



EMUGE

Gewindeschneidtechnik · Spanntechnik
Thread Cutting Technology · Clamping Technology



Katalog 150

Gültig ab 1. November 2016

Catalogue 150

Valid from 1 November 2016

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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| | | | |
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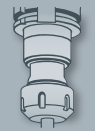


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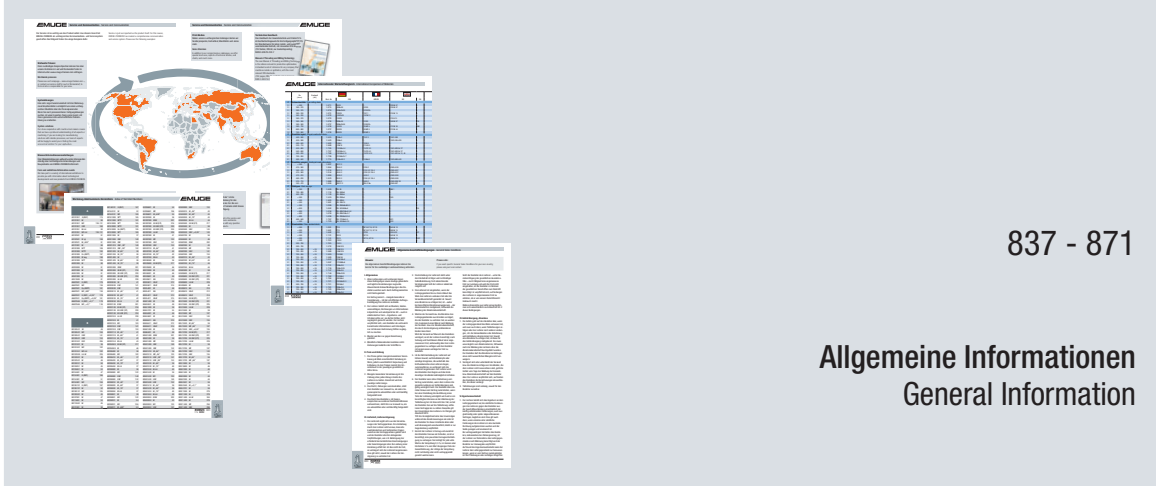


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8



Rund 100 Jahre Präzision und Innovation. Nearly 100 years of precision and innovation.

EMUGE als Teil der EMUGE-FRANKEN Unternehmensgruppe entwickelt und produziert Präzisionswerkzeuge für die Gewindeherstellung, die Werkzeug- und die 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 Gewindevälzrollen ermöglicht die zuverlässige Herstellung von Außengewinden.

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

EMUGE as part of the EMUGE-FRANKEN company association develops and manufactures precision tools for thread production and 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.



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.

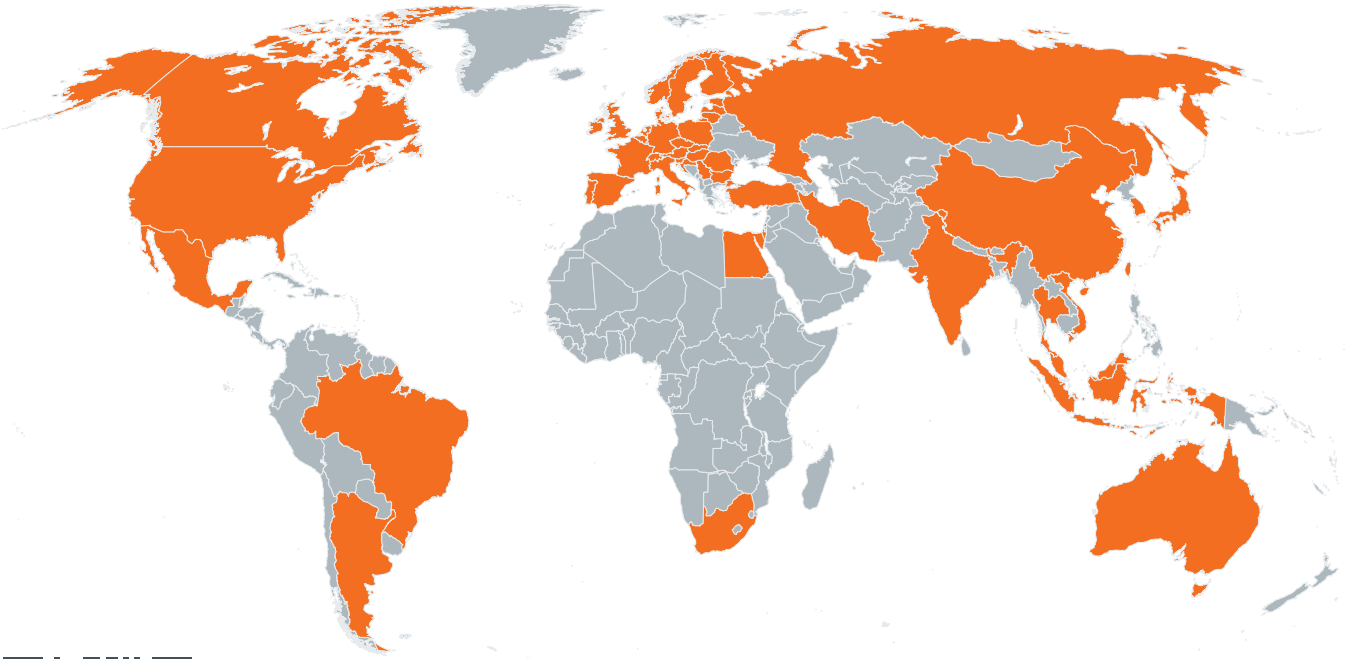
Wir sind in Ihrer Nähe. Weltweit. We are nearby. Throughout the world.

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 optimizing 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
To find your EMUGE-FRANKEN contact person, please see www.emuge-franken.com/sales

Die EMUGE Punch Tap-Technologie stellt neben Gewindebohren, Gewindeformen und Gewindefräsen eine weitere Technologie zur Gewindeherstellung dar.

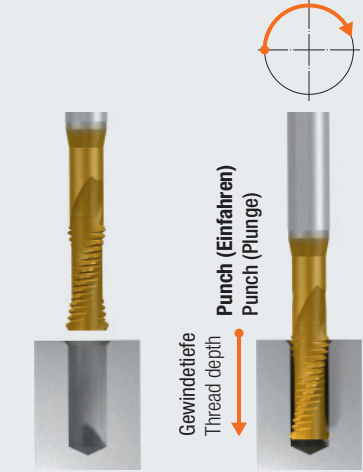


Mit ihrem innovativen, sehr kurzen Bewegungsablauf eröffnet sie eine völlig neue Dimension der Produktivität.

Die Grundidee der Kinematik gliedert sich in drei Arbeitsschritte. Voraussetzung ist eine Vorbohrung im Werkstück mit dem entsprechenden Vorbohrdurchmesser.

The EMUGE Punch Tap 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>In der vorgefertigten Bohrungswand entstehen zwei Helikalnuten. Two helical grooves are generated in the pre-machined wall of the hole.</p> |  |  |
| <p>Schritt 1: Punch (Einfahren) Der Punch Tap besitzt kein durchgehendes Gewindeprofil am Umfang, sondern nur zwei Zahnreihen, die um 180° versetzt angeordnet sind. Dabei übernimmt der erste Zahn jeder Zahnreihe die Nutenzeugung und ermöglicht somit den ersten Schritt des Verfahrens, das helikale Einfahren in die Vorbohrung.</p> | <p>Schritt 2: Gewindeformen Ist der Punch Tap auf Gewindetiefe angekommen, erfolgt das Gewindeformen, welches durch das synchrone Verfahren der Vorschubachse um die halbe Gewindesteigung bei gleichzeitiger Rotation des Werkzeuges um etwa 180° stattfindet.</p> | <p>Schritt 3: Herausfahren Nach der Ausführung des Gewindeformvorgangs wird der Punch Tap durch die erzeugten Nuten aus der Bohrung herausgefahren. Entstanden ist ein Gewinde mit zwei Helikalnuten.</p> |
| <p>Step 1: Punch (Plunge) The Punch Tap does not have a continuous thread profile on the circumference but two rows of teeth which are offset by 180°. The first tooth of each row of teeth is responsible for producing the groove and thereby enables the first step of the process, the helical plunge into the pre-drilled tap hole.</p> | <p>Step 2: Thread-forming Once the Punch Tap has reached the depth of the thread, the forming of the thread 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>Step 3: Retraction Once the thread-forming process is finished, the Punch Tap is retracted from the hole through the generated grooves. The result is a thread with two helical grooves.</p> |

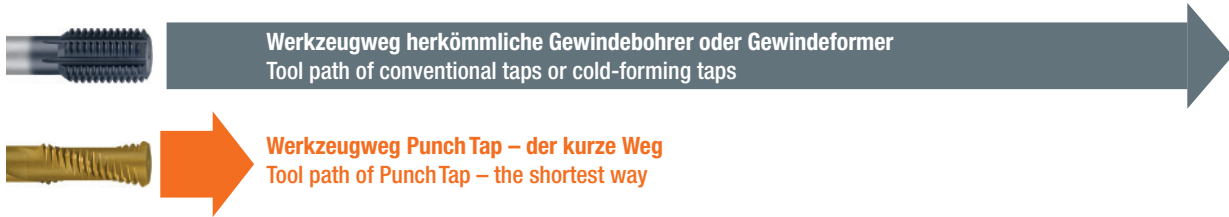


EMUGE Punch Tap – der kurze Weg

Vergleicht man den Werkzeugweg des EMUGE Punch Tap 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 Punch Tap – the shortest way

When comparing the tool path of the EMUGE Punch Tap 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.

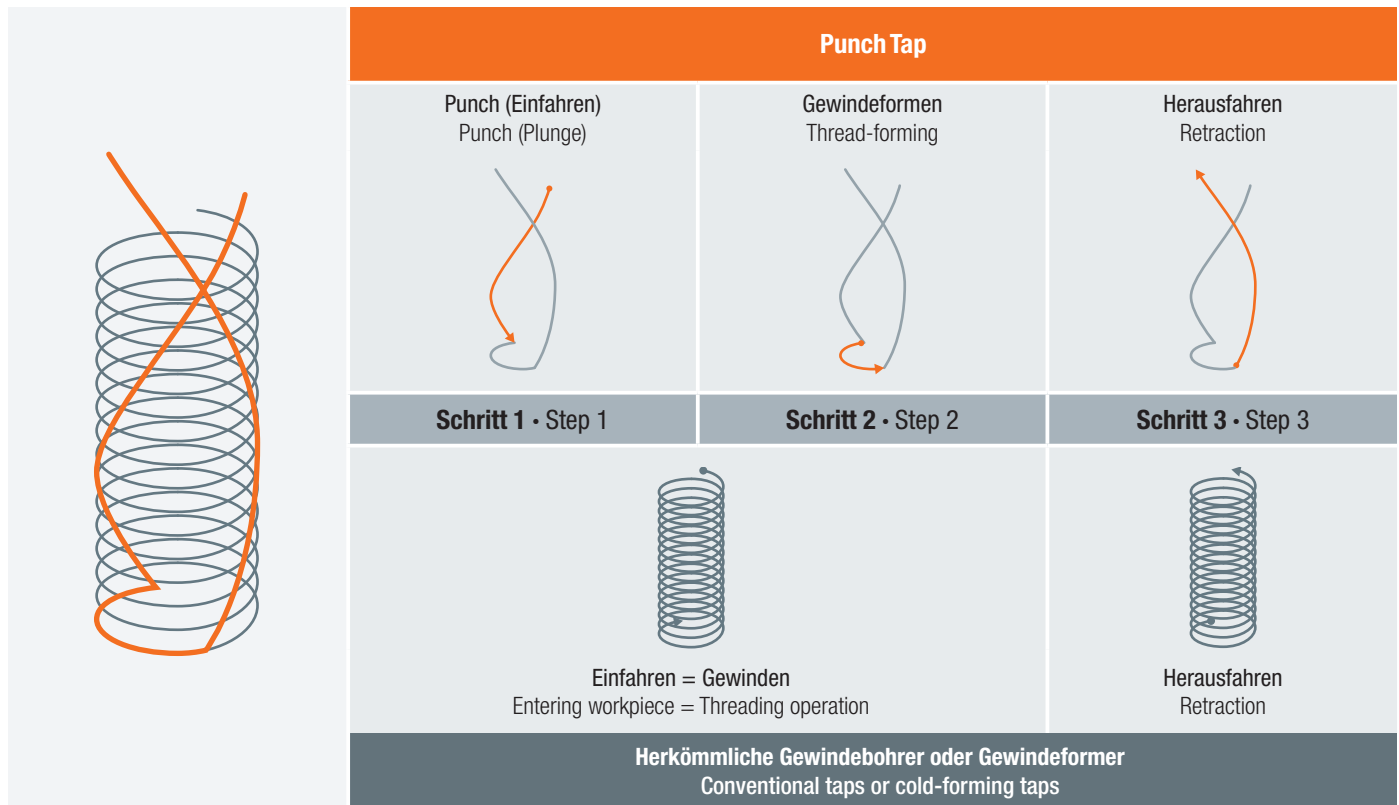


Untersuchungen am ISF der Universität Dortmund ergaben, dass das Punch Tap-Gewinde mit einem herkömmlich produzierten Gewinde in Eigenschaften und Ausreißfestigkeit vergleichbar ist.

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




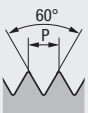
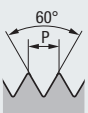
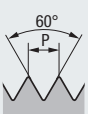
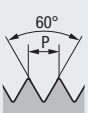
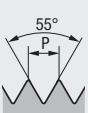
Comparison of tool paths

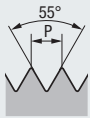


Die Möglichkeit eines Einsatzes der Punch Tap-Technologie hängt von den Prozessbedingungen ab und wird individuell ermittelt. Bei Interesse kontaktieren Sie uns bitte. Weitere Informationen finden Sie unter www.punchtap.com

The possibility of using the Punch Tap 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



| | | |
|---|--|--|
|  <p>M</p> | <p>Metrisches ISO-Regelgewinde DIN 13</p> | <p>ISO Metric coarse thread DIN 13</p> |
|  <p>MF</p> | <p>Metrisches ISO-Feingewinde DIN 13</p> | <p>ISO Metric fine thread DIN 13</p> |
|  <p>UNC</p> | <p>Unified-Grobgewinde ASME B1.1</p> | <p>Unified coarse thread ASME B1.1</p> |
|  <p>UNF</p> | <p>Unified-Feingewinde ASME B1.1</p> | <p>Unified fine thread ASME B1.1</p> |
|  <p>UNEF</p> | <p>Unified-Extra-Feingewinde ASME B1.1</p> | <p>Unified extra fine thread ASME B1.1</p> |
|  <p>UN-8</p> | <p>Unified-Gewinde ASME B1.1 8-Gang-Reihe</p> | <p>Unified thread ASME B1.1 8-Thread series</p> |
|  <p>UNS</p> | <p>Unified-Gewinde ASME B1.1 Für spezielle Durchmesser und Steigungen</p> | <p>Unified thread ASME B1.1 For special diameters and pitches</p> |
|  <p>G (BSP)</p> | <p>Whitworth-Rohrgewinde DIN EN ISO 228 Für nicht im Gewinde dichtende Verbindungen</p> | <p>Whitworth pipe thread DIN EN ISO 228 where pressure-tight joints are not made on the threads</p> |



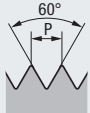
Rp (BSPP)

Zylindrisches Whitworth-Rohrgewinde
DIN EN 10226-1 und ISO 7-1

Innengewinde,
für im Gewinde dichtende Verbindungen

Cylindrical Whitworth pipe thread
DIN EN 10226-1 and ISO 7-1

Internal thread,
where pressure-tight joints are made on the threads



NPSM

Amerikanisches zylindrisches Rohrgewinde
ANSI B1.20.1

Mechanisches Rohrgewinde (früher NPS)

American Standard straight pipe thread
ANSI B1.20.1

For mechanical joints (previously NPS)



NPSF

Amerikanisches zylindrisches Rohrgewinde
ANSI B1.20.3

Zylindrisches Rohrdichtgewinde, gepaart mit kegeligem
Außengewinde NPTF oder PTF-SAE-SHORT;
Lehrung: konisch

American Standard straight pipe thread
ANSI B1.20.3

Dryseal internal straight pipe thread for fuel, combined with
external tapered pipe thread NPTF or PTF-SAE-SHORT;
Gauge with tapered gauges



NPT

Amerikanisches kegeliges Rohrgewinde
ANSI/ASME B1.20.1

Für Gewinde **mit Dichtmittel**, Kegel 1:16

American tapered pipe thread
ANSI/ASME B1.20.1

For threads **with sealant**, taper 1:16



NPTF

Amerikanisches kegeliges Rohrgewinde
ANSI B1.20.3

Für Gewinde **ohne Dichtmittel**, Kegel 1:16

American tapered pipe thread
ANSI B1.20.3

For threads **without sealant**, taper 1:16



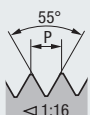
R (BSPT)

Kegeliges Whitworth-Rohrgewinde
DIN EN 10226-1 und ISO 7-1

Außengewinde,
für im Gewinde dichtende Verbindungen,
Kegel 1:16

Tapered Whitworth pipe thread
DIN EN 10226-1 and ISO 7-1

External thread,
where pressure-tight joints are made on the threads,
taper 1:16



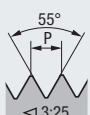
Rc (BSPT)

Kegeliges Whitworth-Rohrgewinde
DIN EN 10226-2 und ISO 7-1

Innengewinde,
für im Gewinde dichtende Verbindungen,
Kegel 1:16

Tapered Whitworth pipe thread
DIN EN 10226-2 and ISO 7-1

Internal thread,
where pressure-tight joints are made on the threads,
taper 1:16




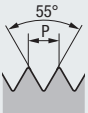

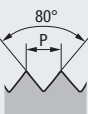
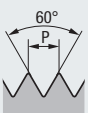
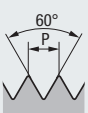

W keg 17E; 25E

**Kegeliges Gewinde zur Verbindung
von Ventilen mit Gasflaschen**
DIN EN ISO 11363, DIN 477-1

Kegel 3:25

**Tapered thread for connection
of valves to gas cylinders**
DIN EN ISO 11363, DIN 477-1

Taper 3:25

| | | |
|--|--|--|
|  <p>W zyl</p> | <p>Zylindrisches Gewinde für Gasflaschenventile DIN 477-1</p> | <p>Cylindrical thread for gas cylinder valves DIN 477-1</p> |
|  <p>BSW</p> | <p>Whitworth-Gewinde BS 84</p> | <p>Whitworth thread BS 84</p> |
|  <p>BSF</p> | <p>Whitworth-Feingewinde BS 84</p> | <p>Whitworth fine thread BS 84</p> |
|  <p>Pg</p> | <p>Stahlpanzerrohr-Gewinde DIN 40430</p> | <p>Steel conduit thread DIN 40430</p> |
|  <p>MJ</p> | <p>MJ-Gewinde DIN ISO 5855</p> | <p>MJ thread DIN ISO 5855</p> |
|  <p>UNJC</p> | <p>Unified-Grobgewinde ASME B1.15</p> | <p>Unified coarse thread ASME B1.15</p> |
|  <p>UNJF</p> | <p>Unified-Feingewinde ASME B1.15</p> | <p>Unified fine thread ASME B1.15</p> |

**EG M**

Metrisches ISO-Regelgewinde
DIN 8140-2

Für Gewindedrahteinsätze

ISO Metric coarse thread
DIN 8140-2

For wire thread inserts (STI)

**EG UNC**

Unified-Grobgewinde
ASME B18.29.1

Für Gewindedrahteinsätze

Unified coarse thread
ASME B18.29.1

For wire thread inserts (STI)

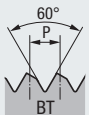
**EG UNF**

Unified-Feingewinde
ASME B18.29.1

Für Gewindedrahteinsätze

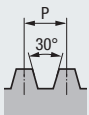
Unified fine thread
ASME B18.29.1

For wire thread inserts (STI)

**LK-M**

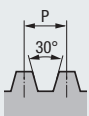
Metrisches SELF-LOCK-Regelgewinde
EMUGE-Norm

Metric SELF-LOCK coarse thread
EMUGE standard

**Tr**

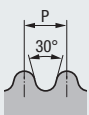
Metrisches ISO-Trapez-Regelgewinde
DIN 103

ISO Metric trapezoidal coarse thread
DIN 103

**Tr-F**

Metrisches ISO-Trapez-Feingewinde
DIN 103

ISO Metric trapezoidal fine thread
DIN 103

**Rd**

Rundgewinde
DIN 405

Round thread
DIN 405

1 Baumaße · Dimensions

2 Ausführung · Design



EMUGE Maschinen-Gewindebohrer · Machine Taps
Enorm 1

Product Finder

Vc

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

Tech. Info

M

DIN 13

60°

l₁

l₂

l₃

Ø d₁

Ø d₂

DIN 371

STEEL
Steel materials

h = 10 x P

h = 10 x P

h = 10 x P

h = 10 x P

h = 10 x P

| | | | | | |
|---------------------------------|-----------|-----------|----------------|----------------|----------|
| Toleranz - Tolerance | 7G | 7G | ISO 2/6H | ISO 2/6H | ISO 2/6H |
| Beschichtung - Coating | TIN | TIN | HSSE | HSSE | HSSE |
| Schneidstoff - Cutting material | HSSE | HSSE | R35 | R35 | R35 |
| | C / 2-3 | C / 2-3 | LH, L35 | LH, L35 | C / 2-3 |
| | E / 0 | E / 0 | E / 0 | E / 0 | E / 0 |

Technische Informationen Technical information → 245 - 266

Gewindetiefe und Lochform Thread depth and hole type

Einsatzgebiete - Material Applications - material → 22

| Werkzeug-Ident - Tool ident | Enorm 1-STEEL „7G“ | Enorm 1-STEEL TIN „7G“ | Enorm 1-STEEL-LH | Enorm 1-STEEL-LH TIN | Enorm 1-STEEL-X |
|-----------------------------|--------------------|-------------------------------|------------------|----------------------|-----------------|
| Ø d ₁ mm | | | | | |
| P mm | | | | | |
| l ₁ | | | | | |
| l ₂ | | | | | |
| l ₃ | | | | | |
| Ø d ₂ | | | | | |
| □ | | | | | |
| Dimens.-Ident | | | | | |
| 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 | | | | | |

● = Lagerwerkzeug, Preis siehe Preisliste
Stock tool, price see price list

Bei Bestellung bitten wir Sie, den **Dimensions-Ident** dem **Werkzeug-Ident** anzufügen.

Beispiel: **B0501430.0030**

In your order, please add to the **order ident** the **tool ident**.

Example: **B0501430.0030**



Gewindebohrer Taps

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Product Finder

Vc

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

Tech. Info



Gewindebohrer mit verstärktem Schaft
Taps with reinforced shank

**Rekord 1
Enorm 1**

Gewindebohrer mit durchfallendem Schaft
Taps with reduced shank

**Rekord 2
Enorm 2**

Gewindebohrer mit Spanglocke
Taps with internal chip collector

Robust 2X

Gewindebohrer mit extra-langem Schaft
Taps with extra long shank

**Rekord 1/2-LS
Enorm 1/2-LS**

Gewindebohrer mit langen Nuten und langem Schaft
Taps with long flutes and long shank

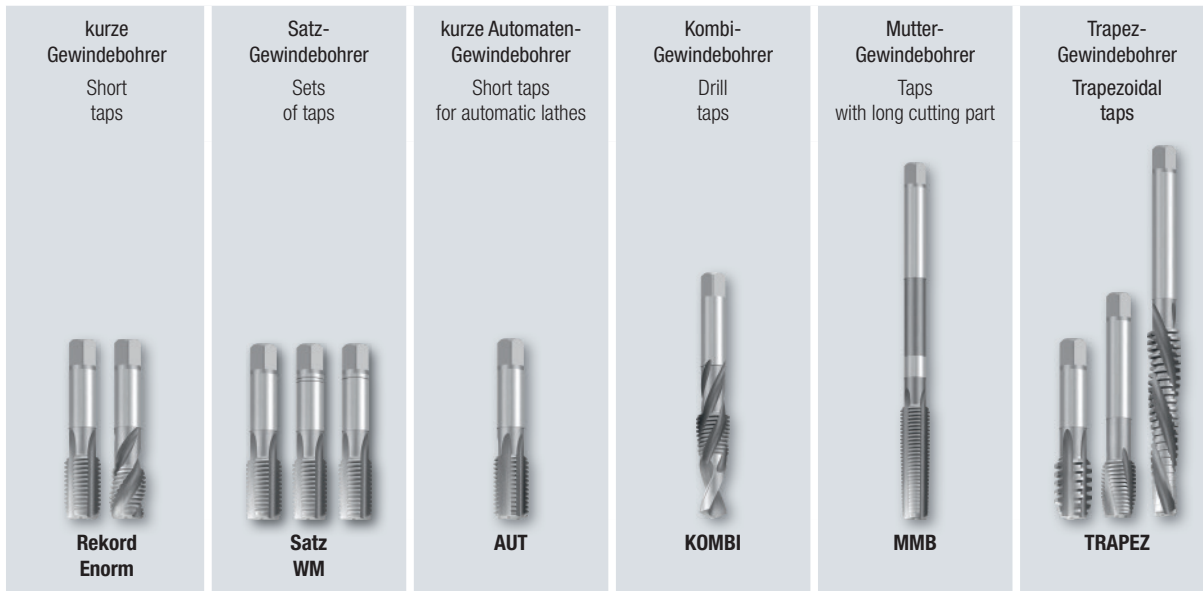
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Rekord 2-LF4**

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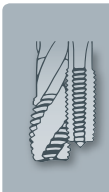


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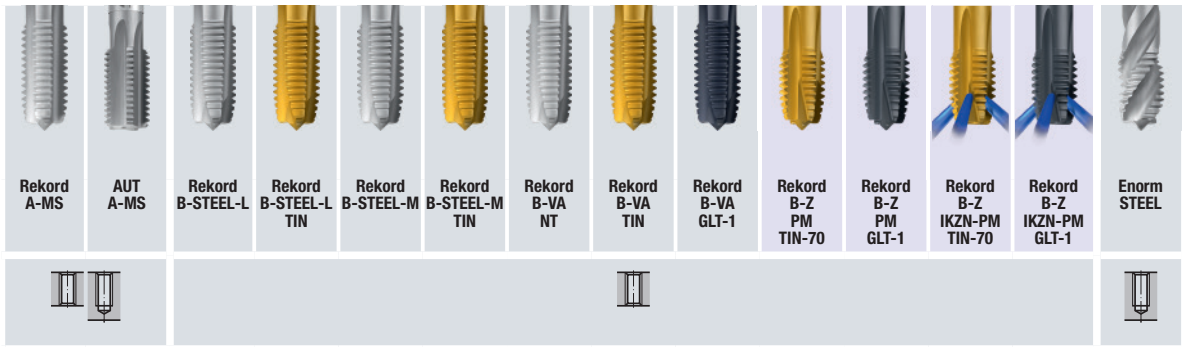
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|  <p>Spezial-Schaftverlängerungen Special shank extensions</p> | Seite · Page |
|  <p>Verstellbare Windeisen Adjustable tap wrenches</p> | 240 - 242 |
|  <p>Gewindebohrer-Auszieher Tap extractors</p> | 243 |
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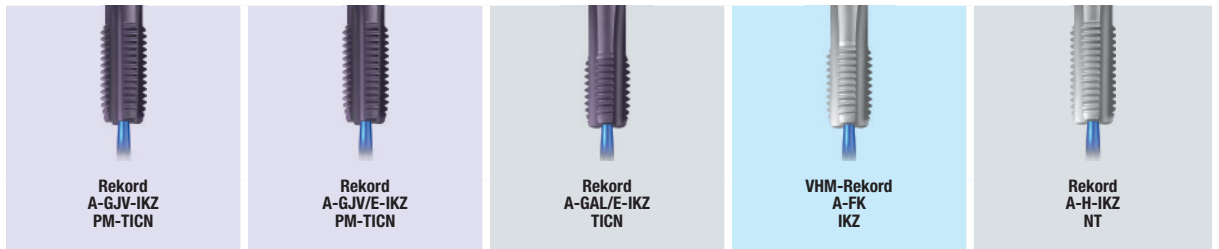
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| | 6GX | 91 | | | | | | | | | 55 77 | 55 77 | 55 77 | 55 77 |
| | 7G | | | 37 65 | 37 65 | 38 | 38 | 42 69 | 42 69 | 42 69 | | | | 40 67 |
| | 6H +0,1 | | | | | | | | | | | | | |
| MF | ISO 1/4H | | | 108 | 108 | | | 115 | 115 | 116 | | | | 103 113 |
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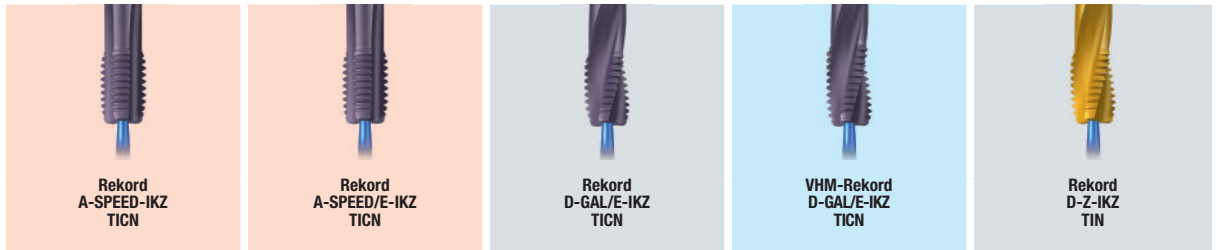
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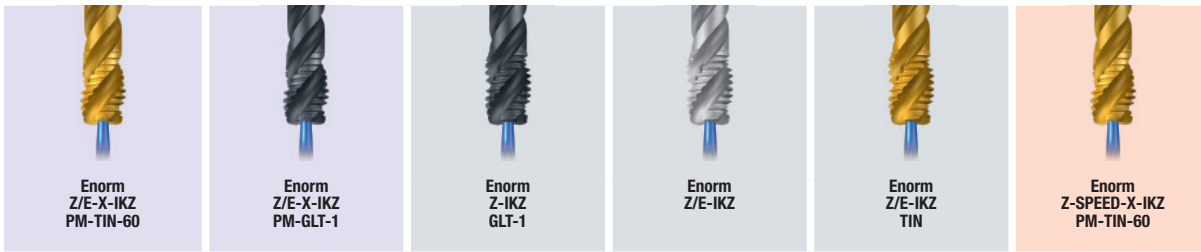
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| M | 60, 83 | 60, 83 | 47 | 47 | 55, 78, 88, 89 |
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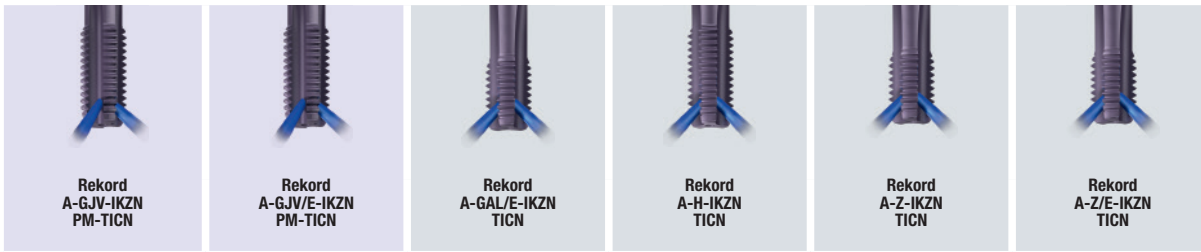
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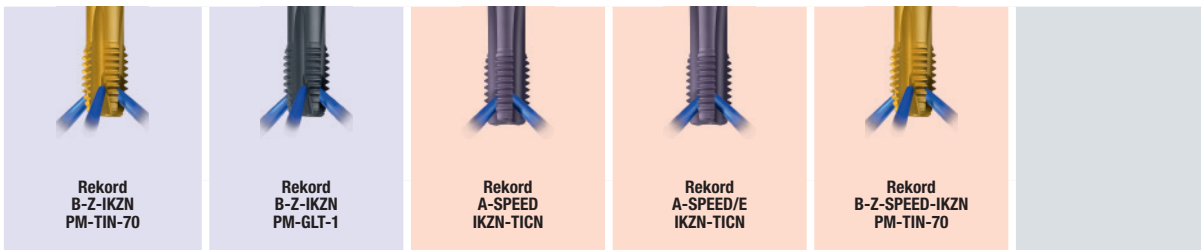
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Wegweiser und Schnittwerte

Bitte beachten:

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

Die Eignung ist folgendermaßen gekennzeichnet:

- Gewindebohrer sehr gut geeignet
- Gewindebohrer gut geeignet

= DIN-Form / Gänge (Anschnittlänge)

Internationaler Werkstoffvergleich siehe Seite 838 - 851.

Product finder and cutting data

Please note:

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

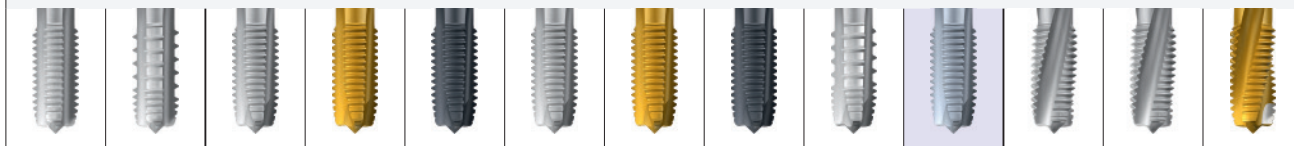
The suitability is marked as follows:

- Tap is very suitable
- Tap is suitable





= DIN form / threads (chamfer length)

International comparison of materials, see page 838 - 851.

| | | Einsatzgebiete – Material Applications – material | | Material-Beispiele Material examples | Material-Nummern 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 ² | 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 ² | 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 ² | 20MoCr3 1.7320 42CrMo4 1.7225 102Cr6 1.2067 50CrMo4 1.7228 |
| | 4.1 | Vergütungsstähle, Kaltarbeitsstähle, Nitrierstähle, u.a. | Heat-treatable steels, Cold work steels, Nitriding steels, etc. | ≤ 1200 N/mm ² | X45NiCrMo4 1.2767 31CrMo12 1.8515 X38CrMoV5-3 1.2367 |
| | 5.1 | Hochlegierte Stähle, Kaltarbeitsstähle, Warmarbeitsstähle, u.a. | High-alloyed steels, Cold work steels, Hot work steels, etc. | ≤ 1400 N/mm ² | X100CrMoV8-1-1 1.2990 X40CrMoV5-1 1.2344 |
| M | Nichtrostende Stahlwerkstoffe Stainless steel materials | | | | |
| | 1.1 | Ferritisch, martensitisch | Ferritic, martensitic | ≤ 950 N/mm ² | X2CrTi12 1.4512 |
| | 2.1 | Austenitisch | Austenitic | ≤ 950 N/mm ² | X6CrNiMoTi17-12-2 1.4571 |
| | 3.1 | Austenitisch-ferritisch (Duplex) | Austenitic-ferritic (Duplex) | ≤ 1100 N/mm ² | X2CrNiMoN22-5-3 1.4462 |
| | 4.1 | Austenitisch-ferritisch hitzebeständig (Super Duplex) | Austenitic-ferritic heat-resistant (Super Duplex) | ≤ 1250 N/mm ² | 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 ² | EN-GJL-200 (GG20) EN-JL-1030 |
| | 1.2 | Gusseisen mit Kugelgrafit (GJS) | Cast iron with nodular graphite (GJS) | 250-450 N/mm ² | EN-GJL-300 (GG30) EN-JL-1050 |
| | 2.1 | Gusseisen mit Kugelgrafit (GJS) | Cast iron with nodular graphite (GJS) | 350-500 N/mm ² | EN-GJS-400-15 (GGG40) EN-JS-1030 |
| | 2.2 | Gusseisen mit Kugelgrafit (GJS) | Cast iron with nodular graphite (GJS) | 500-900 N/mm ² | EN-GJS-700-2 (GGG70) EN-JS-1070 |
| | 3.1 | Gusseisen mit Vermiculargrafit (GJV) | Cast iron with vermicular graphite (GJV) | 300-400 N/mm ² | GJV 300 |
| | 3.2 | Gusseisen mit Vermiculargrafit (GJV) | Cast iron with vermicular graphite (GJV) | 400-500 N/mm ² | GJV 450 |
| | 4.1 | Temperguss (GTMW, GTMB) | Malleable cast iron (GTMW, GTMB) | 250-500 N/mm ² | EN-GJMW-350-4 (GTW-35) EN-JM-1010 |
| 4.2 | Temperguss (GTMW, GTMB) | Malleable cast iron (GTMW, GTMB) | 500-800 N/mm ² | EN-GJMB-450-6 (GTS-45) EN-JM-1140 | |
| N | Nichteisenwerkstoffe Non ferrous materials | | | | |
| | Aluminium-Legierungen Aluminium alloys | | | | |
| | 1.1 | Aluminium-Knetlegierungen | Aluminium wrought alloys | ≤ 200 N/mm ² | EN AW-AlMn1 EN AW-3103 |
| | 1.2 | Aluminium-Knetlegierungen | Aluminium wrought alloys | ≤ 350 N/mm ² | EN AW-AlMgSi EN AW-6060 |
| | 1.3 | Aluminium-Knetlegierungen | Aluminium wrought alloys | ≤ 550 N/mm ² | EN AW-AlZn5Mg3Cu EN AW-7022 |
| | 1.4 | Aluminium-Knetlegierungen | Aluminium wrought alloys | Si ≤ 7% | EN AC-AlMg5 EN AC-51300 |
| | 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 |
| | Kupfer-Legierungen Copper alloys | | | | |
| | 2.1 | Reinkupfer, niedriglegiertes Kupfer | Pure copper, low-alloyed copper | ≤ 400 N/mm ² | E-Cu 57 EN CW 004 A |
| | 2.2 | Kupfer-Zink-Legierungen (Messing, langspanend) | Copper-zinc alloys (brass, long-chipping) | ≤ 550 N/mm ² | CuZn37 (Ms63) EN CW 508 L |
| | 2.3 | Kupfer-Zink-Legierungen (Messing, kurzspanend) | Copper-zinc alloys (brass, short-chipping) | ≤ 550 N/mm ² | CuZn36Pb3 (Ms58) EN CW 603 N |
| | 2.4 | Kupfer-Aluminium-Legierungen (Alubronze, langspanend) | Copper-aluminium alloys (alu bronze, long-chipping) | ≤ 800 N/mm ² | CuAl10Ni5Fe4 EN CW 307 G |
| | 2.5 | Kupfer-Zinn-Legierungen (Zinnbronze, langspanend) | Copper-tin alloys (tin bronze, long-chipping) | ≤ 700 N/mm ² | CuSn8P EN CW 459 K |
| | 2.6 | Kupfer-Zinn-Legierungen (Zinnbronze, kurzspanend) | Copper-tin alloys (tin bronze, short-chipping) | ≤ 400 N/mm ² | CuSn7 ZnPb (Rg7) 2.1090 |
| | 2.7 | Kupfer-Sonderlegierungen | Special copper alloys | ≤ 600 N/mm ² | (AMPCO® 8) |
| | 2.8 | Kupfer-Sonderlegierungen | Special copper alloys | ≤ 1400 N/mm ² | (AMPCO® 45) |
| | Magnesium-Legierungen Magnesium alloys | | | | |
| | 3.1 | Magnesium-Knetlegierungen | Magnesium wrought alloys | ≤ 500 N/mm ² | MgAl6Zn 3.5612 |
| | 3.2 | Magnesium-Gusslegierungen | Magnesium cast alloys | ≤ 500 N/mm ² | 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 ² | Ti1 3.7025 |
| | 1.2 | Titan-Legierungen | Titanium alloys | ≤ 900 N/mm ² | TiAl6V4 3.7165 |
| | 1.3 | Titan-Legierungen | Titanium alloys | ≤ 1250 N/mm ² | TiAl4Mo4Sn2 3.7185 |
| | Nickel-, Kobalt- und Eisen-Legierungen Nickel alloys, cobalt alloys and iron alloys | | | | |
| | 2.1 | Reinnickel | Pure nickel | ≤ 600 N/mm ² | Ni 99.6 2.4060 |
| | 2.2 | Nickel-Basis-Legierungen | Nickel-base alloys | ≤ 1000 N/mm ² | Monel 400 2.4360 |
| | 2.3 | Nickel-Basis-Legierungen | Nickel-base alloys | ≤ 1600 N/mm ² | Inconel 718 2.4668 |
| | 2.4 | Nickel-Basis-Legierungen | Nickel-base alloys | ≤ 1000 N/mm ² | Udimet 605 |
| | 2.5 | Kobalt-Basis-Legierungen | Cobalt-base alloys | ≤ 1600 N/mm ² | Haynes 25 2.4964 |
| | 2.6 | Eisen-Basis-Legierungen | Iron-base alloys | ≤ 1500 N/mm ² | 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 | 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 | Armax 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 |



| Rekord A-STEEL | Rekord A-STEEL-AZ | Rekord B-STEEL-L | Rekord B-STEEL-L TIN | Rekord B-STEEL-L GLT-1 | Rekord B-STEEL-M | Rekord B-STEEL-M TIN | Rekord B-STEEL-M GLT-1 | Rekord B-STEEL-M AZ | Rekord B-STEEL-H PM-CRT | Rekord D-STEEL | Rekord D-STEEL/E | Rekord DF-STEEL TIN |
|----------------|-------------------|------------------|----------------------|------------------------|------------------|----------------------|------------------------|---------------------|-------------------------|----------------|------------------|---------------------|
| C / 2-3 | C / 2-3 | B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 | B ≈ 6 | C / 2-3 | E / 1,5-2 | C / 2-3 |

| | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|
| max. 2 x d ₁  | | max. 3 x d ₁  | | | | | | | max. 2 x d ₁  | | | Gewindetiefe und Lochform Thread depth and hole type  |
|--|--|--|--|--|--|--|--|--|--|--|--|--|

| | | | | | | | | | | | | |
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| | | | | | | | | | 5 - 20 | | | | | 5.1 |
| | | | | | | | | | | | | | | 1.1 |
| | | | | | | | | | | | | | | 2.1 |
| | | | | | | | | | | | | | | 3.1 |
| | | | | | | | | | | | | | | 4.1 |
| | | | | | | | | | | | | | 15 - 45 | 1.1 |
| | | | | | | | | | | | | | 10 - 40 | 1.2 |
| | | | | 10 - 30 | 10 - 30 | | | 10 - 30 | 10 - 30 | | | | 10 - 30 | 2.1 |
| | | | | | | | | | | | | | 10 - 25 | 2.2 |
| | | | | | | | | | | | | | 10 - 25 | 3.1 |
| | | | | | | | | | | | | | 10 - 20 | 3.2 |
| | | | | | | | | | | | | | 15 - 45 | 4.1 |
| | | | | | | | | | | | | | 10 - 40 | 4.2 |
| | | | | | | | | | | | | | | 1.1 |
| | | | | | | | | | | | | | | 1.2 |
| | | | | | | | | | | | | | | 1.3 |
| | | | | | | | | | | | | 15 - 40 | | 1.4 |
| | | | | | | | | | | | | 15 - 40 | | 1.5 |
| | | | | | | | | | | | | | | 1.6 |
| | | | | | | | | | | | | | | 2.1 |
| | | | 10 - 40 | 10 - 40 | | | | | | | | | | 2.2 |
| | | | | | 10 - 40 | 20 - 60 | | | | | | | | 2.3 |
| | | | | | 5 - 25 | | | | | | | 5 - 25 | | 2.4 |
| | | | | | 5 - 25 | | | | | | | 5 - 25 | | 2.5 |
| | | | | | | | | | | | | | | 2.6 |
| | | | | | | | | | | | | | | 2.7 |
| | | | | | | | | | | | | | | 2.8 |
| | | | | | | | | | | | | | | 3.1 |
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| | | | | | | | | | | | | | | 4.1 |
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| | | | | | | | | | | | | | | 4.4 |
| | | | | | | | | | | | | | | 5.1 |
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| | | | | | | | | | | | | | | 5.3 |
| | | | | | | | | | | | | | | 1.1 |
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| | | | | | | | | | | | | | | 1.3 |
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| | | | | | | | | | | | | | | 1.1 |
| | | | | | | | | | | | | | | 1.2 |
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| | | | | | | | | | | | | | | 1.4 |
| | | | | | | | | | | | | | | 1.5 |

- Product Finder
- V_c
- M
- MF
- UNC
- UN-8
- 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
- Tech. Info



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

Tech. Info



| | | | | | | | | | | | | |
|--|-------------|-----------------|---------------|-------------------|----------------|-----------------|-------------------|-------------------|----------|----------------|------------|------------------|
| | Enorm STEEL | Enorm STEEL TIN | Enorm STEEL-X | Enorm STEEL-X TIN | Rekord B-VA NT | Rekord B-VA TIN | Rekord B-VA GLT-1 | Rekord B-VA-AZ NT | Enorm VA | Enorm VA GLT-1 | Enorm VA-X | Enorm VA-X GLT-1 |
| | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 |

| | | | | | | | | | | | | |
|--|---------------------------|--|--|--|-------------------------|--|--|--|---------------------------|--|--|--|
| Gewindetiefe und Lochform Thread depth and hole type | max. 2,5 x d ₁ | | | | max. 3 x d ₁ | | | | max. 2,5 x d ₁ | | | |
| | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|------------------|--------------------|----------|--------|--------|--------------------|-----------|----------------|----|----------------|----------------|--------|--------|
| M | 39, 62, 66, 86, 91 | 39, 66 | 40, 67 | 41, 67 | 41, 63, 68, 87, 91 | 41, 68 | 41, 63, 68, 87 | 43 | 43, 63, 70, 87 | 43, 63, 70, 87 | 44, 71 | 44, 71 |
| MF | 103, 113 | 103, 113 | | | 115 | 103, 115 | 103, 115 | | 103, 116 | 103, 117 | | |
| UNC | 140, 144 | 140, 144 | | | 141, 145 | 141, 145 | 141, 145 | | 141, 145 | 141, 145 | | |
| UNF | 152, 156 | 152, 156 | | | 153, 157 | 153, 157 | 153, 157 | | 153, 157 | 153, 157 | | |
| UNEF, UN-8 | 164 | | | | 165 | 165 | 165 | | 148 | | | |
| G, Rp | 169 | 169 | | | 169 | 169 | 169 | | 169 | 170 | | |
| NPSM, NPSF | | | | | | | | | | | | |
| NPT, NPTF, Rc, W | | | | | | | | | | | | |
| BSW, BSF | 201, 203 | | | | 201, 203 | 201, 203 | 201, 203 | | 202, 204 | 202, 204 | | |
| Pg | | | | | | | | | | | | |
| MJ | | | | | | | | | | | | |
| UNJC, UNJF | | | | | | | | | | | | |
| EG (STI) | | | | | 216 - 226 | 216 - 226 | 216 - 226 | | | | | |
| LK-M | | | | | 228, 230 | 228, 230 | 228, 230 | | | | | |
| Tr, Tr-F, Rd | | | | | | | | | | | | |

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|---|-----|--------|----------------|--------|----------------|--------|----------------|----------------|--------|--------|----------------|--------|----------------|
| P | 1.1 | 5 - 25 | 15 - 45 | 5 - 25 | 15 - 45 | 5 - 25 | 15 - 45 | 15 - 45 | 5 - 25 | 5 - 25 | 15 - 45 | 5 - 25 | 15 - 45 |
| | 2.1 | 5 - 20 | 10 - 40 | 5 - 20 | 10 - 40 | 5 - 20 | 10 - 40 | 10 - 40 | 5 - 20 | 5 - 20 | 10 - 40 | 5 - 20 | 10 - 40 |
| | 3.1 | 2 - 15 | 5 - 25 | 2 - 15 | 5 - 25 | 2 - 15 | 5 - 25 | 5 - 25 | 2 - 15 | 2 - 15 | 5 - 25 | 2 - 15 | 5 - 25 |
| | 4.1 | | 5 - 20 | | 5 - 20 | | 5 - 20 | 5 - 20 | | | 5 - 20 | | 5 - 20 |
| | 5.1 | | | | | | | | | | | | |

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|---|-----|--|--|--|--|--------|--------|---------------|--------|--------|---------------|--------|---------------|
| M | 1.1 | | | | | | | | | | | | |
| | 2.1 | | | | | 2 - 10 | 5 - 20 | 5 - 20 | 2 - 10 | 2 - 10 | 5 - 20 | 2 - 10 | 5 - 20 |
| | 3.1 | | | | | 2 - 10 | 5 - 20 | 5 - 20 | 2 - 10 | 2 - 10 | 5 - 20 | 2 - 10 | 5 - 20 |
| | 4.1 | | | | | | 5 - 15 | 5 - 15 | | | 5 - 15 | | 5 - 15 |

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|---|-----|--|----------------|--|----------------|---------------|----------------|----------------|---------------|---------------|----------------|---------------|----------------|
| K | 1.1 | | | | | | | | | | | | |
| | 1.2 | | | | | | | | | | | | |
| | 2.1 | | 10 - 30 | | 10 - 30 | 5 - 20 | 10 - 30 | 10 - 30 | 5 - 20 | 5 - 20 | 10 - 30 | 5 - 20 | 10 - 30 |
| | 2.2 | | | | | | | | | | | | |
| | 3.1 | | | | | | | | | | | | |
| | 3.2 | | | | | | | | | | | | |
| | 4.1 | | | | | | | | | | | | |
| | 4.2 | | | | | | | | | | | | |

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|---|-----|---------|---------|---------|---------|---------|---------|---------|---------|--|--|--|--|
| N | 1.1 | | | | | | | | | | | | |
| | 1.2 | | | | | | | | | | | | |
| | 1.3 | | | | | | | | | | | | |
| | 1.4 | | | | | | | | | | | | |
| | 1.5 | | | | | | | | | | | | |
| | 1.6 | | | | | | | | | | | | |
| | 2.1 | | | | | | | | | | | | |
| | 2.2 | 10 - 40 | 20 - 60 | 10 - 40 | 20 - 60 | 10 - 40 | 20 - 60 | 20 - 60 | 10 - 40 | | | | |

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|---|-----|--|--|--|--|--------|--------|--|--------|--|--|--|--|
| N | 2.3 | | | | | | | | | | | | |
| | 2.4 | | | | | | | | | | | | |
| | 2.5 | | | | | 2 - 10 | 5 - 25 | | 2 - 10 | | | | |
| | 2.6 | | | | | 2 - 10 | 5 - 25 | | 2 - 10 | | | | |
| | 2.7 | | | | | | | | | | | | |
| | 2.8 | | | | | | | | | | | | |
| | 3.1 | | | | | | | | | | | | |
| | 3.2 | | | | | | | | | | | | |

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| N | 4.1 | | | | | | | | | | | | |
| | 4.2 | | | | | | | | | | | | |
| | 4.3 | | | | | | | | | | | | |
| | 4.4 | | | | | | | | | | | | |
| | 5.1 | | | | | | | | | | | | |

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| N | 5.2 | | | | | | | | | | | | |
| | 5.3 | | | | | | | | | | | | |
| | 1.1 | | | | | | | | | | | | |
| | 1.2 | | | | | | | | | | | | |
| | 1.3 | | | | | | | | | | | | |
| | 2.1 | | | | | | | | | | | | |

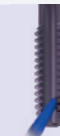
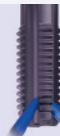
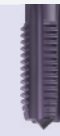
| | | | | | | | | | | | | | |
|---|-----|--|--|--|--|--|--|--|--|--|--|--|--|
| S | 2.2 | | | | | | | | | | | | |
| | 2.3 | | | | | | | | | | | | |
| | 2.4 | | | | | | | | | | | | |
| | 2.5 | | | | | | | | | | | | |
| | 2.6 | | | | | | | | | | | | |

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| H | 1.1 | | | | | | | | | | | | |
| | 1.2 | | | | | | | | | | | | |
| | 1.3 | | | | | | | | | | | | |
| | 1.4 | | | | | | | | | | | | |
| | 1.5 | | | | | | | | | | | | |

EMUGE
—VA—

EMUGE
—GG—

EMUGE
—GJV—



Robust 2X-VA NE2
C / 2-3

Robust 2X-VA TIN
C / 2-3

Rekord A-GG NT
C / 2-3

Rekord A-GG TICN
C / 2-3

Rekord A-GJV PM-TICN
C / 2-3

Rekord A-GJV-1KZ PM-TICN
C / 2-3

Rekord A-GJV-1KZN PM-TICN
C / 2-3

Rekord A-GJV/E PM-TICN
E / 1,5-2

Rekord A-GJV/E-1KZ PM-TICN
E / 1,5-2

Rekord A-GJV/E-1KZN PM-TICN
E / 1,5-2



Gewindetiefe und Lochform
Thread depth and hole type

84
126

85
126

45, 71
117

45, 71
117

45, 72
117

45, 72
117

45, 72
117

45, 72
117

45, 72
117

45, 73
118

M
MF
UNC
UNF
G, Rp
NPSM, NPSF
UNEJ, UN-8
G, Rp
NPT, NPTF
Rc, W
W
BSW, BSF
Pg
MJ
UNJC, UNJF
EG (STI)
LK-M
Tr, Tr-F, Rd

Seite . Page

2 - 8

2 - 8

1.1

2 - 6

2 - 6

2.1

1 - 8

1 - 8

3.1

1 - 5

1 - 5

4.1

5.1

1 - 8

1 - 8

1.1

1 - 8

1 - 8

2.1

3.1

4.1

2 - 10

2 - 10

10 - 25

15 - 45

15 - 45

15 - 45

15 - 45

15 - 45

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15 - 45

1.1

2 - 10

2 - 10

10 - 20

10 - 40

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1.2

2 - 8

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3.1

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3.2

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15 - 45

4.1

2 - 10

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10 - 40

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10 - 40

4.2

1.1

1.2

1.3

1.4

1.5

1.6

2.1

2.2

2.3

2.4

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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

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1.3

2.1

2.2

2.3

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2.5

2.6

1.1

1.2

1.3

1.4

1.5

Product Finder

V_c

M

MF

UNC
UN-8

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

Tech. Info



- 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
- Tech. Info

EMUGE
AL

EMUGE
GAL

EMUGE
MG



| | | | | | | | | | | |
|--|-------------|-------------------|----------|----------------|------------------|-------------------------|--------------------------|-------------------------|-----------------------------|-------------------|
| | Rekord B-AL | Rekord B-AL GLT-8 | Enorm AL | Enorm AL GLT-8 | Enorm AL/E GLT-8 | Rekord A-GAL/E IKZ-TiCN | Rekord A-GAL/E IKZN-TiCN | Rekord D-GAL/E IKZ-TiCN | VHM-Rekord D-GAL/E IKZ-TiCN | Rekord A-MG GLT-1 |
|--|-------------|-------------------|----------|----------------|------------------|-------------------------|--------------------------|-------------------------|-----------------------------|-------------------|

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|--|--------|--------|---------|---------|-----------|-----------|-----------|-----------|-----------|---------|
| | B / ≈3 | 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 |
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| | | | | | | | | | | |
|--|-----------------------------|--|-------------------------------|--|--|-----------------------------|--|-----------------------------|--|-----------------------------|
| Gewindetiefe und Lochform Thread depth and hole type | max. 3 x d ₁ | | max. 2,5 x d ₁ | | | max. 2 x d ₁ | | max. 2 x d ₁ | | max. 2 x d ₁ |
|--|-----------------------------|--|-------------------------------|--|--|-----------------------------|--|-----------------------------|--|-----------------------------|

| | | | | | | | | | | |
|--------------|--------|--------|--------|-----------|----|----|----|----|----|----|
| M | 46, 73 | 46, 73 | 46, 73 | 46, 73 | 46 | 47 | 47 | 47 | 47 | 47 |
| MF | | | 118 | | | | | | | |
| UNC | | | | | | | | | | |
| UNF | | | | | | | | | | |
| UNEF | | | | | | | | | | |
| UNEF, UN-8 | | | | | | | | | | |
| G, Rp | | | | | | | | | | |
| NPSM, NPSF | | | | | | | | | | |
| NPT, NPTF | | | | | | | | | | |
| Rc, W | | | | | | | | | | |
| BSW, BSF | | | | | | | | | | |
| Pg | | | | 210 | | | | | | |
| MJ | | | | 212, 214 | | | | | | |
| UNJC, UNJF | | | | 217 - 225 | | | | | | |
| EG (STI) | 217 | 217 | | 229 | | | | | | |
| LK-M | | | | | | | | | | |
| Tr, Tr-F, Rd | | | | | | | | | | |

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|---|-----|--|--|--|--|--|--|--|--|--|
| P | 1.1 | | | | | | | | | |
| | 2.1 | | | | | | | | | |
| | 3.1 | | | | | | | | | |
| | 4.1 | | | | | | | | | |
| | 5.1 | | | | | | | | | |

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|---|-----|--|--|--|--|--|--|--|--|--|
| M | 1.1 | | | | | | | | | |
| | 2.1 | | | | | | | | | |
| | 3.1 | | | | | | | | | |
| | 4.1 | | | | | | | | | |
| K | 1.1 | | | | | | | | | |
| | 1.2 | | | | | | | | | |
| | 2.1 | | | | | | | | | |
| | 2.2 | | | | | | | | | |
| | 3.1 | | | | | | | | | |
| | 3.2 | | | | | | | | | |
| | 4.1 | | | | | | | | | |
| | 4.2 | | | | | | | | | |

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|---|-----|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| N | 1.1 | 10 - 20 | 15 - 40 | 10 - 20 | 15 - 40 | 15 - 40 | | | | |
| | 1.2 | 10 - 20 | 15 - 40 | 10 - 20 | 15 - 40 | 15 - 40 | | | | |
| | 1.3 | 10 - 20 | 15 - 40 | 10 - 20 | 15 - 40 | 15 - 40 | | | | |
| | 1.4 | 10 - 20 | 15 - 40 | 10 - 20 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 40 - 80 |
| | 1.5 | | | | | | 15 - 40 | 15 - 40 | 15 - 40 | 40 - 80 |
| | 1.6 | | | | | | 10 - 30 | 10 - 30 | 10 - 30 | 30 - 60 |

| | | | | | | | | | | |
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| N | 2.1 | | | | | | | | | |
| | 2.2 | | | | | | | | | |
| | 2.3 | | | | | | | | | |
| | 2.4 | | | | | | | | | |
| | 2.5 | | | | | | | | | |
| | 2.6 | | | | | | | | | |
| | 2.7 | | | | | | | | | |
| | 2.8 | | | | | | | | | |

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|---|-----|--|--|--|--|--|--|--|--|---------|
| N | 3.1 | | | | | | | | | 20 - 60 |
| | 3.2 | | | | | | | | | 20 - 60 |

| | | | | | | | | | | |
|---|-----|--|--|--|--|--|--|--|--|--|
| N | 4.1 | | | | | | | | | |
| | 4.2 | | | | | | | | | |
| | 4.3 | | | | | | | | | |
| | 4.4 | | | | | | | | | |

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|---|-----|--|--|--|--|--|--|--|--|--|
| S | 5.1 | | | | | | | | | |
| | 5.2 | | | | | | | | | |
| | 5.3 | | | | | | | | | |
| | 1.1 | | | | | | | | | |
| | 1.2 | | | | | | | | | |
| | 1.3 | | | | | | | | | |

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|---|-----|--|--|--|--|--|--|--|--|--|
| S | 2.1 | | | | | | | | | |
| | 2.2 | | | | | | | | | |
| | 2.3 | | | | | | | | | |
| | 2.4 | | | | | | | | | |
| | 2.5 | | | | | | | | | |
| | 2.6 | | | | | | | | | |

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|---|-----|--|--|--|--|--|--|--|--|--|
| H | 1.1 | | | | | | | | | |
| | 1.2 | | | | | | | | | |
| | 1.3 | | | | | | | | | |
| | 1.4 | | | | | | | | | |
| | 1.5 | | | | | | | | | |

Product Finder

V_c

M

MF

UNC UN-8
Gewindetiefe und Lochform
Thread depth and hole type

UNF UNEF

G, Rp NPSM, NPSF

NPT, NPTF Rc, W

BSW, BSF

Pg MJ UNJC, UNJF

MJ UNJC, UNJF

EG (STI) SELF-LOCK

Tr, Tr-F Rd

Zubehör Accessories

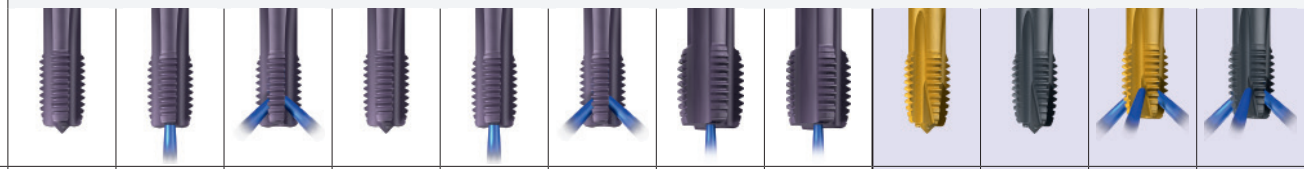
Tech. Info




| | Rekord C-NI-PM TiCN | Rekord DF-NI-PM TiCN | Rekord A-H NT | Rekord A-H TiCN | Rekord A-H-IKZ NT | Rekord A-H-IKZ TiCN | Rekord A-H-IKZN TiCN | VHM/KHM Rekord A-H-IKZ | VHM/KHM Rekord A-H/E-IKZ | Rekord A-HCUT-PM TiCN | VHM-Rekord A-HCUT/D TiCN | VHM-Rekord A-HCUT/C TiCN 3) |
|--------------|-------------------------|-------------------------|-------------------------|-----------------|-------------------------|---------------------|-------------------------|-------------------------|--------------------------|---------------------------|--------------------------|-----------------------------|
| | D / 4-5 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | E / 1,5-2 | C / 2-3 | D / 4-5 | C / 2-3 |
| | max. 3 x d ₁ | max. 2 x d ₁ | max. 2 x d ₁ | | max. 2 x d ₁ | | max. 2 x d ₁ | max. 2 x d ₁ | | max. 1,5 x d ₁ | | max. 1,5 x d ₁ |
| | | | | | | | | | | | | |
| M | 49, 74 | 49, 74 | 49, 63, 75, 87 | 50, 75 | 50, 75 | 50, 75 | 50, 75 | 50, 75 | 104, 119 | 51, 75 | 52 | 52 |
| MF | | | 104, 118 | 119 | 119 | 119 | 119 | | | 104, 119 | 105 | 105 |
| UNC | | | 141, 145 | | | | | | | | | |
| UNF | | | 153, 157 | | | | | | | | | |
| UNEF, UN-8 | | | | 170 | | | | | | | | |
| G, Rp | | | 170 | | | | | | | | | |
| NPSM, NPSF | | | | | | | | | 170 | | | |
| NPT, NPTF | | | | | | | | | | 166, 171 | 167 | 167 |
| Rc, W | | | | | | | | | | | | |
| BSW, BSF | | | | | | | | | | | | |
| Pg | | | 209 | | | | | | | | | |
| MJ | 211 | 211 | | | | | | | | | | |
| UNJC, UNJF | 213, 215 | 213, 215 | | | | | | | | | | |
| EG (STI) | | | | | | | | | | | | |
| LK-M | | | | | | | | | | | | |
| Tr, Tr-F, Rd | | | | | | | | | | | | |
| P | 1.1 | | 5 - 25 | 15 - 45 | 5 - 25 | 15 - 45 | 15 - 45 | | | | | |
| | 2.1 | | 5 - 20 | 10 - 40 | 5 - 20 | 10 - 40 | 10 - 40 | | | | | |
| | 3.1 | | 2 - 15 | 5 - 25 | 2 - 15 | 5 - 25 | 5 - 25 | | | | | |
| | 4.1 | | | 5 - 20 | | 5 - 20 | 5 - 20 | | | | | |
| | 5.1 | | | | | | | 5 - 15 | 5 - 15 | | | |
| M | 1.1 | | | | | | | | | | | |
| | 2.1 | | | | | | | | | | | |
| | 3.1 | | | | | | | | | | | |
| | 4.1 | 2 - 10 | 2 - 10 | | | | | | | | | |
| K | 1.1 | | 10 - 25 | 15 - 45 | 10 - 25 | 15 - 45 | 15 - 45 | 40 - 80 | 40 - 80 | | | |
| | 1.2 | | 10 - 20 | 10 - 40 | 10 - 20 | 10 - 40 | 10 - 40 | 30 - 60 | 30 - 60 | | | |
| | 2.1 | | 5 - 20 | 10 - 30 | 5 - 20 | 10 - 30 | 10 - 30 | 30 - 60 | 30 - 60 | | | |
| | 2.2 | | 5 - 15 | 10 - 25 | 5 - 15 | 10 - 25 | 10 - 25 | 20 - 40 | 20 - 40 | | | |
| | 3.1 | | 5 - 15 | 10 - 25 | 5 - 15 | 10 - 25 | 10 - 25 | 20 - 40 | 20 - 40 | | | |
| | 3.2 | | 5 - 10 | 10 - 20 | 5 - 10 | 10 - 20 | 10 - 20 | 20 - 40 | 20 - 40 | | | |
| | 4.1 | | 10 - 25 | 15 - 45 | 10 - 25 | 15 - 45 | 15 - 45 | 40 - 80 | 40 - 80 | | | |
| 4.2 | | 10 - 20 | 10 - 40 | 10 - 20 | 10 - 40 | 10 - 40 | 30 - 60 | 30 - 60 | | | | |
| N | 1.1 | | | | | | | | | | | |
| | 1.2 | | | | | | | | | | | |
| | 1.3 | | | | | | | | | | | |
| | 1.4 | | | | | | | | | | | |
| | 1.5 | | | | | | | 20 - 60 | 20 - 60 | | | |
| | 1.6 | | | | | | | 20 - 40 | 20 - 40 | | | |
| | 2.1 | | | | | | | | | | | |
| | 2.2 | | | | | | | | | | | |
| | 2.3 | | | | | | | | | | | |
| | 2.4 | | | 2 - 10 | 5 - 25 | 2 - 10 | 5 - 25 | 5 - 25 | | | | |
| | 2.5 | | | 2 - 10 | 5 - 25 | 2 - 10 | 5 - 25 | 5 - 25 | | | | |
| | 2.6 | | | 5 - 20 | 10 - 30 | 5 - 20 | 10 - 30 | 10 - 30 | 20 - 40 | 20 - 40 | | |
| | 2.7 | | | 1 - 5 | 2 - 10 | 1 - 5 | 2 - 10 | 2 - 10 | 5 - 15 | 5 - 15 | | |
| 2.8 | 1 - 5 | 1 - 5 | | | | | | 1 - 8 | 1 - 8 | | | |
| 3.1 | | | | | | | | | | | | |
| 3.2 | | | | | | | | | | | | |
| 4.1 | | | 5 - 25 | 10 - 40 | 5 - 25 | 10 - 40 | 10 - 40 | 20 - 60 | 20 - 60 | | | |
| 4.2 | | | | | | | | | | | | |
| 4.3 | | | | | | | | | | | | |
| 4.4 | | | | | | | | 10 - 25 | 10 - 25 | | | |
| 5.1 | | | 10 - 20 | 10 - 20 | 10 - 20 | 10 - 20 | 10 - 20 | 20 - 60 | 20 - 60 | | | |
| 5.2 | | | | | | | | 10 - 30 | 10 - 30 | | | |
| 5.3 | | | | | | | | | | | | |
| S | 1.1 | | | | | | | | | | | |
| | 1.2 | 2 - 10 | 2 - 10 | | | | | | | | | |
| | 1.3 | 1 - 8 | 1 - 8 | | | | | | | | | |
| | 2.1 | | | | | | | | | | | |
| | 2.2 | | | | | | | | | | | |
| | 2.3 | 1 - 8 | 1 - 8 | | | | | | | | | |
| 2.4 | | | | | | | | | | | | |
| 2.5 | 1 - 8 | 1 - 8 | | | | | | | | | | |
| 2.6 | 1 - 8 | 1 - 8 | | | | | | | | | | |
| H | 1.1 | | | | | | | 1 - 5 | 1 - 5 | 1 - 5 | | |
| | 1.2 | | | | | | | 1 - 3 | 1 - 3 | 1 - 3 | | |
| | 1.3 | | | | | | | | | | 1 - 3 | 1 - 3 |
| | 1.4 | | | | | | | | | | 1 - 2 | 1 - 2 |
| | 1.5 | | | | | | | | | | | |

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

3) VHM-Rekord A-HCUT/D-TiCN als Vorschneider verwenden!
Use solid carbide tap VHM-Rekord A-HCUT/D-TiCN as No. 1 tap!



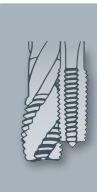
| Rekord A-Z TiCN | Rekord A-Z-ikZ TiCN | Rekord A-Z-ikZN TiCN | Rekord A-Z/E TiCN | Rekord A-Z/E-ikZ TiCN | Rekord A-Z/E-ikZN TiCN | Rekord A-Z-ikZ-LF3 TiCN | Rekord A-Z-ikZ-LF4 TiCN | Rekord B-Z-PM TiN-70 | Rekord B-Z-PM GLT-1 | Rekord B-Z-ikZN PM-TiN-70 | Rekord B-Z-ikZN PM-GLT-1 | |
|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|---------------------|---------------------------|--------------------------|---|
| C / 2-3 | C / 2-3 | C / 2-3 | E / 1,5-2 | E / 1,5-2 | E / 1,5-2 | C / 2-3 | C / 2-3 | B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 | |
| max. 2 x d ₁ | max. 2 x d ₁ | max. 2 x d ₁ | max. 2 x d ₁ | max. 2 x d ₁ | max. 2 x d ₁ | max. 3 x d ₁ | max. 4 x d ₁ | max. 3 x d ₁ | | | | Gewindetiefe und Lochform Thread depth and hole type |
| 53,76 119 | 53,76 119 | 53,76 120 | 53,76 120 | 53,76 120 | 54,77 120 | 88 128 | 89 129 | 54,77 106, 121 | 54,77 106, 121 | 54,77 121 | 54,77 121 | |


 Gewindetiefe und Lochform
 Thread depth and hole type
 M
 MF
 UNF
 UNF
 G, Rp
 NPSM, NPSF
 NPT, NPTF
 Rc, W
 BSW, BSF
 Pg
 MJ
 UNJC, UNJF
 EG (ST)
 LK-M
 Tr, Tr-F, Rd

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| | | | | | | | | | | | | | |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----|
| 15 - 45 | 15 - 45 | 15 - 45 | 15 - 45 | 15 - 45 | 15 - 45 | 15 - 45 | 15 - 45 | 15 - 45 | 15 - 45 | 15 - 45 | 15 - 45 | 15 - 45 | 1.1 |
| 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 2.1 |
| 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 3.1 |
| 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 4.1 |
| | | | | | | | | 2 - 15 | 2 - 15 | 2 - 15 | 2 - 15 | 2 - 15 | 5.1 |
| | | | | | | | | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 1.1 |
| | | | | | | | | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 2.1 |
| | | | | | | | | 5 - 15 | 5 - 15 | 5 - 15 | 5 - 15 | 5 - 15 | 3.1 |
| | | | | | | | | | | | | | 4.1 |
| 15 - 45 | 15 - 45 | 15 - 45 | 15 - 45 | 15 - 45 | 15 - 45 | 15 - 45 | 15 - 45 | | | | | | 1.1 |
| 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | | | | | | 1.2 |
| 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 2.1 |
| 10 - 25 | 10 - 25 | 10 - 25 | 10 - 25 | 10 - 25 | 10 - 25 | 10 - 25 | 10 - 25 | | | | | | 2.2 |
| 10 - 25 | 10 - 25 | 10 - 25 | 10 - 25 | 10 - 25 | 10 - 25 | 10 - 25 | 10 - 25 | | | | | | 3.1 |
| 10 - 20 | 10 - 20 | 10 - 20 | 10 - 20 | 10 - 20 | 10 - 20 | 10 - 20 | 10 - 20 | | | | | | 3.2 |
| 15 - 45 | 15 - 45 | 15 - 45 | 15 - 45 | 15 - 45 | 15 - 45 | 15 - 45 | 15 - 45 | | | | | | 4.1 |
| 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | | | | | | 4.2 |
| | | | | | | | | | | | | | 1.1 |
| | | | | | | | | | | | | | 1.2 |
| | | | | | | | | | | | | | 1.3 |
| 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 1.4 |
| 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 1.5 |
| 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 1.6 |
| | | | | | | | | 5 - 30 | 5 - 30 | 5 - 30 | 5 - 30 | 5 - 30 | 2.1 |
| | | | | | | | | 20 - 60 | 20 - 60 | 20 - 60 | 20 - 60 | 20 - 60 | 2.2 |
| | | | | | | | | | | | | | 2.3 |
| 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 2.4 |
| 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 2.5 |
| 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 2.6 |
| 2 - 10 | 2 - 10 | 2 - 10 | 2 - 10 | 2 - 10 | 2 - 10 | 2 - 10 | 2 - 10 | 2 - 10 | 2 - 10 | 2 - 10 | 2 - 10 | 2 - 10 | 2.7 |
| | | | | | | | | | | | | | 2.8 |
| | | | | | | | | | | | | | 3.1 |
| | | | | | | | | | | | | | 3.2 |
| 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | | | | | | 4.1 |
| | | | | | | | | | | | | | 4.2 |
| | | | | | | | | | | | | | 4.3 |
| | | | | | | | | | | | | | 4.4 |
| | | | | | | | | | | | | | 5.1 |
| | | | | | | | | | | | | | 5.2 |
| | | | | | | | | | | | | | 5.3 |
| | | | | | | | | 5 - 15 | 5 - 15 | 5 - 15 | 5 - 15 | 5 - 15 | 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 Finder
 V_c
 M
 MF
 UNF
 UN-8
 UNF
 G, Rp
 NPSM, NPSF
 NPT, NPTF
 Rc, W
 BSW, BSF
 Pg
 MJ
 UNJC, UNJF
 EG (ST)
 SELF-LOCK
 Tr, Tr-F, Rd
 Zubehör
 Accessories
 Tech. Info



Product Finder

V_c

M

MF

UNC UN-8

UNF UNEF

G, Rp NPSM, NPSF

NPT, NPTF Rc, W

BSW, BSF

Pg

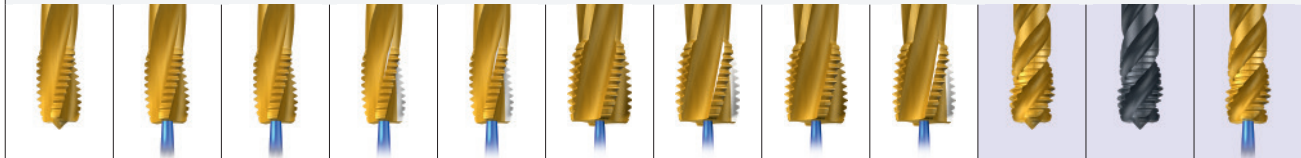
MJ UNJC, UNJF

EG (STI) SELF-LOCK

Tr, Tr-F Rd

Zubehör Accessories

Tech. Info



| | Rekord D-Z TIN | Rekord D-Z-IKZ TIN | Rekord D-Z/E-IKZ TIN | Rekord D-Z-BF IKZ-TIN | Rekord D-Z/E-BF IKZ-TIN | Rekord D-Z-IKZ LF3-TIN | Rekord D-Z-BF-IKZ LF3-TIN | Rekord D-Z-IKZ LF4-TIN | Rekord D-Z-BF-IKZ LF4-TIN | Enorm Z-X-PM TIN-60 | Enorm Z-X-PM GLT-1 | Enorm Z-X-IKZ PM-TIN-60 |
|--|-----------------------------|--------------------|----------------------|-----------------------|-------------------------|-----------------------------|---------------------------|-----------------------------|---------------------------|-----------------------------|--------------------|-------------------------|
| | C / 2-3 | C / 2-3 | E / 1,5-2 | C / 2-3 | E / 1,5-2 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 |
| Gewindetiefe und Lochform Thread depth and hole type | max. 2 x d ₁ | | | | | max. 3 x d ₁ | | max. 4 x d ₁ | | max. 3 x d ₁ | | |
| M | 55, 78 | 55, 78 | 55, 78 | 55, 63, 78, 87 | 55, 78 | 88 | 88 | 89 | 89 | 56, 79 | 56, 79 | 56, 79 |
| MF | 121 | 121 | 121 | 121 | 121 | 128 | 128 | 129 | 129 | 122 | 122 | 122 |
| UNC | | | | | | | | | | 142, 146 | 142, 146 | 142, 146 |
| UNF | | | | | | | | | | 154, 158 | 154, 158 | 154, 158 |
| UNEF, UN-8 | | | | | | | | | | | | |
| G, Rp | | | | | | | | | | 171 | 171 | 171 |
| NPSM, NPSF | | | | | | | | | | | | |
| NPT, NPTF | | | | | | | | | | | | |
| Rc, W | | | | | | | | | | | | |
| BSW, BSF | | | | | | | | | | | | |
| Pg | | | | | | | | | | | | |
| MJ | | | | | | | | | | | | |
| UNJC, UNJF | | | | | | | | | | | | |
| EG (STI) | | | | | | | | | | | | |
| SELF-LOCK | | | | | | | | | | | | |
| Tr, Tr-F | | | | | | | | | | | | |
| Rd | | | | | | | | | | | | |
| P | | | | | | | | | | | | |
| 1.1 | | | | | | | | | | | | |
| 2.1 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 60 | 10 - 60 | 10 - 60 |
| 3.1 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 40 | 5 - 40 | 5 - 40 |
| 4.1 | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 30 | 5 - 30 | 5 - 30 |
| 5.1 | 2 - 10 | 2 - 10 | 2 - 10 | 2 - 10 | 2 - 10 | 2 - 10 | 2 - 10 | 2 - 10 | 2 - 10 | | | |
| M | | | | | | | | | | | | |
| 1.1 | | | | | | | | | | 5 - 20 | 5 - 20 | 5 - 20 |
| 2.1 | | | | | | | | | | 5 - 20 | 5 - 20 | 5 - 20 |
| 3.1 | | | | | | | | | | 5 - 15 | 5 - 15 | 5 - 15 |
| 4.1 | | | | | | | | | | | | |
| K | | | | | | | | | | | | |
| 1.1 | | | | | | | | | | | | |
| 1.2 | | | | | | | | | | | | |
| 2.1 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 |
| 2.2 | 10 - 25 | 10 - 25 | 10 - 25 | 10 - 25 | 10 - 25 | 10 - 25 | 10 - 25 | 10 - 25 | 10 - 25 | 10 - 30 | 10 - 30 | 10 - 30 |
| 3.1 | | | | | | | | | | | | |
| 3.2 | | | | | | | | | | | | |
| 4.1 | | | | | | | | | | | | |
| 4.2 | | | | | | | | | | | | |
| N | | | | | | | | | | | | |
| 1.1 | | | | | | | | | | | | |
| 1.2 | | | | | | | | | | | | |
| 1.3 | | | | | | | | | | | | |
| 1.4 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 |
| 1.5 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 |
| 1.6 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 |
| 2.1 | | | | | | | | | | 5 - 30 | 5 - 30 | 5 - 30 |
| 2.2 | | | | | | | | | | 20 - 60 | 20 - 60 | 20 - 60 |
| 2.3 | | | | | | | | | | | | |
| 2.4 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 |
| 2.5 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 |
| 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 | | | | | | | | | | 5 - 15 | 5 - 15 | 5 - 15 |
| 1.2 | | | | | | | | | | | | |
| 1.3 | | | | | | | | | | | | |
| 2.1 | | | | | | | | | | | | |
| 2.2 | | | | | | | | | | | | |
| 2.3 | | | | | | | | | | | | |
| 2.4 | | | | | | | | | | | | |
| 2.5 | | | | | | | | | | | | |
| 2.6 | | | | | | | | | | | | |
| H | | | | | | | | | | | | |
| 1.1 | | | | | | | | | | | | |
| 1.2 | | | | | | | | | | | | |
| 1.3 | | | | | | | | | | | | |
| 1.4 | | | | | | | | | | | | |
| 1.5 | | | | | | | | | | | | |

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Vertriebspartner



| | | | | | | | | | | | |
|------------------------|-----------------------|----------------------|---------------------------|--------------------------|---------|-------------|---------------|-------------------|-----------|---------------|-----------------|
| Enorm Z-X-IKZ PM-GLT-1 | Enorm Z/E-X-PM TIN-60 | Enorm Z/E-X-PM GLT-1 | Enorm Z/E-X-IKZ PM-TIN-60 | Enorm Z/E-X-IKZ PM-GLT-1 | Enorm Z | Enorm Z TIN | Enorm Z GLT-1 | Enorm Z-IKZ GLT-1 | Enorm Z/E | Enorm Z/E TIN | Enorm Z/E GLT-1 |
| C / 2-3 | 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 | C / 2-3 | E / 1,5-2 | E / 1,5-2 | E / 1,5-2 |

max. 3 x d₁



Gewindetiefe und Lochform
Thread depth and hole type

| | | | | | | | | | | | |
|--------------|--------------------------------------|--------------------------------------|--------------|--------------|-------------------|----------|-------|-------|---|---|-------|
| 56,79 122 | 56,79 122 142, 146 154, 158 | 57,79 123 142, 146 154, 158 | 57,79 123 | 57,79 123 | 58,81 143, 147 | 58,81 | 58,81 | 58,81 | 59,81, 91 107, 124 143, 147 155, 159 | 59,81 107, 124 143, 147 155, 159 | 59,81 |
| 171 | 171 | 171 | 171 | 171 | | | | | 172, 180 182, 183 | 172, 180 182, 183 | |
| | | | | | | 217, 219 | | | 217 - 227 229, 231 | 217 - 227 229, 231 | |

M
MF
UNC
UNF
G, Rp
NPSM, NPSF
NPT, NPTF
Rc, W
BSW, BSF
Pg
MJ
UNJC, UNJF
EG (STI)
LK-M
Tr, Tr-F, Rd

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|----------------|----------------|----------------|----------------|----------------|--------|----------------|----------------|----------------|--------|----------------|----------------|-----|
| | | | | | 5 - 25 | 15 - 45 | 15 - 45 | 15 - 45 | 5 - 25 | 15 - 45 | 15 - 45 | 1.1 |
| 10 - 60 | 10 - 60 | 10 - 60 | 10 - 60 | 10 - 60 | 5 - 20 | 10 - 40 | 10 - 40 | 10 - 40 | 5 - 20 | 10 - 40 | 10 - 40 | 2.1 |
| 5 - 40 | 5 - 40 | 5 - 40 | 5 - 40 | 5 - 40 | 2 - 15 | 5 - 25 | 5 - 25 | 5 - 25 | 2 - 15 | 5 - 25 | 5 - 25 | 3.1 |
| 5 - 30 | 5 - 30 | 5 - 30 | 5 - 30 | 5 - 30 | 2 - 10 | 5 - 20 | 5 - 20 | 5 - 20 | 2 - 10 | 5 - 20 | 5 - 20 | 4.1 |
| | | | | | | | | | | | | 5.1 |

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SELF-LOCK
Tr, Tr-F
Rd

| | | | | | | | | | | | | |
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| 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 2 - 10 | 5 - 20 | 5 - 20 | 5 - 20 | 2 - 10 | 5 - 20 | 5 - 20 | 1.1 |
| 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 2 - 10 | 5 - 20 | 5 - 20 | 5 - 20 | 2 - 10 | 5 - 20 | 5 - 20 | 2.1 |
| 5 - 15 | 5 - 15 | 5 - 15 | 5 - 15 | 5 - 15 | | 5 - 15 | 5 - 15 | 5 - 15 | | 5 - 15 | 5 - 15 | 3.1 |
| | | | | | | | | | | | | 4.1 |
| | | | | | | | | | | | | 1.1 |
| | | | | | | | | | | | | 1.2 |
| 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | | | | | | | | 2.1 |
| | | | | | | | | | | | | 2.2 |
| | | | | | | | | | | | | 3.1 |
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| | | | | | | | | | | | | 1.1 |
| | | | | | | | | | | | | 1.2 |
| | | | | | | | | | | | | 1.3 |
| 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | | 15 - 40 | 15 - 40 | 15 - 40 | | 15 - 40 | 15 - 40 | 1.4 |
| 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | 15 - 40 | | 15 - 40 | 15 - 40 | 15 - 40 | | 15 - 40 | 15 - 40 | 1.5 |
| 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | | 10 - 30 | 10 - 30 | 10 - 30 | | 10 - 30 | 10 - 30 | 1.6 |
| 5 - 30 | 5 - 30 | 5 - 30 | 5 - 30 | 5 - 30 | 5 - 20 | 5 - 30 | 5 - 30 | 5 - 30 | 5 - 20 | 5 - 30 | 5 - 30 | 2.1 |
| 20 - 60 | 20 - 60 | 20 - 60 | 20 - 60 | 20 - 60 | | 20 - 60 | 20 - 60 | 20 - 60 | | 20 - 60 | 20 - 60 | 2.2 |
| | | | | | | | | | | | | 2.3 |
| 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | | 5 - 25 | 5 - 25 | 5 - 25 | | 5 - 25 | 5 - 25 | 2.4 |
| 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | 5 - 25 | | 5 - 25 | 5 - 25 | 5 - 25 | | 5 - 25 | 5 - 25 | 2.5 |
| | | | | | | | | | | | | 2.6 |
| | | | | | | | | | | | | 2.7 |
| | | | | | | | | | | | | 2.8 |
| | | | | | | | | | | | | 3.1 |
| | | | | | | | | | | | | 3.2 |
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| | | | | | | | | | | | | 4.3 |
| | | | | | | | | | | | | 4.4 |
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| 5 - 15 | 5 - 15 | 5 - 15 | 5 - 15 | 5 - 15 | | 5 - 15 | 5 - 15 | 5 - 15 | | 5 - 15 | 5 - 15 | 1.1 |
| | | | | | | | | | | | | 1.2 |
| | | | | | | | | | | | | 1.3 |
| | | | | | | | | | | | | 2.1 |
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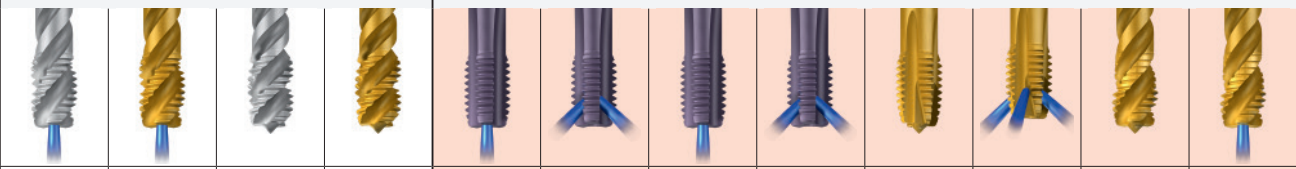
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|--|---------------|-------------------|-----------|---------------|-------------------------|--------------------------|---------------------------|----------------------------|----------------------------|---------------------------------|---------------------------|-------------------------------|
| | Enorm Z/E-IKZ | Enorm Z/E-IKZ TIN | Enorm Z50 | Enorm Z50 TIN | Rekord A-SPEED IKZ-TICN | Rekord A-SPEED IKZN-TICN | Rekord A-SPEED/E IKZ-TICN | Rekord A-SPEED/E IKZN-TICN | Rekord B-Z-SPEED PM-TIN-70 | Rekord B-Z-SPEED-IKZN PM-TIN-70 | Enorm Z-SPEED-X PM-TIN-60 | Enorm Z-SPEED-X-IKZ PM-TIN-60 |
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| | E / 1,5-2 | E / 1,5-2 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | E / 1,5-2 | E / 1,5-2 | B / 4-5 | B / 4-5 | C / 2-3 | C / 2-3 |
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| Gewindtiefe und Lochform Thread depth and hole type | max. 3 x d ₁ | | | | max. 2 x d ₁ | | max. 2 x d ₁ | | max. 3 x d ₁ | | max. 3 x d ₁ | |
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|---|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| M | 59 | 59,81 | 59,82 | 59,82 | 60,83 | 60,83 | 60,83 | 60,83 | 61,83 | 61,83 | 61,83 | 61,83 |
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| MF | 124 | 124 | | | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 125 |
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| G, Rp | | | | | | | | | | | | |
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| Rc, W | | | | | | | | | | | | |
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| MJ | | | | | | | | | | | | |
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| 1.1 | 5 - 25 | 15 - 45 | 5 - 25 | 15 - 45 | | | | | 40 - 80 | 40 - 80 | | |
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| 2.1 | 5 - 20 | 10 - 40 | 5 - 20 | 10 - 40 | | | | | 30 - 60 | 30 - 60 | 30 - 60 | 30 - 60 |
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| 3.1 | 2 - 15 | 5 - 25 | 2 - 15 | 5 - 25 | | | | | 20 - 40 | 20 - 40 | 20 - 40 | 20 - 40 |
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| 4.1 | 2 - 10 | 5 - 20 | 2 - 10 | 5 - 20 | | | | | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 |
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| 5.1 | | | | | | | | | | | | |
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| 1.1 | 2 - 10 | 5 - 20 | 2 - 10 | 5 - 20 | | | | | | | | |
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| 2.1 | 2 - 10 | 5 - 20 | 2 - 10 | 5 - 20 | | | | | | | | |
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| 3.1 | | 5 - 15 | | 5 - 15 | | | | | | | | |
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| 4.1 | | | | | | | | | | | | |
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| 1.1 | | | | | 40 - 80 | 40 - 80 | 40 - 80 | 40 - 80 | | | | |
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| 1.2 | | | | | 30 - 60 | 30 - 60 | 30 - 60 | 30 - 60 | | | | |
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| 2.1 | | | | | 30 - 60 | 30 - 60 | 30 - 60 | 30 - 60 | 30 - 60 | 30 - 60 | | |
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| 2.2 | | | | | 20 - 40 | 20 - 40 | 20 - 40 | 20 - 40 | 20 - 40 | 20 - 40 | | |
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| 3.1 | | | | | 20 - 40 | 20 - 40 | 20 - 40 | 20 - 40 | | | | |
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| 3.2 | | | | | 20 - 40 | 20 - 40 | 20 - 40 | 20 - 40 | | | | |
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| 4.1 | | | | | 40 - 80 | 40 - 80 | 40 - 80 | 40 - 80 | | | | |
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| 4.2 | | | | | 30 - 60 | 30 - 60 | 30 - 60 | 30 - 60 | | | | |
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| 1.1 | | | | | | | | | | | | |
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| 1.2 | | | | | | | | | | | | |
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| 1.3 | | | | | | | | | | | | |
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| 1.4 | | 15 - 40 | | 15 - 40 | 20 - 60 | 20 - 60 | 20 - 60 | 20 - 60 | 20 - 60 | 20 - 60 | | |
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| 1.5 | | 15 - 40 | | 15 - 40 | 20 - 60 | 20 - 60 | 20 - 60 | 20 - 60 | 20 - 60 | 20 - 60 | | |
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| 1.6 | | 10 - 30 | | 10 - 30 | 20 - 40 | 20 - 40 | 20 - 40 | 20 - 40 | 20 - 40 | 20 - 40 | | |
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| 2.1 | 5 - 20 | 5 - 30 | 5 - 20 | 5 - 30 | | | | | | | | |
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| 2.2 | | 20 - 60 | | 20 - 60 | | | | | | | | |
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| 2.3 | | | | | | | | | | | | |
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| 2.4 | | 5 - 25 | | 5 - 25 | | | | | | | | |
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| 2.5 | | 5 - 25 | | 5 - 25 | | | | | | | | |
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| 2.6 | | | | | | | | | | | | |
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| 2.7 | | | | | | | | | | | | |
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| 2.8 | | | | | | | | | | | | |
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| 3.1 | | | | | | | | | | | | |
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| 3.2 | | | | | | | | | | | | |
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| 4.1 | | | | | | | | | | | | |
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| 4.2 | | | | | | | | | | | | |
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| 4.3 | | | | | | | | | | | | |
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| 4.4 | | | | | | | | | | | | |
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| 5.1 | | | | | | | | | | | | |
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| 5.2 | | | | | | | | | | | | |
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| 5.3 | | | | | | | | | | | | |
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| 1.1 | | 5 - 15 | | 5 - 15 | | | | | | | | |
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| 1.2 | | | | | | | | | | | | |
|-----|--|--|--|--|--|--|--|--|--|--|--|--|

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|-----|--|--|--|--|--|--|--|--|--|--|--|--|
| 1.3 | | | | | | | | | | | | |
|-----|--|--|--|--|--|--|--|--|--|--|--|--|

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|-----|--|--|--|--|--|--|--|--|--|--|--|--|
| 2.1 | | | | | | | | | | | | |
|-----|--|--|--|--|--|--|--|--|--|--|--|--|

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|-----|--|--|--|--|--|--|--|--|--|--|--|--|
| 2.2 | | | | | | | | | | | | |
|-----|--|--|--|--|--|--|--|--|--|--|--|--|

| | | | | | | | | | | | | |
|-----|--|--|--|--|--|--|--|--|--|--|--|--|
| 2.3 | | | | | | | | | | | | |
|-----|--|--|--|--|--|--|--|--|--|--|--|--|

| | | | | | | | | | | | | |
|-----|--|--|--|--|--|--|--|--|--|--|--|--|
| 2.4 | | | | | | | | | | | | |
|-----|--|--|--|--|--|--|--|--|--|--|--|--|

| | | | | | | | | | | | | |
|-----|--|--|--|--|--|--|--|--|--|--|--|--|
| 2.5 | | | | | | | | | | | | |
|-----|--|--|--|--|--|--|--|--|--|--|--|--|

| | | | | | | | | | | | | |
|-----|--|--|--|--|--|--|--|--|--|--|--|--|
| 2.6 | | | | | | | | | | | | |
|-----|--|--|--|--|--|--|--|--|--|--|--|--|

| | | | | | | | | | | | | |
|-----|--|--|--|--|--|--|--|--|--|--|--|--|
| 1.1 | | | | | | | | | | | | |
|-----|--|--|--|--|--|--|--|--|--|--|--|--|

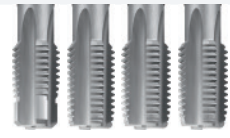
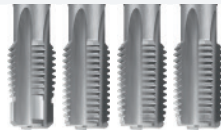
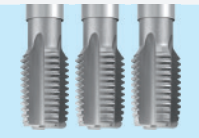
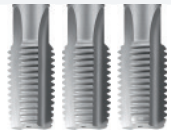
| | | | | | | | | | | | | |
|-----|--|--|--|--|--|--|--|--|--|--|--|--|
| 1.2 | | | | | | | | | | | | |
|-----|--|--|--|--|--|--|--|--|--|--|--|--|

| | | | | | | | | | | | | |
|-----|--|--|--|--|--|--|--|--|--|--|--|--|
| 1.3 | | | | | | | | | | | | |
|-----|--|--|--|--|--|--|--|--|--|--|--|--|

| | | | | | | | | | | | | |
|-----|--|--|--|--|--|--|--|--|--|--|--|--|
| 1.4 | | | | | | | | | | | | |
|-----|--|--|--|--|--|--|--|--|--|--|--|--|

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|-----|--|--|--|--|--|--|--|--|--|--|--|--|
| 1.5 | | | | | | | | | | | | |
|-----|--|--|--|--|--|--|--|--|--|--|--|--|

SET



HGB-Set

VHM/KHM-Set

WM-Set

WM-Set
TIN

WM-F-TIC-Set

C / 2-3

C / ≈3

C / 2-3

C / 2-3

C / 2-3

max. 2 x d₁



Gewindetiefe
und Lochform
Thread depth
and hole type

92
132
149
161

93
135

94
136
150
162

96

98

205, 208

M
MF
UNC
UNF
G, Rp
NPSM, NPSF
NPT, NPTF
Rc, W
BSW, BSF
Pg
MJ
UNJC, UNJF
EG (ST)
LK-M
Tr, Tr-F, Rd

1 - 3

1 - 3

1 - 3

1.1

1 - 3

1 - 3

1 - 3

2.1

1 - 3

1 - 3

1 - 3

1 - 3

3.1

1 - 3

1 - 3

1 - 3

4.1

1 - 3

1 - 3

1 - 3

1 - 3

5.1

1 - 3

1 - 3

1.1

1 - 3

1 - 3

2.1

1 - 3

1 - 3

3.1

1 - 3

1 - 3

4.1

1.1

1.2

2.1

2.2

3.1

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

1.1

1.2

1.3

1.4

1.5















v_c in m/min



- 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
- Tech. Info

| | | EMUGE MS | | | | EMUGE STEEL | | EMUGE VA | | | | | |
|--|-----|-------------------------|--|-------------------------|--|---------------------------|--|------------------|---------------|---------------|--------------|----------------------|--------------|
| AUT-A | | KOMBI | | MMB | | KEG | | Rekord KEG STEEL | | Rekord KEG VA | | Rekord KEG R35-VA-AZ | |
| | | AUT-A MS-R | | KOMBI | | MMB DIN 357 | | C / 2-3 | | C / 2-3 | | C / 2-3 | |
| Gewindetiefe und Lochform Thread depth and hole type | | max. 1 x d ₁ | | max. 1 x d ₁ | | max. 1,5 x d ₁ | | — | | — | | — | |
| M | | 138 | | 100 | | 101 | | | | | | | |
| MF | | 178, 181 | | | | | | 185 - 197 198 | | 189 | | 185 - 196 | |
| G, Rp NPSM, NPSF | | | | | | | | | | 185, 187 | | 186 - 192 | |
| NPT, NPTF Rc, W | | | | | | | | | | | | 186, 188 | |
| BSW, BSF | | | | | | | | | | | | | |
| Pg | | | | | | | | | | | | | |
| MJ UNJC, UNJF | | | | | | | | | | | | | |
| EG (STI) SELF-LOCK | | | | | | | | | | | | | |
| Tr, Tr-F Rd | | | | | | | | | | | | | |
| P | 1.1 | | | 5 - 25 | | 5 - 25 | | 2 - 8 | 2 - 8 | 2 - 8 | 2 - 8 | 2 - 8 | 2 - 8 |
| | 2.1 | | | 5 - 20 | | 5 - 20 | | 2 - 6 | 2 - 6 | 2 - 6 | 2 - 6 | 2 - 6 | 2 - 6 |
| | 3.1 | | | | | | | | | 1 - 8 | 1 - 8 | 1 - 8 | 1 - 8 |
| | 4.1 | | | | | | | | | 1 - 5 | 1 - 5 | | |
| | 5.1 | | | | | | | | | | | | |
| M | 1.1 | | | | | | | | | 1 - 8 | 1 - 8 | 1 - 8 | 1 - 8 |
| | 2.1 | | | | | | | | | 1 - 8 | 1 - 8 | 1 - 8 | 1 - 8 |
| | 3.1 | | | | | | | | | 1 - 5 | 1 - 5 | 1 - 5 | 1 - 5 |
| | 4.1 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| K | 1.1 | | | | | | | 2 - 10 | 2 - 10 | | | | |
| | 1.2 | | | | | | | 2 - 10 | 2 - 10 | | | | |
| | 2.1 | | | | | | | | | 2 - 8 | 2 - 8 | | |
| | 2.2 | | | | | | | | | 2 - 8 | 2 - 8 | | |
| | 3.1 | | | | | | | | | 2 - 8 | 2 - 8 | | |
| | 3.2 | | | | | | | | | 2 - 8 | 2 - 8 | | |
| | 4.1 | | | | | | | | | 2 - 10 | 2 - 10 | | |
| | 4.2 | | | | | | | | | 2 - 10 | 2 - 10 | | |
| | | | | | | | | | | | | | |
| N | 1.1 | | | | | | | | | | | | |
| | 1.2 | | | | | | | | | | | | |
| | 1.3 | | | | | | | | | | | | |
| | 1.4 | | | | | | | | | 2 - 10 | | | |
| | 1.5 | | | | | | | | | 2 - 10 | | | |
| | 1.6 | | | | | | | | | | | | |
| | 2.1 | | | | | | | | | | | | |
| | 2.2 | | | 10 - 40 | | 10 - 40 | | 2 - 10 | 2 - 10 | | | | |
| | 2.3 | | | | | | | 2 - 10 | 2 - 10 | | | | |
| | 2.4 | | | 10 - 40 | | | | | | 1 - 8 | 1 - 8 | | |
| | 2.5 | | | | | | | | | 1 - 8 | 1 - 8 | | |
| | 2.6 | | | 5 - 20 | | | | | | 1 - 8 | 1 - 8 | | |
| | 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 | | | | | | | | | | | | |
| | 1.2 | | | | | | | | | | | | |
| | 1.3 | | | | | | | | | | | | |
| | 1.4 | | | | | | | | | | | | |
| | 1.5 | | | | | | | | | | | | |

4) Bei entsprechender Einspannlänge bis ca. 2,5 x d₁
With sufficient clamping length up to approx. 2.5 x d₁

| EMUGE NI | TRAPEZ | EMUGE STEEL | | EMUGE VA | | EMUGE MS | RUND | EMUGE STEEL | |
|--|--------|---|---|---|---|---|------|---|--|
|  | |  |  |  |  |  | |  | |
| Rekord KEG R10-NI-PM-TiCN | | TRAPEZ 2Stuf STEEL | TRAPEZ Rekord C-STEEL | TRAPEZ AM-VA NT | TRAPEZ Rekord C-VA-NT | TRAPEZ AUT A-MS | | RUND Rekord A-STEEL | |
| C / 2-3 | | | | | | E / 1,5-2 | | C / 2-3 |  |
| — | | max. 2 x d ₁ 4) | max. 2 x d ₁ 4) | max. 1,5 x d ₁ | max. 2 x d ₁ | max. 1 x d ₁ | | max. 1 x d ₁ | Gewindetiefe und Lochform Thread depth and hole type |
| | |  |  |  |  |  | |  | |
| 186, 191 | | | | | | | | | M MF UNC UNF G, Rp NPSM, NPSF NPT, NPTF Rc, W BSW, BSF Pg MJ UNJC, UNJF EG (STI) LK-M Tr, Tr-F, Rd |
| | | 232 | 235 | 233 | 235 | 234, 236 | | 237 | |
| | | 2 - 8 | 2 - 8 | 2 - 8 | 2 - 8 | | | 2 - 8 | 1.1 |
| | | 2 - 6 | 2 - 6 | 2 - 6 | 2 - 6 | | | 2 - 6 | 2.1 |
| | | 1 - 8 | | 1 - 8 | 1 - 8 | | | | 3.1 |
| | | | | | | | | | 4.1 |
| | | | | | | | | | 5.1 |
| | | | | 1 - 8 | 1 - 8 | | | | 1.1 |
| 1 - 8 | | | | 1 - 8 | 1 - 8 | | | | 2.1 |
| 1 - 5 | | | | | | | | | 3.1 |
| 1 - 3 | | | | | | | | | 4.1 |
| | | 2 - 10 | | | | | | 2 - 10 | 1.1 |
| | | 2 - 10 | | | | | | 2 - 10 | 1.2 |
| | | | | 2 - 8 | 2 - 8 | | | 2 - 8 | 2.1 |
| | | | | 2 - 8 | 2 - 8 | | | 2 - 8 | 2.2 |
| | | | | 2 - 8 | 2 - 8 | | | 2 - 8 | 3.1 |
| | | | | 2 - 8 | 2 - 8 | | | 2 - 8 | 3.2 |
| | | | | 2 - 10 | 2 - 10 | | | 2 - 10 | 4.1 |
| | | | | 2 - 10 | 2 - 10 | | | 2 - 10 | 4.2 |
| | | | | | | | | | 1.1 |
| | | | | | | | | | 1.2 |
| | | | | | | | | | 1.3 |
| | | | | | | | | | 1.4 |
| | | | | | | | | | 1.5 |
| | | | | | | | | | 1.6 |
| | | 2 - 10 | | | | 2 - 10 | | 2 - 10 | 2.1 |
| | | 2 - 10 | | | | | | 2 - 10 | 2.2 |
| | | | | 1 - 8 | 1 - 8 | | | | 2.3 |
| | | | | 1 - 8 | 1 - 8 | | | | 2.4 |
| | | | | 1 - 8 | 1 - 8 | | | | 2.5 |
| | | 1 - 8 | | 1 - 8 | 1 - 8 | | | | 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 |
| 1 - 3 | | | | | | | | | 2.2 |
| | | | | | | | | | 2.3 |
| | | | | | | | | | 2.4 |
| 1 - 3 | | | | | | | | | 2.5 |
| 1 - 3 | | | | | | | | | 2.6 |
| | | | | | | | | | 1.1 |
| | | | | | | | | | 1.2 |
| | | | | | | | | | 1.3 |
| | | | | | | | | | 1.4 |
| | | | | | | | | | 1.5 |

Product Finder

v_c

M

MF

UNC
UN-8

UNF

G, Rp
NPSM, NPSF

NPT, NPTF
Rc, W

BSW, BSF

Pg

MJ
UNJC, UNJF

EG (STI)
SELF-LOCK

Tr, Tr-F
Rd

Zubehör
Accessories

Tech. Info

M

K

N

S

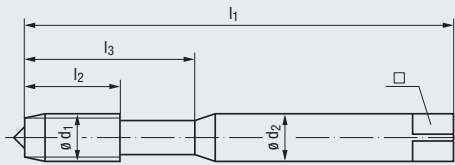
H

- 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
- Tech. Info



DIN 13

DIN 371



STEEL
Steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266



| | | | | |
|---------|---------|----------|----------|----------|
| 6HX | 6HX | ISO 2/6H | ISO 2/6H | ISO 2/6H |
| HSSE | HSSE | HSSE | TIN | GLT-1 |
| 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 |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

| | | | | |
|-----------|-----------|-----------|--------------|-----------|
| P 1.1-3.1 | P 1.1-3.1 | P 1.1-3.1 | P 1.1-4.1 | P 1.1-4.1 |
| N 2.3 | N 2.3 | N 2.2 | K 2.1 | K 2.1 |
| | | | N 2.2, 2.4-5 | |

Werkzeug-Ident · Tool ident

| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | Image | Dimens.- Ident | B0101001 | B0121001 | B0208900 | B0208400 | B020K500 |
|-----|------------------------|---------|----------------|----------------|----------------|------------------|------|-------|-------------------|--------------------|-----------------------|----------------------|-----------------------------|-------------------------------|
| | | | | | | | | | | Rekord 1A-STEEL | Rekord 1A-STEEL-AZ | Rekord 1B-STEEL-L | Rekord 1B-STEEL-L TIN | Rekord 1B-STEEL-L GLT-1 |
| 1 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 0,75 | .0010 | ● *) | | ● *) | | ○ *) | |
| 1,1 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 0,85 | .0011 | ● *) | | ● *) | | ○ *) | |
| 1,2 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 0,95 | .0012 | ● *) | | ● *) | | ○ *) | |
| 1,4 | 0,3 | 40 | 6 | – | 2,5 | 2,1 | 1,1 | .0014 | ● *) | | ● *) | | ○ *) | |
| 1,6 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,25 | .0016 | ● | | ● | | ● | |
| 1,7 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,35 | .0017 | ● | | ● | | ○ | |
| 1,8 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,45 | .0018 | ● | | ● | | ○ | |
| 2 | 0,4 | 45 | 7 | 12 | 2,8 | 2,1 | 1,6 | .0020 | ● | | ● | | ● | |
| 2,2 | 0,45 | 45 | 7 | 12 | 2,8 | 2,1 | 1,75 | .0022 | ● | | ● | | ○ | |
| 2,3 | 0,4 | 45 | 7 | 12 | 2,8 | 2,1 | 1,9 | .0023 | ● | | ● | | ○ | |
| 2,5 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 2,05 | .0025 | ● | | ● | ● | ● | |
| 2,6 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 2,15 | .0026 | ● | | ● | ○ | ○ | |
| 3 | 0,5 | 56 | 11 | 18 | 3,5 | 2,7 | 2,5 | .0030 | ● | ● | ● | ● | ● | |
| 3,5 | 0,6 | 56 | 12 | 20 | 4 | 3 | 2,9 | .0035 | ● | | ● | ○ | ○ | |
| 4 | 0,7 | 63 | 13 | 21 | 4,5 | 3,4 | 3,3 | .0040 | ● | ● | ● | ● | ○ | |
| 4,5 | 0,75 | 70 | 14 | 25 | 6 | 4,9 | 3,7 | .0045 | ● | | ● | ○ | ○ | |
| 5 | 0,8 | 70 | 15 | 25 | 6 | 4,9 | 4,2 | .0050 | ● | ● | ● | ● | ○ | |
| 5,5 | 0,9 | 80 | 16 | 30 | 6 | 4,9 | 4,6 | .0055 | ● | | ● | ○ | ○ | |
| 6 | 1 | 80 | 17 | 30 | 6 | 4,9 | 5 | .0060 | ● | ● | ● | ● | ○ | |
| 7 | 1 | 80 | 17 | 30 | 7 | 5,5 | 6 | .0070 | ● | | ● | ○ | ○ | |
| 8 | 1,25 | 90 | 20 | 35 | 8 | 6,2 | 6,8 | .0080 | ● | ● | ● | ● | ○ | |
| 9 | 1,25 | 90 | 20 | 35 | 9 | 7 | 7,8 | .0090 | ● | | ● | ○ | ○ | |
| 10 | 1,5 | 100 | 22 | 39 | 10 | 8 | 8,5 | .0100 | ● | ● | ● | ● | ○ | |
| 12 | 1,75 | 110 | 24 | 44 | 12 | 9 | 10,2 | .0112 | | | ● | ○ | | |

DIN 376

| | | | | |
|----|----|----|----|--|
| 64 | 64 | 64 | 64 | |
|----|----|----|----|--|

DIN 352

| | | | | |
|----|----|--|--|--|
| 90 | 90 | | | |
|----|----|--|--|--|

*) ≤ M1,4 Tol. 4H(X)/5H(X)

STEEL
Steel
materials

| | | | | | | | | | |
|------------|-------------|------------|-------------|------------|-------------|---------------|---------------|----------|-------------|
| new | new | new | new | new | new | new | new | | |
| | | | | | | | | | |
| ISO 1/4H | ISO 1/4H | ISO 3/6G | ISO 3/6G | 7G | 7G | ISO 2/6H | ISO 2/6H | ISO 2/6H | ISO 2/6H |
| HSSE | TIN HSSE | HSSE | TIN HSSE | HSSE | TIN HSSE | HSSE | TIN HSSE | HSSE | TIN HSSE |
| B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 | LH B / 4-5 | LH B / 4-5 | B / 4-5 | B / 4-5 |
| E / 0 | E / 0 | E / 0 | E / 0 | E / 0 | E / 0 | E / 0 | E / 0 | E / 0 | E / 0 |

max. 3 x d₁



| | | | | | | | | | |
|------------------------------|-------------------------------------|------------------------------|-------------------------------------|------------------------------|-------------------------------------|----------------------------|--------------------------------|----------------------|-----------------------------|
| 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 | P 1.1-3.1 | P 1.1-4.1 | P 2.1-4.1 | P 2.1-4.1 |
| N 2.2 | K 2.1 | N 2.2 | K 2.1 | N 2.2 | K 2.1 | N 2.2 | K 2.1 | | K 2.1 |
| | N 2.2, 2.4-5 | | N 2.2, 2.4-5 | | N 2.2, 2.4-5 | | N 2.2, 2.4-5 | | |
| B0208910 | B0208410 | B0208920 | B0208420 | B0208930 | B0208430 | B0208950 | B0208450 | B0201000 | B0201400 |
| Rekord 1B-STEEL-L „4H“ | Rekord 1B-STEEL-L TIN „4H“ | Rekord 1B-STEEL-L „6G“ | Rekord 1B-STEEL-L TIN „6G“ | Rekord 1B-STEEL-L „7G“ | Rekord 1B-STEEL-L TIN „7G“ | Rekord 1B-STEEL-L LH | Rekord 1B-STEEL-L LH-TIN | Rekord 1B-STEEL-M | Rekord 1B-STEEL-M TIN |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| • | | • | | • | | • | | • | |
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| • | | • | | • | | • | | • | |
| | | | | | | | | | |
| • | ○ | • | ○ | • | ○ | • | ○ | • | • |
| • | ○ | • | ○ | • | ○ | • | ○ | • | • |
| • | | • | | • | | • | | • | |
| • | ○ | • | ○ | • | ○ | • | ○ | • | • |
| • | ○ | • | ○ | • | ○ | • | ○ | • | • |
| • | ○ | • | ○ | • | ○ | • | ○ | • | • |
| • | ○ | • | ○ | • | ○ | • | ○ | • | • |
| • | ○ | • | ○ | • | ○ | • | ○ | • | • |
| • | ○ | • | ○ | • | ○ | • | ○ | • | • |
| | | | | | | | | | |
| 64 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 |
| | | | | | | | | 90 | |

2) < M3 mit GLT-1-Beschichtung auf Anfrage
< M3 with GLT-1 coating upon request

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

Tech. Info

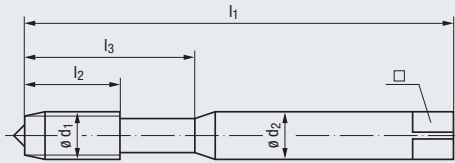


- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



M
DIN 13

DIN 371



STEEL
Steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266

| | | | | |
|----------|-----------------|-----------------|-----------|-----------|
| ISO 2/6H | ISO 3/6G | ISO 3/6G | 7G | 7G |
| GLT-1 | | TIN | | TIN |
| HSSE | HSSE | HSSE | HSSE | HSSE |
| B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 |
| E / O | E / O | E / O | E / O | E / O |

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | | | |
|-----------|-----------|-----------|-----------|-----------|
| P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 |
| K 2.1 | | K 2.1 | | K 2.1 |

Werkzeug-Ident · Tool ident

| Ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | Image | Dimens.-Ident | B020C000 | B0201020 | B0201420 | B0201030 | B0201430 |
|------------------------|---------|----------------|----------------|----------------|------------------|-----|-------|---------------|-------------------------|------------------------|----------------------------|------------------------|----------------------------|
| | | | | | | | | | Rekord 1B-STEEL-M GLT-1 | Rekord 1B-STEEL-M „6G“ | Rekord 1B-STEEL-M TIN „6G“ | Rekord 1B-STEEL-M „7G“ | Rekord 1B-STEEL-M TIN „7G“ |
| M 1 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 0,75 | .0010 | | | | | |
| 1,1 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 0,85 | .0011 | | | | | |
| 1,2 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 0,95 | .0012 | | | | | |
| 1,4 | 0,3 | 40 | 6 | – | 2,5 | 2,1 | 1,1 | .0014 | | | | | |
| 1,6 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,25 | .0016 | • | | | | |
| 1,7 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,35 | .0017 | | | | | |
| 1,8 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,45 | .0018 | | | | | |
| 2 | 0,4 | 45 | 7 | 12 | 2,8 | 2,1 | 1,6 | .0020 | • | • | | • | |
| 2,2 | 0,45 | 45 | 7 | 12 | 2,8 | 2,1 | 1,75 | .0022 | | | | | |
| 2,3 | 0,4 | 45 | 7 | 12 | 2,8 | 2,1 | 1,9 | .0023 | | | | | |
| 2,5 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 2,05 | .0025 | • | • | | • | |
| 2,6 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 2,15 | .0026 | | | | | |
| 3 | 0,5 | 56 | 11 | 18 | 3,5 | 2,7 | 2,5 | .0030 | | • | ○ | • | ○ |
| 3,5 | 0,6 | 56 | 12 | 20 | 4 | 3 | 2,9 | .0035 | | | | | |
| 4 | 0,7 | 63 | 13 | 21 | 4,5 | 3,4 | 3,3 | .0040 | | • | ○ | • | ○ |
| 4,5 | 0,75 | 70 | 14 | 25 | 6 | 4,9 | 3,7 | .0045 | | | | | |
| 5 | 0,8 | 70 | 15 | 25 | 6 | 4,9 | 4,2 | .0050 | | • | ○ | • | ○ |
| 5,5 | 0,9 | 80 | 16 | 30 | 6 | 4,9 | 4,6 | .0055 | | | | | |
| 6 | 1 | 80 | 17 | 30 | 6 | 4,9 | 5 | .0060 | | • | ○ | • | ○ |
| 7 | 1 | 80 | 17 | 30 | 7 | 5,5 | 6 | .0070 | | | | | |
| 8 | 1,25 | 90 | 20 | 35 | 8 | 6,2 | 6,8 | .0080 | | • | ○ | • | ○ |
| 9 | 1,25 | 90 | 20 | 35 | 9 | 7 | 7,8 | .0090 | | | | | |
| 10 | 1,5 | 100 | 22 | 39 | 10 | 8 | 8,5 | .0100 | | • | ○ | • | ○ |
| 12 | 1,75 | 110 | 24 | 44 | 12 | 9 | 10,2 | .0112 | | | | | |



2) < M3 mit GLT-1-Beschichtung auf Anfrage
< M3 with GLT-1 coating upon request

STEEL
Steel materials

| new | | new | | | | | | | | |
|--------------------------|-------------------------|-------------------|--|--------------------|-----------------------------|--------------------|-----------------------------|--------------------|-----------------------------|-----|
| | | | | | | | | | | |
| 6HX | ISO 2/6H | ISO 2/6H | ISO 2/6H | ISO 2/6H | ISO 2/6H | ISO 1/4H | ISO 1/4H | ISO 3/6G | ISO 3/6G | |
| CRT | | | TIN | | TIN | | TIN | | TIN | |
| HSSE-PM | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | |
| | R15 | R15 | R15 | R35 | R35 | R35 | R35 | R35 | R35 | |
| B / ≈6 | C / 2-3 | E / 1,5-2 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | |
| E / 0 | E / 0 | E / 0 | E / 0 | E / 0 | E / 0 | E / 0 | E / 0 | E / 0 | E / 0 | |
| max. 3 x d ₁ | max. 2 x d ₁ | | max. 2,5 x d ₁ | | | | | | | |
| | | | | | | | | | | |
| P 3.1-5.1 | P 2.1-3.1 | P 2.1-3.1 | P 1.1-4.1 K 1.1-4.2 N 1.4-5, 2.4-5 | P 1.1-3.1 N 2.2 | P 1.1-4.1 K 2.1 N 2.2 | P 1.1-3.1 N 2.2 | P 1.1-4.1 K 2.1 N 2.2 | P 1.1-3.1 N 2.2 | P 1.1-4.1 K 2.1 N 2.2 | |
| B0208E01 | B0451000 | B0461000 | B0401400 | B0501000 | B0501400 | B0501010 | B0501410 | B0501020 | B0501420 | |
| Rekord 1B-STEEL-H PM-CRT | Rekord 1D-STEEL | Rekord 1D-STEEL/E | Rekord 1DF-STEEL TIN | Enorm 1-STEEL | Enorm 1-STEEL TIN | Enorm 1-STEEL „4H“ | Enorm 1-STEEL TIN „4H“ | Enorm 1-STEEL „6G“ | Enorm 1-STEEL TIN „6G“ | |
| | | | | | | | | | | 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 |
| 65 | 66 | 66 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | |
| | 91 | | | 91 | | | | | | |

*) ≤ M1,4 Tol. 4H/5H

- 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
- Tech. Info

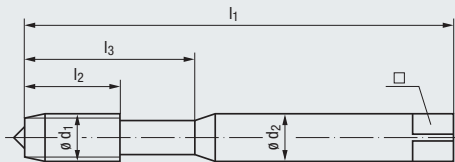


- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



DIN 13

DIN 371



STEEL
Steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266



| | | | | |
|-----------|-----------|----------------|----------------|----------|
| 7G | 7G | ISO 2/6H | ISO 2/6H | ISO 2/6H |
| HSSE | TIN | HSSE | TIN | HSSE |
| R35 | HSSE | R35 | HSSE | R35 |
| C / 2-3 | R35 | LH, L35 | LH, L35 | C / 2-3 |
| E / O | C / 2-3 | E / O | C / 2-3 | E / O |

Gewindetiefe und Lochform
Thread depth and hole type

max. 2,5 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | | | |
|------------------|------------------|------------------|------------------|------------------|
| 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 |
| N 2.2 | K 2.1 | N 2.2 | K 2.1 | N 2.2 |
| | N 2.2 | | N 2.2 | |

Werkzeug-Ident · Tool ident

B0501030 B0501430 B0501050 B0501450 B0601000

| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | Ø | Dimens.- Ident | Enorm | Enorm | Enorm | Enorm | Enorm |
|---|------------------------|---------|----------------|----------------|----------------|------------------|-----|------|-------------------|---------|------------------------|------------|-------------------|-----------|
| | | | | | | | | | | 1-STEEL | 1-STEEL TIN „7G“ | 1-STEEL-LH | 1-STEEL-LH TIN | 1-STEEL-X |
| | 1 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 0,75 | .0010 | | | | | |
| | 1,1 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 0,85 | .0011 | | | | | |
| | 1,2 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 0,95 | .0012 | | | | | |
| | 1,4 | 0,3 | 40 | 6 | – | 2,5 | 2,1 | 1,1 | .0014 | | | | | |
| | 1,6 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,25 | .0016 | | | | | |
| | 1,7 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,35 | .0017 | | | | | |
| | 1,8 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,45 | .0018 | | | | | |
| | 2 | 0,4 | 45 | 7 | 12 | 2,8 | 2,1 | 1,6 | .0020 | ● | ● | ○ | | |
| | 2,2 | 0,45 | 45 | 7 | 12 | 2,8 | 2,1 | 1,75 | .0022 | | | | | |
| | 2,3 | 0,4 | 45 | 7 | 12 | 2,8 | 2,1 | 1,9 | .0023 | | | | | |
| | 2,5 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 2,05 | .0025 | ● | ● | ○ | | |
| | 2,6 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 2,15 | .0026 | | | | | |
| | 3 | 0,5 | 56 | 11 | 18 | 3,5 | 2,7 | 2,5 | .0030 | ● | ● | ● | ● | ● |
| | 3,5 | 0,6 | 56 | 12 | 20 | 4 | 3 | 2,9 | .0035 | | | | | |
| | 4 | 0,7 | 63 | 13 | 21 | 4,5 | 3,4 | 3,3 | .0040 | ● | ● | ● | ● | ● |
| | 4,5 | 0,75 | 70 | 14 | 25 | 6 | 4,9 | 3,7 | .0045 | | | | | |
| | 5 | 0,8 | 70 | 15 | 25 | 6 | 4,9 | 4,2 | .0050 | ● | ● | ● | ● | ● |
| | 5,5 | 0,9 | 80 | 16 | 30 | 6 | 4,9 | 4,6 | .0055 | | | | | |
| | 6 | 1 | 80 | 17 | 30 | 6 | 4,9 | 5 | .0060 | ● | ● | ● | ● | ● |
| | 7 | 1 | 80 | 17 | 30 | 7 | 5,5 | 6 | .0070 | | | | | |
| | 8 | 1,25 | 90 | 20 | 35 | 8 | 6,2 | 6,8 | .0080 | ● | ● | ● | ● | ● |
| | 9 | 1,25 | 90 | 20 | 35 | 9 | 7 | 7,8 | .0090 | | | | | |
| | 10 | 1,5 | 100 | 22 | 39 | 10 | 8 | 8,5 | .0100 | ● | ● | ● | ● | ● |
| | 12 | 1,75 | 110 | 24 | 44 | 12 | 9 | 10,2 | .0112 | | | | | |

DIN 376



» 67

» 67

» 67

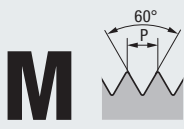
» 67

» 67

DIN 352

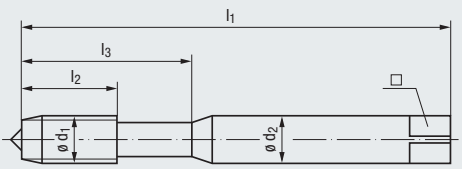


- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



DIN 13

DIN 371



VA
Stainless steel materials



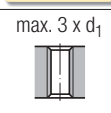
Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266

| | | | | |
|-----------|-----------|-----------|-----------|---------------|
| ISO 3/6G | 7G | 7G | 7G | ISO 2/6H |
| GLT-1 | NT | TIN | GLT-1 | NT |
| HSSE | HSSE | HSSE | HSSE | HSSE |
| B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 | LH B / 4-5 |
| E / O / P | E / O / P | E / O / P | E / O / P | E / O / P |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

| | | | | |
|-----------|--------------|--------------|-----------|--------------|
| P 1.1-4.1 | P 1.1-3.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-3.1 |
| M 1.1-3.1 | M 1.1-2.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-2.1 |
| K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 |
| N 2.2 | N 2.2, 2.5-6 | N 2.2, 2.5-6 | N 2.2 | N 2.2, 2.5-6 |

Werkzeug-Ident · Tool ident

| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | Ø | Dimens.- Ident | B020C320 | B0203030 | B0203130 | B020C330 | B0203050 |
|-----|------------------------|---------|----------------|----------------|----------------|------------------|-----|------|-------------------|----------------------------------|-------------------------------|--------------------------------|----------------------------------|--------------------------|
| | | | | | | | | | | Rekord 1B-VA GLT-1 „6G“ | Rekord 1B-VA NT „7G“ | Rekord 1B-VA TIN „7G“ | Rekord 1B-VA GLT-1 „7G“ | Rekord 1B-VA-LH NT |
| 1 | 1,1 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 0,75 | .0010 | | | | | |
| 1,1 | 1,1 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 0,85 | .0011 | | | | | |
| 1,2 | 1,2 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 0,95 | .0012 | | | | | |
| 1,4 | 1,4 | 0,3 | 40 | 6 | – | 2,5 | 2,1 | 1,1 | .0014 | | | | | |
| 1,6 | 1,6 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,25 | .0016 | | | | | |
| 1,7 | 1,7 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,35 | .0017 | | | | | |
| 1,8 | 1,8 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,45 | .0018 | | | | | |
| 2 | 2 | 0,4 | 45 | 7 | 12 | 2,8 | 2,1 | 1,6 | .0020 | ○ | ● | | ○ | ● |
| 2,2 | 2,2 | 0,45 | 45 | 7 | 12 | 2,8 | 2,1 | 1,75 | .0022 | | | | | |
| 2,3 | 2,3 | 0,4 | 45 | 7 | 12 | 2,8 | 2,1 | 1,9 | .0023 | | | | | |
| 2,5 | 2,5 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 2,05 | .0025 | ○ | ● | | ○ | ● |
| 2,6 | 2,6 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 2,15 | .0026 | | | | | |
| 3 | 3 | 0,5 | 56 | 11 | 18 | 3,5 | 2,7 | 2,5 | .0030 | ○ | ● | ○ | ○ | ● |
| 3,5 | 3,5 | 0,6 | 56 | 12 | 20 | 4 | 3 | 2,9 | .0035 | ○ | ● | | | |
| 4 | 4 | 0,7 | 63 | 13 | 21 | 4,5 | 3,4 | 3,3 | .0040 | ○ | ● | ○ | ○ | ● |
| 4,5 | 4,5 | 0,75 | 70 | 14 | 25 | 6 | 4,9 | 3,7 | .0045 | | | | | |
| 5 | 5 | 0,8 | 70 | 15 | 25 | 6 | 4,9 | 4,2 | .0050 | ○ | ● | ○ | ○ | ● |
| 5,5 | 5,5 | 0,9 | 80 | 16 | 30 | 6 | 4,9 | 4,6 | .0055 | | | | | |
| 6 | 6 | 1 | 80 | 17 | 30 | 6 | 4,9 | 5 | .0060 | ○ | ● | ○ | ○ | ● |
| 7 | 7 | 1 | 80 | 17 | 30 | 7 | 5,5 | 6 | .0070 | | | | | |
| 8 | 8 | 1,25 | 90 | 20 | 35 | 8 | 6,2 | 6,8 | .0080 | ○ | ● | ○ | ○ | ● |
| 9 | 9 | 1,25 | 90 | 20 | 35 | 9 | 7 | 7,8 | .0090 | | | | | |
| 10 | 10 | 1,5 | 100 | 22 | 39 | 10 | 8 | 8,5 | .0100 | ○ | ● | ○ | ○ | ● |
| 12 | 12 | 1,75 | 110 | 24 | 44 | 12 | 9 | 10,2 | .0112 | | | | | |

| | | | | | | |
|---------|--|----|----|----|----|----|
| DIN 376 | | 69 | 69 | 69 | 69 | 69 |
| DIN 352 | | | | | | |

VA
Stainless steel
materials



| | | | | | | | | | |
|-----------|-----------|-----------|-----------|-----------|-----------------|-----------------|-----------------|-----------------|-----------|
| ISO 2/6H | ISO 2/6H | ISO 2/6H | ISO 2/6H | ISO 2/6H | ISO 1/4H | ISO 1/4H | ISO 3/6G | ISO 3/6G | 7G |
| TIN | GLT-1 | NT | | GLT-1 | | GLT-1 | | GLT-1 | |
| HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE |
| LH | LH | | R35 | R35 | R35 | R35 | R35 | R35 | R35 |
| B / 4-5 | B / 4-5 | B / 4-5 | C / 2-3 | 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 | E / O / P | E / O / P | E / O / P |

max. 3 x d₁



max. 2,5 x d₁



| | | | | | | | | | |
|---------------------|------------------|---------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| P 1.1-4.1 | P 1.1-4.1 | P 1.1-3.1 | 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 | P 1.1-3.1 |
| M 1.1-3.1 | M 1.1-3.1 | M 1.1-2.1 | M 1.1-2.1 | M 1.1-3.1 | M 1.1-2.1 | M 1.1-3.1 | M 1.1-2.1 | M 1.1-3.1 | M 1.1-2.1 |
| K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 |
| N 2.2, 2.5-6 | N 2.2 | N 2.2, 2.5-6 | | | | | | | |

| | | | | | | | | | |
|---------------------|-----------------------|--------------------|------------|------------------|-----------------|-----------------------|-----------------|-----------------------|-----------------|
| B0203150 | B020C350 | B0223000 | B0503000 | B050C300 | B0503010 | B050C310 | B0503020 | B050C320 | B0503030 |
| Rekord 1B-VA-LH TIN | Rekord 1B-VA-LH GLT-1 | Rekord 1B-VA-AZ NT | Enorm 1-VA | Enorm 1-VA GLT-1 | Enorm 1-VA „4H“ | Enorm 1-VA GLT-1 „4H“ | Enorm 1-VA „6G“ | Enorm 1-VA GLT-1 „6G“ | Enorm 1-VA „7G“ |

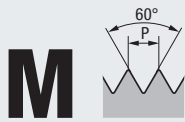
| | | | | | | | | | | | |
|----|----|---|------|----|----|----|----|----|----|---|-----|
| | | | | | | | | | | M | 1 |
| | | | | | | | | | | | 1,1 |
| | | | | | | | | | | | 1,2 |
| | | | ○ *) | | | | | | | | 1,4 |
| | | | ○ | | | | | | | | 1,6 |
| | | | ○ | | | | | | | | 1,7 |
| | | | ○ | | | | | | | | 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 |
| 69 | 69 | | 70 | 70 | 70 | 70 | 70 | 71 | 71 | | |

*) ≤ M1,4 Tol. 4H/5H

- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

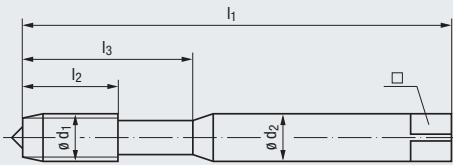


- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

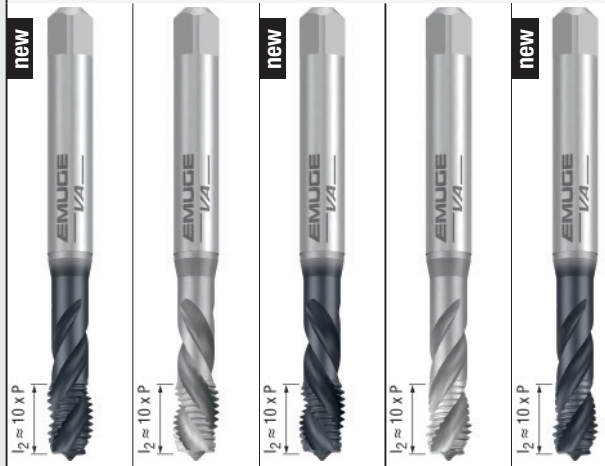


DIN 13

DIN 371



VA
Stainless steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266

| | | | | |
|-----------|----------------|----------------|-----------|-----------|
| 7G | ISO 2/6H | ISO 2/6H | ISO 2/6H | ISO 2/6H |
| GLT-1 | | GLT-1 | | GLT-1 |
| HSSE | HSSE | HSSE | HSSE | HSSE |
| R35 | LH, L35 | LH, L35 | R35 | R35 |
| 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 |

Gewindetiefe und Lochform
Thread depth and hole type

max. 2,5 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | | | |
|------------------|------------------|------------------|------------------|------------------|
| 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 1.1-3.1 | M 1.1-2.1 | M 1.1-3.1 | M 1.1-2.1 | M 1.1-3.1 |
| K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 |

Werkzeug-Ident · Tool ident











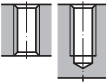
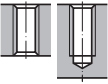

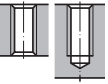
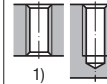
B050C330 B0503050 B050C350 B0603000 B060C300

| M | ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | | Dimens.- Ident | Enorm | | | | |
|---|------------------------|---------|----------------|----------------|----------------|------------------|-----|------|-------------------|-----------------------|---------|------------------|--------|-----------------|
| | | | | | | | | | | 1-VA GLT-1 „7G“ | 1-VA-LH | 1-VA-LH GLT-1 | 1-VA-X | 1-VA-X GLT-1 |
| | 1 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 0,75 | .0010 | | | | | |
| | 1,1 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 0,85 | .0011 | | | | | |
| | 1,2 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 0,95 | .0012 | | | | | |
| | 1,4 | 0,3 | 40 | 6 | – | 2,5 | 2,1 | 1,1 | .0014 | | | | | |
| | 1,6 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,25 | .0016 | | | | | |
| | 1,7 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,35 | .0017 | | | | | |
| | 1,8 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,45 | .0018 | | | | | |
| | 2 | 0,4 | 45 | 7 | 12 | 2,8 | 2,1 | 1,6 | .0020 | | | | | |
| | 2,2 | 0,45 | 45 | 7 | 12 | 2,8 | 2,1 | 1,75 | .0022 | | | | | |
| | 2,3 | 0,4 | 45 | 7 | 12 | 2,8 | 2,1 | 1,9 | .0023 | | | | | |
| | 2,5 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 2,05 | .0025 | • | | | | |
| | 2,6 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 2,15 | .0026 | | | | | |
| | 3 | 0,5 | 56 | 11 | 18 | 3,5 | 2,7 | 2,5 | .0030 | • | • | • | • | • |
| | 3,5 | 0,6 | 56 | 12 | 20 | 4 | 3 | 2,9 | .0035 | | | | | |
| | 4 | 0,7 | 63 | 13 | 21 | 4,5 | 3,4 | 3,3 | .0040 | • | • | • | • | • |
| | 4,5 | 0,75 | 70 | 14 | 25 | 6 | 4,9 | 3,7 | .0045 | | | | | |
| | 5 | 0,8 | 70 | 15 | 25 | 6 | 4,9 | 4,2 | .0050 | • | • | • | • | • |
| | 5,5 | 0,9 | 80 | 16 | 30 | 6 | 4,9 | 4,6 | .0055 | | | | | |
| | 6 | 1 | 80 | 17 | 30 | 6 | 4,9 | 5 | .0060 | • | • | • | • | • |
| | 7 | 1 | 80 | 17 | 30 | 7 | 5,5 | 6 | .0070 | | | | | |
| | 8 | 1,25 | 90 | 20 | 35 | 8 | 6,2 | 6,8 | .0080 | • | • | • | • | • |
| | 9 | 1,25 | 90 | 20 | 35 | 9 | 7 | 7,8 | .0090 | | | | | |
| | 10 | 1,5 | 100 | 22 | 39 | 10 | 8 | 8,5 | .0100 | • | • | • | • | • |
| | 12 | 1,75 | 110 | 24 | 44 | 12 | 9 | 10,2 | .0112 | | | | | |

DIN 376

71 71 71 71 71

DIN 352

| GG Cast iron | | GJV Cast iron vermicular | | | | | | | |
|--|---|--|---|--|---|--|---|---|---|
|  |  |  |  |  |  |  |  |  |  |
| 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX |
| NT | TICN | TICN | TICN | TICN | TICN | TICN | TICN | TICN | TICN |
| HSSE | HSSE | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| 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 | E / 1,5-2 | E / 1,5-2 |
| E | E | E | E | E | E | E | E | E | E |
| max. 2 x d ₁  | | max. 2 x d ₁  | | max. 2 x d ₁  | | max. 2 x d ₁  | | max. 2 x d ₁  | |
| K 1.1-2 | K 1.1-2 | 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 | K 1.1-4.2 |
| B0102001 | B0109201 | B010R501 | B195R501 | B106R501 | B011R501 | B196R501 | B109R501 | B109R501 | |
| Rekord 1A-GG NT | Rekord 1A-GG TICN | Rekord 1A-GJV PM-TICN | Rekord 1A-GJV IKZ-PM TICN | Rekord 1A-GJV IKZN-PM TICN | Rekord 1A-GJV/E PM-TICN | Rekord 1A-GJV/E IKZ-PM TICN | Rekord 1A-GJV/E IKZN-PM TICN | Rekord 1A-GJV/E IKZN-PM TICN | |
| | | | | | | | | | 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 |
| 71 | 71 | 72 | 72 | 72 | 72 | 72 | 73 | | |

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

Product Finder

V_c

M

MF

UNC UN-8

UNF UNEF

G, Rp NPSM, NPSF

NPT, NPTF Rc, W

BSW, BSF

Pg

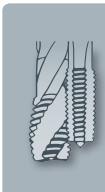
MJ UNJC, UNJF

EG (ST) SELF-LOCK

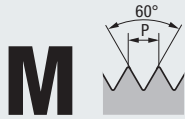
Tr, Tr-F Rd

Zubehör Accessories

Tech. Info

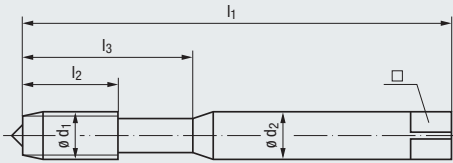


- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



DIN 13

DIN 371



AL
Aluminium wrought alloys



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

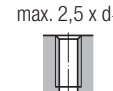
Technische Informationen
Technical information

» 245 - 266



| | | | | |
|----------|----------|----------|----------|------------------|
| ISO 2/6H | ISO 2/6H | ISO 2/6H | ISO 2/6H | ISO 2/6H |
| HSSE | HSSE | HSSE | HSSE | HSSE |
| B / ≈3 | B / ≈3 | C / 2-3 | C / 2-3 | E / 1,5-2 |
| E / O | E / O | E / O | E / O | E / O |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

N 1.1-4 N 1.1-4 N 1.1-4 N 1.1-4 N 1.1-4










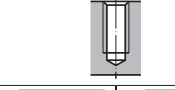



Werkzeug-Ident · Tool ident

| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | Dimens.- Ident | B0204500 | B020S800 | B0504500 | B050S800 | B051S800 | |
|-----|------------------------|---------|----------------|----------------|----------------|------------------|-----|-------------------|-----------------|--------------------------|-----------------|------------------------|--------------------------|---|
| | | | | | | | | | Rekord 1B-AL | Rekord 1B-AL GLT-8 | Enorm 1-AL | Enorm 1-AL GLT-8 | Enorm 1-AL/E GLT-8 | |
| 1 | 1 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 0,75 | .0010 | | | | | |
| 1,1 | 1,1 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 0,85 | .0011 | | | | | |
| 1,2 | 1,2 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 0,95 | .0012 | | | | | |
| 1,4 | 1,4 | 0,3 | 40 | 6 | – | 2,5 | 2,1 | 1,1 | .0014 | ● ^{*)} | ● ^{*)} | ● ^{*)} | ● ^{*)} | |
| 1,6 | 1,6 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,25 | .0016 | ● | ● | ● | ● | |
| 1,7 | 1,7 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,35 | .0017 | | | | | |
| 1,8 | 1,8 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,45 | .0018 | | | | | |
| 2 | 2 | 0,4 | 45 | 7 | 12 | 2,8 | 2,1 | 1,6 | .0020 | ● | ● | ● | ● | |
| 2,2 | 2,2 | 0,45 | 45 | 7 | 12 | 2,8 | 2,1 | 1,75 | .0022 | | | | | |
| 2,3 | 2,3 | 0,4 | 45 | 7 | 12 | 2,8 | 2,1 | 1,9 | .0023 | | | | | |
| 2,5 | 2,5 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 2,05 | .0025 | ● | ● | ● | ● | |
| 2,6 | 2,6 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 2,15 | .0026 | | | | | |
| 3 | 3 | 0,5 | 56 | 11 | 18 | 3,5 | 2,7 | 2,5 | .0030 | ● | ● | ● | ● | ● |
| 3,5 | 3,5 | 0,6 | 56 | 12 | 20 | 4 | 3 | 2,9 | .0035 | ○ | ○ | ○ | ○ | |
| 4 | 4 | 0,7 | 63 | 13 | 21 | 4,5 | 3,4 | 3,3 | .0040 | ● | ● | ● | ● | ● |
| 4,5 | 4,5 | 0,75 | 70 | 14 | 25 | 6 | 4,9 | 3,7 | .0045 | | | | | |
| 5 | 5 | 0,8 | 70 | 15 | 25 | 6 | 4,9 | 4,2 | .0050 | ● | ● | ● | ● | ● |
| 5,5 | 5,5 | 0,9 | 80 | 16 | 30 | 6 | 4,9 | 4,6 | .0055 | | | | | |
| 6 | 6 | 1 | 80 | 17 | 30 | 6 | 4,9 | 5 | .0060 | ● | ● | ● | ● | ● |
| 7 | 7 | 1 | 80 | 17 | 30 | 7 | 5,5 | 6 | .0070 | | | | | |
| 8 | 8 | 1,25 | 90 | 20 | 35 | 8 | 6,2 | 6,8 | .0080 | ● | ● | ● | ● | ● |
| 9 | 9 | 1,25 | 90 | 20 | 35 | 9 | 7 | 7,8 | .0090 | | | | | |
| 10 | 10 | 1,5 | 100 | 22 | 39 | 10 | 8 | 8,5 | .0100 | ● | ● | ● | ● | ● |
| 12 | 12 | 1,75 | 110 | 24 | 44 | 12 | 9 | 10,2 | .0112 | | | | | |



| | | | | | |
|---------|----|----|----|----|--|
| DIN 376 | 73 | 73 | 73 | 73 | |
| DIN 352 | | | | | |

^{*)} ≤ M1,4 Tol. 4H/5H

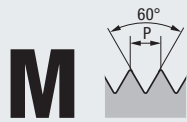
| GAL Aluminium cast alloys | | | | MG Magnesium alloys | FK Short-chipping synthetics | | |
|---|--|--|---|--|---|--|-----|
|  |  |  |  |  |  |  | |
| 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | |
| TICN | TICN | TICN | | GLT-1 | NT | | |
| HSSE | HSSE | HSSE | VHM | HSSE | HSSE | VHM | |
| | | R15 | R15 | | | | |
| 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 | |
| E / M | E / M | E / M | E / M | E | E | E | |
| max. 2 x d ₁  | max. 2 x d ₁  | max. 2 x d ₁  | | max. 2 x d ₁  | max. 2 x d ₁  | max. 2 x d ₁  | |
| N 1.4-6 | N 1.4-6 | N 1.4-6 | N 1.4-6 | N 3.1-2 | N 4.1, 4.3 | N 4.1, 4.3-4 | |
| B1969501 | B1099501 | B0989501 | B098Q801 | B010J601 | B010T001 | B8170901 | |
| Rekord 1A-GAL/E IKZ-TICN | Rekord 1A-GAL/E IKZN-TICN | Rekord 1D-GAL/E IKZ-TICN | VHM Rekord 1D-GAL/E IKZ-TICN | Rekord 1A-MG GLT-1 | Rekord 1A-FK NT | VHM Rekord 1A-FK- IKZ | |
| | | | | | | | 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 |

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

- 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 (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

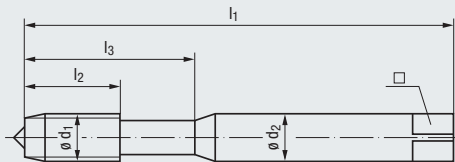


- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



M
DIN 13

DIN 371



PVC
Long-chipping synthetics



MS
Copper-zinc alloys



TI
Titanium



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266

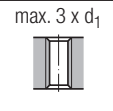
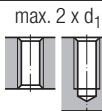
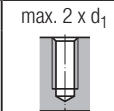


- 6HX
- CRN
- HSSE
- R15
- E / 1,5-2**
- E

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

- 6HX
- NT2
- HSSE
- L15
- D / 4-5
- E / O / P

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

N 4.2

N 2.3

- P 4.1-5.1**
- M 3.1-4.1**
- N 2.4-5, 2.7**
- S 1.1-2.2, 2.4**

Werkzeug-Ident · Tool ident

B046L801

B0102501

B0306001

| M | ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | Dimens.-Ident | Rekord 1D-PVC/E CRN | Rekord 1A-MS | Rekord 1C-TI NT2 |
|---|------------------------|---------|----------------|----------------|----------------|------------------|-----|---------------|---------------------|--------------|------------------|
| | | | | | | | | | | | |
| | 1 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 0,75 | .0010 | | |
| | 1,1 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 0,85 | .0011 | | |
| | 1,2 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 0,95 | .0012 | | |
| | 1,4 | 0,3 | 40 | 6 | – | 2,5 | 2,1 | 1,1 | .0014 | | |
| | 1,6 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,25 | .0016 | | |
| | 1,7 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,35 | .0017 | | |
| | 1,8 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,45 | .0018 | | |
| | 2 | 0,4 | 45 | 7 | 12 | 2,8 | 2,1 | 1,6 | .0020 | • | • |
| | 2,2 | 0,45 | 45 | 7 | 12 | 2,8 | 2,1 | 1,75 | .0022 | | |
| | 2,3 | 0,4 | 45 | 7 | 12 | 2,8 | 2,1 | 1,9 | .0023 | | |
| | 2,5 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 2,05 | .0025 | • | • |
| | 2,6 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 2,15 | .0026 | | |
| | 3 | 0,5 | 56 | 11 | 18 | 3,5 | 2,7 | 2,5 | .0030 | • | • |
| | 3,5 | 0,6 | 56 | 12 | 20 | 4 | 3 | 2,9 | .0035 | | ○ |
| | 4 | 0,7 | 63 | 13 | 21 | 4,5 | 3,4 | 3,3 | .0040 | • | • |
| | 4,5 | 0,75 | 70 | 14 | 25 | 6 | 4,9 | 3,7 | .0045 | | |
| | 5 | 0,8 | 70 | 15 | 25 | 6 | 4,9 | 4,2 | .0050 | • | • |
| | 5,5 | 0,9 | 80 | 16 | 30 | 6 | 4,9 | 4,6 | .0055 | | |
| | 6 | 1 | 80 | 17 | 30 | 6 | 4,9 | 5 | .0060 | • | • |
| | 7 | 1 | 80 | 17 | 30 | 7 | 5,5 | 6 | .0070 | | |
| | 8 | 1,25 | 90 | 20 | 35 | 8 | 6,2 | 6,8 | .0080 | • | • |
| | 9 | 1,25 | 90 | 20 | 35 | 9 | 7 | 7,8 | .0090 | | |
| | 10 | 1,5 | 100 | 22 | 39 | 10 | 8 | 8,5 | .0100 | • | • |
| | 12 | 1,75 | 110 | 24 | 44 | 12 | 9 | 10,2 | .0112 | | |

DIN 376

















DIN 352



» 73

» 91

| TI Titanium | | | TILEG Titanium alloys | NI Nickel alloys | | H Materials of high tensile strength |
|--|--|--|--|---|--|--|
|  |  |  |  |  |  |  |
| 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX |
| TICN | NT2 | TICN | TICN | TICN | TICN | NT |
| HSSE | HSSE | HSSE | HSSE | HSSE-PM | HSSE-PM | HSSE |
| L15 | R15 | R15 | R15 | L08 | R10 | |
| D / 4-5 | C / 2-3 | C / 2-3 | C / 2-3 | D / 4-5 | C / 2-3 | C / 2-3 |
| E / O / P | E / O / P | E / O / P | E / O / P | O / P | O / P | E / O / P |
| max. 3 x d ₁  | max. 2 x d ₁  | max. 2 x d ₁  | max. 2 x d ₁  | max. 3 x d ₁  | max. 2 x d ₁  | max. 2 x d ₁  |
| P 4.1-5.1 | P 4.1-5.1 | P 4.1-5.1 | M 4.1 | M 4.1 | M 4.1 | P 1.1-3.1 |
| M 3.1-4.1 | M 3.1-4.1 | M 3.1-4.1 | S 1.2-3 | N 2.8 | N 2.8 | K 1.1-4.2 |
| N 2.4-5, 2.7 | N 2.4-5, 2.7 | N 2.4-5, 2.7 | | S 1.2-3 | S 1.2-3 | N 2.4-7 |
| S 1.1-2.2, 2.4 | S 1.1-2.2, 2.4 | S 1.1-2.2, 2.4 | | S 2.3, 2.5-6 | S 2.3, 2.5-6 | N 4.1, 5.1 |
| B0309601 | B0456001 | B0459601 | B040V401 | B030J401 | B438J401 | B0100501 |
| Rekord 1C-TI TICN | Rekord 1D-TI NT2 | Rekord 1D-TI TICN | Rekord 1DF-TILEG TICN | Rekord 1C-NI-PM TICN | Rekord 1DF-NI-PM TICN | Rekord 1A-H NT |
| | | | | | | 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 |
| 📄 73 | 📄 73 | 📄 74 | | 📄 74 | 📄 74 | 📄 75 |

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 (ST) SELF-LOCK

Tr, Tr-F Rd

Zubehör Accessories

Tech. Info

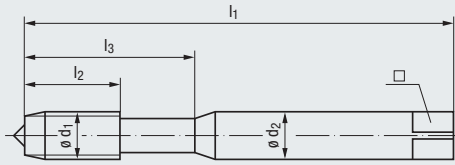


- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



DIN 13

DIN 371



H
Materials of high tensile strength



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

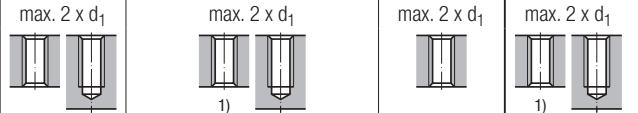
Technische Informationen
Technical information

» 245 - 266



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

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

| | | | | |
|------------|------------|------------|------------|----------------|
| P 1.1-4.1 | P 1.1-3.1 | P 1.1-4.1 | P 1.1-4.1 | P 5.1 |
| 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 |
| N 2.4-7 | N 2.4-7 | N 2.4-7 | N 2.4-7 | N 1.5-6, 2.6-8 |
| N 4.1, 5.1 | N 4.1, 5.1 | N 4.1, 5.1 | N 4.1, 5.1 | N 4.1, 4.3-5.2 |
| | | | | H 1.1-2 |

Werkzeug-Ident · Tool ident

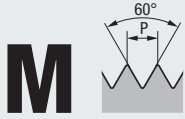
B0109101 B1950501 B1959101 B1069101 B1950901

| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | Dimens.- Ident | Rekord 1A-H TICN | Rekord 1A-H- IKZ NT | Rekord 1A-H- IKZ TICN | Rekord 1A-H- IKZN TICN | VHM Rekord 1A-H- IKZ |
|-----|------------------------|---------|----------------|----------------|----------------|------------------|-----|-------------------|------------------------|------------------------------|--------------------------------|---------------------------------|-------------------------------|
| | | | | | | | | | | | | | |
| 1 | 1 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 0,75 | | | | | |
| 1,1 | 1,1 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 0,85 | | | | | |
| 1,2 | 1,2 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 0,95 | | | | | |
| 1,4 | 1,4 | 0,3 | 40 | 6 | – | 2,5 | 2,1 | 1,1 | | | | | |
| 1,6 | 1,6 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,25 | | | | | |
| 1,7 | 1,7 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,35 | | | | | |
| 1,8 | 1,8 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,45 | | | | | |
| 2 | 2 | 0,4 | 45 | 7 | 12 | 2,8 | 2,1 | 1,6 | ● | | | | |
| 2,2 | 2,2 | 0,45 | 45 | 7 | 12 | 2,8 | 2,1 | 1,75 | | | | | |
| 2,3 | 2,3 | 0,4 | 45 | 7 | 12 | 2,8 | 2,1 | 1,9 | | | | | |
| 2,5 | 2,5 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 2,05 | ● | | | | |
| 2,6 | 2,6 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 2,15 | | | | | |
| 3 | 3 | 0,5 | 56 | 11 | 18 | 3,5 | 2,7 | 2,5 | ● | | | | ● |
| 3,5 | 3,5 | 0,6 | 56 | 12 | 20 | 4 | 3 | 2,9 | ● | | | | ● |
| 4 | 4 | 0,7 | 63 | 13 | 21 | 4,5 | 3,4 | 3,3 ²⁾ | ● | | | | ● |
| 4,5 | 4,5 | 0,75 | 70 | 14 | 25 | 6 | 4,9 | 3,7 | | | | | |
| 5 | 5 | 0,8 | 70 | 15 | 25 | 6 | 4,9 | 4,2 ²⁾ | ● | ● | ● | ○ | ● |
| 5,5 | 5,5 | 0,9 | 80 | 16 | 30 | 6 | 4,9 | 4,6 | | | | | |
| 6 | 6 | 1 | 80 | 17 | 30 | 6 | 4,9 | 5 ²⁾ | ● | ● | ● | ○ | ● |
| 7 | 7 | 1 | 80 | 17 | 30 | 7 | 5,5 | 6 | ● | | | | |
| 8 | 8 | 1,25 | 90 | 20 | 35 | 8 | 6,2 | 6,8 ²⁾ | ● | ● | ● | ○ | ● |
| 9 | 9 | 1,25 | 90 | 20 | 35 | 9 | 7 | 7,8 | | | | | |
| 10 | 10 | 1,5 | 100 | 22 | 39 | 10 | 8 | 8,5 ²⁾ | ● | ● | ● | ○ | ● |
| 12 | 12 | 1,75 | 110 | 24 | 44 | 12 | 9 | 10,2 | | | | | |



» 75 » 75 » 75 » 75 » 75

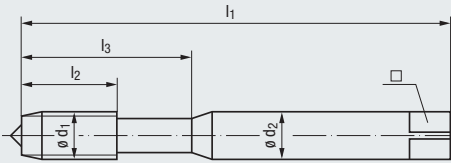
1) Gewindebohren in Durchgangslöcher nur mit externer Kühlschmierung möglich
Threading in through holes is possible only with external cooling/lubrication



DIN 13

DIN 371

HCUT
Hardened
steels



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



6HX

TICN

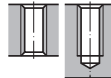
HSSE-PM

C / 2-3

O / P

Gewindetiefe und Lochform
Thread depth and hole type

max. 1,5 x d₁



Einsatzgebiete – Material
Applications – material

» 22

H 1.1-2

Werkzeug-Ident · Tool ident

B010J901

| M | ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | Image | Dimens.- Ident | Rekord 1A-HCUT-PM TICN | | |
|---|------------------------|---------|----------------|----------------|----------------|------------------|-----|-------|-------------------|---------------------------|---|---|
| | | | | | | | | | | ○ | ● | ● |
| | 4 | 0,7 | 63 | 7 | 21 | 4,5 | 3,4 | 3,4 | .0040 | ○ | | |
| | 5 | 0,8 | 70 | 8 | 25 | 6 | 4,9 | 4,3 | .0050 | ○ | | |
| | 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 5,1 | .0060 | ● | | |
| | 8 | 1,25 | 90 | 14 | 35 | 8 | 6,2 | 6,9 | .0080 | ● | | |
| | 10 | 1,5 | 100 | 16 | 39 | 10 | 8 | 8,6 | .0100 | ● | | |

DIN 376



» 75

DIN 352



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 (ST)
SELF-LOCK

Tr, Tr-F
Rd

Zubehör
Accessories

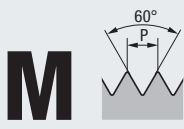
Tech. Info



Werkzeug-Aufnahmen der Typenreihe
Softsynchro® siehe Seite 661 - 681

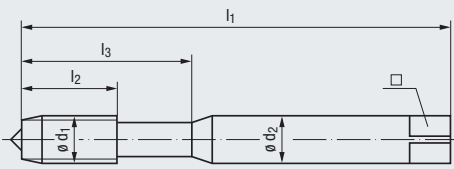
Tool holders of our Softsynchro® series,
see page 661 - 681

- Product Finder
- Vc
- 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
- Tech. Info



DIN 13

≈DIN 371



HCUT
Hardened steels



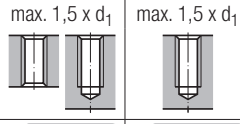
Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

Technical information icon: 245 - 266

| | |
|---------|---------|
| 6HX | 6HX |
| TICN | TICN |
| VHM | VHM |
| D / 4-5 | C / 2-3 |
| O / P | O / P |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

Applications icon: 22

| | |
|---------|---------|
| H 1.3-4 | H 1.3-4 |
|---------|---------|

Werkzeug-Ident · Tool ident

B016K101 B010K101

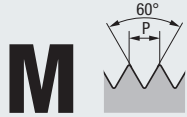
| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | 2,55 | Dimens.- Ident | VHM Rekord | |
|---|------------------------|---------|----------------|----------------|----------------|------------------|-----|------|-------------------|-------------------|-------------------|
| | | | | | | | | | | 1A-HCUT/D TICN | 1A-HCUT/C TICN |
| | 3 | 0,5 | 63 | 6 | 18 | 4,5 | 3,4 | 2,55 | .0030 | ● | ● |
| | 4 | 0,7 | 63 | 8 | 20 | 4,5 | 3,4 | 3,4 | .0040 | ● | ● |
| | 5 | 0,8 | 70 | 10 | 26 | 6 | 4,9 | 4,3 | .0050 | ● | ● |
| | 6 | 1 | 80 | 12 | 28 | 6 | 4,9 | 5,1 | .0060 | ● | ● |
| | 8 | 1,25 | 90 | 15 | 35 | 8 | 6,2 | 6,9 | .0080 | ● | ● |
| | 10 | 1,5 | 100 | 18 | 38 | 10 | 8 | 8,6 | .0100 | ● | ● |
| | 12 | 1,75 | 110 | 21 | 41 | 12 | 9 | 10,4 | .0112 | ● | ● |
| | 14 | 2 | 110 | 24 | 44 | 14 | 11 | 12,2 | .0114 | ○ | ○ |
| | 16 | 2 | 110 | 24 | 44 | 16 | 12 | 14,2 | .0116 | ● | ● |

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!



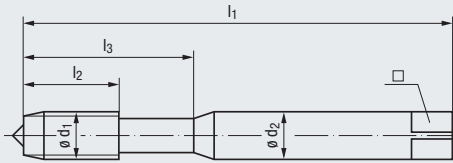
Spiralbohrer Typ EF-Drill-HCUT
siehe Seite 558

Twist drills type EF-Drill-HCUT,
see page 558



DIN 13

DIN 371



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



Gewindetiefe und Lochform
Thread depth and hole type

Einsatzgebiete – Material
Applications – material

» 22

Werkzeug-Ident · Tool ident

| M | ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | Dimens.- Ident | Z CNC-controlled machines | | | | | |
|---|------------------------|---------|----------------|----------------|----------------|------------------|-----|-------------------|---------------------------------|--------------------------------|---------------------------------|------------------------------|--------------------------------------|--|
| | | | | | | | | | Rekord 1A-Z TICN | Rekord 1A-Z- IKZ TICN | Rekord 1A-Z- IKZN TICN | Rekord 1A-Z/ E TICN | Rekord 1A-Z- E- IKZ TICN | |
| | 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 | | | | | | |
| | 4,5 | 0,75 | 70 | 8 | 25 | 6 | 4,9 | 3,7 | | | | | | |
| | 5 | 0,8 | 70 | 8 | 25 | 6 | 4,9 | 4,2 | | | | | | |
| | 5,5 | 0,9 | 80 | 10 | 30 | 6 | 4,9 | 4,6 | | | | | | |
| | 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 5 | | | | | | |
| | 7 | 1 | 80 | 10 | 30 | 7 | 5,5 | 6 | | | | | | |
| | 8 | 1,25 | 90 | 14 | 35 | 8 | 6,2 | 6,8 | | | | | | |
| | 9 | 1,25 | 90 | 14 | 35 | 9 | 7 | 7,8 | | | | | | |
| | 10 | 1,5 | 100 | 16 | 39 | 10 | 8 | 8,5 | | | | | | |
| | 12 | 1,75 | 110 | 18 | 44 | 12 | 9 | 10,2 | | | | | | |

DIN 376



» 76

» 76

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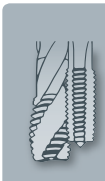
DIN 352



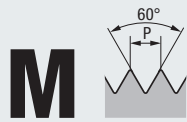
1) Gewindebohren in Durchgangslöcher nur mit externer Kühlschmierung möglich
Threading in through holes is possible only with external cooling/lubrication

Product Finder

- Vc
- M
- MF
- UNC UN-8
- UNF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

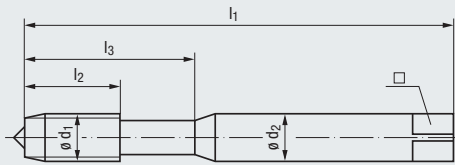


- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



DIN 13

DIN 371



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

Technical information → 245 - 266

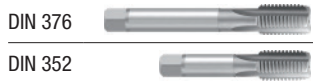
Gewindetiefe und Lochform
Thread depth and hole type

Einsatzgebiete – Material
Applications – material

Applications – material → 22

Werkzeug-Ident · Tool ident

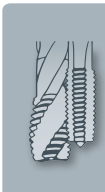
| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | Image | Dimens.- Ident | Tool Ident | | | | |
|-----|------------------------|---------|----------------|----------------|----------------|------------------|------|-------|-------------------|-----------------------------------|-----------------------------|----------------------------|--|---|
| | | | | | | | | | | Rekord 1A-Z/E- IKZN TICN | Rekord 1B-Z-PM TIN-70 | Rekord 1B-Z-PM GLT-1 | Rekord 1B-Z- IKZN PM-TIN- 70 | Rekord 1B-Z- IKZN PM-GLT- 1 |
| 1 | 0,25 | 40 | 2,5 | – | 2,5 | 2,1 | 0,75 | .0010 | | | | | | |
| 1,1 | 0,25 | 40 | 2,5 | – | 2,5 | 2,1 | 0,85 | .0011 | | | | | | |
| 1,2 | 0,25 | 40 | 2,5 | – | 2,5 | 2,1 | 0,95 | .0012 | | | | | | |
| 1,4 | 0,3 | 40 | 3 | – | 2,5 | 2,1 | 1,1 | .0014 | | | | | | |
| 1,6 | 0,35 | 40 | 4 | 11 | 2,5 | 2,1 | 1,25 | .0016 | | | | | | |
| 1,7 | 0,35 | 40 | 4 | 11 | 2,5 | 2,1 | 1,35 | .0017 | | | | | | |
| 1,8 | 0,35 | 40 | 4 | 11 | 2,5 | 2,1 | 1,45 | .0018 | | | | | | |
| 2 | 0,4 | 45 | 4 | 12 | 2,8 | 2,1 | 1,6 | .0020 | | | | | | |
| 2,2 | 0,45 | 45 | 4,5 | 12 | 2,8 | 2,1 | 1,75 | .0022 | | | | | | |
| 2,3 | 0,4 | 45 | 4,5 | 12 | 2,8 | 2,1 | 1,9 | .0023 | | | | | | |
| 2,5 | 0,45 | 50 | 5 | 14 | 2,8 | 2,1 | 2,05 | .0025 | | | | | | |
| 2,6 | 0,45 | 50 | 5 | 14 | 2,8 | 2,1 | 2,15 | .0026 | | | | | | |
| 3 | 0,5 | 56 | 6 | 18 | 3,5 | 2,7 | 2,5 | .0030 | | | | | | |
| 3,5 | 0,6 | 56 | 7 | 20 | 4 | 3 | 2,9 | .0035 | | | | | | |
| 4 | 0,7 | 63 | 7 | 21 | 4,5 | 3,4 | 3,3 | .0040 | | | | | | |
| 4,5 | 0,75 | 70 | 8 | 25 | 6 | 4,9 | 3,7 | .0045 | | | | | | |
| 5 | 0,8 | 70 | 8 | 25 | 6 | 4,9 | 4,2 | .0050 | ○ | | | ○ | ○ | |
| 5,5 | 0,9 | 80 | 10 | 30 | 6 | 4,9 | 4,6 | .0055 | | | | | | |
| 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 5 | .0060 | ○ | | | ○ | ○ | |
| 7 | 1 | 80 | 10 | 30 | 7 | 5,5 | 6 | .0070 | | | | | | |
| 8 | 1,25 | 90 | 14 | 35 | 8 | 6,2 | 6,8 | .0080 | ○ | | | ○ | ○ | |
| 9 | 1,25 | 90 | 14 | 35 | 9 | 7 | 7,8 | .0090 | | | | | | |
| 10 | 1,5 | 100 | 16 | 39 | 10 | 8 | 8,5 | .0100 | ○ | | | ○ | ○ | |
| 12 | 1,75 | 110 | 18 | 44 | 12 | 9 | 10,2 | .0112 | | | | | | |



| Z CNC-controlled machines | | | | |
|-----------------------------------|-----------------------------|----------------------------|--|---|
| new | new | new | new | new |
| | | | | |
| 6HX | 6HX | 6HX | 6HX | 6HX |
| TICN | TIN-70 | GLT-1 | TIN-70 | GLT-1 |
| HSSE | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| E / 1,5-2 | B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 |
| E / O | E / O / P | E / O / P | E / O | E / O |
| max. 2 x d ₁ | max. 3 x d ₁ | | | |
| | | | | |
| P 1.1-4.1 | P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 |
| K 1.1-4.2 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 |
| N 1.4-6, 2.4-7 | K 2.1 | K 2.1 | K 2.1 | K 2.1 |
| N 4.1 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 |
| S 1.1 | S 1.1 | S 1.1 | S 1.1 | S 1.1 |
| B1099401 | B0208F01 | B020A601 | B1088F01 | B108A601 |
| Rekord 1A-Z/E- IKZN TICN | Rekord 1B-Z-PM TIN-70 | Rekord 1B-Z-PM GLT-1 | Rekord 1B-Z- IKZN PM-TIN- 70 | Rekord 1B-Z- IKZN PM-GLT- 1 |
| 77 | 77 | 77 | 77 | 77 |
| DIN 352 | | | | |

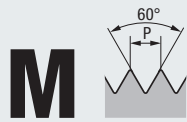
| Z CNC-controlled machines | | | | | | | | | |
|------------------------------|----------------------------|----------------------------------|---------------------------------|-----------------------------|-----------------------|-----------------------|------------------------|--------------------------|-----------------------|
| | | | | | | | | | |
| new | new | new | new | | | new | new | new | new |
| 6GX | 6GX | 6GX | 6GX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX |
| TIN-70 | GLT-1 | TIN-70 | GLT-1 | TIN | TIN | TIN | TIN | TIN | TIN |
| HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE |
| R15 | R15 | R15 | R15 | R15 | R15 | R15 | R15 | R15 | R15 |
| B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 | C / 2-3 | C / 2-3 | E / 1,5-2 | C / 2-3 | E / 1,5-2 | C / 2-3 |
| E / O / P | E / O / P | E / O | E / O | E / O / P | E / O | E / O | E / O | E / O | E / O |
| max. 3 x d ₁ | | | | max. 2 x d ₁ | | | | | |
| P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 | P 2.1-5.1 | P 2.1-5.1 | P 2.1-5.1 | P 2.1-5.1 | P 2.1-5.1 | P 2.1-5.1 |
| M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | K 2.1-2 | K 2.1-2 | K 2.1-2 | K 2.1-2 | K 2.1-2 | K 2.1-2 |
| N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-6, 2.4-5 | N 1.4-6, 2.4-5 | N 1.4-6, 2.4-5 | N 1.4-6, 2.4-5 | N 1.4-6, 2.4-5 | N 1.4-6, 2.4-5 |
| S 1.1 | S 1.1 | S 1.1 | S 1.1 | | | | | | |
| B0208F21 | B020A621 | B1088F21 | B108A621 | B0453701 | B0963701 | B0983701 | B4253701 | B4053701 | |
| Rekord 1B-Z-PM TIN-70 „6GX“ | Rekord 1B-Z-PM GLT-1 „6GX“ | Rekord 1B-Z-1KZN PM-TIN-70 „6GX“ | Rekord 1B-Z-1KZN PM-GLT-1 „6GX“ | Rekord 1D-Z TIN | Rekord 1D-Z-1KZ TIN | Rekord 1D-Z/E-1KZ TIN | Rekord 1D-Z-BF 1KZ-TIN | Rekord 1D-Z/E-BF 1KZ-TIN | |
| | | | | | | | | | 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_c
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



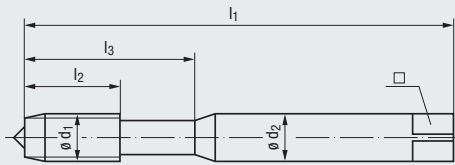
● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

- 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
- Tech. Info



DIN 13

DIN 371



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266



Z
CNC-controlled machines



| | | | | |
|----------------|----------------|----------------|----------------|------------------|
| 6HX | 6HX | 6HX | 6HX | 6HX |
| TIN-60 | GLT-1 | TIN-60 | GLT-1 | TIN-60 |
| HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| R45 | R45 | R45 | R45 | R45 |
| C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | E / 1,5-2 |
| E / O / P | E / O / P | E / O | E / O | E / O / P |

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | | | |
|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 |
| M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 |
| K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 |
| N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 |
| S 1.1 | S 1.1 | S 1.1 | S 1.1 | S 1.1 |

Werkzeug-Ident · Tool ident

| M | ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | Dimens.- Ident | B5760F01 | B576A601 | B5810F01 | B581A601 | B5820F01 |
|-----|------------------------|---------|----------------|----------------|----------------|------------------|-----|-------------------|-----------------------------|----------------------------|------------------------------------|-----------------------------------|-------------------------------|
| | | | | | | | | | Enorm 1-Z-X-PM TIN-60 | Enorm 1-Z-X-PM GLT-1 | Enorm 1-Z-X IKZ-PM TIN-60 | Enorm 1-Z-X IKZ-PM GLT-1 | Enorm 1-Z/E-X-PM TIN-60 |
| 1 | 1 | 0,25 | 40 | 2,5 | – | 2,5 | 2,1 | 0,75 | | | | | |
| 1,1 | 1,1 | 0,25 | 40 | 2,5 | – | 2,5 | 2,1 | 0,85 | | | | | |
| 1,2 | 1,2 | 0,25 | 40 | 2,5 | – | 2,5 | 2,1 | 0,95 | | | | | |
| 1,4 | 1,4 | 0,3 | 40 | 3 | – | 2,5 | 2,1 | 1,1 | | | | | |
| 1,6 | 1,6 | 0,35 | 40 | 4 | 11 | 2,5 | 2,1 | 1,25 | | | | | |
| 1,7 | 1,7 | 0,35 | 40 | 4 | 11 | 2,5 | 2,1 | 1,35 | | | | | |
| 1,8 | 1,8 | 0,35 | 40 | 4 | 11 | 2,5 | 2,1 | 1,45 | | | | | |
| 2 | 2 | 0,4 | 45 | 4 | 12 | 2,8 | 2,1 | 1,6 | ○ | ○ | | | ○ |
| 2,2 | 2,2 | 0,45 | 45 | 4,5 | 12 | 2,8 | 2,1 | 1,75 | | | | | |
| 2,3 | 2,3 | 0,4 | 45 | 4,5 | 12 | 2,8 | 2,1 | 1,9 | | | | | |
| 2,5 | 2,5 | 0,45 | 50 | 5 | 14 | 2,8 | 2,1 | 2,05 | ○ | ○ | | | ○ |
| 2,6 | 2,6 | 0,45 | 50 | 5 | 14 | 2,8 | 2,1 | 2,15 | | | | | |
| 3 | 3 | 0,5 | 56 | 6 | 18 | 3,5 | 2,7 | 2,5 | ● | ● | | | ● |
| 3,5 | 3,5 | 0,6 | 56 | 7 | 20 | 4 | 3 | 2,9 | ○ | ○ | | | ○ |
| 4 | 4 | 0,7 | 63 | 7 | 21 | 4,5 | 3,4 | 3,3 | ● | ● | ● | ● | ● |
| 4,5 | 4,5 | 0,75 | 70 | 8 | 25 | 6 | 4,9 | 3,7 | | | ● | ● | ● |
| 5 | 5 | 0,8 | 70 | 8 | 25 | 6 | 4,9 | 4,2 | ● | ● | ● | ● | ● |
| 5,5 | 5,5 | 0,9 | 80 | 10 | 30 | 6 | 4,9 | 4,6 | | | ● | ● | ● |
| 6 | 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 5 | ● | ● | ● | ● | ● |
| 7 | 7 | 1 | 80 | 10 | 30 | 7 | 5,5 | 6 | | | ● | ● | ● |
| 8 | 8 | 1,25 | 90 | 14 | 35 | 8 | 6,2 | 6,8 | ● | ● | ● | ● | ● |
| 9 | 9 | 1,25 | 90 | 14 | 35 | 9 | 7 | 7,8 | | | ● | ● | ● |
| 10 | 10 | 1,5 | 100 | 16 | 39 | 10 | 8 | 8,5 | ● | ● | ● | ● | ● |
| 12 | 12 | 1,75 | 110 | 18 | 44 | 12 | 9 | 10,2 | | | | | |

DIN 376



» 79

» 79

» 79

» 79

» 79

DIN 352



Z
CNC-controlled
machines



| | | | | | | | | | |
|------------------|------------------|------------------|----------------|----------------|----------------|----------------|------------------|------------------|------------------|
| 6HX | 6HX | 6HX | 6GX | 6GX | 6GX | 6GX | 6GX | 6GX | 6GX |
| GLT-1 | TIN-60 | GLT-1 | TIN-60 | GLT-1 | TIN-60 | GLT-1 | TIN-60 | GLT-1 | TIN-60 |
| HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| R45 | R45 | R45 | R45 | R45 | R45 | R45 | R45 | R45 | R45 |
| E / 1,5-2 | E / 1,5-2 | E / 1,5-2 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | E / 1,5-2 | E / 1,5-2 | E / 1,5-2 |
| E/O/P | E/O | E/O | E/O/P | E/O/P | E/O | E/O | E/O/P | E/O/P | E/O |

max. 3 x d₁



| | | | | | | | | | |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 |
| M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 |
| K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 |
| N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 |
| S 1.1 | S 1.1 | S 1.1 | S 1.1 | S 1.1 | S 1.1 | S 1.1 | S 1.1 | S 1.1 | S 1.1 |

| | | | | | | | | | |
|------------------------------|--------------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|--|---|--|---------------------------------------|--|
| B582A601 | B5830F01 | B583A601 | B5760F21 | B576A621 | B5810F21 | B581A621 | B5820F21 | B582A621 | B5830F21 |
| Enorm 1-Z/E-X-PM GLT-1 | Enorm 1-Z/E-X IKZ-PM TIN-60 | Enorm 1-Z/E-X IKZ-PM GLT-1 | Enorm 1-Z-X-PM TIN-60 „6GX“ | Enorm 1-Z-X-PM GLT-1 „6GX“ | Enorm 1-Z-X-IKZ PM-TIN-60 „6GX“ | Enorm 1-Z-X-IKZ PM-GLT-1 „6GX“ | Enorm 1-Z/E-X-PM TIN-60 „6GX“ | Enorm 1-Z/E-X-PM GLT-1 „6GX“ | Enorm 1-Z/E-X-IKZ PM-TIN-60 „6GX“ |

| | | | | | | | | | | |
|------|------|------|------|------|------|------|------|------|------|-----|
| | | | | | | | | | | 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 |
| 📄 79 | 📄 79 | 📄 79 | 📄 79 | 📄 79 | 📄 80 | 📄 80 | 📄 80 | 📄 80 | 📄 80 | |

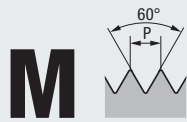
● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

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
- Tech. Info

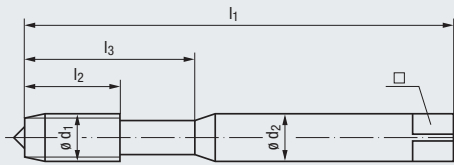


- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



DIN 13

DIN 371



Z
CNC-controlled machines



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266

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

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | | | |
|-------------------------|------------------|-----------------------|-----------------------|-----------------------|
| P 2.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 |
| M 1.1-3.1 | M 1.1-2.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 |
| K 2.1 | N 2.1 | N 1.4-6 | N 1.4-6 | N 1.4-6 |
| N 1.4-2.2, 2.4-5 | | N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 |
| S 1.1 | | S 1.1 | S 1.1 | S 1.1 |

Werkzeug-Ident · Tool ident

B583A621 B0503500 B0503700 B050C400 B099C400

| M | ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | Dimens.- Ident | Enorm | Enorm | Enorm | Enorm | Enorm | |
|---|------------------------|---------|----------------|----------------|----------------|------------------|-----|-------------------|--------------------------------------|-------|------------|--------------|----------------------|---|
| | | | | | | | | | 1-Z/E-X- IKZ PM-GLT-1 „6GX“ | 1-Z | 1-Z TIN | 1-Z GLT-1 | 1-Z- IKZ GLT-1 | |
| | 1 | 0,25 | 40 | 2,5 | – | 2,5 | 2,1 | 0,75 | .0010 | | | | | |
| | 1,1 | 0,25 | 40 | 2,5 | – | 2,5 | 2,1 | 0,85 | .0011 | | | | | |
| | 1,2 | 0,25 | 40 | 2,5 | – | 2,5 | 2,1 | 0,95 | .0012 | | | | | |
| | 1,4 | 0,3 | 40 | 3 | – | 2,5 | 2,1 | 1,1 | .0014 | | | | | |
| | 1,6 | 0,35 | 40 | 4 | 11 | 2,5 | 2,1 | 1,25 | .0016 | | | | | |
| | 1,7 | 0,35 | 40 | 4 | 11 | 2,5 | 2,1 | 1,35 | .0017 | | | | | |
| | 1,8 | 0,35 | 40 | 4 | 11 | 2,5 | 2,1 | 1,45 | .0018 | | | | | |
| | 2 | 0,4 | 45 | 4 | 12 | 2,8 | 2,1 | 1,6 | .0020 | | | | | |
| | 2,2 | 0,45 | 45 | 4,5 | 12 | 2,8 | 2,1 | 1,75 | .0022 | | | | | |
| | 2,3 | 0,4 | 45 | 4,5 | 12 | 2,8 | 2,1 | 1,9 | .0023 | | | | | |
| | 2,5 | 0,45 | 50 | 5 | 14 | 2,8 | 2,1 | 2,05 | .0025 | | | | | |
| | 2,6 | 0,45 | 50 | 5 | 14 | 2,8 | 2,1 | 2,15 | .0026 | | | | | |
| | 3 | 0,5 | 56 | 6 | 18 | 3,5 | 2,7 | 2,5 | .0030 | | • | • | • | |
| | 3,5 | 0,6 | 56 | 7 | 20 | 4 | 3 | 2,9 | .0035 | | • | • | • | |
| | 4 | 0,7 | 63 | 7 | 21 | 4,5 | 3,4 | 3,3 | .0040 | • | • | • | • | |
| | 4,5 | 0,75 | 70 | 8 | 25 | 6 | 4,9 | 3,7 | .0045 | | • | • | • | |
| | 5 | 0,8 | 70 | 8 | 25 | 6 | 4,9 | 4,2 | .0050 | • | • | • | • | • |
| | 5,5 | 0,9 | 80 | 10 | 30 | 6 | 4,9 | 4,6 | .0055 | | • | • | • | |
| | 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 5 | .0060 | • | • | • | • | • |
| | 7 | 1 | 80 | 10 | 30 | 7 | 5,5 | 6 | .0070 | | • | • | • | |
| | 8 | 1,25 | 90 | 14 | 35 | 8 | 6,2 | 6,8 | .0080 | • | • | • | • | • |
| | 9 | 1,25 | 90 | 14 | 35 | 9 | 7 | 7,8 | .0090 | | • | • | • | |
| | 10 | 1,5 | 100 | 16 | 39 | 10 | 8 | 8,5 | .0100 | • | • | • | • | • |
| | 12 | 1,75 | 110 | 18 | 44 | 12 | 9 | 10,2 | .0112 | | | | | |



81 81 81 81 81

Z
CNC-controlled
machines

| | | | | | | | | | |
|------------------|------------------|-------------------|------------------|------------------|------------------|------------------|------------|------------|-------------------|
| | | | | | | | | | |
| ISO 2/6H | ISO 2/6H TIN | ISO 2/6H GLT-1 | ISO 2/6H | ISO 2/6H TIN | ISO 3/6G | ISO 3/6G | 6HX | 6HX | 6H +0,1 2) |
| HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE |
| R45 | R45 | R45 | R45 | R45 | R45 | R45 | R50 | R50 | R50 |
| E / 1,5-2 | 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 | C / 2-3 |
| E / O / P | E / O / P | E / O / P | E / O | E / O | E / O / P | E / O / P | E / O / P | E / O / P | E / O / P |

max. 3 x d₁



| | | | | | | | | | |
|------------------|-----------------------|-----------------------|------------------|-----------------------|------------------|-----------------------|------------------|-----------------------|------------------|
| P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 |
| M 1.1-2.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-2.1 | M 1.1-3.1 | M 1.1-2.1 | M 1.1-3.1 | M 1.1-2.1 | M 1.1-3.1 | M 1.1-2.1 |
| N 2.1 | N 1.4-6 | N 1.4-6 | N 2.1 | N 1.4-6 | N 2.1 | N 1.4-6 | N 2.1 | N 1.4-6 | N 2.1 |
| | N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 | | N 2.1-2, 2.4-5 | | N 2.1-2, 2.4-5 | | N 2.1-2, 2.4-5 | |
| | S 1.1 | S 1.1 | | S 1.1 | | S 1.1 | | S 1.1 | |

| | | | | | | | | | |
|-----------------|-----------------------|-------------------------|--------------------|---------------------------|------------------------|-------------------------------|-----------------|-----------------------|--------------------------|
| B0513500 | B0513700 | B051C400 | B0973500 | B0973700 | B0513520 | B0513720 | B0653501 | B0653701 | B0653540 |
| Enorm 1-Z/E | Enorm 1-Z/E TIN | Enorm 1-Z/E GLT-1 | Enorm 1-Z/E-IKZ | Enorm 1-Z/E-IKZ TIN | Enorm 1-Z/E „6G“ | Enorm 1-Z/E TIN „6G“ | Enorm 1-Z50 | Enorm 1-Z50 TIN | Enorm 1-Z50 „+0,1“ |

| | | | | | | | | | | | |
|------|------|------|---|------|------|------|------|------|------|---|-----|
| | | | | | | | | | | 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 |
| 📄 81 | 📄 81 | 📄 81 | | 📄 81 | 📄 81 | 📄 82 | 📄 82 | 📄 82 | 📄 82 | | |
| 📄 91 | | | | | | | | | | | |

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_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

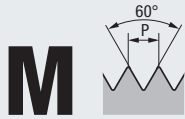
Tr, Tr-F Rd

Zubehör Accessories

Tech. Info

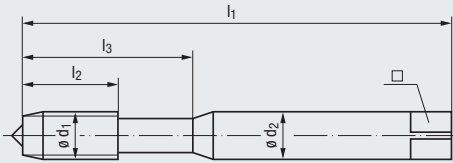


- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



DIN 13

DIN 371



SPEED
High-speed cutting



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266



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

Gewindetiefe und Lochform
Thread depth and hole type

| | | | |
|-------------------------|-------------------------|-------------------------|-------------------------|
| max. 2 x d ₁ | max. 2 x d ₁ | max. 2 x d ₁ | max. 2 x d ₁ |
| | | | |

Einsatzgebiete – Material
Applications – material

» 22

| | | | |
|------------------|------------------|------------------|------------------|
| K 1.1-4.2 | K 1.1-4.2 | K 1.1-4.2 | K 1.1-4.2 |
| N 1.4-6 | N 1.4-6 | N 1.4-6 | N 1.4-6 |

Werkzeug-Ident · Tool ident

B3159401 B3179401 B3169401 B3189401

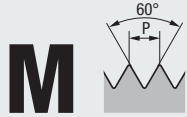
| M | ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | | Dimens.- Ident | Rekord | Rekord | Rekord | Rekord |
|-----|------------------------|---------|----------------|----------------|----------------|------------------|------|-------|-------------------|----------------------|-----------------------|------------------------|-------------------------|
| | | | | | | | | | | 1A-SPEED IKZ-TICN | 1A-SPEED IKZN-TICN | 1A-SPEED/E IKZ-TICN | 1A-SPEED/E IKZN-TICN |
| 1 | 0,25 | 40 | 2,5 | – | 2,5 | 2,1 | 0,75 | .0010 | | | | | |
| 1,1 | 0,25 | 40 | 2,5 | – | 2,5 | 2,1 | 0,85 | .0011 | | | | | |
| 1,2 | 0,25 | 40 | 2,5 | – | 2,5 | 2,1 | 0,95 | .0012 | | | | | |
| 1,4 | 0,3 | 40 | 3 | – | 2,5 | 2,1 | 1,1 | .0014 | | | | | |
| 1,6 | 0,35 | 40 | 4 | 11 | 2,5 | 2,1 | 1,25 | .0016 | | | | | |
| 1,7 | 0,35 | 40 | 4 | 11 | 2,5 | 2,1 | 1,35 | .0017 | | | | | |
| 1,8 | 0,35 | 40 | 4 | 11 | 2,5 | 2,1 | 1,45 | .0018 | | | | | |
| 2 | 0,4 | 45 | 4 | 12 | 2,8 | 2,1 | 1,6 | .0020 | | | | | |
| 2,2 | 0,45 | 45 | 4,5 | 12 | 2,8 | 2,1 | 1,75 | .0022 | | | | | |
| 2,3 | 0,4 | 45 | 4,5 | 12 | 2,8 | 2,1 | 1,9 | .0023 | | | | | |
| 2,5 | 0,45 | 50 | 5 | 14 | 2,8 | 2,1 | 2,05 | .0025 | | | | | |
| 2,6 | 0,45 | 50 | 5 | 14 | 2,8 | 2,1 | 2,15 | .0026 | | | | | |
| 3 | 0,5 | 56 | 6 | 18 | 3,5 | 2,7 | 2,5 | .0030 | | | | | |
| 3,5 | 0,6 | 56 | 7 | 20 | 4 | 3 | 2,9 | .0035 | | | | | |
| 4 | 0,7 | 63 | 7 | 21 | 4,5 | 3,4 | 3,3 | .0040 | ● | | ● | | |
| 4,5 | 0,75 | 70 | 8 | 25 | 6 | 4,9 | 3,7 | .0045 | | | | | |
| 5 | 0,8 | 70 | 8 | 25 | 6 | 4,9 | 4,2 | .0050 | ● | ○ | ● | ○ | |
| 5,5 | 0,9 | 80 | 10 | 30 | 6 | 4,9 | 4,6 | .0055 | | | | | |
| 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 5 | .0060 | ● | ○ | ● | ○ | |
| 7 | 1 | 80 | 10 | 30 | 7 | 5,5 | 6 | .0070 | | | | | |
| 8 | 1,25 | 90 | 14 | 35 | 8 | 6,2 | 6,8 | .0080 | ● | ○ | ● | ○ | |
| 9 | 1,25 | 90 | 14 | 35 | 9 | 7 | 7,8 | .0090 | | | | | |
| 10 | 1,5 | 100 | 16 | 39 | 10 | 8 | 8,5 | .0100 | ● | ○ | ● | ○ | |
| 12 | 1,75 | 110 | 18 | 44 | 12 | 9 | 10,2 | .0112 | | | | | |

DIN 376

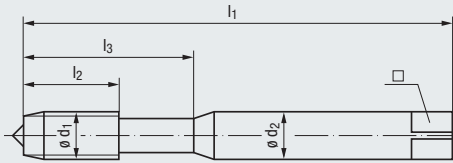
» 83 » 83 » 83 » 83

DIN 352

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

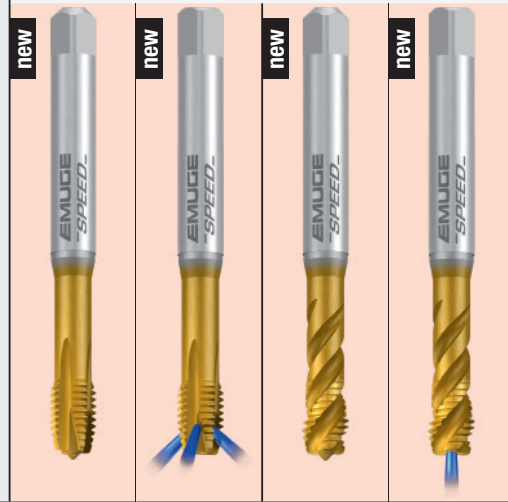


DIN 13



DIN 371

SPEED
High-speed cutting



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | | | |
|----------------|----------------|----------------|----------------|
| 6HX | 6HX | 6HX | 6HX |
| TIN-70 | TIN-70 | TIN-60 | TIN-60 |
| HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| R45 | R45 | R45 | R45 |
| B / 4-5 | B / 4-5 | C / 2-3 | C / 2-3 |
| E | E | E | E |

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | | |
|-----------|-----------|-----------|-----------|
| P 1.1-4.1 | P 1.1-4.1 | P 2.1-4.1 | P 2.1-4.1 |
| K 2.1-2 | K 2.1-2 | | |
| N 1.4-6 | N 1.4-6 | | |

Werkzeug-Ident · Tool ident

B3208F01 B3258F01 B3600F01 B3650F01

| M | ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | Dimens.- Ident | Rekord | Rekord | Enorm | Enorm | |
|---|------------------------|---------|----------------|----------------|----------------|------------------|-----|-------------------|-------------------------|---------------------------------|-----------------------------|---------------------------------|---|
| | | | | | | | | | 1B-Z-SPEED PM-TIN-70 | 1B-Z-SPEED IKZN-PM TIN-70 | 1-Z-SPEED X-PM TIN-60 | 1-Z-SPEED X-IKZ-PM TIN-60 | |
| | 1 | 0,25 | 40 | 2,5 | – | 2,5 | 2,1 | 0,75 | .0010 | | | | |
| | 1,1 | 0,25 | 40 | 2,5 | – | 2,5 | 2,1 | 0,85 | .0011 | | | | |
| | 1,2 | 0,25 | 40 | 2,5 | – | 2,5 | 2,1 | 0,95 | .0012 | | | | |
| | 1,4 | 0,3 | 40 | 3 | – | 2,5 | 2,1 | 1,1 | .0014 | | | | |
| | 1,6 | 0,35 | 40 | 4 | 11 | 2,5 | 2,1 | 1,25 | .0016 | | | | |
| | 1,7 | 0,35 | 40 | 4 | 11 | 2,5 | 2,1 | 1,35 | .0017 | | | | |
| | 1,8 | 0,35 | 40 | 4 | 11 | 2,5 | 2,1 | 1,45 | .0018 | | | | |
| | 2 | 0,4 | 45 | 4 | 12 | 2,8 | 2,1 | 1,6 | .0020 | | | | |
| | 2,2 | 0,45 | 45 | 4,5 | 12 | 2,8 | 2,1 | 1,75 | .0022 | | | | |
| | 2,3 | 0,4 | 45 | 4,5 | 12 | 2,8 | 2,1 | 1,9 | .0023 | | | | |
| | 2,5 | 0,45 | 50 | 5 | 14 | 2,8 | 2,1 | 2,05 | .0025 | | | | |
| | 2,6 | 0,45 | 50 | 5 | 14 | 2,8 | 2,1 | 2,15 | .0026 | | | | |
| | 3 | 0,5 | 56 | 6 | 18 | 3,5 | 2,7 | 2,5 | .0030 | | | | |
| | 3,5 | 0,6 | 56 | 7 | 20 | 4 | 3 | 2,9 | .0035 | | | | |
| | 4 | 0,7 | 63 | 7 | 21 | 4,5 | 3,4 | 3,3 | .0040 | ● | | ● | |
| | 4,5 | 0,75 | 70 | 8 | 25 | 6 | 4,9 | 3,7 | .0045 | | | | |
| | 5 | 0,8 | 70 | 8 | 25 | 6 | 4,9 | 4,2 | .0050 | ● | ○ | ● | ● |
| | 5,5 | 0,9 | 80 | 10 | 30 | 6 | 4,9 | 4,6 | .0055 | | | | |
| | 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 5 | .0060 | ● | ○ | ● | ● |
| | 7 | 1 | 80 | 10 | 30 | 7 | 5,5 | 6 | .0070 | | | | |
| | 8 | 1,25 | 90 | 14 | 35 | 8 | 6,2 | 6,8 | .0080 | ● | ○ | ● | ● |
| | 9 | 1,25 | 90 | 14 | 35 | 9 | 7 | 7,8 | .0090 | | | | |
| | 10 | 1,5 | 100 | 16 | 39 | 10 | 8 | 8,5 | .0100 | ● | ○ | ● | ● |
| | 12 | 1,75 | 110 | 18 | 44 | 12 | 9 | 10,2 | .0112 | | | | |

DIN 376

83 83 83 83

DIN 352

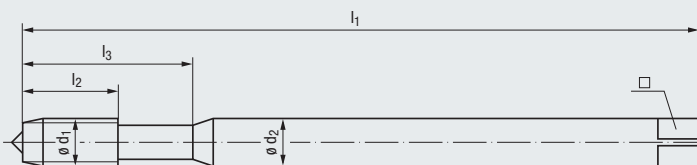
- Product Finder
- Vc
- M**
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

M



DIN 13

Mit extra langem Schaft
With extra long shank



STEEL
Steel materials



| | | | | | |
|---|---|----------|------------------|----------------|----------------|
| Technische Informationen Technical information | Toleranz · Tolerance Beschichtung · Coating Schneidstoff · Cutting material | ISO 2/6H | ISO 2/6H | ISO 2/6H | ISO 2/6H |
| | | HSSE | HSSE | TIN HSSE | HSSE |
| | | B / 4-5 | E / 1,5-2 | R15 C / 2-3 | R35 C / 2-3 |
| | | E / 0 | E / 0 | E / 0 | E / 0 |

| | | | |
|---|-------------------------|-------------------------|---------------------------|
| Gewindetiefe und Lochform Thread depth and hole type | max. 3 x d ₁ | max. 2 x d ₁ | max. 2,5 x d ₁ |
| | | | |

| | | | | |
|--|-----------|-----------|--|--------------------|
| Einsatzgebiete – Material Applications – material | P 2.1-4.1 | P 2.1-3.1 | P 1.1-4.1 K 1.1-4.2 N 1.4-5, 2.4-5 | P 1.1-3.1 N 2.2 |
|--|-----------|-----------|--|--------------------|

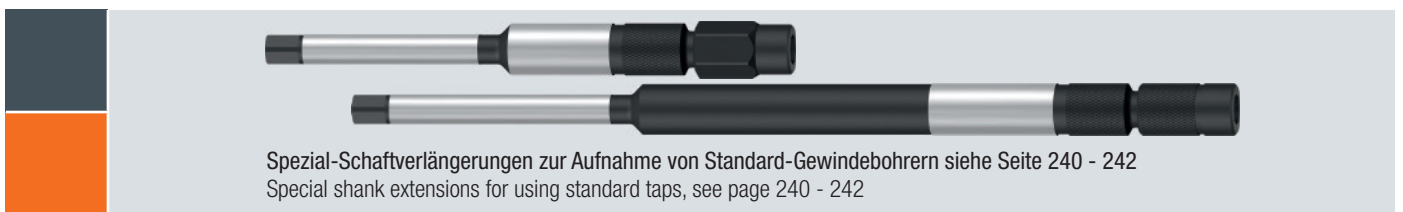
| Werkzeug-Ident · Tool ident | | | | | | | | | | B2201000 | B2461000 | B2401400 | B2501000 |
|-----------------------------|------|----------------|----------------|----------------|------------------|-----|--|---------------|----------------------|----------------------|-------------------------|------------------|----------|
| | | | | | | | | | Rekord 1B-STEEL-M LS | Rekord 1D-STEEL/E LS | Rekord 1DF-STEEL LS-TIN | Enorm 1-STEEL-LS | |
| Ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | | Dimens.-Ident | | | | | |
| M 3 | 0,5 | 100 | 11 | 18 | 3,5 | 2,7 | | .0030 | ● | ● | ● | ● | |
| 4 | 0,7 | 125 | 13 | 21 | 4,5 | 3,4 | | .0040 | ● | ● | ● | ● | |
| 5 | 0,8 | 140 | 15 | 25 | 6 | 4,9 | | .0050 | ● | ● | ● | ● | |
| 6 | 1 | 160 | 17 | 30 | 6 | 4,9 | | .0060 | ● | ● | ● | ● | |
| 8 | 1,25 | 180 | 20 | 35 | 8 | 6,2 | | .0080 | ● | ● | ● | ● | |
| 10 | 1,5 | 200 | 22 | 39 | 10 | 8 | | .0100 | ● | ● | ● | ● | |

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

| VA Stainless steel materials | | | | H Materials of high tensile strength | Z CNC-controlled machines | | | |
|---------------------------------|-----------------------|---------------------------|---------------------|---|------------------------------|--|--|-----|
| | | | | | | | | |
| ISO 2/6H | ISO 2/6H | ISO 2/6H | ISO 2/6H | 6HX | 6HX | | | |
| NT | GLT-1 | | GLT-1 | NT | TIN | | | |
| HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | | | |
| | | R35 | R35 | | R15 | | | |
| B / 4-5 | B / 4-5 | 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 | | | |
| max. 3 x d ₁ | | max. 2,5 x d ₁ | | max. 2 x d 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 2.1-5.1 | | | |
| M 1.1-2.1 | M 1.1-3.1 | M 1.1-2.1 | M 1.1-3.1 | K 1.1-4.2 | K 2.1-2 | | | |
| K 2.1 | K 2.1 | K 2.1 | K 2.1 | N 2.4-7 | N 1.4-6, 2.4-5 | | | |
| N 2.2, 2.5-6 | N 2.2 | | | N 4.1, 5.1 | | | | |
| B2203000 | B220C300 | B2503000 | B250C300 | B2100501 | B4093701 | | | |
| Rekord 1B-VA-LS NT | Rekord 1B-VA-LS GLT-1 | Enorm 1-VA-LS | Enorm 1-VA-LS GLT-1 | Rekord 1A-H-LS NT | Rekord 1D-Z-BF IKZ-LS TIN | | | |
| ● | ● | ● | ● | ● | ○ | | | M 3 |
| ● | ● | ● | ● | ● | ○ | | | 4 |
| ● | ● | ● | ● | ● | ○ | | | 5 |
| ● | ● | ● | ● | ● | ○ | | | 6 |
| ● | ● | ● | ● | ● | ○ | | | 8 |
| | | | | | ○ | | | 10 |
| | | | | | | | | |

- 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
- Tech. Info



Spezial-Schaftverlängerungen zur Aufnahme von Standard-Gewindebohrern siehe Seite 240 - 242
Special shank extensions for using standard taps, see page 240 - 242

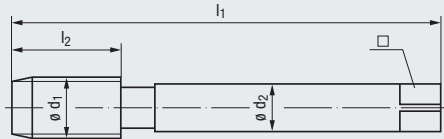
● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

- 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
- Tech. Info

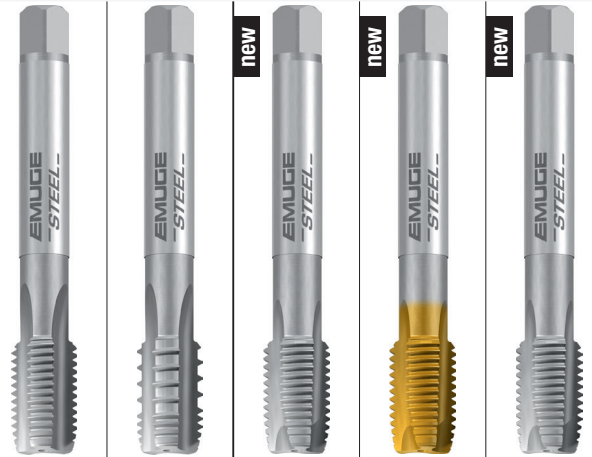


DIN 13

DIN 376



STEEL
Steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266



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

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

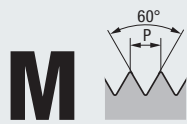
| | | | | |
|--------------------|--------------------|--------------------|------------------------------------|--------------------|
| P 1.1-3.1 N 2.3 | P 1.1-3.1 N 2.3 | P 1.1-3.1 N 2.2 | P 1.1-4.1 K 2.1 N 2.2, 2.4-5 | P 1.1-3.1 N 2.2 |
|--------------------|--------------------|--------------------|------------------------------------|--------------------|

Werkzeug-Ident · Tool ident

| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | Dimens.- Ident | Rekord | Rekord | Rekord | Rekord | Rekord |
|---|------------------------|---------|----------------|----------------|------------------|------|-------------------|----------|-------------|------------|-------------------|--------------------|
| | | | | | | | | 2A-STEEL | 2A-STEEL-AZ | 2B-STEEL-L | 2B-STEEL-L TIN | 2B-STEEL-L „4H“ |
| | 3 | 0,5 | 56 | 11 | 2,2 | – | .0030 | | | | | |
| | 4 | 0,7 | 63 | 13 | 2,8 | 2,1 | .0040 | | | | | |
| | 5 | 0,8 | 70 | 15 | 3,5 | 2,7 | .0050 | | | | | |
| | 6 | 1 | 80 | 17 | 4,5 | 3,4 | .0060 | | | | | |
| | 7 | 1 | 80 | 17 | 5,5 | 4,3 | .0070 | | | | | |
| | 8 | 1,25 | 90 | 20 | 6 | 4,9 | .0080 | | | | | |
| | 9 | 1,25 | 90 | 20 | 7 | 5,5 | .0090 | | | | | |
| | 10 | 1,5 | 100 | 22 | 7 | 5,5 | .0100 | | | | | |
| | 11 | 1,5 | 100 | 22 | 8 | 6,2 | .0111 | | | | | |
| | 12 | 1,75 | 110 | 24 | 9 | 7 | .0112 | | | | | |
| | 14 | 2 | 110 | 26 | 11 | 9 | .0114 | | | | | |
| | 16 | 2 | 110 | 27 | 12 | 9 | .0116 | | | | | |
| | 18 | 2,5 | 125 | 30 | 14 | 11 | .0118 | | | | | |
| | 20 | 2,5 | 140 | 32 | 16 | 12 | .0120 | | | | | |
| | 22 | 2,5 | 140 | 32 | 18 | 14,5 | .0122 | | | | | |
| | 24 | 3 | 160 | 34 | 18 | 14,5 | .0124 | | | | | |
| | 27 | 3 | 160 | 36 | 20 | 16 | .0127 | | | | | |
| | 30 | 3,5 | 180 | 40 | 22 | 18 | .0130 | | | | | |
| | 33 | 3,5 | 180 | 40 | 25 | 20 | .0133 | | | | | |
| | 36 | 4 | 200 | 50 | 28 | 22 | .0136 | | | | | |
| | 39 | 4 | 200 | 50 | 32 | 24 | .0139 | | | | | |
| | 42 | 4,5 | 200 | 56 | 32 | 24 | .0142 | | | | | |
| | 45 | 4,5 | 220 | 58 | 36 | 29 | .0145 | | | | | |
| | 48 | 5 | 250 | 65 | 36 | 29 | .0148 | | | | | |
| | 52 | 5 | 250 | 65 | 40 | 32 | .0152 | | | | | |

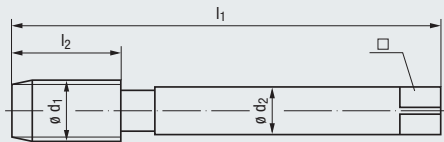
| | | | | | | |
|---------|--|----|----|----|----|----|
| DIN 371 | | 36 | 36 | 36 | 36 | 37 |
| DIN 352 | | 90 | 90 | | | |

- Product Finder
- Vc
- 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
- Tech. Info



DIN 13

DIN 376



STEEL
Steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266

| | | | | |
|----------|------------------|----------|----------|----------|
| ISO 2/6H | ISO 2/6H | ISO 2/6H | ISO 2/6H | ISO 2/6H |
| HSSE | HSSE | TIN | HSSE | TIN |
| R15 | R15 | HSSE | HSSE | HSSE |
| C / 2-3 | E / 1,5-2 | R15 | R35 | R35 |
| E / 0 | E / 0 | C / 2-3 | C / 2-3 | C / 2-3 |
| E / 0 | E / 0 | E / 0 | E / 0 | E / 0 |

Gewindetiefe und Lochform
Thread depth and hole type

max. 2 x d₁



max. 2,5 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | | | |
|-----------|-----------|--|--------------------|-----------------------------|
| P 2.1-3.1 | P 2.1-3.1 | P 1.1-4.1 K 1.1-4.2 N 1.4-5, 2.4-5 | P 1.1-3.1 N 2.2 | P 1.1-4.1 K 2.1 N 2.2 |
|-----------|-----------|--|--------------------|-----------------------------|

Werkzeug-Ident · Tool ident

C0451000 C0461000 C0401400 C0501000 C0501400

| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | Dimens.- Ident | Rekord | Rekord | Rekord | Enorm | Enorm |
|---|------------------------|---------|----------------|----------------|------------------|------|-------------------|----------|------------|------------------|---------|----------------|
| | | | | | | | | 2D-STEEL | 2D-STEEL/E | 2DF-STEEL TIN | 2-STEEL | 2-STEEL TIN |
| | 3 | 0,5 | 56 | 11 | 2,2 | – | .0030 | | | | ● | |
| | 4 | 0,7 | 63 | 13 | 2,8 | 2,1 | .0040 | | | | ● | |
| | 5 | 0,8 | 70 | 15 | 3,5 | 2,7 | .0050 | | | | ● | |
| | 6 | 1 | 80 | 17 | 4,5 | 3,4 | .0060 | ● | | | ● | |
| | 7 | 1 | 80 | 17 | 5,5 | 4,3 | .0070 | | | | ● | |
| | 8 | 1,25 | 90 | 20 | 6 | 4,9 | .0080 | ● | | | ● | |
| | 9 | 1,25 | 90 | 20 | 7 | 5,5 | .0090 | | | | ● | |
| | 10 | 1,5 | 100 | 22 | 7 | 5,5 | .0100 | ● | | | ● | |
| | 11 | 1,5 | 100 | 22 | 8 | 6,2 | .0111 | | | | ● | |
| | 12 | 1,75 | 110 | 24 | 9 | 7 | .0112 | ● | ● | ● | ● | ● |
| | 14 | 2 | 110 | 26 | 11 | 9 | .0114 | | | ● | ● | ● |
| | 16 | 2 | 110 | 27 | 12 | 9 | .0116 | ● | ● | ● | ● | ● |
| | 18 | 2,5 | 125 | 30 | 14 | 11 | .0118 | | | ● | ● | ● |
| | 20 | 2,5 | 140 | 32 | 16 | 12 | .0120 | ● | ● | ● | ● | ● |
| | 22 | 2,5 | 140 | 32 | 18 | 14,5 | .0122 | | | ● | ● | ● |
| | 24 | 3 | 160 | 34 | 18 | 14,5 | .0124 | ● | ● | ○ | ● | ● |
| | 27 | 3 | 160 | 36 | 20 | 16 | .0127 | ● | | | ● | ● |
| | 30 | 3,5 | 180 | 40 | 22 | 18 | .0130 | ● | | | ● | ● |
| | 33 | 3,5 | 180 | 40 | 25 | 20 | .0133 | | | | ● | ● |
| | 36 | 4 | 200 | 50 | 28 | 22 | .0136 | | | | ● | ○ |
| | 39 | 4 | 200 | 50 | 32 | 24 | .0139 | | | | ● | ● |
| | 42 | 4,5 | 200 | 56 | 32 | 24 | .0142 | | | | ● | ● |
| | 45 | 4,5 | 220 | 58 | 36 | 29 | .0145 | | | | ● | ● |
| | 48 | 5 | 250 | 65 | 36 | 29 | .0148 | | | | ● | ● |
| | 52 | 5 | 250 | 65 | 40 | 32 | .0152 | | | | ● | ● |

DIN 371

39 39 39 39 39

DIN 352

91 91

STEEL
Steel
materials

| | | | | | | | | | |
|-----------------|-----------------|-----------------|-----------------|-----------|-----------|----------------|----------------|----------|----------|
| | new | | | | | | | | |
| ISO 1/4H | ISO 1/4H | ISO 3/6G | ISO 3/6G | 7G | 7G | ISO 2/6H | ISO 2/6H | ISO 2/6H | ISO 2/6H |
| | TIN | | TIN | | TIN | | TIN | | TIN |
| HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE |
| R35 | R35 | R35 | R35 | R35 | R35 | LH, L35 | LH, L35 | R35 | R35 |
| C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 |
| E / 0 | E / 0 | E / 0 | E / 0 | E / 0 | E / 0 | E / 0 | E / 0 | E / 0 | E / 0 |

max. 2,5 x d₁



| | | | | | | | | | |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| 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 | P 1.1-3.1 | P 1.1-4.1 | P 1.1-3.1 | P 1.1-4.1 |
| N 2.2 | K 2.1 | N 2.2 | K 2.1 | N 2.2 | K 2.1 | N 2.2 | K 2.1 | N 2.2 | K 2.1 |
| | N 2.2 | | N 2.2 | | N 2.2 | | N 2.2 | | N 2.2 |

| | | | | | | | | | |
|--------------------|------------------------|--------------------|------------------------|--------------------|------------------------|------------------|----------------------|-----------------|---------------------|
| C0501010 | C0501410 | C0501020 | C0501420 | C0501030 | C0501430 | C0501050 | C0501450 | C0601000 | C0601400 |
| Enorm 2-STEEL „4H“ | Enorm 2-STEEL TIN „4H“ | Enorm 2-STEEL „6G“ | Enorm 2-STEEL TIN „6G“ | Enorm 2-STEEL „7G“ | Enorm 2-STEEL TIN „7G“ | Enorm 2-STEEL-LH | Enorm 2-STEEL-LH TIN | Enorm 2-STEEL-X | Enorm 2-STEEL-X TIN |

| | | | | | | | | | | | |
|------|------|------|------|------|------|------|------|------|------|----------|----|
| | | | | | | | | | | 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 |
| 📄 39 | 📄 39 | 📄 39 | 📄 39 | 📄 40 | 📄 40 | 📄 40 | 📄 40 | 📄 40 | 📄 41 | | |

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

Product Finder

V_c

M

MF

UNC UN-8

UNF

G, Rp NPSM, NPSF

NPT, NPTF Rc, W

BSW, BSF

Pg

MJ UNJC, UNJF

EG (STI) SELF-LOCK

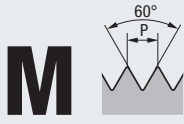
Tr, Tr-F Rd

Zubehör Accessories

Tech. Info

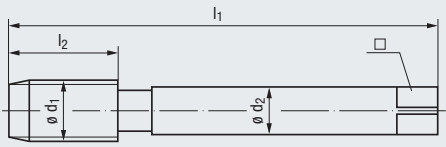


- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

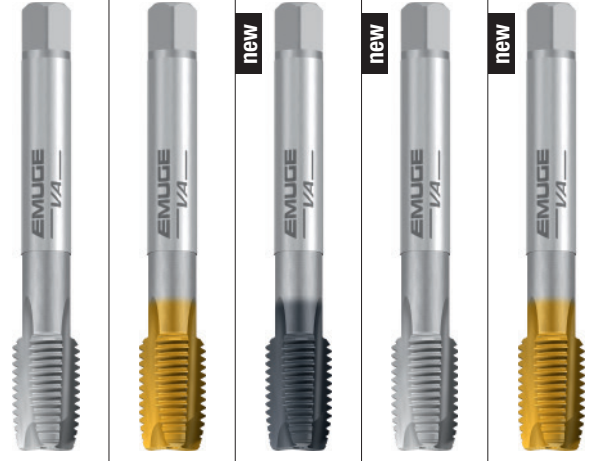


DIN 13

DIN 376



VA
Stainless steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

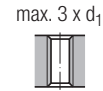
| | | | | |
|-----------|-----------|-----------|-----------|-----------|
| ISO 2/6H | ISO 2/6H | ISO 2/6H | ISO 1/4H | ISO 1/4H |
| NT | TIN | GLT-1 | NT | TIN |
| HSSE | HSSE | HSSE | HSSE | HSSE |
| B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 |
| E / O / P | E / O / P | E / O / P | E / O / P |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

Technische Informationen
Technical information

» 245 - 266



Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

| | | | | |
|--------------|--------------|-----------|--------------|--------------|
| P 1.1-3.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-3.1 | P 1.1-4.1 |
| M 1.1-2.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-2.1 | M 1.1-3.1 |
| K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 |
| N 2.2, 2.5-6 | N 2.2, 2.5-6 | N 2.2 | N 2.2, 2.5-6 | N 2.2, 2.5-6 |

Werkzeug-Ident · Tool ident

| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | Dimens.- Ident | Rekord 2B-VA NT | Rekord 2B-VA TIN | Rekord 2B-VA GLT-1 | Rekord 2B-VA NT „4H“ | Rekord 2B-VA TIN „4H“ |
|---|------------------------|---------|----------------|----------------|------------------|------|-------------------|-----------------|------------------|--------------------|----------------------|-----------------------|
| | | | | | | | | C0203000 | C0203100 | C020C300 | C0203010 | C0203110 |
| | 3 | 0,5 | 56 | 11 | 2,2 | – | .0030 | | | | | |
| | 4 | 0,7 | 63 | 13 | 2,8 | 2,1 | .0040 | | | | | |
| | 5 | 0,8 | 70 | 15 | 3,5 | 2,7 | .0050 | ● | ● | ● | | |
| | 6 | 1 | 80 | 17 | 4,5 | 3,4 | .0060 | ● | ● | ● | | |
| | 7 | 1 | 80 | 17 | 5,5 | 4,3 | .0070 | | | | | |
| | 8 | 1,25 | 90 | 20 | 6 | 4,9 | .0080 | ● | ● | ● | | |
| | 9 | 1,25 | 90 | 20 | 7 | 5,5 | .0090 | | | | | |
| | 10 | 1,5 | 100 | 22 | 7 | 5,5 | .0100 | ● | ● | ● | | |
| | 11 | 1,5 | 100 | 22 | 8 | 6,2 | .0111 | ● | ● | ● | | |
| | 12 | 1,75 | 110 | 24 | 9 | 7 | .0112 | ● | ● | ● | ● | ○ |
| | 14 | 2 | 110 | 26 | 11 | 9 | .0114 | ● | ● | ● | ○ | ○ |
| | 16 | 2 | 110 | 27 | 12 | 9 | .0116 | ● | ● | ● | ● | ○ |
| | 18 | 2,5 | 125 | 30 | 14 | 11 | .0118 | ● | ● | ● | ○ | ○ |
| | 20 | 2,5 | 140 | 32 | 16 | 12 | .0120 | ● | ● | ● | ● | ○ |
| | 22 | 2,5 | 140 | 32 | 18 | 14,5 | .0122 | ● | ● | ● | ○ | ○ |
| | 24 | 3 | 160 | 34 | 18 | 14,5 | .0124 | ● | ● | ● | ● | ○ |
| | 27 | 3 | 160 | 36 | 20 | 16 | .0127 | ● | ● | ● | | |
| | 30 | 3,5 | 180 | 40 | 22 | 18 | .0130 | ● | ● | ● | | |
| | 33 | 3,5 | 180 | 40 | 25 | 20 | .0133 | ● | ○ | ○ | | |
| | 36 | 4 | 200 | 50 | 28 | 22 | .0136 | ● | ○ | ○ | | |
| | 39 | 4 | 200 | 50 | 32 | 24 | .0139 | ● | ○ | ○ | | |
| | 42 | 4,5 | 200 | 56 | 32 | 24 | .0142 | ● | ○ | ○ | | |
| | 45 | 4,5 | 220 | 58 | 36 | 29 | .0145 | ● | ○ | ○ | | |
| | 48 | 5 | 250 | 65 | 36 | 29 | .0148 | ● | ○ | ○ | | |
| | 52 | 5 | 250 | 65 | 40 | 32 | .0152 | ● | ○ | ○ | | |

DIN 371 41
DIN 352 91

VA
Stainless steel
materials

| | | | | | | | | | | |
|-----------------|-----------------|-----------------|-----------------|-----------|------------|------------|------------|------------|------------|------------|
| new | | new | new | | new | new | new | new | new | new |
| | | | | | | | | | | |
| ISO 1/4H | ISO 3/6G | ISO 3/6G | 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 | NT | TIN | GLT-1 | GLT-1 |
| HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE |
| | | | | | | | LH | LH | LH | |
| B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 |
| E / O / P | E / O / P | E / O / P | 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 d₁



| | | | | | | | | | |
|----------------------------------|-------------------------------|--------------------------------|----------------------------------|-------------------------------|--------------------------------|----------------------------------|--------------------------|---------------------------|-----------------------------|
| P 1.1-4.1 | P 1.1-3.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-3.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-3.1 | P 1.1-4.1 | P 1.1-4.1 |
| M 1.1-3.1 | M 1.1-2.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-2.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-2.1 | M 1.1-3.1 | M 1.1-3.1 |
| K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 |
| N 2.2 | N 2.2, 2.5-6 | N 2.2, 2.5-6 | N 2.2 | N 2.2, 2.5-6 | N 2.2, 2.5-6 | N 2.2 | N 2.2, 2.5-6 | N 2.2, 2.5-6 | N 2.2 |
| C020C310 | C0203020 | C0203120 | C020C320 | C0203030 | C0203130 | C020C330 | C0203050 | C0203150 | C020C350 |
| Rekord 2B-VA GLT-1 „4H“ | Rekord 2B-VA NT „6G“ | Rekord 2B-VA TIN „6G“ | Rekord 2B-VA GLT-1 „6G“ | Rekord 2B-VA NT „7G“ | Rekord 2B-VA TIN „7G“ | Rekord 2B-VA GLT-1 „7G“ | Rekord 2B-VA-LH NT | Rekord 2B-VA-LH TIN | Rekord 2B-VA-LH GLT-1 |

| | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----------|----|
| | | | | | | | | | | 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 |
| 41 | 41 | 41 | 42 | 42 | 42 | 42 | 42 | 43 | 43 | | |

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

Product Finder

Vc

M

MF

UNC UN-8

UNF UNEF

G, Rp NPSM, NPSF

NPT, NPTF Rc, W

BSW, BSF

Pg

MJ UNJC, UNJF

EG (ST) SELF-LOCK

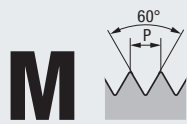
Tr, Tr-F Rd

Zubehör Accessories

Tech. Info

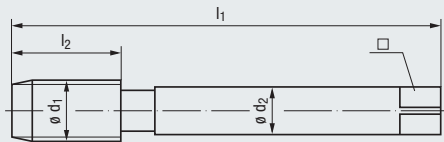


- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

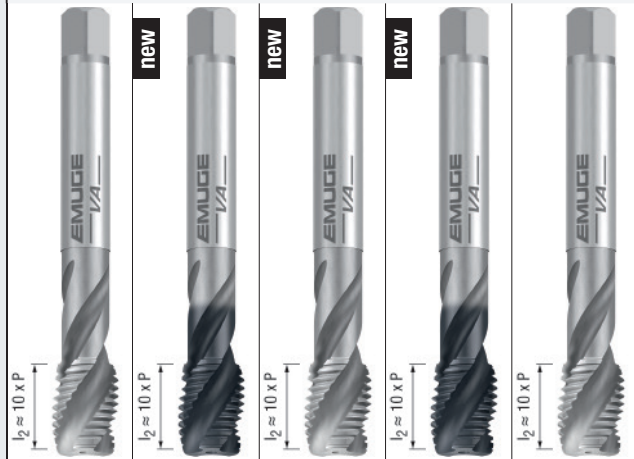


DIN 13

DIN 376



VA
Stainless steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266

| | | | | |
|-----------|-----------|-----------|-----------|-----------|
| ISO 2/6H | ISO 2/6H | ISO 1/4H | ISO 1/4H | ISO 3/6G |
| HSSE | GLT-1 | HSSE | GLT-1 | HSSE |
| R35 | R35 | R35 | R35 | R35 |
| 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 |

Gewindetiefe und Lochform
Thread depth and hole type

max. 2,5 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | | | |
|-----------|-----------|-----------|-----------|-----------|
| 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 |
| M 1.1-2.1 | M 1.1-3.1 | M 1.1-2.1 | M 1.1-3.1 | M 1.1-2.1 |
| K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 |

Werkzeug-Ident · Tool ident

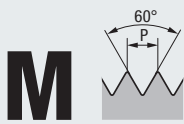
| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | Dimens.- Ident | Enorm 2-VA | | | | |
|---|------------------------|---------|----------------|----------------|------------------|------|-------------------|------------|----------|----------|----------|----------|
| | | | | | | | | C0503000 | C050C300 | C0503010 | C050C310 | C0503020 |
| | 3 | 0,5 | 56 | 11 | 2,2 | – | .0030 | ○ | | | | |
| | 4 | 0,7 | 63 | 13 | 2,8 | 2,1 | .0040 | ○ | | | | |
| | 5 | 0,8 | 70 | 15 | 3,5 | 2,7 | .0050 | ○ | | | | |
| | 6 | 1 | 80 | 17 | 4,5 | 3,4 | .0060 | ○ | | | | |
| | 7 | 1 | 80 | 17 | 5,5 | 4,3 | .0070 | ○ | | | | |
| | 8 | 1,25 | 90 | 20 | 6 | 4,9 | .0080 | ○ | | | | |
| | 9 | 1,25 | 90 | 20 | 7 | 5,5 | .0090 | ○ | | | | |
| | 10 | 1,5 | 100 | 22 | 7 | 5,5 | .0100 | ○ | | | | |
| | 11 | 1,5 | 100 | 22 | 8 | 6,2 | .0111 | ○ | | | | |
| | 12 | 1,75 | 110 | 24 | 9 | 7 | .0112 | ● | ○ | ● | ○ | ● |
| | 14 | 2 | 110 | 26 | 11 | 9 | .0114 | ● | ○ | ○ | ○ | ○ |
| | 16 | 2 | 110 | 27 | 12 | 9 | .0116 | ● | ○ | ● | ○ | ● |
| | 18 | 2,5 | 125 | 30 | 14 | 11 | .0118 | ● | ○ | ○ | ○ | ○ |
| | 20 | 2,5 | 140 | 32 | 16 | 12 | .0120 | ● | ○ | ● | ○ | ● |
| | 22 | 2,5 | 140 | 32 | 18 | 14,5 | .0122 | ● | ○ | ○ | ○ | ○ |
| | 24 | 3 | 160 | 34 | 18 | 14,5 | .0124 | ● | ○ | ● | ○ | ● |
| | 27 | 3 | 160 | 36 | 20 | 16 | .0127 | ● | ○ | | | |
| | 30 | 3,5 | 180 | 40 | 22 | 18 | .0130 | ● | ○ | | | |
| | 33 | 3,5 | 180 | 40 | 25 | 20 | .0133 | ○ | | | | |
| | 36 | 4 | 200 | 50 | 28 | 22 | .0136 | ○ | | | | |
| | 39 | 4 | 200 | 50 | 32 | 24 | .0139 | ○ | | | | |
| | 42 | 4,5 | 200 | 56 | 32 | 24 | .0142 | ○ | | | | |
| | 45 | 4,5 | 220 | 58 | 36 | 29 | .0145 | ○ | | | | |
| | 48 | 5 | 250 | 65 | 36 | 29 | .0148 | ○ | | | | |
| | 52 | 5 | 250 | 65 | 40 | 32 | .0152 | | | | | |

DIN 371

43 43 43 43 43

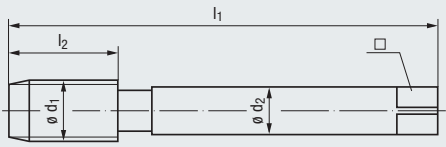
DIN 352

- Product Finder
- Vc
- 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
- Tech. Info



DIN 13

DIN 376



GJV
Cast iron
vermicular



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

Technical information [» 245 - 266](#)

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

Gewindetiefe und Lochform
Thread depth and hole type

| | | | | |
|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| max. 2 x d ₁ | max. 2 x d ₁ | max. 2 x d ₁ | max. 2 x d ₁ | max. 2 x d ₁ |
| | | | | |

Einsatzgebiete – Material
Applications – material

Applications – material [» 22](#)

























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

Werkzeug-Ident · Tool ident

| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | | Dimens.- Ident | C010R501 | C195R501 | C106R501 | C011R501 | C196R501 |
|---|------------------------|---------|----------------|----------------|------------------|------|------|-------------------|-----------------------------|------------------------------------|-------------------------------------|-------------------------------|--------------------------------------|
| | | | | | | | | | Rekord 2A-GJV PM-TICN | Rekord 2A-GJV IKZ-PM TICN | Rekord 2A-GJV IKZN-PM TICN | Rekord 2A-GJV/E PM-TICN | Rekord 2A-GJV/E IKZ-PM TICN |
| | 3 | 0,5 | 56 | 11 | 2,2 | – | 2,5 | .0030 | | | | | |
| | 4 | 0,7 | 63 | 13 | 2,8 | 2,1 | 3,3 | .0040 | | | | | |
| | 5 | 0,8 | 70 | 15 | 3,5 | 2,7 | 4,2 | .0050 | | | | | |
| | 6 | 1 | 80 | 17 | 4,5 | 3,4 | 5 | .0060 | | | | | |
| | 7 | 1 | 80 | 17 | 5,5 | 4,3 | 6 | .0070 | | | | | |
| | 8 | 1,25 | 90 | 20 | 6 | 4,9 | 6,8 | .0080 | | | | | |
| | 9 | 1,25 | 90 | 20 | 7 | 5,5 | 7,8 | .0090 | | | | | |
| | 10 | 1,5 | 100 | 22 | 7 | 5,5 | 8,5 | .0100 | | | | | |
| | 11 | 1,5 | 100 | 22 | 8 | 6,2 | 9,5 | .0111 | | | | | |
| | 12 | 1,75 | 110 | 24 | 9 | 7 | 10,2 | .0112 | ● | ● | ○ | ● | ● |
| | 14 | 2 | 110 | 26 | 11 | 9 | 12 | .0114 | | | | | |
| | 16 | 2 | 110 | 27 | 12 | 9 | 14 | .0116 | ● | ● | ○ | ● | ● |
| | 18 | 2,5 | 125 | 30 | 14 | 11 | 15,5 | .0118 | | | | | |
| | 20 | 2,5 | 140 | 32 | 16 | 12 | 17,5 | .0120 | | ● | ○ | | ● |
| | 22 | 2,5 | 140 | 32 | 18 | 14,5 | 19,5 | .0122 | | | | | |
| | 24 | 3 | 160 | 34 | 18 | 14,5 | 21 | .0124 | | | | | |
| | 27 | 3 | 160 | 36 | 20 | 16 | 24 | .0127 | | | | | |
| | 30 | 3,5 | 180 | 40 | 22 | 18 | 26,5 | .0130 | | | | | |
| | 33 | 3,5 | 180 | 40 | 25 | 20 | 29,5 | .0133 | | | | | |
| | 36 | 4 | 200 | 50 | 28 | 22 | 32 | .0136 | | | | | |
| | 39 | 4 | 200 | 50 | 32 | 24 | 35 | .0139 | | | | | |
| | 42 | 4,5 | 200 | 56 | 32 | 24 | 37,5 | .0142 | | | | | |
| | 45 | 4,5 | 220 | 58 | 36 | 29 | 40,5 | .0145 | | | | | |
| | 48 | 5 | 250 | 65 | 36 | 29 | 43 | .0148 | | | | | |
| | 52 | 5 | 250 | 65 | 40 | 32 | 47 | .0152 | | | | | |

| | | | | |
|---------|--|--|--|--|
| DIN 371 | | | | |
| DIN 352 | | | | |

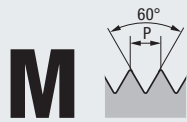
1) Gewindebohren in Durchgangslöcher nur mit externer Kühlschmierung möglich
Threading in through holes is possible only with external cooling/lubrication

| GJV Cast iron vermicular | | AL Aluminium wrought alloys | | | | TI Titanium | | | |
|--|--|--|--|--|--|--|--|--|-----|
|  | |  |  |  |  |  |  |  | |
| 6HX | | ISO 2/6H | ISO 2/6H | ISO 2/6H | ISO 2/6H | 6HX | 6HX | 6HX | |
| TICN | | | GLT-8 | | GLT-8 | NT2 | TICN | NT2 | |
| HSSE-PM | | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | |
| E / 1,5-2 | | B / ≈3 | B / ≈3 | C / 2-3 | C / 2-3 | L15 | L15 | R15 | |
| E | | E / 0 | E / 0 | E / 0 | E / 0 | D / 4-5 | D / 4-5 | C / 2-3 | |
| E / 0 / P | | E / 0 / P | E / 0 / P | E / 0 / P | E / 0 / P | E / 0 / P | E / 0 / P | E / 0 / P | |
| max. 2 x d ₁ | | max. 3 x d ₁ | max. 3 x d ₁ | max. 2,5 x d ₁ | max. 2,5 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ | max. 2 x d ₁ | |
|  | |  |  |  |  |  |  |  | |
| K 1.1-4.2 | | N 1.1-4 | N 1.1-4 | N 1.1-4 | N 1.1-4 | P 4.1-5.1 | P 4.1-5.1 | P 4.1-5.1 | |
| | | | | | | M 3.1-4.1 | M 3.1-4.1 | M 3.1-4.1 | |
| | | | | | | N 2.4-5, 2.7 | N 2.4-5, 2.7 | N 2.4-5, 2.7 | |
| | | | | | | S 1.1-2.2, 2.4 | S 1.1-2.2, 2.4 | S 1.1-2.2, 2.4 | |
| C109R501 | | C0204500 | C020S800 | C0504500 | C050S800 | C0306001 | C0309601 | C0456001 | |
| Rekord 2A-GJV/E IKZN-PM TICN | | Rekord 2B-AL | Rekord 2B-AL GLT-8 | Enorm 2-AL | Enorm 2-AL GLT-8 | Rekord 2C-TI NT2 | Rekord 2C-TI TICN | Rekord 2D-TI NT2 | |
| | | | | | | | | | M 3 |
| | | | | | | | | | 4 |
| | | | | | | | | | 5 |
| | | | | | | | | | 6 |
| | | | | | | | | | 7 |
| | | | | | | | | | 8 |
| | | | | | | | | | 9 |
| | | | | | | | | | 10 |
| | | | | | | | | | 11 |
| ○ | | ● | ● | ● | ● | ● | ● | ● | 12 |
| ○ | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 14 |
| ○ | | ● | ● | ● | ● | ● | ● | ● | 16 |
| | | | | | | | | | 18 |
| ○ | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 20 |
| | | | | | | | | | 22 |
| | | | | | | | | | 24 |
| | | | | | | | | | 27 |
| | | | | | | | | | 30 |
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| | | | | | | | | | 45 |
| | | | | | | | | | 48 |
| | | | | | | | | | 52 |
|  45 | |  46 |  46 |  46 |  46 |  48 |  49 |  49 | |

- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

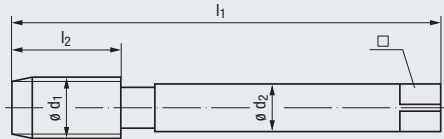


- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



DIN 13

DIN 376



TI
Titanium



NI
Nickel alloys



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



- 6HX
- TICN
- HSSE
- R15
- C / 2-3
- E / O / P

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

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

Gewindetiefe und Lochform
Thread depth and hole type

max. 2 x d₁



max. 3 x d₁



max. 2 x d₁



Einsatzgebiete – Material
Applications – material

» 22

- P 4.1-5.1**
- M 3.1-4.1**
- N 2.4-5, 2.7**
- S 1.1-2.2, 2.4**

- M 4.1**
- N 2.8**
- S 1.2-3**
- S 2.3, 2.5-6**

- M 4.1**
- N 2.8**
- S 1.2-3**
- S 2.3, 2.5-6**

Werkzeug-Ident · Tool ident

C0459601

C030J401

C438J401

| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | Dimens.- Ident | Rekord 2D-TI TICN | Rekord 2C-NI-PM TICN | Rekord 2DF-NI-PM TICN |
|---|------------------------|---------|----------------|----------------|------------------|------|--------------------|-------------------------|----------------------------|-----------------------------|
| | | | | | | | | | | |
| | 3 | 0,5 | 56 | 11 | 2,2 | – | 2,5 | .0030 | | |
| | 4 | 0,7 | 63 | 13 | 2,8 | 2,1 | 3,3 | .0040 | | |
| | 5 | 0,8 | 70 | 15 | 3,5 | 2,7 | 4,2 | .0050 | | |
| | 6 | 1 | 80 | 17 | 4,5 | 3,4 | 5 | .0060 | | |
| | 7 | 1 | 80 | 17 | 5,5 | 4,3 | 6 | .0070 | | |
| | 8 | 1,25 | 90 | 20 | 6 | 4,9 | 6,8 | .0080 | | |
| | 9 | 1,25 | 90 | 20 | 7 | 5,5 | 7,8 | .0090 | | |
| | 10 | 1,5 | 100 | 22 | 7 | 5,5 | 8,5 | .0100 | | |
| | 11 | 1,5 | 100 | 22 | 8 | 6,2 | 9,5 | .0111 | | |
| | 12 | 1,75 | 110 | 24 | 9 | 7 | 10,2 ²⁾ | .0112 | ● | ● |
| | 14 | 2 | 110 | 26 | 11 | 9 | 12 ²⁾ | .0114 | ○ | ○ |
| | 16 | 2 | 110 | 27 | 12 | 9 | 14 ²⁾ | .0116 | ● | ● |
| | 18 | 2,5 | 125 | 30 | 14 | 11 | 15,5 | .0118 | ○ | ○ |
| | 20 | 2,5 | 140 | 32 | 16 | 12 | 17,5 ²⁾ | .0120 | ● | ● |
| | 22 | 2,5 | 140 | 32 | 18 | 14,5 | 19,5 | .0122 | ○ | ○ |
| | 24 | 3 | 160 | 34 | 18 | 14,5 | 21 | .0124 | ● | ● |
| | 27 | 3 | 160 | 36 | 20 | 16 | 24 | .0127 | | |
| | 30 | 3,5 | 180 | 40 | 22 | 18 | 26,5 | .0130 | | |
| | 33 | 3,5 | 180 | 40 | 25 | 20 | 29,5 | .0133 | | |
| | 36 | 4 | 200 | 50 | 28 | 22 | 32 | .0136 | | |
| | 39 | 4 | 200 | 50 | 32 | 24 | 35 | .0139 | | |
| | 42 | 4,5 | 200 | 56 | 32 | 24 | 37,5 | .0142 | | |
| | 45 | 4,5 | 220 | 58 | 36 | 29 | 40,5 | .0145 | | |
| | 48 | 5 | 250 | 65 | 36 | 29 | 43 | .0148 | | |
| | 52 | 5 | 250 | 65 | 40 | 32 | 47 | .0152 | | |

DIN 371 49

49

49

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

| H Materials of high tensile strength | | | | | | HCUT Hardened steels | | | |
|---|------------------|-----------------------------|----------------------|-----------------------------|-----------------------------|-------------------------------|--|--|-----|
| | | | | | | | | | |
| 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | | | |
| NT | TICN | NT | TICN | TICN | KHM | TICN | | | |
| HSSE | HSSE | HSSE | HSSE | HSSE | | HSSE-PM | | | |
| C / 2-3 | 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 | E / O | E / O | E / O | O / P | | | |
| max. 2 x d ₁ | | max. 2 x d ₁ | | max. 2 x d ₁ | max. 2 x d ₁ | max. 1,5 x d ₁ | | | |
| P 1.1-3.1 | P 1.1-4.1 | P 1.1-3.1 | P 1.1-4.1 | P 1.1-4.1 | P 5.1 | H 1.1-2 | | | |
| 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 | | | | |
| N 2.4-7 | N 2.4-7 | N 2.4-7 | N 2.4-7 | N 2.4-7 | N 1.5-6, 2.6-8 | | | | |
| N 4.1, 5.1 | N 4.1, 5.1 | N 4.1, 5.1 | N 4.1, 5.1 | N 4.1, 5.1 | N 4.1, 4.3-5.2 | | | | |
| | | | | | H 1.1-2 | | | | |
| C0100501 | C0109101 | C1950501 | C1959101 | C1069101 | C1950901 | C010J901 | | | |
| Rekord 2A-H NT | Rekord 2A-H TICN | Rekord 2A-H-IKZ NT | Rekord 2A-H-IKZ TICN | Rekord 2A-H-IKZ TICN | KHM-Rekord 2A-H-IKZ | Rekord 2A-HCUT-PM TICN | | | |
| | | | | | | | | | 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 |
| 📄 49 | 📄 50 | 📄 50 | 📄 50 | 📄 50 | 📄 50 | 📄 51 | | | |

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

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

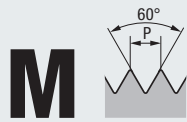
Tr, Tr-F Rd

Zubehör Accessories

Tech. Info

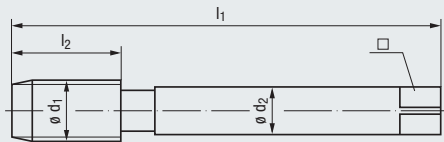


- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



DIN 13

DIN 376



Z
CNC-controlled machines



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266

» 245 - 266



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

Gewindetiefe und Lochform
Thread depth and hole type

| | | | | |
|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| max. 2 x d ₁ | max. 2 x d ₁ | max. 2 x d ₁ | max. 2 x d ₁ | max. 2 x d ₁ |
| | | | | |

Einsatzgebiete – Material
Applications – material

» 22

| | | | | |
|----------------|----------------|----------------|----------------|----------------|
| P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 |
| 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 |
| N 1.4-6, 2.4-7 | N 1.4-6, 2.4-7 | N 1.4-6, 2.4-7 | N 1.4-6, 2.4-7 | N 1.4-6, 2.4-7 |
| N 4.1 | N 4.1 | N 4.1 | N 4.1 | N 4.1 |

Werkzeug-Ident · Tool ident

| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | | Dimens.- Ident | Werkzeug-Ident · Tool ident | | | | |
|---|------------------------|---------|----------------|----------------|------------------|------|------|-------------------|-----------------------------|--------------------------------|---------------------------------|------------------------------|--------------------------------|
| | | | | | | | | | Rekord 2A-Z TICN | Rekord 2A-Z- IKZ TICN | Rekord 2A-Z- IKZN TICN | Rekord 2A-Z/ E TICN | Rekord 2A-Z- IKZ TICN |
| | 3 | 0,5 | 56 | 6 | 2,2 | – | 2,5 | .0030 | | | | | |
| | 4 | 0,7 | 63 | 7 | 2,8 | 2,1 | 3,3 | .0040 | | | | | |
| | 5 | 0,8 | 70 | 8 | 3,5 | 2,7 | 4,2 | .0050 | | | | | |
| | 6 | 1 | 80 | 10 | 4,5 | 3,4 | 5 | .0060 | | | | | |
| | 7 | 1 | 80 | 10 | 5,5 | 4,3 | 6 | .0070 | | | | | |
| | 8 | 1,25 | 90 | 14 | 6 | 4,9 | 6,8 | .0080 | | | | | |
| | 9 | 1,25 | 90 | 14 | 7 | 5,5 | 7,8 | .0090 | | | | | |
| | 10 | 1,5 | 100 | 16 | 7 | 5,5 | 8,5 | .0100 | | | | | |
| | 11 | 1,5 | 100 | 18 | 8 | 6,2 | 9,5 | .0111 | | | | | |
| | 12 | 1,75 | 110 | 18 | 9 | 7 | 10,2 | .0112 | ● | ● | ○ | ● | ● |
| | 14 | 2 | 110 | 20 | 11 | 9 | 12 | .0114 | ● | ● | ○ | ● | ● |
| | 16 | 2 | 110 | 22 | 12 | 9 | 14 | .0116 | ● | ● | ○ | ● | ● |
| | 18 | 2,5 | 125 | 25 | 14 | 11 | 15,5 | .0118 | ○ | ○ | ○ | ○ | ○ |
| | 20 | 2,5 | 140 | 25 | 16 | 12 | 17,5 | .0120 | ● | ● | ○ | ● | ● |
| | 22 | 2,5 | 140 | 27 | 18 | 14,5 | 19,5 | .0122 | | | | | |
| | 24 | 3 | 160 | 30 | 18 | 14,5 | 21 | .0124 | | ● | ○ | | |
| | 27 | 3 | 160 | 30 | 20 | 16 | 24 | .0127 | | | | | |
| | 30 | 3,5 | 180 | 35 | 22 | 18 | 26,5 | .0130 | | | | | |
| | 33 | 3,5 | 180 | 35 | 25 | 20 | 29,5 | .0133 | | | | | |
| | 36 | 4 | 200 | 40 | 28 | 22 | 32 | .0136 | | | | | |
| | 39 | 4 | 200 | 40 | 32 | 24 | 35 | .0139 | | | | | |
| | 42 | 4,5 | 200 | 45 | 32 | 24 | 37,5 | .0142 | | | | | |
| | 45 | 4,5 | 220 | 45 | 36 | 29 | 40,5 | .0145 | | | | | |
| | 48 | 5 | 250 | 50 | 36 | 29 | 43 | .0148 | | | | | |
| | 52 | 5 | 250 | 50 | 40 | 32 | 47 | .0152 | | | | | |

DIN 371

» 53

» 53

» 53

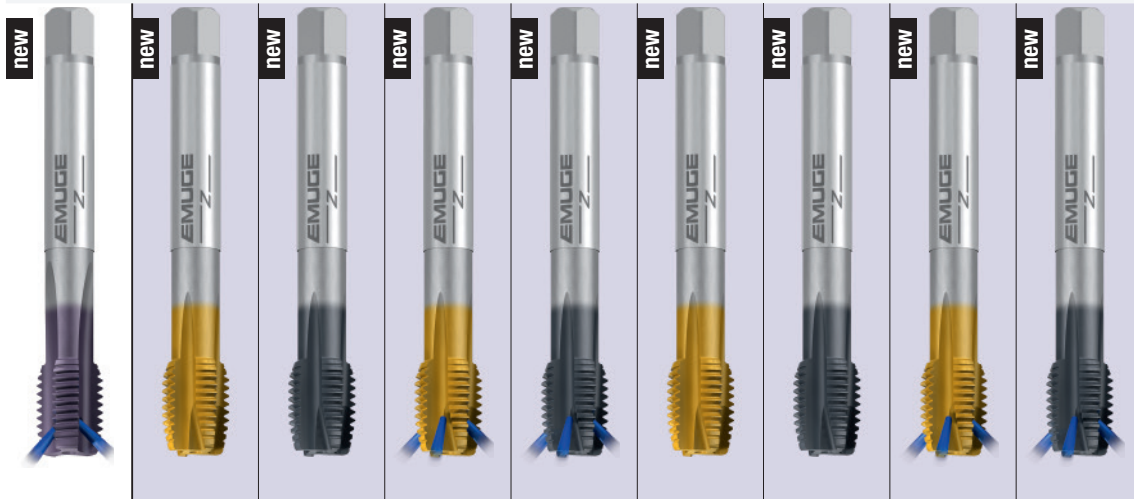
» 53

» 53

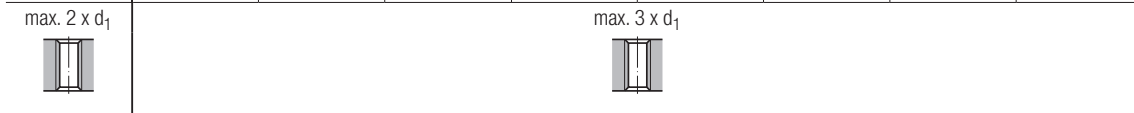
DIN 352

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 | 6HX | 6HX | 6HX | 6HX | 6GX | 6GX | 6GX | 6GX |
| TICN | TIN-70 | GLT-1 | TIN-70 | GLT-1 | TIN-70 | GLT-1 | TIN-70 | GLT-1 |
| HSSE | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| E / 1,5-2 | B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 |
| E / O | E / O / P | E / O / P | E / O | E / O | E / O / P | E / O / P | E / O | E / O |



| | | | | | | | | |
|-----------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| P 1.1-4.1 | P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 |
| K 1.1-4.2 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 |
| N 1.4-6, 2.4-7 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 |
| N 4.1 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 |
| S 1.1 | S 1.1 | S 1.1 | S 1.1 | S 1.1 | S 1.1 | S 1.1 | S 1.1 | S 1.1 |

| | | | | | | | | |
|-------------------------|-----------------------|----------------------|----------------------------|---------------------------|-----------------------------|----------------------------|----------------------------------|---------------------------------|
| C1099401 | C0208F01 | C020A601 | C1088F01 | C108A601 | C0208F21 | C020A621 | C1088F21 | C108A621 |
| Rekord 2A-Z/E-1KZN TICN | Rekord 2B-Z-PM TIN-70 | Rekord 2B-Z-PM GLT-1 | Rekord 2B-Z-1KZN PM-TIN-70 | Rekord 2B-Z-1KZN PM-GLT-1 | Rekord 2B-Z-PM TIN-70 „6GX“ | Rekord 2B-Z-PM GLT-1 „6GX“ | Rekord 2B-Z-1KZN PM-TIN-70 „6GX“ | Rekord 2B-Z-1KZN PM-GLT-1 „6GX“ |

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

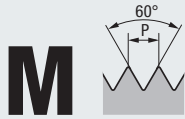
| | | | | | | | | |
|--|--|--|--|--|--|--|--|--|
| | | | | | | | | |
|--|--|--|--|--|--|--|--|--|

- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



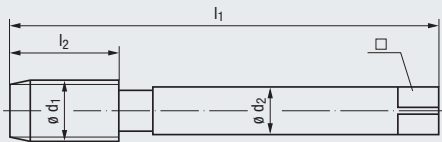
● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

- 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
- Tech. Info



DIN 13

DIN 376



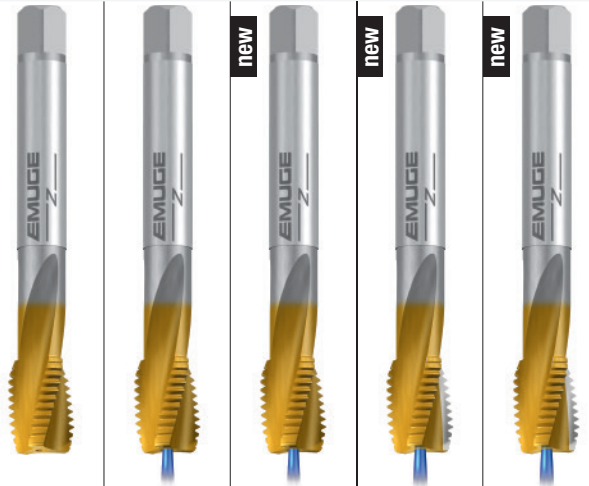
Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266



Z
CNC-controlled machines



| | | | | |
|-----------|---------|------------------|---------|------------------|
| 6HX | 6HX | 6HX | 6HX | 6HX |
| TIN | TIN | TIN | TIN | TIN |
| HSSE | HSSE | HSSE | HSSE | HSSE |
| R15 | R15 | R15 | R15 | R15 |
| C / 2-3 | C / 2-3 | E / 1,5-2 | C / 2-3 | E / 1,5-2 |
| E / O / P | E / O | E / O | E / O | E / O |

Gewindetiefe und Lochform
Thread depth and hole type

max. 2 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| P 2.1-5.1 | P 2.1-5.1 | P 2.1-5.1 | P 2.1-5.1 | P 2.1-5.1 |
| K 2.1-2 | K 2.1-2 | K 2.1-2 | K 2.1-2 | K 2.1-2 |
| N 1.4-6, 2.4-5 | N 1.4-6, 2.4-5 | N 1.4-6, 2.4-5 | N 1.4-6, 2.4-5 | N 1.4-6, 2.4-5 |

Werkzeug-Ident · Tool ident

C0453701 C0963701 C0983701 C4253701 C4053701

| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | Ø | Dimens.- Ident | Rekord | Rekord | Rekord | Rekord | Rekord |
|---|------------------------|---------|----------------|----------------|------------------|------|------|-------------------|-------------|---------------------|-----------------------|--------------------|----------------------|
| | | | | | | | | | 2D-Z TIN | 2D-Z- IKZ TIN | 2D-Z/E- IKZ TIN | 2D-Z-BF IKZ-TIN | 2D-Z-E-BF IKZ-TIN |
| | 3 | 0,5 | 56 | 6 | 2,2 | – | 2,5 | .0030 | | | | | |
| | 4 | 0,7 | 63 | 7 | 2,8 | 2,1 | 3,3 | .0040 | | | | | |
| | 5 | 0,8 | 70 | 8 | 3,5 | 2,7 | 4,2 | .0050 | | | | | |
| | 6 | 1 | 80 | 10 | 4,5 | 3,4 | 5 | .0060 | | | | | |
| | 7 | 1 | 80 | 10 | 5,5 | 4,3 | 6 | .0070 | | | | | |
| | 8 | 1,25 | 90 | 14 | 6 | 4,9 | 6,8 | .0080 | | | | | |
| | 9 | 1,25 | 90 | 14 | 7 | 5,5 | 7,8 | .0090 | | | | | |
| | 10 | 1,5 | 100 | 16 | 7 | 5,5 | 8,5 | .0100 | | | | | |
| | 11 | 1,5 | 100 | 18 | 8 | 6,2 | 9,5 | .0111 | | | | | |
| | 12 | 1,75 | 110 | 18 | 9 | 7 | 10,2 | .0112 | ● | ● | ● | ● | ● |
| | 14 | 2 | 110 | 20 | 11 | 9 | 12 | .0114 | | ○ | | ○ | |
| | 16 | 2 | 110 | 22 | 12 | 9 | 14 | .0116 | ● | ● | ● | ● | ● |
| | 18 | 2,5 | 125 | 25 | 14 | 11 | 15,5 | .0118 | | ○ | | ○ | |
| | 20 | 2,5 | 140 | 25 | 16 | 12 | 17,5 | .0120 | ● | ● | ● | ● | ● |
| | 22 | 2,5 | 140 | 27 | 18 | 14,5 | 19,5 | .0122 | | | | ○ | |
| | 24 | 3 | 160 | 30 | 18 | 14,5 | 21 | .0124 | | ○ | | ○ | |
| | 27 | 3 | 160 | 30 | 20 | 16 | 24 | .0127 | | ○ | | ○ | |
| | 30 | 3,5 | 180 | 35 | 22 | 18 | 26,5 | .0130 | | ● | | ○ | |
| | 33 | 3,5 | 180 | 35 | 25 | 20 | 29,5 | .0133 | | | | | |
| | 36 | 4 | 200 | 40 | 28 | 22 | 32 | .0136 | | | | | |
| | 39 | 4 | 200 | 40 | 32 | 24 | 35 | .0139 | | | | | |
| | 42 | 4,5 | 200 | 45 | 32 | 24 | 37,5 | .0142 | | | | | |
| | 45 | 4,5 | 220 | 45 | 36 | 29 | 40,5 | .0145 | | | | | |
| | 48 | 5 | 250 | 50 | 36 | 29 | 43 | .0148 | | | | | |
| | 52 | 5 | 250 | 50 | 40 | 32 | 47 | .0152 | | | | | |

DIN 371

» 55

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DIN 352

Z
CNC-controlled
machines

| | | | | | | | | | |
|----------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|----------------|----------------|
| new | new | new | new | new | new | new | new | new | new |
| | | | | | | | | | |
| 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6GX | 6GX |
| TIN-60 | GLT-1 | TIN-60 | GLT-1 | TIN-60 | GLT-1 | TIN-60 | GLT-1 | TIN-60 | GLT-1 |
| HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| R45 | R45 | R45 | R45 | R45 | R45 | R45 | R45 | R45 | R45 |
| C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | 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 | E / O | E / O / P | E / O / P | E / O | E / O | E / O / P | E / O / P |

max. 3 x d₁



| | | | | | | | | | |
|------------------------------|-----------------------------|----------------------------------|---------------------------------|--------------------------------|-------------------------------|------------------------------------|-----------------------------------|------------------------------------|-----------------------------------|
| P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 |
| M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 |
| K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 |
| N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 |
| S 1.1 | S 1.1 | S 1.1 | S 1.1 | S 1.1 | S 1.1 | S 1.1 | S 1.1 | S 1.1 | S 1.1 |
| C5760F01 | C576A601 | C5810F01 | C581A601 | C5820F01 | C582A601 | C5830F01 | C583A601 | C5760F21 | C576A621 |
| Enorm 2-Z-X-PM TIN-60 | Enorm 2-Z-X-PM GLT-1 | Enorm 2-Z-X IKZ-PM TIN-60 | Enorm 2-Z-X IKZ-PM GLT-1 | Enorm 2-Z/E-X-PM TIN-60 | Enorm 2-Z/E-X-PM GLT-1 | Enorm 2-Z/E-X IKZ-PM TIN-60 | Enorm 2-Z/E-X IKZ-PM GLT-1 | Enorm 2-Z-X-PM TIN-60 „6GX“ | Enorm 2-Z-X-PM GLT-1 „6GX“ |

| | | | | | | | | | | | |
|------|------|------|------|------|------|------|------|------|------|---|----|
| | | | | | | | | | | M | 3 |
| | | | | | | | | | | | 4 |
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| | | | | | | | | | | | 9 |
| | | | | | | | | | | | 10 |
| | | | | | | | | | | | 11 |
| ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | 12 |
| ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | 14 |
| ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | 16 |
| | | | | | | | | | | | 18 |
| ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | 20 |
| | | | | | | | | | | | 22 |
| ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | 24 |
| | | | | | | | | | | | 27 |
| ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | 30 |
| | | | | | | | | | | | 33 |
| | | | | | | | | | | | 36 |
| | | | | | | | | | | | 39 |
| | | | | | | | | | | | 42 |
| | | | | | | | | | | | 45 |
| | | | | | | | | | | | 48 |
| | | | | | | | | | | | 52 |
| 📄 56 | 📄 56 | 📄 56 | 📄 56 | 📄 56 | 📄 57 | 📄 57 | 📄 57 | 📄 57 | 📄 57 | | |

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 (ST) SELF-LOCK

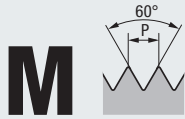
Tr, Tr-F Rd

Zubehör Accessories

Tech. Info

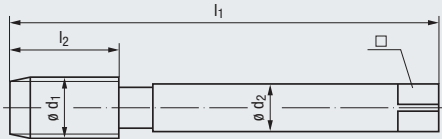


- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



DIN 13

DIN 376



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266



Z
CNC-controlled machines



| | | | | |
|----------------|----------------|------------------|------------------|------------------|
| 6GX | 6GX | 6GX | 6GX | 6GX |
| TIN-60 | GLT-1 | TIN-60 | GLT-1 | TIN-60 |
| HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| R45 | R45 | R45 | R45 | R45 |
| C / 2-3 | C / 2-3 | E / 1,5-2 | E / 1,5-2 | E / 1,5-2 |
| E / 0 | E / 0 | E / 0 / P | E / 0 / P | E / 0 |

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | | | |
|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 |
| M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 |
| K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 |
| N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 |
| S 1.1 | S 1.1 | S 1.1 | S 1.1 | S 1.1 |

Werkzeug-Ident · Tool ident

| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | Dimens.- Ident | Enorm 2-Z-X- IKZ | Enorm 2-Z-X- IKZ | Enorm 2-Z/E-X- PM | Enorm 2-Z/E-X- PM | Enorm 2-Z/E-X- IKZ |
|---|------------------------|---------|----------------|----------------|------------------|------|-------------------|---------------------|---------------------|----------------------|----------------------|-----------------------|
| | | | | | | | | PM-TIN-60 „6GX“ | PM-GLT-1 „6GX“ | TIN-60 „6GX“ | GLT-1 „6GX“ | PM-TIN-60 „6GX“ |
| | 3 | 0,5 | 56 | 6 | 2,2 | – | .0030 | | | | | |
| | 4 | 0,7 | 63 | 7 | 2,8 | 2,1 | .0040 | | | | | |
| | 5 | 0,8 | 70 | 8 | 3,5 | 2,7 | .0050 | | | | | |
| | 6 | 1 | 80 | 10 | 4,5 | 3,4 | .0060 | | | | | |
| | 7 | 1 | 80 | 10 | 5,5 | 4,3 | .0070 | | | | | |
| | 8 | 1,25 | 90 | 14 | 6 | 4,9 | .0080 | | | | | |
| | 9 | 1,25 | 90 | 14 | 7 | 5,5 | .0090 | | | | | |
| | 10 | 1,5 | 100 | 16 | 7 | 5,5 | .0100 | | | | | |
| | 11 | 1,5 | 100 | 18 | 8 | 6,2 | .0111 | | | | | |
| | 12 | 1,75 | 110 | 18 | 9 | 7 | .0112 | ● | ● | ● | ● | ● |
| | 14 | 2 | 110 | 20 | 11 | 9 | .0114 | | | | | |
| | 16 | 2 | 110 | 22 | 12 | 9 | .0116 | ● | ● | ● | ● | ● |
| | 18 | 2,5 | 125 | 25 | 14 | 11 | .0118 | | | | | |
| | 20 | 2,5 | 140 | 25 | 16 | 12 | .0120 | ● | ● | ● | ● | ● |
| | 22 | 2,5 | 140 | 27 | 18 | 14,5 | .0122 | | | | | |
| | 24 | 3 | 160 | 30 | 18 | 14,5 | .0124 | ● | ● | ● | ● | ● |
| | 27 | 3 | 160 | 30 | 20 | 16 | .0127 | | | | | |
| | 30 | 3,5 | 180 | 35 | 22 | 18 | .0130 | ● | ● | ● | ● | ● |
| | 33 | 3,5 | 180 | 35 | 25 | 20 | .0133 | | | | | |
| | 36 | 4 | 200 | 40 | 28 | 22 | .0136 | | | | | |
| | 39 | 4 | 200 | 40 | 32 | 24 | .0139 | | | | | |
| | 42 | 4,5 | 200 | 45 | 32 | 24 | .0142 | | | | | |
| | 45 | 4,5 | 220 | 45 | 36 | 29 | .0145 | | | | | |
| | 48 | 5 | 250 | 50 | 36 | 29 | .0148 | | | | | |
| | 52 | 5 | 250 | 50 | 40 | 32 | .0152 | | | | | |

DIN 371

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DIN 352

Z
CNC-controlled
machines

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

max. 3 x d₁



| | | | | | | | | | | |
|--|------------------|-----------------------|-----------------------|-----------------------------|------------------|-----------------------|-----------------------|-----------------------------|-----------------------|------------------|
| P 2.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 |
| M 1.1-3.1 | M 1.1-2.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-2.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-2.1 |
| K 2.1 | N 2.1 | N 1.4-6 | N 1.4-6 | N 1.4-6 | N 2.1 | N 1.4-6 | N 1.4-6 | N 1.4-6 | N 1.4-6 | N 2.1 |
| N 1.4-2.2, 2.4-5 | | N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 | | N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 | |
| S 1.1 | | S 1.1 | S 1.1 | S 1.1 | | S 1.1 | S 1.1 | S 1.1 | S 1.1 | |
| C583A621 | C0503500 | C0503700 | C050C400 | C099C400 | C0513500 | C0513700 | C051C400 | C0973700 | C0513520 | |
| Enorm 2-Z/E-X- IKZ PM-GLT-1 „6GX“ | Enorm 2-Z | Enorm 2-Z TIN | Enorm 2-Z GLT-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 „6G“ | |
| | | | | | | | | | | M 3 |
| | | | | | | | | | | 4 |
| | | | | | | | | | | 5 |
| | | | | | | | | | | 6 |
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| | | | | | | | | | | 10 |
| | | | | | | | | | | 11 |
| ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 12 |
| | ● | ○ | ○ | | ● | ○ | ● | ○ | ○ | 14 |
| ● | ● | ○ | ○ | ● | ● | ○ | ● | ○ | ○ | 16 |
| | ● | ○ | ○ | | ● | ○ | ● | ○ | ○ | 18 |
| ● | ● | ○ | ○ | ● | ● | ○ | ● | ○ | ○ | 20 |
| | ● | ○ | ○ | | ● | ○ | ● | ○ | ○ | 22 |
| ● | ○ | | ● | | ○ | | ○ | | | 24 |
| | ○ | | | | ○ | | | | | 27 |
| | ○ | | | | ○ | | | | | 30 |
| | ○ | | | | ○ | | | | | 33 |
| | ○ | | | | ○ | | | | | 36 |
| | ○ | | | | ○ | | | | | 39 |
| | ○ | | | | ○ | | | | | 42 |
| | ○ | | | | ○ | | | | | 45 |
| | | | | | ○ | | | | | 48 |
| | | | | | | | | | | 52 |
| 📄 58 | 📄 58 | 📄 58 | 📄 58 | 📄 58 | 📄 59 | 📄 59 | 📄 59 | 📄 59 | 📄 59 | |
| | 📄 91 | | | | | | | | | |

Product Finder

V_c

M

MF

UNC UN-8

UNF UNEF

G, Rp NPSM, NPSF

NPT, NPTF Rc, W

BSW, BSF

Pg

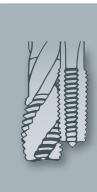
MJ UNJC, UNJF

EG (STI) SELF-LOCK

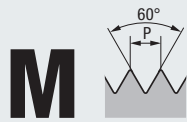
Tr, Tr-F Rd

Zubehör Accessories

Tech. Info

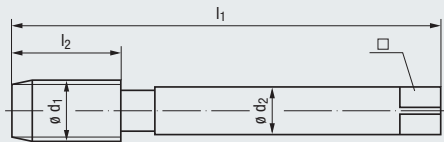


- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



DIN 13

DIN 376



Z
CNC-controlled machines



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266

| | | | |
|------------------|------------|------------|-----------------------------|
| ISO 3/6G | 6HX | 6HX | 6H +0,1²⁾ |
| TIN | | TIN | |
| HSSE | HSSE | HSSE | HSSE |
| R45 | R50 | R50 | R50 |
| E / 1,5-2 | C / 2-3 | C / 2-3 | C / 2-3 |
| E / O / P | E / O / P | E / O / P | E / O / P |

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | | |
|-----------------------|------------------|-----------------------|------------------|
| P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 |
| M 1.1-3.1 | M 1.1-2.1 | M 1.1-3.1 | M 1.1-2.1 |
| N 1.4-6 | N 2.1 | N 1.4-6 | N 2.1 |
| N 2.1-2, 2.4-5 | | N 2.1-2, 2.4-5 | |
| S 1.1 | | S 1.1 | |

Werkzeug-Ident · Tool ident

C0513720 C0653501 C0653701 C0653540

| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | Dimens.- Ident | Enorm | Enorm | Enorm | Enorm |
|---|------------------------|---------|----------------|----------------|------------------|------|-------------------|----------------------|-------|--------------|-------|
| | | | | | | | | 2-Z/E TIN „6G“ | 2-Z50 | 2-Z50 TIN | 2-Z50 |
| | 3 | 0,5 | 56 | 6 | 2,2 | – | .0030 | | | | |
| | 4 | 0,7 | 63 | 7 | 2,8 | 2,1 | .0040 | | | | |
| | 5 | 0,8 | 70 | 8 | 3,5 | 2,7 | .0050 | | | | |
| | 6 | 1 | 80 | 10 | 4,5 | 3,4 | .0060 | | | | ● |
| | 7 | 1 | 80 | 10 | 5,5 | 4,3 | .0070 | | | | ● |
| | 8 | 1,25 | 90 | 14 | 6 | 4,9 | .0080 | | | | ● |
| | 9 | 1,25 | 90 | 14 | 7 | 5,5 | .0090 | | | | ● |
| | 10 | 1,5 | 100 | 16 | 7 | 5,5 | .0100 | | | | ● |
| | 11 | 1,5 | 100 | 18 | 8 | 6,2 | .0111 | | | | ● |
| | 12 | 1,75 | 110 | 18 | 9 | 7 | .0112 | ● | ● | ● | ● |
| | 14 | 2 | 110 | 20 | 11 | 9 | .0114 | ○ | | | |
| | 16 | 2 | 110 | 22 | 12 | 9 | .0116 | ● | ● | ● | ● |
| | 18 | 2,5 | 125 | 25 | 14 | 11 | .0118 | ○ | | | |
| | 20 | 2,5 | 140 | 25 | 16 | 12 | .0120 | ● | ● | ● | ● |
| | 22 | 2,5 | 140 | 27 | 18 | 14,5 | .0122 | | | | |
| | 24 | 3 | 160 | 30 | 18 | 14,5 | .0124 | | | | ○ |
| | 27 | 3 | 160 | 30 | 20 | 16 | .0127 | | | | |
| | 30 | 3,5 | 180 | 35 | 22 | 18 | .0130 | | | | |
| | 33 | 3,5 | 180 | 35 | 25 | 20 | .0133 | | | | |
| | 36 | 4 | 200 | 40 | 28 | 22 | .0136 | | | | |
| | 39 | 4 | 200 | 40 | 32 | 24 | .0139 | | | | |
| | 42 | 4,5 | 200 | 45 | 32 | 24 | .0142 | | | | |
| | 45 | 4,5 | 220 | 45 | 36 | 29 | .0145 | | | | |
| | 48 | 5 | 250 | 50 | 36 | 29 | .0148 | | | | |
| | 52 | 5 | 250 | 50 | 40 | 32 | .0152 | | | | |

DIN 371

» 59 » 59 » 59 » 59

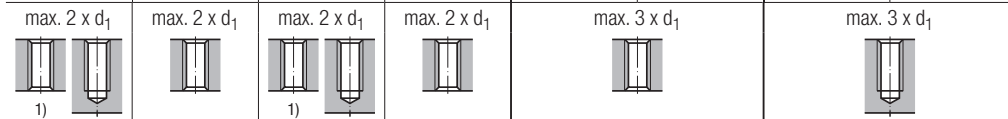
DIN 352

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

SPEED
High-speed
cutting



| | | | | | | | |
|---------|---------|-----------|-----------|---------|---------|---------|---------|
| 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX |
| TICN | TICN | TICN | TICN | TIN-70 | TIN-70 | TIN-60 | TIN-60 |
| HSSE | HSSE | HSSE | HSSE | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| C / 2-3 | C / 2-3 | E / 1,5-2 | E / 1,5-2 | B / 4-5 | B / 4-5 | C / 2-3 | C / 2-3 |
| E | E | E | E | E | E | E | E |



| | | | | | | | |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| K 1.1-4.2 | K 1.1-4.2 | K 1.1-4.2 | K 1.1-4.2 | P 1.1-4.1 | P 1.1-4.1 | P 2.1-4.1 | P 2.1-4.1 |
| N 1.4-6 | N 1.4-6 | N 1.4-6 | N 1.4-6 | K 2.1-2 | K 2.1-2 | | |
| | | | | N 1.4-6 | N 1.4-6 | | |

| | | | | | | | |
|--------------------------|---------------------------|----------------------------|-----------------------------|-----------------------------|----------------------------------|-----------------------------|-----------------------------|
| C3159401 | C3179401 | C3169401 | C3189401 | C3208F01 | C3258F01 | C3600F01 | C3650F01 |
| Rekord 2A-SPEED IKZ-TICN | Rekord 2A-SPEED IKZN-TICN | Rekord 2A-SPEED/E IKZ-TICN | Rekord 2A-SPEED/E IKZN-TICN | Rekord 2B-Z-SPEED PM-TIN-70 | Rekord 2B-Z-SPEED IKZN-PM TIN-70 | Enorm 2-Z-SPEED X-PM TIN-60 | Enorm 2-Z-SPEED X-PM TIN-60 |

| | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|--|--|---|----|
| | | | | | | | | | | 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 |
| 60 | 60 | 60 | 60 | 61 | 61 | 61 | 61 | | | | |

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

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 (ST) SELF-LOCK

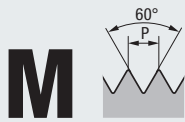
Tr, Tr-F Rd

Zubehör Accessories

Tech. Info



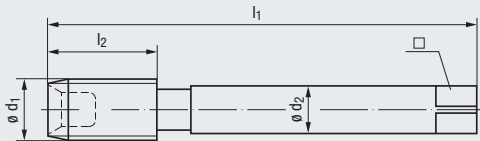
- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



DIN 13

DIN 376

Mit Spanglocke
With internal chip collector



VA
Stainless steel materials



Technische Informationen
Technical information

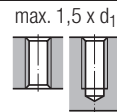
» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



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

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

| | |
|-----------|-----------|
| P 1.1-4.1 | P 1.1-4.1 |
| M 1.1-2.1 | M 1.1-2.1 |
| K 1.1-4.2 | K 1.1-4.2 |

Werkzeug-Ident · Tool ident

C0803009

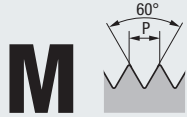
C0803001

| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | | Dimens.- Ident | Robust 2X-VA V-Nr.1 NE2 | Robust 2X-VA NE2 |
|---|------------------------|---------|----------------|----------------|------------------|------|------|-------------------|-------------------------|------------------|
| | | | | | | | | | | |
| | 20 | 2,5 | 140 | 32 | 16 | 12 | 17,5 | .0120 | | ● |
| | 22 | 2,5 | 140 | 32 | 18 | 14,5 | 19,5 | .0122 | | ● |
| | 24 | 3 | 160 | 34 | 18 | 14,5 | 21 | .0124 | | ● |
| | 27 | 3 | 160 | 36 | 20 | 16 | 24 | .0127 | | ● |
| | 30 | 3,5 | 180 | 40 | 22 | 18 | 26,5 | .0130 | | ● |
| | 33 | 3,5 | 180 | 40 | 25 | 20 | 29,5 | .0133 | | ● |
| | 36 | 4 | 200 | 50 | 28 | 22 | 32 | .0136 | | ● |
| | 39 | 4 | 200 | 50 | 32 | 24 | 35 | .0139 | | ● |
| | 42 | 4,5 | 200 | 56 | 32 | 24 | 37,5 | .0142 | | ● |
| | 45 | 4,5 | 220 | 58 | 36 | 29 | 40,5 | .0145 | | ● |
| | 48 | 5 | 250 | 65 | 36 | 29 | 43 | .0148 | | ● |
| | 52 | 5 | 250 | 65 | 40 | 32 | 47 | .0152 | ● | ● |
| | 56 | 5,5 | 250 | 70 | 40 | 32 | 50,5 | .0156 | ● | ● |
| | 60 | 5,5 | 280 | 70 | 45 | 35 | 54,5 | .0160 | ● | ● |
| | 64 | 6 | 315 | 75 | 50 | 39 | 58 | .0164 | ● | ● |
| | 68 | 6 | 315 | 75 | 50 | 39 | 62 | .0168 | ● | ● |

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.

≥ M56 Schaft mit Griffrielen!
≥ M56 Shank with grooves for better handling!

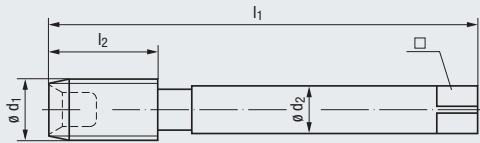
2) Robust 2X-VA-NE2 kann auch im Satz als Fertigschneider benutzt werden.
Hierbei kann eine Gewindetiefe von bis zu 3 x d₁ hergestellt werden.
Robust 2X-VA-NE2 can also be used as finishing taps in a set of taps.
In this way, thread depths of up to 3 x d₁ can be produced.



DIN 13

DIN 376

Mit Spanglocke
With internal chip collector



Technische Informationen
Technical information

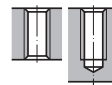
» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



Gewindetiefe und Lochform
Thread depth and hole type

max. 1,5 x d₁



Einsatzgebiete – Material
Applications – material

» 22

Werkzeug-Ident · Tool ident

| | | | | | | | | | C0803109 | C0803101 |
|---------------------|------|----------------|----------------|------------------|------|------|---------------|---|-------------------------|------------------|
| | | | | | | | | | Robust 2X-VA V-Nr.1 TIN | Robust 2X-VA TIN |
| Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | | Dimens.-Ident | | | |
| M 20 | 2,5 | 140 | 32 | 16 | 12 | 17,5 | .0120 | | ○ | |
| 22 | 2,5 | 140 | 32 | 18 | 14,5 | 19,5 | .0122 | | ○ | |
| 24 | 3 | 160 | 34 | 18 | 14,5 | 21 | .0124 | | ○ | |
| 27 | 3 | 160 | 36 | 20 | 16 | 24 | .0127 | | ○ | |
| 30 | 3,5 | 180 | 40 | 22 | 18 | 26,5 | .0130 | | ○ | |
| 33 | 3,5 | 180 | 40 | 25 | 20 | 29,5 | .0133 | | ○ | |
| 36 | 4 | 200 | 50 | 28 | 22 | 32 | .0136 | | ○ | |
| 39 | 4 | 200 | 50 | 32 | 24 | 35 | .0139 | | ○ | |
| 42 | 4,5 | 200 | 56 | 32 | 24 | 37,5 | .0142 | | ○ | |
| 45 | 4,5 | 220 | 58 | 36 | 29 | 40,5 | .0145 | | ○ | |
| 48 | 5 | 250 | 65 | 36 | 29 | 43 | .0148 | | ○ | |
| 52 | 5 | 250 | 65 | 40 | 32 | 47 | .0152 | ○ | ○ | |
| 56 | 5,5 | 250 | 70 | 40 | 32 | 50,5 | .0156 | ○ | ○ | |
| 60 | 5,5 | 280 | 70 | 45 | 35 | 54,5 | .0160 | ○ | ○ | |
| 64 | 6 | 315 | 75 | 50 | 39 | 58 | .0164 | ○ | ○ | |
| 68 | 6 | 315 | 75 | 50 | 39 | 62 | .0168 | ○ | ○ | |

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.

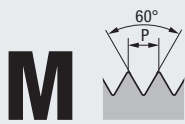
≥ M56 Schaft mit Griffrielen!
≥ M56 Shank with grooves for better handling!

2) Robust 2X-VA-TIN kann auch im Satz als Fertigschneider benutzt werden.
Hierbei kann eine Gewindetiefe von bis zu 3 x d₁ hergestellt werden.
Robust 2X-VA-TIN can also be used as finishing taps in a set of taps.
In this way, thread depths of up to 3 x d₁ can be produced.

- 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 (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

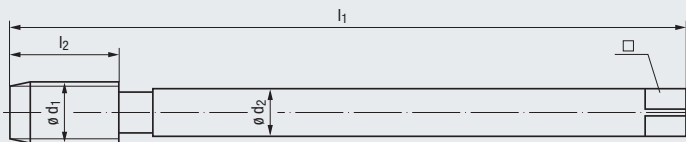


- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



DIN 13

Mit extra langem Schaft
With extra long shank



STEEL
Steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266

| | | | |
|----------|------------------|----------|----------|
| ISO 2/6H | ISO 2/6H | ISO 2/6H | ISO 2/6H |
| HSSE | HSSE | HSSE | HSSE |
| B / 4-5 | E / 1,5-2 | R15 | R15 |
| E / 0 | E / 0 | C / 2-3 | C / 2-3 |
| E / 0 | E / 0 | E / 0 | E / 0 |

Gewindetiefe und Lochform
Thread depth and hole type

| | | | |
|-------------------------|-------------------------|---------------------------|--|
| max. 3 x d ₁ | max. 2 x d ₁ | max. 2,5 x d ₁ | |
| | | | |

Einsatzgebiete – Material
Applications – material

» 22

| | | | |
|-----------|-----------|--|--------------------|
| P 2.1-4.1 | P 2.1-3.1 | P 1.1-4.1 K 1.1-4.2 N 1.4-5, 2.4-5 | P 1.1-3.1 N 2.2 |
|-----------|-----------|--|--------------------|

Werkzeug-Ident · Tool ident









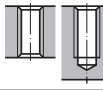

| Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | | Dimens.- Ident | C2201000 | C2461000 | C2401400 | C2501000 |
|------------------------|---------|----------------|----------------|------------------|-----|------|-------------------|----------------------------|----------------------------|-------------------------------|---------------------|
| | | | | | | | | Rekord 2B-STEEL-M LS | Rekord 2D-STEEL/E LS | Rekord 2DF-STEEL LS-TIN | Enorm 2-STEEL-LS |
| M 6 | 1 | 160 | 17 | 4,5 | 3,4 | 5 | .0060 | ● | ● | | ● |
| 8 | 1,25 | 180 | 20 | 6 | 4,9 | 6,8 | .0080 | ● | ● | | ● |
| 10 | 1,5 | 200 | 22 | 7 | 5,5 | 8,5 | .0100 | ● | ● | | ● |
| 12 | 1,75 | 224 | 24 | 9 | 7 | 10,2 | .0112 | ● | ● | ● | ● |
| 14 | 2 | 224 | 26 | 11 | 9 | 12 | .0114 | ● | ● | | ● |
| 16 | 2 | 224 | 27 | 12 | 9 | 14 | .0116 | ● | ● | ● | ● |
| 18 | 2,5 | 250 | 30 | 14 | 11 | 15,5 | .0118 | ● | ● | | ● |
| 20 | 2,5 | 280 | 32 | 16 | 12 | 17,5 | .0120 | ● | ● | | ● |



62 62 62 62

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

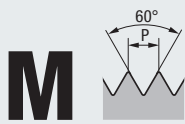
2) Auch mit innerer Kühlschmierstoff-Zufuhr IKZN möglich
Also available with internal coolant supply IKZN

| VA Stainless steel materials | | | | H Materials of high tensile strength | Z CNC-controlled machines | | | |
|---|--|---|--|---|---|--|--|------------|
|  | new  |  | new  |  | new  | | | |
| 2) | | 1) | 1) | 1) 2) | 1) 2) | | | |
| ISO 2/6H | ISO 2/6H | ISO 2/6H | ISO 2/6H | 6HX | 6HX | | | |
| NT | GLT-1 | | GLT-1 | NT | TIN | | | |
| HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | | | |
| | | R35 | R35 | | R15 | | | |
| B / 4-5 | B / 4-5 | 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 | | | |
| max. 3 x d ₁ | | max. 2,5 x d ₁ | | max. 2 x d 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 2.1-5.1 | | | |
| M 1.1-2.1 | M 1.1-3.1 | M 1.1-2.1 | M 1.1-3.1 | K 1.1-4.2 | K 2.1-2 | | | |
| K 2.1 | K 2.1 | K 2.1 | K 2.1 | N 2.4-7 | N 1.4-6, 2.4-5 | | | |
| N 2.2, 2.5-6 | N 2.2 | | | N 4.1, 5.1 | | | | |
| C2203000 | C220C300 | C2503000 | C250C300 | C2100501 | C4093701 | | | |
| Rekord 2B-VA-LS NT | Rekord 2B-VA-LS GLT-1 | Enorm 2-VA-LS | Enorm 2-VA-LS GLT-1 | Rekord 2A-H-LS NT | Rekord 2D-Z-BF IKZ-LS TIN | | | |
| ● | ○ | ● | ○ | ● | | | | M 6 |
| ● | ○ | ● | ○ | ● | | | | 8 |
| ● | ○ | ● | ○ | ● | | | | 10 |
| ● | ○ | ● | ○ | ● | | ○ | | 12 |
| ● | ○ | ● | ○ | ● | | | | 14 |
| ● | ○ | ● | ○ | ● | | ○ | | 16 |
| ● | ○ | ● | ○ | ● | | | | 18 |
| ● | ○ | ● | ○ | ● | | | | 20 |
| 📄 63 | 📄 63 | 📄 63 | 📄 63 | 📄 63 | 📄 63 | | | |

- 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
- Tech. Info

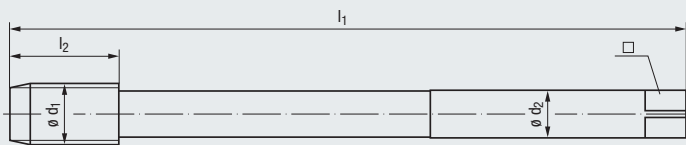


- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



DIN 13

Mit langen Nuten und langem Schaft für Gewindetiefen bis max. 3 x d₁
 With long flutes and long shank for thread depths up to max. 3 x d₁



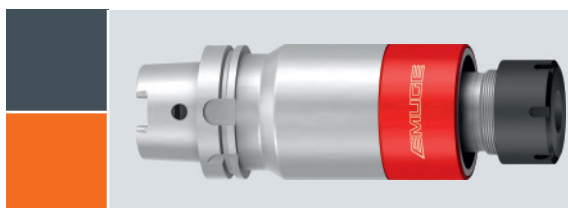
| | | | | |
|---|---|---------|---------|---------|
| Technische Informationen Technical information | Toleranz · Tolerance Beschichtung · Coating Schneidstoff · Cutting material | 6HX | 6HX | 6HX |
| | | TICN | TIN | TIN |
| » 245 - 266 | | HSSE | HSSE | HSSE |
| | | C / 2-3 | C / 2-3 | C / 2-3 |
| | | E / O | E / O | E / O |

| | | | |
|---|-----------------------------|-----------------------------|--|
| Gewindetiefe und Lochform Thread depth and hole type | max. 3 x d ₁ | max. 3 x d ₁ | |
|---|-----------------------------|-----------------------------|--|

| | | | | |
|--|------|---|---|---|
| Einsatzgebiete – Material Applications – material | » 22 | P 1.1-4.1 K 1.1-4.2 N 1.4-6, 2.4-7 N 4.1 | P 2.1-5.1 K 2.1-2 N 1.4-6, 2.4-5 | P 2.1-5.1 K 2.1-2 N 1.4-6, 2.4-5 |
|--|------|---|---|---|

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

1) Gewindebohren in Durchgangslöcher 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 664 - 665, 675 - 676 und 747 - 754.

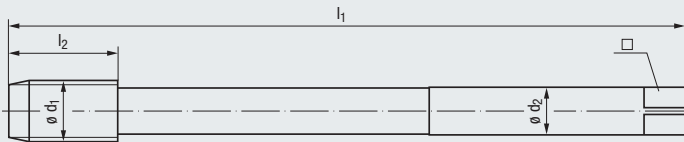
For the clamping of taps for the production of large threads, we recommend using our holders of the Softsynchro® and HF series. You will find these on pages 664 - 665, 675 - 676 and 747 - 754.

M



DIN 13

Mit langen Nuten und langem Schaft für Gewindetiefen bis max. 4 x d₁
With long flutes and long shank for thread depths up to max. 4 x d₁



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



Gewindetiefe und Lochform
Thread depth and hole type

Einsatzgebiete – Material
Applications – material

» 22

Werkzeug-Ident · Tool ident

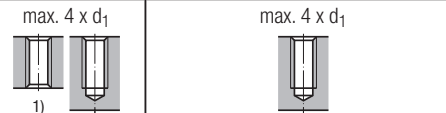
| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | Dimens.- Ident | Rekord 2A-Z- IKZ -LF4 TICN | Rekord 2D-Z- IKZ -LF4 TIN | Rekord 2D-Z- BF-IKZ -LF4 TIN |
|---|------------------------|---------|----------------|----------------|------------------|------|-------------------|---|--|--|
| | | | | | | | | ● | ● | ○ |
| | 20 | 2,5 | 190 | 25 | 16 | 12 | .0120 | ● | ● | ○ |
| | 22 | 2,5 | 230 | 27 | 18 | 14,5 | .0122 | ● | ● | ○ |
| | 24 | 3 | 240 | 30 | 18 | 14,5 | .0124 | ● | ● | ○ |
| | 27 | 3 | 250 | 30 | 20 | 16 | .0127 | ● | ● | ○ |
| | 30 | 3,5 | 270 | 35 | 22 | 18 | .0130 | ● | ● | ○ |
| | 33 | 3,5 | 290 | 35 | 25 | 20 | .0133 | ● | ● | ○ |
| | 36 | 4 | 310 | 40 | 28 | 22 | .0136 | ● | ● | ○ |
| | 42 | 4,5 | 340 | 45 | 32 | 24 | .0142 | ● | ● | ○ |
| | 45 | 4,5 | 360 | 45 | 36 | 29 | .0145 | ● | ● | ○ |

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

Z
CNC-controlled
machines



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

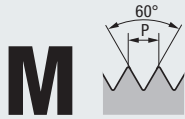


| | | |
|----------------|----------------|----------------|
| P 1.1-4.1 | P 2.1-5.1 | P 2.1-5.1 |
| K 1.1-4.2 | K 2.1-2 | K 2.1-2 |
| N 1.4-6, 2.4-7 | N 1.4-6, 2.4-5 | N 1.4-6, 2.4-5 |
| N 4.1 | | |

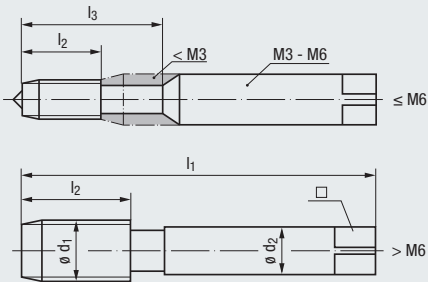
- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



- 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
- Tech. Info



DIN 13



DIN 352

STEEL
Steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266



| | | | | |
|---------|---------|---------|----------|----------|
| 6HX | 6HX | 6HX | ISO 2/6H | ISO 2/6H |
| HSSE | HSSE | HSSE | HSSE | HSSE |
| | LH | | | |
| C / 2-3 | C / 2-3 | C / 2-3 | B / 4-5 | B / 4-5 |
| E / 0 | E / 0 | E / 0 | E / 0 | E / 0 |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

| | | | | |
|-----------|-----------|-----------|-----------|-----------|
| P 1.1-3.1 | P 1.1-3.1 | P 1.1-3.1 | P 2.1-4.1 | P 2.1-4.1 |
| N 2.3 | N 2.3 | N 2.3 | | |

Werkzeug-Ident · Tool ident

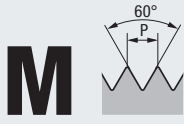
| M | ϕd_1 mm | P mm | l ₁ | l ₂ | l ₃ | ϕd_2 | \square | Dimens.- Ident | Rekord | Rekord | Rekord | Rekord | Rekord | |
|---|------------------|---------|----------------|----------------|----------------|------------|-----------|-------------------|---------|-----------------|------------|-----------|-----------------|---|
| | | | | | | | | | A-STEEL | A-STEEL-LH | A-STEEL-AZ | B-STEEL-M | B-STEEL-M AZ | |
| | 1 | 0,25 | 32 | 5 | – | 2,5 | 2,1 | 0,75 | .0010 | o ^{*)} | | | | |
| | 1,1 | 0,25 | 32 | 5 | – | 2,5 | 2,1 | 0,85 | .0011 | | | | | |
| | 1,2 | 0,25 | 32 | 5 | – | 2,5 | 2,1 | 0,95 | .0012 | o ^{*)} | | | | |
| | 1,4 | 0,3 | 32 | 7 | – | 2,5 | 2,1 | 1,1 | .0014 | o ^{*)} | | | | |
| | 1,6 | 0,35 | 32 | 8 | – | 2,5 | 2,1 | 1,25 | .0016 | o | | | | |
| | 1,8 | 0,35 | 32 | 8 | – | 2,5 | 2,1 | 1,45 | .0018 | o | | | | |
| | 2 | 0,4 | 36 | 8 | – | 2,8 | 2,1 | 1,6 | .0020 | o | | | | |
| | 2,2 | 0,45 | 36 | 9 | – | 2,8 | 2,1 | 1,75 | .0022 | o | | | | |
| | 2,3 | 0,4 | 36 | 9 | – | 2,8 | 2,1 | 1,9 | .0023 | o | | | | |
| | 2,5 | 0,45 | 40 | 9 | – | 2,8 | 2,1 | 2,05 | .0025 | o | | | | |
| | 2,6 | 0,45 | 40 | 9 | – | 2,8 | 2,1 | 2,15 | .0026 | o | | | | |
| | 3 | 0,5 | 40 | 10 | 18 | 3,5 | 2,7 | 2,5 | .0030 | ● | ● | o | ● | o |
| | 3,5 | 0,6 | 45 | 11 | 20 | 4 | 3 | 2,9 | .0035 | o | | | o | o |
| | 4 | 0,7 | 45 | 12 | 22 | 4,5 | 3,4 | 3,3 | .0040 | ● | ● | o | ● | o |
| | 4,5 | 0,75 | 50 | 13 | 24 | 6 | 4,9 | 3,7 | .0045 | | | | | |
| | 5 | 0,8 | 50 | 14 | 25 | 6 | 4,9 | 4,2 | .0050 | ● | ● | o | ● | o |
| | 6 | 1 | 56 | 16 | 28 | 6 | 4,9 | 5 | .0060 | ● | ● | o | ● | o |
| | 7 | 1 | 56 | 18 | – | 6 | 4,9 | 6 | .0070 | | | | | |
| | 8 | 1,25 | 63 | 20 | – | 6 | 4,9 | 6,8 | .0080 | ● | ● | o | ● | o |
| | 9 | 1,25 | 63 | 20 | – | 7 | 5,5 | 7,8 | .0090 | | | | | |
| | 10 | 1,5 | 70 | 22 | – | 7 | 5,5 | 8,5 | .0100 | ● | ● | o | ● | o |
| | 11 | 1,5 | 70 | 22 | – | 8 | 6,2 | 9,5 | .0111 | | | | | |
| | 12 | 1,75 | 75 | 24 | – | 9 | 7 | 10,2 | .0112 | ● | ● | o | ● | o |
| | 14 | 2 | 80 | 26 | – | 11 | 9 | 12 | .0114 | o | o | | | |
| | 16 | 2 | 80 | 27 | – | 12 | 9 | 14 | .0116 | o | o | | | |
| | 18 | 2,5 | 95 | 30 | – | 14 | 11 | 15,5 | .0118 | o | o | | | |
| | 20 | 2,5 | 95 | 32 | – | 16 | 12 | 17,5 | .0120 | o | o | | | |
| | 22 | 2,5 | 100 | 32 | – | 18 | 14,5 | 19,5 | .0122 | o | | | | |
| | 24 | 3 | 110 | 34 | – | 18 | 14,5 | 21 | .0124 | o | o | | | |
| | 27 | 3 | 110 | 36 | – | 20 | 16 | 24 | .0127 | o | | | | |
| | 30 | 3,5 | 125 | 40 | – | 22 | 18 | 26,5 | .0130 | o | | | | |



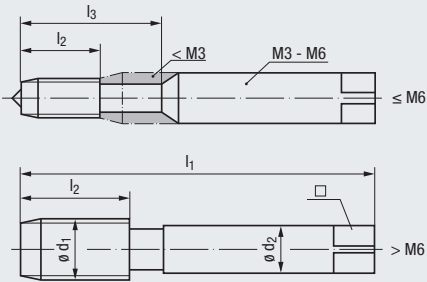
| | | | | |
|---------|----|--|----|----|
| DIN 371 | 36 | | 36 | 37 |
| DIN 376 | 64 | | 64 | 65 |

^{*)} $\le M1,4$ Tol. 4H(X)/5H(X)

- 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
- Tech. Info



DIN 13



DIN 352

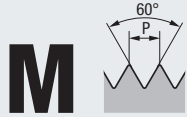


| | | | |
|---|---|---------|---------|
| Technische Informationen Technical information | Toleranz · Tolerance Beschichtung · Coating Schneidstoff · Cutting material | 6HX | 6HX |
| | | HSSE | HSSE |
| Technische Informationen Technical information | Technische Informationen Technical information | A / 5-6 | D / 3-4 |
| | | O / P | O / P |
| Gewindetiefe und Lochform Thread depth and hole type | max. 2 x d ₁ | | |
| | | | |

| | | | | |
|--|-----------|-----------|-----------|-----------|
| Einsatzgebiete – Material Applications – material | P 1.1-3.1 | P 1.1-3.1 | P 1.1-3.1 | P 1.1-3.1 |
| | | | | |

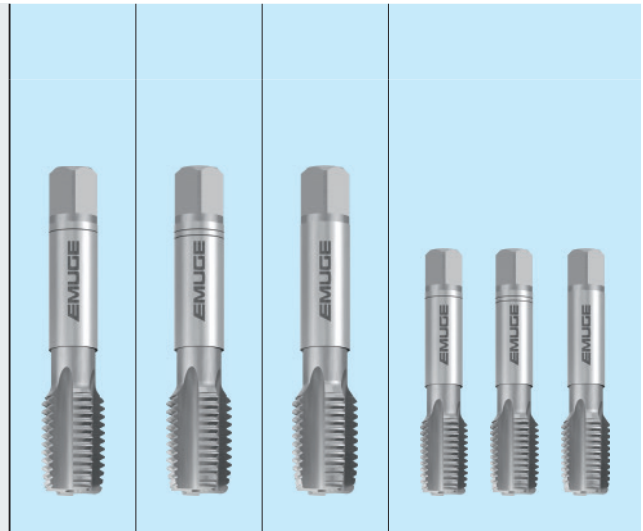
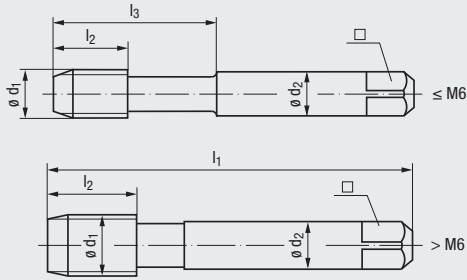
| Werkzeug-Ident · Tool ident | | | | | | | | | | H0111019 | H0111029 | H0111001 | H0101001 |
|-----------------------------|------------------------|---------|----------------|----------------|----------------|------------------|------|-------|---------------|----------------|-----------------|-----------------|----------------------------|
| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | | Dimens.-Ident | HGB-Set V-Nr.1 | HGB-Set M-Nr.2 | HGB-Set F | HGB-Set 3S (Nr.1, Nr.2, F) |
| | | | | | | | | | | 1 | 0,25 | 32 | 5 |
| 1,1 | 0,25 | 32 | 5 | — | 2,5 | 2,1 | 0,85 | .0011 | | | | | |
| 1,2 | 0,25 | 32 | 5 | — | 2,5 | 2,1 | 0,95 | .0012 | | | | | |
| 1,4 | 0,3 | 32 | 7 | — | 2,5 | 2,1 | 1,1 | .0014 | ● | ● | ● ^{*)} | ● ^{*)} | |
| 1,6 | 0,35 | 32 | 8 | — | 2,5 | 2,1 | 1,25 | .0016 | ● | ● | ● | ● | |
| 1,7 | 0,35 | 32 | 8 | — | 2,5 | 2,1 | 1,35 | .0017 | | | | | |
| 1,8 | 0,35 | 32 | 8 | — | 2,5 | 2,1 | 1,45 | .0018 | | | | | |
| 2 | 0,4 | 36 | 8 | — | 2,8 | 2,1 | 1,6 | .0020 | ● | ● | ● | ● | |
| 2,2 | 0,45 | 36 | 9 | — | 2,8 | 2,1 | 1,75 | .0022 | | | | | |
| 2,3 | 0,4 | 36 | 9 | — | 2,8 | 2,1 | 1,9 | .0023 | | | | | |
| 2,5 | 0,45 | 40 | 9 | — | 2,8 | 2,1 | 2,05 | .0025 | ● | ● | ● | ● | |
| 2,6 | 0,45 | 40 | 9 | — | 2,8 | 2,1 | 2,15 | .0026 | | | | | |
| 3 | 0,5 | 40 | 10 | 18 | 3,5 | 2,7 | 2,5 | .0030 | ● | ● | ● | ● | |
| 3,5 | 0,6 | 45 | 11 | 20 | 4 | 3 | 2,9 | .0035 | ● | ● | ● | ● | |
| 4 | 0,7 | 45 | 12 | 22 | 4,5 | 3,4 | 3,3 | .0040 | ● | ● | ● | ● | |
| 4,5 | 0,75 | 50 | 13 | 24 | 6 | 4,9 | 3,7 | .0045 | | | | | |
| 5 | 0,8 | 50 | 14 | 25 | 6 | 4,9 | 4,2 | .0050 | ● | ● | ● | ● | |
| 6 | 1 | 56 | 16 | 28 | 6 | 4,9 | 5 | .0060 | ● | ● | ● | ● | |
| 7 | 1 | 56 | 18 | — | 6 | 4,9 | 6 | .0070 | ● | ● | ● | ● | |
| 8 | 1,25 | 63 | 20 | — | 6 | 4,9 | 6,8 | .0080 | ● | ● | ● | ● | |
| 9 | 1,25 | 63 | 20 | — | 7 | 5,5 | 7,8 | .0090 | | | | | |
| 10 | 1,5 | 70 | 22 | — | 7 | 5,5 | 8,5 | .0100 | ● | ● | ● | ● | |
| 11 | 1,5 | 70 | 22 | — | 8 | 6,2 | 9,5 | .0111 | ● | ● | ● | ● | |
| 12 | 1,75 | 75 | 24 | — | 9 | 7 | 10,2 | .0112 | ● | ● | ● | ● | |
| 14 | 2 | 80 | 26 | — | 11 | 9 | 12 | .0114 | ● | ● | ● | ● | |
| 16 | 2 | 80 | 27 | — | 12 | 9 | 14 | .0116 | ● | ● | ● | ● | |
| 18 | 2,5 | 95 | 30 | — | 14 | 11 | 15,5 | .0118 | | | | | |
| 20 | 2,5 | 95 | 32 | — | 16 | 12 | 17,5 | .0120 | ● | ● | ● | ● | |
| 22 | 2,5 | 100 | 32 | — | 18 | 14,5 | 19,5 | .0122 | | | | | |
| 24 | 3 | 110 | 34 | — | 18 | 14,5 | 21 | .0124 | ● | ● | ● | ● | |
| 27 | 3 | 110 | 36 | — | 20 | 16 | 24 | .0127 | ● | ● | ● | ● | |
| 30 | 3,5 | 125 | 40 | — | 22 | 18 | 26,5 | .0130 | ● | ● | ● | ● | |
| 33 | 3,5 | 125 | 40 | — | 25 | 20 | 29,5 | .0133 | ● | ● | ● | ● | |
| 36 | 4 | 150 | 50 | — | 28 | 22 | 32 | .0136 | ● | ● | ● | ● | |

^{*)} ≤ M1,4 Tol. 4HX/5HX



DIN 13

≈ DIN 352



- Product Finder
- Vc
- 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
- Tech. Info

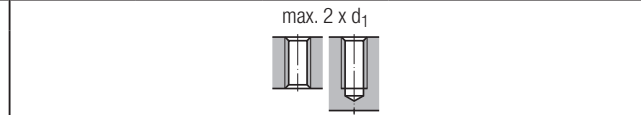
Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266

| | | | |
|---------|---------|---------|---------|
| | | 6HX | 6HX |
| VHM/KHM | VHM/KHM | VHM/KHM | VHM/KHM |
| C / ≈3 | C / ≈3 | C / ≈3 | C / ≈3 |
| O / P | O / P | O / P | O / P |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

| | | | |
|-----------|-----------|-----------|-----------|
| P 5.1 | P 5.1 | P 5.1 | P 5.1 |
| N 2.8.5.2 | N 2.8.5.2 | N 2.8.5.2 | N 2.8.5.2 |
| H 1.1-3 | H 1.1-3 | H 1.1-3 | H 1.1-3 |

Werkzeug-Ident · Tool ident

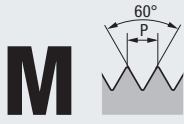
| M | ø d1 mm | P mm | l1 | l2 | max. l3 | ø d2 | □ | Dimens.- Ident | H0310919 | H0310929 | H0310901 | H0300901 |
|---|------------|---------|----|----|------------|------|-----|-------------------|--------------------------|--------------------------|---------------------|---|
| | | | | | | | | | VHM/KHM Set V-Nr.1 | VHM/KHM Set M-Nr.2 | VHM/KHM Set F | VHM/KHM Set 3S (Nr.1, Nr.2, F) |
| | 3 | 0,5 | 40 | 6 | 18 | 3,5 | 2,7 | 2,5 | ● | ● | ● | ● |
| | 4 | 0,7 | 45 | 7 | 19 | 4,5 | 3,4 | 3,3 | ● | ● | ● | ● |
| | 5 | 0,8 | 50 | 9 | 25 | 6 | 4,9 | 4,2 | ● | ● | ● | ● |
| | 6 | 1 | 56 | 10 | 26 | 6 | 4,9 | 5 | ● | ● | ● | ● |
| | 8 | 1,25 | 63 | 14 | – | 6 | 4,9 | 6,8 | ● | ● | ● | ● |
| | 10 | 1,5 | 70 | 16 | – | 7 | 5,5 | 8,5 | ● | ● | ● | ● |
| | 12 | 1,75 | 75 | 18 | – | 9 | 7 | 10,2 | ● | ● | ● | ● |
| | 14 | 2 | 80 | 20 | – | 11 | 9 | 12 | ● | ● | ● | ● |
| | 16 | 2 | 80 | 22 | – | 12 | 9 | 14 | ● | ● | ● | ● |
| | 20 | 2,5 | 95 | 25 | – | 16 | 12 | 17,5 | ● | ● | ● | ● |



Kühlschmierstoffe siehe Seite 238 - 239

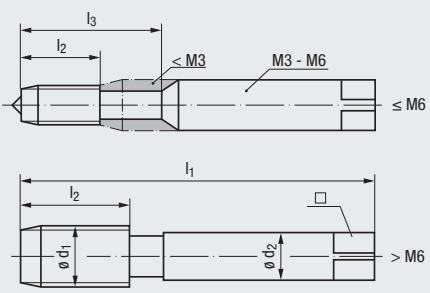
Coolant-lubricants, see page 238 - 239

- 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
- Tech. Info



DIN 352

DIN 13



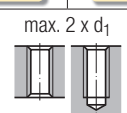
Toleranz · Tolerance
 Beschichtung · Coating
 Schneidstoff · Cutting material

Technische Informationen
 Technical information

Technical information icon: 245 - 266

| | | | |
|---------|---------|---------|-------------|
| HSSE | HSSE | HSSE | 6HX 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

Applications icon: 22

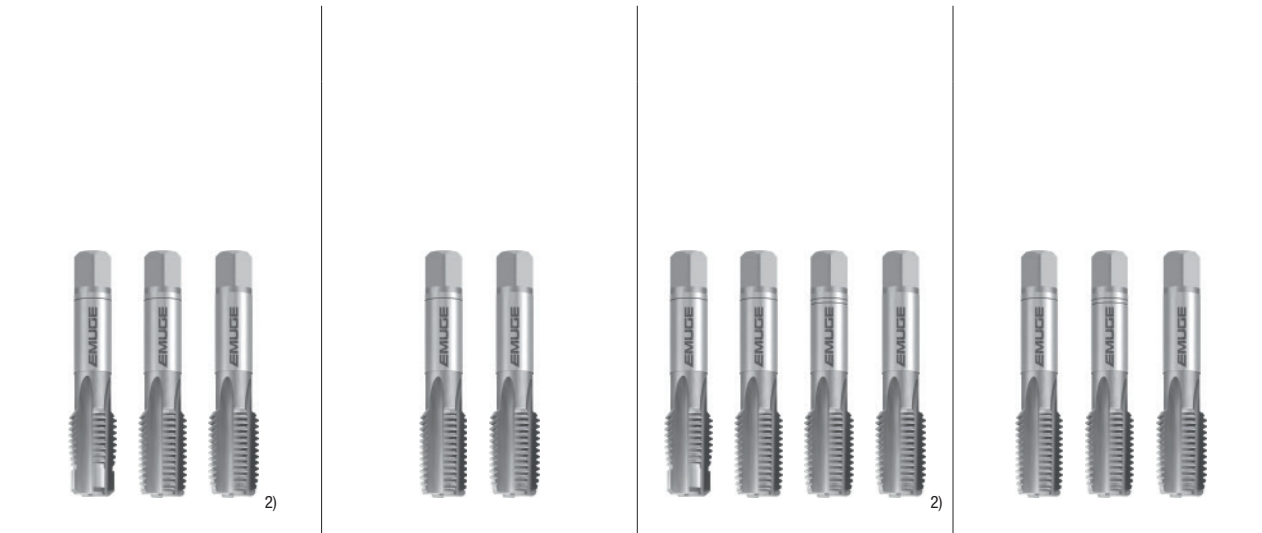
| | | | |
|--------------|--------------|--------------|--------------|
| P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 |
| M 1.1-4.1 | M 1.1-4.1 | M 1.1-4.1 | M 1.1-4.1 |
| S 2.1-2, 2.4 | S 2.1-2, 2.4 | S 2.1-2, 2.4 | S 2.1-2, 2.4 |

Werkzeug-Ident · Tool ident

H0413019 H0423019 H0423029 H0423001

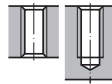
| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | Dimens.- Ident | WM-Set V-Nr.1Z | WM-Set V-Nr.1 | WM-Set M-Nr.2 | WM-Set F |
|---|------------------------|---------|----------------|----------------|----------------|------------------|------|-------------------|-------------------|------------------|------------------|-------------|
| | | | | | | | | | | | | |
| | 2 | 0,4 | 36 | 8 | – | 2,8 | 2,1 | 1,6 | ● | ● | ● | ● |
| | 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 | ● | ● | ● | ● |
| | 2,6 | 0,45 | 40 | 9 | – | 2,8 | 2,1 | 2,15 | ● | ● | ● | ● |
| | 3 | 0,5 | 40 | 10 | 18 | 3,5 | 2,7 | 2,5 | ● | ● | ● | ● |
| | 3,5 | 0,6 | 45 | 11 | 20 | 4 | 3 | 2,9 | ● | ● | ● | ● |
| | 4 | 0,7 | 45 | 12 | 22 | 4,5 | 3,4 | 3,3 | ● | ● | ● | ● |
| | 5 | 0,8 | 50 | 14 | 25 | 6 | 4,9 | 4,2 | ● | ● | ● | ● |
| | 6 | 1 | 56 | 16 | 28 | 6 | 4,9 | 5 | ● | ● | ● | ● |
| | 8 | 1,25 | 63 | 20 | – | 6 | 4,9 | 6,8 | ● | ● | ● | ● |
| | 10 | 1,5 | 70 | 22 | – | 7 | 5,5 | 8,5 | ● | ● | ● | ● |
| | 12 | 1,75 | 75 | 24 | – | 9 | 7 | 10,2 | ● | ● | ● | ● |
| | 14 | 2 | 80 | 26 | – | 11 | 9 | 12 | ● | ● | ● | ● |
| | 16 | 2 | 80 | 27 | – | 12 | 9 | 14 | ● | ● | ● | ● |
| | 18 | 2,5 | 95 | 30 | – | 14 | 11 | 15,5 | ● | ● | ● | ● |
| | 20 | 2,5 | 95 | 32 | – | 16 | 12 | 17,5 | ● | ● | ● | ● |
| | 22 | 2,5 | 100 | 32 | – | 18 | 14,5 | 19,5 | ● | ● | ● | ● |
| | 24 | 3 | 110 | 34 | – | 18 | 14,5 | 21 | ● | ● | ● | ● |
| | 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.



| | | | |
|---------|---------|---------|---------|
| 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 d₁



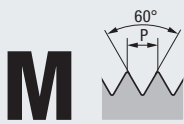
| | | | |
|---------------------|---------------------|---------------------|---------------------|
| P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 |
| M 1.1-4.1 | M 1.1-4.1 | M 1.1-4.1 | M 1.1-4.1 |
| S 2.1-2, 2.4 | S 2.1-2, 2.4 | S 2.1-2, 2.4 | S 2.1-2, 2.4 |

| | | | |
|-------------------------|------------------|-------------------------------|------------------------|
| H0453001 | H0483001 | H0403001 | H0433001 |
| WM-Set 3S | WM-Set 2S | WM-Set 4S | WM-Set 3S |
| (Nr.1Z, Nr.1, F) | (Nr.1, F) | (Nr.1Z, Nr.1, Nr.2, F) | (Nr.1, Nr.2, F) |

| | | | | |
|---|---|---|---|------------|
| ● | ● | ● | ● | M 2 |
| | | | | 2,2 |
| | | | | 2,3 |
| ● | ● | ● | ● | 2,5 |
| | | | | 2,6 |
| ● | ● | ● | ● | 3 |
| ● | ● | ● | ● | 3,5 |
| ● | ● | ● | ● | 4 |
| ● | ● | ● | ● | 5 |
| ● | ● | ● | ● | 6 |
| ● | ● | ● | ● | 8 |
| ● | ● | ● | ● | 10 |
| ● | ● | ● | ● | 12 |
| ● | ● | ● | ● | 14 |
| ● | ● | ● | ● | 16 |
| ● | ● | ● | ● | 18 |
| ● | ● | ● | ● | 20 |
| ● | ● | ● | ● | 22 |
| ● | ● | ● | ● | 24 |
| | | | | 27 |
| | | | | 30 |

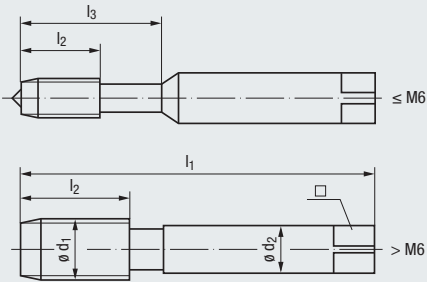
2) Beim Gewindebohren von Hand in Durchgangslöcher entfällt Nr.1
No.1 is not needed when tapping in through holes by hand

- Product Finder
- V_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
- Tech. Info



DIN 352

DIN 13



Toleranz · Tolerance
 Beschichtung · Coating
 Schneidstoff · Cutting material

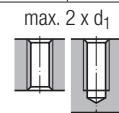
Technische Informationen
 Technical information

Technical information icon: 245 - 266

Technical drawing icon: max. 2 x d₁

| | | | |
|---------|---------|---------|---------|
| TIN | TIN | TIN | 6HX |
| HSSE | HSSE | HSSE | TIN |
| C / 2-3 | C / 2-3 | C / 2-3 | HSSE |
| O / P | O / P | O / P | C / 2-3 |
| | | | O / P |

Gewindetiefe und Lochform
 Thread depth and hole type



Einsatzgebiete – Material
 Applications – material

Technical information icon: 22





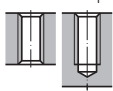
| | | | |
|-----------|-----------|-----------|-----------|
| P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 |
| M 1.1-4.1 | M 1.1-4.1 | M 1.1-4.1 | M 1.1-4.1 |
| N 2.7 | N 2.7 | N 2.7 | N 2.7 |
| S 2.1-6 | S 2.1-6 | S 2.1-6 | S 2.1-6 |

Werkzeug-Ident · Tool ident

| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | Image | Dimens.- Ident | H0413119 | H0423119 | H0423129 | H0423101 |
|---|------------------------|---------|----------------|----------------|----------------|------------------|-----|-------|-------------------|--------------------------|-------------------------|-------------------------|--------------------|
| | | | | | | | | | | WM-Set V-Nr.1Z TIN | WM-Set V-Nr.1 TIN | WM-Set M-Nr.2 TIN | WM-Set F TIN |
| | 3 | 0,5 | 40 | 10 | 18 | 3,5 | 2,7 | 2,5 | .0030 | ● | ● | ● | ● |
| | 4 | 0,7 | 45 | 12 | 22 | 4,5 | 3,4 | 3,3 | .0040 | ● | ● | ● | ● |
| | 5 | 0,8 | 50 | 14 | 25 | 6 | 4,9 | 4,2 | .0050 | ● | ● | ● | ● |
| | 6 | 1 | 56 | 16 | 28 | 6 | 4,9 | 5 | .0060 | ● | ● | ● | ● |
| | 8 | 1,25 | 63 | 20 | — | 6 | 4,9 | 6,8 | .0080 | ● | ● | ● | ● |
| | 10 | 1,5 | 70 | 22 | — | 7 | 5,5 | 8,5 | .0100 | ● | ● | ● | ● |
| | 12 | 1,75 | 75 | 24 | — | 9 | 7 | 10,2 | .0112 | ● | ● | ● | ● |
| | 14 | 2 | 80 | 26 | — | 11 | 9 | 12 | .0114 | ● | ● | ● | ● |
| | 16 | 2 | 80 | 27 | — | 12 | 9 | 14 | .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.

- 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
- Tech. Info

| | | | | |
|---|---|---|---|-----|
|  <p>2)</p> |  |  <p>2)</p> |  | |
| <p>6HX</p> <p>TIN</p> <p>HSSE</p> <p>C / 2-3</p> <p>O / P</p> | <p>6HX</p> <p>TIN</p> <p>HSSE</p> <p>C / 2-3</p> <p>O / P</p> | <p>6HX</p> <p>TIN</p> <p>HSSE</p> <p>C / 2-3</p> <p>O / P</p> | <p>6HX</p> <p>TIN</p> <p>HSSE</p> <p>C / 2-3</p> <p>O / P</p> | |
| <p>max. 2 x d₁</p>  | | | | |
| <p>P 1.1-5.1</p> <p>M 1.1-4.1</p> <p>N 2.7</p> <p>S 2.1-6</p> | <p>P 1.1-5.1</p> <p>M 1.1-4.1</p> <p>N 2.7</p> <p>S 2.1-6</p> | <p>P 1.1-5.1</p> <p>M 1.1-4.1</p> <p>N 2.7</p> <p>S 2.1-6</p> | <p>P 1.1-5.1</p> <p>M 1.1-4.1</p> <p>N 2.7</p> <p>S 2.1-6</p> | |
| <p>H0453101</p> <p>WM-Set 3S TIN (Nr.1Z, Nr.1, F)</p> | <p>H0483101</p> <p>WM-Set 2S TIN (Nr.1, F)</p> | <p>H0403101</p> <p>WM-Set 4S TIN (Nr.1Z, Nr.1, Nr.2, F)</p> | <p>H0433101</p> <p>WM-Set 3S TIN (Nr.1, Nr.2, F)</p> | |
| ● | ● | ● | ● | 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

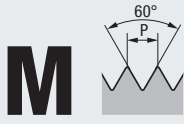




Verstellbare Windeisen siehe Seite 243

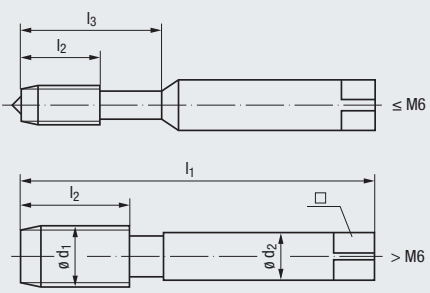
Adjustable tap wrenches, see page 243

- 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
- Tech. Info



DIN 352

DIN 13



Toleranz · Tolerance
 Beschichtung · Coating
 Schneidstoff · Cutting material

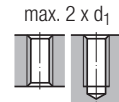
Technische Informationen
 Technical information

Technical information icon: 245 - 266

Technical drawing icon: max. 2 x d₁

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

Gewindetiefe und Lochform
 Thread depth and hole type



Einsatzgebiete – Material
 Applications – material



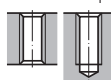
Technical information icon: 22

| | | | |
|--------------|--------------|--------------|--------------|
| P 3.1-5.1 | P 3.1-5.1 | P 3.1-5.1 | P 3.1-5.1 |
| N 2.7 | N 2.7 | N 2.7 | N 2.7 |
| S 2.3, 2.5-6 | S 2.3, 2.5-6 | S 2.3, 2.5-6 | S 2.3, 2.5-6 |

Werkzeug-Ident · Tool ident

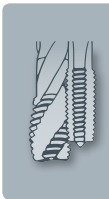
| Ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | Image | Dimens.- Ident | H0417119 | H0427119 | H0427129 | H0427101 |
|------------------------|---------|----------------|----------------|----------------|------------------|-----|-------|-------------------|-------------------------------|------------------------------|------------------------------|-----------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

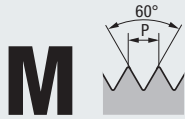
| | | | | |
|---|---|--|--|--|
|  <p>2)</p> |  | | | |
| <p>6HX NT HSSE</p> <p>C / 2-3 O / P</p> | <p>6HX NT HSSE</p> <p>C / 2-3 O / P</p> | | | |
| <p>max. 2 x d₁</p>  | | | | |
| <p>P 3.1-5.1 N 2.7 S 2.3, 2.5-6</p> | <p>P 3.1-5.1 N 2.7 S 2.3, 2.5-6</p> | | | |
| <p>H0407101 WM-F-TIC-Set 4S NT (Nr.1Z, Nr.1, Nr.2, F)</p> | <p>H0437101 WM-F-TIC-Set 3S NT (Nr.1, Nr.2, F)</p> | | | |
| <p>● ● ● ● ● ● ● ● ●</p> | <p>● ● ● ● ● ● ● ● ●</p> | | | <p>M 3 4 5 6 8 10 12 16 20</p> |

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_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
- Tech. Info

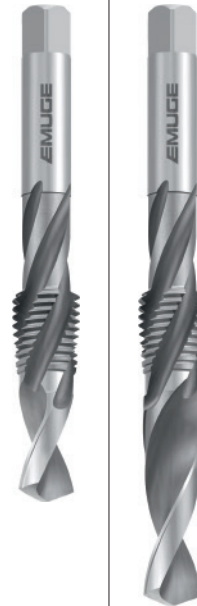
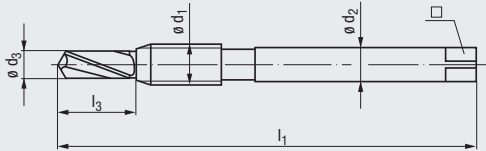


- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



DIN 13

Normal lang und extra lang
Standard length and extra long



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» » 245 - 266

| | |
|----------|----------|
| ISO 2/6H | ISO 2/6H |
| HSSE | HSSE |
| C / 2-3 | C / 2-3 |
| E / 0 | E / 0 |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» » 22

| | |
|-----------|-----------|
| P 1.1-2.1 | P 1.1-2.1 |
| N 2.2 | N 2.2 |

Normal lang · Standard length

| Werkzeug-Ident · Tool ident | | | | | | | | | M0601000 | | | |
|-----------------------------|---------|-------|-------|-------------------|-----|-------------------|-------------------|--------------------|----------|--|--|--|
| $\varnothing d_1$ mm | P mm | l_1 | l_3 | $\varnothing d_2$ | □ | $\varnothing d_3$ | Dimens.- Ident | KOMBI Normal-Ig | | | | |
| M 3 | 0,5 | 62 | 9 | 3,5 | 2,7 | 2,55 | .0030 | ○ | | | | |
| 3,5 | 0,6 | 66 | 10 | 4 | 3 | 2,95 | .0035 | | | | | |
| 4 | 0,7 | 66 | 10 | 4,5 | 3,4 | 3,36 | .0040 | ○ | | | | |
| 5 | 0,8 | 75 | 12 | 6 | 4,9 | 4,26 | .0050 | ○ | | | | |
| 6 | 1 | 81 | 14 | 6 | 4,9 | 5,05 | .0060 | ○ | | | | |
| 8 | 1,25 | 93 | 20 | 6 | 4,9 | 6,8 | .0080 | ○ | | | | |
| 10 | 1,5 | 99 | 22 | 7 | 5,5 | 8,55 | .0100 | ○ | | | | |
| 12 | 1,75 | 106 | 25 | 9 | 7 | 10,3 | .0112 | ○ | | | | |
| 14 | 2 | 114 | 28 | 11 | 9 | 12,1 | .0114 | | | | | |
| 16 | 2 | 123 | 32 | 12 | 9 | 14,1 | .0116 | ○ | | | | |
| 18 | 2,5 | 132 | 36 | 14 | 11 | 15,6 | .0118 | | | | | |
| 20 | 2,5 | 132 | 36 | 16 | 12 | 17,6 | .0120 | ○ | | | | |

Extra lang · Extra long

| Werkzeug-Ident · Tool ident | | | | | | | | | M0621000 | | | |
|-----------------------------|---------|-------|-------|-------------------|-----|-------------------|-------------------|-------------------|----------|--|--|--|
| $\varnothing d_1$ mm | P mm | l_1 | l_3 | $\varnothing d_2$ | □ | $\varnothing d_3$ | Dimens.- Ident | KOMBI Extra-Ig | | | | |
| M 3 | 0,5 | 71 | 18 | 3,5 | 2,7 | 2,55 | .0030 | ○ | | | | |
| 4 | 0,7 | 77 | 21 | 4,5 | 3,4 | 3,36 | .0040 | ○ | | | | |
| 5 | 0,8 | 87 | 24 | 6 | 4,9 | 4,26 | .0050 | ○ | | | | |
| 6 | 1 | 94 | 27 | 6 | 4,9 | 5,05 | .0060 | ○ | | | | |
| 8 | 1,25 | 109 | 36 | 6 | 4,9 | 6,8 | .0080 | ○ | | | | |
| 10 | 1,5 | 118 | 41 | 7 | 5,5 | 8,55 | .0100 | ○ | | | | |
| 12 | 1,75 | 127 | 46 | 9 | 7 | 10,3 | .0112 | ○ | | | | |

M



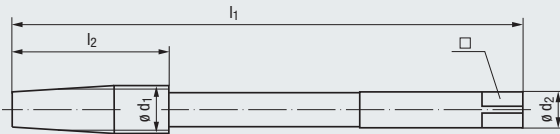
DIN 13

DIN
357



Haben Sie Bedarf an Automaten-Mutter-Gewindebohrern?
Bitte sprechen Sie uns an!

Do you need taper taps?
Please contact us!



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



ISO 2/6H

HSSE

E / O

Gewindetiefe und Lochform
Thread depth and hole type

max. 1,5 x d₁



Einsatzgebiete – Material
Applications – material

» 22

P 1.1-2.1

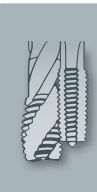
N 2.2

Werkzeug-Ident · Tool ident

M0101000

| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | Ø | Dimens.- Ident | MMB DIN 357 | | | | |
|---|------------------------|---------|----------------|----------------|------------------|------|------|-------------------|----------------|---|---|---|--|
| | | | | | | | | | ○ | ○ | ○ | ○ | |
| | 3 | 0,5 | 70 | 16 | 2,2 | – | 2,5 | .0030 | ○ | | | | |
| | 4 | 0,7 | 90 | 22 | 2,8 | 2,1 | 3,3 | .0040 | ○ | | | | |
| | 5 | 0,8 | 100 | 24 | 3,5 | 2,7 | 4,2 | .0050 | ○ | | | | |
| | 6 | 1 | 110 | 30 | 4,5 | 3,4 | 5 | .0060 | ○ | | | | |
| | 7 | 1 | 110 | 30 | 5,5 | 4,3 | 6 | .0070 | ○ | | | | |
| | 8 | 1,25 | 125 | 38 | 6 | 4,9 | 6,8 | .0080 | ○ | | | | |
| | 10 | 1,5 | 140 | 45 | 7 | 5,5 | 8,5 | .0100 | ○ | | | | |
| | 12 | 1,75 | 180 | 50 | 9 | 7 | 10,2 | .0112 | ○ | | | | |
| | 14 | 2 | 200 | 56 | 11 | 9 | 12 | .0114 | ○ | | | | |
| | 16 | 2 | 200 | 63 | 12 | 9 | 14 | .0116 | ○ | | | | |
| | 18 | 2,5 | 220 | 63 | 14 | 11 | 15,5 | .0118 | | | | | |
| | 20 | 2,5 | 250 | 70 | 16 | 12 | 17,5 | .0120 | | | | | |
| | 22 | 2,5 | 280 | 80 | 18 | 14,5 | 19,5 | .0122 | | | | | |
| | 24 | 3 | 280 | 80 | 18 | 14,5 | 21 | .0124 | | | | | |
| | 27 | 3 | 315 | 90 | 20 | 16 | 24 | .0127 | | | | | |
| | 30 | 3,5 | 315 | 100 | 22 | 18 | 26,5 | .0130 | | | | | |

- 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 (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

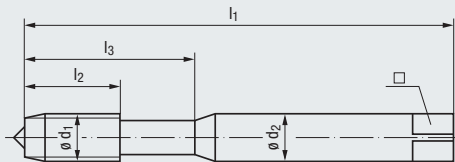


- Product Finder
- Vc
- M
- MF**
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

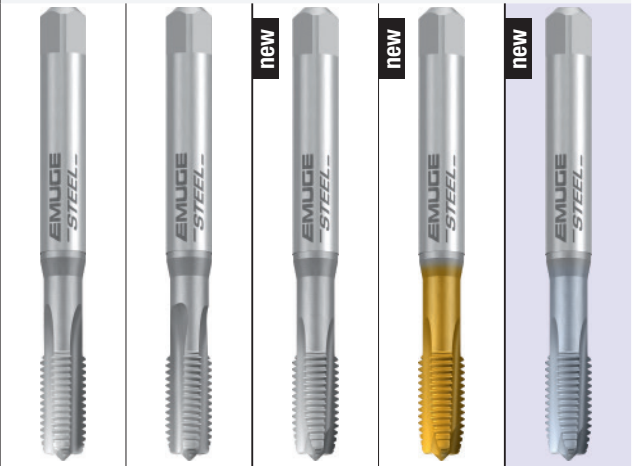


DIN 13

DIN 371



STEEL
Steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266

| | | | | |
|---------|-----------|----------|----------|----------------|
| 6HX | 6HX | ISO 2/6H | ISO 2/6H | 6HX |
| HSSE | HSSE | HSSE | TIN | CRT |
| | LH | | | HSSE-PM |
| C / 2-3 | C / 2-3 | B / 4-5 | B / 4-5 | B / ≈6 |
| E / O | E / O | E / O | E / O | E / O |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

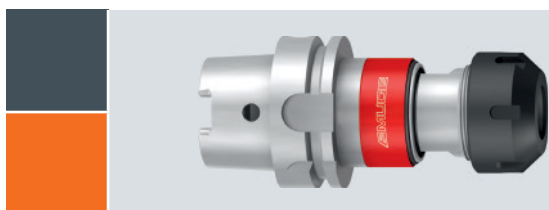
» 22

| | | | | |
|--------------------|--------------------|--------------------|------------------------------------|-----------|
| P 1.1-3.1 N 2.3 | P 1.1-3.1 N 2.3 | P 1.1-3.1 N 2.2 | P 1.1-4.1 K 2.1 N 2.2, 2.4-5 | P 3.1-5.1 |
|--------------------|--------------------|--------------------|------------------------------------|-----------|

Werkzeug-Ident · Tool ident

| M | ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | Dimens.- Ident | Rekord 1A-STEEL | Rekord 1A-STEEL-LH | Rekord 1B-STEEL-L | Rekord 1B-STEEL-L TIN | Rekord 1B-STEEL-H PM-CRT |
|---|------------------------|---------|----------------|----------------|----------------|------------------|-----|-------------------|-----------------|--------------------|-------------------|-----------------------|--------------------------|
| | | | | | | | | | B0101001 | B0101051 | B0208900 | B0208400 | B0208E01 |
| | 2,5 | x 0,35 | 50 | 7 | 12 | 2,8 | 2,1 | 2,15 | ○ | | | | |
| | 2,6 | x 0,35 | 50 | 7 | 12 | 2,8 | 2,1 | 2,25 | ○ | | | | |
| | 3 | x 0,35 | 56 | 8 | 18 | 3,5 | 2,7 | 2,65 | ○ | ○ | | | |
| | 3,5 | x 0,35 | 56 | 9 | 20 | 4 | 3 | 3,15 | ○ | | ● | ○ | |
| | 4 | x 0,5 | 63 | 10 | 21 | 4,5 | 3,4 | 3,5 | ● | ● | ● | ● | |
| | 5 | x 0,5 | 70 | 11 | 25 | 6 | 4,9 | 4,5 | ● | ● | ● | ● | |
| | 6 | x 0,5 | 80 | 13 | 30 | 6 | 4,9 | 5,5 | ● | ● | ● | ● | |
| | 6 | x 0,75 | 80 | 13 | 30 | 6 | 4,9 | 5,2 | ● | ● | ● | ● | |
| | 7 | x 0,75 | 80 | 13 | 30 | 7 | 5,5 | 6,2 | ○ | | ● | ○ | |
| | 8 | x 0,75 | 80 | 14 | 30 | 8 | 6,2 | 7,2 | ● | | ● | ● | |
| | 8 | x 1 | 90 | 17 | 35 | 8 | 6,2 | 7 | ● | ● | ● | ● | ● |
| | 9 | x 0,75 | 90 | 14 | 35 | 9 | 7 | 8,2 | ○ | | ● | ○ | |
| | 9 | x 1 | 90 | 17 | 35 | 9 | 7 | 8 | ○ | | ● | ○ | ● |
| | 10 | x 0,75 | 90 | 15 | 35 | 10 | 8 | 9,2 | ○ | | ● | ● | |
| | 10 | x 1 | 90 | 18 | 35 | 10 | 8 | 9 | ● | ● | ● | ● | ● |
| | 10 | x 1,25 | 100 | 18 | 39 | 10 | 8 | 8,8 | ○ | | ● | ● | |

| | | | | | | |
|----------|--|-----|-----|-----|-----|-----|
| DIN 374 | | 108 | | 108 | 108 | 111 |
| DIN 2181 | | 130 | 130 | | | |



Werkzeug-Aufnahmen der Typenreihe Softsynchro® siehe Seite 661 - 681

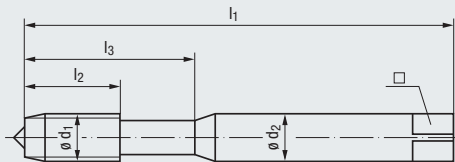
Tool holders of our Softsynchro® series, see page 661 - 681

- 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
- Tech. Info



DIN 13

DIN 371



H
Materials of high tensile strength



HCUT
Hardened steels



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

» 245 - 266



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

Gewindetiefe und Lochform
Thread depth and hole type

| | | |
|-------------------------|-------------------------|---------------------------|
| max. 2 x d ₁ | max. 2 x d ₁ | max. 1,5 x d ₁ |
| | | |

Einsatzgebiete – Material
Applications – material

» 22

| | | |
|-------------------|-----------------------|----------------|
| P 1.1-3.1 | P 5.1 | H 1.1-2 |
| K 1.1-4.2 | K 1.1-4.2 | |
| N 2.4-7 | N 1.5-6, 2.6-8 | |
| N 4.1, 5.1 | N 4.1, 4.3-5.2 | |
| | H 1.1-2 | |

Werkzeug-Ident · Tool ident

B0100501 B1950901 B010J901

| M | ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | Dimens.- Ident | Rekord | VHM | Rekord |
|---|------------------------|---------|----------------|----------------|----------------|------------------|-----|-------------------|------------|------------------------|------------------------|
| | | | | | | | | | 1A-H NT | Rekord 1A-H- IKZ | 1A-HCUT- PM TICN |
| | 2,5 | x 0,35 | 50 | 7 | 12 | 2,8 | 2,1 | 2,15 | ● | | |
| | 2,6 | x 0,35 | 50 | 7 | 12 | 2,8 | 2,1 | 2,25 | ○ | | |
| | 3 | x 0,35 | 56 | 8 | 18 | 3,5 | 2,7 | 2,65 | ● | | |
| | 3,5 | x 0,35 | 56 | 9 | 20 | 4 | 3 | 3,15 | ● | | |
| | 4 | x 0,5 | 63 | 10 | 21 | 4,5 | 3,4 | 3,5 | ● | | |
| | 5 | x 0,5 | 70 | 11 | 25 | 6 | 4,9 | 4,5 | ● | | |
| | 6 | x 0,5 | 80 | 13 | 30 | 6 | 4,9 | 5,5 | ● | | |
| | 6 | x 0,75 | 80 | 13 | 30 | 6 | 4,9 | 5,2 | ● | ● | |
| | 7 | x 0,75 | 80 | 13 | 30 | 7 | 5,5 | 6,2 | ● | | |
| | 8 | x 0,75 | 80 | 14 | 30 | 8 | 6,2 | 7,2 | ● | | |
| | 8 | x 1 | 90 | 17 | 35 | 8 | 6,2 | 7 ²⁾ | ● | ● | ● |
| | 9 | x 0,75 | 90 | 14 | 35 | 9 | 7 | 8,2 | ● | | |
| | 9 | x 1 | 90 | 17 | 35 | 9 | 7 | 8 | ● | | |
| | 10 | x 0,75 | 90 | 15 | 35 | 10 | 8 | 9,2 | ● | | |
| | 10 | x 1 | 90 | 18 | 35 | 10 | 8 | 9 ²⁾ | ● | ● | ● |
| | 10 | x 1,25 | 100 | 18 | 39 | 10 | 8 | 8,8 | ● | ● | |



» 118 » 119 » 119

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

2) Vorbohrdurchmesser 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

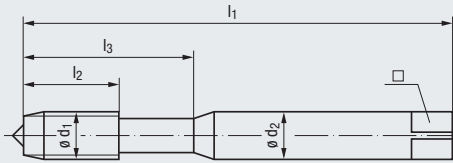
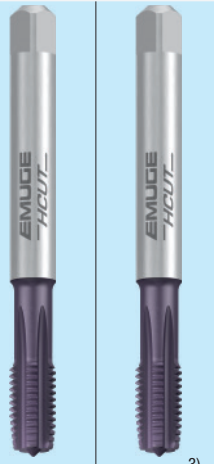
MF



DIN 13

DIN 371

HCUT
Hardened steels



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | |
|----------------|----------------|
| 6HX | 6HX |
| TICN | TICN |
| VHM | VHM |
| D / 4-5 | C / 2-3 |
| O / P | O / P |

Gewindetiefe und Lochform
Thread depth and hole type

| | |
|---------------------------|---------------------------|
| max. 1,5 x d ₁ | max. 1,5 x d ₁ |
| | |

Einsatzgebiete – Material
Applications – material

» 22

H 1.3-4

Werkzeug-Ident · Tool ident

B016K101 B010K101

| M | ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | | Dimens.- Ident | VHM Rekord 1A-HCUT/D TICN | VHM Rekord 1A-HCUT/C TICN |
|---|------------------------|---------|----------------|----------------|----------------|------------------|-----|------|-------------------|------------------------------------|------------------------------------|
| | | | | | | | | | | ● | ● |
| | 8 | x 1 | 90 | 15 | 35 | 8 | 6,2 | 7,1 | .0251 | ● | ● |
| | 10 | x 1 | 100 | 18 | 38 | 10 | 8 | 9,1 | .0276 | ● | ● |
| | 12 | x 1,5 | 110 | 21 | 41 | 12 | 9 | 10,6 | .0303 | ● | ● |
| | 14 | x 1,5 | 110 | 24 | 44 | 14 | 11 | 12,6 | .0331 | ● | ● |
| | 16 | x 1,5 | 110 | 24 | 44 | 16 | 12 | 14,6 | .0359 | ● | ● |

3) 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!

- 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 (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



Spiralbohrer Typ EF-Drill-HCUT
siehe Seite 558

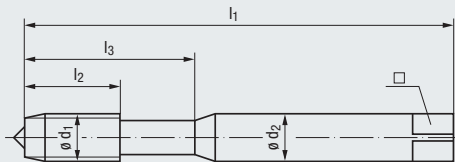
Twist drills type EF-Drill-HCUT,
see page 558

- 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
- Tech. Info



DIN 13

DIN 371



Z
CNC-controlled machines



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | |
|-----------|-----------|
| 6HX | 6HX |
| TIN-70 | GLT-1 |
| HSSE-PM | HSSE-PM |
| B / 4-5 | B / 4-5 |
| E / O / P | E / O / P |

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | |
|------------------|------------------|
| P 1.1-5.1 | P 1.1-5.1 |
| M 1.1-3.1 | M 1.1-3.1 |
| K 2.1 | K 2.1 |
| N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 |
| S 1.1 | S 1.1 |

Werkzeug-Ident · Tool ident

B0208F01 B020A601

| M | ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | Image | Dimens.- Ident | Rekord 1B-Z-PM TIN-70 | Rekord 1B-Z-PM GLT-1 |
|---|------------------------|---------|----------------|----------------|----------------|------------------|-----|-------|-------------------|-----------------------------|----------------------------|
| | | | | | | | | | | | |
| | 2,5 | x 0,35 | 50 | 5 | 12 | 2,8 | 2,1 | 2,15 | .0196 | | |
| | 2,6 | x 0,35 | 50 | 5 | 12 | 2,8 | 2,1 | 2,25 | .0199 | | |
| | 3 | x 0,35 | 56 | 4,5 | 18 | 3,5 | 2,7 | 2,65 | .0202 | | |
| | 3,5 | x 0,35 | 56 | 5 | 20 | 4 | 3 | 3,15 | .0205 | | |
| | 4 | x 0,5 | 63 | 5 | 21 | 4,5 | 3,4 | 3,5 | .0210 | • | • |
| | 5 | x 0,5 | 70 | 5 | 25 | 6 | 4,9 | 4,5 | .0218 | • | • |
| | 6 | x 0,5 | 80 | 5 | 30 | 6 | 4,9 | 5,5 | .0228 | | |
| | 6 | x 0,75 | 80 | 8 | 30 | 6 | 4,9 | 5,2 | .0229 | | |
| | 7 | x 0,75 | 80 | 10 | 30 | 7 | 5,5 | 6,2 | .0239 | | |
| | 8 | x 0,75 | 80 | 8 | 30 | 8 | 6,2 | 7,2 | .0250 | | |
| | 8 | x 1 | 90 | 10 | 35 | 8 | 6,2 | 7 | .0251 | | |
| | 9 | x 0,75 | 90 | 10 | 35 | 9 | 7 | 8,2 | .0262 | | |
| | 9 | x 1 | 90 | 10 | 35 | 9 | 7 | 8 | .0263 | | |
| | 10 | x 0,75 | 90 | 10 | 35 | 10 | 8 | 9,2 | .0275 | | |
| | 10 | x 1 | 90 | 10 | 35 | 10 | 8 | 9 | .0276 | | |
| | 10 | x 1,25 | 100 | 16 | 39 | 10 | 8 | 8,8 | .0277 | | |

DIN 374

» 121

» 121

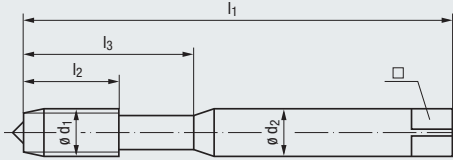
DIN 2181

MF



DIN 13

DIN 371



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



Gewindetiefe und Lochform
Thread depth and hole type

Einsatzgebiete – Material
Applications – material

» 22

Werkzeug-Ident · Tool ident

| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | Image | Dimens.- Ident | max. 3 x d ₁ | | | |
|---|------------------------|---------|----------------|----------------|----------------|------------------|-----|-------|-------------------|-------------------------|-----------------|------------------|----------------------|
| | | | | | | | | | | Enorm 1-Z/E | Enorm 1-Z/E TIN | Enorm 1-Z/E „6G“ | Enorm 1-Z/E TIN „6G“ |
| | 2,5 | x 0,35 | 50 | 5 | 12 | 2,8 | 2,1 | 2,15 | .0196 | | | | |
| | 2,6 | x 0,35 | 50 | 5 | 12 | 2,8 | 2,1 | 2,25 | .0199 | | | | |
| | 3 | x 0,35 | 56 | 4,5 | 18 | 3,5 | 2,7 | 2,65 | .0202 | | | | |
| | 3,5 | x 0,35 | 56 | 5 | 20 | 4 | 3 | 3,15 | .0205 | | | | |
| | 4 | x 0,5 | 63 | 5 | 21 | 4,5 | 3,4 | 3,5 | .0210 | ● | ● | ● | ● |
| | 5 | x 0,5 | 70 | 5 | 25 | 6 | 4,9 | 4,5 | .0218 | ● | ● | ● | ● |
| | 6 | x 0,5 | 80 | 5 | 30 | 6 | 4,9 | 5,5 | .0228 | ● | ● | ● | ● |
| | 6 | x 0,75 | 80 | 8 | 30 | 6 | 4,9 | 5,2 | .0229 | ● | ● | ● | ● |
| | 7 | x 0,75 | 80 | 10 | 30 | 7 | 5,5 | 6,2 | .0239 | | | | |
| | 8 | x 0,75 | 80 | 8 | 30 | 8 | 6,2 | 7,2 | .0250 | | | | |
| | 8 | x 1 | 90 | 10 | 35 | 8 | 6,2 | 7 | .0251 | | | | |
| | 9 | x 0,75 | 90 | 10 | 35 | 9 | 7 | 8,2 | .0262 | | | | |
| | 9 | x 1 | 90 | 10 | 35 | 9 | 7 | 8 | .0263 | | | | |
| | 10 | x 0,75 | 90 | 10 | 35 | 10 | 8 | 9,2 | .0275 | | | | |
| | 10 | x 1 | 90 | 10 | 35 | 10 | 8 | 9 | .0276 | | | | |
| | 10 | x 1,25 | 100 | 16 | 39 | 10 | 8 | 8,8 | .0277 | | | | |

DIN 374

» 124

» 124

» 124

» 125

DIN 2181

| ISO 2/6H | ISO 2/6H | ISO 3/6G | ISO 3/6G |
|-----------|-----------|-----------|-----------|
| HSSE | HSSE | HSSE | HSSE |
| R45 | R45 | R45 | R45 |
| E / 1,5-2 | E / 1,5-2 | E / 1,5-2 | E / 1,5-2 |
| E / O / P | E / O / P | E / O / P | E / O / P |



| P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 |
|-----------|----------------|-----------|----------------|
| M 1.1-2.1 | M 1.1-3.1 | M 1.1-2.1 | M 1.1-3.1 |
| N 2.1 | N 1.4-6 | N 2.1 | N 1.4-6 |
| | N 2.1-2, 2.4-5 | | N 2.1-2, 2.4-5 |
| S 1.1 | | S 1.1 | S 1.1 |

- 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 (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

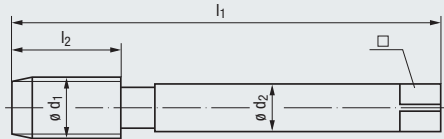


- Product Finder
- V_c
- M
- MF**
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

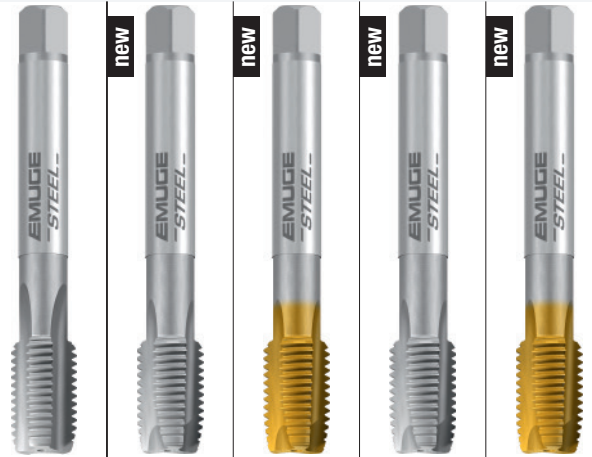


DIN 13

DIN 374



STEEL
Steel materials



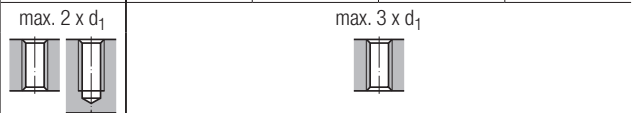
Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266

| | | | | |
|---------|----------|-------------|----------|-------------|
| 6HX | ISO 2/6H | ISO 2/6H | ISO 1/4H | ISO 1/4H |
| HSSE | HSSE | TIN HSSE | HSSE | TIN HSSE |
| C / 2-3 | B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 |
| E / 0 | E / 0 | E / 0 | E / 0 | E / 0 |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

| | | | | |
|--------------------|--------------------|------------------------------------|--------------------|------------------------------------|
| P 1.1-3.1 N 2.3 | P 1.1-3.1 N 2.2 | P 1.1-4.1 K 2.1 N 2.2, 2.4-5 | P 1.1-3.1 N 2.2 | P 1.1-4.1 K 2.1 N 2.2, 2.4-5 |
|--------------------|--------------------|------------------------------------|--------------------|------------------------------------|

Werkzeug-Ident · Tool ident

| M | ø d ₁ mm | P mm | l ₁ | l ₂ | ø d ₂ | □ | Dimens.- Ident | Rekord | Rekord | Rekord | Rekord | Rekord |
|----|------------------------|---------|----------------|----------------|------------------|------|-------------------|----------|------------|-------------------|--------------------|---------------------------|
| | | | | | | | | 2A-STEEL | 2B-STEEL-L | 2B-STEEL-L TIN | 2B-STEEL-L „4H“ | 2B-STEEL-L TIN „4H“ |
| 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 | ○ | ● | ● | | |
| 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 | ○ | ● | ● | | |
| 10 | x | 0,75 | 90 | 18 | 7 | 5,5 | 9,2 | ○ | ● | ● | | |
| 10 | x | 1 | 90 | 18 | 7 | 5,5 | 9 | ○ | ● | ● | ● | ○ |
| 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 | ○ | ● | ● | | |
| 12 | x | 1,25 | 100 | 22 | 9 | 7 | 10,8 | ○ | ● | ● | | |
| 12 | x | 1,5 | 100 | 22 | 9 | 7 | 10,5 | ○ | ● | ● | ● | ○ |
| 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 | ○ | ● | ● | ● | ○ |
| 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 | ○ | ● | ● | ● | ○ |
| 18 | x | 1 | 110 | 20 | 14 | 11 | 17 | ○ | ● | ● | | |
| 18 | x | 1,5 | 110 | 25 | 14 | 11 | 16,5 | ○ | ● | ● | ● | ○ |
| 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 | ○ | ● | ● | ● | ○ |
| 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 | ○ | ● | ● | | |

DIN 371 102

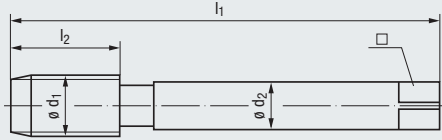
DIN 2181 130

MF



DIN 13

DIN 374



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



Gewindetiefe und Lochform
Thread depth and hole type

Einsatzgebiete – Material
Applications – material

» 22

Werkzeug-Ident · Tool ident

| M | ø d ₁ mm | P mm | l ₁ | l ₂ | ø d ₂ | □ | | Dimens.- Ident | STEEL Steel materials | | | | |
|---|------------------------|---------|----------------|----------------|------------------|----|------|-------------------|--------------------------|----------------------|-----------------------------|------------------------------|-------------------------------------|
| | | | | | | | | | Rekord 2A-STEEL | Rekord 2B-STEEL-L | Rekord 2B-STEEL-L TIN | Rekord 2B-STEEL-L „4H“ | Rekord 2B-STEEL-L TIN „4H“ |
| | 27 | x 1,5 | 140 | 28 | 20 | 16 | 25,5 | .0470 | ● | ● | ● | | |
| | 27 | x 2 | 140 | 28 | 20 | 16 | 25 | .0471 | ● | ● | ● | | |
| | 28 | x 1,5 | 140 | 28 | 20 | 16 | 26,5 | .0476 | ● | ● | ● | | |
| | 28 | x 2 | 140 | 28 | 20 | 16 | 26 | .0477 | ● | ● | ● | | |
| | 30 | x 1,5 | 150 | 28 | 22 | 18 | 28,5 | .0490 | ● | ● | ● | | |
| | 30 | x 2 | 150 | 28 | 22 | 18 | 28 | .0491 | ● | ● | ● | | |
| | 32 | x 1,5 | 150 | 28 | 22 | 18 | 30,5 | .0504 | ● | ● | ○ | | |
| | 32 | x 2 | 150 | 28 | 22 | 18 | 30 | .0505 | ● | ● | ○ | | |
| | 33 | x 1,5 | 160 | 30 | 25 | 20 | 31,5 | .0511 | ● | ● | ○ | | |
| | 33 | x 2 | 160 | 30 | 25 | 20 | 31 | .0512 | ● | ● | ○ | | |
| | 34 | x 1,5 | 170 | 30 | 28 | 22 | 32,5 | .0518 | ● | ● | ○ | | |
| | 35 | x 1,5 | 170 | 30 | 28 | 22 | 33,5 | .0525 | ● | ● | ○ | | |
| | 36 | x 1,5 | 170 | 30 | 28 | 22 | 34,5 | .0532 | ● | ● | ○ | | |
| | 36 | x 2 | 170 | 30 | 28 | 22 | 34 | .0533 | ● | ● | ○ | | |
| | 36 | x 3 | 200 | 42 | 28 | 22 | 33 | .0534 | ● | ● | ○ | | |
| | 38 | x 1,5 | 170 | 30 | 28 | 22 | 36,5 | .0546 | ● | ● | ○ | | |
| | 39 | x 1,5 | 170 | 30 | 32 | 24 | 37,5 | .0553 | ● | ● | ○ | | |
| | 39 | x 2 | 170 | 30 | 32 | 24 | 37 | .0554 | ● | ● | ○ | | |
| | 40 | x 1,5 | 170 | 30 | 32 | 24 | 38,5 | .0560 | ● | ● | ○ | | |
| | 40 | x 2 | 170 | 30 | 32 | 24 | 38 | .0561 | ● | ● | ○ | | |
| | 42 | x 1,5 | 170 | 30 | 32 | 24 | 40,5 | .0574 | ● | ● | ○ | | |
| | 42 | x 2 | 170 | 30 | 32 | 24 | 40 | .0575 | ● | ● | ○ | | |
| | 42 | x 3 | 200 | 45 | 32 | 24 | 39 | .0576 | ● | ● | ○ | | |
| | 45 | x 1,5 | 180 | 32 | 36 | 29 | 43,5 | .0595 | ● | ● | ○ | | |
| | 45 | x 2 | 180 | 32 | 36 | 29 | 43 | .0596 | ● | ● | ○ | | |
| | 45 | x 3 | 200 | 45 | 36 | 29 | 42 | .0597 | ● | ● | ○ | | |
| | 48 | x 1,5 | 190 | 32 | 36 | 29 | 46,5 | .0616 | ● | ● | ○ | | |
| | 48 | x 2 | 190 | 32 | 36 | 29 | 46 | .0617 | ● | ● | ○ | | |
| | 48 | x 3 | 225 | 50 | 36 | 29 | 45 | .0618 | ● | ● | ○ | | |
| | 50 | x 1,5 | 190 | 32 | 36 | 29 | 48,5 | .0630 | ● | ● | ○ | | |
| | 50 | x 2 | 190 | 32 | 36 | 29 | 48 | .0631 | ● | ● | ○ | | |
| | 52 | x 1,5 | 190 | 32 | 40 | 32 | 50,5 | .0644 | ● | ● | ○ | | |
| | 52 | x 2 | 190 | 32 | 40 | 32 | 50 | .0645 | ● | ● | ○ | | |
| | 52 | x 3 | 225 | 50 | 40 | 32 | 49 | .0646 | ● | ● | ○ | | |

DIN 371

102

102

102

DIN 2181

130

Product Finder

- Vc
- M
- MF**
- UNC UN-8
- UNF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

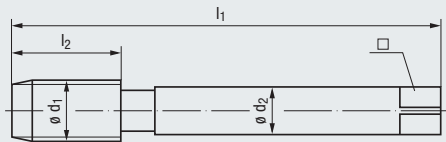


- Product Finder
- Vc
- M
- MF**
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



DIN 13

DIN 374



STEEL
Steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266

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

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | | |
|--------------------|------------------------------------|--------------------|------------------------------------|
| P 1.1-3.1 N 2.2 | P 1.1-4.1 K 2.1 N 2.2, 2.4-5 | P 1.1-3.1 N 2.2 | P 1.1-4.1 K 2.1 N 2.2, 2.4-5 |
|--------------------|------------------------------------|--------------------|------------------------------------|

Werkzeug-Ident · Tool ident

C0208920 C0208420 C0208950 C0208450

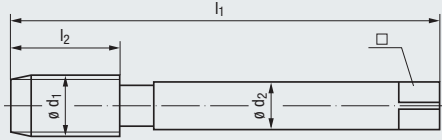
| M | ø d ₁ mm | P mm | l ₁ | l ₂ | ø d ₂ | □ | Dimens.- Ident | Rekord | Rekord | Rekord | Rekord |
|---|------------------------|---------|----------------|----------------|------------------|------|-------------------|--------------------|---------------------------|------------------|----------------------|
| | | | | | | | | 2B-STEEL-L „6G“ | 2B-STEEL-L TIN „6G“ | 2B-STEEL-L LH | 2B-STEEL-L LH-TIN |
| | 6 | x 0,5 | 80 | 13 | 4,5 | 3,4 | .0228 | | | | |
| | 6 | x 0,75 | 80 | 13 | 4,5 | 3,4 | .0229 | | | | |
| | 8 | x 0,75 | 80 | 14 | 6 | 4,9 | .0250 | | | | |
| | 8 | x 1 | 90 | 17 | 6 | 4,9 | .0251 | ● | ○ | ● | ○ |
| | 9 | x 1 | 90 | 17 | 7 | 5,5 | .0263 | | | | |
| | 10 | x 0,75 | 90 | 18 | 7 | 5,5 | .0275 | | | | |
| | 10 | x 1 | 90 | 18 | 7 | 5,5 | .0276 | ● | ○ | ● | ○ |
| | 10 | x 1,25 | 100 | 22 | 7 | 5,5 | .0277 | | | | |
| | 11 | x 1 | 90 | 18 | 8 | 6,2 | .0288 | | | | |
| | 12 | x 1 | 100 | 18 | 9 | 7 | .0301 | ● | ○ | ● | ○ |
| | 12 | x 1,25 | 100 | 22 | 9 | 7 | .0302 | | | | |
| | 12 | x 1,5 | 100 | 22 | 9 | 7 | .0303 | ● | ○ | ● | ○ |
| | 14 | x 1 | 100 | 18 | 11 | 9 | .0329 | | | | |
| | 14 | x 1,25 | 100 | 22 | 11 | 9 | .0330 | | | | |
| | 14 | x 1,5 | 100 | 22 | 11 | 9 | .0331 | ● | ○ | ● | ○ |
| | 15 | x 1 | 100 | 18 | 12 | 9 | .0343 | | | | |
| | 16 | x 1 | 100 | 18 | 12 | 9 | .0357 | | | | |
| | 16 | x 1,5 | 100 | 22 | 12 | 9 | .0359 | ● | ○ | ● | ○ |
| | 18 | x 1 | 110 | 20 | 14 | 11 | .0388 | | | | |
| | 18 | x 1,5 | 110 | 25 | 14 | 11 | .0390 | ● | ○ | ● | ○ |
| | 18 | x 2 | 125 | 26 | 14 | 11 | .0391 | | | | |
| | 20 | x 1 | 125 | 20 | 16 | 12 | .0420 | | | | |
| | 20 | x 1,5 | 125 | 25 | 16 | 12 | .0422 | ● | ○ | ● | ○ |
| | 20 | x 2 | 140 | 27 | 16 | 12 | .0423 | | | | |
| | 22 | x 1 | 125 | 20 | 18 | 14,5 | .0436 | | | | |
| | 22 | x 1,5 | 125 | 25 | 18 | 14,5 | .0438 | | | | |
| | 22 | x 2 | 140 | 27 | 18 | 14,5 | .0439 | | | | |
| | 24 | x 1 | 140 | 20 | 18 | 14,5 | .0450 | | | | |
| | 24 | x 1,5 | 140 | 27 | 18 | 14,5 | .0452 | | | | |
| | 24 | x 2 | 140 | 27 | 18 | 14,5 | .0453 | | | | |

MF



DIN 13

DIN 374



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



Gewindetiefe und Lochform
Thread depth and hole type

Einsatzgebiete – Material
Applications – material

» 22

Werkzeug-Ident · Tool ident

| M | ø d ₁ mm | P mm | l ₁ | l ₂ | ø d ₂ | □ | DIN 374 | Dimens.- Ident | STEEL Steel materials | | | | | |
|---|------------------------|---------|----------------|----------------|------------------|------|---------|-------------------|--------------------------|-----------------------------|--------------------------------|--------------------|----------------------|---|
| | | | | | | | | | Rekord 2B-STEEL-M | Rekord 2B-STEEL-M TIN | Rekord 2B-STEEL-H PM-CRT | Rekord 2D-STEEL | Rekord 2D-STEEL/E | |
| | 4 | x 0,35 | 63 | 10 | 2,8 | 2,1 | 3,65 | .0209 | | | | | | |
| | 4 | x 0,5 | 63 | 10 | 2,8 | 2,1 | 3,5 | .0210 | | | | | | |
| | 5 | x 0,5 | 70 | 11 | 3,5 | 2,7 | 4,5 | .0218 | | | | | | |
| | 6 | x 0,5 | 80 | 13 | 4,5 | 3,4 | 5,5 | .0228 | | | | | | |
| | 6 | x 0,75 | 80 | 13 | 4,5 | 3,4 | 5,2 | .0229 | ● | ● | | ○ | | |
| | 8 | x 0,75 | 80 | 14 | 6 | 4,9 | 7,2 | .0250 | | | | ○ | | |
| | 8 | x 1 | 90 | 17 | 6 | 4,9 | 7 | .0251 | ● | ● | | ● | ● | |
| | 9 | x 1 | 90 | 17 | 7 | 5,5 | 8 | .0263 | | | | ● | | ● |
| | 10 | x 0,75 | 90 | 18 | 7 | 5,5 | 9,2 | .0275 | | | | ○ | | |
| | 10 | x 1 | 90 | 18 | 7 | 5,5 | 9 | .0276 | ● | ● | | ● | ● | |
| | 10 | x 1,25 | 100 | 22 | 7 | 5,5 | 8,8 | .0277 | ● | ● | | ● | ● | |
| | 11 | x 1 | 90 | 18 | 8 | 6,2 | 10 | .0288 | | | | ○ | | |
| | 12 | x 1 | 100 | 18 | 9 | 7 | 11 | .0301 | ● | ● | | ● | ● | |
| | 12 | x 1,25 | 100 | 22 | 9 | 7 | 10,8 | .0302 | ● | ● | | ● | ● | |
| | 12 | x 1,5 | 100 | 22 | 9 | 7 | 10,5 | .0303 | ● | ● | ● | ● | ● | |
| | 14 | x 1 | 100 | 18 | 11 | 9 | 13 | .0329 | | | | ● | | |
| | 14 | x 1,25 | 100 | 22 | 11 | 9 | 12,8 | .0330 | | | | ○ | | |
| | 14 | x 1,5 | 100 | 22 | 11 | 9 | 12,5 | .0331 | ● | ● | ● | ● | ● | |
| | 15 | x 1 | 100 | 18 | 12 | 9 | 14 | .0343 | | | | ● | | |
| | 16 | x 1 | 100 | 18 | 12 | 9 | 15 | .0357 | | | | ● | | |
| | 16 | x 1,5 | 100 | 22 | 12 | 9 | 14,5 | .0359 | ● | ● | ● | ● | ● | |
| | 18 | x 1 | 110 | 20 | 14 | 11 | 17 | .0388 | | | | ● | | |
| | 18 | x 1,5 | 110 | 25 | 14 | 11 | 16,5 | .0390 | ● | ● | | ● | ● | |
| | 18 | x 2 | 125 | 26 | 14 | 11 | 16 | .0391 | | | | ○ | | |
| | 20 | x 1 | 125 | 20 | 16 | 12 | 19 | .0420 | | | | ○ | | |
| | 20 | x 1,5 | 125 | 25 | 16 | 12 | 18,5 | .0422 | ● | ● | | ● | ● | |
| | 20 | x 2 | 140 | 27 | 16 | 12 | 18 | .0423 | | | | ● | | |
| | 22 | x 1 | 125 | 20 | 18 | 14,5 | 21 | .0436 | | | | ○ | | |
| | 22 | x 1,5 | 125 | 25 | 18 | 14,5 | 20,5 | .0438 | ● | ● | | ● | ● | |
| | 22 | x 2 | 140 | 27 | 18 | 14,5 | 20 | .0439 | | | | ○ | | |
| | 24 | x 1 | 140 | 20 | 18 | 14,5 | 23 | .0450 | | | | ○ | | |
| | 24 | x 1,5 | 140 | 27 | 18 | 14,5 | 22,5 | .0452 | ● | ● | | ● | ● | |
| | 24 | x 2 | 140 | 27 | 18 | 14,5 | 22 | .0453 | | | | ● | | |
| | 25 | x 1,5 | 140 | 28 | 18 | 14,5 | 23,5 | .0458 | | | | ○ | | |
| | 26 | x 1,5 | 140 | 28 | 18 | 14,5 | 24,5 | .0464 | | | | ○ | | |

DIN 371



102

DIN 2181



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

Tech. Info

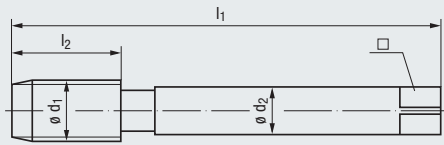


- Product Finder
- V_c
- M
- MF**
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

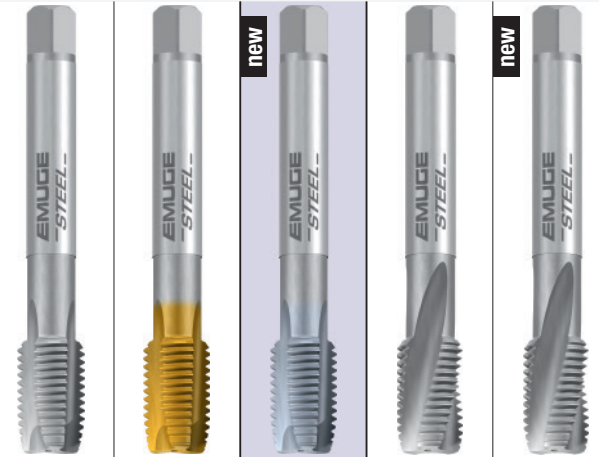


DIN 13

DIN 374



STEEL
Steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266

| | | | | |
|----------|----------|---------|----------|------------------|
| ISO 2/6H | ISO 2/6H | 6HX | ISO 2/6H | ISO 2/6H |
| HSSE | HSSE | HSSE-PM | HSSE | HSSE |
| B / 4-5 | B / 4-5 | B / ≈6 | C / 2-3 | E / 1,5-2 |
| E / 0 | E / 0 | E / 0 | E / 0 | E / 0 |

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



max. 2 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | | | |
|-----------|--------------------|-----------|-----------|-----------|
| P 2.1-4.1 | P 2.1-4.1 K 2.1 | P 3.1-5.1 | P 2.1-3.1 | P 2.1-3.1 |
|-----------|--------------------|-----------|-----------|-----------|

Werkzeug-Ident · Tool ident

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

DIN 371

102

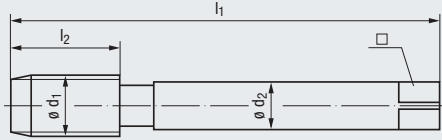
DIN 2181

MF



DIN 13

DIN 374



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



Gewindetiefe und Lochform
Thread depth and hole type

Einsatzgebiete – Material
Applications – material

» 22

Werkzeug-Ident · Tool ident

| M | ø d ₁ mm | P mm | l ₁ | l ₂ | ø d ₂ | □ | DIN 374 | Dimens.- Ident | STEEL | | | | |
|---|------------------------|---------|----------------|----------------|------------------|------|---------|-------------------|---------------|-------------------|--------------------|------------------|----------------------|
| | | | | | | | | | Enorm 2-STEEL | Enorm 2-STEEL TIN | Enorm 2-STEEL „4H“ | Enorm 2-STEEL-LH | Enorm 2-STEEL-LH TIN |
| | 4 | x 0,35 | 63 | 5 | 2,8 | 2,1 | 3,65 | .0209 | | | | | |
| | 4 | x 0,5 | 63 | 5 | 2,8 | 2,1 | 3,5 | .0210 | | | | | |
| | 5 | x 0,5 | 70 | 5 | 3,5 | 2,7 | 4,5 | .0218 | | | | | |
| | 6 | x 0,5 | 80 | 5 | 4,5 | 3,4 | 5,5 | .0228 | | | | | |
| | 6 | x 0,75 | 80 | 8 | 4,5 | 3,4 | 5,2 | .0229 | | | | | |
| | 8 | x 0,75 | 80 | 8 | 6 | 4,9 | 7,2 | .0250 | | | | | |
| | 8 | x 1 | 90 | 10 | 6 | 4,9 | 7 | .0251 | | | | | |
| | 9 | x 1 | 90 | 10 | 7 | 5,5 | 8 | .0263 | | | | | |
| | 10 | x 0,75 | 90 | 10 | 7 | 5,5 | 9,2 | .0275 | | | | | |
| | 10 | x 1 | 90 | 10 | 7 | 5,5 | 9 | .0276 | | | | | |
| | 10 | x 1,25 | 100 | 16 | 7 | 5,5 | 8,8 | .0277 | | | | | |
| | 11 | x 1 | 90 | 11 | 8 | 6,2 | 10 | .0288 | | | | | |
| | 12 | x 1 | 100 | 11 | 9 | 7 | 11 | .0301 | | | | | |
| | 12 | x 1,25 | 100 | 15 | 9 | 7 | 10,8 | .0302 | | | | | |
| | 12 | x 1,5 | 100 | 15 | 9 | 7 | 10,5 | .0303 | | | | | |
| | 14 | x 1 | 100 | 11 | 11 | 9 | 13 | .0329 | | | | | |
| | 14 | x 1,25 | 100 | 15 | 11 | 9 | 12,8 | .0330 | | | | | |
| | 14 | x 1,5 | 100 | 15 | 11 | 9 | 12,5 | .0331 | | | | | |
| | 15 | x 1 | 100 | 12 | 12 | 9 | 14 | .0343 | | | | | |
| | 16 | x 1 | 100 | 12 | 12 | 9 | 15 | .0357 | | | | | |
| | 16 | x 1,5 | 100 | 15 | 12 | 9 | 14,5 | .0359 | | | | | |
| | 18 | x 1 | 110 | 13 | 14 | 11 | 17 | .0388 | | | | | |
| | 18 | x 1,5 | 110 | 17 | 14 | 11 | 16,5 | .0390 | | | | | |
| | 18 | x 2 | 125 | 20 | 14 | 11 | 16 | .0391 | | | | | |
| | 20 | x 1 | 125 | 14 | 16 | 12 | 19 | .0420 | | | | | |
| | 20 | x 1,5 | 125 | 17 | 16 | 12 | 18,5 | .0422 | | | | | |
| | 20 | x 2 | 140 | 20 | 16 | 12 | 18 | .0423 | | | | | |
| | 22 | x 1 | 125 | 14 | 18 | 14,5 | 21 | .0436 | | | | | |
| | 22 | x 1,5 | 125 | 17 | 18 | 14,5 | 20,5 | .0438 | | | | | |
| | 22 | x 2 | 140 | 20 | 18 | 14,5 | 20 | .0439 | | | | | |
| | 24 | x 1 | 140 | 15 | 18 | 14,5 | 23 | .0450 | | | | | |
| | 24 | x 1,5 | 140 | 20 | 18 | 14,5 | 22,5 | .0452 | | | | | |
| | 24 | x 2 | 140 | 20 | 18 | 14,5 | 22 | .0453 | | | | | |
| | 25 | x 1,5 | 140 | 20 | 18 | 14,5 | 23,5 | .0458 | | | | | |
| | 26 | x 1,5 | 140 | 20 | 18 | 14,5 | 24,5 | .0464 | | | | | |

DIN 371



103

103

103

DIN 2181



max. 2,5 x d₁



| | | | | |
|--------------------|-----------------------------|--------------------|--------------------|-----------------------------|
| P 1.1-3.1 N 2.2 | P 1.1-4.1 K 2.1 N 2.2 | P 1.1-3.1 N 2.2 | P 1.1-3.1 N 2.2 | P 1.1-4.1 K 2.1 N 2.2 |
|--------------------|-----------------------------|--------------------|--------------------|-----------------------------|

Product Finder

Vc

M

MF

UNC UN-8

UNF

G, Rp NPSM, NPSF

NPT, NPTF Rc, W

BSW, BSF

Pg

MJ UNJC, UNJF

EG (ST) SELF-LOCK

Tr, Tr-F Rd

Zubehör Accessories

Tech. Info

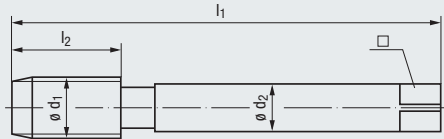


- Product Finder
- Vc
- M
- MF**
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



DIN 13

DIN 374



STEEL
Steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266

| | | | | |
|----------|----------|-----------------|----------------|----------------|
| ISO 2/6H | ISO 2/6H | ISO 1/4H | ISO 2/6H | ISO 2/6H |
| HSSE | HSSE | HSSE | HSSE | HSSE |
| R35 | R35 | R35 | LH, L35 | LH, L35 |
| C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 |
| E / O | E / O | E / O | E / O | E / O |

Gewindetiefe und Lochform
Thread depth and hole type

max. 2,5 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | | | |
|-----------|-----------|-----------|-----------|-----------|
| P 1.1-3.1 | P 1.1-4.1 | P 1.1-3.1 | P 1.1-3.1 | P 1.1-4.1 |
| N 2.2 | K 2.1 | N 2.2 | N 2.2 | K 2.1 |
| | N 2.2 | | | N 2.2 |

Werkzeug-Ident · Tool ident

C0501000 C0501400 C0501010 C0501050 C0501450

| M | ø d ₁ mm | P mm | l ₁ | l ₂ | ø d ₂ | □ | Dimens.- Ident | Enorm 2-STEEL | Enorm 2-STEEL TIN | Enorm 2-STEEL „4H“ | Enorm 2-STEEL-LH | Enorm 2-STEEL-LH TIN |
|----|------------------------|---------|----------------|----------------|------------------|----|-------------------|---------------|-------------------|--------------------|------------------|----------------------|
| | | | | | | | | | | | | |
| 27 | x | 1,5 | 140 | 20 | 20 | 16 | .0470 | ● | | | | |
| 27 | x | 2 | 140 | 20 | 20 | 16 | .0471 | ● | | | | |
| 28 | x | 1,5 | 140 | 20 | 20 | 16 | .0476 | ● | | | | |
| 28 | x | 2 | 140 | 20 | 20 | 16 | .0477 | ● | | | | |
| 30 | x | 1,5 | 150 | 22 | 22 | 18 | .0490 | ● | | | | |
| 30 | x | 2 | 150 | 22 | 22 | 18 | .0491 | ● | | | | |
| 32 | x | 1,5 | 150 | 22 | 22 | 18 | .0504 | ● | | | | |
| 32 | x | 2 | 150 | 22 | 22 | 18 | .0505 | ○ | | | | |
| 33 | x | 1,5 | 160 | 24 | 25 | 20 | .0511 | ● | | | | |
| 33 | x | 2 | 160 | 24 | 25 | 20 | .0512 | ● | | | | |
| 34 | x | 1,5 | 170 | 24 | 28 | 22 | .0518 | ● | | | | |
| 35 | x | 1,5 | 170 | 24 | 28 | 22 | .0525 | ● | | | | |
| 36 | x | 1,5 | 170 | 24 | 28 | 22 | .0532 | ● | | | | |
| 36 | x | 2 | 170 | 24 | 28 | 22 | .0533 | ● | | | | |
| 36 | x | 3 | 200 | 30 | 28 | 22 | .0534 | ● | | | | |
| 38 | x | 1,5 | 170 | 24 | 28 | 22 | .0546 | ● | | | | |
| 39 | x | 1,5 | 170 | 25 | 32 | 24 | .0553 | ○ | | | | |
| 39 | x | 2 | 170 | 25 | 32 | 24 | .0554 | ○ | | | | |
| 40 | x | 1,5 | 170 | 25 | 32 | 24 | .0560 | ● | | | | |
| 40 | x | 2 | 170 | 25 | 32 | 24 | .0561 | ○ | | | | |
| 42 | x | 1,5 | 170 | 25 | 32 | 24 | .0574 | ● | | | | |
| 42 | x | 2 | 170 | 25 | 32 | 24 | .0575 | ● | | | | |
| 42 | x | 3 | 200 | 30 | 32 | 24 | .0576 | ● | | | | |
| 45 | x | 1,5 | 180 | 27 | 36 | 29 | .0595 | ● | | | | |
| 45 | x | 2 | 180 | 27 | 36 | 29 | .0596 | ○ | | | | |
| 45 | x | 3 | 200 | 30 | 36 | 29 | .0597 | ○ | | | | |
| 48 | x | 1,5 | 190 | 27 | 36 | 29 | .0616 | ● | | | | |
| 48 | x | 2 | 190 | 27 | 36 | 29 | .0617 | ● | | | | |
| 48 | x | 3 | 225 | 33 | 36 | 29 | .0618 | ● | | | | |
| 50 | x | 1,5 | 190 | 27 | 36 | 29 | .0630 | ● | | | | |
| 50 | x | 2 | 190 | 27 | 36 | 29 | .0631 | ● | | | | |
| 52 | x | 1,5 | 190 | 27 | 40 | 32 | .0644 | ● | | | | |
| 52 | x | 2 | 190 | 27 | 40 | 32 | .0645 | ● | | | | |
| 52 | x | 3 | 225 | 33 | 40 | 32 | .0646 | ○ | | | | |

DIN 371 103

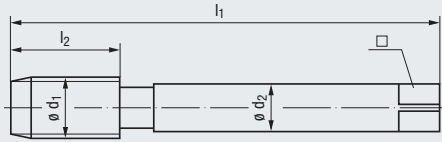
DIN 2181 103

MF



DIN 13

DIN 374



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



Gewindetiefe und Lochform
Thread depth and hole type

Einsatzgebiete – Material
Applications – material

» 22

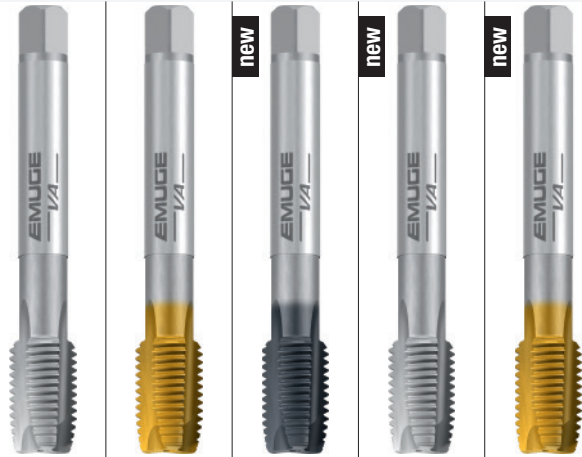
Werkzeug-Ident · Tool ident

| M | ø d ₁ mm | P mm | l ₁ | l ₂ | ø d ₂ | □ | Dimens.- Ident | max. 3 x d ₁ | | | | |
|---|------------------------|---------|----------------|----------------|------------------|------|-------------------|-------------------------|------------------------|--------------------------|-------------------------------|--------------------------------|
| | | | | | | | | Rekord 2B-VA NT | Rekord 2B-VA TIN | Rekord 2B-VA GLT-1 | Rekord 2B-VA NT „4H“ | Rekord 2B-VA TIN „4H“ |
| | 6 | x 0,5 | 80 | 13 | 4,5 | 3,4 | .0228 | ● | ● | ● | | |
| | 6 | x 0,75 | 80 | 13 | 4,5 | 3,4 | .0229 | ● | ● | ● | | |
| | 8 | x 0,75 | 80 | 14 | 6 | 4,9 | .0250 | ● | ● | ● | | |
| | 8 | x 1 | 90 | 17 | 6 | 4,9 | .0251 | ● | ● | ● | ○ | ○ |
| | 9 | x 1 | 90 | 17 | 7 | 5,5 | .0263 | | | | | |
| | 10 | x 0,75 | 90 | 18 | 7 | 5,5 | .0275 | | | | | |
| | 10 | x 1 | 90 | 18 | 7 | 5,5 | .0276 | ● | ● | ● | ○ | ○ |
| | 10 | x 1,25 | 100 | 22 | 7 | 5,5 | .0277 | | | | | |
| | 11 | x 1 | 90 | 18 | 8 | 6,2 | .0288 | | | | | |
| | 12 | x 1 | 100 | 18 | 9 | 7 | .0301 | ● | ● | ● | ○ | ○ |
| | 12 | x 1,25 | 100 | 22 | 9 | 7 | .0302 | | | | | |
| | 12 | x 1,5 | 100 | 22 | 9 | 7 | .0303 | ● | ● | ● | ○ | ○ |
| | 14 | x 1 | 100 | 18 | 11 | 9 | .0329 | ○ | ○ | ○ | | |
| | 14 | x 1,25 | 100 | 22 | 11 | 9 | .0330 | ○ | ○ | ○ | | |
| | 14 | x 1,5 | 100 | 22 | 11 | 9 | .0331 | ○ | ○ | ○ | ○ | ○ |
| | 15 | x 1 | 100 | 18 | 12 | 9 | .0343 | | | | | |
| | 16 | x 1 | 100 | 18 | 12 | 9 | .0357 | ○ | ○ | ○ | | |
| | 16 | x 1,5 | 100 | 22 | 12 | 9 | .0359 | ● | ● | ● | ○ | ○ |
| | 18 | x 1 | 110 | 20 | 14 | 11 | .0388 | | | | | |
| | 18 | x 1,5 | 110 | 25 | 14 | 11 | .0390 | ● | ● | ● | ○ | ○ |
| | 18 | x 2 | 125 | 26 | 14 | 11 | .0391 | | | | | |
| | 20 | x 1 | 125 | 20 | 16 | 12 | .0420 | ○ | ○ | ○ | | |
| | 20 | x 1,5 | 125 | 25 | 16 | 12 | .0422 | ● | ● | ● | ○ | ○ |
| | 20 | x 2 | 140 | 27 | 16 | 12 | .0423 | ○ | ○ | ○ | | |
| | 22 | x 1 | 125 | 20 | 18 | 14,5 | .0436 | | | | | |
| | 22 | x 1,5 | 125 | 25 | 18 | 14,5 | .0438 | ● | ● | ● | | |
| | 22 | x 2 | 140 | 27 | 18 | 14,5 | .0439 | ○ | ○ | ○ | | |
| | 24 | x 1 | 140 | 20 | 18 | 14,5 | .0450 | | | | | |
| | 24 | x 1,5 | 140 | 27 | 18 | 14,5 | .0452 | ● | ● | ● | | |
| | 24 | x 2 | 140 | 27 | 18 | 14,5 | .0453 | | | | | |
| | 25 | x 1,5 | 140 | 28 | 18 | 14,5 | .0458 | ○ | ○ | ○ | | |
| | 26 | x 1,5 | 140 | 28 | 18 | 14,5 | .0464 | ○ | ○ | ○ | | |
| | 27 | x 1,5 | 140 | 28 | 20 | 16 | .0470 | | | | | |
| | 28 | x 1,5 | 140 | 28 | 20 | 16 | .0476 | ● | ● | ● | | |
| | 30 | x 1,5 | 150 | 28 | 22 | 18 | .0490 | | | | | |

DIN 371

DIN 2181

VA
Stainless steel
materials



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

Product
Finder

Vc

M

MF

UNC
UN-8

UNF
UNEF

G, Rp
NPSM, NPSF

NPT, NPTF
Rc, W

BSW, BSF

Pg

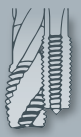
MJ
UNJC, UNJF

EG (STI)
SELF-LOCK

Tr, Tr-F
Rd

Zubehör
Accessories

Tech. Info

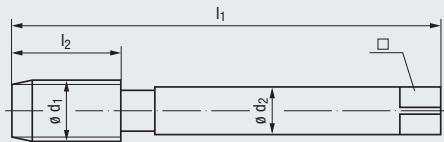


- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

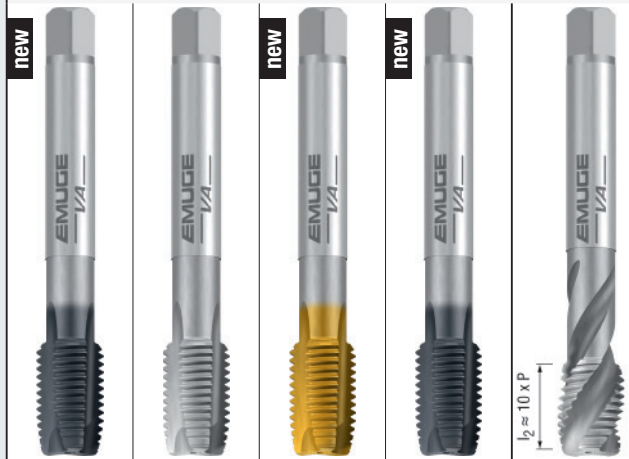


DIN 13

DIN 374



VA
Stainless steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

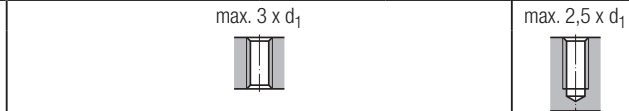
| | | | | |
|-----------|-----------|-----------|-----------|-----------|
| ISO 1/4H | ISO 3/6G | ISO 3/6G | ISO 3/6G | ISO 2/6H |
| GLT-1 | NT | TIN | GLT-1 | |
| HSSE | HSSE | HSSE | HSSE | HSSE |
| B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 | C / 2-3 |
| E / O / P | E / O / P | E / O / P | E / O / P |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

Technische Informationen
Technical information

» 245 - 266



Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

| | | | | |
|-----------|--------------|--------------|-----------|-----------|
| P 1.1-4.1 | P 1.1-3.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-3.1 |
| M 1.1-3.1 | M 1.1-2.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-2.1 |
| K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 |
| N 2.2 | N 2.2, 2.5-6 | N 2.2, 2.5-6 | N 2.2 | |

Werkzeug-Ident · Tool ident










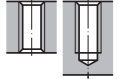

C020C310 C0203020 C0203120 C020C320 C0503000

| M | ø d1 mm | P mm | l1 | l2 | ø d2 | □ | Dimens.- Ident | Rekord 2B-VA GLT-1 „4H“ | Rekord 2B-VA NT „6G“ | Rekord 2B-VA TIN „6G“ | Rekord 2B-VA GLT-1 „6G“ | Enorm 2-VA |
|---|------------|---------|-----|----|------|------|-------------------|-------------------------------|----------------------------|-----------------------------|-------------------------------|------------|
| | | | | | | | | | | | | |
| | 6 | x 0,5 | 80 | 13 | 4,5 | 3,4 | .0228 | | | | | |
| | 6 | x 0,75 | 80 | 13 | 4,5 | 3,4 | .0229 | | | | | ● |
| | 8 | x 0,75 | 80 | 14 | 6 | 4,9 | .0250 | | | | | ● |
| | 8 | x 1 | 90 | 17 | 6 | 4,9 | .0251 | ○ | ○ | ○ | ○ | ● |
| | 9 | x 1 | 90 | 17 | 7 | 5,5 | .0263 | | | | | ○ |
| | 10 | x 0,75 | 90 | 18 | 7 | 5,5 | .0275 | | | | | ● |
| | 10 | x 1 | 90 | 18 | 7 | 5,5 | .0276 | ○ | ○ | ○ | ○ | ● |
| | 10 | x 1,25 | 100 | 22 | 7 | 5,5 | .0277 | | | | | ○ |
| | 11 | x 1 | 90 | 18 | 8 | 6,2 | .0288 | | | | | ○ |
| | 12 | x 1 | 100 | 18 | 9 | 7 | .0301 | ○ | ○ | ○ | ○ | ● |
| | 12 | x 1,25 | 100 | 22 | 9 | 7 | .0302 | | | | | ○ |
| | 12 | x 1,5 | 100 | 22 | 9 | 7 | .0303 | ○ | ○ | ○ | ○ | ● |
| | 14 | x 1 | 100 | 18 | 11 | 9 | .0329 | | | | | ○ |
| | 14 | x 1,25 | 100 | 22 | 11 | 9 | .0330 | | | | | ○ |
| | 14 | x 1,5 | 100 | 22 | 11 | 9 | .0331 | ○ | ○ | ○ | ○ | ● |
| | 15 | x 1 | 100 | 18 | 12 | 9 | .0343 | | | | | ○ |
| | 16 | x 1 | 100 | 18 | 12 | 9 | .0357 | | | | | ○ |
| | 16 | x 1,5 | 100 | 22 | 12 | 9 | .0359 | ○ | ○ | ○ | ○ | ● |
| | 18 | x 1 | 110 | 20 | 14 | 11 | .0388 | | | | | ○ |
| | 18 | x 1,5 | 110 | 25 | 14 | 11 | .0390 | ○ | ○ | ○ | ○ | ● |
| | 18 | x 2 | 125 | 26 | 14 | 11 | .0391 | | | | | ○ |
| | 20 | x 1 | 125 | 20 | 16 | 12 | .0420 | | | | | ○ |
| | 20 | x 1,5 | 125 | 25 | 16 | 12 | .0422 | ○ | ○ | ○ | ○ | ● |
| | 20 | x 2 | 140 | 27 | 16 | 12 | .0423 | | | | | ○ |
| | 22 | x 1 | 125 | 20 | 18 | 14,5 | .0436 | | | | | ○ |
| | 22 | x 1,5 | 125 | 25 | 18 | 14,5 | .0438 | | | | | ● |
| | 22 | x 2 | 140 | 27 | 18 | 14,5 | .0439 | | | | | ○ |
| | 24 | x 1 | 140 | 20 | 18 | 14,5 | .0450 | | | | | ○ |
| | 24 | x 1,5 | 140 | 27 | 18 | 14,5 | .0452 | | | | | ● |
| | 24 | x 2 | 140 | 27 | 18 | 14,5 | .0453 | | | | | ○ |
| | 25 | x 1,5 | 140 | 28 | 18 | 14,5 | .0458 | | | | | ○ |
| | 26 | x 1,5 | 140 | 28 | 18 | 14,5 | .0464 | | | | | ● |
| | 27 | x 1,5 | 140 | 28 | 20 | 16 | .0470 | | | | | ○ |
| | 28 | x 1,5 | 140 | 28 | 20 | 16 | .0476 | | | | | ● |
| | 30 | x 1,5 | 150 | 28 | 22 | 18 | .0490 | | | | | ● |

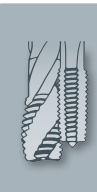
DIN 371

DIN 2181

» 103

| VA Stainless steel materials | | GG Cast iron | | GJV Cast iron vermicular | | | | | |
|--|--|---|--|--------------------------------|----------------------------|-------------------------|-----------------------------|-----------|-----------|
|  new |   |   new |    | ISO 2/6H | 6HX | 6HX | 6HX | 6HX | 6HX |
| | | | | GLT-1 | NT | TICN | TICN | TICN | TICN |
| | | | | HSSE | HSSE | HSSE | HSSE-PM | HSSE-PM | HSSE-PM |
| | | | | R35 | | | | | |
| | | | | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | E / 1,5-2 | E / 1,5-2 |
| | | | | E / O / P | E | E | E | E | E |
| max. 2,5 x d ₁ | max. 2 x d ₁ | | max. 2 x d ₁ | | | | | | |
|  |  | |  | | | | | | |
| P 1.1-4.1 | K 1.1-2 | K 1.1-2 | K 1.1-4.2 | | | | | | |
| M 1.1-3.1 | | | | | | | | | |
| K 2.1 | | | | | | | | | |
| C050C300 | C0102001 | C0109201 | C010R501 | C195R501 | C106R501 | C011R501 | C196R501 | | |
| Enorm 2-VA GLT-1 | Rekord 2A-GG NT | Rekord 2A-GG TICN | Rekord 2A-GJV PM-TICN | Rekord 2A-GJV IKZ-PM TICN | Rekord 2A-GJV IKZN-PM TICN | Rekord 2A-GJV/E PM-TICN | Rekord 2A-GJV/E IKZ-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 | |
| | | | | | | | | 12 x 1,5 | |
| | | | | | | | | 14 x 1 | |
| | | | | | | | | 14 x 1,25 | |
| | | | | | | | | 14 x 1,5 | |
| | | | | | | | | 15 x 1 | |
| | | | | | | | | 16 x 1 | |
| | | | | | | | | 16 x 1,5 | |
| | | | | | | | | 18 x 1 | |
| | | | | | | | | 18 x 1,5 | |
| | | | | | | | | 18 x 2 | |
| | | | | | | | | 20 x 1 | |
| | | | | | | | | 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 | |
| | | | | | | | | 28 x 1,5 | |
| | | | | | | | | 30 x 1,5 | |
| 103 | | | | | | | | | |

- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



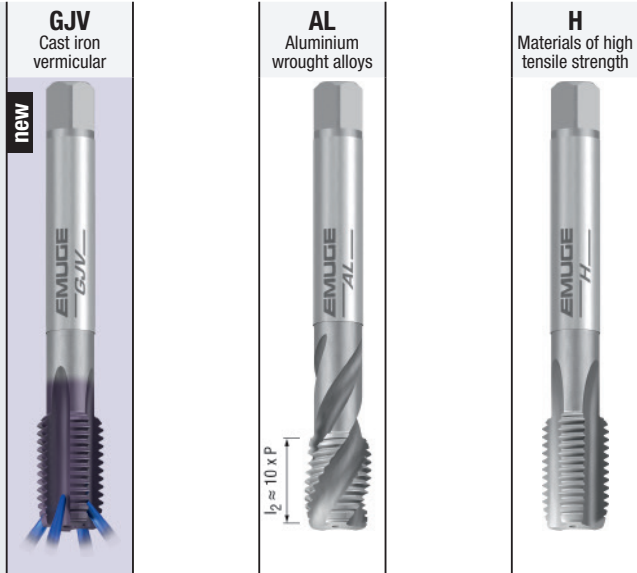
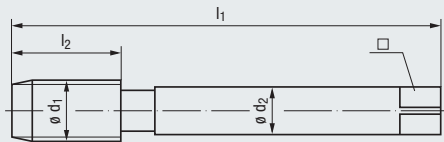
● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
 ○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

- 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
- Tech. Info



DIN 13

DIN 374



| | | | | |
|---|---|-----------|----------|-----------|
| Technische Informationen Technical information | Toleranz · Tolerance Beschichtung · Coating Schneidstoff · Cutting material | 6HX | ISO 2/6H | 6HX |
| | | TICN | HSSE | NT |
| Technische Informationen Technical information | Schneidstoff · Cutting material | HSSE-PM | HSSE | HSSE |
| | | E / 1,5-2 | R35 | C / 2-3 |
| | | E | C / 2-3 | C / 2-3 |
| | | | E / O | E / O / P |

| | | | |
|---|-------------------------|---------------------------|-------------------------|
| Gewindetiefe und Lochform Thread depth and hole type | max. 2 x d ₁ | max. 2,5 x d ₁ | max. 2 x d ₁ |
| | | | |

| | | | |
|--|-----------|---------|---|
| Einsatzgebiete – Material Applications – material | K 1.1-4.2 | N 1.1-4 | P 1.1-3.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1 |
| | | | |

Werkzeug-Ident · Tool ident

| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | | Dimens.- Ident | Rekord 2A-GJV/E IKZN-PM TICN | Enorm 2-AL | Rekord 2A-H NT |
|---|------------------------|---------|----------------|----------------|------------------|------|--------------------|-------------------|------------------------------|------------|----------------|
| | | | | | | | | | C109R501 | C0504500 | C0100501 |
| | 6 | x 0,5 | 80 | 13 | 4,5 | 3,4 | 5,5 | .0228 | | | |
| | 6 | x 0,75 | 80 | 13 | 4,5 | 3,4 | 5,2 | .0229 | | | |
| | 8 | x 0,75 | 80 | 14 | 6 | 4,9 | 7,2 | .0250 | | | |
| | 8 | x 1 | 90 | 17 | 6 | 4,9 | 7 | .0251 | | | ○ |
| | 9 | x 1 | 90 | 17 | 7 | 5,5 | 8 | .0263 | | | ● |
| | 10 | x 0,75 | 90 | 18 | 7 | 5,5 | 9,2 | .0275 | | | ○ |
| | 10 | x 1 | 90 | 18 | 7 | 5,5 | 9 | .0276 | | | ● |
| | 10 | x 1,25 | 100 | 22 | 7 | 5,5 | 8,8 | .0277 | | | ● |
| | 11 | x 1 | 90 | 18 | 8 | 6,2 | 10 | .0288 | | | |
| | 12 | x 1 | 100 | 18 | 9 | 7 | 11 | .0301 | | | ● |
| | 12 | x 1,25 | 100 | 22 | 9 | 7 | 10,8 | .0302 | | | ○ |
| | 12 | x 1,5 | 100 | 22 | 9 | 7 | 10,5 ²⁾ | .0303 | ○ | ● | ● |
| | 14 | x 1 | 100 | 18 | 11 | 9 | 13 | .0329 | | | |
| | 14 | x 1,25 | 100 | 22 | 11 | 9 | 12,8 | .0330 | | | ○ |
| | 14 | x 1,5 | 100 | 22 | 11 | 9 | 12,5 ²⁾ | .0331 | ○ | ● | ● |
| | 15 | x 1 | 100 | 18 | 12 | 9 | 14 | .0343 | | | ○ |
| | 16 | x 1 | 100 | 18 | 12 | 9 | 15 | .0357 | | | ○ |
| | 16 | x 1,5 | 100 | 22 | 12 | 9 | 14,5 ²⁾ | .0359 | ○ | ● | ● |
| | 18 | x 1 | 110 | 20 | 14 | 11 | 17 | .0388 | | | |
| | 18 | x 1,5 | 110 | 25 | 14 | 11 | 16,5 | .0390 | ○ | | ● |
| | 18 | x 2 | 125 | 26 | 14 | 11 | 16 | .0391 | | | ○ |
| | 20 | x 1 | 125 | 20 | 16 | 12 | 19 | .0420 | | | ○ |
| | 20 | x 1,5 | 125 | 25 | 16 | 12 | 18,5 | .0422 | ○ | | ● |
| | 20 | x 2 | 140 | 27 | 16 | 12 | 18 | .0423 | | | |
| | 22 | x 1 | 125 | 20 | 18 | 14,5 | 21 | .0436 | | | |
| | 22 | x 1,5 | 125 | 25 | 18 | 14,5 | 20,5 | .0438 | | | ● |
| | 22 | x 2 | 140 | 27 | 18 | 14,5 | 20 | .0439 | | | |
| | 24 | x 1 | 140 | 20 | 18 | 14,5 | 23 | .0450 | | | ○ |
| | 24 | x 1,5 | 140 | 27 | 18 | 14,5 | 22,5 | .0452 | | | ● |
| | 24 | x 2 | 140 | 27 | 18 | 14,5 | 22 | .0453 | | | ○ |



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

| H Materials of high tensile strength | | | | | HCUT Hardened steels | Z CNC-controlled machines | |
|---|-----------------------------|----------------------|-----------------------------|---------------------|-------------------------------|------------------------------|----------------------|
| | | | | | | | |
| 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX |
| TICN | NT | TICN | TICN | KHM | TICN | TICN | TICN |
| HSSE | HSSE | HSSE | HSSE | HSSE | HSSE-PM | HSSE | HSSE |
| C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 |
| E / O / P | E / O | E / O | E / O | E / O | O / P | E / O / P | E / O |
| | max. 2 x d ₁ | | max. 2 x d ₁ | | max. 1,5 x d ₁ | max. 2 x d ₁ | |
| P 1.1-4.1 | P 1.1-3.1 | P 1.1-4.1 | P 1.1-4.1 | P 5.1 | H 1.1-2 | P 1.1-4.1 | P 1.1-4.1 |
| 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 |
| N 2.4-7 | N 2.4-7 | N 2.4-7 | N 2.4-7 | N 1.5-6, 2.6-8 | | N 1.4-6, 2.4-7 | N 1.4-6, 2.4-7 |
| N 4.1, 5.1 | N 4.1, 5.1 | N 4.1, 5.1 | N 4.1, 5.1 | N 4.1, 4.3-5.2 | | N 4.1 | N 4.1 |
| | | | | H 1.1-2 | | | |
| C0109101 | C1950501 | C1959101 | C1069101 | C1950901 | C010J901 | C0109401 | C1959401 |
| Rekord 2A-H TICN | Rekord 2A-H-IKZ NT | Rekord 2A-H-IKZ TICN | Rekord 2A-H-IKZN TICN | KHM-Rekord 2A-H-IKZ | Rekord 2A-HCUT-PM TICN | Rekord 2A-Z TICN | Rekord 2A-Z-IKZ 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 |
| | | | | | | | 12 x 1,5 |
| | | | | | | | 14 x 1 |
| | | | | | | | 14 x 1,25 |
| | | | | | | | 14 x 1,5 |
| | | | | | | | 15 x 1 |
| | | | | | | | 16 x 1 |
| | | | | | | | 16 x 1,5 |
| | | | | | | | 18 x 1 |
| | | | | | | | 18 x 1,5 |
| | | | | | | | 18 x 2 |
| | | | | | | | 20 x 1 |
| | | | | | | | 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 |
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- Product Finder
- Vc
- 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
- Tech. Info



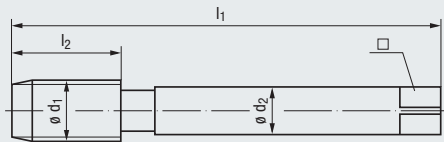
1) Gewindebohren in Durchgangslöcher nur mit externer Kühlschmierung möglich
Threading in through holes is possible only with external cooling/lubrication

- 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
- Tech. Info



DIN 13

DIN 374



Z
CNC-controlled machines



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266



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

Gewindetiefe und Lochform
Thread depth and hole type

| | | | |
|-------------------------|-------------------------|-------------------------|-------------------------|
| max. 2 x d ₁ | max. 2 x d ₁ | max. 2 x d ₁ | max. 2 x d ₁ |
| | | | |

Einsatzgebiete – Material
Applications – material

» 22

| | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|
| P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 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 1.4-6, 2.4-7 | N 1.4-6, 2.4-7 | N 1.4-6, 2.4-7 | N 1.4-6, 2.4-7 |
| N 4.1 | N 4.1 | N 4.1 | N 4.1 |

Werkzeug-Ident · Tool ident

C1069401 C0119401 C1969401 C1099401

| M | ø d ₁ mm | P mm | l ₁ | l ₂ | ø d ₂ | □ | | Dimens.- Ident | Rekord | Rekord | Rekord | Rekord |
|---|------------------------|---------|----------------|----------------|------------------|------|------|-------------------|-----------------------|--------------------|----------------------------|-----------------------------|
| | | | | | | | | | 2A-Z- IKZN TICN | 2A-Z/ E TICN | 2A-Z- E- IKZ TICN | 2A-Z- E- IKZN TICN |
| | 6 | x 0,5 | 80 | 5 | 4,5 | 3,4 | 5,5 | .0228 | | | | |
| | 6 | x 0,75 | 80 | 8 | 4,5 | 3,4 | 5,2 | .0229 | | | | |
| | 8 | x 0,75 | 80 | 8 | 6 | 4,9 | 7,2 | .0250 | | | | |
| | 8 | x 1 | 90 | 10 | 6 | 4,9 | 7 | .0251 | ○ | ● | ● | ○ |
| | 9 | x 1 | 90 | 10 | 7 | 5,5 | 8 | .0263 | | | | |
| | 10 | x 0,75 | 90 | 10 | 7 | 5,5 | 9,2 | .0275 | | | | |
| | 10 | x 1 | 90 | 10 | 7 | 5,5 | 9 | .0276 | ○ | ● | ● | ○ |
| | 10 | x 1,25 | 100 | 16 | 7 | 5,5 | 8,8 | .0277 | ○ | ● | ● | ○ |
| | 11 | x 1 | 90 | 11 | 8 | 6,2 | 10 | .0288 | | | | |
| | 12 | x 1 | 100 | 11 | 9 | 7 | 11 | .0301 | | | | |
| | 12 | x 1,25 | 100 | 15 | 9 | 7 | 10,8 | .0302 | | | | |
| | 12 | x 1,5 | 100 | 15 | 9 | 7 | 10,5 | .0303 | ○ | ● | ● | ○ |
| | 14 | x 1 | 100 | 11 | 11 | 9 | 13 | .0329 | | | | |
| | 14 | x 1,25 | 100 | 15 | 11 | 9 | 12,8 | .0330 | | | | |
| | 14 | x 1,5 | 100 | 15 | 11 | 9 | 12,5 | .0331 | ○ | ● | ● | ○ |
| | 15 | x 1 | 100 | 12 | 12 | 9 | 14 | .0343 | | | | |
| | 16 | x 1 | 100 | 12 | 12 | 9 | 15 | .0357 | | | | |
| | 16 | x 1,5 | 100 | 15 | 12 | 9 | 14,5 | .0359 | ○ | ● | ● | ○ |
| | 18 | x 1 | 110 | 13 | 14 | 11 | 17 | .0388 | | | | |
| | 18 | x 1,5 | 110 | 17 | 14 | 11 | 16,5 | .0390 | | | | |
| | 18 | x 2 | 125 | 20 | 14 | 11 | 16 | .0391 | | | | |
| | 20 | x 1 | 125 | 14 | 16 | 12 | 19 | .0420 | | | | |
| | 20 | x 1,5 | 125 | 17 | 16 | 12 | 18,5 | .0422 | | | | |
| | 20 | x 2 | 140 | 20 | 16 | 12 | 18 | .0423 | | | | |
| | 22 | x 1 | 125 | 14 | 18 | 14,5 | 21 | .0436 | | | | |
| | 22 | x 1,5 | 125 | 17 | 18 | 14,5 | 20,5 | .0438 | | | | |
| | 22 | x 2 | 140 | 20 | 18 | 14,5 | 20 | .0439 | | | | |
| | 24 | x 1 | 140 | 15 | 18 | 14,5 | 23 | .0450 | | | | |
| | 24 | x 1,5 | 140 | 20 | 18 | 14,5 | 22,5 | .0452 | | | | |
| | 24 | x 2 | 140 | 20 | 18 | 14,5 | 22 | .0453 | | | | |

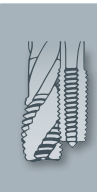
DIN 371

DIN 2181

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 | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | | |
| TIN-70 | GLT-1 | TIN-70 | GLT-1 | TIN | TIN | TIN | TIN | TIN | | |
| HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE | HSSE | HSSE | HSSE | HSSE | | |
| R15 | R15 | R15 | R15 | R15 | R15 | R15 | R15 | R15 | | |
| B / 4-5 | B / 4-5 | B / 4-5 | B / 4-5 | C / 2-3 | C / 2-3 | E / 1,5-2 | C / 2-3 | E / 1,5-2 | | |
| E / O / P | E / O / P | E / O | E / O | E / O / P | E / O | E / O | E / O | E / O | | |
| max. 3 x d ₁ | | | | max. 2 x d ₁ | | | | | | |
| P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 | P 2.1-5.1 | P 2.1-5.1 | P 2.1-5.1 | P 2.1-5.1 | P 2.1-5.1 | | |
| M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | K 2.1-2 | K 2.1-2 | K 2.1-2 | K 2.1-2 | K 2.1-2 | | |
| K 2.1 | K 2.1 | K 2.1 | K 2.1 | N 1.4-6, 2.4-5 | N 1.4-6, 2.4-5 | N 1.4-6, 2.4-5 | N 1.4-6, 2.4-5 | N 1.4-6, 2.4-5 | | |
| N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | | | | | | | |
| S 1.1 | S 1.1 | S 1.1 | S 1.1 | | | | | | | |
| C0208F01 | C020A601 | C1088F01 | C108A601 | C0453701 | C0963701 | C0983701 | C4253701 | C4053701 | | |
| Rekord 2B-Z-PM TIN-70 | Rekord 2B-Z-PM GLT-1 | Rekord 2B-Z-1KZ PM-TIN-70 | Rekord 2B-Z-1KZ PM-GLT-1 | Rekord 2D-Z TIN | Rekord 2D-Z-1KZ TIN | Rekord 2D-Z/E-1KZ TIN | Rekord 2D-Z-BF 1KZ-TIN | Rekord 2D-Z/E-BF 1KZ-TIN | | |
| | | | | | | | | | 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 | |
| | | | | | | | | | 12 x 1,5 | |
| | | | | | | | | | 14 x 1 | |
| | | | | | | | | | 14 x 1,25 | |
| | | | | | | | | | 14 x 1,5 | |
| | | | | | | | | | 15 x 1 | |
| | | | | | | | | | 16 x 1 | |
| | | | | | | | | | 16 x 1,5 | |
| | | | | | | | | | 18 x 1 | |
| | | | | | | | | | 18 x 1,5 | |
| | | | | | | | | | 18 x 2 | |
| | | | | | | | | | 20 x 1 | |
| | | | | | | | | | 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 | |
| 106 | 106 | | | | | | | | | |

- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



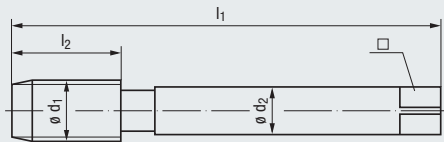
● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

- 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
- Tech. Info



DIN 13

DIN 374



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | | | |
|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 |
| M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 |
| K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 |
| N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 |
| S 1.1 | S 1.1 | S 1.1 | S 1.1 | S 1.1 |

Werkzeug-Ident · Tool ident

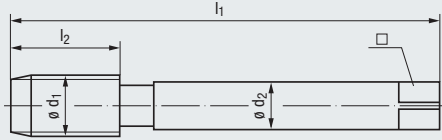
| M | ø d ₁ mm | P mm | l ₁ | l ₂ | ø d ₂ | □ | Dimens.- Ident | C5760F01 | C576A601 | C5810F01 | C581A601 | C5820F01 |
|----|------------------------|---------|----------------|----------------|------------------|------|-------------------|-----------------------------|----------------------------|------------------------------------|-----------------------------------|-------------------------------|
| | | | | | | | | Enorm 2-Z-X-PM TIN-60 | Enorm 2-Z-X-PM GLT-1 | Enorm 2-Z-X IKZ-PM TIN-60 | Enorm 2-Z-X IKZ-PM GLT-1 | Enorm 2-Z/E-X-PM TIN-60 |
| 6 | x 0,5 | 80 | 5 | 4,5 | 3,4 | 5,5 | .0228 | | | | | |
| 6 | x 0,75 | 80 | 8 | 4,5 | 3,4 | 5,2 | .0229 | • | • | • | • | • |
| 8 | x 0,75 | 80 | 8 | 6 | 4,9 | 7,2 | .0250 | | | | | |
| 8 | x 1 | 90 | 10 | 6 | 4,9 | 7 | .0251 | • | • | • | • | • |
| 9 | x 1 | 90 | 10 | 7 | 5,5 | 8 | .0263 | | | | | |
| 10 | x 0,75 | 90 | 10 | 7 | 5,5 | 9,2 | .0275 | | | | | |
| 10 | x 1 | 90 | 10 | 7 | 5,5 | 9 | .0276 | • | • | • | • | • |
| 10 | x 1,25 | 100 | 16 | 7 | 5,5 | 8,8 | .0277 | • | • | • | • | • |
| 11 | x 1 | 90 | 11 | 8 | 6,2 | 10 | .0288 | | | | | |
| 12 | x 1 | 100 | 11 | 9 | 7 | 11 | .0301 | • | • | • | • | • |
| 12 | x 1,25 | 100 | 15 | 9 | 7 | 10,8 | .0302 | • | • | • | • | • |
| 12 | x 1,5 | 100 | 15 | 9 | 7 | 10,5 | .0303 | • | • | • | • | • |
| 14 | x 1 | 100 | 11 | 11 | 9 | 13 | .0329 | | | | | |
| 14 | x 1,25 | 100 | 15 | 11 | 9 | 12,8 | .0330 | | | | | |
| 14 | x 1,5 | 100 | 15 | 11 | 9 | 12,5 | .0331 | • | • | • | • | • |
| 15 | x 1 | 100 | 12 | 12 | 9 | 14 | .0343 | | | | | |
| 16 | x 1 | 100 | 12 | 12 | 9 | 15 | .0357 | | | | | |
| 16 | x 1,5 | 100 | 15 | 12 | 9 | 14,5 | .0359 | • | • | • | • | • |
| 18 | x 1 | 110 | 13 | 14 | 11 | 17 | .0388 | | | | | |
| 18 | x 1,5 | 110 | 17 | 14 | 11 | 16,5 | .0390 | • | • | • | • | • |
| 18 | x 2 | 125 | 20 | 14 | 11 | 16 | .0391 | | | | | |
| 20 | x 1 | 125 | 14 | 16 | 12 | 19 | .0420 | | | | | |
| 20 | x 1,5 | 125 | 17 | 16 | 12 | 18,5 | .0422 | • | • | • | • | • |
| 20 | x 2 | 140 | 20 | 16 | 12 | 18 | .0423 | | | | | |
| 22 | x 1 | 125 | 14 | 18 | 14,5 | 21 | .0436 | | | | | |
| 22 | x 1,5 | 125 | 17 | 18 | 14,5 | 20,5 | .0438 | • | • | • | • | • |
| 22 | x 2 | 140 | 20 | 18 | 14,5 | 20 | .0439 | | | | | |
| 24 | x 1 | 140 | 15 | 18 | 14,5 | 23 | .0450 | | | | | |
| 24 | x 1,5 | 140 | 20 | 18 | 14,5 | 22,5 | .0452 | • | • | • | • | • |
| 24 | x 2 | 140 | 20 | 18 | 14,5 | 22 | .0453 | | | | | |

MF



DIN 13

DIN 374



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | | |
|------------------|------------------|------------------|
| 6HX | 6HX | 6HX |
| GLT-1 | TIN-60 | GLT-1 |
| HSSE-PM | HSSE-PM | HSSE-PM |
| R45 | R45 | R45 |
| E / 1,5-2 | E / 1,5-2 | E / 1,5-2 |
| E / O / P | E / O | E / O |

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | |
|-------------------------|-------------------------|-------------------------|
| P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 |
| M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 |
| K 2.1 | K 2.1 | K 2.1 |
| N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 |
| S 1.1 | S 1.1 | S 1.1 |

Werkzeug-Ident · Tool ident

C582A601 C5830F01 C583A601

| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | | Dimens.- Ident | Enorm | Enorm | Enorm |
|---|------------------------|---------|----------------|----------------|------------------|------|------|-------------------|---------------------|-----------------------------|----------------------------|
| | | | | | | | | | 2-Z/E-X-PM GLT-1 | 2-Z/E-X IKZ-PM TIN-60 | 2-Z/E-X IKZ-PM GLT-1 |
| | 6 | x 0,5 | 80 | 5 | 4,5 | 3,4 | 5,5 | .0228 | ● | ● | ● |
| | 6 | x 0,75 | 80 | 8 | 4,5 | 3,4 | 5,2 | .0229 | ● | ● | ● |
| | 8 | x 0,75 | 80 | 8 | 6 | 4,9 | 7,2 | .0250 | ● | ● | ● |
| | 8 | x 1 | 90 | 10 | 6 | 4,9 | 7 | .0251 | ● | ● | ● |
| | 9 | x 1 | 90 | 10 | 7 | 5,5 | 8 | .0263 | ● | ● | ● |
| | 10 | x 0,75 | 90 | 10 | 7 | 5,5 | 9,2 | .0275 | ● | ● | ● |
| | 10 | x 1 | 90 | 10 | 7 | 5,5 | 9 | .0276 | ● | ● | ● |
| | 10 | x 1,25 | 100 | 16 | 7 | 5,5 | 8,8 | .0277 | ● | ● | ● |
| | 11 | x 1 | 90 | 11 | 8 | 6,2 | 10 | .0288 | ● | ● | ● |
| | 12 | x 1 | 100 | 11 | 9 | 7 | 11 | .0301 | ● | ● | ● |
| | 12 | x 1,25 | 100 | 15 | 9 | 7 | 10,8 | .0302 | ● | ● | ● |
| | 12 | x 1,5 | 100 | 15 | 9 | 7 | 10,5 | .0303 | ● | ● | ● |
| | 14 | x 1 | 100 | 11 | 11 | 9 | 13 | .0329 | ● | ● | ● |
| | 14 | x 1,25 | 100 | 15 | 11 | 9 | 12,8 | .0330 | ● | ● | ● |
| | 14 | x 1,5 | 100 | 15 | 11 | 9 | 12,5 | .0331 | ● | ● | ● |
| | 15 | x 1 | 100 | 12 | 12 | 9 | 14 | .0343 | ● | ● | ● |
| | 16 | x 1 | 100 | 12 | 12 | 9 | 15 | .0357 | ● | ● | ● |
| | 16 | x 1,5 | 100 | 15 | 12 | 9 | 14,5 | .0359 | ● | ● | ● |
| | 18 | x 1 | 110 | 13 | 14 | 11 | 17 | .0388 | ● | ● | ● |
| | 18 | x 1,5 | 110 | 17 | 14 | 11 | 16,5 | .0390 | ● | ● | ● |
| | 18 | x 2 | 125 | 20 | 14 | 11 | 16 | .0391 | ● | ● | ● |
| | 20 | x 1 | 125 | 14 | 16 | 12 | 19 | .0420 | ● | ● | ● |
| | 20 | x 1,5 | 125 | 17 | 16 | 12 | 18,5 | .0422 | ● | ● | ● |
| | 20 | x 2 | 140 | 20 | 16 | 12 | 18 | .0423 | ● | ● | ● |
| | 22 | x 1 | 125 | 14 | 18 | 14,5 | 21 | .0436 | ● | ● | ● |
| | 22 | x 1,5 | 125 | 17 | 18 | 14,5 | 20,5 | .0438 | ● | ● | ● |
| | 22 | x 2 | 140 | 20 | 18 | 14,5 | 20 | .0439 | ● | ● | ● |
| | 24 | x 1 | 140 | 15 | 18 | 14,5 | 23 | .0450 | ● | ● | ● |
| | 24 | x 1,5 | 140 | 20 | 18 | 14,5 | 22,5 | .0452 | ● | ● | ● |
| | 24 | x 2 | 140 | 20 | 18 | 14,5 | 22 | .0453 | ● | ● | ● |

- 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 (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

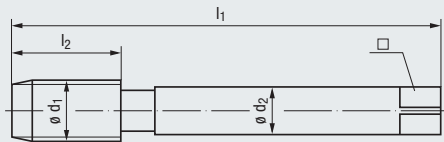


- Product Finder
- V_c
- M
- MF**
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

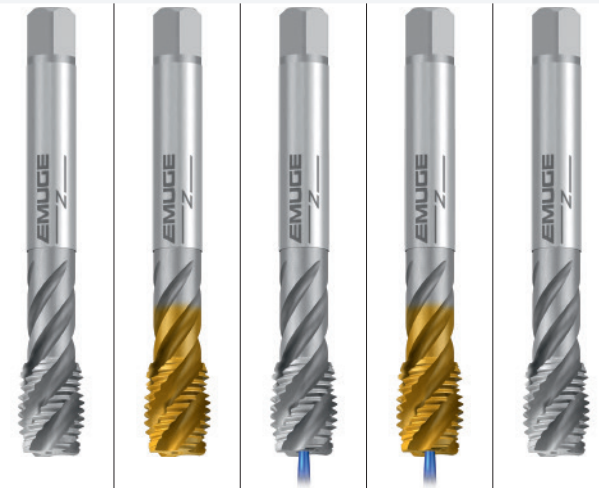


DIN 13

DIN 374



Z
CNC-controlled machines



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266

| | | | | |
|------------------|------------------|------------------|------------------|------------------|
| ISO 2/6H | ISO 2/6H | ISO 2/6H | ISO 2/6H | ISO 3/6G |
| TIN | TIN | TIN | TIN | TIN |
| HSSE | HSSE | HSSE | HSSE | HSSE |
| 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 / O / P | E / O / P | E / O | E / O | E / O / P |

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | | | |
|------------------|-----------------------|------------------|-----------------------|------------------|
| P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 |
| M 1.1-2.1 | M 1.1-3.1 | M 1.1-2.1 | M 1.1-3.1 | M 1.1-2.1 |
| N 2.1 | N 1.4-6 | N 2.1 | N 1.4-6 | N 2.1 |
| | N 2.1-2, 2.4-5 | | N 2.1-2, 2.4-5 | |
| | S 1.1 | | S 1.1 | |

Werkzeug-Ident · Tool ident

C0513500 C0513700 C0973500 C0973700 C0513520

| M | ø d ₁ mm | x | P mm | l ₁ | l ₂ | ø d ₂ | □ | Dimens.- Ident | Enorm | Enorm | Enorm | Enorm | Enorm |
|---|------------------------|---|---------|----------------|----------------|------------------|------|-------------------|-------|--------------|---------------|----------------------|---------------|
| | | | | | | | | | 2-Z/E | 2-Z/E TIN | 2-Z/E- IKZ | 2-Z/E- IKZ TIN | 2-Z/E „6G“ |
| | 6 | x | 0,75 | 80 | 8 | 4,5 | 3,4 | .0229 | | | | | |
| | 8 | x | 0,75 | 80 | 8 | 6 | 4,9 | .0250 | ● | | | | ○ |
| | 8 | x | 1 | 90 | 10 | 6 | 4,9 | .0251 | ● | ● | ○ | | ● |
| | 9 | x | 1 | 90 | 10 | 7 | 5,5 | .0263 | | | | | |
| | 10 | x | 0,75 | 90 | 10 | 7 | 5,5 | .0275 | | | | | |
| | 10 | x | 1 | 90 | 10 | 7 | 5,5 | .0276 | ● | ● | ○ | | ● |
| | 10 | x | 1,25 | 100 | 16 | 7 | 5,5 | .0277 | ○ | | | | ○ |
| | 11 | x | 1 | 90 | 11 | 8 | 6,2 | .0288 | | | | | ○ |
| | 12 | x | 1 | 100 | 11 | 9 | 7 | .0301 | ● | ● | | | ● |
| | 12 | x | 1,25 | 100 | 15 | 9 | 7 | .0302 | ○ | ○ | | | ○ |
| | 12 | x | 1,5 | 100 | 15 | 9 | 7 | .0303 | ● | ● | ● | ● | ● |
| | 14 | x | 1 | 100 | 11 | 11 | 9 | .0329 | ○ | | | | ○ |
| | 14 | x | 1,25 | 100 | 15 | 11 | 9 | .0330 | | | | | |
| | 14 | x | 1,5 | 100 | 15 | 11 | 9 | .0331 | ● | ● | ● | ● | ● |
| | 15 | x | 1 | 100 | 12 | 12 | 9 | .0343 | ○ | | | | |
| | 16 | x | 1 | 100 | 12 | 12 | 9 | .0357 | ○ | | | | ○ |
| | 16 | x | 1,5 | 100 | 15 | 12 | 9 | .0359 | ○ | ● | ● | ● | ● |
| | 18 | x | 1 | 110 | 13 | 14 | 11 | .0388 | ○ | | | | ○ |
| | 18 | x | 1,5 | 110 | 17 | 14 | 11 | .0390 | ● | ● | | | ○ |
| | 18 | x | 2 | 125 | 20 | 14 | 11 | .0391 | | | | | |
| | 20 | x | 1 | 125 | 14 | 16 | 12 | .0420 | ○ | | | | ○ |
| | 20 | x | 1,5 | 125 | 17 | 16 | 12 | .0422 | ● | ● | ● | ● | ○ |
| | 20 | x | 2 | 140 | 20 | 16 | 12 | .0423 | | | | | |
| | 22 | x | 1 | 125 | 14 | 18 | 14,5 | .0436 | | | | | ○ |
| | 22 | x | 1,5 | 125 | 17 | 18 | 14,5 | .0438 | ○ | ○ | | | ○ |
| | 22 | x | 2 | 140 | 20 | 18 | 14,5 | .0439 | | | | | |
| | 24 | x | 1 | 140 | 15 | 18 | 14,5 | .0450 | | | | | ○ |
| | 24 | x | 1,5 | 140 | 20 | 18 | 14,5 | .0452 | ○ | ○ | | | ○ |
| | 24 | x | 2 | 140 | 20 | 18 | 14,5 | .0453 | | | | | |
| | 25 | x | 1,5 | 140 | 20 | 18 | 14,5 | .0458 | | | | | |
| | 26 | x | 1,5 | 140 | 20 | 18 | 14,5 | .0464 | ○ | ○ | | | ○ |
| | 27 | x | 1,5 | 140 | 20 | 20 | 16 | .0470 | | | | | ○ |
| | 28 | x | 1,5 | 140 | 20 | 20 | 16 | .0476 | ○ | | | | ○ |
| | 30 | x | 1,5 | 150 | 22 | 22 | 18 | .0490 | ○ | | | | ○ |

DIN 371

107

107

107

DIN 2181

Z
CNC-controlled machines



SPEED
High-speed cutting



| | | | | | | | | | |
|-----------------------------|---------------------------------|----------------------------------|-----------------------------------|------------------------------------|------------------------------------|---|------------------------------------|------------------------------------|------------------------------------|
| ISO 3/6G | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX |
| TIN | TICN | TICN | TICN | TICN | TIN-70 | TIN-70 | TIN-60 | TIN-60 | TIN-60 |
| HSSE | HSSE | HSSE | HSSE | HSSE | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| R45 | | | | | | | R45 | R45 | R45 |
| E / 1,5-2 | C / 2-3 | C / 2-3 | E / 1,5-2 | E / 1,5-2 | B / 4-5 | B / 4-5 | C / 2-3 | C / 2-3 | C / 2-3 |
| E / O / P | E | E | E | E | E | E | E | E | E |
| max. 3 x d ₁ | max. 2 x d ₁ | max. 2 x d ₁ | max. 2 x d ₁ | max. 2 x d ₁ | max. 3 x d ₁ | | max. 3 x d ₁ | | |
| | | | | | | | | | |
| P 1.1-4.1 | K 1.1-4.2 | K 1.1-4.2 | K 1.1-4.2 | K 1.1-4.2 | P 1.1-4.1 | P 1.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 |
| M 1.1-3.1 | N 1.4-6 | N 1.4-6 | N 1.4-6 | N 1.4-6 | K 2.1-2 | K 2.1-2 | | | |
| N 1.4-6 | | | | | N 1.4-6 | N 1.4-6 | | | |
| N 2.1-2, 2.4-5 | | | | | | | | | |
| S 1.1 | | | | | | | | | |
| C0513720 | C3159401 | C3179401 | C3169401 | C3189401 | C3208F01 | C3258F01 | C3600F01 | C3650F01 | C3650F01 |
| Enorm 2-Z/E TIN „6G“ | Rekord 2A-SPEED IKZ-TICN | Rekord 2A-SPEED IKZN-TICN | Rekord 2A-SPEED/E IKZ-TICN | Rekord 2A-SPEED/E IKZN-TICN | Rekord 2B-Z-SPEED PM-TIN-70 | Rekord 2B-Z-SPEED IKZN-PM TIN-70 | Enorm 2-Z-SPEED X-PM TIN-60 | Enorm 2-Z-SPEED X-PM TIN-60 | Enorm 2-Z-SPEED X-PM TIN-60 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|-------------------|
| ○ | ● | ○ | ○ | ○ | ● | ○ | ● | ● | M 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 |
| | | | | | | | | | 12 x 1,5 |
| | | | | | | | | | 14 x 1 |
| | | | | | | | | | 14 x 1,25 |
| | | | | | | | | | 14 x 1,5 |
| | | | | | | | | | 15 x 1 |
| | | | | | | | | | 16 x 1 |
| | | | | | | | | | 16 x 1,5 |
| | | | | | | | | | 18 x 1 |
| | | | | | | | | | 18 x 1,5 |
| | | | | | | | | | 18 x 2 |
| | | | | | | | | | 20 x 1 |
| | | | | | | | | | 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 |
| | | | | | | | | | 28 x 1,5 |
| | | | | | | | | | 30 x 1,5 |

107

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

Product Finder

Vc

M

MF

UNC UN-8

UNF UNF-8

G, Rp NPSM, NPSF

NPT, NPTF Rc, W

BSW, BSF

Pg

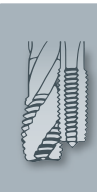
MJ UNJC, UNJF

EG (ST) SELF-LOCK

Tr, Tr-F Rd

Zubehör Accessories

Tech. Info



- Product Finder
- Vc
- 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
- Tech. Info

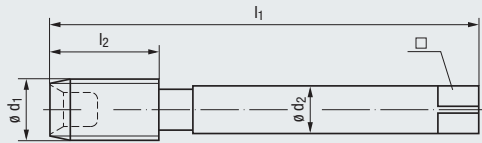
MF



DIN 13

DIN 374

Mit Spanglocke
With internal chip collector



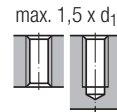
Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22



| | | | |
|----------|----------|----------|----------|
| NE2 | 6HX | TIN | 6HX |
| HSSE | NE2 | HSSE | TIN |
| C / 2-3 | HSSE | C / 2-3 | HSSE |
| P / 0 1) | C / 2-3 | P / 0 1) | C / 2-3 |
| | P / 0 1) | P / 0 1) | P / 0 1) |

| Werkzeug-Ident · Tool ident | | | | | | | | | C0803009 | C0803001 | C0803109 | C0803101 |
|-----------------------------|---------|----------------|----------------|------------------|------|------|-------------------|----------------------------------|------------------------|----------------------------------|------------------------|----------|
| Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | | Dimens.- Ident | Robust 2X-VA V-Nr.1 NE2 | Robust 2X-VA NE2 | Robust 2X-VA V-Nr.1 TIN | Robust 2X-VA TIN | |
| M 20 | x 1,5 | 125 | 25 | 16 | 12 | 18,5 | .0422 | | ● | | ○ | |
| 22 | x 1,5 | 125 | 25 | 18 | 14,5 | 20,5 | .0438 | | ● | | ○ | |
| 24 | x 1,5 | 140 | 27 | 18 | 14,5 | 22,5 | .0452 | | ● | | ○ | |
| 24 | x 2 | 140 | 27 | 18 | 14,5 | 22 | .0453 | | ● | | ○ | |
| 27 | x 1,5 | 140 | 28 | 20 | 16 | 25,5 | .0470 | | ● | | ○ | |
| 27 | x 2 | 140 | 28 | 20 | 16 | 25 | .0471 | | ● | | ○ | |
| 30 | x 1,5 | 150 | 28 | 22 | 18 | 28,5 | .0490 | | ● | | ○ | |
| 33 | x 1,5 | 160 | 30 | 25 | 20 | 31,5 | .0511 | | ● | | ○ | |
| 33 | x 2 | 160 | 30 | 25 | 20 | 31 | .0512 | | ● | | ○ | |
| 36 | x 1,5 | 170 | 30 | 28 | 22 | 34,5 | .0532 | | ● | | ○ | |
| 36 | x 2 | 170 | 30 | 28 | 22 | 34 | .0533 | | ● | | ○ | |
| 36 | x 3 | 200 | 42 | 28 | 22 | 33 | .0534 | ○ | ● | ○ | ○ | |
| 38 | x 1,5 | 170 | 30 | 28 | 22 | 36,5 | .0546 | | ● | | ○ | |
| 39 | x 3 | 200 | 42 | 32 | 24 | 36 | .0555 | ○ | ● | ○ | ○ | |
| 40 | x 2 | 170 | 30 | 32 | 24 | 38 | .0561 | | ● | | ○ | |
| 42 | x 1,5 | 170 | 30 | 32 | 24 | 40,5 | .0574 | | ● | | ○ | |
| 42 | x 2 | 170 | 30 | 32 | 24 | 40 | .0575 | | ● | | ○ | |
| 42 | x 3 | 200 | 45 | 32 | 24 | 39 | .0576 | ○ | ● | ○ | ○ | |
| 45 | x 3 | 200 | 45 | 36 | 29 | 42 | .0597 | ○ | ● | ○ | ○ | |
| 48 | x 1,5 | 190 | 32 | 36 | 29 | 46,5 | .0616 | | ● | | ○ | |
| 48 | x 2 | 190 | 32 | 36 | 29 | 46 | .0617 | | ● | | ○ | |
| 48 | x 3 | 225 | 50 | 36 | 29 | 45 | .0618 | ○ | ● | ○ | ○ | |
| 52 | x 3 | 225 | 50 | 40 | 32 | 49 | .0646 | ○ | ● | ○ | ○ | |
| 56 | x 3 | 225 | 50 | 40 | 32 | 53 | .0661 | ○ | ● | ○ | ○ | |
| 56 | x 4 | 250 | 60 | 40 | 32 | 52 | .0662 | ● | ● | ○ | ○ | |
| 60 | x 4 | 280 | 60 | 45 | 35 | 56 | .0672 | ● | ● | ○ | ○ | |
| 64 | x 3 | 275 | 55 | 50 | 39 | 61 | .0681 | | ● | | ○ | |
| 64 | x 4 | 315 | 65 | 50 | 39 | 60 | .0682 | ● | ● | ○ | ○ | |
| 68 | x 4 | 315 | 65 | 50 | 39 | 64 | .0692 | ● | ● | ○ | ○ | |
| 70 | x 3 | 275 | 55 | 50 | 39 | 67 | .0696 | | ● | | ○ | |
| 70 | x 4 | 340 | 65 | 50 | 39 | 66 | .0697 | ● | ● | ○ | ○ | |

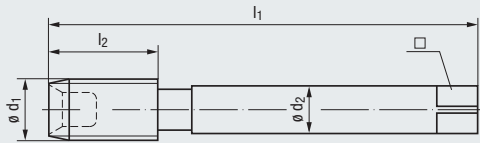
MF



DIN 13

DIN 374

Mit Spanglocke
With internal chip collector



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



Gewindetiefe und Lochform
Thread depth and hole type

Einsatzgebiete – Material
Applications – material

» 22

Werkzeug-Ident · Tool ident

| | Ø d ₁ mm | P mm | l ₁ / l ₂ | | Ø d ₂ | □ | Ident | Dimens.- Ident | C0803009 | C0803001 | C0803109 | C0803101 |
|---|------------------------|---------|----------------------------------|------------------------|------------------|----|-------|-------------------|----------------------------------|------------------------|----------|----------|
| | | | Robust 2X-VA V-Nr.1 NE2 | Robust 2X-VA NE2 | | | | | Robust 2X-VA V-Nr.1 TIN | Robust 2X-VA TIN | | |
| M | 72 | x 3 | 275 | 55 | 50 | 39 | 69 | .0702 | ● | ● | ○ | ○ |
| | 72 | x 4 | 340 | 65 | 50 | 39 | 68 | .0703 | ● | ● | ○ | ○ |
| | 72 | x 6 | 340 | 80 | 50 | 39 | 66 | .0704 | ● | ● | ○ | ○ |
| | 76 | x 3 | 275 | 55 | 50 | 39 | 73 | .0714 | ● | ● | ○ | ○ |
| | 76 | x 4 | 340 | 65 | 50 | 39 | 72 | .0715 | ● | ● | ○ | ○ |
| | 76 | x 6 | 340 | 80 | 50 | 39 | 70 | .0716 | ● | ● | ○ | ○ |
| | 80 | x 4 | 360 | 65 | 50 | 39 | 76 | .0727 | ● | ● | ○ | ○ |
| | 80 | x 6 | 360 | 80 | 50 | 39 | 74 | .0728 | ● | ● | ○ | ○ |
| | 85 | x 3 | 325 | 60 | 50 | 39 | 82 | .0736 | ● | ● | ○ | ○ |
| | 85 | x 4 | 380 | 70 | 50 | 39 | 81 | .0737 | ● | ● | ○ | ○ |
| | 90 | x 3 | 325 | 60 | 50 | 39 | 87 | .0746 | ● | ● | ○ | ○ |
| | 90 | x 4 | 380 | 70 | 50 | 39 | 86 | .0747 | ● | ● | ○ | ○ |
| | 90 | x 6 | 380 | 80 | 50 | 39 | 84 | .0748 | ● | ● | ○ | ○ |
| | 95 | x 6 | 400 | 85 | 56 | 44 | 89 | .0758 | ● | ● | ○ | ○ |
| | 100 | x 4 | 400 | 70 | 56 | 44 | 96 | .0767 | ● | ● | ○ | ○ |
| | 100 | x 6 | 400 | 85 | 56 | 44 | 94 | .0768 | ● | ● | ○ | ○ |
| | 110 | x 6 | 400 | 85 | 56 | 44 | 104 | .0788 | ● | ● | ○ | ○ |
| | 115 | x 3 | 350 | 65 | 56 | 44 | 112 | .0791 | ● | ● | ○ | ○ |
| | 120 | x 4 | 400 | 75 | 56 | 44 | 116 | .0797 | ● | ● | ○ | ○ |
| | 120 | x 6 | 400 | 90 | 56 | 44 | 114 | .0798 | ● | ● | ○ | ○ |

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.

≥ M56 Schaft mit Griffrillen!
≥ M56 Shank with grooves for better handling!

2) Robust 2X-VA-NE2 und Robust 2X-VA-TIN können auch im Satz als Fertigschneider benutzt werden.
Hierbei kann eine Gewindetiefe von bis zu 3 x d₁ hergestellt werden.
Robust 2X-VA-NE2 and Robust 2X-VA-TIN can also be used as finishing taps in a set of taps.
In this way, thread depths of up to 3 x d₁ can be produced.

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

Product Finder

- Vc
- M
- MF**
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



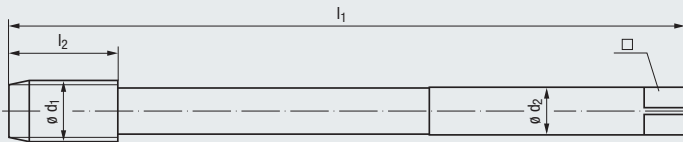
- Product Finder
- Vc
- M
- MF**
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

MF



DIN 13

Mit langen Nuten für Gewindetiefen bis max. 3 x d₁
With long flutes for thread depths up to max. 3 x d₁



| | | | | |
|---|---|---------|---------|---------|
| Technische Informationen Technical information | Toleranz · Tolerance Beschichtung · Coating Schneidstoff · Cutting material | 6HX | 6HX | 6HX |
| | | TICN | TIN | TIN |
| » 245 - 266 | | HSSE | HSSE | HSSE |
| | | C / 2-3 | C / 2-3 | C / 2-3 |
| | | E / O | E / O | E / O |

| | | |
|---|-------------------------|-------------------------|
| Gewindetiefe und Lochform Thread depth and hole type | max. 3 x d ₁ | max. 3 x d ₁ |
| | | |

| | | | | |
|--|------|---|---|---|
| Einsatzgebiete – Material Applications – material | » 22 | P 1.1-4.1 K 1.1-4.2 N 1.4-6, 2.4-7 N 4.1 | P 2.1-5.1 K 2.1-2 N 1.4-6, 2.4-5 | P 2.1-5.1 K 2.1-2 N 1.4-6, 2.4-5 |
|--|------|---|---|---|

| Werkzeug-Ident · Tool ident | | | | | | | | | C0579401 | C4963701 | C4973701 |
|-----------------------------|---------|----------------|----------------|------------------|------|----|-------------------|--------------------------------|-------------------------------|----------------------------------|----------|
| Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | | Dimens.- Ident | Rekord 2A-Z-IKZ-LF3 TICN | Rekord 2D-Z-IKZ-LF3 TIN | Rekord 2D-Z-BF-IKZ-LF3 TIN | |
| M 24 | x 2 | 215 | 20 | 18 | 14,5 | 22 | .0453 | ○ | ○ | ○ | |
| 30 | x 2 | 240 | 22 | 22 | 18 | 28 | .0491 | ○ | ○ | ○ | |
| 36 | x 3 | 270 | 30 | 28 | 22 | 33 | .0534 | ○ | ○ | ○ | |

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



Spiralbohrer Typ EF-Drill Modular
siehe Seite 540 - 545

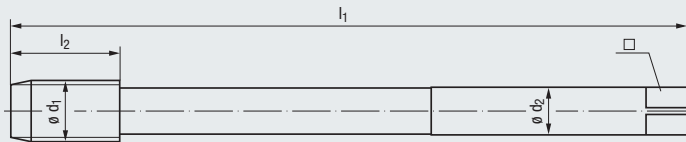
Twist drills type EF-Drill Modular,
see page 540 - 545

MF



DIN 13

Mit langen Nuten für Gewindetiefen bis max. 4 x d₁
With long flutes for thread depths up to max. 4 x d₁



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



Gewindetiefe und Lochform
Thread depth and hole type

Einsatzgebiete – Material
Applications – material

» 22

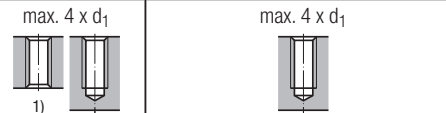
Werkzeug-Ident · Tool ident

| M | ø d ₁ mm | P mm | l ₁ | l ₂ | ø d ₂ | □ | Ø | Dimens.- Ident | C0539401 | C4283701 | C4063701 |
|---|------------------------|---------|----------------|----------------|------------------|------|----|-------------------|---|--|--|
| | | | | | | | | | Rekord 2A-Z- IKZ -LF4 TICN | Rekord 2D-Z- IKZ -LF4 TIN | Rekord 2D-Z- BF-IKZ -LF4 TIN |
| | 24 | x 2 | 240 | 20 | 18 | 14,5 | 22 | .0453 | ○ | ○ | ○ |
| | 30 | x 2 | 270 | 22 | 22 | 18 | 28 | .0491 | ○ | ○ | ○ |
| | 36 | x 3 | 310 | 30 | 28 | 22 | 33 | .0534 | ○ | ○ | ○ |

Z
CNC-controlled
machines

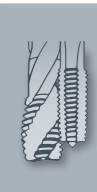


| | | |
|---------|---------|---------|
| 6HX | 6HX | 6HX |
| TICN | TIN | TIN |
| HSSE | HSSE | HSSE |
| C / 2-3 | R15 | R15 |
| E / O | C / 2-3 | C / 2-3 |
| | E / O | E / O |



| | | |
|----------------|----------------|----------------|
| P 1.1-4.1 | P 2.1-5.1 | P 2.1-5.1 |
| K 1.1-4.2 | K 2.1-2 | K 2.1-2 |
| N 1.4-6, 2.4-7 | N 1.4-6, 2.4-5 | N 1.4-6, 2.4-5 |
| N 4.1 | | |

- 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 (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



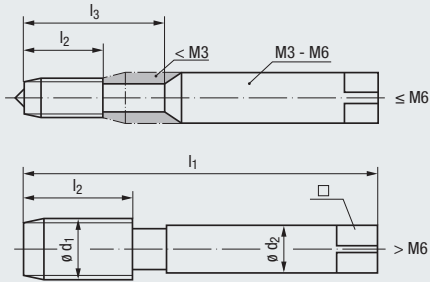
1) Gewindebohren in Durchgangslöchern nur mit externer Kühlschmierung möglich
Threading in through holes is possible only with external cooling/lubrication

- 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
- Tech. Info



DIN 2181

DIN 13



STEEL
Steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

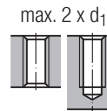
Technische Informationen
Technical information

Technical information icon: 245 - 266

Technical drawing icon: max. 2 x d₁

- 6HX
- 6HX
- HSSE
- HSSE
- LH**
- C / 2-3
- C / 2-3
- E / O
- E / O

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

Technical information icon: 22

- P 1.1-3.1
- P 1.1-3.1
- N 2.3
- N 2.3

Werkzeug-Ident · Tool ident

A0101001 A0101051

Rekord A-STEEL Rekord A-STEEL-LH

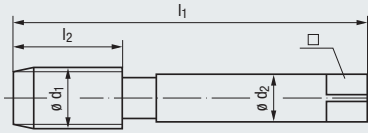
| M | ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | Dimens.- Ident | Rekord A-STEEL | Rekord A-STEEL-LH |
|---|------------------------|---------|----------------|----------------|----------------|------------------|------|-------------------|-------------------|----------------------|
| | | | | |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

MF



DIN 13

DIN 2181



STEEL
Steel materials



Technische Informationen
Technical information

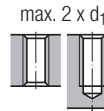
» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | |
|---------|-----------|
| 6HX | 6HX |
| HSSE | HSSE |
| C / 2-3 | C / 2-3 |
| E / O | E / O |
| | LH |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

| | |
|-----------|-----------|
| P 1.1-3.1 | P 1.1-3.1 |
| N 2.3 | N 2.3 |

Werkzeug-Ident · Tool ident

| | |
|----------------|-------------------|
| A0101001 | A0101051 |
| Rekord A-STEEL | Rekord A-STEEL-LH |

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

DIN 371

» 102 » 102

DIN 374

» 108

Product Finder

V_c

M

MF

UNC UN-8

UNF UNEF

G, Rp NPSM, NPSF

NPT, NPTF Rc, W

BSW, BSF

Pg

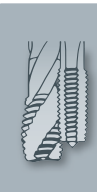
MJ UNJC, UNJF

EG (ST) SELF-LOCK

Tr, Tr-F Rd

Zubehör Accessories

Tech. Info

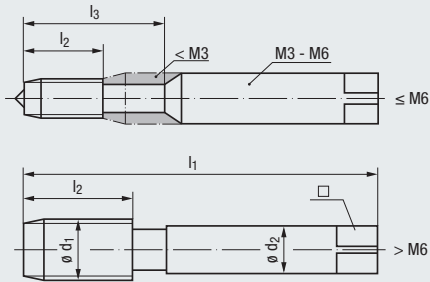


- Product Finder
- V_c
- M
- MF**
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



DIN 2181

DIN 13



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

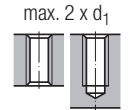
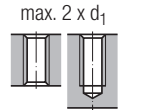
Technische Informationen
Technical information

» 245 - 266



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

Gewindetiefe und Lochform
Thread depth and hole type



P 1.1-3.1 P 1.1-3.1 P 1.1-3.1

Einsatzgebiete – Material
Applications – material

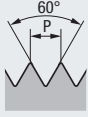
» 22

Werkzeug-Ident · Tool ident

H0211009 H0211001 H0201001

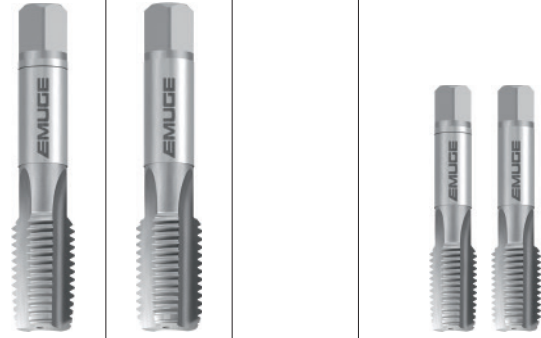
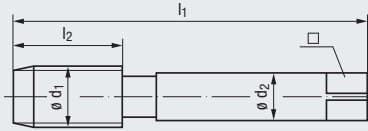
| M | ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | Tool Ident | Dimens.- Ident | HGB-Set | HGB-Set | HGB-Set |
|---|------------------------|---------|----------------|----------------|----------------|------------------|------|------------|-------------------|-----------|---------|---------|
| | | | | | | | | | | V-Nr.1 | F | 2S |
| | | | | | | | | | | (Nr.1, F) | | |
| | 2,5 | x 0,35 | 40 | 9 | – | 2,8 | 2,1 | 2,15 | .0196 | ○ | ○ | ○ |
| | 2,6 | x 0,35 | 40 | 9 | – | 2,8 | 2,1 | 2,25 | .0199 | | | |
| | 3 | x 0,35 | 40 | 8 | 18 | 3,5 | 2,7 | 2,65 | .0202 | ○ | ○ | ○ |
| | 3,5 | x 0,35 | 45 | 8 | 20 | 4 | 3 | 3,15 | .0205 | | | |
| | 4 | x 0,35 | 45 | 9 | 22 | 4,5 | 3,4 | 3,65 | .0209 | ● | ● | ● |
| | 4 | x 0,5 | 45 | 9 | 22 | 4,5 | 3,4 | 3,5 | .0210 | ● | ● | ● |
| | 4,5 | x 0,5 | 50 | 10 | 24 | 6 | 4,9 | 4 | .0214 | | | |
| | 5 | x 0,5 | 50 | 11 | 25 | 6 | 4,9 | 4,5 | .0218 | ● | ● | ● |
| | 6 | x 0,5 | 56 | 12 | 27 | 6 | 4,9 | 5,5 | .0228 | ● | ● | ● |
| | 6 | x 0,75 | 56 | 12 | 27 | 6 | 4,9 | 5,2 | .0229 | ● | ● | ● |
| | 7 | x 0,75 | 56 | 14 | – | 6 | 4,9 | 6,2 | .0239 | | | |
| | 8 | x 0,5 | 56 | 14 | – | 6 | 4,9 | 7,5 | .0249 | ● | ● | ● |
| | 8 | x 0,75 | 56 | 14 | – | 6 | 4,9 | 7,2 | .0250 | ● | ● | ● |
| | 8 | x 1 | 63 | 17 | – | 6 | 4,9 | 7 | .0251 | ● | ● | ● |
| | 9 | x 1 | 63 | 17 | – | 7 | 5,5 | 8 | .0263 | | | |
| | 10 | x 0,75 | 63 | 18 | – | 7 | 5,5 | 9,2 | .0275 | ● | ● | ● |
| | 10 | x 1 | 63 | 18 | – | 7 | 5,5 | 9 | .0276 | ● | ● | ● |
| | 10 | x 1,25 | 70 | 22 | – | 7 | 5,5 | 8,8 | .0277 | ● | ● | ● |
| | 11 | x 1 | 63 | 18 | – | 8 | 6,2 | 10 | .0288 | | | |
| | 12 | x 1 | 70 | 18 | – | 9 | 7 | 11 | .0301 | ● | ● | ● |
| | 12 | x 1,25 | 70 | 20 | – | 9 | 7 | 10,8 | .0302 | ● | ● | ● |
| | 12 | x 1,5 | 70 | 20 | – | 9 | 7 | 10,5 | .0303 | ● | ● | ● |
| | 13 | x 1 | 70 | 18 | – | 11 | 9 | 12 | .0315 | | | |
| | 14 | x 1 | 70 | 18 | – | 11 | 9 | 13 | .0329 | ● | ● | ● |
| | 14 | x 1,25 | 70 | 20 | – | 11 | 9 | 12,8 | .0330 | ● | ● | ● |
| | 14 | x 1,5 | 70 | 20 | – | 11 | 9 | 12,5 | .0331 | ● | ● | ● |
| | 15 | x 1 | 70 | 18 | – | 12 | 9 | 14 | .0343 | | | |
| | 15 | x 1,5 | 70 | 20 | – | 12 | 9 | 13,5 | .0345 | | | |
| | 16 | x 1 | 70 | 18 | – | 12 | 9 | 15 | .0357 | ● | ● | ● |
| | 16 | x 1,5 | 70 | 20 | – | 12 | 9 | 14,5 | .0359 | ● | ● | ● |
| | 18 | x 1 | 80 | 18 | – | 14 | 11 | 17 | .0388 | ● | ● | ● |
| | 18 | x 1,5 | 80 | 22 | – | 14 | 11 | 16,5 | .0390 | ● | ● | ● |
| | 18 | x 2 | 80 | 22 | – | 14 | 11 | 16 | .0391 | ● | ● | ● |
| | 20 | x 1 | 80 | 18 | – | 16 | 12 | 19 | .0420 | ● | ● | ● |
| | 20 | x 1,5 | 80 | 22 | – | 16 | 12 | 18,5 | .0422 | ● | ● | ● |
| | 20 | x 2 | 80 | 22 | – | 16 | 12 | 18 | .0423 | ● | ● | ● |
| | 22 | x 1 | 80 | 18 | – | 18 | 14,5 | 21 | .0436 | ● | ● | ● |
| | 22 | x 1,5 | 80 | 22 | – | 18 | 14,5 | 20,5 | .0438 | ● | ● | ● |
| | 22 | x 2 | 80 | 22 | – | 18 | 14,5 | 20 | .0439 | ● | ● | ● |
| | 24 | x 1 | 90 | 18 | – | 18 | 14,5 | 23 | .0450 | ● | ● | ● |

MF



DIN 13

DIN 2181



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

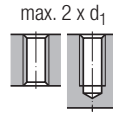
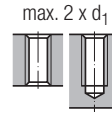
Technische Informationen
Technical information

» 245 - 266



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

Gewindetiefe und Lochform
Thread depth and hole type



P 1.1-3.1 P 1.1-3.1 P 1.1-3.1

Einsatzgebiete – Material
Applications – material

» 22

Werkzeug-Ident · Tool ident

H0211009 H0211001 H0201001

| M | ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | | Dimens.- Ident | HGB-Set | HGB-Set | HGB-Set |
|---|------------------------|---------|----------------|----------------|----------------|------------------|------|------|-------------------|-----------|---------|---------|
| | | | | | | | | | | V-Nr.1 | F | 2S |
| | | | | | | | | | | (Nr.1, F) | | |
| | 24 | x 1,5 | 90 | 22 | – | 18 | 14,5 | 22,5 | .0452 | ○ | ○ | ○ |
| | 24 | x 2 | 90 | 22 | – | 18 | 14,5 | 22 | .0453 | ○ | ○ | ○ |
| | 25 | x 1,5 | 90 | 22 | – | 18 | 14,5 | 23,5 | .0458 | ○ | ○ | ○ |
| | 26 | x 1,5 | 90 | 22 | – | 18 | 14,5 | 24,5 | .0464 | ○ | ○ | ○ |
| | 27 | x 1,5 | 90 | 22 | – | 20 | 16 | 25,5 | .0470 | ○ | ○ | ○ |
| | 27 | x 2 | 90 | 22 | – | 20 | 16 | 25 | .0471 | ○ | ○ | ○ |
| | 28 | x 1,5 | 90 | 22 | – | 20 | 16 | 26,5 | .0476 | ○ | ○ | ○ |
| | 30 | x 1 | 90 | 18 | – | 22 | 18 | 29 | .0488 | ○ | ○ | ○ |
| | 30 | x 1,5 | 90 | 22 | – | 22 | 18 | 28,5 | .0490 | ○ | ○ | ○ |
| | 30 | x 2 | 90 | 22 | – | 22 | 18 | 28 | .0491 | ○ | ○ | ○ |
| | 32 | x 1,5 | 90 | 22 | – | 22 | 18 | 30,5 | .0504 | ○ | ○ | ○ |
| | 33 | x 1,5 | 100 | 25 | – | 25 | 20 | 31,5 | .0511 | ○ | ○ | ○ |
| | 33 | x 2 | 100 | 25 | – | 25 | 20 | 31 | .0512 | ○ | ○ | ○ |
| | 34 | x 1,5 | 100 | 25 | – | 28 | 22 | 32,5 | .0518 | ○ | ○ | ○ |
| | 35 | x 1,5 | 100 | 25 | – | 28 | 22 | 33,5 | .0525 | ○ | ○ | ○ |
| | 36 | x 1,5 | 100 | 25 | – | 28 | 22 | 34,5 | .0532 | ○ | ○ | ○ |
| | 36 | x 2 | 125 | 30 | – | 28 | 22 | 34 | .0533 | ○ | ○ | ○ |
| | 36 | x 3 | 125 | 36 | – | 28 | 22 | 33 | .0534 | ○ | ○ | ○ |
| | 38 | x 1,5 | 100 | 25 | – | 28 | 22 | 36,5 | .0546 | ○ | ○ | ○ |
| | 39 | x 2 | 125 | 30 | – | 32 | 24 | 37 | .0554 | ○ | ○ | ○ |
| | 39 | x 3 | 125 | 36 | – | 32 | 24 | 36 | .0555 | ○ | ○ | ○ |
| | 40 | x 1,5 | 110 | 25 | – | 32 | 24 | 38,5 | .0560 | ○ | ○ | ○ |
| | 40 | x 2 | 125 | 30 | – | 32 | 24 | 38 | .0561 | ○ | ○ | ○ |
| | 40 | x 3 | 125 | 36 | – | 32 | 24 | 37 | .0562 | ○ | ○ | ○ |
| | 42 | x 1,5 | 110 | 25 | – | 32 | 24 | 40,5 | .0574 | ○ | ○ | ○ |
| | 42 | x 2 | 125 | 30 | – | 32 | 24 | 40 | .0575 | ○ | ○ | ○ |
| | 42 | x 3 | 125 | 36 | – | 32 | 24 | 39 | .0576 | ○ | ○ | ○ |
| | 45 | x 1,5 | 110 | 25 | – | 36 | 29 | 43,5 | .0595 | ○ | ○ | ○ |
| | 45 | x 2 | 125 | 30 | – | 36 | 29 | 43 | .0596 | ○ | ○ | ○ |
| | 45 | x 3 | 125 | 36 | – | 36 | 29 | 42 | .0597 | ○ | ○ | ○ |
| | 48 | x 1,5 | 140 | 25 | – | 36 | 29 | 46,5 | .0616 | ○ | ○ | ○ |
| | 48 | x 2 | 140 | 30 | – | 36 | 29 | 46 | .0617 | ○ | ○ | ○ |
| | 48 | x 3 | 140 | 36 | – | 36 | 29 | 45 | .0618 | ○ | ○ | ○ |
| | 50 | x 1,5 | 140 | 25 | – | 36 | 29 | 48,5 | .0630 | ○ | ○ | ○ |
| | 50 | x 2 | 140 | 30 | – | 36 | 29 | 48 | .0631 | ○ | ○ | ○ |
| | 50 | x 3 | 140 | 36 | – | 36 | 29 | 47 | .0632 | ○ | ○ | ○ |
| | 52 | x 1,5 | 140 | 25 | – | 40 | 32 | 50,5 | .0644 | ○ | ○ | ○ |
| | 52 | x 2 | 140 | 32 | – | 40 | 32 | 50 | .0645 | ○ | ○ | ○ |
| | 52 | x 3 | 140 | 40 | – | 40 | 32 | 49 | .0646 | ○ | ○ | ○ |

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

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 (ST) SELF-LOCK

Tr, Tr-F Rd

Zubehör Accessories

Tech. Info

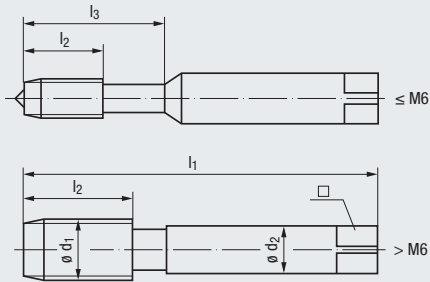


- Product Finder
- V_c
- M
- MF**
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



DIN 2181

DIN 13



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

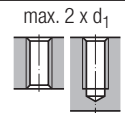
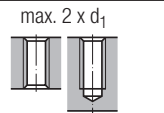
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6HX
HSSE
LH
D / 3-4
O / P

6HX
HSSE
LH
C / 2-3
O / P

Gewindetiefe und Lochform
Thread depth and hole type



P 1.1-3.1

P 1.1-3.1

P 1.1-3.1

Einsatzgebiete – Material
Applications – material

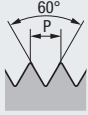
» 22

Werkzeug-Ident · Tool ident

H0211059 H0211051 H0201051

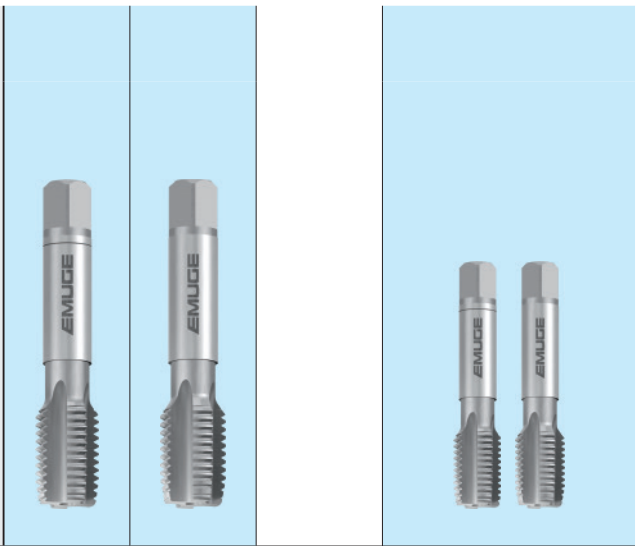
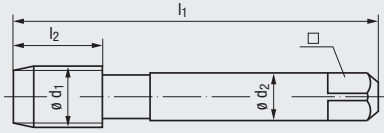
| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | Image | Dimens.- Ident | HGB-Set | HGB-Set | HGB-Set |
|---|------------------------|---------|----------------|----------------|----------------|------------------|------|-------|-------------------|-----------|---------|--------------------|
| | | | | | | | | | | LH-V-Nr.1 | LH-F | LH-2S (Nr.1, F) |
| | 6 | x 0,5 | 56 | 12 | 27 | 6 | 4,9 | 5,5 | .0228 | | | |
| | 6 | x 0,75 | 56 | 12 | 27 | 6 | 4,9 | 5,2 | .0229 | | | |
| | 7 | x 0,75 | 56 | 14 | — | 6 | 4,9 | 6,2 | .0239 | | | |
| | 8 | x 0,5 | 56 | 14 | — | 6 | 4,9 | 7,5 | .0249 | | | |
| | 8 | x 0,75 | 56 | 14 | — | 6 | 4,9 | 7,2 | .0250 | | | |
| | 8 | x 1 | 63 | 17 | — | 6 | 4,9 | 7 | .0251 | ○ | ○ | ○ |
| | 9 | x 1 | 63 | 17 | — | 7 | 5,5 | 8 | .0263 | | | |
| | 10 | x 0,75 | 63 | 18 | — | 7 | 5,5 | 9,2 | .0275 | | | |
| | 10 | x 1 | 63 | 18 | — | 7 | 5,5 | 9 | .0276 | ○ | ○ | ○ |
| | 10 | x 1,25 | 70 | 22 | — | 7 | 5,5 | 8,8 | .0277 | | | |
| | 11 | x 1 | 63 | 18 | — | 8 | 6,2 | 10 | .0288 | | | |
| | 12 | x 1 | 70 | 18 | — | 9 | 7 | 11 | .0301 | ○ | ○ | ○ |
| | 12 | x 1,25 | 70 | 20 | — | 9 | 7 | 10,8 | .0302 | | | |
| | 12 | x 1,5 | 70 | 20 | — | 9 | 7 | 10,5 | .0303 | ○ | ○ | ○ |
| | 13 | x 1 | 70 | 18 | — | 11 | 9 | 12 | .0315 | | | |
| | 14 | x 1 | 70 | 18 | — | 11 | 9 | 13 | .0329 | | | |
| | 14 | x 1,25 | 70 | 20 | — | 11 | 9 | 12,8 | .0330 | | | |
| | 14 | x 1,5 | 70 | 20 | — | 11 | 9 | 12,5 | .0331 | ○ | ○ | ○ |
| | 15 | x 1 | 70 | 18 | — | 12 | 9 | 14 | .0343 | | | |
| | 15 | x 1,5 | 70 | 20 | — | 12 | 9 | 13,5 | .0345 | | | |
| | 16 | x 1 | 70 | 18 | — | 12 | 9 | 15 | .0357 | | | |
| | 16 | x 1,5 | 70 | 20 | — | 12 | 9 | 14,5 | .0359 | ○ | ○ | ○ |
| | 18 | x 1 | 80 | 18 | — | 14 | 11 | 17 | .0388 | | | |
| | 18 | x 1,5 | 80 | 22 | — | 14 | 11 | 16,5 | .0390 | ○ | ○ | ○ |
| | 18 | x 2 | 80 | 22 | — | 14 | 11 | 16 | .0391 | | | |
| | 20 | x 1 | 80 | 18 | — | 16 | 12 | 19 | .0420 | | | |
| | 20 | x 1,5 | 80 | 22 | — | 16 | 12 | 18,5 | .0422 | ○ | ○ | ○ |
| | 20 | x 2 | 80 | 22 | — | 16 | 12 | 18 | .0423 | | | |
| | 22 | x 1 | 80 | 18 | — | 18 | 14,5 | 21 | .0436 | | | |
| | 22 | x 1,5 | 80 | 22 | — | 18 | 14,5 | 20,5 | .0438 | ○ | ○ | ○ |
| | 22 | x 2 | 80 | 22 | — | 18 | 14,5 | 20 | .0439 | | | |
| | 24 | x 1 | 90 | 18 | — | 18 | 14,5 | 23 | .0450 | | | |
| | 24 | x 1,5 | 90 | 22 | — | 18 | 14,5 | 22,5 | .0452 | ○ | ○ | ○ |
| | 24 | x 2 | 90 | 22 | — | 18 | 14,5 | 22 | .0453 | | | |

MF



DIN 13

DIN 2181



- Product Finder
- Vc
- M
- MF**
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266

6HX

VHM/KHM

C / ≈3

O / P

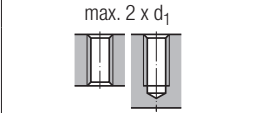
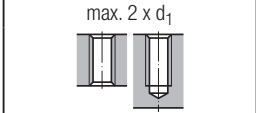
6HX

VHM/KHM

C / ≈3

O / P

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

P 5.1

N 2.8, 5.2

H 1.1-3

P 5.1

N 2.8, 5.2

H 1.1-3

| Werkzeug-Ident · Tool ident | | | | | | | | | H0330909 | H0330901 | H0320901 |
|-----------------------------|---------|----------------|----------------|------------------|-----|------|-------------------|--------------------------|---------------------|-----------------------------------|----------|
| Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | | Dimens.- Ident | VHM/KHM Set V-Nr.1 | VHM/KHM Set F | VHM/KHM Set 2S (Nr.1, F) | |
| M 8 | x 1 | 63 | 10 | 6 | 4,9 | 7 | .0251 | ○ | ○ | ○ | |
| 10 | x 1 | 63 | 10 | 7 | 5,5 | 9 | .0276 | ○ | ○ | ○ | |
| 12 | x 1,5 | 70 | 15 | 9 | 7 | 10,5 | .0303 | ○ | ○ | ○ | |
| 14 | x 1,5 | 70 | 15 | 11 | 9 | 12,5 | .0331 | ○ | ○ | ○ | |
| 16 | x 1,5 | 70 | 15 | 12 | 9 | 14,5 | .0359 | ○ | ○ | ○ | |

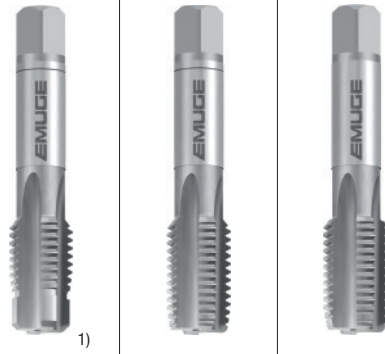
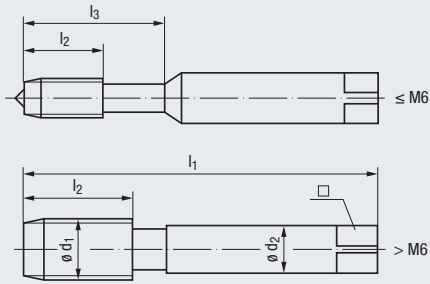
● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

- 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
- Tech. Info



DIN 2181

DIN 13



Toleranz · Tolerance
 Beschichtung · Coating
 Schneidstoff · Cutting material

Technische Informationen
 Technical information

Technical information icon: 245 - 266

Technical drawing icon: max. 2 x d₁

| | | |
|---------|---------|---------|
| HSSE | HSSE | HSSE |
| C / 2-3 | C / 2-3 | C / 2-3 |
| O / P | O / P | O / P |

Gewindetiefe und Lochform
 Thread depth and hole type

| | | |
|--------------|--------------|--------------|
| 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 |
| S 2.1-2, 2.4 | S 2.1-2, 2.4 | S 2.1-2, 2.4 |

Einsatzgebiete – Material
 Applications – material

| | | |
|----------------|---------------|----------|
| H0463009 | H0473009 | H0473001 |
| WM-Set V-Nr.1Z | WM-Set V-Nr.1 | WM-Set F |

| Werkzeug-Ident · Tool ident | | | | | | | | | | H0463009 | H0473009 | H0473001 |
|-----------------------------|--------|----------------|----------------|----------------|------------------|------|------|---------------|---|----------|----------|----------|
| Ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | | Dimens.-Ident | | | | |
| M 6 | x 0,75 | 56 | 12 | 27 | 6 | 4,9 | 5,2 | .0229 | ○ | ○ | ○ | |
| 8 | x 0,75 | 56 | 14 | – | 6 | 4,9 | 7,2 | .0250 | ○ | ○ | ○ | |
| 8 | x 1 | 63 | 17 | – | 6 | 4,9 | 7 | .0251 | ● | ● | ● | |
| 10 | x 1 | 63 | 18 | – | 7 | 5,5 | 9 | .0276 | ● | ● | ● | |
| 12 | x 1 | 70 | 18 | – | 9 | 7 | 11 | .0301 | ○ | ○ | ○ | |
| 12 | x 1,5 | 70 | 20 | – | 9 | 7 | 10,5 | .0303 | ● | ● | ● | |
| 14 | x 1,5 | 70 | 20 | – | 11 | 9 | 12,5 | .0331 | ● | ● | ● | |
| 16 | x 1,5 | 70 | 20 | – | 12 | 9 | 14,5 | .0359 | ● | ● | ● | |
| 18 | x 1,5 | 80 | 22 | – | 14 | 11 | 16,5 | .0390 | ○ | ○ | ○ | |
| 20 | x 1,5 | 80 | 22 | – | 16 | 12 | 18,5 | .0422 | ○ | ○ | ○ | |
| 22 | x 1,5 | 80 | 22 | – | 18 | 14,5 | 20,5 | .0438 | ○ | ○ | ○ | |
| 24 | x 1,5 | 90 | 22 | – | 18 | 14,5 | 22,5 | .0452 | ○ | ○ | ○ | |

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 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

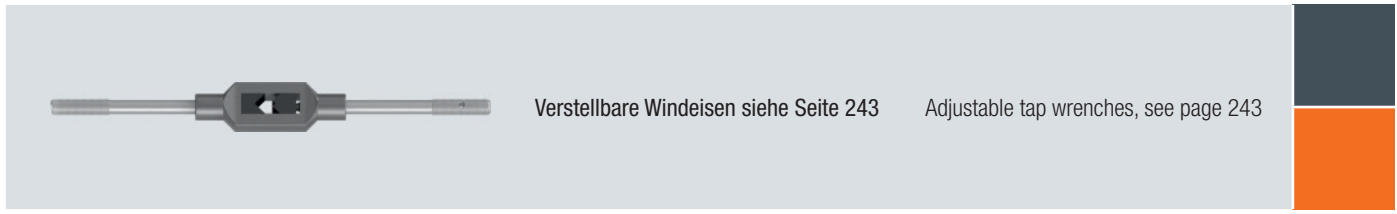
Zubehör
Accessories

Tech. Info



| | | | |
|--|--|--|---|
| <p>2)</p> | | | |
| <p>6HX</p> <p>HSSE</p> <p>C / 2-3</p> <p>O / P</p> | <p>6HX</p> <p>HSSE</p> <p>C / 2-3</p> <p>O / P</p> | | |
| <p>max. 2 x d₁</p> | | | |
| <p>P 1.1-5.1</p> <p>M 1.1-4.1</p> <p>S 2.1-2, 2.4</p> | <p>P 1.1-5.1</p> <p>M 1.1-4.1</p> <p>S 2.1-2, 2.4</p> | | |
| <p>H0453001</p> <p>WM-Set 3S</p> <p>(Nr.1Z, Nr.1, F)</p> | <p>H0483001</p> <p>WM-Set 2S</p> <p>(Nr.1, F)</p> | | |
| <p>○</p> <p>○</p> <p>●</p> <p>●</p> <p>○</p> <p>●</p> <p>●</p> <p>○</p> <p>○</p> <p>○</p> <p>○</p> | <p>○</p> <p>○</p> <p>●</p> <p>●</p> <p>○</p> <p>●</p> <p>●</p> <p>○</p> <p>○</p> <p>○</p> <p>○</p> | | <p>M 6 x 0,75</p> <p>8 x 0,75</p> <p>8 x 1</p> <p>10 x 1</p> <p>12 x 1</p> <p>12 x 1,5</p> <p>14 x 1,5</p> <p>16 x 1,5</p> <p>18 x 1,5</p> <p>20 x 1,5</p> <p>22 x 1,5</p> <p>24 x 1,5</p> |

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



Verstellbare Windeisen siehe Seite 243 Adjustable tap wrenches, see page 243

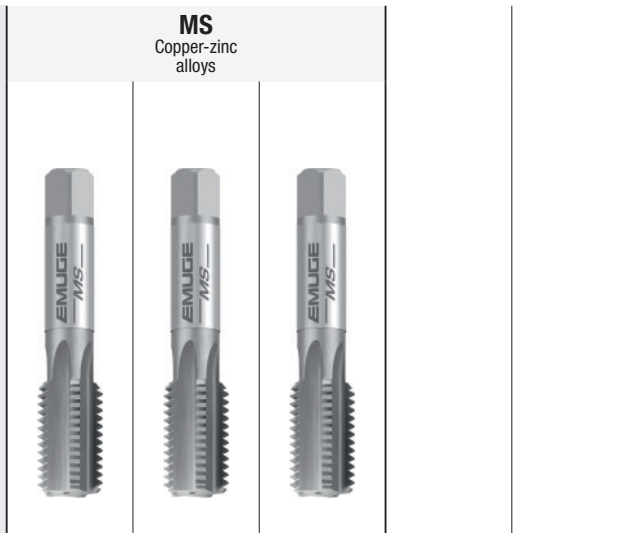
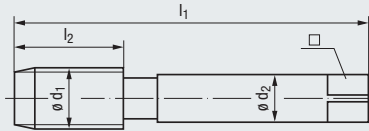
- Product Finder
- V_c
- M
- MF**
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



MF

DIN 13

Für dünnwandige Messing-Rohre
For thin-walled brass tubes



| | | | | |
|--|---------------------------------|-----------------------------|--------------------|------------|
| Technische Informationen Technical information ▶ 245 - 266 | Toleranz · Tolerance | 6HX | 6HX +0,1 2) | 6GX |
| | Beschichtung · Coating | HSSE | HSSE | HSSE |
| | Schneidstoff · Cutting material | max. 1 | max. 1 | max. 1 |
| | | E | E | E |
| Gewindetiefe und Lochform Thread depth and hole type | | max. 1 x d ₁ | | |
| | | N 2,3,2,6 | N 2,3,2,6 | N 2,3,2,6 |

Einsatzgebiete – Material
Applications – material
▶ 22

| Werkzeug-Ident · Tool ident | | | | | | | | | A6622501 | A662254A | A6622521 |
|-----------------------------|---------|----------------|----------------|------------------|------|------|-------------------|---------------|-------------------------|------------------------|----------|
| Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | | Dimens.- Ident | AUT-A MS-R | AUT-A MS-R „+0,1“ | AUT-A MS-R „6GX“ | |
| M 8 | x 1 | 63 | 17 | 6 | 4,9 | 7 | .0251 | ○ | | ○ | |
| 10 | x 1 | 63 | 18 | 7 | 5,5 | 9 | .0276 | ○ | ○ | ○ | |
| 12 | x 1 | 70 | 18 | 9 | 7 | 11 | .0301 | ○ | ○ | ○ | |
| 12 | x 1,5 | 70 | 20 | 9 | 7 | 10,5 | .0303 | ○ | | ○ | |
| 14 | x 1 | 70 | 18 | 10 1) | 8 | 13 | .0329 | | ○ | ○ | |
| 14 | x 1,5 | 70 | 20 | 10 1) | 8 | 12,5 | .0331 | ○ | | ○ | |
| 15 | x 1 | 70 | 18 | 12 | 9 | 14 | .0343 | | | ○ | |
| 16 | x 1,5 | 70 | 20 | 12 | 9 | 14,5 | .0359 | ○ | ○ | ○ | |
| 17 | x 1 | 70 | 18 | 12 | 9 | 16 | .0372 | | | ○ | |
| 18 | x 1,5 | 80 | 22 | 12 1) | 9 | 16,5 | .0390 | ○ | | ○ | |
| 20 | x 1,5 | 80 | 22 | 15 1) | 12 | 18,5 | .0422 | ○ | | ○ | |
| 22 | x 1,5 | 80 | 22 | 15 1) | 12 | 20,5 | .0438 | ○ | | ○ | |
| 24 | x 1,5 | 90 | 22 | 18 | 14,5 | 22,5 | .0452 | ○ | | ○ | |
| 26 | x 1,5 | 90 | 22 | 18 | 14,5 | 24,5 | .0464 | ○ | | ○ | |
| 28 | x 1,5 | 90 | 22 | 18 1) | 14,5 | 26,5 | .0476 | ○ | | ○ | |
| 30 | x 1,5 | 90 | 22 | 18 1) | 14,5 | 28,5 | .0490 | ○ | | ○ | |

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

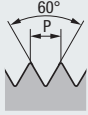
2) Vorbohrdurchmesser für Gewindebohrer mit Übermaß um 0,1 mm anheben
Increase drill diameter for taps with oversize by 0.1 mm



Automatengewindebohrer für
Metrisches ISO-Regelgewinde DIN 13
auf Anfrage

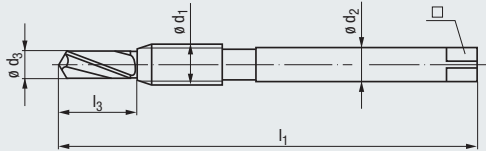
Taps for automatic lathes for
ISO Metric coarse thread DIN 13,
upon request

MF



DIN 13

Normal lang
Standard length



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



- ISO 2/6H
- HSSE
- C / 2-3
- E / 0

Gewindetiefe und Lochform
Thread depth and hole type

max. 1 x d₁

Einsatzgebiete – Material
Applications – material

» 22

- P 1.1-2.1
- N 2.2

Werkzeug-Ident · Tool ident

M0601000

| | ø d ₁ mm | P mm | l ₁ | l ₃ | ø d ₂ | □ | ø d ₃ | Dimens.- Ident | KOMBI Normal-Ig | | | | |
|----------|------------------------|---------|----------------|----------------|------------------|-----|------------------|-------------------|--------------------|--|--|--|--|
| | | | | | | | | | | | | | |
| M | 4 | x 0,5 | 66 | 10 | 4,5 | 3,4 | 3,55 | .0210 | ○ | | | | |
| | 5 | x 0,5 | 75 | 12 | 6 | 4,9 | 4,55 | .0218 | | | | | |
| | 6 | x 0,75 | 81 | 14 | 6 | 4,9 | 5,31 | .0229 | ○ | | | | |
| | 8 | x 0,75 | 93 | 20 | 6 | 4,9 | 7,31 | .0250 | | | | | |
| | 8 | x 1 | 93 | 20 | 6 | 4,9 | 7,05 | .0251 | ○ | | | | |
| | 10 | x 1 | 99 | 22 | 7 | 5,5 | 9,05 | .0276 | ○ | | | | |
| | 10 | x 1,25 | 99 | 22 | 7 | 5,5 | 8,8 | .0277 | | | | | |
| | 12 | x 1 | 106 | 25 | 9 | 7 | 11,05 | .0301 | | | | | |
| | 12 | x 1,5 | 106 | 25 | 9 | 7 | 10,55 | .0303 | ○ | | | | |
| | 14 | x 1,5 | 114 | 28 | 11 | 9 | 12,55 | .0331 | ○ | | | | |
| | 16 | x 1,5 | 123 | 32 | 12 | 9 | 14,55 | .0359 | ○ | | | | |
| | 18 | x 1,5 | 132 | 36 | 14 | 11 | 16,55 | .0390 | | | | | |
| | 20 | x 1,5 | 132 | 36 | 16 | 12 | 18,55 | .0422 | ○ | | | | |

- 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
- Tech. Info



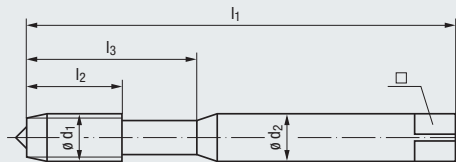
- Product Finder
- V_c
- M
- MF
- UNC**
UN-8
- UNF
UNEF
- G, Rp
NPSM, NPSF
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- MJ
UNJC, UNJF
- EG (STI)
SELF-LOCK
- Tr, Tr-F
Rd
- Zubehör
Accessories
- Tech. Info

UNC

ASME B1.1



≈ DIN 371



STEEL
Steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266



| | | | | |
|---------|---------|-----------|----------------|----------------|
| 2B | 2B | 3B | 2B | 2B |
| HSSE | HSSE | HSSE | HSSE | TIN HSSE |
| B / 4-5 | B / 4-5 | B / 4-5 | C / 2-3 R35 | C / 2-3 R35 |
| E / O | E / O | E / O | E / O | E / O |

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



max. 2,5 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | | | |
|--------------------|-----------|-----------|--------------------|-----------------------------|
| P 1.1-3.1 N 2.2 | P 2.1-4.1 | P 2.1-4.1 | P 1.1-3.1 N 2.2 | P 1.1-4.1 K 2.1 N 2.2 |
|--------------------|-----------|-----------|--------------------|-----------------------------|

Werkzeug-Ident · Tool ident

| | | | | |
|----------|----------|----------|----------|----------|
| B0208900 | B0201000 | B0201010 | B0501000 | B0501400 |
|----------|----------|----------|----------|----------|

| Nr. | ø d ₁ inch | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | Dimens.- Ident | Rekord | Rekord | Rekord | Enorm | Enorm |
|--------|--------------------------|------------------|----------------|----------------|----------------|------------------|-----|-------------------|------------|------------|--------------------|---------|----------------|
| | | | | | | | | | 1B-STEEL-L | 1B-STEEL-M | 1B-STEEL-M „3B“ | 1-STEEL | 1-STEEL 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 | ● | ● | ○ | ● | |
| Nr. 3 | 0.0990 | 48 | 50 | 9 | 14 | 2,8 | 2,1 | 2,1 | ○ | ○ | ○ | ○ | |
| Nr. 4 | 0.1120 | 40 | 56 | 11 | 18 | 3,5 | 2,7 | 2,35 | ● | ● | ○ | ● | ● |
| Nr. 5 | 0.1250 | 40 | 56 | 11 | 18 | 3,5 | 2,7 | 2,65 | ● | ○ | ○ | ○ | |
| Nr. 6 | 0.1380 | 32 | 56 | 12 | 20 | 4 | 3 | 2,85 | ● | ● | ○ | ● | ● |
| Nr. 8 | 0.1640 | 32 | 63 | 13 | 21 | 4,5 | 3,4 | 3,5 | ● | ● | ● | ● | ● |
| Nr. 10 | 0.1900 | 24 | 70 | 15 | 25 | 6 | 4,9 | 3,9 | ● | ● | ● | ● | ● |
| Nr. 12 | 0.2160 | 24 | 80 | 16 | 30 | 6 | 4,9 | 4,5 | ● | ○ | ○ | ○ | |
| 1/4 | 0.2500 | 20 | 80 | 17 | 30 | 7 | 5,5 | 5,1 | ● | ● | ● | ● | ● |
| 5/16 | 0.3125 | 18 | 90 | 20 | 35 | 8 | 6,2 | 6,6 | ● | ● | ● | ● | ● |
| 3/8 | 0.3750 | 16 | 100 | 22 | 39 | 10 | 8 | 8 | ● | ● | ● | ● | ● |

≈ DIN 376









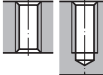
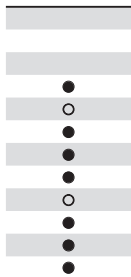
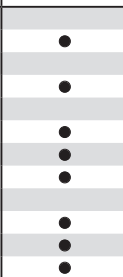
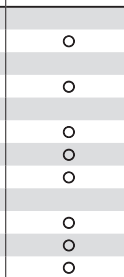
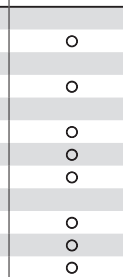
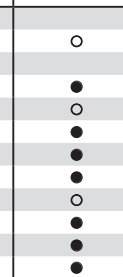
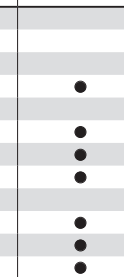
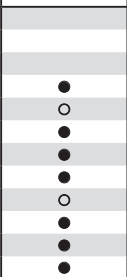







144

144

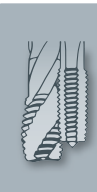
144

144

144

| STEEL Steel materials  | VA Stainless steel materials  | | | | | | H Materials of high tensile strength  |
|--|---|---|---|--|---|--|---|
| 3B HSSE R35 C / 2-3 E / O | 2B NT HSSE B / 4-5 E / O / P | 2B TIN HSSE B / 4-5 E / O / P | 2B GLT-1 HSSE B / 4-5 E / O / P | 2B GLT-1 HSSE R35 C / 2-3 E / O / P | 2B GLT-1 HSSE R35 C / 2-3 E / O / P | 2BX NT HSSE C / 2-3 E / O / P | |
| max. 2,5 x d ₁  | max. 3 x d ₁  | | | max. 2,5 x d ₁  | | max. 2 x d ₁  | |
| P 1.1-3.1 N 2.2 | P 1.1-3.1 M 1.1-2.1 K 2.1 N 2.2, 2.5-6 | P 1.1-4.1 M 1.1-3.1 K 2.1 N 2.2, 2.5-6 | P 1.1-4.1 M 1.1-3.1 K 2.1 N 2.2 | P 1.1-3.1 M 1.1-2.1 K 2.1 | P 1.1-4.1 M 1.1-3.1 K 2.1 | P 1.1-3.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1 | |
| B0501010 Enorm 1-STEEL „3B“ | B0203000 Rekord 1B-VA NT | B0203100 Rekord 1B-VA TIN | B020C300 Rekord 1B-VA GLT-1 | B0503000 Enorm 1-VA | B050C300 Enorm 1-VA GLT-1 | B0100501 Rekord 1A-H NT | |
|  |  |  |  |  |  |  | |
|  145 |  145 |  145 |  145 |  145 |  145 |  145 | |

- Product Finder
- Vc
- M
- MF
- UNC UN-6
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



- Nr. 1 - 64
- Nr. 2 - 56
- Nr. 3 - 48
- Nr. 4 - 40
- Nr. 5 - 40
- Nr. 6 - 32
- Nr. 8 - 32
- Nr. 10 - 24
- Nr. 12 - 24
- 1/4 - 20
- 5/16 - 18
- 3/8 - 16



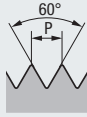
Gewindeschneidapparate
Typ SWITCH-MASTER®
siehe Seite 739 - 742

Tapping attachments
type SWITCH-MASTER®,
see page 739 - 742

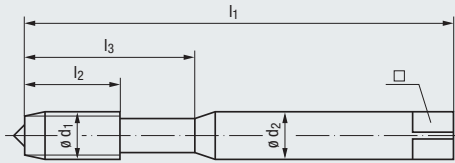
- Product Finder
- Vc
- M
- MF
- UNC**
UN-3
- UNF
UNEF
- G, Rp
NPSM, NPSF
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- MJ
UNJC, UNJF
- EG (STI)
SELF-LOCK
- Tr, Tr-F
Rd
- Zubehör
Accessories
- Tech. Info

UNC

ASME B1.1



≈ DIN 371



Z
CNC-controlled machines



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266



| | | | |
|----------------|----------------|------------------|------------------|
| new | new | new | new |
| 2BX | 2BX | 2BX | 2BX |
| TIN-60 | GLT-1 | TIN-60 | GLT-1 |
| HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| 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 |

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | | |
|-------------------------|-------------------------|-------------------------|-------------------------|
| P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 |
| M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 |
| K 2.1 | K 2.1 | K 2.1 | K 2.1 |
| N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 |
| S 1.1 | S 1.1 | S 1.1 | S 1.1 |

Werkzeug-Ident · Tool ident

| Nr. | Ø d ₁ inch | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | Dimens.- Ident | Werkzeug-Ident · Tool ident | | | | |
|--------|--------------------------|------------------|----------------|----------------|----------------|------------------|-----|-------------------|-----------------------------|----------|----------|----------|---|
| | | | | | | | | | B5760F01 | B576A601 | B5820F01 | B582A601 | |
| Nr. 1 | 0.0730 | 64 | 45 | 4 | – | 2,8 | 2,1 | 1,55 | .5000 | | | | |
| Nr. 2 | 0.0860 | 56 | 45 | 4,5 | – | 2,8 | 2,1 | 1,85 | .5001 | | | | |
| Nr. 3 | 0.0990 | 48 | 50 | 5 | 14 | 2,8 | 2,1 | 2,1 | .5002 | | | | |
| Nr. 4 | 0.1120 | 40 | 56 | 6 | 18 | 3,5 | 2,7 | 2,35 | .5003 | ● | ● | ● | ● |
| Nr. 5 | 0.1250 | 40 | 56 | 7 | 18 | 3,5 | 2,7 | 2,65 | .5004 | ● | ● | ● | ● |
| Nr. 6 | 0.1380 | 32 | 56 | 7 | 20 | 4 | 3 | 2,85 | .5005 | ● | ● | ● | ● |
| Nr. 8 | 0.1640 | 32 | 63 | 8 | 21 | 4,5 | 3,4 | 3,5 | .5006 | ● | ● | ● | ● |
| Nr. 10 | 0.1900 | 24 | 70 | 10 | 25 | 6 | 4,9 | 3,9 | .5007 | ● | ● | ● | ● |
| Nr. 12 | 0.2160 | 24 | 80 | 10 | 30 | 6 | 4,9 | 4,5 | .5008 | ● | ● | ● | ● |
| 1/4 | 0.2500 | 20 | 80 | 13 | 30 | 7 | 5,5 | 5,1 | .5009 | ● | ● | ● | ● |
| 5/16 | 0.3125 | 18 | 90 | 14 | 35 | 8 | 6,2 | 6,6 | .5010 | ● | ● | ● | ● |
| 3/8 | 0.3750 | 16 | 100 | 16 | 39 | 10 | 8 | 8 | .5011 | ● | ● | ● | ● |

≈ DIN 376



» 146

» 146

» 146

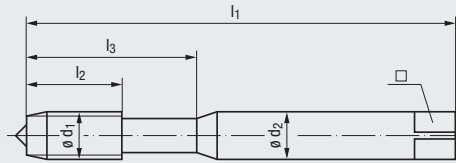
» 146

UNC

ASME B1.1



≈ DIN 371



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| Z CNC-controlled machines | | | |
|------------------------------|--------------------|------------------|------------------|
| | | | |
| 2B | 2B +0,05 1) | 2B | 2B |
| HSSE | HSSE | HSSE | TIN |
| 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 |

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | | |
|------------------|------------------|------------------|-----------------------|
| P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 |
| M 1.1-2.1 | M 1.1-2.1 | M 1.1-2.1 | M 1.1-3.1 |
| N 2.1 | N 2.1 | N 2.1 | N 1.4-6 |
| | | | N 2.1-2, 2.4-5 |
| | | | S 1.1 |

Werkzeug-Ident · Tool ident

B0503500 B0503530 B0513500 B0513700

| Nr. | ø d ₁ | | P | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | Dimens.-Ident | Enorm | | | |
|--------|------------------|-------------|-----|----------------|----------------|----------------|------------------|------|---------------|-------|-----|-------|-----------|
| | inch | Gg/1" (tpi) | | | | | | | | 1-Z | 1-Z | 1-Z/E | 1-Z/E TIN |
| Nr. 1 | 0.0730 | 64 | 45 | 4 | – | 2,8 | 2,1 | 1,55 | .5000 | | | | |
| Nr. 2 | 0.0860 | 56 | 45 | 4,5 | – | 2,8 | 2,1 | 1,85 | .5001 | ● | | | |
| Nr. 3 | 0.0990 | 48 | 50 | 5 | 14 | 2,8 | 2,1 | 2,1 | .5002 | | ○ | ○ | |
| Nr. 4 | 0.1120 | 40 | 56 | 6 | 18 | 3,5 | 2,7 | 2,35 | .5003 | ● | ○ | ● | ● |
| Nr. 5 | 0.1250 | 40 | 56 | 7 | 18 | 3,5 | 2,7 | 2,65 | .5004 | ○ | ○ | ○ | |
| Nr. 6 | 0.1380 | 32 | 56 | 7 | 20 | 4 | 3 | 2,85 | .5005 | ● | ○ | | ● |
| Nr. 8 | 0.1640 | 32 | 63 | 8 | 21 | 4,5 | 3,4 | 3,5 | .5006 | ● | ○ | ● | ● |
| Nr. 10 | 0.1900 | 24 | 70 | 10 | 25 | 6 | 4,9 | 3,9 | .5007 | ● | ○ | ● | ● |
| Nr. 12 | 0.2160 | 24 | 80 | 10 | 30 | 6 | 4,9 | 4,5 | .5008 | ○ | ○ | ○ | |
| 1/4 | 0.2500 | 20 | 80 | 13 | 30 | 7 | 5,5 | 5,1 | .5009 | ● | ● | ● | ● |
| 5/16 | 0.3125 | 18 | 90 | 14 | 35 | 8 | 6,2 | 6,6 | .5010 | ● | ● | ● | ● |
| 3/8 | 0.3750 | 16 | 100 | 16 | 39 | 10 | 8 | 8 | .5011 | ● | ● | ● | ● |

≈ DIN 376



147

147

147

147

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

Product Finder

- Vc
- M
- MF
- UNC** UN-6
- 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
- Tech. Info



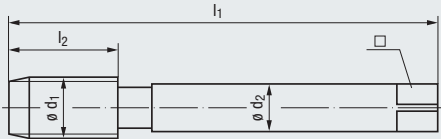
- Product Finder
- Vc
- M
- MF
- UNC**
UN-3
- UNF
UNEF
- G, Rp
NPSM, NPSF
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- MJ
UNJC, UNJF
- EG (STI)
SELF-LOCK
- Tr, Tr-F
Rd
- Zubehör
Accessories
- Tech. Info

UNC

ASME B1.1



≈ DIN 376



STEEL
Steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266



| | | | | |
|---------|---------|-----------|----------------|----------------|
| 2B | 2B | 3B | 2B | 2B |
| HSSE | HSSE | HSSE | HSSE | TIN HSSE |
| B / 4-5 | B / 4-5 | B / 4-5 | R35 C / 2-3 | R35 C / 2-3 |
| E / O | E / O | E / O | E / O | E / O |

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



max. 2,5 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | | | |
|--------------------|-----------|-----------|--------------------|-----------------------------|
| P 1.1-3.1 N 2.2 | P 2.1-4.1 | P 2.1-4.1 | P 1.1-3.1 N 2.2 | P 1.1-4.1 K 2.1 N 2.2 |
|--------------------|-----------|-----------|--------------------|-----------------------------|

Werkzeug-Ident · Tool ident

| | | | | |
|----------|----------|----------|----------|----------|
| C0208900 | C0201000 | C0201010 | C0501000 | C0501400 |
|----------|----------|----------|----------|----------|

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

≈ DIN 371



140

140

140












140

140



Gewinde-Tiefenlehrdorne
siehe Seite 624 - 627

Thread depth plug gauges,
see page 624 - 627

| STEEL Steel materials | VA Stainless steel materials | | | | | | H Materials of high tensile strength | | |
|--|--|---|---|--|---|--|--|--|--|
|  |  |  |  |  |  |  | | | |
| 3B | 2B | 2B | 2B | 2B | 2B | 2BX | | | |
| | NT | TIN | GLT-1 | | GLT-1 | NT | | | |
| HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | | | |
| R35 | | | | R35 | R35 | | | | |
| C / 2-3 | B / 4-5 | B / 4-5 | B / 4-5 | C / 2-3 | C / 2-3 | C / 2-3 | | | |
| E / O | E / O / P | E / O / P | E / O / P | E / O / P | E / O / P | E / O / P | | | |
| max. 2,5 x d ₁  | max. 3 x d ₁  | | | max. 2,5 x d ₁  | | max. 2 x d ₁  | | | |
| P 1.1-3.1 | P 1.1-3.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-3.1 | P 1.1-4.1 | P 1.1-3.1 | | | |
| N 2.2 | M 1.1-2.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-2.1 | M 1.1-3.1 | K 1.1-4.2 | | | |
| | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | N 2.4-7 | | | |
| | N 2.2, 2.5-6 | N 2.2, 2.5-6 | N 2.2 | | | N 4.1, 5.1 | | | |
| C0501010 | C0203000 | C0203100 | C020C300 | C0503000 | C050C300 | C0100501 | | | |
| Enorm 2-STEEL | Rekord 2B-VA NT | Rekord 2B-VA TIN | Rekord 2B-VA GLT-1 | Enorm 2-VA | Enorm 2-VA GLT-1 | Rekord 2A-H NT | | | |
| „3B“ | | | | | | | | | |
| | | | | ○ | ○ | | | | |
| ○ | | | | ○ | ○ | ○ | | | |
| ● | ● | ○ | ○ | ● | ● | ● | 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 | | |
| 141 | 141 | 141 | 141 | 141 | 141 | 141 | | | |

- Product Finder
- Vc
- 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
- Tech. Info



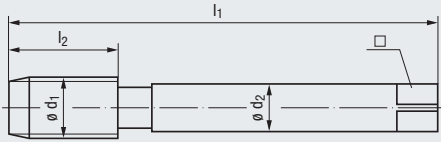
- Product Finder
- Vc
- M
- MF
- UNC**
UN-8
- UNF
UNEF
- G, Rp
NPSM, NPSF
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- MJ
UNJC, UNJF
- EG (STI)
SELF-LOCK
- Tr, Tr-F
Rd
- Zubehör
Accessories
- Tech. Info

UNC

ASME B1.1



≈ DIN 376



Z
CNC-controlled machines



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266



| | | | |
|----------------|----------------|------------------|------------------|
| 2BX | 2BX | 2BX | 2BX |
| TIN-60 | GLT-1 | TIN-60 | GLT-1 |
| HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| 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 |

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | | |
|-------------------------|-------------------------|-------------------------|-------------------------|
| P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 |
| M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 |
| K 2.1 | K 2.1 | K 2.1 | K 2.1 |
| N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 |
| S 1.1 | S 1.1 | S 1.1 | S 1.1 |

Werkzeug-Ident · Tool ident

C5760F01 C576A601 C5820F01 C582A601

| Ø d ₁ inch | P inch | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | Dimens.- Ident | Enorm | Enorm | Enorm | Enorm |
|--------------------------|-----------|------------------|----------------|----------------|------------------|------|-------------------|--------------------|-------------------|----------------------|---------------------|
| | | | | | | | | 2-Z-X-PM TIN-60 | 2-Z-X-PM GLT-1 | 2-Z/E-X-PM TIN-60 | 2-Z/E-X-PM GLT-1 |
| 1/4 | 0.2500 | 20 | 80 | 13 | 4,5 | 3,4 | 5,1 | | | | |
| 5/16 | 0.3125 | 18 | 90 | 14 | 6 | 4,9 | 6,6 | | | | |
| 3/8 | 0.3750 | 16 | 100 | 16 | 7 | 5,5 | 8 | | | | |
| 7/16 | 0.4375 | 14 | 100 | 18 | 8 | 6,2 | 9,4 | • | • | • | • |
| 1/2 | 0.5000 | 13 | 110 | 20 | 9 | 7 | 10,8 | • | • | • | • |
| 9/16 | 0.5625 | 12 | 110 | 20 | 11 | 9 | 12,2 | | | | |
| 5/8 | 0.6250 | 11 | 110 | 22 | 12 | 9 | 13,5 | • | • | • | • |
| 3/4 | 0.7500 | 10 | 125 | 25 | 14 | 11 | 16,5 | • | • | • | • |
| 7/8 | 0.8750 | 9 | 140 | 27 | 18 | 14,5 | 19,5 | | | | |
| 1" | 1.0000 | 8 | 160 | 30 | 18 | 14,5 | 22,25 | • | • | • | • |
| 1 1/8 | 1.1250 | 7 | 180 | 35 | 22 | 18 | 25 | | | | |
| 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 | | | | |

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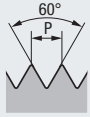
» 142

» 142

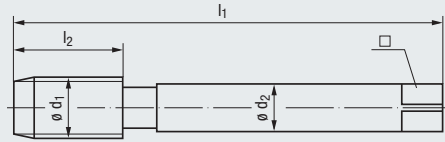
» 142

UNC

ASME B1.1



≈ DIN 376



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



Gewindetiefe und Lochform
Thread depth and hole type

Einsatzgebiete – Material
Applications – material

» 22

Werkzeug-Ident · Tool ident

| Ø d ₁ inch | P inch | Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | | Dimens.- Ident | max. 3 x d ₁ | | | |
|--------------------------|-----------|-------------|----------------|----------------|------------------|------|-------|-------------------|-------------------------|----------------------|-------------|--------------------|
| | | | | | | | | | Enorm 2-Z | Enorm 2-Z „+0,05“ | Enorm 2-Z/E | Enorm 2-Z/E TIN |
| 1/4 | 0.2500 | 20 | 80 | 13 | 4,5 | 3,4 | 5,1 | .5009 | | | | |
| 5/16 | 0.3125 | 18 | 90 | 14 | 6 | 4,9 | 6,6 | .5010 | | | | |
| 3/8 | 0.3750 | 16 | 100 | 16 | 7 | 5,5 | 8 | .5011 | ○ | | ○ | |
| 7/16 | 0.4375 | 14 | 100 | 18 | 8 | 6,2 | 9,4 | .5012 | ● | ○ | ● | ● |
| 1/2 | 0.5000 | 13 | 110 | 20 | 9 | 7 | 10,8 | .5013 | ● | ○ | ● | ● |
| 9/16 | 0.5625 | 12 | 110 | 20 | 11 | 9 | 12,2 | .5014 | ○ | ○ | ○ | ○ |
| 5/8 | 0.6250 | 11 | 110 | 22 | 12 | 9 | 13,5 | .5015 | ● | ○ | ● | ● |
| 3/4 | 0.7500 | 10 | 125 | 25 | 14 | 11 | 16,5 | .5016 | ● | ○ | ● | ● |
| 7/8 | 0.8750 | 9 | 140 | 27 | 18 | 14,5 | 19,5 | .5017 | ○ | ○ | ○ | ○ |
| 1" | 1.0000 | 8 | 160 | 30 | 18 | 14,5 | 22,25 | .5018 | ● | ○ | ● | ● |
| 1 1/8 | 1.1250 | 7 | 180 | 35 | 22 | 18 | 25 | .5019 | | | | |
| 1 1/4 | 1.2500 | 7 | 180 | 35 | 22 | 18 | 28 | .5020 | | | | |
| 1 3/8 | 1.3750 | 6 | 200 | 40 | 28 | 22 | 30,75 | .5021 | | | | |
| 1 1/2 | 1.5000 | 6 | 200 | 40 | 28 | 22 | 34 | .5022 | | | | |
| 1 3/4 | 1.7500 | 5 | 220 | 45 | 36 | 29 | 39,5 | .5023 | | | | |
| 2" | 2.0000 | 4 1/2 | 250 | 50 | 40 | 32 | 45 | .5024 | | | | |

≈ DIN 371



» 143

» 143

» 143

» 143

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

Product Finder

Vc

M

MF

UNC
UN-6

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

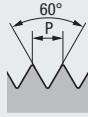
Tech. Info



- Product Finder
- Vc
- 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
- Tech. Info

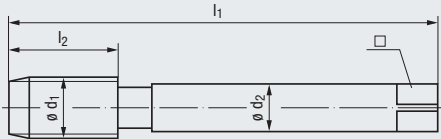
UN-8

ASME B1.1



≈ DIN
374

VA
Stainless steel
materials



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



2B

HSSE

R35

C / 2-3

E / O / P

Gewindetiefe und Lochform
Thread depth and hole type

max. 2,5 x d₁



Einsatzgebiete – Material
Applications – material

» 22

P 1.1-3.1

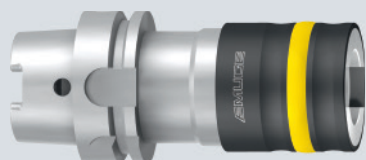
M 1.1-2.1

K 2.1

Werkzeug-Ident · Tool ident

C0503000

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



Schnellwechsel-Aufnahmen Typ KSN
siehe Seite 688 - 697

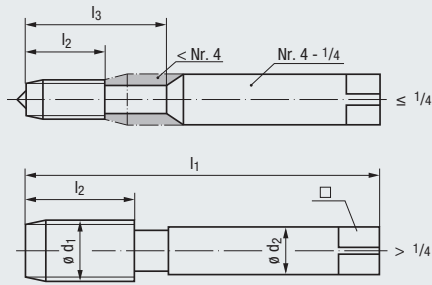
Quick-change tap holders type KSN,
see page 688 - 697

UNC

ASME B1.1



≈ DIN 352



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



HSSE

HSSE

2BX

2BX

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

max. 2 x d₁



Einsatzgebiete – Material
Applications – material

» 22

P 1.1-3.1

P 1.1-3.1

P 1.1-3.1

P 1.1-3.1

Werkzeug-Ident · Tool ident

H0111019

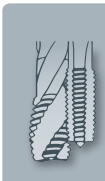
H0111029

H0111001

H0101001

| Nr. | Ø d ₁ inch | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | Dimens.- Ident | HGB-Set | | | | |
|--------|--------------------------|------------------|----------------|----------------|----------------|------------------|------|-------------------|---------|--------|---|-----------------------|---|
| | | | | | | | | | V-Nr.1 | M-Nr.2 | F | 3S (Nr.1, Nr.2, F) | |
| Nr. 1 | 0.0730 | 64 | 36 | 8 | — | 2,8 | 2,1 | 1,55 | .5000 | ○ | ○ | ○ | ○ |
| Nr. 2 | 0.0860 | 56 | 36 | 9 | — | 2,8 | 2,1 | 1,85 | .5001 | ○ | ○ | ○ | ○ |
| Nr. 3 | 0.0990 | 48 | 40 | 9 | — | 2,8 | 2,1 | 2,1 | .5002 | ○ | ○ | ○ | ○ |
| Nr. 4 | 0.1120 | 40 | 40 | 10 | 18 | 3,5 | 2,7 | 2,35 | .5003 | ● | ● | ● | ● |
| Nr. 5 | 0.1250 | 40 | 40 | 10 | 18 | 3,5 | 2,7 | 2,65 | .5004 | ○ | ○ | ○ | ○ |
| Nr. 6 | 0.1380 | 32 | 45 | 11 | 20 | 4 | 3 | 2,85 | .5005 | ● | ● | ● | ● |
| Nr. 8 | 0.1640 | 32 | 45 | 12 | 22 | 4,5 | 3,4 | 3,5 | .5006 | ● | ● | ● | ● |
| Nr. 10 | 0.1900 | 24 | 50 | 14 | 25 | 6 | 4,9 | 3,9 | .5007 | ● | ● | ● | ● |
| Nr. 12 | 0.2160 | 24 | 56 | 16 | 28 | 6 | 4,9 | 4,5 | .5008 | ○ | ○ | ○ | ○ |
| 1/4 | 0.2500 | 20 | 56 | 16 | 28 | 6 | 4,9 | 5,1 | .5009 | ● | ● | ● | ● |
| 5/16 | 0.3125 | 18 | 63 | 20 | — | 6 | 4,9 | 6,6 | .5010 | ○ | ○ | ○ | ○ |
| 3/8 | 0.3750 | 16 | 70 | 22 | — | 7 | 5,5 | 8 | .5011 | ● | ● | ● | ● |
| 7/16 | 0.4375 | 14 | 70 | 22 | — | 8 | 6,2 | 9,4 | .5012 | ○ | ○ | ○ | ○ |
| 1/2 | 0.5000 | 13 | 75 | 25 | — | 9 | 7 | 10,8 | .5013 | ● | ● | ● | ● |
| 9/16 | 0.5625 | 12 | 80 | 26 | — | 11 | 9 | 12,2 | .5014 | ○ | ○ | ○ | ○ |
| 5/8 | 0.6250 | 11 | 80 | 27 | — | 12 | 9 | 13,5 | .5015 | ○ | ○ | ○ | ○ |
| 3/4 | 0.7500 | 10 | 95 | 32 | — | 14 | 11 | 16,5 | .5016 | ○ | ○ | ○ | ○ |
| 7/8 | 0.8750 | 9 | 100 | 32 | — | 18 | 14,5 | 19,5 | .5017 | ○ | ○ | ○ | ○ |
| 1" | 1.0000 | 8 | 110 | 36 | — | 18 | 14,5 | 22,25 | .5018 | ○ | ○ | ○ | ○ |
| 1 1/8 | 1.1250 | 7 | 125 | 40 | — | 22 | 18 | 25 | .5019 | ○ | ○ | ○ | ○ |
| 1 1/4 | 1.2500 | 7 | 125 | 40 | — | 22 | 18 | 28 | .5020 | ○ | ○ | ○ | ○ |
| 1 3/8 | 1.3750 | 6 | 150 | 50 | — | 28 | 22 | 30,75 | .5021 | ○ | ○ | ○ | ○ |
| 1 1/2 | 1.5000 | 6 | 150 | 50 | — | 28 | 22 | 34 | .5022 | ○ | ○ | ○ | ○ |
| 1 3/4 | 1.7500 | 5 | 160 | 58 | — | 36 | 29 | 39,5 | .5023 | ○ | ○ | ○ | ○ |
| 2" | 2.0000 | 4 1/2 | 180 | 65 | — | 40 | 32 | 45 | .5024 | ○ | ○ | ○ | ○ |

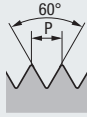
- Product Finder
- V_c
- M
- MF
- UNC UN-6
- UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

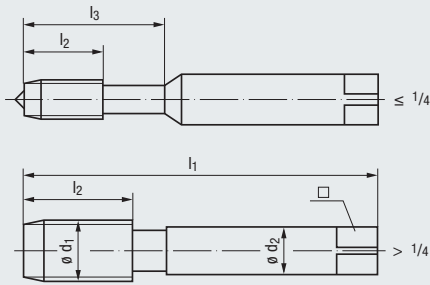
- Product Finder
- V_c
- M
- MF
- UNC**
UN-8
- UNF
UNEF
- G, Rp
NPSM, NPSF
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- MJ
UNJC, UNJF
- EG (STI)
SELF-LOCK
- Tr, Tr-F
Rd
- Zubehör
Accessories
- Tech. Info

UNC



≈ DIN 352

ASME B1.1



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

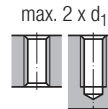
» 245 - 266



| | | | |
|---------|---------|---------|---------|
| HSSE | HSSE | HSSE | HSSE |
| C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 |
| O / P | O / P | O / P | O / P |

2BX

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

| | | | |
|---------------------|---------------------|---------------------|---------------------|
| 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 |
| S 2.1-2, 2.4 | S 2.1-2, 2.4 | S 2.1-2, 2.4 | S 2.1-2, 2.4 |




Werkzeug-Ident · Tool ident

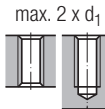
H0413019 H0423019 H0423029 H0423001

| $\varnothing d_1$ inch | P inch | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | $\varnothing d_2$ | □ | | Dimens.- Ident | WM-Set | WM-Set | WM-Set | WM-Set |
|---------------------------|-----------|------------------|----------------|----------------|----------------|-------------------|------|-------|-------------------|---------|--------|--------|--------|
| | | | | | | | | | | V-Nr.1Z | V-Nr.1 | M-Nr.2 | F |
| 1/4 | 0.2500 | 20 | 56 | 16 | 28 | 6 | 4,9 | 5,1 | .5009 | ● | ● | ● | ● |
| 5/16 | 0.3125 | 18 | 63 | 20 | – | 6 | 4,9 | 6,6 | .5010 | ● | ● | ● | ● |
| 3/8 | 0.3750 | 16 | 70 | 22 | – | 7 | 5,5 | 8 | .5011 | ● | ● | ● | ● |
| 7/16 | 0.4375 | 14 | 70 | 22 | – | 8 | 6,2 | 9,4 | .5012 | ○ | ○ | ○ | ○ |
| 1/2 | 0.5000 | 13 | 75 | 25 | – | 9 | 7 | 10,8 | .5013 | ● | ● | ● | ● |
| 9/16 | 0.5625 | 12 | 80 | 26 | – | 11 | 9 | 12,2 | .5014 | ○ | ○ | ○ | ○ |
| 5/8 | 0.6250 | 11 | 80 | 27 | – | 12 | 9 | 13,5 | .5015 | ○ | ○ | ○ | ○ |
| 3/4 | 0.7500 | 10 | 95 | 32 | – | 14 | 11 | 16,5 | .5016 | ○ | ○ | ○ | ○ |
| 7/8 | 0.8750 | 9 | 100 | 32 | – | 18 | 14,5 | 19,5 | .5017 | ○ | ○ | ○ | ○ |
| 1" | 1.0000 | 8 | 110 | 36 | – | 18 | 14,5 | 22,25 | .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.

- 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
- Tech. Info

| | | | |
|---|---|--|---|
|  <p>2)</p> |  |  <p>2)</p> |  |
| 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 S 2.1-2, 2.4 | P 1.1-5.1 M 1.1-4.1 S 2.1-2, 2.4 | P 1.1-5.1 M 1.1-4.1 S 2.1-2, 2.4 | P 1.1-5.1 M 1.1-4.1 S 2.1-2, 2.4 |
|---|---|---|---|

| H0453001 | H0483001 | H0403001 | H0433001 |
|------------------|--------------|------------------------|-----------------|
| WM-Set 3S | WM-Set 2S | WM-Set 4S | WM-Set 3S |
| (Nr.1Z, Nr.1, F) | (Nr.1, F) | (Nr.1Z, Nr.1, Nr.2, F) | (Nr.1, Nr.2, F) |
| ● | ● | ● | ● |
| ● | ● | ● | ● |
| ● | ● | ● | ● |
| ○ | ○ | ○ | ○ |
| ● | ● | ● | ● |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ |

| | |
|---|-----------|
| ● | 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 |

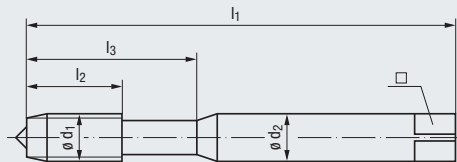
2) Beim Gewindebohren von Hand in Durchgangslöcher entfällt Nr.1
 No.1 is not needed when tapping in through holes by hand

- Product 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
- Tech. Info



ASME B1.1

≈ DIN 371



STEEL
Steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266

| | | | | |
|---------|---------|-----------|-------|-------|
| 2B | 2B | 3B | 2B | 2B |
| HSSE | HSSE | HSSE | HSSE | TIN |
| B / 4-5 | B / 4-5 | B / 4-5 | R35 | R35 |
| E / O | E / O | E / O | E / O | E / O |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

| | | | | |
|--------------------|-----------|-----------|--------------------|-----------------------------|
| P 1.1-3.1 N 2.2 | P 2.1-4.1 | P 2.1-4.1 | P 1.1-3.1 N 2.2 | P 1.1-4.1 K 2.1 N 2.2 |
|--------------------|-----------|-----------|--------------------|-----------------------------|

Werkzeug-Ident · Tool ident







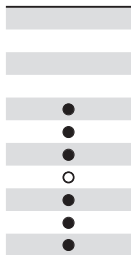
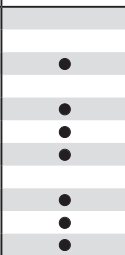
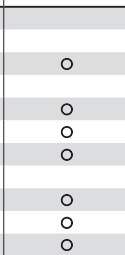
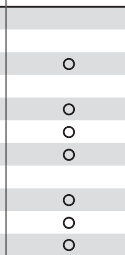
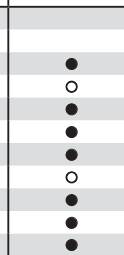
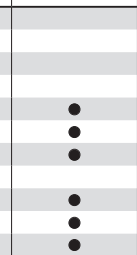
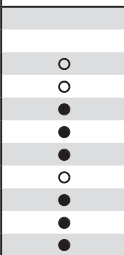







| | | | | |
|----------|----------|----------|----------|----------|
| B0208900 | B0201000 | B0201010 | B0501000 | B0501400 |
|----------|----------|----------|----------|----------|

| Nr. | d ₁ inch | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | d ₂ | □ | Image | Dimens.-Ident | Rekord 1B-STEEL-L | Rekord 1B-STEEL-M | Rekord 1B-STEEL-M „3B“ | Enorm 1-STEEL | Enorm 1-STEEL TIN |
|--------|------------------------|------------------|----------------|----------------|----------------|----------------|-----|-------|---------------|-------------------|-------------------|------------------------|---------------|-------------------|
| | | | | | | | | | | ● | ● | ● | ○ | ● |
| Nr. 2 | 0.0860 | 64 | 45 | 7 | 12 | 2,8 | 2,1 | 1,85 | .5035 | ● | ● | ● | ○ | |
| Nr. 3 | 0.0990 | 56 | 50 | 9 | 14 | 2,8 | 2,1 | 2,15 | .5036 | ● | ○ | ● | ○ | |
| Nr. 4 | 0.1120 | 48 | 56 | 11 | 18 | 3,5 | 2,7 | 2,4 | .5037 | ● | ● | ● | ○ | |
| Nr. 5 | 0.1250 | 44 | 56 | 11 | 18 | 3,5 | 2,7 | 2,7 | .5038 | ● | ○ | ● | ○ | |
| Nr. 6 | 0.1380 | 40 | 56 | 12 | 20 | 4 | 3 | 2,95 | .5039 | ● | ● | ● | ● | ● |
| Nr. 8 | 0.1640 | 36 | 63 | 13 | 21 | 4,5 | 3,4 | 3,5 | .5040 | ● | ● | ● | ● | ● |
| Nr. 10 | 0.1900 | 32 | 70 | 15 | 25 | 6 | 4,9 | 4,1 | .5041 | ● | ● | ● | ● | ● |
| Nr. 12 | 0.2160 | 28 | 80 | 16 | 30 | 6 | 4,9 | 4,6 | .5042 | ● | ● | ● | ○ | |
| 1/4 | 0.2500 | 28 | 80 | 17 | 30 | 7 | 5,5 | 5,5 | .5043 | ● | ● | ● | ● | ● |
| 5/16 | 0.3125 | 24 | 90 | 17 | 35 | 8 | 6,2 | 6,9 | .5044 | ● | ● | ● | ● | ● |
| 3/8 | 0.3750 | 24 | 90 | 18 | 35 | 10 | 8 | 8,5 | .5045 | ● | ● | ● | ● | ● |

≈ DIN 374



| | | | | |
|-----|-----|-----|-----|-----|
| 156 | 156 | 156 | 156 | 156 |
|-----|-----|-----|-----|-----|

| STEEL Steel materials  $l_2 \approx 10 \times P$ | VA Stainless steel materials  $l_2 \approx 10 \times P$ | | | | | | H Materials of high tensile strength  $l_2 \approx 10 \times P$ |
|---|--|---|---|---|---|---|--|
| 3B HSSE R35 C / 2-3 E / O | 2B NT HSSE B / 4-5 E / O / P | 2B TIN HSSE B / 4-5 E / O / P | 2B GLT-1 HSSE B / 4-5 E / O / P | 2B HSSE R35 C / 2-3 E / O / P | 2B GLT-1 HSSE R35 C / 2-3 E / O / P | 2BX NT HSSE C / 2-3 E / O / P | |
| max. 2,5 x d ₁  | max. 3 x d ₁  | | | | | | max. 2 x d ₁  |
| P 1.1-3.1 N 2.2 | P 1.1-3.1 M 1.1-2.1 K 2.1 N 2.2, 2.5-6 | P 1.1-4.1 M 1.1-3.1 K 2.1 N 2.2, 2.5-6 | P 1.1-4.1 M 1.1-3.1 K 2.1 N 2.2 | P 1.1-3.1 M 1.1-2.1 K 2.1 | P 1.1-4.1 M 1.1-3.1 K 2.1 | P 1.1-3.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1 | |
| B0501010 Enorm 1-STEEL „3B“ | B0203000 Rekord 1B-VA NT | B0203100 Rekord 1B-VA TIN | B020C300 Rekord 1B-VA GLT-1 | B0503000 Enorm 1-VA | B050C300 Enorm 1-VA GLT-1 | B0100501 Rekord 1A-H NT | |
|  |  |  |  |  |  |  | |
|  157 |  157 |  157 |  157 |  157 |  157 |  157 | |

- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



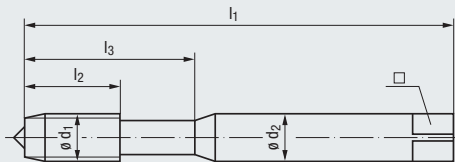
- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF**
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



UNF

ASME B1.1

≈ DIN 371



Z
CNC-controlled machines



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266



| | | | |
|----------------|----------------|------------------|------------------|
| 2BX | 2BX | 2BX | 2BX |
| TIN-60 | GLT-1 | TIN-60 | GLT-1 |
| HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| 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 |

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | | |
|-------------------------|-------------------------|-------------------------|-------------------------|
| P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 |
| M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 |
| K 2.1 | K 2.1 | K 2.1 | K 2.1 |
| N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 |
| S 1.1 | S 1.1 | S 1.1 | S 1.1 |

Werkzeug-Ident · Tool ident

B5760F01 B576A601 B5820F01 B582A601

| Nr. | d ₁ inch | P inch | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | d ₂ | □ | Dimens.-Ident | Enorm | | | |
|--------|------------------------|-----------|------------------|----------------|----------------|----------------|----------------|------|---------------|--------------------|-------------------|----------------------|---------------------|
| | | | | | | | | | | 1-Z-X-PM TIN-60 | 1-Z-X-PM GLT-1 | 1-Z/E-X-PM TIN-60 | 1-Z/E-X-PM GLT-1 |
| Nr. 2 | 0.0860 | 64 | 45 | 4,5 | 12 | 2,8 | 2,1 | 1,85 | .5035 | | | | |
| Nr. 3 | 0.0990 | 56 | 50 | 5 | 14 | 2,8 | 2,1 | 2,15 | .5036 | | | | |
| Nr. 4 | 0.1120 | 48 | 56 | 6 | 18 | 3,5 | 2,7 | 2,4 | .5037 | | | | |
| Nr. 5 | 0.1250 | 44 | 56 | 7 | 18 | 3,5 | 2,7 | 2,7 | .5038 | | | | |
| Nr. 6 | 0.1380 | 40 | 56 | 7 | 20 | 4 | 3 | 2,95 | .5039 | | | | |
| Nr. 8 | 0.1640 | 36 | 63 | 8 | 21 | 4,5 | 3,4 | 3,5 | .5040 | | | | |
| Nr. 10 | 0.1900 | 32 | 70 | 10 | 25 | 6 | 4,9 | 4,1 | .5041 | ● | ● | ● | ● |
| Nr. 12 | 0.2160 | 28 | 80 | 10 | 30 | 6 | 4,9 | 4,6 | .5042 | ● | ● | ● | ● |
| 1/4 | 0.2500 | 28 | 80 | 10 | 30 | 7 | 5,5 | 5,5 | .5043 | ● | ● | ● | ● |
| 5/16 | 0.3125 | 24 | 90 | 10 | 35 | 8 | 6,2 | 6,9 | .5044 | ● | ● | ● | ● |
| 3/8 | 0.3750 | 24 | 90 | 10 | 35 | 10 | 8 | 8,5 | .5045 | ● | ● | ● | ● |

≈ DIN 374

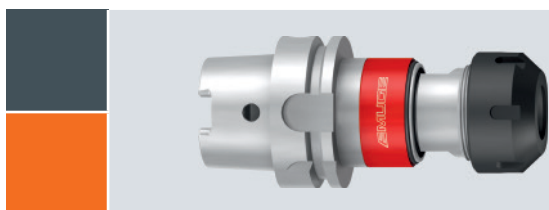


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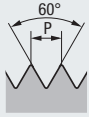


Werkzeug-Aufnahmen der Typenreihe Softsynchro® siehe Seite 661 - 681

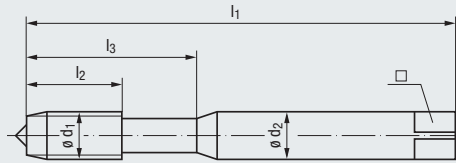
Tool holders of our Softsynchro® series, see page 661 - 681

UNF

ASME B1.1



≈ DIN 371



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | | |
|------------------|------------------|--------------------|
| 2B | 2B | 2B +0,05 1) |
| HSSE | TIN | HSSE |
| R45 | R45 | R45 |
| E / 1,5-2 | E / 1,5-2 | E / 1,5-2 |
| E / O / P | E / O / P | E / O / P |

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | |
|------------------|-----------------------|------------------|
| P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 |
| M 1.1-2.1 | M 1.1-3.1 | M 1.1-2.1 |
| N 2.1 | N 1.4-6 | N 2.1 |
| | N 2.1-2, 2.4-5 | |
| | S 1.1 | |

Werkzeug-Ident · Tool ident

B0513500 B0513700 B0513530

| Nr. | ∅ d ₁ inch | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | ∅ d ₂ | □ | Image | Dimens.-Ident | Enorm | Enorm | Enorm |
|--------|--------------------------|------------------|----------------|----------------|----------------|------------------|-----|-------|---------------|-------|--------------|------------------|
| | | | | | | | | | | 1-Z/E | 1-Z/E TIN | 1-Z/E „+0,05“ |
| Nr. 2 | 0.0860 | 64 | 45 | 4,5 | 12 | 2,8 | 2,1 | 1,85 | .5035 | ○ | | ○ |
| Nr. 3 | 0.0990 | 56 | 50 | 5 | 14 | 2,8 | 2,1 | 2,15 | .5036 | ○ | | ○ |
| Nr. 4 | 0.1120 | 48 | 56 | 6 | 18 | 3,5 | 2,7 | 2,4 | .5037 | ○ | ○ | ○ |
| Nr. 5 | 0.1250 | 44 | 56 | 7 | 18 | 3,5 | 2,7 | 2,7 | .5038 | ○ | | ○ |
| Nr. 6 | 0.1380 | 40 | 56 | 7 | 20 | 4 | 3 | 2,95 | .5039 | ● | ● | ● |
| Nr. 8 | 0.1640 | 36 | 63 | 8 | 21 | 4,5 | 3,4 | 3,5 | .5040 | ● | ● | ● |
| Nr. 10 | 0.1900 | 32 | 70 | 10 | 25 | 6 | 4,9 | 4,1 | .5041 | ● | ● | ● |
| Nr. 12 | 0.2160 | 28 | 80 | 10 | 30 | 6 | 4,9 | 4,6 | .5042 | ○ | | ○ |
| 1/4 | 0.2500 | 28 | 80 | 10 | 30 | 7 | 5,5 | 5,5 | .5043 | ● | ● | ● |
| 5/16 | 0.3125 | 24 | 90 | 10 | 35 | 8 | 6,2 | 6,9 | .5044 | ● | ● | ● |
| 3/8 | 0.3750 | 24 | 90 | 10 | 35 | 10 | 8 | 8,5 | .5045 | ● | ● | ● |

≈ DIN 374



» 159 » 159 » 159

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

- 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
- Tech. Info



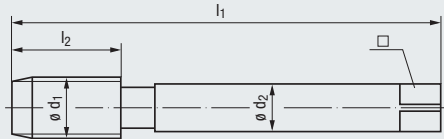
- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

UNF



ASME B1.1

≈ DIN 374



STEEL
Steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266



| | | | | |
|---------|---------|-----------|-------|-------|
| 2B | 2B | 3B | 2B | 2B |
| HSSE | HSSE | HSSE | HSSE | TIN |
| B / 4-5 | B / 4-5 | B / 4-5 | R35 | R35 |
| E / O | E / O | E / O | E / O | E / O |

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



max. 2,5 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | | | |
|--------------------|-----------|-----------|--------------------|-----------------------------|
| P 1.1-3.1 N 2.2 | P 2.1-4.1 | P 2.1-4.1 | P 1.1-3.1 N 2.2 | P 1.1-4.1 K 2.1 N 2.2 |
|--------------------|-----------|-----------|--------------------|-----------------------------|

Werkzeug-Ident · Tool ident

| | | | | |
|----------|----------|----------|----------|----------|
| C0208900 | C0201000 | C0201010 | C0501000 | C0501400 |
|----------|----------|----------|----------|----------|

| Ø d ₁ inch | P inch | Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | Dimens.-Ident | Rekord 2B-STEEL-L | Rekord 2B-STEEL-M | Rekord 2B-STEEL-M „3B“ | Enorm 2-STEEL | Enorm 2-STEEL TIN |
|--------------------------|-----------|-------------|----------------|----------------|------------------|------|---------------|-------------------|-------------------|------------------------|---------------|-------------------|
| | | | | | | | | 1/4 | 0.2500 | 28 | 80 | 17 |
| 5/16 | 0.3125 | 24 | 90 | 17 | 6 | 4,9 | 6,9 | • | • | • | • | • |
| 3/8 | 0.3750 | 24 | 90 | 18 | 7 | 5,5 | 8,5 | • | • | • | • | • |
| 7/16 | 0.4375 | 20 | 100 | 22 | 8 | 6,2 | 9,9 | • | • | • | • | • |
| 1/2 | 0.5000 | 20 | 100 | 22 | 9 | 7 | 11,5 | • | • | • | • | • |
| 9/16 | 0.5625 | 18 | 100 | 22 | 11 | 9 | 12,9 | • | ○ | • | • | ○ |
| 5/8 | 0.6250 | 18 | 100 | 22 | 12 | 9 | 14,5 | • | • | • | • | • |
| 3/4 | 0.7500 | 16 | 110 | 25 | 14 | 11 | 17,5 | • | • | • | • | • |
| 7/8 | 0.8750 | 14 | 125 | 25 | 18 | 14,5 | 20,4 | • | • | • | • | • |
| 1" | 1.0000 | 12 | 140 | 28 | 18 | 14,5 | 23,25 | • | • | • | • | • |
| 1 1/8 | 1.1250 | 12 | 150 | 28 | 22 | 18 | 26,5 | • | • | • | • | • |
| 1 1/4 | 1.2500 | 12 | 150 | 28 | 22 | 18 | 29,5 | • | • | • | • | • |
| 1 3/8 | 1.3750 | 12 | 170 | 30 | 28 | 22 | 32,75 | • | • | • | • | • |
| 1 1/2 | 1.5000 | 12 | 170 | 30 | 28 | 22 | 36 | • | • | • | • | • |

≈ DIN 371
























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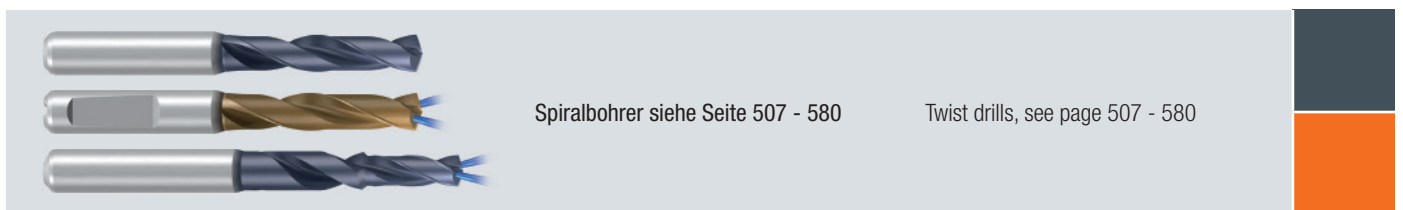
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152

| STEEL Steel materials  | VA Stainless steel materials  | | | | | | H Materials of high tensile strength  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|--|---|--|---|--|--|--|--|--|--|----------|--|--|--|--|--|--|--|-----------|--|--|--|--|--|--|--|----------|---|--|--|--|--|--|--|-----------|---|---|---|---|---|---|---|----------|---|---|---|---|---|---|---|-----------|---|---|---|---|---|---|---|----------|---|---|---|---|---|---|---|----------|---|---|---|---|---|---|---|----------|--|--|--|--|---|---|---|---------|--|--|--|--|---|---|---|------------|--|--|--|--|---|---|---|------------|--|--|--|--|---|---|---|------------|--|--|--|--|---|---|---|------------|
| 3B HSSE R35 C / 2-3 E / O | 2B NT HSSE B / 4-5 E / O / P | 2B TIN HSSE B / 4-5 E / O / P | 2B GLT-1 HSSE B / 4-5 E / O / P | 2B HSSE R35 C / 2-3 E / O / P | 2B GLT-1 HSSE R35 C / 2-3 E / O / P | 2BX NT HSSE C / 2-3 E / O / P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| max. 2,5 x d ₁  | max. 3 x d ₁  | | | max. 2,5 x d ₁  | | max. 2 x d ₁  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P 1.1-3.1 N 2.2 | P 1.1-3.1 M 1.1-2.1 K 2.1 N 2.2, 2.5-6 | P 1.1-4.1 M 1.1-3.1 K 2.1 N 2.2, 2.5-6 | P 1.1-4.1 M 1.1-3.1 K 2.1 N 2.2 | P 1.1-3.1 M 1.1-2.1 K 2.1 | P 1.1-4.1 M 1.1-3.1 K 2.1 | P 1.1-3.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C0501010 Enorm 2-STEEL „3B“ | C0203000 Rekord 2B-VA NT | C0203100 Rekord 2B-VA TIN | C020C300 Rekord 2B-VA GLT-1 | C0503000 Enorm 2-VA | C050C300 Enorm 2-VA GLT-1 | C0100501 Rekord 2A-H NT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  |  |  |  |  |  |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  153 |  153 |  153 |  153 |  153 |  153 |  153 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="0"> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1/4 - 28</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>5/16 - 24</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>3/8 - 24</td></tr> <tr><td>●</td><td></td><td></td><td></td><td></td><td></td><td></td><td>7/16 - 20</td></tr> <tr><td>●</td><td>●</td><td>○</td><td>○</td><td>●</td><td>●</td><td>●</td><td>1/2 - 20</td></tr> <tr><td>●</td><td>●</td><td>○</td><td>○</td><td>●</td><td>○</td><td>●</td><td>9/16 - 18</td></tr> <tr><td>●</td><td>●</td><td>○</td><td>○</td><td>●</td><td>●</td><td>●</td><td>5/8 - 18</td></tr> <tr><td>●</td><td>●</td><td>○</td><td>○</td><td>●</td><td>●</td><td>●</td><td>3/4 - 16</td></tr> <tr><td>○</td><td>●</td><td>○</td><td>○</td><td>●</td><td>●</td><td>●</td><td>7/8 - 14</td></tr> <tr><td></td><td></td><td></td><td></td><td>●</td><td>●</td><td>●</td><td>1" - 12</td></tr> <tr><td></td><td></td><td></td><td></td><td>●</td><td>●</td><td>●</td><td>1 1/8 - 12</td></tr> <tr><td></td><td></td><td></td><td></td><td>●</td><td>●</td><td>●</td><td>1 1/4 - 12</td></tr> <tr><td></td><td></td><td></td><td></td><td>●</td><td>●</td><td>●</td><td>1 3/8 - 12</td></tr> <tr><td></td><td></td><td></td><td></td><td>●</td><td>●</td><td>●</td><td>1 1/2 - 12</td></tr> </table> | | | | | | | | | | | | | | 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 |
| | | | | | | | 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

- Product Finder
- Vc
- 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
- Tech. Info



Spiralbohrer siehe Seite 507 - 580

Twist drills, see page 507 - 580

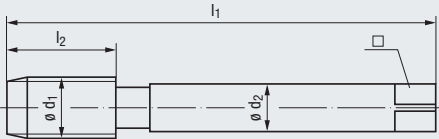
- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

UNF

ASME B1.1



≈ DIN 374



Z
CNC-controlled machines



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266



| | | | |
|----------------|----------------|------------------|------------------|
| 2BX | 2BX | 2BX | 2BX |
| TIN-60 | GLT-1 | TIN-60 | GLT-1 |
| HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| 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 |

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | | |
|-------------------------|-------------------------|-------------------------|-------------------------|
| P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 | P 2.1-4.1 |
| M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 | M 1.1-3.1 |
| K 2.1 | K 2.1 | K 2.1 | K 2.1 |
| N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 | N 1.4-2.2, 2.4-5 |
| S 1.1 | S 1.1 | S 1.1 | S 1.1 |

Werkzeug-Ident · Tool ident

C5760F01 C576A601 C5820F01 C582A601

| Ø d ₁ inch | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | Dimens.- Ident | Enorm | | | | | |
|--------------------------|------------------|----------------|----------------|------------------|-----|-------------------|--------------------|-------------------|----------------------|---------------------|---|---|
| | | | | | | | 2-Z-X-PM TIN-60 | 2-Z-X-PM GLT-1 | 2-Z/E-X-PM TIN-60 | 2-Z/E-X-PM GLT-1 | | |
| 1/4 | 0.2500 | 28 | 80 | 10 | 4,5 | 3,4 | 5,5 | .5043 | | | | |
| 5/16 | 0.3125 | 24 | 90 | 10 | 6 | 4,9 | 6,9 | .5044 | | | | |
| 3/8 | 0.3750 | 24 | 90 | 10 | 7 | 5,5 | 8,5 | .5045 | | | | |
| 7/16 | 0.4375 | 20 | 100 | 13 | 8 | 6,2 | 9,9 | .5046 | ● | ● | ● | ● |
| 1/2 | 0.5000 | 20 | 100 | 13 | 9 | 7 | 11,5 | .5047 | ● | ● | ● | ● |
| 9/16 | 0.5625 | 18 | 100 | 15 | 11 | 9 | 12,9 | .5048 | | | | |
| 5/8 | 0.6250 | 18 | 100 | 15 | 12 | 9 | 14,5 | .5049 | ● | ● | ● | ● |
| 3/4 | 0.7500 | 16 | 110 | 17 | 14 | 11 | 17,5 | .5050 | ● | ● | ● | ● |
| 7/8 | 0.8750 | 14 | 125 | 17 | 18 | 14,5 | 20,4 | .5051 | | | | |
| 1" | 1.0000 | 12 | 140 | 20 | 18 | 14,5 | 23,25 | .5052 | ● | ● | ● | ● |
| 1 1/8 | 1.1250 | 12 | 150 | 22 | 22 | 18 | 26,5 | .5053 | | | | |
| 1 1/4 | 1.2500 | 12 | 150 | 22 | 22 | 18 | 29,5 | .5054 | | | | |
| 1 3/8 | 1.3750 | 12 | 170 | 24 | 28 | 22 | 32,75 | .5055 | | | | |
| 1 1/2 | 1.5000 | 12 | 170 | 24 | 28 | 22 | 36 | .5056 | | | | |

≈ DIN 371



154

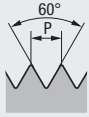
154

154

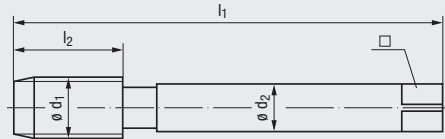
154

UNF

ASME B1.1



≈ DIN 374



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | | |
|------------------|------------------|--------------------|
| 2B | 2B | 2B +0,05 1) |
| HSSE | TIN | HSSE |
| R45 | R45 | R45 |
| E / 1,5-2 | E / 1,5-2 | E / 1,5-2 |
| E / O / P | E / O / P | E / O / P |

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | |
|------------------|-----------------------|------------------|
| P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 |
| M 1.1-2.1 | M 1.1-3.1 | M 1.1-2.1 |
| N 2.1 | N 1.4-6 | N 2.1 |
| | N 2.1-2, 2.4-5 | |
| | S 1.1 | |

Werkzeug-Ident · Tool ident

C0513500 C0513700 C0513530

| Ø d ₁ inch | P inch | Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | Dimens.- Ident | Enorm | Enorm | Enorm |
|--------------------------|-----------|-------------|----------------|----------------|------------------|------|-------------------|-------|--------------|------------------|
| | | | | | | | | 2-Z/E | 2-Z/E TIN | 2-Z/E „+0,05” |
| 1/4 | 0.2500 | 28 | 80 | 10 | 4,5 | 3,4 | 5,5 | .5043 | | |
| 5/16 | 0.3125 | 24 | 90 | 10 | 6 | 4,9 | 6,9 | .5044 | | |
| 3/8 | 0.3750 | 24 | 90 | 10 | 7 | 5,5 | 8,5 | .5045 | | |
| 7/16 | 0.4375 | 20 | 100 | 13 | 8 | 6,2 | 9,9 | .5046 | ● | ○ |
| 1/2 | 0.5000 | 20 | 100 | 13 | 9 | 7 | 11,5 | .5047 | ● | ○ |
| 9/16 | 0.5625 | 18 | 100 | 15 | 11 | 9 | 12,9 | .5048 | ● | ○ |
| 5/8 | 0.6250 | 18 | 100 | 15 | 12 | 9 | 14,5 | .5049 | ● | ○ |
| 3/4 | 0.7500 | 16 | 110 | 17 | 14 | 11 | 17,5 | .5050 | ● | ○ |
| 7/8 | 0.8750 | 14 | 125 | 17 | 18 | 14,5 | 20,4 | .5051 | ● | ○ |
| 1" | 1.0000 | 12 | 140 | 20 | 18 | 14,5 | 23,25 | .5052 | ● | ○ |
| 1 1/8 | 1.1250 | 12 | 150 | 22 | 22 | 18 | 26,5 | .5053 | | |
| 1 1/4 | 1.2500 | 12 | 150 | 22 | 22 | 18 | 29,5 | .5054 | | |
| 1 3/8 | 1.3750 | 12 | 170 | 24 | 28 | 22 | 32,75 | .5055 | | |
| 1 1/2 | 1.5000 | 12 | 170 | 24 | 28 | 22 | 36 | .5056 | | |

≈ DIN 371



155

155

155

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



Gewinde-Tiefenlehndorne
siehe Seite 624 - 627

Thread depth plug gauges,
see page 624 - 627

- Product Finder
- Vc
- 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
- Tech. Info

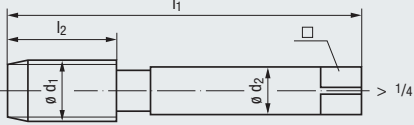
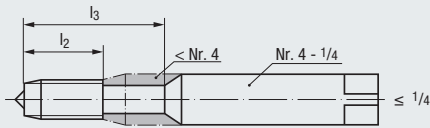
UNF



ASME B1.1

≈ DIN 2181

STEEL
Steel materials



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



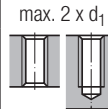
2BX

HSSE

C / 2-3

E / 0

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

P 1.1-3.1

N 2.3

Werkzeug-Ident · Tool ident

A0101001

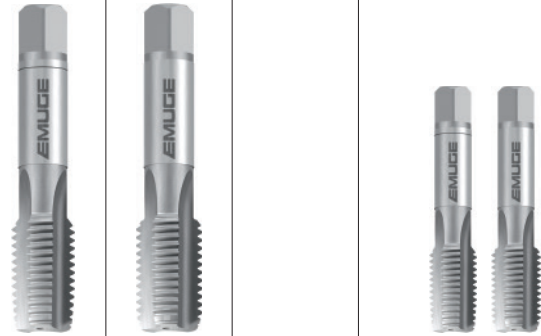
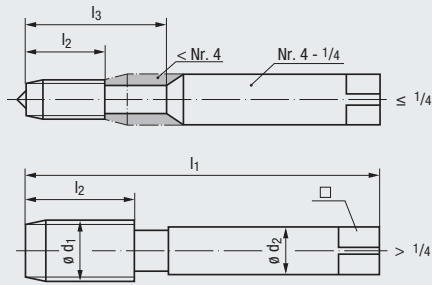
| Nr. | Ø d ₁ | | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | Rekord A-STEEL | |
|--------|------------------|------|------------------|----------------|----------------|----------------|------------------|------|----------------|-------|
| | inch | inch | | | | | | | | |
| Nr. 0 | 0.0600 | | 80 | 32 | 8 | – | 2,5 | 2,1 | 1,25 | .5033 |
| Nr. 1 | 0.0730 | | 72 | 36 | 8 | – | 2,8 | 2,1 | 1,55 | .5034 |
| Nr. 2 | 0.0860 | | 64 | 36 | 9 | – | 2,8 | 2,1 | 1,85 | .5035 |
| Nr. 3 | 0.0990 | | 56 | 40 | 9 | – | 2,8 | 2,1 | 2,15 | .5036 |
| Nr. 4 | 0.1120 | | 48 | 40 | 10 | 18 | 3,5 | 2,7 | 2,4 | .5037 |
| Nr. 5 | 0.1250 | | 44 | 40 | 10 | 18 | 3,5 | 2,7 | 2,7 | .5038 |
| Nr. 6 | 0.1380 | | 40 | 45 | 11 | 20 | 4 | 3 | 2,95 | .5039 |
| Nr. 8 | 0.1640 | | 36 | 45 | 12 | 22 | 4,5 | 3,4 | 3,5 | .5040 |
| Nr. 10 | 0.1900 | | 32 | 50 | 14 | 25 | 6 | 4,9 | 4,1 | .5041 |
| Nr. 12 | 0.2160 | | 28 | 56 | 16 | 28 | 6 | 4,9 | 4,6 | .5042 |
| 1/4 | 0.2500 | | 28 | 56 | 16 | 28 | 6 | 4,9 | 5,5 | .5043 |
| 5/16 | 0.3125 | | 24 | 63 | 17 | – | 6 | 4,9 | 6,9 | .5044 |
| 3/8 | 0.3750 | | 24 | 63 | 18 | – | 7 | 5,5 | 8,5 | .5045 |
| 7/16 | 0.4375 | | 20 | 70 | 22 | – | 8 | 6,2 | 9,9 | .5046 |
| 1/2 | 0.5000 | | 20 | 70 | 20 | – | 9 | 7 | 11,5 | .5047 |
| 9/16 | 0.5625 | | 18 | 70 | 20 | – | 11 | 9 | 12,9 | .5048 |
| 5/8 | 0.6250 | | 18 | 70 | 20 | – | 12 | 9 | 14,5 | .5049 |
| 3/4 | 0.7500 | | 16 | 80 | 22 | – | 14 | 11 | 17,5 | .5050 |
| 7/8 | 0.8750 | | 14 | 80 | 22 | – | 18 | 14,5 | 20,4 | .5051 |
| 1" | 1.0000 | | 12 | 90 | 22 | – | 18 | 14,5 | 23,25 | .5052 |
| 1 1/8 | 1.1250 | | 12 | 90 | 22 | – | 22 | 18 | 26,5 | .5053 |
| 1 1/4 | 1.2500 | | 12 | 90 | 22 | – | 22 | 18 | 29,5 | .5054 |
| 1 3/8 | 1.3750 | | 12 | 125 | 30 | – | 28 | 22 | 32,75 | .5055 |
| 1 1/2 | 1.5000 | | 12 | 125 | 30 | – | 28 | 22 | 36 | .5056 |

UNF



ASME B1.1

≈ DIN 2181



- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNF**
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

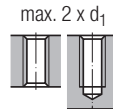
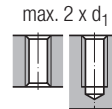
Technische Informationen
Technical information

» 245 - 266



| | | |
|---------|---------|---------|
| | 2BX | 2BX |
| HSSE | HSSE | HSSE |
| D / 3-4 | C / 2-3 | C / 2-3 |
| O / P | O / P | O / P |

Gewindetiefe und Lochform
Thread depth and hole type



P 1.1-3.1 P 1.1-3.1 P 1.1-3.1

Einsatzgebiete – Material
Applications – material

» 22

Werkzeug-Ident · Tool ident

H0211009 H0211001 H0201001

| ø d ₁ inch | inch | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | Dimens.- Ident | HGB-Set | HGB-Set | HGB-Set | |
|--------------------------|--------|------------------|----------------|----------------|----------------|------------------|------|-------------------|---------|---------|-----------------|---|
| | | | | | | | | | V-Nr.1 | F | 2S (Nr.1, F) | |
| Nr. 0 | 0.0600 | 80 | 32 | 8 | — | 2,5 | 2,1 | 1,25 | .5033 | | | |
| Nr. 1 | 0.0730 | 72 | 36 | 8 | — | 2,8 | 2,1 | 1,55 | .5034 | ○ | ○ | ○ |
| Nr. 2 | 0.0860 | 64 | 36 | 9 | — | 2,8 | 2,1 | 1,85 | .5035 | ○ | ○ | ○ |
| Nr. 3 | 0.0990 | 56 | 40 | 9 | — | 2,8 | 2,1 | 2,15 | .5036 | | | |
| Nr. 4 | 0.1120 | 48 | 40 | 10 | 18 | 3,5 | 2,7 | 2,4 | .5037 | ○ | ○ | ○ |
| Nr. 5 | 0.1250 | 44 | 40 | 10 | 18 | 3,5 | 2,7 | 2,7 | .5038 | | | |
| Nr. 6 | 0.1380 | 40 | 45 | 11 | 20 | 4 | 3 | 2,95 | .5039 | ○ | ○ | ○ |
| Nr. 8 | 0.1640 | 36 | 45 | 12 | 22 | 4,5 | 3,4 | 3,5 | .5040 | ○ | ○ | ○ |
| Nr. 10 | 0.1900 | 32 | 50 | 14 | 25 | 6 | 4,9 | 4,1 | .5041 | ○ | ○ | ○ |
| Nr. 12 | 0.2160 | 28 | 56 | 16 | 28 | 6 | 4,9 | 4,6 | .5042 | | | |
| 1/4 | 0.2500 | 28 | 56 | 16 | 28 | 6 | 4,9 | 5,5 | .5043 | ○ | ○ | ○ |
| 5/16 | 0.3125 | 24 | 63 | 17 | — | 6 | 4,9 | 6,9 | .5044 | ○ | ○ | ○ |
| 3/8 | 0.3750 | 24 | 63 | 18 | — | 7 | 5,5 | 8,5 | .5045 | ○ | ○ | ○ |
| 7/16 | 0.4375 | 20 | 70 | 22 | — | 8 | 6,2 | 9,9 | .5046 | ○ | ○ | ○ |
| 1/2 | 0.5000 | 20 | 70 | 20 | — | 9 | 7 | 11,5 | .5047 | ○ | ○ | ○ |
| 9/16 | 0.5625 | 18 | 70 | 20 | — | 11 | 9 | 12,9 | .5048 | | | |
| 5/8 | 0.6250 | 18 | 70 | 20 | — | 12 | 9 | 14,5 | .5049 | ○ | ○ | ○ |
| 3/4 | 0.7500 | 16 | 80 | 22 | — | 14 | 11 | 17,5 | .5050 | ○ | ○ | ○ |
| 7/8 | 0.8750 | 14 | 80 | 22 | — | 18 | 14,5 | 20,4 | .5051 | | | |
| 1" | 1.0000 | 12 | 90 | 22 | — | 18 | 14,5 | 23,25 | .5052 | ○ | ○ | ○ |
| 1 1/8 | 1.1250 | 12 | 90 | 22 | — | 22 | 18 | 26,5 | .5053 | ○ | ○ | ○ |
| 1 1/4 | 1.2500 | 12 | 90 | 22 | — | 22 | 18 | 29,5 | .5054 | ○ | ○ | ○ |
| 1 3/8 | 1.3750 | 12 | 125 | 30 | — | 28 | 22 | 32,75 | .5055 | ○ | ○ | ○ |
| 1 1/2 | 1.5000 | 12 | 125 | 30 | — | 28 | 22 | 36 | .5056 | ○ | ○ | ○ |



Verstellbare Windeisen siehe Seite 243

Adjustable tap wrenches, see page 243

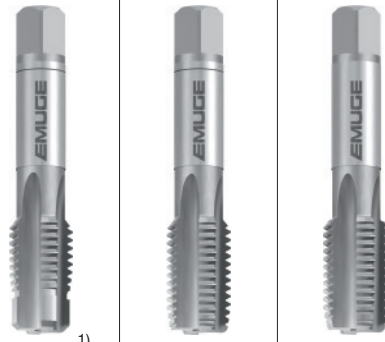
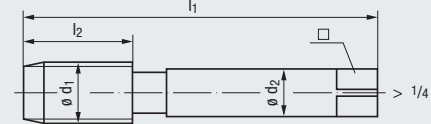
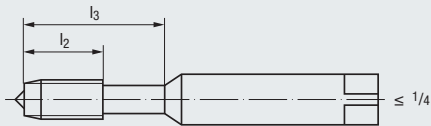
- Product Finder
- V_c
- M
- MF
- UNC
UN-8
- UNF
UNEF
- G, Rp
NPSM, NPSF
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- MJ
UNJC, UNJF
- EG (STI)
SELF-LOCK
- Tr, Tr-F
Rd
- Zubehör
Accessories
- Tech. Info



UNF

ASME B1.1

≈ DIN
2181



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266

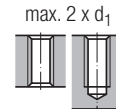


HSSE
C / 2-3
O / P

HSSE
C / 2-3
O / P

2BX
HSSE
C / 2-3
O / P

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

| | | |
|--------------|--------------|--------------|
| 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 |
| S 2.1-2, 2.4 | S 2.1-2, 2.4 | S 2.1-2, 2.4 |

Werkzeug-Ident · Tool ident

H0463009 H0473009 H0473001

| Ø d ₁ inch | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | Dimens.- Ident | WM-Set V-Nr.1Z | WM-Set V-Nr.1 | WM-Set F | | |
|--------------------------|------------------|----------------|----------------|----------------|------------------|----|-------------------|-------------------|------------------|-------------|---|---|
| | | | | | | | | | | | | |
| 1/4 | 0.2500 | 28 | 56 | 16 | 28 | 6 | 4,9 | 5,5 | .5043 | ● | ● | ● |
| 5/16 | 0.3125 | 24 | 63 | 17 | – | 6 | 4,9 | 6,9 | .5044 | ● | ● | ● |
| 3/8 | 0.3750 | 24 | 63 | 18 | – | 7 | 5,5 | 8,5 | .5045 | ● | ● | ● |
| 7/16 | 0.4375 | 20 | 70 | 22 | – | 8 | 6,2 | 9,9 | .5046 | ● | ● | ● |
| 1/2 | 0.5000 | 20 | 70 | 20 | – | 9 | 7 | 11,5 | .5047 | ● | ● | ● |
| 9/16 | 0.5625 | 18 | 70 | 20 | – | 11 | 9 | 12,9 | .5048 | ○ | ○ | ○ |
| 5/8 | 0.6250 | 18 | 70 | 20 | – | 12 | 9 | 14,5 | .5049 | ○ | ○ | ○ |
| 3/4 | 0.7500 | 16 | 80 | 22 | – | 14 | 11 | 17,5 | .5050 | ○ | ○ | ○ |
| 7/8 | 0.8750 | 14 | 80 | 22 | – | 18 | 14,5 | 20,4 | .5051 | ○ | ○ | ○ |
| 1" | 1.0000 | 12 | 90 | 22 | – | 18 | 14,5 | 23,25 | .5052 | ○ | ○ | ○ |

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 Finder

V_c

M

MF

UNC
UN-8

UNF
UNEF

G, Rp
NPSM, NPSF

NPT, NPTF
Rc, W

BSW, BSF

Pg

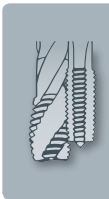
MJ
UNJC, UNJF

EG (STI)
SELF-LOCK

Tr, Tr-F
Rd

Zubehör
Accessories

Tech. Info



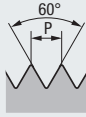
| | | | |
|---|--|--|---|
| <p>2)</p> | | | |
| <p>2BX</p> <p>HSSE</p> <p>C / 2-3</p> <p>O / P</p> | <p>2BX</p> <p>HSSE</p> <p>C / 2-3</p> <p>O / P</p> | | |
| <p>max. 2 x d₁</p> | | | |
| <p>P 1.1-5.1</p> <p>M 1.1-4.1</p> <p>S 2.1-2, 2.4</p> | <p>P 1.1-5.1</p> <p>M 1.1-4.1</p> <p>S 2.1-2, 2.4</p> | | |
| <p>H0453001</p> <p>WM-Set</p> <p>3S</p> <p>(Nr.1Z, Nr.1, F)</p> | <p>H0483001</p> <p>WM-Set</p> <p>2S</p> <p>(Nr.1, F)</p> | | |
| <p>●</p> <p>●</p> <p>●</p> <p>●</p> <p>○</p> <p>○</p> <p>○</p> | <p>●</p> <p>●</p> <p>●</p> <p>●</p> <p>○</p> <p>○</p> <p>○</p> | | <p>1/4 - 28</p> <p>5/16 - 24</p> <p>3/8 - 24</p> <p>7/16 - 20</p> <p>1/2 - 20</p> <p>9/16 - 18</p> <p>5/8 - 18</p> <p>3/4 - 16</p> <p>7/8 - 14</p> <p>1" - 12</p> |

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

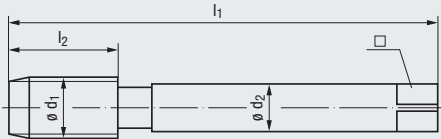
- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

UNEF

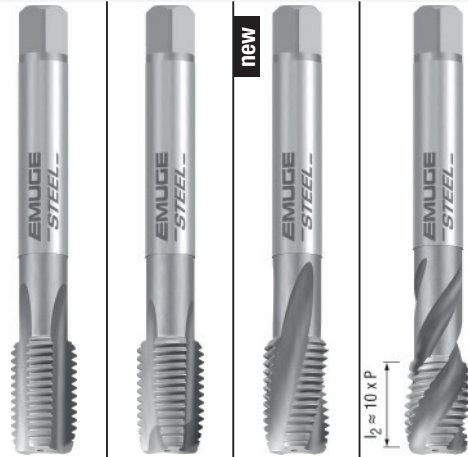
ASME B1.1



≈ DIN 374



STEEL
Steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266

| | | | |
|---------|---------|------------------|---------|
| 2BX | 2B | 2B | 2B |
| HSSE | HSSE | HSSE | HSSE |
| C / 2-3 | B / 4-5 | E / 1,5-2 | C / 2-3 |
| E / 0 | E / 0 | E / 0 | E / 0 |

Gewindetiefe und Lochform
Thread depth and hole type

| | | | |
|-------------------------|-------------------------|-------------------------|---------------------------|
| max. 2 x d ₁ | max. 3 x d ₁ | max. 2 x d ₁ | max. 2,5 x d ₁ |
| | | | |

Einsatzgebiete – Material
Applications – material

» 22

| | | | |
|--------------------|-----------|-----------|--------------------|
| P 1.1-3.1 N 2.3 | P 2.1-4.1 | P 2.1-3.1 | P 1.1-3.1 N 2.2 |
|--------------------|-----------|-----------|--------------------|

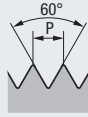
Werkzeug-Ident · Tool ident

| | | | |
|----------|----------|----------|----------|
| C0101001 | C0201000 | C0461000 | C0501000 |
|----------|----------|----------|----------|

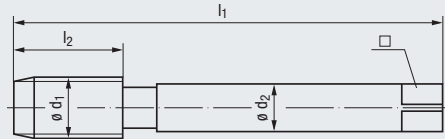
| Ø d ₁ inch | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | | Dimens.- Ident | Rekord | Rekord | Rekord | Enorm | |
|--------------------------|------------------|----------------|----------------|------------------|-----|------|-------------------|----------|------------|------------|---------|---|
| | | | | | | | | 2A-STEEL | 2B-STEEL-M | 2D-STEEL/E | 2-STEEL | |
| 1/4 | 0.2500 | 32 | 80 | 14 | 4,5 | 3,4 | 5,55 | .5058 | ○ | ● | ● | ● |
| 5/16 | 0.3125 | 32 | 80 | 14 | 6 | 4,9 | 7,15 | .5059 | ○ | ● | ● | ● |
| 3/8 | 0.3750 | 32 | 90 | 18 | 7 | 5,5 | 8,7 | .5060 | ○ | ● | ● | ● |
| 7/16 | 0.4375 | 28 | 90 | 18 | 8 | 6,2 | 10,2 | .5061 | ○ | ● | ● | ● |
| 1/2 | 0.5000 | 28 | 100 | 18 | 9 | 7 | 11,8 | .5062 | ○ | ● | ● | ● |
| 9/16 | 0.5625 | 24 | 100 | 18 | 11 | 9 | 13,2 | .5063 | ○ | ● | ● | ● |
| 5/8 | 0.6250 | 24 | 100 | 18 | 12 | 9 | 14,8 | .5064 | ○ | ● | ● | ● |
| 3/4 | 0.7500 | 20 | 110 | 25 | 14 | 11 | 17,8 | .5066 | ○ | ● | ● | ● |
| 7/8 | 0.8750 | 20 | 125 | 25 | 18 | 14,5 | 20,95 | .5068 | ○ | ● | ● | ● |
| 1" | 1.0000 | 20 | 140 | 28 | 18 | 14,5 | 24,15 | .5070 | ○ | ● | ● | ● |

UNEF

ASME B1.1



≈ DIN 374



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | |
|-----------|-----------|
| 2B | 2B |
| TIN | GLT-1 |
| HSSE | HSSE |
| B / 4-5 | B / 4-5 |
| E / O / P | E / O / P |

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | |
|--------------|-----------|
| P 1.1-4.1 | P 1.1-4.1 |
| M 1.1-3.1 | M 1.1-3.1 |
| K 2.1 | K 2.1 |
| N 2.2, 2.5-6 | N 2.2 |

Werkzeug-Ident · Tool ident

C0203100 C020C300

| ø d ₁ inch | P Gg/1" (tpi) | l ₁ | l ₂ | ø d ₂ | □ | Image | Dimens.-Ident | Rekord 2B-VA TIN | Rekord 2B-VA GLT-1 | |
|--------------------------|------------------|----------------|----------------|------------------|-----|-------|---------------|------------------|--------------------|---|
| | | | | | | | | | | |
| 1/4 | 0.2500 | 32 | 80 | 14 | 4,5 | 3,4 | 5,55 | .5058 | ● | ○ |
| 5/16 | 0.3125 | 32 | 80 | 14 | 6 | 4,9 | 7,15 | .5059 | ● | ○ |
| 3/8 | 0.3750 | 32 | 90 | 18 | 7 | 5,5 | 8,7 | .5060 | ● | ○ |
| 7/16 | 0.4375 | 28 | 90 | 18 | 8 | 6,2 | 10,2 | .5061 | ● | ○ |
| 1/2 | 0.5000 | 28 | 100 | 18 | 9 | 7 | 11,8 | .5062 | ● | ○ |
| 9/16 | 0.5625 | 24 | 100 | 18 | 11 | 9 | 13,2 | .5063 | ● | ○ |
| 5/8 | 0.6250 | 24 | 100 | 18 | 12 | 9 | 14,8 | .5064 | ● | ○ |
| 3/4 | 0.7500 | 20 | 110 | 25 | 14 | 11 | 17,8 | .5066 | ● | ○ |
| 7/8 | 0.8750 | 20 | 125 | 25 | 18 | 14,5 | 20,95 | .5068 | ● | ○ |
| 1" | 1.0000 | 20 | 140 | 28 | 18 | 14,5 | 24,15 | .5070 | ● | ○ |

- 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 (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



- Product Finder
- Vc
- 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
- Tech. Info

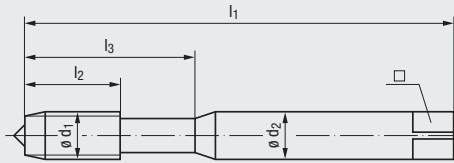
G (BSP)

DIN EN ISO 228



≈ DIN 371

HCUT
Hardened steels



Technische Informationen
Technical information

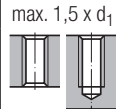
» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



- „X“
- TICN
- HSSE-PM**
- C / 2-3
- O / P

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

H 1.1-2

Werkzeug-Ident · Tool ident

B010J901

Nenngröße
Nom. size



Dimens.-Ident

**Rekord 1A-HCUT-PM
TICN**

| | ∅ d ₁ | ∅ d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | ∅ d ₂ | □ | |
|----------|------------------|------------------------|------------------|----------------|----------------|----------------|------------------|---|-----|
| G | 1/8 | 9,73 | 28 | 90 | 10 | 35 | 10 | 8 | 8,8 |

.4035

•

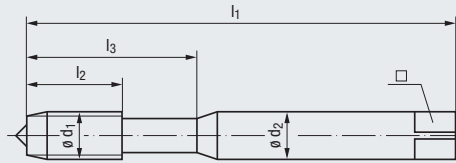
DIN 5156



» 171



≈ DIN 371



HCUT
Hardened steels



- Product Finder
- Vc
- 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
- Tech. Info

Technische Informationen
Technical information

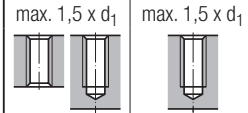
» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | |
|----------------|----------------|
| „X“ | „X“ |
| TICN | TICN |
| VHM | VHM |
| D / 4-5 | C / 2-3 |
| O / P | O / P |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

H 1.3-4

Werkzeug-Ident · Tool ident

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



Spiralbohrer Typ EF-Drill-HCUT
siehe Seite 558

Twist drills type EF-Drill-HCUT,
see page 558

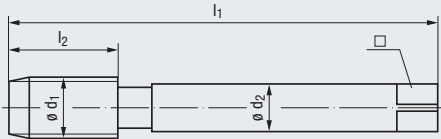
- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

G (BSP)

DIN EN ISO 228



DIN 5156



STEEL
Steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266



| | | | | |
|------------------|------------------|------------------|------------------|------------------|
| „X“ | | | | |
| HSSE | HSSE | TIN HSSE | HSSE | TIN HSSE |
| C / 2-3 E / 0 | B / 4-5 E / 0 | B / 4-5 E / 0 | B / 4-5 E / 0 | B / 4-5 E / 0 |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22















| | | | | |
|--------------------|--------------------|------------------------------------|-----------|--------------------|
| P 1.1-3.1 N 2.3 | P 1.1-3.1 N 2.2 | P 1.1-4.1 K 2.1 N 2.2, 2.4-5 | P 2.1-4.1 | P 2.1-4.1 K 2.1 |
|--------------------|--------------------|------------------------------------|-----------|--------------------|

Werkzeug-Ident · Tool ident

| Nenngröße Nom. size | Ø d ₁ | Ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | Ø | Dimens.- Ident | C0101001 | C0208900 | C0208400 | C0201000 | C0201400 |
|------------------------|------------------|------------------------|------------------|----------------|----------------|------------------|------|-------|-------------------|--------------------|----------------------|-----------------------------|----------------------|-----------------------------|
| | | | | | | | | | | Rekord 2A-STEEL | Rekord 2B-STEEL-L | Rekord 2B-STEEL-L TIN | Rekord 2B-STEEL-M | Rekord 2B-STEEL-M TIN |
| G | 1/16 | 7,72 | 28 | 90 | 17 | 6 | 4,9 | 6,8 | .4034 | ● | ● | ● | ● | ● |
| | 1/8 | 9,73 | 28 | 90 | 18 | 7 | 5,5 | 8,8 | .4035 | ● | ● | ● | ● | ● |
| | 1/4 | 13,16 | 19 | 100 | 22 | 11 | 9 | 11,8 | .4036 | ● | ● | ● | ● | ● |
| | 3/8 | 16,66 | 19 | 100 | 22 | 12 | 9 | 15,25 | .4037 | ● | ● | ● | ● | ● |
| | 1/2 | 20,96 | 14 | 125 | 25 | 16 | 12 | 19 | .4038 | ● | ● | ● | ● | ● |
| | 5/8 | 22,91 | 14 | 125 | 25 | 18 | 14,5 | 21 | .4039 | ○ | ● | ○ | ● | ○ |
| | 3/4 | 26,44 | 14 | 140 | 28 | 20 | 16 | 24,5 | .4040 | ● | ● | ● | ● | ○ |
| | 7/8 | 30,20 | 14 | 150 | 28 | 22 | 18 | 28,25 | .4041 | ○ | ● | ● | ● | ● |
| | 1" | 33,25 | 11 | 160 | 30 | 25 | 20 | 30,75 | .4042 | ○ | ● | ● | ● | ● |
| | 1 1/8 | 37,90 | 11 | 170 | 30 | 28 | 22 | 35,5 | .4043 | ○ | ● | ● | ● | ● |
| | 1 1/4 | 41,91 | 11 | 170 | 30 | 32 | 24 | 39,5 | .4044 | ○ | ● | ● | ● | ● |
| | 1 3/8 | 44,32 | 11 | 180 | 32 | 36 | 29 | 41,75 | .4045 | ○ | ● | ● | ● | ● |
| | 1 1/2 | 47,80 | 11 | 190 | 32 | 36 | 29 | 45,25 | .4046 | ○ | ● | ● | ● | ● |
| | 1 5/8 | 52,00 | 11 | 190 | 32 | 40 | 32 | 49,5 | .4047 | ○ | ● | ● | ● | ● |
| | 1 3/4 | 53,75 | 11 | 190 | 32 | 40 | 32 | 51 | .4048 | ○ | ● | ● | ● | ● |
| | 2" | 59,61 | 11 | 220 | 40 | 45 | 35 | 57 | .4050 | ○ | ● | ● | ● | ● |



174

| STEEL Steel materials | | | | | VA Stainless steel materials | | | | |
|---|---|---|---|---|--|--|---|---|---|
|  |  |  |  |  |  |  |  |  |  |
| HSSE | HSSE | TIN HSSE | HSSE | TIN HSSE | NT HSSE | TIN HSSE | GLT-1 HSSE | HSSE | |
| R15 | R15 | R15 | R35 | R35 | | | | R35 | |
| C / 2-3 | E / 1,5-2 | C / 2-3 | C / 2-3 | C / 2-3 | B / 4-5 | B / 4-5 | B / 4-5 | C / 2-3 | |
| E / 0 | E / 0 | E / 0 | E / 0 | E / 0 | E / 0/P | E / 0/P | E / 0/P | E / 0/P | |
| max. 2 x d ₁ | | max. 2,5 x d ₁ | | | max. 3 x d ₁ | | | max. 2,5 x d ₁ | |
|  | |  | | |  | | |  | |
| P 2.1-3.1 | P 2.1-3.1 | P 1.1-4.1 K 1.1-4.2 N 1.4-5, 2.4-5 | P 1.1-3.1 N 2.2 | P 1.1-4.1 K 2.1 N 2.2 | P 1.1-3.1 M 1.1-2.1 K 2.1 N 2.2, 2.5-6 | P 1.1-4.1 M 1.1-3.1 K 2.1 N 2.2, 2.5-6 | P 1.1-4.1 M 1.1-3.1 K 2.1 N 2.2 | P 1.1-3.1 M 1.1-2.1 K 2.1 | |
| C0451000 | C0461000 | C0401400 | C0501000 | C0501400 | C0203000 | C0203100 | C020C300 | C0503000 | |
| Rekord 2D-STEEL | 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 | Enorm 2-VA | |
| ○ | ○ | ● | ○ | ○ | ● | ○ | ○ | ○ | G 1/16 - 28 |
| ● | ● | ● | ● | ● | ● | ○ | ○ | ● | 1/8 - 28 |
| ● | ● | ● | ● | ● | ● | ○ | ○ | ● | 1/4 - 19 |
| ● | ● | ● | ● | ● | ● | ○ | ○ | ● | 3/8 - 19 |
| ○ | ○ | ● | ○ | ○ | ● | ○ | ○ | ● | 1/2 - 14 |
| ● | ● | | ● | ● | ● | ○ | ○ | ○ | 5/8 - 14 |
| ○ | ○ | | ○ | ○ | ○ | ○ | ○ | ● | 3/4 - 14 |
| ● | ● | | ○ | ○ | ● | ○ | ○ | ○ | 7/8 - 14 |
| ○ | ○ | | ○ | ● | ○ | ○ | ○ | ○ | 1" - 11 |
| ○ | | | ○ | | | | | ○ | 1 1/8 - 11 |
| ○ | | | ○ | | | | | ○ | 1 1/4 - 11 |
| ○ | | | ○ | | | | | ○ | 1 3/8 - 11 |
| ○ | | | ○ | | | | | ○ | 1 1/2 - 11 |
| ○ | | | ○ | | | | | ○ | 1 5/8 - 11 |
| ○ | | | ○ | | | | | ○ | 1 3/4 - 11 |
| ○ | | | ○ | | | | | ○ | 2" - 11 |

Product Finder

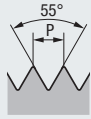
- Vc
- M
- MF
- UNC UN-8
- UNF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



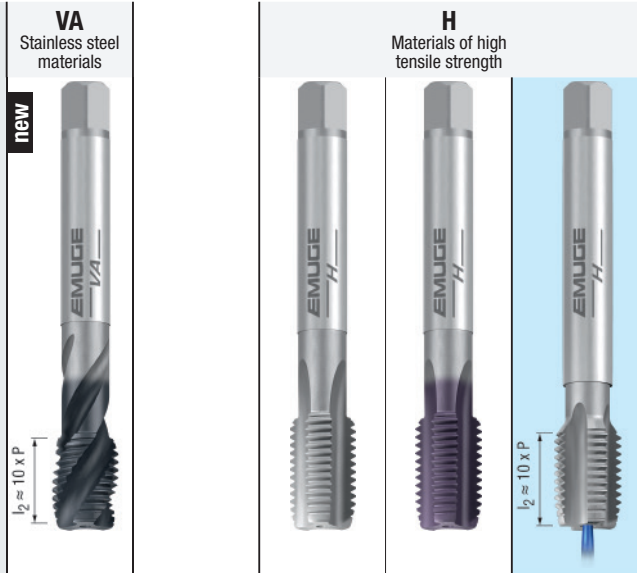
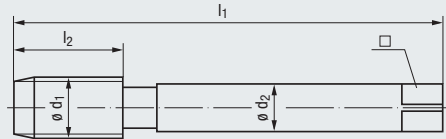
- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

G (BSP)

DIN EN ISO 228



DIN 5156



| | | | | | |
|---|---|-------------------------------------|------------------------------------|--------------------------------------|-------------------------------|
| Technische Informationen Technical information | Toleranz · Tolerance Beschichtung · Coating Schneidstoff · Cutting material | GLT-1 | „X“ | „X“ | „X“ |
| | | HSSE R35 C / 2-3 E / O / P | NT HSSE C / 2-3 E / O / P | TICN HSSE C / 2-3 E / O / P | VHM/KHM E / 1,5-2 E / O |








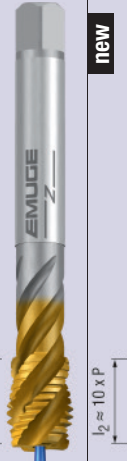





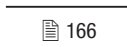
| | | | | |
|---|---------------------------|-------------------------|-------------------------|-------------------------|
| Gewindetiefe und Lochform Thread depth and hole type | max. 2,5 x d ₁ | max. 2 x d ₁ | max. 2 x d ₁ | max. 2 x d ₁ |
|---|---------------------------|-------------------------|-------------------------|-------------------------|

| | | | | |
|--|---------------------------------|---|---|---|
| Einsatzgebiete – Material Applications – material | P 1.1-4.1 M 1.1-3.1 K 2.1 | P 1.1-3.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1 | P 1.1-4.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1 | P 5.1 K 1.1-4.2 N 1.5-6, 2.6-8 N 4.1, 4.3-5.2 H 1.1-2 |
|--|---------------------------------|---|---|---|

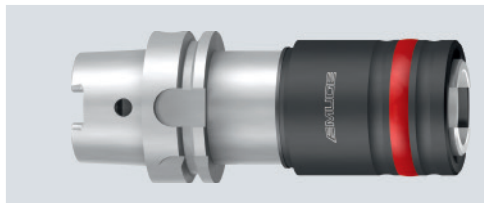
| Werkzeug-Ident · Tool ident | | | | | | | | | | C050C300 | C0100501 | C0109101 | C1960901 |
|-----------------------------|------------------------|------------------|----------------|----------------|------------------|----|------|-----------|-------------------|------------------------|----------------------|------------------------|---------------------------------|
| Nenngröße Nom. size | | | | | | | | | Dimens.- Ident | Enorm 2-VA GLT-1 | Rekord 2A-H NT | Rekord 2A-H TICN | VHM/KHM Rekord 2A-H/E-1KZ |
| Ø d ₁ | Ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | | | | | | | |
| G | 1/16 | 7,72 | 28 | 90 | 17 | 6 | 4,9 | 6,8 | .4034 | ○ | ○ | ● | |
| | 1/8 | 9,73 | 28 | 90 | 18 | 7 | 5,5 | 8,8 | .4035 | ● | ● | ● | |
| | 1/4 | 13,16 | 19 | 100 | 22 | 11 | 9 | 11,8 2) | .4036 | ● | ● | ● | |
| | 3/8 | 16,66 | 19 | 100 | 22 | 12 | 9 | 15,25 2) | .4037 | ● | ● | ● | |
| | 1/2 | 20,96 | 14 | 125 | 25 | 16 | 12 | 19 2) | .4038 | ● | ● | ● | |
| | 5/8 | 22,91 | 14 | 125 | 25 | 18 | 14,5 | 21 | .4039 | ○ | ○ | | |
| | 3/4 | 26,44 | 14 | 140 | 28 | 20 | 16 | 24,5 | .4040 | ● | ○ | | |
| | 7/8 | 30,20 | 14 | 150 | 28 | 22 | 18 | 28,25 | .4041 | ○ | ○ | | |
| | 1" | 33,25 | 11 | 160 | 30 | 25 | 20 | 30,75 | .4042 | ● | ○ | | |
| | 1 1/8 | 37,90 | 11 | 170 | 30 | 28 | 22 | 35,5 | .4043 | ○ | ○ | | |
| | 1 1/4 | 41,91 | 11 | 170 | 30 | 32 | 24 | 39,5 | .4044 | ● | | | |
| | 1 3/8 | 44,32 | 11 | 180 | 32 | 36 | 29 | 41,75 | .4045 | ○ | | | |
| | 1 1/2 | 47,80 | 11 | 190 | 32 | 36 | 29 | 45,25 | .4046 | ● | | | |
| | 1 5/8 | 52,00 | 11 | 190 | 32 | 40 | 32 | 49,5 | .4047 | | | | |
| | 1 3/4 | 53,75 | 11 | 190 | 32 | 40 | 32 | 51 | .4048 | ○ | | | |
| | 2" | 59,61 | 11 | 220 | 40 | 45 | 35 | 57 | .4050 | ○ | | | |
| | | | | | | | | ≈ DIN 371 | | | | | |
| | | | | | | | | DIN 5157 | | | | | |

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

2) Vorbohrerdurchmesser 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

| HCUT Hardened steels | Z CNC-controlled machines | | | | | | | | | |
|---|--|---|---|---|---|--|---|---|---|---|
| | new | new | new | new | new | new | new | new | new | new |
|  |  |  |  |  |  |  |  |  |  |  |
| „X“ | „X“ | „X“ | „X“ | „X“ | „X“ | „X“ | „X“ | „X“ | „X“ | „X“ |
| TiCN | TIN-60 | GLT-1 | TIN-60 | GLT-1 | TIN-60 | GLT-1 | TIN-60 | GLT-1 | TIN-60 | GLT-1 |
| HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| | R45 | R45 | R45 | R45 | R45 | R45 | R45 | R45 | R45 | R45 |
| 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 | E / 1,5-2 | E / 1,5-2 | E / 1,5-2 |
| O / P | E / O / P | E / O / P | E / O | E / O | E / O / P | E / O / P | E / O / P | E / O | E / O | E / O |
| max. 1,5 x d ₁  | max. 3 x d ₁  | | | | | | | | | |
| H 1.1-2 | P 2.1-4.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1 | P 2.1-4.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1 | P 2.1-4.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1 | P 2.1-4.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1 | P 2.1-4.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1 | P 2.1-4.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1 | P 2.1-4.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1 | P 2.1-4.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1 | P 2.1-4.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1 | P 2.1-4.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1 |
| C010J901 | C5760F01 | C576A601 | C5810F01 | C581A601 | C5820F01 | C582A601 | C5830F01 | C583A601 | C5830F01 | C583A601 |
| Rekord 2A-HCUT-PM TiCN | Enorm 2-Z-X-PM TiCN-60 | Enorm 2-Z-X-PM GLT-1 | Enorm 2-Z-X IKZ-PM TiCN-60 | Enorm 2-Z-X IKZ-PM GLT-1 | Enorm 2-Z/E-X-PM TiCN-60 | Enorm 2-Z/E-X-PM GLT-1 | Enorm 2-Z/E-X IKZ-PM TiCN-60 | Enorm 2-Z/E-X IKZ-PM GLT-1 | Enorm 2-Z/E-X IKZ-PM GLT-1 | Enorm 2-Z/E-X IKZ-PM GLT-1 |
| ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
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|  | | | | | | | | | | |

- Product Finder
- Vc
- 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
- Tech. Info



Schnellwechsel-Aufnahmen
Typ KSN/HD siehe Seite 698 - 705

Quick-change tap holders
type KSN/HD, see page 698 - 705

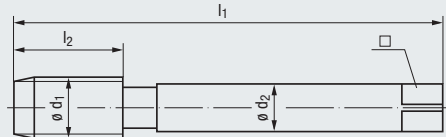
- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF UNEF
- G Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

G (BSP)



DIN EN ISO 228

DIN 5156



Z
CNC-controlled machines



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | | |
|-----------|-----------|---------------------|
| | TIN | +0,05 ¹⁾ |
| HSSE | HSSE | HSSE |
| R45 | R45 | R45 |
| E / 1,5-2 | E / 1,5-2 | E / 1,5-2 |
| E / O / P | E / O / P | E / O / P |

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | |
|-----------|----------------|-----------|
| P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 |
| M 1.1-2.1 | M 1.1-3.1 | M 1.1-2.1 |
| N 2.1 | N 1.4-6 | N 2.1 |
| | N 2.1-2, 2.4-5 | |
| S 1.1 | | |

Werkzeug-Ident · Tool ident

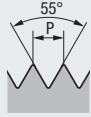
C0513500 C0513700 C0513530

| Nenngröße Nom. size | Ø d ₁ | Ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | Ø | Dimens.- Ident | Enorm 2-Z/E | Enorm 2-Z/E TIN | Enorm 2-Z/E „+0,05“ |
|------------------------|------------------|------------------------|------------------|----------------|----------------|------------------|------|-------|-------------------|----------------|-----------------------|---------------------------|
| | | | | | | | | | | | | |
| G | 1/16 | 7,72 | 28 | 90 | 10 | 6 | 4,9 | 6,8 | .4034 | ○ | ● | ● |
| | 1/8 | 9,73 | 28 | 90 | 10 | 7 | 5,5 | 8,8 | .4035 | ● | ● | ● |
| | 1/4 | 13,16 | 19 | 100 | 15 | 11 | 9 | 11,8 | .4036 | ● | ● | ● |
| | 3/8 | 16,66 | 19 | 100 | 15 | 12 | 9 | 15,25 | .4037 | ● | ● | ● |
| | 1/2 | 20,96 | 14 | 125 | 17 | 16 | 12 | 19 | .4038 | ● | ● | ● |
| | 5/8 | 22,91 | 14 | 125 | 17 | 18 | 14,5 | 21 | .4039 | ○ | ○ | ○ |
| | 3/4 | 26,44 | 14 | 140 | 20 | 20 | 16 | 24,5 | .4040 | ● | ● | ○ |
| | 7/8 | 30,20 | 14 | 150 | 22 | 22 | 18 | 28,25 | .4041 | ○ | ○ | ○ |
| | 1" | 33,25 | 11 | 160 | 24 | 25 | 20 | 30,75 | .4042 | ● | ● | ○ |
| | 1 1/8 | 37,90 | 11 | 170 | 24 | 28 | 22 | 35,5 | .4043 | | | |
| | 1 1/4 | 41,91 | 11 | 170 | 25 | 32 | 24 | 39,5 | .4044 | ○ | | |
| | 1 3/8 | 44,32 | 11 | 180 | 27 | 36 | 29 | 41,75 | .4045 | | | |
| | 1 1/2 | 47,80 | 11 | 190 | 27 | 36 | 29 | 45,25 | .4046 | ○ | | |
| | 1 5/8 | 52,00 | 11 | 190 | 27 | 40 | 32 | 49,5 | .4047 | | | |
| | 1 3/4 | 53,75 | 11 | 190 | 27 | 40 | 32 | 51 | .4048 | | | |
| | 2" | 59,61 | 11 | 220 | 32 | 45 | 35 | 57 | .4050 | | | |

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

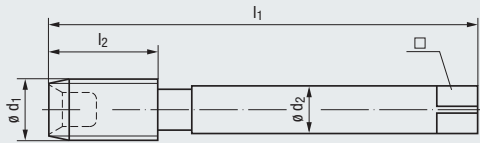
G (BSP)

DIN EN ISO 228



DIN 5156

Mit Spanglocke
With internal chip collector



Technische Informationen
Technical information

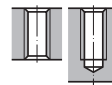
» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



Gewindetiefe und Lochform
Thread depth and hole type

max. 1,5 x d₁



Einsatzgebiete – Material
Applications – material

» 22

Werkzeug-Ident · Tool ident

| Werkzeug-Ident · Tool ident | | | | | | | | | | C0803001 | C0803101 |
|-----------------------------|------------------|------------------------|------------------|----------------|----------------|------------------|-------|-------|-------------------|------------------------|------------------------|
| Nenngröße Nom. size | Ø d ₁ | Ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | | Dimens.- Ident | Robust 2X-VA NE2 | Robust 2X-VA TIN |
| | | | | | | | | | | ● | ○ |
| G 1" | 33,25 | 11 | 160 | 30 | 25 | 20 | 30,75 | .4042 | ● | ○ | |
| 1 1/4" | 41,91 | 11 | 170 | 30 | 32 | 24 | 39,5 | .4044 | ● | ○ | |
| 1 1/2" | 47,80 | 11 | 190 | 32 | 36 | 29 | 45,25 | .4046 | ● | ○ | |
| 1 3/4" | 53,75 | 11 | 190 | 32 | 40 | 32 | 51 | .4048 | ● | ○ | |
| 2" | 59,61 | 11 | 220 | 40 | 45 | 35 | 57 | .4050 | ● | ○ | |
| 2 1/4" | 65,71 | 11 | 275 | 45 | 50 | 39 | 63,3 | .4051 | ● | ○ | |
| 2 1/2" | 75,18 | 11 | 275 | 45 | 50 | 39 | 72,8 | .4053 | ● | ○ | |
| 2 3/4" | 81,53 | 11 | 325 | 50 | 50 | 39 | 79,1 | .4054 | ● | ○ | |
| 3" | 87,88 | 11 | 325 | 50 | 50 | 39 | 85,5 | .4055 | ● | ○ | |

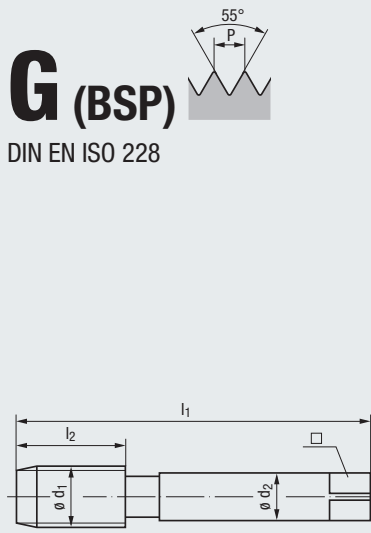
2) Bevorzugt mit Pastenschmierung einsetzen, neben Werkzeug auch Bohrungswandung einstreichen.
Ölschmierung ist nur bei senkrechter Grundlochbearbeitung möglich, wenn das Grundloch mit Öl vollgefüllt ist.
If possible, use paste lubrication, coating both the tool and the walls of the drilled hole.
Lubrication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

≥ G2" Schaft mit Griffrielen!
≥ G2" Shank with grooves for better handling!

- 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 (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



- Product Finder
- Vc
- 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
- Tech. Info



DIN 5157

STEEL
Steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

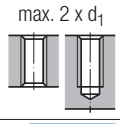
Technical information icon: 245 - 266

Technical drawing icon:

Water drop icon:

- „X“
- HSSE
- C / 2-3
- E / 0

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

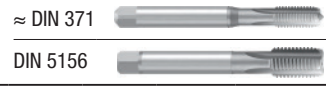
Applications icon: 22

- P 1.1-3.1
- N 2.3

Werkzeug-Ident · Tool ident

A0101001

| Nenngröße Nom. size | Dimensions | | | | | | | Dimens.- Ident | Rekord A-STEEL |
|------------------------|------------------|------------------------|------------------|----------------|----------------|------------------|-------|-------------------|-------------------|
| | Ø d ₁ | Ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | | |
| G 1/16 | 7,72 | 28 | 63 | 17 | 6 | 4,9 | 6,8 | .4034 | ○ |
| 1/8 | 9,73 | 28 | 63 | 18 | 7 | 5,5 | 8,8 | .4035 | ● |
| 1/4 | 13,16 | 19 | 70 | 20 | 11 | 9 | 11,8 | .4036 | ● |
| 3/8 | 16,66 | 19 | 70 | 20 | 12 | 9 | 15,25 | .4037 | ● |
| 1/2 | 20,96 | 14 | 80 | 22 | 16 | 12 | 19 | .4038 | ● |
| 5/8 | 22,91 | 14 | 80 | 22 | 18 | 14,5 | 21 | .4039 | ○ |
| 3/4 | 26,44 | 14 | 90 | 22 | 20 | 16 | 24,5 | .4040 | ● |
| 7/8 | 30,20 | 14 | 90 | 22 | 22 | 18 | 28,25 | .4041 | ○ |
| 1" | 33,25 | 11 | 100 | 25 | 25 | 20 | 30,75 | .4042 | ○ |
| 1 1/8 | 37,90 | 11 | 125 | 30 | 28 | 22 | 35,5 | .4043 | ○ |
| 1 1/4 | 41,91 | 11 | 125 | 30 | 32 | 24 | 39,5 | .4044 | ○ |
| 1 3/8 | 44,32 | 11 | 125 | 30 | 36 | 29 | 41,75 | .4045 | ○ |
| 1 1/2 | 47,80 | 11 | 140 | 30 | 36 | 29 | 45,25 | .4046 | ○ |
| 1 3/4 | 53,75 | 11 | 140 | 32 | 40 | 32 | 51 | .4048 | ○ |
| 2" | 59,61 | 11 | 160 | 36 | 45 | 35 | 57 | .4050 | ○ |



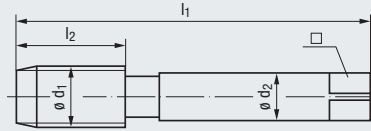
168

G (BSP)

DIN EN ISO 228



DIN 5157



Technische Informationen
Technical information

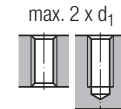
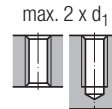
» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | | |
|---------|---------|---------|
| | „X“ | „X“ |
| HSSE | HSSE | HSSE |
| D / 3-4 | C / 2-3 | C / 2-3 |
| O / P | O / P | O / P |

Gewindetiefe und Lochform
Thread depth and hole type



P 1.1-3.1 P 1.1-3.1 P 1.1-3.1

Einsatzgebiete – Material
Applications – material

» 22

Werkzeug-Ident · Tool ident

| Nenngröße Nom. size | Ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | Ø | Dimens.- Ident | H0211009 | H0211001 | H0201001 |
|------------------------|------------------------|------------------|----------------|----------------|------------------|------|-------|-------------------|-------------------|--------------|----------------------------|
| | | | | | | | | | HGB-Set V-Nr.1 | HGB-Set F | HGB-Set 2S (Nr.1, F) |
| G 1/16 | 7,72 | 28 | 63 | 17 | 6 | 4,9 | 6,8 | .4034 | ● | ● | ● |
| 1/8 | 9,73 | 28 | 63 | 18 | 7 | 5,5 | 8,8 | .4035 | ● | ● | ● |
| 1/4 | 13,16 | 19 | 70 | 20 | 11 | 9 | 11,8 | .4036 | ● | ● | ● |
| 3/8 | 16,66 | 19 | 70 | 20 | 12 | 9 | 15,25 | .4037 | ● | ● | ● |
| 1/2 | 20,96 | 14 | 80 | 22 | 16 | 12 | 19 | .4038 | ● | ● | ● |
| 5/8 | 22,91 | 14 | 80 | 22 | 18 | 14,5 | 21 | .4039 | ○ | ○ | ○ |
| 3/4 | 26,44 | 14 | 90 | 22 | 20 | 16 | 24,5 | .4040 | ● | ● | ● |
| 7/8 | 30,20 | 14 | 90 | 22 | 22 | 18 | 28,25 | .4041 | ○ | ○ | ○ |
| 1" | 33,25 | 11 | 100 | 25 | 25 | 20 | 30,75 | .4042 | ○ | ○ | ○ |
| 1 1/8 | 37,90 | 11 | 125 | 30 | 28 | 22 | 35,5 | .4043 | ○ | ○ | ○ |
| 1 1/4 | 41,91 | 11 | 125 | 30 | 32 | 24 | 39,5 | .4044 | ○ | ○ | ○ |
| 1 3/8 | 44,32 | 11 | 125 | 30 | 36 | 29 | 41,75 | .4045 | ○ | ○ | ○ |
| 1 1/2 | 47,80 | 11 | 140 | 30 | 36 | 29 | 45,25 | .4046 | ○ | ○ | ○ |
| 1 3/4 | 53,75 | 11 | 140 | 32 | 40 | 32 | 51 | .4048 | ○ | ○ | ○ |
| 2" | 59,61 | 11 | 160 | 36 | 45 | 35 | 57 | .4050 | ○ | ○ | ○ |

- Product Finder
- Vc
- 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
- Tech. Info

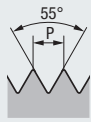


Verstellbare Windeisen siehe Seite 243

Adjustable tap wrenches, see page 243

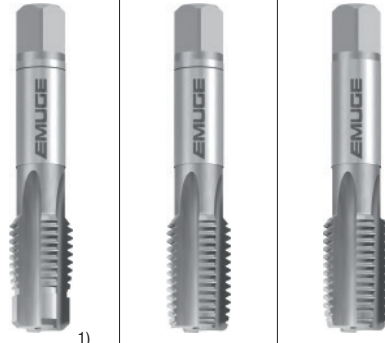
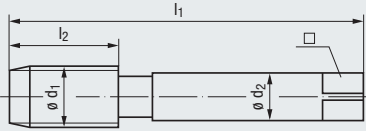
- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF UNEF
- G Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

G (BSP)



DIN EN ISO 228

DIN 5157



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

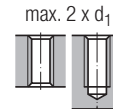


HSSE
C / 2-3
O / P

HSSE
C / 2-3
O / P

„X“
HSSE
C / 2-3
O / P

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

| | | |
|--------------|--------------|--------------|
| 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 |
| S 2.1-2, 2.4 | S 2.1-2, 2.4 | S 2.1-2, 2.4 |



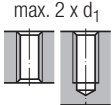
Werkzeug-Ident · Tool ident

H0463009 H0473009 H0473001

| Nenngröße Nom. size | Ø d ₁ | Ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | Ø | Dimens.- Ident |
|------------------------|------------------|------------------------|------------------|----------------|----------------|------------------|-------|--------------|-------------------|
| | | | | | | | | | |
| G 1/8 | 9,73 | 28 | 63 | 18 | 7 | 5,5 | 8,8 | .4035 | |
| 1/4 | 13,16 | 19 | 70 | 20 | 11 | 9 | 11,8 | .4036 | |
| 3/8 | 16,66 | 19 | 70 | 20 | 12 | 9 | 15,25 | .4037 | |
| 1/2 | 20,96 | 14 | 80 | 22 | 16 | 12 | 19 | .4038 | |
| 5/8 | 22,91 | 14 | 80 | 22 | 18 | 14,5 | 21 | .4039 | |
| 3/4 | 26,44 | 14 | 90 | 22 | 20 | 16 | 24,5 | .4040 | |
| 1" | 33,25 | 11 | 100 | 25 | 25 | 20 | 30,75 | .4042 | |

| WM-Set V-Nr.1Z | WM-Set V-Nr.1 | WM-Set F |
|-------------------|------------------|-------------|
| ● | ● | ● |
| ● | ● | ● |
| ● | ● | ● |
| ● | ● | ● |
| ● | ● | ● |
| ● | ● | ● |
| ○ | ○ | ○ |

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.

| | | | | |
|---|--|--|--|---|
|  <p>2)</p> |  | | | <p>Product Finder</p> <p>V_c</p> <p>M</p> <p>MF</p> <p>UNC UN-8</p> <p>UNF UNEF</p> <p>G, Rp NPSM, NPSF</p> <p>NPT, NPTF Rc, W</p> <p>BSW, BSF</p> <p>Pg</p> <p>MJ UNJC, UNJF</p> <p>EG (STI) SELF-LOCK</p> <p>Tr, Tr-F Rd</p> <p>Zubehör Accessories</p> <p>Tech. Info</p> |
| <p>„X“</p> <p>HSSE</p> <p>C / 2-3</p> <p>O / P</p> | <p>„X“</p> <p>HSSE</p> <p>C / 2-3</p> <p>O / P</p> | | | |
|  | | | | |
| <p>P 1.1-5.1</p> <p>M 1.1-4.1</p> <p>S 2.1-2, 2.4</p> | <p>P 1.1-5.1</p> <p>M 1.1-4.1</p> <p>S 2.1-2, 2.4</p> | | | |
| <p>H0453001</p> <p>WM-Set</p> <p>3S</p> <p>(Nr.1Z, Nr.1, F)</p> | <p>H0483001</p> <p>WM-Set</p> <p>2S</p> <p>(Nr.1, F)</p> | | | |
| <p>●</p> <p>●</p> <p>●</p> <p>●</p> <p>●</p> <p>○</p> | <p>●</p> <p>●</p> <p>●</p> <p>●</p> <p>●</p> <p>○</p> | | | <p>G 1/8 - 28</p> <p>1/4 - 19</p> <p>3/8 - 19</p> <p>1/2 - 14</p> <p>5/8 - 14</p> <p>3/4 - 14</p> <p>1" - 11</p> |

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

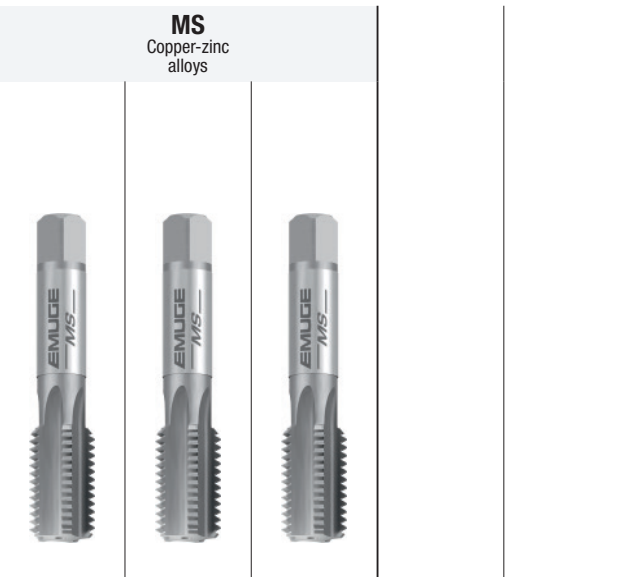
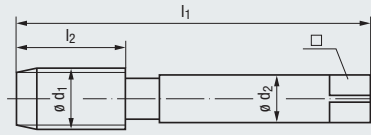
- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF UNEF
- G Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



DIN EN ISO 228

≈ DIN 5157

Für dünnwandige Messing-Rohre
For thin-walled brass tubes



| | | | | |
|--|---------------------------------|--------|--------------|-------------|
| Technische Informationen Technical information ▶ 245 - 266 | Toleranz · Tolerance | „X“ | „X“ +0,05 2) | „X“ +0,1 2) |
| | Beschichtung · Coating | HSSE | HSSE | HSSE |
| | Schneidstoff · Cutting material | max. 1 | max. 1 | max. 1 |
| | | E | E | E |

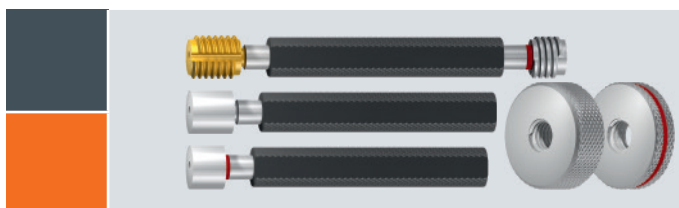
| | | | |
|---|-------------------------|--|--|
| Gewindetiefe und Lochform Thread depth and hole type | max. 1 x d ₁ | | |
| | | | |

| | | | |
|--|-----------|-----------|-----------|
| Einsatzgebiete – Material Applications – material ▶ 22 | N 2,3,2,6 | N 2,3,2,6 | N 2,3,2,6 |
|--|-----------|-----------|-----------|

| Werkzeug-Ident · Tool ident | | | | | | | | | | A6622501 | A6622531 | A662254A |
|-----------------------------|------------------|------------------------|------------------|----------------|----------------|------------------|------|-------|-------------------|---------------|---------------|---------------|
| Nenngröße Nom. size | Ø d ₁ | Ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | | Dimens.- Ident | AUT-A MS-R | AUT-A MS-R | AUT-A MS-R |
| | | | | | | | | | | | „+0,05“ | „+0,1“ |
| G | 1/8 | 9,73 | 28 | 63 | 18 | 7 | 5,5 | 8,8 | .4035 | ● | ● | ● |
| | 1/4 | 13,16 | 19 | 70 | 20 | 10 1) | 8 | 11,8 | .4036 | ● | ● | ● |
| | 3/8 | 16,66 | 19 | 70 | 20 | 12 | 9 | 15,25 | .4037 | ● | ● | ● |
| | 1/2 | 20,96 | 14 | 80 | 22 | 15 1) | 12 | 19 | .4038 | ● | ● | ● |
| | 3/4 | 26,44 | 14 | 90 | 22 | 18 1) | 14,5 | 24,5 | .4040 | ● | ● | ● |
| | 7/8 | 30,20 | 14 | 90 | 22 | 18 1) | 14,5 | 28,25 | .4041 | ● | ● | ● |
| | 1" | 33,25 | 11 | 100 | 25 | 18 1) | 14,5 | 30,75 | .4042 | ○ | ○ | ○ |
| | 1 1/8 | 37,90 | 11 | 125 | 30 | 18 1) | 14,5 | 35,5 | .4043 | ○ | ○ | ○ |
| | 1 1/4 | 41,91 | 11 | 125 | 30 | 18 1) | 14,5 | 39,5 | .4044 | ○ | ○ | ○ |
| | 1 3/8 | 44,32 | 11 | 125 | 30 | 18 1) | 14,5 | 41,75 | .4045 | ○ | ○ | ○ |
| | 1 1/2 | 47,80 | 11 | 140 | 30 | 18 1) | 14,5 | 45,25 | .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

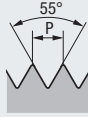


Gewindelehren
siehe Seite 581 - 654

Thread gauges,
see page 581 - 654

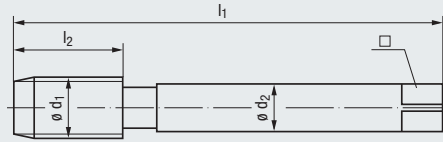
Rp (BSPP)

DIN EN 10226-1, ISO 7-1



DIN 5156

STEEL
Steel materials



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



„X“

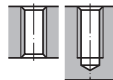
HSSE

C / 2-3

E / 0

Gewindetiefe und Lochform
Thread depth and hole type

max. 2 x d₁



Einsatzgebiete – Material
Applications – material

» 22

P 1.1-3.1
N 2.3

Werkzeug-Ident · Tool ident

C0101001

Nenngröße
Nom. size

| Rp | Ø d ₁ | Ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | Image | Dimens.- Ident | Rekord 2A-STEEL | | | | |
|------|------------------|------------------------|------------------|----------------|----------------|------------------|-----|-------|-------------------|--------------------|------|-------|---|--|
| | | | | | | | | | | | 6,55 | .4091 | ○ | |
| 1/16 | 7,72 | 7,72 | 28 | 90 | 17 | 6 | 4,9 | 6,55 | .4091 | ○ | | | | |
| 1/8 | 9,73 | 9,73 | 28 | 90 | 18 | 7 | 5,5 | 8,6 | .4092 | ● | | | | |
| 1/4 | 13,16 | 13,16 | 19 | 100 | 22 | 11 | 9 | 11,5 | .4093 | ● | | | | |
| 3/8 | 16,66 | 16,66 | 19 | 100 | 22 | 12 | 9 | 15 | .4094 | ● | | | | |
| 1/2 | 20,96 | 20,96 | 14 | 125 | 25 | 16 | 12 | 18,5 | .4095 | ● | | | | |
| 3/4 | 26,44 | 26,44 | 14 | 140 | 28 | 20 | 16 | 24 | .4096 | ● | | | | |
| 1" | 33,25 | 33,25 | 11 | 160 | 30 | 25 | 20 | 30,25 | .4097 | ● | | | | |

Zugehöriges Außengewinde ist kegelig, siehe Schneideisen Seite 493
The appropriate external thread is tapered, see dies, page 493

- 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 (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



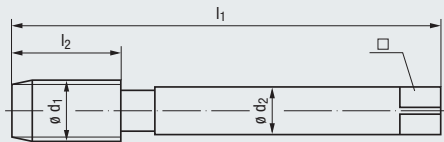
- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

Rp (BSPP)

DIN EN 10226-1, ISO 7-1



DIN 5156



Z
CNC-controlled machines



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | |
|-----------|-----------|
| HSSE | TIN |
| R45 | HSSE |
| E / 1,5-2 | R45 |
| E / O / P | E / 1,5-2 |
| | E / O / P |

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | |
|-----------|----------------|
| P 1.1-4.1 | P 1.1-4.1 |
| M 1.1-2.1 | M 1.1-3.1 |
| N 2.1 | N 1.4-6 |
| | N 2.1-2, 2.4-5 |
| S 1.1 | S 1.1 |

Werkzeug-Ident · Tool ident

C0513500 C0513700

| Nenngröße Nom. size | | | | | | | | | Dimens.- Ident | Enorm 2-Z/E | Enorm 2-Z/E TIN |
|------------------------|------------------------|------------------|----------------|----------------|------------------|-----|-------|-------|-------------------|----------------|-----------------------|
| Ø d ₁ | Ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | | | | | |
| Rp 1/16 | 7,72 | 28 | 90 | 10 | 6 | 4,9 | 6,55 | .4091 | ○ | ○ | |
| 1/8 | 9,73 | 28 | 90 | 10 | 7 | 5,5 | 8,6 | .4092 | ● | ● | |
| 1/4 | 13,16 | 19 | 100 | 15 | 11 | 9 | 11,5 | .4093 | ● | ● | |
| 3/8 | 16,66 | 19 | 100 | 15 | 12 | 9 | 15 | .4094 | ● | ● | |
| 1/2 | 20,96 | 14 | 125 | 17 | 16 | 12 | 18,5 | .4095 | ● | ● | |
| 3/4 | 26,44 | 14 | 140 | 20 | 20 | 16 | 24 | .4096 | ● | ○ | |
| 1" | 33,25 | 11 | 160 | 24 | 25 | 20 | 30,25 | .4097 | ● | ○ | |

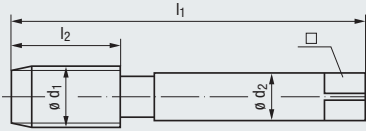
Zugehöriges Außengewinde ist kegelig, siehe Schneideisen Seite 493
The appropriate external thread is tapered, see dies, page 493

Rp (BSPP)
DIN EN 10226-1, ISO 7-1



≈ DIN 352

Für dünnwandige Messing-Rohre
For thin-walled brass tubes



MS
Copper-zinc alloys



Technische Informationen
Technical information

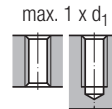
» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



„X“ „X“ +0,05 2)
HSSE HSSE
max. 1 max. 1
E E

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

N 2,3,2,6 N 2,3,2,6

Werkzeug-Ident · Tool ident

A6622501 A6622531

| Nenngröße Nom. size | Ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | Ø d ₁ | Ø d ₂ | Dimens.- Ident | AUT-A | AUT-A | | | |
|------------------------|------------------------|------------------|----------------|----------------|------------------|------|------------------|------------------|-------------------|-------|-------|--|--|--|
| | | | | | | | | | | MS-R | MS-R | | | |
| Rp 1/8 | 9,73 | 28 | 63 | 18 | 7 | 5,5 | 8,6 | 8,6 | .4092 | ○ | ○ | | | |
| 1/4 | 13,16 | 19 | 70 | 20 | 10 1) | 8 | 11,5 | 11,5 | .4093 | ○ | ○ | | | |
| 3/8 | 16,66 | 19 | 70 | 20 | 12 | 9 | 15 | 15 | .4094 | ○ | ○ | | | |
| 1/2 | 20,96 | 14 | 80 | 22 | 15 1) | 12 | 18,5 | 18,5 | .4095 | ○ | ○ | | | |
| 3/4 | 26,44 | 14 | 90 | 22 | 18 1) | 14,5 | 24 | 24 | .4096 | ○ | ○ | | | |
| 1" | 33,25 | 11 | 100 | 25 | 18 1) | 14,5 | 30,25 | 30,25 | .4097 | ○ | ○ | | | |

Zugehöriges Außengewinde ist kegelig, siehe Schneideisen Seite 493
The appropriate external thread is tapered, see dies, page 493

- 1) Spezieller AUT-Schaft
Special shank for "AUT" taps
- 2) Vorbohrdurchmesser für Gewindebohrer mit Übermaß um 0,05 anheben
Increase drill diameter for taps with oversize by 0.05 mm

- 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
- Tech. Info



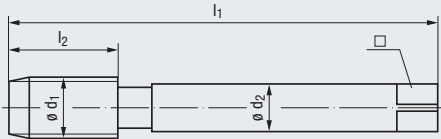
- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM NPSC
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

NPSM

ANSI B1.20.1



≈ DIN 5156



STEEL
Steel materials



Z
CNC-controlled machines



Technische Informationen
Technical information

» 245 - 266

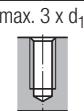
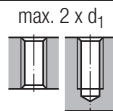
Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



- „X“
- HSSE
- C / 2-3
- E / 0

- TIN
- HSSE
- R45
- E / 1,5-2**
- E / 0 / P

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

- P 1.1-3.1
- N 2.3

- P 1.1-4.1
- M 1.1-2.1
- N 2.1
- N 1.4-6
- N 2.1-2, 2.4-5
- S 1.1

Werkzeug-Ident · Tool ident

C0101001

C0513500

C0513700

Nenngröße
Nom. size

| Ø d ₁ | Ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | Dimens.-Ident | |
|------------------|------------------------|------------------|----------------|----------------|------------------|-----|---------------|------|
| | | | | | | | NPSM | NPSC |
| 1/8 | 10,100 | 27 | 90 | 18 | 7 | 5,5 | 9,1 | 8,8 |
| 1/4 | 13,404 | 18 | 100 | 22 | 11 | 9 | 12 | 11,4 |
| 3/8 | 16,843 | 18 | 100 | 22 | 12 | 9 | 15,5 | 14,9 |
| 1/2 | 20,949 | 14 | 125 | 25 | 16 | 12 | 19 | 18,4 |
| 3/4 | 26,296 | 14 | 140 | 28 | 20 | 16 | 24,5 | 23,7 |
| 1" | 32,895 | 11 1/2 | 160 | 30 | 25 | 20 | 30,5 | 29,8 |

Rekord 2A-STEEL

Enorm 2-Z/E

Enorm 2-Z/E TIN

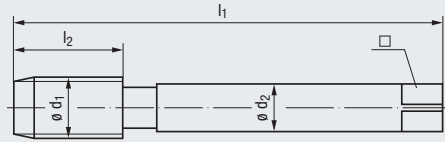
NPSM auch für NPSC verwendbar
NPSM can also be used for NPSC thread

NPSF

ANSI B1.20.3



≈ DIN 5156



STEEL
Steel materials



Z
CNC-controlled machines



Product Finder

Vc

M

MF

UNC UN-8

UNF UNEF

G, Rp NPSM **NPSF**

NPT, NPTF Rc, W

BSW, BSF

Pg

MJ UNJC, UNJF

EG (ST) SELF-LOCK

Tr, Tr-F Rd

Zubehör Accessories

Tech. Info

Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



„X“

HSSE

C / 2-3

E / O

TIN

HSSE

HSSE

R45

R45

E / 1,5-2

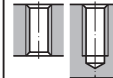
E / 1,5-2

E / O / P

E / O / P

Gewindetiefe und Lochform
Thread depth and hole type

max. 2 x d₁



max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

P 1.1-3.1

N 2.3

P 1.1-4.1

M 1.1-2.1

N 2.1

P 1.1-4.1

M 1.1-3.1

N 1.4-6

N 2.1-2, 2.4-5

S 1.1

Werkzeug-Ident · Tool ident

C0101001

C0513500

C0513700

Nenngröße
Nom. size

Dimens.-
Ident

Rekord
2A-STEEL

Enorm
2-Z/E

Enorm
2-Z/E
TIN

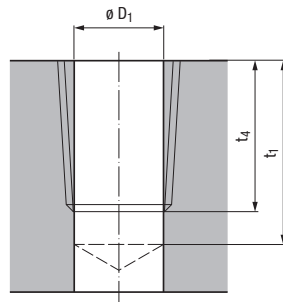
| Ø d ₁ | Ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | Ø d ₁ | Dimens.- Ident | Rekord 2A-STEEL | Enorm 2-Z/E | Enorm 2-Z/E TIN |
|------------------|------------------------|------------------|----------------|----------------|------------------|-----|------------------|-------------------|--------------------|----------------|-----------------------|
| 1/16 | 7,582 | 27 | 90 | 17 | 6 | 4,9 | 6,35 | .5904 | ● | ● | ● |
| 1/8 | 9,929 | 27 | 90 | 18 | 7 | 5,5 | 8,7 | .5905 | ● | ● | ● |
| 1/4 | 13,236 | 18 | 100 | 22 | 11 | 9 | 11,3 | .5906 | ● | ● | ● |
| 3/8 | 16,673 | 18 | 100 | 22 | 12 | 9 | 14,75 | .5907 | ● | ● | ● |
| 1/2 | 20,819 | 14 | 125 | 25 | 16 | 12 | 18,2 | .5908 | ● | ● | ● |
| 3/4 | 26,166 | 14 | 140 | 28 | 20 | 16 | 23,5 | .5909 | ○ | ○ | ○ |
| 1" | 32,718 | 11 1/2 | 160 | 30 | 25 | 20 | 29,5 | .5910 | ○ | ○ | ○ |

- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, R
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



ANSI/ASME B1.20.1

a) Zylindrisch vorarbeiten
Cylindrical preparation of thread hole

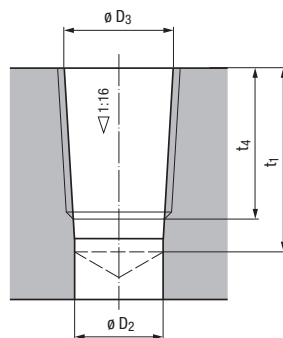


EMUGE NPT-Gewindebohrer sind für die Lochformen a) bis c) geeignet. Für Gewinde mit höheren Anforderungen, z.B. NPT-Gewinde für die Luftfahrt, empfehlen wir, das Kernloch nach Form b) bzw. c) auszuführen.

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 Nom. size $\varnothing d_1$ | P 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 |

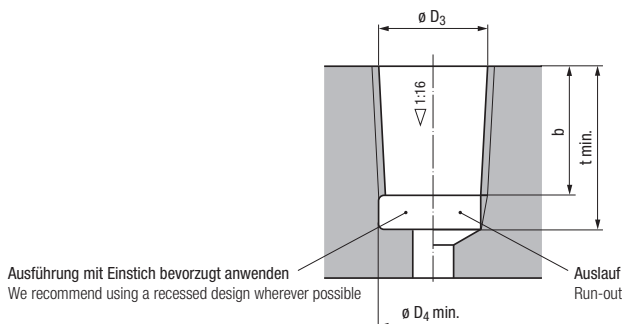
b) Kegelig vorarbeiten
Tapered preparation of thread hole



| Nenngröße Nom. size $\varnothing d_1$ | P Gg/1" (tpi) | $\varnothing D_2$ | $\varnothing D_3$ +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 |

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



| Nenngröße Nom. size $\varnothing d_1$ | P Gg/1" (tpi) | $\varnothing D_3$ +0,05 | b | t min. 2) | $\varnothing D_4$ 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 |

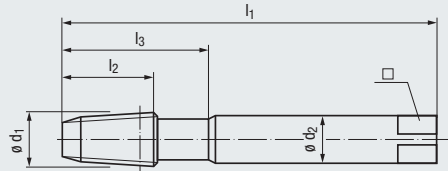
2) Die Kernlochmaße sind auf Minimallängen nach ASME-Norm aufgebaut. Für Grundlöcher, welche die angegebenen Mindestdiefen t nicht zulassen, sind Sondergewindebohrer erforderlich. Eine bemaßte Grundlochskizze ist zur Beurteilung notwendig. The thread hole dimensions are based on minimal lengths acc. 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.

NPT



ANSI/ASME B1.20.1

≈ DIN 371



STEEL
Steel materials



VA
Stainless steel materials



- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



HSSE
C / 2-3
E / O

HSSE
C / 2-3
E / O / P

HSSE
C / 2-3
E / O / P

Einsatzgebiete – Material
Applications – material

» 22

P 1.1-2.1
K 1.1-2
N 2.2-3

P 1.1-4.1
M 1.1-2.1
K 2.1-4.2
N 1.4-5, 2.4-6

P 1.1-4.1
M 1.1-3.1
K 2.1-4.2
N 2.4-6

Werkzeug-Ident · Tool ident

| Nenngröße Nom. size | | | | | | | Dimens.- Ident | B0181000 | B0183000 | B0193000 |
|------------------------|------------------|-------|-------|-------|-------------------|-----------|-------------------|--------------------------|-----------------------|--------------------------|
| $\varnothing d_1$ | P Gg/1" (tpi) | l_1 | l_2 | l_3 | $\varnothing d_2$ | \square | | Rekord 1-KEG STEEL | Rekord 1-KEG VA | Rekord 1-KEG VA-AZ |
| 1/16 | 27 | 90 | 12 | 26 | 8 | 6,2 | .5763 | ● | ● | ● |
| 1/8 | 27 | 90 | 12 | 26 | 10 | 8 | .5764 | ● | ● | ● |
| 1/4 | 18 | 100 | 18 | 34,5 | 14 | 11 | .5765 | ● | ● | ● |
| 3/8 | 18 | 110 | 18 | 37,5 | 18 | 14,5 | .5766 | | | |
| 1/2 | 14 | 140 | 23 | 45 | 22 | 18 | .5767 | | | |
| | | | | | | | ≈ DIN 374 | 187 | 187 | 187 |
| | | | | | | | ≈ DIN 2181 | 189 | | |

Gewindekernloch-Vorfertigungsdurchmesser für NPT-Gewinde siehe Seite 184
Thread hole preparatory diameters for NPT threads, see page 184

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

» 200

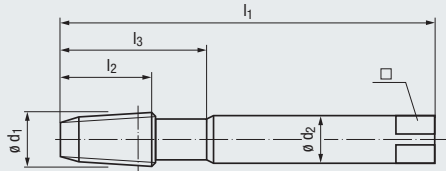
- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W**
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



NPT

ANSI/ASME B1.20.1

≈ DIN 371



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | |
|-----------|-----------|
| HSSE | HSSE |
| R35 | R35 |
| C / 2-3 | C / 2-3 |
| E / O / P | E / O / P |

| |
|----------------|
| TICN |
| HSSE-PM |
| R10 |
| C / 2-3 |
| O / P |



Einsatzgebiete – Material
Applications – material

» 22

| | |
|------------------|------------------|
| P 1.1-3.1 | P 1.1-3.1 |
| M 1.1-3.1 | M 1.1-3.1 |

| |
|---------------------|
| M 2.1-4.1 |
| S 2.3, 2.5-6 |

Werkzeug-Ident · Tool ident

| | | | | | | | | B1583000 | B1593000 | B670J400 | |
|------------------------|------------------|-------|-------|-------|-------------------|-----------|-------------------|---|------------------------------|--------------------------------------|--|
| Nenngröße Nom. size | | | | | | | | Rekord 1-KEG R35-VA | Rekord 1-KEG R35-VA-AZ | Rekord 1-KEG R10-NI PM-TICN | |
| $\varnothing d_1$ | P Gg/1" (tpi) | l_1 | l_2 | l_3 | $\varnothing d_2$ | \square | Dimens.- Ident | | | | |
| 1/16 | 27 | 90 | 12 | 26 | 8 | 6,2 | .5763 | ● | ● | | |
| 1/8 | 27 | 90 | 12 | 26 | 10 | 8 | .5764 | ● | ● | ○ | |
| 1/4 | 18 | 100 | 18 | 34,5 | 14 | 11 | .5765 | ● | ● | ○ | |
| 3/8 | 18 | 110 | 18 | 37,5 | 18 | 14,5 | .5766 | | | ○ | |
| 1/2 | 14 | 140 | 23 | 45 | 22 | 18 | .5767 | | | ○ | |
| ≈ DIN 374 | | | | | | | |  | » 188 | » 188 | |
| ≈ DIN 2181 | | | | | | | |  | | | |

Gewidekernloch-Vorfertigungsdurchmesser für NPT-Gewinde siehe Seite 184
Thread hole preparatory diameters for NPT threads, see page 184

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

» 200



Schneideisen für kegelige
Außengewinde siehe Seite 491 - 493

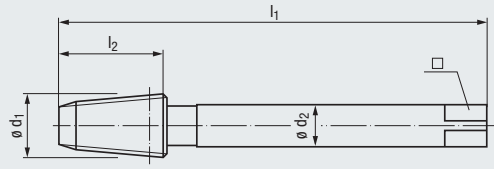
Dies for external tapered threads,
see page 491 - 493

NPT



ANSI/ASME B1.20.1

≈ DIN 374



STEEL
Steel materials



VA
Stainless steel materials



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | | |
|---------|-----------|-----------|
| HSSE | HSSE | HSSE |
| C / 2-3 | C / 2-3 | C / 2-3 |
| E / 0 | E / 0 / P | E / 0 / P |

Einsatzgebiete – Material
Applications – material

» 22

| | | |
|------------------|-----------------------|------------------|
| P 1.1-2.1 | P 1.1-4.1 | P 1.1-4.1 |
| K 1.1-2 | M 1.1-2.1 | M 1.1-3.1 |
| N 2.2-3 | K 2.1-4.2 | K 2.1-4.2 |
| | N 1.4-5, 2.4-6 | N 2.4-6 |

Werkzeug-Ident · Tool ident

| | | | | | | | C0181000 | C0183000 | C0193000 |
|------------------------|------------------|----------------|----------------|------------------|----|-------------------|--------------------------|-----------------------|--------------------------|
| Nenngröße Nom. size | | | | | | | Rekord 2-KEG STEEL | Rekord 2-KEG VA | Rekord 2-KEG VA-AZ |
| Ø d ₁ | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | Dimens.- Ident | | | |
| 3/8 | 18 | 110 | 18 | 14 | 11 | .5766 | ● | ● | |
| 1/2 | 14 | 140 | 23 | 16 | 12 | .5767 | ● | ● | |
| 3/4 | 14 | 150 | 24 | 20 | 16 | .5768 | ● | ● | |
| 1" | 11 1/2 | 170 | 30 | 25 | 20 | .5769 | ● | ● | |
| 1 1/4 | 11 1/2 | 190 | 32 | 32 | 24 | .5770 | ○ | | |
| 1 1/2 | 11 1/2 | 200 | 32 | 36 | 29 | .5771 | ○ | | |
| 2" | 11 1/2 | 220 | 34 | 45 | 35 | .5772 | ○ | | |
| ≈ DIN 371 | | | | | | | » 185 | » 185 | » 185 |
| ≈ DIN 2181 | | | | | | | » 189 | | |

Gewindekernloch-Vorfertigungsdurchmesser für NPT-Gewinde siehe Seite 184
Thread hole preparatory diameters for NPT threads, see page 184

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 » 200

- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



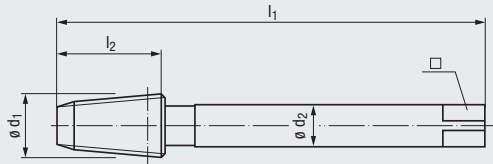
- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF** Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



NPT

ANSI/ASME B1.20.1

≈ DIN 374



VA
Stainless steel materials



Technische Informationen
Technical information

245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | |
|-----------|-----------|
| HSSE | HSSE |
| R35 | R35 |
| C / 2-3 | C / 2-3 |
| E / O / P | E / O / P |

Einsatzgebiete – Material
Applications – material

22

| | |
|-----------|-----------|
| P 1.1-3.1 | P 1.1-3.1 |
| M 1.1-3.1 | M 1.1-3.1 |

Werkzeug-Ident · Tool ident

| Nenngröße Nom. size | P Gg/1" (tpi) | l_1 | l_2 | $\varnothing d_2$ | \square | Dimens.- Ident | C1583000 | C1593000 |
|------------------------|------------------|-------|-------|-------------------|-----------|-------------------|---------------------------|------------------------------|
| | | | | | | | Rekord 2-KEG R35-VA | Rekord 2-KEG R35-VA-AZ |
| 3/8 | 18 | 110 | 18 | 14 | 11 | .5766 | ● | ● |
| 1/2 | 14 | 140 | 23 | 16 | 12 | .5767 | ● | ● |
| 3/4 | 14 | 150 | 24 | 20 | 16 | .5768 | ● | ● |
| 1" | 11 1/2 | 170 | 30 | 25 | 20 | .5769 | ● | ● |
| 1 1/4 | 11 1/2 | 190 | 32 | 32 | 24 | .5770 | ○ | ○ |
| 1 1/2 | 11 1/2 | 200 | 32 | 36 | 29 | .5771 | ○ | ○ |
| 2" | 11 1/2 | 220 | 34 | 45 | 35 | .5772 | ○ | ○ |

≈ DIN 371



186

186

≈ DIN 2181



Gewidekernloch-Vorfertigungsdurchmesser für NPT-Gewinde siehe Seite 184
Thread hole preparatory diameters for NPT threads, see page 184

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

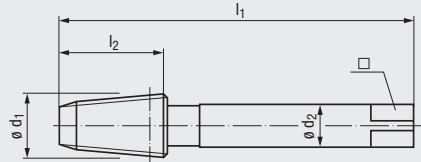
200

NPT



ANSI/ASME B1.20.1

≈ DIN 2181



STEEL
Steel materials



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | |
|---------|---------|
| HSSE | HSSE |
| C / 2-3 | C / 2-3 |
| E / 0 | E / 0 |

Einsatzgebiete – Material
Applications – material

» 22

| | |
|-----------|-----------|
| P 1.1-2.1 | P 1.1-2.1 |
| K 1.1-2 | K 1.1-2 |
| N 2.2-3 | N 2.2-3 |

Werkzeug-Ident · Tool ident

| Nenngröße Nom. size | | | | | | | Dimens.- Ident | A0181000 | A0191000 |
|------------------------|------------------|----------------|----------------|------------------|-----|------------------------|-------------------|---------------------------|----------|
| Ø d ₁ | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | Rekord KEG STEEL | | Rekord KEG STEEL-AZ | |
| 1/16 | 27 | 63 | 12 | 6 | 4,9 | .5763 | ● | ○ | |
| 1/8 | 27 | 63 | 12 | 7 | 5,5 | .5764 | ● | ○ | |
| 1/4 | 18 | 63 | 18 | 11 | 9 | .5765 | ● | ● | |
| 3/8 | 18 | 70 | 18 | 12 | 9 | .5766 | ● | ● | |
| 1/2 | 14 | 80 | 23 | 16 | 12 | .5767 | ● | ● | |
| 3/4 | 14 | 100 | 24 | 20 | 16 | .5768 | ● | ● | |
| 1" | 11 1/2 | 110 | 30 | 25 | 20 | .5769 | ● | ○ | |
| 1 1/4 | 11 1/2 | 125 | 32 | 32 | 24 | .5770 | ○ | ○ | |
| 1 1/2 | 11 1/2 | 140 | 32 | 36 | 29 | .5771 | ○ | ○ | |
| 2" | 11 1/2 | 160 | 34 | 45 | 35 | .5772 | ○ | ○ | |
| ≈ DIN 371 | | | | | | | | » 185 | |
| ≈ DIN 374 | | | | | | | | » 187 | |

Gewindekernloch-Vorfertigungsdurchmesser für NPT-Gewinde siehe Seite 184
Thread hole preparatory diameters for NPT threads, see page 184

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

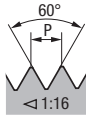
» 200

- 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
- Tech. Info



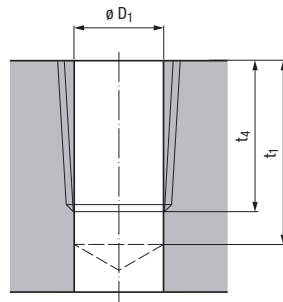
- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

NPTF



ANSI B1.20.3

a) Zylindrisch vorarbeiten Cylindrical preparation of thread hole

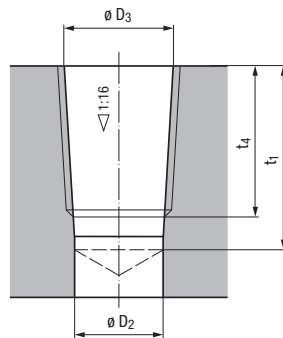


EMUGE NPTF-Gewindebohrer sind für die Lochformen a) bis c) geeignet. Für Gewinde mit höheren Anforderungen, z.B. NPTF-Gewinde für die Luftfahrt, empfehlen wir, das Kernloch nach Form b) bzw. c) auszuführen.

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 Nom. size $\varnothing d_1$ | P 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 |

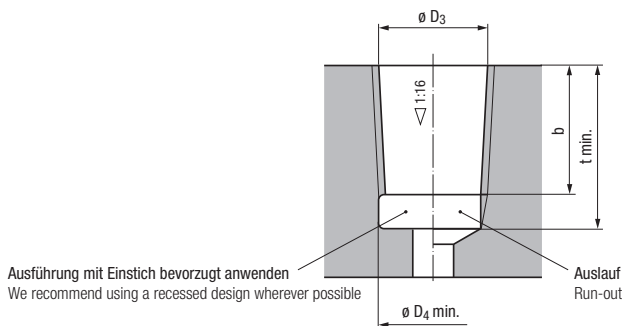
b) Kegelig vorarbeiten Tapered preparation of thread hole



| Nenngröße Nom. size $\varnothing d_1$ | P Gg/1" (tpi) | $\varnothing D_2$ | $\varnothing D_3$ +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 |

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



| Nenngröße Nom. size $\varnothing d_1$ | P Gg/1" (tpi) | $\varnothing D_3$ +0,05 | b | t min. 2) | $\varnothing D_4$ 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 |

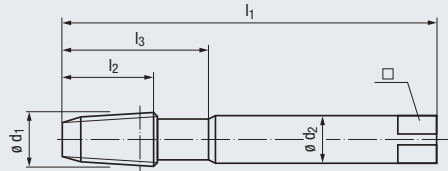
2) Die Kernlochmaße sind auf Minimallängen nach ASME-Norm aufgebaut. Für Grundlöcher, welche die angegebenen Mindestdiefen t nicht zulassen, sind Sondergewindebohrer erforderlich. Eine bemaßte Grundlochskizze ist zur Beurteilung notwendig. The thread hole dimensions are based on minimal lengths acc. 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.

NPTF

ANSI B1.20.3



≈ DIN 371



STEEL
Steel materials



VA
Stainless steel materials



NI
Nickel alloys



Product Finder

Vc

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

Tech. Info

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information ▶▶ 245 - 266



HSSE

C / 2-3

E / 0

HSSE

C / 2-3

E / 0 / P

HSSE

R35

C / 2-3

E / 0 / P

TICN

HSSE-PM

R10

C / 2-3

O / P

Einsatzgebiete – Material
Applications – material ▶▶ 22

P 1.1-2.1

K 1.1-2

N 2.2-3

P 1.1-4.1

M 1.1-2.1

K 2.1-4.2

N 1.4-5, 2.4-6

P 1.1-3.1

M 1.1-3.1

M 2.1-4.1

S 2.3, 2.5-6

Werkzeug-Ident · Tool ident

| Nenngröße Nom. size | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | Dimens.- Ident | Werkzeug-Ident · Tool ident | | | | |
|------------------------|------------------|----------------|----------------|----------------|------------------|------|-------------------|-----------------------------|----------|----------|----------|--|
| | | | | | | | | B0181000 | B0183000 | B1583000 | B670J400 | |
| 1/16 | 27 | 90 | 12 | 26 | 8 | 6,2 | .5782 | ● | ● | ● | ○ | |
| 1/8 | 27 | 90 | 12 | 26 | 10 | 8 | .5783 | ● | ● | ● | ○ | |
| 1/4 | 18 | 100 | 18 | 34,5 | 14 | 11 | .5784 | ● | ● | ● | ○ | |
| 3/8 | 18 | 110 | 18 | 37,5 | 18 | 14,5 | .5785 | | | | ○ | |
| 1/2 | 14 | 140 | 23 | 45 | 22 | 18 | .5786 | | | | ○ | |
| ≈ DIN 374 | | | | | | | | | 192 | 192 | 192 | |
| ≈ DIN 2181 | | | | | | | | | 193 | | | |

Gewindekernloch-Vorfertigungsdurchmesser für NPTF-Gewinde siehe Seite 190
Thread hole preparatory diameters for NPTF threads, see page 190

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 ▶▶ 200
Taper reamers 1:16 for tapered threads

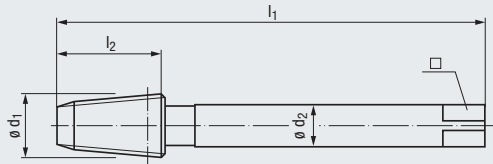
- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

NPTF



≈ DIN 374

ANSI B1.20.3



STEEL
Steel materials



VA
Stainless steel materials



Technische Informationen
Technical information

➔ 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



HSSE

HSSE

HSSE

C / 2-3

C / 2-3

C / 2-3

E / O

E / O / P

E / O / P

Einsatzgebiete – Material
Applications – material

➔ 22

- P 1.1-2.1
- K 1.1-2
- N 2.2-3

- P 1.1-4.1
- M 1.1-2.1
- K 2.1-4.2
- N 1.4-5, 2.4-6

- P 1.1-3.1
- M 1.1-3.1

Werkzeug-Ident · Tool ident

| Nenngröße Nom. size | | | | | | | Dimens.- Ident | C0181000 | C0183000 | C1583000 |
|------------------------|------------------|----------------|----------------|------------------|----|--------------------------|-------------------|-----------------------|---------------------------|----------|
| Ø d ₁ | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | Rekord 2-KEG STEEL | | Rekord 2-KEG VA | Rekord 2-KEG R35-VA | |
| 3/8 | 18 | 110 | 18 | 14 | 11 | .5785 | ● | ● | ● | |
| 1/2 | 14 | 140 | 23 | 16 | 12 | .5786 | ● | ● | ● | |
| 3/4 | 14 | 150 | 24 | 20 | 16 | .5787 | ● | ● | ● | |
| 1" | 11 1/2 | 170 | 30 | 25 | 20 | .5788 | ○ | ○ | ○ | |
| 1 1/4 | 11 1/2 | 190 | 32 | 32 | 24 | .5789 | ○ | ○ | ○ | |
| 1 1/2 | 11 1/2 | 200 | 32 | 36 | 29 | .5790 | ○ | ○ | ○ | |
| 2" | 11 1/2 | 220 | 34 | 45 | 35 | .5791 | ○ | ○ | ○ | |
| ≈ DIN 371 | | | | | | | | 191 | 191 | 191 |
| ≈ DIN 2181 | | | | | | | | 193 | | |

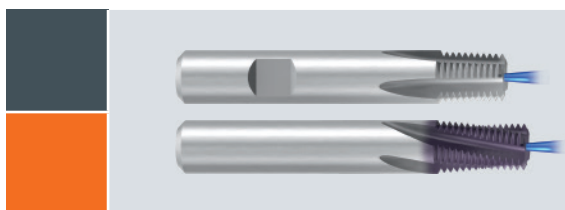
Gewindekernloch-Vorfertigungsdurchmesser für NPTF-Gewinde siehe Seite 190
Thread hole preparatory diameters for NPTF threads, see page 190

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

➔ 200



Gewindefräser für kegelige Gewinde
Typ GF-KEG siehe Seite 399 - 412

Thread milling cutters for tapered threads
type GF-KEG, see page 399 - 412

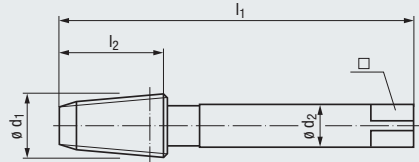
NPTF

ANSI B1.20.3



≈ DIN 2181

STEEL
Steel materials



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



HSSE

C / 2-3

E / 0

Einsatzgebiete – Material
Applications – material

» 22

P 1.1-2.1

K 1.1-2

N 2.2-3

Werkzeug-Ident · Tool ident

A0181000

Nenngröße
Nom. size

Dimens.-
Ident

**Rekord
KEG
STEEL**

| $\varnothing d_1$ | P Gg/1" (tpi) | l_1 | l_2 | $\varnothing d_2$ | \square | Dimens.- Ident | Rekord KEG STEEL |
|-------------------|------------------|-------|-------|-------------------|-----------|-------------------|------------------------|
| 1/16 | 27 | 63 | 12 | 6 | 4,9 | .5782 | ● |
| 1/8 | 27 | 63 | 12 | 7 | 5,5 | .5783 | ● |
| 1/4 | 18 | 63 | 18 | 11 | 9 | .5784 | ● |
| 3/8 | 18 | 70 | 18 | 12 | 9 | .5785 | ● |
| 1/2 | 14 | 80 | 23 | 16 | 12 | .5786 | ● |
| 3/4 | 14 | 100 | 24 | 20 | 16 | .5787 | ● |
| 1" | 11 1/2 | 110 | 30 | 25 | 20 | .5788 | ○ |
| 1 1/4 | 11 1/2 | 125 | 32 | 32 | 24 | .5789 | ○ |
| 1 1/2 | 11 1/2 | 140 | 32 | 36 | 29 | .5790 | ○ |
| 2" | 11 1/2 | 160 | 34 | 45 | 35 | .5791 | ○ |

≈ DIN 371



» 191

≈ DIN 374



» 192

Gewindekernloch-Vorfertigungsdurchmesser für NPTF-Gewinde siehe Seite 190
Thread hole preparatory diameters for NPTF threads, see page 190

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

» 200



- Product Finder
- Vc
- 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
- Tech. Info

Rc (BSPT)

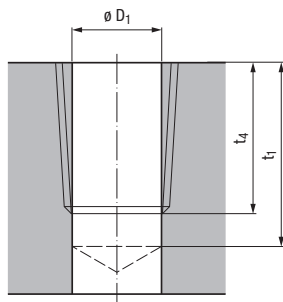
DIN EN 10226-2, ISO 7-1



EMUGE Rc-Gewindebohrer sind für die Lochformen a) bis c) geeignet. Die Lochform a) kann angewendet werden, wenn keine Dichtprobleme zu befürchten sind.

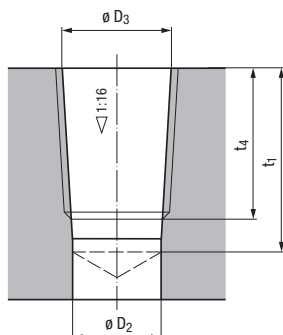
EMUGE Rc taps are suited for the hole forms a) to c). Hole type a) can be used when there is no reason to worry about sealing problems.

a) Zylindrisch vorarbeiten
Cylindrical preparation of thread hole



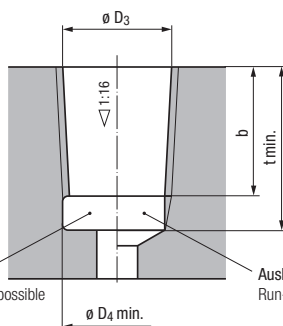
| Nenngröße Nom. size $\varnothing d_1$ | P Gg/1" (tpi) | $\varnothing D_1$ | t_1 | t_4 |
|---|------------------|-------------------|-------|-------|
| Rc 1/16 | 28 | 6,15 | 11,1 | 9,5 |
| 1/8 | 28 | 8,15 | 11,1 | 9,5 |
| 1/4 | 19 | 10,85 | 16,3 | 14,0 |
| 3/8 | 19 | 14,30 | 16,7 | 14,4 |
| 1/2 | 14 | 17,80 | 22,3 | 19,1 |
| 3/4 | 14 | 23,20 | 23,6 | 20,4 |
| 1" | 11 | 29,20 | 28,3 | 24,3 |

b) Kegelig vorarbeiten
Tapered preparation of thread hole



| Nenngröße Nom. size $\varnothing d_1$ | P Gg/1" (tpi) | $\varnothing D_2$ | $\varnothing D_3$ JS11 | t_1 | t_4 |
|---|------------------|-------------------|---------------------------|-------|-------|
| Rc 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 |

c) Vorarbeiten von Grundlöchern
Preparation of blind holes



| Nenngröße Nom. size $\varnothing d_1$ | P Gg/1" (tpi) | $\varnothing D_3$ JS11 | b | t min. ²⁾ | $\varnothing D_4$ min. |
|---|------------------|---------------------------|------|-------------------------|---------------------------|
| Rc 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} |

2) Für Grundlöcher, welche die angegebenen Mindesttiefen 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.

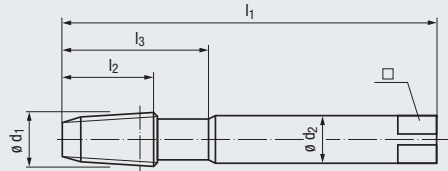
Rc (BSPT)

DIN EN 10226-2, ISO 7-1



≈ DIN 371

VA
Stainless steel materials



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



HSSE

C / 2-3

E / O / P

Einsatzgebiete – Material
Applications – material

» 22

- P** 1.1-4.1
- M** 1.1-2.1
- K** 2.1-4.2
- N** 1.4-5, 2.4-6

Werkzeug-Ident · Tool ident

B0183000

| Nenngröße Nom. size | P | | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | Dimens.- Ident | Rekord 1-KEG VA |
|------------------------|------------------|-------------|----------------|----------------|----------------|------------------|----|-------------------|-----------------------|
| | ø d ₁ | Gg/1" (tpi) | | | | | | | |
| Rc 1/8 | 28 | 28 | 90 | 12 | 26 | 10 | 8 | .4115 | ● |
| 1/4 | 19 | 19 | 100 | 18 | 34,5 | 14 | 11 | .4116 | ● |

≈ DIN 374



» 196

Gewindekernloch-Vorfertigungsdurchmesser für Rc-Gewinde siehe Seite 194
Thread hole preparatory diameters for Rc threads, see page 194



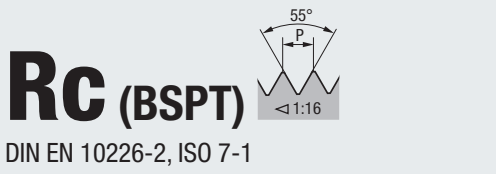
Kegelreibahlen 1:16 für kegelige Gewinde
Taper reamers 1:16 for tapered threads

» 200

- Product Finder
- Vc
- 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
- Tech. Info

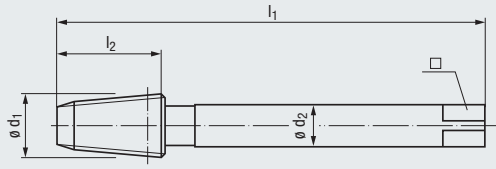


- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



≈ DIN 374

VA
Stainless steel materials



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

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



Einsatzgebiete – Material
Applications – material

» 22

- P 1.1-4.1
- M 1.1-2.1
- K 2.1-4.2
- N 1.4-5, 2.4-6

Werkzeug-Ident · Tool ident

C0183000

| Nenngröße Nom. size | P Gg/1" (tpi) | Dimens.-Ident | | | | Rekord 2-KEG VA |
|------------------------|------------------|---------------|-------|-------------------|-----------|-----------------|
| | | 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



» 195

Gewindekernloch-Vorfertigungsdurchmesser für Rc-Gewinde siehe Seite 194
Thread hole preparatory diameters for Rc threads, see page 194



Kegelreibahlen 1:16 für kegelige Gewinde
Taper reamers 1:16 for tapered threads

» 200

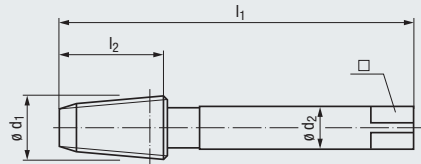
Rc (BSPT)

DIN EN 10226-2, ISO 7-1



≈ DIN 2181

STEEL
Steel materials



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



HSSE

C / 2-3

E / 0

Einsatzgebiete – Material
Applications – material

» 22

P 1.1-2.1

K 1.1-2

N 2.2-3

Werkzeug-Ident · Tool ident

A0181000

| Nenngröße Nom. size | P | | | | | | Dimens.- Ident | Rekord KEG STEEL |
|------------------------|------------------|-------------|----------------|----------------|------------------|-----|-------------------|------------------------|
| | ø d ₁ | Gg/1" (tpi) | l ₁ | l ₂ | ø d ₂ | □ | | |
| Rc | 1/16 | 28 | 63 | 12 | 6 | 4,9 | .4114 | ○ |
| | 1/8 | 28 | 63 | 12 | 7 | 5,5 | .4115 | ● |
| | 1/4 | 19 | 63 | 18 | 11 | 9 | .4116 | ● |
| | 3/8 | 19 | 70 | 18 | 12 | 9 | .4117 | ● |
| | 1/2 | 14 | 80 | 23 | 16 | 12 | .4118 | ● |
| | 3/4 | 14 | 100 | 24 | 20 | 16 | .4119 | ● |
| | 1" | 11 | 110 | 30 | 25 | 20 | .4120 | ● |

Gewindekernloch-Vorfertigungsdurchmesser für Rc-Gewinde siehe Seite 194
Thread hole preparatory diameters for Rc threads, see page 194



Kegelreibahlen 1:16 für kegelige Gewinde
Taper reamers 1:16 for tapered threads

» 200

Product Finder

Vc

M

MF

UNC
UN-8

UNF
UNEF

G, Rp
NPSM, NPSF

NPT, NPTF
Rc W

BSW, BSF

Pg

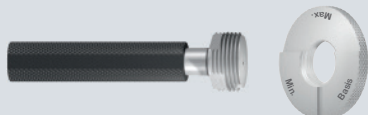
MJ
UNJC, UNJF

EG (STI)
SELF-LOCK

Tr, Tr-F
Rd

Zubehör
Accessories

Tech. Info



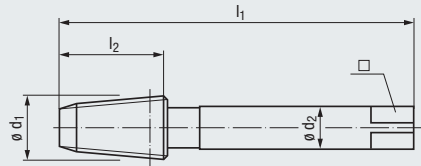
Gewindelehren für kegelige Gewinde
siehe Seite 611 - 613

Thread gauges for tapered threads,
see page 611 - 613

- Product Finder
- Vc
- 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
- Tech. Info

W keg

DIN EN ISO 11363
DIN 477 kegelig · tapered



STEEL
Steel materials



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



HSSE

C / 2-3

E / 0

P 1.1-2.1

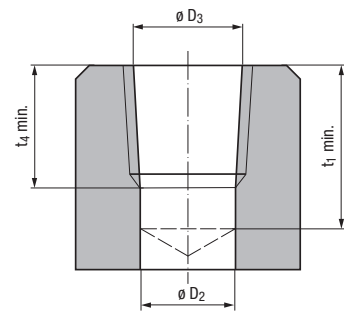
K 1.1-2

N 2.2-3

Einsatzgebiete – Material
Applications – material

» 22

Kegelig vorarbeiten
Tapered preparation of the thread hole



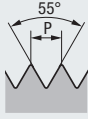
Werkzeug-Ident · Tool ident

A0181000

| $\varnothing d_1$ | P Gg/1" (tpi) | l_1 | l_2 | $\varnothing d_2$ | \square | Dimens.- Ident | Rekord KEG STEEL | $\varnothing D_2$ | $\varnothing D_3$ $\pm 0,06$ | t_1 min. | t_4 min. |
|-------------------|------------------|-------|-------|-------------------|-----------|-------------------|------------------------|-------------------|---------------------------------|---------------|---------------|
| 17E / W 19,8 | 14 | 95 | 30 | 16 | 12 | .3286 | ○ | 14,6 | 16,82 | 24,5 | 22,5 |
| 25E / W 28,8 | 14 | 100 | 35 | 22 | 18 | .3287 | ○ | 22,6 | 25,42 | 29,5 | 27,5 |

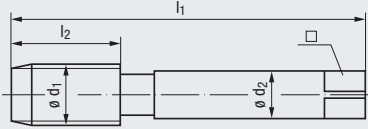
W zyl

DIN 477 zylindrisch · cylindrical



≈ DIN 5157

MS
Copper-zinc alloys



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



„X“

HSSE

C / 2-3

E

Gewindetiefe und Lochform
Thread depth and hole type

max. 2 x d₁




Einsatzgebiete – Material
Applications – material

» 22

N 2.3

Werkzeug-Ident · Tool ident

A0102501

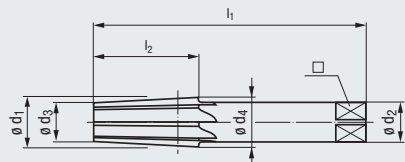
| W | ø d ₁ | P Gg/1" (tpi) | l ₁ | l ₂ | ø d ₂ | □ |  Dimens.-Ident | Rekord A-MS | | | | | |
|---|------------------|------------------|----------------|----------------|------------------|------|---|-------------|---|--|--|--|--|
| | | | | | | | | | ○ | | | | |
| | 21,8 | 14 | 80 | 22 | 18 | 14,5 | 19,8 | .3284 | ○ | | | | |
| | 24,32 | 14 | 90 | 22 | 18 | 14,5 | 22,3 | .3285 | ○ | | | | |

- 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 (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

Für konische Gewinde NPT, NPTF, Rc (BSPT), Kegel 1:16
 For tapered pipe threads NPT, NPTF, Rc (BSPT), taper 1:16

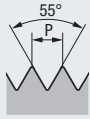


| Technische Informationen Technical information | | Schneidstoff · Cutting material | | | | | | | | |
|---|------------------|---------------------------------|--------------------|----|----|-----|----|-------|---|---|
| Werkzeug-Ident · Tool ident | | G0037165 | G0037175 | | | | | | | |
| Nenngröße Nom. size | | KEG-RB 1:16 Form A | KEG-RB 1:16 Form B | | | | | | | |
| Ø d ₁ | Ø d ₃ | | | | | | | | | |
| | -0,05 | | | | | | | | | |
| Ø d ₄ | l ₁ | | | | | | | | | |
| | l ₂ | | | | | | | | | |
| Ø d ₂ | □ | | | | | | | | | |
| Z | | | | | | | | | | |
| | | Dimens.-Ident | | | | | | | | |
| 1/16 | 5,95 | 7,0 | 70 | 17 | 6 | 4,9 | 6 | .5763 | ● | ● |
| 1/8 | 8,05 | 9,1 | 70 | 17 | 7 | 5,5 | 6 | .5764 | ● | ● |
| 1/4 | 10,30 | 12,0 | 80 | 27 | 11 | 9 | 6 | .5765 | ● | ● |
| 3/8 | 13,75 | 15,4 | 85 | 27 | 12 | 9 | 8 | .5766 | ● | ● |
| 1/2 | 16,95 | 19,1 | 95 | 35 | 16 | 12 | 8 | .5767 | ● | ● |
| 3/4 | 22,25 | 24,5 | 105 | 35 | 20 | 16 | 10 | .5768 | ● | ● |
| 1" | 28,00 | 30,7 | 130 | 43 | 25 | 20 | 10 | .5769 | ● | ● |
| 1 1/4 | 36,75 | 39,5 | 140 | 44 | 32 | 24 | 12 | .5770 | ● | ● |
| 1 1/2 | 42,80 | 45,6 | 150 | 45 | 36 | 29 | 12 | .5771 | ● | ● |
| 2" | 54,80 | 57,7 | 160 | 46 | 45 | 35 | 14 | .5772 | ● | ● |

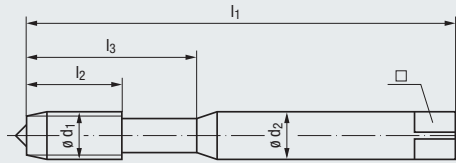
Achtung! Die Reibahlen sind ggf. durch Kürzung von vorne der aktuellen Lochtiefe anzupassen.
 Please note: If needed, the reamers can be fitted to the required hole depth by shortening the cutting part.

BSW

BS 84



≈ DIN 371



STEEL
Steel materials



$l_2 \approx 10 \times P$

VA
Stainless steel materials



Product Finder

Vc

M

MF

UNC UN-8

UNF UNEF

G, Rp NPSM, NPSF

NPT, NPTF Rc, W

BSW, BSF

Pg

MJ UNJC, UNJF

EG (ST) SELF-LOCK

Tr, Tr-F Rd

Zubehör Accessories

Tech. Info

Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



med.

HSSE

R35

C / 2-3

E / O

med.

NT

HSSE

B / 4-5

E / O / P

med.

TIN

HSSE

B / 4-5

E / O / P

med.

GLT-1

HSSE

B / 4-5

E / O / P

Gewindetiefe und Lochform
Thread depth and hole type

max. 2,5 x d₁



max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

P 1.1-3.1
N 2.2

P 1.1-3.1
M 1.1-2.1
K 2.1
N 2.2, 2.5-6

P 1.1-4.1
M 1.1-3.1
K 2.1
N 2.2, 2.5-6

P 1.1-4.1
M 1.1-3.1
K 2.1
N 2.2

Werkzeug-Ident · Tool ident

B0501000

B0203000

B0203100

B020C300

| | Ø d ₁ | | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | Image | Dimens.-Ident | Tool Ident | | | |
|------------|------------------|------|------------------|----------------|----------------|----------------|------------------|-----|-------|---------------|---------------|-----------------|------------------|--------------------|
| | inch | mm | | | | | | | | | Enorm 1-STEEL | Rekord 1B-VA NT | Rekord 1B-VA TIN | Rekord 1B-VA GLT-1 |
| BSW | 1/8 | 3,18 | 40 | 56 | 11 | 18 | 3,5 | 2,7 | 2,55 | .3046 | ○ | ● | ● | ○ |
| | 5/32 | 3,97 | 32 | 63 | 13 | 21 | 4,5 | 3,4 | 3,2 | .3047 | ○ | ● | ○ | ○ |
| | 3/16 | 4,76 | 24 | 70 | 15 | 25 | 6 | 4,9 | 3,7 | .3048 | ○ | ● | ● | ○ |
| | 7/32 | 5,56 | 24 | 80 | 16 | 30 | 6 | 4,9 | 4,5 | .3049 | ○ | ● | ○ | ○ |
| | 1/4 | 6,35 | 20 | 80 | 17 | 30 | 7 | 5,5 | 5,1 | .3050 | ○ | ● | ● | ○ |
| | 5/16 | 7,94 | 18 | 90 | 20 | 35 | 8 | 6,2 | 6,5 | .3051 | ○ | ● | ● | ○ |
| | 3/8 | 9,53 | 16 | 100 | 22 | 39 | 10 | 8 | 7,9 | .3052 | ○ | ● | ● | ○ |

≈ DIN 376



» 203

» 203

» 203

» 203

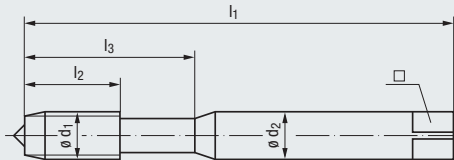
- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

BSW

BS 84



≈ DIN 371



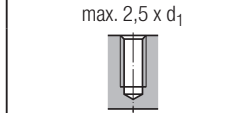
Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266

| | |
|-----------|-----------|
| med. | med. |
| HSSE | GLT-1 |
| R35 | HSSE |
| C / 2-3 | R35 |
| E / O / P | C / 2-3 |
| E / O / P | E / O / P |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

| | |
|-----------|-----------|
| P 1.1-3.1 | P 1.1-4.1 |
| M 1.1-2.1 | M 1.1-3.1 |
| K 2.1 | K 2.1 |

Werkzeug-Ident · Tool ident

B0503000 B050C300

| BSW | Ø d ₁ inch | Ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | Dimens.- Ident | Enorm 1-VA | | |
|-----|--------------------------|------------------------|------------------|----------------|----------------|----------------|------------------|-----|-------------------|------------|------------------|---|
| | | | | | | | | | | Enorm 1-VA | Enorm 1-VA GLT-1 | |
| | 1/8 | 3,18 | 40 | 56 | 7 | 18 | 3,5 | 2,7 | 2,55 | .3046 | ● | ○ |
| | 5/32 | 3,97 | 32 | 63 | 7 | 21 | 4,5 | 3,4 | 3,2 | .3047 | ○ | ○ |
| | 3/16 | 4,76 | 24 | 70 | 10 | 25 | 6 | 4,9 | 3,7 | .3048 | ● | ○ |
| | 7/32 | 5,56 | 24 | 80 | 10 | 30 | 6 | 4,9 | 4,5 | .3049 | ○ | ○ |
| | 1/4 | 6,35 | 20 | 80 | 13 | 30 | 7 | 5,5 | 5,1 | .3050 | ● | ○ |
| | 5/16 | 7,94 | 18 | 90 | 14 | 35 | 8 | 6,2 | 6,5 | .3051 | ● | ○ |
| | 3/8 | 9,53 | 16 | 100 | 16 | 39 | 10 | 8 | 7,9 | .3052 | ● | ○ |

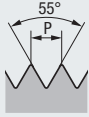
≈ DIN 376



204

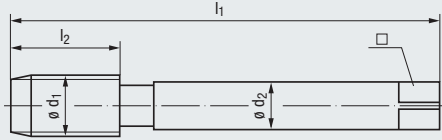
204

BSW



BS 84

≈ DIN 376



STEEL
Steel materials



l₂ ≈ 10 x P

VA
Stainless steel materials



- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNF-8
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

Technische Informationen
Technical information

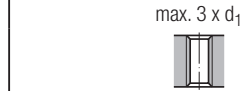
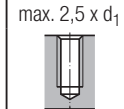
» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | | | |
|---------|-----------|-----------|-----------|
| med. | med. | med. | med. |
| HSSE | NT | TIN | GLT-1 |
| R35 | HSSE | HSSE | HSSE |
| C / 2-3 | B / 4-5 | B / 4-5 | B / 4-5 |
| E / 0 | E / 0 / P | E / 0 / P | E / 0 / P |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

| | | | |
|-----------|--------------|--------------|-----------|
| P 1.1-3.1 | P 1.1-3.1 | P 1.1-4.1 | P 1.1-4.1 |
| N 2.2 | M 1.1-2.1 | M 1.1-3.1 | M 1.1-3.1 |
| | K 2.1 | K 2.1 | K 2.1 |
| | N 2.2, 2.5-6 | N 2.2, 2.5-6 | N 2.2 |

Werkzeug-Ident · Tool ident

| | Ø d ₁ inch | Ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | | Dimens.- Ident | Werkzeug-Ident | | | |
|-----|--------------------------|------------------------|------------------|----------------|----------------|------------------|------|-------|-------------------|----------------|------------------|-----------------------------------|------------------------------------|
| | | | | | | | | | | C0501000 | Enorm 2-STEEL | C0203000 Rekord 2B-VA NT | C0203100 Rekord 2B-VA TIN |
| BSW | 7/16 | 11,11 | 14 | 100 | 22 | 8 | 6,2 | 9,25 | .3053 | ○ | ● | ● | ○ |
| | 1/2 | 12,70 | 12 | 110 | 25 | 9 | 7 | 10,5 | .3054 | ○ | ● | ● | ○ |
| | 9/16 | 14,29 | 12 | 110 | 26 | 11 | 9 | 12 | .3055 | ○ | ● | ○ | ○ |
| | 5/8 | 15,88 | 11 | 110 | 27 | 12 | 9 | 13,5 | .3056 | ○ | ● | ● | ○ |
| | 3/4 | 19,05 | 10 | 125 | 30 | 14 | 11 | 16,4 | .3058 | ○ | ● | ● | ○ |
| | 7/8 | 22,23 | 9 | 140 | 32 | 18 | 14,5 | 19,25 | .3060 | ○ | ● | ○ | ○ |
| | 1" | 25,40 | 8 | 160 | 36 | 18 | 14,5 | 22 | .3062 | ○ | ● | ● | ○ |
| | 1 1/8 | 28,58 | 7 | 180 | 40 | 22 | 18 | 24,75 | .3063 | ○ | | | |
| | 1 1/4 | 31,75 | 7 | 180 | 40 | 22 | 18 | 27,75 | .3064 | ○ | | | |
| | 1 3/8 | 34,93 | 6 | 200 | 50 | 28 | 22 | 30,5 | .3065 | ○ | | | |
| | 1 1/2 | 38,10 | 6 | 200 | 50 | 28 | 22 | 33,5 | .3066 | ○ | | | |
| | 1 3/4 | 44,45 | 5 | 220 | 58 | 36 | 29 | 39 | .3068 | ○ | | | |
| | 2" | 50,80 | 4 1/2 | 250 | 65 | 40 | 32 | 44,5 | .3070 | ○ | | | |

≈ DIN 371

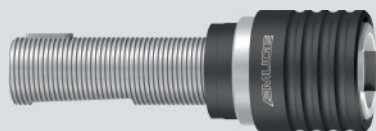


» 201

» 201

» 201

» 201



Schnellwechsel-Aufnahmen der
Typenreihe SFM siehe Seite 733 - 738

Quick-change tap holders of our
SFM series, see page 733 - 738

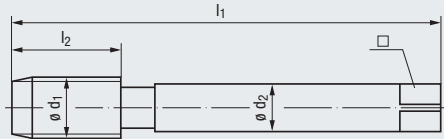
- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

BSW



BS 84

≈ DIN 376



VA
Stainless steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266

| | |
|-----------|-----------|
| med. | med. |
| HSSE | GLT-1 |
| R35 | HSSE |
| C / 2-3 | R35 |
| E / O / P | C / 2-3 |
| E / O / P | E / O / P |

Gewindetiefe und Lochform
Thread depth and hole type

max. 2,5 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | |
|------------------|------------------|
| P 1.1-3.1 | P 1.1-4.1 |
| M 1.1-2.1 | M 1.1-3.1 |
| K 2.1 | K 2.1 |

Werkzeug-Ident · Tool ident

C0503000 C050C300

| Ø d ₁ inch | Ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | Image | Dimens.- Ident | Enorm 2-VA | Enorm 2-VA GLT-1 |
|--------------------------|------------------------|------------------|----------------|----------------|------------------|------|-------|-------------------|---------------|------------------------|
| | | | | | | | | | | |
| BSW 7/16 | 11,11 | 14 | 100 | 18 | 8 | 6,2 | 9,25 | .3053 | ○ | ○ |
| 1/2 | 12,70 | 12 | 110 | 20 | 9 | 7 | 10,5 | .3054 | ○ | ○ |
| 9/16 | 14,29 | 12 | 110 | 20 | 11 | 9 | 12 | .3055 | | |
| 5/8 | 15,88 | 11 | 110 | 22 | 12 | 9 | 13,5 | .3056 | ○ | ○ |
| 3/4 | 19,05 | 10 | 125 | 25 | 14 | 11 | 16,4 | .3058 | ○ | ○ |
| 7/8 | 22,23 | 9 | 140 | 27 | 18 | 14,5 | 19,25 | .3060 | ○ | ○ |
| 1" | 25,40 | 8 | 160 | 30 | 18 | 14,5 | 22 | .3062 | ○ | ○ |
| 1 1/8 | 28,58 | 7 | 180 | 35 | 22 | 18 | 24,75 | .3063 | | |
| 1 1/4 | 31,75 | 7 | 180 | 35 | 22 | 18 | 27,75 | .3064 | | |
| 1 3/8 | 34,93 | 6 | 200 | 40 | 28 | 22 | 30,5 | .3065 | | |
| 1 1/2 | 38,10 | 6 | 200 | 40 | 28 | 22 | 33,5 | .3066 | | |
| 1 3/4 | 44,45 | 5 | 220 | 45 | 36 | 29 | 39 | .3068 | | |
| 2" | 50,80 | 4 1/2 | 250 | 50 | 40 | 32 | 44,5 | .3070 | | |

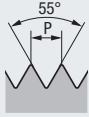
≈ DIN 371



202

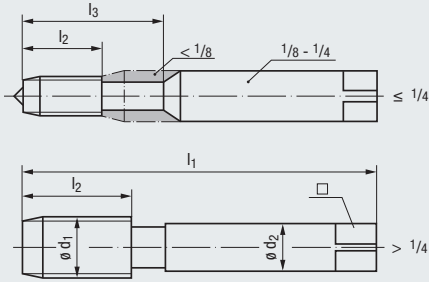
202

BSW



≈ DIN 352

BS 84



Product Finder

Vc

M

MF

UNC UN-8

UNF UNEF

G, Rp NPSM, NPSF

NPT, NPTF Rc, W

BSW, BSF

Pg

MJ UNJC, UNJF

EG (ST) SELF-LOCK

Tr, Tr-F Rd

Zubehör Accessories

Tech. Info

| | | | | | |
|---|---|------------------|------------------|------------------|------------------|
| Technische Informationen Technical information ▶▶ 245 - 266 | Toleranz · Tolerance Beschichtung · Coating Schneidstoff · Cutting material | | | med. „X“ | med. „X“ |
| | | HSSE | HSSE | HSSE | HSSE |
| | | 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 | max. 2 x d ₁ | | | |
|---|-----------------------------|--|--|--|

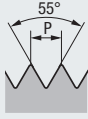
| | | | | |
|---|-----------|-----------|-----------|-----------|
| Einsatzgebiete – Material Applications – material ▶▶ 22 | P 1.1-3.1 | P 1.1-3.1 | P 1.1-3.1 | P 1.1-3.1 |
|---|-----------|-----------|-----------|-----------|

| Werkzeug-Ident · Tool ident | | | | | | | | | | | | H0111019 | H0111029 | H0111001 | H0101001 |
|-----------------------------|--------------------------|------------------------|------------------|----------------|----------------|----------------|------------------|------|-------|-------------------|-------------------|-------------------|--------------|----------------------------------|----------|
| BSW | ø d ₁ inch | ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | | Dimens.- Ident | HGB-Set V-Nr.1 | HGB-Set M-Nr.2 | HGB-Set F | HGB-Set 3S (Nr.1, Nr.2, F) | |
| | | | | | | | | | | | | | | | |
| | 1/16 | 1,59 | 60 | 32 | 8 | — | 2,5 | 2,1 | 1,15 | .3044 | ○ | ○ | ○ | ○ | |
| | 3/32 | 2,38 | 48 | 40 | 9 | — | 2,8 | 2,1 | 1,85 | .3045 | ○ | ○ | ○ | ○ | |
| | 1/8 | 3,18 | 40 | 40 | 10 | 18 | 3,5 | 2,7 | 2,55 | .3046 | ○ | ○ | ○ | ○ | |
| | 5/32 | 3,97 | 32 | 45 | 12 | 22 | 4,5 | 3,4 | 3,2 | .3047 | ○ | ○ | ○ | ○ | |
| | 3/16 | 4,76 | 24 | 50 | 14 | 25 | 6 | 4,9 | 3,7 | .3048 | ○ | ○ | ○ | ○ | |
| | 7/32 | 5,56 | 24 | 56 | 16 | 28 | 6 | 4,9 | 4,5 | .3049 | ○ | ○ | ○ | ○ | |
| | 1/4 | 6,35 | 20 | 56 | 16 | 28 | 6 | 4,9 | 5,1 | .3050 | ○ | ○ | ○ | ○ | |
| | 5/16 | 7,94 | 18 | 63 | 20 | — | 6 | 4,9 | 6,5 | .3051 | ○ | ○ | ○ | ○ | |
| | 3/8 | 9,53 | 16 | 70 | 22 | — | 7 | 5,5 | 7,9 | .3052 | ○ | ○ | ○ | ○ | |
| | 7/16 | 11,11 | 14 | 70 | 22 | — | 8 | 6,2 | 9,25 | .3053 | ○ | ○ | ○ | ○ | |
| | 1/2 | 12,70 | 12 | 75 | 25 | — | 9 | 7 | 10,5 | .3054 | ○ | ○ | ○ | ○ | |
| | 9/16 | 14,29 | 12 | 80 | 26 | — | 11 | 9 | 12 | .3055 | ○ | ○ | ○ | ○ | |
| | 5/8 | 15,88 | 11 | 80 | 27 | — | 12 | 9 | 13,5 | .3056 | ○ | ○ | ○ | ○ | |
| | 3/4 | 19,05 | 10 | 95 | 32 | — | 14 | 11 | 16,4 | .3058 | ○ | ○ | ○ | ○ | |
| | 7/8 | 22,23 | 9 | 100 | 32 | — | 18 | 14,5 | 19,25 | .3060 | ○ | ○ | ○ | ○ | |
| | 1" | 25,40 | 8 | 110 | 36 | — | 18 | 14,5 | 22 | .3062 | ○ | ○ | ○ | ○ | |
| | 1 1/8 | 28,58 | 7 | 125 | 40 | — | 22 | 18 | 24,75 | .3063 | ○ | ○ | ○ | ○ | |
| | 1 1/4 | 31,75 | 7 | 125 | 40 | — | 22 | 18 | 27,75 | .3064 | ○ | ○ | ○ | ○ | |
| | 1 3/8 | 34,93 | 6 | 150 | 50 | — | 28 | 22 | 30,5 | .3065 | ○ | ○ | ○ | ○ | |
| | 1 1/2 | 38,10 | 6 | 150 | 50 | — | 28 | 22 | 33,5 | .3066 | ○ | ○ | ○ | ○ | |
| | 1 5/8 | 41,28 | 5 | 150 | 56 | — | 32 | 24 | 35,5 | .3067 | ○ | ○ | ○ | ○ | |
| | 1 3/4 | 44,45 | 5 | 160 | 58 | — | 36 | 29 | 39 | .3068 | ○ | ○ | ○ | ○ | |
| | 1 7/8 | 47,63 | 4 1/2 | 180 | 65 | — | 36 | 29 | 41,5 | .3069 | ○ | ○ | ○ | ○ | |
| | 2" | 50,80 | 4 1/2 | 180 | 65 | — | 40 | 32 | 44,5 | .3070 | ○ | ○ | ○ | ○ | |

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
 ○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

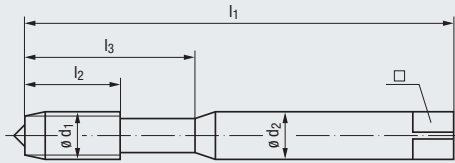
- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

BSF



≈ DIN 371

BS 84



STEEL
Steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266



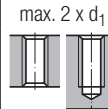
med. „X“

HSSE

C / 2-3

E / 0

Gewindetiefe und Lochform
Thread depth and hole type



P 1.1-3.1
N 2.3

Einsatzgebiete – Material
Applications – material

» 22

Werkzeug-Ident · Tool ident

B0101001

| | | | | | | | | | | Dimens.-Ident | Rekord 1A-STEEL | | | |
|-----|--------------------------|------------------------|------------------|----------------|----------------|----------------|------------------|-----|-----|---------------|-----------------|--|--|--|
| | ø d ₁ inch | ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | | | | | | |
| BSF | 1/4 | 6,35 | 26 | 80 | 17 | 30 | 7 | 5,5 | 5,3 | .3090 | ● | | | |
| | 5/16 | 7,94 | 22 | 90 | 17 | 35 | 8 | 6,2 | 6,8 | .3092 | ● | | | |
| | 3/8 | 9,53 | 20 | 100 | 18 | 39 | 10 | 8 | 8,3 | .3093 | ● | | | |

≈ DIN 374



» 207

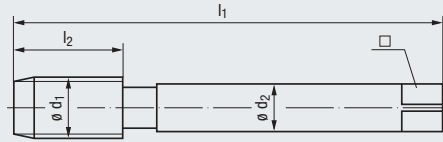
BSF



BS 84

≈ DIN 374

STEEL
Steel materials



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



med. „X“

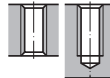
HSSE

C / 2-3

E / 0

Gewindetiefe und Lochform
Thread depth and hole type

max. 2 x d₁



Einsatzgebiete – Material
Applications – material


» 22

P 1.1-3.1

N 2.3

Werkzeug-Ident · Tool ident

C0101001

| | ∅ d ₁ inch | ∅ d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | ∅ d ₂ | □ |  | Dimens.- Ident | Rekord 2A-STEEL |
|------------|--------------------------|------------------------|------------------|----------------|----------------|------------------|------|---|-------------------|--------------------|
| BSF | 7/16 | 11,11 | 18 | 100 | 22 | 8 | 6,2 | 9,7 | .3094 | ○ |
| | 1/2 | 12,70 | 16 | 100 | 22 | 9 | 7 | 11,1 | .3095 | ○ |
| | 5/8 | 15,88 | 14 | 110 | 27 | 12 | 9 | 14 | .3097 | ○ |
| | 3/4 | 19,05 | 12 | 125 | 27 | 14 | 11 | 16,75 | .3099 | ○ |
| | 7/8 | 22,23 | 11 | 140 | 32 | 18 | 14,5 | 19,75 | .3101 | ○ |
| | 1" | 25,40 | 10 | 160 | 36 | 18 | 14,5 | 22,75 | .3102 | ○ |

≈ DIN 371



» 206

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

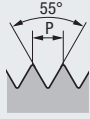
Zubehör
Accessories

Tech. Info



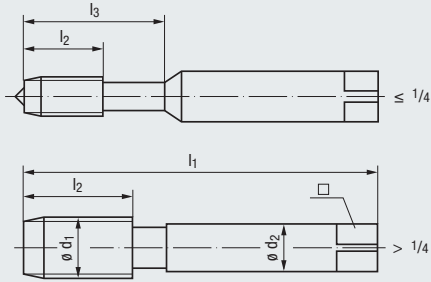
- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

BSF



≈ DIN 352

BS 84



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

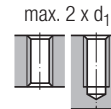
Technische Informationen
Technical information

» 245 - 266



| | | | |
|---------|---------|----------|----------|
| | | med. „X“ | med. „X“ |
| HSSE | HSSE | HSSE | HSSE |
| 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

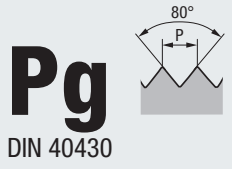
» 22

P 1.1-3.1 P 1.1-3.1 P 1.1-3.1 P 1.1-3.1

Werkzeug-Ident · Tool ident

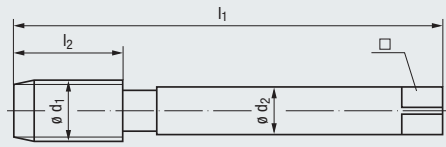
H0111019 H0111029 H0111001 H0101001

| | ø d ₁ inch | ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | | Dimens.- Ident | HGB-Set | HGB-Set | HGB-Set | HGB-Set |
|-----|--------------------------|------------------------|------------------|----------------|----------------|----------------|------------------|------|-------|-------------------|---------|---------|---------|---------|
| | | | | | | | | | | | V-Nr.1 | M-Nr.2 | F | 3S |
| BSF | 3/16 | 4,76 | 32 | 50 | 14 | 25 | 6 | 4,9 | 4 | .3088 | ○ | ○ | ○ | ○ |
| | 1/4 | 6,35 | 26 | 56 | 16 | 28 | 6 | 4,9 | 5,3 | .3090 | ○ | ○ | ○ | ○ |
| | 5/16 | 7,94 | 22 | 63 | 17 | – | 6 | 4,9 | 6,8 | .3092 | ○ | ○ | ○ | ○ |
| | 3/8 | 9,53 | 20 | 70 | 22 | – | 7 | 5,5 | 8,3 | .3093 | ○ | ○ | ○ | ○ |
| | 7/16 | 11,11 | 18 | 70 | 22 | – | 8 | 6,2 | 9,7 | .3094 | ○ | ○ | ○ | ○ |
| | 1/2 | 12,70 | 16 | 70 | 20 | – | 9 | 7 | 11,1 | .3095 | ○ | ○ | ○ | ○ |
| | 5/8 | 15,88 | 14 | 80 | 27 | – | 12 | 9 | 14 | .3097 | ○ | ○ | ○ | ○ |
| | 3/4 | 19,05 | 12 | 80 | 22 | – | 14 | 11 | 16,75 | .3099 | ○ | ○ | ○ | ○ |
| | 7/8 | 22,23 | 11 | 80 | 22 | – | 18 | 14,5 | 19,75 | .3101 | ○ | ○ | ○ | ○ |
| | 1" | 25,40 | 10 | 110 | 36 | – | 18 | 14,5 | 22,75 | .3102 | ○ | ○ | ○ | ○ |



Pg
DIN 40430

DIN 40433



- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg**
- MJ UNJC, UNJF
- EG (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

| | | | |
|---|---|---------|------------|
| Technische Informationen Technical information | Toleranz · Tolerance Beschichtung · Coating Schneidstoff · Cutting material | „X“ | „X“ |
| | | HSSE | NT HSSE |
| Technische Informationen Technical information | Schneidstoff · Cutting material | C / 2-3 | C / 2-3 |
| | | E / 0 | E / 0 / P |

| | | |
|---|-------------------------|-------------------------|
| Gewindetiefe und Lochform Thread depth and hole type | max. 2 x d ₁ | max. 2 x d ₁ |
| | | |

| | | |
|--|--------------------|---|
| Einsatzgebiete – Material Applications – material | P 1.1-3.1 N 2.3 | P 1.1-3.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1 |
|--|--------------------|---|

| Werkzeug-Ident · Tool ident | | | | | | | | | | C0101001 | C0100501 |
|-----------------------------|------------------------|------------------|----------------|----------------|------------------|----|------|-------|-------------------|--------------------|----------------------|
| Nenngröße Nom. size | | | | | | | | | Dimens.- Ident | Rekord 2A-STEEL | Rekord 2A-H NT |
| Ø d ₁ | Ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | | | | | |
| Pg | 7 | 12,5 | 20 | 100 | 22 | 9 | 7 | 11,35 | .4153 | ● | ● |
| | 9 | 15,2 | 18 | 100 | 22 | 12 | 9 | 13,95 | .4154 | ● | ● |
| | 11 | 18,6 | 18 | 110 | 25 | 14 | 11 | 17,35 | .4155 | ● | ● |
| | 13,5 | 20,4 | 18 | 125 | 25 | 16 | 12 | 19,15 | .4156 | ● | ● |
| | 16 | 22,5 | 18 | 125 | 25 | 18 | 14,5 | 21,25 | .4157 | ● | ● |
| | 21 | 28,3 | 16 | 150 | 28 | 22 | 18 | 26,95 | .4158 | ○ | ○ |
| | 29 | 37,0 | 16 | 170 | 30 | 28 | 22 | 35,6 | .4159 | ○ | ○ |
| | 36 | 47,0 | 16 | 190 | 32 | 36 | 29 | 45,6 | .4160 | ○ | |
| | 42 | 54,0 | 16 | 190 | 32 | 40 | 32 | 52,6 | .4161 | ○ | |
| | 48 | 59,3 | 16 | 220 | 36 | 45 | 35 | 57,9 | .4162 | ○ | |

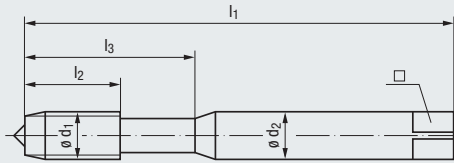
● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
 ○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

- 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
- Tech. Info



DIN ISO 5855

DIN 371



AL
Aluminium wrought alloys



TI
Titanium



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



- 4H
- GLT-8
- HSSE
- R45
- C / 2-3
- E / O

- | | |
|-----------|-----------|
| 4HX | 4HX |
| TICN | TICN |
| HSSE | HSSE |
| L15 | R15 |
| D / 4-5 | C / 2-3 |
| E / O / P | E / O / P |

Gewindetiefe und Lochform
Thread depth and hole type

max. 2,5 x d₁



max. 3 x d₁



max. 2 x d₁



Einsatzgebiete – Material
Applications – material

» 22

N 1.1-4

- | | |
|-----------------------|-----------------------|
| P 4.1-5.1 | P 4.1-5.1 |
| M 3.1-4.1 | M 3.1-4.1 |
| N 2.4-5, 2.7 | N 2.4-5, 2.7 |
| S 1.1-2.2, 2.4 | S 1.1-2.2, 2.4 |

Werkzeug-Ident · Tool ident

B050S810

B0309611

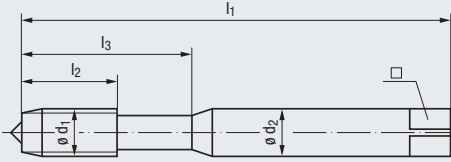
B0459611

| | ∅ d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | ∅ d ₂ | □ | Image | Dimens.-Ident | Enorm 1-AL GLT-8 | | | Rekord 1C-TI TICN | | Rekord 1D-TI TICN | |
|-----------|------------------------|---------|----------------|----------------|----------------|------------------|-----|-------|---------------|------------------|---|---|-------------------|---|-------------------|--|
| | | | | | | | | | | ● | ● | ● | ● | ● | ● | |
| MJ | 3 | x 0,5 | 56 | 11 | 18 | 3,5 | 2,7 | 2,6 | .1229 | ● | ● | ● | ● | ● | ● | |
| | 4 | x 0,7 | 63 | 13 | 21 | 4,5 | 3,4 | 3,4 | .1231 | ● | ● | ● | ● | ● | ● | |
| | 5 | x 0,8 | 70 | 15 | 25 | 6 | 4,9 | 4,3 | .1232 | ● | ● | ● | ● | ● | ● | |
| | 6 | x 1 | 80 | 17 | 30 | 6 | 4,9 | 5,1 | .1233 | ● | ● | ● | ● | ● | ● | |
| | 8 | x 1 | 90 | 17 | 35 | 8 | 6,2 | 7,1 | .1235 | ● | ● | ● | ● | ● | ● | |
| | 8 | x 1,25 | 90 | 20 | 35 | 8 | 6,2 | 6,9 | .2026 | ● | ● | ● | ● | ● | ● | |
| | 10 | x 1,25 | 100 | 18 | 39 | 10 | 8 | 8,9 | .1236 | ● | ● | ● | ● | ● | ● | |
| | 10 | x 1,5 | 100 | 22 | 39 | 10 | 8 | 8,6 | .2308 | ● | ● | ● | ● | ● | ● | |



DIN ISO 5855

DIN 371



NI
Nickel
alloys



Product Finder

Vc

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

Tech. Info

Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | |
|----------------|----------------|
| 4HX | 4HX |
| TICN | TICN |
| HSSE-PM | HSSE-PM |
| L08 | R10 |
| D / 4-5 | C / 2-3 |
| O / P | O / P |

Gewindetiefe und Lochform
Thread depth and hole type

| | |
|-------------------------|-------------------------|
| max. 3 x d ₁ | max. 2 x d ₁ |
| | |

Einsatzgebiete – Material
Applications – material

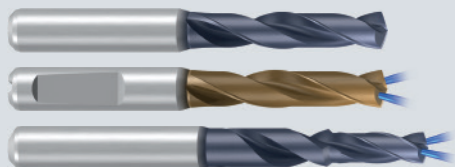
» 22

| | |
|---------------------|---------------------|
| M 4.1 | M 4.1 |
| N 2.8 | N 2.8 |
| S 1.2-3 | S 1.2-3 |
| S 2.3, 2.5-6 | S 2.3, 2.5-6 |

Werkzeug-Ident · Tool ident

B030J411 B438J411

| MJ | ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | | Dimens.- Ident | Rekord | |
|----|------------------------|---------|----------------|----------------|----------------|------------------|-----|-----|-------------------|------------------|-------------------|
| | | | | | | | | | | 1C-NI-PM TICN | 1DF-NI-PM TICN |
| | 3 | x 0,5 | 56 | 11 | 18 | 3,5 | 2,7 | 2,6 | .1229 | ● | ● |
| | 4 | x 0,7 | 63 | 13 | 21 | 4,5 | 3,4 | 3,4 | .1231 | ● | ● |
| | 5 | x 0,8 | 70 | 15 | 25 | 6 | 4,9 | 4,3 | .1232 | ● | ● |
| | 6 | x 1 | 80 | 17 | 30 | 6 | 4,9 | 5,1 | .1233 | ● | ● |
| | 8 | x 1 | 90 | 17 | 35 | 8 | 6,2 | 7,1 | .1235 | ● | ● |
| | 8 | x 1,25 | 90 | 20 | 35 | 8 | 6,2 | 6,9 | .2026 | ● | ● |
| | 10 | x 1,25 | 100 | 18 | 39 | 10 | 8 | 8,9 | .1236 | ● | ● |
| | 10 | x 1,5 | 100 | 22 | 39 | 10 | 8 | 8,6 | .2308 | ● | ● |



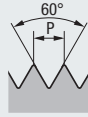
Spiralbohrer siehe Seite 507 - 580

Twist drills, see page 507 - 580

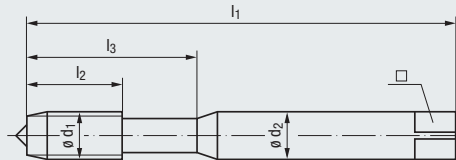
- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

UNJC

ASME B1.15



≈ DIN 371



Technische Informationen
Technical information

» 245 - 266

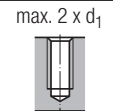
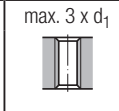
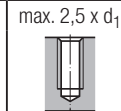
Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



- 3B
- GLT-8
- HSSE
- R45
- C / 2-3
- E / O

- | | |
|-----------|-----------|
| 3BX | 3BX |
| TICN | TICN |
| HSSE | HSSE |
| L15 | R15 |
| D / 4-5 | C / 2-3 |
| E / O / P | E / O / P |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

N 1.1-4

- | | |
|-----------------------|-----------------------|
| P 4.1-5.1 | P 4.1-5.1 |
| M 3.1-4.1 | M 3.1-4.1 |
| N 2.4-5, 2.7 | N 2.4-5, 2.7 |
| S 1.1-2.2, 2.4 | S 1.1-2.2, 2.4 |

Werkzeug-Ident · Tool ident

B050S810

B0309611

B0459611

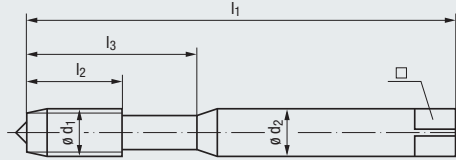
| Nr. | ø d ₁ inch | P inch | Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | Dimens.- Ident | Enorm 1, Rekord 1 | | |
|--------|--------------------------|-----------|-------------|----------------|----------------|----------------|------------------|------|-------------------|-------------------|---------------|---------------|
| | | | | | | | | | | 1-AL GLT-8 | 1C-TI TICN | 1D-TI TICN |
| Nr. 4 | 0.1120 | 40 | 56 | 11 | 18 | 3,5 | 2,7 | 2,3 | .5479 | ● | ● | ● |
| Nr. 6 | 0.1380 | 32 | 56 | 12 | 20 | 4 | 3 | 2,85 | .5481 | ● | ● | ● |
| Nr. 8 | 0.1640 | 32 | 63 | 13 | 21 | 4,5 | 3,4 | 3,5 | .5482 | ● | ● | ● |
| Nr. 10 | 0.1900 | 24 | 70 | 15 | 25 | 6 | 4,9 | 3,9 | .5483 | ● | ● | ● |
| 1/4 | 0.2500 | 20 | 80 | 17 | 30 | 7 | 5,5 | 5,25 | .5485 | ● | ● | ● |
| 5/16 | 0.3125 | 18 | 90 | 20 | 35 | 8 | 6,2 | 6,7 | .5486 | ● | ● | ● |
| 3/8 | 0.3750 | 16 | 100 | 22 | 39 | 10 | 8 | 8,1 | .5487 | ● | ● | ● |

UNJC

ASME B1.15



≈ DIN 371



NI
Nickel
alloys



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | |
|----------------|----------------|
| 3BX | 3BX |
| TICN | TICN |
| HSSE-PM | HSSE-PM |
| L08 | R10 |
| D / 4-5 | C / 2-3 |
| O / P | O / P |

Gewindetiefe und Lochform
Thread depth and hole type

| | |
|-------------------------|-------------------------|
| max. 3 x d ₁ | max. 2 x d ₁ |
| | |

Einsatzgebiete – Material
Applications – material

» 22

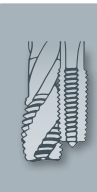
| | |
|---------------------|---------------------|
| M 4.1 | M 4.1 |
| N 2.8 | N 2.8 |
| S 1.2-3 | S 1.2-3 |
| S 2.3, 2.5-6 | S 2.3, 2.5-6 |

Werkzeug-Ident · Tool ident

B030J411 B438J411

| Nr. | ø d ₁ | | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | Dimens.- Ident | Rekord 1C-NI-PM TICN | Rekord 1DF-NI-PM TICN |
|--------|------------------|------|------------------|----------------|----------------|----------------|------------------|-----|-------------------|----------------------------|-----------------------------|
| | inch | inch | | | | | | | | | |
| Nr. 4 | 0.1120 | | 40 | 56 | 11 | 18 | 3,5 | 2,7 | 2,3 | ○ | ○ |
| Nr. 6 | 0.1380 | | 32 | 56 | 12 | 20 | 4 | 3 | 2,85 | ○ | ○ |
| Nr. 8 | 0.1640 | | 32 | 63 | 13 | 21 | 4,5 | 3,4 | 3,5 | ○ | ○ |
| Nr. 10 | 0.1900 | | 24 | 70 | 15 | 25 | 6 | 4,9 | 3,9 | ○ | ○ |
| 1/4 | 0.2500 | | 20 | 80 | 17 | 30 | 7 | 5,5 | 5,25 | ○ | ○ |
| 5/16 | 0.3125 | | 18 | 90 | 20 | 35 | 8 | 6,2 | 6,7 | ○ | ○ |
| 3/8 | 0.3750 | | 16 | 100 | 22 | 39 | 10 | 8 | 8,1 | ○ | ○ |

- 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 (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



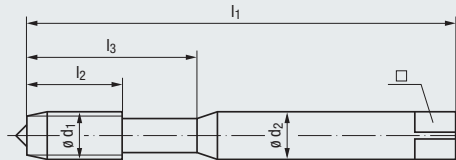
- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

UNJF



ASME B1.15

≈ DIN 371



| | | | | |
|---|---|---------|-----------|-----------|
| Technische Informationen Technical information | Toleranz · Tolerance Beschichtung · Coating Schneidstoff · Cutting material | 3B | 3BX | 3BX |
| | | GLT-8 | TICN | TICN |
| Technische Informationen Technical information | Technische Informationen Technical information | HSSE | HSSE | HSSE |
| | | R45 | L15 | R15 |
| | | C / 2-3 | D / 4-5 | C / 2-3 |
| | | E / 0 | E / 0 / P | E / 0 / P |

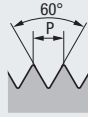
| | | | |
|---|---------------------------|-------------------------|-------------------------|
| Gewindetiefe und Lochform Thread depth and hole type | max. 2,5 x d ₁ | max. 3 x d ₁ | max. 2 x d ₁ |
| | | | |

| | | | |
|--|----------------|--|--|
| Einsatzgebiete – Material Applications – material | N 1.1-4 | P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4 | P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4 |
|--|----------------|--|--|

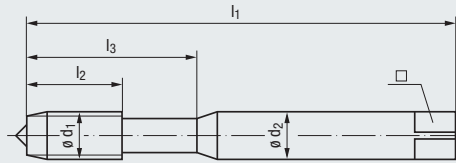
| Werkzeug-Ident · Tool ident | | | | | | | | | | B050S810 | B0309611 | B0459611 |
|-----------------------------|--------------------------|------------------|----------------|----------------|----------------|------------------|-----|------|---------------|------------------|-------------------|-------------------|
| Nr. | ∅ d ₁ inch | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | ∅ d ₂ | □ | | Dimens.-Ident | Enorm 1-AL GLT-8 | Rekord 1C-TI TICN | Rekord 1D-TI TICN |
| | | | | | | | | | | Nr. 4 | 0.1120 | 48 |
| Nr. 6 | 0.1380 | 40 | 56 | 12 | 20 | 4 | 3 | 3 | .5507 | ● | ● | ● |
| Nr. 8 | 0.1640 | 36 | 63 | 13 | 21 | 4,5 | 3,4 | 3,55 | .5508 | ● | ● | ● |
| Nr. 10 | 0.1900 | 32 | 70 | 15 | 25 | 6 | 4,9 | 4,15 | .5509 | ● | ● | ● |
| 1/4 | 0.2500 | 28 | 80 | 17 | 30 | 7 | 5,5 | 5,55 | .5511 | ● | ● | ● |
| 5/16 | 0.3125 | 24 | 90 | 17 | 35 | 8 | 6,2 | 7 | .5512 | ● | ● | ● |
| 3/8 | 0.3750 | 24 | 90 | 18 | 35 | 10 | 8 | 8,6 | .5513 | ● | ● | ● |

UNJF

ASME B1.15



≈ DIN 371



NI
Nickel
alloys



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | |
|----------------|----------------|
| 3BX | 3BX |
| TICN | TICN |
| HSSE-PM | HSSE-PM |
| L08 | R10 |
| D / 4-5 | C / 2-3 |
| O / P | O / P |

Gewindetiefe und Lochform
Thread depth and hole type

| | |
|-------------------------|-------------------------|
| max. 3 x d ₁ | max. 2 x d ₁ |
| | |

Einsatzgebiete – Material
Applications – material

» 22

| | |
|---------------------|---------------------|
| M 4.1 | M 4.1 |
| N 2.8 | N 2.8 |
| S 1.2-3 | S 1.2-3 |
| S 2.3, 2.5-6 | S 2.3, 2.5-6 |

Werkzeug-Ident · Tool ident

B030J411 B438J411

| Nr. | ø d ₁ | | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | Dimens.- Ident | Rekord 1C-NI-PM TICN | Rekord 1DF-NI-PM TICN | |
|--------|------------------|------|------------------|----------------|----------------|----------------|------------------|-----|-------------------|----------------------------|-----------------------------|---|
| | inch | inch | | | | | | | | | | |
| Nr. 4 | 0.1120 | | 48 | 56 | 11 | 18 | 3,5 | 2,7 | 2,4 | .5505 | ○ | ○ |
| Nr. 6 | 0.1380 | | 40 | 56 | 12 | 20 | 4 | 3 | 3 | .5507 | ○ | ○ |
| Nr. 8 | 0.1640 | | 36 | 63 | 13 | 21 | 4,5 | 3,4 | 3,55 | .5508 | ○ | ○ |
| Nr. 10 | 0.1900 | | 32 | 70 | 15 | 25 | 6 | 4,9 | 4,15 | .5509 | ○ | ○ |
| 1/4 | 0.2500 | | 28 | 80 | 17 | 30 | 7 | 5,5 | 5,55 | .5511 | ○ | ○ |
| 5/16 | 0.3125 | | 24 | 90 | 17 | 35 | 8 | 6,2 | 7 | .5512 | ○ | ○ |
| 3/8 | 0.3750 | | 24 | 90 | 18 | 35 | 10 | 8 | 8,6 | .5513 | ○ | ○ |

- 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 (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



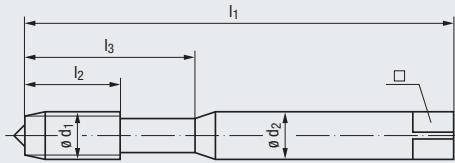
- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK**
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

EG M (STI)

DIN 8140-2



DIN 40435



VA
Stainless steel materials



new

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

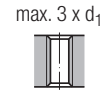
Technische Informationen
Technical information

» 245 - 266



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

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

| | | |
|--------------|--------------|-----------|
| P 1.1-3.1 | P 1.1-4.1 | P 1.1-4.1 |
| M 1.1-2.1 | M 1.1-3.1 | M 1.1-3.1 |
| K 2.1 | K 2.1 | K 2.1 |
| N 2.2, 2.5-6 | N 2.2, 2.5-6 | N 2.2 |

Werkzeug-Ident · Tool ident

B0203000 B0203100 B020C300

| Nenngröße Nom. size | | | | | | | | | Dimens.- Ident | Rekord 1B-VA NT | Rekord 1B-VA TIN | Rekord 1B-VA GLT-1 |
|------------------------|------------------|------------------------|---------|----------------|----------------|----------------|------------------|------|-------------------|-----------------------|------------------------|--------------------------|
| | Ø d ₁ | Ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | | | | |
| EG M 2,5 | 3,085 | 0,45 | 56 | 11 | 18 | 3,5 | 2,7 | 2,65 | .0965 | ● | ● | ○ |
| 3 | 3,650 | 0,5 | 63 | 10 | 21 | 4,5 | 3,4 | 3,15 | .0966 | ● | ● | ○ |
| 4 | 4,910 | 0,7 | 70 | 12 | 25 | 6 | 4,9 | 4,2 | .0968 | ● | ● | ○ |
| 5 | 6,040 | 0,8 | 80 | 13 | 30 | 6 | 4,9 | 5,25 | .0970 | ● | ● | ○ |
| 6 | 7,300 | 1 | 90 | 17 | 35 | 8 | 6,2 | 6,3 | .0971 | ● | ● | ○ |
| 8 | 9,624 | 1,25 | 100 | 18 | 39 | 10 | 8 | 8,4 | .0973 | ● | ● | ○ |










DIN 40435



» 218

» 218

» 218

| AL Aluminium wrought alloys | | | Z CNC-controlled machines | | | | | | |
|--|---|--|---|--|---|--|--|--|-----------------|
|  |  |  |  |  |  | | | | |
| 6H mod. | 6H mod. | 6H mod. | 6H mod. | 6H mod. | 6H mod. | | | | |
| HSSE | GLT-8 HSSE | GLT-8 HSSE | HSSE | HSSE | TIN HSSE | | | | |
| B / ≈3 | B / ≈3 | C / 2-3 | R45 | R45 | R45 | | | | |
| E / 0 | E / 0 | E / 0 | C / 2-3 | E / 1,5-2 | E / 1,5-2 | | | | |
| E / 0 / P | E / 0 / P | E / 0 / P | E / 0 / P | E / 0 / P | E / 0 / P | | | | |
| max. 3 x d ₁  | | max. 2,5 x d ₁  | | max. 3 x d ₁  | | | | | |
| N 1.1-4 | N 1.1-4 | N 1.1-4 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | | | | |
| | | | M 1.1-2.1 | M 1.1-2.1 | M 1.1-3.1 | | | | |
| | | | N 2.1 | N 2.1 | N 1.4-6 | | | | |
| | | | | | N 2.1-2, 2.4-5 | | | | |
| | | | | | S 1.1 | | | | |
| B0204500 | B020S800 | B050S800 | B0503500 | B0513500 | B0513700 | | | | |
| Rekord 1B-AL | Rekord 1B-AL GLT-8 | Enorm 1-AL GLT-8 | Enorm 1-Z | Enorm 1-Z/E | Enorm 1-Z/E TIN | | | | |
| ● | ● | ● | ● | ● | ● | | | | EG M 2,5 |
| ● | ● | ● | ● | ● | ● | | | | 3 |
| ● | ● | ● | ● | ● | ● | | | | 4 |
| ● | ● | ● | ● | ● | ● | | | | 5 |
| ● | ● | ● | ● | ● | ● | | | | 6 |
| ● | ● | ● | ● | ● | ● | | | | 8 |
| | | 📄 219 | 📄 219 | 📄 219 | 📄 219 | | | | |

- 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
- Tech. Info



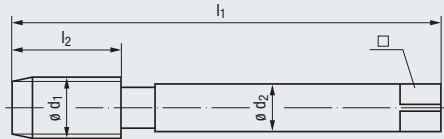
- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK**
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

EG M (STI)

DIN 8140-2



DIN 40435



VA
Stainless steel materials



new

Technische Informationen
Technical information

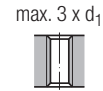
» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



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

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

| | | |
|--------------|--------------|-----------|
| P 1.1-3.1 | P 1.1-4.1 | P 1.1-4.1 |
| M 1.1-2.1 | M 1.1-3.1 | M 1.1-3.1 |
| K 2.1 | K 2.1 | K 2.1 |
| N 2.2, 2.5-6 | N 2.2, 2.5-6 | N 2.2 |

Werkzeug-Ident · Tool ident

C0203000 C0203100 C020C300

| Nenngröße Nom. size | | | | | | | | Dimens.- Ident | Rekord 2B-VA NT | Rekord 2B-VA TIN | Rekord 2B-VA GLT-1 |
|------------------------|------------------|------------------------|---------|----------------|----------------|------------------|------|-------------------|-----------------------|------------------------|--------------------------|
| | Ø d ₁ | Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | | | | |
| EG M 10 | 10 | 11,948 | 1,5 | 100 | 22 | 9 | 7 | 10,5 | ● | ● | ○ |
| 12 | 12 | 14,274 | 1,75 | 110 | 26 | 11 | 9 | 12,5 | ● | ● | ○ |
| 14 | 14 | 16,598 | 2 | 110 | 27 | 12 | 9 | 14,5 | ● | ● | ○ |
| 16 | 16 | 18,598 | 2 | 125 | 27 | 14 | 11 | 16,5 | ● | ● | ○ |
| 18 | 18 | 21,248 | 2,5 | 140 | 32 | 18 | 14,5 | 18,75 | ● | ● | ○ |
| 20 | 20 | 23,248 | 2,5 | 160 | 34 | 18 | 14,5 | 20,75 | ● | ● | ○ |

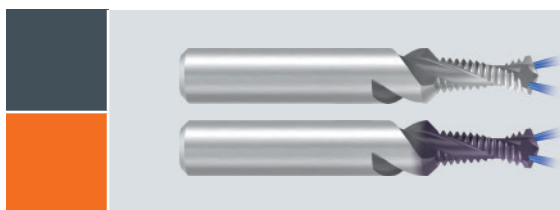
DIN 40435



» 216

» 216

» 216



Bohrgewindefräser für
Metrisches EG-Gewinde
siehe Seite 350 - 351

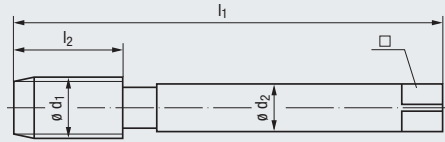
Drill thread mills for
Metric STI thread,
see page 350 - 351

EG M (STI)

DIN 8140-2



DIN 40435



AL
Aluminium wrought alloys



Z
CNC-controlled machines



Product Finder

- Vc
- 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
- Tech. Info

Technische Informationen
Technical information

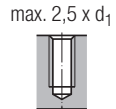
» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | | | |
|---------|-----------|------------------|------------------|
| 6H mod. | 6H mod. | 6H mod. | 6H mod. |
| GLT-8 | | | TIN |
| HSSE | HSSE | HSSE | HSSE |
| R35 | R45 | R45 | R45 |
| C / 2-3 | C / 2-3 | E / 1,5-2 | E / 1,5-2 |
| E / 0 | E / 0 / P | E / 0 / P | E / 0 / P |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

| | | | |
|----------------|------------------|------------------|-----------------------|
| N 1.1-4 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 |
| | M 1.1-2.1 | M 1.1-2.1 | M 1.1-3.1 |
| | N 2.1 | N 2.1 | N 1.4-6 |
| | | | N 2.1-2, 2.4-5 |
| | | | S 1.1 |

Werkzeug-Ident · Tool ident

C050S800 C0503500 C0513500 C0513700

| Nenngröße Nom. size | Dimens.-Ident | | | | | | | Enorm 2-AL GLT-8 | Enorm 2-Z | Enorm 2-Z/E | Enorm 2-Z/E TIN |
|------------------------|------------------|------------------------|---------|----------------|----------------|------------------|------|---------------------|-----------|-------------|--------------------|
| | Ø d ₁ | Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | | | | |
| EG M | 10 | 11,948 | 1,5 | 100 | 15 | 9 | 7 | 10,5 | ● | ● | ● |
| | 12 | 14,274 | 1,75 | 110 | 20 | 11 | 9 | 12,5 | ● | ● | ● |
| | 14 | 16,598 | 2 | 110 | 20 | 12 | 9 | 14,5 | | | |
| | 16 | 18,598 | 2 | 125 | 20 | 14 | 11 | 16,5 | | ● | ● |
| | 18 | 21,248 | 2,5 | 140 | 27 | 18 | 14,5 | 18,75 | | ● | ● |
| | 20 | 23,248 | 2,5 | 160 | 30 | 18 | 14,5 | 20,75 | | ● | ● |

DIN 40435



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» 217

» 217

» 217

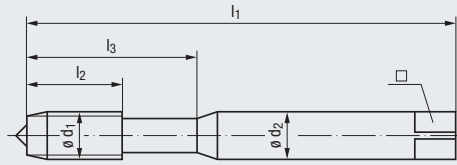
- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK**
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

EG UNC (STI)

ASME B18.29.1



≈ DIN 371



VA
Stainless steel materials



new

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266



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

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | |
|---------------------|---------------------|------------------|
| P 1.1-3.1 | P 1.1-4.1 | P 1.1-4.1 |
| M 1.1-2.1 | M 1.1-3.1 | M 1.1-3.1 |
| K 2.1 | K 2.1 | K 2.1 |
| N 2.2, 2.5-6 | N 2.2, 2.5-6 | N 2.2 |

Werkzeug-Ident · Tool ident

B0203000 B0203100 B020C300

| Nenngröße Nom. size | Ø d ₁ | | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | Ø d ₂ | | □ | Dimens.- Ident |
|------------------------|------------------|--|------------------|----------------|----------------|----------------|------------------|-----|-----|-------------------|
| | mm | | | | | | | | | |
| EG Nr. 4 | 3,671 | | 40 | 63 | 13 | 21 | 4,5 | 3,4 | 3,1 | .5611 |
| Nr. 6 | 4,536 | | 32 | 70 | 14 | 25 | 6 | 4,9 | 3,8 | .5613 |
| Nr. 8 | 5,197 | | 32 | 80 | 16 | 30 | 6 | 4,9 | 4,4 | .5614 |
| Nr. 10 | 6,200 | | 24 | 80 | 17 | 30 | 7 | 5,5 | 5,2 | .5615 |
| 1/4 | 8,002 | | 20 | 90 | 20 | 35 | 8 | 6,2 | 6,7 | .5617 |
| 5/16 | 9,771 | | 18 | 100 | 22 | 39 | 10 | 8 | 8,4 | .5618 |

≈ DIN 376



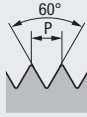
» 222

» 222

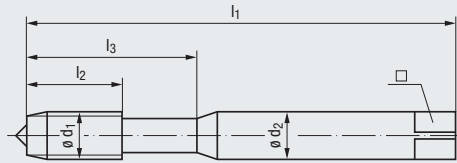
» 222

EG UNC (STI)

ASME B18.29.1



≈ DIN 371



AL
Aluminium wrought alloys



Z
CNC-controlled machines



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | | |
|---------|------------------|------------------|
| 2B | 2B | 2B |
| GLT-8 | | TIN |
| HSSE | HSSE | HSSE |
| R45 | R45 | R45 |
| C / 2-3 | E / 1,5-2 | E / 1,5-2 |
| E / 0 | E / 0 / P | E / 0 / P |

Gewindetiefe und Lochform
Thread depth and hole type

max. 2,5 x d₁



max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | |
|----------------|------------------|-----------------------|
| N 1.1-4 | P 1.1-4.1 | P 1.1-4.1 |
| | M 1.1-2.1 | M 1.1-3.1 |
| | N 2.1 | N 1.4-6 |
| | | N 2.1-2, 2.4-5 |
| | | S 1.1 |

Werkzeug-Ident · Tool ident

B050S800 B0513500 B0513700

| Nenngröße Nom. size | Dimensions | | | | | | | | Dimens.- Ident | Enorm 1-AL GLT-8 | Enorm 1-Z/E | Enorm 1-Z/E TIN |
|------------------------|------------------|------------------------|------------------|----------------|----------------|----------------|------------------|-----|-------------------|------------------------|----------------|-----------------------|
| | Ø d ₁ | Ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | | | | |
| EG Nr. 4 | 3,671 | 40 | 63 | 7 | 21 | 4,5 | 3,4 | 3,1 | .5611 | ● | ● | ● |
| Nr. 6 | 4,536 | 32 | 70 | 8 | 25 | 6 | 4,9 | 3,8 | .5613 | ● | ● | ● |
| Nr. 8 | 5,197 | 32 | 80 | 8 | 30 | 6 | 4,9 | 4,4 | .5614 | ● | ● | ● |
| Nr. 10 | 6,200 | 24 | 80 | 10 | 30 | 7 | 5,5 | 5,2 | .5615 | ● | ● | ● |
| 1/4 | 8,002 | 20 | 90 | 14 | 35 | 8 | 6,2 | 6,7 | .5617 | ● | ● | ● |
| 5/16 | 9,771 | 18 | 100 | 16 | 39 | 10 | 8 | 8,4 | .5618 | ● | ● | ● |

≈ DIN 376



» 223

» 223

- Product Finder
- Vc
- 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
- Tech. Info



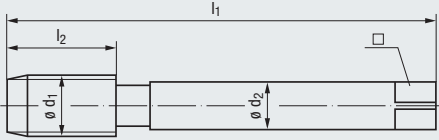
- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI)** SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

EG UNC (STI)

ASME B18.29.1



≈ DIN 376



VA
Stainless steel materials



new

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266



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

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | |
|---------------------|---------------------|------------------|
| P 1.1-3.1 | P 1.1-4.1 | P 1.1-4.1 |
| M 1.1-2.1 | M 1.1-3.1 | M 1.1-3.1 |
| K 2.1 | K 2.1 | K 2.1 |
| N 2.2, 2.5-6 | N 2.2, 2.5-6 | N 2.2 |

Werkzeug-Ident · Tool ident

C0203000 C0203100 C020C300

| Nenngröße Nom. size | Ø d ₁ | | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | | □ | Dimens.- Ident |
|------------------------|------------------|--|------------------|----------------|----------------|------------------|------|-------|-------------------|
| | mm | | | | | | | | |
| EG 3/8 | 11,587 | | 16 | 100 | 22 | 9 | 7 | 10 | .5619 |
| 7/16 | 13,469 | | 14 | 110 | 26 | 11 | 9 | 11,6 | .5620 |
| 1/2 | 15,237 | | 13 | 110 | 27 | 12 | 9 | 13,3 | .5621 |
| 9/16 | 17,039 | | 12 | 110 | 27 | 12 | 9 | 14,9 | .5622 |
| 5/8 | 18,875 | | 11 | 125 | 30 | 14 | 11 | 16,5 | .5623 |
| 3/4 | 22,349 | | 10 | 140 | 32 | 18 | 14,5 | 19,75 | .5624 |

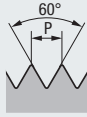
≈ DIN 371



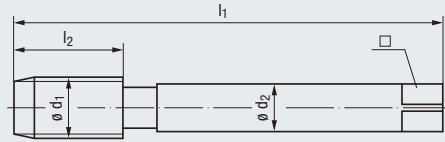
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EG UNC (STI)

ASME B18.29.1



≈ DIN 376



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



Gewindetiefe und Lochform
Thread depth and hole type

Einsatzgebiete – Material
Applications – material

» 22

Werkzeug-Ident · Tool ident

Nenngröße
Nom. size

| EG | Ø d ₁ | Ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | Dimens.- Ident | Enorm | |
|----|------------------|------------------------|------------------|----------------|----------------|------------------|------|-------------------|-------|--------------|
| | | | | | | | | | 2-Z/E | 2-Z/E TIN |
| | 3/8 | 11,587 | 16 | 100 | 15 | 9 | 7 | .5619 | ● | ● |
| | 7/16 | 13,469 | 14 | 110 | 20 | 11 | 9 | .5620 | ○ | ○ |
| | 1/2 | 15,237 | 13 | 110 | 22 | 12 | 9 | .5621 | ● | ● |
| | 9/16 | 17,039 | 12 | 110 | 22 | 12 | 9 | .5622 | ○ | ○ |
| | 5/8 | 18,875 | 11 | 125 | 25 | 14 | 11 | .5623 | ● | ● |
| | 3/4 | 22,349 | 10 | 140 | 27 | 18 | 14,5 | .5624 | ● | ● |

≈ DIN 371



» 221

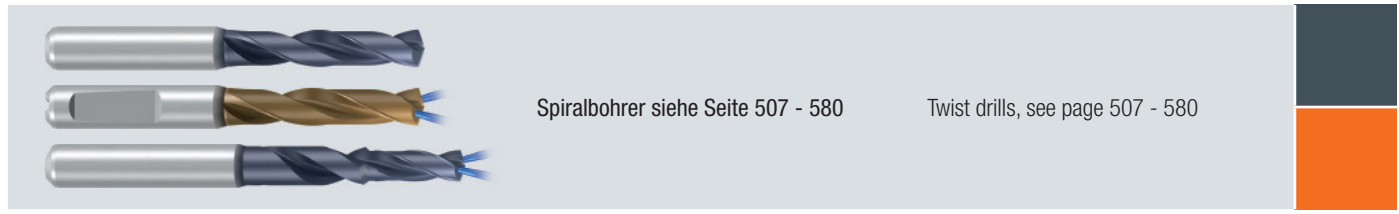
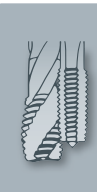
» 221

| Z CNC-controlled machines | |
|---------------------------------|-----------|
| | |
| 2B | 2B |
| HSSE | TIN |
| R45 | HSSE |
| E / 1,5-2 | R45 |
| E / O / P | E / 1,5-2 |
| E / O / P | E / O / P |

| | |
|-------------------------|----------------|
| max. 3 x d ₁ | |
| P 1.1-4.1 | P 1.1-4.1 |
| M 1.1-2.1 | M 1.1-3.1 |
| N 2.1 | N 1.4-6 |
| | N 2.1-2, 2.4-5 |
| | S 1.1 |

| | |
|----------|----------|
| C0513500 | C0513700 |
|----------|----------|

- 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
- Tech. Info



Spiralbohrer siehe Seite 507 - 580

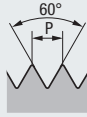
Twist drills, see page 507 - 580

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

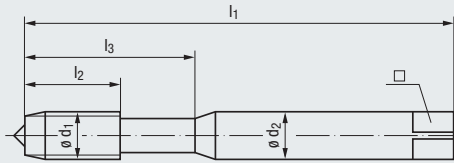
- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI)** SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

EG UNF (STI)

ASME B18.29.1



≈ DIN 371



VA
Stainless steel materials



new

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266



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

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | |
|---------------------|---------------------|------------------|
| P 1.1-3.1 | P 1.1-4.1 | P 1.1-4.1 |
| M 1.1-2.1 | M 1.1-3.1 | M 1.1-3.1 |
| K 2.1 | K 2.1 | K 2.1 |
| N 2.2, 2.5-6 | N 2.2, 2.5-6 | N 2.2 |

Werkzeug-Ident · Tool ident

B0203000 B0203100 B020C300

| Nenngröße Nom. size | Ø d ₁ | | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | Ø d ₂ | | □ | Dimens.- Ident |
|------------------------|------------------|--|------------------|----------------|----------------|----------------|------------------|-----|------|-------------------|
| | mm | | | | | | | | | |
| EG Nr. 4 | 3,533 | | 48 | 56 | 9 | 20 | 4 | 3 | 3 | .5633 |
| Nr. 6 | 4,330 | | 40 | 70 | 11 | 25 | 6 | 4,9 | 3,7 | .5635 |
| Nr. 8 | 5,083 | | 36 | 80 | 13 | 30 | 6 | 4,9 | 4,4 | .5636 |
| Nr. 10 | 5,858 | | 32 | 80 | 13 | 30 | 6 | 4,9 | 5,1 | .5637 |
| 1/4 | 7,528 | | 28 | 90 | 17 | 35 | 8 | 6,2 | 6,6 | .5639 |
| 5/16 | 9,312 | | 24 | 90 | 18 | 35 | 10 | 8 | 8,25 | .5640 |

≈ DIN 374



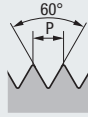
» 226

» 226

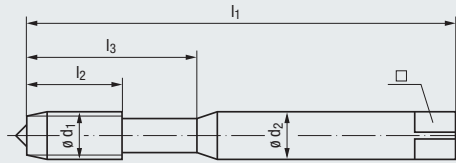
» 226

EG UNF (STI)

ASME B18.29.1



≈ DIN 371



AL
Aluminium wrought alloys



Z
CNC-controlled machines



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | | |
|---------|------------------|------------------|
| 2B | 2B | 2B |
| GLT-8 | | TIN |
| HSSE | HSSE | HSSE |
| R45 | R45 | R45 |
| C / 2-3 | E / 1,5-2 | E / 1,5-2 |
| E / 0 | E / 0 / P | E / 0 / P |

Gewindetiefe und Lochform
Thread depth and hole type

max. 2,5 x d₁



max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | |
|----------------|------------------|-----------------------|
| N 1.1-4 | P 1.1-4.1 | P 1.1-4.1 |
| | M 1.1-2.1 | M 1.1-3.1 |
| | N 2.1 | N 1.4-6 |
| | | N 2.1-2, 2.4-5 |
| | | S 1.1 |

Werkzeug-Ident · Tool ident

B050S800 B0513500 B0513700

| Nenngröße Nom. size | Dimens.-Ident | | | | | | | | Enorm 1-AL GLT-8 | Enorm 1-Z/E | Enorm 1-Z/E TIN |
|------------------------|------------------|------------------------|------------------|----------------|----------------|----------------|------------------|------|---------------------|-------------|--------------------|
| | Ø d ₁ | Ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | | | |
| EG 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



» 227

» 227

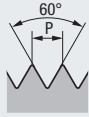
- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK**
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



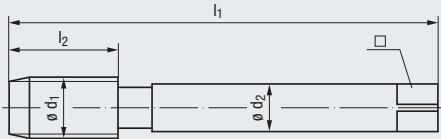
- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI)** SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

EG UNF (STI)

ASME B18.29.1



≈ DIN 374



VA
Stainless steel materials



new

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 245 - 266



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

Gewindetiefe und Lochform
Thread depth and hole type

max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

| | | |
|--------------|--------------|-----------|
| P 1.1-3.1 | P 1.1-4.1 | P 1.1-4.1 |
| M 1.1-2.1 | M 1.1-3.1 | M 1.1-3.1 |
| K 2.1 | K 2.1 | K 2.1 |
| N 2.2, 2.5-6 | N 2.2, 2.5-6 | N 2.2 |

Werkzeug-Ident · Tool ident

C0203000 C0203100 C020C300

| Nenngröße Nom. size | Dimens.-Ident | | | | | | | Rekord 2B-VA NT | Rekord 2B-VA TIN | Rekord 2B-VA GLT-1 |
|------------------------|------------------|---------------------|---------------|----------------|----------------|------------------|-------|-----------------|------------------|--------------------|
| | Ø d ₁ | Ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | | | |
| EG 3/8 | 10,899 | 24 | 90 | 18 | 8 | 6,2 | 9,8 | ● | ● | ○ |
| 7/16 | 12,763 | 20 | 100 | 22 | 9 | 7 | 11,5 | ● | ● | ○ |
| 1/2 | 14,352 | 20 | 100 | 22 | 11 | 9 | 13,1 | ● | ● | ○ |
| 9/16 | 16,121 | 18 | 100 | 22 | 12 | 9 | 14,7 | ● | ● | ○ |
| 5/8 | 17,709 | 18 | 110 | 25 | 14 | 11 | 16,25 | ● | ● | ○ |
| 3/4 | 21,112 | 16 | 125 | 25 | 16 | 12 | 19,5 | ● | ● | ○ |

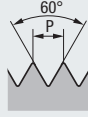
≈ DIN 371



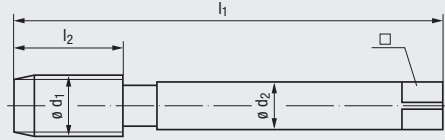
» 224 » 224 » 224

EG UNF (STI)

ASME B18.29.1



≈ DIN 374



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



Gewindetiefe und Lochform
Thread depth and hole type

Einsatzgebiete – Material
Applications – material

» 22

Werkzeug-Ident · Tool ident

Nenngröße
Nom. size

| EG | Ø d ₁ | Ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | Ø | Dimens.- Ident | Enorm | |
|----|------------------|------------------------|------------------|----------------|----------------|------------------|-----|-------|-------------------|-------|--------------|
| | | | | | | | | | | 2-Z/E | 2-Z/E TIN |
| | 3/8 | 10,899 | 24 | 90 | 11 | 8 | 6,2 | 9,8 | .5641 | ● | ● |
| | 7/16 | 12,763 | 20 | 100 | 13 | 9 | 7 | 11,5 | .5642 | ○ | ○ |
| | 1/2 | 14,352 | 20 | 100 | 15 | 11 | 9 | 13,1 | .5643 | ● | ● |
| | 9/16 | 16,121 | 18 | 100 | 15 | 12 | 9 | 14,7 | .5644 | ○ | ○ |
| | 5/8 | 17,709 | 18 | 110 | 17 | 14 | 11 | 16,25 | .5645 | ● | ● |
| | 3/4 | 21,112 | 16 | 125 | 17 | 16 | 12 | 19,5 | .5646 | ● | ● |

≈ DIN 371



» 225

» 225



| | |
|-----------|-----------|
| 2B | 2B |
| HSSE | TIN |
| R45 | HSSE |
| E / 1,5-2 | R45 |
| E / O / P | E / 1,5-2 |
| | E / O / P |

max. 3 x d₁



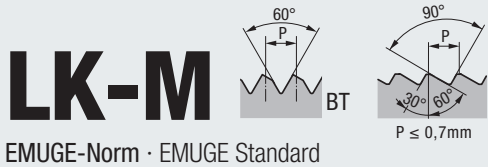
| | |
|-----------|----------------|
| P 1.1-4.1 | P 1.1-4.1 |
| M 1.1-2.1 | M 1.1-3.1 |
| N 2.1 | N 1.4-6 |
| | N 2.1-2, 2.4-5 |
| | S 1.1 |

C0513500 C0513700

- 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
- Tech. Info

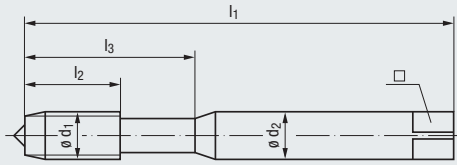


- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



DIN 371

EMUGE-Norm · EMUGE Standard

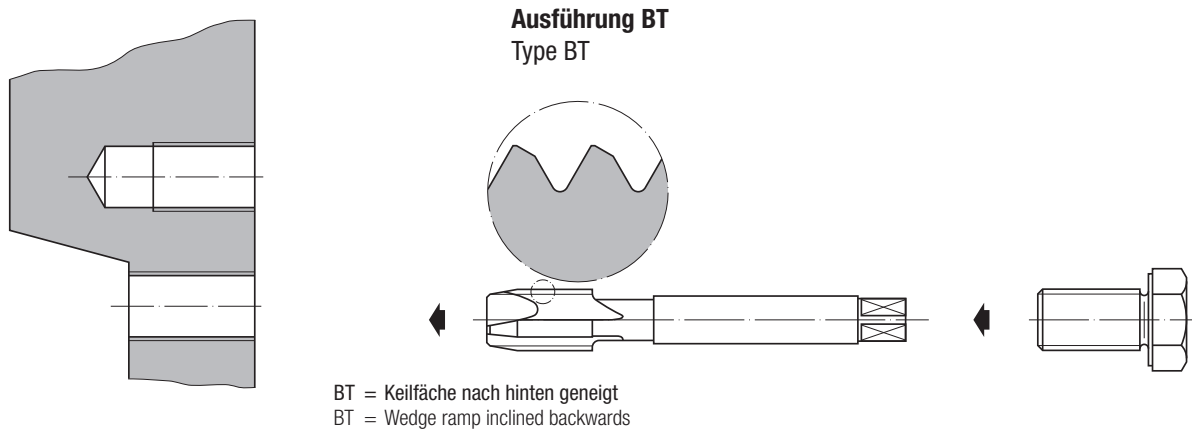


| | | | | | |
|--|---------------------------------|-----------|-----------|-----------|---------|
| Technische Informationen Technical information ▶ 245 - 266 | Toleranz · Tolerance | NT | TIN | GLT-1 | NT |
| | Beschichtung · Coating | HSSE | HSSE | HSSE | HSSE |
| | Schneidstoff · Cutting material | B / 4-5 | B / 4-5 | B / 4-5 | C / 2-3 |
| | | E / O / P | E / O / P | E / O / P | E |

| | | | | |
|---|-------------------------|-------------------------|--|--|
| Gewindetiefe und Lochform Thread depth and hole type | max. 3 x d ₁ | max. 2 x d ₁ | | |
| | | | | |

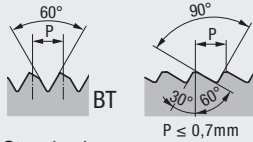
| | | | | |
|--|---------------------|---------------------|------------------|----------------|
| Einsatzgebiete – Material Applications – material ▶ 22 | P 1.1-3.1 | P 1.1-4.1 | P 1.1-4.1 | K 1.1-2 |
| | M 1.1-2.1 | M 1.1-3.1 | M 1.1-3.1 | |
| | K 2.1 | K 2.1 | K 2.1 | |
| | N 2.2, 2.5-6 | N 2.2, 2.5-6 | N 2.2 | |

| Werkzeug-Ident · Tool ident | | | | | | | | | | B0203000 | B0203100 | B020C300 | B0102000 |
|-----------------------------|---------|----------------|----------------|----------------|------------------|-----|-----|---------------|-----------------|------------------|--------------------|-----------------|----------|
| Ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | | Dimens.-Ident | Rekord 1B-VA NT | Rekord 1B-VA TIN | Rekord 1B-VA GLT-1 | Rekord 1A-GG NT | |
| | | | | | | | | | LK-M | 3 | 0,5 | 56 | 11 |
| | 4 | 0,7 | 63 | 13 | 21 | 4,5 | 3,4 | 3,55 | | | | ○ | |
| | 5 | 0,8 | 70 | 15 | 25 | 6 | 4,4 | 4,4 | ● | ○ | ○ | ○ | |
| | 6 | 1 | 80 | 17 | 30 | 6 | 4,9 | 5,2 | ● | ● | ○ | ● | |
| | 8 | 1,25 | 90 | 20 | 35 | 8 | 6,2 | 7 | ● | ● | ○ | ● | |
| | 10 | 1,5 | 100 | 22 | 39 | 10 | 8,8 | 8,8 | ● | ● | ○ | ● | |
| DIN 376 | | | | | | | | | | 230 | 230 | 230 | 230 |



LK-M

EMUGE-Norm · EMUGE Standard



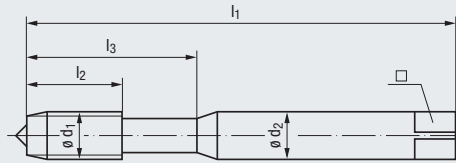
DIN 371

AL
Aluminium wrought alloys

new



Z
CNC-controlled machines



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



GLT-8

HSSE

R45

C / 2-3

E / O

TIN

HSSE

R45

E / 1,5-2

E / O / P

E / 1,5-2

E / O / P

Gewindetiefe und Lochform
Thread depth and hole type

max. 2,5 x d₁



max. 3 x d₁



Einsatzgebiete – Material
Applications – material

» 22

N 1.1-4

P 1.1-4.1

M 1.1-2.1

N 2.1

P 1.1-4.1

M 1.1-3.1

N 1.4-6

N 2.1-2, 2.4-5

S 1.1

Werkzeug-Ident · Tool ident

B050S800

B0513500

B0513700

| ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | Image | Dimens.- Ident | Enorm | | |
|------------------------|---------|----------------|----------------|----------------|------------------|-----|-------|-------------------|---------------|-------|--------------|
| | | | | | | | | | 1-AL GLT-8 | 1-Z/E | 1-Z/E TIN |
| LK-M 3 | 0,5 | 56 | 6 | 18 | 3,5 | 2,7 | 2,7 | .1046 | ● | ● | ○ |
| 4 | 0,7 | 63 | 7 | 21 | 4,5 | 3,4 | 3,55 | .1048 | ● | ● | ○ |
| 5 | 0,8 | 70 | 8 | 25 | 6 | 4,9 | 4,4 | .1050 | ● | ● | ○ |
| 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 5,2 | .1052 | ● | ● | ● |
| 8 | 1,25 | 90 | 14 | 35 | 8 | 6,2 | 7 | .1054 | ● | ● | ● |
| 10 | 1,5 | 100 | 16 | 39 | 10 | 8 | 8,8 | .1056 | ● | ● | ● |

DIN 376



» 231

» 231

- 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 (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

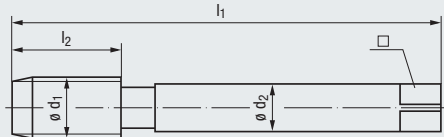


- Product Finder
- V_c
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



EMUGE-Norm · EMUGE Standard

DIN 376



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

| | | | |
|-----------|-----------|-----------|---------|
| NT | TIN | GLT-1 | NT |
| HSSE | HSSE | HSSE | HSSE |
| B / 4-5 | B / 4-5 | B / 4-5 | C / 2-3 |
| E / O / P | E / O / P | E / O / P | E |

Technische Informationen
Technical information

» 245 - 266

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

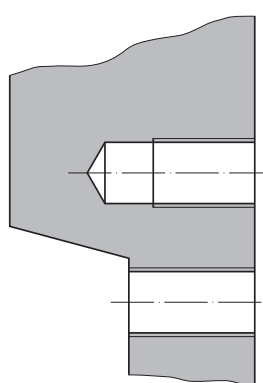
| | | | |
|--------------|--------------|-----------|---------|
| P 1.1-3.1 | P 1.1-4.1 | P 1.1-4.1 | K 1.1-2 |
| M 1.1-2.1 | M 1.1-3.1 | M 1.1-3.1 | |
| K 2.1 | K 2.1 | K 2.1 | |
| N 2.2, 2.5-6 | N 2.2, 2.5-6 | N 2.2 | |

Werkzeug-Ident · Tool ident

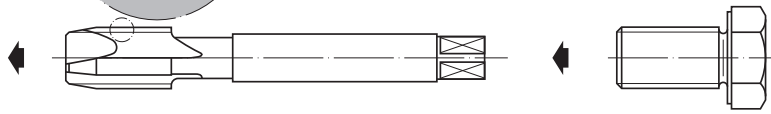
C0203000 C0203100 C020C300 C0102000

| | ø d ₁ mm | P mm | l ₁ | l ₂ | ø d ₂ | □ | Dimens.- Ident | Rekord | Rekord | Rekord | Rekord |
|------|------------------------|---------|----------------|----------------|------------------|------|-------------------|-------------|--------------|----------------|-------------|
| | | | | | | | | 2B-VA NT | 2B-VA TIN | 2B-VA GLT-1 | 2A-GG NT |
| LK-M | 12 | 1,75 | 110 | 24 | 9 | 7 | .1058 | ● | ● | ○ | ○ |
| | 14 | 2 | 110 | 26 | 11 | 9 | .1059 | ● | ● | ○ | ○ |
| | 16 | 2 | 110 | 27 | 12 | 9 | .1060 | ● | ● | ○ | ○ |
| | 20 | 2,5 | 140 | 32 | 16 | 12 | .1062 | ● | ● | ○ | ○ |
| | 24 | 3 | 160 | 34 | 18 | 14,5 | .1064 | ● | ● | ○ | ○ |

DIN 371 228 228 228 228

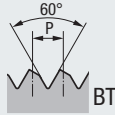


Ausführung BT
Type BT



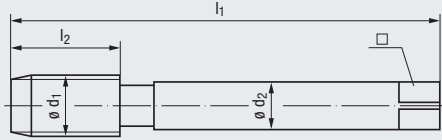
BT = Keilfläche nach hinten geneigt
BT = Wedge ramp inclined backwards

LK-M



EMUGE-Norm · EMUGE Standard

DIN 376



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



Gewindetiefe und Lochform
Thread depth and hole type

Einsatzgebiete – Material
Applications – material

» 22

Werkzeug-Ident · Tool ident

| | Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | | Dimens.- Ident | Werkzeug-Ident | |
|-------------|------------------------|---------|----------------|----------------|------------------|------|------|-------------------|----------------|-----------------------|
| | | | | | | | | | Enorm 2-Z/E | Enorm 2-Z/E TIN |
| LK-M | 12 | 1,75 | 110 | 18 | 9 | 7 | 10,7 | .1058 | ● | ● |
| | 14 | 2 | 110 | 20 | 11 | 9 | 12,5 | .1059 | ● | ● |
| | 16 | 2 | 110 | 22 | 12 | 9 | 14,5 | .1060 | ● | ● |
| | 20 | 2,5 | 140 | 25 | 16 | 12 | 18 | .1062 | ○ | ○ |
| | 24 | 3 | 160 | 30 | 18 | 14,5 | 21,5 | .1064 | ○ | ○ |

DIN 371



» 229

» 229

Z
CNC-controlled
machines



- HSSE
- R45
- E / 1,5-2**
- E / O / P
- TIN
- HSSE
- R45
- E / 1,5-2**
- E / O / P

max. 3 x d₁



- P 1.1-4.1**
- M 1.1-2.1**
- N 2.1**
- P 1.1-4.1**
- M 1.1-3.1**
- N 1.4-6**
- N 2.1-2, 2.4-5**
- S 1.1**

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

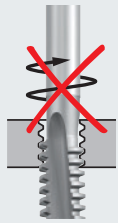
Tech. Info



- Product Finder
- Vc
- 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
- Tech. Info

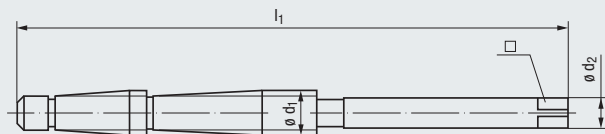


DIN 103



Nicht reversieren!
No reversal!

2-Stufen-Ausführung
2-step design



STEEL
Steel materials

| | | | | |
|---|-------------|---------------------------------|------|----------------|
| Technische Informationen Technical information | ▶ 245 - 266 | Toleranz · Tolerance | 7H | 7H |
| | | Beschichtung · Coating | HSSE | HSSE |
| | | Schneidstoff · Cutting material | L05 | LH, R05 |
| | | | 0 | 0 |

| | | |
|---|---------------------------------------|--|
| Gewindetiefe und Lochform Thread depth and hole type | max. 2 x d ₁ ¹⁾ | |
|---|---------------------------------------|--|

| | | | |
|--|------|--------------------------------------|--------------------------------------|
| Einsatzgebiete – Material Applications – material | ▶ 22 | P 1.1-3.1 K 1.1-2 N 2.2-3, 2.6 | P 1.1-3.1 K 1.1-2 N 2.2-3, 2.6 |
|--|------|--------------------------------------|--------------------------------------|

Werkzeug-Ident · Tool ident

| Tr | ø d ₁ mm | P mm | l ₁ | ø d ₂ | □ | | Dimens.-Ident | G0351000 | G0351050 |
|----|------------------------|---------|----------------|------------------|------|-------|---------------|--------------------|-----------------------|
| | | | | | | | | TRAPEZ 2Stuf STEEL | TRAPEZ 2Stuf STEEL-LH |
| | 8 | x 1,5 | 105 | 6 | 4,9 | 6,6 | .7040 | ○ | ○ |
| | 9 | x 2 | 130 | 7 | 5,5 | 7,2 | .7042 | ○ | ○ |
| | 10 | x 2 | 130 | 7 | 5,5 | 8,2 | .7043 | ○ | ○ |
| | 10 | x 3 | 155 | 7 | 5,5 | 7,25 | .7044 | ○ | ○ |
| | 11 | x 3 | 155 | 8 | 6,2 | 8,25 | .7045 | ○ | ○ |
| | 12 | x 3 | 160 | 9 | 7 | 9,25 | .7046 | ○ | ○ |
| | 14 | x 3 | 170 | 10 | 8 | 11,25 | .7047 | ○ | ○ |
| | 14 | x 4 | 195 | 10 | 8 | 10,25 | .7048 | ○ | ○ |
| | 16 | x 4 | 225 | 12 | 9 | 12,25 | .7051 | ○ | ○ |
| | 18 | x 4 | 225 | 14 | 11 | 14,25 | .7052 | ○ | ○ |
| | 20 | x 4 | 225 | 16 | 12 | 16,25 | .7053 | ○ | ○ |
| | 22 | x 5 | 260 | 16 | 12 | 17,25 | .7054 | ○ | ○ |
| | 24 | x 5 | 285 | 18 | 14,5 | 19,25 | .7055 | ○ | ○ |
| | 26 | x 5 | 285 | 20 | 16 | 21,25 | .7057 | ○ | ○ |
| | 28 | x 5 | 300 | 22 | 18 | 23,25 | .7058 | ○ | ○ |
| | 30 | x 6 | 335 | 22 | 18 | 24,25 | .7059 | ○ | ○ |
| | 32 | x 6 | 335 | 25 | 20 | 26,25 | .7060 | ○ | ○ |
| | 34 | x 6 | 350 | 28 | 22 | 28,25 | .7061 | ○ | ○ |
| | 36 | x 6 | 350 | 28 | 22 | 30,25 | .7062 | ○ | ○ |
| | 38 | x 7 | 385 | 28 | 22 | 31,5 | .7063 | ○ | ○ |
| | 40 | x 7 | 400 | 32 | 24 | 33,5 | .7064 | ○ | ○ |
| | 42 | x 7 | 400 | 32 | 24 | 35,5 | .7065 | ○ | ○ |
| | 44 | x 7 | 410 | 36 | 29 | 37,5 | .7066 | ○ | ○ |
| | 46 | x 8 | 440 | 36 | 29 | 38,5 | .7067 | ○ | ○ |
| | 48 | x 8 | 455 | 40 | 32 | 40,5 | .7068 | ○ | ○ |
| | 50 | x 8 | 470 | 40 | 32 | 42,5 | .7069 | ○ | ○ |
| | 52 | x 8 | 470 | 40 | 32 | 44,5 | .7070 | ○ | ○ |

¹⁾ Bei entsprechender Einspannlänge bis ca. 2,5 x d₁
With sufficient clamping length up to approx. 2.5 x d₁



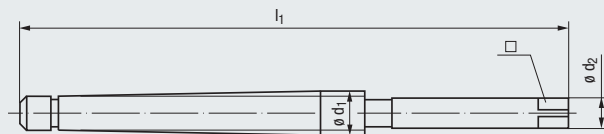
DIN 103

NC

VA
Stainless steel materials



Muss mit zwangsläufiger Steigung geschnitten werden
Positive feed control is necessary



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | |
|------|---------|
| 7H | 7H |
| NT | NT |
| HSSE | HSSE |
| L25 | LH, R25 |
| 0 | 0 |

Gewindetiefe und Lochform
Thread depth and hole type

max. 1,5 x d₁




Einsatzgebiete – Material
Applications – material

» 22

| | |
|-----------|-----------|
| P 1.1-3.1 | P 1.1-3.1 |
| M 1.1-2.1 | M 1.1-2.1 |
| K 2.1-4.2 | K 2.1-4.2 |
| N 2.4-6 | N 2.4-6 |

Werkzeug-Ident · Tool ident

G0303000 G0303050

| Tr | ø d ₁ mm | x | P mm | l ₁ | ø d ₂ | □ |  Dimens.-Ident | TRAPEZ AM-VA NT | TRAPEZ AM-VA-LH NT | |
|----|------------------------|---|---------|----------------|------------------|------|---|-----------------|--------------------|---|
| | | | | | | | | | | |
| | 8 | x | 1,5 | 90 | 6 | 4,9 | 6,6 | .7040 | ○ | ○ |
| | 9 | x | 2 | 110 | 7 | 5,5 | 7,2 | .7042 | ○ | ○ |
| | 10 | x | 2 | 110 | 7 | 5,5 | 8,2 | .7043 | ○ | ○ |
| | 10 | x | 3 | 130 | 7 | 5,5 | 7,25 | .7044 | ○ | ○ |
| | 11 | x | 3 | 130 | 8 | 6,2 | 8,25 | .7045 | ○ | ○ |
| | 12 | x | 3 | 140 | 9 | 7 | 9,25 | .7046 | ○ | ○ |
| | 14 | x | 3 | 145 | 10 | 8 | 11,25 | .7047 | ○ | ○ |
| | 14 | x | 4 | 165 | 10 | 8 | 10,25 | .7048 | ○ | ○ |
| | 16 | x | 4 | 190 | 12 | 9 | 12,25 | .7051 | ○ | ○ |
| | 18 | x | 4 | 195 | 14 | 11 | 14,25 | .7052 | ○ | ○ |
| | 20 | x | 4 | 195 | 16 | 12 | 16,25 | .7053 | ○ | ○ |
| | 22 | x | 5 | 220 | 16 | 12 | 17,25 | .7054 | ○ | ○ |
| | 24 | x | 5 | 245 | 18 | 14,5 | 19,25 | .7055 | ○ | ○ |
| | 26 | x | 5 | 245 | 20 | 16 | 21,25 | .7057 | ○ | ○ |
| | 28 | x | 5 | 260 | 22 | 18 | 23,25 | .7058 | ○ | ○ |
| | 30 | x | 6 | 285 | 22 | 18 | 24,25 | .7059 | ○ | ○ |

- 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 (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



- Product Finder
- Vc
- 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
- Tech. Info



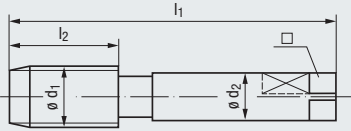
DIN 103

≈ DIN 352

MS
Copper-zinc alloys



Speziell für Drehautomaten
Specially made for automatic lathes



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



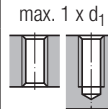
7H

HSSE

E / 1,5-2

0

Gewindetiefe und Lochform
Thread depth and hole type



N 2.3

Einsatzgebiete – Material
Applications – material

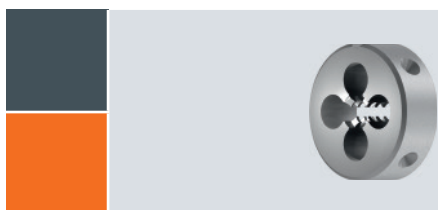
» 22

Werkzeug-Ident · Tool ident

G0442500

| Tr | ø d ₁ mm | P mm | l ₁ | l ₂ | ø d ₂ | □ | Image | Dimens.- Ident | TRAPEZ AUT-A MS | | | | |
|----|------------------------|---------|----------------|----------------|------------------|-----|-------|-------------------|-----------------------|--|--|--|--|
| | | | | | | | | | | | | | |
| | 8 | x 1,5 | 70 | 22 | 8 ¹⁾ | 6,2 | 6,6 | .7040 | ○ | | | | |
| | 8 | x 2 | 70 | 22 | 8 ¹⁾ | 6,2 | 6,2 | .7041 | ○ | | | | |
| | 9 | x 2 | 70 | 22 | 8 ¹⁾ | 6,2 | 7,2 | .7042 | ○ | | | | |
| | 10 | x 2 | 70 | 22 | 8 ¹⁾ | 6,2 | 8,2 | .7043 | ○ | | | | |
| | 10 | x 3 | 70 | 22 | 8 ¹⁾ | 6,2 | 7,25 | .7044 | ○ | | | | |
| | 11 | x 3 | 75 | 24 | 9 | 7 | 8,25 | .7045 | ○ | | | | |
| | 12 | x 3 | 75 | 25 | 9 | 7 | 9,25 | .7046 | ○ | | | | |
| | 14 | x 3 | 80 | 26 | 10 ¹⁾ | 8 | 11,25 | .7047 | ○ | | | | |
| | 14 | x 4 | 80 | 26 | 10 ¹⁾ | 8 | 10,25 | .7048 | ○ | | | | |
| | 16 | x 4 | 80 | 27 | 12 | 9 | 12,25 | .7051 | ○ | | | | |
| | 18 | x 4 | 95 | 32 | 12 ¹⁾ | 9 | 14,25 | .7052 | ○ | | | | |
| | 20 | x 4 | 95 | 32 | 15 ¹⁾ | 12 | 16,25 | .7053 | ○ | | | | |

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

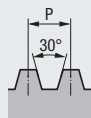


Schneideisen für Trapez-Gewinde
siehe Seite 496 - 497

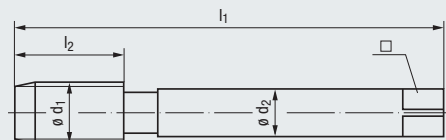
Dies for trapezoidal threads,
see page 496 - 497

Tr-F

DIN 103



≈ DIN 374/376



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material




Gewindetiefe und Lochform
Thread depth and hole type

Einsatzgebiete – Material
Applications – material

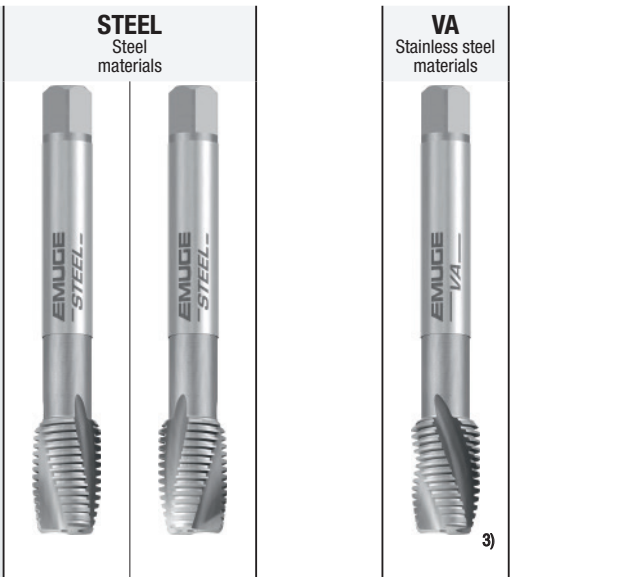
» 22

Werkzeug-Ident · Tool ident



| Tr | ø d ₁ mm | x | P mm | l ₁ | l ₂ | ø d ₂ | □ |  Dimens.-Ident | STEEL Steel materials | | VA Stainless steel materials |
|----|------------------------|---|---------|----------------|----------------|------------------|------|---|--------------------------|---------------------------|---------------------------------|
| | | | | | | | | | TRAPEZ Rekord 2C-STEEL | TRAPEZ Rekord 2C-STEEL LH | TRAPEZ Rekord 2C-VA NT |
| | 9 | x | 1,5 | 100 | 22 | 7 | 5,5 | 7,6 | ○ | ○ | ○ |
| | 10 | x | 1,5 | 100 | 22 | 7 | 5,5 | 8,6 | ○ | ○ | ○ |
| | 11 | x | 2 | 100 | 22 | 8 | 6,2 | 9,2 | ○ | ○ | ○ |
| | 12 | x | 2 | 110 | 25 | 9 | 7 | 10,2 | ○ | ○ | ○ |
| | 14 | x | 2 | 110 | 26 | 11 | 9 | 12,2 | ○ | ○ | ○ |
| | 16 | x | 2 | 110 | 27 | 12 | 9 | 14,2 | ○ | ○ | ○ |
| | 18 | x | 2 | 125 | 27 | 14 | 11 | 16,2 | ○ | ○ | ○ |
| | 20 | x | 2 | 140 | 27 | 16 | 12 | 18,2 | ○ | ○ | ○ |
| | 22 | x | 3 | 160 | 34 | 18 | 14,5 | 19,25 | ○ | ○ | ○ |
| | 24 | x | 3 | 160 | 36 | 18 | 14,5 | 21,25 | ○ | ○ | ○ |
| | 26 | x | 3 | 160 | 36 | 20 | 16 | 23,25 | ○ | ○ | ○ |
| | 28 | x | 3 | 180 | 40 | 22 | 18 | 25,25 | ○ | ○ | ○ |
| | 30 | x | 3 | 180 | 40 | 22 | 18 | 27,25 | ○ | ○ | ○ |

2) Bei entsprechender Einspannlänge bis ca. 2,5 x d₁
With sufficient clamping length up to approx. 2.5 x d₁

3) Muss mit zwangsläufiger Steigung geschnitten werden
Positive feed control is necessary



| | | |
|------|---------|------|
| 7H | 7H | 7H |
| HSSE | HSSE | HSSE |
| L15 | LH, R15 | L25 |
| 0 | 0 | 0 |

| | |
|---|---|
| max. 2 x d ₁ 2) | max. 2 x d ₁ |
|  |  |

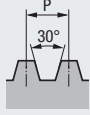
| | | |
|-----------|-----------|-----------|
| P 1.1-2.1 | P 1.1-2.1 | P 1.1-3.1 |
| | | M 1.1-2.1 |
| | | K 2.1-4.2 |
| | | N 2.4-6 |

- 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
- Tech. Info



- Product Finder
- Vc
- 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
- Tech. Info

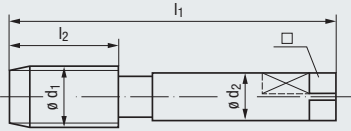
Tr-F



≈ DIN 352

DIN 103

Speziell für Drehautomaten
Specially made for automatic lathes



MS
Copper-zinc alloys



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



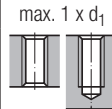
7H

HSSE

E / 1,5-2

0

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Applications – material

» 22

N 2.3

Werkzeug-Ident · Tool ident

G0442500

| Tr | Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | Image | Dimens.- Ident | TRAPEZ AUT-A MS | | | | |
|----|------------------------|---------|----------------|----------------|------------------|------|-------|-------------------|-----------------------|--|--|--|--|
| | | | | | | | | | | | | | |
| | 9 | x 1,5 | 70 | 22 | 8 ¹⁾ | 6,2 | 7,6 | .7111 | ○ | | | | |
| | 10 | x 1,5 | 70 | 22 | 8 ¹⁾ | 6,2 | 8,6 | .7112 | ○ | | | | |
| | 11 | x 2 | 75 | 24 | 9 | 7 | 9,2 | .7128 | ○ | | | | |
| | 12 | x 2 | 75 | 25 | 9 | 7 | 10,2 | .7129 | ○ | | | | |
| | 14 | x 2 | 80 | 26 | 10 ¹⁾ | 8 | 12,2 | .7130 | ○ | | | | |
| | 16 | x 2 | 80 | 27 | 12 | 9 | 14,2 | .7132 | ○ | | | | |
| | 18 | x 2 | 80 | 22 | 12 ¹⁾ | 9 | 16,2 | .7133 | ○ | | | | |
| | 20 | x 2 | 80 | 22 | 15 ¹⁾ | 12 | 18,2 | .7134 | ○ | | | | |
| | 22 | x 3 | 100 | 32 | 15 ¹⁾ | 12 | 19,25 | .7156 | ○ | | | | |
| | 24 | x 3 | 110 | 36 | 18 | 14,5 | 21,25 | .7157 | ○ | | | | |
| | 26 | x 3 | 110 | 36 | 18 | 14,5 | 23,25 | .7159 | ○ | | | | |
| | 28 | x 3 | 125 | 36 | 18 ¹⁾ | 14,5 | 25,25 | .7160 | ○ | | | | |
| | 30 | x 3 | 125 | 34 | 18 ¹⁾ | 14,5 | 27,25 | .7161 | ○ | | | | |

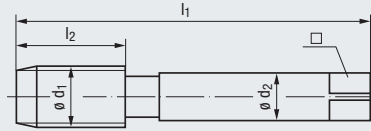
1) Spezieller AUT-Schaft
Special shank for "AUT" taps



DIN 405

≈ DIN 352

STEEL
Steel materials



Technische Informationen
Technical information

» 245 - 266

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



Gewindetiefe und Lochform
Thread depth and hole type

Einsatzgebiete – Material
Applications – material

» 22

Werkzeug-Ident · Tool ident

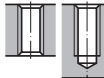
7H

HSSE

C / 2-3

0

max. 1 x d₁




P 1.1-2.1

K 1.1-4.2

N 2.2-3

G0401000

RUND
Rekord
A-STEEL

| | ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | ø d ₂ | □ |  | Dimens.- Ident | | | | |
|-----------|------------------------|------------------|----------------|----------------|------------------|------|---|-------------------|---|--|--|--|
| Rd | 8 | x 10 | 70 | 22 | 8 | 6,2 | 6 | .7287 | ○ | | | |
| | 9 | x 10 | 70 | 22 | 8 | 6,2 | 7 | .7288 | ○ | | | |
| | 10 | x 10 | 70 | 22 | 8 | 6,2 | 8 | .7289 | ○ | | | |
| | 11 | x 10 | 70 | 22 | 8 | 6,2 | 9 | .7290 | ○ | | | |
| | 12 | x 10 | 75 | 25 | 9 | 7 | 10 | .7291 | ○ | | | |
| | 14 | x 8 | 80 | 26 | 11 | 9 | 11,5 | .7293 | ○ | | | |
| | 16 | x 8 | 80 | 27 | 12 | 9 | 13,5 | .7294 | ○ | | | |
| | 18 | x 8 | 95 | 32 | 14 | 11 | 15,5 | .7295 | ○ | | | |
| | 20 | x 8 | 95 | 32 | 16 | 12 | 17,5 | .7296 | ○ | | | |
| | 22 | x 8 | 100 | 32 | 18 | 14,5 | 19,5 | .7297 | ○ | | | |
| | 24 | x 8 | 110 | 36 | 18 | 14,5 | 21,5 | .7298 | ○ | | | |
| | 26 | x 8 | 110 | 36 | 20 | 16 | 23,5 | .7299 | ○ | | | |
| | 28 | x 8 | 125 | 34 | 22 | 18 | 25,5 | .7300 | ○ | | | |
| | 30 | x 8 | 125 | 34 | 22 | 18 | 27,5 | .7301 | ○ | | | |



Gewindelehren
siehe Seite 581 - 654

Thread gauges,
see page 581 - 654

- Product Finder
- Vc
- 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



| | | Gewindeschneidöle, chlorfrei | Thread cutting oils, chlorine-free | | | | | | |
|---|---|--------------------------------|-------------------------------------|---|---|---|---|---|---|
| | <table border="1"> <tr><td>P</td><td>M</td></tr> <tr><td>K</td><td>N</td></tr> <tr><td>S</td><td>H</td></tr> </table> | P | M | K | N | S | H | Für Stahlwerkstoffe Kann sowohl für Pinsel- als auch für Umlaufschmierung verwendet werden. | For steel materials Can be used for brush and circulation lubrication. |
| P | M | | | | | | | | |
| K | N | | | | | | | | |
| S | H | | | | | | | | |
| | <table border="1"> <tr><td>P</td><td>M</td></tr> <tr><td>K</td><td>N</td></tr> <tr><td>S</td><td>H</td></tr> </table> | P | M | K | N | S | H | Für Gusswerkstoffe Kann sowohl für Pinsel- als auch für Umlaufschmierung verwendet werden. | For cast materials Can be used for brush and circulation lubrication. |
| P | M | | | | | | | | |
| K | N | | | | | | | | |
| S | H | | | | | | | | |
| | <table border="1"> <tr><td>P</td><td>M</td></tr> <tr><td>K</td><td>N</td></tr> <tr><td>S</td><td>H</td></tr> </table> | P | M | K | N | S | H | Für nahezu alle Werkstoffe Als Emulsion im Mischungsverhältnis 1:8 einzusetzen. Kann auch im unverdünnten Zustand verwendet werden. Für die Bearbeitung von Kupferwerkstoffen nur bedingt geeignet! | For almost all materials For use as emulsion in a mixing ratio of 1:8. Can be used in undiluted state also. Limited suitability for the machining of copper materials! |
| P | M | | | | | | | | |
| K | N | | | | | | | | |
| S | H | | | | | | | | |
| | <table border="1"> <tr><td>P</td><td>M</td></tr> <tr><td>K</td><td>N</td></tr> <tr><td>S</td><td>H</td></tr> </table> | P | M | K | N | S | H | Für Nichteisen-Werkstoffe Kann sowohl für Pinsel- als auch für Umlaufschmierung verwendet werden. | For non ferrous materials Can be used for brush and circulation lubrication. |
| P | M | | | | | | | | |
| K | N | | | | | | | | |
| S | H | | | | | | | | |
| | <table border="1"> <tr><td>P</td><td>M</td></tr> <tr><td>K</td><td>N</td></tr> <tr><td>S</td><td>H</td></tr> </table> | P | M | K | N | S | H | Für schwer zerspanbare Werkstoffe Zum Gewindeformen hervorragend geeignet. Kann sowohl für Pinsel- als auch für Umlaufschmierung verwendet werden. Für die Bearbeitung von Buntmetall nicht geeignet! | For difficult materials Perfectly suitable for the cold forming of threads. Can be used for brush and circulation lubrication. Not suitable for the machining of non-ferrous materials! |
| P | M | | | | | | | | |
| K | N | | | | | | | | |
| S | H | | | | | | | | |
| | | Gewindeschneidpaste, chlorfrei | Thread cutting paste, chlorine-free | | | | | | |
| | <table border="1"> <tr><td>P</td><td>M</td></tr> <tr><td>K</td><td>N</td></tr> <tr><td>S</td><td>H</td></tr> </table> | P | M | K | N | S | H | Für schwer zerspanbare Werkstoffe Zum Gewindeformen hervorragend geeignet. Besonders vorteilhaft bei waagrechter Bearbeitung, großen Abmessungen und Durchgangslochgewinden. Kann nur für Pinselschmierung verwendet werden. Für die Bearbeitung von Buntmetall nur bedingt geeignet! | For difficult materials Perfectly suitable for the cold forming of threads. Especially useful in horizontal machining, with large thread sizes and through hole threads. To be used only for brush lubrication. Limited suitability for the machining of non-ferrous materials! |
| P | M | | | | | | | | |
| K | N | | | | | | | | |
| S | H | | | | | | | | |

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.

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.

| Nr. No. | Gebinde Container size | Artikel-Nr. Article no. | |
|------------------------|------------------------|-------------------------|---|
| 1+ STEEL | 1 kg | FZ191015.01 | ● |
| | 5 kg | FZ191015.05 | ● |
| | 10 kg | FZ191015.10 | ● |
| | 20 kg | FZ191015.20 | ● |
| 2+ CAST IRON | 1 kg | FZ191115.01 | ● |
| | 5 kg | FZ191115.05 | ● |
| | 10 kg | FZ191115.10 | ● |
| | 20 kg | FZ191115.20 | ● |
| 3+ EMULSION | 1 kg | FZ191215.01 | ● |
| | 5 kg | FZ191215.05 | ● |
| | 10 kg | FZ191215.10 | ● |
| | 20 kg | FZ191215.20 | ● |

| Nr. No. | Gebinde Container size | Artikel-Nr. Article no. | |
|--------------------------|------------------------|-------------------------|---|
| 4+ NON FERROUS | 1 kg | FZ191315.01 | ● |
| | 5 kg | FZ191315.05 | ● |
| | 10 kg | FZ191315.10 | ● |
| | 20 kg | FZ191315.20 | ● |
| 5+ HIGH ALLOY | 1 kg | FZ191415.01 | ● |
| | 5 kg | FZ191415.05 | ● |
| | 10 kg | FZ191415.10 | ● |
| | 20 kg | FZ191415.20 | ● |
| 6+ PASTE | 0,45 kg | FZ191515.005 | ● |
| | 4,5 kg | FZ191515.05 | ● |

- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



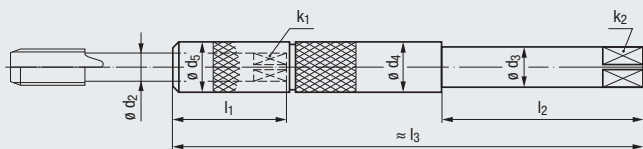
● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
 ○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

- 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
- Tech. Info



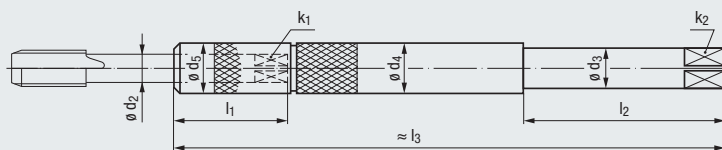
Für den Einsatz auf CNC-Maschinen und herkömmlichen Gewindeschneideinrichtungen
 For use on CNC machines and conventional thread cutting machinery

Kurze Ausführung Short design



| Größe Size | Baumaße Gewindebohrer / Gewindeformer Dimensions of tap / cold-forming tap | | | | Baumaße Schaftverlängerung Dimensions of extension | | | | | | Artikel-Nr. Article no. | |
|---------------|---|----------------|------------|------------|---|------------------------------------|-----------------------------------|----------------|-----------------------------------|----------------|----------------------------|---|
| | ∅ d ₂ | k ₁ | | | l ₁ | ∅ d ₃ h ₉ | k ₂ h ₁₂ | l ₂ | ∅ d ₄ / d ₅ | l ₃ | | |
| 1 | 2,8 | 2,1 | M 2 - M2,6 | M 4 | 21 | 6 | 4,9 | 60 | 6,1 | 130 | FZ111300.01 | ● |
| 2 | 3,5 | 2,7 | M 3 | M 4,5 - M5 | 22 | 6 | 4,9 | 60 | 7,5 | 130 | FZ111300.02 | ● |
| 3 | 4 | 3 | M 3,5 | M 5,5 | 22 | 6 | 4,9 | 60 | 8,4 | 130 | FZ111300.03 | ● |
| 4 | 4,5 | 3,4 | M 4 | M 6 | 22 | 6 | 4,9 | 60 | 8,4 | 130 | FZ111300.04 | ● |
| 5 | 6 | 4,9 | M 4,5 - M6 | M 8 | 25 | 7 | 5,5 | 60 | 12,1 | 130 | FZ111300.05 | ● |
| 6 | 7 | 5,5 | M 7 | M 9 - M10 | 25 | 7 | 5,5 | 60 | 12,1 | 130 | FZ111300.06 | ● |
| 7 | 8 | 6,2 | M 8 | M11 | 29 | 8 | 6,2 | 60 | 13 | 130 | FZ111300.07 | ● |
| 8 | 9 | 7 | M 9 | M12 | 30 | 9 | 7 | 60 | 15 | 130 | FZ111300.08 | ● |
| 9 | 10 | 8 | M10 | - | 32 | 10 | 8 | 60 | 15 | 130 | FZ111300.09 | ● |
| 10 | 11 | 9 | - | M14 | 35 | 11 | 9 | 90 | 18 | 180 | FZ111300.10 | ● |
| 11 | 12 | 9 | (M12) | M16 | 35 | 12 | 9 | 90 | 18 | 180 | FZ111300.11 | ● |
| 12 | 14 | 11 | - | M18 | 39 | 14 | 11 | 90 | 22 | 180 | FZ111300.12 | ● |
| 13 | 16 | 12 | - | M20 | 40 | 16 | 12 | 90 | 22 | 180 | FZ111300.13 | ● |
| 14 | 18 | 14,5 | - | M22 - M24 | 42 | 18 | 14,5 | 100 | 26 | 200 | FZ111300.14 | ● |
| 15 | 20 | 16 | - | M27 | 44 | 20 | 16 | 100 | 28 | 200 | FZ111300.15 | ● |
| 16 | 22 | 18 | - | M30 | 46 | 22 | 18 | 100 | 30 | 200 | FZ111300.16 | ● |
| 17 | 25 | 20 | - | M33 | 49 | 25 | 20 | 100 | 35 | 200 | FZ111300.17 | ● |

Lange Ausführung Long design



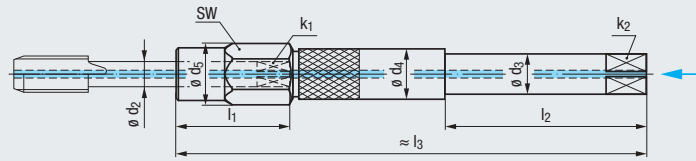
| Größe Size | Baumaße Gewindebohrer / Gewindeformer Dimensions of tap / cold-forming tap | | | | Baumaße Schaftverlängerung Dimensions of extension | | | | | | Artikel-Nr. Article no. | |
|---------------|---|----------------|------------|------------|---|------------------------------------|-----------------------------------|----------------|-----------------------------------|----------------|----------------------------|---|
| | ∅ d ₂ | k ₁ | | | l ₁ | ∅ d ₃ h ₉ | k ₂ h ₁₂ | l ₂ | ∅ d ₄ / d ₅ | l ₃ | | |
| 1 | 2,8 | 2,1 | M 2 - M2,6 | M 4 | 21 | 6 | 4,9 | 65 | 6,1 | 230 | FZ111310.01 | ● |
| 2 | 3,5 | 2,7 | M 3 | M 4,5 - M5 | 22 | 6 | 4,9 | 70 | 7,5 | 230 | FZ111310.02 | ● |
| 3 | 4 | 3 | M 3,5 | M 5,5 | 22 | 6 | 4,9 | 70 | 8,4 | 230 | FZ111310.03 | ● |
| 4 | 4,5 | 3,4 | M 4 | M 6 | 22 | 6 | 4,9 | 70 | 8,4 | 230 | FZ111310.04 | ● |
| 5 | 6 | 4,9 | M 4,5 - M6 | M 8 | 25 | 7 | 5,5 | 70 | 12,1 | 230 | FZ111310.05 | ● |
| 6 | 7 | 5,5 | M 7 | M 9 - M10 | 25 | 7 | 5,5 | 70 | 12,1 | 230 | FZ111310.06 | ● |
| 7 | 8 | 6,2 | M 8 | M11 | 29 | 8 | 6,2 | 80 | 13 | 230 | FZ111310.07 | ● |
| 8 | 9 | 7 | M 9 | M12 | 30 | 9 | 7 | 80 | 15 | 230 | FZ111310.08 | ● |
| 9 | 10 | 8 | M10 | - | 32 | 10 | 8 | 80 | 15 | 230 | FZ111310.09 | ● |
| 10 | 11 | 9 | - | M14 | 35 | 11 | 9 | 90 | 18 | 330 | FZ111310.10 | ● |
| 11 | 12 | 9 | (M12) | M16 | 35 | 12 | 9 | 90 | 18 | 330 | FZ111310.11 | ● |
| 12 | 14 | 11 | - | M18 | 39 | 14 | 11 | 90 | 22 | 330 | FZ111310.12 | ● |
| 13 | 16 | 12 | - | M20 | 40 | 16 | 12 | 90 | 22 | 330 | FZ111310.13 | ● |
| 14 | 18 | 14,5 | - | M22 - M24 | 42 | 18 | 14,5 | 100 | 26 | 330 | FZ111310.14 | ● |
| 15 | 20 | 16 | - | M27 | 44 | 20 | 16 | 100 | 28 | 330 | FZ111310.15 | ● |
| 16 | 22 | 18 | - | M30 | 46 | 22 | 18 | 100 | 30 | 330 | FZ111310.16 | ● |
| 17 | 25 | 20 | - | M33 | 49 | 25 | 20 | 100 | 35 | 330 | FZ111310.17 | ● |



Ersatz-Spannkappen oder Sechskant-Spannkappen auf Anfrage
 Spare clamping nuts or hexagon clamping nuts are available upon request

Für den Einsatz auf CNC-Maschinen und herkömmlichen Gewindeschneideinrichtungen
For use on CNC machines and conventional thread cutting machinery

Kurze Ausführung, mit innerer Kühlschmierstoff-Zufuhr
Short design, with internal coolant supply

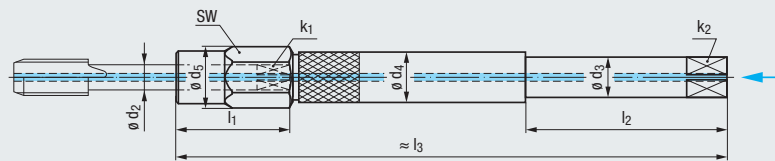


IKZ

p_{max}
50bar
(700psi)

| Größe Size | Baumaße Gewindebohrer / Gewindeformer Dimensions of tap / cold-forming tap | | | | Baumaße Schaftverlängerung Dimensions of extension | | | | | | | Spannkappe Clamping nut | | Artikel-Nr. Article no. | new |
|---------------|---|----------------|------------|------------|---|------------------------------------|-----------------------------------|----------------|------------------|------------------|----------------|----------------------------|------------------------------------|----------------------------|-----|
| | ø d ₂ | k ₁ | | | l ₁ | ø d ₃ h ₉ | k ₂ h ₁₂ | l ₂ | ø d ₄ | ø d ₅ | l ₃ | SW (W/F) | M _d ¹⁾ Nm | | |
| 1 | 2,8 | 2,1 | M 2 - M2,6 | M 4 | 21 | 6 | 4,9 | 60 | 6,1 | 6,5 | 130 | 6 | 2 | FZ112600.01 | ● |
| 2 | 3,5 | 2,7 | M 3 | M 4,5 - M5 | 22 | 6 | 4,9 | 60 | 7,5 | 9 | 130 | 8 | 2 | FZ112600.02 | ● |
| 3 | 4 | 3 | M 3,5 | M 5,5 | 22 | 6 | 4,9 | 60 | 8,4 | 10 | 130 | 9 | 2,5 | FZ112600.03 | ● |
| 4 | 4,5 | 3,4 | M 4 | M 6 | 22 | 6 | 4,9 | 60 | 8,4 | 10 | 130 | 9 | 3 | FZ112600.04 | ● |
| 5 | 6 | 4,9 | M 4,5 - M6 | M 8 | 25 | 7 | 5,5 | 60 | 12,1 | 13,5 | 130 | 12 | 3,5 | FZ112600.05 | ● |
| 6 | 7 | 5,5 | M 7 | M 9 - M10 | 25 | 7 | 5,5 | 60 | 12,1 | 13,5 | 130 | 12 | 5 | FZ112600.06 | ● |
| 7 | 8 | 6,2 | M 8 | M11 | 29 | 8 | 6,2 | 60 | 13 | 14,5 | 130 | 13 | 6 | FZ112600.07 | ● |
| 8 | 9 | 7 | M 9 | M12 | 30 | 9 | 7 | 60 | 15 | 16,5 | 130 | 15 | 8 | FZ112600.08 | ● |
| 9 | 10 | 8 | M10 | - | 32 | 10 | 8 | 60 | 15 | 16,5 | 130 | 15 | 11 | FZ112600.09 | ● |
| 10 | 11 | 9 | - | M14 | 35 | 11 | 9 | 90 | 18 | 20 | 180 | 18 | 15 | FZ112600.10 | ● |
| 11 | 12 | 9 | (M12) | M16 | 35 | 12 | 9 | 90 | 18 | 20 | 180 | 18 | 20 | FZ112600.11 | ● |
| 12 | 14 | 11 | - | M18 | 39 | 14 | 11 | 90 | 22 | 25 | 180 | 22 | 25 | FZ112600.12 | ● |
| 13 | 16 | 12 | - | M20 | 40 | 16 | 12 | 90 | 22 | 25 | 180 | 22 | 33 | FZ112600.13 | ● |
| 14 | 18 | 14,5 | - | M22 - M24 | 42 | 18 | 14,5 | 100 | 26 | 29 | 200 | 26 | 45 | FZ112600.14 | ● |
| 15 | 20 | 16 | - | M27 | 44 | 20 | 16 | 100 | 28 | 32 | 200 | 28 | 60 | FZ112600.15 | ● |
| 16 | 22 | 18 | - | M30 | 46 | 22 | 18 | 100 | 30 | 34 | 200 | 30 | 77 | FZ112600.16 | ● |
| 17 | 25 | 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



IKZ

p_{max}
50bar
(700psi)

| Größe Size | Baumaße Gewindebohrer / Gewindeformer Dimensions of tap / cold-forming tap | | | | Baumaße Schaftverlängerung Dimensions of extension | | | | | | | Spannkappe Clamping nut | | Artikel-Nr. Article no. | new |
|---------------|---|----------------|------------|------------|---|------------------------------------|-----------------------------------|----------------|------------------|----------------|----------------|----------------------------|------------------------------------|----------------------------|-----|
| | ø d ₂ | k ₁ | | | l ₁ | ø d ₃ h ₉ | k ₂ h ₁₂ | l ₂ | ø d ₄ | d ₅ | l ₃ | SW (W/F) | M _d ¹⁾ Nm | | |
| 1 | 2,8 | 2,1 | M 2 - M2,6 | M 4 | 21 | 6 | 4,9 | 65 | 6,1 | 6,5 | 230 | 6 | 2 | FZ112610.01 | ● |
| 2 | 3,5 | 2,7 | M 3 | M 4,5 - M5 | 22 | 6 | 4,9 | 70 | 7,5 | 9 | 230 | 8 | 2 | FZ112610.02 | ● |
| 3 | 4 | 3 | M 3,5 | M 5,5 | 22 | 6 | 4,9 | 70 | 8,4 | 10 | 230 | 9 | 2,5 | FZ112610.03 | ● |
| 4 | 4,5 | 3,4 | M 4 | M 6 | 22 | 6 | 4,9 | 70 | 8,4 | 10 | 230 | 9 | 3 | FZ112610.04 | ● |
| 5 | 6 | 4,9 | M 4,5 - M6 | M 8 | 25 | 7 | 5,5 | 70 | 12,1 | 13,5 | 230 | 12 | 3,5 | FZ112610.05 | ● |
| 6 | 7 | 5,5 | M 7 | M 9 - M10 | 25 | 7 | 5,5 | 70 | 12,1 | 13,5 | 230 | 12 | 5 | FZ112610.06 | ● |
| 7 | 8 | 6,2 | M 8 | M11 | 29 | 8 | 6,2 | 80 | 13 | 14,5 | 230 | 13 | 6 | FZ112610.07 | ● |
| 8 | 9 | 7 | M 9 | M12 | 30 | 9 | 7 | 80 | 15 | 16,5 | 230 | 15 | 8 | FZ112610.08 | ● |
| 9 | 10 | 8 | M10 | - | 32 | 10 | 8 | 80 | 15 | 16,5 | 230 | 15 | 11 | FZ112610.09 | ● |
| 10 | 11 | 9 | - | M14 | 35 | 11 | 9 | 90 | 18 | 20 | 330 | 18 | 15 | FZ112610.10 | ● |
| 11 | 12 | 9 | (M12) | M16 | 35 | 12 | 9 | 90 | 18 | 20 | 330 | 18 | 20 | FZ112610.11 | ● |
| 12 | 14 | 11 | - | M18 | 39 | 14 | 11 | 90 | 22 | 25 | 330 | 22 | 25 | FZ112610.12 | ● |
| 13 | 16 | 12 | - | M20 | 40 | 16 | 12 | 90 | 22 | 25 | 330 | 22 | 33 | FZ112610.13 | ● |
| 14 | 18 | 14,5 | - | M22 - M24 | 42 | 18 | 14,5 | 100 | 26 | 29 | 330 | 26 | 45 | FZ112610.14 | ● |
| 15 | 20 | 16 | - | M27 | 44 | 20 | 16 | 100 | 28 | 32 | 330 | 28 | 60 | FZ112610.15 | ● |
| 16 | 22 | 18 | - | M30 | 46 | 22 | 18 | 100 | 30 | 34 | 330 | 30 | 77 | FZ112610.16 | ● |
| 17 | 25 | 20 | - | M33 | 49 | 25 | 20 | 100 | 35 | 41 | 330 | 36 | 100 | FZ112610.17 | ● |



Ersatz-Sechskant-Spannkappen auf Anfrage
Spare hexagon clamping nuts are available upon request

¹⁾ empfohlenes Anzugsdrehmoment
Recommend tightening torque



Drehmomentschlüssel TORCO-FIX und Aufsteckschlüssel A-SW siehe Seite 795
Torque wrenches TORCO-FIX and shell-type wrenches A-SW, see page 795

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 (ST) SELF-LOCK

Tr, Tr-F Rd

Zubehör Accessories

Tech. Info

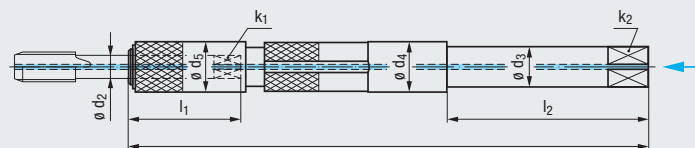


- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info





Für den Einsatz auf CNC-Maschinen und herkömmlichen Gewindeschneideeinrichtungen
 For use on CNC machines and conventional thread cutting machinery

Kurze Ausführung, mit innerer Kühlschmierstoff-Zufuhr
 Short design, with internal coolant supply

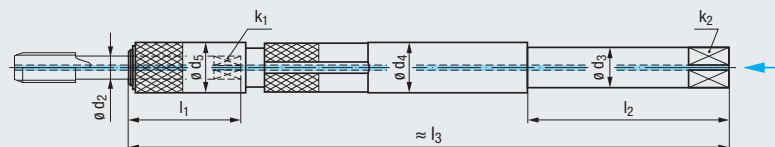


IKZ

p_{max}
50bar
 (700psi)



| Größe Size | Baumaße Gewindebohrer / Gewindeformer Dimensions of tap / cold-forming tap | | | | Baumaße Schaftverlängerung Dimensions of extension | | | | | | Rillenform Slot shape | Artikel-Nr. Article no. | |
|---------------|---|-------|---|---|---|-------------------------|--------------|-------|-------------------------|-------|--------------------------|----------------------------|---|
| | $\varnothing d_2$ | k_1 |  |  | l_1 | $\varnothing d_3$ h6 | k_2 h12 | l_2 | $\varnothing d_4 / d_5$ | l_3 | | | |
| 4 | 4,5 | 3,4 | M 4 | M 6 | 23 | 10 | 8 | 60 | 12,1 | 160 | A | FZ115490.04 | ○ |
| 5 | 6 | 4,9 | M 4,5 - M6 | M 8 | 25 | 10 | 8 | 60 | 12,1 | 160 | A | FZ115490.05 | ○ |
| 7 | 8 | 6,2 | M 8 | M11 | 29 | 12 | 9 | 60 | 13 | 160 | A | FZ115510.07 | ○ |
| 8 | 9 | 7 | M 9 | M12 | 30 | 12 | 9 | 60 | 15 | 160 | A | FZ115510.08 | ○ |
| 9 | 10 | 8 | M10 | — | 32 | 12 | 9 | 60 | 15 | 160 | A | FZ115510.09 | ○ |
| 11 | 12 | 9 | (M12) | M16 | 35 | 16 | 12 | 60 | 18 | 160 | B | FZ115530.11 | ○ |

Lange Ausführung, mit innerer Kühlschmierstoff-Zufuhr
 Long design, with internal coolant supply



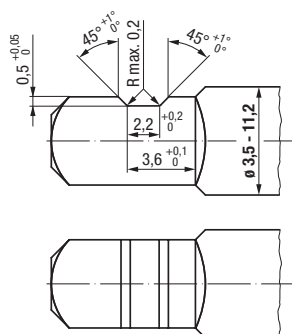
IKZ

p_{max}
50bar
 (700psi)

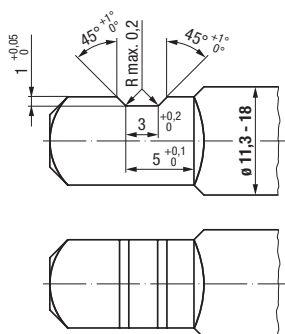
| Größe Size | Baumaße Gewindebohrer / Gewindeformer Dimensions of tap / cold-forming tap | | | | Baumaße Schaftverlängerung Dimensions of extension | | | | | | Rillenform Slot shape | Artikel-Nr. Article no. | |
|---------------|---|-------|---|---|---|-------------------------|--------------|-------|-------------------------|-------|--------------------------|----------------------------|---|
| | $\varnothing d_2$ | k_1 |  |  | l_1 | $\varnothing d_3$ h6 | k_2 h12 | l_2 | $\varnothing d_4 / d_5$ | l_3 | | | |
| 4 | 4,5 | 3,4 | M 4 | M 6 | 23 | 10 | 8 | 100 | 12,1 | 230 | A | FZ115480.04 | ○ |
| 5 | 6 | 4,9 | M 4,5 - M6 | M 8 | 25 | 10 | 8 | 100 | 12,1 | 230 | A | FZ115480.05 | ○ |
| 7 | 8 | 6,2 | M 8 | M11 | 29 | 12 | 9 | 100 | 13 | 230 | A | FZ115500.07 | ○ |
| 8 | 9 | 7 | M 9 | M12 | 30 | 12 | 9 | 100 | 15 | 230 | A | FZ115500.08 | ○ |
| 9 | 10 | 8 | M10 | — | 32 | 12 | 9 | 100 | 15 | 230 | A | FZ115500.09 | ○ |
| 11 | 12 | 9 | (M12) | M16 | 35 | 16 | 12 | 100 | 18 | 230 | B | FZ115520.11 | ○ |

Bearbeitungsmaße für Rillenform am Gewindebohrer-Vierkant
 Machining specifications for the slot shape on the driving square of taps

Form A



Form B

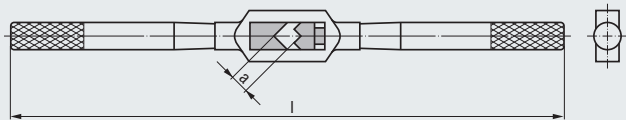


Lehren für E-Lock-Rillenform siehe Seite 763
 Gauges for E-Lock slots, see page 763



Für normale Beanspruchung
For normal use

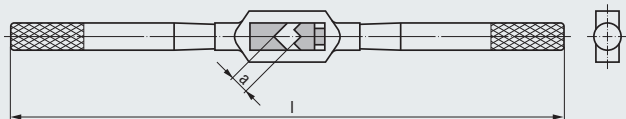
≈ DIN
1814



| Größe Size | Baumaße Dimensions | Artikel-Nr. Article no. | |
|---------------|-----------------------------|----------------------------|---|
| | $a_{min.} - a_{max.}$ 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 | ● |

Für starke Beanspruchung
For heavy use

≈ DIN
1814



Aus gehärtetem Stahl (Gehäuse: Temperguss oder Stahl geschmiedet)
Made of hardened steel (casing: malleable iron or forged steel)

| Größe Size | Baumaße Dimensions | Artikel-Nr. Article no. | |
|---------------|-----------------------------|----------------------------|---|
| | $a_{min.} - a_{max.}$ 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 | ● |
| 6 | 9 - 25 | 1000 | ● |
| 7 | 16 - 32 | 1250 | ● |

- 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 (ST) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info



- 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
- Tech. Info

Für Gewindebohrer mit 3 geraden Nuten For taps with 3 straight flutes



| für Gewinde for thread size | Artikel-Nr. Article no. | |
|--------------------------------|----------------------------|---|
| 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 | ● |
| M 10 | FZ111100.10/3 | ● |
| M 12 | FZ111100.12/3 | ● |
| M 14 | FZ111100.14/3 | ● |
| M 16 | FZ111100.16/3 | ● |
| M 20 | FZ111100.20/3 | ● |

Andere Ausführungen auf Anfrage
Other designs are available upon request

Für Gewindebohrer mit 4 geraden Nuten For taps with 4 straight flutes



| für Gewinde for thread size | Artikel-Nr. Article no. | |
|--------------------------------|----------------------------|---|
| M 8 | FZ111100.08/4 | ● |
| M 10 | FZ111100.10/4 | ● |
| M 12 | FZ111100.12/4 | ● |
| M 16 | FZ111100.16/4 | ● |
| M 20 | FZ111100.20/4 | ● |



Technische Informationen

Technical Information

Seite · Page

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Product
FinderV_c

M

MF

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

BSW, BSF

Pg

MJ
UNJC, UNJFEG (STI)
SELF-LOCKTr, Tr-F
RdZubehör
Accessories

Tech. Info






Die Technischen Informationen der jeweiligen Kapitel dieses Kataloges sind in vielen Landessprachen auch als separate Druckerzeugnisse verfügbar. Bitte wenden Sie sich an den für Sie zuständigen Vertriebspartner.

The technical information complementing the various chapters of this catalogue is available also as a separate printed booklet in many different languages. Please speak to your usual sales contact.





- 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
- Tech. Info**

1.1 EMUGE Gewindebohrer-Bauformen

Bauformen nach DIN (Beispiele)

| | Bauform Constructional design | Baumaße Dimensions | EMUGE-Bezeichnung EMUGE designation |
|---|--|-----------------------|---|
|  | Handgewindebohrer, kurze Maschinen-Gewindebohrer Hand taps, short machine taps | DIN 352 DIN 2181 | Rekord Enorm |
|  | Maschinen-Gewindebohrer mit verstärktem Schaft Machine taps with reinforced shank | DIN 371 | Rekord 1 Enorm 1 |
|  | Maschinen-Gewindebohrer mit durchfallendem Schaft Machine taps with reduced shank | DIN 376 DIN 374 | Rekord 2 Enorm 2 Robust 2X |

Bauformen nach EMUGE-Werknorm (Beispiele)

| | Bauform Constructional design | EMUGE-Bezeichnung EMUGE designation |
|---|--|--|
|  | Maschinen-Gewindebohrer mit langen Nuten und langem Schaft Machine taps with long flutes and long shank | LF |
|  | Maschinen-Gewindebohrer mit extra langem Schaft Machine taps with extra long shank | LS |
|  | Maschinen-Kombi-Gewindebohrer Machine drill taps | KOMBI |
|  | Trapez-Einschnitt-Gewindebohrer Single finishing trapezoidal taps | TRAPEZ |

1.2 Gewindebohrer-Sonderausführungen (Beispiele)

Sonderwerkzeuge nach Kundenwunsch

EMUGE fertigt Spezial-Gewindebohrer nach Kundenzeichnungen und eigenen Konstruktionen.



1.2 Special tap types (examples)

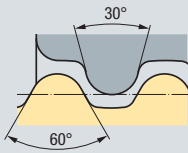
Special taps to customers' specifications

EMUGE produces special taps to customers' drawings and proper specifications.

Sondergewinde (Beispiele)

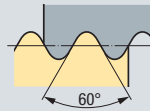
Special threads (examples)

GL



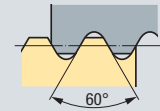
Zylindrisches Rundgewinde
nach DIN 168-1
Cylindrical round thread
acc. DIN 168-1

FG



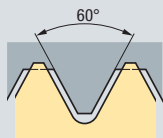
Fahradgewinde
nach DIN 79012
Bicycle thread
acc. DIN 79012

Vg



Ventilgewinde
nach DIN 7756
Valve thread
acc. DIN 7756

MFS



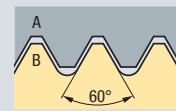
Metrisches ISO-Gewinde für Festsitz
nach DIN 8141-1
ISO Metric thread for tight fit
acc. DIN 8141-1

ST



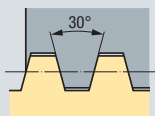
Blehschraubengewinde
nach DIN EN ISO 1478
Sheet metal screw thread
acc. DIN EN ISO 1478

A/B



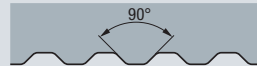
Stativ-Anschlussgewinde
nach DIN 4503
Tripod connection thread
acc. DIN 4503

Tr



Flaches Metrisches ISO-Trapezgewinde
(ein- und mehrgängig) nach DIN 380-1 und -2
Flat ISO metric trapezoidal thread
(one-start and multi-start) acc. DIN 380-1 and -2

GEWI



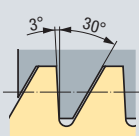
Sonderprofil
Special profile

E



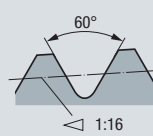
Elektrogewinde
nach DIN 40400
Electrical thread
acc. DIN 40400

S

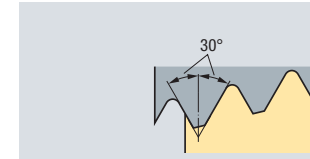


Metrisches Säbengewinde (ein- und mehrgängig)
nach DIN 513-1 bis -3
Metric buttress thread (one-start and multi-start)
acc. DIN 513-1 to -3

M



Metrisches kegeliges Außengewinde
nach DIN 158-1
Metric tapered external thread
acc. DIN 158-1



Gewinde für Drahtauslöser
nach DIN 19004
Thread for wire release connection
acc. DIN 19004

Product
Finder

Vc

M

MF

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

BSW, BSF

Pg

MJ
UNJC, UNJFEG (ST)
SELF-LOCKTr, Tr-F
RdZubehör
Accessories

Tech. Info

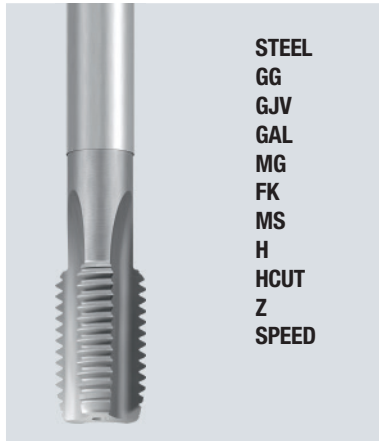


- Product Finder
- Vc
- M
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd

1.3 EMUGE Gewindebohrer-Grundformen

1.3 Basic types of our EMUGE taps

Rekord A



STEEL
GG
GJV
GAL
MG
FK
MS
H
HCUT
Z
SPEED

- Gerade Nutenform
- Anschnittform C (2-3 Gänge)
- Anschnittform E (1,5-2 Gänge)
- Für Grundloch- und Durchgangslochgewinde

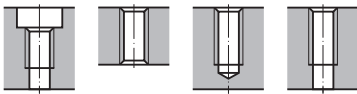
Bemerkung:

Vorwiegend für kurzspanendes Material. Die Nuten können nur einen Teil der Späne aufnehmen. Ein Spantransport in Axialrichtung erfolgt praktisch nicht. Tiefe Grundloch- oder Durchgangslochgewinde sollten daher nicht in langspanendes Material gebohrt werden.

- Straight flutes
- Chamfer form C (2-3 threads)
- Chamfer form E (1.5-2 threads)
- For blind hole and through hole threads

Note:

Especially for short-chipping material. The flutes can hold only a part of the chips. There is practically no chip transport in an axial direction. We do not recommend using this tap type in deep blind hole or through hole threads in long-chipping material.



Rekord B



STEEL-L
STEEL-M
STEEL-H
VA
AL
Z
Z-SPEED

- Gerade Nutenform mit Schälanschnitt
- Anschnittform B (4-5 Gänge)
- Für Durchgangslochgewinde

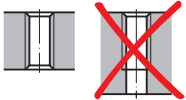
Bemerkung:

Typisches Werkzeug für Durchgangslochgewinde in langspanenden Materialien. Der Schälanschnitt schiebt die Späne eng gerollt nach vorne und verhindert ein Verstopfen der Spannuten. Der Kühlschmierstoff kann ungehindert nachfließen. Nicht im Umkehrschnitt einsetzen!

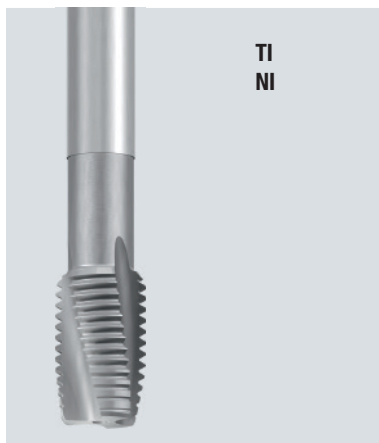
- Straight flutes with spiral point
- Chamfer form B (4-5 threads)
- For through hole threads

Note:

Typical tool for through hole threads in long-chipping material. The spiral point pushes the tightly rolled chips ahead and prevents clogging of the flutes. Coolant-lubricant can flow freely. Do not use this tap type for a reverse cut!



Rekord C



TI
NI

- 8-15° linksgedrahte Spannuten
- Anschnittform D (4-5 Gänge)
- Für Durchgangslochgewinde

Bemerkung:

Die linksgedrahten Nuten schieben die Späne nach vorne. Im Gegensatz zur Schälanschnittausführung (Rekord B) verläuft der Spanwinkel über die gesamte Anschnittlänge nahezu konstant. Dies ergibt sehr stabile Anschnittzähne für hochfeste Materialien.

- 8-15° left-hand spiral flutes
- Chamfer form D (4-5 threads)
- For through hole threads

Note:

The left-hand spiral flutes push the chips ahead. As opposed to the spiral-point design (Rekord B), the rake angle remains constant over the complete length of the chamfer. This means extremely stable chamfer teeth for high-strength materials.



1.3 EMUGE Gewindebohrer-Grundformen

1.3 Basic types of our EMUGE taps

Rekord D



STEEL
GAL
PVC
TI
Z

- 10-15° rechtsgedrallte Spannuten
- Anschnittform E (1,5-2 Gänge)
- Anschnittform C (2-3 Gänge)
- Für Grundlochgewinde

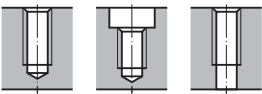
Bemerkung:

Vorwiegend auf Drehautomaten und Mehrspindelmaschinen einzusetzen. Auch bei Gewinden mit Aufbohrung sind schwach gedrallte Nuten von Vorteil. Besonders mit innerer Kühlschmierstoff-Zufuhr werden Spanprobleme auf CNC-Maschinen gelöst.

- 10-15° right-hand spiral flutes
- Chamfer form E (1.5-2 threads)
- Chamfer form C (2-3 threads)
- For blind hole threads

Note:

Especially to be recommended on automatic lathes and multi-spindle machines. The slow spiral flutes will be especially helpful in thread holes beginning with an increased diameter (counterbore or enlarged bore). Provided with internal coolant supply, this tap type will help to solve chip problems on CNC machines.



Rekord DF



STEEL
TILLEG
NI

- 10-15° rechtsgedrallte Spannuten
- Zusätzliche Anteilung „F“ (Freischliff)
- Anschnittform C (2-3 Gänge)
- Für Grundlochgewinde

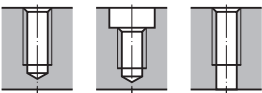
Bemerkung:

Vorwiegend auf Drehautomaten und Mehrspindelmaschinen einzusetzen. Auch bei Gewinden mit Aufbohrung sind schwach gedrallte Nuten von Vorteil. Die zusätzliche Anteilung „F“ (Freischliff) bewirkt enger gerollte bzw. kleiner gebrochene Späne. Besonders mit innerer Kühlschmierstoff-Zufuhr werden Spanprobleme auf CNC-Maschinen gelöst.

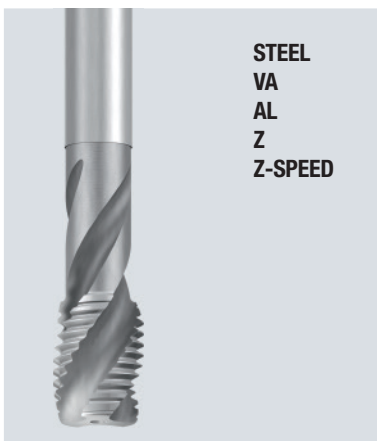
- 10-15° right-hand spiral flutes
- Additional helix correction "F" (relief)
- Chamfer form C (2-3 threads)
- For blind hole threads

Note:

Especially to be recommended on automatic lathes and multi-spindle machines. The slow spiral flutes will be especially helpful in thread holes beginning with an increased diameter (counterbore or enlarged bore). The additional helix correction "F" (relief) produces smaller, and tightly rolled chips. Provided with internal coolant supply, this tap type will help to solve chip problems on CNC machines.



Enorm



STEEL
VA
AL
Z
Z-SPEED

- 35-50° rechtsgedrallte Spannuten
- Anschnittform E (1,5-2 Gänge)
- Anschnittform C (2-3 Gänge)
- Für Grundlochgewinde in langspanenden Werkstoffen

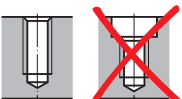
Bemerkung:

Typisches Werkzeug für Grundlochgewinde in langspanenden Werkstoffen. Durch die stark gedrallten Nuten werden die Späne gut aus dem Grundloch herausgefördert. Je nach Ausführung und Abmessung können bis zu $3 \times d_1$ tiefe Gewinde gebohrt werden. Nicht für Gewinde mit vorgesetzter Aufbohrung geeignet.

- 35-50° right-hand spiral flutes
- Chamfer form E (1.5-2 threads)
- Chamfer form C (2-3 threads)
- For blind hole threads in long-chipping materials

Note:

Typical tool for blind hole threads in long-chipping materials. The fast spiral flutes provide good chip removal from the blind hole. Depending on design and size, threads up to $3 \times d_1$ can be cut. Not to be recommended for threads beginning with an increased diameter.

Product
FinderV_c

M

MF

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

BSW, BSF

Pg

MJ
UNJC, UNJFEG (ST)
SELF-LOCKTr, Tr-F
RdZubehör
Accessories

Tech. Info



- 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
- Tech. Info

1.3 EMUGE Gewindebohrer-Grundformen

1.3 Basic types of our EMUGE taps

Robust 2X



- Mit stirnseitiger Aussparung
- Anschnittform C (2-3 Gänge)
- Für Grundloch- und Durchgangslochgewinde

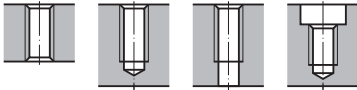
Bemerkung:

Die speziell ausgebildete Schneidenkrone gibt diesem Werkzeug bereits beim Anschneiden eine hervorragende Eigenführung. Sehr saubere und maßgenaue Gewinde werden dadurch geschnitten. Das Spanmaterial wird bei Grundlochgewinden in der stirnseitigen Aussparung (Spanglocke) aufgenommen. Dieses Werkzeug ist bevorzugt mit Pastenschmierung einzusetzen. Hierbei muss neben dem Werkzeug auch die Bohrungswandung eingestrichen werden! Ölschmierung ist nur bei senkrechter Bearbeitung möglich, wenn das Grundloch mit Öl vollgefüllt ist.

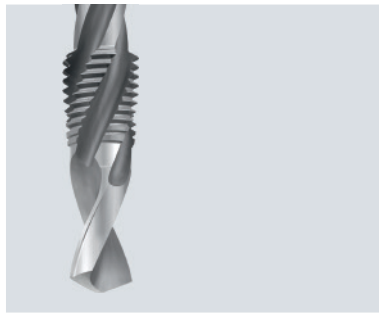
- Provided with a hollow face
- Chamfer form C (2-3 threads)
- For blind hole and through hole threads

Note:

The special crown-shaped front portion of this tool provides excellent accuracy even in the first stage of the cutting process. Extra clean and accurate threads can be cut in this way. The swarf is collected in the hollow face of the tap (internal chip collector) when cutting blind hole threads. For this tool, we recommend using paste lubrication wherever possible. Please make sure to cover not only the tool but also the walls of the hole with paste! Oil lubrication is possible only in vertical machining, if the blind hole can be completely filled with oil.



KOMBI



- Ca. 25° rechtsgedrallte Spannuten
- Anschnittform C (2-3 Gänge)
- Für Durchgangslochgewinde (max. 1 x d₁)

Bemerkung:

Kombiniertes Werkzeug zum Kernloch- und Gewindebohren von Durchgangslochgewinden in einem Arbeitsgang, ohne Werkzeugwechsel. Wir empfehlen den Einsatz auf Maschinen mit umschaltbaren Drehzahlen zum Kernloch- und Gewindebohren. Der Vorschub ist der jeweiligen Bearbeitung anzupassen. Werkzeug-Aufnahmen mit Längenausgleich auf Druck sind nicht verwendbar.

- Approx. 25° right-hand spiral flutes
- Chamfer form C (2-3 threads)
- For through hole threads (max. 1 x d₁)

Note:

Combination tool for drilling the thread hole and cutting the thread in through holes in one work process, without tool change. We recommend the use on machines with adjustable speed for drilling and thread cutting. Feed must be adjusted to the respective work process. Tool holders with length compensation on compression are not suitable for this tool type.



MMB



- Gerade Nutenform
- Anschnittlänge ca. 2/3 der Gewindelänge
- Für Durchgangslochgewinde (max. 1,5 x d₁)

Bemerkung:

Maschinen-Mutter-Gewindebohrer nach DIN 357 zum Gewindebohren von Muttern. Für den Einsatz auf Automaten bieten wir auf Anfrage geeignete Werkzeuge an.

- Straight flutes
- Chamfer length approx. 2/3 of thread length
- For through hole threads (max. 1.5 x d₁)

Note:

Machine nut taps acc. DIN 357 for the tapping of nuts. We can also offer you suitable tools for the use on automatic tapping machines.



Set



- Gerade Nutenform
- Anschnittform C (2-3 Gänge) beim Fertigschneider
- Für Grundloch- und Durchgangslochgewinde

Bemerkung:

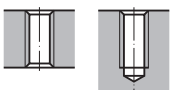
Zum Gewindebohren von Hand (auch maschinell einsetzbar). Die Satz-Zusammenstellung ist beim WM-Set kombinierbar zwischen Vorschneider mit Führungszapfen, Vorschneider, Mittelschneider und Fertigschneider.

Das Vorschneiden mit Führungszapfen hilft zum winkelgerechten Anschneiden von Hand. Nur bei Grundlochgewinden muss zusätzlich mit dem Vorschneider auf Gewindetiefe nachgeschnitten werden.

- Straight flutes
- Chamfer form C (2-3 threads) on the finishing tap
- For blind hole and through hole threads







Note:

For thread cutting by hand (suitable also for use on machines). Sets of taps can be composed freely from no. 1 tap with pilot, no. 1 tap, no. 2 tap and finishing tap, in the case of WM sets. Preparatory cutting with a pilot type tap makes a right-angle cut by hand much easier. In blind hole threads, it is necessary to re-cut with a standard no.1 tap to the full thread depth.



1.4 EMUGE Geometriebezeichnungen

1.4 Our EMUGE geometries

| | | |
|---|--|--|
|  <p>Rekord A Rekord B Rekord D Rekord DF Enorm</p> | <p>Für Stahlwerkstoffe</p> <p>Geometrie mit sehr guter Eigenführung zum lehrenhaltigen Gewindebohren auf allen Maschinen. Sie ist in vielen Gewindesystemen und Abmessungen auf Lager. In Kombination mit Hartstoffschichten können Schnittwerte und Standwerte erhöht werden.</p> <ul style="list-style-type: none"> • Rekord B-STEEL-L Für Stahlwerkstoffe mit niedriger Festigkeit • Rekord B-STEEL-M Für Stahlwerkstoffe mit mittlerer Festigkeit • Rekord B-STEEL-H Für Stahlwerkstoffe mit hoher Festigkeit | <p>For steel materials</p> <p>Geometry with very good proper guidance for true-to-gauge thread cutting on all machines. Available ex stock in many thread systems and sizes. By combination with hard surface coatings, cutting data and tool life increases can be achieved.</p> <ul style="list-style-type: none"> • Rekord B-STEEL-L For low strength steels • Rekord B-STEEL-M For medium strength steels • Rekord B-STEEL-H For high strength steels |
|  <p>Rekord B Enorm</p> | <p>Für nichtrostende Stahlwerkstoffe und Stahlwerkstoffe</p> <p>Bei zähen, langspanenden Materialien muss der Span axial in eine Richtung geführt werden, um Spanverklümmungen zu vermeiden. Ein erhöhter Profilveriwinkel reduziert die Reibung und dadurch auch Kaltpressschweißungen.</p> | <p>For stainless steel materials and steel materials</p> <p>With tough and long-chipping materials, the chips must be transported in an axial direction in order to avoid chip jams. An increased profile relief angle reduces friction and with it, the danger of cold welding.</p> |
|  <p>Rekord A</p> | <p>Für Gusseisen</p> <p>Da Gusseisen ein sehr abrasiver Werkstoff ist, erhalten die Gewindebohrer neben geringerem Spanwinkel immer eine Oberflächenbehandlung zur Standwerterhöhung. Im Allgemeinen genügen für diese kurzspanenden Werkstoffe gerade Spannuten.</p> | <p>For cast iron</p> <p>Since cast iron is a very abrasive material, these taps are always provided with a surface treatment in addition to a low rake angle. In general, straight flutes are sufficient for such short-chipping materials.</p> |
|  <p>Rekord A</p> | <p>Für Gusseisen mit Vermiculargrafit</p> <p>Neu entwickelte Gusswerkstoffe weisen besondere Gefügestrukturen auf. In Verbindung mit erhöhter Nutenzahl und angepasster Geometrie ermöglichen diese Werkzeuge in diesen abrasiven Werkstoffen als auch in Gusseisen hohe Standwerte.</p> | <p>For cast iron with vermicular graphite</p> <p>Newly developed cast materials often show very special grain structures. In combination with an increased number of flutes and a specially adjusted geometry, these tools permit long tool life even in these highly abrasive materials as well as in normal cast iron.</p> |
|  <p>Rekord B Enorm</p> | <p>Für Aluminium-Knetlegierungen</p> <p>In langspanendem Aluminium ist es unbedingt notwendig, den Spänen eine axiale Richtung zu geben. Neben großem Spanwinkel haben diese Werkzeuge in der Regel eine Spannuten weniger, damit mehr Späne aufgenommen werden können. Dadurch wird ein Spänestau in der Nut vermieden.</p> | <p>For aluminium wrought alloys</p> <p>In the machining of long-chipping aluminium, it is absolutely necessary to provide chip transport in an axial direction. In addition to the large rake angle, these tools are made with a reduced number of flutes so that there is even more room for the swarf. This helps to avoid clogging of the flutes.</p> |
|  <p>Rekord A Rekord D</p> | <p>Für Aluminium-Gusslegierungen</p> <p>Um bei diesem sehr stark verschleißenden Material hohe Standwerte zu erzielen, erhalten die Werkzeuge eine Hartstoffschicht. Innere Kühlschmierstoff-Zuführung wirkt sich besonders vorteilhaft aus.</p> | <p>For aluminium cast alloys</p> <p>In order to achieve a long tool life in this highly abrasive material, all the tools are provided with a hard surface coating. Internal coolant supply also is very helpful.</p> |



- Product Finder
- Vc
- 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
- Tech. Info






1.4 EMUGE Geometriebezeichnungen

1.4 Our EMUGE geometries

| | | |
|--|---|--|
|  <p>Rekord A</p> | <p>Für Kupfer-Zink-Legierungen (Messing, kurzspanend)</p> <p>Ein geringer Spanwinkel bringt gute Lehrenhaltigkeit der Gewinde. Gerade Nuten sind in kurzspanendem Messing hervorragend geeignet.</p> | <p>For copper-zinc alloys (brass, short-chipping)</p> <p>A small rake angle ensures that true-to-gauge threads are produced. Straight flutes are perfectly suited for short-chipping brass.</p> |
|  <p>Rekord A</p> | <p>Für Magnesium-Legierungen</p> <p>Dieser Werkstoff gewinnt zunehmend auch in der Kfz-Industrie an Bedeutung. Durch die besondere Geometrie in Verbindung mit einer Gleit-Deckschicht kann dieses Werkzeug neben Öl- und Emulsionsschmierung auch trocken eingesetzt werden.</p> | <p>For magnesium alloys</p> <p>This workpiece material is gaining more and more importance, especially in the automotive industry. The special geometry, in combination with an anti-friction layer, makes it possible to use this tool for dry machining as well as for oil and emulsion lubrication.</p> |
|  <p>Rekord A</p> | <p>Für kurzspanende Kunststoffe</p> <p>In Verbindung mit Hartmetall werden durch hohe Freiwinkel in abrasiven Werkstoffen (Duroplaste, faserverstärkte Kunststoffe) hohe Standwerte erreicht. Für Werkstoffe mit einem Faseranteil kleiner 30% steht alternativ ein HSSE-Werkzeug zur Verfügung.</p> | <p>For short-chipping synthetics</p> <p>Large relief angles in combination with carbide material will help to achieve long tool life in abrasive materials (duroplastics, fibre-reinforced synthetics). For workpiece materials with a fibre content of less than 30%, an HSSE tool is available as an alternative.</p> |
|  <p>Rekord D</p> | <p>Für langspanende Kunststoffe</p> <p>Der Anschnitt dieses Werkzeugs wurde optimiert, um ein sicheres Abscheren der Restspanwurzel im Gewinde sicherzustellen. Eine erhöhte Toleranzlage sowie eine Hartstoffbeschichtung erzeugen in diesen elastischen Werkstoffen lehrenhaltige Gewinde.</p> | <p>For long-chipping synthetics</p> <p>The chamfer of this tool has been optimised in order to ensure a safe shearing off of the chip root in the thread. An elevated tolerance, combined with a hard surface coating, guarantees true-to-gauge threads in these elastic materials.</p> |
|  <p>Rekord C Rekord D</p> | <p>Für Titan</p> <p>Diese Werkstoffe sind meist sehr fest, langspanend und klemmend. Geringe Spanwinkel und sehr hohe Freiwinkel sind nötig. Häufig muss jedoch das Werkzeug speziell dem Werkstoff und den Einsatzbedingungen angepasst werden.</p> | <p>For titanium</p> <p>These alloys are usually very strong, long-chipping and clamping. Small rake angles and very high relief angles are necessary. Often, it is necessary also to specially adjust the tool to the individual alloy and the specific work conditions.</p> |
|  <p>Rekord DF</p> | <p>Für Titan-Legierungen</p> <p>Die Titanlegierungen nehmen einen immer höheren Stellenwert in der Industrie ein. Die Geometrie dieses Werkzeuges wurde speziell auf diese Werkstoffe abgestimmt. Hohe Freiwinkelwerte verhindern Kaltpressschweißungen. Eine Anteilung erzeugt kurzes Spanmaterial.</p> | <p>For titanium alloys</p> <p>Titanium alloys are becoming more and more popular in modern industry. The geometry of this tool has been specially adjusted to the machining of these materials. Cold welding is prevented by the extra high relief angle values. A helix correction provides short chips.</p> |

1.4 EMUGE Geometriebezeichnungen

1.4 Our EMUGE geometries

| | | |
|---|--|--|
|  <p>Rekord C Rekord DF</p> | <p>Für Nickel-Legierungen</p> <p>Nickel-Legierungen sind meist sehr zäh, klemmend und hochfest wie z.B. Inconel 718. Negative Spanwinkel, sehr hohe Freiwinkel und eine Hartstoffschicht sind unerlässlich. Pasten- bzw. Ölschmierung ist meist notwendig.</p> | <p>For nickel alloys</p> <p>Nickel alloys are usually very tough, clamping and of high tensile strength, e.g. Inconel 718. Negative rake angles, very high relief angles and a hard surface coating are an unconditional necessity. Lubrication with paste or oil is necessary in most cases.</p> |
|  <p>Rekord A</p> | <p>Für hochfeste Werkstoffe</p> <p>Relativ große Freiwinkelwerte bringen in Verbindung mit einer Oberflächenbehandlung oder Hartstoffschicht in abrasiven Werkstoffen sehr hohe Standwerte.</p> | <p>For materials of high tensile strength</p> <p>Relatively high relief angle values in combination with a surface treatment or a hard surface coating ensure extra long tool life in abrasive materials.</p> |
|  <p>Rekord A</p> | <p>Für gehärtete Stähle</p> <p>Diese Geometrie mit speziell angepasster Nutenform sowie Span- und Freiwinkelwerten ermöglicht das Gewindebohren in gehärtetem Stahl. Mit Schneidstoff HSSE-PM für Härten von 44-55 HRC, mit Vollhartmetall für Härten von 55-63 HRC geeignet.</p> | <p>For hardened steels</p> <p>This geometry with its specially adjusted flute profiles and its special rake and relief angles makes thread cutting in hardened steel possible. Made of cutting material HSS-E-PM, these tools are suitable for a material hardness of 44-55 HRC, while solid carbide tools will work in a hardness of 55-63 HRC.</p> |
|  <p>Rekord A Rekord B Rekord D Enorm</p> | <p>Für CNC-gesteuerte Maschinen</p> <p>Diese sehr schneidfreudige Geometrie mit höherem Span- und Freiwinkel ist für zahlreiche langspanende Werkstoffe geeignet. Sie wurde speziell für CNC-gesteuerte Werkzeugmaschinen konstruiert. Bei synchron gesteuertem Vorschub kommt die Leistungsfähigkeit besonders in Verbindung mit unseren Spannanzgen-Aufnahmen der Typenreihe Softsynchro® zum Tragen.</p> | <p>For CNC-controlled machines</p> <p>This very keen cutting geometry with elevated rake and relief angles is suitable for a multitude of long-chipping materials. It is designed especially for CNC-controlled machine tools. Synchronous feed control, especially in connection with our collet holders of the Softsynchro® series, will bring out the full performance potential of these tools.</p> |
|  <p>Rekord A Rekord B Enorm</p> | <p>Zum Hochgeschwindigkeitsbohren</p> <p>CNC-Maschinen, besonders in Verbindung mit unserem Speedsynchro®, geben die Voraussetzung, hohe Drehzahlen zu fahren. Die spezielle Geometrie, in Verbindung mit einer Hartstoffschicht, bietet hier die Möglichkeit, auch hohe Schnittgeschwindigkeiten zu realisieren.</p> | <p>For high-speed tapping</p> <p>CNC machines, especially in combination with our Speedsynchro®, make very high speeds possible. The special geometry of these tools, combined with a hard surface coating, offers you the chance to do your machining at the highest speeds your machine can manage.</p> |

Product
Finder

Vc

M

MF

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

BSW, BSF

Pg

MJ
UNJC, UNJFEG (STI)
SELF-LOCKTr, Tr-F
RdZubehör
Accessories

Tech. Info



- Product Finder
- Vc
- 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
- Tech. Info

1.5 EMUGE Oberflächenbehandlungen und -Beschichtungen

1.5 Our EMUGE surface treatments and coatings

NE2



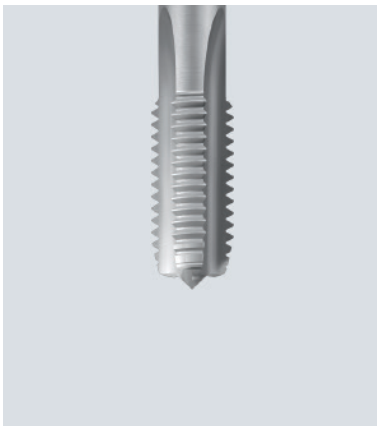
Oxidieren

In einer Anlage wird den Werkzeugen Wasserdampf zugeführt. Dadurch bildet sich auf der Werkzeugoberfläche eine dunkle Oxidschicht. Diese Oxidschicht bewirkt einen Schutz der Oberfläche. Sie wird ein guter Träger von Schmierstoffen. Kaltschweißungen, wie sie besonders mit kohlenstoffarmen, weichen Stählen auftreten, werden vermieden.

Oxidisation

In a special installation, the tools are exposed to hot steam. This leads to the formation of a dark oxide layer on the tool surface. This oxide layer protects the surface, and acts as a good carrier of lubricants. Cold welding which occurs especially with low-carbon, soft steels, can be prevented in this way.

NT



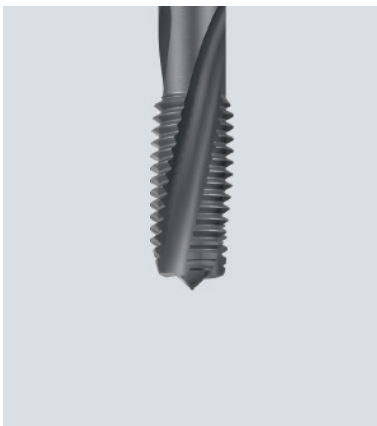
Nitrieren

Durch thermochemische Behandlung wird die Oberfläche im Bereich von ca. 0,03 bis 0,05 mm Eindringtiefe mit Stickstoff angereichert. Da die Oberfläche sehr hart (1000-1250 HV) und spröde wird, eignen sich nitrierte Werkzeuge nur bedingt für Grundlochgewinde bzw. im Umkehrschnitt. In abrasiven Werkstoffen wie Grauguss, Sphäroguss, Aluminiumguss sowie auch Duroplaste wird der Standwert entscheidend erhöht.

Nitriding

In a thermo-chemical treatment, the surface is enriched with nitrogen to a depth of approx. 0.03 to 0.05 mm. Since the surface becomes very hard (1000-1250 HV) and brittle, nitrided tools can be used with certain restrictions only in blind holes and in all work cases which necessitate reversing. In abrasive materials like cast iron, spheroidal cast iron, cast aluminium and duroplastics, tool life can be increased in a decisive manner.

NT2



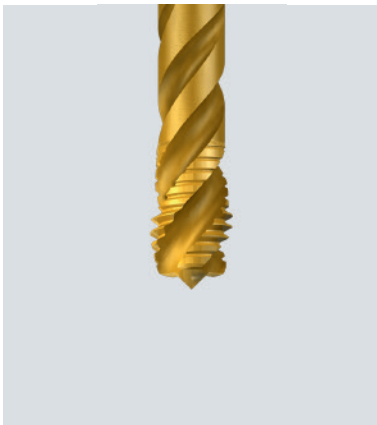
Nitrieren und Oxidieren

Die Oberfläche der Werkzeuge wird zunächst nitriert und anschließend oxidiert (NT + NE2). Dies ergibt eine Kombination aus erhöhter Oberflächenhärte und Schmierstoffträger.

Nitriding and oxidisation

The surface of the tools is first nitrided and then oxidised (NT + NE2). This treatment combines increased surface hardness with an improved lubricant-holding capacity.

TIN



Titannitrid (goldgelb)

Im PVD-Verfahren (500 °C) werden Schichtdicken von 3-7 µm erreicht. Die Schichten zeichnen sich durch hohe Schichthftung und TIN-typische Eigenschaften gegen Aufschweißungen aus.

TIN-Schichtsysteme mit Zusatzkennnummer (z.B. TIN-60, TIN-70) sind bezüglich Substrat, Werkzeuggeometrie und Anwendung optimiert.

Titanium nitride (gold-yellow)

In a PVD process (500 °C) a coating thickness of 3-7 µm can be realised. The coatings feature a high adhesion strength and TIN-typical properties against cold welding.

TIN coating systems with additional code number (e.g. TIN-60, TIN-70) are optimised with regard to substrate and application.

1.5 EMUGE Oberflächenbehandlungen
und -Beschichtungen

1.5 Our EMUGE surface treatments and coatings

TICN

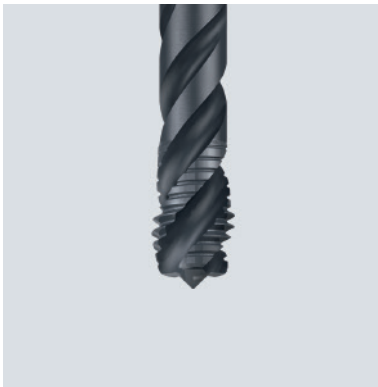
**Titan-Carbonitrid (blau-grau)**

Im PVD-Verfahren (500 °C) werden Schichtdicken von 2-4 µm erreicht. Die Härte beträgt hier ca. 3000 HV. Die TICN-Schicht bleibt bis ca. 400 °C beständig.

Titanium carbonitride (blue-grey)

In a PVD process (500 °C) a coating thickness of 2-4 µm can be realised. The hardness is approx. 3000 HV. The TICN coating will resist up to approx. 400 °C.

GLT-1

**Hartstoffschicht mit Gleit-Deckschicht (dunkelgrau)**

Im PVD-Verfahren (500 °C) werden Schichtdicken von 2-4 µm erreicht. Die Kombination einer Hartstoffschicht (ca. 3000 HV) mit einer darüberliegenden Gleit-Deckschicht bringt entscheidende Standortvorteile. Der Spanfluss wird positiv beeinflusst.

Achtung:

Vor dem Nachbeschichten müssen die Werkzeuge entschichtet werden!

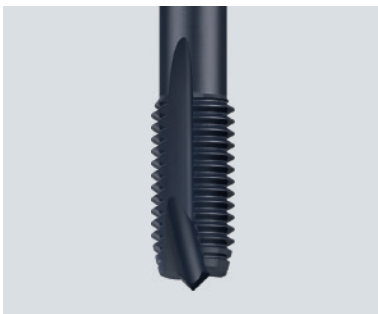
Hard surface coating with anti-friction layer (dark-grey)

In a PVD process (500 °C) a coating thickness of 2-4 µm can be realised. The combination of a hard surface coating (approx. 3000 HV) with a superimposed anti-friction layer yields decisive tool life advantages. Also, the chip flow can be very positively influenced.

Please note:

Before re-coating, tools need to be de-coated!

GLT-8

**Diamantähnliche, amorphe Kohlenstoffschicht (schwarz-grau)**

Im PVD-Verfahren werden Schichtdicken von ca. 1-2 µm erreicht. Die Härte beträgt ca. 2500 HV. Diese Monolayerschicht eignet sich hervorragend zur Bearbeitung von Buntmetallen und Aluminium mit niedrigem Si-Gehalt (< 7% Si). Durch den geringen Reibwert wird Werkstoffadhäsion stark vermindert. Die Schicht bleibt bis ca. 350 °C beständig.

Diamond-like, amorphous carbon coating (black-grey)

In a PVD process a coating thickness of 1-2 µm can be realised. The hardness is approx. 2500 HV. This mono-layer coating is an excellent choice for the machining of non-ferrous metals and aluminium with a low silicon content (< 7% Si). Thanks to the low friction, material adhesion is drastically reduced. This coating will remain resistant up to approx. 350 °C.

CRN

**Chromnitrid (silbergrau)**

Im PVD-Verfahren (500 °C) werden Schichtdicken von bis zu 6 µm erreicht. Bei einer Härte von 1750 HV werden durch hervorragende Gleiteigenschaften in Buntmetallen und Thermoplasten (auch bei hohen Temperaturen) hohe Standwerte erzielt.

Chromium nitride (silver-grey)

In a PVD process (500 °C) coating thicknesses of up to 6 µm can be realised. With a hardness of 1750 HV, the excellent sliding properties will help to achieve long tool life in non-ferrous metals and thermoplastics (even at high temperatures).

CRT

**Chrom-Titannitrid (silbergrau)**

Das CrTi-basierte, eigenspannungsoptimierte Schichtsystem mit Schichtdicken von 5-7 µm eignet sich primär für anspruchsvolle Zerspannungsaufgaben.

Chrome-Titanium nitride (silver-grey)

The CrTi-based layer system is optimised for residual stress and features a layer thickness of 5-7 µm, it is primarily suitable for demanding machining tasks.

Product
FinderV_c

M

MF

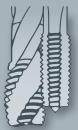
UNC
UN-8UNF
UNEFG, Rp
NPSM, NPSFNPT, NPTF
Rc, W

BSW, BSF

Pg

MJ
UNJC, UNJFEG (STI)
SELF-LOCKTr, Tr-F
RdZubehör
Accessories

Tech. Info



- Product Finder
- V_c
- M
- AZ
- MF
- UNC UN-8
- UNF UNEF
- G, Rp NPSM, NPSF
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- X
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd
- Zubehör Accessories
- Tech. Info

1.6 Sonstige EMUGE-Kurzbezeichnungen

1.6 Other EMUGE abbreviations

AZ



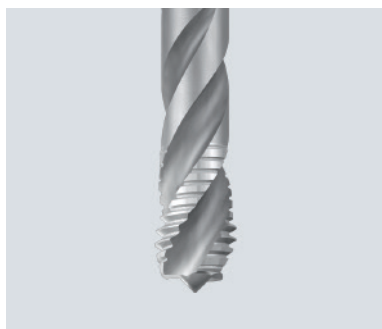
Mit ausgesetzten Zähnen

Durch „ausgesetzte“ Zähne wird Flankenreibung reduziert. Kühlschmierstoff kann ungehindert zwischen die Reibpartner fließen.

With alternating teeth

With “alternating teeth”, flank friction can be reduced. Coolant-lubricant can flow freely between the friction partners.

X



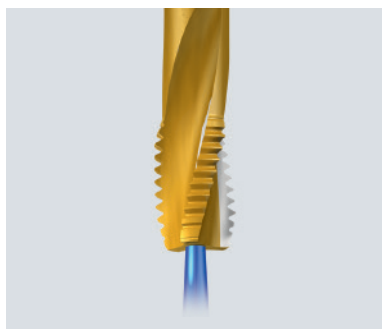
Mit konisch abgesetztem Führungsgewinde

Durch Abschleifen der Zahnspitzen im Führungsgewinde werden Zahnausbrüche auf Grund von Spanverklümmungen vermieden.

With back taper

Tooth chipping due to chip jams can be prevented by grinding off the tooth crests in the guide thread area.

BF



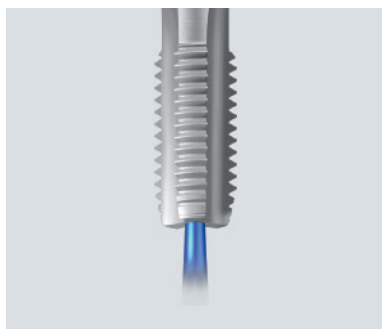
Mit blanker Spanbrust

Durch Abschleifen der Hartstoffschicht an der Spanbrust und spezieller Kantenpräparation, werden in Stahlwerkstoffen kürzere Späne erzeugt. Spanverwicklungen am Werkzeug werden vermieden.

With bright face

“Bright Face” grinding in combination with a special edge preparation ensures that chips will break in steel materials. Short chips will be evacuated without “birdnesting”.

IKZ



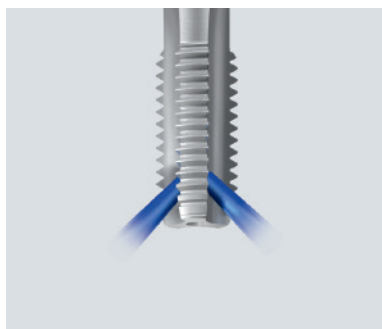
Innere Kühlschmierstoff-Zufuhr, axial (DIN-Bezeichnung: KA)

Axialer Austritt des Kühlschmierstoffes bietet optimale Kühlung im Anschnittbereich. Späne werden aus dem Grundloch gespült.

Internal coolant supply, axial (DIN designation: KA)

The axial exit of coolant-lubricant provides optimum cooling and lubrication in the chamfer area. Chips are evacuated easily from blind holes.

IKZN



Innere Kühlschmierstoff-Zufuhr, axial mit Austritt in den Nuten (DIN-Bezeichnung: KR)

Radialer Austritt bringt auch beim Durchgangsloch den Kühlschmierstoffprozesssicher in den Anschnittbereich.

Internal coolant supply, axial, with coolant exiting in the flutes (DIN designation: KR)

Radial exit of coolant-lubricant is the safest solution for providing coolant supply in the chamfer area even in through holes.

1.6 Sonstige EMUGE-Kurzbezeichnungen

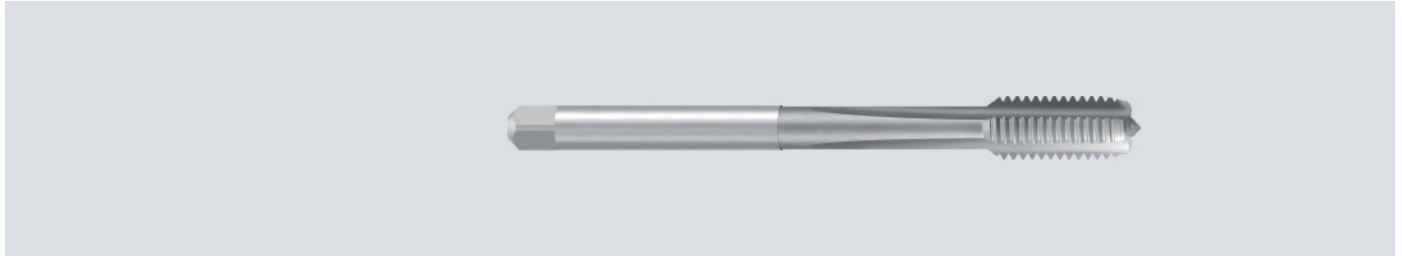
1.6 Other EMUGE abbreviations

LF**Maschinen-Gewindebohrer mit langen Nuten und langem Schaft**

Je nach Material können durch den längeren Schneidteil und lange Spannuten Gewindetiefen von bis zu $4 \times d_1$ erreicht werden.

Machine taps with long flutes and long shank

Depending on the workpiece material, thread depths of up to $4 \times d_1$ can be achieved with the extended thread part and the long flutes.

**LS****Maschinen-Gewindebohrer mit extra langem Schaft**

Schwer zugängliche Gewinde können problemlos mit diesen Werkzeugen bearbeitet werden.

Machine taps with extra long shank

Threads with bad access can be easily machined with these tools.

**LH****Linksgewinde**

Linksgewindebohrer sind spiegelbildlich zu Rechtsgewindebohrern.

Left-hand thread

Left-hand taps are mirror-image designs of the right-hand taps.

VHM**Vollhartmetall**

Werkzeuge mit einem Gewindenenddurchmesser $< 12,0$ mm werden aus Vollhartmetall (Gewinde- und Schaftteil) gefertigt.

Solid carbide

Tools with a thread diameter < 12.0 mm are made of solid carbide (thread part and shank).

KHM**Vollhartmetall-Kopf**

Bei Werkzeugen mit einem Gewindenenddurchmesser $\geq 12,0$ mm wird der Gewindeteil aus Vollhartmetall, der Schaftteil aus Werkzeugstahl gefertigt.

Solid carbide head

With tools with a thread diameter ≥ 12.0 mm, the head, or thread part, is made of solid carbide, the shank of tool steel.

„+0,1“**Übermaß**

Werden nach dem Gewindebohren die Innengewinde beschichtet oder das Bauteil warmbehandelt, muss häufig mit „Übermaß“ gebohrt werden.

Oversize

If an internal thread is coated, or the whole component heat-treated after the production of the thread, then it is often necessary to work with “oversize” tools.

Product
FinderV_c

M

MF

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

BSW, BSF

Pg

MJ
UNJC, UNJFEG (STI)
SELF-LOCKTr, Tr-F
RdZubehör
Accessories

Tech. Info



- 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
- Tech. Info

1.7 Anschnittformen

Anschnittformen und Anschnittlängen für Gewindebohrer nach DIN 2197.

1.7 Chamfer forms

Chamfer forms and chamfer lengths for taps acc. DIN 2197.

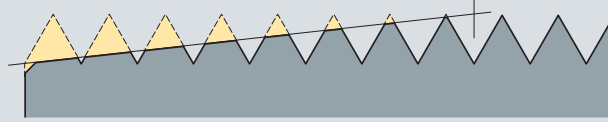
Form A

Anschnittlänge 6-8 Gänge

Für gerade Nuten

Chamfer length 6-8 threads

For straight flutes



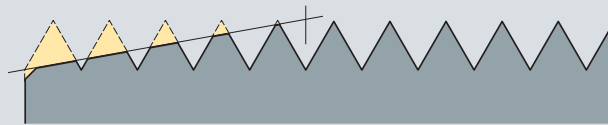
Form B

Anschnittlänge 3,5-5,5 Gänge

Für gerade Nuten mit Schälanschnitt

Chamfer length 3.5-5.5 threads

For straight flutes with spiral point



Form C

Anschnittlänge 2-3 Gänge

Für gerade oder gedrahlte Nuten

Chamfer length 2-3 threads

For straight or spiral flutes



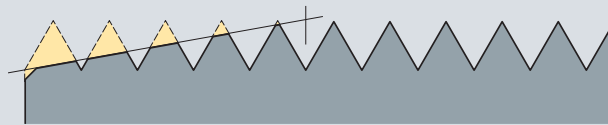
Form D

Anschnittlänge 3,5-5 Gänge

Für gerade oder gedrahlte Nuten

Chamfer length 3.5-5 threads

For straight or spiral flutes



Form E

Anschnittlänge 1,5-2 Gänge

Für gerade oder gedrahlte Nuten

Chamfer length 1.5-2 threads

For straight or spiral flutes



Form F

Anschnittlänge 1-1,5 Gänge

Für gerade oder gedrahlte Nuten

Chamfer length 1-1.5 threads

For straight or spiral flutes



Die Anschnittlänge der EMUGE-Gewindebohrer ist dem jeweiligen Werkstoff im Einzelfall angepasst.

The chamfer length of our EMUGE taps is adjusted to the workpiece material in each individual case.

1.8 Kühl- und Schmierstoffe

Dem Schmiermittel wird im Allgemeinen zu wenig Bedeutung geschenkt. Um vom Werkzeug die volle Leistung zu erhalten, muss der richtige Kühlschmierstoff verwendet werden.

Grundsätzlich unterscheiden wir folgende Arten der Kühlung und Schmierung:

A

Trocken, Druckluft, gekühlte Druckluft

Der reine „Trockenschnitt“ kommt meist nur in Grauguss zum Einsatz. Um Späne zu fördern wird Druckluft – auch gekühlt – eingesetzt.

E

Emulsion

(EMUGE-Gewindeschneidöl Nr. 3+ EMULSION)

Die gebräuchlichste Kühlschmierung auf Bearbeitungszentren.

M

Minimalmengenschmierung (MQL)

Durch die Möglichkeit Luft-Ölgemisch bei modernen Bearbeitungszentren durch die Spindel zu fördern, gewinnt diese Art der Kühlschmierung mehr und mehr an Bedeutung.

O

Gewindeschneidöl

(EMUGE-Gewindeschneidöle Nr. 1+ STEEL, Nr. 2+ CAST IRON, Nr. 4+ NON FERROUS, Nr. 5+ HIGH ALLOY)

Abgestimmt auf die zu bearbeitenden Werkstoffe werden hervorragende Gewindeoberflächen und Standwerte erreicht.

P

Gewindeschneidpaste

(EMUGE-Gewindeschneidpaste Nr. 6+ PASTE)

Zum Gewindeformen hervorragend geeignet. Besonders vorteilhaft bei waagrechtter Bearbeitung, großen Abmessungen und Durchgangslochgewinden. Kann nur für Pinselschmierung verwendet werden.

1.8 Cooling and lubrication agents

Lubricants are often, if not generally, given too little consideration. If you want to get the best performance out of your tool you have to take care to use the best coolant-lubricant available.

In general, we distinguish the following types of cooling and lubrication:

Dry machining, pressurised air, cold pressurised air

“Real” dry machining is mostly used only in cast iron. Pressurised air, sometimes cooled, is used in some cases for chip removal.

Emulsion

(EMUGE thread cutting oil no. 3+ EMULSION)

The most common type of coolant-lubricant on machining centres.

Minimum-quantity lubrication (MQL)

Due to the more and more common option of supplying aerosol through the spindle on modern machining centres, this type of cooling and lubrication is gaining more and more popularity.

Thread cutting oil

(EMUGE thread cutting oils no.1+ STEEL, no. 2+ CAST IRON, no. 4+ NON FERROUS, no. 5+ HIGH ALLOY)

With these oils which are perfectly adjusted to specific materials, excellent thread surfaces and tool life can be achieved.

Thread cutting paste

(EMUGE thread cutting paste no. 6+ PASTE)

Perfectly suitable for the cold forming of threads. Especially useful in horizontal machining, with large thread sizes and through hole threads. To be used only for brush lubrication.

Product
FinderV_c

M

MF

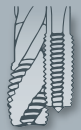
UNC
UN-8UNF
UNEFG, Rp
NPSM, NPSFNPT, NPTF
Rc, W

BSW, BSF

Pg

MJ
UNJC, UNJFEG (STI)
SELF-LOCKTr, Tr-F
RdZubehör
Accessories

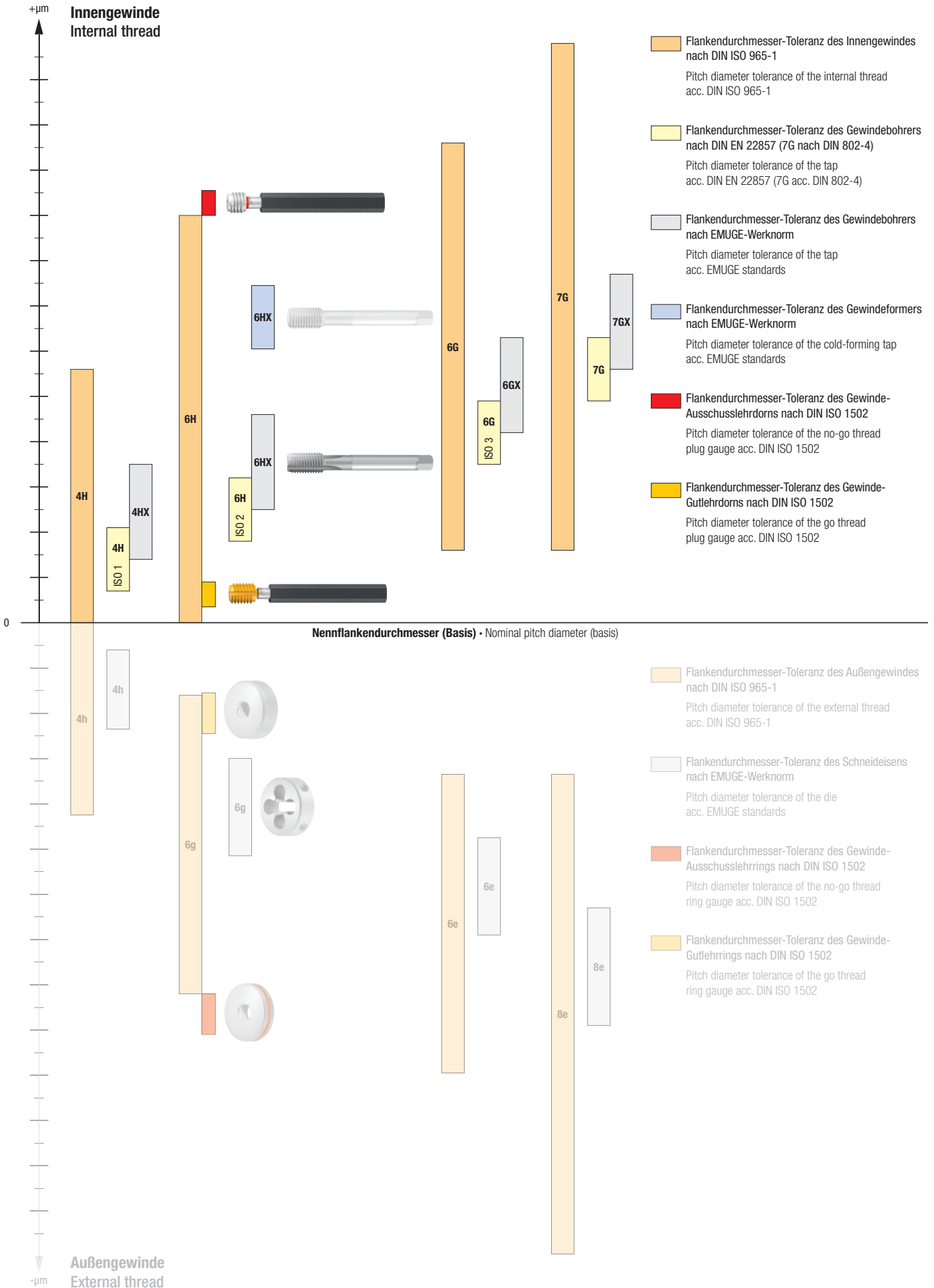
Tech. Info



- 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
- Tech. Info

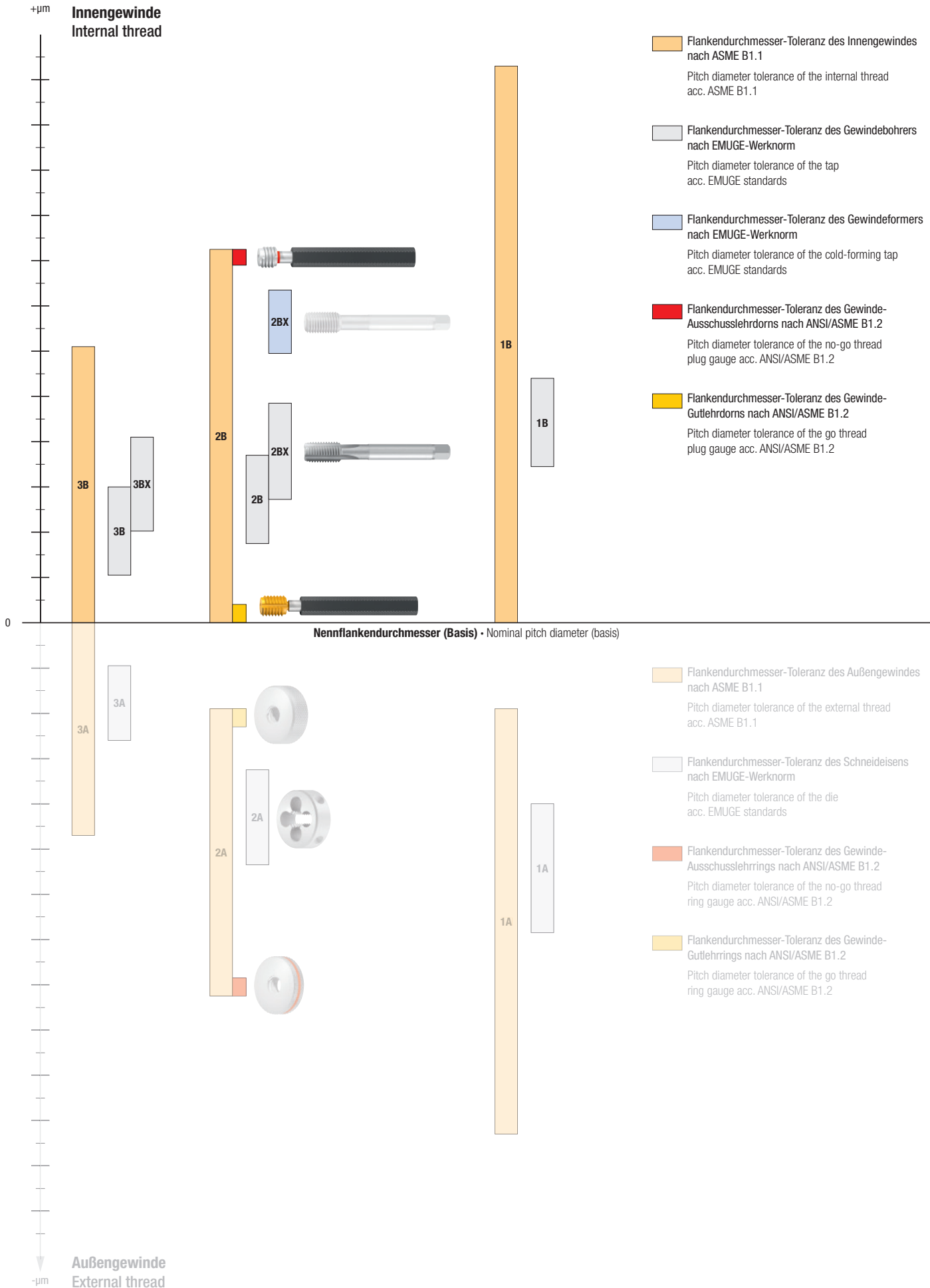
1.9 Toleranzfelder des Flankendurchmessers beim Metrischen Gewinde (schematische Darstellung)

1.9 Tolerance zones of the pitch diameter on the Metric thread (graphic representation)

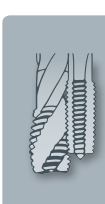


1.10 Toleranzfelder des Flankendurchmessers beim Unified-Gewinde (schematische Darstellung)

1.10 Tolerance zones of the pitch diameter on the Unified thread (graphic representation)



- 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 (ST) SELF-LOCK
 - Tr, Tr-F Rd
 - Zubehör Accessories



- 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
- Tech. Info**

1.11 Berechnung der Schnittdaten

1.11 Calculation of cutting data

| | | | |
|--|--|---|--|
| | $n = \frac{v_c \cdot 1000}{d_1 \cdot \pi} \quad [\text{min}^{-1}]$ | <p>Drehzahl n in min⁻¹ d₁ = Gewinendenndurchmesser in mm v_c = Schnittgeschwindigkeit in m/min</p> | <p>Speed n in min⁻¹ (rpm) d₁ = Major diameter of thread in mm v_c = Cutting speed in m/min</p> |
| | $v_c = \frac{d_1 \cdot \pi \cdot n}{1000} \quad [\text{m/min}]$ | <p>Schnittgeschwindigkeit v_c in m/min d₁ = Gewinendenndurchmesser in mm n = Drehzahl in min⁻¹</p> | <p>Cutting speed v_c in m/min d₁ = Major diameter of thread in mm n = Speed in min⁻¹ (rpm)</p> |
| | $M_c = \frac{k_c \cdot P^2 \cdot d_1}{8000} \quad [\text{Nm}]$ | <p>Schnittmoment am Gewindebohrer M_c in Nm (für Spitzgewinde M, MF, UNC, UNF, usw.) k_c = Spezifische Schnittkraft in N/mm² P = Gewindesteigung in mm d₁ = Gewinendenndurchmesser in mm</p> | <p>Cutting torque on the tap M_c in Nm (for tapered threads M, MF, UNC, UNF etc) k_c = Specific cutting force in N/mm² P = Thread pitch in mm d₁ = Major diameter of thread in mm</p> |
| | $P_c = \frac{M_c \cdot n}{9550 \cdot \eta} \quad [\text{kW}]$ | <p>Maschinenantriebsleistung P_c in kW M_c = Schnittmoment am Gewindebohrer in Nm n = Drehzahl in min⁻¹ η = Wirkungsgrad der Maschine</p> | <p>Machine drive power P_c in kW M_c = Cutting torque on the tap in Nm n = Speed in min⁻¹ (rpm) η = Efficiency of the machine</p> |



Beispiel für Drehmoment- und Leistungsberechnung

Gewinde: M64x4-6H
 Material: St52 (680 N/mm²)
 Schnittgeschwindigkeit v_c: 6 m/min
 Drehzahl n: 30 min⁻¹
 Wirkungsgrad der Maschine η: 0,6

Sample calculation of torque and performance

Thread: M64x4-6H
 Material: St52 (680 N/mm²)
 Cutting speed v_c: 6 m/min
 Speed n: 30 rpm
 Efficiency of the machine η: 0.6

$$M_c = \frac{2500 \cdot 4^2 \cdot 64}{8000} \quad [\text{Nm}]$$

Schnittmoment am Gewindebohrer M_c in Nm

(für Spitzgewinde M, MF, UNC, UNF, usw.)
 M_c = 320 Nm

Cutting torque on the tap M_c in Nm

(for tapered threads M, MF, UNC, UNF etc)
 M_c = 320 Nm

$$P_c = \frac{320 \cdot 30}{9550 \cdot 0,6} \quad [\text{kW}]$$

Maschinenantriebsleistung P_c in kW

(Gewindebohrer im Neuzustand)
 P_c = 1,67 kW

Machine drive power P_c in kW

(tap in new condition)
 P_c = 1.67 kW

Durch Verschleiß am Gewindebohrer, oder auch kurzzeitige Spanverklümmungen, sollte der **dreifache Wert** als Berechnungsgrundlage verwendet werden. Einfluss auf Schnittmoment und Leistung haben neben Spanablauf auch Geometrie und Beschichtung am Werkzeug, sowie die Schmierung.

Due to wear of the tap and temporarily jammed chips, **three times** the value should be used as calculation basis. Influential factors besides chip evacuation affecting cutting torque and performance are geometry and coating of the tool as well as the lubrication.

Somit sollte bei diesem Beispiel die Antriebsleistung 3 x 1,67 kW = **5 kW** betragen.

Therefore the drive power in our example should be 3 x 1,67 kW = **5kW**.

1.11 Berechnung der Schnittdaten

1.11 Calculation of cutting data

Spezifische Schnittkraft k_c in N/mm²Specific cutting force k_c in N/mm²

| Einsatzgebiete – Material Applications – material | | | Spezifische Schnittkraft k_c in N/mm ² Specific cutting force k_c in N/mm ² | |
|---|--|---|--|------|
| | Stahlwerkstoffe Steel materials | | | |
| P | 1.1 Kaltfließpressstähle, Baustähle, Automatenstähle, u.a. | Cold-extrusion steels, Construction steels, Free-cutting steels, etc. | ≤ 600 N/mm ² | 2300 |
| | 2.1 Baustähle, Einsatzstähle, Stahlguss, u.a. | Construction steels, Cementation steels, Steel castings, etc. | ≤ 800 N/mm ² | 2500 |
| | 3.1 Einsatzstähle, Vergütungsstähle, Kaltarbeitsstähle, u.a. | Cementation steels, Heat-treatable steels, Cold work steels, etc. | ≤ 1000 N/mm ² | 2600 |
| | 4.1 Vergütungsstähle, Kaltarbeitsstähle, Nitrierstähle, u.a. | Heat-treatable steels, Cold work steels, Nitriding steels, etc. | ≤ 1200 N/mm ² | 3000 |
| | 5.1 Hochlegierte Stähle, Kaltarbeitsstähle, Warmarbeitsstähle, u.a. | High-alloyed steels, Cold work steels, Hot work steels, etc. | ≤ 1400 N/mm ² | 3600 |
| M | Nichtrostende Stahlwerkstoffe Stainless steel materials | | | |
| | 1.1 Ferritisch, martensitisch | Ferritic, martensitic | ≤ 950 N/mm ² | 3200 |
| | 2.1 Austenitisch | Austenitic | ≤ 950 N/mm ² | 3200 |
| | 3.1 Austenitisch-ferritisch (Duplex) | Austenitic-ferritic (Duplex) | ≤ 1100 N/mm ² | 3200 |
| 4.1 Austenitisch-ferritisch hitzebeständig (Super Duplex) | Austenitic-ferritic heat-resistant (Super Duplex) | ≤ 1250 N/mm ² | 4000 | |
| K | Gusswerkstoffe Cast materials | | | |
| | 1.1 Gusseisen mit Lamellengrafit (GJL) | Cast iron with lamellar graphite (GJL) | 100-250 N/mm ² | 1600 |
| | 1.2 | | 250-450 N/mm ² | 1600 |
| | 2.1 Gusseisen mit Kugelgrafit (GJS) | Cast iron with nodular graphite (GJS) | 350-500 N/mm ² | 2400 |
| | 2.2 | | 500-900 N/mm ² | 2400 |
| | 3.1 Gusseisen mit Vermiculargrafit (GJV) | Cast iron with vermicular graphite (GJV) | 300-400 N/mm ² | 2500 |
| | 3.2 | | 400-500 N/mm ² | 2500 |
| 4.1 Temperguss (GTMW, GTMB) | Malleable cast iron (GTMW, GTMB) | 250-500 N/mm ² | 2700 | |
| 4.2 | | 500-800 N/mm ² | 2700 | |
| N | Nichteisenwerkstoffe Non ferrous materials | | | |
| | Aluminium-Legierungen Aluminium alloys | | | |
| | 1.1 | | ≤ 200 N/mm ² | 680 |
| | 1.2 Aluminium-Knetlegierungen | Aluminium wrought alloys | ≤ 350 N/mm ² | 680 |
| | 1.3 | | ≤ 550 N/mm ² | 680 |
| | 1.4 | | Si ≤ 7% | 680 |
| | 1.5 Aluminium-Gusslegierungen | Aluminium cast alloys | 7% < Si ≤ 12% | 680 |
| | 1.6 | | 12% < Si ≤ 17% | 680 |
| | Kupfer-Legierungen Copper alloys | | | |
| | 2.1 Reinkupfer, niedriglegiertes Kupfer | Pure copper, low-alloyed copper | ≤ 400 N/mm ² | 1100 |
| | 2.2 Kupfer-Zink-Legierungen (Messing, langspanend) | Copper-zinc alloys (brass, long-chipping) | ≤ 550 N/mm ² | 720 |
| | 2.3 Kupfer-Zink-Legierungen (Messing, kurzspanend) | Copper-zinc alloys (brass, short-chipping) | ≤ 550 N/mm ² | 720 |
| | 2.4 Kupfer-Aluminium-Legierungen (Alubronze, langspanend) | Copper-aluminium alloys (alu bronze, long-chipping) | ≤ 800 N/mm ² | 1900 |
| | 2.5 Kupfer-Zinn-Legierungen (Zinnbronze, langspanend) | Copper-tin alloys (tin bronze, long-chipping) | ≤ 700 N/mm ² | 1900 |
| | 2.6 Kupfer-Zinn-Legierungen (Zinnbronze, kurzspanend) | Copper-tin alloys (tin bronze, short-chipping) | ≤ 400 N/mm ² | 1900 |
| | 2.7 | | ≤ 600 N/mm ² | 1400 |
| | 2.8 Kupfer-Sonderlegierungen | Special copper alloys | ≤ 1400 N/mm ² | 1400 |
| | Magnesium-Legierungen Magnesium alloys | | | |
| | 3.1 Magnesium-Knetlegierungen | Magnesium wrought alloys | ≤ 500 N/mm ² | 750 |
| | 3.2 Magnesium-Gusslegierungen | Magnesium cast alloys | ≤ 500 N/mm ² | 750 |
| | Kunststoffe Synthetics | | | |
| | 4.1 Duroplaste (kurzspanend) | Duroplastics (short-chipping) | | 500 |
| | 4.2 Thermoplaste (langspanend) | Thermoplastics (long-chipping) | | 500 |
| 4.3 Faserverstärkte Kunststoffe (Faseranteil ≤ 30%) | Fibre-reinforced synthetics (fibre content ≤ 30%) | | 500 | |
| 4.4 Faserverstärkte Kunststoffe (Faseranteil > 30%) | Fibre-reinforced synthetics (fibre content > 30%) | | 500 | |
| Besondere Werkstoffe Special materials | | | | |
| 5.1 Grafit | Graphite | | 480 | |
| 5.2 Wolfram-Kupfer-Legierungen | Tungsten-copper alloys | | 480 | |
| 5.3 Verbundwerkstoffe | Composite materials | | 480 | |
| S | Spezialwerkstoffe Special materials | | | |
| | Titan-Legierungen Titanium alloys | | | |
| | 1.1 Reintitan | Pure titanium | ≤ 450 N/mm ² | 4000 |
| | 1.2 | | ≤ 900 N/mm ² | 4000 |
| | 1.3 Titan-Legierungen | Titanium alloys | ≤ 1250 N/mm ² | 4000 |
| | Nickel-, Kobalt- und Eisen-Legierungen Nickel alloys, cobalt alloys and iron alloys | | | |
| | 2.1 Reinnickel | Pure nickel | ≤ 600 N/mm ² | 4000 |
| | 2.2 | | ≤ 1000 N/mm ² | 4000 |
| | 2.3 Nickel-Basis-Legierungen | Nickel-base alloys | ≤ 1600 N/mm ² | 4000 |
| | 2.4 | | ≤ 1000 N/mm ² | 4000 |
| 2.5 Kobalt-Basis-Legierungen | Cobalt-base alloys | ≤ 1600 N/mm ² | 4000 | |
| 2.6 Eisen-Basis-Legierungen | Iron-base alloys | ≤ 1500 N/mm ² | 4000 | |
| H | Harte Werkstoffe Hard materials | | | |
| | 1.1 | | 44 - 50 HRC | 4100 |
| | 1.2 | | 50 - 55 HRC | 4700 |
| | 1.3 Hochfeste Stähle, gehärtete Stähle, Hartguss | High strength steels, hardened steels, hard castings | 55 - 60 HRC | 5000 |
| | 1.4 | | 60 - 63 HRC | 5200 |
| 1.5 | | 63 - 66 HRC | 5200 | |

Product
FinderV_c

M

MF

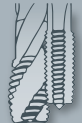
UNC
UN-8UNF
UNEFG, Rp
NPSM, NPSFNPT, NPTF
Rc, W

BSW, BSF

Pg

MJ
UNJC, UNJFEG (ST)
SELF-LOCKTr, Tr-F
RdZubehör
Accessories

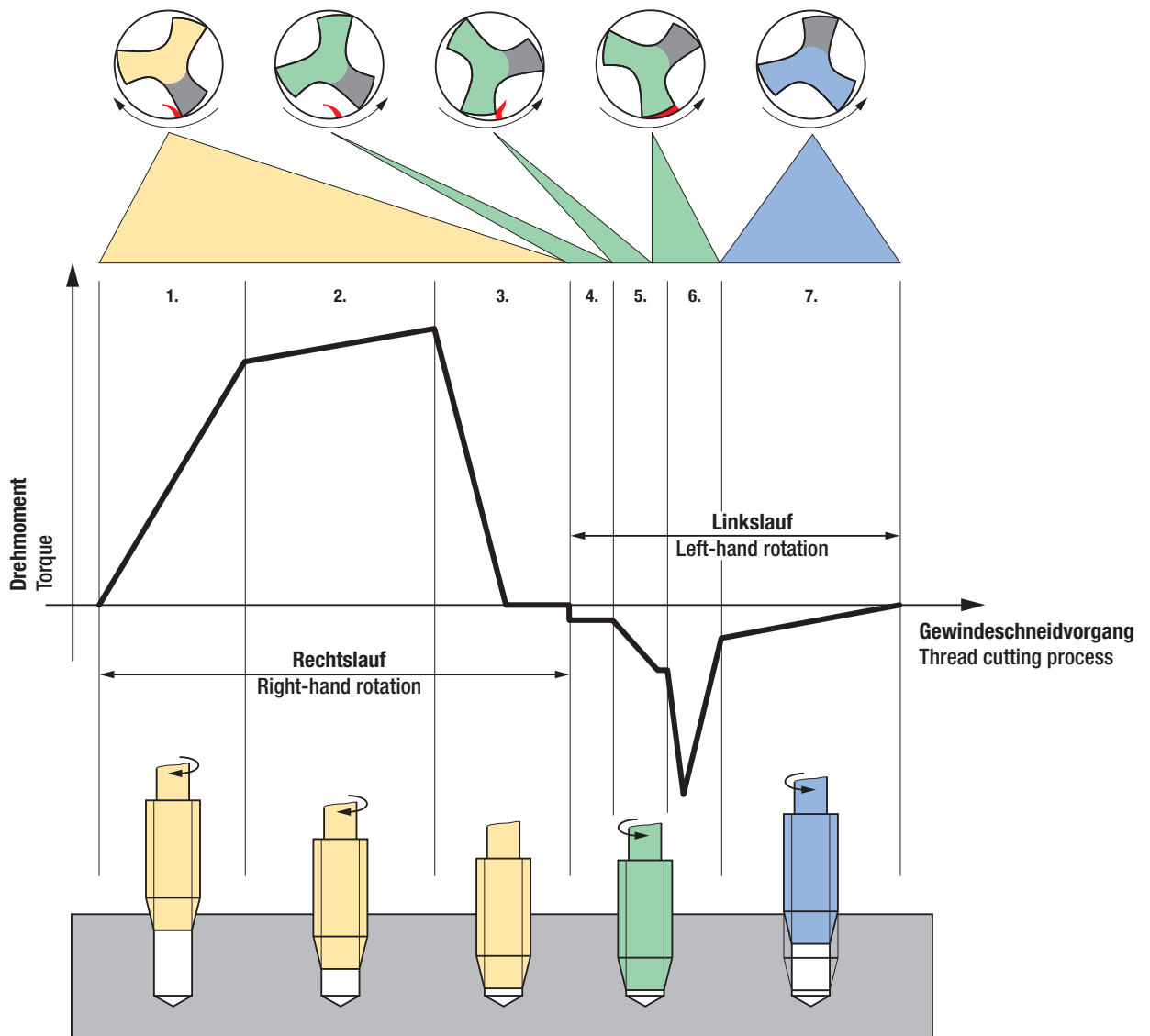
Tech. Info



- 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
- Tech. Info

1.12 Schematischer Drehmomentverlauf beim Gewindebohren

1.12 Schematic of torque curve during a thread cutting process



1. Anschneiden des Gewindebohrers bis zum Eingriff aller Anschnittzähne

2. Schnittmomente des jetzt mit allen Anschnittzähnen schneidenden Gewindebohrers

3. Abbremsen der Maschinenspindel bis zum Stillstand

4. Beginnender Rücklauf der Spindel bis zum Kontakt des Zahnstegrückens mit dem in der Bohrung stehenden Span der Folgeschneide

5. Abscheren des Spans

6. Zurückquetschen der nach der Spanabscherung stehengebliebenen Spanwurzel (Größe abhängig vom Anschnitt-Freiwinkel des Gewindebohrers sowie des Rückenschnittwinkels)

7. Gleitreibung zwischen Gewindebohrer und Werkstück

1. Beginning of cut to full contact of all chamfer teeth

2. Cutting torque of the tap which is now cutting with all its chamfer teeth

3. Braking the machine spindle to a stop

4. Beginning reversal of the spindle to contact of the tooth back with the chip root left standing by the next cutting tap tooth

5. Shearing off the chip root

6. Squashing back the chip root remains left after the shearing off of the chip root (size depending on the chamfer relief angle of the tap and on the rear cutting angle of the tap tooth)

7. Sliding friction between tap and workpiece

1.13 Technischer Fragebogen: Gewindebohren

Firma:
 Ansprechpartner:
 Telefon:
 Fax:
 E-Mail:

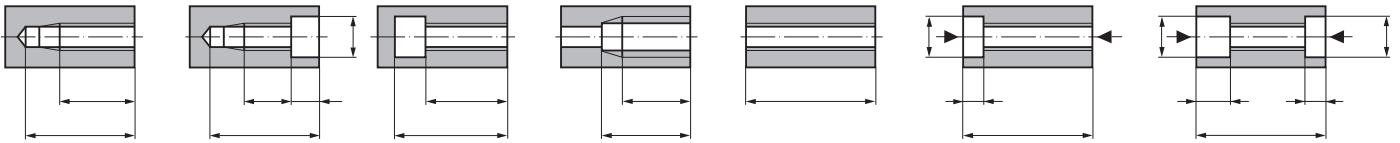
Abmessung:
 Ausführung:
 Artikel-Nr.:
 Projekt:

Werkstückbezeichnung:

Kernlochdurchmesser:

Kernlochform (bitte Maße eintragen):

- gebohrt geräumt gestanzt
 gegossen gezogen



Maschine:

Hersteller:
 Typ:
 Antriebsleistung: kW

- horizontal Werkzeug rotierend
 vertikal Werkzeug stehend

Schnittdaten:

Drehzahl n: min⁻¹
 Schnittgeschwindigkeit v_c: m/min

Vorschub:

- Andruckkurve Sonstige:
 Hydraulik
 Leitpatrone
 NC-gesteuert
 Synchronspindel
 Zahnräder

Werkzeugaufnahme:

- starr (Spannzange)
 Gewindeschneidapparat } Hersteller:
 Gewindeschneidfutter } Typ:
 mit Überlastkupplung
 mit Längenausgleich
 mit achsparalleler Pendelung
 mit innerer Kühlschmierstoff-Zufuhr Druck: bar

Spindelaufnahme:

MK / SK / HSK / TR / andere:
 DIN / ANSI / JIS / andere:

Werkstückwerkstoff:

Bezeichnung:
 Behandlungszustand:
 Festigkeit: N/mm²
 Härte: Dehnung: %
 kurzspanend langspanend

Kühlung:

- Öl Emulsion % Trocken
 Umlauf Pinsel Nebel Sonstige:

Werkzeug-Empfehlung:

Ausführung:
 Artikel-Nr.:
 Schaftdurchmesser: DIN:
 Besonderheit:
 Bisher verwendete Werkzeuge (Hersteller):
 Standwert: (Anzahl der Gewinde)

Aufgenommen von:

Datum / Unterschrift:

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 (ST) SELF-LOCK

Tr, Tr-F Rd

Zubehör Accessories

Tech. Info



- Product Finder
- V_c
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- UNC UN-8
- UNF UNEF
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- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- MJ UNJC, UNJF
- EG (STI) SELF-LOCK
- Tr, Tr-F Rd

1.13 Technical questionnaire: Tapping of threads

Company: Size:

Contact: Design:

Phone: Article no.:

Fax: Project:

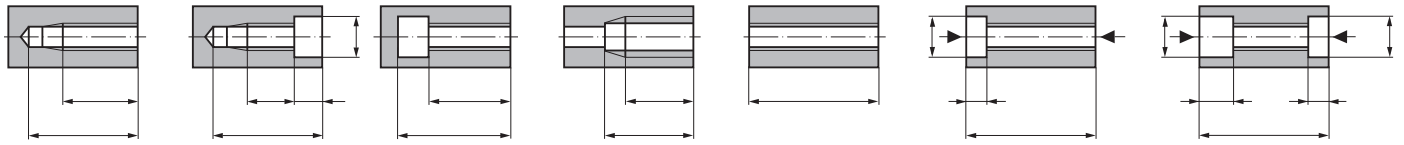
E-mail:

Workpiece description: Thread hole diameter:

drilled broached stamped

cast drawn

Hole type (please enter dimensional specifications):



Machine:

Manufacturer:

Type:

Power: kW

- horizontal rotating tool
- vertical standing tool

Cutting data:

Speed n: rpm

Cutting speed v_c: m/min

Feed:

- Pressure cam Others:
- Hydraulics
- Lead screw
- NC-controlled
- Synchronous spindle
- Gear wheels

Tool holder:

- rigid (collet)
- Tapping attachment } Manufacturer:
- Tap holder } Type:
- with overload clutch
- with length compensation
- with axial parallel floating
- with internal coolant supply Pressure: bar

Spindle adaptation:

MT / ISO taper / HSK / TR / others:

DIN / ANSI / JIS / others:

Workpiece material:

Description:

Condition during work:

Tensile strength: N/mm²

Hardness: Elongation: %

short-chipping long-chipping

Cooling/lubrication:

- Oil Emulsion % Dry
- Circulation Brush Mist Others:

Tool recommendation:

Design:

Article no.:

Shank diameter: DIN:

Special features:

Tools used until now (manufacturer):

Tool life: (no. of threads)

Filled in by:

Date / signature:



Gewindeformer Cold-Forming Taps

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| Produktseiten | Product pages | 278 - 304 |
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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.



- 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

- 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 langem Schaft
Cold-forming taps with long shank



InnoForm 2-LF3
InnoForm 2-LF4

Gewindeformer mit extra-langem Schaft
Cold-forming taps with extra long shank



InnoForm 1-LS
InnoForm 2-LS

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Coolant-lubricants

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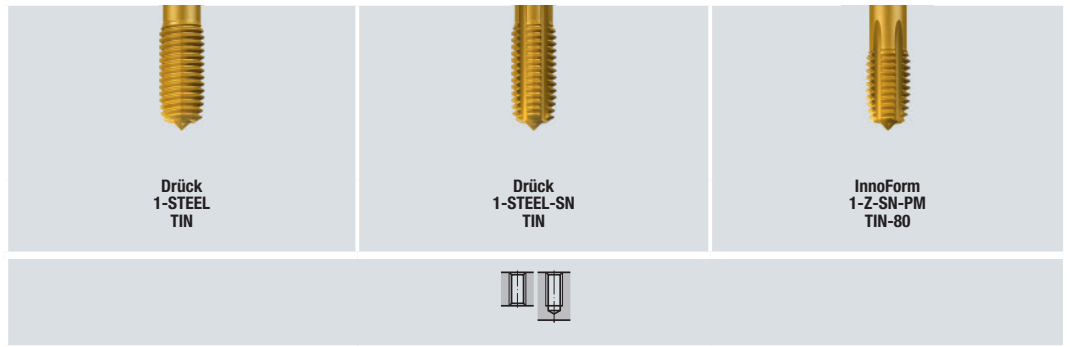


Spezial-Schaftverlängerungen
Special shank extensions

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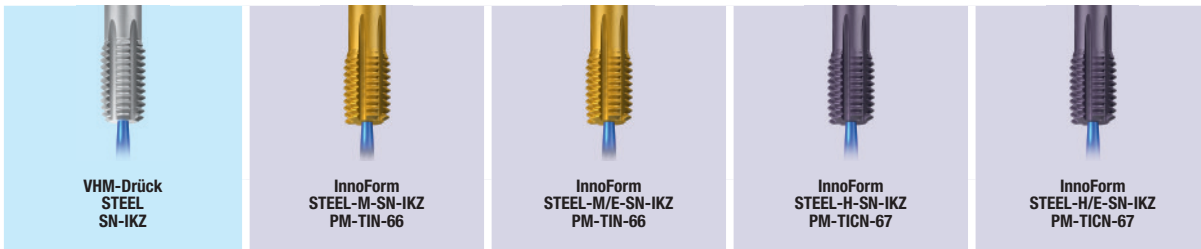
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Product Finder

Vc

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MF

UNC

UNF

G

SELF-LOCK

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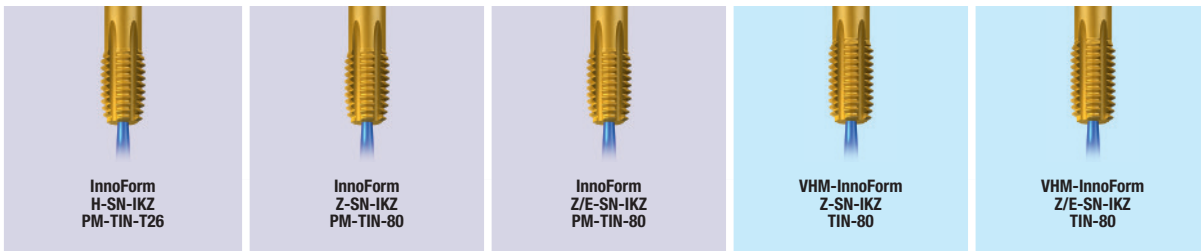
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| MF |
| UNC |
| UNF |
| G (BSP) |



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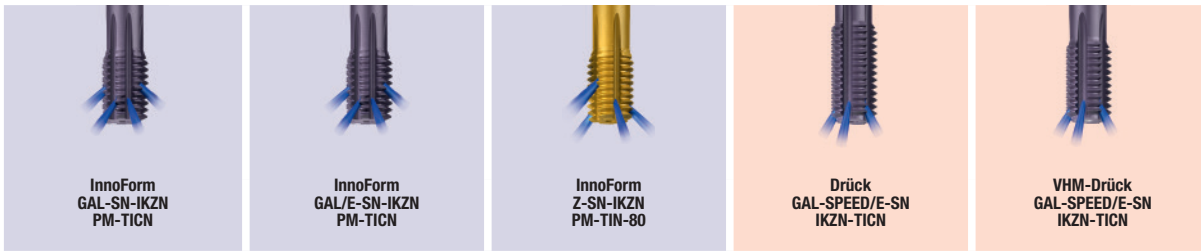
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|---------|
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| MF |
| UNC |
| UNF |
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| UNC |
| UNF |
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|---------|
| M |
| MF |
| UNC |
| UNF |
| G (BSP) |

- Product Finder
- V_c
- M
- MF
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- UNF
- G
- SELF-LOCK
- Tech. Info

Wegweiser und Schnittwerte

Bitte beachten:

Die in den jeweiligen Spalten angegebenen Umfangsgeschwindigkeiten (v_c in m/min) sind Richtwerte, welche je nach Einsatzbedingungen (Material, Schmierung, Maschine, usw.) angepasst werden müssen.

Die Eignung ist folgendermaßen gekennzeichnet:

- Gewindeformer sehr gut geeignet
- Gewindeformer gut geeignet

= DIN-Form / Gänge (Anformkegellänge)

Internationaler Werkstoffvergleich siehe Seite 838 - 851.

Product finder and cutting data

Please note:

The circumferential speeds (v_c 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 suitability is marked as follows:

- Cold-forming tap is very suitable
- Cold-forming tap is suitable

= DIN form / threads (lead taper length)

International comparison of materials, see page 838 - 851.

| Einsatzgebiete – Material Applications – material | | Material-Beispiele Material examples | Material-Nummern Material numbers |
|--|--|---|---|
| P | Stahlwerkstoffe Kaltfließpressstähle, Baustähle, Automatenstähle, u.a. | Steel materials Cold-extrusion steels, Construction steels, Free-cutting steels, etc. | 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. | 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. | 20MoCr3 1.7320 42CrMo4 1.7225 102Cr6 1.2067 50CrMo4 1.7228 |
| | 4.1 Vergütungsstähle, Kaltarbeitsstähle, Nitrierstähle, u.a. | Heat-treatable steels, Cold work steels, Nitriding steels, etc. | X45NiCrMo4 1.2767 31CrMo12 1.8515 X38CrMoV5-3 1.2367 |
| | 5.1 Hochlegierte Stähle, Kaltarbeitsstähle, Warmarbeitsstähle, u.a. | High-alloyed steels, Cold work steels, Hot work steels, etc. | X100CrMoV8-1-1 1.2990 X40CrMoV5-1 1.2344 |
| M | Nichtrostende Stahlwerkstoffe 1.1 Ferritisch, martensitisch | Stainless steel materials Ferritic, martensitic | X2CrTi12 1.4512 |
| | 2.1 Austenitisch | Austenitic | X6CrNiMoTi17-12-2 1.4571 |
| | 3.1 Austenitisch-ferritisch (Duplex) | Austenitic-ferritic (Duplex) | X2CrNiMoN22-5-3 1.4462 |
| | 4.1 Austenitisch-ferritisch hitzebeständig (Super Duplex) | Austenitic-ferritic heat-resistant (Super Duplex) | X2CrNiMoN25-7-4 1.4410 |
| K | Gusswerkstoffe 1.1 Gusseisen mit Lamellengrafit (GJL) | Cast materials Cast iron with lamellar graphite (GJL) | EN-GJL-200 (GG20) EN-JL-1030 |
| | 1.2 Gusseisen mit Kugelgrafit (GJS) | Cast iron with nodular graphite (GJS) | EN-GJL-300 (GG30) EN-JL-1050 |
| | 2.1 Gusseisen mit Kugelgrafit (GJS) | Cast iron with nodular graphite (GJS) | EN-GJS-400-15 (GGG40) EN-JS-1030 |
| | 2.2 Gusseisen mit Kugelgrafit (GJS) | Cast iron with nodular graphite (GJS) | EN-GJS-700-2 (GGG70) EN-JS-1070 |
| | 3.1 Gusseisen mit Vermiculargrafit (GJV) | Cast iron with vermicular graphite (GJV) | GJV 300 |
| | 3.2 Gusseisen mit Vermiculargrafit (GJV) | Cast iron with vermicular graphite (GJV) | GJV 450 |
| | 4.1 Temperguss (GTMW, GTMB) | Malleable cast iron (GTMW, GTMB) | EN-GJMW-350-4 (GTW-35) EN-JM-1010 |
| 4.2 Temperguss (GTMW, GTMB) | Malleable cast iron (GTMW, GTMB) | EN-GJMB-450-6 (GTS-45) EN-JM-1140 | |
| N | Nichteisenwerkstoffe 1.1 Aluminium-Legierungen | Non ferrous materials Aluminium alloys | |
| | 1.2 Aluminium-Knetlegierungen | Aluminium wrought alloys | EN AW-AlMn1 EN AW-3103 EN AW-AlMgSi EN AW-6060 |
| | 1.3 Aluminium-Knetlegierungen | Aluminium wrought alloys | EN AW-AlZn5Mg3Cu EN AW-7022 |
| | 1.4 Aluminium-Knetlegierungen | Aluminium wrought alloys | EN AC-AlMg5 EN AC-51300 |
| | 1.5 Aluminium-Gusslegierungen | Aluminium cast alloys | EN AC-AISi9Cu3 EN AC-46500 |
| | 1.6 Aluminium-Gusslegierungen | Aluminium cast alloys | GD-AISi17Cu4FeMg |
| | 2.1 Reinkupfer, niedriglegiertes Kupfer | Pure copper, low-alloyed copper | E-Cu 57 |
| | 2.2 Kupfer-Zink-Legierungen (Messing, langspanend) | Copper-zinc alloys (brass, long-chipping) | CuZn37 (Ms63) EN CW 508 L |
| | 2.3 Kupfer-Zink-Legierungen (Messing, kurzspanend) | Copper-zinc alloys (brass, short-chipping) | CuZn36Pb3 (Ms58) EN CW 603 N |
| | 2.4 Kupfer-Aluminium-Legierungen (Alubronze, langspanend) | Copper-aluminium alloys (alu bronze, long-chipping) | CuAl10Ni5Fe4 EN CW 307 G |
| | 2.5 Kupfer-Zinn-Legierungen (Zinnbronze, langspanend) | Copper-tin alloys (tin bronze, long-chipping) | CuSn8P EN CW 459 K |
| | 2.6 Kupfer-Zinn-Legierungen (Zinnbronze, kurzspanend) | Copper-tin alloys (tin bronze, short-chipping) | CuSn7 ZnPb (Rg7) 2.1090 |
| | 2.7 Kupfer-Sonderlegierungen | Special copper alloys | (AMPCO® 8) |
| | 2.8 Kupfer-Sonderlegierungen | Special copper alloys | (AMPCO® 45) |
| | 3.1 Magnesium-Knetlegierungen | Magnesium wrought alloys | MgAl6Zn 3.5612 |
| | 3.2 Magnesium-Gusslegierungen | Magnesium cast alloys | EN-MCMgAl9Zn1 EN-MC21120 |
| S | Kunststoffe 4.1 Duroplaste (kurzspanend) | Synthetics 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 5.1 Grafit | Special materials Graphite | C 8000 |
| | 5.2 Wolfram-Kupfer-Legierungen | Tungsten-copper alloys | W-Cu 80/20 |
| | 5.3 Verbundwerkstoffe | Composite materials | Hyllite, Alucobond |
| | Spezialwerkstoffe Titan-Legierungen | Special materials Titanium alloys | |
| | 1.1 Reintitan | Pure titanium | Ti1 3.7025 |
| | 1.2 Titan-Legierungen | Titanium alloys | TiAl6V4 3.7165 |
| 1.3 Titan-Legierungen | Titanium alloys | TiAl4Mo4Sn2 3.7185 | |
| S | Nickel-, Kobalt- und Eisen-Legierungen 2.1 Reinnickel | Nickel alloys, cobalt alloys and iron alloys Pure nickel | |
| | 2.2 Nickel-Basis-Legierungen | Nickel-base alloys | Ni 99.6 2.4060 Monel 400 2.4360 |
| | 2.3 Nickel-Basis-Legierungen | Nickel-base alloys | Inconel 718 2.4668 |
| | 2.4 Kobalt-Basis-Legierungen | Cobalt-base alloys | Udimet 605 |
| | 2.5 Kobalt-Basis-Legierungen | Cobalt-base alloys | Haynes 25 2.4964 |
| | 2.6 Eisen-Basis-Legierungen | Iron-base alloys | Incoloy 800 1.4958 |
| H | Harte Werkstoffe 1.1 Hochfeste Stähle, gehärtete Stähle, Hartguss | Hard materials High strength steels, hardened steels, hard castings | |
| | 1.2 Hochfeste Stähle, gehärtete Stähle, Hartguss | High strength steels, hardened steels, hard castings | Weldox 1100 |
| | 1.3 Hochfeste Stähle, gehärtete Stähle, Hartguss | High strength steels, hardened steels, hard castings | Hardox 550 |
| | 1.4 Hochfeste Stähle, gehärtete Stähle, Hartguss | High strength steels, hardened steels, hard castings | Armox 600T |
| | 1.5 Hochfeste Stähle, gehärtete Stähle, Hartguss | High strength steels, hardened steels, hard castings | Ferro-Titanit HSSE |



Drück STEEL NT
C / 2-3

Drück STEEL CR
C / 2-3

Drück STEEL TIN
C / 2-3

Drück STEEL-SN NT
C / 2-3

Drück STEEL-SN CR
C / 2-3

Drück STEEL-SN TIN
C / 2-3

VHM-Drück STEEL SN-IKZ
C / 2-3

InnoForm STEEL-BL/D PM-TIN
D / 4-5

InnoForm STEEL-M-SN PM-TIN-66
C / 2-3



Gewindetiefe und Lochform
Thread depth and hole type

M
MF
UNC
UNF
G
SELF-LOCK
Tech. Info
UNEf, UN-8
G, Rp
NPSM, NPSF
NPT, NPTF, Rc
W
BSW, BSF
Pg
MJ
UNJC, UNJF
EG (ST)
LK-M
Tr, Tr-F, Rd

278

278

278, 287
294, 296
299, 300
301, 302

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279, 287
294, 296
299, 300
301, 302

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279, 287
296

15 - 45

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4.1

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10 - 25 ²⁾
10 - 25 ²⁾

10 - 25 ²⁾
10 - 25 ²⁾

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40 - 80

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40 - 80

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Product Finder

v_c

M

MF

UNC

UNF

G

SELF-LOCK

Tech. Info



Product Finder

V_c

M

MF

UNC

UNF

G

SELF-LOCK

Tech. Info



Gewindetiefe und Lochform
Thread depth and hole type

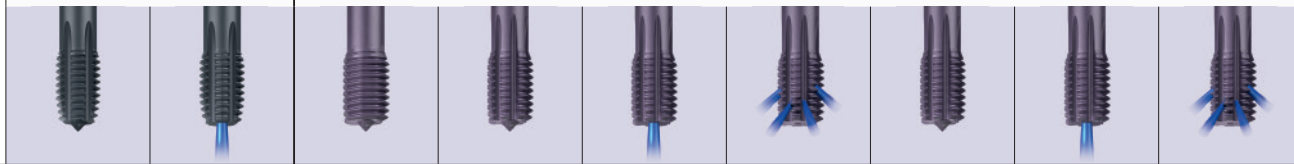
M
MF
UNC
UNF
UNEf, UN-8
G, Rp
NPSM, NPSF
NPT, NPTF, Rc
W
BSW, BSF
Pg
MJ
UNJC, UNJF
EG (STI)
LK-M
Tr, Tr-F, Rd

| | InnoForm STEEL-M-SN IKZ-PM-TIN-66 | InnoForm STEEL-M/E-SN IKZ-PM-TIN-66 | InnoForm STEEL-H-SN IKZ-PM-TICN-67 | InnoForm STEEL-H-SN IKZ-PM-TICN-67 | InnoForm STEEL-H/E-SN IKZ-PM-TICN-67 | InnoForm VA/E-SN PM-TIN-T26 | InnoForm VA/E-SN-IKZ PM-TIN-T26 | InnoForm AL PM-GLT-8 | InnoForm AL-SN PM-GLT-8 | InnoForm AL-SN-IKZ PM-GLT-8 |
|---------------|-----------------------------------|-------------------------------------|------------------------------------|------------------------------------|--------------------------------------|------------------------------|---------------------------------|----------------------|-----------------------------|-----------------------------|
| | C / 2-3 | | E / 1,5-2 | | E / 1,5-2 | | C / 2-3 | | C / 2-3 | |
| | max. 3 x d ₁ | | max. 3 x d ₁ | | max. 3 x d ₁ | | max. 3 x d ₁ | | max. 3 x d ₁ | |
| M | 279, 287 | 279, 287 | 279, 288 | 279, 288 | 280, 288 | 280 | 280 | 281 | 281 | 281 |
| MF | 296 | 296 | 297 | 297 | 297 | | | | | |
| UNC | | | | | | | | | | |
| 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 | | | | | | | | | | |
| P | 1.1 | 20 - 80 | 20 - 80 | | | 20 - 80 | 20 - 80 | | | |
| | 2.1 | 20 - 60 | 20 - 60 | | | 20 - 60 | 20 - 60 | | | |
| | 3.1 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | | |
| | 4.1 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | | |
| | 5.1 | | | 10 - 20 | 10 - 20 | 10 - 20 | | | | |
| M | 1.1 | | | | | 10 - 25 ²⁾ | 10 - 25 ²⁾ | | | |
| | 2.1 | | | | | 10 - 25 ²⁾ | 10 - 25 ²⁾ | | | |
| | 3.1 | | | | | 5 - 20 ²⁾ | 5 - 20 ²⁾ | | | |
| | 4.1 | | | | | | | | | |
| K | 1.1 | | | | | | | | | |
| | 1.2 | | | | | | | | | |
| | 2.1 | 20 - 60 | 20 - 60 | 20 - 60 | 20 - 60 | 20 - 60 | | | | |
| | 2.2 | | | | | | | | | |
| | 3.1 | | | | | | | | | |
| | 3.2 | | | | | | | | | |
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| N | 1.1 | | | | | | | 20 - 60 | 20 - 60 | 20 - 60 |
| | 1.2 | | | | | | | 20 - 60 | 20 - 60 | 20 - 60 |
| | 1.3 | | | | | | | 20 - 60 | 20 - 60 | 20 - 60 |
| | 1.4 | | | | | | | 20 - 60 | 20 - 60 | 20 - 60 |
| | 1.5 | | | | | | | 20 - 60 | 20 - 60 | 20 - 60 |
| | 1.6 | | | | | | | | | |
| | 2.1 | | | | | | | 20 - 40 | 20 - 40 | 20 - 40 |
| | 2.2 | | | | | | | 40 - 80 | 40 - 80 | 40 - 80 |
| | 2.3 | | | | | | | | | |
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V_c in m/min





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| InnoForm AL/E-SN PM-GLT-8 | InnoForm AL/E-SN- IKZ PM-GLT-8 | InnoForm GAL PM-TiCN | InnoForm GAL-SN PM-TiCN | InnoForm GAL-SN- IKZ PM-TiCN | InnoForm GAL-SN- IKZN PM-TiCN | InnoForm GAL/E-SN PM-TiCN | InnoForm GAL/E-SN- IKZ PM-TiCN | InnoForm GAL/E-SN- IKZN PM-TiCN |
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|-----------|-----------|---------|---------|---------|---------|-----------|-----------|-----------|
| E / 1,5-2 | E / 1,5-2 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | E / 1,5-2 | E / 1,5-2 | E / 1,5-2 |
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| max. 3 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ | | max. 3 x d ₁ | max. 3 x d ₁ | | max. 3 x d ₁ | max. 3 x d ₁ |
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| 281 | 281 | 281 | 281 | 281 | 281 | 282 | 282 | 282 |
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Gewindetiefe
und Lochform
Thread depth
and hole type

- M
- MF
- UNC
- UNF
- G
- SELF-LOCK
- Tech. Info
- BSW, BSF
- Pg
- MJ
- UNJC, UNJF
- EG (ST)
- LK-M
- Tr, Tr-F, Rd

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| | | | | | | | | | | 1.5 |

Product Finder

v_c

M

MF

UNC

UNF

G

SELF-LOCK

Tech. Info



Product Finder

V_C

M

MF

UNC

UNF

G

SELF-LOCK

Tech. Info



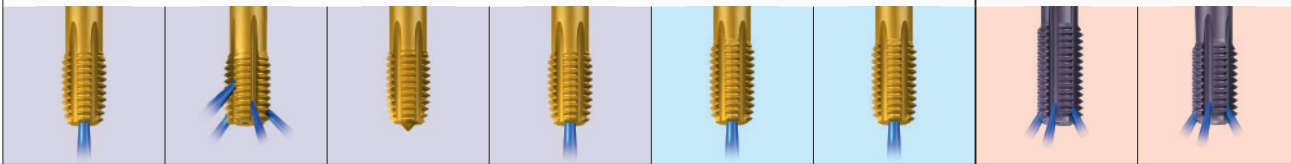
Gewindetiefe und Lochform
Thread depth and hole type

M
MF
UNC
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

| | InnoForm H-SN PM-TiN-T26 | InnoForm H-SN-ikZ PM-TiN-T26 | InnoForm H-SN-ikZ-LF3 PM-TiN-T26 | 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 PM-TiN-80 | InnoForm Z-SN PM-TiN-80 |
|----------|-----------------------------|------------------------------|----------------------------------|-----------------------------------|----------------------------------|-----------------------------------|-----------------------------|--|
| | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 |
| | max. 3 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ | max. 4 x d ₁ | max. 4 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ |
| | 283, 289 297 | 283, 289 297 | 292 | 292 | 293 | 293 | 283, 289 | 283, 286, 289 295, 297 299, 300 301, 302 303 |
| P | | | | | | | | |
| 1.1 | | | | | | | 20 - 80 | 20 - 80 |
| 2.1 | 20 - 60 | 20 - 60 | 20 - 60 | 20 - 60 | 20 - 60 | 20 - 60 | 20 - 60 | 20 - 60 |
| 3.1 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 | 10 - 40 |
| 4.1 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 | 10 - 30 |
| 5.1 | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 | 5 - 20 |
| M | | | | | | | | |
| 1.1 | | | | | | | 10 - 25 ²⁾ | 10 - 25 ²⁾ |
| 2.1 | | | | | | | 10 - 25 ²⁾ | 10 - 25 ²⁾ |
| 3.1 | | | | | | | 5 - 20 ²⁾ | 5 - 20 ²⁾ |
| 4.1 | | | | | | | | |
| K | | | | | | | | |
| 1.1 | | | | | | | | |
| 1.2 | | | | | | | | |
| 2.1 | 20 - 60 | 20 - 60 | 20 - 60 | 20 - 60 | 20 - 60 | 20 - 60 | 20 - 60 | 20 - 60 |
| 2.2 | | | | | | | | |
| 3.1 | | | | | | | | |
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| 2.1 | | | | | | | 20 - 40 | 20 - 40 |
| 2.2 | | | | | | | 40 - 80 | 40 - 80 |
| 2.3 | | | | | | | | |
| 2.4 | | | | | | | 20 - 40 | 20 - 40 |
| 2.5 | | | | | | | 20 - 40 | 20 - 40 |
| 2.6 | | | | | | | | |
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| S | | | | | | | | |
| 1.1 | | | | | | | 5 - 20 ²⁾ | 5 - 20 ²⁾ |
| 1.2 | | | | | | | 5 - 15 ²⁾ | 5 - 15 ²⁾ |
| 1.3 | | | | | | | 5 - 10 ²⁾ | 5 - 10 ²⁾ |
| 2.1 | | | | | | | 5 - 10 ²⁾ | 5 - 10 ²⁾ |
| 2.2 | | | | | | | 5 - 10 ²⁾ | 5 - 10 ²⁾ |
| 2.3 | | | | | | | | |
| 2.4 | | | | | | | 5 - 10 ²⁾ | 5 - 10 ²⁾ |
| 2.5 | | | | | | | | |
| 2.6 | | | | | | | | |
| H | | | | | | | | |
| 1.1 | | | | | | | | |
| 1.2 | | | | | | | | |
| 1.3 | | | | | | | | |
| 1.4 | | | | | | | | |
| 1.5 | | | | | | | | |

Seite . Page

V_C in m/min



| | | | | | | | |
|-----------------------------|------------------------------|---------------------------|-------------------------------|------------------------------|--------------------------------|--------------------------------|------------------------------------|
| 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 | VHM-InnoForm Z-SN-IKZ TIN-80 | VHM-InnoForm Z/E-SN-IKZ TIN-80 | Drück GAL-SPEED/E SN-IKZN-TiCN | VHM-Drück GAL-SPEED/E SN-IKZN-TiCN |
| C / 2-3 | C / 2-3 | E / 1,5-2 | E / 1,5-2 | C / 2-3 | E / 1,5-2 | E / 1,5-2 | E / 1,5-2 |

| | | | | | | | |
|-----------------------------|-----------------------------|--|--|-----------------------------|--|-----------------------------|--|
| max. 3 x d ₁ | max. 3 x d ₁ | | | max. 3 x d ₁ | | max. 3 x d ₁ | |
| | | | | | | | |

| | | | | | | | |
|---|----------|----------|----------|-----|-----|----------------------|----------------------|
| 283, 286, 289, 291 295, 297 299, 300 301, 302 303 | 283, 289 | 283, 289 | 283, 289 | 284 | 284 | 285, 290 295, 298 | 285, 290 295, 298 |
|---|----------|----------|----------|-----|-----|----------------------|----------------------|

Gewindetiefe und Lochform
Thread depth and hole type

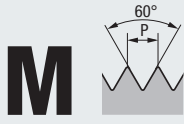
M
MF
UNC
UNF
G
SELF-LOCK
Tech. Info

UNEf, UN-8
G, Rp
NPSM, NPSF
NPT, NPTF, Rc
W
BSW, BSF
Pg
MJ
UNJC, UNJF
EG (ST)
LK-M
Tr, Tr-F, Rd

Seite . Page

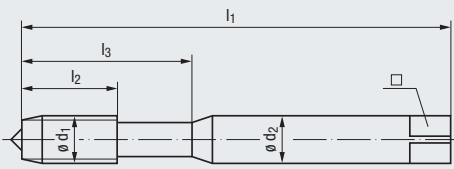
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|--|--|--|--|--|--|--|--|--|--|-----|
| | | | | | | | | | | |
| | | | | | | | | | | 1.1 |
| | | | | | | | | | | 2.1 |
| | | | | | | | | | | 3.1 |
| | | | | | | | | | | 4.1 |
| | | | | | | | | | | 5.1 |
| | | | | | | | | | | 1.1 |
| | | | | | | | | | | 2.1 |
| | | | | | | | | | | 3.1 |
| | | | | | | | | | | 4.1 |
| | | | | | | | | | | 1.1 |
| | | | | | | | | | | 1.2 |
| | | | | | | | | | | 2.1 |
| | | | | | | | | | | 2.2 |
| | | | | | | | | | | 3.1 |
| | | | | | | | | | | 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 |
| | | | | | | | | | | 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 Finder
- Vc
- M
- MF
- UNC
- UNF
- G
- SELF-LOCK
- Tech. Info



DIN 13

DIN 2174



STEEL
Steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

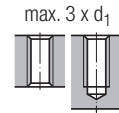
| | | | | |
|---------|---------|-----------|---------|---------|
| 6HX | 6HX | 6HX | 6HX | 6HX |
| NT | CR | TIN | NT | CR |
| HSSE | HSSE | HSSE | HSSE | HSSE |
| C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 |
| O / P | E / O | E / O / P | O / P | E / O |

Technische Informationen
Technical information

» 305 - 324



Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Application – material

» 272

| | | | | |
|-----------|----------------|--|-----------|----------------|
| P 1.1-3.1 | N 1.1-4, 2.1-2 | P 1.1-3.1 M 1.1-2.1 2 N 1.4-5, 2.1-2 | P 1.1-3.1 | N 1.1-4, 2.1-2 |
|-----------|----------------|--|-----------|----------------|

Werkzeug-Ident · Tool ident

| | | | | | | | | | | B0911000 | B0911300 | B0911400 | B0921000 | B0921300 |
|------------------------|---------|----------------|----------------|----------------|------------------|-----|-------|---------------|------|------------------|------------------|-------------------|---------------------|---------------------|
| | | | | | | | | | | Drück 1-STEEL NT | Drück 1-STEEL CR | Drück 1-STEEL TIN | Drück 1-STEEL-SN NT | Drück 1-STEEL-SN CR |
| Ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | | Dimens.-Ident | | | | | | |
| M 1 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 0,9 | .0010 | ● *) | | | | | |
| 1,1 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 1 | .0011 | ● *) | | | | | |
| 1,2 | 0,25 | 40 | 5 | – | 2,5 | 2,1 | 1,1 | .0012 | ● *) | | | | | |
| 1,4 | 0,3 | 40 | 6 | – | 2,5 | 2,1 | 1,28 | .0014 | ● *) | | | | | |
| 1,6 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,47 | .0016 | ● | | ● | | | |
| 1,7 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,57 | .0017 | ● | | | | | |
| 1,8 | 0,35 | 40 | 6 | 11 | 2,5 | 2,1 | 1,67 | .0018 | ● | | | | | |
| 2 | 0,4 | 45 | 7 | 12 | 2,8 | 2,1 | 1,85 | .0020 | ● | ● | ● | ○ | ● | |
| 2,2 | 0,45 | 45 | 7 | 12 | 2,8 | 2,1 | 2,03 | .0022 | ● | | | ○ | | |
| 2,3 | 0,4 | 45 | 7 | 12 | 2,8 | 2,1 | 2,15 | .0023 | ● | | | ○ | | |
| 2,5 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 2,33 | .0025 | ● | ● | ● | ○ | ● | |
| 2,6 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 2,43 | .0026 | ● | | ○ | ○ | | |
| 3 | 0,5 | 56 | 11 | 18 | 3,5 | 2,7 | 2,8 | .0030 | ● | ● | ● | ○ | ● | |
| 3,5 | 0,6 | 56 | 12 | 20 | 4 | 3 | 3,25 | .0035 | ● | ● | ● | ○ | | |
| 4 | 0,7 | 63 | 13 | 21 | 4,5 | 3,4 | 3,7 | .0040 | ● | ● | ● | ● | ● | |
| 4,5 | 0,75 | 70 | 14 | 25 | 6 | 4,9 | 4,2 | .0045 | ● | ● | ● | ● | ● | |
| 5 | 0,8 | 70 | 15 | 25 | 6 | 4,9 | 4,65 | .0050 | ● | ● | ● | ● | ● | |
| 5,5 | 0,9 | 80 | 16 | 30 | 6 | 4,9 | 5,1 | .0055 | ● | ● | ● | ● | ● | |
| 6 | 1 | 80 | 17 | 30 | 6 | 4,9 | 5,6 | .0060 | ● | ● | ● | ● | ● | |
| 7 | 1 | 80 | 17 | 30 | 7 | 5,5 | 6,6 | .0070 | ● | | ● | ○ | | |
| 8 | 1,25 | 90 | 20 | 35 | 8 | 6,2 | 7,45 | .0080 | ● | ● | ● | ● | ● | |
| 9 | 1,25 | 90 | 20 | 35 | 9 | 7 | 8,45 | .0090 | ● | ● | ● | ● | ● | |
| 10 | 1,5 | 100 | 22 | 39 | 10 | 8 | 9,35 | .0100 | ● | ● | ● | ● | ● | |
| 12 | 1,75 | 110 | 24 | 44 | 12 | 9 | 11,25 | .0112 | ● | ● | ● | ● | ● | |

DIN 2174

» 272

*) ≤ 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 321.

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 321.

STEEL
Steel
materials

| EMUGE STEEL | | new | | new | | new | | new | | new | |
|-------------------------|--------------------------|-------------------------|----------------------------|------------------------------|---------------------------------|-------------------------------------|---------------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| | | | | | | | | | | | |
| 6HX | 6HX | 6GX | 6GX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX |
| TIN | | TIN | TIN | TIN | TIN-66 | TIN-66 | TIN-66 | TIN-66 | TIN | TICN-67 | TIN |
| HSSE | VHM | HSSE | HSSE | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | D / 4-5 | C / 2-3 | C / 2-3 | E / 1,5-2 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 |
| E / O / P | E / O | E / O / P | E / O / P | E / O / P | E / O / P | E / O | E / O | E / O / P | E / O | E / O | E / O |
| max. 3 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ | | max. 3 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ | | max. 3 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ |
| | | | | | | | | | | | |
| P 1.1-3.1 | P 2.1-4.1 | P 1.1-3.1 | P 1.1-3.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 | P 3.1-5.1 | P 3.1-5.1 | P 3.1-5.1 | P 3.1-5.1 |
| M 1.1-2.1 2) | N 1.4-5 | M 1.1-2.1 2) | M 1.1-2.1 2) | | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 |
| N 1.4-5, 2.1-2 | | N 1.4-5, 2.1-2 | N 1.4-5, 2.1-2 | | | | | | | | |
| B0921400 | B1970100 | B0911420 | B0921420 | B535P300 | B5217F00 | B5237F00 | B5317F00 | B5216F00 | B5236F00 | B5236F00 | B5236F00 |
| Drück 1-STEEL-SN TIN | VHM Drück 1-STEEL SN-IKZ | Drück 1-STEEL TIN „6GX“ | Drück 1-STEEL-SN TIN „6GX“ | InnoForm 1-STEEL-BL/D PM-TIN | InnoForm 1-STEEL-M SN-PM TIN-66 | InnoForm 1-STEEL-M SN-IKZ-PM TIN-66 | InnoForm 1-STEEL-M/E SN-IKZ-PM TIN-66 | InnoForm 1-STEEL-H SN-PM TICN-67 | InnoForm 1-STEEL-H SN-PM TICN-67 | InnoForm 1-STEEL-H SN-PM TICN-67 | InnoForm 1-STEEL-H SN-PM TICN-67 |
| | | | | | | | | | | | 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 |
| 📄 287 | | | | | 📄 287 | 📄 287 | 📄 287 | 📄 288 | 📄 288 | | |

1) Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich
Cold-forming in through holes is possible only with external cooling/lubrication

2) Mit Emulsion nur bedingt einsetzbar
Restricted application possibilities with emulsion

3) Zum Patent angemeldet
Patent pending

Product Finder

V_c

M

MF

UNC

UNF

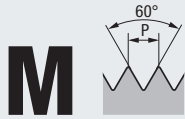
G

SELF-LOCK

Tech. Info

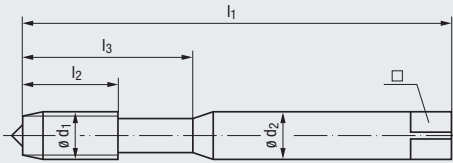


- Product Finder
- Vc
- M
- MF
- UNC
- UNF
- G
- SELF-LOCK
- Tech. Info



M
DIN 13

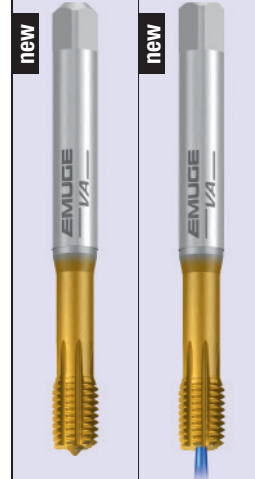
DIN 2174



STEEL
Steel materials



VA
Stainless steel materials



Technische Informationen
Technical information

» 305 - 324

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

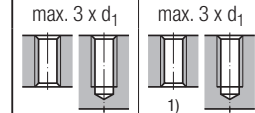
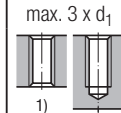


6HX
TICN-67
HSSE-PM
E / 1,5-2
E / 0

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



Einsatzgebiete – Material
Application – material

» 272

P 3.1-5.1
K 2.1

P 1.1-4.1
M 1.1-3.1 2)

P 1.1-4.1
M 1.1-3.1 2)

Werkzeug-Ident · Tool ident

B5316F00

B5296A00

B5316A00

| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | Image | Dimens.- Ident | InnoForm 1 | | |
|-----|------------------------|---------|----------------|----------------|----------------|------------------|-----|-------|-------------------|-------------------------------------|-------------------------|--------------------------------|
| | | | | | | | | | | 1-STEEL-H/E SN-IKZ-PM TICN-67 | 1-VA/E-SN PM-TIN-T26 | 1-VA/E-SN IKZ-PM TIN-T26 |
| 1 | 1,1 | 0,25 | 40 | 2,5 | – | 2,5 | 2,1 | 0,9 | .0010 | | | |
| 1,1 | 1,1 | 0,25 | 40 | 2,5 | – | 2,5 | 2,1 | 1 | .0011 | | | |
| 1,2 | 1,2 | 0,25 | 40 | 2,5 | – | 2,5 | 2,1 | 1,1 | .0012 | | | |
| 1,4 | 1,4 | 0,3 | 40 | 3 | – | 2,5 | 2,1 | 1,28 | .0014 | | | |
| 1,6 | 1,6 | 0,35 | 40 | 4 | 11 | 2,5 | 2,1 | 1,47 | .0016 | | | |
| 1,7 | 1,7 | 0,35 | 40 | 4 | 11 | 2,5 | 2,1 | 1,57 | .0017 | | | |
| 1,8 | 1,8 | 0,35 | 40 | 4 | 11 | 2,5 | 2,1 | 1,67 | .0018 | | | |
| 2 | 2 | 0,4 | 45 | 4 | 12 | 2,8 | 2,1 | 1,85 | .0020 | | | |
| 2,2 | 2,2 | 0,45 | 45 | 4,5 | 12 | 2,8 | 2,1 | 2,03 | .0022 | | | |
| 2,3 | 2,3 | 0,4 | 45 | 4,5 | 12 | 2,8 | 2,1 | 2,15 | .0023 | | | |
| 2,5 | 2,5 | 0,45 | 50 | 5 | 14 | 2,8 | 2,1 | 2,33 | .0025 | | | |
| 2,6 | 2,6 | 0,45 | 50 | 5 | 14 | 2,8 | 2,1 | 2,43 | .0026 | | | |
| 3 | 3 | 0,5 | 56 | 6 | 18 | 3,5 | 2,7 | 2,8 | .0030 | | | |
| 3,5 | 3,5 | 0,6 | 56 | 7 | 20 | 4 | 3 | 3,25 | .0035 | | | |
| 4 | 4 | 0,7 | 63 | 7 | 21 | 4,5 | 3,4 | 3,7 | .0040 | | | |
| 4,5 | 4,5 | 0,75 | 70 | 8 | 25 | 6 | 4,9 | 4,2 | .0045 | | | |
| 5 | 5 | 0,8 | 70 | 8 | 25 | 6 | 4,9 | 4,65 | .0050 | | | |
| 5,5 | 5,5 | 0,9 | 80 | 10 | 30 | 6 | 4,9 | 5,1 | .0055 | | | |
| 6 | 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 5,6 | .0060 | | | |
| 7 | 7 | 1 | 80 | 10 | 30 | 7 | 5,5 | 6,6 | .0070 | | | |
| 8 | 8 | 1,25 | 90 | 14 | 35 | 8 | 6,2 | 7,45 | .0080 | | | |
| 9 | 9 | 1,25 | 90 | 14 | 35 | 9 | 7 | 8,45 | .0090 | | | |
| 10 | 10 | 1,5 | 100 | 16 | 39 | 10 | 8 | 9,35 | .0100 | | | |
| 12 | 12 | 1,75 | 110 | 18 | 44 | 12 | 9 | 11,25 | .0112 | | | |

DIN 2174

















» 288

1) Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich
Cold-forming in through holes is possible only with external cooling/lubrication

2) Mit Emulsion nur bedingt einsetzbar
Restricted application possibilities with emulsion

3) Zum Patent angemeldet
Patent pending

- Product Finder
- Vc
- M
- MF
- UNC
- UNF
- G
- SELF-LOCK
- Tech. Info

| AL Aluminium wrought alloys | | | | | GAL Aluminium cast alloys | | | | | | |
|--|---|--|---|--|---|--|---|--|---|---|-----|
|  |  |  |  |  |  |  |  |  | | | |
| 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | | | |
| GLT-8 | GLT-8 | GLT-8 | GLT-8 | GLT-8 | TICN | TICN | TICN | TICN | | | |
| HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | | | |
| C / 2-3 | C / 2-3 | C / 2-3 | 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 | E / O / P | E / O | E / O / P | E / O / P | E / O | E / O | | | |
| max. 3 x d ₁  | | max. 3 x d ₁  | | max. 3 x d ₁  | | max. 3 x d ₁  | | max. 3 x d ₁  | | | |
| N 1.1-4, 2.1-2 | N 1.1-4, 2.1-2 | N 1.1-4, 2.1-2 | N 1.1-4, 2.1-2 | N 1.1-4, 2.1-2 | N 1.4-6 | N 1.4-6 | N 1.4-6 | N 1.4-6 | | | |
| B519Y700 | B521Y700 | B523Y700 | B529Y700 | B531Y700 | B519Q200 | B521Q200 | B523Q200 | B526Q200 | | | |
| InnoForm 1-AL-PM GLT-8 | InnoForm 1-AL-SN-PM GLT-8 | InnoForm 1-AL-SN-PM-GLT-8 | InnoForm 1-AL/E-SN PM-GLT-8 | InnoForm 1-AL/E-SN IKZ-PM GLT-8 | InnoForm 1-GAL-PM TICN | InnoForm 1-GAL-SN PM-TICN | InnoForm 1-GAL-SN IKZ-PM-TICN | InnoForm 1-GAL-SN IKZN-PM TICN | | | |
| ○ *) | | | | | | | | | 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 |

*) ≤ M1,4 Tol. 4HX/5HX



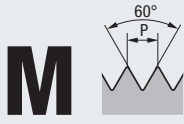
Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei P ≥ 1 mm um 0,05 mm kleiner vorzubohren.

Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 321.

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for P ≥ 1 mm.

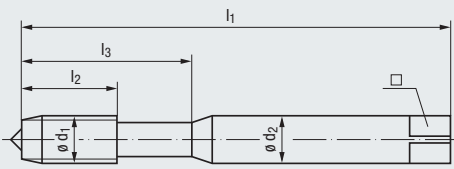
For further information regarding the recommended preparatory diameters, see page 321.

- Product Finder
- Vc
- M
- MF
- UNC
- UNF
- G
- SELF-LOCK
- Tech. Info



M
DIN 13

DIN 2174



| | | | | |
|---|---|-------------------------|-------------------------|-------------------------|
| Technische Informationen Technical information | Toleranz · Tolerance Beschichtung · Coating Schneidstoff · Cutting material | 6HX | 6HX | 6HX |
| | | TICN | TICN | TICN |
| Technische Informationen Technical information | Technische Informationen Technical information | HSSE-PM | HSSE-PM | HSSE-PM |
| | | E / 1,5-2 | E / 1,5-2 | E / 1,5-2 |
| Gewindetiefe und Lochform Thread depth and hole type | Technische Informationen Technical information | E / O / P | E / O | E / O |
| | | max. 3 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ |
| Einsatzgebiete – Material Application – material | Technische Informationen Technical information | | | |
| | | N 1.4-6 | N 1.4-6 | N 1.4-6 |

| Werkzeug-Ident · Tool ident | | | | | | | | | | B529Q200 | B531Q200 | B533Q200 |
|-----------------------------|---------|----------------|----------------|----------------|------------------|-----|-------|-------------------|---|-----------------------------------|---------------------------------------|---|
| Ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | | Dimens.- Ident | | InnoForm 1-GAL/E-SN PM-TICN | InnoForm 1-GAL/E-SN IKZ-PM-TICN | InnoForm 1-GAL/E-SN IKZN-PM TICN |
| M 2 | 0,4 | 45 | 4 | 12 | 2,8 | 2,1 | 1,85 | .0020 | | | | |
| 2,2 | 0,45 | 45 | 4,5 | 12 | 2,8 | 2,1 | 2,03 | .0022 | | | | |
| 2,3 | 0,4 | 45 | 4,5 | 12 | 2,8 | 2,1 | 2,15 | .0023 | | | | |
| 2,5 | 0,45 | 50 | 5 | 14 | 2,8 | 2,1 | 2,33 | .0025 | | | | |
| 2,6 | 0,45 | 50 | 5 | 14 | 2,8 | 2,1 | 2,43 | .0026 | | | | |
| 3 | 0,5 | 56 | 6 | 18 | 3,5 | 2,7 | 2,8 | .0030 | | | | |
| 3,5 | 0,6 | 56 | 7 | 20 | 4 | 3 | 3,25 | .0035 | | | | |
| 4 | 0,7 | 63 | 7 | 21 | 4,5 | 3,4 | 3,7 | .0040 | | | | |
| 4,5 | 0,75 | 70 | 8 | 25 | 6 | 4,9 | 4,2 | .0045 | | | | |
| 5 | 0,8 | 70 | 8 | 25 | 6 | 4,9 | 4,65 | .0050 | ● | ● | ○ | |
| 5,5 | 0,9 | 80 | 10 | 30 | 6 | 4,9 | 5,1 | .0055 | | | | |
| 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 5,6 | .0060 | ● | ● | ○ | |
| 7 | 1 | 80 | 10 | 30 | 7 | 5,5 | 6,6 | .0070 | | | | |
| 8 | 1,25 | 90 | 14 | 35 | 8 | 6,2 | 7,45 | .0080 | ● | ● | ○ | |
| 9 | 1,25 | 90 | 14 | 35 | 9 | 7 | 8,45 | .0090 | | | | |
| 10 | 1,5 | 100 | 16 | 39 | 10 | 8 | 9,35 | .0100 | ● | ● | ○ | |
| 12 | 1,75 | 110 | 18 | 44 | 12 | 9 | 11,25 | .0112 | | | | |
































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 321.

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 321.

- Product Finder
- Vc
- M
- MF
- UNC
- UNF
- G
- SELF-LOCK
- Tech. Info

| H Materials of high tensile strength | | Z CNC-controlled machines | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |  |  |
| 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6GX |
| TIN-T26 | TIN-T26 | TIN-80 | TIN-80 | TIN-80 | TIN-80 | TIN-80 | TIN-80 | TIN-80 | TIN-80 |
| HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| 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 | E / 1,5-2 | C / 2-3 |
| E / O / P | E / O | E / O / P | E / O / P | E / O | E / O | E / O / P | E / O | E / O | E / O / P |
| max. 3 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ |
|  |  |  |  |  |  |  |  |  |  |
| P 2.1-5.1 | P 2.1-5.1 | P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 |
| K 2.1 | K 2.1 | M 1.1-3.1 ²⁾ | M 1.1-3.1 ²⁾ | M 1.1-3.1 ²⁾ | M 1.1-3.1 ²⁾ | M 1.1-3.1 ²⁾ | M 1.1-3.1 ²⁾ | M 1.1-3.1 ²⁾ | M 1.1-3.1 ²⁾ |
| | | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 |
| | | N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 |
| | | S 1.1-2.2 ²⁾ | S 1.1-2.2 ²⁾ | S 1.1-2.2 ²⁾ | S 1.1-2.2 ²⁾ | S 1.1-2.2 ²⁾ | S 1.1-2.2 ²⁾ | S 1.1-2.2 ²⁾ | S 1.1-2.2 ²⁾ |
| | | S 2.4 ²⁾ | S 2.4 ²⁾ | S 2.4 ²⁾ | S 2.4 ²⁾ | S 2.4 ²⁾ | S 2.4 ²⁾ | S 2.4 ²⁾ | S 2.4 ²⁾ |
| B521W700 | B523W700 | B519Z700 | B521Z700 | B523Z700 | B526Z700 | B529Z700 | B531Z700 | B521Z720 | |
| InnoForm 1-H-SN-PM TIN-T26 | InnoForm 1-H-SN- IKZ PM-TIN-T26 | InnoForm 1-Z-PM TIN-80 | InnoForm 1-Z-SN-PM TIN-80 | InnoForm 1-Z-SN- IKZ PM-TIN-80 | InnoForm 1-Z-SN- IKZN PM-TIN-80 | InnoForm 1-Z/E-SN PM-TIN-80 | InnoForm 1-Z/E-SN- IKZ PM-TIN-80 | InnoForm 1-Z-SN-PM TIN-80 „6GX“ | |
| | | ○ | ○ | | | | | | M 2 |
| | | | | | | | | | 2,2 |
| | | | | | | | | | 2,3 |
| | | ○ | ○ | | | | | | 2,5 |
| | | | | | | | | | 2,6 |
| | | ● | ● | | | ● | | ● | 3 |
| | | | | | | | | | 3,5 |
| | | ● | ● | ● | ○ | ● | ● | ● | 4 |
| | | | | | | | | | 4,5 |
| ● | ● | ● | ● | ● | ○ | ● | ● | ● | 5 |
| | | | | | | | | | 5,5 |
| ● | ● | ● | ● | ● | ○ | ● | ● | ● | 6 |
| | | | | | | | | | 7 |
| ● | ● | ● | ● | ● | ○ | ● | ● | ● | 8 |
| | | | | | | | | | 9 |
| ● | ● | ● | ● | ● | ○ | ● | ● | ● | 10 |
| | | | | | | | | | 12 |
|  289 |  289 |  289 |  289 |  289 |  289 |  289 |  289 |  289 | |

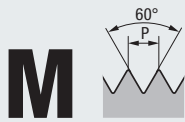
²⁾ Mit Emulsion nur bedingt einsetzbar
Restricted application possibilities with emulsion



Spannzangen-Aufnahmen mit integrierter Übersetzung der Typenreihe Speedsynchro® Modular siehe Seite 683 - 686

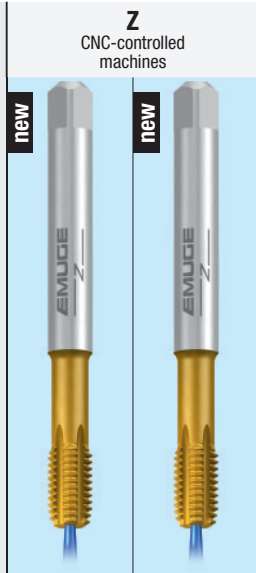
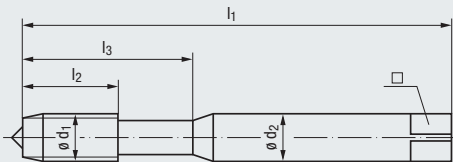
Collet holders with integrated transmission of our Speedsynchro® Modular series, see page 683 - 686

- Product Finder
- V_c
- M
- MF
- UNC
- UNF
- G
- SELF-LOCK
- Tech. Info



DIN 13

DIN 2174



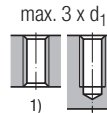
Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

Technische Informationen
Technical information

» 305 - 324

| | |
|---------|-----------|
| 6HX | 6HX |
| TIN-80 | TIN-80 |
| VHM | VHM |
| C / 2-3 | E / 1,5-2 |
| E / 0 | E / 0 |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Application – material

» 272

| | |
|----------------|----------------|
| P 2.1-5.1 | P 2.1-5.1 |
| N 1.4-5, 2.4-5 | N 1.4-5, 2.4-5 |

Werkzeug-Ident · Tool ident

B523Z800 B531Z800

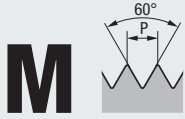
| M | ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | Image | Dimens.- Ident | VHM InnoForm | |
|---|------------------------|---------|----------------|----------------|----------------|------------------|-----|-------|-------------------|--------------------------|----------------------------|
| | | | | | | | | | | 1-Z-SN- IKZ TIN-80 | 1-Z/E-SN- IKZ TIN-80 |
| | 2 | 0,4 | 45 | 4 | 12 | 2,8 | 2,1 | 1,85 | .0020 | | |
| | 2,2 | 0,45 | 45 | 4,5 | 12 | 2,8 | 2,1 | 2,03 | .0022 | | |
| | 2,3 | 0,4 | 45 | 4,5 | 12 | 2,8 | 2,1 | 2,15 | .0023 | | |
| | 2,5 | 0,45 | 50 | 5 | 14 | 2,8 | 2,1 | 2,33 | .0025 | | |
| | 2,6 | 0,45 | 50 | 5 | 14 | 2,8 | 2,1 | 2,43 | .0026 | | |
| | 3 | 0,5 | 56 | 6 | 18 | 3,5 | 2,7 | 2,8 | .0030 | | |
| | 3,5 | 0,6 | 56 | 7 | 20 | 4 | 3 | 3,25 | .0035 | | |
| | 4 | 0,7 | 63 | 7 | 21 | 4,5 | 3,4 | 3,7 | .0040 | | |
| | 4,5 | 0,75 | 70 | 8 | 25 | 6 | 4,9 | 4,2 | .0045 | | |
| | 5 | 0,8 | 70 | 8 | 25 | 6 | 4,9 | 4,65 | .0050 | • | • |
| | 5,5 | 0,9 | 80 | 10 | 30 | 6 | 4,9 | 5,1 | .0055 | | |
| | 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 5,6 | .0060 | • | • |
| | 7 | 1 | 80 | 10 | 30 | 7 | 5,5 | 6,6 | .0070 | | |
| | 8 | 1,25 | 90 | 14 | 35 | 8 | 6,2 | 7,45 | .0080 | • | • |
| | 9 | 1,25 | 90 | 14 | 35 | 9 | 7 | 8,45 | .0090 | | |
| | 10 | 1,5 | 100 | 16 | 39 | 10 | 8 | 9,35 | .0100 | • | • |
| | 12 | 1,75 | 110 | 18 | 44 | 12 | 9 | 11,25 | .0112 | | |

1) Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich
Cold-forming in through holes is possible only with external cooling/lubrication



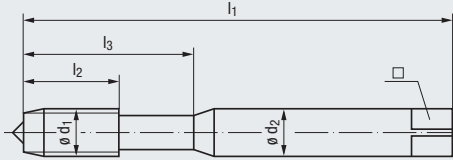
Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei P ≥ 1 mm um 0,05 mm kleiner vorzubohren.
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 321.

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 321.

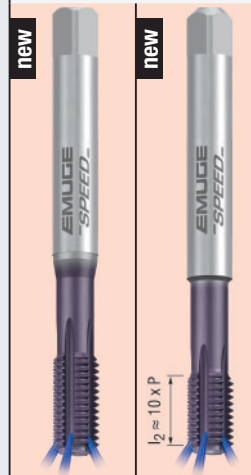


DIN 13

DIN 2174



SPEED
High-speed cutting



Product Finder

Vc

M

MF

UNC

UNF

G

SELF-LOCK

Tech. Info

Technische Informationen
Technical information

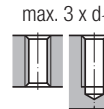
» 305 - 324

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | |
|------------------|------------------|
| 6HX | 6HX |
| TICN | TICN |
| HSSE | VHM |
| E / 1,5-2 | E / 1,5-2 |
| E / 0 | E / 0 |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Application – material

» 272

N 1.4-5 N 1.4-5

Werkzeug-Ident · Tool ident

B5059500 B505Q800

| M | ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | | Dimens.- Ident | Drück | VHM-Drück |
|-----|------------------------|---------|----------------|----------------|----------------|------------------|-------|-------|-------------------|------------|------------|
| | | | | | | | | | | 1-GAL | 1-GAL |
| | | | | | | | | | | SPEED/E-SN | SPEED/E-SN |
| | | | | | | | | | | IKZN-TICN | IKZN-TICN |
| 2 | 0,4 | 45 | 7 | 12 | 2,8 | 2,1 | 1,85 | .0020 | | | |
| 2,2 | 0,45 | 45 | 7 | 12 | 2,8 | 2,1 | 2,03 | .0022 | | | |
| 2,3 | 0,4 | 45 | 7 | 12 | 2,8 | 2,1 | 2,15 | .0023 | | | |
| 2,5 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 2,33 | .0025 | | | |
| 2,6 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 2,43 | .0026 | | | |
| 3 | 0,5 | 56 | 11 | 18 | 3,5 | 2,7 | 2,8 | .0030 | | | |
| 3,5 | 0,6 | 56 | 12 | 20 | 4 | 3 | 3,25 | .0035 | | | |
| 4 | 0,7 | 63 | 13 | 21 | 4,5 | 3,4 | 3,7 | .0040 | ○ | ○ | |
| 4,5 | 0,75 | 70 | 14 | 25 | 6 | 4,9 | 4,2 | .0045 | | | |
| 5 | 0,8 | 70 | 15 | 25 | 6 | 4,9 | 4,65 | .0050 | ○ | ○ | |
| 5,5 | 0,9 | 80 | 16 | 30 | 6 | 4,9 | 5,1 | .0055 | | | |
| 6 | 1 | 80 | 17 | 30 | 6 | 4,9 | 5,6 | .0060 | ○ | ○ | |
| 7 | 1 | 80 | 17 | 30 | 7 | 5,5 | 6,6 | .0070 | | | |
| 8 | 1,25 | 90 | 20 | 35 | 8 | 6,2 | 7,45 | .0080 | ○ | ○ | |
| 9 | 1,25 | 90 | 20 | 35 | 9 | 7 | 8,45 | .0090 | | | |
| 10 | 1,5 | 100 | 22 | 39 | 10 | 8 | 9,35 | .0100 | ○ | ○ | |
| 12 | 1,75 | 110 | 24 | 44 | 12 | 9 | 11,25 | .0112 | | | |

DIN 2174

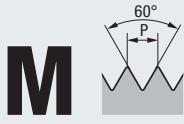
» 290 » 290



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 321.

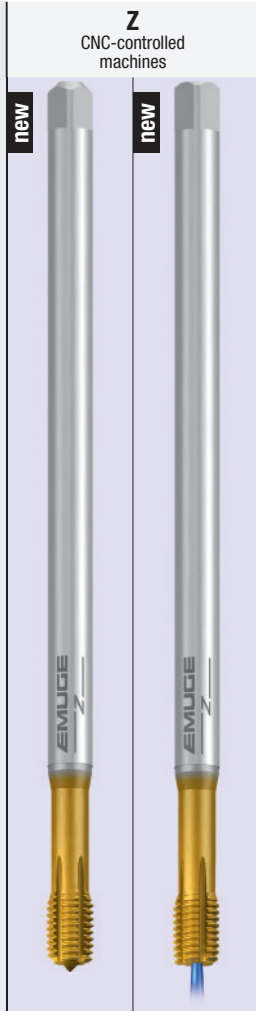
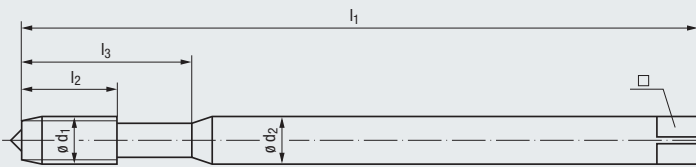
We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for P ≥ 1 mm.
For further information regarding the recommended preparatory diameters, see page 321.

- Product Finder
- Vc
- M**
- MF
- UNC
- UNF
- G
- SELF-LOCK
- Tech. Info



DIN 13

Mit extra langem Schaft
With extra long shank



| | | | | | | | | | | | |
|--|---------|---|---|----------------|------------------|-----|------|---------------|-------|-------|--|
| <p>Toleranz · Tolerance</p> <p>Beschichtung · Coating</p> <p>Schneidstoff · Cutting material</p> | | <p>6HX</p> <p>TIN-80</p> <p>HSSE-PM</p> <p>C / 2-3</p> <p>E / O / P</p> | <p>6HX</p> <p>TIN-80</p> <p>HSSE-PM</p> <p>C / 2-3</p> <p>E / O</p> | | | | | | | | |
| <p>Technische Informationen Technical information</p> <p>» 305 - 324</p> | | <p>max. 3 x d₁</p> | | | | | | | | | |
| <p>Gewindetiefe und Lochform Thread depth and hole type</p> | | <p>max. 3 x d₁</p> | | | | | | | | | |
| <p>Einsatzgebiete – Material Application – material</p> <p>» 272</p> | | <p>P 1.1-5.1</p> <p>M 1.1-3.1²⁾</p> <p>K 2.1</p> <p>N 2.1-2, 2.4-5</p> <p>S 1.1-2.2²⁾</p> <p>S 2.4²⁾</p> | <p>P 1.1-5.1</p> <p>M 1.1-3.1²⁾</p> <p>K 2.1</p> <p>N 2.1-2, 2.4-5</p> <p>S 1.1-2.2²⁾</p> <p>S 2.4²⁾</p> | | | | | | | | |
| <p>Werkzeug-Ident · Tool ident</p> | | B555Z700 | B544Z700 | | | | | | | | |
| | | InnoForm 1-Z-SN-LS PM-TIN-80 | InnoForm 1-Z-SN-LS PM-TIN-80 | | | | | | | | |
| ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | | Dimens.-Ident | | | |
| M 3 | 0,5 | 100 | 6 | 18 | 3,5 | 2,7 | 2,8 | .0030 | ● | | |
| 4 | 0,7 | 125 | 7 | 21 | 4,5 | 3,4 | 3,7 | .0040 | ● | | |
| 5 | 0,8 | 140 | 8 | 25 | 6 | 4,9 | 4,65 | .0050 | ● | ○ | |
| 6 | 1 | 160 | 10 | 30 | 6 | 4,9 | 5,6 | .0060 | ● | ○ | |
| 8 | 1,25 | 180 | 14 | 35 | 8 | 6,2 | 7,45 | .0080 | ● | ○ | |
| 10 | 1,5 | 200 | 16 | 39 | 10 | 8 | 9,35 | .0100 | ● | ○ | |
| | | | | | | | | | » 291 | » 291 | |

1) Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich
Cold-forming in through holes is possible only with external cooling/lubrication

2) Mit Emulsion nur bedingt einsetzbar
Restricted application possibilities with emulsion



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 321.

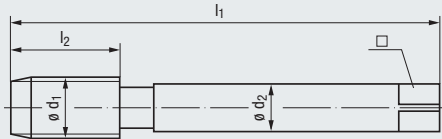
We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for P ≥ 1 mm.
For further information regarding the recommended preparatory diameters, see page 321.

M



DIN 13

DIN 2174



Technische Informationen
Technical information

» 305 - 324

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material




Gewindetiefe und Lochform
Thread depth and hole type

Einsatzgebiete – Material
Application – material

» 272

Werkzeug-Ident · Tool ident

| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ |  Dimens.- Ident | STEEL Steel materials | | | | | |
|---|------------------------|---------|----------------|----------------|------------------|------|--|--------------------------|----------------------------|--|--|--|--|
| | | | | | | | | Drück 2-STEEL TIN | Drück 2-STEEL-SN TIN | InnoForm 2-STEEL-M SN-PM TIN-66 | InnoForm 2-STEEL-M SN-IKZ-PM TIN-66 | InnoForm 2-STEEL-M/E SN-IKZ-PM TIN-66 | |
| | 10 | 1,5 | 100 | 22 | 7 | 5,5 | 9,35 | .0100 | | | | | |
| | 12 | 1,75 | 110 | 24 | 9 | 7 | 11,25 | .0112 | | | | | |
| | 14 | 2 | 110 | 26 | 11 | 9 | 13,1 | .0114 | | | | | |
| | 16 | 2 | 110 | 27 | 12 | 9 | 15,1 | .0116 | | | | | |
| | 18 | 2,5 | 125 | 30 | 14 | 11 | 16,85 | .0118 | | | | | |
| | 20 | 2,5 | 140 | 32 | 16 | 12 | 18,85 | .0120 | | | | | |
| | 22 | 2,5 | 140 | 32 | 18 | 14,5 | 20,85 | .0122 | | | | | |
| | 24 | 3 | 160 | 34 | 18 | 14,5 | 22,6 | .0124 | | | | | |
| | 27 | 3 | 160 | 36 | 20 | 16 | 25,6 | .0127 | | | | | |
| | 30 | 3,5 | 180 | 40 | 22 | 18 | 28,35 | .0130 | | | | | |
| | 33 | 3,5 | 180 | 40 | 25 | 20 | 31,35 | .0133 | | | | | |
| | 36 | 4 | 200 | 50 | 28 | 22 | 34,1 | .0136 | | | | | |
| | 39 | 4 | 200 | 50 | 32 | 24 | 37,1 | .0139 | | | | | |
| | 42 | 4,5 | 200 | 56 | 32 | 24 | 39,85 | .0142 | | | | | |
| | 45 | 4,5 | 220 | 58 | 36 | 29 | 42,85 | .0145 | | | | | |
| | 48 | 5 | 250 | 65 | 36 | 29 | 45,65 | .0148 | | | | | |

DIN 2174



» 278

» 279

» 279

» 279

» 279

1) Gewindeformen in Durchgangslöchern nur mit externer Kühlschmierung möglich
Cold-forming in through holes is possible only with external cooling/lubrication

2) Mit Emulsion nur bedingt einsetzbar
Restricted application possibilities with emulsion

3) Zum Patent angemeldet
Patent pending



Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei P ≥ 1 mm um 0,05 mm kleiner vorzubohren.

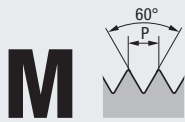
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 321.

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 321.

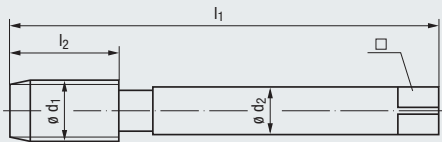


- Product Finder
- V_c
- M
- MF
- UNC
- UNF
- G
- SELF-LOCK
- Tech. Info



DIN 13

DIN 2174



STEEL
Steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

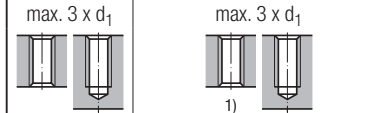
Technische Informationen
Technical information

» 305 - 324



| | | |
|----------------|----------------|------------------|
| 6HX | 6HX | 6HX |
| TICN-67 | TICN-67 | TICN-67 |
| HSSE-PM | HSSE-PM | HSSE-PM |
| C / 2-3 | C / 2-3 | E / 1,5-2 |
| E / O / P | E / O | E / O |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Application – material

» 272

| | | |
|------------------|------------------|------------------|
| P 3.1-5.1 | P 3.1-5.1 | P 3.1-5.1 |
| K 2.1 | K 2.1 | K 2.1 |

Werkzeug-Ident · Tool ident

C5216F00 C5236F00 C5316F00

| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | Image | Dimens.- Ident | InnoForm | InnoForm | InnoForm |
|---|------------------------|---------|----------------|----------------|------------------|------|-------|-------------------|-------------------------------|--|--|
| | | | | | | | | | 2-STEEL-H SN-PM TICN-67 | 2-STEEL-H SN- IKZ -PM TICN-67 | 2-STEEL-H/ E SN- IKZ -PM TICN-67 |
| | 10 | 1,5 | 100 | 16 | 7 | 5,5 | 9,35 | .0100 | | | |
| | 12 | 1,75 | 110 | 18 | 9 | 7 | 11,25 | .0112 | • | • | • |
| | 14 | 2 | 110 | 20 | 11 | 9 | 13,1 | .0114 | | | |
| | 16 | 2 | 110 | 22 | 12 | 9 | 15,1 | .0116 | • | • | • |
| | 18 | 2,5 | 125 | 25 | 14 | 11 | 16,85 | .0118 | | | |
| | 20 | 2,5 | 140 | 25 | 16 | 12 | 18,85 | .0120 | | | |
| | 22 | 2,5 | 140 | 27 | 18 | 14,5 | 20,85 | .0122 | | | |
| | 24 | 3 | 160 | 30 | 18 | 14,5 | 22,6 | .0124 | | | |
| | 27 | 3 | 160 | 30 | 20 | 16 | 25,6 | .0127 | | | |
| | 30 | 3,5 | 180 | 35 | 22 | 18 | 28,35 | .0130 | | | |
| | 33 | 3,5 | 180 | 35 | 25 | 20 | 31,35 | .0133 | | | |
| | 36 | 4 | 200 | 40 | 28 | 22 | 34,1 | .0136 | | | |
| | 39 | 4 | 200 | 40 | 32 | 24 | 37,1 | .0139 | | | |
| | 42 | 4,5 | 200 | 45 | 32 | 24 | 39,85 | .0142 | | | |
| | 45 | 4,5 | 220 | 45 | 36 | 29 | 42,85 | .0145 | | | |
| | 48 | 5 | 250 | 50 | 36 | 29 | 45,65 | .0148 | | | |

DIN 2174



» 279

» 279

» 280

1) Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich
Cold-forming in through holes is possible only with external cooling/lubrication

3) 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 321.

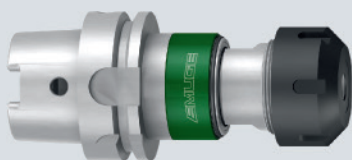
We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for P ≥ 1 mm.

For further information regarding the recommended preparatory diameters, see page 321.

- Product Finder
- V_c
- M
- MF
- UNC
- UNF
- G
- SELF-LOCK
- Tech. Info

| H Materials of high tensile strength | | Z CNC-controlled machines | | | | | | | |
|---|---|---|---|---|--|---|---|---|------|
|  |  |  |  |  |  |  |  |  | |
| 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | |
| TIN-T26 | TIN-T26 | TIN-80 | TIN-80 | TIN-80 | TIN-80 | TIN-80 | TIN-80 | TIN-80 | |
| HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | |
| 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 | E / 1,5-2 | |
| E / O | E | E / O / P | E / O / P | E / O | E / O | E / O / P | E / O / P | E / O | |
| max. 3 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ | |
|  |  |  |  |  |  |  |  |  | |
| P 2.1-5.1 | P 2.1-5.1 | P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 | P 1.1-5.1 | |
| K 2.1 | K 2.1 | M 1.1-3.1 ²⁾ | M 1.1-3.1 ²⁾ | M 1.1-3.1 ²⁾ | M 1.1-3.1 ²⁾ | M 1.1-3.1 ²⁾ | M 1.1-3.1 ²⁾ | M 1.1-3.1 ²⁾ | |
| | | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | |
| | | N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 | |
| | | S 1.1-2.2 ²⁾ | S 1.1-2.2 ²⁾ | S 1.1-2.2 ²⁾ | S 1.1-2.2 ²⁾ | S 1.1-2.2 ²⁾ | S 1.1-2.2 ²⁾ | S 1.1-2.2 ²⁾ | |
| | | S 2.4 ²⁾ | S 2.4 ²⁾ | S 2.4 ²⁾ | S 2.4 ²⁾ | S 2.4 ²⁾ | S 2.4 ²⁾ | S 2.4 ²⁾ | |
| C521W700 | C523W700 | C519Z700 | C521Z700 | C523Z700 | C526Z700 | C529Z700 | C531Z700 | | |
| InnoForm 2-H-SN-PM TIN-T26 | InnoForm 2-H-SN-PM PM-TIN-T26 | InnoForm 2-Z-PM TIN-80 | InnoForm 2-Z-SN-PM TIN-80 | InnoForm 2-Z-SN-PM PM-TIN-80 | InnoForm 2-Z-SN-PM PM-TIN-80 | InnoForm 2-Z-SN-PM PM-TIN-80 | InnoForm 2-Z-SN-PM PM-TIN-80 | InnoForm 2-Z-SN-PM PM-TIN-80 | |
| ● | ● | ● | ● | ● | ○ | ● | ● | | M 10 |
| | | ● | ● | ● | ○ | ● | ● | | 12 |
| | | ● | ● | ● | ○ | ● | ● | | 14 |
| | | | | | | | | | 16 |
| | | | ● | ● | | | | | 18 |
| | | | | | ○ | | | | 20 |
| | | | | | | | | | 22 |
| | | | | | | | | | 24 |
| | | | | | | | | | 27 |
| | | | | | | | | | 30 |
| | | | | | | | | | 33 |
| | | | | | | | | | 36 |
| | | | | | | | | | 39 |
| | | | | | | | | | 42 |
| | | | | | | | | | 45 |
| | | | | | | | | | 48 |
| 283 | 283 | 283 | 283 | 283 | 283 | 283 | 283 | 283 | |

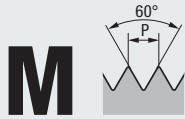
²⁾ Mit Emulsion nur bedingt einsetzbar
Restricted application possibilities with emulsion



Werkzeug-Aufnahmen für
Minimalmengenschmierung
siehe Seite 714 - 732

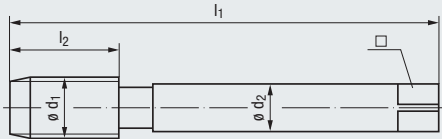
Tool holders for
minimum-quantity lubrication,
see page 714 - 732

- Product Finder
- Vc
- M**
- MF
- UNC
- UNF
- G
- SELF-LOCK
- Tech. Info

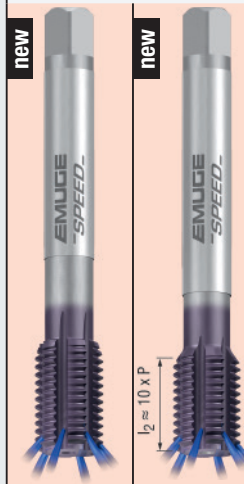


DIN 13

DIN 2174



SPEED
High-speed cutting



Technische Informationen
Technical information

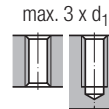
305 - 324

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | |
|------------------|------------------|
| 6HX | 6HX |
| TICN | TICN |
| HSSE | VHM |
| E / 1,5-2 | E / 1,5-2 |
| E / 0 | E / 0 |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Application – material

272

N 1.4-5 **N 1.4-5**

Werkzeug-Ident · Tool ident

C5059500 C505Q800

| M | ∅ d ₁ mm | P mm | l ₁ | l ₂ | ∅ d ₂ | □ | Image | Dimens.- Ident | Drück | VHM-Drück |
|---|------------------------|---------|----------------|----------------|------------------|-----|-------|-------------------|----------------------------------|----------------------------------|
| | | | | | | | | | 2-GAL SPEED/E-SN IKZN-TICN | 2-GAL SPEED/E-SN IKZN-TICN |
| | 10 | 1,5 | 100 | 22 | 7 | 5,5 | 9,35 | .0100 | | |
| | 12 | 1,75 | 110 | 24 | 9 | 7 | 11,25 | .0112 | ○ | ○ |
| | 14 | 2 | 110 | 26 | 11 | 9 | 13,1 | .0114 | | |
| | 16 | 2 | 110 | 27 | 12 | 9 | 15,1 | .0116 | | |
| | 18 | 2,5 | 125 | 30 | 14 | 11 | 16,85 | .0118 | | |
| | 20 | 2,5 | 140 | 32 | 16 | 12 | 18,85 | .0120 | | |

DIN 2174



285

285



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 321.

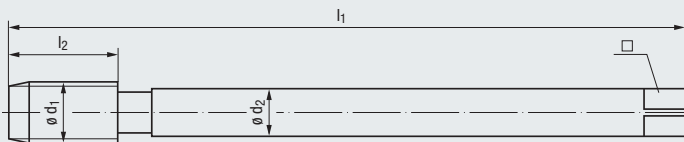
We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for P ≥ 1 mm.
For further information regarding the recommended preparatory diameters, see page 321.

M



DIN 13

Mit extra langem Schaft
With extra long shank



Technische Informationen
Technical information

» 305 - 324

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material





Gewindetiefe und Lochform
Thread depth and hole type

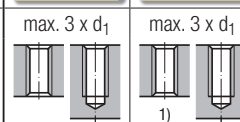
Einsatzgebiete – Material
Application – material

» 272

Werkzeug-Ident · Tool ident

| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ |  Dimens.-Ident | Z CNC-controlled machines | | |
|---|---|---------|----------------|----------------|------------------|-----|---|------------------------------|----------------------------------|--|
| | | | | | | | | InnoForm 2-Z-SN-LS PM-TIN-80 | InnoForm 2-Z-SN-1KZ LS-PM TIN-80 | |
| | 10 | 1,5 | 200 | 16 | 7 | 5,5 | 9,35 | .0100 | | |
| | 12 | 1,75 | 224 | 18 | 9 | 7 | 11,25 | .0112 | ● ○ | |
| | 14 | 2 | 224 | 20 | 11 | 9 | 13,1 | .0114 | ○ ○ | |
| | 16 | 2 | 224 | 22 | 12 | 9 | 15,1 | .0116 | ● ○ | |
| | 18 | 2,5 | 250 | 25 | 14 | 11 | 16,85 | .0118 | | |
| | 20 | 2,5 | 280 | 25 | 16 | 12 | 18,85 | .0120 | ○ ○ | |
| |  | | | | | | | » 286 | » 286 | |

| | |
|-----------|---------|
| 6HX | 6HX |
| TIN-80 | TIN-80 |
| HSSE-PM | HSSE-PM |
| C / 2-3 | C / 2-3 |
| E / O / P | E / O |



| | |
|----------------|----------------|
| P 1.1-5.1 | P 1.1-5.1 |
| M 1.1-3.1 2) | M 1.1-3.1 2) |
| K 2.1 | K 2.1 |
| N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 |
| S 1.1-2.2 2) | S 1.1-2.2 2) |
| S 2.4 2) | S 2.4 2) |

C555Z700
InnoForm 2-Z-SN-LS PM-TIN-80

C544Z700
InnoForm 2-Z-SN-1KZ LS-PM TIN-80

- Product Finder
- Vc
- M
- MF
- UNC
- UNF
- G
- SELF-LOCK
- Tech. Info



1) Gewindeformen in Durchgangslöchern nur mit externer Kühlschmierung möglich
Cold-forming in through holes is possible only with external cooling/lubrication

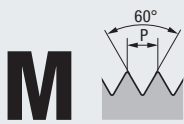
2) Mit Emulsion nur bedingt einsetzbar
Restricted application possibilities with emulsion



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 321.

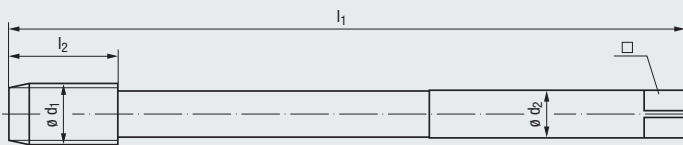
We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for P ≥ 1 mm.
For further information regarding the recommended preparatory diameters, see page 321.

- Product Finder
- Vc
- M**
- MF
- UNC
- UNF
- G
- SELF-LOCK
- Tech. Info



DIN 13

Für Gewindetiefen bis max. 3 x d₁
For thread depths up to max. 3 x d₁



Technische Informationen
Technical information

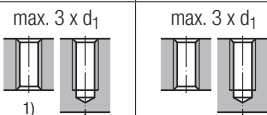
» 305 - 324

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



- | | |
|----------------|----------------|
| 6HX | 6HX |
| TIN-T26 | TIN-T26 |
| HSSE-PM | HSSE-PM |
| C / 2-3 | C / 2-3 |
| E / O | E / O |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Application – material

» 272

- | | |
|------------------|------------------|
| P 2.1-5.1 | P 2.1-5.1 |
| K 2.1 | K 2.1 |

Werkzeug-Ident · Tool ident

C599W700 C500W700

| M | ∅ d ₁ mm | P mm | l ₁ | l ₂ | ∅ d ₂ | □ | | Dimens.- Ident | InnoForm 2-H-SN- IKZ LF3-PM TIN-T26 | InnoForm 2-H-SN- IKZN LF3-PM TIN-T26 |
|---|------------------------|---------|----------------|----------------|------------------|------|-------|-------------------|---|--|
| | | | | | | | | | ○ | ○ |
| | 24 | 3 | 215 | 30 | 18 | 14,5 | 22,6 | .0124 | ○ | ○ |
| | 30 | 3,5 | 240 | 35 | 22 | 18 | 28,35 | .0130 | ○ | ○ |
| | 33 | 3,5 | 255 | 35 | 25 | 20 | 31,35 | .0133 | ○ | ○ |
| | 36 | 4 | 275 | 40 | 28 | 22 | 34,1 | .0136 | ○ | ○ |
| | 42 | 4,5 | 295 | 45 | 32 | 24 | 39,85 | .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 ≥ 1 mm um 0,05 mm kleiner vorzubohren.
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 321.

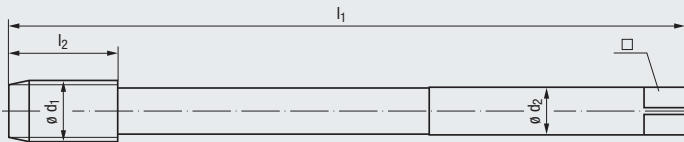
We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for P ≥ 1 mm.
For further information regarding the recommended preparatory diameters, see page 321.

M



DIN 13

Für Gewindetiefen bis max. 4 x d₁
For thread depths up to max. 4 x d₁



Technische Informationen
Technical information

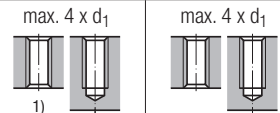
» 305 - 324

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | |
|----------------|----------------|
| 6HX | 6HX |
| TIN-T26 | TIN-T26 |
| HSSE-PM | HSSE-PM |
| C / 2-3 | C / 2-3 |
| E / O | E / O |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Application – material

» 272

| | |
|------------------|------------------|
| P 2.1-5.1 | P 2.1-5.1 |
| K 2.1 | K 2.1 |

Werkzeug-Ident · Tool ident

C594W700 C595W700

| M | ø d ₁ mm | P mm | l ₁ | l ₂ | ø d ₂ | □ | Dimens.- Ident | InnoForm | InnoForm |
|---|------------------------|---------|----------------|----------------|------------------|------|-------------------|------------------------------|--------------------------------------|
| | | | | | | | | 2-H-SN- LF4-PM TIN-T26 | 2-H-SN- IKZN LF4-PM TIN-T26 |
| | 24 | 3 | 240 | 30 | 18 | 14,5 | .0124 | ○ | ○ |
| | 30 | 3,5 | 270 | 35 | 22 | 18 | .0130 | ○ | ○ |
| | 33 | 3,5 | 290 | 35 | 25 | 20 | .0133 | ○ | ○ |
| | 36 | 4 | 310 | 40 | 28 | 22 | .0136 | ○ | ○ |
| | 42 | 4,5 | 340 | 45 | 32 | 24 | .0142 | ○ | ○ |

1) Gewindeformen in Durchgangslöchern 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 321.

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 321.

- Product Finder
- Vc
- M
- MF
- UNC
- UNF
- G
- SELF-LOCK
- Tech. Info

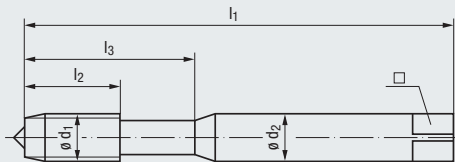


- Product Finder
- V_c
- M
- MF**
- UNC
- UNF
- G
- SELF-LOCK
- Tech. Info



DIN 13

DIN 2174



STEEL
Steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

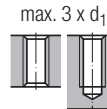
Technische Informationen
Technical information

» 305 - 324



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

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Application – material

» 272

| | |
|--------------------------------|--------------------------------|
| P 1.1-3.1 | P 1.1-3.1 |
| M 1.1-2.1 ²⁾ | M 1.1-2.1 ²⁾ |
| N 1.4-5, 2.1-2 | N 1.4-5, 2.1-2 |

Werkzeug-Ident · Tool ident

B0911400 B0921400

| M | ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | Image | Dimens.- Ident | Drück | Drück |
|---|------------------------|---------|----------------|----------------|----------------|------------------|-----|-------|-------------------|----------------|-------------------|
| | | | | | | | | | | 1-STEEL TIN | 1-STEEL-SN TIN |
| | 2,5 | x 0,35 | 50 | 7 | 12 | 2,8 | 2,1 | 2,37 | .0196 | | |
| | 2,6 | x 0,35 | 50 | 7 | 12 | 2,8 | 2,1 | 2,47 | .0199 | | |
| | 3 | x 0,35 | 56 | 8 | 18 | 3,5 | 2,7 | 2,88 | .0202 | | |
| | 3,5 | x 0,35 | 56 | 9 | 20 | 4 | 3 | 3,38 | .0205 | | |
| | 4 | x 0,5 | 63 | 10 | 21 | 4,5 | 3,4 | 3,8 | .0210 | ● | ● |
| | 5 | x 0,5 | 70 | 11 | 25 | 6 | 4,9 | 4,8 | .0218 | ● | ● |
| | 6 | x 0,5 | 80 | 13 | 30 | 6 | 4,9 | 5,8 | .0228 | ● | ● |
| | 6 | x 0,75 | 80 | 13 | 30 | 6 | 4,9 | 5,7 | .0229 | ● | ● |
| | 7 | x 0,75 | 80 | 13 | 30 | 7 | 5,5 | 6,7 | .0239 | | |
| | 8 | x 0,75 | 80 | 14 | 30 | 8 | 6,2 | 7,7 | .0250 | ● | ● |
| | 8 | x 1 | 90 | 17 | 35 | 8 | 6,2 | 7,6 | .0251 | ● | ● |
| | 9 | x 0,75 | 90 | 14 | 35 | 9 | 7 | 8,7 | .0262 | | |
| | 9 | x 1 | 90 | 17 | 35 | 9 | 7 | 8,6 | .0263 | | |
| | 10 | x 0,75 | 90 | 15 | 35 | 10 | 8 | 9,7 | .0275 | | |
| | 10 | x 1 | 90 | 18 | 35 | 10 | 8 | 9,6 | .0276 | ● | ● |
| | 10 | x 1,25 | 100 | 18 | 39 | 10 | 8 | 9,45 | .0277 | | |

DIN 2174



» 296

» 296

1) Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich
Cold-forming in through holes is possible only with external cooling/lubrication

2) Mit Emulsion nur bedingt einsetzbar
Restricted application possibilities with emulsion



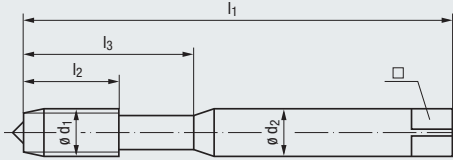
Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei P ≥ 1 mm um 0,05 mm kleiner vorzubohren.
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 321.

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 321.

MF

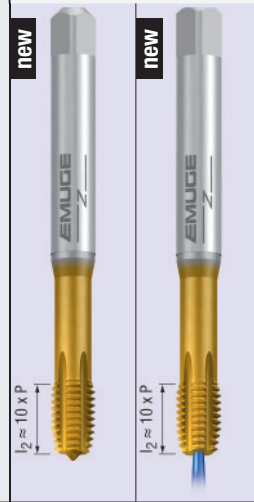


DIN 13

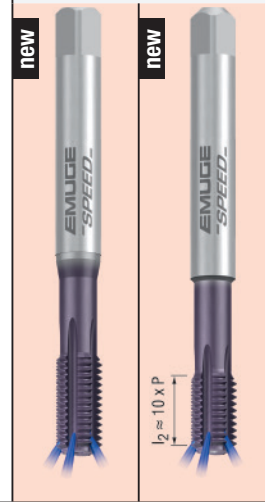


DIN 2174

Z
CNC-controlled machines



SPEED
High-speed cutting



Technische Informationen
Technical information

» 305 - 324

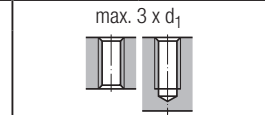
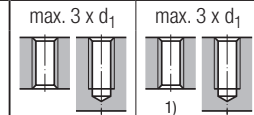
Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | |
|----------------|----------------|
| 6HX | 6HX |
| TIN-80 | TIN-80 |
| HSSE-PM | HSSE-PM |
| C / 2-3 | C / 2-3 |
| E / O / P | E / O |

| | |
|------------------|------------------|
| 6HX | 6HX |
| TICN | TICN |
| HSSE | VHM |
| E / 1,5-2 | E / 1,5-2 |
| E / O | E / O |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Application – material

» 272

| | |
|-----------------------|-----------------------|
| P 1.1-5.1 | P 1.1-5.1 |
| M 1.1-3.1 2) | M 1.1-3.1 2) |
| K 2.1 | K 2.1 |
| N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 |
| S 1.1-2.2 2) | S 1.1-2.2 2) |
| S 2.4 2) | S 2.4 2) |

| | |
|----------------|----------------|
| N 1.4-5 | N 1.4-5 |
|----------------|----------------|

Werkzeug-Ident · Tool ident

| | |
|---------------------------|-------------------------------|
| B521Z700 | B523Z700 |
| InnoForm 1-Z-SN-PM TIN-80 | InnoForm 1-Z-SN-IKZ PM-TIN-80 |

| | |
|----------------------------------|--------------------------------------|
| B5059500 | B5050800 |
| Drück 1-GAL SPEED/E-SN IKZN-TICN | VHM-Drück 1-GAL SPEED/E-SN IKZN-TICN |

| | ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | | Dimens.-Ident | InnoForm 1-Z-SN-PM TIN-80 | | InnoForm 1-Z-SN-IKZ PM-TIN-80 | | Drück 1-GAL SPEED/E-SN IKZN-TICN | | VHM-Drück 1-GAL SPEED/E-SN IKZN-TICN | |
|----------|------------------------|---------|----------------|----------------|----------------|------------------|------|--------------|---------------|---------------------------|----------|-------------------------------|----------|----------------------------------|---|--------------------------------------|--|
| | | | | | | | | | | B521Z700 | B523Z700 | B5059500 | B5050800 | | | | |
| M | 2,5 x 0,35 | 50 | 7 | 12 | 2,8 | 2,1 | 2,37 | .0196 | | | | | | | | | |
| | 2,6 x 0,35 | 50 | 7 | 12 | 2,8 | 2,1 | 2,47 | .0199 | | | | | | | | | |
| | 3 x 0,35 | 56 | 8 | 18 | 3,5 | 2,7 | 2,88 | .0202 | | | | | | | | | |
| | 3,5 x 0,35 | 56 | 9 | 20 | 4 | 3 | 3,38 | .0205 | | | | | | | | | |
| | 4 x 0,5 | 63 | 10 | 21 | 4,5 | 3,4 | 3,8 | .0210 | | | | | | | | | |
| | 5 x 0,5 | 70 | 11 | 25 | 6 | 4,9 | 4,8 | .0218 | | | | | | | | | |
| | 6 x 0,5 | 80 | 13 | 30 | 6 | 4,9 | 5,8 | .0228 | | | | | | | | | |
| | 6 x 0,75 | 80 | 13 | 30 | 6 | 4,9 | 5,7 | .0229 | | | | | | ○ | | ○ | |
| | 7 x 0,75 | 80 | 13 | 30 | 7 | 5,5 | 6,7 | .0239 | | | | | | | | | |
| | 8 x 0,75 | 80 | 14 | 30 | 8 | 6,2 | 7,7 | .0250 | | | | | | | | | |
| | 8 x 1 | 90 | 17 | 35 | 8 | 6,2 | 7,6 | .0251 | ● | ● | | | ○ | | ○ | | |
| | 9 x 0,75 | 90 | 14 | 35 | 9 | 7 | 8,7 | .0262 | | | | | | | | | |
| | 9 x 1 | 90 | 17 | 35 | 9 | 7 | 8,6 | .0263 | | | | | | | | | |
| | 10 x 0,75 | 90 | 15 | 35 | 10 | 8 | 9,7 | .0275 | | | | | | | | | |
| | 10 x 1 | 90 | 18 | 35 | 10 | 8 | 9,6 | .0276 | ● | ● | | | | | | | |
| | 10 x 1,25 | 100 | 18 | 39 | 10 | 8 | 9,45 | .0277 | | | | | | ○ | | ○ | |

DIN 2174



» 297

» 297

» 298

» 298

1) Gewindeformen in Durchgangslöchern nur mit externer Kühlschmierung möglich
Cold-forming in through holes is possible only with external cooling/lubrication

2) Mit Emulsion nur bedingt einsetzbar
Restricted application possibilities with emulsion



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 321.

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 321.

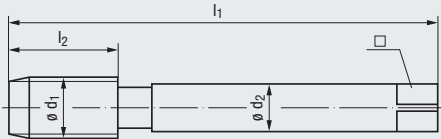
- Product Finder
- Vc
- M
- MF**
- UNC
- UNF
- G
- SELF-LOCK
- Tech. Info

MF

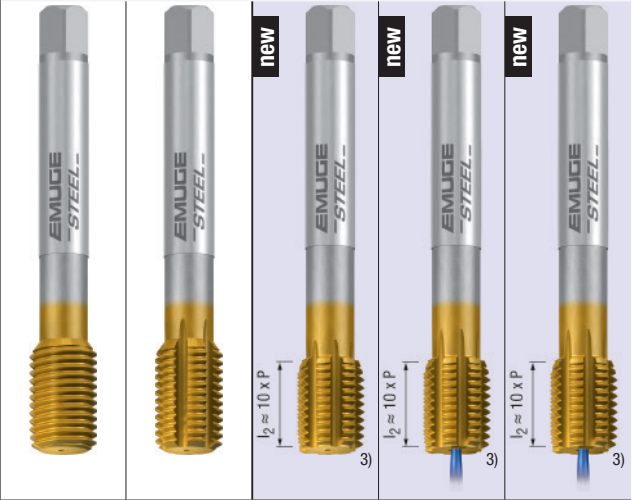


DIN 13

DIN 2174



STEEL
Steel materials



Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material

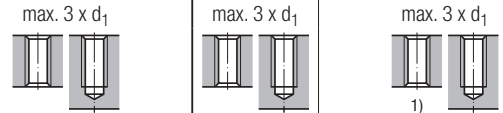
Technische Informationen
Technical information

» 305 - 324



| | | | | |
|-----------|-----------|----------------|----------------|------------------|
| 6HX | 6HX | 6HX | 6HX | 6HX |
| TIN | TIN | TIN-66 | TIN-66 | TIN-66 |
| HSSE | HSSE | HSSE-PM | HSSE-PM | HSSE-PM |
| C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | E / 1,5-2 |
| E / O / P | E / O / P | E / O / P | E / O | E / O |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Application – material

» 272

| | | | | |
|-----------------------|-----------------------|------------------|------------------|------------------|
| P 1.1-3.1 | P 1.1-3.1 | P 1.1-4.1 | P 1.1-4.1 | P 1.1-4.1 |
| M 1.1-2.1 2) | M 1.1-2.1 2) | K 2.1 | K 2.1 | K 2.1 |
| N 1.4-5, 2.1-2 | N 1.4-5, 2.1-2 | | | |

Werkzeug-Ident · Tool ident

C0911400 C0921400 C5217F00 C5237F00 C5317F00

| M | Ø d ₁ mm | P mm | l ₁ | l ₂ | Ø d ₂ | □ | Image | Dimens.- Ident | Drück | Drück | InnoForm | InnoForm | InnoForm |
|----|------------------------|---------|----------------|----------------|------------------|---|-------|-------------------|----------------|-------------------|------------------------------|----------------------------------|------------------------------------|
| | | | | | | | | | 2-STEEL TIN | 2-STEEL-SN TIN | 2-STEEL-M SN-PM TIN-66 | 2-STEEL-M SN-IKZ-PM TIN-66 | 2-STEEL-M/E SN-IKZ-PM TIN-66 |
| 11 | x 1 | 90 | 18 | 8 | 6,2 | | | .0288 | | | | | |
| 12 | x 1 | 100 | 18 | 9 | 7 | | | .0301 | ● | ● | | | |
| 12 | x 1,25 | 100 | 22 | 9 | 7 | | | .0302 | | | | | |
| 12 | x 1,5 | 100 | 22 | 9 | 7 | | | .0303 | ● | ● | ● | ● | ● |
| 14 | x 1 | 100 | 18 | 11 | 9 | | | .0329 | | | | | |
| 14 | x 1,25 | 100 | 22 | 11 | 9 | | | .0330 | | | | | |
| 14 | x 1,5 | 100 | 22 | 11 | 9 | | | .0331 | ● | ● | ● | ● | ● |
| 15 | x 1 | 100 | 18 | 12 | 9 | | | .0343 | | | | | |
| 15 | x 1,5 | 100 | 22 | 12 | 9 | | | .0345 | | | | | |
| 16 | x 1 | 100 | 18 | 12 | 9 | | | .0357 | ○ | ○ | | | |
| 16 | x 1,5 | 100 | 22 | 12 | 9 | | | .0359 | ● | ● | ● | ● | ● |
| 18 | x 1 | 110 | 20 | 14 | 11 | | | .0388 | | | | | |
| 18 | x 1,5 | 110 | 25 | 14 | 11 | | | .0390 | | | | | |
| 18 | x 2 | 125 | 26 | 14 | 11 | | | .0391 | | | | | |
| 20 | x 1 | 125 | 20 | 16 | 12 | | | .0420 | | | | | |
| 20 | x 1,5 | 125 | 25 | 16 | 12 | | | .0422 | ● | ● | | | |
| 20 | x 2 | 140 | 27 | 16 | 12 | | | .0423 | | | | | |

DIN 2174



» 294

» 294

1) Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich
Cold-forming in through holes is possible only with external cooling/lubrication

2) Mit Emulsion nur bedingt einsetzbar
Restricted application possibilities with emulsion

3) 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 321.

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 321.

- Product Finder
- Vc
- M
- MF
- UNC
- UNF
- G
- SELF-LOCK
- Tech. Info

| STEEL Steel materials | | | H Materials of high tensile strength | | Z CNC-controlled machines | | |
|---|---|---|---|---|---|---|-----------|
|  |  |  |  |  |  |  | |
| 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | |
| TICN-67 | TICN-67 | TICN-67 | TIN-T26 | TIN-T26 | TIN-80 | TIN-80 | |
| HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | |
| C / 2-3 | C / 2-3 | E / 1,5-2 | C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 | |
| E / O / P | E / O | E / O | E / O | E | E / O / P | E / O | |
| max. 3 x d ₁ | max. 3 x d ₁ | | max. 3 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ | max. 3 x d ₁ | |
|  |  | |  |  |  |  | |
| P 3.1-5.1 | P 3.1-5.1 | P 3.1-5.1 | P 2.1-5.1 | P 2.1-5.1 | P 1.1-5.1 | P 1.1-5.1 | |
| K 2.1 | K 2.1 | K 2.1 | K 2.1 | K 2.1 | M 1.1-3.1 2) | M 1.1-3.1 2) | |
| | | | | | K 2.1 | K 2.1 | |
| | | | | | N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 | |
| | | | | | S 1.1-2.2 2) | S 1.1-2.2 2) | |
| | | | | | S 2.4 2) | S 2.4 2) | |
| C5216F00 | C5236F00 | C5316F00 | C521W700 | C523W700 | C521Z700 | C523Z700 | |
| InnoForm 2-STEEL-H SN-PM TICN-67 | InnoForm 2-STEEL-H SN-IKZ-PM TICN-67 | InnoForm 2-STEEL-H/E SN-IKZ-PM TICN-67 | InnoForm 2-H-SN-PM TIN-T26 | InnoForm 2-H-SN-IKZ PM-TIN-T26 | InnoForm 2-Z-SN-PM TIN-80 | InnoForm 2-Z-SN-IKZ PM-TIN-80 | |
| | | | | | | | M 11 x 1 |
| | | | | | | | 12 x 1 |
| | | | | | | | 12 x 1,25 |
| ● | ● | ● | ● | ● | ● | ● | 12 x 1,5 |
| | | | | | | | 14 x 1 |
| | | | | | | | 14 x 1,25 |
| ● | ● | ● | ● | ● | ● | ● | 14 x 1,5 |
| | | | | | | | 15 x 1 |
| | | | | | | | 15 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | 16 x 1 |
| | | | | | | | 16 x 1,5 |
| | | | | | | | 18 x 1 |
| | | | | | | | 18 x 1,5 |
| | | | | | | | 18 x 2 |
| | | | | | | | 20 x 1 |
| | | | | | | | 20 x 1,5 |
| | | | | | | | 20 x 2 |
| | | | | | 📄 295 | 📄 295 | |



Kühlschmierstoffe siehe Seite 238 - 239 Coolant-lubricants, see page 238 - 239

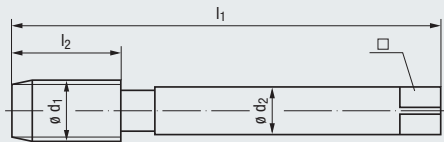
● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

- Product Finder
- V_c
- M
- MF**
- UNC
- UNF
- G
- SELF-LOCK
- Tech. Info

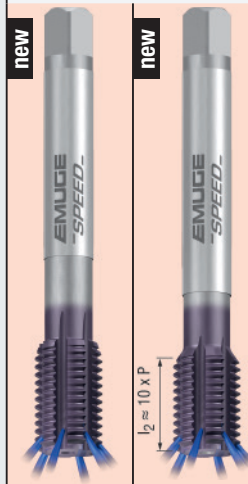


DIN 13

DIN 2174



SPEED
High-speed cutting



Technische Informationen
Technical information

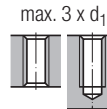
305 - 324

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | |
|------------------|------------------|
| 6HX | 6HX |
| TICN | TICN |
| HSSE | VHM |
| E / 1,5-2 | E / 1,5-2 |
| E / 0 | E / 0 |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Application – material

272

N 1.4-5 N 1.4-5

Werkzeug-Ident · Tool ident

C5059500 C505Q800

| M | ∅ d ₁ mm | P mm | l ₁ | l ₂ | ∅ d ₂ | □ | Image | Dimens.- Ident | Drück | VHM-Drück |
|---|------------------------|---------|----------------|----------------|------------------|-----|-------|-------------------|----------------------------------|----------------------------------|
| | | | | | | | | | 2-GAL SPEED/E-SN IKZN-TICN | 2-GAL SPEED/E-SN IKZN-TICN |
| | 11 | x 1 | 90 | 18 | 8 | 6,2 | | .0288 | | |
| | 12 | x 1 | 100 | 18 | 9 | 7 | | .0301 | | |
| | 12 | x 1,25 | 100 | 22 | 9 | 7 | | .0302 | ○ | ○ |
| | 12 | x 1,5 | 100 | 22 | 9 | 7 | | .0303 | ○ | ○ |
| | 14 | x 1 | 100 | 18 | 11 | 9 | | .0329 | | |
| | 14 | x 1,25 | 100 | 22 | 11 | 9 | | .0330 | | |
| | 14 | x 1,5 | 100 | 22 | 11 | 9 | | .0331 | ○ | ○ |
| | 15 | x 1 | 100 | 18 | 12 | 9 | | .0343 | | |
| | 15 | x 1,5 | 100 | 22 | 12 | 9 | | .0345 | | |
| | 16 | x 1 | 100 | 18 | 12 | 9 | | .0357 | | |
| | 16 | x 1,5 | 100 | 22 | 12 | 9 | | .0359 | ○ | ○ |
| | 18 | x 1 | 110 | 20 | 14 | 11 | | .0388 | | |
| | 18 | x 1,5 | 110 | 25 | 14 | 11 | | .0390 | | |
| | 18 | x 2 | 125 | 26 | 14 | 11 | | .0391 | | |
| | 20 | x 1 | 125 | 20 | 16 | 12 | | .0420 | | |
| | 20 | x 1,5 | 125 | 25 | 16 | 12 | | .0422 | | |
| | 20 | x 2 | 140 | 27 | 16 | 12 | | .0423 | | |

DIN 2174



295

295



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 321.

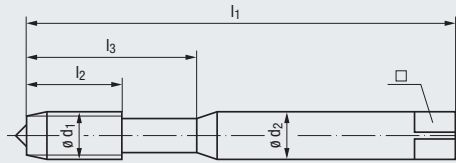
We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for P ≥ 1 mm.
For further information regarding the recommended preparatory diameters, see page 321.

UNC

ASME B1.1



≈ DIN 2174



Technische Informationen
Technical information

» 305 - 324

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



Gewindetiefe und Lochform
Thread depth and hole type

Einsatzgebiete – Material
Application – material

» 272

Werkzeug-Ident · Tool ident

| ø d ₁ inch | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | ø d ₂ | □ | Image | Dimens.- Ident | STEEL Steel materials | | Z CNC-controlled machines | | |
|--------------------------|------------------|----------------|----------------|----------------|------------------|-----|-------|-------------------|--------------------------|----------------------------|---|--|---|
| | | | | | | | | | Drück 1-STEEL TIN | Drück 1-STEEL-SN TIN | B521Z700 InnoForm 1-Z-SN-PM TIN-80 | B523Z700 InnoForm 1-Z-SN- PM-TIN-80 | |
| Nr. 4 | 0.1120 | 40 | 56 | 11 | 18 | 3,5 | 2,7 | 2,55 | .5003 | ● | ● | ● | ● |
| Nr. 5 | 0.1250 | 40 | 56 | 11 | 18 | 3,5 | 2,7 | 2,9 | .5004 | ● | ● | ● | ● |
| Nr. 6 | 0.1380 | 32 | 56 | 12 | 20 | 4 | 3 | 3,15 | .5005 | ● | ● | ● | ● |
| Nr. 8 | 0.1640 | 32 | 63 | 13 | 21 | 4,5 | 3,4 | 3,8 | .5006 | ● | ● | ● | ● |
| Nr. 10 | 0.1900 | 24 | 70 | 15 | 25 | 6 | 4,9 | 4,35 | .5007 | ● | ● | ● | ● |
| Nr. 12 | 0.2160 | 24 | 80 | 16 | 30 | 6 | 4,9 | 5 | .5008 | ● | ● | ● | ● |
| 1/4 | 0.2500 | 20 | 80 | 17 | 30 | 7 | 5,5 | 5,75 | .5009 | ● | ● | ● | ● |
| 5/16 | 0.3125 | 18 | 90 | 20 | 35 | 8 | 6,2 | 7,3 | .5010 | ● | ● | ● | ● |
| 3/8 | 0.3750 | 16 | 100 | 22 | 39 | 10 | 8 | 8,8 | .5011 | ● | ● | ● | ● |

≈ DIN 2174



» 300

» 300

» 300

» 300

1) Gewindeformen in Durchgangslöchern nur mit externer Kühlschmierung möglich
Cold-forming in through holes is possible only with external cooling/lubrication

2) Mit Emulsion nur bedingt einsetzbar
Restricted application possibilities with emulsion



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 321.

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 321.

Product
Finder

Vc

M

MF

UNC

UNF

G

SELF-LOCK

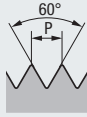
Tech. Info



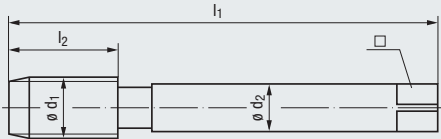
- Product Finder
- V_c
- M
- MF
- UNC**
- UNF
- G
- SELF-LOCK
- Tech. Info

UNC

ASME B1.1



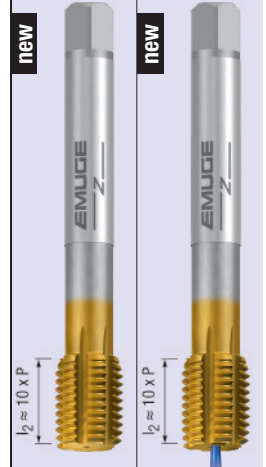
≈ DIN 2174



STEEL
Steel materials



Z
CNC-controlled machines



Technische Informationen
Technical information

305 - 324

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | |
|-----------|-----------|
| 2BX | 2BX |
| TIN | TIN |
| HSSE | HSSE |
| C / 2-3 | C / 2-3 |
| E / O / P | E / O / P |

| | |
|----------------|----------------|
| 2BX | 2BX |
| TIN-80 | TIN-80 |
| HSSE-PM | HSSE-PM |
| C / 2-3 | C / 2-3 |
| E / O / P | E / O |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Application – material

272

| | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|
| P 1.1-3.1 | P 1.1-3.1 | P 1.1-5.1 | P 1.1-5.1 |
| M 1.1-2.1 2) | M 1.1-2.1 2) | M 1.1-3.1 2) | M 1.1-3.1 2) |
| N 1.4-5, 2.1-2 | N 1.4-5, 2.1-2 | K 2.1 | K 2.1 |
| | | N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 |
| | | S 1.1-2.2 2) | S 1.1-2.2 2) |
| | | S 2.4 2) | S 2.4 2) |

Werkzeug-Ident · Tool ident

| Werkzeug-Ident · Tool ident | | | | | | | | | C0911400 | C0921400 | C521Z700 | C523Z700 |
|-----------------------------|------------------|----------------|----------------|------------------|----|-------|---------------|-------------------|----------------------|---------------------------|---------------------------|----------|
| Ø d ₁ inch | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | Image | Dimens.-Ident | Drück 2-STEEL TIN | Drück 2-STEEL-SN TIN | InnoForm 2-Z-SN-PM TIN-80 | InnoForm 2-Z-SN-PM-TIN-80 | |
| | | | | | | | | | | | | |
| 7/16 | 0.4375 | 14 | 100 | 22 | 8 | 6,2 | 10,25 | .5012 | ● | ● | ● | |
| 1/2 | 0.5000 | 13 | 110 | 25 | 9 | 7 | 11,8 | .5013 | ● | ● | ● | |
| 9/16 | 0.5625 | 12 | 110 | 26 | 11 | 9 | 13,3 | .5014 | ○ | ○ | ○ | |
| 5/8 | 0.6250 | 11 | 110 | 27 | 12 | 9 | 14,8 | .5015 | ● | ● | ● | |
| 3/4 | 0.7500 | 10 | 125 | 30 | 14 | 11 | 17,85 | .5016 | ● | ● | ● | |
| 7/8 | 0.8750 | 9 | 140 | 32 | 18 | 14,5 | 20,9 | .5017 | | | | |
| 1" | 1.0000 | 8 | 160 | 36 | 18 | 14,5 | 23,9 | .5018 | | | | |

≈ DIN 2174



299

299

299

299

1) Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich
Cold-forming in through holes is possible only with external cooling/lubrication

2) Mit Emulsion nur bedingt einsetzbar
Restricted application possibilities with emulsion



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 321.

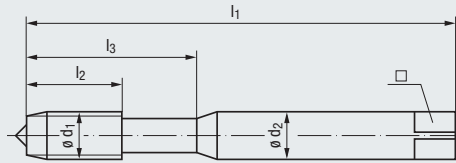
We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminium cast alloys) for P = 24 threads/1" and coarser threads.
For further information regarding the recommended preparatory diameters, see page 321.

UNF



ASME B1.1

≈ DIN 2174



Technische Informationen
Technical information

» 305 - 324

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



Gewindetiefe und Lochform
Thread depth and hole type

Einsatzgebiete – Material
Application – material

» 272

Werkzeug-Ident · Tool ident

| Nr. | Ø d ₁ inch | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | Ø | Dimens.- Ident | STEEL Steel materials | | Z CNC-controlled machines | |
|------------|--------------------------|------------------|----------------|----------------|----------------|------------------|-----|------|-------------------|--------------------------|----------------------------|---------------------------------|---------------------------------|
| | | | | | | | | | | Drück 1-STEEL TIN | Drück 1-STEEL-SN TIN | new 2BX TIN-80 HSSE-PM | new 2BX TIN-80 HSSE-PM |
| Nr. 2 | 0.0860 | 64 | 45 | 7 | 12 | 2,8 | 2,1 | 2,02 | .5035 | | | | |
| Nr. 3 | 0.0990 | 56 | 50 | 9 | 14 | 2,8 | 2,1 | 2,32 | .5036 | | | | |
| Nr. 4 | 0.1120 | 48 | 56 | 11 | 18 | 3,5 | 2,7 | 2,62 | .5037 | ● | ● | | |
| Nr. 5 | 0.1250 | 44 | 56 | 11 | 18 | 3,5 | 2,7 | 2,92 | .5038 | | | | |
| Nr. 6 | 0.1380 | 40 | 56 | 12 | 20 | 4 | 3 | 3,22 | .5039 | ● | ● | | |
| Nr. 8 | 0.1640 | 36 | 63 | 13 | 21 | 4,5 | 3,4 | 3,85 | .5040 | ● | ● | | |
| Nr. 10 | 0.1900 | 32 | 70 | 15 | 25 | 6 | 4,9 | 4,45 | .5041 | ● | ● | | ● |
| Nr. 12 | 0.2160 | 28 | 80 | 16 | 30 | 6 | 4,9 | 5,1 | .5042 | ● | ● | | ● |
| 1/4 | 0.2500 | 28 | 80 | 17 | 30 | 7 | 5,5 | 5,95 | .5043 | ● | ● | | ● |
| 5/16 | 0.3125 | 24 | 90 | 17 | 35 | 8 | 6,2 | 7,45 | .5044 | ● | ● | | ● |
| 3/8 | 0.3750 | 24 | 90 | 18 | 35 | 10 | 8 | 9,05 | .5045 | ● | ● | | ● |
| ≈ DIN 2174 | | | | | | | | | | » 302 | » 302 | » 302 | » 302 |

1) Gewindeformen in Durchgangslöchern nur mit externer Kühlschmierung möglich
Cold-forming in through holes is possible only with external cooling/lubrication

2) Mit Emulsion nur bedingt einsetzbar
Restricted application possibilities with emulsion



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 321.

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 321.

Product Finder

Vc

M

MF

UNC

UNF

G

SELF-LOCK

Tech. Info



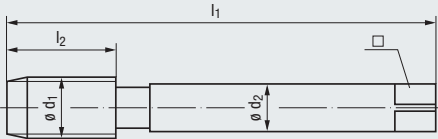
- Product Finder
- Vc
- M
- MF
- UNC
- UNF**
- G
- SELF-LOCK
- Tech. Info

UNF

ASME B1.1



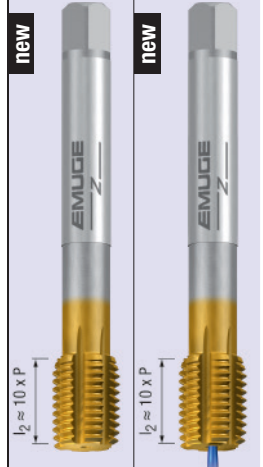
≈ DIN 2174



STEEL
Steel materials



Z
CNC-controlled machines



Technische Informationen
Technical information

305 - 324

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | | | |
|-----------|-----------|----------------|----------------|
| 2BX | 2BX | 2BX | 2BX |
| TIN | TIN | TIN-80 | TIN-80 |
| HSSE | HSSE | HSSE-PM | HSSE-PM |
| C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 |
| E / O / P | E / O / P | E / O / P | E / O |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Application – material

272

| | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|
| P 1.1-3.1 | P 1.1-3.1 | P 1.1-5.1 | P 1.1-5.1 |
| M 1.1-2.1 2) | M 1.1-2.1 2) | M 1.1-3.1 2) | M 1.1-3.1 2) |
| N 1.4-5, 2.1-2 | N 1.4-5, 2.1-2 | K 2.1 | K 2.1 |
| | | N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 |
| | | S 1.1-2.2 2) | S 1.1-2.2 2) |
| | | S 2.4 2) | S 2.4 2) |

Werkzeug-Ident · Tool ident

| Werkzeug-Ident · Tool ident | | | | | | | | | C0911400 | C0921400 | C521Z700 | C523Z700 |
|-----------------------------|-----------|-------------|----------------|----------------|------------------|------|-------|---------------|-------------------|----------------------|---------------------------|-------------------------------|
| Ø d ₁ inch | P inch | Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | Image | Dimens.-Ident | Drück 2-STEEL TIN | Drück 2-STEEL-SN TIN | InnoForm 2-Z-SN-PM TIN-80 | InnoForm 2-Z-SN-IKZ PM-TIN-80 |
| | | | | | | | | | 7/16 | 0.4375 | 20 | 100 |
| 1/2 | 0.5000 | 20 | 100 | 22 | 9 | 7 | 12,15 | .5047 | ● | ● | ● | ● |
| 9/16 | 0.5625 | 18 | 100 | 22 | 11 | 9 | 13,65 | .5048 | ○ | ○ | | |
| 5/8 | 0.6250 | 18 | 100 | 22 | 12 | 9 | 15,25 | .5049 | ● | ● | | |
| 3/4 | 0.7500 | 16 | 110 | 25 | 14 | 11 | 18,35 | .5050 | ● | ● | | |
| 7/8 | 0.8750 | 14 | 125 | 25 | 18 | 14,5 | 21,4 | .5051 | | | | |
| 1" | 1.0000 | 12 | 140 | 28 | 18 | 14,5 | 24,45 | .5052 | | | | |

≈ DIN 2174



301 301 301 301

1) Gewindeformen in Durchgangslöcher nur mit externer Kühlschmierung möglich
Cold-forming in through holes is possible only with external cooling/lubrication

2) Mit Emulsion nur bedingt einsetzbar
Restricted application possibilities with emulsion

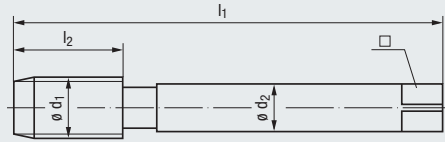


Bei schlecht ausformenden Werkstoffen (z.B. GAL) empfehlen wir bei P = 24 Gg./1" und größer um 0,05 mm kleiner vorzubohren.
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 321.

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 321.

G (BSP)

DIN EN ISO 228

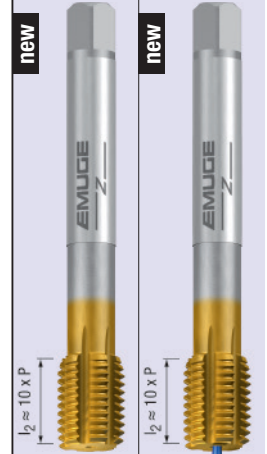


DIN 2189

STEEL
Steel materials



Z
CNC-controlled machines



Technische Informationen
Technical information

» 305 - 324

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | | | |
|-----------|-----------|----------------|----------------|
| „X“ | „X“ | „X“ | „X“ |
| TIN | TIN | TIN-80 | TIN-80 |
| HSSE | HSSE | HSSE-PM | HSSE-PM |
| C / 2-3 | C / 2-3 | C / 2-3 | C / 2-3 |
| E / O / P | E / O / P | E / O / P | E / O |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Application – material

» 272

| | | | |
|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| P 1.1-3.1 | P 1.1-3.1 | P 1.1-5.1 | P 1.1-5.1 |
| M 1.1-2.1 ²⁾ | M 1.1-2.1 ²⁾ | M 1.1-3.1 ²⁾ | M 1.1-3.1 ²⁾ |
| N 1.4-5, 2.1-2 | N 1.4-5, 2.1-2 | K 2.1 | K 2.1 |
| | | N 2.1-2, 2.4-5 | N 2.1-2, 2.4-5 |
| | | S 1.1-2.2 ²⁾ | S 1.1-2.2 ²⁾ |
| | | S 2.4 ²⁾ | S 2.4 ²⁾ |

Werkzeug-Ident · Tool ident

| Nenngröße Nom. size | Ø d ₁ mm | P Gg/1" (tpi) | l ₁ | l ₂ | Ø d ₂ | □ | | Dimens.- Ident | Drück 2-STEEL | | InnoForm 2-Z-SN-PM | |
|------------------------|------------------------|------------------|----------------|----------------|------------------|------|-------|-------------------|---------------|-------------------|--------------------|-----------|
| | | | | | | | | | TIN | 2-STEEL-SN TIN | TIN-80 | PM-TIN-80 |
| G 1/16 | 7,72 | 28 | 90 | 17 | 6 | 4,9 | 7,25 | .4034 | ● | ● | ● | ● |
| 1/8 | 9,73 | 28 | 90 | 18 | 7 | 5,5 | 9,25 | .4035 | ● | ● | ● | ● |
| 1/4 | 13,16 | 19 | 100 | 22 | 11 | 9 | 12,55 | .4036 | ● | ● | ● | ● |
| 3/8 | 16,66 | 19 | 100 | 22 | 12 | 9 | 16,05 | .4037 | ● | ● | ● | ● |
| 1/2 | 20,96 | 14 | 125 | 25 | 16 | 12 | 20,1 | .4038 | ● | ● | ● | ● |
| 5/8 | 22,91 | 14 | 125 | 25 | 18 | 14,5 | 22,05 | .4039 | | | | |
| 3/4 | 26,44 | 14 | 140 | 28 | 20 | 16 | 25,6 | .4040 | | ○ | | |
| 7/8 | 30,20 | 14 | 150 | 28 | 22 | 18 | 29,35 | .4041 | | | | |
| 1" | 33,25 | 11 | 160 | 30 | 25 | 20 | 32,15 | .4042 | | ○ | | |

1) Gewindeformen in Durchgangslöchern nur mit externer Kühlschmierung möglich
Cold-forming in through holes is possible only with external cooling/lubrication

2) Mit Emulsion nur bedingt einsetzbar
Restricted application possibilities with emulsion



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 321.

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 321.

Product Finder

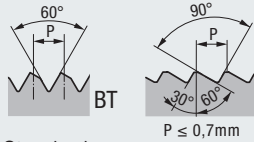
- Vc
- M
- MF
- UNC
- UNF
- G**
- SELF-LOCK
- Tech. Info



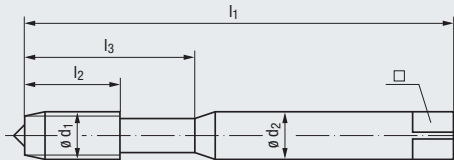
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- G
- SELF-LOCK**
- Tech. Info

LK-M

EMUGE-Norm · EMUGE Standard



DIN 2174



STEEL
Steel materials



Technische Informationen
Technical information

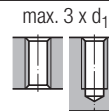
» 305 - 324

Toleranz · Tolerance
Beschichtung · Coating
Schneidstoff · Cutting material



| | |
|-----------|-----------|
| TIN | TIN |
| HSSE | HSSE |
| C / 2-3 | C / 2-3 |
| E / 0 / P | E / 0 / P |

Gewindetiefe und Lochform
Thread depth and hole type



Einsatzgebiete – Material
Application – material

» 272

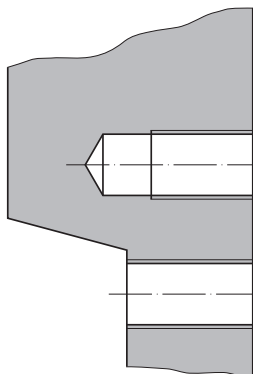
| | |
|-------------------------|-------------------------|
| P 1.1-3.1 | P 1.1-3.1 |
| M 1.1-2.1 ²⁾ | M 1.1-2.1 ²⁾ |
| N 1.4-5, 2.1-2 | N 1.4-5, 2.1-2 |

Werkzeug-Ident · Tool ident

B0911400 B0921400

| Ø d ₁ mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₂ | □ | Image | Dimens.- Ident | Drück | |
|------------------------|---------|----------------|----------------|----------------|------------------|-----|-------|-------------------|----------------|-------------------|
| | | | | | | | | | 1-STEEL TIN | 1-STEEL-SN TIN |
| LK-M 3 | 0,5 | 56 | 11 | 18 | 3,5 | 2,7 | 2,85 | .1046 | ● | ● |
| 4 | 0,7 | 63 | 13 | 21 | 4,5 | 3,4 | 3,8 | .1048 | ● | ● |
| 5 | 0,8 | 70 | 15 | 25 | 6 | 4,9 | 4,8 | .1050 | ● | ● |
| 6 | 1 | 80 | 17 | 30 | 6 | 4,9 | 5,7 | .1052 | ● | ● |
| 8 | 1,25 | 90 | 20 | 35 | 8 | 6,2 | 7,6 | .1054 | ● | ● |
| 10 | 1,5 | 100 | 22 | 39 | 10 | 8 | 9,5 | .1056 | ● | ● |

²⁾ Mit Emulsion nur bedingt einsetzbar
Restricted application possibilities with emulsion



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 ≥ 1 mm um 0,05 mm kleiner vorzubohren.
Weitere Informationen zu den empfohlenen Vorfertigungsdurchmessern siehe Seite 321.

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 321.

Technische Informationen

Technical Information

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| 2.2 | Gewindeformer-Sonderausführungen (Beispiele) Special cold-forming tap types (examples) | 307 |
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| 2.16 | Lehrung und Toleranzen geformter Innengewinde Gauging and tolerances of cold-formed threads | 322 |
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Product
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SELF-LOCK

Tech. Info



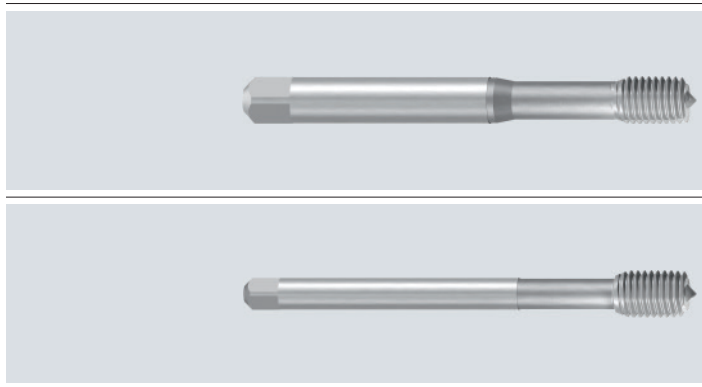
Die Technischen Informationen der jeweiligen Kapitel dieses Kataloges sind in vielen Landessprachen auch als separate Druckerzeugnisse verfügbar. Bitte wenden Sie sich an den für Sie zuständigen Vertriebspartner.

The technical information complementing the various chapters of this catalogue is available also as a separate printed booklet in many different languages. Please speak to your usual sales contact.

- Product Finder
- V_c
- M
- MF
- UNC
- UNF
- G
- SELF-LOCK
- Tech. Info

2.1 EMUGE Gewindeformer-Bauformen

Bauformen nach DIN (Beispiele)

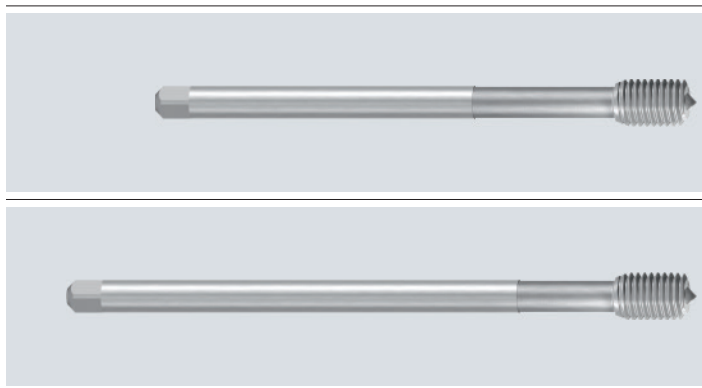


2.1 Constructional designs of our EMUGE cold-forming taps

Constructional designs acc. DIN (examples)

| Bauform Constructional design | Baumaße Dimensions | EMUGE-Bezeichnung EMUGE designation |
|---|-----------------------|--|
| Maschinen-Gewindeformer mit verstärktem Schaft Machine cold-forming taps with reinforced shank | DIN 2174 | Drück 1 InnoForm 1 |
| Maschinen-Gewindeformer mit durchfallendem Schaft Machine cold-forming taps with reduced shank | DIN 2174 | Drück 2 InnoForm 2 |

Bauformen nach EMUGE-Werknorm (Beispiele)

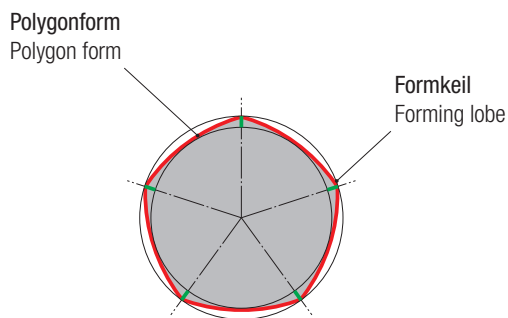


Constructional designs acc. EMUGE standard (examples)

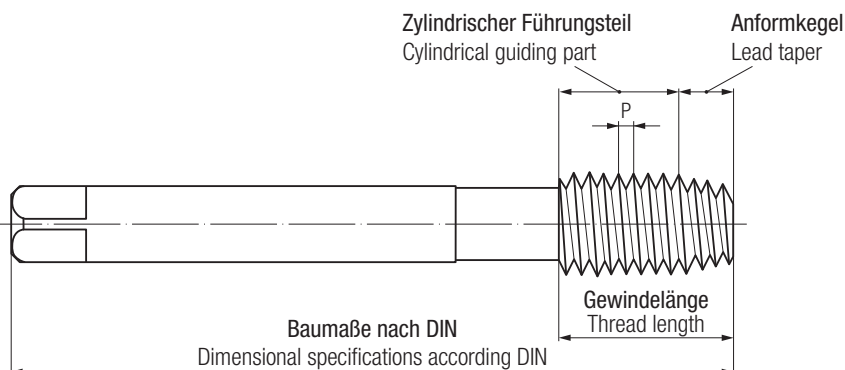
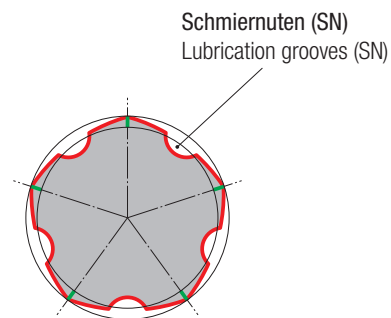
| Bauform Constructional design | EMUGE-Bezeichnung EMUGE designation |
|--|--|
| Maschinen-Gewindeformer mit langem Schaft Machine cold-forming taps with long shank | LF |
| Maschinen-Gewindeformer mit extra langem Schaft Machine cold-forming taps with extra long shank | LS |



Geometrischer Aufbau eines Gewindeformers



Geometric construction of a cold-forming tap



2.2 Gewindeformer-Sonderausführungen (Beispiele)

Sonderwerkzeuge nach Kundenwunsch

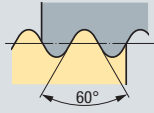
EMUGE fertigt Spezial-Gewindeformer nach Kundenzeichnungen und eigenen Konstruktionen.

InnoForm-Sonderwerkzeuge

Sollte für spezielle Anwendungsfälle im umfangreichen InnoForm-Gewindeformer-Programm keine geeignete Werkzeugvariante vorhanden sein, so werden kundenspezifisch, nach Angabe der Randbedingungen und der Werkstückzeichnung, InnoForm-Werkzeuge geliefert. Beispielsweise können spezielle Gewindeabmessungen und -toleranzen, Sondergewindeprofile, Sonderbauformen und besondere Verfahren zum kombinierten Gewindebohren und -formen bei der Konzeption beachtet werden.

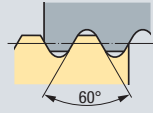
Sondergewinde (Beispiele)

FG



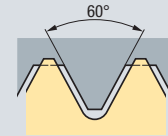
Fahrradgewinde
nach DIN 79012
Bicycle thread
acc. DIN 79012

Vg



Ventilgewinde
nach DIN 7756
Valve thread
acc. DIN 7756

MFS



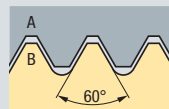
Metrisches ISO-Gewinde für Festsitz
nach DIN 8141-1
ISO Metric thread for tight fit
acc. DIN 8141-1

ST



Blechsraubengewinde
nach DIN EN ISO 1478
Sheet metal screw thread
acc. DIN EN ISO 1478

A/B



Stativ-Anschlussgewinde
nach DIN 4503
Tripod connection thread
acc. DIN 4503

2.2 Special cold-forming tap types (examples)

Special taps to customers' specifications

EMUGE produces special cold-forming taps to customers' drawings and proper specifications.

InnoForm special tools

If our comprehensive InnoForm programme of cold-forming taps does not include a suitable tool design for a specific application, we will be happy to furnish a custom-made, special InnoForm tool designed for the work conditions and according to the workpiece drawing of the individual customer. Such special designs can be made in special thread sizes and tolerances, with special thread profiles and dimensional specifications, or for special processes involving combined thread cutting and cold forming.

Special threads (examples)

Product
Finder

V_c

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MF

UNC

UNF

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SELF-LOCK

Tech. Info



- Product Finder
- V_c
- M
- MF
- UNC
- UNF
- G
- SELF-LOCK
- Tech. Info

2.3 EMUGE Gewindeformer-Grundformen

EMUGE stellte als weltweit erstes Unternehmen eine Reihe von Gewindeformern vor, die zur Bearbeitung von bestimmten Werkstoffen oder Werkstoffgruppen optimiert sind. War dies nur bei Schneidwerkzeugen möglich, so ist es EMUGE gelungen, Gewindeformer auf die Besonderheiten einzelner Werkstoffe und Werkstoffgruppen abzustimmen und dadurch die Leistung dieser Werkzeuge zum Teil deutlich zu erhöhen. Bis dahin waren Gewindeformer für den Einsatz in sämtlichen verformbaren Werkstoffen ausgelegt, wodurch in definierten Anwendungen Leistungspotential verschenkt wurde. EMUGE hat in mehrjähriger Entwicklungsarbeit die Mechanismen des Gewindeformens in bestimmten Werkstoffen untersucht und aus den erzielten Ergebnissen eine vollkommen neue Werkzeuggeneration geschaffen. Um dieses innovative Gewindeformer-Programm herauszuheben, wurde ein neuer Name gewählt: **InnoForm**

2.3 Basic types of our EMUGE cold-forming taps

EMUGE is the first threading tool manufacturer worldwide to introduce a programme of cold-forming taps specially designed for the machining of specific materials or material groups. While this was possible only for cutting tools, we have succeeded in designing cold-forming taps especially for the special properties of single materials and material groups, sometimes increasing performance in a dramatic way. Until then conventional cold-forming taps were made for the use in all ductile materials: potential performance features in defined applications were simply wasted in the process. EMUGE has made extensive investigations into the mechanisms of cold forming for years, and developed an entirely new tool generation from the results. In order to highlight the uniqueness of this highly innovative programme of cold-forming taps, we have thought of a new name: **InnoForm**

Drück



- Gewindeformer zur spanlosen Innengewinde-Herstellung
- Anformkegelform E (1,5-2 Gänge)
- Anformkegelform C (2-3 Gänge)
- Anformkegelform D (4-5 Gänge)
- Für Grundloch- und Durchgangslochgewinde

Bemerkung:

Abhängig vom zu bearbeitenden Material sind die wesentlichen Vorteile des Gewindeformens neben sehr guter Oberflächenqualität auch höhere statische und dynamische Festigkeit des Gewindes.

Die zu erzeugende Gewindelänge wird nicht durch abzuführende Späne begrenzt. Hervorragende Stabilität des Werkzeuges besonders bei kleinen Gewindeabmessungen. Sämtliche fließfähigen Werkstoffe können geformt werden. Auf ausreichende Schmierung muss geachtet werden. Schmiernuten werden grundsätzlich bei Durchgangslochgewinde und horizontaler Bearbeitung empfohlen (Ausnahme bei sehr kurzen Durchgangslochgewinden, wie z.B. bei Blechdurchzügen).

Evtl. muss der empfohlene Gewindekernloch-Vorfertigungsdurchmesser den Einsatzbedingungen angepasst werden.

- Cold-forming tap for the chipless production of internal threads
- Lead taper form E (1.5-2 threads)
- Lead taper form C (2-3 threads)
- Lead taper form D (4-5 threads)
- For blind hole and through hole threads

Note:

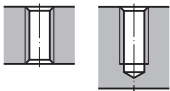
Depending on the workpiece material, the essential advantages of the cold-forming of threads are not only excellent surface quality but also higher static and dynamic strength of the thread.

The length of the thread to be produced is not limited by chips which must be removed. The tools feature an excellent stability, especially with small thread sizes.

All ductile materials can be cold-formed. Sufficient lubrication is essential. We generally recommend using oil grooves for through hole threads and horizontal machining. (Exception: very short through hole threads, e.g. sheet metal components).

Sometimes, it is necessary to adjust the recommended thread hole preparatory diameter to work conditions.

InnoForm



2.4 EMUGE Geometriebezeichnungen

2.4 Our EMUGE geometries

**Drück
InnoForm**

Für Stahlwerkstoffe

Diese bewährte Geometrie ist für die allgemeine Anwendung in Stahl konzipiert. Sie ist in vielen Gewindesystemen und Abmessungen auf Lager. In Kombination mit Hartstoffschichten können Umfangsgeschwindigkeiten erhöht werden.

- **InnoForm-STEEL-M**
Für Stahlwerkstoffe mit mittlerer Festigkeit
- **InnoForm-STEEL-H**
Für Stahlwerkstoffe mit hoher Festigkeit

For steel materials

This highly successful geometry has been designed for general use in steel. It is available ex stock in numerous thread systems and sizes. Circumference speeds can be increased by combining it with a suitable hard surface coating.

- **InnoForm-STEEL-M**
For medium strength steels
- **InnoForm-STEEL-H**
For high strength steels

2.4 EMUGE Geometriebezeichnungen

2.4 Our EMUGE geometries

| | | |
|--|---|--|
|  InnoForm | <p>Für nichtrostende Stahlwerkstoffe und Stahlwerkstoffe</p> <p>Diese Werkstoffe verhalten sich stark adhäsiv, was zu Kaltpressschweißungen führen kann. Auch neigen diese Werkstoffe bei der Umformung stark zu verfestigen, wodurch die Formkeile stärker belastet werden. Um hier entgegenzuwirken, wurde eine Geometrie entwickelt, die den hohen Anforderungen hinsichtlich der Stabilität genügt.</p> | <p>For stainless steel materials and steel materials</p> <p>These materials show a high degree of adhesion which can lead to cold-welding effects. Also, they tend to strengthening during the forming process which puts more stress on the forming lobes. In order to compensate this, we have developed a geometry which meets the elevated requirements towards stability perfectly.</p> |
|  InnoForm | <p>Für Aluminium-Knetlegierungen</p> <p>Diese Werkstoffe zeigen unter üblichen Schmierungsverhältnissen, wie beispielsweise Emulsionsschmierung, eine stark adhäsive Neigung bei der Umformung des Gewindes. Um trotz dieses ungünstigen Werkstoffverhaltens ein positives Arbeitsergebnis zu erzielen, ist diese Geometrie mit einer Beschichtung ausgestattet, die sehr gute Reibungs- bzw. Gleiteigenschaften und damit eine optimale Prozesssicherheit bietet.</p> | <p>For aluminium wrought alloys</p> <p>Under the usual lubrication conditions, e.g. emulsion lubrication, these materials show a strong inclination to adhesion in the cold forming of threads. In order to obtain satisfactory work results in spite of these unfavourable material properties, this geometry was provided with a coating that offers excellent friction characteristics and, as a result, a perfect degree of process safety.</p> |
|  Drück InnoForm | <p>Für Aluminium-Gusslegierungen</p> <p>Bei der Anwendung von Gewindeformern in Aluminiumguss-Werkstoffen, stellt sich eine starke abrasive Belastung der Formkeile ein. Weiterhin sind die Umformeigenschaften dieser eher spröden Materialien als relativ schlecht einzuordnen. Um bei diesen schwierigen Bedingungen sehr gute Ergebnisse hinsichtlich des Gewindefertigungsprozesses und des Verschleißes zu erhalten, wurde bei diesem Typ die Geometrie angepasst und der Former zusätzlich mit einer Hartstoffschicht versehen.</p> | <p>For aluminium cast alloys</p> <p>Cast aluminium materials exert a very strong abrasive stress on the forming lobes of a cold-forming tap during work. In addition, the ductile properties of these rather brittle materials must be regarded as relatively poor. In order to achieve easier thread production and better wear resistance even under these bad conditions, we have given this tool type a specially adjusted geometry and an additional hard surface coating.</p> |
|  InnoForm | <p>Für hochfeste Werkstoffe</p> <p>Diese Geometrie wurde ausgelegt, um Werkstoffe umzuformen, deren Umform-eigenschaften eingeschränkt sind. Die spezielle Werkzeuggeometrie mit einer entsprechenden Hartstoffschicht liefert eine gute Qualität der gefertigten Gewinde bei sehr guter Verschleißbeständigkeit.</p> | <p>For materials of high tensile strength</p> <p>This geometry was designed for the cold forming of materials with restricted ductile properties. The special tool geometry, combined with an appropriate hard surface coating, provides excellent quality of the finished threads and very good wear resistance.</p> |
|  InnoForm | <p>Für CNC-gesteuerte Maschinen</p> <p>Diese Geometrie zielt darauf ab, speziell für CNC-gesteuerte Maschinen die entstehenden Reibungskräfte und Wärmebelastungen an den Formkeilen zu verringern. Bei synchron gesteuertem Vorschub kommt die Leistungsfähigkeit besonders in Verbindung mit Spannzangen-Aufnahmen der Typenreihe Softsynchro® zum Tragen.</p> | <p>For CNC-controlled machines</p> <p>This geometry is aimed at reducing the unavoidable friction forces and the heat stress on the forming lobes especially for use on CNC-controlled machines. With a synchronous feed control, the performance potential of these tools can be used to the full, especially in combination with the collet holders of our Softsynchro® series.</p> |
|  Drück | <p>Zum Hochgeschwindigkeitsbohren</p> <p>CNC-Maschinen, besonders in Verbindung mit Spannzangen-Aufnahmen der Typenreihe Speedsynchro® Modular, geben die Voraussetzung, hohe Drehzahlen zu fahren. Die spezielle Geometrie, in Verbindung mit einer Hartstoffschicht, bietet hier die Möglichkeit, auch hohe Schnittgeschwindigkeiten zu realisieren.</p> | <p>For high-speed tapping</p> <p>CNC machines, especially in combination with the collet holders of our Speedsynchro® Modular series, make very high speeds possible. The special geometry of these tools, combined with a hard surface coating, offers you the chance to do your machining at the highest speeds your machine can manage.</p> |



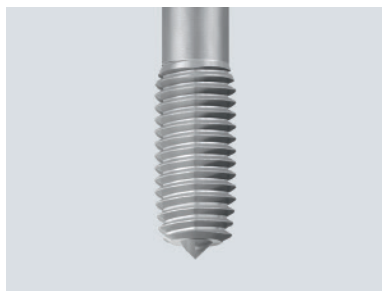
- Product Finder
- V_c
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- MF
- UNC
- UNF
- G
- SELF-LOCK

2.5 EMUGE Oberflächenbehandlungen und -Beschichtungen

2.5 Our EMUGE surface treatments and coatings

Tech. Info

NT



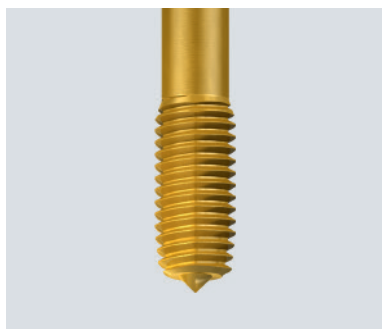
Nitrieren

Durch thermochemische Behandlung wird die Oberfläche im Bereich von ca. 0,03 bis 0,05 mm Eindringtiefe mit Stickstoff angereichert. Da die Oberfläche sehr hart (1000-1250 HV) wird, eignen sich nitrierte Werkzeuge für abrasive Werkstoffe wie Grauguss, Sphäroguss, Aluminiumguss sowie auch Duroplaste. Der Standwert wird entscheidend erhöht.

Nitriding

In a thermo-chemical treatment, the surface is enriched with nitrogen to a depth of approx. 0.03 to 0.05 mm. Since the surface becomes very hard (1000-1250 HV), nitrided tools are a very good choice for abrasive materials like cast iron, spheroidal cast iron, cast aluminium and duroplastics. Tool life is increased in a decisive manner.

TIN



Titannitrid (goldgelb)

Im PVD-Verfahren (500 °C) werden Schichtdicken von 3-7 µm erreicht. Die **glatten** Schichten zeichnen sich durch hohe Schichthftung und TIN-typische Eigenschaften gegen Aufschweißungen aus.

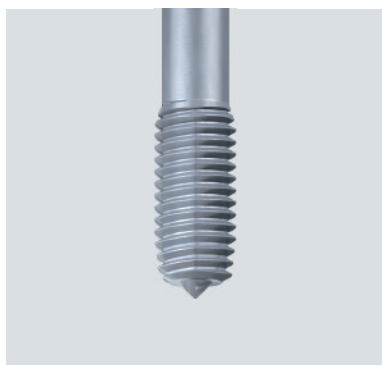
TIN-Schichtsysteme mit Zusatzkennnummer (z.B. TIN-66, TIN-80) sind bezüglich Substrat, Werkzeuggeometrie und Anwendung optimiert.

Titanium nitride (gold-yellow)

In a PVD process (500 °C) a coating thickness of 3-7 µm can be realised. The **smooth** coatings feature a high adhesion strength and TIN-typical properties against cold welding.

TIN coating systems with additional code number (e.g. TIN-66, TIN-80) are optimised with regard to substrate, tool geometry and application.

CR



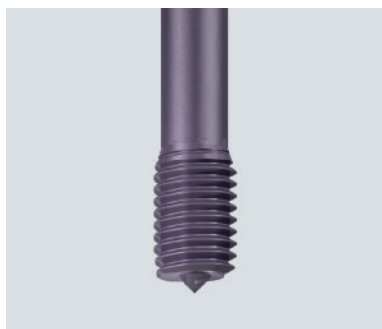
Hartverchromen

Die Hartchromschicht erreicht eine Härte von 1200 bis 1400 HV. Sie zeigt hervorragende Gleiteigenschaften. Die Schichtdicke beträgt 2-4 µm. Vor allem in Buntmetallen und Thermoplasten erreicht man Verbesserungen der Standwerte. Nicht zu empfehlen ist der Einsatz in Stahlwerkstoffen. Hier werden beim Umformvorgang Temperaturen von 250 °C sehr oft überschritten. Eine Haftung der Hartchromschicht ist dann nicht mehr gewährleistet.

Hard chrome plating

The hard chrome surface reaches a hardness of 1200 to 1400 HV, and shows excellent anti-friction properties. The thickness of the coating is 2-4 µm. Tool life can be considerably increased, especially in non-ferrous metals and thermoplastics. However, we do not recommend the use of this coating in steel materials. Here, temperatures of 250 °C are often exceeded in a cold-forming process, and that might endanger the adhesion of the hard chrome plating.

TICN



Titan-Carbonitrid (blau-grau)

Im PVD-Verfahren (500 °C) werden Schichtdicken von 2-4 µm erreicht. Die Härte beträgt hier ca. 3000 HV. Die TICN-Schicht bleibt bis ca. 400 °C beständig.

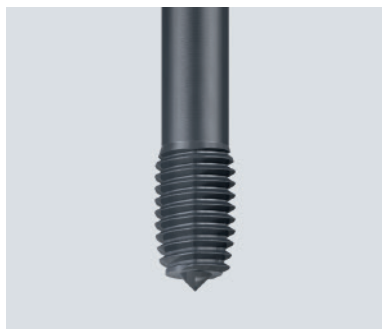
TICN-Schichtsysteme mit Zusatzkennnummer (z.B. TICN-67) sind bezüglich Substrat, Werkzeuggeometrie und Anwendung optimiert.

Titanium carbonitride (blue-grey)

In a PVD process (500 °C) a coating thickness of 2-4 µm can be realised. The hardness is approx. 3000 HV. The TICN coating will resist up to approx. 400 °C.

TICN coating systems with additional code number (e.g. TICN-67) are optimised with regard to substrate and application.

GLT-8



Diamantähnliche, amorphe Kohlenstoffschicht (schwarz-grau)

Im PVD-Verfahren werden Schichtdicken von ca. 1-2 µm erreicht. Die Härte beträgt ca. 2500 HV. Diese Monolayerschicht eignet sich hervorragend zur Bearbeitung von Buntmetallen und Aluminium mit niedrigem Si-Gehalt (< 7% Si). Durch den geringen Reibwert wird Werkstoffadhäsion stark vermindert. Die Schicht bleibt bis ca. 350 °C beständig.

Diamond-like, amorphous carbon coating (black-grey)

In a PVD process a coating thickness of 1-2 µm can be realised. The hardness is approx. 2500 HV. This mono-layer coating is an excellent choice for the machining of non-ferrous metals and aluminium with a low silicon content (< 7% Si). Thanks to the low friction, material adhesion is drastically reduced. This coating will remain resistant up to approx. 350 °C.

2.6 Sonstige EMUGE-Kurzbezeichnungen

2.6 Other EMUGE abbreviations

Product
FinderV_c

M

MF

UNC

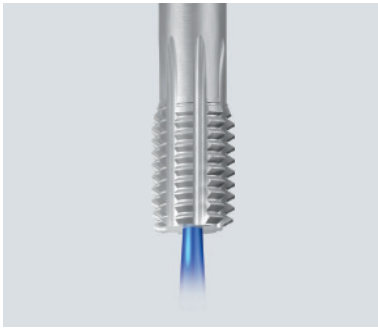
UNF

G

SELF-LOCK

Tech. Info

IKZ

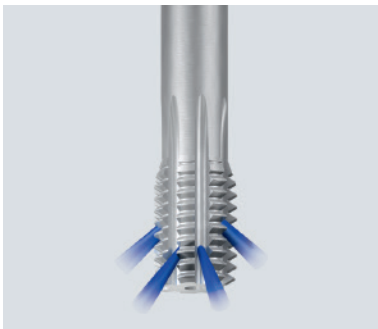
**Innere Kühlschmierstoff-Zufuhr, axial
(DIN-Bezeichnung: KA)**

Axialer Austritt des Kühlschmierstoffes bietet optimale Kühlschmierung im Anformkegelbereich.

**Internal coolant supply, axial
(DIN designation: KA)**

The axial exit of coolant-lubricant provides optimum cooling and lubrication in the lead taper area.

IKZN

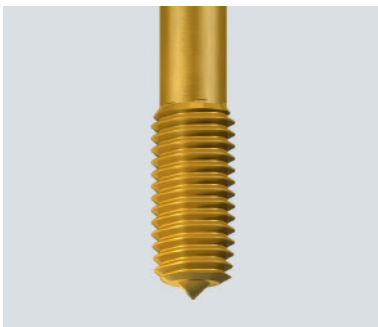
**Innere Kühlschmierstoff-Zufuhr, axial
mit Austritt in den Schmiernuten
(DIN-Bezeichnung: KR)**

Radialer Austritt bringt auch beim Durchgangsloch den Kühlschmierstoff prozesssicher in den Anformkegelbereich.

**Internal coolant supply, axial,
with coolant exiting in the flutes
(DIN designation: KR)**

Radial exit of coolant-lubricant is the safest solution for providing coolant supply in the lead taper area even in through holes.

BL

**Für Blechdurchzüge**

Die Ausführung BL basiert je nach Werkstoffwahl auf dem jeweiligen InnoForm-Grundwerkzeug. Allerdings wird der Anformkegel verlängert, um eine bessere Zentrierung des Werkzeuges zu erreichen. Zusätzlich garantiert die erhöhte Gewindelänge ein sicheres Reversieren, auch bei ungenaueren Umschaltzyklen.

For sheet metal components

The various BL designs are based each on an appropriate basic InnoForm tool, depending on the choice of material. Their special features include an extra long lead taper for a safer centering of the tool, and increased thread length for safe reversal, even with less exact reversing cycles.

VHM

**Vollhartmetall**

Werkzeuge mit einem Gewindenenddurchmesser < 12,0 mm werden aus Vollhartmetall (Gewinde- und Schaftteil) gefertigt.

Solid carbide

Tools with a thread diameter < 12.0 mm are made of solid carbide (thread part and shank).



2.7 Anformkegelformen

Anformkegelformen und Anformkegellängen für Gewindeformer nach DIN 2175.

2.7 Lead taper forms

Lead taper forms and lead taper lengths for cold-forming taps acc. DIN 2175.

Form C

Anformkegellänge 2-3 Gänge

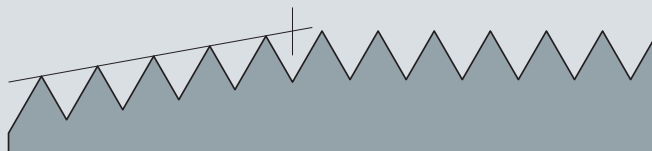
Lead taper length 2-3 threads



Form D

Anformkegellänge 3-5,5 Gänge

Lead taper length 3-5.5 threads



Form E

Anformkegellänge 1,5-2 Gänge

Lead taper length 1.5-2 threads



Form F

Anformkegellänge 1-1,5 Gänge

Lead taper length 1-1.5 threads



2.8 Kühl- und Schmierstoffe

Dem Schmiermittel wird im Allgemeinen zu wenig Bedeutung geschenkt. Um vom Werkzeug die volle Leistung zu erhalten, muss der richtige Kühlschmierstoff verwendet werden.

Grundsätzlich unterscheiden wir folgende Arten der Kühlung und Schmierung:

E

Emulsion

(EMUGE-Gewindeschneidöl Nr. 3+ EMULSION)

Die gebräuchlichste Kühlschmierung auf Bearbeitungszentren.

2.8 Cooling and lubrication agents

Lubricants are often, if not generally, given too little consideration. If you want to get the best performance out of your tool you have to take care to use the best coolant-lubricant available.

In general, we distinguish the following types of cooling and lubrication:

Emulsion

(EMUGE thread cutting oil no. 3+ EMULSION)

The most common type of coolant-lubricant on machining centres.

M

Minimalmengenschmierung (MQL)

Durch die Möglichkeit Luft-Ölgemisch bei modernen Bearbeitungszentren durch die Spindel zu fördern, gewinnt diese Art der Kühlschmierung mehr und mehr an Bedeutung.

Minimum-quantity lubrication (MQL)

Due to the more and more common option of supplying aerosol through the spindle on modern machining centres, this type of cooling and lubrication is gaining more and more popularity.

O

Gewindeschneidöl

(EMUGE-Gewindeschneidöle Nr. 1+ STEEL, Nr. 2+ CAST IRON, Nr. 4+ NON FERROUS, Nr. 5+ HIGH ALLOY)

Abgestimmt auf die zu bearbeitenden Werkstoffe werden hervorragende Gewindeoberflächen und Standwerte erreicht.

Thread cutting oil

(EMUGE thread cutting oils no.1+ STEEL, no. 2+ CAST IRON, no. 4+ NON FERROUS, no. 5+ HIGH ALLOY)

With these oils which are perfectly adjusted to specific materials, excellent thread surfaces and tool life can be achieved.

P

Gewindeschneidpaste

(EMUGE-Gewindeschneidpaste Nr. 6+ PASTE)

Zum Gewindeformen hervorragend geeignet. Besonders vorteilhaft bei waagrechtter Bearbeitung, großen Abmessungen und Durchgangslochgewinden. Kann nur für Pinselschmierung verwendet werden.

Thread cutting paste

(EMUGE thread cutting paste no. 6+ PASTE)

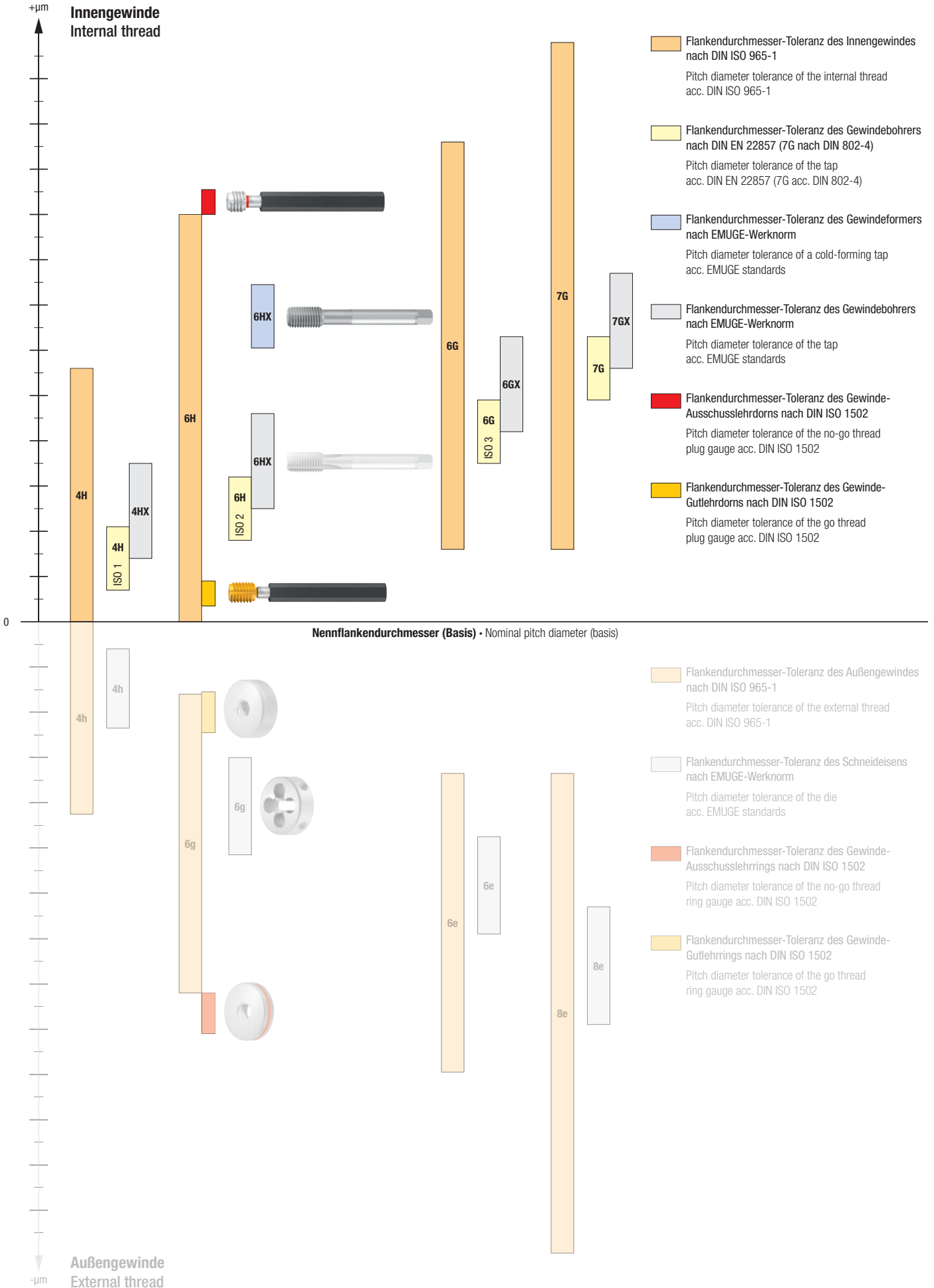
Perfectly suitable for the cold forming of threads. Especially useful in horizontal machining, with large thread sizes and through hole threads. To be used only for brush lubrication.



- Product Finder
- V_c
- M
- MF
- UNC
- UNF
- G
- SELF-LOCK
- Tech. Info

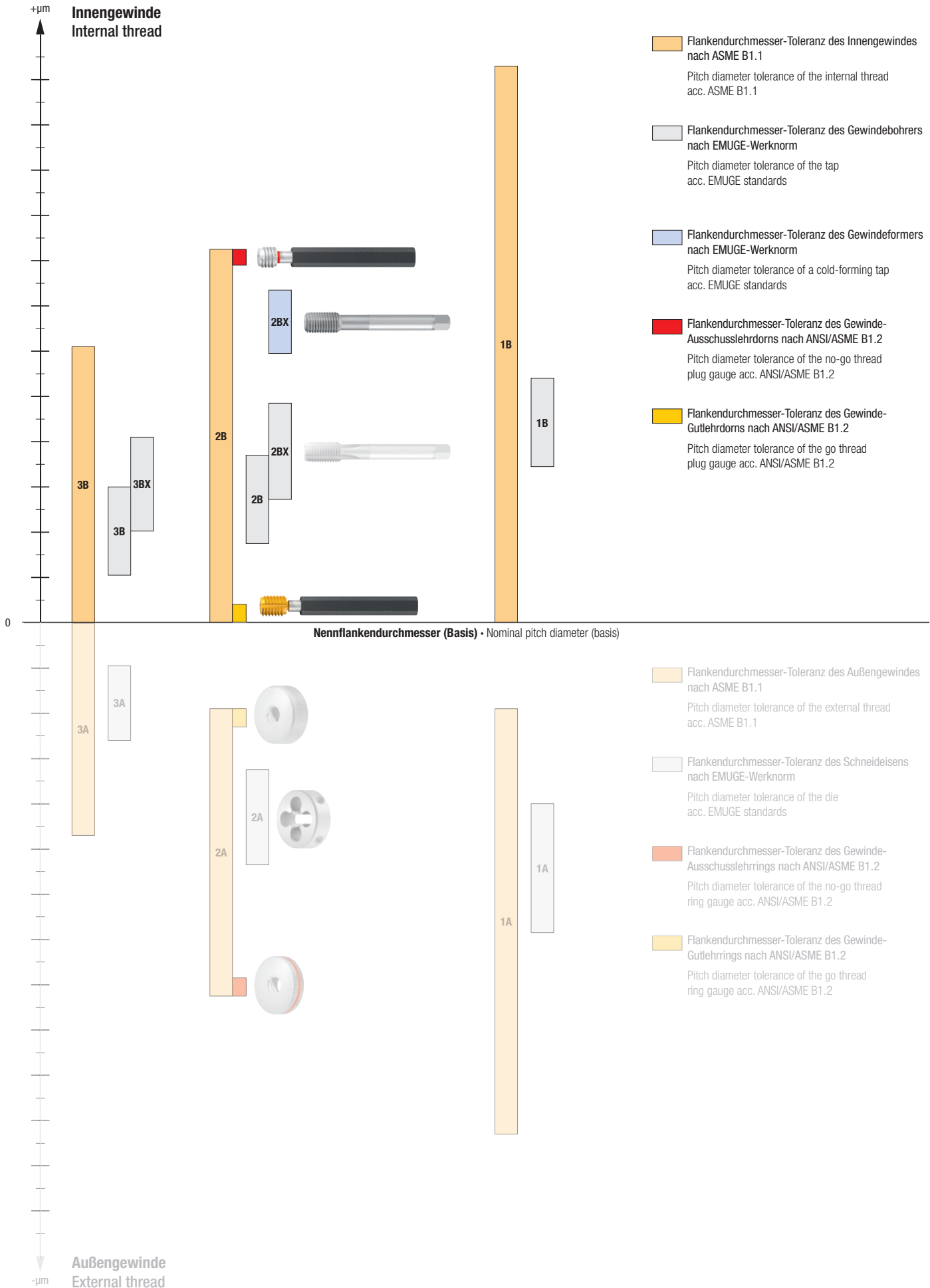
2.9 Toleranzfelder des Flankendurchmessers beim Metrischen Gewinde (schematische Darstellung)

2.9 Tolerance zones of the pitch diameter on the Metric thread (graphic representation)



2.10 Toleranzfelder des Flankendurchmessers beim Unified-Gewinde (schematische Darstellung)

2.10 Tolerance zones of the pitch diameter on the Unified thread (graphic representation)



Product Finder

V_c

M

MF

UNC

UNF

G

SELF-LOCK

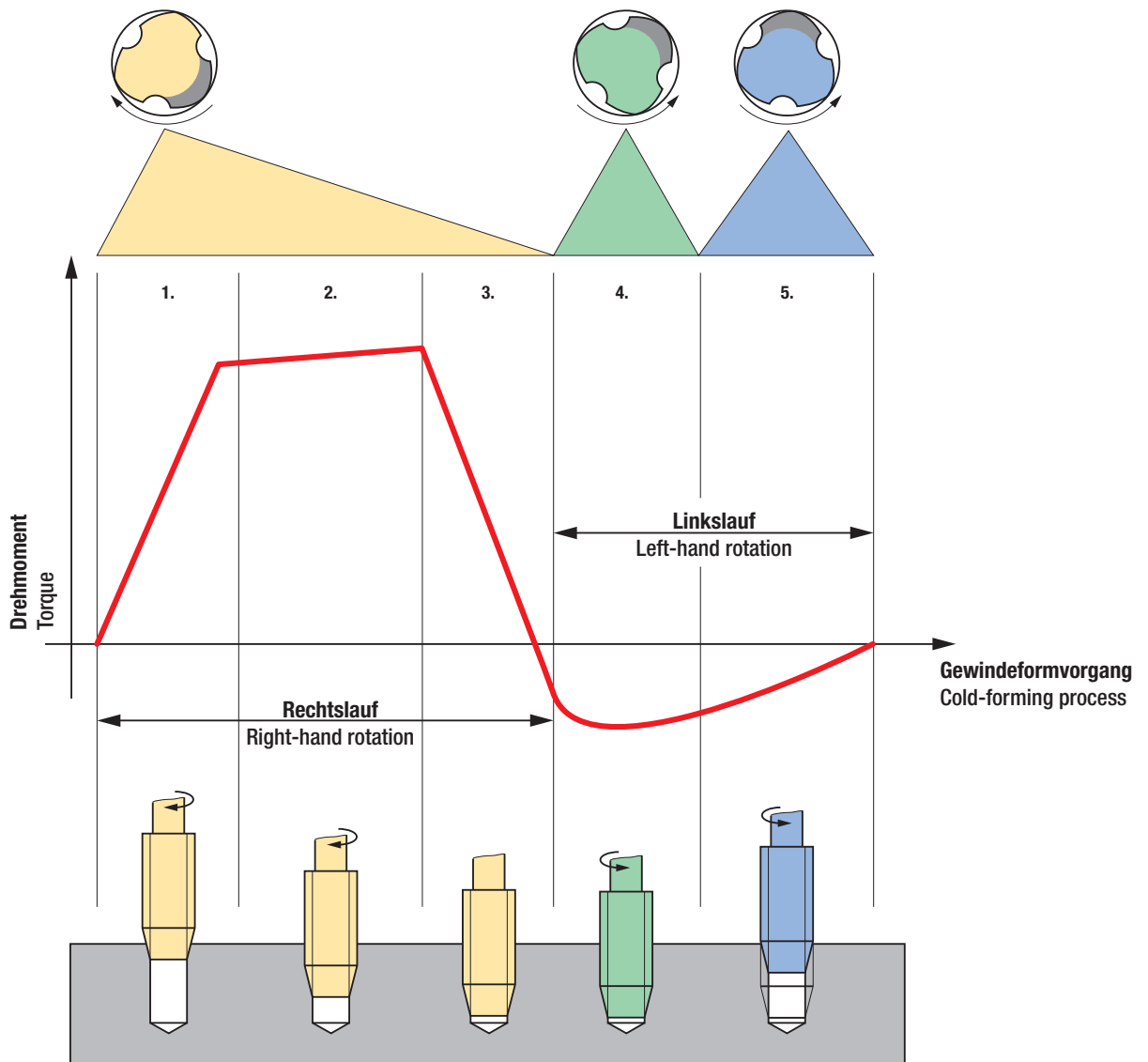
Tech. Info



- Product Finder
- V_c
- M
- MF
- UNC
- UNF
- G
- SELF-LOCK
- Tech. Info

2.11 Schematischer Drehmomentverlauf beim Gewindeformen

2.11 Schematic of torque curve in the cold forming of threads



1. Anformen des Gewindeformers bis zum Eingriff aller Anformzähne

2. Formmomente des vollständig im Eingriff befindlichen Anformkegels

3. Abbremsen der Maschinenspindel bis zum Stillstand

1. Beginning of forming process until all lead taper teeth are in contact.

2. Forming work of the lead taper which is now in full contact.

3. Braking the machine spindle to a stop

4. Beginnender Rücklauf der Spindel mit Gleitreibung

4. Beginning reversal of the spindle with sliding friction

5. Gleitreibung zwischen Gewindeformer und Werkstück

5. Sliding friction between cold-forming tap and workpiece

2.12 Umformverhalten und Drehmoment

2.12 Cold forming and torque

Kennwerte des Werkstück-Werkstoffes

Nicht alle Werkstoffe sind zum Formen geeignet. Sie müssen ein Mindestmaß an Fließfähigkeit aufweisen und dürfen eine bestimmte Werkstofffestigkeit nicht überschreiten. Geeignete Werkstoffe liegen in der Zugfestigkeit unter 1400 N/mm², bei einer Bruchdehnung von mindestens 5%. Außerdem führen unterschiedliche Materialien und deren Legierungen zu sehr spezifischen Fließigenschaften und Verfestigungsverhalten. Es ist offensichtlich, dass z.B. Knetaluminium, hochfester Stahl oder VA-Material völlig unterschiedlich reagieren.

Drehmoment

Das Drehmoment beim Gewindeformen ist im Wesentlichen abhängig vom zu bearbeitenden Material, der Gewindeabmessung, von Schmierung und Gewindekernloch-Vorfertigungsdurchmesser, sowie der Geometrie und Beschichtung des Werkzeuges. Den Einfluss des Vorfertigungsdurchmessers auf das Drehmoment zeigt das folgende Diagramm.

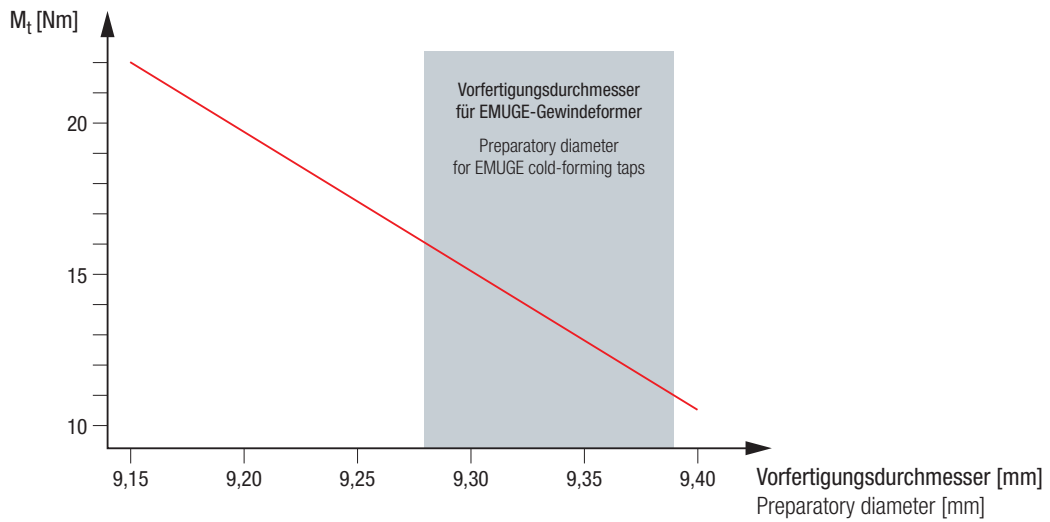
Technical data of the workpiece material

Not all materials are suitable for cold forming. For that, they must show a minimum value of ductility and must not exceed a certain maximum strength. Suitable materials usually have a tensile strength of less than 1400 N/mm² and a minimum fracture strain of 5%. In addition, different materials and their alloys lead to very specific flow properties and strengthening characteristics. Obviously, wrought aluminium, high-strength steel or stainless materials will react in very different ways.

Torque

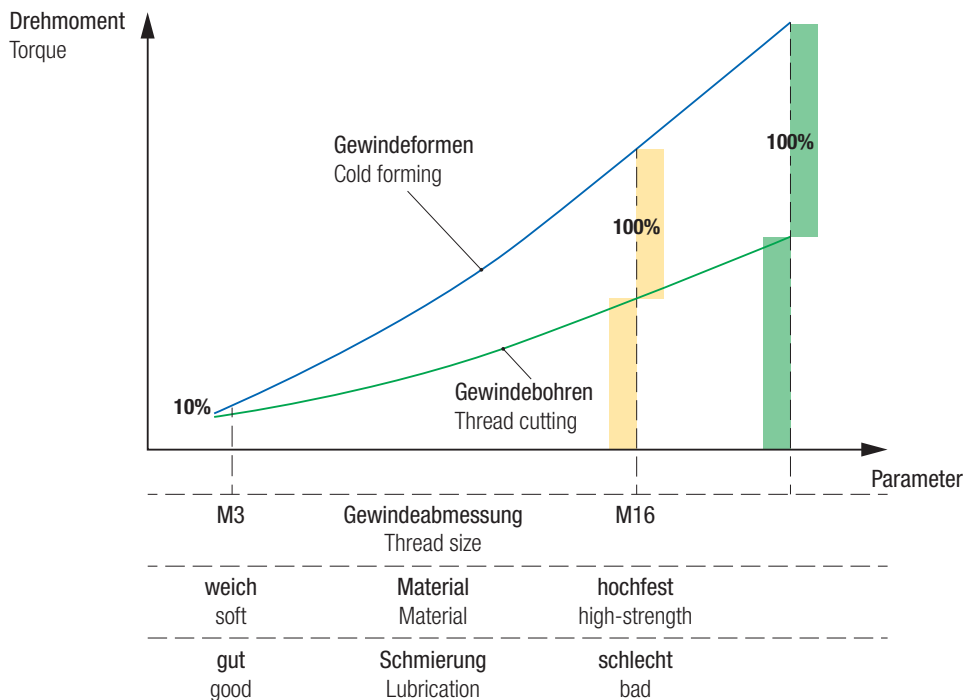
Torque, in the cold forming of threads, depends mostly on the workpiece material, the thread size, lubrication and thread hole preparatory diameter, as well as on the geometry and the coating of the tool. The influence of the preparatory diameter on torque is shown in the following diagram.

InnoForm, M10-6HX
Werkstoff C45
n = 350 min⁻¹
InnoForm, M10-6HX
Material C45
n = 350 rpm



Die folgende Grafik zeigt schematisch den Drehmoment-Unterschied zwischen Gewindebohren und Gewindeformen.

The following diagram demonstrates the difference in torque between thread cutting and cold forming.



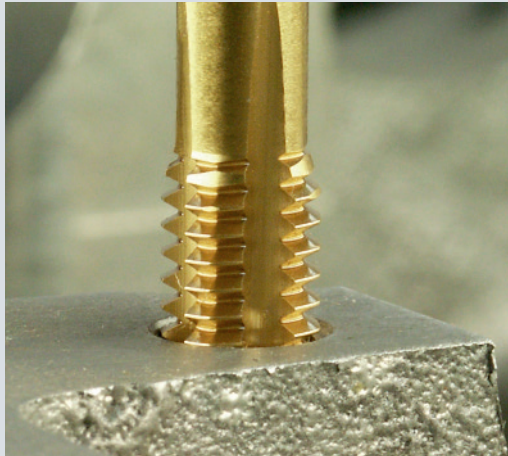
- Product Finder
- V_c
- M
- MF
- UNC
- UNF
- G
- SELF-LOCK
- Tech. Info**



- Product Finder
- V_c
- M
- MF
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- SELF-LOCK
- Tech. Info

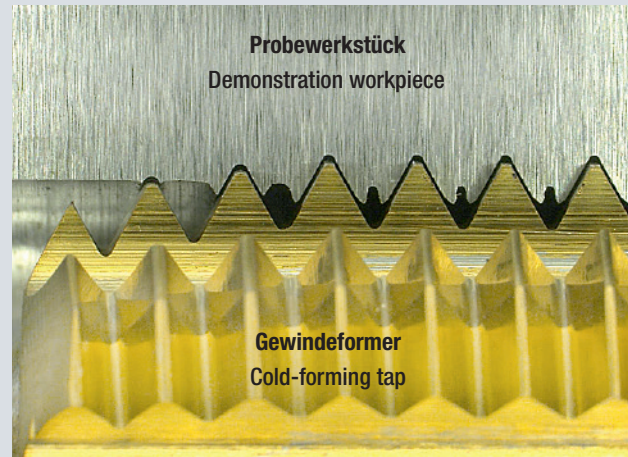
2.13 Das Fertigungsverfahren Gewindeformen

Das Gewindeformen ist nach DIN 8583-5 den druckumformenden Verfahren zugeordnet. Das Innengewinde wird durch Eindrücken der schraubenförmig angeordneten Gewindegänge in die vorgefertigte Bohrung druckumformend erzeugt. Das Gewindeformwerkzeug besitzt einen Anformkegel sowie einen zylindrischen Führungsteil. Durch beide Bereiche verläuft schraubenförmig der Gewindegang. Im Querschnitt ist senkrecht zur Werkzeugachse ein polygonförmiges Profil zu erkennen. Dadurch ergeben sich Formkeile mit dem wirksamen Gewindeprofil.



2.13 Cold forming as a production process

The cold forming of threads, according to DIN 8583-5, belongs to the pressure-forming processes. The internal thread is produced by the impression of a helical sequence of thread teeth into the formerly prepared thread hole, the desired profile is formed by pressure. A cold-forming tap is provided with a lead taper and a cylindrical guiding part. The thread helix runs on through both parts. If you look at a cross-section of the tool, there is a polygon shape to be recognised at a right angle to the tool axis. This polygon shape provides forming lobes which carry the effective thread profile.



Der Anformbereich ist ausgebildet als Anformkegel, in dem der schraubenförmige Gewindegang im Durchmesser zunimmt. Im Formprozess erzeugt der Anformbereich das Gewinde, wobei die Formkeile nacheinander mit radialer Zustellung in Eingriff kommen und das Gewinde ausformen. Hierbei fließt das Werkstückmaterial von den Gewindespitzen entlang der Gewindeflanken in den Gewindekernbereich. Es entstehen geglättete Flanken sowie im Gewindekernbereich die typische „Kralle“.

Der zylindrische Führungsteil des Gewindeformers glättet die geformte Gewindeoberfläche nach und dient zur axialen Führung des Werkzeugs. Abhängig vom zu bearbeitenden Material sind die wesentlichen Vorteile des Gewindeformens neben sehr guter Oberflächenqualität auch höhere statische und dynamische Festigkeit des Gewindes. Die zu erzeugende Gewindelänge wird nicht durch abzuführende Späne begrenzt, wodurch eine hohe Prozesssicherheit erreicht wird. Die hohe Eigenführung des Werkzeuges verhindert axiales „Verschneiden“. Hervorragende Stabilität des Werkzeuges ist besonders bei kleinen Abmessungen hilfreich.

The lead portion of a cold-forming tap is made as a lead taper, in which the helical thread line is continuously increasing in diameter. In the cold-forming process, the lead taper produces the thread, the forming lobes penetrating the workpiece successively in a radial direction by forming the thread. During this process, the workpiece material “flows” from the thread crests along the thread flanks into the area of the minor thread diameter. This creates smooth flank surfaces and, in the minor diameter area, the typical space pocket. The cylindrical guiding part of the cold-forming tap makes the surface of the produced thread even smoother, and serves to firmly guide the tool axially. Depending on the workpiece material, the essential advantages of cold forming include excellent surface quality but also increased static and dynamic strength of the thread. The length of the thread to be produced is not limited by chips which need to be removed, so process safety is extremely good. The excellent self-guiding characteristics of a cold-forming tap prevent axial “miscutting”. The extraordinary stability of the tools is very helpful, especially with small diameters.

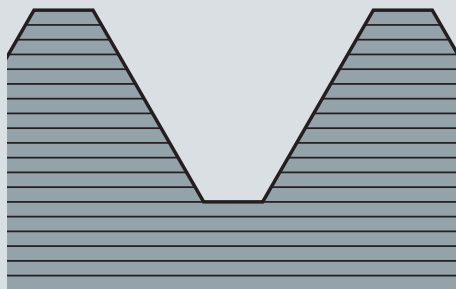
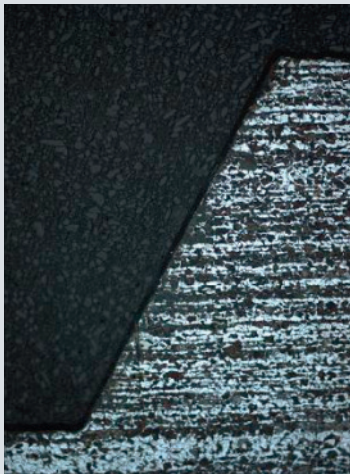
2.14 Der Unterschied zwischen spanend hergestelltem und geformtem Innengewinde

Beim spanend hergestellten Innengewinde werden die zulässigen Belastungswerte durch Zerschneiden der Werkstofffasern beeinträchtigt. Außerdem können Flankenwinkelfehler leichter auftreten, die ungünstige Spannungsverteilungen verursachen und den Traganteil vermindern. Beim geformten Innengewinde ergeben sich nichtunterbrochene Fasern und ein kaltverfestigter Werkstoff. Zusätzliche Flankenwinkelabweichungen, die bei spanend hergestellten Gewinden auftreten können, werden vermieden, weil sich der Werkstoff spielfrei an die Flanke des Werkzeugs verformt. Der unvollständig ausgeformte Kern, ein typisches Merkmal geformter Gewinde, hat keinen Einfluss auf die Ausreißfestigkeit. Durch das Gewindeformen ergeben sich in den Gewindeflanken und insbesondere im Gewindegrund Verfestigungen im Werkstoffgefüge. Diese wirken sich positiv auf die Schwing- und Wechselfestigkeit bei dynamisch beanspruchten Bauteilen aus.

2.14 The difference between a cut thread and a cold-formed thread

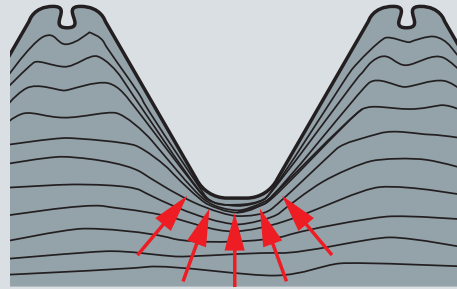
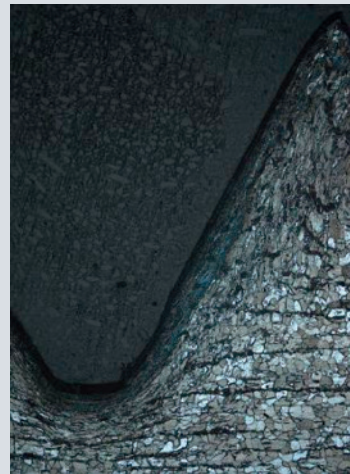
With a cut thread, the permissible stress values are limited due to the fact that the grain structure of the material is cut. Also, flank angle errors can occur easily; these will cause a very unfavourable distribution of stress on the thread and limit its holding strength. With a cold-formed thread, the grain of the material is not cut or interrupted, and the material itself shows increased strength, due to its having been compressed by cold-forming. Flank angle errors which are quite common in cut threads are prevented by the material being formed, without any play, along the thread flanks of the tap. The incomplete minor diameter, typical for cold-formed threads, has no influence on the stripping resistance of the thread. Cold forming causes material strengthening on the thread flanks and especially in the root area of the thread. This strengthening of the material structure has a very positive influence on the vibration properties and the general resistance of the thread under dynamic stress.

Spanend hergestelltes Gewinde
Cut thread



Faserverlauf beim spanend hergestellten Gewinde
Grain structure in a cut thread

Geformtes Gewinde
Cold-formed thread



Faserverlauf beim geformten Gewinde, Verfestigung im rissgefährdeten Gewindegrund am Außendurchmesser erhöht die Dauerfestigkeit
Grain structure in a cold-formed thread, strengthening in the root area / on the major diameter which is especially exposed to the danger of crack formation increases resistance

Maximale Gewindetiefe, maximale Gewindesteigung

Über die maximal erreichbare Gewindetiefe und die größtmögliche kaltverformbare Gewindesteigung lässt sich keine generelle Aussage machen. Die erzielbare Gewindetiefe ist größer als beim spanenden Werkzeug. Sie ist in der Praxis hauptsächlich von der Qualität der Kühlschmierung abhängig und durch die Werkzeugbaulänge begrenzt. Die maximal umformbare Gewindesteigung wird von den Werkstück-Werkstoffeigenschaften begrenzt.

Maximum thread depth, maximum thread pitch

The maximum thread depth to be achieved and the fastest possible thread pitch to be produced by cold-forming are a topic about which a general statement is impossible. The possible thread depth is definitely larger than it could be with a cutting tap. In practical work, it depends primarily on the quality of cooling/lubrication, and is limited by the constructional length of the tool.

The maximum thread pitch in cold forming is limited by the workpiece material properties.

Product Finder

V_c

M

MF

UNC

UNF

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SELF-LOCK

Tech. Info



- Product Finder
- v_c
- M
- MF
- UNC
- UNF
- G
- SELF-LOCK
- Tech. Info

2.15 Gewidekernloch-Vorfertigungsdurchmesser für Gewindeformer

Einfluss des Vorfertigungsdurchmessers

Bei zu kleinem Vorfertigungsdurchmesser wird das Werkstückmaterial im Gewidekern überformt und es treten sehr hohe Prozesskräfte auf. Ist zu groß vorgefertigt, wird der Gewidekernbereich nicht ausreichend ausgeformt, d.h. der Kerndurchmesser wird zu groß. Um diese negativen Effekte auszuschließen, ist die Toleranz des Vorfertigungsdurchmessers eingeeengt.

In Einsatzfällen mit sehr speziellem Umformverhalten kann es notwendig sein, vom empfohlenen Vorfertigungsdurchmesser abzuweichen und den erforderlichen Vorfertigungsdurchmesser durch Versuche zu ermitteln.

Es ist zu beachten, dass der Vorfertigungsdurchmesser den entstehenden Innengewinde-Kerndurchmesser beeinflusst, wie folgendes Beispiel zeigt. Die Vorfertigung ist sorgfältig herzustellen. Jede Ungenauigkeit und Oberflächenrauheit spiegelt sich im geformten Gewidekerndurchmesser wider.

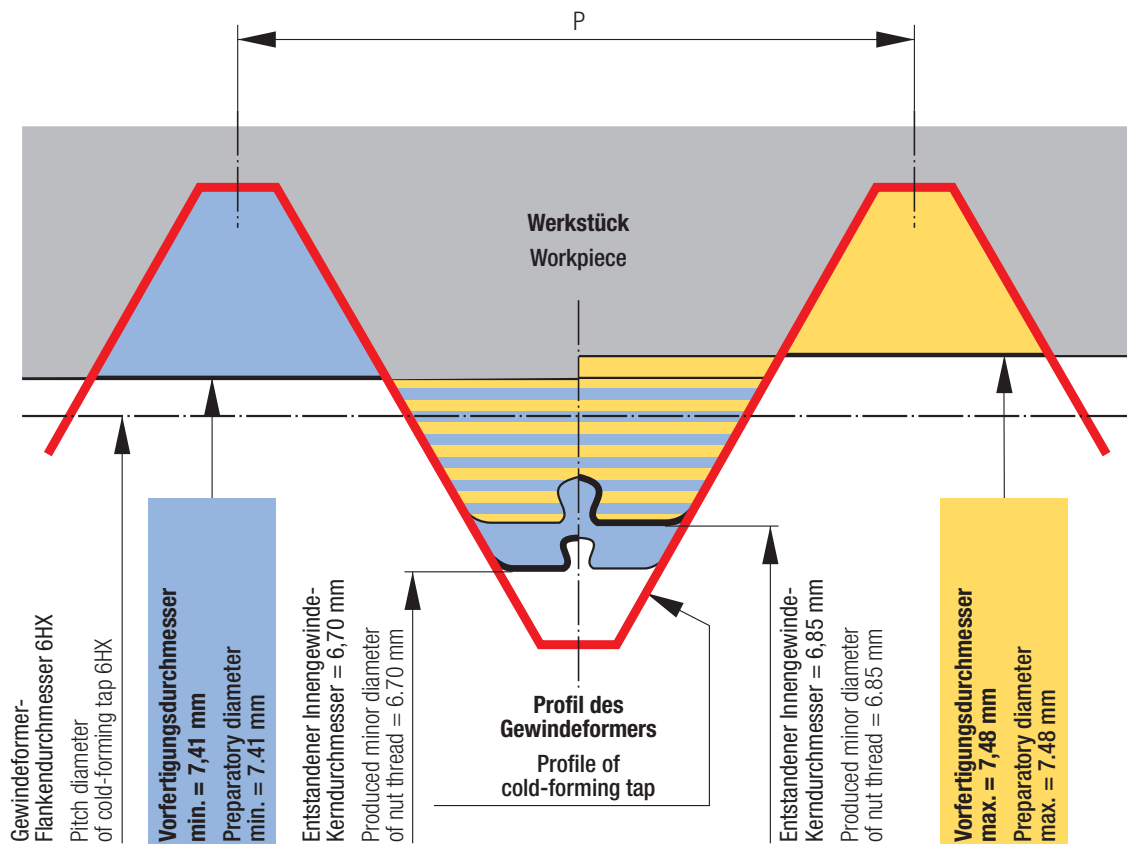
2.15 Thread hole preparatory diameter for cold-forming taps

The influence of the preparatory diameter

If the preparatory diameter is too small the workpiece material is overformed in the thread root and there are excessive process forces. If the preparatory diameter is too large the thread root is not sufficiently formed, the minor diameter is too small. In order to preclude such negative effects, the tolerance of the preparatory diameter is narrowed down from the start.

In some cases where the forming characteristics are very extraordinary it may be necessary to go without a standard preparatory diameter entirely, and to find the correct diameter by testing.

It is important to know that the preparatory diameter has a decisive influence on the minor diameter of the nut thread, as the following example shows. Every lack of precision, every kind of surface roughness will be mirrored in the finished internal thread and its minor diameter.



Geformtes Gewide M8-6HX in rost- und säurebeständigem Material, z.B. Werkstoff-Nr. 1.4571, 1.4401, bei unterschiedlichen Vorfertigungsdurchmessern.

Cold-formed thread M8-6HX in corrosion- and acid-proof material, e.g. material no. 1.4571 or 1.4401, with different preparatory diameters.

Mutterhöhe = 2 x d
 $v_c = 6,4 \text{ m/min}$
 $n = 255 \text{ min}^{-1}$

Kühlschmierstoff:
 EMUGE-Gewideschneidöl Nr. 5+ HIGH ALLOY

Nut height = 2 x d
 $v_c = 6.4 \text{ m/min}$
 $n = 255 \text{ rpm}$

Coolant-lubricant:
 EMUGE thread cutting oil no. 5+ HIGH ALLOY

Während die Einhaltung der Innengewideflankendurchmesser-Toleranz, z.B. 6H Metrisches ISO-Gewide, beim Gewideformen meist keine Schwierigkeiten bereitet, ist beim Innengewidekerndurchmesser – wie oben angedeutet – mit Abweichungen zu rechnen.

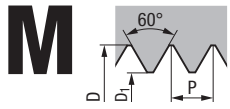
In DIN 13-50 sind die vergrößerten Kerndurchmesser-Toleranzen für geformte Innengewide festgelegt. Diese Norm lässt ein Toleranzfeld von 7H für den Innengewidekerndurchmesser zu, bei einer Flankendurchmesser-Toleranz von 6H.

While the observation of the pitch diameter tolerance of the internal thread, e.g. ISO metric thread 6H, offers no problems usually, deviations in the minor diameter of the internal or nut thread must be expected, as demonstrated above.

The extended minor diameter tolerances for cold-formed internal threads are specified in DIN 13-50. This standard allows a 7H tolerance for the minor diameter of the nut thread, with a pitch diameter tolerance of 6H.

2.15 Gewidekernloch-Vorfertigungsdurchmesser für Gewindeformer

2.15 Thread hole preparatory diameter for cold-forming taps



M
Metrisches ISO-Regelgewinde DIN 13
ISO Metric coarse thread DIN 13

| Nenngröße Nom. size | | D ₁ (6H) | | |
|------------------------|---------|---------------------|------------|---------------------|
| D mm | P mm | min. mm | max. mm | empf. rec. mm |
| M 1 | 0,25 | 0,89 | 0,93 | 0,9 |
| 1,1 | 0,25 | 0,99 | 1,03 | 1 |
| 1,2 | 0,25 | 1,09 | 1,13 | 1,1 |
| 1,4 | 0,3 | 1,27 | 1,31 | 1,28 |
| 1,6 | 0,35 | 1,46 | 1,50 | 1,47 |
| 1,7 | 0,35 | 1,56 | 1,60 | 1,57 |
| 1,8 | 0,35 | 1,66 | 1,70 | 1,67 |
| 2 | 0,4 | 1,84 | 1,88 | 1,85 |
| 2,2 | 0,45 | 2,02 | 2,06 | 2,03 |
| 2,3 | 0,4 | 2,14 | 2,18 | 2,15 |
| 2,5 | 0,45 | 2,32 | 2,36 | 2,33 |
| 2,6 | 0,45 | 2,42 | 2,46 | 2,43 |
| 3 | 0,5 | 2,79 | 2,83 | 2,8 |
| 3,5 | 0,6 | 3,24 | 3,28 | 3,25 |
| 4 | 0,7 | 3,69 | 3,73 | 3,7 |
| 4,5 | 0,75 | 4,16 | 4,23 | 4,2 |
| 5 | 0,8 | 4,64 | 4,68 | 4,65 |
| 5,5 | 0,9 | 5,09 | 5,13 | 5,1 |
| 6 | 1 | 5,55 | 5,63 | 5,6 |
| 7 | 1 | 6,55 | 6,64 | 6,6 |
| 8 | 1,25 | 7,41 | 7,49 | 7,45 |
| 9 | 1,25 | 8,41 | 8,49 | 8,45 |
| 10 | 1,5 | 9,28 | 9,39 | 9,35 |
| 12 | 1,75 | 11,16 | 11,29 | 11,25 |
| 14 | 2 | 13,02 | 13,14 | 13,1 |
| 16 | 2 | 15,02 | 15,14 | 15,1 |
| 18 | 2,5 | 16,73 | 16,89 | 16,85 |
| 20 | 2,5 | 18,73 | 18,90 | 18,85 |
| 22 | 2,5 | 20,73 | 20,90 | 20,85 |
| 24 | 3 | 22,47 | 22,65 | 22,6 |
| 27 | 3 | 25,47 | 25,65 | 25,6 |
| 30 | 3,5 | 28,19 | 28,40 | 28,35 |
| 33 | 3,5 | 31,19 | 31,41 | 31,35 |
| 36 | 4 | 33,92 | 34,16 | 34,31 |
| 39 | 4 | 36,92 | 37,16 | 37,1 |
| 42 | 4,5 | 39,64 | 39,91 | 39,85 |
| 45 | 4,5 | 42,64 | 42,91 | 42,85 |
| 48 | 5 | 45,37 | 45,71 | 45,65 |

P ≤ 0,3 mm = Tol. 5H



MF
Metrisches ISO-Feingewinde DIN 13
ISO Metric fine thread DIN 13

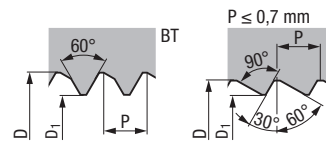
| Nenngröße Nom. size | | D ₁ (6H) | | |
|------------------------|---------|---------------------|------------|---------------------|
| D mm | P mm | min. mm | max. mm | empf. rec. mm |
| M 2,5 x 0,35 | | 2,36 | 2,40 | 2,37 |
| 2,6 x 0,35 | | 2,46 | 2,50 | 2,47 |
| 3 x 0,35 | | 2,87 | 2,91 | 2,88 |
| 3,5 x 0,35 | | 3,37 | 3,41 | 3,38 |
| 4 x 0,5 | | 3,79 | 3,83 | 3,8 |
| 5 x 0,5 | | 4,79 | 4,83 | 4,8 |
| 6 x 0,5 | | 5,80 | 5,83 | 5,8 |
| 6 x 0,75 | | 5,67 | 5,73 | 5,7 |
| 7 x 0,75 | | 6,67 | 6,74 | 6,7 |
| 8 x 0,75 | | 7,67 | 7,74 | 7,7 |
| 8 x 1 | | 7,55 | 7,64 | 7,6 |
| 9 x 0,75 | | 8,67 | 8,74 | 8,7 |
| 9 x 1 | | 8,55 | 8,64 | 8,6 |
| 10 x 0,75 | | 9,67 | 9,74 | 9,7 |
| 10 x 1 | | 9,55 | 9,64 | 9,6 |
| 10 x 1,25 | | 9,41 | 9,49 | 9,45 |
| 11 x 1 | | 10,55 | 10,64 | 10,6 |
| 12 x 1 | | 11,55 | 11,64 | 11,6 |
| 12 x 1,25 | | 11,43 | 11,49 | 11,45 |
| 12 x 1,5 | | 11,29 | 11,39 | 11,35 |
| 14 x 1 | | 13,55 | 13,64 | 13,6 |
| 14 x 1,25 | | 13,43 | 13,49 | 13,45 |
| 14 x 1,5 | | 13,29 | 13,39 | 13,35 |
| 15 x 1 | | 14,55 | 14,64 | 14,6 |
| 16 x 1 | | 15,55 | 15,64 | 15,6 |
| 16 x 1,5 | | 15,29 | 15,39 | 15,35 |
| 18 x 1 | | 17,55 | 17,64 | 17,6 |
| 18 x 1,5 | | 17,29 | 17,39 | 17,35 |
| 18 x 2 | | 17,02 | 17,14 | 17,1 |
| 20 x 1 | | 19,55 | 19,65 | 19,6 |
| 20 x 1,5 | | 19,29 | 19,40 | 19,35 |
| 20 x 2 | | 19,02 | 19,15 | 19,1 |
| 24 x 2 | | 23,03 | 23,15 | 23,1 |
| 30 x 2 | | 29,03 | 29,15 | 29,1 |
| 36 x 3 | | 34,47 | 34,66 | 34,6 |
| 42 x 4 | | 39,92 | 40,16 | 40,1 |
| 48 x 3 | | 46,48 | 46,66 | 46,6 |
| 48 x 4 | | 45,93 | 46,21 | 46,15 |



G (BSP)
Whitworth-Rohrgewinde DIN EN ISO 228
Whitworth pipe thread DIN EN ISO 228

| Nenngröße Nom. size | | D ₁ | | |
|------------------------|------------------|----------------|------------|---------------------|
| D | P Gg/1" (tpi) | min. mm | max. mm | empf. rec. mm |
| G 1/16 - 28 | | 7,25 | 7,29 | 7,25 |
| 1/8 - 28 | | 9,25 | 9,29 | 9,25 |
| 1/4 - 19 | | 12,48 | 12,59 | 12,55 |
| 3/8 - 19 | | 15,99 | 16,09 | 16,05 |
| 1/2 - 14 | | 20,02 | 20,15 | 20,1 |
| 5/8 - 14 | | 21,97 | 22,10 | 22,05 |
| 3/4 - 14 | | 25,50 | 25,65 | 25,6 |
| 7/8 - 14 | | 29,26 | 29,40 | 29,35 |
| 1" - 11 | | 32,05 | 32,21 | 32,15 |

LK-M



Metr. SELF-LOCK-Regelgewinde, EMUGE-Norm
Metric SELF-LOCK coarse thread, EMUGE standard

| Nenngröße Nom. size | | D ₁ | | |
|------------------------|---------|----------------|------------|---------------------|
| D mm | P mm | min. mm | max. mm | empf. rec. mm |
| LK-M 3 | 0,5 | 2,82 | 2,88 | 2,85 |
| 4 | 0,7 | 3,77 | 3,83 | 3,8 |
| 5 | 0,8 | 4,77 | 4,83 | 4,8 |
| 6 | 1 | 5,70 | 5,78 | 5,7 |
| 8 | 1,25 | 7,58 | 7,68 | 7,6 |
| 10 | 1,5 | 9,48 | 9,58 | 9,5 |

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 Standzeitoptimierung 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 ≥ 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.

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 optimize 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 ≥ 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.



UNC
Unified-Grobgewinde ASME B1.1
Unified coarse thread ASME B1.1

| Nenngröße Nom. size | | D ₁ (2B) | | |
|------------------------|------------------|---------------------|------------|---------------------|
| D inch | P Gg/1" (tpi) | min. mm | max. mm | empf. rec. mm |
| Nr. 4 - 40 | | 2,55 | 2,58 | 2,55 |
| Nr. 5 - 40 | | 2,88 | 2,93 | 2,9 |
| Nr. 6 - 32 | | 3,12 | 3,18 | 3,15 |
| Nr. 8 - 32 | | 3,79 | 3,83 | 3,8 |
| Nr. 10 - 24 | | 4,31 | 4,38 | 4,35 |
| Nr. 12 - 24 | | 4,97 | 5,03 | 5 |
| 1/4 - 20 | | 5,72 | 5,78 | 5,75 |
| 5/16 - 18 | | 7,23 | 7,34 | 7,3 |
| 3/8 - 16 | | 8,73 | 8,84 | 8,8 |
| 7/16 - 14 | | 10,20 | 10,29 | 10,25 |
| 1/2 - 13 | | 11,71 | 11,84 | 11,8 |
| 9/16 - 12 | | 13,21 | 13,34 | 13,3 |
| 5/8 - 11 | | 14,70 | 14,84 | 14,8 |
| 3/4 - 10 | | 17,73 | 17,89 | 17,85 |
| 7/8 - 9 | | 20,75 | 20,95 | 20,9 |
| 1" - 8 | | 23,74 | 23,95 | 23,9 |



UNF
Unified-Feingewinde ASME B1.1
Unified fine thread ASME B1.1

| Nenngröße Nom. size | | D ₁ (2B) | | |
|------------------------|------------------|---------------------|------------|---------------------|
| D inch | P Gg/1" (tpi) | min. mm | max. mm | empf. rec. mm |
| Nr. 2 - 64 | | 2,01 | 2,05 | 2,02 |
| Nr. 3 - 56 | | 2,31 | 2,35 | 2,32 |
| Nr. 4 - 48 | | 2,60 | 2,65 | 2,62 |
| Nr. 5 - 44 | | 2,91 | 2,95 | 2,92 |
| Nr. 6 - 40 | | 3,21 | 3,25 | 3,22 |
| Nr. 8 - 36 | | 3,83 | 3,88 | 3,85 |
| Nr. 10 - 32 | | 4,45 | 4,48 | 4,45 |
| Nr. 12 - 28 | | 5,05 | 5,13 | 5,1 |
| 1/4 - 28 | | 5,92 | 5,98 | 5,95 |
| 5/16 - 24 | | 7,43 | 7,49 | 7,45 |
| 3/8 - 24 | | 9,02 | 9,09 | 9,05 |
| 7/16 - 20 | | 10,49 | 10,59 | 10,55 |
| 1/2 - 20 | | 12,08 | 12,19 | 12,15 |
| 9/16 - 18 | | 13,60 | 13,69 | 13,65 |
| 5/8 - 18 | | 15,19 | 15,29 | 15,25 |
| 3/4 - 16 | | 18,27 | 18,40 | 18,35 |
| 7/8 - 14 | | 21,33 | 21,45 | 21,4 |
| 1" - 12 | | 24,34 | 24,50 | 24,45 |

- Product Finder
- V_c
- M
- MF
- UNC
- UNF
- G
- SELF-LOCK
- Tech. Info

2.16 Lehrung und Toleranzen geformter Innengewinde

Gewindelehrung – Kombination von Toleranzklassen

Die Gewindelehrung im Flankendurchmesser wird mit üblichen Gewinde-Grenzlehrdornen der zeichnungsmäßig festgelegten Gewindequalifizierung vorgenommen. Es ist zu beachten, dass für geformte Metrische Gewinde die Festlegung der Toleranzen nach DIN 13-50 anzuwenden ist.

Auszug aus DIN 13-50

Grenzabmaße und Toleranzen Limit allowances and tolerances

M Metrisches ISO-Regelgewinde DIN 13 ISO Metric coarse thread DIN 13

| Gewinde-Kurzzeichen Thread specification | Flankendurchmesser bei Toleranzfeld 6H Pitch diameter for tolerance 6H | | Kerndurchmesser bei Toleranzfeld 7H Minor diameter for tolerance 7H | | Toleranz in µm Tolerance in µm |
|---|---|--------|--|--------|-----------------------------------|
| | min. | max. | min. | max. | |
| M 3 | 2,675 | 2,775 | 2,459 | 2,639 | 180 |
| 4 | 3,545 | 3,663 | 3,242 | 3,466 | 224 |
| 5 | 4,480 | 4,605 | 4,134 | 4,384 | 250 |
| 6 | 5,350 | 5,500 | 4,917 | 5,217 | 300 |
| 8 | 7,188 | 7,348 | 6,647 | 6,982 | 335 |
| 10 | 9,026 | 9,206 | 8,376 | 8,751 | 375 |
| 12 | 10,863 | 11,063 | 10,106 | 10,531 | 425 |
| 16 | 14,701 | 14,913 | 13,835 | 14,310 | 475 |

2.16 Gauging and tolerances of cold-formed threads

Thread gauging – Combination of tolerance classes

Thread gauging in the pitch diameter is done with the usual go/no-go thread plug gauges as specified in the well-known thread standards. It should be noted that for cold-formed Metric threads the specifications for tolerances according DIN 13-50 apply.

Extract from DIN 13-50

Grenzabmaße und Toleranzen Limit allowances and tolerances

MF Metrisches ISO-Feingewinde DIN 13 ISO Metric fine thread DIN 13

| Gewinde-Kurzzeichen Thread specification | Flankendurchmesser bei Toleranzfeld 6H Pitch diameter for tolerance 6H | | Kerndurchmesser bei Toleranzfeld 7H Minor diameter for tolerance 7H | | Toleranz in µm Tolerance in µm |
|---|---|--------|--|--------|-----------------------------------|
| | min. | max. | min. | max. | |
| M 8 x 1 | 7,350 | 7,500 | 6,917 | 7,217 | 300 |
| 10 x 1 | 9,350 | 9,500 | 8,917 | 9,217 | 300 |
| 12 x 1,5 | 11,026 | 11,216 | 10,376 | 10,751 | 375 |
| 14 x 1,5 | 13,026 | 13,216 | 12,376 | 12,751 | 375 |
| 16 x 1,5 | 15,026 | 15,216 | 14,376 | 14,751 | 375 |

1. Anwendungsbereich

Diese Norm legt Gewindetoleranzen für durch Gewindeformen (siehe DIN 8583-5) herzustellende Innengewinde fest. Das Fertigungsverfahren Gewindeformen ist vorzugsweise für Regelgewinde M3 bis M16 und Feingewinde M8 x 1 bis M30 x 2 nach DIN ISO 262 und DIN ISO 965-2 anwendbar.

2. Toleranzen

Für durch Gewindeformen herzustellende Innengewinde der Einschraubgruppe N nach DIN ISO 965-1 werden nach DIN 13-50 folgende Toleranzfelder festgelegt:

- für Flankendurchmesser 6H (wie DIN ISO 965-1)
- für Kerndurchmesser 7H (DIN 13-50)

Hinweis: Bei Gewindetoleranzen, die nicht in DIN 13-50 genormt sind, ist sinnvollerweise analog zu verfahren, d.h., die Kerndurchmesser-Toleranz sollte gegenüber der Flankendurchmesser-Toleranz erhöht werden – in der Regel um eine Qualitätsstufe. In solchen Fällen ist allerdings durch den Werkzeuganwender zu klären, ob die erhöhte Toleranz im bearbeiteten Werkstück zulässig ist.

3. Toleranzen des Gewindeteils

Der Gewindeteil des Formers wird im Vergleich zum Gewindebohrer mit einer erhöhten Toleranzlage ausgeführt, da der Werkstoff nach der plastischen Verformung um den elastischen Anteil zurückfedert. Das erzeugte Gewinde ist deshalb kleiner als der Formteil des Formers. Der Former lässt sich nach dem Gewindeformen nicht nochmals von Hand in das Gewinde einschrauben, was beim Gewindebohren meist problemlos realisierbar ist. Darum ist es nötig, den Gewindeteil näher an die obere Toleranzgrenze des Innengewindes zu legen.

1. Application range

This standard specifies thread tolerances for internal threads to be produced by cold forming (see DIN 8583-5). The production process cold forming is to be used, preferably, for coarse threads M3 to M16 and for fine threads M8 x 1 to M30 x 2 according DIN ISO 262 and DIN ISO 965-2.

2. Tolerances

For internal threads of screw-in class N according DIN ISO 965-1, which are to be produced by cold forming, the following tolerance zones have been specified according to DIN ISO 13-50:

- for the pitch diameter 6H (as in DIN ISO 965-1)
- for the minor diameter 7H (DIN 13-50)

Note: For thread tolerances which are not specified in DIN 13-50, it is usually recommended to proceed in an analogue way, i.e. to raise the minor diameter tolerance in relation to the pitch diameter tolerance – normally by one tolerance step. However, in such cases the user has to check first if the raised tolerance is acceptable in the workpiece to be produced.

3. Tolerance of the thread part

The thread part of a cold-forming tap is generally produced with an increased tolerance since the workpiece material will always contract after the plastic forming process, depending on its elasticity. Consequently, the produced thread is always smaller than the thread part of the cold-forming tap. You will never be able to screw the cold-forming tap back into the thread manually after the cold-forming process, as would be possible without any problem with a cut thread and a cutting tap. For this reason, it is necessary to manufacture the thread part of a cold-forming tap closer to the upper tolerance limit of the internal thread.

2.17 Technischer Fragebogen: Gewindeformen

Firma:
 Ansprechpartner:
 Telefon:
 Fax:
 E-Mail:

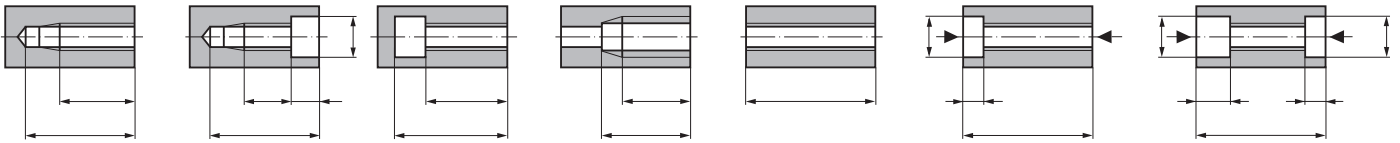
Abmessung:
 Ausführung:
 Artikel-Nr.:
 Projekt:

Werkstückbezeichnung:

Kernlochdurchmesser:

- gebohrt geräumt gestanzt
 gegossen gezogen

Kernlochform (bitte Maße eintragen):



Maschine:

Hersteller:
 Typ:
 Antriebsleistung: kW

- horizontal Werkzeug rotierend
 vertikal Werkzeug stehend

Schnittdaten:

Drehzahl n: min⁻¹
 Umfangsgeschwindigkeit v_c: m/min

Vorschub:

- Andruckkurve Sonstige:
 Hydraulik
 Leitpatrone
 NC-gesteuert
 Synchronspindel
 Zahnräder

Werkzeugaufnahme:

- starr (Spannzange)
 Gewindeführapparat } Hersteller:
 Gewindeführfutter } Typ:
 mit Überlastkupplung
 mit Längenausgleich
 mit achsparalleler Pendelung
 mit innerer Kühlschmierstoff-Zufuhr Druck: bar

Spindelaufnahme:

MK / SK / HSK / TR / andere:
 DIN / ANSI / JIS / andere:

Werkstückwerkstoff:

Bezeichnung:
 Behandlungszustand:
 Festigkeit: N/mm²
 Härte: Dehnung: %
 kurzspanend langspanend

Kühlung:

- Öl Emulsion % Trocken
 Umlauf Pinsel Nebel Sonstige:

Werkzeug-Empfehlung:

Ausführung:
 Artikel-Nr.:
 Schaftdurchmesser: DIN:
 Besonderheit:
 Bisher verwendete Werkzeuge (Hersteller):
 Standwert: (Anzahl der Gewinde)

Aufgenommen von:

Datum / Unterschrift:

- Product Finder
- V_c
- M
- MF
- UNC
- UNF
- G
- SELF-LOCK
- Tech. Info**

2.17 Technical questionnaire: Cold forming of threads

Company:
 Contact:
 Phone:
 Fax:
 E-mail:

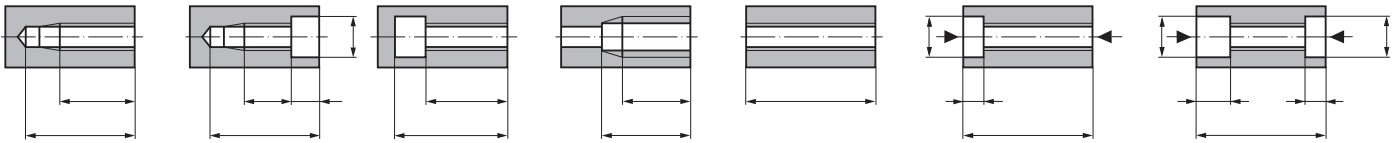
Size:
 Design:
 Article no.:
 Project:

Workpiece description:

Thread hole diameter:

- drilled broached stamped
 cast drawn

Hole type (please enter dimensional specifications):



Machine:

Manufacturer:
 Type:
 Power: kW
 horizontal rotating tool
 vertical standing tool

Spindle adaptation:

MT / ISO taper / HSK / TR / others:
 DIN / ANSI / JIS / others:

Cutting data:

Speed n: rpm
 Circumferential speed v_c: m/min

Workpiece material:

Description:
 Condition during work:
 Tensile strength: N/mm²
 Hardness: Elongation: %
 short-chipping long-chipping

Feed:

- Pressure cam Others:
- Hydraulics
- Lead screw
- NC-controlled
- Synchronous spindle
- Gear wheels

Cooling/lubrication:

- Oil Emulsion % Dry
- Circulation Brush Mist Others:

Tool holder:

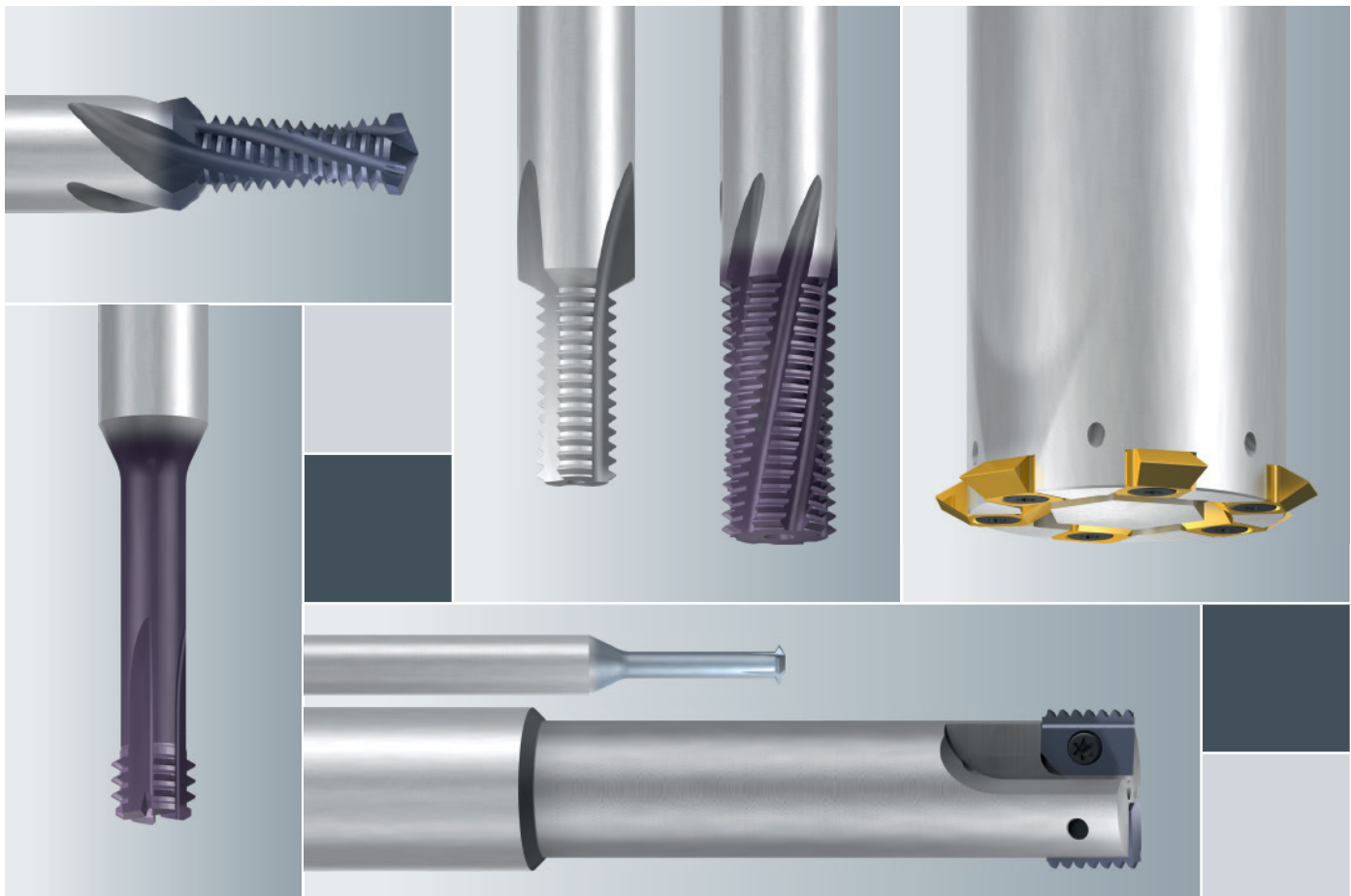
- rigid (collet)
- Tapping attachment } Manufacturer:
- Tap holder } Type:
- with overload clutch
- with length compensation
- with axial parallel floating
- with internal coolant supply Pressure: bar

Tool recommendation:

Design:
 Article no.:
 Shank diameter: DIN:
 Special features:
 Tools used until now (manufacturer):
 Tool life: (no. of threads)

Filled in by:

Date / signature:



Gewindefräser Thread Milling Cutters

Seite · Page

| | | |
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| Übersicht | Contents | 326 - 327 |
| Wegweiser und Schnittwerte | Product finder and cutting data | 328 - 332 |
| Produktseiten | Product pages | 333 - 448 |
| Technische Informationen | Technical information | 449 - 472 |

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

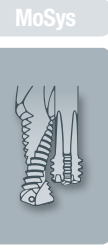
GF-KEG

ZGF

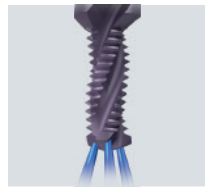
ZIRK-GF

Gigant

MoSys



BGF



Vollhartmetall-Bohrgewindefräser

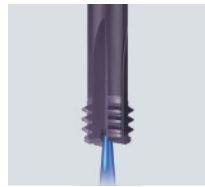
- Für die Komplettbearbeitung von Kernloch, Senkfase und Gewinde in einem Arbeitsgang
- Mit korrigiertem Gewindeprofil (abmessungsgebunden)

Solid carbide drill thread mills

- For the complete machining of thread hole, chamfer and thread in one work process
- With corrected thread profile (for one single thread size only)

333 - 352

ZBGF



Vollhartmetall-Zirkularbohrgewindefräser

- Für die Bearbeitung von Kernloch und Gewinde in einem Arbeitsgang
- Mit korrigiertem Gewindeprofil (abmessungsübergreifend, steigungsgebunden)

Solid carbide circular drill thread mills

- For the machining of thread hole and thread in one work process
- With corrected thread profile (for different thread sizes, but for one pitch only)

353 - 357

GSF



Vollhartmetall-Gewindefräser mit Senkfase

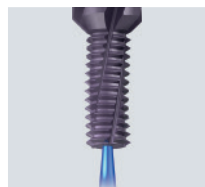
- Für die Bearbeitung von Senkfase und Gewinde in einem Arbeitsgang
- Mit korrigiertem Gewindeprofil (abmessungsgebunden)

Solid carbide thread milling cutters with countersinking step

- For the machining of countersunk edge and thread in one work process
- With corrected thread profile (for one single thread size only)

358 - 379

GSF-Z



Vollhartmetall-Gewindefräser mit Senkfase

- Für die Bearbeitung von Senkfase und Gewinde in einem Arbeitsgang
- Mit korrigiertem Gewindeprofil (abmessungsgebunden)
- Hohe Nutenzahl
- Optimierte Schneidengeometrie

Solid carbide thread milling cutters with countersinking step

- For the machining of countersunk edge and thread in one work process
- With corrected thread profile (for one single thread size only)
- Increased number of flutes
- Optimised cutting geometry

GF



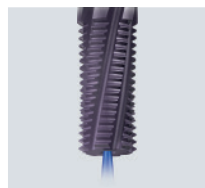
Vollhartmetall-Gewindefräser

- Mit Standard-Gewindeprofil (abmessungsübergreifend, steigungsgebunden)

Solid carbide thread milling cutters

- With standard thread profile (for different thread sizes, but for one pitch only)

GF-Z



Vollhartmetall-Gewindefräser

- Mit Standard-Gewindeprofil (abmessungsübergreifend, steigungsgebunden)
- Hohe Nutenzahl
- Optimierte Schneidengeometrie

Solid carbide thread milling cutters

- With standard thread profile (for different thread sizes, but for one pitch only)
- Increased number of flutes
- Optimised cutting geometry

380 - 398

GF-Vario-Z



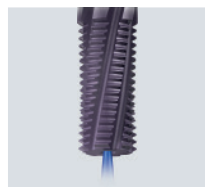
Vollhartmetall-Gewindefräser variabel

- Mit korrigiertem Gewindeprofil (abmessungsübergreifend, steigungsgebunden)
- Hohe Nutenzahl
- Optimierte Schneidengeometrie

Solid carbide thread milling cutters, variable

- With corrected thread profile (for different thread sizes, but for one pitch only)
- Increased number of flutes
- Optimised cutting geometry

GF-H



Vollhartmetall-Gewindefräser für die Hartbearbeitung

- Mit korrigiertem Gewindeprofil (abmessungsgebunden)

Solid carbide thread milling cutters for hard machining

- With corrected thread profile (for one single thread size only)

GF-KEG



Vollhartmetall-Gewindefräser für kegelige Gewinde

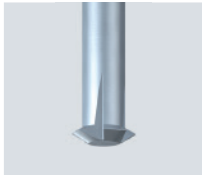
- Mit korrigiertem Gewindeprofil (abmessungs- bzw. steigungsgebunden)

Solid carbide thread milling cutters for tapered threads

- With corrected thread profile (for one single thread size, resp. for one pitch only)

399 - 412

ZGF



Vollhartmetall-Zirkulargewindefräser

- Mit korrigiertem Gewindeprofil (abmessungs- und steigungsübergreifend)
- Für die Bearbeitung von Gewinden ab M 1

Solid carbide circular thread milling cutters

- With corrected thread profile (for different thread sizes and pitches)
- For the machining of threads from M 1

ZGF-S-CUT



Vollhartmetall-Zirkulargewindefräser

- Mit korrigiertem Gewindeprofil (abmessungsgebunden)

Solid carbide circular thread milling cutters

- With corrected thread profile (for one single thread size only)

413 - 420

ZGF-HCUT



Vollhartmetall-Zirkulargewindefräser

- Mit korrigiertem Gewindeprofil (abmessungsgebunden)

Solid carbide circular thread milling cutters

- With corrected thread profile (for one single thread size only)

ZIRK-GF



Zirkular-Gewindefräskörper

- Mit einer oder zwei Mehrzahnplatten (abmessungsübergreifend, steigungsgebunden)

Circular thread milling bodies

- With one or two multi-tooth inserts (for different thread sizes, but for one pitch only)

421 - 425

ZIRK-GF



Zirkular-Gewindefräskörper

- Mit Einstechwendeplatte „3-Zahn“ (abmessungs- und steigungsübergreifend)

Circular thread milling bodies

- With infeed indexable insert "3-tooth" (for different thread sizes and pitches)

Gigant



Zirkular-Gewindefräskörper

- Speziell für große Abmessungen
- Mit bis zu zehn 4-Zahn-Wendeplatten (abmessungs- und steigungsübergreifend)

Circular thread milling bodies

- Specially made for large thread sizes
- With up to ten 4-tooth indexable inserts (for different thread sizes and pitches)

426 - 445

MoSys



Kombinierbares Plan- und Stufsenk-System

- Für die 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

446 - 448

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

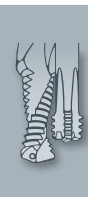
GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



Wegweiser und Schnittwerte

Bitte beachten:

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

Die Eignung ist folgendermaßen gekennzeichnet:

- Gewindefräser sehr gut geeignet
- Gewindefräser gut geeignet

v_c = Schnittgeschwindigkeit [m/min]
 f_z = Vorschub pro Zahn [mm]
 f_b = Vorschub beim Bohren [mm/U]

Product finder 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.).

The suitability is marked as follows:

- Thread milling cutter is very suitable
- Thread milling cutter is suitable

v_c = Cutting speed [m/min]
 f_z = Feed per tooth [mm]
 f_b = Drilling feed [mm/U]

Internationaler Werkstoffvergleich siehe Seite 838 - 851.

International comparison of materials, see page 838 - 851.

| Einsatzgebiete – Material Applications – material | | Material-Beispiele Material examples | Material-Nummern Material numbers |
|--|--|---|---|
| P | Stahlwerkstoffe Kaltfließpressstähle, Baustähle, Automatenstähle, u.a. | Steel materials Cold-extrusion steels, Construction steels, Free-cutting steels, etc. | 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. | 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. | 20MoCr3 1.7320 42CrMo4 1.7225 102Cr6 1.2067 50CrMo4 1.7228 |
| | 4.1 Vergütungsstähle, Kaltarbeitsstähle, Nitrierstähle, u.a. | Heat-treatable steels, Cold work steels, Nitriding steels, etc. | X45NiCrMo4 1.2767 31CrMo12 1.8515 X38CrMoV5-3 1.2367 |
| | 5.1 Hochlegierte Stähle, Kaltarbeitsstähle, Warmarbeitsstähle, u.a. | High-alloyed steels, Cold work steels, Hot work steels, etc. | X100CrMoV8-1-1 1.2990 X40CrMoV5-1 1.2344 |
| M | Nichtrostende Stahlwerkstoffe 1.1 Ferritisch, martensitisch | Stainless steel materials Ferritic, martensitic | X2CrTi12 1.4512 |
| | 2.1 Austenitisch | Austenitic | X6CrNiMoTi17-12-2 1.4571 |
| | 3.1 Austenitisch-ferritisch (Duplex) | Austenitic-ferritic (Duplex) | X2CrNiMoN22-5-3 1.4462 |
| | 4.1 Austenitisch-ferritisch hitzebeständig (Super Duplex) | Austenitic-ferritic heat-resistant (Super Duplex) | X2CrNiMoN25-7-4 1.4410 |
| K | Gusswerkstoffe 1.1 Gusseisen mit Lamellengrafit (GJL) | Cast materials Cast iron with lamellar graphite (GJL) | EN-GJL-200 (GG20) EN-JL-1030 |
| | 1.2 Gusseisen mit Kugelgrafit (GJS) | Cast iron with nodular graphite (GJS) | 250-450 N/mm ² EN-GJL-300 (GG30) EN-JL-1050 |
| | 2.1 Gusseisen mit Kugelgrafit (GJS) | Cast iron with nodular graphite (GJS) | 350-500 N/mm ² EN-GJS-400-15 (GGG40) EN-JS-1030 |
| | 2.2 Gusseisen mit Kugelgrafit (GJS) | Cast iron with nodular graphite (GJS) | 500-900 N/mm ² EN-GJS-700-2 (GGG70) EN-JS-1070 |
| | 3.1 Gusseisen mit Vermiculargrafit (GJV) | Cast iron with vermicular graphite (GJV) | 300-400 N/mm ² GJV 300 |
| | 3.2 Gusseisen mit Vermiculargrafit (GJV) | Cast iron with vermicular graphite (GJV) | 400-500 N/mm ² GJV 450 |
| 4.1 Temperguss (GTMW, GTMB) | Malleable cast iron (GTMW, GTMB) | 250-500 N/mm ² EN-GJMW-350-4 (GTW-35) EN-JM-1010 | |
| 4.2 Temperguss (GTMW, GTMB) | Malleable cast iron (GTMW, GTMB) | 500-800 N/mm ² EN-GJMB-450-6 (GTS-45) EN-JM-1140 | |
| N | Nichteisenwerkstoffe 1.1 Aluminium-Legierungen | Non ferrous materials Aluminium alloys | |
| | 1.2 Aluminium-Knetlegierungen | Aluminium wrought alloys | EN AW-AlMn1 EN AW-3103 |
| | 1.3 Aluminium-Knetlegierungen | Aluminium wrought alloys | EN AW-AlMgSi EN AW-6060 |
| | 1.4 Aluminium-Knetlegierungen | Aluminium wrought alloys | EN AW-AlZn5Mg3Cu EN AW-7022 |
| | 1.5 Aluminium-Gusslegierungen | Aluminium cast alloys | Si ≤ 7% EN AC-AlMg5 EN AC-307 G |
| | 1.6 Aluminium-Gusslegierungen | Aluminium cast alloys | 7% < Si ≤ 12% EN AC-AISi9Cu3 EN AC-46500 |
| | 2.1 Kupfer-Legierungen | Copper alloys | GD-AISi17Cu4FeMg |
| | 2.2 Reinkupfer, niedriglegiertes Kupfer | Pure copper, low-alloyed copper | E-Cu 57 EN CW 004 A |
| | 2.3 Kupfer-Zink-Legierungen (Messing, langspanend) | Copper-zinc alloys (brass, long-chipping) | CuZn37 (Ms63) EN CW 508 L |
| | 2.4 Kupfer-Zink-Legierungen (Messing, kurzspanend) | Copper-zinc alloys (brass, short-chipping) | CuZn36Pb3 (Ms58) EN CW 603 N |
| | 2.5 Kupfer-Aluminium-Legierungen (Alubronze, langspanend) | Copper-aluminium alloys (alu bronze, long-chipping) | CuAl10Ni5Fe4 EN CW 307 G |
| | 2.6 Kupfer-Zinn-Legierungen (Zinnbronze, langspanend) | Copper-tin alloys (tin bronze, long-chipping) | CuSn8P EN CW 459 K |
| | 2.7 Kupfer-Zinn-Legierungen (Zinnbronze, kurzspanend) | Copper-tin alloys (tin bronze, short-chipping) | CuSn7 ZnPb (Rg7) 2.1090 |
| | 2.8 Kupfer-Sonderlegierungen | Special copper alloys | (AMPCO® 8) |
| | 3.1 Magnesium-Legierungen | Magnesium alloys | (AMPCO® 45) |
| | 3.2 Magnesium-Knetlegierungen | Magnesium wrought alloys | MgAl6Zn 3.5612 |
| 3.3 Magnesium-Gusslegierungen | Magnesium cast alloys | EN-MCMgAl9Zn1 EN-MC21120 | |
| S | Kunststoffe 4.1 Duroplaste (kurzspanend) | Synthetics 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 5.1 Graphit | Special materials Graphite | C 8000 |
| | 5.2 Wolfram-Kupfer-Legierungen | Tungsten-copper alloys | W-Cu 80/20 |
| | 5.3 Verbundwerkstoffe | Composite materials | Hyllite, Alucobond |
| | Spezialwerkstoffe 1.1 Titan-Legierungen | Special materials Titanium alloys | |
| | 1.2 Reintitan | Pure titanium | Ti1 3.7025 |
| | 1.3 Titan-Legierungen | Titanium alloys | TiAl6V4 3.7165 TiAl4Mo4Sn2 3.7185 |
| H | Nickel-, Kobalt- und Eisen-Legierungen 2.1 Reinnickel | Nickel alloys, cobalt alloys and iron alloys Pure nickel | Ni 99.6 2.4060 |
| | 2.2 Nickel-Basis-Legierungen | Nickel-base alloys | Monel 400 2.4360 |
| | 2.3 Nickel-Basis-Legierungen | Nickel-base alloys | Inconel 718 2.4668 |
| | 2.4 Kobalt-Basis-Legierungen | Cobalt-base alloys | Udimet 605 |
| | 2.5 Kobalt-Basis-Legierungen | Cobalt-base alloys | Haynes 25 2.4964 |
| | 2.6 Eisen-Basis-Legierungen | Iron-base alloys | Incoloy 800 1.4958 |
| H | Harte Werkstoffe 1.1 Hochfeste Stähle, gehärtete Stähle, Hartguss | Hard materials High strength steels, hardened steels, hard castings | Weldox 1100 Hardox 550 Armax 600T Ferro-Titanit HSSE |
| | 1.2 Hochfeste Stähle, gehärtete Stähle, Hartguss | High strength steels, hardened steels, hard castings | |
| | 1.3 Hochfeste Stähle, gehärtete Stähle, Hartguss | High strength steels, hardened steels, hard castings | |
| | 1.4 Hochfeste Stähle, gehärtete Stähle, Hartguss | High strength steels, hardened steels, hard castings | |
| | 1.5 Hochfeste Stähle, gehärtete Stähle, Hartguss | High strength steels, hardened steels, hard castings | |



GSF, GSF-Z



GF, GF-Z



GF-Vario-Z



GF-KEG



ZIRK-GF



GF-H

gerade- und 15° drallgenutet (R15)
straight flutes and 15° spiral flutes (R15)

30° drallgenutet (R30)
30° spiral flutes (R30)

| v_c | | v_c | | f_z | | | v_c | f_z | |
|---------------------------|------------------|---------------------------|------------------|------------------------------|------------------------------|---------------------------|----------------|---------------|-----|
| Unbeschichtet Uncoated | TICN | Unbeschichtet Uncoated | TICN | $\phi d_1 \leq 4 \text{ mm}$ | $\phi d_1 \leq 8 \text{ mm}$ | $\phi d_1 > 8 \text{ mm}$ | TICN | | |
| 40 - 100 | 80 - 250 | 40 - 100 | 80 - 250 | 0,005 - 0,04 | 0,04 - 0,07 | 0,05 - 0,15 | | | 1.1 |
| 30 - 80 | 60 - 150 | 30 - 80 | 60 - 150 | 0,005 - 0,04 | 0,04 - 0,07 | 0,05 - 0,15 | | | 2.1 |
| 20 - 60 | 40 - 120 | 20 - 60 | 40 - 120 | 0,005 - 0,03 | 0,03 - 0,05 | 0,04 - 0,12 | | | 3.1 |
| 20 - 60 | 40 - 120 | | | 0,003 - 0,02 | 0,02 - 0,05 | 0,04 - 0,12 | | | 4.1 |
| 20 - 60 | 40 - 120 | | | 0,003 - 0,02 | 0,02 - 0,05 | 0,04 - 0,12 | | | 5.1 |
| | 40 - 120 | | 40 - 120 | 0,003 - 0,03 | 0,03 - 0,05 | 0,04 - 0,12 | | | 1.1 |
| | 40 - 120 | | 40 - 120 | 0,003 - 0,03 | 0,03 - 0,05 | 0,04 - 0,12 | | | 2.1 |
| | 30 - 80 | | | 0,003 - 0,02 | 0,02 - 0,05 | 0,04 - 0,10 | | | 3.1 |
| | 30 - 60 | | | 0,003 - 0,02 | 0,02 - 0,04 | 0,03 - 0,08 | | | 4.1 |
| 80 - 140 | 100 - 200 | 80 - 140 | 100 - 200 | | 0,04 - 0,07 | 0,05 - 0,15 | | | 1.1 |
| 80 - 140 | 100 - 200 | 80 - 140 | 100 - 200 | | 0,04 - 0,07 | 0,05 - 0,15 | | | 1.2 |
| 60 - 120 | 80 - 200 | 60 - 120 | 80 - 200 | | 0,04 - 0,07 | 0,05 - 0,15 | | | 2.1 |
| 60 - 120 | 80 - 200 | 60 - 120 | 80 - 200 | | 0,04 - 0,07 | 0,05 - 0,15 | | | 2.2 |
| 60 - 120 | 80 - 200 | 60 - 120 | 80 - 200 | | 0,04 - 0,07 | 0,05 - 0,15 | | | 3.1 |
| 60 - 120 | 80 - 200 | 60 - 120 | 80 - 200 | | 0,04 - 0,07 | 0,05 - 0,15 | | | 3.2 |
| 60 - 120 | 80 - 200 | 60 - 120 | 80 - 200 | | 0,04 - 0,07 | 0,05 - 0,15 | | | 4.1 |
| 60 - 120 | 80 - 200 | 60 - 120 | 80 - 200 | | 0,04 - 0,07 | 0,05 - 0,15 | | | 4.2 |
| 100 - 250 | 150 - 400 | 100 - 250 | 150 - 400 | 0,01 - 0,05 | 0,05 - 0,08 | 0,07 - 0,20 | | | 1.1 |
| 100 - 250 | 150 - 400 | 100 - 250 | 150 - 400 | 0,01 - 0,05 | 0,05 - 0,08 | 0,07 - 0,20 | | | 1.2 |
| 100 - 250 | 150 - 400 | 100 - 250 | 150 - 400 | 0,01 - 0,05 | 0,05 - 0,08 | 0,07 - 0,20 | | | 1.3 |
| 100 - 250 | 150 - 400 | 100 - 250 | 150 - 400 | 0,01 - 0,05 | 0,05 - 0,08 | 0,07 - 0,20 | | | 1.4 |
| 150 - 250 | 150 - 400 | 150 - 250 | 150 - 400 | 0,01 - 0,05 | 0,05 - 0,08 | 0,07 - 0,20 | | | 1.5 |
| | 100 - 200 | | 100 - 200 | 0,01 - 0,05 | 0,05 - 0,08 | 0,07 - 0,20 | | | 1.6 |
| 100 - 250 | 150 - 400 | 100 - 250 | 150 - 400 | 0,008 - 0,05 | 0,05 - 0,08 | 0,07 - 0,20 | | | 2.1 |
| 100 - 250 | 150 - 400 | 100 - 250 | 150 - 400 | 0,008 - 0,05 | 0,05 - 0,08 | 0,07 - 0,20 | | | 2.2 |
| 100 - 250 | 150 - 400 | 100 - 250 | 150 - 400 | 0,008 - 0,05 | 0,05 - 0,08 | 0,07 - 0,20 | | | 2.3 |
| 60 - 150 | 100 - 250 | 60 - 150 | 100 - 250 | 0,008 - 0,04 | 0,04 - 0,07 | 0,05 - 0,15 | | | 2.4 |
| 60 - 150 | 100 - 250 | 60 - 150 | 100 - 250 | 0,008 - 0,04 | 0,04 - 0,07 | 0,05 - 0,15 | | | 2.5 |
| 60 - 150 | 100 - 250 | 60 - 150 | 100 - 250 | 0,008 - 0,04 | 0,04 - 0,07 | 0,05 - 0,15 | | | 2.6 |
| 80 - 200 | 100 - 250 | 80 - 200 | 100 - 250 | 0,008 - 0,04 | 0,04 - 0,07 | 0,05 - 0,15 | | | 2.7 |
| | 40 - 80 | | 40 - 80 | 0,003 - 0,02 | 0,02 - 0,05 | 0,04 - 0,15 | 40 - 60 | 0,008 - 0,03 | 2.7 |
| | 30 - 60 | | | 0,003 - 0,02 | 0,02 - 0,05 | 0,04 - 0,15 | 40 - 60 | 0,008 - 0,03 | 2.8 |
| 150 - 250 | 150 - 400 | 150 - 250 | 150 - 400 | 0,01 - 0,05 | 0,05 - 0,08 | 0,07 - 0,20 | | | 3.1 |
| 150 - 250 | 150 - 400 | 150 - 250 | 150 - 400 | 0,01 - 0,05 | 0,05 - 0,08 | 0,07 - 0,20 | | | 3.2 |
| 60 - 150 | 100 - 400 | 60 - 150 | 100 - 400 | 0,01 - 0,05 | 0,05 - 0,10 | 0,08 - 0,25 | | | 4.1 |
| 60 - 150 | 100 - 400 | 60 - 150 | 100 - 400 | 0,01 - 0,05 | 0,05 - 0,10 | 0,08 - 0,25 | | | 4.2 |
| | 80 - 120 | | 80 - 120 | 0,01 - 0,05 | 0,05 - 0,10 | 0,08 - 0,25 | | | 4.3 |
| | 80 - 120 | | 80 - 120 | 0,01 - 0,05 | 0,05 - 0,10 | 0,08 - 0,25 | | | 4.4 |
| | 100 - 200 | | 100 - 200 | | 0,04 - 0,07 | 0,08 - 0,25 | | | 5.1 |
| 15 - 40 | 30 - 60 | 15 - 40 | 30 - 60 | | 0,02 - 0,04 | 0,03 - 0,08 | | | 5.2 |
| | | | | | | | | | 5.3 |
| 15 - 50 | 30 - 80 | 15 - 50 | 30 - 80 | 0,003 - 0,03 | 0,03 - 0,05 | 0,04 - 0,10 | | | 1.1 |
| 15 - 50 | 30 - 80 | 15 - 50 | 30 - 80 | 0,003 - 0,03 | 0,03 - 0,05 | 0,04 - 0,10 | | | 1.2 |
| 15 - 40 | 30 - 60 | | | 0,003 - 0,02 | 0,02 - 0,04 | 0,03 - 0,08 | | | 1.3 |
| | 30 - 60 | | 30 - 60 | 0,003 - 0,02 | 0,02 - 0,04 | 0,03 - 0,08 | | | 2.1 |
| | 30 - 60 | | | 0,003 - 0,02 | 0,02 - 0,04 | 0,03 - 0,08 | | | 2.2 |
| | 30 - 40 | | | 0,003 - 0,02 | 0,02 - 0,04 | 0,03 - 0,08 | | | 2.3 |
| | 30 - 60 | | | 0,003 - 0,02 | 0,02 - 0,04 | 0,03 - 0,08 | | | 2.4 |
| | 30 - 40 | | | 0,003 - 0,02 | 0,02 - 0,04 | 0,03 - 0,08 | | | 2.5 |
| | 30 - 40 | | | 0,003 - 0,02 | 0,02 - 0,04 | 0,03 - 0,08 | | | 2.6 |
| | 30 - 60 | | | | 0,015 - 0,04 | 0,03 - 0,08 | | | 1.1 |
| | 30 - 60 | | | | 0,015 - 0,04 | 0,03 - 0,08 | | | 1.2 |
| | | | | | | | 40 - 60 | 0,005 - 0,025 | 1.3 |
| | | | | | | | 30 - 40 | 0,005 - 0,015 | 1.4 |
| | | | | | | | 30 - 40 | 0,005 - 0,015 | 1.5 |

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



BGF-Z2

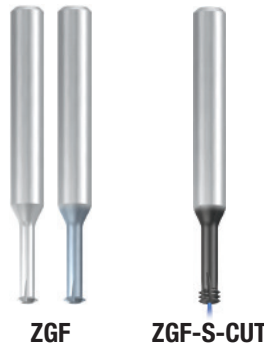


BGF-Z3



BGF-Z4

| | v_c | | v_c | | v_c | | f_b | | f_z | | |
|----------|---------------------------|------------------|---------------------------|-----------|------------------|------------------|-------------------------------------|----------------------------------|-------------------------------------|----------------------------------|-------------|
| | Unbeschichtet Uncoated | TICN | Unbeschichtet Uncoated | TICN | TICN | TIALN-T3 | $\varnothing d_1 \leq 8 \text{ mm}$ | $\varnothing d_1 > 8 \text{ mm}$ | $\varnothing d_1 \leq 8 \text{ mm}$ | $\varnothing d_1 > 8 \text{ mm}$ | |
| P | 1.1 | | | | | | | | | | |
| | 2.1 | | | | | | | | | | |
| | 3.1 | | | | | | | | | | |
| | 4.1 | | | | | | | | | | |
| | 5.1 | | | | | | | | | | |
| M | 1.1 | | | | | | | | | | |
| | 2.1 | | | | | | | | | | |
| | 3.1 | | | | | | | | | | |
| | 4.1 | | | | | | | | | | |
| K | 1.1 | 80 - 140 | 80 - 160 | 80 - 140 | 80 - 160 | 80 - 160 | 80 - 160 | 0,10 - 0,25 | 0,20 - 0,40 | 0,04 - 0,07 | 0,05 - 0,12 |
| | 1.2 | 80 - 140 | 80 - 160 | 80 - 140 | 80 - 160 | 80 - 160 | 80 - 160 | 0,10 - 0,25 | 0,20 - 0,40 | 0,04 - 0,07 | 0,05 - 0,12 |
| | 2.1 | 80 - 140 | 80 - 160 | | | | | 0,10 - 0,15 | 0,15 - 0,25 | 0,04 - 0,07 | 0,05 - 0,12 |
| | 2.2 | 80 - 140 | 80 - 160 | | | | | 0,10 - 0,15 | 0,15 - 0,25 | 0,04 - 0,07 | 0,05 - 0,12 |
| | 3.1 | 80 - 140 | 80 - 160 | | | | | 0,10 - 0,25 | 0,20 - 0,40 | 0,04 - 0,07 | 0,05 - 0,12 |
| | 3.2 | 80 - 140 | 80 - 160 | | | | | 0,10 - 0,25 | 0,20 - 0,40 | 0,04 - 0,07 | 0,05 - 0,12 |
| | 4.1 | | | | | | | | | | |
| 4.2 | | | | | | | | | | | |
| N | 1.1 | 100 - 250 | 150 - 250 | | | | | 0,08 - 0,15 | 0,15 - 0,25 | 0,04 - 0,08 | 0,07 - 0,15 |
| | 1.2 | 100 - 250 | 150 - 250 | | | | | 0,08 - 0,15 | 0,15 - 0,25 | 0,04 - 0,08 | 0,07 - 0,15 |
| | 1.3 | 100 - 250 | 150 - 250 | | | | | 0,08 - 0,15 | 0,15 - 0,25 | 0,04 - 0,08 | 0,07 - 0,15 |
| | 1.4 | 100 - 250 | 150 - 400 | | | | | 0,15 - 0,25 | 0,20 - 0,40 | 0,04 - 0,08 | 0,07 - 0,15 |
| | 1.5 | 100 - 250 | 150 - 400 | 100 - 250 | 150 - 400 | 150 - 400 | 150 - 400 | 0,15 - 0,25 | 0,20 - 0,40 | 0,04 - 0,08 | 0,07 - 0,15 |
| | 1.6 | | 100 - 200 | | 100 - 200 | 100 - 200 | 100 - 200 | 0,15 - 0,25 | 0,20 - 0,40 | 0,04 - 0,08 | 0,07 - 0,15 |
| | 2.1 | | | | | | | | | | |
| | 2.2 | 100 - 250 | 150 - 400 | | | | | 0,10 - 0,20 | 0,15 - 0,30 | 0,05 - 0,08 | 0,07 - 0,15 |
| | 2.3 | 100 - 250 | 150 - 400 | 100 - 250 | 150 - 400 | 150 - 400 | 150 - 400 | 0,10 - 0,20 | 0,15 - 0,30 | 0,05 - 0,08 | 0,07 - 0,15 |
| | 2.4 | | | | | | | | | | |
| | 2.5 | | | | | | | | | | |
| | 2.6 | 80 - 200 | 100 - 250 | | | | | 0,10 - 0,25 | 0,20 - 0,40 | 0,04 - 0,07 | 0,05 - 0,12 |
| | 2.7 | | | | | | | | | | |
| | 2.8 | | | | | | | | | | |
| | 3.1 | 100 - 250 | 150 - 400 | | | | | 0,10 - 0,20 | 0,15 - 0,30 | 0,04 - 0,08 | 0,07 - 0,15 |
| | 3.2 | 100 - 250 | 150 - 400 | | | | | 0,15 - 0,30 | 0,20 - 0,40 | 0,04 - 0,08 | 0,07 - 0,15 |
| 4.1 | 60 - 150 | 100 - 400 | | | | | 0,15 - 0,30 | 0,20 - 0,40 | 0,05 - 0,10 | 0,08 - 0,20 | |
| 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 | | | | | | | | | | |
| | 1.2 | | | | | | | | | | |
| | 1.3 | | | | | | | | | | |
| | 1.4 | | | | | | | | | | |
| | 1.5 | | | | | | | | | | |



| | v_c | | f_z | | | v_c | f_z | |
|-----------|---------------------------|------------------|-------------------------------------|-------------------------------------|----------------------------------|----------------|--------------|-----|
| | Unbeschichtet Uncoated | TiCN | $\varnothing d_1 \leq 4 \text{ mm}$ | $\varnothing d_1 \leq 8 \text{ mm}$ | $\varnothing d_1 > 8 \text{ mm}$ | | | |
| 40 - 100 | 80 - 250 | | 0,005 - 0,04 | 0,04 - 0,07 | 0,05 - 0,15 | | | 1.1 |
| 30 - 80 | 60 - 150 | | 0,005 - 0,04 | 0,04 - 0,07 | 0,05 - 0,15 | | | 2.1 |
| 20 - 60 | 40 - 120 | | 0,005 - 0,03 | 0,03 - 0,05 | 0,04 - 0,12 | | | 3.1 |
| 20 - 60 | 40 - 120 | | 0,003 - 0,02 | 0,02 - 0,05 | 0,04 - 0,12 | | | 4.1 |
| 20 - 60 | 40 - 120 | | 0,003 - 0,02 | 0,02 - 0,05 | 0,04 - 0,12 | | | 5.1 |
| | 40 - 120 | | 0,003 - 0,03 | 0,03 - 0,05 | 0,04 - 0,12 | | | 1.1 |
| | 40 - 120 | | 0,003 - 0,03 | 0,03 - 0,05 | 0,04 - 0,12 | | | 2.1 |
| | 30 - 80 | | 0,003 - 0,02 | 0,02 - 0,05 | 0,04 - 0,10 | | | 3.1 |
| | 30 - 60 | | 0,003 - 0,02 | 0,02 - 0,04 | 0,03 - 0,08 | | | 4.1 |
| 80 - 140 | 100 - 200 | | | 0,04 - 0,07 | 0,05 - 0,15 | | | 1.1 |
| 80 - 140 | 100 - 200 | | | 0,04 - 0,07 | 0,05 - 0,15 | | | 1.2 |
| 60 - 120 | 80 - 200 | | | 0,04 - 0,07 | 0,05 - 0,15 | | | 2.1 |
| 60 - 120 | 80 - 200 | | | 0,04 - 0,07 | 0,05 - 0,15 | | | 2.2 |
| 60 - 120 | 80 - 200 | | | 0,04 - 0,07 | 0,05 - 0,15 | | | 3.1 |
| 60 - 120 | 80 - 200 | | | 0,04 - 0,07 | 0,05 - 0,15 | | | 3.2 |
| 60 - 120 | 80 - 200 | | | 0,04 - 0,07 | 0,05 - 0,15 | | | 4.1 |
| 60 - 120 | 80 - 200 | | | 0,04 - 0,07 | 0,05 - 0,15 | | | 4.2 |
| | 100 - 250 | 150 - 400 | 0,01 - 0,05 | 0,05 - 0,08 | 0,07 - 0,20 | | | 1.1 |
| | 100 - 250 | 150 - 400 | 0,01 - 0,05 | 0,05 - 0,08 | 0,07 - 0,20 | | | 1.2 |
| | 100 - 250 | 150 - 400 | 0,01 - 0,05 | 0,05 - 0,08 | 0,07 - 0,20 | | | 1.3 |
| | 150 - 250 | 150 - 400 | 0,01 - 0,05 | 0,05 - 0,08 | 0,07 - 0,20 | | | 1.4 |
| | 150 - 250 | 150 - 400 | 0,01 - 0,05 | 0,05 - 0,08 | 0,07 - 0,20 | | | 1.5 |
| | | 100 - 200 | 0,01 - 0,05 | 0,05 - 0,08 | 0,07 - 0,20 | | | 1.6 |
| 100 - 250 | 150 - 400 | | 0,008 - 0,05 | 0,05 - 0,08 | 0,07 - 0,20 | | | 2.1 |
| 100 - 250 | 150 - 400 | | 0,008 - 0,05 | 0,05 - 0,08 | 0,07 - 0,20 | | | 2.2 |
| 100 - 250 | 150 - 400 | | 0,008 - 0,05 | 0,05 - 0,08 | 0,07 - 0,20 | | | 2.3 |
| 60 - 150 | 100 - 250 | | 0,008 - 0,04 | 0,04 - 0,07 | 0,05 - 0,15 | | | 2.4 |
| 60 - 150 | 100 - 250 | | 0,008 - 0,04 | 0,04 - 0,07 | 0,05 - 0,15 | | | 2.5 |
| 60 - 150 | 100 - 250 | | 0,008 - 0,04 | 0,04 - 0,07 | 0,05 - 0,15 | | | 2.6 |
| 80 - 200 | 100 - 250 | | 0,008 - 0,04 | 0,04 - 0,07 | 0,05 - 0,15 | | | 2.7 |
| | 40 - 80 | | 0,003 - 0,02 | 0,02 - 0,05 | 0,04 - 0,15 | | | 2.7 |
| | 30 - 60 | | 0,003 - 0,02 | 0,02 - 0,05 | 0,04 - 0,15 | | | 2.8 |
| 150 - 250 | 150 - 400 | | 0,01 - 0,05 | 0,05 - 0,08 | 0,07 - 0,20 | | | 3.1 |
| 150 - 250 | 150 - 400 | | 0,01 - 0,05 | 0,05 - 0,08 | 0,07 - 0,20 | | | 3.2 |
| | 60 - 150 | 100 - 400 | 0,01 - 0,05 | 0,05 - 0,10 | 0,08 - 0,25 | | | 4.1 |
| | 60 - 150 | 100 - 400 | 0,01 - 0,05 | 0,05 - 0,10 | 0,08 - 0,25 | | | 4.2 |
| | | 80 - 120 | 0,01 - 0,05 | 0,05 - 0,10 | 0,08 - 0,25 | | | 4.3 |
| | | 80 - 120 | 0,01 - 0,05 | 0,05 - 0,10 | 0,08 - 0,25 | | | 4.4 |
| | | 100 - 200 | | 0,04 - 0,07 | 0,08 - 0,25 | | | 5.1 |
| | | 30 - 60 | | 0,02 - 0,04 | 0,03 - 0,08 | | | 5.2 |
| | | | | | | | | 5.3 |
| 15 - 50 | 30 - 80 | | 0,003 - 0,03 | 0,03 - 0,05 | 0,04 - 0,10 | | | 1.1 |
| 15 - 50 | 30 - 80 | | 0,003 - 0,03 | 0,03 - 0,05 | 0,04 - 0,10 | | | 1.2 |
| 15 - 40 | 30 - 60 | | 0,003 - 0,02 | 0,02 - 0,04 | 0,03 - 0,08 | | | 1.3 |
| | | 30 - 60 | 0,003 - 0,02 | 0,02 - 0,04 | 0,03 - 0,08 | | | 2.1 |
| | | 30 - 60 | 0,003 - 0,02 | 0,02 - 0,04 | 0,03 - 0,08 | | | 2.2 |
| | | 30 - 40 | 0,003 - 0,02 | 0,02 - 0,04 | 0,03 - 0,08 | | | 2.3 |
| | | 30 - 60 | 0,003 - 0,02 | 0,02 - 0,04 | 0,03 - 0,08 | | | 2.4 |
| | | 30 - 40 | 0,003 - 0,02 | 0,02 - 0,04 | 0,03 - 0,08 | | | 2.5 |
| | | 30 - 40 | 0,003 - 0,02 | 0,02 - 0,04 | 0,03 - 0,08 | | | 2.6 |
| | | 30 - 60 | | 0,015 - 0,04 | 0,03 - 0,08 | 30 - 60 | 0,005 - 0,08 | 1.1 |
| | | 30 - 60 | | 0,015 - 0,04 | 0,03 - 0,08 | 30 - 60 | 0,005 - 0,08 | 1.2 |
| | | | | | | 30 - 60 | 0,005 - 0,06 | 1.3 |
| | | | | | | 30 - 60 | 0,005 - 0,06 | 1.4 |
| | | | | | | 30 - 60 | 0,005 - 0,06 | 1.5 |

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



ZBGF-T



ZBGF-W

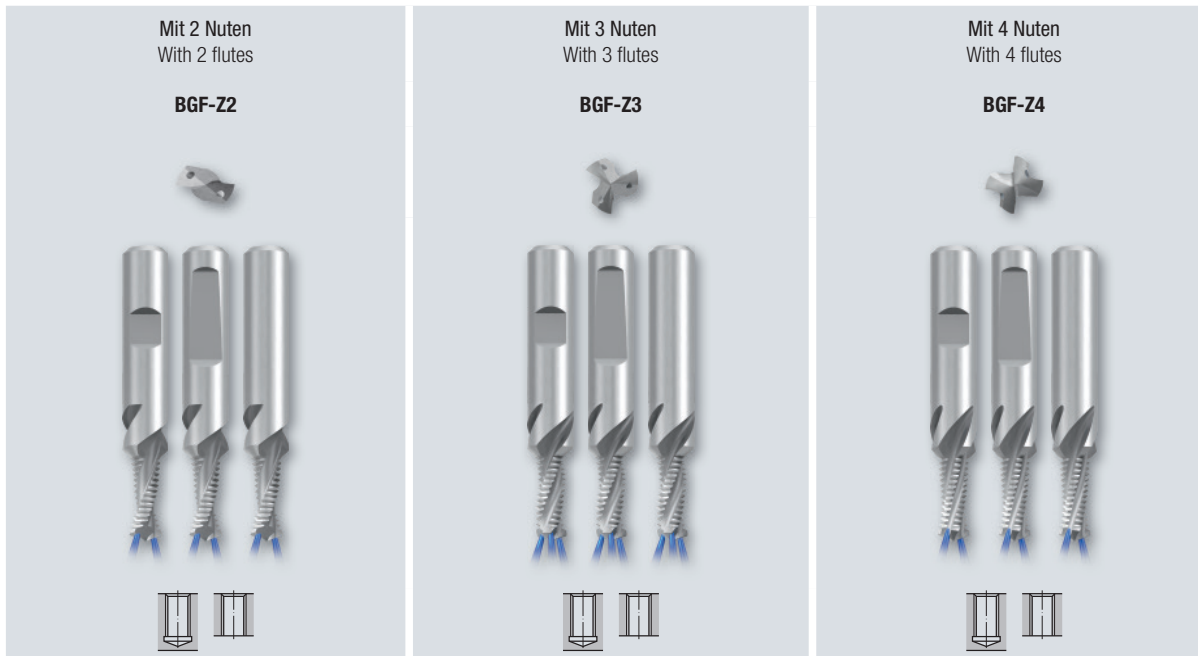


ZBGF-H



Gigant

| | | v_c | f_z | v_c | f_z | v_c | f_z | v_c | f_z |
|-----|-----|-----------------------|-------------|-----------------------|-------------|-----------------------|-------------|-----------------------|-------------|
| | | Beschichtet Coated | | Beschichtet Coated | | Beschichtet Coated | | Beschichtet Coated | |
| P | 1.1 | | | 150 - 250 | 0,04 - 0,08 | | | 250 - 500 | 0,15 - 0,25 |
| | 2.1 | | | 150 - 250 | 0,04 - 0,08 | | | 250 - 500 | 0,15 - 0,25 |
| | 3.1 | | | 100 - 250 | 0,03 - 0,08 | | | 150 - 250 | 0,10 - 0,15 |
| | 4.1 | | | 100 - 250 | 0,03 - 0,08 | | | 150 - 250 | 0,10 - 0,15 |
| | 5.1 | | | 100 - 200 | 0,02 - 0,06 | | | 150 - 250 | 0,10 - 0,15 |
| M | 1.1 | | | 100 - 180 | 0,02 - 0,05 | | | 80 - 150 | 0,10 - 0,15 |
| | 2.1 | | | 100 - 180 | 0,02 - 0,05 | | | 80 - 150 | 0,10 - 0,15 |
| | 3.1 | | | 60 - 120 | 0,02 - 0,04 | | | 60 - 120 | 0,08 - 0,12 |
| | 4.1 | | | 60 - 120 | 0,02 - 0,04 | | | 60 - 120 | 0,08 - 0,12 |
| K | 1.1 | 200 - 300 | 0,04 - 0,12 | 200 - 300 | 0,04 - 0,10 | | | 180 - 400 | 0,15 - 0,25 |
| | 1.2 | 200 - 300 | 0,04 - 0,12 | 200 - 300 | 0,04 - 0,10 | | | 180 - 400 | 0,15 - 0,25 |
| | 2.1 | | | 150 - 250 | 0,05 - 0,08 | | | 180 - 400 | 0,15 - 0,25 |
| | 2.2 | | | 150 - 250 | 0,05 - 0,08 | | | 180 - 400 | 0,15 - 0,25 |
| | 3.1 | | | 150 - 250 | 0,05 - 0,08 | | | 150 - 250 | 0,10 - 0,15 |
| | 3.2 | | | 150 - 250 | 0,05 - 0,08 | | | 150 - 250 | 0,10 - 0,15 |
| | 4.1 | | | 200 - 300 | 0,05 - 0,10 | | | 180 - 400 | 0,15 - 0,25 |
| | 4.2 | | | 200 - 300 | 0,05 - 0,10 | | | 180 - 400 | 0,15 - 0,25 |
| N | 1.1 | 200 - 300 | 0,04 - 0,08 | 200 - 300 | 0,05 - 0,10 | | | 400 - 500 | 0,15 - 0,30 |
| | 1.2 | 200 - 300 | 0,04 - 0,08 | 200 - 300 | 0,05 - 0,10 | | | 400 - 500 | 0,15 - 0,30 |
| | 1.3 | 200 - 300 | 0,04 - 0,08 | 200 - 300 | 0,05 - 0,10 | | | 400 - 500 | 0,15 - 0,30 |
| | 1.4 | 200 - 300 | 0,04 - 0,08 | 200 - 300 | 0,05 - 0,10 | | | 400 - 500 | 0,15 - 0,30 |
| | 1.5 | 200 - 300 | 0,04 - 0,10 | 200 - 300 | 0,05 - 0,10 | | | 400 - 500 | 0,15 - 0,30 |
| | 1.6 | 100 - 200 | 0,04 - 0,10 | 100 - 200 | 0,05 - 0,10 | | | 150 - 250 | 0,15 - 0,30 |
| | 2.1 | | | 100 - 180 | 0,03 - 0,05 | | | 250 - 500 | 0,15 - 0,25 |
| | 2.2 | | | 150 - 250 | 0,05 - 0,08 | | | 250 - 500 | 0,15 - 0,25 |
| | 2.3 | | | 200 - 300 | 0,05 - 0,10 | | | 250 - 500 | 0,15 - 0,25 |
| | 2.4 | | | 100 - 180 | 0,03 - 0,05 | | | 150 - 250 | 0,10 - 0,25 |
| | 2.5 | | | 100 - 180 | 0,03 - 0,05 | | | 150 - 250 | 0,10 - 0,25 |
| | 2.6 | | | 200 - 300 | 0,05 - 0,10 | | | 150 - 250 | 0,10 - 0,25 |
| | 2.7 | | | | | 40 - 60 | 0,02 - 0,04 | 80 - 150 | 0,10 - 0,15 |
| | 2.8 | | | | | 40 - 60 | 0,02 - 0,04 | 80 - 150 | 0,10 - 0,15 |
| | 3.1 | 200 - 300 | 0,04 - 0,10 | 200 - 300 | 0,05 - 0,10 | | | 400 - 500 | 0,15 - 0,30 |
| | 3.2 | 200 - 300 | 0,04 - 0,10 | 200 - 300 | 0,05 - 0,10 | | | 400 - 500 | 0,15 - 0,30 |
| 4.1 | | | 150 - 250 | 0,05 - 0,08 | | | 180 - 400 | 0,15 - 0,25 | |
| 4.2 | | | | | | | 180 - 400 | 0,15 - 0,25 | |
| 4.3 | | | 80 - 150 | 0,05 - 0,08 | | | 80 - 150 | 0,15 - 0,25 | |
| 4.4 | | | 80 - 150 | 0,05 - 0,08 | | | 80 - 150 | 0,15 - 0,25 | |
| 5.1 | | | | | | | | | |
| 5.2 | | | | | | | | | |
| 5.3 | | | | | | | | | |
| S | 1.1 | | | 60 - 120 | 0,02 - 0,04 | | | 60 - 120 | 0,08 - 0,12 |
| | 1.2 | | | 60 - 120 | 0,02 - 0,04 | | | 60 - 120 | 0,08 - 0,12 |
| | 1.3 | | | 60 - 120 | 0,02 - 0,04 | | | 60 - 120 | 0,08 - 0,12 |
| | 2.1 | | | 60 - 120 | 0,02 - 0,04 | | | | |
| | 2.2 | | | 60 - 120 | 0,02 - 0,04 | | | | |
| | 2.3 | | | | | | | | |
| 2.4 | | | 60 - 120 | 0,02 - 0,04 | | | | | |
| 2.5 | | | | | | | | | |
| 2.6 | | | | | | | | | |
| H | 1.1 | | | 60 - 100 | 0,02 - 0,06 | 60 - 100 | 0,03 - 0,06 | | |
| | 1.2 | | | 60 - 100 | 0,02 - 0,06 | 60 - 100 | 0,03 - 0,06 | | |
| | 1.3 | | | | | 40 - 70 | 0,02 - 0,04 | | |
| | 1.4 | | | | | 30 - 60 | 0,02 - 0,04 | | |
| | 1.5 | | | | | 30 - 60 | 0,02 - 0,04 | | |



Seite · Page

| | | | |
|-----------|-----------|-----------|-------------------|
| 334 - 335 | 336 - 337 | 338 - 339 | M |
| 340 - 341 | | 342 - 343 | MF |
| 344 - 345 | | | UNC |
| 346 - 347 | | | UNF |
| 348 - 349 | | | G (BSP) |
| 350 - 351 | | | EG M (STI) |

Product Finder

- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



Mögliche Modifikationen · Possible modifications



Stirrfase am Bohrteil
Face chamfer on the drill part



AZR/AZ (ausgesetzte Zähne)
AZR/AZ (alternating teeth)



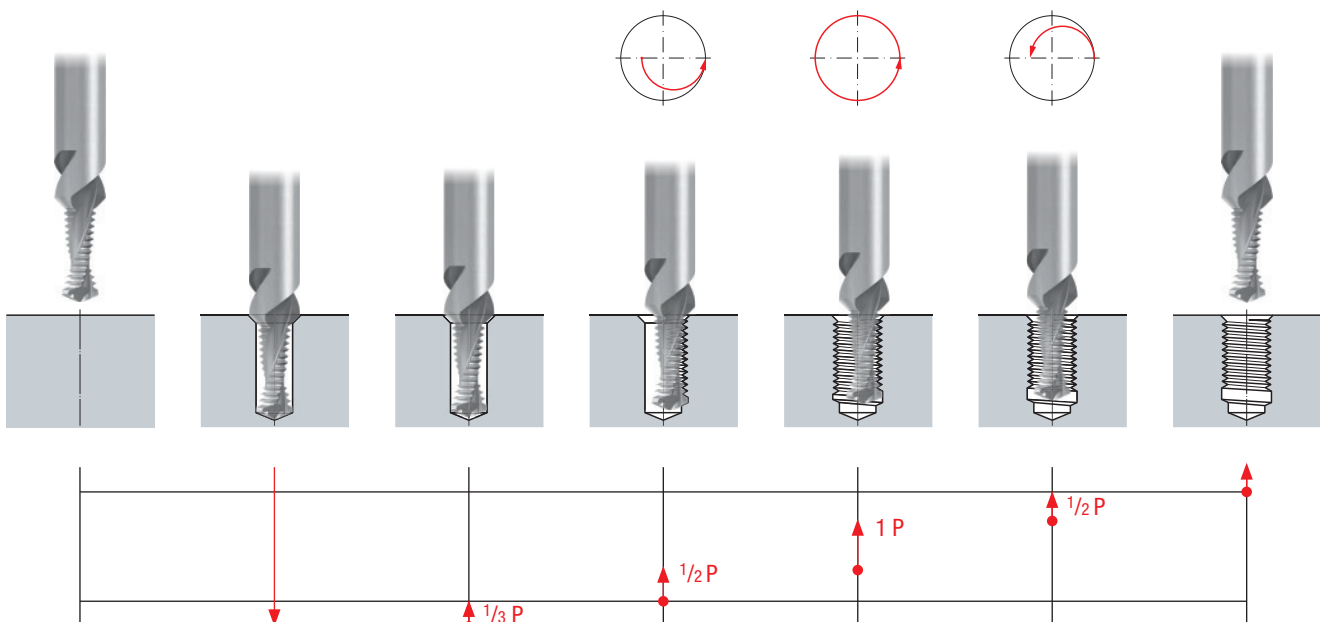
Unvollständigen Gang entfernen
Remove incomplete thread



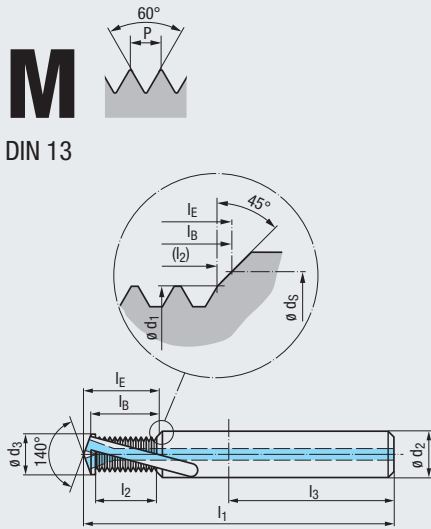
Schaftkühlruten
Coolant grooves along the shank

Eine Beschreibung dieser Modifikationsmöglichkeiten finden Sie auf Seite 456 - 457
For a description of these modifications, see pages 456 - 457

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
- EG (STI) SELF-LOCK
- Tr
- Zubehör Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys

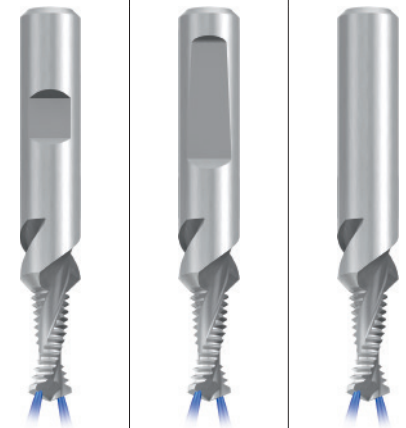


VHM

R30 **RH + LH**

Z2 **DIN 6535**
 HB
 HE
 HA

90° **∅ D**



Einsatzgebiete – Material Applications – material **328**

K 1.1-3.2 **N 1.1-5**
N 2.2-3, 2.6 **N 3.1-2, 4.1**

Gewindetiefe Thread depth

1,5 x D

Werkzeug-Ident · Tool ident

| | GF422201 | GF422501 | GF422801 |
|-----------------------------|----------|----------|----------|
| BGF-VHM-Z2 1,5xD R30-IKZ-HB | ● | ● | ● |
| BGF-VHM-Z2 1,5xD R30-IKZ-HE | ● | ● | ● |
| BGF-VHM-Z2 1,5xD R30-IKZ-HA | ● | ● | ● |

| ∅ D mm | P mm | Dimens.-Ident | | | | | | | | | |
|--------|------|---------------|-------|-------|-------------------|-------------------|-------------------|-------------------|-------|-------|-------|
| | | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_S$ | l_B | l_E | |
| M 4 | 0,7 | 49 | 5,64 | 36 | 3,16 | 6 | 3,3 | 4,3 | 6,8 | 7,4 | .0040 |
| 5 | 0,8 | 55 | 7,25 | 36 | 4,04 | 6 | 4,2 | 5,3 | 8,6 | 9,4 | .0050 |
| 6 | 1 | 62 | 9,06 | 36 | 4,8 | 8 | 5 | 6,3 | 10,7 | 11,6 | .0060 |
| 8 | 1,25 | 74 | 11,33 | 40 | 6,5 | 10 | 6,75 | 8,3 | 13,4 | 14,6 | .0080 |
| 10 | 1,5 | 79 | 15,09 | 45 | 8,2 | 12 | 8,5 | 10,3 | 17,5 | 19,1 | .0100 |
| 12 | 1,75 | 89 | 17,61 | 45 | 9,9 | 14 | 10,25 | 12,3 | 20,4 | 22,3 | .0112 |
| 14 | 2 | 102 | 20,12 | 48 | 11,6 | 16 | 12 | 14,3 | 23,3 | 25,5 | .0114 |
| 16 | 2 | 102 | 24,13 | 48 | 13,6 | 18 | 14 | 16,3 | 27,3 | 29,9 | .0116 |

Gewindetiefe Thread depth

2 x D

Werkzeug-Ident · Tool ident

| | GF432201 | GF432501 | GF432801 |
|---------------------------|----------|----------|----------|
| BGF-VHM-Z2 2xD R30-IKZ-HB | ● | ● | ● |
| BGF-VHM-Z2 2xD R30-IKZ-HE | ● | ● | ● |
| BGF-VHM-Z2 2xD R30-IKZ-HA | ● | ● | ● |

| ∅ D mm | P mm | Dimens.-Ident | | | | | | | | | |
|--------|------|---------------|-------|-------|-------------------|-------------------|-------------------|-------------------|-------|-------|-------|
| | | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_S$ | l_B | l_E | |
| M 4 | 0,7 | 49 | 7,74 | 36 | 3,16 | 6 | 3,3 | 4,3 | 8,9 | 9,5 | .0040 |
| 5 | 0,8 | 55 | 9,65 | 36 | 4,04 | 6 | 4,2 | 5,3 | 11 | 11,8 | .0050 |
| 6 | 1 | 62 | 12,06 | 36 | 4,8 | 8 | 5 | 6,3 | 13,7 | 14,6 | .0060 |
| 8 | 1,25 | 74 | 15,08 | 40 | 6,5 | 10 | 6,75 | 8,3 | 17,1 | 18,3 | .0080 |
| 10 | 1,5 | 79 | 19,59 | 45 | 8,2 | 12 | 8,5 | 10,3 | 22 | 23,6 | .0100 |
| 12 | 1,75 | 89 | 22,86 | 45 | 9,9 | 14 | 10,25 | 12,3 | 25,7 | 27,5 | .0112 |
| 14 | 2 | 102 | 28,12 | 48 | 11,6 | 16 | 12 | 14,3 | 31,3 | 33,5 | .0114 |
| 16 | 2 | 102 | 32,13 | 48 | 13,6 | 18 | 14 | 16,3 | 35,3 | 37,9 | .0116 |

Gewindetiefe Thread depth

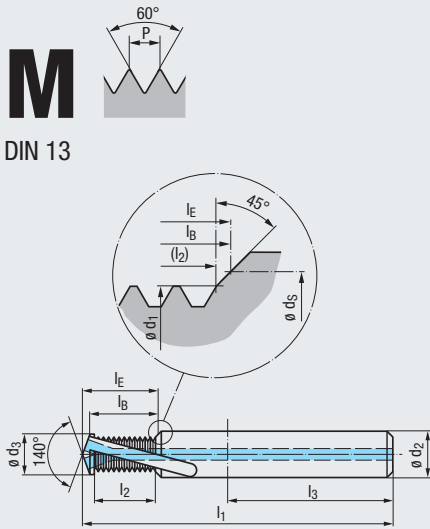
2,5 x D

Werkzeug-Ident · Tool ident

| | GF442201 | GF442501 | GF442801 |
|-----------------------------|----------|----------|----------|
| BGF-VHM-Z2 2,5xD R30-IKZ-HB | ● | ● | ● |
| BGF-VHM-Z2 2,5xD R30-IKZ-HE | ● | ● | ● |
| BGF-VHM-Z2 2,5xD R30-IKZ-HA | ● | ● | ● |

| ∅ D mm | P mm | Dimens.-Ident | | | | | | | | | |
|--------|------|---------------|-------|-------|-------------------|-------------------|-------------------|-------------------|-------|-------|-------|
| | | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_S$ | l_B | l_E | |
| M 6 | 1 | 65 | 15,10 | 36 | 4,8 | 8 | 5 | 6,3 | 16,7 | 17,6 | .0060 |
| 8 | 1,25 | 80 | 20,08 | 40 | 6,5 | 10 | 6,75 | 8,3 | 22,1 | 23,3 | .0080 |
| 10 | 1,5 | 85 | 25,59 | 45 | 8,2 | 12 | 8,5 | 10,3 | 28 | 29,6 | .0100 |
| 12 | 1,75 | 95 | 29,86 | 45 | 9,9 | 14 | 10,25 | 12,3 | 32,7 | 34,5 | .0112 |
| 14 | 2 | 110 | 36,12 | 48 | 11,6 | 16 | 12 | 14,3 | 39,3 | 41,5 | .0114 |
| 16 | 2 | 110 | 40,13 | 48 | 13,6 | 18 | 14 | 16,3 | 43,3 | 45,9 | .0116 |

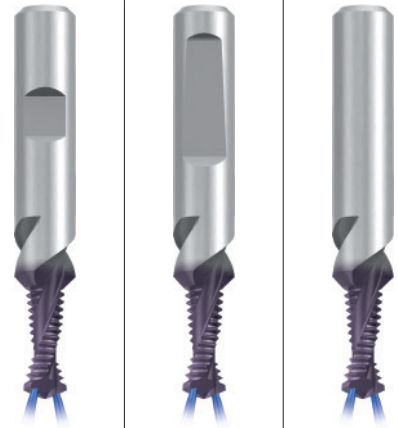
Andere Abmessungen auf Anfrage
 Other sizes upon request



M

DIN 13

| | |
|-----|----------------------------|
| VHM | TICN |
| R30 | RH + LH |
| Z2 | DIN 6535 HB HE HA |
| 90° | ø D |



- Product Finder
- v_c / f_z
- M
- MF
- UNC UN, UNS
- UNF UNEF
- G, Rp
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- EG (STI) SELF-LOCK

Einsatzgebiete – Material Applications – material ▶▶ 328

K 1.1-3.2 N 1.1-6
N 2.2-3, 2.6 N 3.1-2, 4.1

Gewindetiefe Thread depth

1,5 x D

Werkzeug-Ident · Tool ident

| ø D mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₁ | ø d ₂ | ø d ₃ | ø d _S | l _B | l _E | Dimens.-Ident | GF422206 | GF422506 | GF422806 |
|-----------|---------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|----------------|----------------|---------------|----------------------------------|----------------------------------|----------------------------------|
| | | | | | | | | | | | | BGF-VHM-Z2 1,5xD R30-1KZ-HB TICN | BGF-VHM-Z2 1,5xD R30-1KZ-HE TICN | BGF-VHM-Z2 1,5xD R30-1KZ-HA TICN |
| M 4 | 0,7 | 49 | 5,64 | 36 | 3,16 | 6 | 3,3 | 4,3 | 6,8 | 7,4 | .0040 | ● | ● | ● |
| 5 | 0,8 | 55 | 7,25 | 36 | 4,04 | 6 | 4,2 | 5,3 | 8,6 | 9,4 | .0050 | ● | ● | ● |
| 6 | 1 | 62 | 9,06 | 36 | 4,8 | 8 | 5 | 6,3 | 10,7 | 11,6 | .0060 | ● | ● | ● |
| 8 | 1,25 | 74 | 11,33 | 40 | 6,5 | 10 | 6,75 | 8,3 | 13,4 | 14,6 | .0080 | ● | ● | ● |
| 10 | 1,5 | 79 | 15,09 | 45 | 8,2 | 12 | 8,5 | 10,3 | 17,5 | 19,1 | .0100 | ● | ● | ● |
| 12 | 1,75 | 89 | 17,61 | 45 | 9,9 | 14 | 10,25 | 12,3 | 20,4 | 22,3 | .0112 | ● | ● | ● |
| 14 | 2 | 102 | 20,12 | 48 | 11,6 | 16 | 12 | 14,3 | 23,3 | 25,5 | .0114 | ● | ● | ● |
| 16 | 2 | 102 | 24,13 | 48 | 13,6 | 18 | 14 | 16,3 | 27,3 | 29,9 | .0116 | ● | ● | ● |

Gewindetiefe Thread depth

2 x D

Werkzeug-Ident · Tool ident

| ø D mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₁ | ø d ₂ | ø d ₃ | ø d _S | l _B | l _E | Dimens.-Ident | GF432206 | GF432506 | GF432806 |
|-----------|---------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|----------------|----------------|---------------|--------------------------------|--------------------------------|--------------------------------|
| | | | | | | | | | | | | BGF-VHM-Z2 2xD R30-1KZ-HB TICN | BGF-VHM-Z2 2xD R30-1KZ-HE TICN | BGF-VHM-Z2 2xD R30-1KZ-HA TICN |
| M 4 | 0,7 | 49 | 7,74 | 36 | 3,16 | 6 | 3,3 | 4,3 | 8,9 | 9,5 | .0040 | ● | ● | ● |
| 5 | 0,8 | 55 | 9,65 | 36 | 4,04 | 6 | 4,2 | 5,3 | 11 | 11,8 | .0050 | ● | ● | ● |
| 6 | 1 | 62 | 12,06 | 36 | 4,8 | 8 | 5 | 6,3 | 13,7 | 14,6 | .0060 | ● | ● | ● |
| 8 | 1,25 | 74 | 15,08 | 40 | 6,5 | 10 | 6,75 | 8,3 | 17,1 | 18,3 | .0080 | ● | ● | ● |
| 10 | 1,5 | 79 | 19,59 | 45 | 8,2 | 12 | 8,5 | 10,3 | 22 | 23,6 | .0100 | ● | ● | ● |
| 12 | 1,75 | 89 | 22,86 | 45 | 9,9 | 14 | 10,25 | 12,3 | 25,7 | 27,5 | .0112 | ● | ● | ● |
| 14 | 2 | 102 | 28,12 | 48 | 11,6 | 16 | 12 | 14,3 | 31,3 | 33,5 | .0114 | ● | ● | ● |
| 16 | 2 | 102 | 32,13 | 48 | 13,6 | 18 | 14 | 16,3 | 35,3 | 37,9 | .0116 | ● | ● | ● |

Gewindetiefe Thread depth

2,5 x D

Werkzeug-Ident · Tool ident

| ø D mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₁ | ø d ₂ | ø d ₃ | ø d _S | l _B | l _E | Dimens.-Ident | GF442206 | GF442506 | GF442806 |
|-----------|---------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|----------------|----------------|---------------|----------------------------------|----------------------------------|----------------------------------|
| | | | | | | | | | | | | BGF-VHM-Z2 2,5xD R30-1KZ-HB TICN | BGF-VHM-Z2 2,5xD R30-1KZ-HE TICN | BGF-VHM-Z2 2,5xD R30-1KZ-HA TICN |
| M 6 | 1 | 65 | 15,10 | 36 | 4,8 | 8 | 5 | 6,3 | 16,7 | 17,6 | .0060 | ● | ● | ● |
| 8 | 1,25 | 80 | 20,08 | 40 | 6,5 | 10 | 6,75 | 8,3 | 22,1 | 23,3 | .0080 | ● | ● | ● |
| 10 | 1,5 | 85 | 25,59 | 45 | 8,2 | 12 | 8,5 | 10,3 | 28 | 29,6 | .0100 | ● | ● | ● |
| 12 | 1,75 | 95 | 29,86 | 45 | 9,9 | 14 | 10,25 | 12,3 | 32,7 | 34,5 | .0112 | ● | ● | ● |
| 14 | 2 | 110 | 36,12 | 48 | 11,6 | 16 | 12 | 14,3 | 39,3 | 41,5 | .0114 | ● | ● | ● |
| 16 | 2 | 110 | 40,13 | 48 | 13,6 | 18 | 14 | 16,3 | 43,3 | 45,9 | .0116 | ● | ● | ● |

Andere Abmessungen auf Anfrage Other sizes upon request

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

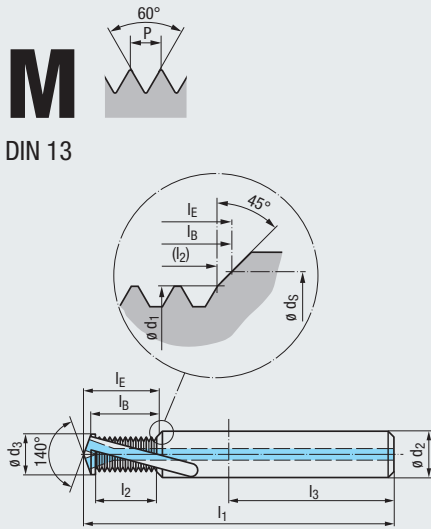
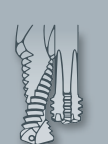
GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



VHM

R30

RH + LH

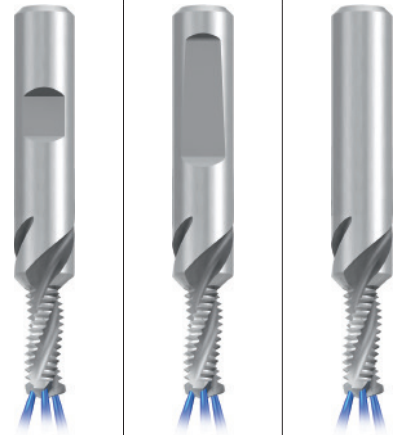
Z3

DIN 6535

HB
HE
HA

90°

$\varnothing D$



Einsatzgebiete – Material
Applications – material

» 328

K 1.1-2 N 1.5, 2,3

Gewindetiefe
Thread depth

1,5 x D

Werkzeug-Ident · Tool ident

GF422251 GF422551 GF422851

| $\varnothing D$ mm | P mm | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_S$ | l_B | l_E | Dimens.- Ident | BGF-VHM-Z3 1,5xD R30-IKZ-HB | BGF-VHM-Z3 1,5xD R30-IKZ-HE | BGF-VHM-Z3 1,5xD R30-IKZ-HA |
|-----------------------|---------|-------|-------|-------|-------------------|-------------------|-------------------|-------------------|-------|-------|-------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| | | | | | | | | | | | | | | |
| M 6 | 1 | 62 | 9,06 | 36 | 4,8 | 8 | 5 | 6,3 | 10,7 | 11,6 | .0060 | ● | ● | ● |
| 8 | 1,25 | 74 | 11,33 | 40 | 6,5 | 10 | 6,75 | 8,3 | 13,4 | 14,6 | .0080 | ● | ● | ● |
| 10 | 1,5 | 79 | 15,09 | 45 | 8,2 | 12 | 8,5 | 10,3 | 17,5 | 19,1 | .0100 | ● | ● | ● |
| 12 | 1,75 | 89 | 17,61 | 45 | 9,9 | 14 | 10,25 | 12,3 | 20,4 | 22,3 | .0112 | ● | ● | ● |
| 16 | 2 | 102 | 24,13 | 48 | 13,6 | 18 | 14 | 16,3 | 27,3 | 29,9 | .0116 | ● | ● | ● |

Gewindetiefe
Thread depth

2 x D

Werkzeug-Ident · Tool ident

GF432251 GF432551 GF432851

| $\varnothing D$ mm | P mm | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_S$ | l_B | l_E | Dimens.- Ident | BGF-VHM-Z3 2xD R30-IKZ-HB | BGF-VHM-Z3 2xD R30-IKZ-HE | BGF-VHM-Z3 2xD R30-IKZ-HA |
|-----------------------|---------|-------|-------|-------|-------------------|-------------------|-------------------|-------------------|-------|-------|-------------------|---------------------------------|---------------------------------|---------------------------------|
| | | | | | | | | | | | | | | |
| M 6 | 1 | 62 | 12,06 | 36 | 4,8 | 8 | 5 | 6,3 | 13,7 | 14,6 | .0060 | ● | ● | ● |
| 8 | 1,25 | 74 | 15,08 | 40 | 6,5 | 10 | 6,75 | 8,3 | 17,1 | 18,3 | .0080 | ● | ● | ● |
| 10 | 1,5 | 79 | 19,59 | 45 | 8,2 | 12 | 8,5 | 10,3 | 22 | 23,6 | .0100 | ● | ● | ● |
| 12 | 1,75 | 89 | 22,86 | 45 | 9,9 | 14 | 10,25 | 12,3 | 25,7 | 27,5 | .0112 | ● | ● | ● |
| 16 | 2 | 102 | 32,13 | 48 | 13,6 | 18 | 14 | 16,3 | 35,3 | 37,9 | .0116 | ● | ● | ● |

Gewindetiefe
Thread depth

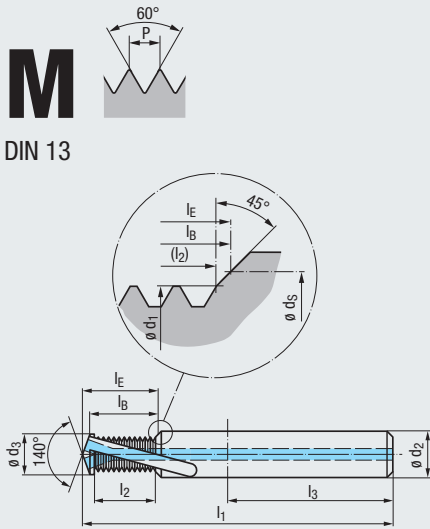
2,5 x D

Werkzeug-Ident · Tool ident

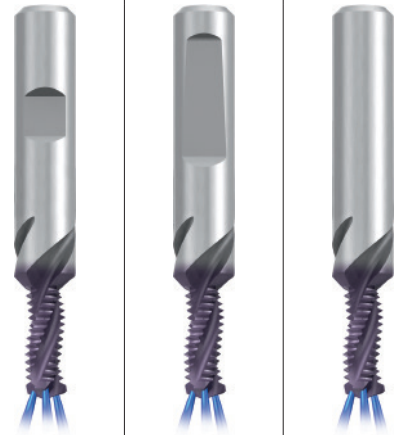
GF442251 GF442551 GF442851

| $\varnothing D$ mm | P mm | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_S$ | l_B | l_E | Dimens.- Ident | BGF-VHM-Z3 2,5xD R30-IKZ-HB | BGF-VHM-Z3 2,5xD R30-IKZ-HE | BGF-VHM-Z3 2,5xD R30-IKZ-HA |
|-----------------------|---------|-------|-------|-------|-------------------|-------------------|-------------------|-------------------|-------|-------|-------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| | | | | | | | | | | | | | | |
| M 6 | 1 | 65 | 15,10 | 36 | 4,8 | 8 | 5 | 6,3 | 16,7 | 17,6 | .0060 | ● | ● | ● |
| 8 | 1,25 | 80 | 20,08 | 40 | 6,5 | 10 | 6,75 | 8,3 | 22,1 | 23,3 | .0080 | ● | ● | ● |
| 10 | 1,5 | 85 | 25,59 | 45 | 8,2 | 12 | 8,5 | 10,3 | 28 | 29,6 | .0100 | ● | ● | ● |
| 12 | 1,75 | 95 | 29,86 | 45 | 9,9 | 14 | 10,25 | 12,3 | 32,7 | 34,5 | .0112 | ● | ● | ● |
| 16 | 2 | 110 | 40,13 | 48 | 13,6 | 18 | 14 | 16,3 | 43,3 | 45,9 | .0116 | ● | ● | ● |

Andere Abmessungen auf Anfrage
Other sizes upon request



| | |
|-----|----------------------------|
| VHM | TICN |
| R30 | RH + LH |
| Z3 | DIN 6535 HB HE HA |
| 90° | ø D |



Einsatzgebiete – Material Applications – material **328**

K 1.1-2 N 1.5-6, 2.3

Gewindetiefe Thread depth

1,5 x D

Werkzeug-Ident · Tool ident

| ø D mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₁ | ø d ₂ | ø d ₃ | ø d _S | l _B | l _E | Dimens.- Ident | GF422556 | GF422556 | GF422856 |
|-----------|---------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|----------------|----------------|-------------------|---|---|---|
| | | | | | | | | | | | | BGF-VHM-Z3 1,5xD R30-1KZ-HB TICN | BGF-VHM-Z3 1,5xD R30-1KZ-HE TICN | BGF-VHM-Z3 1,5xD R30-1KZ-HA TICN |
| M 6 | 1 | 62 | 9,06 | 36 | 4,8 | 8 | 5 | 6,3 | 10,7 | 11,6 | .0060 | ● | ● | ● |
| 8 | 1,25 | 74 | 11,33 | 40 | 6,5 | 10 | 6,75 | 8,3 | 13,4 | 14,6 | .0080 | ● | ● | ● |
| 10 | 1,5 | 79 | 15,09 | 45 | 8,2 | 12 | 8,5 | 10,3 | 17,5 | 19,1 | .0100 | ● | ● | ● |
| 12 | 1,75 | 89 | 17,61 | 45 | 9,9 | 14 | 10,25 | 12,3 | 20,4 | 22,3 | .0112 | ● | ● | ● |
| 16 | 2 | 102 | 24,13 | 48 | 13,6 | 18 | 14 | 16,3 | 27,3 | 29,9 | .0116 | ● | ● | ● |

Gewindetiefe Thread depth

2 x D

Werkzeug-Ident · Tool ident

| ø D mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₁ | ø d ₂ | ø d ₃ | ø d _S | l _B | l _E | Dimens.- Ident | GF432256 | GF432556 | GF432856 |
|-----------|---------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|----------------|----------------|-------------------|---|---|---|
| | | | | | | | | | | | | BGF-VHM-Z3 2xD R30-1KZ-HB TICN | BGF-VHM-Z3 2xD R30-1KZ-HE TICN | BGF-VHM-Z3 2xD R30-1KZ-HA TICN |
| M 6 | 1 | 62 | 12,06 | 36 | 4,8 | 8 | 5 | 6,3 | 13,7 | 14,6 | .0060 | ● | ● | ● |
| 8 | 1,25 | 74 | 15,08 | 40 | 6,5 | 10 | 6,75 | 8,3 | 17,1 | 18,3 | .0080 | ● | ● | ● |
| 10 | 1,5 | 79 | 19,59 | 45 | 8,2 | 12 | 8,5 | 10,3 | 22 | 23,6 | .0100 | ● | ● | ● |
| 12 | 1,75 | 89 | 22,86 | 45 | 9,9 | 14 | 10,25 | 12,3 | 25,7 | 27,5 | .0112 | ● | ● | ● |
| 16 | 2 | 102 | 32,13 | 48 | 13,6 | 18 | 14 | 16,3 | 35,3 | 37,9 | .0116 | ● | ● | ● |

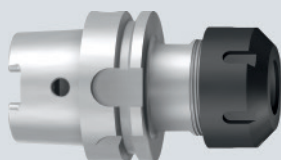
Gewindetiefe Thread depth

2,5 x D

Werkzeug-Ident · Tool ident

| ø D mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₁ | ø d ₂ | ø d ₃ | ø d _S | l _B | l _E | Dimens.- Ident | GF442256 | GF442556 | GF442856 |
|-----------|---------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|----------------|----------------|-------------------|---|---|---|
| | | | | | | | | | | | | BGF-VHM-Z3 2,5xD R30-1KZ-HB TICN | BGF-VHM-Z3 2,5xD R30-1KZ-HE TICN | BGF-VHM-Z3 2,5xD R30-1KZ-HA TICN |
| M 6 | 1 | 65 | 15,10 | 36 | 4,8 | 8 | 5 | 6,3 | 16,7 | 17,6 | .0060 | ● | ● | ● |
| 8 | 1,25 | 80 | 20,08 | 40 | 6,5 | 10 | 6,75 | 8,3 | 22,1 | 23,3 | .0080 | ● | ● | ● |
| 10 | 1,5 | 85 | 25,59 | 45 | 8,2 | 12 | 8,5 | 10,3 | 28 | 29,6 | .0100 | ● | ● | ● |
| 12 | 1,75 | 95 | 29,86 | 45 | 9,9 | 14 | 10,25 | 12,3 | 32,7 | 34,5 | .0112 | ● | ● | ● |
| 16 | 2 | 110 | 40,13 | 48 | 13,6 | 18 | 14 | 16,3 | 43,3 | 45,9 | .0116 | ● | ● | ● |

Andere Abmessungen auf Anfrage
Other sizes upon request



Spannzangen-Aufnahmen
Typ KSN/Synchro
siehe Seite 711 - 713

Collet holders
type KSN/Synchro,
see page 711 - 713

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

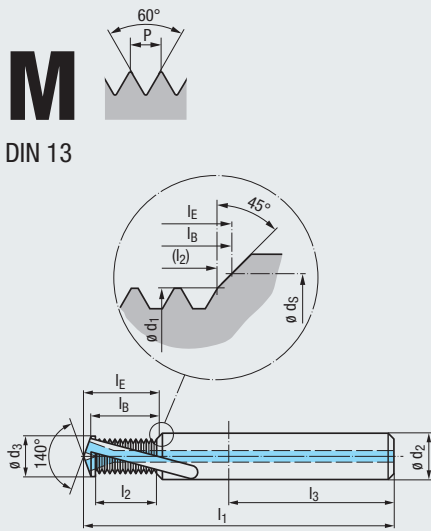
ZIRK-GF

Gigant

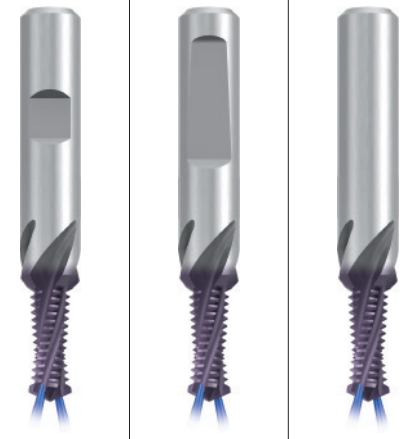
MoSys



- Product Finder
- v_c / f_z
- M
- MF
- UNC UN, UNS
- UNF UNEF
- G, Rp
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- EG (STI) SELF-LOCK
- Tr
- Zubehör Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys



| | |
|-----|----------------------------|
| VHM | TICN |
| R20 | RH + LH |
| Z4 | DIN 6535 HB HE HA |
| 90° | θD |



Einsatzgebiete – Material Applications – material » 328

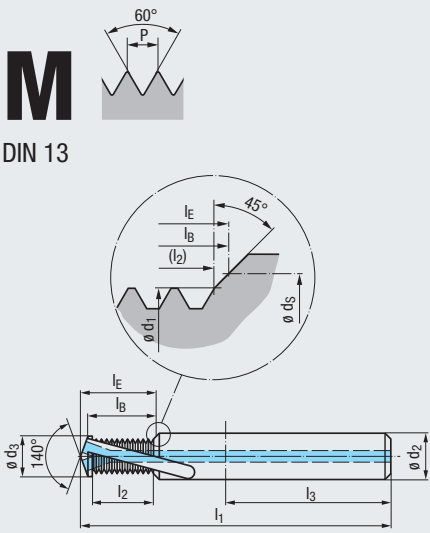
K 1.1-2 **N** 1.5-6, 2.3

| Gewindetiefe Thread depth | | | | | | | | | | | | 1,5 x D | | |
|-----------------------------|---------|-------|-------|-------|--------------|--------------|--------------|--------------|-------|-------|---------------|---|---|---|
| Werkzeug-Ident · Tool ident | | | | | | | | | | | | GF429246 | GF429546 | GF429846 |
| θD mm | P mm | l_1 | l_2 | l_3 | θd_1 | θd_2 | θd_3 | θd_5 | l_B | l_E | Dimens.-Ident | BGF-VHM-Z4 1,5xD R20-IKZ-HB TICN | BGF-VHM-Z4 1,5xD R20-IKZ-HE TICN | BGF-VHM-Z4 1,5xD R20-IKZ-HA TICN |
| M 6 | 1 | 62 | 9,06 | 36 | 4,8 | 8 | 5 | 6,3 | 10,7 | 11,6 | .0060 | ● | ● | ● |
| 8 | 1,25 | 74 | 11,33 | 40 | 6,5 | 10 | 6,75 | 8,3 | 13,4 | 14,6 | .0080 | ● | ● | ● |
| 10 | 1,5 | 79 | 15,09 | 45 | 8,2 | 12 | 8,5 | 10,3 | 17,5 | 19,1 | .0100 | ● | ● | ● |
| 12 | 1,75 | 89 | 17,61 | 45 | 9,9 | 14 | 10,25 | 12,3 | 20,4 | 22,3 | .0112 | ● | ● | ● |

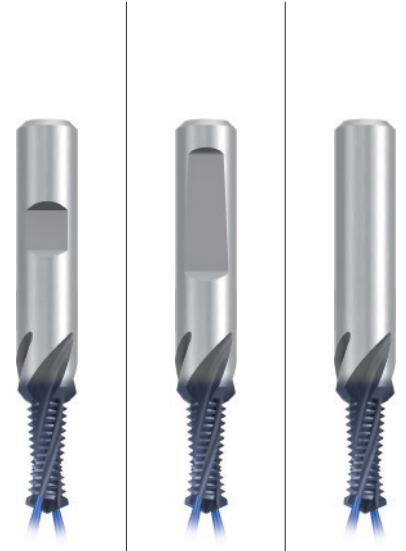
| Gewindetiefe Thread depth | | | | | | | | | | | | 2 x D | | |
|-----------------------------|---------|-------|-------|-------|--------------|--------------|--------------|--------------|-------|-------|---------------|---|---|---|
| Werkzeug-Ident · Tool ident | | | | | | | | | | | | GF439246 | GF439546 | GF439846 |
| θD mm | P mm | l_1 | l_2 | l_3 | θd_1 | θd_2 | θd_3 | θd_5 | l_B | l_E | Dimens.-Ident | BGF-VHM-Z4 2xD R20-IKZ-HB TICN | BGF-VHM-Z4 2xD R20-IKZ-HE TICN | BGF-VHM-Z4 2xD R20-IKZ-HA TICN |
| M 6 | 1 | 62 | 12,06 | 36 | 4,8 | 8 | 5 | 6,3 | 13,7 | 14,6 | .0060 | ● | ● | ● |
| 8 | 1,25 | 74 | 15,08 | 40 | 6,5 | 10 | 6,75 | 8,3 | 17,1 | 18,3 | .0080 | ● | ● | ● |
| 10 | 1,5 | 79 | 19,59 | 45 | 8,2 | 12 | 8,5 | 10,3 | 22 | 23,6 | .0100 | ● | ● | ● |
| 12 | 1,75 | 89 | 22,86 | 45 | 9,9 | 14 | 10,25 | 12,3 | 25,7 | 27,5 | .0112 | ● | ● | ● |
| 16 | 2 | 102 | 32,13 | 48 | 13,6 | 18 | 14 | 16,3 | 35,3 | 37,9 | .0116 | ● | ● | ● |

| Gewindetiefe Thread depth | | | | | | | | | | | | 2,5 x D | | |
|-----------------------------|---------|-------|-------|-------|--------------|--------------|--------------|--------------|-------|-------|---------------|---|---|---|
| Werkzeug-Ident · Tool ident | | | | | | | | | | | | GF449246 | GF449546 | GF449846 |
| θD mm | P mm | l_1 | l_2 | l_3 | θd_1 | θd_2 | θd_3 | θd_5 | l_B | l_E | Dimens.-Ident | BGF-VHM-Z4 2,5xD R20-IKZ-HB TICN | BGF-VHM-Z4 2,5xD R20-IKZ-HE TICN | BGF-VHM-Z4 2,5xD R20-IKZ-HA TICN |
| M 6 | 1 | 65 | 15,10 | 36 | 4,8 | 8 | 5 | 6,3 | 16,7 | 17,6 | .0060 | ● | ● | ● |
| 8 | 1,25 | 80 | 20,08 | 40 | 6,5 | 10 | 6,75 | 8,3 | 22,1 | 23,3 | .0080 | ● | ● | ● |
| 10 | 1,5 | 85 | 25,59 | 45 | 8,2 | 12 | 8,5 | 10,3 | 28 | 29,6 | .0100 | ● | ● | ● |
| 12 | 1,75 | 95 | 29,86 | 45 | 9,9 | 14 | 10,25 | 12,3 | 32,7 | 34,5 | .0112 | ● | ● | ● |
| 16 | 2 | 110 | 40,13 | 48 | 13,6 | 18 | 14 | 16,3 | 43,3 | 45,9 | .0116 | ● | ● | ● |

Andere Abmessungen auf Anfrage
Other sizes upon request



| | |
|-----|----------------------------|
| VHM | TIALN T3 |
| R20 | RH + LH |
| Z4 | DIN 6535 HB HE HA |
| 90° | Ø D |



- Product Finder
- v_c / f_z
- M
- MF
- UNC UN, UNS
- UNF UNEF
- G, Rp
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- EG (STI) SELF-LOCK
- Tr
- Zubehör Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys

Einsatzgebiete – Material Applications – material **328**

K 1.1-2 N 1.5-6, 2.3

Gewindetiefe Thread depth

1,5 x D

Werkzeug-Ident · Tool ident

| Ø D mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₁ | Ø d ₂ | Ø d ₃ | Ø d _S | l _B | l _E | Dimens.-Ident | GF429248 | GF429548 | GF429848 |
|--------|------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|----------------|----------------|---------------|--------------------------------------|--------------------------------------|--------------------------------------|
| | | | | | | | | | | | | BGF-VHM-Z4 1,5xD R20-1KZ-HB TIALN-T3 | BGF-VHM-Z4 1,5xD R20-1KZ-HE TIALN-T3 | BGF-VHM-Z4 1,5xD R20-1KZ-HA TIALN-T3 |
| M 6 | 1 | 62 | 9,06 | 36 | 4,8 | 8 | 5 | 6,3 | 10,7 | 11,6 | .0060 | ● | ● | ● |
| 8 | 1,25 | 74 | 11,33 | 40 | 6,5 | 10 | 6,75 | 8,3 | 13,4 | 14,6 | .0080 | ● | ● | ● |
| 10 | 1,5 | 79 | 15,09 | 45 | 8,2 | 12 | 8,5 | 10,3 | 17,5 | 19,1 | .0100 | ● | ● | ● |
| 12 | 1,75 | 89 | 17,61 | 45 | 9,9 | 14 | 10,25 | 12,3 | 20,4 | 22,3 | .0112 | ● | ● | ● |

Gewindetiefe Thread depth

2 x D

Werkzeug-Ident · Tool ident

| Ø D mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₁ | Ø d ₂ | Ø d ₃ | Ø d _S | l _B | l _E | Dimens.-Ident | GF439248 | GF439548 | GF439848 |
|--------|------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|----------------|----------------|---------------|------------------------------------|------------------------------------|------------------------------------|
| | | | | | | | | | | | | BGF-VHM-Z4 2xD R20-1KZ-HB TIALN-T3 | BGF-VHM-Z4 2xD R20-1KZ-HE TIALN-T3 | BGF-VHM-Z4 2xD R20-1KZ-HA TIALN-T3 |
| M 6 | 1 | 62 | 12,06 | 36 | 4,8 | 8 | 5 | 6,3 | 13,7 | 14,6 | .0060 | ● | ● | ● |
| 8 | 1,25 | 74 | 15,08 | 40 | 6,5 | 10 | 6,75 | 8,3 | 17,1 | 18,3 | .0080 | ● | ● | ● |
| 10 | 1,5 | 79 | 19,59 | 45 | 8,2 | 12 | 8,5 | 10,3 | 22 | 23,6 | .0100 | ● | ● | ● |
| 12 | 1,75 | 89 | 22,86 | 45 | 9,9 | 14 | 10,25 | 12,3 | 25,7 | 27,5 | .0112 | ● | ● | ● |
| 16 | 2 | 102 | 32,13 | 48 | 13,6 | 18 | 14 | 16,3 | 35,3 | 37,9 | .0116 | ● | ● | ● |

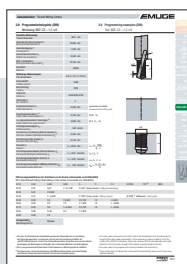
Gewindetiefe Thread depth

2,5 x D

Werkzeug-Ident · Tool ident

| Ø D mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₁ | Ø d ₂ | Ø d ₃ | Ø d _S | l _B | l _E | Dimens.-Ident | GF449248 | GF449548 | GF449848 |
|--------|------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|----------------|----------------|---------------|--------------------------------------|--------------------------------------|--------------------------------------|
| | | | | | | | | | | | | BGF-VHM-Z4 2,5xD R20-1KZ-HB TIALN-T3 | BGF-VHM-Z4 2,5xD R20-1KZ-HE TIALN-T3 | BGF-VHM-Z4 2,5xD R20-1KZ-HA TIALN-T3 |
| M 6 | 1 | 65 | 15,10 | 36 | 4,8 | 8 | 5 | 6,3 | 16,7 | 17,6 | .0060 | ● | ● | ● |
| 8 | 1,25 | 80 | 20,08 | 40 | 6,5 | 10 | 6,75 | 8,3 | 22,1 | 23,3 | .0080 | ● | ● | ● |
| 10 | 1,5 | 85 | 25,59 | 45 | 8,2 | 12 | 8,5 | 10,3 | 28 | 29,6 | .0100 | ● | ● | ● |
| 12 | 1,75 | 95 | 29,86 | 45 | 9,9 | 14 | 10,25 | 12,3 | 32,7 | 34,5 | .0112 | ● | ● | ● |
| 16 | 2 | 110 | 40,13 | 48 | 13,6 | 18 | 14 | 16,3 | 43,3 | 45,9 | .0116 | ● | ● | ● |

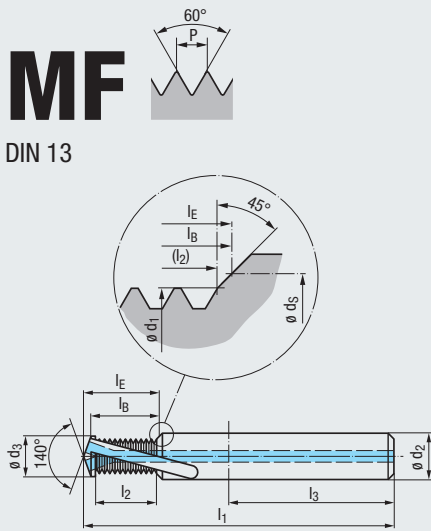
Andere Abmessungen auf Anfrage Other sizes upon request



Programmierbeispiel für Bohrwinddefräser Typ BGF siehe Seite 463

Programming example for drill thread mills type BGF, see page 463

- Product Finder
- v_c / f_z
- M
- MF**
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info
- BGF**
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys

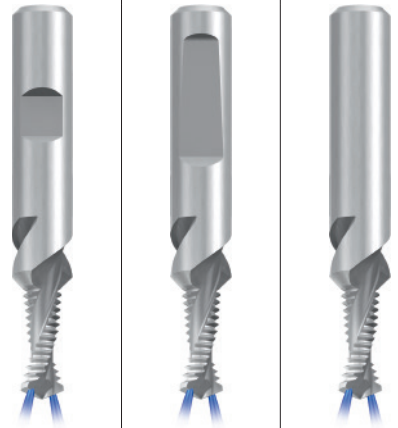


VHM

R30 **RH + LH**

Z2 **DIN 6535**
HB
HE
HA

90° **Ø D**



Einsatzgebiete – Material Applications – material » 328

K 1.1-3.2 **N** 1.1-5
N 2.2-3, 2.6 **N** 3.1-2, 4.1

Gewindetiefe Thread depth

1,5 x D

Werkzeug-Ident · Tool ident

| | | | | | | | | | | | | GF422201 | GF422501 | GF422801 |
|------------------|---------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|----------------|----------------|-------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| | | | | | | | | | | | | BGF-VHM-Z2 1,5xD R30-IKZ-HB | BGF-VHM-Z2 1,5xD R30-IKZ-HE | BGF-VHM-Z2 1,5xD R30-IKZ-HA |
| Ø D mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₁ | Ø d ₂ | Ø d ₃ | Ø d _S | l _B | l _E | Dimens.- Ident | | | |
| M 4 x 0,5 | 49 | 5,05 | 36 | 3,36 | 6 | 3,5 | 4,3 | 7 | 7,6 | .0210 | | | | |
| 5 x 0,5 | 55 | 7,56 | 36 | 4,34 | 6 | 4,5 | 5,3 | 8,5 | 9,3 | .0218 | | | | |
| 6 x 0,75 | 62 | 9,07 | 36 | 5,05 | 8 | 5,25 | 6,3 | 10,4 | 11,3 | .0229 | ● | ● | ● | |
| 8 x 1 | 74 | 12,09 | 40 | 6,75 | 10 | 7 | 8,3 | 13,8 | 15 | .0251 | ● | ● | ● | |
| 10 x 1 | 79 | 15,11 | 45 | 8,7 | 12 | 9 | 10,3 | 16,8 | 18,4 | .0276 | ● | ● | ● | |
| 10 x 1,25 | 79 | 15,11 | 45 | 8,4 | 12 | 8,75 | 10,3 | 17,2 | 18,8 | .0277 | ● | ● | ● | |
| 12 x 1 | 89 | 17,14 | 45 | 10,65 | 14 | 11 | 12,3 | 18,8 | 20,8 | .0301 | ● | ● | ● | |
| 12 x 1,25 | 89 | 18,88 | 45 | 10,4 | 14 | 10,75 | 12,3 | 20,9 | 22,9 | .0302 | ● | ● | ● | |
| 12 x 1,5 | 89 | 18,12 | 45 | 10,15 | 14 | 10,5 | 12,3 | 20,5 | 22,5 | .0303 | ● | ● | ● | |
| 14 x 1,5 | 102 | 21,14 | 48 | 12,1 | 16 | 12,5 | 14,3 | 23,6 | 25,8 | .0331 | ● | ● | ● | |
| 16 x 1,5 | 102 | 24,15 | 48 | 14,1 | 18 | 14,5 | 16,3 | 26,6 | 29,2 | .0359 | ● | ● | ● | |

Gewindetiefe Thread depth

2 x D

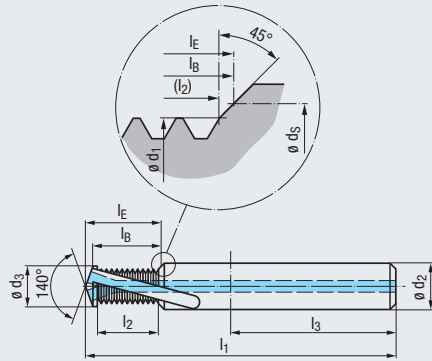
Werkzeug-Ident · Tool ident

| | | | | | | | | | | | | GF432201 | GF432501 | GF432801 |
|------------------|---------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|----------------|----------------|-------------------|---------------------------------|---------------------------------|---------------------------------|
| | | | | | | | | | | | | BGF-VHM-Z2 2xD R30-IKZ-HB | BGF-VHM-Z2 2xD R30-IKZ-HE | BGF-VHM-Z2 2xD R30-IKZ-HA |
| Ø D mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₁ | Ø d ₂ | Ø d ₃ | Ø d _S | l _B | l _E | Dimens.- Ident | | | |
| M 4 x 0,5 | 49 | 8,05 | 36 | 3,36 | 6 | 3,5 | 4,3 | 9 | 9,6 | .0210 | | | | |
| 5 x 0,5 | 55 | 10,06 | 36 | 4,34 | 6 | 4,5 | 5,3 | 11 | 11,8 | .0218 | | | | |
| 6 x 0,75 | 62 | 12,07 | 36 | 5,05 | 8 | 5,25 | 6,3 | 13,4 | 14,3 | .0229 | ● | ● | ● | |
| 8 x 1 | 74 | 16,09 | 40 | 6,75 | 10 | 7 | 8,3 | 17,8 | 19 | .0251 | ● | ● | ● | |
| 10 x 1 | 79 | 20,11 | 45 | 8,7 | 12 | 9 | 10,3 | 21,8 | 23,4 | .0276 | ● | ● | ● | |
| 10 x 1,25 | 79 | 20,11 | 45 | 8,4 | 12 | 8,75 | 10,3 | 22,2 | 23,8 | .0277 | ● | ● | ● | |
| 12 x 1 | 89 | 24,14 | 45 | 10,65 | 14 | 11 | 12,3 | 25,8 | 27,8 | .0301 | ● | ● | ● | |
| 12 x 1,25 | 89 | 23,88 | 45 | 10,4 | 14 | 10,75 | 12,3 | 25,9 | 27,9 | .0302 | ● | ● | ● | |
| 12 x 1,5 | 89 | 24,12 | 45 | 10,15 | 14 | 10,5 | 12,3 | 26,5 | 28,5 | .0303 | ● | ● | ● | |
| 14 x 1,5 | 102 | 27,14 | 48 | 12,1 | 16 | 12,5 | 14,3 | 29,6 | 31,8 | .0331 | ● | ● | ● | |
| 16 x 1,5 | 102 | 31,65 | 48 | 14,1 | 18 | 14,5 | 16,3 | 34,1 | 36,7 | .0359 | ● | ● | ● | |

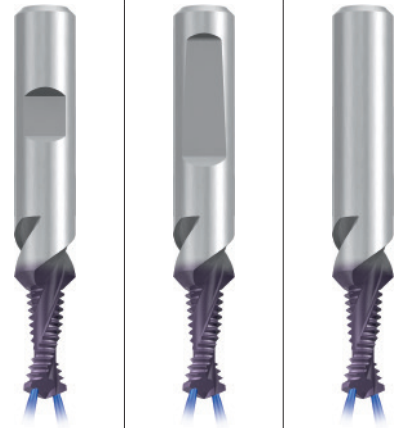
Andere Abmessungen auf Anfrage
Other sizes upon request

MF

DIN 13



| | |
|-----|----------------------------|
| VHM | TICN |
| R30 | RH + LH |
| Z2 | DIN 6535 HB HE HA |
| 90° | ø D |



- Product Finder
- v_c / f_z
- M
- MF**
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK

Einsatzgebiete – Material Applications – material 328

K 1.1-3.2 N 1.1-6
N 2.2-3, 2.6 N 3.1-2, 4.1

Gewindetiefe Thread depth

1,5 x D

Werkzeug-Ident · Tool ident

| | | | | | | | | | | | | GF422206 | GF422506 | GF422806 |
|------------------|---------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|----------------|----------------|-------------------|---|---|---|
| | | | | | | | | | | | | BGF-VHM-Z2 1,5xD R30-1KZ-HB TICN | BGF-VHM-Z2 1,5xD R30-1KZ-HE TICN | BGF-VHM-Z2 1,5xD R30-1KZ-HA TICN |
| ø D mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₁ | ø d ₂ | ø d ₃ | ø d _S | l _B | l _E | Dimens.- Ident | | | |
| M 4 x 0,5 | 49 | 5,05 | 36 | 3,36 | 6 | 3,5 | 4,3 | 7 | 7,6 | .0210 | | | | |
| 5 x 0,5 | 55 | 7,56 | 36 | 4,34 | 6 | 4,5 | 5,3 | 8,5 | 9,3 | .0218 | | | | |
| 6 x 0,75 | 62 | 9,07 | 36 | 5,05 | 8 | 5,25 | 6,3 | 10,4 | 11,3 | .0229 | ● | ● | ● | |
| 8 x 1 | 74 | 12,09 | 40 | 6,75 | 10 | 7 | 8,3 | 13,8 | 15 | .0251 | ● | ● | ● | |
| 10 x 1 | 79 | 15,11 | 45 | 8,7 | 12 | 9 | 10,3 | 16,8 | 18,4 | .0276 | ● | ● | ● | |
| 10 x 1,25 | 79 | 15,11 | 45 | 8,4 | 12 | 8,75 | 10,3 | 17,2 | 18,8 | .0277 | ● | ● | ● | |
| 12 x 1 | 89 | 17,14 | 45 | 10,65 | 14 | 11 | 12,3 | 18,8 | 20,8 | .0301 | ● | ● | ● | |
| 12 x 1,25 | 89 | 18,88 | 45 | 10,4 | 14 | 10,75 | 12,3 | 20,9 | 22,9 | .0302 | ● | ● | ● | |
| 12 x 1,5 | 89 | 18,12 | 45 | 10,15 | 14 | 10,5 | 12,3 | 20,5 | 22,5 | .0303 | ● | ● | ● | |
| 14 x 1,5 | 102 | 21,14 | 48 | 12,1 | 16 | 12,5 | 14,3 | 23,6 | 25,8 | .0331 | ● | ● | ● | |
| 16 x 1,5 | 102 | 24,15 | 48 | 14,1 | 18 | 14,5 | 16,3 | 26,6 | 29,2 | .0359 | ● | ● | ● | |

Gewindetiefe Thread depth

2 x D

Werkzeug-Ident · Tool ident

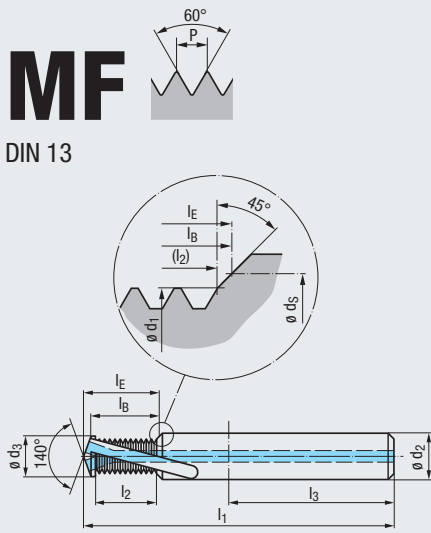
| | | | | | | | | | | | | GF432206 | GF432506 | GF432806 |
|------------------|---------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|----------------|----------------|-------------------|---|---|---|
| | | | | | | | | | | | | BGF-VHM-Z2 2xD R30-1KZ-HB TICN | BGF-VHM-Z2 2xD R30-1KZ-HE TICN | BGF-VHM-Z2 2xD R30-1KZ-HA TICN |
| ø D mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₁ | ø d ₂ | ø d ₃ | ø d _S | l _B | l _E | Dimens.- Ident | | | |
| M 4 x 0,5 | 49 | 8,05 | 36 | 3,36 | 6 | 3,5 | 4,3 | 9 | 9,6 | .0210 | | | | |
| 5 x 0,5 | 55 | 10,06 | 36 | 4,34 | 6 | 4,5 | 5,3 | 11 | 11,8 | .0218 | | | | |
| 6 x 0,75 | 62 | 12,07 | 36 | 5,05 | 8 | 5,25 | 6,3 | 13,4 | 14,3 | .0229 | ● | ● | ● | |
| 8 x 1 | 74 | 16,09 | 40 | 6,75 | 10 | 7 | 8,3 | 17,8 | 19 | .0251 | ● | ● | ● | |
| 10 x 1 | 79 | 20,11 | 45 | 8,7 | 12 | 9 | 10,3 | 21,8 | 23,4 | .0276 | ● | ● | ● | |
| 10 x 1,25 | 79 | 20,11 | 45 | 8,4 | 12 | 8,75 | 10,3 | 22,2 | 23,8 | .0277 | ● | ● | ● | |
| 12 x 1 | 89 | 24,14 | 45 | 10,65 | 14 | 11 | 12,3 | 25,8 | 27,8 | .0301 | ● | ● | ● | |
| 12 x 1,25 | 89 | 23,88 | 45 | 10,4 | 14 | 10,75 | 12,3 | 25,9 | 27,9 | .0302 | ● | ● | ● | |
| 12 x 1,5 | 89 | 24,12 | 45 | 10,15 | 14 | 10,5 | 12,3 | 26,5 | 28,5 | .0303 | ● | ● | ● | |
| 14 x 1,5 | 102 | 27,14 | 48 | 12,1 | 16 | 12,5 | 14,3 | 29,6 | 31,8 | .0331 | ● | ● | ● | |
| 16 x 1,5 | 102 | 31,65 | 48 | 14,1 | 18 | 14,5 | 16,3 | 34,1 | 36,7 | .0359 | ● | ● | ● | |

Andere Abmessungen auf Anfrage
Other sizes upon request

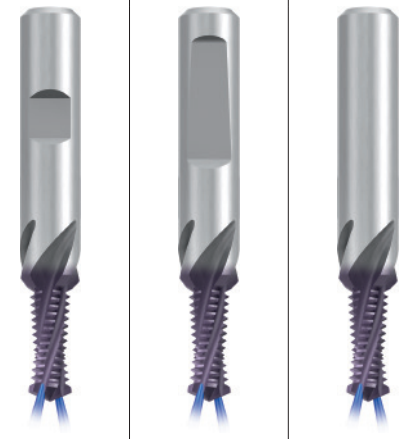
- Tr
- Zubehör
Accessories
- Tech. Info
- BGF**
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys



- Product Finder
- v_c / f_z
- M
- MF**
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info
- BGF**
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys



| | |
|-----|----------------------------|
| VHM | TICN |
| R20 | RH + LH |
| Z4 | DIN 6535 HB HE HA |
| 90° | $\varnothing D$ |



Einsatzgebiete – Material Applications – material » 328

K 1.1-2 **N** 1.5-6, 2,3

Gewindetiefe Thread depth

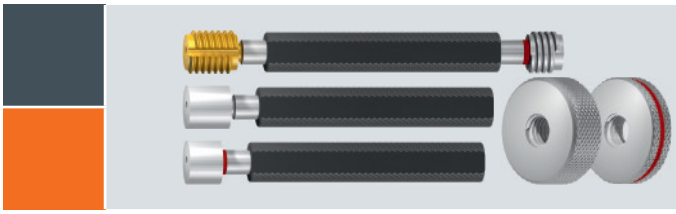
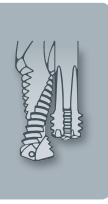
2 x D

Werkzeug-Ident · Tool ident

| | GF439246 | GF439546 | GF439846 |
|--------------------------------|----------|----------|----------|
| BGF-VHM-Z4 2xD R20-IKZ-HB TICN | ● | ● | ● |
| BGF-VHM-Z4 2xD R20-IKZ-HE TICN | ● | ● | ● |
| BGF-VHM-Z4 2xD R20-IKZ-HA TICN | ● | ● | ● |

| | $\varnothing D$ mm | P mm | Dimens.-Ident | | | | | | | | | |
|----------|-----------------------|---------|---------------|-------|-------|-------------------|-------------------|-------------------|-------------------|-------|-------|-------|
| | | | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_S$ | l_B | l_E | |
| M | 8 x 1 | | 74 | 16,09 | 40 | 6,75 | 10 | 7 | 8,3 | 17,8 | 19 | .0251 |
| | 10 x 1 | | 79 | 20,11 | 45 | 8,7 | 12 | 9 | 10,3 | 21,8 | 23,4 | .0276 |
| | 12 x 1,5 | | 89 | 24,12 | 45 | 10,15 | 14 | 10,5 | 12,3 | 26,5 | 28,5 | .0303 |
| | 16 x 1,5 | | 102 | 31,65 | 48 | 14,1 | 18 | 14,5 | 16,3 | 34,1 | 36,7 | .0359 |

Andere Abmessungen auf Anfrage
Other sizes upon request

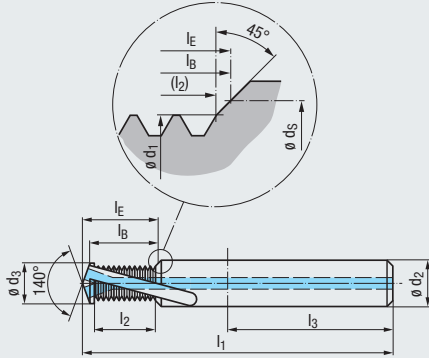


Gewindelehren
siehe Seite 581 - 654

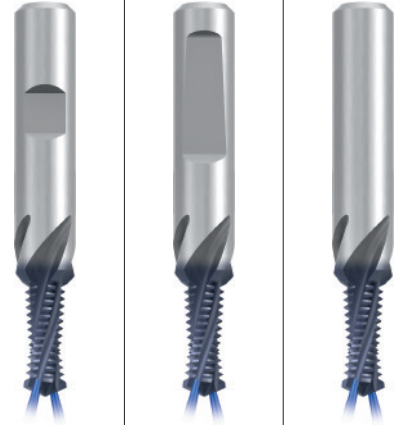
Thread gauges,
see page 581 - 654

MF

DIN 13



| | |
|-----|----------------------------|
| VHM | TIALN T3 |
| R20 | RH + LH |
| Z4 | DIN 6535 HB HE HA |
| 90° | ø D |



Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



Einsatzgebiete – Material
Applications – material **328**

K 1.1-2 N 1.5-6, 2.3

Gewindetiefe
Thread depth

2 x D

Werkzeug-Ident · Tool ident

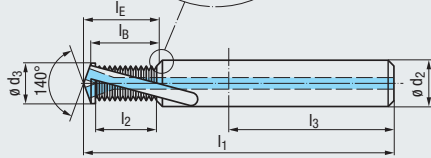
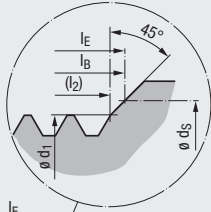
| | | | | | | | | | | | | | | GF439248 | GF439548 | GF439848 | |
|-----------|---------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|----------------|----------------|-------------------|---|---|---|---|---|---|
| | | | | | | | | | | | | | | BGF-VHM-Z4 2xD R20-IKZ-HB TIALN-T3 | BGF-VHM-Z4 2xD R20-IKZ-HE TIALN-T3 | BGF-VHM-Z4 2xD R20-IKZ-HA TIALN-T3 | |
| ø D mm | P mm | l ₁ | l ₂ | l ₃ | ø d ₁ | ø d ₂ | ø d ₃ | ø d _S | l _B | l _E | Dimens.- Ident | | | | | | |
| M 8 | x 1 | 74 | 16,09 | 40 | 6,75 | 10 | 7 | 8,3 | 17,8 | 19 | .0251 | ● | ● | ● | ● | ● | ● |
| 10 | x 1 | 79 | 20,11 | 45 | 8,7 | 12 | 9 | 10,3 | 21,8 | 23,4 | .0276 | ● | ● | ● | ● | ● | ● |
| 12 | x 1,5 | 89 | 24,12 | 45 | 10,15 | 14 | 10,5 | 12,3 | 26,5 | 28,5 | .0303 | ● | ● | ● | ● | ● | ● |
| 16 | x 1,5 | 102 | 31,65 | 48 | 14,1 | 18 | 14,5 | 16,3 | 34,1 | 36,7 | .0359 | ● | ● | ● | ● | ● | ● |

Andere Abmessungen auf Anfrage
Other sizes upon request

- Product Finder
- v_c / f_z
- M
- MF
- UNC**
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info
- BGF**
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys

UNC

ASME B1.1



VHM

R30

RH + LH

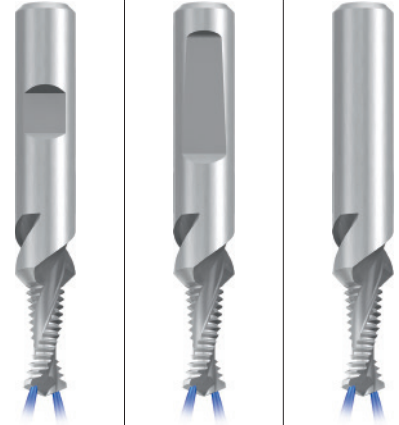
Z2

DIN 6535



90°

$\varnothing D$



Einsatzgebiete – Material Applications – material ▶ 328

K 1.1-3.2 **N** 1.1-5
N 2.2-3, 2.6 **N** 3.1-2, 4.1

Gewindetiefe Thread depth

1,5 x D

Werkzeug-Ident · Tool ident

| | GF422201 | GF422501 | GF422801 |
|-----------------------------|----------|-----------------------------|-----------------------------|
| BGF-VHM-Z2 1,5xD R30-IKZ-HB | | BGF-VHM-Z2 1,5xD R30-IKZ-HE | BGF-VHM-Z2 1,5xD R30-IKZ-HA |
| | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | ● |

| $\varnothing D$ inch | P Gg/1" (tpi) | Dimens.-Ident | | | | | | | | | |
|-------------------------|------------------|---------------|-------|-------|-------------------|-------------------|-------------------|-------------------|-------|-------|-------|
| | | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_S$ | l_B | l_E | |
| Nr. 12 | 24 | 62 | 7,50 | 36 | 4,21 | 8 | 4,5 | 5,79 | 9,2 | 10 | .5008 |
| 1/4 | 20 | 62 | 8,99 | 36 | 4,85 | 8 | 5,2 | 6,65 | 11,1 | 12 | .5009 |
| 5/16 | 18 | 74 | 11,39 | 40 | 6,25 | 10 | 6,6 | 8,25 | 13,7 | 14,9 | .5010 |
| 3/8 | 16 | 79 | 14,40 | 45 | 7,65 | 12 | 8 | 9,83 | 16,9 | 18,4 | .5011 |
| 7/16 | 14 | 79 | 16,45 | 45 | 9 | 12 | 9,4 | 11,43 | 19,3 | 21 | .5012 |
| 1/2 | 13 | 89 | 17,71 | 45 | 10,35 | 14 | 10,75 | 13 | 20,8 | 22,8 | .5013 |
| 9/16 | 12 | 102 | 21,31 | 48 | 11,8 | 16 | 12,25 | 14,61 | 24,7 | 26,9 | .5014 |
| 5/8 | 11 | 102 | 23,21 | 48 | 13,1 | 18 | 13,5 | 16,18 | 26,9 | 29,3 | .5015 |
| 3/4 | 10 | 115 | 28,10 | 50 | 16 | 20 | 16,5 | 19,35 | 32,1 | 35,1 | .5016 |

Gewindetiefe Thread depth

2 x D

Werkzeug-Ident · Tool ident

| | GF432201 | GF432501 | GF432801 |
|---------------------------|----------|---------------------------|---------------------------|
| BGF-VHM-Z2 2xD R30-IKZ-HB | | BGF-VHM-Z2 2xD R30-IKZ-HE | BGF-VHM-Z2 2xD R30-IKZ-HA |
| | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | ● |

| $\varnothing D$ inch | P Gg/1" (tpi) | Dimens.-Ident | | | | | | | | | |
|-------------------------|------------------|---------------|-------|-------|-------------------|-------------------|-------------------|-------------------|-------|-------|-------|
| | | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_S$ | l_B | l_E | |
| Nr. 12 | 24 | 62 | 10,66 | 36 | 4,21 | 8 | 4,5 | 5,79 | 12,4 | 13,2 | .5008 |
| 1/4 | 20 | 62 | 12,80 | 36 | 4,85 | 8 | 5,2 | 6,65 | 14,9 | 15,8 | .5009 |
| 5/16 | 18 | 74 | 15,63 | 40 | 6,25 | 10 | 6,6 | 8,25 | 17,9 | 19,1 | .5010 |
| 3/8 | 16 | 79 | 19,16 | 45 | 7,65 | 12 | 8 | 9,83 | 21,7 | 23,2 | .5011 |
| 7/16 | 14 | 79 | 21,89 | 45 | 9 | 12 | 9,4 | 11,43 | 24,8 | 26,5 | .5012 |
| 1/2 | 13 | 89 | 25,52 | 45 | 10,35 | 14 | 10,75 | 13 | 28,6 | 30,6 | .5013 |
| 9/16 | 12 | 102 | 27,66 | 48 | 11,8 | 16 | 12,25 | 14,61 | 31 | 33,2 | .5014 |
| 5/8 | 11 | 102 | 30,14 | 48 | 13,1 | 18 | 13,5 | 16,18 | 33,8 | 36,2 | .5015 |
| 3/4 | 10 | 115 | 38,26 | 50 | 16 | 20 | 16,5 | 19,35 | 42,2 | 45,2 | .5016 |

Gewindetiefe Thread depth

2,5 x D

Werkzeug-Ident · Tool ident

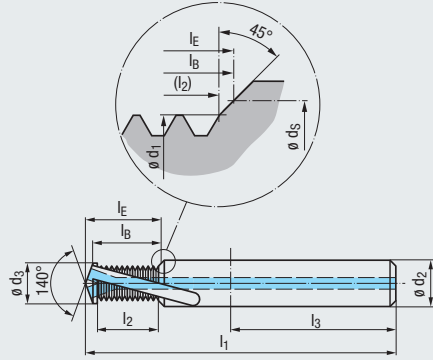
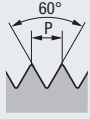
| | GF442201 | GF442501 | GF442801 |
|-----------------------------|----------|-----------------------------|-----------------------------|
| BGF-VHM-Z2 2,5xD R30-IKZ-HB | | BGF-VHM-Z2 2,5xD R30-IKZ-HE | BGF-VHM-Z2 2,5xD R30-IKZ-HA |
| | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | ● |

| $\varnothing D$ inch | P Gg/1" (tpi) | Dimens.-Ident | | | | | | | | | |
|-------------------------|------------------|---------------|-------|-------|-------------------|-------------------|-------------------|-------------------|-------|-------|-------|
| | | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_S$ | l_B | l_E | |
| 3/8 | 16 | 85 | 23,93 | 45 | 7,65 | 12 | 8 | 9,83 | 26,5 | 27,9 | .5011 |
| 7/16 | 14 | 85 | 27,33 | 45 | 9 | 12 | 9,4 | 11,43 | 30,2 | 31,9 | .5012 |
| 1/2 | 13 | 95 | 31,39 | 45 | 10,35 | 14 | 10,75 | 13 | 34,5 | 36,5 | .5013 |
| 9/16 | 12 | 110 | 34,01 | 48 | 11,8 | 16 | 12,25 | 14,61 | 37,3 | 39,6 | .5014 |
| 5/8 | 11 | 110 | 39,38 | 48 | 13,1 | 18 | 13,5 | 16,18 | 43 | 45,5 | .5015 |
| 3/4 | 10 | 125 | 45,88 | 50 | 16 | 20 | 16,5 | 19,35 | 49,9 | 52,9 | .5016 |

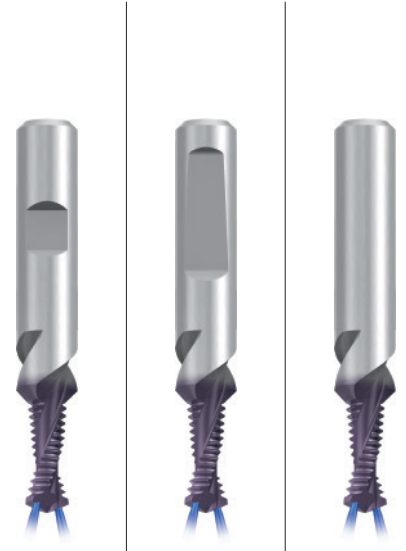
Andere Abmessungen auf Anfrage
Other sizes upon request

UNC

ASME B1.1



| | |
|-----|----------------------------|
| VHM | TICN |
| R30 | RH + LH |
| Z2 | DIN 6535 HB HE HA |
| 90° | Ø D |



- Product Finder
- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr

Einsatzgebiete – Material Applications – material » 328

K 1.1-3.2 **N 1.1-6**
N 2.2-3, 2.6 **N 3.1-2, 4.1**

Gewindetiefe Thread depth

1,5 x D

| Werkzeug-Ident · Tool ident | | | | | | | | | | | | GF422206 | GF422506 | GF422806 |
|-----------------------------|---------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|----------------|----------------|---------------|----------------------------------|----------------------------------|----------------------------------|
| | | | | | | | | | | | Dimens.-Ident | BGF-VHM-Z2 1,5xD R30-IKZ-HB TICN | BGF-VHM-Z2 1,5xD R30-IKZ-HE TICN | BGF-VHM-Z2 1,5xD R30-IKZ-HA TICN |
| Ø D inch | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | Ø d ₁ | Ø d ₂ | Ø d ₃ | Ø d _S | l _B | l _E | | | | |
| Nr. 12 | 24 | 62 | 7,50 | 36 | 4,21 | 8 | 4,5 | 5,79 | 9,2 | 10 | .5008 | | | |
| 1/4 | 20 | 62 | 8,99 | 36 | 4,85 | 8 | 5,2 | 6,65 | 11,1 | 12 | .5009 | ● | ● | ● |
| 5/16 | 18 | 74 | 11,39 | 40 | 6,25 | 10 | 6,6 | 8,25 | 13,7 | 14,9 | .5010 | ● | ● | ● |
| 3/8 | 16 | 79 | 14,40 | 45 | 7,65 | 12 | 8 | 9,83 | 16,9 | 18,4 | .5011 | ● | ● | ● |
| 7/16 | 14 | 79 | 16,45 | 45 | 9 | 12 | 9,4 | 11,43 | 19,3 | 21 | .5012 | ● | ● | ● |
| 1/2 | 13 | 89 | 17,71 | 45 | 10,35 | 14 | 10,75 | 13 | 20,8 | 22,8 | .5013 | ● | ● | ● |
| 9/16 | 12 | 102 | 21,31 | 48 | 11,8 | 16 | 12,25 | 14,61 | 24,7 | 26,9 | .5014 | ● | ● | ● |
| 5/8 | 11 | 102 | 23,21 | 48 | 13,1 | 18 | 13,5 | 16,18 | 26,9 | 29,3 | .5015 | ● | ● | ● |
| 3/4 | 10 | 115 | 28,10 | 50 | 16 | 20 | 16,5 | 19,35 | 32,1 | 35,1 | .5016 | | | |

Gewindetiefe Thread depth

2 x D

| Werkzeug-Ident · Tool ident | | | | | | | | | | | | GF432206 | GF432506 | GF432806 |
|-----------------------------|---------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|----------------|----------------|---------------|--------------------------------|--------------------------------|--------------------------------|
| | | | | | | | | | | | Dimens.-Ident | BGF-VHM-Z2 2xD R30-IKZ-HB TICN | BGF-VHM-Z2 2xD R30-IKZ-HE TICN | BGF-VHM-Z2 2xD R30-IKZ-HA TICN |
| Ø D inch | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | Ø d ₁ | Ø d ₂ | Ø d ₃ | Ø d _S | l _B | l _E | | | | |
| Nr. 12 | 24 | 62 | 10,66 | 36 | 4,21 | 8 | 4,5 | 5,79 | 12,4 | 13,2 | .5008 | | | |
| 1/4 | 20 | 62 | 12,80 | 36 | 4,85 | 8 | 5,2 | 6,65 | 14,9 | 15,8 | .5009 | ● | ● | ● |
| 5/16 | 18 | 74 | 15,63 | 40 | 6,25 | 10 | 6,6 | 8,25 | 17,9 | 19,1 | .5010 | ● | ● | ● |
| 3/8 | 16 | 79 | 19,16 | 45 | 7,65 | 12 | 8 | 9,83 | 21,7 | 23,2 | .5011 | ● | ● | ● |
| 7/16 | 14 | 79 | 21,89 | 45 | 9 | 12 | 9,4 | 11,43 | 24,8 | 26,5 | .5012 | ● | ● | ● |
| 1/2 | 13 | 89 | 25,52 | 45 | 10,35 | 14 | 10,75 | 13 | 28,6 | 30,6 | .5013 | ● | ● | ● |
| 9/16 | 12 | 102 | 27,66 | 48 | 11,8 | 16 | 12,25 | 14,61 | 31 | 33,2 | .5014 | ● | ● | ● |
| 5/8 | 11 | 102 | 30,14 | 48 | 13,1 | 18 | 13,5 | 16,18 | 33,8 | 36,2 | .5015 | ● | ● | ● |
| 3/4 | 10 | 115 | 38,26 | 50 | 16 | 20 | 16,5 | 19,35 | 42,2 | 45,2 | .5016 | | | |

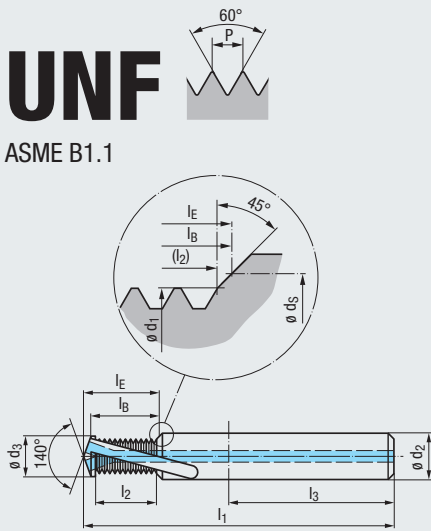
Gewindetiefe Thread depth

2,5 x D

| Werkzeug-Ident · Tool ident | | | | | | | | | | | | GF442206 | GF442506 | GF442806 |
|-----------------------------|---------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|----------------|----------------|---------------|----------------------------------|----------------------------------|----------------------------------|
| | | | | | | | | | | | Dimens.-Ident | BGF-VHM-Z2 2,5xD R30-IKZ-HB TICN | BGF-VHM-Z2 2,5xD R30-IKZ-HE TICN | BGF-VHM-Z2 2,5xD R30-IKZ-HA TICN |
| Ø D inch | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | Ø d ₁ | Ø d ₂ | Ø d ₃ | Ø d _S | l _B | l _E | | | | |
| 3/8 | 16 | 85 | 23,93 | 45 | 7,65 | 12 | 8 | 9,83 | 26,5 | 27,9 | .5011 | ● | ● | ● |
| 7/16 | 14 | 85 | 27,33 | 45 | 9 | 12 | 9,4 | 11,43 | 30,2 | 31,9 | .5012 | ● | ● | ● |
| 1/2 | 13 | 95 | 31,39 | 45 | 10,35 | 14 | 10,75 | 13 | 34,5 | 36,5 | .5013 | ● | ● | ● |
| 9/16 | 12 | 110 | 34,01 | 48 | 11,8 | 16 | 12,25 | 14,61 | 37,3 | 39,6 | .5014 | ● | ● | ● |
| 5/8 | 11 | 110 | 39,38 | 48 | 13,1 | 18 | 13,5 | 16,18 | 43 | 45,5 | .5015 | | | |
| 3/4 | 10 | 125 | 45,88 | 50 | 16 | 20 | 16,5 | 19,35 | 49,9 | 52,9 | .5016 | | | |

Andere Abmessungen auf Anfrage
Other sizes upon request

- Product Finder
- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF**
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys

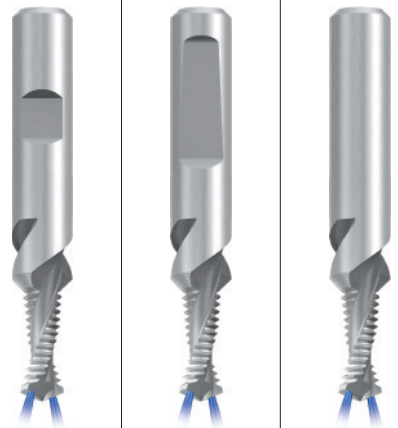


VHM

R30 **RH + LH**

Z2 **DIN 6535**
HB
HE
HA

90° **Ø D**



Einsatzgebiete – Material Applications – material **328**

K 1.1-3.2 **N 1.1-5**
N 2.2-3, 2.6 **N 3.1-2, 4.1**

Gewindetiefe Thread depth

1,5 x D

| Werkzeug-Ident · Tool ident | | | | | | | | | | | | GF422201 | GF422501 | GF422801 |
|-----------------------------|------------------|-------|-------|-------|-------------------|-------------------|-------------------|-------------------|-------|-------|---------------|-----------------------------------|-----------------------------------|-----------------------------------|
| | | | | | | | | | | | Dimens.-Ident | BGF-VHM-Z2 1,5xD R30-IKZ-HB | BGF-VHM-Z2 1,5xD R30-IKZ-HE | BGF-VHM-Z2 1,5xD R30-IKZ-HA |
| Ø D inch | P Gg/1" (tpi) | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_S$ | l_B | l_E | | | | |
| Nr. 10 | 32 | 55 | 7,24 | 36 | 3,8 | 6 | 4,1 | 5,15 | 8,6 | 9,3 | .5041 | | | |
| Nr. 12 | 28 | 62 | 8,27 | 36 | 4,36 | 8 | 4,65 | 5,8 | 9,8 | 10,6 | .5042 | | | |
| 1/4 | 28 | 62 | 9,16 | 36 | 5,26 | 8 | 5,5 | 6,65 | 10,6 | 11,6 | .5043 | ● | ● | ● |
| 5/16 | 24 | 74 | 11,74 | 40 | 6,6 | 10 | 6,9 | 8,25 | 13,5 | 14,7 | .5044 | ● | ● | ● |
| 3/8 | 24 | 79 | 13,87 | 45 | 8,2 | 12 | 8,5 | 9,85 | 15,6 | 17,2 | .5045 | ● | ● | ● |
| 7/16 | 20 | 79 | 17,91 | 45 | 9,55 | 12 | 9,9 | 11,4 | 19,9 | 21,7 | .5046 | ● | ● | ● |
| 1/2 | 20 | 89 | 19,20 | 45 | 11,1 | 14 | 11,5 | 13 | 21,2 | 23,3 | .5047 | ● | ● | ● |
| 9/16 | 18 | 102 | 21,32 | 48 | 12,5 | 16 | 12,9 | 14,6 | 23,6 | 25,9 | .5048 | ● | ● | ● |
| 5/8 | 18 | 102 | 22,74 | 48 | 14,1 | 18 | 14,5 | 16,2 | 25 | 27,6 | .5049 | ● | ● | ● |
| 3/4 | 16 | 115 | 28,78 | 50 | 17 | 20 | 17,5 | 19,4 | 31,3 | 34,5 | .5050 | | | |

Gewindetiefe Thread depth

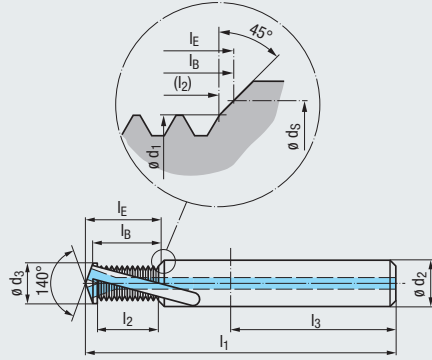
2 x D

| Werkzeug-Ident · Tool ident | | | | | | | | | | | | GF432201 | GF432501 | GF432801 |
|-----------------------------|------------------|-------|-------|-------|-------------------|-------------------|-------------------|-------------------|-------|-------|---------------|---------------------------------|---------------------------------|---------------------------------|
| | | | | | | | | | | | Dimens.-Ident | BGF-VHM-Z2 2xD R30-IKZ-HB | BGF-VHM-Z2 2xD R30-IKZ-HE | BGF-VHM-Z2 2xD R30-IKZ-HA |
| Ø D inch | P Gg/1" (tpi) | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_3$ | $\varnothing d_S$ | l_B | l_E | | | | |
| Nr. 10 | 32 | 55 | 9,63 | 36 | 3,8 | 6 | 4,1 | 5,15 | 11 | 11,7 | .5041 | | | |
| Nr. 12 | 28 | 62 | 10,99 | 36 | 4,36 | 8 | 4,65 | 5,8 | 12,5 | 13,3 | .5042 | | | |
| 1/4 | 28 | 62 | 12,79 | 36 | 5,26 | 8 | 5,5 | 6,65 | 14,3 | 15,3 | .5043 | ● | ● | ● |
| 5/16 | 24 | 74 | 15,98 | 40 | 6,6 | 10 | 6,9 | 8,25 | 17,7 | 19 | .5044 | ● | ● | ● |
| 3/8 | 24 | 79 | 19,16 | 45 | 8,2 | 12 | 8,5 | 9,85 | 20,9 | 22,4 | .5045 | ● | ● | ● |
| 7/16 | 20 | 79 | 21,72 | 45 | 9,55 | 12 | 9,9 | 11,4 | 23,8 | 25,5 | .5046 | ● | ● | ● |
| 1/2 | 20 | 89 | 25,55 | 45 | 11,1 | 14 | 11,5 | 13 | 27,6 | 29,7 | .5047 | ● | ● | ● |
| 9/16 | 18 | 102 | 28,37 | 48 | 12,5 | 16 | 12,9 | 14,6 | 30,6 | 33 | .5048 | ● | ● | ● |
| 5/8 | 18 | 102 | 31,21 | 48 | 14,1 | 18 | 14,5 | 16,2 | 33,5 | 36,1 | .5049 | ● | ● | ● |
| 3/4 | 16 | 115 | 38,31 | 50 | 17 | 20 | 17,5 | 19,4 | 40,9 | 44,1 | .5050 | | | |

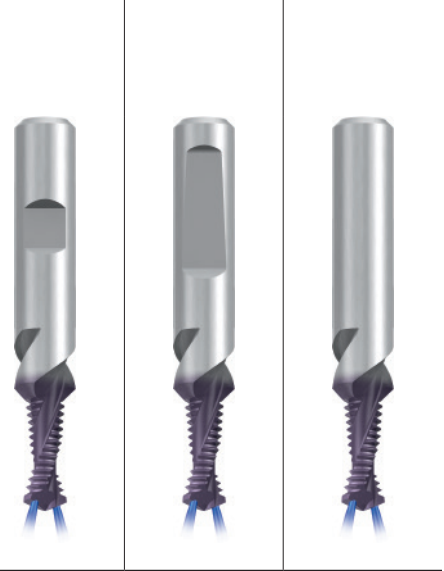
Andere Abmessungen auf Anfrage
Other sizes upon request

UNF

ASME B1.1



| | |
|-----|----------------------------|
| VHM | TICN |
| R30 | RH + LH |
| Z2 | DIN 6535 HB HE HA |
| 90° | ø D |



- Product Finder
- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF**
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK

Einsatzgebiete – Material Applications – material **328**

K 1.1-3.2 N 1.1-6
N 2.2-3, 2.6 N 3.1-2, 4.1

Gewindetiefe Thread depth

1,5 x D

| Werkzeug-Ident · Tool ident | | | | | | | | | | | | GF422206 | GF422506 | GF422806 |
|-----------------------------|------------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|----------------|----------------|-------------------|---|---|---|
| ø D inch | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | ø d ₁ | ø d ₂ | ø d ₃ | ø d _S | l _B | l _E | Dimens.- Ident | BGF-VHM-Z2 1,5xD R30-1KZ-HB TICN | BGF-VHM-Z2 1,5xD R30-1KZ-HE TICN | BGF-VHM-Z2 1,5xD R30-1KZ-HA TICN |
| | | | | | | | | | | | | Nr. 10 | 32 | 55 |
| Nr. 12 | 28 | 62 | 8,27 | 36 | 4,36 | 8 | 4,65 | 5,8 | 9,8 | 10,6 | .5042 | | | |
| 1/4 | 28 | 62 | 9,16 | 36 | 5,26 | 8 | 5,5 | 6,65 | 10,6 | 11,6 | .5043 | ● | ● | ● |
| 5/16 | 24 | 74 | 11,74 | 40 | 6,6 | 10 | 6,9 | 8,25 | 13,5 | 14,7 | .5044 | ● | ● | ● |
| 3/8 | 24 | 79 | 13,87 | 45 | 8,2 | 12 | 8,5 | 9,85 | 15,6 | 17,2 | .5045 | ● | ● | ● |
| 7/16 | 20 | 79 | 17,91 | 45 | 9,55 | 12 | 9,9 | 11,4 | 19,9 | 21,7 | .5046 | ● | ● | ● |
| 1/2 | 20 | 89 | 19,20 | 45 | 11,1 | 14 | 11,5 | 13 | 21,2 | 23,3 | .5047 | ● | ● | ● |
| 9/16 | 18 | 102 | 21,32 | 48 | 12,5 | 16 | 12,9 | 14,6 | 23,6 | 25,9 | .5048 | ● | ● | ● |
| 5/8 | 18 | 102 | 22,74 | 48 | 14,1 | 18 | 14,5 | 16,2 | 25 | 27,6 | .5049 | ● | ● | ● |
| 3/4 | 16 | 115 | 28,78 | 50 | 17 | 20 | 17,5 | 19,4 | 31,3 | 34,5 | .5050 | | | |

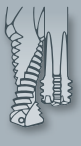
Gewindetiefe Thread depth

2 x D

| Werkzeug-Ident · Tool ident | | | | | | | | | | | | GF432206 | GF432506 | GF432806 |
|-----------------------------|------------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|----------------|----------------|-------------------|---|---|---|
| ø D inch | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | ø d ₁ | ø d ₂ | ø d ₃ | ø d _S | l _B | l _E | Dimens.- Ident | BGF-VHM-Z2 2xD R30-1KZ-HB TICN | BGF-VHM-Z2 2xD R30-1KZ-HE TICN | BGF-VHM-Z2 2xD R30-1KZ-HA TICN |
| | | | | | | | | | | | | Nr. 10 | 32 | 55 |
| Nr. 12 | 28 | 62 | 10,99 | 36 | 4,36 | 8 | 4,65 | 5,8 | 12,5 | 13,3 | .5042 | | | |
| 1/4 | 28 | 62 | 12,79 | 36 | 5,26 | 8 | 5,5 | 6,65 | 14,3 | 15,3 | .5043 | ● | ● | ● |
| 5/16 | 24 | 74 | 15,98 | 40 | 6,6 | 10 | 6,9 | 8,25 | 17,7 | 19 | .5044 | ● | ● | ● |
| 3/8 | 24 | 79 | 19,16 | 45 | 8,2 | 12 | 8,5 | 9,85 | 20,9 | 22,4 | .5045 | ● | ● | ● |
| 7/16 | 20 | 79 | 21,72 | 45 | 9,55 | 12 | 9,9 | 11,4 | 23,8 | 25,5 | .5046 | ● | ● | ● |
| 1/2 | 20 | 89 | 25,55 | 45 | 11,1 | 14 | 11,5 | 13 | 27,6 | 29,7 | .5047 | ● | ● | ● |
| 9/16 | 18 | 102 | 28,37 | 48 | 12,5 | 16 | 12,9 | 14,6 | 30,6 | 33 | .5048 | ● | ● | ● |
| 5/8 | 18 | 102 | 31,21 | 48 | 14,1 | 18 | 14,5 | 16,2 | 33,5 | 36,1 | .5049 | ● | ● | ● |
| 3/4 | 16 | 115 | 38,31 | 50 | 17 | 20 | 17,5 | 19,4 | 40,9 | 44,1 | .5050 | | | |

Andere Abmessungen auf Anfrage
Other sizes upon request

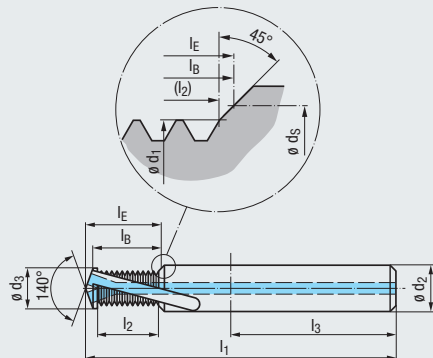
- Zubehör
Accessories
- Tech. Info
- BGF**
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys



- Product Finder
- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF
UNEF
- G Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys

G (BSP)

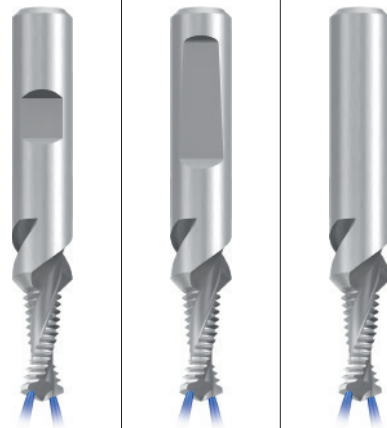
DIN EN ISO 228


VHM
R30
RH + LH
Z2
DIN 6535

 HB
HE
HA

90°

ø D


 Einsatzgebiete – Material
Applications – material ▶▶ 328

| | |
|---------------------|---------------------|
| K 1.1-3.2 | N 1.1-5 |
| N 2.2-3, 2.6 | N 3.1-2, 4.1 |

 Gewindetiefe
Thread depth

1,5 x D

Werkzeug-Ident · Tool ident

| | GF422201 | GF422501 | GF422801 |
|----------------------------|----------|----------|----------|
| BGF-VHM-Z2 1,5xD | | | |
| R30-İKZ-HB | | | |
| | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | ● |

 Nenngröße
Nom. size

 Dimens.-
Ident

| ø D | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | ø d ₁ | ø d ₂ | ø d ₃ | ø d _S | l _B | l _E | Dimens.- Ident |
|--------------|------------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|----------------|----------------|-------------------|
| | | | | | | | | | | | |
| G 1/8 | 28 | 79 | 14,56 | 45 | 8,5 | 12 | 8,8 | 10 | 16,1 | 17,7 | .4035 |
| 1/4 | 19 | 102 | 18,77 | 48 | 11,4 | 16 | 11,8 | 13,5 | 21 | 23,1 | .4036 |
| 3/8 | 19 | 102 | 25,46 | 48 | 14,85 | 18 | 15,25 | 17 | 27,7 | 30,5 | .4037 |

 Gewindetiefe
Thread depth

2 x D

Werkzeug-Ident · Tool ident

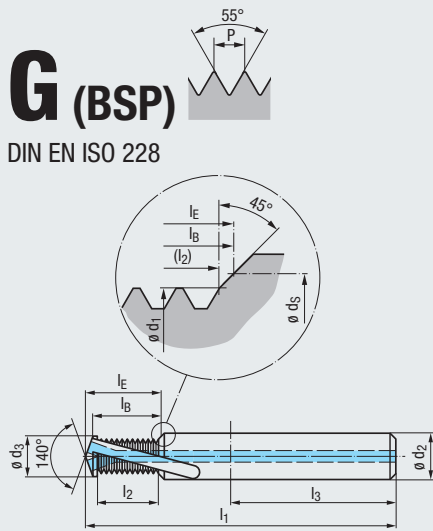
| | GF432201 | GF432501 | GF432801 |
|--------------------------|----------|----------|----------|
| BGF-VHM-Z2 2xD | | | |
| R30-İKZ-HB | | | |
| | ● | ● | ● |
| | ● | ● | ● |
| | ● | ● | ● |

 Nenngröße
Nom. size

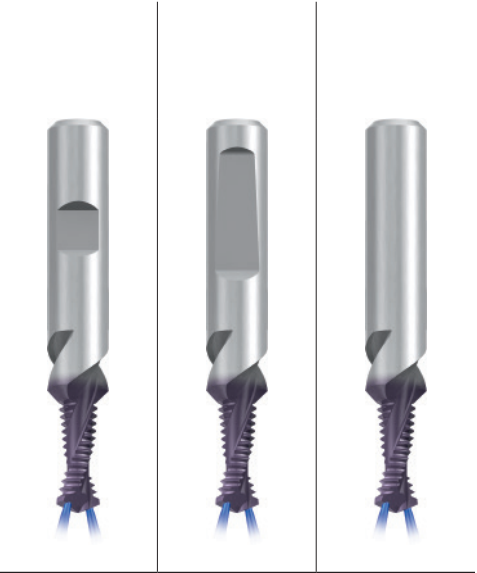
 Dimens.-
Ident

| ø D | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | ø d ₁ | ø d ₂ | ø d ₃ | ø d _S | l _B | l _E | Dimens.- Ident |
|--------------|------------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|----------------|----------------|-------------------|
| | | | | | | | | | | | |
| G 1/8 | 28 | 79 | 19,10 | 45 | 8,5 | 12 | 8,8 | 10 | 20,6 | 22,2 | .4035 |
| 1/4 | 19 | 102 | 25,46 | 48 | 11,4 | 16 | 11,8 | 13,5 | 27,7 | 29,8 | .4036 |
| 3/8 | 19 | 102 | 33,48 | 48 | 14,85 | 18 | 15,25 | 17 | 35,7 | 38,5 | .4037 |

 Andere Abmessungen auf Anfrage
Other sizes upon request

| | |
|-----|----------------------------|
| VHM | TICN |
| R30 | RH + LH |
| Z2 | DIN 6535 HB HE HA |
| 90° | θD |



- Product Finder
- v_c / f_z
- M
- MF
- UNC UN, UNS
- UNF UNEF
- G, Rp
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- EG (STI) SELF-LOCK
- Tr
- Zubehör Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys

Einsatzgebiete – Material Applications – material ▶▶ 328

K 1.1-3.2 N 1.1-6
N 2.2-3, 2.6 N 3.1-2, 4.1

Gewindetiefe Thread depth

1,5 x D

| Werkzeug-Ident · Tool ident | | | | | | | | | | | | GF422206 | GF422506 | GF422806 |
|-----------------------------|---------------|-------|-------|-------|--------------|--------------|--------------|--------------|-------|-------|---------------|----------------------------------|----------------------------------|----------------------------------|
| Nenngröße Nom. size | | | | | | | | | | | Dimens.-Ident | BGF-VHM-Z2 1,5xD R30-1KZ-HB TICN | BGF-VHM-Z2 1,5xD R30-1KZ-HE TICN | BGF-VHM-Z2 1,5xD R30-1KZ-HA TICN |
| θD | P Gg/1" (tpi) | l_1 | l_2 | l_3 | θd_1 | θd_2 | θd_3 | θd_s | l_b | l_e | | | | |
| G 1/8 | 28 | 79 | 14,56 | 45 | 8,5 | 12 | 8,8 | 10 | 16,1 | 17,7 | .4035 | ● | ● | ● |
| 1/4 | 19 | 102 | 18,77 | 48 | 11,4 | 16 | 11,8 | 13,5 | 21 | 23,1 | .4036 | ● | ● | ● |
| 3/8 | 19 | 102 | 25,46 | 48 | 14,85 | 18 | 15,25 | 17 | 27,7 | 30,5 | .4037 | ● | ● | ● |

Gewindetiefe Thread depth

2 x D

| Werkzeug-Ident · Tool ident | | | | | | | | | | | | GF432206 | GF432506 | GF432806 |
|-----------------------------|---------------|-------|-------|-------|--------------|--------------|--------------|--------------|-------|-------|---------------|--------------------------------|--------------------------------|--------------------------------|
| Nenngröße Nom. size | | | | | | | | | | | Dimens.-Ident | BGF-VHM-Z2 2xD R30-1KZ-HB TICN | BGF-VHM-Z2 2xD R30-1KZ-HE TICN | BGF-VHM-Z2 2xD R30-1KZ-HA TICN |
| θD | P Gg/1" (tpi) | l_1 | l_2 | l_3 | θd_1 | θd_2 | θd_3 | θd_s | l_b | l_e | | | | |
| G 1/8 | 28 | 79 | 19,10 | 45 | 8,5 | 12 | 8,8 | 10 | 20,6 | 22,2 | .4035 | ● | ● | ● |
| 1/4 | 19 | 102 | 25,46 | 48 | 11,4 | 16 | 11,8 | 13,5 | 27,7 | 29,8 | .4036 | ● | ● | ● |
| 3/8 | 19 | 102 | 33,48 | 48 | 14,85 | 18 | 15,25 | 17 | 35,7 | 38,5 | .4037 | ● | ● | ● |

Andere Abmessungen auf Anfrage Other sizes upon request



Gewinde-Tiefenlehndorne siehe Seite 624 - 627

Thread depth plug gauges, see page 624 - 627

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

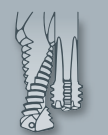
GF-KEG

ZGF

ZIRK-GF

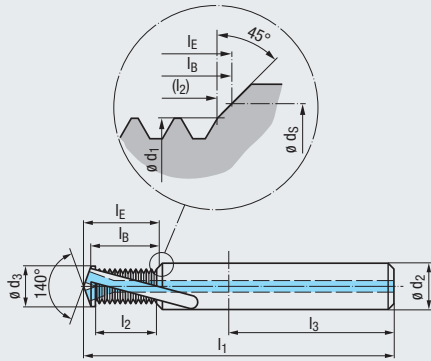
Gigant

MoSys



EG M (STI)

DIN 8140-2



VHM

R30

RH + LH

Z2



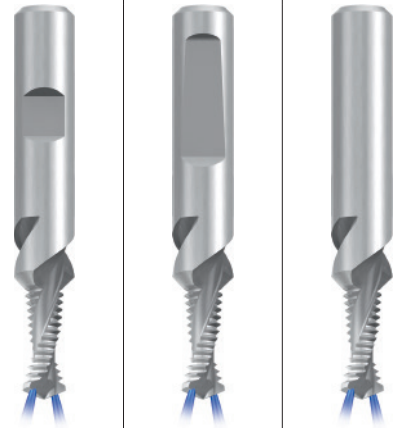
DIN 6535



90°



θD



Einsatzgebiete – Material
Applications – material

» 328

K 1.1-3.2 N 1.1-5
N 2.2-3, 2.6 N 3.1-2, 4.1

Gewindetiefe
Thread depth

1,5 x D

Werkzeug-Ident · Tool ident

GF422201 GF422501 GF422801

Nenngröße
Nom. size

Dimens.-
Ident

BGF-VHM-Z2 1,5xD R30-
IKZ-HB BGF-VHM-Z2 1,5xD R30-
IKZ-HE BGF-VHM-Z2 1,5xD R30-
IKZ-HA

| | θD | P | | l_1 | l_2 | l_3 | θd_1 | θd_2 | θd_3 | θd_5 | l_B | l_E | Dimens.- Ident |
|-------------|------------|------|--|-------|-------|-------|--------------|--------------|--------------|--------------|-------|-------|-------------------|
| | | mm | | | | | | | | | | | |
| EG M | 6 | 1 | | 74 | 10,10 | 40 | 6 | 10 | 6,3 | 7,6 | 11,8 | 12,9 | .0971 |
| | 8 | 1,25 | | 79 | 12,60 | 45 | 8,1 | 12 | 8,4 | 9,9 | 14,6 | 16,1 | .0973 |
| | 10 | 1,5 | | 89 | 16,63 | 45 | 10 | 14 | 10,4 | 12,25 | 19,1 | 21 | .0975 |
| | 12 | 1,75 | | 102 | 19,38 | 48 | 12,1 | 16 | 12,5 | 14,6 | 22,2 | 24,5 | .0977 |
| | 14 | 2 | | 102 | 22,12 | 48 | 14,1 | 18 | 14,5 | 16,9 | 25,3 | 28 | .0978 |
| | 16 | 2 | | 115 | 26,17 | 50 | 16 | 20 | 16,5 | 18,9 | 29,4 | 32,4 | .0979 |

| | | |
|---|---|---|
| ● | ● | ● |
| ● | ● | ● |
| ● | ● | ● |
| ● | ● | ● |
| ● | ● | ● |
| ● | ● | ● |

Gewindetiefe
Thread depth

2 x D

Werkzeug-Ident · Tool ident

GF432201 GF432501 GF432801

Nenngröße
Nom. size

Dimens.-
Ident

BGF-VHM-Z2 2xD R30-
IKZ-HB BGF-VHM-Z2 2xD R30-
IKZ-HE BGF-VHM-Z2 2xD R30-
IKZ-HA

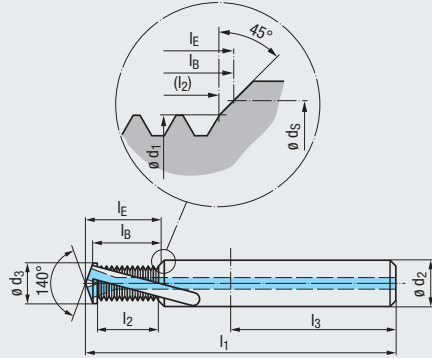
| | θD | P | | l_1 | l_2 | l_3 | θd_1 | θd_2 | θd_3 | θd_5 | l_B | l_E | Dimens.- Ident |
|-------------|------------|------|--|-------|-------|-------|--------------|--------------|--------------|--------------|-------|-------|-------------------|
| | | mm | | | | | | | | | | | |
| EG M | 6 | 1 | | 74 | 13,10 | 40 | 6 | 10 | 6,3 | 7,6 | 14,8 | 15,9 | .0971 |
| | 8 | 1,25 | | 79 | 16,35 | 45 | 8,1 | 12 | 8,4 | 9,9 | 18,4 | 19,9 | .0973 |
| | 10 | 1,5 | | 89 | 21,13 | 45 | 10 | 14 | 10,4 | 12,25 | 23,6 | 25,5 | .0975 |
| | 12 | 1,75 | | 102 | 24,63 | 48 | 12,1 | 16 | 12,5 | 14,6 | 27,5 | 29,7 | .0977 |
| | 14 | 2 | | 102 | 30,12 | 48 | 14,1 | 18 | 14,5 | 16,9 | 33,3 | 36 | .0978 |
| | 16 | 2 | | 115 | 34,17 | 50 | 16 | 20 | 16,5 | 18,9 | 37,4 | 40,4 | .0979 |

| | | |
|---|---|---|
| ● | ● | ● |
| ● | ● | ● |
| ● | ● | ● |
| ● | ● | ● |
| ● | ● | ● |
| ● | ● | ● |

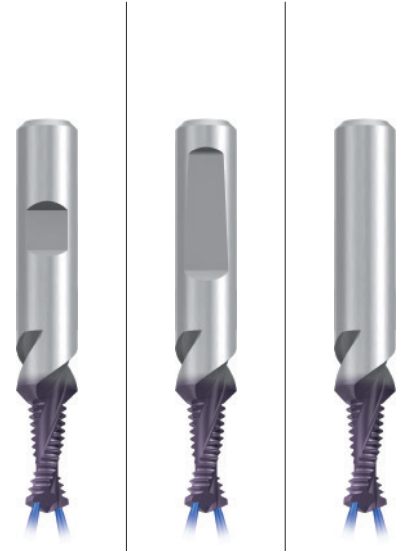
Andere Abmessungen auf Anfrage
Other sizes upon request

EG M (STI)

DIN 8140-2



| | |
|-----|----------------------------|
| VHM | TICN |
| R30 | RH + LH |
| Z2 | DIN 6535 HB HE HA |
| 90° | ø D |



- Product Finder
- v_c / f_z
- M
- MF
- UNC UN, UNS
- UNF UNEF
- G, Rp
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- EG (STI) SELF-LOCK

Einsatzgebiete – Material Applications – material ▶ 328

K 1.1-3.2 **N** 1.1-6
N 2.2-3, 2.6 **N** 3.1-2, 4.1

Gewindetiefe Thread depth

1,5 x D

| Werkzeug-Ident · Tool ident | | | | | | | | | | | | GF422206 | GF422506 | GF422806 |
|-----------------------------|------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|----------------|----------------|---------------|----------------------------------|----------------------------------|----------------------------------|
| Nenngröße Nom. size | | | | | | | | | | | Dimens.-Ident | BGF-VHM-Z2 1,5xD R30-IKZ-HB TICN | BGF-VHM-Z2 1,5xD R30-IKZ-HE TICN | BGF-VHM-Z2 1,5xD R30-IKZ-HA TICN |
| ø D | P mm | l ₁ | l ₂ | l ₃ | ø d ₁ | ø d ₂ | ø d ₃ | ø d _S | l _B | l _E | | | | |
| EG M 6 | 1 | 74 | 10,10 | 40 | 6 | 10 | 6,3 | 7,6 | 11,8 | 12,9 | .0971 | ● | ● | ● |
| 8 | 1,25 | 79 | 12,60 | 45 | 8,1 | 12 | 8,4 | 9,9 | 14,6 | 16,1 | .0973 | ● | ● | ● |
| 10 | 1,5 | 89 | 16,63 | 45 | 10 | 14 | 10,4 | 12,25 | 19,1 | 21 | .0975 | ● | ● | ● |
| 12 | 1,75 | 102 | 19,38 | 48 | 12,1 | 16 | 12,5 | 14,6 | 22,2 | 24,5 | .0977 | ● | ● | ● |
| 14 | 2 | 102 | 22,12 | 48 | 14,1 | 18 | 14,5 | 16,9 | 25,3 | 28 | .0978 | ● | ● | ● |
| 16 | 2 | 115 | 26,17 | 50 | 16 | 20 | 16,5 | 18,9 | 29,4 | 32,4 | .0979 | ● | ● | ● |

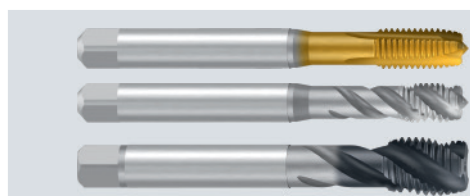
Gewindetiefe Thread depth

2 x D

| Werkzeug-Ident · Tool ident | | | | | | | | | | | | GF432206 | GF432506 | GF432806 |
|-----------------------------|------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|----------------|----------------|---------------|--------------------------------|--------------------------------|--------------------------------|
| Nenngröße Nom. size | | | | | | | | | | | Dimens.-Ident | BGF-VHM-Z2 2xD R30-IKZ-HB TICN | BGF-VHM-Z2 2xD R30-IKZ-HE TICN | BGF-VHM-Z2 2xD R30-IKZ-HA TICN |
| ø D | P mm | l ₁ | l ₂ | l ₃ | ø d ₁ | ø d ₂ | ø d ₃ | ø d _S | l _B | l _E | | | | |
| EG M 6 | 1 | 74 | 13,10 | 40 | 6 | 10 | 6,3 | 7,6 | 14,8 | 15,9 | .0971 | ● | ● | ● |
| 8 | 1,25 | 79 | 16,35 | 45 | 8,1 | 12 | 8,4 | 9,9 | 18,4 | 19,9 | .0973 | ● | ● | ● |
| 10 | 1,5 | 89 | 21,13 | 45 | 10 | 14 | 10,4 | 12,25 | 23,6 | 25,5 | .0975 | ● | ● | ● |
| 12 | 1,75 | 102 | 24,63 | 48 | 12,1 | 16 | 12,5 | 14,6 | 27,5 | 29,7 | .0977 | ● | ● | ● |
| 14 | 2 | 102 | 30,12 | 48 | 14,1 | 18 | 14,5 | 16,9 | 33,3 | 36 | .0978 | ● | ● | ● |
| 16 | 2 | 115 | 34,17 | 50 | 16 | 20 | 16,5 | 18,9 | 37,4 | 40,4 | .0979 | ● | ● | ● |

Andere Abmessungen auf Anfrage Other sizes upon request

- Tr
- Zubehör Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys



Gewindebohrer für Metrisches EG-Gewinde siehe Seite 216 - 219

Taps for Metric STI thread, see page 216 - 219

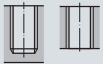
● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

- Product Finder
- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info
- BGF**
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys
- 



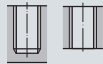
Für die Bearbeitung von Aluminium und Grauguss
For the machining of aluminium and cast iron

ZBGF-T



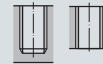
Für die Hartbearbeitung
For hard materials

ZBGF-H



Für die Weichbearbeitung
For soft/unhardened materials

ZBGF-W



Seite · Page

| | | | |
|-----|-----|-----|--------------|
| 354 | 355 | 355 | M, MF |
| | 356 | 356 | UNC |
| | 357 | 357 | UNF |

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

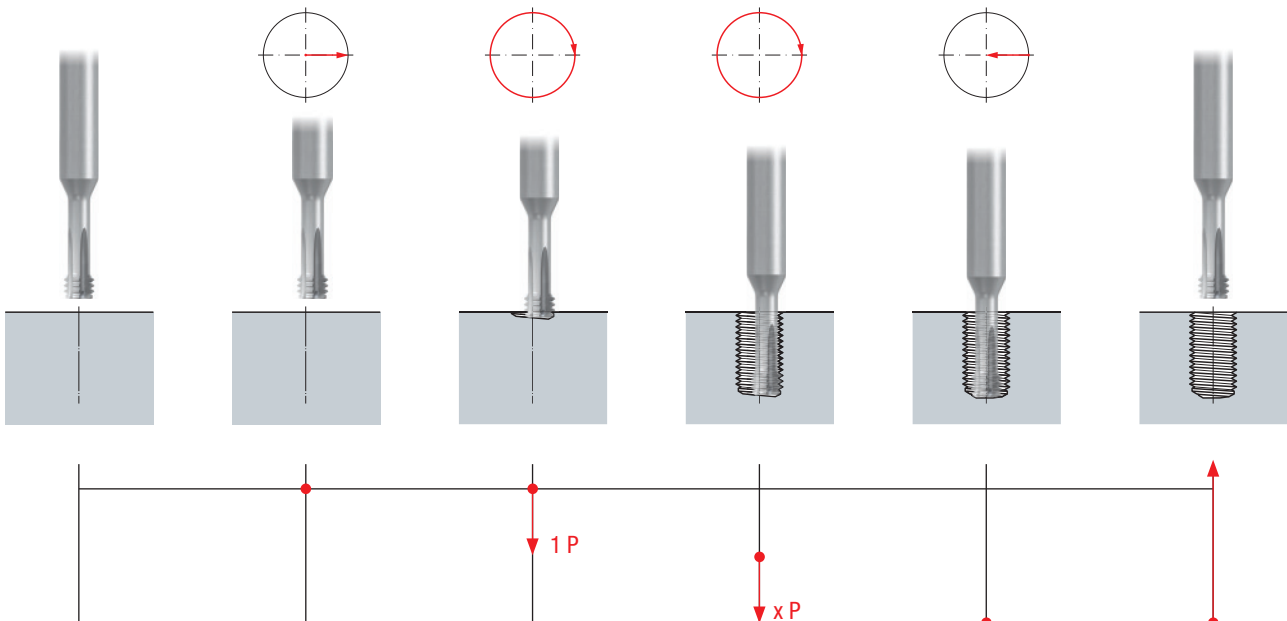
ZIRK-GF

Gigant

MoSys



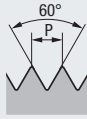
Gewindefräszyklus · Thread milling cycle



- Product Finder
- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys

M, MF

DIN 13



VHM

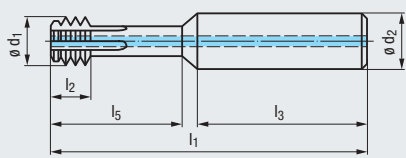
TICN

RH + LH

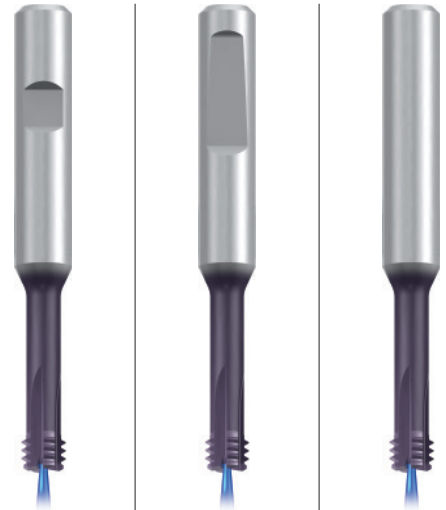
RH-rot.

Z3 - Z4

DIN 6535
 HB
 HE
 HA



ZBGF-T
Für die Bearbeitung von Aluminium und Grauguss
For the machining of aluminium and cast iron



K 1.1-2 **N** 1.1-6, 3.1-2

Einsatzgebiete – Material
Applications – material » 328

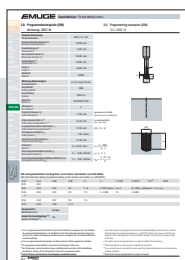
Gewindetiefe
Thread depth

3 x D

Werkzeug-Ident · Tool ident

| P mm | ø D | l ₁ | l ₂ | l ₃ | l ₅ | ø d ₁ | ø d ₂ | Z | Dimens.- Ident | GF753276 | GF753576 | GF753876 |
|-------------|------------------|----------------|----------------|----------------|----------------|------------------|------------------|---|-------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| | | | | | | | | | | ZBGF-T-VHM 3xD IKZ-HB TICN | ZBGF-T-VHM 3xD IKZ-HE TICN | ZBGF-T-VHM 3xD IKZ-HA TICN |
| 1 | M 6 - M 7 | 65 | 4 | 36 | 20 | 4,5 | 8 | 3 | .0060 | ● | ● | ● |
| 1,25 | M 8 - M10 x 1,25 | 80 | 5 | 40 | 27 | 6,2 | 10 | 4 | .0080 | ● | ● | ● |
| 1,5 | M10 - M12 x 1,5 | 85 | 6 | 40 | 34 | 7,75 | 10 | 4 | .0100 | ● | ● | ● |
| 1,75 | M12 | 100 | 7 | 45 | 39 | 9,2 | 12 | 4 | .0112 | ● | ● | ● |

Andere Abmessungen auf Anfrage
Other sizes upon request

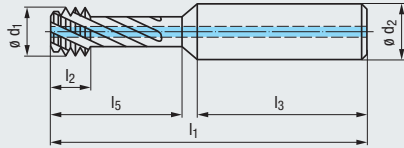
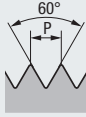


Programmierbeispiel für
Zirkular-Bohrgewindefräser Typ ZBGF
siehe Seite 464

Programming example for
circular drill thread mills type ZBGF,
see page 464

M, MF

DIN 13



VHM **TIALN T4**

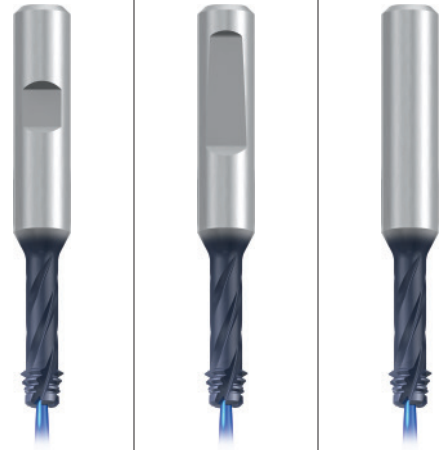
RH + LH **RH-rot.**

R30 **Z3 - Z4**

DIN 6535
HB HE HA

ZBGF-W

Für die Weichbearbeitung
For soft/unhardened materials



| | | |
|-----------------------|---------------------|---------------------|
| P 1.1-5.1 | M 1.1-4.1 | K 1.1-4.2 |
| N 1.1-6, 2.1-6 | N 3.1-2 | N 4.1, 4.3-4 |
| S 1.1-3 | S 2.1-2, 2.4 | H 1.1-2 |

Einsatzgebiete – Material
Applications – material **328**

Gewindetiefe
Thread depth

2 x D

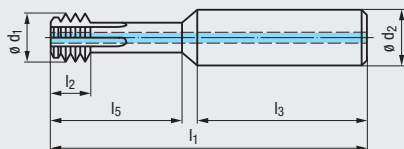
Werkzeug-Ident · Tool ident

| P mm | ø D | l ₁ | l ₂ | l ₃ | l ₅ | ø d ₁ | ø d ₂ | Z | Dimens.-Ident |
|-------------|------------------|----------------|----------------|----------------|----------------|------------------|------------------|---|---------------|
| 1 | M 6 - M 7 | 60 | 4,6 | 36 | 16 | 4,51 | 8 | 3 | .0060 |
| 1,25 | M 8 - M10 x 1,25 | 71 | 5,7 | 40 | 21 | 6,23 | 10 | 4 | .0080 |
| 1,5 | M10 - M12 x 1,5 | 76 | 6,9 | 40 | 26 | 7,75 | 10 | 4 | .0100 |
| 1,75 | M12 | 86 | 7,9 | 45 | 32 | 9,16 | 12 | 4 | .0112 |
| 2 | M14 - M16 | 98 | 9,1 | 48 | 41 | 11,08 | 16 | 4 | .0114 |

| GF732257 | GF732557 | GF732857 |
|--|--|--|
| ZBGF-W-VHM 2xD R30- IKZ-HB TIALN-T4 | ZBGF-W-VHM 2xD R30- IKZ-HE TIALN-T4 | ZBGF-W-VHM 2xD R30- IKZ-HA TIALN-T4 |
| ● | ● | ● |
| ● | ● | ● |
| ● | ● | ● |
| ● | ● | ● |
| ● | ● | ● |

M, MF

DIN 13



VHM **TIALN T3**

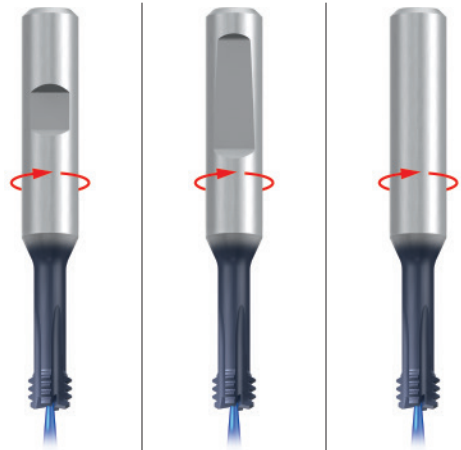
RH **LH-rot.**

Z4

DIN 6535
HB HE HA

ZBGF-H

Für die Hartbearbeitung
For hard materials



| | |
|----------------|----------------|
| N 2.7-8 | H 1.1-5 |
|----------------|----------------|

Einsatzgebiete – Material
Applications – material **328**

Gewindetiefe
Thread depth

2 x D

Werkzeug-Ident · Tool ident

| P mm | ø D | l ₁ | l ₂ | l ₃ | l ₅ | ø d ₁ | ø d ₂ | Z | Dimens.-Ident |
|-------------|------------------|----------------|----------------|----------------|----------------|------------------|------------------|---|---------------|
| 1,25 | M 8 - M10 x 1,25 | 71 | 5 | 40 | 19 | 6,2 | 10 | 4 | .0080 |
| 1,5 | M10 - M12 x 1,5 | 76 | 6 | 40 | 25 | 7,75 | 10 | 4 | .0100 |
| 1,75 | M12 | 86 | 7 | 45 | 31 | 9,2 | 12 | 4 | .0112 |
| 2 | M14 - M16 | 98 | 8 | 48 | 36 | 11,1 | 16 | 4 | .0114 |

| GF733208 | GF733508 | GF733808 |
|---------------------------------------|---------------------------------------|---------------------------------------|
| ZBGF-H-VHM 2xD IKZ-HB TIALN-T3 | ZBGF-H-VHM 2xD IKZ-HE TIALN-T3 | ZBGF-H-VHM 2xD IKZ-HA TIALN-T3 |
| ● | ● | ● |
| ● | ● | ● |
| ● | ● | ● |
| ● | ● | ● |
| ● | ● | ● |

Andere Abmessungen auf Anfrage
Other sizes upon request

Product Finder

v_c / f_z

M

MF

UNC UN, UNS

UNF UNEF

G, Rp

NPT, NPTF Rc, W

BSW, BSF

Pg

EG (STI) SELF-LOCK

Tr

Zubehör Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

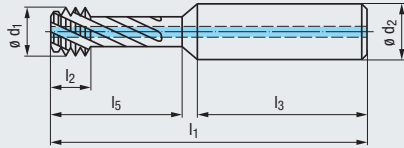
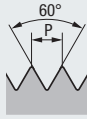
Gigant

MoSys

- Product Finder
- v_c / f_z
- M
- MF
- UNC**
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info
- BGF
- ZBGF**
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys

UNC

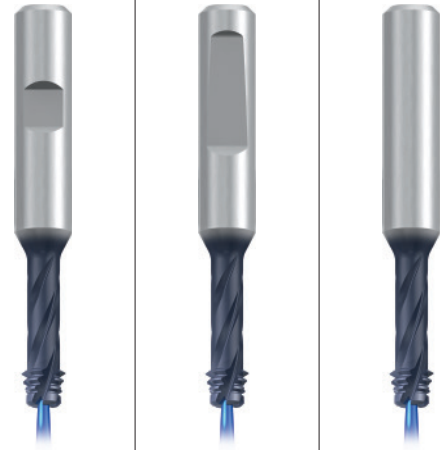
ASME B1.1



| | |
|----------------------------|-----------------|
| VHM | TIALN T4 |
| RH + LH | RH-rot. |
| R30 | Z3 - Z5 |
| DIN 6535 HB HE HA | $\varnothing D$ |

ZBGF-W

Für die Weichbearbeitung
For soft/unhardened materials



- | | | |
|----------------|--------------|--------------|
| P 1.1-5.1 | M 1.1-4.1 | K 1.1-4.2 |
| N 1.1-6, 2.1-6 | N 3.1-2 | N 4.1, 4.3-4 |
| S 1.1-3 | S 2.1-2, 2.4 | H 1.1-2 |

Einsatzgebiete – Material
Applications – material [» 328](#)

Gewindetiefe
Thread depth

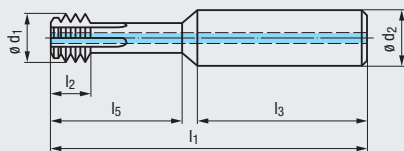
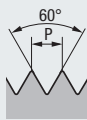
2 x D

Werkzeug-Ident · Tool ident

| $\varnothing D$ inch | P Gg/1" (tpi) | l_1 | l_2 | l_3 | l_5 | $\varnothing d_1$ | $\varnothing d_2$ | Z | Dimens.- Ident | GF732257 | GF732557 | GF732857 |
|-------------------------|------------------|-------|-------|-------|-------|-------------------|-------------------|---|-------------------|---|---|---|
| | | | | | | | | | | ZBGF-W-VHM 2xD R30-IKZ-HB TIALN-T4 | ZBGF-W-VHM 2xD R30-IKZ-HE TIALN-T4 | ZBGF-W-VHM 2xD R30-IKZ-HA TIALN-T4 |
| 1/4 | 20 | 60 | 5,8 | 36 | 17 | 4,64 | 8 | 3 | .5009 | • | • | • |
| 5/16 | 18 | 76 | 6,4 | 40 | 22 | 5,64 | 10 | 4 | .5010 | • | • | • |
| 3/8 | 16 | 76 | 7,2 | 40 | 26 | 7,16 | 10 | 4 | .5011 | • | • | • |
| 7/16 | 14 | 86 | 8,1 | 45 | 31 | 8,47 | 12 | 4 | .5012 | • | • | • |
| 1/2 | 13 | 86 | 8,9 | 45 | 33 | 10,08 | 12 | 4 | .5013 | • | • | • |
| 5/8 | 11 | 98 | 10,4 | 48 | 42 | 12,89 | 16 | 4 | .5015 | • | • | • |
| 3/4 | 10 | 111 | 11,4 | 50 | 51 | 15,5 | 20 | 5 | .5016 | • | • | • |

UNC

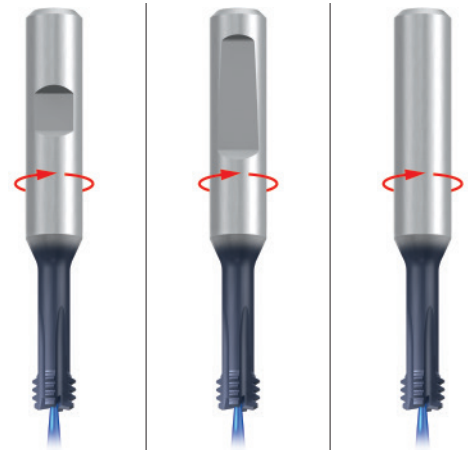
ASME B1.1



| | |
|----------------------------|-----------------|
| VHM | TIALN T3 |
| RH | LH-rot. |
| | Z4 - Z5 |
| DIN 6535 HB HE HA | $\varnothing D$ |

ZBGF-H

Für die Hartbearbeitung
For hard materials



- | | |
|---------|---------|
| N 2.7-8 | H 1.1-5 |
|---------|---------|

Einsatzgebiete – Material
Applications – material [» 328](#)

Gewindetiefe
Thread depth

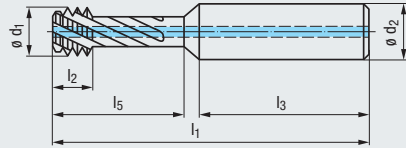
2 x D

Werkzeug-Ident · Tool ident

| $\varnothing D$ inch | P Gg/1" (tpi) | l_1 | l_2 | l_3 | l_5 | $\varnothing d_1$ | $\varnothing d_2$ | Z | Dimens.- Ident | GF733208 | GF733508 | GF733808 |
|-------------------------|------------------|-------|-------|-------|-------|-------------------|-------------------|---|-------------------|---|---|---|
| | | | | | | | | | | ZBGF-H-VHM 2xD IKZ-HB TIALN-T3 | ZBGF-H-VHM 2xD IKZ-HE TIALN-T3 | ZBGF-H-VHM 2xD IKZ-HA TIALN-T3 |
| 5/16 | 18 | 76 | 5,6 | 40 | 22 | 5,64 | 10 | 4 | .5010 | • | • | • |
| 3/8 | 16 | 76 | 6,4 | 40 | 27 | 7,16 | 10 | 4 | .5011 | • | • | • |
| 7/16 | 14 | 86 | 7,3 | 45 | 31 | 8,47 | 12 | 4 | .5012 | • | • | • |
| 1/2 | 13 | 86 | 7,8 | 45 | 33 | 10,08 | 12 | 4 | .5013 | • | • | • |
| 5/8 | 11 | 98 | 9,2 | 48 | 42 | 12,89 | 16 | 4 | .5015 | • | • | • |
| 3/4 | 10 | 111 | 10,2 | 50 | 51 | 15,5 | 20 | 5 | .5016 | • | • | • |

UNF

ASME B1.1



VHM **TIALN T4**

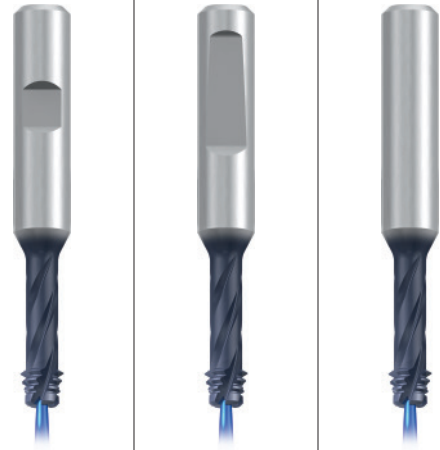
RH + LH **RH-rot.**

R30 **Z3 - Z5**

DIN 6535
HB HE HA

ZBGF-W

Für die Weichbearbeitung
For soft/unhardened materials



- P** 1.1-5.1 **M** 1.1-4.1 **K** 1.1-4.2
- N** 1.1-6, 2.1-6 **N** 3.1-2 **N** 4.1, 4.3-4
- S** 1.1-3 **S** 2.1-2, 2.4 **H** 1.1-2

Einsatzgebiete – Material
Applications – material » 328

Gewindetiefe
Thread depth

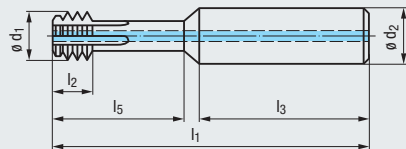
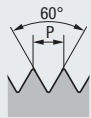
| Werkzeug-Ident · Tool ident | | | | | | | | | | Dimens.-Ident |
|-----------------------------|------------------|----------------|----------------|----------------|----------------|------------------|------------------|---|--|---------------|
| ø D inch | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | l ₅ | ø d ₁ | ø d ₂ | Z | | |
| 1/4 | 28 | 60 | 4,2 | 36 | 17 | 4,66 | 8 | 3 | | .5043 |
| 5/16 | 24 | 76 | 4,8 | 40 | 22 | 5,64 | 10 | 4 | | .5044 |
| 3/8 | 24 | 76 | 4,8 | 40 | 26 | 7,14 | 10 | 4 | | .5045 |
| 7/16 - 1/2 | 20 | 86 | 5,8 | 45 | 33 | 8,45 | 12 | 4 | | .5046 |
| 9/16 - 5/8 | 18 | 98 | 6,4 | 48 | 41 | 11,27 | 16 | 4 | | .5048 |
| 3/4 | 16 | 111 | 7,2 | 50 | 51 | 15,38 | 20 | 5 | | .5050 |

2 x D

| GF732257 | GF732557 | GF732857 |
|---|---|---|
| ZBGF-W-VHM 2xD R30-İKZ-HB TIALN-T4 | ZBGF-W-VHM 2xD R30-İKZ-HE TIALN-T4 | ZBGF-W-VHM 2xD R30-İKZ-HA TIALN-T4 |
| • | • | • |
| • | • | • |
| • | • | • |
| • | • | • |
| • | • | • |
| • | • | • |

UNF

ASME B1.1



VHM **TIALN T3**

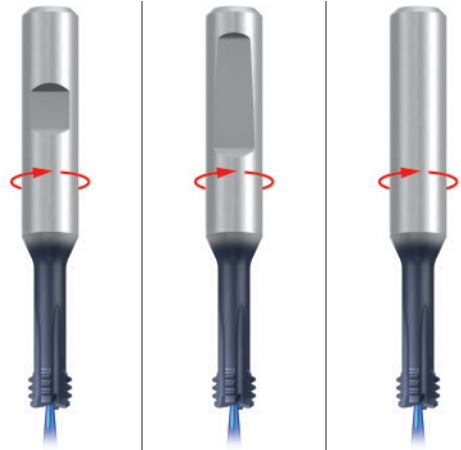
RH **LH-rot.**

Z4 - Z5

DIN 6535
HB HE HA

ZBGF-H

Für die Hartbearbeitung
For hard materials



- N** 2.7-8 **H** 1.1-5

Einsatzgebiete – Material
Applications – material » 328

Gewindetiefe
Thread depth

| Werkzeug-Ident · Tool ident | | | | | | | | | | Dimens.-Ident |
|-----------------------------|------------------|----------------|----------------|----------------|----------------|------------------|------------------|---|--|---------------|
| ø D inch | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | l ₅ | ø d ₁ | ø d ₂ | Z | | |
| 5/16 | 24 | 76 | 4,2 | 40 | 22 | 5,64 | 10 | 4 | | .5044 |
| 3/8 | 24 | 76 | 4,2 | 40 | 27 | 7,14 | 10 | 4 | | .5045 |
| 7/16 - 1/2 | 20 | 86 | 5,1 | 45 | 33 | 8,45 | 12 | 4 | | .5046 |
| 9/16 - 5/8 | 18 | 98 | 5,6 | 48 | 41 | 11,27 | 16 | 4 | | .5048 |
| 3/4 | 16 | 111 | 6,4 | 50 | 51 | 15,38 | 20 | 5 | | .5050 |

2 x D

| GF733208 | GF733508 | GF733808 |
|---|---|---|
| ZBGF-H-VHM 2xD İKZ-HB TIALN-T3 | ZBGF-H-VHM 2xD İKZ-HE TIALN-T3 | ZBGF-H-VHM 2xD İKZ-HA TIALN-T3 |
| • | • | • |
| • | • | • |
| • | • | • |
| • | • | • |
| • | • | • |
| • | • | • |

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

Andere Abmessungen auf Anfrage
Other sizes upon request

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

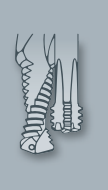
ZGF

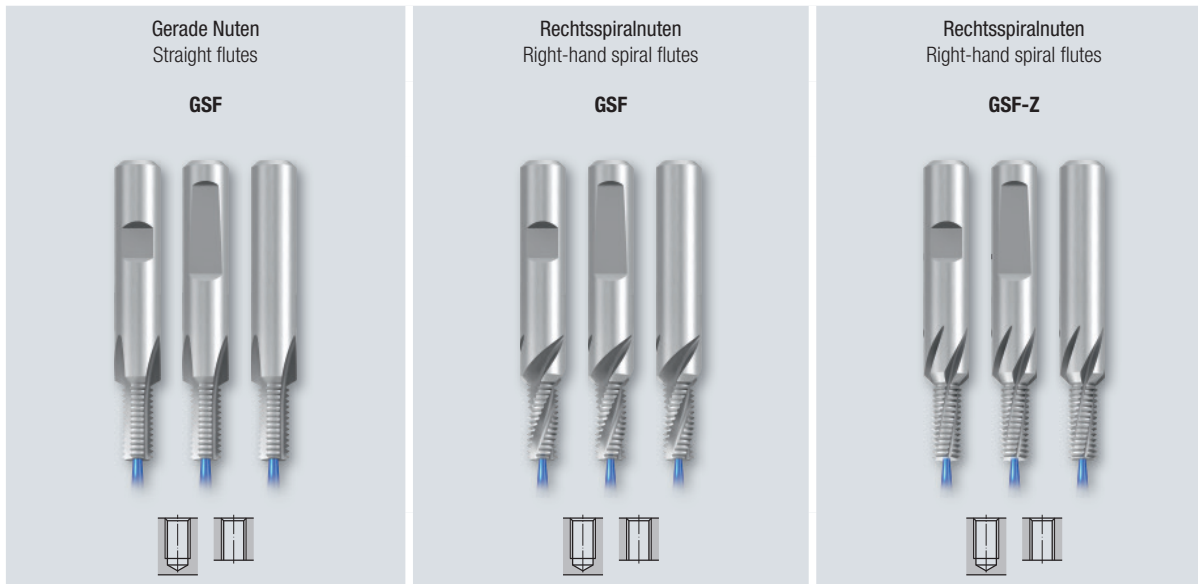
ZIRK-GF

Gigant

MoSys

- Product Finder
- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info
- BGF
- ZBGF
- GSF**
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys





Seite · Page

| | | | |
|-----------|-----------|-----------|----------------|
| 360 - 361 | 362 - 363 | 364 - 365 | M |
| 366 - 367 | 368 - 369 | 370 - 371 | MF |
| | 372 - 373 | | UNC |
| | 374 - 375 | | UNF |
| | 376 - 377 | | G (BSP) |
| 378 - 379 | | | LK-M |

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



Mögliche Modifikationen · Possible modifications



Stirnseite ohne/mit Stirnschnitt
Face chamfer with/without cutting face



AZR/AZ (ausgesetzte Zähne)
AZR/AZ (alternating teeth)



Unvollständigen Gang entfernen
Remove incomplete thread



IKZN (innere Kühlschmierstoff-Zufuhr mit Austritt in den Nuten)
IKZN (internal coolant supply exiting in the flutes)



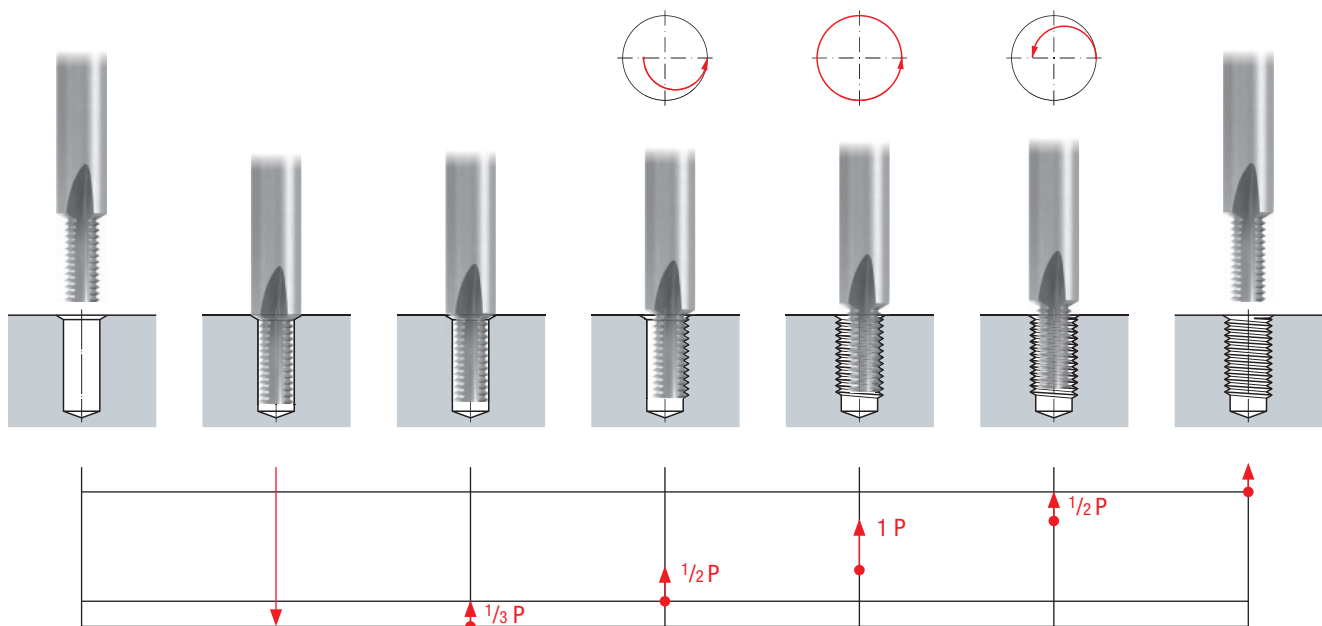
Halsfreischliff
Recessed neck



Schaftkühlfluten
Coolant grooves along the shank

Eine Beschreibung dieser Modifikationsmöglichkeiten finden Sie auf Seite 456 - 457
For a description of these modifications, see pages 456 - 457

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

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

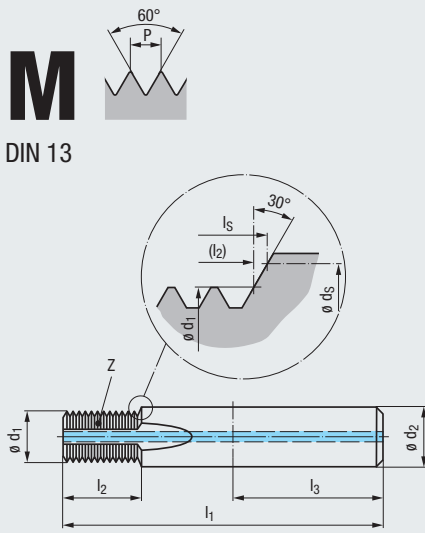
GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



VHM

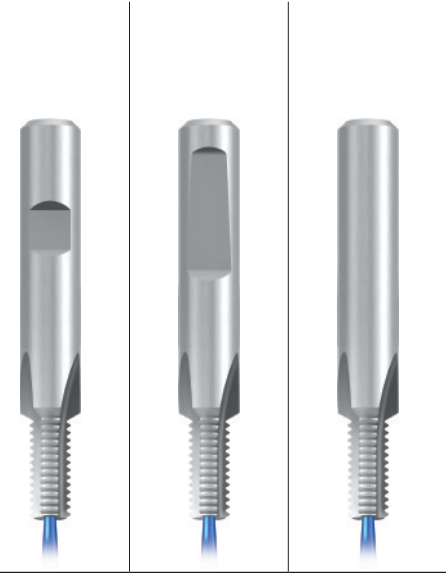
RH + LH

Z3 - Z4

DIN 6535
HB
HE
HA

120°

$\varnothing D$



Einsatzgebiete – Material Applications – material » 328

P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6
N 3.1-2 N 4.1-2, 5.2 S 1.1-3

Gewindetiefe Thread depth

1,5 x D

| Werkzeug-Ident · Tool ident | | | | | | | | | | | Dimens.-Ident | GF323101 | GF323401 | GF323701 |
|-----------------------------|------|-------|-------|-------|-------------------|-------------------|-------------------|-------|---|----------------------|---------------|----------------------|----------------------|----------|
| $\varnothing D$ mm | P mm | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_S$ | l_S | Z | GSF-VHM 1,5xD IKZ-HB | | GSF-VHM 1,5xD IKZ-HE | GSF-VHM 1,5xD IKZ-HA | |
| M 3 | 0,5 | 42 | 4,7 | 28 | 2,4 | 4 | 3,3 | 5 | 3 | .0030 | | | ● ¹⁾ | |
| 4 | 0,7 | 55 | 5,9 | 36 | 3,15 | 6 | 4,3 | 6,3 | 3 | .0040 | ● | ● | ● | |
| 5 | 0,8 | 55 | 7,6 | 36 | 4 | 6 | 5,3 | 7,9 | 3 | .0050 | ● | ● | ● | |
| 6 | 1 | 62 | 9,5 | 36 | 4,8 | 8 | 6,3 | 9,9 | 3 | .0060 | ● | ● | ● | |
| 8 | 1,25 | 74 | 13,1 | 40 | 6,5 | 10 | 8,3 | 13,6 | 3 | .0080 | ● | ● | ● | |
| 10 | 1,5 | 80 | 15,7 | 45 | 8,2 | 12 | 10,3 | 16,3 | 3 | .0100 | ● | ● | ● | |
| 12 | 1,75 | 90 | 18,3 | 45 | 9,9 | 14 | 12,3 | 19 | 4 | .0112 | ● | ● | ● | |
| 14 | 2 | 100 | 23 | 48 | 11,6 | 16 | 14,3 | 23,7 | 4 | .0114 | ● | ● | ● | |
| 16 | 2 | 102 | 25 | 48 | 13,6 | 18 | 16,3 | 25,7 | 4 | .0116 | ● | ● | ● | |

Gewindetiefe Thread depth

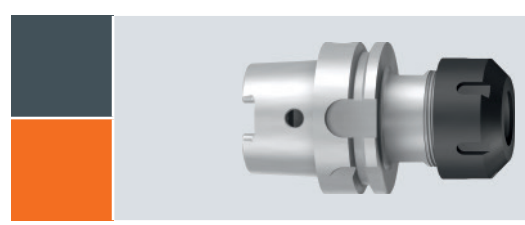
2 x D

| Werkzeug-Ident · Tool ident | | | | | | | | | | | Dimens.-Ident | GF333101 | GF333401 | GF333701 |
|-----------------------------|------|-------|-------|-------|-------------------|-------------------|-------------------|-------|---|--------------------|---------------|--------------------|--------------------|----------|
| $\varnothing D$ mm | P mm | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_S$ | l_S | Z | GSF-VHM 2xD IKZ-HB | | GSF-VHM 2xD IKZ-HE | GSF-VHM 2xD IKZ-HA | |
| M 3 | 0,5 | 42 | 6,2 | 28 | 2,4 | 4 | 3,3 | 6,5 | 3 | .0030 | | | ● ²⁾ | |
| 4 | 0,7 | 55 | 8,7 | 36 | 3,15 | 6 | 4,3 | 9,1 | 3 | .0040 | ● | ● | ● | |
| 5 | 0,8 | 55 | 10,8 | 36 | 4 | 6 | 5,3 | 11,1 | 3 | .0050 | ● | ● | ● | |
| 6 | 1 | 62 | 12,5 | 36 | 4,8 | 8 | 6,3 | 12,9 | 3 | .0060 | ● | ● | ● | |
| 8 | 1,25 | 74 | 16,8 | 40 | 6,5 | 10 | 8,3 | 17,4 | 3 | .0080 | ● | ● | ● | |
| 10 | 1,5 | 80 | 20,2 | 45 | 8,2 | 12 | 10,3 | 20,8 | 3 | .0100 | ● | ● | ● | |
| 12 | 1,75 | 90 | 25,3 | 45 | 9,9 | 14 | 12,3 | 26 | 4 | .0112 | ● | ● | ● | |
| 14 | 2 | 100 | 29 | 48 | 11,6 | 16 | 14,3 | 29,7 | 4 | .0114 | ● | ● | ● | |
| 16 | 2 | 102 | 33 | 48 | 13,6 | 18 | 16,3 | 33,7 | 4 | .0116 | ● | ● | ● | |

Andere Abmessungen auf Anfrage
Other sizes upon request

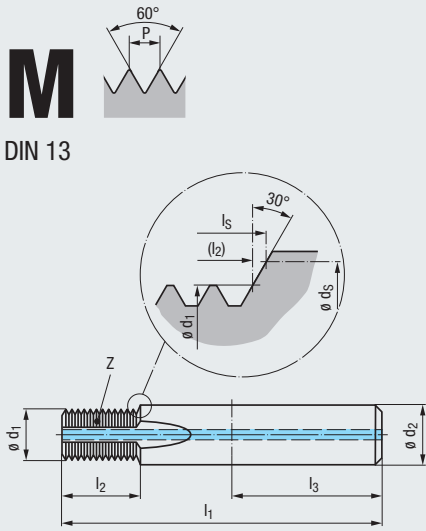
¹⁾ M3 ohne innere Kühlschmierstoff-Zufuhr IKZ! Werkzeug-Ident = GF303701
M3 without internal coolant supply IKZ! Tool ident = GF303701

²⁾ M3 ohne innere Kühlschmierstoff-Zufuhr IKZ! Werkzeug-Ident = GF313701
M3 without internal coolant supply IKZ! Tool ident = GF313701



Spannzangen-Aufnahmen
Typ KSN/Synchro
siehe Seite 711 - 713

Collet holders
type KSN/Synchro,
see page 711 - 713

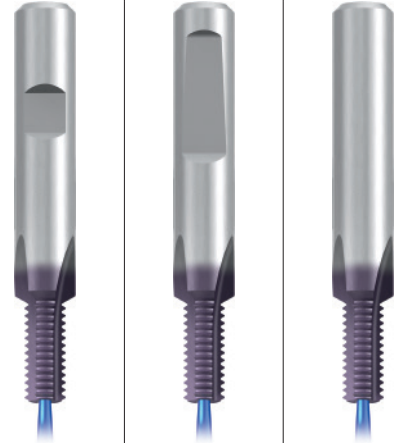


VHM **TICN**

RH + LH

Z3 - Z4 **DIN 6535**
 HB
 HE
 HA

120° **θD**



Einsatzgebiete – Material Applications – material 328

P 1.1-5.1 **M 1.1-4.1** **K 1.1-4.2**
N 1.1-5.2 **S 1.1-2.6** **H 1.1-2**

Gewindetiefe Thread depth

1,5 x D

Werkzeug-Ident · Tool ident

GF323106 GF323406 GF323706

| θD mm | P mm | l_1 | l_2 | l_3 | θd_1 | θd_2 | θd_3 | l_s | Z | Dimens.- Ident | GF323106 | GF323406 | GF323706 |
|------------------|---------|-------|-------|-------|--------------|--------------|--------------|-------|---|-------------------|------------------------------------|------------------------------------|------------------------------------|
| | | | | | | | | | | | GSF-VHM 1,5xD IKZ-HB TICN | GSF-VHM 1,5xD IKZ-HE TICN | GSF-VHM 1,5xD IKZ-HA TICN |
| M 3 | 0,5 | 42 | 4,7 | 28 | 2,4 | 4 | 3,3 | 5 | 3 | .0030 | | | ● ¹⁾ |
| 4 | 0,7 | 55 | 5,9 | 36 | 3,15 | 6 | 4,3 | 6,3 | 3 | .0040 | ● | ● | ● |
| 5 | 0,8 | 55 | 7,6 | 36 | 4 | 6 | 5,3 | 7,9 | 3 | .0050 | ● | ● | ● |
| 6 | 1 | 62 | 9,5 | 36 | 4,8 | 8 | 6,3 | 9,9 | 3 | .0060 | ● | ● | ● |
| 8 | 1,25 | 74 | 13,1 | 40 | 6,5 | 10 | 8,3 | 13,6 | 3 | .0080 | ● | ● | ● |
| 10 | 1,5 | 80 | 15,7 | 45 | 8,2 | 12 | 10,3 | 16,3 | 3 | .0100 | ● | ● | ● |
| 12 | 1,75 | 90 | 18,3 | 45 | 9,9 | 14 | 12,3 | 19 | 4 | .0112 | ● | ● | ● |
| 14 | 2 | 100 | 23 | 48 | 11,6 | 16 | 14,3 | 23,7 | 4 | .0114 | ● | ● | ● |
| 16 | 2 | 102 | 25 | 48 | 13,6 | 18 | 16,3 | 25,7 | 4 | .0116 | ● | ● | ● |

Gewindetiefe Thread depth

2 x D

Werkzeug-Ident · Tool ident

GF333106 GF333406 GF333706

| θD mm | P mm | l_1 | l_2 | l_3 | θd_1 | θd_2 | θd_3 | l_s | Z | Dimens.- Ident | GF333106 | GF333406 | GF333706 |
|------------------|---------|-------|-------|-------|--------------|--------------|--------------|-------|---|-------------------|----------------------------------|----------------------------------|----------------------------------|
| | | | | | | | | | | | GSF-VHM 2xD IKZ-HB TICN | GSF-VHM 2xD IKZ-HE TICN | GSF-VHM 2xD IKZ-HA TICN |
| M 3 | 0,5 | 42 | 6,2 | 28 | 2,4 | 4 | 3,3 | 6,5 | 3 | .0030 | | | ● ²⁾ |
| 4 | 0,7 | 55 | 8,7 | 36 | 3,15 | 6 | 4,3 | 9,1 | 3 | .0040 | ● | ● | ● |
| 5 | 0,8 | 55 | 10,8 | 36 | 4 | 6 | 5,3 | 11,1 | 3 | .0050 | ● | ● | ● |
| 6 | 1 | 62 | 12,5 | 36 | 4,8 | 8 | 6,3 | 12,9 | 3 | .0060 | ● | ● | ● |
| 8 | 1,25 | 74 | 16,8 | 40 | 6,5 | 10 | 8,3 | 17,4 | 3 | .0080 | ● | ● | ● |
| 10 | 1,5 | 80 | 20,2 | 45 | 8,2 | 12 | 10,3 | 20,8 | 3 | .0100 | ● | ● | ● |
| 12 | 1,75 | 90 | 25,3 | 45 | 9,9 | 14 | 12,3 | 26 | 4 | .0112 | ● | ● | ● |
| 14 | 2 | 100 | 29 | 48 | 11,6 | 16 | 14,3 | 29,7 | 4 | .0114 | ● | ● | ● |
| 16 | 2 | 102 | 33 | 48 | 13,6 | 18 | 16,3 | 33,7 | 4 | .0116 | ● | ● | ● |

Andere Abmessungen auf Anfrage
 Other sizes upon request

¹⁾ M3 ohne innere Kühlschmierstoff-Zufuhr IKZ! Werkzeug-Ident = **GF303706**
 M3 without internal coolant supply IKZ! Tool ident = **GF303706**

²⁾ M3 ohne innere Kühlschmierstoff-Zufuhr IKZ! Werkzeug-Ident = **GF313706**
 M3 without internal coolant supply IKZ! Tool ident = **GF313706**

Product Finder

v_c / f_z

M

MF

UNC UN, UNS

UNF UNEF

G, Rp

NPT, NPTF Rc, W

BSW, BSF

Pg

EG (STI) SELF-LOCK

Tr

Zubehör Accessories

Tech. Info

BGF

ZBGF

GSF

GF

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

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

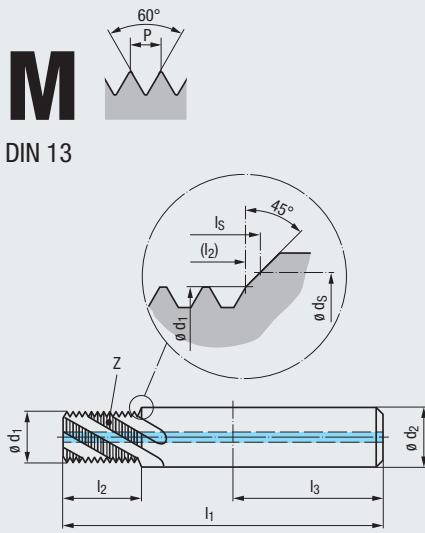
GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys

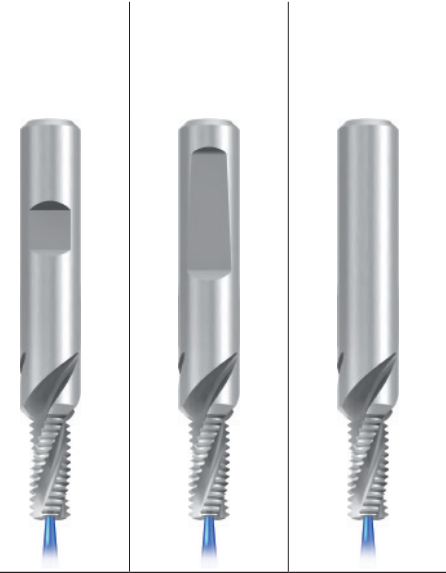


VHM

R30 RH + LH

Z3 - Z4
DIN 6535
HB
HE
HA

90° $\varnothing D$



Einsatzgebiete – Material
Applications – material » 328

P 1.1-3.1 K 1.1-4.2 N 1.1-5
N 2.1-6 N 3.1-4.2, 5.2 S 1.1-2

Gewindetiefe
Thread depth

1,5 x D

Werkzeug-Ident · Tool ident

| | GF322101 | GF322401 | GF322701 |
|--------------------------------|----------|----------|----------|
| GSF-VHM 1,5xD R30-IKZ-HB | ● | ● | ● |
| GSF-VHM 1,5xD R30-IKZ-HE | ● | ● | ● |
| GSF-VHM 1,5xD R30-IKZ-HA | ● | ● | ● |

| $\varnothing D$ mm | P mm | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_s$ | l_s | Z | Dimens.- Ident |
|-----------------------|---------|-------|-------|-------|-------------------|-------------------|-------------------|-------|---|-------------------|
| | | | | | | | | | | |
| M 5 | 0,8 | 55 | 7,6 | 36 | 4 | 6 | 5,3 | 8,2 | 3 | .0050 |
| 6 | 1 | 62 | 9,5 | 36 | 4,8 | 8 | 6,3 | 10,2 | 3 | .0060 |
| 8 | 1,25 | 74 | 13,1 | 40 | 6,5 | 10 | 8,3 | 13,9 | 3 | .0080 |
| 10 | 1,5 | 80 | 15,8 | 45 | 8,2 | 12 | 10,3 | 16,7 | 3 | .0100 |
| 12 | 1,75 | 90 | 18,4 | 45 | 9,9 | 14 | 12,3 | 19,5 | 4 | .0112 |
| 14 | 2 | 100 | 23 | 48 | 11,6 | 16 | 14,3 | 24,2 | 4 | .0114 |
| 16 | 2 | 102 | 25 | 48 | 13,6 | 18 | 16,3 | 26,2 | 4 | .0116 |

Gewindetiefe
Thread depth

2 x D

Werkzeug-Ident · Tool ident

| | GF332101 | GF332401 | GF332701 |
|------------------------------|----------|----------|----------|
| GSF-VHM 2xD R30-IKZ-HB | ● | ● | ● |
| GSF-VHM 2xD R30-IKZ-HE | ● | ● | ● |
| GSF-VHM 2xD R30-IKZ-HA | ● | ● | ● |

| $\varnothing D$ mm | P mm | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_s$ | l_s | Z | Dimens.- Ident |
|-----------------------|---------|-------|-------|-------|-------------------|-------------------|-------------------|-------|---|-------------------|
| | | | | | | | | | | |
| M 5 | 0,8 | 55 | 10,8 | 36 | 4 | 6 | 5,3 | 11,4 | 3 | .0050 |
| 6 | 1 | 62 | 12,5 | 36 | 4,8 | 8 | 6,3 | 13,2 | 3 | .0060 |
| 8 | 1,25 | 74 | 16,9 | 40 | 6,5 | 10 | 8,3 | 17,7 | 3 | .0080 |
| 10 | 1,5 | 80 | 20,3 | 45 | 8,2 | 12 | 10,3 | 21,2 | 3 | .0100 |
| 12 | 1,75 | 90 | 25,4 | 45 | 9,9 | 14 | 12,3 | 26,5 | 4 | .0112 |
| 14 | 2 | 100 | 29 | 48 | 11,6 | 16 | 14,3 | 30,2 | 4 | .0114 |
| 16 | 2 | 102 | 33 | 48 | 13,6 | 18 | 16,3 | 34,2 | 4 | .0116 |

Gewindetiefe
Thread depth

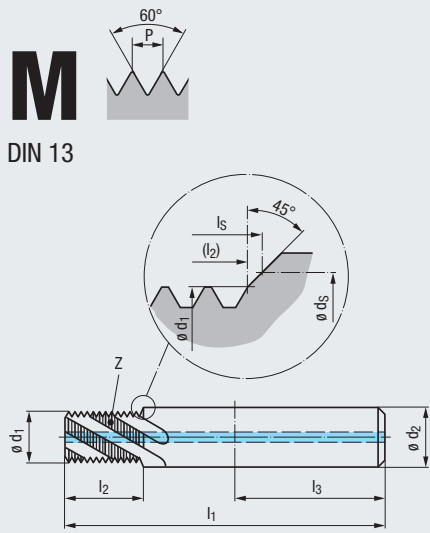
2,5 x D

Werkzeug-Ident · Tool ident

| | GF342101 | GF342401 | GF342701 |
|--------------------------------|----------|----------|----------|
| GSF-VHM 2,5xD R30-IKZ-HB | ● | ● | ● |
| GSF-VHM 2,5xD R30-IKZ-HE | ● | ● | ● |
| GSF-VHM 2,5xD R30-IKZ-HA | ● | ● | ● |

| $\varnothing D$ mm | P mm | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_s$ | l_s | Z | Dimens.- Ident |
|-----------------------|---------|-------|-------|-------|-------------------|-------------------|-------------------|-------|---|-------------------|
| | | | | | | | | | | |
| M 5 | 0,8 | 58 | 13,2 | 36 | 4 | 6 | 5,3 | 13,8 | 3 | .0050 |
| 6 | 1 | 65 | 15,5 | 36 | 4,8 | 8 | 6,3 | 16,2 | 3 | .0060 |
| 8 | 1,25 | 78 | 20,6 | 40 | 6,5 | 10 | 8,3 | 21,4 | 3 | .0080 |
| 10 | 1,5 | 85 | 26,3 | 45 | 8,2 | 12 | 10,3 | 27,2 | 3 | .0100 |
| 12 | 1,75 | 95 | 30,7 | 45 | 9,9 | 14 | 12,3 | 31,7 | 4 | .0112 |
| 14 | 2 | 110 | 37 | 48 | 11,6 | 16 | 14,3 | 38,2 | 4 | .0114 |
| 16 | 2 | 110 | 41 | 48 | 13,6 | 18 | 16,3 | 42,2 | 4 | .0116 |

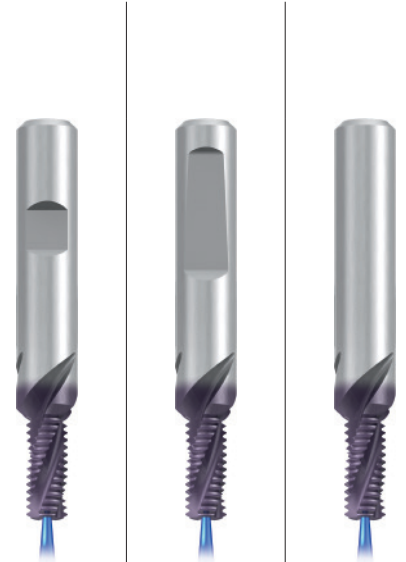
Andere Abmessungen auf Anfrage
Other sizes upon request



M

DIN 13

| | |
|---------|----------------------------|
| VHM | TICN |
| R30 | RH + LH |
| Z3 - Z4 | DIN 6535 HB HE HA |
| 90° | θD |



- Product Finder
- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr

Einsatzgebiete – Material Applications – material » 328

| | | |
|-----------|-----------|--------------|
| P 1.1-3.1 | M 1.1-2.1 | K 1.1-4.2 |
| N 1.1-2.7 | N 3.1-5.2 | S 1.1-2, 2.1 |

Gewindetiefe Thread depth

1,5 x D

| Werkzeug-Ident · Tool ident | | | | | | | | | | | GF322106 | GF322406 | GF322706 |
|-----------------------------|---------|-------|-------|-------|--------------|--------------|--------------|-------|---|---------------|-------------------------------|-------------------------------|-------------------------------|
| θD mm | P mm | l_1 | l_2 | l_3 | θd_1 | θd_2 | θd_s | l_s | Z | Dimens.-Ident | GSF-VHM 1,5xD R30-1KZ-HB TICN | GSF-VHM 1,5xD R30-1KZ-HE TICN | GSF-VHM 1,5xD R30-1KZ-HA TICN |
| M 5 | 0,8 | 55 | 7,6 | 36 | 4 | 6 | 5,3 | 8,2 | 3 | .0050 | ● | ● | ● |
| 6 | 1 | 62 | 9,5 | 36 | 4,8 | 8 | 6,3 | 10,2 | 3 | .0060 | ● | ● | ● |
| 8 | 1,25 | 74 | 13,1 | 40 | 6,5 | 10 | 8,3 | 13,9 | 3 | .0080 | ● | ● | ● |
| 10 | 1,5 | 80 | 15,8 | 45 | 8,2 | 12 | 10,3 | 16,7 | 3 | .0100 | ● | ● | ● |
| 12 | 1,75 | 90 | 18,4 | 45 | 9,9 | 14 | 12,3 | 19,5 | 4 | .0112 | ● | ● | ● |
| 14 | 2 | 100 | 23 | 48 | 11,6 | 16 | 14,3 | 24,2 | 4 | .0114 | ● | ● | ● |
| 16 | 2 | 102 | 25 | 48 | 13,6 | 18 | 16,3 | 26,2 | 4 | .0116 | ● | ● | ● |

Gewindetiefe Thread depth

2 x D

| Werkzeug-Ident · Tool ident | | | | | | | | | | | GF332106 | GF332406 | GF332706 |
|-----------------------------|---------|-------|-------|-------|--------------|--------------|--------------|-------|---|---------------|-----------------------------|-----------------------------|-----------------------------|
| θD mm | P mm | l_1 | l_2 | l_3 | θd_1 | θd_2 | θd_s | l_s | Z | Dimens.-Ident | GSF-VHM 2xD R30-1KZ-HB TICN | GSF-VHM 2xD R30-1KZ-HE TICN | GSF-VHM 2xD R30-1KZ-HA TICN |
| M 5 | 0,8 | 55 | 10,8 | 36 | 4 | 6 | 5,3 | 11,4 | 3 | .0050 | ● | ● | ● |
| 6 | 1 | 62 | 12,5 | 36 | 4,8 | 8 | 6,3 | 13,2 | 3 | .0060 | ● | ● | ● |
| 8 | 1,25 | 74 | 16,9 | 40 | 6,5 | 10 | 8,3 | 17,7 | 3 | .0080 | ● | ● | ● |
| 10 | 1,5 | 80 | 20,3 | 45 | 8,2 | 12 | 10,3 | 21,2 | 3 | .0100 | ● | ● | ● |
| 12 | 1,75 | 90 | 25,4 | 45 | 9,9 | 14 | 12,3 | 26,5 | 4 | .0112 | ● | ● | ● |
| 14 | 2 | 100 | 29 | 48 | 11,6 | 16 | 14,3 | 30,2 | 4 | .0114 | ● | ● | ● |
| 16 | 2 | 102 | 33 | 48 | 13,6 | 18 | 16,3 | 34,2 | 4 | .0116 | ● | ● | ● |

Gewindetiefe Thread depth

2,5 x D

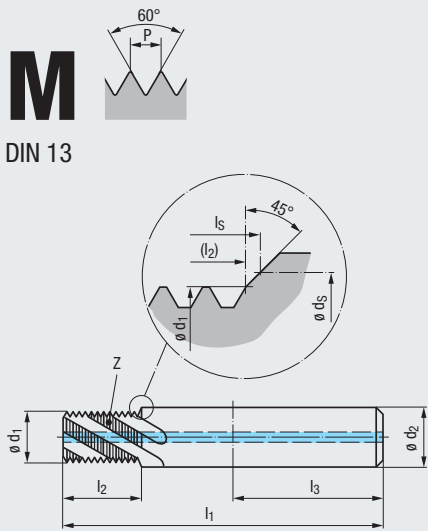
| Werkzeug-Ident · Tool ident | | | | | | | | | | | GF342106 | GF342406 | GF342706 |
|-----------------------------|---------|-------|-------|-------|--------------|--------------|--------------|-------|---|---------------|-------------------------------|-------------------------------|-------------------------------|
| θD mm | P mm | l_1 | l_2 | l_3 | θd_1 | θd_2 | θd_s | l_s | Z | Dimens.-Ident | GSF-VHM 2,5xD R30-1KZ-HB TICN | GSF-VHM 2,5xD R30-1KZ-HE TICN | GSF-VHM 2,5xD R30-1KZ-HA TICN |
| M 5 | 0,8 | 58 | 13,2 | 36 | 4 | 6 | 5,3 | 13,8 | 3 | .0050 | ● | ● | ● |
| 6 | 1 | 65 | 15,5 | 36 | 4,8 | 8 | 6,3 | 16,2 | 3 | .0060 | ● | ● | ● |
| 8 | 1,25 | 78 | 20,6 | 40 | 6,5 | 10 | 8,3 | 21,4 | 3 | .0080 | ● | ● | ● |
| 10 | 1,5 | 85 | 26,3 | 45 | 8,2 | 12 | 10,3 | 27,2 | 3 | .0100 | ● | ● | ● |
| 12 | 1,75 | 95 | 30,7 | 45 | 9,9 | 14 | 12,3 | 31,7 | 4 | .0112 | ● | ● | ● |
| 14 | 2 | 110 | 37 | 48 | 11,6 | 16 | 14,3 | 38,2 | 4 | .0114 | ● | ● | ● |
| 16 | 2 | 110 | 41 | 48 | 13,6 | 18 | 16,3 | 42,2 | 4 | .0116 | ● | ● | ● |

Andere Abmessungen auf Anfrage Other sizes upon request

- Zubehör Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- 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
- EG (STI) SELF-LOCK
- Tr
- Zubehör Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys



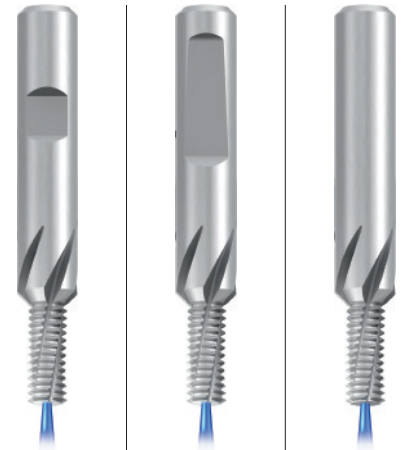
VHM

R15 **RH + LH**

Z4 - Z5 **DIN 6535**
 HB
 HE
 HA

90° $\varnothing D$

Mit höherer Nutenzahl
 With increased number of flutes



Einsatzgebiete – Material Applications – material **328**

P 1.1-5.1 **K** 1.1-4.2 **N** 1.1-5, 2.1-6
N 3.1-2 **N** 4.1-2, 5.2 **S** 1.1-3

Gewindetiefe Thread depth

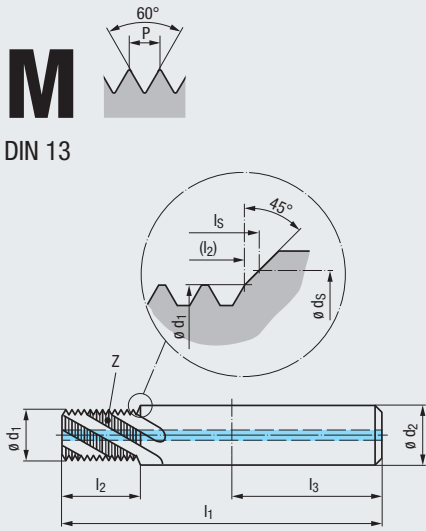
2 x D

Werkzeug-Ident · Tool ident

| | GF335121 | GF335421 | GF335721 |
|---------------------------------|----------|----------|----------|
| GSF-Z-VHM 2xD R15-1KZ-HB | ● | ● | ● |
| GSF-Z-VHM 2xD R15-1KZ-HE | ● | ● | ● |
| GSF-Z-VHM 2xD R15-1KZ-HA | ● | ● | ● |

| | $\varnothing D$ mm | P mm | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_s$ | l_s | Z | Dimens.- Ident |
|----------|-----------------------|---------|-------|-------|-------|-------------------|-------------------|-------------------|-------|---|-------------------|
| | | | | | | | | | | | |
| M | 6 | 1 | 62 | 12,5 | 36 | 4,8 | 8 | 6,3 | 13,2 | 4 | .0060 |
| | 8 | 1,25 | 74 | 16,9 | 40 | 6,5 | 10 | 8,3 | 17,7 | 4 | .0080 |
| | 10 | 1,5 | 80 | 20,3 | 45 | 8,2 | 12 | 10,3 | 21,2 | 5 | .0100 |
| | 12 | 1,75 | 90 | 25,4 | 45 | 9,9 | 14 | 12,3 | 26,5 | 5 | .0112 |

Andere Abmessungen auf Anfrage
 Other sizes upon request

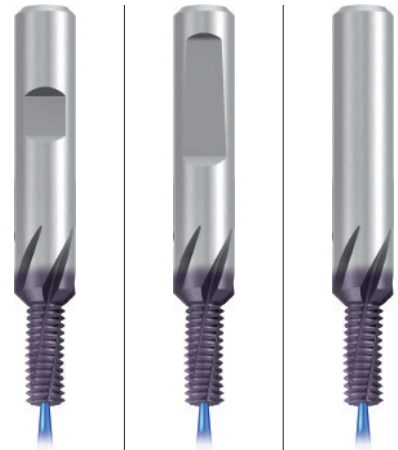


M

DIN 13

| | |
|---------|----------------------------|
| VHM | TICN |
| R15 | RH + LH |
| Z4 - Z5 | DIN 6535 HB HE HA |
| 90° | ϕD |

Mit höherer Nutenzahl
With increased number of flutes



Einsatzgebiete – Material
Applications – material ▶ 328

| | | |
|-----------|-----------|-----------|
| P 1.1-5.1 | M 1.1-4.1 | K 1.1-4.2 |
| N 1.1-5.2 | S 1.1-2.6 | H 1.1-2 |

Gewindetiefe
Thread depth

2 x D

Werkzeug-Ident · Tool ident

| | ϕD mm | P mm | l_1 | l_2 | l_3 | ϕd_1 | ϕd_2 | ϕd_3 | l_s | Z | Dimens.- Ident | GF335126 | GF335426 | GF335726 |
|----------|----------------|---------|-------|-------|-------|------------|------------|------------|-------|---|-------------------|--|--|--|
| | | | | | | | | | | | | GSF-Z-VHM 2xD R15-1KZ-HB TICN | GSF-Z-VHM 2xD R15-1KZ-HE TICN | GSF-Z-VHM 2xD R15-1KZ-HA TICN |
| M | 6 | 1 | 62 | 12,5 | 36 | 4,8 | 8 | 6,3 | 13,2 | 4 | .0060 | ● | ● | ● |
| | 8 | 1,25 | 74 | 16,9 | 40 | 6,5 | 10 | 8,3 | 17,7 | 4 | .0080 | ● | ● | ● |
| | 10 | 1,5 | 80 | 20,3 | 45 | 8,2 | 12 | 10,3 | 21,2 | 5 | .0100 | ● | ● | ● |
| | 12 | 1,75 | 90 | 25,4 | 45 | 9,9 | 14 | 12,3 | 26,5 | 5 | .0112 | ● | ● | ● |

Andere Abmessungen auf Anfrage
Other sizes upon request

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

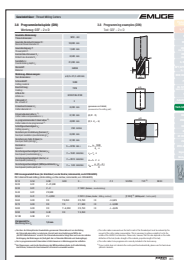
GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



Programmierbeispiel für Gewindefräser
mit Senkfase Typ GSF siehe Seite 465

Programming example for thread milling
cutters with countersinking step type GSF,
see page 465

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

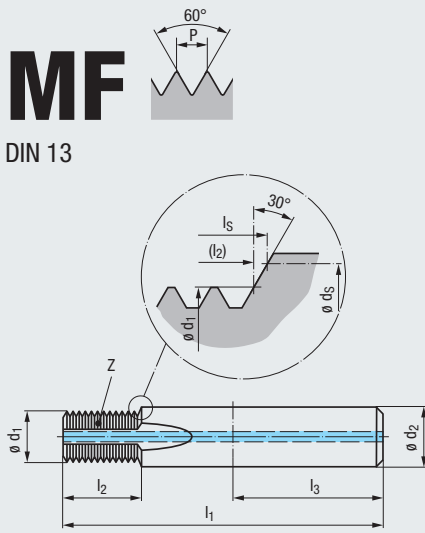
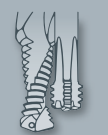
GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys

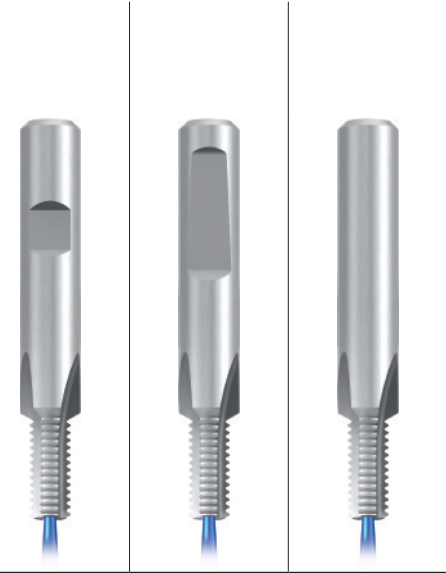
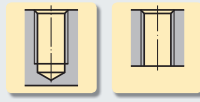


VHM

RH + LH

Z3 - Z4
DIN 6535
HB
HE
HA

120°
Ø D



Einsatzgebiete – Material
Applications – material

P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6
N 3.1-2 N 4.1-2, 5.2 S 1.1-3

Gewindetiefe
Thread depth

1,5 x D

Werkzeug-Ident · Tool ident

| | GF323101 | GF323401 | GF323701 |
|----------------------|----------|----------|----------|
| GSF-VHM 1,5xD IKZ-HB | ● | ● | ● |
| GSF-VHM 1,5xD IKZ-HE | ● | ● | ● |
| GSF-VHM 1,5xD IKZ-HA | ● | ● | ● |

| Ø D mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₁ | Ø d ₂ | Ø d _S | l _S | Z | Dimens.- Ident |
|-----------|-----------|----------------|----------------|----------------|------------------|------------------|------------------|----------------|-------|-------------------|
| | | | | | | | | | | |
| M | 6 x 0,75 | 62 | 9,4 | 36 | 5 | 8 | 6,3 | 9,7 | 3 | .0229 |
| | 8 x 1 | 74 | 12,5 | 40 | 6,7 | 10 | 8,3 | 12,9 | 3 | .0251 |
| | 10 x 1 | 80 | 15,5 | 45 | 8,7 | 12 | 10,3 | 15,9 | 3 | .0276 |
| | 10 x 1,25 | 80 | 15,6 | 45 | 8,4 | 12 | 10,3 | 16,1 | 3 | .0277 |
| | 12 x 1 | 90 | 18,5 | 45 | 10,6 | 14 | 12,3 | 19 | 4 | .0301 |
| | 12 x 1,25 | 90 | 18,1 | 45 | 10,4 | 14 | 12,3 | 18,6 | 4 | .0302 |
| | 12 x 1,5 | 90 | 18,7 | 45 | 10,1 | 14 | 12,3 | 19,3 | 4 | .0303 |
| | 14 x 1,5 | 100 | 21,7 | 48 | 12,1 | 16 | 14,3 | 22,3 | 4 | .0331 |
| 16 x 1,5 | 102 | 24,7 | 48 | 14 | 18 | 16,3 | 25,4 | 4 | .0359 | |

Gewindetiefe
Thread depth

2 x D

Werkzeug-Ident · Tool ident

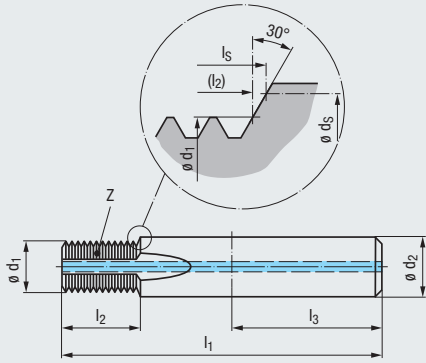
| | GF333101 | GF333401 | GF333701 |
|--------------------|----------|----------|----------|
| GSF-VHM 2xD IKZ-HB | ● | ● | ● |
| GSF-VHM 2xD IKZ-HE | ● | ● | ● |
| GSF-VHM 2xD IKZ-HA | ● | ● | ● |

| Ø D mm | P mm | l ₁ | l ₂ | l ₃ | Ø d ₁ | Ø d ₂ | Ø d _S | l _S | Z | Dimens.- Ident |
|-----------|-----------|----------------|----------------|----------------|------------------|------------------|------------------|----------------|-------|-------------------|
| | | | | | | | | | | |
| M | 6 x 0,75 | 62 | 12,4 | 36 | 5 | 8 | 6,3 | 12,7 | 3 | .0229 |
| | 8 x 1 | 74 | 16,5 | 40 | 6,7 | 10 | 8,3 | 16,9 | 3 | .0251 |
| | 10 x 1 | 80 | 20,5 | 45 | 8,7 | 12 | 10,3 | 20,9 | 3 | .0276 |
| | 10 x 1,25 | 80 | 20,6 | 45 | 8,4 | 12 | 10,3 | 21,1 | 3 | .0277 |
| | 12 x 1 | 90 | 24,5 | 45 | 10,6 | 14 | 12,3 | 25 | 4 | .0301 |
| | 12 x 1,25 | 90 | 24,3 | 45 | 10,4 | 14 | 12,3 | 24,9 | 4 | .0302 |
| | 12 x 1,5 | 90 | 24,7 | 45 | 10,1 | 14 | 12,3 | 25,3 | 4 | .0303 |
| | 14 x 1,5 | 100 | 29,2 | 48 | 12,1 | 16 | 14,3 | 29,8 | 4 | .0331 |
| 16 x 1,5 | 102 | 32,2 | 48 | 14 | 18 | 16,3 | 32,9 | 4 | .0359 | |

Andere Abmessungen auf Anfrage
Other sizes upon request

MF

DIN 13

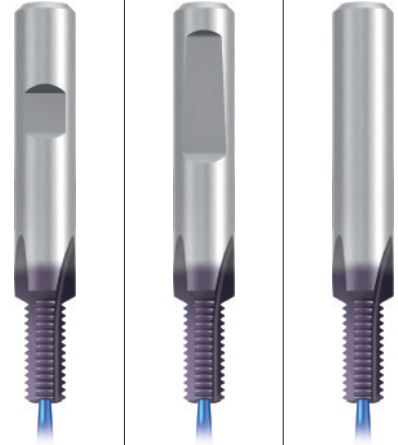


VHM **TICN**

RH + LH

Z3 - Z4 **DIN 6535**
 HB
 HE
 HA

120° **θD**



Einsatzgebiete – Material Applications – material 328

P 1.1-5.1 **M** 1.1-4.1 **K** 1.1-4.2
N 1.1-5.2 **S** 1.1-2.6 **H** 1.1-2

Gewindetiefe Thread depth

1,5 x D

Werkzeug-Ident · Tool ident

GF323106 GF323406 GF323706

| θD mm | P mm | l_1 | l_2 | l_3 | θd_1 | θd_2 | θd_3 | l_s | Z | Dimens.- Ident | GSF-VHM | GSF-VHM | GSF-VHM |
|-------------------|---------|-------|-------|-------|--------------|--------------|--------------|-------|-------|-------------------|-------------------------|-------------------------|-------------------------|
| | | | | | | | | | | | 1,5xD IKZ-HB TICN | 1,5xD IKZ-HE TICN | 1,5xD IKZ-HA TICN |
| M 6 x 0,75 | 62 | 9,4 | 36 | 5 | 8 | 6,3 | 9,7 | 3 | .0229 | ● | ● | ● | |
| 8 x 1 | 74 | 12,5 | 40 | 6,7 | 10 | 8,3 | 12,9 | 3 | .0251 | ● | ● | ● | |
| 10 x 1 | 80 | 15,5 | 45 | 8,7 | 12 | 10,3 | 15,9 | 3 | .0276 | ● | ● | ● | |
| 10 x 1,25 | 80 | 15,6 | 45 | 8,4 | 12 | 10,3 | 16,1 | 3 | .0277 | ● | ● | ● | |
| 12 x 1 | 90 | 18,5 | 45 | 10,6 | 14 | 12,3 | 19 | 4 | .0301 | ● | ● | ● | |
| 12 x 1,25 | 90 | 18,1 | 45 | 10,4 | 14 | 12,3 | 18,6 | 4 | .0302 | ● | ● | ● | |
| 12 x 1,5 | 90 | 18,7 | 45 | 10,1 | 14 | 12,3 | 19,3 | 4 | .0303 | ● | ● | ● | |
| 14 x 1,5 | 100 | 21,7 | 48 | 12,1 | 16 | 14,3 | 22,3 | 4 | .0331 | ● | ● | ● | |
| 16 x 1,5 | 102 | 24,7 | 48 | 14 | 18 | 16,3 | 25,4 | 4 | .0359 | ● | ● | ● | |

Gewindetiefe Thread depth

2 x D

Werkzeug-Ident · Tool ident

GF333106 GF333406 GF333706

| θD mm | P mm | l_1 | l_2 | l_3 | θd_1 | θd_2 | θd_3 | l_s | Z | Dimens.- Ident | GSF-VHM | GSF-VHM | GSF-VHM |
|-------------------|---------|-------|-------|-------|--------------|--------------|--------------|-------|-------|-------------------|-----------------------|-----------------------|-----------------------|
| | | | | | | | | | | | 2xD IKZ-HB TICN | 2xD IKZ-HE TICN | 2xD IKZ-HA TICN |
| M 6 x 0,75 | 62 | 12,4 | 36 | 5 | 8 | 6,3 | 12,7 | 3 | .0229 | ● | ● | ● | |
| 8 x 1 | 74 | 16,5 | 40 | 6,7 | 10 | 8,3 | 16,9 | 3 | .0251 | ● | ● | ● | |
| 10 x 1 | 80 | 20,5 | 45 | 8,7 | 12 | 10,3 | 20,9 | 3 | .0276 | ● | ● | ● | |
| 10 x 1,25 | 80 | 20,6 | 45 | 8,4 | 12 | 10,3 | 21,1 | 3 | .0277 | ● | ● | ● | |
| 12 x 1 | 90 | 24,5 | 45 | 10,6 | 14 | 12,3 | 25 | 4 | .0301 | ● | ● | ● | |
| 12 x 1,25 | 90 | 24,3 | 45 | 10,4 | 14 | 12,3 | 24,9 | 4 | .0302 | ● | ● | ● | |
| 12 x 1,5 | 90 | 24,7 | 45 | 10,1 | 14 | 12,3 | 25,3 | 4 | .0303 | ● | ● | ● | |
| 14 x 1,5 | 100 | 29,2 | 48 | 12,1 | 16 | 14,3 | 29,8 | 4 | .0331 | ● | ● | ● | |
| 16 x 1,5 | 102 | 32,2 | 48 | 14 | 18 | 16,3 | 32,9 | 4 | .0359 | ● | ● | ● | |

Andere Abmessungen auf Anfrage
 Other sizes upon request

Product Finder

v_c / f_z

M

MF

UNC UN, UNS

UNF UNEF

G, Rp

NPT, NPTF Rc, W

BSW, BSF

Pg

EG (STI) SELF-LOCK

Tr

Zubehör Accessories

Tech. Info

BGF

ZBGF

GSF

GF

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

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

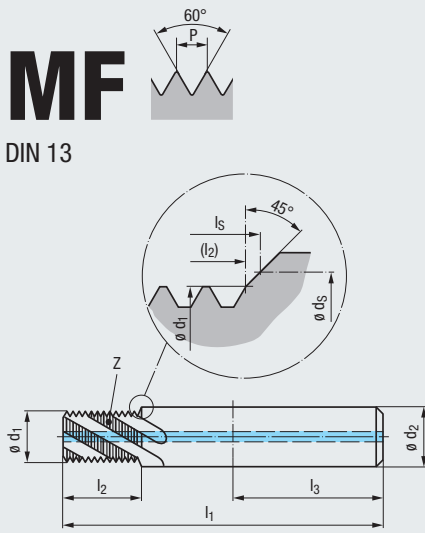
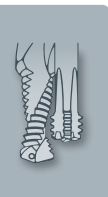
GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys

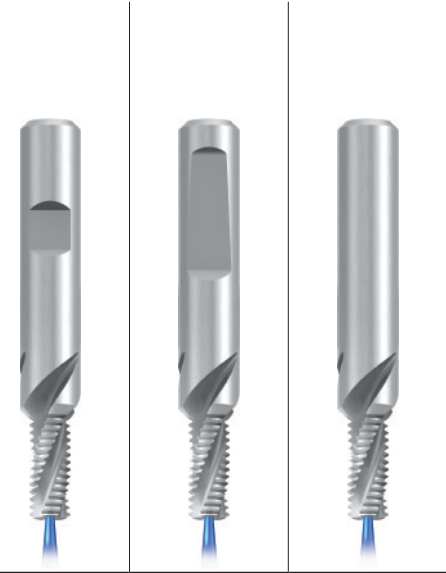


VHM

R30 RH + LH

Z3 - Z4
DIN 6535
HB
HE
HA

90° θD



Einsatzgebiete – Material
Applications – material » 328

P 1.1-3.1 K 1.1-4.2 N 1.1-5
N 2.1-6 N 3.1-4.2, 5.2 S 1.1-2

Gewindetiefe
Thread depth

1,5 x D

Werkzeug-Ident · Tool ident

| | GF322101 | GF322401 | GF322701 |
|--------------------------|----------|----------|----------|
| GSF-VHM 1,5xD R30-IKZ-HB | ● | ● | ● |
| GSF-VHM 1,5xD R30-IKZ-HE | ● | ● | ● |
| GSF-VHM 1,5xD R30-IKZ-HA | ● | ● | ● |

| θD mm | P mm | l_1 | l_2 | l_3 | θd_1 | θd_2 | θd_3 | l_s | Z | Dimens.- Ident |
|------------------|---------|-------|-------|-------|--------------|--------------|--------------|-------|---|-------------------|
| | | | | | | | | | | |
| M 6 | x 0,75 | 62 | 9,4 | 36 | 5 | 8 | 6,3 | 10 | 3 | .0229 |
| 8 | x 1 | 74 | 12,5 | 40 | 6,7 | 10 | 8,3 | 13,2 | 3 | .0251 |
| 10 | x 1 | 80 | 15,5 | 45 | 8,7 | 12 | 10,3 | 16,2 | 3 | .0276 |
| 10 | x 1,25 | 80 | 15,7 | 45 | 8,4 | 12 | 10,3 | 16,5 | 3 | .0277 |
| 12 | x 1 | 90 | 18,5 | 45 | 10,6 | 14 | 12,3 | 19,3 | 4 | .0301 |
| 12 | x 1,25 | 90 | 18,2 | 45 | 10,4 | 14 | 12,3 | 19 | 4 | .0302 |
| 12 | x 1,5 | 90 | 18,8 | 45 | 10,1 | 14 | 12,3 | 19,7 | 4 | .0303 |
| 14 | x 1,5 | 100 | 21,8 | 48 | 12,1 | 16 | 14,3 | 22,7 | 4 | .0331 |
| 16 | x 1,5 | 102 | 24,8 | 48 | 14 | 18 | 16,3 | 25,8 | 4 | .0359 |

Gewindetiefe
Thread depth

2 x D

Werkzeug-Ident · Tool ident

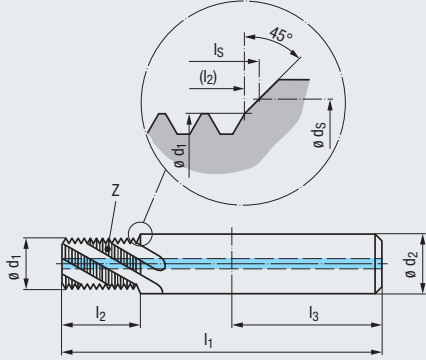
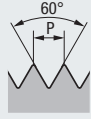
| | GF332101 | GF332401 | GF332701 |
|------------------------|----------|----------|----------|
| GSF-VHM 2xD R30-IKZ-HB | ● | ● | ● |
| GSF-VHM 2xD R30-IKZ-HE | ● | ● | ● |
| GSF-VHM 2xD R30-IKZ-HA | ● | ● | ● |

| θD mm | P mm | l_1 | l_2 | l_3 | θd_1 | θd_2 | θd_3 | l_s | Z | Dimens.- Ident |
|------------------|---------|-------|-------|-------|--------------|--------------|--------------|-------|---|-------------------|
| | | | | | | | | | | |
| M 6 | x 0,75 | 62 | 12,4 | 36 | 5 | 8 | 6,3 | 13 | 3 | .0229 |
| 8 | x 1 | 74 | 16,5 | 40 | 6,7 | 10 | 8,3 | 17,2 | 3 | .0251 |
| 10 | x 1 | 80 | 20,5 | 45 | 8,7 | 12 | 10,3 | 21,2 | 3 | .0276 |
| 10 | x 1,25 | 80 | 20,7 | 45 | 8,4 | 12 | 10,3 | 21,5 | 3 | .0277 |
| 12 | x 1 | 90 | 24,5 | 45 | 10,6 | 14 | 12,3 | 25,3 | 4 | .0301 |
| 12 | x 1,25 | 90 | 24,4 | 45 | 10,4 | 14 | 12,3 | 25,2 | 4 | .0302 |
| 12 | x 1,5 | 90 | 24,8 | 45 | 10,1 | 14 | 12,3 | 25,7 | 4 | .0303 |
| 14 | x 1,5 | 100 | 29,3 | 48 | 12,1 | 16 | 14,3 | 30,2 | 4 | .0331 |
| 16 | x 1,5 | 102 | 32,3 | 48 | 14 | 18 | 16,3 | 33,3 | 4 | .0359 |

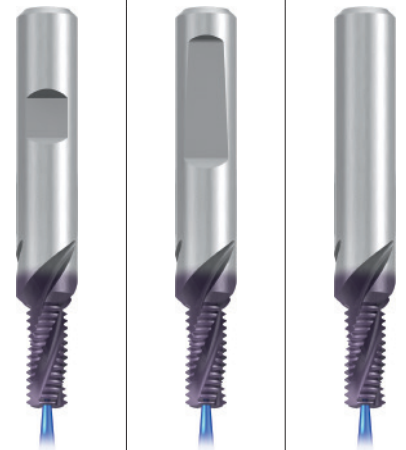
Andere Abmessungen auf Anfrage
Other sizes upon request

MF

DIN 13



| | |
|---------|----------------------------|
| VHM | TICN |
| R30 | RH + LH |
| Z3 - Z4 | DIN 6535 HB HE HA |
| 90° | θD |



Einsatzgebiete – Material Applications – material **328**

| | | |
|-----------|-----------|-------------|
| P 1.1-3.1 | M 1.1-2.1 | K 1.1-4.2 |
| N 1.1-2.7 | N 3.1-5.2 | S 1.1-2.2.1 |

Gewindetiefe Thread depth

1,5 x D

Werkzeug-Ident · Tool ident

| θD mm | P mm | l_1 | l_2 | l_3 | θd_1 | θd_2 | θd_s | l_s | Z | Dimens.- Ident | GF322106 | GF322406 | GF322706 |
|------------------|---------|-------|-------|-------|--------------|--------------|--------------|-------|-------|-------------------|--|--|--|
| | | | | | | | | | | | GSF-VHM 1,5xD R30-1KZ-HB TICN | GSF-VHM 1,5xD R30-1KZ-HE TICN | GSF-VHM 1,5xD R30-1KZ-HA TICN |
| M 6 x 0,75 | 62 | 9,4 | 36 | 5 | 8 | 6,3 | 10 | 3 | .0229 | ● | ● | ● | |
| 8 x 1 | 74 | 12,5 | 40 | 6,7 | 10 | 8,3 | 13,2 | 3 | .0251 | ● | ● | ● | |
| 10 x 1 | 80 | 15,5 | 45 | 8,7 | 12 | 10,3 | 16,2 | 3 | .0276 | ● | ● | ● | |
| 10 x 1,25 | 80 | 15,7 | 45 | 8,4 | 12 | 10,3 | 16,5 | 3 | .0277 | ● | ● | ● | |
| 12 x 1 | 90 | 18,5 | 45 | 10,6 | 14 | 12,3 | 19,3 | 4 | .0301 | ● | ● | ● | |
| 12 x 1,25 | 90 | 18,2 | 45 | 10,4 | 14 | 12,3 | 19 | 4 | .0302 | ● | ● | ● | |
| 12 x 1,5 | 90 | 18,8 | 45 | 10,1 | 14 | 12,3 | 19,7 | 4 | .0303 | ● | ● | ● | |
| 14 x 1,5 | 100 | 21,8 | 48 | 12,1 | 16 | 14,3 | 22,7 | 4 | .0331 | ● | ● | ● | |
| 16 x 1,5 | 102 | 24,8 | 48 | 14 | 18 | 16,3 | 25,8 | 4 | .0359 | ● | ● | ● | |

Gewindetiefe Thread depth

2 x D

Werkzeug-Ident · Tool ident

| θD mm | P mm | l_1 | l_2 | l_3 | θd_1 | θd_2 | θd_s | l_s | Z | Dimens.- Ident | GF332106 | GF332406 | GF332706 |
|------------------|---------|-------|-------|-------|--------------|--------------|--------------|-------|-------|-------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| | | | | | | | | | | | GSF-VHM 2xD R30-1KZ-HB TICN | GSF-VHM 2xD R30-1KZ-HE TICN | GSF-VHM 2xD R30-1KZ-HA TICN |
| M 6 x 0,75 | 62 | 12,4 | 36 | 5 | 8 | 6,3 | 13 | 3 | .0229 | ● | ● | ● | |
| 8 x 1 | 74 | 16,5 | 40 | 6,7 | 10 | 8,3 | 17,2 | 3 | .0251 | ● | ● | ● | |
| 10 x 1 | 80 | 20,5 | 45 | 8,7 | 12 | 10,3 | 21,2 | 3 | .0276 | ● | ● | ● | |
| 10 x 1,25 | 80 | 20,7 | 45 | 8,4 | 12 | 10,3 | 21,5 | 3 | .0277 | ● | ● | ● | |
| 12 x 1 | 90 | 24,5 | 45 | 10,6 | 14 | 12,3 | 25,3 | 4 | .0301 | ● | ● | ● | |
| 12 x 1,25 | 90 | 24,4 | 45 | 10,4 | 14 | 12,3 | 25,2 | 4 | .0302 | ● | ● | ● | |
| 12 x 1,5 | 90 | 24,8 | 45 | 10,1 | 14 | 12,3 | 25,7 | 4 | .0303 | ● | ● | ● | |
| 14 x 1,5 | 100 | 29,3 | 48 | 12,1 | 16 | 14,3 | 30,2 | 4 | .0331 | ● | ● | ● | |
| 16 x 1,5 | 102 | 32,3 | 48 | 14 | 18 | 16,3 | 33,3 | 4 | .0359 | ● | ● | ● | |

Andere Abmessungen auf Anfrage
Other sizes upon request

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

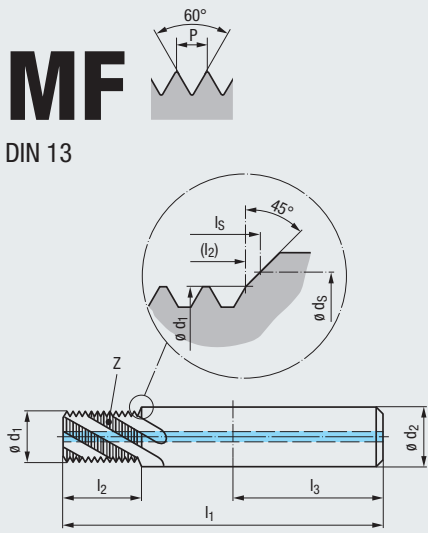
ZGF

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
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys



VHM

R15

RH + LH

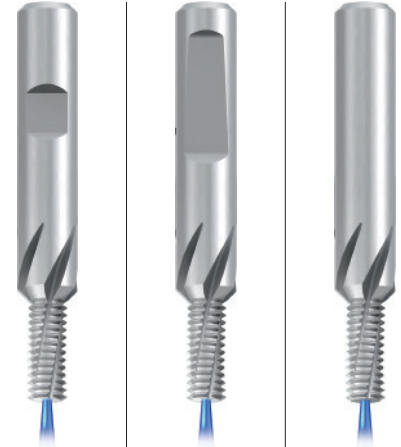
Z4 - Z5

DIN 6535
HB
HE
HA

90°

$\varnothing D$

Mit höherer Nutenzahl
With increased number of flutes



Einsatzgebiete – Material
Applications – material » 328

| | | |
|------------------|---------------------|-----------------------|
| P 1.1-5.1 | K 1.1-4.2 | N 1.1-5, 2.1-6 |
| N 3.1-2 | N 4.1-2, 5.2 | S 1.1-3 |

Gewindetiefe
Thread depth

2 x D

Werkzeug-Ident · Tool ident

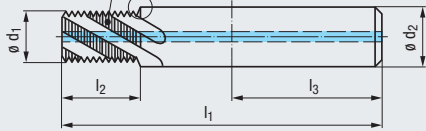
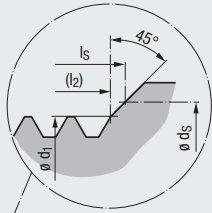
| | GF335121 | GF335421 | GF335721 |
|---------------------------------------|----------|----------|----------|
| GSF-Z-VHM 2xD R15-IKZ-HB | ● | ● | ● |
| GSF-Z-VHM 2xD R15-IKZ-HE | ● | ● | ● |
| GSF-Z-VHM 2xD R15-IKZ-HA | ● | ● | ● |

| | $\varnothing D$ mm | P mm | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_s$ | l_s | Z | Dimens.- Ident |
|----------|-----------------------|---------|-------|-------|-------|-------------------|-------------------|-------------------|-------|---|-------------------|
| | | | | | | | | | | | |
| M | 8 | x 1 | 74 | 16,5 | 40 | 6,7 | 10 | 8,3 | 17,2 | 4 | .0251 |
| | 10 | x 1 | 80 | 20,5 | 45 | 8,7 | 12 | 10,3 | 21,2 | 5 | .0276 |
| | 12 | x 1,25 | 90 | 24,4 | 45 | 10,4 | 14 | 12,3 | 25,2 | 5 | .0302 |

Andere Abmessungen auf Anfrage
Other sizes upon request

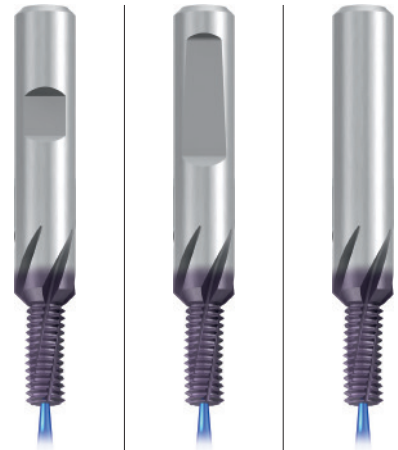
MF

DIN 13



| | |
|---------|----------------------------|
| VHM | TICN |
| R15 | RH + LH |
| Z4 - Z5 | DIN 6535 HB HE HA |
| 90° | ø D |

Mit höherer Nutenzahl
With increased number of flutes



Einsatzgebiete – Material
Applications – material » 328

| | | |
|-----------|-----------|-----------|
| P 1.1-5.1 | M 1.1-4.1 | K 1.1-4.2 |
| N 1.1-5.2 | S 1.1-2.6 | H 1.1-2 |

Gewindetiefe
Thread depth

2 x D

Werkzeug-Ident · Tool ident

| | | | | | | | | | | | Dimens.-Ident | GF335126 | GF335426 | GF335726 |
|-----|--------|----------------|----------------|----------------|------------------|------------------|------------------|----------------|---|-------|--|--|--|----------|
| ø D | P | l ₁ | l ₂ | l ₃ | ø d ₁ | ø d ₂ | ø d _s | l _s | Z | | GSF-Z-VHM 2xD R15-1KZ-HB TICN | GSF-Z-VHM 2xD R15-1KZ-HE TICN | GSF-Z-VHM 2xD R15-1KZ-HA TICN | |
| M 8 | x 1 | 74 | 16,5 | 40 | 6,7 | 10 | 8,3 | 17,2 | 4 | .0251 | ● | ● | ● | |
| 10 | x 1 | 80 | 20,5 | 45 | 8,7 | 12 | 10,3 | 21,2 | 5 | .0276 | ● | ● | ● | |
| 12 | x 1,25 | 90 | 24,4 | 45 | 10,4 | 14 | 12,3 | 25,2 | 5 | .0302 | ● | ● | ● | |

Andere Abmessungen auf Anfrage
Other sizes upon request

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

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

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

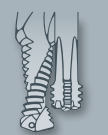
GF-KEG

ZGF

ZIRK-GF

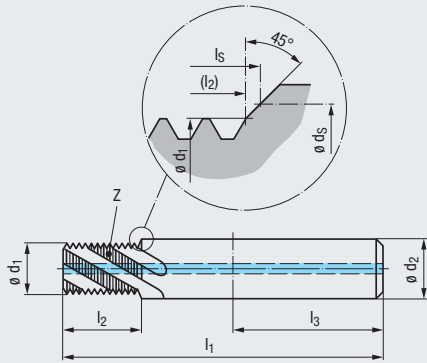
Gigant

MoSys



UNC

ASME B.1.1



VHM

R30

RH + LH

Z3 - Z5



DIN 6535



P 1.1-3.1 K 1.1-4.2 N 1.1-5
N 2.1-6 N 3.1-4.2, 5.2 S 1.1-2

Einsatzgebiete – Material
Applications – material

» 328

Gewindetiefe
Thread depth

1,5 x D

Werkzeug-Ident · Tool ident

GF322101 GF322401 GF322701

| Ø D inch | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | Ø d ₁ | Ø d ₂ | Ø d _s | l _s | Z | Dimens.- Ident | GSF-VHM | GSF-VHM | GSF-VHM |
|-------------|------------------|----------------|----------------|----------------|------------------|------------------|------------------|----------------|---|-------------------|---------------------|---------------------|---------------------|
| | | | | | | | | | | | 1,5xD R30-IKZ-HB | 1,5xD R30-IKZ-HE | 1,5xD R30-IKZ-HA |
| Nr. 12 | 24 | 62 | 9 | 36 | 4,15 | 8 | 5,79 | 9,7 | 3 | .5008 | | | |
| 1/4 | 20 | 62 | 10,8 | 36 | 4,7 | 8 | 6,65 | 11,7 | 3 | .5009 | • | • | • |
| 5/16 | 18 | 74 | 13,4 | 40 | 6,15 | 10 | 8,25 | 14,4 | 3 | .5010 | • | • | • |
| 3/8 | 16 | 80 | 15,1 | 45 | 7,65 | 12 | 9,83 | 16,1 | 3 | .5011 | • | • | • |
| 7/16 | 14 | 80 | 17,3 | 45 | 9 | 12 | 11,43 | 18,3 | 3 | .5012 | • | • | • |
| 1/2 | 13 | 90 | 20,6 | 45 | 10,35 | 14 | 13 | 21,7 | 4 | .5013 | • | • | • |
| 9/16 | 12 | 100 | 22,3 | 48 | 11,8 | 16 | 14,61 | 23,5 | 4 | .5014 | • | • | • |
| 5/8 | 11 | 102 | 24,3 | 48 | 13,1 | 18 | 16,18 | 25,6 | 4 | .5015 | • | • | • |
| 3/4 | 10 | 110 | 29,3 | 50 | 16 | 20 | 19,35 | 30,7 | 5 | .5016 | • | • | • |

Gewindetiefe
Thread depth

2 x D

Werkzeug-Ident · Tool ident

GF332101 GF332401 GF332701

| Ø D inch | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | Ø d ₁ | Ø d ₂ | Ø d _s | l _s | Z | Dimens.- Ident | GSF-VHM | GSF-VHM | GSF-VHM |
|-------------|------------------|----------------|----------------|----------------|------------------|------------------|------------------|----------------|---|-------------------|-------------------|-------------------|-------------------|
| | | | | | | | | | | | 2xD R30-IKZ-HB | 2xD R30-IKZ-HE | 2xD R30-IKZ-HA |
| Nr. 12 | 24 | 62 | 11,1 | 36 | 4,15 | 8 | 5,79 | 11,9 | 3 | .5008 | | | |
| 1/4 | 20 | 62 | 13,3 | 36 | 4,7 | 8 | 6,65 | 14,2 | 3 | .5009 | • | • | • |
| 5/16 | 18 | 74 | 16,2 | 40 | 6,15 | 10 | 8,25 | 17,2 | 3 | .5010 | • | • | • |
| 3/8 | 16 | 80 | 19,9 | 45 | 7,65 | 12 | 9,83 | 20,8 | 3 | .5011 | • | • | • |
| 7/16 | 14 | 80 | 22,7 | 45 | 9 | 12 | 11,43 | 23,8 | 3 | .5012 | • | • | • |
| 1/2 | 13 | 90 | 26,4 | 45 | 10,35 | 14 | 13 | 27,6 | 4 | .5013 | • | • | • |
| 9/16 | 12 | 100 | 30,7 | 48 | 11,8 | 16 | 14,61 | 32 | 4 | .5014 | • | • | • |
| 5/8 | 11 | 102 | 33,5 | 48 | 13,1 | 18 | 16,18 | 34,9 | 4 | .5015 | • | • | • |
| 3/4 | 10 | 110 | 39,4 | 50 | 16 | 20 | 19,35 | 40,9 | 5 | .5016 | • | • | • |

Gewindetiefe
Thread depth

2,5 x D

Werkzeug-Ident · Tool ident

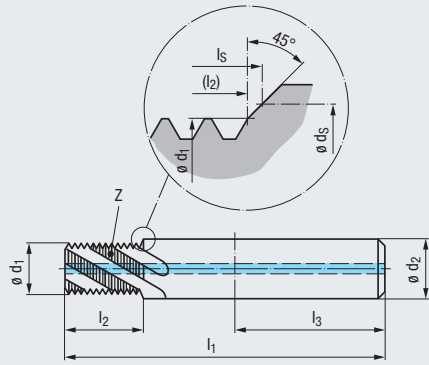
GF342101 GF342401 GF342701

| Ø D inch | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | Ø d ₁ | Ø d ₂ | Ø d _s | l _s | Z | Dimens.- Ident | GSF-VHM | GSF-VHM | GSF-VHM |
|-------------|------------------|----------------|----------------|----------------|------------------|------------------|------------------|----------------|---|-------------------|---------------------|---------------------|---------------------|
| | | | | | | | | | | | 2,5xD R30-IKZ-HB | 2,5xD R30-IKZ-HE | 2,5xD R30-IKZ-HA |
| 3/8 | 16 | 85 | 24,6 | 45 | 7,65 | 12 | 9,83 | 25,6 | 3 | .5011 | • | • | • |
| 7/16 | 14 | 85 | 28,2 | 45 | 9 | 12 | 11,43 | 29,2 | 3 | .5012 | • | • | • |
| 1/2 | 13 | 96 | 32,3 | 45 | 10,35 | 14 | 13 | 33,4 | 4 | .5013 | • | • | • |
| 9/16 | 12 | 107 | 37,1 | 48 | 11,8 | 16 | 14,61 | 38,3 | 4 | .5014 | • | • | • |
| 5/8 | 11 | 110 | 40,5 | 48 | 13,1 | 18 | 16,18 | 41,8 | 4 | .5015 | • | • | • |
| 3/4 | 10 | 125 | 49,6 | 50 | 16 | 20 | 19,35 | 51,1 | 5 | .5016 | • | • | • |

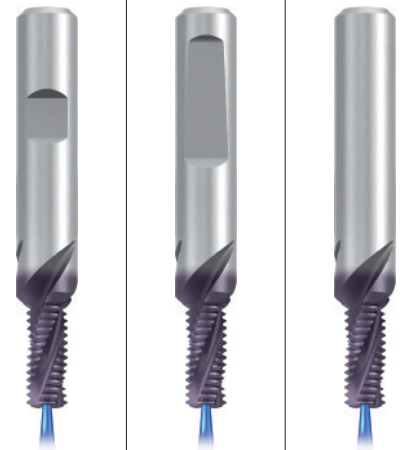
Andere Abmessungen auf Anfrage
Other sizes upon request

UNC

ASME B.1.1



| | |
|---------|----------------------------|
| VHM | TICN |
| R30 | RH + LH |
| Z3 - Z5 | DIN 6535 HB HE HA |
| 90° | θD |



- Product Finder
- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr

Einsatzgebiete – Material Applications – material ▶▶ 328

| | | |
|-----------|-----------|--------------|
| P 1.1-3.1 | M 1.1-2.1 | K 1.1-4.2 |
| N 1.1-2.7 | N 3.1-5.2 | S 1.1-2, 2.1 |

Gewindetiefe Thread depth

1,5 x D

Werkzeug-Ident · Tool ident

GF322106 GF322406 GF322706

| θD inch | P Gg/1" (tpi) | l_1 | l_2 | l_3 | θd_1 | θd_2 | θd_3 | l_s | Z | Dimens.-Ident | GF322106 | GF322406 | GF322706 |
|--------------------|------------------|-------|-------|-------|--------------|--------------|--------------|-------|---|---------------|-------------------------------|-------------------------------|-------------------------------|
| | | | | | | | | | | | GSF-VHM 1,5xD R30-IKZ-HB TICN | GSF-VHM 1,5xD R30-IKZ-HE TICN | GSF-VHM 1,5xD R30-IKZ-HA TICN |
| Nr. 12 | 24 | 62 | 9 | 36 | 4,15 | 8 | 5,79 | 9,7 | 3 | .5008 | | | |
| 1/4 | 20 | 62 | 10,8 | 36 | 4,7 | 8 | 6,65 | 11,7 | 3 | .5009 | ● | ● | ● |
| 5/16 | 18 | 74 | 13,4 | 40 | 6,15 | 10 | 8,25 | 14,4 | 3 | .5010 | ● | ● | ● |
| 3/8 | 16 | 80 | 15,1 | 45 | 7,65 | 12 | 9,83 | 16,1 | 3 | .5011 | ● | ● | ● |
| 7/16 | 14 | 80 | 17,3 | 45 | 9 | 12 | 11,43 | 18,3 | 3 | .5012 | ● | ● | ● |
| 1/2 | 13 | 90 | 20,6 | 45 | 10,35 | 14 | 13 | 21,7 | 4 | .5013 | ● | ● | ● |
| 9/16 | 12 | 100 | 22,3 | 48 | 11,8 | 16 | 14,61 | 23,5 | 4 | .5014 | ● | ● | ● |
| 5/8 | 11 | 102 | 24,3 | 48 | 13,1 | 18 | 16,18 | 25,6 | 4 | .5015 | ● | ● | ● |
| 3/4 | 10 | 110 | 29,3 | 50 | 16 | 20 | 19,35 | 30,7 | 5 | .5016 | ● | ● | ● |

Gewindetiefe Thread depth

2 x D

Werkzeug-Ident · Tool ident

GF332106 GF332406 GF332706

| θD inch | P Gg/1" (tpi) | l_1 | l_2 | l_3 | θd_1 | θd_2 | θd_3 | l_s | Z | Dimens.-Ident | GF332106 | GF332406 | GF332706 |
|--------------------|------------------|-------|-------|-------|--------------|--------------|--------------|-------|---|---------------|-----------------------------|-----------------------------|-----------------------------|
| | | | | | | | | | | | GSF-VHM 2xD R30-IKZ-HB TICN | GSF-VHM 2xD R30-IKZ-HE TICN | GSF-VHM 2xD R30-IKZ-HA TICN |
| Nr. 12 | 24 | 62 | 11,1 | 36 | 4,15 | 8 | 5,79 | 11,9 | 3 | .5008 | | | |
| 1/4 | 20 | 62 | 13,3 | 36 | 4,7 | 8 | 6,65 | 14,2 | 3 | .5009 | ● | ● | ● |
| 5/16 | 18 | 74 | 16,2 | 40 | 6,15 | 10 | 8,25 | 17,2 | 3 | .5010 | ● | ● | ● |
| 3/8 | 16 | 80 | 19,9 | 45 | 7,65 | 12 | 9,83 | 20,8 | 3 | .5011 | ● | ● | ● |
| 7/16 | 14 | 80 | 22,7 | 45 | 9 | 12 | 11,43 | 23,8 | 3 | .5012 | ● | ● | ● |
| 1/2 | 13 | 90 | 26,4 | 45 | 10,35 | 14 | 13 | 27,6 | 4 | .5013 | ● | ● | ● |
| 9/16 | 12 | 100 | 30,7 | 48 | 11,8 | 16 | 14,61 | 32 | 4 | .5014 | ● | ● | ● |
| 5/8 | 11 | 102 | 33,5 | 48 | 13,1 | 18 | 16,18 | 34,9 | 4 | .5015 | ● | ● | ● |
| 3/4 | 10 | 110 | 39,4 | 50 | 16 | 20 | 19,35 | 40,9 | 5 | .5016 | ● | ● | ● |

Gewindetiefe Thread depth

2,5 x D

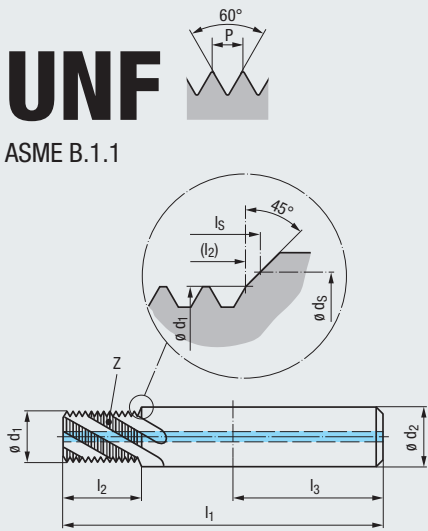
Werkzeug-Ident · Tool ident

GF342106 GF342406 GF342706

| θD mm | P Gg/1" (tpi) | l_1 | l_2 | l_3 | θd_1 | θd_2 | θd_3 | l_s | Z | Dimens.-Ident | GF342106 | GF342406 | GF342706 |
|------------------|------------------|-------|-------|-------|--------------|--------------|--------------|-------|---|---------------|-------------------------------|-------------------------------|-------------------------------|
| | | | | | | | | | | | GSF-VHM 2,5xD R30-IKZ-HB TICN | GSF-VHM 2,5xD R30-IKZ-HE TICN | GSF-VHM 2,5xD R30-IKZ-HA TICN |
| 3/8 | 16 | 85 | 24,6 | 45 | 7,65 | 12 | 9,83 | 25,6 | 3 | .5011 | ● | ● | ● |
| 7/16 | 14 | 85 | 28,2 | 45 | 9 | 12 | 11,43 | 29,2 | 3 | .5012 | ● | ● | ● |
| 1/2 | 13 | 96 | 32,3 | 45 | 10,35 | 14 | 13 | 33,4 | 4 | .5013 | ● | ● | ● |
| 9/16 | 12 | 107 | 37,1 | 48 | 11,8 | 16 | 14,61 | 38,3 | 4 | .5014 | ● | ● | ● |
| 5/8 | 11 | 110 | 40,5 | 48 | 13,1 | 18 | 16,18 | 41,8 | 4 | .5015 | ● | ● | ● |
| 3/4 | 10 | 125 | 49,6 | 50 | 16 | 20 | 19,35 | 51,1 | 5 | .5016 | ● | ● | ● |

Andere Abmessungen auf Anfrage
Other sizes upon request

- Product Finder
- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys



ASME B.1.1

VHM

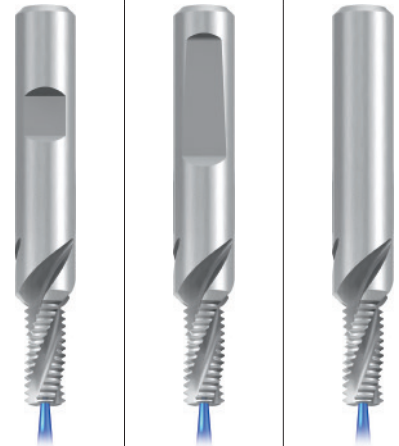
R30

RH + LH

Z3 - Z5



DIN 6535



Einsatzgebiete – Material
Applications – material

» 328

P 1.1-3.1 K 1.1-4.2 N 1.1-5
N 2.1-6 N 3.1-4.2, 5.2 S 1.1-2

Gewindetiefe
Thread depth

1,5 x D

Werkzeug-Ident · Tool ident

GF322101 GF322401 GF322701

| ø D inch | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | ø d ₁ | ø d ₂ | ø d _s | l _s | Z | Dimens.- Ident | GSF-VHM | GSF-VHM | GSF-VHM |
|-------------|------------------|----------------|----------------|----------------|------------------|------------------|------------------|----------------|---|-------------------|---------------------|---------------------|---------------------|
| | | | | | | | | | | | 1,5xD R30-IKZ-HB | 1,5xD R30-IKZ-HE | 1,5xD R30-IKZ-HA |
| Nr. 10 | 32 | 55 | 7,6 | 36 | 3,8 | 6 | 5,13 | 8,1 | 3 | .5041 | • | • | • |
| Nr. 12 | 28 | 62 | 8,6 | 36 | 4,3 | 8 | 5,79 | 9,3 | 3 | .5042 | • | • | • |
| 1/4 | 28 | 62 | 10,5 | 36 | 5,15 | 8 | 6,65 | 11,1 | 3 | .5043 | • | • | • |
| 5/16 | 24 | 74 | 12,2 | 40 | 6,6 | 10 | 8,25 | 12,9 | 3 | .5044 | • | • | • |
| 3/8 | 24 | 80 | 14,3 | 45 | 8,2 | 12 | 9,83 | 15 | 3 | .5045 | • | • | • |
| 7/16 | 20 | 80 | 17,2 | 45 | 9,55 | 12 | 11,43 | 18 | 3 | .5046 | • | • | • |
| 1/2 | 20 | 90 | 19,7 | 45 | 11,1 | 14 | 13 | 20,5 | 4 | .5047 | • | • | • |
| 9/16 | 18 | 100 | 21,9 | 48 | 12,5 | 16 | 14,61 | 22,8 | 4 | .5048 | • | • | • |
| 5/8 | 18 | 102 | 24,8 | 48 | 14,1 | 18 | 16,18 | 25,6 | 4 | .5049 | • | • | • |
| 3/4 | 16 | 110 | 29,5 | 50 | 17 | 20 | 19,35 | 30,4 | 5 | .5050 | • | • | • |

Gewindetiefe
Thread depth

2 x D

Werkzeug-Ident · Tool ident

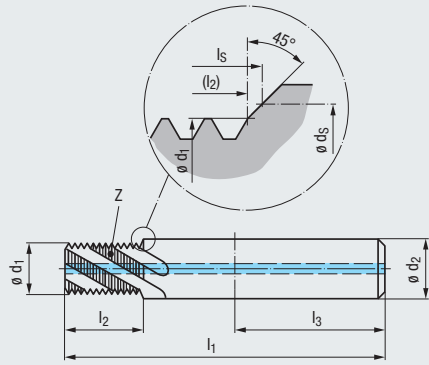
GF332101 GF332401 GF332701

| ø D inch | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | ø d ₁ | ø d ₂ | ø d _s | l _s | Z | Dimens.- Ident | GSF-VHM | GSF-VHM | GSF-VHM |
|-------------|------------------|----------------|----------------|----------------|------------------|------------------|------------------|----------------|---|-------------------|-------------------|-------------------|-------------------|
| | | | | | | | | | | | 2xD R30-IKZ-HB | 2xD R30-IKZ-HE | 2xD R30-IKZ-HA |
| Nr. 10 | 32 | 55 | 9,9 | 36 | 3,8 | 6 | 5,13 | 10,5 | 3 | .5041 | • | • | • |
| Nr. 12 | 28 | 62 | 11,4 | 36 | 4,3 | 8 | 5,79 | 12 | 3 | .5042 | • | • | • |
| 1/4 | 28 | 62 | 13,2 | 36 | 5,15 | 8 | 6,65 | 13,8 | 3 | .5043 | • | • | • |
| 5/16 | 24 | 74 | 16,4 | 40 | 6,6 | 10 | 8,25 | 17,1 | 3 | .5044 | • | • | • |
| 3/8 | 24 | 80 | 19,6 | 45 | 8,2 | 12 | 9,83 | 20,3 | 3 | .5045 | • | • | • |
| 7/16 | 20 | 80 | 22,3 | 45 | 9,55 | 12 | 11,43 | 23,1 | 3 | .5046 | • | • | • |
| 1/2 | 20 | 90 | 26,1 | 45 | 11,1 | 14 | 13 | 26,9 | 4 | .5047 | • | • | • |
| 9/16 | 18 | 100 | 29 | 48 | 12,5 | 16 | 14,61 | 29,9 | 4 | .5048 | • | • | • |
| 5/8 | 18 | 102 | 33,2 | 48 | 14,1 | 18 | 16,18 | 34,1 | 4 | .5049 | • | • | • |
| 3/4 | 16 | 110 | 39 | 50 | 17 | 20 | 19,35 | 40 | 5 | .5050 | • | • | • |

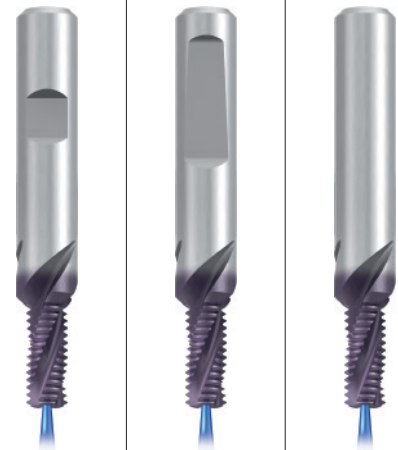
Andere Abmessungen auf Anfrage
Other sizes upon request

UNF

ASME B.1.1



| | |
|---------|----------------------------|
| VHM | TICN |
| R30 | RH + LH |
| Z3 - Z5 | DIN 6535 HB HE HA |
| 90° | Ø D |



Einsatzgebiete – Material Applications – material ▶▶ 328

| | | |
|-----------|-----------|-------------|
| P 1.1-3.1 | M 1.1-2.1 | K 1.1-4.2 |
| N 1.1-2.7 | N 3.1-5.2 | S 1.1-2.2.1 |

Gewindetiefe Thread depth

1,5 x D

Werkzeug-Ident · Tool ident

GF322106 GF322406 GF322706

| Ø D inch | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | Ø d ₁ | Ø d ₂ | Ø d _S | l _S | Z | Dimens.- Ident | GF322106 | GF322406 | GF322706 |
|-------------|------------------|----------------|----------------|----------------|------------------|------------------|------------------|----------------|---|-------------------|--|--|--|
| | | | | | | | | | | | GSF-VHM 1,5xD R30-1KZ-HB TICN | GSF-VHM 1,5xD R30-1KZ-HE TICN | GSF-VHM 1,5xD R30-1KZ-HA TICN |
| Nr. 10 | 32 | 55 | 7,6 | 36 | 3,8 | 6 | 5,13 | 8,1 | 3 | .5041 | ● | ● | ● |
| Nr. 12 | 28 | 62 | 8,6 | 36 | 4,3 | 8 | 5,79 | 9,3 | 3 | .5042 | ● | ● | ● |
| 1/4 | 28 | 62 | 10,5 | 36 | 5,15 | 8 | 6,65 | 11,1 | 3 | .5043 | ● | ● | ● |
| 5/16 | 24 | 74 | 12,2 | 40 | 6,6 | 10 | 8,25 | 12,9 | 3 | .5044 | ● | ● | ● |
| 3/8 | 24 | 80 | 14,3 | 45 | 8,2 | 12 | 9,83 | 15 | 3 | .5045 | ● | ● | ● |
| 7/16 | 20 | 80 | 17,2 | 45 | 9,55 | 12 | 11,43 | 18 | 3 | .5046 | ● | ● | ● |
| 1/2 | 20 | 90 | 19,7 | 45 | 11,1 | 14 | 13 | 20,5 | 4 | .5047 | ● | ● | ● |
| 9/16 | 18 | 100 | 21,9 | 48 | 12,5 | 16 | 14,61 | 22,8 | 4 | .5048 | ● | ● | ● |
| 5/8 | 18 | 102 | 24,8 | 48 | 14,1 | 18 | 16,18 | 25,6 | 4 | .5049 | ● | ● | ● |
| 3/4 | 16 | 110 | 29,5 | 50 | 17 | 20 | 19,35 | 30,4 | 5 | .5050 | ● | ● | ● |

Gewindetiefe Thread depth

2 x D

Werkzeug-Ident · Tool ident

GF332106 GF332406 GF332706

| Ø D inch | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | Ø d ₁ | Ø d ₂ | Ø d _S | l _S | Z | Dimens.- Ident | GF332106 | GF332406 | GF332706 |
|-------------|------------------|----------------|----------------|----------------|------------------|------------------|------------------|----------------|---|-------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| | | | | | | | | | | | GSF-VHM 2xD R30-1KZ-HB TICN | GSF-VHM 2xD R30-1KZ-HE TICN | GSF-VHM 2xD R30-1KZ-HA TICN |
| Nr. 10 | 32 | 55 | 9,9 | 36 | 3,8 | 6 | 5,13 | 10,5 | 3 | .5041 | ● | ● | ● |
| Nr. 12 | 28 | 62 | 11,4 | 36 | 4,3 | 8 | 5,79 | 12 | 3 | .5042 | ● | ● | ● |
| 1/4 | 28 | 62 | 13,2 | 36 | 5,15 | 8 | 6,65 | 13,8 | 3 | .5043 | ● | ● | ● |
| 5/16 | 24 | 74 | 16,4 | 40 | 6,6 | 10 | 8,25 | 17,1 | 3 | .5044 | ● | ● | ● |
| 3/8 | 24 | 80 | 19,6 | 45 | 8,2 | 12 | 9,83 | 20,3 | 3 | .5045 | ● | ● | ● |
| 7/16 | 20 | 80 | 22,3 | 45 | 9,55 | 12 | 11,43 | 23,1 | 3 | .5046 | ● | ● | ● |
| 1/2 | 20 | 90 | 26,1 | 45 | 11,1 | 14 | 13 | 26,9 | 4 | .5047 | ● | ● | ● |
| 9/16 | 18 | 100 | 29 | 48 | 12,5 | 16 | 14,61 | 29,9 | 4 | .5048 | ● | ● | ● |
| 5/8 | 18 | 102 | 33,2 | 48 | 14,1 | 18 | 16,18 | 34,1 | 4 | .5049 | ● | ● | ● |
| 3/4 | 16 | 110 | 39 | 50 | 17 | 20 | 19,35 | 40 | 5 | .5050 | ● | ● | ● |

Andere Abmessungen auf Anfrage
Other sizes upon request

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

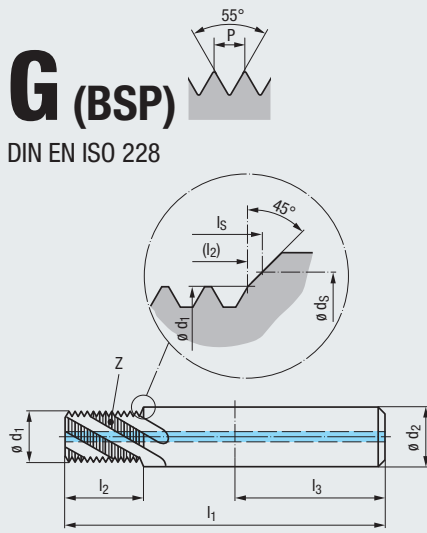
Gigant

MoSys



● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

- Product Finder
- v_c / f_z
- M
- MF
- UNC UN, UNS
- UNF UNEF
- G Rp
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- EG (STI) SELF-LOCK
- Tr
- Zubehör Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys

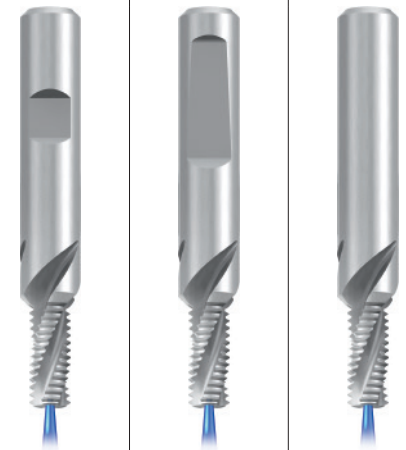


VHM

R30 **RH + LH**

Z3 - Z4 **DIN 6535**
 HB
 HE
 HA

90° $\varnothing D$



Einsatzgebiete – Material Applications – material **328**

P 1.1-3.1 **K 1.1-4.2** **N 1.1-5**
N 2.1-6 **N 3.1-4.2, 5.2** **S 1.1-2**

Gewindetiefe Thread depth

1,5 x D

Werkzeug-Ident · Tool ident

| | GF322101 | GF322401 | GF322701 |
|--------------------------|----------|----------|----------|
| GSF-VHM 1,5xD R30-IKZ-HB | ● | ● | ● |
| GSF-VHM 1,5xD R30-IKZ-HE | ● | ● | ● |
| GSF-VHM 1,5xD R30-IKZ-HA | ● | ● | ● |

Nenngröße Nom. size

Dimens.-Ident

| $\varnothing D$ | P Gg/1" (tpi) | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_S$ | l_S | Z | Dimens.-Ident |
|-----------------|---------------|-------|-------|-------|-------------------|-------------------|-------------------|-------|---|---------------|
| G 1/8 | 28 | 80 | 15 | 45 | 8,2 | 12 | 10 | 15,7 | 3 | .4035 |
| 1/4 | 19 | 100 | 20,7 | 48 | 11 | 16 | 13,5 | 21,8 | 4 | .4036 |
| 3/8 | 19 | 102 | 26,1 | 48 | 14,5 | 18 | 17 | 27,2 | 4 | .4037 |

Gewindetiefe Thread depth

2 x D

Werkzeug-Ident · Tool ident

| | GF332101 | GF332401 | GF332701 |
|------------------------|----------|----------|----------|
| GSF-VHM 2xD R30-IKZ-HB | ● | ● | ● |
| GSF-VHM 2xD R30-IKZ-HE | ● | ● | ● |
| GSF-VHM 2xD R30-IKZ-HA | ● | ● | ● |

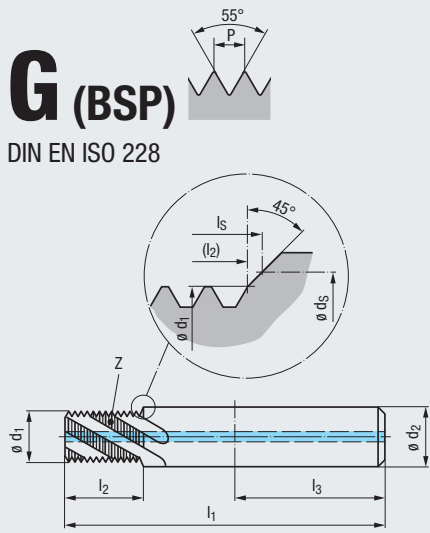
Nenngröße Nom. size

Dimens.-Ident

| $\varnothing D$ | P Gg/1" (tpi) | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_S$ | l_S | Z | Dimens.-Ident |
|-----------------|---------------|-------|-------|-------|-------------------|-------------------|-------------------|-------|---|---------------|
| G 1/8 | 28 | 80 | 20,4 | 45 | 8,2 | 12 | 10 | 21,2 | 3 | .4035 |
| 1/4 | 19 | 100 | 27,4 | 48 | 11 | 16 | 13,5 | 28,5 | 4 | .4036 |
| 3/8 | 19 | 102 | 34,1 | 48 | 14,5 | 18 | 17 | 35,2 | 4 | .4037 |

Andere Abmessungen auf Anfrage
 Other sizes upon request





| | |
|---------|----------------------------|
| VHM | TICN |
| R30 | RH + LH |
| Z3 - Z4 | DIN 6535 HB HE HA |
| 90° | θD |



- Product Finder
- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK

Einsatzgebiete – Material Applications – material ▶▶ 328

| | | |
|-----------|-----------|--------------|
| P 1.1-3.1 | M 1.1-2.1 | K 1.1-4.2 |
| N 1.1-2.7 | N 3.1-5.2 | S 1.1-2, 2.1 |

Gewindetiefe Thread depth

1,5 x D

| Werkzeug-Ident · Tool ident | | | | | | | | | | | GF322106 | GF322406 | GF322706 |
|-----------------------------|---------------|-------|-------|-------|--------------|--------------|--------------|-------|---|---------------|-------------------------------|-------------------------------|-------------------------------|
| Nenngröße Nom. size | | | | | | | | | | Dimens.-Ident | GSF-VHM 1,5xD R30-1KZ-HB TICN | GSF-VHM 1,5xD R30-1KZ-HE TICN | GSF-VHM 1,5xD R30-1KZ-HA TICN |
| θD | P Gg/1" (tpi) | l_1 | l_2 | l_3 | θd_1 | θd_2 | θd_3 | l_s | Z | | | | |
| G 1/8 | 28 | 80 | 15 | 45 | 8,2 | 12 | 10 | 15,7 | 3 | .4035 | ● | ● | ● |
| 1/4 | 19 | 100 | 20,7 | 48 | 11 | 16 | 13,5 | 21,8 | 4 | .4036 | ● | ● | ● |
| 3/8 | 19 | 102 | 26,1 | 48 | 14,5 | 18 | 17 | 27,2 | 4 | .4037 | ● | ● | ● |

Gewindetiefe Thread depth

2 x D

| Werkzeug-Ident · Tool ident | | | | | | | | | | | GF332106 | GF332406 | GF332706 |
|-----------------------------|---------------|-------|-------|-------|--------------|--------------|--------------|-------|---|---------------|-----------------------------|-----------------------------|-----------------------------|
| Nenngröße Nom. size | | | | | | | | | | Dimens.-Ident | GSF-VHM 2xD R30-1KZ-HB TICN | GSF-VHM 2xD R30-1KZ-HE TICN | GSF-VHM 2xD R30-1KZ-HA TICN |
| θD | P Gg/1" (tpi) | l_1 | l_2 | l_3 | θd_1 | θd_2 | θd_3 | l_s | Z | | | | |
| G 1/8 | 28 | 80 | 20,4 | 45 | 8,2 | 12 | 10 | 21,2 | 3 | .4035 | ● | ● | ● |
| 1/4 | 19 | 100 | 27,4 | 48 | 11 | 16 | 13,5 | 28,5 | 4 | .4036 | ● | ● | ● |
| 3/8 | 19 | 102 | 34,1 | 48 | 14,5 | 18 | 17 | 35,2 | 4 | .4037 | ● | ● | ● |

Andere Abmessungen auf Anfrage Other sizes upon request

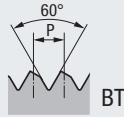
- Zubehör Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys



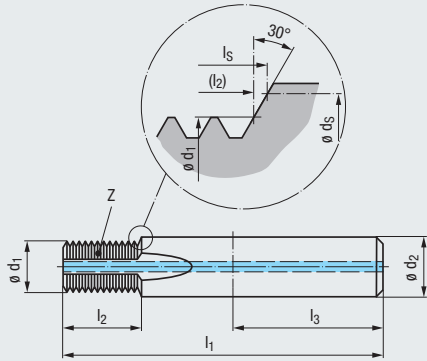
● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

- Product Finder
- v_c / f_z
- M
- MF
- UNC UN, UNS
- UNF UNEF
- G, Rp
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- EG (ST) SELF-LOCK
- Tr
- Zubehör Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys

LK-M



EMUGE-Norm · EMUGE Standard



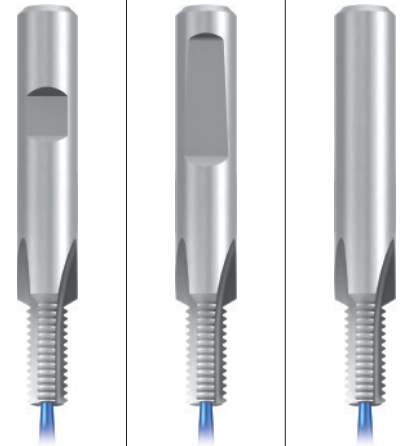
VHM

RH + LH

Z3 - Z4



DIN 6535



Einsatzgebiete – Material
Applications – material

» 328

P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6
N 3.1-2 N 4.1-2, 5.2 S 1.1-3

Gewindetiefe
Thread depth

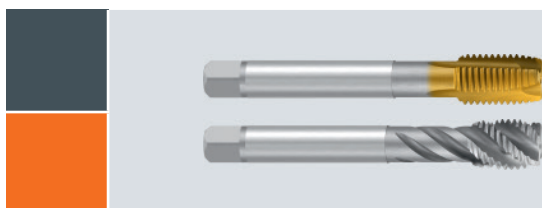
2 x D

Werkzeug-Ident · Tool ident

| | GF333101 | GF333401 | GF333701 |
|---|--------------------------|--------------------------|--------------------------|
| | GSF-VHM 2xD IKZ-HB | GSF-VHM 2xD IKZ-HE | GSF-VHM 2xD IKZ-HA |
| • | • | • | • |
| • | • | • | • |
| • | • | • | • |
| • | • | • | • |
| • | • | • | • |

| | $\varnothing D$ mm | P mm | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_s$ | l_s | Z | Dimens.- Ident |
|-------------|-----------------------|---------|-------|-------|-------|-------------------|-------------------|-------------------|-------|---|-------------------|
| | | | | | | | | | | | |
| LK-M | 5 | 0,8 | 55 | 10,7 | 36 | 4 | 6 | 5,3 | 11,1 | 3 | .1050 |
| | 6 | 1 | 62 | 12,4 | 36 | 4,8 | 8 | 6,3 | 12,8 | 3 | .1052 |
| | 8 | 1,25 | 74 | 16,7 | 40 | 6,5 | 10 | 8,3 | 17,3 | 3 | .1054 |
| | 10 | 1,5 | 80 | 20,1 | 45 | 8,2 | 12 | 10,3 | 20,7 | 3 | .1056 |
| | 12 | 1,75 | 90 | 25,2 | 45 | 9,9 | 14 | 12,3 | 25,9 | 4 | .1058 |

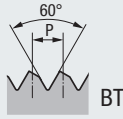
Andere Abmessungen auf Anfrage
Other sizes upon request



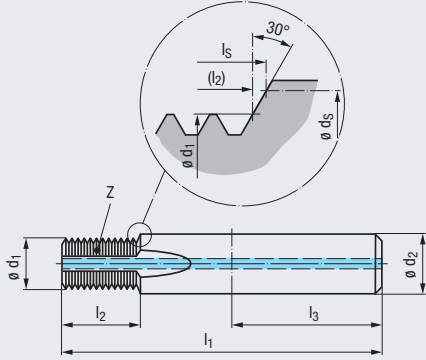
Gewindebohrer für Metrisches
SELF-LOCK-Gewinde
siehe Seite 228 - 231

Taps for Metric SELF-LOCK thread,
see page 228 - 231

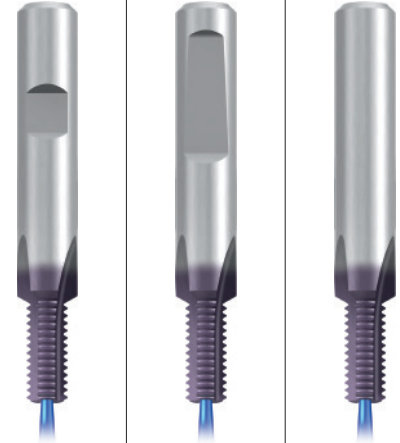
LK-M



EMUGE-Norm · EMUGE Standard



| | |
|---------|-----------------|
| VHM | TICN |
| | RH + LH |
| Z3 - Z4 | DIN 6535 |
| | HB HE HA |
| 120° | $\varnothing D$ |
| | |



Einsatzgebiete – Material Applications – material 328

| | | |
|-----------|-----------|-----------|
| P 1.1-5.1 | M 1.1-4.1 | K 1.1-4.2 |
| N 1.1-5.2 | S 1.1-2.6 | H 1.1-2 |

Gewindetiefe Thread depth

2 x D

Werkzeug-Ident · Tool ident

GF333106 GF333406 GF333706

| | $\varnothing D$ mm | P mm | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_s$ | l_s | Z | Dimens.- Ident | GF333106 | GF333406 | GF333706 |
|-------------|-----------------------|---------|-------|-------|-------|-------------------|-------------------|-------------------|-------|---|-------------------|----------------------------------|----------------------------------|----------------------------------|
| | | | | | | | | | | | | GSF-VHM 2xD IKZ-HB TICN | GSF-VHM 2xD IKZ-HE TICN | GSF-VHM 2xD IKZ-HA TICN |
| LK-M | 5 | 0,8 | 55 | 10,7 | 36 | 4 | 6 | 5,3 | 11,1 | 3 | .1050 | ● | ● | ● |
| | 6 | 1 | 62 | 12,4 | 36 | 4,8 | 8 | 6,3 | 12,8 | 3 | .1052 | ● | ● | ● |
| | 8 | 1,25 | 74 | 16,7 | 40 | 6,5 | 10 | 8,3 | 17,3 | 3 | .1054 | ● | ● | ● |
| | 10 | 1,5 | 80 | 20,1 | 45 | 8,2 | 12 | 10,3 | 20,7 | 3 | .1056 | ● | ● | ● |
| | 12 | 1,75 | 90 | 25,2 | 45 | 9,9 | 14 | 12,3 | 25,9 | 4 | .1058 | ● | ● | ● |

Andere Abmessungen auf Anfrage
Other sizes upon request

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

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

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

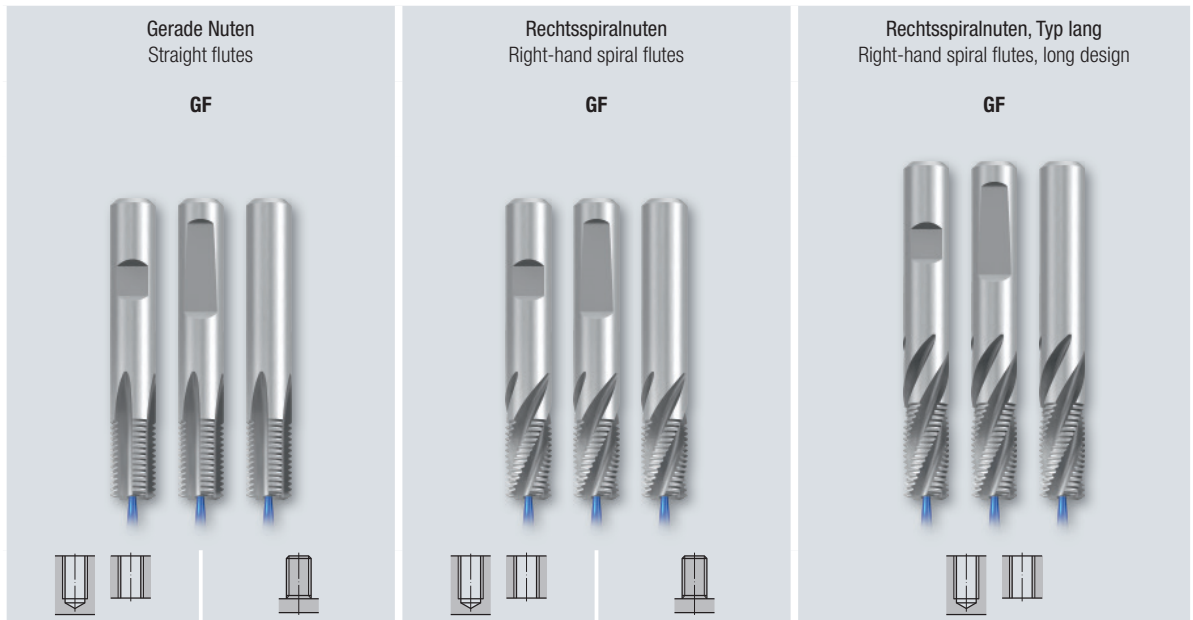
GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



Seite · Page

| | | | | | |
|-----------------------|-----|-----|-----|-----|-----|
| M, MF | 382 | 385 | 383 | | 384 |
| UN | 390 | | | | 391 |
| G (BSP), Rp (BSPP), W | 393 | 393 | 394 | 394 | |
| Pg | 396 | 396 | 397 | 397 | |
| LK-M | 398 | | | | |

Mögliche Modifikationen · Possible modifications



Stirnseite ohne/mit Stirnschnitt
Face chamfer with/without cutting face



AZR/AZ (ausgesetzte Zähne)
AZR/AZ (alternating teeth)



Unvollständigen Gang entfernen
Remove incomplete thread



IKZN (innere Kühlschmierstoff-Zufuhr mit Austritt in den Nuten)
IKZN (internal coolant supply exiting in the flutes)



Halsfreischliff
Recessed neck

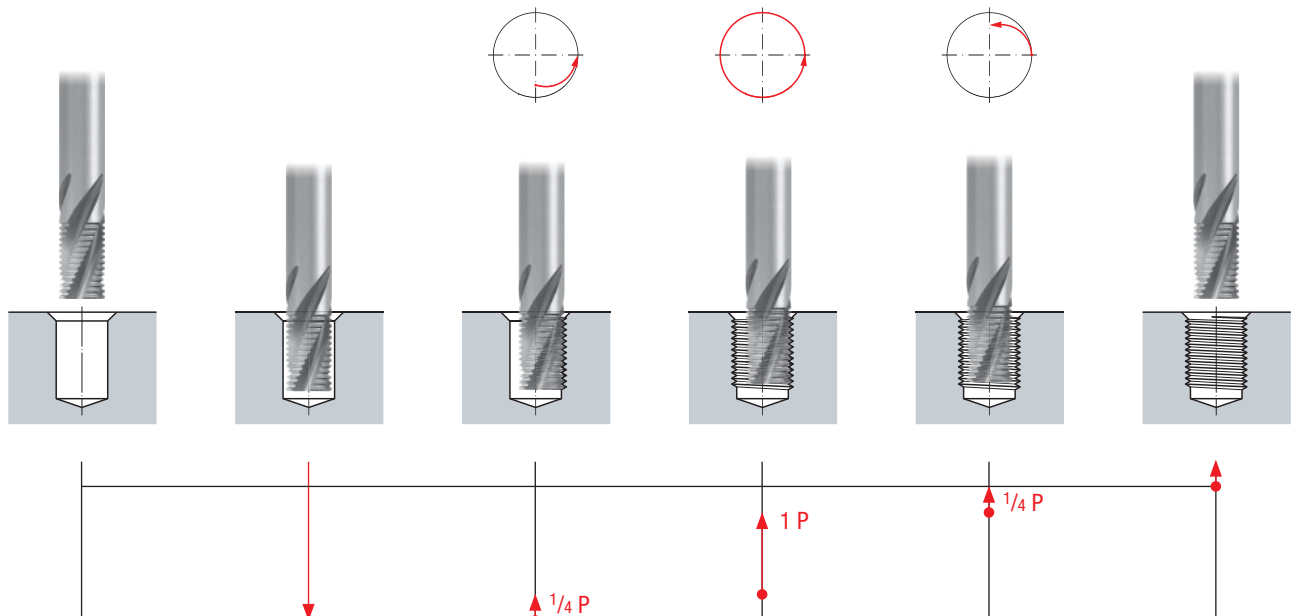


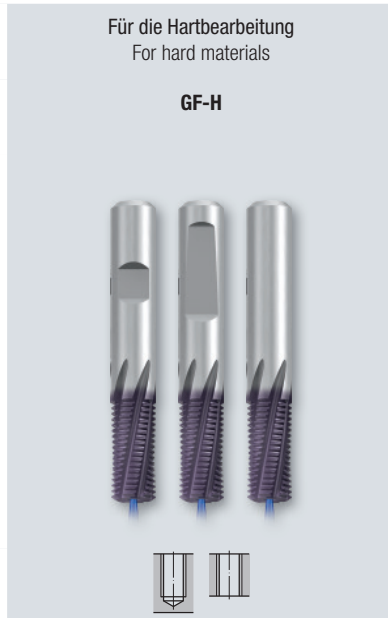
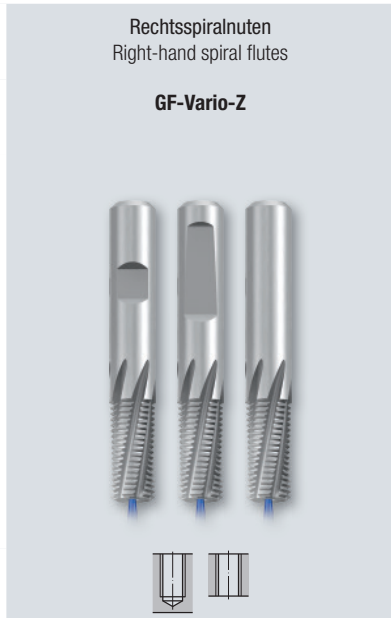
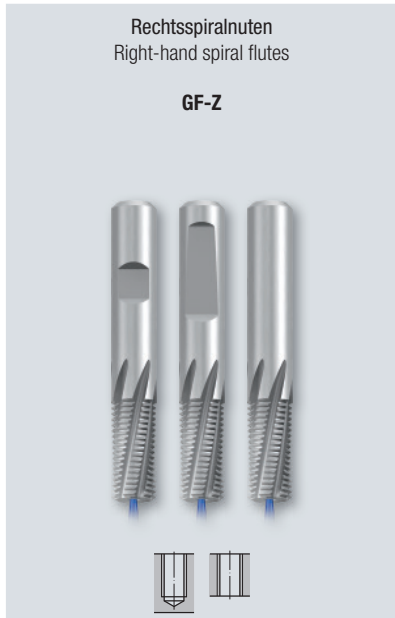
Schaftkühlruten
Coolant grooves along the shank

Eine Beschreibung dieser Modifikationsmöglichkeiten finden Sie auf Seite 456 - 457
For a description of these modifications, see pages 456 - 457

Gewindefräszyklus · Thread milling cycle

GF, GF-Z





Seite · Page

| | | | |
|-----|-----------|-----|-----------------------|
| 386 | 387 - 388 | 389 | M, MF |
| | 392 | | UN |
| | 395 | | G (BSP), Rp (BSPP), W |
| | | | Pg |
| | | | LK-M |

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



Mögliche Modifikationen · Possible modifications



Stirnfase ohne/mit Stirnschnitt
Face chamfer with/without cutting face



AZR/AZ (ausgesetzte Zähne)
AZR/AZ (alternating teeth)



Unvollständigen Gang entfernen
Remove incomplete thread



IKZN (innere Kühlschmierstoff-Zufuhr mit Austritt in den Nuten)
IKZN (internal coolant supply exiting in the flutes)



Halsfreischliff
Recessed neck

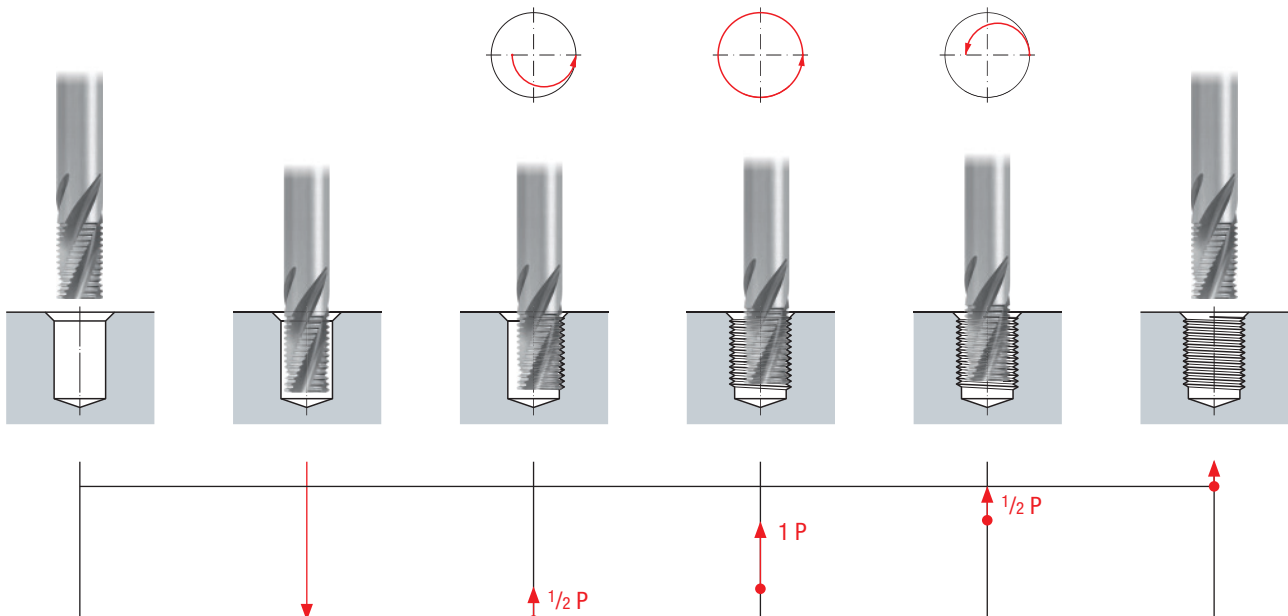


Schaftkühlfluten
Coolant grooves along the shank

Eine Beschreibung dieser Modifikationsmöglichkeiten finden Sie auf Seite 456 - 457
For a description of these modifications, see pages 456 - 457

Gewindefräszklus · Thread milling cycle

GF-Vario-Z, GF-H



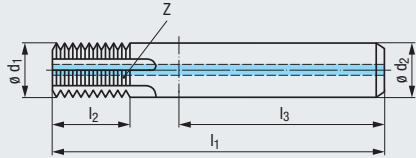
- Product Finder
- v_c / f_z
- M
- MF
- UNC UN, UNS
- UNF UNEF
- G, Rp
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- EG (STI) SELF-LOCK
- Tr
- Zubehör Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys

M, MF

DIN 13



Für Innengewinde
For internal threads



VHM

RH + LH

Z3 - Z5



DIN 6535



$\varnothing D$



Einsatzgebiete – Material
Applications – material

» 328

P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6
N 3.1-2 N 4.1-2, 5.2 S 1.1-3

| P mm | $\varnothing D_{min.}$ mm | $\varnothing d_1$ mm | $\varnothing d_2$ | l_1 | l_2 | l_3 | Z | GF-VHM IKZ-HB | | GF-VHM IKZ-HE | | GF-VHM IKZ-HA | |
|---------|------------------------------|-------------------------|-------------------|-------|-------|-------|---|---------------|---|---------------|---|---------------|---|
| | | | | | | | | ● | ● | ● | ● | ● | ● |
| 0,5 | 10 | 7,9 | 8 | 63 | 12,2 | 36 | 3 | GF163101.9506 | ● | GF163401.9506 | ● | GF163701.9506 | ● |
| 0,5 | 12 | 9,9 | 10 | 70 | 16,2 | 40 | 4 | GF163211.9506 | ● | GF163511.9506 | ● | GF163811.9506 | ● |
| 0,75 | 11 | 7,9 | 8 | 63 | 12,3 | 36 | 3 | GF163101.9509 | ● | GF163401.9509 | ● | GF163701.9509 | ● |
| 0,75 | 13 | 9,9 | 10 | 70 | 16,8 | 40 | 4 | GF163211.9509 | ● | GF163511.9509 | ● | GF163811.9509 | ● |
| 1 | 14 | 9,9 | 10 | 70 | 16,4 | 40 | 4 | GF163211.9512 | ● | GF163511.9512 | ● | GF163811.9512 | ● |
| 1 | 16 | 11,9 | 12 | 80 | 20,4 | 45 | 4 | GF163121.9512 | ● | GF163421.9512 | ● | GF163721.9512 | ● |
| 1 | 22 | 15,9 | 16 | 90 | 25,4 | 48 | 5 | GF163131.9512 | ● | GF163431.9512 | ● | GF163731.9512 | ● |
| 1 | 27 | 19,9 | 20 | 105 | 32,4 | 50 | 5 | GF163151.9512 | ● | GF163451.9512 | ● | GF163751.9512 | ● |
| 1,5 | 14 | 9,9 | 10 | 70 | 17,1 | 40 | 4 | GF163211.9514 | ● | GF163511.9514 | ● | GF163811.9514 | ● |
| 1,5 | 16 | 11,9 | 12 | 80 | 21,6 | 45 | 4 | GF163121.9514 | ● | GF163421.9514 | ● | GF163721.9514 | ● |
| 1,5 | 22 | 15,9 | 16 | 90 | 26,1 | 48 | 5 | GF163131.9514 | ● | GF163431.9514 | ● | GF163731.9514 | ● |
| 1,5 | 27 | 19,9 | 20 | 105 | 33,6 | 50 | 5 | GF163151.9514 | ● | GF163451.9514 | ● | GF163751.9514 | ● |
| 2 | 18 | 11,9 | 12 | 80 | 20,9 | 45 | 4 | GF163121.9516 | ● | GF163421.9516 | ● | GF163721.9516 | ● |
| 2 | 22 | 15,9 | 16 | 90 | 26,9 | 48 | 5 | GF163131.9516 | ● | GF163431.9516 | ● | GF163731.9516 | ● |
| 2 | 27 | 19,9 | 20 | 105 | 32,9 | 50 | 5 | GF163151.9516 | ● | GF163451.9516 | ● | GF163751.9516 | ● |
| 3 | 24 | 15,9 | 16 | 90 | 28,3 | 48 | 5 | GF163131.9518 | ● | GF163431.9518 | ● | GF163731.9518 | ● |
| 3 | 30 | 19,9 | 20 | 105 | 34,3 | 50 | 5 | GF163151.9518 | ● | GF163451.9518 | ● | GF163751.9518 | ● |

TICN



Einsatzgebiete – Material
Applications – material

» 328

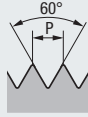
P 1.1-5.1 M 1.1-4.1 K 1.1-4.2
N 1.1-5.2 S 1.1-2.6 H 1.1-2

| P mm | $\varnothing D_{min.}$ mm | $\varnothing d_1$ mm | $\varnothing d_2$ | l_1 | l_2 | l_3 | Z | GF-VHM IKZ-HB TICN | | GF-VHM IKZ-HE TICN | | GF-VHM IKZ-HA TICN | |
|---------|------------------------------|-------------------------|-------------------|-------|-------|-------|---|--------------------|---|--------------------|---|--------------------|---|
| | | | | | | | | ● | ● | ● | ● | ● | ● |
| 0,5 | 10 | 7,9 | 8 | 63 | 12,2 | 36 | 3 | GF163106.9506 | ● | GF163406.9506 | ● | GF163706.9506 | ● |
| 0,5 | 12 | 9,9 | 10 | 70 | 16,2 | 40 | 4 | GF163216.9506 | ● | GF163516.9506 | ● | GF163816.9506 | ● |
| 0,75 | 11 | 7,9 | 8 | 63 | 12,3 | 36 | 3 | GF163106.9509 | ● | GF163406.9509 | ● | GF163706.9509 | ● |
| 0,75 | 13 | 9,9 | 10 | 70 | 16,8 | 40 | 4 | GF163216.9509 | ● | GF163516.9509 | ● | GF163816.9509 | ● |
| 1 | 14 | 9,9 | 10 | 70 | 16,4 | 40 | 4 | GF163216.9512 | ● | GF163516.9512 | ● | GF163816.9512 | ● |
| 1 | 16 | 11,9 | 12 | 80 | 20,4 | 45 | 4 | GF163126.9512 | ● | GF163426.9512 | ● | GF163726.9512 | ● |
| 1 | 22 | 15,9 | 16 | 90 | 25,4 | 48 | 5 | GF163136.9512 | ● | GF163436.9512 | ● | GF163736.9512 | ● |
| 1 | 27 | 19,9 | 20 | 105 | 32,4 | 50 | 5 | GF163156.9512 | ● | GF163456.9512 | ● | GF163756.9512 | ● |
| 1,5 | 14 | 9,9 | 10 | 70 | 17,1 | 40 | 4 | GF163216.9514 | ● | GF163516.9514 | ● | GF163816.9514 | ● |
| 1,5 | 16 | 11,9 | 12 | 80 | 21,6 | 45 | 4 | GF163126.9514 | ● | GF163426.9514 | ● | GF163726.9514 | ● |
| 1,5 | 22 | 15,9 | 16 | 90 | 26,1 | 48 | 5 | GF163136.9514 | ● | GF163436.9514 | ● | GF163736.9514 | ● |
| 1,5 | 27 | 19,9 | 20 | 105 | 33,6 | 50 | 5 | GF163156.9514 | ● | GF163456.9514 | ● | GF163756.9514 | ● |
| 2 | 18 | 11,9 | 12 | 80 | 20,9 | 45 | 4 | GF163126.9516 | ● | GF163426.9516 | ● | GF163726.9516 | ● |
| 2 | 22 | 15,9 | 16 | 90 | 26,9 | 48 | 5 | GF163136.9516 | ● | GF163436.9516 | ● | GF163736.9516 | ● |
| 2 | 27 | 19,9 | 20 | 105 | 32,9 | 50 | 5 | GF163156.9516 | ● | GF163456.9516 | ● | GF163756.9516 | ● |
| 3 | 24 | 15,9 | 16 | 90 | 28,3 | 48 | 5 | GF163136.9518 | ● | GF163436.9518 | ● | GF163736.9518 | ● |
| 3 | 30 | 19,9 | 20 | 105 | 34,3 | 50 | 5 | GF163156.9518 | ● | GF163456.9518 | ● | GF163756.9518 | ● |

Andere Steigungen auf Anfrage
Tools for different thread pitch upon request

M, MF

DIN 13



VHM

R30

RH + LH

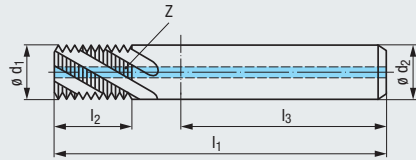
Z3 - Z5



DIN 6535



Für Innengewinde
For internal threads



Einsatzgebiete – Material
Applications – material

» 328

P 1.1-3.1 K 1.1-4.2 N 1.1-5
N 2.1-6 N 3.1-4.2, 5.2 S 1.1-2

| P mm | ∅ D _{min.} mm | ∅ d ₁ mm | ∅ d ₂ | l ₁ | l ₂ | l ₃ | Z | GF-VHM R30-IKZ-HB | GF-VHM R30-IKZ-HE | GF-VHM R30-IKZ-HA |
|---------|---------------------------|------------------------|------------------|----------------|----------------|----------------|---|----------------------|----------------------|----------------------|
| 0,5 | 10 | 7,9 | 8 | 63 | 12,2 | 36 | 3 | GF162101.9506 ● | GF162401.9506 ● | GF162701.9506 ● |
| 0,75 | 11 | 7,9 | 8 | 63 | 12,3 | 36 | 3 | GF162101.9509 ● | GF162401.9509 ● | GF162701.9509 ● |
| 1 | 14 | 9,9 | 10 | 70 | 16,4 | 40 | 4 | GF162211.9512 ● | GF162511.9512 ● | GF162811.9512 ● |
| 1 | 16 | 11,9 | 12 | 80 | 20,4 | 45 | 4 | GF162121.9512 ● | GF162421.9512 ● | GF162721.9512 ● |
| 1 | 22 | 15,9 | 16 | 90 | 25,4 | 48 | 5 | GF162131.9512 ● | GF162431.9512 ● | GF162731.9512 ● |
| 1 | 27 | 19,9 | 20 | 105 | 32,4 | 50 | 5 | GF162151.9512 ● | GF162451.9512 ● | GF162751.9512 ● |
| 1,5 | 14 | 9,9 | 10 | 70 | 17,1 | 40 | 4 | GF162211.9514 ● | GF162511.9514 ● | GF162811.9514 ● |
| 1,5 | 16 | 11,9 | 12 | 80 | 21,6 | 45 | 4 | GF162121.9514 ● | GF162421.9514 ● | GF162721.9514 ● |
| 1,5 | 22 | 15,9 | 16 | 90 | 26,1 | 48 | 5 | GF162131.9514 ● | GF162431.9514 ● | GF162731.9514 ● |
| 1,5 | 27 | 19,9 | 20 | 105 | 33,6 | 50 | 5 | GF162151.9514 ● | GF162451.9514 ● | GF162751.9514 ● |
| 2 | 18 | 11,9 | 12 | 80 | 20,9 | 45 | 4 | GF162121.9516 ● | GF162421.9516 ● | GF162721.9516 ● |
| 2 | 22 | 15,9 | 16 | 90 | 26,9 | 48 | 5 | GF162131.9516 ● | GF162431.9516 ● | GF162731.9516 ● |
| 2 | 27 | 19,9 | 20 | 105 | 32,9 | 50 | 5 | GF162151.9516 ● | GF162451.9516 ● | GF162751.9516 ● |
| 3 | 24 | 15,9 | 16 | 90 | 28,3 | 48 | 5 | GF162131.9518 ● | GF162431.9518 ● | GF162731.9518 ● |
| 3 | 30 | 19,9 | 20 | 105 | 34,9 | 50 | 5 | GF162151.9518 ● | GF162451.9518 ● | GF162751.9518 ● |

TICN

Einsatzgebiete – Material
Applications – material

» 328

P 1.1-3.1 M 1.1-2.1 K 1.1-4.2
N 1.1-2.7 N 3.1-5.2 S 1.1-2, 2.1

| P mm | ∅ D _{min.} mm | ∅ d ₁ mm | ∅ d ₂ | l ₁ | l ₂ | l ₃ | Z | GF-VHM R30-IKZ-HB TICN | GF-VHM R30-IKZ-HE TICN | GF-VHM R30-IKZ-HA TICN |
|---------|---------------------------|------------------------|------------------|----------------|----------------|----------------|---|------------------------------|------------------------------|------------------------------|
| 0,5 | 10 | 7,9 | 8 | 63 | 12,2 | 36 | 3 | GF162106.9506 ● | GF162406.9506 ● | GF162706.9506 ● |
| 0,75 | 11 | 7,9 | 8 | 63 | 12,3 | 36 | 3 | GF162106.9509 ● | GF162406.9509 ● | GF162706.9509 ● |
| 1 | 14 | 9,9 | 10 | 70 | 16,4 | 40 | 4 | GF162216.9512 ● | GF162516.9512 ● | GF162816.9512 ● |
| 1 | 16 | 11,9 | 12 | 80 | 20,4 | 45 | 4 | GF162126.9512 ● | GF162426.9512 ● | GF162726.9512 ● |
| 1 | 22 | 15,9 | 16 | 90 | 25,4 | 48 | 5 | GF162136.9512 ● | GF162436.9512 ● | GF162736.9512 ● |
| 1 | 27 | 19,9 | 20 | 105 | 32,4 | 50 | 5 | GF162156.9512 ● | GF162456.9512 ● | GF162756.9512 ● |
| 1,5 | 14 | 9,9 | 10 | 70 | 17,1 | 40 | 4 | GF162216.9514 ● | GF162516.9514 ● | GF162816.9514 ● |
| 1,5 | 16 | 11,9 | 12 | 80 | 21,6 | 45 | 4 | GF162126.9514 ● | GF162426.9514 ● | GF162726.9514 ● |
| 1,5 | 22 | 15,9 | 16 | 90 | 26,1 | 48 | 5 | GF162136.9514 ● | GF162436.9514 ● | GF162736.9514 ● |
| 1,5 | 27 | 19,9 | 20 | 105 | 33,6 | 50 | 5 | GF162156.9514 ● | GF162456.9514 ● | GF162756.9514 ● |
| 2 | 18 | 11,9 | 12 | 80 | 20,9 | 45 | 4 | GF162126.9516 ● | GF162426.9516 ● | GF162726.9516 ● |
| 2 | 22 | 15,9 | 16 | 90 | 26,9 | 48 | 5 | GF162136.9516 ● | GF162436.9516 ● | GF162736.9516 ● |
| 2 | 27 | 19,9 | 20 | 105 | 32,9 | 50 | 5 | GF162156.9516 ● | GF162456.9516 ● | GF162756.9516 ● |
| 3 | 24 | 15,9 | 16 | 90 | 28,3 | 48 | 5 | GF162136.9518 ● | GF162436.9518 ● | GF162736.9518 ● |
| 3 | 30 | 19,9 | 20 | 105 | 34,9 | 50 | 5 | GF162156.9518 ● | GF162456.9518 ● | GF162756.9518 ● |

Andere Steigungen auf Anfrage
Tools for different thread pitch upon request

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

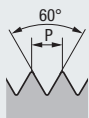
Gigant

MoSys

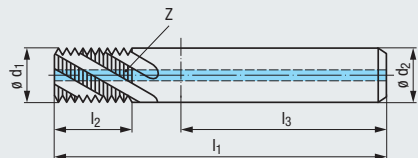
- Product Finder
- v_c / f_z
- M
- MF
- UNC UN, UNS
- UNF UNEF
- G, Rp
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- EG (STI) SELF-LOCK
- Tr
- Zubehör Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys

M, MF

DIN 13



Für Innengewinde
For internal threads



VHM

R30

RH + LH

Z4 - Z5

DIN 6535



$\varnothing D$



Einsatzgebiete – Material
Applications – material

» 328

P 1.1-3.1 K 1.1-4.2 N 1.1-5
N 2.1-6 N 3.1-4.2, 5.2 S 1.1-2

| P mm | $\varnothing D_{min.}$ mm | $\varnothing d_1$ mm | $\varnothing d_2$ | l_1 | l_2 | l_3 | Z | GF-VHM R30-Ig-IKZ-HB | | GF-VHM R30-Ig-IKZ-HE | | GF-VHM R30-Ig-IKZ-HA | |
|---------|------------------------------|-------------------------|-------------------|-------|-------|-------|---|----------------------|---|----------------------|---|----------------------|---|
| | | | | | | | | ● | ● | ● | ● | ● | ● |
| 1 | 14 | 9,9 | 10 | 80 | 20,4 | 40 | 4 | GF162311.9512 | ● | GF162611.9512 | ● | GF162911.9512 | ● |
| 1 | 16 | 11,9 | 12 | 90 | 25,4 | 45 | 4 | GF162321.9512 | ● | GF162621.9512 | ● | GF162921.9512 | ● |
| 1 | 22 | 15,9 | 16 | 100 | 32,4 | 48 | 5 | GF162331.9512 | ● | GF162631.9512 | ● | GF162931.9512 | ● |
| 1 | 27 | 19,9 | 20 | 115 | 40,4 | 50 | 5 | GF162351.9512 | ● | GF162651.9512 | ● | GF162951.9512 | ● |
| 1,5 | 14 | 9,9 | 10 | 80 | 21,6 | 40 | 4 | GF162311.9514 | ● | GF162611.9514 | ● | GF162911.9514 | ● |
| 1,5 | 16 | 11,9 | 12 | 90 | 26,1 | 45 | 4 | GF162321.9514 | ● | GF162621.9514 | ● | GF162921.9514 | ● |
| 1,5 | 22 | 15,9 | 16 | 100 | 33,6 | 48 | 5 | GF162331.9514 | ● | GF162631.9514 | ● | GF162931.9514 | ● |
| 1,5 | 27 | 19,9 | 20 | 115 | 41,1 | 50 | 5 | GF162351.9514 | ● | GF162651.9514 | ● | GF162951.9514 | ● |
| 2 | 18 | 11,9 | 12 | 90 | 26,9 | 45 | 4 | GF162321.9516 | ● | GF162621.9516 | ● | GF162921.9516 | ● |
| 2 | 22 | 15,9 | 16 | 100 | 32,9 | 48 | 5 | GF162331.9516 | ● | GF162631.9516 | ● | GF162931.9516 | ● |
| 2 | 27 | 19,9 | 20 | 115 | 40,9 | 50 | 5 | GF162351.9516 | ● | GF162651.9516 | ● | GF162951.9516 | ● |
| 3 | 24 | 15,9 | 16 | 100 | 34,3 | 48 | 5 | GF162331.9518 | ● | GF162631.9518 | ● | GF162931.9518 | ● |
| 3 | 30 | 19,9 | 20 | 115 | 43,3 | 50 | 5 | GF162351.9518 | ● | GF162651.9518 | ● | GF162951.9518 | ● |

Einsatzgebiete – Material
Applications – material

» 328

TICN



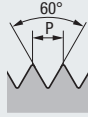
P 1.1-3.1 M 1.1-2.1 K 1.1-4.2
N 1.1-2.7 N 3.1-5.2 S 1.1-2, 2.1

| P mm | $\varnothing D_{min.}$ mm | $\varnothing d_1$ mm | $\varnothing d_2$ | l_1 | l_2 | l_3 | Z | GF-VHM R30-Ig-IKZ-HB TICN | | GF-VHM R30-Ig-IKZ-HE TICN | | GF-VHM R30-Ig-IKZ-HA TICN | |
|---------|------------------------------|-------------------------|-------------------|-------|-------|-------|---|---------------------------|---|---------------------------|---|---------------------------|---|
| | | | | | | | | ● | ● | ● | ● | ● | ● |
| 1 | 14 | 9,9 | 10 | 80 | 20,4 | 40 | 4 | GF162316.9512 | ● | GF162616.9512 | ● | GF162916.9512 | ● |
| 1 | 16 | 11,9 | 12 | 90 | 25,4 | 45 | 4 | GF162326.9512 | ● | GF162626.9512 | ● | GF162926.9512 | ● |
| 1 | 22 | 15,9 | 16 | 100 | 32,4 | 48 | 5 | GF162336.9512 | ● | GF162636.9512 | ● | GF162936.9512 | ● |
| 1 | 27 | 19,9 | 20 | 115 | 40,4 | 50 | 5 | GF162356.9512 | ● | GF162656.9512 | ● | GF162956.9512 | ● |
| 1,5 | 14 | 9,9 | 10 | 80 | 21,6 | 40 | 4 | GF162316.9514 | ● | GF162616.9514 | ● | GF162916.9514 | ● |
| 1,5 | 16 | 11,9 | 12 | 90 | 26,1 | 45 | 4 | GF162326.9514 | ● | GF162626.9514 | ● | GF162926.9514 | ● |
| 1,5 | 22 | 15,9 | 16 | 100 | 33,6 | 48 | 5 | GF162336.9514 | ● | GF162636.9514 | ● | GF162936.9514 | ● |
| 1,5 | 27 | 19,9 | 20 | 115 | 41,1 | 50 | 5 | GF162356.9514 | ● | GF162656.9514 | ● | GF162956.9514 | ● |
| 2 | 18 | 11,9 | 12 | 90 | 26,9 | 45 | 4 | GF162326.9516 | ● | GF162626.9516 | ● | GF162926.9516 | ● |
| 2 | 22 | 15,9 | 16 | 100 | 32,9 | 48 | 5 | GF162336.9516 | ● | GF162636.9516 | ● | GF162936.9516 | ● |
| 2 | 27 | 19,9 | 20 | 115 | 40,9 | 50 | 5 | GF162356.9516 | ● | GF162656.9516 | ● | GF162956.9516 | ● |
| 3 | 24 | 15,9 | 16 | 100 | 34,3 | 48 | 5 | GF162336.9518 | ● | GF162636.9518 | ● | GF162936.9518 | ● |
| 3 | 30 | 19,9 | 20 | 115 | 43,3 | 50 | 5 | GF162356.9518 | ● | GF162656.9518 | ● | GF162956.9518 | ● |

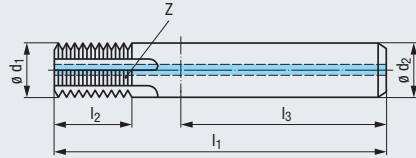
Andere Steigungen auf Anfrage
Tools for different thread pitch upon request

M, MF

DIN 13



Für Außengewinde
For external threads



VHM

RH + LH

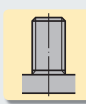
Z4 - Z5



DIN 6535



∅ D



Einsatzgebiete – Material
Applications – material

» 328

P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6
N 3.1-2 N 4.1-2, 5.2 S 1.1-3

| P mm | ∅ D _{min.} mm | ∅ d ₁ mm | ∅ d ₂ | l ₁ | l ₂ | l ₃ | Z | GF-VHM Ext.-IKZ-HB | GF-VHM Ext.-IKZ-HE | GF-VHM Ext.-IKZ-HA |
|---------|---------------------------|------------------------|------------------|----------------|----------------|----------------|---|-----------------------|-----------------------|-----------------------|
| 1 | 10 | 9,9 | 10 | 70 | 16,5 | 40 | 4 | GF161211.9512 ● | GF161511.9512 ● | GF161811.9512 ● |
| 1 | 12 | 11,9 | 12 | 80 | 20,5 | 45 | 4 | GF161121.9512 ● | GF161421.9512 ● | GF161721.9512 ● |
| 1,5 | 12 | 11,9 | 12 | 80 | 21,75 | 45 | 4 | GF161121.9514 ● | GF161421.9514 ● | GF161721.9514 ● |
| 1,5 | 16 | 15,9 | 16 | 90 | 26,25 | 48 | 5 | GF161131.9514 ● | GF161431.9514 ● | GF161731.9514 ● |
| 1,5 | 20 | 19,9 | 20 | 105 | 33,75 | 50 | 5 | GF161151.9514 ● | GF161451.9514 ● | GF161751.9514 ● |
| 2 | 16 | 15,9 | 16 | 90 | 27 | 48 | 5 | GF161131.9516 ● | GF161431.9516 ● | GF161731.9516 ● |
| 2 | 20 | 19,9 | 20 | 105 | 33 | 50 | 5 | GF161151.9516 ● | GF161451.9516 ● | GF161751.9516 ● |
| 3 | 20 | 19,9 | 20 | 105 | 34,5 | 50 | 5 | GF161151.9518 ● | GF161451.9518 ● | GF161751.9518 ● |

TICN



Einsatzgebiete – Material
Applications – material

» 328

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2
N 1.1-5.2 S 1.1-2.6 H 1.1-2

| P mm | ∅ D _{min.} mm | ∅ d ₁ mm | ∅ d ₂ | l ₁ | l ₂ | l ₃ | Z | GF-VHM Ext.-IKZ-HB TICN | GF-VHM Ext.-IKZ-HE TICN | GF-VHM Ext.-IKZ-HA TICN |
|---------|---------------------------|------------------------|------------------|----------------|----------------|----------------|---|-------------------------------|-------------------------------|-------------------------------|
| 1 | 10 | 9,9 | 10 | 70 | 16,5 | 40 | 4 | GF161216.9512 ● | GF161516.9512 ● | GF161816.9512 ● |
| 1 | 12 | 11,9 | 12 | 80 | 20,5 | 45 | 4 | GF161126.9512 ● | GF161426.9512 ● | GF161726.9512 ● |
| 1,5 | 12 | 11,9 | 12 | 80 | 21,75 | 45 | 4 | GF161126.9514 ● | GF161426.9514 ● | GF161726.9514 ● |
| 1,5 | 16 | 15,9 | 16 | 90 | 26,25 | 48 | 5 | GF161136.9514 ● | GF161436.9514 ● | GF161736.9514 ● |
| 1,5 | 20 | 19,9 | 20 | 105 | 33,75 | 50 | 5 | GF161156.9514 ● | GF161456.9514 ● | GF161756.9514 ● |
| 2 | 16 | 15,9 | 16 | 90 | 27 | 48 | 5 | GF161136.9516 ● | GF161436.9516 ● | GF161736.9516 ● |
| 2 | 20 | 19,9 | 20 | 105 | 33 | 50 | 5 | GF161156.9516 ● | GF161456.9516 ● | GF161756.9516 ● |
| 3 | 20 | 19,9 | 20 | 105 | 34,5 | 50 | 5 | GF161156.9518 ● | GF161456.9518 ● | GF161756.9518 ● |

Andere Steigungen auf Anfrage
Tools for different thread pitch upon request

Mit Rechtsspiralnuten auf Anfrage
With right-hand spiral flutes upon request

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

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

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

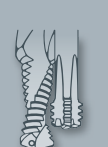
GF-KEG

ZGF

ZIRK-GF

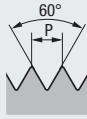
Gigant

MoSys

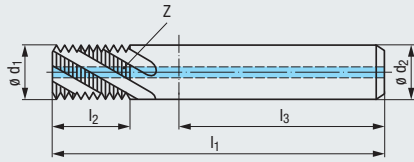


M, MF

DIN 13



Für Innengewinde
For internal threads



VHM

R15

RH + LH

Z6

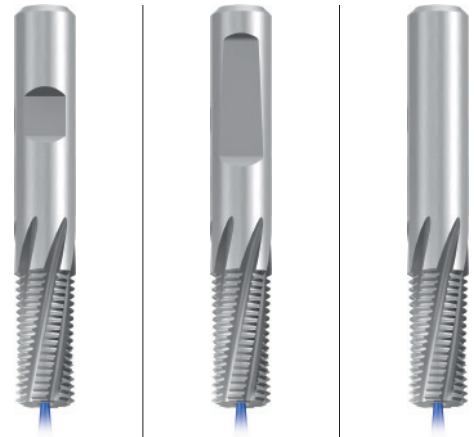
DIN 6535



$\varnothing D$



Mit höherer Nutenzahl
With increased number of flutes



Einsatzgebiete – Material
Applications – material

» 328

P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6
N 3.1-2 N 4.1-2, 5.2 S 1.1-3

| P mm | $\varnothing D_{min.}$ mm | $\varnothing d_1$ mm | $\varnothing d_2$ | l_1 | l_2 | l_3 | Z | GF-Z-VHM R15-IKZ-HB | GF-Z-VHM R15-IKZ-HE | GF-Z-VHM R15-IKZ-HA |
|---------|------------------------------|-------------------------|-------------------|-------|-------|-------|---|------------------------|------------------------|------------------------|
| 1 | 14 | 9,9 | 10 | 70 | 20,4 | 40 | 6 | GF165361.9512 | GF165661.9512 | GF165961.9512 |
| 1,5 | 16 | 11,9 | 12 | 80 | 26,1 | 45 | 6 | GF165371.9514 | GF165671.9514 | GF165971.9514 |
| 2 | 22 | 15,9 | 16 | 90 | 32,9 | 48 | 6 | GF165381.9516 | GF165681.9516 | GF165981.9516 |
| 3 | 30 | 19,9 | 20 | 105 | 43,3 | 50 | 6 | GF165391.9518 | GF165691.9518 | GF165991.9518 |

TICN



Einsatzgebiete – Material
Applications – material

» 328

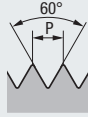
P 1.1-5.1 M 1.1-4.1 K 1.1-4.2
N 1.1-5.2 S 1.1-2.6 H 1.1-2

| P mm | $\varnothing D_{min.}$ mm | $\varnothing d_1$ mm | $\varnothing d_2$ | l_1 | l_2 | l_3 | Z | GF-Z-VHM R15-IKZ-HB TICN | GF-Z-VHM R15-IKZ-HE TICN | GF-Z-VHM R15-IKZ-HA TICN |
|---------|------------------------------|-------------------------|-------------------|-------|-------|-------|---|--------------------------------|--------------------------------|--------------------------------|
| 1 | 14 | 9,9 | 10 | 70 | 20,4 | 40 | 6 | GF165366.9512 | GF165666.9512 | GF165966.9512 |
| 1,5 | 16 | 11,9 | 12 | 80 | 26,1 | 45 | 6 | GF165376.9514 | GF165676.9514 | GF165976.9514 |
| 2 | 22 | 15,9 | 16 | 90 | 32,9 | 48 | 6 | GF165386.9516 | GF165686.9516 | GF165986.9516 |
| 3 | 30 | 19,9 | 20 | 105 | 43,3 | 50 | 6 | GF165396.9518 | GF165696.9518 | GF165996.9518 |

Andere Steigungen auf Anfrage
Tools for different thread pitch upon request

M, MF

DIN 13



VHM

R15

RH + LH

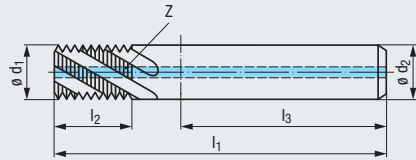
Z4 - Z6



DIN 6535



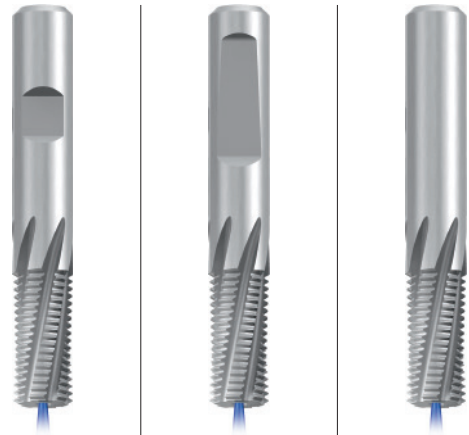
Für Innengewinde
For internal threads



Einsatzgebiete – Material
Applications – material

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Mit höherer Nutenzahl
With increased number of flutes



P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6
N 3.1-2 N 4.1-2, 5.2 S 1.1-3

| P mm | ø D | ø d ₁ mm | ø d ₂ | l ₁ | l ₂ | l ₃ | Z | GF-VZ-VHM R15-IKZ-HB | GF-VZ-VHM R15-IKZ-HE | GF-VZ-VHM R15-IKZ-HA |
|---------|-------|------------------------|------------------|----------------|----------------|----------------|---|-------------------------|-------------------------|-------------------------|
| 0,5 | ≥ M 3 | 2,4 | 6 | 51 | 6,2 | 36 | 4 | GFB35101.0030 ● | GFB35401.0030 ● | GFB35701.0030 ● |
| 0,7 | ≥ M 4 | 3,15 | 6 | 55 | 8,7 | 36 | 4 | GFB35101.0040 ● | GFB35401.0040 ● | GFB35701.0040 ● |
| 0,8 | ≥ M 5 | 4 | 6 | 55 | 10,8 | 36 | 4 | GFB35101.0050 ● | GFB35401.0050 ● | GFB35701.0050 ● |
| 1 | ≥ M 6 | 4,8 | 6 | 55 | 12,4 | 36 | 4 | GFB35101.0060 ● | GFB35401.0060 ● | GFB35701.0060 ● |
| 1,25 | ≥ M 8 | 6,5 | 8 | 63 | 16,8 | 36 | 4 | GFB35101.0080 ● | GFB35401.0080 ● | GFB35701.0080 ● |
| 1,5 | ≥ M10 | 8,2 | 10 | 70 | 21,7 | 40 | 5 | GFB35101.0100 ● | GFB35401.0100 ● | GFB35701.0100 ● |
| 1,75 | ≥ M12 | 9,9 | 10 | 74 | 25,3 | 40 | 5 | GFB35101.0112 ● | GFB35401.0112 ● | GFB35701.0112 ● |
| 2 | ≥ M14 | 11,6 | 12 | 85 | 28,9 | 45 | 5 | GFB35101.0114 ● | GFB35401.0114 ● | GFB35701.0114 ● |
| 2,5 | ≥ M18 | 15 | 16 | 100 | 38,6 | 48 | 5 | GFB35101.0118 ● | GFB35401.0118 ● | GFB35701.0118 ● |
| 3 | ≥ M24 | 19,9 | 20 | 115 | 49,4 | 50 | 6 | GFB35101.0124 ● | GFB35401.0124 ● | GFB35701.0124 ● |

TICN



Einsatzgebiete – Material
Applications – material

328

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2
N 1.1-5.2 S 1.1-2.6 H 1.1-2

| P mm | ø D | ø d ₁ mm | ø d ₂ | l ₁ | l ₂ | l ₃ | Z | GF-VZ-VHM R15-IKZ-HB TICN | GF-VZ-VHM R15-IKZ-HE TICN | GF-VZ-VHM R15-IKZ-HA TICN |
|---------|-------|------------------------|------------------|----------------|----------------|----------------|---|---------------------------------|---------------------------------|---------------------------------|
| 0,5 | ≥ M 3 | 2,4 | 6 | 51 | 6,2 | 36 | 4 | GFB35106.0030 ● | GFB35406.0030 ● | GFB35706.0030 ● |
| 0,7 | ≥ M 4 | 3,15 | 6 | 55 | 8,7 | 36 | 4 | GFB35106.0040 ● | GFB35406.0040 ● | GFB35706.0040 ● |
| 0,8 | ≥ M 5 | 4 | 6 | 55 | 10,8 | 36 | 4 | GFB35106.0050 ● | GFB35406.0050 ● | GFB35706.0050 ● |
| 1 | ≥ M 6 | 4,8 | 6 | 55 | 12,4 | 36 | 4 | GFB35106.0060 ● | GFB35406.0060 ● | GFB35706.0060 ● |
| 1,25 | ≥ M 8 | 6,5 | 8 | 63 | 16,8 | 36 | 4 | GFB35106.0080 ● | GFB35406.0080 ● | GFB35706.0080 ● |
| 1,5 | ≥ M10 | 8,2 | 10 | 70 | 21,7 | 40 | 5 | GFB35106.0100 ● | GFB35406.0100 ● | GFB35706.0100 ● |
| 1,75 | ≥ M12 | 9,9 | 10 | 74 | 25,3 | 40 | 5 | GFB35106.0112 ● | GFB35406.0112 ● | GFB35706.0112 ● |
| 2 | ≥ M14 | 11,6 | 12 | 85 | 28,9 | 45 | 5 | GFB35106.0114 ● | GFB35406.0114 ● | GFB35706.0114 ● |
| 2,5 | ≥ M18 | 15 | 16 | 100 | 38,6 | 48 | 5 | GFB35106.0118 ● | GFB35406.0118 ● | GFB35706.0118 ● |
| 3 | ≥ M24 | 19,9 | 20 | 115 | 49,4 | 50 | 6 | GFB35106.0124 ● | GFB35406.0124 ● | GFB35706.0124 ● |

Andere Steigungen auf Anfrage
Tools for different thread pitch upon request

- Product Finder
- v_c / f_z
- M
- MF
- UNC UN, UNS
- UNF UNEF
- G, Rp
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- EG (STI) SELF-LOCK
- Tr
- Zubehör Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys

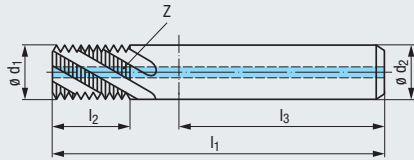


- Product Finder
- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys



DIN 13

Für Innengewinde
For internal threads



VHM

R15

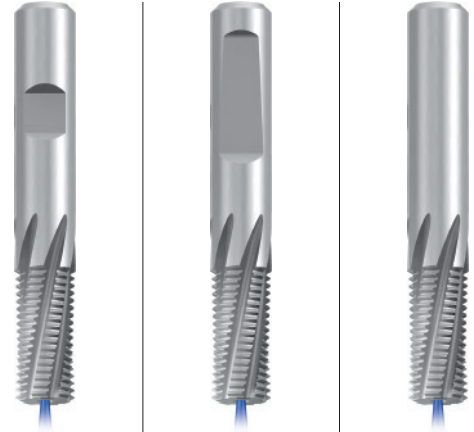
RH + LH

Z4 - Z5

DIN 6535



Mit höherer Nutenzahl
With increased number of flutes



Einsatzgebiete – Material
Applications – material

» 328

P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6
N 3.1-2 N 4.1-2, 5.2 S 1.1-3

| P mm | ∅ D | ∅ d ₁ mm | ∅ d ₂ | l ₁ | l ₂ | l ₃ | Z |
|------|-------|---------------------|------------------|----------------|----------------|----------------|---|
| 1 | ≥ M 8 | 6,7 | 8 | 63 | 16,4 | 36 | 4 |
| 1 | ≥ M10 | 8,7 | 10 | 70 | 20,4 | 40 | 5 |
| 1,5 | ≥ M16 | 14,1 | 16 | 95 | 33,7 | 48 | 5 |

| GF-VZ-VHM R15- IKZ-HB | GF-VZ-VHM R15- IKZ-HE | GF-VZ-VHM R15- IKZ-HA |
|---------------------------------|---------------------------------|---------------------------------|
| GFB35101.0251 ● | GFB35401.0251 ● | GFB35701.0251 ● |
| GFB35101.0276 ● | GFB35401.0276 ● | GFB35701.0276 ● |
| GFB35101.0359 ● | GFB35401.0359 ● | GFB35701.0359 ● |

TICN



Einsatzgebiete – Material
Applications – material

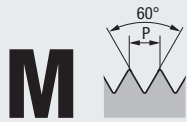
» 328

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2
N 1.1-5.2 S 1.1-2.6 H 1.1-2

| P mm | ∅ D | ∅ d ₁ mm | ∅ d ₂ | l ₁ | l ₂ | l ₃ | Z |
|------|-------|---------------------|------------------|----------------|----------------|----------------|---|
| 1 | ≥ M 8 | 6,7 | 8 | 63 | 16,4 | 36 | 4 |
| 1 | ≥ M10 | 8,7 | 10 | 70 | 20,4 | 40 | 5 |
| 1,5 | ≥ M16 | 14,1 | 16 | 95 | 33,7 | 48 | 5 |

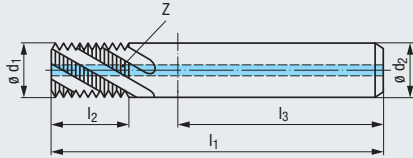
| GF-VZ-VHM R15- IKZ-HB TICN | GF-VZ-VHM R15- IKZ-HE TICN | GF-VZ-VHM R15- IKZ-HA TICN |
|---|---|---|
| GFB35106.0251 ● | GFB35406.0251 ● | GFB35706.0251 ● |
| GFB35106.0276 ● | GFB35406.0276 ● | GFB35706.0276 ● |
| GFB35106.0359 ● | GFB35406.0359 ● | GFB35706.0359 ● |

Andere Steigungen auf Anfrage
Tools for different thread pitch upon request



DIN 13

Für Innengewinde
For internal threads



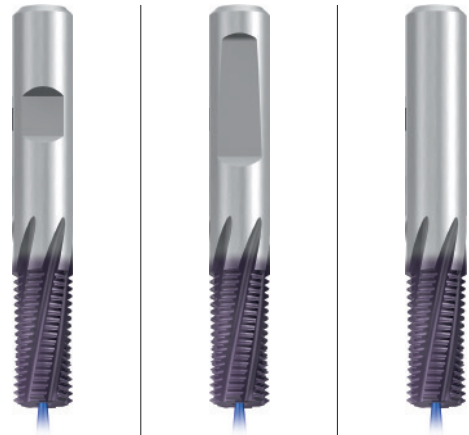
VHM **TICN**

R10 **RH + LH**

Z4 - Z5 **DIN 6535**
HB
HE
HA

$\varnothing D$

Für die Hartbearbeitung
For hard materials



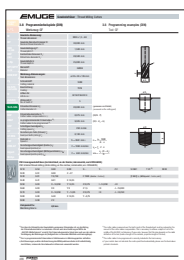
N 2.7-8 H 1.3-5

Einsatzgebiete – Material
Applications – material

» 328

| $\varnothing D$ mm | P mm | $\varnothing d_1$ mm | $\varnothing d_2$ | l_1 | l_2 | l_3 | Z | GF-H-VHM R10- IKZ -HB TICN | GF-H-VHM R10- IKZ -HE TICN | GF-H-VHM R10- IKZ -HA TICN |
|-----------------------|---------|-------------------------|-------------------|-------|-------|-------|---|---|---|---|
| M 6 | 1 | 4,6 | 6 | 55 | 9,4 | 36 | 4 | GF927126.0060 ● | GF927426.0060 ● | GF927726.0060 ● |
| 8 | 1,25 | 6,25 | 8 | 63 | 13,1 | 36 | 5 | GF927126.0080 ● | GF927426.0080 ● | GF927726.0080 ● |
| 10 | 1,5 | 7,9 | 8 | 63 | 15,7 | 36 | 5 | GF927126.0100 ● | GF927426.0100 ● | GF927726.0100 ● |
| 12 | 1,75 | 9,55 | 10 | 70 | 18,3 | 40 | 5 | GF927126.0112 ● | GF927426.0112 ● | GF927726.0112 ● |
| 16 | 2 | 13,2 | 14 | 90 | 24,9 | 45 | 5 | GF927126.0116 ● | GF927426.0116 ● | GF927726.0116 ● |
| 20 | 2,5 | 15,9 | 16 | 100 | 33,6 | 48 | 5 | GF927126.0120 ● | GF927426.0120 ● | GF927726.0120 ● |

Andere Steigungen auf Anfrage
Tools for different thread pitch upon request



Programmierbeispiel für Gewindefräser
Typ GF siehe Seite 466

Programming example for thread milling
cutters type GF, see page 466

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

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

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

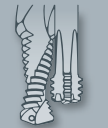
GF-KEG

ZGF

ZIRK-GF

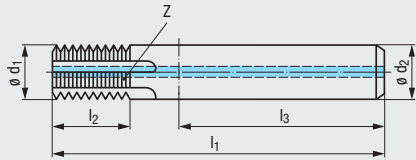
Gigant

MoSys



ASME B1.1

Für Innengewinde
For internal threads



VHM

RH + LH

Z4 - Z5



DIN 6535



Einsatzgebiete – Material
Applications – material

» 328

P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6
N 3.1-2 N 4.1-2, 5.2 S 1.1-3

| P Gg/1" (tpi) | $\emptyset D_{min.}$ inch | $\emptyset d_1$ mm | $\emptyset d_2$ | l_1 | l_2 | l_3 | Z | GF-VHM IKZ-HB | GF-VHM IKZ-HE | GF-VHM IKZ-HA |
|------------------|------------------------------|-----------------------|-----------------|-------|-------|-------|---|------------------|------------------|------------------|
| 24 | 1/2 | 9,9 | 10 | 70 | 16,3 | 40 | 4 | GF163211.9579 | ● GF163511.9579 | ● GF163811.9579 |
| 20 | 1/2 | 9,9 | 10 | 70 | 17,1 | 40 | 4 | GF163211.9580 | ● GF163511.9580 | ● GF163811.9580 |
| 20 | 11/16 | 11,9 | 12 | 80 | 20,9 | 45 | 4 | GF163121.9580 | ● GF163421.9580 | ● GF163721.9580 |
| 20 | 7/8 | 15,9 | 16 | 90 | 25,9 | 48 | 5 | GF163131.9580 | ● GF163431.9580 | ● GF163731.9580 |
| 20 | 1" | 19,9 | 20 | 105 | 32,3 | 50 | 5 | GF163151.9580 | ● GF163451.9580 | ● GF163751.9580 |
| 18 | 1/2 | 9,9 | 10 | 70 | 17,5 | 40 | 4 | GF163211.9581 | ● GF163511.9581 | ● GF163811.9581 |
| 16 | 1/2 | 9,9 | 10 | 70 | 16,6 | 40 | 4 | GF163211.9582 | ● GF163511.9582 | ● GF163811.9582 |
| 16 | 11/16 | 11,9 | 12 | 80 | 21,3 | 45 | 4 | GF163121.9582 | ● GF163421.9582 | ● GF163721.9582 |
| 16 | 7/8 | 15,9 | 16 | 90 | 26,2 | 48 | 5 | GF163131.9582 | ● GF163431.9582 | ● GF163731.9582 |
| 16 | 1" | 19,9 | 20 | 105 | 32,4 | 50 | 5 | GF163151.9582 | ● GF163451.9582 | ● GF163751.9582 |
| 14 | 7/8 | 15,9 | 16 | 90 | 26,2 | 48 | 5 | GF163131.9583 | ● GF163431.9583 | ● GF163731.9583 |
| 12 | 11/16 | 11,9 | 12 | 80 | 22,1 | 45 | 4 | GF163121.9585 | ● GF163421.9585 | ● GF163721.9585 |
| 12 | 7/8 | 15,9 | 16 | 90 | 26,3 | 48 | 5 | GF163131.9585 | ● GF163431.9585 | ● GF163731.9585 |
| 12 | 1" | 19,9 | 20 | 105 | 32,7 | 50 | 5 | GF163151.9585 | ● GF163451.9585 | ● GF163751.9585 |
| 10 | 11/16 | 11,9 | 12 | 80 | 21,4 | 45 | 4 | GF163121.9587 | ● GF163421.9587 | ● GF163721.9587 |
| 9 | 11/16 | 11,9 | 12 | 80 | 21 | 45 | 4 | GF163121.9588 | ● GF163421.9588 | ● GF163721.9588 |
| 8 | 7/8 | 15,9 | 16 | 90 | 26,8 | 48 | 5 | GF163131.9589 | ● GF163431.9589 | ● GF163731.9589 |
| 8 | 1" | 19,9 | 20 | 105 | 33,2 | 50 | 5 | GF163151.9589 | ● GF163451.9589 | ● GF163751.9589 |
| 6 | 1" | 19,9 | 20 | 105 | 35,8 | 50 | 5 | GF163151.9591 | ● GF163451.9591 | ● GF163751.9591 |

TICN



Einsatzgebiete – Material
Applications – material

» 328

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2
N 1.1-5.2 S 1.1-2.6 H 1.1-2

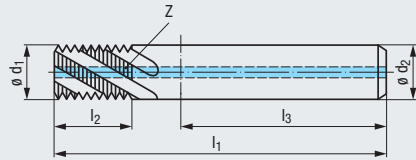
| P Gg/1" (tpi) | $\emptyset D_{min.}$ inch | $\emptyset d_1$ mm | $\emptyset d_2$ | l_1 | l_2 | l_3 | Z | GF-VHM IKZ-HB TICN | GF-VHM IKZ-HE TICN | GF-VHM IKZ-HA TICN |
|------------------|------------------------------|-----------------------|-----------------|-------|-------|-------|---|--------------------------|--------------------------|--------------------------|
| 24 | 1/2 | 9,9 | 10 | 70 | 16,3 | 40 | 4 | GF163216.9579 | ● GF163516.9579 | ● GF163816.9579 |
| 20 | 1/2 | 9,9 | 10 | 70 | 17,1 | 40 | 4 | GF163216.9580 | ● GF163516.9580 | ● GF163816.9580 |
| 20 | 11/16 | 11,9 | 12 | 80 | 20,9 | 45 | 4 | GF163126.9580 | ● GF163426.9580 | ● GF163726.9580 |
| 20 | 7/8 | 15,9 | 16 | 90 | 25,9 | 48 | 5 | GF163136.9580 | ● GF163436.9580 | ● GF163736.9580 |
| 20 | 1" | 19,9 | 20 | 105 | 32,3 | 50 | 5 | GF163156.9580 | ● GF163456.9580 | ● GF163756.9580 |
| 18 | 1/2 | 9,9 | 10 | 70 | 17,5 | 40 | 4 | GF163216.9581 | ● GF163516.9581 | ● GF163816.9581 |
| 16 | 1/2 | 9,9 | 10 | 70 | 16,6 | 40 | 4 | GF163216.9582 | ● GF163516.9582 | ● GF163816.9582 |
| 16 | 11/16 | 11,9 | 12 | 80 | 21,3 | 45 | 4 | GF163126.9582 | ● GF163426.9582 | ● GF163726.9582 |
| 16 | 7/8 | 15,9 | 16 | 90 | 26,2 | 48 | 5 | GF163136.9582 | ● GF163436.9582 | ● GF163736.9582 |
| 16 | 1" | 19,9 | 20 | 105 | 32,4 | 50 | 5 | GF163156.9582 | ● GF163456.9582 | ● GF163756.9582 |
| 14 | 7/8 | 15,9 | 16 | 90 | 26,2 | 48 | 5 | GF163136.9583 | ● GF163436.9583 | ● GF163736.9583 |
| 12 | 11/16 | 11,9 | 12 | 80 | 22,1 | 45 | 4 | GF163126.9585 | ● GF163426.9585 | ● GF163726.9585 |
| 12 | 7/8 | 15,9 | 16 | 90 | 26,3 | 48 | 5 | GF163136.9585 | ● GF163436.9585 | ● GF163736.9585 |
| 12 | 1" | 19,9 | 20 | 105 | 32,7 | 50 | 5 | GF163156.9585 | ● GF163456.9585 | ● GF163756.9585 |
| 10 | 11/16 | 11,9 | 12 | 80 | 21,4 | 45 | 4 | GF163126.9587 | ● GF163426.9587 | ● GF163726.9587 |
| 9 | 11/16 | 11,9 | 12 | 80 | 21 | 45 | 4 | GF163126.9588 | ● GF163426.9588 | ● GF163726.9588 |
| 8 | 7/8 | 15,9 | 16 | 90 | 26,8 | 48 | 5 | GF163136.9589 | ● GF163436.9589 | ● GF163736.9589 |
| 8 | 1" | 19,9 | 20 | 105 | 33,2 | 50 | 5 | GF163156.9589 | ● GF163456.9589 | ● GF163756.9589 |
| 6 | 1" | 19,9 | 20 | 105 | 35,8 | 50 | 5 | GF163156.9591 | ● GF163456.9591 | ● GF163756.9591 |

Andere Steigungen auf Anfrage
Tools for different thread pitch upon request



ASME B1.1

Für Innengewinde
For internal threads

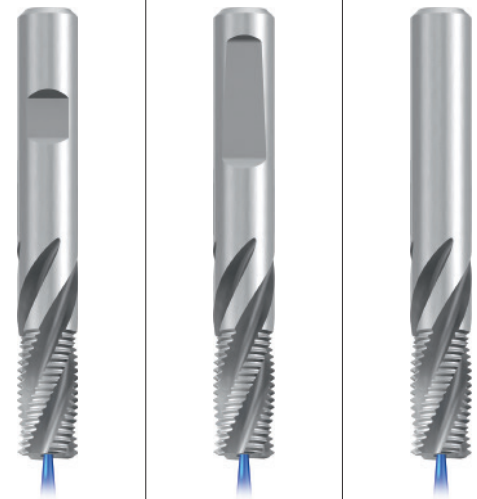


VHM

R30 **RH + LH**

Z4 - Z5 **DIN 6535**
HB
HE
HA

$\varnothing D$



Einsatzgebiete – Material
Applications – material

» 328

P 1.1-3.1 K 1.1-4.2 N 1.1-5
N 2.1-6 N 3.1-4.2, 5.2 S 1.1-2

| P Gg/1" (tpi) | $\varnothing D_{min.}$ inch | $\varnothing d_1$ mm | $\varnothing d_2$ | l_1 | l_2 | l_3 | Z | GF-VHM R30-Ig-IKZ-HB | GF-VHM R30-Ig-IKZ-HE | GF-VHM R30-Ig-IKZ-HA |
|------------------|--------------------------------|-------------------------|-------------------|-------|-------|-------|---|-------------------------|-------------------------|-------------------------|
| 24 | 1/2 | 9,9 | 10 | 80 | 20,6 | 40 | 4 | GF162311.9579 | ● GF162611.9579 | ● GF162911.9579 |
| 20 | 1/2 | 9,9 | 10 | 80 | 20,9 | 40 | 4 | GF162311.9580 | ● GF162611.9580 | ● GF162911.9580 |
| 20 | 11/16 | 11,9 | 12 | 90 | 26 | 45 | 4 | GF162321.9580 | ● GF162621.9580 | ● GF162921.9580 |
| 20 | 7/8 | 15,9 | 16 | 100 | 32,3 | 48 | 5 | GF162331.9580 | ● GF162631.9580 | ● GF162931.9580 |
| 20 | 1" | 19,9 | 20 | 115 | 41,2 | 50 | 5 | GF162351.9580 | ● GF162651.9580 | ● GF162951.9580 |
| 18 | 1/2 | 9,9 | 10 | 80 | 20,4 | 40 | 4 | GF162311.9581 | ● GF162611.9581 | ● GF162911.9581 |
| 16 | 1/2 | 9,9 | 10 | 80 | 21,3 | 40 | 4 | GF162311.9582 | ● GF162611.9582 | ● GF162911.9582 |
| 16 | 11/16 | 11,9 | 12 | 90 | 26,1 | 45 | 4 | GF162321.9582 | ● GF162621.9582 | ● GF162921.9582 |
| 16 | 7/8 | 15,9 | 16 | 100 | 32,4 | 48 | 5 | GF162331.9582 | ● GF162631.9582 | ● GF162931.9582 |
| 16 | 1" | 19,9 | 20 | 115 | 40,4 | 50 | 5 | GF162351.9582 | ● GF162651.9582 | ● GF162951.9582 |
| 14 | 7/8 | 15,9 | 16 | 100 | 33,4 | 48 | 5 | GF162331.9583 | ● GF162631.9583 | ● GF162931.9583 |
| 12 | 11/16 | 11,9 | 12 | 90 | 26,3 | 45 | 4 | GF162321.9585 | ● GF162621.9585 | ● GF162921.9585 |
| 12 | 7/8 | 15,9 | 16 | 100 | 32,7 | 48 | 5 | GF162331.9585 | ● GF162631.9585 | ● GF162931.9585 |
| 12 | 1" | 19,9 | 20 | 115 | 41,1 | 50 | 5 | GF162351.9585 | ● GF162651.9585 | ● GF162951.9585 |
| 10 | 11/16 | 11,9 | 12 | 90 | 26,5 | 45 | 4 | GF162321.9587 | ● GF162621.9587 | ● GF162921.9587 |
| 9 | 11/16 | 11,9 | 12 | 90 | 26,6 | 45 | 4 | GF162321.9588 | ● GF162621.9588 | ● GF162921.9588 |
| 8 | 7/8 | 15,9 | 16 | 100 | 33,1 | 48 | 5 | GF162331.9589 | ● GF162631.9589 | ● GF162931.9589 |
| 8 | 1" | 19,9 | 20 | 115 | 42,7 | 50 | 5 | GF162351.9589 | ● GF162651.9589 | ● GF162951.9589 |
| 6 | 1" | 19,9 | 20 | 115 | 44,3 | 50 | 5 | GF162351.9591 | ● GF162651.9591 | ● GF162951.9591 |

TICN



Einsatzgebiete – Material
Applications – material

» 328

P 1.1-3.1 M 1.1-2.1 K 1.1-4.2
N 1.1-2.7 N 3.1-5.2 S 1.1-2, 2.1

| P Gg/1" (tpi) | $\varnothing D_{min.}$ inch | $\varnothing d_1$ mm | $\varnothing d_2$ | l_1 | l_2 | l_3 | Z | GF-VHM R30-Ig-IKZ-HB TICN | GF-VHM R30-Ig-IKZ-HE TICN | GF-VHM R30-Ig-IKZ-HA TICN |
|------------------|--------------------------------|-------------------------|-------------------|-------|-------|-------|---|---------------------------------|---------------------------------|---------------------------------|
| 24 | 1/2 | 9,9 | 10 | 80 | 20,6 | 40 | 4 | GF162316.9579 | ● GF162616.9579 | ● GF162916.9579 |
| 20 | 1/2 | 9,9 | 10 | 80 | 20,9 | 40 | 4 | GF162316.9580 | ● GF162616.9580 | ● GF162916.9580 |
| 20 | 11/16 | 11,9 | 12 | 90 | 26 | 45 | 4 | GF162326.9580 | ● GF162626.9580 | ● GF162926.9580 |
| 20 | 7/8 | 15,9 | 16 | 100 | 32,3 | 48 | 5 | GF162336.9580 | ● GF162636.9580 | ● GF162936.9580 |
| 20 | 1" | 19,9 | 20 | 115 | 41,2 | 50 | 5 | GF162356.9580 | ● GF162656.9580 | ● GF162956.9580 |
| 18 | 1/2 | 9,9 | 10 | 80 | 20,4 | 40 | 4 | GF162316.9581 | ● GF162616.9581 | ● GF162916.9581 |
| 16 | 1/2 | 9,9 | 10 | 80 | 21,3 | 40 | 4 | GF162316.9582 | ● GF162616.9582 | ● GF162916.9582 |
| 16 | 11/16 | 11,9 | 12 | 90 | 26,1 | 45 | 4 | GF162326.9582 | ● GF162626.9582 | ● GF162926.9582 |
| 16 | 7/8 | 15,9 | 16 | 100 | 32,4 | 48 | 5 | GF162336.9582 | ● GF162636.9582 | ● GF162936.9582 |
| 16 | 1" | 19,9 | 20 | 115 | 40,4 | 50 | 5 | GF162356.9582 | ● GF162656.9582 | ● GF162956.9582 |
| 14 | 7/8 | 15,9 | 16 | 100 | 33,4 | 48 | 5 | GF162336.9583 | ● GF162636.9583 | ● GF162936.9583 |
| 12 | 11/16 | 11,9 | 12 | 90 | 26,3 | 45 | 4 | GF162326.9585 | ● GF162626.9585 | ● GF162926.9585 |
| 12 | 7/8 | 15,9 | 16 | 100 | 32,7 | 48 | 5 | GF162336.9585 | ● GF162636.9585 | ● GF162936.9585 |
| 12 | 1" | 19,9 | 20 | 115 | 41,1 | 50 | 5 | GF162356.9585 | ● GF162656.9585 | ● GF162956.9585 |
| 10 | 11/16 | 11,9 | 12 | 90 | 26,5 | 45 | 4 | GF162326.9587 | ● GF162626.9587 | ● GF162926.9587 |
| 9 | 11/16 | 11,9 | 12 | 90 | 26,6 | 45 | 4 | GF162326.9588 | ● GF162626.9588 | ● GF162926.9588 |
| 8 | 7/8 | 15,9 | 16 | 100 | 33,1 | 48 | 5 | GF162336.9589 | ● GF162636.9589 | ● GF162936.9589 |
| 8 | 1" | 19,9 | 20 | 115 | 42,7 | 50 | 5 | GF162356.9589 | ● GF162656.9589 | ● GF162956.9589 |
| 6 | 1" | 19,9 | 20 | 115 | 44,3 | 50 | 5 | GF162356.9591 | ● GF162656.9591 | ● GF162956.9591 |

Andere Steigungen auf Anfrage
Tools for different thread pitch upon request

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

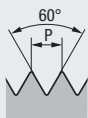
Gigant

MoSys

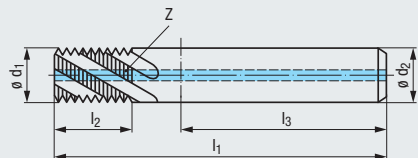
- Product Finder
- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF

UNC, UN

ASME B1.1



Für Innengewinde
For internal threads

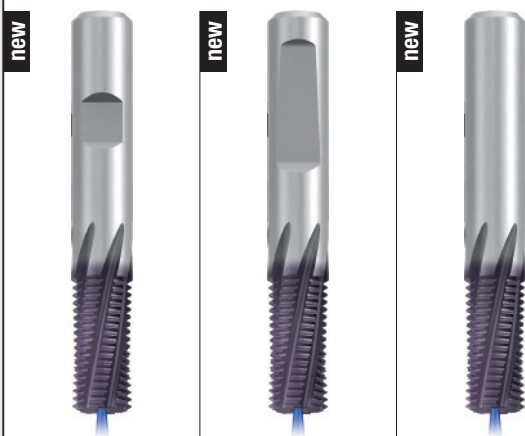


VHM **TICN**

R15 **RH + LH**

Z4 - Z6 **DIN 6535**
HB
HE
HA

Mit höherer Nutenzahl
With increased number of flutes



Einsatzgebiete – Material
Applications – material [» 328](#)

P 1.1-5.1 **M** 1.1-4.1 **K** 1.1-4.2
N 1.1-5.2 **S** 1.1-2.6 **H** 1.1-2

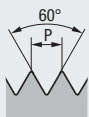
| P Gg/1" (tpi) | $\varnothing D_{min.}$ inch | $\varnothing d_1$ mm | $\varnothing d_2$ | l_1 | l_2 | l_3 | Z | GF-VZ-VHM R15-IKZ-HB TICN | GF-VZ-VHM R15-IKZ-HE TICN | GF-VZ-VHM R15-IKZ-HA TICN |
|------------------|--------------------------------|-------------------------|-------------------|-------|-------|-------|---|---------------------------------|---------------------------------|---------------------------------|
| 24 | \geq Nr. 10 | 3,7 | 6 | 55 | 10 | 36 | 4 | GFB35106.5007 | ● GFB35406.5007 | ● GFB35706.5007 |
| 20 | \geq 1/4 | 4,95 | 6 | 58 | 13,3 | 36 | 4 | GFB35106.5009 | ● GFB35406.5009 | ● GFB35706.5009 |
| 18 | \geq 5/16 | 6,3 | 8 | 62 | 16,2 | 36 | 4 | GFB35106.5010 | ● GFB35406.5010 | ● GFB35706.5010 |
| 16 | \geq 3/8 | 7,65 | 8 | 65 | 19,8 | 36 | 5 | GFB35106.5011 | ● GFB35406.5011 | ● GFB35706.5011 |
| 14 | \geq 7/16 | 9 | 10 | 74 | 22,6 | 40 | 5 | GFB35106.5012 | ● GFB35406.5012 | ● GFB35706.5012 |
| 13 | \geq 1/2 | 10,4 | 12 | 80 | 26,3 | 45 | 5 | GFB35106.5013 | ● GFB35406.5013 | ● GFB35706.5013 |
| 12 | \geq 9/16 | 11,8 | 12 | 85 | 30,6 | 45 | 5 | GFB35106.5014 | ● GFB35406.5014 | ● GFB35706.5014 |
| 11 | \geq 5/8 | 13 | 14 | 90 | 33,4 | 45 | 5 | GFB35106.5015 | ● GFB35406.5015 | ● GFB35706.5015 |
| 10 | \geq 3/4 | 15,9 | 16 | 100 | 39,3 | 48 | 5 | GFB35106.5016 | ● GFB35406.5016 | ● GFB35706.5016 |
| 9 | \geq 7/8 | 18,9 | 20 | 110 | 46,5 | 50 | 6 | GFB35106.5017 | ● GFB35406.5017 | ● GFB35706.5017 |
| 8 | \geq 1" | 21,6 | 25 | 125 | 52,3 | 56 | 6 | GFB35106.5018 | ● GFB35406.5018 | ● GFB35706.5018 |

Andere Steigungen auf Anfrage
Tools for different thread pitch upon request

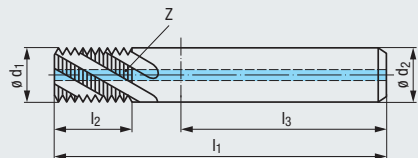
- ZIRK-GF
- Gigant
- MoSys

UNF, UN

ASME B1.1



Für Innengewinde
For internal threads

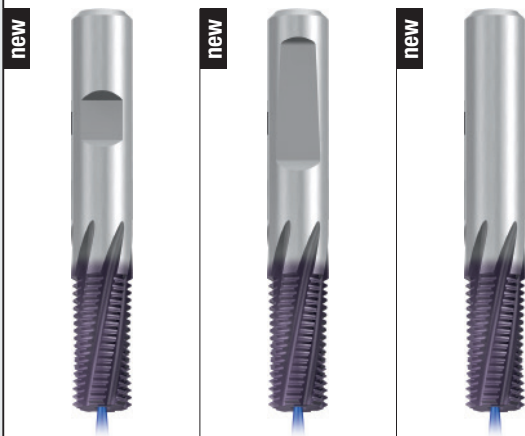


VHM **TICN**

R15 **RH + LH**

Z4 - Z8 **DIN 6535**
HB
HE
HA

Mit höherer Nutenzahl
With increased number of flutes



Einsatzgebiete – Material
Applications – material [» 328](#)

P 1.1-5.1 **M** 1.1-4.1 **K** 1.1-4.2
N 1.1-5.2 **S** 1.1-2.6 **H** 1.1-2

| P Gg/1" (tpi) | $\varnothing D_{min.}$ inch | $\varnothing d_1$ mm | $\varnothing d_2$ | l_1 | l_2 | l_3 | Z | GF-VZ-VHM R15-IKZ-HB TICN | GF-VZ-VHM R15-IKZ-HE TICN | GF-VZ-VHM R15-IKZ-HA TICN |
|------------------|--------------------------------|-------------------------|-------------------|-------|-------|-------|---|---------------------------------|---------------------------------|---------------------------------|
| 32 | \geq Nr. 10 | 3,9 | 6 | 55 | 9,9 | 36 | 4 | GFB35106.5041 | ● GFB35406.5041 | ● GFB35706.5041 |
| 28 | \geq Nr. 12 | 4,45 | 6 | 58 | 11,3 | 36 | 4 | GFB35106.5042 | ● GFB35406.5042 | ● GFB35706.5042 |
| 28 | \geq 1/4 | 5,3 | 6 | 58 | 13,1 | 36 | 4 | GFB35106.5043 | ● GFB35406.5043 | ● GFB35706.5043 |
| 24 | \geq 5/16 | 6,6 | 8 | 62 | 16,4 | 36 | 5 | GFB35106.5044 | ● GFB35406.5044 | ● GFB35706.5044 |
| 20 | \geq 7/16 | 9,55 | 10 | 74 | 22,2 | 40 | 6 | GFB35106.5046 | ● GFB35406.5046 | ● GFB35706.5046 |
| 18 | \geq 9/16 | 12,5 | 14 | 85 | 28,9 | 45 | 7 | GFB35106.5048 | ● GFB35406.5048 | ● GFB35706.5048 |
| 16 | \geq 3/4 | 17 | 18 | 102 | 38,8 | 48 | 8 | GFB35106.5050 | ● GFB35406.5050 | ● GFB35706.5050 |

Andere Steigungen auf Anfrage
Tools for different thread pitch upon request

G (BSP), Rp (BSPP), W

DIN EN ISO 228, DIN EN 10226-1, ISO 7/1, BS 84



VHM

RH + LH

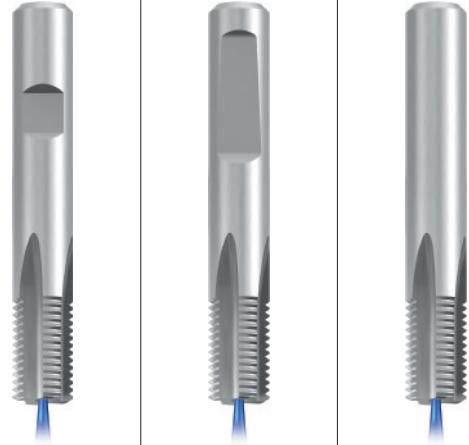
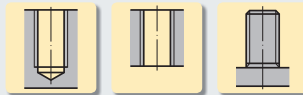
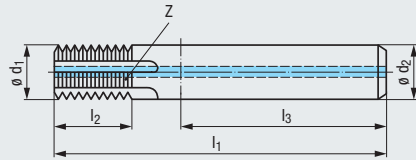
Z4 - Z5



DIN 6535



Für Innen- und Außengewinde
For internal and external threads



Einsatzgebiete – Material
Applications – material

» 328

P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6
N 3.1-2 N 4.1-2, 5.2 S 1.1-3

| P | $\varnothing D_{\min.}^{1)}$ | $\varnothing d_1$ | $\varnothing d_2$ | l_1 | l_2 | l_3 | Z | GF-VHM IKZ-HB | GF-VHM IKZ-HE | GF-VHM IKZ-HA |
|----|------------------------------|-------------------|-------------------|-------|-------|-------|---|------------------|------------------|------------------|
| 19 | 1/4 | 9,9 | 10 | 70 | 16,7 | 40 | 4 | GF163211.9545 ● | GF163511.9545 ● | GF163811.9545 ● |
| 14 | 1/2 | 15,9 | 16 | 90 | 26,3 | 48 | 5 | GF163131.9548 ● | GF163431.9548 ● | GF163731.9548 ● |
| 14 | 3/4 | 19,9 | 20 | 105 | 33,5 | 50 | 5 | GF163151.9548 ● | GF163451.9548 ● | GF163751.9548 ● |
| 11 | 1" | 15,9 | 16 | 90 | 26,5 | 48 | 5 | GF163131.9550 ● | GF163431.9550 ● | GF163731.9550 ● |
| 11 | 1" | 19,9 | 20 | 105 | 33,5 | 50 | 5 | GF163151.9550 ● | GF163451.9550 ● | GF163751.9550 ● |

TICN



Einsatzgebiete – Material
Applications – material

» 328

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2
N 1.1-5.2 S 1.1-2.6 H 1.1-2

| P | $\varnothing D_{\min.}^{1)}$ | $\varnothing d_1$ | $\varnothing d_2$ | l_1 | l_2 | l_3 | Z | GF-VHM IKZ-HB TICN | GF-VHM IKZ-HE TICN | GF-VHM IKZ-HA TICN |
|----|------------------------------|-------------------|-------------------|-------|-------|-------|---|--------------------------|--------------------------|--------------------------|
| 19 | 1/4 | 9,9 | 10 | 70 | 16,7 | 40 | 4 | GF163216.9545 ● | GF163516.9545 ● | GF163816.9545 ● |
| 14 | 1/2 | 15,9 | 16 | 90 | 26,3 | 48 | 5 | GF163136.9548 ● | GF163436.9548 ● | GF163736.9548 ● |
| 14 | 3/4 | 19,9 | 20 | 105 | 33,5 | 50 | 5 | GF163156.9548 ● | GF163456.9548 ● | GF163756.9548 ● |
| 11 | 1" | 15,9 | 16 | 90 | 26,5 | 48 | 5 | GF163136.9550 ● | GF163436.9550 ● | GF163736.9550 ● |
| 11 | 1" | 19,9 | 20 | 105 | 33,5 | 50 | 5 | GF163156.9550 ● | GF163456.9550 ● | GF163756.9550 ● |

¹⁾ Durchmesser bezogen auf Rohr-Innengewinde bzw. Rohr-Außengewinde
Diameter related to internal pipe thread resp. external pipe thread

Product
Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

Gigant

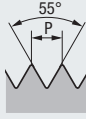
MoSys



- Product Finder
- v_c / f_z
- M
- MF
- UNC UN, UNS
- UNF UNEF
- G, Rp
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- EG (STI) SELF-LOCK
- Tr
- Zubehör Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- 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



VHM

R30

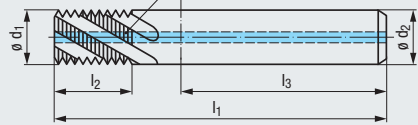
RH + LH

Z4 - Z5

DIN 6535



Für Innen- und Außengewinde
For internal and external threads



Einsatzgebiete – Material
Applications – material

» 328

P 1.1-3.1 K 1.1-4.2 N 1.1-5
N 2.1-6 N 3.1-4.2, 5.2 S 1.1-2

| P Gg/1" (tpi) | $\varnothing D_{\min.}^{1)}$ inch | $\varnothing d_1$ mm | $\varnothing d_2$ | l_1 | l_2 | l_3 | Z | GF-VHM R30-IKZ-HB | GF-VHM R30-IKZ-HE | GF-VHM R30-IKZ-HA |
|------------------|--------------------------------------|-------------------------|-------------------|-------|-------|-------|---|----------------------|----------------------|----------------------|
| 19 | 1/4 | 9,9 | 10 | 70 | 16,7 | 40 | 4 | GF162211.9545 | GF162511.9545 | GF162811.9545 |
| 14 | 1/2 | 11,9 | 12 | 80 | 20,9 | 45 | 4 | GF162121.9548 | GF162421.9548 | GF162721.9548 |
| 14 | 1/2 | 15,9 | 16 | 90 | 26,3 | 48 | 5 | GF162131.9548 | GF162431.9548 | GF162731.9548 |
| 14 | 3/4 | 19,9 | 20 | 105 | 33,5 | 50 | 5 | GF162151.9548 | GF162451.9548 | GF162751.9548 |
| 11 | 1" | 15,9 | 16 | 90 | 26,5 | 48 | 5 | GF162131.9550 | GF162431.9550 | GF162731.9550 |
| 11 | 1" | 19,9 | 20 | 105 | 33,5 | 50 | 5 | GF162151.9550 | GF162451.9550 | GF162751.9550 |

TICN



Einsatzgebiete – Material
Applications – material

» 328

P 1.1-3.1 M 1.1-2.1 K 1.1-4.2
N 1.1-2.7 N 3.1-5.2 S 1.1-2, 2.1

| P Gg/1" (tpi) | $\varnothing D_{\min.}^{1)}$ inch | $\varnothing d_1$ mm | $\varnothing d_2$ | l_1 | l_2 | l_3 | Z | GF-VHM R30-IKZ-HB TICN | GF-VHM R30-IKZ-HE TICN | GF-VHM R30-IKZ-HA TICN |
|------------------|--------------------------------------|-------------------------|-------------------|-------|-------|-------|---|------------------------------|------------------------------|------------------------------|
| 19 | 1/4 | 9,9 | 10 | 70 | 16,7 | 40 | 4 | GF162216.9545 | GF162516.9545 | GF162816.9545 |
| 14 | 1/2 | 11,9 | 12 | 80 | 20,9 | 45 | 4 | GF162126.9548 | GF162426.9548 | GF162726.9548 |
| 14 | 1/2 | 15,9 | 16 | 90 | 26,3 | 48 | 5 | GF162136.9548 | GF162436.9548 | GF162736.9548 |
| 14 | 3/4 | 19,9 | 20 | 105 | 33,5 | 50 | 5 | GF162156.9548 | GF162456.9548 | GF162756.9548 |
| 11 | 1" | 15,9 | 16 | 90 | 26,5 | 48 | 5 | GF162136.9550 | GF162436.9550 | GF162736.9550 |
| 11 | 1" | 19,9 | 20 | 105 | 33,5 | 50 | 5 | GF162156.9550 | GF162456.9550 | GF162756.9550 |

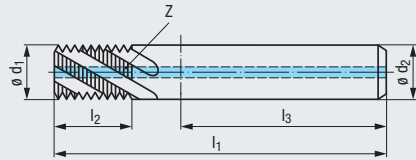
¹⁾ Durchmesser bezogen auf Rohr-Innengewinde bzw. Rohr-Außengewinde
Diameter related to internal pipe thread resp. external pipe thread

G (BSP), Rp (BSPP), W

DIN EN ISO 228, DIN EN 10226-1, ISO 7/1, BS 84



Für Innengewinde
For internal threads



VHM

R15

RH + LH

Z5 - Z8



DIN 6535



Mit höherer Nutenzahl
With increased number of flutes

new



new



new



Einsatzgebiete – Material
Applications – material

» 328

P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6
N 3.1-2 N 4.1-2, 5.2 S 1.1-3

| P | $\varnothing D_{min.}$ | $\varnothing d_1$ | $\varnothing d_2$ | l_1 | l_2 | l_3 | Z | GF-Z-VHM R15-IKZ-HB | GF-Z-VHM R15-IKZ-HE | GF-Z-VHM R15-IKZ-HA |
|----|------------------------|-------------------|-------------------|-------|-------|-------|---|---------------------|---------------------|---------------------|
| 19 | G 1/4 | 9,9 | 10 | 70 | 20,7 | 40 | 6 | GF165361.9545 ● | GF165661.9545 ● | GF165961.9545 ● |
| 14 | G 1/2 | 11,9 | 12 | 80 | 26,3 | 45 | 5 | GF165371.9548 ● | GF165671.9548 ● | GF165971.9548 ● |
| 14 | G 1/2 | 15,9 | 16 | 90 | 33,6 | 48 | 6 | GF165381.9548 ● | GF165681.9548 ● | GF165981.9548 ● |
| 14 | G 3/4 | 19,9 | 20 | 105 | 40,8 | 50 | 8 | GF165391.9548 ○ | GF165691.9548 ○ | GF165991.9548 ○ |
| 11 | G 1" | 15,9 | 16 | 90 | 33,5 | 48 | 5 | GF165381.9550 ● | GF165681.9550 ● | GF165981.9550 ● |
| 11 | G 1" | 19,9 | 20 | 105 | 42,7 | 50 | 6 | GF165391.9550 ● | GF165691.9550 ● | GF165991.9550 ● |

TICN

new



new



new



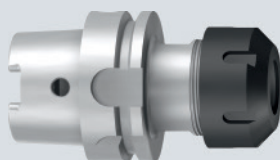
Einsatzgebiete – Material
Applications – material

» 328

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2
N 1.1-5.2 S 1.1-2.6 H 1.1-2

| P | $\varnothing D_{min.}$ | $\varnothing d_1$ | $\varnothing d_2$ | l_1 | l_2 | l_3 | Z | GF-Z-VHM R15-IKZ-HB TICN | GF-Z-VHM R15-IKZ-HE TICN | GF-Z-VHM R15-IKZ-HA TICN |
|----|------------------------|-------------------|-------------------|-------|-------|-------|---|--------------------------|--------------------------|--------------------------|
| 19 | G 1/4 | 9,9 | 10 | 70 | 20,7 | 40 | 6 | GF165366.9545 ● | GF165666.9545 ● | GF165966.9545 ● |
| 14 | G 1/2 | 11,9 | 12 | 80 | 26,3 | 45 | 5 | GF165376.9548 ● | GF165676.9548 ● | GF165976.9548 ● |
| 14 | G 1/2 | 15,9 | 16 | 90 | 33,6 | 48 | 6 | GF165386.9548 ● | GF165686.9548 ● | GF165986.9548 ● |
| 14 | G 3/4 | 19,9 | 20 | 105 | 40,8 | 50 | 8 | GF165396.9548 ○ | GF165696.9548 ○ | GF165996.9548 ○ |
| 11 | G 1" | 15,9 | 16 | 90 | 33,5 | 48 | 5 | GF165386.9550 ● | GF165686.9550 ● | GF165986.9550 ● |
| 11 | G 1" | 19,9 | 20 | 105 | 42,7 | 50 | 6 | GF165396.9550 ● | GF165696.9550 ● | GF165996.9550 ● |

Andere Steigungen auf Anfrage
Tools for different thread pitch upon request



Spannzangen-Aufnahmen
Typ KSN/Synchro
siehe Seite 711 - 713

Collet holders
type KSN/Synchro,
see page 711 - 713



Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

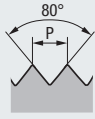
Gigant

MoSys



Pg

DIN 40430



VHM

RH + LH

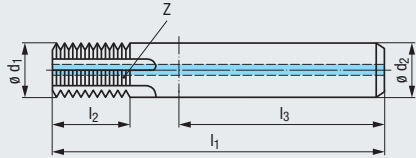
Z4



DIN 6535



Für Innen- und Außengewinde
For internal and external threads



Einsatzgebiete – Material
Applications – material

» 328

P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6
N 3.1-2 N 4.1-2, 5.2 S 1.1-3

Nenngröße

Nom. size

ϕD 1)

P

Gg/1" (tpi)

ϕd_1

mm

ϕd_2

mm

l_1

mm

l_2

mm

l_3

mm

Z

| Nenngröße Nom. size ϕD 1) | P Gg/1" (tpi) | ϕd_1 mm | ϕd_2 mm | l_1 mm | l_2 mm | l_3 mm | Z |
|---------------------------------------|------------------|------------------|------------------|-------------|-------------|-------------|---|
| 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-VHM
IKZ-HB

GF-VHM
IKZ-HE

GF-VHM
IKZ-HA

| | | | | | |
|---------------|---|---------------|---|---------------|---|
| GF163211.9661 | ● | GF163511.9661 | ● | GF163811.9661 | ● |
| GF163121.9662 | ● | GF163421.9662 | ● | GF163721.9662 | ● |
| GF163121.9663 | ● | GF163421.9663 | ● | GF163721.9663 | ● |

TICN



Einsatzgebiete – Material
Applications – material

» 328

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2
N 1.1-5.2 S 1.1-2.6 H 1.1-2

Nenngröße

Nom. size

ϕD 1)

P

Gg/1" (tpi)

ϕd_1

mm

ϕd_2

mm

l_1

mm

l_2

mm

l_3

mm

Z

| Nenngröße Nom. size ϕD 1) | P Gg/1" (tpi) | ϕd_1 mm | ϕd_2 mm | l_1 mm | l_2 mm | l_3 mm | Z |
|---------------------------------------|------------------|------------------|------------------|-------------|-------------|-------------|---|
| 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-VHM
IKZ-HB
TICN

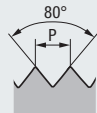
GF-VHM
IKZ-HE
TICN

GF-VHM
IKZ-HA
TICN

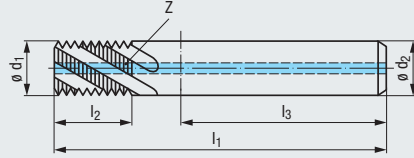
| | | | | | |
|---------------|---|---------------|---|---------------|---|
| GF163216.9661 | ● | GF163516.9661 | ● | GF163816.9661 | ● |
| GF163126.9662 | ● | GF163426.9662 | ● | GF163726.9662 | ● |
| GF163126.9663 | ● | GF163426.9663 | ● | GF163726.9663 | ● |

1) Durchmesser bezogen auf Rohr-Innengewinde bzw. Rohr-Außengewinde
Diameter related to internal pipe thread resp. external pipe thread

Pg
DIN 40430



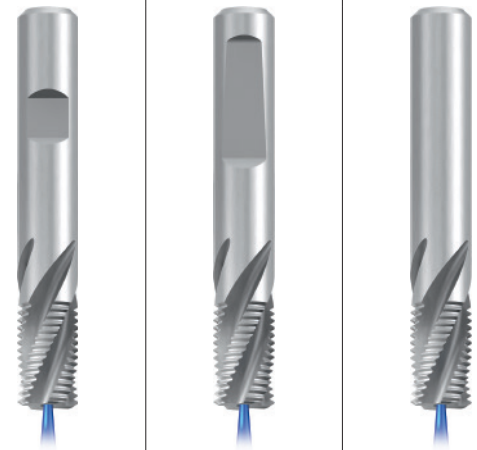
Für Innen- und Außengewinde
For internal and external threads



VHM

R30 **RH + LH**

Z4 **DIN 6535**
HB
HE
HA



Einsatzgebiete – Material ▶▶ 328
Applications – material

| Nenngröße Nom. size ø D ¹⁾ | P Gg/1" (tpi) | ø d ₁ mm | ø d ₂ | l ₁ | l ₂ | l ₃ | Z |
|---|------------------|------------------------|------------------|----------------|----------------|----------------|---|
| 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-VHM R30-IKZ-HB | GF-VHM R30-IKZ-HE | GF-VHM R30-IKZ-HA |
|----------------------|----------------------|----------------------|
| GF162211.9661 ● | GF162511.9661 ● | GF162811.9661 ● |
| GF162121.9662 ● | GF162421.9662 ● | GF162721.9662 ● |
| GF162121.9663 ● | GF162421.9663 ● | GF162721.9663 ● |

TICN



Einsatzgebiete – Material ▶▶ 328
Applications – material

| Nenngröße Nom. size ø D ¹⁾ | P Gg/1" (tpi) | ø d ₁ mm | ø d ₂ | l ₁ | l ₂ | l ₃ | Z |
|---|------------------|------------------------|------------------|----------------|----------------|----------------|---|
| 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-VHM R30-IKZ-HB TICN | GF-VHM R30-IKZ-HE TICN | GF-VHM R30-IKZ-HA TICN |
|------------------------------|------------------------------|------------------------------|
| GF162216.9661 ● | GF162516.9661 ● | GF162816.9661 ● |
| GF162126.9662 ● | GF162426.9662 ● | GF162726.9662 ● |
| GF162126.9663 ● | GF162426.9663 ● | GF162726.9663 ● |

¹⁾ Durchmesser bezogen auf Rohr-Innengewinde bzw. Rohr-Außengewinde
Diameter related to internal pipe thread resp. external pipe thread

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

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

 EG (STI)
SELF-LOCK

Tr

 Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

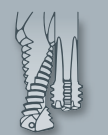
GF-KEG

ZGF

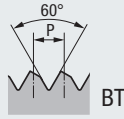
ZIRK-GF

Gigant

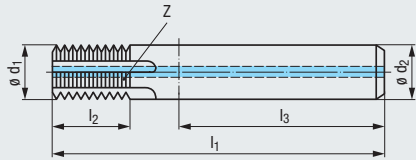
MoSys



LK-M



EMUGE-Norm · EMUGE Standard

Für Innengewinde
For internal threads

VHM
RH + LH
Z4 - Z5

DIN 6535

 $\varnothing D$

 Einsatzgebiete – Material
Applications – material

» 328

| | | |
|------------------|---------------------|-----------------------|
| P 1.1-5.1 | K 1.1-4.2 | N 1.1-5, 2.1-6 |
| N 3.1-2 | N 4.1-2, 5.2 | S 1.1-3 |

GF-VHM
IKZ-HB
GF-VHM
IKZ-HE
GF-VHM
IKZ-HA

| P mm | $\varnothing D_{min.}$ mm | $\varnothing d_1$ mm | $\varnothing d_2$ | l_1 | l_2 | l_3 | Z | GF-VHM IKZ-HB | GF-VHM IKZ-HE | GF-VHM IKZ-HA |
|------------|------------------------------|-------------------------|-------------------|-------|-------|-------|---|------------------|------------------|------------------|
| 1 | 14 | 9,9 | 10 | 70 | 16,4 | 40 | 4 | GF163211.9757 | ● GF163511.9757 | ● GF163811.9757 |
| 1 | 16 | 11,9 | 12 | 80 | 20,4 | 45 | 4 | GF163121.9757 | ● GF163421.9757 | ● GF163721.9757 |
| 1,5 | 14 | 9,9 | 10 | 70 | 17 | 40 | 4 | GF163211.9664 | ● GF163511.9664 | ● GF163811.9664 |
| 1,5 | 16 | 11,9 | 12 | 80 | 21,5 | 45 | 4 | GF163121.9664 | ● GF163421.9664 | ● GF163721.9664 |
| 2 | 22 | 15,9 | 16 | 90 | 26,7 | 48 | 5 | GF163131.9705 | ● GF163431.9705 | ● GF163731.9705 |
| 3 | 30 | 19,9 | 20 | 105 | 34,1 | 50 | 5 | GF163151.9767 | ● GF163451.9767 | ● GF163751.9767 |

TICN

 Einsatzgebiete – Material
Applications – material

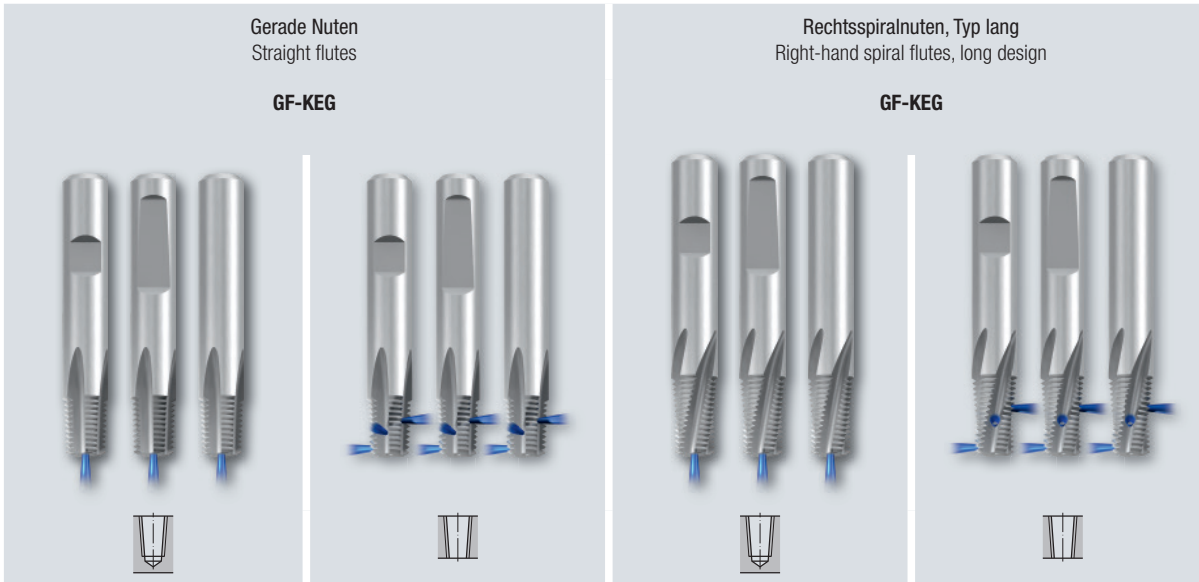
» 328

| | | |
|------------------|------------------|------------------|
| P 1.1-5.1 | M 1.1-4.1 | K 1.1-4.2 |
| N 1.1-5.2 | S 1.1-2.6 | H 1.1-2 |

GF-VHM
IKZ-HB
TICN
GF-VHM
IKZ-HE
TICN
GF-VHM
IKZ-HA
TICN

| P mm | $\varnothing D_{min.}$ mm | $\varnothing d_1$ mm | $\varnothing d_2$ | l_1 | l_2 | l_3 | Z | GF-VHM IKZ-HB TICN | GF-VHM IKZ-HE TICN | GF-VHM IKZ-HA TICN |
|------------|------------------------------|-------------------------|-------------------|-------|-------|-------|---|--------------------------|--------------------------|--------------------------|
| 1 | 14 | 9,9 | 10 | 70 | 16,4 | 40 | 4 | GF163216.9757 | ● GF163516.9757 | ● GF163816.9757 |
| 1 | 16 | 11,9 | 12 | 80 | 20,4 | 45 | 4 | GF163126.9757 | ● GF163426.9757 | ● GF163726.9757 |
| 1,5 | 14 | 9,9 | 10 | 70 | 17 | 40 | 4 | GF163216.9664 | ● GF163516.9664 | ● GF163816.9664 |
| 1,5 | 16 | 11,9 | 12 | 80 | 21,5 | 45 | 4 | GF163126.9664 | ● GF163426.9664 | ● GF163726.9664 |
| 2 | 22 | 15,9 | 16 | 90 | 26,7 | 48 | 5 | GF163136.9705 | ● GF163436.9705 | ● GF163736.9705 |
| 3 | 30 | 19,9 | 20 | 105 | 34,1 | 50 | 5 | GF163156.9767 | ● GF163456.9767 | ● GF163756.9767 |

 Andere Steigungen auf Anfrage
Tools for different thread pitch upon request



Seite · Page

| | | | | |
|-----|-----|-----|-----|---------------------|
| 401 | 402 | 403 | 404 | NPT (API-LP) |
| 406 | 407 | 408 | 409 | NPTF |
| 411 | 412 | | | Rc (BSPT) |

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



Mögliche Modifikationen · Possible modifications



Stirrfase ohne/mit Stirnschnitt
Face chamfer with/without cutting face



AZR/AZ (ausgesetzte Zähne)
AZR/AZ (alternating teeth)



Unvollständigen Gang entfernen
Remove incomplete thread



IKZN (innere Kühlschmierstoff-Zufuhr mit Austritt in den Nuten)
IKZN (internal coolant supply exiting in the flutes)



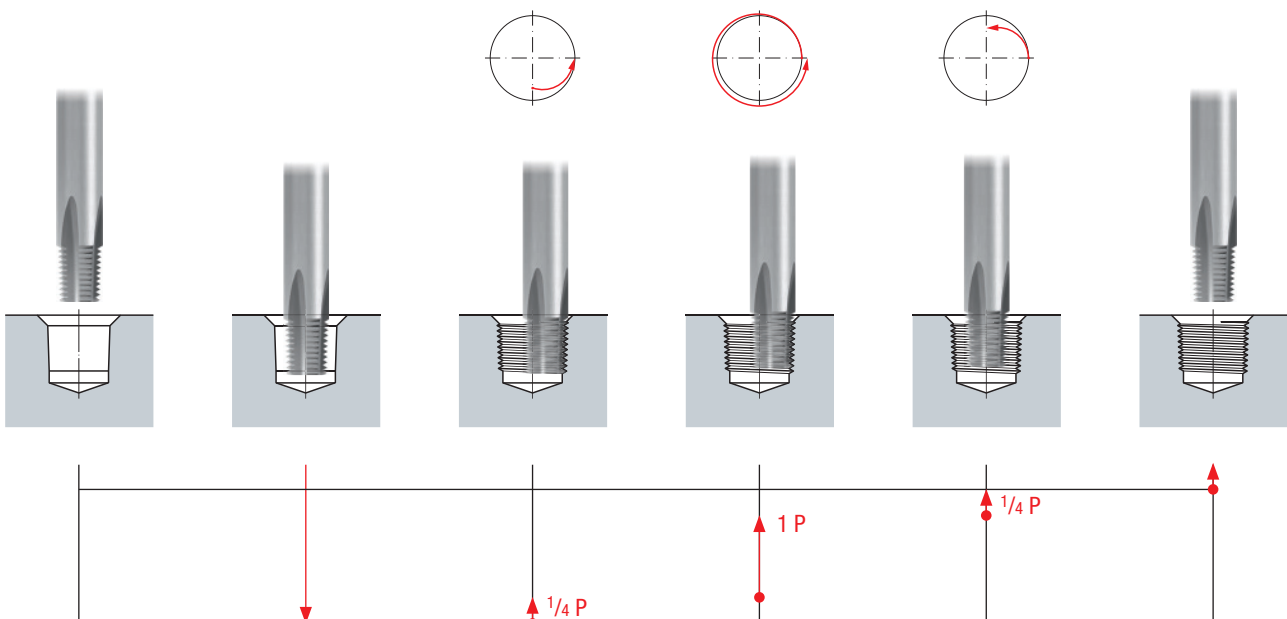
Halsfreischliff
Recessed neck



Schaftkühlruten
Coolant grooves along the shank

Eine Beschreibung dieser Modifikationsmöglichkeiten finden Sie auf Seite 456 - 457
For a description of these modifications, see pages 456 - 457

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

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

Gigant

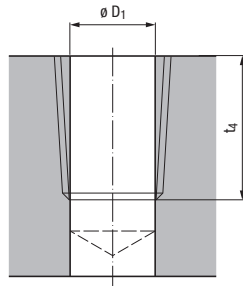
MoSys

NPT



ANSI/ASME B1.20.1

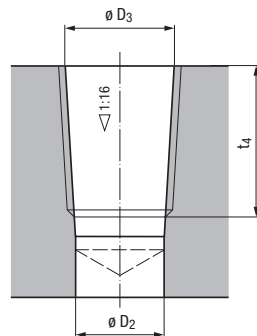
a) Zylindrisch vorarbeiten
Cylindrical preparation of thread hole



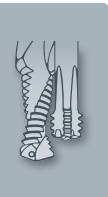
EMUGE NPT-Gewindefräser sind für die Lochformen a) und b) geeignet.
EMUGE NPT thread milling cutters are suited for the hole forms a) and b).

| Nenngröße Nom. size D | P 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 Nom. size D | P Gg/1" (tpi) | $\varnothing D_2$ | $\varnothing D_3$ +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 |

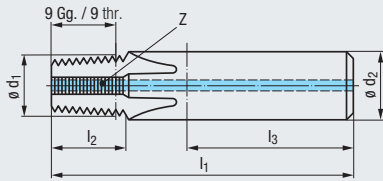


NPT



ANSI/ASME B1.20.1

Für kegeliges Innengewinde
For internal tapered threads



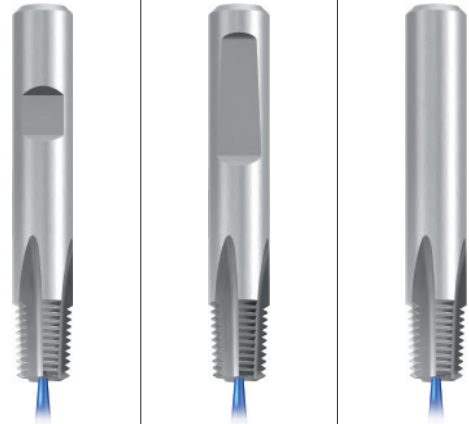
VHM

RH + LH

Z3 - Z5



DIN 6535



Einsatzgebiete – Material
Applications – material

P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6
N 3.1-2 N 4.1-2, 5.2 S 1.1-3

| Nenngröße Nom. size | P | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | Z |
|------------------------|-------------|-------|-------|-------|-------------------|-------------------|---|
| D | Gg/1" (tpi) | | | | | | |
| 1/16 | 27 | 55 | 9,88 | 36 | 5,9 | 8 | 3 |
| 1/8 | 27 | 55 | 9,88 | 36 | 7,65 | 8 | 3 |
| 1/4 | 18 | 75 | 14,79 | 45 | 10,15 | 12 | 4 |
| 3/8 | 18 | 75 | 14,78 | 45 | 11,15 | 12 | 4 |
| 1/2 - 3/4 | 14 | 80 | 19,01 | 48 | 14,25 | 16 | 4 |
| 1" - 2" | 11 1/2 | 90 | 23,14 | 50 | 19,6 | 20 | 5 |

| GF-KEG-VHM IKZ-HB | GF-KEG-VHM IKZ-HE | GF-KEG-VHM IKZ-HA |
|----------------------|----------------------|----------------------|
| GF173101.5763 ● | GF173401.5763 ● | GF173701.5763 ● |
| GF173101.5764 ● | GF173401.5764 ● | GF173701.5764 ● |
| GF173111.5765 ● | GF173411.5765 ● | GF173711.5765 ● |
| GF173111.5766 ● | GF173411.5766 ● | GF173711.5766 ● |
| GF173131.9678 ● | GF173431.9678 ● | GF173731.9678 ● |
| GF173151.9679 ● | GF173451.9679 ● | GF173751.9679 ● |

TICN



Einsatzgebiete – Material
Applications – material

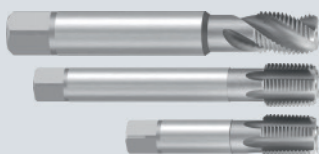
P 1.1-5.1 M 1.1-4.1 K 1.1-4.2
N 1.1-5.2 S 1.1-2.6 H 1.1-2

| Nenngröße Nom. size | P | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | Z |
|------------------------|-------------|-------|-------|-------|-------------------|-------------------|---|
| D | Gg/1" (tpi) | | | | | | |
| 1/16 | 27 | 55 | 9,88 | 36 | 5,9 | 8 | 3 |
| 1/8 | 27 | 55 | 9,88 | 36 | 7,65 | 8 | 3 |
| 1/4 | 18 | 75 | 14,79 | 45 | 10,15 | 12 | 4 |
| 3/8 | 18 | 75 | 14,78 | 45 | 11,15 | 12 | 4 |
| 1/2 - 3/4 | 14 | 80 | 19,01 | 48 | 14,25 | 16 | 4 |
| 1" - 2" | 11 1/2 | 90 | 23,14 | 50 | 19,6 | 20 | 5 |

| GF-KEG-VHM IKZ-HB TICN | GF-KEG-VHM IKZ-HE TICN | GF-KEG-VHM IKZ-HA TICN |
|------------------------------|------------------------------|------------------------------|
| GF173106.5763 ● | GF173406.5763 ● | GF173706.5763 ● |
| GF173106.5764 ● | GF173406.5764 ● | GF173706.5764 ● |
| GF173116.5765 ● | GF173416.5765 ● | GF173716.5765 ● |
| GF173116.5766 ● | GF173416.5766 ● | GF173716.5766 ● |
| GF173136.9678 ● | GF173436.9678 ● | GF173736.9678 ● |
| GF173156.9679 ● | GF173456.9679 ● | GF173756.9679 ● |

NPT-Fräser werden mit korrigiertem Profil gefertigt
NPT cutters are manufactured with a corrected profile

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 184 - 197

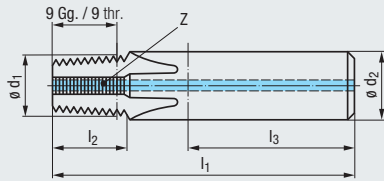
Taps for internal tapered threads,
see page 184 - 197

- Product Finder
- v_c / f_z
- M
- MF
- UNC UN, UNS
- UNF UNEF
- G, Rp
- NPT, NPTF Rc, W
- BSW, BSF
- Pg
- EG (STI) SELF-LOCK
- Tr
- Zubehör Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys



ANSI/ASME B1.20.1

Für kegeliges Innengewinde
For internal tapered threads



VHM

RH + LH

Z3 - Z5

DIN 6535

HB
HE
HA



new



new



new



Einsatzgebiete – Material
Applications – material

» 328

P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6
N 3.1-2 N 4.1-2, 5.2 S 1.1-3

Nenngröße

Nom. size

| D | P Gg/1" (tpi) | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | Z |
|-----------|------------------|-------|-------|-------|-------------------|-------------------|---|
| 1/16 | 27 | 55 | 9,88 | 36 | 5,9 | 8 | 3 |
| 1/8 | 27 | 55 | 9,88 | 36 | 7,65 | 8 | 3 |
| 1/4 | 18 | 75 | 14,79 | 45 | 10,15 | 12 | 4 |
| 3/8 | 18 | 75 | 14,78 | 45 | 11,15 | 12 | 4 |
| 1/2 - 3/4 | 14 | 80 | 19,01 | 48 | 14,25 | 16 | 4 |
| 1" - 2" | 11 1/2 | 90 | 23,14 | 50 | 19,6 | 20 | 5 |

GF-KEG-VHM
IKZN-HB

GF-KEG-VHM
IKZN-HE

GF-KEG-VHM
IKZN-HA

| | | | | | |
|---------------|---|---------------|---|---------------|---|
| GF193101.5763 | ● | GF193401.5763 | ● | GF193701.5763 | ● |
| GF193101.5764 | ● | GF193401.5764 | ● | GF193701.5764 | ● |
| GF193111.5765 | ● | GF193411.5765 | ● | GF193711.5765 | ● |
| GF193111.5766 | ● | GF193411.5766 | ● | GF193711.5766 | ● |
| GF193131.9678 | ● | GF193431.9678 | ● | GF193731.9678 | ● |
| GF193151.9679 | ● | GF193451.9679 | ● | GF193751.9679 | ● |

TICN

new



new



new



Einsatzgebiete – Material
Applications – material

» 328

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2
N 1.1-5.2 S 1.1-2.6 H 1.1-2

Nenngröße

Nom. size

| D | P Gg/1" (tpi) | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | Z |
|-----------|------------------|-------|-------|-------|-------------------|-------------------|---|
| 1/16 | 27 | 55 | 9,88 | 36 | 5,9 | 8 | 3 |
| 1/8 | 27 | 55 | 9,88 | 36 | 7,65 | 8 | 3 |
| 1/4 | 18 | 75 | 14,79 | 45 | 10,15 | 12 | 4 |
| 3/8 | 18 | 75 | 14,78 | 45 | 11,15 | 12 | 4 |
| 1/2 - 3/4 | 14 | 80 | 19,01 | 48 | 14,25 | 16 | 4 |
| 1" - 2" | 11 1/2 | 90 | 23,14 | 50 | 19,6 | 20 | 5 |

GF-KEG-VHM
IKZN-HB
TICN

GF-KEG-VHM
IKZN-HE
TICN

GF-KEG-VHM
IKZN-HA
TICN

| | | | | | |
|---------------|---|---------------|---|---------------|---|
| GF193106.5763 | ● | GF193406.5763 | ● | GF193706.5763 | ● |
| GF193106.5764 | ● | GF193406.5764 | ● | GF193706.5764 | ● |
| GF193116.5765 | ● | GF193416.5765 | ● | GF193716.5765 | ● |
| GF193116.5766 | ● | GF193416.5766 | ● | GF193716.5766 | ● |
| GF193136.9678 | ● | GF193436.9678 | ● | GF193736.9678 | ● |
| GF193156.9679 | ● | GF193456.9679 | ● | GF193756.9679 | ● |

NPT-Fräser werden mit korrigiertem Profil gefertigt
NPT cutters are manufactured with a corrected profile

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



VHM

R15

RH + LH

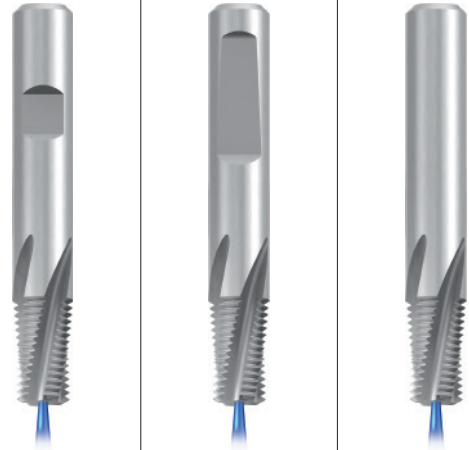
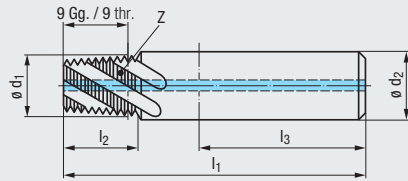
Z3 - Z5



DIN 6535



Für kegeliges Innengewinde
For internal tapered threads



Einsatzgebiete – Material
Applications – material

P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6
N 3.1-2 N 4.1-2, 5.2 S 1.1-3

| Nenngröße Nom. size | | P | l ₁ | l ₂ | l ₃ | ø d ₁ | ø d ₂ | Z | GF-KEG-VHM R15-Ig-IKZ-HB | GF-KEG-VHM R15-Ig-IKZ-HE | GF-KEG-VHM R15-Ig-IKZ-HA |
|------------------------|-------------|----|----------------|----------------|----------------|------------------|------------------|---------------|-----------------------------|-----------------------------|-----------------------------|
| D | Gg/1" (tpi) | | | | | | | | | | |
| 1/16 | 27 | 60 | 13,63 | 36 | 5,9 | 8 | 3 | GF175301.5763 | ● GF175601.5763 | ● GF175901.5763 | ● |
| 1/8 | 27 | 60 | 13,63 | 36 | 7,65 | 8 | 3 | GF175301.5764 | ● GF175601.5764 | ● GF175901.5764 | ● |
| 1/4 | 18 | 80 | 20,44 | 45 | 10,15 | 12 | 4 | GF175311.5765 | ● GF175611.5765 | ● GF175911.5765 | ● |
| 3/8 | 18 | 80 | 20,43 | 45 | 11,15 | 12 | 4 | GF175311.5766 | ● GF175611.5766 | ● GF175911.5766 | ● |
| 1/2 - 3/4 | 14 | 85 | 26,27 | 48 | 14,25 | 16 | 4 | GF175331.9678 | ● GF175631.9678 | ● GF175931.9678 | ● |
| 1" - 2" | 11 1/2 | 95 | 31,98 | 50 | 19,6 | 20 | 5 | GF175351.9679 | ● GF175651.9679 | ● GF175951.9679 | ● |

TICN



Einsatzgebiete – Material
Applications – material

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2
N 1.1-5.2 S 1.1-2.6 H 1.1-2

| Nenngröße Nom. size | | P | l ₁ | l ₂ | l ₃ | ø d ₁ | ø d ₂ | Z | GF-KEG-VHM R15-Ig-IKZ-HB TICN | GF-KEG-VHM R15-Ig-IKZ-HE TICN | GF-KEG-VHM R15-Ig-IKZ-HA TICN |
|------------------------|-------------|----|----------------|----------------|----------------|------------------|------------------|---------------|-------------------------------------|-------------------------------------|-------------------------------------|
| D | Gg/1" (tpi) | | | | | | | | | | |
| 1/16 | 27 | 60 | 13,63 | 36 | 5,9 | 8 | 3 | GF175306.5763 | ● GF175606.5763 | ● GF175906.5763 | ● |
| 1/8 | 27 | 60 | 13,63 | 36 | 7,65 | 8 | 3 | GF175306.5764 | ● GF175606.5764 | ● GF175906.5764 | ● |
| 1/4 | 18 | 80 | 20,44 | 45 | 10,15 | 12 | 4 | GF175316.5765 | ● GF175616.5765 | ● GF175916.5765 | ● |
| 3/8 | 18 | 80 | 20,43 | 45 | 11,15 | 12 | 4 | GF175316.5766 | ● GF175616.5766 | ● GF175916.5766 | ● |
| 1/2 - 3/4 | 14 | 85 | 26,27 | 48 | 14,25 | 16 | 4 | GF175336.9678 | ● GF175636.9678 | ● GF175936.9678 | ● |
| 1" - 2" | 11 1/2 | 95 | 31,98 | 50 | 19,6 | 20 | 5 | GF175356.9679 | ● GF175656.9679 | ● GF175956.9679 | ● |

NPT/API-LP-Fräser werden mit korrigiertem Profil gefertigt
NPT/API-LP cutters are manufactured with a corrected profile

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 UN, UNS
- UNF UNEF
- G, Rp
- NPT NPTF Rc, W
- BSW, BSF
- Pg
- EG (STI) SELF-LOCK
- Tr
- Zubehör Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys



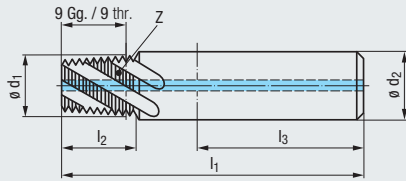
- Product Finder
- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys

NPT (API-LP)

ANSI/ASME B1.20.1



Für kegeliges Innengewinde
For internal tapered threads



VHM

R15

RH + LH

Z3 - Z5

DIN 6535

HB
HE
HA



new



new



new



Einsatzgebiete – Material
Applications – material

» 328

P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6
N 3.1-2 N 4.1-2, 5.2 S 1.1-3

Nenngröße
Nom. size

| D | P Gg/1" (tpi) | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | Z | GF-KEG-VHM R15-Ig- IKZN -HB | GF-KEG-VHM R15-Ig- IKZN -HE | GF-KEG-VHM R15-Ig- IKZN -HA |
|-----------|------------------|-------|-------|-------|-------------------|-------------------|---|---------------------------------------|---------------------------------------|---------------------------------------|
| 1/16 | 27 | 60 | 13,63 | 36 | 5,9 | 8 | 3 | GF195301.5763 | GF195601.5763 | GF195901.5763 |
| 1/8 | 27 | 60 | 13,63 | 36 | 7,65 | 8 | 3 | GF195301.5764 | GF195601.5764 | GF195901.5764 |
| 1/4 | 18 | 80 | 20,44 | 45 | 10,15 | 12 | 4 | GF195311.5765 | GF195611.5765 | GF195911.5765 |
| 3/8 | 18 | 80 | 20,43 | 45 | 11,15 | 12 | 4 | GF195311.5766 | GF195611.5766 | GF195911.5766 |
| 1/2 - 3/4 | 14 | 85 | 26,27 | 48 | 14,25 | 16 | 4 | GF195331.9678 | GF195631.9678 | GF195931.9678 |
| 1" - 2" | 11 1/2 | 95 | 31,98 | 50 | 19,6 | 20 | 5 | GF195351.9679 | GF195651.9679 | GF195951.9679 |

TICN

new



new



new



Einsatzgebiete – Material
Applications – material

» 328

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2
N 1.1-5.2 S 1.1-2.6 H 1.1-2

Nenngröße
Nom. size

| D | P Gg/1" (tpi) | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | Z | GF-KEG-VHM R15-Ig- IKZN -HB TICN | GF-KEG-VHM R15-Ig- IKZN -HE TICN | GF-KEG-VHM R15-Ig- IKZN -HA TICN |
|-----------|------------------|-------|-------|-------|-------------------|-------------------|---|---|---|---|
| 1/16 | 27 | 60 | 13,63 | 36 | 5,9 | 8 | 3 | GF195306.5763 | GF195606.5763 | GF195906.5763 |
| 1/8 | 27 | 60 | 13,63 | 36 | 7,65 | 8 | 3 | GF195306.5764 | GF195606.5764 | GF195906.5764 |
| 1/4 | 18 | 80 | 20,44 | 45 | 10,15 | 12 | 4 | GF195316.5765 | GF195616.5765 | GF195916.5765 |
| 3/8 | 18 | 80 | 20,43 | 45 | 11,15 | 12 | 4 | GF195316.5766 | GF195616.5766 | GF195916.5766 |
| 1/2 - 3/4 | 14 | 85 | 26,27 | 48 | 14,25 | 16 | 4 | GF195336.9678 | GF195636.9678 | GF195936.9678 |
| 1" - 2" | 11 1/2 | 95 | 31,98 | 50 | 19,6 | 20 | 5 | GF195356.9679 | GF195656.9679 | GF195956.9679 |

NPT/API-LP-Fräser werden mit korrigiertem Profil gefertigt
NPT/API-LP cutters are manufactured with a corrected profile

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

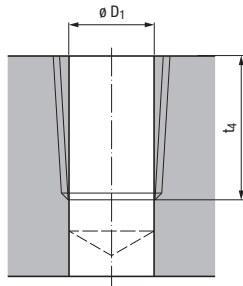


EMUGE NPTF-Gewindefräser sind für die Lochformen a) und b) geeignet.

EMUGE NPTF thread milling cutters are suited for the hole forms a) and b).

a) Zylindrisch vorarbeiten

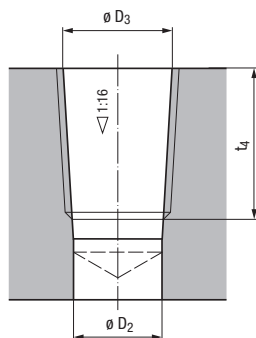
Cylindrical preparation of thread hole



| Nenngröße Nom. size D | P 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 Nom. size D | P Gg/1" (tpi) | $\varnothing D_2$ | $\varnothing D_3$ +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, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



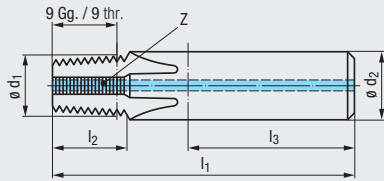
- Product Finder
- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys

NPTF



ANSI B1.20.3

Für kegeliges Innengewinde
For internal tapered threads



VHM

RH + LH

Z3 - Z5

DIN 6535

HB
HE
HA



Einsatzgebiete – Material
Applications – material

» 328

P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6
N 3.1-2 N 4.1-2, 5.2 S 1.1-3

Nenngröße
Nom. size

| D | P Gg/1" (tpi) | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | Z | GF-KEG-VHM IKZ-HB | GF-KEG-VHM IKZ-HE | GF-KEG-VHM IKZ-HA |
|---------|------------------|-------|-------|-------|-------------------|-------------------|---|----------------------|----------------------|----------------------|
| 1/16 | 27 | 55 | 9,84 | 36 | 5,9 | 8 | 3 | GF173101.5782 | GF173401.5782 | GF173701.5782 |
| 1/8 | 27 | 55 | 9,83 | 36 | 7,65 | 8 | 3 | GF173101.5783 | GF173401.5783 | GF173701.5783 |
| 1/4 | 18 | 75 | 14,77 | 45 | 10,15 | 12 | 4 | GF173111.5784 | GF173411.5784 | GF173711.5784 |
| 3/8 | 18 | 75 | 14,76 | 45 | 11,15 | 12 | 4 | GF173111.5785 | GF173411.5785 | GF173711.5785 |
| 1/2 | 14 | 80 | 19 | 48 | 14,25 | 16 | 4 | GF173131.5786 | GF173431.5786 | GF173731.5786 |
| 3/4 | 14 | 80 | 19 | 48 | 14,25 | 16 | 4 | GF173131.5787 | GF173431.5787 | GF173731.5787 |
| 1" - 2" | 11 1/2 | 90 | 23,13 | 50 | 19,6 | 20 | 5 | GF173151.9684 | GF173451.9684 | GF173751.9684 |

TICN



Einsatzgebiete – Material
Applications – material

» 328

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2
N 1.1-5.2 S 1.1-2.6 H 1.1-2

Nenngröße
Nom. size

| D | P Gg/1" (tpi) | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | Z | GF-KEG-VHM IKZ-HB TICN | GF-KEG-VHM IKZ-HE TICN | GF-KEG-VHM IKZ-HA TICN |
|---------|------------------|-------|-------|-------|-------------------|-------------------|---|------------------------------|------------------------------|------------------------------|
| 1/16 | 27 | 55 | 9,84 | 36 | 5,9 | 8 | 3 | GF173106.5782 | GF173406.5782 | GF173706.5782 |
| 1/8 | 27 | 55 | 9,83 | 36 | 7,65 | 8 | 3 | GF173106.5783 | GF173406.5783 | GF173706.5783 |
| 1/4 | 18 | 75 | 14,77 | 45 | 10,15 | 12 | 4 | GF173116.5784 | GF173416.5784 | GF173716.5784 |
| 3/8 | 18 | 75 | 14,76 | 45 | 11,15 | 12 | 4 | GF173116.5785 | GF173416.5785 | GF173716.5785 |
| 1/2 | 14 | 80 | 19 | 48 | 14,25 | 16 | 4 | GF173136.5786 | GF173436.5786 | GF173736.5786 |
| 3/4 | 14 | 80 | 19 | 48 | 14,25 | 16 | 4 | GF173136.5787 | GF173436.5787 | GF173736.5787 |
| 1" - 2" | 11 1/2 | 90 | 23,13 | 50 | 19,6 | 20 | 5 | GF173156.9684 | GF173456.9684 | GF173756.9684 |

NPTF-Fräser werden mit korrigiertem Profil gefertigt
NPTF cutters are manufactured with a corrected profile

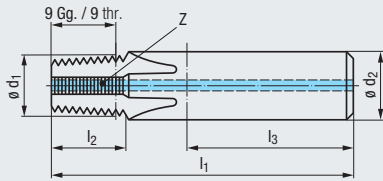
Anwendungshinweis: Es wird ein NC-Programm für schneckenförmiges Wendelnutfräsen benötigt, da sonst ein Absatz im gefrästen Gewinde entsteht
Application recommendation: You must have an NC programme for spiral-worm keyway milling, otherwise the finished thread will have a stepped profile

NPTF

ANSI B1.20.3



Für kegeliges Innengewinde
For internal tapered threads



VHM

RH + LH

Z3 - Z5



DIN 6535



new



new



new



Einsatzgebiete – Material
Applications – material



P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6
N 3.1-2 N 4.1-2, 5.2 S 1.1-3

Nenngröße
Nom. size

| D | P Gg/1" (tpi) | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | Z | GF-KEG-VHM IKZN-HB | GF-KEG-VHM IKZN-HE | GF-KEG-VHM IKZN-HA |
|---------|------------------|-------|-------|-------|-------------------|-------------------|---|-----------------------|-----------------------|-----------------------|
| 1/16 | 27 | 55 | 9,84 | 36 | 5,9 | 8 | 3 | GF193101.5782 | GF193401.5782 | GF193701.5782 |
| 1/8 | 27 | 55 | 9,83 | 36 | 7,65 | 8 | 3 | GF193101.5783 | GF193401.5783 | GF193701.5783 |
| 1/4 | 18 | 75 | 14,77 | 45 | 10,15 | 12 | 4 | GF193111.5784 | GF193411.5784 | GF193711.5784 |
| 3/8 | 18 | 75 | 14,76 | 45 | 11,15 | 12 | 4 | GF193111.5785 | GF193411.5785 | GF193711.5785 |
| 1/2 | 14 | 80 | 19 | 48 | 14,25 | 16 | 4 | GF193131.5786 | GF193431.5786 | GF193731.5786 |
| 3/4 | 14 | 80 | 19 | 48 | 14,25 | 16 | 4 | GF193131.5787 | GF193431.5787 | GF193731.5787 |
| 1" - 2" | 11 1/2 | 90 | 23,13 | 50 | 19,6 | 20 | 5 | GF193151.9684 | GF193451.9684 | GF193751.9684 |

TICN

new



new



new



Einsatzgebiete – Material
Applications – material



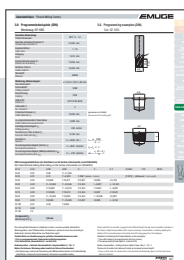
P 1.1-5.1 M 1.1-4.1 K 1.1-4.2
N 1.1-5.2 S 1.1-2.6 H 1.1-2

Nenngröße
Nom. size

| D | P Gg/1" (tpi) | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | Z | GF-KEG-VHM IKZN-HB TICN | GF-KEG-VHM IKZN-HE TICN | GF-KEG-VHM IKZN-HA TICN |
|---------|------------------|-------|-------|-------|-------------------|-------------------|---|-------------------------------|-------------------------------|-------------------------------|
| 1/16 | 27 | 55 | 9,84 | 36 | 5,9 | 8 | 3 | GF193106.5782 | GF193406.5782 | GF193706.5782 |
| 1/8 | 27 | 55 | 9,83 | 36 | 7,65 | 8 | 3 | GF193106.5783 | GF193406.5783 | GF193706.5783 |
| 1/4 | 18 | 75 | 14,77 | 45 | 10,15 | 12 | 4 | GF193116.5784 | GF193416.5784 | GF193716.5784 |
| 3/8 | 18 | 75 | 14,76 | 45 | 11,15 | 12 | 4 | GF193116.5785 | GF193416.5785 | GF193716.5785 |
| 1/2 | 14 | 80 | 19 | 48 | 14,25 | 16 | 4 | GF193136.5786 | GF193436.5786 | GF193736.5786 |
| 3/4 | 14 | 80 | 19 | 48 | 14,25 | 16 | 4 | GF193136.5787 | GF193436.5787 | GF193736.5787 |
| 1" - 2" | 11 1/2 | 90 | 23,13 | 50 | 19,6 | 20 | 5 | GF193156.9684 | GF193456.9684 | GF193756.9684 |

NPTF-Fräser werden mit korrigiertem Profil gefertigt
NPTF cutters are manufactured with a corrected profile

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



Programmierbeispiel für kegelige
Gewindefräser Typ GF-KEG
siehe Seite 467

Programming example for tapered
thread milling cutters type GF-KEG,
see page 467

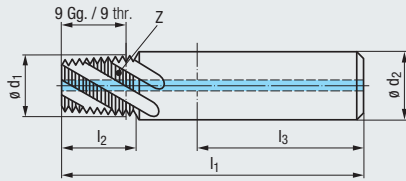
- Product Finder
- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys

NPTF



ANSI B1.20.3

Für kegeliges Innengewinde
For internal tapered threads



VHM

R15

RH + LH

Z3 - Z5

DIN 6535



Einsatzgebiete – Material
Applications – material

P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6
N 3.1-2 N 4.1-2, 5.2 S 1.1-3

Nenngröße
Nom. size

| D | P Gg/1" (tpi) | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | Z |
|---------|------------------|-------|-------|-------|-------------------|-------------------|---|
| 1/16 | 27 | 60 | 13,6 | 36 | 5,9 | 8 | 3 |
| 1/8 | 27 | 60 | 13,6 | 36 | 7,65 | 8 | 3 |
| 1/4 | 18 | 80 | 20,41 | 45 | 10,15 | 12 | 4 |
| 3/8 | 18 | 80 | 20,4 | 45 | 11,15 | 12 | 4 |
| 1/2 | 14 | 85 | 26,25 | 48 | 14,25 | 16 | 4 |
| 3/4 | 14 | 85 | 26,25 | 48 | 14,25 | 16 | 4 |
| 1" - 2" | 11 1/2 | 95 | 31,96 | 50 | 19,6 | 20 | 5 |

GF-KEG-VHM
R15-Ig-IKZ-HB

GF-KEG-VHM
R15-Ig-IKZ-HE

GF-KEG-VHM
R15-Ig-IKZ-HA

| | | | | | |
|---------------|---|---------------|---|---------------|---|
| GF175301.5782 | ● | GF175601.5782 | ● | GF175901.5782 | ● |
| GF175301.5783 | ● | GF175601.5783 | ● | GF175901.5783 | ● |
| GF175311.5784 | ● | GF175611.5784 | ● | GF175911.5784 | ● |
| GF175311.5785 | ● | GF175611.5785 | ● | GF175911.5785 | ● |
| GF175331.5786 | ● | GF175631.5786 | ● | GF175931.5786 | ● |
| GF175331.5787 | ● | GF175631.5787 | ● | GF175931.5787 | ● |
| GF175351.9684 | ● | GF175651.9684 | ● | GF175951.9684 | ● |

TICN



Einsatzgebiete – Material
Applications – material

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2
N 1.1-5.2 S 1.1-2.6 H 1.1-2

Nenngröße
Nom. size

| D | P Gg/1" (tpi) | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | Z |
|---------|------------------|-------|-------|-------|-------------------|-------------------|---|
| 1/16 | 27 | 60 | 13,6 | 36 | 5,9 | 8 | 3 |
| 1/8 | 27 | 60 | 13,6 | 36 | 7,65 | 8 | 3 |
| 1/4 | 18 | 80 | 20,41 | 45 | 10,15 | 12 | 4 |
| 3/8 | 18 | 80 | 20,4 | 45 | 11,15 | 12 | 4 |
| 1/2 | 14 | 85 | 26,25 | 48 | 14,25 | 16 | 4 |
| 3/4 | 14 | 85 | 26,25 | 48 | 14,25 | 16 | 4 |
| 1" - 2" | 11 1/2 | 95 | 31,96 | 50 | 19,6 | 20 | 5 |

GF-KEG-VHM
R15-Ig-IKZ-HB
TICN

GF-KEG-VHM
R15-Ig-IKZ-HE
TICN

GF-KEG-VHM
R15-Ig-IKZ-HA
TICN

| | | | | | |
|---------------|---|---------------|---|---------------|---|
| GF175306.5782 | ● | GF175606.5782 | ● | GF175906.5782 | ● |
| GF175306.5783 | ● | GF175606.5783 | ● | GF175906.5783 | ● |
| GF175316.5784 | ● | GF175616.5784 | ● | GF175916.5784 | ● |
| GF175316.5785 | ● | GF175616.5785 | ● | GF175916.5785 | ● |
| GF175336.5786 | ● | GF175636.5786 | ● | GF175936.5786 | ● |
| GF175336.5787 | ● | GF175636.5787 | ● | GF175936.5787 | ● |
| GF175356.9684 | ● | GF175656.9684 | ● | GF175956.9684 | ● |

NPTF-Fräser werden mit korrigiertem Profil gefertigt
NPTF cutters are manufactured with a corrected profile

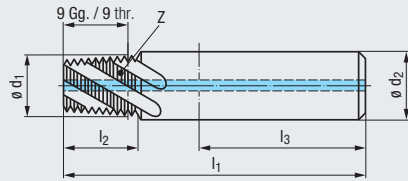
Anwendungshinweis: Es wird ein NC-Programm für schneckenförmiges Wendelnutfräsen benötigt, da sonst ein Absatz im gefrästen Gewinde entsteht
Application recommendation: You must have an NC programme for spiral-worm keyway milling, otherwise the finished thread will have a stepped profile

NPTF

ANSI B1.20.3



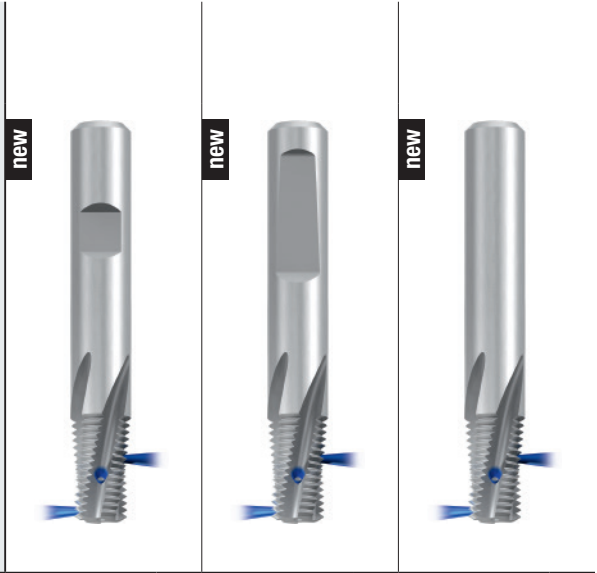
Für kegeliges Innengewinde
For internal tapered threads



VHM

R15 **RH + LH**

Z3 - Z5 **DIN 6535**
 HB
 HE
 HA

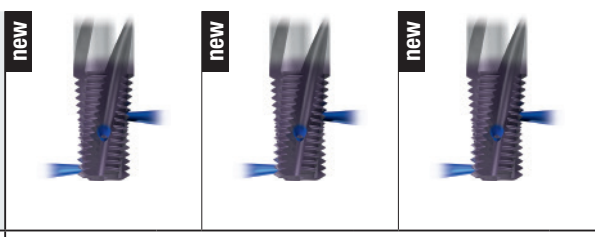


Einsatzgebiete – Material 328
 Applications – material

P 1.1-5.1 **K** 1.1-4.2 **N** 1.1-5, 2.1-6
N 3.1-2 **N** 4.1-2, 5.2 **S** 1.1-3

| Nenngröße Nom. size | | | | | | | | GF-KEG-VHM R15-Ig-IKZN-HB | GF-KEG-VHM R15-Ig-IKZN-HE | GF-KEG-VHM R15-Ig-IKZN-HA |
|------------------------|------------------|-------|-------|-------|-------------------|-------------------|---|------------------------------|------------------------------|------------------------------|
| D | P Gg/1" (tpi) | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | Z | | | |
| 1/16 | 27 | 60 | 13,6 | 36 | 5,9 | 8 | 3 | GF195301.5782 ● | GF195601.5782 ● | GF195901.5782 ● |
| 1/8 | 27 | 60 | 13,6 | 36 | 7,65 | 8 | 3 | GF195301.5783 ● | GF195601.5783 ● | GF195901.5783 ● |
| 1/4 | 18 | 80 | 20,41 | 45 | 10,15 | 12 | 4 | GF195311.5784 ● | GF195611.5784 ● | GF195911.5784 ● |
| 3/8 | 18 | 80 | 20,4 | 45 | 11,15 | 12 | 4 | GF195311.5785 ● | GF195611.5785 ● | GF195911.5785 ● |
| 1/2 | 14 | 85 | 26,25 | 48 | 14,25 | 16 | 4 | GF195331.5786 ● | GF195631.5786 ● | GF195931.5786 ● |
| 3/4 | 14 | 85 | 26,25 | 48 | 14,25 | 16 | 4 | GF195331.5787 ● | GF195631.5787 ● | GF195931.5787 ● |
| 1" - 2" | 11 1/2 | 95 | 31,96 | 50 | 19,6 | 20 | 5 | GF195351.9684 ● | GF195651.9684 ● | GF195951.9684 ● |

TICN



Einsatzgebiete – Material 328
 Applications – material

P 1.1-5.1 **M** 1.1-4.1 **K** 1.1-4.2
N 1.1-5.2 **S** 1.1-2.6 **H** 1.1-2

| Nenngröße Nom. size | | | | | | | | GF-KEG-VHM R15-Ig-IKZN-HB TICN | GF-KEG-VHM R15-Ig-IKZN-HE TICN | GF-KEG-VHM R15-Ig-IKZN-HA TICN |
|------------------------|------------------|-------|-------|-------|-------------------|-------------------|---|--------------------------------------|--------------------------------------|--------------------------------------|
| D | P Gg/1" (tpi) | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | Z | | | |
| 1/16 | 27 | 60 | 13,6 | 36 | 5,9 | 8 | 3 | GF195306.5782 ● | GF195606.5782 ● | GF195906.5782 ● |
| 1/8 | 27 | 60 | 13,6 | 36 | 7,65 | 8 | 3 | GF195306.5783 ● | GF195606.5783 ● | GF195906.5783 ● |
| 1/4 | 18 | 80 | 20,41 | 45 | 10,15 | 12 | 4 | GF195316.5784 ● | GF195616.5784 ● | GF195916.5784 ● |
| 3/8 | 18 | 80 | 20,4 | 45 | 11,15 | 12 | 4 | GF195316.5785 ● | GF195616.5785 ● | GF195916.5785 ● |
| 1/2 | 14 | 85 | 26,25 | 48 | 14,25 | 16 | 4 | GF195336.5786 ● | GF195636.5786 ● | GF195936.5786 ● |
| 3/4 | 14 | 85 | 26,25 | 48 | 14,25 | 16 | 4 | GF195336.5787 ● | GF195636.5787 ● | GF195936.5787 ● |
| 1" - 2" | 11 1/2 | 95 | 31,96 | 50 | 19,6 | 20 | 5 | GF195356.9684 ● | GF195656.9684 ● | GF195956.9684 ● |

NPTF-Fräser werden mit korrigiertem Profil gefertigt
 NPTF cutters are manufactured with a corrected profile

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
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

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

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys

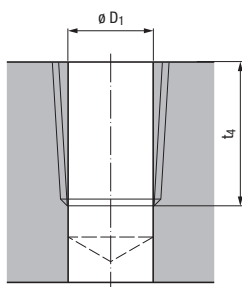


Rc (BSPT)

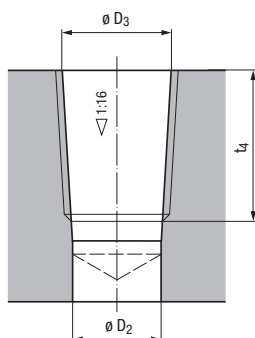
DIN EN 10226-2, ISO 7-1



a) Zylindrisch vorarbeiten
Cylindrical preparation of thread hole



b) Kegelig vorarbeiten
Tapered preparation of thread hole



EMUGE Rc-Gewindebohrer sind für die Lochformen a) und b) geeignet. Die Lochform a) kann angewendet werden, wenn keine Dichtprobleme zu befürchten sind.

EMUGE Rc taps are suited for the hole forms a) and b). Hole type a) can be used when there is no reason to worry about sealing problems.

| Nenngröße Nom. size D | P Gg/1" (tpi) | $\varnothing D_1$ | t_4 |
|-----------------------------|------------------|-------------------|-------|
| Rc 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 Nom. size D | P Gg/1" (tpi) | $\varnothing D_2$ | $\varnothing D_3$ (JS11) | t_4 |
|-----------------------------|------------------|-------------------|-----------------------------|-------|
| Rc 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

RH + LH

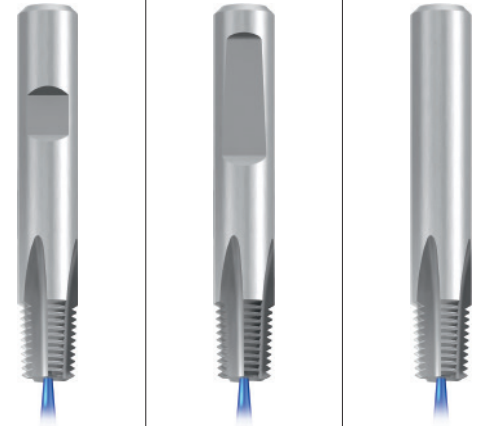
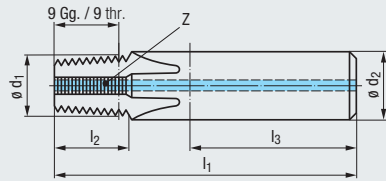
Z3 - Z5



DIN 6535



Für kegeliges Innengewinde
For internal tapered threads



Einsatzgebiete – Material
Applications – material

328

P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6
N 3.1-2 N 4.1-2, 5.2 S 1.1-3

Nenngröße
Nom. size

| | D | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | ø d ₁ | ø d ₂ | Z | GF-KEG-VHM IKZ-HB | GF-KEG-VHM IKZ-HE | GF-KEG-VHM IKZ-HA |
|-----------|----|------------------|----------------|----------------|----------------|------------------|------------------|---|----------------------|----------------------|----------------------|
| Rc 1/16 | 28 | 28 | 55 | 8,56 | 36 | 5,9 | 8 | 3 | GF173101.4114 | GF173401.4114 | GF173701.4114 |
| 1/8 | 28 | 28 | 55 | 8,56 | 36 | 7,65 | 8 | 3 | GF173101.4115 ● | GF173401.4115 ● | GF173701.4115 ● |
| 1/4 | 19 | 75 | 75 | 13,96 | 45 | 10,15 | 12 | 4 | GF173111.4116 ● | GF173411.4116 ● | GF173711.4116 ● |
| 3/8 | 19 | 75 | 75 | 13,96 | 45 | 11,15 | 12 | 4 | GF173111.4117 ● | GF173411.4117 ● | GF173711.4117 ● |
| 1/2 - 3/4 | 14 | 80 | 80 | 19,06 | 48 | 14,25 | 16 | 4 | GF173131.9561 ● | GF173431.9561 ● | GF173731.9561 ● |
| 1" - 2" | 11 | 90 | 90 | 24,26 | 50 | 19,6 | 20 | 5 | GF173151.9562 ● | GF173451.9562 ● | GF173751.9562 ● |

TICN



Einsatzgebiete – Material
Applications – material

328

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2
N 1.1-5.2 S 1.1-2.6 H 1.1-2

Nenngröße
Nom. size

| | D | P Gg/1" (tpi) | l ₁ | l ₂ | l ₃ | ø d ₁ | ø d ₂ | Z | GF-KEG-VHM IKZ-HB TICN | GF-KEG-VHM IKZ-HE TICN | GF-KEG-VHM IKZ-HA TICN |
|-----------|----|------------------|----------------|----------------|----------------|------------------|------------------|---|------------------------------|------------------------------|------------------------------|
| Rc 1/16 | 28 | 28 | 55 | 8,56 | 36 | 5,9 | 8 | 3 | GF173106.4114 | GF173406.4114 | GF173706.4114 |
| 1/8 | 28 | 28 | 55 | 8,56 | 36 | 7,65 | 8 | 3 | GF173106.4115 ● | GF173406.4115 ● | GF173706.4115 ● |
| 1/4 | 19 | 75 | 75 | 13,96 | 45 | 10,15 | 12 | 4 | GF173116.4116 ● | GF173416.4116 ● | GF173716.4116 ● |
| 3/8 | 19 | 75 | 75 | 13,96 | 45 | 11,15 | 12 | 4 | GF173116.4117 ● | GF173416.4117 ● | GF173716.4117 ● |
| 1/2 - 3/4 | 14 | 80 | 80 | 19,06 | 48 | 14,25 | 16 | 4 | GF173136.9561 ● | GF173436.9561 ● | GF173736.9561 ● |
| 1" - 2" | 11 | 90 | 90 | 24,26 | 50 | 19,6 | 20 | 5 | GF173156.9562 ● | GF173456.9562 ● | GF173756.9562 ● |

Rc-Fräser werden mit korrigiertem Profil gefertigt
Rc cutters are manufactured with a corrected profile

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



Schneideisen für kegeliges
Außengewinde siehe Seite 493

Dies for external tapered thread,
see page 493

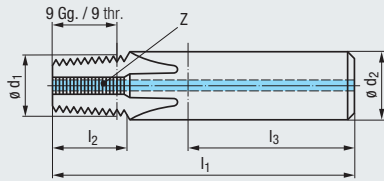
- Product Finder
- v_c / f_z
- M
- MF
- UNC UN, UNS
- UNF UNEF
- G, Rp
- NPT, NPTF Rc W
- BSW, BSF
- Pg
- EG (STI) SELF-LOCK
- Tr
- Zubehör Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys

RC (BSPT)

DIN EN 10226-2, ISO 7-1



Für kegeliges Innengewinde
For internal tapered threads



VHM

RH + LH

Z3 - Z5

DIN 6535

HB
HE
HA

new

new

new

Einsatzgebiete – Material
Applications – material

» 328

P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6
N 3.1-2 N 4.1-2, 5.2 S 1.1-3

Nenngröße
Nom. size

| | D | P Gg/1" (tpi) | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | Z | GF-KEG-VHM IKZN-HB | GF-KEG-VHM IKZN-HE | GF-KEG-VHM IKZN-HA |
|----------------|----|------------------|-------|-------|-------|-------------------|-------------------|---------------|-----------------------|-----------------------|-----------------------|
| Rc 1/16 | 28 | 55 | 8,56 | 36 | 5,9 | 8 | 3 | GF193101.4114 | GF193401.4114 | GF193701.4114 | |
| 1/8 | 28 | 55 | 8,56 | 36 | 7,65 | 8 | 3 | GF193101.4115 | GF193401.4115 | GF193701.4115 | |
| 1/4 | 19 | 75 | 13,96 | 45 | 10,15 | 12 | 4 | GF193111.4116 | GF193411.4116 | GF193711.4116 | |
| 3/8 | 19 | 75 | 13,95 | 45 | 11,15 | 12 | 4 | GF193111.4117 | GF193411.4117 | GF193711.4117 | |
| 1/2 - 3/4 | 14 | 80 | 19,06 | 48 | 14,25 | 16 | 4 | GF193131.9561 | GF193431.9561 | GF193731.9561 | |
| 1" - 2" | 11 | 90 | 24,26 | 50 | 19,6 | 20 | 5 | GF193151.9562 | GF193451.9562 | GF193751.9562 | |

TICN

new

new

new

Einsatzgebiete – Material
Applications – material

» 328

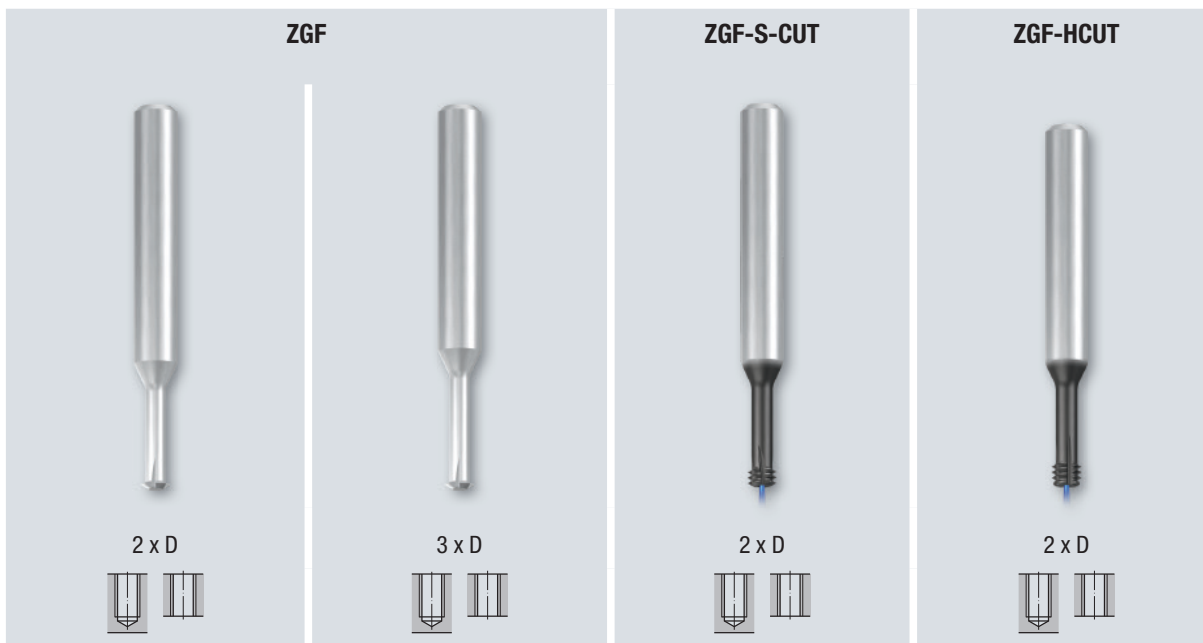
P 1.1-5.1 M 1.1-4.1 K 1.1-4.2
N 1.1-5.2 S 1.1-2.6 H 1.1-2

Nenngröße
Nom. size

| | D | P Gg/1" (tpi) | l_1 | l_2 | l_3 | $\varnothing d_1$ | $\varnothing d_2$ | Z | GF-KEG-VHM IKZN-HB TICN | GF-KEG-VHM IKZN-HE TICN | GF-KEG-VHM IKZN-HA TICN |
|----------------|----|------------------|-------|-------|-------|-------------------|-------------------|---------------|-------------------------------|-------------------------------|-------------------------------|
| Rc 1/16 | 28 | 55 | 8,56 | 36 | 5,9 | 8 | 3 | GF193106.4114 | GF193406.4114 | GF193706.4114 | |
| 1/8 | 28 | 55 | 8,56 | 36 | 7,65 | 8 | 3 | GF193106.4115 | GF193406.4115 | GF193706.4115 | |
| 1/4 | 19 | 75 | 13,96 | 45 | 10,15 | 12 | 4 | GF193116.4116 | GF193416.4116 | GF193716.4116 | |
| 3/8 | 19 | 75 | 13,95 | 45 | 11,15 | 12 | 4 | GF193116.4117 | GF193416.4117 | GF193716.4117 | |
| 1/2 - 3/4 | 14 | 80 | 19,06 | 48 | 14,25 | 16 | 4 | GF193136.9561 | GF193436.9561 | GF193736.9561 | |
| 1" - 2" | 11 | 90 | 24,26 | 50 | 19,6 | 20 | 5 | GF193156.9562 | GF193456.9562 | GF193756.9562 | |

Rc-Fräser werden mit korrigiertem Profil gefertigt
Rc cutters are manufactured with a corrected profile

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



Seite · Page

| | | | | |
|-----|-----|-----|-----|--------------|
| 414 | 415 | 416 | 417 | M, MF |
| 418 | 419 | 420 | | UNC |
| 418 | 419 | 420 | | UNF |

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

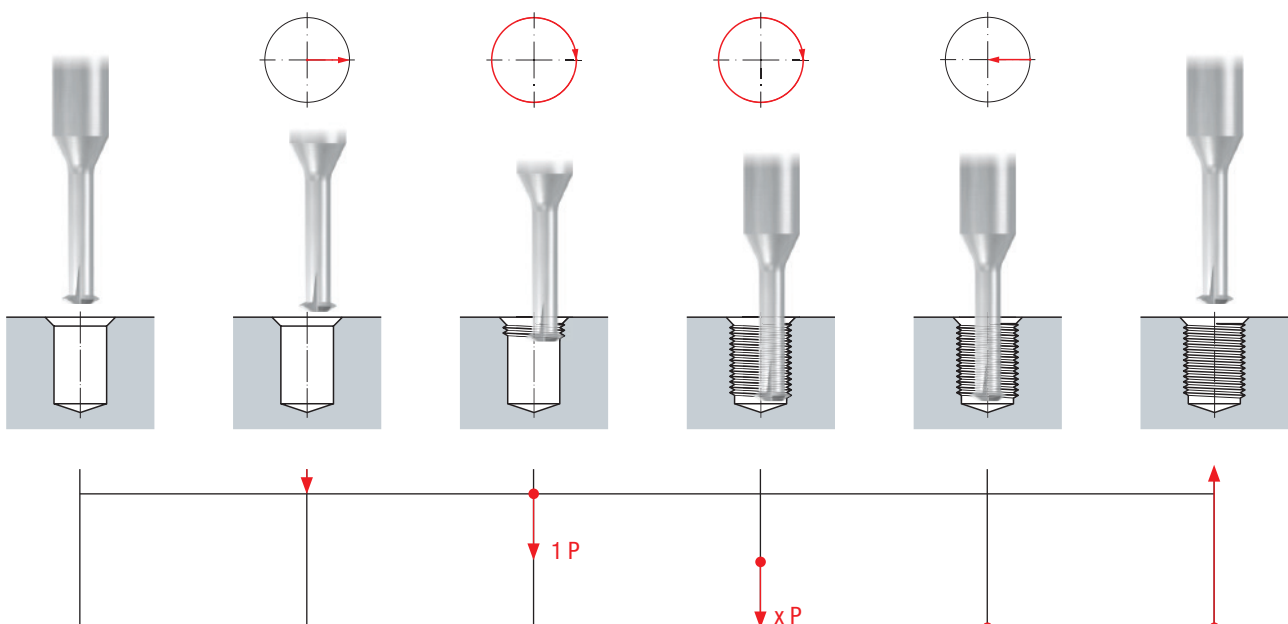
ZIRK-GF

Gigant

MoSys



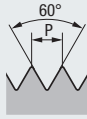
Gewindefräszyklus · Thread milling cycle



- Product Finder
- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys

M, MF

DIN 13



VHM

RH + LH

Z1 - Z5



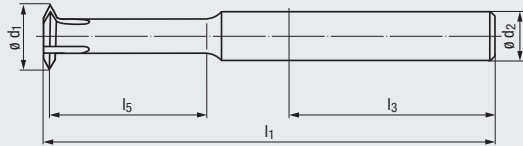
DIN 6535



$\varnothing D$



Für Innengewinde
For internal threads



new



Gewindetiefe
Thread depth

2 x D

Einsatzgebiete – Material
Applications – material



P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6
N 3.1-2 N 4.1-2, 5.2 S 1.1-3

Tech. Info

| $\varnothing D$ | $P_{max.}$ mm | l_1 | l_3 | l_5 | $\varnothing d_1$ | $\varnothing d_2$ | Z | ZGF-VHM 2xD HA | ZGF-VHM 2xD HB |
|-------------------------|------------------|-------|-------|-------|-------------------|-------------------|---|----------------------|----------------------|
| M1 - M1,2 | 0,25 | 39 | 28 | 2,8 | 0,7 | 3 | 1 | GF243701.0010 | ● |
| M1,4 - M1,8 | 0,35 | 39 | 28 | 3,5 | 1,04 | 3 | 2 | GF253701.0014 | ● |
| M2 - M2,3 | 0,45 | 39 | 28 | 4,8 | 1,52 | 3 | 3 | GF253701.0020 | ● |
| M2,5 - M3 | 0,5 | 39 | 28 | 6 | 1,95 | 3 | 3 | GF253701.0025 | ● |
| M3,5 - M4,5 | 0,75 | 42 | 28 | 9 | 2,78 | 4 | 3 | GF253701.0035 | ● |
| M5 - M7 | 1 | 55 | 36 | 14 | 4 | 6 | 4 | GF253701.0050 | ● |
| M8 - M10 ¹⁾ | 1,5 | 62 | 36 | 19,8 | 6,5 | 8 | 5 | GF253701.0080 | ● |
| M12 - M16 ¹⁾ | 2 | 78 | 40 | 31,8 | 9,9 | 10 | 5 | GF253701.0112 | ● |

TICN



new



Einsatzgebiete – Material
Applications – material



P 1.1-5.1 M 1.1-4.1 K 1.1-4.2
N 1.1-5.2 S 1.1-2.6 H 1.1-2

| $\varnothing D$ | $P_{max.}$ mm | l_1 | l_3 | l_5 | $\varnothing d_1$ | $\varnothing d_2$ | Z | ZGF-VHM 2xD HA TICN | ZGF-VHM 2xD HB TICN |
|-------------------------|------------------|-------|-------|-------|-------------------|-------------------|---|------------------------------|------------------------------|
| M1 - M1,2 | 0,25 | 39 | 28 | 2,8 | 0,7 | 3 | 1 | GF243706.0010 | ● |
| M1,4 - M1,8 | 0,35 | 39 | 28 | 3,5 | 1,04 | 3 | 2 | GF253706.0014 | ● |
| M2 - M2,3 | 0,45 | 39 | 28 | 4,8 | 1,52 | 3 | 3 | GF253706.0020 | ● |
| M2,5 - M3 | 0,5 | 39 | 28 | 6 | 1,95 | 3 | 3 | GF253706.0025 | ● |
| M3,5 - M4,5 | 0,75 | 42 | 28 | 9 | 2,78 | 4 | 3 | GF253706.0035 | ● |
| M5 - M7 | 1 | 55 | 36 | 14 | 4 | 6 | 4 | GF253706.0050 | ● |
| M8 - M10 ¹⁾ | 1,5 | 62 | 36 | 19,8 | 6,5 | 8 | 5 | GF253706.0080 | ● |
| M12 - M16 ¹⁾ | 2 | 78 | 40 | 31,8 | 9,9 | 10 | 5 | GF253706.0112 | ● |

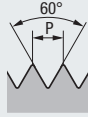
¹⁾ Ausführung mit innerer Kühlschmierstoff-Zufuhr IKZ
Design with internal coolant supply IKZ

Teilweise auch für UN-Gewinde verwendbar
Partly suitable also for UN threads

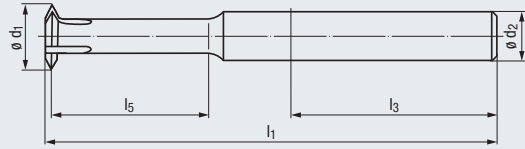
Andere Ausführungen auf Anfrage
Other designs upon request

M, MF

DIN 13



Für Innengewinde
For internal threads



VHM

new

RH + LH

Z1 - Z5



DIN 6535



ø D



new



Gewindetiefe
Thread depth

3 x D

Einsatzgebiete – Material
Applications – material



P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6
N 3.1-2 N 4.1-2, 5.2 S 1.1-3

| ø D | P _{max.} mm | l ₁ | l ₃ | l ₅ | ø d ₁ | ø d ₂ | Z | ZGF-VHM 3xD HA | | ZGF-VHM 3xD HB | |
|-------------------|-------------------------|----------------|----------------|----------------|------------------|------------------|---|----------------------|---|----------------------|---|
| | | | | | | | | ● | ○ | ● | ○ |
| M1 | 0,25 | 39 | 28 | 3,1 | 0,7 | 3 | 1 | GF273701.0010 | ● | | |
| M1,6 | 0,35 | 39 | 28 | 4,95 | 1,18 | 3 | 2 | GF273701.0016 | ● | | |
| M2 | 0,4 | 39 | 28 | 6,2 | 1,52 | 3 | 3 | GF273701.0020 | ● | | |
| M2,5 | 0,45 | 39 | 28 | 7,7 | 1,96 | 3 | 3 | GF273701.0025 | ● | | |
| M3 | 0,5 | 41 | 28 | 9,25 | 2,4 | 3 | 3 | GF273701.0030 | ● | | |
| M4 | 0,7 | 44 | 28 | 12,35 | 3,15 | 4 | 3 | GF273701.0040 | ● | | |
| M5 | 0,8 | 56 | 36 | 15,4 | 4,04 | 6 | 4 | GF273701.0050 | ● | | |
| M6 | 1 | 59 | 36 | 18,5 | 4,8 | 6 | 4 | GF273701.0060 | ● | | |
| M8 ¹⁾ | 1,25 | 65 | 36 | 24,65 | 6,5 | 8 | 5 | GF273701.0080 | ● | | |
| M10 ¹⁾ | 1,5 | 77 | 40 | 30,75 | 8,2 | 10 | 5 | GF273701.0100 | ● | | |
| M12 ¹⁾ | 1,75 | 82 | 40 | 36,85 | 9,9 | 10 | 5 | GF273701.0112 | ● | | |
| M14 ¹⁾ | 2 | 94 | 45 | 43 | 11,6 | 12 | 5 | GF273701.0114 | ● | | |
| M16 ¹⁾ | 2 | 100 | 45 | 49 | 13,6 | 14 | 5 | GF273701.0116 | ● | | |

Einsatzgebiete – Material
Applications – material



P 1.1-5.1 M 1.1-4.1 K 1.1-4.2
N 1.1-5.2 S 1.1-2.6 H 1.1-2

| ø D | P _{max.} mm | l ₁ | l ₃ | l ₅ | ø d ₁ | ø d ₂ | Z | ZGF-VHM 3xD HA TICN | | ZGF-VHM 3xD HB TICN | |
|-------------------|-------------------------|----------------|----------------|----------------|------------------|------------------|---|------------------------------|---|------------------------------|---|
| | | | | | | | | ● | ○ | ● | ○ |
| M1 | 0,25 | 39 | 28 | 3,1 | 0,7 | 3 | 1 | GF273706.0010 | ● | | |
| M1,6 | 0,35 | 39 | 28 | 4,95 | 1,18 | 3 | 2 | GF273706.0016 | ● | | |
| M2 | 0,4 | 39 | 28 | 6,2 | 1,52 | 3 | 3 | GF273706.0020 | ● | | |
| M2,5 | 0,45 | 39 | 28 | 7,7 | 1,96 | 3 | 3 | GF273706.0025 | ● | | |
| M3 | 0,5 | 41 | 28 | 9,25 | 2,4 | 3 | 3 | GF273706.0030 | ● | | |
| M4 | 0,7 | 44 | 28 | 12,35 | 3,15 | 4 | 3 | GF273706.0040 | ● | | |
| M5 | 0,8 | 56 | 36 | 15,4 | 4,04 | 6 | 4 | GF273706.0050 | ● | GF273106.0050 | ● |
| M6 | 1 | 59 | 36 | 18,5 | 4,8 | 6 | 4 | GF273706.0060 | ● | GF273106.0060 | ● |
| M8 ¹⁾ | 1,25 | 65 | 36 | 24,65 | 6,5 | 8 | 5 | GF273706.0080 | ● | GF273106.0080 | ● |
| M10 ¹⁾ | 1,5 | 77 | 40 | 30,75 | 8,2 | 10 | 5 | GF273706.0100 | ● | GF273106.0100 | ● |
| M12 ¹⁾ | 1,75 | 82 | 40 | 36,85 | 9,9 | 10 | 5 | GF273706.0112 | ● | GF273106.0112 | ● |
| M14 ¹⁾ | 2 | 94 | 45 | 43 | 11,6 | 12 | 5 | GF273706.0114 | ● | GF273106.0114 | ● |
| M16 ¹⁾ | 2 | 100 | 45 | 49 | 13,6 | 14 | 5 | GF273706.0116 | ● | GF273106.0116 | ● |

¹⁾ Ausführung mit innerer Kühlschmierstoff-Zufuhr IKZ
Design with internal coolant supply IKZ

Teilweise auch für UN-Gewinde verwendbar
Partly suitable also for UN threads

Andere Ausführungen auf Anfrage
Other 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

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

Gigant

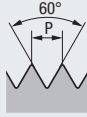
MoSys



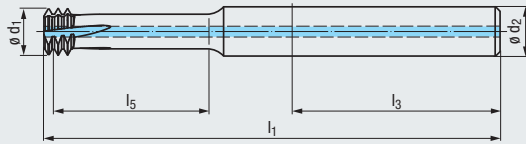
- Product Finder
- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys

M, MF

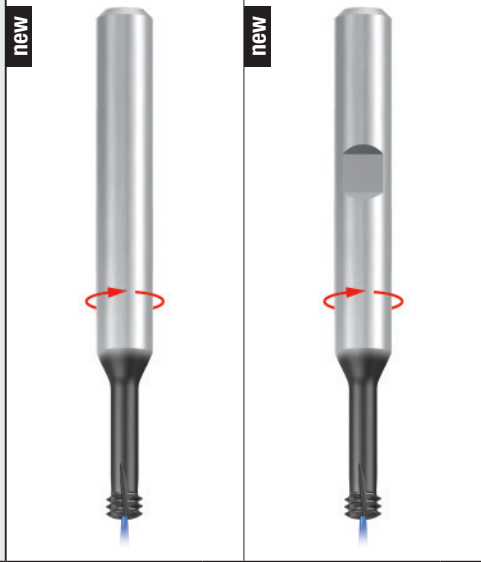
DIN 13



Für Innengewinde
For internal threads



| | |
|----------|-----------|
| VHM | TIALN T46 |
| RH + LH | LH-rot. |
| L10 | Z4 - Z5 |
| DIN 6535 | ø D |
| HA | HB |



Gewindetiefe
Thread depth

2 x D

Einsatzgebiete – Material
Applications – material



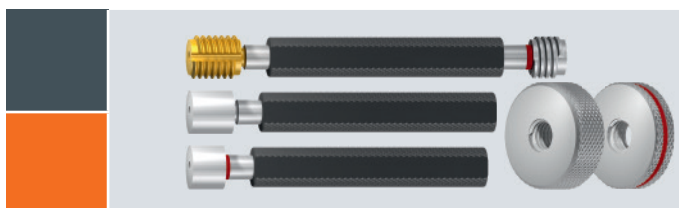
| | | |
|-----------|-----------|-----------|
| P 1.1-5.1 | M 1.1-4.1 | K 1.1-4.2 |
| N 1.1-5.2 | S 1.1-2.6 | H 1.1-2 |

| ø D | P _{max.} mm | l ₁ | l ₃ | l ₅ | ø d ₁ | ø d ₂ | Z |
|--------------------------|-------------------------|----------------|----------------|----------------|------------------|------------------|---|
| M 3 ²⁾ | 0,5 | 39 | 28 | 6,2 | 2,4 | 3 | 4 |
| M 4 ²⁾ | 0,7 | 42 | 28 | 8,3 | 3,15 | 4 | 4 |
| M 5 | 0,8 | 52 | 36 | 10,3 | 4,04 | 6 | 4 |
| M 6 | 1 | 55 | 36 | 12,43 | 4,8 | 6 | 4 |
| M 8 | 1,25 | 60 | 36 | 16,7 | 6,5 | 8 | 4 |
| M10 | 1,5 | 70 | 40 | 20,7 | 8,2 | 10 | 5 |

| ZGF-S-CUT-VHM 2xD IKZ-HA TIALN-T46 | ZGF-S-CUT-VHM 2xD IKZ-HB TIALN-T46 |
|---|---|
| GF26A729.0030 | ● |
| GF26A729.0040 | ● |
| GF26A729.0050 | ● |
| GF26A729.0060 | ● |
| GF26A729.0080 | ● |
| GF26A729.0100 | ● |

²⁾ Ausführung ohne innerer Kühlschmierstoff-Zufuhr IKZ
Design without internal coolant supply IKZ

Andere Ausführungen auf Anfrage
Other designs upon request

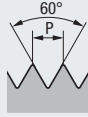


Gewindelehren
siehe Seite 581 - 654

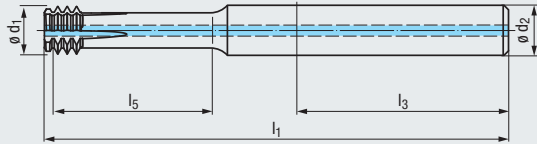
Thread gauges,
see page 581 - 654

M, MF

DIN 13



Für Innengewinde
For internal threads



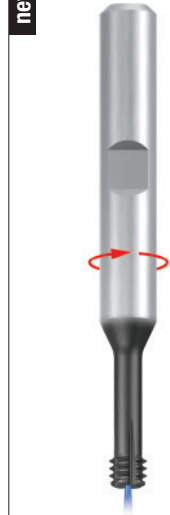
VHM **TIALN T46** **new**

RH + LH **LH-rot.**

Z4 - Z5

DIN 6535

HA HB



Gewindetiefe
Thread depth

2 x D

Einsatzgebiete – Material
Applications – material

H 1.1-5



| ø D | P _{max.} mm | l ₁ | l ₃ | l ₅ | ø d ₁ | ø d ₂ | Z | ZGF-HCUT-VHM 2xD IKZ-HA TIALN-T46 | | ZGF-HCUT-VHM 2xD IKZ-HB TIALN-T46 | |
|--------------------------|-------------------------|----------------|----------------|----------------|------------------|------------------|---|--|---|--|---|
| | | | | | | | | ● | ● | ● | ● |
| M 3 ²⁾ | 0,5 | 51 | 36 | 6,25 | 2,4 | 6 | 4 | ● | ● | ● | ● |
| M 4 ²⁾ | 0,7 | 51 | 36 | 8,35 | 3,15 | 6 | 4 | ● | ● | ● | ● |
| M 5 | 0,8 | 52 | 36 | 10,4 | 4,04 | 6 | 4 | ● | ● | ● | ● |
| M 6 | 1 | 55 | 36 | 12,3 | 4,8 | 6 | 4 | ● | ● | ● | ● |
| M 8 | 1,25 | 60 | 36 | 16,6 | 6,5 | 8 | 4 | ● | ● | ● | ● |
| M10 | 1,5 | 70 | 40 | 20,75 | 8,2 | 10 | 5 | ● | ● | ● | ● |
| M12 | 1,75 | 74 | 40 | 24,85 | 9,9 | 10 | 5 | ● | ● | ● | ● |
| M14 | 2 | 85 | 45 | 29 | 11,6 | 12 | 5 | ● | ● | ● | ● |
| M16 | 2 | 90 | 45 | 33 | 13,6 | 14 | 5 | ● | ● | ● | ● |

²⁾ Ausführung ohne innerer Kühlschmierstoff-Zufuhr IKZ
Design without internal coolant supply IKZ

Andere Ausführungen auf Anfrage
Other 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

EG (STI) SELF-LOCK

Tr

Zubehör Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

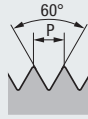
Gigant

MoSys

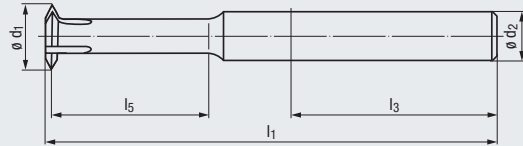
- Product Finder
- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys

UNC, UNF

ASME B1.1



Für Innengewinde
For internal threads



VHM

RH + LH

Z3

DIN 6535

HA

$\varnothing D$

new



Gewindetiefe
Thread depth

2 x D

Einsatzgebiete – Material
Applications – material



- P 1.1-5.1
- K 1.1-4.2
- N 1.1-5, 2.1-6
- N 3.1-2
- N 4.1-2, 5.2
- S 1.1-3

| $\varnothing D$ | $P_{max.}$ mm | l_1 | l_3 | l_5 | $\varnothing d_1$ | $\varnothing d_2$ | Z | ZGF-VHM 2xD HA |
|-----------------|------------------|-------|-------|-------|-------------------|-------------------|---|----------------------|
| Nr. 4 - 40 | 0,635 | 39 | 28 | 6,35 | 2,06 | 3 | 3 | GF253701.5003 |
| Nr. 6 - 32 | 0,794 | 39 | 28 | 7 | 2,55 | 3 | 3 | GF253701.5005 |
| Nr. 8 - 32 | 0,794 | 42 | 28 | 8,35 | 3,21 | 4 | 3 | GF253701.5006 |

Einsatzgebiete – Material
Applications – material



TICN

new



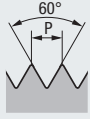
| $\varnothing D$ | $P_{max.}$ mm | l_1 | l_3 | l_5 | $\varnothing d_1$ | $\varnothing d_2$ | Z | ZGF-VHM 2xD HA TICN |
|-----------------|------------------|-------|-------|-------|-------------------|-------------------|---|------------------------------|
| Nr. 4 - 40 | 0,635 | 39 | 28 | 6,35 | 2,06 | 3 | 3 | GF253706.5003 |
| Nr. 6 - 32 | 0,794 | 39 | 28 | 7 | 2,55 | 3 | 3 | GF253706.5005 |
| Nr. 8 - 32 | 0,794 | 42 | 28 | 8,35 | 3,21 | 4 | 3 | GF253706.5006 |

Auch für UNF-Gewinde verwendbar
Suitable also for UNF threads

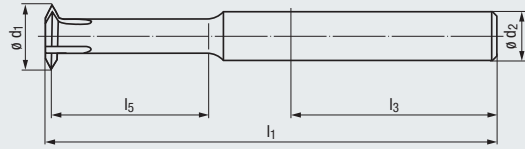
Andere Ausführungen auf Anfrage
Other designs upon request

UNC

ASME B1.1



Für Innengewinde
For internal threads



VHM **TICN** **new**

RH + LH

Z3 - Z5 **DIN 6535**

HA HB

ø D



Gewindetiefe
Thread depth

3 x D

Einsatzgebiete – Material
Applications – material

P 1.1-5.1 **M 1.1-4.1** **K 1.1-4.2**
N 1.1-5.2 **S 1.1-2.6** **H 1.1-2**

| ø D | P _{max.} mm | l ₁ | l ₃ | l ₅ | ø d ₁ | ø d ₂ | Z | ZGF-VHM 3xD HA TICN | ZGF-VHM 3xD HB TICN |
|-------------------------------|-------------------------|----------------|----------------|----------------|------------------|------------------|---|------------------------------|------------------------------|
| Nr. 2 - 56 | 0,454 | 39 | 28 | 6,75 | 1,7 | 3 | 3 | GF273706.5001 | ● |
| Nr. 4 - 40 | 0,635 | 40 | 28 | 8,85 | 2,15 | 3 | 3 | GF273706.5003 | ● |
| Nr. 6 - 32 | 0,794 | 42 | 28 | 10,9 | 2,7 | 3 | 3 | GF273706.5005 | ● |
| Nr. 10 - 24 | 1,058 | 46 | 28 | 15 | 3,7 | 4 | 3 | GF273706.5007 | ● |
| 1/4 - 20 | 1,27 | 59 | 36 | 20,15 | 4,95 | 6 | 4 | GF273706.5009 | ● GF273106.5009 ● |
| 5/16 - 18¹⁾ | 1,411 | 65 | 36 | 24,5 | 6,3 | 8 | 4 | GF273706.5010 | ● GF273106.5010 ● |
| 3/8 - 16¹⁾ | 1,588 | 68 | 36 | 29,38 | 7,7 | 8 | 5 | GF273706.5011 | ● GF273106.5011 ● |

UNF

ASME B1.1



new



new



Einsatzgebiete – Material
Applications – material

P 1.1-5.1 **M 1.1-4.1** **K 1.1-4.2**
N 1.1-5.2 **S 1.1-2.6** **H 1.1-2**

| ø D | P _{max.} mm | l ₁ | l ₃ | l ₅ | ø d ₁ | ø d ₂ | Z | ZGF-VHM 3xD HA TICN | ZGF-VHM 3xD HB TICN |
|-------------------------------|-------------------------|----------------|----------------|----------------|------------------|------------------|---|------------------------------|------------------------------|
| Nr. 10 - 32 | 0,794 | 46 | 28 | 14,85 | 3,9 | 4 | 4 | GF273706.5041 | ● |
| 1/4 - 28 | 0,907 | 59 | 36 | 19,5 | 5,25 | 6 | 4 | GF273706.5043 | ● GF273106.5043 ● |
| 5/16 - 24¹⁾ | 1,058 | 65 | 36 | 24,3 | 6,6 | 8 | 5 | GF273706.5044 | ● GF273106.5044 ● |
| 7/16 - 20¹⁾ | 1,27 | 77 | 40 | 33,95 | 9,55 | 10 | 5 | GF273706.5046 | ● GF273106.5046 ● |

¹⁾ Ausführung mit innerer Kühlschmierstoff-Zufuhr IKZ
Design with internal coolant supply IKZ

Teilweise auch für Metrische Gewinde verwendbar
Partly suitable also for Metric threads

Andere Ausführungen auf Anfrage
Other 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

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys

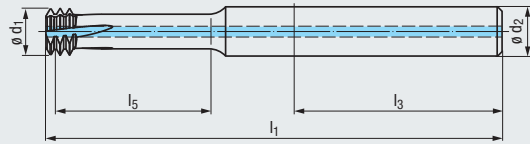
- Product Finder
- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys

UNC

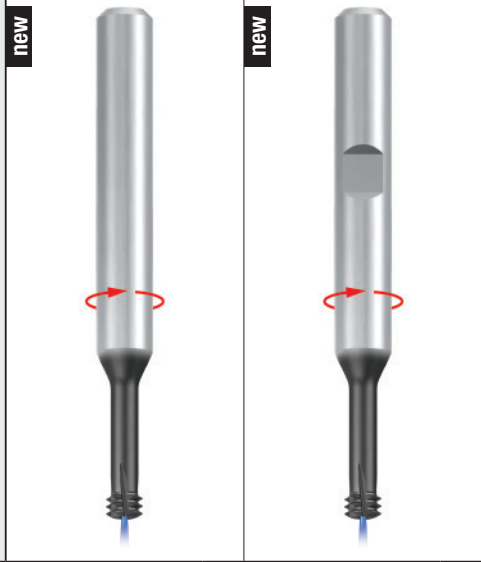
ASME B1.1



Für Innengewinde
For internal threads



- VHM
- TIALN T46
- RH + LH
- LH-rot.
- L10
- Z3 - Z6
- DIN 6535
- HA
- HB



Gewindetiefe
Thread depth

2 x D

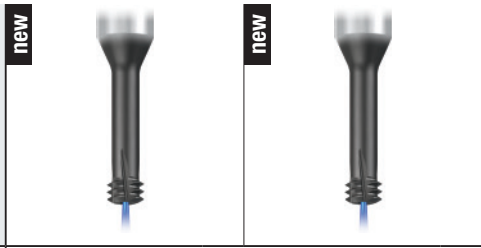
Einsatzgebiete – Material
Applications – material

P 1.1-5.1
M 1.1-4.1
K 1.1-4.2
N 1.1-5.2
S 1.1-2.6
H 1.1-2

| $\emptyset D$ | $P_{max.}$ mm | l_1 | l_3 | l_5 | $\emptyset d_1$ | $\emptyset d_2$ | Z | ZGF-S-CUT-VHM 2xD IKZ-HA TIALN-T46 | ZGF-S-CUT-VHM 2xD IKZ-HB TIALN-T46 |
|----------------------------------|------------------|-------|-------|-------|-----------------|-----------------|---|---|---|
| Nr. 4 - 40 ²⁾ | 0,635 | 39 | 28 | 5,95 | 2,15 | 3 | 3 | GF26A729.5003 | ● |
| Nr. 6 - 32 ²⁾ | 0,794 | 39 | 28 | 7,3 | 2,7 | 3 | 3 | GF26A729.5005 | ● |
| Nr. 10 - 24 ²⁾ | 1,058 | 42 | 28 | 10,1 | 3,7 | 4 | 3 | GF26A729.5007 | ● |
| 1/4 - 20 | 1,27 | 55 | 36 | 13,2 | 4,95 | 6 | 3 | GF26A729.5009 | ● GF26A129.5009 ● |
| 5/16 - 18 | 1,411 | 58 | 36 | 16,45 | 6,3 | 8 | 4 | GF26A729.5010 | ● GF26A129.5010 ● |
| 3/8 - 16 | 1,588 | 62 | 36 | 16,65 | 7,7 | 8 | 4 | GF26A729.5011 | ● GF26A129.5011 ● |

UNF

ASME B1.1



Einsatzgebiete – Material
Applications – material

P 1.1-5.1
M 1.1-4.1
K 1.1-4.2
N 1.1-5.2
S 1.1-2.6
H 1.1-2

| $\emptyset D$ | $P_{max.}$ mm | l_1 | l_3 | l_5 | $\emptyset d_1$ | $\emptyset d_2$ | Z | ZGF-S-CUT-VHM 2xD IKZ-HA TIALN-T46 | ZGF-S-CUT-VHM 2xD IKZ-HB TIALN-T46 |
|----------------------------------|------------------|-------|-------|-------|-----------------|-----------------|---|---|---|
| Nr. 10 - 32 ²⁾ | 0,794 | 42 | 28 | 9,95 | 3,9 | 4 | 4 | GF26A729.5041 | ● |
| 1/4 - 28 | 0,907 | 55 | 36 | 13,1 | 5,25 | 6 | 5 | GF26A729.5043 | ● GF26A129.5043 ● |
| 5/16 - 24 | 1,058 | 58 | 36 | 16,3 | 6,6 | 8 | 5 | GF26A729.5044 | ● GF26A129.5044 ● |
| 7/16 - 20 | 1,27 | 74 | 40 | 22,75 | 9,55 | 10 | 6 | GF26A729.5046 | ● GF26A129.5046 ● |

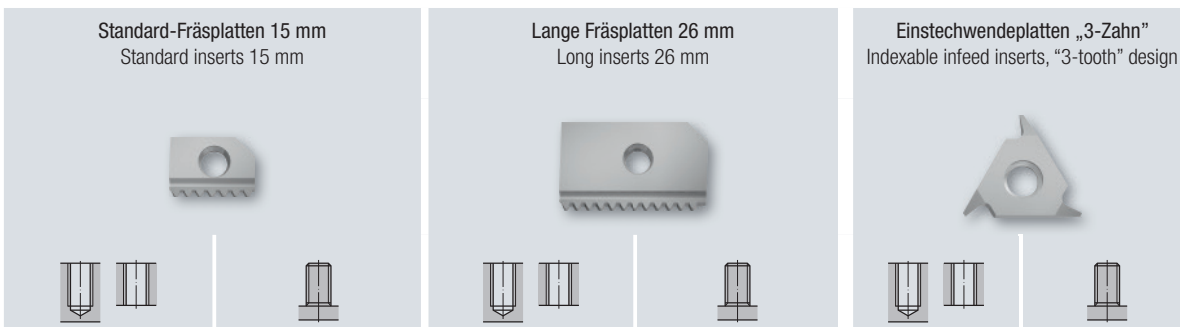
²⁾ Ausführung ohne innerer Kühlschmierstoff-Zufuhr IKZ
Design without internal coolant supply IKZ

Andere Ausführungen auf Anfrage
Other designs upon request



Seite · Page

| | | | |
|-----|-----|-----|-----|
| 422 | 422 | 424 | 425 |
|-----|-----|-----|-----|



Seite · Page

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----------------------------|
| 423 | | 424 | | 425 | | M, MF |
| 423 | | | | | | UN |
| 423 | 423 | 424 | 424 | 425 | 425 | G (BSP), BSW, BSF, W |

¹⁾ Gewindefräszyklus „3-Zahn“ entspricht der Ausführung Gigant, siehe Seite 426
Thread milling cycle corresponding to that of the Gigant design, see page 426

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

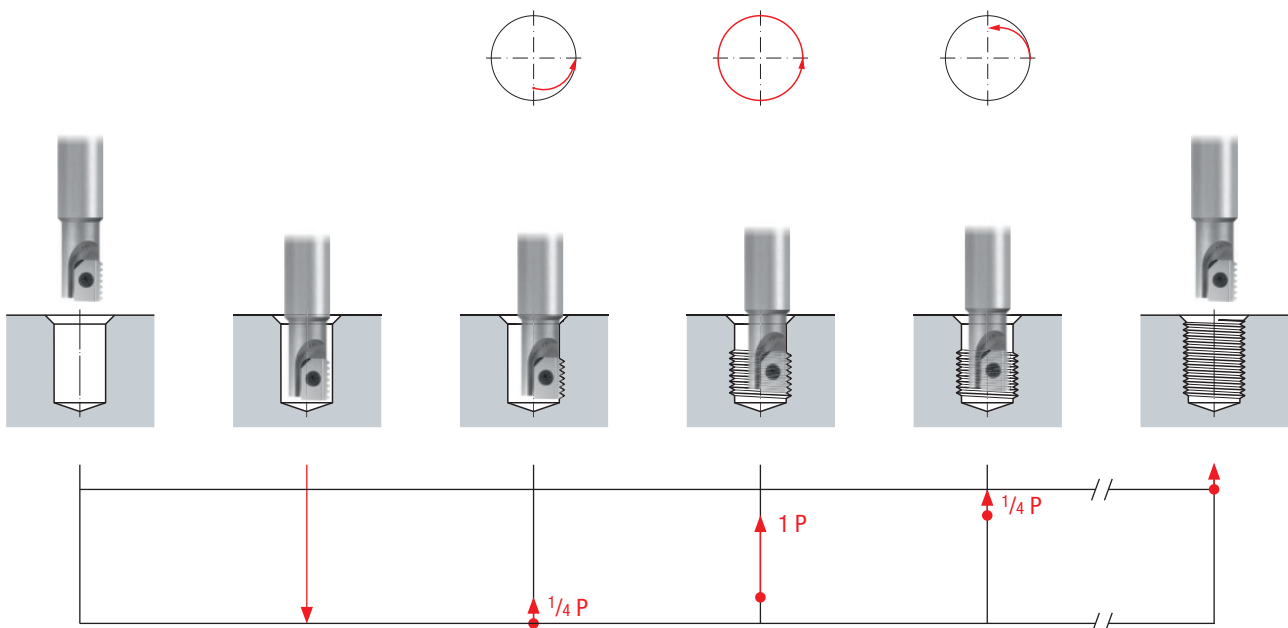
ZGF

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

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

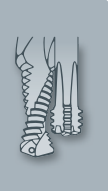
GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



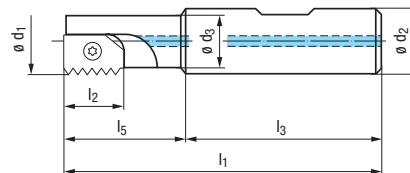
Ausführung für eine Standard-Fräsplatte 15 mm Design for 1 standard insert 15 mm

DIN 1835



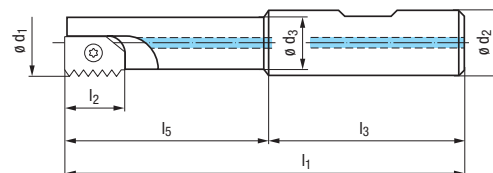
Kurze Ausführung Short design

| P mm | l_1 | l_2 | l_3 | l_5 | $\varnothing d_1$ | $\varnothing d_2$ h6 | $\varnothing d_3$ | ZIRK-GF 15 mm-Z1 IKZN | |
|-----------|-------|-------|-------|-------|-------------------|-------------------------|-------------------|-----------------------------|---|
| 0,5 - 2,5 | 78 | 15 | 48 | 30 | 16 | 16 | 13 | GZ301110 | ● |



Lange Ausführung Long design

| P mm | l_1 | l_2 | l_3 | l_5 | $\varnothing d_1$ | $\varnothing d_2$ h6 | $\varnothing d_3$ | ZIRK-GF 15 mm-Z1 IKZN | |
|-------------------------|-------|-------|-------|-------|-------------------|-------------------------|-------------------|-----------------------------|---|
| 0,5 - 2,5 | 98 | 15 | 48 | 50 | 16 | 16 | 13 | GZ301310 ²⁾ | ● |
| 0,5 - 2,5 | 110 | 15 | 50 | 60 | 20 | 20 | 17 | GZ301320 | ● |
| 3,0 - 3,5 ¹⁾ | 110 | 15 | 50 | 60 | 22 | 20 | 17 | GZ301340 | ● |



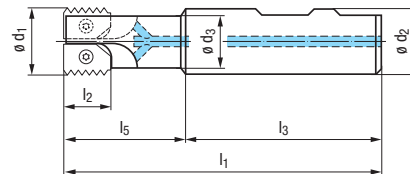
Ausführung für zwei Standard-Fräsplatten 15 mm Design for 2 standard inserts 15 mm

DIN 1835



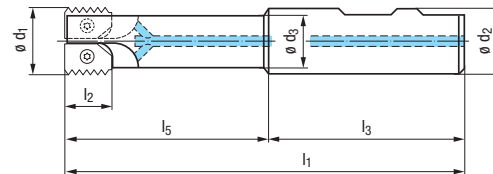
Kurze Ausführung Short design

| P mm | l_1 | l_2 | l_3 | l_5 | $\varnothing d_1$ | $\varnothing d_2$ h6 | $\varnothing d_3$ | ZIRK-GF 15 mm-Z2 IKZN | |
|-------------------------|-------|-------|-------|-------|-------------------|-------------------------|-------------------|-----------------------------|---|
| 0,5 - 2,5 | 106 | 15 | 56 | 50 | 25 | 25 | 21 | GZ301130 | ● |
| 3,0 - 3,5 ¹⁾ | 106 | 15 | 56 | 50 | 27 | 25 | 21 | GZ301140 | ● |



Lange Ausführung Long design

| P mm | l_1 | l_2 | l_3 | l_5 | $\varnothing d_1$ | $\varnothing d_2$ h6 | $\varnothing d_3$ | ZIRK-GF 15 mm-Z2 IKZN | |
|-----------|-------|-------|-------|-------|-------------------|-------------------------|-------------------|-----------------------------|---|
| 0,5 - 2,5 | 150 | 15 | 56 | 94 | 25 | 25 | 21 | GZ301330 ²⁾ | ● |

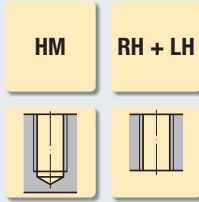
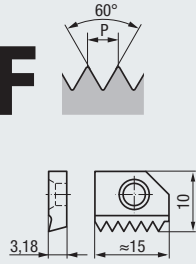


¹⁾ Verstärkte Ausführung
Reinforced design

²⁾ Aus Schwermetall, schwingungsgedämpft
Of vibration-absorbing heavy metal

M, MF

DIN 13



Für Innengewinde
For internal threads

Standard-Fräsplatten 15 mm
Standard inserts 15 mm



Beschichtung · Coating

TIALN-T4

Einsatzgebiete – Material
Applications – material

» 328

| | | | | | |
|------------------|-----------------------|----------------|------------------|------------------|------------------|
| P 1.1-5.1 | K 1.1-4.2 | N 1.1-5 | P 1.1-5.1 | M 1.1-4.1 | K 1.1-4.2 |
| N 2.1-6 | N 3.1-4.2, 5.2 | S 1.1-3 | N 1.1-5.2 | S 1.1-2.6 | H 1.1-2 |

P
mm

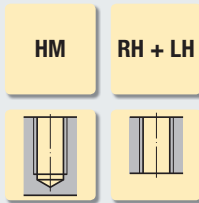
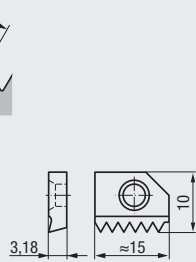
HM-FP-Z1
15 mm

HM-FP-Z1
15 mm
TIALN-T4

| P mm | GF603111.9506 | | GF603117.9506 | |
|-------------------|---------------|--|---------------|--|
| 0,5 | ● | | ● | |
| 0,75 | ● | | ● | |
| 1 | ● | | ● | |
| 1,25 | ● | | ● | |
| 1,5 | ● | | ● | |
| 1,75 | ● | | ● | |
| 2 | ● | | ● | |
| 2,5 | ● | | ● | |
| 3 ¹⁾ | ● | | ● | |
| 3,5 ¹⁾ | ● | | ● | |

UN

ANSI B1.1



Für Innengewinde
For internal threads

Standard-Fräsplatten 15 mm
Standard inserts 15 mm



Beschichtung · Coating

TIALN-T4

Einsatzgebiete – Material
Applications – material

» 328

| | | | | | |
|------------------|-----------------------|----------------|------------------|------------------|------------------|
| P 1.1-5.1 | K 1.1-4.2 | N 1.1-5 | P 1.1-5.1 | M 1.1-4.1 | K 1.1-4.2 |
| N 2.1-6 | N 3.1-4.2, 5.2 | S 1.1-3 | N 1.1-5.2 | S 1.1-2.6 | H 1.1-2 |

P
Gg/1" (tpi)

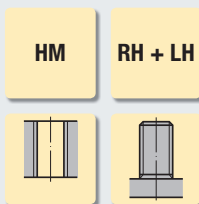
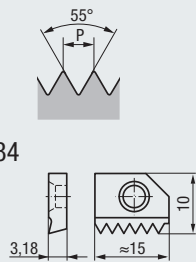
HM-FP-Z1
15 mm

HM-FP-Z1
15 mm
TIALN-T4

| P Gg/1" (tpi) | GF603111.9580 | | GF603117.9580 | |
|---------------|---------------|--|---------------|--|
| 20 | ● | | ● | |
| 16 | ● | | ● | |
| 14 | ● | | ● | |
| 12 | ● | | ● | |

G (BSP), BSW, BSF, W

DIN EN ISO 228, BS 84



Für Innen- und Außengewinde
For internal and external threads

Standard-Fräsplatten 15 mm
Standard inserts 15 mm



Beschichtung · Coating

TIALN-T4

Einsatzgebiete – Material
Applications – material

» 328

| | | | | | |
|------------------|-----------------------|----------------|------------------|------------------|------------------|
| P 1.1-5.1 | K 1.1-4.2 | N 1.1-5 | P 1.1-5.1 | M 1.1-4.1 | K 1.1-4.2 |
| N 2.1-6 | N 3.1-4.2, 5.2 | S 1.1-3 | N 1.1-5.2 | S 1.1-2.6 | H 1.1-2 |

P
Gg/1" (tpi)

HM-FP-Z1
15 mm

HM-FP-Z1
15 mm
TIALN-T4

| P Gg/1" (tpi) | GF603111.9548 | | GF603117.9548 | |
|---------------|---------------|--|---------------|--|
| 14 | ● | | ● | |
| 11 | ● | | ● | |

Ersatzschraube M4 x 7; Torx T15 } **GZ309010**
Spare screw M4 x 7; Torx T15

Schraubendreher Torx T15 } **GZ309020**
Screw driver Torx T15

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

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

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

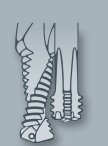
GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



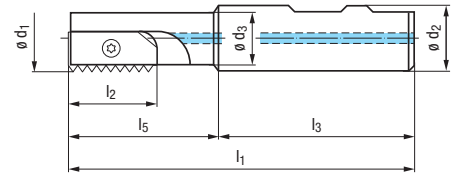
Ausführung für eine lange Fräsplatte 26 mm Design for 1 long insert 26 mm

DIN 1835



Kurze Ausführung
Short design

| P mm | l_1 | l_2 | l_3 | l_5 | $\varnothing d_1$ | $\varnothing d_2$ h6 | $\varnothing d_3$ | ZIRK-GF 26 mm-Z1 IKZN |
|---------|-------|-------|-------|-------|-------------------|-------------------------|-------------------|-----------------------------|
| 1 - 4 | 107 | 26 | 56 | 48 | 25 | 25 | 20 | GZ303010 ● |



M, MF
DIN 13

HM **RH + LH**

Für Innengewinde
For internal threads

Lange Fräsplatten 26 mm Long inserts 26 mm



Beschichtung · Coating

TIALN-T4

Einsatzgebiete – Material
Applications – material



| | | | | | |
|------------------|-----------------------|----------------|------------------|------------------|------------------|
| P 1.1-5.1 | K 1.1-4.2 | N 1.1-5 | P 1.1-5.1 | M 1.1-4.1 | K 1.1-4.2 |
| N 2.1-6 | N 3.1-4.2, 5.2 | S 1.1-3 | N 1.1-5.2 | S 1.1-2.6 | H 1.1-2 |

| P mm | HM-FP-Z1 26 mm | HM-FP-Z1 26 mm TIALN-T4 |
|---------|-------------------|-------------------------------|
| 1 | GF603142.9512 ● | GF603147.9514 ● |
| 1,5 | GF603142.9514 ● | GF603147.9516 ● |
| 2 | GF603142.9516 ● | GF603147.9517 ● |
| 2,5 | GF603142.9517 ● | GF603147.9518 ● |
| 3 | GF603142.9518 ● | GF603147.9519 ● |
| 3,5 | GF603142.9519 ● | GF603147.9520 ● |
| 4 | GF603142.9520 ● | |

**G (BSP),
BSW, BSF, W**
DIN EN ISO 228, BS 84

HM **RH + LH**

Für Innen- und Außengewinde
For internal and external threads

Lange Fräsplatten 26 mm Long inserts 26 mm



Beschichtung · Coating

TIALN-T4

Einsatzgebiete – Material
Applications – material



| | | | | | |
|------------------|-----------------------|----------------|------------------|------------------|------------------|
| P 1.1-5.1 | K 1.1-4.2 | N 1.1-5 | P 1.1-5.1 | M 1.1-4.1 | K 1.1-4.2 |
| N 2.1-6 | N 3.1-4.2, 5.2 | S 1.1-3 | N 1.1-5.2 | S 1.1-2.6 | H 1.1-2 |

| P Gg/1" (tpi) | HM-FP-Z1 26 mm | HM-FP-Z1 26 mm TIALN-T4 |
|------------------|-------------------|-------------------------------|
| 14 | GF603142.9548 ● | GF603147.9548 ● |
| 11 | GF603142.9550 ● | GF603147.9550 ● |

Ersatzschraube M4 x 13; Torx T15
Spare screw M4 x 13; Torx T15 } **GZ309210**

Schraubendreher Torx T15
Screw driver Torx T15 } **GZ309020**

Für Einstechwendeplatten „3-Zahn“
For indexable infeed inserts, “3-tooth” design

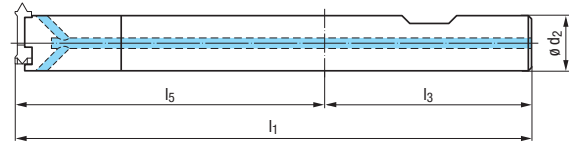
DIN 6535

HB 



Hartmetall-Ausführung
Carbide design

| Plattengröße Insert size | l_1 | l_3 | l_5 | $\varnothing d_2$ h6 | ZIRK-GF Gr. 02 IKZN |
|-----------------------------|-------|-------|-------|-------------------------|---------------------------|
| 02 | 112 | 45 | 67 | 12 | GZ311330 ● |



M, MF
DIN 13

HM **RH + LH**

Für Innengewinde
For internal threads

Einstechwendeplatten „3-Zahn“
Indexable infeed inserts, “3-tooth” design



Beschichtung · Coating

TIALN-T4

Einsatzgebiete – Material
Applications – material  328

P 1.1-5.1 **K 1.1-4.2** **N 1.1-5** **P 1.1-5.1** **M 1.1-4.1** **K 1.1-4.2**
N 2.1-6 **N 3.1-4.2, 5.2** **S 1.1-3** **N 1.1-5.2** **S 1.1-2.6** **H 1.1-2**

Plattengröße
Insert size

HM-EP-Z3
Gr. 02

HM-EP-Z3
Gr. 02
TIALN-T4

| P | $\varnothing D$ |
|--------------|-----------------|
| 02 1 - 3,5 | 17,5 |
| 02 3 | 17,5 |
| 02 2,5 (M20) | 16 |

| | |
|------------------------|------------------------|
| GF613121.9512 ● | GF613127.9512 ● |
| GF613121.9518 ● | GF613127.9518 ● |
| GF613121.0120 ● | GF613127.0120 ● |

**G (BSP),
BSW, BSF, W**
DIN EN ISO 228, BS 84

HM **RH + LH**

Für Innen- und Außengewinde
For internal and external threads

Einstechwendeplatten „3-Zahn“
Indexable infeed inserts, “3-tooth” design



Beschichtung · Coating

TIALN-T4

Einsatzgebiete – Material
Applications – material  328

P 1.1-5.1 **K 1.1-4.2** **N 1.1-5** **P 1.1-5.1** **M 1.1-4.1** **K 1.1-4.2**
N 2.1-6 **N 3.1-4.2, 5.2** **S 1.1-3** **N 1.1-5.2** **S 1.1-2.6** **H 1.1-2**


Plattengröße
Insert size

HM-EP-Z3
Gr. 02

HM-EP-Z3
Gr. 02
TIALN-T4

| P | $\varnothing D$ |
|-------|-----------------|
| 02 14 | 17,5 |
| 02 11 | 17,5 |

| | |
|------------------------|------------------------|
| GF613121.9548 ● | GF613127.9548 ● |
| GF613121.9550 ● | GF613127.9550 ● |

 Ersatzschraube M4 x 11; Torx T15 } **GZ319020**
Spare screw M4 x 11; Torx T15

 Schraubendreher Torx T15 } **GZ319060**
Screw driver Torx T15

- Product Finder
- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- 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

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

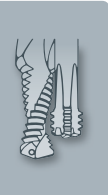
GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



Werkzeugbeschreibung:

Zirkulargewindefräser mit auswechselbaren Wendeschneidplatten zur Herstellung von großen Innen- und Außengewinden (ab M20). Die Gewindefräsplatten können meist universell (steigungsübergreifend) eingesetzt werden. Voraussetzung ist ein vorgearbeitetes Kernloch und ggf. eine Ansenkung.

Einsatzgebiete:

Niedrig- und hochlegierte Stähle bis 1400 N/mm², nichtrostende Stahlwerkstoffe, Gusswerkstoffe, Aluminium-Legierungen, Kupfer-Legierungen, Magnesium-Legierungen, Kunststoffe sowie Titan-Legierungen.

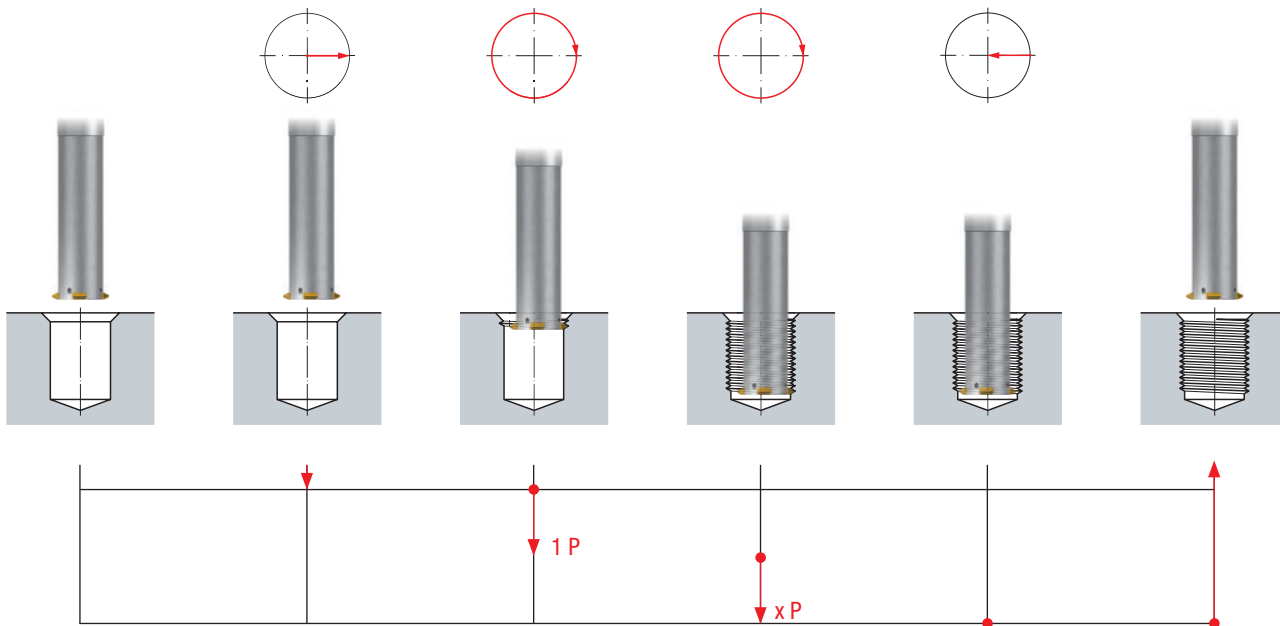
Tool description:

Circular thread milling bodies with exchangeable inserts for the production of large internal and external threads (from M20). The inserts can mostly be used universally (they are not limited to a single pitch). A ready prepared thread hole, countersunk if necessary, is needed.

Application range:

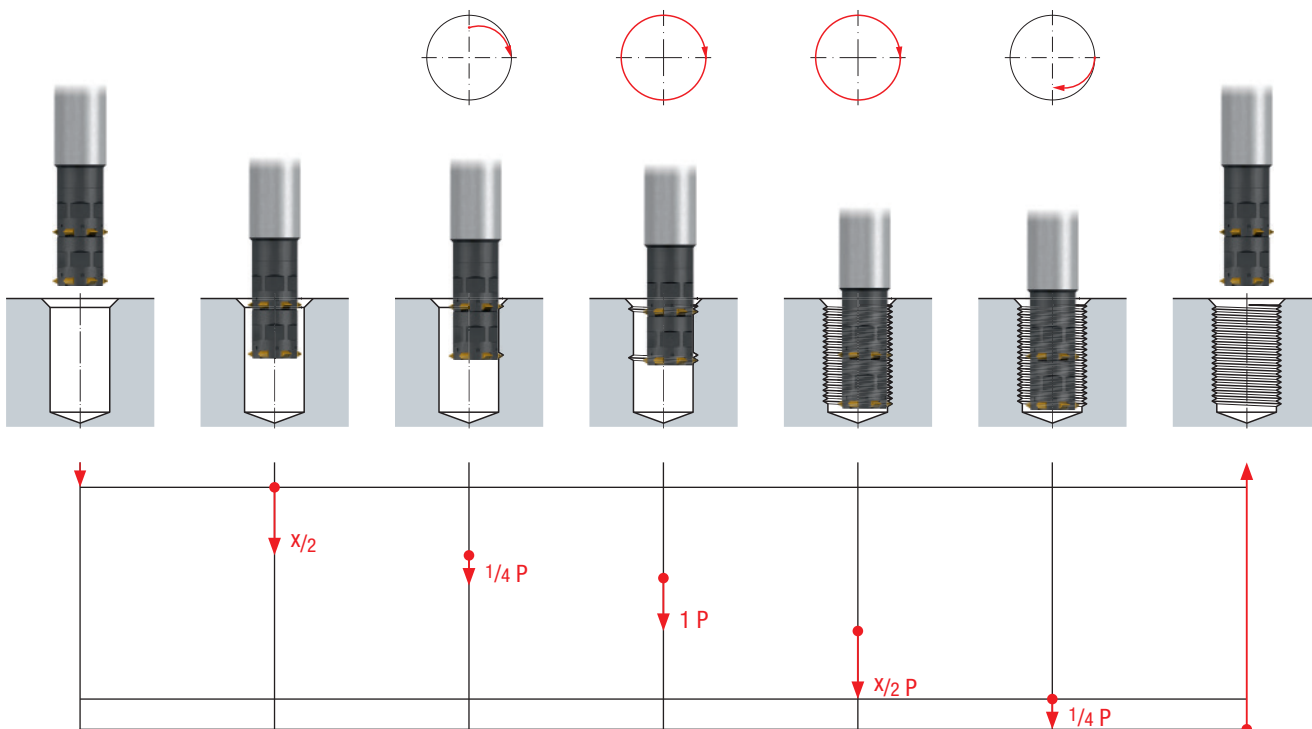
Low- and high-alloyed steels up to 1400 N/mm², stainless steel materials, cast materials, aluminium alloys, copper alloys, magnesium alloys, synthetics as well as titanium alloys.

Gewindefräszyklus · Thread milling cycle



Gewindefräszyklus · Thread milling cycle

Gigant modular sprinter



| | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| | | | | | |
| Größe Size 10 | Größe Size 11 | Größe Size 12 | Größe Size 13 | Größe Size 14 | Größe Size 15 |

Seite · Page

| | | | | | |
|-----|-----|-----|-----|-----|-----|
| 430 | 432 | 434 | 436 | 438 | 440 |
|-----|-----|-----|-----|-----|-----|

| | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| | | | | | |
| Größe Size 10 | Größe Size 11 | Größe Size 12 | Größe Size 13 | Größe Size 14 | Größe Size 15 |

Seite · Page

| | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 431 | 431 | 433 | 433 | 435 | 435 | 437 | 437 | 439 | 439 | 441 | |
| 431 | | 433 | | 435 | | 437 | | 439 | | 441 | |
| 431 | 431 | 433 | 433 | 435 | 435 | 437 | 437 | 439 | 439 | | |
| | | 433 | | 435 | | | | | | | |
| 431 | 431 | 433 | 433 | 435 | 435 | 437 | 437 | 439 | 439 | 441 | 441 |

M, MF

UN

G (BSP), BSW, BSF, W

NPT

Tr

Seite · Page

| | | |
|--|--|-----------|
| | Fräsringe zum Entfernen des unvollständigen Ganges Milling rings for removal of the incomplete thread | 442 |
| | Aufnahmen für Gigant Holders for Gigant | 444 - 445 |

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

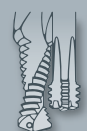
GF-KEG

ZGF

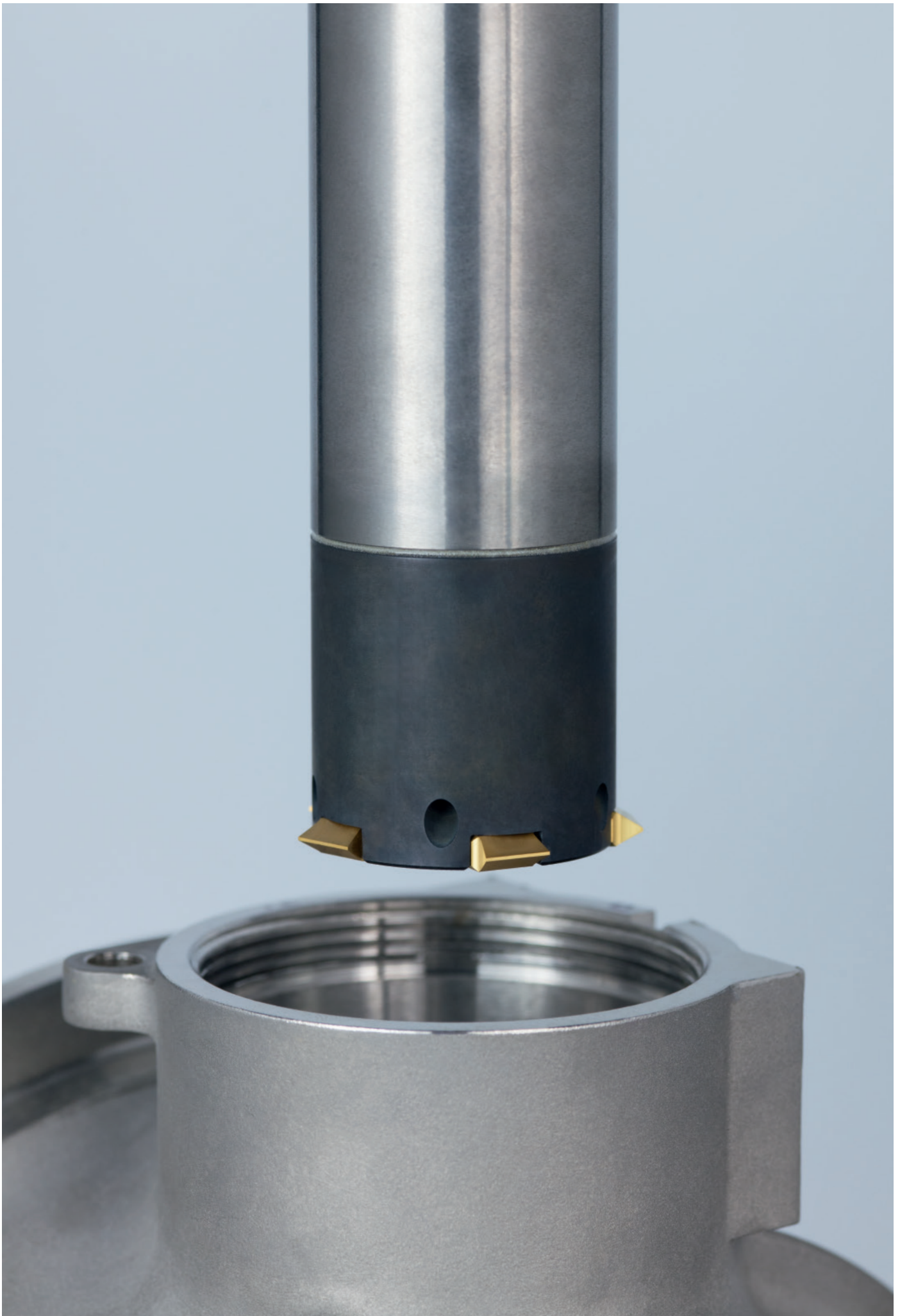
ZIRK-GF

Gigant

MoSys



- Product Finder
- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant**
- MoSys
- 



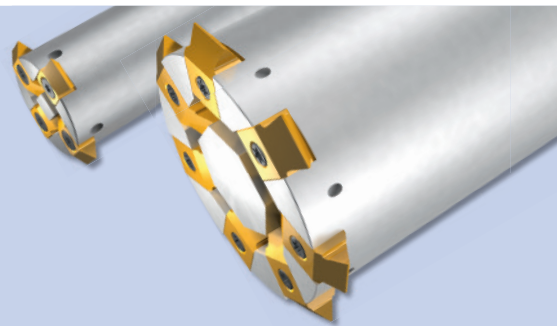
Gigant-ic

Vorteile:

- Flexibilität

Advantages:

- Flexibility



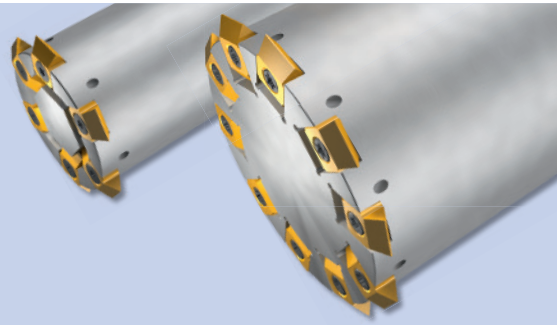
Gigant sprinter

Vorteile:

- Schnelligkeit

Advantages:

- Fast operation



Gigant soft run

Hartmetall-Träger

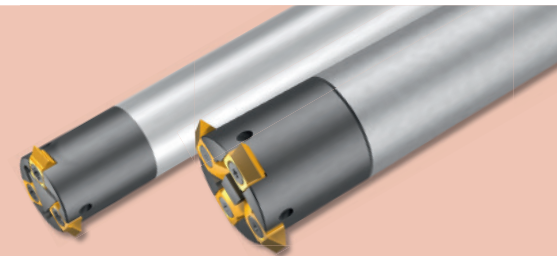
Carbide tool body

Vorteile:

- Laufruhe
- Stabilität

Advantages:

- Smooth operation
- Stability



Gigant soft run sprinter

Hartmetall-Träger

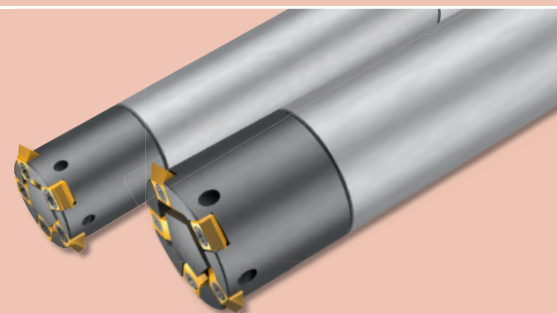
Carbide tool body

Vorteile:

- Schnelligkeit
- Laufruhe
- Stabilität

Advantages:

- Fast operation
- Smooth operation
- Stability



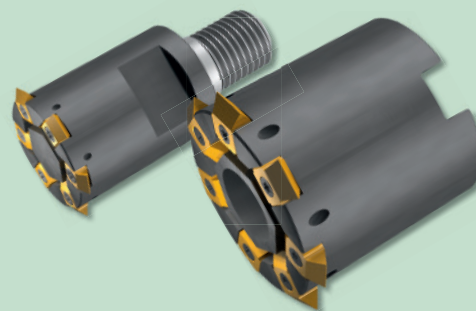
Gigant modular

Vorteile:

- Modularer Aufbau

Advantages:

- Modular construction



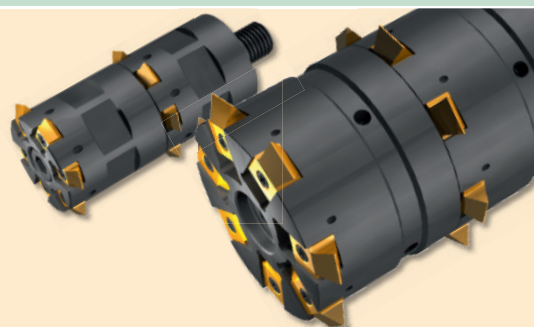
Gigant modular sprinter

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

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

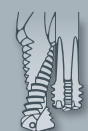
GF-KEG

ZGF

ZIRK-GF

Gigant

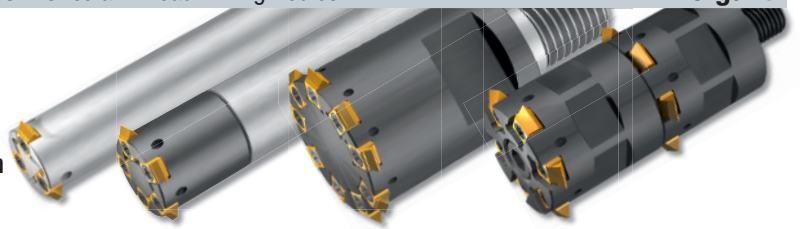
MoSys



Product Finder

v_c / f_z

10



M

Für große Abmessungen ab Gewindedurchmesser 20 mm
For large thread sizes, from thread diameter 20 mm

MF

UNC
UN, UNS

UNF
UNEF

G Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



Gigant-ic

Gigant sprinter

DIN 1835 B



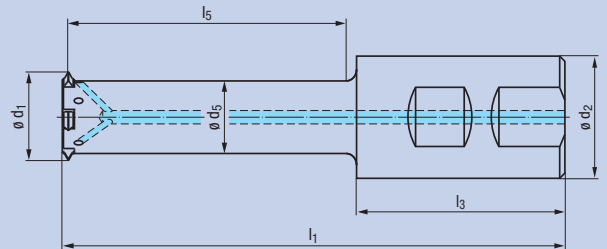
Z2 - Z3



Z5



| $\varnothing D_{min.}$ mm | l_1 | l_3 | l_5 | $\varnothing d_1$ | $\varnothing d_2$ h6 | $\varnothing d_5$ | Z (Inserts) | Gigant-ic | Gigant sprinter |
|------------------------------|-------|-------|-------|-------------------|-------------------------|-------------------|----------------|-------------|-----------------|
| | | | | | | | | Gr. 10-1KZN | Gr. 10-1KZN |
| 20 | 87 | 45 | 40 | 17 | 12 | 12 | 2 | GZ341000 ● | |
| 24 | 100 | 48 | 50 | 20,5 | 16 | 15,9 | 3 | GZ341040 ● | |
| 24 | 115 | 48 | 65 | 20,5 | 16 | 15,9 | 3 | GZ341050 ● | |
| 30 | 145 | 60 | 80 | 23,85 | 32 | 19 | 5 | | GZ341200 ● |



Gigant soft run

Gigant soft run sprinter

DIN 6535 HA



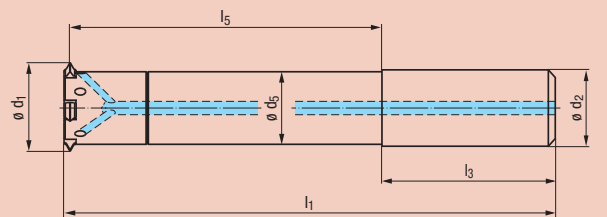
Z2 - Z3



Z5 - Z8



| $\varnothing D_{min.}$ mm | l_1 | l_3 | l_5 | $\varnothing d_1$ | $\varnothing d_2$ h6 | $\varnothing d_5$ | Z (Inserts) | Gigant soft run | Gigant soft run sprinter |
|------------------------------|-------|-------|-------|-------------------|-------------------------|-------------------|----------------|-----------------|--------------------------|
| | | | | | | | | Gr. 10-1KZN | Gr. 10-1KZN |
| 20 | 97 | 45 | 50 | 17 | 12 | 12 | 2 | GZ34A010 ● | |
| 24 | 115 | 48 | 65 | 20,5 | 16 | 15,9 | 3 | GZ34A000 ● | |
| 30 | 142 | 50 | 90 | 23,85 | 20 | 19 | 5 | | GZ34C000 ● |
| 36 | 153 | 56 | 95 | 30 | 25 | 25 | 7 | | GZ34C010 ● |
| 40 | 178 | 60 | 115 | 32,85 | 32 | 27,7 | 8 | | GZ34C020 ● |



Mit variabler Länge auf Anfrage
With variable length upon request

Gigant modular

Nur einzeln einsetzbar
Can only be used individually

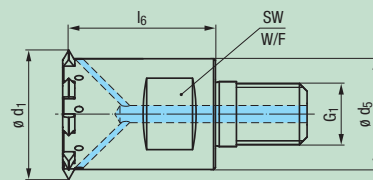
M



Z9



| $\varnothing D_{min.}$ mm | l_6 | $\varnothing d_1$ | $\varnothing d_5$ | G_1 | SW (W/F) | Z (Inserts) | Gigant modular |
|------------------------------|-------|-------------------|-------------------|-------|-------------|----------------|----------------|
| 40 | 38 | 34,25 | 28,8 | M16 | 22 | 9 | GZ351000 ● |



Gigant modular sprinter

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

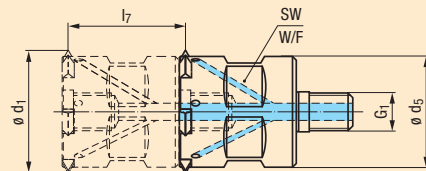
MF



Z6



| new $\varnothing D_{min.}$ mm | l_7 | $\varnothing d_1$ | $\varnothing d_5$ | G_1 | SW (W/F) | Z (Inserts) | Gigant modular Sprinter |
|---|-------|-------------------|-------------------|--------|-------------|----------------|-------------------------|
| 32 | 24 | 27 | 22,15 | M8 x 1 | 19 | 6 | GZ353000 ● |



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

Fräsringe zum Entfernen des unvollständigen Ganges siehe Seite 442
Milling rings for removal of the incomplete thread, see page 442

Aufnahmen und Verlängerungen für Gigant modular und Gigant modular sprinter siehe Seite 444 - 445
Holders and extensions for Gigant modular and Gigant modular sprinter, see pages 444 - 445

10

2-Zahnwendeplatten für Steigungsbereich bis 3 mm (8 Gg/1")
 2-tooth indexable inserts for a pitch range up to 3 mm (8 tpi)

| | | | |
|---|--------------------------|---|--|
| | HM RH + LH | | |
| Beschichtung · Coating | | TIN | TIALN-T4 |
| Einsatzgebiete – Material Range of application – material 328 | | P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-4.4 S 1.1-3 | |
| P mm | P Gg/1" (tpi) | b | h |
| | | HM-WP-Z2 Gr. 10 TIN | HM-WP-Z2 Gr. 10 TIALN-T4 |

| | | | |
|---------------------------------------|-------------------|--|--------|
| M, MF, UN DIN 13, ANSI B1.1 | | | |
| 1 - 2,5 1,5 - 3 | 24 - 10 16 - 8 | 5 5 | 7 7 |
| | | GF643005.9512 GF643005.9514 | ● ● |
| | | GF643007.9512 GF643007.9514 | ● ● |

| | | | |
|------------------------|--|--------|--|
| M, MF DIN 13 | | | new |
| 1,5 2 | | 5 5 | 7 7 |
| | | | GF641007.9514 GF641007.9516 |
| | | | ● ● |

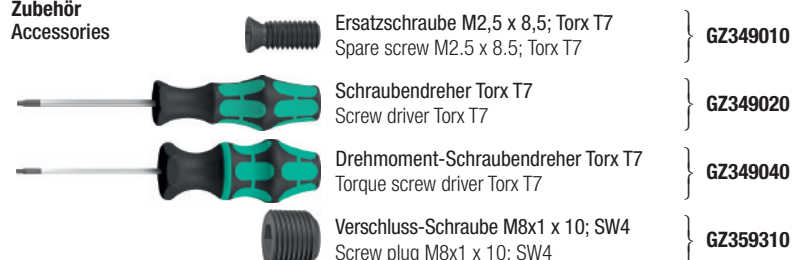
| | | | | |
|--|-------------|---|---|--|
| G (BSP), BSW, BSF, W DIN EN ISO 228, BS 84 | | | | |
| (1,814) | 14 (9 - 28) | 5 | 7 | |
| | | | | GF643005.9548 GF643007.9548 |
| | | | | ● ● |

| | | | | | |
|----------------------|--|--------|--------|--|--|
| Tr DIN 103 | | | | | new |
| 1,5 2 | | 5 5 | 7 7 | $\varnothing D_{min.} = d_1 + 11$ $\varnothing D_{min.} = d_1 + 14$ | |
| | | | | | GF643007.9597 GF643007.9599 |
| | | | | | ● ● |

Andere Ausführungen auf Anfrage, z.B.
 Other designs upon request, e.g.



Zubehör
 Accessories



Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

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

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

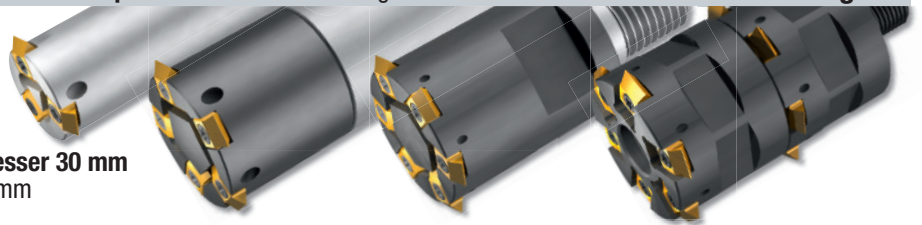
Gigant

MoSys



11

Für große Abmessungen ab Gewindedurchmesser 30 mm
For large thread sizes, from thread diameter 30 mm



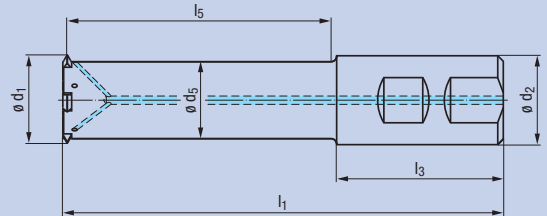
Gigant-ic

Gigant sprinter

DIN 1835 B



| $\emptyset D_{min.}$ mm | l_1 | l_3 | l_5 | $\emptyset d_1$ | $\emptyset d_2$ h6 | $\emptyset d_5$ | Z (Inserts) | Gigant-ic | | Gigant sprinter | |
|----------------------------|-------|-------|-------|-----------------|-----------------------|-----------------|----------------|-------------|---|-----------------|---|
| | | | | | | | | Gr. 11-IKZN | | Gr. 11-IKZN | |
| 30 | 122 | 60 | 60 | 23,85 | 32 | 19 | 3 | GZ341121 | ● | | |
| 30 | 138 | 56 | 80 | 23,85 | 25 | 19 | 3 | GZ341021 | ● | | |
| 30 | 142 | 60 | 80 | 23,85 | 32 | 19 | 3 | GZ341001 | ● | | |
| 30 | 152 | 60 | 90 | 23,85 | 32 | 19 | 3 | GZ341101 | ● | | |
| 34 | 153 | 60 | 90 | 28 | 32 | 23 | 5 | | | GZ341211 | ● |
| 36 | 157 | 60 | 95 | 29,5 | 32 | 24,5 | 3 | GZ341131 | ● | | |
| 40 | 159 | 60 | 95 | 32,85 | 32 | 27,7 | 5 | | | GZ341201 | ● |
| 40 | 124 | 60 | 60 | 34 | 32 | 28,8 | 6 | | | GZ341221 | ● |
| 48 | 144 | 60 | 80 | 40,25 | 32 | 35 | 8 | | | GZ341231 | ● |



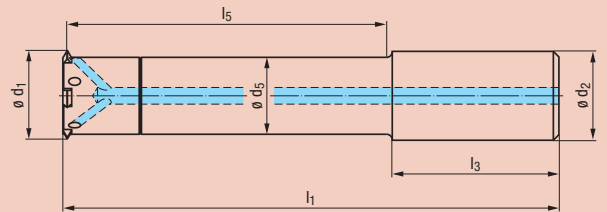
Gigant soft run

Gigant soft run sprinter

DIN 6535 HA



| $\emptyset D_{min.}$ mm | l_1 | l_3 | l_5 | $\emptyset d_1$ | $\emptyset d_2$ h6 | $\emptyset d_5$ | Z (Inserts) | Gigant soft run | | Gigant soft run sprinter | |
|----------------------------|-------|-------|-------|-----------------|-----------------------|-----------------|----------------|-----------------|---|--------------------------|---|
| | | | | | | | | Gr. 11-IKZN | | Gr. 11-IKZN | |
| 30 | 142 | 50 | 90 | 23,85 | 20 | 19 | 3 | GZ34A001 | ● | | |
| 40 | 179 | 60 | 115 | 32,85 | 32 | 27,7 | 5 | | | GZ34C001 | ● |



Mit variabler Länge auf Anfrage
With variable length upon request

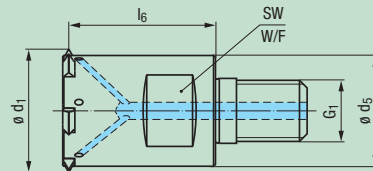
Gigant modular

M



| $\emptyset D_{min.}$ mm | l_6 | $\emptyset d_1$ | $\emptyset d_5$ | G_1 | SW (W/F) | Z (Inserts) | Gigant modular | |
|----------------------------|-------|-----------------|-----------------|-------|-------------|----------------|----------------|---|
| | | | | | | | Gr. 11-IKZN | |
| 42 | 38 | 34,25 | 28,8 | M16 | 22 | 6 | GZ351001 | ● |

Nur einzeln einsetzbar
Can only be used individually



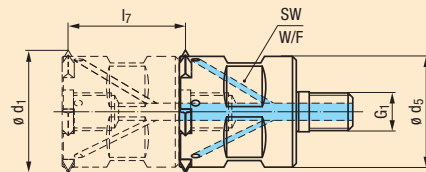
Gigant modular sprinter

MF



| new | $\emptyset D_{min.}$ mm | l_7 | $\emptyset d_1$ | $\emptyset d_5$ | G_1 | SW (W/F) | Z (Inserts) | Gigant modular sprinter | | |
|------------|----------------------------|-------|-----------------|-----------------|---------|-------------|----------------|-------------------------|-------------|--|
| | | | | | | | | | Gr. 11-IKZN | |
| | 42 | 24 | 34,25 | 29,15 | M10 x 1 | 25 | 6 | GZ353001 | ● | |

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

Fräsringe zum Entfernen des unvollständigen Ganges siehe Seite 442
Milling rings for removal of the incomplete thread, see page 442

Aufnahmen und Verlängerungen für Gigant modular und Gigant modular sprinter siehe Seite 444 - 445
Holders and extensions for Gigant modular and Gigant modular sprinter, see pages 444 - 445

11

4-Zahnwendeplatten für Steigungsbereich bis 4 mm (6 Gg/1") 4-tooth indexable inserts for a pitch range up to 4 mm (6 tpi)

| | | | |
|---|---|--|--------------------------------|
| | <div style="display: flex; gap: 10px;"> <div style="border: 1px solid black; padding: 2px;">HM</div> <div style="border: 1px solid black; padding: 2px;">RH + LH</div> </div> | | |
| | Beschichtung · Coating | | TIN |
| Einsatzgebiete – Material Range of application – material » 328 | | <div style="display: flex; justify-content: space-between;"> <div style="text-align: center;"> P 1.1-5.1 N 1.1-4.4 </div> <div style="text-align: center;"> M 1.1-4.1 S 1.1-3 </div> <div style="text-align: center;"> K 1.1-4.2 </div> </div> | |
| P mm | P Gg/1" (tpi) | b | h |
| | | HM-WP-Z4 Gr. 11 TIN | HM-WP-Z4 Gr. 11 TIALN-T4 |

| | | | | | | | |
|---|---------|------|------|---------------|---|---------------|---|
| <h3>M, MF, UN</h3> <p>DIN 13, ANSI B1.1</p> | | | | | | | |
| 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 | ● |

| | | | | | | | |
|------------------------------|--|------|------|--|--|---------------|---|
| <h3>M, MF</h3> <p>DIN 13</p> | | | | | | new | |
| 2,5 | | 6,35 | 9,52 | | | GF641107.9517 | ● |
| 3 | | 6,35 | 9,52 | | | GF641107.9518 | ● |

| | | | | | | | |
|--|-------------|------|------|---------------|---|---------------|---|
| <h3>G (BSP), BSW, BSF, W</h3> <p>DIN EN ISO 228, BS 84</p> | | | | | | | |
| (2,309) | 11 (9 - 28) | 6,35 | 9,52 | GF643105.9550 | ● | GF643107.9550 | ● |

| | | | | | | | |
|---------------------------------------|--------|------|------|--|--|---------------|---|
| <h3>NPT</h3> <p>ANSI/ASME B1.20.1</p> | | | | | | new | |
| (2,209) | 11 1/2 | 6,35 | 9,52 | | | GF643107.9679 | ● |

| | | | | | | | |
|----------------------------|--|------|------|-----------------------------------|--|---------------|---|
| <h3>Tr</h3> <p>DIN 103</p> | | | | | | new | |
| 3 | | 6,35 | 9,52 | $\varnothing D_{min.} = d_1 + 23$ | | GF643107.9601 | ● |
| 4 | | 6,35 | 9,52 | $\varnothing D_{min.} = d_1 + 32$ | | GF643107.9603 | ● |

Andere Ausführungen auf Anfrage, z.B.
Other designs upon request, e.g.



Einstechplatten in verschiedenen Ausführungen
Infeed inserts in various designs

Zubehör
Accessories

- 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

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

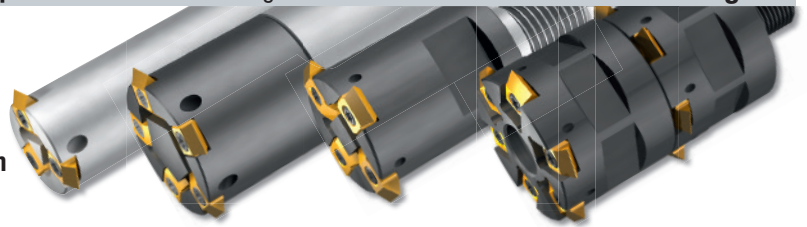
GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



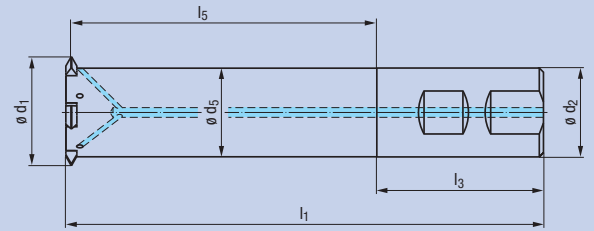
12

Für große Abmessungen ab Gewindedurchmesser 40 mm
For large thread sizes, from thread diameter 40 mm

Gigant-ic

Gigant sprinter

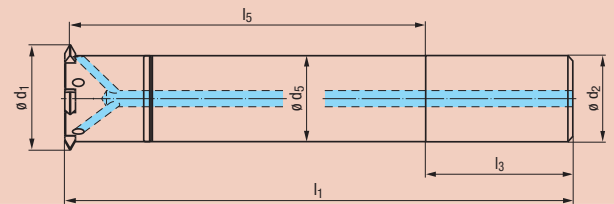
| DIN 1835 B | Z3 | | Z5 | | | | | | |
|---------------------------|-------|-------|-------|-------------------|----------------------|-------------------|-------------|-----------------------|-----------------------------|
| | | | | | | | | | |
| | | | | | | | | | |
| $\varnothing D_{min.}$ mm | l_1 | l_3 | l_5 | $\varnothing d_1$ | $\varnothing d_2$ h6 | $\varnothing d_5$ | Z (Inserts) | Gigant-ic Gr. 12-IKZN | Gigant sprinter Gr. 12-IKZN |
| 40 | 153 | 56 | 95 | 32,85 | 25 | 24,5 | 3 | GZ341032 ● | |
| 40 | 158 | 60 | 95 | 32,85 | 32 | 24,5 | 3 | GZ341012 ● | |
| 40 | 178 | 60 | 115 | 32,85 | 32 | 24,5 | 3 | GZ341112 ● | |
| 48 | 172 | 60 | 110 | 40,25 | 32 | 31,9 | 5 | | GZ341202 ● |



Gigant soft run

Gigant soft run sprinter

| DIN 6535 HA | Z3 | | Z5 | | | | | | |
|---------------------------|-------|-------|-------|-------------------|----------------------|-------------------|-------------|-----------------------------|--------------------------------------|
| | | | | | | | | | |
| | | | | | | | | | |
| $\varnothing D_{min.}$ mm | l_1 | l_3 | l_5 | $\varnothing d_1$ | $\varnothing d_2$ h6 | $\varnothing d_5$ | Z (Inserts) | Gigant soft run Gr. 12-IKZN | Gigant soft run sprinter Gr. 12-IKZN |
| 40 | 173 | 56 | 115 | 32,85 | 25 | 24,5 | 3 | GZ34A002 ● | |
| 48 | 207 | 60 | 145 | 40,25 | 32 | 31,9 | 5 | | GZ34C002 ● |

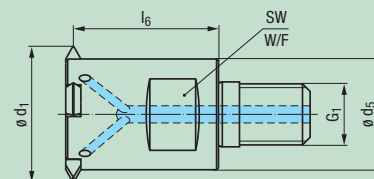


Mit variabler Länge auf Anfrage
With variable length upon request

Gigant modular

| M | Z4 | | | | | | |
|---------------------------|-------|-------------------|-------------------|-------|----------|-------------|----------------------------|
| | | | | | | | |
| | | | | | | | |
| $\varnothing D_{min.}$ mm | l_6 | $\varnothing d_1$ | $\varnothing d_5$ | G_1 | SW (W/F) | Z (Inserts) | Gigant modular Gr. 12-IKZN |
| 46 | 38 | 37,5 | 28,8 | M16 | 22 | 4 | GZ351002 ● |

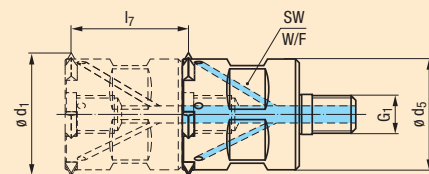
Nur einzeln einsetzbar
Can only be used individually



Gigant modular sprinter

| MF | Z6 | | | | | | |
|---------------------------|-------|-------------------|-------------------|---------|----------|-------------|-------------------------------------|
| | | | | | | | |
| | | | | | | | |
| $\varnothing D_{min.}$ mm | l_7 | $\varnothing d_1$ | $\varnothing d_5$ | G_1 | SW (W/F) | Z (Inserts) | Gigant modular sprinter Gr. 12-IKZN |
| 58 | 36 | 46 | 37,65 | M12 x 1 | 32 | 6 | GZ353002 ● |

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

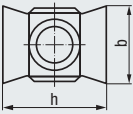


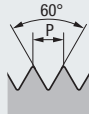
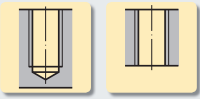


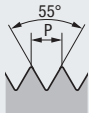
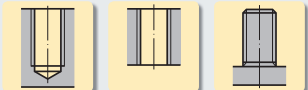

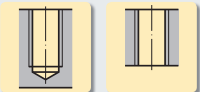
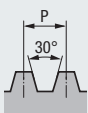
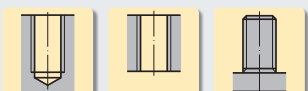
Das Maß l_7 muss ein Vielfaches der Steigung P des herzustellenden Gewindes sein
The measurement l_7 must be a multiple of the pitch P of the thread to be produced

Fräsringe zum Entfernen des unvollständigen Ganges siehe Seite 442
Milling rings for removal of the incomplete thread, see page 442

Aufnahmen und Verlängerungen für Gigant modular und Gigant modular sprinter siehe Seite 444 - 445
Holders and extensions for Gigant modular and Gigant modular sprinter, see pages 444 - 445

12

4-Zahnwendeplatten 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)

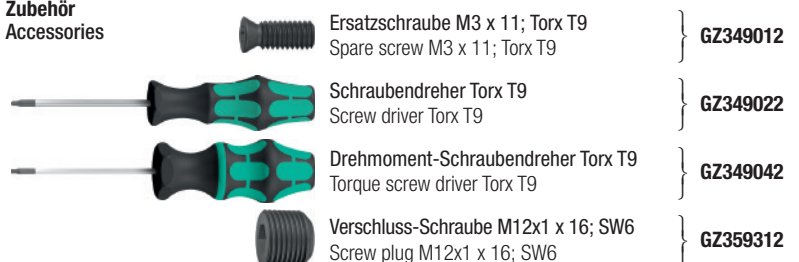
|  | | | | HM | RH + LH |  |  |
|---|------------------|-----|------|--|---------|---|---|
| Einsatzgebiete – Material Range of application – material | | | | Beschichtung · Coating | | | |
| P mm | P Gg/1" (tpi) | b | h | HM-WP-Z4 Gr. 12 TIN | | HM-WP-Z4 Gr. 12 TIALN-T4 | |
| M, MF, UN DIN 13, ANSI B1.1   | | | | P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-4.4 S 1.1-3 | | | |
| 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 | ● |
| M, MF DIN 13   | | | | new | | | |
| 3,5 | | 8,5 | 13,5 | | | GF641207.9519 | ● |
| 4 | | 8,5 | 13,5 | | | GF641207.9520 | ● |
| G (BSP), BSW, BSF, W DIN EN ISO 228, BS 84   | | | | | | | |
| (2,309) | 11 (5 - 28) | 8,5 | 13,5 | GF643205.9550 | ● | GF643207.9550 | ● |
| NPT ANSI/ASME B1.20.1   | | | | new | | | |
| (3,175) | 8 | 8,5 | 13,5 | | | GF643207.9680 | ● |
| Tr DIN 103   | | | | new | | | |
| 4 | | 8,5 | 13,5 | | | GF643207.9603 | ● |
| 5 | | 8,5 | 13,5 | | | GF643207.9604 | ● |
| | | | | | | | $\varnothing D_{min.} = d_1 + 32$ $\varnothing D_{min.} = d_1 + 41$ |

Andere Ausführungen auf Anfrage, z.B.
Other designs upon request, e.g.



 Einstechplatten in verschiedenen Ausführungen
Infeed inserts in various designs

Zubehör
Accessories



Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

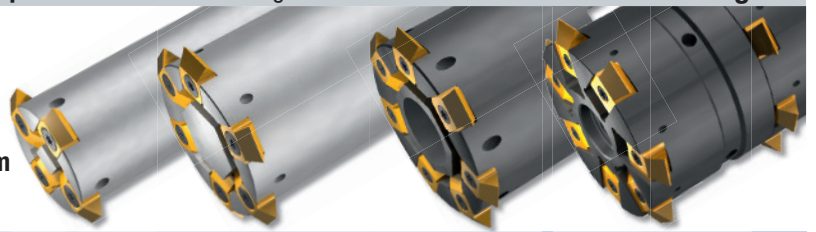
Gigant

MoSys



13

Für große Abmessungen ab Gewindedurchmesser 48 mm
For large thread sizes, from thread diameter 48 mm

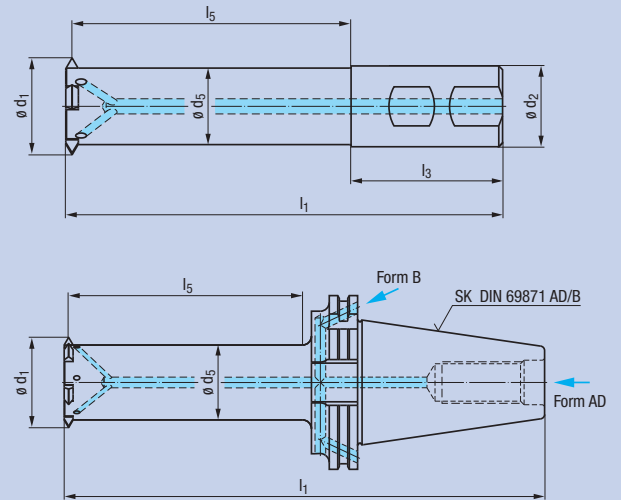


Gigant-ic

Gigant sprinter

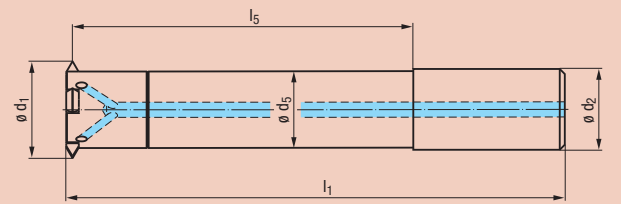
| | | | | | | | | |
|-------------------------|-------|-------|-----------|-----------------|--------------------|-----------------|-------------|---------------------------------|
| DIN 1835 B | | | Z4 | | | | | |
| $\emptyset D_{min.}$ mm | l_1 | l_3 | l_5 | $\emptyset d_1$ | $\emptyset d_2$ h6 | $\emptyset d_5$ | Z (Inserts) | Gigant-ic Gr. 13-IKZN |
| 48 | 173 | 60 | 110 | 40,25 | 32 | 31 | 4 | GZ341153 ● |
| 48 | 208 | 60 | 145 | 40,25 | 32 | 31 | 4 | GZ341143 ● |

| | | | | | | | | |
|-------------------------|-------|-------|-----------------|-----------|-----------------|-------------|---------------------------------|---------------------------------------|
| DIN 69871 | | | Z4 | Z6 | | | | |
| $\emptyset D_{min.}$ mm | l_1 | l_5 | $\emptyset d_1$ | SK | $\emptyset d_5$ | Z (Inserts) | Gigant-ic Gr. 13-IKZN | Gigant sprinter Gr. 13-IKZN |
| 48 | 212 | 110 | 40,25 | SK 40 | 31 | 4 | GZ343003 ● | |
| 48 | 245 | 110 | 40,25 | SK 50 | 31 | 4 | GZ344003 ● | |
| 48 | 247 | 145 | 40,25 | SK 40 | 31 | 4 | GZ343103 ● | |
| 48 | 280 | 145 | 40,25 | SK 50 | 31 | 4 | GZ344103 ● | |
| 64 | 333 | 195 | 52,55 | SK 50 | 43,75 | 6 | | GZ344203 ● |



Gigant soft run

| | | | | | | | | |
|-------------------------|-------|-------|-----------|-----------------|--------------------|-----------------|-------------|---------------------------------------|
| DIN 6535 HA | | | Z4 | | | | | |
| $\emptyset D_{min.}$ mm | l_1 | l_3 | l_5 | $\emptyset d_1$ | $\emptyset d_2$ h6 | $\emptyset d_5$ | Z (Inserts) | Gigant soft run Gr. 13-IKZN |
| 48 | 207 | 60 | 145 | 40,25 | 32 | 31 | 4 | GZ34A003 ● |

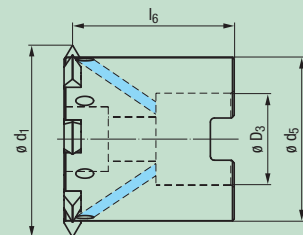


Mit variabler Länge auf Anfrage
With variable length upon request

Gigant modular

| | | | | | | | |
|-------------------------|-------|-----------------|-----------------|-----------------|-------------|--------------------------------------|--|
| DIN 138 | | | Z7 | | | | |
| $\emptyset D_{min.}$ mm | l_6 | $\emptyset d_1$ | $\emptyset d_5$ | $\emptyset D_3$ | Z (Inserts) | Gigant modular Gr. 13-IKZN | |
| 66 | 47,5 | 57,5 | 48 | 27 | 7 | GZ352003 ● | |

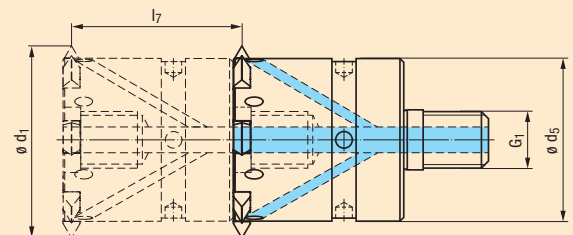
Nur einzeln einsetzbar
Can only be used individually



Gigant modular sprinter

| | | | | | | | |
|------------|-------------------------|-------|-----------------|-----------------|----------------|-------------|---|
| MF | | | Z7 | | | | |
| new | $\emptyset D_{min.}$ mm | l_7 | $\emptyset d_1$ | $\emptyset d_5$ | G ₁ | Z (Inserts) | Gigant modular sprinter Gr. 13-IKZN |
| | 66 | 48 | 57,5 | 48 | M18 x 1,5 | 7 | GZ353003 ● |

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

Fräsringe zum Entfernen des unvollständigen Ganges siehe Seite 442
Milling rings for removal of the incomplete thread, see page 442

Aufnahmen und Verlängerungen für Gigant modular und Gigant modular sprinter siehe Seite 444 - 445
Holders and extensions for Gigant modular and Gigant modular sprinter, see pages 444 - 445

13

4-Zahnwendeplatten für Steigungsbereich bis 6 mm (4 Gg/1")
 4-tooth indexable inserts for a pitch range up to 6 mm (4 tpi)

| | | | | | |
|---|---|--|-----|----------------------------------|---------------------------------------|
| | <div style="display: flex; gap: 10px;"> <div style="border: 1px solid black; padding: 2px;">HM</div> <div style="border: 1px solid black; padding: 2px;">RH + LH</div> </div> | | | | |
| | Beschichtung · Coating | | TIN | TIALN-T4 | |
| Einsatzgebiete – Material Range of application – material » 328 | | <div style="display: flex; justify-content: space-between;"> <div style="text-align: center;"> P 1.1-5.1 N 1.1-4.4 </div> <div style="text-align: center;"> M 1.1-4.1 S 1.1-3 </div> <div style="text-align: center;"> K 1.1-4.2 </div> </div> | | | |
| P mm | P Gg/1" (tpi) | b | h | HM-WP-Z4 Gr. 13 TIN | HM-WP-Z4 Gr. 13 TIALN-T4 |

| | | | | | |
|---|-----------------|------------|--------------|--|--|
| <h2>M, MF, UN</h2> <p>DIN 13, ANSI B1.1</p> | | | | | |
| 1,5 - 3 3 - 6 | 16 - 9 9 - 4 | 9,5 9,5 | 15,5 15,5 | GF643305.9514 ● GF643305.9518 ● | GF643307.9514 ● GF643307.9518 ● |

| | | | | | |
|------------------------------|--|------------|--------------|------------|--|
| <h2>M, MF</h2> <p>DIN 13</p> | | | | new | |
| 4,5 5 | | 9,5 9,5 | 15,5 15,5 | | GF641307.9521 ● GF641307.9522 ● |

| | | | | | |
|--|---------------|-----|------|------------------------|------------------------|
| <h2>G (BSP), BSW, BSF, W</h2> <p>DIN EN ISO 228, BS 84</p> | | | | | |
| (2,309) | 11 (4.5 - 12) | 9,5 | 15,5 | GF643305.9550 ● | GF643307.9550 ● |

| | | | | | |
|----------------------------|--|------------|--------------|--|--|
| <h2>Tr</h2> <p>DIN 103</p> | | | | new | |
| 5 6 | | 9,5 9,5 | 15,5 15,5 | $\varnothing D_{min.} = d_1 + 43$ $\varnothing D_{min.} = d_1 + 53$ | GF643307.9604 ● GF643307.9605 ● |

Andere Ausführungen auf Anfrage, z.B.
 Other designs upon request, e.g.



Zubehör
 Accessories

- Ersatzschraube 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**

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

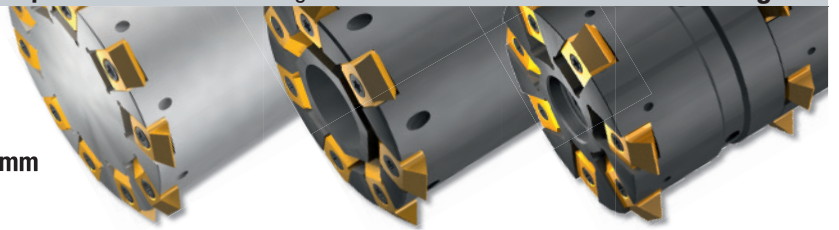
GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



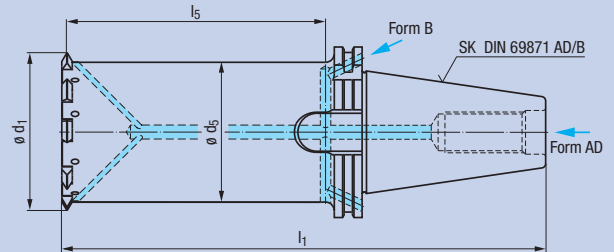
14

Für große Abmessungen ab Gewindedurchmesser 64 mm
For large thread sizes, from thread diameter 64 mm

Gigant-ic

Gigant sprinter

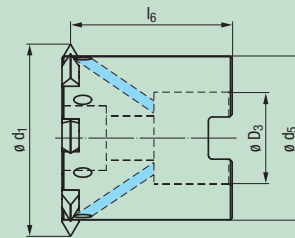
| DIN 69871 AD/B | | Z4 - Z7 | | Z10 | | | | |
|------------------------------|-------|---------|-------------------|-------|-------------------|----------------|--------------------------|--------------------------------|
| | | | | | | | | |
| $\varnothing D_{min.}$ mm | l_1 | l_5 | $\varnothing d_1$ | SK | $\varnothing d_5$ | Z (Inserts) | Gigant-ic Gr. 14-IKZN | Gigant sprinter Gr. 14-IKZN |
| 64 | 253 | 150 | 52,55 | SK 40 | 41 | 4 | GZ343014 ● | |
| 64 | 286 | 150 | 52,55 | SK 50 | 41 | 4 | GZ344014 ● | |
| 64 | 298 | 195 | 52,55 | SK 40 | 41 | 4 | GZ343114 ● | |
| 64 | 331 | 195 | 52,55 | SK 50 | 41 | 4 | GZ344114 ● | |
| 80 | 308 | 170 | 66,55 | SK 50 | 55 | 7 | GZ344024 ● | |
| 80 | 398 | 260 | 66,55 | SK 50 | 55 | 7 | GZ344124 ● | |
| 115 | 489 | 360 | 92 | SK 50 | 80 | 10 | | GZ344204 ● |



Gigant modular

| DIN 138 | | Z7 | | | | |
|------------------------------|-------|-------------------|-------------------|-------------------|----------------|-------------------------------|
| $\varnothing D_{min.}$ mm | l_6 | $\varnothing d_1$ | $\varnothing d_5$ | $\varnothing D_3$ | Z (Inserts) | Gigant modular Gr. 14-IKZN |
| 80 | 47 | 71,5 | 60 | 27 | 7 | GZ352004 ● |

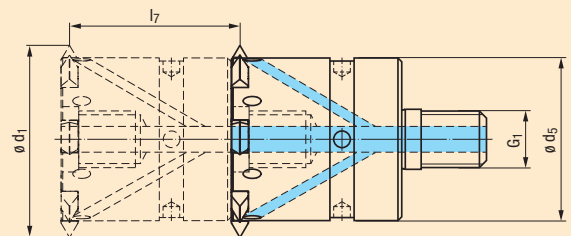
Nur einzeln einsetzbar
Can only be used individually



Gigant modular sprinter

| MF | | Z7 | | | | |
|------------------------------|-------|-------------------|-------------------|-----------|----------------|--|
| $\varnothing D_{min.}$ mm | l_7 | $\varnothing d_1$ | $\varnothing d_5$ | G_1 | Z (Inserts) | Gigant modular sprinter Gr. 14-IKZN |
| 80 | 60 | 71,5 | 60 | M24 x 1,5 | 7 | GZ353004 ● |

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

Fräsringe zum Entfernen des unvollständigen Ganges siehe Seite 442
Milling rings for removal of the incomplete thread, see page 442

Aufnahmen und Verlängerungen für Gigant modular und Gigant modular sprinter siehe Seite 444 - 445
Holders and extensions for Gigant modular and Gigant modular sprinter, see pages 444 - 445

14

4-Zahnwendeplatten 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 RH + LH | | |
| | Beschichtung · Coating | TIN | TIALN-T4 |
| Einsatzgebiete – Material Range of application – material ▶ 328 | P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-4.4 S 1.1-3 | | |
| P mm P Gg/1" (tpi) b h | HM-WP-Z4 Gr. 14 TIN | HM-WP-Z4 Gr. 14 TIALN-T4 | |

| | | | |
|---|--|--|--|
| <h2>M, MF, UN</h2> DIN 13, ANSI B1.1 | | | |
| 1,5 - 3 16 - 9 12,5 19 3 - 6 9 - 4 12,5 19 | GF643405.9514 ● GF643407.9514 ● GF643405.9518 ● GF643407.9518 ● | | |

| | | | |
|---|--|--|--|
| <h2>M, MF</h2> DIN 13 | | | new |
| 5,5 12,5 19 6 12,5 19 | | | GF641407.9709 ● GF641407.9523 ● |

| | | | |
|--|---|--|--|
| <h2>G (BSP), BSW, BSF, W</h2> DIN EN ISO 228, BS 84 | | | |
| (2,309) 11 (3.5 - 12) 12,5 19 | GF643405.9550 ● GF643407.9550 ● | | |

| | | | |
|--|--|--|--|
| <h2>Tr</h2> DIN 103 | | | new |
| 6 12,5 19 $\varnothing D_{min.} = d_1 + 61$ 8 12,5 19 $\varnothing D_{min.} = d_1 + 84$ | | | GF643407.9605 ● GF643407.9736 ● |

Andere Ausführungen auf Anfrage, z.B.
 Other designs upon request, e.g.



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**

Product Finder

v_c / f_z

M

MF

UNC UN, UNS

UNF UNEF

G, Rp

NPT, NPTF Rc, W

BSW, BSF

Pg

EG (STI) SELF-LOCK

Tr

Zubehör Accessories

Tech. Info

BGF

ZBGF

GSF

GF

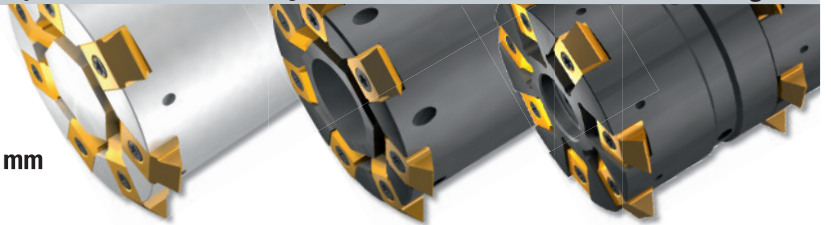
GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



Product Finder

v_c / f_z

15

M

Für große Abmessungen ab Gewindedurchmesser 115 mm
For large thread sizes, from thread diameter 115 mm

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

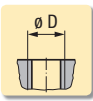
ZIRK-GF

Gigant

MoSys

Gigant-ic

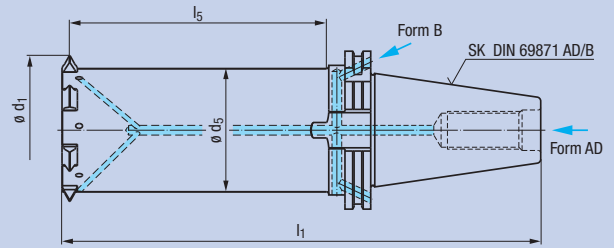
DIN 69871



Z7

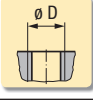


| $\varnothing D_{min.}$ mm | l_1 | l_5 | $\varnothing d_1$ | SK | $\varnothing d_5$ | Z (Inserts) | Gigant-ic Gr. 15-IKZN |
|------------------------------|-------|-------|-------------------|-------|-------------------|----------------|--------------------------|
| 115 | 341 | 204 | 92 | SK 50 | 76 | 7 | GZ344035 ● |
| 115 | 497 | 360 | 92 | SK 50 | 76 | 7 | GZ344045 ● |



Gigant modular

DIN 138

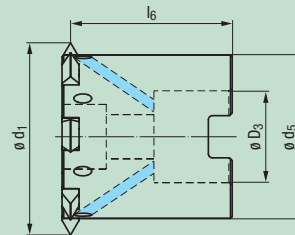


Z7



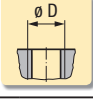
| $\varnothing D_{min.}$ mm | l_6 | $\varnothing d_1$ | $\varnothing d_5$ | $\varnothing D_3$ | Z (Inserts) | Gigant modular Gr. 15-IKZN |
|------------------------------|-------|-------------------|-------------------|-------------------|----------------|-------------------------------|
| 115 | 55 | 94 | 78 | 32 | 7 | GZ352005 ● |

Nur einzeln einsetzbar
Can only be used individually



Gigant modular sprinter

MF

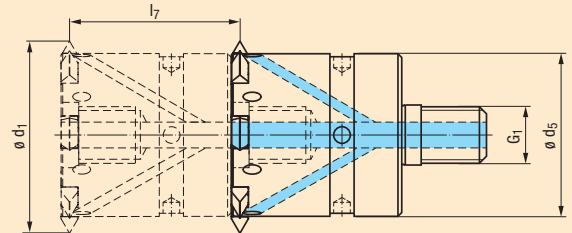


Z7



| new | $\varnothing D_{min.}$ mm | l_7 | $\varnothing d_1$ | $\varnothing d_5$ | G_1 | Z (Inserts) | Gigant modular sprinter Gr. 15-IKZN |
|------------|------------------------------|-------|-------------------|-------------------|-----------|----------------|--|
| | 115 | 60 | 94 | 78 | M24 x 1,5 | 7 | GZ353005 ● |

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

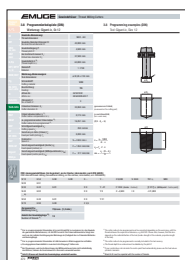


Die Innensechskant-Schraube zum stirnseitigen Verschließen der Kühlmittel-Bohrung ist im Lieferumfang enthalten
The hexagon socket screw to close the coolant hole on the face side is included with the delivery

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



Aufnahmen und Verlängerungen für Gigant modular und Gigant modular sprinter siehe Seite 444 - 445
Holders and extensions for Gigant modular and Gigant modular sprinter, see pages 444 - 445

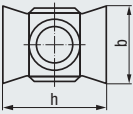



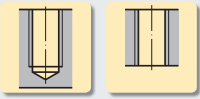
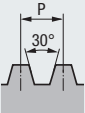
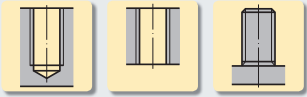


Programmierbeispiel für Gewindefräser
Typ Gigant siehe Seite 470

Programming example for thread millers
cutters type Gigant, see page 470

15

4-Zahnwendeplatten für Steigungsbereich bis 12 mm (4 Gg/1") 4-tooth indexable inserts for a pitch range up to 12 mm (4 tpi)

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|---|--|
|  | | | | HM RH + LH | |  | |  | |
| Einsatzgebiete – Material Range of application – material | | | | Beschichtung · Coating | | TIN | | TIALN-T4 | |
| P mm P Gg/1" (tpi) b h | | | | P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-4.4 S 1.1-3 | | HM-WP-Z4 Gr. 15 TIN | | HM-WP-Z4 Gr. 15 TIALN-T4 | |
| <h1>M, MF, UN</h1> DIN 13, ANSI B1.1 | | | |  | |  | | | |
| 1,5 - 6 16 - 4 14,3 28,58 6 - 8 4 14,3 28,58 | | | | GF643505.9514 ● GF643507.9514 ● GF643505.9523 ● GF643507.9523 ● | | | | | |
| <h1>Tr</h1> DIN 103 | | | |  | |  | | new | |
| 10 14,3 28,58 $\varnothing D_{min.} = d_1 + 101$ 12 14,3 28,58 $\varnothing D_{min.} = d_1 + 122$ | | | | | | GF643507.9748 ● GF643507.9749 ● | | | |

Andere Ausführungen auf Anfrage, z.B.
Other designs upon request, e.g.



Zubehör
Accessories

- 
 Ersatzschraube M5 x 18; Torx T20
Spare screw M5 x 18; Torx T20
- 
 Schraubendreher Torx T20
Screw driver Torx T20
- 
 Drehmoment-Schraubendreher Torx T20
Torque screw driver Torx T20
- 
 Hakenschlüssel mit Zapfen
nach DIN 1810-B 68-75 mm
Hook wrench type B with pin
acc. to DIN 1810-B 68-75 mm
- 
 Verschluss-Schraube M24x1,5 x 25; SW12
Screw plug M24x1.5 x 25; SW12

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

Gigant

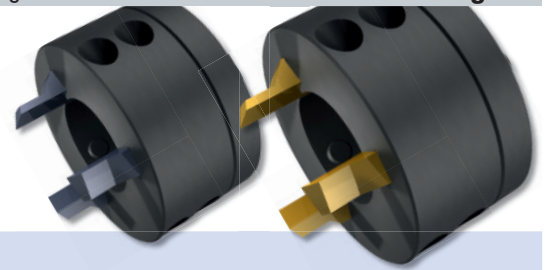
MoSys



- Product Finder
- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys

10-14

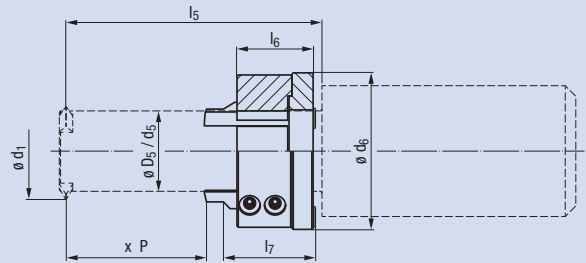
Fräsringe zum Entfernen des unvollständigen Ganges
Milling rings for removal of the incomplete thread



Gigant-ic



| new | Größe Size | $\varnothing d_1$ | $\varnothing D_5 / d_5$ | l_6 | l_7 | $\varnothing d_6$ | Z (Inserts) | | |
|-----|---------------|-------------------|-------------------------|-------|-------|-------------------|----------------|------------------------|---|
| | 10 | 20,5 | 15,9 | 18 | 23 | 33 | 3 | GZ80FOC4.010040 | ● |
| | 11 | 23,85 | 19 | 18 | 22 | 37 | 3 | GZ80GOC4.011040 | ● |
| | 12 | 32,85 | 24,5 | 22 | 24 | 47 | 3 | GZ80HOC4.012060 | ● |
| | 13 | 40,25 | 31 | 22 | 24 | 55 | 4 | GZ80IOC4.013060 | ● |
| | 14 | 52,55 | 41 | 22 | 23 | 65 | 4 | GZ80JOC4.014060 | ● |



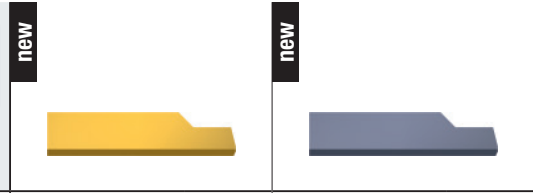
Das Maß „x P“ muss ein Vielfaches der Steigung P des herzustellenden Gewindes sein
The measurement "x P" must be a multiple of the pitch P of the thread to be produced

Die Nutztiefe l_5 des Zirkular-Gewindefräskörpers verringert sich um das Maß l_7
The usable depth l_5 of the circular thread milling body is reduced by dimension l_7

1-Zahn-Fräsplatten für Fräsringe

1-tooth milling inserts for milling rings


HM RH + LH



| Einsatzgebiete – Material Range of application – material | | | Beschichtung · Coating | |
|--|-------|---|------------------------|------------|
| ▶▶ 328 | | | TIN | TIALN-T4 |
| P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-4.4 S 1.1-3 | | | HM-FP-Z1 | HM-FP-Z1 |
| Größe Size | l_8 | t | TIN | TIALN-T4 |
| 10 | 20 | 4 | GF663005 ● | GF663007 ● |
| 11 | 20 | 4 | GF663105 ● | GF663107 ● |
| 12 | 25 | 6 | GF663205 ● | GF663207 ● |
| 13 | 25 | 6 | GF663305 ● | GF663307 ● |
| 14 | 25 | 6 | GF663405 ● | GF663407 ● |



Product
Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

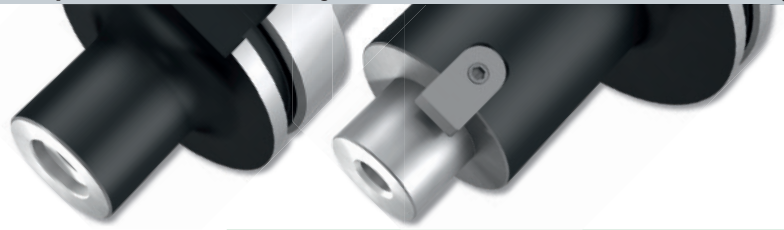
ZGF

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

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

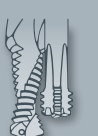
GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



10-15

Aufnahmen für Gigant modular Holders for Gigant modular

HSK-A

DIN 69893-1



| Größe Size | G ₁ | ∅ d ₅ | l ₅ | l _A | HSK | |
|---------------|----------------|------------------|----------------|----------------|---------|--------------------------|
| 10-12 | M16 | 29 | 29 | 59 | HSK-A63 | GZ5391A4.116059 ● |

DIN 138



| Größe Size | ∅ D ₃ | ∅ d ₅ | l ₅ | l ₃ | l _A | HSK | |
|---------------|------------------|------------------|----------------|----------------|----------------|---------|--------------------------|
| 13 | 27 | 48 | 131 | 21 | 160 | HSK-A63 | GZ5391B4.270160 ● |
| 14 | 27 | 60 | 131 | 21 | 160 | HSK-A63 | GZ5391B5.270160 ● |
| 15 | 32 | 78 | 171 | 24 | 200 | HSK-A63 | GZ5391B4.320200 ● |

SK (ISO)

DIN 69871



| Größe Size | G ₁ | ∅ d ₅ | l ₅ | l _A | SK | |
|---------------|----------------|------------------|----------------|----------------|-------|--------------------------|
| 10-12 | M16 | 29 | 11 | 36 | SK 40 | GZ5243A4.116036 ● |
| 10-12 | M16 | 29 | 11 | 36 | SK 50 | GZ5263A4.116036 ● |

DIN 138



| Größe Size | ∅ D ₃ | ∅ d ₅ | l ₅ | l ₃ | l _A | SK | |
|---------------|------------------|------------------|----------------|----------------|----------------|-------|--------------------------|
| 13 | 27 | 48 | 132 | 21 | 160 | SK 50 | GZ5263B4.270160 ● |
| 14 | 27 | 60 | 132 | 21 | 160 | SK 50 | GZ5263B5.270160 ● |
| 15 | 32 | 78 | 174 | 24 | 200 | SK 50 | GZ5263B4.320200 ● |

HSS-Verlängerungen für Gigant modular HSS extensions for Gigant modular

∅32

DIN 1835 A



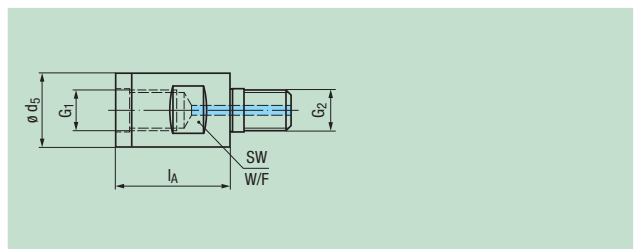
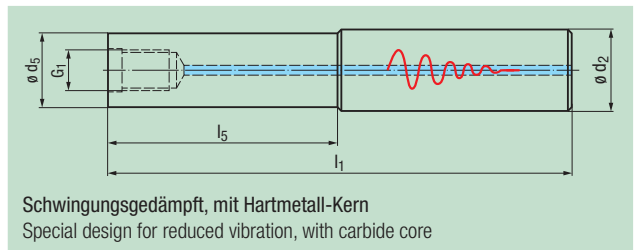
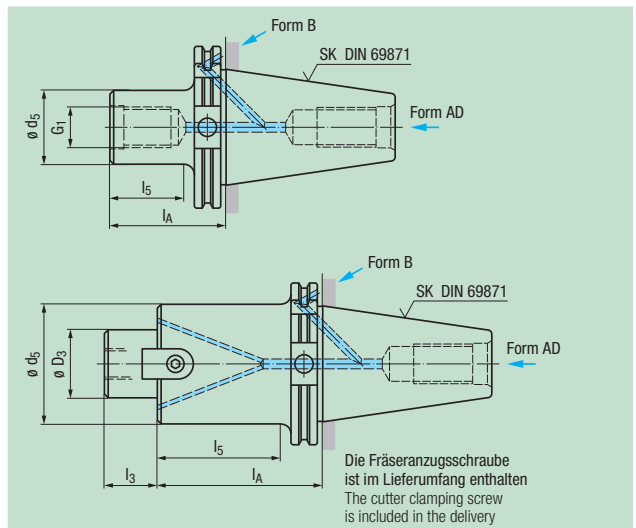
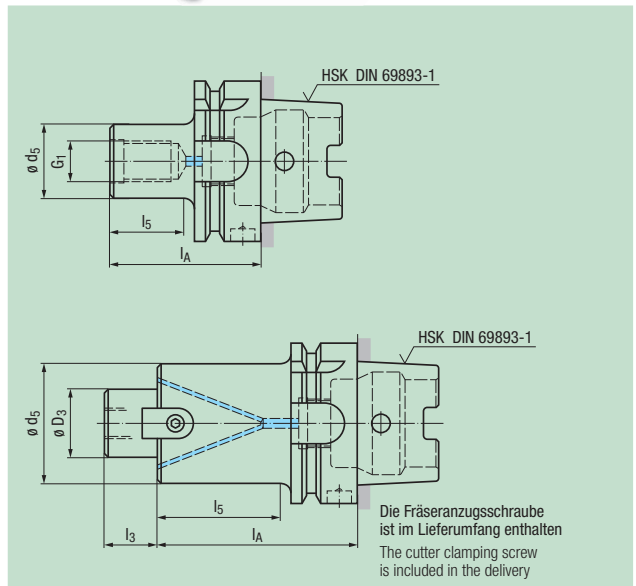
| Größe Size | G ₁ | ∅ d ₅ | l ₅ | l ₁ | ∅ d ₂ h6 | |
|---------------|----------------|------------------|----------------|----------------|------------------------|--------------------------|
| 10-12 | M16 | 29,4 | 108 | 200 | 32 | GZ5521A4.320108 ● |

Zwischenadapter für Gigant modular Intermediate adapters for Gigant modular

M16



| Größe Size | G ₁ | ∅ d ₅ | l _A | SW (W/F) | G ₂ | |
|---------------|----------------|------------------|----------------|-------------|----------------|--------------------------|
| 10-12 | M16 | 29 | 40 | 22 | M16 | GZ56E1A4.116040 ● |
| 10-12 | M16 | 29 | 90 | 22 | M16 | GZ56E1A4.116090 ● |



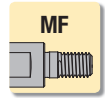
10-15



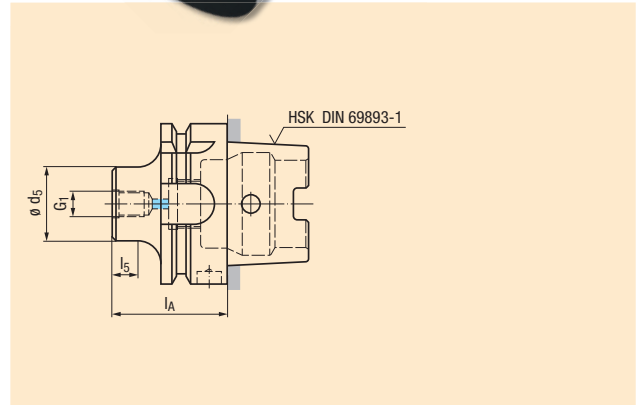
Aufnahmen für Gigant modular sprinter Holders for Gigant modular sprinter

HSK-A

DIN 69893-1

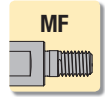


| Größe Size | G ₁ | ∅ d ₅ | l ₅ | l _A | HSK | | |
|---------------|----------------|------------------|----------------|----------------|----------|------------------------|---|
| 10 | M 8 x 1 | 22,15 | 10 | 45 | HSK-A63 | GZ7391AA.251010 | ● |
| 11 | M10 x 1 | 29,15 | 10 | 45 | HSK-A63 | GZ7391AB.276010 | ● |
| 12 | M12 x 1 | 37,65 | 12 | 45 | HSK-A63 | GZ7391AC.301012 | ● |
| 13 | M18 x 1,5 | 48 | 32 | 60 | HSK-A63 | GZ7391AD.390032 | ● |
| 14 | M24 x 1,5 | 60 | 40 | 80 | HSK-A100 | GZ73A1AE.452040 | ● |
| 15 | M24 x 1,5 | 78 | 45 | 76 | HSK-A100 | GZ73A1AF.452045 | ● |

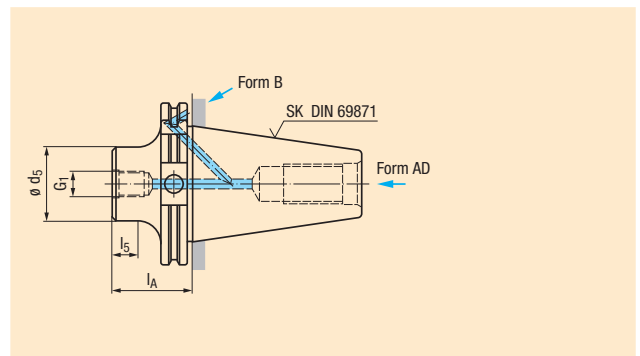


SK (ISO)

DIN 69871

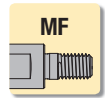


| Größe Size | G ₁ | ∅ d ₅ | l ₅ | l _A | SK | | |
|---------------|----------------|------------------|----------------|----------------|-------|------------------------|---|
| 10 | M 8 x 1 | 22,15 | 10 | 35 | SK 40 | GZ7243AA.251010 | ● |
| 11 | M10 x 1 | 29,15 | 10 | 35 | SK 40 | GZ7243AB.276010 | ● |
| 12 | M12 x 1 | 37,65 | 12 | 35 | SK 40 | GZ7243AC.301012 | ● |
| 13 | M18 x 1,5 | 48 | 15 | 37 | SK 40 | GZ7243AD.390015 | ● |
| 14 | M24 x 1,5 | 60 | 15 | 40 | SK 50 | GZ7263AE.452015 | ● |
| 15 | M24 x 1,5 | 78 | 20 | 45 | SK 50 | GZ7263AF.452020 | ● |

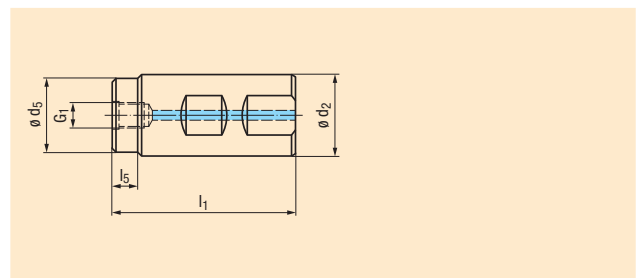


∅25-∅32

DIN 1835 B



| Größe Size | G ₁ | ∅ d ₅ | l ₅ | l ₁ | ∅ d ₂ h ₆ | | |
|---------------|----------------|------------------|----------------|----------------|------------------------------------|------------------------|---|
| 10 | M 8 x 1 | 22,15 | 10 | 68 | 25 | GZ75D1AA.251010 | ● |
| 11 | M10 x 1 | 29,15 | 10 | 72 | 32 | GZ7521AB.276010 | ● |
| 12 | M12 x 1 | 37,65 | 12 | 77 | 32 | GZ7521AC.301012 | ● |



- Product Finder
- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- 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
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info
- BGF
- ZBGF
- GSF
- GF
- 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:

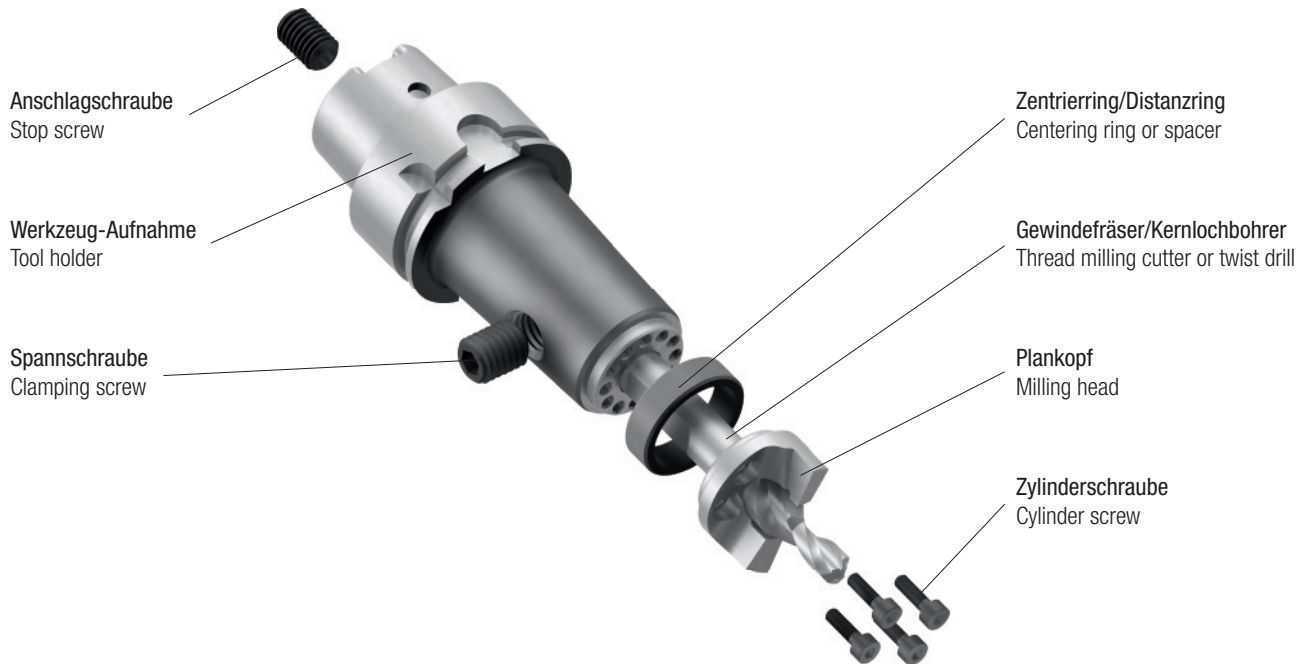
- Smaller tool quantities
- Fewer magazine places and reduced stocking costs
- Shorter machining times

„MoSys“ answers to the following requirements:

- Easy assembly
- High degree of rigidity
- High dimensional precision
- Modular construction for universal application

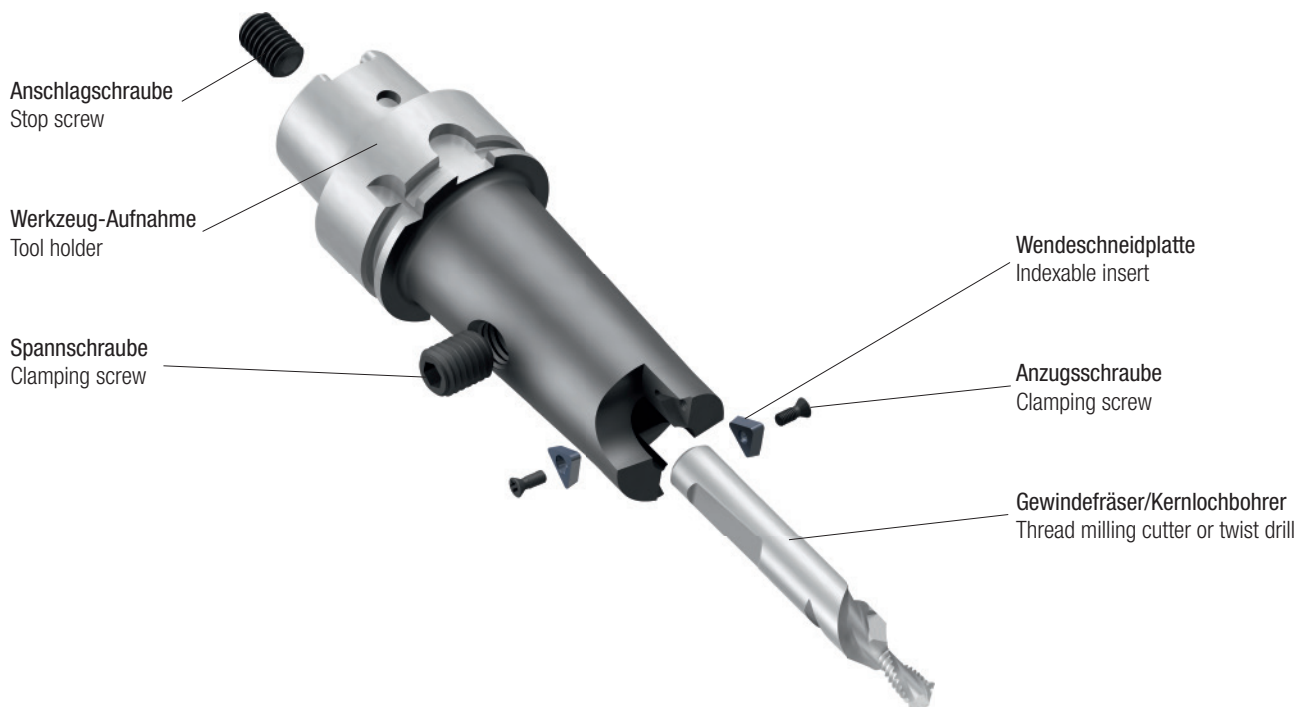
MoSys mit Vollhartmetall-Kopf

MoSys with solid carbide head



MoSys mit Wendeschneidplatten

MoSys with indexable inserts



Steilkegelschäfte
ISO taper shanks



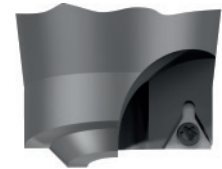
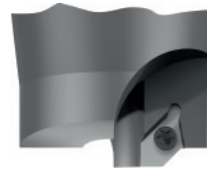
Kegel-Hohlschäfte
Hollow taper shanks



Anschluss für Plankopf
Connection for milling head



Anschluss für Wendeschneidplatten
Connection for indexable inserts



Zentrierring
Centering ring



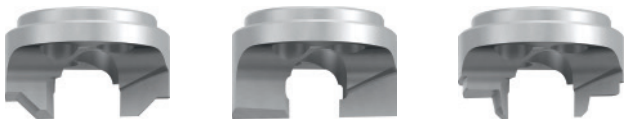
Wendeschneidplatten zum Planen und Fasen
Indexable inserts for plane milling and chamfering



Wendeschneidplatten zum Planen
Indexable inserts for plane milling



Vollhartmetall-Planköpfe
Solid carbide milling heads



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

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

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

EG (STI)
SELF-LOCK

Tr

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ZGF

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MoSys



Zur Angebotsausarbeitung werden folgende Daten benötigt:

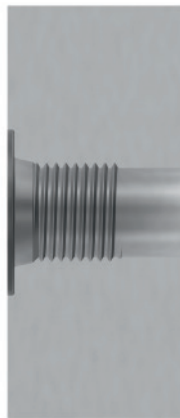
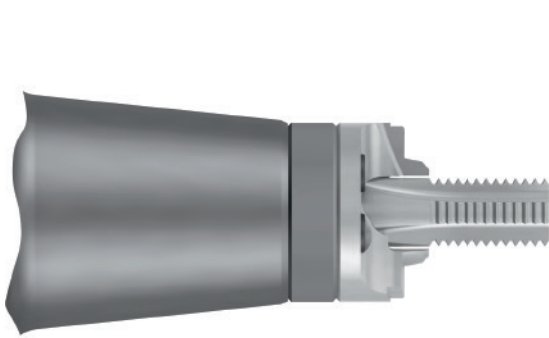
- Werkstückzeichnung mit evtl. Störkontur
- Maschinenseitige Aufnahme mit Kühlschmierstoff-Übergabe
- Detaillierte Senkkontur
- Herzustellende Gewindeabmessung einschließlich Gewindetiefe
- Bohrungsform (Durchgangsloch, Grundloch)
- Kernlochdurchmesser (falls vorhanden)
- Zu bearbeitender Werkstoff

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

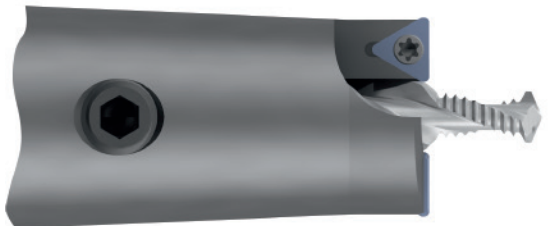
Beispiel für Bearbeitung mit Vollhartmetall-Kopf

Example for machining with solid carbide head



Beispiel für Bearbeitung mit Wendeschneidplatten

Example for machining with indexable inserts



Technische Informationen

Technical Information

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| 3.7 | Programmierung Ein- und Ausfahren im Viertelkreis Programming of run-in and run-out in a quarter circle | 462 |
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| 3.9 | Technischer Fragebogen: GewindefräSEN Technical questionnaire: Thread milling | 471 - 472 |

Product
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M

MF

UNC
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G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

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BGF

ZBGF

GSF

GF

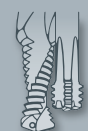
GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



Die Technischen Informationen der jeweiligen Kapitel dieses Kataloges sind in vielen Landessprachen auch als separate Druckerzeugnisse verfügbar. Bitte wenden Sie sich an den für Sie zuständigen Vertriebspartner.

The technical information complementing the various chapters of this catalogue is available also as a separate printed booklet in many different languages. Please speak to your usual sales contact.

Product Finder

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3.1 Charakteristik und Vorteile des Gewindefräsens

Gewindefräsen – eine Technologie, die Ihre Fertigungskosten spürbar senken kann!

Durch den verstärkten Einsatz der CNC-Technologie sind die Voraussetzungen für ein zukunftsorientiertes Verfahren zur Herstellung von Innen- und Außengewinden geschaffen worden.

Das Gewindefräsen lässt sich problemlos und prozesssicher praktizieren, wenn die CNC-Maschine über eine Steuerung mit 3D-Interpolation verfügt. Des Weiteren wird eine stabile und vibrationsfreie Werkzeug- und Werkstückschwingung sowie innere Kühlschmierstoff-Zufuhr (IKZ) benötigt.

Das Gewindefräsen ist in einer Vielzahl von Anwendungsfällen eine sinnvolle Alternative zum Gewindeschneiden oder Gewindeformen mit folgenden Vorteilen:

- Kurze Fertigungszeiten
- Hohe Prozesssicherheit
- Sehr gute Oberflächenqualität
- Verschiedene Bearbeitungsfunktionen mit einem Werkzeug
- Nutzbare Gewindetiefe bis zum Bohrungsgrund
- Keine hochwertigen Schmierstoffe notwendig
- Keine Spanprobleme, da nur kurze Frässpäne erzeugt werden
- Kein axiales Verschneiden (Vorweite) der Gewinde
- Universeller Einsatz in den verschiedensten Werkstoffen bis ca. 60 HRC
- Grund- und Durchgangslochgewinde mit einem Werkzeug
- Unabhängige Gewindeherstellung bezüglich Abmessung und Toleranz
- Ein Werkzeug für Rechts- und Linksgewinde
- Geringe Schnittkräfte
- Auch für dünnwandige Werkstücke geeignet

Sollten Sie keine oder nur wenig Erfahrung bei der Programmierung der Steuerung haben, stehen Ihnen unsere Techniker gerne mit Rat und Tat zur Seite. Wir sind auch gerne bereit, Sie hausintern oder vor Ort an konkreten Bearbeitungsbeispielen zu schulen.

Bitte sprechen Sie unsere Vertriebsmitarbeiter an.

3.1 Characteristics and advantages of thread milling

Thread milling – A technology which can reduce your production costs considerably!

With the more and more widespread use of CNC technology, the basic conditions for a future-oriented technique of producing internal and external threads have been created.

Thread milling can be practiced without any trouble and with a high degree of process safety if your CNC machine is provided with a control for 3D-interpolation. In addition to that, you need stable and vibration-free tool and workpiece clamping, and internal coolant supply.

Thread milling is, in a multitude of application cases, a highly recommendable alternative to tapping or cold-forming of threads, with the following advantages:

- Short production times
- High degree of process safety
- Very good surface quality
- Combination of different machining jobs with one tool
- Usable thread depth down to the very bottom of the hole
- No expensive lubricants are needed
- No chip problems, since only short milling chips are created
- No axial miscutting (overcut) of the thread
- Universal use in the most different materials up to approx. 60 HRC
- Blind hole and through hole threads produced with one tool
- Thread production independent of thread size and tolerance
- One tool only for right-hand and left-hand threads
- Low cutting forces
- Suitable also for thin-walled components

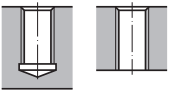
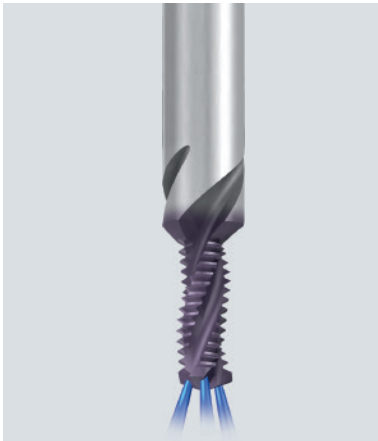
In case you should have little or no experience with the programming of the control, our technicians will be happy to help you by word and deed. We are also ready, at any time, to provide in-house or on-location training for you with practical machining examples.

Please contact our sales personnel.

3.2 EMUGE Gewindefräser-Typen

3.2 Our EMUGE thread milling cutter types

BGF

**Vollhartmetall-Bohrgewindefräser**

- Zur Herstellung von Innengewinden
- Für die Komplettbearbeitung von Kernloch, Senkfase und Gewinde in einem Arbeitsgang
- Abmessungsbezogenes Werkzeug mit korrigiertem Gewindeprofil

Ausführungen:

- 2-nutig: Bearbeitung ins volle Material
 3-nutig: Bearbeitung in vorgegossene Kernlöcher und ins volle Material
 4-nutig: Kürzere Bearbeitungszeiten (nur Gusseisen und Aluminium-Guss, kurzspanend)

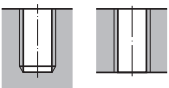
Solid carbide drill thread mills

- For the production of internal threads
- For the complete machining of thread hole, chamfer and thread in one work process
- Tool for one single thread size with corrected thread profile

Designs:

- 2-fluted: For work in solid material
 3-fluted: For work in pre-cast thread holes and in solid material
 4-fluted: For shorter machining times (only for cast iron and cast aluminium, short-chipping)

ZBGF

**Vollhartmetall-Zirkular-Bohrgewindefräser**

- Zur Herstellung von Innengewinden
- Für die Bearbeitung von Kernloch und Gewinde in einem Arbeitsgang
- Abmessungsübergreifendes und steigungsgebundenes Werkzeug mit korrigiertem Gewindeprofil

Ausführungen:

- ZBGF-T: Für Gewindetiefen bis 3 x D in Aluminium und Grauguss
 ZBGF-H: Für die Hartbearbeitung ab 44 HRC
 ZBGF-W: Für die verschiedensten Werkstoffe bis 44 HRC

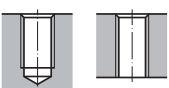
Solid carbide circular drill thread mills

- For the production of internal threads
- For the machining of thread hole and thread in one work process
- Tool for different thread sizes but for one pitch only, with corrected thread profile

Designs:

- ZBGF-T: For thread depths up to 3 x D in aluminium and cast iron
 ZBGF-H: For hard machining from 44 HRC
 ZBGF-W: For the most different materials up to 44 HRC

GSF

**Vollhartmetall-Gewindefräser mit Senkfase**

- Zur Herstellung von Innengewinden
- Für die Bearbeitung von Senkfase und Gewinde in einem Arbeitsgang
- Abmessungsbezogenes Werkzeug mit korrigiertem Gewindeprofil
- Voraussetzung ist ein vorgearbeitetes Kernloch

Solid carbide thread milling cutters with countersinking step

- For the production of internal threads
- For the machining of chamfer and thread in one work process
- Tool for one single thread size, with corrected thread profile
- A ready prepared thread hole is necessary

Product
Finder v_c / f_z

M

MF

UNC
UN, UNSUNF
UNEF

G, Rp

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Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

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Zubehör
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BGF

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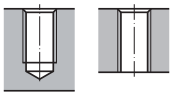
Zubehör
Accessories

Tech. Info

3.2 EMUGE Gewindefräser-Typen

3.2 Our EMUGE thread milling cutter types

GSF-Z



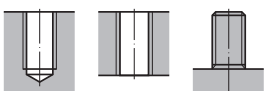
Vollhartmetall-Gewindefräser mit Senkfase

- Zur Herstellung von Innengewinden
- Für die Bearbeitung von Senkfase und Gewinde in einem Arbeitsgang
- Abmessungsbezogenes Werkzeug mit korrigiertem Gewindeprofil
- Höhere Nutenzahl im Vergleich zum Typ GSF
- Optimierte Schneidengeometrie
- Voraussetzung ist ein vorgearbeitetes Kernloch

Solid carbide thread milling cutters with countersinking step

- For the production of internal threads
- For the machining of chamfer and thread in one work process
- Tool for one single thread size, with corrected thread profile
- Increased number of flutes compared with type GSF
- Optimised cutting geometry
- A ready prepared thread hole is necessary

GF



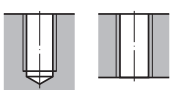
Vollhartmetall-Gewindefräser

- Zur Herstellung von Innen- und Außengewinden
- Abmessungsübergreifendes Werkzeug mit Standard-Gewindeprofil (steigungsgebunden)
- Voraussetzung ist ein vorgearbeitetes Kernloch ggf. mit einer Ansenkung
- Um größere Profilüberfräsungen bei Innengewinden zu vermeiden, sollte der Fräserdurchmesser nicht größer als $\frac{2}{3}$ (bei Feingewinden $\frac{3}{4}$) des herzustellenden Gewindes sein
- Bei Außengewinden sollte der Fräserdurchmesser den herzustellenden Gewindedurchmesser nicht überschreiten

Solid carbide thread milling cutters

- For the production of internal and external threads
- Tool for different thread sizes with standard thread profile (but for one pitch only)
- A ready prepared thread hole is necessary, including chamfer if needed
- In order to avoid serious profile deviation in internal threads, the cutter diameter should not exceed $\frac{2}{3}$ (with fine threads, $\frac{3}{4}$) of the thread to be produced
- With external threads, the cutter diameter should not exceed the diameter of the thread to be produced

GF-Z



Vollhartmetall-Gewindefräser

- Zur Herstellung von Innengewinden
- Abmessungsübergreifendes Werkzeug mit Standard-Gewindeprofil (steigungsgebunden)
- Höhere Nutenzahl im Vergleich zum Typ GF
- Optimierte Schneidengeometrie
- Voraussetzung ist ein vorgearbeitetes Kernloch ggf. mit einer Ansenkung
- Um größere Profilüberfräsungen bei Innengewinden zu vermeiden, sollte der Fräserdurchmesser nicht größer als $\frac{2}{3}$ (bei Feingewinden $\frac{3}{4}$) des herzustellenden Gewindes sein

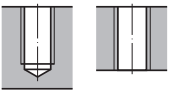
Solid carbide thread milling cutters

- For the production of internal threads
- Tool for different thread sizes with standard thread profile (but for one pitch only)
- Increased number of flutes compared with type GF
- Optimised cutting geometry
- A ready prepared thread hole is necessary, including chamfer if needed
- In order to avoid serious profile deviation in internal threads, the cutter diameter should not exceed $\frac{2}{3}$ (with fine threads, $\frac{3}{4}$) of the thread to be produced

3.2 EMUGE Gewindefräser-Typen

3.2 Our EMUGE thread milling cutter types

GF-Vario-Z

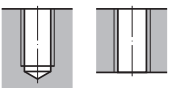
**Vollhartmetall-Gewindefräser variabel**

- Zur Herstellung von Innengewinden
- Abmessungsübergreifendes und steigungsgebundenes Werkzeug mit korrigiertem Gewindeprofil
- Hohe Nutenzahl
- Optimierte Schneidengeometrie
- Voraussetzung ist ein vorgearbeitetes Kernloch ggf. mit einer Ansenkung

Solid carbide thread milling cutters, variable

- For the production of internal threads
- Tool for different thread sizes, but for one pitch only, with corrected thread profile
- Large number of flutes
- Optimised cutting geometry
- A ready prepared thread hole is necessary, including chamfer if needed

GF-H

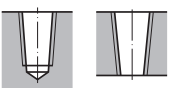
**Vollhartmetall-Gewindefräser für die Hartbearbeitung**

- Zur Herstellung von Innengewinden
- Abmessungsbezogenes Werkzeug mit korrigiertem Gewindeprofil
- Voraussetzung ist ein vorgearbeitetes Kernloch ggf. mit einer Ansenkung

Solid carbide thread milling cutters for hard machining

- For the production of internal threads
- Tool for one single thread size, with corrected thread profile
- A ready prepared thread hole is necessary, including chamfer if needed

GF-KEG

**Vollhartmetall-Gewindefräser für kegelige Gewinde**

- Zur Herstellung von kegeligen Innengewinden
- Abmessungs- bzw. steigungsgebundenes Werkzeug mit korrigiertem Gewindeprofil
- Voraussetzung ist ein zylindrisch oder besser ein kegelig vorgebohrtes Kernloch ggf. mit einer Ansenkung

Solid carbide thread milling cutters for tapered threads

- For the production of tapered internal threads
- Tool for one single thread size, resp. for one pitch only, with corrected thread profile
- A ready prepared cylindrical, or even better, tapered, thread hole is necessary, including chamfer if needed

Product
Finder v_c / f_z

M

MF

UNC
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BSW, BSF

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SELF-LOCK

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Zubehör
Accessories

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GSF

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GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys

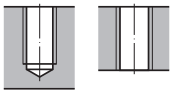


- Product Finder
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Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories

3.2 EMUGE Gewindefräser-Typen

3.2 Our EMUGE thread milling cutter types

ZGF



Vollhartmetall-Zirkulargewindefräser

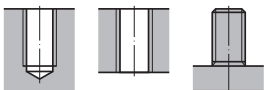
- Zur Herstellung von Innengewinden ab M1
- **ZGF**
Abmessungs- und steigungsübergreifendes Werkzeug mit korrigiertem Gewindeprofil
- **ZGF-S-CUT**
Abmessungsbezogenes Werkzeug mit korrigiertem Gewindeprofil
- **ZGF-HCUT**
Abmessungsbezogenes Werkzeug mit korrigiertem Gewindeprofil
- Voraussetzung ist ein vorgearbeitetes Kernloch ggf. mit einer Ansenkung

Solid carbide circular thread milling cutters

- For the production of internal threads from M1
- **ZGF**
Tool for different thread sizes and pitches, with corrected thread profile
- **ZGF-S-CUT**
Tool for one single thread size, with corrected thread profile
- **ZGF-HCUT**
Tool for one single thread size, with corrected thread profile
- A ready prepared thread hole is necessary, including chamfer if needed

Tech. Info

ZIRK-GF

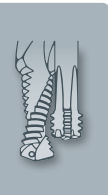


Zirkular-Gewindefräskörper

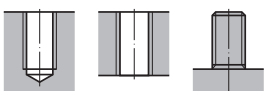
- Zur Herstellung von Innen- und Außengewinden
- Mit einer oder zwei Mehrzahnplatten
- Abmessungsübergreifendes und steigungsgebundenes Werkzeug
- Voraussetzung ist ein vorgearbeitetes Kernloch ggf. mit einer Ansenkung
- Um größere Profilüberfräsungen bei Innengewinden zu vermeiden, sollte der Fräserdurchmesser nicht größer als $\frac{2}{3}$ (bei Feingewinden $\frac{3}{4}$) des herzustellenden Gewindes sein

Circular thread milling bodies

- For the production of internal and external threads
- With one or two multi-tooth inserts
- Tool for different thread sizes, but for one pitch only
- A ready prepared thread hole is necessary, including chamfer if needed
- In order to avoid serious profile deviation in internal threads, the cutter diameter should not exceed $\frac{2}{3}$ (with fine threads, $\frac{3}{4}$) of the thread to be produced



ZIRK-GF



Zirkular-Gewindefräskörper

- Zur Herstellung von Innen- und Außengewinden
- Mit einer Einstechwendeplatte „3-Zahn“
- Abmessungs- und steigungsübergreifendes Werkzeug
- Voraussetzung ist ein vorgearbeitetes Kernloch ggf. mit einer Ansenkung
- Um größere Profilüberfräsungen bei Innengewinden zu vermeiden, sollte der Fräserdurchmesser nicht größer als $\frac{2}{3}$ (bei Feingewinden $\frac{3}{4}$) des herzustellenden Gewindes sein

Circular thread milling bodies

- For the production of internal and external threads
- With one infeed indexable insert, "3-tooth" design
- Tool for different thread sizes and pitches
- A ready prepared thread hole is necessary, including chamfer if needed
- In order to avoid serious profile deviation in internal threads, the cutter diameter should not exceed $\frac{2}{3}$ (with fine threads, $\frac{3}{4}$) of the thread to be produced

3.2 EMUGE Gewindefräser-Typen

3.2 Our EMUGE thread milling cutter types

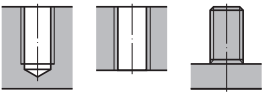
Gigant

**Zirkular-Gewindefräskörper**

- Zur Herstellung von großen Innen- und Außengewinden
- Mit bis zu zehn 4-Zahn-Wendeplatten (steigungsübergreifend)
- Abmessungs- und steigungsübergreifendes Werkzeug
- Voraussetzung ist ein vorgearbeitetes Kernloch ggf. mit einer Ansenkung

Circular thread milling bodies

- For the production of large internal and external threads
- With up to ten 4-tooth indexable inserts (independent of pitch)
- Tool for different thread sizes and pitches
- A ready prepared thread hole is necessary, including chamfer if needed

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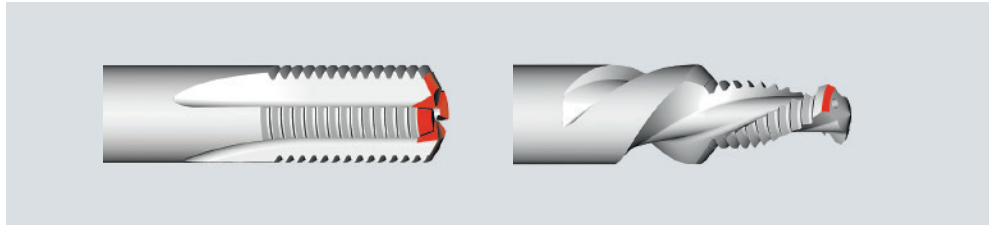
- Product Finder
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- M
- MF
- UNC
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- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories

3.3 Mögliche Modifikationen an Gewindefräsern

3.3 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

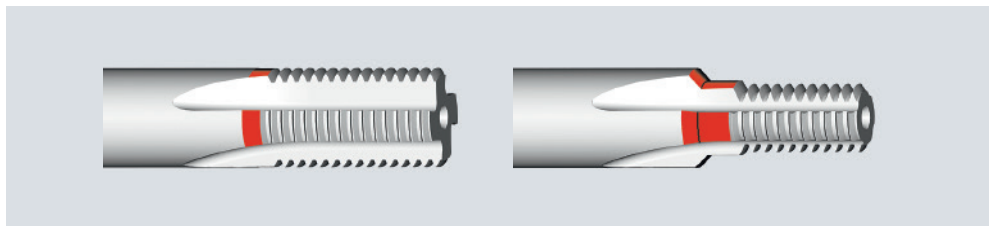
Note:

- Face chamfer for circular chamfering of the thread hole
- Additional cutting face for circular face milling

Tech. Info

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. $1 \times P$ hinterschleifen
- Bei entsprechender Eintauchtiefe wird beim Gewindefräsen der unvollständige, gratbehaftete Gewindegang abgefräst (entfernt)

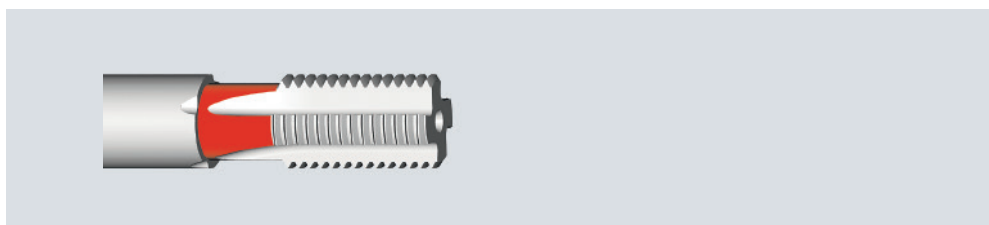
Note:

- At the rear end of the thread part, a step with a length of min. $1 \times P$ 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:

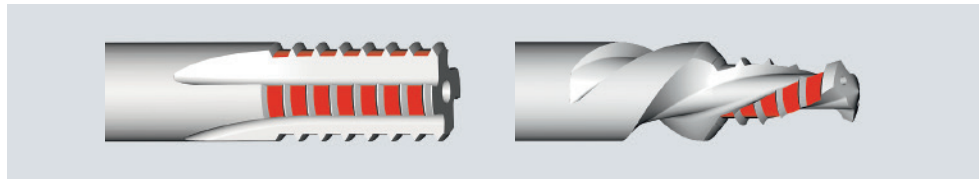
- For larger thread depths (total thread depth is achieved by a double milling process)
- For constant cutting pressure, the thread part length and the neck length are arranged in a ratio of 1:1!
- The thread part length and the offset for a second milling process are always a whole-number multiple of the thread pitch

3.3 Mögliche Modifikationen an Gewindfräsern

3.3 Possible modifications on thread milling cutters

AZR

Radial ausgesetzte Zahnreihen



Geeignet für:

- Alle Typen GF, GSF und BGF

Bemerkung:

- Durch **AZR** werden die Seitenkräfte beim Gewindfräsen reduziert; die zyklisch fehlenden Gewindelücken werden durch zusätzliche zirkuläre Fräsumläufe gefräst

Eine nicht gezeigte Variante wäre auch **AZ** (abwechselnd ausgesetzte Zähne)

Vorteil:

- Zusätzliche zirkuläre Fräsumläufe entfallen; dadurch ergibt sich eine normale Einstichbreite am Bohrungsgrund bei BGF

Suitable for:

- All types GF, GSF and BGF

Note:

- AZR helps to reduce lateral forces in thread milling; the alternating missing gaps in the thread are produced by additional circular milling orbits

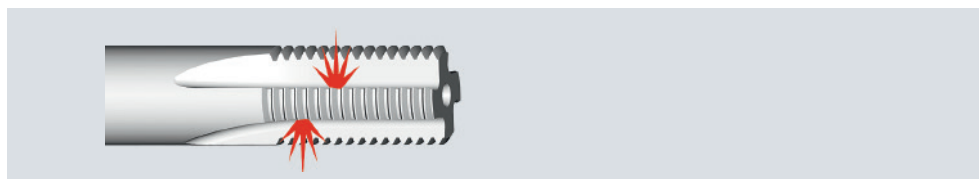
There is another variant, not shown here, called **AZ** (alternating teeth in a staggered sequence)

Advantage:

- No additional circular orbits are necessary; due to this, there is a perfectly normal recess depth at the hole bottom, if BGF type tools are used

IKZN

Innere Kühlschmierstoff-Zufuhr mit Austritt in den Nuten



Internal coolant supply exiting in the flutes

Geeignet für:

- Alle Typen GF und GSF

Bemerkung:

- Stirnseitig verschlossene Axialbohrung für die Bearbeitung von Durchgangslöchern
- Für maximale Stabilität des Frästeils sind die seitlichen Austrittsbohrungen axial versetzt angeordnet

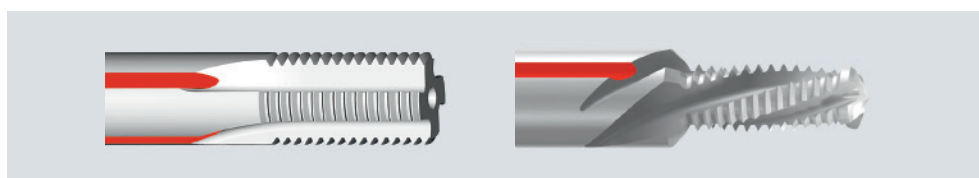
Suitable for:

- All types GF and GSF

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

Schaftkühlritzen



Coolant grooves along the shank

Geeignet für:

- Alle Typen GF, GSF und 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

Suitable for:

- All types GF, GSF and BGF

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

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



Product Finder

3.4 Berechnung der Schnittdaten

3.4 Calculation of cutting data

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

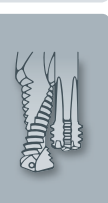
GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



$$v_c = \frac{d_1 \cdot \pi \cdot n}{1000} \text{ [m/min]}$$

Schnittgeschwindigkeit v_c in m/min

d_1 = Frästeildurchmesser in mm
 n = Drehzahl in min^{-1}

Cutting speed v_c in m/min

d_1 = Milling part diameter in mm
 n = Speed in min^{-1} (rpm)

$$n = \frac{v_c \cdot 1000}{d_1 \cdot \pi} \text{ [min}^{-1}\text{]}$$

Drehzahl n in min^{-1}

d_1 = Frästeildurchmesser in mm
 v_c = Schnittgeschwindigkeit in m/min

Speed n in min^{-1} (rpm)

d_1 = Milling part diameter in mm
 v_c = Cutting speed in m/min

$$v_f = f_z \cdot Z \cdot n \text{ [mm/min]}$$

Vorschubgeschwindigkeit Kontur v_f in mm/min

f_z = Vorschub pro Zahn in mm
 Z = Anzahl der Nuten

Feed speed contour v_f in mm/min

f_z = Feed per tooth in mm
 Z = No. of flutes

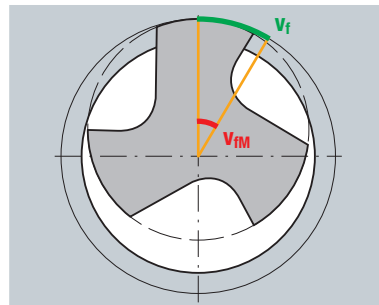
$$v_{fM} = \frac{v_f \cdot (D - d_1)}{D} \text{ [mm/min]}$$

Vorschubgeschwindigkeit Mittelpunktsbahn (bei Innengewinde) v_{fM} in mm/min

v_f = Vorschubgeschwindigkeit in mm/min
 D = Gewinendurchmesser in mm
 d_1 = Frästeildurchmesser in mm

Feed speed centre orbit (with internal threads) v_{fM} in mm/min

v_f = Feed speed in mm/min
 D = Nominal thread diameter in mm
 d_1 = Milling part diameter in mm



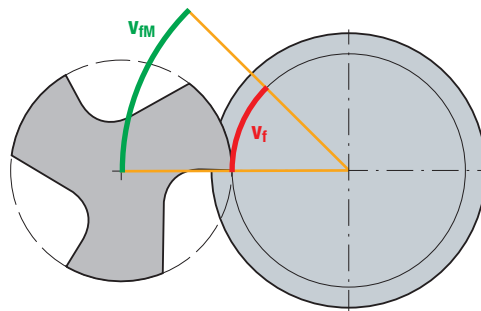
$$v_{fM} = \frac{v_f \cdot (D + d_1)}{D} \text{ [mm/min]}$$

Vorschubgeschwindigkeit Mittelpunktsbahn (bei Außengewinde) v_{fM} in mm/min

v_f = Vorschubgeschwindigkeit in mm/min
 D = Gewinendurchmesser in mm
 d_1 = Frästeildurchmesser in mm

Feed speed centre orbit (with external threads) v_{fM} in mm/min

v_f = Feed speed in mm/min
 D = Nominal thread diameter in mm
 d_1 = Milling part diameter in mm

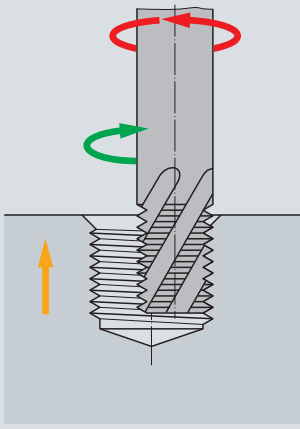
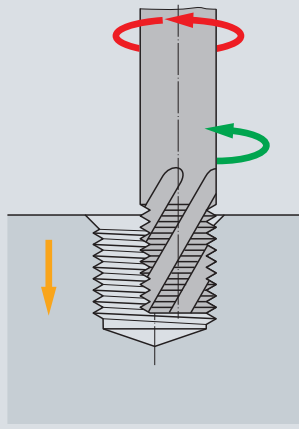








Der eingegebene Konturvorschub wird von der Maschine auf die Mittelpunktsbahn umgerechnet! Sollte dies nicht der Fall sein (erkennbar an einer wesentlich schnelleren Bearbeitungszeit bzw. Werkzeugbruch) muss der Mittelpunktsbahnvorschub eingegeben werden.

The contour feed entered is recalculated to the centre orbit by the machine! If this should not happen (to be recognised by the noticeably increased machining speed or by tool breakage), then the centre orbit feed must be entered manually.

3.5 Gewindefräsverfahren (Rechtsgewinde)

3.5 Thread milling processes (right-hand thread)

| <p>Gleichlaufräsen Climb milling</p> | <p>Gegenlaufräsen Conventional milling</p> |
|--|--|
|  |  |
|  Werkzeugdrehrichtung „rechts“ Sense of rotation of tool “right-hand”  Vorschubbewegung gegen den Uhrzeigersinn Feed movement in counter-clock-wise direction  Steigung „aufwärts“ Pitch “upwards” |  Werkzeugdrehrichtung „rechts“ Sense of rotation of tool “right-hand”  Vorschubbewegung im Uhrzeigersinn Feed movement in clock-wise direction  Steigung „abwärts“ Pitch “downwards” |

| |
|---|
| Product Finder |
| v_c / f_z |
| M |
| MF |
| UNC UN, UNS |
| UNF UNEF |
| G, Rp |
| NPT, NPTF Rc, W |
| BSW, BSF |
| Pg |
| EG (STI) SELF-LOCK |
| Tr |
| Zubehör Accessories |
| Tech. Info |
| BGF |
| ZBGF |
| GSF |
| GF |
| 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

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

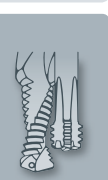
GF-KEG

ZGF

ZIRK-GF

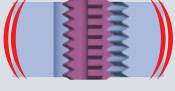



Gigant

MoSys



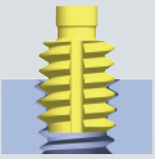
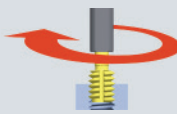


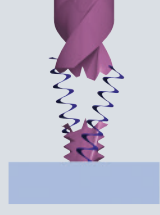
3.6 Probleme, mögliche Ursachen und Abhilfen beim Gewindefräsen

3.6 Problems, possible causes and solutions in thread milling

| | | Gewindefräsen allgemein Thread milling in general | | | |
|--------------------------------------|---|---|--|---|---|
| | |  |  |  |  |
| | | Ratteln, Vibrationen Chattering, vibrations | Schlechte Werkstückoberfläche Bad surface quality on workpiece | übermäßiger Verschleiß Excessive wear | Schneidkanten- ausbrüche Chipped cutting edges |
| Mögliche Ursachen Possible causes | | Abhilfen · Solutions | | | |
| ~ | Überprüfen Check | | | | |
| ↑ | Steigern, erhöhen Increase | | | | |
| ↓ | Vermindern Decrease | | | | |
| GL | Gleichlaufräsen Climb milling | | | | |
| GG | Gegenlaufräsen Conventional milling | | | | |
| | Schnittgeschwindigkeit Cutting speed | ~ | ~ | ↓ | |
| | Vorschub pro Zahn Feed per tooth | ~ | ~ | ↑ | ↓ |
| | Stabilität (Werkstück/Werkstückspannung) Stability (workpiece/workpiece clamping) | ↑ | ↑ | ↑ | ↑ |
| | Stabilität (Werkzeug/Maschine) Stability (tool/machine) | ↑ | ↑ | ↑ | ↑ |
| | Auskraglänge Protruding length (of tool) | ↓ | ↓ | ↓ | ~ |
| | Werkzeugspirale (Drallnut) Tool helix (spiral flutes) | ↑ | ↑ | ~ | ~ |
| | Rundlaufgenauigkeit Concentricity | ~ | ~ | ~ | |
| | Beschichtung Coating | | | ↑ | ↑ |
| | Fräsverfahren/Programm/programmierter Radius Milling process/programme/programmed radius | | | GL | GL |
| | Einsatzbereich (Durchmesser-Verhältnis) Work case (relation of tool/thread diameters) | | | | |
| | Werkzeugwechsel Tool change | | | | |
| | NC-Achsen/Bahngeschwindigkeit (Rechner) NC axis/path speed (computer) | ~ | ~ | ~ | ~ |
| | Bohrvorschub (Entspannen) Drilling speed (remove chips) | | | | |
| | Kühlschmierstoff-Druck/Austrittsbohrung Coolant-lubricant pressure (exit bore) | | | ~ | ~ |

3.6 Probleme, mögliche Ursachen und Abhilfen beim Gewindefräsen

3.6 Problems, possible causes and solutions in thread milling

| Gewindefräsen allgemein Thread milling in general | | Bohrgewindefräsen Drill thread milling | | |
|---|---|---|---|---|
|  |  |  |  |  |
| Gewinde wird konisch (Lehre klemmt auf Tiefe) Tapered thread shape (gauge jams after reaching a certain depth) | Geringe Toleranz von Gut- zu Ausschuss-Lehrung Small difference between go and no-go gauging | Markierung im Einfahrbereich Marks in the run-in area | Zahnausbrüche am Bohrgewindefräser Tooth chipping on the drill thread mill | Werkzeugbruch beim Bohren Tool breakage during the drilling process |

Abhilfen · Solutions

| | | | | |
|----|---|---|---|-----|
| | | | ~ | |
| ↓ | | | ~ | |
| ↑ | | ~ | | |
| ↑ | | ~ | | |
| ↓ | | | | |
| ~ | | | | |
| | ~ | | ~ | ~ |
| GG | | ~ | ~ | |
| | ~ | | | |
| | ~ | | | |
| ~ | | ~ | ~ | |
| | | | ~ | ↓ ~ |
| | | | ~ | ~ |

- Product Finder
- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
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- ZIRK-GF
- Gigant
- MoSys

3.7 Programmierung Ein- und Ausfahren im Viertelkreis

3.7 Programming of run-in and run-out in a quarter circle

- Wird verwendet, wenn der Abstand zwischen Gewindefräser und Kernlochwand mindestens 1 x Steigung beträgt
- Programmierung nach DIN 66025
- Gleichlaufräsen
- Inkrementaler Aufbau an der Gewindekontur
- Unterprogramm zur Abarbeitung des Gewindes

- To be used if the distance between thread milling cutter and thread hole wall is 1 x pitch as a minimum
- Programming acc. DIN 66025
- Climb milling
- Incremental construction along the thread contour
- Sub-programme for processing the thread

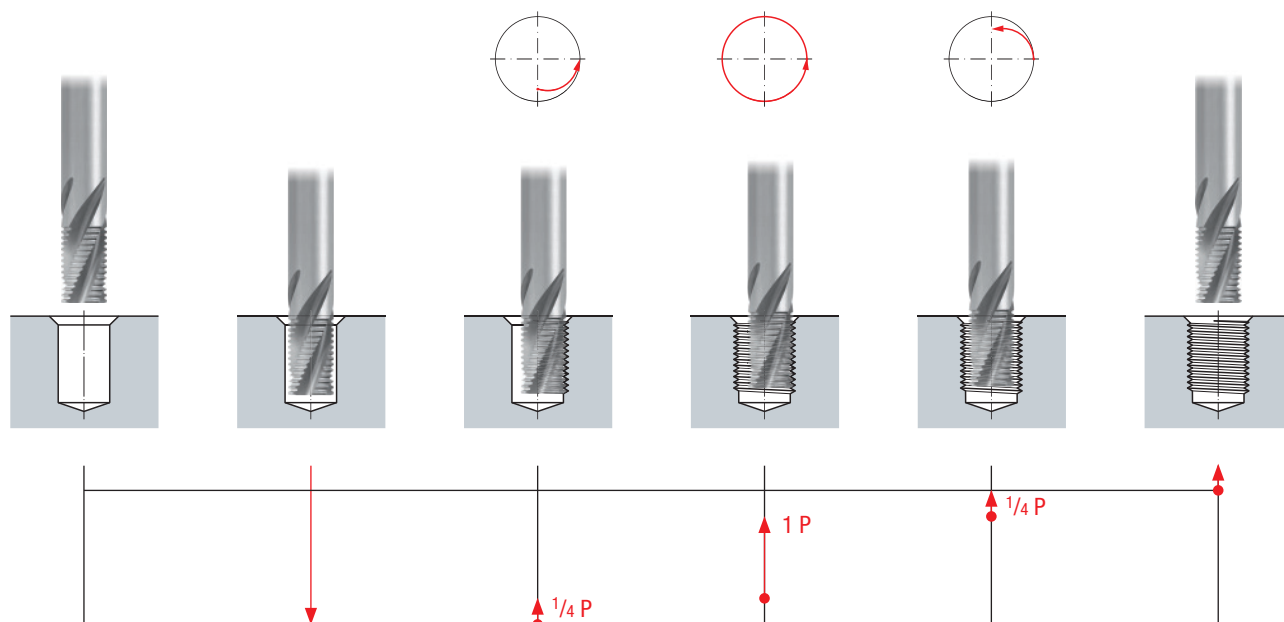
Gewinde: M20 x 1,5 – Gewindetiefe 16 mm
Werkzeug: GF-VHM-R30-IKZ-HB (Z4)
Artikel-Nr.: GF162121.9514

Thread: M20 x 1,5 – Thread depth 16 mm
Tool: GF-VHM-R30-IKZ-HB (Z4)
Article no.: GF162121.9514

| | | | | | | | | | | |
|------|------|--------|------|---------|---------|---------|---------|---------|------|--|
| N 10 | G 54 | G 90 | G 00 | X... | Y... | Z 2 | S 2500 | T 01 | M 03 | Startpunkt · Start point ■ = Sicherheitsabstand 2 mm · Safety distance 2 mm |
| N 20 | G 91 | G 00 | | | | Z -18 | | | | Gewindetiefe abfahren · Run down to thread depth ■ = Sicherheitsabstand + Gewindetiefe · Safety distance + thread depth |
| N 30 | G 01 | Y 0,75 | | F 200 | | | | | | ■ = 1/2 Steigung verfahren · Relocate by 1/2 pitch |
| N 40 | G 41 | G 01 | | X 9,25 | | | | | | ■ = (Nenndurchm. – Steigung) / 2 · (Nominal dia. – pitch) / 2 |
| N 50 | G 03 | | | X -9,25 | Y 9,25 | Z 0,375 | I -9,25 | J 0 | | ■ = (Nenndurchm. – Steigung) / 2 · (Nominal dia. – pitch) / 2 ■ = Steigung / 4 · Pitch / 4 |
| N 60 | G 03 | | | X 0 | Y 0 | Z 1,5 | I 0 | J -10 | | ■ = Steigung · Pitch ■ = Nenndurchm. / 2 · Nominal dia. / 2 |
| N 70 | G 03 | | | X -9,25 | Y -9,25 | Z 0,375 | I 0 | J -9,25 | | ■ = (Nenndurchm. – Steigung) / 2 · (Nominal dia. – pitch) / 2 ■ = Steigung / 4 · Pitch / 4 |
| N 80 | G 00 | G 40 | | X 9,25 | Y -0,75 | | | | | ■ = (Nenndurchm. – Steigung) / 2 · (Nominal dia. – pitch) / 2 ■ = 1/2 Steigung verfahren · Relocate by 1/2 pitch |
| N 90 | G 90 | | | | | Z 2 | | | | ■ = Endpunkt bzw. Ausgangspunkt · Finish point resp. point of origin |

Programmablauf

Programme sequence



Programmierhilfen zum Gewindefräsen für DIN- und Heidenhain-Steuerungen sind auf www.emuge.de als Download verfügbar.

Programming support for thread milling with DIN and Heidenhain controls is available for download on www.emuge.de.

3.8 Programmierbeispiele (DIN)

Werkzeug: BGF-Z2 – 1,5 x D

3.8 Programming examples (DIN)

Tool: BGF-Z2 – 1.5 x D

| | |
|--|----------------------------|
| Gewinde-Abmessung: Thread dimension: | M10 - 6H |
| Gewinde-Nenn Durchmesser D: Nominal thread diameter D: | 10,000 mm |
| Gewindesteigung P: Thread pitch P: | 1,500 mm |
| Kernlochdurchmesser D₁: Drilled hole diameter D ₁ : | 8,500 mm |
| Bohr-/ Senktiefe l_E: Drilling/Countersinking depth l _E : | 19,100 mm |
| Werkstoff: Material: | GAISI9 |
| Werkzeug-Abmessungen: Tool dimensions: | ∅ 8,2 x 19,1 x 79 mm |
| Schneidstoff: Cutting material: | VHM |
| Beschichtung: Coating: | TICN |
| Artikel-Nr.: Article no.: | GF422206.0100 |
| Zähnezahl Z: No. of teeth Z: | 2 |
| Fräserdurchmesser d₁: Cutter diameter d ₁ : | 8,200 mm |
| Fräserradiuskorrektur k¹⁾: Cutter radius compensation k ¹⁾ : | 0,100 mm |
| zu programmierender Fräserradius²⁾: Cutter radius to be programmed ²⁾ : | 4,000 mm |
| Schnittgeschwindigkeit v_c: Cutting speed v _c : | 250 m/min |
| Vorschub pro Umdrehung (Bohren/Senken) f_b: Feed per revolution (Drilling/countersinking) f _b : | 0,250 mm |
| Vorschub pro Zahn (Fräsen) f_z: Feed per tooth (milling) f _z : | 0,100 mm |
| Drehzahl n: Speed n: | S = 9709 min ⁻¹ |
| Vorschubgeschwindigkeit (Bohren/Senken) v_b: Feed speed (Drilling/countersinking) v _b : | F = 2427 mm/min |
| Vorschubgeschwindigkeit (Kontur) v_f: Feed speed (contour) v _f : | F = 1942 mm/min |
| Vorschubgeschwindigkeit (Mittelpunktsbahn) v_{fM}: Feed speed (centre point) v _{fM} : | F = 350 mm/min |

(gemessen am Frästeil)
(measured on the cutting part)

$$(0,01 \cdot D)$$

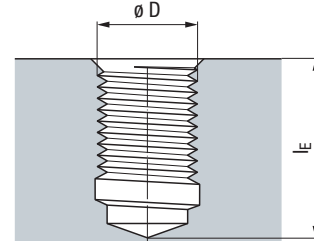
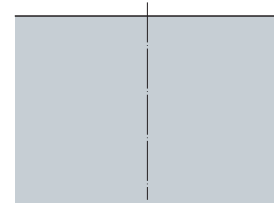
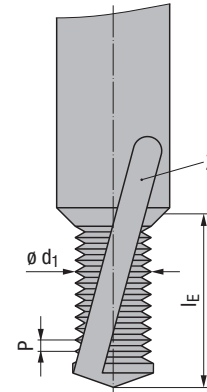
$$(0,5 \cdot d_1 - k)$$

$$n = \frac{v_c \cdot 1000}{d_1 \cdot \pi}$$

$$v_b = f_b \cdot n$$

$$v_f = f_z \cdot Z \cdot n$$

$$v_{fM} = \frac{v_f \cdot (D - d_1)}{D}$$



CNC-Innengewindefräsen (im Gleichlauf, an der Kontur, inkremental, nach DIN 66025)

CNC internal thread milling (climb milling, on the contour, incremental, acc. DIN 66025)

| | | | | | | | | | |
|------|------|----------|--|--|------|----------|--|--------------------|-----|
| N 10 | G 54 | G 90 | G 00 | X... | Y... | Z 2 | S 9709 | T 01 ²⁾ | M03 |
| N 20 | G 91 | G 01 | Z -21,100 | F 2427 (Bohren/Senken · Drilling/countersinking) | | | | | |
| N 30 | G 01 | Z 0,500 | | | | | | | |
| N 40 | G 41 | Y -4,250 | F 1942 (Fräsen, Kontur · Milling, contour) | | | | [F 350] ³⁾ (Mittelpunkt · Centre point) | | |
| N 50 | G 03 | X 0 | Y 9,250 | Z 0,750 | I 0 | J 4,625 | | | |
| N 60 | G 03 | X 0 | Y 0 | Z 1,500 | I 0 | J -5,000 | | | |
| N 70 | G 03 | X 0 | Y -9,250 | Z 0,750 | I 0 | J -4,625 | | | |
| N 80 | G 00 | G 40 | X 0 | Y 4,250 | | | | | |
| N 90 | G 90 | Z 2 | | | | | | | |

Zerspanzeit t_n:
Machining time t_n: **2,3 sec.**

¹⁾ Der über die Zahnschneidkante des Gewindeteils gemessene Fräserradius ist um den Betrag der Fräserradiuskorrektur zu reduzieren. Hiermit wird eine Zustellung auf Mitte der „6H/ISO2-Muttertoleranz“ erreicht. Die Fräserradiuskorrektur hängt aber auch von der radialen Verdrängung des Werkzeuges ab (Festigkeit des zu fräsenden Materials und Auskraglänge).

²⁾ Der zu programmierende Fräserradius ist üblicherweise im Werkzeugspeicher enthalten.

³⁾ Bei Steuerungen, welche die Berechnung des Mittelpunktsvorschubs nicht selbstständig durchführen, müssen die Vorschubwerte in Klammern verwendet werden.

¹⁾ The cutter radius measured over the tooth crests of the threaded part must be reduced by the amount of the cutter radius compensation. This is necessary to achieve a depth of cut to the middle of the 6H/ISO2 nut tolerance. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projection length of the tool).

²⁾ The cutter radius to be programmed is normally included in the tool memory.

³⁾ If your control does not calculate the centre point feed automatically please use the feed values printed in brackets.

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



Product Finder

v_c / f_z

3.8 Programmierbeispiele (DIN)

Werkzeug: ZBGF-W

3.8 Programming examples (DIN)

Tool: ZBGF-W

| | | |
|------------------------|--|-----------------------------|
| M | Gewinde-Abmessung: Thread dimension: | M12 x 1,5 - 6H |
| MF | Gewinde-Nenndurchmesser D: Nominal thread diameter D: | 12,000 mm |
| UNC UN, UNS | Gewindesteigung P: Thread pitch P: | 1,500 mm |
| UNF UNEF | Kernlochdurchmesser D₁: Drilled hole diameter D ₁ : | 10,500 mm |
| G, Rp | Gewindetiefe b ³⁾: Thread depth b ³⁾ : | 15,000 mm |
| NPT, NPTF Rc, W | Länge l₂: Length l ₂ : | 6,000 mm |
| BSW, BSF | Werkstoff: Material: | GAISI9 |
| Pg | Werkzeug-Abmessungen: Tool dimensions: | ø 7,75 x 6,9 x 76 mm |
| EG (STI) SELF-LOCK | Schneidstoff: Cutting material: | VHM |
| Tr | Beschichtung: Coating: | TIALN-T4 |
| Zubehör Accessories | Artikel-Nr.: Article no.: | GF732257.0100 |
| Tech. Info | Zähnezahl Z: No. of teeth Z: | 4 |
| BGF | Fräserdurchmesser d₁: Cutter diameter d ₁ : | 7,750 mm |
| ZBGF | Fräserradiuskorrektur k ¹⁾: Cutter radius compensation k ¹⁾ : | 0,120 mm |
| GSF | zu programmierender Fräserradius ¹⁾: Cutter radius to be programmed ¹⁾ : | 3,755 mm |
| GF | Schnittgeschwindigkeit v_c: Cutting speed v _c : | 250 m/min |
| GF-KEG | Vorschub pro Zahn (Fräsen) f_z: Feed per tooth (milling) f _z : | 0,100 mm |
| ZGF | Drehzahl n: Speed n: | S = 10273 min ⁻¹ |
| ZIRK-GF | Vorschubgeschwindigkeit (Kontur) v_f: Feed speed (contour) v _f : | F = 4109 mm/min |
| Gigant | Vorschubgeschwindigkeit (Mittelpunktsbahn) v_{fM}: Feed speed (centre point) v _{fM} : | F = 1455 mm/min |
| MoSys | | |

(gemessen am Frästeil)
(measured on the cutting part)

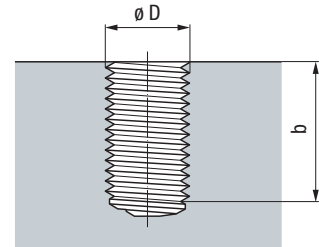
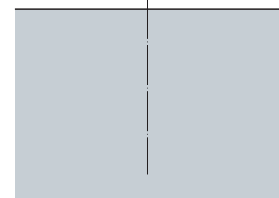
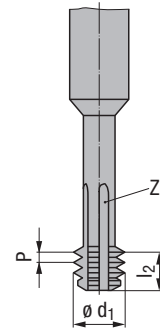
(je nach Einsatzfall)
(acc. work case)

(0,5 · d₁ - k)

$$n = \frac{v_c \cdot 1000}{d_1 \cdot \pi}$$

$$v_f = f_z \cdot Z \cdot n$$

$$v_{fM} = \frac{v_f \cdot (D - d_1)}{D}$$



CNC-Innengewindefräsen (im Gegenlauf, an der Kontur, inkremental, nach DIN 66025)

CNC internal thread milling (conventional milling, on the contour, incremental, acc. DIN 66025)

| | | | | | | | | | |
|-------------------|------|------|-------|------|---------------------------|---------|------------------------|------------------------------|------|
| N 10 | G 54 | G 90 | G 00 | X... | Y... | Z 1,500 | S 10273 | T 01 ²⁾ | M 03 |
| N 20 | G 91 | | | | | | | | |
| N 30 | G 42 | G 01 | X 0 | Y -6 | F 4109 (Kontur · contour) | | [F 1455] ⁴⁾ | (Mittelpunkt · Centre point) | |
| N 40 | G 02 | G 01 | X 0 | Y 0 | Z -1,500 | I 0 | J 6,000 | | |
| ... ⁵⁾ | | | | | | | | | |
| N 50 | G 40 | G 01 | X 0 | Y 6 | | | | | |
| N 70 | G 90 | G 00 | Z 1,5 | | | | | | |

| | |
|--|-----------------|
| Zerspanzeit t_h: Machining time t _h : | 8,3 sec. |
| Anzahl der Gewindegänge ⁵⁾: Number of threads ⁵⁾ : | 14 |

¹⁾ Der zu programmierende Fräserradius ist je nach Einsatzfall zu korrigieren, bis das Gewinde die gewünschte Muttertoleranz, z.B. 6H/ISO2 erreicht. Die Fräserradiuskorrektur hängt aber auch von der radialen Verdrängung des Werkzeugs ab (Festigkeit des zu fräsenden Materials und Auskraglänge).

²⁾ Der zu programmierende Fräserradius ist üblicherweise im Werkzeugspeicher enthalten.

³⁾ Die eingegebene Gewindetiefe b muss durch die Steigung P teilbar sein.

⁴⁾ Bei Steuerungen, welche die Berechnung des Mittelpunktvorschubs nicht selbstständig durchführen, müssen die Vorschubwerte in Klammern verwendet werden.

⁵⁾ Satz N 40 muss mit Anzahl der Gewindegänge wiederholt werden.

¹⁾ The cutter radius to be programmed must be corrected, depending on the work case, until the thread achieves the required nut tolerance, e.g. 6H/ISO2. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projection length of the tool).

²⁾ The cutter radius to be programmed is normally included in the tool memory.

³⁾ The thread depth b as entered must be divisible by the pitch P.

⁴⁾ If your control does not calculate the centre point feed automatically please use the feed values printed in brackets.

⁵⁾ Block N 40 must be repeated with the number of threads.

3.8 Programmierbeispiele (DIN)

Werkzeug: GSF – 2 x D

3.8 Programming examples (DIN)

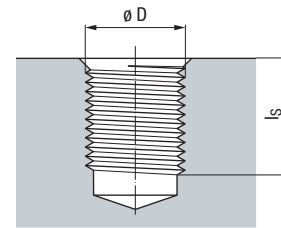
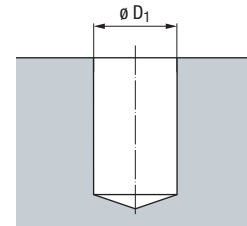
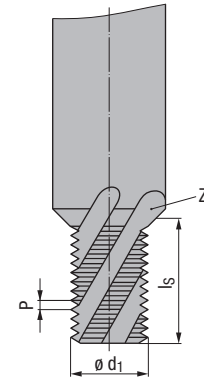
Tool: GSF – 2 x D

| | |
|---|-----------|
| Gewinde-Abmessung: Thread dimension: | M10 - 6H |
| Gewinde-Nenn Durchmesser D: Nominal thread diameter D: | 10,000 mm |
| Gewindesteigung P: Thread pitch P: | 1,500 mm |
| Kernlochdurchmesser D₁: Drilled hole diameter D ₁ : | 8,500 mm |
| Senktiefe I_S: Countersinking depth I _S : | 21,200 mm |
| Werkstoff: Material: | GAISI9 |

| | |
|---|----------------------|
| Werkzeug-Abmessungen: Tool dimensions: | ∅ 8,2 x 21,2 x 80 mm |
| Schneidstoff: Cutting material: | VHM |
| Beschichtung: Coating: | TICN |
| Artikel-Nr.: Article no.: | GF332106.0100 |
| Zähnezahl Z: No. of teeth Z: | 3 |
| Fräserdurchmesser d₁: Cutter diameter d ₁ : | 8,200 mm |

| | | |
|--|----------------------------|--|
| Fräserradiuskorrektur k¹: Cutter radius compensation k ¹ : | 0,100 mm | (0,01 · D) |
| zu programmierender Fräserradius²: Cutter radius to be programmed ² : | 4,000 mm | (0,5 · d ₁ - k) |
| Schnittgeschwindigkeit v_c: Cutting speed v _c : | 250 m/min | |
| Vorschub pro Umdrehung (Senken) f_s: Feed per revolution (countersinking) f _s : | 0,200 mm | |
| Vorschub pro Zahn (Fräsen) f_z: Feed per tooth (milling) f _z : | 0,100 mm | |
| Drehzahl n: Speed n: | S = 9709 min ⁻¹ | $n = \frac{v_c \cdot 1000}{d_1 \cdot \pi}$ |
| Vorschubgeschwindigkeit (Senken) v_s: Feed speed (countersinking) v _s : | F = 1942 mm/min | v _s = f _s · n |
| Vorschubgeschwindigkeit (Kontur) v_f: Feed speed (contour) v _f : | F = 2913 mm/min | v _f = f _z · Z · n |
| Vorschubgeschwindigkeit (Mittelpunktsbahn) v_{fM}: Feed speed (centre point) v _{fM} : | F = 524 mm/min | $v_{fM} = \frac{v_f \cdot (D - d_1)}{D}$ |

(gemessen am Frästeil)
(measured on the cutting part)



CNC-Innengewindefräsen (im Gleichlauf, an der Kontur, inkremental, nach DIN 66025)

CNC internal thread milling (climb milling, on the contour, incremental, acc. DIN 66025)

| | | | | | | | | | |
|-------|------|-----------|----------|---------|--|----------|-----------------------|------------------------------|------|
| N 10 | G 54 | G 90 | G 00 | X... | Y... | Z 2 | S 9709 | T 01 ²⁾ | M 03 |
| N 20 | G 91 | Z -21,200 | | | | | | | |
| N 30 | G 01 | Z -2 | | | F 1942 (Senken · countersinking) | | | | |
| N 40 | G 01 | Z 0,500 | | | | | | | |
| N 50 | G 41 | Y -4,250 | | | F 2913 (Fräsen, Kontur · Milling, contour) | | [F 524] ³⁾ | (Mittelpunkt · Centre point) | |
| N 60 | G 03 | X 0 | Y 9,250 | Z 0,750 | I 0 | J 4,625 | | | |
| N 70 | G 03 | X 0 | Y 0 | Z 1,500 | I 0 | J -5,000 | | | |
| N 80 | G 03 | X 0 | Y -9,250 | Z 0,750 | I 0 | J -4,625 | | | |
| N 90 | G 00 | G 40 | X 0 | Y 4,250 | | | | | |
| N 100 | G 90 | Z 2 | | | | | | | |

Zerspanzeit t_n:
Machining time t_n: **1,3 sec.**

¹⁾ Der über die Zahnschneidkante des Gewindeteils gemessene Fräserradius ist um den Betrag der Fräserradiuskorrektur zu reduzieren. Hiermit wird eine Zustellung auf Mitte der „6H/ISO2-Muttertoleranz“ erreicht. Die Fräserradiuskorrektur hängt aber auch von der radialen Verdrängung des Werkzeuges ab (Festigkeit des zu fräsierenden Materials und Auskraglänge).
²⁾ Der zu programmierende Fräserradius ist üblicherweise im Werkzeugspeicher enthalten.
³⁾ Bei Steuerungen, welche die Berechnung des Mittelpunktsvorschubs nicht selbstständig durchführen, müssen die Vorschubwerte in Klammern verwendet werden.

¹⁾ The cutter radius measured over the tooth crests of the threaded part must be reduced by the amount of the cutter radius compensation. This is necessary to achieve a depth of cut to the middle of the 6H/ISO2 nut tolerance. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projection length of the tool).
²⁾ The cutter radius to be programmed is normally included in the tool memory.
³⁾ If your control does not calculate the centre point feed automatically please use the feed values printed in brackets.

- Product Finder
- v_c / f_z
- M
- MF
- UNC
UN, UNS
- UNF
UNEF
- G, Rp
- NPT, NPTF
Rc, W
- BSW, BSF
- Pg
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info**
- BGF
- ZBGF
- GSF
- GF
- 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

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

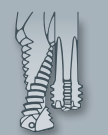
GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



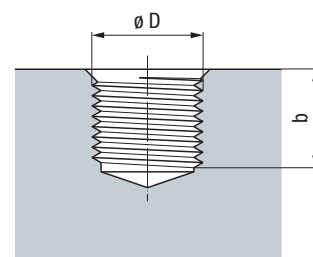
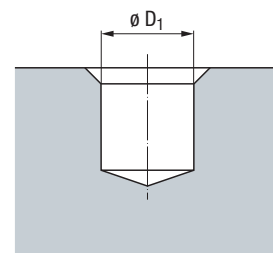
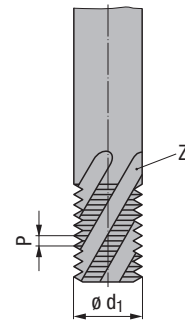
3.8 Programmierbeispiele (DIN)

Werkzeug: GF

| | |
|--|----------------------------|
| Gewinde-Abmessung: Thread dimension: | M30 x 1,5 - 6H |
| Gewinde-Nenndurchmesser D: Nominal thread diameter D: | 30,000 mm |
| Gewindesteigung P: Thread pitch P: | 1,500 mm |
| Kernlochdurchmesser D₁: Drilled hole diameter D ₁ : | 28,500 mm |
| Gewindetiefe b: Thread depth b: | 25,000 mm |
| Werkstoff: Material: | GAISI9 |
| Werkzeug-Abmessungen: Tool dimensions: | ∅ 20 x 32 x 105 mm |
| Schneidstoff: Cutting material: | VHM |
| Beschichtung: Coating: | TICN |
| Artikel-Nr.: Article no.: | GF163156.9514 |
| Zähnezahl Z: No. of teeth Z: | 5 |
| Fräserdurchmesser d₁: Cutter diameter d ₁ : | 20,000 mm |
| Fräserradiuskorrektur k¹: Cutter radius compensation k ¹ : | 0,075 mm |
| zu programmierender Fräserradius²: Cutter radius to be programmed ² : | 9,925 mm |
| Schnittgeschwindigkeit v_c: Cutting speed v _c : | 250 m/min |
| Vorschub pro Zahn (Fräsen) f_z: Feed per tooth (milling) f _z : | 0,100 mm |
| Drehzahl n: Speed n: | S = 3981 min ⁻¹ |
| Vorschubgeschwindigkeit (Kontur) v_f: Feed speed (contour) v _f : | F = 1990 mm/min |
| Vorschubgeschwindigkeit (Mittelpunktsbahn) v_{fM}: Feed speed (centre point) v _{fM} : | F = 663 mm/min |

3.8 Programming examples (DIN)

Tool: GF



(gemessen am Frästeil)
(measured on the cutting part)

$$(0,05 \cdot P)$$

$$(0,5 \cdot d_1 - k)$$

$$n = \frac{v_c \cdot 1000}{d_1 \cdot \pi}$$

$$v_f = f_z \cdot Z \cdot n$$

$$v_{fM} = \frac{v_f \cdot (D - d_1)}{D}$$

CNC-Innengewindefräsen (im Gleichlauf, an der Kontur, inkremental, nach DIN 66025)

CNC internal thread milling (climb milling, on the contour, incremental, acc. DIN 66025)

| | | | | | | | | | |
|------|------|-----------|----------|---------|---------------------------|-----------|-----------------------|------------------------------|------|
| N 10 | G 54 | G 90 | G 00 | X... | Y... | Z 2 | S 3981 | T 01 ²⁾ | M 03 |
| N 20 | G 91 | G 00 | Z -27 | | | | | | |
| N 30 | G 01 | Y 0,750 | | | F 1990 (Kontur · Contour) | | [F 663] ³⁾ | (Mittelpunkt · Centre point) | |
| N 40 | G 41 | G 01 | X 14,25 | | | | | | |
| N 50 | G 03 | X -14,250 | Y 14,25 | Z 0,375 | I -14,250 | J 0 | | | |
| N 60 | G 03 | X 0 | Y 0 | Z 1,5 | I 0 | J -15,000 | | | |
| N 70 | G 03 | X -14,250 | Y -14,25 | Z 0,375 | I 0 | J -14,250 | | | |
| N 80 | G 00 | G 40 | X 14,25 | Y -0,75 | | | | | |
| N 90 | G 90 | Z 2 | | | | | | | |

Zerspanzeit t_h:
Machining time t_h: **4,2 sec.**

¹⁾ Der über die Zahnspitze des Gewindeteils gemessene Fräserradius ist um den Betrag der Fräserradiuskorrektur zu reduzieren. Hiermit wird eine Zustellung auf Mitte der „6H/ISO2-Muttertoleranz“ erreicht. Die Fräserradiuskorrektur hängt aber auch von der radialen Verdrängung des Werkzeuges ab (Festigkeit des zu fräsenden Materials und Auskraglänge).

²⁾ Der zu programmierende Fräserradius ist üblicherweise im Werkzeugspeicher enthalten.

³⁾ Bei Steuerungen, welche die Berechnung des Mittelpunktvorschubs nicht selbstständig durchführen, müssen die Vorschubwerte in Klammern verwendet werden.

¹⁾ The cutter radius measured over the tooth crests of the threaded part must be reduced by the amount of the cutter radius compensation. This is necessary to achieve a depth of cut to the middle of the 6H/ISO2 nut tolerance. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projection length of the tool).

²⁾ The cutter radius to be programmed is normally included in the tool memory.

³⁾ If your control does not calculate the centre point feed automatically please use the feed values printed in brackets.

3.8 Programmierbeispiele (DIN)

Werkzeug: GF-KEG

3.8 Programming examples (DIN)

Tool: GF-KEG

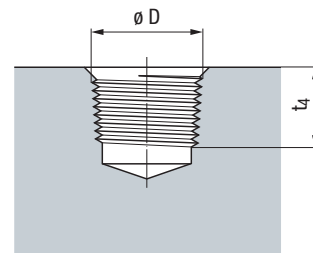
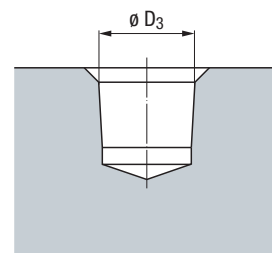
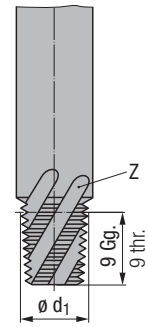
| | |
|--|----------------------------|
| Gewinde-Abmessung: Thread dimension: | NPT 1/2 - 14 |
| Gewinde-Außendurchmesser D: Thread major diameter D: | 21,092 mm |
| Kegelverhältnis: Taper ratio: | 1 : 16 |
| Steigung: Pitch: | 1,814 mm |
| Kernlochdurchmesser D₃: Drilled hole diameter D ₃ : | 17,850 mm |
| Nutzbare Tiefe t₄: Usable depth t ₄ : | 15,384 mm |
| Werkstoff: Material: | GAISI9 |
| Werkzeug-Abmessungen: Tool dimensions: | ø 14,25 x 19,01 x 80 mm |
| Schneidstoff: Cutting material: | VHM |
| Beschichtung: Coating: | TICN |
| Artikel-Nr.: Article no.: | GF173136.9678 |
| Zähnezahl Z: No. of teeth Z: | 4 |
| Fräserdurchmesser d₁: Cutter diameter d ₁ : | 14,250 mm |
| zu programmierender Fräserradius: Cutter radius to be programmed: | 7,080 mm |
| Schnittgeschwindigkeit v_c: Cutting speed v _c : | 250 m/min |
| Vorschub pro Zahn (Fräsen) f_z: Feed per tooth (milling) f _z : | 0,120 mm |
| Drehzahl n: Speed n: | S = 5584 min ⁻¹ |
| Vorschubgeschwindigkeit (Kontur) v_f: Feed speed (contour) v _f : | F = 2681 mm/min |
| Vorschubgeschwindigkeit (Mittelpunktsbahn) v_{fM}: Feed speed (centre point) v _{fM} : | F = 870 mm/min |

(gemessen am Frästeil)
(measured on the cutting part)

$$n = \frac{v_c \cdot 1000}{d_1 \cdot \pi}$$

$$v_f = f_z \cdot Z \cdot n$$

$$v_{fM} = \frac{v_f \cdot (D - d_1)}{D}$$



CNC-Innengewindefräsen (im Gleichlauf, an der Kontur, inkremental, nach DIN 66025)

CNC internal thread milling (climb milling, on the contour, incremental, acc. DIN 66025)

| | | | | | | | | | |
|-------|------|-----------|-----------|---------------------------|-----------|-----------|--|------|------|
| N 10 | G 54 | G 90 | G 00 | X... | Y... | Z 2 | S 5584 | T 01 | M 03 |
| N 20 | G 91 | G 00 | Z -17,384 | | | | | | |
| N 30 | G 01 | G 41 | Y -8,925 | F 2681 (Kontur · Contour) | | | [F 870] ¹⁾ (Mittelpunkt · Centre point) | | |
| N 40 | G 03 | X 0,000 | Y 19,471 | Z 0,907 | I 0,000 | J 9,736 | | | |
| N 50 | G 03 | X -10,560 | Y -10,546 | Z 0,454 | I -0,007 | J -10,553 | | | |
| N 60 | G 03 | X 10,560 | Y -10,574 | Z 0,454 | I 10,567 | J -0,007 | | | |
| N 70 | G 03 | X 10,589 | Y 10,574 | Z 0,454 | I 0,007 | J 10,581 | | | |
| N 80 | G 03 | X -10,589 | Y 10,603 | Z 0,454 | I -10,596 | J 0,007 | | | |
| N 90 | G 03 | X 0,000 | Y -19,528 | Z 0,907 | I 0,000 | J -9,764 | | | |
| N 100 | G 01 | G 40 | Y 8,925 | | | | | | |
| N 110 | G 90 | | | | | | | | |
| N 120 | Z 2 | | | | | | | | |

Zerspanzeit t_n: 2,9 sec.
Machining time t_n:

Das erste gefräste Gewinde ist unbedingt zu lehren, um eine eventuell erforderliche Werkzeugradius- oder Tiefenkorrektur vorzunehmen, welche sich aus dem planseitigen Abstand der Lehdorn-Messstufen zum Werkstück ergibt.

- Variable Werte zur Beeinflussung des gefrästen Gewindedurchmessers sind:**
1. Der zu programmierende Fräserradius im Werkzeugspeicher
 2. Die Eintauchtiefe (Gewindetiefe) Z- im Satz N 20

Radiuskorrektur = fehlende Einschraubtiefe x Kegelverhältnis (1 : 16) : 2

Merke: Ein kleinerer Werkzeugradius bewirkt ein tieferes Einschrauben!

¹⁾ Bei Steuerungen, welche die Berechnung des Mittelpunktvorschubs nicht selbstständig durchführen, müssen die Vorschubwerte in Klammern verwendet werden.

Please note that it is essential to gauge the first finished thread! This will make it possible to introduce a tool radius or depth compensation which may be necessary. Compensation is made by adjusting the distance of the measuring steps on the plane side of the plug gauge from the workpiece.

Variables for influencing the thread diameter on the workpiece:

1. The cutter radius to be programmed in the tool memory
2. The plunge depth (thread depth Z- in block N 20)

Radius compensation = lacking screw-in depth x taper ratio (1 : 16) : 2

Please note: A smaller tool radius will create an increased screw-in depth!

¹⁾ If your control does not calculate the centre point feed automatically please use the feed values printed in brackets.

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

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BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



Product Finder

v_c / f_z

3.8 Programmierbeispiele (DIN)

Werkzeug: GF (Außengewinde)

3.8 Programming examples (DIN)

Tool: GF (external thread)

| | | |
|------------------------|---|----------------------------|
| M | Gewinde-Abmessung: Thread dimension: | M20 x 1,5 - 6g |
| MF | Gewinde-Nenndurchmesser D: Nominal thread diameter D: | 20,000 mm |
| UNC UN, UNS | Gewindesteigung P: Thread pitch P: | 1,500 mm |
| UNF UNEF | Gewindelänge b: Thread length b: | 20,000 mm |
| G, Rp | Werkstoff: Material: | GAISI9 |
| NPT, NPTF Rc, W | Werkzeug-Abmessungen: Tool dimensions: | ∅ 20 x 32 x 105 mm |
| BSW, BSF | Schneidstoff: Cutting material: | VHM |
| Pg | Beschichtung: Coating: | TICN |
| EG (STI) SELF-LOCK | Artikel-Nr.: Article no.: | GF161156.9514 |
| Tr | Zähnezahl Z: No. of teeth Z: | 5 |
| Zubehör Accessories | Fräserdurchmesser d_1 : Cutter diameter d_1 : | 20,000 mm |
| Tech. Info | Fräserradiuskorrektur k^1 : Cutter radius compensation k^1 : | 0,075 mm |
| BGF | zu programmierender Fräserradius 2 : Cutter radius to be programmed 2 : | 9,925 mm |
| ZBGF | Schnittgeschwindigkeit v_c : Cutting speed v_c : | 250 m/min |
| GSF | Vorschub pro Zahn (Fräsen) f_z : Feed per tooth (milling) f_z : | 0,150 mm |
| GF | Drehzahl n: Speed n: | S = 3981 min ⁻¹ |
| GF-KEG | Vorschubgeschwindigkeit (Kontur) v_f : Feed speed (contour) v_f : | F = 2986 mm/min |
| ZGF | Vorschubgeschwindigkeit (Mittelpunktsbahn) v_{FM} : Feed speed (centre point) v_{FM} : | F = 5971 mm/min |

(gemessen am Frästeil)
(measured on the cutting part)

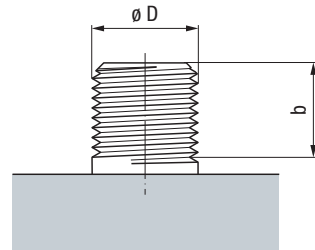
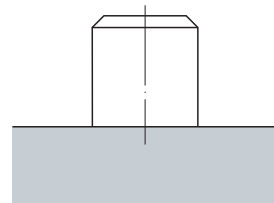
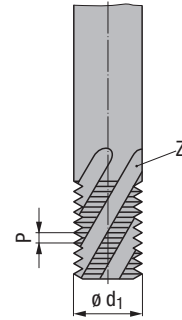
$$(0,05 \cdot P)$$

$$(0,5 \cdot d_1 - k)$$

$$n = \frac{v_c \cdot 1000}{d_1 \cdot \pi}$$

$$v_f = f_z \cdot Z \cdot n$$

$$v_{FM} = \frac{v_f \cdot (D + d_1)}{D}$$



CNC-Außengewindefräsen (im Gleichlauf, an der Kontur, inkremental, nach DIN 66025)

CNC external thread milling (climb milling, on the contour, incremental, acc. DIN 66025)

| | | | | | | | | | |
|------|------|-----------|-----------|----------|---------------------------|----------|------------------------|------------------------------|------|
| N 10 | G 54 | G 90 | G 00 | X ... | Y ... | Z 2 | S 3981 | T 01 ²⁾ | M,03 |
| N 20 | G 91 | G 00 | X -10,000 | Y 20,000 | | | | | |
| N 30 | G 00 | Z -19,750 | | | | | | | |
| N 40 | G 41 | G 01 | Y -10,975 | | F 2986 (Kontur · Contour) | | [F 5971] ³⁾ | (Mittelpunkt · Centre point) | |
| N 50 | | | X 10,000 | Z -0,300 | | | | | |
| N 60 | G 02 | X 0 | Y 0 | Z -1,500 | I 0 | J -9,025 | | | |
| N 70 | G 01 | X 10,000 | Y 0 | Z -0,300 | | | | | |
| N 80 | G 40 | G 00 | Y 10,975 | | | | | | |
| N 90 | G 90 | Z 2 | | | | | | | |

Zerspanzeit t_h :
Machining time t_h : **1,5 sec.**

¹⁾ Der über die Zahnspitze des Gewindeteils gemessene Fräserradius ist um den Betrag der Fräserradiuskorrektur zu reduzieren. Hiermit wird eine Zustellung auf Mitte der „6g/ISO2-Bolzentoleranz“ erreicht. Die Fräserradiuskorrektur hängt aber auch von der radialen Verdrängung des Werkzeuges ab (Festigkeit des zu fräsenden Materials und Auskralllänge).

²⁾ Der zu programmierende Fräserradius ist üblicherweise im Werkzeugspeicher enthalten.

³⁾ Bei Steuerungen, welche die Berechnung des Mittelpunktsvorschubs nicht selbstständig durchführen, müssen die Vorschubwerte in Klammern verwendet werden.

¹⁾ The cutter radius measured over the tooth crests of the threaded part must be reduced by the amount of the cutter radius compensation. This is necessary to achieve a depth of cut to the middle of the 6g/ISO2 bolt tolerance. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projection length of the tool).

²⁾ The cutter radius to be programmed is normally included in the tool memory.

³⁾ If your control does not calculate the centre point feed automatically please use the feed values printed in brackets.

3.8 Programmierbeispiele (DIN)

Werkzeug: ZIRK-GF

3.8 Programming examples (DIN)

Tool: ZIRK-GF

| | |
|--|----------------------------|
| Gewinde-Abmessung: Thread dimension: | M30 x 1,5 - 6H |
| Gewinde-Nenndurchmesser D: Nominal thread diameter D: | 30,000 mm |
| Gewindesteigung P: Thread pitch P: | 1,500 mm |
| Kernlochdurchmesser D₁: Drilled hole diameter D ₁ : | 28,500 mm |
| Gewindetiefe b: Thread depth b: | 25,000 mm |
| Werkstoff: Material: | GAISI9 |
| Werkzeug-Abmessungen: Tool dimensions: | ∅ 16 x 125 mm |
| Schneidstoff: Cutting material: | HM |
| Beschichtung: Coating: | TIN |
| Artikel-Nr.: Article no.: | GZ301310 GF603115.9514 |
| Zähnezahl Z: No. of teeth Z: | 1 |
| Fräserdurchmesser d₁: Cutter diameter d ₁ : | 16,000 mm |
| Schneidenlänge l₂: Cutting length l ₂ : | 15,000 mm |
| Fräserradiuskorrektur k¹⁾: Cutter radius compensation k ¹⁾ : | 0,075 mm |
| zu programmierender Fräserradius²⁾: Cutter radius to be programmed ²⁾ : | 7,925 mm |
| Schnittgeschwindigkeit v_c: Cutting speed v _c : | 250 m/min |
| Vorschub pro Zahn (Fräsen) f_z: Feed per tooth (milling) f _z : | 0,150 mm |
| Drehzahl n: Speed n: | S = 4976 min ⁻¹ |
| Vorschubgeschwindigkeit (Kontur) v_f: Feed speed (contour) v _f : | F = 746 mm/min |
| Vorschubgeschwindigkeit (Mittelpunktsbahn) v_{fM}: Feed speed (centre point) v _{fM} : | F = 348 mm/min |

(gemessen am Frästeil)
(measured on the cutting part)

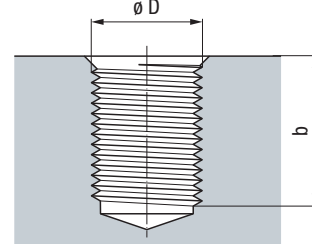
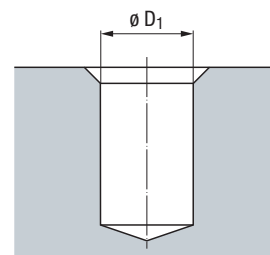
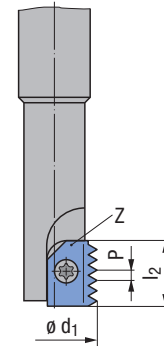
$$(0,05 \cdot P)$$

$$(0,5 \cdot d_1 - k)$$

$$n = \frac{v_c \cdot 1000}{d_1 \cdot \pi}$$

$$v_f = f_z \cdot Z \cdot n$$

$$v_{fM} = \frac{v_f \cdot (D - d_1)}{D}$$



CNC-Innengewindefräsen (im Gleichlauf, an der Kontur, inkremental, nach DIN 66025)

CNC internal thread milling (climb milling, on the contour, incremental, acc. DIN 66025)

| | | | | | | | | | |
|-------------------|------|-----------|----------|----------|-----------|--------------------------|-----------------------|------------------------------|-----|
| N 10 | G 54 | G 90 | G 00 | X ... | Y ... | Z 2 | S 4976 | T01 ²⁾ | M03 |
| N 20 | G 91 | G 00 | Z-27,000 | | | | | | |
| N 30 | G 01 | Y 0,750 | | | | F 746 (Kontur · Contour) | [F 348] ³⁾ | (Mittelpunkt · Centre point) | |
| N 40 | G 41 | G 01 | X 14,250 | | | | | | |
| N 50 | G 03 | X -14,250 | Y 14,250 | Z 0,375 | I -14,250 | J 0 | | | |
| N 60 | G 03 | X 0 | Y 0 | Z 1,500 | I 0 | J -15,000 | | | |
| N 70 | G 03 | X -14,250 | Y-14,250 | Z 0,375 | I 0 | J -14,250 | | | |
| N 80 | G 00 | G 40 | X 14,250 | Y -0,750 | | | | | |
| N 90 | G 00 | Z 11,250 | | | | | | | |
| ... ⁴⁾ | | | | | | | | | |
| N 170 | G90 | | | | | | | | |

Zerspanzeit t_h: 22,3 sec.
Machining time t_h:

¹⁾ Der über die Zahnspitze des Gewindeteils gemessene Fräserradius ist um den Betrag der Fräserradiuskorrektur zu reduzieren. Hiermit wird eine Zustellung auf Mitte der „6H/ISO2-Muttertoleranz“ erreicht. Die Fräserradiuskorrektur hängt aber auch von der radialen Verdrängung des Werkzeuges ab (Festigkeit des zu fräsenden Materials und Auskräglänge).

²⁾ Der zu programmierende Fräserradius ist üblicherweise im Werkzeugspeicher enthalten.

³⁾ Bei Steuerungen, welche die Berechnung des Mittelpunktsvorschubs nicht selbstständig durchführen, müssen die Vorschubwerte in Klammern verwendet werden.

⁴⁾ Die Satznummern N 30 bis N 90 müssen entsprechend der Anzahl der Wiederholungen erneut aufgerufen werden.

¹⁾ The cutter radius measured over the tooth crests of the threaded part must be reduced by the amount of the cutter radius compensation. This is necessary to achieve a depth of cut to the middle of the 6H/ISO2 nut tolerance. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projection length of the tool).

²⁾ The cutter radius to be programmed is normally included in the tool memory.

³⁾ If your control does not calculate the centre point feed automatically please use the feed values printed in brackets.

⁴⁾ The block numbers N 30 to N 90 must be called up anew according to the number of repetitions.

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

GF-KEG

ZGF

ZIRK-GF

Gigant

MoSys



Product Finder

3.8 Programmierbeispiele (DIN)

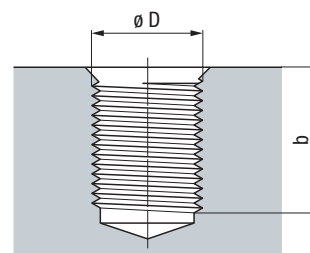
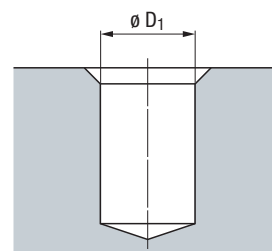
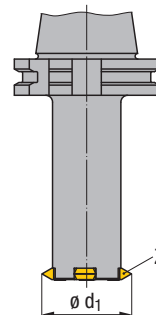
3.8 Programming examples (DIN)

v_c / f_z

Werkzeug: Gigant-ic, Gr.12

Tool: Gigant-ic, Size 12

| | | |
|------------------------|--|---|
| M | Gewinde-Abmessung: Thread dimension: | M42 - 6H |
| MF | Gewinde-Nenn Durchmesser D: Nominal thread diameter D: | 42,000 mm |
| UNC UN, UNS | Gewindesteigung P: Thread pitch P: | 4,500 mm |
| UNF UNEF | Kernlochdurchmesser D₁: Drilled hole diameter D ₁ : | 37,500 mm |
| G, Rp | Gewindetiefe b³⁾: Thread depth b ³⁾ : | 63,000 mm |
| NPT, NPTF Rc, W | Werkstoff: Material: | 1.1730 |
| BSW, BSF | Werkzeug-Abmessungen: Tool dimensions: | ∅ 32,85 x 153 mm |
| Pg | Schneidstoff: Cutting material: | VHM |
| EG (STI) SELF-LOCK | Beschichtung: Coating: | TIN |
| Tr | Artikel-Nr.: Article no.: | GZ341032 GF643205.9517 |
| Zubehör Accessories | Zähnezahl Z: No. of teeth Z: | 3 |
| Tech. Info | Fräserdurchmesser d₁: Cutter diameter d ₁ : | 32,850 mm (gemessen am Frästeil) (measured on the cutting part) |
| BGF | Fräserradiuskorrektur k¹⁾: Cutter radius compensation k ¹⁾ : | 0,174 mm (je nach Einsatzfall) (acc. work case) |
| ZBGF | zu programmierender Fräserradius²⁾: Cutter radius to be programmed ²⁾ : | 16,251 mm (0,5 · d ₁ - k) |
| GSF | Schnittgeschwindigkeit v_c: Cutting speed v _c : | 250 m/min |
| GF | Vorschub pro Zahn (Fräsen) f_z: Feed per tooth (milling) f _z : | 0,200 mm |
| GF-KEG | Drehzahl n: Speed n: | S = 2424 min ⁻¹ $n = \frac{v_c \cdot 1000}{d_1 \cdot \pi}$ |
| ZGF | Vorschubgeschwindigkeit (Kontur) v_f: Feed speed (contour) v _f : | F = 1454 mm/min $v_f = f_z \cdot Z \cdot n$ |
| ZIRK-GF | Vorschubgeschwindigkeit (Mittelpunktsbahn) v_{fM}: Feed speed (centre point) v _{fM} : | F = 317 mm/min $v_{fM} = \frac{v_f \cdot (D - d_1)}{D}$ |



CNC-Innengewindefräsen (im Gegenlauf, an der Kontur, inkremental, nach DIN 66025)

CNC internal thread milling (conventional milling, on the contour, incremental, acc. DIN 66025)

| | | | | | | | | | |
|-------------------|------|------|------|-------|-------|---------------------------|--------|-----------------------|------------------------------|
| N 10 | G 54 | G 90 | G 00 | X... | Y... | Z 0,000 | S 2424 | T01 ²⁾ | M03 |
| N 20 | G 91 | | | | | | | | |
| N 30 | G 42 | G 01 | | X 0 | Y -21 | F 1454 (Kontur - Contour) | | [F 317] ⁴⁾ | (Mittelpunkt - Centre point) |
| N 40 | G 02 | | | X 0 | Y 0 | Z -4,500 | I 0 | J 21,000 | |
| ... ⁵⁾ | | | | | | | | | |
| N 50 | G 40 | G 01 | | X 0 | Y 21 | | | | |
| N 70 | G 90 | G 00 | | Z 4,5 | | | | | |

| | |
|---|-----------------------------|
| Zerspanzeit t_h: Machining time t _h : | 72,6 sec. (1,2 min.) |
| Anzahl der Gewindegänge⁵⁾: Number of threads ⁵⁾ : | 13 |

¹⁾ Der zu programmierende Fräserradius ist je nach Einsatzfall zu korrigieren, bis das Gewinde die gewünschte Muttertoleranz, z.B. 6H/ISO2 erreicht. Die Fräserradiuskorrektur hängt aber auch von der radialen Verdrängung des Werkzeugs ab (Festigkeit des zu fräsenden Materials und Auskraglänge).

²⁾ Der zu programmierende Fräserradius ist üblicherweise im Werkzeugspeicher enthalten.

³⁾ Die eingegebene Gewindetiefe b muss durch die Steigung P teilbar sein.

⁴⁾ Bei Steuerungen, welche die Berechnung des Mittelpunktsvorschubs nicht selbstständig durchführen, müssen die Vorschubwerte in Klammern verwendet werden.

⁵⁾ Satz N 40 muss mit Anzahl der Gewindegänge wiederholt werden.

¹⁾ The cutter radius to be programmed must be corrected, depending on the work case, until the thread achieves the required nut tolerance, e.g. 6H/ISO2. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projection length of the tool).

²⁾ The cutter radius to be programmed is normally included in the tool memory.

³⁾ The thread depth b as entered must be divisible by the pitch P.

⁴⁾ If your control does not calculate the centre point feed automatically please use the feed values printed in brackets.

⁵⁾ Block N 40 must be repeated with the number of threads.

3.9 Technischer Fragebogen: Gewindefräsen

Firma:
 Ansprechpartner:
 Telefon:
 Fax:
 E-Mail:

Abmessung:
 Ausführung:
 Artikel-Nr.:
 Projekt:

Werkstückbezeichnung:
 Werkstückwerkstoff:

Ident-Nr.:
 Festigkeit / Härte:

Einsatzbedingungen:

Maschinentyp:
 Steuerung:
 horizontal vertikal
 Werkzeugaufnahme:
 Schnittgeschwindigkeit v_c : m/min
 Drehzahl n: min^{-1}
 Standwert: (Anzahl der Gewinde)

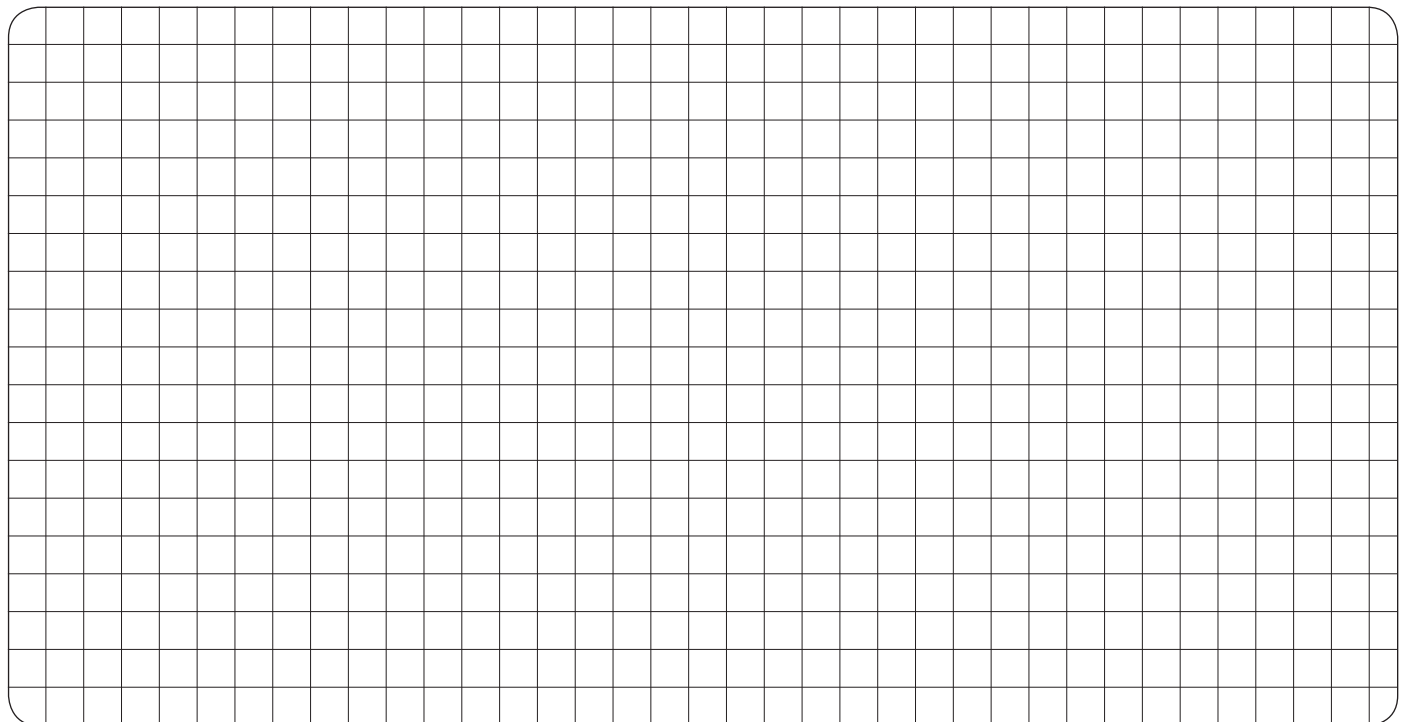
Spindelaufnahme:
 Kernlochform / Bolzenform:
 Kühlschmierstoff:
 Druck: IKZ
 Vorschubwerte: f_z : mm
 f_s : mm
 f_b : mm

Kunde fräst bereits Gewinde:
 Abmessung:
 Hersteller:

Ergebnis / besondere Hinweise:

Zu erledigen:

Skizze:



Aufgenommen von:

Datum / Unterschrift:

Product Finder

v_c / f_z

M

MF

UNC
UN, UNS

UNF
UNEF

G, Rp

NPT, NPTF
Rc, W

BSW, BSF

Pg

EG (STI)
SELF-LOCK

Tr

Zubehör
Accessories

Tech. Info

BGF

ZBGF

GSF

GF

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
- EG (STI)
SELF-LOCK
- Tr
- Zubehör
Accessories
- Tech. Info**
- BGF
- ZBGF
- GSF
- GF
- GF-KEG
- ZGF
- ZIRK-GF
- Gigant
- MoSys

3.9 Technical questionnaire: Thread milling

Company: Size:

Contact: Design:

Phone: Article no.:

Fax: Project:

E-mail:

Workpiece description: Ident no.:

Workpiece material: Tensile strength / hardness:

Work conditions:

Machine type: Spindle adaptation:

Control: Hole type / bolt type:

horizontal vertical Coolant-lubricant:

Tool holder: Pressure: Internal coolant supply

Cutting speed v_c : m/min Feed values: f_z : mm

Speed n: rpm f_s : mm

Tool life: (no. of threads) f_b : mm

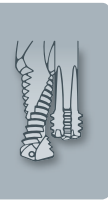
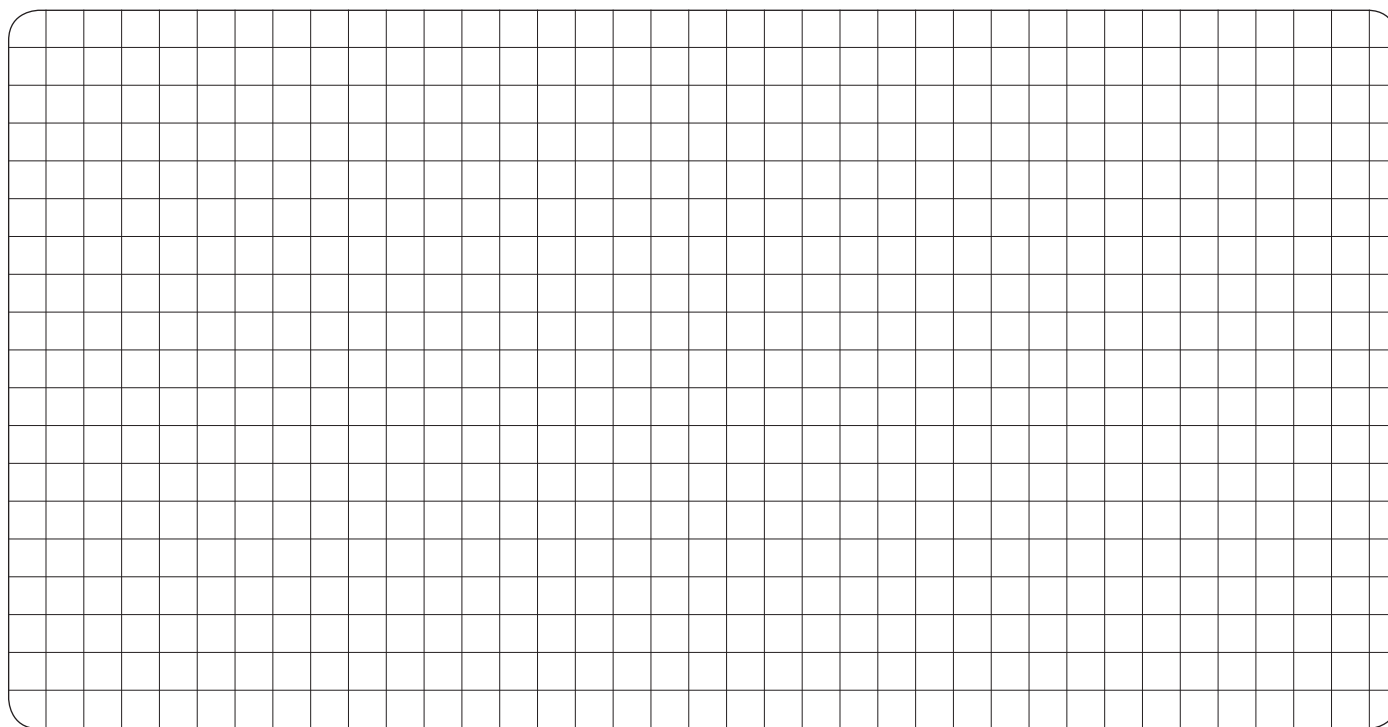
Customer is already milling threads: Result / special information:

Size:

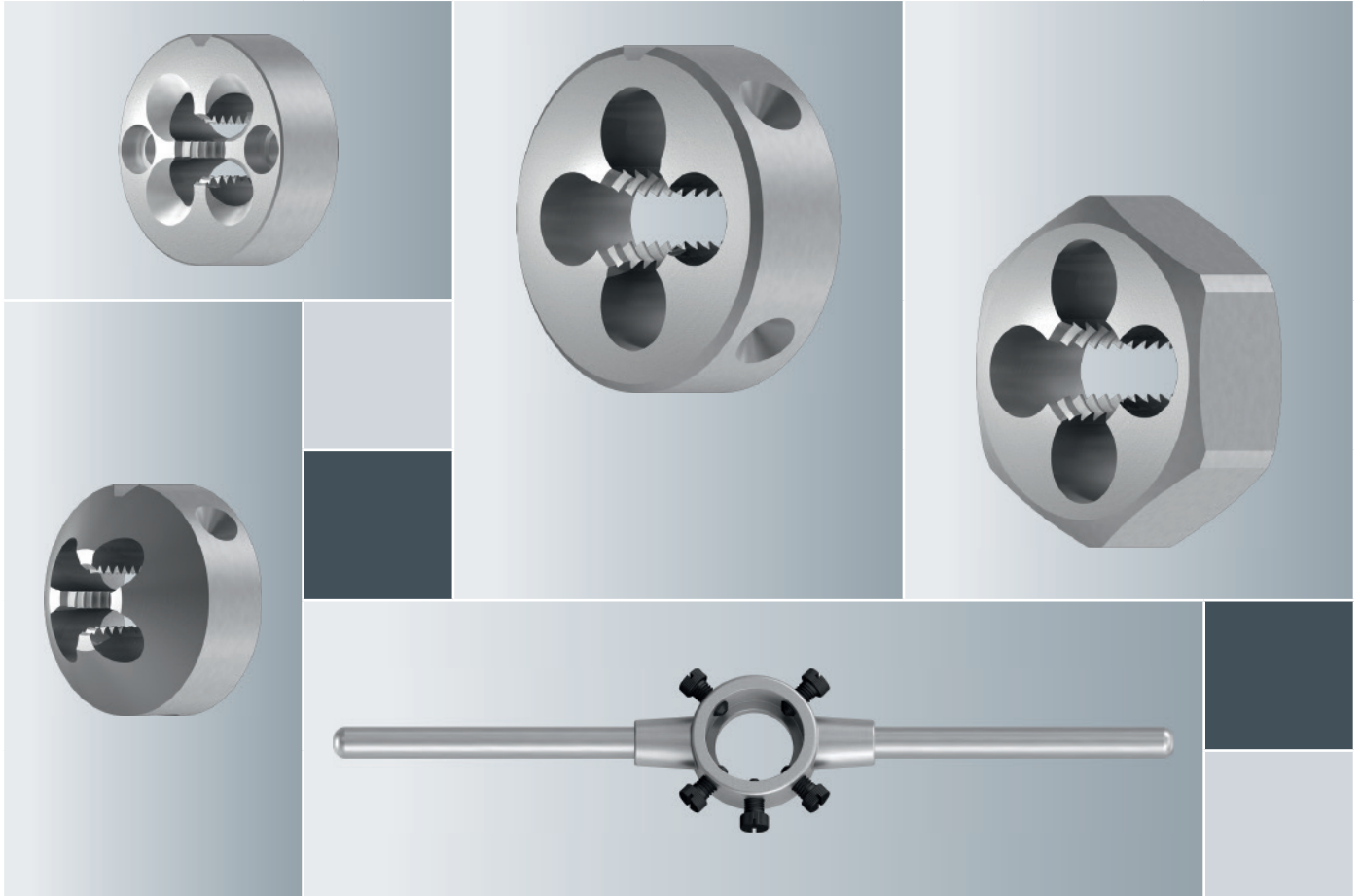
Manufacturer:

Agenda:

Sketch:



Filled in by: Date / signature:



Schneideisen Dies



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| Wegweiser und Schnittwerte | Product finder and cutting data | 476 - 477 |
| Produktseiten | Product pages | 478 - 498 |
| Technische Informationen | Technical information | 499 - 506 |

- Product Finder
- Vc
- M
- MF
- UNC
- UNF
UNEF
- G
- NPT, NPTF
R
- BSW, BSF
- Tr, Tr-F
- Zubehör
Accessories
- Tech. Info



EMUGE
KSN3-HSK-A63
DIN69893
F3303C04.30

EMUGE
EM03 - SE 38x14
F0623606



Runde
Schneideisen
Round
dies



Automaten-
Schneideisen
Dies
for automatic lathes



Glocken-
Schneideisen
Acorn
dies



Sechskant-
Schneideisen
Hexagon
dies



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| 478 - 479 | 480 | 481 | 482 | M |
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| 491 | | | | NPT |
| 492 | | | | NPTF |
| 493 | | | | R (BSPT) |
| 494 | | | | BSW |
| 495 | | | | BSF |
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Kühlschmierstoffe
Coolant-lubricants

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Schneideisenhalter
Die stocks

498

Product
Finder

V_c

M

MF

UNC

UNF
UNEF

G

NPT, NPTF
R

BSW, BSF

Tr, Tr-F

Zubehör
Accessories

Tech. Info



- Product Finder
- V_c
- M
- MF
- UNC
- UNF
UNEF
- G
- NPT, NPTF
R
- BSW, BSF
- Tr, Tr-F
- Zubehör
Accessories
- Tech. Info

Wegweiser und Schnittwerte

Bitte beachten:

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

Die Eignung ist folgendermaßen gekennzeichnet:

- **Schneideisen sehr gut geeignet**
- Schneideisen gut geeignet

= Anschnittlänge

Internationaler Werkstoffvergleich siehe Seite 838 - 851.

Product finder and cutting data

Please note:

The cutting speeds (v_c 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 suitability is marked as follows:

- **Die is very suitable**
- Die is suitable

= Chamfer length

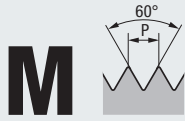
International comparison of materials, see page 838 - 851.

| Einsatzgebiete – Material Applications – material | | Material-Beispiele Material examples | Material-Nummern Material numbers | |
|--|--|---|---|--------------------------|
| P | Stahlwerkstoffe Kaltfließpressstähle, Baustähle, Automatenstähle, u.a. | Steel materials Cold-extrusion steels, Construction steels, Free-cutting steels, etc. | ≤ 600 N/mm ² | |
| | 2.1 Baustähle, Einsatzstähle, Stahlguss, u.a. | Construction steels, Cementation steels, Steel castings, etc. | ≤ 800 N/mm ² | |
| | 3.1 Einsatzstähle, Vergütungsstähle, Kaltarbeitsstähle, u.a. | Cementation steels, Heat-treatable steels, Cold work steels, etc. | ≤ 1000 N/mm ² | |
| | 4.1 Vergütungsstähle, Kaltarbeitsstähle, Nitrierstähle, u.a. | Heat-treatable steels, Cold work steels, Nitriding steels, etc. | ≤ 1200 N/mm ² | |
| | 5.1 Hochlegierte Stähle, Kaltarbeitsstähle, Warmarbeitsstähle, u.a. | High-alloyed steels, Cold work steels, Hot work steels, etc. | ≤ 1400 N/mm ² | |
| M | Nichtrostende Stahlwerkstoffe 1.1 Ferritisch, martensitisch | Stainless steel materials Ferritic, martensitic | ≤ 950 N/mm ² | |
| | 2.1 Austenitisch | Austenitic | ≤ 950 N/mm ² | |
| | 3.1 Austenitisch-ferritisch (Duplex) | Austenitic-ferritic (Duplex) | ≤ 1100 N/mm ² | |
| | 4.1 Austenitisch-ferritisch hitzebeständig (Super Duplex) | Austenitic-ferritic heat-resistant (Super Duplex) | ≤ 1250 N/mm ² | |
| K | Gusswerkstoffe 1.1 Gusseisen mit Lamellengrafit (GJL) | Cast materials Cast iron with lamellar graphite (GJL) | 100-250 N/mm ² | |
| | 1.2 | Cast iron with lamellar graphite (GJL) | 250-450 N/mm ² | |
| | 2.1 Gusseisen mit Kugelgrafit (GJS) | Cast iron with nodular graphite (GJS) | 350-500 N/mm ² | |
| | 2.2 | Cast iron with nodular graphite (GJS) | 500-900 N/mm ² | |
| | 3.1 Gusseisen mit Vermiculargrafit (GJV) | Cast iron with vermicular graphite (GJV) | 300-400 N/mm ² | |
| | 3.2 | Cast iron with vermicular graphite (GJV) | 400-500 N/mm ² | |
| 4.1 Temperguss (GTMW, GTMB) | Malleable cast iron (GTMW, GTMB) | 250-500 N/mm ² | | |
| 4.2 | Malleable cast iron (GTMW, GTMB) | 500-800 N/mm ² | | |
| N | Nichteisenwerkstoffe 1.1 Aluminium-Legierungen | Non ferrous materials Aluminium alloys | ≤ 200 N/mm ² | |
| | 1.2 | Aluminium wrought alloys | ≤ 350 N/mm ² | |
| | 1.3 | Aluminium wrought alloys | ≤ 550 N/mm ² | |
| | 1.4 | Aluminium wrought alloys | Si ≤ 7% | |
| | 1.5 | Aluminium-Gusslegierungen | Aluminium cast alloys | 7% < Si ≤ 12% |
| | 1.6 | Aluminium-Gusslegierungen | Aluminium cast alloys | 12% < Si ≤ 17% |
| | 2.1 | Kupfer-Legierungen | Copper alloys | ≤ 400 N/mm ² |
| | 2.2 | Reinkupfer, niedriglegiertes Kupfer | Pure copper, low-alloyed copper | ≤ 550 N/mm ² |
| | 2.3 | Kupfer-Zink-Legierungen (Messing, langspanend) | Copper-zinc alloys (brass, long-chipping) | ≤ 550 N/mm ² |
| | 2.4 | Kupfer-Zink-Legierungen (Messing, kurzspanend) | Copper-zinc alloys (brass, short-chipping) | ≤ 800 N/mm ² |
| | 2.5 | Kupfer-Aluminium-Legierungen (Alubronze, langspanend) | Copper-aluminium alloys (alu bronze, long-chipping) | ≤ 700 N/mm ² |
| | 2.6 | Kupfer-Zinn-Legierungen (Zinnbronze, langspanend) | Copper-tin alloys (tin bronze, long-chipping) | ≤ 400 N/mm ² |
| | 2.7 | Kupfer-Zinn-Legierungen (Zinnbronze, kurzspanend) | Copper-tin alloys (tin bronze, short-chipping) | ≤ 600 N/mm ² |
| | 2.8 | Kupfer-Sonderlegierungen | Special copper alloys | ≤ 1400 N/mm ² |
| | 3.1 | Magnesium-Legierungen | Magnesium alloys | ≤ 500 N/mm ² |
| | 3.2 | Magnesium-Knetlegierungen | Magnesium wrought alloys | ≤ 500 N/mm ² |
| 3.2 | Magnesium-Gusslegierungen | Magnesium cast alloys | ≤ 500 N/mm ² | |
| S | Kunststoffe 4.1 Duroplaste (kurzspanend) | Synthetics Duroplastics (short-chipping) | | |
| | 4.2 Thermoplaste (langspanend) | Thermoplastics (long-chipping) | | |
| | 4.3 Faserverstärkte Kunststoffe (Faseranteil ≤ 30%) | Fibre-reinforced synthetics (fibre content ≤ 30%) | | |
| | 4.4 Faserverstärkte Kunststoffe (Faseranteil > 30%) | Fibre-reinforced synthetics (fibre content > 30%) | | |
| | Besondere Werkstoffe 5.1 Grafit | Special materials Graphite | | |
| | 5.2 Wolfram-Kupfer-Legierungen | Tungsten-copper alloys | | |
| | 5.3 Verbundwerkstoffe | Composite materials | | |
| | Spezialwerkstoffe 1.1 Titan-Legierungen | Special materials Titanium alloys | | |
| 1.2 | Pure titanium | | | |
| 1.3 | Titanium alloys | | | |
| H | Nickel-, Kobalt- und Eisen-Legierungen 2.1 Reinnickel | Nickel alloys, cobalt alloys and iron alloys Pure nickel | ≤ 600 N/mm ² | |
| | 2.2 | Pure nickel | ≤ 1000 N/mm ² | |
| | 2.3 | Nickel-Basis-Legierungen | Nickel-base alloys | ≤ 1600 N/mm ² |
| | 2.4 | Nickel-Basis-Legierungen | Nickel-base alloys | ≤ 1000 N/mm ² |
| | 2.5 | Kobalt-Basis-Legierungen | Cobalt-base alloys | ≤ 1600 N/mm ² |
| | 2.6 | Eisen-Basis-Legierungen | Iron-base alloys | ≤ 1500 N/mm ² |
| H | Harte Werkstoffe 1.1 | Hard materials High strength steels, hardened steels, hard castings | 44 - 50 HRC | |
| | 1.2 | High strength steels, hardened steels, hard castings | 50 - 55 HRC | |
| | 1.3 | Hochfeste Stähle, gehärtete Stähle, Hartguss | 55 - 60 HRC | |
| | 1.4 | Hochfeste Stähle, gehärtete Stähle, Hartguss | 60 - 63 HRC | |
| | 1.5 | Hochfeste Stähle, gehärtete Stähle, Hartguss | 63 - 66 HRC | |

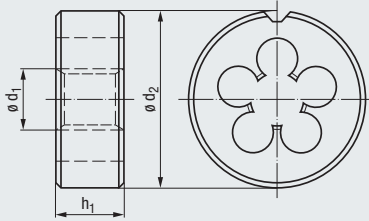


| | | | | | | | | | | KEG | | TRAPEZ | | |
|--|----------------|----------------|--------------|--------------|-------------|---------------------|--------------------|-----------------|------------------|----------------|------------------|--------|-----------------------|-----|
| | SE-B nor STEEL | SE-B gel STEEL | SE-B nor VA | SE-B gel VA | SE-B gel MS | SE-AUT-LD gel STEEL | SE-GLOCK gel STEEL | SE-GLOCK gel MS | SE-6KT nor STEEL | | SE-KEG nor STEEL | | TRAPEZ SE-B-nor STEEL | |
| | 1,5 | 1,5 | 2 | 2 | 1 | 1,5 | 1 | 1 | 1,5 | | 1,5 | | 1,5-2 | |
| | 478 | 478 | 479 | 479 | 479 | 480 | 481 | | 482 | | | | | |
| | 484 | 484 | 485 | | 485 | | | | | | | | | |
| | 486 | 486 | | | | | | | | | | | | |
| | 487 | 487 | | | | | | | | | | | | |
| | 488 | 488 | | | | | | | | | | | | |
| | 489 | 489 | | | 489 | | | 490 | | | 491 | | | |
| | | | | | | | | | | | 492 | | | |
| | | | | | | | | | | | 493 | | | |
| | 494 | | | | | | | | | | | | | |
| | 495 | | | | | | | | | | | | 496 | |
| | | | | | | | | | | | | | 497 | |
| | 1 - 8 | 1 - 8 | 1 - 8 | 1 - 8 | | 1 - 8 | 1 - 8 | | 1 - 8 | | 1 - 2 | | 1 - 2 ¹⁾ | 1.1 |
| | 1 - 5 | 1 - 5 | 1 - 5 | 1 - 5 | | 1 - 5 | 1 - 5 | | 1 - 5 | | 1 - 5 | | | 2.1 |
| | 1 - 3 | 1 - 3 | 1 - 3 | 1 - 3 | | 1 - 3 | 1 - 3 | | 1 - 3 | | 1 - 2 | | | 3.1 |
| | | | | | | | | | | | | | | 4.1 |
| | | | | | | | | | | | | | | 5.1 |
| | | | 1 - 4 | 1 - 4 | | | | | | | | | | 1.1 |
| | | | 1 - 4 | 1 - 4 | | | | | | | | | | 2.1 |
| | | | | | | | | | | | | | | 3.1 |
| | | | | | | | | | | | | | | 4.1 |
| | | | | | | | | | | | | | | 1.1 |
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| | | | | | | | | | | | | | | 4.1 |
| | | | | | | | | | | | | | | 4.2 |
| | | 10 - 20 | | | | 10 - 20 | | | | | | | | 1.1 |
| | | 10 - 20 | | | | 10 - 20 | | | | | | | | 1.2 |
| | | 10 - 20 | | | | 10 - 20 | | | | | | | | 1.3 |
| | | | | | | | | | | | | | | 1.4 |
| | | | | | | | | | | | | | | 1.5 |
| | | | | | | | | | | | | | | 1.6 |
| | 10 - 20 | 10 - 20 | | | | 10 - 20 | 10 - 20 | | | | | | | 2.1 |
| | | 10 - 20 | | | | 10 - 25 | 10 - 20 | 10 - 20 | | 10 - 25 | 1 - 5 | | 1 - 2 ¹⁾ | 2.2 |
| | | | | | | | | | | | | | | 2.3 |
| | | | | | | | | | | | | | | 2.4 |
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| | | | | | | | | | | | | | | 3.1 |
| | | | | | | | | | | | | | | 3.2 |
| | 1 - 8 | 1 - 8 | 2 - 10 | 2 - 10 | | 1 - 8 | 1 - 8 | | | | | | | 4.1 |
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| | | | | | | | | | | | | | | 1.4 |
| | | | | | | | | | | | | | | 1.5 |

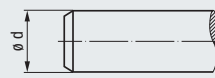
- Product Finder
- V_c
- M
- MF
- UNC
- UNF
UNEF
- G
- NPT, NPTF
R
- BSW, BSF
- Tr, Tr-F
- Zubehör
Accessories
- Tech. Info



DIN 13



Vorarbeitsdurchmesser $d \approx$
Preparatory diameter $d \approx$



DIN EN
22568

STEEL
Steel
materials

normal
standard



geläpft
lapped



Technische Informationen
Technical information

» 499 - 506

Toleranz · Tolerance

Schneidstoff · Cutting material



Einsatzgebiete – Material
Applications – material

» 476

6g

HSS

1,5

E / O

P 1.1-3.1

N 2.2, 4.2

6g

HSS

1,5

E / O

P 1.1-3.1

N 1.1-3

N 2.1-2, 4.2

Werkzeug-Ident · Tool ident

D0101000

D0101500

| M | $\varnothing d_1$ mm | P mm | $\varnothing d_2$ | x | h_1 | $\varnothing d \approx$ | | | Dimens.- Ident | SE-B nor STEEL | SE-B gel STEEL |
|---|-------------------------|---------|-------------------|---|-------|-------------------------|-------|-------|-------------------|----------------------|----------------------|
| | | | | | | „4h“ | „6g“ | „6e“ | | | |
| | 1 | 0,25 | 16 | x | 5 | 0,98 | 0,97 | 0,93 | .0010 | •*) | •*) |
| | 1,1 | 0,25 | 16 | x | 5 | 1,08 | 1,07 | 1,03 | .0011 | •*) | •*) |
| | 1,2 | 0,25 | 16 | x | 5 | 1,18 | 1,17 | 1,13 | .0012 | •*) | •*) |
| | 1,4 | 0,3 | 16 | x | 5 | 1,38 | 1,36 | 1,32 | .0014 | •*) | •*) |
| | 1,6 | 0,35 | 16 | x | 5 | 1,57 | 1,54 | 1,51 | .0016 | • | • |
| | 1,7 | 0,35 | 16 | x | 5 | 1,67 | 1,64 | 1,61 | .0017 | • | • |
| | 1,8 | 0,35 | 16 | x | 5 | 1,77 | 1,74 | 1,71 | .0018 | • | • |
| | 2 | 0,4 | 16 | x | 5 | 1,97 | 1,93 | 1,90 | .0020 | • | • |
| | 2,2 | 0,45 | 16 | x | 5 | 2,16 | 2,13 | 2,10 | .0022 | • | • |
| | 2,3 | 0,4 | 16 | x | 5 | 2,26 | 2,23 | 2,20 | .0023 | • | • |
| | 2,5 | 0,45 | 16 | x | 5 | 2,46 | 2,43 | 2,40 | .0025 | • | • |
| | 2,6 | 0,45 | 16 | x | 5 | 2,56 | 2,53 | 2,50 | .0026 | • | • |
| | 3 | 0,5 | 20 | x | 5 | 2,96 | 2,92 | 2,89 | .0030 | • | • |
| | 3,5 | 0,6 | 20 | x | 5 | 3,46 | 3,41 | 3,38 | .0035 | • | • |
| | 4 | 0,7 | 20 | x | 5 | 3,95 | 3,90 | 3,87 | .0040 | • | • |
| | 4,5 | 0,75 | 20 | x | 7 | 4,45 | 4,40 | 4,37 | .0045 | • | • |
| | 5 | 0,8 | 20 | x | 7 | 4,95 | 4,90 | 4,86 | .0050 | • | • |
| | 6 | 1 | 20 | x | 7 | 5,94 | 5,88 | 5,85 | .0060 | • | • |
| | 7 | 1 | 25 | x | 9 | 6,94 | 6,88 | 6,85 | .0070 | • | • |
| | 8 | 1,25 | 25 | x | 9 | 7,93 | 7,86 | 7,83 | .0080 | • | • |
| | 9 | 1,25 | 25 | x | 9 | 8,93 | 8,86 | 8,83 | .0090 | • | • |
| | 10 | 1,5 | 30 | x | 11 | 9,92 | 9,85 | 9,81 | .0100 | • | • |
| | 11 | 1,5 | 30 | x | 11 | 10,92 | 10,85 | 10,81 | .0110 | • | •*) |
| | 12 | 1,75 | 38 | x | 14 | 11,91 | 11,83 | 11,81 | .0112 | • | • |
| | 14 | 2 | 38 | x | 14 | 13,91 | 13,82 | 13,78 | .0114 | • | • |
| | 16 | 2 | 45 | x | 18 | 15,91 | 15,82 | 15,78 | .0116 | • | • |
| | 18 | 2,5 | 45 | x | 18 | 17,89 | 17,79 | 17,75 | .0118 | • | • |
| | 20 | 2,5 | 45 | x | 18 | 19,89 | 19,79 | 19,75 | .0120 | • | • |
| | 22 | 2,5 | 55 | x | 22 | 21,89 | 21,79 | 21,75 | .0122 | • | • |
| | 24 | 3 | 55 | x | 22 | 23,88 | 23,76 | 23,72 | .0124 | • | • |
| | 27 | 3 | 65 | x | 25 | 26,88 | 26,76 | 26,72 | .0127 | • | • |
| | 30 | 3,5 | 65 | x | 25 | 29,87 | 29,73 | 29,70 | .0130 | • | • |
| | 33 | 3,5 | 65 | x | 25 | 32,87 | 32,73 | 32,70 | .0133 | • | • |
| | 36 | 4 | 65 | x | 25 | 35,85 | 35,70 | 35,66 | .0136 | • | • |
| | 39 | 4 | 75 | x | 30 | 38,85 | 38,70 | 38,66 | .0139 | • | • |
| | 42 | 4,5 | 75 | x | 30 | 41,84 | 41,68 | 41,65 | .0142 | • | • |
| | 45 | 4,5 | 90 | x | 36 | 44,84 | 44,68 | 44,65 | .0145 | • | • |
| | 48 | 5 | 90 | x | 36 | 47,83 | 47,66 | 47,62 | .0148 | • | • |
| | 52 | 5 | 90 | x | 36 | 51,83 | 51,66 | 51,62 | .0152 | • | • |

*) \leq M1,4 Tol. 6h

Toleranzklasse 4h auf Anfrage
Tolerance class 4h upon request

| STEEL Steel materials | | VA Stainless steel materials | | MS Copper-zinc alloys | |
|---------------------------------------|---------------------------------------|--|--|--------------------------|------------|
| normal standard | normal standard | normal standard | geläppt lapped | geläppt lapped | |
| | | | | | |
| 6e HSS | 6g HSS LH | 6g HSSE | 6g HSSE | 6g HSS | |
| 1,5 E/O | 1,5 E/O | 2 E/O/P | 2 E/O/P | 1 E/O | |
| P 1.1-3.1 N 2.2, 4.2 | P 1.1-3.1 N 2.2, 4.2 | P 1.1-3.1 M 1.1-2.1 N 4.1 | P 1.1-3.1 M 1.1-2.1 N 4.1 | N 2.3 | |
| D0101030 | D0101050 | D0103000 | D0103500 | D0102500 | |
| SE-B nor STEEL „6e“ | SE-B nor STEEL-LH | SE-B nor VA | SE-B gel VA | SE-B gel MS | |
| | | | | | 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 |
| ● | ● | ● | ● | ● | 6 |
| ● | ● | ● | ● | ● | 7 |
| ● | ● | ● | ● | ● | 8 |
| | | | | | 9 |
| ● | ● | ● | ● | ● | 10 |
| | | | | | 11 |
| ● | ● | ● | ● | ● | 12 |
| ○ | ● | ● | ● | ○ | 14 |
| ● | ● | ● | ● | ○ | 16 |
| | ● | ● | ● | ○ | 18 |
| | ● | ● | ● | ○ | 20 |
| | ● | ● | ● | | 22 |
| | ● | ● | ● | | 24 |
| | ● | ● | ● | | 27 |
| | | ● | ● | | 30 |
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| | | | | | 39 |
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| | | | | | 45 |
| | | | | | 48 |
| | | | | | 52 |

- Product Finder
- Vc
- M
- MF
- UNC
- UNF
- UNEF
- G
- NPT, NPTF
- R
- BSW, BSF
- Tr, Tr-F
- Zubehör
- Accessories
- Tech. Info

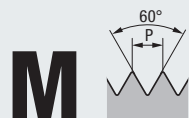


Schnellwechsel-Einsätze für
runde Schneideisen Typ EM-SE
siehe Seite 777

Quick-change adapters for
round dies type EM-SE,
see page 777

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

- Product Finder
- V_c
- M
- MF
- UNC
- UNF
UNEF
- G
- NPT, NPTF
R
- BSW, BSF
- Tr, Tr-F
- Zubehör
Accessories
- Tech. Info



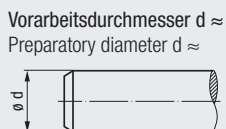
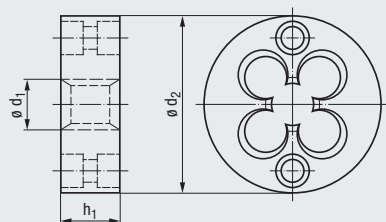
M
DIN 13

beidseitig verwendbar
to be used from both sides

Type
LD

STEEL
Steel
materials

geläpft
lapped



Toleranz · Tolerance
Schneidstoff · Cutting material

Technische Informationen
Technical information »» 499 - 506



- 6g
- HSS
- 1,5
- E / O

Einsatzgebiete – Material
Applications – material »» 476

- P 1.1-3.1
- N 1.1-3
- N 2.1-2, 4.2

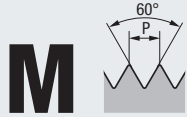
Werkzeug-Ident · Tool ident

D0361500

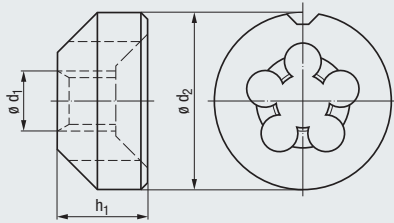
| | $\varnothing d_1$ mm | P mm | $\varnothing d_2$ | x | h_1 | $\varnothing d \approx$ | | | Dimens.- Ident | SE-AUT-LD gel STEEL |
|----------|-------------------------|---------|-------------------|---|-------|-------------------------|-------|-------|-------------------|---------------------------|
| | | | | | | „4h“ | „6g“ | „6e“ | | |
| M | 1 | 0,25 | 16 | x | 2 | 0,98 | 0,97 | 0,93 | .0010 | |
| | 1,1 | 0,25 | 16 | x | 2 | 1,08 | 1,07 | 1,03 | .0011 | |
| | 1,2 | 0,25 | 16 | x | 2 | 1,18 | 1,17 | 1,13 | .0012 | ○*) |
| | 1,4 | 0,3 | 16 | x | 2,6 | 1,38 | 1,36 | 1,32 | .0014 | ●*) |
| | 1,6 | 0,35 | 16 | x | 2,6 | 1,57 | 1,54 | 1,51 | .0016 | ● |
| | 1,7 | 0,35 | 16 | x | 2,6 | 1,67 | 1,64 | 1,61 | .0017 | ● |
| | 1,8 | 0,35 | 16 | x | 2,6 | 1,77 | 1,74 | 1,71 | .0018 | ○ |
| | 2 | 0,4 | 16 | x | 3,5 | 1,97 | 1,93 | 1,90 | .0020 | ● |
| | 2,2 | 0,45 | 16 | x | 3,5 | 2,17 | 2,13 | 2,10 | .0022 | ○ |
| | 2,3 | 0,4 | 16 | x | 3,5 | 2,27 | 2,23 | 2,20 | .0023 | ● |
| | 2,5 | 0,45 | 16 | x | 3,5 | 2,47 | 2,43 | 2,40 | .0025 | ● |
| | 3 | 0,5 | 16 | x | 3,5 | 2,97 | 2,92 | 2,89 | .0030 | ● |
| | 3,5 | 0,6 | 16 | x | 4 | 3,46 | 3,41 | 3,38 | .0035 | ● |
| | 4 | 0,7 | 16 | x | 5 | 3,96 | 3,90 | 3,87 | .0040 | ● |
| | 4,5 | 0,75 | 20 | x | 7 | 4,46 | 4,40 | 4,37 | .0045 | |
| | 5 | 0,8 | 20 | x | 7 | 4,95 | 4,90 | 4,86 | .0050 | ● |
| | 6 | 1 | 20 | x | 7 | 5,94 | 5,88 | 5,85 | .0060 | ● |
| | 7 | 1 | 25 | x | 7 | 6,94 | 6,88 | 6,85 | .0070 | |
| | 8 | 1,25 | 25 | x | 9 | 7,93 | 7,86 | 7,83 | .0080 | |
| | 10 | 1,5 | 30 | x | 11 | 9,92 | 9,85 | 9,81 | .0100 | |
| | 12 | 1,75 | 35 | x | 12 | 11,91 | 11,83 | 11,81 | .0112 | |
| | 14 | 2 | 35 | x | 14 | 13,91 | 13,82 | 13,78 | .0114 | |
| | 16 | 2 | 45 | x | 18 | 15,91 | 15,82 | 15,78 | .0116 | |

*) \leq M1,4 Tol. 6h





DIN 13

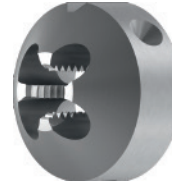


Vorarbeitdurchmesser $d \approx$
Preparatory diameter $d \approx$



STEEL
Steel materials

geläpft
lapped



Technische Informationen
Technical information

» 499 - 506

Toleranz · Tolerance
Schneidstoff · Cutting material



6g

HSS

1

E / O

Einsatzgebiete – Material
Applications – material

» 476

P 1.1-3.1

N 2.2, 4.2

Werkzeug-Ident · Tool ident

D0301500

| | $\varnothing d_1$ mm | P mm | $\varnothing d_2$ | x | h_1 | $\varnothing d \approx$ | | | Dimens.- Ident | SE-GLOCK gel STEEL |
|----------|-------------------------|---------|-------------------|---|-------|-------------------------|------|------|-------------------|--------------------------|
| | | | | | | „4h“ | „6g“ | „6e“ | | |
| M | 2 | 0,4 | 16 | x | 8 | 1,97 | 1,93 | 1,90 | .0020 | ● |
| | 2,5 | 0,45 | 16 | x | 8 | 2,47 | 2,43 | 2,40 | .0025 | ● |
| | 3 | 0,5 | 16 | x | 8 | 2,97 | 2,92 | 2,89 | .0030 | ● |
| | 3,5 | 0,6 | 16 | x | 9,5 | 3,46 | 3,41 | 3,38 | .0035 | ○ |
| | 4 | 0,7 | 16 | x | 9,5 | 3,96 | 3,90 | 3,87 | .0040 | ● |
| | 5 | 0,8 | 20 | x | 9,5 | 4,95 | 4,90 | 4,86 | .0050 | ● |
| | 6 | 1 | 20 | x | 9,5 | 5,94 | 5,88 | 5,85 | .0060 | ● |
| | 8 | 1,25 | 25 | x | 14 | 7,93 | 7,86 | 7,83 | .0080 | ● |

Product Finder

Vc

M

MF

UNC

UNF
UNEF

G

NPT, NPTF
R

BSW, BSF

Tr, Tr-F

Zubehör
Accessories

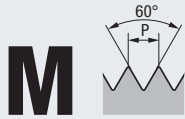
Tech. Info



Kühlschmierstoffe siehe Seite 238 - 239

Coolant-lubricants, see page 238 - 239

- Product Finder
- Vc
- M
- MF
- UNC
- UNF
UNEF
- G
- NPT, NPTF
R
- BSW, BSF
- Tr, Tr-F
- Zubehör
Accessories
- Tech. Info

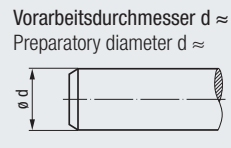
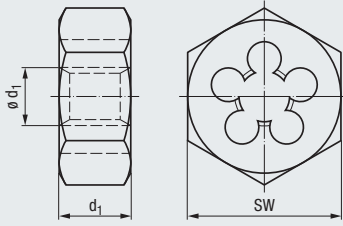
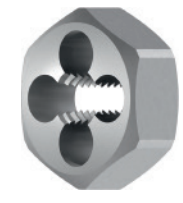


M
DIN 13

DIN 382

STEEL
Steel materials

normal standard



Vorarbeitsdurchmesser $\varnothing d \approx$
Preparatory diameter $\varnothing d \approx$

Toleranz · Tolerance
Schneidstoff · Cutting material

- 6g
- HSS
- 1,5
- E / O
- P 1.1-3.1**

Technische Informationen
Technical information »» 499 - 506



Einsatzgebiete – Material
Applications – material »» 476

Werkzeug-Ident · Tool ident **D0401000**

| | $\varnothing d_1$ mm | P mm | SW | x | h_1 | $\varnothing d \approx$ | | | Dimens.- Ident | SE-6KT nor STEEL |
|----------|-------------------------|---------|----|----|-------|-------------------------|-------|--------------|-------------------|------------------------|
| | | | | | | „4h“ | „6g“ | „6e“ | | |
| M | 3 | 0,5 | 18 | x | 5 | 2,97 | 2,92 | 2,89 | .0030 | ● |
| | 3,5 | 0,6 | 18 | x | 5 | 3,46 | 3,41 | 3,38 | .0035 | ○ |
| | 4 | 0,7 | 18 | x | 5 | 3,96 | 3,90 | 3,87 | .0040 | ● |
| | 5 | 0,8 | 18 | x | 7 | 4,95 | 4,90 | 4,86 | .0050 | ● |
| | 6 | 1 | 18 | x | 7 | 5,94 | 5,88 | 5,85 | .0060 | ● |
| | 7 | 1 | 21 | x | 9 | 6,94 | 6,88 | 6,85 | .0070 | ○ |
| | 8 | 1,25 | 21 | x | 9 | 7,93 | 7,86 | 7,83 | .0080 | ● |
| | 10 | 1,5 | 27 | x | 11 | 9,92 | 9,85 | 9,81 | .0100 | ● |
| | 12 | 1,75 | 36 | x | 14 | 11,91 | 11,83 | 11,81 | .0112 | ● |
| | 14 | 2 | 36 | x | 14 | 13,91 | 13,82 | 13,78 | .0114 | ● |
| | 16 | 2 | 41 | x | 18 | 15,91 | 15,82 | 15,78 | .0116 | ● |
| | 18 | 2,5 | 41 | x | 18 | 17,89 | 17,79 | 17,75 | .0118 | ● |
| | 20 | 2,5 | 41 | x | 18 | 19,89 | 19,79 | 19,75 | .0120 | ● |
| | 22 | 2,5 | 50 | x | 22 | 21,89 | 21,79 | 21,75 | .0122 | ● |
| | 24 | 3 | 50 | x | 22 | 23,88 | 23,76 | 23,72 | .0124 | ● |
| | 27 | 3 | 60 | x | 25 | 26,88 | 26,76 | 26,72 | .0127 | ● |
| 30 | 3,5 | 60 | x | 25 | 29,87 | 29,73 | 29,70 | .0130 | ● | |
| 33 | 3,5 | 60 | x | 25 | 32,87 | 32,73 | 32,70 | .0133 | ● | |
| 36 | 4 | 60 | x | 25 | 35,85 | 35,70 | 35,66 | .0136 | ● | |



Product
Finder

Vc

M

MF

UNC

UNF

G

NPT, NPTF
R

BSW, BSF

Tr, Tr-F

Zubehör
Accessories

Tech. Info

EMUGE bietet ein umfangreiches Programm an Gewindewalzrollen, Schneckenwalzrollen, Rändelrollen und Kerbverzahnungsrollen 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 Gewindefertigung 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:

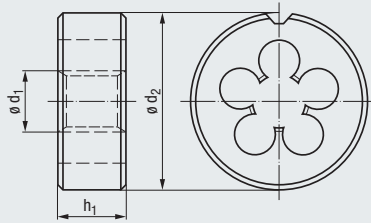
- Incompletely formed major diameter
- Special machines are necessary

For further information please get in touch with your sales contact.

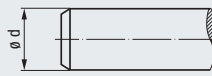
- Product Finder
- Vc
- M
- MF**
- UNC
- UNF UNEF
- G
- NPT, NPTF R
- BSW, BSF
- Tr, Tr-F
- Zubehör Accessories
- Tech. Info



DIN 13



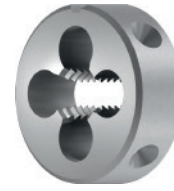
Vorarbeitendurchmesser $d \approx$
Preparatory diameter $d \approx$



DIN EN
22568

STEEL
Steel materials

normal
standard



geläppt
lapped



Technische Informationen
Technical information

» 499 - 506

Toleranz · Tolerance
Schneidstoff · Cutting material



Einsatzgebiete – Material
Applications – material

» 476

6g

HSS

1,5

E / O

P 1.1-3.1

N 2.2, 4.2

6g

HSS

1,5

E / O

P 1.1-3.1

N 1.1-3





N 2.1-2, 4.2

Werkzeug-Ident · Tool ident

D0101000

D0101500

| | $\varnothing d_1$ mm | P mm | $\varnothing d_2$ | x | h_1 | $\varnothing d \approx$ | | | Dimens.- Ident | SE-B nor STEEL | SE-B gel STEEL |
|---|-------------------------|---------|-------------------|------|-------|-------------------------|-------|-------|-------------------|----------------------|----------------------|
| | | | | | | „4h“ | „6g“ | „6e“ | | | |
| M | 2,5 | x 0,35 | 16 | x 5 | | 2,47 | 2,44 | — | .0196 | ● | ● |
| | 2,6 | x 0,35 | 16 | x 5 | | 2,57 | 2,54 | — | .0199 | ○ | ○ |
| | 3 | x 0,35 | 20 | x 5 | | 2,97 | 2,94 | — | .0202 | ● | ● |
| | 3,5 | x 0,35 | 20 | x 5 | | 3,47 | 3,44 | — | .0205 | ● | ● |
| | 4 | x 0,35 | 20 | x 5 | | 3,97 | 3,94 | — | .0209 | ● | ● |
| | 4 | x 0,5 | 20 | x 5 | | 3,96 | 3,92 | 3,89 | .0210 | ● | ● |
| | 5 | x 0,5 | 20 | x 5 | | 4,96 | 4,92 | 4,89 | .0218 | ● | ● |
| | 6 | x 0,5 | 20 | x 5 | | 5,96 | 5,92 | 5,89 | .0228 | ● | ● |
| | 6 | x 0,75 | 20 | x 7 | | 5,95 | 5,90 | 5,87 | .0229 | ● | ● |
| | 7 | x 0,75 | 25 | x 9 | | 6,95 | 6,90 | 6,87 | .0239 | ● | ● |
| | 8 | x 0,5 | 25 | x 9 | | 7,96 | 7,92 | 7,89 | .0249 | ● | ● |
| | 8 | x 0,75 | 25 | x 9 | | 7,95 | 7,90 | 7,87 | .0250 | ● | ● |
| | 8 | x 1 | 25 | x 9 | | 7,94 | 7,88 | 7,85 | .0251 | ● | ● |
| | 9 | x 0,75 | 25 | x 9 | | 8,95 | 8,90 | 8,87 | .0262 | ● | ● |
| | 9 | x 1 | 25 | x 9 | | 8,94 | 8,88 | 8,85 | .0263 | ● | ● |
| | 10 | x 0,75 | 30 | x 11 | | 9,95 | 9,90 | 9,87 | .0275 | ● | ● |
| | 10 | x 1 | 30 | x 11 | | 9,94 | 9,88 | 9,85 | .0276 | ● | ● |
| | 10 | x 1,25 | 30 | x 11 | | 9,93 | 9,86 | 9,83 | .0277 | ● | ● |
| | 11 | x 1 | 30 | x 11 | | 10,94 | 10,88 | 10,85 | .0288 | ● | ● |
| | 12 | x 1 | 38 | x 10 | | 11,94 | 11,88 | 11,85 | .0301 | ● | ● |
| | 12 | x 1,25 | 38 | x 10 | | 11,93 | 11,86 | 11,83 | .0302 | ● | ● |
| | 12 | x 1,5 | 38 | x 10 | | 11,92 | 11,85 | 11,81 | .0303 | ● | ● |
| | 13 | x 1 | 38 | x 10 | | 12,94 | 12,88 | 12,85 | .0315 | ● | ● |
| | 14 | x 1 | 38 | x 10 | | 13,94 | 13,88 | 13,85 | .0329 | ● | ● |
| | 14 | x 1,25 | 38 | x 10 | | 13,93 | 13,86 | 13,83 | .0330 | ● | ● |
| | 14 | x 1,5 | 38 | x 10 | | 13,92 | 13,85 | 13,81 | .0331 | ● | ● |
| | 15 | x 1 | 38 | x 10 | | 14,94 | 14,88 | 14,85 | .0343 | ● | ● |
| | 15 | x 1,5 | 38 | x 10 | | 14,92 | 14,85 | 14,81 | .0345 | ● | ● |
| | 16 | x 1 | 45 | x 14 | | 15,94 | 15,88 | 15,85 | .0357 | ● | ● |
| | 16 | x 1,5 | 45 | x 14 | | 15,92 | 15,85 | 15,81 | .0359 | ● | ● |
| | 18 | x 1 | 45 | x 14 | | 17,94 | 17,88 | 17,85 | .0388 | ● | ● |
| | 18 | x 1,5 | 45 | x 14 | | 17,92 | 17,85 | 17,81 | .0390 | ● | ● |
| | 18 | x 2 | 45 | x 14 | | 17,91 | 17,82 | 17,78 | .0391 | ● | ● |
| | 20 | x 1 | 45 | x 14 | | 19,94 | 19,88 | 19,85 | .0420 | ● | ● |
| | 20 | x 1,5 | 45 | x 14 | | 19,92 | 19,85 | 19,81 | .0422 | ● | ● |
| | 20 | x 2 | 45 | x 14 | | 19,91 | 19,82 | 19,78 | .0423 | ● | ● |
| | 22 | x 1 | 55 | x 16 | | 21,94 | 21,88 | 21,85 | .0436 | ● | ● |
| | 22 | x 1,5 | 55 | x 16 | | 21,92 | 21,85 | 21,81 | .0438 | ● | ● |
| | 22 | x 2 | 55 | x 16 | | 21,91 | 21,82 | 21,78 | .0439 | ● | ● |
| | 24 | x 1 | 55 | x 16 | | 23,94 | 23,88 | 23,85 | .0450 | ● | ● |
| | 24 | x 1,5 | 55 | x 16 | | 23,92 | 23,85 | 23,81 | .0452 | ● | ● |
| | 24 | x 2 | 55 | x 16 | | 23,91 | 23,82 | 23,78 | .0453 | ● | ● |
| | 25 | x 1 | 55 | x 16 | | 24,94 | 24,88 | 24,85 | .0456 | ● | ● |
| | 25 | x 1,5 | 55 | x 16 | | 24,92 | 24,85 | 24,81 | .0458 | ● | ● |
| | 26 | x 1,5 | 55 | x 16 | | 25,92 | 25,85 | 25,81 | .0464 | ● | ● |
| | 27 | x 1 | 65 | x 18 | | 26,94 | 26,88 | 26,85 | .0468 | ● | ● |
| | 27 | x 1,5 | 65 | x 18 | | 26,92 | 26,85 | 26,81 | .0470 | ● | ● |
| | 27 | x 2 | 65 | x 18 | | 26,91 | 26,82 | 26,78 | .0471 | ● | ● |
| | 28 | x 1 | 65 | x 18 | | 27,94 | 27,88 | 27,85 | .0474 | ● | ● |
| | 28 | x 1,5 | 65 | x 18 | | 27,92 | 27,85 | 27,81 | .0476 | ● | ● |
| | 30 | x 1 | 65 | x 18 | | 29,94 | 29,88 | 29,85 | .0488 | ● | ● |
| | 30 | x 1,5 | 65 | x 18 | | 29,92 | 29,85 | 29,81 | .0490 | ● | ● |
| | 30 | x 2 | 65 | x 18 | | 29,91 | 29,82 | 29,78 | .0491 | ● | ● |

| STEEL Steel materials | | VA Stainless steel materials | MS Copper-zinc alloys | |
|---|---|---|---|---------------------|
| normal standard | normal standard | normal standard | geläpft lapped | |
|  |  |  |  | |
| 6e HSS | 6g HSS LH | 6g HSSE | 6g HSS | |
| 1,5 E/O | 1,5 E/O | 2 E/O/P | 1 E/O | |
| P 1.1-3.1 N 2.2, 4.2 | P 1.1-3.1 N 2.2, 4.2 | P 1.1-3.1 M 1.1-2.1 N 4.1 | N 2.3 | |
| D0101030 | D0101050 | D0103000 | D0102500 | |
| SE-B nor STEEL „6e“ | SE-B nor STEEL-LH | SE-B nor VA | SE-B gel MS | |
| | | | | M 2,5 x 0,35 |
| | | | | 2,6 x 0,35 |
| | | | | 3 x 0,35 |
| | | | | 3,5 x 0,35 |
| | | | | 4 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 0,5 |
| • | • | • | • | 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 |
| • | • | • | • | 11 x 1 |
| | | | | 12 x 1 |
| • | • | • | • | 12 x 1,25 |
| | | | | 12 x 1,5 |
| | • | | • | 13 x 1 |
| | • | | • | 14 x 1 |
| | • | | • | 14 x 1,25 |
| • | • | • | • | 14 x 1,5 |
| | | | | 15 x 1 |
| | | | • | 15 x 1,5 |
| • | • | • | • | 16 x 1 |
| | | | • | 16 x 1,5 |
| | • | • | • | 18 x 1 |
| | • | • | • | 18 x 1,5 |
| | | | • | 18 x 2 |
| | • | • | • | 20 x 1 |
| | | | • | 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 |
| | | | ○ | 25 x 1,5 |
| | | | | 26 x 1,5 |
| | | | | 27 x 1 |
| | | | | 27 x 1,5 |
| | | | | 27 x 2 |
| | | | | 28 x 1 |
| | | | | 28 x 1,5 |
| | | | | 30 x 1 |
| | | | | 30 x 1,5 |
| | | | | 30 x 2 |

- Product Finder
- Vc
- M
- MF
- UNC
- UNF
UNEF
- G
- NPT, NPTF
R
- BSW, BSF
- Tr, Tr-F
- Zubehör
Accessories
- Tech. Info

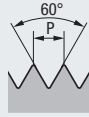


• = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

- Product Finder
- Vc
- M
- MF
- UNC**
- UNF
UNEF
- G
- NPT, NPTF
R
- BSW, BSF
- Tr, Tr-F
- Zubehör
Accessories
- Tech. Info

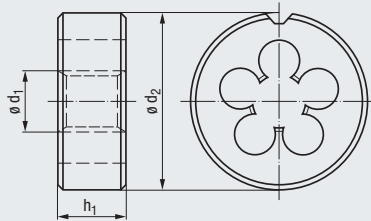
UNC

ASME B1.1



DIN EN
22568

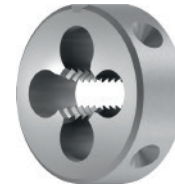
STEEL
Steel
materials



Vorarbeitsdurchmesser $d \approx$
Preparatory diameter $d \approx$



normal
standard



geläppt
lapped



Technische Informationen
Technical information

» 499 - 506

Toleranz · Tolerance
Schneidstoff · Cutting material



Einsatzgebiete – Material
Applications – material

» 476

2A
HSS

2A
HSS

1,5
E / O

1,5
E / O

P 1.1-3.1
N 2.2, 4.2

P 1.1-3.1
N 1.1-3
N 2.1-2, 4.2

Werkzeug-Ident · Tool ident

D0101000

D0101500

| Nr. | $\varnothing d_1$ | | P Gg/1" (tpi) | $\varnothing d_2$ | x | h_1 | $\varnothing d \approx$ | | Dimens.- Ident | SE-B nor STEEL | SE-B gel STEEL |
|--------|-------------------|------|------------------|-------------------|---|-------|-------------------------|-------|-------------------|----------------------|----------------------|
| | inch | inch | | | | | „2A“ | „3A“ | | | |
| Nr. 1 | 0.0730 | | 64 | 16 | x | 5 | 1,79 | 1,81 | .5000 | ● | ● |
| Nr. 2 | 0.0860 | | 56 | 16 | x | 5 | 2,12 | 2,14 | .5001 | ● | ● |
| Nr. 3 | 0.0990 | | 48 | 16 | x | 5 | 2,44 | 2,46 | .5002 | ● | ● |
| Nr. 4 | 0.1120 | | 40 | 16 | x | 5 | 2,76 | 2,78 | .5003 | ● | ● |
| Nr. 5 | 0.1250 | | 40 | 20 | x | 5 | 3,09 | 3,11 | .5004 | ● | ● |
| Nr. 6 | 0.1380 | | 32 | 20 | x | 7 | 3,41 | 3,43 | .5005 | ● | ● |
| Nr. 8 | 0.1640 | | 32 | 20 | x | 7 | 4,07 | 4,09 | .5006 | ● | ● |
| Nr. 10 | 0.1900 | | 24 | 20 | x | 7 | 4,71 | 4,73 | .5007 | ● | ● |
| Nr. 12 | 0.2160 | | 24 | 20 | x | 7 | 5,37 | 5,39 | .5008 | ● | ● |
| 1/4 | 0.2500 | | 20 | 20 | x | 7 | 6,22 | 6,25 | .5009 | ● | ● |
| 5/16 | 0.3125 | | 18 | 25 | x | 9 | 7,80 | 7,83 | .5010 | ● | ● |
| 3/8 | 0.3750 | | 16 | 30 | x | 11 | 9,37 | 9,41 | .5011 | ● | ● |
| 7/16 | 0.4375 | | 14 | 30 | x | 11 | 10,95 | 10,98 | .5012 | ● | ● |
| 1/2 | 0.5000 | | 13 | 38 | x | 14 | 12,52 | 12,56 | .5013 | ● | ● |
| 9/16 | 0.5625 | | 12 | 38 | x | 14 | 14,10 | 14,14 | .5014 | ● | ● |
| 5/8 | 0.6250 | | 11 | 45 | x | 18 | 15,68 | 15,72 | .5015 | ● | ● |
| 3/4 | 0.7500 | | 10 | 45 | x | 18 | 18,84 | 18,89 | .5016 | ● | ● |
| 7/8 | 0.8750 | | 9 | 55 | x | 22 | 22,00 | 22,05 | .5017 | ● | ● |
| 1" | 1.0000 | | 8 | 55 | x | 22 | 25,16 | 25,21 | .5018 | ● | ● |
| 1 1/8 | 1.1250 | | 7 | 65 | x | 25 | 28,31 | 28,37 | .5019 | ● | ● |
| 1 1/4 | 1.2500 | | 7 | 65 | x | 25 | 31,49 | 31,54 | .5020 | ● | ● |
| 1 3/8 | 1.3750 | | 6 | 65 | x | 25 | 34,63 | 34,69 | .5021 | ● | ● |
| 1 1/2 | 1.5000 | | 6 | 75 | x | 30 | 37,80 | 37,87 | .5022 | ● | ● |
| 1 3/4 | 1.7500 | | 5 | 90 | x | 36 | 44,12 | 44,19 | .5023 | ● | ● |
| 2" | 2.0000 | | 4 1/2 | 90 | x | 36 | 50,45 | 50,52 | .5024 | ● | ● |

Toleranzklasse 3A und 1A auf Anfrage
Tolerance classes 3A and 1A upon request



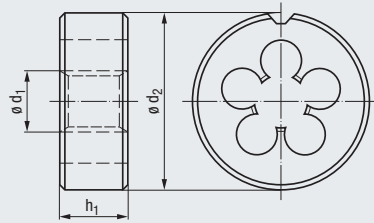
Schneideisenhalter für runde
Schneideisen siehe Seite 498

Die stocks for round dies,
see page 498

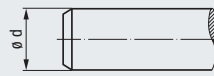
UNF



ASME B1.1



Vorarbeitdurchmesser $d \approx$
Preparatory diameter $d \approx$



DIN EN
22568

STEEL
Steel
materials

normal
standard



geläppt
lapped



Technische Informationen
Technical information

» 499 - 506

Toleranz · Tolerance
Schneidstoff · Cutting material



Einsatzgebiete – Material
Applications – material

» 476

2A

HSS

1,5

E / O

P 1.1-3.1

N 2.2, 4.2

2A

HSS

1,5

E / O

P 1.1-3.1

N 1.1-3

N 2.1-2, 4.2

Werkzeug-Ident · Tool ident

D0101000

D0101500

| $\varnothing d_1$ inch | inch | P Gg/1" (tpi) | $\varnothing d_2$ x h_1 | $\varnothing d \approx$ | | Dimens.- Ident | SE-B nor STEEL | SE-B gel STEEL |
|---------------------------|--------|------------------|---------------------------|-------------------------|-------|-------------------|----------------------|----------------------|
| | | | | „2A“ | „3A“ | | | |
| Nr. 0 | 0.0600 | 80 | 16 x 5 | 1,47 | 1,49 | .5033 | ● | ● |
| Nr. 1 | 0.0730 | 72 | 16 x 5 | 1,80 | 1,81 | .5034 | ● | ● |
| Nr. 2 | 0.0860 | 64 | 16 x 5 | 2,12 | 2,14 | .5035 | ● | ● |
| Nr. 3 | 0.0990 | 56 | 16 x 5 | 2,44 | 2,46 | .5036 | ● | ● |
| Nr. 4 | 0.1120 | 48 | 16 x 5 | 2,77 | 2,79 | .5037 | ● | ● |
| Nr. 5 | 0.1250 | 44 | 20 x 5 | 3,10 | 3,12 | .5038 | ● | ● |
| Nr. 6 | 0.1380 | 40 | 20 x 5 | 3,42 | 3,44 | .5039 | ● | ● |
| Nr. 8 | 0.1640 | 36 | 20 x 7 | 4,08 | 4,10 | .5040 | ● | ● |
| Nr. 10 | 0.1900 | 32 | 20 x 7 | 4,73 | 4,75 | .5041 | ● | ● |
| Nr. 12 | 0.2160 | 28 | 20 x 7 | 5,38 | 5,40 | .5042 | ● | ● |
| 1/4 | 0.2500 | 28 | 20 x 7 | 6,24 | 6,27 | .5043 | ● | ● |
| 5/16 | 0.3125 | 24 | 25 x 9 | 7,82 | 7,85 | .5044 | ● | ● |
| 3/8 | 0.3750 | 24 | 30 x 11 | 9,41 | 9,43 | .5045 | ● | ● |
| 7/16 | 0.4375 | 20 | 30 x 11 | 10,98 | 11,01 | .5046 | ● | ● |
| 1/2 | 0.5000 | 20 | 38 x 10 | 12,56 | 12,60 | .5047 | ● | ● |
| 9/16 | 0.5625 | 18 | 38 x 10 | 14,14 | 14,18 | .5048 | ● | ● |
| 5/8 | 0.6250 | 18 | 45 x 14 | 15,73 | 15,77 | .5049 | ● | ● |
| 3/4 | 0.7500 | 16 | 45 x 14 | 18,89 | 18,93 | .5050 | ● | ● |
| 7/8 | 0.8750 | 14 | 55 x 16 | 22,05 | 22,09 | .5051 | ● | ● |
| 1" | 1.0000 | 12 | 55 x 16 | 25,21 | 25,26 | .5052 | ● | ● |
| 1 1/8 | 1.1250 | 12 | 65 x 18 | 28,38 | 28,43 | .5053 | ● | ● |
| 1 1/4 | 1.2500 | 12 | 65 x 18 | 31,55 | 31,60 | .5054 | ● | ● |
| 1 3/8 | 1.3750 | 12 | 65 x 18 | 34,73 | 34,78 | .5055 | ● | ● |
| 1 1/2 | 1.5000 | 12 | 75 x 20 | 37,90 | 37,95 | .5056 | ● | ● |

Toleranzklasse 3A und 1A auf Anfrage
Tolerance classes 3A and 1A upon request

- Product Finder
- Vc
- M
- MF
- UNC
- UNF
- G
- NPT, NPTF
- R
- BSW, BSF
- Tr, Tr-F
- Zubehör
- Accessories
- Tech. Info



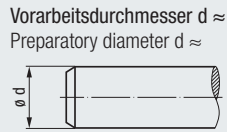
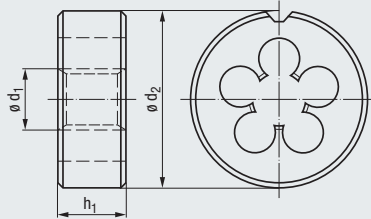
- Product Finder
- Vc
- M
- MF
- UNC
- UNF
UNEF
- G
- NPT, NPTF
R
- BSW, BSF
- Tr, Tr-F
- Zubehör
Accessories
- Tech. Info

UNEF



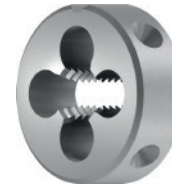
≈DIN EN
22568

ASME B1.1



STEEL
Steel materials

normal
standard



geläppt
lapped



Technische Informationen
Technical information

» 499 - 506

Toleranz · Tolerance
Schneidstoff · Cutting material

2A
HSS

2A
HSS



1,5
E / O

1,5
E / O

Einsatzgebiete – Material
Applications – material

» 476

P 1.1-3.1
N 2.2, 4.2

P 1.1-3.1
N 1.1-3
N 2.1-2, 4.2

Werkzeug-Ident · Tool ident

D0101000

D0101500

| Nr. | $\varnothing d_1$ | | P Gg/1" (tpi) | $\varnothing d_2$ x h_1 | $\varnothing d \approx$ | | Dimens.- Ident | SE-B nor STEEL | SE-B gel STEEL |
|--------|-------------------|------|------------------|---------------------------|-------------------------|-------|-------------------|----------------------|----------------------|
| | inch | inch | | | „2A“ | „3A“ | | | |
| Nr. 12 | 0.2160 | | 32 | 20 x 7 | 5,39 | 5,41 | .5057 | ● | ● |
| 1/4 | 0.2500 | | 32 | 20 x 7 | 6,25 | 6,27 | .5058 | ● | ● |
| 5/16 | 0.3125 | | 32 | 25 x 9 | 7,84 | 7,86 | .5059 | ● | ● |
| 3/8 | 0.3750 | | 32 | 30 x 11 | 9,42 | 9,45 | .5060 | ● | ● |
| 7/16 | 0.4375 | | 28 | 30 x 11 | 11,00 | 11,03 | .5061 | ● | ● |
| 1/2 | 0.5000 | | 28 | 38 x 10 | 12,59 | 12,62 | .5062 | ● | ● |
| 9/16 | 0.5625 | | 24 | 38 x 10 | 14,17 | 14,20 | .5063 | ● | ● |
| 5/8 | 0.6250 | | 24 | 45 x 14 | 15,75 | 15,78 | .5064 | ● | ● |
| 3/4 | 0.7500 | | 20 | 45 x 14 | 18,91 | 18,95 | .5066 | ● | ● |
| 7/8 | 0.8750 | | 20 | 55 x 16 | 22,09 | 22,12 | .5068 | ● | ● |
| 1" | 1.0000 | | 20 | 55 x 16 | 25,26 | 25,30 | .5070 | ● | ● |

Toleranzklasse 3A und 1A auf Anfrage
Tolerance classes 3A and 1A upon request

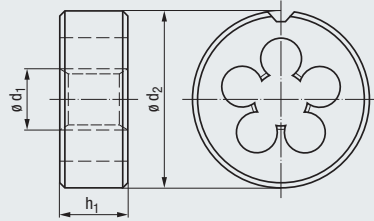




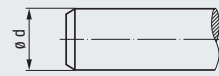
G (BSP)

DIN EN ISO 228

DIN EN 24231



Vorarbeitdurchmesser $\varnothing d \approx$
Preparatory diameter $\varnothing d \approx$



STEEL
Steel materials

MS
Copper-zinc alloys

normal standard

geläpft lapped

geläpft lapped



Toleranz · Tolerance
Schneidstoff · Cutting material

Technische Informationen
Technical information

Einsatzgebiete – Material
Applications – material

» 499 - 506

» 476

Class A

Class A

Class A

HSS

HSS

HSS

1,5

1,5

1

E / O

E / O

E / O

P 1.1-3.1

P 1.1-3.1

N 2.3

N 2.2, 4.2

N 1.1-3

N 2.1-2, 4.2

| Werkzeug-Ident · Tool ident | | | | | | | D0101000 | D0101500 | D0102500 |
|-----------------------------|-------------------------|------------------|-------------------------|------------|-------------------|----------------------|----------------------|-------------------------|----------|
| Nenngröße Nom. size | | | $\varnothing d \approx$ | | Dimens.- Ident | SE-B nor STEEL | SE-B gel STEEL | SE-B gel MS 1) | |
| $\varnothing d_1$ | $\varnothing d_1$ mm | P Gg/1" (tpi) | $\varnothing d_2$ | x h_1 | | Class A | | | |
| G | 1/16 | 7,72 | 28 | 25 x 9 | 7,62 | .4034 | | | |
| | 1/8 | 9,73 | 28 | 30 x 11 | 9,62 | .4035 | ● | ● | ● |
| | 1/4 | 13,16 | 19 | 38 x 10 | 13,03 | .4036 | ● | ● | ● |
| | 3/8 | 16,66 | 19 | 45 x 14 | 16,54 | .4037 | ● | ● | ● |
| | 1/2 | 20,96 | 14 | 45 x 14 | 20,81 | .4038 | ● | ● | ● |
| | 5/8 | 22,91 | 14 | 55 x 16 | 22,77 | .4039 | ● | ● | ● |
| | 3/4 | 26,44 | 14 | 55 x 16 | 26,30 | .4040 | ● | ● | ● |
| | 7/8 | 30,20 | 14 | 65 x 18 | 30,06 | .4041 | ● | ● | ● |
| | 1" | 33,25 | 11 | 65 x 18 | 33,07 | .4042 | ● | ● | ● |
| | 1 1/8 | 37,90 | 11 | 75 x 20 | 37,72 | .4043 | ● | ● | ● |
| | 1 1/4 | 41,91 | 11 | 75 x 20 | 41,73 | .4044 | ● | ● | ● |
| | 1 3/8 | 44,32 | 11 | 90 x 22 | 44,14 | .4045 | ● | ● | ● |
| | 1 1/2 | 47,80 | 11 | 90 x 22 | 47,62 | .4046 | ● | ● | ● |
| | 1 3/4 | 53,75 | 11 | 90 x 22 | 53,57 | .4048 | ● | ● | ● |
| | 2" | 59,61 | 11 | 105 x 22 | 59,43 | .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 Finder
- Vc
- M
- MF
- UNC
- UNF
- UNEF
- G**
- NPT, NPTF
- R
- BSW, BSF
- Tr, Tr-F
- Zubehör
Accessories
- Tech. Info

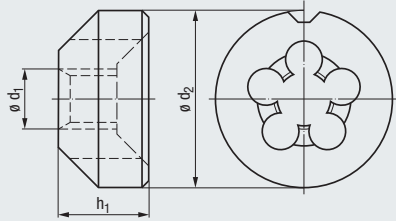


- Product Finder
- V_c
- M
- MF
- UNC
- UNF
UNEF
- G**
- NPT, NPTF
R
- BSW, BSF
- Tr, Tr-F
- Zubehör
Accessories
- Tech. Info



G (BSP)

DIN EN ISO 228

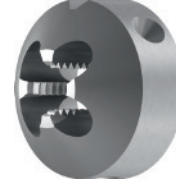


Vorarbeitdurchmesser $d \approx$
Preparatory diameter $d \approx$



MS
Copper-zinc
alloys

geläppt
lapped



Toleranz · Tolerance
Schneidstoff · Cutting material

Class A

HSS

Technische Informationen
Technical information ▶▶ 499 - 506



1

E / O

Einsatzgebiete – Material
Applications – material ▶▶ 476

N 2.3

Werkzeug-Ident · Tool ident

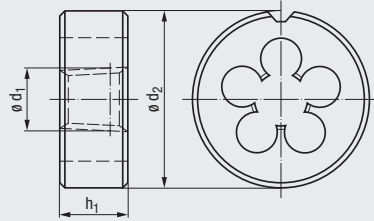
D0302500

| Nenngröße Nom. size | | | | | | $\varnothing d \approx$ Class A | Dimens.- Ident | SE-GLOCK gel MS |
|------------------------|-------------------------|------------------|-------------------|---|-------|------------------------------------|-------------------|-----------------------|
| $\varnothing d_1$ | $\varnothing d_1$ mm | P Gg/1" (tpi) | $\varnothing d_2$ | x | h_1 | | | |
| G 1/8 | 9,73 | 28 | 25 | x | 14 | 9,62 | .4035 | ● |
| 1/4 | 13,16 | 19 | 30 | x | 18 | 13,03 | .4036 | ● |
| 3/8 | 16,66 | 19 | 38 | x | 20 | 16,54 | .4037 | ● |
| 1/2 | 20,96 | 14 | 45 | x | 24 | 20,81 | .4038 | ● |
| 3/4 | 26,44 | 14 | 55 | x | 28 | 26,30 | .4040 | ● |
| 1" | 33,25 | 11 | 65 | x | 30 | 33,07 | .4042 | ● |

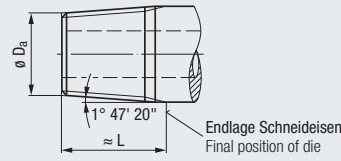




ANSI/ASME B1.20.1

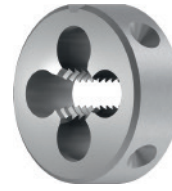


Bolzen-Vorarbeitsmaße im Kegel 1:16
Preparatory bolt dimensions on taper 1:16



STEEL
Steel materials

normal standard



Technische Informationen
Technical information

» 499 - 506

Toleranz · Tolerance
Schneidstoff · Cutting material

HSS



1,5

O / P

Einsatzgebiete – Material
Applications – material

» 476

P 1.1-3.1

N 2.3

Werkzeug-Ident · Tool ident

D0191000

Nenngröße
Nom. size

| $\varnothing d_1$ | P Gg/1" (tpi) | $\varnothing d_2$ | x | h_1 | $\varnothing D_a$ min. | $\varnothing D_a$ max. | $\approx L$ | Dimens.- Ident | SE-KEG nor STEEL | |
|-------------------|------------------|-------------------|---|-------|---------------------------|---------------------------|-------------|-------------------|------------------------|---|
| | | | | | | | | | ● | ○ |
| 1/16 | 27 | 25 | x | 9 | 7,52 | 7,64 | 8,3 | .5763 | ● | |
| 1/8 | 27 | 30 | x | 11 | 9,87 | 9,99 | 8,4 | .5764 | ● | |
| 1/4 | 18 | 38 | x | 14 | 13,10 | 13,26 | 12,7 | .5765 | ● | |
| 3/8 | 18 | 45 | x | 14 | 16,52 | 16,67 | 12,9 | .5766 | ● | |
| 1/2 | 14 | 45 | x | 18 | 20,55 | 20,71 | 16,8 | .5767 | ● | |
| 3/4 | 14 | 55 | x | 22 | 25,87 | 26,03 | 17,0 | .5768 | ● | |
| 1" | 11 1/2 | 65 | x | 25 | 32,42 | 32,59 | 21,2 | .5769 | ● | |
| 1 1/4 | 11 1/2 | 75 | x | 26 | 41,14 | 41,32 | 21,9 | .5770 | ● | |
| 1 1/2 | 11 1/2 | 90 | x | 27 | 47,21 | 47,39 | 22,3 | .5771 | ● | |
| 2" | 11 1/2 | 105 | x | 28 | 59,25 | 59,42 | 23,1 | .5772 | ● | |

Product Finder

Vc

M

MF

UNC

UNF
UNEF

G

NPT NPTF
R

BSW, BSF

Tr, Tr-F

Zubehör
Accessories

Tech. Info

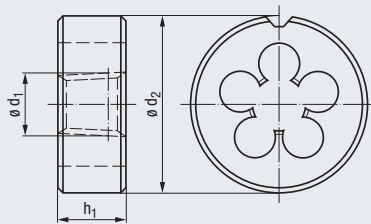


- Product Finder
- Vc
- M
- MF
- UNC
- UNF
UNEF
- G
- NPT NPTF**
- R

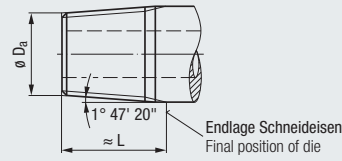
NPTF



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

Technische Informationen
Technical information »» 499 - 506



1,5

0 / P

Zubehör
Accessories

Einsatzgebiete – Material
Applications – material »» 476

P 1.1-3.1

N 2.3

Werkzeug-Ident · Tool ident

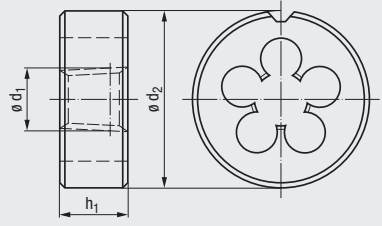
D0191000

| Nenngröße Nom. size | | | | | $\varnothing D_a$ min. | $\varnothing D_a$ max. | $\approx L$ | Dimens.- Ident | SE-KEG nor STEEL |
|------------------------|------------------|-------------------|---|-------|---------------------------|---------------------------|-------------|-------------------|------------------------|
| $\varnothing d_1$ | P Gg/1" (tpi) | $\varnothing d_2$ | x | h_1 | | | | | |
| 1/16 | 27 | 25 | x | 9 | 7,52 | 7,62 | 9,2 | .5782 | ● |
| 1/8 | 27 | 30 | x | 11 | 9,87 | 9,96 | 9,3 | .5783 | ● |
| 1/4 | 18 | 38 | x | 14 | 13,13 | 13,21 | 14,1 | .5784 | ● |
| 3/8 | 18 | 45 | x | 14 | 16,55 | 16,63 | 14,3 | .5785 | ● |
| 1/2 | 14 | 45 | x | 18 | 20,62 | 20,70 | 18,6 | .5786 | ● |
| 3/4 | 14 | 55 | x | 22 | 25,93 | 26,02 | 18,9 | .5787 | ● |
| 1" | 11 1/2 | 65 | x | 25 | 32,47 | 32,56 | 23,5 | .5788 | ● |
| 1 1/4 | 11 1/2 | 75 | x | 26 | 41,20 | 41,29 | 24,1 | .5789 | |
| 1 1/2 | 11 1/2 | 90 | x | 27 | 47,27 | 47,36 | 24,5 | .5790 | |
| 2" | 11 1/2 | 105 | x | 28 | 59,28 | 59,37 | 25,3 | .5791 | |

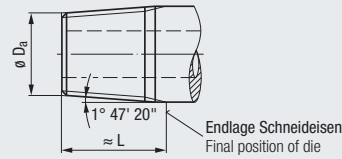




DIN EN 10226-1, ISO 7-1



Bolzen-Vorarbeitsmaße im Kegel 1:16
Preparatory bolt dimensions on taper 1:16



≈ DIN EN 24230

STEEL
Steel materials

normal standard



Technische Informationen
Technical information

» 499 - 506

Toleranz · Tolerance
Schneidstoff · Cutting material

HSS



1,5

O / P

Einsatzgebiete – Material
Applications – material

» 476

P 1.1-3.1

N 2.3

Werkzeug-Ident · Tool ident

D0191000

| Nenngröße Nom. size | | | | | | | | Dimens.- Ident | SE-KEG nor STEEL |
|------------------------|------------------|-------------------|---|-------|-------------------|--------|-------------|-------------------|------------------------|
| $\varnothing d_1$ | P Gg/1" (tpi) | $\varnothing d_2$ | x | h_1 | $\varnothing D_a$ | Tol. | $\approx L$ | | |
| R 1/8 | 28 | 30 | x | 11 | 9,48 | ± 0,05 | 8,1 | .4069 | ● |
| 1/4 | 19 | 38 | x | 14 | 12,78 | ± 0,08 | 12 | .4070 | ● |
| 3/8 | 19 | 45 | x | 14 | 16,26 | ± 0,08 | 12,4 | .4071 | ● |
| 1/2 | 14 | 45 | x | 18 | 20,44 | ± 0,11 | 16,4 | .4072 | ● |
| 3/4 | 14 | 55 | x | 22 | 25,85 | ± 0,11 | 17,7 | .4073 | ● |
| 1" | 11 | 65 | x | 25 | 32,60 | ± 0,14 | 20,8 | .4074 | ● |

Zugehöriges Innengewinde ist zylindrisch, siehe Gewindebohrer Seite 179 - 181
The appropriate internal thread is cylindrical, see taps, page 179 - 181

- Product Finder
- V_c
- M
- MF
- UNC
- UNF
UNEF
- G
- NPT, NPTF
R
- BSW, BSF
- Tr, Tr-F
- Zubehör
Accessories
- Tech. Info



Gewindefräser für kegelige Gewinde
Typ GF-KEG siehe Seite 399 - 412

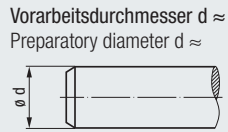
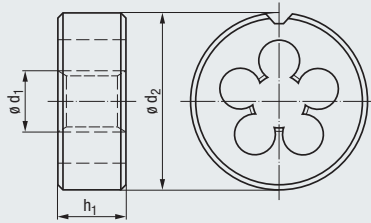
Thread milling cutters for tapered threads
type GF-KEG, see page 399 - 412

- Product Finder
- V_c
- M
- MF
- UNC
- UNF
UNEF
- G
- NPT, NPTF
R
- BSW, BSF
- Tr, Tr-F
- Zubehör
Accessories
- Tech. Info

BSW



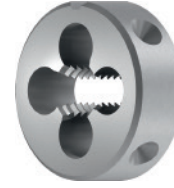
BS 84



DIN EN
22568

STEEL
Steel
materials

normal
standard



Toleranz · Tolerance
Schneidstoff · Cutting material

medium class
HSS

Technische Informationen
Technical information

» 499 - 506



1,5
E / O

Einsatzgebiete – Material
Applications – material

» 476

P 1.1-3.1
N 2.2, 4.2

Werkzeug-Ident · Tool ident

D0101000

| | $\varnothing d_1$ inch | $\varnothing d_1$ mm | P Gg/1" (tpi) | $\varnothing d_2$ | x | h_1 | $\varnothing d \approx$ medium class | Dimens.- Ident | SE-B nor STEEL |
|-----|---------------------------|-------------------------|------------------|-------------------|---|-------|---|-------------------|----------------------|
| BSW | 1/16 | 1,59 | 60 | 16 | x | 5 | 1,51 | .3044 | ● |
| | 3/32 | 2,38 | 48 | 16 | x | 5 | 2,30 | .3045 | ● |
| | 1/8 | 3,18 | 40 | 20 | x | 5 | 3,09 | .3046 | ● |
| | 5/32 | 3,97 | 32 | 20 | x | 7 | 3,88 | .3047 | ● |
| | 3/16 | 4,76 | 24 | 20 | x | 7 | 4,66 | .3048 | ● |
| | 7/32 | 5,56 | 24 | 20 | x | 7 | 5,46 | .3049 | ● |
| | 1/4 | 6,35 | 20 | 20 | x | 7 | 6,24 | .3050 | ● |
| | 5/16 | 7,94 | 18 | 25 | x | 9 | 7,82 | .3051 | ● |
| | 3/8 | 9,53 | 16 | 30 | x | 11 | 9,40 | .3052 | ● |
| | 7/16 | 11,11 | 14 | 30 | x | 11 | 10,98 | .3053 | ● |
| | 1/2 | 12,70 | 12 | 38 | x | 14 | 12,56 | .3054 | ● |
| | 9/16 | 14,29 | 12 | 38 | x | 14 | 14,14 | .3055 | ● |
| | 5/8 | 15,88 | 11 | 45 | x | 18 | 15,72 | .3056 | ● |
| | 3/4 | 19,05 | 10 | 45 | x | 18 | 18,89 | .3058 | ● |
| | 7/8 | 22,23 | 9 | 55 | x | 22 | 22,10 | .3060 | ● |
| | 1" | 25,40 | 8 | 55 | x | 22 | 25,27 | .3062 | ● |
| | 1 1/8 | 28,58 | 7 | 65 | x | 25 | 28,44 | .3063 | ● |
| | 1 1/4 | 31,75 | 7 | 65 | x | 25 | 31,61 | .3064 | ● |
| | 1 3/8 | 34,93 | 6 | 65 | x | 25 | 34,77 | .3065 | ● |
| | 1 1/2 | 38,10 | 6 | 75 | x | 30 | 37,95 | .3066 | ● |
| | 1 5/8 | 41,28 | 5 | 75 | x | 30 | 41,11 | .3067 | ○ |
| | 1 3/4 | 44,45 | 5 | 90 | x | 36 | 44,28 | .3068 | ● |
| | 2" | 50,80 | 4 1/2 | 90 | x | 36 | 50,62 | .3070 | ● |



BSF

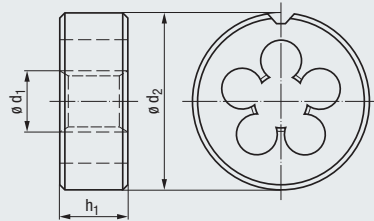


BS 84

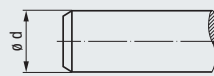
DIN EN 22568

STEEL
Steel materials

normal standard



Vorarbeitdurchmesser $d \approx$
Preparatory diameter $d \approx$



Technische Informationen
Technical information

» 499 - 506

Toleranz · Tolerance
Schneidstoff · Cutting material



medium class

HSS

1,5

E / O

Einsatzgebiete – Material
Applications – material

» 476

P 1.1-3.1

N 2.2, 4.2

Werkzeug-Ident · Tool ident

D0101000

| | $\varnothing d_1$ inch | $\varnothing d_1$ mm | P Gg/1" (tpi) | $\varnothing d_2$ | x | h_1 | $\varnothing d \approx$ medium class | Dimens.- Ident | SE-B nor STEEL |
|------------|---------------------------|-------------------------|------------------|-------------------|---|-------|---|-------------------|----------------------|
| | | | | | | | | | ● |
| BSF | 3/16 | 4,76 | 32 | 20 | x | 7 | 4,67 | .3088 | ● |
| | 1/4 | 6,35 | 26 | 20 | x | 7 | 6,25 | .3090 | ● |
| | 5/16 | 7,94 | 22 | 25 | x | 9 | 7,83 | .3092 | ● |
| | 3/8 | 9,53 | 20 | 30 | x | 11 | 9,41 | .3093 | ● |
| | 7/16 | 11,11 | 18 | 30 | x | 11 | 10,99 | .3094 | ● |
| | 1/2 | 12,70 | 16 | 38 | x | 10 | 12,57 | .3095 | ● |
| | 5/8 | 15,88 | 14 | 45 | x | 14 | 15,73 | .3097 | ● |
| | 3/4 | 19,05 | 12 | 45 | x | 14 | 18,89 | .3099 | ● |
| | 7/8 | 22,23 | 11 | 55 | x | 16 | 22,11 | .3101 | ● |
| | 1" | 25,40 | 10 | 55 | x | 16 | 25,28 | .3102 | ● |

Product Finder

Vc

M

MF

UNC

UNF
UNEF

G

NPT, NPTF
R

BSW, BSF

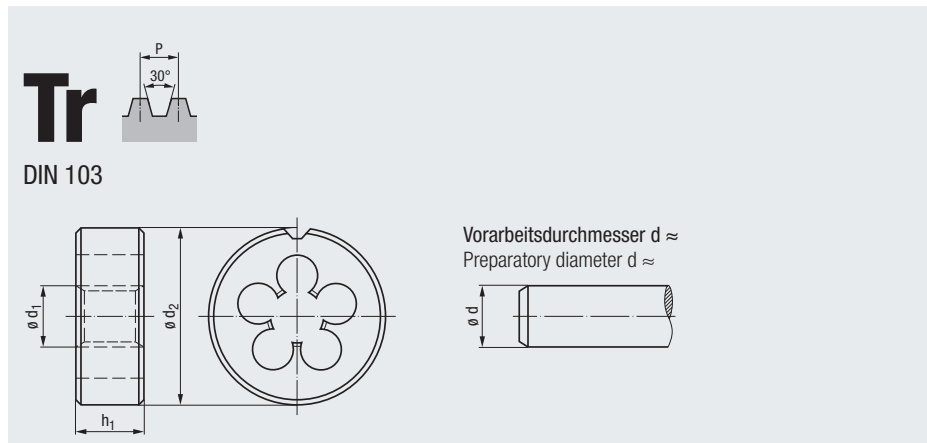
Tr, Tr-F

Zubehör
Accessories

Tech. Info



- Product Finder
- Vc
- M
- MF
- UNC
- UNF
UNEF
- G
- NPT, NPTF
R
- BSW, BSF
- Tr, Tr-F
- Zubehör
Accessories
- Tech. Info



STEEL
Steel materials

normal standard

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499 - 506

Toleranz · Tolerance
Schneidstoff · Cutting material

7e
HSS

1,5-2
O / P

Einsatzgebiete – Material
Applications – material

476

P 1.1)
N 2.3)

| Werkzeug-Ident · Tool ident | | | | | | | D0101000 | |
|-----------------------------|---------|-------------------|------|-------|---------------------------------|-------------------|--------------------------------|--|
| $\varnothing d_1$ mm | P mm | $\varnothing d_2$ | x | h_1 | $\varnothing d \approx$ „7e“ | Dimens.- Ident | TRAPEZ SE-B nor STEEL | |
| Tr 8 | x 1,5 | 25 | x 9 | | 7,93 | .7040 | • | |
| 10 | x 2 | 38 | x 14 | | 9,91 | .7043 | • | |
| 10 | x 3 | 38 | x 14 | | 9,88 | .7044 | • | |
| 11 | x 3 | 38 | x 14 | | 10,88 | .7045 | • | |
| 12 | x 3 | 38 | x 14 | | 11,88 | .7046 | • | |
| 14 | x 3 | 45 | x 18 | | 13,88 | .7047 | • | |
| 14 | x 4 | 45 | x 18 | | 13,85 | .7048 | • | |
| 16 | x 4 | 45 | x 18 | | 15,85 | .7051 | • | |
| 18 | x 4 | 45 | x 18 | | 17,85 | .7052 | • | |
| 20 | x 4 | 55 | x 22 | | 19,85 | .7053 | • | |
| 22 | x 5 | 55 | x 22 | | 21,83 | .7054 | • | |
| 24 | x 5 | 65 | x 25 | | 23,83 | .7055 | • | |
| 26 | x 5 | 65 | x 25 | | 25,83 | .7057 | • | |
| 28 | x 5 | 65 | x 25 | | 27,83 | .7058 | • | |
| 30 | x 6 | 65 | x 25 | | 29,81 | .7059 | • | |
| 32 | x 6 | 65 | x 25 | | 31,81 | .7060 | • | |

1) Nur zum Nachschneiden geeignet
Suitable only for reconditioning

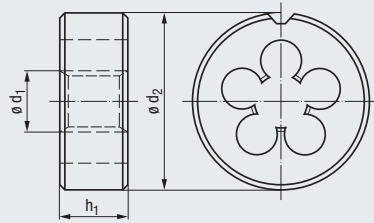


Gewindebohrer für Trapez-Gewinde
siehe Seite 232 - 236

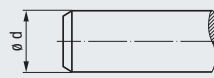
Taps for trapezoidal threads,
see page 232 - 236



DIN 103

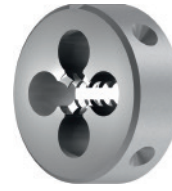


Vorarbeitdurchmesser $d \approx$
Preparatory diameter $d \approx$



STEEL
Steel materials

normal standard



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» 499 - 506

Toleranz · Tolerance
Schneidstoff · Cutting material



Einsatzgebiete – Material
Applications – material

» 476

7e

HSS

1,5-2

0 / P

P 1.1¹⁾

N 2.3¹⁾

Werkzeug-Ident · Tool ident

D0101000

| $\varnothing d_1$ mm | P mm | $\varnothing d_2$ | x | h_1 | $\varnothing d \approx$ „7e“ | Dimens.- Ident | TRAPEZ SE-B nor STEEL |
|-------------------------|---------|-------------------|------|-------|---------------------------------|-------------------|--------------------------------|
| Tr 12 | x 2 | 38 | x 14 | | 11,91 | .7129 | ● |
| 14 | x 2 | 38 | x 14 | | 13,91 | .7130 | ● |
| 16 | x 2 | 45 | x 18 | | 15,91 | .7132 | ● |
| 18 | x 2 | 45 | x 18 | | 17,91 | .7133 | ● |
| 20 | x 2 | 45 | x 18 | | 19,91 | .7134 | ● |
| 22 | x 3 | 55 | x 22 | | 21,88 | .7156 | |
| 24 | x 3 | 55 | x 22 | | 23,88 | .7157 | |
| 26 | x 3 | 55 | x 22 | | 25,88 | .7159 | |
| 28 | x 3 | 65 | x 25 | | 27,88 | .7160 | |
| 30 | x 3 | 65 | x 25 | | 29,88 | .7161 | |

¹⁾ Nur zum Nachschneiden geeignet
Suitable only for reconditioning

- Product Finder
- V_C
- M
- MF
- UNC
- UNF
UNEF
- G
- NPT, NPTF
R
- BSW, BSF
- Tr, Tr-F
- Zubehör
Accessories
- Tech. Info



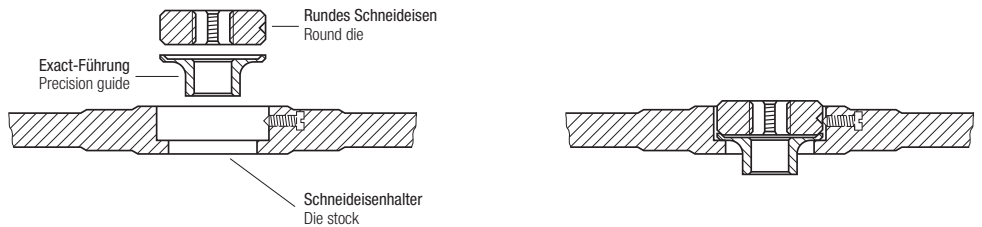
- Product Finder
- Vc
- M
- MF
- UNC
- UNF
UNEF
- G
- NPT, NPTF
R
- BSW, BSF
- Tr, Tr-F
- Zubehör
Accessories
- Tech. Info

DIN EN
22568



| Werkzeug-Ident · Tool ident | | | FZ201000 |
|---|--|-------------------|----------|
| Schneideisenhalter Nr. Die stock no. | Schneideisen-Aufnahme Die adaptation ø d ₂ x h ₁ | Dimens.- Ident | |
| | | | 1 |
| 2 | 20 x 5 | .02 | ● |
| 3 | 20 x 7 | .03 | ● |
| 4 | 25 x 9 | .04 | ● |
| 5 | 30 x 11 | .05 | ● |
| 6 | 38 x 10 | .06 | ● |
| 7 | 38 x 14 | .07 | ● |
| 8 | 45 x 14 | .08 | ● |
| 9 | 45 x 18 | .09 | ● |
| 10 | 55 x 16 | .10 | ● |
| 11 | 55 x 22 | .11 | ● |
| 12 | 65 x 18 | .12 | ● |
| 13 | 65 x 25 | .13 | ● |
| 14 | 75 x 20 | .14 | ● |
| 15 | 75 x 30 | .15 | ● |
| 16 | 90 x 22 | .16 | ● |
| 17 | 90 x 36 | .17 | ● |
| 18 | 105 x 22 | .18 | ● |
| 19 | 105 x 36 | .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

Technische Informationen

Technical information

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| 4.1 | EMUGE Schneideisen-Bauformen The constructional designs of our EMUGE dies | 500 |
| 4.2 | EMUGE Geometriebezeichnungen Our EMUGE geometries | 501 |
| 4.3 | Sonstige EMUGE-Kurzbezeichnungen Other EMUGE abbreviations | 501 |
| 4.4 | Anschnittlängen Chamfer lengths | 502 |
| 4.5 | Kühl- und Schmierstoffe Cooling and lubrication agents | 502 |
| 4.6 | Toleranzfelder des Flankendurchmessers beim Metrischen Gewinde (schematische Darstellung) Tolerance zones of the pitch diameter on the Metric thread (graphic representation) | 503 |
| 4.7 | Toleranzfelder des Flankendurchmessers beim Unified-Gewinde (schematische Darstellung) Tolerance zones of the pitch diameter on the Unified thread (graphic representation) | 504 |
| 4.8 | Technischer Fragebogen: Schneideisen Technical questionnaire: Dies | 505 - 506 |

Product
FinderV_c

M

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UNC

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UNEF

G

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Die Technischen Informationen der jeweiligen Kapitel dieses Kataloges sind in vielen Landessprachen auch als separate Druckerzeugnisse verfügbar. Bitte wenden Sie sich an den für Sie zuständigen Vertriebspartner.

The technical information complementing the various chapters of this catalogue is available also as a separate printed booklet in many different languages. Please speak to your usual sales contact.

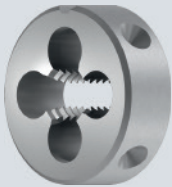
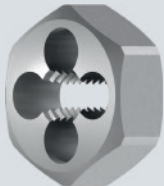
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4.1 EMUGE Schneideisen-Bauformen

4.1 Constructional designs of our EMUGE dies

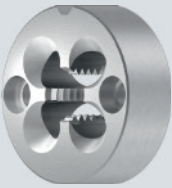

Bauformen nach DIN (Beispiele)

Constructional designs acc. DIN (examples)

| | Bauform Constructional design | Baumaße Dimensions | EMUGE-Bezeichnung EMUGE designation |
|---|--|-----------------------|--|
|  | Runde Schneideisen (B = vorgeschlitzt) Round dies (B = pre-slotted) | DIN EN 22568 | SE-B |
|  | Sechskant-Schneideisen Hexagon dies | DIN 382 | SE-6KT |

Bauformen nach EMUGE-Werknorm (Beispiele)

Constructional designs acc. EMUGE standard (examples)

| | Bauform Constructional design | EMUGE-Bezeichnung EMUGE designation |
|---|---|--|
|  | Automaten-Schneideisen mit Aufschraublöchern Dies for automatic lathes with fixing holes | SE-AUT-LD |
|  | Glocken-Schneideisen Acorn dies | SE-GLOCK |



4.2 EMUGE Geometriebezeichnungen

4.2 Our EMUGE geometries

STEEL**Für Stahlwerkstoffe**

Diese Schneideisen sind mit einem Schälanschnitt ausgeführt, um in langspanenden Materialien dem Span eine axiale Richtung zu geben.

For steel materials

These dies are made with a spiral point which, in long-chipping materials, guides the chip in an axial direction.

VA**Für nichtrostende Stahlwerkstoffe und Stahlwerkstoffe**

Ein etwas längerer Anschnitt ergibt eine bessere Spanaufteilung. Der Schälanschnitt führt das Spanmaterial in axialer Richtung ab, somit kann der Kühlschmierstoff ungehindert nachfließen.

For stainless steel materials and steel materials

The chamfer of these dies is a little longer, and provides an improved chip division. A spiral point ensures chip transport in an axial direction, so that the coolant-lubricant can flow freely.

MS**Für Kupfer-Zink-Legierungen (Messing, kurzspanend)**

Ohne Schälanschnitt für axiale Kraftneutrales Anschneiden sowie mit reduziertem Spanwinkel für einen stabilen Schneidkeil.

For copper-zinc alloys (brass, short-chipping)

Design without spiral point for a first cutting phase without any axial force, and with a reduced rake angle for a stable cutting wedge.

4.3 Sonstige EMUGE-Kurzbezeichnungen

4.3 Other EMUGE abbreviations

nor**Normal**

Ohne besondere Oberflächenbehandlung.

Normal

No special surface treatment.

gel**Geläppt**

Durch die geläppte Oberfläche im Gewinde wird Reibung herabgesetzt und somit ein besseres Schneidergebnis erzielt.

Lapped

The lapped thread surface reduces friction and helps to achieve an improved cutting performance.

Product
FinderV_c

M

MF

UNC

UNF
UNEF

G

NPT, NPTF
R

BSW, BSF

Tr, Tr-F

Zubehör
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4.4 Anschnittlängen

4.4 Chamfer lengths

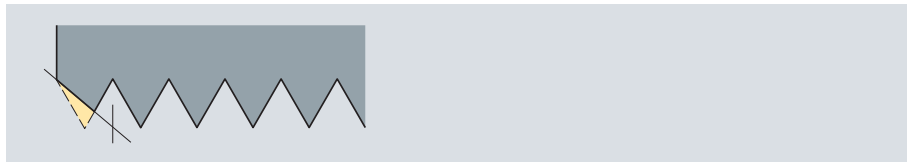
Anschnittlängen für Schneideisen nach EMUGE-Werknorm.

Chamfer lengths for dies acc. EMUGE standard.

1

Anschnittlänge 1 Gang

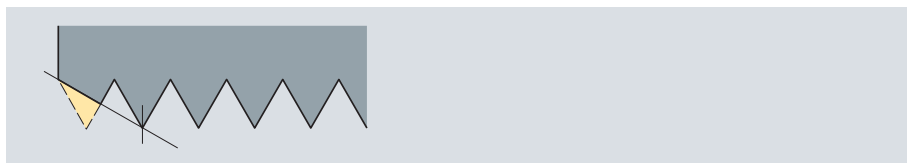
Chamfer length 1 thread



1,5

Anschnittlänge 1,5 Gänge

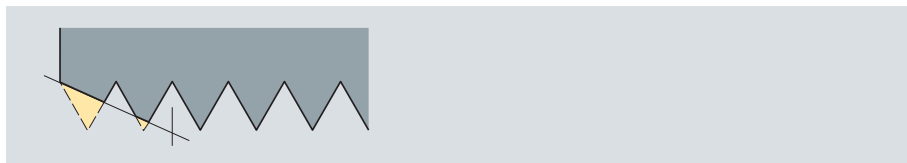
Chamfer length 1,5 threads



2

Anschnittlänge 2 Gänge

Chamfer length 2 threads



4.5 Kühl- und Schmierstoffe

4.5 Cooling and lubrication agents

Dem Schmiermittel wird im Allgemeinen zu wenig Bedeutung geschenkt. Um vom Werkzeug die volle Leistung zu erhalten, muss der richtige Kühlschmierstoff verwendet werden.

Lubricants are often, if not generally, given too little consideration. If you want to get the best performance out of your tool you have to take care to use the best coolant-lubricant available.

Grundsätzlich unterscheiden wir folgende Arten der Kühlung und Schmierung:

In general, we distinguish the following types of cooling and lubrication:

E

Emulsion

(EMUGE-Gewindeschneidöl Nr. 3+ EMULSION)

Die gebräuchlichste Kühlschmierung auf Bearbeitungszentren.

Emulsion

(EMUGE thread cutting oil no. 3+ EMULSION)

The most common type of coolant-lubricant on machining centres.

O

Gewindeschneidöl

(EMUGE-Gewindeschneidöle Nr. 1+ STEEL, Nr. 2+ CAST IRON, Nr. 4+ NON FERROUS, Nr. 5+ HIGH ALLOY)

Abgestimmt auf die zu bearbeitenden Werkstoffe werden hervorragende Gewindeoberflächen und Standwerte erreicht.

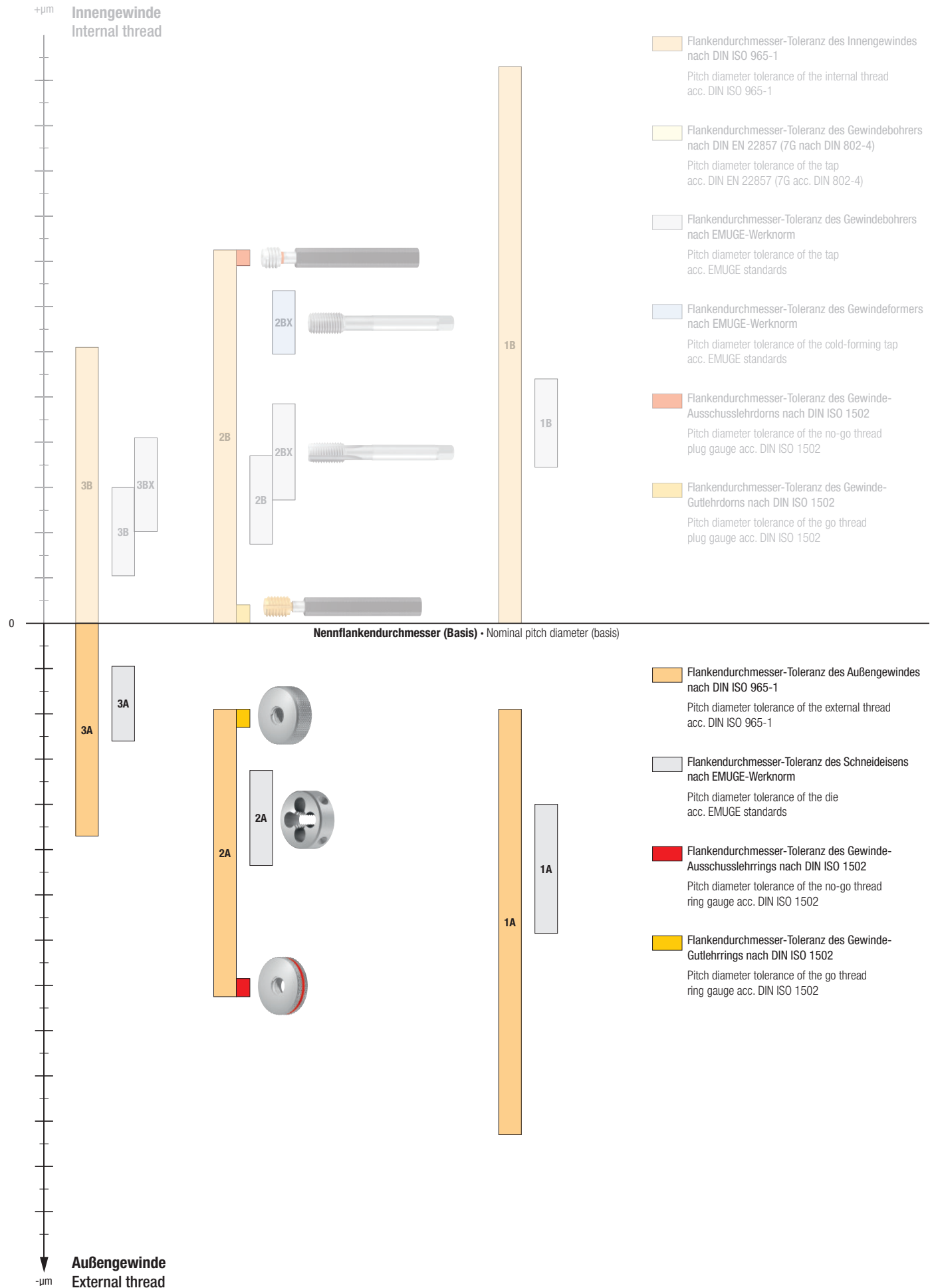
Thread cutting oil

(EMUGE thread cutting oils no.1+ STEEL, no. 2+ CAST IRON, no. 4+ NON FERROUS, no. 5+ HIGH ALLOY)

With these oils which are perfectly adjusted to specific materials, excellent thread surfaces and tool life can be achieved.

4.6 Toleranzfelder des Flankendurchmessers beim Metrischen Gewinde (schematische Darstellung)

4.6 Tolerance zones of the pitch diameter on the Metric thread (graphic representation)



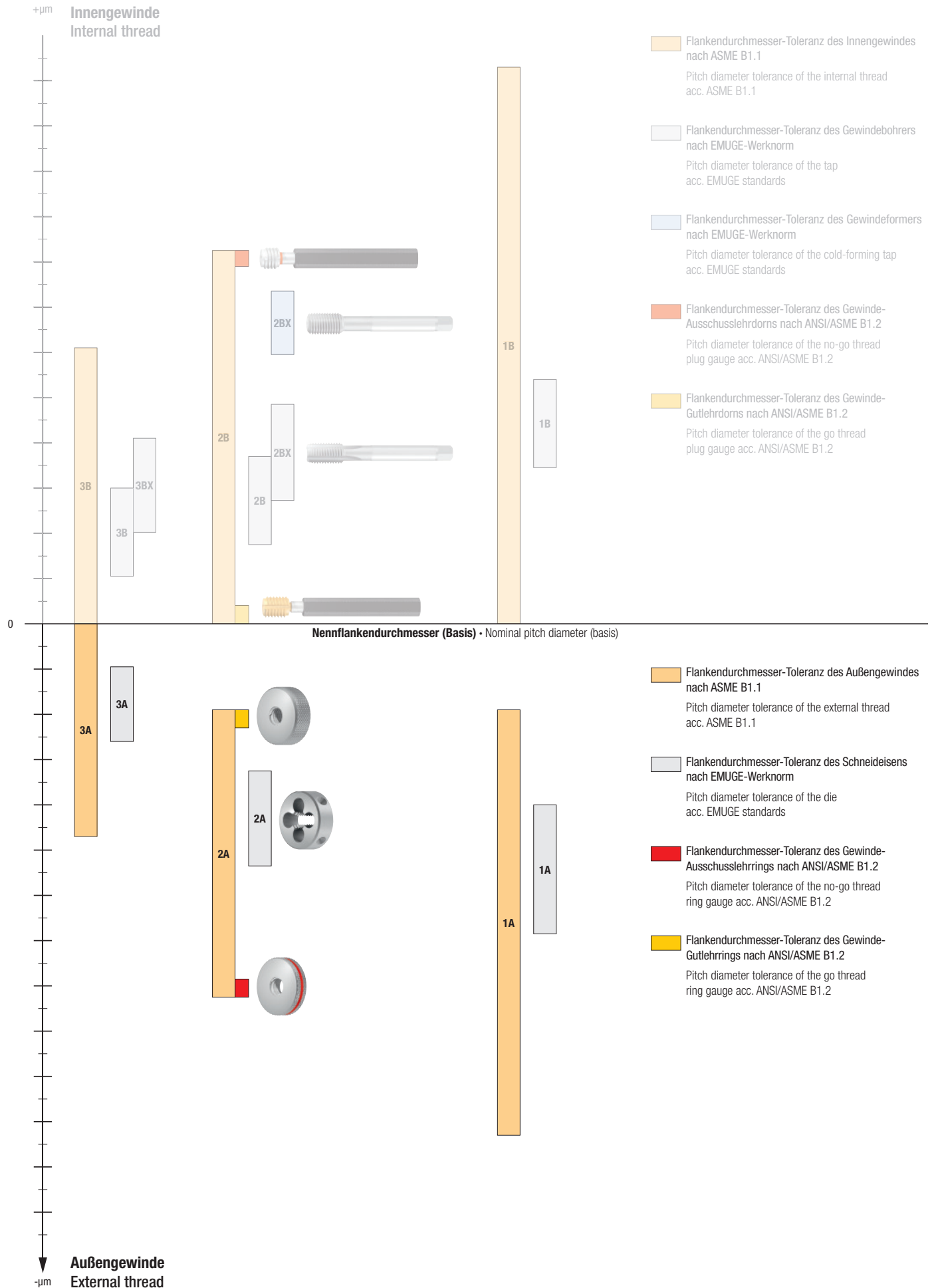
- Product Finder
- V_c
- M
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- Tr, Tr-F
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- NPT, NPTF
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- BSW, BSF
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- Zubehör
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- Tech. Info

4.7 Toleranzfelder des Flankendurchmessers beim Unified-Gewinde (schematische Darstellung)

4.7 Tolerance zones of the pitch diameter on the Unified thread (graphic representation)



4.8 Technischer Fragebogen: Schneideisen

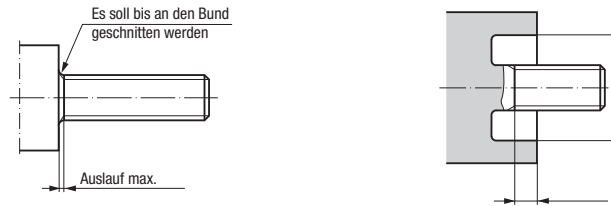
Firma:
 Ansprechpartner:
 Telefon:
 Fax:
 E-Mail:

Abmessung:
 Ausführung:
 Artikel-Nr.:
 Projekt:

Werkstückbezeichnung:

Bolzendurchmesser:
 gedreht gegossen gezogen

Bolzenform (bitte Maße eintragen):



Maschine:

Hersteller:
 Typ:
 Antriebsleistung: kW
 horizontal Werkzeug rotierend
 vertikal Werkzeug stehend

Spindelaufnahme:

MK / SK / HSK / TR / andere:
 DIN / ANSI / JIS / andere:

Schnittdaten:

Drehzahl n: min⁻¹
 Schnittgeschwindigkeit v_c: m/min

Werkstückwerkstoff:

Bezeichnung:
 Behandlungszustand:
 Festigkeit: N/mm²
 Härte: Dehnung: %
 kurzspanend langspanend

Vorschub:

Andruckkurve Sonstige:
 Hydraulik
 Leitpatrone
 NC-gesteuert
 Synchronspindel
 Zahnräder

Kühlung:

Öl Emulsion % Trocken
 Umlauf Pinsel Nebel Sonstige:

Werkzeugaufnahme:

starr (Spannzange)
 Gewindeschneidapparat } Hersteller:
 Gewindeschneidfutter } Typ:
 mit Überlastkupplung
 mit Längenausgleich
 mit achsparalleler Pendelung
 mit innerer Kühlschmierstoff-Zufuhr Druck: bar

Werkzeug-Empfehlung:

Ausführung:
 Artikel-Nr.:
 d₂ x h₁: DIN:
 Besonderheit:
 Bisher verwendete Werkzeuge (Hersteller):
 Standwert: (Anzahl der Gewinde)

Aufgenommen von:

Datum / Unterschrift:

- Product Finder
- v_c
- M
- MF
- UNC
- UNF
- UNEF
- G
- NPT, NPTF
- R
- BSW, BSW
- Tr, Tr-F
- Zubehör
- Accessories
- Tech. Info



- Product Finder
- V_c
- M
- MF
- UNC
- UNF
UNEF
- G
- NPT, NPTF
R
- BSW, BSF
- Tr, Tr-F
- Zubehör
Accessories
- Tech. Info

4.8 Technical questionnaire: Dies

Company:
 Contact:
 Phone:
 Fax:
 E-mail:

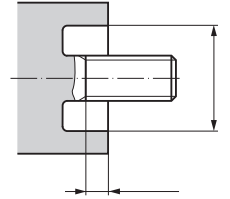
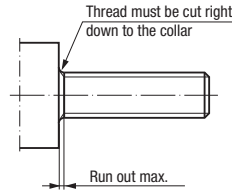
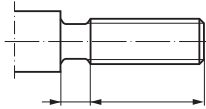
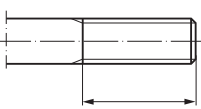
Size:
 Design:
 Article no.:
 Project:

Workpiece description:

Bolt diameter:

turned cast drawn

Bolt type (please enter dimensional specifications):



Machine:

Manufacturer:
 Type:
 Power: kW
 horizontal rotating tool
 vertical standing tool

Spindle adaptation:

MT / ISO taper / HSK / TR / others:
 DIN / ANSI / JIS / others:

Cutting data:

Speed n: rpm
 Cutting speed v_c: m/min

Workpiece material:

Description:
 Condition during work:
 Tensile strength: N/mm²
 Hardness: Elongation: %
 short-chipping long-chipping

Feed:

Pressure cam Others:
 Hydraulics
 Lead screw
 NC-controlled
 Synchronous spindle
 Gear wheels

Cooling/lubrication:

Oil Emulsion % Dry
 Circulation Brush Mist Others:

Tool holder:

Rigid (collet)
 Tapping attachment } Manufacturer:
 Tap holder } Type:
 with overload clutch
 with length compensation
 with axial parallel floating
 with internal coolant supply Pressure: bar

Tool recommendation:

Design:
 Article no.:
 d₂ x h₁: DIN:
 Special features:
 Tools used until now (manufacturer):
 Tool life: (no. of threads)

Filled in by:

Date/signature:



3 x D

5 x D

6 x D

8 x D

2-3,5 x D

Spiralbohrer Twist Drills

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| Übersicht | Contents | 508 - 509 |
| Wegweiser und Schnittwerte | Product finder and cutting data | 510 - 521 |
| Produktseiten | Product pages | 522 - 566 |
| Technische Informationen | Technical information | 567 - 580 |



- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör
Accessories
- Tech. Info


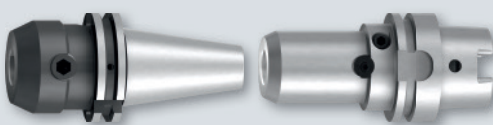


Seite · Page

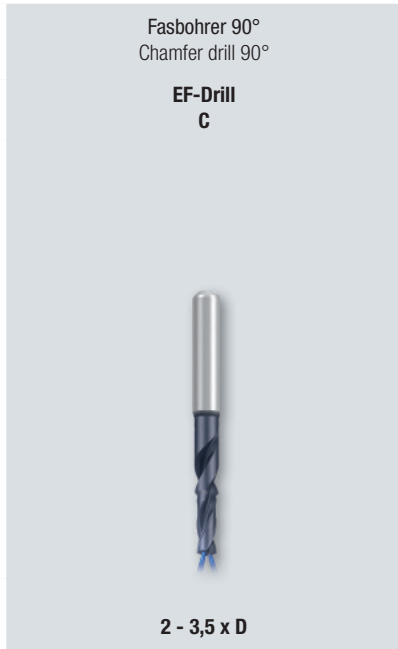
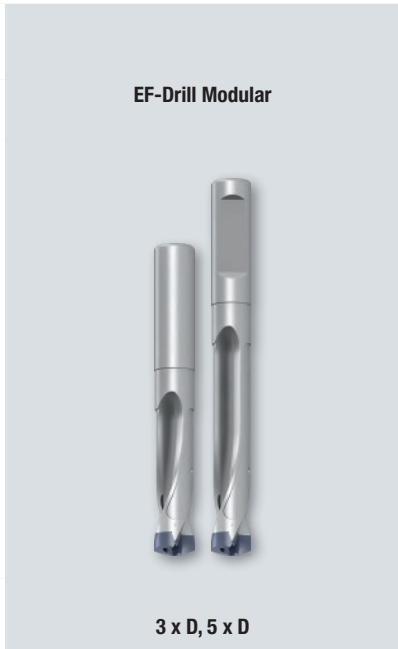
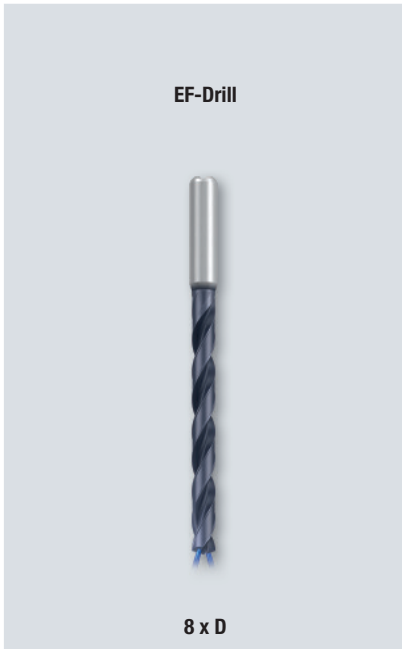
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|--------------|-----|-----------|-----------|-----------|
| STEEL | 523 | 524 - 527 | 528 - 531 | 532 - 535 |
| VA | | | 546 - 549 | 550 - 553 |
| GG | | | | 554 - 557 |
| HCUT | | 558 | | |

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

Seite · Page

| | |
|---|------------------|
|  <p>Kühlschmierstoffe Coolant-lubricants</p> | <p>238 - 239</p> |
|  <p>Werkzeug-Aufnahmen, Hydrodehnspannfutter und Zubehör Tool holders, hydraulic expansion chucks and accessories</p> | <p>562 - 566</p> |





- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör
Accessories
- Tech. Info

| | | | |
|-----------|---------------------------|-----|-------|
| 536 - 539 | Seite · Page 540 - 545 | 560 | STEEL |
| | | 561 | VA |
| | | | GG |
| | | | HCUT |

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



- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

Wegweiser und Schnittwerte

Bitte beachten:

Die Eignung der Spiralbohrer ist in den jeweiligen Spalten folgendermaßen gekennzeichnet:

- = sehr gut geeignet
- = gut geeignet

Die zugehörigen Schnittgeschwindigkeiten v_c [m/min] und Vorschübe pro Umdrehung f [mm/U] sind auf den Seiten 514 - 521 zu finden.

Internationaler Werkstoffvergleich siehe Seite 838 - 851.

Product finder and cutting data

Please note:

The suitability of the twist drills is marked in the respective columns as follows:

- = very suitable
- = suitable

The appropriate cutting speeds v_c [m/min] and feed per revolution values f [mm/rev.] are to be found on pages 514 - 521.

International comparison of materials, see page 838 - 851.

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

| Einsatzgebiete – Material Applications – material | | Material-Beispiele Material examples | Material-Nummern Material numbers |
|---|--|---|---|
| P | Stahlwerkstoffe Kaltfließpressstähle, Baustähle, Automatenstähle, u.a. | Steel materials Cold-extrusion steels, Construction steels, Free-cutting steels, etc. | 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. | 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. | 20MoCr3 1.7320 42CrMo4 1.7225 102Cr6 1.2067 50CrMo4 1.7228 |
| | 4.1 Vergütungsstähle, Kaltarbeitsstähle, Nitrierstähle, u.a. | Heat-treatable steels, Cold work steels, Nitriding steels, etc. | X45NiCrMo4 1.2767 31CrMo12 1.8515 X38CrMoV5-3 1.2367 |
| | 5.1 Hochlegierte Stähle, Kaltarbeitsstähle, Warmarbeitsstähle, u.a. | High-alloyed steels, Cold work steels, Hot work steels, etc. | X100CrMoV8-1-1 1.2990 X40CrMoV5-1 1.2344 |
| | M | Nichtrostende Stahlwerkstoffe 1.1 Ferritisch, martensitisch | Stainless steel materials Ferritic, martensitic |
| 2.1 Austenitisch | | Austenitic | X6CrNiMoTi17-12-2 1.4571 |
| 3.1 Austenitisch-ferritisch (Duplex) | | Austenitic-ferritic (Duplex) | X2CrNiMoN22-5-3 1.4462 |
| 4.1 Austenitisch-ferritisch hitzebeständig (Super Duplex) | | Austenitic-ferritic heat-resistant (Super Duplex) | X2CrNiMoN25-7-4 1.4410 |
| K | | Gusswerkstoffe 1.1 Gusseisen mit Lamellengrafit (GJL) | Cast materials Cast iron with lamellar graphite (GJL) |
| | 1.2 Gusseisen mit Kugelgrafit (GJS) | Cast iron with nodular graphite (GJS) | EN-GJL-300 (GG30) EN-JL-1050 |
| | 2.1 Gusseisen mit Kugelgrafit (GJS) | Cast iron with nodular graphite (GJS) | EN-GJS-400-15 (GGG40) EN-JS-1030 |
| | 2.2 Gusseisen mit Kugelgrafit (GJS) | Cast iron with nodular graphite (GJS) | EN-GJS-700-2 (GGG70) EN-JS-1070 |
| | 3.1 Gusseisen mit Vermiculargrafit (GJV) | Cast iron with vermicular graphite (GJV) | GJV 300 |
| | 3.2 Gusseisen mit Vermiculargrafit (GJV) | Cast iron with vermicular graphite (GJV) | GJV 450 |
| | 4.1 Temperguss (GTMW, GTMB) | Malleable cast iron (GTMW, GTMB) | EN-GJMW-350-4 (GTW-35) EN-JM-1010 |
| 4.2 Temperguss (GTMW, GTMB) | Malleable cast iron (GTMW, GTMB) | EN-GJMB-450-6 (GTS-45) EN-JM-1140 | |
| N | Nichteisenwerkstoffe 1.1 Aluminium-Legierungen | Non ferrous materials Aluminium alloys | |
| | 1.2 Aluminium-Knetlegierungen | Aluminium wrought alloys | EN AW-AlMn1 EN AW-3103 EN AW-AlMgSi EN AW-6060 |
| | 1.3 Aluminium-Knetlegierungen | Aluminium wrought alloys | 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 |
| | 2.1 Reinkupfer, niedriglegiertes Kupfer | Pure copper, low-alloyed copper | E-Cu 57 EN CW 004 A |
| | 2.2 Kupfer-Zink-Legierungen (Messing, langspanend) | Copper-zinc alloys (brass, long-chipping) | CuZn37 (Ms63) EN CW 508 L |
| | 2.3 Kupfer-Zink-Legierungen (Messing, kurzspanend) | Copper-zinc alloys (brass, short-chipping) | CuZn36Pb3 (Ms58) EN CW 603 N |
| | 2.4 Kupfer-Aluminium-Legierungen (Alubronze, langspanend) | Copper-aluminium alloys (alu bronze, long-chipping) | CuAl10Ni5Fe4 EN CW 307 G |
| | 2.5 Kupfer-Zinn-Legierungen (Zinnbronze, langspanend) | Copper-tin alloys (tin bronze, long-chipping) | CuSn8P EN CW 459 K |
| | 2.6 Kupfer-Zinn-Legierungen (Zinnbronze, kurzspanend) | Copper-tin alloys (tin bronze, short-chipping) | CuSn7 ZnPb (Rg7) 2.1090 |
| | 2.7 Kupfer-Sonderlegierungen | Special copper alloys | (AMPCO® 8) |
| | 2.8 Kupfer-Sonderlegierungen | Special copper alloys | (AMPCO® 45) |
| | 3.1 Magnesium-Knetlegierungen | Magnesium wrought alloys | MgAl6Zn 3.5612 |
| | 3.2 Magnesium-Gusslegierungen | Magnesium cast alloys | EN-MCMgAl9Zn1 EN-MC21120 |
| S | Kunststoffe 4.1 Duroplaste (kurzspanend) | Synthetics 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 5.1 Grafit | Special materials Graphite | C 8000 |
| | 5.2 Wolfram-Kupfer-Legierungen | Tungsten-copper alloys | W-Cu 80/20 |
| | 5.3 Verbundwerkstoffe | Composite materials | Hyllite, Alucobond |
| | Spezialwerkstoffe 1.1 Titan-Legierungen | Special materials Titanium alloys | |
| 1.2 Reintitan | Pure titanium | Ti1 3.7025 | |
| 1.3 Titan-Legierungen | Titanium alloys | TiAl6V4 3.7165 TiAl4Mo4Sn2 3.7185 | |
| H | Nickel-, Kobalt- und Eisen-Legierungen 2.1 Reinnickel | Nickel alloys, cobalt alloys and iron alloys Pure nickel | Ni 99.6 2.4060 |
| | 2.2 Nickel-Basis-Legierungen | Nickel-base alloys | Monel 400 2.4360 Inconel 718 2.4668 |
| | 2.3 Nickel-Basis-Legierungen | Nickel-base alloys | Udimet 605 |
| | 2.4 Kobalt-Basis-Legierungen | Cobalt-base alloys | Haynes 25 2.4964 |
| | 2.5 Kobalt-Basis-Legierungen | Cobalt-base alloys | Haynes 25 2.4964 |
| | 2.6 Eisen-Basis-Legierungen | Iron-base alloys | Incoloy 800 1.4958 |
| H | Harte Werkstoffe 1.1 Hochfeste Stähle, gehärtete Stähle, Hartguss | Hard materials High strength steels, hardened steels, hard castings | Weldox 1100 Hardox 550 Armax 600T Ferro-Titanit HSSE |
| | 1.2 Hochfeste Stähle, gehärtete Stähle, Hartguss | High strength steels, hardened steels, hard castings | |
| | 1.3 Hochfeste Stähle, gehärtete Stähle, Hartguss | High strength steels, hardened steels, hard castings | |
| | 1.4 Hochfeste Stähle, gehärtete Stähle, Hartguss | High strength steels, hardened steels, hard castings | |
| | 1.5 Hochfeste Stähle, gehärtete Stähle, Hartguss | High strength steels, hardened steels, hard castings | |

Kühlschmierstoff-Empfehlung
 Coolant-lubricant recommendation



| Emulsion Emulsion | ö1 OI | Minimale Mengenschmierung (MMS) Minimum quantity lubrication (MQL) | Trocken / Druckluft Dry / Pressurised air | EF-Drill Micro STEEL | | EF-Drill STEEL | | | Typ Type |
|-------------------------------------|-------------------------------------|---|--|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| | | | | 6 x D | 3 x D | 3 x D | 5 x D | 8 x D | Bohrtiefe Drill depth |
| | | | | 523 | 524 - 527 | 528 - 531 | 532 - 535 | 536 - 539 | Seite Page |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 1.1 |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 2.1 |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 3.1 |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 4.1 |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 5.1 |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 1.1 |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 2.1 |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 3.1 |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 4.1 |
| <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1.1 |
| <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1.2 |
| <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 2.1 |
| <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 2.2 |
| <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 3.1 |
| <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 3.2 |
| <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 4.1 |
| <input checked="" type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 4.2 |
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| <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1.3 |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1.4 |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1.5 |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1.6 |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 2.1 |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 2.2 |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 2.3 |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 2.4 |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 2.5 |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 2.6 |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 2.7 |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 2.8 |
| | | | | | | | | | 3.1 |
| | | | | | | | | | 3.2 |
| | | | | | | | | | 4.1 |
| | | | | | | | | | 4.2 |
| | | | | | | | | | 4.3 |
| | | | | | | | | | 4.4 |
| | | | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | | | 5.1 |
| | | | | | | | | | 5.2 |
| | | | | | | | | | 5.3 |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | | | | | 1.1 |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | | | | | 1.2 |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | | | | | 1.3 |
| | | | | | | | | | 2.1 |
| | | | | | | | | | 2.2 |
| | | | | | | | | | 2.3 |
| | | | | | | | | | 2.4 |
| | | | | | | | | | 2.5 |
| | | | | | | | | | 2.6 |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 1.1 |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1.2 |
| | | | | | | | | | 1.3 |
| | | | | | | | | | 1.4 |
| | | | | | | | | | 1.5 |

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



Kühlschmierstoff-Empfehlung
 Coolant-lubricant recommendation



| Emulsion Emulsion | Öl Oil | Minimale Mengenschmierung (MMS) Minimum quantity lubrication (MQL) | Trocken / Druckluft Dry / Pressurised air |
|--------------------------|--------------------------|---|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| EF-Drill Modular STEEL | | EF-Drill VA | | EF-Drill GG |
|------------------------|----------------|-------------|-----------|-------------|
| 3 x D | 5 x D | 3 x D | 5 x D | 5 x D |
| 540 - 544 | 540 - 543, 545 | 546 - 549 | 550 - 553 | 554 - 557 |

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

| Material | Coolant-lubricant recommendation | | | | EF-Drill Modular STEEL | | | | | EF-Drill VA | | EF-Drill GG |
|----------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------|-------------|-------------------------------------|-------------|
| | Emulsion | Oil | MMS | Dry | 3 x D | 5 x D | 3 x D | 5 x D | 3 x D | 5 x D | 5 x D | |
| P | 1.1 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| | 2.1 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| | 3.1 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| | 4.1 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| | 5.1 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| M | 1.1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | |
| | 2.1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | |
| | 3.1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | |
| | 4.1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | |
| K | 1.1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | |
| | 1.2 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | |
| | 2.1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | |
| | 2.2 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input type="checkbox"/> | |
| | 3.1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | |
| | 3.2 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | |
| | 4.1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | |
| | 4.2 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | |
| N | 1.1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| | 1.2 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| | 1.3 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| | 1.4 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| | 1.5 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| | 1.6 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| | 2.1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| | 2.2 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| | 2.3 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| | 2.4 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| | 2.5 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| | 2.6 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| | 2.7 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| | 2.8 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| | 3.1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| | 3.2 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | |
| 4.1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | |
| 4.2 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | |
| 4.3 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | |
| 4.4 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | |
| 5.1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | |
| 5.2 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | |
| 5.3 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | |
| S | 1.1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| | 1.2 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| | 1.3 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| | 2.1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| | 2.2 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| | 2.6 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| H | 1.1 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| | 1.2 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| | 1.3 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| | 1.4 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| | 1.5 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |





| | | | |
|------------------|---------------------|------------------|--------------------------|
| EF-Drill HCUT | EF-Drill C STEEL | EF-Drill C VA | Typ Type |
| 3 x D | 2-3,5 x D | 2-3,5 x D | Bohrtiefe Drill depth |
| 558 | 560 | 561 | Seite Page |

| | | | | |
|---|---|---|-----|----------|
| | | | 1.1 | P |
| | ■ | | 2.1 | |
| | ■ | | 3.1 | |
| | ■ | | 4.1 | |
| | ■ | | 5.1 | |
| | | | 1.1 | M |
| | | ■ | 2.1 | |
| | | ■ | 3.1 | |
| | | ■ | 4.1 | |
| | | | 1.1 | K |
| | □ | | 1.2 | |
| | □ | | 2.1 | |
| | ■ | | 2.2 | |
| | □ | | 3.1 | |
| | □ | | 3.2 | |
| | □ | | 4.1 | |
| | □ | | 4.2 | |
| | | | 1.1 | N |
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| | □ | □ | 1.3 | |
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| | | | 5.3 | |
| | | | 1.1 | S |
| | | □ | 1.2 | |
| | | □ | 1.3 | |
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| | | □ | 2.2 | |
| | | □ | 2.3 | |
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| | | | 2.5 | |
| | | | 2.6 | |
| | | | 1.1 | H |
| □ | ■ | | 1.2 | |
| ■ | □ | | 1.3 | |
| ■ | | | 1.4 | |
| ■ | | | 1.5 | |

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





EF-Drill Micro STEEL

| | Schnittgeschwindigkeit v _c [m/min] Cutting speed v _c [m/min] | | | D = 0,8 mm | | | D = 1,0 mm | | | D = 1,25 mm | | | |
|----------|---|------------|------------|---|------------|--------------|------------|------------|--------------|-------------|------------|--------------|-------|
| | min. | empf. rec. | max. | Vorschub pro Umdrehung f [mm/U] - Feed per revolution f [mm/rev.] | | | | | | | | | |
| | | | | min. | empf. rec. | max. | min. | empf. rec. | max. | min. | empf. rec. | max. | |
| P | 1.1 | 80 | 90 | 100 | 0,020 | 0,025 | 0,030 | 0,030 | 0,035 | 0,040 | 0,040 | 0,045 | 0,050 |
| | 2.1 | 70 | 85 | 100 | 0,020 | 0,025 | 0,030 | 0,030 | 0,035 | 0,040 | 0,040 | 0,045 | 0,050 |
| | 3.1 | 60 | 65 | 70 | 0,010 | 0,015 | 0,020 | 0,020 | 0,025 | 0,030 | 0,030 | 0,035 | 0,040 |
| | 4.1 | 50 | 55 | 60 | 0,010 | 0,015 | 0,020 | 0,020 | 0,025 | 0,030 | 0,030 | 0,035 | 0,040 |
| | 5.1 | 45 | 50 | 55 | 0,010 | 0,015 | 0,020 | 0,020 | 0,025 | 0,030 | 0,030 | 0,035 | 0,040 |
| M | 1.1 | 40 | 48 | 55 | 0,005 | 0,008 | 0,010 | 0,010 | 0,013 | 0,015 | 0,020 | 0,023 | 0,025 |
| | 2.1 | 30 | 35 | 40 | 0,010 | 0,015 | 0,020 | 0,015 | 0,020 | 0,025 | 0,025 | 0,030 | 0,035 |
| | 3.1 | 30 | 35 | 40 | 0,005 | 0,008 | 0,010 | 0,010 | 0,013 | 0,015 | 0,020 | 0,023 | 0,025 |
| | 4.1 | 30 | 35 | 40 | 0,005 | 0,008 | 0,010 | 0,010 | 0,013 | 0,015 | 0,020 | 0,023 | 0,025 |
| K | 1.1 | 120 | 145 | 170 | 0,020 | 0,025 | 0,030 | 0,040 | 0,050 | 0,060 | 0,060 | 0,070 | 0,080 |
| | 1.2 | 120 | 145 | 170 | 0,020 | 0,025 | 0,030 | 0,040 | 0,050 | 0,060 | 0,060 | 0,070 | 0,080 |
| | 2.1 | 120 | 135 | 150 | 0,020 | 0,025 | 0,030 | 0,040 | 0,050 | 0,060 | 0,060 | 0,070 | 0,080 |
| | 2.2 | 90 | 105 | 120 | 0,010 | 0,015 | 0,020 | 0,030 | 0,040 | 0,050 | 0,050 | 0,060 | 0,070 |
| | 3.1 | 60 | 70 | 80 | 0,020 | 0,025 | 0,030 | 0,030 | 0,040 | 0,050 | 0,040 | 0,050 | 0,060 |
| | 3.2 | 60 | 70 | 80 | 0,010 | 0,015 | 0,020 | 0,020 | 0,030 | 0,040 | 0,030 | 0,040 | 0,050 |
| | 4.1 | 60 | 70 | 80 | 0,020 | 0,025 | 0,030 | 0,030 | 0,040 | 0,050 | 0,040 | 0,050 | 0,060 |
| | 4.2 | 60 | 70 | 80 | 0,010 | 0,015 | 0,020 | 0,020 | 0,030 | 0,040 | 0,030 | 0,040 | 0,050 |
| N | 1.1 | 100 | 140 | 180 | 0,030 | 0,035 | 0,040 | 0,040 | 0,045 | 0,050 | 0,050 | 0,055 | 0,060 |
| | 1.2 | 100 | 140 | 180 | 0,030 | 0,035 | 0,040 | 0,040 | 0,045 | 0,050 | 0,050 | 0,055 | 0,060 |
| | 1.3 | 100 | 140 | 180 | 0,030 | 0,035 | 0,040 | 0,040 | 0,045 | 0,050 | 0,050 | 0,055 | 0,060 |
| | 1.4 | 80 | 115 | 150 | 0,030 | 0,035 | 0,040 | 0,040 | 0,045 | 0,050 | 0,050 | 0,055 | 0,060 |
| | 1.5 | 80 | 115 | 150 | 0,020 | 0,025 | 0,030 | 0,030 | 0,035 | 0,040 | 0,040 | 0,045 | 0,050 |
| | 1.6 | 80 | 115 | 150 | 0,020 | 0,025 | 0,030 | 0,030 | 0,035 | 0,040 | 0,040 | 0,045 | 0,050 |
| | 2.1 | | | | | | | | | | | | |
| | 2.2 | 120 | 135 | 150 | 0,010 | 0,020 | 0,030 | 0,020 | 0,030 | 0,040 | 0,030 | 0,040 | 0,050 |
| | 2.3 | 120 | 135 | 150 | 0,010 | 0,020 | 0,030 | 0,020 | 0,030 | 0,040 | 0,030 | 0,040 | 0,050 |
| | 2.4 | | | | | | | | | | | | |
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| 4.1 | | | | | | | | | | | | | |
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| 5.1 | | | | | | | | | | | | | |
| 5.2 | | | | | | | | | | | | | |
| 5.3 | | | | | | | | | | | | | |
| S | 1.1 | | | | | | | | | | | | |
| | 1.2 | 20 | 25 | 30 | 0,010 | 0,015 | 0,020 | 0,010 | 0,015 | 0,020 | 0,025 | 0,030 | 0,035 |
| | 1.3 | 15 | 20 | 25 | 0,010 | 0,015 | 0,020 | 0,010 | 0,015 | 0,020 | 0,025 | 0,030 | 0,035 |
| | 2.1 | | | | | | | | | | | | |
| | 2.2 | | | | | | | | | | | | |
| | 2.6 | | | | | | | | | | | | |
| H | 1.1 | | | | | | | | | | | | |
| | 1.2 | | | | | | | | | | | | |
| | 1.3 | | | | | | | | | | | | |
| | 1.4 | | | | | | | | | | | | |
| | 1.5 | | | | | | | | | | | | |



Schnittwerte

Bei diesen Angaben handelt es sich um Richtwerte.

- Die fett gedruckten Richtwerte (**empf.**) sind bei stabilen Verhältnissen für leistungsfähige Werkzeugmaschinen mit ausreichend hohem Drehzahlniveau zu empfehlen.
- Entsprechend gelten die niedrigeren Schnittgeschwindigkeiten (**min.**) in Verbindung mit höheren Vorschubwerten (bis **max.**) für Werkzeugmaschinen mit niedrigeren Spindeldrehzahlen.
- Für optimale Werkstückverhältnisse und sehr leistungsfähige, hochdrehende Werkzeugmaschinen können die hohen Schnittgeschwindigkeiten (**max.**) bei ggf. reduzierten Vorschüben die beste Wahl sein.

Cutting data

Please note that these data are standard values only.

- We recommend the standard values in bold print (**rec.**) for stable work conditions and for high-performance machine tools with sufficient speed capability.
- Correspondingly, the lower cutting speeds (**min.**) in connection with higher feed values (up to **max.**) should be used for machine tools with lower spindle speeds.
- For optimum workpiece conditions, and for machine tools with extremely high performance and high spindle speeds, the high cutting speeds (**max.**) in connection with possibly reduced feed values can be applied.

| D = 1,5 mm | | | D = 2,0 mm | | | D = 2,5 mm | | | D = 3,0 mm | | | |
|---|--------------|-------|------------|--------------|-------|------------|--------------|-------|------------|--------------|-------|-----|
| Vorschub pro Umdrehung f [mm/U] · Feed per revolution f [mm/rev.] | | | | | | | | | | | | |
| min. | empf. rec. | max. | min. | empf. rec. | max. | min. | empf. rec. | max. | min. | empf. rec. | max. | |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
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| | | | | | | | | | | | | 4.4 |
| | | | | | | | | | | | | 5.1 |
| | | | | | | | | | | | | 5.2 |
| | | | | | | | | | | | | 5.3 |
| 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 |
| 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 |
| 0,030 | 0,040 | 0,050 | 0,040 | 0,050 | 0,060 | 0,055 | 0,065 | 0,075 | 0,065 | 0,075 | 0,085 | 1.3 |
| | | | | | | | | | | | | 2.1 |
| | | | | | | | | | | | | 2.2 |
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| | | | | | | | | | | | | 1.5 |

- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

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





EF-Drill STEEL
3 x D

EF-Drill STEEL
3 x D

EF-Drill STEEL
5 x D

EF-Drill STEEL
8 x D

EF-Drill C STEEL
2 - 3,5 x D

Schnittgeschwindigkeit v_c [m/min] - Cutting speed v_c [m/min]

| | | min. | empf. rec. | max. | min. | empf. rec. | max. | min. | empf. rec. | max. | min. | empf. rec. | max. | min. | empf. rec. | max. |
|-----|-----|-----------|------------|------|------|------------|------|------|------------|------|------|------------|------|-----------|------------|------|
| P | 1.1 | 100 | 120 | 140 | 140 | 160 | 200 | 140 | 160 | 200 | 120 | 140 | 160 | 140 | 160 | 200 |
| | 2.1 | 85 | 100 | 115 | 120 | 145 | 170 | 120 | 145 | 170 | 95 | 115 | 135 | 120 | 145 | 170 |
| | 3.1 | 70 | 85 | 100 | 100 | 120 | 140 | 100 | 120 | 140 | 90 | 100 | 115 | 100 | 120 | 140 |
| | 4.1 | 60 | 70 | 80 | 80 | 100 | 120 | 80 | 100 | 120 | 70 | 85 | 100 | 80 | 100 | 120 |
| | 5.1 | 45 | 55 | 65 | 60 | 70 | 80 | 60 | 70 | 80 | 50 | 60 | 70 | 60 | 70 | 80 |
| M | 1.1 | | | | 60 | 80 | 100 | 60 | 80 | 100 | 55 | 70 | 90 | 60 | 80 | 100 |
| | 2.1 | | | | | | | | | | | | | | | |
| | 3.1 | | | | | | | | | | | | | | | |
| | 4.1 | | | | | | | | | | | | | | | |
| | 5.1 | | | | | | | | | | | | | | | |
| K | 1.1 | 120 | 150 | 180 | 130 | 160 | 190 | 130 | 160 | 190 | 115 | 140 | 165 | 130 | 160 | 190 |
| | 1.2 | 100 | 130 | 150 | 110 | 140 | 160 | 110 | 140 | 160 | 95 | 125 | 140 | 110 | 140 | 160 |
| | 2.1 | 100 | 130 | 160 | 110 | 140 | 170 | 110 | 140 | 170 | 95 | 125 | 150 | 110 | 140 | 170 |
| | 2.2 | 100 | 120 | 140 | 120 | 140 | 160 | 120 | 140 | 160 | 105 | 125 | 140 | 120 | 140 | 160 |
| | 3.1 | 70 | 80 | 90 | 70 | 90 | 100 | 70 | 90 | 100 | 60 | 80 | 90 | 70 | 90 | 100 |
| | 3.2 | 70 | 80 | 90 | 70 | 90 | 100 | 70 | 90 | 100 | 60 | 80 | 90 | 70 | 90 | 100 |
| | 4.1 | 110 | 130 | 150 | 120 | 140 | 160 | 120 | 140 | 160 | 105 | 125 | 140 | 120 | 140 | 160 |
| | 4.2 | 90 | 110 | 130 | 100 | 120 | 140 | 100 | 120 | 140 | 90 | 105 | 125 | 100 | 120 | 140 |
| | 5.1 | | | | | | | | | | | | | | | |
| N | 1.1 | 210 | 240 | 270 | 220 | 260 | 280 | 220 | 260 | 280 | 195 | 230 | 245 | 220 | 260 | 280 |
| | 1.2 | 210 | 240 | 270 | 220 | 260 | 280 | 220 | 260 | 280 | 195 | 230 | 245 | 220 | 260 | 280 |
| | 1.3 | 180 | 200 | 220 | 200 | 230 | 260 | 200 | 230 | 260 | 175 | 200 | 230 | 200 | 230 | 260 |
| | 1.4 | 180 | 200 | 220 | 200 | 230 | 260 | 200 | 230 | 260 | 175 | 200 | 230 | 200 | 230 | 260 |
| | 1.5 | 150 | 170 | 180 | 165 | 185 | 200 | 165 | 185 | 200 | 145 | 165 | 175 | 165 | 185 | 200 |
| | 1.6 | | | | | | | | | | | | | | | |
| | 2.1 | 110 | 130 | 160 | 115 | 135 | 170 | 115 | 135 | 170 | 100 | 120 | 150 | 115 | 135 | 170 |
| | 2.2 | 150 | 160 | 170 | 160 | 175 | 190 | 160 | 175 | 190 | 140 | 155 | 165 | 160 | 175 | 190 |
| | 2.3 | 180 | 210 | 240 | 190 | 220 | 250 | 190 | 220 | 250 | 165 | 195 | 220 | 190 | 220 | 250 |
| | 2.4 | 60 | 80 | 90 | 70 | 90 | 110 | 70 | 90 | 110 | 60 | 80 | 95 | 70 | 90 | 110 |
| | 2.5 | 90 | 110 | 140 | 120 | 160 | 180 | 120 | 160 | 180 | 110 | 140 | 160 | 120 | 160 | 180 |
| | 2.6 | 90 | 100 | 110 | 100 | 115 | 130 | 100 | 115 | 130 | 90 | 100 | 115 | 100 | 115 | 130 |
| | 2.7 | 50 | 55 | 60 | 60 | 65 | 70 | 60 | 65 | 70 | 50 | 55 | 60 | 60 | 65 | 70 |
| | 2.8 | 50 | 55 | 60 | 65 | 70 | 75 | 65 | 70 | 75 | 55 | 60 | 65 | 65 | 70 | 75 |
| | 3.1 | | | | | | | | | | | | | | | |
| | 3.2 | | | | | | | | | | | | | | | |
| 4.1 | | | | | | | | | | | | | | | | |
| 4.2 | | | | | | | | | | | | | | | | |
| 4.3 | | | | | | | | | | | | | | | | |
| 4.4 | | | | | | | | | | | | | | | | |
| 5.1 | 70 | 90 | 120 | | | | | | | | | | | | | |
| 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 | 35 | 40 | 45 | 35 | 40 | 45 | | | 35 | 40 | 45 | |
| | 1.2 | 20 | 25 | 30 | 30 | 35 | 40 | 30 | 35 | 40 | | | 30 | 35 | 40 | |
| | 1.3 | | | | | | | | | | | | | | | |
| | 1.4 | | | | | | | | | | | | | | | |
| | 1.5 | | | | | | | | | | | | | | | |



Schnittwerte

Bei diesen Angaben handelt es sich um Richtwerte.

- Die fett gedruckten Richtwerte (**empf.**) sind bei stabilen Verhältnissen für leistungsfähige Werkzeugmaschinen mit ausreichend hohem Drehzahlniveau zu empfehlen.
- Entsprechend gelten die niedrigeren Schnittgeschwindigkeiten (**min.**) in Verbindung mit höheren Vorschubwerten (bis **max.**) für Werkzeugmaschinen mit niedrigeren Spindeldrehzahlen.
- Für optimale Werkstückverhältnisse und sehr leistungsfähige, hochdrehende Werkzeugmaschinen können die hohen Schnittgeschwindigkeiten (**max.**) bei ggf. reduzierten Vorschüben die beste Wahl sein.

EF-Drill-STEEL 8 x D:

- Eine Vorzentrierung durch den Einsatz eines Pilotbohrers wird empfohlen.
- Die angegebenen Werte für den Vorschub pro Umdrehung f [mm/U] sind um 15% zu reduzieren!

Cutting data

Please note that these data are standard values only.

- We recommend the standard values in bold print (**rec.**) for stable work conditions and for high-performance machine tools with sufficient speed capability.
- Correspondingly, the lower cutting speeds (**min.**) in connection with higher feed values (up to **max.**) should be used for machine tools with lower spindle speeds.
- For optimum workpiece conditions, and for machine tools with extremely high performance and high spindle speeds, the high cutting speeds (**max.**) in connection with possibly reduced feed values can be applied.

EF-Drill-STEEL 8 x D:

- Preparatory centering with a pilot drill is recommended.
- Reduce the recommended feed per revolution value f [mm/rev.] by 15%!

| D = 3 mm | | | D = 5 mm | | | D = 8 mm | | | D = 10 mm | | | D = 12 mm | | | D = 16 mm | | | D = 20 mm | | | |
|---|-------------|------|----------|-------------|------|----------|-------------|------|-----------|-------------|------|-----------|-------------|------|-----------|-------------|------|-----------|-------------|------|-----|
| Vorschub pro Umdrehung f [mm/U] · Feed per revolution f [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. | |
| 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 | 0,29 | 0,35 | 0,42 | 1.1 |
| 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 | 0,28 | 0,32 | 0,36 | 2.1 |
| 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 | 0,28 | 0,32 | 0,36 | 3.1 |
| 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 | 0,22 | 0,28 | 0,34 | 4.1 |
| 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 | 0,21 | 0,24 | 0,27 | 5.1 |
| 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 | 0,22 | 0,26 | 0,30 | 1.1 |
| | | | | | | | | | | | | | | | | | | | | | 3.1 |
| | | | | | | | | | | | | | | | | | | | | | 4.1 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 | 0,49 | 0,56 | 0,64 | 1.1 |
| 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 | 0,49 | 0,56 | 0,64 | 1.2 |
| 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 | 0,49 | 0,56 | 0,64 | 1.3 |
| 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 | 0,49 | 0,56 | 0,64 | 1.4 |
| 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 | 0,44 | 0,49 | 0,54 | 1.5 |
| | | | | | | | | | | | | | | | | | | | | | 1.6 |
| 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 | 0,25 | 0,30 | 0,34 | 2.1 |
| 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 | 0,32 | 0,37 | 0,41 | 2.2 |
| 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 | 0,36 | 0,42 | 0,49 | 2.3 |
| 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 | 0,22 | 0,24 | 0,29 | 2.4 |
| 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 | 0,26 | 0,29 | 0,34 | 2.5 |
| 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 | 0,28 | 0,32 | 0,36 | 2.6 |
| 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 | 0,16 | 0,18 | 0,20 | 2.7 |
| 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 | 0,16 | 0,18 | 0,20 | 2.8 |
| | | | | | | | | | | | | | | | | | | | | | 3.1 |
| | | | | | | | | | | | | | | | | | | | | | 3.2 |
| | | | | | | | | | | | | | | | | | | | | | 4.1 |
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| | | | | | | | | | | | | | | | | | | | | | 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 | 0,24 | 0,28 | 0,32 | 5.1 |
| | | | | | | | | | | | | | | | | | | | | | 5.2 |
| | | | | | | | | | | | | | | | | | | | | | 5.3 |
| | | | | | | | | | | | | | | | | | | | | | 1.1 |
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| | | | | | | | | | | | | | | | | | | | | | 2.5 |
| | | | | | | | | | | | | | | | | | | | | | 2.6 |
| 0,04 | 0,06 | 0,08 | 0,06 | 0,07 | 0,08 | 0,10 | 0,12 | 0,14 | 0,12 | 0,14 | 0,16 | 0,14 | 0,16 | 0,18 | 0,16 | 0,18 | 0,20 | 0,20 | 0,22 | 0,24 | 1.1 |
| 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 |
| | | | | | | | | | | | | | | | | | | | | | 1.3 |
| | | | | | | | | | | | | | | | | | | | | | 1.4 |
| | | | | | | | | | | | | | | | | | | | | | 1.5 |

- Product Finder
- STEEL
- VA
- GG
- HCU
- Zubehör Accessories
- Tech. Info

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





EF-Drill Modular
 STEEL
 3 x D

EF-Drill Modular
 STEEL
 5 x D

Schnittgeschwindigkeit v_c [m/min] · Cutting speed v_c [m/min]

| | | min. | empf. rec. | max. | min. | empf. rec. | max. |
|-----|-----|------|------------|------|------|------------|------|
| P | 1.1 | 100 | 140 | 140 | 100 | 140 | 140 |
| | 2.1 | 90 | 115 | 130 | 90 | 115 | 130 |
| | 3.1 | 70 | 100 | 110 | 70 | 100 | 110 |
| | 4.1 | 60 | 80 | 100 | 60 | 80 | 100 |
| | 5.1 | 50 | 60 | 70 | 50 | 60 | 70 |
| M | 1.1 | 40 | 50 | 60 | 40 | 50 | 60 |
| | 2.1 | | | | | | |
| | 3.1 | | | | | | |
| | 4.1 | | | | | | |
| K | 1.1 | 100 | 120 | 165 | 100 | 120 | 165 |
| | 1.2 | 85 | 125 | 140 | 85 | 125 | 140 |
| | 2.1 | 85 | 125 | 150 | 85 | 125 | 150 |
| | 2.2 | 90 | 125 | 140 | 90 | 125 | 140 |
| | 3.1 | 50 | 70 | 90 | 50 | 70 | 90 |
| | 3.2 | 50 | 70 | 90 | 50 | 70 | 90 |
| | 4.1 | 90 | 125 | 140 | 90 | 125 | 140 |
| | 4.2 | 90 | 90 | 125 | 90 | 90 | 125 |
| N | 1.1 | | | | | | |
| | 1.2 | | | | | | |
| | 1.3 | | | | | | |
| | 1.4 | 100 | 150 | 200 | 100 | 150 | 200 |
| | 1.5 | 80 | 120 | 160 | 80 | 120 | 160 |
| | 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 | | | | | | |
| | 1.2 | | | | | | |
| | 1.3 | | | | | | |
| | 1.4 | | | | | | |
| | 1.5 | | | | | | |



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Cutting data

Please note that these data are standard values only.

- We recommend the standard values in bold print (**rec.**) for stable work conditions and for high-performance machine tools with sufficient speed capability.
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- For optimum workpiece conditions, and for machine tools with extremely high performance and high spindle speeds, the high cutting speeds (**max.**) in connection with possibly reduced feed values can be applied.

| D = 14 mm | | | D = 16 mm | | | D = 20 mm | | | D = 24 mm | | | D = 28 mm | | | D = 32 mm | | | |
|---|-------------|------|-----------|-------------|------|-----------|-------------|------|-----------|-------------|------|-----------|-------------|------|-----------|-------------|------|-----|
| Vorschub pro Umdrehung f [mm/U] · Feed per revolution f [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. | |
| 0,15 | 0,22 | 0,28 | 0,18 | 0,25 | 0,31 | 0,21 | 0,28 | 0,34 | 0,26 | 0,33 | 0,39 | 0,30 | 0,37 | 0,43 | 0,34 | 0,41 | 0,47 | 1.1 |
| 0,16 | 0,23 | 0,30 | 0,19 | 0,26 | 0,33 | 0,22 | 0,29 | 0,36 | 0,27 | 0,34 | 0,41 | 0,31 | 0,38 | 0,45 | 0,35 | 0,42 | 0,49 | 2.1 |
| 0,22 | 0,27 | 0,31 | 0,25 | 0,30 | 0,34 | 0,28 | 0,33 | 0,37 | 0,33 | 0,38 | 0,42 | 0,37 | 0,42 | 0,46 | 0,41 | 0,46 | 0,50 | 3.1 |
| 0,17 | 0,22 | 0,27 | 0,20 | 0,25 | 0,30 | 0,23 | 0,28 | 0,33 | 0,28 | 0,33 | 0,38 | 0,32 | 0,37 | 0,42 | 0,36 | 0,41 | 0,46 | 4.1 |
| 0,16 | 0,21 | 0,26 | 0,19 | 0,24 | 0,29 | 0,22 | 0,27 | 0,32 | 0,27 | 0,32 | 0,37 | 0,31 | 0,36 | 0,41 | 0,35 | 0,40 | 0,45 | 5.1 |
| 0,13 | 0,17 | 0,20 | 0,15 | 0,19 | 0,22 | 0,17 | 0,21 | 0,24 | 0,20 | 0,24 | 0,27 | 0,22 | 0,26 | 0,29 | 0,24 | 0,28 | 0,31 | 1.1 |
| | | | | | | | | | | | | | | | | | | 3.1 |
| | | | | | | | | | | | | | | | | | | 4.1 |
| 0,23 | 0,33 | 0,43 | 0,31 | 0,41 | 0,51 | 0,39 | 0,49 | 0,59 | 0,49 | 0,59 | 0,69 | 0,57 | 0,67 | 0,77 | 0,65 | 0,75 | 0,85 | 1.1 |
| 0,19 | 0,30 | 0,40 | 0,27 | 0,38 | 0,48 | 0,35 | 0,46 | 0,56 | 0,45 | 0,56 | 0,66 | 0,53 | 0,64 | 0,74 | 0,61 | 0,72 | 0,82 | 1.2 |
| 0,21 | 0,31 | 0,40 | 0,29 | 0,39 | 0,48 | 0,37 | 0,47 | 0,56 | 0,47 | 0,57 | 0,66 | 0,55 | 0,65 | 0,74 | 0,63 | 0,73 | 0,82 | 2.1 |
| 0,17 | 0,28 | 0,38 | 0,25 | 0,36 | 0,46 | 0,33 | 0,44 | 0,54 | 0,43 | 0,54 | 0,64 | 0,51 | 0,62 | 0,72 | 0,59 | 0,70 | 0,80 | 2.2 |
| 0,15 | 0,24 | 0,33 | 0,23 | 0,32 | 0,41 | 0,31 | 0,40 | 0,49 | 0,41 | 0,50 | 0,59 | 0,49 | 0,58 | 0,67 | 0,57 | 0,66 | 0,75 | 3.1 |
| 0,15 | 0,24 | 0,33 | 0,23 | 0,32 | 0,41 | 0,31 | 0,40 | 0,49 | 0,41 | 0,50 | 0,59 | 0,49 | 0,58 | 0,67 | 0,57 | 0,66 | 0,75 | 3.2 |
| 0,14 | 0,22 | 0,29 | 0,22 | 0,30 | 0,37 | 0,30 | 0,38 | 0,45 | 0,40 | 0,48 | 0,55 | 0,48 | 0,56 | 0,63 | 0,56 | 0,64 | 0,71 | 4.1 |
| 0,13 | 0,20 | 0,27 | 0,21 | 0,28 | 0,35 | 0,29 | 0,36 | 0,43 | 0,39 | 0,46 | 0,53 | 0,47 | 0,54 | 0,61 | 0,55 | 0,62 | 0,69 | 4.2 |
| | | | | | | | | | | | | | | | | | | 1.1 |
| | | | | | | | | | | | | | | | | | | 1.2 |
| | | | | | | | | | | | | | | | | | | 1.3 |
| 0,30 | 0,35 | 0,40 | 0,35 | 0,40 | 0,45 | 0,40 | 0,45 | 0,50 | 0,45 | 0,50 | 0,55 | 0,50 | 0,55 | 0,60 | 0,55 | 0,60 | 0,65 | 1.4 |
| 0,40 | 0,45 | 0,50 | 0,45 | 0,50 | 0,55 | 0,50 | 0,55 | 0,60 | 0,55 | 0,60 | 0,65 | 0,60 | 0,65 | 0,70 | 0,65 | 0,70 | 0,75 | 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 |
| | | | | | | | | | | | | | | | | | | 1.4 |
| | | | | | | | | | | | | | | | | | | 1.5 |

- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

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





EF-Drill
VA
3 x D

EF-Drill
VA
5 x D

EF-Drill C
VA
2 - 3,5 x D

EF-Drill
GG
5 x D

EF-Drill
HCUT
3 x D

Schnittgeschwindigkeit v_c [m/min] · Cutting speed v_c [m/min]

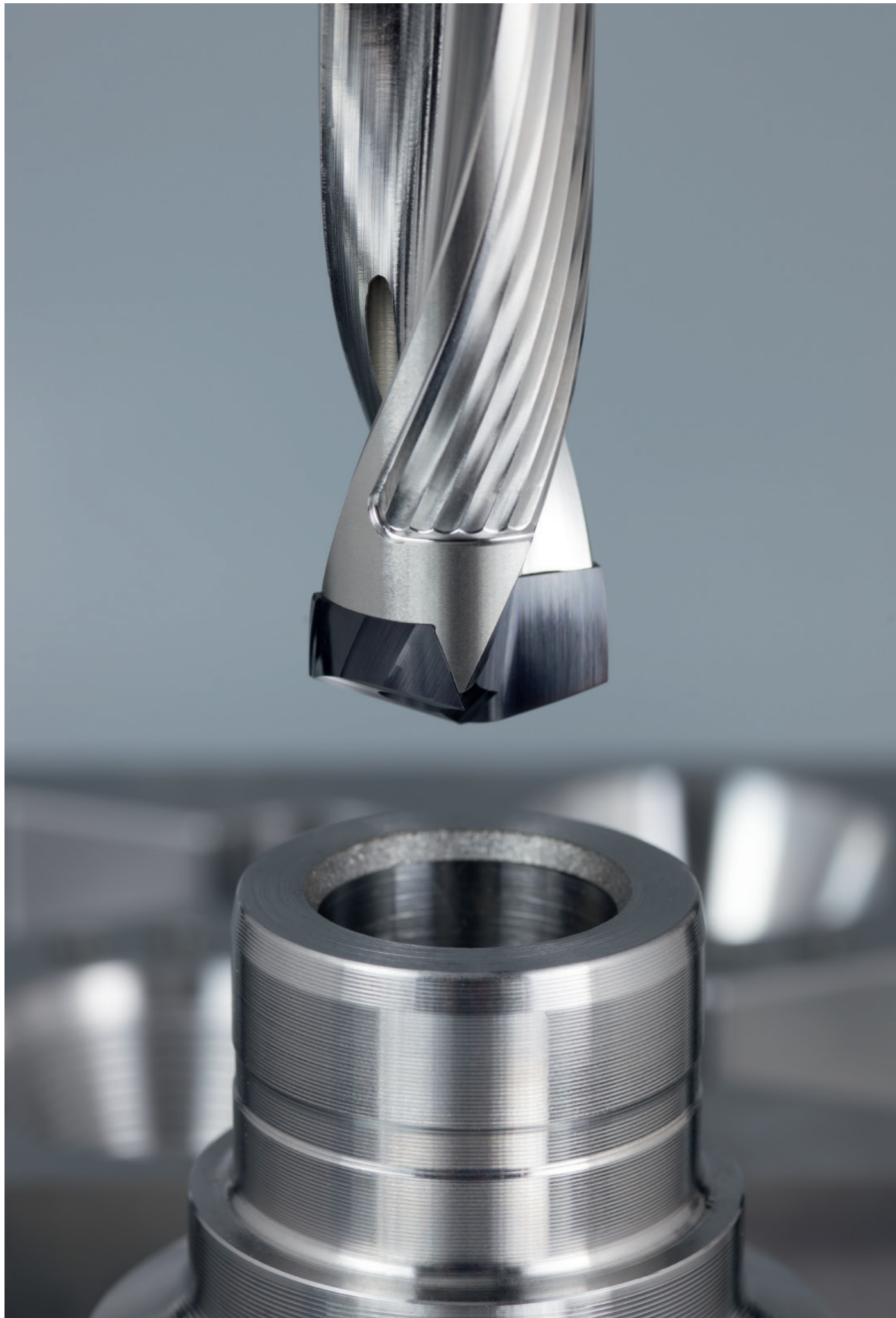
min. empf. rec. max. min. empf. rec. max. min. empf. rec. max. min. empf. rec. max.

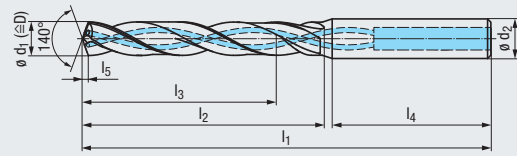
| | | min. | empf. rec. | max. | min. | empf. rec. | max. | min. | empf. rec. | max. | min. | empf. rec. | max. | min. | empf. rec. | max. |
|-----|-----|-----------|------------|------|-----------|------------|------|-----------|------------|------|------------|------------|------|------|------------|------|
| P | 1.1 | | | | | | | | | | | | | | | |
| | 2.1 | | | | | | | | | | | | | | | |
| | 3.1 | | | | | | | | | | | | | | | |
| | 4.1 | | | | | | | | | | | | | | | |
| | 5.1 | | | | | | | | | | | | | | | |
| M | 1.1 | 60 | 80 | 100 | 60 | 80 | 100 | 60 | 80 | 100 | | | | | | |
| | 2.1 | 40 | 50 | 60 | 40 | 50 | 60 | 40 | 50 | 60 | | | | | | |
| | 3.1 | 35 | 40 | 45 | 35 | 40 | 45 | 35 | 40 | 45 | | | | | | |
| | 4.1 | 30 | 35 | 40 | 30 | 35 | 40 | 30 | 35 | 40 | | | | | | |
| K | 1.1 | | | | | | | | | | 140 | 180 | 210 | | | |
| | 1.2 | | | | | | | | | | 120 | 150 | 180 | | | |
| | 2.1 | | | | | | | | | | 120 | 150 | 190 | | | |
| | 2.2 | | | | | | | | | | 110 | 130 | 150 | | | |
| | 3.1 | | | | | | | | | | 80 | 100 | 110 | | | |
| | 3.2 | | | | | | | | | | 80 | 100 | 110 | | | |
| | 4.1 | | | | | | | | | | 130 | 150 | 180 | | | |
| 4.2 | | | | | | | | | | 110 | 130 | 150 | | | | |
| N | 1.1 | 220 | 260 | 280 | 220 | 260 | 280 | 220 | 260 | 280 | | | | | | |
| | 1.2 | 220 | 260 | 280 | 220 | 260 | 280 | 220 | 260 | 280 | | | | | | |
| | 1.3 | 200 | 230 | 260 | 200 | 230 | 260 | 200 | 230 | 260 | | | | | | |
| | 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 | 45 | 55 | 65 | 45 | 55 | 65 | 45 | 55 | 65 | | | | | | |
| | 1.2 | 30 | 45 | 55 | 30 | 45 | 55 | 30 | 45 | 55 | | | | | | |
| | 1.3 | 30 | 35 | 40 | 30 | 35 | 40 | 30 | 35 | 40 | | | | | | |
| | 2.1 | | | | | | | | | | | | | | | |
| | 2.2 | 10 | 20 | 30 | 10 | 20 | 30 | 10 | 20 | 30 | | | | | | |
| | 2.3 | | | | | | | | | | | | | | | |
| 2.4 | 30 | 45 | 55 | 30 | 45 | 55 | 30 | 45 | 55 | | | | | | | |
| 2.5 | | | | | | | | | | | | | | | | |
| 2.6 | 30 | 35 | 40 | 30 | 35 | 40 | 30 | 35 | 40 | | | | | | | |
| H | 1.1 | | | | | | | | | | 30 | 35 | 40 | | | |
| | 1.2 | | | | | | | | | | 20 | 25 | 30 | | | |
| | 1.3 | | | | | | | | | | 15 | 20 | 25 | | | |
| | 1.4 | | | | | | | | | | 10 | 15 | 20 | | | |
| | 1.5 | | | | | | | | | | 8 | 12 | 15 | | | |



- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör
Accessories
- Tech. Info

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





VHM TIALN T99 R30 Z2 2FF 140° IT9-IT10 DIN 6535 HA

new STEEL Steel materials

- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

Bohrtiefe
Drill depth

6 x D

Einsatzgebiete – Material
Applications – material

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2
N 1.1-6 N 2.2-3 S 1.2-3

Werkzeug-Ident · Tool ident

TE213324

| $\varnothing d_1$ k5 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | Dimensions | | | | | | | Dimens.- Ident | EF-Drill Micro-STEEL HA-1K-2FF TIALN-T99 |
|-------------------------|-----------------------|------------------------------------|------------|-------|-------|-------|-------|-------------------|-------|-------------------|---|
| | | | l_1 | l_2 | l_3 | l_4 | l_5 | $\varnothing d_2$ | | | |
| 0,75 | M1 | | 51,5 | 5,7 | 4,5 | 28 | 0,105 | 3 | .0075 | ● | |
| 0,80 | M1x0,2 | | 51,5 | 6,1 | 4,8 | 28 | 0,112 | 3 | .0080 | ● | |
| 0,85 | M1,1 | | 51,5 | 6,5 | 5,1 | 28 | 0,119 | 3 | .0085 | ● | |
| 0,90 | M1,1x,2 | M1 | 51,5 | 6,9 | 5,4 | 28 | 0,126 | 3 | .0090 | ● | |
| 0,95 | M1,2 | | 51,5 | 7,3 | 5,7 | 28 | 0,132 | 3 | .0095 | ● | |
| 1,00 | M1,2x0,2 | M1,1 | 55 | 7,7 | 6 | 28 | 0,139 | 4 | .0100 | ● | |
| 1,10 | M1,4 | M1,2 | 55 | 8,5 | 6,6 | 28 | 0,153 | 4 | .0110 | ● | |
| 1,20 | M1,4x0,2 | | 55 | 9,3 | 7,2 | 28 | 0,167 | 4 | .0120 | ● | |
| 1,25 | M1,6 | | 55 | 9,7 | 7,5 | 28 | 0,174 | 4 | .0125 | ● | |
| 1,28 | | M1,4 | 55 | 9,7 | 7,7 | 28 | 0,178 | 4 | .0128 | ● | |
| 1,30 | MJ1,6x0,35 | | 57 | 10,1 | 7,8 | 28 | 0,181 | 4 | .0130 | ● | |
| 1,35 | M1,7 | | 57 | 10,5 | 8,1 | 28 | 0,188 | 4 | .0135 | ● | |
| 1,40 | M1,6x0,2 | | 57 | 10,9 | 8,4 | 28 | 0,195 | 4 | .0140 | ● | |
| 1,45 | M1,8 | | 57 | 11,3 | 8,7 | 28 | 0,202 | 4 | .0145 | ● | |
| 1,47 | | M1,6 | 57 | 11,3 | 8,8 | 28 | 0,202 | 4 | .0147 | ● | |
| 1,50 | | | 57 | 11,7 | 9 | 28 | 0,209 | 4 | .0150 | ● | |
| 1,57 | | M1,7 | 59 | 11,7 | 9,4 | 28 | 0,219 | 4 | .0157 | ● | |
| 1,60 | M2 / M1,8x0,2 | | 59 | 12,5 | 9,6 | 28 | 0,223 | 4 | .0160 | ● | |
| 1,67 | | M1,8 | 59 | 12,5 | 10 | 28 | 0,233 | 4 | .0167 | ● | |
| 1,70 | | | 59 | 13,3 | 10,2 | 28 | 0,237 | 4 | .0170 | ● | |
| 1,75 | M2,2 / M2x0,25 | | 59 | 13,7 | 10,5 | 28 | 0,244 | 4 | .0175 | ● | |
| 1,80 | | | 61 | 14,1 | 10,8 | 28 | 0,251 | 4 | .0180 | ● | |
| 1,85 | | M2 | 61 | 14,5 | 11,1 | 28 | 0,258 | 4 | .0185 | ● | |
| 1,90 | M2,3 | M2x0,25 | 61 | 14,9 | 11,4 | 28 | 0,265 | 4 | .0190 | ● | |
| 1,95 | M2,2x0,25 / M2,3x0,35 | | 61 | 15,3 | 11,7 | 28 | 0,272 | 4 | .0195 | ● | |
| 2,00 | | | 63 | 15,7 | 12 | 28 | 0,279 | 4 | .0200 | ● | |
| 2,03 | | M2,2 | 63 | 15,7 | 12,2 | 28 | 0,283 | 4 | .0203 | ● | |
| 2,05 | M2,5 / M2,3x0,25 | | 63 | 16,1 | 12,3 | 28 | 0,286 | 4 | .0205 | ● | |
| 2,10 | MJ2,5x0,45 | M2,2x0,25 | 63 | 16,5 | 12,6 | 28 | 0,293 | 4 | .0210 | ● | |
| 2,15 | M2,6 / M2,5x0,35 | M2,3 | 63 | 16,9 | 12,9 | 28 | 0,300 | 4 | .0215 | ● | |
| 2,20 | | M2,3x0,25 | 63 | 17,3 | 13,2 | 28 | 0,307 | 4 | .0220 | ● | |
| 2,30 | | | 65 | 18,1 | 13,8 | 28 | 0,321 | 4 | .0230 | ● | |
| 2,33 | | M2,5 | 65 | 18,1 | 14 | 28 | 0,325 | 4 | .0233 | ● | |
| 2,40 | | M2,5x0,25 | 65 | 18,9 | 14,4 | 28 | 0,335 | 4 | .0240 | ● | |
| 2,43 | | M2,6 | 65 | 18,9 | 14,6 | 28 | 0,339 | 4 | .0243 | ● | |
| 2,50 | M3 | M2,6x0,25 | 65 | 19,7 | 15 | 28 | 0,349 | 4 | .0250 | ● | |
| 2,60 | MJ3x0,5 | | 66,5 | 20,5 | 15,6 | 28 | 0,363 | 4 | .0260 | ● | |
| 2,65 | M3x0,35 | | 66,5 | 20,9 | 15,9 | 28 | 0,370 | 4 | .0265 | ● | |
| 2,70 | | | 66,5 | 21,3 | 16,2 | 28 | 0,377 | 4 | .0270 | ● | |
| 2,80 | | M3 | 68,5 | 22,1 | 16,8 | 28 | 0,390 | 4 | .0280 | ● | |
| 2,90 | M3,5 | M3x0,25 | 68,5 | 22,9 | 17,4 | 28 | 0,404 | 4 | .0290 | ● | |
| 3,00 | M3,5x0,5 / MJ3,5x0,6 | | 73 | 23,7 | 18 | 36 | 0,418 | 4 | .0300 | ● | |

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





- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

VHM **TIALN T14**

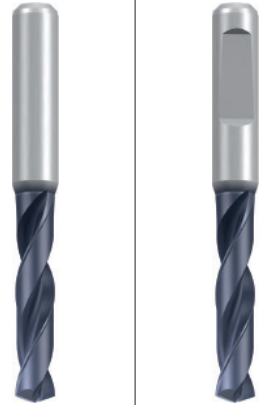
DIN 6537 K **R30**

Z2 **2FF**

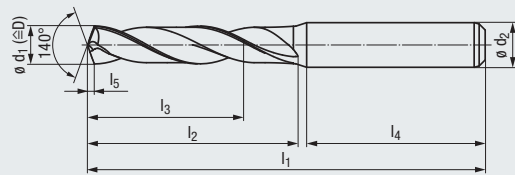
140° **IT9-IT10**

DIN 6535
 HA 
 HE 

STEEL
Steel materials



Kurze Ausführung
Short design



Bohrtiefe
Drill depth

3 x D

Einsatzgebiete – Material
Applications – material  510

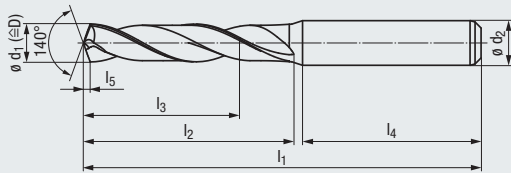
P 1.1-5.1 **K** 1.1-4.2 **N** 1.1-5
N 2.1-8 **N** 5.1 **H** 1.1-2

Werkzeug-Ident · Tool ident

TA103324 **TA403324**

| ϕd_1 m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | | | | | | ϕd_2 h6 | Dimens.- Ident | EF-Drill-STEEL DIN6537K-HA AK-2FF TIALN-T14 | EF-Drill-STEEL DIN6537K-HE AK-2FF TIALN-T14 |
|------------------|-----------------------|------------------------------------|-------|-------|-------|-------|-------|------------------|-------------------|--|--|
| | | | l_1 | l_2 | l_3 | l_4 | l_5 | | | | |
| 2,80 | | M3 | 57 | 16 | 11 | 36 | 0,6 | 6 | .0280 | ● | ● |
| 2,85 | | | 57 | 16 | 11 | 36 | 0,6 | 6 | .0285 | ● | ● |
| 2,90 | M3,5 | M3x0,25 | 57 | 16 | 11 | 36 | 0,6 | 6 | .0290 | ● | ● |
| 3,00 | M3,5x0,5 / MJ3,5x0,6 | | 62 | 20 | 14 | 36 | 0,6 | 6 | .0300 | ● | ● |
| 3,10 | | | 62 | 20 | 14 | 36 | 0,6 | 6 | .0310 | ● | ● |
| 3,15 | M3,5x0,35 | | 62 | 20 | 14 | 36 | 0,6 | 6 | .0315 | ● | ● |
| 3,20 | MJ3,5x0,35 | | 62 | 20 | 14 | 36 | 0,6 | 6 | .0320 | ● | ● |
| 3,25 | | M3,5 | 62 | 20 | 14 | 36 | 0,6 | 6 | .0325 | ● | ● |
| 3,30 | M4 | M3,5x0,5 | 62 | 20 | 14 | 36 | 0,7 | 6 | .0330 | ● | ● |
| 3,35 | | | 62 | 20 | 14 | 36 | 0,7 | 6 | .0335 | ● | ● |
| 3,38 | | M3,5x0,35 | 62 | 20 | 14 | 36 | 0,7 | 6 | .0338 | ● | ● |
| 3,40 | MJ4x0,7 | | 62 | 20 | 14 | 36 | 0,7 | 6 | .0340 | ● | ● |
| 3,50 | M4x0,5 | | 62 | 20 | 14 | 36 | 0,7 | 6 | .0350 | ● | ● |
| 3,55 | | | 62 | 20 | 14 | 36 | 0,7 | 6 | .0355 | ● | ● |
| 3,60 | MJ4x0,5 | | 62 | 20 | 14 | 36 | 0,7 | 6 | .0360 | ● | ● |
| 3,65 | M4x0,35 | | 62 | 20 | 14 | 36 | 0,7 | 6 | .0365 | ● | ● |
| 3,70 | M4,5 | M4 | 62 | 20 | 14 | 36 | 0,7 | 6 | .0370 | ● | ● |
| 3,80 | | M4x0,5 | 66 | 24 | 17 | 36 | 0,7 | 6 | .0380 | ● | ● |
| 3,88 | | M4x0,35 | 66 | 24 | 17 | 36 | 0,8 | 6 | .0388 | ● | ● |
| 3,90 | MJ4,5x0,75 | | 66 | 24 | 17 | 36 | 0,8 | 6 | .0390 | ● | ● |
| 4,00 | | | 66 | 24 | 17 | 36 | 0,8 | 6 | .0400 | ● | ● |
| 4,10 | MJ4,5x0,5 | | 66 | 24 | 17 | 36 | 0,8 | 6 | .0410 | ● | ● |
| 4,15 | M5x0,9 | | 66 | 24 | 17 | 36 | 0,8 | 6 | .0415 | ● | ● |
| 4,20 | M5 / M5x0,75 | M4,5 | 66 | 24 | 17 | 36 | 0,8 | 6 | .0420 | ● | ● |
| 4,30 | MJ5x0,8 | M4,5x0,5 | 66 | 24 | 17 | 36 | 0,8 | 6 | .0430 | ● | ● |
| 4,35 | | | 66 | 24 | 17 | 36 | 0,8 | 6 | .0435 | ● | ● |
| 4,40 | | | 66 | 24 | 17 | 36 | 0,9 | 6 | .0440 | ● | ● |
| 4,45 | | | 66 | 24 | 17 | 36 | 0,9 | 6 | .0445 | ● | ● |
| 4,50 | M5x0,5 | | 66 | 24 | 17 | 36 | 0,9 | 6 | .0450 | ● | ● |
| 4,60 | M5,5 / MJ5x0,5 | | 66 | 24 | 17 | 36 | 0,9 | 6 | .0460 | ● | ● |
| 4,65 | | M5 | 66 | 24 | 17 | 36 | 0,9 | 6 | .0465 | ● | ● |
| 4,70 | | M5x0,75 | 66 | 24 | 17 | 36 | 0,9 | 6 | .0470 | ● | ● |
| 4,80 | | M5x0,5 | 66 | 28 | 20 | 36 | 0,9 | 6 | .0480 | ● | ● |
| 4,90 | | | 66 | 28 | 20 | 36 | 0,9 | 6 | .0490 | ● | ● |
| 5,00 | M6 | | 66 | 28 | 20 | 36 | 1,0 | 6 | .0500 | ● | ● |
| 5,10 | MJ6x1 | M5,5 | 66 | 28 | 20 | 36 | 1,0 | 6 | .0510 | ● | ● |
| 5,20 | M6x0,75 | | 66 | 28 | 20 | 36 | 1,0 | 6 | .0520 | ● | ● |
| 5,25 | | | 66 | 28 | 20 | 36 | 1,0 | 6 | .0525 | ● | ● |
| 5,30 | | M5,5x0,5 | 66 | 28 | 20 | 36 | 1,0 | 6 | .0530 | ● | ● |
| 5,40 | | | 66 | 28 | 20 | 36 | 1,0 | 6 | .0540 | ● | ● |
| 5,50 | M6x0,5 | | 66 | 28 | 20 | 36 | 1,1 | 6 | .0550 | ● | ● |
| 5,55 | | M6 (GAL) | 66 | 28 | 20 | 36 | 1,1 | 6 | .0555 | ● | ● |
| 5,60 | MJ6x0,5 | M6 | 66 | 28 | 20 | 36 | 1,1 | 6 | .0560 | ● | ● |

Kurze Ausführung
Short design



VHM **TIALN T14**

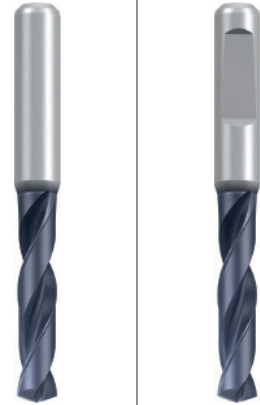
DIN 6537 K **R30**

Z2 **2FF**

140° **IT9-IT10**

DIN 6535
HA HE

STEEL
Steel materials



- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

Bohrtiefe
Drill depth

3 x D

Einsatzgebiete – Material
Applications – material 510

P 1.1-5.1 **K** 1.1-4.2 **N** 1.1-5
N 2.1-8 **N** 5.1 **H** 1.1-2

Werkzeug-Ident · Tool ident

TA103324 TA403324

| $\varnothing d_1$ m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | | | | | | $\varnothing d_2$ h6 | Dimens.- Ident | EF-Drill-STEEL | |
|-------------------------|-----------------------|------------------------------------|-------|-------|-------|-------|-------|-------------------------|-------------------|------------------------------------|------------------------------------|
| | | | l_1 | l_2 | l_3 | l_4 | l_5 | | | DIN6537K-HA AK-2FF TIALN-T14 | DIN6537K-HE AK-2FF TIALN-T14 |
| 5,70 | | M6x0,75 | 66 | 28 | 20 | 36 | 1,1 | 6 | .0570 | ● | ● |
| 5,80 | | M6x0,5 | 66 | 28 | 20 | 36 | 1,1 | 6 | .0580 | ● | ● |
| 5,90 | | | 66 | 28 | 20 | 36 | 1,1 | 6 | .0590 | ● | ● |
| 6,00 | M7 | | 66 | 28 | 20 | 36 | 1,1 | 6 | .0600 | ● | ● |
| 6,10 | MJ7x1 | | 79 | 34 | 24 | 36 | 1,2 | 8 | .0610 | ● | ● |
| 6,20 | M7x0,75 | | 79 | 34 | 24 | 36 | 1,2 | 8 | .0620 | ● | ● |
| 6,30 | | | 79 | 34 | 24 | 36 | 1,2 | 8 | .0630 | ● | ● |
| 6,35 | MJ7x0,75 | | 79 | 34 | 24 | 36 | 1,2 | 8 | .0635 | ● | ● |
| 6,40 | | | 79 | 34 | 24 | 36 | 1,2 | 8 | .0640 | ● | ● |
| 6,50 | M7x0,5 | | 79 | 34 | 24 | 36 | 1,2 | 8 | .0650 | ● | ● |
| 6,60 | | M7 | 79 | 34 | 24 | 36 | 1,3 | 8 | .0660 | ● | ● |
| 6,70 | | M7x0,75 | 79 | 34 | 24 | 36 | 1,3 | 8 | .0670 | ● | ● |
| 6,80 | M8 | M7x0,5 | 79 | 34 | 24 | 36 | 1,3 | 8 | .0680 | ● | ● |
| 6,90 | MJ8x1,25 | | 79 | 34 | 24 | 36 | 1,3 | 8 | .0690 | ● | ● |
| 7,00 | M8x1 | | 79 | 34 | 24 | 36 | 1,3 | 8 | .0700 | ● | ● |
| 7,10 | MJ8x1 | | 79 | 41 | 29 | 36 | 1,3 | 8 | .0710 | ● | ● |
| 7,20 | M8x0,75 | | 79 | 41 | 29 | 36 | 1,4 | 8 | .0720 | ● | ● |
| 7,30 | | | 79 | 41 | 29 | 36 | 1,4 | 8 | .0730 | ● | ● |
| 7,40 | | M8 (GAL) | 79 | 41 | 29 | 36 | 1,4 | 8 | .0740 | ● | ● |
| 7,45 | | M8 | 79 | 41 | 29 | 36 | 1,4 | 8 | .0745 | ● | ● |
| 7,50 | M8x0,5 | | 79 | 41 | 29 | 36 | 1,4 | 8 | .0750 | ● | ● |
| 7,60 | | M8x1 | 79 | 41 | 29 | 36 | 1,4 | 8 | .0760 | ● | ● |
| 7,70 | | M8x0,75 | 79 | 41 | 29 | 36 | 1,5 | 8 | .0770 | ● | ● |
| 7,80 | M9 | M8x0,5 | 79 | 41 | 29 | 36 | 1,5 | 8 | .0780 | ● | ● |
| 7,90 | MJ9x1,25 | | 79 | 41 | 29 | 36 | 1,5 | 8 | .0790 | ● | ● |
| 8,00 | M9x1 | | 79 | 41 | 29 | 36 | 1,5 | 8 | .0800 | ● | ● |
| 8,10 | MJ9x1 | | 89 | 47 | 35 | 40 | 1,5 | 10 | .0810 | ● | ● |
| 8,20 | M9x0,75 | | 89 | 47 | 35 | 40 | 1,5 | 10 | .0820 | ● | ● |
| 8,30 | | | 89 | 47 | 35 | 40 | 1,6 | 10 | .0830 | ● | ● |
| 8,40 | | M9 (GAL) | 89 | 47 | 35 | 40 | 1,6 | 10 | .0840 | ● | ● |
| 8,45 | | M9 | 89 | 47 | 35 | 40 | 1,6 | 10 | .0845 | ● | ● |
| 8,50 | M10 / M9x0,5 | | 89 | 47 | 35 | 40 | 1,6 | 10 | .0850 | ● | ● |
| 8,60 | MJ10x1,5 | M9x1 | 89 | 47 | 35 | 40 | 1,6 | 10 | .0860 | ● | ● |
| 8,70 | | M9x0,75 | 89 | 47 | 35 | 40 | 1,6 | 10 | .0870 | ● | ● |
| 8,80 | M10x1,25 | M9x0,5 | 89 | 47 | 35 | 40 | 1,7 | 10 | .0880 | ● | ● |
| 8,90 | MJ10x1,25 | | 89 | 47 | 35 | 40 | 1,7 | 10 | .0890 | ● | ● |
| 9,00 | M10x1 | | 89 | 47 | 35 | 40 | 1,7 | 10 | .0900 | ● | ● |
| 9,10 | MJ10x1 | | 89 | 47 | 35 | 40 | 1,7 | 10 | .0910 | ● | ● |
| 9,20 | M10x0,75 | | 89 | 47 | 35 | 40 | 1,7 | 10 | .0920 | ● | ● |
| 9,30 | | M10 (GAL) | 89 | 47 | 35 | 40 | 1,7 | 10 | .0930 | ● | ● |
| 9,35 | MJ10x0,75 | M10 | 89 | 47 | 35 | 40 | 1,8 | 10 | .0935 | ● | ● |
| 9,40 | | M10x1,25 (GAL) | 89 | 47 | 35 | 40 | 1,8 | 10 | .0940 | ● | ● |
| 9,45 | | M10x1,25 | 89 | 47 | 35 | 40 | 1,8 | 10 | .0945 | ● | ● |

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

\varnothing 9,50 mm - \varnothing 20,00 mm \rightarrow





- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör
Accessories
- Tech. Info

VHM **TIALN T14**

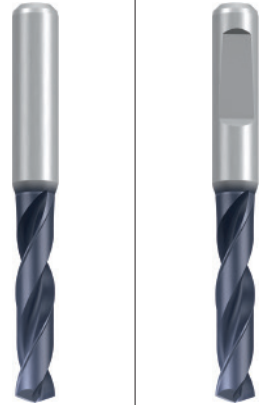
DIN 6537 K **R30**

Z2 **2FF**

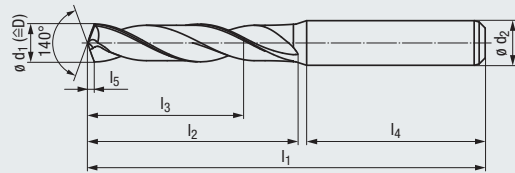
140° **IT9-IT10**

DIN 6535
HA  HE 

STEEL
Steel materials



Kurze Ausführung
Short design



Bohrtiefe
Drill depth



3 x D

Einsatzgebiete – Material
Applications – material  510

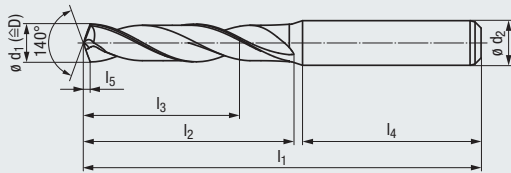
P 1.1-5.1 **K** 1.1-4.2 **N** 1.1-5
N 2.1-8 **N** 5.1 **H** 1.1-2

Werkzeug-Ident · Tool ident

TA103324 **TA403324**

| $\varnothing d_1$ m7 | Gewindebohrer Taps  | Gewindeformer Cold-forming taps  | | | | | | $\varnothing d_2$ h6 | Dimens.- Ident | EF-Drill-STEEL DIN6537K-HA AK-2FF TIALN-T14 | EF-Drill-STEEL DIN6537K-HE AK-2FF TIALN-T14 |
|-------------------------|---|--|-------|-------|-------|-------|-------|-------------------------|-------------------|--|--|
| | | | l_1 | l_2 | l_3 | l_4 | l_5 | | | | |
| 9,50 | M11 / M10x0,5 | | 89 | 47 | 35 | 40 | 1,8 | 10 | .0950 | ● | ● |
| 9,60 | MJ10x0,5 / MJ11x1,5 | M10x1 | 89 | 47 | 35 | 40 | 1,8 | 10 | .0960 | ● | ● |
| 9,70 | | M10x0,75 | 89 | 47 | 35 | 40 | 1,8 | 10 | .0970 | ● | ● |
| 9,80 | | M10x0,5 | 89 | 47 | 35 | 40 | 1,8 | 10 | .0980 | ● | ● |
| 9,90 | MJ11x1,25 | | 89 | 47 | 35 | 40 | 1,9 | 10 | .0990 | ● | ● |
| 10,00 | M11x1 | | 89 | 47 | 35 | 40 | 1,9 | 10 | .1000 | ● | ● |
| 10,10 | MJ11x1 | | 102 | 55 | 40 | 45 | 1,9 | 12 | .1010 | ● | ● |
| 10,20 | M12 / M11x0,75 | | 102 | 55 | 40 | 45 | 1,9 | 12 | .1020 | ● | ● |
| 10,30 | | M11 (GAL) | 102 | 55 | 40 | 45 | 1,9 | 12 | .1030 | ● | ● |
| 10,35 | MJ11x0,75 | M11 | 102 | 55 | 40 | 45 | 1,9 | 12 | .1035 | ● | ● |
| 10,40 | | | 102 | 55 | 40 | 45 | 1,9 | 12 | .1040 | ● | ● |
| 10,50 | M12x1,5 | | 102 | 55 | 40 | 45 | 2,0 | 12 | .1050 | ● | ● |
| 10,60 | MJ12x1,5 | M11x1 | 102 | 55 | 40 | 45 | 2,0 | 12 | .1060 | ● | ● |
| 10,70 | | M11x0,75 | 102 | 55 | 40 | 45 | 2,0 | 12 | .1070 | ● | ● |
| 10,80 | M12x1,25 | | 102 | 55 | 40 | 45 | 2,0 | 12 | .1080 | ● | ● |
| 10,90 | MJ12x1,25 | | 102 | 55 | 40 | 45 | 2,0 | 12 | .1090 | ● | ● |
| 11,00 | M12x1 | | 102 | 55 | 40 | 45 | 2,1 | 12 | .1100 | ● | ● |
| 11,10 | MJ12x1 | | 102 | 55 | 40 | 45 | 2,1 | 12 | .1110 | ● | ● |
| 11,20 | M12x0,75 | M12 (GAL) | 102 | 55 | 40 | 45 | 2,1 | 12 | .1120 | ● | ● |
| 11,25 | | M12 | 102 | 55 | 40 | 45 | 2,1 | 12 | .1125 | ● | ● |
| 11,30 | | M12x1,5 (GAL) | 102 | 55 | 40 | 45 | 2,1 | 12 | .1130 | ● | ● |
| 11,35 | | M12x1,5 | 102 | 55 | 40 | 45 | 2,1 | 12 | .1135 | ● | ● |
| 11,40 | | M12x1,25 (GAL) | 102 | 55 | 40 | 45 | 2,1 | 12 | .1140 | ● | ● |
| 11,45 | | M12x1,25 | 102 | 55 | 40 | 45 | 2,1 | 12 | .1145 | ● | ● |
| 11,50 | | | 102 | 55 | 40 | 45 | 2,1 | 12 | .1150 | ● | ● |
| 11,60 | | M12x1 | 102 | 55 | 40 | 45 | 2,2 | 12 | .1160 | ● | ● |
| 11,70 | | M12x0,75 | 102 | 55 | 40 | 45 | 2,2 | 12 | .1170 | ● | ● |
| 11,80 | | | 102 | 55 | 40 | 45 | 2,2 | 12 | .1180 | ● | ● |
| 11,90 | | | 102 | 55 | 40 | 45 | 2,2 | 12 | .1190 | ● | ● |
| 12,00 | M14 | | 102 | 55 | 40 | 45 | 2,2 | 12 | .1200 | ● | ● |
| 12,20 | | | 107 | 60 | 43 | 45 | 2,3 | 14 | .1220 | ● | ● |
| 12,30 | | | 107 | 60 | 43 | 45 | 2,3 | 14 | .1230 | ● | ● |
| 12,50 | M14x1,5 | | 107 | 60 | 43 | 45 | 2,3 | 14 | .1250 | ● | ● |
| 12,60 | MJ14x1,5 | M13x1 | 107 | 60 | 43 | 45 | 2,3 | 14 | .1260 | ● | ● |
| 12,70 | | M13x0,75 | 107 | 60 | 43 | 45 | 2,4 | 14 | .1270 | ● | ● |
| 12,80 | M14x1,25 | | 107 | 60 | 43 | 45 | 2,4 | 14 | .1280 | ● | ● |
| 12,90 | MJ14x1,25 | | 107 | 60 | 43 | 45 | 2,4 | 14 | .1290 | ● | ● |
| 13,00 | M14x1 | | 107 | 60 | 43 | 45 | 2,4 | 14 | .1300 | ● | ● |
| 13,10 | MJ14x1 | M14 | 107 | 60 | 43 | 45 | 2,4 | 14 | .1310 | ● | ● |
| 13,20 | M14x0,75 | | 107 | 60 | 43 | 45 | 2,5 | 14 | .1320 | ● | ● |
| 13,30 | | | 107 | 60 | 43 | 45 | 2,5 | 14 | .1330 | ● | ● |
| 13,35 | | M14x1,5 | 107 | 60 | 43 | 45 | 2,5 | 14 | .1335 | ● | ● |
| 13,45 | | M14x1,25 | 107 | 60 | 43 | 45 | 2,5 | 14 | .1345 | ● | ● |

Kurze Ausführung
Short design



VHM **TIALN T14**

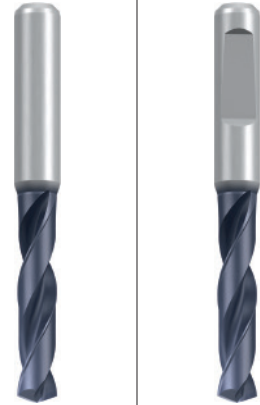
DIN 6537 K **R30**

Z2 **2FF**

140° **IT9-IT10**

DIN 6535
HA HE

STEEL
Steel materials



- Product Finder
- v_c / f
- STEEL**
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

Bohrtiefe
Drill depth

3 x D

Einsatzgebiete – Material
Applications – material 510

P 1.1-5.1 **K** 1.1-4.2 **N** 1.1-5
N 2.1-8 **N** 5.1 **H** 1.1-2

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

Werkzeug-Ident · Tool ident

| $\varnothing d_1$ m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | | | | | | $\varnothing d_2$ h6 | Dimens.- Ident | TA103324 | TA403324 |
|-------------------------|-----------------------|------------------------------------|-------|-------|-------|-------|-------|-------------------------|-------------------|--|--|
| | | | l_1 | l_2 | l_3 | l_4 | l_5 | | | EF-Drill-STEEL DIN6537K-HA AK-2FF TIALN-T14 | EF-Drill-STEEL DIN6537K-HE AK-2FF TIALN-T14 |
| 13,50 | | | 107 | 60 | 43 | 45 | 2,5 | 14 | .1350 | ● | ● |
| 13,60 | MJ15x1,5 | M14x1 | 107 | 60 | 43 | 45 | 2,5 | 14 | .1360 | ● | ● |
| 13,70 | | M14x0,75 | 107 | 60 | 43 | 45 | 2,5 | 14 | .1370 | ● | ● |
| 13,80 | | | 107 | 60 | 43 | 45 | 2,6 | 14 | .1380 | ● | ● |
| 14,00 | M16 / M15x1 | | 107 | 60 | 43 | 45 | 2,6 | 14 | .1400 | ● | ● |
| 14,10 | MJ15x1 | | 115 | 65 | 45 | 48 | 2,6 | 16 | .1410 | ● | ● |
| 14,30 | | | 115 | 65 | 45 | 48 | 2,7 | 16 | .1430 | ● | ● |
| 14,40 | | | 115 | 65 | 45 | 48 | 2,7 | 16 | .1440 | ● | ● |
| 14,50 | M16x1,5 | | 115 | 65 | 45 | 48 | 2,7 | 16 | .1450 | ● | ● |
| 14,60 | MJ16x1,5 | M15x1 | 115 | 65 | 45 | 48 | 2,7 | 16 | .1460 | ● | ● |
| 14,70 | | M15x0,75 | 115 | 65 | 45 | 48 | 2,7 | 16 | .1470 | ● | ● |
| 14,80 | | | 115 | 65 | 45 | 48 | 2,7 | 16 | .1480 | ● | ● |
| 15,00 | M16x1 | | 115 | 65 | 45 | 48 | 2,8 | 16 | .1500 | ● | ● |
| 15,10 | MJ16x1 | M16 | 115 | 65 | 45 | 48 | 2,8 | 16 | .1510 | ● | ● |
| 15,35 | | M16x1,5 | 115 | 65 | 45 | 48 | 2,8 | 16 | .1535 | ● | ● |
| 15,50 | M18 | | 115 | 65 | 45 | 48 | 2,9 | 16 | .1550 | ● | ● |
| 15,60 | | M16x1 | 115 | 65 | 45 | 48 | 2,9 | 16 | .1560 | ● | ● |
| 16,00 | M18x2 | | 115 | 65 | 45 | 48 | 3,0 | 16 | .1600 | ● | ● |
| 16,50 | M18x1,5 | | 123 | 73 | 51 | 48 | 3,1 | 18 | .1650 | ● | ● |
| 17,00 | M18x1 | | 123 | 73 | 51 | 48 | 3,1 | 18 | .1700 | ● | ● |
| 17,50 | M20 | | 123 | 73 | 51 | 48 | 3,2 | 18 | .1750 | ● | ● |
| 17,60 | | M18x1 | 123 | 73 | 51 | 48 | 3,3 | 18 | .1760 | ● | ● |
| 18,00 | M20x2 | | 123 | 73 | 51 | 48 | 3,3 | 18 | .1800 | ● | ● |
| 18,50 | M20x1,5 | | 131 | 79 | 55 | 50 | 3,4 | 20 | .1850 | ● | ● |
| 18,85 | | M20 | 131 | 79 | 55 | 50 | 3,5 | 20 | .1885 | ● | ● |
| 19,00 | M20x1 | | 131 | 79 | 55 | 50 | 3,5 | 20 | .1900 | ● | ● |
| 19,35 | | M20x1,5 | 131 | 79 | 55 | 50 | 3,6 | 20 | .1935 | ● | ● |
| 19,50 | M22 | | 131 | 79 | 55 | 50 | 3,6 | 20 | .1950 | ● | ● |
| 19,60 | | M20x1 | 131 | 79 | 55 | 50 | 3,6 | 20 | .1960 | ● | ● |
| 20,00 | M22x2 | | 131 | 79 | 55 | 50 | 3,7 | 20 | .2000 | ● | ● |



- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

VHM

TIALN
T14

DIN
6537 K

R30

Z2

4FF

140°

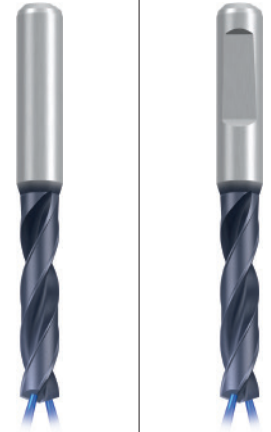
IT9-IT10

DIN 6535

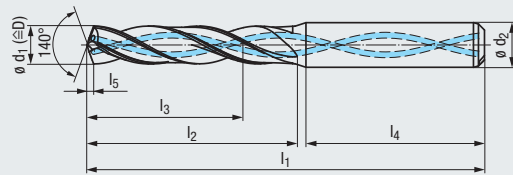
HA

HE

STEEL
Steel materials



Kurze Ausführung
Short design



Bohrtiefe
Drill depth

3 x D

Einsatzgebiete – Material
Applications – material

P 1.1-5.1

M 1.1

K 1.1-4.2

N 1.1-5

N 2.1-8

H 1.1-2

Werkzeug-Ident · Tool ident

TA203344 TA503344

| $\emptyset d_1$ m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | | | | | | $\emptyset d_2$ h6 | Dimens.- Ident | TA203344 | TA503344 |
|-----------------------|-----------------------|------------------------------------|-------|-------|-------|-------|-------|-----------------------|-------------------|--|--|
| | | | l_1 | l_2 | l_3 | l_4 | l_5 | | | EF-Drill-STEEL DIN6537K-HA IK-4FF TIALN-T14 | EF-Drill-STEEL DIN6537K-HE IK-4FF TIALN-T14 |
| 2,80 | | M3 | 57 | 16 | 11 | 36 | 0,6 | 6 | .0280 | ● | ● |
| 2,85 | | | 57 | 16 | 11 | 36 | 0,6 | 6 | .0285 | ● | ● |
| 2,90 | M3,5 | M3x0,25 | 57 | 16 | 11 | 36 | 0,6 | 6 | .0290 | ● | ● |
| 3,00 | M3,5x0,5 / MJ3,5x0,6 | | 62 | 20 | 14 | 36 | 0,6 | 6 | .0300 | ● | ● |
| 3,10 | | | 62 | 20 | 14 | 36 | 0,6 | 6 | .0310 | ● | ● |
| 3,15 | M3,5x0,35 | | 62 | 20 | 14 | 36 | 0,6 | 6 | .0315 | ● | ● |
| 3,20 | MJ3,5x0,35 | | 62 | 20 | 14 | 36 | 0,6 | 6 | .0320 | ● | ● |
| 3,25 | | M3,5 | 62 | 20 | 14 | 36 | 0,6 | 6 | .0325 | ● | ● |
| 3,30 | M4 | M3,5x0,5 | 62 | 20 | 14 | 36 | 0,7 | 6 | .0330 | ● | ● |
| 3,35 | | | 62 | 20 | 14 | 36 | 0,7 | 6 | .0335 | ● | ● |
| 3,38 | | M3,5x0,35 | 62 | 20 | 14 | 36 | 0,7 | 6 | .0338 | ● | ● |
| 3,40 | MJ4x0,7 | | 62 | 20 | 14 | 36 | 0,7 | 6 | .0340 | ● | ● |
| 3,50 | M4x0,5 | | 62 | 20 | 14 | 36 | 0,7 | 6 | .0350 | ● | ● |
| 3,55 | | | 62 | 20 | 14 | 36 | 0,7 | 6 | .0355 | ● | ● |
| 3,60 | MJ4x0,5 | | 62 | 20 | 14 | 36 | 0,7 | 6 | .0360 | ● | ● |
| 3,65 | M4x0,35 | | 62 | 20 | 14 | 36 | 0,7 | 6 | .0365 | ● | ● |
| 3,70 | M4,5 | M4 | 62 | 20 | 14 | 36 | 0,7 | 6 | .0370 | ● | ● |
| 3,80 | | M4x0,5 | 66 | 24 | 17 | 36 | 0,7 | 6 | .0380 | ● | ● |
| 3,88 | | M4x0,35 | 66 | 24 | 17 | 36 | 0,8 | 6 | .0388 | ● | ● |
| 3,90 | MJ4,5x0,75 | | 66 | 24 | 17 | 36 | 0,8 | 6 | .0390 | ● | ● |
| 4,00 | | | 66 | 24 | 17 | 36 | 0,8 | 6 | .0400 | ● | ● |
| 4,10 | MJ4,5x0,5 | | 66 | 24 | 17 | 36 | 0,8 | 6 | .0410 | ● | ● |
| 4,15 | M5x0,9 | | 66 | 24 | 17 | 36 | 0,8 | 6 | .0415 | ● | ● |
| 4,20 | M5 / M5x0,75 | M4,5 | 66 | 24 | 17 | 36 | 0,8 | 6 | .0420 | ● | ● |
| 4,30 | MJ5x0,8 | M4,5x0,5 | 66 | 24 | 17 | 36 | 0,8 | 6 | .0430 | ● | ● |
| 4,35 | | | 66 | 24 | 17 | 36 | 0,8 | 6 | .0435 | ● | ● |
| 4,40 | | | 66 | 24 | 17 | 36 | 0,9 | 6 | .0440 | ● | ● |
| 4,45 | | | 66 | 24 | 17 | 36 | 0,9 | 6 | .0445 | ● | ● |
| 4,50 | M5x0,5 | | 66 | 24 | 17 | 36 | 0,9 | 6 | .0450 | ● | ● |
| 4,60 | M5,5 / MJ5x0,5 | | 66 | 24 | 17 | 36 | 0,9 | 6 | .0460 | ● | ● |
| 4,65 | | M5 | 66 | 24 | 17 | 36 | 0,9 | 6 | .0465 | ● | ● |
| 4,70 | | M5x0,75 | 66 | 24 | 17 | 36 | 0,9 | 6 | .0470 | ● | ● |
| 4,80 | | M5x0,5 | 66 | 28 | 20 | 36 | 0,9 | 6 | .0480 | ● | ● |
| 4,90 | | | 66 | 28 | 20 | 36 | 0,9 | 6 | .0490 | ● | ● |
| 5,00 | M6 | | 66 | 28 | 20 | 36 | 1,0 | 6 | .0500 | ● | ● |
| 5,10 | MJ6x1 | M5,5 | 66 | 28 | 20 | 36 | 1,0 | 6 | .0510 | ● | ● |
| 5,20 | M6x0,75 | | 66 | 28 | 20 | 36 | 1,0 | 6 | .0520 | ● | ● |
| 5,25 | | | 66 | 28 | 20 | 36 | 1,0 | 6 | .0525 | ● | ● |
| 5,30 | | M5,5x0,5 | 66 | 28 | 20 | 36 | 1,0 | 6 | .0530 | ● | ● |
| 5,40 | | | 66 | 28 | 20 | 36 | 1,0 | 6 | .0540 | ● | ● |
| 5,50 | M6x0,5 | | 66 | 28 | 20 | 36 | 1,1 | 6 | .0550 | ● | ● |
| 5,55 | | M6 (GAL) | 66 | 28 | 20 | 36 | 1,1 | 6 | .0555 | ● | ● |
| 5,60 | MJ6x0,5 | M6 | 66 | 28 | 20 | 36 | 1,1 | 6 | .0560 | ● | ● |

VHM **TIALN T14**

DIN 6537 K **R30**

Z2 **4FF**

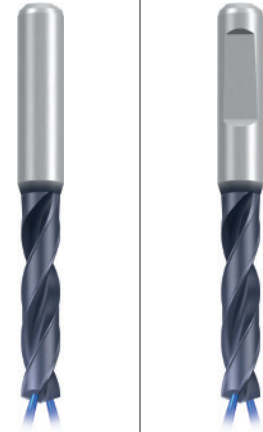
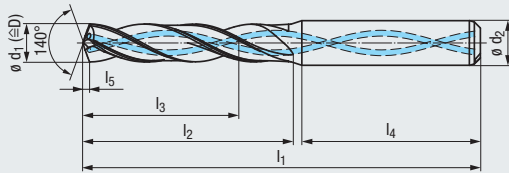
140° **IT9-IT10**

DIN 6535
HA HE

STEEL
Steel materials

- Product Finder
- v_c / f
- STEEL**
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

Kurze Ausführung
Short design



Bohrtiefe
Drill depth

3 x D

Einsatzgebiete – Material
Applications – material 510

P 1.1-5.1 **M** 1.1 **K** 1.1-4.2
N 1.1-5 **N** 2.1-8 **H** 1.1-2

Werkzeug-Ident · Tool ident

TA203344 TA503344

| ø d ₁ m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | | | | | | ø d ₂ h6 | Dimens.- Ident | EF-Drill-STEEL | |
|------------------------|-----------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|------------------------|-------------------|------------------------------------|------------------------------------|
| | | | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | | | DIN6537K-HA IK-4FF TIALN-T14 | DIN6537K-HE IK-4FF TIALN-T14 |
| 5,70 | | M6x0,75 | 66 | 28 | 20 | 36 | 1,1 | 6 | .0570 | ● | ● |
| 5,80 | | M6x0,5 | 66 | 28 | 20 | 36 | 1,1 | 6 | .0580 | ● | ● |
| 5,90 | | | 66 | 28 | 20 | 36 | 1,1 | 6 | .0590 | ● | ● |
| 6,00 | M7 | | 66 | 28 | 20 | 36 | 1,1 | 6 | .0600 | ● | ● |
| 6,10 | MJ7x1 | | 79 | 34 | 24 | 36 | 1,2 | 8 | .0610 | ● | ● |
| 6,20 | M7x0,75 | | 79 | 34 | 24 | 36 | 1,2 | 8 | .0620 | ● | ● |
| 6,30 | | | 79 | 34 | 24 | 36 | 1,2 | 8 | .0630 | ● | ● |
| 6,35 | MJ7x0,75 | | 79 | 34 | 24 | 36 | 1,2 | 8 | .0635 | ● | ● |
| 6,40 | | | 79 | 34 | 24 | 36 | 1,2 | 8 | .0640 | ● | ● |
| 6,50 | M7x0,5 | | 79 | 34 | 24 | 36 | 1,2 | 8 | .0650 | ● | ● |
| 6,60 | | M7 | 79 | 34 | 24 | 36 | 1,3 | 8 | .0660 | ● | ● |
| 6,70 | | M7x0,75 | 79 | 34 | 24 | 36 | 1,3 | 8 | .0670 | ● | ● |
| 6,80 | M8 | M7x0,5 | 79 | 34 | 24 | 36 | 1,3 | 8 | .0680 | ● | ● |
| 6,90 | MJ8x1,25 | | 79 | 34 | 24 | 36 | 1,3 | 8 | .0690 | ● | ● |
| 7,00 | M8x1 | | 79 | 34 | 24 | 36 | 1,3 | 8 | .0700 | ● | ● |
| 7,10 | MJ8x1 | | 79 | 41 | 29 | 36 | 1,3 | 8 | .0710 | ● | ● |
| 7,20 | M8x0,75 | | 79 | 41 | 29 | 36 | 1,4 | 8 | .0720 | ● | ● |
| 7,30 | | | 79 | 41 | 29 | 36 | 1,4 | 8 | .0730 | ● | ● |
| 7,40 | | M8 (GAL) | 79 | 41 | 29 | 36 | 1,4 | 8 | .0740 | ● | ● |
| 7,45 | | M8 | 79 | 41 | 29 | 36 | 1,4 | 8 | .0745 | ● | ● |
| 7,50 | M8x0,5 | | 79 | 41 | 29 | 36 | 1,4 | 8 | .0750 | ● | ● |
| 7,60 | | M8x1 | 79 | 41 | 29 | 36 | 1,4 | 8 | .0760 | ● | ● |
| 7,70 | | M8x0,75 | 79 | 41 | 29 | 36 | 1,5 | 8 | .0770 | ● | ● |
| 7,80 | M9 | M8x0,5 | 79 | 41 | 29 | 36 | 1,5 | 8 | .0780 | ● | ● |
| 7,90 | MJ9x1,25 | | 79 | 41 | 29 | 36 | 1,5 | 8 | .0790 | ● | ● |
| 8,00 | M9x1 | | 79 | 41 | 29 | 36 | 1,5 | 8 | .0800 | ● | ● |
| 8,10 | MJ9x1 | | 89 | 47 | 35 | 40 | 1,5 | 10 | .0810 | ● | ● |
| 8,20 | M9x0,75 | | 89 | 47 | 35 | 40 | 1,5 | 10 | .0820 | ● | ● |
| 8,30 | | | 89 | 47 | 35 | 40 | 1,6 | 10 | .0830 | ● | ● |
| 8,40 | | M9 (GAL) | 89 | 47 | 35 | 40 | 1,6 | 10 | .0840 | ● | ● |
| 8,45 | | M9 | 89 | 47 | 35 | 40 | 1,6 | 10 | .0845 | ● | ● |
| 8,50 | M10 / M9x0,5 | | 89 | 47 | 35 | 40 | 1,6 | 10 | .0850 | ● | ● |
| 8,60 | MJ10x1,5 | M9x1 | 89 | 47 | 35 | 40 | 1,6 | 10 | .0860 | ● | ● |
| 8,70 | | M9x0,75 | 89 | 47 | 35 | 40 | 1,6 | 10 | .0870 | ● | ● |
| 8,80 | M10x1,25 | M9x0,5 | 89 | 47 | 35 | 40 | 1,7 | 10 | .0880 | ● | ● |
| 8,90 | MJ10x1,25 | | 89 | 47 | 35 | 40 | 1,7 | 10 | .0890 | ● | ● |
| 9,00 | M10x1 | | 89 | 47 | 35 | 40 | 1,7 | 10 | .0900 | ● | ● |
| 9,10 | MJ10x1 | | 89 | 47 | 35 | 40 | 1,7 | 10 | .0910 | ● | ● |
| 9,20 | M10x0,75 | | 89 | 47 | 35 | 40 | 1,7 | 10 | .0920 | ● | ● |
| 9,30 | | M10 (GAL) | 89 | 47 | 35 | 40 | 1,7 | 10 | .0930 | ● | ● |
| 9,35 | MJ10x0,75 | M10 | 89 | 47 | 35 | 40 | 1,8 | 10 | .0935 | ● | ● |
| 9,40 | | M10x1,25 (GAL) | 89 | 47 | 35 | 40 | 1,8 | 10 | .0940 | ● | ● |
| 9,45 | | M10x1,25 | 89 | 47 | 35 | 40 | 1,8 | 10 | .0945 | ● | ● |

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

ø 9,50 mm - ø 20,00 mm



- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

VHM

TIALN
T14

DIN
6537 K

R30

Z2

4FF

140°

IT9-IT10

DIN 6535

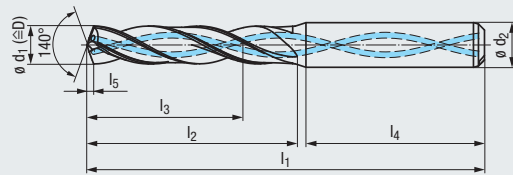
HA

HE

STEEL
Steel materials



Kurze Ausführung
Short design



Bohrtiefe
Drill depth

3 x D

Einsatzgebiete – Material
Applications – material

P 1.1-5.1

M 1.1

K 1.1-4.2

N 1.1-5

N 2.1-8

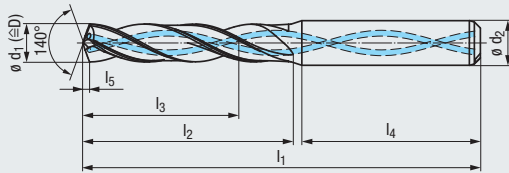
H 1.1-2

Werkzeug-Ident · Tool ident

TA203344 TA503344

| $\varnothing d_1$ m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | | | | | | $\varnothing d_2$ h6 | Dimens.- Ident | EF-Drill-STEEL DIN6537K-HA IK-4FF TIALN-T14 | EF-Drill-STEEL DIN6537K-HE IK-4FF TIALN-T14 |
|-------------------------|-----------------------|------------------------------------|-------|-------|-------|-------|-------|-------------------------|-------------------|--|--|
| | | | l_1 | l_2 | l_3 | l_4 | l_5 | | | TA203344 | TA503344 |
| 9,50 | M11 / M10x0,5 | | 89 | 47 | 35 | 40 | 1,8 | 10 | .0950 | ● | ● |
| 9,60 | MJ10x0,5 / MJ11x1,5 | M10x1 | 89 | 47 | 35 | 40 | 1,8 | 10 | .0960 | ● | ● |
| 9,70 | | M10x0,75 | 89 | 47 | 35 | 40 | 1,8 | 10 | .0970 | ● | ● |
| 9,80 | | M10x0,5 | 89 | 47 | 35 | 40 | 1,8 | 10 | .0980 | ● | ● |
| 9,90 | MJ11x1,25 | | 89 | 47 | 35 | 40 | 1,9 | 10 | .0990 | ● | ● |
| 10,00 | M11x1 | | 89 | 47 | 35 | 40 | 1,9 | 10 | .1000 | ● | ● |
| 10,10 | MJ11x1 | | 102 | 55 | 40 | 45 | 1,9 | 12 | .1010 | ● | ● |
| 10,20 | M12 / M11x0,75 | | 102 | 55 | 40 | 45 | 1,9 | 12 | .1020 | ● | ● |
| 10,30 | | M11 (GAL) | 102 | 55 | 40 | 45 | 1,9 | 12 | .1030 | ● | ● |
| 10,35 | MJ11x0,75 | M11 | 102 | 55 | 40 | 45 | 1,9 | 12 | .1035 | ● | ● |
| 10,40 | | | 102 | 55 | 40 | 45 | 1,9 | 12 | .1040 | ● | ● |
| 10,50 | M12x1,5 | | 102 | 55 | 40 | 45 | 2,0 | 12 | .1050 | ● | ● |
| 10,60 | MJ12x1,5 | M11x1 | 102 | 55 | 40 | 45 | 2,0 | 12 | .1060 | ● | ● |
| 10,70 | | M11x0,75 | 102 | 55 | 40 | 45 | 2,0 | 12 | .1070 | ● | ● |
| 10,80 | M12x1,25 | | 102 | 55 | 40 | 45 | 2,0 | 12 | .1080 | ● | ● |
| 10,90 | MJ12x1,25 | | 102 | 55 | 40 | 45 | 2,0 | 12 | .1090 | ● | ● |
| 11,00 | M12x1 | | 102 | 55 | 40 | 45 | 2,1 | 12 | .1100 | ● | ● |
| 11,10 | MJ12x1 | | 102 | 55 | 40 | 45 | 2,1 | 12 | .1110 | ● | ● |
| 11,20 | M12x0,75 | M12 (GAL) | 102 | 55 | 40 | 45 | 2,1 | 12 | .1120 | ● | ● |
| 11,25 | | M12 | 102 | 55 | 40 | 45 | 2,1 | 12 | .1125 | ● | ● |
| 11,30 | | M12x1,5 (GAL) | 102 | 55 | 40 | 45 | 2,1 | 12 | .1130 | ● | ● |
| 11,35 | | M12x1,5 | 102 | 55 | 40 | 45 | 2,1 | 12 | .1135 | ● | ● |
| 11,40 | | M12x1,25 (GAL) | 102 | 55 | 40 | 45 | 2,1 | 12 | .1140 | ● | ● |
| 11,45 | | M12x1,25 | 102 | 55 | 40 | 45 | 2,1 | 12 | .1145 | ● | ● |
| 11,50 | | | 102 | 55 | 40 | 45 | 2,1 | 12 | .1150 | ● | ● |
| 11,60 | | M12x1 | 102 | 55 | 40 | 45 | 2,2 | 12 | .1160 | ● | ● |
| 11,70 | | M12x0,75 | 102 | 55 | 40 | 45 | 2,2 | 12 | .1170 | ● | ● |
| 11,80 | | | 102 | 55 | 40 | 45 | 2,2 | 12 | .1180 | ● | ● |
| 11,90 | | | 102 | 55 | 40 | 45 | 2,2 | 12 | .1190 | ● | ● |
| 12,00 | M14 | | 102 | 55 | 40 | 45 | 2,2 | 12 | .1200 | ● | ● |
| 12,20 | | | 107 | 60 | 43 | 45 | 2,3 | 14 | .1220 | ● | ● |
| 12,30 | | | 107 | 60 | 43 | 45 | 2,3 | 14 | .1230 | ● | ● |
| 12,50 | M14x1,5 | | 107 | 60 | 43 | 45 | 2,3 | 14 | .1250 | ● | ● |
| 12,60 | MJ14x1,5 | M13x1 | 107 | 60 | 43 | 45 | 2,3 | 14 | .1260 | ● | ● |
| 12,70 | | M13x0,75 | 107 | 60 | 43 | 45 | 2,4 | 14 | .1270 | ● | ● |
| 12,80 | M14x1,25 | | 107 | 60 | 43 | 45 | 2,4 | 14 | .1280 | ● | ● |
| 12,90 | MJ14x1,25 | | 107 | 60 | 43 | 45 | 2,4 | 14 | .1290 | ● | ● |
| 13,00 | M14x1 | | 107 | 60 | 43 | 45 | 2,4 | 14 | .1300 | ● | ● |
| 13,10 | MJ14x1 | M14 | 107 | 60 | 43 | 45 | 2,4 | 14 | .1310 | ● | ● |
| 13,20 | M14x0,75 | | 107 | 60 | 43 | 45 | 2,5 | 14 | .1320 | ● | ● |
| 13,30 | | | 107 | 60 | 43 | 45 | 2,5 | 14 | .1330 | ● | ● |
| 13,35 | | M14x1,5 | 107 | 60 | 43 | 45 | 2,5 | 14 | .1335 | ● | ● |
| 13,45 | | M14x1,25 | 107 | 60 | 43 | 45 | 2,5 | 14 | .1345 | ● | ● |

Kurze Ausführung
Short design



VHM **TIALN T14**

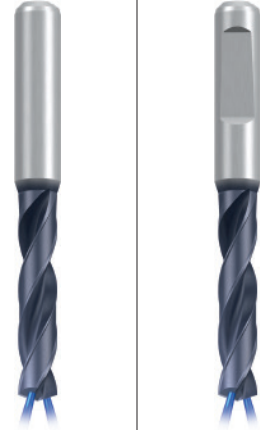
DIN 6537 K **R30**

Z2 **4FF**

140° **IT9-IT10**

DIN 6535
HA HE

STEEL
Steel materials



- Product Finder
- v_c / f
- STEEL**
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

Bohrtiefe
Drill depth

3 x D

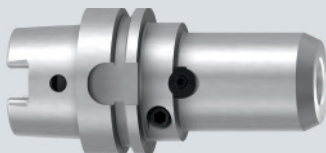
Einsatzgebiete – Material
Applications – material 510

P 1.1-5.1 **M** 1.1 **K** 1.1-4.2
N 1.1-5 **N** 2.1-8 **H** 1.1-2

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

Werkzeug-Ident · Tool ident

| $\varnothing d_1$ m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | | | | | | $\varnothing d_2$ h6 | Dimens.- Ident | TA203344 | | TA503344 | |
|-------------------------|-----------------------|------------------------------------|-------|-------|-------|-------|-------|-------------------------|-------------------|--|--|----------|--|
| | | | l_1 | l_2 | l_3 | l_4 | l_5 | | | EF-Drill-STEEL DIN6537K-HA IK-4FF TIALN-T14 | EF-Drill-STEEL DIN6537K-HE IK-4FF TIALN-T14 | | |
| 13,50 | | | 107 | 60 | 43 | 45 | 2,5 | 14 | .1350 | ● | ● | | |
| 13,60 | MJ15x1,5 | M14x1 | 107 | 60 | 43 | 45 | 2,5 | 14 | .1360 | ● | ● | | |
| 13,70 | | M14x0,75 | 107 | 60 | 43 | 45 | 2,5 | 14 | .1370 | ● | ● | | |
| 13,80 | | | 107 | 60 | 43 | 45 | 2,6 | 14 | .1380 | ● | ● | | |
| 14,00 | M16 / M15x1 | | 107 | 60 | 43 | 45 | 2,6 | 14 | .1400 | ● | ● | | |
| 14,10 | MJ15x1 | | 115 | 65 | 45 | 48 | 2,6 | 16 | .1410 | ● | ● | | |
| 14,30 | | | 115 | 65 | 45 | 48 | 2,7 | 16 | .1430 | ● | ● | | |
| 14,40 | | | 115 | 65 | 45 | 48 | 2,7 | 16 | .1440 | ● | ● | | |
| 14,50 | M16x1,5 | | 115 | 65 | 45 | 48 | 2,7 | 16 | .1450 | ● | ● | | |
| 14,60 | MJ16x1,5 | M15x1 | 115 | 65 | 45 | 48 | 2,7 | 16 | .1460 | ● | ● | | |
| 14,70 | | M15x0,75 | 115 | 65 | 45 | 48 | 2,7 | 16 | .1470 | ● | ● | | |
| 14,80 | | | 115 | 65 | 45 | 48 | 2,7 | 16 | .1480 | ● | ● | | |
| 15,00 | M16x1 | | 115 | 65 | 45 | 48 | 2,8 | 16 | .1500 | ● | ● | | |
| 15,10 | MJ16x1 | M16 | 115 | 65 | 45 | 48 | 2,8 | 16 | .1510 | ● | ● | | |
| 15,35 | | M16x1,5 | 115 | 65 | 45 | 48 | 2,8 | 16 | .1535 | ● | ● | | |
| 15,50 | M18 | | 115 | 65 | 45 | 48 | 2,9 | 16 | .1550 | ● | ● | | |
| 15,60 | | M16x1 | 115 | 65 | 45 | 48 | 2,9 | 16 | .1560 | ● | ● | | |
| 16,00 | M18x2 | | 115 | 65 | 45 | 48 | 3,0 | 16 | .1600 | ● | ● | | |
| 16,50 | M18x1,5 | | 123 | 73 | 51 | 48 | 3,1 | 18 | .1650 | ● | ● | | |
| 17,00 | M18x1 | | 123 | 73 | 51 | 48 | 3,1 | 18 | .1700 | ● | ● | | |
| 17,50 | M20 | | 123 | 73 | 51 | 48 | 3,2 | 18 | .1750 | ● | ● | | |
| 17,60 | | M18x1 | 123 | 73 | 51 | 48 | 3,3 | 18 | .1760 | ● | ● | | |
| 18,00 | M20x2 | | 123 | 73 | 51 | 48 | 3,3 | 18 | .1800 | ● | ● | | |
| 18,50 | M20x1,5 | | 131 | 79 | 55 | 50 | 3,4 | 20 | .1850 | ● | ● | | |
| 18,85 | | M20 | 131 | 79 | 55 | 50 | 3,5 | 20 | .1885 | ● | ● | | |
| 19,00 | M20x1 | | 131 | 79 | 55 | 50 | 3,5 | 20 | .1900 | ● | ● | | |
| 19,35 | | M20x1,5 | 131 | 79 | 55 | 50 | 3,6 | 20 | .1935 | ● | ● | | |
| 19,50 | M22 | | 131 | 79 | 55 | 50 | 3,6 | 20 | .1950 | ● | ● | | |
| 19,60 | | M20x1 | 131 | 79 | 55 | 50 | 3,6 | 20 | .1960 | ● | ● | | |
| 20,00 | M22x2 | | 131 | 79 | 55 | 50 | 3,7 | 20 | .2000 | ● | ● | | |



Hydrodehnspannfutter
siehe Seite 564 - 665

Hydraulic expansion chucks,
see page 564 - 665

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör
Accessories
- Tech. Info

VHM **TIALN T14**

DIN 6537 L **R30**

Z2 **4FF**

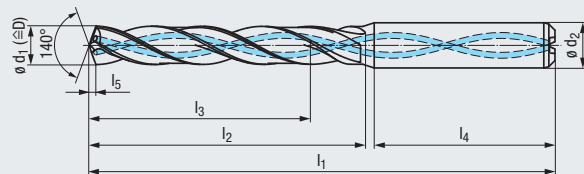
140° **IT9-IT10**

DIN 6535
HA HE

STEEL
Steel materials



Lange Ausführung
Long design



Bohrtiefe
Drill depth

5 x D

Einsatzgebiete – Material
Applications – material

P 1.1-5.1
M 1.1
K 1.1-4.2
N 1.1-5
N 2.1-8
H 1.1-2

Werkzeug-Ident · Tool ident

TA213344 TA513344

| $\emptyset d_1$ m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | | | | | | $\emptyset d_2$ h6 | Dimens.- Ident | EF-Drill-STEEL DIN6537L-HA IK-4FF TIALN-T14 | EF-Drill-STEEL DIN6537L-HE IK-4FF TIALN-T14 |
|-----------------------|-----------------------|------------------------------------|-------|-------|-------|-------|-------|-----------------------|-------------------|--|--|
| | | | l_1 | l_2 | l_3 | l_4 | l_5 | | | TA213344 | TA513344 |
| 2,80 | | M3 | 61 | 22 | 17 | 36 | 0,6 | 6 | .0280 | ● | ● |
| 2,85 | | | 61 | 22 | 17 | 36 | 0,6 | 6 | .0285 | ● | ● |
| 2,90 | M3,5 | M3x0,25 | 61 | 22 | 17 | 36 | 0,6 | 6 | .0290 | ● | ● |
| 3,00 | M3,5x0,5 / MJ3,5x0,6 | | 66 | 28 | 23 | 36 | 0,6 | 6 | .0300 | ● | ● |
| 3,10 | | | 66 | 28 | 23 | 36 | 0,6 | 6 | .0310 | ● | ● |
| 3,15 | M3,5x0,35 | | 66 | 28 | 23 | 36 | 0,6 | 6 | .0315 | ● | ● |
| 3,20 | MJ3,5x0,35 | | 66 | 28 | 23 | 36 | 0,6 | 6 | .0320 | ● | ● |
| 3,25 | | M3,5 | 66 | 28 | 23 | 36 | 0,6 | 6 | .0325 | ● | ● |
| 3,30 | M4 | M3,5x0,5 | 66 | 28 | 23 | 36 | 0,7 | 6 | .0330 | ● | ● |
| 3,35 | | | 66 | 28 | 23 | 36 | 0,7 | 6 | .0335 | ● | ● |
| 3,38 | | M3,5x0,35 | 66 | 28 | 23 | 36 | 0,7 | 6 | .0338 | ● | ● |
| 3,40 | MJ4x0,7 | | 66 | 28 | 23 | 36 | 0,7 | 6 | .0340 | ● | ● |
| 3,50 | M4x0,5 | | 66 | 28 | 23 | 36 | 0,7 | 6 | .0350 | ● | ● |
| 3,55 | | | 66 | 28 | 23 | 36 | 0,7 | 6 | .0355 | ● | ● |
| 3,60 | MJ4x0,5 | | 66 | 28 | 23 | 36 | 0,7 | 6 | .0360 | ● | ● |
| 3,65 | M4x0,35 | | 66 | 28 | 23 | 36 | 0,7 | 6 | .0365 | ● | ● |
| 3,70 | M4,5 | M4 | 66 | 28 | 23 | 36 | 0,7 | 6 | .0370 | ● | ● |
| 3,80 | | M4x0,5 | 74 | 36 | 29 | 36 | 0,7 | 6 | .0380 | ● | ● |
| 3,88 | | M4x0,35 | 74 | 36 | 29 | 36 | 0,8 | 6 | .0388 | ● | ● |
| 3,90 | MJ4,5x0,75 | | 74 | 36 | 29 | 36 | 0,8 | 6 | .0390 | ● | ● |
| 4,00 | | | 74 | 36 | 29 | 36 | 0,8 | 6 | .0400 | ● | ● |
| 4,10 | MJ4,5x0,5 | | 74 | 36 | 29 | 36 | 0,8 | 6 | .0410 | ● | ● |
| 4,15 | M5x0,9 | | 74 | 36 | 29 | 36 | 0,8 | 6 | .0415 | ● | ● |
| 4,20 | M5 / M5x0,75 | M4,5 | 74 | 36 | 29 | 36 | 0,8 | 6 | .0420 | ● | ● |
| 4,30 | MJ5x0,8 | M4,5x0,5 | 74 | 36 | 29 | 36 | 0,8 | 6 | .0430 | ● | ● |
| 4,35 | | | 74 | 36 | 29 | 36 | 0,8 | 6 | .0435 | ● | ● |
| 4,40 | | | 74 | 36 | 29 | 36 | 0,9 | 6 | .0440 | ● | ● |
| 4,45 | | | 74 | 36 | 29 | 36 | 0,9 | 6 | .0445 | ● | ● |
| 4,50 | M5x0,5 | | 74 | 36 | 29 | 36 | 0,9 | 6 | .0450 | ● | ● |
| 4,60 | M5,5 / MJ5x0,5 | | 74 | 36 | 29 | 36 | 0,9 | 6 | .0460 | ● | ● |
| 4,65 | | M5 | 74 | 36 | 29 | 36 | 0,9 | 6 | .0465 | ● | ● |
| 4,70 | | M5x0,75 | 74 | 36 | 29 | 36 | 0,9 | 6 | .0470 | ● | ● |
| 4,80 | | M5x0,5 | 82 | 44 | 35 | 36 | 0,9 | 6 | .0480 | ● | ● |
| 4,90 | | | 82 | 44 | 35 | 36 | 0,9 | 6 | .0490 | ● | ● |
| 5,00 | M6 | | 82 | 44 | 35 | 36 | 1,0 | 6 | .0500 | ● | ● |
| 5,10 | MJ6x1 | M5,5 | 82 | 44 | 35 | 36 | 1,0 | 6 | .0510 | ● | ● |
| 5,20 | M6x0,75 | | 82 | 44 | 35 | 36 | 1,0 | 6 | .0520 | ● | ● |
| 5,25 | | | 82 | 44 | 35 | 36 | 1,0 | 6 | .0525 | ● | ● |
| 5,30 | | M5,5x0,5 | 82 | 44 | 35 | 36 | 1,0 | 6 | .0530 | ● | ● |
| 5,40 | | | 82 | 44 | 35 | 36 | 1,0 | 6 | .0540 | ● | ● |
| 5,50 | M6x0,5 | | 82 | 44 | 35 | 36 | 1,1 | 6 | .0550 | ● | ● |
| 5,55 | | M6 (GAL) | 82 | 44 | 35 | 36 | 1,1 | 6 | .0555 | ● | ● |
| 5,60 | MJ6x0,5 | M6 | 82 | 44 | 35 | 36 | 1,1 | 6 | .0560 | ● | ● |

VHM **TIALN T14**

DIN 6537 L **R30**

Z2 **4FF**

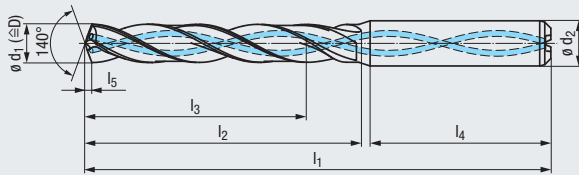
140° **IT9-IT10**

DIN 6535
HA HE

STEEL
Steel materials

- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

Lange Ausführung
Long design



Bohrtiefe
Drill depth

5 x D

Einsatzgebiete – Material
Applications – material » 510

P 1.1-5.1 **M** 1.1 **K** 1.1-4.2
N 1.1-5 **N** 2.1-8 **H** 1.1-2

Werkzeug-Ident · Tool ident

TA213344 TA513344

| ø d ₁ m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | | | | | | ø d ₂ h6 | Dimens.- Ident | EF-Drill-STEEL | |
|------------------------|-----------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|------------------------|-------------------|------------------------------------|------------------------------------|
| | | | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | | | DIN6537L-HA IK-4FF TIALN-T14 | DIN6537L-HE IK-4FF TIALN-T14 |
| 5,70 | | M6x0,75 | 82 | 44 | 35 | 36 | 1,1 | 6 | .0570 | ● | ● |
| 5,80 | | M6x0,5 | 82 | 44 | 35 | 36 | 1,1 | 6 | .0580 | ● | ● |
| 5,90 | | | 82 | 44 | 35 | 36 | 1,1 | 6 | .0590 | ● | ● |
| 6,00 | M7 | | 82 | 44 | 35 | 36 | 1,1 | 6 | .0600 | ● | ● |
| 6,10 | MJ7x1 | | 91 | 53 | 43 | 36 | 1,2 | 8 | .0610 | ● | ● |
| 6,20 | M7x0,75 | | 91 | 53 | 43 | 36 | 1,2 | 8 | .0620 | ● | ● |
| 6,30 | | | 91 | 53 | 43 | 36 | 1,2 | 8 | .0630 | ● | ● |
| 6,35 | MJ7x0,75 | | 91 | 53 | 43 | 36 | 1,2 | 8 | .0635 | ● | ● |
| 6,40 | | | 91 | 53 | 43 | 36 | 1,2 | 8 | .0640 | ● | ● |
| 6,50 | M7x0,5 | | 91 | 53 | 43 | 36 | 1,2 | 8 | .0650 | ● | ● |
| 6,60 | | M7 | 91 | 53 | 43 | 36 | 1,3 | 8 | .0660 | ● | ● |
| 6,70 | | M7x0,75 | 91 | 53 | 43 | 36 | 1,3 | 8 | .0670 | ● | ● |
| 6,80 | M8 | M7x0,5 | 91 | 53 | 43 | 36 | 1,3 | 8 | .0680 | ● | ● |
| 6,90 | MJ8x1,25 | | 91 | 53 | 43 | 36 | 1,3 | 8 | .0690 | ● | ● |
| 7,00 | M8x1 | | 91 | 53 | 43 | 36 | 1,3 | 8 | .0700 | ● | ● |
| 7,10 | MJ8x1 | | 91 | 53 | 43 | 36 | 1,3 | 8 | .0710 | ● | ● |
| 7,20 | M8x0,75 | | 91 | 53 | 43 | 36 | 1,4 | 8 | .0720 | ● | ● |
| 7,30 | | | 91 | 53 | 43 | 36 | 1,4 | 8 | .0730 | ● | ● |
| 7,40 | | M8 (GAL) | 91 | 53 | 43 | 36 | 1,4 | 8 | .0740 | ● | ● |
| 7,45 | | M8 | 91 | 53 | 43 | 36 | 1,4 | 8 | .0745 | ● | ● |
| 7,50 | M8x0,5 | | 91 | 53 | 43 | 36 | 1,4 | 8 | .0750 | ● | ● |
| 7,60 | | M8x1 | 91 | 53 | 43 | 36 | 1,4 | 8 | .0760 | ● | ● |
| 7,70 | | M8x0,75 | 91 | 53 | 43 | 36 | 1,5 | 8 | .0770 | ● | ● |
| 7,80 | M9 | M8x0,5 | 91 | 53 | 43 | 36 | 1,5 | 8 | .0780 | ● | ● |
| 7,90 | MJ9x1,25 | | 91 | 53 | 43 | 36 | 1,5 | 8 | .0790 | ● | ● |
| 8,00 | M9x1 | | 91 | 53 | 43 | 36 | 1,5 | 8 | .0800 | ● | ● |
| 8,10 | MJ9x1 | | 103 | 61 | 49 | 40 | 1,5 | 10 | .0810 | ● | ● |
| 8,20 | M9x0,75 | | 103 | 61 | 49 | 40 | 1,5 | 10 | .0820 | ● | ● |
| 8,30 | | | 103 | 61 | 49 | 40 | 1,6 | 10 | .0830 | ● | ● |
| 8,40 | | M9 (GAL) | 103 | 61 | 49 | 40 | 1,6 | 10 | .0840 | ● | ● |
| 8,45 | | M9 | 103 | 61 | 49 | 40 | 1,6 | 10 | .0845 | ● | ● |
| 8,50 | M10 / M9x0,5 | | 103 | 61 | 49 | 40 | 1,6 | 10 | .0850 | ● | ● |
| 8,60 | MJ10x1,5 | M9x1 | 103 | 61 | 49 | 40 | 1,6 | 10 | .0860 | ● | ● |
| 8,70 | | M9x0,75 | 103 | 61 | 49 | 40 | 1,6 | 10 | .0870 | ● | ● |
| 8,80 | M10x1,25 | M9x0,5 | 103 | 61 | 49 | 40 | 1,7 | 10 | .0880 | ● | ● |
| 8,90 | MJ10x1,25 | | 103 | 61 | 49 | 40 | 1,7 | 10 | .0890 | ● | ● |
| 9,00 | M10x1 | | 103 | 61 | 49 | 40 | 1,7 | 10 | .0900 | ● | ● |
| 9,10 | MJ10x1 | | 103 | 61 | 49 | 40 | 1,7 | 10 | .0910 | ● | ● |
| 9,20 | M10x0,75 | | 103 | 61 | 49 | 40 | 1,7 | 10 | .0920 | ● | ● |
| 9,30 | | M10 (GAL) | 103 | 61 | 49 | 40 | 1,7 | 10 | .0930 | ● | ● |
| 9,35 | MJ10x0,75 | M10 | 103 | 61 | 49 | 40 | 1,8 | 10 | .0935 | ● | ● |
| 9,40 | | M10x1,25 (GAL) | 103 | 61 | 49 | 40 | 1,8 | 10 | .0940 | ● | ● |
| 9,45 | | M10x1,25 | 103 | 61 | 49 | 40 | 1,8 | 10 | .0945 | ● | ● |

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

ø 9,50 mm - ø 20,00 mm



- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

VHM

TIALN
T14

DIN
6537 L

R30

Z2

4FF

140°

IT9-IT10

DIN 6535

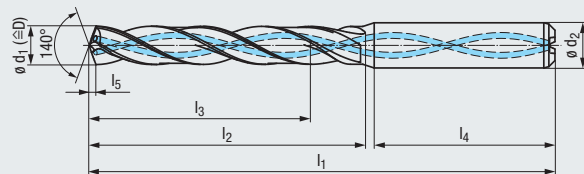
HA

HE

STEEL
Steel materials



Lange Ausführung
Long design



Bohrtiefe
Drill depth

5 x D

Einsatzgebiete – Material
Applications – material

| | | |
|-----------|---------|-----------|
| P 1.1-5.1 | M 1.1 | K 1.1-4.2 |
| N 1.1-5 | N 2.1-8 | H 1.1-2 |

Werkzeug-Ident · Tool ident

TA213344 **TA513344**

| $\emptyset d_1$ m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | | | | | | $\emptyset d_2$ h6 | Dimens.- Ident | EF-Drill-STEEL DIN6537L-HA IK-4FF TIALN-T14 | EF-Drill-STEEL DIN6537L-HE IK-4FF TIALN-T14 |
|-----------------------|-----------------------|------------------------------------|-------|-------|-------|-------|-------|-----------------------|-------------------|--|--|
| | | | l_1 | l_2 | l_3 | l_4 | l_5 | | | TA213344 | TA513344 |
| 9,50 | M11 / M10x0,5 | | 103 | 61 | 49 | 40 | 1,8 | 10 | .0950 | ● | ● |
| 9,60 | MJ10x0,5 / MJ11x1,5 | M10x1 | 103 | 61 | 49 | 40 | 1,8 | 10 | .0960 | ● | ● |
| 9,70 | | M10x0,75 | 103 | 61 | 49 | 40 | 1,8 | 10 | .0970 | ● | ● |
| 9,80 | | M10x0,5 | 103 | 61 | 49 | 40 | 1,8 | 10 | .0980 | ● | ● |
| 9,90 | MJ11x1,25 | | 103 | 61 | 49 | 40 | 1,9 | 10 | .0990 | ● | ● |
| 10,00 | M11x1 | | 103 | 61 | 49 | 40 | 1,9 | 10 | .1000 | ● | ● |
| 10,10 | MJ11x1 | | 118 | 71 | 56 | 45 | 1,9 | 12 | .1010 | ● | ● |
| 10,20 | M12 / M11x0,75 | | 118 | 71 | 56 | 45 | 1,9 | 12 | .1020 | ● | ● |
| 10,30 | | M11 (GAL) | 118 | 71 | 56 | 45 | 1,9 | 12 | .1030 | ● | ● |
| 10,35 | MJ11x0,75 | M11 | 118 | 71 | 56 | 45 | 1,9 | 12 | .1035 | ● | ● |
| 10,40 | | | 118 | 71 | 56 | 45 | 1,9 | 12 | .1040 | ● | ● |
| 10,50 | M12x1,5 | | 118 | 71 | 56 | 45 | 2,0 | 12 | .1050 | ● | ● |
| 10,60 | MJ12x1,5 | M11x1 | 118 | 71 | 56 | 45 | 2,0 | 12 | .1060 | ● | ● |
| 10,70 | | M11x0,75 | 118 | 71 | 56 | 45 | 2,0 | 12 | .1070 | ● | ● |
| 10,80 | M12x1,25 | | 118 | 71 | 56 | 45 | 2,0 | 12 | .1080 | ● | ● |
| 10,90 | MJ12x1,25 | | 118 | 71 | 56 | 45 | 2,0 | 12 | .1090 | ● | ● |
| 11,00 | M12x1 | | 118 | 71 | 56 | 45 | 2,1 | 12 | .1100 | ● | ● |
| 11,10 | MJ12x1 | | 118 | 71 | 56 | 45 | 2,1 | 12 | .1110 | ● | ● |
| 11,20 | M12x0,75 | M12 (GAL) | 118 | 71 | 56 | 45 | 2,1 | 12 | .1120 | ● | ● |
| 11,25 | | M12 | 118 | 71 | 56 | 45 | 2,1 | 12 | .1125 | ● | ● |
| 11,30 | | M12x1,5 (GAL) | 118 | 71 | 56 | 45 | 2,1 | 12 | .1130 | ● | ● |
| 11,35 | | M12x1,5 | 118 | 71 | 56 | 45 | 2,1 | 12 | .1135 | ● | ● |
| 11,40 | | M12x1,25 (GAL) | 118 | 71 | 56 | 45 | 2,1 | 12 | .1140 | ● | ● |
| 11,45 | | M12x1,25 | 118 | 71 | 56 | 45 | 2,1 | 12 | .1145 | ● | ● |
| 11,50 | | | 118 | 71 | 56 | 45 | 2,1 | 12 | .1150 | ● | ● |
| 11,60 | | M12x1 | 118 | 71 | 56 | 45 | 2,2 | 12 | .1160 | ● | ● |
| 11,70 | | M12x0,75 | 118 | 71 | 56 | 45 | 2,2 | 12 | .1170 | ● | ● |
| 11,80 | | | 118 | 71 | 56 | 45 | 2,2 | 12 | .1180 | ● | ● |
| 11,90 | | | 118 | 71 | 56 | 45 | 2,2 | 12 | .1190 | ● | ● |
| 12,00 | M14 | | 118 | 71 | 56 | 45 | 2,2 | 12 | .1200 | ● | ● |
| 12,20 | | | 124 | 77 | 60 | 45 | 2,3 | 14 | .1220 | ● | ● |
| 12,30 | | | 124 | 77 | 60 | 45 | 2,3 | 14 | .1230 | ● | ● |
| 12,50 | M14x1,5 | | 124 | 77 | 60 | 45 | 2,3 | 14 | .1250 | ● | ● |
| 12,60 | MJ14x1,5 | M13x1 | 124 | 77 | 60 | 45 | 2,3 | 14 | .1260 | ● | ● |
| 12,70 | | M13x0,75 | 124 | 77 | 60 | 45 | 2,4 | 14 | .1270 | ● | ● |
| 12,80 | M14x1,25 | | 124 | 77 | 60 | 45 | 2,4 | 14 | .1280 | ● | ● |
| 12,90 | MJ14x1,25 | | 124 | 77 | 60 | 45 | 2,4 | 14 | .1290 | ● | ● |
| 13,00 | M14x1 | | 124 | 77 | 60 | 45 | 2,4 | 14 | .1300 | ● | ● |
| 13,10 | MJ14x1 | M14 | 124 | 77 | 60 | 45 | 2,4 | 14 | .1310 | ● | ● |
| 13,20 | M14x0,75 | | 124 | 77 | 60 | 45 | 2,5 | 14 | .1320 | ● | ● |
| 13,30 | | | 124 | 77 | 60 | 45 | 2,5 | 14 | .1330 | ● | ● |
| 13,35 | | M14x1,5 | 124 | 77 | 60 | 45 | 2,5 | 14 | .1335 | ● | ● |
| 13,45 | | M14x1,25 | 124 | 77 | 60 | 45 | 2,5 | 14 | .1345 | ● | ● |

VHM **TIALN T14**

DIN 6537 L **R30**

Z2 **4FF**

140° **IT9-IT10**

DIN 6535
HA HE

STEEL
Steel materials

Product Finder

v_c / f

STEEL

VA

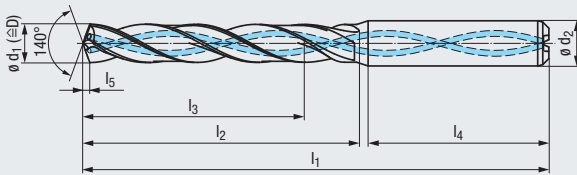
GG

HCUT

Zubehör
Accessories

Tech. Info

Lange Ausführung
Long design



Bohrtiefe
Drill depth

5 x D

Einsatzgebiete – Material
Applications – material 510

P 1.1-5.1 **M** 1.1 **K** 1.1-4.2
N 1.1-5 **N** 2.1-8 **H** 1.1-2

Werkzeug-Ident · Tool ident

TA213344 TA513344

| ø d ₁ m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | | | | | | ø d ₂ h6 | Dimens.- Ident | EF-Drill-STEEL | |
|------------------------|-----------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|------------------------|-------------------|------------------------------------|------------------------------------|
| | | | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | | | DIN6537L-HA IK-4FF TIALN-T14 | DIN6537L-HE IK-4FF TIALN-T14 |
| 13,50 | | | 124 | 77 | 60 | 45 | 2,5 | 14 | .1350 | ● | ● |
| 13,60 | MJ15x1,5 | M14x1 | 124 | 77 | 60 | 45 | 2,5 | 14 | .1360 | ● | ● |
| 13,70 | | M14x0,75 | 124 | 77 | 60 | 45 | 2,5 | 14 | .1370 | ● | ● |
| 13,80 | | | 124 | 77 | 60 | 45 | 2,6 | 14 | .1380 | ● | ● |
| 14,00 | M16 / M15x1 | | 124 | 77 | 60 | 45 | 2,6 | 14 | .1400 | ● | ● |
| 14,10 | MJ15x1 | | 133 | 83 | 63 | 48 | 2,6 | 16 | .1410 | ● | ● |
| 14,30 | | | 133 | 83 | 63 | 48 | 2,7 | 16 | .1430 | ● | ● |
| 14,40 | | | 133 | 83 | 63 | 48 | 2,7 | 16 | .1440 | ● | ● |
| 14,50 | M16x1,5 | | 133 | 83 | 63 | 48 | 2,7 | 16 | .1450 | ● | ● |
| 14,60 | MJ16x1,5 | M15x1 | 133 | 83 | 63 | 48 | 2,7 | 16 | .1460 | ● | ● |
| 14,70 | | M15x0,75 | 133 | 83 | 63 | 48 | 2,7 | 16 | .1470 | ● | ● |
| 14,80 | | | 133 | 83 | 63 | 48 | 2,7 | 16 | .1480 | ● | ● |
| 15,00 | M16x1 | | 133 | 83 | 63 | 48 | 2,8 | 16 | .1500 | ● | ● |
| 15,10 | MJ16x1 | M16 | 133 | 83 | 63 | 48 | 2,8 | 16 | .1510 | ● | ● |
| 15,35 | | M16x1,5 | 133 | 83 | 63 | 48 | 2,8 | 16 | .1535 | ● | ● |
| 15,50 | M18 | | 133 | 83 | 63 | 48 | 2,9 | 16 | .1550 | ● | ● |
| 15,60 | | M16x1 | 133 | 83 | 63 | 48 | 2,9 | 16 | .1560 | ● | ● |
| 16,00 | M18x2 | | 133 | 83 | 63 | 48 | 3,0 | 16 | .1600 | ● | ● |
| 16,50 | M18x1,5 | | 143 | 93 | 71 | 48 | 3,1 | 18 | .1650 | ● | ● |
| 17,00 | M18x1 | | 143 | 93 | 71 | 48 | 3,1 | 18 | .1700 | ● | ● |
| 17,50 | M20 | | 143 | 93 | 71 | 48 | 3,2 | 18 | .1750 | ● | ● |
| 17,60 | | M18x1 | 143 | 93 | 71 | 48 | 3,3 | 18 | .1760 | ● | ● |
| 18,00 | M20x2 | | 143 | 93 | 71 | 48 | 3,3 | 18 | .1800 | ● | ● |
| 18,50 | M20x1,5 | | 153 | 101 | 77 | 50 | 3,4 | 20 | .1850 | ● | ● |
| 18,85 | | M20 | 153 | 101 | 77 | 50 | 3,5 | 20 | .1885 | ● | ● |
| 19,00 | M20x1 | | 153 | 101 | 77 | 50 | 3,5 | 20 | .1900 | ● | ● |
| 19,35 | | M20x1,5 | 153 | 101 | 77 | 50 | 3,6 | 20 | .1935 | ● | ● |
| 19,50 | M22 | | 153 | 101 | 77 | 50 | 3,6 | 20 | .1950 | ● | ● |
| 19,60 | | M20x1 | 153 | 101 | 77 | 50 | 3,6 | 20 | .1960 | ● | ● |
| 20,00 | M22x2 | | 153 | 101 | 77 | 50 | 3,7 | 20 | .2000 | ● | ● |

3 x D

5 x D

6 x D

8 x D

2-3,5 x D



- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

VHM TIALN T14

R30

Z2 4FF

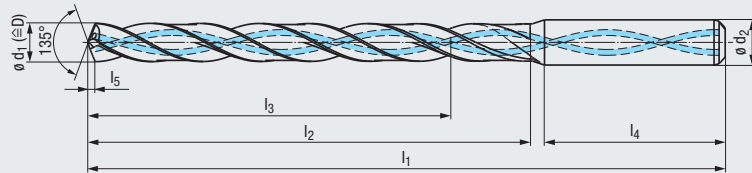
135° IT9-IT11

DIN 6535 HA

STEEL
Steel materials



Extra-lange Ausführung
Extra long design



Eine Vorzentrierung durch den Einsatz eines Vorbohrers (z.B. EF-Drill nach DIN 6537 K) wird empfohlen
Preparatory centering with a centering drill (p.ex. EF-Drill acc. DIN 6537 K) is recommended

Bohrtiefe
Drill depth

8 x D

Einsatzgebiete – Material
Applications – material

P 1.1-5.1 M 1.1 K 1.1-4.2
N 1.1-5 N 2.1-8

Werkzeug-Ident · Tool ident

TA223344

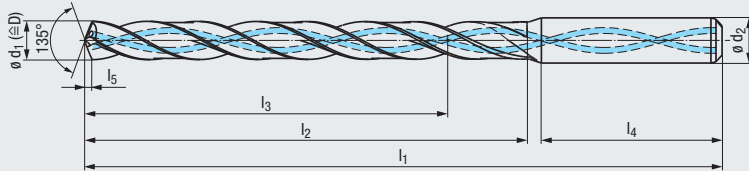
| $\emptyset d_1$ m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | l_1 | l_2 | l_3 | l_4 | l_5 | $\emptyset d_2$ h6 | Dimens.- Ident | EF-Drill-STEEL 8xD-HA IK-4FF TIALN-T14 | |
|-----------------------|-----------------------|------------------------------------|-------|-------|-------|-------|-------|-----------------------|-------------------|---|---|
| | | | | | | | | | | ● | ● |
| 2,80 | | M3 | 70 | 30 | 24 | 36 | 0,6 | 6 | .0280 | ● | |
| 2,85 | | | 70 | 30 | 24 | 36 | 0,6 | 6 | .0285 | ● | |
| 2,90 | M3,5 | M3x0,25 | 70 | 30 | 24 | 36 | 0,7 | 6 | .0290 | ● | |
| 3,00 | M3,5x0,5 / MJ3,5x0,6 | | 78 | 38 | 30 | 36 | 0,7 | 6 | .0300 | ● | |
| 3,10 | | | 78 | 38 | 30 | 36 | 0,7 | 6 | .0310 | ● | |
| 3,15 | M3,5x0,35 | | 78 | 38 | 30 | 36 | 0,7 | 6 | .0315 | ● | |
| 3,20 | MJ3,5x0,35 | | 78 | 38 | 30 | 36 | 0,7 | 6 | .0320 | ● | |
| 3,25 | | M3,5 | 78 | 38 | 30 | 36 | 0,7 | 6 | .0325 | ● | |
| 3,30 | M4 | M3,5x0,5 | 78 | 38 | 30 | 36 | 0,7 | 6 | .0330 | ● | |
| 3,35 | | | 78 | 38 | 30 | 36 | 0,7 | 6 | .0335 | ● | |
| 3,38 | | M3,5x0,35 | 78 | 38 | 30 | 36 | 0,8 | 6 | .0338 | ● | |
| 3,40 | MJ4x0,7 | | 78 | 38 | 30 | 36 | 0,8 | 6 | .0340 | ● | |
| 3,50 | M4x0,5 | | 78 | 38 | 30 | 36 | 0,8 | 6 | .0350 | ● | |
| 3,55 | | | 78 | 38 | 30 | 36 | 0,8 | 6 | .0355 | ● | |
| 3,60 | MJ4x0,5 | | 78 | 38 | 30 | 36 | 0,8 | 6 | .0360 | ● | |
| 3,65 | M4x0,35 | | 78 | 38 | 30 | 36 | 0,8 | 6 | .0365 | ● | |
| 3,70 | M4,5 | M4 | 78 | 38 | 30 | 36 | 0,8 | 6 | .0370 | ● | |
| 3,80 | | M4x0,5 | 88 | 48 | 38 | 36 | 0,8 | 6 | .0380 | ● | |
| 3,88 | | M4x0,35 | 88 | 48 | 38 | 36 | 0,9 | 6 | .0388 | ● | |
| 3,90 | MJ4,5x0,75 | | 88 | 48 | 38 | 36 | 0,9 | 6 | .0390 | ● | |
| 4,00 | | | 88 | 48 | 38 | 36 | 0,9 | 6 | .0400 | ● | |
| 4,10 | MJ4,5x0,5 | | 88 | 48 | 38 | 36 | 0,9 | 6 | .0410 | ● | |
| 4,15 | M5x0,9 | | 88 | 48 | 38 | 36 | 0,9 | 6 | .0415 | ● | |
| 4,20 | M5 / M5x0,75 | M4,5 | 88 | 48 | 38 | 36 | 0,9 | 6 | .0420 | ● | |
| 4,30 | MJ5x0,8 | M4,5x0,5 | 88 | 48 | 38 | 36 | 0,9 | 6 | .0430 | ● | |
| 4,35 | | | 88 | 48 | 38 | 36 | 1,0 | 6 | .0435 | ● | |
| 4,40 | | | 88 | 48 | 38 | 36 | 1,0 | 6 | .0440 | ● | |
| 4,45 | | | 88 | 48 | 38 | 36 | 1,0 | 6 | .0445 | ● | |
| 4,50 | M5x0,5 | | 88 | 48 | 38 | 36 | 1,0 | 6 | .0450 | ● | |
| 4,60 | M5,5 / MJ5x0,5 | | 88 | 48 | 38 | 36 | 1,0 | 6 | .0460 | ● | |
| 4,65 | | M5 | 88 | 48 | 38 | 36 | 1,0 | 6 | .0465 | ● | |
| 4,70 | | M5x0,75 | 88 | 48 | 38 | 36 | 1,0 | 6 | .0470 | ● | |
| 4,80 | | M5x0,5 | 97 | 60 | 48 | 36 | 1,0 | 6 | .0480 | ● | |
| 4,90 | | | 97 | 60 | 48 | 36 | 1,1 | 6 | .0490 | ● | |
| 5,00 | M6 | | 97 | 60 | 48 | 36 | 1,1 | 6 | .0500 | ● | |
| 5,10 | MJ6x1 | M5,5 | 97 | 60 | 48 | 36 | 1,1 | 6 | .0510 | ● | |
| 5,20 | M6x0,75 | | 97 | 60 | 48 | 36 | 1,1 | 6 | .0520 | ● | |
| 5,25 | | | 97 | 60 | 48 | 36 | 1,1 | 6 | .0525 | ● | |
| 5,30 | | M5,5x0,5 | 97 | 60 | 48 | 36 | 1,1 | 6 | .0530 | ● | |
| 5,40 | | | 97 | 60 | 48 | 36 | 1,2 | 6 | .0540 | ● | |
| 5,50 | M6x0,5 | | 97 | 60 | 48 | 36 | 1,2 | 6 | .0550 | ● | |
| 5,55 | | M6 (GAL) | 97 | 60 | 48 | 36 | 1,2 | 6 | .0555 | ● | |
| 5,60 | MJ6x0,5 | M6 | 97 | 60 | 48 | 36 | 1,2 | 6 | .0560 | ● | |

VHM TIALN T14
R30
Z2 4FF
135° IT9-IT11
DIN 6535
HA

STEEL
Steel
materials



Extra-lange Ausführung
Extra long design



Eine Vorzentrierung durch den Einsatz eines Vorbohrers (z.B. EF-Drill nach DIN 6537 K) wird empfohlen
Preparatory centering with a centering drill (p.ex. EF-Drill acc. DIN 6537 K) is recommended

Bohrtiefe
Drill depth

8 x D

Einsatzgebiete – Material
Applications – material



P 1.1-5.1 M 1.1 K 1.1-4.2
N 1.1-5 N 2.1-8

Werkzeug-Ident · Tool ident

TA223344

| ϕd_1 m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | | | | | | ϕd_2 h6 | Dimens.- Ident | EF-Drill-STEEL 8xD-HA IK-4FF TIALN-T14 |
|------------------|-----------------------|------------------------------------|-------|-------|-------|-------|-------|------------------|-------------------|---|
| | | | l_1 | l_2 | l_3 | l_4 | l_5 | | | |
| 5,70 | | M6x0,75 | 97 | 60 | 48 | 36 | 1,2 | 6 | .0570 | ● |
| 5,80 | | M6x0,5 | 97 | 60 | 48 | 36 | 1,3 | 6 | .0580 | ● |
| 5,90 | | | 97 | 60 | 48 | 36 | 1,3 | 6 | .0590 | ● |
| 6,00 | M7 | | 97 | 60 | 48 | 36 | 1,3 | 6 | .0600 | ● |
| 6,10 | MJ7x1 | | 107 | 70 | 56 | 36 | 1,3 | 8 | .0610 | ● |
| 6,20 | M7x0,75 | | 107 | 70 | 56 | 36 | 1,3 | 8 | .0620 | ● |
| 6,30 | | | 107 | 70 | 56 | 36 | 1,4 | 8 | .0630 | ● |
| 6,35 | MJ7x0,75 | | 107 | 70 | 56 | 36 | 1,4 | 8 | .0635 | ● |
| 6,40 | | | 107 | 70 | 56 | 36 | 1,4 | 8 | .0640 | ● |
| 6,50 | M7x0,5 | | 107 | 70 | 56 | 36 | 1,4 | 8 | .0650 | ● |
| 6,60 | | M7 | 107 | 70 | 56 | 36 | 1,4 | 8 | .0660 | ● |
| 6,70 | | M7x0,75 | 107 | 70 | 56 | 36 | 1,4 | 8 | .0670 | ● |
| 6,80 | M8 | M7x0,5 | 107 | 70 | 56 | 36 | 1,5 | 8 | .0680 | ● |
| 6,90 | MJ8x1,25 | | 107 | 70 | 56 | 36 | 1,5 | 8 | .0690 | ● |
| 7,00 | M8x1 | | 107 | 70 | 56 | 36 | 1,5 | 8 | .0700 | ● |
| 7,10 | MJ8x1 | | 117 | 80 | 64 | 36 | 1,5 | 8 | .0710 | ● |
| 7,20 | M8x0,75 | | 117 | 80 | 64 | 36 | 1,5 | 8 | .0720 | ● |
| 7,30 | | | 117 | 80 | 64 | 36 | 1,6 | 8 | .0730 | ● |
| 7,40 | | M8 (GAL) | 117 | 80 | 64 | 36 | 1,6 | 8 | .0740 | ● |
| 7,45 | | M8 | 117 | 80 | 64 | 36 | 1,6 | 8 | .0745 | ● |
| 7,50 | M8x0,5 | | 117 | 80 | 64 | 36 | 1,6 | 8 | .0750 | ● |
| 7,60 | | M8x1 | 117 | 80 | 64 | 36 | 1,6 | 8 | .0760 | ● |
| 7,70 | | M8x0,75 | 117 | 80 | 64 | 36 | 1,6 | 8 | .0770 | ● |
| 7,80 | M9 | M8x0,5 | 117 | 80 | 64 | 36 | 1,7 | 8 | .0780 | ● |
| 7,90 | MJ9x1,25 | | 117 | 80 | 64 | 36 | 1,7 | 8 | .0790 | ● |
| 8,00 | M9x1 | | 117 | 80 | 64 | 36 | 1,7 | 8 | .0800 | ● |
| 8,10 | MJ9x1 | | 141 | 100 | 80 | 40 | 1,7 | 10 | .0810 | ● |
| 8,20 | M9x0,75 | | 141 | 100 | 80 | 40 | 1,7 | 10 | .0820 | ● |
| 8,30 | | | 141 | 100 | 80 | 40 | 1,8 | 10 | .0830 | ● |
| 8,40 | | M9 (GAL) | 141 | 100 | 80 | 40 | 1,8 | 10 | .0840 | ● |
| 8,45 | | M9 | 141 | 100 | 80 | 40 | 1,8 | 10 | .0845 | ● |
| 8,50 | M10 / M9x0,5 | | 141 | 100 | 80 | 40 | 1,8 | 10 | .0850 | ● |
| 8,60 | MJ10x1,5 | M9x1 | 141 | 100 | 80 | 40 | 1,8 | 10 | .0860 | ● |
| 8,70 | | M9x0,75 | 141 | 100 | 80 | 40 | 1,9 | 10 | .0870 | ● |
| 8,80 | M10x1,25 | M9x0,5 | 141 | 100 | 80 | 40 | 1,9 | 10 | .0880 | ● |
| 8,90 | MJ10x1,25 | | 141 | 100 | 80 | 40 | 1,9 | 10 | .0890 | ● |
| 9,00 | M10x1 | | 141 | 100 | 80 | 40 | 1,9 | 10 | .0900 | ● |
| 9,10 | MJ10x1 | | 141 | 100 | 80 | 40 | 1,9 | 10 | .0910 | ● |
| 9,20 | M10x0,75 | | 141 | 100 | 80 | 40 | 2,0 | 10 | .0920 | ● |
| 9,30 | | M10 (GAL) | 141 | 100 | 80 | 40 | 2,0 | 10 | .0930 | ● |
| 9,35 | MJ10x0,75 | M10 | 141 | 100 | 80 | 40 | 2,0 | 10 | .0935 | ● |
| 9,40 | | M10x1,25 (GAL) | 141 | 100 | 80 | 40 | 2,0 | 10 | .0940 | ● |
| 9,45 | | M10x1,25 | 141 | 100 | 80 | 40 | 2,0 | 10 | .0945 | ● |

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör
Accessories
- Tech. Info

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



- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

VHM **TIALN T14**

R30

Z2 **4FF**

135° **IT9-IT11**

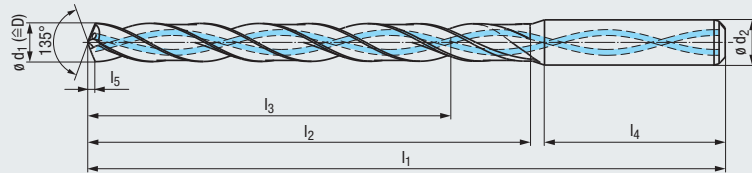
DIN 6535

HA

STEEL
Steel materials



Extra-lange Ausführung
Extra long design



Eine Vorzentrierung durch den Einsatz eines Vorbohrers (z.B. EF-Drill nach DIN 6537 K) wird empfohlen
Preparatory centering with a centering drill (p.ex. EF-Drill acc. DIN 6537 K) is recommended

Bohrtiefe
Drill depth

8 x D

Einsatzgebiete – Material
Applications – material

P 1.1-5.1 **M** 1.1 **K** 1.1-4.2
N 1.1-5 **N** 2.1-8

Werkzeug-Ident · Tool ident

TA223344

| $\emptyset d_1$ m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | Dimensions | | | | | $\emptyset d_2$ h6 | Dimens.- Ident | EF-Drill-STEEL 8xD-HA IK-4FF TIALN-T14 |
|-----------------------|-----------------------|------------------------------------|------------|-------|-------|-------|-------|-----------------------|-------------------|---|
| | | | l_1 | l_2 | l_3 | l_4 | l_5 | | | |
| 9,50 | M11 / M10x0,5 | | 141 | 100 | 80 | 40 | 2,0 | 10 | .0950 | ● |
| 9,60 | MJ10x0,5 / MJ11x1,5 | M10x1 | 141 | 100 | 80 | 40 | 2,0 | 10 | .0960 | ● |
| 9,70 | | M10x0,75 | 141 | 100 | 80 | 40 | 2,1 | 10 | .0970 | ● |
| 9,80 | | M10x0,5 | 141 | 100 | 80 | 40 | 2,1 | 10 | .0980 | ● |
| 9,90 | MJ11x1,25 | | 141 | 100 | 80 | 40 | 2,1 | 10 | .0990 | ● |
| 10,00 | M11x1 | | 141 | 100 | 80 | 40 | 2,1 | 10 | .1000 | ● |
| 10,10 | MJ11x1 | | 166 | 120 | 96 | 45 | 2,1 | 12 | .1010 | ● |
| 10,20 | M12 / M11x0,75 | | 166 | 120 | 96 | 45 | 2,2 | 12 | .1020 | ● |
| 10,30 | | M11 (GAL) | 166 | 120 | 96 | 45 | 2,2 | 12 | .1030 | ● |
| 10,35 | MJ11x0,75 | M11 | 166 | 120 | 96 | 45 | 2,2 | 12 | .1035 | ● |
| 10,40 | | | 166 | 120 | 96 | 45 | 2,2 | 12 | .1040 | ● |
| 10,50 | M12x1,5 | | 166 | 120 | 96 | 45 | 2,2 | 12 | .1050 | ● |
| 10,60 | MJ12x1,5 | M11x1 | 166 | 120 | 96 | 45 | 2,2 | 12 | .1060 | ● |
| 10,70 | | M11x0,75 | 166 | 120 | 96 | 45 | 2,3 | 12 | .1070 | ● |
| 10,80 | M12x1,25 | | 166 | 120 | 96 | 45 | 2,3 | 12 | .1080 | ● |
| 10,90 | MJ12x1,25 | | 166 | 120 | 96 | 45 | 2,3 | 12 | .1090 | ● |
| 11,00 | M12x1 | | 166 | 120 | 96 | 45 | 2,3 | 12 | .1100 | ● |
| 11,10 | MJ12x1 | | 166 | 120 | 96 | 45 | 2,3 | 12 | .1110 | ● |
| 11,20 | M12x0,75 | M12 (GAL) | 166 | 120 | 96 | 45 | 2,4 | 12 | .1120 | ● |
| 11,25 | | M12 | 166 | 120 | 96 | 45 | 2,4 | 12 | .1125 | ● |
| 11,30 | | M12x1,5 (GAL) | 166 | 120 | 96 | 45 | 2,4 | 12 | .1130 | ● |
| 11,35 | | M12x1,5 | 166 | 120 | 96 | 45 | 2,4 | 12 | .1135 | ● |
| 11,40 | | M12x1,25 (GAL) | 166 | 120 | 96 | 45 | 2,4 | 12 | .1140 | ● |
| 11,45 | | M12x1,25 | 166 | 120 | 96 | 45 | 2,4 | 12 | .1145 | ● |
| 11,50 | | | 166 | 120 | 96 | 45 | 2,4 | 12 | .1150 | ● |
| 11,60 | | M12x1 | 166 | 120 | 96 | 45 | 2,5 | 12 | .1160 | ● |
| 11,70 | | M12x0,75 | 166 | 120 | 96 | 45 | 2,5 | 12 | .1170 | ● |
| 11,80 | | | 166 | 120 | 96 | 45 | 2,5 | 12 | .1180 | ● |
| 11,90 | | | 166 | 120 | 96 | 45 | 2,5 | 12 | .1190 | ● |
| 12,00 | M14 | | 166 | 120 | 96 | 45 | 2,5 | 12 | .1200 | ● |
| 12,20 | | | 186 | 140 | 112 | 45 | 2,6 | 14 | .1220 | ● |
| 12,30 | | | 186 | 140 | 112 | 45 | 2,6 | 14 | .1230 | ● |
| 12,50 | M14x1,5 | | 186 | 140 | 112 | 45 | 2,6 | 14 | .1250 | ● |
| 12,60 | MJ14x1,5 | M13x1 | 186 | 140 | 112 | 45 | 2,7 | 14 | .1260 | ● |
| 12,70 | | M13x0,75 | 186 | 140 | 112 | 45 | 2,7 | 14 | .1270 | ● |
| 12,80 | M14x1,25 | | 186 | 140 | 112 | 45 | 2,7 | 14 | .1280 | ● |
| 12,90 | MJ14x1,25 | | 186 | 140 | 112 | 45 | 2,7 | 14 | .1290 | ● |
| 13,00 | M14x1 | | 186 | 140 | 112 | 45 | 2,7 | 14 | .1300 | ● |
| 13,10 | MJ14x1 | M14 | 186 | 140 | 112 | 45 | 2,8 | 14 | .1310 | ● |
| 13,20 | M14x0,75 | | 186 | 140 | 112 | 45 | 2,8 | 14 | .1320 | ● |
| 13,30 | | | 186 | 140 | 112 | 45 | 2,8 | 14 | .1330 | ● |
| 13,35 | | M14x1,5 | 186 | 140 | 112 | 45 | 2,8 | 14 | .1335 | ● |
| 13,45 | | M14x1,25 | 186 | 140 | 112 | 45 | 2,8 | 14 | .1345 | ● |

VHM TIALN T14

R30

Z2 4FF

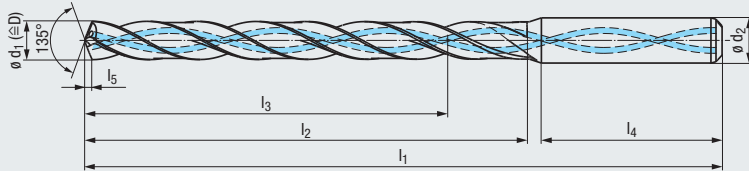
135° IT9-IT11

DIN 6535 HA

STEEL
Steel
materials



Extra-lange Ausführung
Extra long design



Eine Vorzentrierung durch den Einsatz eines Vorbohrers (z.B. EF-Drill nach DIN 6537 K) wird empfohlen
Preparatory centering with a centering drill (p.ex. EF-Drill acc. DIN 6537 K) is recommended

Bohrtiefe
Drill depth

8 x D

Einsatzgebiete – Material
Applications – material



P 1.1-5.1 M 1.1 K 1.1-4.2
N 1.1-5 N 2.1-8

Werkzeug-Ident · Tool ident

TA223344

| ϕd_1 m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | | | | | | ϕd_2 h6 | Dimens.- Ident | EF-Drill-STEEL 8xD-HA IK-4FF TIALN-T14 |
|------------------|-----------------------|------------------------------------|-------|-------|-------|-------|-------|------------------|-------------------|---|
| | | | l_1 | l_2 | l_3 | l_4 | l_5 | | | |
| 13,50 | | | 186 | 140 | 112 | 45 | 2,8 | 14 | .1350 | ● |
| 13,60 | MJ15x1,5 | M14x1 | 186 | 140 | 112 | 45 | 2,9 | 14 | .1360 | ● |
| 13,70 | | M14x0,75 | 186 | 140 | 112 | 45 | 2,9 | 14 | .1370 | ● |
| 13,80 | | | 186 | 140 | 112 | 45 | 2,9 | 14 | .1380 | ● |
| 14,00 | M16 / M15x1 | | 186 | 140 | 112 | 45 | 2,9 | 14 | .1400 | ● |
| 14,10 | MJ15x1 | | 209 | 160 | 128 | 48 | 3,0 | 16 | .1410 | ● |
| 14,30 | | | 209 | 160 | 128 | 48 | 3,0 | 16 | .1430 | ● |
| 14,40 | | | 209 | 160 | 128 | 48 | 3,0 | 16 | .1440 | ● |
| 14,50 | M16x1,5 | | 209 | 160 | 128 | 48 | 3,1 | 16 | .1450 | ● |
| 14,60 | MJ16x1,5 | M15x1 | 209 | 160 | 128 | 48 | 3,1 | 16 | .1460 | ● |
| 14,70 | | M15x0,75 | 209 | 160 | 128 | 48 | 3,1 | 16 | .1470 | ● |
| 14,80 | | | 209 | 160 | 128 | 48 | 3,1 | 16 | .1480 | ● |
| 15,00 | M16x1 | | 209 | 160 | 128 | 48 | 3,2 | 16 | .1500 | ● |
| 15,10 | MJ16x1 | M16 | 209 | 160 | 128 | 48 | 3,2 | 16 | .1510 | ● |
| 15,35 | | M16x1,5 | 209 | 160 | 128 | 48 | 3,2 | 16 | .1535 | ● |
| 15,50 | M18 | | 209 | 160 | 128 | 48 | 3,3 | 16 | .1550 | ● |
| 15,60 | | M16x1 | 209 | 160 | 128 | 48 | 3,3 | 16 | .1560 | ● |
| 16,00 | M18x2 | | 209 | 160 | 128 | 48 | 3,4 | 16 | .1600 | ● |
| 16,50 | M18x1,5 | | 229 | 180 | 144 | 48 | 3,5 | 18 | .1650 | ● |
| 17,00 | M18x1 | | 229 | 180 | 144 | 48 | 3,6 | 18 | .1700 | ● |
| 17,50 | M20 | | 229 | 180 | 144 | 48 | 3,7 | 18 | .1750 | ● |
| 17,60 | | M18x1 | 229 | 180 | 144 | 48 | 3,7 | 18 | .1760 | ● |
| 18,00 | M20x2 | | 229 | 180 | 144 | 48 | 3,8 | 18 | .1800 | ● |
| 18,50 | M20x1,5 | | 251 | 200 | 160 | 50 | 3,9 | 20 | .1850 | ● |
| 18,85 | | M20 | 251 | 200 | 160 | 50 | 4,0 | 20 | .1885 | ● |
| 19,00 | M20x1 | | 251 | 200 | 160 | 50 | 4,0 | 20 | .1900 | ● |
| 19,35 | | M20x1,5 | 251 | 200 | 160 | 50 | 4,1 | 20 | .1935 | ● |
| 19,50 | M22 | | 251 | 200 | 160 | 50 | 4,1 | 20 | .1950 | ● |
| 19,60 | | M20x1 | 251 | 200 | 160 | 50 | 4,1 | 20 | .1960 | ● |
| 20,00 | M22x2 | | 251 | 200 | 160 | 50 | 4,2 | 20 | .2000 | ● |



Kühlschmierstoffe siehe Seite 238 - 239

Coolant-lubricants, see page 238 - 239

- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

VHM

TIALN T21

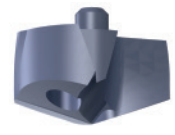
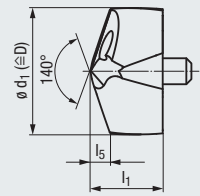
new

R30



STEEL
Steel materials

Vollhartmetall-Schneidkopf
Solid carbide cutting head



Einsatzgebiete – Material
Applications – material

» 510

P 1.1-5.1 M 1.1
K 1.1-4.2 N 1.4-5

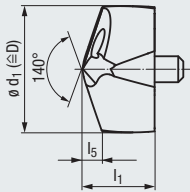
Werkzeug-Ident · Tool ident

TM003324

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

| $\varnothing d_1$ k8 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | Plattensitzgröße Size of insert seat | l_1 | l_5 | Dimens.- Ident | EF-Drill Modular STEEL AK-2FF TIALN-T21 |
|-------------------------|-----------------------|------------------------------------|---|-------|-------|-------------------|--|
| 14,00 | M16 / M15x1 | | 2 | 8 | 2,6 | .1400 | ● |
| 14,10 | MJ15x1 | | 2 | 8 | 2,6 | .1410 | ● |
| 14,20 | M15x0,75 | | 2 | 8 | 2,6 | .1420 | ● |
| 14,30 | | | 2 | 8 | 2,7 | .1430 | ● |
| 14,40 | | | 2 | 8 | 2,7 | .1440 | ● |
| 14,50 | M16x1,5 | | 2 | 8 | 2,7 | .1450 | ● |
| 14,60 | MJ16x1,5 | M15x1 | 2 | 8 | 2,7 | .1460 | ● |
| 14,70 | | M15x0,75 | 2 | 8 | 2,7 | .1470 | ● |
| 14,80 | | | 2 | 8 | 2,7 | .1480 | ● |
| 14,90 | | | 2 | 8 | 2,8 | .1490 | ● |
| 15,00 | M16x1 | | 2 | 8 | 2,8 | .1500 | ● |
| 15,10 | MJ16x1 | M16 | 2 | 8 | 2,8 | .1510 | ● |
| 15,20 | M16x0,75 | | 2 | 8 | 2,8 | .1520 | ● |
| 15,30 | | | 2 | 8 | 2,8 | .1530 | ● |
| 15,35 | | M16x1,5 | 2 | 8 | 2,8 | .1535 | ● |
| 15,40 | | | 2 | 8 | 2,9 | .1540 | ● |
| 15,50 | M18 | | 2 | 8 | 2,9 | .1550 | ● |
| 15,60 | | M16x1 | 2 | 8 | 2,9 | .1560 | ● |
| 15,70 | | M16x0,75 | 2 | 8 | 2,9 | .1570 | ● |
| 15,80 | MJ18x2,5 | | 2 | 8 | 2,9 | .1580 | ● |
| 15,90 | | | 2 | 8 | 2,9 | .1590 | ● |
| 16,00 | M18x2 | | 3 | 9 | 3,0 | .1600 | ● |
| 16,10 | MJ17x1 | | 3 | 9 | 3,0 | .1610 | ● |
| 16,20 | | | 3 | 9 | 3,0 | .1620 | ● |
| 16,30 | | | 3 | 9 | 3,0 | .1630 | ● |
| 16,40 | | | 3 | 9 | 3,0 | .1640 | ● |
| 16,50 | M18x1,5 | | 3 | 9 | 3,1 | .1650 | ● |
| 16,60 | MJ18x1,5 | | 3 | 9 | 3,1 | .1660 | ● |
| 16,70 | | | 3 | 9 | 3,1 | .1670 | ● |
| 16,80 | | | 3 | 9 | 3,1 | .1680 | ● |
| 16,85 | | M18 | 3 | 9 | 3,1 | .1685 | ● |
| 16,90 | | | 3 | 9 | 3,1 | .1690 | ● |
| 17,00 | M18x1 | | 3 | 9 | 3,1 | .1700 | ● |
| 17,10 | MJ18x1 | M18x2 | 3 | 9 | 3,2 | .1710 | ● |
| 17,20 | | | 3 | 9 | 3,2 | .1720 | ● |
| 17,30 | | | 3 | 9 | 3,2 | .1730 | ● |
| 17,35 | | M18x1,5 | 3 | 9 | 3,2 | .1735 | ● |
| 17,40 | | | 3 | 9 | 3,2 | .1740 | ● |
| 17,50 | M20 | | 3 | 9 | 3,2 | .1750 | ● |
| 17,60 | | M18x1 | 3 | 9 | 3,3 | .1760 | ● |
| 17,70 | | | 3 | 9 | 3,3 | .1770 | ● |
| 17,80 | MJ20x2,5 | | 3 | 9 | 3,3 | .1780 | ● |
| 17,90 | | | 3 | 9 | 3,3 | .1790 | ● |
| 18,00 | M20x2 | | 3 | 9 | 3,3 | .1800 | ● |
| 18,10 | | | 3 | 9 | 3,3 | .1810 | ● |
| 18,20 | | | 3 | 9 | 3,4 | .1820 | ● |
| 18,30 | | | 3 | 9 | 3,4 | .1830 | ● |
| 18,40 | | | 3 | 9 | 3,4 | .1840 | ● |
| 18,50 | M20x1,5 | | 3 | 9 | 3,4 | .1850 | ● |
| 18,60 | MJ20x1,5 | | 3 | 9 | 3,4 | .1860 | ● |
| 18,70 | | | 3 | 9 | 3,5 | .1870 | ● |

Vollhartmetall-Schneidkopf
Solid carbide cutting head



VHM **TIALN T21**

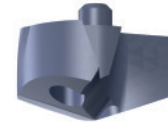
R30

Z2 **2FF**

140° **IT9-IT11**

new

STEEL
Steel materials



- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör
Accessories
- Tech. Info

Einsatzgebiete – Material Applications – material » 510

P 1.1-5.1 **M** 1.1
K 1.1-4.2 **N** 1.4-5

Werkzeug-Ident · Tool ident

| $\varnothing d_1$ k8 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | Plattensitzgröße Size of insert seat | l_1 | l_5 | Dimens.- Ident | TM003324 | |
|-------------------------|-----------------------|------------------------------------|---|-------|-------|-------------------|--|--|
| | | | | | | | EF-Drill Modular STEEL AK-2FF TIALN-T21 | |
| 18,80 | | | 3 | 9 | 3,5 | .1880 | ● | |
| 18,85 | | M20 | 3 | 9 | 3,5 | .1885 | ● | |
| 18,90 | | | 3 | 9 | 3,5 | .1890 | ● | |
| 19,00 | M20x1 | | 4 | 11 | 3,5 | .1900 | ● | |
| 19,10 | MJ20x1 | M20x2 | 4 | 11 | 3,5 | .1910 | ● | |
| 19,20 | | | 4 | 11 | 3,5 | .1920 | ● | |
| 19,30 | | | 4 | 11 | 3,6 | .1930 | ● | |
| 19,35 | | M20x1,5 | 4 | 11 | 3,6 | .1935 | ● | |
| 19,40 | | | 4 | 11 | 3,6 | .1940 | ● | |
| 19,50 | M22 | | 4 | 11 | 3,6 | .1950 | ● | |
| 19,60 | | M20x1 | 4 | 11 | 3,6 | .1960 | ● | |
| 19,70 | | | 4 | 11 | 3,6 | .1970 | ● | |
| 19,80 | | | 4 | 11 | 3,7 | .1980 | ● | |
| 19,90 | | | 4 | 11 | 3,7 | .1990 | ● | |
| 20,00 | M22x2 | | 4 | 11 | 3,7 | .2000 | ● | |
| 20,10 | | | 4 | 11 | 3,7 | .2010 | ● | |
| 20,20 | | | 4 | 11 | 3,7 | .2020 | ● | |
| 20,30 | | | 4 | 11 | 3,7 | .2030 | ● | |
| 20,40 | | | 4 | 11 | 3,8 | .2040 | ● | |
| 20,50 | M22x1,5 | | 4 | 11 | 3,8 | .2050 | ● | |
| 20,60 | MJ22x1,5 | | 4 | 11 | 3,8 | .2060 | ● | |
| 20,70 | | | 4 | 11 | 3,8 | .2070 | ● | |
| 20,80 | | | 4 | 11 | 3,8 | .2080 | ● | |
| 20,85 | | M22 | 4 | 11 | 3,8 | .2085 | ● | |
| 20,90 | | | 4 | 11 | 3,9 | .2090 | ● | |
| 21,00 | M24 / M22x1 | | 4 | 11 | 3,9 | .2100 | ● | |
| 21,10 | MJ22x1 | M22x2 | 4 | 11 | 3,9 | .2110 | ● | |
| 21,20 | | | 4 | 11 | 3,9 | .2120 | ● | |
| 21,30 | | | 4 | 11 | 3,9 | .2130 | ● | |
| 21,35 | | M22x1,5 | 4 | 11 | 3,9 | .2135 | ● | |
| 21,40 | | | 4 | 11 | 3,9 | .2140 | ● | |
| 21,50 | | | 4 | 11 | 4,0 | .2150 | ● | |
| 21,60 | | M22x1 | 4 | 11 | 4,0 | .2160 | ● | |
| 21,70 | | | 4 | 11 | 4,0 | .2170 | ● | |
| 21,80 | | | 4 | 11 | 4,0 | .2180 | ● | |
| 21,90 | | | 4 | 11 | 4,0 | .2190 | ● | |
| 22,00 | M24x2 | | 5 | 12,5 | 4,1 | .2200 | ● | |
| 22,10 | | | 5 | 12,5 | 4,1 | .2210 | ● | |
| 22,20 | | | 5 | 12,5 | 4,1 | .2220 | ● | |
| 22,30 | | | 5 | 12,5 | 4,1 | .2230 | ● | |
| 22,40 | | | 5 | 12,5 | 4,1 | .2240 | ● | |
| 22,50 | M24x1,5 | | 5 | 12,5 | 4,1 | .2250 | ● | |
| 22,60 | MJ24x1,5 | M24 | 5 | 12,5 | 4,2 | .2260 | ● | |
| 22,65 | | | 5 | 12,5 | 4,2 | .2265 | ● | |
| 22,70 | | | 5 | 12,5 | 4,2 | .2270 | ● | |
| 22,80 | | | 5 | 12,5 | 4,2 | .2280 | ● | |
| 22,90 | | | 5 | 12,5 | 4,2 | .2290 | ● | |
| 23,00 | M24x1 | | 5 | 12,5 | 4,2 | .2300 | ● | |
| 23,10 | | M24x2 | 5 | 12,5 | 4,3 | .2310 | ● | |
| 23,20 | | | 5 | 12,5 | 4,3 | .2320 | ● | |
| 23,30 | | | 5 | 12,5 | 4,3 | .2330 | ● | |

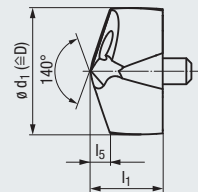
- 3 x D
- 5 x D
- 6 x D
- 8 x D
- 2-3,5 x D



● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör
Accessories
- Tech. Info

Vollhartmetall-Schneidkopf
Solid carbide cutting head



VHM

TIALN
T21

R30

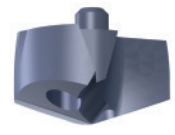
Z2

2FF

140°

IT9-IT11

new



STEEL
Steel
materials

Einsatzgebiete – Material
Applications – material » 510

P 1.1-5.1

M 1.1

K 1.1-4.2

N 1.4-5

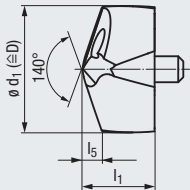
Werkzeug-Ident · Tool ident

TM003324

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

| $\varnothing d_1$ k8 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | Plattensitzgröße Size of insert seat | l_1 | l_5 | Dimens.- Ident | EF-Drill Modular STEEL AK-2FF TIALN-T21 |
|-------------------------|-----------------------|------------------------------------|---|-------|-------|-------------------|--|
| 23,35 | | M24x1,5 | 5 | 12,5 | 4,3 | .2335 | ● |
| 23,40 | | | 5 | 12,5 | 4,3 | .2340 | ● |
| 23,50 | M25x1,5 | | 5 | 12,5 | 4,3 | .2350 | ● |
| 23,60 | MJ25x1,5 | M24x1 | 5 | 12,5 | 4,3 | .2360 | ● |
| 23,70 | | | 5 | 12,5 | 4,4 | .2370 | ● |
| 23,80 | | | 5 | 12,5 | 4,4 | .2380 | ● |
| 23,90 | | | 5 | 12,5 | 4,4 | .2390 | ● |
| 24,00 | M27 | | 5 | 12,5 | 4,4 | .2400 | ● |
| 24,10 | MJ25x1 | | 5 | 12,5 | 4,4 | .2410 | ● |
| 24,20 | | | 5 | 12,5 | 4,5 | .2420 | ● |
| 24,30 | | | 5 | 12,5 | 4,5 | .2430 | ● |
| 24,40 | | | 5 | 12,5 | 4,5 | .2440 | ● |
| 24,50 | M26x1,5 | | 5 | 12,5 | 4,5 | .2450 | ● |
| 24,60 | MJ26x1,5 | | 5 | 12,5 | 4,5 | .2460 | ● |
| 24,70 | | | 5 | 12,5 | 4,5 | .2470 | ● |
| 24,80 | | | 5 | 12,5 | 4,6 | .2480 | ● |
| 24,90 | | | 5 | 12,5 | 4,6 | .2490 | ● |
| 25,00 | M27x2 | | 5 | 12,5 | 4,6 | .2500 | ● |
| 25,10 | | | 5 | 12,5 | 4,6 | .2510 | ● |
| 25,20 | | | 5 | 12,5 | 4,6 | .2520 | ● |
| 25,30 | | | 5 | 12,5 | 4,7 | .2530 | ● |
| 25,40 | | | 5 | 12,5 | 4,7 | .2540 | ● |
| 25,50 | M27x1,5 | | 5 | 12,5 | 4,7 | .2550 | ● |
| 25,60 | MJ27x1,5 | M27 | 5 | 12,5 | 4,7 | .2560 | ● |
| 25,65 | | | 5 | 12,5 | 4,7 | .2565 | ● |
| 25,70 | | | 5 | 12,5 | 4,7 | .2570 | ● |
| 25,80 | | | 5 | 12,5 | 4,7 | .2580 | ● |
| 25,90 | | | 5 | 12,5 | 4,8 | .2590 | ● |
| 26,00 | M27x1 / M28x2 | | 6 | 15 | 4,8 | .2600 | ● |
| 26,10 | | M27x2 | 6 | 15 | 4,8 | .2610 | ● |
| 26,20 | | | 6 | 15 | 4,8 | .2620 | ● |
| 26,30 | | | 6 | 15 | 4,8 | .2630 | ● |
| 26,40 | | | 6 | 15 | 4,9 | .2640 | ● |
| 26,50 | M30 / M28x1,5 | | 6 | 15 | 4,9 | .2650 | ● |
| 26,60 | MJ28x1,5 | M27x1 | 6 | 15 | 4,9 | .2660 | ● |
| 26,70 | | | 6 | 15 | 4,9 | .2670 | ● |
| 26,80 | | | 6 | 15 | 4,9 | .2680 | ● |
| 26,90 | | | 6 | 15 | 4,9 | .2690 | ● |
| 27,00 | M30x3 | | 6 | 15 | 5,0 | .2700 | ● |
| 27,10 | MJ28x1 | | 6 | 15 | 5,0 | .2710 | ● |
| 27,20 | | | 6 | 15 | 5,0 | .2720 | ● |
| 27,30 | | | 6 | 15 | 5,0 | .2730 | ● |
| 27,40 | | | 6 | 15 | 5,0 | .2740 | ● |
| 27,50 | | | 6 | 15 | 5,1 | .2750 | ● |
| 27,60 | | | 6 | 15 | 5,1 | .2760 | ● |
| 27,70 | | | 6 | 15 | 5,1 | .2770 | ● |
| 27,80 | | | 6 | 15 | 5,1 | .2780 | ● |
| 27,90 | | | 6 | 15 | 5,1 | .2790 | ● |
| 28,00 | M30x2 | | 6 | 15 | 5,1 | .2800 | ● |
| 28,10 | | | 6 | 15 | 5,2 | .2810 | ● |
| 28,20 | | | 6 | 15 | 5,2 | .2820 | ● |

Vollhartmetall-Schneidkopf
Solid carbide cutting head



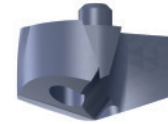
VHM **TIALN T21**

R30

Z2 **2FF**

140° **IT9-IT11**

new



STEEL
Steel materials

Product Finder

v_c / f

STEEL

VA

GG

HCUT

Zubehör
Accessories

Tech. Info

Einsatzgebiete – Material Applications – material 510

P 1.1-5.1 **M** 1.1
K 1.1-4.2 **N** 1.4-5

Werkzeug-Ident · Tool ident

TM003324

| $\varnothing d_1$ k8 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | Plattensitzgröße Size of insert seat | l_1 | l_5 | Dimens.- Ident | EF-Drill Modular STEEL AK-2FF TIALN-T21 |
|-------------------------|-----------------------|------------------------------------|---|-------|-------|-------------------|--|
| 28,30 | | | 6 | 15 | 5,2 | .2830 | ● |
| 28,40 | | | 6 | 15 | 5,2 | .2840 | ● |
| 28,50 | M30x1,5 | | 6 | 15 | 5,2 | .2850 | ● |
| 28,60 | MJ30x1,5 | M30x3 | 6 | 15 | 5,3 | .2860 | ● |
| 28,70 | | | 6 | 15 | 5,3 | .2870 | ● |
| 28,80 | | | 6 | 15 | 5,3 | .2880 | ● |
| 28,90 | | | 6 | 15 | 5,3 | .2890 | ● |
| 29,00 | M30x1 | | 6 | 15 | 5,3 | .2900 | ● |
| 29,10 | MJ30x1 | M30x2 | 6 | 15 | 5,3 | .2910 | ● |
| 29,20 | | | 6 | 15 | 5,4 | .2920 | ● |
| 29,30 | | | 6 | 15 | 5,4 | .2930 | ● |
| 29,35 | | M30x1,5 | 6 | 15 | 5,4 | .2935 | ● |
| 29,40 | | | 6 | 15 | 5,4 | .2940 | ● |
| 29,50 | M33 | | 6 | 15 | 5,4 | .2950 | ● |
| 29,60 | | M30x1 | 6 | 15 | 5,4 | .2960 | ● |
| 29,70 | | | 6 | 15 | 5,5 | .2970 | ● |
| 29,80 | | | 6 | 15 | 5,5 | .2980 | ● |
| 29,90 | | | 6 | 15 | 5,5 | .2990 | ● |
| 30,00 | M32x2 / M33x3 | | 7 | 17 | 5,5 | .3000 | ● |
| 30,10 | | | 7 | 17 | 5,5 | .3010 | ● |
| 30,20 | | | 7 | 17 | 5,5 | .3020 | ● |
| 30,30 | | | 7 | 17 | 5,6 | .3030 | ● |
| 30,40 | | | 7 | 17 | 5,6 | .3040 | ● |
| 30,50 | M32x1,5 | | 7 | 17 | 5,6 | .3050 | ● |
| 30,60 | MJ32x1,5 | | 7 | 17 | 5,6 | .3060 | ● |
| 30,70 | | | 7 | 17 | 5,6 | .3070 | ● |
| 30,80 | | | 7 | 17 | 5,7 | .3080 | ● |
| 30,90 | | | 7 | 17 | 5,7 | .3090 | ● |
| 31,00 | M33x2 | | 7 | 17 | 5,7 | .3100 | ● |
| 31,10 | MJ32x1 | | 7 | 17 | 5,7 | .3110 | ● |
| 31,20 | | | 7 | 17 | 5,7 | .3120 | ● |
| 31,30 | | | 7 | 17 | 5,7 | .3130 | ● |
| 31,40 | | | 7 | 17 | 5,8 | .3140 | ● |
| 31,50 | M33x1,5 | | 7 | 17 | 5,8 | .3150 | ● |
| 31,60 | | M33x3 | 7 | 17 | 5,8 | .3160 | ● |
| 31,70 | | | 7 | 17 | 5,8 | .3170 | ● |
| 31,80 | | | 7 | 17 | 5,8 | .3180 | ● |
| 31,90 | | | 7 | 17 | 5,9 | .3190 | ● |
| 32,00 | M36 | | 7 | 17 | 5,9 | .3200 | ● |

3 x D

5 x D

6 x D

8 x D

2-3,5 x D



- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

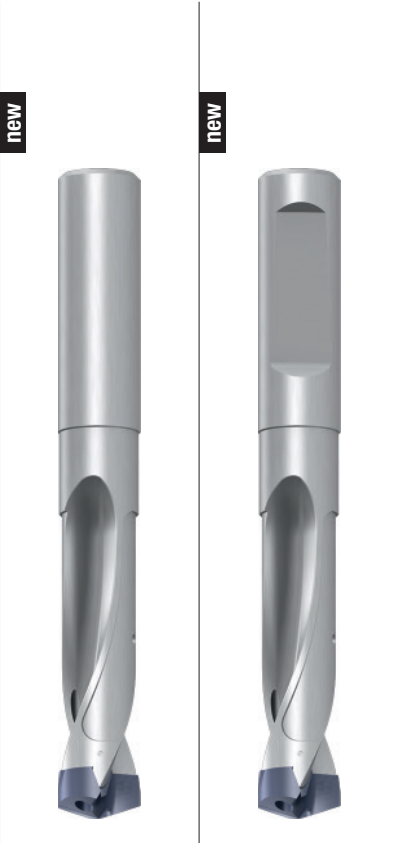
R30

Z2

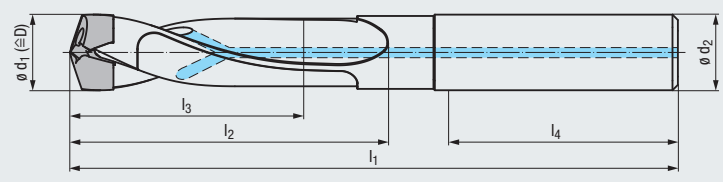
2FF

DIN 6535
HA
HE

IT9-IT10



Trägerwerkzeug, kurze Ausführung
Tool body, short design



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

Bohrtiefe
Drill depth

3 x D

| Werkzeug-Ident · Tool ident | | | | | | | | | | TM200000 | TM500000 |
|-----------------------------|--------------------|---|-------|-------|-------|-------|------------------|-------------------|--|--|----------|
| ϕd_1 min. | ϕd_1 max. | Plattensitzgröße Size of insert seat | l_1 | l_2 | l_3 | l_4 | ϕd_2 h6 | Dimens.- Ident | EF-Drill Modular DIN 6535 HA 3 x D | EF-Drill Modular DIN 6535 HE 3 x D | |
| 14,00 | 14,49 | 2 | 124 | 65 | 43 | 48 | 16 | .1400 | ● | ● | |
| 14,50 | 14,99 | 2 | 125 | 67 | 45 | 48 | 16 | .1450 | ● | ● | |
| 15,00 | 15,99 | 2 | 129 | 72 | 48 | 48 | 16 | .1500 | ● | ● | |
| 16,00 | 16,99 | 3 | 136 | 76 | 51 | 48 | 18 | .1600 | ● | ● | |
| 17,00 | 17,99 | 3 | 139 | 81 | 54 | 48 | 18 | .1700 | ● | ● | |
| 18,00 | 18,99 | 3 | 147 | 85 | 57 | 50 | 20 | .1800 | ● | ● | |
| 19,00 | 19,99 | 4 | 150 | 90 | 60 | 50 | 20 | .1900 | ● | ● | |
| 20,00 | 20,99 | 4 | 165 | 94 | 63 | 56 | 25 | .2000 | ● | ● | |
| 21,00 | 21,99 | 4 | 169 | 99 | 66 | 56 | 25 | .2100 | ● | ● | |
| 22,00 | 22,99 | 5 | 173 | 103 | 69 | 56 | 25 | .2200 | ● | ● | |
| 23,00 | 23,99 | 5 | 177 | 108 | 72 | 56 | 25 | .2300 | ● | ● | |
| 24,00 | 24,99 | 5 | 181 | 112 | 75 | 56 | 25 | .2400 | ● | ● | |
| 25,00 | 25,99 | 5 | 194 | 117 | 78 | 60 | 32 | .2500 | ● | ● | |
| 26,00 | 26,99 | 6 | 199 | 121 | 81 | 60 | 32 | .2600 | ● | ● | |
| 27,00 | 27,99 | 6 | 202 | 126 | 84 | 60 | 32 | .2700 | ● | ● | |
| 28,00 | 28,99 | 6 | 207 | 130 | 87 | 60 | 32 | .2800 | ● | ● | |
| 29,00 | 29,99 | 6 | 210 | 135 | 90 | 60 | 32 | .2900 | ● | ● | |
| 30,00 | 30,99 | 7 | 215 | 139 | 93 | 60 | 32 | .3000 | ● | ● | |
| 31,00 | 31,99 | 7 | 218 | 144 | 96 | 60 | 32 | .3100 | ● | ● | |
| 32,00 | 32,99 | 7 | 223 | 148 | 99 | 60 | 32 | .3200 | ● | ● | |

Lieferumfang: ohne Vollhartmetall-Schneidkopf, mit Torx-Schrauben
Delivery: without solid carbide cutting head, with Torx screws

Vollhartmetall-Schneidköpfe siehe Seite 540 - 543
Solid carbide cutting heads, see page 540 - 543



Schraubendreher · Screwdriver



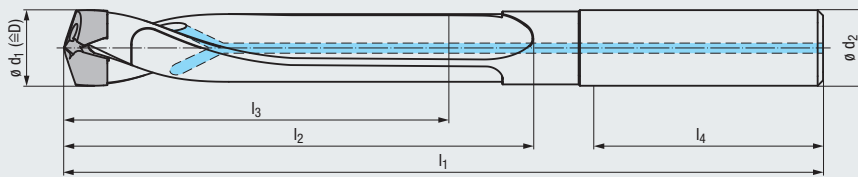
Spannschraube · Clamping Screw



| Plattensitzgröße Size of insert seat | Größe Size | Klingendurchmesser Blade diameter | Artikel-Nr. Article no. | |
|---|---------------|--------------------------------------|----------------------------|---|
| 2 | Torx T7 | 2,5 | TM919099 | ● |
| 3 | Torx T8 | 3,5 | TM919199 | ● |
| 4 | Torx T8 | 3,5 | TM919199 | ● |
| 5 | Torx T9 | 4 | TM919299 | ● |
| 6 | Torx T15 | 4 | TM919399 | ● |
| 7 | Torx T15 | 4 | TM919399 | ● |

| Plattensitzgröße Size of insert seat | Größe Size | M_d max. | Artikel-Nr. Article no. | |
|---|----------------------|---------------|----------------------------|---|
| 2 | M2,2 x 6 x Torx T7 | 0,60 Nm | TM909090.0600 | ● |
| 3 | M2,5 x 6,5 x Torx T8 | 0,88 Nm | TM909191.0650 | ● |
| 4 | M3 x 7,5 x Torx T8 | 1,53 Nm | TM909192.0750 | ● |
| 5 | M3,5 x 8,5 x Torx T9 | 2,44 Nm | TM909293.0850 | ● |
| 6 | M4 x 10 x Torx T15 | 3,66 Nm | TM909394.1000 | ● |
| 7 | M4,5 x 11 x Torx T15 | 5,22 Nm | TM909395.1100 | ● |

Trägerwerkzeug, lange Ausführung
Tool body, long design

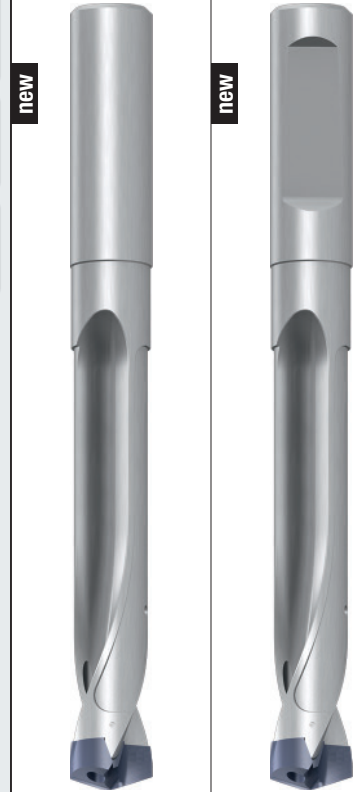


R30

Z2 **2FF**

DIN 6535 **IT10-IT11**

HA HE



Bohrtiefe
Drill depth

5 x D

Werkzeug-Ident · Tool ident

| ø d ₁ min. | ø d ₁ max. | Plattensitzgröße Size of insert seat | l ₁ | l ₂ | l ₃ | l ₄ | ø d ₂ h6 | Dimens.- Ident | TM210000 | TM510000 |
|--------------------------|--------------------------|---|----------------|----------------|----------------|----------------|------------------------|-------------------|--|--|
| | | | | | | | | | EF-Drill Modular DIN 6535 HA 5 x D | EF-Drill Modular DIN 6535 HE 5 x D |
| 14,00 | 14,49 | 2 | 153 | 94 | 72 | 48 | 16 | .1400 | ● | ● |
| 14,50 | 14,99 | 2 | 155 | 97 | 75 | 48 | 16 | .1450 | ● | ● |
| 15,00 | 15,99 | 2 | 161 | 104 | 80 | 48 | 16 | .1500 | ● | ● |
| 16,00 | 16,99 | 3 | 170 | 110 | 85 | 48 | 18 | .1600 | ● | ● |
| 17,00 | 17,99 | 3 | 175 | 117 | 90 | 48 | 18 | .1700 | ● | ● |
| 18,00 | 18,99 | 3 | 185 | 123 | 95 | 50 | 20 | .1800 | ● | ● |
| 19,00 | 19,99 | 4 | 190 | 130 | 100 | 50 | 20 | .1900 | ● | ● |
| 20,00 | 20,99 | 4 | 207 | 136 | 105 | 56 | 25 | .2000 | ● | ● |
| 21,00 | 21,99 | 4 | 213 | 143 | 110 | 56 | 25 | .2100 | ● | ● |
| 22,00 | 22,99 | 5 | 219 | 149 | 115 | 56 | 25 | .2200 | ● | ● |
| 23,00 | 23,99 | 5 | 225 | 156 | 120 | 56 | 25 | .2300 | ● | ● |
| 24,00 | 24,99 | 5 | 231 | 162 | 125 | 56 | 25 | .2400 | ● | ● |
| 25,00 | 25,99 | 5 | 246 | 169 | 130 | 60 | 32 | .2500 | ● | ● |
| 26,00 | 26,99 | 6 | 253 | 175 | 135 | 60 | 32 | .2600 | ● | ● |
| 27,00 | 27,99 | 6 | 258 | 182 | 140 | 60 | 32 | .2700 | ● | ● |
| 28,00 | 28,99 | 6 | 265 | 188 | 145 | 60 | 32 | .2800 | ● | ● |
| 29,00 | 29,99 | 6 | 270 | 195 | 150 | 60 | 32 | .2900 | ● | ● |
| 30,00 | 30,99 | 7 | 277 | 201 | 155 | 60 | 32 | .3000 | ● | ● |
| 31,00 | 31,99 | 7 | 282 | 208 | 160 | 60 | 32 | .3100 | ● | ● |
| 32,00 | 32,99 | 7 | 289 | 214 | 165 | 60 | 32 | .3200 | ● | ● |

Lieferumfang: ohne Vollhartmetall-Schneidkopf, mit Torx-Schrauben
Delivery: without solid carbide cutting head, with Torx screws

Vollhartmetall-Schneidköpfe siehe Seite 540 - 543
Solid carbide cutting heads, see page 540 - 543

Schraubendreher · Screwdriver



| Plattensitzgröße Size of insert seat | Größe Size | Klingendurchmesser Blade diameter | Artikel-Nr. Article no. | |
|---|---------------|--------------------------------------|----------------------------|---|
| 2 | Torx T7 | 2,5 | TM919099 | ● |
| 3 | Torx T8 | 3,5 | TM919199 | ● |
| 4 | Torx T8 | 3,5 | TM919199 | ● |
| 5 | Torx T9 | 4 | TM919299 | ● |
| 6 | Torx T15 | 4 | TM919399 | ● |
| 7 | Torx T15 | 4 | TM919399 | ● |

Spannschraube · Clamping Screw



| Plattensitzgröße Size of insert seat | Größe Size | M _d max. | Artikel-Nr. Article no. | |
|---|----------------------|------------------------|----------------------------|---|
| 2 | M2,2 x 6 x Torx T7 | 0,60 Nm | TM909090.0600 | ● |
| 3 | M2,5 x 6,5 x Torx T8 | 0,88 Nm | TM909191.0650 | ● |
| 4 | M3 x 7,5 x Torx T8 | 1,53 Nm | TM909192.0750 | ● |
| 5 | M3,5 x 8,5 x Torx T9 | 2,44 Nm | TM909293.0850 | ● |
| 6 | M4 x 10 x Torx T15 | 3,66 Nm | TM909394.1000 | ● |
| 7 | M4,5 x 11 x Torx T15 | 5,22 Nm | TM909395.1100 | ● |

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

Für die Bearbeitung von nichtrostenden Stahlwerkstoffen
 For the machining of stainless steel materials

VHM

ALCR T37

DIN 6537 K

R30

Z2

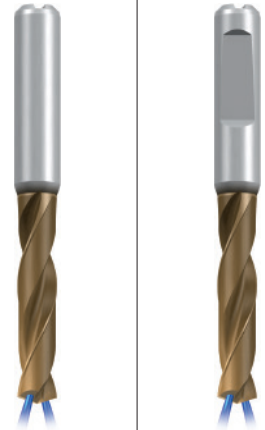
2FF

140°

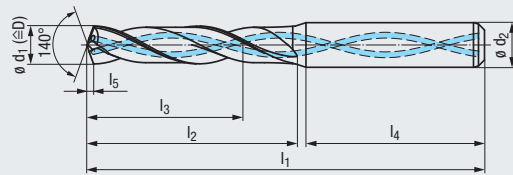
IT9-IT10

DIN 6535
 HA
 HE

VA
 Stainless steel materials



Kurze Ausführung
 Short design



Bohrtiefe
 Drill depth

3 x D

Einsatzgebiete – Material
 Applications – material » 510

M 1.1-4.1

S 1.1-3

S 2.2, 2.4, 2.6

N 1.1-3

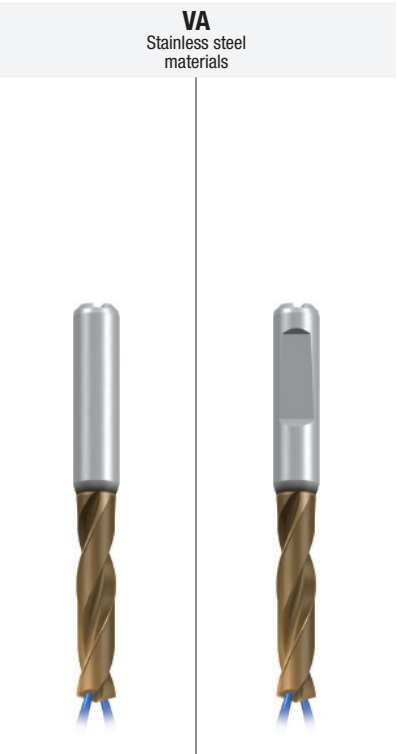
Werkzeug-Ident · Tool ident

TA204524 TA504524

| ø d ₁ m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | | | | | | ø d ₂ h6 | Dimens.- Ident | TA204524 | TA504524 |
|------------------------|-----------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|------------------------|-------------------|--|--|
| | | | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | | | EF-Drill-VA DIN6537K-HA IK-2FF ALCR-T37 | EF-Drill-VA DIN6537K-HE IK-2FF ALCR-T37 |
| 2,80 | | M3 | 57 | 16 | 11 | 36 | 0,6 | 6 | .0280 | ● | ● |
| 2,85 | | | 57 | 16 | 11 | 36 | 0,6 | 6 | .0285 | ● | ● |
| 2,90 | M3,5 | M3x0,25 | 57 | 16 | 11 | 36 | 0,6 | 6 | .0290 | ● | ● |
| 3,00 | M3,5x0,5 / MJ3,5x0,6 | | 62 | 20 | 14 | 36 | 0,6 | 6 | .0300 | ● | ● |
| 3,10 | | | 62 | 20 | 14 | 36 | 0,6 | 6 | .0310 | ● | ● |
| 3,15 | M3,5x0,35 | | 62 | 20 | 14 | 36 | 0,6 | 6 | .0315 | ● | ● |
| 3,20 | MJ3,5x0,35 | | 62 | 20 | 14 | 36 | 0,6 | 6 | .0320 | ● | ● |
| 3,25 | | M3,5 | 62 | 20 | 14 | 36 | 0,6 | 6 | .0325 | ● | ● |
| 3,30 | M4 | M3,5x0,5 | 62 | 20 | 14 | 36 | 0,7 | 6 | .0330 | ● | ● |
| 3,35 | | | 62 | 20 | 14 | 36 | 0,7 | 6 | .0335 | ● | ● |
| 3,38 | | M3,5x0,35 | 62 | 20 | 14 | 36 | 0,7 | 6 | .0338 | ● | ● |
| 3,40 | MJ4x0,7 | | 62 | 20 | 14 | 36 | 0,7 | 6 | .0340 | ● | ● |
| 3,50 | M4x0,5 | | 62 | 20 | 14 | 36 | 0,7 | 6 | .0350 | ● | ● |
| 3,55 | | | 62 | 20 | 14 | 36 | 0,7 | 6 | .0355 | ● | ● |
| 3,60 | MJ4x0,5 | | 62 | 20 | 14 | 36 | 0,7 | 6 | .0360 | ● | ● |
| 3,65 | M4x0,35 | | 62 | 20 | 14 | 36 | 0,7 | 6 | .0365 | ● | ● |
| 3,70 | M4,5 | M4 | 62 | 20 | 14 | 36 | 0,7 | 6 | .0370 | ● | ● |
| 3,80 | | M4x0,5 | 66 | 24 | 17 | 36 | 0,7 | 6 | .0380 | ● | ● |
| 3,88 | | M4x0,35 | 66 | 24 | 17 | 36 | 0,8 | 6 | .0388 | ● | ● |
| 3,90 | MJ4,5x0,75 | | 66 | 24 | 17 | 36 | 0,8 | 6 | .0390 | ● | ● |
| 4,00 | | | 66 | 24 | 17 | 36 | 0,8 | 6 | .0400 | ● | ● |
| 4,10 | MJ4,5x0,5 | | 66 | 24 | 17 | 36 | 0,8 | 6 | .0410 | ● | ● |
| 4,15 | M5x0,9 | | 66 | 24 | 17 | 36 | 0,8 | 6 | .0415 | ● | ● |
| 4,20 | M5 / M5x0,75 | M4,5 | 66 | 24 | 17 | 36 | 0,8 | 6 | .0420 | ● | ● |
| 4,30 | MJ5x0,8 | M4,5x0,5 | 66 | 24 | 17 | 36 | 0,8 | 6 | .0430 | ● | ● |
| 4,35 | | | 66 | 24 | 17 | 36 | 0,8 | 6 | .0435 | ● | ● |
| 4,40 | | | 66 | 24 | 17 | 36 | 0,9 | 6 | .0440 | ● | ● |
| 4,45 | | | 66 | 24 | 17 | 36 | 0,9 | 6 | .0445 | ● | ● |
| 4,50 | M5x0,5 | | 66 | 24 | 17 | 36 | 0,9 | 6 | .0450 | ● | ● |
| 4,60 | M5,5 / MJ5x0,5 | | 66 | 24 | 17 | 36 | 0,9 | 6 | .0460 | ● | ● |
| 4,65 | | M5 | 66 | 24 | 17 | 36 | 0,9 | 6 | .0465 | ● | ● |
| 4,70 | | M5x0,75 | 66 | 24 | 17 | 36 | 0,9 | 6 | .0470 | ● | ● |
| 4,80 | | M5x0,5 | 66 | 28 | 20 | 36 | 0,9 | 6 | .0480 | ● | ● |
| 4,90 | | | 66 | 28 | 20 | 36 | 0,9 | 6 | .0490 | ● | ● |
| 5,00 | M6 | | 66 | 28 | 20 | 36 | 1,0 | 6 | .0500 | ● | ● |
| 5,10 | MJ6x1 | M5,5 | 66 | 28 | 20 | 36 | 1,0 | 6 | .0510 | ● | ● |
| 5,20 | M6x0,75 | | 66 | 28 | 20 | 36 | 1,0 | 6 | .0520 | ● | ● |
| 5,25 | | | 66 | 28 | 20 | 36 | 1,0 | 6 | .0525 | ● | ● |
| 5,30 | | M5,5x0,5 | 66 | 28 | 20 | 36 | 1,0 | 6 | .0530 | ● | ● |
| 5,40 | | | 66 | 28 | 20 | 36 | 1,0 | 6 | .0540 | ● | ● |
| 5,50 | M6x0,5 | | 66 | 28 | 20 | 36 | 1,1 | 6 | .0550 | ● | ● |
| 5,55 | | | 66 | 28 | 20 | 36 | 1,1 | 6 | .0555 | ● | ● |
| 5,60 | MJ6x0,5 | M6 | 66 | 28 | 20 | 36 | 1,1 | 6 | .0560 | ● | ● |

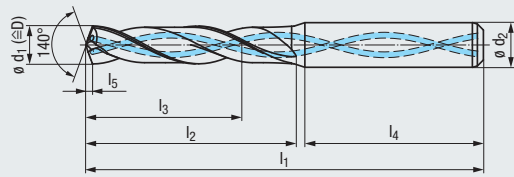
Für die Bearbeitung von nichtrostenden Stahlwerkstoffen
For the machining of stainless steel materials

VHM ALCR T37
 DIN 6537 K R30
 Z2 2FF
 140° IT9-IT10
 DIN 6535
 HA HE



- Product Finder
- vc / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

Kurze Ausführung
Short design



Bohrtiefe
Drill depth

3 x D

Einsatzgebiete – Material
Applications – material » 510

M 1.1-4.1 S 1.1-3 S 2.2, 2.4, 2.6
N 1.1-3

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

Werkzeug-Ident · Tool ident

| Ø d ₁ m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | | | | | | Ø d ₂ h6 | Dimens.- Ident | TA204524 | TA504524 |
|------------------------|-----------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|------------------------|-------------------|--|--|
| | | | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | | | EF-Drill-VA DIN6537K-HA IK-2FF ALCR-T37 | EF-Drill-VA DIN6537K-HE IK-2FF ALCR-T37 |
| 5,70 | | M6x0,75 | 66 | 28 | 20 | 36 | 1,1 | 6 | .0570 | ● | ● |
| 5,80 | | M6x0,5 | 66 | 28 | 20 | 36 | 1,1 | 6 | .0580 | ● | ● |
| 5,90 | | | 66 | 28 | 20 | 36 | 1,1 | 6 | .0590 | ● | ● |
| 6,00 | M7 | | 66 | 28 | 20 | 36 | 1,1 | 6 | .0600 | ● | ● |
| 6,10 | MJ7x1 | | 79 | 34 | 24 | 36 | 1,2 | 8 | .0610 | ● | ● |
| 6,20 | M7x0,75 | | 79 | 34 | 24 | 36 | 1,2 | 8 | .0620 | ● | ● |
| 6,30 | | | 79 | 34 | 24 | 36 | 1,2 | 8 | .0630 | ● | ● |
| 6,35 | MJ7x0,75 | | 79 | 34 | 24 | 36 | 1,2 | 8 | .0635 | ● | ● |
| 6,40 | | | 79 | 34 | 24 | 36 | 1,2 | 8 | .0640 | ● | ● |
| 6,50 | M7x0,5 | | 79 | 34 | 24 | 36 | 1,2 | 8 | .0650 | ● | ● |
| 6,60 | | M7 | 79 | 34 | 24 | 36 | 1,3 | 8 | .0660 | ● | ● |
| 6,70 | | M7x0,75 | 79 | 34 | 24 | 36 | 1,3 | 8 | .0670 | ● | ● |
| 6,80 | M8 | M7x0,5 | 79 | 34 | 24 | 36 | 1,3 | 8 | .0680 | ● | ● |
| 6,90 | MJ8x1,25 | | 79 | 34 | 24 | 36 | 1,3 | 8 | .0690 | ● | ● |
| 7,00 | M8x1 | | 79 | 34 | 24 | 36 | 1,3 | 8 | .0700 | ● | ● |
| 7,10 | MJ8x1 | | 79 | 41 | 29 | 36 | 1,3 | 8 | .0710 | ● | ● |
| 7,20 | M8x0,75 | | 79 | 41 | 29 | 36 | 1,4 | 8 | .0720 | ● | ● |
| 7,30 | | | 79 | 41 | 29 | 36 | 1,4 | 8 | .0730 | ● | ● |
| 7,40 | | | 79 | 41 | 29 | 36 | 1,4 | 8 | .0740 | ● | ● |
| 7,45 | | M8 | 79 | 41 | 29 | 36 | 1,4 | 8 | .0745 | ● | ● |
| 7,50 | M8x0,5 | | 79 | 41 | 29 | 36 | 1,4 | 8 | .0750 | ● | ● |
| 7,60 | | M8x1 | 79 | 41 | 29 | 36 | 1,4 | 8 | .0760 | ● | ● |
| 7,70 | | M8x0,75 | 79 | 41 | 29 | 36 | 1,5 | 8 | .0770 | ● | ● |
| 7,80 | M9 | M8x0,5 | 79 | 41 | 29 | 36 | 1,5 | 8 | .0780 | ● | ● |
| 7,90 | MJ9x1,25 | | 79 | 41 | 29 | 36 | 1,5 | 8 | .0790 | ● | ● |
| 8,00 | M9x1 | | 79 | 41 | 29 | 36 | 1,5 | 8 | .0800 | ● | ● |
| 8,10 | MJ9x1 | | 89 | 47 | 35 | 40 | 1,5 | 10 | .0810 | ● | ● |
| 8,20 | M9x0,75 | | 89 | 47 | 35 | 40 | 1,5 | 10 | .0820 | ● | ● |
| 8,30 | | | 89 | 47 | 35 | 40 | 1,6 | 10 | .0830 | ● | ● |
| 8,40 | | | 89 | 47 | 35 | 40 | 1,6 | 10 | .0840 | ● | ● |
| 8,45 | | M9 | 89 | 47 | 35 | 40 | 1,6 | 10 | .0845 | ● | ● |
| 8,50 | M10 / M9x0,5 | | 89 | 47 | 35 | 40 | 1,6 | 10 | .0850 | ● | ● |
| 8,60 | MJ10x1,5 | M9x1 | 89 | 47 | 35 | 40 | 1,6 | 10 | .0860 | ● | ● |
| 8,70 | | M9x0,75 | 89 | 47 | 35 | 40 | 1,6 | 10 | .0870 | ● | ● |
| 8,80 | M10x1,25 | M9x0,5 | 89 | 47 | 35 | 40 | 1,7 | 10 | .0880 | ● | ● |
| 8,90 | MJ10x1,25 | | 89 | 47 | 35 | 40 | 1,7 | 10 | .0890 | ● | ● |
| 9,00 | M10x1 | | 89 | 47 | 35 | 40 | 1,7 | 10 | .0900 | ● | ● |
| 9,10 | MJ10x1 | | 89 | 47 | 35 | 40 | 1,7 | 10 | .0910 | ● | ● |
| 9,20 | M10x0,75 | | 89 | 47 | 35 | 40 | 1,7 | 10 | .0920 | ● | ● |
| 9,30 | | | 89 | 47 | 35 | 40 | 1,7 | 10 | .0930 | ● | ● |
| 9,35 | MJ10x0,75 | M10 | 89 | 47 | 35 | 40 | 1,8 | 10 | .0935 | ● | ● |
| 9,40 | | | 89 | 47 | 35 | 40 | 1,8 | 10 | .0940 | ● | ● |
| 9,45 | | M10x1,25 | 89 | 47 | 35 | 40 | 1,8 | 10 | .0945 | ● | ● |

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

Ø 9,50 mm - Ø 20,00 mm



- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

Für die Bearbeitung von nichtrostenden Stahlwerkstoffen
 For the machining of stainless steel materials

VHM

ALCR T37

DIN 6537 K

R30

Z2

2FF

140°

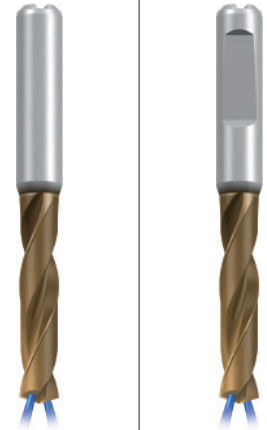
IT9-IT10

DIN 6535

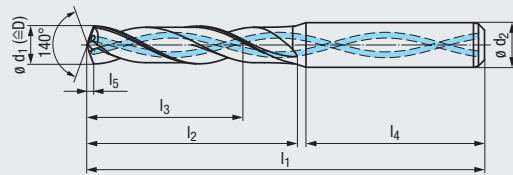
HA

HE

VA
Stainless steel materials



Kurze Ausführung
Short design



Bohrtiefe
Drill depth

3 x D

Einsatzgebiete – Material
Applications – material » 510

M 1.1-4.1

S 1.1-3

S 2.2, 2.4, 2.6

N 1.1-3

Werkzeug-Ident · Tool ident

TA204524 TA504524

| $\varnothing d_1$ m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | | | | | | $\varnothing d_2$ h6 | Dimens.- Ident | EF-Drill-VA DIN6537K-HA IK-2FF ALCR-T37 | EF-Drill-VA DIN6537K-HE IK-2FF ALCR-T37 |
|-------------------------|-----------------------|------------------------------------|-------|-------|-------|-------|-------|-------------------------|-------------------|--|--|
| | | | l_1 | l_2 | l_3 | l_4 | l_5 | | | TA204524 | TA504524 |
| 9,50 | M11 / M10x0,5 | | 89 | 47 | 35 | 40 | 1,8 | 10 | .0950 | ● | ● |
| 9,60 | MJ10x0,5 / MJ11x1,5 | M10x1 | 89 | 47 | 35 | 40 | 1,8 | 10 | .0960 | ● | ● |
| 9,70 | | M10x0,75 | 89 | 47 | 35 | 40 | 1,8 | 10 | .0970 | ● | ● |
| 9,80 | | M10x0,5 | 89 | 47 | 35 | 40 | 1,8 | 10 | .0980 | ● | ● |
| 9,90 | MJ11x1,25 | | 89 | 47 | 35 | 40 | 1,9 | 10 | .0990 | ● | ● |
| 10,00 | M11x1 | | 89 | 47 | 35 | 40 | 1,9 | 10 | .1000 | ● | ● |
| 10,10 | MJ11x1 | | 102 | 55 | 40 | 45 | 1,9 | 12 | .1010 | ● | ● |
| 10,20 | M12 / M11x0,75 | | 102 | 55 | 40 | 45 | 1,9 | 12 | .1020 | ● | ● |
| 10,30 | | | 102 | 55 | 40 | 45 | 1,9 | 12 | .1030 | ● | ● |
| 10,35 | MJ11x0,75 | M11 | 102 | 55 | 40 | 45 | 1,9 | 12 | .1035 | ● | ● |
| 10,40 | | | 102 | 55 | 40 | 45 | 1,9 | 12 | .1040 | ● | ● |
| 10,50 | M12x1,5 | | 102 | 55 | 40 | 45 | 2,0 | 12 | .1050 | ● | ● |
| 10,60 | MJ12x1,5 | M11x1 | 102 | 55 | 40 | 45 | 2,0 | 12 | .1060 | ● | ● |
| 10,70 | | M11x0,75 | 102 | 55 | 40 | 45 | 2,0 | 12 | .1070 | ● | ● |
| 10,80 | M12x1,25 | | 102 | 55 | 40 | 45 | 2,0 | 12 | .1080 | ● | ● |
| 10,90 | MJ12x1,25 | | 102 | 55 | 40 | 45 | 2,0 | 12 | .1090 | ● | ● |
| 11,00 | M12x1 | | 102 | 55 | 40 | 45 | 2,1 | 12 | .1100 | ● | ● |
| 11,10 | MJ12x1 | | 102 | 55 | 40 | 45 | 2,1 | 12 | .1110 | ● | ● |
| 11,20 | M12x0,75 | | 102 | 55 | 40 | 45 | 2,1 | 12 | .1120 | ● | ● |
| 11,25 | | M12 | 102 | 55 | 40 | 45 | 2,1 | 12 | .1125 | ● | ● |
| 11,30 | | | 102 | 55 | 40 | 45 | 2,1 | 12 | .1130 | ● | ● |
| 11,35 | | M12x1,5 | 102 | 55 | 40 | 45 | 2,1 | 12 | .1135 | ● | ● |
| 11,40 | | | 102 | 55 | 40 | 45 | 2,1 | 12 | .1140 | ● | ● |
| 11,45 | | M12x1,25 | 102 | 55 | 40 | 45 | 2,1 | 12 | .1145 | ● | ● |
| 11,50 | | | 102 | 55 | 40 | 45 | 2,1 | 12 | .1150 | ● | ● |
| 11,60 | | M12x1 | 102 | 55 | 40 | 45 | 2,2 | 12 | .1160 | ● | ● |
| 11,70 | | M12x0,75 | 102 | 55 | 40 | 45 | 2,2 | 12 | .1170 | ● | ● |
| 11,80 | | | 102 | 55 | 40 | 45 | 2,2 | 12 | .1180 | ● | ● |
| 11,90 | | | 102 | 55 | 40 | 45 | 2,2 | 12 | .1190 | ● | ● |
| 12,00 | M14 | | 102 | 55 | 40 | 45 | 2,2 | 12 | .1200 | ● | ● |
| 12,20 | | | 107 | 60 | 43 | 45 | 2,3 | 14 | .1220 | ● | ● |
| 12,30 | | | 107 | 60 | 43 | 45 | 2,3 | 14 | .1230 | ● | ● |
| 12,50 | M14x1,5 | | 107 | 60 | 43 | 45 | 2,3 | 14 | .1250 | ● | ● |
| 12,60 | MJ14x1,5 | M13x1 | 107 | 60 | 43 | 45 | 2,3 | 14 | .1260 | ● | ● |
| 12,70 | | M13x0,75 | 107 | 60 | 43 | 45 | 2,4 | 14 | .1270 | ● | ● |
| 12,80 | M14x1,25 | | 107 | 60 | 43 | 45 | 2,4 | 14 | .1280 | ● | ● |
| 12,90 | MJ14x1,25 | | 107 | 60 | 43 | 45 | 2,4 | 14 | .1290 | ● | ● |
| 13,00 | M14x1 | | 107 | 60 | 43 | 45 | 2,4 | 14 | .1300 | ● | ● |
| 13,10 | MJ14x1 | M14 | 107 | 60 | 43 | 45 | 2,4 | 14 | .1310 | ● | ● |
| 13,20 | M14x0,75 | | 107 | 60 | 43 | 45 | 2,5 | 14 | .1320 | ● | ● |
| 13,30 | | | 107 | 60 | 43 | 45 | 2,5 | 14 | .1330 | ● | ● |
| 13,35 | | M14x1,5 | 107 | 60 | 43 | 45 | 2,5 | 14 | .1335 | ● | ● |
| 13,45 | | M14x1,25 | 107 | 60 | 43 | 45 | 2,5 | 14 | .1345 | ● | ● |

Für die Bearbeitung von nichtrostenden Stahlwerkstoffen
For the machining of stainless steel materials

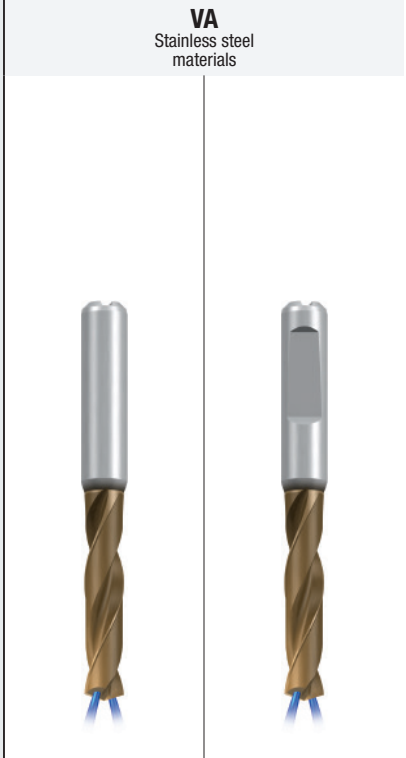
VHM **ALCR T37**

DIN 6537 K **R30**

Z2 **2FF**

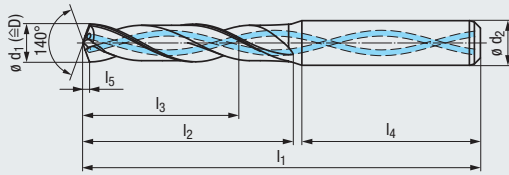
140° **IT9-IT10**

DIN 6535
HA HE



- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

Kurze Ausführung
Short design



Bohrtiefe
Drill depth

3 x D

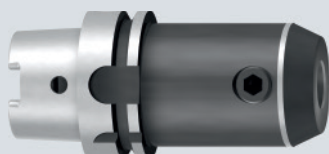
Einsatzgebiete – Material
Applications – material 510

M 1.1-4.1 **S** 1.1-3 **S** 2.2,2.4,2.6
N 1.1-3

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

Werkzeug-Ident · Tool ident

| ø d ₁ m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | | | | | | ø d ₂ h6 | Dimens.- Ident | TA204524 | TA504524 |
|------------------------|-----------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|------------------------|-------------------|--|--|
| | | | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | | | EF-Drill-VA DIN6537K-HA IK-2FF ALCR-T37 | EF-Drill-VA DIN6537K-HE IK-2FF ALCR-T37 |
| 13,50 | | | 107 | 60 | 43 | 45 | 2,5 | 14 | .1350 | ● | ● |
| 13,60 | MJ15x1,5 | M14x1 | 107 | 60 | 43 | 45 | 2,5 | 14 | .1360 | ● | ● |
| 13,70 | | M14x0,75 | 107 | 60 | 43 | 45 | 2,5 | 14 | .1370 | ● | ● |
| 13,80 | | | 107 | 60 | 43 | 45 | 2,6 | 14 | .1380 | ● | ● |
| 14,00 | M16 / M15x1 | | 107 | 60 | 43 | 45 | 2,6 | 14 | .1400 | ● | ● |
| 14,10 | MJ15x1 | | 115 | 65 | 45 | 48 | 2,6 | 16 | .1410 | ● | ● |
| 14,30 | | | 115 | 65 | 45 | 48 | 2,7 | 16 | .1430 | ● | ● |
| 14,40 | | | 115 | 65 | 45 | 48 | 2,7 | 16 | .1440 | ● | ● |
| 14,50 | M16x1,5 | | 115 | 65 | 45 | 48 | 2,7 | 16 | .1450 | ● | ● |
| 14,60 | MJ16x1,5 | M15x1 | 115 | 65 | 45 | 48 | 2,7 | 16 | .1460 | ● | ● |
| 14,70 | | M15x0,75 | 115 | 65 | 45 | 48 | 2,7 | 16 | .1470 | ● | ● |
| 14,80 | | | 115 | 65 | 45 | 48 | 2,7 | 16 | .1480 | ● | ● |
| 15,00 | M16x1 | | 115 | 65 | 45 | 48 | 2,8 | 16 | .1500 | ● | ● |
| 15,10 | MJ16x1 | M16 | 115 | 65 | 45 | 48 | 2,8 | 16 | .1510 | ● | ● |
| 15,35 | | M16x1,5 | 115 | 65 | 45 | 48 | 2,8 | 16 | .1535 | ● | ● |
| 15,50 | M18 | | 115 | 65 | 45 | 48 | 2,9 | 16 | .1550 | ● | ● |
| 15,60 | | M16x1 | 115 | 65 | 45 | 48 | 2,9 | 16 | .1560 | ● | ● |
| 16,00 | M18x2 | | 115 | 65 | 45 | 48 | 3,0 | 16 | .1600 | ● | ● |
| 16,50 | M18x1,5 | | 123 | 73 | 51 | 48 | 3,1 | 18 | .1650 | ● | ● |
| 17,00 | M18x1 | | 123 | 73 | 51 | 48 | 3,1 | 18 | .1700 | ● | ● |
| 17,50 | M20 | | 123 | 73 | 51 | 48 | 3,2 | 18 | .1750 | ● | ● |
| 17,60 | | M18x1 | 123 | 73 | 51 | 48 | 3,3 | 18 | .1760 | ● | ● |
| 18,00 | M20x2 | | 123 | 73 | 51 | 48 | 3,3 | 18 | .1800 | ● | ● |
| 18,50 | M20x1,5 | | 131 | 79 | 55 | 50 | 3,4 | 20 | .1850 | ● | ● |
| 18,85 | | M20 | 131 | 79 | 55 | 50 | 3,5 | 20 | .1885 | ● | ● |
| 19,00 | M20x1 | | 131 | 79 | 55 | 50 | 3,5 | 20 | .1900 | ● | ● |
| 19,35 | | M20x1,5 | 131 | 79 | 55 | 50 | 3,6 | 20 | .1935 | ● | ● |
| 19,50 | M22 | | 131 | 79 | 55 | 50 | 3,6 | 20 | .1950 | ● | ● |
| 19,60 | | M20x1 | 131 | 79 | 55 | 50 | 3,6 | 20 | .1960 | ● | ● |
| 20,00 | M22x2 | | 131 | 79 | 55 | 50 | 3,7 | 20 | .2000 | ● | ● |



Werkzeug-Aufnahmen für Zylinderschäfte
mit geneigter Spannfläche
siehe Seite 562 - 563

Tool holders for straight shanks
with inclined clamping flat,
see page 562 - 563

- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör
Accessories
- Tech. Info

Für die Bearbeitung von nichtrostenden Stahlwerkstoffen
For the machining of stainless steel materials

VHM

ALCR
T37

DIN
6537 L

R30

Z2

2FF

140°

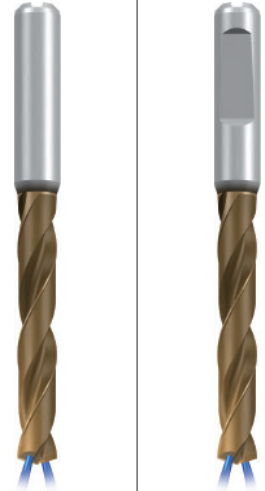
IT9-IT10

DIN 6535

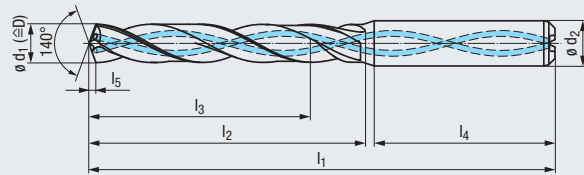
HA

HE

VA
Stainless steel
materials



Lange Ausführung
Long design



Bohrtiefe
Drill depth

5 x D

Einsatzgebiete – Material
Applications – material » 510

M 1.1-4.1 **S 1.1-3** **S 2.2, 2.4, 2.6**

Werkzeug-Ident · Tool ident

TA214524 **TA514524**

| $\emptyset d_1$ m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | | | | | | $\emptyset d_2$ h6 | Dimens.- Ident | EF-Drill-VA DIN6537L-HA IK-2FF ALCR-T37 | EF-Drill-VA DIN6537L-HE IK-2FF ALCR-T37 |
|-----------------------|---------------------------|--|-------|-------|-------|-------|-------|-----------------------|-------------------|--|--|
| | | | l_1 | l_2 | l_3 | l_4 | l_5 | | | TA214524 | TA514524 |
| 2,80 | | M3 | 61 | 22 | 17 | 36 | 0,6 | 6 | .0280 | ● | ● |
| 2,85 | | | 61 | 22 | 17 | 36 | 0,6 | 6 | .0285 | ● | ● |
| 2,90 | M3,5 | M3x0,25 | 61 | 22 | 17 | 36 | 0,6 | 6 | .0290 | ● | ● |
| 3,00 | M3,5x0,5 / MJ3,5x0,6 | | 66 | 28 | 23 | 36 | 0,6 | 6 | .0300 | ● | ● |
| 3,10 | | | 66 | 28 | 23 | 36 | 0,6 | 6 | .0310 | ● | ● |
| 3,15 | M3,5x0,35 | | 66 | 28 | 23 | 36 | 0,6 | 6 | .0315 | ● | ● |
| 3,20 | MJ3,5x0,35 | | 66 | 28 | 23 | 36 | 0,6 | 6 | .0320 | ● | ● |
| 3,25 | | M3,5 | 66 | 28 | 23 | 36 | 0,6 | 6 | .0325 | ● | ● |
| 3,30 | M4 | M3,5x0,5 | 66 | 28 | 23 | 36 | 0,7 | 6 | .0330 | ● | ● |
| 3,35 | | | 66 | 28 | 23 | 36 | 0,7 | 6 | .0335 | ● | ● |
| 3,38 | | M3,5x0,35 | 66 | 28 | 23 | 36 | 0,7 | 6 | .0338 | ● | ● |
| 3,40 | MJ4x0,7 | | 66 | 28 | 23 | 36 | 0,7 | 6 | .0340 | ● | ● |
| 3,50 | M4x0,5 | | 66 | 28 | 23 | 36 | 0,7 | 6 | .0350 | ● | ● |
| 3,55 | | | 66 | 28 | 23 | 36 | 0,7 | 6 | .0355 | ● | ● |
| 3,60 | MJ4x0,5 | | 66 | 28 | 23 | 36 | 0,7 | 6 | .0360 | ● | ● |
| 3,65 | M4x0,35 | | 66 | 28 | 23 | 36 | 0,7 | 6 | .0365 | ● | ● |
| 3,70 | M4,5 | M4 | 66 | 28 | 23 | 36 | 0,7 | 6 | .0370 | ● | ● |
| 3,80 | | M4x0,5 | 74 | 36 | 29 | 36 | 0,7 | 6 | .0380 | ● | ● |
| 3,88 | | M4x0,35 | 74 | 36 | 29 | 36 | 0,8 | 6 | .0388 | ● | ● |
| 3,90 | MJ4,5x0,75 | | 74 | 36 | 29 | 36 | 0,8 | 6 | .0390 | ● | ● |
| 4,00 | | | 74 | 36 | 29 | 36 | 0,8 | 6 | .0400 | ● | ● |
| 4,10 | MJ4,5x0,5 | | 74 | 36 | 29 | 36 | 0,8 | 6 | .0410 | ● | ● |
| 4,15 | M5x0,9 | | 74 | 36 | 29 | 36 | 0,8 | 6 | .0415 | ● | ● |
| 4,20 | M5 / M5x0,75 | M4,5 | 74 | 36 | 29 | 36 | 0,8 | 6 | .0420 | ● | ● |
| 4,30 | MJ5x0,8 | M4,5x0,5 | 74 | 36 | 29 | 36 | 0,8 | 6 | .0430 | ● | ● |
| 4,35 | | | 74 | 36 | 29 | 36 | 0,8 | 6 | .0435 | ● | ● |
| 4,40 | | | 74 | 36 | 29 | 36 | 0,9 | 6 | .0440 | ● | ● |
| 4,45 | | | 74 | 36 | 29 | 36 | 0,9 | 6 | .0445 | ● | ● |
| 4,50 | M5x0,5 | | 74 | 36 | 29 | 36 | 0,9 | 6 | .0450 | ● | ● |
| 4,60 | M5,5 / MJ5x0,5 | | 74 | 36 | 29 | 36 | 0,9 | 6 | .0460 | ● | ● |
| 4,65 | | M5 | 74 | 36 | 29 | 36 | 0,9 | 6 | .0465 | ● | ● |
| 4,70 | | M5x0,75 | 74 | 36 | 29 | 36 | 0,9 | 6 | .0470 | ● | ● |
| 4,80 | | M5x0,5 | 82 | 44 | 35 | 36 | 0,9 | 6 | .0480 | ● | ● |
| 4,90 | | | 82 | 44 | 35 | 36 | 0,9 | 6 | .0490 | ● | ● |
| 5,00 | M6 | | 82 | 44 | 35 | 36 | 1,0 | 6 | .0500 | ● | ● |
| 5,10 | MJ6x1 | M5,5 | 82 | 44 | 35 | 36 | 1,0 | 6 | .0510 | ● | ● |
| 5,20 | M6x0,75 | | 82 | 44 | 35 | 36 | 1,0 | 6 | .0520 | ● | ● |
| 5,25 | | | 82 | 44 | 35 | 36 | 1,0 | 6 | .0525 | ● | ● |
| 5,30 | | M5,5x0,5 | 82 | 44 | 35 | 36 | 1,0 | 6 | .0530 | ● | ● |
| 5,40 | | | 82 | 44 | 35 | 36 | 1,0 | 6 | .0540 | ● | ● |
| 5,50 | M6x0,5 | | 82 | 44 | 35 | 36 | 1,1 | 6 | .0550 | ● | ● |
| 5,55 | | | 82 | 44 | 35 | 36 | 1,1 | 6 | .0555 | ● | ● |
| 5,60 | MJ6x0,5 | M6 | 82 | 44 | 35 | 36 | 1,1 | 6 | .0560 | ● | ● |

Für die Bearbeitung von nichtrostenden Stahlwerkstoffen
For the machining of stainless steel materials

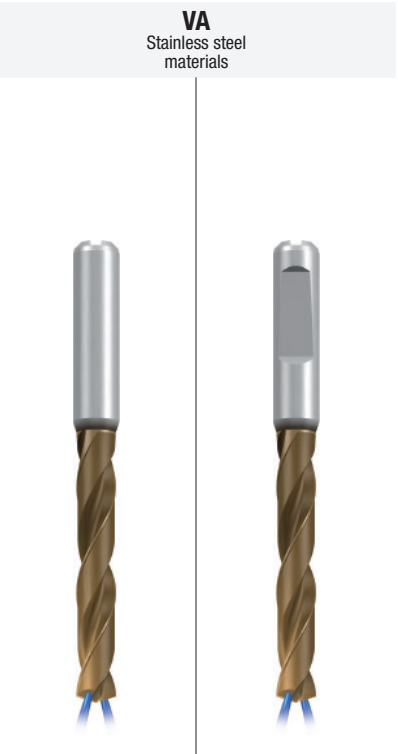
VHM **ALCR T37**

DIN 6537 L **R30**

Z2 **2FF**

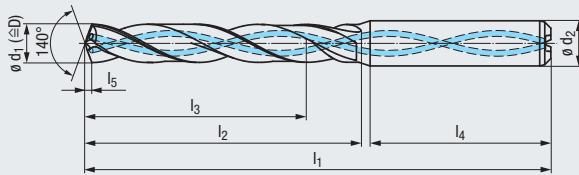
140° **IT9-IT10**

DIN 6535
HA HE



- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

Lange Ausführung
Long design



Bohrtiefe
Drill depth

5 x D

Einsatzgebiete – Material
Applications – material 510

M 1.1-4.1 **S 1.1-3** **S 2.2,2.4,2.6**

Werkzeug-Ident · Tool ident

| ø d ₁ m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | | | | | | ø d ₂ h6 | Dimens.- Ident | TA214524 | TA514524 |
|------------------------|-----------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|------------------------|-------------------|--|--|
| | | | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | | | EF-Drill-VA DIN6537L-HA IK-2FF ALCR-T37 | EF-Drill-VA DIN6537L-HE IK-2FF ALCR-T37 |
| 5,70 | | M6x0,75 | 82 | 44 | 35 | 36 | 1,1 | 6 | .0570 | ● | ● |
| 5,80 | | M6x0,5 | 82 | 44 | 35 | 36 | 1,1 | 6 | .0580 | ● | ● |
| 5,90 | | | 82 | 44 | 35 | 36 | 1,1 | 6 | .0590 | ● | ● |
| 6,00 | M7 | | 82 | 44 | 35 | 36 | 1,1 | 6 | .0600 | ● | ● |
| 6,10 | MJ7x1 | | 91 | 53 | 43 | 36 | 1,2 | 8 | .0610 | ● | ● |
| 6,20 | M7x0,75 | | 91 | 53 | 43 | 36 | 1,2 | 8 | .0620 | ● | ● |
| 6,30 | | | 91 | 53 | 43 | 36 | 1,2 | 8 | .0630 | ● | ● |
| 6,35 | MJ7x0,75 | | 91 | 53 | 43 | 36 | 1,2 | 8 | .0635 | ● | ● |
| 6,40 | | | 91 | 53 | 43 | 36 | 1,2 | 8 | .0640 | ● | ● |
| 6,50 | M7x0,5 | | 91 | 53 | 43 | 36 | 1,2 | 8 | .0650 | ● | ● |
| 6,60 | | M7 | 91 | 53 | 43 | 36 | 1,3 | 8 | .0660 | ● | ● |
| 6,70 | | M7x0,75 | 91 | 53 | 43 | 36 | 1,3 | 8 | .0670 | ● | ● |
| 6,80 | M8 | M7x0,5 | 91 | 53 | 43 | 36 | 1,3 | 8 | .0680 | ● | ● |
| 6,90 | MJ8x1,25 | | 91 | 53 | 43 | 36 | 1,3 | 8 | .0690 | ● | ● |
| 7,00 | M8x1 | | 91 | 53 | 43 | 36 | 1,3 | 8 | .0700 | ● | ● |
| 7,10 | MJ8x1 | | 91 | 53 | 43 | 36 | 1,3 | 8 | .0710 | ● | ● |
| 7,20 | M8x0,75 | | 91 | 53 | 43 | 36 | 1,4 | 8 | .0720 | ● | ● |
| 7,30 | | | 91 | 53 | 43 | 36 | 1,4 | 8 | .0730 | ● | ● |
| 7,40 | | | 91 | 53 | 43 | 36 | 1,4 | 8 | .0740 | ● | ● |
| 7,45 | | M8 | 91 | 53 | 43 | 36 | 1,4 | 8 | .0745 | ● | ● |
| 7,50 | M8x0,5 | | 91 | 53 | 43 | 36 | 1,4 | 8 | .0750 | ● | ● |
| 7,60 | | M8x1 | 91 | 53 | 43 | 36 | 1,4 | 8 | .0760 | ● | ● |
| 7,70 | | M8x0,75 | 91 | 53 | 43 | 36 | 1,5 | 8 | .0770 | ● | ● |
| 7,80 | M9 | M8x0,5 | 91 | 53 | 43 | 36 | 1,5 | 8 | .0780 | ● | ● |
| 7,90 | MJ9x1,25 | | 91 | 53 | 43 | 36 | 1,5 | 8 | .0790 | ● | ● |
| 8,00 | M9x1 | | 91 | 53 | 43 | 36 | 1,5 | 8 | .0800 | ● | ● |
| 8,10 | MJ9x1 | | 103 | 61 | 49 | 40 | 1,5 | 10 | .0810 | ● | ● |
| 8,20 | M9x0,75 | | 103 | 61 | 49 | 40 | 1,5 | 10 | .0820 | ● | ● |
| 8,30 | | | 103 | 61 | 49 | 40 | 1,6 | 10 | .0830 | ● | ● |
| 8,40 | | | 103 | 61 | 49 | 40 | 1,6 | 10 | .0840 | ● | ● |
| 8,45 | | M9 | 103 | 61 | 49 | 40 | 1,6 | 10 | .0845 | ● | ● |
| 8,50 | M10 / M9x0,5 | | 103 | 61 | 49 | 40 | 1,6 | 10 | .0850 | ● | ● |
| 8,60 | MJ10x1,5 | M9x1 | 103 | 61 | 49 | 40 | 1,6 | 10 | .0860 | ● | ● |
| 8,70 | | M9x0,75 | 103 | 61 | 49 | 40 | 1,6 | 10 | .0870 | ● | ● |
| 8,80 | M10x1,25 | M9x0,5 | 103 | 61 | 49 | 40 | 1,7 | 10 | .0880 | ● | ● |
| 8,90 | MJ10x1,25 | | 103 | 61 | 49 | 40 | 1,7 | 10 | .0890 | ● | ● |
| 9,00 | M10x1 | | 103 | 61 | 49 | 40 | 1,7 | 10 | .0900 | ● | ● |
| 9,10 | MJ10x1 | | 103 | 61 | 49 | 40 | 1,7 | 10 | .0910 | ● | ● |
| 9,20 | M10x0,75 | | 103 | 61 | 49 | 40 | 1,7 | 10 | .0920 | ● | ● |
| 9,30 | | | 103 | 61 | 49 | 40 | 1,7 | 10 | .0930 | ● | ● |
| 9,35 | MJ10x0,75 | M10 | 103 | 61 | 49 | 40 | 1,8 | 10 | .0935 | ● | ● |
| 9,40 | | | 103 | 61 | 49 | 40 | 1,8 | 10 | .0940 | ● | ● |
| 9,45 | | M10x1,25 | 103 | 61 | 49 | 40 | 1,8 | 10 | .0945 | ● | ● |

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör
Accessories
- Tech. Info

Für die Bearbeitung von nichtrostenden Stahlwerkstoffen
For the machining of stainless steel materials

VHM

ALCR
T37

DIN
6537 L

R30

Z2

2FF

140°

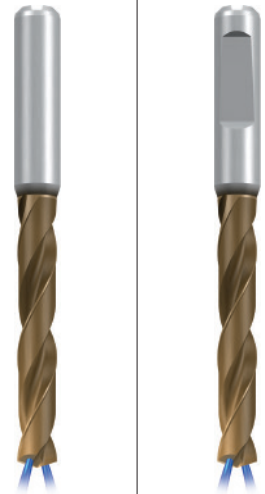
IT9-IT10

DIN 6535

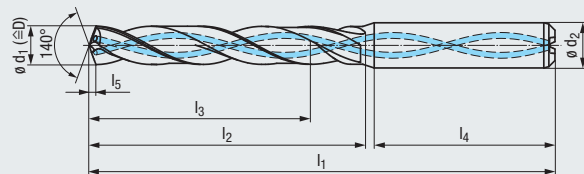
HA

HE

VA
Stainless steel
materials



Lange Ausführung
Long design



Bohrtiefe
Drill depth

5 x D

Einsatzgebiete – Material
Applications – material » 510

M 1.1-4.1 **S 1.1-3** **S 2.2, 2.4, 2.6**

Werkzeug-Ident · Tool ident

TA214524

TA514524

| $\varnothing d_1$ m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | | | | | | $\varnothing d_2$ h6 | Dimens.- Ident | EF-Drill-VA DIN6537L-HA IK-2FF ALCR-T37 | EF-Drill-VA DIN6537L-HE IK-2FF ALCR-T37 |
|-------------------------|-----------------------|------------------------------------|-------|-------|-------|-------|-------|-------------------------|-------------------|--|--|
| | | | l_1 | l_2 | l_3 | l_4 | l_5 | | | | |
| 9,50 | M11 / M10x0,5 | | 103 | 61 | 49 | 40 | 1,8 | 10 | .0950 | ● | ● |
| 9,60 | MJ10x0,5 / MJ11x1,5 | M10x1 | 103 | 61 | 49 | 40 | 1,8 | 10 | .0960 | ● | ● |
| 9,70 | | M10x0,75 | 103 | 61 | 49 | 40 | 1,8 | 10 | .0970 | ● | ● |
| 9,80 | | M10x0,5 | 103 | 61 | 49 | 40 | 1,8 | 10 | .0980 | ● | ● |
| 9,90 | MJ11x1,25 | | 103 | 61 | 49 | 40 | 1,9 | 10 | .0990 | ● | ● |
| 10,00 | M11x1 | | 103 | 61 | 49 | 40 | 1,9 | 10 | .1000 | ● | ● |
| 10,10 | MJ11x1 | | 118 | 71 | 56 | 45 | 1,9 | 12 | .1010 | ● | ● |
| 10,20 | M12 / M11x0,75 | | 118 | 71 | 56 | 45 | 1,9 | 12 | .1020 | ● | ● |
| 10,30 | | | 118 | 71 | 56 | 45 | 1,9 | 12 | .1030 | ● | ● |
| 10,35 | MJ11x0,75 | M11 | 118 | 71 | 56 | 45 | 1,9 | 12 | .1035 | ● | ● |
| 10,40 | | | 118 | 71 | 56 | 45 | 1,9 | 12 | .1040 | ● | ● |
| 10,50 | M12x1,5 | | 118 | 71 | 56 | 45 | 2,0 | 12 | .1050 | ● | ● |
| 10,60 | MJ12x1,5 | M11x1 | 118 | 71 | 56 | 45 | 2,0 | 12 | .1060 | ● | ● |
| 10,70 | | M11x0,75 | 118 | 71 | 56 | 45 | 2,0 | 12 | .1070 | ● | ● |
| 10,80 | M12x1,25 | | 118 | 71 | 56 | 45 | 2,0 | 12 | .1080 | ● | ● |
| 10,90 | MJ12x1,25 | | 118 | 71 | 56 | 45 | 2,0 | 12 | .1090 | ● | ● |
| 11,00 | M12x1 | | 118 | 71 | 56 | 45 | 2,1 | 12 | .1100 | ● | ● |
| 11,10 | MJ12x1 | | 118 | 71 | 56 | 45 | 2,1 | 12 | .1110 | ● | ● |
| 11,20 | M12x0,75 | | 118 | 71 | 56 | 45 | 2,1 | 12 | .1120 | ● | ● |
| 11,25 | | M12 | 118 | 71 | 56 | 45 | 2,1 | 12 | .1125 | ● | ● |
| 11,30 | | | 118 | 71 | 56 | 45 | 2,1 | 12 | .1130 | ● | ● |
| 11,35 | | M12x1,5 | 118 | 71 | 56 | 45 | 2,1 | 12 | .1135 | ● | ● |
| 11,40 | | | 118 | 71 | 56 | 45 | 2,1 | 12 | .1140 | ● | ● |
| 11,45 | | M12x1,25 | 118 | 71 | 56 | 45 | 2,1 | 12 | .1145 | ● | ● |
| 11,50 | | | 118 | 71 | 56 | 45 | 2,1 | 12 | .1150 | ● | ● |
| 11,60 | | M12x1 | 118 | 71 | 56 | 45 | 2,2 | 12 | .1160 | ● | ● |
| 11,70 | | M12x0,75 | 118 | 71 | 56 | 45 | 2,2 | 12 | .1170 | ● | ● |
| 11,80 | | | 118 | 71 | 56 | 45 | 2,2 | 12 | .1180 | ● | ● |
| 11,90 | | | 118 | 71 | 56 | 45 | 2,2 | 12 | .1190 | ● | ● |
| 12,00 | M14 | | 118 | 71 | 56 | 45 | 2,2 | 12 | .1200 | ● | ● |
| 12,20 | | | 124 | 77 | 60 | 45 | 2,3 | 14 | .1220 | ● | ● |
| 12,30 | | | 124 | 77 | 60 | 45 | 2,3 | 14 | .1230 | ● | ● |
| 12,50 | M14x1,5 | | 124 | 77 | 60 | 45 | 2,3 | 14 | .1250 | ● | ● |
| 12,60 | MJ14x1,5 | M13x1 | 124 | 77 | 60 | 45 | 2,3 | 14 | .1260 | ● | ● |
| 12,70 | | M13x0,75 | 124 | 77 | 60 | 45 | 2,4 | 14 | .1270 | ● | ● |
| 12,80 | M14x1,25 | | 124 | 77 | 60 | 45 | 2,4 | 14 | .1280 | ● | ● |
| 12,90 | MJ14x1,25 | | 124 | 77 | 60 | 45 | 2,4 | 14 | .1290 | ● | ● |
| 13,00 | M14x1 | | 124 | 77 | 60 | 45 | 2,4 | 14 | .1300 | ● | ● |
| 13,10 | MJ14x1 | M14 | 124 | 77 | 60 | 45 | 2,4 | 14 | .1310 | ● | ● |
| 13,20 | M14x0,75 | | 124 | 77 | 60 | 45 | 2,5 | 14 | .1320 | ● | ● |
| 13,30 | | | 124 | 77 | 60 | 45 | 2,5 | 14 | .1330 | ● | ● |
| 13,35 | | M14x1,5 | 124 | 77 | 60 | 45 | 2,5 | 14 | .1335 | ● | ● |
| 13,45 | | M14x1,25 | 124 | 77 | 60 | 45 | 2,5 | 14 | .1345 | ● | ● |



Für die Bearbeitung von nichtrostenden Stahlwerkstoffen
For the machining of stainless steel materials

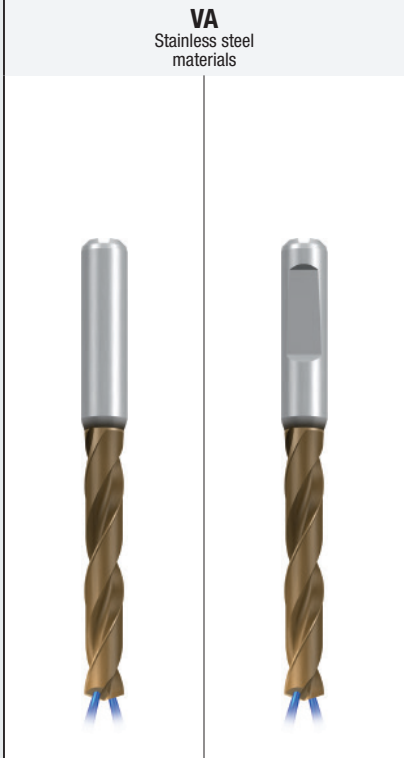
VHM **ALCR T37**

DIN 6537 L **R30**

Z2 **2FF**

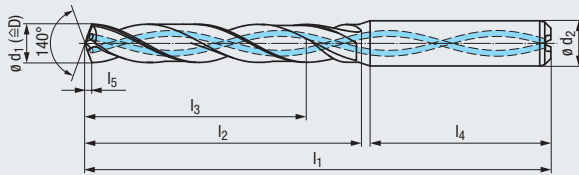
140° **IT9-IT10**

DIN 6535
HA  HE 




- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

Lange Ausführung
Long design



Bohrtiefe
Drill depth

5 x D

Einsatzgebiete – Material
Applications – material  510

M 1.1-4.1 **S 1.1-3** **S 2.2,2.4,2.6**

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

Werkzeug-Ident · Tool ident

| ø d ₁ m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | | | | | | ø d ₂ h6 | Dimens.- Ident | TA214524 | TA514524 |
|------------------------|-----------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|------------------------|-------------------|--|--|
| | | | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | | | EF-Drill-VA DIN6537L-HA IK-2FF ALCR-T37 | EF-Drill-VA DIN6537L-HE IK-2FF ALCR-T37 |
| 13,50 | | | 124 | 77 | 60 | 45 | 2,5 | 14 | .1350 | ● | ● |
| 13,60 | MJ15x1,5 | M14x1 | 124 | 77 | 60 | 45 | 2,5 | 14 | .1360 | ● | ● |
| 13,70 | | M14x0,75 | 124 | 77 | 60 | 45 | 2,5 | 14 | .1370 | ● | ● |
| 13,80 | | | 124 | 77 | 60 | 45 | 2,6 | 14 | .1380 | ● | ● |
| 14,00 | M16 / M15x1 | | 124 | 77 | 60 | 45 | 2,6 | 14 | .1400 | ● | ● |
| 14,10 | MJ15x1 | | 133 | 83 | 63 | 48 | 2,6 | 16 | .1410 | ● | ● |
| 14,30 | | | 133 | 83 | 63 | 48 | 2,7 | 16 | .1430 | ● | ● |
| 14,40 | | | 133 | 83 | 63 | 48 | 2,7 | 16 | .1440 | ● | ● |
| 14,50 | M16x1,5 | | 133 | 83 | 63 | 48 | 2,7 | 16 | .1450 | ● | ● |
| 14,60 | MJ16x1,5 | M15x1 | 133 | 83 | 63 | 48 | 2,7 | 16 | .1460 | ● | ● |
| 14,70 | | M15x0,75 | 133 | 83 | 63 | 48 | 2,7 | 16 | .1470 | ● | ● |
| 14,80 | | | 133 | 83 | 63 | 48 | 2,7 | 16 | .1480 | ● | ● |
| 15,00 | M16x1 | | 133 | 83 | 63 | 48 | 2,8 | 16 | .1500 | ● | ● |
| 15,10 | MJ16x1 | M16 | 133 | 83 | 63 | 48 | 2,8 | 16 | .1510 | ● | ● |
| 15,35 | | M16x1,5 | 133 | 83 | 63 | 48 | 2,8 | 16 | .1535 | ● | ● |
| 15,50 | M18 | | 133 | 83 | 63 | 48 | 2,9 | 16 | .1550 | ● | ● |
| 15,60 | | M16x1 | 133 | 83 | 63 | 48 | 2,9 | 16 | .1560 | ● | ● |
| 16,00 | M18x2 | | 133 | 83 | 63 | 48 | 3,0 | 16 | .1600 | ● | ● |
| 16,50 | M18x1,5 | | 143 | 93 | 71 | 48 | 3,1 | 18 | .1650 | ● | ● |
| 17,00 | M18x1 | | 143 | 93 | 71 | 48 | 3,1 | 18 | .1700 | ● | ● |
| 17,50 | M20 | | 143 | 93 | 71 | 48 | 3,2 | 18 | .1750 | ● | ● |
| 17,60 | | M18x1 | 143 | 93 | 71 | 48 | 3,3 | 18 | .1760 | ● | ● |
| 18,00 | M20x2 | | 143 | 93 | 71 | 48 | 3,3 | 18 | .1800 | ● | ● |
| 18,50 | M20x1,5 | | 153 | 101 | 77 | 50 | 3,4 | 20 | .1850 | ● | ● |
| 18,85 | | M20 | 153 | 101 | 77 | 50 | 3,5 | 20 | .1885 | ● | ● |
| 19,00 | M20x1 | | 153 | 101 | 77 | 50 | 3,5 | 20 | .1900 | ● | ● |
| 19,35 | | M20x1,5 | 153 | 101 | 77 | 50 | 3,6 | 20 | .1935 | ● | ● |
| 19,50 | M22 | | 153 | 101 | 77 | 50 | 3,6 | 20 | .1950 | ● | ● |
| 19,60 | | M20x1 | 153 | 101 | 77 | 50 | 3,6 | 20 | .1960 | ● | ● |
| 20,00 | M22x2 | | 153 | 101 | 77 | 50 | 3,7 | 20 | .2000 | ● | ● |



● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

Für die Bearbeitung von Gusswerkstoffen
For the machining of cast materials

VHM

ALCR T2

DIN 6537 L

R30

Z2

4FF

140°

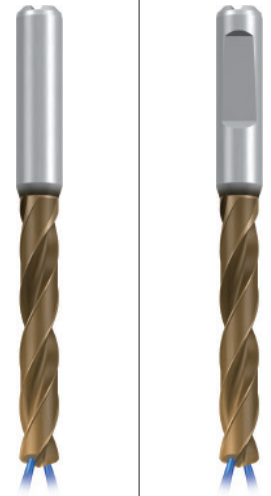
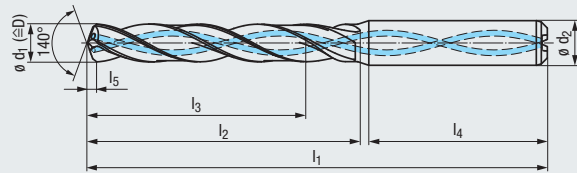
IT9-IT10

DIN 6535

HA

HE

Lange Ausführung
Long design



Bohrtiefe
Drill depth

5 x D

Einsatzgebiete – Material
Applications – material » 510

K 1.1-4.2

Werkzeug-Ident · Tool ident

TA212444

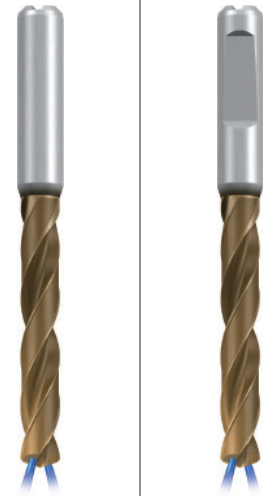
TA512444

| ø d ₁ m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | | | | | | ø d ₂ h6 | Dimens.- Ident | EF-Drill-GG DIN6537L-HA IK-4FF ALCR-T2 | EF-Drill-GG DIN6537L-HE IK-4FF ALCR-T2 |
|------------------------|-----------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|------------------------|-------------------|---|---|
| | | | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | | | ● | ● |
| 2,80 | | M3 | 61 | 22 | 17 | 36 | 0,7 | 6 | .0280 | ● | ● |
| 2,85 | | | 61 | 22 | 17 | 36 | 0,7 | 6 | .0285 | ● | ● |
| 2,90 | M3,5 | M3x0,25 | 61 | 22 | 17 | 36 | 0,8 | 6 | .0290 | ● | ● |
| 3,00 | M3,5x0,5 / MJ3,5x0,6 | | 66 | 28 | 23 | 36 | 0,8 | 6 | .0300 | ● | ● |
| 3,10 | | | 66 | 28 | 23 | 36 | 0,8 | 6 | .0310 | ● | ● |
| 3,15 | M3,5x0,35 | | 66 | 28 | 23 | 36 | 0,8 | 6 | .0315 | ● | ● |
| 3,20 | MJ3,5x0,35 | | 66 | 28 | 23 | 36 | 0,8 | 6 | .0320 | ● | ● |
| 3,25 | | M3,5 | 66 | 28 | 23 | 36 | 0,8 | 6 | .0325 | ● | ● |
| 3,30 | M4 | M3,5x0,5 | 66 | 28 | 23 | 36 | 0,9 | 6 | .0330 | ● | ● |
| 3,35 | | | 66 | 28 | 23 | 36 | 0,9 | 6 | .0335 | ● | ● |
| 3,38 | | M3,5x0,35 | 66 | 28 | 23 | 36 | 0,9 | 6 | .0338 | ● | ● |
| 3,40 | MJ4x0,7 | | 66 | 28 | 23 | 36 | 0,9 | 6 | .0340 | ● | ● |
| 3,50 | M4x0,5 | | 66 | 28 | 23 | 36 | 0,9 | 6 | .0350 | ● | ● |
| 3,55 | | | 66 | 28 | 23 | 36 | 0,9 | 6 | .0355 | ● | ● |
| 3,60 | MJ4x0,5 | | 66 | 28 | 23 | 36 | 0,9 | 6 | .0360 | ● | ● |
| 3,65 | M4x0,35 | | 66 | 28 | 23 | 36 | 0,9 | 6 | .0365 | ● | ● |
| 3,70 | M4,5 | M4 | 66 | 28 | 23 | 36 | 1,0 | 6 | .0370 | ● | ● |
| 3,80 | | M4x0,5 | 74 | 36 | 29 | 36 | 1,0 | 6 | .0380 | ● | ● |
| 3,88 | | M4x0,35 | 74 | 36 | 29 | 36 | 1,0 | 6 | .0388 | ● | ● |
| 3,90 | MJ4,5x0,75 | | 74 | 36 | 29 | 36 | 1,0 | 6 | .0390 | ● | ● |
| 4,00 | | | 74 | 36 | 29 | 36 | 1,0 | 6 | .0400 | ● | ● |
| 4,10 | MJ4,5x0,5 | | 74 | 36 | 29 | 36 | 1,1 | 6 | .0410 | ● | ● |
| 4,15 | M5x0,9 | | 74 | 36 | 29 | 36 | 1,1 | 6 | .0415 | ● | ● |
| 4,20 | M5 / M5x0,75 | M4,5 | 74 | 36 | 29 | 36 | 1,1 | 6 | .0420 | ● | ● |
| 4,30 | MJ5x0,8 | M4,5x0,5 | 74 | 36 | 29 | 36 | 1,1 | 6 | .0430 | ● | ● |
| 4,35 | | | 74 | 36 | 29 | 36 | 1,1 | 6 | .0435 | ● | ● |
| 4,40 | | | 74 | 36 | 29 | 36 | 1,1 | 6 | .0440 | ● | ● |
| 4,45 | | | 74 | 36 | 29 | 36 | 1,1 | 6 | .0445 | ● | ● |
| 4,50 | M5x0,5 | | 74 | 36 | 29 | 36 | 1,2 | 6 | .0450 | ● | ● |
| 4,60 | M5,5 / MJ5x0,5 | | 74 | 36 | 29 | 36 | 1,2 | 6 | .0460 | ● | ● |
| 4,65 | | M5 | 74 | 36 | 29 | 36 | 1,2 | 6 | .0465 | ● | ● |
| 4,70 | | M5x0,75 | 74 | 36 | 29 | 36 | 1,2 | 6 | .0470 | ● | ● |
| 4,80 | | M5x0,5 | 82 | 44 | 35 | 36 | 1,2 | 6 | .0480 | ● | ● |
| 4,90 | | | 82 | 44 | 35 | 36 | 1,3 | 6 | .0490 | ● | ● |
| 5,00 | M6 | | 82 | 44 | 35 | 36 | 1,3 | 6 | .0500 | ● | ● |
| 5,10 | MJ6x1 | M5,5 | 82 | 44 | 35 | 36 | 1,3 | 6 | .0510 | ● | ● |
| 5,20 | M6x0,75 | | 82 | 44 | 35 | 36 | 1,3 | 6 | .0520 | ● | ● |
| 5,25 | | | 82 | 44 | 35 | 36 | 1,3 | 6 | .0525 | ● | ● |
| 5,30 | | M5,5x0,5 | 82 | 44 | 35 | 36 | 1,4 | 6 | .0530 | ● | ● |
| 5,40 | | | 82 | 44 | 35 | 36 | 1,4 | 6 | .0540 | ● | ● |
| 5,50 | M6x0,5 | | 82 | 44 | 35 | 36 | 1,4 | 6 | .0550 | ● | ● |
| 5,55 | | | 82 | 44 | 35 | 36 | 1,4 | 6 | .0555 | ● | ● |
| 5,60 | MJ6x0,5 | M6 | 82 | 44 | 35 | 36 | 1,4 | 6 | .0560 | ● | ● |

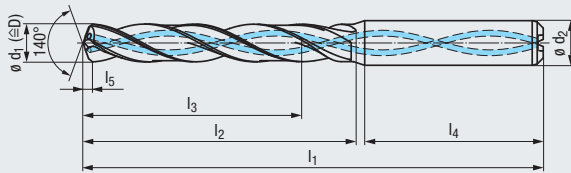
Für die Bearbeitung von Gusswerkstoffen
For the machining of cast materials

VHM ALCR T2
DIN 6537 L R30
Z2 4FF
140° IT9-IT10
DIN 6535
HA HE

GG
Cast iron



Lange Ausführung
Long design



Bohrtiefe
Drill depth

5 x D

Einsatzgebiete – Material
Applications – material **510**

K 1.1-4.2

Werkzeug-Ident · Tool ident

| Ø d ₁ m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | Dimensions | | | | | Ø d ₂ h6 | Dimens.- Ident | TA212444 | TA512444 |
|------------------------|-----------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|------------------------|-------------------|---|---|
| | | | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | | | EF-Drill-GG DIN6537L-HA IK-4FF ALCR-T2 | EF-Drill-GG DIN6537L-HE IK-4FF ALCR-T2 |
| 5,70 | | M6x0,75 | 82 | 44 | 35 | 36 | 1,4 | 6 | .0570 | ● | ● |
| 5,80 | | M6x0,5 | 82 | 44 | 35 | 36 | 1,5 | 6 | .0580 | ● | ● |
| 5,90 | | | 82 | 44 | 35 | 36 | 1,5 | 6 | .0590 | ● | ● |
| 6,00 | M7 | | 82 | 44 | 35 | 36 | 1,5 | 6 | .0600 | ● | ● |
| 6,10 | MJ7x1 | | 91 | 53 | 43 | 36 | 1,5 | 8 | .0610 | ● | ● |
| 6,20 | M7x0,75 | | 91 | 53 | 43 | 36 | 1,6 | 8 | .0620 | ● | ● |
| 6,30 | | | 91 | 53 | 43 | 36 | 1,6 | 8 | .0630 | ● | ● |
| 6,35 | MJ7x0,75 | | 91 | 53 | 43 | 36 | 1,6 | 8 | .0635 | ● | ● |
| 6,40 | | | 91 | 53 | 43 | 36 | 1,6 | 8 | .0640 | ● | ● |
| 6,50 | M7x0,5 | | 91 | 53 | 43 | 36 | 1,6 | 8 | .0650 | ● | ● |
| 6,60 | | M7 | 91 | 53 | 43 | 36 | 1,7 | 8 | .0660 | ● | ● |
| 6,70 | | M7x0,75 | 91 | 53 | 43 | 36 | 1,7 | 8 | .0670 | ● | ● |
| 6,80 | M8 | M7x0,5 | 91 | 53 | 43 | 36 | 1,7 | 8 | .0680 | ● | ● |
| 6,90 | MJ8x1,25 | | 91 | 53 | 43 | 36 | 1,7 | 8 | .0690 | ● | ● |
| 7,00 | M8x1 | | 91 | 53 | 43 | 36 | 1,8 | 8 | .0700 | ● | ● |
| 7,10 | MJ8x1 | | 91 | 53 | 43 | 36 | 1,8 | 8 | .0710 | ● | ● |
| 7,20 | M8x0,75 | | 91 | 53 | 43 | 36 | 1,8 | 8 | .0720 | ● | ● |
| 7,30 | | | 91 | 53 | 43 | 36 | 1,8 | 8 | .0730 | ● | ● |
| 7,40 | | | 91 | 53 | 43 | 36 | 1,9 | 8 | .0740 | ● | ● |
| 7,45 | | M8 | 91 | 53 | 43 | 36 | 1,9 | 8 | .0745 | ● | ● |
| 7,50 | M8x0,5 | | 91 | 53 | 43 | 36 | 1,9 | 8 | .0750 | ● | ● |
| 7,60 | | M8x1 | 91 | 53 | 43 | 36 | 1,9 | 8 | .0760 | ● | ● |
| 7,70 | | M8x0,75 | 91 | 53 | 43 | 36 | 1,9 | 8 | .0770 | ● | ● |
| 7,80 | M9 | M8x0,5 | 91 | 53 | 43 | 36 | 2,0 | 8 | .0780 | ● | ● |
| 7,90 | MJ9x1,25 | | 91 | 53 | 43 | 36 | 2,0 | 8 | .0790 | ● | ● |
| 8,00 | M9x1 | | 91 | 53 | 43 | 36 | 2,0 | 8 | .0800 | ● | ● |
| 8,10 | MJ9x1 | | 103 | 61 | 49 | 40 | 2,0 | 10 | .0810 | ● | ● |
| 8,20 | M9x0,75 | | 103 | 61 | 49 | 40 | 2,1 | 10 | .0820 | ● | ● |
| 8,30 | | | 103 | 61 | 49 | 40 | 2,1 | 10 | .0830 | ● | ● |
| 8,40 | | | 103 | 61 | 49 | 40 | 2,1 | 10 | .0840 | ● | ● |
| 8,45 | | M9 | 103 | 61 | 49 | 40 | 2,1 | 10 | .0845 | ● | ● |
| 8,50 | M10 / M9x0,5 | | 103 | 61 | 49 | 40 | 2,1 | 10 | .0850 | ● | ● |
| 8,60 | MJ10x1,5 | M9x1 | 103 | 61 | 49 | 40 | 2,2 | 10 | .0860 | ● | ● |
| 8,70 | | M9x0,75 | 103 | 61 | 49 | 40 | 2,2 | 10 | .0870 | ● | ● |
| 8,80 | M10x1,25 | M9x0,5 | 103 | 61 | 49 | 40 | 2,2 | 10 | .0880 | ● | ● |
| 8,90 | MJ10x1,25 | | 103 | 61 | 49 | 40 | 2,2 | 10 | .0890 | ● | ● |
| 9,00 | M10x1 | | 103 | 61 | 49 | 40 | 2,3 | 10 | .0900 | ● | ● |
| 9,10 | MJ10x1 | | 103 | 61 | 49 | 40 | 2,3 | 10 | .0910 | ● | ● |
| 9,20 | M10x0,75 | | 103 | 61 | 49 | 40 | 2,3 | 10 | .0920 | ● | ● |
| 9,30 | | | 103 | 61 | 49 | 40 | 2,3 | 10 | .0930 | ● | ● |
| 9,35 | MJ10x0,75 | M10 | 103 | 61 | 49 | 40 | 2,3 | 10 | .0935 | ● | ● |
| 9,40 | | | 103 | 61 | 49 | 40 | 2,4 | 10 | .0940 | ● | ● |
| 9,45 | | M10x1,25 | 103 | 61 | 49 | 40 | 2,4 | 10 | .0945 | ● | ● |

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

Ø 9,50 mm - Ø 20,00 mm



- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör
Accessories
- Tech. Info

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



- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör
Accessories
- Tech. Info

Für die Bearbeitung von Gusswerkstoffen
For the machining of cast materials

VHM

ALCR T2

DIN 6537 L

R30

Z2

4FF

140°

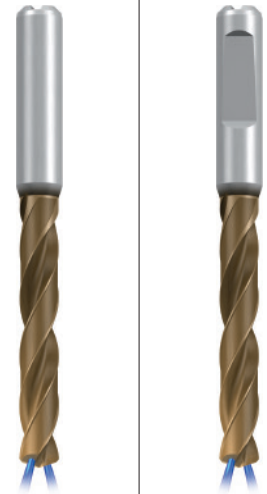
IT9-IT10

DIN 6535

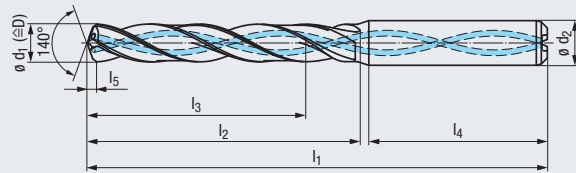
HA

HE

GG
Cast iron



Lange Ausführung
Long design



Bohrtiefe
Drill depth

5 x D

Einsatzgebiete – Material
Applications – material » 510

K 1.1-4.2

Werkzeug-Ident · Tool ident

TA212444

TA512444

| $\emptyset d_1$ m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | | | | | | $\emptyset d_2$ h6 | Dimens.- Ident | EF-Drill-GG DIN6537L-HA IK-4FF ALCR-T2 | EF-Drill-GG DIN6537L-HE IK-4FF ALCR-T2 |
|-----------------------|-----------------------|------------------------------------|-------|-------|-------|-------|-------|-----------------------|-------------------|---|---|
| | | | l_1 | l_2 | l_3 | l_4 | l_5 | | | | |
| 9,50 | M11 / M10x0,5 | | 103 | 61 | 49 | 40 | 2,4 | 10 | .0950 | ● | ● |
| 9,60 | MJ10x0,5 / MJ11x1,5 | M10x1 | 103 | 61 | 49 | 40 | 2,4 | 10 | .0960 | ● | ● |
| 9,70 | | M10x0,75 | 103 | 61 | 49 | 40 | 2,4 | 10 | .0970 | ● | ● |
| 9,80 | | M10x0,5 | 103 | 61 | 49 | 40 | 2,5 | 10 | .0980 | ● | ● |
| 9,90 | MJ11x1,25 | | 103 | 61 | 49 | 40 | 2,5 | 10 | .0990 | ● | ● |
| 10,00 | M11x1 | | 103 | 61 | 49 | 40 | 2,5 | 10 | .1000 | ● | ● |
| 10,10 | MJ11x1 | | 118 | 71 | 56 | 45 | 2,5 | 12 | .1010 | ● | ● |
| 10,20 | M12 / M11x0,75 | | 118 | 71 | 56 | 45 | 2,6 | 12 | .1020 | ● | ● |
| 10,30 | | | 118 | 71 | 56 | 45 | 2,6 | 12 | .1030 | ● | ● |
| 10,35 | MJ11x0,75 | M11 | 118 | 71 | 56 | 45 | 2,6 | 12 | .1035 | ● | ● |
| 10,40 | | | 118 | 71 | 56 | 45 | 2,6 | 12 | .1040 | ● | ● |
| 10,50 | M12x1,5 | | 118 | 71 | 56 | 45 | 2,6 | 12 | .1050 | ● | ● |
| 10,60 | MJ12x1,5 | M11x1 | 118 | 71 | 56 | 45 | 2,7 | 12 | .1060 | ● | ● |
| 10,70 | | M11x0,75 | 118 | 71 | 56 | 45 | 2,7 | 12 | .1070 | ● | ● |
| 10,80 | M12x1,25 | | 118 | 71 | 56 | 45 | 2,7 | 12 | .1080 | ● | ● |
| 10,90 | MJ12x1,25 | | 118 | 71 | 56 | 45 | 2,7 | 12 | .1090 | ● | ● |
| 11,00 | M12x1 | | 118 | 71 | 56 | 45 | 2,8 | 12 | .1100 | ● | ● |
| 11,10 | MJ12x1 | | 118 | 71 | 56 | 45 | 2,8 | 12 | .1110 | ● | ● |
| 11,20 | M12x0,75 | | 118 | 71 | 56 | 45 | 2,8 | 12 | .1120 | ● | ● |
| 11,25 | | M12 | 118 | 71 | 56 | 45 | 2,8 | 12 | .1125 | ● | ● |
| 11,30 | | | 118 | 71 | 56 | 45 | 2,8 | 12 | .1130 | ● | ● |
| 11,35 | | M12x1,5 | 118 | 71 | 56 | 45 | 2,8 | 12 | .1135 | ● | ● |
| 11,40 | | | 118 | 71 | 56 | 45 | 2,8 | 12 | .1140 | ● | ● |
| 11,45 | | M12x1,25 | 118 | 71 | 56 | 45 | 2,9 | 12 | .1145 | ● | ● |
| 11,50 | | | 118 | 71 | 56 | 45 | 2,9 | 12 | .1150 | ● | ● |
| 11,60 | | M12x1 | 118 | 71 | 56 | 45 | 2,9 | 12 | .1160 | ● | ● |
| 11,70 | | M12x0,75 | 118 | 71 | 56 | 45 | 2,9 | 12 | .1170 | ● | ● |
| 11,80 | | | 118 | 71 | 56 | 45 | 2,9 | 12 | .1180 | ● | ● |
| 11,90 | | | 118 | 71 | 56 | 45 | 3,0 | 12 | .1190 | ● | ● |
| 12,00 | M14 | | 118 | 71 | 56 | 45 | 3,0 | 12 | .1200 | ● | ● |
| 12,20 | | | 124 | 77 | 60 | 45 | 3,0 | 14 | .1220 | ● | ● |
| 12,30 | | | 124 | 77 | 60 | 45 | 3,1 | 14 | .1230 | ● | ● |
| 12,50 | M14x1,5 | | 124 | 77 | 60 | 45 | 3,1 | 14 | .1250 | ● | ● |
| 12,60 | MJ14x1,5 | M13x1 | 124 | 77 | 60 | 45 | 3,1 | 14 | .1260 | ● | ● |
| 12,70 | | M13x0,75 | 124 | 77 | 60 | 45 | 3,2 | 14 | .1270 | ● | ● |
| 12,80 | M14x1,25 | | 124 | 77 | 60 | 45 | 3,2 | 14 | .1280 | ● | ● |
| 12,90 | MJ14x1,25 | | 124 | 77 | 60 | 45 | 3,2 | 14 | .1290 | ● | ● |
| 13,00 | M14x1 | | 124 | 77 | 60 | 45 | 3,2 | 14 | .1300 | ● | ● |
| 13,10 | MJ14x1 | M14 | 124 | 77 | 60 | 45 | 3,3 | 14 | .1310 | ● | ● |
| 13,20 | M14x0,75 | | 124 | 77 | 60 | 45 | 3,3 | 14 | .1320 | ● | ● |
| 13,30 | | | 124 | 77 | 60 | 45 | 3,3 | 14 | .1330 | ● | ● |
| 13,35 | | M14x1,5 | 124 | 77 | 60 | 45 | 3,3 | 14 | .1335 | ● | ● |
| 13,45 | | M14x1,25 | 124 | 77 | 60 | 45 | 3,4 | 14 | .1345 | ● | ● |

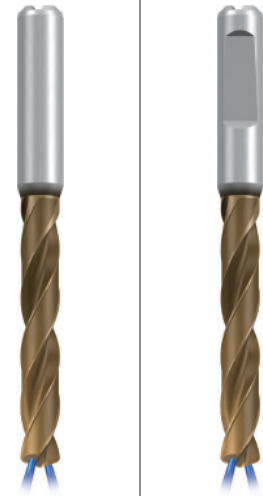
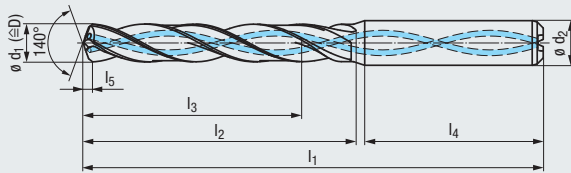
Für die Bearbeitung von Gusswerkstoffen
For the machining of cast materials

VHM ALCR T2
 DIN 6537 L R30
 Z2 4FF
 140° IT9-IT10
 DIN 6535
 HA HE

GG
Cast iron

- Product Finder
- v_c / f
- STEEL
- VA
- GG**
- HCUT
- Zubehör
Accessories
- Tech. Info

Lange Ausführung
Long design



Bohrtiefe
Drill depth

5 x D

Einsatzgebiete – Material
Applications – material » 510

K 1.1-4.2

Werkzeug-Ident · Tool ident

| ø d ₁ m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | | | | | | ø d ₂ h6 | Dimens.- Ident | TA212444 | TA512444 |
|------------------------|-----------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|------------------------|-------------------|---|---|
| | | | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | | | EF-Drill-GG DIN6537L-HA IK-4FF ALCR-T2 | EF-Drill-GG DIN6537L-HE IK-4FF ALCR-T2 |
| 13,50 | | | 124 | 77 | 60 | 45 | 3,4 | 14 | .1350 | ● | ● |
| 13,60 | MJ15x1,5 | M14x1 | 124 | 77 | 60 | 45 | 3,4 | 14 | .1360 | ● | ● |
| 13,70 | | M14x0,75 | 124 | 77 | 60 | 45 | 3,4 | 14 | .1370 | ● | ● |
| 13,80 | | | 124 | 77 | 60 | 45 | 3,4 | 14 | .1380 | ● | ● |
| 14,00 | M16 / M15x1 | | 124 | 77 | 60 | 45 | 3,5 | 14 | .1400 | ● | ● |
| 14,10 | MJ15x1 | | 133 | 83 | 63 | 48 | 3,5 | 16 | .1410 | ● | ● |
| 14,30 | | | 133 | 83 | 63 | 48 | 3,6 | 16 | .1430 | ● | ● |
| 14,40 | | | 133 | 83 | 63 | 48 | 3,6 | 16 | .1440 | ● | ● |
| 14,50 | M16x1,5 | | 133 | 83 | 63 | 48 | 3,6 | 16 | .1450 | ● | ● |
| 14,60 | MJ16x1,5 | M15x1 | 133 | 83 | 63 | 48 | 3,6 | 16 | .1460 | ● | ● |
| 14,70 | | M15x0,75 | 133 | 83 | 63 | 48 | 3,7 | 16 | .1470 | ● | ● |
| 14,80 | | | 133 | 83 | 63 | 48 | 3,7 | 16 | .1480 | ● | ● |
| 15,00 | M16x1 | | 133 | 83 | 63 | 48 | 3,7 | 16 | .1500 | ● | ● |
| 15,10 | MJ16x1 | M16 | 133 | 83 | 63 | 48 | 3,8 | 16 | .1510 | ● | ● |
| 15,35 | | M16x1,5 | 133 | 83 | 63 | 48 | 3,8 | 16 | .1535 | ● | ● |
| 15,50 | M18 | | 133 | 83 | 63 | 48 | 3,9 | 16 | .1550 | ● | ● |
| 15,60 | | M16x1 | 133 | 83 | 63 | 48 | 3,9 | 16 | .1560 | ● | ● |
| 16,00 | M18x2 | | 133 | 83 | 63 | 48 | 4,0 | 16 | .1600 | ● | ● |
| 16,50 | M18x1,5 | | 143 | 93 | 71 | 48 | 4,1 | 18 | .1650 | ● | ● |
| 17,00 | M18x1 | | 143 | 93 | 71 | 48 | 4,2 | 18 | .1700 | ● | ● |
| 17,50 | M20 | | 143 | 93 | 71 | 48 | 4,3 | 18 | .1750 | ● | ● |
| 17,60 | | M18x1 | 143 | 93 | 71 | 48 | 4,4 | 18 | .1760 | ● | ● |
| 18,00 | M20x2 | | 143 | 93 | 71 | 48 | 4,5 | 18 | .1800 | ● | ● |
| 18,50 | M20x1,5 | | 153 | 101 | 77 | 50 | 4,6 | 20 | .1850 | ● | ● |
| 18,85 | | M20 | 153 | 101 | 77 | 50 | 4,7 | 20 | .1885 | ● | ● |
| 19,00 | M20x1 | | 153 | 101 | 77 | 50 | 4,7 | 20 | .1900 | ● | ● |
| 19,35 | | M20x1,5 | 153 | 101 | 77 | 50 | 4,8 | 20 | .1935 | ● | ● |
| 19,50 | M22 | | 153 | 101 | 77 | 50 | 4,8 | 20 | .1950 | ● | ● |
| 19,60 | | M20x1 | 153 | 101 | 77 | 50 | 4,9 | 20 | .1960 | ● | ● |
| 20,00 | M22x2 | | 153 | 101 | 77 | 50 | 5,0 | 20 | .2000 | ● | ● |

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



- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör
Accessories
- Tech. Info

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

VHM

TIALN
T10

DIN
6537 K

R30

Z2

2FF

140°

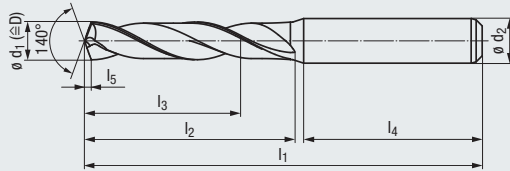
IT9-IT10

DIN 6535

HA

new

HCUT
Hardened steels



Bohrtiefe
Drill depth

3 x D

Einsatzgebiete – Material
Applications – material » 510

H 1.1-5

Werkzeug-Ident · Tool ident

TA107725

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

| Ø d ₁ m7 | Gewindebohrer Taps HCUT | l ₁ | l ₂ | l ₃ | l ₄ | l ₅ | Ø d ₂ h6 | Dimens.- Ident | EF-Drill-HCUT DIN6537K-HA AK-2FF TIALN-T10 | |
|------------------------|-------------------------------|----------------|----------------|----------------|----------------|----------------|------------------------|-------------------|---|---|
| | | | | | | | | | • | • |
| 2,55 | M3 | 57 | 16 | 11 | 36 | 0,5 | 6 | .0255 | • | • |
| 3,00 | M3 | 62 | 20 | 14 | 36 | 0,6 | 6 | .0300 | • | • |
| 3,40 | M4 | 62 | 20 | 14 | 36 | 0,7 | 6 | .0340 | • | • |
| 3,50 | M4 | 62 | 20 | 14 | 36 | 0,7 | 6 | .0350 | • | • |
| 4,00 | M4 | 66 | 24 | 17 | 36 | 0,8 | 6 | .0400 | • | • |
| 4,30 | M5 | 66 | 24 | 17 | 36 | 0,8 | 6 | .0430 | • | • |
| 4,50 | M5 | 66 | 24 | 17 | 36 | 0,9 | 6 | .0450 | • | • |
| 5,00 | M5 | 66 | 28 | 20 | 36 | 1,0 | 6 | .0500 | • | • |
| 5,10 | M6 | 66 | 28 | 20 | 36 | 1,0 | 6 | .0510 | • | • |
| 5,50 | M6 | 66 | 28 | 20 | 36 | 1,1 | 6 | .0550 | • | • |
| 6,00 | M6 | 66 | 28 | 20 | 36 | 1,1 | 6 | .0600 | • | • |
| 6,50 | M7 | 79 | 34 | 24 | 36 | 1,2 | 8 | .0650 | • | • |
| 6,90 | M8 | 79 | 34 | 24 | 36 | 1,3 | 8 | .0690 | • | • |
| 7,00 | M8 | 79 | 34 | 24 | 36 | 1,3 | 8 | .0700 | • | • |
| 7,10 | M8 x 1 | 79 | 41 | 29 | 36 | 1,3 | 8 | .0710 | • | • |
| 7,50 | M8 x 1 | 79 | 41 | 29 | 36 | 1,4 | 8 | .0750 | • | • |
| 8,00 | M8 x 1 | 79 | 41 | 29 | 36 | 1,5 | 8 | .0800 | • | • |
| 8,50 | M9 | 89 | 47 | 35 | 40 | 1,6 | 10 | .0850 | • | • |
| 8,60 | M10 | 89 | 47 | 35 | 40 | 1,6 | 10 | .0860 | • | • |
| 8,80 | G 1/8 | 89 | 47 | 35 | 40 | 1,7 | 10 | .0880 | • | • |
| 9,00 | G 1/8 | 89 | 47 | 35 | 40 | 1,7 | 10 | .0900 | • | • |
| 9,10 | M10 x 1 | 89 | 47 | 35 | 40 | 1,7 | 10 | .0910 | • | • |
| 9,50 | M10 x 1 | 89 | 47 | 35 | 40 | 1,8 | 10 | .0950 | • | • |
| 10,00 | M10 x 1 | 89 | 47 | 35 | 40 | 1,9 | 10 | .1000 | • | • |
| 10,40 | M12 | 102 | 55 | 40 | 45 | 1,9 | 12 | .1040 | • | • |
| 10,50 | M12 | 102 | 55 | 40 | 45 | 2,0 | 12 | .1050 | • | • |
| 10,60 | M12 x 1,5 | 102 | 55 | 40 | 45 | 2,0 | 12 | .1060 | • | • |
| 11,00 | M12 x 1,5 | 102 | 55 | 40 | 45 | 2,1 | 12 | .1100 | • | • |
| 11,50 | M12 x 1,5 | 102 | 55 | 40 | 45 | 2,1 | 12 | .1150 | • | • |
| 11,90 | G 1/4 | 102 | 55 | 40 | 45 | 2,2 | 12 | .1190 | • | • |
| 12,00 | G 1/4 | 102 | 55 | 40 | 45 | 2,2 | 12 | .1200 | • | • |
| 12,60 | M14 x 1,5 | 107 | 60 | 43 | 45 | 2,3 | 14 | .1260 | • | • |
| 14,20 | M16 | 115 | 65 | 45 | 48 | 2,6 | 16 | .1420 | • | • |
| 14,60 | M16 x 1,5 | 115 | 65 | 45 | 48 | 2,7 | 16 | .1460 | • | • |



Spannzangen-Aufnahmen
Typ KSN/Synchro
siehe Seite 711 - 713

Collet holders
type KSN/Synchro,
see page 711 - 713

Product
Finder v_c / f

STEEL

VA

GG

HCUT

Zubehör
Accessories

Tech. Info

3 x D

5 x D

6 x D

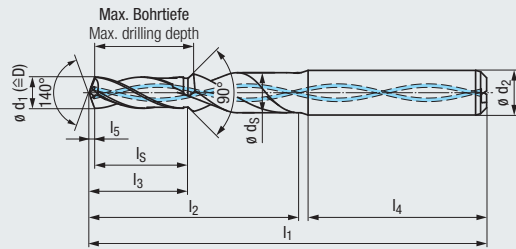
8 x D

2-3,5 x D



- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

Variable Stufenlängen in mm-Schritten
Variable step length in millimeter steps



VHM **TIALN T14**

≈ **DIN 6537 K**

Z2 **4FF**

140° **IT8-IT10**

DIN 6535

HA

STEEL
Steel materials



Bohrtiefe
Drill depth

2 - 3,5 x D

Einsatzgebiete – Material
Applications – material



P 1.1-5.1 **M** 1.1
K 1.1-4.2 **N** 1.1-5
N 2.1-8 **H** 1.1-2

Werkzeug-Ident · Tool ident

TG203344

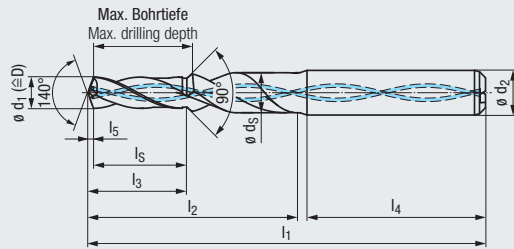
| Ø d ₁ m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | l ₃ | | | l ₅ | | Ø d ₂ h6 | Dimens.- Ident | EF-Drill C-STEEL HA IK-4FF TIALN-T14 | | |
|------------------------|-----------------------|------------------------------------|----------------|-----------------|----------------|----------------|---------------|------------------------|-------------------|---|-------------------|---|
| | | | 2 x D min. | 3,5 x D max. | l ₄ | l ₅ | 2 x D min. | | | | 3,5 x D max. | |
| 2,80 | | M3 | 4 | 57 | 17 | 6,6 - 10,6 | 36 | 0,6 | 6 - 10 | 6 | .028006 - .028010 | ● |
| 2,90 | M3,5 | | 4 | 57 | 18 | 6,6 - 10,6 | 36 | 0,6 | 6 - 10 | 6 | .029006 - .029010 | ● |
| 3,25 | | M3,5 | 5 | 62 | 24 | 7,7 - 11,7 | 36 | 0,6 | 7 - 11 | 6 | .032507 - .032511 | ● |
| 3,30 | M4 | M3,5 x 0,5 | 5 | 62 | 24 | 7,7 - 12,7 | 36 | 0,7 | 7 - 12 | 6 | .033007 - .033012 | ● |
| 3,70 | M4,5 | M4 | 5 | 62 | 24 | 7,8 - 13,8 | 36 | 0,7 | 7 - 13 | 6 | .037007 - .037013 | ● |
| 4,20 | M5, M5 x 0,75 | M4,5 | 6 | 66 | 29 | 8,9 - 15,9 | 36 | 0,8 | 8 - 15 | 6 | .042008 - .042015 | ● |
| 4,65 | | M5 | 6 | 66 | 29 | 9,9 - 16,9 | 36 | 0,9 | 9 - 16 | 6 | .046509 - .046516 | ● |
| 5,00 | M6 | | 7 | 79 | 40 | 11,0 - 19,0 | 36 | 1,0 | 10 - 18 | 8 | .050010 - .050018 | ● |
| 5,60 | MJ6 x 0,5 | M6 | 7 | 79 | 40 | 12,1 - 21,1 | 36 | 1,1 | 11 - 20 | 8 | .056011 - .056020 | ● |
| 6,00 | M7 | | 8 | 79 | 42 | 13,2 - 22,2 | 36 | 1,1 | 12 - 21 | 8 | .060012 - .060021 | ● |
| 6,60 | | M7 | 8 | 89 | 45 | 14,3 - 24,3 | 40 | 1,3 | 13 - 23 | 10 | .066013 - .066023 | ● |
| 6,80 | M8 | M7 x 0,5 | 9 | 89 | 46 | 15,4 - 25,4 | 40 | 1,3 | 14 - 24 | 10 | .068014 - .068024 | ● |
| 7,00 | M8 x 1 | | 9 | 89 | 46 | 15,4 - 26,4 | 40 | 1,3 | 14 - 25 | 10 | .070014 - .070025 | ● |
| 7,45 | | M8 | 9 | 89 | 46 | 16,5 - 27,5 | 40 | 1,4 | 15 - 26 | 10 | .074515 - .074526 | ● |
| 7,60 | | M8 x 1 | 9 | 89 | 46 | 16,5 - 28,5 | 40 | 1,4 | 15 - 27 | 10 | .076015 - .076027 | ● |
| 7,80 | M9 | M8 x 0,5 | 10 | 89 | 48 | 17,5 - 28,5 | 40 | 1,5 | 16 - 27 | 10 | .078016 - .078027 | ● |
| 8,45 | | M9 | 12 | 102 | 56 | 18,7 - 31,7 | 45 | 1,6 | 17 - 30 | 12 | .084517 - .084530 | ● |
| 8,50 | M10, M9 x 0,5 | | 12 | 102 | 56 | 18,7 - 31,7 | 45 | 1,6 | 17 - 30 | 12 | .085017 - .085030 | ● |
| 9,00 | M10 x 1 | | 12 | 102 | 56 | 19,8 - 33,8 | 45 | 1,7 | 18 - 32 | 12 | .090018 - .090032 | ● |
| 9,35 | MJ10 x 0,75 | M10 | 12 | 102 | 56 | 20,8 - 34,8 | 45 | 1,8 | 19 - 33 | 12 | .093519 - .093533 | ● |
| 9,50 | M11, M10 x 0,5 | | 12 | 102 | 56 | 20,9 - 34,9 | 45 | 1,8 | 19 - 33 | 12 | .095019 - .095033 | ● |
| 9,60 | MJ,10 x 0,5 | M10x1 | 12 | 102 | 56 | 20,9 - 35,9 | 45 | 1,8 | 19 - 34 | 12 | .096019 - .096034 | ● |
| 10,20 | M12, M11 x 0,75 | | 14 | 107 | 61 | 22,0 - 38,0 | 45 | 1,9 | 20 - 36 | 14 | .102020 - .102036 | ● |
| 10,35 | MJ11 x 0,75 | M11 | 14 | 107 | 61 | 23,0 - 38,0 | 45 | 1,9 | 21 - 36 | 14 | .103521 - .103536 | ● |
| 10,50 | M12 x 1,5 | | 14 | 107 | 61 | 23,1 - 39,1 | 45 | 2,0 | 21 - 37 | 14 | .105021 - .105037 | ● |
| 11,25 | | M12 | 14 | 107 | 61 | 25,2 - 41,2 | 45 | 2,1 | 23 - 39 | 14 | .112523 - .112539 | ● |
| 11,35 | | M12 x 1,5 | 14 | 107 | 61 | 25,2 - 42,2 | 45 | 2,1 | 23 - 40 | 14 | .113523 - .113540 | ● |
| 12,00 | M14 | | 16 | 115 | 66 | 26,4 - 44,4 | 48 | 2,2 | 24 - 42 | 16 | .120024 - .120042 | ● |
| 12,50 | M14 x 1,5 | | 16 | 115 | 66 | 27,4 - 46,4 | 48 | 2,3 | 25 - 44 | 16 | .125025 - .125044 | ● |
| 13,10 | MJ14 x 1 | M14 | 16 | 115 | 66 | 28,6 - 48,6 | 48 | 2,4 | 26 - 46 | 16 | .131026 - .131046 | ● |
| 13,35 | | M14 x 1,5 | 16 | 115 | 66 | 29,6 - 49,6 | 48 | 2,5 | 27 - 47 | 16 | .133527 - .133547 | ● |
| 14,00 | M16, M15 x 1 | | 18 | 123 | 74 | 30,7 - 51,7 | 48 | 2,6 | 28 - 49 | 18 | .140028 - .140049 | ● |
| 14,50 | M16 x 1,5 | | 18 | 123 | 74 | 31,8 - 53,8 | 48 | 2,7 | 29 - 51 | 18 | .145029 - .145051 | ● |
| 15,10 | MJ16 x 1 | M16 | 18 | 123 | 74 | 32,9 - 55,9 | 48 | 2,8 | 30 - 53 | 18 | .151030 - .151053 | ● |
| 15,35 | | M16 x 1,5 | 18 | 123 | 74 | 34,0 - 57,0 | 48 | 2,8 | 31 - 54 | 18 | .153531 - .153554 | ● |
| 15,50 | M18 | | 20 | 131 | 80 | 34,0 - 57,0 | 50 | 2,9 | 31 - 54 | 20 | .155031 - .155054 | ● |

Bestell-Beispiel · Ordering example: **TG203344.0280 07**

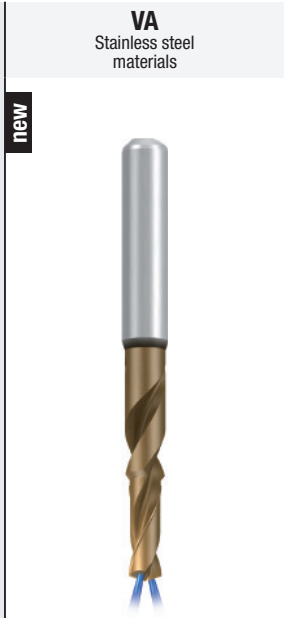
Bohrdurchmesser d₁ = 2,80 mm · Drill diameter d₁ = 2,80 mm

Stufenlänge l₅ = 7 mm · Step length l₅ = 7 mm

Variable Stufenlängen in mm-Schritten
Variable step length in millimeter steps



VHM ALCR T37
 ≈ DIN 6537 K
 Z2 2FF
 140° IT8-IT10
 DIN 6535
 HA



- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

Bohrtiefe
Drill depth

2 - 3,5 x D

Einsatzgebiete – Material
Applications – material

M 1.1-4.1 S 1.1-3
 S 2.2, 2.4, 2.6 N 1.1-3

Werkzeug-Ident · Tool ident

TG204524

| ø d ₁ m7 | Gewindebohrer Taps | Gewindeformer Cold-forming taps | ø d _s | | l ₃ | | l ₄ | | l _s | | ø d ₂ h6 | Dimens.- Ident | EF-Drill C-VA HA IK-2FF ALCR-T37 |
|------------------------|-----------------------|------------------------------------|------------------|----------------|----------------|-----------------|----------------|----------------|----------------|-----------------|------------------------|-------------------|---|
| | | | l ₁ | l ₂ | 2 x D min. | 3,5 x D max. | l ₄ | l ₅ | 2 x D min. | 3,5 x D max. | | | |
| 2,80 | | M3 | 4 | 57 | 17 | 6,6 - 10,6 | 36 | 0,6 | 6 | - 10 | 6 | .028006 - .028010 | ● |
| 2,90 | M3,5 | | 4 | 57 | 18 | 6,6 - 10,6 | 36 | 0,6 | 6 | - 10 | 6 | .029006 - .029010 | ● |
| 3,25 | | M3,5 | 5 | 62 | 24 | 7,7 - 11,7 | 36 | 0,6 | 7 | - 11 | 6 | .032507 - .032511 | ● |
| 3,30 | M4 | M3,5 x 0,5 | 5 | 62 | 24 | 7,7 - 12,7 | 36 | 0,7 | 7 | - 12 | 6 | .033007 - .033012 | ● |
| 3,70 | M4,5 | M4 | 5 | 62 | 24 | 7,8 - 13,8 | 36 | 0,7 | 7 | - 13 | 6 | .037007 - .037013 | ● |
| 4,20 | M5, M5 x 0,75 | M4,5 | 6 | 66 | 29 | 8,9 - 15,9 | 36 | 0,8 | 8 | - 15 | 6 | .042008 - .042015 | ● |
| 4,65 | | M5 | 6 | 66 | 29 | 9,9 - 16,9 | 36 | 0,9 | 9 | - 16 | 6 | .046509 - .046516 | ● |
| 5,00 | M6 | | 7 | 79 | 40 | 11,0 - 19,0 | 36 | 1,0 | 10 | - 18 | 8 | .050010 - .050018 | ● |
| 5,60 | MJ6 x 0,5 | M6 | 7 | 79 | 40 | 12,1 - 21,1 | 36 | 1,1 | 11 | - 20 | 8 | .056011 - .056020 | ● |
| 6,00 | M7 | | 8 | 79 | 42 | 13,2 - 22,2 | 36 | 1,1 | 12 | - 21 | 8 | .060012 - .060021 | ● |
| 6,60 | | M7 | 8 | 89 | 45 | 14,3 - 24,3 | 40 | 1,3 | 13 | - 23 | 10 | .066013 - .066023 | ● |
| 6,80 | M8 | M7 x 0,5 | 9 | 89 | 46 | 15,4 - 25,4 | 40 | 1,3 | 14 | - 24 | 10 | .068014 - .068024 | ● |
| 7,00 | M8 x 1 | | 9 | 89 | 46 | 15,4 - 26,4 | 40 | 1,3 | 14 | - 25 | 10 | .070014 - .070025 | ● |
| 7,45 | | M8 | 9 | 89 | 46 | 16,5 - 27,5 | 40 | 1,4 | 15 | - 26 | 10 | .074515 - .074526 | ● |
| 7,60 | | M8 x 1 | 9 | 89 | 46 | 16,5 - 28,5 | 40 | 1,4 | 15 | - 27 | 10 | .076015 - .076027 | ● |
| 7,80 | M9 | M8 x 0,5 | 10 | 89 | 48 | 17,5 - 28,5 | 40 | 1,5 | 16 | - 27 | 10 | .078016 - .078027 | ● |
| 8,45 | | M9 | 12 | 102 | 56 | 18,7 - 31,7 | 45 | 1,6 | 17 | - 30 | 12 | .084517 - .084530 | ● |
| 8,50 | M10, M9 x 0,5 | | 12 | 102 | 56 | 18,7 - 31,7 | 45 | 1,6 | 17 | - 30 | 12 | .085017 - .085030 | ● |
| 9,00 | M10 x 1 | | 12 | 102 | 56 | 19,8 - 33,8 | 45 | 1,7 | 18 | - 32 | 12 | .090018 - .090032 | ● |
| 9,35 | MJ10 x 0,75 | M10 | 12 | 102 | 56 | 20,8 - 34,8 | 45 | 1,8 | 19 | - 33 | 12 | .093519 - .093533 | ● |
| 9,50 | M11, M10 x 0,5 | | 12 | 102 | 56 | 20,9 - 34,9 | 45 | 1,8 | 19 | - 33 | 12 | .095019 - .095033 | ● |
| 9,60 | MJ,10 x 0,5 | M10x1 | 12 | 102 | 56 | 20,9 - 35,9 | 45 | 1,8 | 19 | - 34 | 12 | .096019 - .096034 | ● |
| 10,20 | M12, M11 x 0,75 | | 14 | 107 | 61 | 22,0 - 38,0 | 45 | 1,9 | 20 | - 36 | 14 | .102020 - .102036 | ● |
| 10,35 | MJ11 x 0,75 | M11 | 14 | 107 | 61 | 23,0 - 38,0 | 45 | 1,9 | 21 | - 36 | 14 | .103521 - .103536 | ● |
| 10,50 | M12 x 1,5 | | 14 | 107 | 61 | 23,1 - 39,1 | 45 | 2,0 | 21 | - 37 | 14 | .105021 - .105037 | ● |
| 11,25 | | M12 | 14 | 107 | 61 | 25,2 - 41,2 | 45 | 2,1 | 23 | - 39 | 14 | .112523 - .112539 | ● |
| 11,35 | | M12 x 1,5 | 14 | 107 | 61 | 25,2 - 42,2 | 45 | 2,1 | 23 | - 40 | 14 | .113523 - .113540 | ● |
| 12,00 | M14 | | 16 | 115 | 66 | 26,4 - 44,4 | 48 | 2,2 | 24 | - 42 | 16 | .120024 - .120042 | ● |
| 12,50 | M14 x 1,5 | | 16 | 115 | 66 | 27,4 - 46,4 | 48 | 2,3 | 25 | - 44 | 16 | .125025 - .125044 | ● |
| 13,10 | MJ14 x 1 | M14 | 16 | 115 | 66 | 28,6 - 48,6 | 48 | 2,4 | 26 | - 46 | 16 | .131026 - .131046 | ● |
| 13,35 | | M14 x 1,5 | 16 | 115 | 66 | 29,6 - 49,6 | 48 | 2,5 | 27 | - 47 | 16 | .133527 - .133547 | ● |
| 14,00 | M16, M15 x 1 | | 18 | 123 | 74 | 30,7 - 51,7 | 48 | 2,6 | 28 | - 49 | 18 | .140028 - .140049 | ● |
| 14,50 | M16 x 1,5 | | 18 | 123 | 74 | 31,8 - 53,8 | 48 | 2,7 | 29 | - 51 | 18 | .145029 - .145051 | ● |
| 15,10 | MJ16 x 1 | M16 | 18 | 123 | 74 | 32,9 - 55,9 | 48 | 2,8 | 30 | - 53 | 18 | .151030 - .151053 | ● |
| 15,35 | | M16 x 1,5 | 18 | 123 | 74 | 34,0 - 57,0 | 48 | 2,8 | 31 | - 54 | 18 | .153531 - .153554 | ● |
| 15,50 | M18 | | 20 | 131 | 80 | 34,0 - 57,0 | 50 | 2,9 | 31 | - 54 | 20 | .155031 - .155054 | ● |

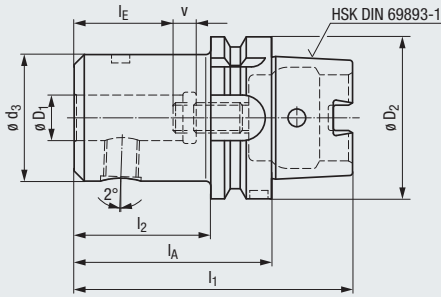
Bestell-Beispiel · Ordering example: **TG204524.0280 07**

Bohrdurchmesser d₁ = 2,80 mm · Drill diameter d₁ = 2,80 mm

Stufenlänge l_s = 7 mm · Step length l_s = 7 mm

- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör
Accessories
- Tech. Info

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



| Werkzeug-Ident · Tool ident | | | | | | | | | TCWNHS63 | |
|-----------------------------|-------------------|-------|-------|-------|-------|-----|-------------------|---------------|----------|---|
| $\varnothing D_1$ | $\varnothing d_3$ | l_1 | l_2 | l_A | l_E | v | $\varnothing D_2$ | Dimens.-Ident | | |
| 6 | 25 | 112 | 54 | 80 | 30 | 10 | HSK-A63 | .060800 | | ● |
| 8 | 28 | 112 | 54 | 80 | 30 | 10 | HSK-A63 | .080800 | | ● |
| 10 | 35 | 112 | 54 | 80 | 35 | 7 | HSK-A63 | .100800 | | ● |
| 12 | 42 | 122 | 64 | 90 | 40 | 7 | HSK-A63 | .120900 | | ● |
| 14 | 44 | 122 | 64 | 90 | 40 | 8 | HSK-A63 | .140900 | | ● |
| 16 | 48 | 132 | 74 | 100 | 43 | 10 | HSK-A63 | .161000 | | ● |
| 18 | 50 | 132 | 74 | 100 | 43 | 10 | HSK-A63 | .181000 | | ● |
| 20 | 52 | 132 | 74 | 100 | 45 | 8 | HSK-A63 | .201000 | | ● |
| 25 | 65 | 142 | 84 | 110 | 50 | 9 | HSK-A63 | .251100 | | ● |
| 32 | 72 | 142 | 84 | 110 | 54 | 9 | HSK-A63 | .321100 | | ● |

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



Kühlschmierstoffrohr und Schlüssel
Coolant tube and assembly wrench

» 782 - 783

Spannschrauben mit Innensechskant
Allen clamping screws



| Werkzeug-Ident · Tool ident | | | TWA01001 | |
|---------------------------------|--------------------|---------------|----------|---|
| Für For $\varnothing D_1$ | Größe Dimension | Dimens.-Ident | | |
| 6 | M 6 x 10 x SW 3 | .22010 | | ● |
| 8 | M 8 x 10 x SW 4 | .25010 | | ● |
| 10 | M10 x 12 x SW 5 | .27012 | | ● |
| 12 - 14 | M12 x 16 x SW 6 | .30016 | | ● |
| 16 - 18 | M14 x 16 x SW 6 | .33016 | | ● |
| 20 | M16 x 16 x SW 8 | .35016 | | ● |
| 25 | M18 x 20 x SW 10 | .39020 | | ● |
| 32 | M20 x 20 x SW 10 | .42020 | | ● |

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



| Werkzeug-Ident · Tool ident | | | TWP03002 | |
|---------------------------------|--------------------|---------------|----------|---|
| Für For $\varnothing D_1$ | Größe Dimension | Dimens.-Ident | | |
| 6 | SW 3 x 100 | .03010 | | ● |
| 8 | SW 4 x 100 | .04010 | | ● |
| 10 | SW 5 x 150 | .05015 | | ● |
| 12 - 16 | SW 6 x 150 | .06015 | | ● |
| 18 - 20 | SW 8 x 150 | .08015 | | ● |
| 25 - 32 | SW10 x 200 | .10020 | | ● |

Verstellschrauben mit Innensechskant
Allen adjusting screws



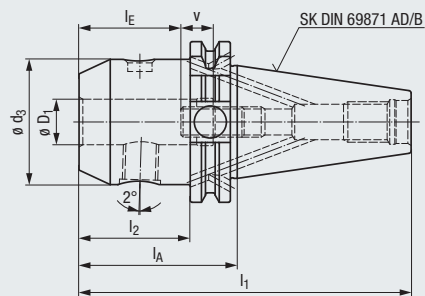
| Werkzeug-Ident · Tool ident | | | TWA02001 | |
|---------------------------------|--------------------|---------------|----------|---|
| Für For $\varnothing D_1$ | Größe Dimension | Dimens.-Ident | | |
| 6 | M 5 x 16 x SW 2,5 | .20016 | | ● |
| 8 | M 6 x 16 x SW 3 | .22016 | | ● |
| 10 | M 8 x 16 x SW 4 | .25016 | | ● |
| 12 - 14 | M10 x 16 x SW 5 | .27016 | | ● |
| 16 - 18 | M12 x 16 x SW 6 | .30016 | | ● |
| 20 - 32 | M16 x 20 x SW 6 | .35020 | | ● |

Winkelschraubendreher für Verstellschrauben
Allen wrench for adjusting screws



| Werkzeug-Ident · Tool ident | | | TWP03001 | |
|---------------------------------|--------------------|---------------|----------|---|
| Für For $\varnothing D_1$ | Größe Dimension | Dimens.-Ident | | |
| 6 | SW 2,5 | .02500 | | ● |
| 8 | SW 3 | .03000 | | ● |
| 10 | SW 4 | .04000 | | ● |
| 12 - 14 | SW 5 | .05000 | | ● |
| 16 - 32 | SW 6 | .06000 | | ● |

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



Product Finder

v_c / f

STEEL

VA

GG

HCUT

Zubehör
Accessories

Tech. Info

Werkzeug-Ident · Tool ident

TCWNSK40

| ø D ₁ | d ₃ | l ₁ | l ₂ | l _A | l _E | v | SK | Dimens.-Ident |
|------------------|----------------|----------------|----------------|----------------|----------------|----|-------|---------------|
| 6 | 25 | 118 | 31 | 50 | 30 | 10 | SK 40 | .060500 |
| 8 | 28 | 118 | 31 | 50 | 30 | 10 | SK 40 | .080500 |
| 10 | 35 | 118 | 31 | 50 | 35 | 10 | SK 40 | .100500 |
| 12 | 42 | 118 | 31 | 50 | 40 | 10 | SK 40 | .120500 |
| 14 | 44 | 118 | 31 | 50 | 40 | 10 | SK 40 | .140500 |
| 16 | 48 | 131 | 44 | 63 | 43 | 10 | SK 40 | .160630 |
| 18 | 50 | 131 | 44 | 63 | 43 | 10 | SK 40 | .180630 |
| 20 | 52 | 131 | 44 | 63 | 45 | 10 | SK 40 | .200630 |
| 25 | 65 | 168 | 81 | 100 | 50 | 10 | SK 40 | .251000 |
| 32 | 72 | 168 | 81 | 100 | 54 | 10 | SK 40 | .321000 |

3 x D

5 x D

6 x D

8 x D

2-3,5 x D

Werkzeug-Ident · Tool ident

TCWNSK50

| ø D ₁ | d ₃ | l ₁ | l ₂ | l _A | l _E | v | SK | Dimens.-Ident |
|------------------|----------------|----------------|----------------|----------------|----------------|----|-------|---------------|
| 6 | 25 | 165 | 44 | 63 | 30 | 10 | SK 50 | .060630 |
| 8 | 28 | 165 | 44 | 63 | 30 | 10 | SK 50 | .080630 |
| 10 | 35 | 165 | 44 | 63 | 35 | 10 | SK 50 | .100630 |
| 12 | 42 | 165 | 44 | 63 | 40 | 10 | SK 50 | .120630 |
| 14 | 44 | 165 | 44 | 63 | 40 | 10 | SK 50 | .140630 |
| 16 | 48 | 165 | 44 | 63 | 43 | 10 | SK 50 | .160630 |
| 18 | 50 | 165 | 44 | 63 | 43 | 10 | SK 50 | .180630 |
| 20 | 52 | 165 | 44 | 63 | 45 | 10 | SK 50 | .200630 |
| 25 | 65 | 182 | 61 | 80 | 50 | 10 | SK 50 | .250800 |
| 32 | 72 | 202 | 81 | 100 | 54 | 10 | SK 50 | .321000 |

Umstellschraube Innenkühlung
Internal coolant screw plug



Anzugsbolzen für Steilkegel
Pull studs for ISO tapers

» 566

Werkzeug-Ident · Tool ident

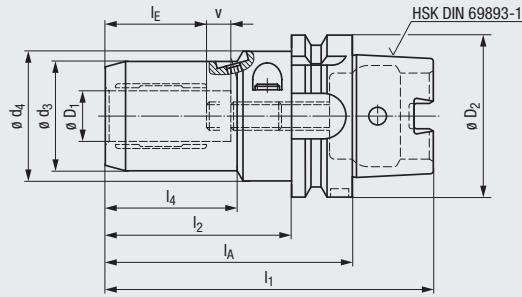
TWA04001

| Für For | Größe Dimension | Dimens.-Ident |
|------------|--------------------|---------------|
| SK 40 | M5 x 5 x SW 2,5 | .20005 |
| SK 50 | M8 x 6 x SW 4 | .25006 |



- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör
Accessories
- Tech. Info

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



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



Werkzeug-Ident · Tool ident

TCHDHS63

| $\varnothing D_1$ | d_3 | d_4 | l_1 | l_2 | l_4 | l_A | l_E | v | $\varnothing D_2$ | Dimens.-Ident | |
|-------------------|-------|-------|-------|-------|-------|-------|-------|-----|-------------------|---------------|---|
| 6 | 25,7 | 50 | 112 | 54 | 33 | 80 | 27 | 10 | HSK-A63 | .060800 | ● |
| 8 | 27,7 | 50 | 112 | 54 | 34 | 80 | 27 | 10 | HSK-A63 | .080800 | ● |
| 10 | 29,7 | 50 | 112 | 59 | 39 | 85 | 31 | 10 | HSK-A63 | .100850 | ● |
| 12 | 31,6 | 50 | 122 | 64 | 45 | 90 | 36 | 10 | HSK-A63 | .120900 | ● |
| 14 | 33,6 | 50 | 122 | 64 | 46 | 90 | 36 | 10 | HSK-A63 | .140900 | ● |
| 16 | 37,6 | 50 | 132 | 69 | 52 | 95 | 39 | 10 | HSK-A63 | .160950 | ● |
| 18 | 39,6 | 50 | 132 | 69 | 52 | 95 | 39 | 10 | HSK-A63 | .180950 | ● |
| 20 | 41,6 | 50 | 132 | 74 | 58 | 100 | 41 | 10 | HSK-A63 | .201000 | ● |
| 25 | 49,6 | 63 | 142 | 94 | 51 | 120 | 46 | 10 | HSK-A63 | .251200 | ● |
| 32 | 59,8 | 63 | 142 | 99 | 59 | 125 | 50 | 10 | HSK-A63 | .321250 | ● |

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



Kühlschmierstoffrohr und Schlüssel
Coolant tube and assembly wrench

782 - 783

Spannschrauben mit Innensechskant Allen clamping screws



Werkzeug-Ident · Tool ident

TWA01002

| Für For $\varnothing D_1$ | Größe Dimension | Dimens.-Ident | |
|---------------------------------|--------------------|---------------|---|
| 6 - 20 | M10 x 12 x SW 5 | .27012 | ● |
| 25 - 32 | M14 x 16 x SW 6 | .33016 | ● |

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



Werkzeug-Ident · Tool ident

TWB03002

| Für For $\varnothing D_1$ | Größe Dimension | Dimens.-Ident | |
|---------------------------------|--------------------|---------------|---|
| 6 - 20 | SW 5 x 150 | .05015 | ● |
| 25 - 32 | SW 6 x 150 | .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

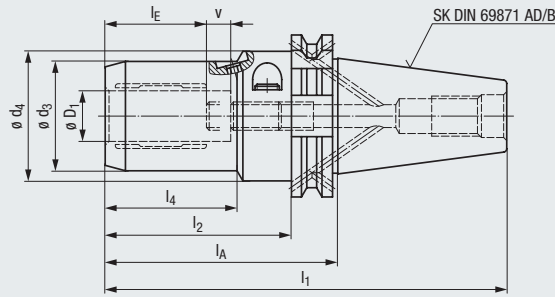


Werkzeug-Ident · Tool ident

TWB03001

| Für For $\varnothing D_1$ | Größe Dimension | Dimens.-Ident | |
|---------------------------------|--------------------|---------------|---|
| 6 - 12 | SW 2,5 | .02500 | ● |
| 14 - 20 | SW 3 | .03000 | ● |
| 25 - 32 | SW 4 | .04000 | ● |

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



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



- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör
Accessories
- Tech. Info

Werkzeug-Ident · Tool ident

TCHDSK40

| ø D ₁ | d ₃ | d ₄ | l ₁ | l ₂ | l ₄ | l _A | l _E | v | SK | Dimens.-Ident |
|------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----|-------|---------------|
| 6 | 25,7 | 50 | 140 | 53 | 33 | 72 | 30 | 10 | SK 40 | .060720 |
| 8 | 27,7 | 50 | 140 | 53 | 34 | 72 | 30 | 10 | SK 40 | .080720 |
| 10 | 29,7 | 50 | 145 | 58 | 39 | 77 | 35 | 10 | SK 40 | .100770 |
| 12 | 31,6 | 50 | 145 | 58 | 40 | 77 | 35 | 10 | SK 40 | .120770 |
| 14 | 33,6 | 50 | 150 | 63 | 46 | 82 | 40 | 10 | SK 40 | .140820 |
| 16 | 37,6 | 50 | 150 | 63 | 47 | 82 | 40 | 10 | SK 40 | .160820 |
| 18 | 39,6 | 50 | 150 | 63 | 47 | 82 | 40 | 10 | SK 40 | .180820 |
| 20 | 41,6 | 50 | 150 | 63 | 48 | 82 | 40 | 10 | SK 40 | .200820 |
| 25 | 49,6 | 63 | 185 | 98 | 51 | 117 | 51 | 10 | SK 40 | .251170 |
| 32 | 59,9 | 63 | 185 | 98 | 59 | 117 | 51 | 10 | SK 40 | .321170 |

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

Werkzeug-Ident · Tool ident

TCHDSK50

| ø D ₁ | d ₃ | d ₄ | l ₁ | l ₂ | l ₄ | l _A | l _E | v | SK | Dimens.-Ident |
|------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----|-------|---------------|
| 20 | 41,6 | 50 | 184 | 63 | 48 | 82 | 40 | 10 | SK 50 | .200820 |
| 25 | 49,6 | 63 | 219 | 98 | 51 | 117 | 51 | 10 | SK 50 | .251170 |
| 32 | 59,9 | 63 | 219 | 98 | 59 | 117 | 51 | 10 | SK 50 | .321170 |

Umstellschraube Innenkühlung
Internal coolant screw plug



Anzugsbolzen für Steilkegel
Pull studs for ISO tapers

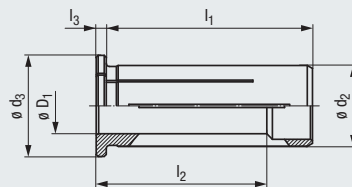
» 566

Werkzeug-Ident · Tool ident

TWA04001

| Für For | Größe Dimension | Dimens.-Ident |
|------------|--------------------|---------------|
| SK 40 | M5 x 5 x SW 2,5 | .20005 |
| SK 50 | M8 x 6 x SW 4 | .25006 |

Reduzierhülsen ø 20 mm
Reduction sleeves dia. 20 mm



Werkzeug-Ident · Tool ident

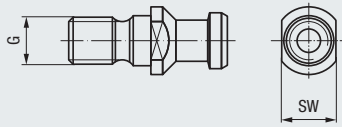
TCHDRD20

| ø D ₁ | l ₁ | l ₂ | l ₃ | d ₂ | d ₃ | Dimens.-Ident |
|------------------|----------------|----------------|----------------|----------------|----------------|---------------|
| 3 | 50 | 28 | 4 | 20 | 25 | .030500 |
| 6 | 50 | 36 | 4 | 20 | 25 | .060500 |
| 8 | 50 | 37 | 4 | 20 | 25 | .080500 |
| 10 | 50 | 40 | 4 | 20 | 25 | .100500 |
| 12 | 50 | 45 | 4 | 20 | 25 | .120500 |
| 14 | 50 | 45 | 4 | 20 | 25 | .140500 |
| 16 | 50 | 48 | 4 | 20 | 25 | .160500 |
| 18 | 50 | 48 | 4 | 20 | 25 | .180500 |

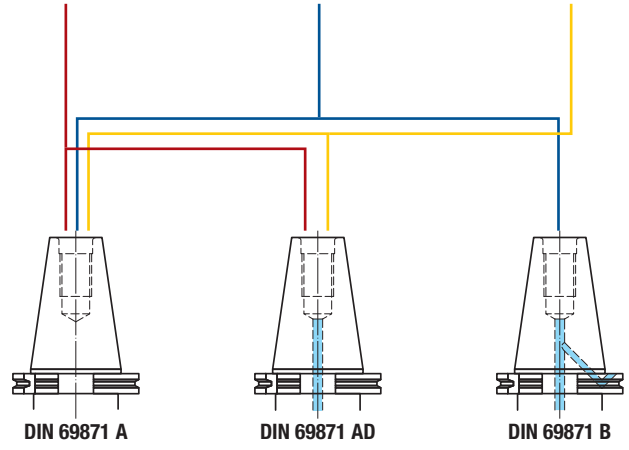
● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

Für Steilkegel nach DIN 69871
For ISO tapers acc. DIN 69871



| Werkzeug-Ident · Tool ident | | | | TWA03001 | TWA03002 | TWA03003 |
|---|-----|----|-------------------|-------------|-------------|------------|
| Für Steilkegelgröße For ISO taper size | G | SW | Dimens.- Ident | DIN 69872 A | DIN 69872 B | ISO 7388 B |
| SK 40 | M16 | 19 | .04000 | • | • | • |
| SK 50 | M24 | 30 | .05000 | • | • | • |



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



Technische Informationen

Technical Information

Seite · Page

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Product
Finderv_c / f

STEEL

VA

GG

HCUT

Zubehör
Accessories

Tech. Info

3 x D

5 x D

6 x D

8 x D

2-3,5 x D



Die Technischen Informationen der jeweiligen Kapitel dieses Kataloges sind in vielen Landessprachen auch als separate Druckerzeugnisse verfügbar. Bitte wenden Sie sich an den für Sie zuständigen Vertriebspartner.

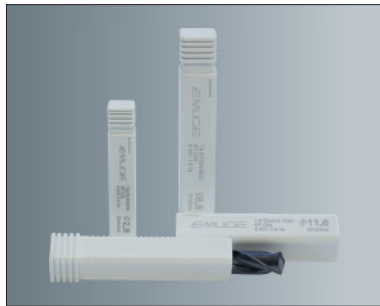
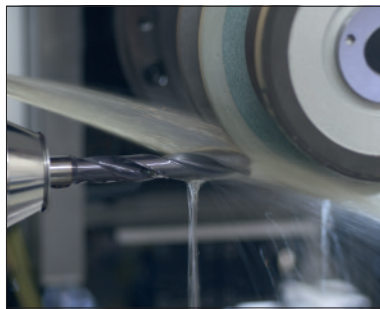
The technical information complementing the various chapters of this catalogue is available also as a separate printed booklet in many different languages. Please speak to your usual sales contact.

- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör
Accessories
- Tech. Info

5.1 Nachschleif- und Wiederbeschichtungs-Service

Das Nachschleifen und Wiederbeschichten ist ein wichtiger Bestandteil für den wirtschaftlichen Einsatz von Bohrwerkzeugen.

Der Nachschleif- und Wiederbeschichtungs-Service von EMUGE stellt die Wiederherstellung der Originalgeometrie und Originalbeschichtung eines Werkzeuges sicher.



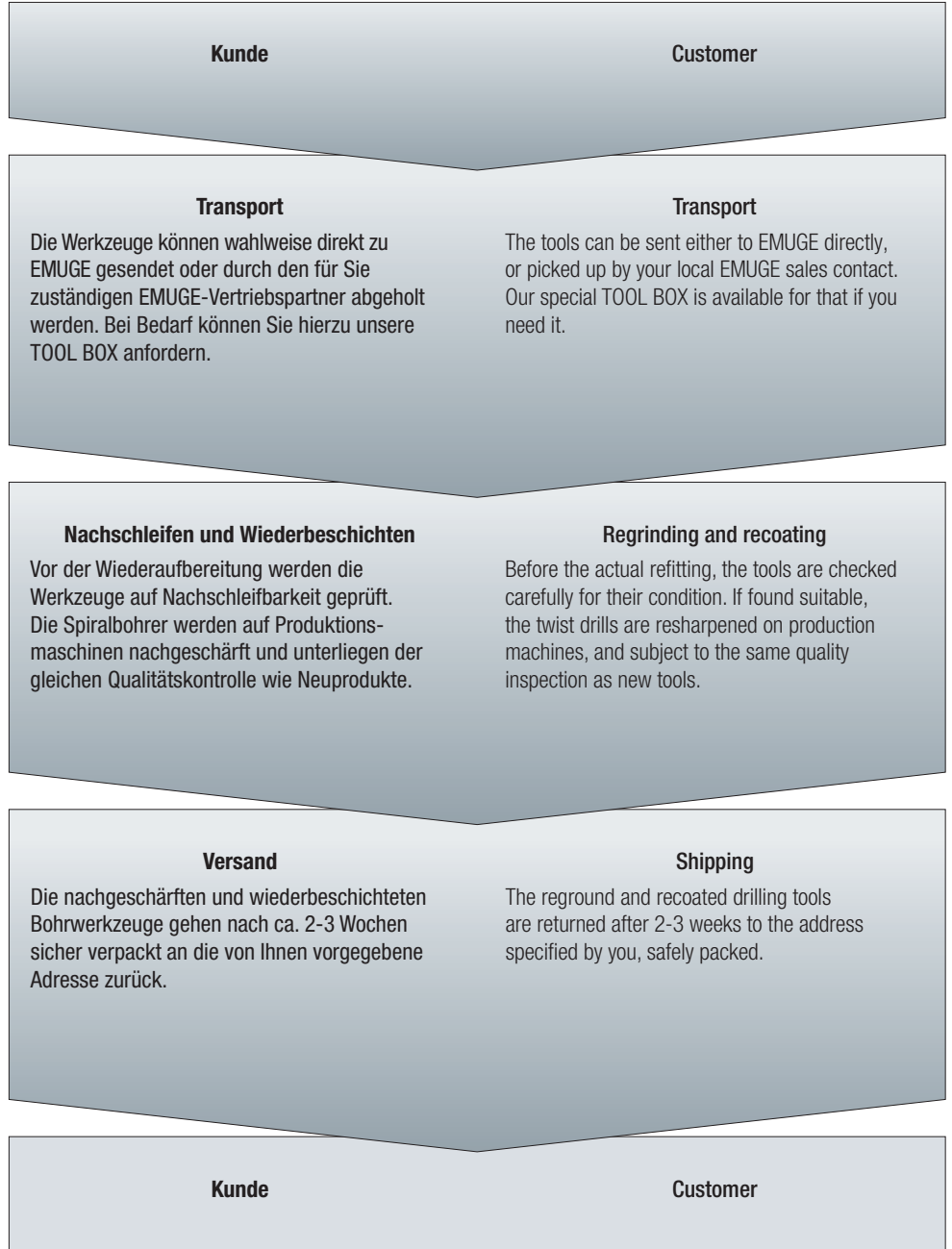
- 3 x D
- 5 x D
- 6 x D
- 8 x D
- 2-3,5 x D



5.1 Regrinding and recoating service

Regrinding and recoating form an essential contribution to the economically efficient use of drilling tools.

The EMUGE regrinding and recoating service guarantees the restoration of the original geometry and the original coating of the tool.



5.2 Typische Spanformen

5.2 Typical chip forms

Product
Finderv_c / f

STEEL

VA

GG

HCUT

Zubehör
Accessories

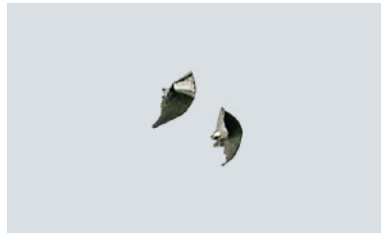
Tech. Info

**Anbohrspan**

Dieser Span wird beim Anbohren erzeugt, bis die Schneidecken im Eingriff sind.

Start-of-drilling chip

This chip type is produced in the start of the drilling process, before the cutting corners are engaged.

**Optimaler Bohrspan**

Dieser Span entsteht, wenn die Schnittdaten optimal gewählt sind.

Optimal drilling chip

This chip type is created when the cutting data are chosen to perfection.

**Durchbohrspan**

Achtung: Erhöhter Platzbedarf zwischen Werkstück und Werkzeugaufnahme wird benötigt.

Drill-through chip

Note: There is need for increased space between workpiece and tool holder.

**Durchbohrdeckel**

Achtung: Erhöhter Platzbedarf für Späne und Deckel beim Durchbohren!

Drill-through slug

Note: There is need for increased space for chips and lid in drilling through!

**Fassspan**

Der Fassspan entsteht bei der Erzeugung der Fase.

Chamfer chip

This chip type is created in the production of the chamfer.

**Stufenbohrspan**

Die Spanlänge dieses Spans kann bei langspanenden Werkstoffen über Verweilzeiten beeinflusst werden.

Step-drill chip

The length of this chip type can be controlled by means of dwell times in long-chipping material.

**Verkettete Späne**

Diese entstehen besonders bei langspanenden Werkstoffen, bzw. nicht optimalen Schnittwerten. Einzelne Verkettungsspäne sind weniger problematisch. Bei Dauerverkettungsspänen führt dies mittelfristig zu Spanstau und somit zu Bohrerbruch.

Hooked up chips

These chips are produced especially in long-chipping materials, or when cutting data are not optimally chosen. Single entangled chips are not such a big issue, but when the entanglement of the chips becomes permanent it will soon lead to chip clogging, and with it to drill breakage.

**Bandspan/Fließspan**

Achtung: Bei Entstehung dieser Späne zeigt der Bohrer bereits starke Beschädigungen an Haupt- und Querschneide! Dies bedeutet Standzeitende.

Ribbon chip / flow chip

Note: When you observe this chip type, the drill already has serious damage on primary cutting edge and chisel edge! This means an end to tool life.

3 x D

5 x D

6 x D

8 x D

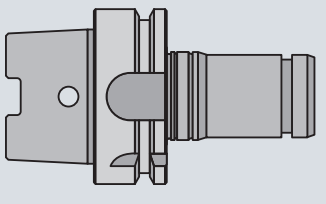
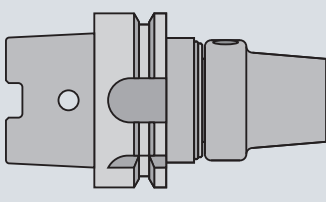
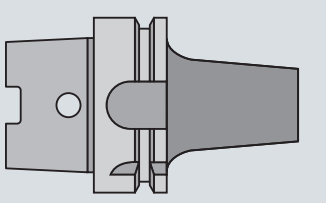
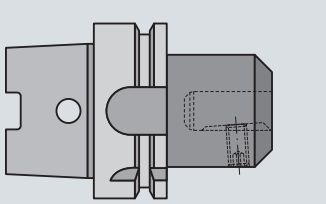
2-3,5 x D



- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör
Accessories
- Tech. Info

5.3 Werkzeugspannung

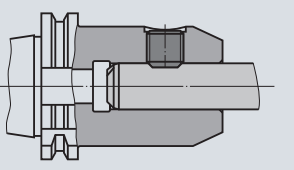
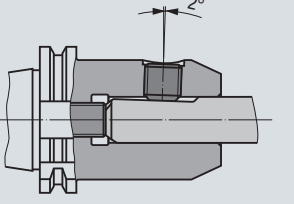
5.3 Tool clamping

| | | |
|---|--|--|
|  | <p>Spannzangen-Aufnahme Typ PGR Rundlaufgenauigkeit < 3 µm</p> <ul style="list-style-type: none"> • Schmale Bauweise • Reduziert Vibrationen | <p>Collet holders type PGR Concentricity < 3 µm</p> <ul style="list-style-type: none"> • Slender construction • Reduced vibrations |
|  | <p>Hydrodehnspannfutter Rundlaufgenauigkeit < 3 µm</p> <ul style="list-style-type: none"> • Reduziert Vibrationen | <p>Hydraulic expansion chucks Concentricity < 3 µm</p> <ul style="list-style-type: none"> • Reduced vibrations |
|  | <p>Schrumpf-Aufnahme Rundlaufgenauigkeit < 3 µm</p> <ul style="list-style-type: none"> • Schmale Bauweise | <p>Shrink-fit chucks Concentricity < 3 µm</p> <ul style="list-style-type: none"> • Slender construction |
|  | <p>Werkzeug-Aufnahme für Zylinderschäfte mit geneigter Spannfläche Rundlaufgenauigkeit < 15 µm</p> <ul style="list-style-type: none"> • Kostengünstig | <p>Tool holders for straight shanks with inclined clamping flat Concentricity < 15 µm</p> <ul style="list-style-type: none"> • Economically efficient |

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

5.4 Unterschied der Werkzeugspannung bei seitlicher Mitnahmefläche und geneigter Spannfläche

5.4 Differences in tool clamping with lateral driving flat and inclined clamping flat

| | | |
|---|--|--|
|  | <p>Seitliche Mitnahmefläche Aufnahme von Werkzeugen mit seitlicher Mitnahmefläche nach DIN 6535 HB bzw. DIN 1835 B. Diese Aufnahme hat keine axiale Abstützung und ist daher für Bohroperationen nicht geeignet.</p> | <p>Lateral driving flat Clamping of tools with lateral driving flat acc. DIN 6535 HB resp. DIN 1835 B. This type of clamping has no axial support and is therefore not suitable for drilling operations.</p> |
|  | <p>Geneigte Spannfläche Aufnahme von Werkzeugen mit geneigter Spannfläche nach DIN 6535 HE bzw. DIN 1835 E.</p> | <p>Inclined clamping flat Clamping of tools with inclined clamping flat acc. DIN 6535 HE resp. DIN 1835 E.</p> |

5.5 Werkstückspannung

Voraussetzungen für den Einsatz von Spiralbohrern:

- Das Werkstück muss fest aufliegen, darf nicht federn oder durchbiegen
- Abhilfe schaffen zusätzliche Auflagepunkte
- Bei dünnen Wandstärken muss der Vorschub reduziert werden

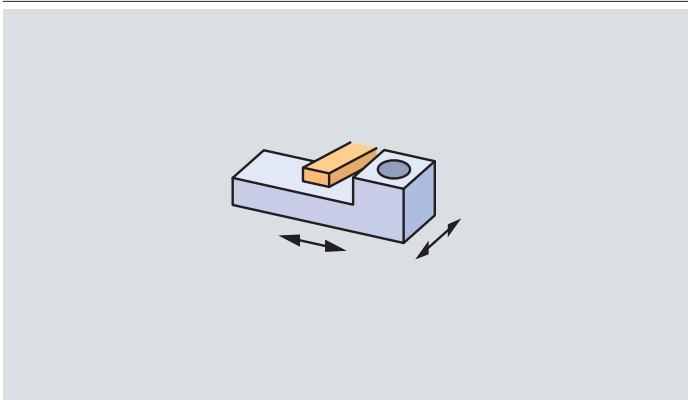
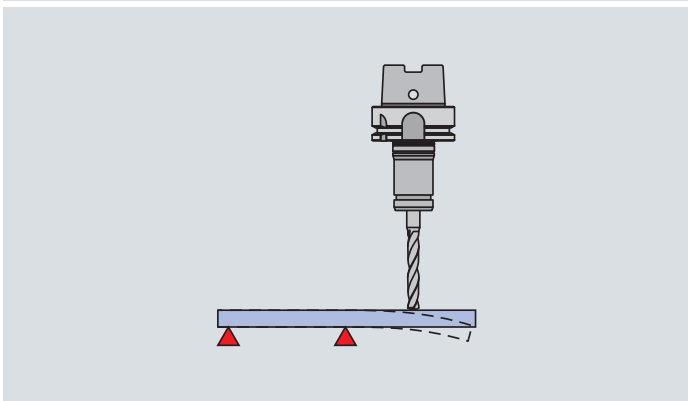
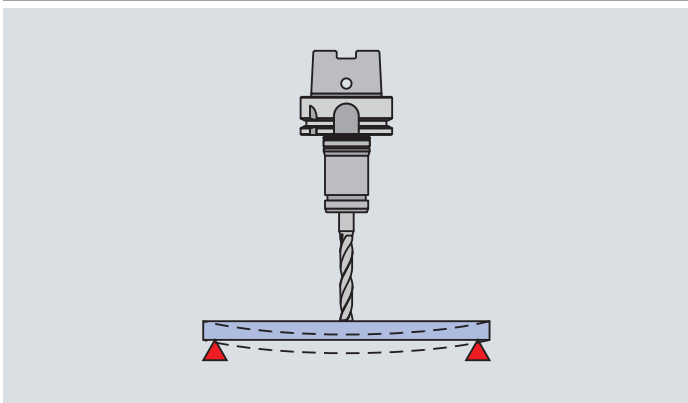
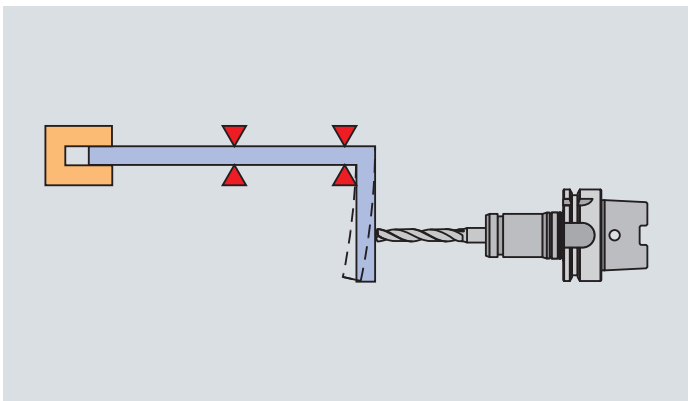
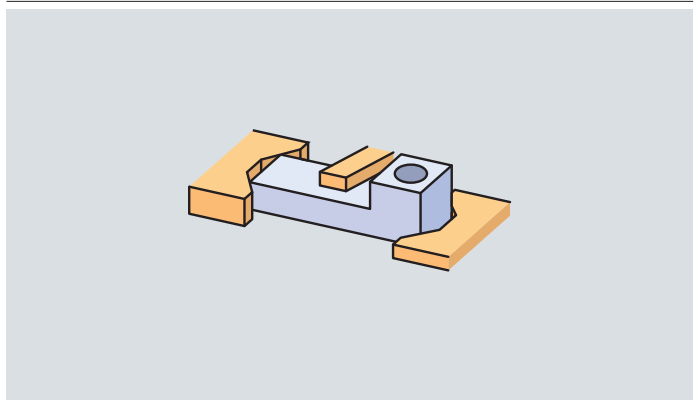
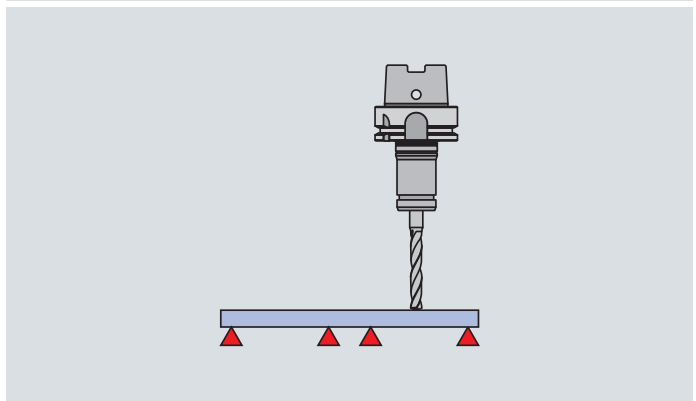
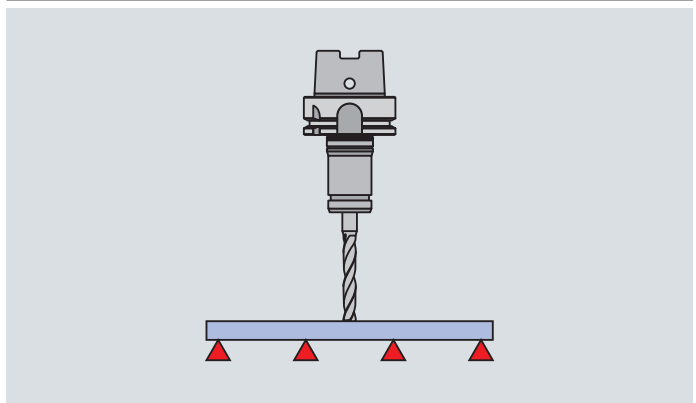
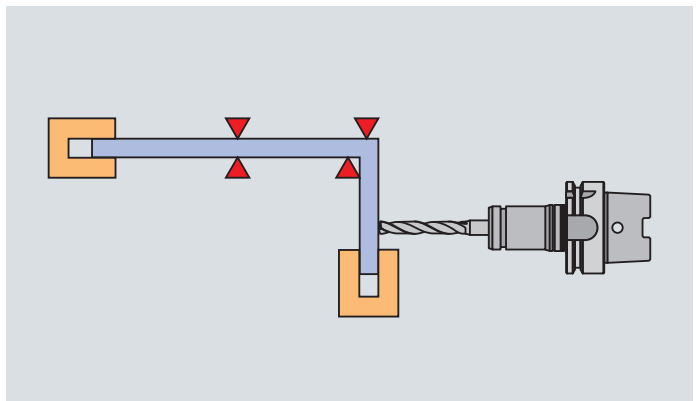
Vollhartmetall-Spiralbohrer reagieren empfindlich auf Biegebeanspruchung!

5.5 Workpiece clamping

Basic conditions for the use of twist drills:

- The workpiece must be firmly supported, without a chance to bounce or bend
- Additional support points will help
- With thin-walled workpieces, feed must be reduced

Solid carbide twist drills are extremely sensitive to bending stress!

Falsche Werkstückspannung
Wrong workpiece clampingRichtige Werkstückspannung
Correct workpiece clampingProduct
Finderv_c / f

STEEL

VA

GG

HCU

Zubehör
Accessories

Tech. Info

3 x D

5 x D

6 x D

8 x D

2-3,5 x D



- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör
Accessories
- Tech. Info

5.6 Kühlschmierstoff-Zufuhr

Innenkühlung ist bei Bohrtiefen über $2 \times D$ immer zu bevorzugen. Ab einer Bohrtiefe von $5 \times D$ ist sie unbedingt erforderlich. Bei der Außenkühlung ist neben dem ausreichenden Kühlschmierstoff-Druck auch auf die richtige Zuführung zu achten.

Wann immer möglich, sollten drei Kühlschmierstoff-Strahlen auf den Spiralbohrer treffen.

5.6 Coolant supply

Internal cooling is always to be recommended when drill depth exceeds $2 \times D$. From a drill depth of $5 \times D$, it is absolutely necessary. With external cooling, make sure to provide not only sufficient coolant pressure but also the right type of supply.

Wherever possible, three coolant-lubricant jets should hit the twist drill directly.

| | | Schlechte Kühlschmierstoff-Zufuhr Bad coolant supply | Gute Kühlschmierstoff-Zufuhr Good coolant supply |
|---|--|---|---|
| Vertikale Bearbeitung Vertical machining | $3 \times D$ $5 \times D$ | | <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Gut Good</p> </div> <div style="text-align: center;"> <p>Besser Better</p> </div> </div> |
| | $6 \times D$ $8 \times D$ $2-3,5 \times D$ | | |
| Horizontale Bearbeitung Horizontal machining | | | |

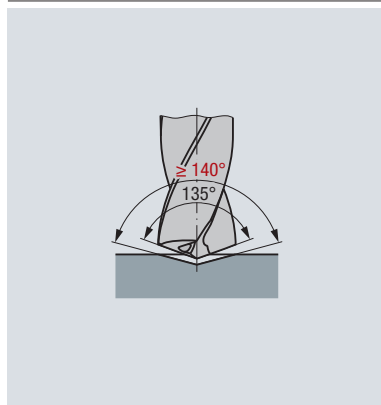


5.7 Spitzenwinkel

Anzentrierung und Pilotbohrung

Bei langen, spannmittelbedingten Auskragungen muss anzentriert oder besser eine Pilotbohrung gesetzt werden.

Bei Werkzeuglängen über $8 \times D$ ist mit reduziertem Vorschub anzubohren oder eine Anzentrierung bzw. Pilotbohrung zu empfehlen.

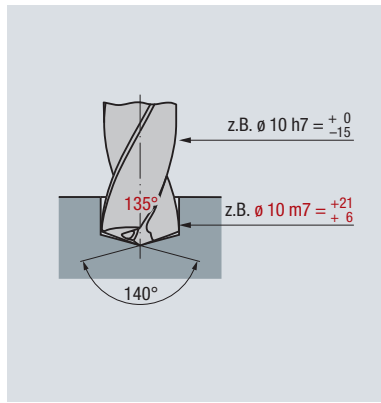


Anzentrierung

Zu beachten gilt, dass der Spitzenwinkel des Vorbohrers größer als der des Folgebohrers ist. Zu empfehlen sind hier EF-Drill nach DIN 6537 K. Die Anzentrierung sollte nicht tiefer sein als die Spitzenlänge l_5 .

Centering

Please note that the point angle of the first, or preparatory drill must be larger than that of the subsequent drill. We recommend our twist drills EF-Drill acc. DIN 6537 K. The centering should not be deeper than the point length l_5 .



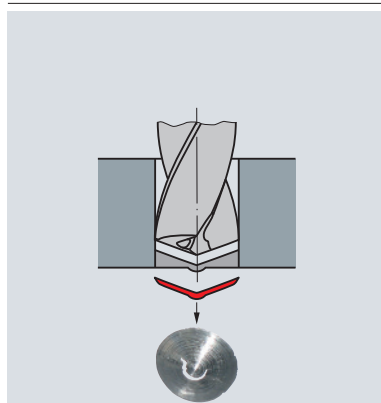
Pilotbohrung

Eine Pilotbohrung kommt beim Tieflochbohren zur Anwendung. Zu beachten ist, dass Spitzenwinkel und Durchmesser des Pilotbohrers größer als beim Folgebohrer sind. Eine Tiefe der Pilotbohrung von $1 \times D$ ist ausreichend.

Pilot hole

A pilot hole is used for deep-hole drilling. Please note that the point angle and the diameter of the pilot drill must be larger than those of the subsequent drill. For the pilot hole, a depth of $1 \times D$ is sufficient.

5.8 Einfluss des Spitzenwinkels

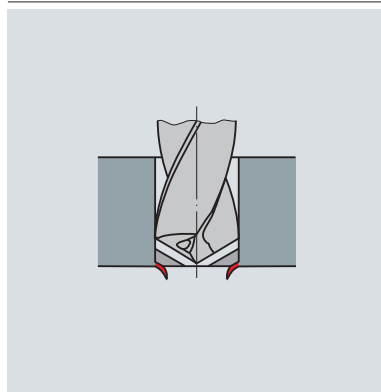


Standard-Spitzenwinkel 140° (EF-Drill)

- Stabile Spitze
- Kurzer Span
- Gute Zentrierung
- Geringerer Leistungsbedarf
- Geringeres Drehmoment
- Deckelbildung
- Gratbildung gering
- Hoher Standweg

Standard point angle 140° (EF-Drill)

- Stable point
- Short chips
- Good centering
- Reduced power consumption
- Reduced torque
- Formation of slug
- Minimal burr formation
- Long tool life



Spitzenwinkel 118°

- Labile Spitze
- Hohes Drehmoment
- Hohe Leistungsaufnahme
- Instabile Hauptschneiden
- Geringe Deckelbildung
- Gratbildung beim Austritt

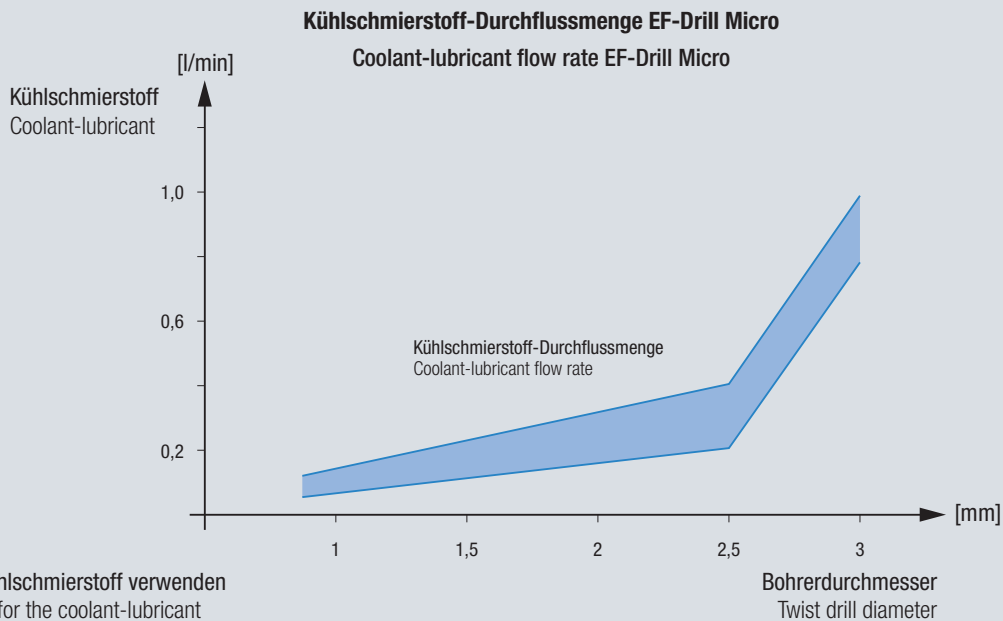
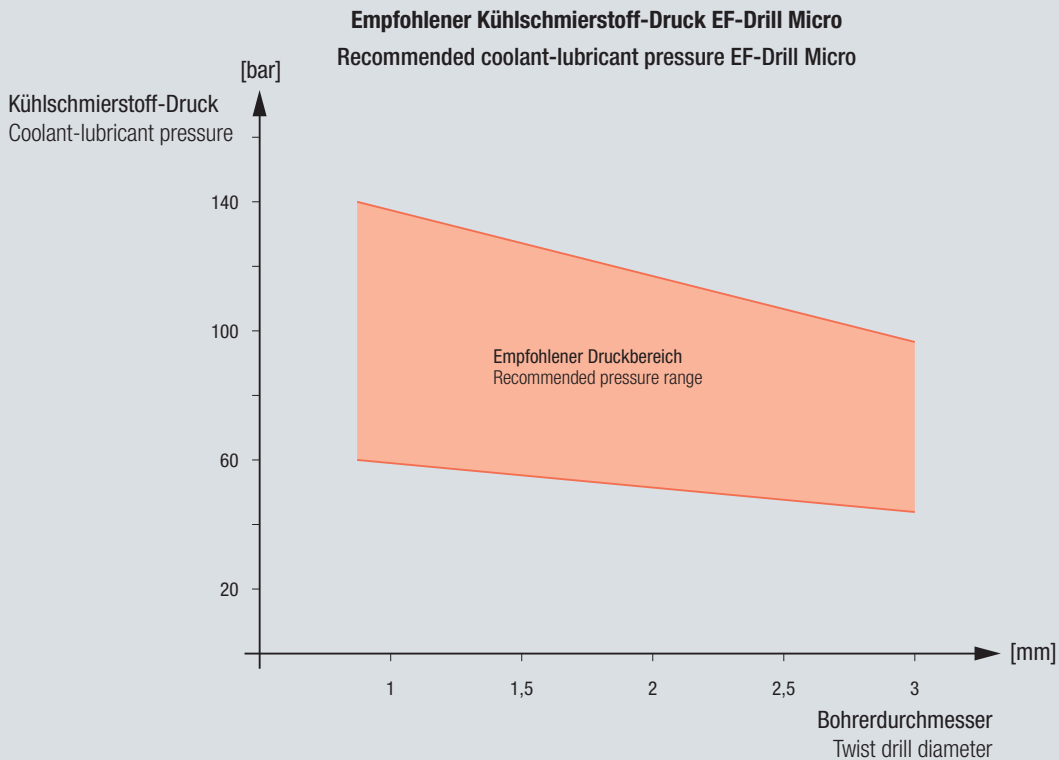
Point angle 118°

- Unstable point
- High torque
- High power consumption
- Unstable primary cutting edges
- Slug formation very much reduced
- Formation of burr during the exit of the drill

- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör
Accessories
- Tech. Info**

5.9 Technische Hinweise EF-Drill Micro

5.9 Technical information EF-Drill Micro



Mikrofilter für Kühlschmierstoff verwenden
Use a micro filter for the coolant-lubricant

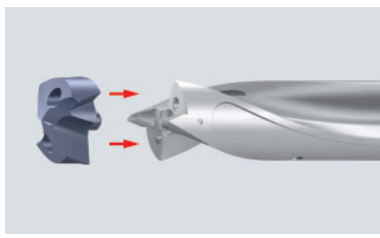


5.10 Technische Hinweise EF-Drill Modular

5.10 Technical information EF-Drill Modular

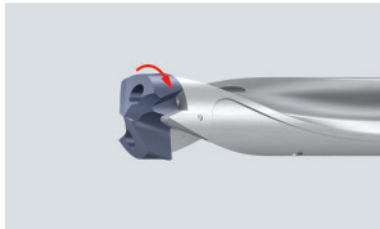
Montage des Bohrkopfes in den Halter

Assembly of drill head into holder



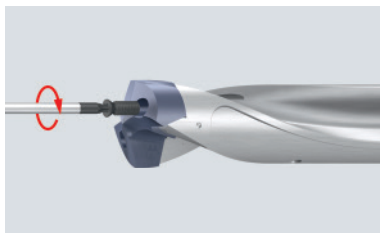
Schneidkopf in den gereinigten Halter einsetzen.

Insert the cutting head into the cleaned holder.



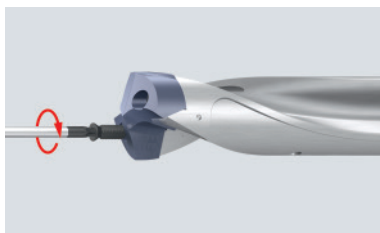
Schneidkopf im Uhrzeigersinn bis zum Anschlag drehen.

Turn the cutting head clockwise up to the stop.



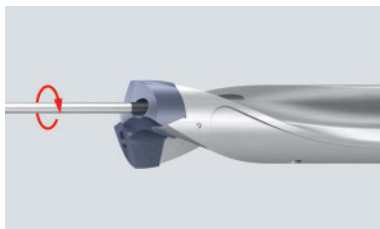
Eine Schraube in die Befestigungsbohrung einsetzen und leicht anziehen.

Insert a screw into the mounting bore and tighten it gently.



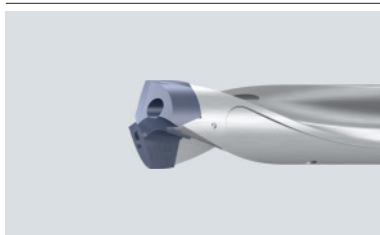
Zweite Schraube in die Befestigungsbohrung einsetzen und fest anziehen.

Insert the second screw into the mounting bore and tighten it firmly.



Erste Schraube mit empfohlenem Drehmoment anziehen. Zweite Schraube noch einmal mit empfohlenem Drehmoment nachziehen.

Tighten the first screw with the recommended torque. Retighten the second screw with the recommended torque.



Fertig montiertes Werkzeug.

Tool completely assembled.

Anzugsdrehmomente für Spannschrauben

Tightening torques for clamping screws

| Plattensitzgröße Size of insert seat | Größe Size | Empf. Anzugsdrehmoment Rec. tightening torque (Nm) |
|---|---------------|--|
| 2 | Torx T7 | 0,60 |
| 3 | Torx T8 | 0,88 |
| 4 | Torx T8 | 1,53 |
| 5 | Torx T9 | 2,44 |
| 6 | Torx T15 | 3,66 |
| 7 | Torx T15 | 5,22 |

Product
Finderv_c / f

STEEL

VA

GG

HCUT

Zubehör
Accessories

Tech. Info

3 x D

5 x D

6 x D

8 x D

2-3,5 x D



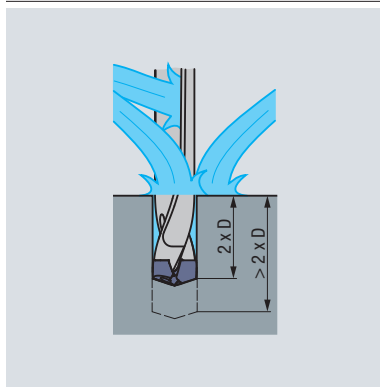
- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info**

5.10 Technische Hinweise EF-Drill Modular

5.10 Technical information EF-Drill Modular

Bearbeitungssituation

Machining condition

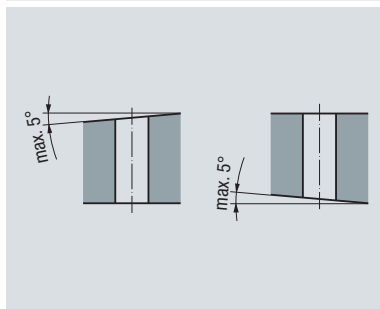


Außenkühlung bis 2 x D möglich,
ab 2 x D in Steps bohren.

Innenkühlung ist immer zu bevorzugen.
Empfohlener Kühlschmierstoff-Druck: > 20 bar.

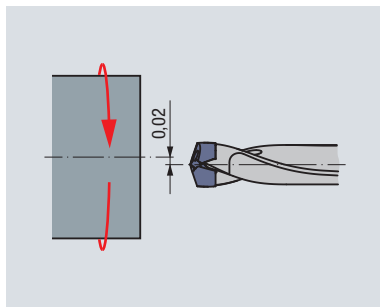
External cooling possible up to 2 x D.
From 2 x D drill in steps.

Internal cooling should always be preferred.
Recommended coolant-lubricant pressure: > 20 bar.



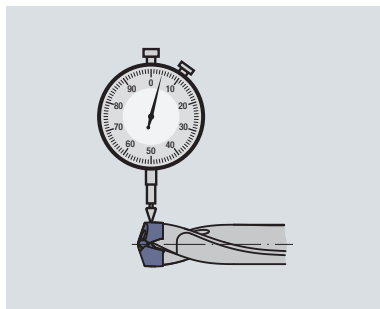
Schräger Ein- und Austritt $\leq 5^\circ$.

Slanting entering and exit $\leq 5^\circ$.



Maximaler Achsversatz 0,02 mm.

Maximum axle offset 0.02 mm.



Maximaler Rundlauffehler < 0,04 mm.

Maximum run-out < 0.04 mm.



5.11 Probleme, mögliche Ursachen und Abhilfen
beim Bohren5.11 Problems, possible causes and solutions
in drillingProduct
Finderv_c / f

STEEL

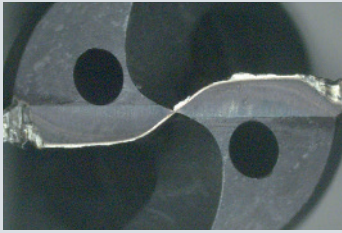
VA

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HCUT

Zubehör
Accessories

Tech. Info

**Probleme:**

- Übermäßiger Eckenverschleiß
- Aufbauschnide
- Führungsfasenverschleiß

Mögliche Ursachen:

- Zu lange Bearbeitungszeiten
- Hohe Temperatur und/oder Reibung
- Rundlauffehler > 0,02 mm
- Instabile Spannung des Werkstückes oder Werkzeuges
- Fettgehalt des Kühlschmierstoffes zu niedrig

Abhilfen:

- Spiralbohrer rechtzeitig wechseln und nachschleifen
- Kühlschmierstoff-Volumen erhöhen
- Kühlschmierstoff mit höherem Ölgehalt bzw. Additive verwenden
- Schnittgeschwindigkeit reduzieren
- Reduzierung des Vorschubes beim Durchbrechen

Problems:

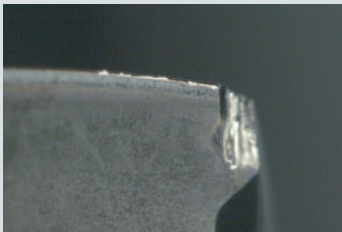
- Excessive wear on the corners
- Built-up edge
- Wear on the margins

Possible causes:

- Excessive machining times
- High temperature and/or friction
- Concentricity run-out > 0.02 mm
- Unstable clamping of workpiece or tool
- Coolant-lubricant too dry

Solutions:

- Exchange twist drill in time and regrind
- Increase coolant-lubricant volume
- Use coolant-lubricant with higher oil content, or additives
- Reduce cutting speed
- Reduce feed for drilling through

**Problem:**

- Abplatzungen an den Schneidecken

Mögliche Ursachen:

- Zu hoher Vorschub
- Werkstück bewegt sich beim Durchbrechen
- Maschine ist instabil
- Spiralbohrer rutscht auf Grund unzureichender Werkzeugspannung
- Rundlauffehler > 0,02 mm

Abhilfen:

- Verbesserung der Werkstückspannung
- Anderes Spannmittel verwenden, z.B. Spannsystem Typ PGR oder Hydrodehnspannfutter
- Vorschub reduzieren

Problem:

- Chipping on the cutting corners

Possible causes:

- Excessive feed
- Workpiece moves when the drill breaks through
- Machine is unstable
- Twist drill slips due to unsatisfactory tool clamping
- Concentricity run-out > 0.02 mm

Solutions:

- Improve workpiece clamping
- Use a different clamping tool, e.g. clamping system PGR or hydraulic expansion chuck
- Reduce feed

**Problem:**

- Ablösen der Schicht an der Führungsfase

Mögliche Ursachen:

- Zu hohe Reibung
- Schräger Austritt
- Adhäsiver Werkstoff
- Zu viele Nachschliffe (Schichtdicke zu hoch)

Abhilfen:

- Kühlschmierstoff mit höherem Ölgehalt bzw. Additive verwenden
- Vorschub beim Austritt reduzieren
- Anzahl der Nachschliffe reduzieren

Problem:

- Coating coming off on the margins

Possible causes:

- Excessive friction
- Slanted exit
- Adhesive workpiece material
- Reground too many times (excessive coating thickness)

Solutions:

- Use coolant-lubricant with higher oil content, or additives
- Reduce feed for exiting
- Reduce the number of times you regrind your drills

3 x D

5 x D

6 x D

8 x D

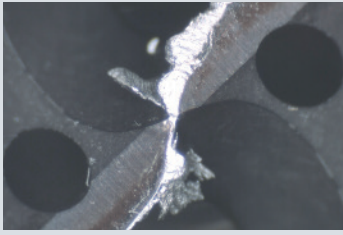
2-3,5 x D



- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör
Accessories
- Tech. Info

5.11 Probleme, mögliche Ursachen und Abhilfen beim Bohren

5.11 Problems, possible causes and solutions in drilling



Problem:

- Aufbauschneide an der Hauptschneide

Mögliche Ursachen:

- Falsche Schnittwerte
- Zu hoher Freiflächenverschleiß
- Schädigung an den Schneiden
- Schlechte Kühlschmierung

Abhilfen:

- Kühlschmierstoff mit höherem Ölgehalt bzw. Additive verwenden
- Schnittgeschwindigkeit erhöhen
- Vorschub reduzieren
- Werkzeugwechsel

Problem:

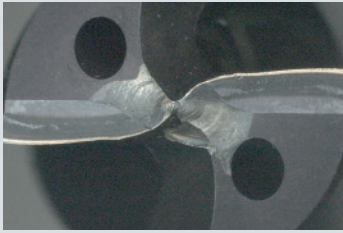
- Built-up edge on the primary cutting edge

Possible causes:

- Wrong cutting data
- Excessive wear on relief surfaces
- Damage on the cutting edges
- Bad coolant supply

Solutions:

- Use coolant-lubricant with higher oil content, or additives
- Increase cutting speed
- Reduce feed
- Exchange tools



Problem:

- Abplatzungen an der Querschneide

Mögliche Ursachen:

- Vibrationen
- Rundlauffehler > 0,02 mm
- Raue oder geneigte Werkstückoberfläche

Abhilfen:

- Vorschub reduzieren
- Anderes Spannmittel verwenden
- Werkstückoberfläche verbessern (z.B. Anspiegeln)

Problem:

- Splintering on the chisel edge

Possible causes:

- Vibrations
- Concentricity run-out > 0.02 mm
- Rough or slanted workpiece surface

Solutions:

- Reduce feed
- Use a different clamping tool
- Improve workpiece surface (e.g. by spot-facing)



5.12 Technischer Fragebogen: Vollhartmetall-Spiralbohrer EF-Drill

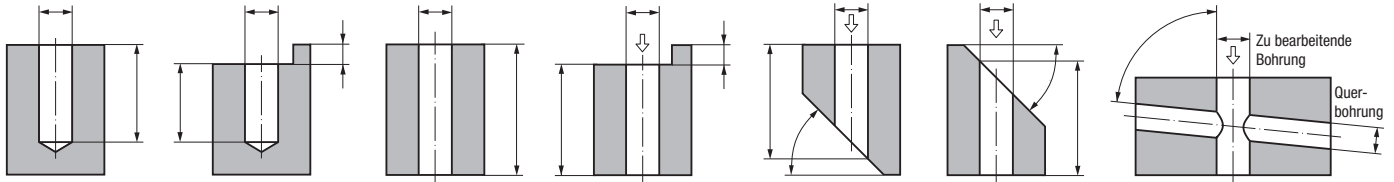
Firma:
 Ansprechpartner:
 Telefon:
 Fax:
 E-Mail:

Bohrungsdurchmesser:
 Bohrungstoleranz:
 Bohrer Ausführung:
 Artikel-Nr.:
 Projekt:

Werkstückbezeichnung:

Lochform (bitte Maße eintragen):

⇒ = Bearbeitungsrichtung

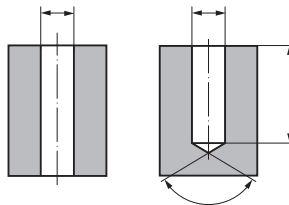


Vorbearbeitung:

Oberfläche: gedreht/gefräst roh gegossen Sonstiges:

Vorbohrung:

ohne
 gebohrt
 gegossen
 Sonstiges:



Maschine:

Hersteller:
 Typ:
 Antriebsleistung: kW
 horizontal Werkzeug rotierend
 vertikal Werkzeug stehend

Werkstückwerkstoff:

Bezeichnung:
 Behandlungszustand:
 Festigkeit: N/mm²
 Härte: Dehnung: %
 kurzspanend langspanend

Schnittdaten:

Drehzahl n: min⁻¹
 Schnittgeschwindigkeit v_c: m/min
 Vorschub f: mm/U
 Vorschubgeschwindigkeit v_f: mm/min

Werkzeug-Empfehlung:

Ausführung:
 Artikel-Nr.:
 Schaftdurchmesser: mm
 Schaftausführung: DIN 6535 HA HE
 Besonderheit:

Schaftform:

Schaftdurchmesser: mm
 Schaftausführung: DIN 6535 HA HE

Kühlung:

Innere Kühlschmierstoff-Zufuhr: nein ja Druck: bar
 Medium: Öl Emulsion: %
 MMS Trocken / Druckluft

Bisher verwendete Werkzeuge (Hersteller):

Standwert: (Anzahl Bohrungen)

Standweg: m

Stückzahl:

Aufgenommen von:

Datum / Unterschrift:

- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories

Tech. Info

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



- Product Finder
- v_c / f
- STEEL
- VA
- GG
- HCUT
- Zubehör Accessories
- Tech. Info

5.12 Technical questionnaire: Solid carbide twist drills EF-Drill

Company: Drilled hole diameter:

Contact: Drilled hole tolerance:

Phone: Drill design:

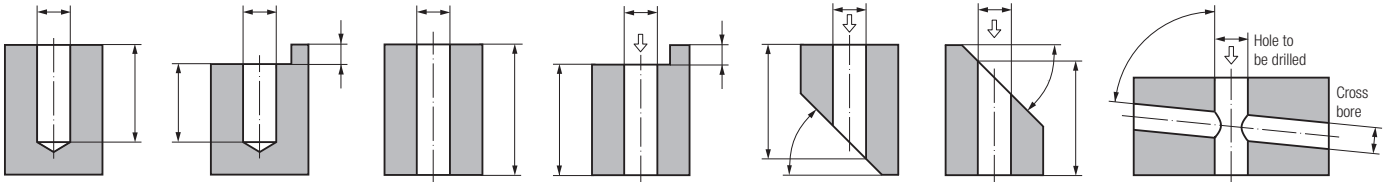
Fax: Article no.:

E-Mail: Project:

Workpiece description:

Hole type (please enter dimensional specifications):

⇒ = Machining direction



Preparatory work:

Surface: turned/milled rough cast others:

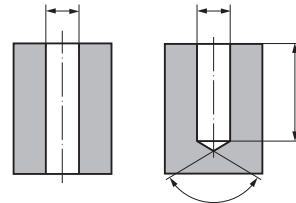
Pilot hole:

without

drilled

cast

others:



Maschine:

Manufacturer:

Type:

Power: kW

horizontal rotating tool

vertical standing tool

Workpiece material:

Description:

Condition during work:

Tensile strength: N/mm²

Hardness: Elongation: %

short-chipping long-chipping

Cutting data:

Speed n: rpm

Cutting speed v_c : m/min

Feed f: mm/rev.

Feed speed v_f : mm/min

Tool recommendation:

Design:

Article no.:

Shank diameter: mm

Shank design: DIN 6535 HA HE

Special features:

Shank type:

Shank diameter: mm

Shank design: DIN 6535 HA HE

Cooling:

Internal coolant supply: no yes Pressure: bar

Medium: Oil Emulsion: %

MQL Dry/pressurised air

Tools used until now (manufacturer):

Tool life: (no. of drilled holes)

Tool path: m

Quantity:

Filled in by:

Date / Signature:



Gewindelehren Thread Gauges

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Technische Informationen

Technical Information

635 - 654



Product Finder

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- 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
- Kalibrieren Calibration
- Tech. Info



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| UNC | 606 | 606 | 606 |
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| NPTF | | | |
| BSW | 614 | 614 | 614 |
| Pg | 615 | 615 | 615 |
| MJ | 616 | | |
| UNJC | 616 | | |
| UNJF | 616 | | |
| EG M (STI) | 617 | | |
| LK-M | 618 | | |
| Tr | 619 | 619 | 619 |
| Tr-F | 620 | 620 | 620 |
| Rd | 621 | 621 | 621 |

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Glatte Grenz-, Gut- und Ausschuss-Lehrdorne
Smooth plug gauges go/no-go, go, and no-go

622

Glatte Kernloch-Grenzlehrdorne für Metrische Gewinde
Smooth plug gauges go/no-go for thread holes, for Metric threads

623



DECOM-Prüflabor im Hause EMUGE
DECOM Calibration Laboratory at EMUGE

631 - 634

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

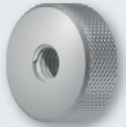
GT, TD

Zubehör
Accessories

Kalibrieren
Calibration

Tech. Info

Gewinde-
Gutlehringe
Thread ring
gauges go



G-GUT-LR

Gewinde-
Ausschusslehringe
Thread ring
gauges no-go



G-AUS-LR

Gewindelehren
für kegelige Gewinde
Thread gauges
for tapered threads



G-GR-LD, G-GR-LR

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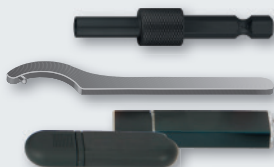
| | | | |
|-----------|-----------|-----|-------------------|
| 586 | 587 | | M |
| 598 - 604 | 599 - 605 | | MF |
| 607 | 607 | | UNC |
| 609 | 609 | | UNF |
| 610 | 610 | | G (BSP) |
| | | 611 | Rp, R, Rc |
| | | 612 | NPT |
| | | 613 | NPTF |
| 614 | 614 | | BSW |
| 615 | 615 | | Pg |
| | | | MJ |
| | | | UNJC |
| | | | UNJF |
| | | | EG M (STI) |
| | | | LK-M |
| 619 | 619 | | Tr |
| 620 | 620 | | Tr-F |
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Gewinde-Tiefenlehrdorne
Thread depth plug gauges

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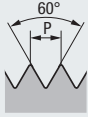
Sechskant-Bit-Adapter und Zubehör
Hexagon bit adapters and accessories

628 - 629



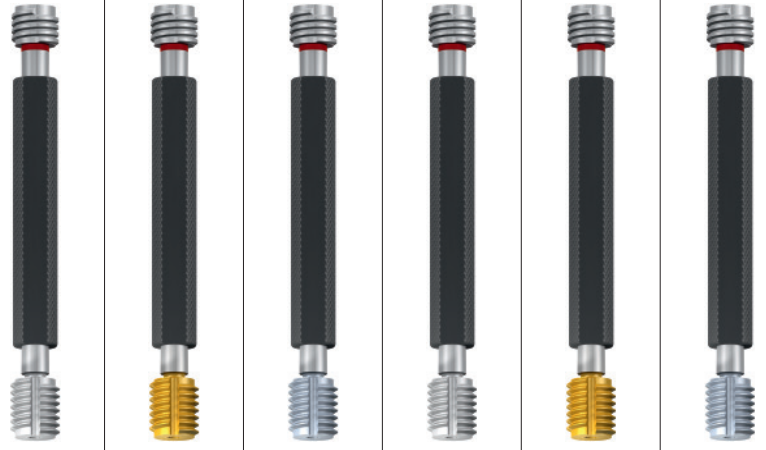
- Product Finder
- M
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- UNF
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- NPT, NPTF
- BSW
- Pg
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UNJC, UNJF
- EG (STI)
SELF-LOCK
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Calibration
- Tech. Info

M



DIN 13

Lehrenmaße nach DIN ISO 1502
Gauge dimensions acc. DIN ISO 1502



| | | | Toleranz · Tolerance | | Beschichtung · Coating | | | | | | | |
|-----------------------------|---------|-------------------|----------------------|----------|------------------------|----------|----------|----------|---|--|--|--|
| | | | 6H | 6H | 6H | 4H | 4H | 4H | | | | |
| | | | | TIN | CR | | TIN | CR | | | | |
| Werkzeug-Ident · Tool ident | | | L0100100 | L0105100 | L0101100 | L0100110 | L0105110 | L0101110 | | | | |
| | | | G-GR-LD | G-GR-LD | G-GR-LD | G-GR-LD | G-GR-LD | G-GR-LD | | | | |
| | | | | TIN | CR | „4H“ | TIN „4H“ | CR „4H“ | | | | |
| ø d ₁ mm | P mm | Dimens.- Ident | | | | | | | | | | |
| M 1 | 0,25 | .0010 | ●*) | | | | | | | | | |
| 1,1 | 0,25 | .0011 | ●*) | | | | | | | | | |
| 1,2 | 0,25 | .0012 | ●*) | | | | | | | | | |
| 1,4 | 0,3 | .0014 | ●*) | | | | | | | | | |
| 1,6 | 0,35 | .0016 | ● | | | | | | | | | |
| 1,7 | 0,35 | .0017 | ● | | | | | | | | | |
| 1,8 | 0,35 | .0018 | ● | | | | | | | | | |
| 2 | 0,4 | .0020 | ● | | | | ● | | | | | |
| 2,2 | 0,45 | .0022 | ● | | | | ● | | | | | |
| 2,3 | 0,4 | .0023 | ● | | | | | | | | | |
| 2,5 | 0,45 | .0025 | ● | | | | ● | | | | | |
| 2,6 | 0,45 | .0026 | ● | | | | | | | | | |
| 3 | 0,5 | .0030 | ● | ● | ● | ● | ● | ○ | ○ | | | |
| 3,5 | 0,6 | .0035 | ● | | | | | | | | | |
| 4 | 0,7 | .0040 | ● | ● | ● | ● | ● | ○ | ○ | | | |
| 4,5 | 0,75 | .0045 | ● | | | | | | | | | |
| 5 | 0,8 | .0050 | ● | ● | ● | ● | ● | ○ | ○ | | | |
| 6 | 1 | .0060 | ● | ● | ● | ● | ● | ○ | ○ | | | |
| 7 | 1 | .0070 | ● | | | | | | | | | |
| 8 | 1,25 | .0080 | ● | ● | ● | ● | ● | ○ | ○ | | | |
| 9 | 1,25 | .0090 | ● | | | | | | | | | |
| 10 | 1,5 | .0100 | ● | ● | ● | ● | ● | ○ | ○ | | | |
| 11 | 1,5 | .0111 | ● | | | | | | | | | |
| 12 | 1,75 | .0112 | ● | ● | ● | ● | ● | ○ | ○ | | | |
| 14 | 2 | .0114 | ● | ● | ● | ● | ● | ○ | ○ | | | |
| 16 | 2 | .0116 | ● | ● | ● | ● | ● | ○ | ○ | | | |
| 18 | 2,5 | .0118 | ● | | | | | | | | | |
| 20 | 2,5 | .0120 | ● | ● | ● | ● | ● | ○ | ○ | | | |
| 22 | 2,5 | .0122 | ● | | | | | | | | | |
| 24 | 3 | .0124 | ● | ● | ● | ● | ● | ○ | ○ | | | |
| 27 | 3 | .0127 | ● | | | | | | | | | |
| 30 | 3,5 | .0130 | ● | | | | | | | | | |
| 33 | 3,5 | .0133 | ● | | | | | | | | | |
| 36 | 4 | .0136 | ● | | | | | | | | | |
| 39 | 4 | .0139 | ● | | | | | | | | | |
| 42 | 4,5 | .0142 | | | | | | | | | | |
| 45 | 4,5 | .0145 | | | | | | | | | | |
| 48 | 5 | .0148 | | | | | | | | | | |
| 52 | 5 | .0152 | | | | | | | | | | |
| 56 | 5,5 | .0156 | | | | | | | | | | |
| 60 | 5,5 | .0160 | | | | | | | | | | |
| 64 | 6 | .0164 | | | | | | | | | | |
| 68 | 6 | .0168 | | | | | | | | | | |

*) ≤ M1,4 Tol. 5H



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

Kalibrierung

Calibration

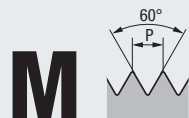
Tech. Info

| | | | | | | | | | |
|-----------|------------------|-----------------|-----------|-----------------|----------|-----------|----------|----------|-----|
| | | | | | | | | | |
| 6G | 6G TIN | 6G CR | 6E | 6H LH | 6H | 6H TIN | 6H CR | 6H | |
| L0100120 | L0105120 | L0101120 | L0100130 | L0100150 | L0120100 | L0125100 | L0121100 | L0140100 | |
| G-GR-LD | G-GR-LD | G-GR-LD | G-GR-LD | G-GR-LD | G-GUT-LD | G-GUT-LD | G-GUT-LD | G-AUS-LD | |
| „6G“ | TIN „6G“ | CR „6G“ | „6E“ | LH | | TIN | CR | | |
| | | | | | ●*) | | | ●*) | 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 |
| ● | ○ | ○ | ● | ● | ● | ● | ● | ● | 6 |
| ● | | | | ● | ● | | | ● | 7 |
| ● | ○ | ○ | ● | ● | ● | ● | ● | ● | 8 |
| ● | | | | ● | ● | | | ● | 9 |
| ● | ○ | ○ | ● | ● | ● | ● | ● | ● | 10 |
| ● | | | | ● | ● | | | ● | 11 |
| ● | ○ | ○ | ● | ● | ● | ● | ● | ● | 12 |
| ● | | | | ● | ● | | | ● | 14 |
| ● | ○ | ○ | ● | ● | ● | ● | ● | ● | 16 |
| ● | | | | ● | ● | | | ● | 18 |
| ● | ○ | ○ | ● | ● | ● | ● | ● | ● | 20 |
| ● | | | | ● | ● | | | ● | 22 |
| ● | ○ | ○ | ● | ● | ● | ● | ● | ● | 24 |
| | | | | | ● | | | ● | 27 |
| | | | | | ● | | | ● | 30 |
| | | | | | ● | | | ● | 33 |
| | | | | | ● | | | ● | 36 |
| | | | | | ● | | | ● | 39 |
| | | | | | ● | | | ● | 42 |
| | | | | | ● | | | ● | 45 |
| | | | | | ● | | | ● | 48 |
| | | | | | ● | | | ● | 52 |
| | | | | | ● | | | ● | 56 |
| | | | | | ● | | | ● | 60 |
| | | | | | ● | | | ● | 64 |
| | | | | | ● | | | ● | 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)

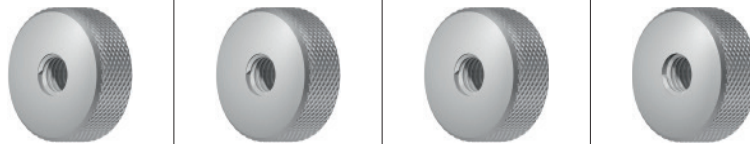


- Product Finder
- M
- MF
- UNC
- UNF
- G
- Rp
R, Rc
- NPT, NPTF
- BSW
- Pg
- MJ
UNJC, UNJF
- EG (STI)
SELF-LOCK
- Tr, Tr-F
Rd
- Glatt
Smooth
- GT, TD
- Zubehör
Accessories
- Kalibrieren
Calibration
- Tech. Info



DIN 13

Lehrenmaße nach DIN ISO 1502
Gauge dimensions acc. DIN ISO 1502



| | | | Toleranz · Tolerance | 6g | 4h | 6e | 6g |
|-----------------------------|---------|-------------------|------------------------|----------|----------|----------------|----|
| | | | Beschichtung · Coating | | | | LH |
| Werkzeug-Ident · Tool ident | | | L0200500 | L0200510 | L0200530 | L0200550 | |
| | | | G-GUT-LR | G-GUT-LR | G-GUT-LR | G-GUT-LR LH | |
| ø d ₁ mm | P mm | Dimens.- Ident | | „4h“ | „6e“ | | |
| M | 1 | 0,25 | .0010 | ●*) | | | |
| | 1,1 | 0,25 | .0011 | ●*) | | | |
| | 1,2 | 0,25 | .0012 | ●*) | | | |
| | 1,4 | 0,3 | .0014 | ●*) | | | |
| | 1,6 | 0,35 | .0016 | ● | | | |
| | 1,7 | 0,35 | .0017 | ● | | | |
| | 1,8 | 0,35 | .0018 | ● | | | |
| | 2 | 0,4 | .0020 | ● | ● | ● | ● |
| | 2,2 | 0,45 | .0022 | ● | ● | ● | ● |
| | 2,3 | 0,4 | .0023 | ● | | | ● |
| | 2,5 | 0,45 | .0025 | ● | ● | ● | ● |
| | 2,6 | 0,45 | .0026 | ● | | | ● |
| | 3 | 0,5 | .0030 | ● | ● | ● | ● |
| | 3,5 | 0,6 | .0035 | ● | ● | ● | ● |
| | 4 | 0,7 | .0040 | ● | ● | ● | ● |
| | 4,5 | 0,75 | .0045 | ● | ● | ● | ● |
| | 5 | 0,8 | .0050 | ● | ● | ● | ● |
| | 6 | 1 | .0060 | ● | ● | ● | ● |
| | 7 | 1 | .0070 | ● | | | ● |
| | 8 | 1,25 | .0080 | ● | ● | ● | ● |
| | 9 | 1,25 | .0090 | ● | | | |
| | 10 | 1,5 | .0100 | ● | ● | ● | ● |
| | 11 | 1,5 | .0111 | ● | | | |
| | 12 | 1,75 | .0112 | ● | ● | ● | ● |
| | 14 | 2 | .0114 | ● | ● | ● | ● |
| | 16 | 2 | .0116 | ● | ● | ● | ● |
| | 18 | 2,5 | .0118 | ● | ● | ● | ● |
| | 20 | 2,5 | .0120 | ● | ● | ● | ● |
| | 22 | 2,5 | .0122 | ● | ● | ● | ● |
| | 24 | 3 | .0124 | ● | ● | ● | ● |
| | 27 | 3 | .0127 | ● | | | |
| | 30 | 3,5 | .0130 | ● | | | |
| | 33 | 3,5 | .0133 | ● | | | |
| | 36 | 4 | .0136 | ● | | | |
| | 39 | 4 | .0139 | ● | | | |
| | 42 | 4,5 | .0142 | ● | | | |
| | 45 | 4,5 | .0145 | ● | | | |
| | 48 | 5 | .0148 | ● | | | |
| | 52 | 5 | .0152 | ● | | | |
| | 56 | 5,5 | .0156 | ● | | | |
| | 60 | 5,5 | .0160 | ● | | | |
| | 64 | 6 | .0164 | ● | | | |
| | 68 | 6 | .0168 | ● | | | |

*) ≤ M1,4 Tol. 6h

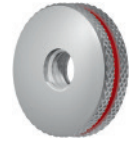
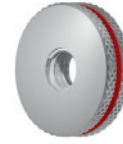


M



DIN 13

Lehrenmaße nach DIN ISO 1502
Gauge dimensions acc. DIN ISO 1502



Toleranz · Tolerance
Beschichtung · Coating

6g

4h

6e

6g

LH

Werkzeug-Ident · Tool ident

L0300500

L0300510

L0300530

L0300550

G-AUS-LR

G-AUS-LR

G-AUS-LR

G-AUS-LR

LH

ø d₁
mm

P
mm

Dimens.-
Ident

| | ø d ₁ mm | P mm | Dimens.- Ident | L0300500 G-AUS-LR | L0300510 G-AUS-LR „4h“ | L0300530 G-AUS-LR „6e“ | L0300550 G-AUS-LR LH |
|---|------------------------|---------|-------------------|----------------------|------------------------------|------------------------------|----------------------------|
| M | 1 | 0,25 | .0010 | ●*) | | | |
| | 1,1 | 0,25 | .0011 | ●*) | | | |
| | 1,2 | 0,25 | .0012 | ●*) | | | |
| | 1,4 | 0,3 | .0014 | ●*) | | | |
| | 1,6 | 0,35 | .0016 | ● | | | |
| | 1,7 | 0,35 | .0017 | ● | | | |
| | 1,8 | 0,35 | .0018 | ● | | | |
| | 2 | 0,4 | .0020 | ● | ● | ● | ● |
| | 2,2 | 0,45 | .0022 | ● | ● | ● | ● |
| | 2,3 | 0,4 | .0023 | ● | | | ● |
| | 2,5 | 0,45 | .0025 | ● | ● | ● | ● |
| | 2,6 | 0,45 | .0026 | ● | | | ● |
| | 3 | 0,5 | .0030 | ● | ● | ● | ● |
| | 3,5 | 0,6 | .0035 | ● | ● | ● | ● |
| | 4 | 0,7 | .0040 | ● | ● | ● | ● |
| | 4,5 | 0,75 | .0045 | ● | | | ● |
| | 5 | 0,8 | .0050 | ● | ● | ● | ● |
| | 6 | 1 | .0060 | ● | ● | ● | ● |
| | 7 | 1 | .0070 | ● | | | ● |
| | 8 | 1,25 | .0080 | ● | ● | ● | ● |
| | 9 | 1,25 | .0090 | ● | | | ● |
| | 10 | 1,5 | .0100 | ● | ● | ● | ● |
| | 11 | 1,5 | .0111 | ● | | | ● |
| | 12 | 1,75 | .0112 | ● | ● | ● | ● |
| | 14 | 2 | .0114 | ● | ● | ● | ● |
| | 16 | 2 | .0116 | ● | ● | ● | ● |
| | 18 | 2,5 | .0118 | ● | ● | ● | ● |
| | 20 | 2,5 | .0120 | ● | ● | ● | ● |
| | 22 | 2,5 | .0122 | ● | ● | ● | ● |
| | 24 | 3 | .0124 | ● | ● | ● | ● |
| | 27 | 3 | .0127 | ● | | | ● |
| | 30 | 3,5 | .0130 | ● | | | ● |
| | 33 | 3,5 | .0133 | ● | | | ● |
| | 36 | 4 | .0136 | ● | | | ● |
| | 39 | 4 | .0139 | ● | | | ● |
| | 42 | 4,5 | .0142 | ● | | | ● |
| | 45 | 4,5 | .0145 | ● | | | ● |
| | 48 | 5 | .0148 | ● | | | ● |
| | 52 | 5 | .0152 | ● | | | ● |
| | 56 | 5,5 | .0156 | ● | | | ● |
| | 60 | 5,5 | .0160 | ● | | | ● |
| | 64 | 6 | .0164 | ● | | | ● |
| | 68 | 6 | .0168 | ● | | | ● |

*) ≤ M1,4 Tol. 6h



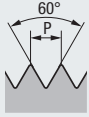
Glatte Kernloch-Grenzlehndorne
siehe Seite 623

Smooth plug gauges go/no-go for thread
holes, see page 623



- 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
- Kalibrieren
Calibration
- Tech. Info

MF



DIN 13

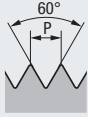
Lehrenmaße nach DIN ISO 1502
Gauge dimensions acc. DIN ISO 1502



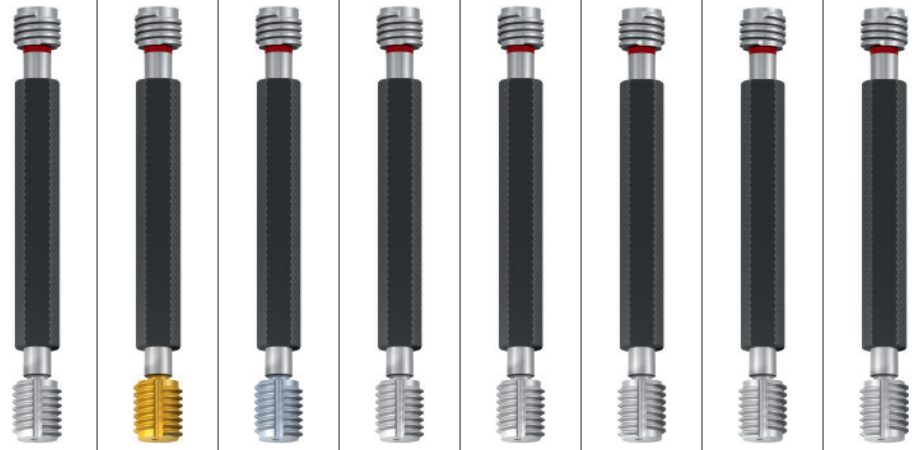
| | | | | Toleranz · Tolerance | | Beschichtung · Coating | | | | | | |
|-----------------------------|---------|-------------------|-------|----------------------|----------|------------------------|----------|----------|----------|----------|----------|---------|
| | | | | 6H | 6H | 6H | 4H | 6G | 6H | 4H | 6G | |
| | | | | | TIN | CR | | | LH | LH | LH | |
| Werkzeug-Ident · Tool ident | | | | L0100100 | L0105100 | L0101100 | L0100110 | L0100120 | L0100150 | L0100160 | L0100170 | |
| | | Dimens.- Ident | | | G-GR-LD | G-GR-LD | G-GR-LD | G-GR-LD | G-GR-LD | G-GR-LD | G-GR-LD | G-GR-LD |
| ø d ₁ mm | P mm | | | | | TIN 1) | CR 1) | „4H“ | „6G“ | LH | „4H“ | „6G“ |
| M | 2 | x 0,25 | .0186 | | | | | ● | | | | |
| | 2,2 | x 0,25 | .0189 | | | | | ● | | | | |
| | 2,3 | x 0,25 | .0192 | | | | | ● | | | | |
| | 2,5 | x 0,35 | .0196 | ● | | | | | | | | |
| | 2,6 | x 0,35 | .0199 | ● | | | | | | | | |
| | 3 | x 0,35 | .0202 | ● | | | | | | ● | | |
| | 3,5 | x 0,35 | .0205 | ● | | | | | | ● | | |
| | 4 | x 0,35 | .0209 | ● | | | | | | ● | | |
| | 4 | x 0,5 | .0210 | ● | | | | ● | | ● | | |
| | 4,5 | x 0,5 | .0214 | ● | | | | ● | | ● | | |
| | 5 | x 0,5 | .0218 | ● | | | | ● | | ● | | |
| | 6 | x 0,5 | .0228 | ● | | | | ● | | ● | | |
| | 6 | x 0,75 | .0229 | ● | | | | ● | | ● | | |
| | 7 | x 0,75 | .0239 | ● | | | | | | | | |
| | 8 | x 0,5 | .0249 | ● | | | | | | | | |
| | 8 | x 0,75 | .0250 | ● | | | | ● | | ● | | |
| | 8 | x 1 | .0251 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | 9 | x 1 | .0263 | ● | | | | ● | | ● | | ● |
| | 10 | x 0,75 | .0275 | ● | | | | ● | | ● | | ● |
| | 10 | x 1 | .0276 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | 10 | x 1,25 | .0277 | ● | | | | ● | | ● | | ● |
| | 11 | x 1 | .0288 | ● | | | | ● | | ● | | ● |
| | 12 | x 1 | .0301 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | 12 | x 1,25 | .0302 | ● | | | | ● | | ● | | ● |
| | 12 | x 1,5 | .0303 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | 13 | x 1 | .0315 | ● | | | | ● | | ● | | ● |
| | 13 | x 1,5 | .0317 | ● | | | | ● | | ● | | ● |
| | 14 | x 1 | .0329 | ● | | | | ● | | ● | | ● |
| | 14 | x 1,25 | .0330 | ● | | | | ● | | ● | | ● |
| | 14 | x 1,5 | .0331 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | 15 | x 1 | .0343 | ● | | | | ● | | ● | | ● |
| | 15 | x 1,5 | .0345 | ● | | | | ● | | ● | | ● |
| | 16 | x 1 | .0357 | ● | | | | ● | | ● | | ● |
| | 16 | x 1,5 | .0359 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | 17 | x 1 | .0372 | ● | | | | ● | | ● | | ● |
| | 17 | x 1,5 | .0374 | ● | | | | ● | | ● | | ● |
| | 18 | x 1 | .0388 | ● | | | | ● | | ● | | ● |
| | 18 | x 1,5 | .0390 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | 18 | x 2 | .0391 | ● | | | | ● | | ● | | ● |
| | 19 | x 1 | .0404 | ● | | | | ● | | ● | | ● |
| | 20 | x 1 | .0420 | ● | | | | ● | | ● | | ● |
| | 20 | x 1,5 | .0422 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | 20 | x 2 | .0423 | ● | | | | ● | | ● | | ● |
| | 21 | x 1 | .0428 | ● | | | | ● | | ● | | ● |
| | 22 | x 1 | .0436 | ● | | | | ● | | ● | | ● |
| | 22 | x 1,5 | .0438 | ● | | | | ● | | ● | | ● |
| | 22 | x 2 | .0439 | ● | | | | ● | | ● | | ● |
| | 23 | x 1 | .0443 | ● | | | | ● | | ● | | ● |
| | 24 | x 1 | .0450 | ● | | | | ● | | ● | | ● |
| | 24 | x 1,5 | .0452 | ● | | | | ● | | ● | | ● |
| | 24 | x 2 | .0453 | ● | | | | ● | | ● | | ● |
| | 25 | x 1 | .0456 | ● | | | | ● | | ● | | ● |
| | 25 | x 1,5 | .0458 | ● | | | | ● | | ● | | ● |
| | 25 | x 2 | .0459 | ● | | | | ● | | ● | | ● |
| | 26 | x 1 | .0462 | ● | | | | ● | | ● | | ● |
| | 26 | x 1,5 | .0464 | ● | | | | ● | | ● | | ● |
| | 26 | x 2 | .0465 | ● | | | | ● | | ● | | ● |

MF

DIN 13



Lehrenmaße nach DIN ISO 1502
Gauge dimensions acc. DIN ISO 1502



Toleranz · Tolerance
Beschichtung · Coating

| | | | | | | | |
|----|-----|----|----|----|----|----|----|
| 6H | 6H | 6H | 4H | 6G | 6H | 4H | 6G |
| | TIN | CR | | | LH | LH | LH |

Werkzeug-Ident · Tool ident

| M | ø d ₁ mm | P mm | Dimens.- Ident | L0100100 | L0105100 | L0101100 | L0100110 | L0100120 | L0100150 | L0100160 | L0100170 |
|---|------------------------|---------|-------------------|----------|------------------------------|-----------------------------|-----------------|-----------------|---------------|---------------|---------------|
| | | | | G-GR-LD | G-GR-LD TIN ¹⁾ | G-GR-LD CR ¹⁾ | G-GR-LD „4H“ | G-GR-LD „6G“ | G-GR-LD LH | G-GR-LD LH | G-GR-LD LH |
| | 27 | x 1 | .0468 | ● | | | ● | ● | ● | ● | ● |
| | 27 | x 1,5 | .0470 | ● | | | ● | ● | ● | ● | ● |
| | 27 | x 2 | .0471 | ● | | | ● | ● | ● | ● | ● |
| | 28 | x 1 | .0474 | ● | | | ● | ● | ● | ● | ● |
| | 28 | x 1,5 | .0476 | ● | | | ● | ● | ● | ● | ● |
| | 28 | x 2 | .0477 | ● | | | ● | ● | ● | ● | ● |
| | 30 | x 1 | .0488 | ● | | | ● | ● | ● | ● | ● |
| | 30 | x 1,5 | .0490 | ● | | | ● | ● | ● | ● | ● |
| | 30 | x 2 | .0491 | ● | | | ● | ● | ● | ● | ● |
| | 30 | x 3 | .0492 | ● | | | ● | ● | ● | ● | ● |
| | 32 | x 1 | .0502 | ● | | | ● | ● | ● | ● | ● |
| | 32 | x 1,5 | .0504 | ● | | | ● | ● | ● | ● | ● |
| | 32 | x 2 | .0505 | ● | | | ● | ● | ● | ● | ● |
| | 33 | x 1 | .0509 | ● | | | ● | ● | ● | ● | ● |
| | 33 | x 1,5 | .0511 | ● | | | ● | ● | ● | ● | ● |
| | 33 | x 2 | .0512 | ● | | | ● | ● | ● | ● | ● |
| | 33 | x 3 | .0513 | ● | | | ● | ● | ● | ● | ● |
| | 34 | x 1 | .0516 | ● | | | ● | ● | ● | ● | ● |
| | 34 | x 1,5 | .0518 | ● | | | ● | ● | ● | ● | ● |
| | 34 | x 2 | .0519 | ● | | | ● | ● | ● | ● | ● |
| | 35 | x 1 | .0523 | ● | | | ● | ● | ● | ● | ● |
| | 35 | x 1,5 | .0525 | ● | | | ● | ● | ● | ● | ● |
| | 35 | x 2 | .0526 | ● | | | ● | ● | ● | ● | ● |
| | 36 | x 1 | .0530 | ● | | | ● | ● | ● | ● | ● |
| | 36 | x 1,5 | .0532 | ● | | | ● | ● | ● | ● | ● |
| | 36 | x 2 | .0533 | ● | | | ● | ● | ● | ● | ● |
| | 36 | x 3 | .0534 | ● | | | ● | ● | ● | ● | ● |
| | 38 | x 1 | .0544 | ● | | | ● | ● | ● | ● | ● |
| | 38 | x 1,5 | .0546 | ● | | | ● | ● | ● | ● | ● |
| | 38 | x 2 | .0547 | ● | | | ● | ● | ● | ● | ● |
| | 39 | x 1 | .0551 | ● | | | ● | ● | ● | ● | ● |
| | 39 | x 1,5 | .0553 | ● | | | ● | ● | ● | ● | ● |
| | 39 | x 2 | .0554 | ● | | | ● | ● | ● | ● | ● |
| | 39 | x 3 | .0555 | ● | | | ● | ● | ● | ● | ● |
| | 40 | x 1 | .0558 | ● | | | ● | ● | ● | ● | ● |
| | 40 | x 1,5 | .0560 | ● | | | ● | ● | ● | ● | ● |
| | 40 | x 2 | .0561 | ● | | | ● | ● | ● | ● | ● |
| | 40 | x 3 | .0562 | ● | | | ● | ● | ● | ● | ● |

> ø 40 nur als Einzellehrdorne erhältlich (G-GUT-LD, G-AUS-LD) siehe Seite 590 - 597
available only as separate plug gauges (G-GUT-LD, G-AUS-LD), see page 590 - 597

¹⁾ Toleranz „4H“ und „6G“ auf Anfrage
Tolerance “4H” and “6G” upon request

- 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
- Kalibrierung
Calibration
- Tech. Info



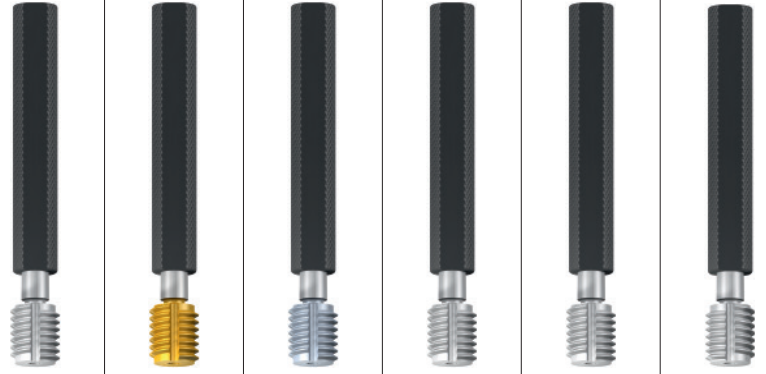
- Product Finder
- M
- MF**
- UNC
- UNF
- G
- Rp
R, Rc
- NPT, NPTF
- BSW
- Pg
- MJ
UNJC, UNJF
- EG (STI)
SELF-LOCK
- Tr, Tr-F
Rd
- Glatt
Smooth
- GT, TD
- Zubehör
Accessories
- Kalibrieren
Calibration
- Tech. Info

MF



DIN 13

Lehrenmaße nach DIN ISO 1502
Gauge dimensions acc. DIN ISO 1502



| | | Toleranz · Tolerance | | Beschichtung · Coating | | | | | | | | | | | | | |
|-----------------------------|---------|----------------------|------|------------------------|-----------------|----------------|------------------|------------------|----------------|----|---|----|---|----|---|----|--|
| | | | | 6H | | 6H TIN | | 6H CR | | 4H | | 6G | | 6H | | LH | |
| Werkzeug-Ident · Tool ident | | | | L0120100 | L0125100 | L0121100 | L0120110 | L0120120 | L0120150 | | | | | | | | |
| | | Dimens.-Ident | | G-GUT-LD | G-GUT-LD TIN | G-GUT-LD CR | G-GUT-LD „4H“ | G-GUT-LD „6G“ | G-GUT-LD LH | | | | | | | | |
| Ø d ₁ mm | P mm | | | | | | | | | | | | | | | | |
| M | 2 | x | 0,25 | .0186 | | | | | | | | | | | | | |
| | 2,2 | x | 0,25 | .0189 | | | | | | | | | | | | | |
| | 2,3 | x | 0,25 | .0192 | | | | | | | | | | | | | |
| | 2,5 | x | 0,35 | .0196 | ● | | | | | | | | | | | | |
| | 2,6 | x | 0,35 | .0199 | ● | | | | | | | | | | | | |
| | 3 | x | 0,35 | .0202 | ● | | | | | | | | | | | | |
| | 3,5 | x | 0,35 | .0205 | ● | | | | | | | | | | | | |
| | 4 | x | 0,35 | .0209 | ● | | | | | | | | | | | | |
| | 4 | x | 0,5 | .0210 | ● | | | | | | | | | | | | |
| | 4,5 | x | 0,5 | .0214 | ● | | | | | | | | | | | | |
| | 5 | x | 0,5 | .0218 | ● | | | | | | | | | | | | |
| | 6 | x | 0,5 | .0228 | ● | | | | | | | | | | | | |
| | 6 | x | 0,75 | .0229 | ● | | | | | | | | | | | | |
| | 7 | x | 0,75 | .0239 | ● | | | | | | | | | | | | |
| | 8 | x | 0,5 | .0249 | ● | | | | | | | | | | | | |
| | 8 | x | 0,75 | .0250 | ● | | | | | | | | | | | | |
| | 8 | x | 1 | .0251 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| | 9 | x | 1 | .0263 | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| | 10 | x | 0,75 | .0275 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| | 10 | x | 1 | .0276 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| | 10 | x | 1,25 | .0277 | ● | | | | | | | | | | | | |
| | 11 | x | 1 | .0288 | ● | | | | | | | | | | | | |
| | 12 | x | 1 | .0301 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| | 12 | x | 1,25 | .0302 | ● | | | | | | | | | | | | |
| | 12 | x | 1,5 | .0303 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| | 13 | x | 1 | .0315 | ● | | | | | | | | | | | | |
| | 13 | x | 1,5 | .0317 | ● | | | | | | | | | | | | |
| | 14 | x | 1 | .0329 | ● | | | | | | | | | | | | |
| | 14 | x | 1,25 | .0330 | ● | | | | | | | | | | | | |
| | 14 | x | 1,5 | .0331 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| | 15 | x | 1 | .0343 | ● | | | | | | | | | | | | |
| | 15 | x | 1,5 | .0345 | ● | | | | | | | | | | | | |
| | 16 | x | 1 | .0357 | ● | | | | | | | | | | | | |
| | 16 | x | 1,5 | .0359 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| | 17 | x | 1 | .0372 | ● | | | | | | | | | | | | |
| | 17 | x | 1,5 | .0374 | ● | | | | | | | | | | | | |
| | 18 | x | 1 | .0388 | ● | | | | | | | | | | | | |
| | 18 | x | 1,5 | .0390 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| | 18 | x | 2 | .0391 | ● | | | | | | | | | | | | |
| | 19 | x | 1 | .0404 | ● | | | | | | | | | | | | |
| | 20 | x | 1 | .0420 | ● | | | | | | | | | | | | |
| | 20 | x | 1,5 | .0422 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| | 20 | x | 2 | .0423 | ● | | | | | | | | | | | | |
| | 21 | x | 1 | .0428 | ● | | | | | | | | | | | | |
| | 22 | x | 1 | .0436 | ● | | | | | | | | | | | | |
| | 22 | x | 1,5 | .0438 | ● | | | | | | | | | | | | |
| | 22 | x | 2 | .0439 | ● | | | | | | | | | | | | |
| | 23 | x | 1 | .0443 | ● | | | | | | | | | | | | |
| | 24 | x | 1 | .0450 | ● | | | | | | | | | | | | |
| | 24 | x | 1,5 | .0452 | ● | | | | | | | | | | | | |
| | 24 | x | 2 | .0453 | ● | | | | | | | | | | | | |
| | 25 | x | 1 | .0456 | ● | | | | | | | | | | | | |
| | 25 | x | 1,5 | .0458 | ● | | | | | | | | | | | | |
| | 25 | x | 2 | .0459 | ● | | | | | | | | | | | | |
| | 26 | x | 1 | .0462 | ● | | | | | | | | | | | | |
| | 26 | x | 1,5 | .0464 | ● | | | | | | | | | | | | |
| | 26 | x | 2 | .0465 | ● | | | | | | | | | | | | |

| 4H | 6G | 6H | 4H | 6G | 6H | 4H | 6G | | |
|----------------|----------------|-----------|-----------|-----------|----------------|----------------|----------------|------------|--|
| LH | LH | | | | LH | LH | LH | | |
| L0120160 | L0120170 | L0140100 | L0140110 | L0140120 | L0140150 | L0140160 | L0140170 | | |
| G-GUT-LD LH | G-GUT-LD LH | G-AUS-LD | G-AUS-LD | G-AUS-LD | G-AUS-LD LH | G-AUS-LD LH | G-AUS-LD LH | | |
| „4H“ | „6G“ | | „4H“ | „6G“ | | „4H“ | „6G“ | | |
| | | | | | | | | M 2 x 0,25 | |
| | | | | | | | | 2,2 x 0,25 | |
| | | | | | | | | 2,3 x 0,25 | |
| | | ● | | | | | | 2,5 x 0,35 | |
| | | ● | | | | | | 2,6 x 0,35 | |
| | | ● | | | | | | 3 x 0,35 | |
| | | ● | | | | | | 3,5 x 0,35 | |
| | | ● | | | | | | 4 x 0,35 | |
| | | ● | | | | | | 4 x 0,5 | |
| | | ● | | | | | | 4,5 x 0,5 | |
| | | ● | | | | | | 5 x 0,5 | |
| | | ● | | | | | | 6 x 0,5 | |
| | | ● | | | | | | 6 x 0,75 | |
| | | ● | | | | | | 7 x 0,75 | |
| | | ● | | | | | | 8 x 0,5 | |
| | | ● | | | | | | 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 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 12 x 1,5 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 13 x 1 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 13 x 1,5 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 14 x 1 | |
| | | ● | | | | | | 14 x 1,25 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 14 x 1,5 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 15 x 1 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 15 x 1,5 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 16 x 1 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 16 x 1,5 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 17 x 1 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 17 x 1,5 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 18 x 1 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 18 x 1,5 | |
| | | ● | | | | | | 18 x 2 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 19 x 1 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 20 x 1 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 20 x 1,5 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 20 x 2 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 21 x 1 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 22 x 1 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 22 x 1,5 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 22 x 2 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 23 x 1 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 24 x 1 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 24 x 1,5 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 24 x 2 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 25 x 1 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 25 x 1,5 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 25 x 2 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 26 x 1 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 26 x 1,5 | |
| ● | ● | ● | ● | ● | ● | ● | ● | 26 x 2 | |

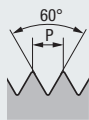
- Product Finder
- M
- MF
- UNC
- UNF
- G
- Rp
R, Rc
- NPT, NPTF
- BSW
- Pg
- MJ
UNJC, UNJF
- EG (STI)
SELF-LOCK
- Tr, Tr-F
Rd
- Glatt
Smooth
- GT, TD
- Zubehör
Accessories
- Kalibrierung
Calibration
- Tech. Info

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry



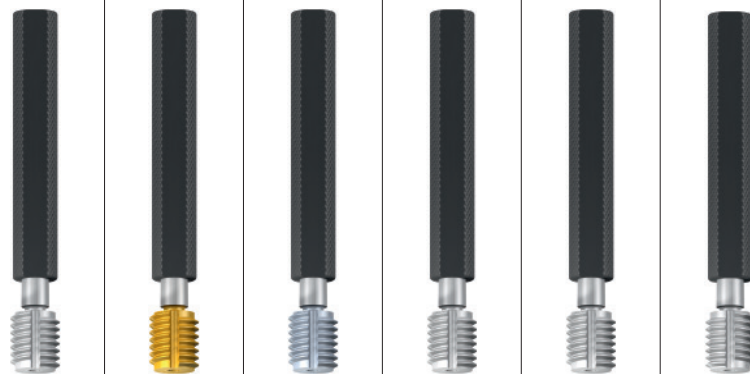
- Product Finder
- M
- MF**
- UNC
- UNF
- G
- Rp
R, Rc
- NPT, NPTF
- BSW
- Pg
- MJ
UNJC, UNJF
- EG (STI)
SELF-LOCK
- Tr, Tr-F
Rd
- Glatt
Smooth
- GT, TD
- Zubehör
Accessories
- Kalibrieren
Calibration
- Tech. Info

MF



DIN 13

Lehrenmaße nach DIN ISO 1502
Gauge dimensions acc. DIN ISO 1502



| | | Toleranz · Tolerance | | Beschichtung · Coating | | | | | | | | | | | | | |
|-----------------------------|---------|----------------------|-----|------------------------|-----------------|----------------|------------------|------------------|----------------|----|---|----|--|----|--|----|--|
| | | | | 6H | | 6H TIN | | 6H CR | | 4H | | 6G | | 6H | | LH | |
| Werkzeug-Ident · Tool ident | | | | L0120100 | L0125100 | L0121100 | L0120110 | L0120120 | L0120150 | | | | | | | | |
| | | | | G-GUT-LD | G-GUT-LD TIN | G-GUT-LD CR | G-GUT-LD „4H“ | G-GUT-LD „6G“ | G-GUT-LD LH | | | | | | | | |
| ø d ₁ mm | P mm | Dimens.- Ident | | | | | | | | | | | | | | | |
| M | 27 | x | 1 | .0468 | ● | | | | ● | ● | ● | | | | | | |
| | 27 | x | 1,5 | .0470 | ● | | | | ● | ● | ● | | | | | | |
| | 27 | x | 2 | .0471 | ● | | | | ● | ● | ● | | | | | | |
| | 28 | x | 1 | .0474 | ● | | | | ● | ● | ● | | | | | | |
| | 28 | x | 1,5 | .0476 | ● | | | | ● | ● | ● | | | | | | |
| | 28 | x | 2 | .0477 | ● | | | | ● | ● | ● | | | | | | |
| | 30 | x | 1 | .0488 | ● | | | | ● | ● | ● | | | | | | |
| | 30 | x | 1,5 | .0490 | ● | | | | ● | ● | ● | | | | | | |
| | 30 | x | 2 | .0491 | ● | | | | ● | ● | ● | | | | | | |
| | 30 | x | 3 | .0492 | ● | | | | ● | ● | ● | | | | | | |
| | 32 | x | 1 | .0502 | ● | | | | ● | ● | ● | | | | | | |
| | 32 | x | 1,5 | .0504 | ● | | | | ● | ● | ● | | | | | | |
| | 32 | x | 2 | .0505 | ● | | | | ● | ● | ● | | | | | | |
| | 33 | x | 1 | .0509 | ● | | | | ● | ● | ● | | | | | | |
| | 33 | x | 1,5 | .0511 | ● | | | | ● | ● | ● | | | | | | |
| | 33 | x | 2 | .0512 | ● | | | | ● | ● | ● | | | | | | |
| | 33 | x | 3 | .0513 | ● | | | | ● | ● | ● | | | | | | |
| | 34 | x | 1 | .0516 | ● | | | | ● | ● | ● | | | | | | |
| | 34 | x | 1,5 | .0518 | ● | | | | ● | ● | ● | | | | | | |
| | 34 | x | 2 | .0519 | ● | | | | ● | ● | ● | | | | | | |
| | 35 | x | 1 | .0523 | ● | | | | ● | ● | ● | | | | | | |
| | 35 | x | 1,5 | .0525 | ● | | | | ● | ● | ● | | | | | | |
| | 35 | x | 2 | .0526 | ● | | | | ● | ● | ● | | | | | | |
| | 36 | x | 1 | .0530 | ● | | | | ● | ● | ● | | | | | | |
| | 36 | x | 1,5 | .0532 | ● | | | | ● | ● | ● | | | | | | |
| | 36 | x | 2 | .0533 | ● | | | | ● | ● | ● | | | | | | |
| | 36 | x | 3 | .0534 | ● | | | | ● | ● | ● | | | | | | |
| | 38 | x | 1 | .0544 | ● | | | | ● | ● | ● | | | | | | |
| | 38 | x | 1,5 | .0546 | ● | | | | ● | ● | ● | | | | | | |
| | 38 | x | 2 | .0547 | ● | | | | ● | ● | ● | | | | | | |
| | 39 | x | 1 | .0551 | ● | | | | ● | ● | ● | | | | | | |
| | 39 | x | 1,5 | .0553 | ● | | | | ● | ● | ● | | | | | | |
| | 39 | x | 2 | .0554 | ● | | | | ● | ● | ● | | | | | | |
| | 39 | x | 3 | .0555 | ● | | | | ● | ● | ● | | | | | | |
| | 40 | x | 1 | .0558 | ● | | | | ● | ● | ● | | | | | | |
| | 40 | x | 1,5 | .0560 | ● | | | | ● | ● | ● | | | | | | |
| | 40 | x | 2 | .0561 | ● | | | | ● | ● | ● | | | | | | |
| | 40 | x | 3 | .0562 | ● | | | | ● | ● | ● | | | | | | |
| | 42 | x | 1 | .0572 | ● | | | | ● | ● | ● | | | | | | |
| | 42 | x | 1,5 | .0574 | ● | | | | ● | ● | ● | | | | | | |
| | 42 | x | 2 | .0575 | ● | | | | ● | ● | ● | | | | | | |
| | 42 | x | 3 | .0576 | ● | | | | ● | ● | ● | | | | | | |
| | 45 | x | 1 | .0593 | ● | | | | ● | ● | ● | | | | | | |
| | 45 | x | 1,5 | .0595 | ● | | | | ● | ● | ● | | | | | | |
| | 45 | x | 2 | .0596 | ● | | | | ● | ● | ● | | | | | | |
| | 45 | x | 3 | .0597 | ● | | | | ● | ● | ● | | | | | | |
| | 48 | x | 1 | .0614 | ● | | | | ● | ● | ● | | | | | | |
| | 48 | x | 1,5 | .0616 | ● | | | | ● | ● | ● | | | | | | |
| | 48 | x | 2 | .0617 | ● | | | | ● | ● | ● | | | | | | |
| | 48 | x | 3 | .0618 | ● | | | | ● | ● | ● | | | | | | |
| | 50 | x | 1 | .0628 | ● | | | | ● | ● | ● | | | | | | |
| | 50 | x | 1,5 | .0630 | ● | | | | ● | ● | ● | | | | | | |
| | 50 | x | 2 | .0631 | ● | | | | ● | ● | ● | | | | | | |
| | 50 | x | 3 | .0632 | ● | | | | ● | ● | ● | | | | | | |
| | 52 | x | 1 | .0642 | ● | | | | ● | ● | ● | | | | | | |
| | 52 | x | 1,5 | .0644 | ● | | | | ● | ● | ● | | | | | | |
| | 52 | x | 2 | .0645 | ● | | | | ● | ● | ● | | | | | | |

| 4H | 6G | 6H | 4H | 6G | 6H | 4H | 6G | |
|----------------|----------------|-----------|-----------|-----------|----------------|----------------|----------------|----------|
| LH | LH | | | | LH | LH | LH | |
| L0120160 | L0120170 | L0140100 | L0140110 | L0140120 | L0140150 | L0140160 | L0140170 | |
| G-GUT-LD LH | G-GUT-LD LH | G-AUS-LD | G-AUS-LD | G-AUS-LD | G-AUS-LD LH | G-AUS-LD LH | G-AUS-LD LH | |
| „4H“ | „6G“ | | „4H“ | „6G“ | | „4H“ | „6G“ | |
| ● | ● | ● | ● | ● | ● | ● | ● | M 27 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 27 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 27 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 28 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 28 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 28 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 30 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 30 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 30 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 30 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 32 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 32 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 32 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 33 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 33 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 33 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 33 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 34 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 34 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 34 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 35 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 35 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 35 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 36 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 36 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 36 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 36 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 38 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 38 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 38 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 39 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 39 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 39 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 39 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 40 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 40 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 40 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 40 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 42 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 42 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 42 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 42 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 45 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 45 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 45 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 45 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 48 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 48 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 48 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 48 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 50 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 50 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 50 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 50 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 52 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 52 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 52 x 2 |

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

Kalibrierung
Calibration

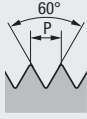
Tech. Info



● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

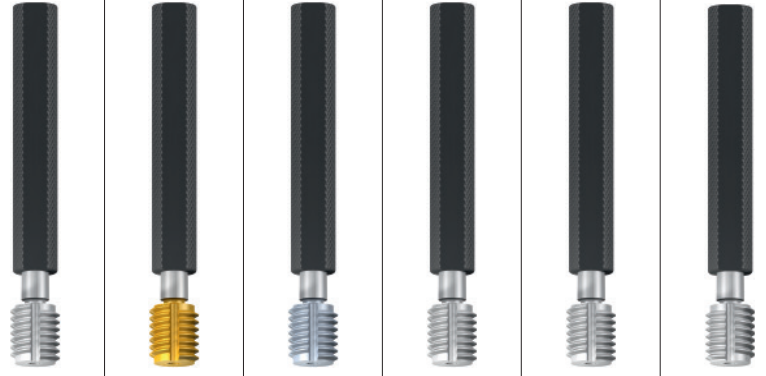
- Product Finder
- M
- MF**
- UNC
- UNF
- G
- Rp
R, Rc
- NPT, NPTF
- BSW
- Pg
- MJ
UNJC, UNJF
- EG (STI)
SELF-LOCK
- Tr, Tr-F
Rd
- Glatt
Smooth
- GT, TD
- Zubehör
Accessories
- Kalibrieren
Calibration
- Tech. Info

MF



DIN 13

Lehrenmaße nach DIN ISO 1502
Gauge dimensions acc. DIN ISO 1502



| | | Toleranz · Tolerance | | Beschichtung · Coating | | | | | | | | | | | | | |
|-----------------------------|---------|----------------------|-----|------------------------|-----------------|----------------|------------------|------------------|----------------|----|---|----|--|----|--|----|--|
| | | | | 6H | | 6H TIN | | 6H CR | | 4H | | 6G | | 6H | | LH | |
| Werkzeug-Ident · Tool ident | | | | L0120100 | L0125100 | L0121100 | L0120110 | L0120120 | L0120150 | | | | | | | | |
| | | Dimens.-Ident | | G-GUT-LD | G-GUT-LD TIN | G-GUT-LD CR | G-GUT-LD „4H“ | G-GUT-LD „6G“ | G-GUT-LD LH | | | | | | | | |
| ø d ₁ mm | P mm | | | | | | | | | | | | | | | | |
| M | 52 | x | 3 | .0646 | ● | | | | ● | ● | ● | | | | | | |
| | 55 | x | 1 | .0653 | ● | | | | ● | ● | ● | | | | | | |
| | 55 | x | 1,5 | .0654 | ● | | | | ● | ● | ● | | | | | | |
| | 55 | x | 2 | .0655 | ● | | | | ● | ● | ● | | | | | | |
| | 55 | x | 3 | .0656 | ● | | | | ● | ● | ● | | | | | | |
| | 56 | x | 1 | .0658 | ● | | | | ● | ● | ● | | | | | | |
| | 56 | x | 1,5 | .0659 | ● | | | | ● | ● | ● | | | | | | |
| | 56 | x | 2 | .0660 | ● | | | | ● | ● | ● | | | | | | |
| | 56 | x | 3 | .0661 | ● | | | | ● | ● | ● | | | | | | |
| | 58 | x | 1 | .0663 | ● | | | | ● | ● | ● | | | | | | |
| | 58 | x | 1,5 | .0664 | ● | | | | ● | ● | ● | | | | | | |
| | 58 | x | 2 | .0665 | ● | | | | ● | ● | ● | | | | | | |
| | 58 | x | 3 | .0666 | ● | | | | ● | ● | ● | | | | | | |
| | 60 | x | 1 | .0668 | ● | | | | ● | ● | ● | | | | | | |
| | 60 | x | 1,5 | .0669 | ● | | | | ● | ● | ● | | | | | | |
| | 60 | x | 2 | .0670 | ● | | | | ● | ● | ● | | | | | | |
| | 60 | x | 3 | .0671 | ● | | | | ● | ● | ● | | | | | | |
| | 62 | x | 1 | .0673 | ● | | | | ● | ● | ● | | | | | | |
| | 62 | x | 1,5 | .0674 | ● | | | | ● | ● | ● | | | | | | |
| | 62 | x | 2 | .0675 | ● | | | | ● | ● | ● | | | | | | |
| | 62 | x | 3 | .0676 | ● | | | | ● | ● | ● | | | | | | |
| | 64 | x | 1 | .0678 | ● | | | | ● | ● | ● | | | | | | |
| | 64 | x | 1,5 | .0679 | ● | | | | ● | ● | ● | | | | | | |
| | 64 | x | 2 | .0680 | ● | | | | ● | ● | ● | | | | | | |
| | 64 | x | 3 | .0681 | ● | | | | ● | ● | ● | | | | | | |
| | 65 | x | 1 | .0683 | ● | | | | ● | ● | ● | | | | | | |
| | 65 | x | 1,5 | .0684 | ● | | | | ● | ● | ● | | | | | | |
| | 65 | x | 2 | .0685 | ● | | | | ● | ● | ● | | | | | | |
| | 65 | x | 3 | .0686 | ● | | | | ● | ● | ● | | | | | | |
| | 68 | x | 1 | .0688 | ● | | | | ● | ● | ● | | | | | | |
| | 68 | x | 1,5 | .0689 | ● | | | | ● | ● | ● | | | | | | |
| | 68 | x | 2 | .0690 | ● | | | | ● | ● | ● | | | | | | |
| | 68 | x | 3 | .0691 | ● | | | | ● | ● | ● | | | | | | |
| | 70 | x | 1 | .0693 | ● | | | | ● | ● | ● | | | | | | |
| | 70 | x | 1,5 | .0694 | ● | | | | ● | ● | ● | | | | | | |
| | 70 | x | 2 | .0695 | ● | | | | ● | ● | ● | | | | | | |
| | 70 | x | 3 | .0696 | ● | | | | ● | ● | ● | | | | | | |
| | 72 | x | 1 | .0699 | ● | | | | ● | ● | ● | | | | | | |
| | 72 | x | 1,5 | .0700 | ● | | | | ● | ● | ● | | | | | | |
| | 72 | x | 2 | .0701 | ● | | | | ● | ● | ● | | | | | | |
| | 72 | x | 3 | .0702 | ● | | | | ● | ● | ● | | | | | | |
| | 75 | x | 1 | .0705 | ● | | | | ● | ● | ● | | | | | | |
| | 75 | x | 1,5 | .0706 | ● | | | | ● | ● | ● | | | | | | |
| | 75 | x | 2 | .0707 | ● | | | | ● | ● | ● | | | | | | |
| | 75 | x | 3 | .0708 | ● | | | | ● | ● | ● | | | | | | |
| | 76 | x | 1 | .0711 | ● | | | | ● | ● | ● | | | | | | |
| | 76 | x | 1,5 | .0712 | ● | | | | ● | ● | ● | | | | | | |
| | 76 | x | 2 | .0713 | ● | | | | ● | ● | ● | | | | | | |
| | 76 | x | 3 | .0714 | ● | | | | ● | ● | ● | | | | | | |
| | 78 | x | 1 | .0717 | ● | | | | ● | ● | ● | | | | | | |
| | 78 | x | 1,5 | .0718 | ● | | | | ● | ● | ● | | | | | | |
| | 78 | x | 2 | .0719 | ● | | | | ● | ● | ● | | | | | | |
| | 80 | x | 1 | .0723 | ● | | | | ● | ● | ● | | | | | | |
| | 80 | x | 1,5 | .0724 | ● | | | | ● | ● | ● | | | | | | |
| | 80 | x | 2 | .0725 | ● | | | | ● | ● | ● | | | | | | |
| | 80 | x | 3 | .0726 | ● | | | | ● | ● | ● | | | | | | |
| | 82 | x | 1,5 | .0729 | ● | | | | ● | ● | ● | | | | | | |

| 4H | 6G | 6H | 4H | 6G | 6H | 4H | 6G | |
|----------------|----------------|-----------|-----------|-----------|----------------|----------------|----------------|----------|
| LH | LH | | | | LH | LH | LH | |
| L0120160 | L0120170 | L0140100 | L0140110 | L0140120 | L0140150 | L0140160 | L0140170 | |
| G-GUT-LD LH | G-GUT-LD LH | G-AUS-LD | G-AUS-LD | G-AUS-LD | G-AUS-LD LH | G-AUS-LD LH | G-AUS-LD LH | |
| „4H“ | „6G“ | | „4H“ | „6G“ | | „4H“ | „6G“ | |
| ● | ● | ● | ● | ● | ● | ● | ● | M 52 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 55 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 55 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 55 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 55 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 56 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 56 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 56 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 56 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 58 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 58 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 58 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 58 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 60 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 60 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 60 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 60 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 62 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 62 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 62 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 62 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 64 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 64 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 64 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 64 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 65 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 65 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 65 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 65 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 68 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 68 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 68 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 68 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 70 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 70 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 70 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 70 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 72 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 72 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 72 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 72 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 75 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 75 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 75 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 75 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 76 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 76 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 76 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 76 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 78 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 78 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 78 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 80 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 80 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 80 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 80 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 82 x 1,5 |

- 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
- Kalibrierung
Calibration
- Tech. Info



● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

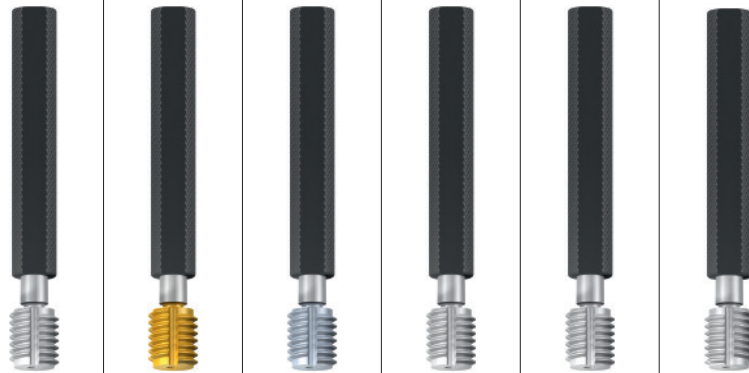
- Product Finder
- M
- MF**
- UNC
- UNF
- G
- Rp
R, Rc
- NPT, NPTF
- BSW
- Pg
- MJ
UNJC, UNJF
- EG (STI)
SELF-LOCK
- Tr, Tr-F
Rd
- Glatt
Smooth
- GT, TD
- Zubehör
Accessories
- Kalibrieren
Calibration
- Tech. Info

MF



DIN 13

Lehrenmaße nach DIN ISO 1502
Gauge dimensions acc. DIN ISO 1502



| | | | Toleranz · Tolerance | | Beschichtung · Coating | | | | | | |
|-----------------------------|-----------|-------------------|----------------------|----------|------------------------|----------|----------|----------|----|--|--|
| | | | 6H | 6H | 6H | 4H | 6G | 6H | LH | | |
| | | | TIN | | CR | | | | | | |
| Werkzeug-Ident · Tool ident | | | L0120100 | L0125100 | L0121100 | L0120110 | L0120120 | L0120150 | | | |
| | | | G-GUT-LD | G-GUT-LD | G-GUT-LD | G-GUT-LD | G-GUT-LD | G-GUT-LD | | | |
| | | | | TIN | CR | „4H“ | „6G“ | LH | | | |
| Ø d ₁ mm | P mm | Dimens.- Ident | | | | | | | | | |
| M | 82 x 2 | .0730 | ● | | | ● | ● | ● | | | |
| | 85 x 1,5 | .0734 | ● | | | ● | ● | ● | | | |
| | 85 x 2 | .0735 | ● | | | ● | ● | ● | | | |
| | 85 x 3 | .0736 | ● | | | ● | ● | ● | | | |
| | 88 x 1,5 | .0739 | ● | | | ● | ● | ● | | | |
| | 88 x 2 | .0740 | ● | | | ● | ● | ● | | | |
| | 90 x 1,5 | .0744 | ● | | | ● | ● | ● | | | |
| | 90 x 2 | .0745 | ● | | | ● | ● | ● | | | |
| | 90 x 3 | .0746 | ● | | | ● | ● | ● | | | |
| | 92 x 1,5 | .0749 | ● | | | ● | ● | ● | | | |
| | 92 x 2 | .0750 | ● | | | ● | ● | ● | | | |
| | 95 x 1,5 | .0754 | ● | | | ● | ● | ● | | | |
| | 95 x 2 | .0755 | ● | | | ● | ● | ● | | | |
| | 95 x 3 | .0756 | ● | | | ● | ● | ● | | | |
| | 98 x 1,5 | .0759 | ● | | | ● | ● | ● | | | |
| | 98 x 2 | .0760 | ● | | | ● | ● | ● | | | |
| | 100 x 1,5 | .0764 | ● | | | ● | ● | ● | | | |
| | 100 x 2 | .0765 | ● | | | ● | ● | ● | | | |
| | 100 x 3 | .0766 | ● | | | ● | ● | ● | | | |

← M52 x 3 - M82 x 1,5



| | | | | | | | | Product Finder |
|----------------|----------------|----------|----------|----------|----------------|----------------|----------------|-----------------------------|
| 4H | 6G | 6H | 4H | 6G | 6H | 4H | 6G | M |
| LH | LH | | | | LH | LH | LH | MF |
| L0120160 | L0120170 | L0140100 | L0140110 | L0140120 | L0140150 | L0140160 | L0140170 | UNC |
| G-GUT-LD LH | G-GUT-LD LH | G-AUS-LD | G-AUS-LD | G-AUS-LD | G-AUS-LD LH | G-AUS-LD LH | G-AUS-LD LH | UNF |
| „4H“ | „6G“ | | „4H“ | „6G“ | | „4H“ | „6G“ | 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 |
| ● | ● | ● | ● | ● | ● | ● | ● | Kalibrierung Calibration |
| ● | ● | ● | ● | ● | ● | ● | ● | Tech. Info |
| ● | ● | ● | ● | ● | ● | ● | ● | M 82 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 85 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 85 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 85 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 88 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 88 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 90 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 90 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 90 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 92 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 92 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 95 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 95 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 95 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 98 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 98 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 100 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 100 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 100 x 3 |

- 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
- Kalibrierung
Calibration
- Tech. Info



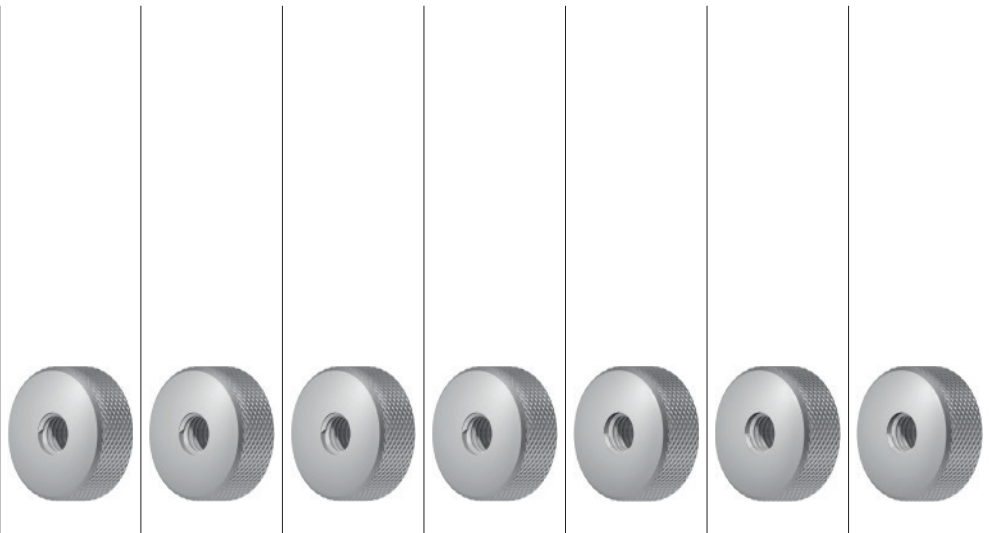
- Product Finder
- M
- MF**
- UNC
- UNF
- G
- Rp
R, Rc
- NPT, NPTF
- BSW
- Pg
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UNJC, UNJF
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SELF-LOCK
- Tr, Tr-F
Rd
- Glatt
Smooth
- GT, TD
- Zubehör
Accessories
- Kalibrieren
Calibration
- Tech. Info

MF



DIN 13

Lehrenmaße nach DIN ISO 1502
Gauge dimensions acc. DIN ISO 1502



| | | | | | | | |
|------------------------|----|----|----|----|----|----|----|
| Toleranz · Tolerance | 6g | 4h | 6h | 6e | 6g | 4h | 6e |
| Beschichtung · Coating | | | | | LH | LH | LH |

| | | | | | | | |
|-----------------------------|----------|----------|----------|----------|----------|----------|----------|
| Werkzeug-Ident · Tool ident | L0200500 | L0200510 | L0200501 | L0200530 | L0200550 | L0200560 | L0200580 |
|-----------------------------|----------|----------|----------|----------|----------|----------|----------|

| M | ø d ₁ mm | x | P mm | Dimens.- Ident | G-GUT-LR | G-GUT-LR | G-GUT-LR | G-GUT-LR | G-GUT-LR LH ¹⁾ | G-GUT-LR LH | G-GUT-LR LH |
|---|------------------------|---|---------|-------------------|----------|----------|----------|----------|------------------------------|----------------|----------------|
| | | | | | | „4h“ | „6h“ | „6e“ | | „4h“ | „6e“ |
| | 2 | x | 0,25 | .0186 | | • | | | | | |
| | 2,2 | x | 0,25 | .0189 | | • | | | | | |
| | 2,3 | x | 0,25 | .0192 | | • | | | | | |
| | 2,5 | x | 0,35 | .0196 | • | | | | | | |
| | 2,6 | x | 0,35 | .0199 | • | | | | | | |
| | 3 | x | 0,35 | .0202 | • | | | | • | | |
| | 3,5 | x | 0,35 | .0205 | • | | | | • | | |
| | 4 | x | 0,35 | .0209 | • | | | | • | | |
| | 4 | x | 0,5 | .0210 | • | • | | | • | | |
| | 4,5 | x | 0,5 | .0214 | • | | | • | • | | |
| | 5 | x | 0,5 | .0218 | • | • | | • | • | | |
| | 6 | x | 0,5 | .0228 | • | • | | • | • | | |
| | 6 | x | 0,75 | .0229 | • | • | | • | • | | |
| | 7 | x | 0,75 | .0239 | • | | | | | | |
| | 8 | x | 0,5 | .0249 | • | | | | | | |
| | 8 | x | 0,75 | .0250 | • | • | | • | • | | |
| | 8 | x | 1 | .0251 | • | • | • | • | • | • | • |
| | 9 | x | 1 | .0263 | • | • | • | • | • | • | • |
| | 10 | x | 0,75 | .0275 | • | | | | | | |
| | 10 | x | 1 | .0276 | • | • | • | • | • | • | • |
| | 10 | x | 1,25 | .0277 | • | | | | | | |
| | 11 | x | 1 | .0288 | • | • | • | • | • | • | • |
| | 12 | x | 1 | .0301 | • | • | • | • | • | • | • |
| | 12 | x | 1,25 | .0302 | • | | | | | | |
| | 12 | x | 1,5 | .0303 | • | • | • | • | • | • | • |
| | 13 | x | 1 | .0315 | • | • | • | • | • | • | • |
| | 13 | x | 1,5 | .0317 | • | • | • | • | • | • | • |
| | 14 | x | 1 | .0329 | • | • | • | • | • | • | • |
| | 14 | x | 1,25 | .0330 | • | | | | | | |
| | 14 | x | 1,5 | .0331 | • | • | • | • | • | • | • |
| | 15 | x | 1 | .0343 | • | • | • | • | • | • | • |
| | 15 | x | 1,5 | .0345 | • | • | • | • | • | • | • |
| | 16 | x | 1 | .0357 | • | • | • | • | • | • | • |
| | 16 | x | 1,5 | .0359 | • | • | • | • | • | • | • |
| | 17 | x | 1 | .0372 | • | • | • | • | • | • | • |
| | 17 | x | 1,5 | .0374 | • | • | • | • | • | • | • |
| | 18 | x | 1 | .0388 | • | • | • | • | • | • | • |
| | 18 | x | 1,5 | .0390 | • | • | • | • | • | • | • |
| | 18 | x | 2 | .0391 | • | • | • | • | • | • | • |
| | 19 | x | 1 | .0404 | • | • | • | • | • | • | • |
| | 20 | x | 1 | .0420 | • | • | • | • | • | • | • |
| | 20 | x | 1,5 | .0422 | • | • | • | • | • | • | • |
| | 20 | x | 2 | .0423 | • | • | • | • | • | • | • |
| | 21 | x | 1 | .0428 | • | • | • | • | • | • | • |
| | 22 | x | 1 | .0436 | • | • | • | • | • | • | • |
| | 22 | x | 1,5 | .0438 | • | • | • | • | • | • | • |
| | 22 | x | 2 | .0439 | • | • | • | • | • | • | • |
| | 23 | x | 1 | .0443 | • | • | • | • | • | • | • |
| | 24 | x | 1 | .0450 | • | • | • | • | • | • | • |
| | 24 | x | 1,5 | .0452 | • | • | • | • | • | • | • |
| | 24 | x | 2 | .0453 | • | • | • | • | • | • | • |
| | 25 | x | 1 | .0456 | • | • | • | • | • | • | • |
| | 25 | x | 1,5 | .0458 | • | • | • | • | • | • | • |
| | 25 | x | 2 | .0459 | • | • | • | • | • | • | • |
| | 26 | x | 1 | .0462 | • | • | • | • | • | • | • |
| | 26 | x | 1,5 | .0464 | • | • | • | • | • | • | • |
| | 26 | x | 2 | .0465 | • | • | • | • | • | • | • |

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



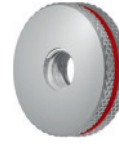
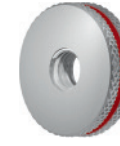
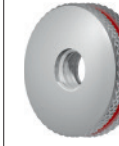
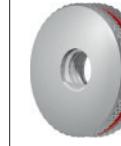
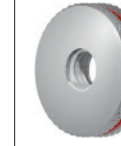
Glatt
Smooth

GT, TD

Zubehör
Accessories

Kalibrierung
Calibration

Tech. Info

| |  |  |  |  |  |  |  | |
|---|--|---|---|---|---|---|---|------------|
| | 6g | 4h | 6h | 6e | 6g LH | 4h LH | 6e LH | |
| | L0300500 | L0300510 | L0300501 | L0300530 | L0300550 | L0300560 | L0300580 | |
| | G-AUS-LR | G-AUS-LR „4h“ | G-AUS-LR „6h“ | G-AUS-LR „6e“ | G-AUS-LR LH 1) | G-AUS-LR LH „4h“ | G-AUS-LR LH „6e“ | |
| | | ● | | | | | | M 2 x 0,25 |
| | | ● | | | | | | 2,2 x 0,25 |
| | | ● | | | | | | 2,3 x 0,25 |
| ● | | | | | | | | 2,5 x 0,35 |
| ● | | | | | ● | | | 2,6 x 0,35 |
| ● | | | | | ● | | | 3 x 0,35 |
| ● | | | | | ● | | | 3,5 x 0,35 |
| ● | | | | | ● | | | 4 x 0,35 |
| ● | | ● | | ● | ● | | | 4 x 0,5 |
| ● | | ● | | ● | ● | | | 4,5 x 0,5 |
| ● | | ● | | ● | ● | | | 5 x 0,5 |
| ● | | ● | | ● | ● | | | 6 x 0,5 |
| ● | | ● | | ● | ● | | | 6 x 0,75 |
| ● | | ● | | ● | ● | | | 7 x 0,75 |
| ● | | ● | | ● | ● | | | 8 x 0,5 |
| ● | | ● | | ● | ● | | | 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 |
| ● | | ● | ● | ● | ● | ● | ● | 12 x 1,5 |
| ● | | ● | ● | ● | ● | ● | ● | 13 x 1 |
| ● | | ● | ● | ● | ● | ● | ● | 13 x 1,5 |
| ● | | ● | ● | ● | ● | ● | ● | 14 x 1 |
| ● | | ● | ● | ● | ● | ● | ● | 14 x 1,25 |
| ● | | ● | ● | ● | ● | ● | ● | 14 x 1,5 |
| ● | | ● | ● | ● | ● | ● | ● | 15 x 1 |
| ● | | ● | ● | ● | ● | ● | ● | 15 x 1,5 |
| ● | | ● | ● | ● | ● | ● | ● | 16 x 1 |
| ● | | ● | ● | ● | ● | ● | ● | 16 x 1,5 |
| ● | | ● | ● | ● | ● | ● | ● | 17 x 1 |
| ● | | ● | ● | ● | ● | ● | ● | 17 x 1,5 |
| ● | | ● | ● | ● | ● | ● | ● | 18 x 1 |
| ● | | ● | ● | ● | ● | ● | ● | 18 x 1,5 |
| ● | | ● | ● | ● | ● | ● | ● | 18 x 2 |
| ● | | ● | ● | ● | ● | ● | ● | 19 x 1 |
| ● | | ● | ● | ● | ● | ● | ● | 20 x 1 |
| ● | | ● | ● | ● | ● | ● | ● | 20 x 1,5 |
| ● | | ● | ● | ● | ● | ● | ● | 20 x 2 |
| ● | | ● | ● | ● | ● | ● | ● | 21 x 1 |
| ● | | ● | ● | ● | ● | ● | ● | 22 x 1 |
| ● | | ● | ● | ● | ● | ● | ● | 22 x 1,5 |
| ● | | ● | ● | ● | ● | ● | ● | 22 x 2 |
| ● | | ● | ● | ● | ● | ● | ● | 23 x 1 |
| ● | | ● | ● | ● | ● | ● | ● | 24 x 1 |
| ● | | ● | ● | ● | ● | ● | ● | 24 x 1,5 |
| ● | | ● | ● | ● | ● | ● | ● | 24 x 2 |
| ● | | ● | ● | ● | ● | ● | ● | 25 x 1 |
| ● | | ● | ● | ● | ● | ● | ● | 25 x 1,5 |
| ● | | ● | ● | ● | ● | ● | ● | 25 x 2 |
| ● | | ● | ● | ● | ● | ● | ● | 26 x 1 |
| ● | | ● | ● | ● | ● | ● | ● | 26 x 1,5 |
| ● | | ● | ● | ● | ● | ● | ● | 26 x 2 |

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry



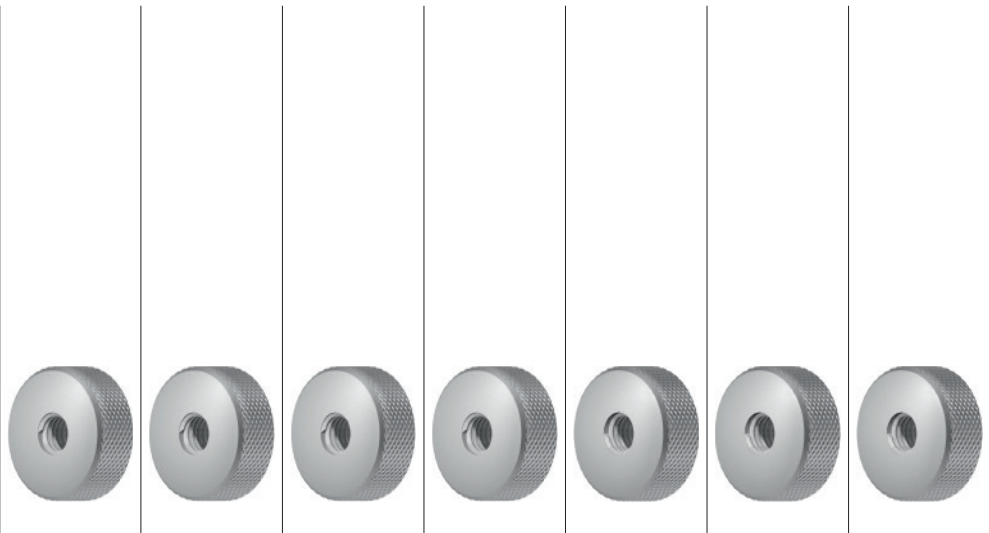
- Product Finder
- M
- MF**
- UNC
- UNF
- G
- Rp
R, Rc
- NPT, NPTF
- BSW
- Pg
- MJ
UNJC, UNJF
- EG (STI)
SELF-LOCK
- Tr, Tr-F
Rd
- Glatt
Smooth
- GT, TD
- Zubehör
Accessories
- Kalibrieren
Calibration
- Tech. Info

MF



DIN 13

Lehrenmaße nach DIN ISO 1502
Gauge dimensions acc. DIN ISO 1502



| | | | | Toleranz · Tolerance | | Beschichtung · Coating | | | | | | | |
|-----------------------------|---------|-------------------|----------|----------------------|----------|------------------------|------------------------------|----------------|----------------|----------------|----|----|----|
| | | | | 6g | 4h | 6h | 6e | 6g | 4h | 6e | LH | LH | LH |
| Werkzeug-Ident · Tool ident | | | | L0200500 | L0200510 | L0200501 | L0200530 | L0200550 | L0200560 | L0200580 | | | |
| | | Dimens.- Ident | G-GUT-LR | G-GUT-LR | G-GUT-LR | G-GUT-LR | G-GUT-LR LH ¹⁾ | G-GUT-LR LH | G-GUT-LR LH | G-GUT-LR LH | | | |
| ø d ₁ mm | P mm | | „4h“ | „6h“ | „6e“ | „4h“ | „6e“ | | | | | | |
| M | 27 | x 1 | .0468 | • | • | • | • | • | • | • | | | |
| | 27 | x 1,5 | .0470 | • | • | • | • | • | • | • | | | |
| | 27 | x 2 | .0471 | • | • | • | • | • | • | • | | | |
| | 28 | x 1 | .0474 | • | • | • | • | • | • | • | | | |
| | 28 | x 1,5 | .0476 | • | • | • | • | • | • | • | | | |
| | 28 | x 2 | .0477 | • | • | • | • | • | • | • | | | |
| | 30 | x 1 | .0488 | • | • | • | • | • | • | • | | | |
| | 30 | x 1,5 | .0490 | • | • | • | • | • | • | • | | | |
| | 30 | x 2 | .0491 | • | • | • | • | • | • | • | | | |
| | 30 | x 3 | .0492 | • | • | • | • | • | • | • | | | |
| | 32 | x 1 | .0502 | • | • | • | • | • | • | • | | | |
| | 32 | x 1,5 | .0504 | • | • | • | • | • | • | • | | | |
| | 32 | x 2 | .0505 | • | • | • | • | • | • | • | | | |
| | 33 | x 1 | .0509 | • | • | • | • | • | • | • | | | |
| | 33 | x 1,5 | .0511 | • | • | • | • | • | • | • | | | |
| | 33 | x 2 | .0512 | • | • | • | • | • | • | • | | | |
| | 33 | x 3 | .0513 | • | • | • | • | • | • | • | | | |
| | 34 | x 1 | .0516 | • | • | • | • | • | • | • | | | |
| | 34 | x 1,5 | .0518 | • | • | • | • | • | • | • | | | |
| | 34 | x 2 | .0519 | • | • | • | • | • | • | • | | | |
| | 35 | x 1 | .0523 | • | • | • | • | • | • | • | | | |
| | 35 | x 1,5 | .0525 | • | • | • | • | • | • | • | | | |
| | 35 | x 2 | .0526 | • | • | • | • | • | • | • | | | |
| | 36 | x 1 | .0530 | • | • | • | • | • | • | • | | | |
| | 36 | x 1,5 | .0532 | • | • | • | • | • | • | • | | | |
| | 36 | x 2 | .0533 | • | • | • | • | • | • | • | | | |
| | 36 | x 3 | .0534 | • | • | • | • | • | • | • | | | |
| | 38 | x 1 | .0544 | • | • | • | • | • | • | • | | | |
| | 38 | x 1,5 | .0546 | • | • | • | • | • | • | • | | | |
| | 38 | x 2 | .0547 | • | • | • | • | • | • | • | | | |
| | 39 | x 1 | .0551 | • | • | • | • | • | • | • | | | |
| | 39 | x 1,5 | .0553 | • | • | • | • | • | • | • | | | |
| | 39 | x 2 | .0554 | • | • | • | • | • | • | • | | | |
| | 39 | x 3 | .0555 | • | • | • | • | • | • | • | | | |
| | 40 | x 1 | .0558 | • | • | • | • | • | • | • | | | |
| | 40 | x 1,5 | .0560 | • | • | • | • | • | • | • | | | |
| | 40 | x 2 | .0561 | • | • | • | • | • | • | • | | | |
| | 40 | x 3 | .0562 | • | • | • | • | • | • | • | | | |
| | 42 | x 1 | .0572 | • | • | • | • | • | • | • | | | |
| | 42 | x 1,5 | .0574 | • | • | • | • | • | • | • | | | |
| | 42 | x 2 | .0575 | • | • | • | • | • | • | • | | | |
| | 42 | x 3 | .0576 | • | • | • | • | • | • | • | | | |
| | 45 | x 1 | .0593 | • | • | • | • | • | • | • | | | |
| | 45 | x 1,5 | .0595 | • | • | • | • | • | • | • | | | |
| | 45 | x 2 | .0596 | • | • | • | • | • | • | • | | | |
| | 45 | x 3 | .0597 | • | • | • | • | • | • | • | | | |
| | 48 | x 1 | .0614 | • | • | • | • | • | • | • | | | |
| | 48 | x 1,5 | .0616 | • | • | • | • | • | • | • | | | |
| | 48 | x 2 | .0617 | • | • | • | • | • | • | • | | | |
| | 48 | x 3 | .0618 | • | • | • | • | • | • | • | | | |
| | 50 | x 1 | .0628 | • | • | • | • | • | • | • | | | |
| | 50 | x 1,5 | .0630 | • | • | • | • | • | • | • | | | |
| | 50 | x 2 | .0631 | • | • | • | • | • | • | • | | | |
| | 50 | x 3 | .0632 | • | • | • | • | • | • | • | | | |
| | 52 | x 1 | .0642 | • | • | • | • | • | • | • | | | |
| | 52 | x 1,5 | .0644 | • | • | • | • | • | • | • | | | |
| | 52 | x 2 | .0645 | • | • | • | • | • | • | • | | | |

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




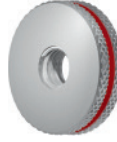
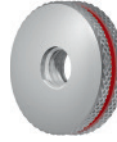
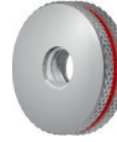
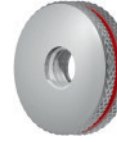
GT, TD

Zubehör
Accessories

Kalibrierung
Calibration

Tech. Info



| |  |  |  |  |  |  |  | |
|---|--|---|---|---|---|---|---|----------|
| | 6g | 4h | 6h | 6e | 6g LH | 4h LH | 6e LH | |
| | L0300500 | L0300510 | L0300501 | L0300530 | L0300550 | L0300560 | L0300580 | |
| | G-AUS-LR | G-AUS-LR „4h“ | G-AUS-LR „6h“ | G-AUS-LR „6e“ | G-AUS-LR LH 1) | G-AUS-LR LH „4h“ | G-AUS-LR LH „6e“ | |
| ● | ● | ● | ● | ● | ● | ● | ● | M 27 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 27 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 27 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 28 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 28 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 28 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 30 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 30 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 30 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 30 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 32 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 32 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 32 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 33 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 33 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 33 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 33 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 34 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 34 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 34 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 35 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 35 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 35 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 36 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 36 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 36 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 36 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 38 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 38 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 38 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 39 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 39 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 39 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 39 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 40 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 40 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 40 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 40 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 42 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 42 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 42 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 42 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 45 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 45 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 45 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 45 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 48 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 48 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 48 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 48 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 50 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 50 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 50 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 50 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 52 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 52 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 52 x 2 |

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

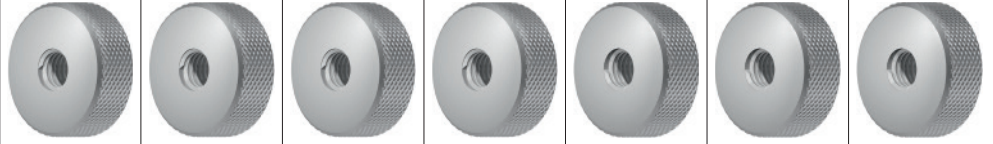
- Product Finder
- M
- MF**
- UNC
- UNF
- G
- Rp
R, Rc
- NPT, NPTF
- BSW
- Pg
- MJ
UNJC, UNJF
- EG (STI)
SELF-LOCK
- Tr, Tr-F
Rd
- Glatt
Smooth
- GT, TD
- Zubehör
Accessories
- Kalibrieren
Calibration
- Tech. Info

MF



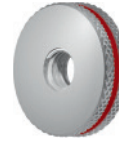
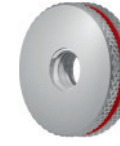
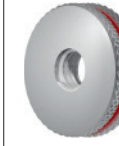
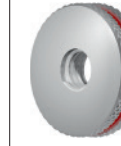
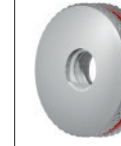


DIN 13

Lehrenmaße nach DIN ISO 1502
Gauge dimensions acc. DIN ISO 1502



| | | | | Toleranz · Tolerance | | Beschichtung · Coating | | | | | | | |
|-----------------------------|----|---------|-------------------|----------------------|------------------|------------------------|------------------|----------------------|----------------|----------------|----|----|----|
| | | | | 6g | 4h | 6h | 6e | 6g | 4h | 6e | LH | LH | LH |
| Werkzeug-Ident · Tool ident | | | | L0200500 | L0200510 | L0200501 | L0200530 | L0200550 | L0200560 | L0200580 | | | |
| Ø d ₁ mm | | P mm | Dimens.- Ident | G-GUT-LR | G-GUT-LR „4h“ | G-GUT-LR „6h“ | G-GUT-LR „6e“ | G-GUT-LR LH 1) | G-GUT-LR LH | G-GUT-LR LH | | | |
| M | 52 | x | 3 | .0646 | ● | ● | ● | ● | ● | ● | | | |
| | 55 | x | 1 | .0653 | ● | ● | ● | ● | ● | ● | | | |
| | 55 | x | 1,5 | .0654 | ● | ● | ● | ● | ● | ● | | | |
| | 55 | x | 2 | .0655 | ● | ● | ● | ● | ● | ● | | | |
| | 55 | x | 3 | .0656 | ● | ● | ● | ● | ● | ● | | | |
| | 56 | x | 1 | .0658 | ● | ● | ● | ● | ● | ● | | | |
| | 56 | x | 1,5 | .0659 | ● | ● | ● | ● | ● | ● | | | |
| | 56 | x | 2 | .0660 | ● | ● | ● | ● | ● | ● | | | |
| | 56 | x | 3 | .0661 | ● | ● | ● | ● | ● | ● | | | |
| | 58 | x | 1 | .0663 | ● | ● | ● | ● | ● | ● | | | |
| | 58 | x | 1,5 | .0664 | ● | ● | ● | ● | ● | ● | | | |
| | 58 | x | 2 | .0665 | ● | ● | ● | ● | ● | ● | | | |
| | 58 | x | 3 | .0666 | ● | ● | ● | ● | ● | ● | | | |
| | 60 | x | 1 | .0668 | ● | ● | ● | ● | ● | ● | | | |
| | 60 | x | 1,5 | .0669 | ● | ● | ● | ● | ● | ● | | | |
| | 60 | x | 2 | .0670 | ● | ● | ● | ● | ● | ● | | | |
| | 60 | x | 3 | .0671 | ● | ● | ● | ● | ● | ● | | | |
| | 62 | x | 1 | .0673 | ● | ● | ● | ● | ● | ● | | | |
| | 62 | x | 1,5 | .0674 | ● | ● | ● | ● | ● | ● | | | |
| | 62 | x | 2 | .0675 | ● | ● | ● | ● | ● | ● | | | |
| | 62 | x | 3 | .0676 | ● | ● | ● | ● | ● | ● | | | |
| | 64 | x | 1 | .0678 | ● | ● | ● | ● | ● | ● | | | |
| | 64 | x | 1,5 | .0679 | ● | ● | ● | ● | ● | ● | | | |
| | 64 | x | 2 | .0680 | ● | ● | ● | ● | ● | ● | | | |
| | 64 | x | 3 | .0681 | ● | ● | ● | ● | ● | ● | | | |
| | 65 | x | 1 | .0683 | ● | ● | ● | ● | ● | ● | | | |
| | 65 | x | 1,5 | .0684 | ● | ● | ● | ● | ● | ● | | | |
| | 65 | x | 2 | .0685 | ● | ● | ● | ● | ● | ● | | | |
| | 65 | x | 3 | .0686 | ● | ● | ● | ● | ● | ● | | | |
| | 68 | x | 1 | .0688 | ● | ● | ● | ● | ● | ● | | | |
| | 68 | x | 1,5 | .0689 | ● | ● | ● | ● | ● | ● | | | |
| | 68 | x | 2 | .0690 | ● | ● | ● | ● | ● | ● | | | |
| | 68 | x | 3 | .0691 | ● | ● | ● | ● | ● | ● | | | |
| | 70 | x | 1 | .0693 | ● | ● | ● | ● | ● | ● | | | |
| | 70 | x | 1,5 | .0694 | ● | ● | ● | ● | ● | ● | | | |
| | 70 | x | 2 | .0695 | ● | ● | ● | ● | ● | ● | | | |
| | 70 | x | 3 | .0696 | ● | ● | ● | ● | ● | ● | | | |
| | 72 | x | 1 | .0699 | ● | ● | ● | ● | ● | ● | | | |
| | 72 | x | 1,5 | .0700 | ● | ● | ● | ● | ● | ● | | | |
| | 72 | x | 2 | .0701 | ● | ● | ● | ● | ● | ● | | | |
| | 72 | x | 3 | .0702 | ● | ● | ● | ● | ● | ● | | | |
| | 75 | x | 1 | .0705 | ● | ● | ● | ● | ● | ● | | | |
| | 75 | x | 1,5 | .0706 | ● | ● | ● | ● | ● | ● | | | |
| | 75 | x | 2 | .0707 | ● | ● | ● | ● | ● | ● | | | |
| | 75 | x | 3 | .0708 | ● | ● | ● | ● | ● | ● | | | |
| | 76 | x | 1 | .0711 | ● | ● | ● | ● | ● | ● | | | |
| | 76 | x | 1,5 | .0712 | ● | ● | ● | ● | ● | ● | | | |
| | 76 | x | 2 | .0713 | ● | ● | ● | ● | ● | ● | | | |
| | 76 | x | 3 | .0714 | ● | ● | ● | ● | ● | ● | | | |
| | 78 | x | 1 | .0717 | ● | ● | ● | ● | ● | ● | | | |
| | 78 | x | 1,5 | .0718 | ● | ● | ● | ● | ● | ● | | | |
| | 78 | x | 2 | .0719 | ● | ● | ● | ● | ● | ● | | | |
| | 80 | x | 1 | .0723 | ● | ● | ● | ● | ● | ● | | | |
| | 80 | x | 1,5 | .0724 | ● | ● | ● | ● | ● | ● | | | |
| | 80 | x | 2 | .0725 | ● | ● | ● | ● | ● | ● | | | |
| | 80 | x | 3 | .0726 | ● | ● | ● | ● | ● | ● | | | |
| | 82 | x | 1,5 | .0729 | ● | ● | ● | ● | ● | ● | | | |

| |  |  |  |  |  |  |  | |
|---|--|---|---|---|---|---|---|----------|
| | 6g | 4h | 6h | 6e | 6g LH | 4h LH | 6e LH | |
| | L0300500 | L0300510 | L0300501 | L0300530 | L0300550 | L0300560 | L0300580 | |
| | G-AUS-LR | G-AUS-LR „4h“ | G-AUS-LR „6h“ | G-AUS-LR „6e“ | G-AUS-LR LH 1) | G-AUS-LR LH „4h“ | G-AUS-LR LH „6e“ | |
| ● | ● | ● | ● | ● | ● | ● | ● | M 52 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 55 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 55 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 55 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 55 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 56 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 56 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 56 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 56 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 58 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 58 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 58 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 58 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 60 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 60 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 60 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 60 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 62 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 62 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 62 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 62 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 64 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 64 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 64 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 64 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 65 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 65 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 65 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 65 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 68 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 68 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 68 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 68 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 70 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 70 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 70 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 70 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 72 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 72 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 72 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 72 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 75 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 75 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 75 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 75 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 76 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 76 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 76 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 76 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 78 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 78 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 78 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 80 x 1 |
| ● | ● | ● | ● | ● | ● | ● | ● | 80 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | ● | 80 x 2 |
| ● | ● | ● | ● | ● | ● | ● | ● | 80 x 3 |
| ● | ● | ● | ● | ● | ● | ● | ● | 82 x 1,5 |

- 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
- Kalibrierung
Calibration
- Tech. Info



● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
 ○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

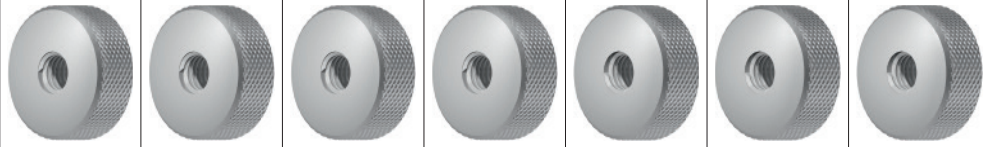
- Product Finder
- M
- MF**
- UNC
- UNF
- G
- Rp
R, Rc
- NPT, NPTF
- BSW
- Pg
- MJ
UNJC, UNJF
- EG (STI)
SELF-LOCK
- Tr, Tr-F
Rd
- Glatt
Smooth
- GT, TD
- Zubehör
Accessories
- Kalibrieren
Calibration
- Tech. Info

MF



DIN 13

Lehrenmaße nach DIN ISO 1502
Gauge dimensions acc. DIN ISO 1502




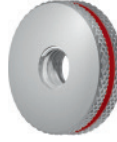
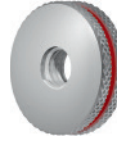
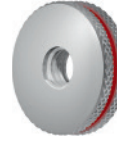
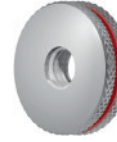


| | | | | Toleranz · Tolerance | | Beschichtung · Coating | | | | | |
|-----------------------------|---------|---------------|-----|----------------------|----------|------------------------|----------|------------------------------|----------------|----------------|---|
| | | | | 6g | 4h | 6h | 6e | 6g | 4h | 6e | |
| | | | | | | | | LH | LH | LH | |
| Werkzeug-Ident · Tool ident | | | | L0200500 | L0200510 | L0200501 | L0200530 | L0200550 | L0200560 | L0200580 | |
| | | Dimens.-Ident | | G-GUT-LR | G-GUT-LR | G-GUT-LR | G-GUT-LR | G-GUT-LR LH ¹⁾ | G-GUT-LR LH | G-GUT-LR LH | |
| ø d ₁ mm | P mm | | | | „4h“ | „6h“ | „6e“ | | „4h“ | „6e“ | |
| M | 82 | x | 2 | .0730 | ● | ● | ● | ● | ● | ● | ● |
| | 85 | x | 1,5 | .0734 | ● | ● | ● | ● | ● | ● | ● |
| | 85 | x | 2 | .0735 | ● | ● | ● | ● | ● | ● | ● |
| | 85 | x | 3 | .0736 | ● | ● | ● | ● | ● | ● | ● |
| | 88 | x | 1,5 | .0739 | ● | ● | ● | ● | ● | ● | ● |
| | 88 | x | 2 | .0740 | ● | ● | ● | ● | ● | ● | ● |
| | 90 | x | 1,5 | .0744 | ● | ● | ● | ● | ● | ● | ● |
| | 90 | x | 2 | .0745 | ● | ● | ● | ● | ● | ● | ● |
| | 90 | x | 3 | .0746 | ● | ● | ● | ● | ● | ● | ● |
| | 92 | x | 1,5 | .0749 | ● | ● | ● | ● | ● | ● | ● |
| | 92 | x | 2 | .0750 | ● | ● | ● | ● | ● | ● | ● |
| | 95 | x | 1,5 | .0754 | ● | ● | ● | ● | ● | ● | ● |
| | 95 | x | 2 | .0755 | ● | ● | ● | ● | ● | ● | ● |
| | 95 | x | 3 | .0756 | ● | ● | ● | ● | ● | ● | ● |
| | 98 | x | 1,5 | .0759 | ● | ● | ● | ● | ● | ● | ● |
| | 98 | x | 2 | .0760 | ● | ● | ● | ● | ● | ● | ● |
| | 100 | x | 1,5 | .0764 | ● | ● | ● | ● | ● | ● | ● |
| | 100 | x | 2 | .0765 | ● | ● | ● | ● | ● | ● | ● |
| | 100 | x | 3 | .0766 | ● | ● | ● | ● | ● | ● | ● |

← M52 x 3 - M82 x 1,5

¹⁾ Toleranz „6h“ auf Anfrage
Tolerance “6h” upon request

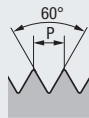


|  |  |  |  |  |  |  | |
|--|---|---|---|---|---|---|-----------|
| 6g | 4h | 6h | 6e | 6g | 4h | 6e | |
| | | | | LH | LH | LH | |
| L0300500 | L0300510 | L0300501 | L0300530 | L0300550 | L0300560 | L0300580 | |
| G-AUS-LR | G-AUS-LR | G-AUS-LR | G-AUS-LR | G-AUS-LR LH 1) | G-AUS-LR LH | G-AUS-LR LH | |
| | „4h“ | „6h“ | „6e“ | | „4h“ | „6e“ | |
| ● | ● | ● | ● | ● | ● | ● | M 82 x 2 |
| ● | ● | ● | ● | ● | ● | ● | 85 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | 85 x 2 |
| ● | ● | ● | ● | ● | ● | ● | 85 x 3 |
| ● | ● | ● | ● | ● | ● | ● | 88 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | 88 x 2 |
| ● | ● | ● | ● | ● | ● | ● | 90 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | 90 x 2 |
| ● | ● | ● | ● | ● | ● | ● | 90 x 3 |
| ● | ● | ● | ● | ● | ● | ● | 92 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | 92 x 2 |
| ● | ● | ● | ● | ● | ● | ● | 95 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | 95 x 2 |
| ● | ● | ● | ● | ● | ● | ● | 95 x 3 |
| ● | ● | ● | ● | ● | ● | ● | 98 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | 98 x 2 |
| ● | ● | ● | ● | ● | ● | ● | 100 x 1,5 |
| ● | ● | ● | ● | ● | ● | ● | 100 x 2 |
| ● | ● | ● | ● | ● | ● | ● | 100 x 3 |



- 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
- Kalibrieren
Calibration
- Tech. Info

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

Werkzeug-Ident · Tool ident

L0100100

L0100110

L0120100

L0140100

G-GR-LD

G-GR-LD

G-GUT-LD

G-AUS-LD

| Nr. | Ø d ₁ | | P Gg/1" (tpi) | Dimens.- Ident | L0100100 G-GR-LD | L0100110 G-GR-LD „3B“ | L0120100 G-GUT-LD | L0140100 G-AUS-LD |
|--------|------------------|------|------------------|-------------------|---------------------|-----------------------------|----------------------|----------------------|
| | inch | inch | | | | | | |
| Nr. 1 | 0.0730 | | 64 | .5000 | ● | | ● | ● |
| Nr. 2 | 0.0860 | | 56 | .5001 | ● | | ● | ● |
| Nr. 3 | 0.0990 | | 48 | .5002 | ● | | ● | ● |
| Nr. 4 | 0.1120 | | 40 | .5003 | ● | | ● | ● |
| Nr. 5 | 0.1250 | | 40 | .5004 | ● | | ● | ● |
| Nr. 6 | 0.1380 | | 32 | .5005 | ● | | ● | ● |
| Nr. 8 | 0.1640 | | 32 | .5006 | ● | | ● | ● |
| Nr. 10 | 0.1900 | | 24 | .5007 | ● | | ● | ● |
| Nr. 12 | 0.2160 | | 24 | .5008 | ● | | ● | ● |
| 1/4 | 0.2500 | | 20 | .5009 | ● | | ● | ● |
| 5/16 | 0.3125 | | 18 | .5010 | ● | | ● | ● |
| 3/8 | 0.3750 | | 16 | .5011 | ● | ● | ● | ● |
| 7/16 | 0.4375 | | 14 | .5012 | ● | ● | ● | ● |
| 1/2 | 0.5000 | | 13 | .5013 | ● | ● | ● | ● |
| 9/16 | 0.5625 | | 12 | .5014 | ● | ● | ● | ● |
| 5/8 | 0.6250 | | 11 | .5015 | ● | ● | ● | ● |
| 3/4 | 0.7500 | | 10 | .5016 | ● | ● | ● | ● |
| 7/8 | 0.8750 | | 9 | .5017 | ● | ● | ● | ● |
| 1" | 1.0000 | | 8 | .5018 | ● | ● | ● | ● |
| 1 1/8 | 1.1250 | | 7 | .5019 | ● | ● | ● | ● |
| 1 1/4 | 1.2500 | | 7 | .5020 | ● | ● | ● | ● |
| 1 3/8 | 1.3750 | | 6 | .5021 | ● | ● | ● | ● |
| 1 1/2 | 1.5000 | | 6 | .5022 | ● | ● | ● | ● |
| 1 3/4 | 1.7500 | | 5 | .5023 | ● | ● | ● | ● |
| 2" | 2.0000 | | 4 1/2 | .5024 | ● | ● | ● | ● |

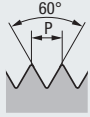
> Ø 1 1/2 nur als Einzellehrdorne erhältlich (G-GUT-LD, G-AUS-LD)
available only as separate plug gauges (G-GUT-LD, G-AUS-LD)

Gewindelehren für UNEF, UN und UNS auf Anfrage
Thread gauges for UNEF, UN and UNS upon request

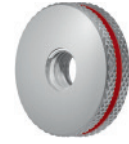
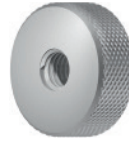
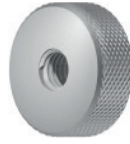


UNC

ASME B1.1



Lehrenmaße nach ANSI/ASME B1.2
Gauge dimensions acc. ANSI/ASME B1.2



Toleranz · Tolerance
Beschichtung · Coating

2A

3A

2A

3A

Werkzeug-Ident · Tool ident

L0200500

L0200510

L0300500

L0300510

G-GUT-LR

G-GUT-LR

G-AUS-LR

G-AUS-LR

| Nr. | ø d ₁ inch | P Gg/1" (tpi) | Dimens.- Ident | | | | |
|--------|--------------------------|------------------|-------------------|---|---|---|---|
| | | | | | | | |
| Nr. 1 | 0.0730 | 64 | .5000 | ● | | ● | |
| Nr. 2 | 0.0860 | 56 | .5001 | ● | | ● | |
| Nr. 3 | 0.0990 | 48 | .5002 | ● | | ● | |
| Nr. 4 | 0.1120 | 40 | .5003 | ● | | ● | |
| Nr. 5 | 0.1250 | 40 | .5004 | ● | | ● | |
| Nr. 6 | 0.1380 | 32 | .5005 | ● | | ● | |
| Nr. 8 | 0.1640 | 32 | .5006 | ● | | ● | |
| Nr. 10 | 0.1900 | 24 | .5007 | ● | | ● | |
| Nr. 12 | 0.2160 | 24 | .5008 | ● | | ● | |
| 1/4 | 0.2500 | 20 | .5009 | ● | | ● | |
| 5/16 | 0.3125 | 18 | .5010 | ● | | ● | |
| 3/8 | 0.3750 | 16 | .5011 | ● | ● | ● | ● |
| 7/16 | 0.4375 | 14 | .5012 | ● | ● | ● | ● |
| 1/2 | 0.5000 | 13 | .5013 | ● | ● | ● | ● |
| 9/16 | 0.5625 | 12 | .5014 | ● | ● | ● | ● |
| 5/8 | 0.6250 | 11 | .5015 | ● | ● | ● | ● |
| 3/4 | 0.7500 | 10 | .5016 | ● | ● | ● | ● |
| 7/8 | 0.8750 | 9 | .5017 | ● | | ● | |
| 1" | 1.0000 | 8 | .5018 | ● | | ● | |
| 1 1/8 | 1.1250 | 7 | .5019 | ● | | ● | |
| 1 1/4 | 1.2500 | 7 | .5020 | ● | | ● | |
| 1 3/8 | 1.3750 | 6 | .5021 | ● | | ● | |
| 1 1/2 | 1.5000 | 6 | .5022 | ● | | ● | |
| 1 3/4 | 1.7500 | 5 | .5023 | ● | | ● | |
| 2" | 2.0000 | 4 1/2 | .5024 | ● | | ● | |

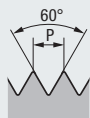
- Product Finder
- M
- MF
- UNC**
- UNF
- G
- Rp
R, Rc
- NPT, NPTF
- BSW
- Pg
- MJ
UNJC, UNJF
- EG (STI)
SELF-LOCK
- Tr, Tr-F
Rd
- Glatt
Smooth
- GT, TD
- Zubehör
Accessories
- Kalibrierung
Calibration
- Tech. Info



● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

- 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
- Kalibrieren
Calibration
- Tech. Info

UNF



ASME B1.1

Lehrenmaße nach ANSI/ASME B1.2
Gauge dimensions acc. ANSI/ASME B1.2



2B



3B



2B



2B

Toleranz · Tolerance
Beschichtung · Coating

Werkzeug-Ident · Tool ident

L0100100

L0100110

L0120100

L0140100

G-GR-LD

G-GR-LD

G-GUT-LD

G-AUS-LD

| Nr. | Ø d ₁ | | P Gg/1" (tpi) | Dimens.- Ident | L0100100 G-GR-LD | L0100110 G-GR-LD „3B“ | L0120100 G-GUT-LD | L0140100 G-AUS-LD |
|--------|------------------|------|------------------|-------------------|---------------------|-----------------------------|----------------------|----------------------|
| | inch | inch | | | | | | |
| Nr. 0 | 0.0600 | | 80 | .5033 | ● | | ● | ● |
| Nr. 1 | 0.0730 | | 72 | .5034 | ● | | ● | ● |
| Nr. 2 | 0.0860 | | 64 | .5035 | ● | | ● | ● |
| Nr. 3 | 0.0990 | | 56 | .5036 | ● | | ● | ● |
| Nr. 4 | 0.1120 | | 48 | .5037 | ● | | ● | ● |
| Nr. 5 | 0.1250 | | 44 | .5038 | ● | | ● | ● |
| Nr. 6 | 0.1380 | | 40 | .5039 | ● | | ● | ● |
| Nr. 8 | 0.1640 | | 36 | .5040 | ● | | ● | ● |
| Nr. 10 | 0.1900 | | 32 | .5041 | ● | | ● | ● |
| Nr. 12 | 0.2160 | | 28 | .5042 | ● | | ● | ● |
| 1/4 | 0.2500 | | 28 | .5043 | ● | | ● | ● |
| 5/16 | 0.3125 | | 24 | .5044 | ● | | ● | ● |
| 3/8 | 0.3750 | | 24 | .5045 | ● | ● | ● | ● |
| 7/16 | 0.4375 | | 20 | .5046 | ● | ● | ● | ● |
| 1/2 | 0.5000 | | 20 | .5047 | ● | ● | ● | ● |
| 9/16 | 0.5625 | | 18 | .5048 | ● | ● | ● | ● |
| 5/8 | 0.6250 | | 18 | .5049 | ● | ● | ● | ● |
| 3/4 | 0.7500 | | 16 | .5050 | ● | ● | ● | ● |
| 7/8 | 0.8750 | | 14 | .5051 | ● | ● | ● | ● |
| 1" | 1.0000 | | 12 | .5052 | ● | ● | ● | ● |
| 1 1/8 | 1.1250 | | 12 | .5053 | ● | ● | ● | ● |
| 1 1/4 | 1.2500 | | 12 | .5054 | ● | ● | ● | ● |
| 1 3/8 | 1.3750 | | 12 | .5055 | ● | ● | ● | ● |
| 1 1/2 | 1.5000 | | 12 | .5056 | ● | ● | ● | ● |

Gewindelehren für UNEF, UN und UNS auf Anfrage
Thread gauges for UNEF, UN and UNS upon request

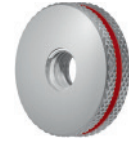
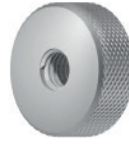
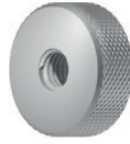


UNF



ASME B1.1

Lehrenmaße nach ANSI/ASME B1.2
Gauge dimensions acc. ANSI/ASME B1.2



Toleranz · Tolerance
Beschichtung · Coating

2A

3A

2A

3A

Werkzeug-Ident · Tool ident

L0200500

L0200510

L0300500

L0300510

G-GUT-LR

G-GUT-LR

G-AUS-LR

G-AUS-LR

| Nr. | Ø d ₁ | | P Gg/1" (tpi) | Dimens.- Ident | | | | |
|--------|------------------|------|------------------|-------------------|---|---|---|---|
| | inch | inch | | | | | | |
| Nr. 0 | 0.0600 | | 80 | .5033 | ● | | ● | |
| Nr. 1 | 0.0730 | | 72 | .5034 | ● | | ● | |
| Nr. 2 | 0.0860 | | 64 | .5035 | ● | | ● | |
| Nr. 3 | 0.0990 | | 56 | .5036 | ● | | ● | |
| Nr. 4 | 0.1120 | | 48 | .5037 | ● | | ● | |
| Nr. 5 | 0.1250 | | 44 | .5038 | ● | | ● | |
| Nr. 6 | 0.1380 | | 40 | .5039 | ● | | ● | |
| Nr. 8 | 0.1640 | | 36 | .5040 | ● | | ● | |
| Nr. 10 | 0.1900 | | 32 | .5041 | ● | | ● | |
| Nr. 12 | 0.2160 | | 28 | .5042 | ● | | ● | |
| 1/4 | 0.2500 | | 28 | .5043 | ● | | ● | |
| 5/16 | 0.3125 | | 24 | .5044 | ● | | ● | |
| 3/8 | 0.3750 | | 24 | .5045 | ● | ● | ● | ● |
| 7/16 | 0.4375 | | 20 | .5046 | ● | ● | ● | ● |
| 1/2 | 0.5000 | | 20 | .5047 | ● | ● | ● | ● |
| 9/16 | 0.5625 | | 18 | .5048 | ● | ● | ● | ● |
| 5/8 | 0.6250 | | 18 | .5049 | ● | ● | ● | ● |
| 3/4 | 0.7500 | | 16 | .5050 | ● | ● | ● | ● |
| 7/8 | 0.8750 | | 14 | .5051 | ● | ● | ● | ● |
| 1" | 1.0000 | | 12 | .5052 | ● | ● | ● | ● |
| 1 1/8 | 1.1250 | | 12 | .5053 | ● | ● | ● | ● |
| 1 1/4 | 1.2500 | | 12 | .5054 | ● | ● | ● | ● |
| 1 3/8 | 1.3750 | | 12 | .5055 | ● | ● | ● | ● |
| 1 1/2 | 1.5000 | | 12 | .5056 | ● | ● | ● | ● |

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

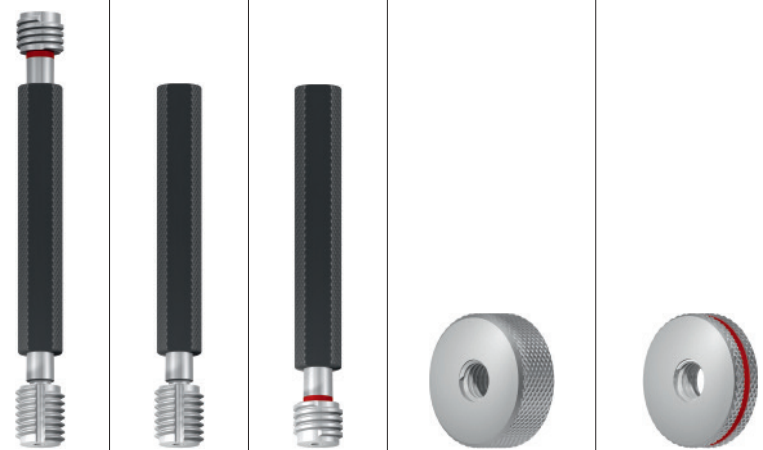
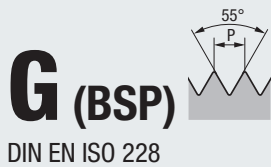
Zubehör
Accessories

Kalibrierung
Calibration

Tech. Info



- 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
- Kalibrieren
Calibration
- Tech. Info



Lehrenmaße nach DIN EN ISO 228-2
Gauge dimensions acc. DIN EN ISO 228-2

A

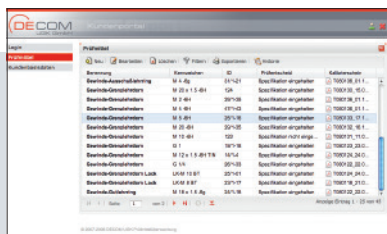
A

Toleranz · Tolerance
Beschichtung · Coating

| Werkzeug-Ident · Tool ident | | | | | L0100100 | L0120100 | L0140100 | L0200500 | L0300500 |
|-----------------------------|-------------------|------------------------|------------------|---------|----------|----------|----------|----------|----------|
| Nenngröße Nom. size | Dimens.- Ident | | | G-GR-LD | G-GUT-LD | G-AUS-LD | G-GUT-LR | G-AUS-LR | |
| | Ø d ₁ | Ø d ₁ mm | P Gg/1" (tpi) | | | | | | |
| G 1/16 | 7,72 | 28 | .4034 | ● | ● | ● | ● | ● | |
| 1/8 | 9,73 | 28 | .4035 | ● | ● | ● | ● | ● | |
| 1/4 | 13,16 | 19 | .4036 | ● | ● | ● | ● | ● | |
| 3/8 | 16,66 | 19 | .4037 | ● | ● | ● | ● | ● | |
| 1/2 | 20,96 | 14 | .4038 | ● | ● | ● | ● | ● | |
| 5/8 | 22,91 | 14 | .4039 | ● | ● | ● | ● | ● | |
| 3/4 | 26,44 | 14 | .4040 | ● | ● | ● | ● | ● | |
| 7/8 | 30,20 | 14 | .4041 | ● | ● | ● | ● | ● | |
| 1" | 33,25 | 11 | .4042 | ● | ● | ● | ● | ● | |
| 1 1/8 | 37,90 | 11 | .4043 | ● | ● | ● | ● | ● | |
| 1 1/4 | 41,91 | 11 | .4044 | | ● | ● | ● | ● | |
| 1 3/8 | 44,32 | 11 | .4045 | | ● | ● | ● | ● | |
| 1 1/2 | 47,80 | 11 | .4046 | | ● | ● | ● | ● | |
| 1 5/8 | 52,00 | 11 | .4047 | | ● | ● | ● | ● | |
| 1 3/4 | 53,75 | 11 | .4048 | | ● | ● | ● | ● | |
| 2" | 59,61 | 11 | .4050 | | ● | ● | ● | ● | |

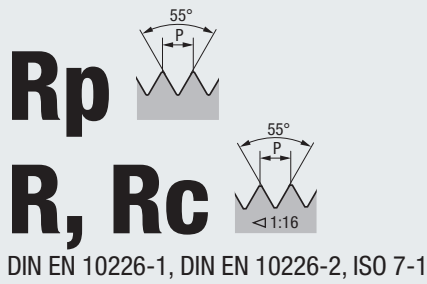
> G 1 1/8 nur als Einzellehrdorne erhältlich (G-GUT-LD, G-AUS-LD)
available only as separate plug gauges (G-GUT-LD, G-AUS-LD)

Gewinde-Lehringe für Toleranz B auf Anfrage
Thread ring gauges for Tolerance B upon request



Prüfmittelverwaltungs-Software
KalimeroNet siehe Seite 634

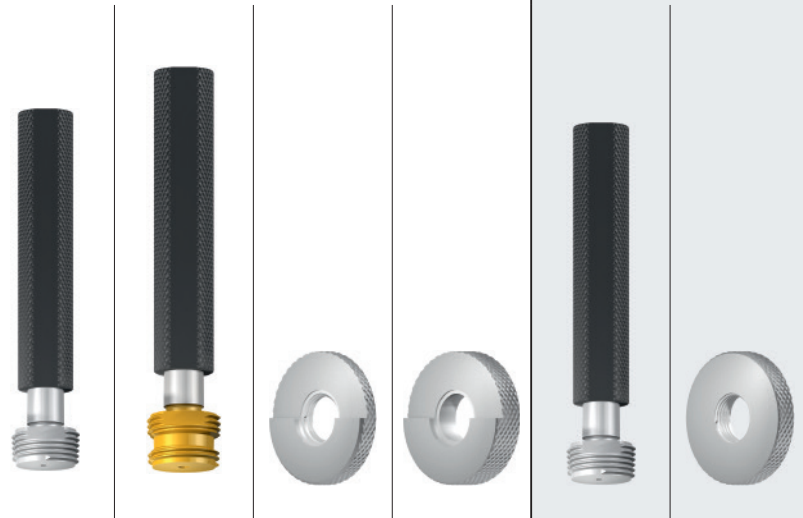
Inspection tool administration software
KalimeroNet, see page 634



Lehrensysteem 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.

1 2¹⁾ 3 4 5 6

| Werkzeug-Ident · Tool ident | | | | L1800101 | L1815101 | L1850501 | L1860501 | L1830501 | L1870101 |
|-----------------------------|-------------------------|-------------------|------------------|-----------------|----------------------------------|-----------------|----------------------------|--------------------|--------------------|
| Nenngröße Nom. size | | Dimens.- Ident | P Gg/1" (tpi) | Keg. G-GR-LD | Keg. G-GR-LD Aussp. TIN | Zyl. G-GR-LR | Keg. G-GR-LR (glatt) | Keg. G-Prüfdorn | Zyl. G-Prüfring |
| $\varnothing d_1$ | $\varnothing d_1$ mm | | | | | | | | |
| R | 1/16 | 7,72 | 28 | ● | ● | ● | ● | ● | ● |
| | 1/8 | 9,73 | 28 | ● | ● | ● | ● | ● | ● |
| | 1/4 | 13,16 | 19 | ● | ● | ● | ● | ● | ● |
| | 3/8 | 16,66 | 19 | ● | ● | ● | ● | ● | ● |
| | 1/2 | 20,96 | 14 | ● | ● | ● | ● | ● | ● |
| | 3/4 | 26,44 | 14 | ● | ● | ● | ● | ● | ● |
| | 1" | 32,25 | 11 | ● | ● | ● | ● | ● | ● |
| | 1 1/4 | 41,91 | 11 | ● | ● | ● | ● | ● | ● |
| | 1 1/2 | 47,80 | 11 | ● | ● | ● | ● | ● | ● |
| | 2" | 59,61 | 11 | ● | ● | ● | ● | ● | ● |
| | 2 1/2 | 75,18 | 11 | ● | ● | ● | ● | ● | ● |
| | 3" | 87,88 | 11 | ● | ● | ● | ● | ● | ● |
| | 4" | 113,03 | 11 | ● | ● | ● | ● | ● | ● |

¹⁾ 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 Lehrensysteem nach DIN EN 10226-3, ISO 7-2

Ziel der Normung war, ein weltweit akzeptiertes Lehrensysteem 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 standardization 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.

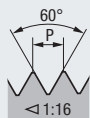
Previous standards, e.g. the German standards DIN 2999-2 to -6, the British standard BS 21, the French standard NF-E 03-165 and the Italian standard UNI ISO 7-2:1984 do not apply anymore.

- Product Finder
- M
- MF
- UNC
- UNF
- G
- Rp
R, Rc
- NPT, NPTF
- BSW
- Pg
- MJ
UNJC, UNJF
- EG (STI)
SELF-LOCK
- Tr, Tr-F
Rd
- Glatt
Smooth
- GT, TD
- Zubehör
Accessories
- Kalibrierung
Calibration
- Tech. Info



- 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
- Kalibrieren
Calibration
- Tech. Info

NPT



ANSI/ASME B1.20.1

Lehrensystem ähnlich ANSI/ASME B1.20.1
Gauge system sim. ANSI/ASME B1.20.1

Ausführung „3-Step“
“3-Step” Design



| Werkzeug-Ident · Tool ident | | | L0500100 | L0600500 | | |
|-----------------------------|------------------|-------------------|-------------------------------------|-------------------------------------|--|--|
| Nenngröße Nom. size | | Dimens.- Ident | G-GR-LD (L ₁) NPT | G-GR-LR (L ₁) NPT | | |
| ∅ d ₁ | P Gg/1" (tpi) | | | | | |
| 1/16 | 27 | .5763 | ● | ● | | |
| 1/8 | 27 | .5764 | ● | ● | | |
| 1/4 | 18 | .5765 | ● | ● | | |
| 3/8 | 18 | .5766 | ● | ● | | |
| 1/2 | 14 | .5767 | ● | ● | | |
| 3/4 | 14 | .5768 | ● | ● | | |
| 1" | 11 1/2 | .5769 | ● | ● | | |
| 1 1/4 | 11 1/2 | .5770 | ● | ● | | |
| 1 1/2 | 11 1/2 | .5771 | ● | ● | | |
| 2" | 11 1/2 | .5772 | ● | ● | | |

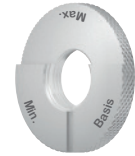


NPTF

ANSI B1.20.3



Ausführung „3-Step“
“3-Step” Design



Lehrensyst \ddot{u} m NPTF-1 nach ASME B1.20.5
Gauge system NPTF-1 acc. ASME B1.20.5

| Werkzeug-Ident · Tool ident | | | L0520100 | L0500100 | L0510100 | L0600500 |
|-----------------------------|-------------|-------------------|---|--------------------------------------|--------------------------------------|--------------------------------------|
| NenngröÙe Nom. size | P | Dimens.- Ident | G-GR-LD (L ₁ + L ₃) NPTF | G-GR-LD (L ₁) NPTF | G-GR-LD (L ₃) NPTF | G-GR-LR (L ₁) NPTF |
| $\varnothing d_1$ | Gg/1" (tpi) | | | | | |
| 1/16 | 27 | .5782 | ● | | | ● |
| 1/8 | 27 | .5783 | ● | | | ● |
| 1/4 | 18 | .5784 | ● | | | ● |
| 3/8 | 18 | .5785 | ● | | | ● |
| 1/2 | 14 | .5786 | ● | | | ● |
| 3/4 | 14 | .5787 | ● | | | ● |
| 1" | 11 1/2 | .5788 | ● | | | ● |
| 1 1/4 | 11 1/2 | .5789 | | ● | ● | ● |
| 1 1/2 | 11 1/2 | .5790 | | ● | ● | ● |
| 2" | 11 1/2 | .5791 | | ● | ● | ● |

> $\varnothing 1"$ nur als Einzellehrdorne erhaltlich (G-GR-LD (L₁), G-GR-LD (L₃))
available only as separate plug gauges (G-GR-LD (L₁), G-GR-LD (L₃))

Gewinde-Grenzlehrringe G-GR-LR (L₂) NPTF auf Anfrage
Thread ring gauges go/no-go G-GR-LR (L₂) NPTF upon request

Lehrensyst \ddot{u} m NPTF-2 nach ASME B1.20.5

für NPTF-Innengewinde

- L₁-Gewinde-Lehrdorn (Ausföhrung „4-Step“)
- L₃-Gewinde-Lehrdorn (Ausföhrung „4-Step“)
- Lehrdorn „Crest Check“ („6-Step“), zur Pröfung der Gewindespitzen am Kerndurchmesser
- Lehrdorn „Root Check“ („6-Step“), zur Pröfung des Gewindegrundes am Außendurchmesser

für NPTF-Außengewinde

- L₁-Gewinde-Lehrring (Ausföhrung „4-Step“)
- L₂-Gewinde-Lehrring (Ausföhrung „4-Step“)
- Lehrring „Crest Check“ („6-Step“), zur Pröfung der Gewindespitzen am Außendurchmesser
- Lehrring „Root Check“ („6-Step“), zur Pröfung des Gewindegrundes am Kerndurchmesser

Gewindegrenzlehren für Lehrensyst \ddot{u} m NPTF-2 auf Anfrage

Gauge system NPTF-2 acc. ASME B1.20.5

for NPTF internal thread

- L₁ thread plug gauge (“4-step” design)
- L₃ 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

- L₁ thread ring gauge (“4-step” design)
- L₂ 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

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

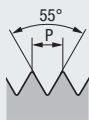
Kalibrierung
Calibration

Tech. Info



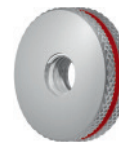
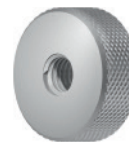
- Product Finder
- M
- MF
- UNC
- UNF
- G
- Rp
R, Rc
- NPT, NPTF
- BSW**

BSW



BS 84

Lehrenmaße nach BS 919-2
Gauge dimensions acc. BS 919-2



- Pg
- MJ
UNJC, UNJF
- EG (STI)
SELF-LOCK
- Tr, Tr-F
Rd
- Glatt
Smooth
- GT, TD
- Zubehör
Accessories
- Kalibrieren
Calibration
- Tech. Info

Toleranz · Tolerance
Beschichtung · Coating

med. med. med. med. *) med.

| Werkzeug-Ident · Tool ident | | | | L0100100 | L0120100 | L0140100 | L0200500 | L0300500 |
|-----------------------------|--------------------------|------------------------|------------------|-------------------|----------|----------|----------|----------|
| | | | | G-GR-LD | G-GUT-LD | G-AUS-LD | G-GUT-LR | G-AUS-LR |
| | ø d ₁ inch | ø d ₁ mm | P Gg/1" (tpi) | Dimens.- Ident | | | | |
| BSW | 1/8 | 3,175 | 40 | .3046 | ● | ● | ● | ● |
| | 3/16 | 4,763 | 24 | .3048 | ● | ● | ● | ● |
| | 1/4 | 6,350 | 20 | .3050 | ● | ● | ● | ● |
| | 5/16 | 7,938 | 18 | .3051 | ● | ● | ● | ● |
| | 3/8 | 9,525 | 16 | .3052 | ● | ● | ● | ● |
| | 7/16 | 11,113 | 14 | .3053 | ● | ● | ● | ● |
| | 1/2 | 12,700 | 12 | .3054 | ● | ● | ● | ● |
| | 9/16 | 14,288 | 12 | .3055 | ● | ● | ● | ● |
| | 5/8 | 15,875 | 11 | .3056 | ● | ● | ● | ● |
| | 3/4 | 19,050 | 10 | .3058 | ● | ● | ● | ● |
| | 7/8 | 22,225 | 9 | .3060 | ● | ● | ● | ● |
| | 1" | 25,400 | 8 | .3062 | ● | ● | ● | ● |
| | 1 1/8 | 28,575 | 7 | .3063 | ● | ● | ● | ● |
| | 1 1/4 | 31,750 | 7 | .3064 | ● | ● | ● | ● |
| | 1 3/8 | 34,925 | 6 | .3065 | | | | |
| | 1 1/2 | 38,100 | 6 | .3066 | ● | ● | ● | ● |
| | 1 3/4 | 44,450 | 5 | .3068 | | ● | ● | ● |
| | 2" | 50,800 | 4 1/2 | .3070 | | ● | ● | ● |

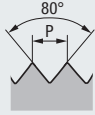
*) ≤ 3/4 Tol. „medium class, before plating“

Gewindelehren für BSF und andere Whitworth-Gewinde auf Anfrage
Thread gauges for BSF and other Whitworth threads upon request

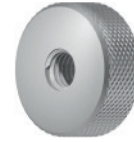
> ø 1 1/2 nur als Einzellehrdorne erhältlich (G-GUT-LD, G-AUS-LD)
available only as separate plug gauges (G-GUT-LD, G-AUS-LD)



Pg
DIN 40430



Lehrenmaße nach DIN 40431
Gauge dimensions acc. DIN 40431



Toleranz · Tolerance
Beschichtung · Coating

| Werkzeug-Ident · Tool ident | | | | L0180100 | L0120100 | L0190100 | L0200500 | L0320500 |
|-----------------------------|------------------------|------------------|-------------------|----------|----------|------------------------|----------|------------------------|
| Nenngröße Nom. size | | | | G-GR-LD | G-GUT-LD | G-AUS-LD ¹⁾ | G-GUT-LR | G-AUS-LR ²⁾ |
| Ø d ₁ | Ø d ₁ mm | P Gg/1" (tpi) | Dimens.- Ident | | | | | |
| Pg 7 | 12,5 | 20 | .4153 | ● | | | ● | ● |
| 9 | 15,2 | 18 | .4154 | ● | | | ● | ● |
| 11 | 18,6 | 18 | .4155 | ● | | | ● | ● |
| 13,5 | 20,4 | 18 | .4156 | ● | | | ● | ● |
| 16 | 22,5 | 18 | .4157 | ● | | | ● | ● |
| 21 | 28,3 | 16 | .4158 | ● | | | ● | ● |
| 29 | 37 | 16 | .4159 | ● | | | ● | ● |
| 36 | 47 | 16 | .4160 | | ● | ● | ● | ● |
| 42 | 54 | 16 | .4161 | | ● | ● | ● | ● |
| 48 | 59,3 | 16 | .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 Lehndorn
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 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
- Kalibrierung
Calibration
- Tech. Info



- 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
- Kalibrieren
Calibration
- Tech. Info

MJ



DIN ISO 5855



Lehrenmaße nach DIN ISO 1502
Gauge dimensions acc. DIN ISO 1502

Toleranz · Tolerance
Beschichtung · Coating

4H

Werkzeug-Ident · Tool ident

L0100110

G-GR-LD

| | ø d ₁ mm | | P mm | Dimens.- Ident | |
|----------|------------------------|---|---------|-------------------|---|
| M | 3 | x | 0,5 | .1229 | ● |
| | 4 | x | 0,7 | .1231 | ● |
| | 5 | x | 0,8 | .1232 | ● |
| | 6 | x | 1 | .1233 | ● |
| | 8 | x | 1 | .1235 | ● |
| | 8 | x | 1,25 | .2026 | ● |
| | 10 | x | 1,25 | .1236 | ● |
| | 10 | x | 1,5 | .2308 | ● |

Gewindelehringe MJ auf Anfrage
Thread ring gauges MJ upon request

UNJC



ASME B1.15



Lehrenmaße nach ANSI/ASME B1.2
Gauge dimensions acc. ANSI/ASME B1.2

Toleranz · Tolerance
Beschichtung · Coating

3B

Werkzeug-Ident · Tool ident

L0100110

G-GR-LD

| | ø d ₁ inch | | P Gg/1" (tpi) | Dimens.- Ident | |
|--------|--------------------------|--|------------------|-------------------|---|
| Nr. 4 | 0.1120 | | 40 | .5479 | ● |
| Nr. 6 | 0.1380 | | 32 | .5481 | ● |
| Nr. 8 | 0.1640 | | 32 | .5482 | ● |
| Nr. 10 | 0.1900 | | 24 | .5483 | ● |
| 1/4 | 0.2500 | | 20 | .5485 | ● |
| 5/16 | 0.3125 | | 18 | .5486 | ● |
| 3/8 | 0.3750 | | 16 | .5487 | ● |

Gewinde-Lehringe für UNJC auf Anfrage
Thread ring gauges for UNJC upon request

UNJF



ASME B1.15



Lehrenmaße nach ANSI/ASME B1.2
Gauge dimensions acc. ANSI/ASME B1.2

Toleranz · Tolerance
Beschichtung · Coating

3B

Werkzeug-Ident · Tool ident

L0100110

G-GR-LD

| | ø d ₁ inch | | P Gg/1" (tpi) | Dimens.- Ident | |
|--------|--------------------------|--|------------------|-------------------|---|
| Nr. 4 | 0.1120 | | 48 | .5505 | ● |
| Nr. 6 | 0.1380 | | 40 | .5507 | ● |
| Nr. 8 | 0.1640 | | 36 | .5508 | ● |
| Nr. 10 | 0.1900 | | 32 | .5509 | ● |
| 1/4 | 0.2500 | | 28 | .5511 | ● |
| 5/16 | 0.3125 | | 24 | .5512 | ● |
| 3/8 | 0.3750 | | 24 | .5513 | ● |

Gewinde-Lehringe für UNJF auf Anfrage
Thread ring gauges for UNJF upon request

EG M (STI)

DIN 8140-2



Lehrenmaße nach DIN ISO 1502
Gauge dimensions acc. DIN ISO 1502

Toleranz · Tolerance
Beschichtung · Coating

6H mod.

Werkzeug-Ident · Tool ident

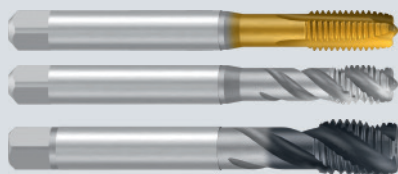
L0100100

G-GR-LD

| Nenngröße Nom. size | P mm | | Dimens.- Ident | ● | | |
|------------------------|------------------|------|-------------------|---|--|--|
| | Ø d ₁ | | | | | |
| EG M | 2,5 | 0,45 | .0965 | ● | | |
| | 3 | 0,5 | .0966 | ● | | |
| | 3,5 | 0,6 | .0967 | ● | | |
| | 4 | 0,7 | .0968 | ● | | |
| | 5 | 0,8 | .0970 | ● | | |
| | 6 | 1 | .0971 | ● | | |
| | 8 | 1,25 | .0973 | ● | | |
| | 10 | 1,5 | .0975 | ● | | |
| | 12 | 1,75 | .0977 | ● | | |
| | 14 | 2 | .0978 | ● | | |
| | 16 | 2 | .0979 | ● | | |
| | 18 | 2,5 | .0980 | ● | | |
| | 20 | 2,5 | .0981 | ● | | |

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

- 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
- Kalibrierung
Calibration
- Tech. Info



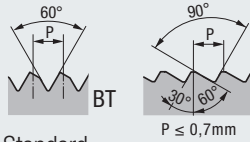
Gewindebohrer für Metrisches
EG-Gewinde siehe Seite 216 - 219

Taps for Metric STI thread,
see page 216 - 219



- 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
- Kalibrieren
Calibration
- Tech. Info

LK-M



EMUGE-Norm · EMUGE Standard

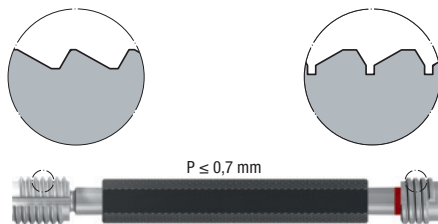


Lehrenmaße nach EMUGE-Norm
Gauge dimensions acc. EMUGE standard

| Werkzeug-Ident · Tool ident | | | L0100100 | | | |
|-----------------------------|------------------------|---------|-------------------|---|--|--|
| | | | G-GR-LD | | | |
| | Ø d ₁ mm | P mm | Dimens.- Ident | | | |
| LK-M | 3 | 0,5 | .1046 | ● | | |
| | 4 | 0,7 | .1048 | ● | | |
| | 5 | 0,8 | .1050 | ● | | |
| | 6 | 1 | .1052 | ● | | |
| | 8 | 1,25 | .1054 | ● | | |
| | 10 | 1,5 | .1056 | ● | | |
| | 12 | 1,75 | .1058 | ● | | |
| | 14 | 2 | .1059 | ● | | |
| | 16 | 2 | .1060 | ● | | |
| | 20 | 2,5 | .1062 | ● | | |
| | 24 | 3 | .1064 | ● | | |

Die Lehrung des EMUGE SELF-LOCK-Gewindes

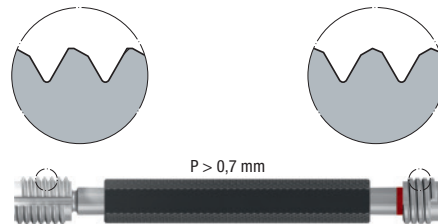
Wir empfehlen unser zweiteiliges Lehrensystem, das der gängigen Praxis der Gut- und Ausschuss-Lehre entspricht und vollkommen für die Gewindeprüfung ausreicht, wenn sichergestellt ist, dass das LK-Gewinde mit unseren profilgetreuen Gewindebohrern hergestellt wird. Es gibt keine allgemein gültige Norm (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.



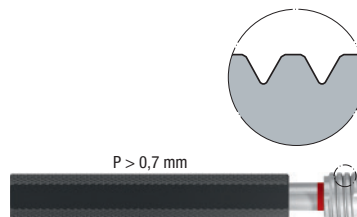
Die Lehrung des Sägezahn-Profiles beruht auf dem gleichen Prinzip, jedoch ist bei Gut- und Ausschusslehren auf die richtige Einschraubseite zu achten.

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.



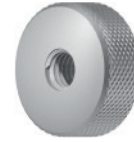
Werden Strehler oder Gewindefräser eingesetzt, empfehlen wir die zusätzliche Verwendung der EMUGE HRPG-Lehre. Diese prüft den unteren Rampenpunkt bzw. eventuelle Rampenwinkelfehler.

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.



DIN 103

Lehrenmaße nach DIN 103-9
Gauge dimensions acc. DIN 103-9



Toleranz · Tolerance
Beschichtung · Coating

7H

7H

7H

7e

7e

Werkzeug-Ident · Tool ident

L0100100

L0120100

L0140100

L0200500

L0300500

G-GR-LD

G-GUT-LD

G-AUS-LD

G-GUT-LR

G-AUS-LR

| Tr | ø d ₁ mm | x | P mm | Dimens.- Ident | Werkzeug-Ident · Tool ident | | | | |
|----|------------------------|-----|---------|-------------------|-----------------------------|----------------------|----------------------|----------------------|----------------------|
| | | | | | L0100100 G-GR-LD | L0120100 G-GUT-LD | L0140100 G-AUS-LD | L0200500 G-GUT-LR | L0300500 G-AUS-LR |
| 8 | x | 1,5 | .7040 | ○ | ○ | ○ | ○ | ○ | |
| 9 | x | 2 | .7042 | ○ | ○ | ○ | ○ | ○ | |
| 10 | x | 2 | .7043 | ○ | ○ | ○ | ○ | ○ | |
| 10 | x | 3 | .7044 | ○ | ○ | ○ | ○ | ○ | |
| 11 | x | 3 | .7045 | ○ | ○ | ○ | ○ | ○ | |
| 12 | x | 3 | .7046 | ○ | ○ | ○ | ○ | ○ | |
| 14 | x | 3 | .7047 | ○ | ○ | ○ | ○ | ○ | |
| 14 | x | 4 | .7048 | ○ | ○ | ○ | ○ | ○ | |
| 16 | x | 4 | .7051 | ○ | ○ | ○ | ○ | ○ | |
| 18 | x | 4 | .7052 | ○ | ○ | ○ | ○ | ○ | |
| 20 | x | 4 | .7053 | ○ | ○ | ○ | ○ | ○ | |
| 22 | x | 5 | .7054 | ○ | ○ | ○ | ○ | ○ | |
| 24 | x | 5 | .7055 | ○ | ○ | ○ | ○ | ○ | |
| 26 | x | 5 | .7057 | ○ | ○ | ○ | ○ | ○ | |
| 28 | x | 5 | .7058 | ○ | ○ | ○ | ○ | ○ | |
| 30 | x | 6 | .7059 | ○ | ○ | ○ | ○ | ○ | |
| 32 | x | 6 | .7060 | ○ | ○ | ○ | ○ | ○ | |
| 34 | x | 6 | .7061 | ○ | ○ | ○ | ○ | ○ | |
| 36 | x | 6 | .7062 | ○ | ○ | ○ | ○ | ○ | |
| 38 | x | 7 | .7063 | ○ | ○ | ○ | ○ | ○ | |
| 40 | x | 7 | .7064 | ○ | ○ | ○ | ○ | ○ | |
| 42 | x | 7 | .7065 | ○ | ○ | ○ | ○ | ○ | |
| 44 | x | 7 | .7066 | ○ | ○ | ○ | ○ | ○ | |
| 46 | x | 8 | .7067 | ○ | ○ | ○ | ○ | ○ | |
| 48 | x | 8 | .7068 | ○ | ○ | ○ | ○ | ○ | |
| 50 | x | 8 | .7069 | ○ | ○ | ○ | ○ | ○ | |
| 52 | x | 8 | .7070 | ○ | ○ | ○ | ○ | ○ | |

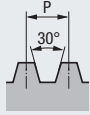
> ø 40 nur als Einzellehrdorne erhältlich (G-GUT-LD, G-AUS-LD)
available only as separate plug gauges (G-GUT-LD, G-AUS-LD)

- Product 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
- Kalibrierung
Calibration
- Tech. Info



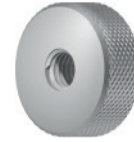
- Product Finder
- M
- MF
- UNC
- UNF
- G
- Rp
R, Rc
- NPT, NPTF
- BSW
- Pg
- MJ
UNJC, UNJF
- EG (STI)
SELF-LOCK
- Tr, Tr-F
Rd
- Glatt
Smooth
- GT, TD
- Zubehör
Accessories
- Kalibrieren
Calibration
- Tech. Info

Tr-F



DIN 103

Lehrenmaße nach DIN 103-9
Gauge dimensions acc. DIN 103-9



Toleranz · Tolerance
Beschichtung · Coating

7H

7H

7H

7e

7e

Werkzeug-Ident · Tool ident

L0100100

L0120100

L0140100

L0200500

L0300500

G-GR-LD

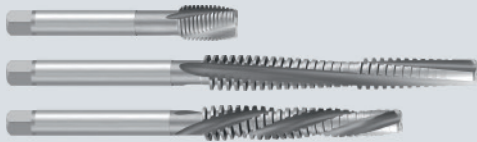
G-GUT-LD

G-AUS-LD

G-GUT-LR

G-AUS-LR

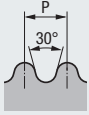
| Tr | ø d ₁ mm | x | P mm | Dimens.- Ident | | | | | |
|----|------------------------|---|---------|-------------------|---------|----------|----------|----------|----------|
| | | | | | G-GR-LD | G-GUT-LD | G-AUS-LD | G-GUT-LR | G-AUS-LR |
| Tr | 9 | x | 1,5 | .7111 | ○ | ○ | ○ | ○ | ○ |
| | 10 | x | 1,5 | .7112 | ○ | ○ | ○ | ○ | ○ |
| | 11 | x | 2 | .7128 | ○ | ○ | ○ | ○ | ○ |
| | 12 | x | 2 | .7129 | ○ | ○ | ○ | ○ | ○ |
| | 14 | x | 2 | .7130 | ○ | ○ | ○ | ○ | ○ |
| | 16 | x | 2 | .7132 | ○ | ○ | ○ | ○ | ○ |
| | 18 | x | 2 | .7133 | ○ | ○ | ○ | ○ | ○ |
| | 20 | x | 2 | .7134 | ○ | ○ | ○ | ○ | ○ |
| | 22 | x | 3 | .7156 | ○ | ○ | ○ | ○ | ○ |
| | 24 | x | 3 | .7157 | ○ | ○ | ○ | ○ | ○ |
| | 26 | x | 3 | .7159 | ○ | ○ | ○ | ○ | ○ |
| | 28 | x | 3 | .7160 | ○ | ○ | ○ | ○ | ○ |
| | 30 | x | 3 | .7161 | ○ | ○ | ○ | ○ | ○ |



Gewindebohrer für Trapez-Gewinde
siehe Seite 232 - 236

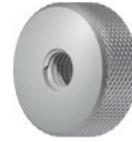
Taps for trapezoidal threads,
see page 232 - 236

Rd



DIN 405

Lehrenmaße nach DIN 405-3
Gauge dimensions acc. DIN 405-3



Toleranz · Tolerance
Beschichtung · Coating

7H

7H

7H

7h

7h

Werkzeug-Ident · Tool ident

L0100200

L0120200

L0140200

L0200600

L0300600

G-GR-LD

G-GUT-LD

G-AUS-LD

G-GUT-LR¹⁾

G-AUS-LR¹⁾

| Rd | ø d ₁ mm | x | P Gg/1" (tpi) | Dimens.- Ident | Werkzeug-Ident · Tool ident | | | | |
|----|------------------------|---|------------------|-------------------|-----------------------------|----------------------|----------------------|------------------------------------|------------------------------------|
| | | | | | L0100200 G-GR-LD | L0120200 G-GUT-LD | L0140200 G-AUS-LD | L0200600 G-GUT-LR ¹⁾ | L0300600 G-AUS-LR ¹⁾ |
| | 8 | x | 10 | .7287 | ● | ● | ● | ● | ● |
| | 9 | x | 10 | .7288 | ● | ● | ● | ● | ● |
| | 10 | x | 10 | .7289 | ● | ● | ● | ● | ● |
| | 11 | x | 10 | .7290 | ● | ● | ● | ● | ● |
| | 12 | x | 10 | .7291 | ● | ● | ● | ● | ● |
| | 14 | x | 8 | .7293 | ● | ● | ● | ● | ● |
| | 16 | x | 8 | .7294 | ● | ● | ● | ● | ● |
| | 18 | x | 8 | .7295 | ● | ● | ● | ● | ● |
| | 20 | x | 8 | .7296 | ● | ● | ● | ● | ● |

¹⁾ Toleranz 7e auf Anfrage
Tolerance 7e upon request

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

Kalibrierung
Calibration

Tech. Info



- 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
- Kalibrieren
Calibration
- Tech. Info

Lehrenmaße nach DIN EN ISO 1938-1
Gauge dimensions acc. DIN EN ISO 1938-1



| | | Toleranz · Tolerance | | |
|-------------------------------------|-------------------|-----------------------------|-------------------------------|-------------------------------|
| | | H7 | H7 | H7 |
| Werkzeug-Ident · Tool ident | | L14000H7 | L14200H7 | L14400H7 |
| Neendurchmesser Nominal diameter | Dimens.- Ident | GR-LD DIN 2245 Form Z | GUT-LD DIN 2246 Form ZG | AUS-LD DIN 2247 Form ZA |
| 3 | .0030 | • | | |
| 3,5 | .0035 | • | | |
| 4 | .0040 | • | | |
| 4,5 | .0045 | • | | |
| 5 | .0050 | • | | |
| 5,5 | .0055 | • | | |
| 6 | .0060 | • | | |
| 7 | .0070 | • | | |
| 8 | .0080 | • | | |
| 9 | .0090 | • | | |
| 10 | .0100 | • | | |
| 11 | .0110 | • | | |
| 12 | .0120 | • | | |
| 13 | .0130 | • | | |
| 14 | .0140 | • | | |
| 15 | .0150 | • | | |
| 16 | .0160 | • | | |
| 17 | .0170 | • | | |
| 18 | .0180 | • | | |
| 19 | .0190 | • | | |
| 20 | .0200 | • | | |
| 21 | .0210 | • | | |
| 22 | .0220 | • | | |
| 23 | .0230 | • | | |
| 24 | .0240 | • | | |
| 25 | .0250 | • | | |
| 26 | .0260 | • | | |
| 27 | .0270 | • | | |
| 28 | .0280 | • | | |
| 30 | .0300 | • | | |
| 32 | .0320 | • | | |
| 33 | .0330 | • | | |
| 34 | .0340 | • | | |
| 35 | .0350 | • | | |
| 36 | .0360 | • | | |
| 37 | .0370 | • | | |
| 40 | .0400 | • | | |
| 44 | .0440 | • | | |
| 45 | .0450 | • | | |
| 46 | .0460 | • | | |
| 47 | .0470 | • | | |
| 48 | .0480 | • | | |
| 50 | .0500 | • | | |
| 52 | .0520 | • | | |
| 55 | .0550 | • | | |
| 58 | .0580 | • | | |
| 60 | .0600 | • | | |
| 62 | .0620 | • | | |
| 65 | .0650 | • | | |
| 68 | .0680 | • | | |
| 70 | .0700 | | • | • |
| 72 | .0720 | | • | • |
| 75 | .0750 | | • | • |
| 78 | .0780 | | • | • |
| 80 | .0800 | | • | • |

> ø 65 nur als Einzellehndorne 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.

M



Für geschnittene Gewinde
For cut threads

DIN 13

Lehrenmaße nach DIN ISO 1502
Gauge dimensions acc. DIN ISO 1502



Toleranz · Tolerance

6H

Werkzeug-Ident · Tool ident

L0160100

| Metrische Gewinde Metric threads | Innengewinde-Kerndurchmesser Minor dia. of the internal thread | | Dimens.- Ident | Glatt-GR-LD |
|-------------------------------------|---|--------|-------------------|-------------|
| | min. | max. | | |
| M 3 | 2,459 | 2,599 | .0030 | ● |
| 3,5 | 2,850 | 3,010 | .0035 | |
| 4 | 3,242 | 3,422 | .0040 | ● |
| 4,5 | 3,688 | 3,878 | .0045 | |
| 5 | 4,134 | 4,334 | .0050 | ● |
| 6 | 4,917 | 5,153 | .0060 | ● |
| 7 | 5,917 | 6,153 | .0070 | ● |
| 8 | 6,647 | 6,912 | .0080 | ● |
| 9 | 7,647 | 7,912 | .0090 | |
| 10 | 8,376 | 8,676 | .0100 | ● |
| 11 | 9,376 | 9,676 | .0111 | |
| 12 | 10,106 | 10,441 | .0112 | ● |
| 14 | 11,835 | 12,210 | .0114 | |
| 16 | 13,835 | 14,210 | .0116 | ● |
| 18 | 15,294 | 15,744 | .0118 | |
| 20 | 17,294 | 17,744 | .0120 | |

M



Für geformte Gewinde
For cold-formed threads

DIN 13

Lehrenmaße nach DIN ISO 1502
Gauge dimensions acc. DIN ISO 1502

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.

Toleranz · Tolerance

7H

Werkzeug-Ident · Tool ident

L0160105

| Metrische Gewinde Metric threads | Innengewinde-Kerndurchmesser Minor dia. of the internal thread | | Dimens.- Ident | Glatt-GR-LD |
|-------------------------------------|---|--------|-------------------|-------------|
| | min. | max. | | |
| M 3 | 2,459 | 2,639 | .0030 | ● |
| 3,5 | 2,850 | 3,050 | .0035 | |
| 4 | 3,242 | 3,466 | .0040 | ● |
| 5 | 4,134 | 4,384 | .0050 | ● |
| 6 | 4,917 | 5,217 | .0060 | ● |
| 7 | 5,917 | 6,217 | .0070 | ● |
| 8 | 6,647 | 6,982 | .0080 | ● |
| 10 | 8,376 | 8,751 | .0100 | ● |
| 12 | 10,106 | 10,531 | .0112 | ● |
| 14 | 11,835 | 12,310 | .0114 | |
| 16 | 13,835 | 14,310 | .0116 | ● |

Weitere Ausführungen auf Anfrage
Further designs upon request

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

Kalibrierung
Calibration

Tech. Info



- 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
- Kalibrieren
Calibration
- Tech. Info

M



DIN 13

Lehrenmaße nach DIN ISO 1502
Gauge dimensions acc. DIN ISO 1502

Analog Analogue



Digital Digital



Toleranz · Tolerance

6H

6H

6H

6H

Max. Gewindetiefe
Max. thread depth

4 x D

2,5 x D

2,5 x D

2,5 x D

Werkzeug-Ident · Tool ident

L1010100

L1040100

L1020200

L1050200

| | Ø d ₁ mm | P mm | Dimens.- Ident |
|----|------------------------|---------|-------------------|
| M | 2 | 0,4 | .0020 |
| | 3 | 0,5 | .0030 |
| | 4 | 0,7 | .0040 |
| | 5 | 0,8 | .0050 |
| | 6 | 1 | .0060 |
| | 8 | 1,25 | .0080 |
| | 10 | 1,5 | .0100 |
| | 12 | 1,75 | .0112 |
| | 14 | 2 | .0114 |
| | 16 | 2 | .0116 |
| | 18 | 2,5 | .0118 |
| | 20 | 2,5 | .0120 |
| | 22 | 2,5 | .0122 |
| 24 | 3 | .0124 | |

GT-GR-LD
„analog“

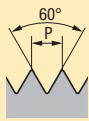
TD-Bit-GUT
„analog“

GT-GR-LD
„digital IW“

TD-Bit-GUT
„digital IW“

1) EG-Konformitätserklärung siehe Seite 646
EC Declaration of Conformity, see page 646

MF



Metrisches ISO-Fingewinde DIN 13
im gleichen Gewindeabmessungs-Bereich auf Anfrage erhältlich

ISO Metric fine threads DIN 13
with identical thread dimensions are available on request



Gefühlsratsche für Gewindetiefen-Lehndorne GT-GR-LD „analog“ und „digital IW“ auf Anfrage verfügbar
Torque limiter for thread depth plug gauges GT-GR-LD „analog“ and „digital IW“ available on request

Zubehör Accessories



Abziehhülsen zum Austausch des Gut-Lehrenkörpers für alle Ausführungen
Pulling sleeves for exchange of the go gauge body for all versions

» 628



USB-Funkempfänger i-Stick und Software für Ausführungen „digital IW“
USB Wireless receiver i-Stick and software for versions „digital IW“

» 629

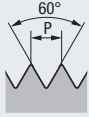


Hakenschlüssel zum Anziehen der Kontermutter bei GT-GR-LD
Hook spanner for tightening the counter nut of GT-GR-LD

» 629

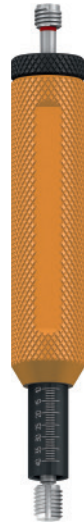
UNC

ASME B1.1



Analog
Analogue

Digital
Digital



Lehrenmaße nach ANSI/ASME B1.2
Gauge dimensions acc. ANSI/ASME B1.2

Toleranz · Tolerance

2B

2B

2B

2B

Max. Gewindetiefe
Max. thread depth

4 x D

2,5 x D

2,5 x D

2,5 x D

Werkzeug-Ident · Tool ident

L1010100

L1040100

L1020200

L1050200

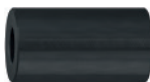
| ø d ₁ inch | P Gg/1" (tpi) | Dimens.- Ident | Werkzeug-Ident · Tool ident | | | |
|--------------------------|------------------|-------------------|-----------------------------|------------------------|--------------------------|----------------------------|
| | | | GT-GR-LD „analog“ | TD-Bit-GUT „analog“ | GT-GR-LD „digital IW“ | TD-Bit-GUT „digital IW“ |
| Nr. 1 0.0730 64 | .5000 | ● | | | | |
| Nr. 2 0.0860 56 | .5001 | ● | | | | |
| Nr. 3 0.0990 48 | .5002 | ● | | | | |
| Nr. 4 0.1120 40 | .5003 | ● | | | | |
| Nr. 5 0.1250 40 | .5004 | ● | | ● | ● | ● |
| Nr. 6 0.1380 32 | .5005 | ● | | ● | ● | ● |
| Nr. 8 0.1640 32 | .5006 | ● | | ● | ● | ● |
| Nr. 10 0.1900 24 | .5007 | ● | | ● | ● | ● |
| Nr. 12 0.2160 24 | .5008 | ● | | ● | ● | ● |
| 1/4 0.2500 20 | .5009 | ● | | ● | ● | ● |
| 5/16 0.3125 18 | .5010 | ● | | ● | ● | ● |
| 3/8 0.3750 16 | .5011 | ● | | ● | ● | ● |
| 7/16 0.4375 14 | .5012 | ● | | ● | ● | ● |
| 1/2 0.5000 13 | .5013 | ● | | ● | ● | ● |
| 9/16 0.5625 12 | .5014 | ● | | ● | ● | ● |
| 5/8 0.6250 11 | .5015 | ● | | ● | ● | ● |
| 3/4 0.7500 10 | .5016 | ● | | ● | ● | ● |
| 7/8 0.8750 9 | .5017 | ● | | ● | ● | ● |

1) EG-Konformitätserklärung siehe Seite 646
EC Declaration of Conformity, see page 646



Gefühlsratsche für Gewindetiefen-Lehrdorne GT-GR-LD „analog“ und „digital IW“ auf Anfrage verfügbar
Torque limiter for thread depth plug gauges GT-GR-LD „analogue“ and „digital IW“ available on request

Zubehör
Accessories



Abziehhülsen zum Austausch des Gut-Lehrenkörpers für alle Ausführungen
Pulling sleeves for exchange of the go gauge body for all versions

» 628



USB-Funkempfänger i-Stick und Software für Ausführungen „digital IW“
USB Wireless receiver i-Stick and software for versions „digital IW“

» 629



Hakenschlüssel zum Anziehen der Kontermutter bei GT-GR-LD
Hook spanner for tightening the counter nut of GT-GR-LD

» 629

- 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
- Kalibrierung
Calibration
- Tech. Info



- 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
- Kalibrieren
Calibration
- Tech. Info

UNF

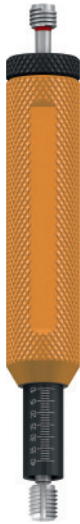
ASME B1.1



Lehrenmaße nach ANSI/ASME B1.2
Gauge dimensions acc. ANSI/ASME B1.2

Analog
Analogue

Digital
Digital



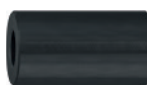
| | | | | Toleranz · Tolerance | | | |
|--|------------------|-------------|-------|----------------------|------------------------|--------------------------|----------------------------|
| | | | | 2B | 2B | 2B | 2B |
| Max. Gewindetiefe Max. thread depth | | | | 4 x D | 2,5 x D | 2,5 x D | 2,5 x D |
| Werkzeug-Ident · Tool ident | | | | L1010100 | L1040100 | L1020200 | L1050200 |
| | | | | GT-GR-LD „analog“ | TD-Bit-GUT „analog“ | GT-GR-LD „digital IW“ | TD-Bit-GUT „digital IW“ |
| Nr. | Ø d ₁ | | P | Dimens.- Ident | | | |
| | inch | Gg/1" (tpi) | | | | | |
| Nr. 0 | 0.0600 | 80 | .5033 | ● | | | |
| Nr. 1 | 0.0730 | 72 | .5034 | ● | | | |
| Nr. 2 | 0.0860 | 64 | .5035 | ● | | | |
| Nr. 3 | 0.0990 | 56 | .5036 | ● | | | |
| Nr. 4 | 0.1120 | 48 | .5037 | ● | | | |
| Nr. 5 | 0.1250 | 44 | .5038 | ● | ● | | |
| Nr. 6 | 0.1380 | 40 | .5039 | ● | ● | ● | ● |
| Nr. 8 | 0.1640 | 36 | .5040 | ● | ● | ● | ● |
| Nr. 10 | 0.1900 | 32 | .5041 | ● | ● | ● | ● |
| Nr. 12 | 0.2160 | 28 | .5042 | ● | ● | ● | ● |
| 1/4 | 0.2500 | 28 | .5043 | ● | ● | ● | ● |
| 5/16 | 0.3125 | 24 | .5044 | ● | ● | ● | ● |
| 3/8 | 0.3750 | 24 | .5045 | ● | ● | ● | ● |
| 7/16 | 0.4375 | 20 | .5046 | ● | ● | ● | ● |
| 1/2 | 0.5000 | 20 | .5047 | ● | ● | ● | ● |
| 9/16 | 0.5625 | 18 | .5048 | ● | | ● | |
| 5/8 | 0.6250 | 18 | .5049 | ● | | ● | |
| 3/4 | 0.7500 | 16 | .5050 | ● | | | |
| 7/8 | 0.8750 | 14 | .5051 | ● | | | |

1) EG-Konformitätserklärung siehe Seite 646
EC Declaration of Conformity, see page 646



Gefühlsratsche für Gewindetiefen-Lehrrdorne GT-GR-LD „analog“ und „digital IW“ auf Anfrage verfügbar
Torque limiter for thread depth plug gauges GT-GR-LD „analog“ and „digital IW“ available on request

Zubehör Accessories



Abziehhülsen zum Austausch des Gut-Lehrenkörpers für alle Ausführungen
Pulling sleeves for exchange of the go gauge body for all versions

» 628



USB-Funkempfänger i-Stick und Software für Ausführungen „digital IW“
USB Wireless receiver i-Stick and software for versions „digital IW“

» 629

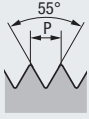


Hakenschlüssel zum Anziehen der Kontermutter bei GT-GR-LD
Hook spanner for tightening the counter nut of GT-GR-LD

» 629

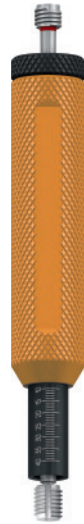
G (BSP)

DIN EN ISO 228



Analog
Analogue

Digital
Digital



Lehrenmaße nach DIN EN ISO 228-2
Gauge dimensions acc. DIN EN ISO 228-1

Toleranz · Tolerance

Max. Gewindetiefe
Max. thread depth

4 x D

2,5 x D

2,5 x D

2,5 x D

Werkzeug-Ident · Tool ident

L1010100

L1040100

L1020200

L1050200

| Nenngröße Nom. size | Ø d ₁ mm | P Gg/1" (tpi) | Dimens.- Ident | | | | |
|------------------------|------------------------|------------------|-------------------|----------------------|------------------------|--------------------------|----------------------------|
| | | | | GT-GR-LD „analog“ | TD-Bit-GUT „analog“ | GT-GR-LD „digital IW“ | TD-Bit-GUT „digital IW“ |
| G 1/16 | 7,72 | 28 | .4034 | ● | ● | ● | ● |
| 1/8 | 9,73 | 28 | .4035 | ● | ● | ● | ● |
| 1/4 | 13,16 | 19 | .4036 | ● | ● | ● | ● |
| 3/8 | 16,66 | 19 | .4037 | ● | ● | ● | ● |
| 1/2 | 20,96 | 14 | .4038 | ● | ● | ● | ● |
| 5/8 | 22,91 | 14 | .4039 | ● | ● | ● | ● |

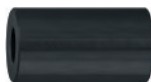
1) EG-Konformitätserklärung siehe Seite 646
EG Declaration of Conformity, see page 646

- 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
- Kalibrierung
Calibration
- Tech. Info



Gefühlsratsche für Gewindetiefen-Lehrdorne GT-GR-LD „analog“ und „digital IW“ auf Anfrage verfügbar
Torque limiter for thread depth plug gauges GT-GR-LD „analogue“ and „digital IW“ available on request

Zubehör
Accessories



Abziehhülsen zum Austausch des Gut-Lehrenkörpers für alle Ausführungen
Pulling sleeves for exchange of the go gauge body for all versions

» 628



USB-Funkempfänger i-Stick und Software für Ausführungen „digital IW“
USB Wireless receiver i-Stick and software for versions „digital IW“

» 629



Hakenschlüssel zum Anziehen der Kontermutter bei GT-GR-LD
Hook spanner for tightening the counter nut of GT-GR-LD

» 629

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry



- Product Finder
- M
- MF
- UNC
- UNF
- G
- Rp
R, Rc
- NPT, NPTF
- BSW
- Pg
- MJ
UNJC, UNJF
- EG (STI)
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Accessories
- Kalibrieren
Calibration
- Tech. Info

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. Akkuschauber, 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

Werkzeug-Ident · Tool ident

L0091070

| Metrische Gewinde Metric threads | Unified-Gewinde Unified threads | Whitworth-Rohrgewinde Whitworth pipe threads | Empf. Drehmoment Recommended torque | Dimens.-Ident |
|-------------------------------------|------------------------------------|---|--|---------------|
| M 2 - M 3 | Nr. 1 - Nr. 4 | — | 6 Ncm | .02.5 |
| M 4 - M 6 | Nr. 5 - Nr. 12 | — | 8 Ncm | .04 |
| M 8 - M10 | 1/4 - 3/8 | G 1/16 - G 1/8 | 14 Ncm | .05.5 |
| M12 - M14 | 7/16 - 1/2 | G 1/4 | 20 Ncm | .07 |
| M16 - M18 | 9/16 - 5/8 | G 3/8 | 30 Ncm | .09 |
| M20 - M24 | 3/4 - 15/16 | G 1/2 - G 5/8 | 40 Ncm | .12 |

GUT-Lehrenkörper auf Anfrage (nicht im Lieferumfang enthalten)
Gauging bodies "GO" upon request (not included)

Abziehhülsen

Zum Austausch der Lehrenkörper bei Gewindetiefen-Lehrdornen

Pulling sleeves

For the exchange of gauging bodies in thread depth plug gauges



Werkzeug-Ident · Tool ident

L0091040

| Aufnahme-Durchmesser Seat diameter | Dimens.-Ident |
|---------------------------------------|---------------|
| 2,5 | .02.5 |
| 4 | .04 |
| 5,5 | .05.5 |
| 7 | .07 |
| 9 | .09 |
| 12 | .12 |



**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



| | | |
|------------------------------------|----------------------|-----------------|
| Werkzeug-Ident · Tool ident | | L0091500 |
| | Dimens.-Ident | |
| i-Stick | .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>

Hakenschlüssel

Zum Festziehen der Kontermutter

Hook spanner

For tightening the counter nut



| Werkzeug-Ident · Tool ident | | | | | L0091410 |
|------------------------------------|-------------------------------------|------------------------------------|---|---------------|-----------------|
| Nenndurchmesser Nominal dia. | Metrische Gewinde Metric threads | Unified-Gewinde Unified threads | Whitworth-Rohrgewinde Whitworth pipe threads | Dimens.-Ident | |
| ≤ 3 mm | M 2 - M 3 | Nr. 1 - Nr. 4 | – | .02.5 | ● |
| > 3 - 6 mm | M 4 - M 6 | Nr. 5 - Nr. 12 | – | .04 | ● |
| > 6 - 10 mm | M 8 - M10 | 1/4 - 3/8 | G 1/16 - G 1/8 | .05.5 | ● |
| > 10 - 14 mm | M12 - M14 | 7/16 - 1/2 | G 1/4 | .07 | ● |
| > 14 - 18 mm | M16 - M18 | 9/16 - 5/8 | G 3/8 | .09 | ● |
| > 18 - 24 mm | M20 - M24 | 3/4 - 15/16 | G 1/2 - G 5/8 | .12 | ● |

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
- G
- Rp
R, Rc
- NPT, NPTF
- BSW
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UNJC, UNJF
- EG (STI)
SELF-LOCK
- Tr, Tr-F
Rd
- Glatt
Smooth
- GT, TD
- Zubehör
Accessories
- Kalibrieren
Calibration
- Tech. Info





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

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 betriebsinterne Kalibrierung unter Verwendung der Bezugsnormale und Normalmesseinrichtungen an nationale Normale angeschlossen.

Als Ansprechpartner dient Ihnen die gesamte Vertriebsorganisation des Firmenverbundes EMUGE-FRANKEN (www.emuge-franken.com/vertrieb).

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 in-house calibrations using reference standards and standard measuring devices

For more information please contact the sales organisation of the company association EMUGE-FRANKEN (www.emuge-franken.com/sales).

- 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
- Kalibrieren, Calibration
- Tech. Info





Deutsche Akkreditierungsstelle GmbH

Beliehene gemäß § 8 Absatz 1 AkkStelleG i.V.m. § 1 Absatz 1 AkkStelleGBV
Unterzeichnerin der Multilateralen Abkommen
von EA, ILAC und IAF zur gegenseitigen Anerkennung

Akkreditierung



Die Deutsche Akkreditierungsstelle GmbH bestätigt hiermit, dass die

DECOM UGK Werkzeugtechnik GmbH
Gartenstraße 7, 91207 Lauf a. d. Pegnitz

für ihr Kalibrierlaboratorium:

DECOM UGK GmbH
Nürnberger Straße 96 – 100, 91207 Lauf a. d. Pegnitz

die Kompetenz nach DIN EN ISO/IEC 17025:2005 besitzt, Kalibrierungen in folgenden Bereichen durchzuführen:

Dimensionelle Messgrößen

Länge

- Gewinde
- Längenmessmittel
- Durchmesser
- Formabweichung

Die Akkreditierungsurkunde gilt nur in Verbindung mit dem Bescheid vom 16.08.2012 mit der Akkreditierungsnummer D-K-17567-01 und ist gültig bis 15.08.2017. Sie besteht aus diesem Deckblatt, der Rückseite des Deckblatts und der folgenden Anlage mit insgesamt 3 Seiten.

Registrierungsnummer der Urkunde: **D-K-17567-01-00**

Braunschweig, 16.08.2012

Im Auftrag
Dr. Michael Wolf
Leiter Abteilung 5

Siehe Hinweise auf der Rückseite

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

Prüflabor zur Prüfmittelüberwachung gemäß DIN ISO 9001 und VDI/VDE-Richtlinien 2618ff. Akkreditiert nach DIN EN ISO/IEC 17025.

Decom UGK GmbH
Nürnberger Str. 96-100
D-91207 Lauf a.d. Pegnitz

1 L999999. 1
Kalibrierschein-Nr.
Calibration Certificate No.

Gegenstand Gewinde-Grenzlehndrom
Object

2 Hersteller EMUGE
Manufacturer

Type M 18x2.5-6H
Type

3 Fabrikate/Serien-Nr. 0916
Serial Number

4 Auftraggeber Musterkunde
Customer
Musterstraße 10
D-9999 Musterstadt

5 Auftragsnummer 123456789
Work order No.

Anzahl der Seiten des Kalibrierscheines 2
Number of pages of the certificate

Datum der Kalibrierung 31.01.2013
Date of calibration

6 Prüfer S. Göbel
Inspector

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.

Decom UGK GmbH
Nürnberger Str. 96 - 100
91207 Lauf a.d. Pegnitz
Fax: +49(0)9123 186 200
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Geschäftsführer:
Ulrike Gimpel-Krienereder
Peter Ludwig
AG Nürnberg HRB 9730

HypoVereinsbank Lauf
BLZ 780 200 70
Konto-Nr. 1000 237 007

UGK-Ident Nr.:
DE 133 541 469

Prüfmitteltyp : Gewinde-Grenzlehndrom

L999999. 1

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 16,3901 mm | - 0,0019 mm | |
| B1 | 16,3912 mm | - 0,0008 mm | |
| A1 | Ausschußseite 16,6078 mm | + 0,0008 mm | |
| B1 | 16,6072 mm | + 0,0002 mm | |

7 Bemerkung

8 Prüferentscheid
Prüfmittel hält die Spezifikationen ein

9 Prüfgerät ULM 450 N: 5382; Dreirahtmethode
10 Anschluß ans nationales Normal
Lehndrom.metas:111-04876
11 Messunsicherheit (P=95%)
U = (2,50 + L x 1,25) µm, L in m

12 Prüfanweisung
VDI/VDE/DGQ-Richtlinie 2618, Blatt 4.8

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).

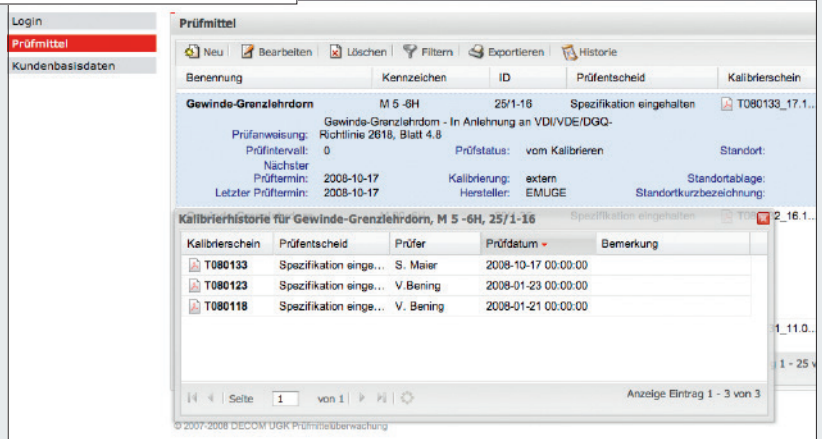
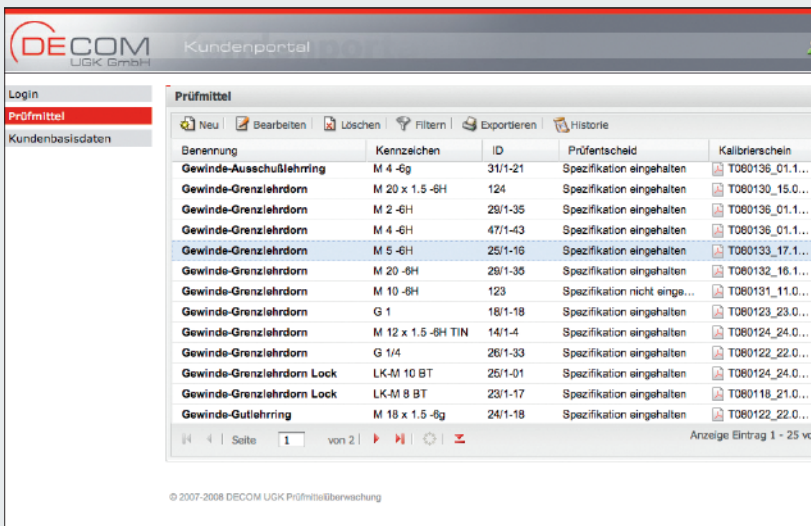
- 1** Kalibrierschein-Nr. zur eindeutigen Zuordnung der Kalibrierung
Number of calibration certificate to clearly assign the calibration
- 2** Messmittelhersteller
Manufacturer of measuring device
- 3** Eindeutige Ident-Nr. des Messmittels zur Zuordnung des Kalibrierscheines
Unique ID number of measuring device for clear assignment to calibration certificate
- 4** Name und Anschrift des Kunden
Name and address of customer
- 5** Auftragsnummer
Order number
- 6** Verantwortlicher Prüfer für den Prüferentscheid
Inspecting person responsible for the inspection decision

- 7** Besondere Hinweise und Bemerkungen zum Messmittel
Specific notes and remarks concerning the measuring device
- 8** Besondere Hinweise und Bemerkungen zum Prüferentscheid
Specific notes and remarks concerning the inspection decision
- 9** Für die Kalibrierung verwendetes Prüfgerät
Measuring device used for the calibration
- 10** Angabe des Bezugsnormales zur Rückführung des Messwertes
Information on reference standard for traceability of measuring values
- 11** Messunsicherheitsangabe
Information on measurement uncertainty
- 12** Angabe der Prüfanweisung
Information on inspection directives

- Product Finder
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- 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
- Kalibrieren
Calibration
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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 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 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 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.

Technische Informationen

Technical Information

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Product
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M

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SELF-LOCKTr, Tr-F
RdGlatt
Smooth

GT, TD

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Die Technischen Informationen der jeweiligen Kapitel dieses Kataloges sind in vielen Landessprachen auch als separate Druckerzeugnisse verfügbar. Bitte wenden Sie sich an den für Sie zuständigen Vertriebspartner.

The technical information complementing the various chapters of this catalogue is available also as a separate printed booklet in many different languages. Please speak to your usual sales contact.

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6.1 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 Prüfmethode 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.

6.2 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

6.1 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.

6.2 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



6.3 EMUGE-Gewindelehren – Prüftechnik in Perfektion

6.3 EMUGE thread gauges – Gauging technology to perfection

Product
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M

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UNF

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Rp
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NPT, NPTF

BSW

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MJ
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SELF-LOCKTr, Tr-F
RdGlatt
Smooth

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Zubehör
AccessoriesKalibrieren
Calibration

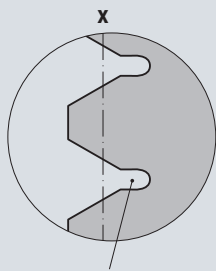
Tech. Info

Ab \varnothing 5,5 mm erhält jeder Gutlehndorn eine **Schmutznut**, dadurch sichere Lehrung auch unter schwierigen Einsatzbedingungen

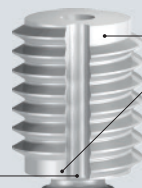
Starting from dia. 5.5 mm each go plug gauge is provided with a dirt flute, for safe gauging even under difficult conditions

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



Funktionsgerechte **Kern-Freiarbeitung** der Ausschuss-Gewindelehren
Recessed minor thread diameter of the no-go gauges for safe function



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



Lehrgriff 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)

Rote Farbkennzeichnung der Ausschusseite
Red marking of the no-go side



Einführansatz

zur verbesserten Einführung des Ausschusslehrenkörpers

Reduced thread start

for easy insertion of the no-go gauge body

$\leq \varnothing$ 40 mm

Form R nach DIN 2240-1 mit Einsteckkegel.
Gut- und Ausschusseite auf einem Lehrgriff.

$> \varnothing$ 40 mm und $\leq \varnothing$ 200 mm

Ähnlich DIN 2240-2 mit Kugelbefestigung.
Gut- und Ausschusseite auf je einem Lehrgriff.
Sicherer Halt bei Lehrung 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.



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6.4 Gewindelehren für Innengewinde und glatte Lehren für Gewindekerndurchmesser

Für die Lehrung des Innengewindes werden der Gewinde-Gutlehrdorn und der Gewinde-Ausschusslehrdorn verwendet. Bis Gewindedurchmesser 40 mm sind Gut- und Ausschusslehrdorn auf einen gemeinsamen Griff montiert und werden als Gewinde-Grenzlehdorn bezeichnet. Für Ausnahmefälle sind Griffe für Gewinde-Grenzlehdorne bis Gewindedurchmesser 62 mm nach DIN 2240-2 genormt. Zur Lehrung des Innengewinde-Kerndurchmessers wird ein (glatter) Gut- und Ausschusslehrdorn empfohlen.

G-GUT-LD



Gewinde-Gutlehrdorn

- Der Gewinde-Gutlehrdorn prüft das sogenannte Paarungsmaß des Innengewindes und die Einschraubbarkeit. Er prüft hierbei das Kleinmaß des Innengewinde-Flankendurchmessers D_2 einschließlich gewisser Formabweichungen im Gewinde, z.B. Steigungs- und Gewindeprofilwinkel-Abweichungen. Außerdem prüft er auch das Kleinmaß des Außendurchmessers. Nicht geprüft wird der Kerndurchmesser D_1 des Innengewindes.
- Der Gewinde-Gutlehrdorn muss sich von Hand ohne Anwendung besonderer Kraft auf ganze Länge des Werkstückgewindes einschrauben lassen. Die zulässige Abnutzung des Gewinde-Gutlehdorns wird durch Messen nach der Drei-Draht-Methode festgestellt. Der Gewinde-Gutlehdorn unterliegt stärkerer Abnutzung und soll regelmäßig überprüft werden. EMUGE empfiehlt deshalb, die Gewinde-Gutlehdorne in hartverchromter oder beschichteter Ausführung zu verwenden.
- Baumaße der Gewinde-Gutlehdorne nach DIN 2281 und DIN 2282.
- Der Gewinde-Gutlehdorn hat volles Gewindeprofil auf seiner Gewindelänge. Es ist zu beachten, dass die Gewindelänge nicht kleiner als 80% der Einschraublänge des Werkstückgewindes ist. Gewinde-Gutlehdorne ab Gewindedurchmesser 5,5 mm werden von EMUGE mit einer Schmutznut versehen.
- Nach DIN ISO 1502 sind keine sogenannten Abnahme-Gutlehdorne genormt.
- Es ist empfehlenswert, die neuen Lehdorne immer in der Fertigung zu benutzen und diejenigen, welche an der Abnutzungsgrenze liegen, für die Abnahme vorzusehen.

6.4 Thread gauges for internal threads and smooth gauges for thread minor diameters

The go thread plug gauge and the no-go thread plug gauge are used for the gauging of internal threads. Go and no-go plug gauges are mounted on a common handle for thread diameters up to 40 mm and are designated as go/no-go thread plug gauges. For exceptional cases handles for go/no-go thread plug gauges up to a thread diameter of 62 mm are standardised in DIN 2240-2. A (smooth) go and no-go plug gauge is recommended for gauging the internal thread minor diameter.

Go thread plug gauge

- The go thread plug gauge checks the so-called "mating size" of the internal thread and the screwing-in capability. In doing so, it checks the smallest size of the internal thread pitch diameter D_2 including certain form deviations in the thread, e.g. pitch and thread profile angle deviations. It also checks the smallest size of the major diameter. The minor diameter D_1 of the internal thread is not checked.
- The go thread plug gauge must be able to be screwed by hand into the full length of the workpiece thread without using particular force. The permissible wear of the go thread plug gauge is determined by measurement based on the three-wire-method. The go thread plug gauge is subject to heavy wear and should be checked at regular intervals. EMUGE therefore recommends using go thread plug gauges in the hard-chrome-plated or coated version.
- Dimensions of the go thread plug gauge acc. DIN 2281 and DIN 2282.
- The go thread plug gauge has a full thread profile along its thread length. It should be noted that the thread length is not less than 80% of the screw-in length of the workpiece thread. Go thread plug gauges, starting from a thread diameter of 5.5 mm, are provided by EMUGE with a dirt flute.
- According to DIN ISO 1502, no so-called "acceptance" go plug gauges are standardised.
- It is advisable to always use the new plug gauges for production and keep those that are close to the wear limit for acceptance.

G-AUS-LD



Gewinde-Ausschusslehdorn

- Der Gewinde-Ausschusslehdorn prüft, ob der Istflankendurchmesser des Werkstück-Innengewindes das vorgeschriebene Größtmaß überschreitet. Der Innengewinde-Außendurchmesser und Innengewinde-Kerndurchmesser wird nicht geprüft.
- Der Gewinde-Ausschusslehdorn darf sich von Hand ohne Anwendung besonderer Kraft in das Werkstückgewinde (von beiden Seiten) nicht mehr als zwei Umdrehungen einschrauben lassen. Die zwei Umdrehungen werden beim Ausschrauben des Lehdorns festgestellt.
- Der Gewinde-Ausschusslehdorn hat eine Gewindelänge von mindestens drei Gängen. Das Gewindeprofil hat verkürzte Flanken.
- Die Lehren sind mit einem roten Farbring markiert.
- Baumaße nach DIN 2283 und DIN 2284.

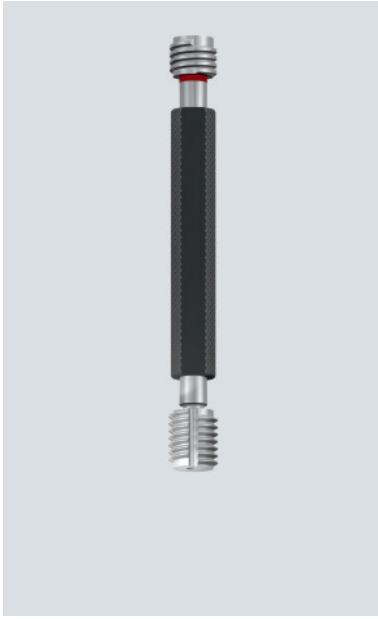
No-go thread plug gauge

- The no-go thread plug gauge checks whether the actual pitch diameter of the workpiece internal thread exceeds the prescribed largest size. The internal thread major diameter and internal thread minor diameter are not checked.
- It must not be possible to screw the no-go thread plug gauge into the workpiece thread by hand for more than two revolutions (from both sides) without the use of particular force. The two revolutions are determined on screwing out the plug gauge.
- The no-go thread plug gauge has a thread length of at least three threads. The thread profile has a truncated crest.
- The gauges are marked with a red coloured ring.
- Dimensions acc. DIN 2283 and DIN 2284.

6.4 Gewindelehren für Innengewinde und glatte Lehren für Gewindekerndurchmesser

6.4 Thread gauges for internal threads and smooth gauges for thread minor diameters

G-GR-LD



Gewinde-Grenzlehndorn

- Der Gewinde-Grenzlehndorn ist die Kombination von Gewinde-Gutlehndorn und Gewinde-Ausschusslehndorn auf einem Griff.
- Die Baumaße der Gewinde-Grenzlehndorne sind bis Nennmaßdurchmesser 40 mm nach DIN 2280 festgelegt. Die Funktionsweise entspricht den vorher beschriebenen Gewinde-Gut- und -Ausschusslehndornen.

Go/no-go thread plug gauge

- The go/no-go thread plug gauge is the combination of a go thread plug gauge and a no-go thread plug gauge on one handle.
- The dimensions of the go/no-go thread plug gauges are specified up to a nominal dimension diameter of 40 mm in DIN 2280. The functionality corresponds to the go and no-go thread plug gauges previously described.

Glatt-GR-LD



Lehren für den Innengewinde-Kerndurchmesser

- Der Innengewinde-Kerndurchmesser D_1 wird mit einem glatten, zylindrischen Gut- und Ausschusslehndorn bzw. Grenzlehndorn geprüft. Da sich der Kerndurchmesser durch das Gewindeschneiden verändern kann, ist eine Überprüfung nach der Gewindefertigstellung notwendig. Für geformte Innengewinde sind beim Metrischen Gewinde eigene Lehren für die erweiterte Kerndurchmesser-Toleranz verfügbar. Grundsätzlich soll vor Lehrung des Innengewinde-Flankendurchmessers eine Prüfung des Innengewinde-Kerndurchmessers erfolgen.
- Der glatte Gutlehndorn muss sich von Hand ohne Anwendung besonderer Kraft durch das Werkstückgewinde führen lassen.
- Der glatte Ausschusslehndorn darf sich in das Werkstückgewinde von beiden Seiten nicht tiefer als eine Steigung ($1 \times P$), vom Gewindefang aus, einführen lassen.

Gauges for the internal thread minor diameter

- The internal thread minor diameter D_1 is checked with a smooth, cylindrical go and no-go plug gauge or a go/no-go plug gauge. As the minor diameter can change through thread tapping, an inspection is required after the thread has been completed. Specific gauges are available to check the extended minor diameter tolerance of cold-formed Metric internal threads. Basically, the internal thread minor diameter should be checked before gauging the internal thread pitch diameter.
- It must be possible to guide the smooth go plug gauge by hand through the workpiece thread without the use of particular force.
- It must not be possible to insert the smooth no-go plug gauge into the workpiece thread from both sides deeper than one pitch ($1 \times P$) from the start of the thread.

Product Finder

M

MF

UNC

UNF

G

Rp
R, Rc

NPT, NPTF

BSW

Pg

MJ
UNJC, UNJFEG (STI)
SELF-LOCKTr, Tr-F
RdGlatt
Smooth

GT, TD

Zubehör
AccessoriesKalibrieren
Calibration

Tech. Info



| |
|----------------------------|
| 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 |
| Kalibrieren Calibration |
| Tech. Info |

6.5 Gewindelehren für Außengewinde und glatte Lehren für Gewindeaußendurchmesser

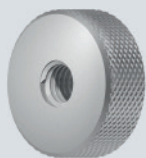
Für die Leh rung des Außengewindes zur Gutseite wird ein Gewinde-Gutlehh ring verwendet, zur Ausschussseite ein Gewinde-Ausschusslehh ring.

Die Gewinde-Lehrringe sollen mit Gewinde-Abnutzungs-Prüfdornen regelmäßig überwacht werden. Zur Prüfung, insbesondere von neuen Lehrringen, werden Gut- und Ausschuss-Prüfdorne (Gegenlehrdorne) verwendet. Der Gewinde-Außendurchmesser d wird mit glatten Gut- und Ausschusslehh ringen oder Gut- und Ausschuss-Rachenlehren geprüft.

6.5 Thread gauges for external threads and smooth gauges for thread major diameters

A go thread ring gauge is used for gauging the external thread for the go side, a no-go thread ring gauge for the no-go side. The thread ring gauges should be monitored regularly with thread wear check plug gauges. Check go and no-go plug gauges (check plug gauges) are used for testing, especially with new ring gauges. The major diameter of thread d is tested with smooth go and no-go ring gauges or go and no-go snap gauges.

G-GUT-LR



Gewinde-Gutlehh ring

- Der Gewinde-Gutlehh ring prüft das sogenannte Paarungsmaß des Außengewindes und die Aufschraubbarkeit. Er prüft dabei das Größtmaß des Außengewinde-Flankendurchmessers d_2 einschließlich gewisser Formabweichungen im Gewinde, z.B. Steigungs- und Gewindeprofilwinkel-Abweichungen. Außerdem prüft er, ob das gerade Flankenstück genügend lang ist, d.h., ob die Rundung am Außengewinde-Kern nicht zu weit in die Profilflanke hineinreicht. Die Kernrundung selbst wird dabei nicht geprüft. Auch der Außendurchmesser wird von dieser Lehre nicht geprüft.
- Der Gewinde-Gutlehh ring muss sich von Hand ohne Anwendung besonderer Kraft über die ganze Länge auf das Werkstückgewinde aufschrauben lassen.
- Der Gewinde-Gutlehh ring unterliegt stärkerer Abnutzung und sollte mit dem Abnutzungs-Prüfdorn regelmäßig überprüft werden.
- Es ist zu beachten, dass die Gewindelänge nicht kleiner als 80% der Einschraublänge des Werkstückgewindes ist.
- Baumaße der Gewinde-Gutlehh ringe nach DIN 2285.
- Gewinde-Gutlehh ringe in der Standardausführung ohne Schmutznut (Außengewinde lässt sich vor der Leh rung besser reinigen als Innengewinde).

Go thread ring gauge

- The go thread ring gauge checks the so-called "mating size" of the external thread and the screwing-on capability. In doing so, it checks the largest dimension of the external thread pitch diameter d_2 including certain form deviations in the thread, e.g. pitch and thread profile angle deviations. It also checks whether the straight flank piece is long enough, i.e. that the curve on the external thread root does not extend too far into the profile flank. The root curve itself is not checked. The major diameter is also not checked by this gauge.
- It must be possible to screw on the go thread ring gauge by hand along the full length of the workpiece thread without the use of particular force.
- The go thread ring gauge is subject to greater wear and should be checked at regular intervals with the wear check plug gauge.
- It should be noted that the thread length is not less than 80% of the thread engagement length of the workpiece thread.
- Dimensions of the go thread ring gauges acc. DIN 2285.
- Go thread ring gauges in the standard version are made without dirt flute (external threads are easier to clean than internal threads prior to gauging).

G-AUS-LR



Gewinde-Ausschusslehh ring

- Der Gewinde-Ausschusslehh ring soll prüfen, ob der Istflankendurchmesser des Werkstück-Außengewindes das vorgeschriebene Kleinmaß unterschreitet. Der Außengewinde-Außendurchmesser und -Kerndurchmesser wird dabei nicht geprüft.
- Der Gewinde-Ausschusslehh ring darf sich von Hand ohne Anwendung besonderer Kraft nicht mehr als zwei Gewindegänge ($2 \times P$) auf das Werkstückgewinde (von beiden Seiten) schrauben lassen. Die zwei Umdrehungen werden beim Abschrauben des Lehrringes festgestellt.
- Der Gewinde-Ausschusslehh ring muss regelmäßig mit dem Abnutzungsprüfdorn überwacht werden.
- Der Gewinde-Ausschusslehh ring hat eine Gewindelänge von mindestens drei Gängen. Das Gewindeprofil hat verkürzte Flanken.
- Die Lehrringe haben eine rote Markierung.
- Baumaße nach DIN 2299.

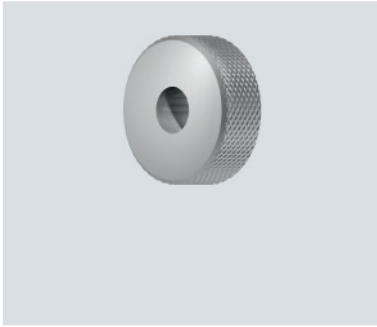
No-go thread ring gauge

- The no-go thread ring gauge is designed to check whether the actual pitch diameter of the workpiece external thread falls below the prescribed smallest size. The external thread major and minor diameter are not tested here.
- It must not be possible to screw the no-go thread ring gauge onto the workpiece thread (from both sides) by hand for more than two threads without the use of particular force. The two revolutions are determined on screwing off the ring gauge.
- The no-go thread ring gauge must be monitored regularly with the wear check plug gauge.
- The no-go thread ring gauge has a thread length of at least three threads. The thread profile has a truncated crest.
- The ring gauges have a red marking.
- Dimensions acc. DIN 2299.

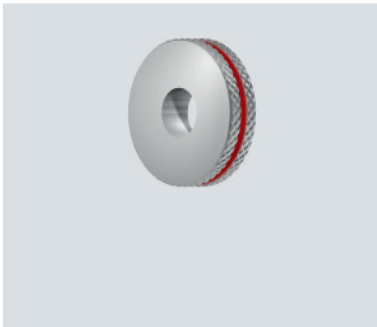
6.5 Gewindelehren für Außengewinde und glatte Lehren für Gewindeaußendurchmesser

6.5 Thread gauges for external threads and smooth gauges for thread major diameters

Glatt-GUT-LR



Glatt-AUS-LR



Lehren für Außengewinde-Außendurchmesser

- Der Außengewinde-Außendurchmesser wird mit glatten Gut- und Ausschusslehringen geprüft.
- Da sich der Außendurchmesser durch das Gewindegewinde verändern kann, ist eine Überprüfung nach der Gewindefertigstellung notwendig.
- Grundsätzlich soll vor Lehren des Außengewinde-Flankendurchmessers eine Lehren oder Prüfung des Außengewinde-Außendurchmessers erfolgen.
- Der glatte Gutlehring für den Außengewinde-Außendurchmesser muss sich über die ganze Gewindelänge ohne Anwendung besonderer Kraft schieben lassen.
- Der glatte Ausschusslehring für den Außengewinde-Außendurchmesser darf sich nicht mehr als zwei Gewindegänge ($2 \times P$), vom Gewindeanfang aus, über das Werkstückgewinde schieben lassen.

Gauges for external thread major diameters

- The external thread major diameter is tested with smooth go and no-go ring gauges.
- As the major diameter can change through thread cutting, an inspection is required after the thread has been completed.
- Generally speaking, a check of the external thread major diameter should be made before gauging the external thread pitch diameter.
- It must be possible to push the smooth go ring gauge for the external thread major diameter along the entire thread length without the use of particular force.
- It must not be possible to push the smooth no-go ring gauge for the external thread major diameter over the workpiece thread by more than two pitches ($2 \times P$) from the start of the thread.

Product
Finder

M

MF

UNC

UNF

G

Rp
R, Rc

NPT, NPTF

BSW

Pg

MJ
UNJC, UNJFEG (STI)
SELF-LOCKTr, Tr-F
RdGlatt
Smooth

GT, TD

Zubehör
AccessoriesKalibrieren
Calibration

Tech. Info



- Product Finder
- M
- MF
- UNC
- UNF
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- Rp
R, Rc
- NPT, NPTF
- BSW
- Pg
- MJ
UNJC, UNJF
- EG (STI)
SELF-LOCK
- Tr, Tr-F
Rd
- Glatt
Smooth
- GT, TD
- Zubehör
Accessories
- Kalibrieren
Calibration
- Tech. Info

6.6 Gewinde-Tiefenlehndorne

Einleitung

Die EMUGE Gewindetiefen-Lehrdorne ermöglichen die Gewindelehre und das Messen der Gewindetiefe in einem Arbeitgang. Ihr Einsatzgebiet finden diese Lehrdorne bei Bauteilen mit gleicher Gewindeabmessung und unterschiedlichen Gewindetiefen, sowie der Einstellung der Gewindetiefe bei allen Arten der Innengewinde-Herstellung.

Bei dem **GT-GR-LD (Gewindetiefen-Grenz-Lehrdorn)** handelt es sich um eine Handlehre, mit der das Gewinde gelehrt und die Gewindetiefe in einem Vorgang gemessen werden kann.

Bei dem **TD-Bit-GUT (Thread Depth-Bit-GUT-Lehrdorn)** handelt es sich um eine Maschinenlehre mit Bit-Aufnahme (DIN ISO 1173), die in einem Akku-Schrauber, Druckluftschrauber oder einer Bohrmaschine verwendet wird, um das Gewinde und die Gewindetiefe in einem Vorgang zu prüfen.

Durch das Einschieben der angefederten Skalenhülle lässt sich die volle geschnittene Gewindetiefe schnell und exakt ablesen.

Die Gewindetiefen-Lehrdorne **GT-GR-LD** und **TD-Bit-GUT** sind sowohl in analoger als auch in digitaler Ausführung verfügbar und erfüllen die gleichen Festlegungen und Prüfkriterien wie in DIN ISO 1502 für Gewinde-Lehrdorne festgelegt.



6.6 GT thread depth plug gauges

Introduction

The thread depth plug gauges permit gauging and measuring of threads in one single step.

These gauges are used in components with identical thread dimensions but different thread depths as well as for setting up a thread depth for any kind of internal thread production.

The **GT-GR-LD** is a manually operated gauge for gauging threads and their depths in one single step.





The **TD-Bit-GUT** is an automatically operated gauge with bit holder (DIN ISO 1173) for use on cordless or pressurised air screwdrivers or drill machines in order to check any thread and its depth in one single step.

By pushing the spring-loaded scaled sleeve into the handle, the fully cut thread depth can be read off quickly and precisely from the display. The thread depth plug gauges **GT-GR-LD** and **TD-BIT-GUT** are available both in analogue and digital versions and comply with the DIN ISO 1502 criteria defined for thread plug gauges.



6.6 Gewinde-Tiefenlehrdorne

6.6 GT thread depth plug gauges

| | „analog“ | „digital IW“ |
|------------|---|---|
| | Analoge Ausführung Analogue version | Digitale Ausführung Digital version |
| GT-GR-LD |  <p>4 x D</p> |  <p>2,5 x D</p> |
| TD-Bit-GUT |  <p>2,5 x D</p> |  <p>2,5 x D</p> |

GT-GR-LD

Handlehren
Manually operated gauges

TD-Bit-GUT

Maschinenlehren
Automatically operated gauges

Merkmale

- Reduziert den Prüfaufwand um ca. 50%
- In verschiedenen Größen verfügbar
- Leicht einstellbar
- Universell einsetzbar
- Lehrenkörper auf Wunsch auch beschichtet
- Messgenauigkeit analog 0,5 mm / digital 0,01 mm
- Mit Feststellschraube zur Fixierung der Skalenhülse optional lieferbar
- Einfacher und sicherer Einsatz
- Digitale Ausführung mit Funkschnittstelle für PC-Auswertung (bei Auslieferung deaktiviert)
- Handlehren optional mit „Gefühlsratsche“ erhältlich

Notable Features

- Reduction of the gauging time by approx. 50%
- Available in various sizes
- Easily adjustable
- Universally applicable
- Gauges can be coated on demand
- Dimension accuracy analogue 0.5 mm / digital 0.01 mm
- Set screw for fixing the scaled sleeve included on request
- Easy and safe performance
- Digital version with wireless interface for PC evaluation (deactivated in default factory setting)
- Manually operated gauges available on request with torque limiter

Product
Finder

M

MF

UNC

UNF

G

Rp
R, Rc

NPT, NPTF

BSW

Pg

MJ
UNJC, UNJFEG (STI)
SELF-LOCKTr, Tr-F
RdGlatt
Smooth

GT, TD

Zubehör
AccessoriesKalibrieren
Calibration

Tech. Info



- 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
- Kalibrieren Calibration
- Tech. Info

6.6 Gewinde-Tiefenlehndorne

Der **Gewindetiefen-Lehrdorn „analog“** wird auf das zu prüfende Innengewinde aufgesetzt und bis zum Gewindegrund eingeschraubt. Die dadurch erreichte Gewindetiefe kann am Übergang der Skalenhülse zum Griff an der Tiefenskala mit einer Genauigkeit von 0,5 mm abgelesen werden.

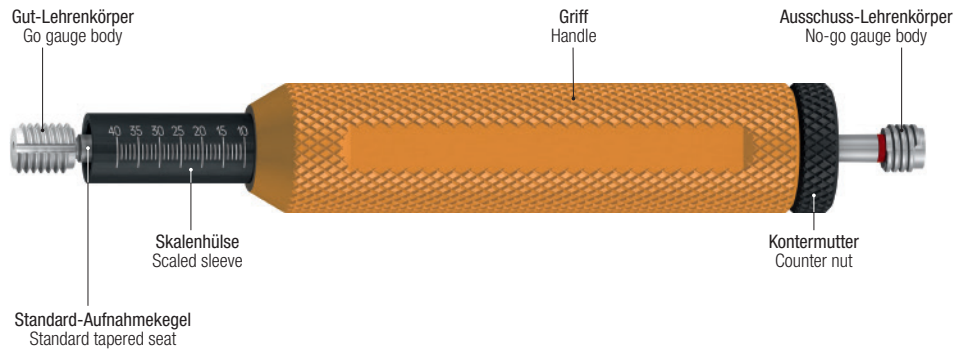
GT-GR-LD „analog“



4 x D

Handlehre

Der **GT-GR-LD „analog“** ermöglicht das Lehren von Gewinden und das gleichzeitige Messen der Gewindetiefe von Hand. Zur Feinjustierung der Gewinde-Messtiefe kann die Handlehre optional auch mit einer Gefühlsratsche ausgeführt werden. Diese ermöglicht ein gleichbleibendes Einschraubmoment und dient nicht zur Drehmomentübertragung.



Manually operated gauges

GT-GR-LD „analog“ for manually gauging threads and their depths simultaneously. Manually operated gauges can be fitted with a torque limiter on request for fine-adjustment of measuring depth of the thread. It allows to maintain a consistent screw-in torque but does not serve to transmit torque.

TD-Bit-GUT „analog“



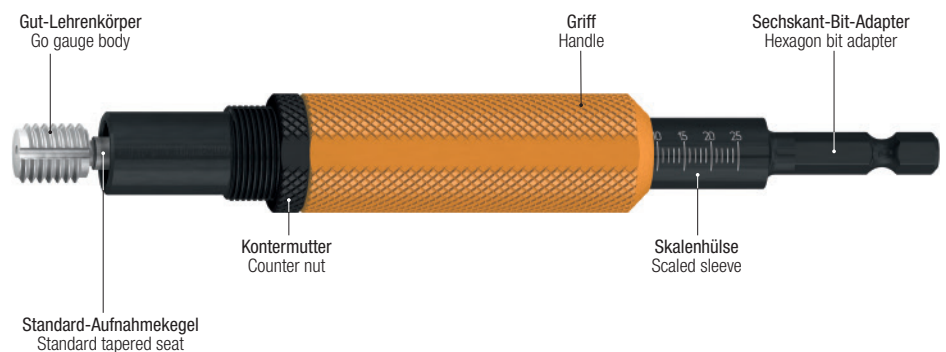
2,5 x D

Maschinenlehre

Der **TD-Bit-GUT „analog“** – in Kombination mit einer Antriebseinheit (z.B. Akkuschauber, Druckluftschrauber oder Bohrmaschine) – ermöglicht im Vergleich zur Handlehre eine erheblich kürzere Prüfdauer und ein ermüdungsfreies Arbeiten im Dauerbetrieb. Durch die Schnittstelle mittels eines Außensechskants 1/4" nach DIN ISO 1173 können mehrere „TD-Bit-GUT“ mit einer Antriebseinheit angetrieben bzw. schnell umadaptiert werden. Unabhängig vom Bediener verbessert die automatisierte Gewindeprüfung mit konstantem Drehmoment die Reproduzierbarkeit des Prüfergebnisses.

Automatically operated gauges

The **TD-Bit-GUT „analog“** used together with a drive unit (e.g. a cordless air screwdriver or drill machines) shortens gauging time and enables an effortless long-term working. Due to the DIN ISO 1173 hexagon 1/4" interface many „TD-Bit-GUT“ might be driven with one single unit and can be exchanged rapidly. Independently of the user, automatic gauging with a constant torque improves the reproducibility of the results.



6.6 Gewinde-Tiefenlehrdorne

Um die genaue Gewindetiefe zu ermitteln empfehlen wir, den **Gewindetiefen-Lehrdorn „digital IW“** bis zum Gewindegrund einzuschrauben. Die dadurch erreichte Gewindetiefe kann durch das Nullsetzen (RESET) der Anzeige und dem anschließenden Ausdrehen des **Gewindetiefen-Lehrdorns „digital IW“** aus dem Werkstück mit einer Genauigkeit von 0,01 mm abgelesen werden. Somit kann auch an verdeckten Positionen geprüft werden.

Der **Gewindetiefen-Lehrdorn „digital IW“** ermöglicht durch seine große LCD-Anzeige ein sicheres und ermüdungsfreies Ablesen der Messwerte. Optional besteht die Möglichkeit, die Messwerte per Funk auf einen PC zu übertragen. Die Datenübertragung erfolgt kabellos vom Lehrdorn zum Empfänger i-Stick, der sich im USB-Port des PC befindetet.

Die Option „Integrated Wireless“ (IW) ermöglicht eine einfache und sichere Datenübertragung per Funk und die direkte Messwertübernahme in Microsoft® Excel® oder andere Microsoft® Windows®-Anwendungen, sowie eine Rückbestätigung in der LCD-Anzeige. Die Option IW ist im Auslieferungszustand nicht aktiviert. Die Aktivierung kann mittels der im Lieferumfang enthaltenen Bedienungsanleitung vorgenommen werden.

GT-GR-LD „digital IW“



2,5 x D

Handlehre

Der **GT-GR-LD „digital IW“** ermöglicht das Lehren von Gewinden und das gleichzeitige Messen der Gewindetiefe von Hand.

Zur Feinjustierung der Gewinde-Messtiefe kann die Handlehre optional auch mit einer Gefühlsratsche ausgeführt werden.

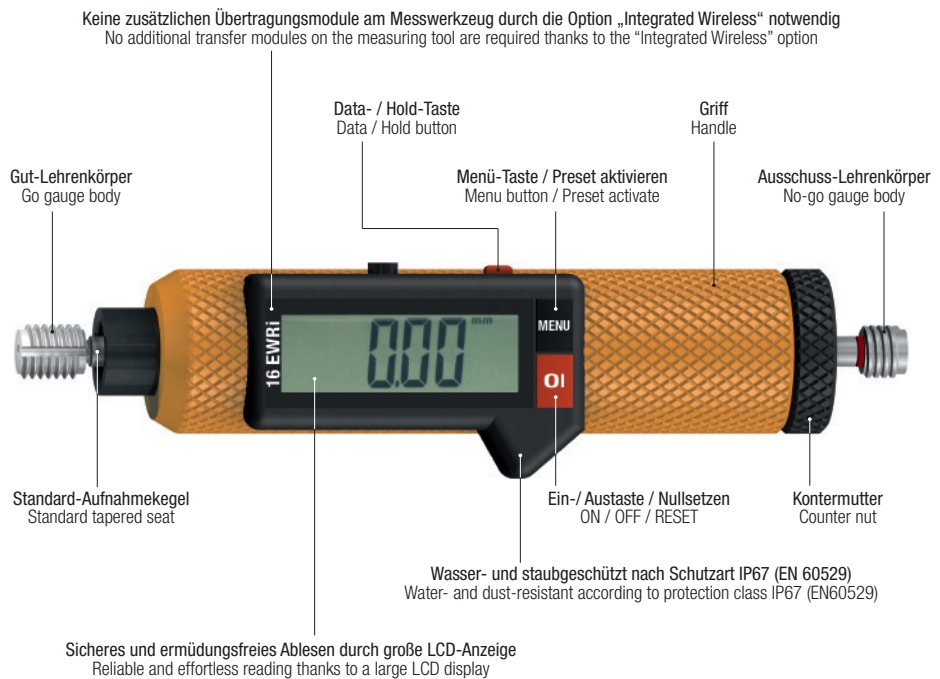
Diese ermöglicht ein gleichbleibendes Einschraubmoment und dient nicht zur Drehmomentübertragung.

Manually operated gauges

GT-GR-LD „digital IW“ for manually gauging threads and their depths simultaneously.

Manually operated gauges can be fitted with a torque limiter on request for fine-adjustment of measuring depth of the thread.

It allows to maintain a consistent screw-in torque but does not serve to transmit torque.



6.6 GT thread depth plug gauges

In order to determine the exact thread depth, we recommend screwing the **digital thread depth plug gauge „digital IW“** down to the bottom of the thread. Its depth can be read off by resetting the display (RESET) and subsequently screwing the digital gauge out of the workpiece with an accuracy of 0.01 mm. Thus even covered threads might be checked.

The **thread depth plug gauge „digital IW“** allows to read the measured values reliably and without effort thanks to a large LCD display. Alternatively the measurement values can be transmitted wirelessly to a PC. Data are transmitted in a wireless transfer from the plug gauge to the i-stick wireless receiver which is plugged into the USB port of the PC.

The option "Integrated Wireless" (IW) allows to easily and reliably transfer data via wireless transmission and to integrate measuring values directly into Microsoft® Excel® or other Microsoft® Windows® applications and provides a reconfirmation of the process on the LCD display. The option IW is not activated in default factory setting. It can be activated according to instructions in the operating manual included with delivery.

Product Finder

M

MF

UNC

UNF

G

Rp
R, Rc

NPT, NPTF

BSW

Pg

MJ
UNJC, UNJFEG (STI)
SELF-LOCKTr, Tr-F
RdGlatt
Smooth

GT, TD

Zubehör
AccessoriesKalibrieren
Calibration

Tech. Info

- 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
- Kalibrieren Calibration
- Tech. Info

6.6 Gewinde-Tiefenlehndorne

6.6 GT thread depth plug gauges

TD-Bit-GUT „digital IW“



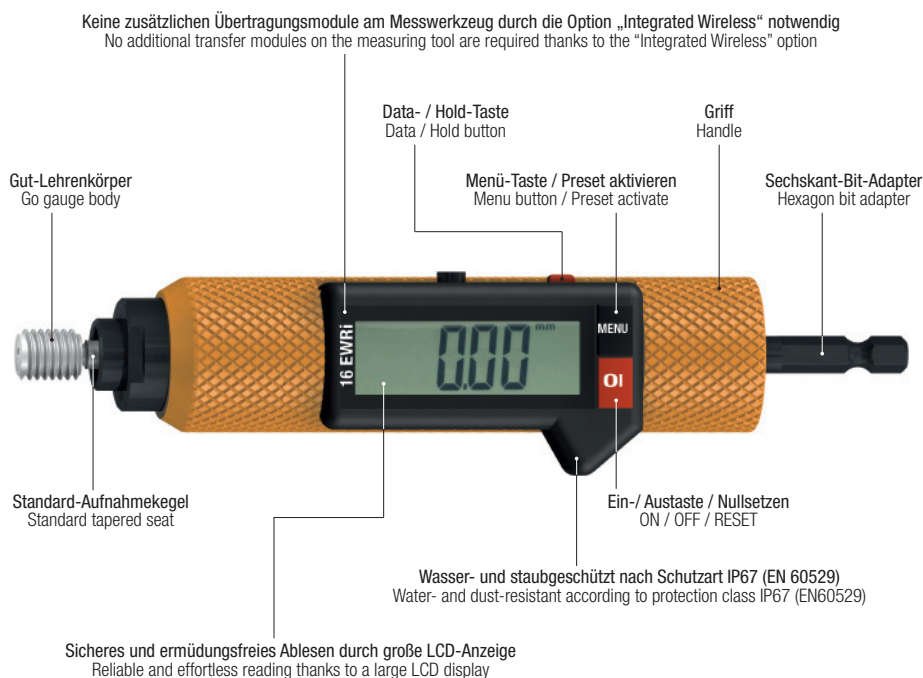
2,5 x D

Maschinenlehre

Der TD-Bit-GUT „digital IW“ – in Kombination mit einer Antriebseinheit (z.B. Akkuschauber, Druckluftschrauber oder Bohrmaschine) – ermöglicht im Vergleich zur Handlehre eine erheblich kürzere Prüfdauer und ein ermüdungsfreies Arbeiten im Dauerbetrieb. Durch die Schnittstelle mittels eines Außensechskants 1/4" nach DIN ISO 1173 können mehrere „TD-Bit-GUT“ mit einer Antriebseinheit angetrieben bzw. schnell umadaptiert werden. Unabhängig vom Bediener verbessert die automatisierte Gewindeprüfung mit konstantem Drehmoment die Reproduzierbarkeit des Prüfergebnisses.

Automatically operated gauges

The TD-Bit-GUT „digital IW“ used together with a drive unit (e.g. a cordless or pressurised air screwdriver or drill machines) shortens gauging time and enables an effortless long-term working. Due to the DIN ISO 1173 hexagon 1/4" interface many „TD-Bit-GUT“ might be driven with one single unit and can be exchanged rapidly. Independently of the user, automatic gauging with a constant torque improves the reproducibility of the results.



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.

6.7 Glatte Lehrdorne für Bohrungen nach DIN EN ISO 1938-1

Für die Lehrung von Passbohrungen wird der glatte Gutlehrdorn und der glatte Ausschusslehrdorn verwendet. Bis Bohrungsdurchmesser 65 mm sind Gut- und Ausschusslehrdorn auf einem Griff montiert und werden als glatter Grenzlehrdorn bezeichnet.

Glatt-GUT-LD



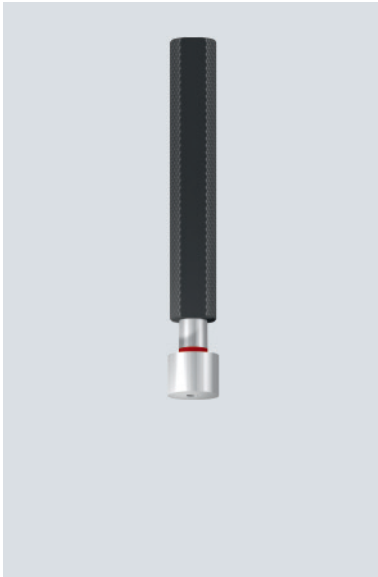
Glatter Gutlehrdorn

- Der glatte Gutlehrdorn prüft das Bohrungskleinmaß einschließlich gewisser Formabweichungen, z.B. Rundheit und Zylindrizität.
- Der glatte Gutlehrdorn muss sich von Hand ohne Anwendung besonderer Kraft auf die ganze Länge der Bohrung einschieben lassen.
- Um eine höhere Verschleißfestigkeit zu erreichen, empfiehlt EMUGE, den glatten Gutlehrdorn in hartverchromter Ausführung oder Hartmetall-Ausführung zu verwenden.
- Baumaße des glatten Gutlehrdornes nach DIN 2246 und DIN 2248.

Smooth go plug gauge

- The smooth go plug gauge checks the minimum drilled hole dimension including certain form deviations, e.g. circularity and cylindricity.
- It must be possible to push the smooth go plug gauge by hand into the full length of the drilled hole without the use of particular force.
- To achieve higher wear resistance, EMUGE recommends using the smooth go plug gauge in the hard-chrome-plated or carbide version.
- Dimensions of the smooth go plug gauge acc. DIN 2246 and DIN 2248.

Glatt-AUS-LD



Glatter Ausschusslehrdorn

- Der glatte Ausschusslehrdorn prüft, ob der Bohrungsdurchmesser das vorgeschriebene Größtmaß überschreitet.
- Der glatte Ausschusslehrdorn darf sich von Hand ohne Anwendung besonderer Kraft nicht in die Bohrung einführen lassen.
- Der glatte Ausschusslehrdorn ist mit einem roten Farbring markiert.
- Baumaße des glatten Ausschusslehrdornes nach DIN 2247 und DIN 2249.

Smooth no-go plug gauge

- The smooth no-go plug gauge checks whether the drilled hole diameter has exceeded the prescribed maximum size.
- It must not be possible to insert the smooth no-go plug gauge into the drilled hole without the use of particular force.
- The smooth no-go plug gauge is marked with a red coloured ring.
- Dimensions of the smooth no-go plug gauge acc. DIN 2247 and DIN 2249.

Product Finder

M

MF

UNC

UNF

G

Rp
R, Rc

NPT, NPTF

BSW

Pg

MJ
UNJC, UNJFEG (STI)
SELF-LOCKTr, Tr-F
RdGlatt
Smooth

GT, TD

Zubehör
AccessoriesKalibrieren
Calibration

Tech. Info



- 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
- Kalibrieren
Calibration
- Tech. Info

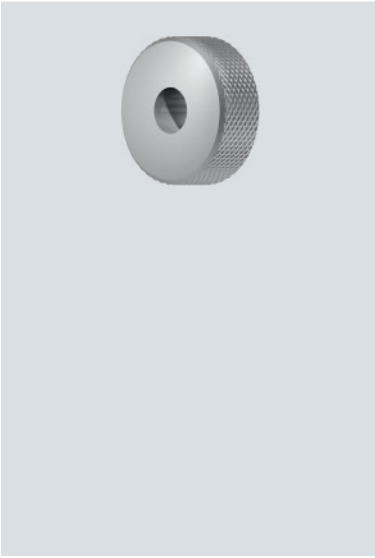
6.8 Glatte Lehrringe für Wellen nach DIN EN ISO 1938-1

Für die Lehrung von Wellendurchmessern, besonders für leicht verformbare Teile, wird der glatte Gutlehring und der glatte Ausschusslehring verwendet.

6.8 Smooth ring gauges for shafts acc. DIN EN ISO 1938-1

The smooth go ring gauge and the smooth no-go ring gauge are used for gauging shaft diameters, especially for components which are easily deformed.

Glatt-GUT-LR



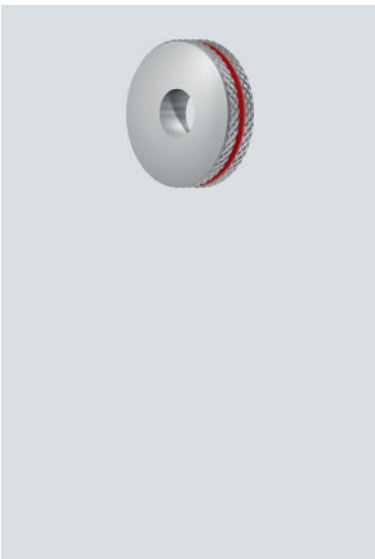
Glatter Gutlehring

- Der glatte Gutlehring prüft das Wellengrößtmaß einschließlich gewisser Formabweichungen, z.B. Rundlauf und Zylindrizität.
- Ein glatter, zylindrischer Gutlehring soll über die ganze Länge mit der Welle gepaart werden können, und zwar von Hand ohne besonderen Kraftaufwand.
- Baumaße der glatten Gutlehringe nach DIN 2250.

Smooth go ring gauge

- The smooth go ring gauge checks the maximum shaft dimension including certain form deviations, e.g. concentricity and cylindricity.
- It must be possible to pair a smooth, cylindrical go ring gauge with the shaft over the entire length by hand without particular application of force.
- Dimensions of the smooth go ring gauges acc. DIN 2250.

Glatt-AUS-LR



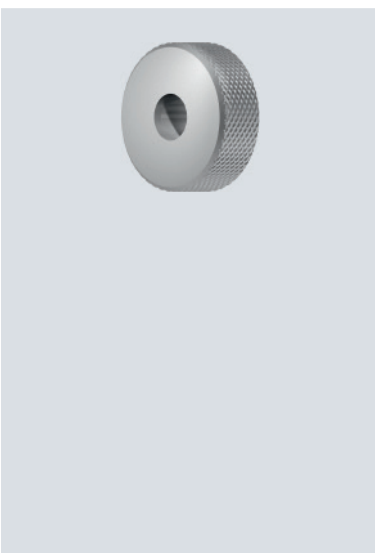
Glatter Ausschusslehring

- Der glatte Ausschusslehring prüft, ob die Welle das vorgeschriebene Wellenkleinstmaß unterschreitet.
- Der glatte Ausschusslehring darf sich von Hand ohne Anwendung besonderer Kraft nicht auf die Welle aufschieben lassen.
- Baumaße der glatten Ausschusslehringe nach DIN 2254.

Smooth no-go ring gauge

- The smooth no-go ring gauge checks whether the shaft has fallen below the prescribed minimum shaft dimension.
- It must not be possible to pair a smooth no-go ring gauge with the shaft without particular application of force.
- Dimensions of the smooth no-go ring gauges acc. DIN 2254.

Glatt-Einst-LR



Glatte Einstellringe

Es wird unterschieden zwischen:

- Einstellringe für pneumatische Längenmessgeräte nach DIN 2250 Form B
und
- Einstellringe für Reibahlen und für allgemeine Anwendung nach DIN 2250 Form C.

Smooth adjusting rings

A differentiation is made between:

- Adjusting rings for pneumatic length measuring instruments acc. DIN 2250 Form B
and
- Adjusting rings for reamers and for general use acc. DIN 2250 Form C.

6.9 Lehrung von anderen Gewinden

Gewindelehren für andere Gewinde (Dichtgewinde, kegelige Gewinde, Festsitzgewinde, SELF-LOCK-Gewinde, u.a.) weichen oft von der allgemeinen Lehrenform erheblich ab. Sie sind meist auf die spezielle Art und Funktion dieser Gewinde abgestimmt.

Ein markantes Beispiel sind die Gewindelehren für Dichtgewinde, z.B. NPT- und NPTF-Gewinde nach US-Norm oder Rohr-Dichtgewinde nach DIN EN 10226 / ISO 7. In solchen Fällen sind die Vorschriften über die Lehrung dieser Gewinde genau zu beachten.

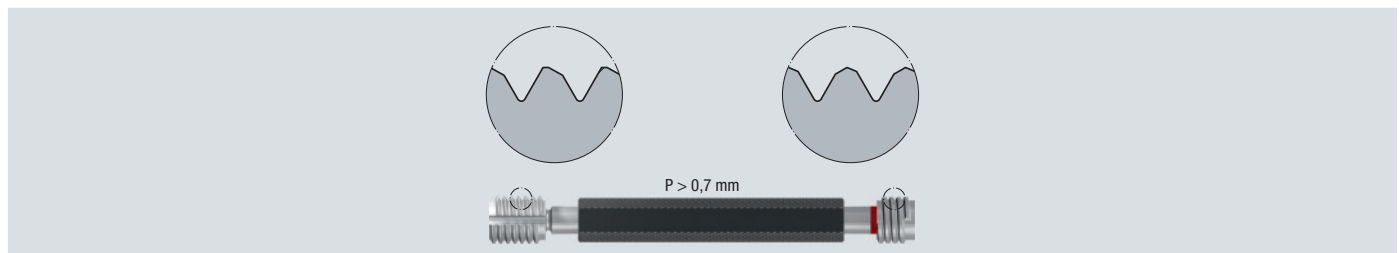
6.9.1 Lehrung des EMUGE-SELF-LOCK-Gewindes

Hier empfiehlt sich das zweiteilige Lehrensystem von EMUGE, das der gängigen Praxis der Gut- und Ausschusslehre entspricht und für die Gewindeprüfung ausreicht, wenn sichergestellt ist, dass das SELF-LOCK-Gewinde mit profilgetreuen EMUGE-Gewindebohrern hergestellt wurde.

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. Deshalb ist es empfehlenswert, EMUGE SELF-LOCK-Gewinde ausschließlich mit EMUGE SELF-LOCK-Gewindelehren zu prüfen.

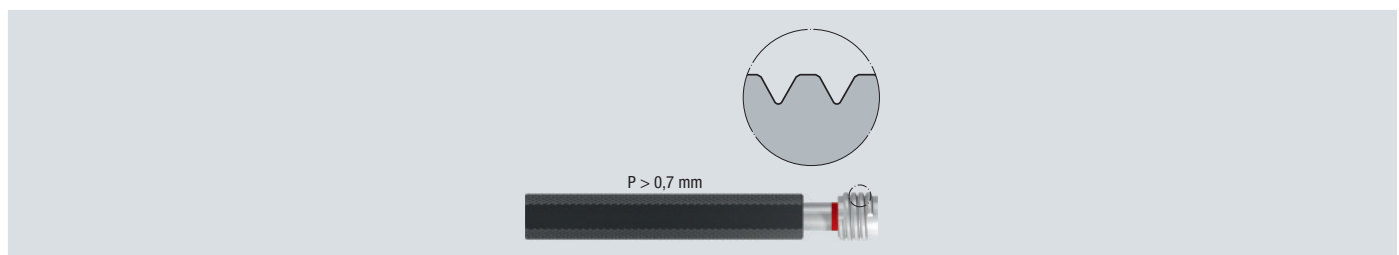
Beim Gutlehrdorn ist auf die richtige Einschraubseite zu achten. Die Ausschussseite ist für beide Einschraubrichtungen geeignet.

Grenzlehrdorn für das EMUGE-SELF-LOCK-Gewinde



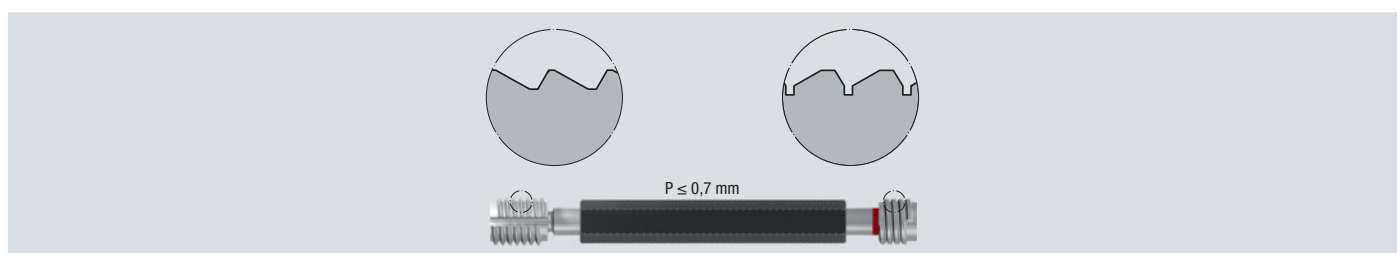
Werden Strehler oder Gewindefräser eingesetzt, ist die zusätzliche Verwendung der EMUGE-HPRG-Lehre empfehlenswert. Diese prüft den unteren Rampenpunkt, bzw. eventuelle Rampenwinkelfehler.

HPRG-Ausschusslehrdorn für das EMUGE-SELF-LOCK-Gewinde



Die Lehrung des Sägezahn-Profiles beruht auf dem gleichen Prinzip, jedoch ist bei Gut- und Ausschusslehrdorn auf die richtige Einschraubseite (BT, TT) zu achten.

Grenzlehrdorn für das EMUGE-SELF-LOCK-Sägezahn-Gewinde



6.9 Gauging of other threads

Thread gauges for other threads (sealing threads, tapered threads, threads for tight fit, SELF-LOCK threads etc.) often deviate considerably from the normal gauge design. They are usually adjusted to the special design and function of these threads.

One good example are the thread gauges for sealing threads, e.g. NPT and NPTF threads acc. US standards, or pipe sealing threads acc. DIN EN 10226 / ISO 7. In such cases, the instructions for the gauging of these threads must be observed in every detail.

6.9.1 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 SELF-LOCK 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.

With the go plug gauge, it is important to observe the correct screw-in direction. The no-go side can be used in either screw-in direction.

Go/no-go plug gauge for the EMUGE SELF-LOCK thread

Whenever threads are produced by chasing or thread milling, we recommend the additional use of our EMUGE HPRG gauge which checks the lower end of the ramp, and helps to identify any deviations in the angle of the ramp.

HPRG no-go plug gauge for the EMUGE SELF-LOCK thread

The gauging of the buttress 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.

Go/no-go plug gauge for the EMUGE SELF-LOCK buttress thread

Product Finder

M

MF

UNC

UNF

G

Rp
R, Rc

NPT, NPTF

BSW

Pg

MJ
UNJC, UNJFEG (STI)
SELF-LOCKTr, Tr-F
RdGlatt
Smooth

GT, TD

Zubehör
AccessoriesKalibrieren
Calibration

Tech. Info

- 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
- Kalibrieren
Calibration

6.9 Lehrung von anderen Gewinden

6.9.2 Amerikanisches Rohrgewinde, Flankenwinkel 60°

6.9.2.1 Rohrgewinde für allgemeine Anwendung (mit Dichtmittel) nach ANSI/ASME B1.20.1

Übersicht: **NPT**
NPSC
NPTR
NPSM
NPSL
NPSH

Jeder Buchstabe in der Bezeichnung hat folgende Beschreibung:

| | |
|----------|--------------------------------|
| N | Nationale (Amerikanische) Norm |
| P | Rohr |
| T | Kegelig |
| C | Verschraubung/Kupplung |
| S | Zylindrisch |
| M | Mechanisch |
| L | Gegenmutter |
| H | Schlauchkupplung |
| R | Geländerfittings |

Das Gewindeprofil ist **symmetrisch** und **senkrecht** zur Gewindeachse!

NPT-Gewinde

- Kegeliges Innengewinde und Außengewinde
- Kegelige Lehrdorne L₁ mit 3 Messstufen (Min., Basis, Max.)
- Kegelige Lehrringe L₁ mit 3 Messstufen (Min., Basis, Max.)

NPSC-Gewinde

- Zylindrisches Innengewinde für druckfeste Verbindungen, wird mit kegeligem Außengewinde NPT und einer zusätzlichen Abdichtung verschraubt
- Kegelige Lehdorne L₁ mit 3 Messstufen (Min., Basis, Max.)

NPTR-Gewinde

- Kegeliges Innengewinde und Außengewinde zur starren mechanischen Geländerverschraubung (ähnlich NPT)

NPSM-Gewinde

- Zylindrisches Innengewinde und Außengewinde für mechanische „Free-Fitting“-Verbindungen und Befestigungen, vorwiegend bei Verbindungen von Rohren ohne inneren Druck
- Gut- und Ausschusslehrringe und -Lehrdorne sind zylindrisch!

NPSL-Gewinde

- Zylindrisches Innengewinde und Außengewinde für mechanische „Loose-Fitting“-Verbindungen mit Gegenmuttern, z.B. durch Behälterwände geführt und beidseitig mit Gegenmuttern befestigt
- Gut- und Ausschusslehrringe und -Lehrdorne sind zylindrisch!

NPSH-Gewinde

- Zylindrisches Innengewinde und Außengewinde für mechanische „Loose-Fitting“-Verbindungen für Schlauchkupplungen
- Gut- und Ausschusslehrringe und -Lehrdorne sind zylindrisch!

6.9 Gauging of other threads

6.9.2 American Pipe Thread, thread angle 60°

6.9.2.1 Pipe thread for general applications (with sealant) according to ANSI/ASME B1.20.1

Overview: **NPT**
NPSC
NPTR
NPSM
NPSL
NPSH

Each letter in the designation has the following meaning:

| | |
|----------|------------------------------|
| N | National (American) Standard |
| P | Pipe |
| T | Taper |
| C | Coupling |
| S | Straight |
| M | Mechanical |
| L | Locknut |
| H | Hose coupling |
| R | Railing fittings |

The thread profile is **symmetrical** and **perpendicular** to the thread axle!

NPT thread

- Tapered internal thread and external thread
- Tapered plug gauges L₁ with 3 measuring steps (Min., Basis, Max.)
- Tapered ring gauges L₁ with 3 measuring steps (Min., Basis, Max.)

NPSC thread

- Cylindrical internal thread for pressure-tight connections, is screwed with a tapered external thread NPT and an additional sealing
- Tapered plug gauges L₁ mit 3 measuring steps (Min., Basis, Max.)

NPTR threads

- Tapered internal thread and external thread for the rigid mechanical screwing of railing fittings (similar to NPT).

NPSM thread

- Cylindrical internal and external thread for mechanical “Free-Fitting” connections and fastening primarily of pipes without internal pressure
- Ring gauges and plug gauges go and no-go are cylindrical!

NPSL thread

- Cylindrical internal and external thread for mechanical “Loose-Fitting” connections with locknut, e.g. through container walls and tightened with locknuts on both sides
- Ring gauges and plug gauges go and no-go are cylindrical!

NPSH thread

- Cylindrical internal and external thread for mechanical “Loose-Fitting” connections of hose couplings
- Ring gauges and plug gauges go and no-go are cylindrical!



6.9 Lehrung von anderen Gewinden

6.9.2.2 Rohrgewinde für trockendichtende Verbindungen (ohne Dichtmittel) nach ANSI B1.20.3

Übersicht: **NPTF**
PTF-SAE-SHORT
NPSF
NPSI

Jeder Buchstabe in der Bezeichnung hat folgende Beschreibung:

| | |
|----------|--------------------------------|
| N | Nationale (Amerikanische) Norm |
| P | Rohr |
| T | Kegelig |
| S | Zylindrisch |
| F | Treibstoff/Öl |
| I | Mittelfein |

Das Gewindeprofil ist **unsymmetrisch** und **senkrecht** zur Gewindeachse!

NPTF-Gewinde

- Kegeliges Innengewinde und Außengewinde

Lehrensyst. NPTF-1

- Kegelige Lehrdorne L₁ mit 3 Messstufen (Min., Basis, Max.)
- Kegelige Lehrdorne L₃ mit 3 Messstufen (Min., Basis, Max.)
- Kegelige Lehrringe L₁ mit 3 Messstufen (Min., Basis, Max.)
- Kegelige Lehrringe L₂ mit 3 Messstufen (Min., Basis, Max.)

Lehrensyst. NPTF-2 nach ASME B1.20.5

- Kegelige Gewinde-Lehrdorn L₁ mit 4 Messstufen
- Kegelige Gewinde-Lehrdorn L₃ mit 4 Messstufen
- Kegelige glatter Lehrdorn „Crest Check“ mit 6 Messstufen für Mutterkerndurchmesser
- Kegelige Gewinde-Lehrdorn „Root Check“, Flankenwinkel 50°, mit 6 Messstufen für Mutteraußendurchmesser
- Kegelige Gewinde-Lehrdorn L₁ mit 4 Messstufen
- Kegelige Gewinde-Lehrdorn L₂ mit 4 Messstufen
- Kegelige glatter Lehrdorn „Crest Check“ mit 6 Messstufen für Bolzenaußendurchmesser
- Kegelige Gewinde-Lehrdorn „Root Check“, Flankenwinkel 50°, mit 6 Messstufen für Bolzenkerndurchmesser

PTF-SAE-SHORT-Gewinde

- Kegeliges Innengewinde PTF-SAE-SHORT, wird gepaart mit kegeligem NPTF-Außengewinde
- Kegelige Lehrdorne L₁ mit 3 Messstufen (Min., Basis, Max.)
- Kegelige Lehrdorne L₃ mit 3 Messstufen (Min., Basis, Max.)

NPSF-Gewinde

- Zylindrisches Innengewinde, wird mit kegeligem Außengewinde NPTF verschraubt
- Kegelige Lehrdorne L₁ mit 3 Messstufen (Min., Basis, Max.)

NPSI-Gewinde

- Zylindrisches Innengewinde, wird mit kegeligem Außengewinde NPTF verschraubt
- Kegelige Lehrdorne L₁ mit 3 Messstufen (Min., Basis, Max.)

6.9 Gauging of other threads

6.9.2.2 Pipe thread for dryseal connections (without sealant) according ANSI B1.20.3

Overview: **NPTF**
PTF-SAE-SHORT
NPSF
NPSI

Each letter in the designation has the following meaning:

| | |
|----------|------------------------------|
| N | National (American) Standard |
| P | Pipe |
| T | Taper |
| S | Straight |
| F | Fuel and oil |
| I | Intermediate |

The thread profile is **asymmetrical** and **perpendicular** to the thread axle!

NPTF thread

- Tapered internal thread and external thread

Gauge system NPTF-1

- Tapered plug gauges L₁ with 3 measuring steps (Min., Basis, Max.)
- Tapered plug gauges L₃ with 3 measuring steps (Min., Basis, Max.)
- Tapered ring gauges L₁ with 3 measuring steps (Min., Basis, Max.)
- Tapered ring gauges L₂ with 3 measuring steps (Min., Basis, Max.)

Gauge system NPTF-2 according to ASME B1.20.5

- Tapered plug gauge L₁ with 4 measuring steps
- Tapered plug gauge L₃ with 4 measuring steps
- Tapered smooth plug gauge „Crest Check“ with 6 measuring steps for minor diameter of nut
- Tapered plug gauge „Root Check“, thread angle 50°, with 6 measuring steps for major diameter of nut
- Tapered ring gauge L₁ with 4 measuring steps
- Tapered ring gauge L₂ with 4 measuring steps
- Tapered smooth ring gauge „Crest Check“ with 6 measuring steps for major diameter of bolt
- Tapered ring gauge „Root Check“, thread angle 50°, with 6 measuring steps for minor diameter of bolt

PTF-SAE-SHORT thread

- Tapered internal thread PTF-SAE-SHORT, is coupled with a tapered NPTF external thread
- Tapered plug gauges L₁ with 3 measuring steps (Min., Basis, Max.)
- Tapered plug gauges L₃ with 3 measuring steps (Min., Basis, Max.)

NPSF thread

- Cylindrical internal thread, is screwed with a tapered external thread NPTF
- Tapered plug gauges L₁ with 3 measuring steps (Min., Basis, Max.)

NPSI thread

- Cylindrical internal thread, is screwed with a tapered external thread NPTF
- Tapered plug gauges L₁ with 3 measuring steps (Min., Basis, Max.)

Product Finder

M

MF

UNC

UNF

G

Rp
R, Rc

NPT, NPTF

BSW

Pg

MJ
UNJC, UNJFEG (STI)
SELF-LOCKTr, Tr-F
RdGlatt
Smooth

GT, TD

Zubehör
AccessoriesKalibrieren
Calibration

Tech. Info



- 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
- Kalibrieren
Calibration
- Tech. Info

6.9 Lehrung von anderen Gewinden

6.9.3 Whitworth-Rohrgewinde, Flankenwinkel 55°

6.9.3.1 Rohrgewinde für allgemeine Anwendung

| | |
|-----------|--|
| Rp | Zylindrisches Rohr-Innengewinde (parallel) |
| Rc | Kegeliges Rohr-Innengewinde |
| R | Kegeliges Rohr-Außengewinde |

Das Gewindeprofil ist **symmetrisch** mit Außen- und Kernrundung!

Die Bolzen- und Muttergewindemaße sind in mehreren nationalen und internationalen Normen festgelegt,

z.B.: **ISO 7/1**
DIN EN ISO 10226-1
DIN EN ISO 10226-2
u.s.w.

Innengewinde Rp und Rc

Die Lehrung erfolgt nach ISO 7/2 bzw. DIN EN 10226-3

- Kegelige Lehrdorne Nr. 1 mit 1 Messstufe („+“, „-“) für Standardverschraubung
- Kegelige Lehrdorne Nr. 2 mit 1 Messstufe („+“, „-“) zur Prüfung der Einschraubtiefe
- Zylindrischer Prüfring Nr. 6 ohne Messstufe zur Prüfung der Lehren Nr. 1 und Nr. 2

Kegeliges Außengewinde R

Die Lehrung erfolgt nach ISO 7/2 bzw. DIN EN 10226-3

- Zylindrischer Lehrherring Nr. 3 mit 1 Messstufe („+“, „-“)
- Kegeliger glatter Lehrherring Nr. 4 mit 1 Messstufe („+“, „-“) zur Prüfung des Bolzenaußendurchmesser
- Kegeliger Prüfdorn Nr. 5 mit 1 Messstufe zur Prüfung der Lehre Nr. 3

6.9.3.2 Whitworth-Rohrgewinde für spezielle Verschraubungen

- **DIN 3858** = kürzere Gewindelängen
- **DIN 477, DIN EN 144-1, DIN EN ISO 11363** = Gasflaschenventile

DIN 3858

Zylindrisches Innengewinde für Rohrverschraubung mit kurzer Gewindelänge, wird mit kegeligem Außengewinde verschraubt!

- Zylindrische Lehrherringe mit 1 Messstufe für **Regelausführung (Toleranzfeldlage 1)**
- Zylindrische Lehrherringe mit 1 Messstufe für **Kurzausführung (Toleranzfeldlage 2)**
- Zylindrischer Grenzlehndorn mit Gut- und Ausschusseite zur Prüfung des Rp-Innengewindes

6.9 Gauging of other threads

6.9.3. Whitworth Pipe Thread, thread angle 55°

6.9.3.1 Pipe thread for general applications

| | |
|-----------|---|
| Rp | = Cylindrical internal pipe thread (parallel) |
| Rc | = Tapered internal pipe thread |
| R | = Tapered external pipe thread |

The thread profile is **symmetrical** with top and bottom triangles rounded to a circular peak!

The thread dimensions of bolt and nut are specified in several national and international standards,

e.g.: **ISO 7/1**
DIN EN ISO 10226-1
DIN EN ISO 10226-2
etc.

Internal threads Rp and Rc

Gauging is done according to ISO 7/2 resp. DIN EN 10226-3

- Tapered plug gauges no. 1 with 1 measuring step („+“, „-“) for standard screw connections
- Tapered plug gauges no. 2 with 1 measuring step („+“, „-“) for checking screw-in depth
- Cylindrical check ring gauge no. 6 without measuring step for checking gauges no. 1 and no. 2

Tapered external thread R

Gauging is done according to ISO 7/2 resp. DIN EN 10226-3

- Cylindrical ring gauge no. 3 with 1 measuring step („+“, „-“)
- Tapered smooth ring gauge no. 4 with measuring step („+“, „-“) for checking the major diameter of the bolt
- Tapered plug gauge no. 5 with 1 measuring step for checking gauge no. 3

6.9.3.2 Whitworth pipe thread for special screw connections

- **DIN 3858** = shorter thread lengths
- **DIN 477, DIN EN 144-1, DIN EN ISO 11363** = gas cylinder valves

DIN 3858

Cylindrical internal thread for pipe screw connections with short thread length, is screwed with tapered external thread!

- Cylindrical ring gauge with 1 measuring step for **standard version (tolerance zone position 1)**
- Cylindrical ring gauge with 1 measuring step for **short version (tolerance zone position 2)**
- Cylindrical plug gauge go/no-go with go side and no-go side for checking the Rp internal thread



6.9 Lehrung von anderen Gewinden

DIN 477-1

In der DIN 477 sind sowohl zylindrische als auch kegelige Verschraubungen genormt. Diese werden für Gasflaschenverschraubungen, Ventile, Seitenstutzen und Zubehör verwendet.

Zylindrische Verschraubungen

- Zylindrisches Innengewinde und Außengewinde für Seitenstutzen und Zubehör

W 21,8 x 1/14, nur in DIN 477-1 genormt

- Zylindrischer Grenzlehndorn mit Gut- und Ausschusseite
- Zylindrischer Gut- und Ausschusslehrring

W 24,32 x 1/14, nur in DIN 477-1 genormt

- Zylindrischer Grenzlehndorn mit Gut- und Ausschusseite
- Zylindrischer Gut- und Ausschusslehrring

1"-8 BSW medium class, Standardabmessung nach BS 84 genormt

- Zylindrischer Grenzlehndorn mit Gut- und Ausschusseite
- Zylindrischer Gut- und Ausschusslehrring

Kegelige Verschraubungen

- Kegeliges Innengewinde und Außengewinde für Einschraubstutzen und Flaschenhals
- Kegelverhältnis 3:25, Gewindeprofil senkrecht zum Kegelmantel

17E (W 19,8 x 1/14) und 25E (W 28,8 x 1/14) in DIN EN ISO 11363-1 und -2 genormt

Einteiliges Lehrensystem

- I-1 = Glatter Grenzlehndorn kegelig für Mutter-Kerndurchmesser
- I-2 = Gewinde-Grenzlehndorn kegelig
- I-7 = Glatter Grenzlehrring kegelig für Bolzen-Außendurchmesser
- I-8 = Gewinde-Grenzlehrring kegelig

Zweiteiliges Lehrensystem

- I-3 = Glatter Grenzlehndorn kegelig für Mutter-Kerndurchmesser (kleiner Durchmesser)
- I-5 = Glatter Grenzlehndorn kegelig für Mutter-Kerndurchmesser (großer Durchmesser)
- I-4 = Gewinde-Grenzlehndorn kegelig (kleiner Durchmesser)
- I-6 = Gewinde-Grenzlehndorn kegelig (großer Durchmesser)
- I-9 = Glatter Grenzlehrring kegelig für Bolzen-Außendurchmesser (kleiner Durchmesser)
- I-11 = Glatter Grenzlehrring kegelig für Bolzen-Außendurchmesser (großer Durchmesser)
- I-10 = Gewinde-Grenzlehrring kegelig (kleiner Durchmesser)
- I-12 = Gewinde-Grenzlehrring kegelig (großer Durchmesser)

- W 31,3 x 1/14 keg.**
nur in DIN 477-1 und -7 genormt
- Lehrensystem wie 17E und 25E

6.9 Gauging of other threads

DIN 477-1

DIN 477 specifies both cylindrical and tapered screw connections. These are used in screw connections for gas cylinders, valves, spouts and accessories.

Cylindrical screw connections

- Cylindrical internal thread and external thread for spouts and accessories

W 21.8 x 1/14, only specified in DIN 477-1

- Cylindrical plug gauge go/no-go with go side and no-go side
- Cylindrical ring gauge go and no-go

W 24.32 x 1/14, only specified in DIN 477-1

- Cylindrical plug gauge go/no-go with go side and no-go side
- Cylindrical ring gauge go and no-go

1"-8 BSW medium class, standard dimension specified according to BS 84

- Cylindrical plug gauge go/no-go with go side and no-go side
- Cylindrical ring gauge go and no-go

Tapered screw connections

- Tapered internal thread and external thread for screw-in socket and bottleneck.
- Taper ratio 3:25, thread profile perpendicular to cone surface

17E (W 19.8 x 1/14) and 25E (W 28.8 x 1/14) standardised in DIN EN ISO 11363-1 und -2

One-piece gauge system

- I-1 = Smooth plug gauge go/no-go tapered for minor diameter of nut
- I-2 = Plug gauge go/no-go tapered
- I-7 = Smooth ring gauge go/no-go tapered for major diameter of bolt
- I-8 = Ring gauge go/no-go tapered

Two-piece gauge system

- I-3 = Smooth plug gauge go/no-go tapered for minor diameter of nut (small diameter)
- I-5 = Smooth plug gauge go/no-go tapered for minor diameter of nut (large diameter)
- I-4 = Plug gauge go/no-go tapered (small diameter)
- I-6 = Plug gauge go/no-go tapered (large diameter)
- I-9 = Smooth ring gauge go/no-go tapered for major diameter of bolt (small diameter)
- I-11 = Smooth ring gauge go/no-go tapered for major diameter of bolt (large diameter)
- I-10 = Ring gauge go/no-go tapered (small diameter)
- I-12 = Ring gauge go/no-go tapered (large diameter)

- W 31.3 x 1/14 tapered**
standardised only in DIN 477-1 and -7
- Gauge system like 17E and 25E

Product
Finder

M

MF

UNC

UNF

G

Rp
R, Rc

NPT, NPTF

BSW

Pg

MJ
UNJC, UNJFEG (STI)
SELF-LOCKTr, Tr-F
RdGlatt
Smooth

GT, TD

Zubehör
AccessoriesKalibrieren
Calibration

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- 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
- Kalibrieren
Calibration
- Tech. Info

6.9 Lehrung von anderen Gewinden

6.9.4 Metrisches kegeliges Außengewinde DIN 158, Flankenwinkel 60°

Das kegelige Außengewinde wird mit einem zylindrischen Innengewinde gepaart.

Zylindrisches Innengewinde

- Das zylindrische Innengewinde nach DIN 158 ist identisch mit dem Innengewinde nach ISO 965-1, Toleranz-Klasse 4H für den Flankendurchmesser und 5H für den Kerndurchmesser
- Die Lehrung erfolgt mit Gewinde-Grenzlehrdornen mit Gut- und Ausschusseite nach DIN ISO 1502

Kegeliges Außengewinde

- Beim kegeligen Außengewinde unterscheidet man zwei Toleranzlagen: Regelausführung und Kurzausführung!

Kegeliges Außengewinde – Regelausführung

- Das kegelige Außengewinde wird gelehrt mit zylindrischem Gewinde-Grenzlehrring mit Messstufe
Beschriftungs-Beispiel: DIN158-Z-M18x1,5 keg

Kegeliges Außengewinde – Kurzausführung

- Das kegelige Außengewinde wird gelehrt mit zylindrischem Gewinde-Grenzlehrring mit Messstufe
Beschriftungs-Beispiel: DIN158-Z-M18x1,5 keg-kurz

6.9 Gauging of other threads

6.9.4 Metric tapered external thread DIN 158, thread angle 60°

The tapered external thread is coupled with a cylindrical internal thread.

Cylindrical internal thread

- The cylindrical internal thread according to DIN 158 is identical to the internal thread according to ISO 965-1, tolerance class 4H for the pitch diameter and 5H for the minor diameter
- Gauging is done with plug gauges go/no-go with go side and no-go side according to DIN ISO 1502

Tapered external thread

- Two tolerance positions can be distinguished for the tapered external thread: standard version and short version!

Tapered external thread – standard version

- The tapered external thread is gauged with a cylindrical ring gauge go/no-go with measuring step
Example for marking: DIN158-Z-M18x1.5 keg

Tapered external thread – short version

- The tapered external thread is gauged with a cylindrical ring gauge go/no-go with measuring step
Example for marking: DIN158-Z-M18x1.5 keg-kurz





Aufnahmen und Gewindeschneidapparate Tap Holders and Tapping Attachments

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



Technische Informationen

Technical information

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- Softsynchro
- Speedsynchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

| | Kühlung und Schmierung Cooling and lubrication | | | | Funktionen Functions | | | | | | | |
|---------------------------|---|---|---|--|---|---|---|---|---|---|---|---|
| | Imere Kühlmittel-Zufuhr (IKZ) Internal coolant supply (IKZ) | Minimallängenschmierung (MMS) Minimum-quantity lubrication (MQL) | Kühlmittel-Druck am Futtereintritt Coolant-lubricant pressure at the entry to the holder | Luftdruck am Futtereintritt Air pressure at the entry to the holder | Längenausgleich in Druck- und Zugrichtung Length compensation on compression and tension | Minimallängenausgleich Minimal length compensation | Längenausgleich in Zugrichtung Length compensation on tension | Längennachstellung Length readjustment | Druckpunktmechanismus Pressure-point mechanism | Zugausrastung Front release | Achspannparallel Pendelung Axial-parallel floating | |
| |  |  | p_{max} 100bar (1400psi) | p_{max} 50bar (700psi) | p_{max} 6bar (85psi) |  |  |  |  |  |  |  |
| Softsynchro® Micro | | | | | | | ■ | | | | | |
| Softsynchro® 0-5 | ■ | | | ■ | | | ■ | | | | | |
| Softsynchro® 6 | ■ | | | ■ | | | ■ | | | | | |
| Softsynchro®/PGR | ■ | | | ■ | | | ■ | | | | | |
| Softsynchro®/Modular/IKZ | ■ | | | ■ | | | ■ | ■ | | | | |
| Softsynchro®/MMS | | ■ | | | ■ | | ■ | | | | | |
| Softsynchro®/Modular/MQL | | ■ | | | ■ | | ■ | ■ | | | | |
| Speedsynchro®/Modular/IKZ | ■ | | | ■ | | | ■ | ■ | | | | |
| Speedsynchro®/Modular/MQL | | ■ | | | ■ | | ■ | ■ | | | | |
| KSN | | | | | | ■ | | | | ■ | ■ | |
| KSN/HD | ■ | | | ■ | | ■ | | | | ■ | ■ | |
| KSN/HD/ER | ■ | | | ■ | | ■ | | | | ■ | | |
| KSN/HD/PGR | ■ | | | ■ | | ■ | | | | ■ | | |
| KSN/Synchro | ■ | | ■ | | | | | | | | | |
| KSN/MQL | | ■ | | | ■ | ■ | | | | ■ | ■ | |
| SFM | | | | | | | | | | | | |
| SFM-NP | | | | | | | | | | | | ■ |
| SFM-L-DZ | | | | | | ■ | | | | ■ | | |
| SWITCH-MASTER® | ■ | | | ■ | | | | ■ | | | | |
| GR | | | | | | ■ | | | | | | |
| GR-S | | | | | | ■ | | | | | | |
| HF | | | | | | ■ | | | | | | |
| HF/HD/Spezial | ■ | | | ■ | | ■ | | | | | | |

Symbolbeschreibung der Leistungsmerkmale

Description of the symbols of performance characteristics

» 804 - 811

Neue EG-Maschinenrichtlinie 2006/42/EG

Mit der Neufassung der am 31. Dezember 2009 in Kraft getretenen EG-Maschinenrichtlinie 2006/42/EG werden nun auch sogenannte unvollständige Maschinen einbezogen. Dazu gehören auch Werkzeug- und Werkstückspannmittel, welche als Maschinenkomponenten in andere Maschinen eingebaut oder mit ihnen zusammengefügt werden.

Auf manuals.emugedownloads.com stellen wir Ihnen alle notwendigen Informationen der EG-Maschinenrichtlinie 2006/42/EG für unsere Produkte zur Verfügung.

New EC Machinery Directive 2006/42/EC

The new version of the EC Machinery Directive 2006/42/EC which became effective on 31 December 2009 now also contains requirements for so-called incomplete machines. This includes also tool and workpiece clamping devices which are installed into other machines as machine components, or assembled into a unit with them.

On manuals.emugedownloads.com we have compiled for you all the information from the EC Machinery Directive 2006/42/EC which may be necessary for the use of our products.

| Funktionen Functions | | | | Werkzeug-Adaptierung Tool adaptation | | | | | | Empfohlene Einsatzgebiete Recommended range of application | | | | Product Finder | |
|---|-----------------------------|-------------------------------------|--|---|---|--|--|--|---|---|--|--|--------------------------|--------------------------|----------------------------------|
| Übersetzung ins Schnelle Transmission gearing rapid traverse | Wendegeräte Reverse gear | Überlastkupplung Overload clutch | Bohren und Senken Drilling and countersinking | Werkzeugadaptierung über Schnellwechsel-Einsätze, Typenreihe EM Tool adaptation by means of quick-change adapters, EM series | Werkzeugadaptierung über Schnellwechsel-Einsätze, Typenreihe HE Tool adaptation by means of quick-change adapters, HE series | Werkzeugadaptierung über Spannzangen, Typ ER (GB) Tool adaptation by means of collets, type ER (GB) | Werkzeugadaptierung über Spannzangen, Typ PGR-GB Tool adaptation by means of collets, type PGR-GB | Werkzeugadaptierung über Spannzangen, Typ Rubber-Flex Tool adaptation by means of collets, type Rubber-Flex | Einsatz auf Maschinen mit Synchronspindel For use on machines with synchronous spindle | Einsatz auf CNC-Bearbeitungszentren und sonstigen Werkzeugmaschinen For use on CNC machining centres and other machine tools | Einsatz auf Mehrspindelmaschinen und Transferstraßen For use on multi-spindle machines and transfer lines | Einsatz auf Säulenbohrmaschinen For use on pillar drilling machines | | | |
| | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Softsynchro® Micro |
| | | | | | | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Softsynchro® 0-5 |
| | | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Softsynchro® 6 |
| | | | | | | | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Softsynchro®/PGR |
| | | | | | | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Softsynchro®/Modular/IKZ |
| | | | | | | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Softsynchro®/MMS |
| <input type="checkbox"/> | | | | | | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Softsynchro®/Modular/MQL |
| <input type="checkbox"/> | | | | | | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Speedsynchro®/Modular/IKZ |
| | | | | | | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Speedsynchro®/Modular/MQL |
| | | | | <input type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | KSN |
| | | | | <input type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | KSN/HD |
| | | | | | | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | KSN/HD/ER |
| | | | | | | | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | KSN/HD/PGR |
| | | | | | | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | KSN/Synchro |
| | | | | <input type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | KSN/MQL |
| | | | | <input type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | SFM |
| | | | | <input type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | SFM-NP |
| | | | | <input type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | SFM-L-DZ |
| | <input type="checkbox"/> | | | | | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | SWITCH-MASTER® |
| | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | GR |
| | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | GR-S |
| | | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | HF |
| | | | | | <input type="checkbox"/> | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | HF/HD/Spezial |

Product Finder

Softsynchro

Speedsynchro

KSN

MQL MMS

SFM

SWITCH-MASTER

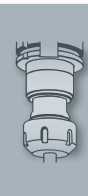
GR, GR-S

HF

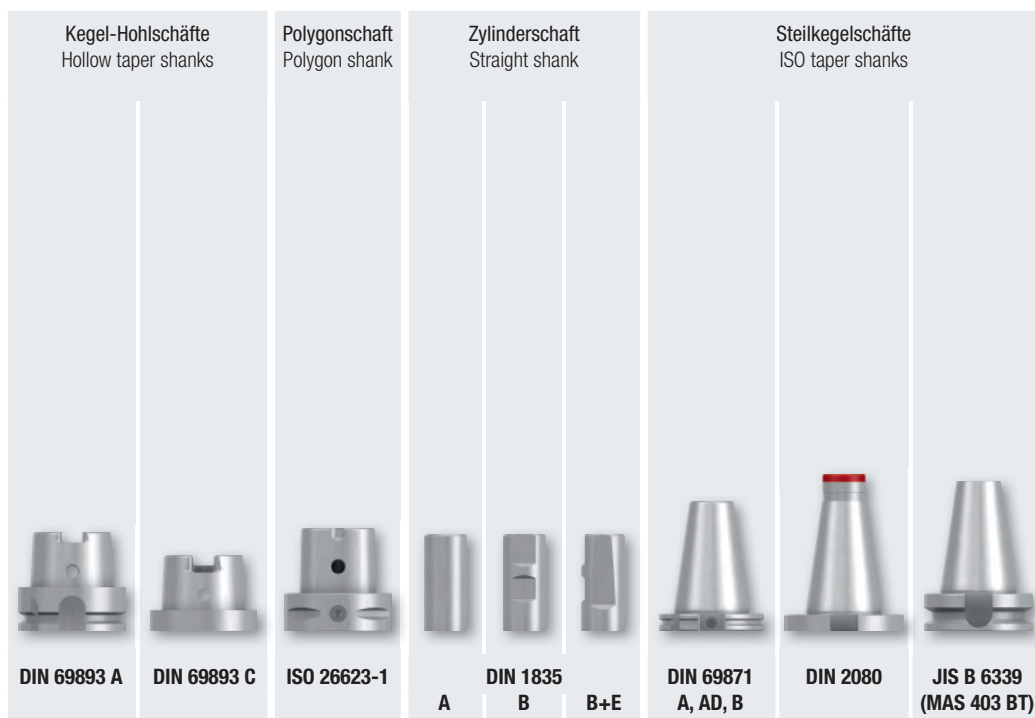
EM

Zubehör Accessories

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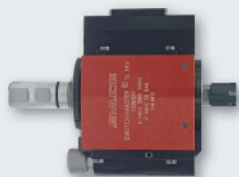


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| Speedsynchro®/Modular/MQL | | | | | | | | |
| KSN | 688 | 689 | | | 690 | 691 | 692 | 693 |
| KSN/HD | 698 | 699 | 700 | | 701 | 702 | | |
| KSN/HD/ER | 706 | 707 | | | 708 | | | |
| KSN/HD/PGR | 709 | | | | 710 | | | |
| KSN/Synchro | 711 | | | | 712 | 713 | | |
| KSN/MQL | 727 - 728 | 729 | | | | | | |
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| SFM-L-DZ | | | | | | | | |
| HF | | | | | | 748 - 749 | 748 - 749 | 748 - 749 |
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Weitere Schaftvarianten auf Anfrage
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Gewindeschneidapparate Typ SWITCH-MASTER®
Tapping attachments type SWITCH-MASTER®

739 - 742



Gewindeschneidapparate Typ GR und GR-S
Tapping attachments type GR and GR-S

743 - 746

| | | | | | | |
|---|---|---|---|---|---|--|
| Morsekegelschaft Morse taper shank | StellhülSENSchaft Cylindrical shank | VDI-Schaft VDI shank | ABS®-Kupplung ABS®-clutch | Schäfte für angetriebene Werkzeuge Shanks for driven tools | | |
|  |  |  |  |  |  |  |
| DIN 228 B | DIN 6327 | DIN ISO 10889 (VDI 3425) | ABS® (System KOMET) | mimatic® | heimatec® | W&F |

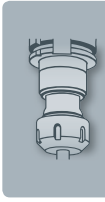
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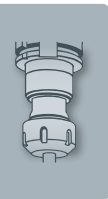
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|-----------|-----|-----|----------|-----|-----|-----|----------------------------------|
| | | | | | | | Softsynchro® Micro |
| | | | | 677 | 678 | 679 | Softsynchro® 0-5 |
| | | | | | | | Softsynchro® 6 |
| | | | | | | | Softsynchro®/Modular/IKZ |
| | | | | | | | Softsynchro®/PGR |
| | | | | | | | Softsynchro®/MMS |
| | | | | | | | Softsynchro®/Modular/MQL |
| | | | 685 | | | | Speedsynchro®/Modular/IKZ |
| | | | 686, 726 | | | | Speedsynchro®/Modular/MQL |
| 694 | 695 | 696 | 697 | | | | KSN |
| | 703 | 704 | 705 | | | | KSN/HD |
| | | | | | | | KSN/HD/ER |
| | | | | | | | KSN/HD/PGR |
| | | | | | | | KSN/Synchro |
| | | | | | | | KSN/MQL |
| 734 | 735 | | | | | | SFM |
| | 736 | | | | | | SFM-NP |
| 737 | 738 | | | | | | SFM-L-DZ |
| 748 - 749 | | | | | | | HF |
| | | | | | | | HF/HD/Spezial |

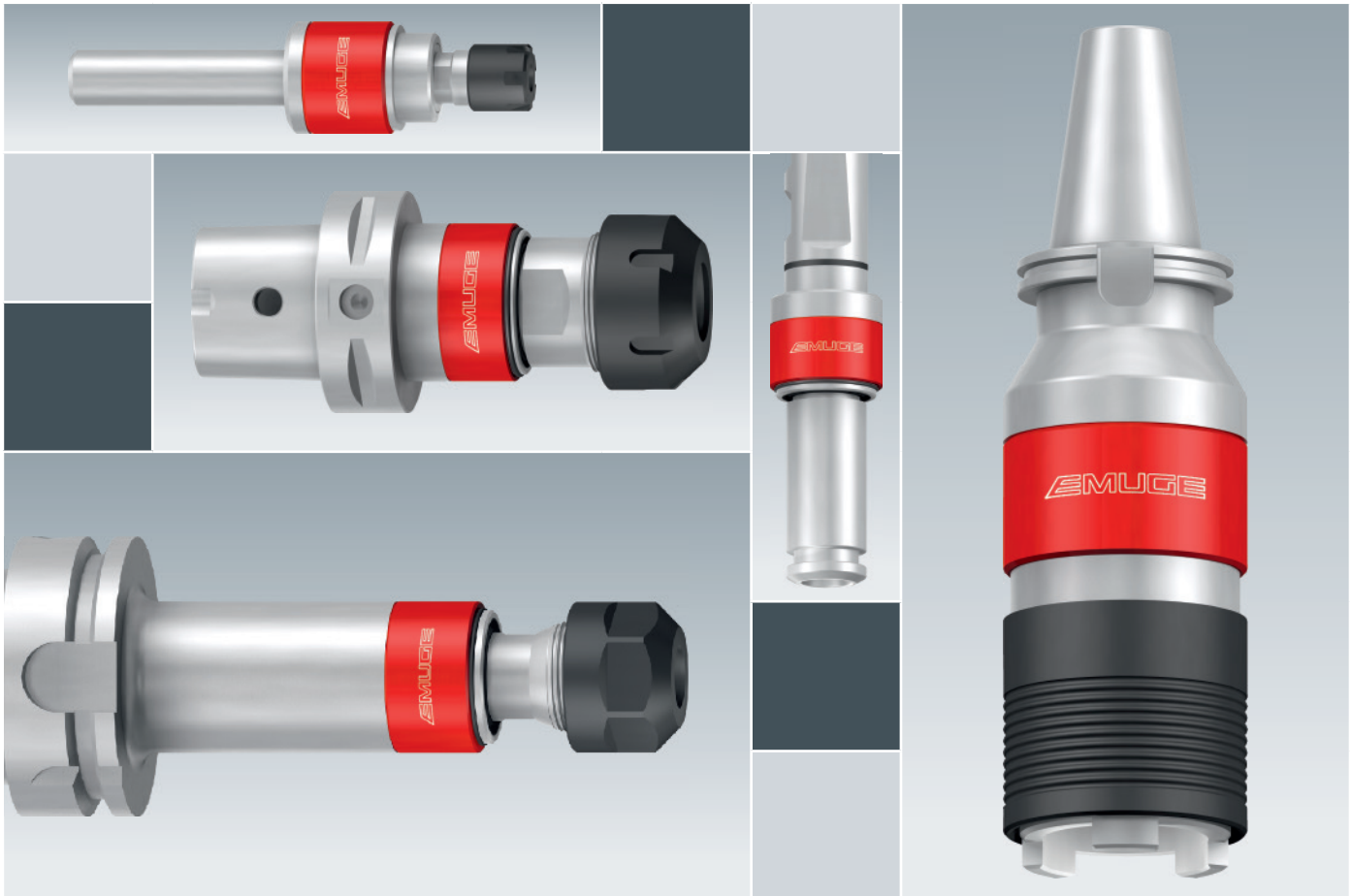
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| | | |
|---|---|-----------|
|  | Schnellwechsel-Einsätze Typenreihe EM Quick-change adapters type EM | 755 - 778 |
|  | Zubehör für Aufnahmen und Gewindeschneidapparate Accessories for tap holders and tapping attachments | 779 - 802 |



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Typenreihe Softsynchro® Softsynchro® Series

Einsatz auf Maschinen mit Synchronspindel

Das Gewindewerkzeug wird durch die Synchronspindel steigungsgeführt, eventuell auftretende Axialkräfte durch Synchronisationsfehler werden durch einen patentierten Minimallängenausgleich auf Zug und Druck minimiert.

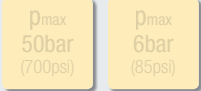
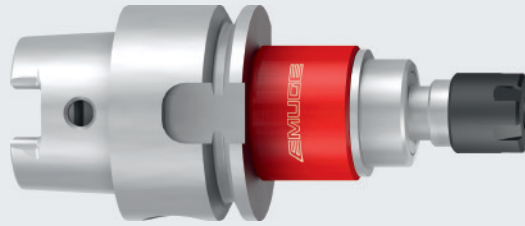
Application on machines with synchronous spindle

The threading tool is pitch-controlled by the synchronous spindle; eventually arising axial forces caused by synchronisation faults are minimised by a patent-protected minimum length compensation on tension and on compression.

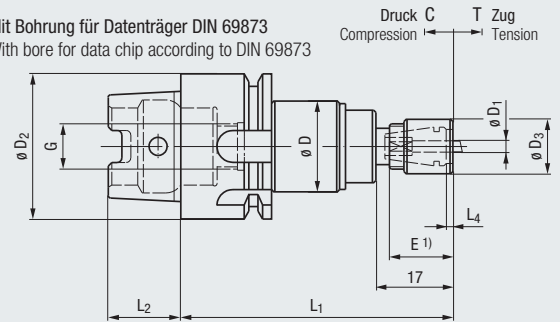


Softsynchro®

DIN 69893 A



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 Type | | $\varnothing D_1$ | | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | L_1 | L_2 | L_4 | G | C | T | Artikel-Nr. Article no. |
|-------------------------------|----------------------------|-------------------|------|---------------|-------------------|-----------------|-------------------|-------|-------|-------|---------|-----|-----|----------------------------|
| Softsynchro® Micro | M0,5 - M4 (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 | F3150C01 |

¹⁾ Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

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)

» 786 - 787



Spannschlüsselsatz
Set of clamping wrenches

» 793



Kühlschmierstoffrohre und Schlüssel
Coolant tubes and wrenches

» 782 - 783



Drehmomentschlüssel TORCO-FIX
Torque wrenches TORCO-FIX

» 795

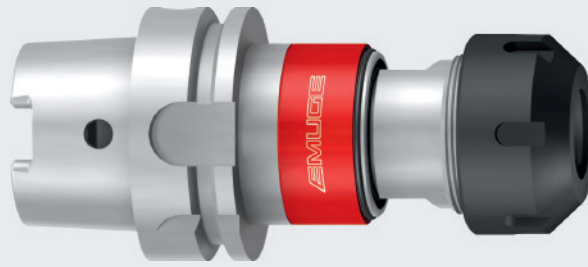


Detaillierte Informationen zur
synchronen Gewindeherstellung
siehe Seite 814 - 820

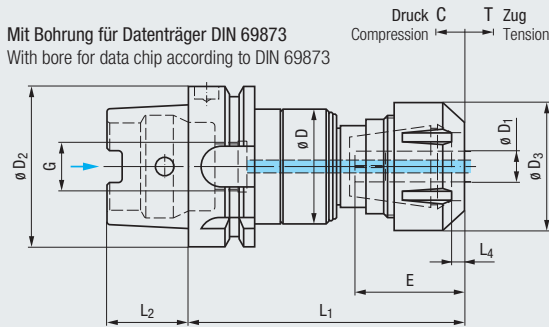
Detailed information
regarding rigid tapping
see page 814 - 820

Softsynchro®

DIN 69893 A



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 Type | | $\varnothing D_1$ | | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | L_1 ER | L_1 ER-GB | L_2 | L_4 | G | C | T | Artikel-Nr. Article no. | |
|-----------------------|-----------------------------|-------------------|------------|-------------|-------------------|-----------------|-------------------|-------------|----------------|-------|-------|-----------|-----|-----|----------------------------|---|
| Softsynchro® 0 | M2 - M8 (Nr.2 - 5/16) | 2,5 - 7 | ER 11 (GB) | Hi-Q/ERM 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® 1 | M4 - M12 (Nr.8 - 7/16) | 4,5 - 10 | ER 20 (GB) | Hi-Q/ERC 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-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® 3 | M4 - M20 (Nr.8 - 3/4) | 4,5 - 16 | ER 32 (GB) | Hi-Q/ERC 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® 4 | M12 - M30 (7/16 - 1 1/8) | 9 - 22 | ER 40 (GB) | Hi-Q/ERC 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 | ● |

1) Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

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)

» 786 - 787



Dichtscheiben Typ DS/ER
Sealing disks type DS/ER

» 789



Spannmutter mit integrierter
Abdichtung Typ Hi-Q/ERM 11
Clamping nut with integrated seal,
type Hi-Q/ERM 11

» 790



Spannschlüsselsatz
Set of clamping wrenches

» 793



Montagevorrichtung
Assembly device

» 793



Kühlschmierstoffrohre und Schlüssel
Coolant tubes and wrenches

» 782 - 783



Drehmomentschlüssel TORCO-FIX
Torque wrenches TORCO-FIX

» 795

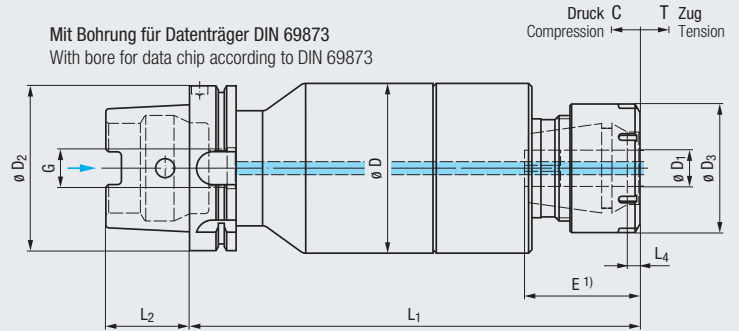


Softsynchro®

DIN 69893 A



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 Type | | $\varnothing D_1$ | | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | L_1 ER | L_1 ER-GB | L_2 | L_4 | G | C | T | Artikel-Nr. Article no. |
|---------------------------|------------------------------|-------------------|------------|-----------------|-------------------|-----------------|-------------------|-------------|----------------|-------|-------|-----------|-----|-----|----------------------------|
| Softsynchro® 5 | M30 - M48 (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 | F3155C06.1 |

¹⁾ Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

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)

» 786 - 787



Dichtscheiben Typ DS/ER
Sealing disks type DS/ER

» 789



Spannschlüssel
Clamping wrenches

» 793



Kühlschmierstoffrohre und Schlüssel
Coolant tubes and wrenches

» 782 - 783



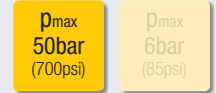
Drehmomentschlüssel TORCO-FIX
Torque wrenches TORCO-FIX

» 795

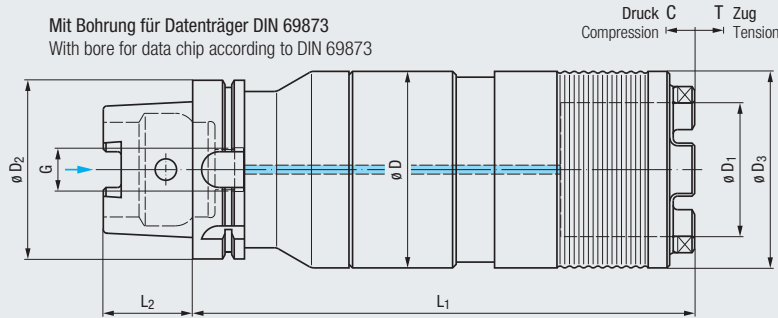


Softsynchro®

DIN 69893 A



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 Type | | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_1$ | $\varnothing D_3$ | L_1 | L_2 | G | C | T | Artikel-Nr. Article no. |
|---------------------------|------------------------------|----------|-------------------|-----------------|-------------------|-------------------|-------|-------|-----------|---|---|----------------------------|
| Softsynchro® 6 | M45 - M76 (1 3/8 - 2 3/8) | HE2/IKZZ | HSK-A100 | 110 | 75 | 110 | 281 | 50 | M24 x 1,5 | 2 | 2 | F3156C06.1 |

Weitere Ausführungen auf Anfrage
Further designs upon request

Zubehör Accessories



Schnellwechsel-Einsätze Typ HE2/IKZZ
Quick-change adapters type HE2/IKZZ ▶ 752



Kühlschmierstoffrohre und Schlüssel
Coolant tubes and wrenches ▶ 782 - 783



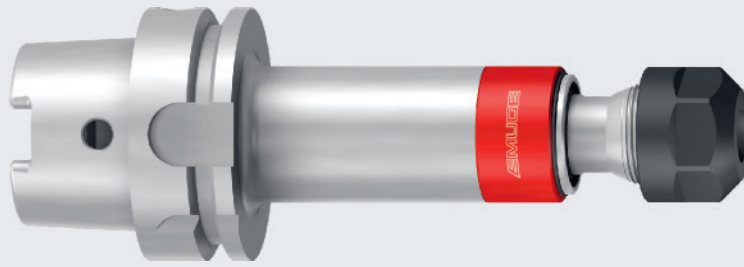
Weitere Schnellwechsel-Aufnahmen
(Typenreihe HF) zur Herstellung von
großen Gewinden siehe Seite 747 - 754

Further quick-change tap holders
(HF series) for the production of
large threads, see pages 747 - 754

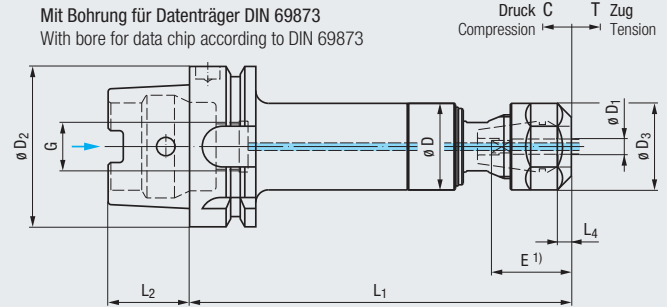


Softsynchro®

DIN 69893 A



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 Type | | $\varnothing D_1$ | | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | L_1 | L_2 | L_4 | G | C | T | Artikel-Nr. Article no. | |
|---------------------------------|---------------------------|-------------------|------------|----------------|-------------------|-----------------|-------------------|-------|-------|-------|---------|-----|-----|----------------------------|---|
| Softsynchro® 1 | M4 - M12 (Nr.8 - 7/16) | 4,5 - 10 | ER 20 (GB) | Hi-Q/ERC 20 | 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 | ● |

1) Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

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)

» 786 - 787



Dichtscheiben Typ DS/ER
Sealing disks type DS/ER

» 789



Spann Schlüsselset
Set of clamping wrenches

» 793



Montagevorrichtung
Assembly device

» 793



Kühlschmierstoffrohre und Schlüssel
Coolant tubes and wrenches

» 782 - 783

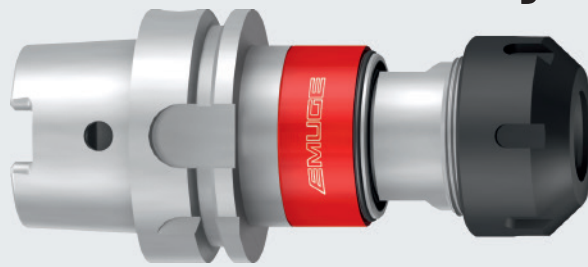


Drehmomentschlüssel TORCO-FIX
Torque wrenches TORCO-FIX

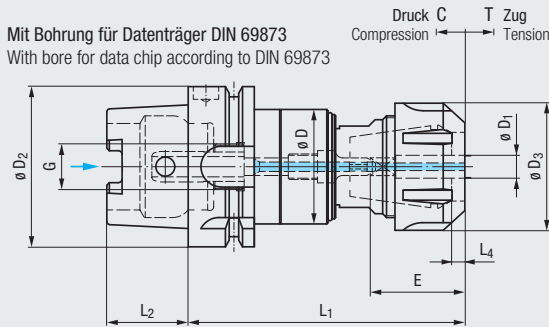
» 795

Softsynchro® Modular/IKZ

DIN 69893 A



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

| new | Typ Type | $\varnothing D_1$ | | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | L_1 | L_2 | L_4 | G | C | T | Artikel-Nr. Article no. | |
|----------------------------|------------------|-------------------|------------|-------------|-------------------|-----------------|-------------------|-------|-------|-------|-----------|-----|-----|-------------------------|---|
| Softsynchro® 1/Modular/IKZ | M4,5 - M10 | 6 / 7 | ER 20 (GB) | Hi-Q/ERC 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, 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® 3/Modular/IKZ | M12 | 9 | ER 32 (GB) | Hi-Q/ERC 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 | ● |

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

Weitere Ausführungen auf Anfrage
Further designs upon request

Einstecktiefen Clamping depths

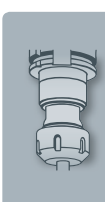
| $\varnothing D_1$ | E | |
|-------------------|------|------|
| | min. | max. |
| 6 | 29 | 31 |
| 7 | 29 | 31 |
| 8 | 34 | 36 |
| 9 | 35 | 37 |
| 10 | 39 | 41 |
| 11 | 40 | 42 |
| 12 | 40 | 42 |
| 14 | 42 | 44 |
| 16 | 43 | 45 |

Zubehör Accessories

- 
Spannzangen Typ ER (GB)
Collets type ER (GB)
▶▶ 786 - 787
- 
Dichtscheiben Typ DS/ER
Sealing disks type DS/ER
▶▶ 789
- 
Spannschlüsselsatz
Set of clamping wrenches
▶▶ 793
- 
Montagevorrichtung
Assembly device
▶▶ 793
- 
Längeneinstellschrauben
Length adjustment screws
▶▶ 784
- 
Drehmomentschlüssel TORCO-FIX
Torque wrenches TORCO-FIX
▶▶ 795

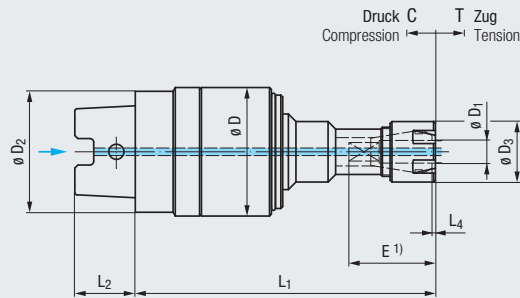
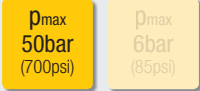
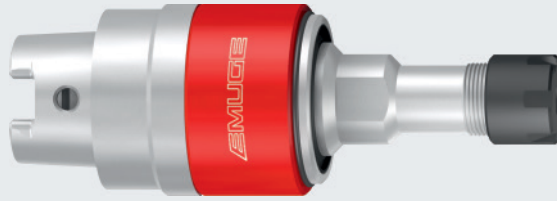
Product Finder

- Soft-synchro
- Speed-synchro
- KSN
- MLQ MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info



Softsynchro®

DIN 69893 C



Einsatz auf Maschinen mit Synchronspindel For use on machines with synchronous spindle

| Typ Type | | $\varnothing D_1$ | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | L_1 ER | L_1 ER-GB | L_2 | L_4 | C | T | Artikel-Nr. Article no. | | |
|-----------------------|---------------------------|-------------------|------------|-------------------|-----------------|-------------------|-------------|----------------|-------|-------|-----|-----|----------------------------|-------------------|---|
| Softsynchro® 0 | M2 - M8 (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 | F3150K01.1 | ● |
| | | | | | HSK-C40 | 34 | 16 | 81,2 | 79,5 | 20 | 0,9 | 0,5 | 0,5 | F3150K02.1 | ○ |
| Softsynchro® 1 | M4 - M12 (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 | F3151K01.1 | ● |
| | | | | | HSK-C40 | 34 | 34 | — | 81,5 | 20 | 5 | 0,5 | 0,5 | F3151K02.1 | ● |

¹⁾ Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

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)

» 786 - 787



Dichtscheiben Typ DS/ER
Sealing disks type DS/ER

» 789



Spannmutter mit integrierter Abdichtung Typ Hi-Q/ERM 11
Clamping nut with integrated seal, type Hi-Q/ERM 11

» 790



Spannschlüsselsatz
Set of clamping wrenches

» 793



Montagevorrichtung
Assembly device

» 793

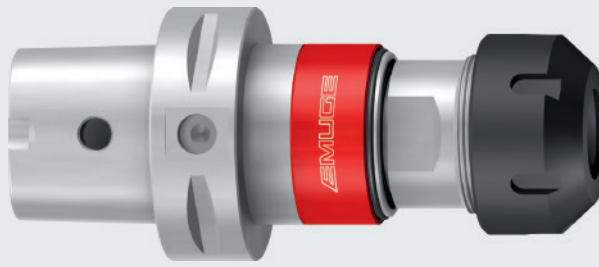


Drehmomentschlüssel TORCO-FIX
Torque wrenches TORCO-FIX

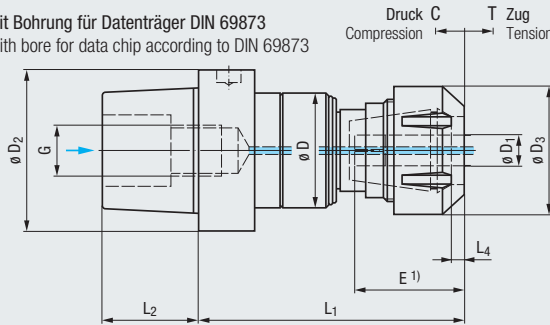
» 795

Softsynchro®

ISO 26623-1



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 Type | | ø D ₁ | | | ø D ₂ | ø D | ø D ₃ | L ₁ ER | L ₁ ER-GB | L ₂ | L ₄ | G | C | T | Artikel-Nr. Article no. | |
|-----------------------|-----------------------------|------------------|------------|-------------|------------------|-----|------------------|----------------------|-------------------------|----------------|----------------|-----------|-----|-----|----------------------------|---|
| Softsynchro® 0 | M2 - M8 (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 | F3150T06.1 | ● |
| Softsynchro® 1 | M4 - M12 (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 | F3151T04.1 | ● |
| | | | | | PSC 50 | 34 | 34 | — | 89,5 | 30 | 5 | M16 x 1,5 | 0,5 | 0,5 | F3151T05.1 | ● |
| | | | | | PSC 63 | 34 | 34 | — | 93,5 | 38 | 5 | M20 x 2 | 0,5 | 0,5 | F3151T06.1 | ● |
| Softsynchro® 3 | M4 - M20 (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 | F3153T04.1 | ● |
| | | | | | PSC 50 | 45 | 50 | — | 103 | 30 | 5 | M16 x 1,5 | 0,5 | 0,5 | F3153T05.1 | ● |
| | | | | | PSC 63 | 45 | 50 | — | 107 | 38 | 5 | M20 x 2 | 0,5 | 0,5 | F3153T06.1 | ● |
| Softsynchro® 4 | M12 - M30 (7/16 - 1 1/8) | 9 - 22 | ER 40 (GB) | Hi-Q/ERC 40 | PSC 63 | 63 | 63 | — | 129,5 | 38 | 5 | M20 x 2 | 0,7 | 0,7 | F3154T06.1 | ● |
| | | | | | PSC 80 | 63 | 63 | — | 134 | 48 | 5 | M20 x 2 | 0,7 | 0,7 | F3154T08.1 | ○ |

1) Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

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)

» 786 - 787



Dichtscheiben Typ DS/ER
Sealing disks type DS/ER

» 789



Spannmutter mit integrierter
Abdichtung Typ HI-Q/ERM 11
Clamping nut with integrated seal,
type HI-Q/ERM 11

» 790



Spannschlüsselsatz
Set of clamping wrenches

» 793



Montagevorrichtung
Assembly device

» 793



Drehmomentschlüssel TORCO-FIX
Torque wrenches TORCO-FIX

» 795



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

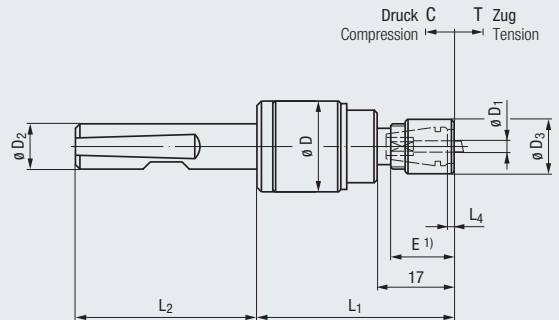
Softsynchro®

DIN 1835 B+E



p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)



Einsatz auf Maschinen mit Synchronspindel For use on machines with synchronous spindle

| Typ Type | | $\varnothing D_1$ | | | $\varnothing D_2$ h6 | $\varnothing D$ | $\varnothing D_3$ | L_1 | L_2 | L_4 | C | T | Artikel-Nr. Article no. |
|-------------------------------|----------------------------|-------------------|------|---------------|-------------------------|-----------------|-------------------|-------|-------|-------|-----|-----|----------------------------|
| Softsynchro® Micro | M0,5 - M4 (Nr.0 - Nr.8) | 2 - 4,5 | ER 8 | Hi-Q/ERM 8 | 10 | 20 | 12 | 43,5 | 40 | 1,5 | 0,2 | 0,2 | F3150G22 |

1) Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

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)

» 786 - 787



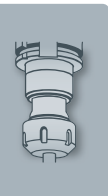
Spannschlüsselsatz
Set of clamping wrenches

» 793



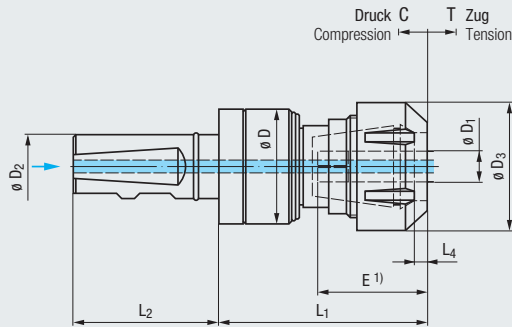
Drehmomentschlüssel TORCO-FIX
Torque wrenches TORCO-FIX

» 795



Softsynchro®

DIN 1835 B+E



Einsatz auf Maschinen mit Synchronspindel For use on machines with synchronous spindle

| Typ Type | | $\varnothing D_1$ | | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | L_1 ER | L_1 ER-GB | L_2 | L_4 | C | T | Artikel-Nr. Article no. | |
|-----------------------|-----------------------------|-------------------|------------|-------------|-------------------|-----------------|-------------------|-------------|----------------|-------|-------|-----|-----|----------------------------|---|
| Softsynchro® 0 | M2 - M8 (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 | F3150G24.1.44 | ● |
| | | | | | 20 | 34 | 16 | 72,7 | 71 | 51 | 0,9 | 0,5 | 0,5 | F3150G25.1.44 | ● |
| | | | | | 25 | 34 | 16 | 72,7 | 71 | 57 | 0,9 | 0,5 | 0,5 | F3150G26.1.44 | ● |
| Softsynchro® 1 | M4 - M12 (Nr.8 - 7/16) | 4,5 - 10 | ER 20 (GB) | Hi-Q/ERC 20 | 20 | 34 | 34 | - | 73 | 51 | 5 | 0,5 | 0,5 | F3151G25.1.44 | ● |
| | | | | | 25 | 34 | 34 | - | 73 | 57 | 5 | 0,5 | 0,5 | F3151G26.1.44 | ● |
| Softsynchro® 3 | M4 - M20 (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 | F3153G26.1.44 | ● |
| Softsynchro® 4 | M12 - M30 (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 | F3154G27.1 | ● |

1) Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

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

▶ ▶ 780



Spannzangen Typ ER (GB)
Collets type ER (GB)

▶ ▶ 786 - 787



Dichtscheiben Typ DS/ER
Sealing disks type DS/ER

▶ ▶ 789



Spannmutter mit integrierter
Abdichtung Typ Hi-Q/ERM 11
Clamping nut with integrated seal,
type Hi-Q/ERM 11

▶ ▶ 790



Spannschlüsselsatz
Set of clamping wrenches

▶ ▶ 793



Montagevorrichtung
Assembly device

▶ ▶ 793



Drehmomentschlüssel TORCO-FIX
Torque wrenches TORCO-FIX

▶ ▶ 795



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

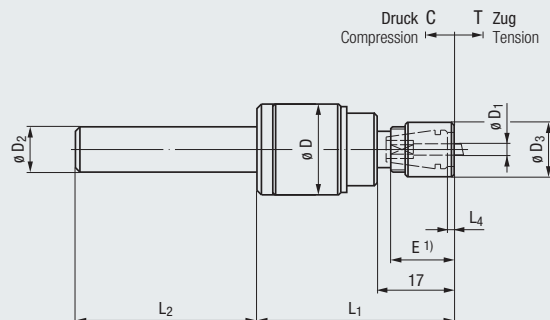
Softsynchro®

DIN 1835 A



p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)



Einsatz auf Maschinen mit Synchronspindel For use on machines with synchronous spindle

| Typ Type | | $\varnothing D_1$ | | | $\varnothing D_2$ h6 | $\varnothing D$ | $\varnothing D_3$ | L ₁ | L ₂ | L ₄ | C | T | Artikel-Nr. Article no. |
|-------------------------------|----------------------------|-------------------|------|---------------|-------------------------|-----------------|-------------------|----------------|----------------|----------------|-----|-----|----------------------------|
| Softsynchro® Micro | M0,5 - M4 (Nr.0 - Nr.8) | 2 - 4,5 | ER 8 | Hi-Q/ERM 8 | 10 | 20 | 12 | 43,5 | 40 | 1,5 | 0,2 | 0,2 | F3150900 |

1) Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

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

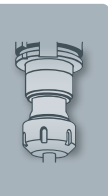
Zubehör Accessories

- Spannzangen Typ ER (GB)
Collets type ER (GB)

» 786 - 787
- Spannschlüsselsatz
Set of clamping wrenches

» 793
- Drehmomentschlüssel TORCO-FIX
Torque wrenches TORCO-FIX

» 795

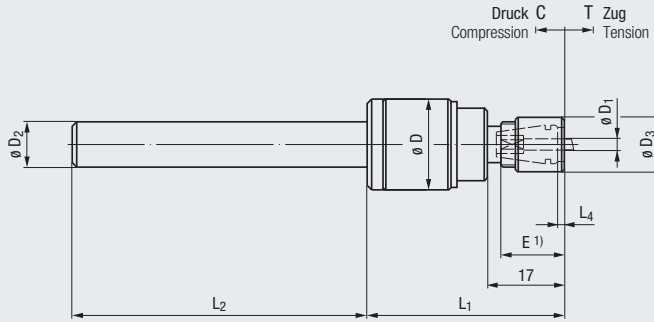


Informationen zur neuen **EG-Maschinenrichtlinie 2006/42/EG**,
siehe Seite 656

Information regarding the new **EC Machinery Directive 2006/42/EC**,
see page 656

Lange Bauform
Long design

Softsynchro®
≈ DIN 1835 A



Einsatz auf Maschinen mit Synchronspindel

For use on machines with synchronous spindle

| Typ Type | | $\varnothing D_1$ | | | $\varnothing D_2$ h6 | $\varnothing D$ | $\varnothing D_3$ | L_1 | L_2 | L_4 | C | T | Artikel-Nr. Article no. |
|---------------------------|----------------------------|-------------------|------|------------|-------------------------|-----------------|-------------------|-------|-------|-------|-----|-----|----------------------------|
| Softsynchro® Micro | M0,5 - M4 (Nr.0 - Nr.8) | 2 - 4,5 | ER 8 | Hi-Q/ERM 8 | 10 | 20 | 12 | 43,5 | 66 | 1,5 | 0,2 | 0,2 | F3150901 |

1) Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

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)

» 786 - 787



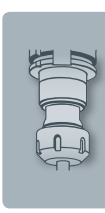
Spannschlüsselsatz
Set of clamping wrenches

» 793



Drehmomentschlüssel TORCO-FIX
Torque wrenches TORCO-FIX

» 795

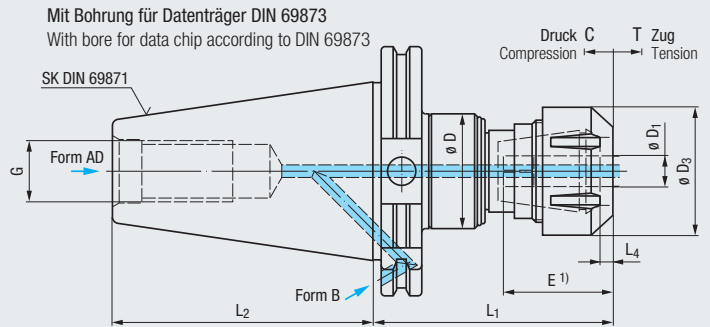


Softsynchro®

DIN 69871 AD
DIN 69871 B



| | | |
|--------------------------------|------------------------------|--|
| | | |
| p_{max} 50bar (700psi) | p_{max} 6bar (85psi) | |
| | | |
| | | |



Einsatz auf Maschinen mit Synchronspindel For use on machines with synchronous spindle

| Typ Type | | $\varnothing D_1$ | | | SK | $\varnothing D$ | $\varnothing D_3$ | L_1 | L_2 | L_4 | G | C | T | Artikel-Nr. Article no. | |
|---------------------------|---------------------------|-------------------|------------|----------------|----------|-----------------|-------------------|-------|--------|-------|-----|-----|-----|----------------------------|---|
| Softsynchro® 1 | M4 - M12 (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 | F3151651.1 | ● |
| | | | | | SK 40 B | 34 | 34 | 85 | 68,4 | 5 | M16 | 0,5 | 0,5 | F3151651.2 | ● |
| | | | | | SK 50 AD | 34 | 34 | 85 | 101,75 | 5 | M24 | 0,5 | 0,5 | F3151653.1 | ● |
| | | | | | SK 50 B | 34 | 34 | 85 | 101,75 | 5 | M24 | 0,5 | 0,5 | F3151653.2 | ● |
| Softsynchro® 3 | M4 - M20 (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 | F3153651.1 | ● |
| | | | | | SK 40 B | 45 | 50 | 93,5 | 68,4 | 5 | M16 | 0,5 | 0,5 | F3153651.2 | ● |
| | | | | | SK 50 AD | 45 | 50 | 93,5 | 101,75 | 5 | M24 | 0,5 | 0,5 | F3153653.1 | ● |
| | | | | | SK 50 B | 45 | 50 | 93,5 | 101,75 | 5 | M24 | 0,5 | 0,5 | F3153653.2 | ● |

1) Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

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) ▶▶ 786 - 787

Dichtscheiben Typ DS/ER
Sealing disks type DS/ER ▶▶ 789

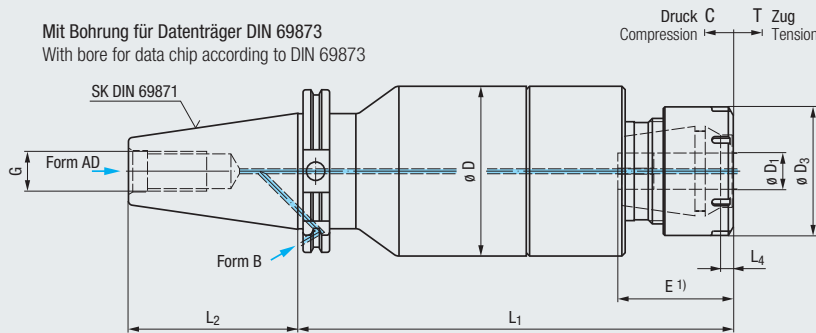
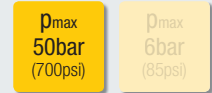
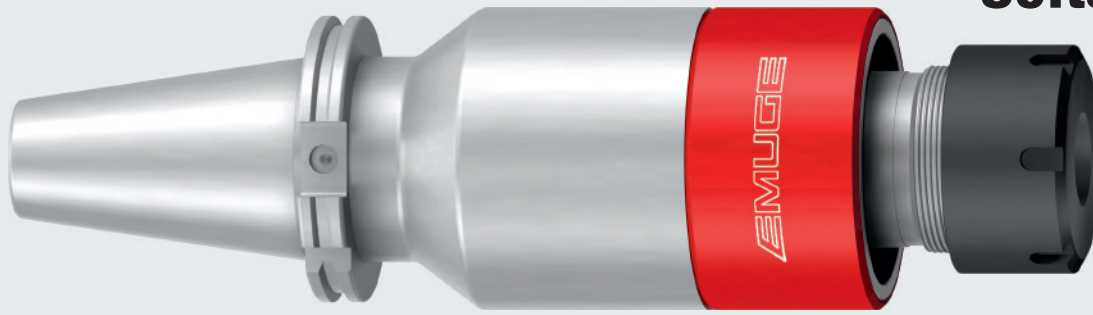
Spanschlüsselsatz
Set of clamping wrenches ▶▶ 793

Montagevorrichtung
Assembly device ▶▶ 793

Drehmomentschlüssel TORCO-FIX
Torque wrenches TORCO-FIX ▶▶ 795

Softsynchro®

DIN 69871 AD
DIN 69871 B



Einsatz auf Maschinen mit Synchronspindel For use on machines with synchronous spindle

| Typ Type | | $\varnothing D_1$ | | | SK | $\varnothing D$ | $\varnothing D_3$ | L_1 ER | L_1 ER-GB | L_2 | L_4 | G | C | T | Artikel-Nr. Article no. | |
|--------------------------|------------------------------|-------------------|------------|-----------------|----------|-----------------|-------------------|-------------|----------------|--------|-------|-----|---|---|----------------------------|---|
| Softsynchro® 5 | M30 - M48 (1 1/8 - 1 3/4) | 22 - 36 | ER 50 (GB) | Hi-Q/ERBC 50 | SK 50 AD | 103 | 78 | 267,5 | 264 | 101,75 | 8 | M24 | 2 | 2 | F3155653.1 | ● |
| | | | | | SK 50 B | 103 | 78 | 267,5 | 264 | 101,75 | 8 | M24 | 2 | 2 | F3155653.2 | ○ |

1) Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

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) ▶▶ 786 - 787



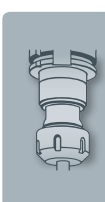
Dichtscheiben Typ DS/ER
Sealing disks type DS/ER ▶▶ 789



Spannschlüssel
Clamping wrenches ▶▶ 793



Drehmomentschlüssel TORCO-FIX
Torque wrenches TORCO-FIX ▶▶ 795

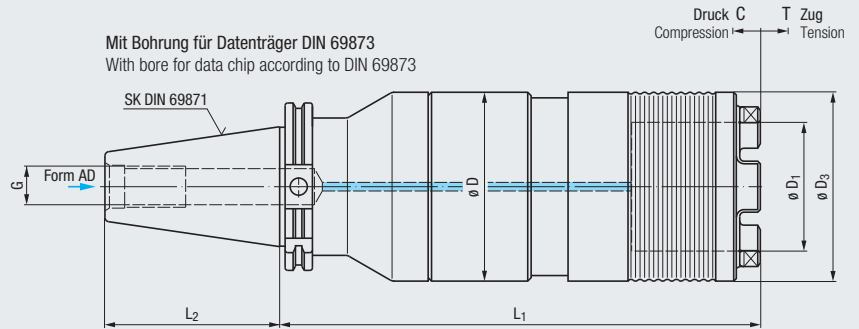


Softsynchro®

DIN 69871 AD



| | | |
|--------------------------------|------------------------------|--|
| | | |
| p_{max} 50bar (700psi) | p_{max} 6bar (85psi) | |
| | | |
| | | |



Einsatz auf Maschinen mit Synchronspindel For use on machines with synchronous spindle

| Typ Type | | | SK | ø D | ø D ₁ | ø D ₃ | L ₁ | L ₂ | G | C | T | Artikel-Nr. Article no. |
|---------------------------|------------------------------|----------|----------|-----|------------------|------------------|----------------|----------------|-----|---|---|----------------------------|
| Softsynchro® 6 | M45 - M76 (1 3/8 - 2 3/8) | HE2/IKZZ | SK 50 AD | 110 | 75 | 110 | 280 | 101,75 | M24 | 2 | 2 | F3156653.1 |

Weitere Ausführungen auf Anfrage
Further designs upon request

Zubehör Accessories



Schnellwechsel-Einsätze Typ HE2/IKZZ
Quick-change adapters type HE2/IKZZ 752

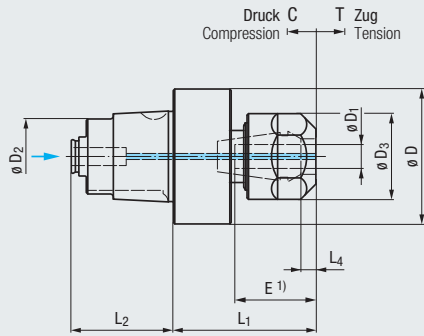


Weitere Schnellwechsel-Aufnahmen (Typenreihe HF) zur Herstellung von großen Gewinden siehe Seite 747 - 754

Further quick-change tap holders (HF series) for the production of large threads, see pages 747 - 754

Für angetriebene Werkzeuge
For driven tools

Softsynchro®
mimatic®



p_{max}
70bar
(1015psi)

p_{max}
6bar
(85psi)

Einsatz auf Maschinen mit Synchronspindel

For use on machines with synchronous spindle

| Typ Type | | $\varnothing D_1$ | | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | L_1 ER | L_1 ER-GB | L_2 | L_4 | C | T | Artikel-Nr. Article no. | | |
|---------------------------------|---------------------------|-------------------|------------|----------------|-------------------|-----------------|-------------------|-------------|----------------|-------|-------|---|-----|----------------------------|------------------------|---|
| Softsynchro® 1 | M4 - M12 (Nr.8 - 7/16) | 4,5 - 10 | ER 16 (GB) | Hi-Q/ERC 16 | MI 40 | 25 | 45 | 28 | 51 | 47,5 | 34 | 5 | 0,5 | 0,5 | F3151Z40.M01001 | ○ |
| | | | | | MI 50 | 33 | 55 | 28 | 48 | 44,5 | 41 | 5 | 0,5 | 0,5 | F3151Z50.M01001 | ○ |

1) Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

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 9 und 10 mm im Futterkörper integriert
Square seat for tools with shank diameter 9 and 10 mm is integrated in the tap holder body

Zubehör
Accessories



Spannzangen Typ ER (GB)
Collets type ER (GB) ▶▶ 786 - 787



Dichtscheiben Typ DS/ER
Sealing disks type DS/ER ▶▶ 789

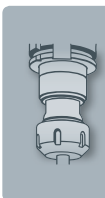


Spannschlüsselsatz
Set of clamping wrenches ▶▶ 793



Drehmomentschlüssel TORCO-FIX
Torque wrenches TORCO-FIX ▶▶ 795

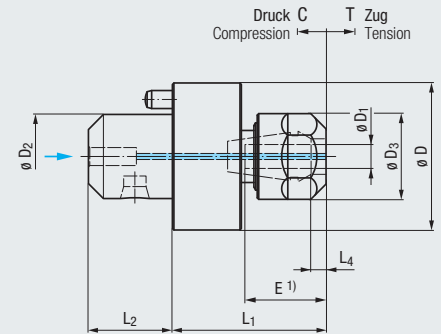
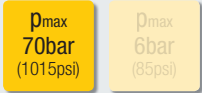
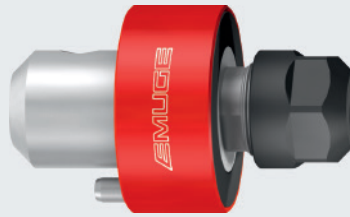
- Product Finder
- Softsynchro
- Speedsynchro
- KSN
- ML MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info



Softsynchro®

heimatec®

Für angetriebene Werkzeuge
For driven tools



Einsatz auf Maschinen mit Synchronspindel For use on machines with synchronous spindle

| Typ Type | | $\varnothing D_1$ | | | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | L ₁ ER | L ₁ ER-GB | L ₂ | L ₄ | C | T | Artikel-Nr. Article no. | |
|---------------------------------|---------------------------|-------------------|------------|----------------|-----|-------------------|-----------------|-------------------|----------------------|-------------------------|----------------|----------------|-----|-----|----------------------------|---|
| Softsynchro® 1 | M4 - M12 (Nr.8 - 7/16) | 4,5 - 10 | ER 16 (GB) | Hi-Q/ERC 16 | HT4 | 22 | 39 | 28 | 55 | 51,5 | 21,5 | 5 | 0,5 | 0,5 | F3151Z04.H01001 | ○ |
| | | | | | HT5 | 28 | 49 | 28 | 55 | 51,5 | 28 | 5 | 0,5 | 0,5 | F3151Z05.H01001 | ○ |
| | | | | | HT6 | 36 | 64 | 28 | 48 | 44,5 | 28 | 5 | 0,5 | 0,5 | F3151Z06.H01001 | ○ |

1) Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

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 9 und 10 mm im Futterkörper integriert
Square seat for tools with shank diameter 9 and 10 mm is integrated in the tap holder body

Zubehör Accessories



Spannzangen Typ ER (GB)
Collets type ER (GB)

» 786 - 787



Dichtscheiben Typ DS/ER
Sealing disks type DS/ER

» 789



Spannschlüsselsatz
Set of clamping wrenches

» 793



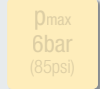
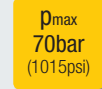
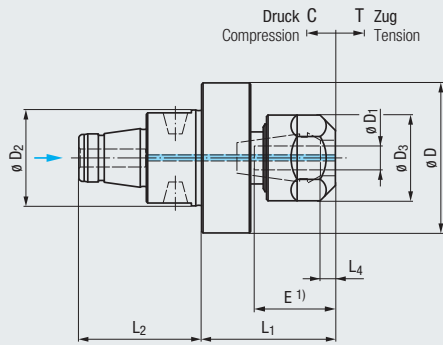
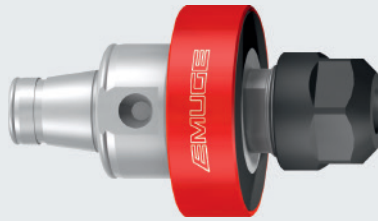
Drehmomentschlüssel TORCO-FIX
Torque wrenches TORCO-FIX

» 795

Für angetriebene Werkzeuge
For driven tools

Softsynchro®

W&F



Einsatz auf Maschinen mit Synchronspindel

For use on machines with synchronous spindle

| Typ Type | | $\varnothing D_1$ | | | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | L_1 ER | L_1 ER-GB | L_2 | L_4 | C | T | Artikel-Nr. Article no. | |
|---------------------------------|---------------------------|-------------------|------------|----------------|-----------|-------------------|-----------------|-------------------|-------------|----------------|-------|-------|-----|-----|----------------------------|---|
| Softsynchro® 1 | M4 - M12 (Nr.8 - 7/16) | 4,5 - 10 | ER 16 (GB) | Hi-Q/ERC 16 | WFB 32-20 | 32 | 50 | 28 | 48 | 44,5 | 41 | 5 | 0,5 | 0,5 | F3151Z32.W01001 | ○ |
| | | | | | WFB 40-25 | 40 | 63 | 28 | 48 | 44,5 | 46 | 5 | 0,5 | 0,5 | F3151Z40.W01001 | ○ |
| | | | | | WFB 50-32 | 48 | 75 | 28 | 48 | 44,5 | 54 | 5 | 0,5 | 0,5 | F3151Z50.W01001 | ○ |

1) Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

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 9 und 10 mm im Futterkörper integriert
Square seat for tools with shank diameter 9 and 10 mm is integrated in the tap holder body

Zubehör
Accessories



Spannzangen Typ ER (GB)
Collets type ER (GB)

» 786 - 787



Dichtscheiben Typ DS/ER
Sealing disks type DS/ER

» 789



Spannschlüsselsatz
Set of clamping wrenches

» 793



Drehmomentschlüssel TORCO-FIX
Torque wrenches TORCO-FIX

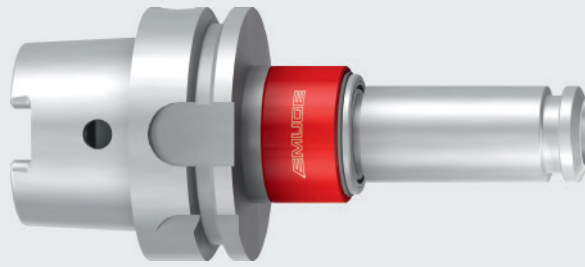
» 795



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

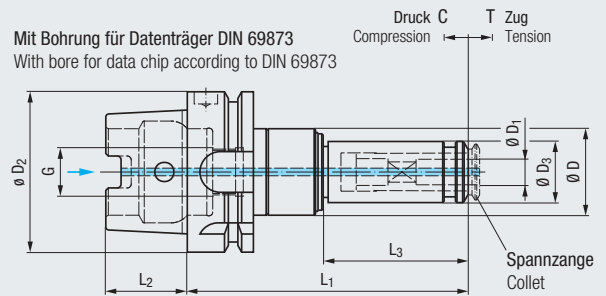
Softsynchro®/PGR

DIN 69893 A



p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)



Einsatz auf Maschinen mit Synchronspindel For use on machines with synchronous spindle

| Typ Type | | $\varnothing D_1$ | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | L_1 | L_2 | L_3 | G | C | T | Artikel-Nr. Article no. | |
|-------------------------------|---------------------------|-------------------|-----------|-------------------|-----------------|-------------------|-------|-------|-------|-----------|-----|-----|----------------------------|---|
| Softsynchro® 1/PGR | M4 - M12 (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 | F3221C04.1 | ● |
| | | | | 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 | F3221C06.1 | ● |
| Softsynchro® 3/PGR | M8 - M20 (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 | F3223C04.1 | ● |
| | | | | HSK-A80 | 45 | 40 | 129,5 | 40 | 67 | M20 x 1,5 | 0,5 | 0,5 | F3223C05.1 | ● |
| | | | | HSK-A100 | 45 | 40 | 131,5 | 50 | 67 | M24 x 1,5 | 0,5 | 0,5 | F3223C06.1 | ● |

Weitere Ausführungen auf Anfrage
Further designs upon request

Zubehör Accessories

- Spannzangen Typ PGR-GB**
Collets type PGR-GB ▶ 796
- Kühlschmierstoffrohre und Schlüssel**
Coolant tubes and wrenches ▶ 782 - 783

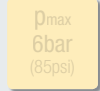
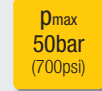
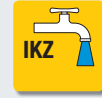
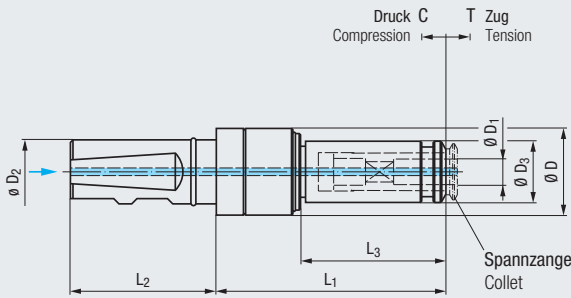


Reinigung von Spannzangen-Aufnahme
und Spannzange Typ PGR
siehe Seite 835

Cleaning of collet holder
and collet type PGR,
see page 835

Softsynchro®/PGR

DIN 1835 B+E



Einsatz auf Maschinen mit Synchronspindel

For use on machines with synchronous spindle

| Typ Type | | ø D ₁ | | ø D ₂ | ø D | ø D ₃ | L ₁ | L ₂ | L ₃ | C | T | Artikel-Nr. Article no. | |
|-------------------------------|---------------------------|------------------|-----------|------------------|-----|------------------|----------------|----------------|----------------|-----|-----|----------------------------|---|
| Softsynchro® 1/PGR | M4 - M12 (Nr.8 - 7/16) | 4,5 - 10 | PGR 15 GB | 25 | 34 | 24 | 87,5 | 57 | 57 | 0,5 | 0,5 | F3221G26.1.44 | ● |
| Softsynchro® 3/PGR | M8 - M20 (5/16 - 3/4) | 8 - 16 | PGR 25 GB | 25 | 45 | 40 | 103,5 | 57 | 67 | 0,5 | 0,5 | F3223G26.1.44 | ● |

Weitere Ausführungen auf Anfrage
Further designs upon request

Zubehör

Accessories



Spannzangen Typ PGR-GB
Collets type PGR-GB

▶ 796



Adaptionsschäfte
Adapter shanks

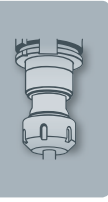
▶ 780

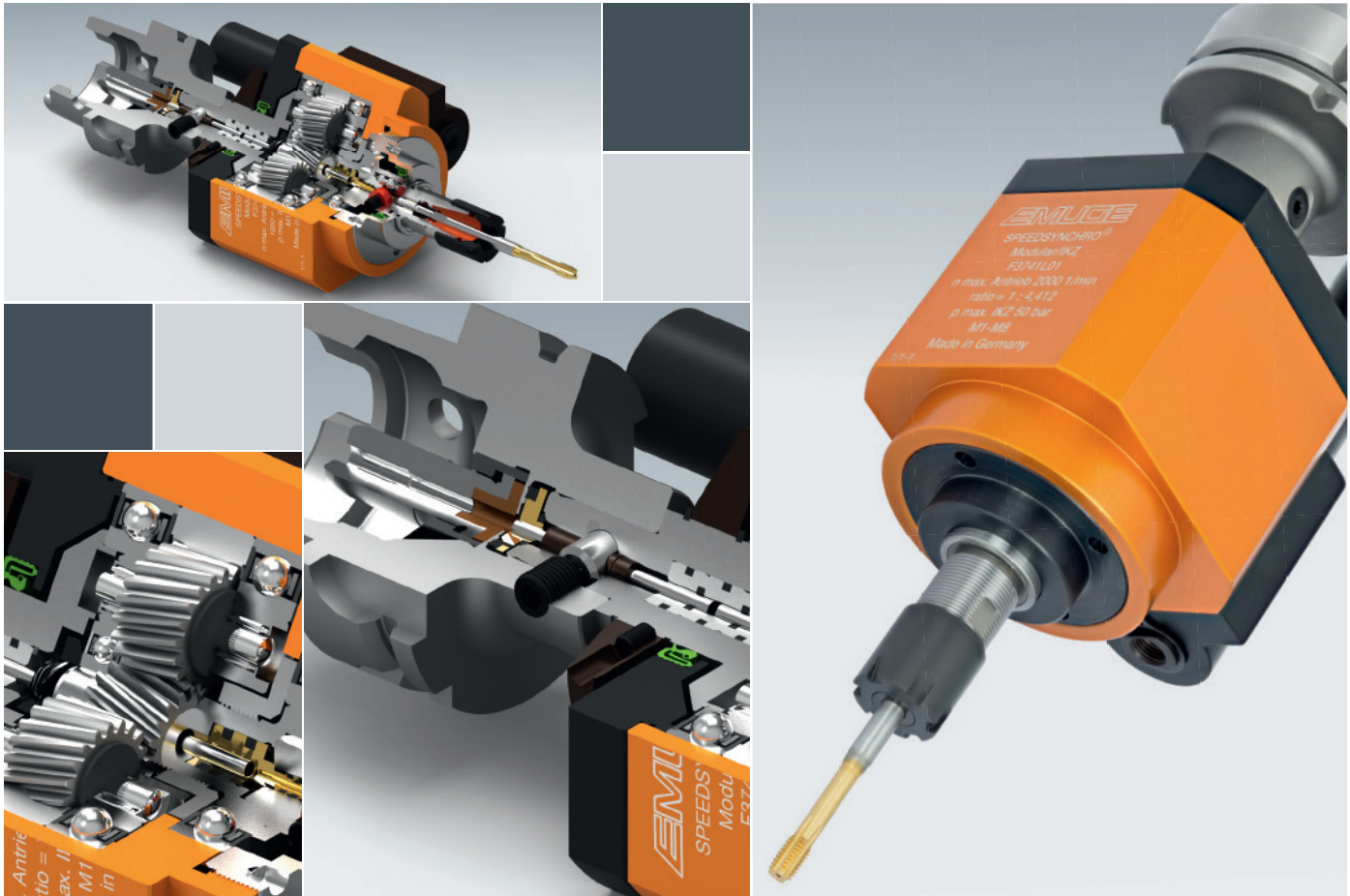


- Product Finder
- Soft-synchro
- Speed-synchro**
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info



EMUGE
SPEEDSYNCHRO®
Modular/IKZ
F3741L01
n max. Antrieb 2000 1/min
ratio = 1 : 4,412
p max. IKZ 50 bar
M1-M8
Made in Germany
11/1-02





Typenreihe Speedsynchro® Modular Speedsynchro® Modular Series

Softsynchro®-Technologie mit Übersetzungsgetriebe

Das Speedsynchro® Modular verfügt über ein integriertes Übersetzungsgetriebe mit einem Übersetzungsverhältnis von 1 : 4,412 und ist mit der patentierten Softsynchro®-Minimallängenausgleichsfunktion kombiniert.

Für eine hohe Werkzeumdrehzahl bei niedriger Spindeldrehzahl zur Taktzeiteinsparung, Energieeinsparung, Axialkraftreduzierung und Erhöhung der Wirtschaftlichkeit.

Softsynchro® technology with transmission gearing

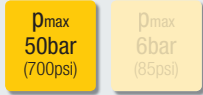
The Speedsynchro Modular® uses an integrated transmission gearing with a transmission ratio of 1:4.412 and combines it with the patented Softsynchro® minimal length compensation function.

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.

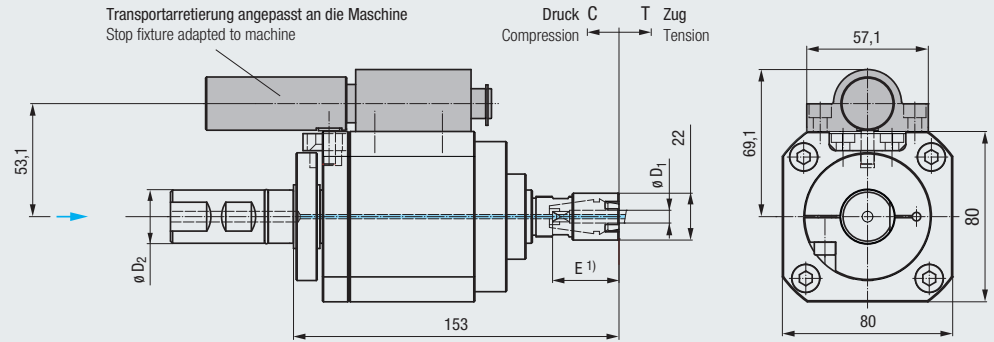


Speedsynchro® Modular/IKZ

DIN 1835 B



Transportarretierung angepasst an die Maschine
Stop fixture adapted to machine



Einsatz auf Maschinen mit Synchronspindel For use on machines with synchronous spindle

| new | | | | $\varnothing D_2$ | $\varnothing D_1$ | Max. Spindeldrehzahl Max. spindle speed | Übersetzungsverhältnis Transmission ratio | C | T | Artikel-Nr. Article no. |
|--------------------------------------|---------|------------|-----------------|-------------------|-------------------|--|--|-----|-----|----------------------------|
| Typ Type | | | | | | | | | | |
| Speedsynchro® Modular/IKZ | M1 - M8 | ER 16 (GB) | Hi-Q/ERMC 16 | 25 | 2,5 - 8 | 2000 | 1 : 4,412 | 0,5 | 0,5 | F3741G26 |

1) Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

Adaptionsschäfte, Transportarretierung (siehe auch Seite 827) und Längeneinstellschraube sind nicht im Lieferumfang enthalten, bitte extra bestellen
Adapter shank, stop fixture (see also page 827) and length adjustment screw are not included in the delivery, please order separately

Zubehör Accessories



Adaptionsschäfte
Adapter shanks



Montagevorrichtung
Assembly device



Spannzangen Typ ER (GB)
Collets type ER (GB)



Längeneinstellschrauben
Length adjustment screws



Dichtscheiben Typ DS/ER
Sealing disks type DS/ER



Mehr Informationen zum
Speedsynchro® Modular unter

More information regarding
Speedsynchro® Modular at

www.speedsynchro.com

Speedsynchro® Modular/IKZ

ABS®

(System KOMET)



EMUGE
SPEEDSYNCHRO®
Modular/IKZ
F3741L01
n max. Antrieb 2000 1/min
ratio = 1 : 4,412
p max. IKZ 50 bar
M1-M8
Made in Germany

IKZ

MMS
MQL

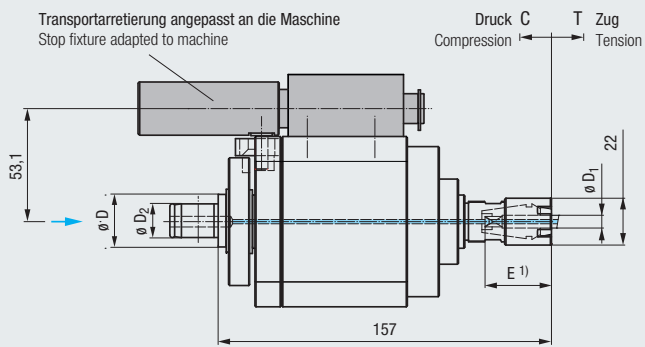
p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)

L+ 2 mm

↔
C T
Soft

F



Einsatz auf Maschinen mit Synchronspindel For use on machines with synchronous spindle

| new | | | | | | | | | | | | |
|--------------------------------------|---------|------------|-----------------|--------|------------------|------------------|--|--|-----|-----|----------------------------|---|
| Typ Type | | | | Ø D | Ø D ₂ | Ø D ₁ | Max. Spindeldrehzahl Max. spindle speed | Übersetzungsverhältnis Transmission ratio | C | T | Artikel-Nr. Article no. | |
| Speedsynchro® Modular/IKZ | M1 - M8 | ER 16 (GB) | Hi-Q/ERMC 16 | ABS 32 | 16 | 2,5 - 8 | 2000 | 1:4,412 | 0,5 | 0,5 | F3741L01 | ● |

1) Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

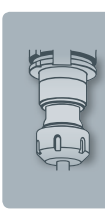
Adaptionsschäfte, Transportarretierung (siehe auch Seite 827) und Längeneinstellschraube sind nicht im Lieferumfang enthalten, bitte extra bestellen
Adapter shank, stop fixture (see also page 827) and length adjustment screw are not included in the delivery, please order separately

Zubehör Accessories

- Adaptionsschäfte
Adapter shanks
▶ ▶ 781
- Montagevorrichtung
Assembly device
▶ ▶ 793
- Spannzangen Typ ER (GB)
Collets type ER (GB)
▶ ▶ 786 - 787
- Längeneinstellschrauben
Length adjustment screws
▶ ▶ 785
- Dichtscheiben Typ DS/ER
Sealing disks type DS/ER
▶ ▶ 789

Product Finder

- Softsynchro
- Speedsynchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

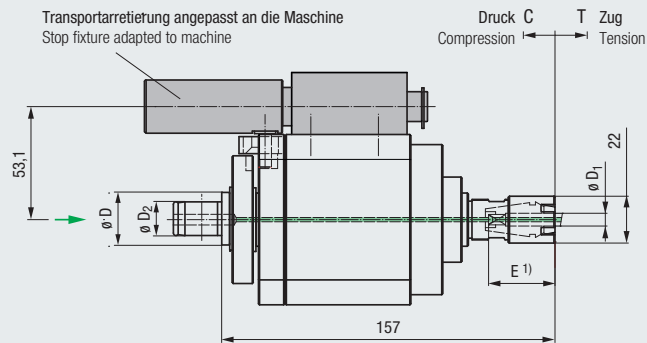


Speedsynchro® Modular/MQL

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

| new | | | | | | | | | | | | |
|--------------------------------------|---------|------------|-----------------|-----------------|-------------------|-------------------|--|--|-----|-----|----------------------------|---|
| Typ Type | | | | $\varnothing D$ | $\varnothing D_2$ | $\varnothing D_1$ | Max. Spindeldrehzahl Max. spindle speed | Übersetzungsverhältnis Transmission ratio | C | T | Artikel-Nr. Article no. | |
| Speedsynchro® Modular/MQL | M1 - M8 | ER 16 (GB) | Hi-Q/ERMC 16 | ABS 32 | 16 | 2,5 - 8 | 2000 | 1 : 4,412 | 0,5 | 0,5 | F3751L01 | ● |

1) Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

Adaptionsschäft, Transportarretierung (siehe auch Seite 827) und Längeneinstellschraube sind nicht im Lieferumfang enthalten, bitte extra bestellen
Adapter shank, stop fixture (see also page 827) and length adjustment screw are not included in the delivery, please order separately

Zubehör Accessories



Adaptionsschäfte
Adapter shanks

» 781



Montagevorrichtung
Assembly device

» 793



Spannzangen Typ ER (GB)
Collets type ER (GB)

» 786 - 787



Längeneinstellschrauben
Length adjustment screws

» 785



Dichtscheiben Typ DS/ER
Sealing disks type DS/ER

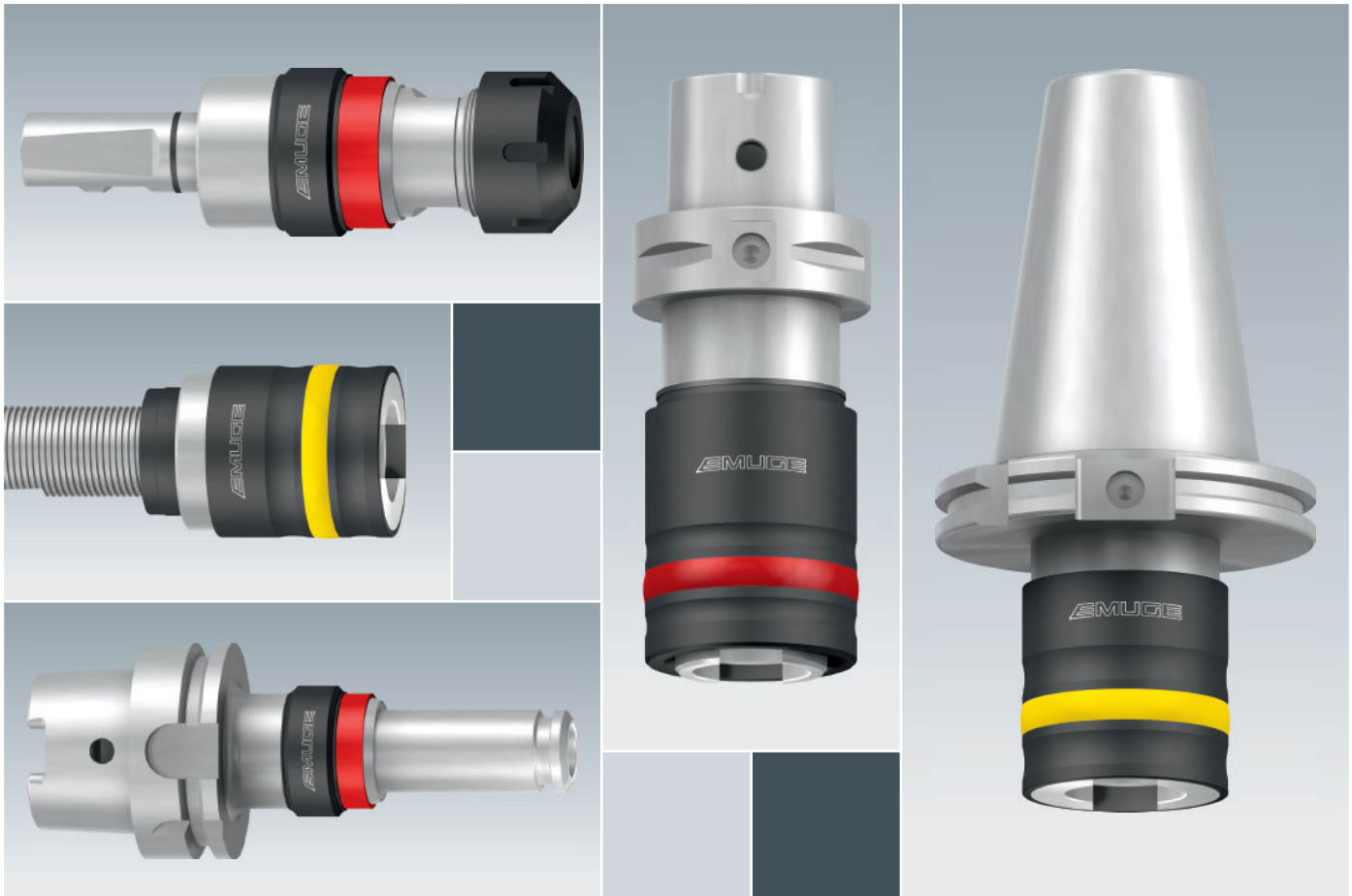
» 789



Mehr Informationen zum
Speedsynchro® Modular unter

More information regarding
Speedsynchro® Modular at

www.speedsynchro.com



Typenreihe KSN KSN Series

Einsatz auf CNC-Bearbeitungszentren und konventionellen Werkzeugmaschinen

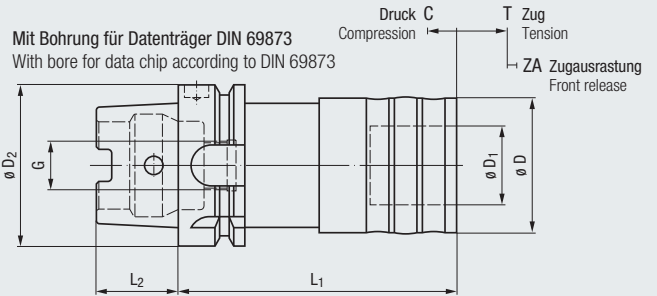
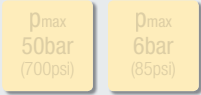
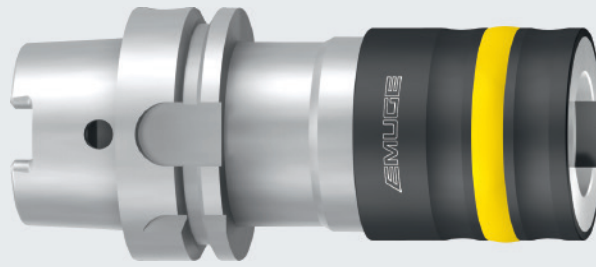
Die Genauigkeit der programmierten Gewindetiefe wird durch den patentierten Druckpunktmechanismus garantiert. Auftretende Differenzen zwischen dem Maschinenvorschub und der Gewindesteigung werden durch einen Längenausgleich kompensiert.

Application on CNC machining centres and conventional machine tools

The accuracy of the programmed thread depth is guaranteed by a patent-protected pressure point mechanism. Arising differences between spindle feed and thread pitch are compensated by a length compensation.



KSN DIN 69893 A



Einsatz auf CNC-Bearbeitungszentren, sonstigen Werkzeugmaschinen und Säulenbohrmaschinen

For use on CNC machining centres, other machine tools and pillar drilling machines

| Typ Type | | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_1$ | L_1 | L_2 | G | C | T | ZA | Artikel-Nr. Article no. | |
|--------------|-----------------------------|-------|-------------------|-----------------|-------------------|-------|-------|-----------|------|------|-----|----------------------------|---|
| KSN 1 | M3 - M14 (Nr.4 - 9/16) | EM 01 | HSK-A32 | 36 | 19 | 71 | 16 | M10 x 1 | 5 | 8 | 2,1 | F3301C01.30 | ● |
| | | | HSK-A40 | 36 | 19 | 73 | 20 | M12 x 1 | 5 | 8 | 2,1 | F3301C02.30 | ● |
| | | | HSK-A50 | 36 | 19 | 77 | 25 | M16 x 1 | 5 | 8 | 2,1 | F3301C03.30 | ● |
| | | | HSK-A63 | 36 | 19 | 79 | 32 | M18 x 1 | 5 | 8 | 2,1 | F3301C04.30 | ● |
| | | | HSK-A80 | 36 | 19 | 83,5 | 40 | M20 x 1,5 | 5 | 8 | 2,1 | F3301C05.30 | ● |
| | | | HSK-A100 | 36 | 19 | 85,5 | 50 | M24 x 1,5 | 5 | 8 | 2,1 | F3301C06.30 | ● |
| KSN 3 | M4,5 - M24 (Nr.10 - 1") | EM 03 | HSK-A40 | 53 | 31 | 107 | 20 | M12 x 1 | 8,5 | 15 | 2,8 | F3303C02.30 | ○ |
| | | | HSK-A50 | 53 | 31 | 111 | 25 | M16 x 1 | 8,5 | 15 | 2,8 | F3303C03.30 | ● |
| | | | HSK-A63 | 53 | 31 | 113 | 32 | M18 x 1 | 8,5 | 15 | 2,8 | F3303C04.30 | ● |
| | | | HSK-A80 | 53 | 31 | 117,5 | 40 | M20 x 1,5 | 8,5 | 15 | 2,8 | F3303C05.30 | ● |
| | | | HSK-A100 | 53 | 31 | 119,5 | 50 | M24 x 1,5 | 8,5 | 15 | 2,8 | F3303C06.30 | ● |
| KSN 4 | M14 - M36 (9/16 - 1 3/8) | EM 04 | HSK-A63 | 78 | 48 | 164 | 32 | M18 x 1 | 15 | 23,5 | 4,1 | F3304C04.30 | ● |
| | | | HSK-A80 | 78 | 48 | 168,5 | 40 | M20 x 1,5 | 15 | 23,5 | 4,1 | F3304C05.30 | ○ |
| | | | HSK-A100 | 78 | 48 | 170,5 | 50 | M24 x 1,5 | 15 | 23,5 | 4,1 | F3304C06.30 | ● |
| KSN 5 | M22 - M48 (7/8 - 1 3/4) | EM 05 | HSK-A80 | 96 | 60 | 203 | 40 | M20 x 1,5 | 16,5 | 25 | 5,7 | F3305C05.30 | ○ |
| | | | HSK-A100 | 96 | 60 | 205 | 50 | M24 x 1,5 | 16,5 | 25 | 5,7 | F3305C06.30 | ● |

Weitere Ausführungen auf Anfrage
Further designs upon request

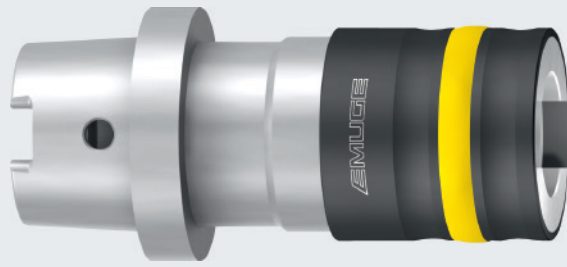
Zubehör Accessories



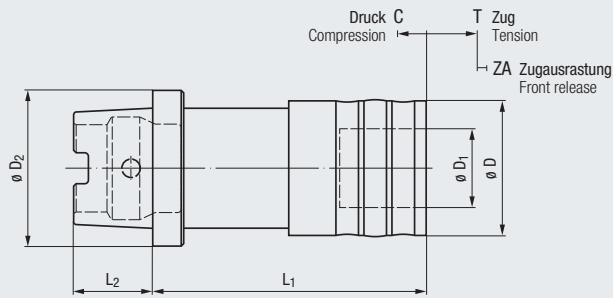
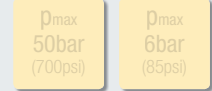
Schnellwechsel-Einsätze Typenreihe EM
Quick-change adapters EM series ▶▶ 755 - 778



Kühlschmierstoffrohre und Schlüssel
Coolant tubes and wrenches ▶▶ 782 - 783





KSN
DIN 69893 C



Einsatz auf CNC-Bearbeitungszentren,
sonstigen Werkzeugmaschinen und
Säulenbohrmaschinen

For use on CNC machining centres,
other machine tools and pillar
drilling machines

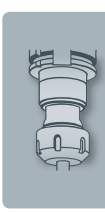
| Typ Type |  |  | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_1$ | L_1 | L_2 | C | T | ZA | Artikel-Nr. Article no. | |
|--------------|---|---|-------------------|-----------------|-------------------|-------|-------|------|------|-----|----------------------------|---|
| KSN 1 | M3 - M14 (Nr.4 - 9/16) | EM 01 | HSK-C32 | 36 | 19 | 65 | 16 | 5 | 8 | 2,1 | F3301K01.30 | ● |
| | | | HSK-C40 | 36 | 19 | 65 | 20 | 5 | 8 | 2,1 | F3301K02.30 | ● |
| | | | HSK-C50 | 36 | 19 | 67 | 25 | 5 | 8 | 2,1 | F3301K03.30 | ● |
| | | | HSK-C63 | 36 | 19 | 67 | 32 | 5 | 8 | 2,1 | F3301K04.30 | ● |
| | | | HSK-C80 | 36 | 19 | 70 | 40 | 5 | 8 | 2,1 | F3301K05.30 | ○ |
| KSN 3 | M4,5 - M24 (Nr.10 - 1") | EM 03 | HSK-C40 | 53 | 31 | 99 | 20 | 8,5 | 15 | 2,8 | F3303K02.30 | ● |
| | | | HSK-C50 | 53 | 31 | 101 | 25 | 8,5 | 15 | 2,8 | F3303K03.30 | ● |
| | | | HSK-C63 | 53 | 31 | 101 | 32 | 8,5 | 15 | 2,8 | F3303K04.30 | ● |
| | | | HSK-C80 | 53 | 31 | 104 | 40 | 8,5 | 15 | 2,8 | F3303K05.30 | ○ |
| | | | HSK-C100 | 53 | 31 | 104 | 50 | 8,5 | 15 | 2,8 | F3303K06.30 | ○ |
| KSN 4 | M14 - M36 (9/16 - 1 3/8) | EM 04 | HSK-C63 | 78 | 48 | 152 | 32 | 15 | 23,5 | 4,1 | F3304K04.30 | ● |
| | | | HSK-C80 | 78 | 48 | 155 | 40 | 15 | 23,5 | 4,1 | F3304K05.30 | ○ |
| | | | HSK-C100 | 78 | 48 | 155 | 50 | 15 | 23,5 | 4,1 | F3304K06.30 | ○ |
| KSN 5 | M22 - M48 (7/8 - 1 3/4) | EM 05 | HSK-C80 | 96 | 60 | 189 | 40 | 16,5 | 25 | 5,7 | F3305K05.30 | ○ |
| | | | HSK-C100 | 96 | 60 | 189 | 50 | 16,5 | 25 | 5,7 | F3305K06.30 | ○ |

Weitere Ausführungen auf Anfrage
Further designs upon request

Zubehör
Accessories

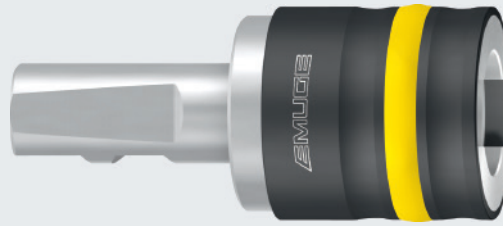


Schnellwechsel-Einsätze Typenreihe EM
Quick-change adapters EM series ▶▶ 755 - 778



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN**
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

KSN DIN 1835 B+E



IKZ

MMS
MQL

p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)

C T

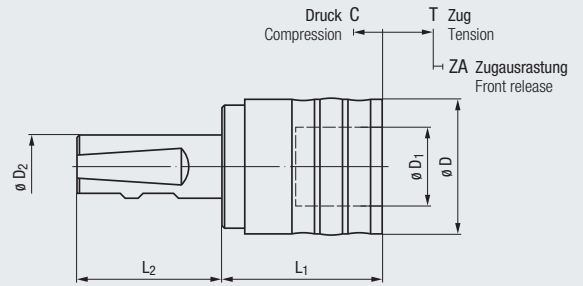
F

↔

[Image]

[Image]

[Image]



Einsatz auf CNC-Bearbeitungszentren, sonstigen Werkzeugmaschinen und Säulenbohrmaschinen
For use on CNC machining centres, other machine tools and pillar drilling machines

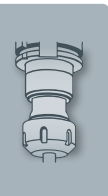
| Typ Type | | | ø D ₂ | ø D | ø D ₁ | L ₁ | L ₂ | C | T | ZA | Artikel-Nr. Article no. | |
|--------------|-----------------------------|-------|------------------|-----|------------------|----------------|----------------|------|------|-----|----------------------------|---|
| KSN 0 | M1 - M10 (Nr.0 - 3/8) | EM 00 | 16 | 26 | 13 | 38 | 49 | 5 | 7,5 | 1,7 | F3300G24 | ● |
| | | | 20 | 26 | 13 | 38 | 51 | 5 | 7,5 | 1,7 | F3300G25 | ● |
| KSN 1 | M3 - M14 (Nr.4 - 9/16) | EM 01 | 16 | 36 | 19 | 39 | 49 | 5 | 8 | 2,1 | F3301G24 | ● |
| | | | 20 | 36 | 19 | 39 | 51 | 5 | 8 | 2,1 | F3301G25 | ● |
| | | | 25 | 36 | 19 | 39 | 57 | 5 | 8 | 2,1 | F3301G26 | ● |
| KSN 3 | M4,5 - M24 (Nr.10 - 1") | EM 03 | 25 | 53 | 31 | 63 | 57 | 8,5 | 15 | 2,8 | F3303G26 | ● |
| | | | 32 | 53 | 31 | 63 | 61 | 8,5 | 15 | 2,8 | F3303G27 | ● |
| KSN 4 | M14 - M36 (9/16 - 1 3/8) | EM 04 | 32 | 78 | 48 | 124 | 61 | 15 | 23,5 | 4,1 | F3304G27 | ● |
| KSN 5 | M22 - M48 (7/8 - 1 3/4) | EM 05 | 40 | 96 | 60 | 135,5 | 71 | 16,5 | 25 | 5,7 | F3305G28 | ● |

Weitere Ausführungen auf Anfrage
Further designs upon request

Zubehör Accessories

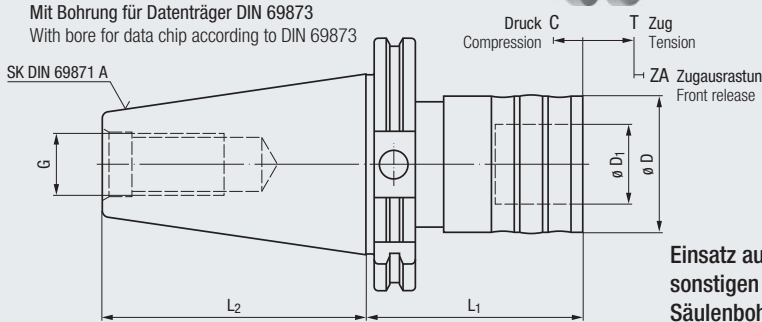
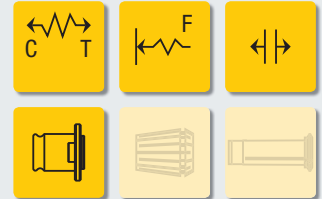
Schnellwechsel-Einsätze Typenreihe EM
Quick-change adapters EM series → 755 - 778

Adaptionsschäfte
Adapter shanks → 780







KSN
DIN 69871 A



Einsatz auf CNC-Bearbeitungszentren,
sonstigen Werkzeugmaschinen und
Säulenbohrmaschinen

For use on CNC machining centres,
other machine tools and pillar
drilling machines

| Typ Type |  |  | SK | ø D | ø D ₁ | L ₁ | L ₂ | G | C | T | ZA | Artikel-Nr. Article no. | |
|--------------|---|---|-------|-----|------------------|----------------|----------------|-----|------|------|-----|----------------------------|---|
| KSN 1 | M3 - M14 (Nr.4 - 9/16) | EM 01 | SK 40 | 36 | 19 | 60 | 68,4 | M16 | 5 | 8 | 2,1 | F3301651 | ● |
| | | | SK 50 | 36 | 19 | 60 | 101,75 | M24 | 5 | 8 | 2,1 | F3301653 | ● |
| KSN 3 | M4,5 - M24 (Nr.10 - 1") | EM 03 | SK 40 | 53 | 31 | 98 | 68,4 | M16 | 8,5 | 15 | 2,8 | F3303651 | ● |
| | | | SK 50 | 53 | 31 | 84 | 101,75 | M24 | 8,5 | 15 | 2,8 | F3303653 | ● |
| KSN 4 | M14 - M36 (9/16 - 1 3/8) | EM 04 | SK 40 | 78 | 48 | 150 | 68,4 | M16 | 15 | 23,5 | 4,1 | F3304651 | ● |
| | | | SK 50 | 78 | 48 | 139 | 101,75 | M24 | 15 | 23,5 | 4,1 | F3304653 | ● |
| KSN 5 | M22 - M48 (7/8 - 1 3/4) | EM 05 | SK 40 | 96 | 60 | 166 | 68,4 | M16 | 16,5 | 25 | 5,7 | F3305651 | ● |
| | | | SK 50 | 96 | 60 | 153 | 101,75 | M24 | 16,5 | 25 | 5,7 | F3305653 | ● |

Weitere Ausführungen auf Anfrage
Further designs upon request

Zubehör
Accessories

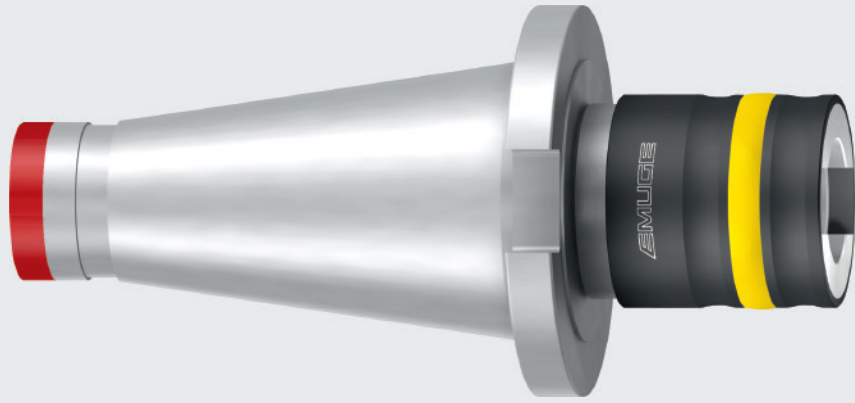


Schnellwechsel-Einsätze Typenreihe EM
Quick-change adapters EM series ▶▶ 755 - 778



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN**
- ML MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

KSN DIN 2080



IKZ

MMS
MQL

p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)

C T

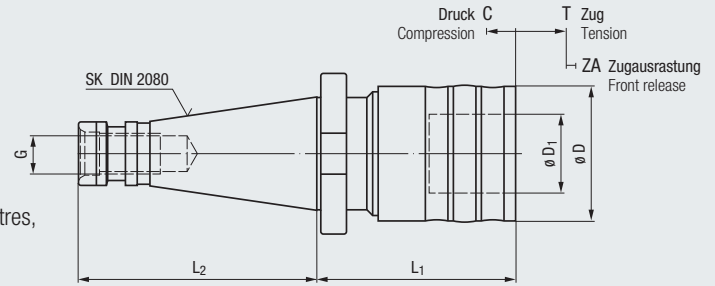
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[Image]

[Image]

[Image]



Einsatz auf CNC-Bearbeitungszentren, sonstigen Werkzeugmaschinen und Säulenbohrmaschinen

For use on CNC machining centres, other machine tools and pillar drilling machines

| Typ Type | | | SK | ø D | ø D ₁ | L ₁ | L ₂ | G | C | T | ZA | Artikel-Nr. Article no. | |
|--------------|-----------------------------|-------|---------------------|-----|------------------|----------------|----------------|-----|------|------|-----|----------------------------|---|
| KSN 1 | M3 - M14 (Nr.4 - 9/16) | EM 01 | SK 30 ¹⁾ | 36 | 19 | 73 | 68,4 | M12 | 5 | 8 | 2,1 | F3301540 | ● |
| | | | SK 40 ¹⁾ | 36 | 19 | 60,6 | 93,4 | M16 | 5 | 8 | 2,1 | F3301541 | ● |
| | | | SK 50 ¹⁾ | 36 | 19 | 55 | 126,8 | M24 | 5 | 8 | 2,1 | F3301543 | ● |
| KSN 3 | M4,5 - M24 (Nr.10 - 1") | EM 03 | SK 30 | 53 | 31 | 97 | 68,4 | M12 | 8,5 | 15 | 2,8 | F3303540 | ○ |
| | | | SK 40 ¹⁾ | 53 | 31 | 84,6 | 93,4 | M16 | 8,5 | 15 | 2,8 | F3303541 | ● |
| | | | SK 50 ¹⁾ | 53 | 31 | 79 | 126,8 | M24 | 8,5 | 15 | 2,8 | F3303543 | ● |
| KSN 4 | M14 - M36 (9/16 - 1 3/8) | EM 04 | SK 40 | 78 | 48 | 143 | 93,4 | M16 | 15 | 23,5 | 4,1 | F3304541 | ● |
| | | | SK 50 ¹⁾ | 78 | 48 | 140 | 126,8 | M24 | 15 | 23,5 | 4,1 | F3304543 | ● |
| KSN 5 | M22 - M48 (7/8 - 1 3/4) | EM 05 | SK 40 | 96 | 60 | 157 | 93,4 | M16 | 16,5 | 25 | 5,7 | F3305541 | ● |
| | | | SK 50 | 96 | 60 | 144 | 126,8 | M24 | 16,5 | 25 | 5,7 | F3305543 | ● |

¹⁾ Adaptierung über DIN 1835 B
Adaptation by DIN 1835 B

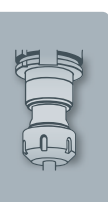
Weitere Ausführungen auf Anfrage
Further designs upon request

SK 40 und SK 50 sind mit Ringnut für MAHO und Deckel ausgestattet
SK 40 and SK 50 shanks are equipped with a ring groove for MAHO and Deckel

Zubehör Accessories

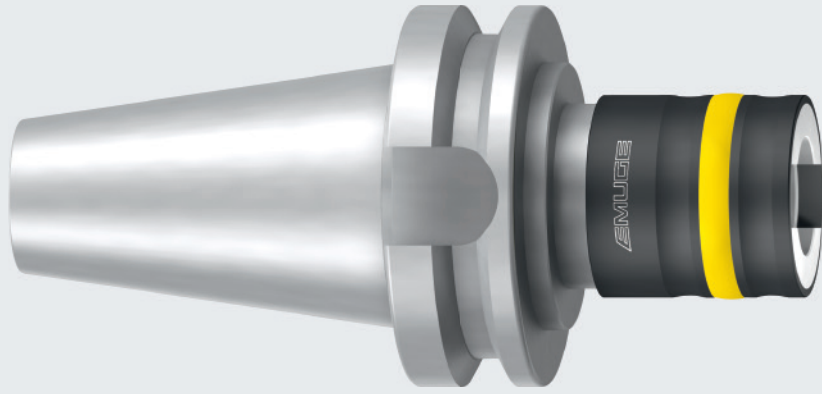
Schnellwechsel-Einsätze Typenreihe EM
Quick-change adapters EM series

▶ 755 - 778

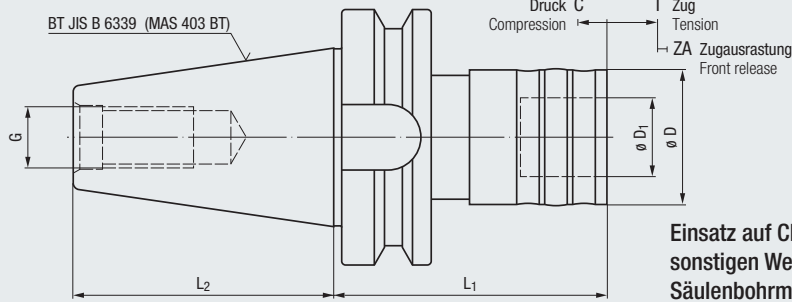


Informationen zur neuen EG-Maschinenrichtlinie 2006/42/EG, siehe Seite 656

Information regarding the new EC Machinery Directive 2006/42/EC, see page 656





KSN
JIS B 6339
(MAS 403 BT)



Einsatz auf CNC-Bearbeitungszentren,
sonstigen Werkzeugmaschinen und
Säulenbohrmaschinen

For use on CNC machining centres,
other machine tools and pillar
drilling machines

| Typ Type |  |  | BT | ø D | ø D ₁ | L ₁ | L ₂ | G | C | T | ZA | Artikel-Nr. Article no. | |
|--------------|---|---|---------------------|-----|------------------|----------------|----------------|-----|------|------|-----|----------------------------|---|
| KSN 1 | M3 - M14 (Nr.4 - 9/16) | EM 01 | BT 40 ¹⁾ | 36 | 19 | 74 | 65,4 | M16 | 5 | 8 | 2,1 | F3301891 | ● |
| | | | BT 50 ¹⁾ | 36 | 19 | 83 | 101,8 | M24 | 5 | 8 | 2,1 | F3301893 | ● |
| KSN 3 | M4,5 - M24 (Nr.10 - 1") | EM 03 | BT 40 ¹⁾ | 53 | 31 | 98 | 65,4 | M16 | 8,5 | 15 | 2,8 | F3303891 | ● |
| | | | BT 50 ¹⁾ | 53 | 31 | 107 | 101,8 | M24 | 8,5 | 15 | 2,8 | F3303893 | ● |
| KSN 4 | M14 - M36 (9/16 - 1 3/8) | EM 04 | BT 40 | 78 | 48 | 164 | 65,4 | M16 | 15 | 23,5 | 4,1 | F3304891 | ● |
| | | | BT 50 ¹⁾ | 78 | 48 | 168 | 101,8 | M24 | 15 | 23,5 | 4,1 | F3304893 | ● |
| KSN 5 | M22 - M48 (7/8 - 1 3/4) | EM 05 | BT 40 | 96 | 60 | 167,5 | 65,4 | M16 | 16,5 | 25 | 5,7 | F3305891 | ● |
| | | | BT 50 | 96 | 60 | 165,5 | 101,8 | M24 | 16,5 | 25 | 5,7 | F3305893 | ● |

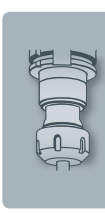
¹⁾ Adaptierung über DIN 1835 B
Adaptation by DIN 1835 B

Weitere Ausführungen auf Anfrage
Further designs upon request

Zubehör
Accessories

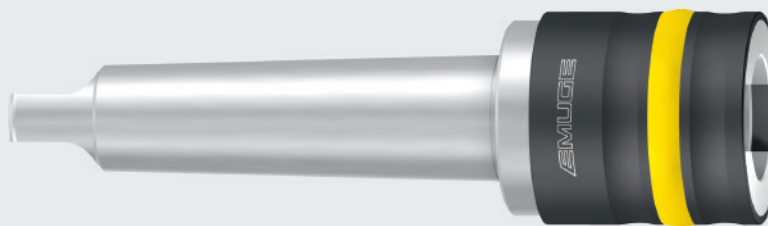


Schnellwechsel-Einsätze Typenreihe EM
Quick-change adapters EM series ▶▶ 755 - 778



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN**
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

KSN DIN 228 B



IKZ

MMS
MQL

p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)

C T

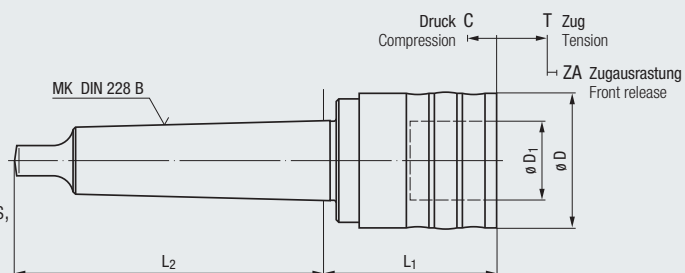
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EM

EM

EM



Einsatz auf CNC-Bearbeitungszentren, sonstigen Werkzeugmaschinen und Säulenbohrmaschinen
For use on CNC machining centres, other machine tools and pillar drilling machines

| Typ Type | | | MK | ∅ D | ∅ D ₁ | L ₁ | L ₂ | C | T | ZA | Artikel-Nr. Article no. | |
|--------------|-----------------------------|-------|------|-----|------------------|----------------|----------------|------|------|-----|----------------------------|---|
| KSN 0 | M1 - M10 (Nr.0 - 3/8) | EM 00 | MK 1 | 26 | 13 | 43,5 | 62 | 5 | 7,5 | 1,7 | F3300101 | ● |
| | | | MK 2 | 26 | 13 | 45 | 75 | 5 | 7,5 | 1,7 | F3300102 | ● |
| KSN 1 | M3 - M14 (Nr.4 - 9/16) | EM 01 | MK 2 | 36 | 19 | 47 | 75 | 5 | 8 | 2,1 | F3301102 | ● |
| | | | MK 3 | 36 | 19 | 47 | 94 | 5 | 8 | 2,1 | F3301103 | ● |
| KSN 3 | M4,5 - M24 (Nr.10 - 1") | EM 03 | MK 3 | 53 | 31 | 71 | 94 | 8,5 | 15 | 2,8 | F3303103 | ● |
| | | | MK 4 | 53 | 31 | 72 | 117,5 | 8,5 | 15 | 2,8 | F3303104 | ● |
| | | | MK 5 | 53 | 31 | 72,5 | 149,5 | 8,5 | 15 | 2,8 | F3303105 | ● |
| KSN 4 | M14 - M36 (9/16 - 1 3/8) | EM 04 | MK 4 | 78 | 48 | 105 | 117,5 | 15 | 23,5 | 4,1 | F3304104 | ● |
| | | | MK 5 | 78 | 48 | 105,5 | 149,5 | 15 | 23,5 | 4,1 | F3304105 | ● |
| KSN 5 | M22 - M48 (7/8 - 1 3/4) | EM 05 | MK 5 | 96 | 60 | 116,5 | 149,5 | 16,5 | 25 | 5,7 | F3305105 | ● |
| | | | MK 6 | 96 | 60 | 118,5 | 210 | 16,5 | 25 | 5,7 | F3305106 | ● |

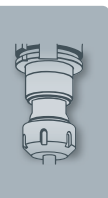
Morsekegelschaft mit Anzugsgewinde nach DIN 228 A auf Anfrage
Morse taper shank with clamping thread acc. DIN 228 A upon request

Weitere Ausführungen auf Anfrage
Further designs upon request

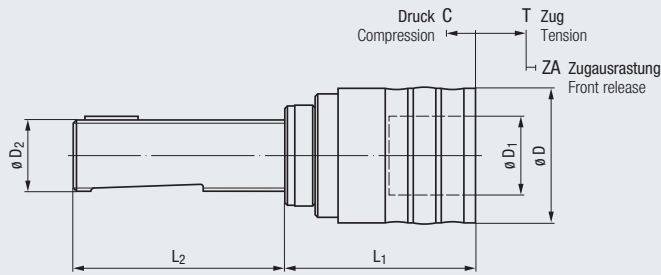
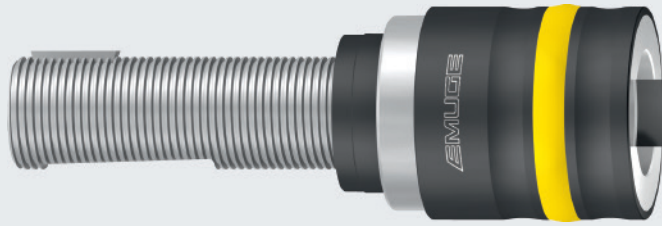
Zubehör Accessories

Schnellwechsel-Einsätze Typenreihe EM
Quick-change adapters EM series

» 755 - 778

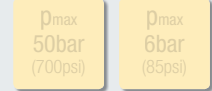


KSN
DIN 6327



Einsatz auf CNC-Bearbeitungszentren,
sonstigen Werkzeugmaschinen und
Säulenbohrmaschinen

For use on CNC machining centres,
other machine tools and pillar
drilling machines



Product Finder

Soft-synchro

Speed-synchro

KSN

MLL MMS

SFM

SWITCH-MASTER



GR, GR-S

HF

EM

Zubehör Accessories

Tech. Info

| Typ Type |  |  | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_1$ | L_1 | L_2 | C | T | ZA | Artikel-Nr. Article no. | |
|--------------|---|---|-------------------|-----------------|-------------------|-------|-------|------|------|-----|----------------------------|---|
| KSN 0 | M1 - M10 (Nr.0 - 3/8) | EM 00 | Tr 16 x 1,5 | 26 | 13 | 50 | 73 | 5 | 7,5 | 1,7 | F3300213 | ● |
| | | | Tr 20 x 2 | 26 | 13 | 50 | 76 | 5 | 7,5 | 1,7 | F3300214 | ● |
| KSN 1 | M3 - M14 (Nr.4 - 9/16) | EM 01 | Tr 16 x 1,5 | 36 | 19 | 52 | 73 | 5 | 8 | 2,1 | F3301213 | ● |
| | | | Tr 20 x 2 | 36 | 19 | 52 | 76 | 5 | 8 | 2,1 | F3301214 | ● |
| | | | Tr 28 x 2 | 36 | 19 | 52 | 83 | 5 | 8 | 2,1 | F3301216 | ● |
| KSN 3 | M4,5 - M24 (Nr.10 - 1") | EM 03 | Tr 36 x 2 | 36 | 19 | 54 | 104 | 5 | 8 | 2,1 | F3301218 | ● |
| | | | Tr 20 x 2 | 53 | 31 | 76 | 76 | 8,5 | 15 | 2,8 | F3303214 | ● |
| | | | Tr 28 x 2 | 53 | 31 | 76 | 83 | 8,5 | 15 | 2,8 | F3303216 | ● |
| KSN 4 | M14 - M36 (9/16 - 1 3/8) | EM 04 | Tr 36 x 2 | 53 | 31 | 78 | 104 | 8,5 | 15 | 2,8 | F3303218 | ● |
| | | | Tr 28 x 2 | 78 | 48 | 109 | 83 | 15 | 23,5 | 4,1 | F3304216 | ● |
| | | | Tr 36 x 2 | 78 | 48 | 111 | 104 | 15 | 23,5 | 4,1 | F3304218 | ● |
| KSN 5 | M22 - M48 (7/8 - 1 3/4) | EM 05 | Tr 48 x 2 | 78 | 48 | 115 | 126 | 15 | 23,5 | 4,1 | F3304219 | ● |
| | | | Tr 36 x 2 | 96 | 60 | 122 | 104 | 16,5 | 25 | 5,7 | F3305218 | ● |
| | | | Tr 48 x 2 | 96 | 60 | 126 | 126 | 16,5 | 25 | 5,7 | F3305219 | ● |

Weitere Ausführungen auf Anfrage
Further designs upon request

Zubehör
Accessories



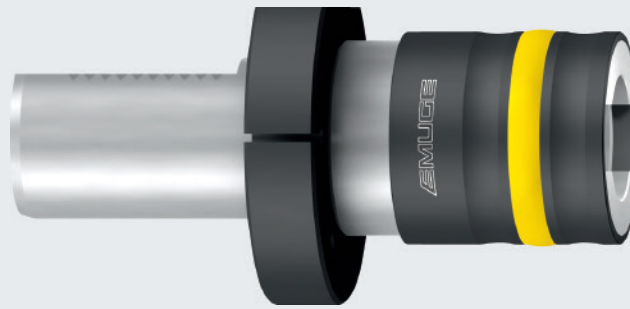
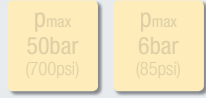
Schnellwechsel-Einsätze Typenreihe EM
Quick-change adapters EM series [» 755 - 778](#)



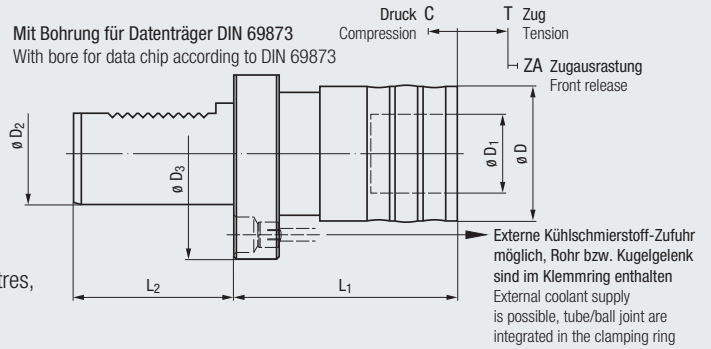
- Product Finder
- Soft-synchro
- Speed-synchro
- KSN**
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

KSN

DIN ISO 10889
(VDI 3425)



Mit Bohrung für Datenträger DIN 69873
With bore for data chip according to DIN 69873



Einsatz auf CNC-Bearbeitungszentren, sonstigen Werkzeugmaschinen und Säulenbohrmaschinen

For use on CNC machining centres, other machine tools and pillar drilling machines

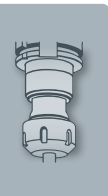
| Typ Type | | | $\varnothing D_2$ | $\varnothing D_3$ | $\varnothing D$ | $\varnothing D_1$ | L_1 | L_2 | C | T | ZA | Artikel-Nr. Article no. | |
|--------------|-----------------------------|-------|-------------------|-------------------|-----------------|-------------------|-------|-------|------|------|-----|----------------------------|---|
| KSN 1 | M3 - M14 (Nr.4 - 9/16) | EM 01 | 20 | 50 | 36 | 19 | 57 | 40 | 5 | 8 | 2,1 | F3301430 | ● |
| | | | 30 | 68 | 36 | 19 | 57 | 55 | 5 | 8 | 2,1 | F3301431 | ● |
| | | | 40 | 83 | 36 | 19 | 57 | 63 | 5 | 8 | 2,1 | F3301432 | ● |
| | | | 50 | 98 | 36 | 19 | 57 | 78 | 5 | 8 | 2,1 | F3301433 | ● |
| KSN 3 | M4,5 - M24 (Nr.10 - 1") | EM 03 | 30 | 68 | 53 | 31 | 88 | 55 | 8,5 | 15 | 2,8 | F3303431 | ● |
| | | | 40 | 83 | 53 | 31 | 88 | 63 | 8,5 | 15 | 2,8 | F3303432 | ● |
| | | | 50 | 98 | 53 | 31 | 88 | 78 | 8,5 | 15 | 2,8 | F3303433 | ● |
| KSN 4 | M14 - M36 (9/16 - 1 3/8) | EM 04 | 40 | 83 | 78 | 48 | 123 | 63 | 15 | 23,5 | 4,1 | F3304432 | ● |
| | | | 50 | 98 | 78 | 48 | 123 | 78 | 15 | 23,5 | 4,1 | F3304433 | ● |
| | | | 60 | 123 | 78 | 48 | 123 | 94 | 15 | 23,5 | 4,1 | F3304434 | ● |
| KSN 5 | M22 - M48 (7/8 - 1 3/4) | EM 05 | 50 | 98 | 96 | 60 | 140 | 78 | 16,5 | 25 | 5,7 | F3305433 | ● |
| | | | 60 | 123 | 96 | 60 | 140 | 94 | 16,5 | 25 | 5,7 | F3305434 | ● |

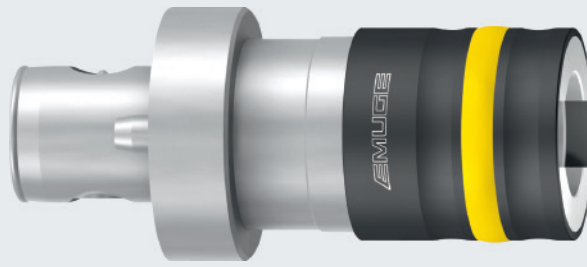
Weitere Ausführungen auf Anfrage
Further designs upon request

Zubehör Accessories

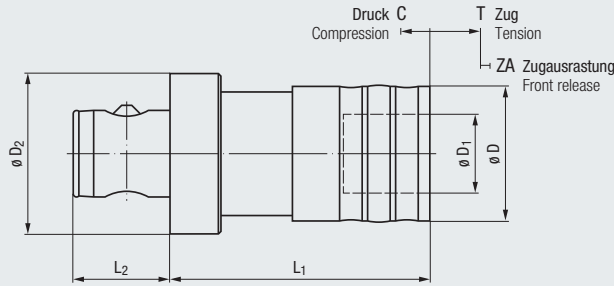


Schnellwechsel-Einsätze Typenreihe EM
Quick-change adapters EM series ▶ 755 - 778







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 Type |  |  | ø D ₂ | ø D | ø D ₁ | L ₁ | L ₂ | C | T | ZA | Artikel-Nr. Article no. | |
|--------------|---|---|------------------|-----|------------------|----------------|----------------|-----|------|-----|----------------------------|---|
| KSN 1 | M3 - M14 (Nr.4 - 9/16) | EM 01 | ABS 32 | 36 | 19 | 72 | 23 | 5 | 8 | 2,1 | F3301L01 | ● |
| | | | ABS 40 | 36 | 19 | 72 | 26 | 5 | 8 | 2,1 | F3301L02 | ● |
| | | | ABS 50 | 36 | 19 | 72 | 31 | 5 | 8 | 2,1 | F3301L03 | ● |
| | | | ABS 63 | 36 | 19 | 72 | 38 | 5 | 8 | 2,1 | F3301L04 | ● |
| KSN 3 | M4,5 - M24 (Nr.10 - 1") | EM 03 | ABS 50 | 53 | 31 | 102 | 31 | 8,5 | 15 | 2,8 | F3303L03 | ● |
| | | | ABS 63 | 53 | 31 | 102 | 38 | 8,5 | 15 | 2,8 | F3303L04 | ● |
| KSN 4 | M14 - M36 (9/16 - 1 3/8) | EM 04 | ABS 63 | 78 | 48 | 155 | 38 | 15 | 23,5 | 4,1 | F3304L04 | ● |

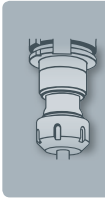
Weitere Ausführungen auf Anfrage
Further designs upon request

Zubehör
Accessories

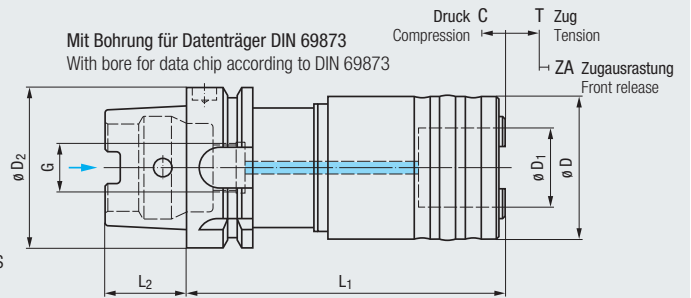
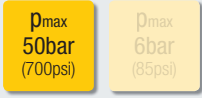
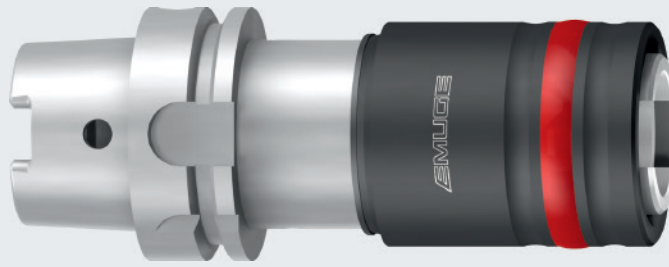


Schnellwechsel-Einsätze Typenreihe EM
Quick-change adapters EM series ▶▶ 755 - 778



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN**
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info



KSN/HD DIN 69893 A



Einsatz auf CNC-Bearbeitungszentren und sonstigen Werkzeugmaschinen
For use on CNC machining centres and other machine tools

| Typ Type |  |  | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_1$ | L_1 | L_2 | G | C | T | ZA | Artikel-Nr. Article no. | |
|-------------|---|---|-------------------|-----------------|-------------------|-------|-------|-----------|---|-----|-----|----------------------------|---|
| KSN 1/HD | M3 - M14 (Nr.4 - 9/16) | EM 01 | HSK-A50 | 40 | 19 | 91 | 25 | M16 x 1 | 5 | 7,5 | 2,5 | F3101C03.1.30 | ● |
| | | | HSK-A63 | 40 | 19 | 93 | 32 | M18 x 1 | 5 | 7,5 | 2,5 | F3101C04.1.30 | ● |
| | | | HSK-A80 | 40 | 19 | 97 | 40 | M20 x 1,5 | 5 | 7,5 | 2,5 | F3101C05.1.30 | ○ |
| | | | HSK-A100 | 40 | 19 | 98 | 50 | M24 x 1,5 | 5 | 7,5 | 2,5 | F3101C06.1.30 | ● |
| KSN 3/HD | M4,5 - M24 (Nr.10 - 1") | EM 03 | HSK-A50 | 56 | 31 | 140 | 25 | M16 x 1 | 7 | 10 | 3 | F3103C03.1.30 | ● |
| | | | HSK-A63 | 56 | 31 | 130 | 32 | M18 x 1 | 7 | 10 | 3 | F3103C04.1.30 | ● |
| | | | HSK-A80 | 56 | 31 | 133 | 40 | M20 x 1,5 | 7 | 10 | 3 | F3103C05.1.30 | ● |
| | | | HSK-A100 | 56 | 31 | 135 | 50 | M24 x 1,5 | 7 | 10 | 3 | F3103C06.1.30 | ● |

Weitere Ausführungen auf Anfrage
Further designs upon request

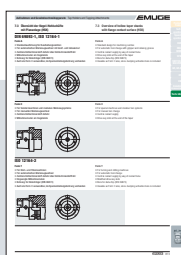
Zubehör Accessories



Schnellwechsel-Einsätze Typenreihe EM
Quick-change adapters EM series [» 755 - 778](#)



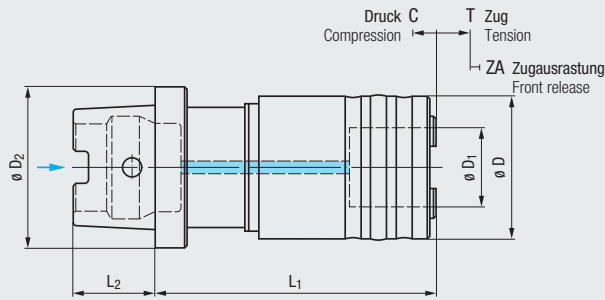
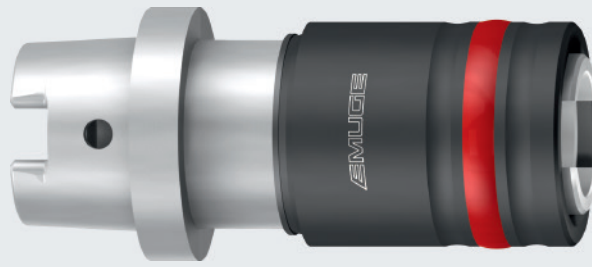
Kühlschmierstoffrohre und Schlüssel
Coolant tubes and wrenches [» 782 - 783](#)



Übersicht der Kegelhohlschäfte
mit Plananlage (HSK)
siehe Seite 813

Overview of hollow taper shanks
with flange contact surface (HSK),
see page 813

KSN/HD
DIN 69893 C



Einsatz auf CNC-Bearbeitungszentren
und sonstigen Werkzeugmaschinen

For use on CNC machining centres
and other machine tools

IKZ

MMS
MQL

p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)

C T

F

- Product Finder
- Soft-synchro
- Speed-synchro
- KSN**
- ML MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

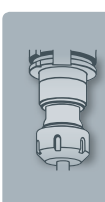
| Typ Type | | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_1$ | L_1 | L_2 | C | T | ZA | Artikel-Nr. Article no. | |
|-----------------|----------------------------|-------|-------------------|-----------------|-------------------|-------|-------|---|-----|-----|----------------------------|---|
| KSN 1/HD | M3 - M14 (Nr.4 - 9/16) | EM 01 | HSK-C40 | 40 | 19 | 75 | 20 | 5 | 7,5 | 2,5 | F3101K02.1.30 | ● |
| | | | HSK-C50 | 40 | 19 | 78 | 25 | 5 | 7,5 | 2,5 | F3101K03.1.30 | ● |
| | | | HSK-C63 | 40 | 19 | 78 | 32 | 5 | 7,5 | 2,5 | F3101K04.1.30 | ● |
| | | | HSK-C80 | 40 | 19 | 81 | 40 | 5 | 7,5 | 2,5 | F3101K05.1.30 | ○ |
| | | | HSK-C100 | 40 | 19 | 81 | 50 | 5 | 7,5 | 2,5 | F3101K06.1.30 | ○ |
| KSN 3/HD | M4,5 - M24 (Nr.10 - 1") | EM 03 | HSK-C50 | 56 | 31 | 118 | 25 | 7 | 10 | 3 | F3103K03.1.30 | ● |
| | | | HSK-C63 | 56 | 31 | 110 | 32 | 7 | 10 | 3 | F3103K04.1.30 | ● |
| | | | HSK-C80 | 56 | 31 | 113 | 40 | 7 | 10 | 3 | F3103K05.1.30 | ○ |
| | | | HSK-C100 | 56 | 31 | 115 | 50 | 7 | 10 | 3 | F3103K06.1.30 | ○ |

Weitere Ausführungen auf Anfrage
Further designs upon request

Zubehör
Accessories



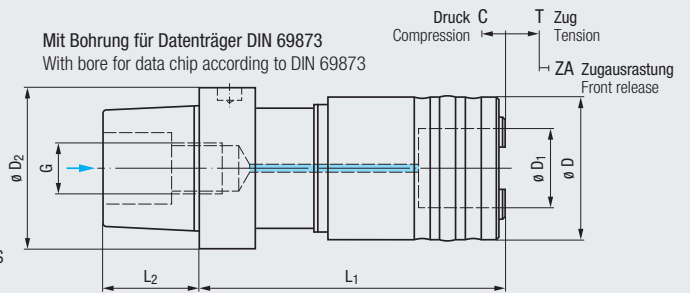
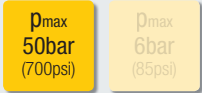
Schnellwechsel-Einsätze Typenreihe EM
Quick-change adapters EM series ▶▶ 755 - 778



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN**
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

KSN/HD

ISO 26623-1



Einsatz auf CNC-Bearbeitungszentren und sonstigen Werkzeugmaschinen

For use on CNC machining centres and other machine tools

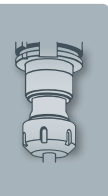
| Typ Type | | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_1$ | L_1 | L_2 | G | C | T | ZA | Artikel-Nr. Article no. | |
|-----------------|----------------------------|-------|-------------------|-----------------|-------------------|-------|-------|---------|---|-----|-----|----------------------------|---|
| KSN 1/HD | M3 - M14 (Nr.4 - 9/16) | EM 01 | PSC 63 | 40 | 19 | 86,5 | 38 | M20 x 2 | 5 | 7,5 | 2,5 | F3101T06.1 | ● |
| KSN 3/HD | M4,5 - M24 (Nr.10 - 1") | EM 03 | PSC 63 | 56 | 31 | 120 | 38 | M20 x 2 | 7 | 10 | 3 | F3103T06.1 | ● |

Weitere Ausführungen auf Anfrage
Further designs upon request

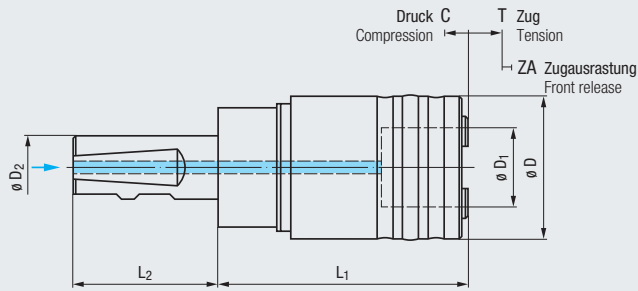
Zubehör Accessories



Schnellwechsel-Einsätze Typenreihe EM
Quick-change adapters EM series [» 755 - 778](#)

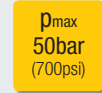


KSN/HD
DIN 1835 B+E



Einsatz auf CNC-Bearbeitungszentren
und sonstigen Werkzeugmaschinen

For use on CNC machining centres
and other machine tools



Product Finder

Soft-synchro

Speed-synchro

KSN

MQL MMS

SFM

SWITCH-MASTER

GR, GR-S

HF

EM

Zubehör Accessories

Tech. Info

| Typ Type | | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_1$ | L_1 | L_2 | C | T | ZA | Artikel-Nr. Article no. | |
|-------------|-----------------------------|-------|-------------------|-----------------|-------------------|-------|-------|----|-----|-----|----------------------------|---|
| KSN 1/HD | M3 - M14 (Nr.4 - 9/16) | EM 01 | 25 | 40 | 19 | 62 | 57 | 5 | 7,5 | 2,5 | F3101G26.1 | ● |
| KSN 3/HD | M4,5 - M24 (Nr.10 - 1") | EM 03 | 25 | 56 | 31 | 98 | 57 | 7 | 10 | 3 | F3103G26.1 | ● |
| KSN 4/HD | M14 - M36 (9/16 - 1 3/8) | EM 04 | 32 | 80 | 48 | 147 | 61 | 15 | 20 | 5 | F3104G27.1 | ● |

Weitere Ausführungen auf Anfrage
Further designs upon request

Zubehör
Accessories



Schnellwechsel-Einsätze Typenreihe EM
Quick-change adapters EM series ▶▶ 755 - 778

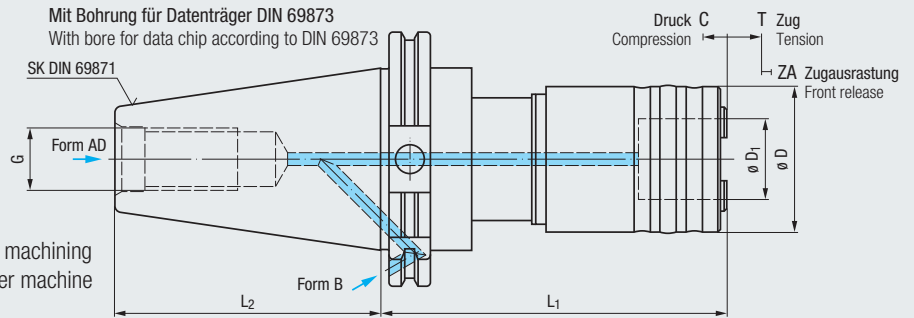
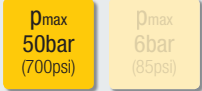
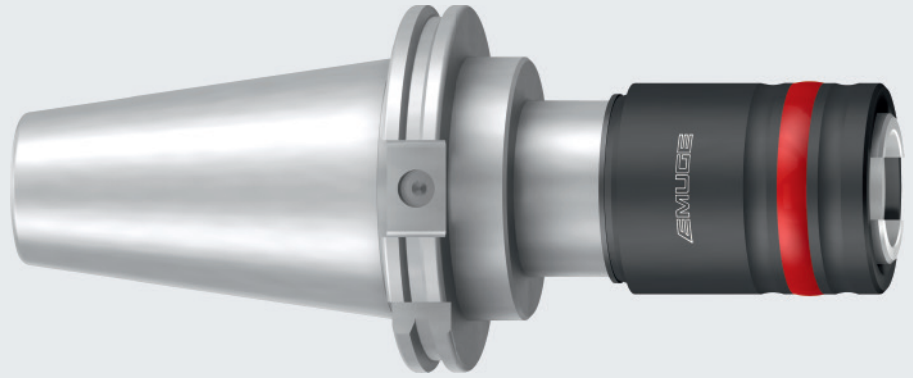


Adaptionsschäfte
Adapter shanks ▶▶ 780



KSN/HD

DIN 69871 AD
DIN 69871 B



Einsatz auf CNC-Bearbeitungs-
zentren und sonstigen
Werkzeugmaschinen

For use on CNC machining
centres and other machine
tools

| Typ Type | | | SK 1) | $\varnothing D$ | $\varnothing D_1$ | L_1 | L_2 | G | C | T | ZA | Artikel-Nr. Article no. | |
|-------------|----------------------------|-------|----------|-----------------|-------------------|-------|--------|-----|---|-----|-----|----------------------------|---|
| KSN 1/HD | M3 - M14 (Nr.4 - 9/16) | EM 01 | SK 40 AD | 40 | 19 | 98 | 68,4 | M16 | 5 | 7,5 | 2,5 | F3101651.1 | ● |
| | | | SK 40 B | 40 | 19 | 98 | 68,4 | M16 | 5 | 7,5 | 2,5 | F3101651.2 | ● |
| | | | SK 50 AD | 40 | 19 | 98 | 101,75 | M24 | 5 | 7,5 | 2,5 | F3101653.1 | ● |
| | | | SK 50 B | 40 | 19 | 98 | 101,75 | M24 | 5 | 7,5 | 2,5 | F3101653.2 | ● |
| KSN 3/HD | M4,5 - M24 (Nr.10 - 1") | EM 03 | SK 40 AD | 56 | 31 | 134 | 68,4 | M16 | 7 | 10 | 3 | F3103651.1 | ● |
| | | | SK 40 B | 56 | 31 | 134 | 68,4 | M16 | 7 | 10 | 3 | F3103651.2 | ● |
| | | | SK 50 AD | 56 | 31 | 134 | 101,75 | M24 | 7 | 10 | 3 | F3103653.1 | ● |
| | | | SK 50 B | 56 | 31 | 134 | 101,75 | M24 | 7 | 10 | 3 | F3103653.2 | ● |

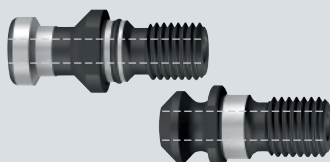
1) Adaptierung über DIN 1835 B
Adaptation by DIN 1835 B

Weitere Ausführungen auf Anfrage
Further designs upon request

Zubehör Accessories



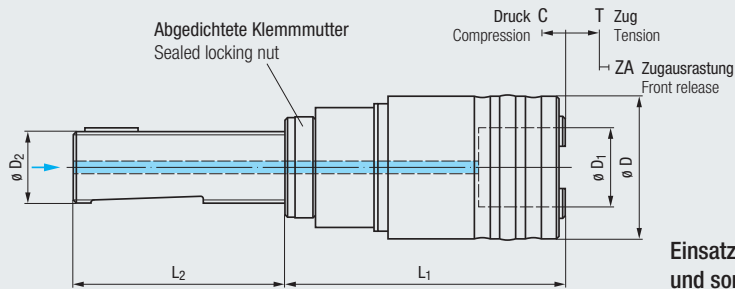
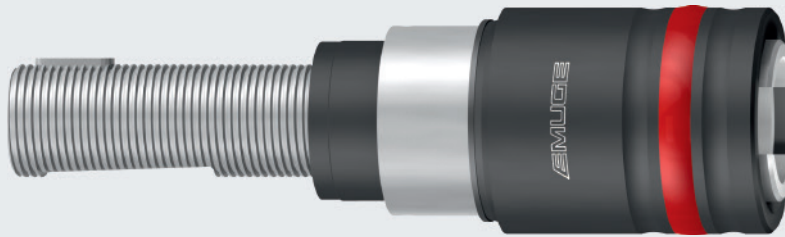
Schnellwechsel-Einsätze Typenreihe EM
Quick-change adapters EM series 755 - 778



Anzugsbolzen für Steilkegelschäfte
siehe Seite 566

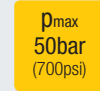
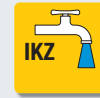
Pull studs for ISO taper shanks,
see page 566

KSN/HD
DIN 6327



Einsatz auf CNC-Bearbeitungszentren
und sonstigen Werkzeugmaschinen

For use on CNC machining centres
and other machine tools



Product Finder

Soft-synchro

Speed-synchro

KSN

MQL MMS

SFM

SWITCH-MASTER

GR, GR-S

HF

EM

Zubehör Accessories

Tech. Info

| Typ Type | | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_1$ | L_1 | L_2 | C | T | ZA | Artikel-Nr. Article no. | |
|-------------|----------------------------|-------|-------------------|-----------------|-------------------|-------|-------|---|-----|-----|----------------------------|---|
| KSN 1/HD | M3 - M14 (Nr.4 - 9/16) | EM 01 | Tr 20 x 2 | 40 | 19 | 79 | 71 | 5 | 7,5 | 2,5 | F3101214.1 | ● |
| | | | Tr 28 x 2 | 40 | 19 | 80 | 77 | 5 | 7,5 | 2,5 | F3101216.1 | ● |
| KSN 3/HD | M4,5 - M24 (Nr.10 - 1") | EM 03 | Tr 28 x 2 | 56 | 31 | 116 | 77 | 7 | 10 | 3 | F3103216.1 | ● |
| | | | Tr 36 x 2 | 56 | 31 | 118 | 98 | 7 | 10 | 3 | F3103218.1 | ● |

Weitere Ausführungen auf Anfrage
Further designs upon request

Zubehör
Accessories



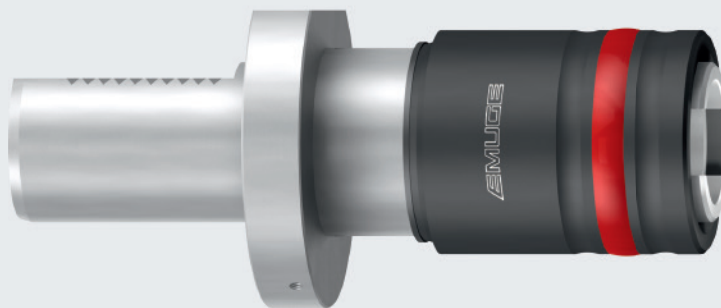
Schnellwechsel-Einsätze Typenreihe EM
Quick-change adapters EM series [» 755 - 778](#)



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN**
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

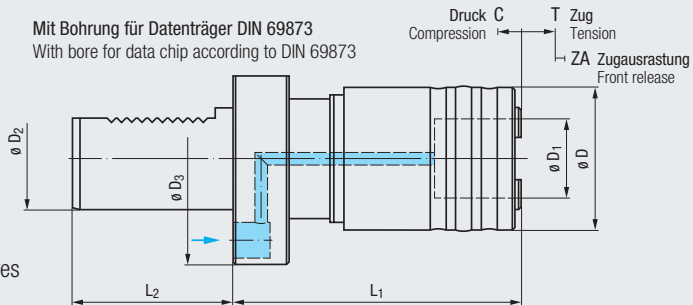
KSN/HD

DIN ISO 10889 (VDI 3425)



p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)



Einsatz auf CNC-Bearbeitungszentren und sonstigen Werkzeugmaschinen
For use on CNC machining centres and other machine tools

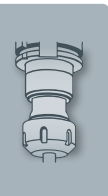
| Typ Type | | | $\varnothing D_2$ | $\varnothing D_3$ | $\varnothing D$ | $\varnothing D_1$ | L_1 | L_2 | C | T | ZA | Artikel-Nr. Article no. | |
|-------------|----------------------------|-------|-------------------|-------------------|-----------------|-------------------|-------|-------|---|-----|-----|----------------------------|---|
| KSN 1/HD | M3 - M14 (Nr.4 - 9/16) | EM 01 | 30 | 68 | 40 | 19 | 77 | 55 | 5 | 7,5 | 2,5 | F3101431.1 | ● |
| | | | 40 | 83 | 40 | 19 | 77 | 63 | 5 | 7,5 | 2,5 | F3101432.1 | ● |
| | | | 50 | 98 | 40 | 19 | 77 | 78 | 5 | 7,5 | 2,5 | F3101433.1 | ○ |
| KSN 3/HD | M4,5 - M24 (Nr.10 - 1") | EM 03 | 30 | 68 | 56 | 31 | 113 | 55 | 7 | 10 | 3 | F3103431.1 | ● |
| | | | 40 | 83 | 56 | 31 | 113 | 63 | 7 | 10 | 3 | F3103432.1 | ● |
| | | | 50 | 98 | 56 | 31 | 113 | 78 | 7 | 10 | 3 | F3103433.1 | ● |

Weitere Ausführungen auf Anfrage
Further designs upon request

Zubehör Accessories

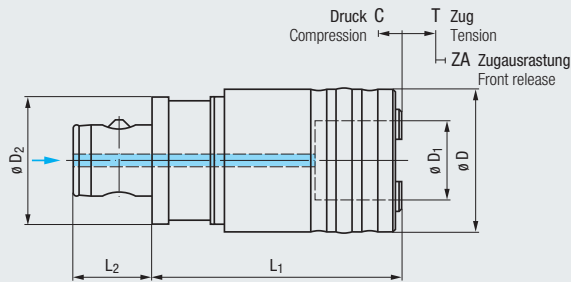
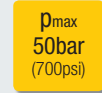


Schnellwechsel-Einsätze Typenreihe EM
Quick-change adapters EM series ▶ 755 - 778





KSN/HD
ABS®
(System KOMET)



Einsatz auf CNC-Bearbeitungszentren
und sonstigen Werkzeugmaschinen

For use on CNC machining centres
and other machine tools

| Typ Type | | | ø D ₂ | ø D | ø D ₁ | L ₁ | L ₂ | C | T | ZA | Artikel-Nr. Article no. | |
|-----------------|----------------------------|-------|------------------|-----|------------------|----------------|----------------|---|-----|-----|----------------------------|---|
| KSN 1/HD | M3 - M14 (Nr.4 - 9/16) | EM 01 | ABS 32 | 40 | 19 | 69 | 23 | 5 | 7,5 | 2,5 | F3101L01.1 | ● |
| KSN 3/HD | M4,5 - M24 (Nr.10 - 1") | EM 03 | ABS 50 | 56 | 31 | 98 | 31 | 7 | 10 | 3 | F3103L03.1 | ● |

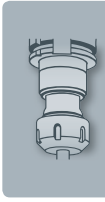
Weitere Ausführungen auf Anfrage
Further designs upon request

Zubehör
Accessories



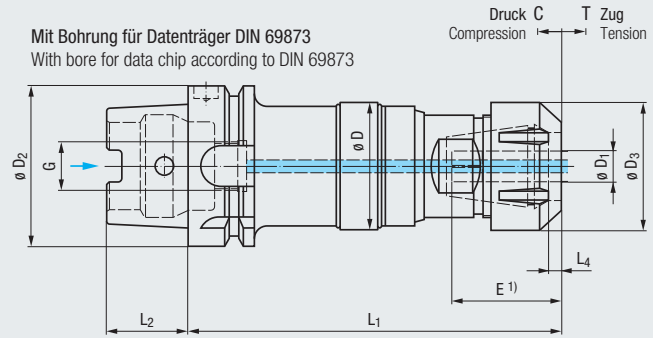
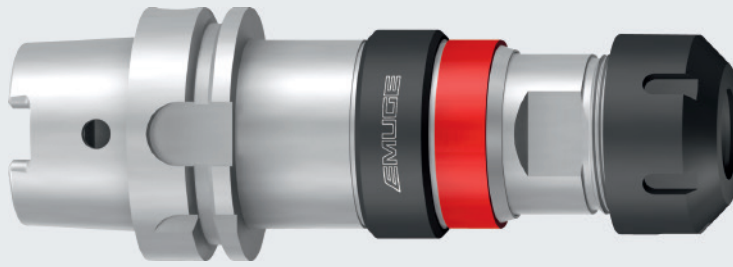
Schnellwechsel-Einsätze Typenreihe EM
Quick-change adapters EM series [» 755 - 778](#)

- Product Finder
- Soft-synchro
- Speed-synchro
- KSN**
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info



KSN/HD/ER

DIN 69893 A



Einsatz auf CNC-Bearbeitungszentren und sonstigen Werkzeugmaschinen
For use on CNC machining centres and other machine tools

| Typ Type | | $\varnothing D_1$ | | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | L_1 | L_2 | L_4 | G | C | T | Artikel-Nr. Article no. | |
|-------------|---------------------------|-------------------|------------|-----------------|-------------------|-----------------|-------------------|-------|-------|-------|-----------|---|-----|----------------------------|---|
| KSN 1/HD/ER | M4 - M12 (Nr.8 - 7/16) | 4,5 - 10 | ER 20 (GB) | Hi-Q/ERMC 20 | HSK-A50 | 38 | 28 | 114 | 25 | 5 | M16 x 1 | 5 | 7,5 | F3231C03.1 | ● |
| | | | | | HSK-A63 | 38 | 28 | 116 | 32 | 5 | M18 x 1 | 5 | 7,5 | F3231C04.1 | ● |
| | | | | | HSK-A80 | 38 | 28 | 120 | 40 | 5 | M20 x 1,5 | 5 | 7,5 | F3231C05.1 | ○ |
| | | | | | HSK-A100 | 38 | 28 | 121 | 50 | 5 | M24 x 1,5 | 5 | 7,5 | F3231C06.1 | ● |
| KSN 3/HD/ER | M4 - M20 (Nr.8 - 3/4) | 4,5 - 16 | ER 32 (GB) | Hi-Q/ERC 32 | HSK-A50 | 52 | 50 | 157 | 25 | 5 | M16 x 1 | 7 | 10 | F3233C03.1 | ○ |
| | | | | | HSK-A63 | 52 | 50 | 147 | 32 | 5 | M18 x 1 | 7 | 10 | F3233C04.1 | ● |
| | | | | | HSK-A80 | 52 | 50 | 150 | 40 | 5 | M20 x 1,5 | 7 | 10 | F3233C05.1 | ○ |
| | | | | | HSK-A100 | 52 | 50 | 152 | 50 | 5 | M24 x 1,5 | 7 | 10 | F3233C06.1 | ● |

1) Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

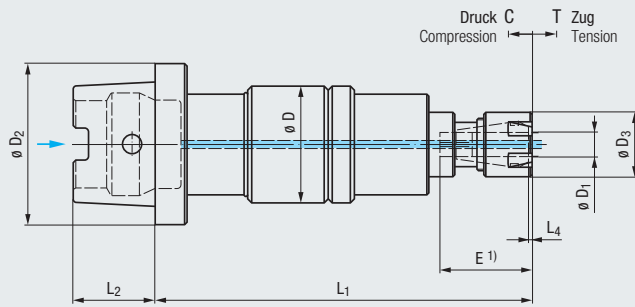
Weitere Ausführungen auf Anfrage
Further designs upon request

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)
▶▶ 786 - 787
- 
Dichtscheiben Typ DS/ER
Sealing disks type DS/ER
▶▶ 789
- 
Spannschlüsselsatz
Set of clamping wrenches
▶▶ 794
- 
Kühlschmierstoffrohre und Schlüssel
Coolant tubes and wrenches
▶▶ 782 - 783

KSN/HD/ER
DIN 69893 C



Einsatz auf CNC-Bearbeitungszentren
und sonstigen Werkzeugmaschinen

For use on CNC machining centres
and other machine tools

IKZ

MMS
MQL

p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)

C T

F

- Product Finder
- Soft-synchro
- Speed-synchro
- KSN**
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

| Typ Type | | $\varnothing D_1$ | | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | L_1 ER | L_1 ER-GB | L_2 | L_4 | C | T | Artikel-Nr. Article no. | |
|--------------------|--------------------------|-------------------|------------|----------------|-------------------|-----------------|-------------------|-------------|----------------|-------|-------|---|---|----------------------------|---|
| KSN 0/HD/ER | M2 - M8 (Nr.0 - Nr.6) | 2,5 - 6 | ER 11 (GB) | Hi-Q/ERM 11 | HSK-C32 | 29 | 16 | 97,3 | 95,5 | 16 | 0,9 | 6 | 6 | F3230K01.1 | ● |
| | | | | | | 29 | 16 | 97,3 | 95,5 | 20 | 0,9 | 6 | 6 | F3230K02.1 | ● |

1) Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

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)

» 786 - 787



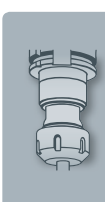
Spannmutter mit integrierter Abdichtung Typ Hi-Q/ERM 11
Clamping nut with integrated seal, type Hi-Q/ERM 11

» 790



Spannschlüsselsatz
Set of clamping wrenches

» 794

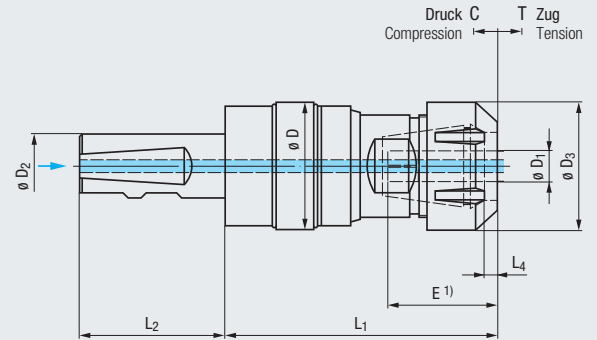


KSN/HD/ER

DIN 1835 B+E



| | | |
|--------------------------------|------------------------------|--|
| | | |
| p_{max} 50bar (700psi) | p_{max} 6bar (85psi) | |
| | | |
| | | |



Einsatz auf CNC-Bearbeitungszentren und sonstigen Werkzeugmaschinen For use on CNC machining centres and other machine tools

| Typ Type | | $\varnothing D_1$ | | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | L_1 | L_2 | L_4 | C | T | Artikel-Nr. Article no. | |
|--------------------|---------------------------|-------------------|------------|-----------------|-------------------|-----------------|-------------------|-------|-------|-------|---|-----|----------------------------|---|
| KSN 1/HD/ER | M4 - M12 (Nr.8 - 7/16) | 4,5 - 10 | ER 20 (GB) | Hi-Q/ERMC 20 | 25 | 38 | 28 | 85 | 57 | 5 | 5 | 7,5 | F3231G26.1 | ● |
| KSN 3/HD/ER | M4 - M20 (Nr.8 - 3/4) | 4,5 - 16 | ER 32 (GB) | Hi-Q/ERC 32 | 25 | 52 | 50 | 115 | 57 | 5 | 7 | 10 | F3233G26.1 | ● |

1) Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

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

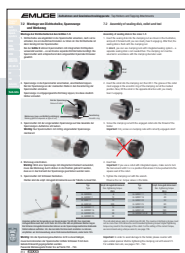
Zubehör Accessories

Spannzangen Typ ER (GB)
Collets type ER (GB) » 786 - 787

Dichtscheiben Typ DS/ER
Sealing disks type DS/ER » 789

Spannschlüsselsatz
Set of clamping wrenches » 794

Adaptionsschäfte
Adapter shanks » 780

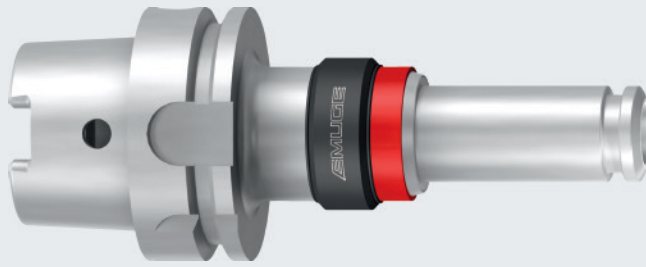


Montage von Dichtscheibe,
Spannzange und Werkzeug
siehe Seite 812

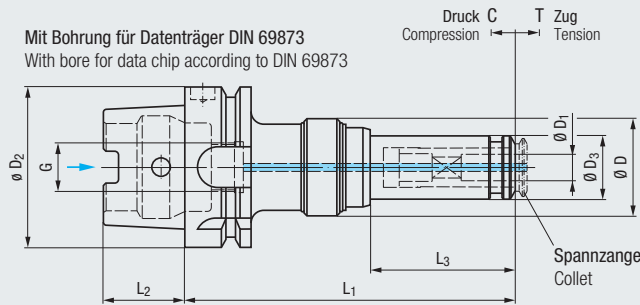
Assembly of sealing disk,
collet and tool,
see page 812

KSN/HD/PGR

DIN 69893 A



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

IKZ

MMS
MQL

p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)

C T

F

- Product Finder
- Soft-synchro
- Speed-synchro
- KSN**
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

| Typ Type | | $\varnothing D_1$ | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | L_1 | L_2 | L_3 | G | C | T | Artikel-Nr. Article no. | |
|---------------------|---------------------------|-------------------|-----------|-------------------|-----------------|-------------------|-------|-------|-------|-----------|---|-----|----------------------------|---|
| KSN 1/HD/PGR | M4 - M12 (Nr.8 - 7/16) | 4,5 - 10 | PGR 15 GB | HSK-A50 | 38 | 24 | 124 | 25 | 55 | M16 x 1 | 5 | 7,5 | F3241C03.1 | ● |
| | | | | HSK-A63 | 38 | 24 | 126 | 32 | 55 | M18 x 1 | 5 | 7,5 | F3241C04.1 | ● |
| | | | | HSK-A80 | 38 | 24 | 130 | 40 | 55 | M20 x 1,5 | 5 | 7,5 | F3241C05.1 | ○ |
| | | | | HSK-A100 | 38 | 24 | 131 | 50 | 55 | M24 x 1,5 | 5 | 7,5 | F3241C06.1 | ○ |
| KSN 3/HD/PGR | M8 - M20 (5/16 - 3/4) | 8 - 16 | PGR 25 GB | HSK-A50 | 52 | 40 | 170 | 25 | 66,5 | M16 x 1 | 7 | 10 | F3243C03.1 | ● |
| | | | | HSK-A63 | 52 | 40 | 160 | 32 | 66,5 | M18 x 1 | 7 | 10 | F3243C04.1 | ● |
| | | | | HSK-A80 | 52 | 40 | 163 | 40 | 66,5 | M20 x 1,5 | 7 | 10 | F3243C05.1 | ● |
| | | | | HSK-A100 | 52 | 40 | 165 | 50 | 66,5 | M24 x 1,5 | 7 | 10 | F3243C06.1 | ● |

Weitere Ausführungen auf Anfrage
Further designs upon request

Zubehör Accessories



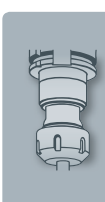
Spannzangen Typ PGR-GB
Collets type PGR-GB

» 796



Kühlschmierstoffrohre und Schlüssel
Coolant tubes and wrenches

» 782 - 783



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN**
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

KSN/HD/PGR

DIN 1835 B+E



IKZ

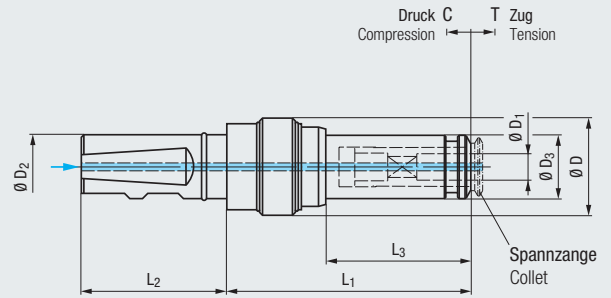
MMS MQL

ρ_{max}
50bar
(700psi)

ρ_{max}
6bar
(85psi)

C T

F



Einsatz auf CNC-Bearbeitungszentren und sonstigen Werkzeugmaschinen
For use on CNC machining centres and other machine tools

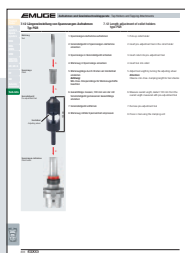
| Typ Type | | $\varnothing D_1$ | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | L_1 | L_2 | L_3 | C | T | Artikel-Nr. Article no. | |
|---------------------|---------------------------|-------------------|-----------|-------------------|-----------------|-------------------|-------|-------|-------|---|-----|----------------------------|---|
| KSN 1/HD/PGR | M4 - M12 (Nr.8 - 7/16) | 4,5 - 10 | PGR 15 GB | 25 | 38 | 24 | 95 | 57 | 55 | 5 | 7,5 | F3241G26.1 | ● |
| KSN 3/HD/PGR | M8 - M20 (5/16 - 3/4) | 8 - 16 | PGR 25 GB | 25 | 52 | 40 | 128 | 57 | 66,5 | 7 | 10 | F3243G26.1 | ● |

Weitere Ausführungen auf Anfrage
Further designs upon request

Zubehör Accessories

Spannzangen Typ PGR-GB
Collets type PGR-GB » 796

Adaptionsschäfte
Adapter shanks » 780

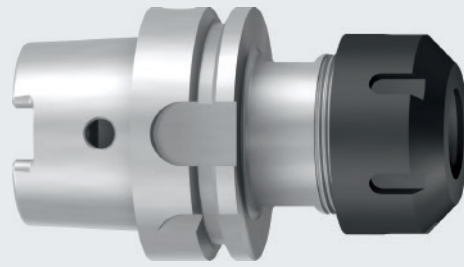


Längeneinstellung von
Spannzangen-Aufnahmen Typ PGR
siehe Seite 836

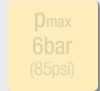
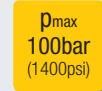
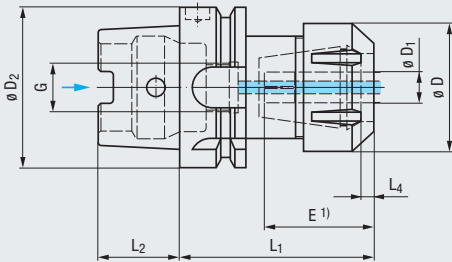
Length adjustment of
collet holders type PGR,
see page 836

KSN/Synchro

DIN 69893 A



Mit Bohrung für Datenträger DIN 69873
With bore for data chip according to DIN 69873



Product Finder

Soft-synchro

Speed-synchro

KSN

MQL MMS

SFM

SWITCH-MASTER

GR, GR-S

HF

EM

Zubehör Accessories

Tech. Info

| Typ Type | | $\varnothing D_1$ | | | $\varnothing D_2$ | $\varnothing D$ | L_1 | L_2 | L_4 | G | Artikel-Nr. Article no. | |
|---------------------------|----------------------------|-------------------|------------|----------------|-------------------|-----------------|-------|-------|-------|-----------|----------------------------|---|
| KSN 1/ Synchro | M4 - M12 (Nr.8 - 1/2) | 4,5 - 10 | ER 20 (GB) | Hi-Q/ERC 20 | HSK-A50 | 34 | 68 | 25 | 5 | M16 x 1 | F3131C03.1.30 | ● |
| | | | | | HSK-A63 | 34 | 68 | 32 | 5 | M18 x 1 | F3131C04.1.30 | ● |
| | | | | | HSK-A100 | 34 | 74 | 50 | 5 | M24 x 1,5 | F3131C06.1.30 | ● |
| KSN 3/ Synchro | M4 - M20 (Nr.8 - 3/4) | 4,5 - 16 | ER 32 (GB) | Hi-Q/ERC 32 | HSK-A50 | 50 | 76 | 25 | 5 | M16 x 1 | F3133C03.1.30 | ● |
| | | | | | HSK-A63 | 50 | 76 | 32 | 5 | M18 x 1 | F3133C04.1.30 | ● |
| | | | | | HSK-A100 | 50 | 84 | 50 | 5 | M24 x 1,5 | F3133C06.1.30 | ● |
| KSN 4/ Synchro | M10 - M30 (3/8 - 1 1/4) | 7 - 22 | ER 40 (GB) | Hi-Q/ERC 40 | HSK-A63 | 63 | 80 | 32 | 5 | M18 x 1 | F3134C04.1.30 | ○ |
| | | | | | HSK-A100 | 63 | 91 | 50 | 5 | M24 x 1,5 | F3134C06.1.30 | ● |

¹⁾ Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

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)

» 786 - 787



Dichtscheiben Typ DS/ER
Sealing disks type DS/ER

» 789



Spannschlüssel
Clamping wrench

» 794



Kühlschmierstoffrohre und Schlüssel
Coolant tubes and wrenches

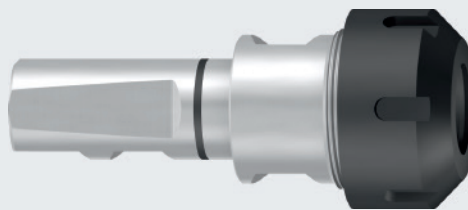
» 782 - 783



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN**
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

KSN/Synchro

DIN 1835 B+E

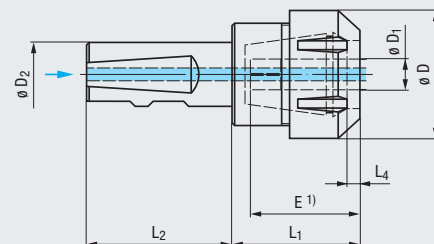


IKZ

MMS MQL

ρ_{max}
100bar
(1400psi)

ρ_{max}
6bar
(85psi)



| Typ Type | | $\varnothing D_1$ | | | $\varnothing D_2$ | $\varnothing D$ | L ₁ | L ₂ | L ₄ | Artikel-Nr. Article no. | |
|---------------------------|----------------------------|-------------------|------------|----------------|-------------------|-----------------|----------------|----------------|----------------|----------------------------|---|
| KSN 1/ Synchro | M4 - M12 (Nr.8 - 1/2) | 4,5 - 10 | ER 20 (GB) | Hi-Q/ERC 20 | 25 | 34 | 42 | 57 | 5 | F3131G26.1.24 | ● |
| KSN 3/ Synchro | M4 - M20 (Nr.8 - 3/4) | 4,5 - 16 | ER 32 (GB) | Hi-Q/ERC 32 | 25 | 50 | 56 | 57 | 5 | F3133G26.1.24 | ● |
| KSN 4/ Synchro | M10 - M30 (3/8 - 1 1/4) | 7 - 22 | ER 40 (GB) | Hi-Q/ERC 40 | 25 | 63 | 65 | 57 | 5 | F3134G26.1.24 | ● |

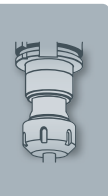
1) Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

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

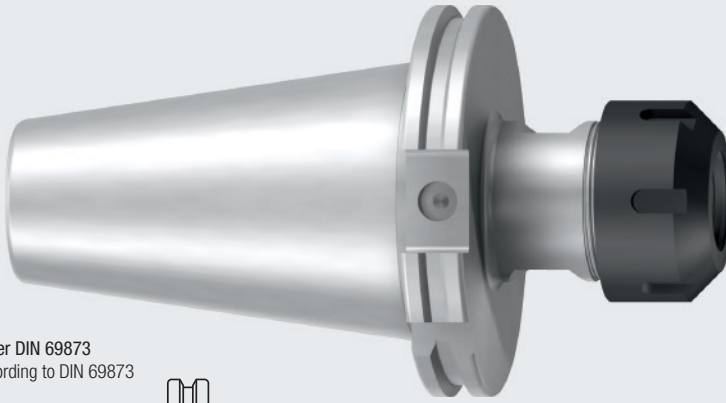
Zubehör Accessories

- Spannzangen Typ ER (GB)
Collets type ER (GB)
» 786 - 787
- Dichtscheiben Typ DS/ER
Sealing disks type DS/ER
» 789
- Spannschlüssel
Clamping wrench
» 794
- Adaptionsschäfte
Adapter shanks
» 780

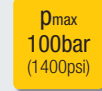
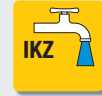
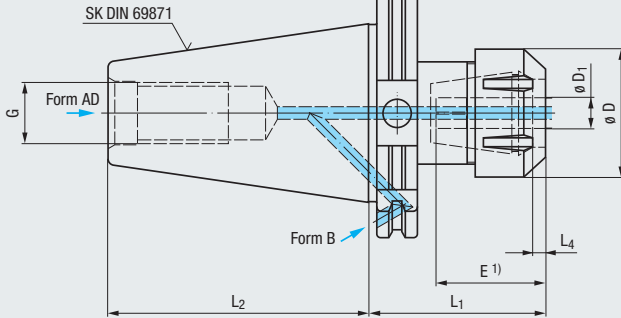


KSN/Synchro

DIN 69871 AD
DIN 69871 B



Mit Bohrung für Datenträger DIN 69873
With bore for data chip according to DIN 69873



Product Finder

Soft-synchro

Speed-synchro

KSN

MQL MMS

SFM

SWITCH-MASTER

GR, GR-S

HF

EM

Zubehör Accessories

Tech. Info

| Typ Type | | ø D ₁ | | | SK | ø D | L ₁ | L ₂ | L ₄ | G | Artikel-Nr. Article no. | |
|---------------------------|----------------------------|------------------|------------|----------------|----------|-----|----------------|----------------|----------------|-----|----------------------------|---|
| KSN 0/ Synchro | M1 - M10 (Nr.1 - 5/16) | 2,5 - 7 | ER 11 (GB) | Hi-Q/ER 11 | SK 40 AD | 19 | 58 | 68,4 | — | M16 | F3130651.1 | ● |
| | | | | | SK 40 B | 19 | 58 | 68,4 | — | M16 | F3130651.2 | ○ |
| | | | | | SK 50 AD | 19 | 58 | 101,75 | — | M24 | F3130653.1 | ● |
| | | | | | SK 50 B | 19 | 58 | 101,75 | — | M24 | F3130653.2 | ○ |
| KSN 1/ Synchro | M4 - M12 (Nr.8 - 1/2) | 4,5 - 10 | ER 20 (GB) | Hi-Q/ERC 20 | SK 40 AD | 34 | 68 | 68,4 | 5 | M16 | F3131651.1.24 | ● |
| | | | | | SK 40 B | 34 | 68 | 68,4 | 5 | M16 | F3131651.2.24 | ● |
| | | | | | SK 50 AD | 34 | 68 | 101,75 | 5 | M24 | F3131653.1.24 | ● |
| | | | | | SK 50 B | 34 | 68 | 101,75 | 5 | M24 | F3131653.2.24 | ● |
| KSN 3/ Synchro | M4 - M20 (Nr.8 - 3/4) | 4,5 - 16 | ER 32 (GB) | Hi-Q/ERC 32 | SK 40 AD | 50 | 76 | 68,4 | 5 | M16 | F3133651.1.24 | ● |
| | | | | | SK 40 B | 50 | 76 | 68,4 | 5 | M16 | F3133651.2.24 | ● |
| | | | | | SK 50 AD | 50 | 76 | 101,75 | 5 | M24 | F3133653.1.24 | ● |
| | | | | | SK 50 B | 50 | 76 | 101,75 | 5 | M24 | F3133653.2.24 | ● |
| KSN 4/ Synchro | M10 - M30 (3/8 - 1 1/4) | 7 - 22 | ER 40 (GB) | Hi-Q/ERC 40 | SK 40 AD | 63 | 85 | 68,4 | 5 | M16 | F3134651.1.24 | ● |
| | | | | | SK 40 B | 63 | 85 | 68,4 | 5 | M16 | F3134651.2.24 | ● |
| | | | | | SK 50 AD | 63 | 85 | 101,75 | 5 | M24 | F3134653.1.24 | ● |
| | | | | | SK 50 B | 63 | 85 | 101,75 | 5 | M24 | F3134653.2.24 | ● |

1) Einstecktiepen E siehe Seite 797
Clamping depths E, see page 797

Weitere Ausführungen auf Anfrage
Further designs upon request

KSN 0/Synchro

Spannmutter ohne integrierte Abdichtung ist im Lieferumfang enthalten
Clamping nut without integrated seal is included in the delivery

KSN 1-4/Synchro

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)

» 786 - 787



Spannmutter mit integrierter Abdichtung Typ Hi-Q/ERC 11
Clamping nut with integrated seal, type Hi-Q/ERC 11

» 791



Dichtscheiben Typ DS/ER
Sealing disks type DS/ER

» 789

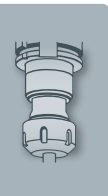
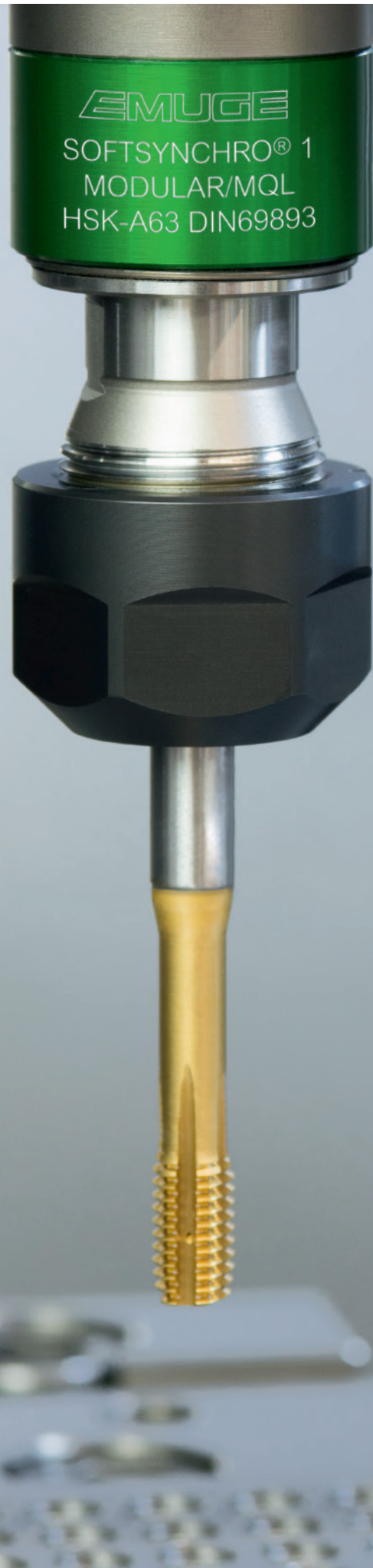


Spannschlüssel
Clamping wrench

» 794



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS**
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info



Product
FinderSoft-
synchroSpeed-
synchro

KSN

MQL
MMS

SFM

SWITCH-
MASTER

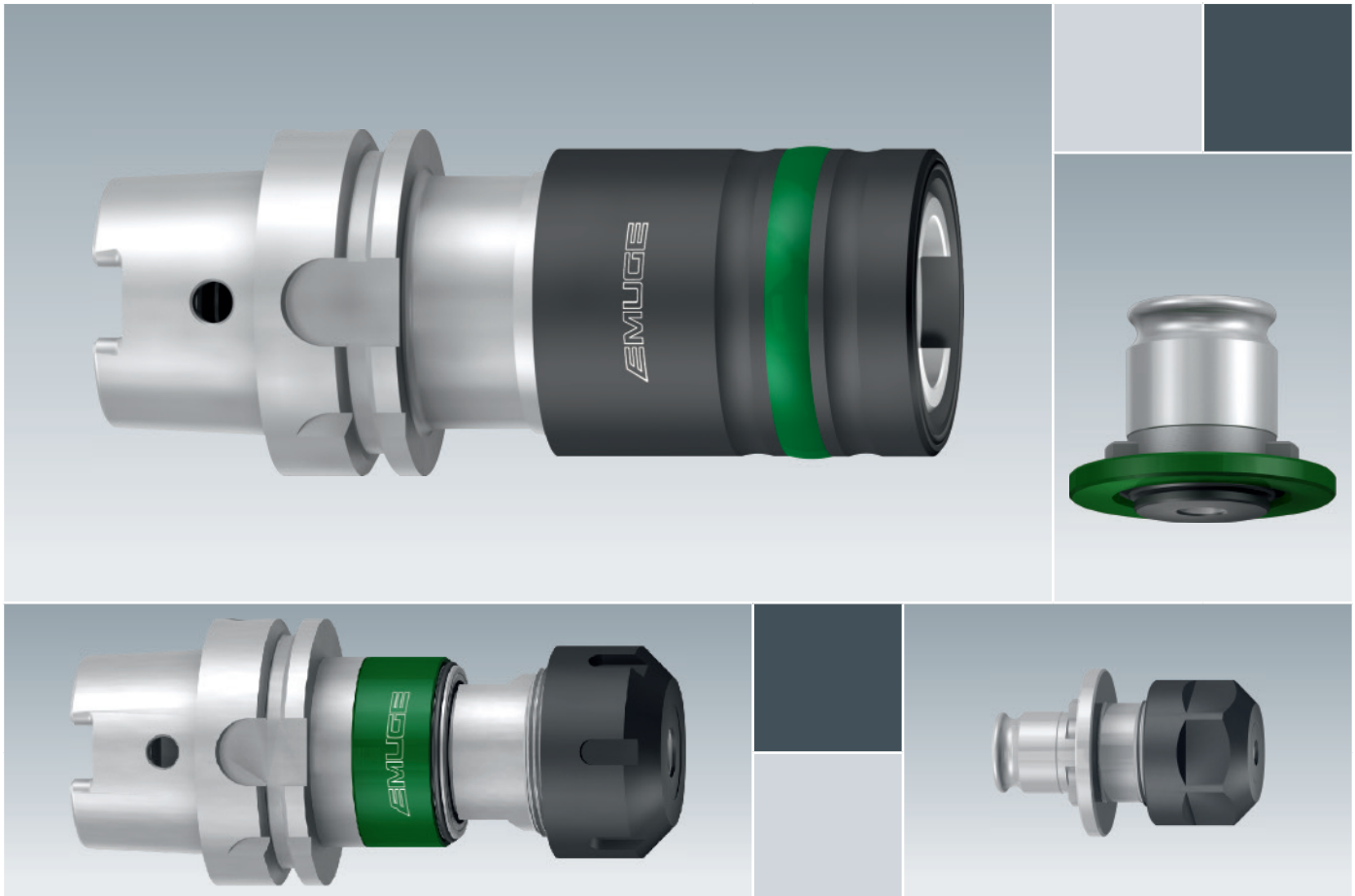
GR, GR-S

HF

EM

Zubehör
Accessories

Tech. Info



Typenreihen mit Minimalmengenschmierung Minimum Quantity Lubrication Series

Einsatz auf Maschinen mit Minimalmengenschmierung (MMS)

Strömungsoptimierte Übergabe des MMS-Mediums von der Maschinenspindel zum Gewindewerkzeug.

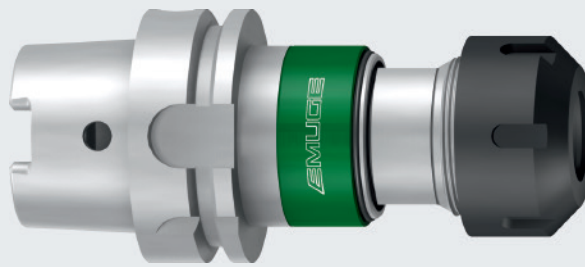
Application on machines with minimum-quantity lubrication (MQL)

Flow-optimised transfer of the MQL medium from machine spindle to threading tool.



Softsynchro®/MMS

DIN 69893 A



IKZ

MMS
MQL

MQL
1

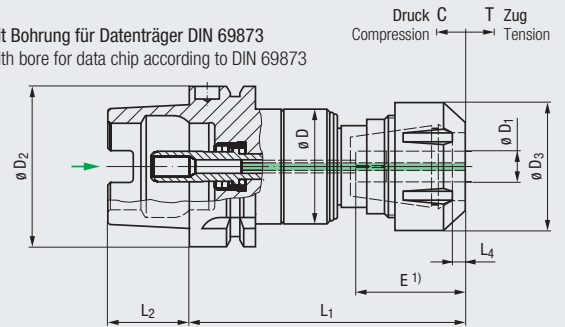
p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)

Soft

F

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 Type | | $\varnothing D_1$ | | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | L_1 | L_2 | L_4 | C | T | Artikel-Nr. Article no. | |
|-------------------------------|------------|-------------------|------------|----------------|-------------------|-----------------|-------------------|-------|-------|-------|-----|-----|----------------------------|---|
| Softsynchro® 1/MMS | M4,5 - M10 | 6 - 8 | ER 20 (GB) | Hi-Q/ERC 20 | HSK-A50 | 34 | 34 | 93,5 | 25 | 5 | 0,5 | 0,5 | F3491C03.1.68 | ● |
| | | | | | HSK-A63 | 34 | 34 | 95,5 | 32 | 5 | 0,5 | 0,5 | F3491C04.1.68 | ● |
| | | | | | HSK-A100 | 34 | 34 | 102 | 50 | 5 | 0,5 | 0,5 | F3491C06.1.68 | ● |
| | M10 - M12 | 9 - 10 | | | HSK-A50 | 34 | 34 | 93,5 | 25 | 5 | 0,5 | 0,5 | F3491C03.1 | ● |
| | | | | | HSK-A63 | 34 | 34 | 95,5 | 32 | 5 | 0,5 | 0,5 | F3491C04.1 | ● |
| | | | | | HSK-A100 | 34 | 34 | 102 | 50 | 5 | 0,5 | 0,5 | F3491C06.1 | ● |
| Softsynchro® 3/MMS | M10 - M20 | 9 - 16 | ER 32 (GB) | Hi-Q/ERC 32 | HSK-A50 | 45 | 50 | 116,3 | 25 | 5 | 0,5 | 0,5 | F3493C03.1 | ● |
| | | | | | HSK-A63 | 45 | 50 | 108,8 | 32 | 5 | 0,5 | 0,5 | F3493C04.1 | ● |
| | | | | | HSK-A100 | 45 | 50 | 115,3 | 50 | 5 | 0,5 | 0,5 | F3493C06.1 | ● |

¹⁾ Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

Weitere Ausführungen auf Anfrage
Further designs upon request

Das Kühlschmierstoffrohr ist im Schaft enthalten und darf nicht demontiert werden, da sonst die Funktion der MMS-Übergabe nicht mehr gewährleistet ist!
The 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

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)

» 786 - 787



Dichtscheiben Typ DS/ER
Sealing disks type DS/ER

» 789



Spann Schlüsselset
Set of clamping wrenches

» 793



Montagevorrichtung
Assembly device

» 793

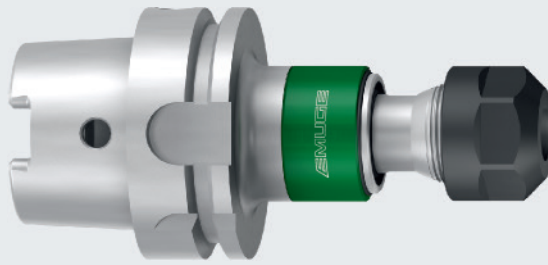


Drehmomentschlüssel TORCO-FIX
Torque wrenches TORCO-FIX

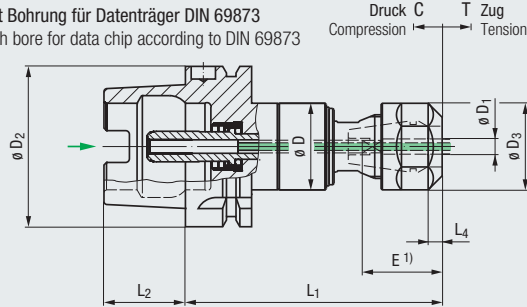
» 795

Softsynchro®/MMS

DIN 69893 A



mit Bohrung für Datenträger DIN 69873
with bore for data chip according to DIN 69873



IKZ

MMS MQL

MQL 2

p_{max} 50bar (700psi)

p_{max} 6bar (85psi)

C T Soft

F

↔

Einsatz auf Maschinen mit Synchronspindel

For use on machines with synchronous spindle

| Typ Type | | $\varnothing D_1$ | | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | L_1 | L_2 | L_4 | C | T | Artikel-Nr. Article no. | |
|-------------------------------|------------|-------------------|------------|-------------|-------------------|-----------------|-------------------|-------|-------|-------|-----|-----|----------------------------|---|
| Softsynchro® 1/MMS | M4,5 - M12 | 6 - 10 | ER 20 (GB) | Hi-Q/ERC 20 | HSK-A50 | 34 | 34 | 93,5 | 25 | 5 | 0,5 | 0,5 | F3511C03.1 | ● |
| | | | | | HSK-A63 | 34 | 34 | 95,5 | 32 | 5 | 0,5 | 0,5 | F3511C04.1 | ● |
| | | | | | HSK-A100 | 34 | 34 | 102 | 50 | 5 | 0,5 | 0,5 | F3511C06.1 | ● |

1) Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

Weitere Ausführungen auf Anfrage
Further designs upon request

Das Kühlschmierstoffrohr ist im Schaft enthalten und darf nicht demontiert werden, da sonst die Funktion der MMS-Übergabe nicht mehr gewährleistet ist!
The 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

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)

» 786 - 787



Dichtscheiben Typ DS/ER
Sealing disks type DS/ER

» 789



Spannschlüsselsatz
Set of clamping wrenches

» 793



Montagevorrichtung
Assembly device

» 793



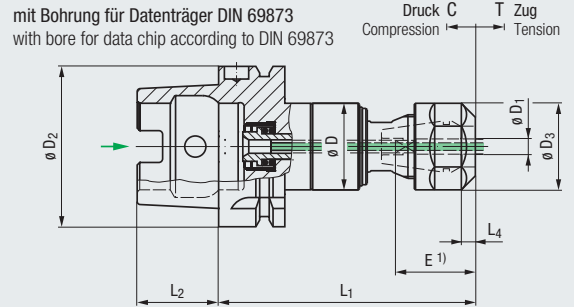
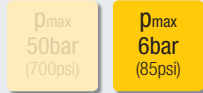
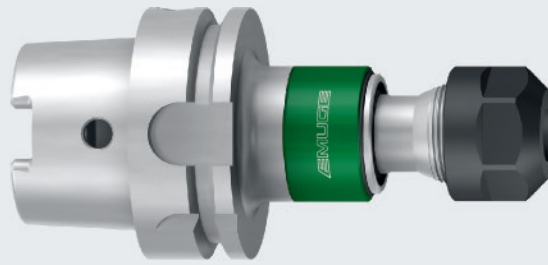
Drehmomentschlüssel TORCO-FIX
Torque wrenches TORCO-FIX

» 795



Softsynchro®/MMS

≈ DIN 69893 C 2)



Einsatz auf Maschinen mit Synchronspindel For use on machines with synchronous spindle

| Typ Type | | ø D ₁ | | | ø D ₂ | ø D | ø D ₃ | L ₁ | L ₂ | L ₄ | C | T | Artikel-Nr. Article no. | |
|-----------------------|------------|------------------|------------|-------------|------------------|-----|------------------|----------------|----------------|----------------|-----|-----|----------------------------|---|
| Softsynchro® 1/MMS | M4,5 - M10 | 6 - 8 | ER 20 (GB) | Hi-Q/ERC 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 797
Clamping depths E, see page 797

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

Das Kühlschmierstoffrohr ist im Schaft enthalten und darf nicht demontiert werden, da sonst die Funktion der MMS-Übergabe nicht mehr gewährleistet ist!
The 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

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) → 786 - 787

Dichtscheiben Typ DS/ER
Sealing disks type DS/ER → 789

Spanschlüsselsatz
Set of clamping wrenches → 793

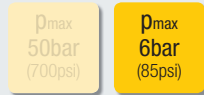
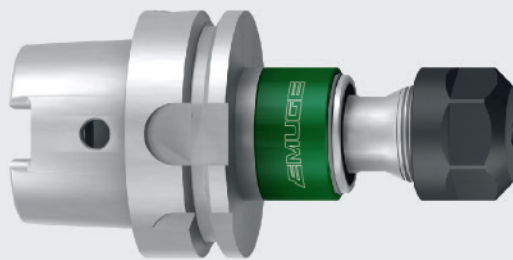
Montagevorrichtung
Assembly device → 793

Drehmomentschlüssel TORCO-FIX
Torque wrenches TORCO-FIX → 795



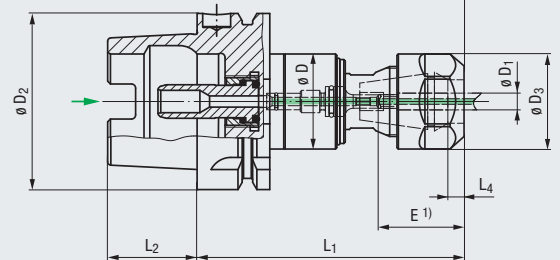
Softsynchro® Modular/MQL

DIN 69893 A



Mit Bohrung für Datenträger DIN 69873
With bore for data chip according to DIN 69873

Druck C T Zug
Compression Tension



Einsatz auf Maschinen mit Synchronspindel For use on machines with synchronous spindle

| new | Typ Type | ø D ₁ | Werkzeugkegel Tool taper | ø D ₂ | ø D | ø D ₃ | L ₁ | L ₂ | L ₄ | C | T | Artikel-Nr. Article no. | | | | |
|----------------------------------|------------------|-------------------------------------|-------------------------------------|-------------------------------------|----------------|------------------|----------------|----------------|----------------|------|-----|----------------------------|-----------------|-----------------|-----------------|---|
| Softsynchro® 1 Modular/MQL | M4,5 - M10 | 6 / 7 | Innenkegel Internal taper 60° | ER 20 (GB) | Hi-Q/ERC 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, M11, M12 | 8 / 9 | Innenkegel Internal taper 60° | ER 20 (GB) | Hi-Q/ERC 20 | 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 | Innenkegel Internal taper 60° | ER 20 (GB) | Hi-Q/ERC 20 | 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 M8 | 6 | Außenkegel External taper 90° | ER 20 (GB) | Hi-Q/ERC 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 | Außenkegel External taper 90° | ER 20 (GB) | Hi-Q/ERC 20 | 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 | Außenkegel External taper 90° | ER 20 (GB) | Hi-Q/ERC 20 | 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 | Außenkegel External taper 90° | ER 20 (GB) | Hi-Q/ERC 20 | 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 | Außenkegel External taper 90° | ER 20 (GB) | Hi-Q/ERC 20 | 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 797
Clamping depths E, see page 797

Külschmierstoffrohr, Längeneinstellschraube sowie Spannmutter für Dichtscheiben sind im Lieferumfang enthalten
Coolant tube, length adjustment screw as well as clamping nut for sealing disks are 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

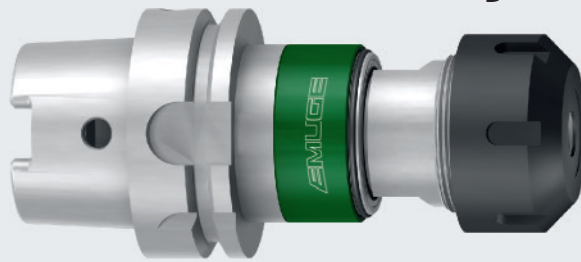


Detaillierte Informationen zu
Softsynchro® Modular
siehe Seite 821 - 822

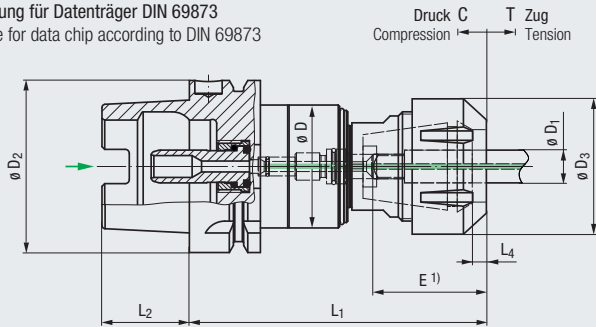
Detailed information
regarding Softsynchro® Modular
see page 821 - 822

Softsynchro® Modular/MQL

DIN 69893 A



Mit Bohrung für Datenträger DIN 69873
With bore for data chip according to DIN 69873



IKZ

MMS
MQL

MQL
1

p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)

C T
Soft

F

L+ 2 mm

[Icon: Cap]

[Icon: Collet]

[Icon: Body]

Einsatz auf Maschinen
mit Synchronspindel

For use on machines
with synchronous spindle

| new | Typ Type | $\varnothing D_1$ | Werkzeugkegel Tool taper | | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | L_1 | L_2 | L_4 | C | T | Artikel-Nr. Article no. | |
|----------------------------------|-------------|-------------------|---|------------|----------------|-------------------|-----------------|-------------------|-----------------|-------|-----------------|-----------------|-----|----------------------------|---|
| Softsynchro® 3 Modular/MQL | M12 | 9 | Innenkegel Internal taper 60° | ER 32 (GB) | Hi-Q/ERC 32 | HSK-A63 | 45 | 50 | 108,8 | 32 | 5 | 0,5 | 0,5 | F3553C04.53.I01 | ● |
| | HSK-A100 | 50 | | | | 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 | 50 | | | | 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 | 50 | | | | 50 | 115,3 | 50 | 5 | 0,5 | 0,5 | F3553C06.53.I03 | ● | | |
| | M12 | 9 | Außenkegel External taper 90° | ER 32 (GB) | Hi-Q/ERC 32 | HSK-A63 | 45 | 50 | 108,8 | 32 | 5 | 0,5 | 0,5 | F3553C04.53.A04 | ● |
| | HSK-A100 | 50 | | | | 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 | 50 | | | | 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 | 50 | | | | 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 | 50 | 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 | 50 | 50 | 115,3 | 50 | 5 | 0,5 | 0,5 | F3553C06.53.A08 | ● | | | | | |

Zubehör Accessories

Spannzangen Typ ER (GB)
Collets type ER (GB) ▶▶ 786 - 787

Dichtscheiben Typ DS/ER
Sealing disks type DS/ER ▶▶ 789

Längeneinstellschrauben
Length adjustment screws ▶▶ 784

Spannschlüsselsatz
Set of clamping wrenches ▶▶ 793

Montagevorrichtung
Assembly device ▶▶ 793

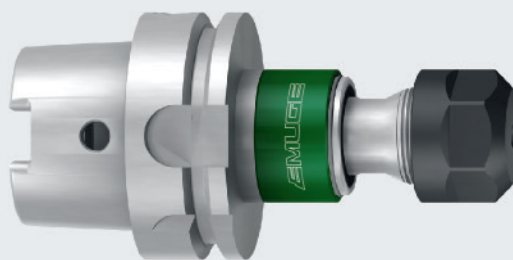
Drehmomentschlüssel TORCO-FIX
Torque wrenches TORCO-FIX ▶▶ 795

Kühlschmierstoffrohre und Schlüssel
Coolant tubes and wrenches ▶▶ 782 - 783

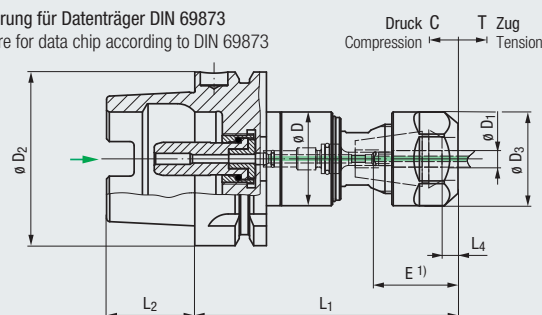
● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

Softsynchro® Modular/MQL

DIN 69893 A



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

| new | | | | | | | | | | | | | | | |
|----------------------------------|------------------|------------------|---|----------------|----------------|------------------|-----|------------------|----------------|----------------|----------------|-----|-----------------|----------------------------|---|
| Typ Type | | ø D ₁ | Werkzeugkegel Tool taper | | | ø D ₂ | ø D | ø D ₃ | L ₁ | L ₂ | L ₄ | C | T | Artikel-Nr. Article no. | |
| Softsynchro® 1 Modular/MQL | M4,5 - M10 | 6 / 7 | Innenkegel Internal taper 60° | ER 20 (GB) | Hi-Q/ERC 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 | ● |
| | | | | | | 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 | ● |
| | M8, M9, M11, M12 | 8 / 9 | 60° | ER 20 (GB) | Hi-Q/ERC 20 | 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 | ● |
| | | | | | | HSK-A40 | 34 | 34 | 89,5 | 20 | 5 | 0,5 | 0,5 | F3551C02.54.A04 | ● |
| | M4,5 - M6 M8 | 6 | Außenkegel External taper 90° | ER 20 (GB) | Hi-Q/ERC 20 | 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 | ● |
| | | | | | | 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 | ● |
| | | | | | | 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 | ● |
| | M7, M10 | 7 | 90° | ER 20 (GB) | Hi-Q/ERC 20 | 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 | ● | |
| HSK-A40 | | | | | | 34 | 34 | 89,5 | 20 | 5 | 0,5 | 0,5 | F3551C02.54.A08 | ● | |
| M8 | 8 | 90° | ER 20 (GB) | Hi-Q/ERC 20 | 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 | ● | |
| | | | | | HSK-A40 | 34 | 34 | 89,5 | 20 | 5 | 0,5 | 0,5 | F3551C02.54.A09 | ● | |
| | | | | | HSK-A63 | 34 | 34 | 95,5 | 32 | 5 | 0,5 | 0,5 | F3551C04.54.A09 | ● | |
| M12 | 9 | 90° | ER 20 (GB) | Hi-Q/ERC 20 | HSK-A100 | 34 | 34 | 102 | 50 | 5 | 0,5 | 0,5 | F3551C06.54.A09 | ● | |
| | | | | | HSK-A40 | 34 | 34 | 89,5 | 20 | 5 | 0,5 | 0,5 | F3551C02.54.A10 | ● | |
| | | | | | HSK-A63 | 34 | 34 | 95,5 | 32 | 5 | 0,5 | 0,5 | F3551C04.54.A10 | ● | |
| | | | | | HSK-A100 | 34 | 34 | 102 | 50 | 5 | 0,5 | 0,5 | F3551C06.54.A10 | ● | |
| M10 | 10 | 90° | ER 20 (GB) | Hi-Q/ERC 20 | HSK-A40 | 34 | 34 | 89,5 | 20 | 5 | 0,5 | 0,5 | F3551C02.54.A11 | ● | |
| | | | | | HSK-A63 | 34 | 34 | 95,5 | 32 | 5 | 0,5 | 0,5 | F3551C04.54.A11 | ● | |
| | | | | | HSK-A100 | 34 | 34 | 102 | 50 | 5 | 0,5 | 0,5 | F3551C06.54.A11 | ● | |
| | | | | | HSK-A40 | 34 | 34 | 89,5 | 20 | 5 | 0,5 | 0,5 | F3551C02.54.A12 | ● | |

1) Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

Külschmierstoffrohr, Längeneinstellschraube sowie Spannmutter für Dichtscheiben sind im Lieferumfang enthalten
Coolant tube, length adjustment screw as well as clamping nut for sealing disks are 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

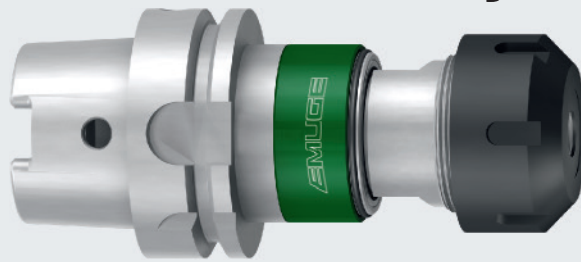


Detaillierte Informationen zu
Softsynchro® Modular
siehe Seite 821 - 822

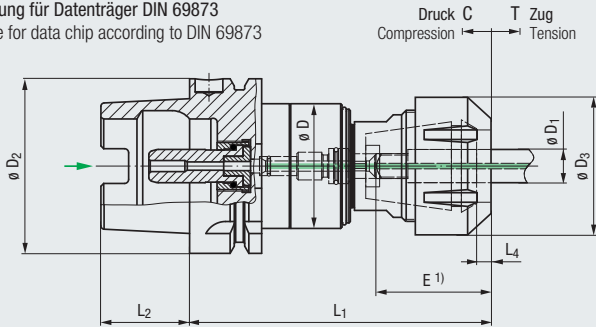
Detailed information
regarding Softsynchro® Modular
see page 821 - 822

Softsynchro® Modular/MQL

DIN 69893 A



Mit Bohrung für Datenträger DIN 69873
With bore for data chip according to DIN 69873



IKZ

MMS
MQL

MQL
2

p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)

C T
Soft

F

L+ 2 mm

[Icon]

[Icon]

[Icon]

Einsatz auf Maschinen
mit Synchronspindel

For use on machines
with synchronous spindle

| new | Typ Type | $\varnothing D_1$ | Werkzeugkegel Tool taper | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | L_1 | L_2 | L_4 | C | T | Artikel-Nr. Article no. | | | |
|----------------------------------|-------------|-------------------|---|-------------------|-----------------|-------------------|-------|-------|-----------------|-----|-----------------|----------------------------|-----|-----------------|---|
| Softsynchro® 3 Modular/MQL | M12 | 9 | Innenkegel Internal taper 60° | ER 32 (GB) | Hi-Q/ERC 32 | HSK-A63 | 45 | 50 | 108,8 | 32 | 5 | 0,5 | 0,5 | F3553C04.54.101 | ● |
| | HSK-A100 | 50 | | | | 50 | 115,3 | 50 | 5 | 0,5 | 0,5 | F3553C06.54.101 | ● | | |
| | M10 - M16 | 10 - 12 | | | | HSK-A63 | 45 | 50 | 108,8 | 32 | 5 | 0,5 | 0,5 | F3553C04.54.102 | ● |
| | HSK-A100 | 50 | | | | 50 | 115,3 | 50 | 5 | 0,5 | 0,5 | F3553C06.54.102 | ● | | |
| | M18 - M20 | 14 - 16 | | | | HSK-A63 | 45 | 50 | 108,8 | 32 | 5 | 0,5 | 0,5 | F3553C04.54.103 | ● |
| | HSK-A100 | 50 | | | | 50 | 115,3 | 50 | 5 | 0,5 | 0,5 | F3553C06.54.103 | ● | | |
| | M12 | 9 | Außenkegel External taper 90° | ER 32 (GB) | Hi-Q/ERC 32 | HSK-A63 | 45 | 50 | 108,8 | 32 | 5 | 0,5 | 0,5 | F3553C04.54.A04 | ● |
| | HSK-A100 | 50 | | | | 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 | 50 | | | | 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 | 50 | | | | 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 | 50 | 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 | 50 | 50 | 115,3 | 50 | 5 | 0,5 | 0,5 | F3553C06.54.A08 | ● | | | | | |

Zubehör Accessories

Spannzangen Typ ER (GB)
Collets type ER (GB) ▶▶ 786 - 787

Dichtscheiben Typ DS/ER
Sealing disks type DS/ER ▶▶ 789

Längeneinstellschrauben
Length adjustment screws ▶▶ 784

Spannschlüsselsatz
Set of clamping wrenches ▶▶ 793

Montagevorrichtung
Assembly device ▶▶ 793

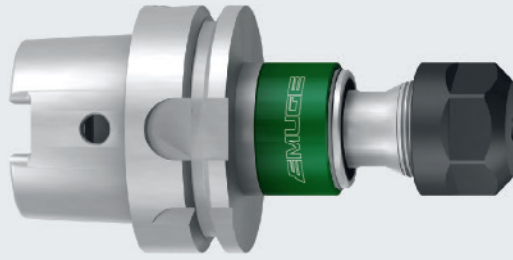
Drehmomentschlüssel TORCO-FIX
Torque wrenches TORCO-FIX ▶▶ 795

Kühlschmierstoffrohre und Schlüssel
Coolant tubes and wrenches ▶▶ 782 - 783

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

Softsynchro® Modular/MQL

≈ DIN 69893 C 2)

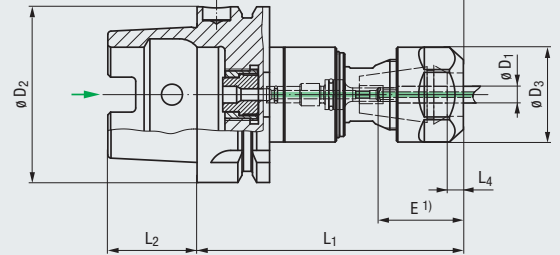


- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info



Mit Bohrung für Datenträger DIN 69873
With bore for data chip according to DIN 69873

Druck C T Zug
Compression Tension



Einsatz auf Maschinen mit Synchronspindel For use on machines with synchronous spindle

| new | Typ Type | ø D ₁ | Werkzeugkegel Tool taper | ø D ₂ | ø D | ø D ₃ | L ₁ | L ₂ | L ₄ | C | T | Artikel-Nr. Article no. | | | | |
|----------------------------------|------------------|------------------|-------------------------------------|------------------|----------------|------------------|----------------|----------------|----------------|-----------------|----|-------------------------|-----|-----------------|-----------------|---|
| Softsynchro® 1 Modular/MQL | M4,5 - M10 | 6 / 7 | Innenkegel Internal taper 60° | ER 20 (GB) | Hi-Q/ERC 20 | HSK-A40 | 34 | 34 | 89,5 | 20 | 5 | 0,5 | 0,5 | F3551C02.52.I01 | ● | |
| | | | | | | HSK-A63 | 34 | 34 | 95,5 | 32 | 5 | 0,5 | 0,5 | F3551C04.52.I01 | ● | |
| | | | | | | HSK-A100 | 34 | 34 | 102 | 50 | 5 | 0,5 | 0,5 | F3551C06.52.I01 | ● | |
| | M8, M9, M11, M12 | 8 / 9 | Innenkegel Internal taper 60° | ER 20 (GB) | Hi-Q/ERC 20 | HSK-A40 | 34 | 34 | 89,5 | 20 | 5 | 0,5 | 0,5 | F3551C02.52.I02 | ● | |
| | | | | | | HSK-A63 | 34 | 34 | 95,5 | 32 | 5 | 0,5 | 0,5 | F3551C04.52.I02 | ● | |
| | | | | | | HSK-A100 | 34 | 34 | 102 | 50 | 5 | 0,5 | 0,5 | F3551C06.52.I02 | ● | |
| | M10 | 10 | Innenkegel Internal taper 60° | ER 20 (GB) | Hi-Q/ERC 20 | HSK-A40 | 34 | 34 | 89,5 | 20 | 5 | 0,5 | 0,5 | F3551C02.52.I03 | ● | |
| | | | | | | HSK-A63 | 34 | 34 | 95,5 | 32 | 5 | 0,5 | 0,5 | F3551C04.52.I03 | ● | |
| | | | | | | HSK-A100 | 34 | 34 | 102 | 50 | 5 | 0,5 | 0,5 | F3551C06.52.I03 | ● | |
| | M4,5 - M6 M8 | 6 | Außenkegel External taper 90° | ER 20 (GB) | Hi-Q/ERC 20 | HSK-A40 | 34 | 34 | 89,5 | 20 | 5 | 0,5 | 0,5 | F3551C02.52.A04 | ● | |
| | | | | | | HSK-A63 | 34 | 34 | 95,5 | 32 | 5 | 0,5 | 0,5 | F3551C04.52.A04 | ● | |
| | | | | | | HSK-A100 | 34 | 34 | 102 | 50 | 5 | 0,5 | 0,5 | F3551C06.52.A04 | ● | |
| | | M7, M10 | | | | 7 | HSK-A40 | 34 | 34 | 89,5 | 20 | 5 | 0,5 | 0,5 | F3551C02.52.A05 | ● |
| | | | | | | | HSK-A63 | 34 | 34 | 95,5 | 32 | 5 | 0,5 | 0,5 | F3551C04.52.A05 | ● |
| | | | | | | | HSK-A100 | 34 | 34 | 102 | 50 | 5 | 0,5 | 0,5 | F3551C06.52.A05 | ● |
| | | M8 | | | | 8 | HSK-A40 | 34 | 34 | 89,5 | 20 | 5 | 0,5 | 0,5 | F3551C02.52.A06 | ● |
| | | | | | | | HSK-A63 | 34 | 34 | 95,5 | 32 | 5 | 0,5 | 0,5 | F3551C04.52.A06 | ● |
| | | | | | | | HSK-A100 | 34 | 34 | 102 | 50 | 5 | 0,5 | 0,5 | F3551C06.52.A06 | ● |
| | | M12 | | | | 9 | HSK-A40 | 34 | 34 | 89,5 | 20 | 5 | 0,5 | 0,5 | F3551C02.52.A07 | ● |
| | | | | | | | HSK-A63 | 34 | 34 | 95,5 | 32 | 5 | 0,5 | 0,5 | F3551C04.52.A07 | ● |
| HSK-A100 | | | | | | | 34 | 34 | 102 | 50 | 5 | 0,5 | 0,5 | F3551C06.52.A07 | ● | |
| M10 | 10 | HSK-A40 | 34 | 34 | 89,5 | 20 | 5 | 0,5 | 0,5 | F3551C02.52.A08 | ● | | | | | |
| | | HSK-A63 | 34 | 34 | 95,5 | 32 | 5 | 0,5 | 0,5 | F3551C04.52.A08 | ● | | | | | |
| | | HSK-A100 | 34 | 34 | 102 | 50 | 5 | 0,5 | 0,5 | F3551C06.52.A08 | ● | | | | | |

1) Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

2) Außenkontur entspricht DIN 69893 A, Innenkontur nach DIN 69893 C
Outside contour acc. DIN 69893 A, inside contour acc. DIN 69893 C

Füllstück, Längeneinstellschraube sowie Spannmutter für Dichtscheiben sind im Lieferumfang enthalten
Adapter, length adjustment screw as well as clamping nut for sealing disks are 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

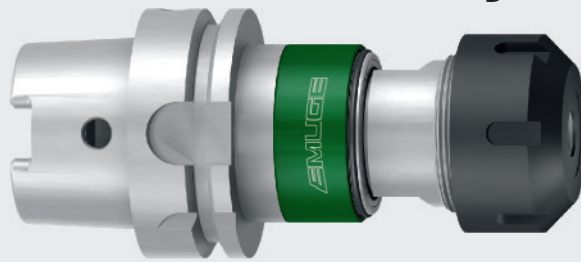


Detaillierte Informationen zu
Softsynchro® Modular
siehe Seite 821 - 822

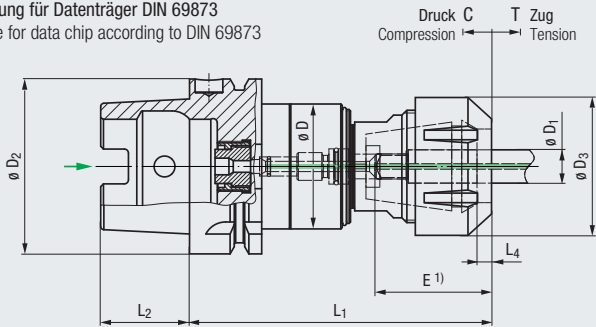
Detailed information
regarding Softsynchro® Modular
see page 821 - 822

Softsynchro® Modular/MQL

≈ DIN 69893 C 2)



Mit Bohrung für Datenträger DIN 69873
With bore for data chip according to DIN 69873



IKZ

MMS
MQL

MQL
1

p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)

C T
Soft

F

L+ 2 mm

[Icon]

[Icon]

[Icon]

Einsatz auf Maschinen mit Synchronspindel For use on machines with synchronous spindle

| new | Typ Type | $\varnothing D_1$ | Werkzeugkegel Tool taper | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_3$ | L_1 | L_2 | L_4 | C | T | Artikel-Nr. Article no. | | | |
|----------------------------------|-------------|-------------------|---|-------------------|-----------------|-------------------|-------|-----------------|-------|-----|-----|----------------------------|-----|-----------------|---|
| Softsynchro® 3 Modular/MQL | M12 | 9 | Innenkegel Internal taper 60° | ER 32 (GB) | Hi-Q/ERC 32 | HSK-A63 | 45 | 50 | 108,8 | 32 | 5 | 0,5 | 0,5 | F3553C04.52.I01 | ● |
| | HSK-A100 | 50 | | | | 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 | 50 | | | | 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 | 50 | | | | 50 | 115,3 | 50 | 5 | 0,5 | 0,5 | F3553C06.52.I03 | ● | | |
| | M12 | 9 | Außenkegel External taper 90° | ER 32 (GB) | Hi-Q/ERC 32 | HSK-A63 | 45 | 50 | 108,8 | 32 | 5 | 0,5 | 0,5 | F3553C04.52.A04 | ● |
| | HSK-A100 | 50 | | | | 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 | 50 | | | | 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 | 50 | | | | 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 | 50 | | | | 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 | 50 | 50 | 115,3 | 50 | 5 | 0,5 | 0,5 | F3553C06.52.A08 | ● | | | | | | |

Zubehör

Accessories

Spannzangen Typ ER (GB)
Collets type ER (GB) ▶▶ 786 - 787

Dichtscheiben Typ DS/ER
Sealing disks type DS/ER ▶▶ 789

Längeneinstellschrauben
Length adjustment screws ▶▶ 784

Spannschlüsselsatz
Set of clamping wrenches ▶▶ 793

Montagevorrichtung
Assembly device ▶▶ 793

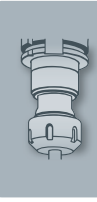
Drehmomentschlüssel TORCO-FIX
Torque wrenches TORCO-FIX ▶▶ 795

Füllstück
Adapter ▶▶ 783

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

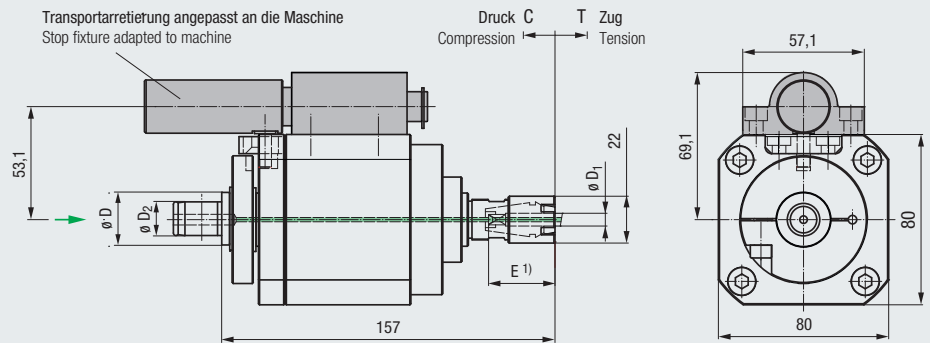
Product Finder

- Softsynchro
- Speedsynchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info



Speedsynchro® Modular/MQL

ABS® (System KOMET)



Einsatz auf Maschinen mit Synchronspindel For use on machines with synchronous spindle

| new | Typ Type | | | | $\varnothing D$ | $\varnothing D_2$ | $\varnothing D_1$ | Max. Spindeldrehzahl Max. spindle speed | Übersetzungsverhältnis Transmission ratio | C | T | Artikel-Nr. Article no. |
|------------------------------|-------------|------------|-----------------|--------|-----------------|-------------------|-------------------|--|--|-----|----------|----------------------------|
| Speedsynchro® Modular/MQL | M1 - M8 | ER 16 (GB) | Hi-Q/ERMC 16 | ABS 32 | 16 | 2,5 - 8 | 2000 | 1 : 4,412 | 0,5 | 0,5 | F3751L01 | ● |

1) Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

Adaptionsschäft, Transportarretierung (siehe auch Seite 827) und Längeneinstellschraube sind nicht im Lieferumfang enthalten, bitte extra bestellen
Adapter shank, stop fixture (see also page 827) and length adjustment screw are not included in the delivery, please order separately

Zubehör Accessories



Adaptionsschäfte
Adapter shanks

» 781



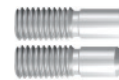
Montagevorrichtung
Assembly device

» 793



Spannzangen Typ ER (GB)
Collets type ER (GB)

» 786 - 787



Längeneinstellschrauben
Length adjustment screws

» 785



Dichtscheiben Typ DS/ER
Sealing disks type DS/ER

» 789

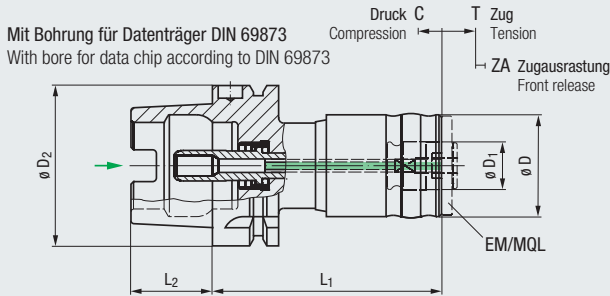
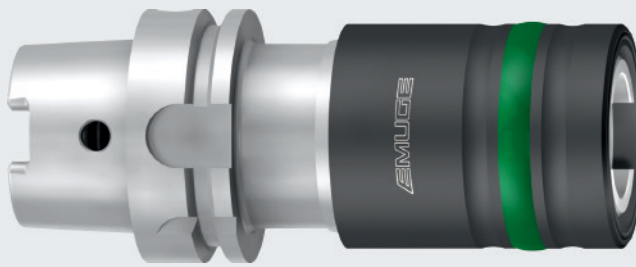


Mehr Informationen zum
Speedsynchro® Modular unter

More information regarding
Speedsynchro® Modular at

www.speedsynchro.com

KSN/MQL
DIN 69893 A



IKZ

MMS
MQL

MQL
1

p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)

C T

F

↔

Einsatz auf CNC-Bearbeitungszentren
und sonstigen Werkzeugmaschinen

For use on CNC machining centres
and other machine tools

| Typ Type | | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_1$ | L_1 | L_2 | C | T | ZA | Artikel-Nr. Article no. | |
|------------------|---------------------------|-----------|-------------------|-----------------|-------------------|-------|-------|---|---|-----|----------------------------|---|
| KSN 1/MQL | M6 - M12 (Nr.10 - 1/2) | EM 01/MQL | HSK-A40 | 40 | 19 | 88 | 20 | 5 | 5 | 2,5 | F3471C02.1 | ● |
| | | | HSK-A50 | 40 | 19 | 90 | 25 | 5 | 5 | 2,5 | F3471C03.1 | ● |
| | | | HSK-A63 | 40 | 19 | 90 | 32 | 5 | 5 | 2,5 | F3471C04.1 | ● |
| | | | HSK-A80 | 40 | 19 | 93 | 40 | 5 | 5 | 2,5 | F3471C05.1 | ● |
| | | | HSK-A100 | 40 | 19 | 93 | 50 | 5 | 5 | 2,5 | F3471C06.1 | ● |
| KSN 3/MQL | M10 - M24 (9/16 - 1") | EM 03/MQL | HSK-A63 | 56 | 31 | 120 | 32 | 7 | 7 | 3 | F3473C04.1 | ● |
| | | | HSK-A80 | 56 | 31 | 125 | 40 | 7 | 7 | 3 | F3473C05.1 | ● |
| | | | HSK-A100 | 56 | 31 | 128 | 50 | 7 | 7 | 3 | F3473C06.1 | ● |

Weitere Ausführungen auf Anfrage
Further designs upon request

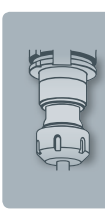
Das Kühlschmierstoffrohr ist im Schaft enthalten und darf nicht demontiert werden, da sonst die Funktion der MMS-Übergabe nicht mehr gewährleistet ist!
The coolant tube is integrated into the shank and must not be disassembled, otherwise the function of the MQL transfer is no longer warranted!

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 [» 730](#)

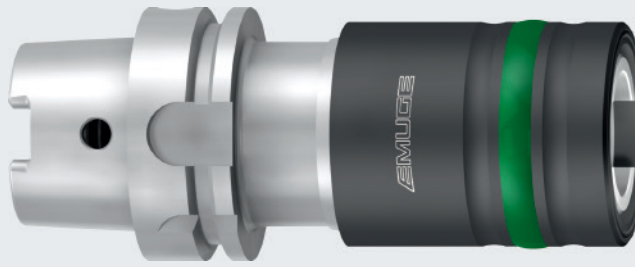
Schnellwechsel-Einsätze Typ EM-Z/MQL
Quick-change adapters type EM-Z/MQL [» 731 - 732](#)



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- ML MMS**
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

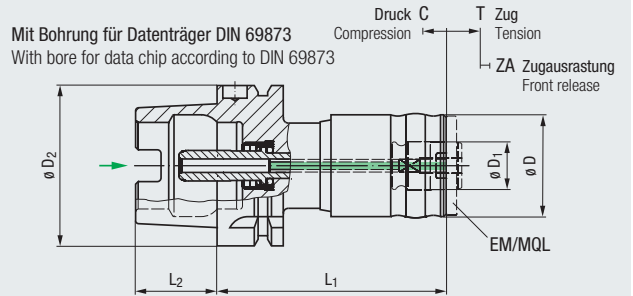
KSN/MQL

DIN 69893 A



p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)



Einsatz auf CNC-Bearbeitungszentren und sonstigen Werkzeugmaschinen For use on CNC machining centres and other machine tools

| Typ Type | | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_1$ | L_1 | L_2 | C | T | ZA | Artikel-Nr. Article no. |
|------------------|---------------------------|-----------|-------------------|-----------------|-------------------|-------|-------|---|---|-----|----------------------------|
| KSN 1/MQL | M6 - M12 (Nr.10 - 1/2) | EM 01/MQL | HSK-A40 | 40 | 19 | 88 | 20 | 5 | 5 | 2,5 | F3481C02.1 |
| | | | HSK-A50 | 40 | 19 | 90 | 25 | 5 | 5 | 2,5 | F3481C03.1 |
| | | | HSK-A63 | 40 | 19 | 90 | 32 | 5 | 5 | 2,5 | F3481C04.1 |
| | | | HSK-A80 | 40 | 19 | 93 | 40 | 5 | 5 | 2,5 | F3481C05.1 |
| | | | HSK-A100 | 40 | 19 | 93 | 50 | 5 | 5 | 2,5 | F3481C06.1 |

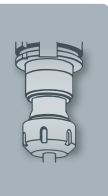
Weitere Ausführungen auf Anfrage
Further designs upon request

Das Kühlschmierstoffrohr ist im Schaft enthalten und darf nicht demontiert werden, da sonst die Funktion der MMS-Übergabe nicht mehr gewährleistet ist!
The coolant tube is integrated into the shank and must not be disassembled, otherwise the function of the MQL transfer is no longer warranted!

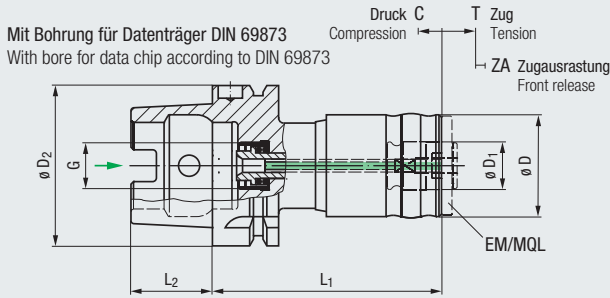
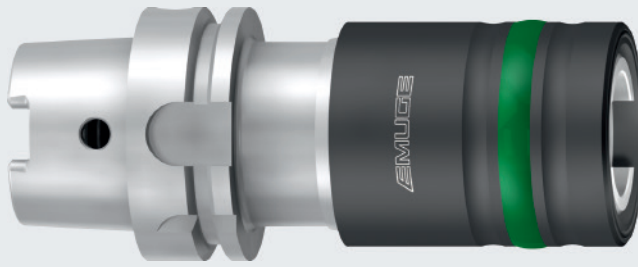
MMS-Übergabe passend zu DIN 69090-4 und vielen Werknormen
MQL supply according to DIN 69090-4 and many internal standards

Zubehör Accessories

- Schnellwechsel-Einsätze Typ EM/MQL
 Quick-change adapters type EM/MQL
 » 730
- Schnellwechsel-Einsätze Typ EM-Z/MQL
 Quick-change adapters type EM-Z/MQL
 » 731



KSN/MQL
≈ DIN 69893 C 1)



p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)

**Einsatz auf CNC-Bearbeitungszentren
und sonstigen Werkzeugmaschinen**

For use on CNC machining centres
and other machine tools

| Typ Type | | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_1$ | L_1 | L_2 | C | T | ZA | Artikel-Nr. Article no. | |
|------------------|---------------------------|-----------|-------------------|-----------------|-------------------|-------|-------|---|---|-----|----------------------------|---|
| KSN 1/MQL | M6 - M12 (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 (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 | ● |

1) 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

Das Kühlschmierstoffrohr ist im Schaft enthalten und darf nicht demontiert werden, da sonst die Funktion der MMS-Übergabe nicht mehr gewährleistet ist!
The 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

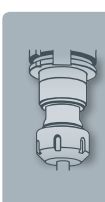
Accessories



Schnellwechsel-Einsätze Typ EM/MQL
Quick-change adapters type EM/MQL ▶ ▶ 730

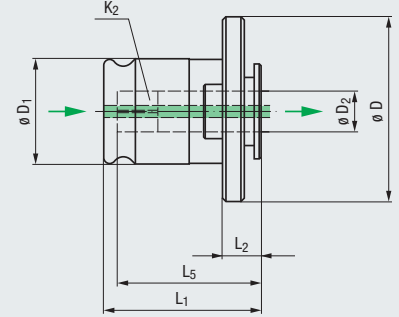
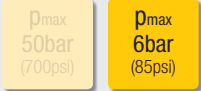
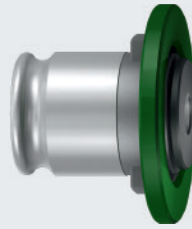


Schnellwechsel-Einsätze Typ EM-Z/MQL
Quick-change adapters type EM-Z/MQL ▶ ▶ 731 - 732



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- ML MMS**
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

EM/MQL DIN

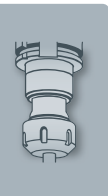


| Typ · Type | EM 01/MQL | EM 03/MQL | | | |
|-------------------|-----------|-----------|--|--|--|
| | M6 - M12 | M10 - M24 | | | |
| $\varnothing D$ | 39 | 55 | | | |
| $\varnothing D_1$ | 19 | 31 | | | |
| L_1 | 29 | 45 | | | |
| L_2 | 7,5 | 10 | | | |

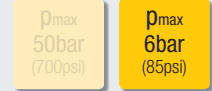
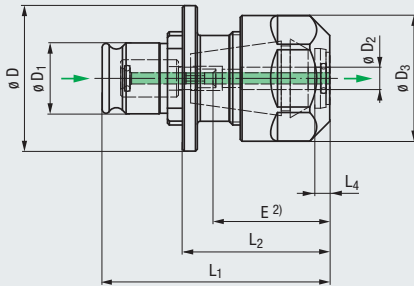
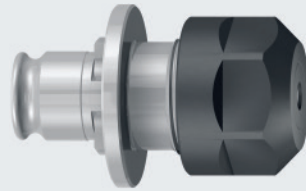
| DIN | | | | Artikel-Nr. Article no. | L_5 | Artikel-Nr. Article no. | L_5 | | | | | | | | | | | |
|-------------------|-------|-----|-----------|----------------------------|-------|----------------------------|-------------------|----|---|--|--|--|--|--|--|--|--|--|
| $\varnothing D_2$ | K_2 | | | | | | | | | | | | | | | | | |
| 6 | 4,9 | M6 | M8 | F4491106.6 | 25 | ● | | | | | | | | | | | | |
| 7 | 5,5 | M7 | M9 - M10 | F4491107.6 | 25 | ● | | | | | | | | | | | | |
| 8 | 6,2 | M8 | M11 | F4491108.6 | 26 | ● | | | | | | | | | | | | |
| 9 | 7 | M9 | M12 | F4491109.6 | 27 | ● | | | | | | | | | | | | |
| 10 | 8 | M10 | | F4491110.6 | 27 | ● | F4493110.6 | 40 | ● | | | | | | | | | |
| 11 | 9 | | M14 | | | | F4493111.6 | 41 | ● | | | | | | | | | |
| 12 | 9 | | M16 | | | | F4493112.6 | 41 | ● | | | | | | | | | |
| 14 | 11 | | M18 | | | | F4493113.6 | 43 | ● | | | | | | | | | |
| 16 | 12 | | M20 | | | | F4493114.6 | 44 | ● | | | | | | | | | |
| 18 | 14,5 | | M22 - M24 | | | | F4493115.6 | 44 | ● | | | | | | | | | |

1) Bei Verwendung von Gewindebohrern / Gewindefornern mit innerer Kühlschmierstoff-Zufuhr
If used with taps / cold-forming taps with internal coolant supply

Nur für Schnellwechsel-Aufnahmen der Typenreihe KSN/MQL geeignet
Only suitable for quick-change tap holders type KSN/MQL



EM-Z/MQL



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- ML MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

| new | Typ Type | $\varnothing D_2$ | Werkzeugkegel Tool taper | | | $\varnothing D$ | $\varnothing D_1$ | $\varnothing D_3$ | L_1 | L_2 | Artikel-Nr. Article no. | |
|-------------|------------------|-------------------|---|------------|-------------|-----------------|-------------------|-------------------|-------|-------|-------------------------|---|
| EM 01-Z/MQL | M4,5 - M10 | 6 / 7 | Innenkegel Internal taper 60° | 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 External taper 90° | ER 20 (GB) | Hi-Q/ERC 20 | 55 | 31 | 34 | 81,5 | 46,5 | F4501001.23D6 | ○ |
| | M7, M10 | 7 | | | | 55 | 31 | 34 | 81,5 | 46,5 | F4501001.23D7 | ○ |
| | M8 | 8 | | | | 55 | 31 | 34 | 81,5 | 46,5 | F4501001.23D8 | ○ |
| | M12 | 9 | | | | 55 | 31 | 34 | 81,5 | 46,5 | F4501001.23D9 | ○ |
| | M10 | 10 | | | | 55 | 31 | 34 | 81,5 | 46,5 | F4501001.23D10 | ○ |
| | | | | | | | | | | | | |

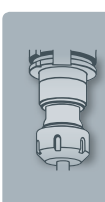
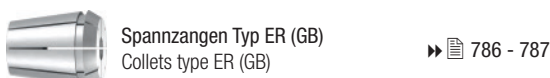
1) Bei Verwendung von Gewindebohrern / Gewindeformern mit innerer Kühlschmierstoff-Zufuhr
If used with taps / cold-forming taps with internal coolant supply

2) Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

Nur für Schnellwechsel-Aufnahmen der Typenreihe KSN/MQL geeignet
Only suitable for quick-change tap holders type KSN/MQL

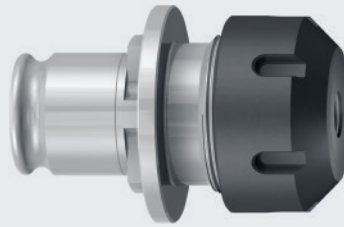
Längeneinstellschraube sowie Spannmutter für Dichtscheiben sind im Lieferumfang enthalten
Length adjustment screw as well as clamping nut for sealing disks are included in the delivery

Zubehör
Accessories



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

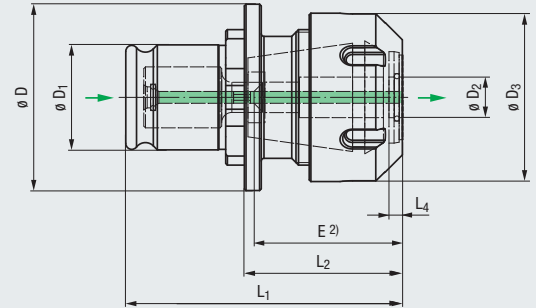
EM-Z/MQL



p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)

L+ 2 mm



| new | Typ Type | | $\varnothing D_2$ | Werkzeugkegel Tool taper | | | $\varnothing D$ | $\varnothing D_1$ | $\varnothing D_3$ | L_1 | L_2 | Artikel-Nr. Article no. | |
|-------------|-------------|---|-------------------|-----------------------------|-------------|----|-----------------|-------------------|-------------------|-------|----------------|----------------------------|--|
| EM 03-Z/MQL | M10 - M16 | Innenkegel Internal taper 60° | 10 - 12 | 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 | Außenkegel External taper 90° | 10 | 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 797
Clamping depths E, see page 797

Nur für Schnellwechsel-Aufnahmen der Typenreihe KSN/MQL geeignet
Only suitable for quick-change tap holders type KSN/MQL

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

Zubehör Accessories



Spannzangen Typ ER (GB)
Collets type ER (GB)

» 786 - 787



Dichtscheiben Typ DS/ER
Sealing disks type DS/ER

» 789



Spannschlüssel
Clamping wrench

» 794

Product
FinderSoft-
synchroSpeed-
synchro

KSN

MQL
MMS

SFM

SWITCH-
MASTER

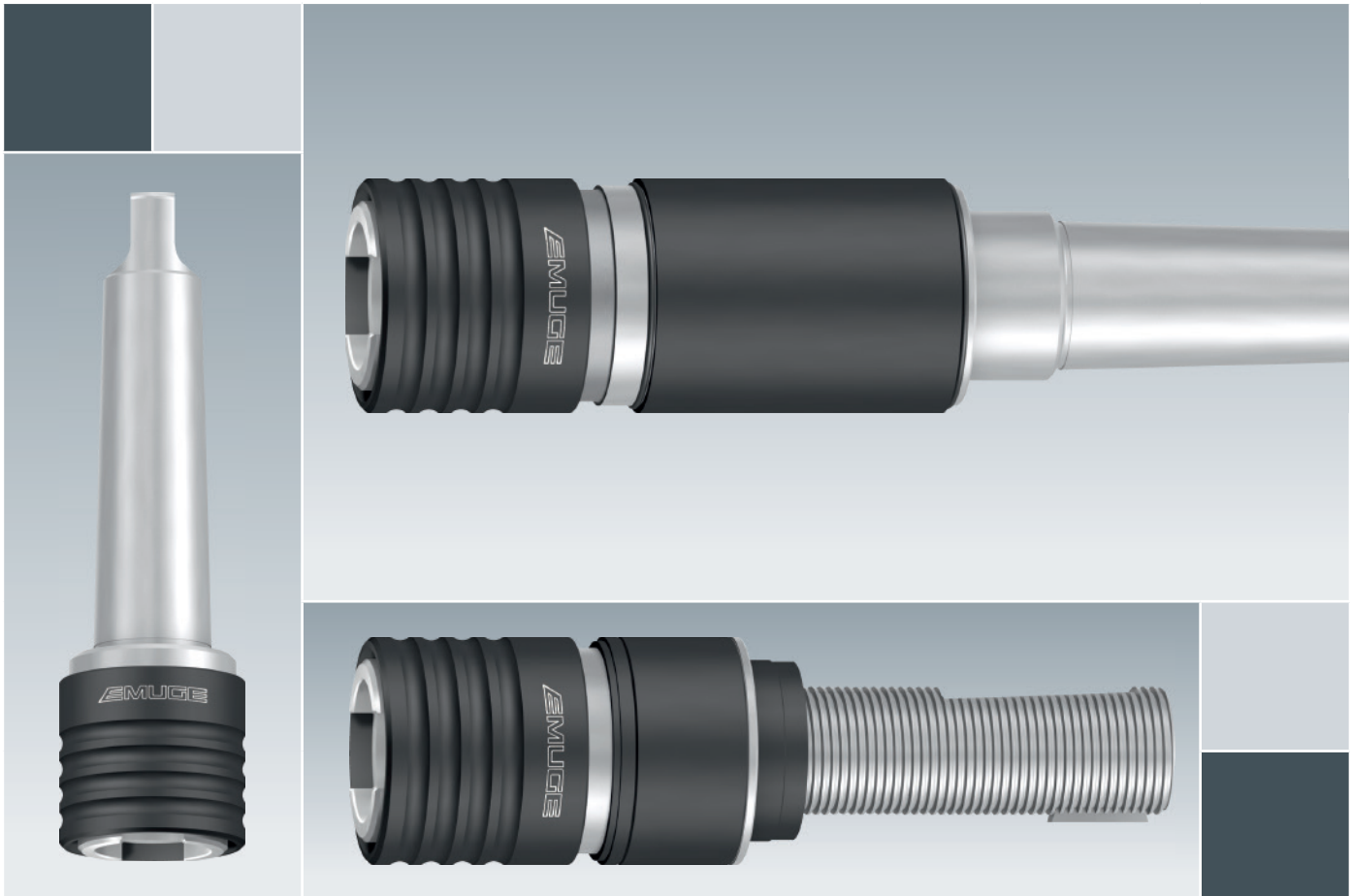
GR, GR-S

HF

EM

Zubehör
Accessories

Tech. Info



Typenreihe SFM

SFM Series

Einsatz auf Mehrspindelmaschinen und Transferstraßen

Auf Grund ihrer schlanken Bauform besonders geeignet auch für Mehrspindelköpfe.

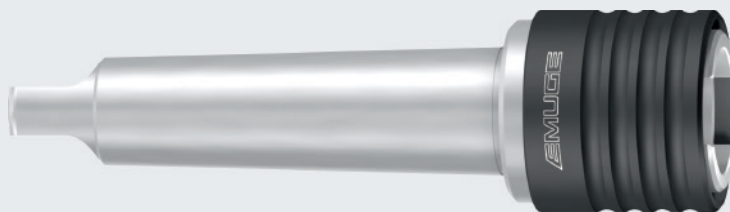
Application on multi-spindle machines and transfer lines

Especially suitable, too, for multi-spindle heads due to their slim design.



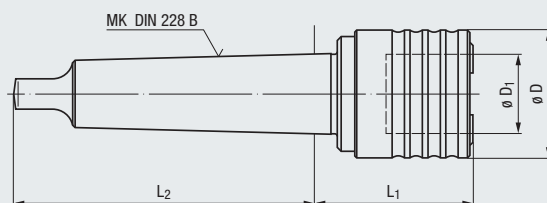
- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM**
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

SFM DIN 228 B



p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)



Einsatz auf Mehrspindelmaschinen und Transferstraßen For use on multi-spindle machines and transfer lines

| Typ Type | | | MK | ø D | ø D ₁ | L ₁ | L ₂ | Artikel-Nr. Article no. | |
|---------------|-----------------------------|-------|------|-----|------------------|----------------|----------------|----------------------------|---|
| SFM 00 | M1 - M10 (Nr.0 - 3/8) | EM 00 | MK 1 | 23 | 13 | 39 | 62 | F0100101 | ● |
| | | | MK 2 | 23 | 13 | 40 | 75 | F0100102 | ● |
| SFM 01 | M3 - M14 (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 | ● |
| SFM 03 | M4,5 - M24 (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 | ● |
| SFM 04 | M14 - M36 (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 | 95 | 149,5 | F0104105 | ● |

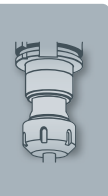
Morsekegelschaft mit Anzugsgewinde nach DIN 228 A auf Anfrage
Morse taper shank with clamping thread acc. DIN 228 A upon request

Weitere Ausführungen auf Anfrage
Further designs upon request

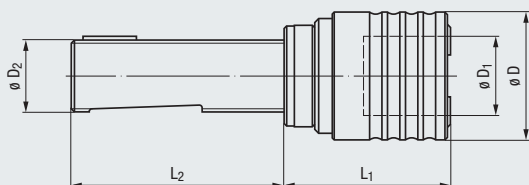
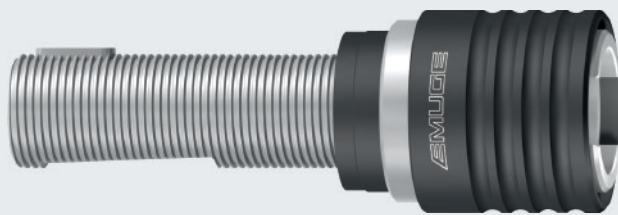
Zubehör Accessories



Schnellwechsel-Einsätze Typenreihe EM
Quick-change adapters EM series » 755 - 778



SFM
DIN 6327



Product Finder

Soft-synchro

Speed-synchro

KSN

MLQ MMS

SFM

SWITCH-MASTER

GR, GR-S

HF

EM

Zubehör Accessories

Tech. Info

IKZ

MMS MQL

p_{max} 50bar (700psi)

p_{max} 6bar (85psi)

C T

F

↻

Einsatz auf Mehrspindelmaschinen und Transferstraßen

For use on multi-spindle machines and transfer lines

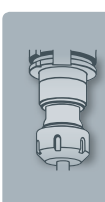
| Typ Type | | | ø D ₂ | ø D | ø D ₁ | L ₁ | L ₂ | Artikel-Nr. Article no. | |
|---------------|-----------------------------|-------|------------------|-----|------------------|----------------|----------------|----------------------------|---|
| SFM 00 | M1 - M10 (Nr.0 - 3/8) | EM 00 | Tr 16 x 1,5 | 23 | 13 | 45 | 73 | F0100213 | ● |
| | | | Tr 20 x 2 | 23 | 13 | 45 | 76 | F0100214 | ○ |
| SFM 01 | M3 - M14 (Nr.4 - 9/16) | EM 01 | Tr 16 x 1,5 | 32 | 19 | 49 | 73 | F0101213 | ● |
| | | | Tr 20 x 2 | 32 | 19 | 49 | 76 | F0101214 | ● |
| | | | Tr 28 x 2 | 32 | 19 | 49 | 83 | F0101216 | ● |
| SFM 03 | M4,5 - M24 (Nr.10 - 1") | EM 03 | Tr 20 x 2 | 50 | 31 | 66 | 76 | F0103214 | ● |
| | | | Tr 28 x 2 | 50 | 31 | 66 | 83 | F0103216 | ● |
| | | | Tr 36 x 2 | 50 | 31 | 68 | 104 | F0103218 | ● |
| SFM 04 | M14 - M36 (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 request

Zubehör
Accessories



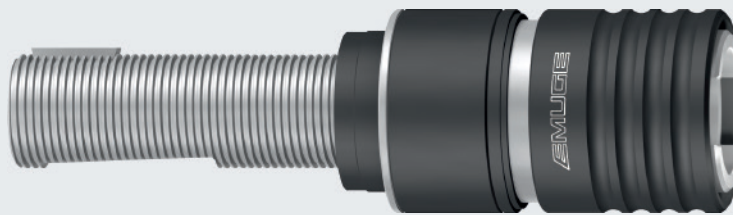
Schnellwechsel-Einsätze Typenreihe EM
Quick-change adapters EM series ▶ 755 - 778



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

SFM-NP

DIN 6327

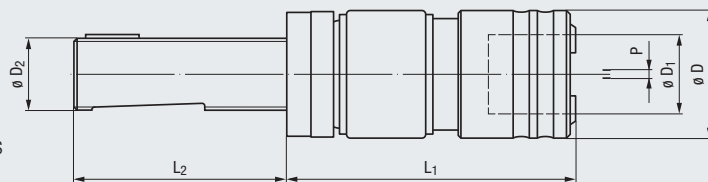


IKZ

MMS
MQL

p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)



Einsatz auf Mehrspindelmaschinen und Transferstraßen For use on multi-spindle machines and transfer lines

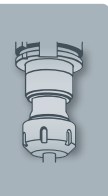
| Typ Type | | | $\varnothing D_2$ | $\varnothing D$ | $\varnothing D_1$ | L_1 | L_2 | P | Artikel-Nr. Article no. | |
|------------------|----------------------------|-------|-------------------|-----------------|-------------------|-------|-------|-----|----------------------------|---|
| SFM 00-NP | M1 - M10 (Nr.0 - 3/8) | EM 00 | Tr 16 x 1,5 | 23 | 13 | 65 | 73 | 0,8 | F2110213 | o |
| | | | Tr 20 x 2 | 23 | 13 | 65 | 76 | 0,8 | F2110214 | o |
| SFM 01-NP | M3 - M14 (Nr.4 - 9/16) | EM 01 | Tr 16 x 1,5 | 32 | 19 | 70 | 73 | 1,4 | F2111213 | o |
| | | | Tr 20 x 2 | 32 | 19 | 70 | 76 | 1,4 | F2111214 | o |
| | | | Tr 28 x 2 | 32 | 19 | 70 | 83 | 1,4 | F2111216 | o |
| SFM 03-NP | M4,5 - M24 (Nr.10 - 1") | EM 03 | Tr 20 x 2 | 50 | 31 | 96 | 76 | 2,5 | F2113214 | o |
| | | | Tr 28 x 2 | 50 | 31 | 96 | 83 | 2,5 | F2113216 | o |
| | | | Tr 36 x 2 | 50 | 31 | 98 | 104 | 2,5 | F2113218 | o |

Weitere Ausführungen auf Anfrage
Further designs upon request

Zubehör Accessories



Schnellwechsel-Einsätze Typenreihe EM ▶▶ 755 - 778
Quick-change adapters EM series

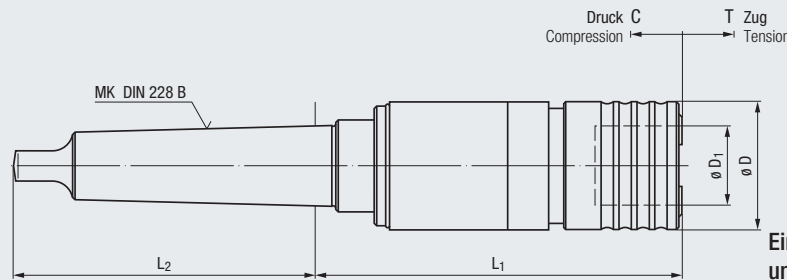
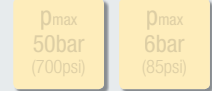
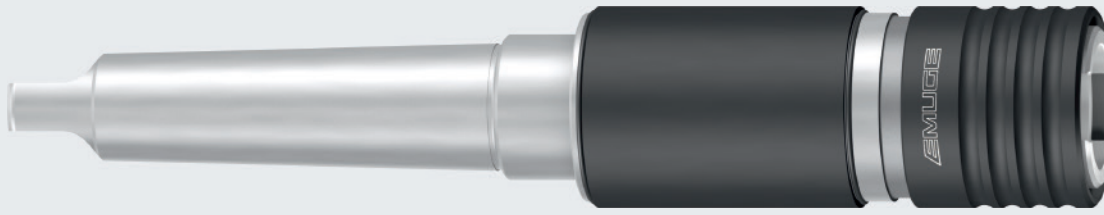


Informationen zur neuen **EG-Maschinenrichtlinie 2006/42/EG**,
siehe Seite 656

Information regarding the new **EC Machinery Directive 2006/42/EC**,
see page 656

SFM-L-DZ

DIN 228 B



Einsatz auf Mehrspindelmaschinen und Transferstraßen

For use on multi-spindle machines and transfer lines

| Typ Type | | | MK | ø D | ø D ₁ | L ₁ | L ₂ | C | T | Artikel-Nr. Article no. | | | |
|----------------------|-----------------------------|-------|----------------------------|-------|------------------|----------------|----------------|-----|-------------------|----------------------------|----|-------------------|---|
| SFM 00-L20-DZ | M1 - M10 (Nr.0 - 3/8) | EM 00 | MK 1 | 23 | 13 | 90 | 62 | 10 | 10 | F0180101.7 | ● | | |
| | | | MK 2 | 23 | 13 | 91 | 75 | 10 | 10 | F0180102.7 | ● | | |
| MK 1 | | | 23 | 13 | 105 | 62 | 15 | 15 | F0190101.7 | ● | | | |
| MK 2 | | | 23 | 13 | 106 | 75 | 15 | 15 | F0190102.7 | ● | | | |
| SFM 01-L20-DZ | M3 - M14 (Nr.4 - 9/16) | EM 01 | MK 1 | 32 | 19 | 102 | 62 | 10 | 10 | F0181101.7 | ○ | | |
| | | | MK 2 | 32 | 19 | 103 | 75 | 10 | 10 | F0181102.7 | ● | | |
| | | | MK 3 | 32 | 19 | 103 | 94 | 10 | 10 | F0181103.7 | ● | | |
| MK 1 | | | 32 | 19 | 117 | 62 | 15 | 15 | F0191101.7 | ○ | | | |
| MK 2 | | | 32 | 19 | 118 | 75 | 15 | 15 | F0191102.7 | ● | | | |
| MK 3 | | | 32 | 19 | 118 | 94 | 15 | 15 | F0191103.7 | ● | | | |
| SFM 01-L40-DZ | | | MK 1 | 32 | 19 | 132 | 62 | 20 | 20 | F0201101.7 | ○ | | |
| | | | MK 2 | 32 | 19 | 133 | 75 | 20 | 20 | F0201102.7 | ● | | |
| | | | MK 3 | 32 | 19 | 133 | 94 | 20 | 20 | F0201103.7 | ● | | |
| SFM 03-L30-DZ | | | M4,5 - M24 (Nr.10 - 1") | EM 03 | MK 2 | 50 | 31 | 142 | 75 | 15 | 15 | F0183102.7 | ○ |
| | MK 3 | 50 | | | 31 | 142 | 94 | 15 | 15 | F0183103.7 | ● | | |
| MK 4 | 50 | 31 | | | 143 | 117,5 | 15 | 15 | F0183104.7 | ● | | | |
| MK 2 | 50 | 31 | | | 157 | 75 | 20 | 20 | F0193102.7 | ○ | | | |
| MK 3 | 50 | 31 | | | 157 | 94 | 20 | 20 | F0193103.7 | ● | | | |
| MK 4 | 50 | 31 | | | 158 | 117,5 | 20 | 20 | F0193104.7 | ● | | | |
| SFM 04-L30-DZ | M14 - M36 (9/16 - 1 3/8) | EM 04 | | | MK 3 | 72 | 48 | 188 | 94 | 15 | 15 | F0184103.7 | ○ |
| | | | | | MK 4 | 72 | 48 | 189 | 117,5 | 15 | 15 | F0184104.7 | ● |
| MK 5 | | | 72 | 48 | 190 | 149,5 | 15 | 15 | F0184105.7 | ● | | | |
| MK 3 | | | 72 | 48 | 203 | 94 | 20 | 20 | F0194103.7 | ○ | | | |
| MK 4 | | | 72 | 48 | 204 | 117,5 | 20 | 20 | F0194104.7 | ● | | | |
| 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 request

Weitere Ausführungen auf Anfrage
Further designs upon request

Zubehör

Accessories

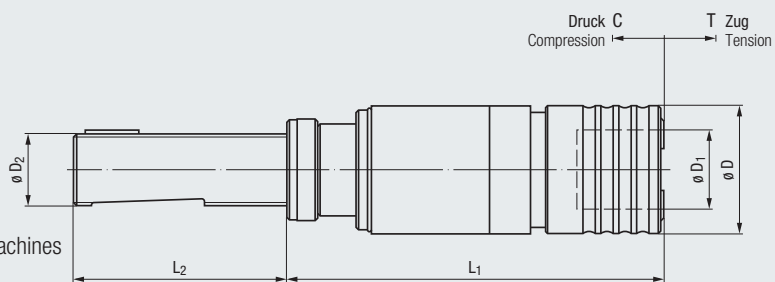
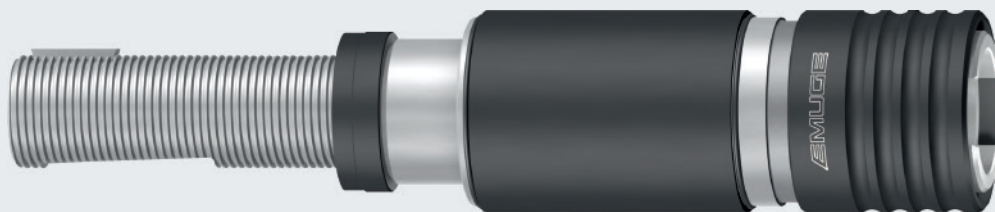


Schnellwechsel-Einsätze Typenreihe EM
Quick-change adapters EM series ▶ 755 - 778





SFM-L-DZ

DIN 6327



Einsatz auf Mehrspindelmaschinen und Transferstraßen
 For use on multi-spindle machines and transfer lines

| Typ Type |  |  | ø D ₂ | ø D | ø D ₁ | L ₁ | L ₂ | C | T | Artikel-Nr. Article no. | |
|----------------------|---|---|------------------|-----|------------------|----------------|----------------|----|----|----------------------------|---|
| SFM 00-L20-DZ | M1 - M10 (Nr.0 - 3/8) | EM 00 | Tr 16 x 1,5 | 23 | 13 | 96 | 73 | 10 | 10 | F0180213.7 | ● |
| | | | Tr 20 x 2 | 23 | 13 | 96 | 76 | 10 | 10 | F0180214.7 | ● |
| SFM 00-L30-DZ | M1 - M10 (Nr.0 - 3/8) | EM 00 | Tr 16 x 1,5 | 23 | 13 | 111 | 73 | 15 | 15 | F0190213.7 | ● |
| | | | Tr 20 x 2 | 23 | 13 | 111 | 76 | 15 | 15 | F0190214.7 | ● |
| SFM 01-L20-DZ | M3 - M14 (Nr.4 - 9/16) | EM 01 | Tr 16 x 1,5 | 32 | 19 | 108 | 73 | 10 | 10 | F0181213.7 | ● |
| | | | Tr 20 x 2 | 32 | 19 | 108 | 76 | 10 | 10 | F0181214.7 | ● |
| | | | Tr 28 x 2 | 32 | 19 | 108 | 83 | 10 | 10 | F0181216.7 | ● |
| SFM 01-L30-DZ | M3 - M14 (Nr.4 - 9/16) | EM 01 | Tr 16 x 1,5 | 32 | 19 | 123 | 73 | 15 | 15 | F0191213.7 | ● |
| | | | Tr 20 x 2 | 32 | 19 | 123 | 76 | 15 | 15 | F0191214.7 | ● |
| | | | Tr 28 x 2 | 32 | 19 | 123 | 83 | 15 | 15 | F0191216.7 | ○ |
| SFM 01-L40-DZ | M3 - M14 (Nr.4 - 9/16) | EM 01 | Tr 16 x 1,5 | 32 | 19 | 138 | 73 | 20 | 20 | F0201213.7 | ● |
| | | | Tr 20 x 2 | 32 | 19 | 138 | 76 | 20 | 20 | F0201214.7 | ● |
| | | | Tr 28 x 2 | 32 | 19 | 138 | 83 | 20 | 20 | F0201216.7 | ● |
| SFM 03-L30-DZ | M4,5 - M24 (Nr.10 - 1") | EM 03 | Tr 20 x 2 | 50 | 31 | 147 | 76 | 15 | 15 | F0183214.7 | ● |
| | | | Tr 28 x 2 | 50 | 31 | 147 | 83 | 15 | 15 | F0183216.7 | ● |
| SFM 03-L40-DZ | M4,5 - M24 (Nr.10 - 1") | EM 03 | Tr 36 x 2 | 50 | 31 | 149 | 104 | 15 | 15 | F0183218.7 | ● |
| | | | Tr 20 x 2 | 50 | 31 | 162 | 76 | 20 | 20 | F0193214.7 | ● |
| | | | Tr 28 x 2 | 50 | 31 | 162 | 83 | 20 | 20 | F0193216.7 | ● |
| SFM 04-L30-DZ | M14 - M36 (9/16 - 1 3/8) | EM 04 | Tr 36 x 2 | 50 | 31 | 164 | 104 | 20 | 20 | F0193218.7 | ○ |
| | | | Tr 28 x 2 | 72 | 48 | 193 | 83 | 15 | 15 | F0184216.7 | ○ |
| SFM 04-L40-DZ | M14 - M36 (9/16 - 1 3/8) | EM 04 | Tr 36 x 2 | 72 | 48 | 195 | 104 | 15 | 15 | F0184218.7 | ● |
| | | | Tr 48 x 2 | 72 | 48 | 199 | 126 | 15 | 15 | F0184219.7 | ○ |
| SFM 04-L40-DZ | M14 - M36 (9/16 - 1 3/8) | EM 04 | Tr 28 x 2 | 72 | 48 | 208 | 83 | 20 | 20 | F0194216.7 | ○ |
| | | | Tr 36 x 2 | 72 | 48 | 210 | 104 | 20 | 20 | F0194218.7 | ● |
| SFM 04-L40-DZ | M14 - M36 (9/16 - 1 3/8) | EM 04 | Tr 48 x 2 | 72 | 48 | 214 | 126 | 20 | 20 | F0194219.7 | ○ |

Weitere Ausführungen auf Anfrage
 Further designs upon request

Zubehör Accessories



Schnellwechsel-Einsätze Typenreihe EM
 Quick-change adapters EM series ▶▶ 755 - 778

Product
FinderSoft-
synchroSpeed-
synchro

KSN

MQL
MMS

SFM

SWITCH-
MASTER

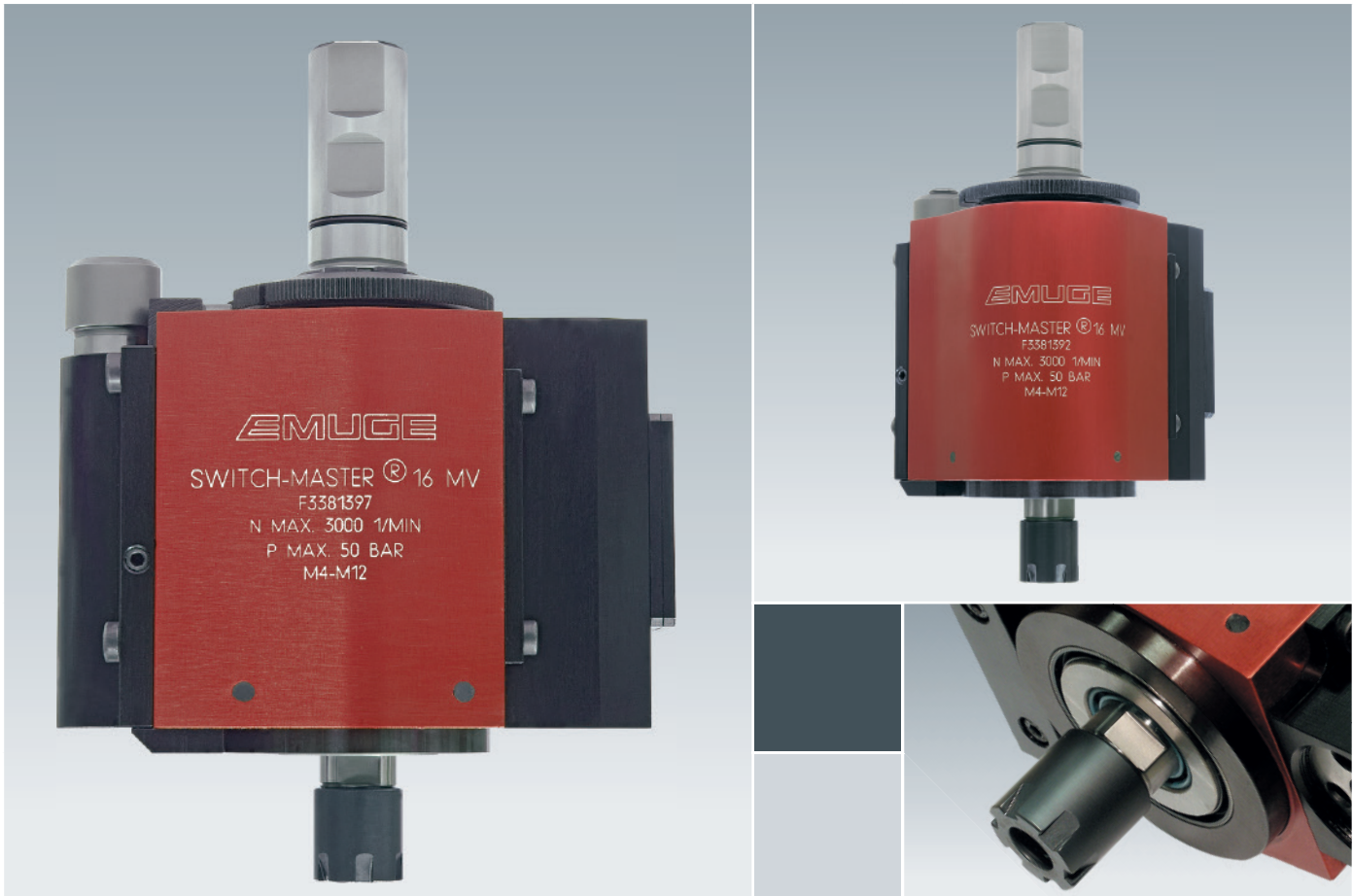
GR, GR-S

HF

EM

Zubehör
Accessories

Tech. Info



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®

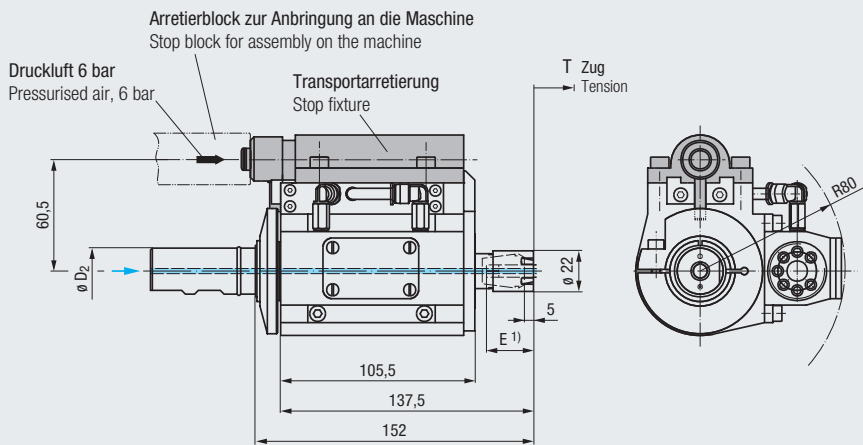


- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER**
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)

Rubber Flex



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 Type | | | | $\varnothing D_2$ DIN 1835 B | Drehzahl Speed/rpm | T | Gewicht Weight (kg) | Artikel-Nr. Article no. |
|------------------------------------|--------------------------|------------|-----------------|---------------------------------|-----------------------|---|---------------------------|----------------------------|
| SWITCH-MASTER 16 MV 90° | M4 - M12 (Nr.8 - 3/8) | ER 16 (GB) | Hi-Q/ERMC 16 | 25 | max. 3000 | 9 | 3,7 | F3381392 |

1) Einstecktiefen E siehe Seite 797
 Clamping depths E, see page 797

Der Gewindeschneidapparat benötigt zum Reversieren Hilfsenergie in Form von Druckluft ($6^{+1}_{-0,5}$ bar)
 The tapping attachment requires auxiliary energy = pressurised air ($6^{+1}_{-0,5}$ bar) for reversing

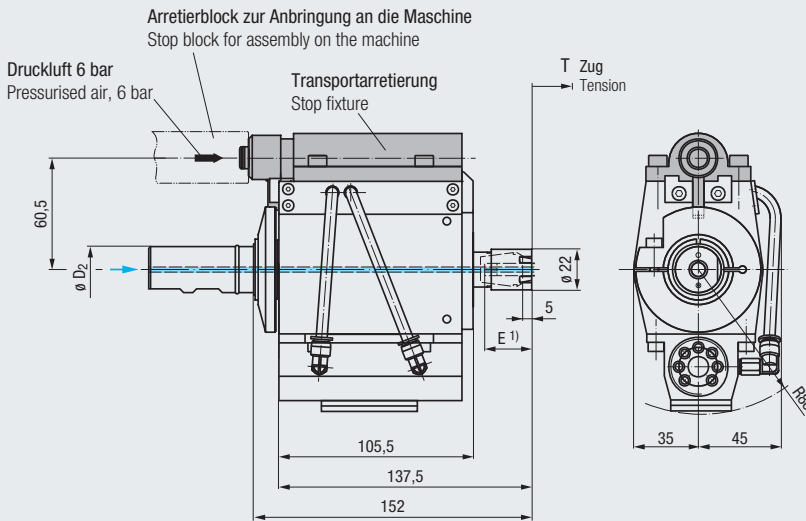
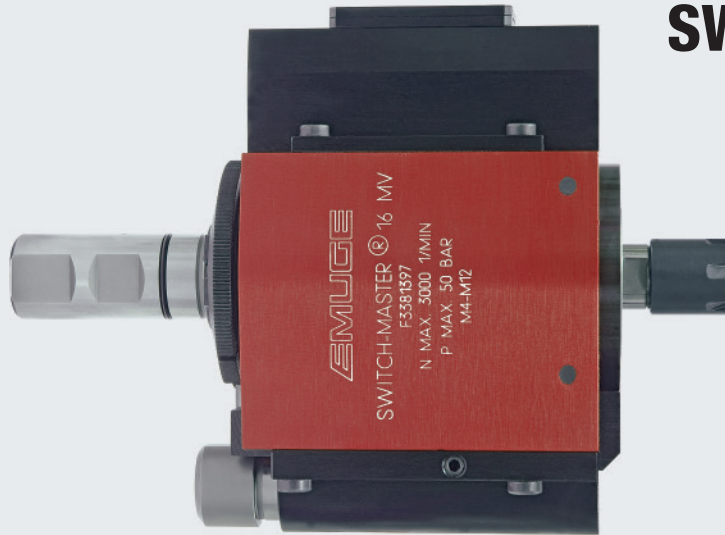
Adaptionsschäft, Arretierblock und Transportarretierung sind nicht im Lieferumfang enthalten, bitte extra bestellen
 Adapter shank, stop block and stop fixture are not included in the delivery, please order separately

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

Zubehör Accessories

- Adaptionsschäfte
Adapter shanks » 780
- Spannzangen Typ ER (GB)
Collets type ER (GB) » 786 - 787
- Dichtscheiben Typ DS/ER
Sealing disks type DS/ER » 789

SWITCH-MASTER®



| | |
|--------------------------|------------------------|
| | |
| p_{max} 50bar (700psi) | p_{max} 6bar (85psi) |
| | |
| | Rubber Flex |

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 Type | | | | $\varnothing D_2$ DIN 1835 B | Drehzahl Speed/rpm | T | Gewicht Weight (kg) | Artikel-Nr. Article no. |
|-------------------------------------|--------------------------|------------|-----------------|---------------------------------|-----------------------|---|---------------------------|----------------------------|
| SWITCH-MASTER 16 MV 180° | M4 - M12 (Nr.8 - 3/8) | ER 16 (GB) | Hi-Q/ERMC 16 | 25 | max. 3000 | 9 | 3,7 | F3381397 |

1) Einstecktiefen E siehe Seite 797
Clamping depths E, see page 797

Der Gewindeschneidapparat benötigt zum Reversieren Hilfsenergie in Form von Druckluft (6⁺¹_{-0,5} bar)
The tapping attachment requires auxiliary energy = pressurised air (6⁺¹_{-0,5} bar) for reversing

Adaptionsschäfte, Arretierblock und Transportarretierung sind nicht im Lieferumfang enthalten, bitte extra bestellen
Adapter shank, stop block and stop fixture are not included in the delivery, please order separately

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

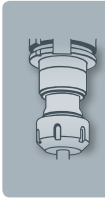
Zubehör
Accessories

Adaptionsschäfte
Adapter shanks
» 780

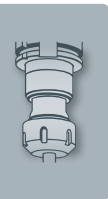
Spannzangen Typ ER (GB)
Collets type ER (GB)
» 786 - 787

Dichtscheiben Typ DS/ER
Sealing disks type DS/ER
» 789

- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- ML MMS
- SFM
- SWITCH-MASTER**
- GR, GR-S
- HF
- EM
- Zubehör
Accessories
- Tech. Info



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER**
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info





Typenreihe GR und GR-S GR and GR-S Series

Einsatz auf Säulenbohrmaschinen mit manuellem Vorschub

Durch das integrierte Wendegetriebe entfällt der Drehrichtungswechsel der Maschinenspindel beim Rücklauf. Zeitersparnis bei der Bearbeitung durch das Übersetzungsverhältnis Vor- zu Rücklauf, je nach Größe 1:1,6 bis 1:1,75.

Application on pillar drilling machines with manual feed

No change of rotating direction of machine spindle at reverse stroke required due to integrated reverse gear. Saving of time during machining due to the gear transmission ratio advanced/backwards movement, depending on size, 1:1.6 up to 1:1.75.



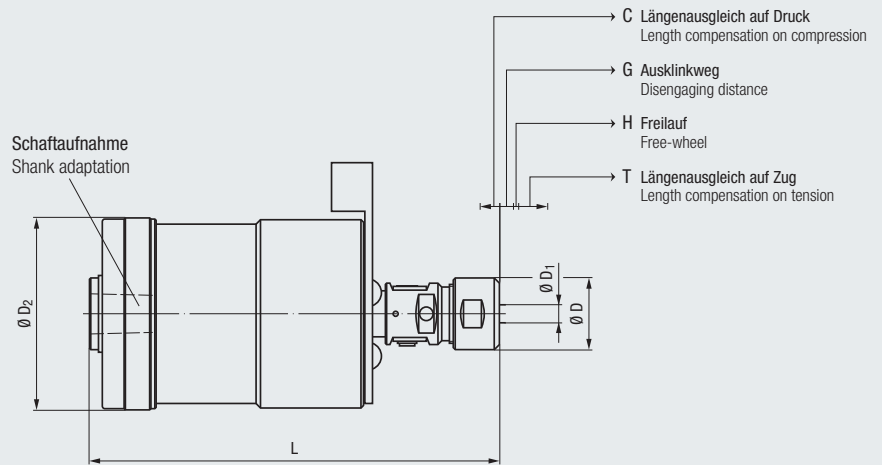
- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR GR-S**
- HF
- EM
- Zubehör Accessories
- Tech. Info

GR



p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)



Einsatz auf Säulenbohrmaschinen For use on pillar drilling machines

| Typ Type | | $\emptyset D_1$ | Schaftaufnahme Shank adaptation | Drehzahl Speed/rpm | | | | | | | | Gewicht Weight (kg) | Artikel-Nr. Article no. |
|-------------|---------------------------|-----------------|------------------------------------|-----------------------|---------------|-----------------|-----|---|-----|-----|------|---------------------------|----------------------------|
| | | | | max. | $\emptyset D$ | $\emptyset D_2$ | L | C | G | H | T | | |
| GR 1 | M2 - M7 (Nr.2 - 1/4) | 2,5 - 6,5 | B 16 DIN ISO 239 | 1500 | 23 | 55 | 130 | 5 | 3,5 | 1,5 | 7 | 1,0 | F0401999 |
| GR 2 | M4 - M12 (Nr.8 - 7/16) | 3,5 - 10 | B 16 DIN ISO 239 | 1000 | 28 | 75 | 156 | 5 | 4 | 1,5 | 8,5 | 2,3 | F0402999 |
| GR 3 | M8 - M20 (5/16 - 3/4) | 6 - 16 | M20 | 600 | 40 | 91 | 204 | 6 | 6 | 1,5 | 11,5 | 4,9 | F0403999 |

Im Lieferumfang enthaltene Rubber-Flex-Spannzangen siehe Seite 746
 Rubber-Flex collets included in the delivery, see page 746

Zubehör Accessories



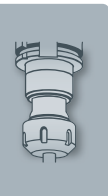
Schäfte
Shanks

» 746

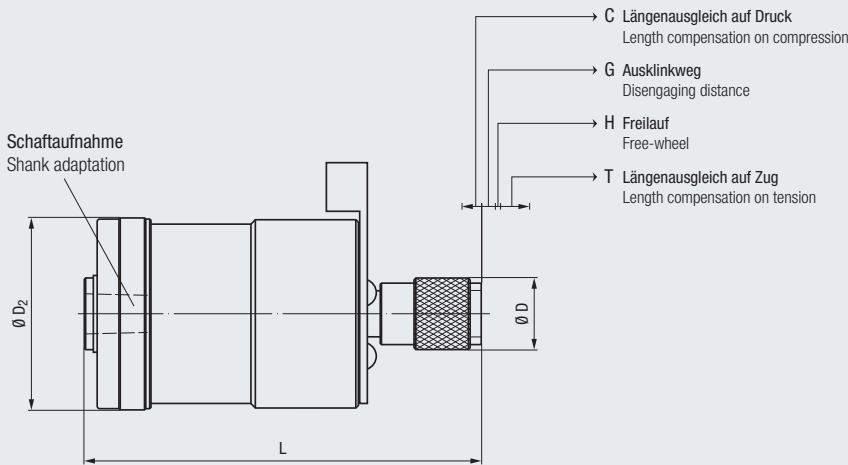


Rubber-Flex-Spannzangen
Rubber-Flex collets

» 746



GR-S



Product Finder

- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S**
- HF
- EM
- Zubehör Accessories
- Tech. Info

IKZ MMS MQL

p_{max} 50bar (700psi) p_{max} 6bar (85psi)

C T

Rubber Flex

Einsatz auf Säulenbohrmaschinen For use on pillar drilling machines

| Typ Type | Schäfte Shanks | Schnellwechsel-Einsätze Quick-change adapters | Schaftaufnahme Shank adaptation | Drehzahl Speed/rpm | | | | | | | | Gewicht Weight (kg) | Artikel-Nr. Article no. | |
|---------------|---------------------------|--|------------------------------------|-----------------------|-----------------|-------------------|-----|---|-----|-----|------|---------------------------|----------------------------|---|
| | | | | max. | $\varnothing D$ | $\varnothing D_2$ | L | C | G | H | T | | | |
| GR 1-S | M2 - M7 (Nr.2 - 1/4) | EM 00 | B 16 DIN ISO 239 | 1500 | 25 | 55 | 139 | 5 | 3,5 | 1,5 | 7 | 1,2 | F0411999 | ● |
| GR 2-S | M4 - M12 (Nr.8 - 7/16) | EM 01 | B 16 DIN ISO 239 | 1000 | 32 | 75 | 157 | 5 | 4 | 1,5 | 8,5 | 2,3 | F0412999 | ● |
| GR 3-S | M8 - M20 (5/16 - 3/4) | EM 03 | M20 | 600 | 50 | 91 | 204 | 6 | 6 | 1,5 | 11,5 | 4,8 | F0413999 | ● |

Zubehör
Accessories



Schäfte
Shanks

» 746



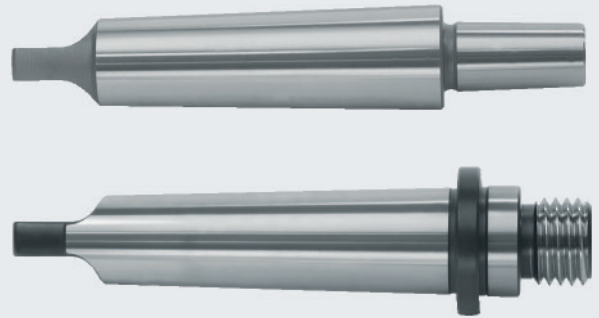
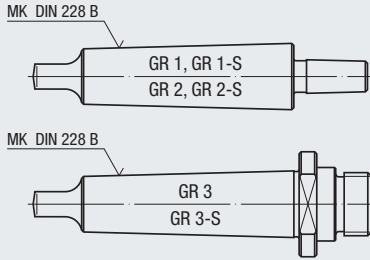
Schnellwechsel-Einsätze Typenreihe EM
Quick-change adapters EM series

» 755 - 778



Schäfte
Shanks

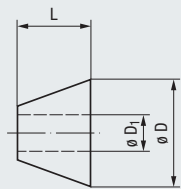
- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S**
- HF
- EM
- Zubehör Accessories
- Tech. Info



| Für Typ For type | MK | Artikel-Nr. Article no. | |
|--|------|----------------------------|---|
| GR 1, GR 1-S GR 2, GR 2-S | MK 1 | F040101.01 | ● |
| | MK 2 | F040101.02 | ● |
| | MK 3 | F040101.03 | ● |
| | MK 4 | F040101.04 | ● |
| GR 3, GR 3-S | MK 2 | F040301.02 | ● |
| | MK 3 | F040301.03 | ● |
| | MK 4 | F040301.04 | ● |

Weitere Schäfte auf Anfrage
Further shanks upon request

Rubber-Flex-Spannzangen
Rubber-Flex collets



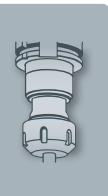
Gewindespindel komplett
Thread spindle, complete

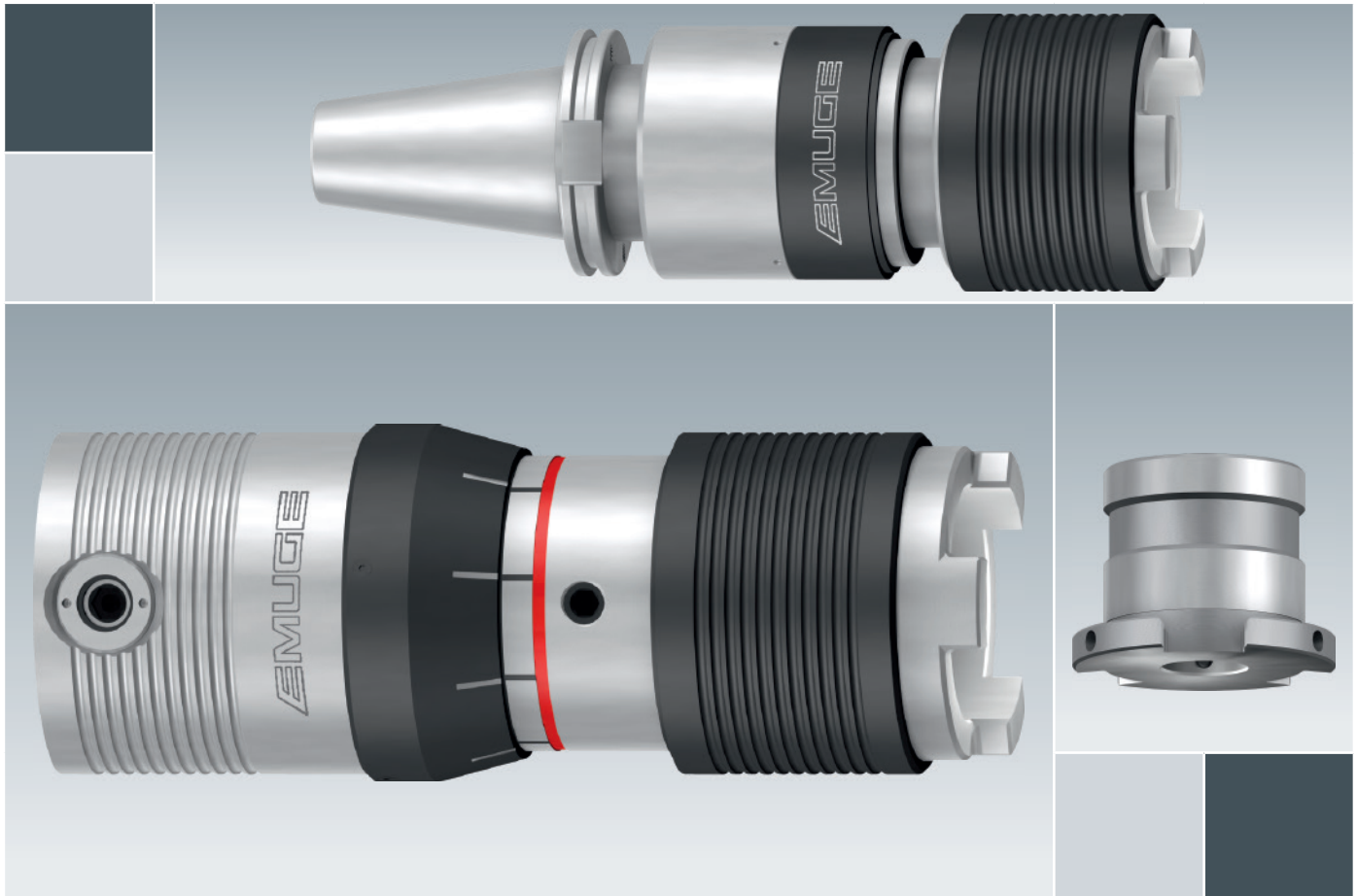


| Für Typ For type | Zangengröße Collet size | L | ø D | ø D ₁ | Artikel-Nr. Article no. | |
|---------------------|----------------------------|------|-----|------------------|----------------------------|---|
| GR 1 | J115 | 12 | 15 | 1 - 2,5 | F0940001 | ● |
| | J116 ¹⁾ | 12 | 15 | 2,5 - 4,5 | F0940002 | ● |
| | J117 ¹⁾ | 12 | 15 | 4,5 - 6,5 | F0940003 | ● |
| GR 2 | J423 | 12,7 | 23 | 2 - 4,5 | F0940004 | ● |
| | J421 ¹⁾ | 12,7 | 23 | 3,5 - 6,5 | F0940006 | ● |
| | J422 ¹⁾ | 12,7 | 23 | 6,5 - 10 | F0940007 | ● |
| GR 3 | R30 ¹⁾ | 15 | 28 | 6 - 10,5 | F0940015 | ● |
| | R32 ¹⁾ | 15 | 28 | 10,5 - 16 | F0940019 | ● |

| Für Typ For type | Artikel-Nr. Article no. | |
|---------------------|----------------------------|---|
| GR 1 | F040157.03 | ● |
| GR 2 | F040257.03 | ● |
| GR 3 | F040357.02 | ● |

¹⁾ Diese Größen sind im Lieferumfang enthalten
These sizes are included in the delivery





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.

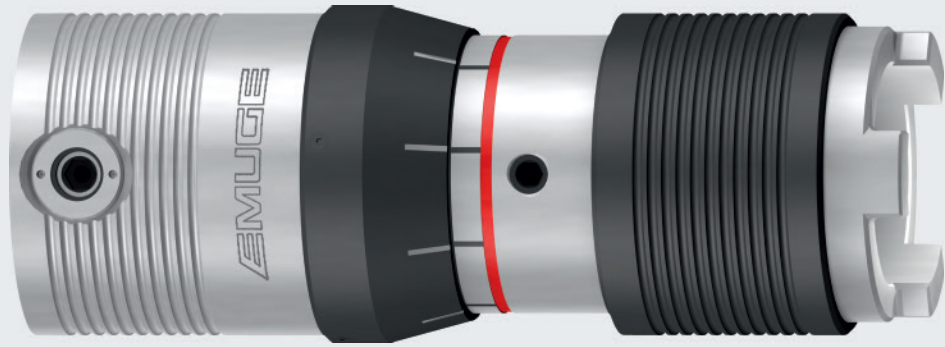
Application on CNC machining centres and boring mills

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.



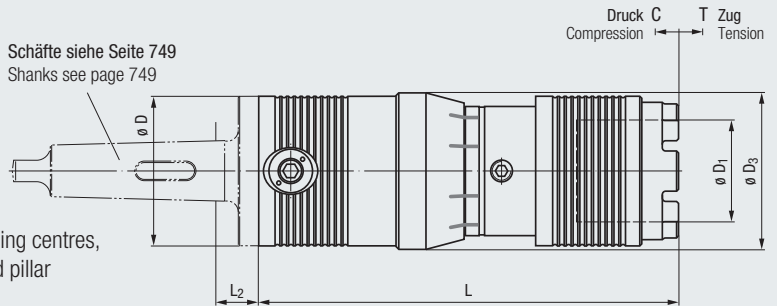
- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF**
- EM
- Zubehör Accessories
- Tech. Info

HF



p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)



Einsatz auf CNC-Bearbeitungszentren, sonstigen Werkzeugmaschinen und Säulenbohrmaschinen

For use on CNC machining centres, other machine tools and pillar drilling machines

| Typ Type | | | Max. Drehmoment Max. torque Nm ¹⁾ | Geometrie | | | | | | Gewicht Weight (kg) | Artikel-Nr. Article no. | |
|--------------|---------------------------------|------|--|-----------|------------------|------------------|-----|----|----|---------------------------|----------------------------|---|
| | | | | Ø D | Ø D ₁ | Ø D ₃ | L | C | T | | | |
| HF 20 | M24 - M76 (1" - 2 1/2") | HE 2 | 1300 | 110 | 75 | 115 | 308 | 15 | 15 | 14,8 | F0332999 | ● |
| HF 30 | M36 - M160 (1 3/8" - 3 1/2") | HE 3 | 3000 | 160 | 90 | 160 | 372 | 20 | 20 | 36,5 | F0333999 | ● |

¹⁾ 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



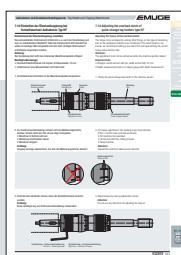
Schnellwechsel-Einsätze Typ HE
Quick-change adapters, type HE

» 752 - 753



Schäfte Typ HF
Shanks type HF

» 749

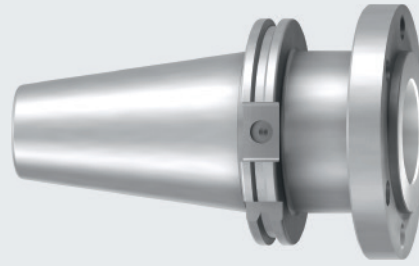


Einstellen der Überlastkupplung bei Schnellwechsel-Aufnahmen Typ HF
siehe Seite 833 - 834

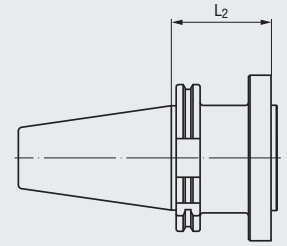
Adjusting the overload clutch of quick-change tap holders type HF,
see page 833 - 834

| Für Typ For type | SK | L ₂ | Gewicht Weight (kg) | Artikel-Nr. Article no. | |
|---------------------|-------|----------------|---------------------------|----------------------------|---|
| HF 20 | SK 50 | 66 | 3,8 | F033206.02 | ● |
| HF 30 | SK 50 | 51 | 5,8 | F033306.01 | ● |

Ausführung mit innerer Kühlschmierstoff-Zufuhr
bis 10 bar auf Anfrage erhältlich
Available with internal coolant supply
up to 10 bar upon request

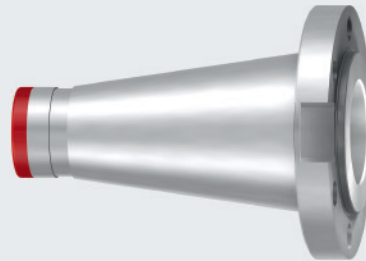


HF
DIN 69871 A

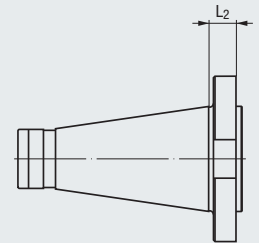


| Für Typ For type | SK | L ₂ | Gewicht Weight (kg) | Artikel-Nr. Article no. | |
|---------------------|-------|----------------|---------------------------|----------------------------|---|
| HF 20 | SK 40 | 22 | 1,7 | F033205.05 | ● |
| | SK 50 | 18 | 3,0 | F033205.01 | ● |
| HF 30 | SK 50 | 19 | 4,3 | F033305.01 | ● |

Ausführung mit innerer Kühlschmierstoff-Zufuhr
bis 10 bar auf Anfrage erhältlich
Available with internal coolant supply
up to 10 bar upon request

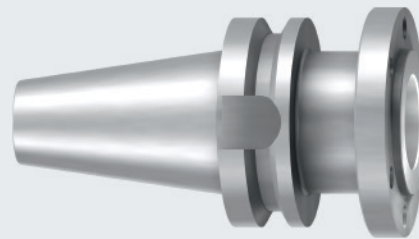


HF
DIN 2080

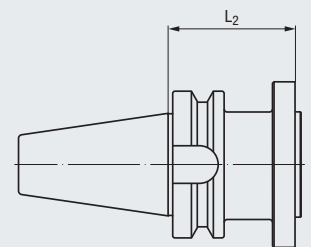


| Für Typ For type | BT | L ₂ | Gewicht Weight (kg) | Artikel-Nr. Article no. | |
|---------------------|-------|----------------|---------------------------|----------------------------|---|
| HF 20 | BT 50 | 85 | 4,7 | F033208.02 | ● |
| HF 30 | BT 50 | 166 | 6,7 | F033308.01 | ○ |

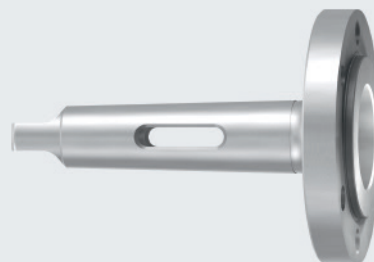
Ausführung mit innerer Kühlschmierstoff-Zufuhr
bis 10 bar auf Anfrage erhältlich
Available with internal coolant supply
up to 10 bar upon request



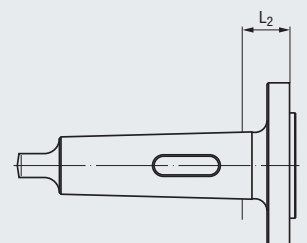
HF
JIS B 6339
(MAS 403 BT)



| Für Typ For type | MK | L ₂ | Gewicht Weight (kg) | Artikel-Nr. Article no. | |
|---------------------|------|----------------|---------------------------|----------------------------|---|
| HF 20 | MK 4 | 34 | 1,7 | F033201.04 | ● |
| | MK 5 | 32 | 2,8 | F033201.05 | ● |
| | MK 6 | 31 | 4,8 | F033201.06 | ● |
| HF 30 | MK 5 | 30 | 3,9 | F033301.01 | ● |
| | MK 6 | 32 | 6,2 | F033301.02 | ● |



HF
DIN 228 B

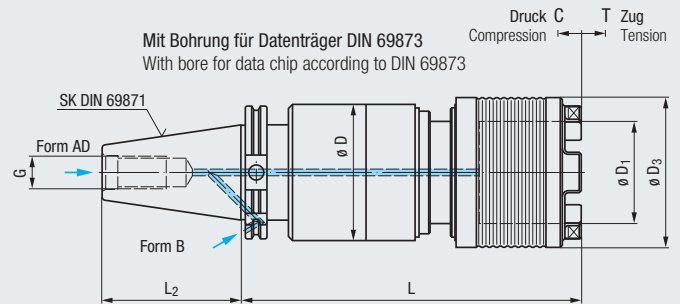


- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF**
- EM
- Zubehör Accessories
- Tech. Info

HF/HD/Spezial

DIN 69871 AD
DIN 69871 B

| | | |
|--------------------------------|------------------------------|--|
| | | |
| p_{max} 50bar (700psi) | p_{max} 6bar (85psi) | |
| | | |
| | | |
| | | |



Einsatz auf CNC-Bearbeitungszentren und sonstigen Werkzeugmaschinen
For use on CNC machining centres and other machine tools

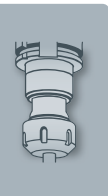
| Typ Type | | | SK | ϕD | ϕD_1 | ϕD_3 | L | L ₂ | G | C | T | Gewicht Weight (kg) | Artikel-Nr. Article no. | |
|------------------|---------------------------|-----------|----------|----------|------------|------------|-----|----------------|-----|----|----|---------------------------|----------------------------|---|
| HF 20/HD/Spezial | M24 - M76 (1" - 2 1/2) | HE 2/IKZZ | SK 50 AD | 100 | 75 | 110 | 250 | 101,75 | M24 | 15 | 15 | 12 | F0332653.1.49 | ● |
| | | | SK 50 B | 100 | 75 | 110 | 250 | 101,75 | M24 | 15 | 15 | 12 | F0332653.2.49 | ○ |

Weitere Ausführungen auf Anfrage
Further designs upon request

Zubehör Accessories



Schnellwechsel-Einsätze Typ HE/IKZZ
Quick-change adapters, type HE/IKZZ ▶ 752

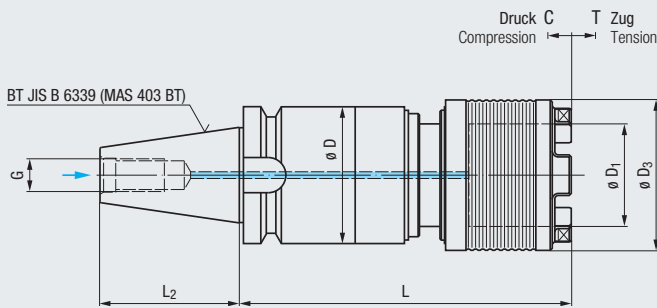


Spannzangen-Aufnahmen der Typenreihe Softsynchro® zur synchronen Herstellung von großen Gewinden siehe Seite 665 und 676

Collet holders of our Softsynchro® series for the synchronous production of large threads, see pages 665 and 676

HF/HD/Spezial

JIS B 6339
(MAS 403 BT)





Einsatz auf CNC-Bearbeitungszentren
und sonstigen Werkzeugmaschinen

For use on CNC machining centres
and other machine tools




- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- ML MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF**
- EM
- Zubehör Accessories
- Tech. Info

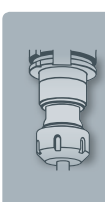
| Typ Type |  |  | BT | ϕD | ϕD_1 | ϕD_3 | L | L_2 | G | C | T | Gewicht Weight (kg) | Artikel-Nr. Article no. |
|-------------------------|--|--|-------|----------|------------|------------|-----|-------|-----|----|----|---------------------------|----------------------------|
| HF 20/HD/Spezial | M24 - M76 (1" - 2 1/2") | HE 2/IKZZ | BT 50 | 100 | 75 | 110 | 248 | 101,8 | M24 | 15 | 15 | 12 | F0332893.1.49 |

Weitere Ausführungen auf Anfrage
Further designs upon request

Zubehör Accessories



Schnellwechsel-Einsätze Typ HE/IKZZ
Quick-change adapters, type HE/IKZZ  752

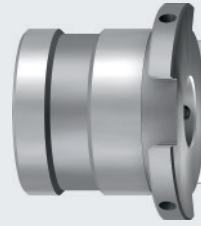
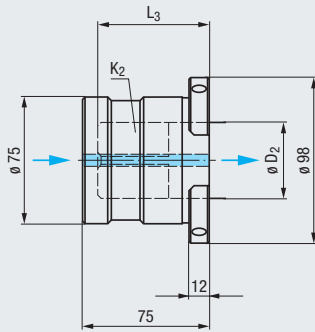


HE 2/IKZZ

Für Gewindebohrer/Gewindeformer
For taps/cold-forming taps



p_{max}
50bar
(700psi)



| DIN | | | | | | ISO | | | | | |
|-----------------|-------|-----------------------------|-------|---------------------------|----------------------------|-----------------|-------|-----------------------|-------|---------------------------|----------------------------|
| $\emptyset D_2$ | K_2 | | L_3 | Gewicht Weight (kg) | Artikel-Nr. Article no. | $\emptyset D_2$ | K_2 | | L_3 | Gewicht Weight (kg) | Artikel-Nr. Article no. |
| 18 | 14,5 | M24 | 53 | 2,2 | F0632115.6 ● | 18 | 14 | M24 | 53 | 2,2 | F0632218.6 ● |
| 20 | 16 | M27 | 53 | 2,2 | F0632116.6 ● | 20 | 16 | M27 - M30 | 53 | 2,2 | F0632116.6 ● |
| 22 | 18 | M30 | 53 | 2,1 | F0632117.6 ● | 22,4 | 18 | M33 | 53 | 2,1 | F0632220.6 ● |
| 25 | 20 | M33 | 53 | 2,1 | F0632118.6 ● | 25 | 20 | M36 | 53 | 2,1 | F0632118.6 ● |
| 28 | 22 | M36 | 53 | 2,1 | F0632119.6 ● | 28 | 22,4 | M39 - M42 | 53 | 2,1 | F0632222.6 ● |
| 32 | 24 | M39 - M42 | 53 | 2,0 | F0632120.6 ● | 31,5 | 25 | M45 - M48 | 53 | 2,0 | F0632223.6 ● |
| 36 | 29 | M45 - M48 | 66 | 1,9 | F0632121.6 ● | 35,5 | 28 | M52 - M56 | 66 | 1,9 | F0632224.6 ● |
| 40 | 32 | M52 - M56 | 66 | 1,8 | F0632122.6 ● | 40 | 31,5 | M60 - M64 | 66 | 1,8 | F0632225.6 ● |
| 45 | 35 | M60 | 66 | 1,7 | F0632123.6 ● | 45 | 35,5 | M68 - M75 | 66 | 1,7 | F0632226.6 ● |
| 50 | 39 | M64 - M76 / M80 1) - M90 1) | 66 | 1,6 | F0632124.6 ● | 50 | 40 | M76 / M80 1) - M90 1) | 66 | 1,6 | F0632227.6 ● |
| 56 | 44 | M92 1) - M120 1) | 66 | 1,4 | F0632125.6 ● | 56 | 45 | M92 1) - M100 1) | 66 | 1,4 | F0632228.6 ● |

1) Feingewinde
Fine threads

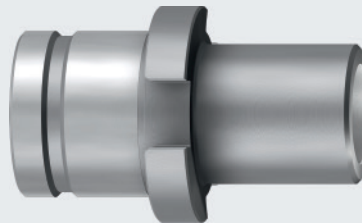
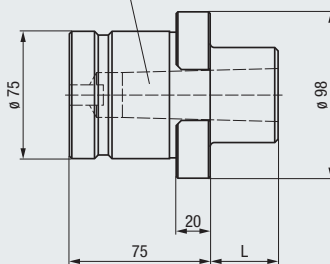
HE 2

Zum Bohren und Senken
For drilling and countersinking



p_{max}
50bar
(700psi)

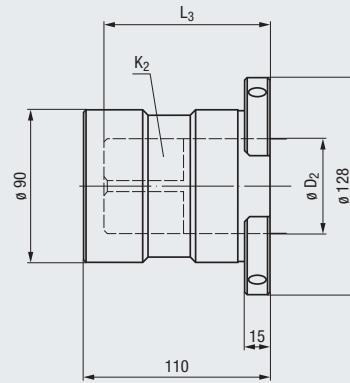
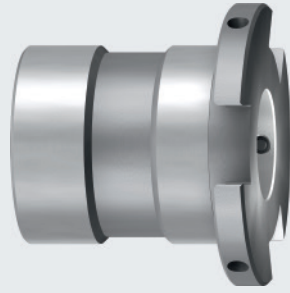
Innenkegel nach DIN 228 B
Internal taper acc. DIN 228 B



| Innenkegel Internal taper | L | Gewicht Weight (kg) | Artikel-Nr. Article no. |
|------------------------------|-----|---------------------------|----------------------------|
| MK | | | |
| MK 3 | 25 | 3,2 | F0642803 ● |
| MK 4 | 48 | 3,3 | F0642804 ● |
| MK 5 | 80 | 3,4 | F0642805 ● |

Für Gewindebohrer/Gewindeformer
For taps/cold-forming taps

HE 3



p_{max}
50bar
(700psi)

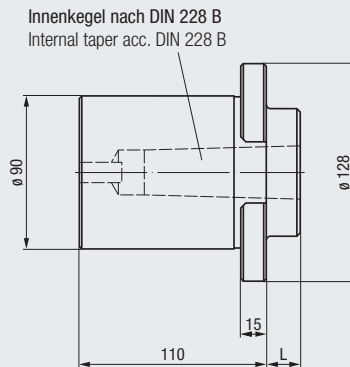
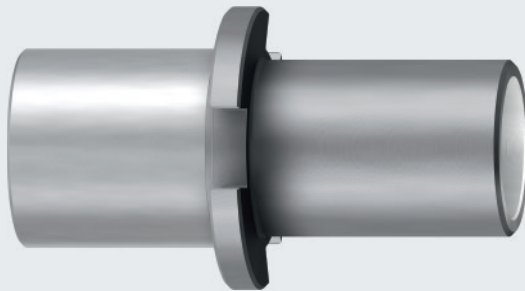
- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

| DIN | | | | | | ISO | | | | | |
|-------------------|-------|-------------|-------|---------------------|-------------------------|-------------------|-------|------------|-------|---------------------|-------------------------|
| $\varnothing D_2$ | K_2 | | L_3 | Gewicht Weight (kg) | Artikel-Nr. Article no. | $\varnothing D_2$ | K_2 | | L_3 | Gewicht Weight (kg) | Artikel-Nr. Article no. |
| 28 | 22 | M36 | 76 | 4,4 | F0633119 ● | 28 | 22,4 | M39 - M42 | 76 | 2,1 | F0633222 ● |
| 32 | 24 | M39 - M42 | 76 | 4,3 | F0633120 ● | 31,5 | 25 | M45 - M48 | 76 | 2,0 | F0633223 ● |
| 36 | 29 | M45 - M48 | 76 | 4,2 | F0633121 ● | 35,5 | 28 | M52 - M56 | 76 | 1,9 | F0633224 ● |
| 40 | 32 | M52 - M56 | 76 | 4,0 | F0633122 ● | 40 | 31,5 | M60 - M64 | 76 | 1,8 | F0633225 ● |
| 45 | 35 | M60 | 76 | 3,9 | F0633123 ● | 45 | 35,5 | M68 - M75 | 76 | 1,7 | F0633226 ● |
| 50 | 39 | M64 - M90 | 76 | 3,7 | F0633124 ● | 50 | 40 | M76 - M90 | 76 | 1,6 | F0633227 ● |
| 56 | 44 | M92 - M120 | 98 | 3,4 | F0633125 ● | 56 | 45 | M92 - M100 | 98 | 1,4 | F0633228 ● |
| 63 | 49 | M122 - M150 | 98 | 3,0 | F0633126 ● | | | | | | |
| 70 | 55 | M155 - M160 | 98 | 2,7 | F0633127 ● | | | | | | |

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

Zum Bohren und Senken
For drilling and countersinking

HE 3

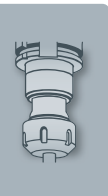


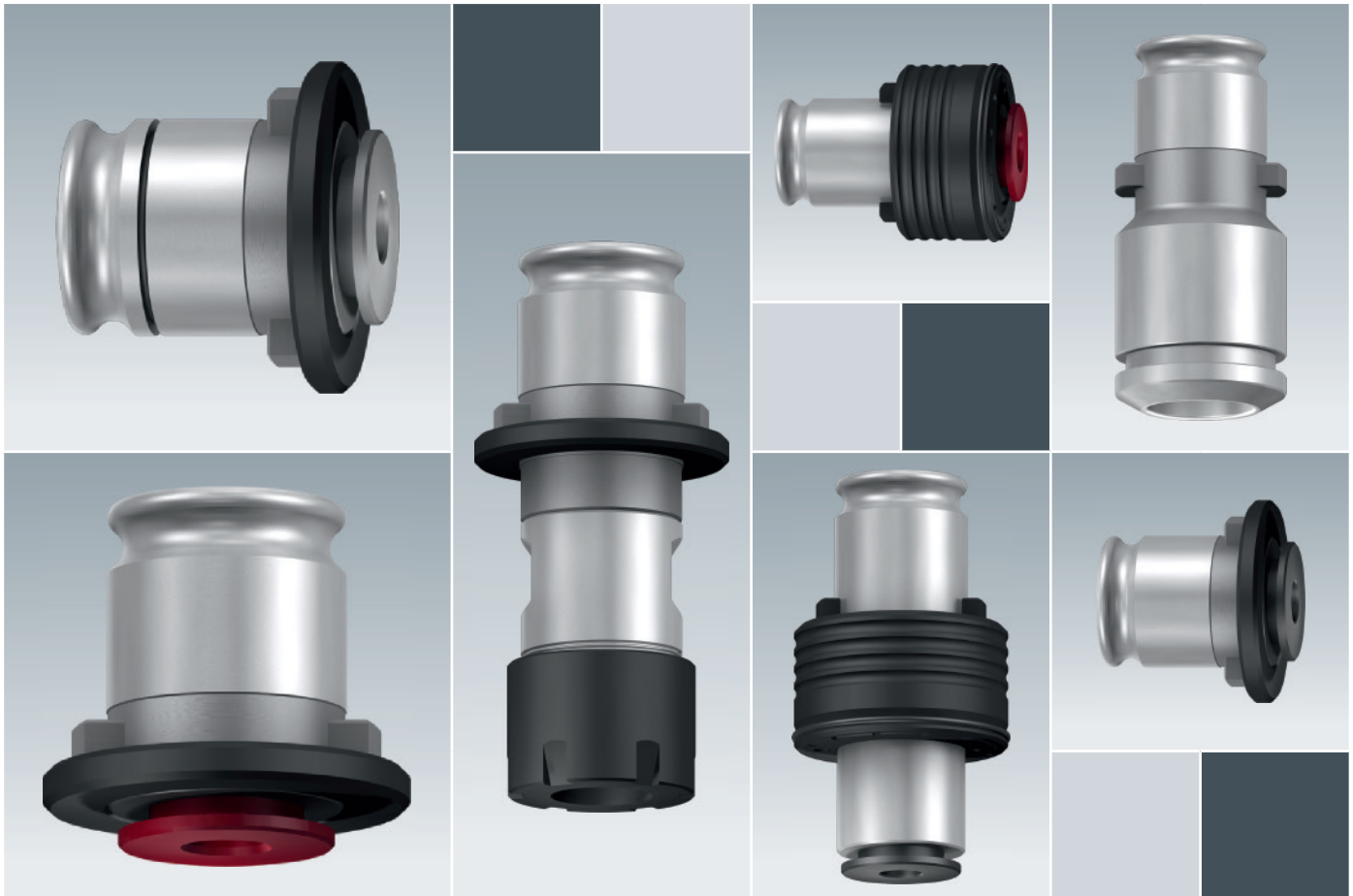
p_{max}
50bar
(700psi)

| Innenkegel Internal taper | L | Gewicht Weight (kg) | Artikel-Nr. Article no. |
|---------------------------|-----|---------------------|-------------------------|
| 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
- GR, GR-S
- HF**
- EM
- Zubehör Accessories
- Tech. Info





Typenreihe EM EM Series

Passend zu all unseren Schnellwechsel-Aufnahmen der Typenreihen KSN, SFM und GR-S

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, SFM and GR-S 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.



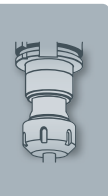
- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM**
- Zubehör Accessories
- Tech. Info

| | | Werkzeug-Adaptierung Tool adaptation | | | Funktionen Functions | | |
|-----|-----|--|---|--|---|---|--|
| DIN | ISO |  |  |  |  |  |  |
| | | Schnellwechsel-Kugelspannsystem oder Klemmung am Vierkant Quick-change ball clamping system or clamping on the square | Spannzangen, Typ ER (GB) Collets, type ER (GB) | Spannzangen, Typ PGR (GB) Collets, type PGR (GB) | Überlastkupplung Overload clutch | Längeneinstellung Length adjustment | Arretierung über formschlüssige Rille am Vierkant Locking with form-positive slot on the square |

Seite · Page

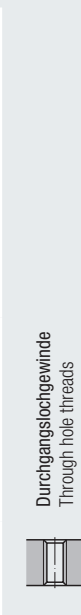
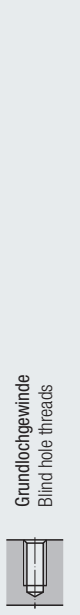
| | | | | | | | | |
|-------------|-----|-----|---|---|---|---|---|---|
| EM | 758 | 759 | ■ | | | | | |
| EM-E | 760 | 760 | ■ | | | | | |
| EM/IKZ | 761 | | ■ | | | | | |
| EM-E-Lock | 762 | 763 | ■ | | | | | ■ |
| EM-U | 764 | 765 | ■ | | | ■ | | |
| EM-U-E | 766 | 766 | ■ | | | ■ | | |
| EM-U/IKZ | 767 | | ■ | | | ■ | | |
| EM-L | 768 | 769 | ■ | | | | ■ | |
| EM-L-E | 770 | 770 | ■ | | | | ■ | |
| EM-UL | 771 | 772 | ■ | | | ■ | ■ | |
| EM-UL-E | 773 | 773 | ■ | | | ■ | ■ | |
| EM-Z/ER/IKZ | 774 | | | ■ | | | | |
| EM-L/ER/IKZ | 775 | | | ■ | | | ■ | |
| EM/PGR/IKZ | 776 | | | | ■ | | | |
| EM-SE | 777 | | | | | | | |
| EM-R | 778 | | | | | | | |

Symbolbeschreibung der Leistungsmerkmale
Description of the symbols for performance characteristics [» 804 - 811](#)



Kühlung und Schmierung
Cooling and lubrication

Empfohlene Einsatzgebiete
Recommended range of application



Regelgewinde
Coarse thread

Feingewinde
Fine thread

Spannen von Vollhartmetall-Werkzeugen
Clamping of solid carbide tools

Hochgeschwindigkeitsbearbeitung
High-speed machining

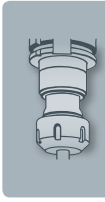
Hoher Kühlschmierstoff-Druck
High coolant-lubricant pressure

Einsatz auf Mehrspindelmaschinen und Transferstraßen
For use on multi-spindle machines and transfer lines

Herstellung von Außengewinden
Production of external threads

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|--|--|---|-------------|
| ■ | | | ■ | ■ | | | | | | | | | EM |
| ■ | | | ■ | | ■ | | | | | | | | EM-E |
| | ■ | | ■ | ■ | | | | | | | | | EM/IKZ |
| ■ | | | ■ | ■ | | ■ | ■ | ■ | | | | | EM-E-Lock |
| ■ | | ■ | | ■ | | | | | | | | | EM-U |
| ■ | | ■ | | ■ | | ■ | | | | | | | EM-U-E |
| | ■ | ■ | | ■ | | | | | | | | | EM-U/IKZ |
| ■ | | | ■ | ■ | | | | | | | | ■ | EM-L |
| ■ | | | ■ | | ■ | | | | | | | ■ | EM-L-E |
| ■ | | ■ | | ■ | | | | | | | | ■ | EM-UL |
| ■ | | ■ | | ■ | | ■ | | | | | | ■ | EM-UL-E |
| ■ | ■ | | ■ | ■ | | ■ | ■ | ■ | | | | | EM-Z/ER/IKZ |
| ■ | ■ | | ■ | ■ | | ■ | ■ | ■ | ■ | | | | EM-L/ER/IKZ |
| ■ | | | ■ | ■ | | ■ | ■ | ■ | | | | | EM/PGR/IKZ |
| | | | | | | | | | | | | ■ | EM-SE |
| | | ■ | ■ | ■ | | | | | | | | | EM-R |

- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- ML MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM**
- Zubehör Accessories
- Tech. Info

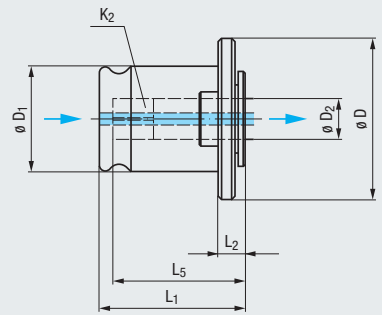


- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM**
- Zubehör Accessories
- Tech. Info

EM DIN

p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)

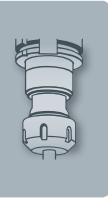


| Typ · Type | EM 00/DIN | EM 01/DIN | EM 03/DIN | EM 04/DIN | EM 05/DIN |
|-------------------|-----------|-----------|------------|-----------|-----------|
| | M1 - M10 | M3 - M14 | M4,5 - M24 | M14 - M36 | M22 - M48 |
| $\varnothing D$ | 23 | 30 | 48 | 70 | 92 |
| $\varnothing D_1$ | 13 | 19 | 31 | 48 | 60 |
| L_1 | 27 | 29 | 45 | 67 | 111 |
| L_2 | 7 | 7 | 10 | 11 | 48 |

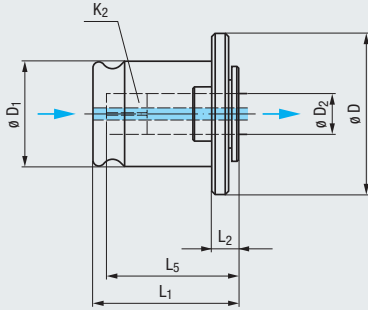
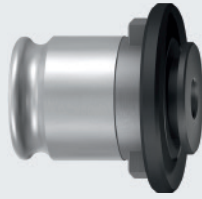
| DIN | | | | Artikel-Nr. Article no. | | Artikel-Nr. Article no. | | Artikel-Nr. Article no. | | Artikel-Nr. Article no. | | Artikel-Nr. Article no. | | | |
|-------------------|-------|-----------|-----------|-------------------------|-------|-------------------------|----------|-------------------------|-------|-------------------------|-------|-------------------------|----------|-----|---|
| $\varnothing D_2$ | K_2 | | | | L_5 | | L_5 | | L_5 | | L_5 | | L_5 | | |
| 2,5 | 2,1 | M1 - M1,8 | M3,5 | F0560100 | 20 | ● | | | | | | | | | |
| 2,8 | 2,1 | M2 - M2,6 | M4 | F0560101 | 20 | ● | | | | | | | | | |
| 3,5 | 2,7 | M3 | M4,5 - M5 | F0560102 | 21 | ● | F0561102 | 23 | ● | | | | | | |
| 4 | 3 | M3,5 | M5,5 | F0560103 | 21 | ● | F0561103 | 23 | ● | | | | | | |
| 4,5 | 3,4 | M4 | M6 | F0560104 | 21 | ● | F0561104 | 23 | ● | | | | | | |
| 6 | 4,9 | M4,5 - M6 | M8 | F0560106 | 23 | ● | F0561106 | 25 | ● | F0563106 | 37 | ● | | | |
| 7 | 5,5 | M7 | M9 - M10 | F0560107 | 23 | ● | F0561107 | 25 | ● | F0563107 | 37 | ● | | | |
| 8 | 6,2 | M8 | M11 | 2) | | | F0561108 | 26 | ● | F0563108 | 38 | ● | | | |
| 9 | 7 | M9 | M12 | | | | F0561109 | 27 | ● | F0563109 | 39 | ● | | | |
| 10 | 8 | M10 | | | | | F0561110 | 27 | ● | F0563110 | 40 | ● | | | |
| 11 | 9 | | M14 | | | | F0561111 | 27 | ● | F0563111 | 41 | ● | F0564111 | 53 | ● |
| 12 | 9 | | M16 | | | | 2) | | | F0563112 | 41 | ● | F0564112 | 53 | ● |
| 14 | 11 | | M18 | | | | | | | F0563113 | 43 | ● | F0564113 | 55 | ● |
| 16 | 12 | | M20 | | | | | | | F0563114 | 44 | ● | F0564114 | 56 | ● |
| 18 | 14,5 | | M22 - M24 | | | | | | | F0563115 | 44 | ● | F0564115 | 58 | ● |
| 20 | 16 | | M27 | | | | | | | 2) | | | F0564116 | 60 | ● |
| 22 | 18 | | M30 | | | | | | | 2) | | | F0564117 | 62 | ● |
| 25 | 20 | | M33 | | | | | | | | | | F0564118 | 64 | ● |
| 28 | 22 | | M36 | | | | | | | | | | F0564119 | 66 | ● |
| 32 | 24 | | M39 - M42 | | | | | | | 2) | | | F0565120 | 104 | ● |
| 36 | 29 | | M45 - M48 | | | | | | | 2) | | | F0565121 | 109 | ● |
| 40 | 32 | | M52 - M56 | | | | | | | | | | 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

2) Schnellwechsel-Einsätze mit erweitertem Spannereich Typ EM-E siehe Seite 760
Quick-change adapters with extended clamping range type EM-E, see page 760



EM
ISO



p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)

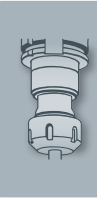
- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM**
- Zubehör Accessories
- Tech. Info

| Typ - Type | EM 00/ISO | EM 01/ISO | EM 03/ISO | EM 04/ISO | EM 05/ISO |
|-------------------|-----------|------------|-----------|-----------|-----------|
| | 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 |
| L_1 | 27 | 29 | 45 | 67 | 111 |
| L_2 | 7 | 7 | 10 | 11 | 48 |

| ISO | | | | Artikel-Nr. Article no. | L_5 | | Artikel-Nr. Article no. | L_5 | | Artikel-Nr. Article no. | L_5 | | Artikel-Nr. Article no. | L_5 | | Artikel-Nr. Article no. | L_5 | |
|------|------|-------------|-----------|----------------------------|-------|---|----------------------------|-------|---|----------------------------|-------|---|----------------------------|-------|---|----------------------------|-------|---|
| 2,24 | 1,8 | | M3 | F0560200 | 19 | ● | | | | | | | | | | | | |
| 2,5 | 2 | M1 - M2 | M3,5 | F0560201 | 19 | ● | | | | | | | | | | | | |
| 2,8 | 2,24 | M2,2 - M2,5 | | F0560202 | 20 | ● | | | | | | | | | | | | |
| 3,15 | 2,5 | M3 | M4 | F0560203 | 20 | ● | | | | | | | | | | | | |
| 3,55 | 2,8 | M3,5 | M4,5 | F0560204 | 20 | ● | F0561204 | 22 | ● | | | | | | | | | |
| 4 | 3,15 | M4 | M5 | F0560205 | 21 | ● | F0561205 | 23 | ● | | | | | | | | | |
| 4,5 | 3,55 | M4,5 | M6 | F0560206 | 21 | ● | F0561206 | 23 | ● | | | | | | | | | |
| 5 | 4 | M5 | | F0560207 | 22 | ● | F0561207 | 24 | ● | | | | | | | | | |
| 5,6 | 4,5 | | M7 | F0560208 | 22 | ● | F0561208 | 24 | ● | | | | | | | | | |
| 6,3 | 5 | M6 | M8 | F0560209 | 23 | ● | F0561209 | 25 | ● | F0563209 | 37 | ● | | | | | | |
| 7,1 | 5,6 | M7 | M9 | F0560210 | 23 | ● | F0561210 | 25 | ● | F0563210 | 37 | ● | | | | | | |
| 8 | 6,3 | M8 | M10 - M11 | 2) | | | F0561211 | 26 | ● | F0563211 | 38 | ● | | | | | | |
| 9 | 7,1 | M9 | M12 | | | | F0561212 | 27 | ● | F0563212 | 39 | ● | | | | | | |
| 10 | 8 | M10 | | | | | F0561110 | 27 | ● | F0563110 | 40 | ● | | | | | | |
| 11,2 | 9 | | M14 | | | | F0561214 | 27 | ● | F0563214 | 41 | ● | F0564214 | 53 | ● | | | |
| 12,5 | 10 | | M16 | | | | 2) | | | F0563215 | 42 | ● | F0564215 | 54 | ● | | | |
| 14 | 11,2 | | M18 - M20 | | | | | | | F0563216 | 43 | ● | F0564216 | 55 | ● | | | |
| 16 | 12,5 | | M22 | | | | | | | F0563217 | 43 | ● | F0564217 | 57 | ● | | | |
| 18 | 14 | | M24 | | | | | | | F0563218 | 43 | ● | F0564218 | 59 | ● | F0565218 | 95 | ● |
| 20 | 16 | | M27 - M30 | | | | 2) | | | | | | F0564116 | 61 | ● | F0565116 | 97 | ● |
| 22,4 | 18 | | M33 | | | | 2) | | | | | | F0564220 | 63 | ● | F0565220 | 99 | ● |
| 25 | 20 | | M36 | | | | | | | | | | F0564118 | 65 | ● | F0565118 | 101 | ● |
| 28 | 22,4 | | M39 - M42 | | | | | | | | | | F0564222 | 66 | ● | F0565222 | 103 | ● |
| 31,5 | 25 | | M45 - M48 | | | | | | | | | | 2) | | | F0565223 | 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 siehe Seite 760
Quick-change adapters with extended clamping range type EM-E, see page 760

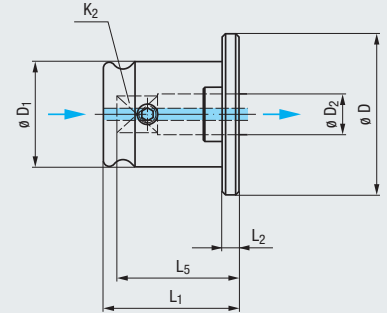
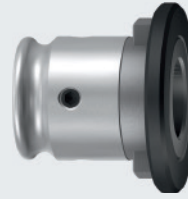


- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

EM-E

DIN
ISO

Zum Schneiden von Feingewinden **MF**
For the cutting of fine threads



IKZ 1)

MMS
MQL

ρ_{max}
50bar
(700psi)

ρ_{max}
6bar
(85psi)

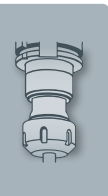
E-Lock

| 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 |

| Typ · Type | | EM 00-E/DIN | | EM 01-E/DIN | | EM 03-E/DIN | | EM 04-E/DIN | | EM 05-E/DIN | |
|--------------------------------------|-------|-------------|-----------|----------------------------|-------|----------------------------|-------|----------------------------|-------|----------------------------|-------|
| Feingewinde Fine thread MF | | M8 - M11 | | M16 | | M27 - M30 | | M39 - M48 | | M52 - M60 | |
| DIN | | | | Artikel-Nr. Article no. | L_5 | Artikel-Nr. Article no. | L_5 | Artikel-Nr. Article no. | L_5 | Artikel-Nr. Article no. | L_5 |
| $\varnothing D_2$ | K_2 | | | | | | | | | | |
| 8 | 6,2 | M8 | M11 | F0800108 | 21 | ● | | | | | |
| 12 | 9 | | M16 | | | F0801112 | 25 | ● | | | |
| 20 | 16 | | M27 | | | F0803116 | 39 | ● | | | |
| 22 | 18 | | M30 | | | F0803117 | 39 | ● | | | |
| 32 | 24 | | M39 - M42 | | | | | F0804120 | 61 | ● | |
| 36 | 29 | | M45 - M48 | | | | | F0804121 | 60 | ● | |
| 40 | 32 | | M52 - M56 | | | | | | | F0805122 | 83 |
| 45 | 35 | | M60 | | | | | | | F0805123 | 83 |

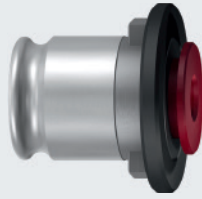
| Typ · Type | | EM 00-E/ISO | | EM 01-E/ISO | | EM 03-E/ISO | | EM 04-E/ISO | | EM 05-E/ISO | | |
|--------------------------------------|-------|-------------|-----------|----------------------------|-------|----------------------------|-------|----------------------------|-------|----------------------------|----------|----|
| Feingewinde Fine thread MF | | M8 - M11 | | M16 | | M27 - M33 | | M45 - M56 | | M52 - M68 | | |
| ISO | | | | Artikel-Nr. Article no. | L_5 | Artikel-Nr. Article no. | L_5 | Artikel-Nr. Article no. | L_5 | Artikel-Nr. Article no. | L_5 | |
| $\varnothing D_2$ | K_2 | | | | | | | | | | | |
| 8 | 6,3 | M8 | M10 - M11 | F0800211 | 21 | ● | | | | | | |
| 12,5 | 10 | | M16 | | | F0801215 | 25 | ● | | | | |
| 20 | 16 | | M27 - M30 | | | F0803116 | 40 | ● | | | | |
| 22,4 | 18 | | M33 | | | F0803220 | 39 | ● | | | | |
| 31,5 | 25 | | M45 - M48 | | | | | F0804223 | 61 | ● | | |
| 35,5 | 28 | | M52 - M56 | | | | | F0804224 | 61 | ● | F0805224 | 81 |
| 40 | 31,5 | | M60 - M64 | | | | | | | F0805225 | 82 | |
| 45 | 35,5 | | M68 | | | | | | | F0805226 | 83 | |

1) Bei Verwendung von Gewindebohrern mit innerer Kühlschmierstoff-Zufuhr
If used with taps with internal coolant supply



Für Gewindebohrer / Gewindeformer ohne innere Kühlschmierstoff-Zufuhr
For taps / cold-forming taps without internal coolant supply

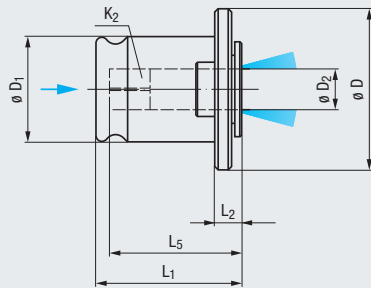
EM/IKZ
DIN



Entlang des Werkzeugschafts
Along the tool shank

p_{max}
50bar
(700psi)

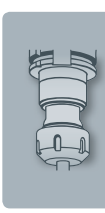
p_{max}
6bar
(85psi)



| Typ · Type | EM 01/IKZ/DIN | EM 03/IKZ/DIN | EM 04/IKZ/DIN | EM 05/IKZ/DIN |
|------------------|---------------|---------------|---------------|---------------|
| | M3 - M14 | M4,5 - M24 | M14 - M36 | M22 - M48 |
| ø D | 30 | 48 | 70 | 92 |
| ø D ₁ | 19 | 31 | 48 | 60 |
| L ₁ | 29 | 45 | 67 | 111 |
| L ₂ | 7 | 10 | 11 | 48 |

| DIN | | | | Artikel-Nr. Article no. | L ₅ | ● | ○ | Artikel-Nr. Article no. | L ₅ | ● | ○ | Artikel-Nr. Article no. | L ₅ | ● | ○ | Artikel-Nr. Article no. | L ₅ | ● | ○ | |
|-----|------|-----------|-----------|----------------------------|----------------|---|---|----------------------------|----------------|---|---|----------------------------|----------------|---|---|----------------------------|----------------|---|---|--|
| 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 | F0561102.5 | 23 | ● | | | | | | | | | | | | | | |
| 4 | 3 | M3,5 | M5,5 | F0561103.5 | 23 | ● | | | | | | | | | | | | | | |
| 4,5 | 3,4 | M4 | M6 | F0561104.5 | 23 | ● | | | | | | | | | | | | | | |
| 6 | 4,9 | M4,5 - M6 | M8 | F0561106.5 | 25 | ● | | F0563106.5 | 37 | ● | | | | | | | | | | |
| 7 | 5,5 | M7 | M9 - M10 | F0561107.5 | 25 | ● | | F0563107.5 | 37 | ● | | | | | | | | | | |
| 8 | 6,2 | M8 | M11 | F0561108.5 | 26 | ● | | F0563108.5 | 38 | ● | | | | | | | | | | |
| 9 | 7 | M9 | M12 | F0561109.5 | 27 | ● | | F0563109.5 | 39 | ● | | | | | | | | | | |
| 10 | 8 | M10 | | F0561110.5 | 27 | ● | | F0563110.5 | 40 | ● | | | | | | | | | | |
| 11 | 9 | | M14 | F0561111.5 | 27 | ● | | F0563111.5 | 41 | ● | | F0564111.5 | 53 | ● | | | | | | |
| 12 | 9 | | M16 | | | | | F0563112.5 | 41 | ● | | F0564112.5 | 53 | ● | | | | | | |
| 14 | 11 | | M18 | | | | | F0563113.5 | 43 | ● | | F0564113.5 | 55 | ● | | | | | | |
| 16 | 12 | | M20 | | | | | F0563114.5 | 44 | ● | | F0564114.5 | 56 | ● | | | | | | |
| 18 | 14,5 | | M22 - M24 | | | | | F0563115.5 | 44 | ● | | F0564115.5 | 58 | ● | | F0565115.5 | 94 | ● | | |
| 20 | 16 | | M27 | | | | | | | | | F0564116.5 | 60 | ● | | F0565116.5 | 96 | ● | | |
| 22 | 18 | | M30 | | | | | | | | | F0564117.5 | 62 | ● | | F0565117.5 | 98 | ● | | |
| 25 | 20 | | M33 | | | | | | | | | F0564118.5 | 64 | ● | | F0565118.5 | 100 | ● | | |
| 28 | 22 | | M36 | | | | | | | | | F0564119.5 | 66 | ● | | F0565119.5 | 102 | ● | | |
| 32 | 24 | | M39 - M42 | | | | | | | | | | | | | F0565120.5 | 104 | ● | | |
| 36 | 29 | | M45 - M48 | | | | | | | | | | | | | F0565121.5 | 109 | ● | | |

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- ML MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

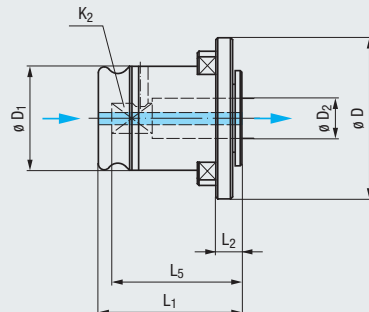
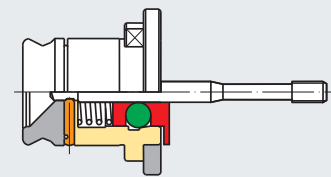
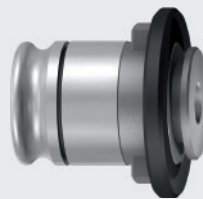
- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

EM-E-Lock

DIN

p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)



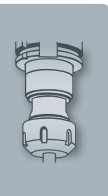
| Typ · Type | EM 01-E-Lock/DIN | EM 03-E-Lock/DIN |
|-------------------|------------------|------------------|
| | M3 - M14 | M4,5 - M24 |
| $\varnothing D$ | 30 | 48 |
| $\varnothing D_1$ | 19 | 31 |
| L_1 | 29 | 45 |
| L_2 | 7 | 10 |

| DIN | | | | Artikel-Nr. Article no. | L_5 | Rillenform Slot shape | | Artikel-Nr. Article no. | L_5 | Rillenform Slot shape | |
|-------------------|-------|-----------|-----------|----------------------------|-------|--------------------------|---|----------------------------|-------|--------------------------|---|
| $\varnothing D_2$ | K_2 | | | | | | | | | | |
| 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 / Gewindefornern mit innerer Kühlschmierstoff-Zufuhr
If used with taps / cold-forming taps with internal coolant supply

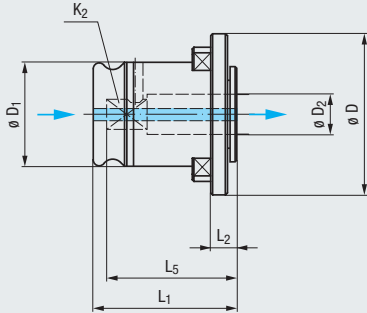
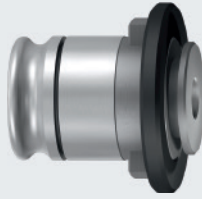
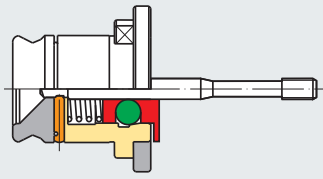
Weitere Größen auf Anfrage
Further sizes upon request

Lehren und Rillenformen siehe Seite 763
Gauges and slot shapes, see page 763



EM-E-Lock

ISO



p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)

E-Lock

- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- ML MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM**
- Zubehör Accessories
- Tech. Info

| Typ · Type | EM 01-E-Lock/ISO | EM 03-E-Lock/ISO |
|-------------------|------------------|------------------|
| | M3,5 - M14 | M6 - M24 |
| $\varnothing D$ | 30 | 48 |
| $\varnothing D_1$ | 19 | 31 |
| L_1 | 29 | 45 |
| L_2 | 7 | 10 |

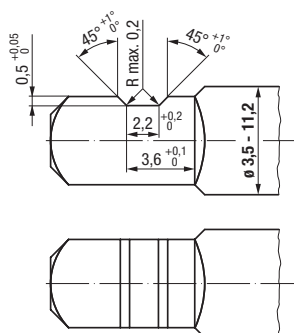
| ISO | | | | Artikel-Nr. Article no. | L_5 | Rillenform Slot shape | | Artikel-Nr. Article no. | L_5 | Rillenform Slot shape | |
|-------------------|-------|------|-----------|----------------------------|-------|--------------------------|---|----------------------------|-------|--------------------------|---|
| $\varnothing D_2$ | K_2 | | | | | | | | | | |
| 3,55 | 2,8 | M3,5 | M4,5 | F2561204 | 22 | A | ● | | | | |
| 4 | 3,15 | M4 | M5 | F2561205 | 23 | A | ● | | | | |
| 4,5 | 3,55 | M4,5 | M6 | F2561206 | 23 | A | ● | | | | |
| 5 | 4 | M5 | | F2561207 | 24 | A | ● | | | | |
| 5,6 | 4,5 | | M7 | F2561208 | 24 | A | ● | | | | |
| 6,3 | 5 | M6 | M8 | F2561209 | 25 | A | ● | F2563209 | 37 | A | ● |
| 7,1 | 5,6 | M7 | M9 | F2561210 | 25 | A | ● | F2563210 | 37 | A | ● |
| 8 | 6,3 | M8 | M10 - M11 | F2561211 | 26 | A | ● | F2563211 | 38 | A | ● |
| 9 | 7,1 | M9 | M12 | F2561212 | 27 | A | ● | F2563212 | 39 | A | ● |
| 10 | 8 | M10 | | F2561110 | 27 | A | ● | F2563110 | 40 | A | ● |
| 11,2 | 9 | | M14 | F2561214 | 27 | A | ● | F2563214 | 41 | A | ● |
| 12,5 | 10 | | M16 | | | | | F2563215 | 42 | B | ● |
| 14 | 11,2 | | M18 - M20 | | | | | F2563216 | 43 | B | ● |
| 16 | 12,5 | | M22 | | | | | F2563217 | 43 | B | ● |
| 18 | 14 | | M24 | | | | | F2563218 | 43 | B | ● |

1) Bei Verwendung von Gewindebohrern / Gewindefornern mit innerer Kühlschmierstoff-Zufuhr
If used with taps / cold-forming taps with internal coolant supply

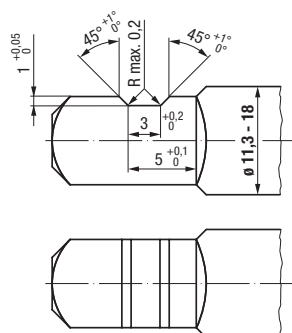
Weitere Größen auf Anfrage
Further sizes upon request

EM-E-Lock Rillenformen am Vierkant EM-E-Lock slot shapes on the driving square

Form A



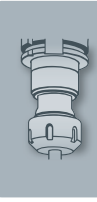
Form B



EM-E-Lock Lehren EM-E-Lock gauges



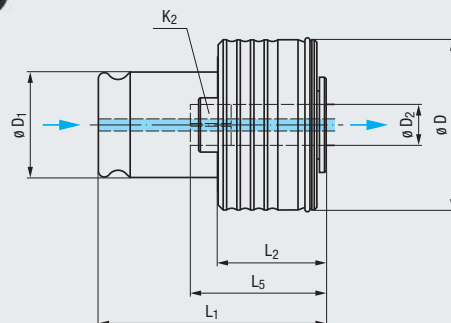
| Typ Type | Für Rillenform For slot shape | Artikel-Nr. Article no. | |
|--------------------|----------------------------------|----------------------------|---|
| EM-E-Lock/A | A | F256199.02 | ● |
| EM-E-Lock/B | B | F256399.02 | ● |



Mit Überlastkupplung
With overload clutch

EM-U

DIN



ρ_{max}
50bar
(700psi)

ρ_{max}
6bar
(85psi)

| Typ · Type | EM 00-U/DIN | EM 01-U/DIN | EM 03-U/DIN | EM 04-U/DIN | EM 05-U/DIN |
|-------------------|-------------|-------------|-------------|-------------|-------------|
| | M1 - M10 | M3 - M14 | M4,5 - M24 | M14 - M36 | M22 - M48 |
| $\varnothing D$ | 24 | 33 | 50 | 72 | 95 |
| $\varnothing D_1$ | 13 | 19 | 31 | 48 | 60 |
| L_1 | 41,5 | 47 | 69 | 101 | 138 |
| L_2 | 22 | 25 | 34 | 45 | 75 |

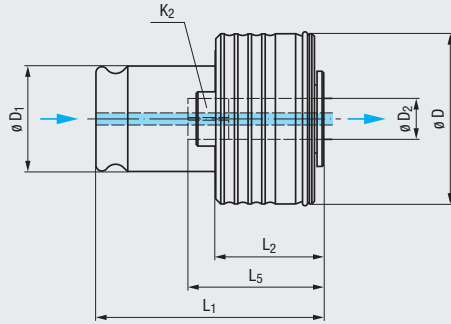
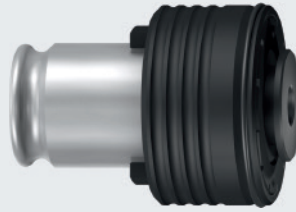
| DIN | | | | Artikel-Nr. Article no. | | Artikel-Nr. Article no. | | Artikel-Nr. Article no. | | Artikel-Nr. Article no. | | Artikel-Nr. Article no. | | | |
|-------------------|-------|-----------|-----------|----------------------------|----|----------------------------|------------|----------------------------|---|----------------------------|----|----------------------------|----------|----|---|
| $\varnothing D_2$ | K_2 | | | L_5 | | L_5 | | L_5 | | L_5 | | L_5 | | | |
| 2,5 | 2,1 | M1 - M1,8 | | F0570100.1 | 21 | ● | | | | | | | | | |
| 2,5 | 2,1 | | M3,5 | F0570100.2 | 21 | ● | | | | | | | | | |
| 2,8 | 2,1 | M2 | | F0570101.1 | 21 | ● | | | | | | | | | |
| 2,8 | 2,1 | M2,5 | | F0570101.2 | 21 | ● | | | | | | | | | |
| 2,8 | 2,1 | | M4 | F0570101.3 | 21 | ● | | | | | | | | | |
| 3,5 | 2,7 | M3 | | F0570102.1 | 22 | ● | F0571102.1 | 23 | ● | | | | | | |
| 3,5 | 2,7 | | M4,5 - M5 | F0570102.2 | 22 | ● | F0571102.2 | 23 | ● | | | | | | |
| 4 | 3 | M3,5 | | F0570103 | 22 | ● | F0571103 | 23 | ● | | | | | | |
| 4,5 | 3,4 | M4 | | F0570104.1 | 22 | ● | F0571104.1 | 23 | ● | | | | | | |
| 4,5 | 3,4 | | M6 | F0570104.2 | 22 | ● | F0571104.2 | 23 | ● | | | | | | |
| 6 | 4,9 | M4,5 - M5 | | F0570106.1 | 24 | ● | F0571106.1 | 25 | ● | F0573106.1 | 38 | ● | | | |
| 6 | 4,9 | M6 | | F0570106.2 | 24 | ● | F0571106.2 | 25 | ● | F0573106.2 | 38 | ● | | | |
| 6 | 4,9 | | M8 | F0570106.3 | 24 | ● | F0571106.3 | 25 | ● | F0573106.3 | 38 | ● | | | |
| 7 | 5,5 | | M10 | F0570107 | 24 | ● | F0571107 | 25 | ● | F0573107 | 38 | ● | | | |
| 8 | 6,2 | M8 | | 2) | | | F0571108 | 26 | ● | F0573108 | 39 | ● | | | |
| 9 | 7 | | M12 | | | | F0571109 | 27 | ● | F0573109 | 40 | ● | | | |
| 10 | 8 | M10 | | | | | F0571110 | 28 | ● | F0573110 | 41 | ● | | | |
| 11 | 9 | | M14 | | | | F0571111 | 29 | ● | F0573111 | 42 | ● | F0574111 | 56 | ● |
| 12 | 9 | | M16 | | | | 2) | | | F0573112 | 42 | ● | F0574112 | 56 | ● |
| 14 | 11 | | M18 | | | | | | | F0573113 | 44 | ● | F0574113 | 58 | ● |
| 16 | 12 | | M20 | | | | | | | F0573114 | 45 | ● | F0574114 | 59 | ● |
| 18 | 14,5 | | M22 - M24 | | | | | | | F0573115 | 47 | ● | F0574115 | 61 | ● |
| 20 | 16 | | M27 | | | | | | | 2) | | | F0574116 | 63 | ● |
| 22 | 18 | | M30 | | | | | | | 2) | | | F0574117 | 65 | ● |
| 25 | 20 | | M33 | | | | | | | | | | F0574118 | 67 | ● |
| 28 | 22 | | M36 | | | | | | | | | | F0574119 | 69 | ● |
| 32 | 24 | | M39 - M42 | | | | | | | 2) | | | | | |
| 36 | 29 | | M45 - M48 | | | | | | | | | | | | |
| 40 | 32 | | M52 - M56 | | | | | | | | | | | | |
| 45 | 35 | | M60 | | | | | | | | | | | | |

1) Bei Verwendung von Gewindebohrern / Gewindefornern 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 siehe Seite 766
Quick-change adapters with extended clamping range type EM-U-E, see page 766

Mit Überlastkupplung
With overload clutch

EM-U
ISO



p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)

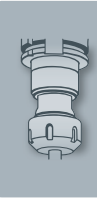
- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM**
- Zubehör Accessories
- Tech. Info

| Typ · Type | EM 00-U/ISO | EM 01-U/ISO | EM 03-U/ISO | EM 04-U/ISO | EM 05-U/ISO |
|-------------------|-------------|-------------|-------------|-------------|-------------|
| | M2,2 - M9 | M3,5 - M14 | M6 - M24 | M14 - M42 | M24 - M48 |
| $\varnothing D$ | 24 | 33 | 50 | 72 | 95 |
| $\varnothing D_1$ | 13 | 19 | 31 | 48 | 60 |
| L_1 | 41,5 | 47 | 69 | 101 | 138 |
| L_2 | 22 | 25 | 34 | 45 | 75 |

| ISO | | | | Artikel-Nr. Article no. | L_5 | ● | ○ | Artikel-Nr. Article no. | L_5 | ● | ○ | Artikel-Nr. Article no. | L_5 | ● | ○ | Artikel-Nr. Article no. | L_5 | ● | ○ |
|------|------|-------------|-----------|----------------------------|-------|---|------------|----------------------------|-------|------------|----|----------------------------|----------|----|---|----------------------------|-------|---|---|
| 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 | 95 | ● | |
| 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 siehe Seite 766
Quick-change adapters with extended clamping range type EM-U-E, see page 766



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

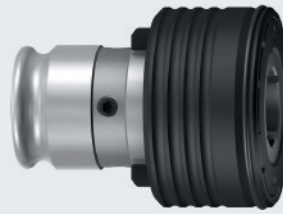
EM-U-E

DIN
ISO

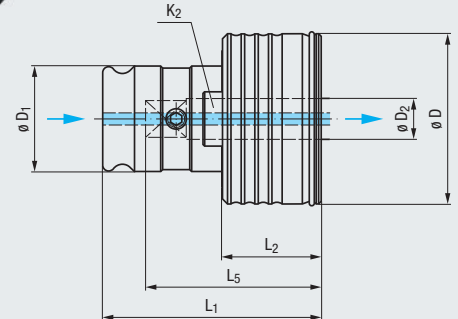
p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)

Zum Schneiden von Feingewinden **MF**
For the cutting of fine threads



Mit Überlastkupplung
With overload clutch

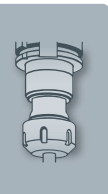


| Typ · Type | EM 00-U-E | EM 01-U-E | EM 03-U-E | EM 04-U-E | EM 05-U-E |
|------------------|-----------|-----------|-----------|-----------|-----------|
| ø D | 24 | 33 | 50 | 72 | 95 |
| ø D ₁ | 13 | 19 | 31 | 48 | 60 |
| L ₁ | 38,5 | 44 | 64,5 | 96 | 125 |
| L ₂ | 19 | 22,5 | 29,5 | 40,5 | 62 |

| Typ · Type | | EM 00-U-E/DIN | | EM 01-U-E/DIN | | EM 03-U-E/DIN | | EM 04-U-E/DIN | | EM 05-U-E/DIN | | |
|--------------------------------------|----------------|----------------------------|----------------|----------------------------|----------------|----------------------------|----------------|----------------------------|----------------|----------------------------|----------------|---|
| Feingewinde Fine thread MF | | M8 - M11 | | M16 | | M27 - M30 | | M39 - M48 | | M52 - M60 | | |
| DIN | | | | | | | | | | | | |
| ø D ₂ | K ₂ | Artikel-Nr. Article no. | L ₅ | Artikel-Nr. Article no. | L ₅ | Artikel-Nr. Article no. | L ₅ | Artikel-Nr. Article no. | L ₅ | Artikel-Nr. Article no. | L ₅ | |
| 8 | 6,2 | M8 | M11 | F0810108 | 28 | ● | | | | | | |
| 12 | 9 | | M16 | | | | | F0811112 | 37 | ● | | |
| 20 | 16 | | M27 | | | | | F0813116 | 50 | ● | | |
| 22 | 18 | | M30 | | | | | F0813117 | 52 | ● | | |
| 32 | 24 | | M39 - M42 | | | | | | | | | |
| 36 | 29 | | M45 - M48 | | | | | F0814120 | 66 | ● | | |
| 40 | 32 | | M52 - M56 | | | | | F0814121 | 71 | ● | | |
| 45 | 35 | | M60 | | | | | | | | | |
| | | | | | | | | | | F0815122 | 91 | ● |
| | | | | | | | | | | F0815123 | 94 | ● |

| Typ · Type | | EM 00-U-E/ISO | | EM 01-U-E/ISO | | EM 03-U-E/ISO | | EM 04-U-E/ISO | | EM 05-U-E/ISO | | |
|--------------------------------------|----------------|----------------------------|----------------|----------------------------|----------------|----------------------------|----------------|----------------------------|----------------|----------------------------|----------------|---|
| Feingewinde Fine thread MF | | M8 - M11 | | M16 | | M27 - M33 | | M45 - M56 | | M52 - M68 | | |
| ISO | | | | | | | | | | | | |
| ø D ₂ | K ₂ | Artikel-Nr. Article no. | L ₅ | Artikel-Nr. Article no. | L ₅ | Artikel-Nr. Article no. | L ₅ | Artikel-Nr. Article no. | L ₅ | Artikel-Nr. Article no. | L ₅ | |
| 8 | 6,3 | M8 | M10 - M11 | F0810211 | 28 | ● | | | | | | |
| 12,5 | 10 | | M16 | | | | | F0811215 | 38 | ● | | |
| 20 | 16 | | M27 - M30 | | | | | F0813116 | 50 | ● | | |
| 22,4 | 18 | | M33 | | | | | F0813220 | 53 | ● | | |
| 31,5 | 25 | | M45 - M48 | | | | | | | F0814223 | 69 | ● |
| 35,5 | 28 | | M52 - M56 | | | | | F0814224 | 72 | ● | | |
| 40 | 31,5 | | M60 - M64 | | | | | | | F0815224 | 96 | ● |
| 45 | 35,5 | | M68 | | | | | | | F0815225 | 103 | ● |
| | | | | | | | | | | F0815226 | 107 | ● |

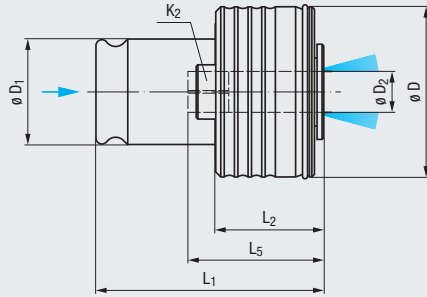
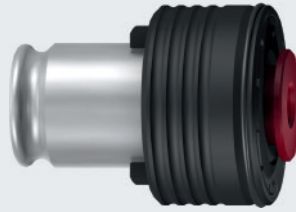
1) Bei Verwendung von Gewindebohrern mit innerer Kühlschmierstoff-Zufuhr
If used with taps with internal coolant supply



Für Gewindebohrer / Gewindeformer ohne innere Kühlschmierstoff-Zufuhr
For taps / cold-forming taps without internal coolant supply

EM-U/IKZ
DIN

Mit Überlastkupplung
With overload clutch

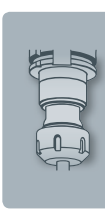


Entlang des Werkzeugschafts
Along the tool shank

| Typ · Type | EM 01-U/IKZ/DIN | EM 03-U/IKZ/DIN | EM 04-U/IKZ/DIN | EM 05-U/IKZ/DIN |
|-------------------|-----------------|-----------------|-----------------|-----------------|
| | M3 - M14 | M4,5 - M24 | M14 - M36 | M22 - M48 |
| $\varnothing D$ | 33 | 50 | 72 | 95 |
| $\varnothing D_1$ | 19 | 31 | 48 | 60 |
| L_1 | 47 | 69 | 101 | 138 |
| L_2 | 25 | 34 | 45 | 75 |

| DIN | | | | Artikel-Nr. Article no. | L_5 | Artikel-Nr. Article no. | L_5 | Artikel-Nr. Article no. | L_5 | Artikel-Nr. Article no. | L_5 | | | | |
|-----|------|-----------|-----------|----------------------------|-------|----------------------------|---------------------|----------------------------|-------|----------------------------|-------|---|-------------------|-----|---|
| 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 | ● |

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

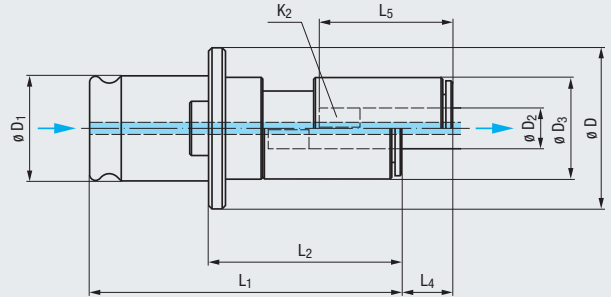
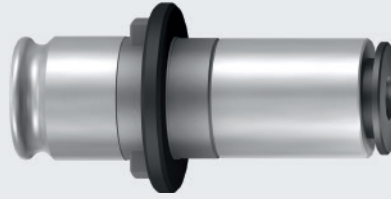


Product Finder

- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

Mit Längennachstellung
With length adjustment

EM-L DIN



IKZ 1)

MMS
MQL

ρ_{max}
50bar
(700psi)

ρ_{max}
6bar
(85psi)

E-Lock

| Typ · Type | EM 00-L/DIN | EM 01-L/DIN | EM 03-L/DIN | EM 04-L/DIN | EM 05-L/DIN |
|------------|-------------|-------------|-------------|-------------|-------------|
|------------|-------------|-------------|-------------|-------------|-------------|



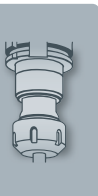
| | | | | | |
|-------------------|----------|----------|------------|-----------|-----------|
| | M1 - M10 | M3 - M14 | M4,5 - M24 | M14 - M36 | M22 - M48 |
| $\varnothing D$ | 23 | 30 | 48 | 70 | 92 |
| $\varnothing D_1$ | 13 | 19 | 31 | 48 | 60 |
| $\varnothing D_3$ | 13 | 18 | 30 | 47 | 58 |
| L_1 | 48 | 55 | 94 | 137 | 205 |
| L_2 | 29 | 33 | 59 | 81 | 142 |
| L_4 | 8 | 10 | 15 | 25 | 40 |

DIN

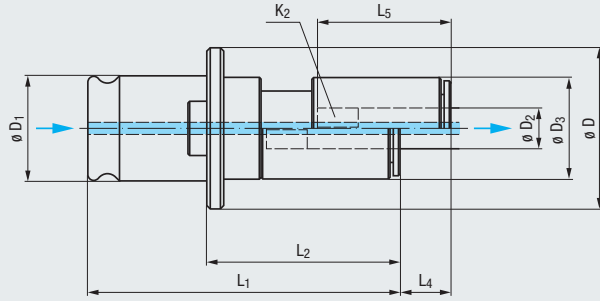
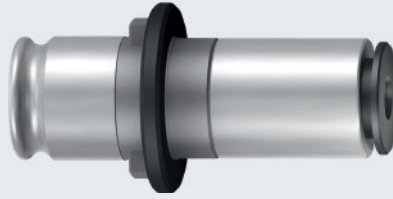
| $\varnothing D_2$ | K_2 | | | Artikel-Nr. Article no. | L_5 | Artikel-Nr. Article no. | L_5 | Artikel-Nr. Article no. | L_5 | Artikel-Nr. Article no. | L_5 | Artikel-Nr. Article no. | L_5 | | |
|-------------------|-------|-----------|-----------|----------------------------|-------|----------------------------|------------|----------------------------|-------|----------------------------|-------|----------------------------|------------|-----|---|
| 2,5 | 2,1 | M1 - M1,8 | M3,5 | F0580100.6 | 21 | ● | | | | | | | | | |
| 2,8 | 2,1 | M2 - M2,6 | M4 | F0580101.6 | 21 | ● | | | | | | | | | |
| 3,5 | 2,7 | M3 | M4,5 - M5 | F0580102.6 | 22 | ● | F0581102.6 | 23 | ● | | | | | | |
| 4 | 3 | M3,5 | M5,5 | F0580103.6 | 22 | ● | F0581103.6 | 22 | ● | | | | | | |
| 4,5 | 3,4 | M4 | M6 | F0580104.6 | 22 | ● | F0581104.6 | 23 | ● | | | | | | |
| 6 | 4,9 | M4,5 - M6 | M8 | F0580106.6 | 24 | ● | F0581106.6 | 25 | ● | F0583106.6 | 38 | ● | | | |
| 7 | 5,5 | M7 | M9 - M10 | F0580107.6 | 24 | ● | F0581107.6 | 25 | ● | F0583107.6 | 38 | ● | | | |
| 8 | 6,2 | M8 | M11 | 2) | | ● | F0581108.6 | 26 | ● | F0583108.6 | 39 | ● | | | |
| 9 | 7 | M9 | M12 | | | ● | F0581109.6 | 27 | ● | F0583109.6 | 40 | ● | | | |
| 10 | 8 | M10 | | | | ● | F0581110.6 | 28 | ● | F0583110.6 | 41 | ● | | | |
| 11 | 9 | | M14 | | | ● | F0581111.6 | 29 | ● | F0583111.6 | 42 | ● | F0584111.6 | 55 | ● |
| 12 | 9 | | M16 | | | 2) | F0583112.6 | 42 | ● | F0584112.6 | 55 | ● | | | |
| 14 | 11 | | M18 | | | | F0583113.6 | 44 | ● | F0584113.6 | 57 | ● | | | |
| 16 | 12 | | M20 | | | | F0583114.6 | 45 | ● | F0584114.6 | 58 | ● | | | |
| 18 | 14,5 | | M22 - M24 | | | | F0583115.6 | 47 | ● | F0584115.6 | 60 | ● | F0585115.6 | 94 | ● |
| 20 | 16 | | M27 | | | | 2) | | ● | F0584116.6 | 62 | ● | F0585116.6 | 96 | ● |
| 22 | 18 | | M30 | | | | 2) | | ● | F0584117.6 | 64 | ● | F0585117.6 | 98 | ● |
| 25 | 20 | | M33 | | | | | | ● | F0584118.6 | 66 | ● | F0585118.6 | 100 | ● |
| 28 | 22 | | M36 | | | | | | ● | F0584119.6 | 68 | ● | F0585119.6 | 102 | ● |
| 32 | 24 | | M39 - M42 | | | | | | 2) | | | ● | F0585120.6 | 104 | ● |
| 36 | 29 | | M45 - M48 | | | | | | 2) | | | ● | F0585121.6 | 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

2) Schnellwechsel-Einsätze mit erweitertem Spannbereich Typ EM-L-E siehe Seite 770
Quick-change adapters with extended clamping range type EM-L-E, see page 770



Mit Längennachstellung
With length adjustment



EM-L
ISO

IKZ 1) MMS MQL

p_{max} 50bar (700psi) p_{max} 6bar (85psi)

E-Lock

[Wavy line icon]

[L+ arrow icon]

[Cylinder icon]

[Thread icon]

[Spindle icon]

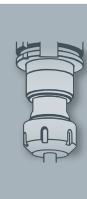
- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

| Typ · Type | EM 00-L/ISO | EM 01-L/ISO | EM 03-L/ISO | EM 04-L/ISO | EM 05-L/ISO |
|------------------|-------------|-------------|-------------|-------------|-------------|
| | M1 - M9 | M3,5 - M14 | M6 - M24 | M14 - M42 | M24 - M48 |
| ø D | 23 | 30 | 48 | 70 | 92 |
| ø D ₁ | 13 | 19 | 31 | 48 | 60 |
| ø 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 |

| DIN | | | | Artikel-Nr. Article no. | L ₅ | | Artikel-Nr. Article no. | L ₅ | | Artikel-Nr. Article no. | L ₅ | | Artikel-Nr. Article no. | L ₅ | | Artikel-Nr. Article no. | L ₅ | |
|------------------|----------------|-------------|-----------|----------------------------|----------------|---|----------------------------|----------------|---|----------------------------|----------------|---|----------------------------|----------------|---|----------------------------|----------------|---|
| ø D ₂ | K ₂ | | | | | | | | | | | | | | | | | |
| 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 | | | | | F0581110.6 | 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) | | | 2) | | | | | |
| 45 | 35,5 | | M68 | | | | | | | 2) | | | 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 Spannungsbereich Typ EM-L-E siehe Seite 770
Quick-change adapters with extended clamping range type EM-L-E, see page 770

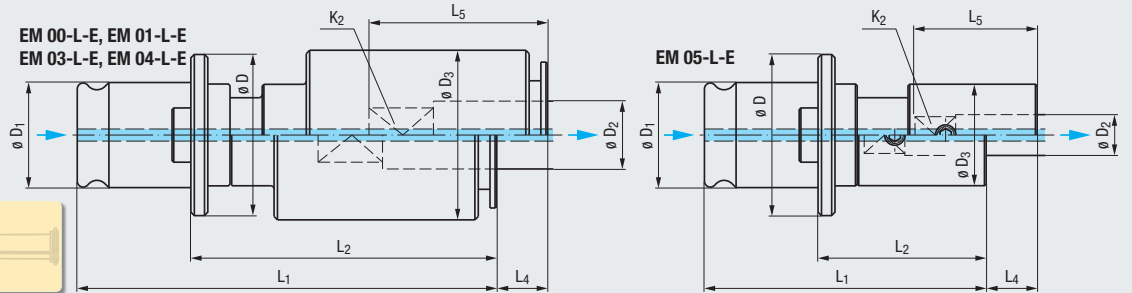
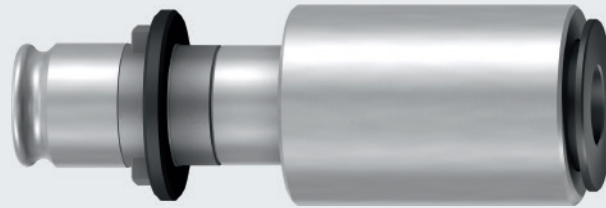


EM-L-E

DIN
ISO

Zum Schneiden von Feingewinden **MF**
For the cutting of fine threads

Mit Längennachstellung
With length adjustment



IKZ 1) **MMS MQL**

ρ_{max} 50bar (700psi) ρ_{max} 6bar (85psi)

EM

Zubehör Accessories

| Typ · Type | EM 00-L-E | EM 01-L-E | EM 03-L-E | EM 04-L-E | EM 05-L-E |
|-------------------|-----------|-----------|-----------|-----------|-----------|
| $\varnothing D$ | 23 | 30 | 48 | 70 | 92 |
| $\varnothing D_1$ | 13 | 19 | 31 | 48 | 60 |
| $\varnothing D_3$ | 18 | 30 | 50 | 60 | 58 |
| L_1 | 73 | 89 | 147 | 191 | 190 |
| L_2 | 54 | 67 | 112 | 135 | 127 |
| L_4 | 8 | 10 | 15 | 25 | 40 |

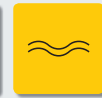
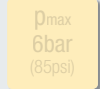
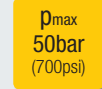
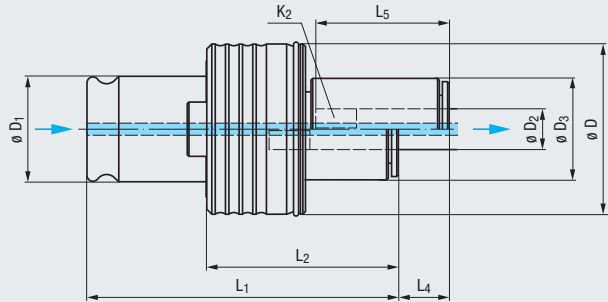
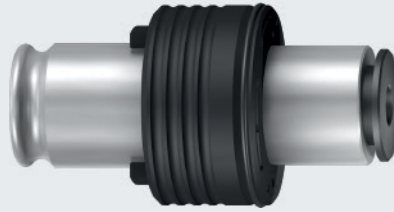
| Typ · Type | | EM 00-L-E/DIN | | EM 01-L-E/DIN | | EM 03-L-E/DIN | | EM 04-L-E/DIN | | EM 05-L-E/DIN | | |
|-----------------------------------|-------|-------------------------|-----------|-------------------------|-------|-------------------------|-------|-------------------------|-------|-------------------------|-------|---|
| Feingewinde Fine thread MF | | M8 - M11 | | M16 | | M27 - M30 | | M39 - M48 | | M52 - M60 | | |
| $\varnothing D_2$ | K_2 | Artikel-Nr. Article no. | L_5 | Artikel-Nr. Article no. | L_5 | Artikel-Nr. Article no. | L_5 | Artikel-Nr. Article no. | L_5 | Artikel-Nr. Article no. | L_5 | |
| 8 | 6,2 | M8 | M11 | F0820108.6 | 26 | ● | | | | | | |
| 12 | 9 | | M16 | | | F0821112.6 | 41 | ● | | | | |
| 20 | 16 | | M27 | | | F0823116.6 | 64 | ● | | | | |
| 22 | 18 | | M30 | | | F0823117.6 | 66 | ● | | | | |
| 32 | 24 | | M39 - M42 | | | | | F0824120.6 | 102 | ● | | |
| 36 | 29 | | M45 - M48 | | | | | F0824121.6 | 107 | ● | | |
| 40 | 32 | | M52 - M56 | | | | | | | F0825122.6 | 83 | ● |
| 45 | 35 | | M60 | | | | | | | F0825123.6 | 83 | ● |

| Typ · Type | | EM 00-L-E/ISO | | EM 01-L-E/ISO | | EM 03-L-E/ISO | | EM 04-L-E/ISO | | EM 05-L-E/ISO | | | |
|-----------------------------------|-------|-------------------------|-----------|-------------------------|-------|-------------------------|-------|-------------------------|-------|-------------------------|------------|----|---|
| Feingewinde Fine thread MF | | M8 - M11 | | M16 | | M27 - M33 | | M45 - M56 | | M52 - M68 | | | |
| $\varnothing D_2$ | K_2 | Artikel-Nr. Article no. | L_5 | Artikel-Nr. Article no. | L_5 | Artikel-Nr. Article no. | L_5 | Artikel-Nr. Article no. | L_5 | Artikel-Nr. Article no. | L_5 | | |
| 8 | 6,3 | M8 | M10 - M11 | F0820211.6 | 26 | ● | | | | | | | |
| 12,5 | 10 | | M16 | | | F0821215.6 | 42 | ● | | | | | |
| 20 | 16 | | M27 - M30 | | | F0823116.6 | 65 | ● | | | | | |
| 22,4 | 18 | | M33 | | | F0823220.6 | 67 | ● | | | | | |
| 31,5 | 25 | | M45 - M48 | | | | | F0824223.6 | 103 | ● | | | |
| 35,5 | 28 | | M52 - M56 | | | | | F0824224.6 | 106 | ● | F0825224.6 | 76 | ● |
| 40 | 31,5 | | M60 - M64 | | | | | | | | F0825225.6 | 79 | ● |
| 45 | 35,5 | | M68 | | | | | | | | F0825226.6 | 83 | ● |

1) Bei Verwendung von Gewindebohrern mit innerer Kühlschmierstoff-Zufuhr
If used with taps with internal coolant supply

Mit Längennachstellung, mit Überlastkupplung
With length adjustment, with overload clutch

EM-UL
DIN



| Typ · Type | EM 00-UL/DIN | EM 01-UL/DIN | EM 03-UL/DIN | EM 04-UL/DIN | EM 05-UL/DIN |
|------------------|--------------|--------------|--------------|--------------|--------------|
| | M1 - M10 | M3 - M14 | M4,5 - M24 | M14 - M36 | M22 - M48 |
| ∅ D | 24 | 33 | 50 | 72 | 95 |
| ∅ D ₁ | 13 | 19 | 31 | 48 | 60 |
| ∅ D ₃ | 13 | 18 | 30 | 47 | 58 |
| L ₁ | 49 | 55 | 94 | 137 | 205 |
| L ₂ | 29 | 33 | 59 | 81 | 142 |
| L ₄ | 8 | 10 | 15 | 25 | 40 |

| DIN | | DIN | | Artikel-Nr. Article no. | | Artikel-Nr. Article no. | | Artikel-Nr. Article no. | | Artikel-Nr. Article no. | | Artikel-Nr. Article no. | | | |
|------------------|----------------|-----------|-----------|-------------------------|----|-------------------------|--------------|-------------------------|---|-------------------------|----|-------------------------|------------|----|---|
| ∅ D ₂ | K ₂ | | | L ₅ | | L ₅ | | L ₅ | | L ₅ | | L ₅ | | | |
| 2,5 | 2,1 | M1 - M1,8 | | F0590100.1.6 | 21 | ● | | | | | | | | | |
| 2,5 | 2,1 | | M3,5 | F0590100.2.6 | 21 | ● | | | | | | | | | |
| 2,8 | 2,1 | M2 | | F0590101.1.6 | 21 | ● | | | | | | | | | |
| 2,8 | 2,1 | M2,5 | | F0590101.2.6 | 21 | ● | | | | | | | | | |
| 2,8 | 2,1 | | M4 | F0590101.3.6 | 21 | ● | | | | | | | | | |
| 3,5 | 2,7 | M3 | | F0590102.1.6 | 22 | ● | F0591102.1.6 | 23 | ● | | | | | | |
| 3,5 | 2,7 | | M4,5 - M5 | F0590102.2.6 | 22 | ● | F0591102.2.6 | 23 | ● | | | | | | |
| 4 | 3 | M3,5 | | F0590103.6 | 22 | ● | F0591103.6 | 22 | ● | | | | | | |
| 4,5 | 3,4 | M4 | | F0590104.1.6 | 22 | ● | F0591104.1.6 | 23 | ● | | | | | | |
| 4,5 | 3,4 | | M6 | F0590104.2.6 | 22 | ● | F0591104.2.6 | 23 | ● | | | | | | |
| 6 | 4,9 | M4,5 - M5 | | F0590106.1.6 | 24 | ● | F0591106.1.6 | 25 | ● | F0593106.1.6 | 38 | ● | | | |
| 6 | 4,9 | M6 | | F0590106.2.6 | 24 | ● | F0591106.2.6 | 25 | ● | F0593106.2.6 | 38 | ● | | | |
| 6 | 4,9 | | M8 | F0590106.3.6 | 24 | ● | F0591106.3.6 | 25 | ● | F0593106.3.6 | 38 | ● | | | |
| 7 | 5,5 | | M10 | F0590107.6 | 24 | ● | F0591107.6 | 25 | ● | F0593107.6 | 38 | ● | | | |
| 8 | 6,2 | M8 | | 2) | | | F0591108.6 | 26 | ● | F0593108.6 | 39 | ● | | | |
| 9 | 7 | | M12 | | | | F0591109.6 | 27 | ● | F0593109.6 | 40 | ● | | | |
| 10 | 8 | M10 | | | | | F0591110.6 | 28 | ● | F0593110.6 | 41 | ● | | | |
| 11 | 9 | | M14 | | | | F0591111.6 | 29 | ● | F0593111.6 | 42 | ● | F0594111.6 | 55 | ● |
| 12 | 9 | | M16 | | | | 2) | | | F0593112.6 | 42 | ● | F0594112.6 | 55 | ● |
| 14 | 11 | | M18 | | | | | | | F0593113.6 | 44 | ● | F0594113.6 | 57 | ● |
| 16 | 12 | | M20 | | | | | | | F0593114.6 | 45 | ● | F0594114.6 | 58 | ● |
| 18 | 14,5 | | M22 - M24 | | | | | | | F0593115.6 | 47 | ● | F0594115.6 | 60 | ● |
| 20 | 16 | | M27 | | | | | | | 2) | | | F0594116.6 | 62 | ● |
| 22 | 18 | | M30 | | | | | | | 2) | | | F0594117.6 | 64 | ● |
| 25 | 20 | | M33 | | | | | | | | | | F0594118.6 | 66 | ● |
| 28 | 22 | | M36 | | | | | | | | | | F0594119.6 | 68 | ● |
| 32 | 24 | | M39 - M42 | | | | | | | | | | 2) | | ● |
| 36 | 29 | | M45 - M48 | | | | | | | | | | 2) | | ● |
| 40 | 32 | | M60 - M64 | | | | | | | | | | 2) | | ● |
| 45 | 35 | | M68 | | | | | | | | | | 2) | | ● |

2) Schnellwechsel-Einsätze mit erweitertem Spannbereich Typ EM-UL-E siehe Seite 773
Quick-change adapters with extended clamping range type EM-UL-E, see page 773

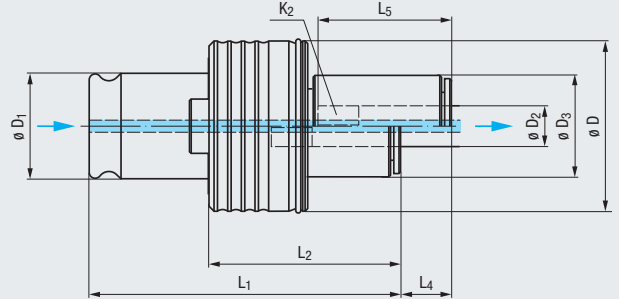
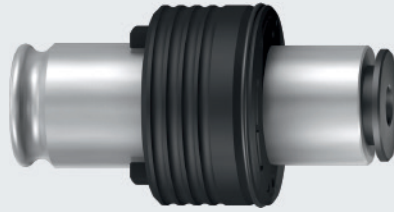


- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

EM-UL

ISO

Mit Längennachstellung, mit Überlastkupplung
With length adjustment, with overload clutch



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

IKZ 1)

MMS MQL

ρ_{max}
50bar
(700psi)

ρ_{max}
6bar
(85psi)

E-Lock

| Typ · Type | EM 00-UL/ISO | EM 01-UL/ISO | EM 03-UL/ISO | EM 04-UL/ISO | EM 05-UL/ISO |
|------------------|--------------|--------------|--------------|--------------|--------------|
| | M1 - M9 | M3,5 - M14 | M6 - M24 | M14 - M42 | M24 - M48 |
| ∅ D | 24 | 33 | 50 | 72 | 95 |
| ∅ D ₁ | 13 | 19 | 31 | 48 | 60 |
| ∅ D ₃ | 13 | 18 | 30 | 47 | 58 |
| L ₁ | 49 | 55 | 94 | 137 | 205 |
| L ₂ | 29 | 33 | 59 | 81 | 142 |
| L ₄ | 8 | 10 | 15 | 25 | 40 |

| DIN | | | | Artikel-Nr. Article no. | | Artikel-Nr. Article no. | | Artikel-Nr. Article no. | | Artikel-Nr. Article no. | | Artikel-Nr. Article no. | | | |
|------------------|----------------|-------------|-----------|-------------------------|----|-------------------------|--------------|-------------------------|---|-------------------------|----|-------------------------|------------|-----|---|
| ∅ D ₂ | K ₂ | | | L ₅ | | L ₅ | | L ₅ | | L ₅ | | L ₅ | | | |
| 2,24 | 1,8 | | M3 | F0590200.6 | 20 | ● | | | | | | | | | |
| 2,5 | 2 | M1 - M2 | | F0590201.1.6 | 20 | ● | | | | | | | | | |
| 2,5 | 2 | | M3,5 | F0590201.2.6 | 20 | ● | | | | | | | | | |
| 2,8 | 2,24 | M2,2 - M2,6 | | F0590202.6 | 21 | ● | | | | | | | | | |
| 3,15 | 2,5 | M3 | | F0590203.1.6 | 21 | ● | | | | | | | | | |
| 3,15 | 2,5 | | M4 | F0590203.2.6 | 21 | ● | | | | | | | | | |
| 3,55 | 2,8 | M3,5 | | F0590204.1.6 | 21 | ● | F0591204.1.6 | 22 | ● | | | | | | |
| 3,55 | 2,8 | | M4,5 | F0590204.2.6 | 21 | ● | F0591204.2.6 | 22 | ● | | | | | | |
| 4 | 3,15 | M4 | | F0590205.1.6 | 22 | ● | F0591205.1.6 | 23 | ● | | | | | | |
| 4 | 3,15 | | M5 | F0590205.2.6 | 22 | ● | F0591205.2.6 | 23 | ● | | | | | | |
| 4,5 | 3,55 | M4,5 | | F0590206.1.6 | 22 | ● | F0591206.1.6 | 23 | ● | | | | | | |
| 4,5 | 3,55 | | M6 | F0590206.2.6 | 22 | ● | F0591206.2.6 | 23 | ● | | | | | | |
| 5 | 4 | M5 | | F0590207.6 | 23 | ● | F0591207.6 | 24 | ● | | | | | | |
| 5,6 | 4,5 | | M7 | F0590208.6 | 23 | ● | F0591208.6 | 24 | ● | | | | | | |
| 6,3 | 5 | M6 | | F0590209.1.6 | 24 | ● | F0591209.1.6 | 25 | ● | F0593209.1.6 | 38 | ● | | | |
| 6,3 | 5 | | M8 | F0590209.2.6 | 24 | ● | F0591209.2.6 | 25 | ● | F0593209.2.6 | 38 | ● | | | |
| 7,1 | 5,6 | M7 | M9 | F0590210.6 | 24 | ● | F0591210.6 | 25 | ● | F0593210.6 | 38 | ● | | | |
| 8 | 6,3 | M8 | M10 - M11 | 2) | | | F0591211.6 | 26 | ● | F0593211.6 | 39 | ● | | | |
| 9 | 7,1 | M9 | M12 | | | | F0591212.6 | 27 | ● | F0593212.6 | 40 | ● | | | |
| 10 | 8 | M10 | | | | | F0591110.6 | 28 | ● | F0593110.6 | 41 | ● | | | |
| 11,2 | 9 | | M14 | | | | F0591214.6 | 29 | ● | F0593214.6 | 42 | ● | F0594214.6 | 55 | ● |
| 12,5 | 10 | | M16 | | | | 2) | | | F0593215.6 | 43 | ● | F0594215.6 | 56 | ● |
| 14 | 11,2 | | M18 - M20 | | | | | | | F0593216.6 | 44 | ● | F0594216.6 | 57 | ● |
| 16 | 12,5 | | M22 | | | | | | | F0593217.6 | 46 | ● | F0594217.6 | 59 | ● |
| 18 | 14 | | M24 | | | | | | | F0593218.6 | 48 | ● | F0594218.6 | 61 | ● |
| 20 | 16 | | M27 - M30 | | | | 2) | | | F0594116.6 | 63 | ● | F0595218.6 | 95 | ● |
| 22,4 | 18 | | M33 | | | | 2) | | | F0594220.6 | 65 | ● | F0595116.6 | 97 | ● |
| 25 | 20 | | M36 | | | | | | | F0594118.6 | 67 | ● | F0595220.6 | 99 | ● |
| 28 | 22,4 | | M39 - M42 | | | | | | | F0594222.6 | 69 | ● | F0595118.6 | 101 | ● |
| 31,5 | 25 | | M45 - M48 | | | | | | | 2) | | | F0595222.6 | 103 | ● |
| 35,5 | 28 | | M52 - M56 | | | | | | | 2) | | | F0595223.6 | 105 | ● |
| 40 | 31,5 | | M60 - M64 | | | | | | | 2) | | | 2) | | |
| 45 | 35,5 | | M68 | | | | | | | 2) | | | 2) | | |

2) Schnellwechsel-Einsätze mit erweitertem Spannbereich Typ EM-UL-E siehe Seite 773
Quick-change adapters with extended clamping range type EM-UL-E, see page 773

MF Zum Schneiden von Feingewinden
For the cutting of fine threads

Mit Längennachstellung, mit Überlastkupplung
With length adjustment, with overload clutch



EM-UL-E

DIN
ISO

Product Finder

Soft-synchro

Speed-synchro

KSN

MQL MMS

SFM

SWITCH-MASTER

GR, GR-S

HF

EM

Zubehör Accessories

Tech. Info

IKZ 1)

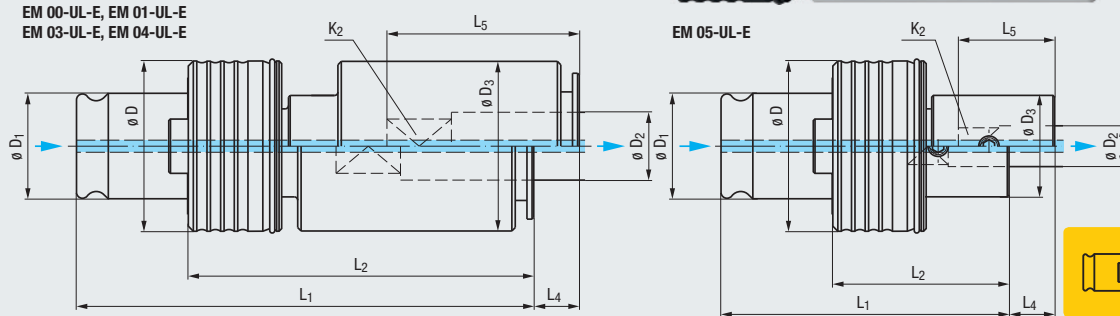
MMS MQL

p_{max} 50bar (700psi)

p_{max} 6bar (85psi)

IKZ 1)

EMUGE



| Typ · Type | EM 00-UL-E | EM 01-UL-E | EM 03-UL-E | EM 04-UL-E | EM 05-UL-E |
|-------------------|------------|------------|------------|------------|------------|
| $\varnothing D$ | 24 | 33 | 50 | 72 | 95 |
| $\varnothing D_1$ | 13 | 19 | 31 | 48 | 60 |
| $\varnothing D_3$ | 18 | 30 | 50 | 60 | 58 |
| L_1 | 73 | 89 | 147 | 191 | 190 |
| L_2 | 53,5 | 67 | 112 | 135 | 127 |
| L_4 | 8 | 10 | 15 | 25 | 40 |

| Typ · Type | EM 00-UL-E/DIN | EM 01-UL-E/DIN | EM 03-UL-E/DIN | EM 04-UL-E/DIN | EM 05-UL-E/DIN |
|-----------------------------------|----------------|----------------|----------------|-------------------|------------------------|
| Feingewinde Fine thread MF | M8 - M11 | M16 | M27 - M30 | M39 - M48 | M52 - M60 |
| DIN | | | | | |
| $\varnothing D_2$ | K_2 | | | | |
| 8 | 6,2 | M8 | M11 | F0830108.6 | 26 ● |
| 12 | 9 | | M16 | F0831112.6 | 41 ● |
| 20 | 16 | | M27 | F0833116.6 | 63 ● |
| 22 | 18 | | M30 | F0833117.6 | 65 ● |
| 32 | 24 | | M39 - M42 | F0834120.6 | 102 ● |
| 36 | 29 | | M45 - M48 | F0834121.6 | 107 ● |
| 40 | 32 | | M52 - M56 | | F0835122.6 83 ● |
| 45 | 35 | | M60 | | F0835123.6 83 ● |

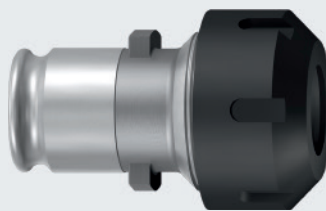
| Typ · Type | EM 00-UL-E/ISO | EM 01-UL-E/ISO | EM 03-UL-E/ISO | EM 04-UL-E/ISO | EM 05-UL-E/ISO |
|-----------------------------------|----------------|----------------|----------------|-------------------|------------------------|
| Feingewinde Fine thread MF | M8 - M11 | M16 | M27 - M33 | M45 - M56 | M52 - M68 |
| ISO | | | | | |
| $\varnothing D_2$ | K_2 | | | | |
| 8 | 6,3 | M8 | M10 - M11 | F0830211.6 | 26 ● |
| 12,5 | 10 | | M16 | F0831215.6 | 42 ● |
| 20 | 16 | | M27 - M30 | F0833116.6 | 64 ● |
| 22,4 | 18 | | M33 | F0833220.6 | 66 ● |
| 31,5 | 25 | | M45 - M48 | F0834223.6 | 103 ● |
| 35,5 | 28 | | M52 - M56 | F0834224.6 | 106 ● |
| 40 | 31,5 | | M60 - M64 | | F0835224.6 76 ● |
| 45 | 35,5 | | M68 | | F0835225.6 79 ● |
| | | | | | F0835226.6 83 ● |

1) Bei Verwendung von Gewindebohrern / Gewindefornern mit innerer Kühlschmierstoff-Zufuhr
If used with taps / cold-forming taps with internal coolant supply



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

EM-Z/ER/IKZ



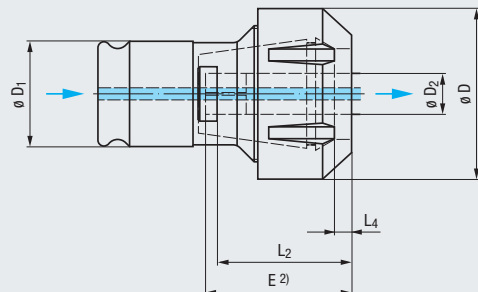
IKZ 1)

MMS MQL

p_{max}
50bar
(700psi)

p_{max}
6bar
(85psi)

E-Lock



| Typ Type | | $\varnothing D_2$ | | | $\varnothing D$ | $\varnothing D_1$ | L_2 | L_4 | Artikel-Nr. Article no. | |
|-----------------------|---------------------------|-------------------|------------|-------------|-----------------|-------------------|-------|-------|-------------------------|---|
| EM 00-Z/ER/IKZ | M2 - M8 (Nr.2 - 5/16) | 2,5 - 7 | ER 11 (GB) | Hi-Q/ER 11 | 19 | 13 | 23 | 0,9 | F0860001 | ● |
| EM 01-Z/ER/IKZ | M4 - M12 (Nr.8 - 7/16) | 4,5 - 10 | ER 20 (GB) | Hi-Q/ERC 20 | 34 | 19 | 34,5 | 5 | F0861001.13 | ● |
| EM 03-Z/ER/IKZ | M4 - M20 (Nr.8 - 3/4) | 4,5 - 16 | ER 32 (GB) | Hi-Q/ERC 32 | 50 | 31 | 41,5 | 5 | F0863001.13 | ● |

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 797
Clamping depths E, see page 797

EM00-Z/ER/IKZ:

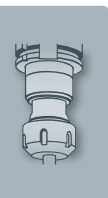
Spannmutter ohne integrierte Abdichtung ist im Lieferumfang enthalten
Clamping nut without integrated seal is included in the delivery

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

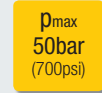
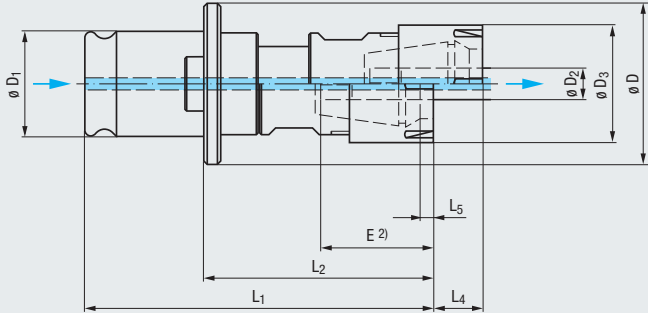
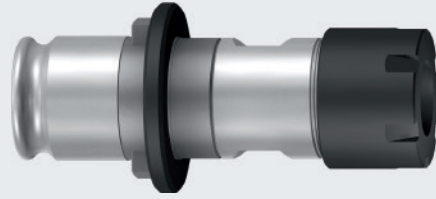
Zubehör Accessories

- Spannzangen Typ ER (GB)
Collets type ER (GB)
▶▶ 786 - 787
- Dichtscheiben Typ DS/ER
Sealing disks type DS/ER
▶▶ 789
- Spannmutter mit integrierter Abdichtung Typ Hi-Q/ERC 11
Clamping nut with integrated seal, type Hi-Q/ERC 11
▶▶ 791
- Spannschlüssel
Clamping wrench
▶▶ 794



Mit Längennachstellung
With length adjustment

EM-L/ER/IKZ



Product Finder

Soft-synchro

Speed-synchro

KSN

MQL MMS

SFM

SWITCH-MASTER

GR, GR-S

HF

EM

Zubehör Accessories

Tech. Info

| Typ Type | | $\varnothing D_2$ | | | $\varnothing D$ | $\varnothing D_1$ | $\varnothing D_3$ | L_1 | L_2 | L_4 | L_5 | Artikel-Nr. Article no. | |
|-----------------------|---------------------------|-------------------|------------|--------------|-----------------|-------------------|-------------------|-------|-------|-------|-------|----------------------------|---|
| EM 00-L/ER/IKZ | M2 - M8 (Nr.2 - 5/16) | 2,5 - 7 | ER 11 (GB) | Hi-Q/ERM 11 | 23 | 13 | 16 | 57,5 | 38 | 8 | 0,9 | F3500011 | ● |
| EM 01-L/ER/IKZ | M4 - M12 (Nr.8 - 7/16) | 4,5 - 9 | ER 16 (GB) | Hi-Q/ERMC 16 | 30 | 19 | 22 | 72 | 50,5 | 10 | 5 | F3501016 | ● |
| EM 03-L/ER/IKZ | M4 - M20 (Nr.8 - 3/4) | 4,5 - 16 | ER 25 (GB) | Hi-Q/ERMC 25 | 48 | 31 | 35 | 103 | 68 | 15 | 5 | F3503025 | ● |

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 797
Clamping depths E, see page 797

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)

» 786 - 787



Dichtscheiben Typ DS/ER
Sealing disks type DS/ER

» 789



Spannmutter mit integrierter Abdichtung Typ Hi-Q/ERMC 11
Clamping nut with integrated seal, type Hi-Q/ERMC 11

» 790



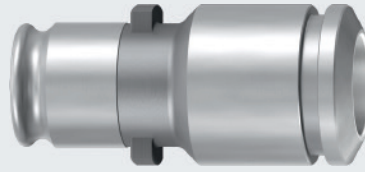
Spannschlüsselsatz
Set of clamping wrenches

» 794



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

EM/PGR/IKZ



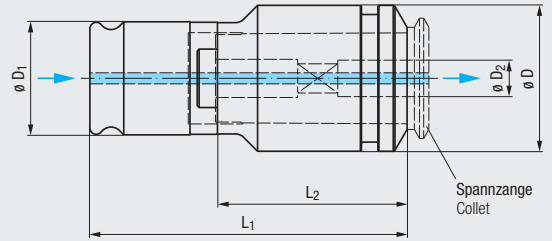
IKZ 1)

MMS MQL

ρ_{max}
50bar
(700psi)

ρ_{max}
6bar
(85psi)

E-Lock



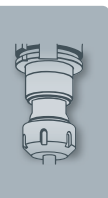
| Typ Type | | ø D ₂ | | ø D | ø D ₁ | L ₁ | L ₂ | Artikel-Nr. Article no. | |
|---------------|---------------------------|------------------|-------------|-----|------------------|----------------|----------------|----------------------------|---|
| EM 01/PGR/IKZ | M4 - M12 (Nr.8 - 7/16) | 4,5 - 10 | PGR 15 (GB) | 24 | 19 | 64 | 42 | F3561015 | ● |
| EM 03/PGR/IKZ | M8 - M20 (5/16 - 3/4) | 8 - 16 | PGR 25 (GB) | 40 | 31 | 87 | 52 | F3563025 | ● |

1) Bei Verwendung von Gewindebohrern / Gewindeformern mit innerer Kühlschmierstoff-Zufuhr
If used with taps / cold-forming taps with internal coolant supply

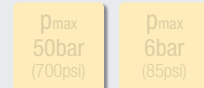
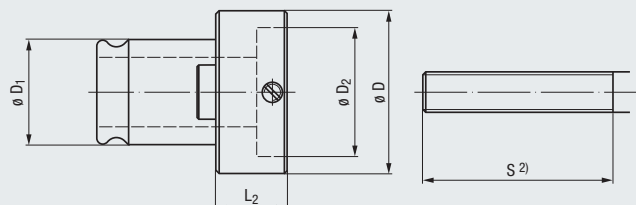
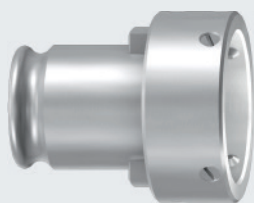
Zubehör Accessories



Spannzangen Typ PGR-GB
Collets type PGR-GB ▶▶ 796



EM-SE



Product Finder

Soft-synchro

Speed-synchro

KSN

MQL MMS

SFM

SWITCH-MASTER


GR, GR-S

HF

EM

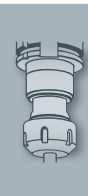
Zubehör Accessories

Tech. Info

| Typ Type |  | | $\varnothing D$ | $\varnothing D_1$ | S ²⁾ | $\varnothing D_2$ | L ₂ | Artikel-Nr. Article no. | |
|-----------------|---|-----------------|-----------------|-------------------|------------------------|-------------------|----------------|----------------------------|---|
| | $\varnothing d_2 \times h_1$ | | | | | | | | |
| EM 01-SE | 16 x 5 | M1 - M4 | 30 | 19 | 36 | 16 | 15 | F0621600 | ● |
| | 20 x 5 | M3 - M4 | 30 | 19 | 36 | 20 | 15 | F0621601 | ● |
| | 20 x 7 | M4,5 - M6 | 30 | 19 | 38 | 20 | 17 | F0621602 | ● |
| | 25 x 9 | M7 - M9 | 35 | 19 | 40 | 25 | 19 | F0621603 | ● |
| | 30 x 11 | M10 - M11 | 40 | 19 | 42 | 30 | 20,5 | F0621604 | ● |
| | 38 x 10 | M12x1 - M15x1,5 | 48 | 19 | 41 (M12); 10 (M14-M15) | 38 | 19,5 | F0621605 | ● |
| | 38 x 14 | M12 - M14 | 48 | 19 | 45 (M12); 14 (M14) | 38 | 23,5 | F0621606 | ● |
| EM 03-SE | 20 x 5 | M3 - M4 | 40 | 31 | 55 | 20 | 20 | F0623601 | ● |
| | 20 x 7 | M4,5 - M6 | 40 | 31 | 56 | 20 | 21,5 | F0623602 | ● |
| | 25 x 9 | M7 - M9 | 40 | 31 | 58 | 25 | 23,5 | F0623603 | ● |
| | 30 x 11 | M10 - M11 | 40 | 31 | 60 | 30 | 25 | F0623604 | ● |
| | 38 x 10 | M12x1 - M15x1,5 | 48 | 31 | 56 | 38 | 21 | F0623605 | ● |
| | 38 x 14 | M12 - M14 | 48 | 31 | 60 | 38 | 25 | F0623606 | ● |
| | 45 x 14 | M16x1 - M20x2 | 57 | 31 | 60 | 45 | 25 | F0623607 | ● |
| | 45 x 18 | M16 - M20 | 57 | 31 | 64 | 45 | 29 | F0623608 | ● |
| EM 04-SE | 30 x 11 | M10 - M11 | 60 | 48 | 84 | 30 | 29 | F0624604 | ● |
| | 38 x 10 | M12x1 - M15x1,5 | 60 | 48 | 83 | 38 | 28 | F0624605 | ● |
| | 38 x 14 | M12 - M14 | 60 | 48 | 87 | 38 | 32 | F0624606 | ● |
| | 45 x 14 | M16x1 - M20x2 | 60 | 48 | 87 | 45 | 32 | F0624607 | ● |
| | 45 x 18 | M16 - M20 | 60 | 48 | 91 | 45 | 36 | F0624608 | ● |
| | 55 x 16 | M22x1 - M26x1,5 | 72 | 48 | 85 | 55 | 30 | F0624609 | ● |
| | 55 x 22 | M22 - M24 | 72 | 48 | 90 | 55 | 35 | F0624610 | ● |
| | 65 x 18 | M27x1 - M36x2 | 82 | 48 | 87 | 65 | 32 | F0624611 | ● |
| | 65 x 25 | M27 - M36 | 82 | 48 | 93 | 65 | 38 | F0624612 | ● |

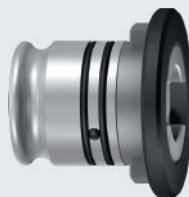
²⁾ Max. zu schneidende Gewindelänge
Max. thread length to be cut

Weitere Größen auf Anfrage
Further sizes upon request

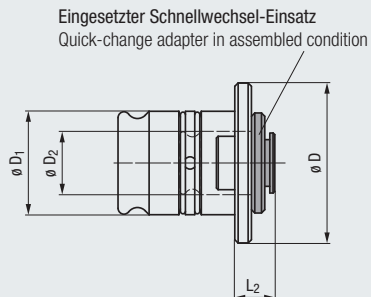


- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM**
- Zubehör Accessories
- Tech. Info

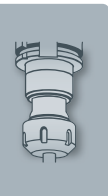
EM-R



| | | |
|--------------------------------|------------------------------|--|
| | | |
| p_{max} 50bar (700psi) | p_{max} 6bar (85psi) | |
| | | |
| | | |



| Typ Type | | $\varnothing D$ | $\varnothing D_1$ | $\varnothing D_2$ | L_2 | Artikel-Nr. Article no. | |
|-------------------|-------|-----------------|-------------------|-------------------|-------|----------------------------|---|
| EM 01/00-R | EM 00 | 30 | 19 | 13 | 11 | F0891000 | ● |
| EM 03/00-R | EM 00 | 48 | 31 | 13 | 12 | F0893000 | ● |
| EM 03/01-R | EM 01 | 48 | 31 | 19 | 12 | F0893001 | ● |
| EM 04/01-R | EM 01 | 70 | 48 | 19 | 13 | F0894001 | ● |
| EM 04/03-R | EM 03 | 70 | 48 | 31 | 17 | F0894003 | ● |
| EM 05/03-R | EM 03 | 92 | 60 | 31 | 24 | F0895003 | ● |
| EM 05/04-R | EM 04 | 92 | 60 | 48 | 27 | F0895004 | ● |

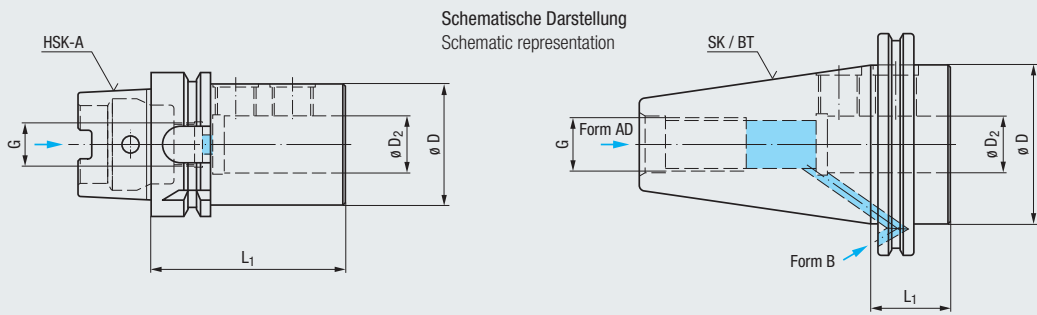
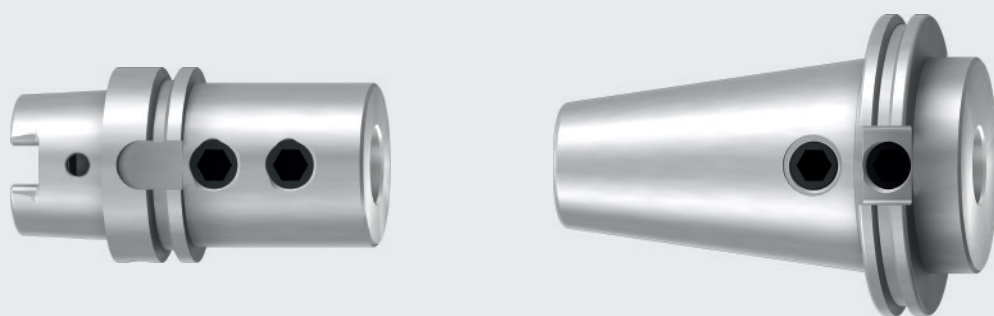




Zubehör für Aufnahmen und Gewindeschneidapparate Accessories for Tap Holders and Tapping Attachments



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info



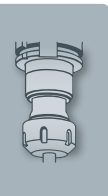
| Typ Type | Form Form | Schaftgröße Shank size | $\varnothing D_2$ | $\varnothing D$ | G | L ₁ | Artikel-Nr. Article no. | |
|------------------------------------|--------------|---------------------------|-------------------|-----------------|-----------|----------------|----------------------------|---|
| DIN 69893 A 1) 2) | | 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 | ● |
| DIN 69871 AD 1) | AD | SK 40 | 25 | 45 | M16 | 35 | F330006.01 | ● |
| | | SK 50 | 25 | 70 | M24 | 35 | F330006.02 | ● |
| | | SK 50 | 32 | 70 | M24 | 35 | F330006.05 | ● |
| DIN 69871 B 1) | B | SK 40 | 25 | 45 | M16 | 35 | F330006.03 | ● |
| | | SK 50 | 25 | 70 | M24 | 35 | F330006.04 | ● |
| | | SK 50 | 32 | 70 | M24 | 35 | F330006.06 | ● |
| DIN 2080 | 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 Metr. | AD | SK 40 | 25 | 45 | M16 | 35 | F330007.01 | ○ |
| | | SK 50 | 25 | 70 | M24 | 35 | F330007.02 | ○ |
| | | SK 50 | 32 | 70 | M24 | 35 | F330007.06 | ○ |
| 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 | ○ |
| JIS B 6339 (MAS 403 BT) | AD | BT 30 | 20 | 36 | M12 | 35 | F330008.04 | ● |
| | | BT 40 | 25 | 45 | M16 | 35 | F330008.01 | ● |
| | | BT 50 | 25 | 70 | M24 | 44 | F330008.02 | ● |
| | | BT 50 | 32 | 70 | M24 | 44 | F330008.03 | ● |

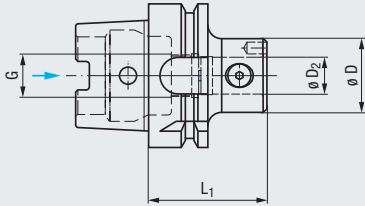
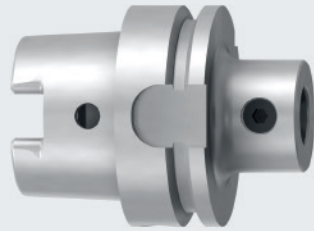
1) Mit Bohrung für Datenträger DIN 69873
With bore for data chip according to DIN 69873

Weitere Ausführungen auf Anfrage
Further designs upon request

2) Kühlschmierstoffrohre und Schlüssel siehe Seite 782 - 783, bitte extra bestellen
Coolant tubes and wrenches see page 782 - 783, please order separately

Spannschraube ist im Lieferumfang enthalten
The locking screw is included in the delivery





Product Finder

Soft-synchro

Speed-synchro

KSN

MQL MMS

SFM

SWITCH-MASTER

GR, GR-S

HF

EM

Zubehör Accessories

Tech. Info

new

| Typ Type | Schaftgröße Shank size | ø D ₂ | ø D | G | L ₁ | Artikel-Nr. Article no. | |
|-----------------------|---------------------------|------------------|--------|-----------|----------------|----------------------------|---|
| DIN 69893 A 1) | HSK-A63 | 16 | ABS 32 | M18 x 1 | 50 | F33000C.48 | ● |
| | HSK-A100 | 16 | ABS 32 | M24 x 1,5 | 60 | F33000C.50 | ● |

1) 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



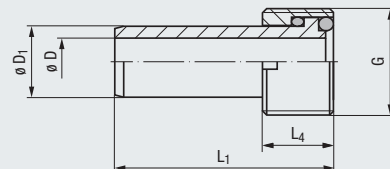
Kühlschmierstoffrohre, Füllstücke und Schlüssel
Coolant tubes, adapters and wrenches

» 782 - 783



- Product Finder
- Softsynchro
- Speedsynchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

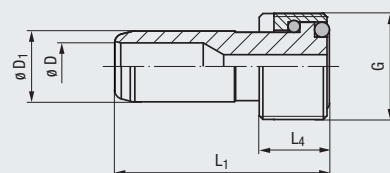
Kühlschmierstoffrohre Coolant tubes



DIN 69895

| Für Schaftgröße For shank size | $\varnothing D$ | $\varnothing D_1$ | L_4 | L_1 | G | Artikel-Nr. Article no. | |
|-----------------------------------|-----------------|-------------------|-------|-------|-----------|----------------------------|---|
| 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



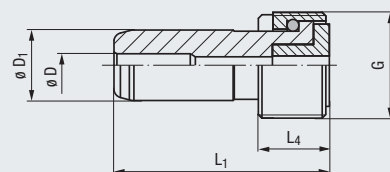
DIN 69090-4

Geeignet für Softsynchro® Modular/MQL
und Speedsynchro® Modular/MQL

Suitable for Softsynchro® Modular/MQL
and Speedsynchro® Modular/MQL

| new | | | | | | | |
|-----------------------------------|-----------------|-------------------|-------|-------|-----------|----------------------------|---|
| Für Schaftgröße For shank size | $\varnothing D$ | $\varnothing D_1$ | L_4 | L_1 | G | Artikel-Nr. Article no. | |
| 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

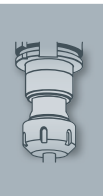


DIN 69090-4

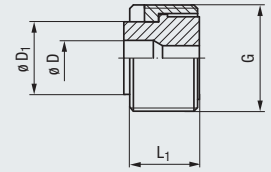
Geeignet für Softsynchro® Modular/MQL
und Speedsynchro® Modular/MQL

Suitable for Softsynchro® Modular/MQL
and Speedsynchro® Modular/MQL

| new | | | | | | | | |
|---|-----------------------------------|-----------------|-------------------|-------|-------|-----------|----------------------------|---|
| Für Schaftgröße For shank size | Für Schaftgröße For shank size | $\varnothing D$ | $\varnothing D_1$ | L_4 | L_1 | G | Artikel-Nr. Article no. | |
| Softsynchro® 1 Modular/MQL 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



Geeignet für Softsynchro® Modular/MQL
und Speedsynchro® Modular/MQL

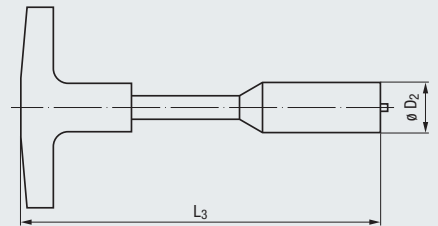
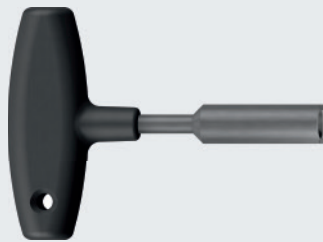
Suitable for Softsynchro® Modular/MQL
and Speedsynchro® Modular/MQL

DIN 69090-4

| new | | | | | |
|-----------------------------------|-----------------|-------------------|-------|-----------|----------------------------|
| Für Schaftgröße For shank size | $\varnothing D$ | $\varnothing D_1$ | L_1 | G | Artikel-Nr. Article no. |
| HSK-A40 | 4 | 8,4 | 8,3 | M12 x 1 | F355335.01 |
| HSK-A63 | 6 | 12,4 | 12,3 | M18 x 1 | F355135.01 |
| HSK-A100 | 10 | 16,4 | 16,4 | M24 x 1,5 | F355135.02 |

1) Füllstücke werden für HSK-A-Schäfte verwendet, d.h. Außenkontur entspricht DIN 69893 A, Innenkontur nach DIN 69893 C
Adapters are used for HSK-A shanks, that means outside contour acc. DIN 69893 A, inside contour acc. DIN 69893 C

Montageschlüssel
Assembly wrenches



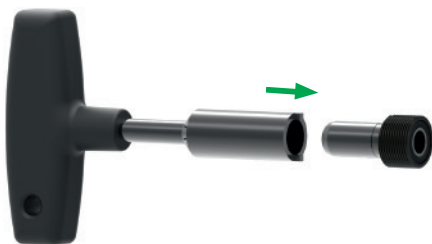
| Für Schaftgröße For shank size | $\varnothing D_2$ | L_3 | Artikel-Nr. Article no. |
|-----------------------------------|-------------------|-------|----------------------------|
| HSK-A40 | 11 | 111 | F330099.02 |
| HSK-A50 | 15 | 120 | F330099.03 |
| HSK-A63 | 17 | 122 | F330099.04 |
| HSK-A80 | 18,5 | 126 | F330099.05 |
| HSK-A100 | 22 | 141 | F330099.06 |

Montage des Kühlschmierstoffrohrs im HSK-Schaft

1. Montageschlüssel auf das Kühlschmierstoffrohr stecken.
Wichtig: Auf die Stellung der Zapfen zu den Nuten achten!

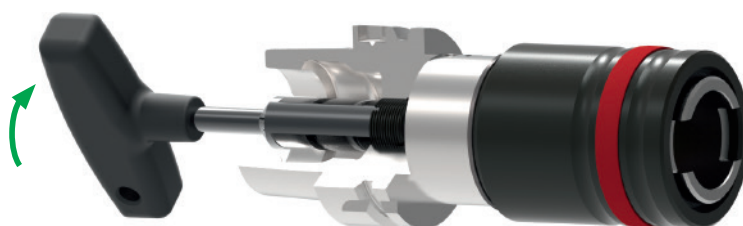
Assembly of the coolant tube in the hollow taper (HSK) shank

1. Put assembly wrench on the coolant tube.
Important: Watch the position of the pins against the grooves

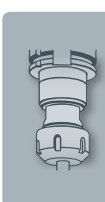


2. Kühlschmierstoffrohr in den Schaft einschrauben.

2. Screw coolant tube into the shank.

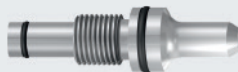


- Product Finder
- Softsynchro
- Speedsynchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info



- Product Finder
- Softsynchro
- Speedsynchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

Von beiden Seiten justierbar, für Werkzeugschäfte mit Innenzentrierung 60°
Adjustable from both sides, for tool shanks with female centre 60°

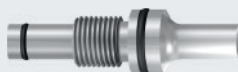


Geeignet für Softsynchro® Modular/IKZ und Softsynchro® Modular/MQL

Suitable for Softsynchro® Modular/IKZ and Softsynchro® Modular/MQL

| new | | | | | | |
|--|---|------------------|-------------------|--|----------------------------|---|
| Für Ausführung For design | Werkzeugkegel Tool taper | | $\varnothing D_1$ | | Artikel-Nr. Article no. | |
| Softsynchro® 1 Modular/IKZ Softsynchro® 1 Modular/MQL | Innenkegel Internal taper 60° | M4,5 - M10 | 6 / 7 | | F355188.01 | ● |
| | | M8, M9, M11, M12 | 8 / 9 | | F355188.02 | ● |
| | | M10 | 10 | | F355188.03 | ● |
| Softsynchro® 3 Modular/IKZ Softsynchro® 3 Modular/MQL | | M12 | 9 | | F355388.01 | ● |
| | | M10 - M16 | 10 - 12 | | F355388.02 | ● |
| | | M18 - M20 | 14 - 16 | | F355388.03 | ● |

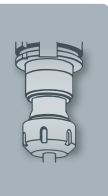
Von beiden Seiten justierbar, für Werkzeugschäfte mit Außenzentrierung 90°
Adjustable from both sides, for tool shanks with male centre 90°



Geeignet für Softsynchro® Modular/MQL

Suitable for Softsynchro® Modular/MQL

| new | | | | | | |
|-----------------------------------|---|---------------|-------------------|--|----------------------------|---|
| Für Ausführung For design | Werkzeugkegel Tool taper | | $\varnothing D_1$ | | Artikel-Nr. Article no. | |
| Softsynchro® 1 Modular/MQL | Außenkegel External taper 90° | M4,5 - M6, M8 | 6 | | F355188.04 | ● |
| | | M7, M10 | 7 | | F355188.05 | ● |
| | | M8 | 8 | | F355188.06 | ● |
| | | M12 | 9 | | F355188.07 | ● |
| | | M10 | 10 | | F355188.08 | ● |
| Softsynchro® 3 Modular/MQL | | M12 | 9 | | F355388.04 | ● |
| | | M10 | 10 | | F355388.05 | ● |
| | | M14 - M16 | 11 - 12 | | F355388.06 | ● |
| | | M18 | 14 | | F355388.07 | ● |
| | | M20 | 16 | | F355388.08 | ● |



Für Werkzeugschäfte mit Innenzentrierung 60°
For tool shanks with female centre 60°



Geeignet für Speedsynchro® Modular/IKZ
und Speedsynchro® Modular/MQL

Suitable for Speedsynchro® Modular/IKZ
and Speedsynchro® Modular/MQL

| new | | | | | | |
|--|---|------------|------------------|--|----------------------------|---|
| Für Ausführung For design | Werkzeugkegel Tool taper | | ø D ₁ | | Artikel-Nr. Article no. | |
| Speedsynchro® Modular/IKZ Speedsynchro® Modular/MQL | Innenkegel Internal taper 60° | M4,5 - M10 | 6 / 7 | | F375188.01 | ● |
| | | M8 | 8 | | F375188.02 | ● |
| | | | | | | |

Für Werkzeugschäfte mit Außenzentrierung 90°
For tool shanks with male centre 90°



Geeignet für Speedsynchro® Modular/MQL

Suitable for Speedsynchro® Modular/MQL

| new | | | | | | |
|------------------------------|---|---------------|------------------|--|----------------------------|---|
| Für Ausführung For design | Werkzeugkegel Tool taper | | ø D ₁ | | Artikel-Nr. Article no. | |
| Speedsynchro® Modular/MQL | Außenkegel External taper 90° | M4,5 - M6. M8 | 6 | | F375188.03 | ● |
| | | M7 | 7 | | F375188.04 | ● |
| | | M8 | 8 | | F375188.05 | ● |

Product
Finder

Soft-
synchro

Speed-
synchro

KSN

MQL
MMS

SFM

SWITCH-
MASTER

GR, GR-S

HF

EM

Zubehör
Accessories

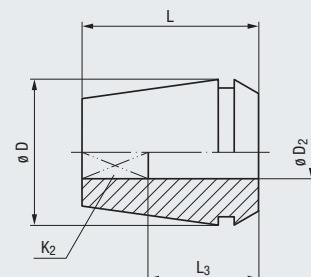
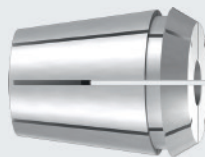
Tech. Info



ER-GB

DIN ISO 15488
(DIN 6499)

Mit Vierkantmitnahme
With square drive



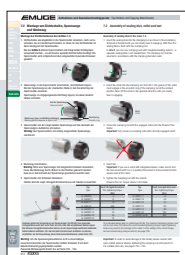
- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

p_{max}
50bar
(700psi)

p_{max}
100bar
(1400psi)

| Typ · Type | | ER 11 GB | ER 16 GB | ER 20 GB | ER 25 GB | ER 32 GB | ER 40 GB | ER 50 GB | | | | | | | | |
|-------------------|-------|-----------|-----------|----------------------------|----------------|----------------------------|----------------|----------------------------|----------------|----------------------------|----------------|----------------------------|----------------|----------------------------|----------------|----|
| | | M2 - M8 | M4 - M12 | M4 - M12 | M4 - M20 | M4 - M20 | M10 - M30 | M30 - M42 | | | | | | | | |
| $\varnothing D$ | | 11 | 16 | 20 | 25 | 32 | 40 | 51 | | | | | | | | |
| L | | 18 | 27,5 | 31,5 | 34 | 40 | 46 | 60 | | | | | | | | |
| DIN | | ER 11 GB | | ER 16 GB | | ER 20 GB | | ER 25 GB | | ER 32 GB | | ER 40 GB | | ER 50 GB | | |
| $\varnothing D_2$ | K_2 | | | Artikel-Nr. Article no. | L ₃ | Artikel-Nr. Article no. | L ₃ | Artikel-Nr. Article no. | L ₃ | Artikel-Nr. Article no. | L ₃ | Artikel-Nr. Article no. | L ₃ | Artikel-Nr. Article no. | L ₃ | |
| 2,8 | 2,1 | M2 - M2,6 | M4 | F0942011.2.8 | 12 | | | | | | | | | | | |
| 3,5 | 2,7 | M3 | M4,5 - M5 | F0942011.3.5 | 14 | | | | | | | | | | | |
| 4 | 3 | M3,5 | M5,5 | F0942011.4 | 14 | | | | | | | | | | | |
| 4,5 | 3,4 | M4 | M6 | F0942011.4.5 | 14 | F0942016.4.5 | 15 | F0942020.4.5 | 15 | F0942025.4.5 | 15 | F0942032.4.5 | 15 | | | |
| 6 | 4,9 | M4,5 - M6 | M8 | F0942011.6 | 14 | F0942016.6 | 18 | F0942020.6 | 18 | F0942025.6 | 18 | F0942032.6 | 18 | | | |
| 7 | 5,5 | M7 | M9 - M10 | | | F0942016.7 | 18 | F0942020.7 | 18 | F0942025.7 | 18 | F0942032.7 | 18 | | | |
| 8 | 6,2 | M8 | M11 | | | F0942016.8 | 22 | F0942020.8 | 22 | F0942025.8 | 22 | F0942032.8 | 22 | | | |
| 9 | 7 | M9 | M12 | | | F0942016.9 | 22 | F0942020.9 | 22 | F0942025.9 | 22 | F0942032.9 | 22 | F0942040.9 | 22 | |
| 10 | 8 | M10 | | | | | | F0942020.10 | 25 | F0942025.10 | 25 | F0942032.10 | 25 | F0942040.10 | 25 | |
| 11 | 9 | | M14 | | | | | | | F0942025.11 | 25 | F0942032.11 | 25 | F0942040.11 | 25 | |
| 12 | 9 | | M16 | | | | | | | F0942025.12 | 25 | F0942032.12 | 25 | F0942040.12 | 25 | |
| 14 | 11 | | M18 | | | | | | | F0942025.14 | 25 | F0942032.14 | 25 | F0942040.14 | 25 | |
| 16 | 12 | | M20 | | | | | | | F0942025.16 | 25 | F0942032.16 | 25 | F0942040.16 | 25 | |
| 18 | 14,5 | | M22 - M24 | | | | | | | | | | | F0942040.18 | 25 | |
| 20 | 16 | | M27 | | | | | | | | | | | F0942040.20 | 28 | |
| 22 | 18 | | M30 | | | | | | | | | | | F0942040.22 | 28 | |
| 25 | 20 | | M33 | | | | | | | | | | | | F0942050.22 | 41 |
| 28 | 22 | | M36 | | | | | | | | | | | | F0942050.25 | 41 |
| 32 | 24 | | M39 - M42 | | | | | | | | | | | | F0942050.28 | 41 |
| | | | | | | | | | | | | | | | F0942050.32 | 41 |

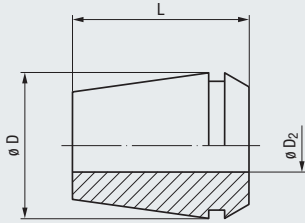
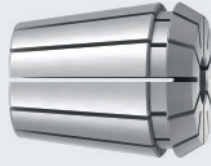
Weitere Ausführungen auf Anfrage
Further designs upon request



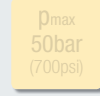
Montage von Dichtscheibe,
Spannzange und Werkzeug
siehe Seite 812

Assembly of sealing disk,
collet and tool,
see page 812

Ohne Vierkantmitnahme
Without square drive



ER
DIN ISO 15488
(DIN 6499)



Product Finder

Soft-synchro

Speed-synchro

KSN

MQL MMS

SFM

SWITCH-MASTER


GR, GR-S

HF

EM

Zubehör
Accessories

Tech. Info

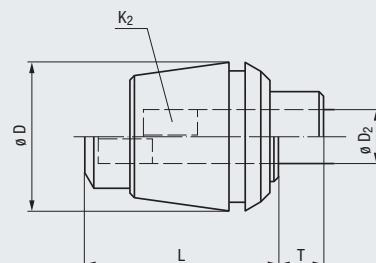
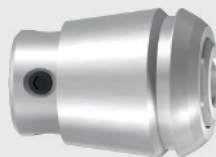
| Typ · Type | ER 08 | ER 11 | ER 16 | ER 20 | ER 32 | ER 40 | ER 50 |
|--|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
|  | 1 - 4,5 | 1,5 - 7 | 9 - 10 | 3 - 11 | 3 - 18 | 12 - 22 | 36 |
| ∅ D | 8 | 11 | 16 | 20 | 32 | 40 | 50 |
| L | 13,6 | 18 | 27,5 | 31,5 | 40 | 46 | 60 |
| ∅ D ₂ | Artikel-Nr. Article no. | Artikel-Nr. Article no. | Artikel-Nr. Article no. | Artikel-Nr. Article no. | Artikel-Nr. Article no. | Artikel-Nr. Article no. | Artikel-Nr. Article no. |
| 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



PCM ET1

Mit Vierkantmitnahme und Längenausgleich auf Zug
With square drive and length compensation on tension



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories

IKZ

MMS MQL

p_{max}
50bar
(700psi)

p_{max}
100bar
(1400psi)

↔
T

🌀

| 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 |
| ∅ D | 11,5 | 21 | 33 | 41 |
| L | 21,5 | 31 | 43 | 54 |

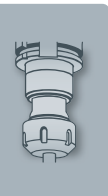
DIN

| ∅ D ₂ | K ₂ | | | Artikel-Nr. Article no. | | Artikel-Nr. Article no. | | Artikel-Nr. Article no. | | Artikel-Nr. Article no. | |
|------------------|----------------|-----------|-----------|----------------------------|---|----------------------------|---|----------------------------|---|----------------------------|---|
| | | | | | | | | | | | |
| 2,8 | 2,1 | M2 - M2,6 | M4 | F0945011.2.8 | ● | F0945020.2.8 | ● | | | | |
| 3,5 | 2,7 | M3 | M4,5 - M5 | | | F0945020.3.5 | ● | | | | |
| 4 | 3 | M3,5 | M5,5 | | | F0945020.4 | ● | | | | |
| 4,5 | 3,4 | M4 | M6 | | | F0945020.4.5 | ● | F0945032.4.5 | ● | | |
| 6 | 4,9 | M4,5 - M6 | M8 | | | F0945020.6 | ● | F0945032.6 | ● | F0945040.6 | ● |
| 7 | 5,5 | M7 | M9 - M10 | | | F0945020.7 | ● | F0945032.7 | ● | F0945040.7 | ● |
| 8 | 6,2 | M8 | M11 | | | | | F0945032.8 | ● | F0945040.8 | ● |
| 9 | 7 | M9 | M12 | | | | | F0945032.9 | ● | F0945040.9 | ● |
| 10 | 8 | M10 | | | | | | F0945032.10 | ● | F0945040.10 | ● |
| 11 | 9 | | M14 | | | | | F0945032.11 | ● | F0945040.11 | ● |
| 12 | 9 | | M16 | | | | | F0945032.12 | ● | F0945040.12 | ● |
| 14 | 11 | | M18 | | | | | | | F0945040.14 | ● |
| 16 | 12 | | M20 | | | | | | | F0945040.16 | ● |

Die Klemmung des Gewindewerkzeugs erfolgt über 4 Gewindestifte am Vierkant
The threading tool is clamped by means of 4 worm screws on the square

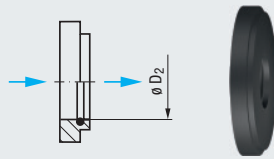
Weitere Ausführungen auf Anfrage
Further designs upon request

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



Dichtscheiben
Sealing disks

DS/ER

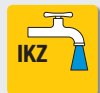
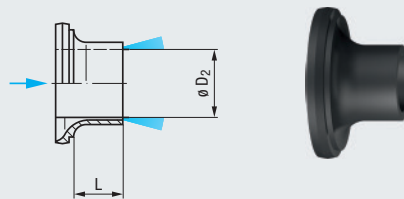


p_{max}
100bar
(1400psi)

| Typ · Type | | DS/ER 16 | | DS/ER 20 | | DS/ER 25 | | DS/ER 32 | | DS/ER 40 | | DS/ER 50 | |
|-------------------|-------|-----------|-----------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| DIN | | | | Artikel-Nr. Article no. | Artikel-Nr. Article no. | Artikel-Nr. Article no. | Artikel-Nr. Article no. | Artikel-Nr. Article no. | Artikel-Nr. Article no. | Artikel-Nr. Article no. | Artikel-Nr. Article no. | Artikel-Nr. Article no. | Artikel-Nr. Article no. |
| $\varnothing D_2$ | K_2 | | | | | | | | | | | | |
| 4 | 3 | M3,5 | M5,5 | F0941516.4 | ● | | | | | | | | |
| 4,5 | 3,4 | M4 | M6 | F0941516.4.5 | ● | F0941520.4.5 | ● | F0941525.4.5 | ● | F0941532.4.5 | ○ | | |
| 6 | 4,9 | M4,5 - M6 | M8 | 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 | ● |
| 25 | 20 | | M33 | | | | | | | | | F0941550.22 | ● |
| 28 | 22 | | M36 | | | | | | | | | F0941550.25 | ● |
| 32 | 24 | | M39 - M42 | | | | | | | | | F0941550.28 | ● |
| 36 | 29 | | M45 - M48 | | | | | | | | | F0941550.32 | ● |
| | | | | | | | | | | | | F0941550.36 | ● |

Kùhlscheiben
Coolant flush disks

KS/ER

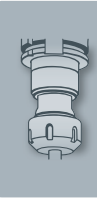


p_{max}
100bar
(1400psi)

| Typ · Type | | KS/ER 16 | | KS/ER 20 | | KS/ER 32 | | | | |
|-------------------|-------|-----------|----------|----------------------------|----|----------------------------|-------------|----------------------------|----|---|
| DIN | | | | Artikel-Nr. Article no. | L | Artikel-Nr. Article no. | L | Artikel-Nr. Article no. | L | |
| $\varnothing D_2$ | K_2 | | | | | | | | | |
| 4 | 3 | M3,5 | M5,5 | F0941716.4 | 11 | ● | | | | |
| 6 | 4,9 | M4,5 - M6 | M8 | F0941716.6 | 11 | ● | F0941720.6 | 11 | ● | |
| 7 | 5,5 | M7 | M9 - M10 | F0941716.7 | 11 | ● | F0941720.7 | 11 | ● | |
| 8 | 6,2 | M8 | M11 | F0941716.8 | 11 | ● | F0941720.8 | 11 | ● | |
| 9 | 7 | M9 | M12 | F0941716.9 | 11 | ● | F0941720.9 | 11 | ● | |
| 10 | 8 | M10 | | F0941716.10 | 2 | ● | F0941720.10 | 11 | ● | |
| 11 | 9 | | M14 | | | | | F0941732.10 | 11 | ● |
| 12 | 9 | | M16 | | | | | F0941732.11 | 11 | ● |
| 14 | 11 | | M18 | | | | | F0941732.12 | 11 | ● |
| 16 | 12 | | M20 | | | | | F0941732.14 | 11 | ● |
| | | | | | | | | F0941732.16 | 11 | ● |

● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry

- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehôr
Accessories
- Tech. Info



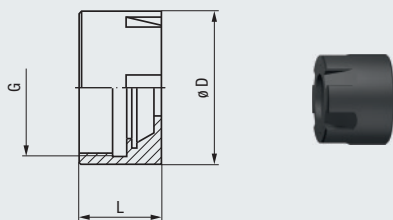
- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

Hi-Q/ERM

Ohne Abdichtung
Without sealing



p_{max}
100bar
(1400psi)



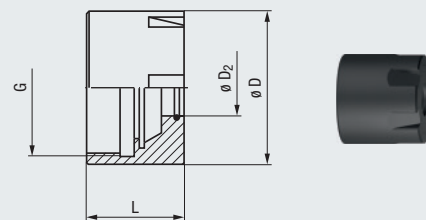
| Typ · Type | Hi-Q/ERM 8 | Hi-Q/ERM 11 |
|------------------------------|----------------------------|----------------------------|
| $\emptyset D$ | 12 | 16 |
| L | 10,8 | 12 |
| G | M10 x 0,75 | M13 x 0,75 |
| Für Spannzange For collet | Artikel-Nr. Article no. | Artikel-Nr. Article no. |
| ER 08 | F0940308 | F0940311 |
| ER 11 (GB) | | |

Hi-Q/ERMC

Mit integrierter Abdichtung
With integrated sealing



p_{max}
100bar
(1400psi)



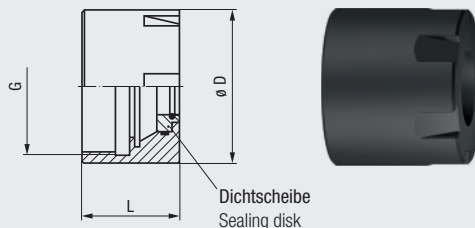
| Typ · Type | Hi-Q/ERMC 11 | |
|--------------------------------|------------------------------|----------------------------|
| $\emptyset D$ | 16 | |
| L | 14,6 | |
| G | M13 x 0,75 | |
| DIN | | |
| $\emptyset D_2$ K ₂ | Für Spannzange For collet | Artikel-Nr. Article no. |
| 6 4,9 M4,5 - M6 | ER 11 (GB) | F0943511.6 |
| 7 5,5 M7 M9 - M10 | ER 11 (GB) | F0943511.7 |

Hi-Q/ERMC

Für Dichtscheiben
For sealing disks



p_{max}
100bar
(1400psi)



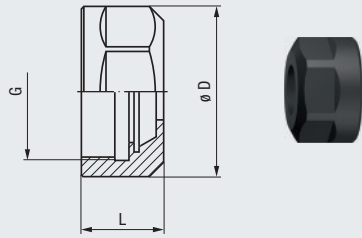
| Typ · Type | Hi-Q/ERMC 16 | Hi-Q/ERMC 20 | Hi-Q/ERMC 25 |
|------------------------------|------------------------------|----------------------------|----------------------------|
| $\emptyset D$ | 22 | 28 | 35 |
| L | 22 | 24 | 25 |
| G | M19 x 1 | M24 x 1 | M30 x 1 |
| Für Spannzange For collet | Dichtscheibe Sealing disk | Artikel-Nr. Article no. | Artikel-Nr. Article no. |
| ER 16 (GB) | DS/ER 16 | F0943516 | |
| ER 20 (GB) | DS/ER 20 | F0943520 | |
| ER 25 (GB) | DS/ER 25 | | F0943525 |

Dichtscheiben sind nicht im Lieferumfang enthalten, bitte extra bestellen (siehe Seite 789)
Sealing disks are not included in the delivery, please order separately (see page 789)



Ohne Abdichtung
Without sealing

Hi-Q/ER

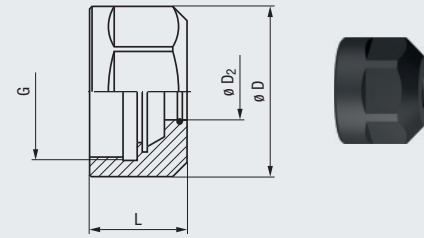


p_{max}
100bar
(1400psi)

| | | |
|------------------------------|-----------------------------------|---|
| Typ · Type | Hi-Q/ER 11 | |
| ø D | 19 | |
| L | 11,3 | |
| G | M14 x 0,75 | |
| Für Spannzange For collet | Artikel-Nr. Article no. | |
| ER 11 (GB) | F0940911 | ● |

Mit integrierter Abdichtung
With integrated sealing

Hi-Q/ERC



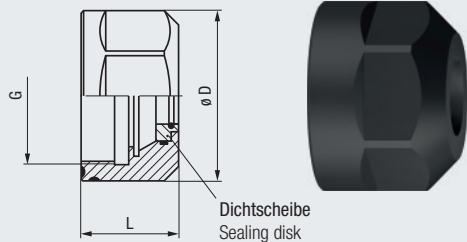
p_{max}
100bar
(1400psi)

| | | |
|------------------|--------------------|-----------------------------------|
| Typ · Type | Hi-Q/ERC 11 | |
| ø D | 19 | |
| L | 14,6 | |
| G | M14 x 0,75 | |
| DIN | | |
| ø D ₂ | K ₂ | für Spannzange for collet |
| 6 | 4,9 | M4,5 - M6 |
| 7 | 5,5 | M7 |
| | | Artikel-Nr. Article no. |
| | | ER 11 (GB) |
| | | ER 11 (GB) |
| | | F0940711.6 |
| | | F0940711.7 |

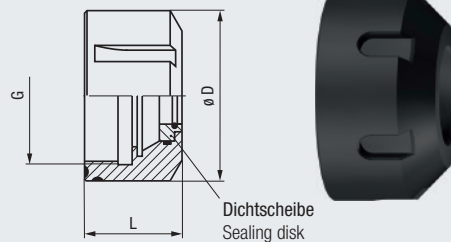
Für Dichtscheiben
For sealing disks

Hi-Q/ERC

Hi-Q/ERC 16-20



Hi-Q/ERC 25-40

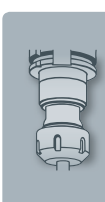


p_{max}
100bar
(1400psi)

| | | | | | | |
|------------------------------|------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| Typ · Type | | Hi-Q/ERC 16 | Hi-Q/ERC 20 | Hi-Q/ERC 25 | Hi-Q/ERC 32 | Hi-Q/ERC 40 |
| ø D | | 28 | 34 | 42 | 50 | 63 |
| L | | 22,5 | 24 | 25 | 27,5 | 30,5 |
| G | | M22 x 1,5 | M25 x 1,5 | M32 x 1,5 | M40 x 1,5 | M50 x 1,5 |
| Für Spannzange For collet | Dichtscheibe Sealing disk | Artikel-Nr. Article no. | Artikel-Nr. Article no. | Artikel-Nr. Article no. | Artikel-Nr. Article no. | Artikel-Nr. Article no. |
| ER 16 (GB) | DS/ER 16 | F0940716 | ● | | | |
| ER 20 (GB) | DS/ER 20 | | F0940720 | ● | | |
| ER 25 (GB) | DS/ER 25 | | | F0940725 | ● | |
| ER 32 (GB) | DS/ER 32 | | | | F0940732 | ● |
| ER 40 (GB) | DS/ER 40 | | | | | F0940740 |

Dichtscheiben sind nicht im Lieferumfang enthalten, bitte extra bestellen (siehe Seite 789)
Sealing disks are not included in the delivery, please order separately (see page 789)

- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MOQ MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör
Accessories
- Tech. Info

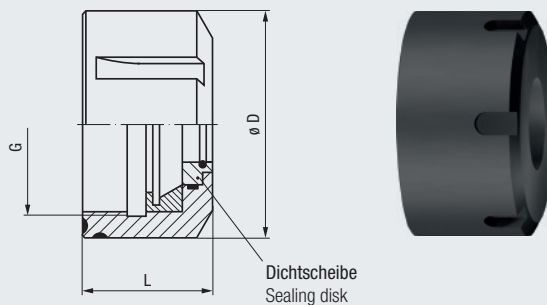


Für Dichtscheiben
For sealing disks

Hi-Q/ERBC

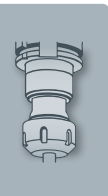


p_{max}
100bar
(1400psi)



| | | | | | | | |
|------------------------------|------------------------------|-----------------------------------|---|--|--|--|--|
| Typ · Type | | Hi-Q/ERBC 50 AF | | | | | |
| | ø D | 77,7 | | | | | |
| | L | 42,5 | | | | | |
| | G | M64 x 2 | | | | | |
| Für Spannzange For collet | Dichtscheibe Sealing disk | Artikel-Nr. Article no. | | | | | |
| ER 50 (GB) | DS/ER 50 | F0941650 | ● | | | | |

Dichtscheiben sind nicht im Lieferumfang enthalten, bitte extra bestellen (siehe Seite 789)
Sealing disks are not included in the delivery, please order separately (see page 789)



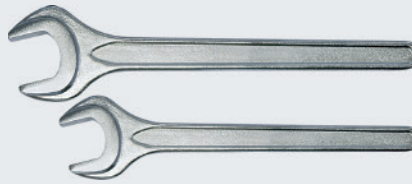
Spannschlüsselsätze
Sets of clamping wrenches

Softsynchro®

Softsynchro® Micro, Softsynchro® 0



Softsynchro® 1



Softsynchro® 3, Softsynchro® 4



Softsynchro® 5



Product Finder

Softsynchro

Speedsynchro

KSN

MQL MMS

SFM

SWITCH-MASTER

GR, GR-S

HF

EM

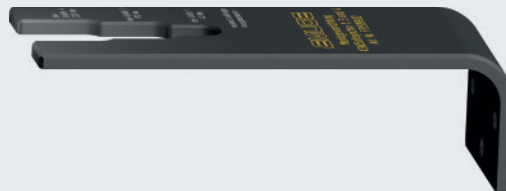
Zubehör Accessories

Tech. Info

| Für Spannzangen-Aufnahmen For collet holders | Bestandteile Components | Artikel-Nr. Article no. | |
|--|----------------------------|----------------------------|---|
| Softsynchro® Micro | E8M / SW8 | F315098.03 | ● |
| Softsynchro® 0 | E11M / SW14 | F315098.02 | ● |
| Softsynchro® 1 | SW30 / SW19 | F315198.02 | ● |
| Softsynchro® 1 für angetriebene Werkzeuge · for driven tools | SW25 / SW17 | F315198.03 | ● |
| Softsynchro® 3 | E32 / SW32 | F315398.01 | ● |
| Softsynchro® 4 | E40 / SW41 | F315498.01 | ● |
| Softsynchro® 5 | E50 | F315598.02 | ● |

Montagevorrichtung
Assembly device

Softsynchro®



| Für Spannzangen-Aufnahmen For collet holders | Artikel-Nr. Article no. | |
|---|----------------------------|---|
| Softsynchro® 1 - Softsynchro® 4 | F315199.02 | ● |

Montagevorrichtung
Assembly device

Speedsynchro® Modular



| Für Spannzangen-Aufnahmen mit integrierter Übersetzung For collet holders with integrated transmission | Artikel-Nr. Article no. | |
|---|----------------------------|---|
| Speedsynchro® Modular | F3741909 | ● |



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- ML MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

KSN/HD/ER

Spannschlüsselsätze
Sets of clamping wrenches

KSN 1/HD/ER



KSN 3/HD/ER



| | Für Spannzangen-Aufnahmen For collet holders | Bestandteile Components | Artikel-Nr. Article no. | |
|--|---|----------------------------|----------------------------|---|
| | KSN 1/HD/ER | E20M / SW24 | F323198.01 | ● |
| | KSN 3/HD/ER | E32 / SW34 | F323398.01 | ● |

EM-L/ER/IKZ

Spannschlüsselsätze
Sets of clamping wrenches

EM 00-L/ER/IKZ - EM 03-L/ER/IKZ



| | Für Spannzangen-Aufnahmen For collet holders | Bestandteile Components | Artikel-Nr. Article no. | |
|--|---|----------------------------|----------------------------|---|
| | EM 00-L/ER/IKZ | E11M / SW11 | F350098.01 | ● |
| | EM 01-L/ER/IKZ | E16M / SW17 | F350198.01 | ● |
| | EM 03-L/ER/IKZ | E25M / SW26 | F350398.01 | ● |

Hi-Q/ER, Hi-Q/ERC

Spannschlüssel
Clamping wrenches

Hi-Q/ER 11, Hi-Q/ERC 20



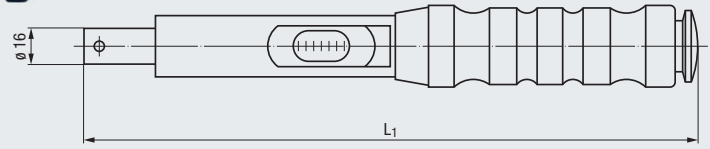
Hi-Q/ERC 32, Hi-Q/ERC 40



| | Für Spannmuttern For clamping nuts | Artikel-Nr. Article no. | |
|--|---------------------------------------|----------------------------|---|
| | Hi-Q/ER 11 | QB002002.00170 | ● |
| | Hi-Q/ERC 20 | QB002002.00300 | ● |
| | Hi-Q/ERC 32 | QB002003.0320 | ● |
| | Hi-Q/ERC 40 | QB002003.0400 | ● |

Drehmomentschlüssel
Torque wrenches

TORCO-FIX

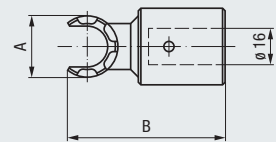


| Typ Type | Drehmoment Torque | | L_1 | Artikel-Nr. Article no. | |
|----------------------|----------------------|--|-------|----------------------------|---|
| | Nm | | | | |
| TORCO-FIX 0 | 2 - 25 | | 290 | F0908002 | ● |
| TORCO-FIX I | 10 - 50 | | 335 | F0908005 | ● |
| TORCO-FIX II | 20 - 200 | | 465 | F0908020 | ● |
| TORCO-FIX III | 60 - 300 | | 565 | F0908060 | ● |

| Typ Type | Für Spannmutter For clamping nut | TORCO-FIX | A | B | Artikel-Nr. Article no. | |
|-----------------|-------------------------------------|-----------|------|----|----------------------------|---|
| | | | | | | |
| 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, II | 22,5 | 56 | F0908500.AE16M | ● |
| A-E 20 M | Hi-Q/ERMC 20 | I, II | 29 | 68 | F0908500.AE20M | ● |
| A-E 25 M | Hi-Q/ERMC 25 | II | 36 | 70 | F0908500.AE25M | ● |

Aufsteckschlüssel
Shell-type wrenches

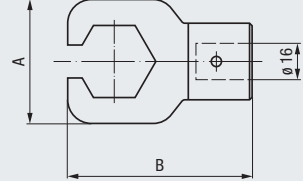
A-EM



| Typ Type | Für Spannmutter For clamping nut | TORCO-FIX | A | B | Artikel-Nr. Article no. | |
|-----------------|-------------------------------------|-----------|----|----|----------------------------|---|
| | | | | | | |
| A-E 16 P | Hi-Q/ERC 16 | I, II | 44 | 71 | F0908500.AE16P | ● |
| A-E 20 P | Hi-Q/ERC 20 | I, II | 52 | 81 | F0908500.AE20P | ● |

Aufsteckschlüssel
Shell-type wrenches

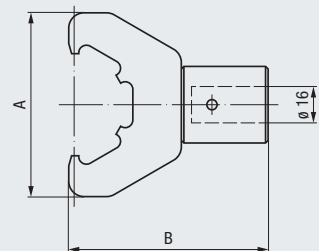
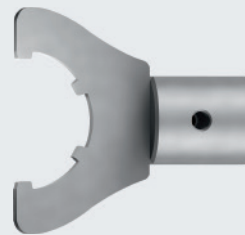
A-EP



| Typ Type | Für Spannmutter For clamping nut | TORCO-FIX | A | B | Artikel-Nr. Article no. | |
|---------------|-------------------------------------|-----------|-----|----|----------------------------|---|
| | | | | | | |
| 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/ERC 50 | III | 111 | 94 | F0908500.AE50 | ● |

Aufsteckschlüssel
Shell-type wrenches

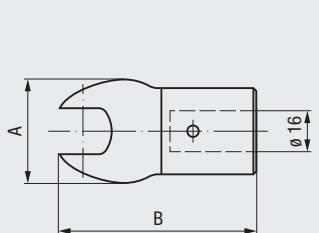
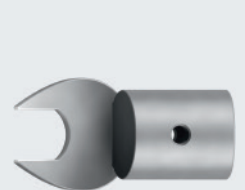
A-E



| Typ Type | Größe für Spezial-Schaftverlängerung Size for special shank extension | TORCO-FIX | A | B | Artikel-Nr. Article no. | |
|----------------|--|-----------|------|----|----------------------------|---|
| | | | | | | |
| A-SW 8 | 02 | 0 | 20,5 | 55 | F0908500.08 | ● |
| A-SW 9 | 03, 04 | 0 | 20,5 | 55 | F0908500.09 | ● |
| A-SW 12 | 05, 06 | 0 | 29 | 57 | F0908500.12 | ● |
| A-SW 13 | 07 | 0 | 34,5 | 59 | F0908500.13 | ● |
| A-SW 15 | 08, 09 | 0 | 34,5 | 59 | F0908500.15 | ● |
| A-SW 18 | 10, 11 | 0, I | 41,5 | 59 | F0908500.18 | ● |
| A-SW 22 | 12, 13 | I | 56 | 64 | F0908500.22 | ● |
| A-SW 26 | 14 | II | 56 | 64 | F0908500.26 | ● |
| A-SW 28 | 15 | II | 68 | 65 | F0908500.28 | ● |
| A-SW 30 | 16 | II | 68 | 65 | F0908500.30 | ● |
| A-SW 36 | 17 | II | 68 | 65 | F0908500.36 | ● |

Aufsteckschlüssel
Shell-type wrenches

A-SW




● = Lagerwerkzeug, siehe Preisliste · Stock tool, see price list
○ = Kurzfristig lieferbar, Preis auf Anfrage · Available on short notice, price upon inquiry




- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

PGR-GB


Mit Vierkantmitnahme und Längennachstellung
With square drive and length adjustment




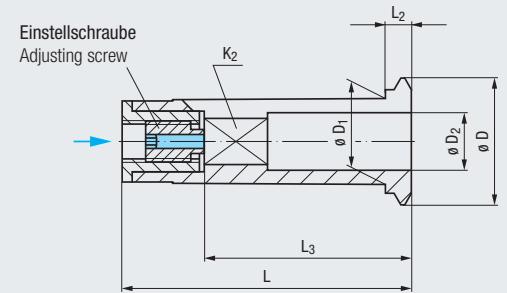



ρ_{max}
50bar
(700psi)



ρ_{max}
100bar
(1400psi)

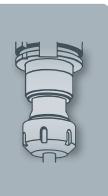







| Typ · Type | PGR 15 GB | PGR 25 GB |
|---|-----------|-----------|
|  | M4 - M12 | M8 - M20 |
| ø D | 22 | 33 |
| ø D ₁ | 15 | 25 |
| L | 50,5 | 60,5 |
| L ₂ | 4,5 | 6 |

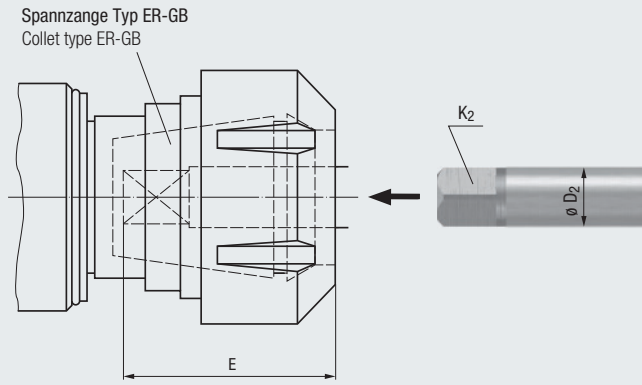
| DIN | | | | Artikel-Nr. Article no. | L ₃ | | | Artikel-Nr. Article no. | L ₃ | | |
|------------------|----------------|--|--|----------------------------|----------------|------|---|----------------------------|----------------|------|---|
| ø D ₂ | K ₂ |  |  | | min. | max. | | | min. | max. | |
| 4,5 | 3,4 | M4 | M6 | F0942615.4.5 | 27 | 29 | ● | | | | |
| 6 | 4,9 | M4,5 - M6 | M8 | F0942615.6 | 29 | 31 | ● | | | | |
| 7 | 5,5 | M7 | M9 - M10 | F0942615.7 | 29 | 31 | ● | | | | |
| 8 | 6,2 | M8 | M11 | F0942615.8 | 33,5 | 36 | ● | F0942625.8 | 33,5 | 36 | ● |
| 9 | 7 | M9 | M12 | F0942615.9 | 34,5 | 37 | ● | F0942625.9 | 34,5 | 37 | ● |
| 10 | 8 | M10 | | F0942615.10 | 35,5 | 38 | ● | F0942625.10 | 38,5 | 41 | ● |
| 11 | 9 | | M14 | | | | | F0942625.11 | 39,5 | 42 | ● |
| 12 | 9 | | M16 | | | | | F0942625.12 | 39,5 | 42 | ● |
| 14 | 11 | | M18 | | | | | F0942625.14 | 41,5 | 44 | ● |
| 16 | 12 | | M20 | | | | | F0942625.16 | 42,5 | 45 | ● |





PGR-Spannzangen ohne Vierkantmitnahme auf Anfrage

PGR collets without square drive upon request



| Spannzangen Collets | | ER 8 | | ER 11 GB | | | ER 16 GB | | |
|-------------------------------|-------|---------------------------------------|-----------|-------------|------------|---------------------------------------|-----------------------------|----|-----------------------|
| Spannmuttern Clamping nuts | | Hi-Q/ERM 8 | | Hi-Q/ERM 11 | Hi-Q/ER 11 | Hi-Q/ERMC 11 Hi-Q/ERC 11 | Hi-Q/ERMC 16 Hi-Q/ERC 16 | | |
| DIN | | Einstecktiefen E Clamping depths E | | | | Einstecktiefen E Clamping depths E | | | |
| $\varnothing D_2$ | K_2 | | | 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 | | | | |
| 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 | 29 |
| 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 / 48 ¹⁾ |
| 10 | 8 | M10 | | | | | | | 43 ¹⁾ |

¹⁾ In Kombination mit Spannzangen Typ ER 16 und Softsynchro® 1 für angetriebene Werkzeuge
In combination with collets type ER 16 and Softsynchro® 1 for driven tools

| Spannzangen Collets | | ER 20 GB | | ER 25 GB | | ER 32 GB | | ER 40 GB | | ER 50 GB | |
|-------------------------------|-------|---------------------------------------|-----------|-----------------------------|----|-------------|--|-------------|--|-------------------|--|
| Spannmuttern Clamping nuts | | Hi-Q/ERMC 20 Hi-Q/ERC 20 | | Hi-Q/ERMC 25 Hi-Q/ERC 25 | | Hi-Q/ERC 32 | | Hi-Q/ERC 40 | | Hi-Q/ERBC 50 AF | |
| DIN | | Einstecktiefen E Clamping depths E | | | | | | | | | |
| $\varnothing D_2$ | K_2 | | | | | | | | | | |
| 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 | | | |
| 25 | 20 | | M33 | | | | | | | 70 | |
| 28 | 22 | | M36 | | | | | | | 72 | |
| 32 | 24 | | M39 - M42 | | | | | | | 74 | |
| 36 | 29 | | M45 - M48 | | | | | | | 76 | |
| | | | | | | | | | | 111 ²⁾ | |

²⁾ In Kombination mit Spannzangen Typ ER 50 und Softsynchro® 5
In combination with collets type ER 50 and Softsynchro® 5

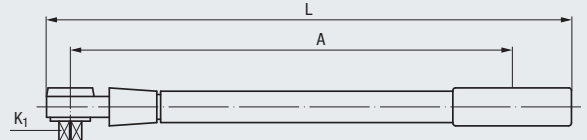
- Product Finder
- Softsynchro
- Speedsynchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

DEU

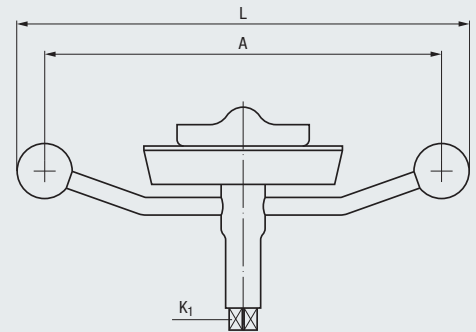
Einarmer Drehmomentschlüssel Single-armed torque wrench



| Typ Type | Für Einsatzgröße For adapter size | Drehmoment Torque Nm | Messbereich Measuring range | A | L | K ₁ | Artikel-Nr. Article no. | |
|-------------|--------------------------------------|----------------------------|--------------------------------|------|------|----------------|----------------------------|---|
| 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

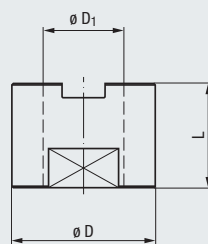
Zweiarmiger Drehmomentschlüssel Double-armed torque wrench



| Typ Type | Für Einsatzgröße For adapter size | Drehmoment Torque Nm | Messbereich Measuring range | A | L | K ₁ | Artikel-Nr. Article no. | |
|-------------|--------------------------------------|----------------------------|--------------------------------|------|------|----------------|----------------------------|---|
| 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

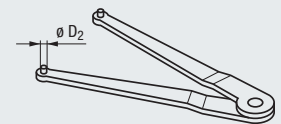
Aufnahmekopf Adapter head



| Typ Type | Für Einsatzgröße For adapter size | ø D | ø D ₁ | L | Artikel-Nr. Article no. | |
|-------------|--------------------------------------|-----|------------------|----|----------------------------|---|
| 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 Type | Für Einsatzgröße For adapter size | ø D ₂ | Artikel-Nr. Article no. | |
|-------------|--------------------------------------|------------------|----------------------------|---|
| 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



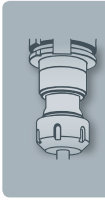
Vierkantbolzen
Square pin



| Typ Type | Für Drehmomentschlüssel For torque wrench | K ₁ inch | Ø D ₂ mm | K ₂ mm | Artikel-Nr. Article no. | |
|---------------|--|------------------------|------------------------|----------------------|----------------------------|---|
| VEU-00 | DEU-00 | 3/8" | 2,5 | 2,1 | F0910100 | ● |
| | | | 2,8 | 2,1 | F0910101 | ● |
| | | | 3,5 | 2,7 | F0910102 | ● |
| | | | 4 | 3 | F0910103 | ● |
| | | | 4,5 | 3,4 | F0910104 | ● |
| | | | 6 | 4,9 | F0910106 | ● |
| | | | 7 | 5,5 | F0910107 | ● |
| | | | 8 | 6,2 | F0910108 | ● |
| | | | 9 | 7 | F0910109 | ● |
| | | | 10 | 8 | F0910110 | ● |
| | | | 11 | 9 | F0910111 | ● |
| | | | 12 | 9 | F0910112 | ● |
| | | | 14 | 11 | F0910113 | ● |
| | | | 16 | 12 | F0910114 | ● |
| | | | 18 | 14,5 | F0910115 | ● |
| VEU-10 | DEU-10 | 1/2" | 4,5 | 3,4 | F0911104 | ● |
| | | | 6 | 4,9 | F0911106 | ● |
| | | | 7 | 5,5 | F0911107 | ● |
| | | | 8 | 6,2 | F0911108 | ● |
| | | | 9 | 7 | F0911109 | ● |
| | | | 10 | 8 | F0911110 | ● |
| | | | 11 | 9 | F0911111 | ● |
| | | | 12 | 9 | F0911112 | ● |
| | | | 14 | 11 | F0911113 | ● |
| | | | 16 | 12 | F0911114 | ● |
| | | | 18 | 14,5 | F0911115 | ● |
| | | | 20 | 16 | F0911116 | ● |
| | | | 22 | 18 | F0911117 | ● |
| 25 | 20 | F0911118 | ● | | | |
| 28 | 22 | F0911119 | ● | | | |
| 32 | 24 | F0911120 | ● | | | |
| 36 | 29 | F0911121 | ● | | | |
| VEU-20 | DEU-20 | 3/4" | 18 | 14,5 | F0912115 | ● |
| | | | 20 | 16 | F0912116 | ● |
| | | | 22 | 18 | F0912117 | ● |
| | | | 25 | 20 | F0912118 | ● |
| | | | 28 | 22 | F0912119 | ● |
| | | | 32 | 24 | F0912120 | ● |
| | | | 36 | 29 | F0912121 | ● |
| | | | 40 | 32 | F0912122 | ● |
| 45 | 35 | F0912123 | ● | | | |

Diese Vierkantbolzen stellen die Verbindung zwischen Drehmomentschlüssel und Schnellwechsel-Einsatz her, wobei das Vierkant K₁ in das Vierkant des Drehmomentschlüssels eingesteckt und der Schaft D₂ mit Vierkant K₂ in den Einsatz eingespannt wird
 These square pins establish the connection between torque wrench and adapter: the square K₁ is inserted into the square seat of the torque wrench, and the shank end D₂ with square K₂ is clamped in the adapter

- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MOQ MMS
- SFM
- SWITCH-MASTER
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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/mm².

Eventuell müssen die Einstellwerte dem jeweiligen Bearbeitungsfall angepasst werden (z.B. beim Gewindeformen).

Setting and checking of the overload clutch on quick-change adapters of types EM-U, EM-UL and HF:

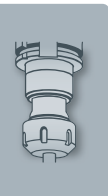
Generally speaking, the torque to be set depends on

- 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/mm².

These values generally need to be adjusted to the individual work case (e.g. for cold-forming of threads).

| Drehmoment Torque | | Gewindesystem Thread system | | | | | | | | |
|----------------------|---------|--------------------------------|--------|--------|------|-------|-------------|-------------|--------------|---------|
| Nm | Ft. lbs | M | UNC | UNF | BSW | BSF | G (Whw.) | NPT NPTF | Rc (BSPT) | Pg |
| 0,3 | 0,2 | M2 | Nr. 2 | Nr. 2 | | | | | | |
| 0,4 | 0,3 | M2,5 | | Nr. 3 | | | | | | |
| 0,5 | 0,4 | | Nr. 3 | Nr. 4 | | | | | | |
| 0,6 | 0,5 | M3 | | | | | | | | |
| 0,8 | 0,6 | | Nr. 4 | Nr. 5 | | | | | | |
| 1 | 0,7 | M3,5 | Nr. 5 | Nr. 6 | 1/8 | | | | | |
| 1,2 | 0,9 | | Nr. 6 | Nr. 8 | | | | | | |
| 1,6 | 1,2 | M4 | Nr. 8 | | 5/32 | | | | | |
| 2 | 1,5 | | | Nr. 10 | | | | | | |
| 2,5 | 1,8 | M5 | | Nr. 12 | | 3/16 | | | | |
| 3 | 2,2 | | Nr. 10 | 1/4 | | | | | | |
| 4 | 3 | | Nr. 12 | | 3/16 | 7/32 | | | | |
| 5 | 3,7 | M6 | | 5/16 | 7/32 | 1/4 | | | | |
| 6 | 4,4 | | 1/4 | 3/8 | 1/4 | 9/32 | G 1/8 | | | |
| 8 | 6 | | | | | 5/16 | | | | |
| 10 | 7,4 | M8 | 5/16 | 7/16 | 5/16 | | | | | |
| 12 | 8,9 | | | 1/2 | | 3/8 | | | | |
| 16 | 12 | | 3/8 | | 3/8 | | | 1/16 | Rc 1/16 | Pg 7 |
| 18 | 13 | M10 | | 9/16 | | 7/16 | G 1/4 | | | |
| 20 | 15 | | | 5/8 | | | | | | |
| 22 | 16 | | 7/16 | | 7/16 | | G 3/8 | | | Pg 9 |
| 25 | 18 | M12 | | | | 1/2 | | 1/8 | Rc 1/8 | Pg 11 |
| 28 | 21 | | | | | | | | | Pg 13,5 |
| 32 | 24 | | 1/2 | 3/4 | 1/2 | 9/16 | | | | Pg 16 |
| 40 | 30 | | 9/16 | | 9/16 | 5/8 | | | | |
| 45 | 33 | M14 | | 7/8 | | 11/16 | | | | Pg 21 |
| 50 | 37 | M16 | 5/8 | | 5/8 | | G 1/2 | | | |
| 56 | 41 | | | | | | G 5/8 | | Rc 1/4 | |
| 63 | 46 | | | | | | | 1/4 | | Pg 29 |
| 70 | 52 | | 3/4 | 1" | 3/4 | 3/4 | G 3/4 | | | |
| 80 | 59 | M18 | | 1 1/8 | | 13/16 | G 7/8 | | | Pg 36 |
| 90 | 66 | M20 | | 1 1/4 | | 7/8 | | 3/8 | Rc 3/8 | Pg 42 |
| 100 | 74 | M22 | 7/8 | 1 3/8 | 7/8 | | | | | Pg 48 |
| 110 | 81 | | | 1 1/2 | | | | | | |
| 125 | 92 | | | | | 1" | | | | |
| 140 | 103 | M24 | 1" | | 1" | | G 1" | | | |
| 160 | 118 | M27 | | | | | G 1 1/8 | 1/2 | Rc 1/2 | |
| 180 | 133 | | | | | | 1 1/8 | G 1 1/4 | | |
| 200 | 148 | | | | | | 1 1/4 | G 1 3/8 | 3/4 | Rc 3/4 |



Einstellen und Prüfen der Überlastkupplung von Schnellwechsel-Einsätzen der Typen EM-U, EM-UL und HF:

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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

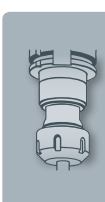
- Size
- Geometry and coating of the tool
- Workpiece material
- Type and quality of the coolant-lubricant
- Drilled hole diameter

The table contains standard values for thread cutting in steel with a tensile strength of 600-800 N/mm².

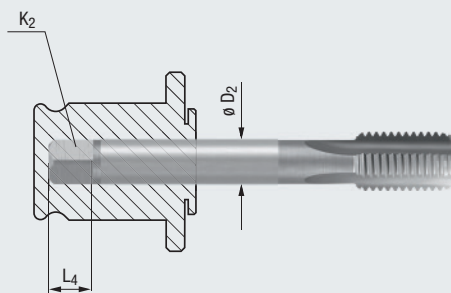
These values generally need to be adjusted to the individual work case (e.g. for cold-forming of threads).

| Drehmoment Torque | | Gewindesystem Thread system | | | | | | | | |
|----------------------|---------|--------------------------------|-------|-----|-------|-------|-------------|-------------|--------------|----|
| Nm | Ft. lbs | M | UNC | UNF | BSW | BSF | G (Whw.) | NPT NPTF | Rc (BSPT) | Pg |
| 220 | 162 | M30 | 1 1/8 | | 1 1/8 | | G 1 1/2 | | | |
| 240 | 177 | M33 | 1 1/4 | | 1 1/4 | | G 1 3/4 | | | |
| 260 | 192 | | | | | 1 3/8 | G 2" | | | |
| 280 | 207 | M36 | | | | | | | | |
| 300 | 221 | | | | | 1 1/2 | G 2 1/4 | | | |
| 320 | 236 | M39 | | | | 1 5/8 | | | | |
| 340 | 250 | | 1 3/8 | | 1 3/8 | | G 2 1/2 | 1" | Rc 1" | |
| 360 | 266 | | 1 1/2 | | 1 1/2 | | G 2 3/4 | | | |
| 400 | 295 | M42 | | | | | G 3" | | | |
| 420 | 310 | M45 | | | | | G 3 1/4 | | | |
| 450 | 332 | | | | | 1 3/4 | G 3 1/2 | 1 1/4 | Rc 1 1/4 | |
| 480 | 354 | | | | | | G 3 3/4 | | | |
| 500 | 369 | | | | | 2" | G 4" | | | |
| 560 | 413 | M48 | | | 1 5/8 | | | 1 1/2 | Rc 1 1/2 | |
| 630 | 465 | M52 | 1 3/4 | | 1 3/4 | | | | | |
| 710 | 524 | M56 | | | | 2 1/4 | | 2" | Rc 2" | |
| 800 | 590 | M60 | | | 1 7/8 | 2 1/2 | | | | |
| 900 | 664 | M64 | | | | 2 3/4 | | | | |
| 1000 | 738 | M68 | 2" | | 2" | | | | | |
| 1100 | 811 | | 2 1/4 | | 2 1/4 | 3" | | | | |
| 1170 | 863 | M72 | | | | | | | | |
| 1230 | 907 | M76 | | | | | | | | |
| 1300 | 959 | M80 | | | | | | | | |
| 1380 | 1018 | M85 | | | | | | | | |
| 1400 | 1033 | | 2 1/2 | | 2 1/2 | | | 2 1/2 | Rc 2 1/2 | |
| 1460 | 1077 | M90 | | | | | | | | |
| 1540 | 1136 | M95 | | | | | | | | |
| 1620 | 1195 | M100 | | | | | | | | |
| 1700 | 1254 | M105 | | | | | | | | |
| 1780 | 1313 | M110 | | | | | | | | |
| 1860 | 1372 | M115 | | | | | | | | |
| 1940 | 1431 | M120 | | | | | | | | |
| 2000 | 1475 | | 2 3/4 | | 2 3/4 | | | 3" | Rc 3" | |
| 2020 | 1490 | M125 | | | | | | | | |
| 2110 | 1556 | M130 | | | | | | | | |
| 2200 | 1623 | | | | 3" | | | | | |
| 2270 | 1674 | M140 | | | | | | | | |
| 2430 | 1792 | M150 | | | | | | | | |
| 2680 | 1977 | M160 | | | | | | | | |

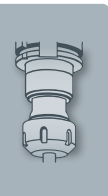
- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
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| DIN | | | ISO | | |
|------------------------|----------------------|----------------------|------------------------|----------------------|----------------------|
| ø D ₂ mm | K ₂ mm | L ₄ mm | ø D ₂ mm | K ₂ mm | L ₄ mm |
| 2,5 | 2,1 | 5 | 2,24 | 1,8 | 4 |
| 2,8 | 2,1 | 5 | 2,5 | 2 | 4 |
| 3,5 | 2,7 | 6 | 2,8 | 2,24 | 5 |
| 4 | 3 | 6 | 3,15 | 2,5 | 5 |
| 4,5 | 3,4 | 6 | 3,55 | 2,8 | 5 |
| 6 | 4,9 | 8 | 4 | 3,15 | 6 |
| 7 | 5,5 | 8 | 4,5 | 3,55 | 6 |
| 8 | 6,2 | 9 | 5 | 4 | 7 |
| 9 | 7 | 10 | 5,6 | 4,5 | 7 |
| 10 | 8 | 11 | 6,3 | 5 | 8 |
| 11 | 9 | 12 | 7,1 | 5,6 | 8 |
| 12 | 9 | 12 | 8 | 6,3 | 9 |
| 14 | 11 | 14 | 9 | 7,1 | 10 |
| 16 | 12 | 15 | 10 | 8 | 11 |
| 18 | 14,5 | 17 | 11,2 | 9 | 12 |
| 20 | 16 | 19 | 12,5 | 10 | 13 |
| 22 | 18 | 21 | 14 | 11,2 | 14 |
| 25 | 20 | 23 | 16 | 12,5 | 16 |
| 28 | 22 | 25 | 18 | 14 | 18 |
| 32 | 24 | 27 | 20 | 16 | 20 |
| 36 | 29 | 32 | 22,4 | 18 | 22 |
| 40 | 32 | 35 | 25 | 20 | 24 |
| 45 | 35 | 38 | 28 | 22,4 | 26 |
| | | | 31,5 | 25 | 28 |
| | | | 35,5 | 28 | 31 |
| | | | 40 | 31,5 | 34 |
| | | | 45 | 35,5 | 38 |



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Technical Information

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Product
FinderSoft-
synchroSpeed-
synchro

KSN

MQL
MMS

SFM

SWITCH-
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Tech. Info

Die Technischen Informationen der jeweiligen Kapitel dieses Kataloges sind in vielen Landessprachen auch als separate Druckerzeugnisse verfügbar. Bitte wenden Sie sich an den für Sie zuständigen Vertriebspartner.

The technical information complementing the various chapters of this catalogue is available also as a separate printed booklet in many different languages. Please speak to your usual sales contact.



- Product Finder
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7.1 Symbolbeschreibung der Leistungsmerkmale



Innere Kühlschmierstoff-Zufuhr (IKZ)

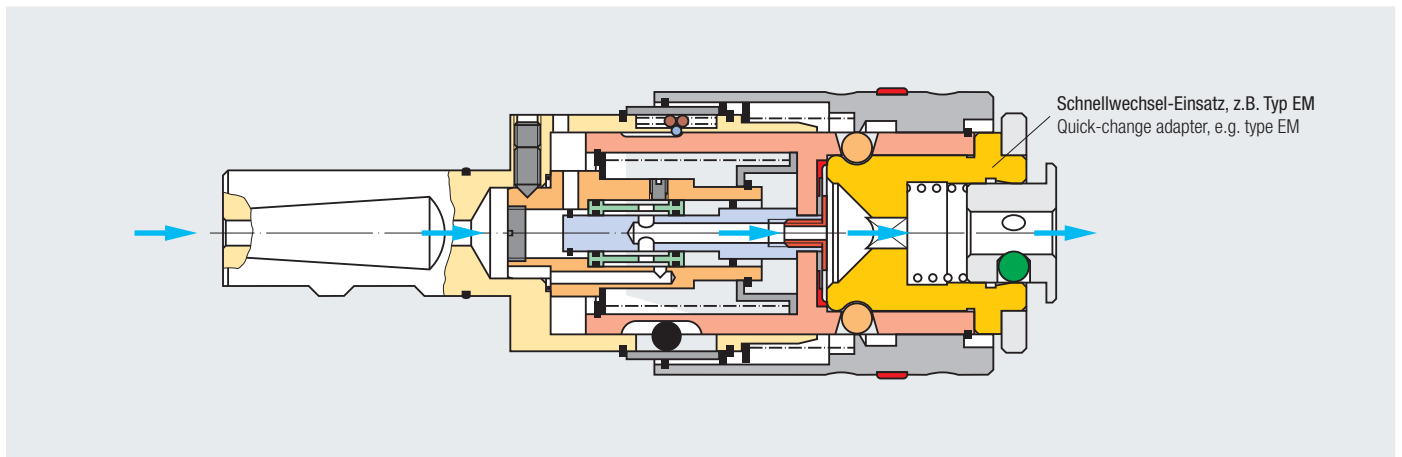
Ist eine Werkzeugmaschine mit innerer Kühlschmierstoff-Zufuhr durch die Maschinenspindel ausgestattet, gestaltet sich der Gewindeherstellzyklus besonders wirtschaftlich, wenn der Kühlschmierstoff durch die axiale Bohrung im Werkzeug bzw. entlang des Werkzeugschafts austritt.

Die Vorteile sind:

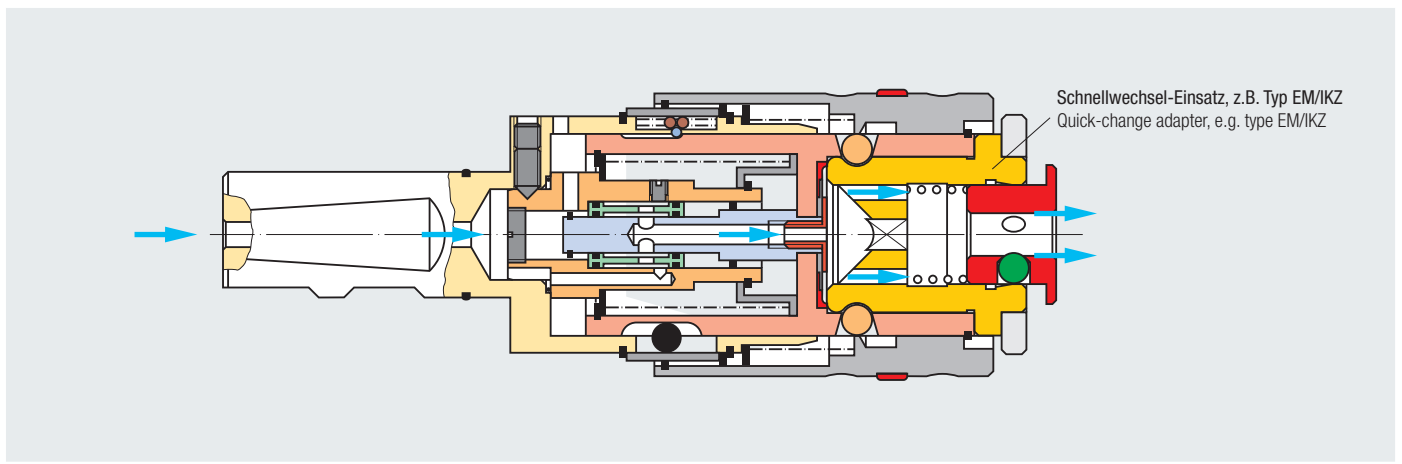
- Optimale Schmierung an der Werkzeugschneide
- Verbesserung der Gewindegüte
- Herausschwemmen der Späne aus der Kernlochbohrung

Hier muss darauf geachtet werden, dass der verwendete Kühlschmierstoff entsprechend gefiltert wird und das verwendete Gewindeschneidfutter für den herrschenden Kühlschmierstoff-Druck ausgelegt ist. Je nach Ausführung des Werkzeugs, mit oder ohne innerer Kühlschmierstoff-Zufuhr, sind die Schnellwechsel-Einsätze in zwei Varianten erhältlich:

Durchführung der inneren Kühlschmierstoff-Zufuhr bei Werkzeugen mit IKZ



Durchführung der inneren Kühlschmierstoff-Zufuhr bei Werkzeugen ohne IKZ



7.1 Description of the symbols for performance characteristics



Internal coolant supply (IKZ)

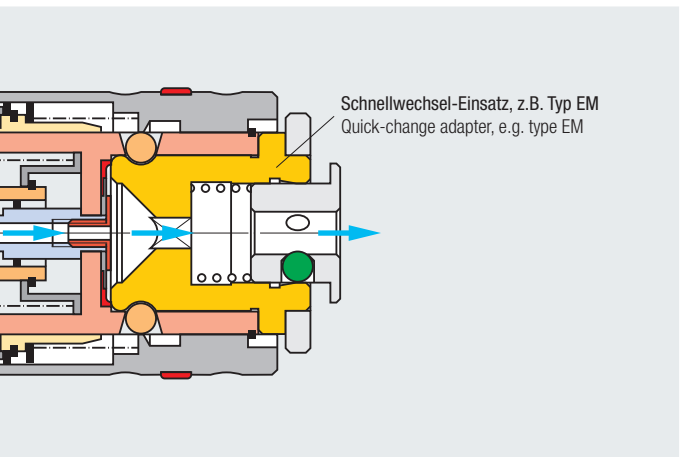
If a machine tool is equipped with internal coolant supply through the machine spindle, then the thread production cycle can be done with special economic efficiency by conducting the coolant-lubricant through the axial bore in the tool, or along the tool shank.

The advantages of this arrangement are:

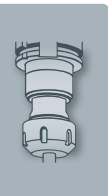
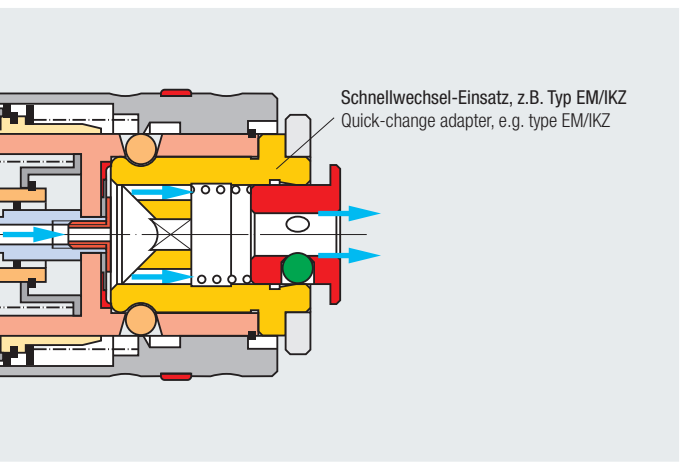
- Perfect lubrication at the cutting edge of the tool
- Improved thread quality
- Chips are washed out of the thread hole

It is, however, necessary to make sure that the coolant-lubricant used is appropriately filtered and that the tap holder used is suitable for the coolant-lubricant pressure of the machine. Depending on the design of the tool, with or without internal coolant supply, the quick-change adapters are available in two versions:

Conduction of internal coolant supply with tools with IKZ



Conduction of internal coolant supply with tools without IKZ



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MLQ MMS
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7.1 Symbolbeschreibung der Leistungsmerkmale

7.1 Description of the symbols for performance characteristics



Minimalmengenschmierung (MMS)

Geeignet für Maschinen, die mit einem zentralen Minimalmengenschmier-System ausgerüstet sind – man spricht auch von „Trockenbearbeitung“. Zusätzlich zu den unter IKZ beschriebenen Vorteilen kommt noch die Umweltfreundlichkeit dieser Werkzeugschmierung hinzu. Die hohen Schnittwerte können wie bei der Nassbearbeitung beibehalten werden. Außerdem werden die Kosten durch Wegfall der Beschaffung und Wartung von aufwendigen Filtereinrichtungen, sowie der Entsorgung der Emulsionen reduziert. Ausführliche Informationen siehe **7.6 Minimalmengenschmierung (MMS)**.



Minimum-quantity lubrication (MQL)

Suitable for machines which are equipped with a central minimum-quantity lubrication system – this is often called “dry machining”. In addition to the advantages described under “IKZ” this lubrication technology is very friendly to the environment. The high cutting data common in wet machining can be used without any change. Another advantage is the reduction of costs, since there is no need to purchase and maintain expensive filter installations, or to dispose of used emulsions. For more detailed information, see **7.6 Minimum-quantity lubrication (MQL)**.



Minimalmengenschmierung (1-Kanal-MMS-System)

Beim **1-Kanal-MMS-System** wird das Luft-Öl-Gemisch vor dem Eintritt in die Maschinenspindel im MMS-Gerät erzeugt und durch die Arbeitsspindel und das Spannsystem zur Wirkstelle geleitet. Ausführliche Informationen siehe **7.6 Minimalmengenschmierung (MMS)**.



Minimum-quantity lubrication (1-channel MQL system)

In a **1-channel MQL system**, the aerosol is generated in the MQL device before it enters into the machine spindle, and is then conducted through the work spindle and the clamping system to the point where it is needed. For more detailed information, see **7.6 Minimum-quantity lubrication (MQL)**.



Minimalmengenschmierung (2-Kanal-MMS-System)

Beim **2-Kanal-MMS-System** werden Öl und Luft getrennt durch die Spindel geführt, die Mischung der beiden Medien erfolgt beim Eintritt in den Werkzeughalter. Ausführliche Informationen siehe **7.6 Minimalmengenschmierung (MMS)**.



Minimum-quantity lubrication (2-channel MQL system)

In a **2-channel MQL system**, oil and air are conducted through the spindle separately, the mixing of the two media is done only at the point where they enter the tool holder. For more detailed information, see **7.6 Minimum-quantity lubrication (MQL)**.

| | | | | |
|------------------------------|--------------------------------|--------------------------------|---------------------------------|----------------------------------|
| p_{max} 6bar (85psi) | p_{max} 10bar (140psi) | p_{max} 50bar (700psi) | p_{max} 70bar (1015psi) | p_{max} 100bar (1400psi) |
|------------------------------|--------------------------------|--------------------------------|---------------------------------|----------------------------------|

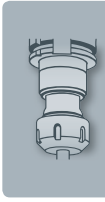
Kühlschmierstoff-Druck am Futtereintritt

Zur Sicherstellung der störungsfreien Funktion der Werkzeug-Aufnahme darf der angegebene Kühlschmierstoff-Druck nicht überschritten werden.

| | | | | |
|------------------------------|--------------------------------|--------------------------------|---------------------------------|----------------------------------|
| p_{max} 6bar (85psi) | p_{max} 10bar (140psi) | p_{max} 50bar (700psi) | p_{max} 70bar (1015psi) | p_{max} 100bar (1400psi) |
|------------------------------|--------------------------------|--------------------------------|---------------------------------|----------------------------------|

Coolant-lubricant pressure at the entry to the holder

For the sake of trouble-free operation of the tool holders, it is vital not to exceed the specified maximum coolant-lubricant pressures.



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
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7.1 Symbolbeschreibung der Leistungsmerkmale



Längenausgleich in Druck- und Zugrichtung

Längenausgleich in Druckrichtung

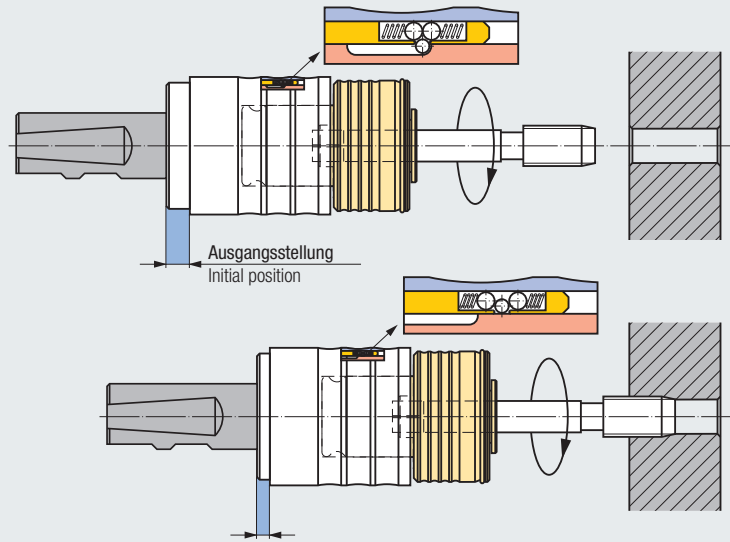
Dieser Längenausgleich kompensiert Differenzen zwischen Spindelvorschub und Steigung des herzustellenden Gewindes. Bei Verwendung eines Schnellwechsel-Einsatzes mit Überlastkupplung nimmt der Längenausgleich auf Druck beim Ansprechen der Überlastkupplung den Spindelvorschub auf.

Betätigter Längenausgleich in Druckrichtung bei

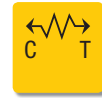
- Plusprogrammierung der Steuerung
- Überlastung des Schnellwechsel-Einsatzes mit Überlastkupplung

Activated length compensation on compression at

- Plus programming of the control
- Overload on the quick-change adapter with overload clutch



7.1 Description of the symbols for performance characteristics



Length compensation on compression and tension

Length compensation on compression

This type of length compensation compensates differences between spindle feed and the pitch of the thread to be produced. If a quick-change adapter with overload clutch is used, the length compensation on compression accommodates spindle feed as soon as the overload clutch responds.

Längenausgleich in Zugrichtung

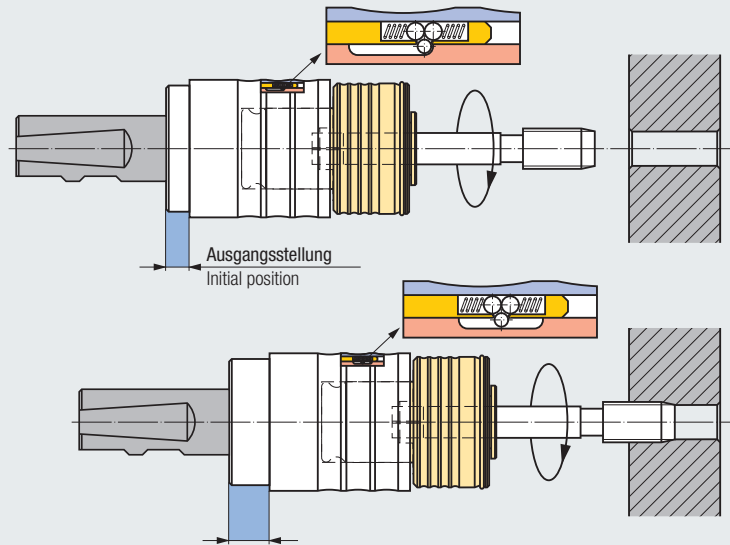
Dieser Längenausgleich kompensiert Differenzen zwischen Spindelvorschub und Steigung des herzustellenden Gewindes, sowie ein Nachlaufen der Spindel im Umkehrpunkt des Gewindeherstellzyklus. Bei den Gewindeschneidapparaten übernimmt der Längenausgleich auf Zug die Umschaltfunktion der Drehrichtung von Rechts- auf Linkslauf.

Betätigter Längenausgleich in Zugrichtung bei

- Minusprogrammierung der Steuerung
- Manuellem Rückzug

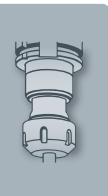
Activated length compensation on tension at

- Minus programming of the control
- Manual retraction



Length compensation on tension

This type of length compensation compensates differences between spindle feed and the pitch of the thread to be produced, as well as a spindle overrun at the point of reversal of the thread production cycle. With the tapping attachments, the length compensation on tension assumes the function of switching the sense of rotation from right-hand to left-hand rotation.



7.1 Symbolbeschreibung der Leistungsmerkmale

7.1 Description of the symbols for performance characteristics

**Minimallängenausgleich**

Durch den Einbau eines Minimallängenausgleiches in Druck- und Zugrichtung werden auftretende Minimalsteigungsdifferenzen zwischen Synchronspindel und dem Werkzeug, die zu hohen Gewindeflankenreibkräften führen würden, ausgeglichen. Eine eventuelle Axialkrafterhöhung während des Gewindeherstellzyklus wird auf ein Minimum reduziert.

Die daraus resultierenden Vorteile sind:

- Kein Verschneiden der Gewinde
- Optimierte Standzeit des Werkzeugs
- Geeignet für innere Kühlschmierstoff-Zufuhr

Ausführliche Informationen siehe **7.4 Synchronre Gewindeherstellung**.

**Minimal length compensation**

An integrated minimal length compensation on compression and tension compensates minimal pitch differences between synchronous spindle and tool which would lead to excessive friction forces on the thread flanks. A possible increase of axial force during the thread production cycle is reduced to a minimum.

The resulting advantages are:

- No miscut threads
- Optimised tool life
- Suitable for internal coolant supply

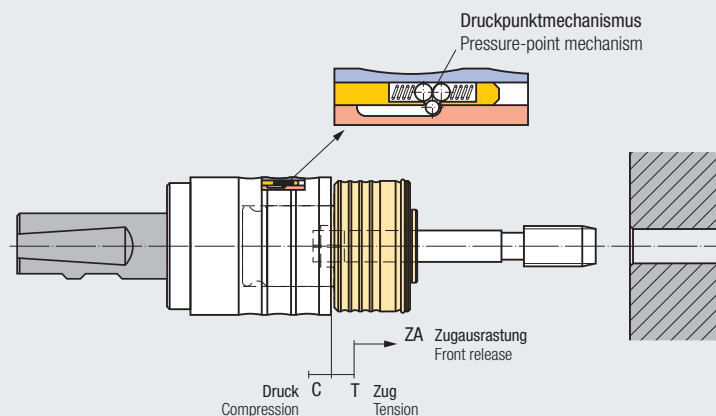
For more detailed information, see **7.4 Rigid tapping**.

**Druckpunktmechanismus**

Der patentierte Druckpunktmechanismus gewährleistet ein sicheres Anschneiden des Werkzeugs. Erst wenn die effektiv auftretende Axialkraft die normal zulässige Anschneidkraft übersteigt, gibt der Druckpunktmechanismus die Längenausgleichsbewegung frei. Dadurch werden reproduzierbare, gleichmäßige Gewindetiefen erreicht.

**Pressure-point mechanism**

The patented pressure-point mechanism guarantees a safe start of the thread cutting process. The length compensation movement is released by the pressure-point mechanism only when the effective axial force exceeds the normal, permissible start-of-cut force. This helps to achieve reproducible, uniform thread depths.



Product Finder

Soft-synchro

Speed-synchro

KSN

MQL MMS

SFM

SWITCH-MASTER

GR, GR-S

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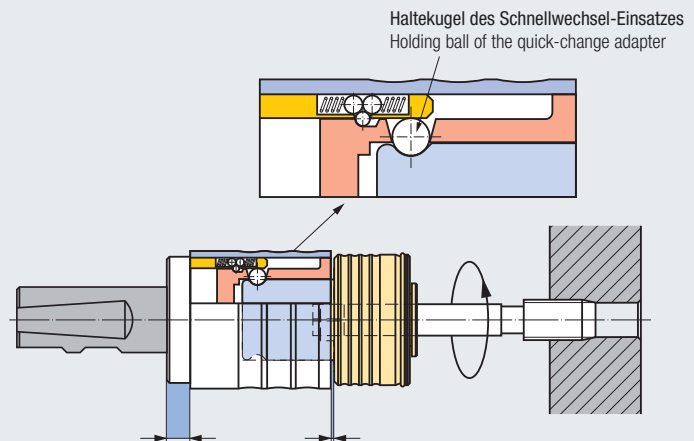
7.1 Symbolbeschreibung der Leistungsmerkmale



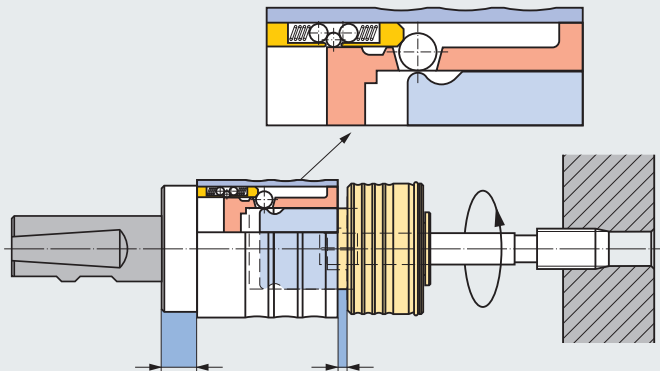
Zugausrastung

Die Zugausrastung schützt die Schnellwechsel-Aufnahme, den verwendeten Schnellwechsel-Einsatz und das Werkzeug, sowie das Werkstück vor Beschädigungen infolge übergroßer axialer Zugbelastungen. Diese Belastungen können auftreten, wenn der Längenausgleichsweg überschritten wird, weil z.B. die Maschinenspindel im Umkehrpunkt des Gewindeherstellzykluses nachläuft oder der Eilvorschub bei der Rückzugbewegung des Werkzeugs einsetzt, bevor das Werkzeug vollkommen aus dem Werkstück ausgetreten ist. In diesen Situationen rastet der Schnellwechsel-Einsatz automatisch aus der Schnellwechsel-Aufnahme aus und vermeidet kostspielige Schäden.

Stellung vor dem Auslösen der Zugausrastung Situation before the triggering of the front release



Stellung nach dem Auslösen der Zugausrastung Situation after the triggering of the front release



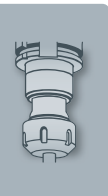
Übersetzung ins Schnelle

Durch das integrierte Übersetzungsgetriebe ins Schnelle wird die Spindeldrehzahl vervielfacht. Die Drehzahl des Gewindegewindes erhöht sich dadurch um den Übersetzungsfaktor.



Transmission gearing rapid traverse

Due to the integrated transmission gearing rapid traverse, the spindle speed is multiplied. Consequently the threading tool speed is increased by the transmission factor.



7.1 Symbolbeschreibung der Leistungsmerkmale

7.1 Description of the symbols for performance characteristics



Achspannele Pendelung

Ein Kugelpendelsystem stellt sicher, dass Fluchtungsfehler zwischen Maschinenspindel und Werkstückbohrung oder Rundlauffehler der Maschinenspindel ausgeglichen werden.

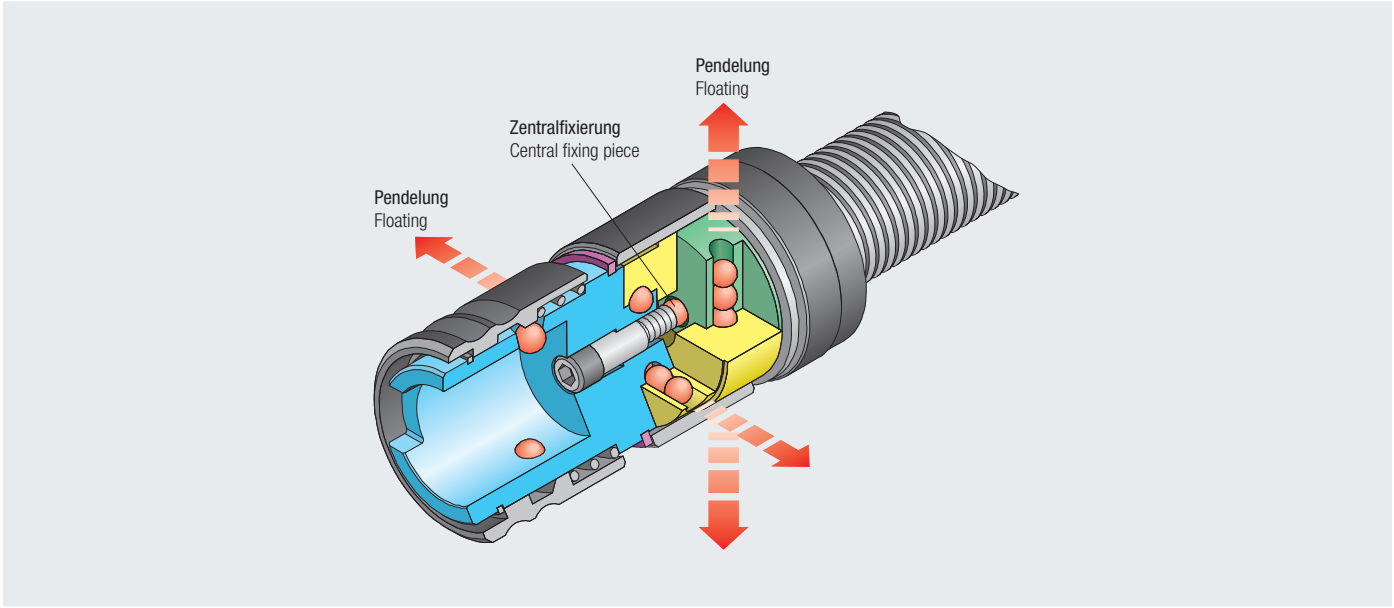
Zwei parallel und um 90° versetzte Bohrungen bilden eine präzise Kugel-Linearführung. Durch diese Anordnung ist die Funktion der „Parallel-Pendelung“ optimal gelöst.



Axial-parallel floating

A ball-based floating system guarantees that small errors of alignment between machine spindle and thread hole, or concentricity run-out on the side of the machine spindle, are compensated.

Two parallel drilled holes, offset by 90°, form a precise ball-based linear guide. This arrangement is the perfect solution for the function of the “parallel floating” feature.



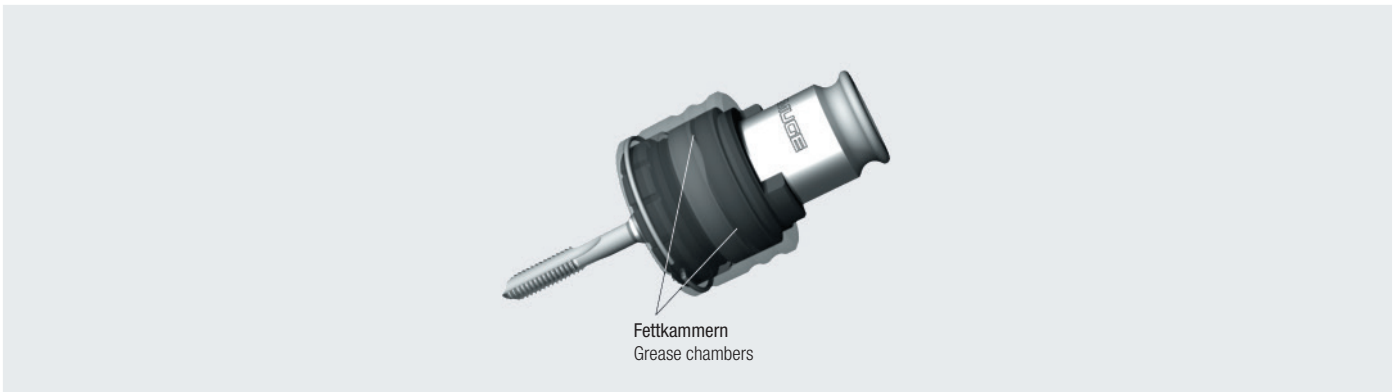
Überlastkupplung

Die von EMUGE entwickelte **Wellenprofilüberlastkupplung** zeichnet sich durch eine hohe Verschleißfestigkeit aus. Fettkammern zwischen dem oberen und unteren Kupplungsring sorgen für eine Permanent schmierung während des Überlastprozesses. Beim Überschreiten des eingestellten Drehmomentes unterbricht die Überlastkupplung die Drehmomentübertragung zwischen Maschinenspindel und Werkzeug während des Gewindeherstellvorganges. Dadurch wird das Werkzeug vor Bruch geschützt.

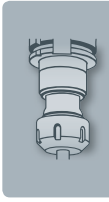


Overload clutch

The **wave-line profile overload clutch** as developed by EMUGE is characterised by its great wear resistance. Grease chambers between the upper and lower clutch ring provide permanent lubrication during the overload process. When the set torque is exceeded during a threading process, the overload clutch immediately interrupts the torque transfer between machine spindle and tool. This protects the tap against damage.



- Product Finder
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- Speed-synchro
- KSN
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7.1 Symbolbeschreibung der Leistungsmerkmale



Wendegetriebe

Durch das integrierte Wendegetriebe entfällt der Drehrichtungswechsel der Maschinenspindel beim Rücklauf.

Die daraus resultierenden Vorteile sind:

- Zeitersparnis durch kürzere Taktzeiten
- Schonung der Maschinenspindel durch konstanten Rechtslauf
- Energieeinsparung durch nahezu gleichbleibende Stromaufnahme

7.1 Description of the symbols for performance characteristics



Reverse gear

The integrated reverse gear makes a change of the sense of rotation of the machine spindle for reversing superfluous.

The resulting advantages are:

- Time savings due to reduced cycle times
- Reduced stress on the machine spindle due to constant right-hand rotation
- Energy savings due to nearly constant power consumption



Längennachstellung

Durch die Längennachstellung kann die Auskraglänge des Schnellwechsel-Einsatzes bei Bedarf nachgestellt/vergrößert werden.



Length adjustment

With the length adjustment, the projection length of the quick-change adapter can be re-adjusted or increased in case of need.



Längennachstellung von 2 mm

Die Auskraglänge des Werkzeuges kann durch die Längeneinstellschraube um 2 mm vergrößert werden.



Length adjustment by 2 mm

The projecting length of the tool can be extended by 2 mm with the length adjustment screw.



E-Lock

Arretierung des Werkzeugs mit formschlüssiger Rille am Vierkant des Werkzeugschafts. Voraussetzung für die Aufnahme des Werkzeugs in den E-Lock-Einsatz ist, dass das Werkzeug an einer Vierkantfläche mit einer Rille versehen ist. Um vorhandene Werkzeuge nachträglich mit dieser Rille versehen zu können, sind die erforderlichen Maßangaben und die dazugehörigen Prüflöhren zu verwenden. Das Ein- bzw. Auswechseln des Werkzeugs erfolgt bei herausgenommenen Einsatz aus der Schnellwechsel-Aufnahme.

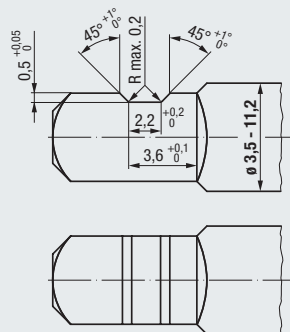


E-Lock

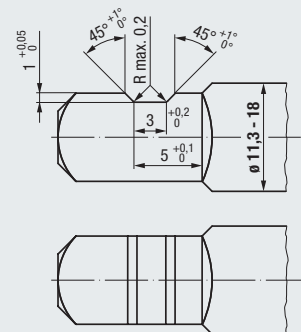
Locking of the tool with form-positive slot on the square of the tool shank. For clamping the tool in an E-Lock adapter, it is necessary that the tool be provided with a slot on one of the flats of the square. In case existing tools have to be provided with this slot, it is necessary to use suitable dimensional specifications, and the appropriate inspection gauges. For the clamping and exchange of tools, the adapter must always be detached from the quick-change holder.

EM-E-Lock Rillenformen am Vierkant EM-E-Lock slot shapes on the driving square

Form A



Form B



Bohren und Senken

Durch Blockieren des Längenausgleichs über eine Arretierschraube kann die Bohr- oder Senkoperation ohne Auswechseln der Schnellwechsel-Aufnahme durchgeführt werden.

Die daraus resultierenden Vorteile sind:

- Geringe Abweichung der Koaxialität zwischen Bohrung und Gewinde
- Kein zeitintensives Umrüsten mit entsprechender Kostenreduzierung



Drilling and countersinking

Drilling and countersinking operations can be done without exchanging the quick-change holder, simply by blocking the length compensation with a locking screw.

The resulting advantages are:

- Alignment offset between drilled hole and thread reduced to a minimum
- No time-consuming re-tooling, with according cost reduction

7.1 Symbolbeschreibung der Leistungsmerkmale

7.1 Description of the symbols for performance characteristics

**Werkzeugadaptierung über Schnellwechsel-Einsätze, Typenreihe EM**

Die Schnellwechsel-Einsätze der Typenreihe EM sind zum Einsatz in unseren Schnellwechsel-Aufnahmen der Typenreihe KSN und SFM bestimmt. Die fünf Größen sind in entsprechende Gewindeabmessungsbereiche eingeteilt und in verschiedenen Ausführungen lieferbar. Die Adaptierung des Werkzeugs erfolgt bei den meisten Schnellwechsel-Einsätzen über ein Schnellwechsel-Kugelspannsystem, wobei für jeden Schaftdurchmesser ein separater Einsatz erforderlich ist. Die Schnellwechsel-Einsätze sind zur Herstellung von Rechts- und Linksgewinden geeignet.

**Tool adaptation by means of quick-change adapters, EM series**

The quick-change adapters of our EM series have been designed for use in the quick-change tap holders of our KSN and SFM series. The five sizes have been divided into corresponding thread size ranges, and are available in different types. The adaptation of the tool is made by means of a quick-change ball clamping system in most quick-change adapters, with a separate adapter being necessary for each shank diameter. Our quick-change adapters are suitable for the production of right-hand and left-hand threads.

**Werkzeugadaptierung über Schnellwechsel-Einsätze, Typenreihe HE**

Die Adaptierung der Werkzeuge erfolgt über Schnellwechsel-Einsätze der Typenreihe HE. Die Klemmung des Werkzeugs erfolgt durch Gewindestifte. Für die Einsätze HE 2/IKZZ wird ein Anzugsmoment von 15 Nm empfohlen.

**Tool adaptation by means of quick-change adapters, HE series**

The tool adaptation is effected by means of quick-change adapters of our HE series. The clamping of the tool is provided by threaded pins. For our adapters type HE 2/IKZZ, we recommend a fastening torque of 15 Nm.

**Werkzeugadaptierung über Spannzangen, Typ ER (GB)**

Die Adaptierung der Werkzeuge erfolgt über Spannzangen der Typenreihe ER bzw. ER-GB (mit integriertem Vierkant) nach DIN ISO 15488 (ehemals DIN 6499). Dadurch wird eine hohe Rundlaufgenauigkeit und eine sichere Klemmung des Werkzeugs erreicht, vor allem bei hohen Schnittgeschwindigkeiten und Kühlschmierstoff-Drücken.

**Tool adaptation by means of collets, type ER (GB)**

The tool adaptation is effected by means of collets of our ER, or our ER-GB series (with integrated square) acc. DIN ISO 15488 (formerly DIN 6499). This type of clamping helps to achieve very good concentricity and a safe clamping of the tool, especially with high cutting speeds and coolant-lubricant pressures.

**Werkzeugadaptierung über Spannzangen, Typ PGR-GB**

Die Adaptierung der Werkzeuge erfolgt über Spannzangen Typ PGR-GB (mit integriertem Vierkant).

**Tool adaptation by means of collets, type PGR-GB**

The tool adaptation is effected by means of collets of type PGR-GB (with integrated square).

**Werkzeugadaptierung über Spannzangen, Typ Rubber-Flex**

Die Adaptierung der Werkzeuge erfolgt über Rubber-Flex-Spannzangen. Diese sind Gummispannzangen mit einvulkanisierten Stahlsegmenten.

**Tool adaptation by means of collets, type Rubber-Flex**

The tool adaptation is effected by means of Rubber-Flex collets. These are rubber collets with steel segments integrated by means of vulcanisation.

Product Finder

Soft-synchro

Speed-synchro

KSN

MQL MMS

SFM

SWITCH-MASTER

GR, GR-S

HF

EM

Zubehör Accessories

Tech. Info



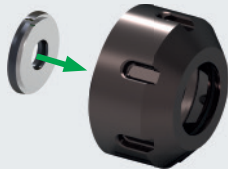
- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info**

7.2 Montage von Dichtscheibe, Spannzange und Werkzeug

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 Spannmuttern mit integriertem Dichtsystem verwendet werden – es wird keine separate Dichtscheibe benötigt. Die Spannmutter wird entsprechend dem eingesetzten Spanndurchmesser gewählt.



7.2 Assembly of sealing disk, collet and tool

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.

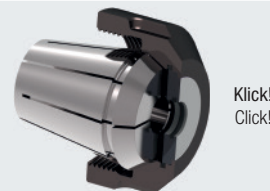
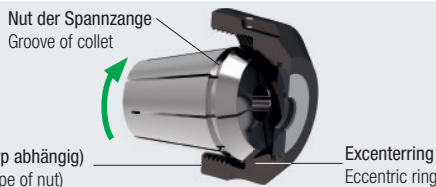
In **size 0**, you can use clamping nuts with integrated sealing system – a separate sealing disk is not needed then. The clamping nut must be selected in accordance with the clamping diameter used.



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 Spannmuttern 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!

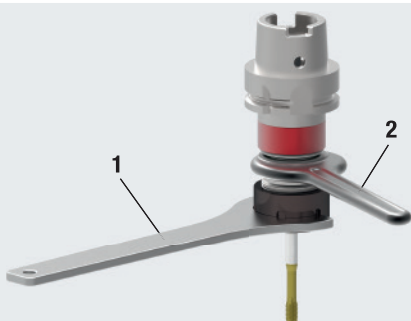


4. Werkzeug einschieben.
Wichtig: Wird eine Spannzange mit integriertem Vierkant verwendet, muss das Werkzeug durch drehen in die Position gebracht werden, dass es in das Vierkant der Spannzange geschoben werden kann.

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. Spannmutter mit Schlüssel festziehen. Hierbei sind die empf. Anzugsdrehmomente aus der Tabelle zu beachten.

5. Tighten the clamping nut with the wrench. Observe the rec. torque values in the table.



| Typ Type | Empf. Anzugsdrehmoment Rec. tightening torque (Nm) |
|--------------|--|
| Hi-Q/ERM 8 | 6 |
| Hi-Q/ERM 11 | 12 |
| Hi-Q/ER 11 | 14 |
| Hi-Q/ER 50 | 300 |
| Hi-Q/ERMC 11 | 12 |
| Hi-Q/ERMC 16 | 24 |
| Hi-Q/ERMC 20 | 28 |
| Hi-Q/ERMC 25 | 32 |

| Typ Type | Empf. Anzugsdrehmoment Rec. tightening torque (Nm) |
|-----------------|--|
| Hi-Q/ERC 11 | 14 |
| Hi-Q/ERC 16 | 40 |
| Hi-Q/ERC 20 | 32 |
| Hi-Q/ERC 25 | 80 |
| Hi-Q/ERC 32 | 90 |
| Hi-Q/ERC 40 | 180 |
| Hi-Q/ERBC 50 AF | 300 |

Angaben gelten bei Verwendung von Spannzangen Typ ER-GB. Das maximale Anzugsdrehmoment darf nicht mehr als 25% über den empfohlenen Werten liegen. Bei höheren Anzugsdrehmomenten können an der Spannzangenaufnahme bleibende Deformationen auftreten. Um das korrekte Drehmoment einstellen zu können, empfehlen wir die Verwendung eines Drehmomentschlüssels, siehe Seite 795.

The indicated values apply to collets type ER-GB. The maximum tightening torque must not be more than 25% above the recommended tightening torque. 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 795.

Wichtig: Um die Spannzangenaufnahme nicht zu beschädigen, muss beim Anziehen der Spannmutter mittels Schlüssel 1 mit dem Gabelschlüssel 2 gegengehalten werden. Passende Werkzeugsets finden Sie auf Seite 793 - 794.

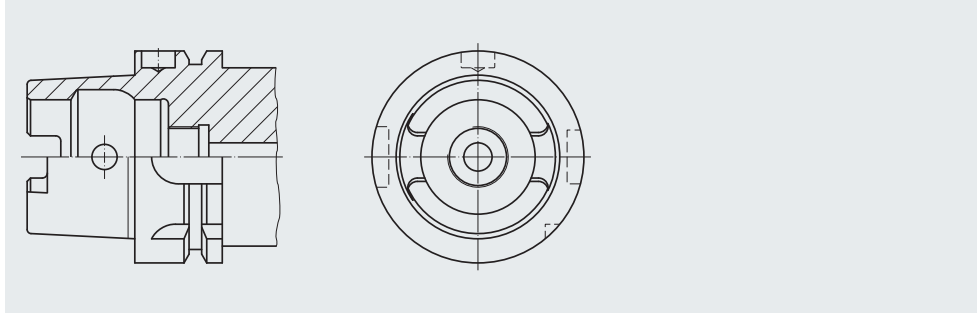
Important: In order to avoid damage to the holder, please counter with open-ended spanner 2 while tightening the clamping nut with wrench 1. For suitable tool sets, see pages 793 - 794.

7.3 Übersicht der Kegel-Hohlschäfte mit Plananlage (HSK)**7.3 Overview of hollow taper shanks with flange contact surface (HSK)****DIN 69893-1, ISO 12164-1****Form A**

- Standardausführung für Bearbeitungszentren
- Für automatischen Werkzeugwechsel mit Greif- und Indexiernut
- Zentrale Kühlschmierstoff-Zufuhr über Kühlschmierstoffrohr
- Mitnehmernuten am Kegelumlauf
- Bohrung für Datenträger (DIN 69873)
- Auch als Form C verwendbar, da Spanneinleitungsbohrung vorhanden

Form A

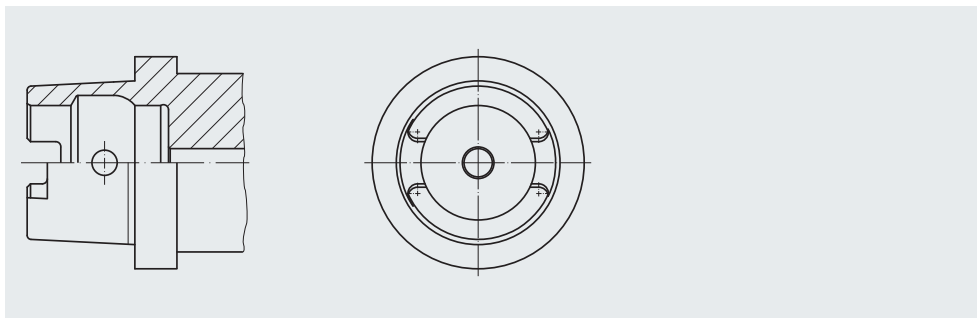
- Standard design for machining centres
- For automatic tool change with gripper and indexing groove
- Central coolant supply by way of coolant tube
- Drive-key slots at the end of the taper
- Bore for data chip (DIN 69873)
- Useable as Form C also, since clamping activation bore is included

**Form C**

- Für Sondermaschinen und modulare Werkzeugsysteme
- Für manuellen Werkzeugwechsel
- Zentrale Kühlschmierstoff-Zufuhr
- Mitnehmernuten am Kegelumlauf

Form C

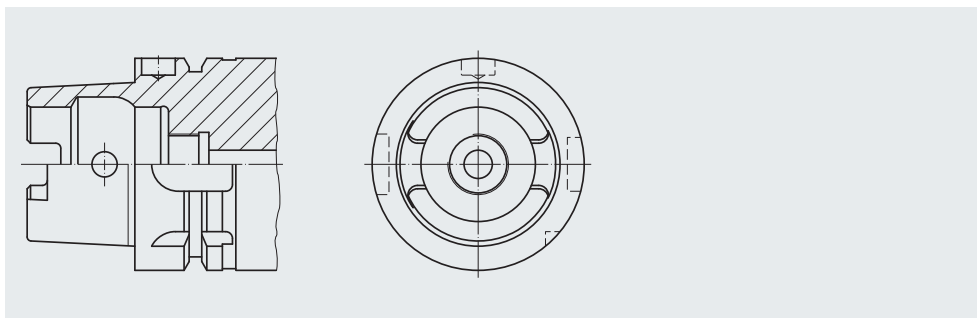
- For special machines and modular tool systems
- For manual tool change
- Central coolant supply
- Drive-key slots at the end of the taper

**ISO 12164-2****Form T**

- Für Dreh- und Fräsmaschinen
- Für automatischen Werkzeugwechsel
- Zentrale Kühlschmierstoff-Zufuhr über Kühlschmierstoffrohr
- Eingeengte Mitnehmernuten
- Bohrung für Datenträger (DIN 69873)
- Auch als Form C verwendbar, da Spanneinleitungsbohrung vorhanden

Form T

- For turning and milling machines
- For automatic tool change
- Central coolant supply by way of coolant tube
- Modified drive-key slots
- Bore for data chip (DIN 69873)
- Useable as Form C also, since clamping activation bore is included



Product Finder

Soft-synchro

Speed-synchro

KSN

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7.4 Synchrone Gewindeherstellung

Warum synchrone Gewindeherstellung mit starren Spannzangen-Aufnahmen nicht zu optimalen Werkzeugstandzeiten führt.

Bei der Herstellung eines Gewindes auf einer CNC-Maschine mit Gewindebohrern oder -formern (nachfolgend zur Vereinfachung mit Gewindewerkzeug bezeichnet) muss die Geschwindigkeit der Drehbewegung der Maschinenspindel mit der Geschwindigkeit der Vorschubachse erfasst, verrechnet und synchronisiert werden.

Bei der Verrechnung der Gewindesteigung und der Schnittgeschwindigkeit, aus der sich die Vorschubgeschwindigkeit ableitet, entstehen Fehler durch Parameter, die bei der Regelung nicht berücksichtigt werden können.

Zu erwähnen sind hier die zwei Haupteinflussgrößen:

1. Einflussgrößen durch das CNC-Bearbeitungszentrum

Rechnergeschwindigkeit, Auflösung der Achsensensorik (lineare Achse, Drehachse, C-Achse), mechanischer Zustand der Maschine.

2. Einflussgrößen durch das Gewindewerkzeug

- a) Toleranzen der Gewindesteigung nach DIN EN 22857
- b) Temperaturgang der Gewindesteigung, Längenausdehnung des Gewindewerkzeugs bei $t_{\text{Arbeit}} \neq t_{\text{Messen}}$

1. Einflussgrößen durch das CNC-Bearbeitungszentrum

Das Schneiden und Formen von Gewinden mit Synchronspindeln erfordert wegen des Formschlusses zwischen Werkzeug und Werkstück ein ständiges μ -genaues Überwachen und Regeln der Vorschubachsenbewegung in Relation zur Drehbewegung der Werkzeugspindel.

Damit unterscheidet sich die Gewindeherstellung von sonst bekannten Bearbeitungen wie z.B. Bohren, Reiben oder Fräsen. Bei diesen Bearbeitungen wird von der Steuerung lediglich eine exakte Linearbewegung zur Positionierung gefordert, da diese Werkzeuge nicht formschlüssig mit dem Werkstück verbunden sind. Dies hat zur Folge, dass das Hauptaugenmerk der Maschinenhersteller auf der Kontrolle der Linearachsen liegt. In der Praxis werden heute zur Regelung der Rotationsachse lediglich Rotgeber mit 256 Impulsen pro Spindelumdrehung (360°) eingesetzt. Dies entspricht einem Winkel und somit Überwachungsloch von 1,4° pro Impuls.

- Es entstehen Axialkräfte bei der Gewindebearbeitung durch Regelungsfehler oder Regelungsungenauigkeiten.

Beispiel:

Gewindewerkzeug M10

Gewindesteigung 1,5 mm

Mögliche unkontrollierte Spindeldrehung 1,4°

- Möglicher axialer Positionsfehler von ca. 5,8 μm zwischen Gewindewerkzeug-Sollposition und Maschinenspindel-Istposition

7.4 Rigid tapping

Why synchronous thread production with rigid collet holders will not result in optimum tool lives.

When producing a thread on a CNC machine with taps or cold-forming taps (for simplicity's sake, we will call them threading tools in the following) the speed of the rotation movement of the machine spindle with the speed of the feed axis must be registered, accounted and synchronised.

When accounting the threading tool pitch and the cutting speed – giving the feed speed, faults may occur caused by parameters not being considered during the control.

Two main influencing variables are:

1. Influencing factors by the CNC machining centre

Computer speed, resolution of the axis detection (linear axis, turning axis, C-axis), mechanical condition of the machine.

2. Influencing factors by the threading tool

- a) Tolerances of the thread pitch acc. to DIN EN 22857
- b) Change of thread pitch and length of the threading tool when $t_{\text{Work}} \neq t_{\text{Measurement}}$

1. Influencing factors by the CNC machining centre

Regarding the formfitting between tool and workpiece, the cutting and forming of threads with synchronous spindles requires permanent μ -exact control and adjusting of the feed axis movement in relation to the rotation movement of the tool spindle. Thus the thread production differs from other known kinds of machining eg drilling, reaming or milling. These processings only require an exact linear movement of the control for positioning purposes, as these tools are not connected formfitting with the workpiece. Consequently, the main emphasis of machine manufacturers is on the control of the linear axis. In practice today simply rotary pick-ups with 256 impulses per spindle rotation (360°) are used to control the rotation axis. This corresponds to an angle and so a control gap of 1.4° per impulse.

- Axial forces during thread machining arise caused by control faults or control inaccuracies.

Example:

Tap M10

Thread pitch 1.5 mm

Possible uncontrolled spindle rotation 1.4°

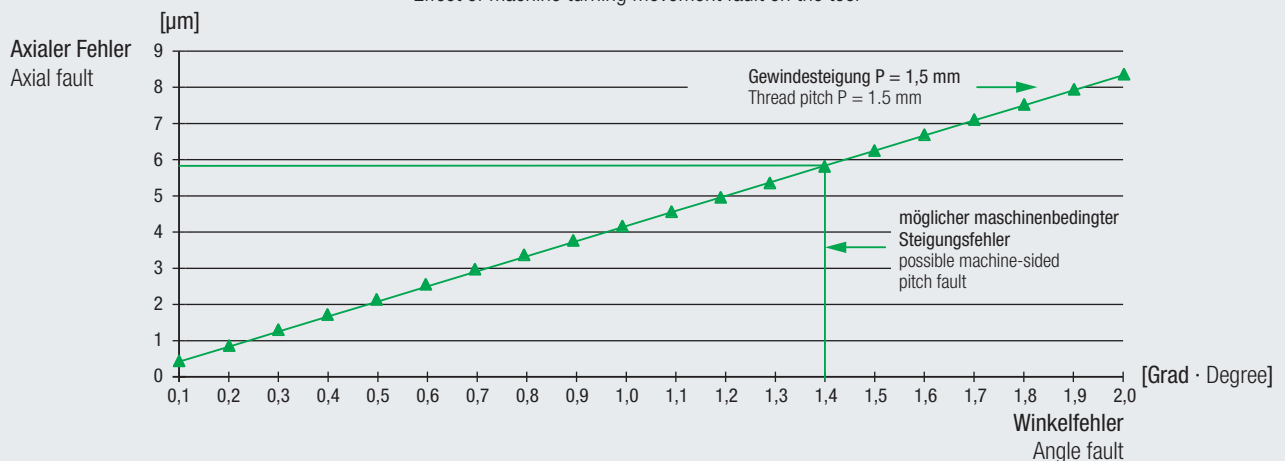
- Possible axial position fault of about 5.8 μm between threading tool specified position and machine spindle real position.

Diagramm Maschinenspindelrehpositionsfehler / axiale Steigungsfehler (gewindesteigungsabhängig)

Auswirkung des Fehlers der Maschinendrehbewegung auf das Gewindewerkzeug

Graph machine spindle turning position fault / axial pitch fault (depends on thread pitch)

Effect of machine turning movement fault on the tool



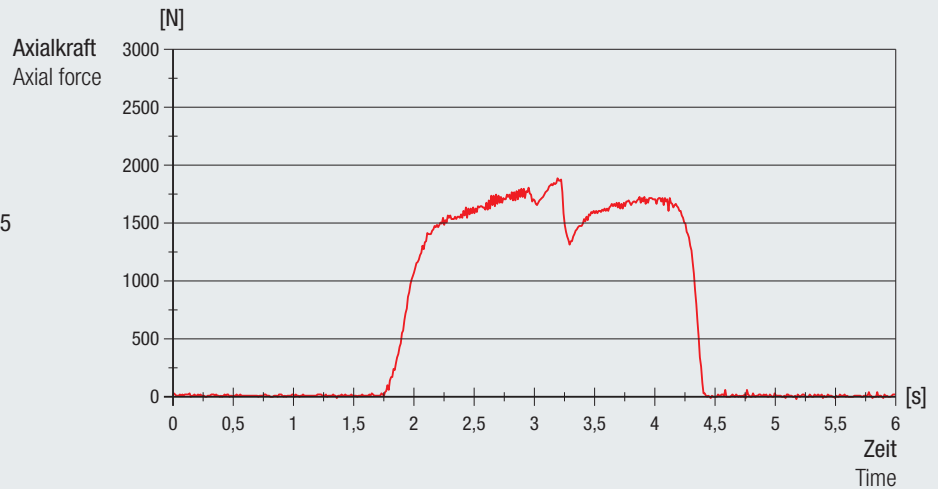
7.4 Synchrone Gewindeherstellung

Hinzu kommt, dass die Rechengeschwindigkeit moderner CNC-Bearbeitungsmaschinen nicht ausreicht, um eine höhere Anzahl von Impulsen des Rotgebers im Bereich von $n = 0$ bis zur max. Spindeldrehzahl zu verarbeiten und die zu synchronisierenden Achsen einzuregeln. Am Beispiel eines CNC-Bearbeitungszentrums mit 256 Impulsen pro Spindelumdrehung kann man aufzeigen, dass die Axialkraft, die auf die Gewindefräßwerkzeugflanken wirkt, mit zunehmender Schnittgeschwindigkeit ansteigt. Die folgenden Diagramme zeigen, dass die Axialkraft für das Formen eines Gewindes M10 bei 500 min^{-1} (ca. $15,7 \text{ m/min}$) bei ca. 1900 N liegt und mit einer Steigerung der Drehzahl auf 2000 min^{-1} ($62,8 \text{ m/min}$) bei über 2500 N . Dadurch ist deutlich zu erkennen, dass die entstehende Axialkraft, verursacht durch Synchronisierungsfehler, drehzahlabhängig ist.

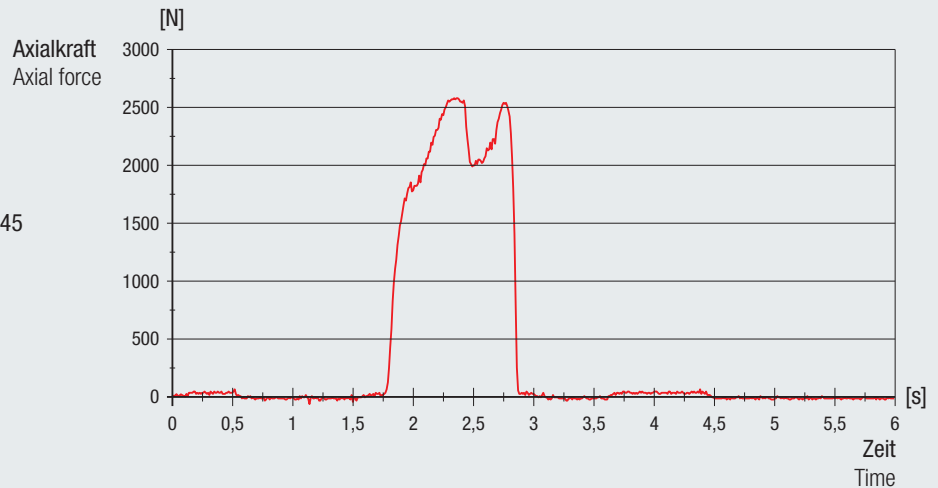
7.4 Rigid tapping

Additionally, the computer speed of modern CNC machining centers is not sufficient to handle a higher number of impulses of the rotary pick-up in the range of $n = 0$ up to the max. spindle speed and to adjust the axis to be synchronised. The example of a CNC machining center with 256 impulses per spindle rotation shows that the axial force working on the tool flanks, increases with growing cutting speed. The following graphs show that the axial force for forming an M10 thread with 500 rpm (about 15.7 m/min) is at about 1900 N ; with an increase of the speed to 2000 rpm (about 62.8 m/min) at over 2500 N . This clearly shows that the arising axial force, caused by the synchronisation fault, depends on the speed.

Drehzahl 500 min^{-1} Gewindeförder M10 in C45
Speed 500 rpm Cold-forming tap M10 in C45



Drehzahl 2000 min^{-1} Gewindeförder M10 in C45
Speed 2000 rpm Cold-forming tap M10 in C45



Product Finder

Soft-synchro

Speed-synchro

KSN

MQL MMS

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SWITCH-MASTER

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- Speed-synchro
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- ML MMS
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7.4 Synchrone Gewindeherstellung

2. Einflussgrößen durch das Gewindewerkzeug

a) Toleranzen der Gewindesteigung

Für Gewindewerkzeuge sind in der europäischen Norm DIN EN 22857 die Abmessungen und Toleranzen für geschliffene Gewinde festgelegt.

Aus der Norm ist zu entnehmen, dass für die Gewindewerkzeugtoleranz eine kleinste Abweichung von $\pm 8 \mu\text{m}$, bezogen auf eine definierte Anzahl von Gewindegängen, zugelassen ist.

Beispiel:

Gewindewerkzeug M10
 Gewindesteigung 1,5 mm
 Prüflänge 7 Gänge
 ➤ Zulässige Steigungstoleranz $\pm 8 \mu\text{m}$

7.4 Rigid tapping

2. Influencing factors by the threading tool

a) Tolerances of the thread pitch

For threading tools the European standard DIN EN 22857 defines the dimensions and tolerances for ground threads. Extract from the standard DIN EN 22857

For the tool tolerance the standard allows a smallest deviation of $\pm 8 \mu\text{m}$ referred to a defined number of threads.

Example:

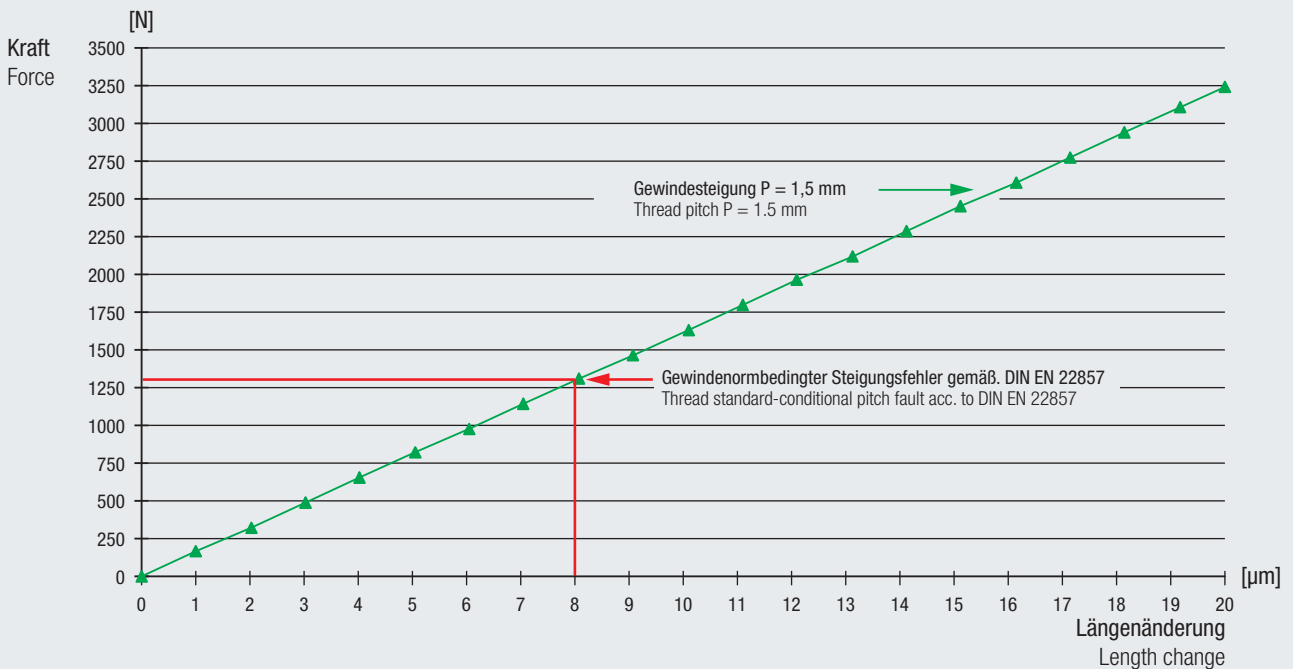
Tap M10
 Thread pitch 1.5 mm
 Check length 7 threads
 ➤ Allowed pitch tolerance $\pm 8 \mu\text{m}$

Kraft/Weg-Diagramm

Benötigte Kraft für die Längenänderung eines Gewindewerkzeugs mit Schaftdurchmesser 10 mm

Force/Movement graph

Required force for the length change of threading tool with shank diameter 10 mm



b) Temperaturgang der Gewindesteigung, Längenausdehnung des Gewindewerkzeugs bei $t_{\text{Arbeit}} \neq t_{\text{Messen}}$

Jede von der Messtemperatur 20°C abweichende Werkzeugtemperatur führt zu einer Längenänderung. Bezogen auf ein Gewindewerkzeug M10 mit 100 mm Länge ergibt sich bei einer Temperaturänderung von 20 °C auf z.B. 40 °C eine Längenänderung von 32 μm .

Bezogen auf die Prüflänge von 7 Gang gemäß DIN EN 22857 ergibt sich folgendes **Beispiel**:

Gewindewerkzeug M10
 Gewindesteigung 1,5 mm
 Gewindewerkzeuglänge 100 mm
 Prüflänge 7 Gänge = 10,5 mm

➤ Axiales Wachsen des Werkzeugs und somit der Gewindesteigung von 3,4 μm

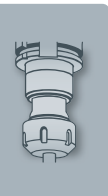
b) Change of thread pitch and length of the threading tool when $t_{\text{Work}} \neq t_{\text{Measurement}}$

Each tool temperature – differing from the measuring temperature 20°C – causes a change in length. For an M10 tap with 100 mm length the temperature change from 20 °C to eg 40 °C a causes length change of 32 μm .

Considering a check length of 7 threads acc. to standard DIN EN 22857 the following **example** results:

Tap M10
 Thread pitch 1.5 mm
 Tap length 100 mm
 Check length 7 threads = 10.5

➤ Axial growth of the tool and thread pitch of 3.4 μm



7.4 Synchrone Gewindeherstellung

7.4 Rigid tapping

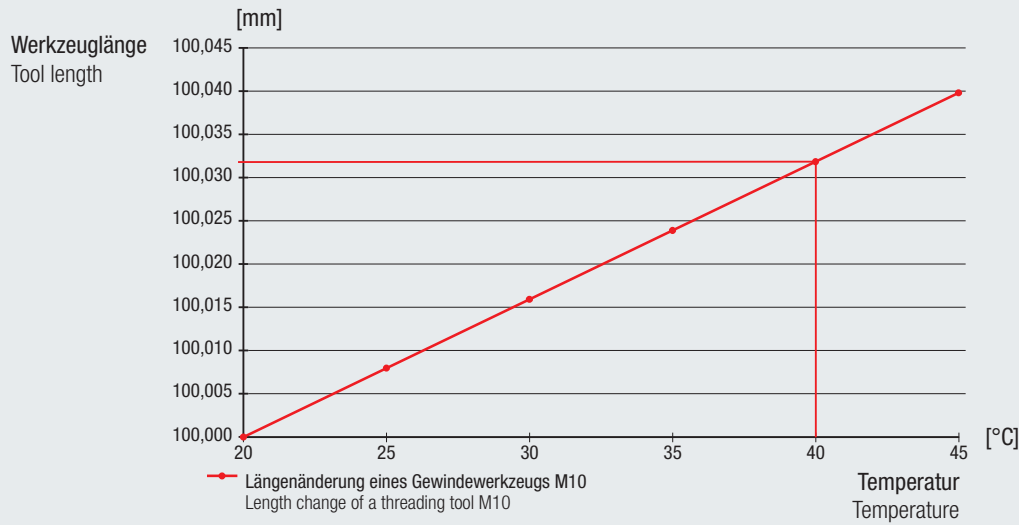
- Product Finder
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Temperaturgang eines Gewindewerkzeugs M10

Länge 100 mm, Temperaturveränderung 20 °C, Längenänderung 32 µm

Temperature change development of a threading tool M10

Length 100 mm, temperature change 20 °C, length change 32 µm



Bezogen auf eine Prüflänge von 7 Gang gemäß DIN EN 22857 ergibt sich bei einer Gewindesteigung von 1,5 mm eine **axiale Längenänderung von 3,4 µm**.

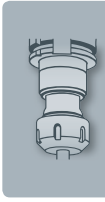
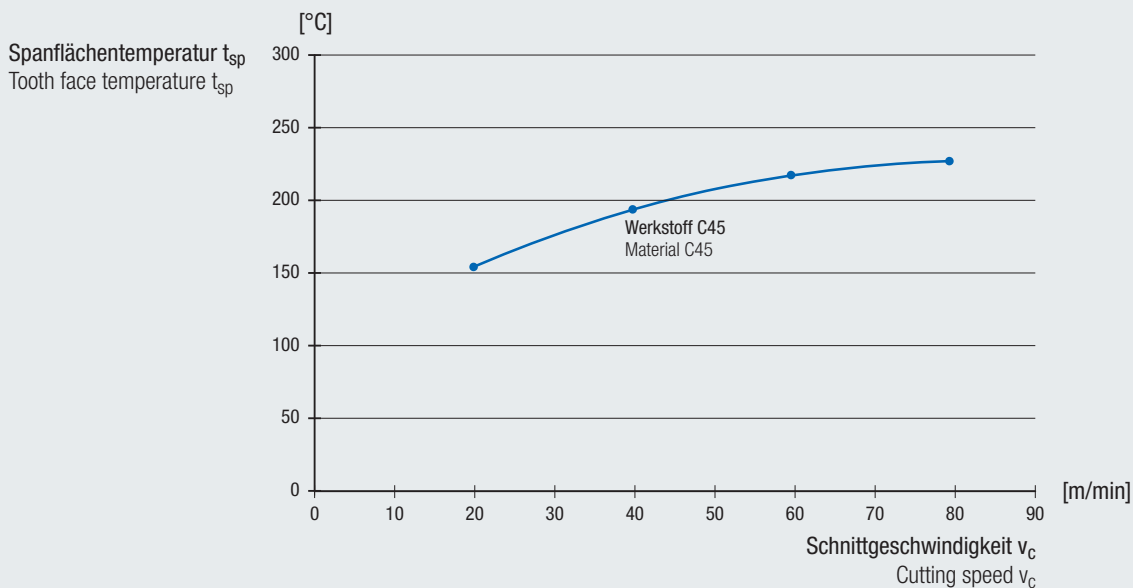
Referred to a check length of 7 threads acc. to DIN EN 22857 and a pitch of 1.5 mm the **axial length would change by 3.4 µm**.

Der Nachweis einer Temperaturänderung des Gewindewerkzeugs kann durch die Messung der Temperatur an der während der Gewindeherstellung meist belasteten Spanfläche erfolgen. Im folgenden Diagramm ist die Temperatur der Spanfläche für ein Gewindewerkzeug M10 bei verschiedenen Schnittgeschwindigkeiten aufgetragen. Als Werkstoff wurde C45, als Kühlschmierstoff 5%ige Emulsion verwendet.

The proof of a change in temperature of the threading tool can be given by measuring the cutting face being heaviest used during the thread production. The following graph shows the temperature of the cutting face for a threading tool M10 with various cutting speeds. Material used is C45, coolant-lubricant is 5% emulsion.

Temperaturverlauf an der Gewindewerkzeugschneide (M10), Emulsion als Kühlschmierstoff

Temperature progressing on the tool tooth face (M10), emulsion as coolant-lubricant



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
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- Tech. Info

7.4 Synchrone Gewindeherstellung

Zusammenfassung

Um die gesamte Auswirkung der einzelnen Einflussfaktoren, die hier angesprochen wurden, auf die Axialkraftkomponente des Gewindeherstellungsprozesses zu erkennen, müssen die aufgeführten möglichen Positionsfehler, Längenänderungen bzw. Kräfte, die zu Längenänderungen führen, zusammengefasst werden.

Das folgende **Diagramm** zeigt auf:

- Bei einer Addition der möglichen Axialfehler durch maschinen-, steigungstoleranz- und temperaturbedingte Einflussgrößen kann im ungünstigsten Fall ein Positionsfehler zwischen Soll-Position des Gewindewerkzeugs und Ist-Position der Maschinenspindel von über 17 µm entstehen,
- **Dieser Positionsfehler führt zu einer Axialkraft von ca. 2800 N** in dem hier gezeigten Beispiel mit einem Gewindewerkzeug M10,
- Diese Kraft wird von den Gewindeflanken des Gewindewerkzeugs aufgenommen, was erhöhte Flankenreibung und dadurch erhöhten Werkzeugverschleiß zur Folge hat.

7.4 Rigid tapping

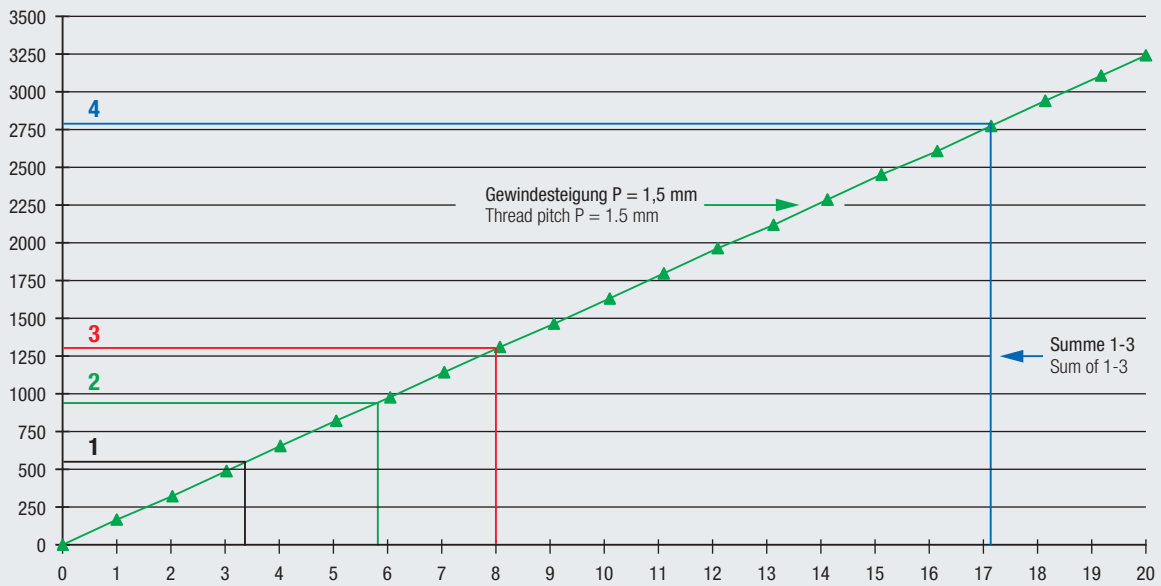
Summary

To realise the total effect of the individual influencing factors mentioned before on the axial force component of the thread producing process, the shown possible position faults, length changes resp. the forces causing length changes must be combined.

The following **graph** shows:

- With an addition of possible axial faults caused by machine pitch tolerance or temperature influencing factors a position fault between specified position of the tap and real position of the machine spindle of more than 17 µm may arise
- **This position fault results in an axial force of about 2800 N** in the shown example with a threading tool M10.
- This force is taken up by the flanks of the tool resulting in increasing flank friction and increased tool wear.

Kraft/Weg-Diagramm
Benötigte Kraft für die Längenänderung eines Gewindewerkzeugs mit Schaftdurchmesser 10 mm
Force/Movement graph
Required force for the length change of threading tool with shank diameter 10 mm



- 1** Möglicher temperaturbedingter Steigungsfehler
Possible temperature-caused pitch fault
- 2** Möglicher maschinenbedingter Steigungsfehler
Possible machine-caused pitch fault
- 3** Möglicher norm-, bzw. gewindewerkzeugbedingter Steigungsfehler
Possible standard resp. threading tool caused pitch fault
- 4** Mögliche Axialkraft auf die Werkzeugflanken
Possible axial force on the tool flanks

Diese zugegebenermaßen theoretischen Betrachtungen der Vorgänge bei der Herstellung eines Gewindes lassen sich jedoch praktisch belegen.

These perhaps theoretical reflections of the processes during production of a thread can be proven in practice.

7.4 Synchrone Gewindeherstellung

Als **Beispiel** wird ein Gewinde M10 mit drei unterschiedlichen Werkzeughaltern in den Werkstoff C45 geformt. Die Axialkräfte wurden dabei bei zwei Drehzahlen, $500 \text{ min}^{-1} = 15,7 \text{ m/min}$ und $2000 \text{ min}^{-1} = 62,8 \text{ m/min}$, aufgezeichnet. Folgende Spannzangen-Aufnahmen wurden getestet:

- Starre Synchron-Spannzangen-Aufnahme,
- EMUGE Spannzangen-Aufnahme Softsynchro® der Größe 1 mit Minimallängenausgleich auf Druck und Zug,
- Synchron-Spannzangen-Aufnahme eines Wettbewerbers mit Minimallängenausgleich mit axialer Dämpfung

Bei allen getesteten Spannzangen-Aufnahmen wurde eine Spannzange Typ ER20-GB, also mit integriertem Vierkant, verwendet.

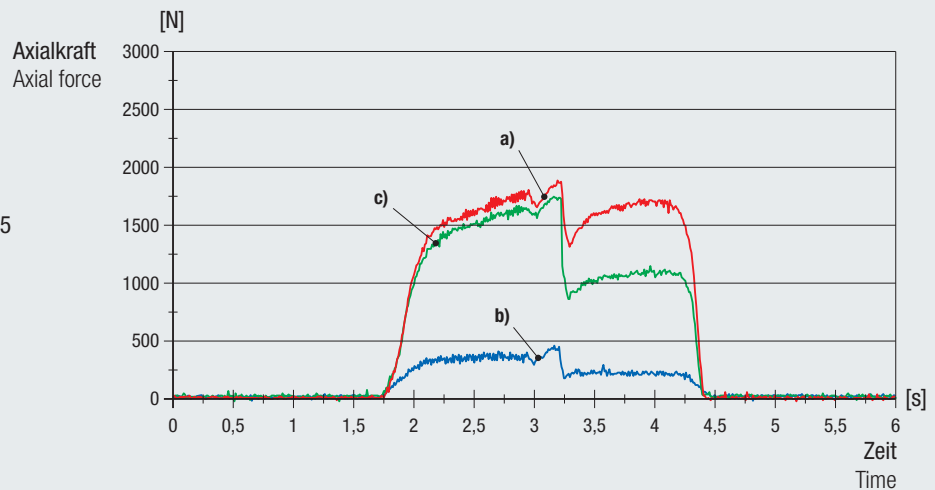
7.4 Rigid tapping

As an **example** an M10 thread with three different tool holders is formed in material C45. The axial forces were recorded at two speeds which were $500 \text{ rpm} = 15.7 \text{ m/min}$ and $2000 \text{ rpm} = 62.8 \text{ m/min}$. The following collet adaptations have been tested:

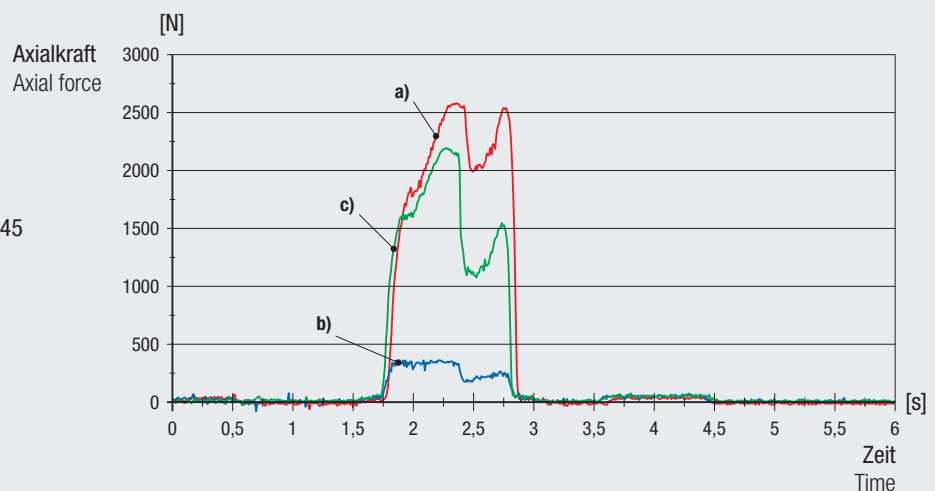
- Rigid synchronous collet adaptation
- EMUGE collet adaptation Softsynchro® size 1 with minimum length compensation on compression and tension
- Synchronous collet adaptation of a competitor with minimum length compensation with axial damping

With all tested collet adaptations a collet type ER20-GB with integrated square was used.

Drehzahl 500 min^{-1} Gewindeformer M10 in C45
Speed 500 rpm Cold-forming tap M10 in C45



Drehzahl 2000 min^{-1} Gewindeformer M10 in C45
Speed 2000 rpm Cold-forming tap M10 in C45



Folgende Erkenntnisse können aus den Versuchen gewonnen werden:

- Die Axialkräfte nehmen mit steigender Drehzahl zu
- Die auftretenden Kräfte beim Gewindeformen mit einer starren Spannzangenaufnahme sind erheblich höher als beim Gewindeformen mit der EMUGE Spannzangen-Aufnahme Typ Softsynchro®
- Die Wettbewerbs-Spannzangen-Aufnahme dämpft im Vergleich zur starren Spannzangen-Aufnahme die Kräfte nur leicht

The following results were verified in these tests:

- Axial forces increase with the raise of speed
- The forces which come into play in the coldforming of threads are considerably higher with a rigid collet holder than with an EMUGE collet holder type Softsynchro®
- The competition collet holder can absorb the upcoming forces only lightly, in comparison with the rigid collet holder

Product Finder

Soft-synchro

Speed-synchro

KSN

MQL MMS

SFM

SWITCH-MASTER

GR, GR-S

HF

EM

Zubehör Accessories

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7.4 Synchrone Gewindeherstellung

Was ist die Ursache für das hervorragende Axialkraftverhalten der EMUGE Spannzangen-Aufnahmen Softsynchro® mit Minimal-längenausgleich?

Wichtiges Merkmal ist die patentierte konstruktive Trennung der Übertragung von Drehmoment und Axialkraft.

Weitere konstruktive Merkmale der EMUGE Spannzangen-Aufnahmen Softsynchro® sind:

- **C-Achsen-Spielfreiheit des Gewindegewindeschneidfutters durch form-schlüssige Drehmomentübertragung über Stahlkugeln**
- **Weiches Ansprechen des vorgespannten Minimallängenausgleichs nach Überschreitung der konstruktiv vorgegebenen Führungskraft durch nahezu verlustfreie Rollreibung der Drehmomentübertragungskugeln in ihren Kugellaufbahnen**
- **Minimaler Längenausgleich und Axialkraftübertragung über vorgespannte Elastomerfedern**
- **Elastomerfedern, die durch ihre Dämpfungseigenschaften ein Aufschwingen der Werkzeugschneide verhindern**

Wird die Trennung der Übertragung von Axialkraft und Drehmoment nicht berücksichtigt, dann wird – wie bei dem Beispiel des Wettbewerb-futters zu sehen – schon zu Beginn der Gewindebearbeitung ein Axialfehler erzeugt. Die Folge ist – wie in den Diagrammen auf der vorhergehenden Seite zu erkennen – ein sofortiges starkes Ansteigen der Axialkraft. Dies wird durch eine praxisbezogene Konstruktion der Spannzangen-Aufnahmen wie beim Softsynchro® verhindert.

Für Werkzeugmaschinen, die die Eigenschaft einer synchronen Gewindebearbeitung nicht zur Verfügung stellen, ist es notwendig, einen größeren Längenausgleich als beim Minimallängenausgleich der Softsynchro® Futter zu verwenden.

Dafür stellt EMUGE Längenausgleichsfutter KSN/HD mit Zangenaufnahme und innerer Kühlschmierstoff-Zufuhr zur Verfügung. Hierbei werden die Vorteile der Spannung des Gewindewerkzeugs über Spannzangen mit denen eines klassischen Längenausgleichsfutters kombiniert.

7.4 Rigid tapping

What is the reason for the outstanding axial force performance of the EMUGE Softsynchro® tap holders with minimum length compensation? Important feature is the patented designed separation of torque and axial force transmission.

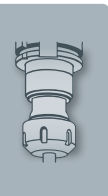
Further design features of the EMUGE Softsynchro® tap holders are:

- **Clearance-free C-axes by formfitting torque transmission over steel balls.**
- **Smooth response of the pre-stressed minimum length compensation after exceeding the constructive defined guiding force by nearly loss-free roll friction of the torque transmission balls in their ball tracks.**
- **Minimum length compensation and axial force transmission over pre-stressed elastomer springs.**
- **Elastomer springs preventing the tool cutting edge from bracing by their damping characteristics.**

If the separation of torque and axial force transmission is disregarded, an axial fault is caused immediately when starting the thread cutting process, see example of the competition collet holder. Consequently, the axial force immediately increases heavily, see graphs on the preceding page. This is avoided by the practical-related design of the Softsynchro®.

For machine tools not providing the feature of synchronous thread machining it is necessary to use a larger length compensation than the minimum length compensation of the Softsynchro® holders.

EMUGE supplies length compensation holders KSN/HD with collet adaptation and internal coolant supply. The advantages of clamping the tool over collets are combined with those of a classic length compensation holder.



7.5 Spannzangen-Aufnahmen Softsynchro® Modular

Ergänzung der Typenreihe Softsynchro®

Auf Grund der Anforderung verschiedenster Anwender aus dem Automobilbereich wurde die erfolgreiche Typenreihe Softsynchro® um die Variante Softsynchro® Modular erweitert.

Die **Modularität** der Spannzangen-Aufnahmen besteht aus **variabel austauschbaren Übergabeelementen** und **Längeneinstellschrauben**.

Ein Gewindedrahteinsatz erlaubt eine kraftabhängige, minimale Axialbewegung der Längeneinstellschraube. Die beim Anziehen der Spannmutter auf das vorgeschriebene Anzugsdrehmoment entstehende Axialkraft zwischen Längeneinstellschraube und Gewindewerkzeug wird dabei minimiert.

Moderne Werkzeugmaschinen zeichnen sich durch eine hohe Rotationsbeschleunigung der Spindel aus. Durch den Gewindedrahteinsatz wird die Längeneinstellschraube zusätzlich gegen Verdrehen beim Umschalten der Spindeldrehrichtung gesichert.

Die neue Variante Softsynchro® Modular ist für die Minimalmengenschmierung (MMS) als Ausführung **Softsynchro® Modular/MQL** und für die innere Kühlschmierstoff-Zufuhr (IKZ) als Ausführung **Softsynchro® Modular/IKZ** erhältlich.

7.5 Collet holders Softsynchro® Modular

Completion of the Softsynchro® series

Because of the requirement of various users from the automotive industry, the successful Softsynchro® series has been expanded by the version Softsynchro® Modular.

The **modularity** of the collet holders consists of **variable exchangeable transfer elements** and **length adjustment screws**.

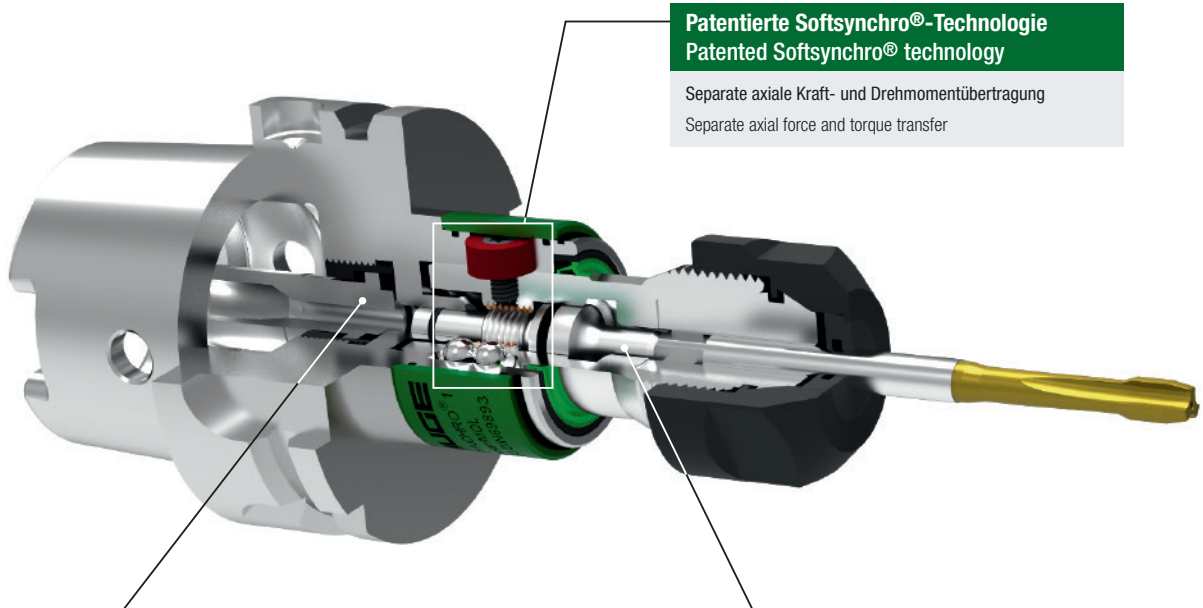
A wire thread insert allows a force-dependent minimal axial movement of the length adjustment screw. The axial force between length adjustment screw and threading tool – arising during tightening the clamping nut to the required tightening torque – is minimised by this design.

Modern machine tools stand out with a high rotation acceleration of the spindle. The wire thread insert secures the length adjustment screw additionally against twisting during switching of the spindle rotation direction.

The new version Softsynchro® Modular is available for minimum quantity lubrication (MQL) as **Softsynchro® Modular/MQL** and for internal coolant supply (IKZ) as **Softsynchro® Modular/IKZ**.

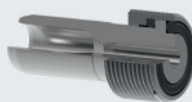
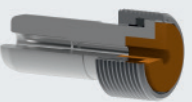
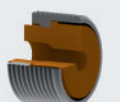
- Product Finder
- Softsynchro
- Speedsynchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info**

Softsynchro® Modular/MQL



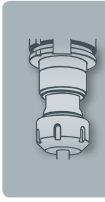
Patentierte Softsynchro®-Technologie
Patented Softsynchro® technology
 Separate axiale Kraft- und Drehmomentübertragung
 Separate axial force and torque transfer

MMS-Übergabeelement
MQL transfer element

-  Kühlschmierstoff-Rohr HSK-A für 1-Kanal-MMS-System
Coolant tube HSK-A for 1-channel MQL system
-  Kühlschmierstoff-Rohr HSK-A für 2-Kanal-MMS-System
Coolant tube HSK-A for 2-channel MQL system
-  Füllstück bei Verwendung von HSK-A als HSK-C für 1-Kanal-MMS-System
Adapter for application of HSK-A as HSK-C for 1-channel MQL system

Längeneinstellschraube
Length adjustment screw

-  Innenkegel, für Werkzeugschaft mit Außenzentrierung 90°
Internal taper, for tool shank with male centre 90°
-  Außenkegel, für Werkzeugschaft mit Innenzentrierung 60°
External taper, for tool shank with female centre 60°

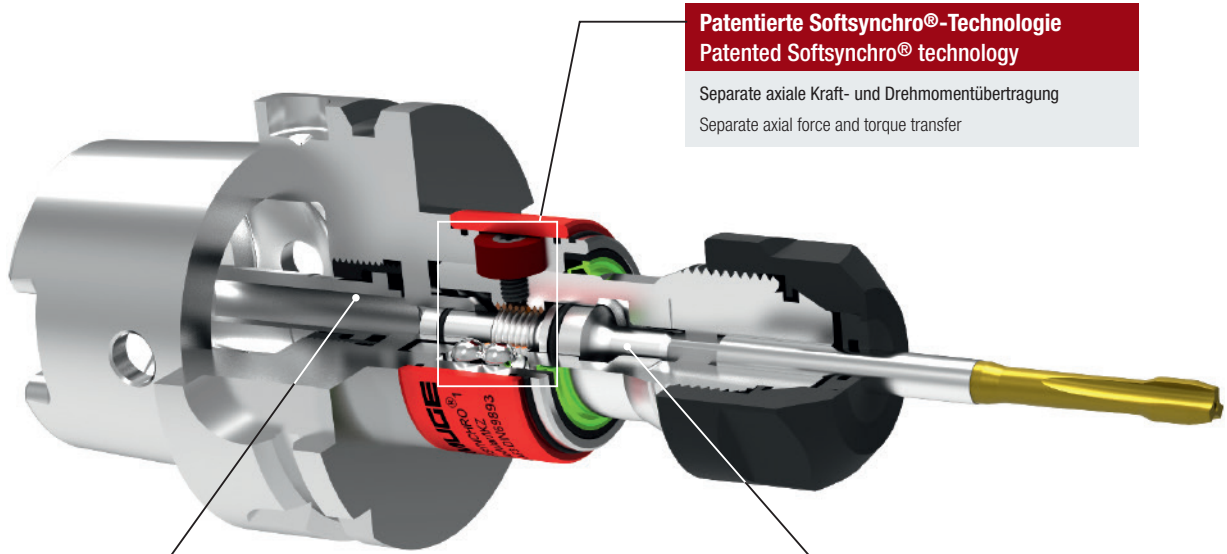


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7.5 Spannzangen-Aufnahmen Softsynchro® Modular

7.5 Collet holders Softsynchro® Modular

Softsynchro® Modular/IKZ



Patentierte Softsynchro®-Technologie Patented Softsynchro® technology

Separate axiale Kraft- und Drehmomentübertragung
Separate axial force and torque transfer

MMS-Übergabelement MQL transfer element



Standard-Kühlschmierstoff-Rohr HSK-A nach DIN 69895
Standard coolant tube HSK-A acc. DIN 69895

Längeneinstellschraube Length adjustment screw



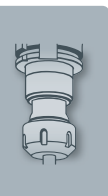
Für Werkzeugschaft mit Innen- oder Außenzentrierung
For tool shank with male or female centre

Das Softsynchro® Modular bietet die gleichen Vorteile des Minimallängenausgleichs wie bei der synchronen Gewindebearbeitung. Mehr zum Thema siehe **7.4 Synchrone Gewindeherstellung**.

The Softsynchro® Modular offers the same advantages of the minimum length compensation as in a synchronous thread machining. For more information on this topic, see **7.4 Rigid Tapping**.

Eine Anleitung zur Montage der Dichtscheibe, Spannzange und Werkzeug sowie korrekte Anzugsdrehmomente siehe **Kapitel 7.2 Montage von Dichtscheibe, Spannzange und Werkzeug**.

For an instruction on how to assemble the sealing disk, collet and tool as well as correct torques, please refer to chapter **7.2 Assembly of sealing disk, collet and tool**.



7.6 Minimalmengenschmierung (MMS)

Allgemeines

Unter Minimalmengenschmierung versteht man das Kühlen von Zerspanungsprozessen mit sehr geringen Mengen Kühlschmierstoff. Dabei ist es wichtig, dass der Kühlschmierstoff geradlinig an die Wirkstelle Werkzeug/Werkstück geführt wird, um dort die Entstehung von Reibwärme zu reduzieren. Der Kühlschmierstoff muss auch bei häufigem Werkzeugwechsel prozesssicher dosiert und zum Werkzeug geleitet werden. Von Minimalmengenschmierung spricht man, wenn eine Menge von 5 bis 50 ml/h des MMS-Mediums verbraucht wird, als Trägermedium dient Luft. Das Verfahren ist eine Weiterentwicklung der Nassbearbeitung, bei der die Bearbeitungsstelle mit Kühlschmierstoff geflutet wird. Eine weitere Variante ist die Trockenbearbeitung, die ganz auf Kühlschmierstoffe bei der Zerspanung verzichtet.

Unterscheidung der MMS-Systeme

Generell wird zwischen **externen** und **internen** MMS-Systemen unterschieden:

- Bei der **externen** Zuführung wird das Luft-Öl-Gemisch von außen an die Bearbeitungsstelle über eine im Bearbeitungsraum der Werkzeugmaschine installierte Düse zugeführt. Es sind keine speziellen Halter oder Werkzeuge notwendig.
- Bei der **internen** Zuführung wird das MMS-Medium durch eine für Minimalmengenschmierung geeignete Drehdurchführung, die Arbeitsspindel, den Werkzeughalter und das Werkzeug direkt bis zur Werkzeugschneide geführt. Hierfür sind spezielle Halter mit einer geraden, strömungsgünstigen Durchführung des MMS-Mediums notwendig. Ebenso werden MMS-optimierte Werkzeuge mit einer an den Halter angepassten Übergabefase und optimierten Austritten benötigt.

Bei der **internen** Zuführung wird wiederum zwischen **1-Kanal-MMS-System** und **2-Kanal-MMS-System** unterschieden:

- Beim **1-Kanal-MMS-System** wird das Luft-Öl-Gemisch vor dem Eintritt in die Maschinenspindel im MMS-Gerät erzeugt und durch die Arbeitsspindel und das Spannsystem zur Wirkstelle geleitet.
- Beim **2-Kanal-MMS-System** werden Öl und Luft getrennt durch die Spindel geführt, die Mischung der beiden Medien erfolgt beim Eintritt in den Werkzeughalter.

7.6 Minimum-quantity lubrication (MQL)

General information

By minimum-quantity lubrication, we mean the cooling of machining processes with very small amounts of coolant-lubricant. In this, it is important that the coolant-lubricant is conveyed directly to the point of contact between tool and workpiece in order to reduce the generation of heat by friction there. Even with repeated tool changes, the coolant-lubricant must be dosed and transported to the tool with the highest possible degree of process safety. The term minimum-quantity lubrication applies when a quantity of 5 to 50 ml/h of the MQL medium is consumed, air is used as a carrier medium. This technique is a redeveloped version of wet machining where the machining area is flooded with coolant-lubricant. Another technique is dry machining which is done completely without coolant-lubricant.

Different MQL systems

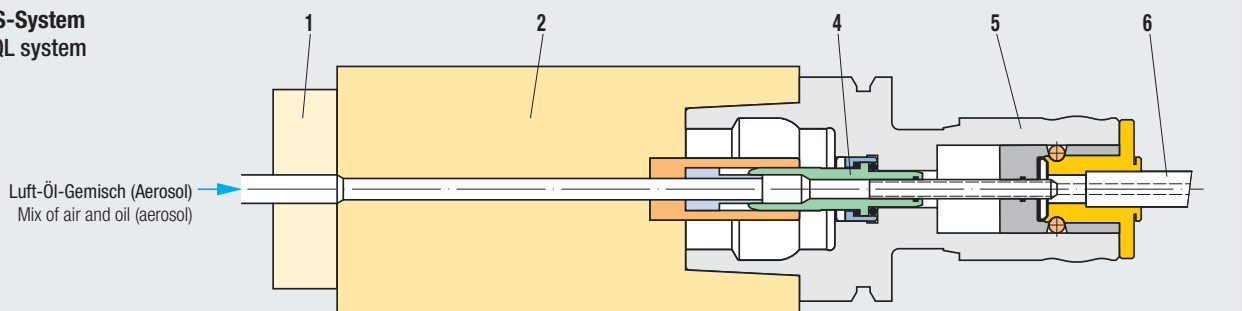
Generally, we make a distinction between **external** and **internal** MQL systems:

- With **external** supply systems, the aerosol containing the oil is sprayed onto the point of machining through a jet installed in the machining space of the machine tool. No special holders or tools are needed.
- With **internal** supply systems, the MQL medium is conveyed through a rotary transmission, the work spindle, the tool holder and the tool itself, directly to the cutting edge of the tool. For such systems, special holders with a straight feed-through of the MQL medium for perfect flow are necessary. What is also needed are tools specially designed for MQL, with a transfer chamfer adjusted to the holder and with optimised coolant-lubricant outlets.

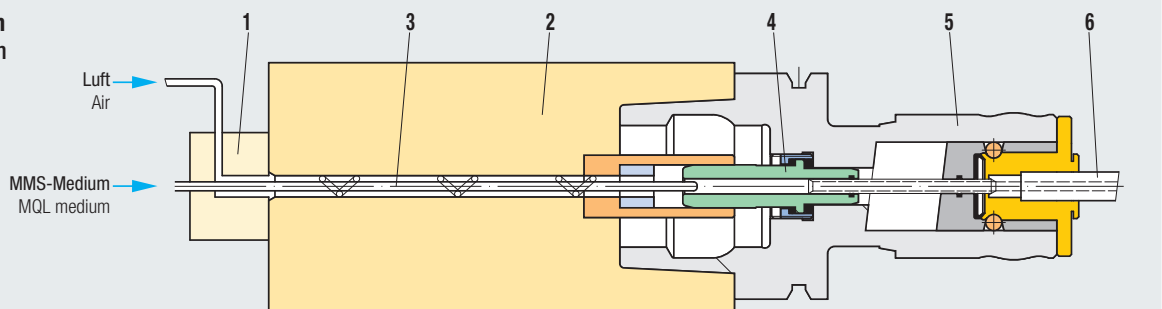
With the **internal** supply systems, we make a further distinction between **1-channel MQL** systems and **2-channel MQL** systems:

- In a **1-channel MQL** system, the aerosol is generated in the MQL device before it enters into the machine spindle, and is then conducted through the work spindle and the clamping system to the point where it is needed.
- In a **2-channel MQL** system, oil and air are conducted through the spindle separately, the mixing of the two media is done only at the point where they enter the tool holder.

1-Kanal-MMS-System 1-channel MQL system



2-Kanal-MMS-System 2-channel MQL system



- 1 Drehdurchführung
Rotary transmission
- 2 Arbeitsspindel
Work spindle

- 3 MMS-Medium-Lanze
MQL medium lance
- 4 Übernahmeeinheit
Transfer unit

- 5 Werkzeug-Aufnahme
Tool holder
- 6 Werkzeug
Tool

Product Finder

Soft-synchro

Speed-synchro

KSN

MQL MMS

SFM

SWITCH-MASTER

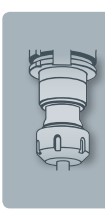
GR, GR-S

HF

EM

Zubehör Accessories

Tech. Info



- Product Finder
- Softsynchro
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- ML MMS
- SFM
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7.6 Minimalmengenschmierung (MMS)

Die Werkzeug-Aufnahmen

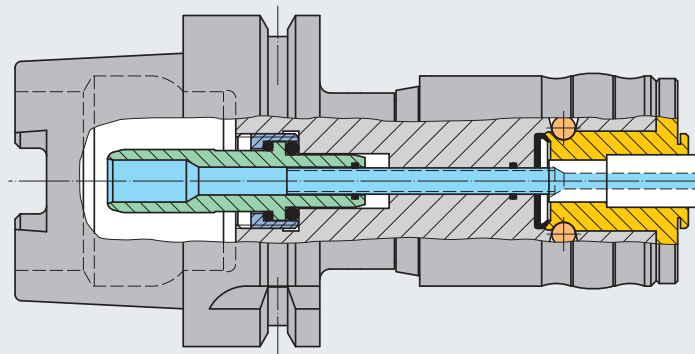
Die Werkzeug-Aufnahmen für Minimalmengenschmierung müssen nicht nur das Werkzeug sicher spannen, sondern auch einen ungehinderten, verlustfreien und strömungsoptimierten Durchfluss des Luft-Öl-Gemisches ermöglichen. Beim 2-Kanal-MMS-System muss zusätzlich noch bei der Übergabe von der Spindel zum Schaft das Gemisch aus Luft und Öl erzeugt werden. Durch diese Anforderungen sind spezielle Schnellwechsel- und Spannzangen-Aufnahmen entstanden, die den jeweiligen Anforderungen der MMS-Systeme gerecht werden. Zusätzlich wurden Werknormen bzw. die Norm E DIN 69090 erarbeitet, welche die Übergabestellen von der Spindel zur Werkzeug-Aufnahme festlegen. Auch diesen Normen werden die EMUGE-Aufnahmen gerecht.

Um Toträume und Versackungen zu vermeiden, bietet EMUGE auch die für die Minimalmengenschmierung passenden Werkzeuge an. Die Übergabe von der Werkzeug-Aufnahme zum Werkzeug kann somit optimal aufeinander abgestimmt werden.

Folgende Werkzeug-Aufnahmen stehen zur Verfügung:

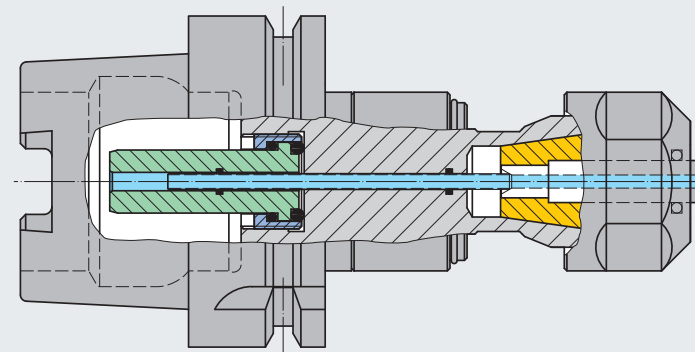
1. KSN/MQL

Diese Schnellwechsel-Aufnahmen sind mit einem Längenausgleich auf Zug und Druck, dem von EMUGE patentierten Druckpunktmechanismus und der bewährten Zugausrüstung ausgestattet. Zusätzlich wird durch ein angefedertes Rohr eine hindernisfreie Führung des Luft-Öl-Gemisches erreicht. Dieses Rohr sorgt auch für eine permanente Übergabe des Gemisches von der Werkzeug-Aufnahme zum Werkzeug. Dazu passend bietet EMUGE Einsätze vom Typ EM/MQL an, die planseitig zwischen Schnellwechsel-Aufnahme und Schnellwechsel-Einsatz abdichten. Diese planseitige Abdichtung ist vor allem bei der Gussbearbeitung und bei „Überkopf“-Bearbeitungen vorteilhaft.



2. Softsynchro®/MMS

Diese Spannzangen-Aufnahmen sind mit dem bekannten Minimal­längen­ausgleich mit getrennter Drehmoment- und Kraftübertragung ausgestattet, siehe auch **7.4 Synchrone Gewindeherstellung**. Auch hier ist eine strömungsoptimierte Führung durch ein angefedertes Rohr gegeben. Dieses steht durch die Anfederung immer sicher am Ende des Werkzeugschaftes an und garantiert eine verlustfreie Übergabe.



7.6 Minimum-quantity lubrication (MQL)

The tool holders

Tool holders for minimum-quantity lubrication must not only provide safe clamping for the tool, but must also permit unhindered, loss-free and free-flow through-feed of the aerosol. In 2-channel MQL systems, it is also necessary to produce the mix of oil and air during the transfer from the spindle to the shank. These challenges have led to the design of special quick-change and collet holders which meet the requirements of the different MQL systems.

Additionally, several company standards and the standard E DIN 69090 were established for a clear specification of the point of transfer from spindle to tool holder. Our EMUGE holders, needless to say, meet all the requirements of these standards, too.

In order to avoid dead spaces and oil clogs, EMUGE offers also the suitable tools for minimum-quantity lubrication. With their detailed adjustment to the holders, an optimised transfer from tool holder to tool can be guaranteed.

The following tool holders are available:

1. KSN/MQL

These quick-change holders are equipped with length compensation on tension and compression, with the EMUGE patented pressure-point mechanism and the proven front release. In addition, a spring-loaded tube guarantees a disturbance-free feed-through of the aerosol. This same tube also provides the permanent transfer of the aerosol from the tool holder to the tool. As a complement, EMUGE offers adapters type EM/MQL which provide a sealing surface between quick-change holder and quick-change adapter. This sealing surface is especially helpful in the machining of cast materials and in "overhead" machining situations.

2. Softsynchro®/MQL

These collet holders are equipped with the well-known minimal length compensation with separate transfer of torque and axial force, see also chapter **7.4 Rigid tapping**. Again, there is an optimised feed-through for perfect flow ensured by a spring-loaded tube. This tube is always in firm contact with the end of the tool shank due to the spring pressure, and guarantees loss-free transfer.

7.7 Spannzangen-Aufnahmen Speedsynchro® Modular

Anwendungsbereich

Speedsynchro® Modular sind für den Einsatz auf CNC-gesteuerten Werkzeugmaschinen konzipiert.

Funktionsweise

Das Speedsynchro® Modular verfügt über ein integriertes Übersetzungsgetriebe mit einem Übersetzungsverhältnis von 1 : 4,412 und ist mit der patentierten Softsynchro®-Minimallängenausgleichsfunktion kombiniert.

Das Übersetzungsgetriebe ermöglicht

- Sich im unproblematischen, relativ niedrigen synchronen Spindel-drehzahlbereich ($< 1500 \text{ min}^{-1}$) der Werkzeugmaschine zu bewegen
- Hohe Schnittgeschwindigkeiten des Gewindewerkzeuges durch die Vervielfachung der Spindeldrehzahl zu realisieren

Allgemeine Spezifikationen

- **Höhere Schnittgeschwindigkeit**
Maschinenspindeln erreichen bei der synchronen Gewindeherstellung ab einer bestimmten Spindeldrehzahl nicht mehr die programmierten Drehzahlen. Durch das Übersetzungsgetriebe im Speedsynchro® Modular werden diese wieder ermöglicht.
- **Höhere Werkzeugstandzeit**
Durch die patentierte Minimallängenausgleichsfunktion wird die Axialkraft am Gewindewerkzeug reduziert.
- **Reduzierung der Energieaufnahme**
Durch das Übersetzungsgetriebe ergibt sich eine geringere Drehzahl der Maschinenspindel und damit über 90% Energieeinsparung im Vergleich zur synchronen Gewindeherstellung.
- **Geringere Anlagenkosten**
Geringerer Energieverbrauch durch den Einsatz von Minimalmengenschmierung (MMS).
 - **Modulare MQL-Rohre**
Umbau von 1- auf 2-kanalige MQL-Systeme.
 - **Modulare Längeneinstellschrauben**
Anpassung der Längeneinstellschrauben an innen- oder außenzentrierte Gewindewerkzeuge.

Technische Eigenschaften

- Schneidbereich: M1 - M8
- Spannzangenaufnahme: ER16
- Übersetzungsverhältnis: 1 : 4,412
- Max. Spindeldrehzahl: 2000 min^{-1}
- Max. Werkzeugdrehzahl: 8824 min^{-1}
- Innere Kühlschmierstoff-Zufuhr
- MMS für 1- oder 2-Kanal-Systeme

7.7 Collet holders Speedsynchro® Modular

Application range

Speedsynchro® Modular are designed for use on CNC-controlled machine tools.

Functionality

The Speedsynchro® Modular uses an integrated transmission gearing with a transmission ratio of 1 : 4.412 and combines it with the patented Softsynchro® minimal length compensation function.

The transmission gearing allows

- To work in the unproblematic and relatively low synchronous spindle speed range ($< 1500 \text{ rpm}$) of the machine tool
- To achieve high cutting speeds of the threading tool due to a multiplication of the spindle speed

General specifications

- **Higher cutting speeds**
In a synchronous thread production machine spindles do not achieve the programmed rotational speeds above a certain spindle speed. The transmission gearing of the Speedsynchro® Modular keeps up with the programmed speeds.
- **Longer tool life**
The patented minimal length compensation function reduces the axial force on the tap.
- **Reduction of energy consumption**
Thanks to the transmission gearing the rotational speed of the machine spindle is reduced which results in energy savings of more than 90% compared to synchronous thread machining..
- **Reduced installation costs**
Lower energy consumption due to the use of minimum quantity lubrication (MQL).
 - **Modular MQL tubes**
Conversion from 1-channel to 2-channel MQL-systems.
 - **Modular length adjustment screws**
Adaptation of length adjustment screws to threading tools with male or female centre.

Technical characteristics

- Cutting range: M1 - M8
- Collet: ER16
- Transmission ratio: 1 : 4.412
- Max. spindle speed: 2000 rpm
- Max. tool speed: 8824 rpm
- Internal coolant supply
- MQL for 1-channel or 2-channel systems

Mehr Informationen zum Speedsynchro® Modular unter

www.speedsynchro.com

More information regarding Speedsynchro® Modular at



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- ML MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

7.7 Spannzangen-Aufnahmen Speedsynchro® Modular

Vorteile des Speedsynchro® Modular

- Einfache Programmierung als Synchronzyklus mit einer dem Übersetzungsverhältnis angepassten Vorschubprogrammierung
- Ermittlung der Zeitvorteile Speedsynchro® Modular / Synchronzyklus durch „Simulation“ ohne Speedsynchro® Modular und Werkzeug möglich
- Exakte Gewindetiefen – keine von Gewindegewindeschneidapparaten bekannten Gewindetiefenstreuungen, da der Speedsynchro® Modular anders als Gewindegewindeschneidapparate kein Umschalten der Drehrichtung ausführt
- Das Reversieren des Gewindegewindewerkzeuges erfolgt durch die Maschinenantriebs spindle:
 - Keine umschaltenden Bauteile im Speedsynchro® Modular
 - Geringer Verschleiß und geringere Wartungszyklen
 - Wartung unabhängig von der produzierten Gewindegewindeanzahl
- Patentierte, konstruktiv eigenständige Übertragung des Bearbeitungs Drehmoments bei der Gewindegewindeherstellung
- Mechanisch unabhängige Kompensierung der durch Synchronisationsfehler entstehenden Axialkräfte an den Gewindegewindewerkzeugflanken
- Minimallängenausgleich $\pm 0,5$ mm
- Federnde Lagerung der Längeneinstellschraube zum Ausgleichen der entstehenden Axialkraft zwischen Längeneinstellschraube und Gewindegewindewerkzeug beim Anziehen der Spannmutter
- Selbsthemmung der Längeneinstellschraube gegen unerwünschte Längenverstellung durch Rotationsbeschleunigung während der Drehrichtungsumkehr der Maschinenspindel

Zyklus zur Gewindegewindeherstellung beim Speedsynchro® Modular

Der Speedsynchro® Modular wird mittels Werkzeugwechsler in die Maschinenspindel eingewechselt, dabei rastet der Fixierbolzen in den Arretierblock ein, die Arretierung wird gelöst und der Speedsynchro® Modular ist bereit.

Hinweise zur Programmierung

Das Übersetzungsverhältnis des Speedsynchro® Modular beträgt 1:4,412. Daraus ergeben sich folgende Programmiervorschriften:

- Vorschub f

$$f = P \times 4,412 \quad [\text{mm/U}]$$

- Drehzahl n der Maschinenspindel für die gewünschte Werkzeugdrehzahl

$$n_{\text{MSP}} = n_{\text{WZG}} / 4,412 \quad [\text{min}^{-1}]$$

- P = Gewindegewindewerkzeugsteigung [mm]
- n_{MSP} = Drehzahl Maschinenspindel [min^{-1}]
- n_{WZG} = Drehzahl Gewindegewindewerkzeug [min^{-1}]

Beispiel Gewinde M6 / Gewindegewindesteigung P = 1 mm:

- Gewünschte Drehzahl am Gewindegewindewerkzeug:
 $n_{\text{WZG}} = 3000 \text{ min}^{-1}$
- Erforderliche Drehzahl an der Maschinenspindel:
 $n_{\text{MSP}} = 3000 \text{ min}^{-1} / 4,412 = 680 \text{ min}^{-1}$
- Erforderlicher Vorschub:
 $f = 1 \times 4,412 \text{ mm/U} = 4,412 \text{ mm/U}$

Serviceleistung

Für den Austausch von Verschleißteilen bietet EMUGE einen Reparaturservice an. Dieser beinhaltet die fachgerechte Instandsetzung, Durchführung einer Druckprüfung und Funktionskontrolle mit Übernahme der vollen Garantie.

7.7 Collet holders Speedsynchro® Modular

Advantages of the Speedsynchro® Modular

- Simple programming as synchronous cycle with feed programme adapted to the transmission ratio
- Evaluation of time benefit of the Speedsynchro® Modular / synchronous cycle by a "simulation" without Speedsynchro® Modular and tool
- Accurate thread depths – no variations in thread depths associated with conventional tapping attachments since the Speedsynchro® Modular in contrast to tapping attachments does not reverse the sense of rotation
- The reversal of the threading tool is done by the machine drive spindle:
 - No switching components in the Speedsynchro® Modular
 - Low wear and longer maintenance intervals
 - Maintenance independent of number of threads produced
- Patented constructive independent transfer of the machining torque in the production of threads
- Mechanically independent compensation of the axial forces at the threading tool flanks caused by synchronisation faults
- Minimum length compensation ± 0.5 mm
- Spring-loaded bearing of the length adjustment screw for compensation of the occurring axial force between length adjustment screw and threading tool when tightening the clamping nut
- Self-locking of the length adjustment screw against unwanted length displacement caused by rotation acceleration during reversal of rotation direction of the machine spindle

Thread production cycle with the Speedsynchro® Modular

The Speedsynchro® Modular is changed into the machine by means of the tool exchanging device, the stop fixture bolt engages in the stop block, the locking device is released and the Speedsynchro® Modular is ready for operation.

Some programming references

The transmission ratio of the Speedsynchro® Modular is 1:4.412 which results in the following programming guidelines:

- Feed f

$$f = P \times 4.412 \quad [\text{mm/rev.}]$$

- Rotational speed n of machine spindle for the desired tool speed

$$n_{\text{MSP}} = n_{\text{TOOL}} / 4.412 \quad [\text{rpm}]$$

- P = Pitch of threading tool [mm]
- n_{MSP} = Rotational speed of machine spindle [rpm]
- n_{TOOL} = Rotational speed of threading tool [rpm]

Example thread M6 / pitch P = 1 mm:

- Desired rotational speed of threading tool:
 $n_{\text{TOOL}} = 3000 \text{ rpm}$
- Required rotational speed of machine spindle:
 $n_{\text{MSP}} = 3000 \text{ rpm} / 4.412 = 680 \text{ rpm}$
- Required feed:
 $f = 1 \times 4.412 \text{ mm/rev.} = 4.412 \text{ mm/rev.}$

Service

In case spare parts need to be exchanged, EMUGE offers you a repair service that includes e.g. competent repair and maintenance, a professional pressure check and function control with full guarantee.



7.7 Spannzangen-Aufnahmen Speedsynchro® Modular

7.7 Collet holders Speedsynchro® Modular

Auslegung der Transportarretierung für Speedsynchro® Modular

Zum Einsatz des Gewindeschneidapparates ist eine Transportarretierung erforderlich, die folgende Aufgaben übernimmt:

- Abstützung der beim Arbeitseinsatz entstehenden Drehmomente
- Korrekte Positionsbestimmung zwischen Maschinenspindel und Transportarretierung bei Verwendung von automatischen Werkzeugwechslern

Die Transportarretierung wird in der Regel vor Auslieferung individuell an die Maschine angepasst.

Technical design of the stop fixture for the Speedsynchro® Modular

For the use of our tapping attachments, a stop fixture is needed for the following functions:

- Supporting the torque caused by the operation of the attachment
- Correct definition of the position between machine spindle and stop fixture whenever automatic tool exchange devices are used

The stop fixture is normally fitted individually to the customer's machine before shipping of the attachment.

Maßangaben zur Transportarretierung
Specifications of the stop fixture

Adresse:
.....
.....
.....

Maschinenhersteller/-bezeichnung:
.....

Arretierblock an der Maschine vorhanden?
 Ja Nein

Schaftausführung und Größe:
.....

Spindelbezeichnung mit den Anschlussmaßen für die Transportarretierung vorhanden?
 Ja (bitte Kopie beilegen)
 Nein, Maße: A: B:
E: W:

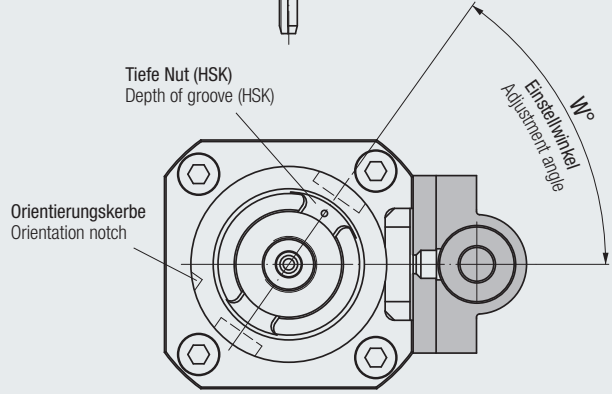
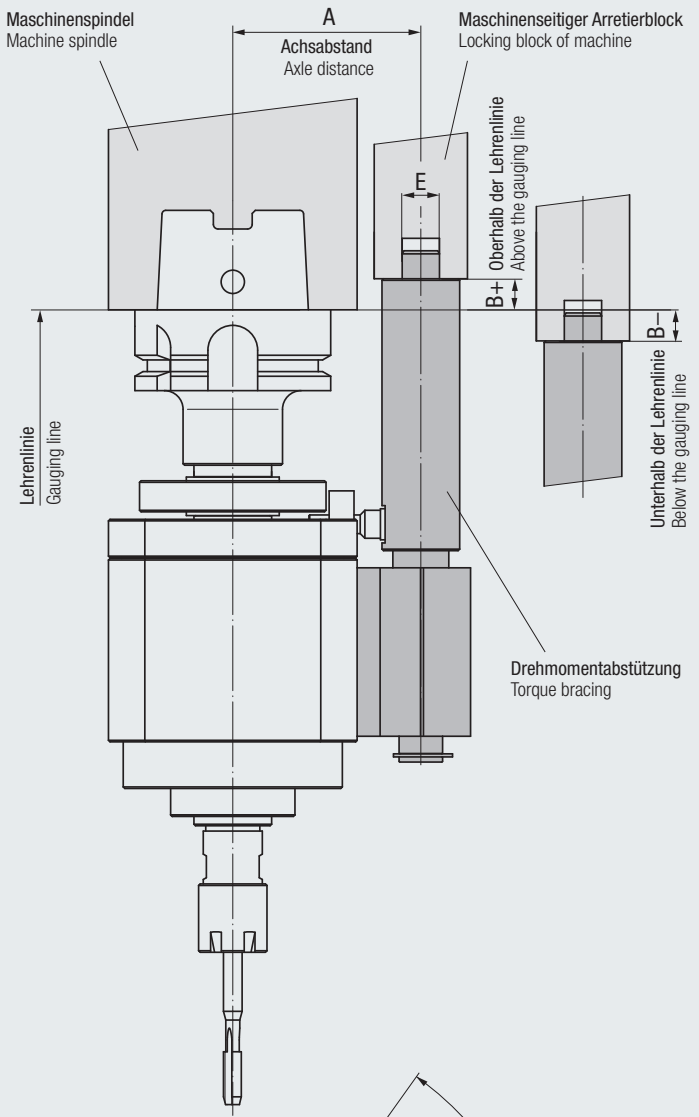
Address:
.....
.....
.....

Machine manufacturer / designation:
.....

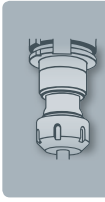
Locking block available on machine?
 Yes No

Shank type and size:
.....

Spindle designation with connecting dimensions for stop fixture available?
 Yes (please enclose a copy)
 No, dimensions: A: B:
E: W:



- Product Finder
- Softsynchro
- Speedsynchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info



- Product Finder
- Soft-synchro
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- Tech. Info**

7.8 Werkzeugüberwachungssystem DDU4

Das Werkzeugüberwachungssystem DDU4 ist die konsequente Weiterentwicklung der bislang bekannten ICS- bzw. TTS-Systeme. Zusätzlich zum aktuellen Drehmoment kann nun gleichzeitig auch die Axialkraft berührungslos in Echtzeit ermittelt werden. Mit fest einstellbaren Regelungs- und Bruchgrenzen in N bzw. Nm in Kombination mit den ARTIS Prozessüberwachungssystemen ist zusätzlich zu den Standardfunktionen folgende Erkennung möglich:

- Werkzeugverschleiß
- Fehlendes Werkzeug
- Fehlerhafte Kernlochbohrung
- Unterschiedliche Gewindetiefen
- Materialberührung
- Werkzeugbruch

Durch digitale Messsignalverarbeitung konnte der Drehmoment- und Axialkraft-Messbereich erweitert werden. Diese Messbereiche sind in jeweils drei Stufen unterteilt und können extern angewählt werden.

Das DDU4 ist in zwei Ausführungen erhältlich:

1. Basislösung DDU4 als „Stand-alone System“

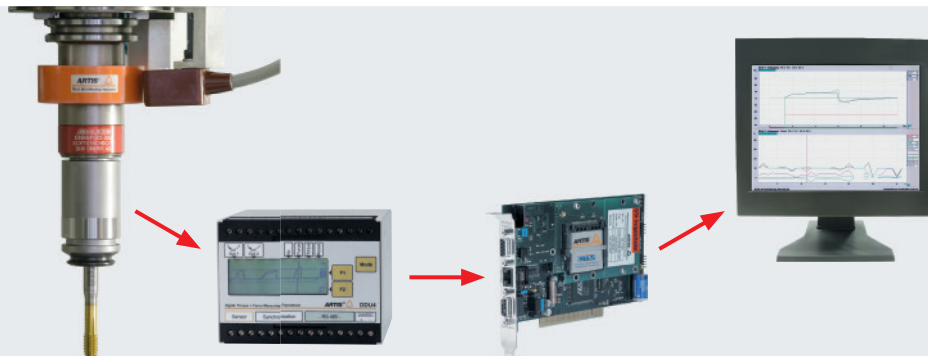
Hierbei handelt es sich um ein preisgünstiges Nachrüstsystem zur Werkzeugüberwachung. Es können für das Drehmoment und die Axialkraft je zwei feste Grenzwerte in Nm bzw. kN eingestellt werden. Durch ein integriertes LCD-Display wird der Kurvenverlauf visualisiert und die Einstellungen vorgenommen. Die Alarmsignale werden über je einen Schaltausgang für das Drehmoment und die Axialkraft ausgegeben. In Kombination mit dem Prozessüberwachungssystem CTM dient das DDU4-System als 2-kanaliger Messumformer.



2. DDU4 in Kombination mit CTM

Die Anbindung an das CTM-Prozessüberwachungssystem bietet neben den Standardfunktionen noch weitere Leistungsmerkmale zur Erkennung von:

- Werkzeugverschleiß
- Fehlerhafte Kernlochbohrungen
- Materialberührung
- Späneklemmer
- Fehlendes Werkzeug
- Unterschiedliche Gewindetiefen
- Werkzeugbruch
- Auswertung für statistische Aufzeichnungen



7.8 Tool monitoring system DDU4

The new tool monitoring system DDU4 is a newly developed system, consequently following upon the already successful ICS and TTS systems. In addition to the current torque indication, you can now also monitor the axial force, contact-free, in real-time. With the option to set fixed response and breakage limits in N or Nm in combination with the ARTIS process monitoring systems, the following recognition features become possible in addition to the standard functions:

- Tool wear
- Missing tool
- Defective thread holes
- Different thread depths
- Material contact
- Tool breakage

Digital signal processing made it possible also to enlarge the measuring range for torque and axial force. These measuring ranges are each subdivided into three steps, each of which can be called off externally.

The DDU4 system is available in two versions:

1. Basic solution: DDU4 as “stand-alone system”

This is an economically efficient upgrading system for tool monitoring. For both torque and axial force, two fixed limit values in Nm or kN can be set. An integrated LCD display will visualize the curve progress, and serve for entering the requested values. Alarm signals are emitted by one switch each for torque and axial force.

In combination with the process monitoring system CTM, the DDU4 system will serve as a 2-channel measuring converter.

2. DDU4 in combination with CTM

In combination with the CTM process monitoring system, the DDU4 system will offer you as additional performance characteristics the recognition of:

- Tool wear
- Defective thread holes
- Material contact
- Chip clogging
- Missing tool
- Different thread depths
- Tool breakage
- Evaluation for statistical purposes

7.9 Gewindeschneidapparate SWITCH-MASTER®

7.9 Tapping attachments SWITCH-MASTER®

Anwendungsbereich

Gewindeschneidapparate der Typenreihen SWITCH-MASTER® sind für den Einsatz auf CNC-gesteuerten Werkzeugmaschinen konzipiert.

Allgemeine Spezifikationen

- Durch das integrierte Wendegetriebe entfällt der Drehrichtungswechsel der Maschinenspindel beim Rücklauf. Die im Wendegetriebe eingebauten Dämpfungselemente kompensieren die durch den Drehrichtungswechsel des Apparate-Spannkopfes auftretenden Beschleunigungskräfte. Die daraus resultierenden Vorteile sind:
 - Zeitersparnis durch kürzere Taktzeiten
 - Schonung der Maschinenspindel durch konstanten Rechtslauf
 - maximale Standzeit der Gewindewerkzeuge
 - Energieeinsparung durch nahezu gleichbleibende Stromaufnahme
- Auslegung für Kühlschmierstoff-Druck bis 50 bar (700 psi)
- Sichere und rundlaufgenaue Klemmung des Gewindewerkzeugs über Spannzangen (für bessere Drehmomentübertragung empfehlen wir, Spannzangen Typ ER-GB mit integriertem Vierkant zu verwenden)
- Als Schnittstelle zur Maschinenspindel dient ein Zylinderschaft $\varnothing 25$ mm nach DIN 1835 B+E; durch die Verwendung von Adaptionsschäften ist ein schneller und kostengünstiger Einsatz auf allen gängigen Spindelaufnahmen sichergestellt
- Die Gewindeschneidapparate SWITCH-MASTER® sind zur Herstellung von Rechtsgewinden ausgelegt; es besteht auf Wunsch jedoch die Möglichkeit, den Apparat für Linksgewinde auszuführen – die Drehrichtung der Maschinenspindel bleibt in beiden Fällen immer rechtsdrehend.

Application range

The tapping attachments of our SWITCH-MASTER® series are designed for use on CNC-controlled machine tools.

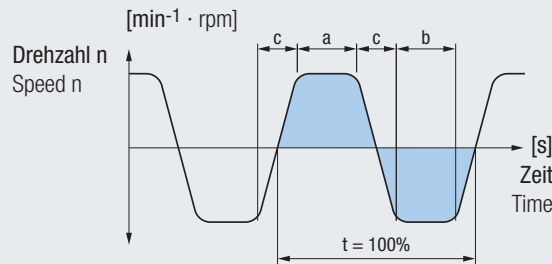
General specifications

- The integrated reverse gear makes a change of the sense of rotation of the machine spindle for reversal superfluous. The absorption elements integrated in the reverse gear compensate the acceleration forces caused by the change of the sense of rotation of the clamping head. The resulting advantages are as follows:
 - Time savings due to reduced cycle times
 - Reduced stress on the machine spindle due to constant right-hand rotation
 - Maximum tool life of the threading tools
 - Energy savings due to almost constant power consumption
- Design for coolant-lubricant pressure up to 50 bar (700 psi)
- Safe and high-concentricity clamping of the tool by means of collets (for improved torque transfer we recommend using collets type ER-GB with integrated square)
- The connection to the machine spindle is a straight shank dia. 25 mm according to DIN 1835 B+E; the use of adapter shanks is a fast and economically efficient way of guaranteeing the compatibility with all the usual spindle adaptations
- The tapping attachments SWITCH-MASTER® are designed for the production of right-hand threads only, however, there is a possibility of designing the attachment for left-hand threads – the sense of rotation of the machine spindle will always remain right-hand.

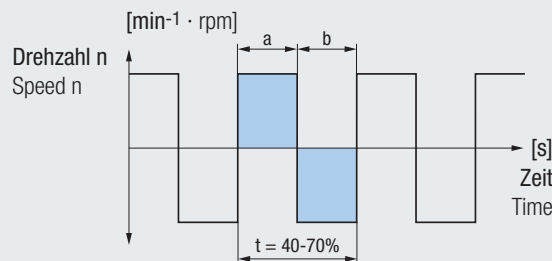
- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

Zeitbedarf bei der Gewindeherstellung mit verschiedenen Werkzeug-Aufnahmen
Time spent on thread production with different tool holders

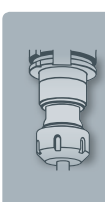
Konventionelle Werkzeug-Aufnahme
Conventional tool holder



Gewindeschneidapparat SWITCH-MASTER® oder GRN-NC
Tapping attachment SWITCH-MASTER® or GRN-NC



- a = Zeit für Gewindeherstellung
Time for thread production
- b = Zeit für Rücklauf des Gewindewerkzeugs
Time for reversal of the threading tool
- c = Umschaltzeit zwischen Rechts- und Linkslauf des Gewindewerkzeugs
Time for switching from right-hand to left-hand rotation of the threading tool
- t = Zeitbedarf bei der Gewindeherstellung
time spent on thread production



- Product Finder
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- Speed-synchro
- KSN
- MQL MMS
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- HF
- EM
- Zubehör Accessories
- Tech. Info**

7.9 Gewindeschneidapparate SWITCH-MASTER®

Zusätzliche Spezifikationen Typ SWITCH-MASTER®

- Gewindeschneidapparate Typ SWITCH-MASTER® sind in zwei Ausführungen (90°, 180°) erhältlich
- Geeignet für Drehzahlen bis max. 3000 min⁻¹
- Ruhiges, verschleißarmes Laufverhalten durch Ölbad Schmierung
- Sichere Abdichtung gegen Eindringung von Kühlschmierstoff in das Gehäuse durch Trennung der Längs- und Drehbewegung des Spannkopfes
- Minimierter Verschleiß an den Schaltgliedern durch extrem schnelles Umschalten (35 ms) der Drehrichtung
- Erzielung von gleichbleibenden Gewindetiefen durch exakt definierten Umschaltpunkt
- Reduzierter Sicherheitsabstand auf 5 mm zwischen Werkstück und Werkzeug auf Grund kurzer Schaltwege; dadurch wird eine zusätzliche Verringerung der Taktzeit erzielt
- Nahezu konstante Schnittgeschwindigkeit, dadurch Erhöhung der Werkzeugstandzeit
- Für den Drehrichtungswechsel wird maschinenseitig als Hilfsenergie Druckluft (6 $\begin{smallmatrix} +1 \\ -0,5 \end{smallmatrix}$ bar) benötigt

Serviceleistung

Für den Austausch von Verschleißteilen bietet EMUGE einen Reparaturservice an. Dieser beinhaltet die fachgerechte Instandsetzung, Durchführung einer Druckprüfung und Funktionskontrolle mit Übernahme der vollen Garantie.

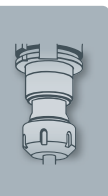
7.9 Tapping attachments SWITCH-MASTER®

Additional specifications type SWITCH-MASTER®

- Tapping attachments of type SWITCH-MASTER® are available in two designs (90°, 180°)
- Suitable for speeds up to max. 3000 rpm
- Smooth, low-wear operation thanks to oil-bath lubrication
- Safe sealing against the penetration of coolant-lubricant into the housing, by separating the axial and rotational movement of the clamping head
- Minimised wear on the gear elements due to extremely fast changes of the sense of rotation (35 ms)
- Constant thread depths thanks to an exactly defined switching point
- Reduced safety distance of 5 mm between workpiece and tool thanks to short gear change paths; this yields an additional reduction of cycle times
- Almost constant cutting speed, resulting in an increase of tool life
- On the machine side, pressurised air (6 $\begin{smallmatrix} +1 \\ -0,5 \end{smallmatrix}$ bar) is needed as auxiliary energy for the change of the sense of rotation

Service

In case spare parts need to be exchanged, EMUGE offers you a repair service that includes e.g. competent repair and maintenance, a professional pressure check and function control with full guarantee.



7.9 Gewindeschneidapparate SWITCH-MASTER®

7.9 Tapping attachments SWITCH-MASTER®

Zum Einsatz des Gewindeschneidapparates ist eine Transportarretierung erforderlich:

Ausführliche Informationen zur Auslegung der Transportarretierung für SWITCH-MASTER® siehe Seite 832.

Zyklus zur Gewindeherstellung (Beispiel):

Der Gewindeschneidapparat wird mittels Werkzeugwechsler in die Maschinenspindel eingewechselt, dabei rastet der Fixierbolzen in den Arretierblock ein, die Arretierung wird gelöst und der Apparat ist bereit.

Über den Eilvorschub wird die Startposition angefahren. Der Sicherheitsabstand x ist zu berücksichtigen.

Der Arbeitszyklus wird abgefahren. Während des kompletten Vorgangs rotiert die Maschinenspindel rechtsdrehend. Nach Erreichen der programmierten Vorschubtiefe steuert die Z-Achse ohne Verweilzeit auf Rücklauf um. Beim Zusammenspiel zwischen Vorschubumkehr der Z-Achse und dem Zwangsvorschub durch die Steigung des rotierenden Werkzeugs wird der Werkzeugaufnahme-Spannkopf axial aus dem Gewindeschneidapparat gezogen. Dieser Auszug bewirkt das Reversieren der Drehrichtung (Rücklauf). Nach dem Austritt des Werkzeugs aus dem erzeugten Gewinde wird der federbeaufschlagte Werkzeugaufnahme-Spannkopf in seine axiale Ausgangsposition zurückgezogen und das Werkzeug wechselt erneut die Drehrichtung.

Die Maschinenspindel befindet sich in der Startposition.

For the use of our tapping attachments, a stop fixture is needed for the following functions:

For more detailed information regarding technical design of the stop fixture for the SWITCH-MASTER®, see page 832.

Thread production cycle (example):

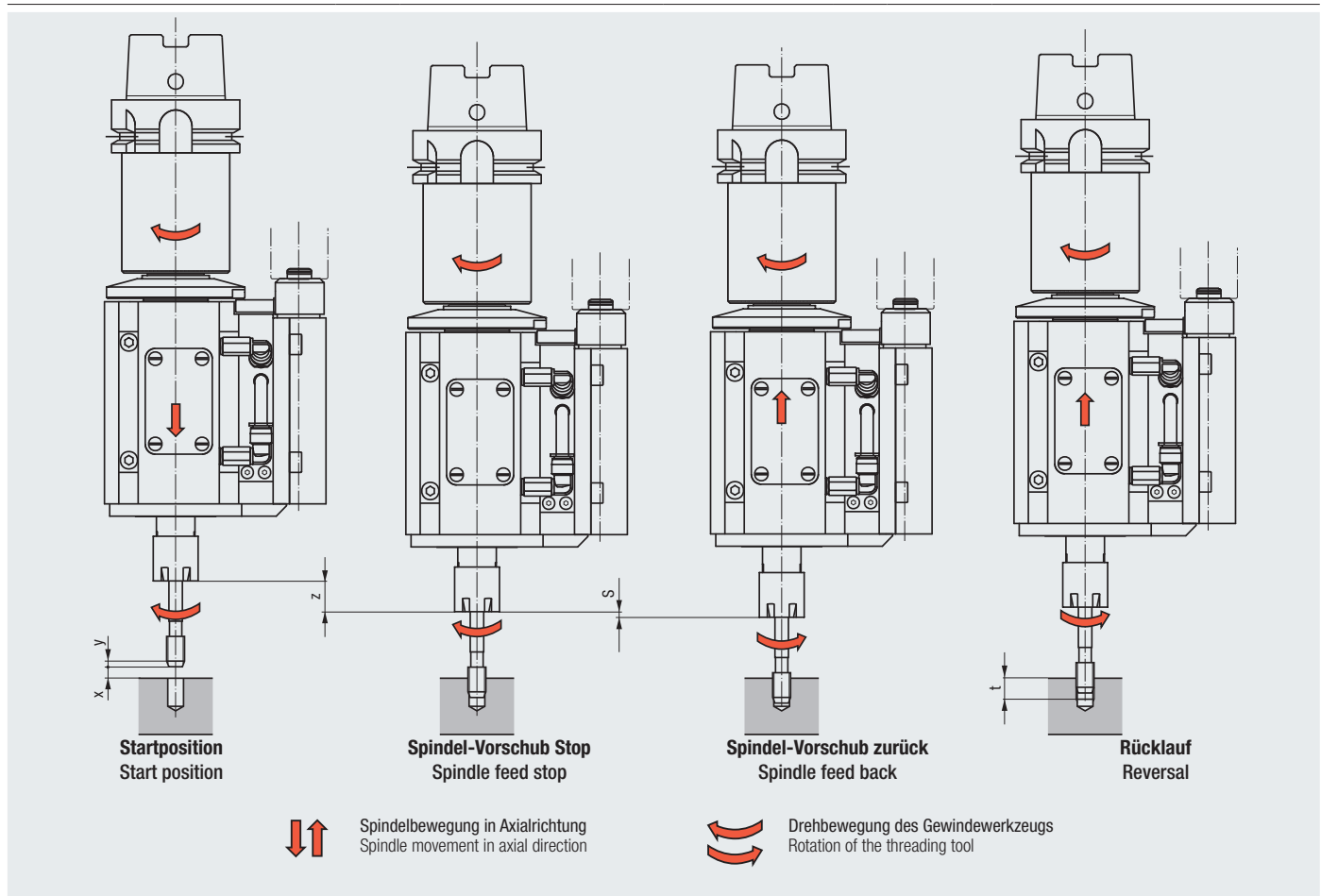
The tapping attachment is changed into the machine by means of the tool exchanging device, the stop fixture bolt engages in the stop block, the locking device is released and the attachment is ready for operation.

The attachment is moved to start position in the fast-feed mode. The safety distance x must be observed.

The work cycle is performed. During the whole cycle, the machine spindle rotates in a right-hand direction. After reaching the programmed feed depth, the Z-axis switches to reverse without any delay. In the interaction between feed reversal of the Z-axis and the positive feed caused by the pitch of the rotating tool the clamping head of the tool holder is pulled axially from the tapping attachment. This movement operates the change of the sense of rotation (reversal). When the tool has come entirely free from the workpiece the spring-loaded clamping head retracts to its original position, and the sense of rotation of the tool is changed again.

The machine spindle is again in start position.

- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info**

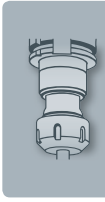


Beispiel des zu programmierenden Verfahrensweges z:

$$z = y + x + t - S$$

- z = Verfahrenweg
- y = Anschnittlänge des Gewindebohrers bzw. Anformkegellänge des Gewindeformers
- x = Sicherheitsabstand 5 mm
- t = Herzustellende Gewindetiefe
- S = Schaltweg = 3 mm

- Example for the travel z to be programmed:**
- z = Travel
 - y = Chamfer length of tap or lead taper length of cold-forming tap
 - x = Safety distance 5 mm
 - t = Thread depth to be produced
 - S = Gear change path = 3 mm



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7.9 Gewindeschneidapparate SWITCH-MASTER®

Auslegung der Transportarretierung für SWITCH-MASTER®

Zum Einsatz des Gewindeschneidapparates ist eine Transportarretierung erforderlich, die folgende Aufgaben übernimmt:

- Abstützung der beim Arbeitseinsatz entstehenden Drehmomente
- Korrekte Positionsbestimmung zwischen Maschinenspindel und Transportarretierung bei Verwendung von automatischen Werkzeugwechslern
- Zuführung der zum Umschalten der Drehrichtung benötigten Hilfsenergie beim Typ SWITCH-MASTER® = Druckluft ($6^{+1}_{-0,5}$ bar)

Die Transportarretierung wird in der Regel vor Auslieferung individuell an die Maschine angepasst.

7.9 Tapping attachments SWITCH-MASTER®

Technical design of the stop fixture for the SWITCH-MASTER®

For the use of our tapping attachments, a stop fixture is needed for the following functions:

- Supporting the torque caused by the operation of the attachment
- Correct definition of the position between machine spindle and stop fixture whenever automatic tool exchange devices are used
- Supply of the auxiliary energy necessary for the change of the sense of rotation on the SWITCH-MASTER® = pressurised air ($6^{+1}_{-0,5}$ bar)

The stop fixture is normally fitted individually to the customer's machine before shipping of the attachment.

Maßangaben zur Transportarretierung Specifications for the stop fixture

Adresse:

Maschinenhersteller/-bezeichnung:

Arretierblock an der Maschine vorhanden?

Ja Nein

Schaftausführung und Größe:

Spindelbezeichnung mit den Anschlussmaßen für die Transportarretierung vorhanden?

Ja (bitte Kopie beilegen)

Nein, Maße: A: B:

E: W:

Address:

Machine manufacturer / designation:

Locking block available on machine?

Yes No

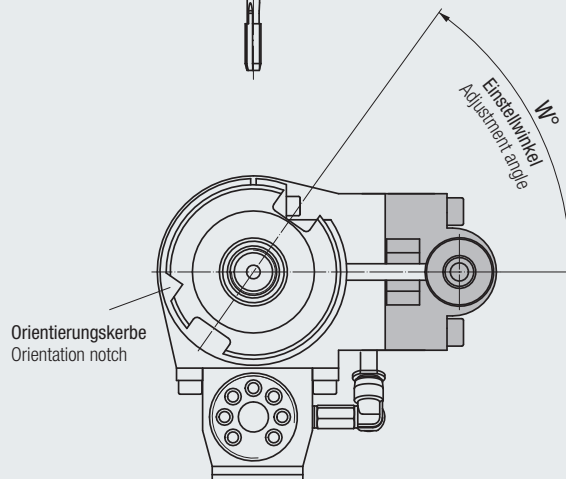
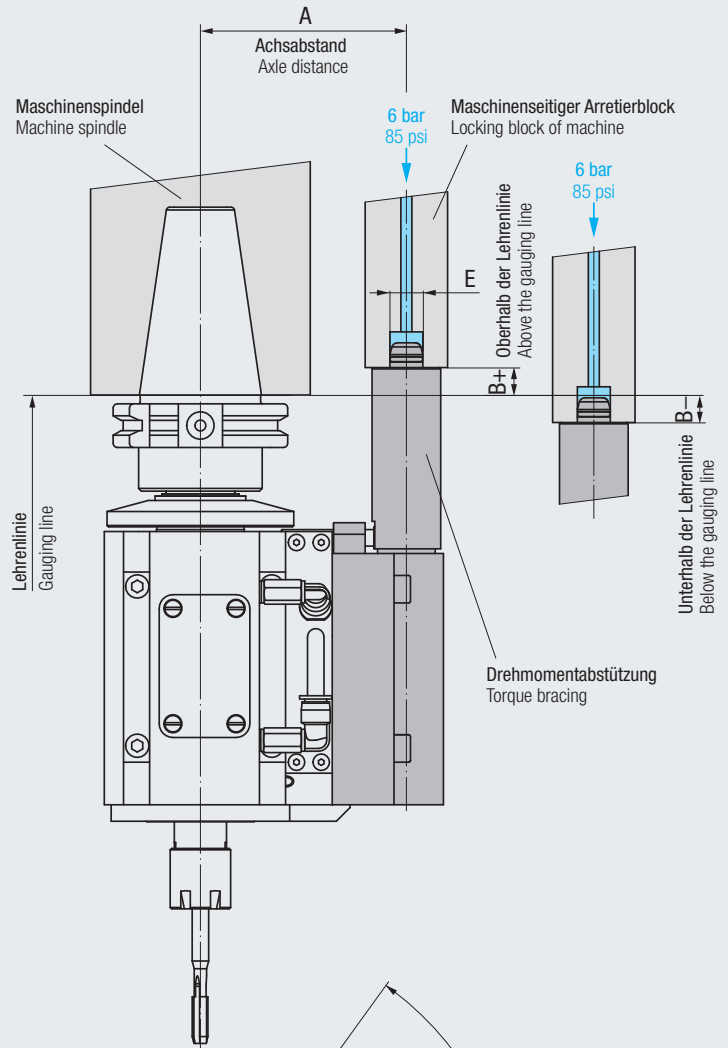
Shank type and size:

Spindle designation with connecting dimensions for stop fixture available?

Yes (please enclose a copy)

No, dimensions: A: B:

E: W:



7.10 Einstellen der Überlastkupplung bei Schnellwechsel-Aufnahmen Typ HF

Drehmoment der Überlastkupplung einstellen

Das einzustellende Drehmoment richtet sich u.a. nach der Bearbeitung und dem zu bearbeitenden Werkstoff. Falls das Drehmoment nicht bekannt ist, sollte ein niedriger Wert eingestellt und sich dem richtigen Drehmoment schrittweise angenähert werden.

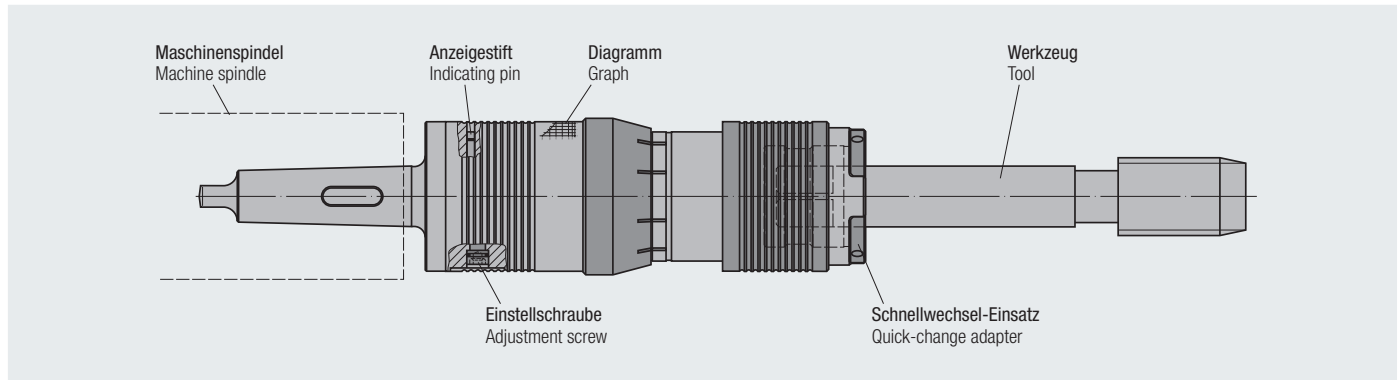
Achtung:

Die Einstellung darf nicht bei rotierender Maschinenspindel erfolgen!

Benötigte Werkzeuge:

- Innensechskantschlüssel mit Zapfen, Schlüsselweite 10 mm
- Tiefenmesser bzw. Messschieber mit Tiefenmaß

1. Schnellwechsel-Aufnahme in die Maschinenspindel einspannen.

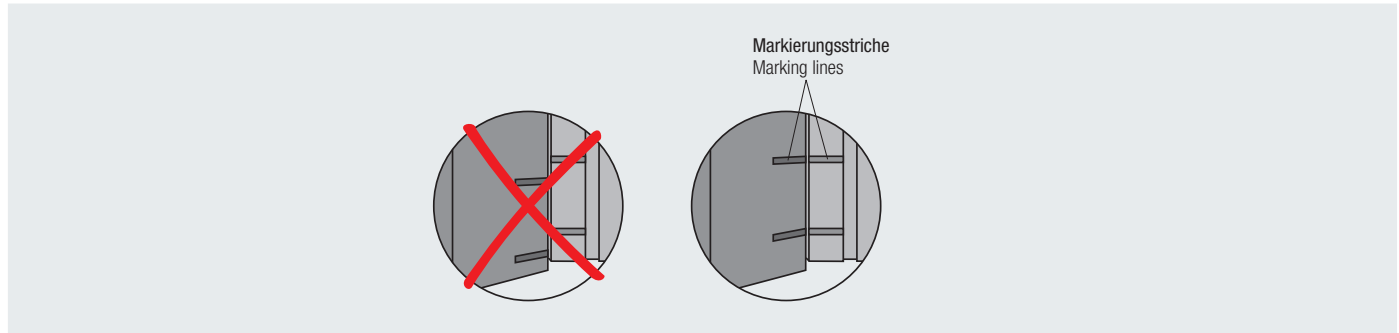


2. Zur Drehmomenteinstellung müssen sich die Markierungsstriche decken. Ist dies nicht der Fall, ist wie folgt vorzugehen:

- Maschine in Betrieb nehmen
- Werkzeug anschneiden lassen
- Maschine stoppen

Achtung:

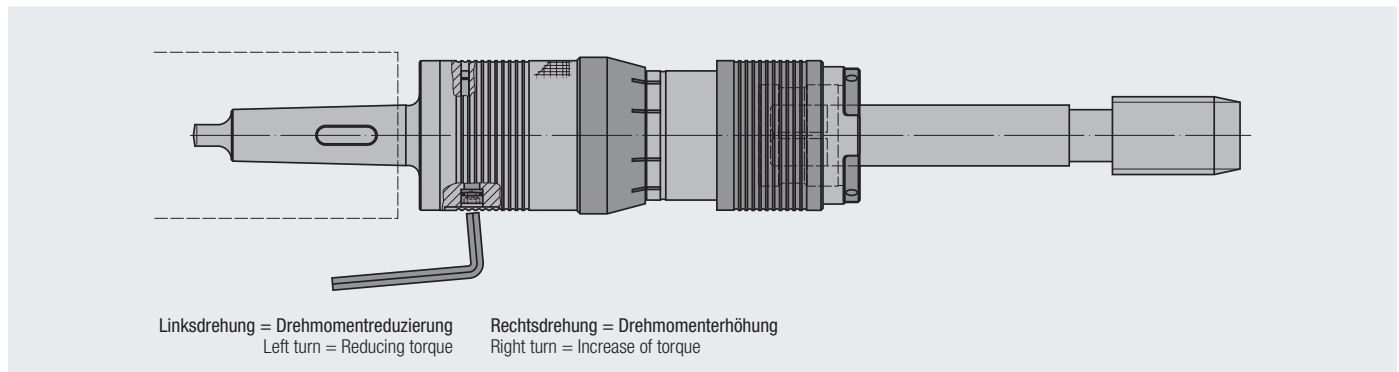
Vorgang so lange wiederholen, bis sich die Markierungsstriche decken!



3. Drehmoment einstellen. Hierzu muss die Einstellschraube verdreht werden.

Achtung:

Keine Verlängerung zur Drehmomenteinstellung verwenden!



7.10 Adjusting the overload clutch of quick-change tap holders type HF

Adjusting the torque of the overload clutch

The torque to be set depends, among other things, on the type of machining and on the workpiece material to be machined. If the exact torque is not known, we recommend setting a low value first, and approaching the correct torque value step by step.

Attention:

The adjustment must not be carried out while the machine spindle rotates!

Required tools:

- Hexagon socket wrench with pin, width across flats 10 mm
- Depth measurement device or caliper gauge with depth measurement

1. Clamp the quick-change tap holder in the machine spindle.

2. For torque adjustment, the marking rings must coincide. If this is not the case, proceed as follows:

- Put machine into operation
- Let the tool start the cutting process
- Stop machine

Attention:

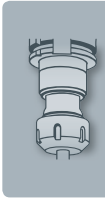
Repeat this until the marking lines coincide!

3. Adjust torque by turning adjustment screw.

Attention:

Do not use any extension for adjusting the torque!

- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info



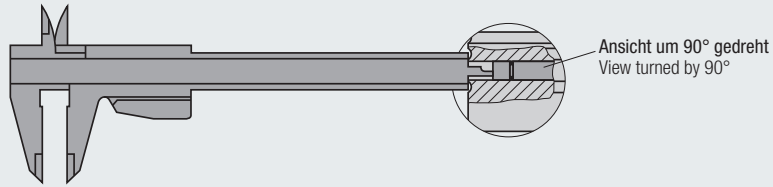
- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info

7.10 Einstellen der Überlastkupplung bei Schnellwechsel-Aufnahmen Typ HF

4. Drehmoment folgendermaßen überprüfen:
- Lage des Anzeigestiftes mit Tiefenmesser messen
 - Drehmoment aus Diagramm ablesen (Diagramm befindet sich auf der Schnellwechsel-Aufnahme)

7.10 Adjusting the overload clutch of quick-change tap holders type HF

4. Check torque by:
- Measuring the position of the indicating pin using the depth measurement device
 - Reading the torque from the graph (the graph is fixed on the quick-change tap holder body)



Beispiel: HF 20, Messtiefe 2,7 mm
Von Diagramm abgelesenes Drehmoment: 625 Nm

Example: HF 20, measuring depth 2.7 mm
Torque read from graph: 625 Nm

Das maximale Drehmoment ist eingestellt, wenn der Anzeigestift bündig mit dem Aufnahmedurchmesser ist.

The max. torque is adjusted if the indicating pin matches with the quick-change tap holder diameter.

Drehmomentverlauf

Die nachfolgenden Diagramme sind in ähnlicher Form auf den Schnellwechsel-Aufnahmen im Bereich der Einstelleinheit aufgedruckt.

Torque progression

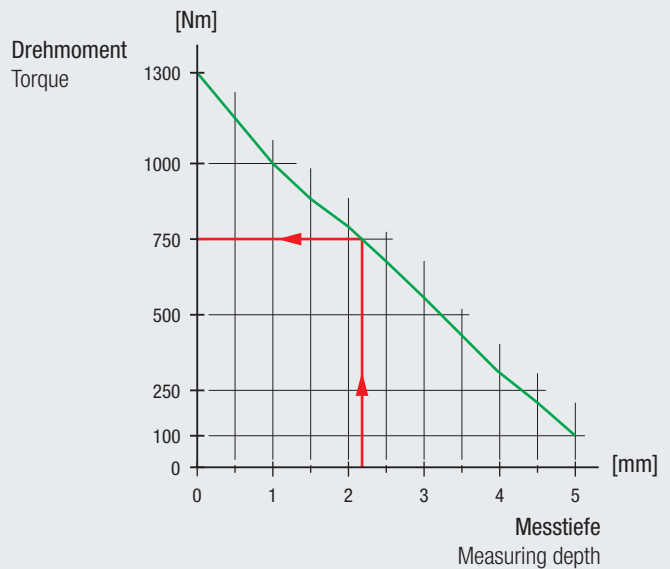
The following graphs are printed onto the quick-change tap holder near the adjustment unit in similar form.

Drehmomentverlauf für die Schnellwechsel-Aufnahme HF 20

Beispiel: Messtiefe 2,2 mm
Aus Diagramm: 750 Nm Drehmoment eingestellt

Torque progression for the quick-change tap holder HF 20

Example: Measuring depth 2.2 mm
From graph: 750 Nm adjusted torque

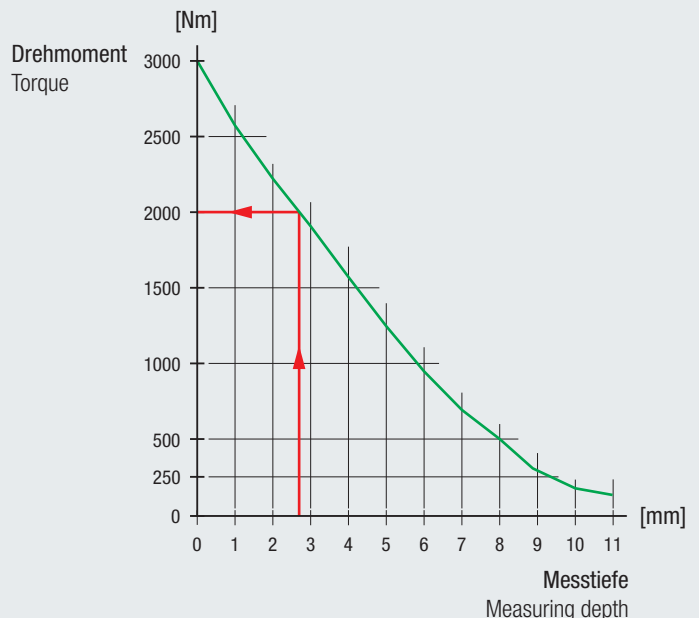


Drehmomentverlauf für die Schnellwechsel-Aufnahme HF 30

Beispiel: Messtiefe 2,75 mm
Aus Diagramm: 2000 Nm Drehmoment eingestellt

Torque progression for the quick-change tap holder HF 30

Example: Measuring depth 2.75 mm
From graph: 2000 Nm adjusted torque



7.11 Reinigung von Spannzangen-Aufnahme und Spannzange Typ PGR

7.11 Cleaning of collet holder and collet type PGR



PGR-Schnittstelle der Spannzangen-Aufnahme reinigen, z.B. mit Hilfe des Kegelreinigers oder eines sauberen, fusselfreien Tuchs.

Clean the PGR interface of the collet holder, e.g. with a taper cleaner or with a clean towel.



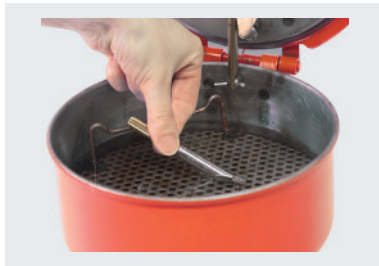
PGR-Spannzange entfetten, am besten durch Eintauchen in einer sauberen, fettlösenden und ölfreien Flüssigkeit, z.B. Alkohol oder Kaltreiniger. Zange trocknen. Pressluft nur verwenden, wenn diese sauber und ölfrei ist (keine davorgeschaltete Wartungseinheit).

Degrease PGR collet, dip in a clean, fat-dissolving and oil-free solvent, e.g. alcohol or cleaning solvent. Dry collet. Only use compressed air if it is clean and oil-free (no preceding maintenance unit).



Zange in den Halter einsetzen.

Set collet into tool holder.



Werkzeugschaft entfetten, am besten durch Eintauchen in einer sauberen, fettlösenden und ölfreien Flüssigkeit, z.B. Alkohol oder Kaltreiniger.

Degrease tool shank by dipping into clean, fat-dissolving and oil-free solvent, e.g. alcohol or cleaning solvent.



Werkzeug in PGR-Spannzange stecken. Bei Verwendung einer Spannzange Typ PGR-GB mit integriertem Vierkant, muss das Werkzeug durch Drehen in die Position gebracht werden, in der es in das Vierkant der Spannzange geschoben werden kann.

Insert tool into the PGR collet. When using a PGR-GB collet with integrated square, the tool must be turned into position in order to be inserted into the square of the collet.

Werkzeug mittels PGR-Spanneinheit einpressen oder Längeneinstellung vornehmen wie unter **7.12 Längeneinstellung von Spannzangen-Aufnahmen Typ PGR** beschrieben.

Press in tool by means of PGR clamping unit, or perform length adjustment as described under **7.12 Length adjustment of collet holders type PGR**.

Product Finder

Soft-synchro

Speed-synchro

KSN

MQL MMS

SFM

SWITCH-MASTER

GR, GR-S

HF

EM

Zubehör Accessories

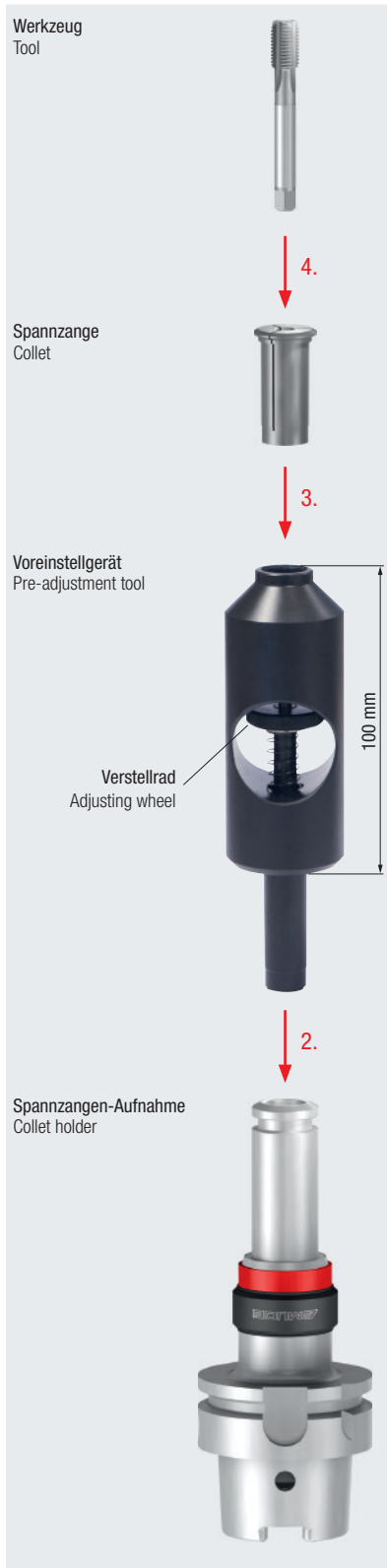
Tech. Info



- Product Finder
- Soft-synchro
- Speed-synchro
- KSN
- MQL MMS
- SFM
- SWITCH-MASTER
- GR, GR-S
- HF
- EM
- Zubehör Accessories
- Tech. Info**

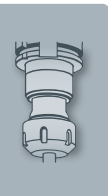
7.12 Längeneinstellung von Spannzangen-Aufnahmen Typ PGR




7.12 Length adjustment of collet holders type PGR



1. Spannzangen-Aufnahme aufnehmen
2. Voreinstellgerät in Spannzangen-Aufnahme einsetzen
3. Spannzange in Voreinstellgerät schieben
4. Werkzeug in Spannzange einsetzen
5. Werkzeuglänge durch Drehen am Verstellrad einstellen
Achtung:
Min./max. Einspannlänge für Werkzeugschäfte beachten
6. Gesamtlänge messen, 100 mm von der mit Voreinstellgerät gemessenen Gesamtlänge abziehen
7. Voreinstellgerät entfernen
8. Werkzeug mittels Spanneinheit einpressen

1. Pick up collet holder
2. Insert pre-adjustment tool in the collet holder
3. Insert collet into pre-adjustment tool
4. Insert tool into collet
5. Adjust tool length by turning the adjusting wheel
Attention:
Observe min./max. clamping length for tool shanks
6. Measure overall length, deduct 100 mm from the overall length measured with pre-adjustment tool
7. Remove pre-adjustment tool
8. Press in tool using the clamping unit






| | R _m [N/mm ²] | Rockwell [HRC] |  | |  | |  | | |
|----------|--|-------------------|---|------------------|--|----|---|-----|--|
| | | | Mat.-Nr. | DIN | AFNOR | BS | EN | | |
| P | Automatenstähle · Free-cutting steels | | | | | | | | |
| 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 | | - | - | |
| 1.2 | 580 - 730 | | 1.0726 | 35S20 | 35 MF 4 | | 212 M 36 | 8M | |
| 1.2 | 660 - 800 | | 1.0727 | 45S20 | 45 MF 4 | | 212 M 44 | - | |
| 1.2 | 740 - 880 | | 1.0728 | 60S20 | 60 MF 4 | | - | - | |
| P | Baustähle legiert · Alloyed construction steels | | | | | | | | |
| 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 | - | |
| 3.1 | 700 - 850 | | 1.7709 | 21CrMoV5-7 | - | | - | - | |
| 2.1 | 490 - 640 | | 1.7715 | 14MoV6-3 | 14 Mo 6 | | 1503-660-440 | - | |
| P | Baustähle unlegiert / Unalloyed construction steels | | | | | | | | |
| 1.1 | > 500 | | 1.0037 | St37-2 | - | | - | - | |
| 1.1 | 410 - 560 | | 1.0044 | St44-2 | E 28-2 | | 4360-43 B | - | |
| 1.1 | 340 - 470 | | 1.0116 | St37-3 | E 24-3; E 24-4 | | 4360-40 C | - | |
| 1.1 | 410 - 560 | | 1.0144 | St44-3 | E 28-3; E 28-4 | | 4360-43 C | - | |
| 2.1 | 470 - 610 | | 1.0050 | St50-2 | A 50-2 | | 4360-50 B | - | |
| 2.1 | 490 - 630 | | 1.0570 | St52-3 | E 36-3; E 36-4 | | 4360-50 B | - | |
| 2.1 | 570 - 710 | | 1.0060 | St60-2 | A 60-2 | | 4360-SSE; SS | - | |
| 1.1 | 340 - 470 | | 1.0038 | RSt37-2 | E24-2 Ne | | 4360 40C | 1A | |
| P | Stahlguss · Steel castings | | | | | | | | |
| 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 | - | | - | - | |
| 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 | - | | - | - | |
| 2.1 | 490 - 640 | | 1.7357 | GS-17CrMo5-5 | - | | 621 | - | |
| 2.1 | > 500 | | 1.7379 | GS-18CrMo9-10 | - | | 622 | - | |
| P | Einsatzstähle / Case-hardening steels | | | | | | | | |
| 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 | | - | - | |
| 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 | |
| 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 | - | | - | - | |
| 2.1 | 500 - 700 | < 24 | 1.7311 | 20CrMo2 | - | | - | - | |
| 3.1 | 700 - 850 | < 24 | 1.7321 | 20MoCr4 | - | | - | - | |
| 3.1 | 700 - 850 | < 24 | 1.7323 | 20MoCrS4 | - | | - | - | |
| 3.1 | 700 - 850 | < 24 | 1.7325 | 25MoCr4 | - | | - | - | |








| | UNI | UNE | JIS | SIS | 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 | 1.2 |
| | - | - | - | 1973 | 1146 | 1.2 |
| | - | - | - | - | - | 1.2 |
| | | | | | | 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 |
| | - | - | - | - | - | 3.1 |
| | - | 13MoCrV6 | - | - | - | 2.1 |
| | | | | | | 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 |
| | 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 |
| | - | - | STKM 12A;C | 1311 | A570.36 | 1.1 |
| | | | | | | P |
| | - | - | - | - | A 27 | 2.1 |
| | - | - | - | - | - | 2.1 |
| | - | F.8310 | - | - | - | 2.1 |
| | - | - | SCPH 11 | - | - | 2.1 |
| | - | - | - | - | - | 2.1 |
| | - | - | - | - | A 757 | 2.1 |
| | - | - | - | - | - | 2.1 |
| | - | - | SNCM 9 | 2541 | - | 3.1 |
| | - | - | - | - | - | 3.1 |
| | - | - | - | - | - | 3.1 |
| | - | - | - | - | - | 3.1 |
| | - | F-8383 | SCPH 21 | - | A 217 | 2.1 |
| | - | - | SCPH 32 | - | - | 2.1 |
| | | | | | | 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 |
| | - | - | 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 |
| | 18 NiCrMo 7 | 14NiCrMo13 | - | - | - | 3.1 |
| | 16 MnCr 5 | 16MnCr5 | SCR 415 | 2511 | 5115 | 3.1 |
| | - | - | - | - | - | 3.1 |
| | 20 MnCr 5 | - | SMnC 420 (H) | - | 5120 | 3.1 |
| | - | - | - | - | - | 3.1 |
| | 12 CrMo 4 | F.155 | SCM 415 (H) | - | - | 3.1 |
| | - | - | SCM 421 | - | - | 3.1 |
| | - | - | - | - | - | 3.1 |
| | - | - | - | - | - | 2.1 |
| | - | - | - | - | - | 3.1 |
| | - | - | - | - | - | 3.1 |
| | - | - | - | - | - | 3.1 |






| | R _m [N/mm ²] | Rockwell [HRC] |  | |  | |  | |
|----------|---|-------------------|---|-------------|--|--------------|---|--|
| | | | Mat.-Nr. | DIN | AFNOR | BS | EN | |
| P | Federstähle · Spring steels | | | | | | | |
| 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 | - | |
| P | Vergütungsstähle legiert · Alloyed heat-treatable steels | | | | | | | |
| 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 | |
| 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 | |



| |  UNI |  UNE |  JIS |  SIS |  AISI/SAE/ASTM | |
|--|--|--|--|---|--|----------|
| | | | | | | P |
| | 55 Si 8 | - | - | 2085; 2090 | 9255 | 3.1 |
| | 60 SiCr 8 | - | SUP 7 | - | 9262 | 3.1 |
| | C 70 | - | - | 1770 | 1070 | 3.1 |
| | C 75 | - | - | 1774; 1778 | 1078; 1080 | 3.1 |
| | - | - | SUP 4 | 1870 | 1095 | 3.1 |
| | - | - | - | - | - | 3.1 |
| | 55 Cr 3 | - | SUP 9 (A) | 2253 | 5155 | 3.1 |
| | 51 CrV 4 | 51CrV4 | SUP 10 | 2230 | 6150 | 3.1 |
| | 55 Si 8 | - | - | 2085; 2090 | 9255 | 3.1 |
| | | | | | | P |
| | G 22 Mn 3 | - | - | - | 1022; 1518 | 2.1 |
| | - | - | - | - | - | 2.1 |
| | 100 Cr 6 | - | SUJ 2 | 2258 | 52100 | 2.1 |
| | - | - | - | - | - | 2.1 |
| | - | - | - | - | - | 2.1 |
| | - | - | - | - | - | 2.1 |
| | - | - | SNC 236 | - | 3135 | 2.1 |
| | 40 NiCrMo 2 (KB) | 40NiCrMo2 | SNCM 240 | - | 8740 | 2.1 |
| | - | - | SNCM 439 | - | 4340 | 2.1 |
| | 38 Cr 2 | - | - | - | - | 2.1 |
| | 45 Cr 2 | - | - | - | 5045 | 2.1 |
| | - | - | - | - | - | 2.1 |
| | - | - | - | - | 5130 | 2.1 |
| | 34 Cr 4 (KB) | 35Cr4 | SCr 430 (H) | - | 5132 | 2.1 |
| | 25 CrMo 4 (KB) | 55Cr3 | SCM 420; SCM 430 | 2225 | 4130 | 2.1 |
| | 35 CrMo4 | 34CrMo4 | SCM 432; SCCrM 3 | 2234 | 4135; 4137 | 2.1 |
| | 41 CrMo 4 | 42CrMo4 | SCM 440 | 2244 | 4142; 4140 | 2.1 |
| | 41 CrMo 4 | F-1252 | SCM 440 | 2244 | 4142; 4140 | 2.1 |
| | - | - | SCM 445 (H) | - | 4150 | 2.1 |
| | - | - | - | - | - | 3.1 |
| | - | - | - | - | - | 3.1 |
| | - | - | - | - | 1039 | 3.1 |
| | - | - | SMn 433 H; SCMn 2 | - | 1330 | 3.1 |
| | - | - | SMn 438 H; SCMn 3 | 2120 | 1335 | 3.1 |
| | C 28 Mn | - | SCMn 1 | - | 1330 | 3.1 |
| | - | - | - | - | - | 3.1 |
| | - | - | - | - | - | 3.1 |
| | - | - | SNC 836 | - | - | 3.1 |
| | - | - | - | - | - | 3.1 |
| | - | - | - | - | - | 3.1 |
| | - | - | - | - | - | 3.1 |
| | - | - | - | - | - | 3.1 |
| | - | - | - | - | - | 3.1 |
| | - | - | SNC 236 | - | 3135 | 3.1 |
| | 35 NiCr 9 | - | SNC 631 (H) | - | 3435 | 3.1 |
| | - | - | SNC 836 | - | - | 3.1 |
| | 38 NiCrMo 4 (KB) | 33NiCrMo4 | SNC 836 | - | 9840 | 3.1 |
| | - | - | - | - | - | 3.1 |
| | 38 Cr 2 | - | - | - | - | 3.1 |
| | 45 Cr 2 | - | - | - | 5045 | 3.1 |
| | - | - | - | - | 5130 | 3.1 |
| | 34 Cr 4 (KB) | 35Cr4 | SCr 430 (H) | - | 5132 | 3.1 |
| | 38 Cr 4 | - | SCr 435 (H) | - | 5135 | 3.1 |
| | 41 Cr 4 | 42Cr4 | SCr 440 (H) | - | 5140 | 3.1 |
| | 25 CrMo 4 (KB) | 55Cr3 | SCM 420; SCM 430 | 2225 | 4130 | 3.1 |
| | 35 CrMo4 | 34CrMo4 | SCM 432; SCCrM 3 | 2234 | 4135; 4137 | 3.1 |
| | 41 CrMo 4 | 42CrMo4 | SCM 440 | 2244 | 4142; 4140 | 3.1 |
| | 41 CrMo 4 | F-1252 | SCM 440 | 2244 | 4142; 4140 | 3.1 |
| | - | - | SCM 445 (H) | - | 4150 | 3.1 |
| | - | - | - | - | - | 3.1 |
| | - | - | - | - | - | 3.1 |
| | 51 CrV 4 | 51CrV4 | SUP 10 | 2230 | 6150 | 3.1 |
| | - | - | - | - | - | 5.1 |
| | - | - | SNC 836 | - | - | 5.1 |
| | - | - | - | - | - | 5.1 |
| | - | - | - | - | - | 5.1 |
| | - | - | - | - | - | 5.1 |
| | - | - | - | - | - | 5.1 |
| | - | - | - | - | - | 5.1 |
| | - | - | SNC 236 | - | 3135 | 5.1 |






| | R _m [N/mm ²] | Rockwell [HRC] |  | |  | |  | |
|---|--|-------------------|---|---------------|--|--------------|---|--|
| | | | Mat.-Nr. | DIN | AFNOR | BS | EN | |
| 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 | - | - | - | |
| P Vergütungsstähle unlegiert · Unalloyed heat-treatable steels | | | | | | | | |
| 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 | - | |
| 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 | |
| P Kaltarbeitstähle · Cold work steels | | | | | | | | |
| 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 | - | |
| 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 | - | - | - | |
| P Werkzeugstähle unlegiert · Unalloyed tool steels | | | | | | | | |
| 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 | - | |



| UNI | UNE | JIS | SIS | AISI/SAE/ASTM | |
|--------------------|-------------|-------------------|------------|---------------|----------|
| 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 |
| | | | | | P |
| 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 |
| 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 |
| | | | | | P |
| - | 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 |
| X 155 CrVMo 12 1KU | - | SKD 11 | - | D 2 | 3.1 |
| X 215 CrW 12 1KU | X210CrW12 | SKD 2 | 2312 | - | 3.1 |
| X 165 CrMoV 12 KU | X160crMoV12 | - | 2310 | - | 3.1 |
| | | | | | P |
| - | - | - | - | - | 2.1 |
| C 80 KU | - | - | - | W 108 | 2.1 |
| C 100 KU | - | - | - | W 110 | 2.1 |
| - | - | - | - | - | 2.1 |
| C 80 KU | - | SKC 3; SK 5; SK 6 | - | W 1 | 2.1 |






| | R _m [N/mm ²] | Rockwell [HRC] |  | |  |  | EN |
|---|--|-------------------|---|--------------------------|--|---|-----|
| | | | Mat.-Nr. | DIN | AFNOR | BS | |
| 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 | - | - |
| P Warmarbeitsstähle · Hot work steels | | | | | | | |
| 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 | - | - | - |
| 3.1 | > 840 | | 1.2744 | 57NiCrMoV7-7 | - | - | - |
| 3.1 | > 860 | | 1.2764 | X19NiCrMo4 | - | - | - |
| 3.1 | < 870 | | 1.2767 | X45NiCrMo4 | Y 35 NCD 16 | - | - |
| 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 | - |
| 3.1 | < 840 | | 1.2316 | X36CrMo17 | - | - | - |
| 4.1 | 1080 | > 29 | Toolox 33 | - | - | - | - |
| 4.1 | 1250 | 43 | Hardox 400 | - | - | - | - |
| 5.1 | 1450 | 45 | Toolox 44 | - | - | - | - |
| P Nitrierstähle · Nitriding steels | | | | | | | |
| 3.1 | < 1000 | < 30 | 1.8504 | 34CrAl6 | - | - | - |
| 3.1 | < 1000 | < 30 | 1.8506 | 34CrAl5 | - | - | - |
| 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 | - | - | - |
| M Rost- und säurebeständige Stähle – ferritisch · Corrosion and acid proof steels – ferritic | | | | | | | |
| 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 | - | - |
| M Rost- und säurebeständige Stähle – austenitisch · Corrosion and acid proof steels – austenitic | | | | | | | |
| 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 | X5CrNi19-9 | - | - | - |
| 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 | - |



| UNI | UNE | JIS | SIS | AISI/SAE/ASTM | |
|---------------------|-----------|-----------------|------------|---------------|----------|
| C 100 KU | - | SK 3 | - | - | 2.1 |
| - | - | - | - | - | 2.1 |
| C 120 KU | - | SK 2 | - | W 112 | 2.1 |
| C 140 KU | - | SK 1 | - | - | 2.1 |
| - | - | - | - | - | 2.1 |
| - | - | SK 7 | - | - | 2.1 |
| - | - | - | - | - | 2.1 |
| - | - | - | - | W 1 | 2.1 |
| - | - | - | - | - | 2.1 |
| - | - | SK 5 | - | - | 2.1 |
| | | | | | P |
| 35 CrMo8 | - | - | - | - | 2.1 |
| 40 CrMnMo 7 | F-5302 | - | - | - | 2.1 |
| - | - | - | - | - | 2.1 |
| - | F.520.S | SKT 4 | - | L 6 | 2.1 |
| - | - | - | - | P20 | 2.1 |
| - | - | - | - | - | 3.1 |
| - | - | - | - | - | 3.1 |
| 42 NiCrMo 15 7 | - | - | - | - | 3.1 |
| X 41 Cr 13 KU | F-5263 | SUS 420 J 2 | - | - | 2.1 |
| X 37 CrMoV 5 1 KU | F-5317 | SKD 6 | - | H 11 | 2.1 |
| X 40 CrMoV 5 1 1 KU | F-5318 | SKD 61 | - | H 13 | 2.1 |
| X 30 CrMoV 12 27 KU | F-5313 | SKD 7 | - | H 10 | 2.1 |
| X 30 WCrV 5 3 KU | - | SKD 4 | - | - | 2.1 |
| X 30 WCrV 9 3 KU | X30WCrV9 | SKD 5 | - | H 21 | 2.1 |
| - | F-5314 | - | - | - | 2.1 |
| X 38 CrMo 16 1 KU | F-5267 | - | - | - | 3.1 |
| - | - | - | - | Toolox 33 | 4.1 |
| - | - | - | - | Hardox 400 | 4.1 |
| - | - | - | - | Toolox 44 | 5.1 |
| | | | | | P |
| - | - | - | - | - | 3.1 |
| - | - | - | - | - | 3.1 |
| 34 CrAlMo 7 | - | - | - | A 355 Cl. D | 3.1 |
| 41 CrAlMo 7 | 41CrAlMo7 | SACM 645 | 2940 | A 355 Cl. A | 3.1 |
| 31 CrMo 12 | - | - | 2240 | - | 3.1 |
| - | - | - | - | - | 3.1 |
| - | - | - | - | - | 3.1 |
| 39 CrMoV 13 9 | - | - | - | - | 3.1 |
| - | - | - | - | - | 3.1 |
| | | | | | M |
| X 6 CrAl 13 | - | SUS 405 | 2302 | 405 | 1.1 |
| X 6 CrTi 12 | - | SUH 409 | - | 409 | 1.1 |
| X 6 Cr 13 | F.3110 | SUS 403 | 2301 | 403 | 1.1 |
| X 8 Cr 17 | F.3113 | SUS 430 | 2320 | 430 | 1.1 |
| X 8 Cr 17 | F-3153 | SUS 430; SUH 21 | - | 430 | 1.1 |
| X 8 CrMo 17 | F.3116 | SUS 434 | 2325 | 434 | 1.1 |
| X 6 CrTi 17 | - | SUS 430 LX | - | XM 8; 430 Ti | 1.1 |
| - | F-3123 | SUS 444 | 2326 | 444 | 1.1 |
| - | F-3152 | - | - | - | 1.1 |
| X 16 Cr 26 | F.3154 | SUH 446 | - | 446 | 1.1 |
| | | | | | M |
| - | - | - | - | 201 | 2.1 |
| - | - | - | - | 202 | 2.1 |
| X10CrNi18-8 | F-3517 | SUS 301 | 2331 | 301 | 2.1 |
| - | - | - | - | 301LN | 2.1 |
| X 10 CrNi 18 9 | F.3508 | SUS 303 | 2346 | 303 | 2.1 |
| X 5 CrNi 18 10 | F.3551 | SUS 302 | - | 304 | 2.1 |
| X 5 CrNi 18 10 | F.3551 | SUS 304 | 2332; 2333 | 304; 304 H | 2.1 |
| X 2 CrNi 18 11 | F.3503 | SCS 19 | 2352; 2333 | 304 L | 2.1 |
| X 2 CrNiN 18 11 | - | SUS 304 LN | 2371 | 304 LN | 2.1 |
| - | - | - | - | 304H | 2.1 |
| - | - | - | - | 304 L | 2.1 |
| - | - | - | - | 304 N | 2.1 |
| 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 |



| | R _m [N/mm ²] | Rockwell [HRC] |  | |  |  | EN |
|----------|---|-------------------|---|-----------------------|--|---|-----|
| | | | Mat.-Nr. | DIN | AFNOR | BS | |
| 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 | X10CrNiMoTi18-12 | - | 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 |
| M | Rost- und säurebeständige Stähle – Duplex · Corrosion and acid proof steels – Duplex | | | | | | |
| 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 | - | - |
| 4.1 | 730 - 1250 | | 1.4410 | X2CrNiMoN25-7-4 | Z 3 CND 25-06 | - | - |
| 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 | - | - |
| M | Rost- und säurebeständige Stähle – martensitisch · Corrosion and acid proof steels – martensitic | | | | | | |
| 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 | - | - |
| 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 | - | - |
| 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 | - | - |
| M | Rost- und säurebeständige Stähle – ausscheidungshärtend · Corrosion and acid proof steels – precipitation-hardened | | | | | | |
| 4.1 | > 1275 | | 1.4542 | X5CrNiCuNb16-4 | Z 7 CNU 15-05 | - | - |
| 3.1 | > 1030 | | 1.4568 | X7CrNiAl17-7 | Z 9 CNA 17-07 | 301 S 81 | - |
| K | Gusseisen mit Lamellengrafit (GJL) · Cast iron with lamellar graphite (GJL) | | | | | | |
| 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 | - |
| 1.2 | 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 | - |
| 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 | - |
| K | Gusseisen mit Kugelgrafit (GJS) · Cast iron with nodular graphite (GJS) | | | | | | |
| 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 | - |
| 2.2 | 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 | - |
| 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 | - |








| UNI | UNE | JIS | SIS | AISI/SAE/ASTM | |
|--------------------|----------------|-------------------|----------|-----------------|----------|
| 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 |
| | | | | | M |
| - | - | SUS 329J3L | 2377 | 2205 | 3.1 |
| - | - | - | 2327 | 2304 | 3.1 |
| - | - | SCS 14A | 2328 | 2507 | 4.1 |
| - | - | - | - | 255 | 3.1 |
| - | - | - | - | 255 | 3.1 |
| | | | | | M |
| 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 |
| X 6 CrNi 13 04 | - | SCS 5 | 2385 | CA 6-NM | 3.1 |
| - | - | - | 2387 | - | 3.1 |
| - | - | 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 | - | HNW 6 | 1.1 |
| X 105 CrMo 17 | - | SUS 440 C | - | 440 C | 1.1 |
| | | | | | M |
| - | - | SCS 630 | - | 630 | 4.1 |
| - | - | SUS 631 | 2388 | 631 | 3.1 |
| | | | | | K |
| 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 |
| 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 |
| - | - | - | - | A-436 Type 1 | 1.1 |
| - | - | - | - | A-436 Type 2 | 1.1 |
| - | - | - | - | A-436 Type 3 | 1.1 |
| - | - | - | - | A-436 Type 4 | 1.1 |
| | | | | | K |
| 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 |
| 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 |
| - | 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 |






| | R _m [N/mm ²] | Rockwell [HRC] | Mat.-Nr. | DIN | AFNOR | BS | EN |
|---|--|-------------------|-----------|----------------|----------------|---------|----|
| K Gusseisen mit Vermiculargrafit (GJV) · Cast iron with vermicular graphite (GJV) | | | | | | | |
| 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 | - | - | - |
| K Temperguss (GTMW, GTMB) · Malleable cast iron (GTMW, GTMB) | | | | | | | |
| 4.1 | > 350 | | 0.8135 | EN-GJMB-350-10 | MN35-10 | B340/12 | - |
| 4.1 | > 450 | | 0.8145 | EN-GJMB-450-6 | - | P440/7 | - |
| 4.2 | > 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 | - |
| 4.1 | 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 | 490 - 570 | | 0.8055 | EN-GJMW-550-4 | - | - | - |
| N Aluminium unlegiert · Unalloyed aluminium | | | | | | | |
| 1.1 | 65 - 150 | | 3.0225 | Al99.5 | A5 | 1B | - |
| 1.1 | 40 - 100 | | 3.0305 | Al99.9 | A9 | - | - |
| N Aluminium-Knetlegierungen, nicht ausgehärtet · Wrought aluminium alloys, not hardened | | | | | | | |
| 1.1 | 100 - 125 | | 3.0505 | AlMn0.5Mg0.5 | - | N31 | - |
| 1.2 | 80 - 230 | | 3.0515 | AlMn1 | - | N3 | - |
| 1.2 | 115 - 290 | | 3.0525 | AlMn1Mg0.5 | A-M1G0,5 | - | - |
| 1.1 | 100 - 205 | | 3.3315 | AlMg1 | A-G0,6 | N41 | - |
| 1.2 | 180 - 310 | | 3.3535 | AlMg3 | A-G3M | N5 | - |
| N Aluminium Knetlegierungen, ausgehärtet · Wrought aluminium alloys, hardened | | | | | | | |
| 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 | - |
| 1.2 | 130 - 270 | | 3.3206 | AlMgSi0.5 | - | H9 | - |
| 1.2 | 120 - 300 | | 3.3211 | AlMg1SiCu | - | H20 | - |
| 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 | - |
| N Aluminium-Gusslegierungen Si ≤ 7% · Aluminium cast alloys Si ≤ 7% | | | | | | | |
| 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 | - | - |
| N Aluminium-Gusslegierungen 7% < Si ≤ 12% · Aluminium cast alloys 7% < Si ≤ 12% | | | | | | | |
| 1.5 | 160 - 200 | | 3.2161 | G-AlSi8Cu3 | - | - | - |
| 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 | - |
| N Aluminium-Gusslegierungen Si > 12% · Aluminium cast alloys Si > 12% | | | | | | | |
| 1.6 | 165 - 370 | | | G-AlSi17Cu4Mg | - | - | - |
| 1.6 | 180 - 220 | | | G-AlSi18CuNiMg | - | - | - |
| 1.6 | 200 - 240 | | | G-AlSi21CuNiMg | - | - | - |
| 1.6 | 230 - 300 | | | G-AlSi25CuNiMg | - | - | - |
| N Reinkupfer, niedriglegiertes Kupfer · Pure copper, low-alloyed copper | | | | | | | |
| 2.2 | < 600 | | 2.0240 | CuZn15 | CuZn15 | CZ 102 | - |
| 2.2 | < 800 | | 2.0265 | CuZn30 | CuZn30 | CZ 106 | - |
| N Kupfer-Zink-Legierungen (Messing, langspanend) · Copper-zinc alloys (brass, long-chipping) | | | | | | | |
| 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 | - |
| N Kupfer-Zink-Legierungen (Messing, kurzspanend) · Copper-zinc alloys (brass, short-chipping) | | | | | | | |
| 2.3 | 340 - 570 | | 2.0401 | CuZn39Pb3 | Ms58 | - | - |
| N Kupfer-Zinn-Legierungen (Zinnbronze, langspanend) · Copper-tin alloys (tin bronze, long-chipping) | | | | | | | |
| 2.5 | < 900 | | 2.1016 | CuSn4 | - | - | - |
| 2.5 | 390 - 620 | | 2.1030 | CuSn8P | - | - | - |
| N Kupfer-Zinn-Legierungen (Zinnbronze, kurzspanend) · Copper-tin alloys (tin bronze, short-chipping) | | | | | | | |
| 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 | - | - |
| N Kupfer-Aluminium-Legierungen (Alubronze) · Copper-aluminium alloys (alu bronze) | | | | | | | |
| 2.7 | > 550 | | AMPCO® 8 | - | - | - | - |
| 2.8 | > 750 | | AMPCO® 21 | - | - | - | - |



| |  UNI |  UNE |  JIS |  SIS |  AISI/SAE/ASTM | |
|----------|---|---|---|--|---|----------|
| | | | | | | K |
| - | - | - | - | - | - | 3.1 |
| - | - | - | - | - | - | 3.2 |
| - | - | - | - | - | - | 3.2 |
| - | - | - | - | - | - | 3.2 |
| - | - | - | - | - | - | 3.2 |
| | | | | | | K |
| - | GTS 35 | - | 0810 | 32510 | - | 4.1 |
| - | GTS 45 | - | 0852 | 40010 | - | 4.1 |
| - | GTS 55 | - | 0854 | 50005 | - | 4.2 |
| - | GTS 65 | - | 0856 | 70003 | - | 4.2 |
| - | GTS 70 | - | 0862; 0864 | 90001 | - | 4.2 |
| - | 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 |
| - | GTW 55 | - | - | - | - | 4.2 |
| | | | | | | N |
| 4507 | L-3051 | A1x1 | - | - | - | 1.1 |
| - | - | - | - | - | - | 1.1 |
| | | | | | | N |
| - | - | - | - | 3105 | - | 1.1 |
| 3568 | L-3810 | 144054 | - | - | - | 1.2 |
| - | - | - | - | - | - | 1.2 |
| 5764 | L-3350 | A2x8 | 144106 | - | - | 1.1 |
| 3575 | L-3390 | - | - | - | - | 1.2 |
| | | | | | | N |
| 3579 | L-3120 | - | - | - | - | 1.3 |
| 3579 | L-3140 | A3x4 | - | - | - | 1.3 |
| 3571 | L-3451 | - | 144212 | - | - | 1.3 |
| 3569 | L-3441 | A2x5 | 144103 | - | - | 1.2 |
| - | - | - | - | - | - | 1.2 |
| 811-04 | - | - | - | 7050 | - | 1.3 |
| 811-05 | - | - | - | 7175 | - | 1.3 |
| | | | | | | N |
| - | - | - | - | - | - | 1.4 |
| - | - | - | - | - | - | 1.4 |
| 5080 | - | - | - | - | - | 1.4 |
| 3059 | - | ADC6 | - | - | - | 1.4 |
| | | | | | | N |
| - | - | - | - | - | - | 1.5 |
| 3051 | - | AC4A | - | - | - | 1.5 |
| 5075 | - | - | - | - | - | 1.5 |
| 3051 | L-2560 | - | 4253 | - | - | 1.5 |
| - | - | - | 4253 | A 360.2 | - | 1.5 |
| 3051 | - | AC3 | 4261 | A 413.2 | - | 1.5 |
| 3048 | - | - | 4260 | A 413.1 | - | 1.5 |
| | | | | | | N |
| - | - | - | - | - | - | 1.6 |
| - | - | - | - | - | - | 1.6 |
| - | - | - | - | - | - | 1.6 |
| - | - | - | - | - | - | 1.6 |
| | | | | | | N |
| - | - | C2300 | - | C23000 | - | 2.2 |
| - | - | C2600 | - | C26000 | - | 2.2 |
| | | | | | | N |
| - | - | C 2700 | - | C27200 | - | 2.2 |
| P-CuZn35 | - | C 2700 | - | C27000 | - | 2.2 |
| - | - | - | - | C28000 | - | 2.2 |
| | | | | | | N |
| - | - | - | - | C38500 | - | 2.3 |
| | | | | | | N |
| - | - | C 5111 | - | C51100 | - | 2.5 |
| - | - | C5210 | - | C52100 | - | 2.5 |
| | | | | | | N |
| - | - | H 5111 | - | C83600 | - | 2.6 |
| - | - | - | - | C93200 | - | 2.6 |
| - | - | - | - | - | - | 2.6 |
| - | - | - | - | - | - | 2.6 |
| | | | | | | N |
| - | - | - | - | - | - | 2.7 |
| - | - | - | - | - | - | 2.8 |



| | R _m [N/mm ²] | Rockwell [HRC] |  | |  | |  | |
|----------|--|-------------------|---|--------------------|--|-------------|---|---|
| | | | Mat.-Nr. | DIN | AFNOR | BS | EN | |
| 2.7 | > 500 | | AMPCO® 25 | - | - | - | - | - |
| 2.8 | > 810 | | AMPCO® 45 | - | - | - | - | - |
| 2.8 | > 1000 | | AMPCO® M-4 | - | - | - | - | - |
| N | Magnesium-Knetlegierungen · Magnesium wrought alloys | | | | | | | |
| 3.1 | > 270 | | 3.5612 | MgAl6Zn | - | - | - | - |
| 3.2 | > 240 | | 3.5912 | G-MgAl9Zn1 | - | - | - | - |
| N | Kunststoffe · Synthetics | | | | | | | |
| 4.1 | | | Bakelit | - | - | - | - | - |
| 4.1 | | | Pertinax | - | - | - | - | - |
| 4.2 | | | PMMA | - | - | - | - | - |
| 4.2 | | | POM | - | - | - | - | - |
| 4.2 | | | PVC | - | - | - | - | - |
| N | Faserverstärkte Kunststoffe · Fibre-reinforced synthetics | | | | | | | |
| 4.3 | 155 - 365 | | GFK | - | - | - | - | - |
| 4.3 | 190 - 210 | | CFK uni. | - | - | - | - | - |
| 4.3 | 190 - 210 | | CFK multi. | - | - | - | - | - |
| 4.3 | | | AFK | - | - | - | - | - |
| S | Nickel-, Kobalt- und Eisen-Legierungen · Nickel alloys, cobalt alloys and iron alloys | | | | | | | |
| 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 | - | - |
| 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 | - | - |
| 2.3 | 1200 | | 2.4632 | NiCr20Co18Ti | - | - | - | - |
| 2.3 | 1180 | | 2.4634 | NiCo20Cr15MoAlTi | - | - | - | - |
| 2.2 | < 770 | | 2.4662 | NiCr13Mo6Ti3 | - | HR 53 | - | - |
| 2.3 | 900 - 1200 | | 2.4670 | - | - | - | - | - |
| 2.3 | 900 - 1200 | | 2.4674 | - | - | - | - | - |
| 2.3 | 1270 | | 2.6554 | - | - | - | - | - |
| 2.2 | 890 | | 2.4856 | NiCr22Mo9Nb | NC 22 FeDNb | NA 21 | - | - |
| 2.3 | < 1400 | | 2.4668 | NiCr19FeNbMo | NC 19Fe Nb | - | - | - |
| S | Reintitan, Titanlegierungen · Pure titanium, titanium alloys | | | | | | | |
| 1.1 | 290 - 410 | | 3.7025 | Ti99.5 / Ti Gr.1 | - | - | - | - |
| 1.1 | 380 - 540 | | 3.7035 | Ti99.4 / Ti Gr.2 | - | TA 1 | - | - |
| 1.2 | 460 - 590 | | 3.7055 | Ti99.3 / Ti Gr.3 | - | TA 2 | - | - |
| 1.2 | 540 - 740 | | 3.7065 | Ti99.2 / Ti Gr.4 | - | TA 3 | - | - |
| 1.1 | 390 - 540 | | 3.7235 | Ti2Pd / Ti Gr.2Pd | - | - | - | - |
| 1.2 | > 890 | | 3.7165 | TiAl6V4 / Ti Gr. 5 | T-A6V | TA 28 | - | - |
| 1.3 | > 1000 | | 3.7185 | TiAl4Mo4Sn2 | - | - | - | - |
| H | Gehärtete Stähle, Hartguss · Hardened steels, hard castings | | | | | | | |
| 1.1 | 1250 - 1550 | < 50 | Weldox 1100 | - | - | - | - | - |
| 1.2 | 1600 - 1800 | < 55 | Hardox 500 | - | - | - | - | - |
| 1.2 | 1820 - 1900 | < 55 | Hardox 550 | - | - | - | - | - |
| 1.2 | ~ 1860 | < 55 | 1.2713 | 55NiCrMoV6 | 55 NCDV 7 | - | - | - |
| 1.3 | 1995 - 2300 | < 60 | Armox 600T | - | - | - | - | - |
| 1.3 | ~ 2100 | < 60 | 1.2542 | 45WCv7 | - | BS 1 | - | - |
| 1.4 | | < 63 | Ferro-Titanit | - | - | - | - | - |
| 1.4 | | < 63 | 1.2379 | X155CrVMo12-1 | Z 160 CDV 12 | BD 2 | - | - |
| 1.5 | | < 66 | HSSE | - | - | - | - | - |
| 1.5 | | < 66 | 1.2436 | X210CrW12 | - | - | - | - |



| | UNI | UNE | JIS | SIS | AISI/SAE/ASTM | |
|--------------------|-----------|-----|--------------------|------|----------------|-----|
| - | - | - | - | - | - | 2.7 |
| - | - | - | - | - | - | 2.8 |
| - | - | - | - | - | - | 2.8 |
| N | | | | | | |
| - | - | - | - | - | - | 3.1 |
| - | - | - | - | - | - | 3.2 |
| N | | | | | | |
| - | - | - | - | - | - | 4.1 |
| - | - | - | - | - | - | 4.1 |
| - | - | - | - | - | - | 4.2 |
| - | - | - | - | - | - | 4.2 |
| - | - | - | - | - | - | 4.2 |
| N | | | | | | |
| - | - | - | - | - | - | 4.3 |
| - | - | - | - | - | - | 4.3 |
| - | - | - | - | - | - | 4.3 |
| - | - | - | - | - | - | 4.3 |
| S | | | | | | |
| 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 |
| - | - | - | - | - | 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 90 | 2.3 |
| - | - | - | - | - | Nimonic 105 | 2.3 |
| - | - | - | - | - | Nimonic 901 | 2.2 |
| - | - | - | - | - | Nimocast 713 | 2.3 |
| - | - | - | - | - | Nimocast PK 24 | 2.3 |
| - | - | - | - | - | Waspaloy | 2.3 |
| - | - | - | - | - | Inconel 625 | 2.2 |
| - | - | - | - | - | Inconel 718 | 2.3 |
| S | | | | | | |
| - | - | - | - | - | - | 1.1 |
| - | - | - | - | - | - | 1.1 |
| - | - | - | - | - | - | 1.2 |
| - | - | - | - | - | - | 1.2 |
| - | - | - | - | - | - | 1.1 |
| - | - | - | - | - | R56400 | 1.2 |
| - | - | - | - | - | - | 1.3 |
| H | | | | | | |
| - | - | - | - | - | Weldox 1100 | 1.1 |
| - | - | - | - | - | Hardox 500 | 1.2 |
| - | - | - | - | - | Hardox 550 | 1.2 |
| - | F.520.S | - | SKT 4 | - | L 6 | 1.2 |
| - | - | - | - | - | Armox 600T | 1.3 |
| 45 WCrV 8 KU | 45WCrSi8 | - | - | 2710 | S 1 | 1.3 |
| - | - | - | - | - | Ferro-Titanit | 1.4 |
| X 155 CrVMo 12 1KU | - | - | SKD 11 | - | D 2 | 1.4 |
| - | - | - | - | - | HSSE | 1.5 |
| X 215 CrW 12 1 KU | X210CrW12 | - | SKD 2 | 2312 | - | 1.5 |



Der Service ist so wichtig wie das Produkt selbst. Aus diesem Grund hat EMUGE-FRANKEN ein umfangreiches Kommunikations- und Servicesystem geschaffen. Nachfolgend finden Sie einige Beispiele dafür.

Service is just as important as the product itself. For this reason, EMUGE-FRANKEN has created a comprehensive communication and service system. Please see the following examples:

Weltweite Präsenz

Ihren zuständigen Ansprechpartner können Sie über unsere Zentralen in Lauf und Rückersdorf oder im Internet unter www.emuge-franken.com abfragen.

Worldwide presence

Please see our homepage – www.emuge-franken.com –, or contact our service staff in Lauf or Rückersdorf, to find out who is responsible for your area.

Systemlösungen

Eine sehr enge Zusammenarbeit mit den Werkzeugmaschinenherstellern ermöglicht uns einen umfangreichen Überblick über die Prozessparameter. Wenn Sie nach prozesssicheren Fertigungslösungen suchen, ist unser Experten-Team gerne bereit, mit Ihnen gemeinsam die wirtschaftlichste Problemlösung zu erarbeiten.

System solutions

Our close cooperation with machine tool makers means that we have a profound understanding of all aspects of machining. If you are looking for manufacturing solutions with reliable processes, our team of experts will be happy to assist you in finding the most economical solution for your application.

Messen/Informationsveranstaltungen

Über Messebeteiligungen weltweit werden Interessenten ständig über technologische Entwicklungen und Neuprodukte von EMUGE-FRANKEN informiert.

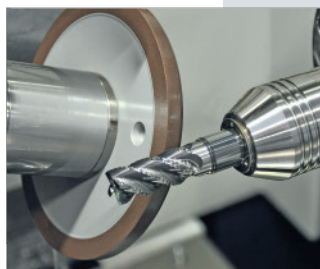
Fairs and exhibitions/Information events

We take part in a variety of international exhibitions to provide you with information about technological developments and new products from EMUGE-FRANKEN.



Nachschleif- und Nachbeschichtungsservice

Auch das leistungsfähigste Zerspanungswerkzeug wird einmal stumpf. Wir bieten Ihnen einen Nachschleif- und Nachbeschichtungsservice in Herstellerqualität. Gerne beraten wir Sie vor Ort oder in unserem Haus.



Regrinding and recoating service

Even the most efficient tool will become blunt eventually. We can offer you a regrinding and recoating service in manufacturer quality. We will be happy to advise you either here at the company or at your premises.



Print-Medien

Neben unseren umfangreichen Katalogen bieten wir Sonderprospekte, Fachartikel, Wandtafeln und vieles mehr.

Sales literature

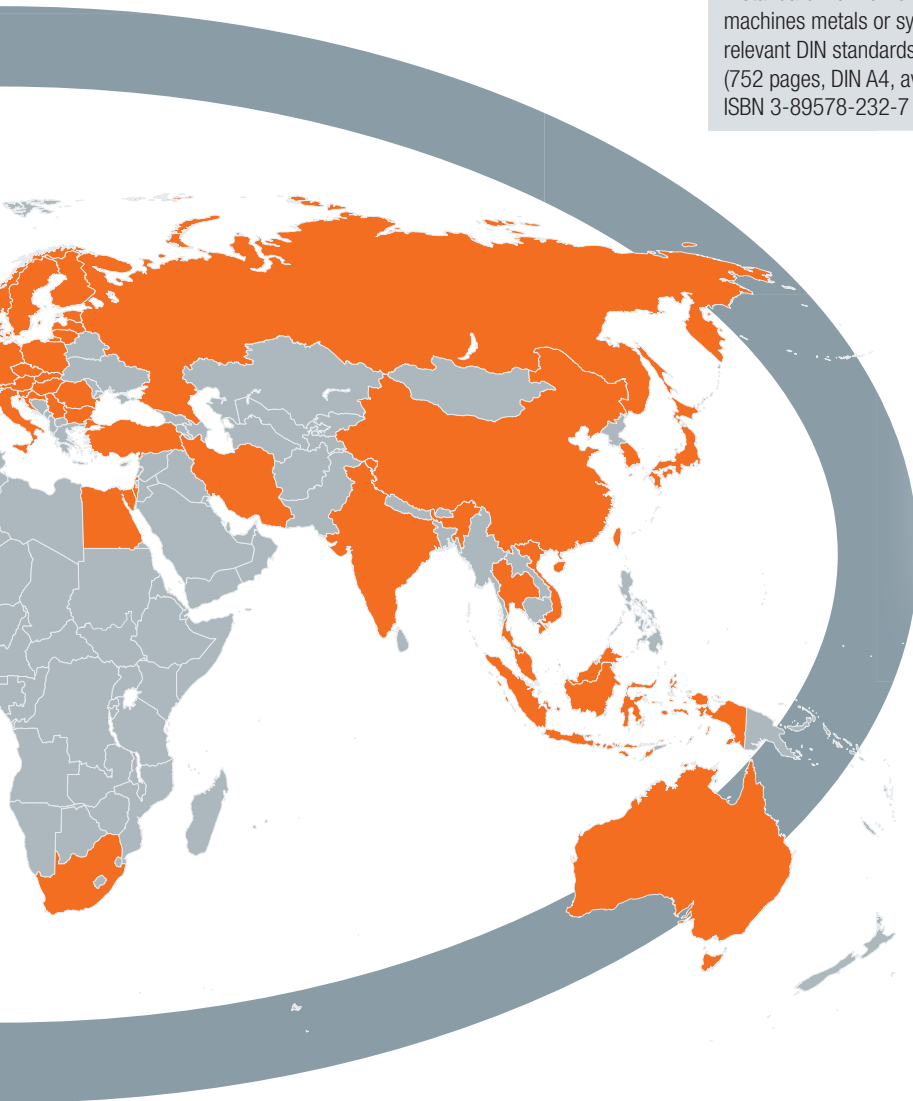
In addition to our comprehensive catalogues, we offer special brochures, reprints of technical articles, wall charts, and much more.

Technisches Handbuch

Das Handbuch der Gewindetechnik und Frästechnik ist das Nachschlagewerk für die Fertigungsoptimierung. Ein Standardwerk für jeden metall- und kunststoffverarbeitenden Betrieb, mit relevanten DIN-Normen. (752 Seiten, DIN A4, nur deutschsprachig) ISBN 3-89578-232-7

Manual of Threading and Milling Technology

The new Manual of Threading and Milling Technology is the reference book for production optimisation. A standard work of reference for any company that machines metals or synthetics, with the most relevant DIN standards. (752 pages, DIN A4, available only in German) ISBN 3-89578-232-7



Lieferservice

EMUGE-FRANKEN verfügt über eines der größten Werkzeuglager in der Branche. Somit wird sichergestellt, dass auch bei Spezialwerkzeugen kürzeste Lieferzeiten eingehalten werden können.

Delivery service

EMUGE-FRANKEN has a more extensive stock-holding than almost any other company in the industry. This helps us to make sure that even very special tools can be supplied within the shortest possible delivery times.



EMUGE-FRANKEN Internet-Service EFIS

Auskünfte über Verfügbarkeit und Preise der lagerhaltigen Werkzeuge von EMUGE-FRANKEN erhalten Sie innerhalb weniger Minuten, unabhängig von der Verfügbarkeit eines Ansprechpartners.

EMUGE-FRANKEN Internet Service EFIS

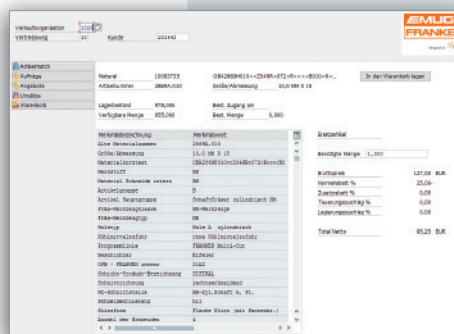
Information about price and availability of stock tools is always available at a glance, even if your contact person is not available.

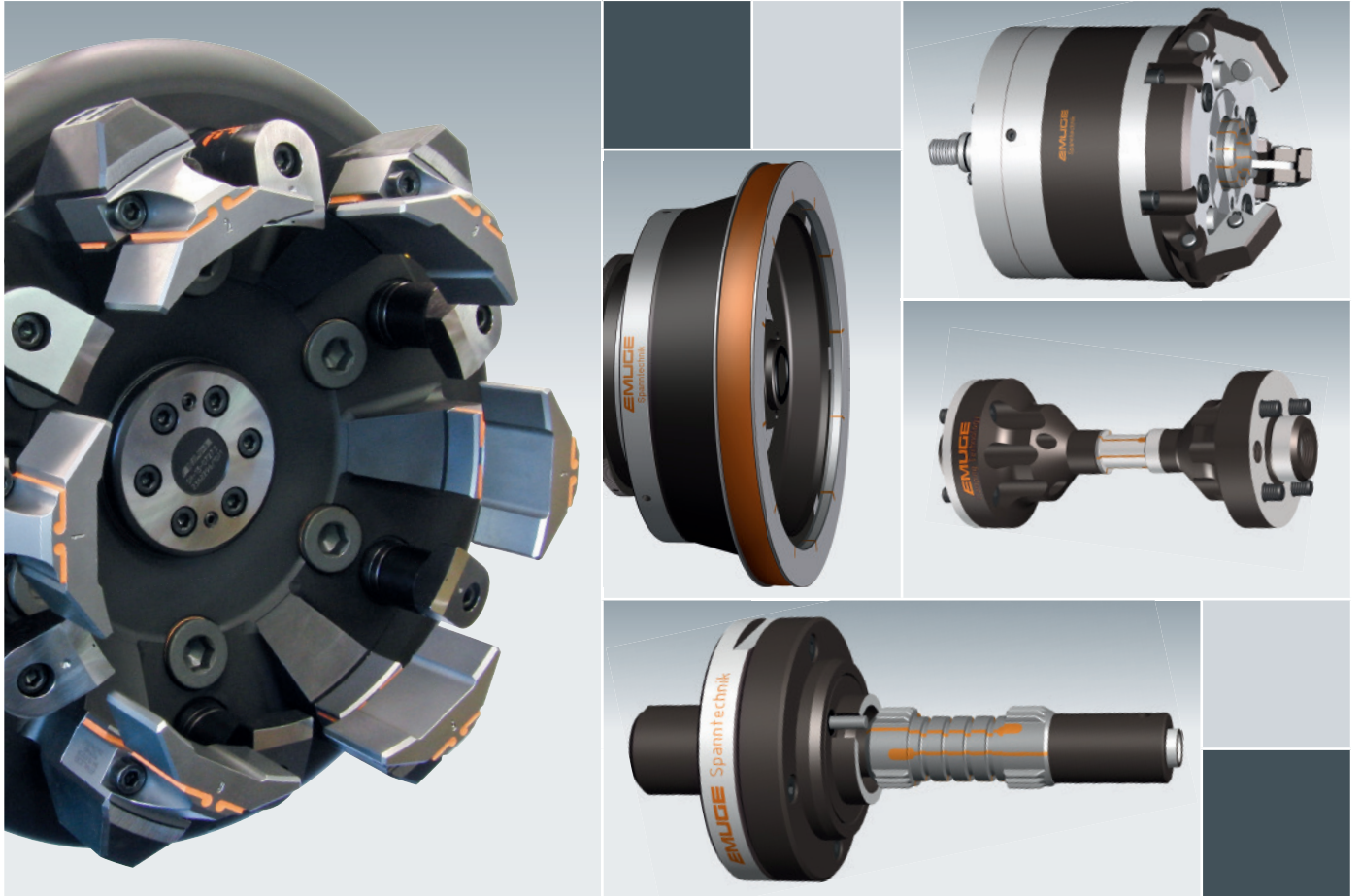
Anwendungstechnik

Die Abteilung „Anwendungstechnik“ ist die Service- und Dienstleistungsabteilung für den weltweit bestehenden Kundenkreis. Für die von EMUGE-FRANKEN angebotenen Produkte steht dieses Expertenteam weltweit zur Verfügung.

Technical service

The Technical Service Department is the service and consulting partner for our customers worldwide. This team of experts will help you with any question regarding EMUGE-FRANKEN products.



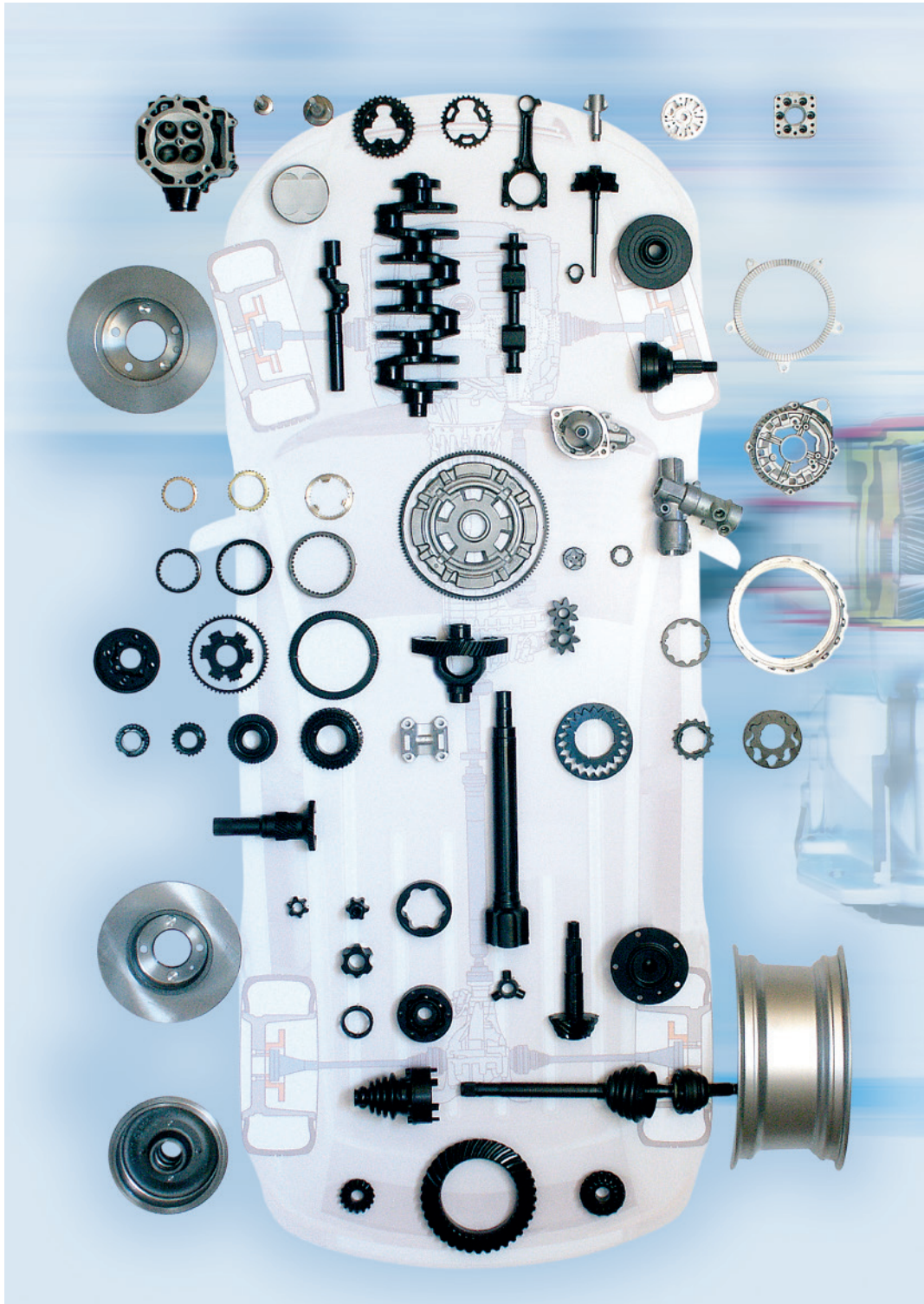


Werkstückspannung Workpiece Clamping



Neben Spannzangen-Aufnahmen, Schnellwechsel-Aufnahmen und Gewindeschneidapparaten bietet EMUGE auch **Präzisionsspannmittel für die Werkstückspannung**. Die überwiegende Anzahl dieser Spannzeuge wird speziell für die von den Kunden geschilderten Anwendungsfälle konstruiert und sind somit **auf den Fertigungsprozess optimierte Sonderlösungen**. Dabei werden schon in der Planungsphase sämtliche Rahmenbedingungen wie z.B. Maschinenausstattung, Genauigkeitsanforderungen und Prozessablauf so praxisnah wie möglich berücksichtigt.

In addition to our collet holders, quick-change holders and tapping attachments, EMUGE also offers **precision clamping tools for workpiece clamping**. The largest part of these clamping tools are designed especially for individual customers' applications, and are, as a consequence, **highly optimised special solutions for specific production processes**. In order to achieve such solutions, it is strictly necessary to analyse all the basic conditions, e.g. machine equipment, precision requirements, details of the production process etc., even in the first planning stage, with a close view to practical work conditions.



Systemspezifikationen

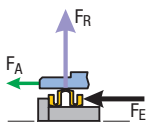
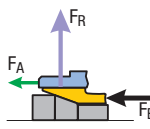
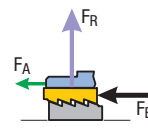
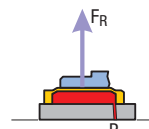
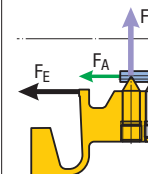
Die Werkstückspannung ist ein wesentliches Element im Produktionsprozess. Die überwiegende Anzahl dieser Spannzeuge wird speziell für die von den Anwendern geschilderten Einsatzfälle konstruiert und sind somit auf den Fertigungsprozess optimierte Sonderlösungen.

Bei der Entwicklung dieser Spannmittel sind sämtliche Voraussetzungen wie Maschinenausrüstung, Genauigkeitsanforderungen und Prozessablauf so praxisnah wie möglich zu berücksichtigen. EMUGE, einer der führenden Hersteller solcher Spannmittel, bedient sich verschiedener Spannprinzipien, die nachfolgend beschrieben werden. Die unten aufgeführten Werte sind lediglich **Richtwerte**.

System specifications

Workpiece clamping is an essential element of the production process. The largest part of these clamping tools are specially designed for the application case described by the user, which means they are special solutions optimised for the individual production process.

In the development of these clamping tools, all basic conditions like machine equipment, precision requirements and process sequence, must be taken into account with as much regard to practical conditions as possible. EMUGE, as one of the leading manufacturers of such clamping equipment, uses various clamping principles which we will describe in detail below. The values listed below are only **reference values**.

| Eigenschaften Features | System | | | | |
|--|---|---|--|---|---|
| | SP | SZ | SG | SH | SM |
| Systemaufbau System set-up |  |  |  |  |  |
| Erreichbare Rundlaufgenauigkeit Achievable concentricity | 2 µm | 4 µm | 4 µm | 2 µm | 4 µm |
| Max. Expansion in Bezug zum Spanndurchmesser Max. expansion in reference to clamping diameter | IT7 (11) | IT13 | IT13 | IT7 | 0,1 - 0,6 mm |
| Spannbereiche Werkstück-Außendurchmesser Clamping ranges, workpiece outside diameter | 5 - 400 mm | 5 - 400 mm | 6 - 300 mm | 5 - 300 mm | 6 - 300 mm |
| Spannbereiche Werkstück-Innendurchmesser Clamping ranges, workpiece inside diameter | 12 - 400 mm | 8 - 400 mm | 12 - 300 mm | 12 - 300 mm | — |
| Sicherheitsfunktion gegen Überspannen Safety function against over-clamping | ja yes | ja yes | ja yes | bedingt partially | ja yes |
| Verschleißschutzbeschichtung möglich Wear protection coating possible | ja yes | ja yes | ja yes | ja yes | ja yes |

F_R = Radialkraft
Radial force

F_A = Axialkraft
Axial force

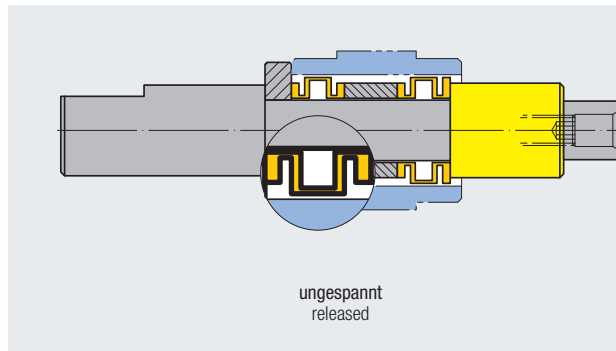
F_E = Kräfteinleitung
Application of force

P_E = Druckeinleitung
Application of pressure

| Toleranzranggrad Degree of tolerance | Nennmaßbereich in mm Nominal size range in mm | | | | | | | | | | | |
|---|--|------------|-------------|--------------|--------------|--------------|--------------|---------------|----------------|----------------|----------------|----------------|
| | ≤ 3 | > 3 ≤ 6 | > 6 ≤ 10 | > 10 ≤ 18 | > 18 ≤ 30 | > 30 ≤ 50 | > 50 ≤ 80 | > 80 ≤ 120 | > 120 ≤ 180 | > 180 ≤ 250 | > 250 ≤ 315 | > 315 ≤ 400 |
| IT7 | 10 | 12 | 15 | 18 | 21 | 25 | 30 | 35 | 40 | 46 | 52 | 57 |
| IT11 | 60 | 75 | 90 | 110 | 130 | 160 | 190 | 220 | 250 | 290 | 320 | 360 |
| IT13 | 140 | 180 | 220 | 270 | 330 | 390 | 460 | 540 | 630 | 720 | 810 | 890 |



System SP

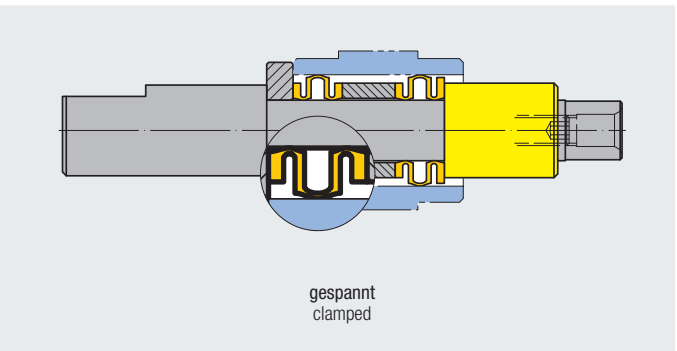


Durch eine axiale Kraftbeaufschlagung bewegen sich die Spannhülsen in Kraftrichtung und dehnen sich dabei radial aus. Hierdurch wird einerseits das Spiel zwischen Spannhülse und Grundkörper, andererseits zwischen Spannhülse und Werkstück beseitigt. Das Werkstück wird gespannt.

In Abhängigkeit von der Toleranz des Werkstücks und der Ausführung des Spannzeugs und der Spannhülsen können mit dem System SP Rundlaufabweichungen $\leq 0,002$ mm erreicht werden.

Durch diese hohe Genauigkeit wird das System SP nicht nur bei der Werkstück-, sondern auch bei der Werkzeugspannung eingesetzt.

System SP

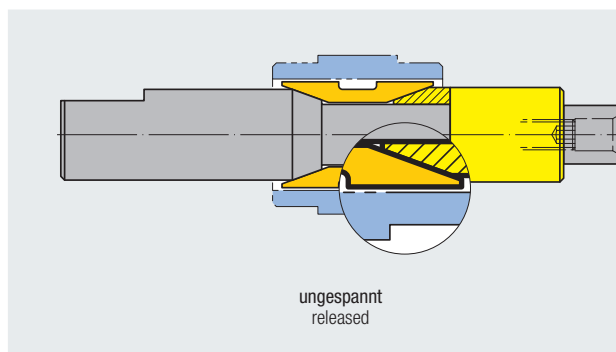


By applying an axial force the clamping sleeves move in direction of the force and expand radially. On the one hand this eliminates the clearance between clamping sleeve and body, on the other hand between clamping sleeve and workpiece. The workpiece is being clamped.

Depending on the tolerance of the workpiece, on the design of the clamping tool and of the clamping sleeves the system SP achieves concentricities of ≤ 0.002 mm (corresponding to ≤ 0.0001 inch).

Due to this high precision the system SP is not only used to clamp workpieces, it is also used to clamp tools.

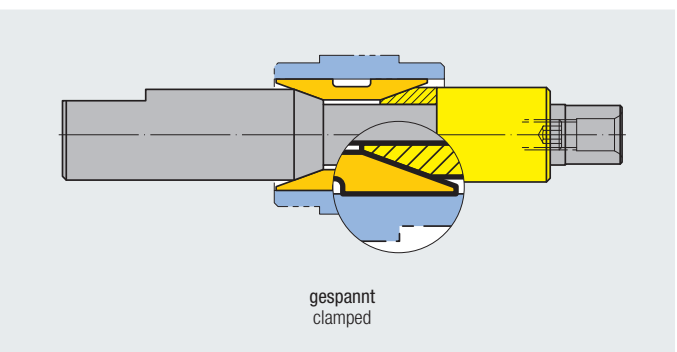
System SZ



Wenn das zu spannende Werkstück nur eine kurze Spannbasis oder der zu spannende Durchmesser eine sehr große Toleranz hat, so kommt das System SZ zum Einsatz.

Hierbei wird eine geschlitzte Spannzanze durch das Einleiten einer Axialkraft über einen Kegel radial aufgeweitet. Gleichzeitig findet auch eine axiale Bewegung statt. Das Werkstück wird gespannt.

System SZ

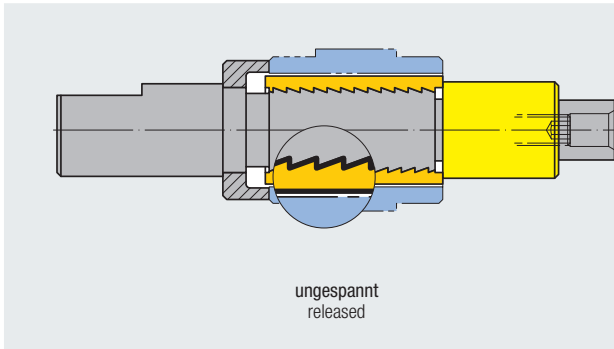


If the workpiece to be clamped has only a short clamping base or if the diameter to be clamped has a very large tolerance, system SZ is used.

By applying an axial force a slitted collet is radially expanded by a cone. Simultaneously an axial movement occurs. The workpiece is being clamped.



System SG

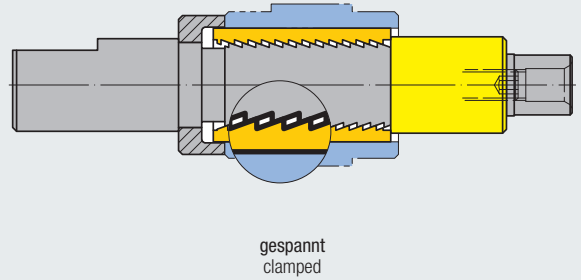


Bedingt durch die Bauart erlaubt das System SP nur Aufweitungen bis etwa zur Toleranzklasse IT11. Sollen größere Toleranzen überbrückt werden, so kommt das System SG zum Einsatz.

Dabei wird eine geschlitzte Spannbüchse mit einem speziellen Sägewinde auf den Grundkörper geschraubt. Bei einer axialen Kraftbeaufschlagung bewegt sich die Spannbüchse in Krafrichtung und dehnt sich gleichzeitig auf Grund des Flankenwinkels in radialer Richtung. Das Werkstück wird gespannt.

Die auf das Werkstück wirkende axiale Komponente erhöht das übertragbare Drehmoment und die Steifigkeit der Spannung. Somit werden auch Werkstücke, die mit einem großen Spanquerschnitt bearbeitet werden, sicher gespannt.

System SG

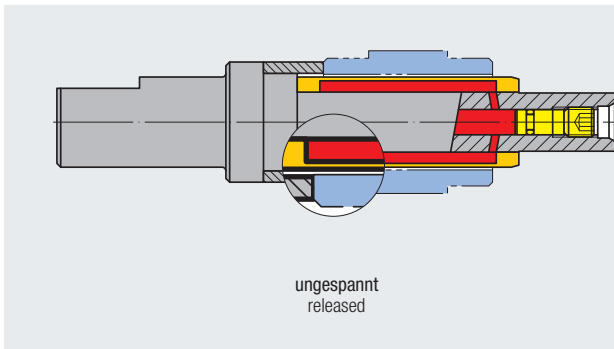


Depending on the type of design the system SP only allows radial expansion up to tolerance class IT11. To bridge larger tolerances, system SG is used.

This is a slitted clamping bush with a special buttress thread. With this thread the bush is screwed onto the body. By applying an axial force the clamping bush moves in direction of the force. Due to the thread angle there is also a radial expansion. The workpiece is being clamped.

The axial component, which has an effect on the workpiece, increases the transferable torque and the stiffness of the clamping process. Consequently the workpiece is safely clamped even if it is machined with a large depth of cut.

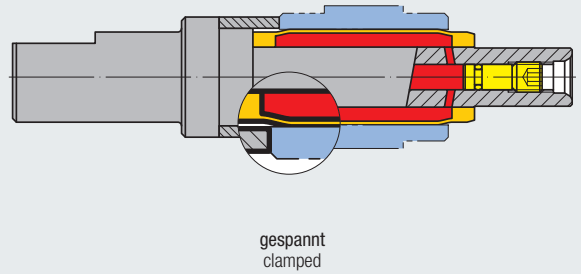
System SH



Hydraulische Spannsysteme SH werden bei stark begrenztem Bauraum eingesetzt. Es lassen sich damit auch lange, dünnwandige Werkstücke oder mehrere gleiche Werkstücke spannen.

Dabei handelt es sich um geschlossene Systeme, die mit Hydrauliköl gefüllt sind. Dieses wird mit einem Kolben beaufschlagt. Der sich aufbauende Druck weitet die dünnwandige Dehnzone radial auf und spannt somit das bzw. die Werkstücke.

System SH

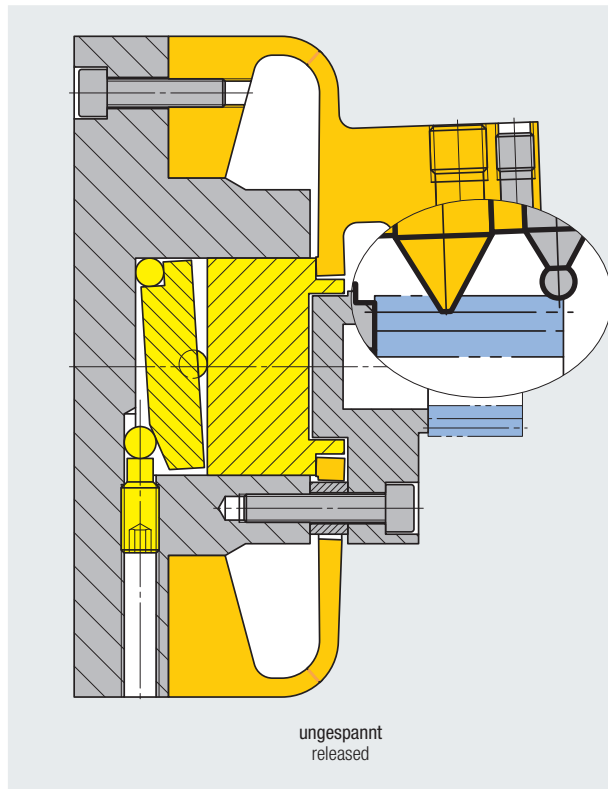


If there is not enough room for a mechanical clamping system, hydraulic system SH is used. It also allows clamping long, thin-walled workpieces or a number of similar workpieces.

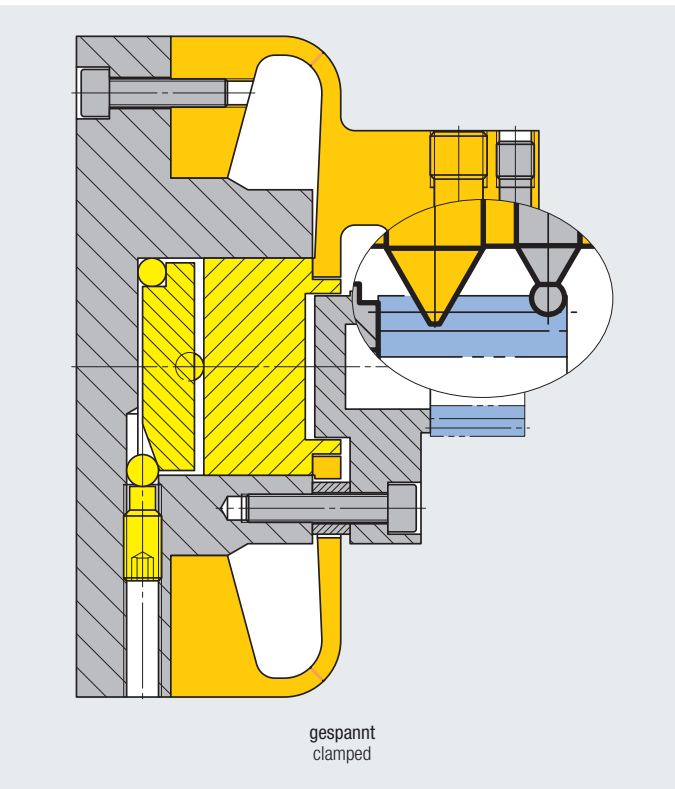
System SH is a closed system filled with hydraulic oil. A force is applied on it with a piston. The hydraulic pressure radially expands the thin-walled clamping zone. The workpiece/the workpieces is/are being clamped.



System SM



System SM



Bei der Fertigung von z. B. hochgenauen Zahnrädern ist es sehr wichtig, die Rundlaufabweichung zwischen dem Teilkreis und der Aufnahmebohrung möglichst gering zu halten.

Hierzu dient das Membranspannsystem SM. Es ermöglicht, das Zahnrad im Teilkreis zu spannen und die Aufnahmebohrung zu bearbeiten.

Das Spannelement ist eine Ringscheibe mit vorzugsweise drei Spannbacken. Bei einem dünnwandigen Werkstück kann die Membran auch vier oder sechs Spannbacken haben. Diese sind entweder aus der Membran herausgearbeitet oder aufgeschraubt.

Wird in axialer Richtung Kraft auf die Membran ausgeübt, so biegt sich diese durch. Dabei bewegen sich die Membranspannbacken axial und öffnen gleichzeitig radial. Das Zahnrad wird freigegeben.

Wegen ihres Eigenfederverhaltens kehrt die Membran in ihre Ausgangslage zurück, sobald die Axialkraft verringert oder weggenommen wird. Das Zahnrad wird in radialer und axialer Richtung gespannt.

In order to manufacture high precision gear wheels for example, it is very important that the eccentricity between pitch circle and seating bore is very small.

For this purpose the diaphragm clamping system SM is used. For machining the seating bore it allows clamping of the gear wheel at the pitch circle.

The clamping element is a ring disk with primarily three clamping jaws. If the workpiece is thin-walled the diaphragm can also have four or six clamping jaws. These are either carved out of the diaphragm or they are screwed onto it.

By applying an axial force onto the diaphragm, it bends in direction of the force. The clamping jaws simultaneously move axially and open in radial direction. The gear wheel is being released.

Due to its flexibility the diaphragm returns to its initial position if the axial force is reduced or taken away. The gear wheel is being clamped in axial and radial direction.



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 Lieferers zustande.
2. Der Lieferer behält sich an Mustern, Kostenvoranschlägen, 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 ohne jeden Abzug á Konto des Lieferers 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 Lieferers 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 Lieferers 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 Lieferers. 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 Lieferers 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 Lieferers 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 weiterzuveräußern. 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
 - der Besteller mit seinen Zahlungsverpflichtungen gegenüber dem Lieferer in Verzug gerät oder
 - sie widerrufen ist oder
 - 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 Schuldnern 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 wechselmäßige 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.
6. Der Antrag auf Eröffnung des Insolvenzverfahrens berechtigt den Lieferer vom Vertrag zurückzutreten und die sofortige Rückgabe des Liefergegenstandes zu verlangen.

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 Ge-

fährübergang 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 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 unmittelbaren Kosten der Nachbesserung bzw. der Ersatzlieferung einschließlich des Versandes. Er trägt außerdem die Kosten des Aus- und Einbaus sowie die Kosten der etwa erforderlichen Gestellung der notwendigen Monteure und Hilfskräfte einschließlich Fahrtkosten, soweit hierdurch keine unverhältnismäßige Belastung des Lieferers eintritt.
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
 - der Besteller den Lieferer unverzüglich von geltend gemachten Schutz- oder Urheberrechtsverletzungen unterrichtet,
 - 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,
 - dem Lieferer alle Abwehrmaßnahmen einschließlich außergerichtlicher Regelungen vorbehalten bleiben,
 - der Rechtsmangel nicht auf einer Anweisung des Bestellers beruht und
 - 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 schuldhafte 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
 - bei Vorsatz,
 - bei grober Fahrlässigkeit des Inhabers/der Organe oder leitender Angestellter,
 - bei schuldhafter Verletzung von Leben, Körper, Gesundheit,
 - bei Mängeln, die er arglistig verschwiegen hat,
 - im Rahmen einer Garantiezusage,
 - 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 grober Fahrlässigkeit nicht leitender Angestellter und bei leichter Fahrlässigkeit, in letzterem Fall begrenzt auf den vertrags-

typischen, vernünftigerweise vorhersehbaren Schäden.

Weitere Ansprüche sind ausgeschlossen.

VIII. Verjährung

Alle Ansprüche des Bestellers – aus welchen Rechtsgründen auch immer – verjähren in 12 Monaten. Für Schadensersatzansprüche nach Abschnitt VII.2. 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.



| A | | |
|----------|-------------------|---------|
| A0101001 | G (BSP) | 174 |
| A0101001 | M | 90 |
| A0101001 | MF | 130-131 |
| A0101001 | UNF | 160 |
| A0101051 | M-LH | 90 |
| A0101051 | MF-LH | 130-131 |
| A0102501 | M | 91 |
| A0102501 | W zyl | 199 |
| A0102521 | M „6GX“ | 91 |
| A0121001 | M | 90 |
| A0181000 | NPT | 189 |
| A0181000 | NPTF | 193 |
| A0181000 | Rc (BSPT) | 197 |
| A0181000 | W keg | 198 |
| A0191000 | NPT | 189 |
| A0201000 | M | 90 |
| A0203000 | M | 91 |
| A0221000 | M | 90 |
| A0451000 | M | 91 |
| A0501000 | M | 91 |
| A0513500 | M | 91 |
| A6622501 | G (BSP) | 178 |
| A6622501 | MF | 138 |
| A6622501 | Rp (BSPP) | 181 |
| A6622521 | MF „6GX“ | 138 |
| A6622531 | G (BSP) „+0,05“ | 178 |
| A6622531 | Rp (BSPP) „+0,05“ | 181 |
| A662254A | G (BSP) „+0,1“ | 178 |
| A662254A | MF „+0,1“ | 138 |
| B | | |
| B0100501 | M | 49 |
| B0100501 | MF | 104 |
| B0100501 | UNC | 141 |
| B0100501 | UNF | 153 |
| B0101001 | BSF | 206 |
| B0101001 | M | 36 |
| B0101001 | MF | 102 |
| B0101051 | MF-LH | 102 |
| B0102000 | LK-M | 228 |
| B0102001 | M | 45 |
| B0102501 | M | 48 |
| B0109101 | M | 50 |
| B0109201 | M | 45 |
| B0109401 | M | 53 |
| B010J601 | M | 47 |
| B010J901 | G (BSP) | 166 |
| B010J901 | M | 51 |
| B010J901 | MF | 104 |
| B010K101 | G (BSP) | 167 |
| B010K101 | M | 52 |
| B010K101 | MF | 105 |
| B010R501 | M | 45 |
| B010T001 | M | 47 |
| B0119401 | M | 53 |
| B011R501 | M | 45 |
| B0121001 | M | 36 |
| B016K101 | G (BSP) | 167 |
| B016K101 | M | 52 |
| B016K101 | MF | 105 |
| B0181000 | NPT | 185 |
| B0181000 | NPTF | 191 |
| B0183000 | NPT | 185 |
| B0183000 | NPTF | 191 |
| B0183000 | Rc (BSPT) | 195 |
| B0193000 | NPT | 185 |
| B0201000 | M | 37 |
| B0201000 | UNC | 140 |
| B0201000 | UNF | 152 |
| B0201010 | UNC „3B“ | 140 |
| B0201010 | UNF „3B“ | 152 |
| B0201020 | M „6G“ | 38 |
| B0201030 | M „7G“ | 38 |
| B0201400 | M | 37 |
| B0201420 | M „6G“ | 38 |
| B0201430 | M „7G“ | 38 |
| B0203000 | BSW | 201 |
| B0203000 | EG M (STI) | 216 |
| B0203000 | EG UNC (STI) | 220 |
| B0203000 | EG UNF (STI) | 224 |
| B0203000 | LK-M | 228 |
| B0203000 | M | 41 |
| B0203000 | UNC | 141 |
| B0203000 | UNF | 153 |
| B0203010 | M „4H“ | 41 |
| B0203020 | M „6G“ | 41 |
| B0203030 | M „7G“ | 42 |
| B0203050 | M-LH | 42 |
| B0203100 | BSW | 201 |
| B0203100 | EG M (STI) | 216 |
| B0203100 | EG UNC (STI) | 220 |
| B0203100 | EG UNF (STI) | 224 |
| B0203100 | LK-M | 228 |
| B0203100 | M | 41 |
| B0203100 | MF | 103 |
| B0203100 | UNC | 141 |
| B0203100 | UNF | 153 |
| B0203110 | M „4H“ | 41 |
| B0203120 | M „6G“ | 41 |
| B0203130 | M „7G“ | 42 |
| B0203150 | M-LH | 43 |
| B0204500 | EG M (STI) | 217 |
| B0204500 | M | 46 |
| B0208400 | M | 36 |
| B0208400 | MF | 102 |
| B0208410 | M „4H“ | 37 |
| B0208420 | M „6G“ | 37 |
| B0208430 | M „7G“ | 37 |
| B0208450 | M-LH | 37 |
| B0208900 | M | 36 |
| B0208900 | MF | 102 |
| B0208900 | UNC | 140 |
| B0208900 | UNF | 152 |
| B0208910 | M „4H“ | 37 |
| B0208920 | M „6G“ | 37 |
| B0208930 | M „7G“ | 37 |
| B0208950 | M-LH | 37 |
| B0208E01 | M | 39 |
| B0208E01 | MF | 102 |
| B0208F01 | M | 54 |
| B0208F01 | MF | 106 |
| B0208F21 | M „6GX“ | 55 |
| B020A601 | M | 54 |
| B020A601 | MF | 106 |
| B020A621 | M „6GX“ | 55 |
| B020C000 | M | 38 |
| B020C300 | BSW | 201 |
| B020C300 | EG M (STI) | 216 |
| B020C300 | EG UNC (STI) | 220 |
| B020C300 | EG UNF (STI) | 224 |
| B020C300 | LK-M | 228 |
| B020C300 | M | 41 |
| B020C300 | MF | 103 |
| B020C300 | UNC | 141 |
| B020C300 | UNF | 153 |
| B020C310 | M „4H“ | 41 |
| B020C320 | M „6G“ | 42 |
| B020C330 | M „7G“ | 42 |
| B020C350 | M-LH | 43 |
| B020K500 | M | 36 |
| B020S800 | EG M (STI) | 217 |
| B020S800 | M | 46 |
| B0223000 | M | 43 |
| B0306001 | M | 48 |
| B0309601 | M | 49 |
| B0309611 | MJ | 210 |
| B0309611 | UNJC | 212 |
| B0309611 | UNJF | 214 |
| B030J401 | M | 49 |
| B030J411 | MJ | 211 |
| B030J411 | UNJC | 213 |
| B030J411 | UNJF | 215 |
| B0401400 | M | 39 |
| B040V401 | M | 49 |
| B0451000 | M | 39 |
| B0453701 | M | 55 |
| B0456001 | M | 49 |
| B0459601 | M | 49 |
| B0459611 | MJ | 210 |
| B0459611 | UNJC | 212 |
| B0459611 | UNJF | 214 |
| B0461000 | M | 39 |
| B046L801 | M | 48 |
| B0501000 | BSW | 201 |
| B0501000 | M | 39 |
| B0501000 | MF | 103 |
| B0501000 | UNC | 140 |
| B0501000 | UNF | 152 |
| B0501010 | M „4H“ | 39 |
| B0501010 | MF „4H“ | 103 |
| B0501010 | UNC „3B“ | 141 |
| B0501010 | UNF „3B“ | 153 |
| B0501020 | M „6G“ | 39 |
| B0501030 | M „7G“ | 40 |
| B0501050 | M-LH | 40 |
| B0501400 | M | 39 |
| B0501400 | MF | 103 |
| B0501400 | UNC | 140 |
| B0501400 | UNF | 152 |
| B0501410 | M „4H“ | 39 |
| B0501420 | M „6G“ | 39 |
| B0501430 | M „7G“ | 40 |
| B0501450 | M-LH | 40 |
| B0503000 | BSW | 202 |
| B0503000 | M | 43 |
| B0503000 | MF | 103 |
| B0503000 | UNC | 141 |
| B0503000 | UNF | 153 |
| B0503010 | M „4H“ | 43 |
| B0503020 | M „6G“ | 43 |
| B0503030 | M „7G“ | 43 |
| B0503050 | M-LH | 44 |
| B0503500 | EG M (STI) | 217 |
| B0503500 | M | 58 |
| B0503500 | UNC | 143 |
| B0503530 | UNC „+0,05“ | 143 |
| B0503700 | M | 58 |
| B0504500 | M | 46 |
| B050C300 | BSW | 202 |
| B050C300 | M | 43 |
| B050C300 | MF | 103 |
| B050C300 | UNC | 141 |
| B050C300 | UNF | 153 |
| B050C310 | M „4H“ | 43 |
| B050C320 | M „6G“ | 43 |
| B050C330 | M „7G“ | 44 |
| B050C350 | M-LH | 44 |
| B050C400 | M | 58 |
| B050S800 | EG M (STI) | 217 |
| B050S800 | EG UNC (STI) | 221 |
| B050S800 | EG UNF (STI) | 225 |
| B050S800 | LK-M | 229 |
| B050S800 | M | 46 |
| B050S810 | MJ | 210 |
| B050S810 | UNJC | 212 |
| B050S810 | UNJF | 214 |
| B0513500 | EG M (STI) | 217 |
| B0513500 | EG UNC (STI) | 221 |
| B0513500 | EG UNF (STI) | 225 |
| B0513500 | LK-M | 229 |
| B0513500 | M | 59 |
| B0513500 | MF | 107 |
| B0513500 | UNC | 143 |
| B0513500 | UNF | 155 |
| B0513520 | M „6G“ | 59 |
| B0513520 | MF „6G“ | 107 |
| B0513530 | UNF „+0,05“ | 155 |
| B0513700 | EG M (STI) | 217 |
| B0513700 | EG UNC (STI) | 221 |
| B0513700 | EG UNF (STI) | 225 |
| B0513700 | LK-M | 229 |
| B0513700 | M | 59 |
| B0513700 | MF | 107 |
| B0513700 | UNC | 143 |
| B0513700 | UNF | 155 |
| B0513720 | M „6G“ | 59 |
| B0513720 | MF „6G“ | 107 |
| B051C400 | M | 59 |
| B051S800 | M | 46 |
| B0601000 | M | 40 |
| B0601400 | M | 41 |
| B0603000 | M | 44 |
| B060C300 | M | 44 |
| B0653501 | M | 59 |
| B0653540 | M „+0,1“ | 59 |
| B0653701 | M | 59 |
| B0911000 | M | 278 |
| B0911300 | M | 278 |
| B0911400 | LK-M | 304 |
| B0911400 | M | 278 |
| B0911400 | MF | 294 |
| B0911400 | UNC | 299 |



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|----------|---------|-----|----------|---------|-----|----------|---------|-----|----------|--------------|---------|
| B0911400 | UNF | 301 | B5059500 | MF | 295 | B583A601 | M | 57 | C0203000 | EG UNC (STI) | 222 |
| B0911420 | M „6GX“ | 279 | B505Q800 | M | 285 | B583A621 | M „6GX“ | 58 | C0203000 | EG UNF (STI) | 226 |
| B0921000 | M | 278 | B505Q800 | MF | 295 | B670J400 | NPT | 186 | C0203000 | G (BSP) | 169 |
| B0921300 | M | 278 | B519Q200 | M | 281 | B670J400 | NPTF | 191 | C0203000 | LK-M | 230 |
| B0921400 | LK-M | 304 | B519Y700 | M | 281 | B8170901 | M | 47 | C0203000 | M | 68 |
| B0921400 | M | 279 | B519Z700 | M | 283 | | | | C0203000 | MF | 115 |
| B0921400 | MF | 294 | B5216F00 | M | 279 | | | | C0203000 | UNC | 145 |
| B0921400 | UNC | 299 | B5217F00 | M | 279 | | | | C0203000 | UNF | 157 |
| B0921400 | UNF | 301 | B521Q200 | M | 281 | | | | C0203010 | M „4H“ | 68 |
| B0921420 | M „6GX“ | 279 | B521W700 | M | 283 | | | | C0203010 | MF „4H“ | 115 |
| B0963701 | M | 55 | B521Y700 | M | 281 | | | | C0203020 | M „6G“ | 69 |
| B0973500 | M | 59 | B521Z700 | M | 283 | | | | C0203020 | MF „6G“ | 116 |
| B0973700 | M | 59 | B521Z700 | MF | 295 | | | | C0203030 | M „7G“ | 69 |
| B0983701 | M | 55 | B521Z700 | UNC | 299 | | | | C0203050 | M-LH | 69 |
| B0989501 | M | 47 | B521Z700 | UNF | 301 | | | | C0203100 | BSW | 203 |
| B098Q801 | M | 47 | B521Z720 | M „6GX“ | 283 | | | | C0203100 | EG M (STI) | 218 |
| B099C400 | M | 58 | B5236F00 | M | 279 | | | | C0203100 | EG UNC (STI) | 222 |
| B1069101 | M | 50 | B5237F00 | M | 279 | | | | C0203100 | EG UNF (STI) | 226 |
| B1069401 | M | 53 | B523Q200 | M | 281 | | | | C0203100 | G (BSP) | 169 |
| B106R501 | M | 45 | B523W700 | M | 283 | | | | C0203100 | LK-M | 230 |
| B1088F01 | M | 54 | B523Y700 | M | 281 | | | | C0203100 | M | 68 |
| B1088F21 | M „6GX“ | 55 | B523Z700 | M | 283 | | | | C0203100 | MF | 115 |
| B108A601 | M | 54 | B523Z700 | MF | 295 | | | | C0203100 | UNC | 145 |
| B108A621 | M „6GX“ | 55 | B523Z700 | UNC | 299 | | | | C0203100 | UNEF | 165 |
| B1099401 | M | 54 | B523Z700 | UNF | 301 | | | | C0203100 | UNF | 157 |
| B1099501 | M | 47 | B523Z800 | M | 284 | | | | C0203110 | M „4H“ | 68 |
| B109R501 | M | 45 | B526Q200 | M | 281 | | | | C0203110 | MF „4H“ | 115 |
| B1583000 | NPT | 186 | B526Z700 | M | 283 | | | | C0203120 | M „6G“ | 69 |
| B1583000 | NPTF | 191 | B5296A00 | M | 280 | | | | C0203120 | MF „6G“ | 116 |
| B1593000 | NPT | 186 | B529Q200 | M | 282 | | | | C0203130 | M „7G“ | 69 |
| B1950501 | M | 50 | B529Y700 | M | 281 | | | | C0203150 | M-LH | 69 |
| B1950901 | M | 50 | B529Z700 | M | 283 | | | | C0204500 | M | 73 |
| B1950901 | MF | 104 | B5316A00 | M | 280 | | | | C0208400 | G (BSP) | 168 |
| B1959101 | M | 50 | B5316F00 | M | 280 | | | | C0208400 | M | 64 |
| B1959401 | M | 53 | B5317F00 | M | 279 | | | | C0208400 | MF | 108-109 |
| B195R501 | M | 45 | B531Q200 | M | 282 | | | | C0208410 | M „4H“ | 65 |
| B1969401 | M | 53 | B531Y700 | M | 281 | | | | C0208410 | MF „4H“ | 108-109 |
| B1969501 | M | 47 | B531Z700 | M | 283 | | | | C0208420 | M „6G“ | 65 |
| B196R501 | M | 45 | B531Z800 | M | 284 | | | | C0208420 | MF „6G“ | 110 |
| B1970100 | M | 279 | B533Q200 | M | 282 | | | | C0208430 | M „7G“ | 65 |
| B2100501 | M | 63 | B535P300 | M | 279 | | | | C0208450 | M-LH | 65 |
| B2201000 | M | 62 | B544Z700 | M | 286 | | | | C0208450 | MF-LH | 110 |
| B2203000 | M | 63 | B555Z700 | M | 286 | | | | C0208900 | G (BSP) | 168 |
| B220C300 | M | 63 | B5760F01 | M | 56 | | | | C0208900 | M | 64 |
| B2401400 | M | 62 | B5760F01 | UNC | 142 | | | | C0208900 | MF | 108-109 |
| B2461000 | M | 62 | B5760F01 | UNF | 154 | | | | C0208900 | UNC | 144 |
| B2501000 | M | 62 | B5760F21 | M „6GX“ | 57 | | | | C0208900 | UNF | 156 |
| B2503000 | M | 63 | B576A601 | M | 56 | | | | C0208910 | M „4H“ | 64 |
| B250C300 | M | 63 | B576A601 | UNC | 142 | | | | C0208910 | MF „4H“ | 108-109 |
| B3159401 | M | 60 | B576A601 | UNF | 154 | | | | C0208920 | M „6G“ | 65 |
| B3169401 | M | 60 | B576A621 | M „6GX“ | 57 | | | | C0208920 | MF „6G“ | 110 |
| B3179401 | M | 60 | B5810F01 | M | 56 | | | | C0208930 | M „7G“ | 65 |
| B3189401 | M | 60 | B5810F21 | M „6GX“ | 57 | | | | C0208950 | M-LH | 65 |
| B3208F01 | M | 61 | B581A601 | M | 56 | | | | C0208950 | MF-LH | 110 |
| B3258F01 | M | 61 | B581A621 | M „6GX“ | 57 | | | | C0208E01 | M | 65 |
| B3600F01 | M | 61 | B5820F01 | M | 56 | | | | C0208E01 | MF | 111-112 |
| B3650F01 | M | 61 | B5820F01 | UNC | 142 | | | | C0208F01 | M | 77 |
| B4053701 | M | 55 | B5820F01 | UNF | 154 | | | | C0208F01 | MF | 121 |
| B4093701 | M | 63 | B5820F21 | M „6GX“ | 57 | | | | C0208F21 | M „6GX“ | 77 |
| B4253701 | M | 55 | B582A601 | M | 57 | | | | C020A601 | M | 77 |
| B438J401 | M | 49 | B582A601 | UNC | 142 | | | | C020A601 | MF | 121 |
| B438J411 | MJ | 211 | B582A601 | UNF | 154 | | | | C020A621 | M „6GX“ | 77 |
| B438J411 | UNJC | 213 | B582A621 | M „6GX“ | 57 | | | | C020C300 | BSW | 203 |
| B438J411 | UNJF | 215 | B5830F01 | M | 57 | | | | C020C300 | EG M (STI) | 218 |
| B5059500 | M | 285 | B5830F21 | M „6GX“ | 57 | | | | C020C300 | EG UNC (STI) | 222 |

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|----------|------------|---------|
| C0100501 | G (BSP) | 170 |
| C0100501 | M | 75 |
| C0100501 | MF | 118 |
| C0100501 | Pg | 209 |
| C0100501 | UNC | 145 |
| C0100501 | UNF | 157 |
| C0101001 | BSF | 207 |
| C0101001 | G (BSP) | 168 |
| C0101001 | M | 64 |
| C0101001 | MF | 108-109 |
| C0101001 | NPSF | 183 |
| C0101001 | NPSM | 182 |
| C0101001 | Pg | 209 |
| C0101001 | Rp (BSPP) | 179 |
| C0101001 | UNEF | 164 |
| C0102000 | LK-M | 230 |
| C0102001 | M | 71 |
| C0102001 | MF | 117 |
| C0109101 | G (BSP) | 170 |
| C0109101 | M | 75 |
| C0109101 | MF | 119 |
| C0109201 | M | 71 |
| C0109201 | MF | 117 |
| C0109401 | M | 76 |
| C0109401 | MF | 119 |
| C010J901 | G (BSP) | 171 |
| C010J901 | M | 75 |
| C010J901 | MF | 119 |
| C010R501 | M | 72 |
| C010R501 | MF | 117 |
| C0119401 | M | 76 |
| C0119401 | MF | 120 |
| C011R501 | M | 72 |
| C011R501 | MF | 117 |
| C0121001 | M | 64 |
| C0181000 | NPT | 187 |
| C0181000 | NPTF | 192 |
| C0183000 | NPT | 187 |
| C0183000 | NPTF | 192 |
| C0183000 | Rc (BSPT) | 196 |
| C0193000 | NPT | 187 |
| C0201000 | G (BSP) | 168 |
| C0201000 | M | 65 |
| C0201000 | MF | 111-112 |
| C0201000 | UNC | 144 |
| C0201000 | UNEF | 164 |
| C0201000 | UNF | 156 |
| C0201010 | UNC „3B“ | 144 |
| C0201010 | UNF „3B“ | 156 |
| C0201400 | G (BSP) | 168 |
| C0201400 | M | 65 |
| C0201400 | MF | 111-112 |
| C0203000 | BSW | 203 |
| C0203000 | EG M (STI) | 218 |



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|----------|--------------|---------|----------|-----------------|-----|----------|---------|---------|----------|---------|-----|
| C020C300 | EG UNF (STI) | 226 | C0503030 | M „7G“ | 71 | C0803001 | M | 84 | C2401400 | M | 86 |
| C020C300 | G (BSP) | 169 | C0503050 | M-LH | 71 | C0803001 | MF | 126-127 | C2461000 | M | 86 |
| C020C300 | LK-M | 230 | C0503500 | EG M (STI) | 219 | C0803009 | M | 84 | C2501000 | M | 86 |
| C020C300 | M | 68 | C0503500 | M | 81 | C0803009 | MF | 126-127 | C2503000 | M | 87 |
| C020C300 | MF | 115 | C0503500 | UNC | 147 | C0803101 | G (BSP) | 173 | C250C300 | M | 87 |
| C020C300 | UNC | 145 | C0503530 | UNC „+0,05“ | 147 | C0803101 | M | 85 | C3159401 | M | 83 |
| C020C300 | UNEF | 165 | C0503700 | M | 81 | C0803101 | MF | 126-127 | C3159401 | MF | 125 |
| C020C300 | UNF | 157 | C0504500 | M | 73 | C0803109 | M | 85 | C3169401 | M | 83 |
| C020C310 | M „4H“ | 69 | C0504500 | MF | 118 | C0803109 | MF | 126-127 | C3169401 | MF | 125 |
| C020C310 | MF „4H“ | 116 | C050C300 | BSW | 204 | C0911400 | G (BSP) | 303 | C3179401 | M | 83 |
| C020C320 | M „6G“ | 69 | C050C300 | G (BSP) | 170 | C0911400 | M | 287 | C3179401 | MF | 125 |
| C020C320 | MF „6G“ | 116 | C050C300 | M | 70 | C0911400 | MF | 296 | C3189401 | M | 83 |
| C020C330 | M „7G“ | 69 | C050C300 | MF | 117 | C0911400 | UNC | 300 | C3189401 | MF | 125 |
| C020C350 | M-LH | 69 | C050C300 | UNC | 145 | C0911400 | UNF | 302 | C3208F01 | M | 83 |
| C020S800 | M | 73 | C050C300 | UNF | 157 | C0921400 | G (BSP) | 303 | C3208F01 | MF | 125 |
| C0306001 | M | 73 | C050C310 | M „4H“ | 70 | C0921400 | M | 287 | C3258F01 | M | 83 |
| C0309601 | M | 73 | C050C320 | M „6G“ | 71 | C0921400 | MF | 296 | C3258F01 | MF | 125 |
| C030J401 | M | 74 | C050C330 | M „7G“ | 71 | C0921400 | UNC | 300 | C3600F01 | M | 83 |
| C0401400 | G (BSP) | 169 | C050C350 | M-LH | 71 | C0921400 | UNF | 302 | C3600F01 | MF | 125 |
| C0401400 | M | 66 | C050C400 | M | 81 | C0963701 | M | 78 | C3650F01 | M | 83 |
| C0451000 | G (BSP) | 169 | C050S800 | EG M (STI) | 219 | C0963701 | MF | 121 | C3650F01 | MF | 125 |
| C0451000 | M | 66 | C050S800 | M | 73 | C0973500 | MF | 124 | C4053701 | M | 78 |
| C0451000 | MF | 111-112 | C0513500 | EG M (STI) | 219 | C0973700 | M | 81 | C4053701 | MF | 121 |
| C0453701 | M | 78 | C0513500 | EG UNC (STI) | 223 | C0973700 | MF | 124 | C4063701 | M | 89 |
| C0453701 | MF | 121 | C0513500 | EG UNF (STI) | 227 | C0983701 | M | 78 | C4063701 | MF | 129 |
| C0456001 | M | 73 | C0513500 | G (BSP) | 172 | C0983701 | MF | 121 | C4093701 | M | 87 |
| C0459601 | M | 74 | C0513500 | LK-M | 231 | C099C400 | M | 81 | C4253701 | M | 78 |
| C0461000 | G (BSP) | 169 | C0513500 | M | 81 | C1069101 | M | 75 | C4253701 | MF | 121 |
| C0461000 | M | 66 | C0513500 | MF | 124 | C1069101 | MF | 119 | C4283701 | M | 89 |
| C0461000 | MF | 111-112 | C0513500 | NPSF | 183 | C1069401 | M | 76 | C4283701 | MF | 129 |
| C0461000 | UNEF | 164 | C0513500 | NPSM | 182 | C1069401 | MF | 120 | C438J401 | M | 74 |
| C0501000 | BSW | 203 | C0513500 | Rp (BSPP) | 180 | C106R501 | M | 72 | C4963701 | M | 88 |
| C0501000 | G (BSP) | 169 | C0513500 | UNC | 147 | C106R501 | MF | 117 | C4963701 | MF | 128 |
| C0501000 | M | 66 | C0513500 | UNF | 159 | C1088F01 | M | 77 | C4973701 | M | 88 |
| C0501000 | MF | 113-114 | C0513520 | M „6G“ | 81 | C1088F01 | MF | 121 | C4973701 | MF | 128 |
| C0501000 | UNC | 144 | C0513520 | MF „6G“ | 124 | C1088F21 | M „6GX“ | 77 | C500W700 | M | 292 |
| C0501000 | UNEF | 164 | C0513530 | G (BSP) „+0,05“ | 172 | C108A601 | M | 77 | C5059500 | M | 290 |
| C0501000 | UNF | 156 | C0513530 | UNF „+0,05“ | 159 | C108A601 | MF | 121 | C5059500 | MF | 298 |
| C0501010 | M „4H“ | 67 | C0513700 | EG M (STI) | 219 | C108A621 | M „6GX“ | 77 | C505Q800 | M | 290 |
| C0501010 | MF „4H“ | 113-114 | C0513700 | EG UNC (STI) | 223 | C1099401 | M | 77 | C505Q800 | MF | 298 |
| C0501010 | UNC „3B“ | 145 | C0513700 | EG UNF (STI) | 227 | C1099401 | MF | 120 | C519Z700 | M | 289 |
| C0501010 | UNF „3B“ | 157 | C0513700 | G (BSP) | 172 | C109R501 | M | 73 | C5216F00 | M | 288 |
| C0501020 | M „6G“ | 67 | C0513700 | LK-M | 231 | C109R501 | MF | 118 | C5216F00 | MF | 297 |
| C0501030 | M „7G“ | 67 | C0513700 | M | 81 | C1583000 | NPT | 188 | C5217F00 | M | 287 |
| C0501050 | M-LH | 67 | C0513700 | MF | 124 | C1583000 | NPTF | 192 | C5217F00 | MF | 296 |
| C0501050 | MF-LH | 113-114 | C0513700 | NPSF | 183 | C1593000 | NPT | 188 | C521W700 | M | 289 |
| C0501400 | G (BSP) | 169 | C0513700 | NPSM | 182 | C1950501 | M | 75 | C521W700 | MF | 297 |
| C0501400 | M | 66 | C0513700 | Rp (BSPP) | 180 | C1950501 | MF | 119 | C521Z700 | G (BSP) | 303 |
| C0501400 | MF | 113-114 | C0513700 | UNC | 147 | C1950901 | M | 75 | C521Z700 | M | 289 |
| C0501400 | UNC | 144 | C0513700 | UNF | 159 | C1950901 | MF | 119 | C521Z700 | MF | 297 |
| C0501400 | UNF | 156 | C0513720 | M „6G“ | 82 | C1959101 | M | 75 | C521Z700 | UNC | 300 |
| C0501410 | M „4H“ | 67 | C0513720 | MF „6G“ | 125 | C1959101 | MF | 119 | C521Z700 | UNF | 302 |
| C0501420 | M „6G“ | 67 | C051C400 | M | 81 | C1959401 | M | 76 | C5236F00 | M | 288 |
| C0501430 | M „7G“ | 67 | C0539401 | M | 89 | C1959401 | MF | 119 | C5236F00 | MF | 297 |
| C0501450 | M-LH | 67 | C0539401 | MF | 129 | C195R501 | M | 72 | C5237F00 | M | 287 |
| C0501450 | MF-LH | 113-114 | C0579401 | M | 88 | C195R501 | MF | 117 | C5237F00 | MF | 296 |
| C0503000 | BSW | 204 | C0579401 | MF | 128 | C1960901 | G (BSP) | 170 | C523W700 | M | 289 |
| C0503000 | G (BSP) | 169 | C0601000 | M | 67 | C1969401 | M | 76 | C523W700 | MF | 297 |
| C0503000 | M | 70 | C0601400 | M | 67 | C1969401 | MF | 120 | C523Z700 | G (BSP) | 303 |
| C0503000 | MF | 116 | C0603000 | M | 71 | C196R501 | M | 72 | C523Z700 | M | 289 |
| C0503000 | UN-8 | 148 | C060C300 | M | 71 | C196R501 | MF | 117 | C523Z700 | MF | 297 |
| C0503000 | UNC | 145 | C0653501 | M | 82 | C2100501 | M | 87 | C523Z700 | UNC | 300 |
| C0503000 | UNF | 157 | C0653540 | M „+0,1“ | 82 | C2201000 | M | 86 | C523Z700 | UNF | 302 |
| C0503010 | M „4H“ | 70 | C0653701 | M | 82 | C2203000 | M | 87 | C526Z700 | M | 289 |
| C0503020 | M „6G“ | 70 | C0803001 | G (BSP) | 173 | C220C300 | M | 87 | C529Z700 | M | 289 |



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|----------|---------|-----|
| C5316F00 | M | 288 |
| C5316F00 | MF | 297 |
| C5317F00 | M | 287 |
| C5317F00 | MF | 296 |
| C531Z700 | M | 289 |
| C544Z700 | M | 291 |
| C555Z700 | M | 291 |
| C5760F01 | G (BSP) | 171 |
| C5760F01 | M | 79 |
| C5760F01 | MF | 122 |
| C5760F01 | UNC | 146 |
| C5760F01 | UNF | 158 |
| C5760F21 | M „6GX“ | 79 |
| C576A601 | G (BSP) | 171 |
| C576A601 | M | 79 |
| C576A601 | MF | 122 |
| C576A601 | UNC | 146 |
| C576A601 | UNF | 158 |
| C576A621 | M „6GX“ | 79 |
| C5810F01 | G (BSP) | 171 |
| C5810F01 | M | 79 |
| C5810F01 | MF | 122 |
| C5810F21 | M „6GX“ | 80 |
| C581A601 | G (BSP) | 171 |
| C581A601 | M | 79 |
| C581A601 | MF | 122 |
| C581A621 | M „6GX“ | 80 |
| C5820F01 | G (BSP) | 171 |
| C5820F01 | M | 79 |
| C5820F01 | MF | 122 |
| C5820F01 | UNC | 146 |
| C5820F01 | UNF | 158 |
| C5820F21 | M „6GX“ | 80 |
| C582A601 | G (BSP) | 171 |
| C582A601 | M | 79 |
| C582A601 | MF | 123 |
| C582A601 | UNC | 146 |
| C582A601 | UNF | 158 |
| C582A621 | M „6GX“ | 80 |
| C5830F01 | G (BSP) | 171 |
| C5830F01 | M | 79 |
| C5830F01 | MF | 123 |
| C5830F21 | M „6GX“ | 80 |
| C583A601 | G (BSP) | 171 |
| C583A601 | M | 79 |
| C583A601 | MF | 123 |
| C583A621 | M „6GX“ | 81 |
| C594W700 | M | 293 |
| C595W700 | M | 293 |
| C599W700 | M | 292 |

D

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|----------|---------|-----|
| D0101000 | BSF | 495 |
| D0101000 | BSW | 494 |
| D0101000 | G (BSP) | 489 |
| D0101000 | M | 478 |
| D0101000 | MF | 484 |
| D0101000 | Tr | 496 |
| D0101000 | Tr-F | 497 |
| D0101000 | UNC | 486 |

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|----------|----------|-----|
| D0101000 | UNEF | 488 |
| D0101000 | UNF | 487 |
| D0101030 | M „6e“ | 479 |
| D0101030 | MF „6e“ | 485 |
| D0101050 | M-LH | 479 |
| D0101050 | MF-LH | 485 |
| D0101500 | G (BSP) | 489 |
| D0101500 | M | 478 |
| D0101500 | MF | 484 |
| D0101500 | UNC | 486 |
| D0101500 | UNEF | 488 |
| D0101500 | UNF | 487 |
| D0102500 | G (BSP) | 489 |
| D0102500 | M | 479 |
| D0102500 | MF | 485 |
| D0103000 | M | 479 |
| D0103000 | MF | 485 |
| D0103500 | M | 479 |
| D0191000 | NPT | 491 |
| D0191000 | NPTF | 492 |
| D0191000 | R (BSPT) | 493 |
| D0301500 | M | 481 |
| D0302500 | G (BSP) | 490 |
| D0361500 | M | 480 |
| D0401000 | M | 482 |

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|-----------------------|----------|
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| GF162721 | M, MF | 383 | GF163211 | UN | 390 | GF163756 | LK-M | 398 | GF173106 | NPTF | 406 |
| GF162721 | Pg | 397 | GF163216 | G (BSP), Rp (BSPP), W | 393 | GF163756 | M, MF | 382 | GF173106 | Rc (BSPT) | 411 |
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| GF162726 | M, MF | 383 | GF163216 | M, MF | 382 | GF163811 | G (BSP), Rp (BSPP), W | 393 | GF173111 | NPTF | 406 |
| GF162726 | Pg | 397 | GF163216 | Pg | 396 | GF163811 | LK-M | 398 | GF173111 | Rc (BSPT) | 411 |
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| GF162751 | G (BSP), Rp (BSPP), W | 394 | GF163421 | M, MF | 382 | GF163816 | LK-M | 398 | GF173131 | NPTF | 406 |
| GF162751 | M, MF | 383 | GF163421 | Pg | 396 | GF163816 | M, MF | 382 | GF173131 | Rc (BSPT) | 411 |
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| GF173136 | Rc (BSPT) | 411 | GF175336 | NPT (API-LP) | 403 | GF193406 | NPT | 402 | GF195611 | NPT (API-LP) | 404 |
| GF173151 | NPT | 401 | GF175336 | NPTF | 408 | GF193406 | NPTF | 407 | GF195611 | NPTF | 409 |
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| GF173151 | Rc (BSPT) | 411 | GF175351 | NPTF | 408 | GF193411 | NPT | 402 | GF195616 | NPTF | 409 |
| GF173156 | NPT | 401 | GF175356 | NPT (API-LP) | 403 | GF193411 | NPTF | 407 | GF195631 | NPT (API-LP) | 404 |
| GF173156 | NPTF | 406 | GF175356 | NPTF | 408 | GF193411 | Rc (BSPT) | 412 | GF195631 | NPTF | 409 |
| GF173156 | Rc (BSPT) | 411 | GF175601 | NPT (API-LP) | 403 | GF193416 | NPT | 402 | GF195636 | NPT (API-LP) | 404 |
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| GF173401 | NPTF | 406 | GF175606 | NPT (API-LP) | 403 | GF193416 | Rc (BSPT) | 412 | GF195651 | NPT (API-LP) | 404 |
| GF173401 | Rc (BSPT) | 411 | GF175606 | NPTF | 408 | GF193431 | NPT | 402 | GF195651 | NPTF | 409 |
| GF173406 | NPT | 401 | GF175611 | NPT (API-LP) | 403 | GF193431 | NPTF | 407 | GF195656 | NPT (API-LP) | 404 |
| GF173406 | NPTF | 406 | GF175611 | NPTF | 408 | GF193431 | Rc (BSPT) | 412 | GF195656 | NPTF | 409 |
| GF173406 | Rc (BSPT) | 411 | GF175616 | NPT (API-LP) | 403 | GF193436 | NPT | 402 | GF195901 | NPT (API-LP) | 404 |
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| GF173416 | NPT | 401 | GF175636 | NPT (API-LP) | 403 | GF193451 | NPTF | 407 | GF195911 | NPT (API-LP) | 404 |
| GF173416 | NPTF | 406 | GF175636 | NPTF | 408 | GF193451 | Rc (BSPT) | 412 | GF195911 | NPTF | 409 |
| GF173416 | Rc (BSPT) | 411 | GF175651 | NPT (API-LP) | 403 | GF193456 | NPT | 402 | GF195916 | NPT (API-LP) | 404 |
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| GF173431 | Rc (BSPT) | 411 | GF175656 | NPTF | 408 | GF193701 | NPT | 402 | GF195931 | NPTF | 409 |
| GF173436 | NPT | 401 | GF175901 | NPT (API-LP) | 403 | GF193701 | NPTF | 407 | GF195936 | NPT (API-LP) | 404 |
| GF173436 | NPTF | 406 | GF175901 | NPTF | 408 | GF193701 | Rc (BSPT) | 412 | GF195936 | NPTF | 409 |
| GF173436 | Rc (BSPT) | 411 | GF175906 | NPT (API-LP) | 403 | GF193706 | NPT | 402 | GF195951 | NPT (API-LP) | 404 |
| GF173451 | NPT | 401 | GF175906 | NPTF | 408 | GF193706 | NPTF | 407 | GF195951 | NPTF | 409 |
| GF173451 | NPTF | 406 | GF175911 | NPT (API-LP) | 403 | GF193706 | Rc (BSPT) | 412 | GF195956 | NPT (API-LP) | 404 |
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| GF173731 | NPT | 401 | GF193106 | Rc (BSPT) | 412 | GF193756 | NPTF | 407 | GF273106 | UNC | 419 |
| GF173731 | NPTF | 406 | GF193111 | NPT | 402 | GF193756 | Rc (BSPT) | 412 | GF273106 | UNF | 419 |
| GF173731 | Rc (BSPT) | 411 | GF193111 | NPTF | 407 | GF195301 | NPT (API-LP) | 404 | GF273701 | M, MF | 415 |
| GF173736 | NPT | 401 | GF193111 | Rc (BSPT) | 412 | GF195301 | NPTF | 409 | GF273706 | M, MF | 415 |
| GF173736 | NPTF | 406 | GF193116 | NPT | 402 | GF195306 | NPT (API-LP) | 404 | GF273706 | UNC | 419 |
| GF173736 | Rc (BSPT) | 411 | GF193116 | NPTF | 407 | GF195306 | NPTF | 409 | GF273706 | UNF | 419 |
| GF173751 | NPT | 401 | GF193116 | Rc (BSPT) | 412 | GF195311 | NPT (API-LP) | 404 | GF283129 | M, MF | 417 |
| GF173751 | NPTF | 406 | GF193131 | NPT | 402 | GF195311 | NPTF | 409 | GF283729 | M, MF | 417 |
| GF173751 | Rc (BSPT) | 411 | GF193131 | NPTF | 407 | GF195316 | NPT (API-LP) | 404 | GF303701 | M | 360 |
| GF173756 | NPT | 401 | GF193131 | Rc (BSPT) | 412 | GF195316 | NPTF | 409 | GF303706 | M | 361 |
| GF173756 | NPTF | 406 | GF193136 | NPT | 402 | GF195331 | NPT (API-LP) | 404 | GF313701 | M | 360 |
| GF173756 | Rc (BSPT) | 411 | GF193136 | NPTF | 407 | GF195331 | NPTF | 409 | GF313706 | M | 361 |
| GF175301 | NPT (API-LP) | 403 | GF193136 | Rc (BSPT) | 412 | GF195336 | NPT (API-LP) | 404 | GF322101 | G (BSP) | 376 |
| GF175301 | NPTF | 408 | GF193151 | NPT | 402 | GF195336 | NPTF | 409 | GF322101 | M | 362 |
| GF175306 | NPT (API-LP) | 403 | GF193151 | NPTF | 407 | GF195351 | NPT (API-LP) | 404 | GF322101 | MF | 368 |
| GF175306 | NPTF | 408 | GF193151 | Rc (BSPT) | 412 | GF195351 | NPTF | 409 | GF322101 | UNC | 372 |
| GF175311 | NPT (API-LP) | 403 | GF193156 | NPT | 402 | GF195356 | NPT (API-LP) | 404 | GF322101 | UNF | 374 |
| GF175311 | NPTF | 408 | GF193156 | NPTF | 407 | GF195356 | NPTF | 409 | GF322106 | G (BSP) | 377 |
| GF175316 | NPT (API-LP) | 403 | GF193156 | Rc (BSPT) | 412 | GF195601 | NPT (API-LP) | 404 | GF322106 | M | 363 |
| GF175316 | NPTF | 408 | GF193401 | NPT | 402 | GF195601 | NPTF | 409 | GF322106 | MF | 369 |
| GF175331 | NPT (API-LP) | 403 | GF193401 | NPTF | 407 | GF195606 | NPT (API-LP) | 404 | GF322106 | UNC | 373 |



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|----------|---------|-----|----------|------------|-----|----------|------------|-----|----------|----------------------|-----|
| GF322106 | UNF | 375 | GF333101 | MF | 366 | GF422506 | UNF | 347 | GF439246 | M | 338 |
| GF322401 | G (BSP) | 376 | GF333106 | LK-M | 379 | GF422551 | M | 336 | GF439246 | MF | 342 |
| GF322401 | M | 362 | GF333106 | M | 361 | GF422556 | M | 337 | GF439248 | M | 339 |
| GF322401 | MF | 368 | GF333106 | MF | 367 | GF422801 | EG M (STI) | 350 | GF439248 | MF | 343 |
| GF322401 | UNC | 372 | GF333401 | LK-M | 378 | GF422801 | G (BSP) | 348 | GF439546 | M | 338 |
| GF322401 | UNF | 374 | GF333401 | M | 360 | GF422801 | M | 334 | GF439546 | MF | 342 |
| GF322406 | G (BSP) | 377 | GF333401 | MF | 366 | GF422801 | MF | 340 | GF439548 | M | 339 |
| GF322406 | M | 363 | GF333406 | LK-M | 379 | GF422801 | UNC | 344 | GF439548 | MF | 343 |
| GF322406 | MF | 369 | GF333406 | M | 361 | GF422801 | UNF | 346 | GF439846 | M | 338 |
| GF322406 | UNC | 373 | GF333406 | MF | 367 | GF422806 | EG M (STI) | 351 | GF439846 | MF | 342 |
| GF322406 | UNF | 375 | GF333701 | LK-M | 378 | GF422806 | G (BSP) | 349 | GF439848 | M | 339 |
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| GF322701 | M | 362 | GF333701 | MF | 366 | GF422806 | MF | 341 | GF442201 | M | 334 |
| GF322701 | MF | 368 | GF333706 | LK-M | 379 | GF422806 | UNC | 345 | GF442201 | UNC | 344 |
| GF322701 | UNC | 372 | GF333706 | M | 361 | GF422806 | UNF | 347 | GF442206 | M | 335 |
| GF322701 | UNF | 374 | GF333706 | MF | 367 | GF422851 | M | 336 | GF442206 | UNC | 345 |
| GF322706 | G (BSP) | 377 | GF335121 | M | 364 | GF422856 | M | 337 | GF442251 | M | 336 |
| GF322706 | M | 363 | GF335121 | MF | 370 | GF429246 | M | 338 | GF442256 | M | 337 |
| GF322706 | MF | 369 | GF335126 | M | 365 | GF429248 | M | 339 | GF442501 | M | 334 |
| GF322706 | UNC | 373 | GF335126 | MF | 371 | GF429546 | M | 338 | GF442501 | UNC | 344 |
| GF322706 | UNF | 375 | GF335421 | M | 364 | GF429548 | M | 339 | GF442506 | M | 335 |
| GF323101 | M | 360 | GF335421 | MF | 370 | GF429846 | M | 338 | GF442506 | UNC | 345 |
| GF323101 | MF | 366 | GF335426 | M | 365 | GF429848 | M | 339 | GF442551 | M | 336 |
| GF323106 | M | 361 | GF335426 | MF | 371 | GF432201 | EG M (STI) | 350 | GF442556 | M | 337 |
| GF323106 | MF | 367 | GF335721 | M | 364 | GF432201 | G (BSP) | 348 | GF442801 | M | 334 |
| GF323401 | M | 360 | GF335721 | MF | 370 | GF432201 | M | 334 | GF442801 | UNC | 344 |
| GF323401 | MF | 366 | GF335726 | M | 365 | GF432201 | MF | 340 | GF442806 | M | 335 |
| GF323406 | M | 361 | GF335726 | MF | 371 | GF432201 | UNC | 344 | GF442806 | UNC | 345 |
| GF323406 | MF | 367 | GF342101 | M | 362 | GF432201 | UNF | 346 | GF442851 | M | 336 |
| GF323701 | M | 360 | GF342101 | UNC | 372 | GF432206 | EG M (STI) | 351 | GF442856 | M | 337 |
| GF323701 | MF | 366 | GF342106 | M | 363 | GF432206 | G (BSP) | 349 | GF449246 | M | 338 |
| GF323706 | M | 361 | GF342106 | UNC | 373 | GF432206 | M | 335 | GF449248 | M | 339 |
| GF323706 | MF | 367 | GF342401 | M | 362 | GF432206 | MF | 341 | GF449546 | M | 338 |
| GF332101 | G (BSP) | 376 | GF342401 | UNC | 372 | GF432206 | UNC | 345 | GF449548 | M | 339 |
| GF332101 | M | 362 | GF342406 | M | 363 | GF432206 | UNF | 347 | GF449846 | M | 338 |
| GF332101 | MF | 368 | GF342406 | UNC | 373 | GF432251 | M | 336 | GF449848 | M | 339 |
| GF332101 | UNC | 372 | GF342701 | M | 362 | GF432256 | M | 337 | GF603111 | G (BSP), BSW, BSF, W | 423 |
| GF332101 | UNF | 374 | GF342701 | UNC | 372 | GF432501 | EG M (STI) | 350 | GF603111 | M, MF | 423 |
| GF332106 | G (BSP) | 377 | GF342706 | M | 363 | GF432501 | G (BSP) | 348 | GF603111 | UN | 423 |
| GF332106 | M | 363 | GF342706 | UNC | 373 | GF432501 | M | 334 | GF603117 | G (BSP), BSW, BSF, W | 423 |
| GF332106 | MF | 369 | GF422201 | EG M (STI) | 350 | GF432501 | MF | 340 | GF603117 | M, MF | 423 |
| GF332106 | UNC | 373 | GF422201 | G (BSP) | 348 | GF432501 | UNC | 344 | GF603117 | UN | 423 |
| GF332106 | UNF | 375 | GF422201 | M | 334 | GF432501 | UNF | 346 | GF603142 | G (BSP), BSW, BSF, W | 424 |
| GF332401 | G (BSP) | 376 | GF422201 | MF | 340 | GF432506 | EG M (STI) | 351 | GF603142 | M, MF | 424 |
| GF332401 | M | 362 | GF422201 | UNC | 344 | GF432506 | G (BSP) | 349 | GF603147 | G (BSP), BSW, BSF, W | 424 |
| GF332401 | MF | 368 | GF422201 | UNF | 346 | GF432506 | M | 335 | GF603147 | M, MF | 424 |
| GF332401 | UNC | 372 | GF422206 | EG M (STI) | 351 | GF432506 | MF | 341 | GF613121 | G (BSP), BSW, BSF, W | 425 |
| GF332401 | UNF | 374 | GF422206 | G (BSP) | 349 | GF432506 | UNC | 345 | GF613121 | M, MF | 425 |
| GF332406 | G (BSP) | 377 | GF422206 | M | 335 | GF432506 | UNF | 347 | GF613127 | G (BSP), BSW, BSF, W | 425 |
| GF332406 | M | 363 | GF422206 | MF | 341 | GF432551 | M | 336 | GF613127 | M, MF | 425 |
| GF332406 | MF | 369 | GF422206 | UNC | 345 | GF432556 | M | 337 | GF641007 | M, MF | 431 |
| GF332406 | UNC | 373 | GF422206 | UNF | 347 | GF432801 | EG M (STI) | 350 | GF641107 | M, MF | 433 |
| GF332406 | UNF | 375 | GF422251 | M | 336 | GF432801 | G (BSP) | 348 | GF641207 | M, MF | 435 |
| GF332701 | G (BSP) | 376 | GF422256 | M | 337 | GF432801 | M | 334 | GF641307 | M, MF | 437 |
| GF332701 | M | 362 | GF422501 | EG M (STI) | 350 | GF432801 | MF | 340 | GF641407 | M, MF | 439 |
| GF332701 | MF | 368 | GF422501 | G (BSP) | 348 | GF432801 | UNC | 344 | GF643005 | G (BSP), BSW, BSF, W | 431 |
| GF332701 | UNC | 372 | GF422501 | M | 334 | GF432801 | UNF | 346 | GF643005 | M, MF, UN | 431 |
| GF332701 | UNF | 374 | GF422501 | MF | 340 | GF432806 | EG M (STI) | 351 | GF643007 | G (BSP), BSW, BSF, W | 431 |
| GF332706 | G (BSP) | 377 | GF422501 | UNC | 344 | GF432806 | G (BSP) | 349 | GF643007 | M, MF, UN | 431 |
| GF332706 | M | 363 | GF422501 | UNF | 346 | GF432806 | M | 335 | GF643007 | Tr | 431 |
| GF332706 | MF | 369 | GF422506 | EG M (STI) | 351 | GF432806 | MF | 341 | GF643105 | G (BSP), BSW, BSF, W | 433 |
| GF332706 | UNC | 373 | GF422506 | G (BSP) | 349 | GF432806 | UNC | 345 | GF643105 | M, MF, UN | 433 |
| GF332706 | UNF | 375 | GF422506 | M | 335 | GF432806 | UNF | 347 | GF643107 | G (BSP), BSW, BSF, W | 433 |
| GF333101 | LK-M | 378 | GF422506 | MF | 341 | GF432851 | M | 336 | GF643107 | M, MF, UN | 433 |
| GF333101 | M | 360 | GF422506 | UNC | 345 | GF432856 | M | 337 | GF643107 | NPT | 433 |



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|----------|----------------------|-----|----------|---------|-----|----------|-----|----------|-------------|
| GF643107 | Tr | 433 | GFB35406 | UNF, UN | 392 | GZ349024 | 439 | GZ80H0C4 | 442 |
| GF643205 | G (BSP), BSW, BSF, W | 435 | GFB35701 | M, MF | 387 | GZ349025 | 441 | GZ80I0C4 | 442 |
| GF643205 | M, MF, UN | 435 | GFB35701 | MF | 388 | GZ349040 | 431 | GZ80J0C4 | 442 |
| GF643207 | G (BSP), BSW, BSF, W | 435 | GFB35706 | M, MF | 387 | GZ349041 | 433 | | |
| GF643207 | M, MF, UN | 435 | GFB35706 | MF | 388 | GZ349042 | 435 | | |
| GF643207 | NPT | 435 | GFB35706 | UNC, UN | 392 | GZ349043 | 437 | | |
| GF643207 | Tr | 435 | GFB35706 | UNF, UN | 392 | GZ349044 | 439 | | |
| GF643305 | G (BSP), BSW, BSF, W | 437 | GZ301110 | | 422 | GZ349045 | 441 | | |
| GF643305 | M, MF, UN | 437 | GZ301130 | | 422 | GZ349053 | 437 | | |
| GF643307 | G (BSP), BSW, BSF, W | 437 | GZ301140 | | 422 | GZ349054 | 439 | | |
| GF643307 | M, MF, UN | 437 | GZ301310 | | 422 | GZ349055 | 441 | | |
| GF643307 | Tr | 437 | GZ301320 | | 422 | GZ34A000 | 430 | | |
| GF643405 | G (BSP), BSW, BSF, W | 439 | GZ301330 | | 422 | GZ34A001 | 432 | | |
| GF643405 | M, MF, UN | 439 | GZ301340 | | 422 | GZ34A002 | 434 | | |
| GF643407 | G (BSP), BSW, BSF, W | 439 | GZ303010 | | 424 | GZ34A003 | 436 | | |
| GF643407 | M, MF, UN | 439 | GZ309010 | | 423 | GZ34A010 | 430 | | |
| GF643407 | Tr | 439 | GZ309020 | | 423 | GZ34C000 | 430 | | |
| GF643505 | M, MF, UN | 441 | GZ309020 | | 424 | GZ34C001 | 432 | | |
| GF643507 | M, MF, UN | 441 | GZ309210 | | 424 | GZ34C002 | 434 | | |
| GF643507 | Tr | 441 | GZ311330 | | 425 | GZ34C010 | 430 | | |
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| GF663007 | | 442 | GZ319060 | | 425 | GZ351000 | 430 | | |
| GF663105 | | 442 | GZ341000 | | 430 | GZ351001 | 432 | | |
| GF663107 | | 442 | GZ341001 | | 432 | GZ351002 | 434 | | |
| GF663205 | | 442 | GZ341012 | | 434 | GZ352003 | 436 | | |
| GF663207 | | 442 | GZ341021 | | 432 | GZ352004 | 438 | | |
| GF663305 | | 442 | GZ341032 | | 434 | GZ352005 | 440 | | |
| GF663307 | | 442 | GZ341040 | | 430 | GZ353000 | 430 | | |
| GF663405 | | 442 | GZ341050 | | 430 | GZ353001 | 432 | | |
| GF663407 | | 442 | GZ341101 | | 432 | GZ353002 | 434 | | |
| GF732257 | M, MF | 355 | GZ341112 | | 434 | GZ353003 | 436 | | |
| GF732257 | UNC | 356 | GZ341121 | | 432 | GZ353004 | 438 | | |
| GF732257 | UNF | 357 | GZ341131 | | 432 | GZ353005 | 440 | | |
| GF732557 | M, MF | 355 | GZ341143 | | 436 | GZ359310 | 431 | | |
| GF732557 | UNC | 356 | GZ341153 | | 436 | GZ359311 | 433 | | |
| GF732557 | UNF | 357 | GZ341200 | | 430 | GZ359312 | 435 | | |
| GF732857 | M, MF | 355 | GZ341201 | | 432 | GZ359313 | 437 | | |
| GF732857 | UNC | 356 | GZ341202 | | 434 | GZ359314 | 439 | | |
| GF732857 | UNF | 357 | GZ341211 | | 432 | GZ359315 | 441 | | |
| GF733208 | M, MF | 355 | GZ341221 | | 432 | GZ5243A4 | 444 | | |
| GF733208 | UNC | 356 | GZ341231 | | 432 | GZ5263A4 | 444 | | |
| GF733208 | UNF | 357 | GZ343003 | | 436 | GZ5263B4 | 444 | | |
| GF733508 | M, MF | 355 | GZ343014 | | 438 | GZ5263B5 | 444 | | |
| GF733508 | UNC | 356 | GZ343103 | | 436 | GZ5391A4 | 444 | | |
| GF733508 | UNF | 357 | GZ343114 | | 438 | GZ5391B4 | 444 | | |
| GF733808 | M, MF | 355 | GZ344003 | | 436 | GZ5391B5 | 444 | | |
| GF733808 | UNC | 356 | GZ344014 | | 438 | GZ5521A4 | 444 | | |
| GF733808 | UNF | 357 | GZ344024 | | 438 | GZ56E1A4 | 444 | | |
| GF753276 | M, MF | 354 | GZ344035 | | 440 | GZ7243AA | 445 | | |
| GF753576 | M, MF | 354 | GZ344045 | | 440 | GZ7243AB | 445 | | |
| GF753876 | M, MF | 354 | GZ344103 | | 436 | GZ7243AC | 445 | | |
| GF927126 | M | 389 | GZ344114 | | 438 | GZ7243AD | 445 | | |
| GF927426 | M | 389 | GZ344124 | | 438 | GZ7263AE | 445 | | |
| GF927726 | M | 389 | GZ344203 | | 436 | GZ7263AF | 445 | | |
| GFB35101 | M, MF | 387 | GZ344204 | | 438 | GZ7391AA | 445 | | |
| GFB35101 | MF | 388 | GZ349010 | | 431 | GZ7391AB | 445 | | |
| GFB35106 | M, MF | 387 | GZ349011 | | 433 | GZ7391AC | 445 | | |
| GFB35106 | MF | 388 | GZ349012 | | 435 | GZ7391AD | 445 | | |
| GFB35106 | UNC, UN | 392 | GZ349013 | | 437 | GZ73A1AE | 445 | | |
| GFB35106 | UNF, UN | 392 | GZ349014 | | 439 | GZ73A1AF | 445 | | |
| GFB35401 | M, MF | 387 | GZ349015 | | 441 | GZ7521AB | 445 | | |
| GFB35401 | MF | 388 | GZ349020 | | 431 | GZ7521AC | 445 | | |
| GFB35406 | M, MF | 387 | GZ349021 | | 433 | GZ75D1AA | 445 | | |
| GFB35406 | MF | 388 | GZ349022 | | 435 | GZ80F0C4 | 442 | | |
| GFB35406 | UNC, UN | 392 | GZ349023 | | 437 | GZ80G0C4 | 442 | | |
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| | | | | | | | | H0101001 | BSF 208 |
| | | | | | | | | H0101001 | BSW 205 |
| | | | | | | | | H0101001 | M 92 |
| | | | | | | | | H0101001 | UNC 149 |
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| | | | | | | | | H0201001 | MF 132-133 |
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| | | | | | | | | H0310901 | M 93 |
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| | | | | | | | | H0330901 | MF 135 |
| | | | | | | | | H0330909 | MF 135 |
| | | | | | | | | H0403001 | M 95 |
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| | | | | | | | | H0403101 | M 97 |
| | | | | | | | | H0407101 | M 99 |
| | | | | | | | | H0413019 | M 94 |
| | | | | | | | | H0413019 | UNC 150 |
| | | | | | | | | H0413119 | M 96 |
| | | | | | | | | H0417119 | M 98 |
| | | | | | | | | H0423001 | M 94 |
| | | | | | | | | H0423001 | UNC 150 |
| | | | | | | | | H0423019 | M 94 |
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| | | | | | | | | H0423029 | M 94 |
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| | | | | | | | | H0423101 | M 96 |
| | | | | | | | | H0423119 | M 96 |
| | | | | | | | | H0423129 | M 96 |
| | | | | | | | | H0427101 | M 98 |
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| H0433001 | UNC | 151 |
| H0433101 | M | 97 |
| H0437101 | M | 99 |
| H0453001 | G (BSP) | 177 |
| H0453001 | M | 95 |
| H0453001 | MF | 137 |
| H0453001 | UNC | 151 |
| H0453001 | UNF | 163 |
| H0453101 | M | 97 |
| H0463009 | G (BSP) | 176 |
| H0463009 | MF | 136 |
| H0463009 | UNF | 162 |
| H0473001 | G (BSP) | 176 |
| H0473001 | MF | 136 |
| H0473001 | UNF | 162 |
| H0473009 | G (BSP) | 176 |
| H0473009 | MF | 136 |
| H0473009 | UNF | 162 |
| H0483001 | G (BSP) | 177 |
| H0483001 | M | 95 |
| H0483001 | MF | 137 |
| H0483001 | UNC | 151 |
| H0483001 | UNF | 163 |
| H0483101 | M | 97 |

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| L0091040 | | 628 |
| L0091070 | | 628 |
| L0091410 | | 629 |
| L0091500 | | 629 |
| L0091510 | | 629 |
| L0100100 | BSW | 614 |
| L0100100 | EG M (STI) | 617 |
| L0100100 | G (BSP) | 610 |
| L0100100 | LK-M | 618 |
| L0100100 | M | 584 |
| L0100100 | MF | 588-589 |
| L0100100 | Tr | 619 |
| L0100100 | Tr-F | 620 |
| L0100100 | UNC | 606 |
| L0100100 | UNF | 608 |
| L0100110 | M „4H“ | 584 |
| L0100110 | MF „4H“ | 588-589 |
| L0100110 | MJ | 616 |
| L0100110 | UNC „3B“ | 606 |
| L0100110 | UNF „3B“ | 608 |
| L0100110 | UNJC | 616 |
| L0100110 | UNJF | 616 |
| L0100120 | M „6G“ | 585 |
| L0100120 | MF „6G“ | 588-589 |
| L0100130 | M „6E“ | 585 |
| L0100150 | M-LH | 585 |
| L0100150 | MF-LH | 588-589 |
| L0100160 | MF-LH „4H“ | 588-589 |
| L0100170 | MF-LH „6G“ | 588-589 |
| L0100200 | Rd | 621 |
| L0101100 | M | 584 |
| L0101100 | MF | 588-589 |
| L0101110 | M „4H“ | 584 |
| L0101120 | M „6G“ | 585 |

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| L0105100 | M | 584 |
| L0105100 | MF | 588-589 |
| L0105110 | M „4H“ | 584 |
| L0105120 | M „6G“ | 585 |
| L0120100 | BSW | 614 |
| L0120100 | G (BSP) | 610 |
| L0120100 | M | 585 |
| L0120100 | MF | 590-596 |
| L0120100 | Pg | 615 |
| L0120100 | Tr | 619 |
| L0120100 | Tr-F | 620 |
| L0120100 | UNC | 606 |
| L0120100 | UNF | 608 |
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| L0120170 | MF-LH „6G“ | 591-597 |
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| L0200500 | G (BSP) | 610 |
| L0200500 | M | 586 |
| L0200500 | MF | 598-604 |
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| L0200500 | Tr | 619 |
| L0200500 | Tr-F | 620 |
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| L0200510 | UNF „3A“ | 609 |
| L0200530 | M „6e“ | 586 |
| L0200530 | MF „6e“ | 598-604 |
| L0200550 | M-LH | 586 |
| L0200550 | MF-LH | 598-604 |
| L0200560 | MF-LH „4h“ | 598-604 |
| L0200580 | MF-LH „6e“ | 598-604 |
| L0200600 | Rd | 621 |
| L0300500 | BSW | 614 |
| L0300500 | G (BSP) | 610 |
| L0300500 | M | 587 |

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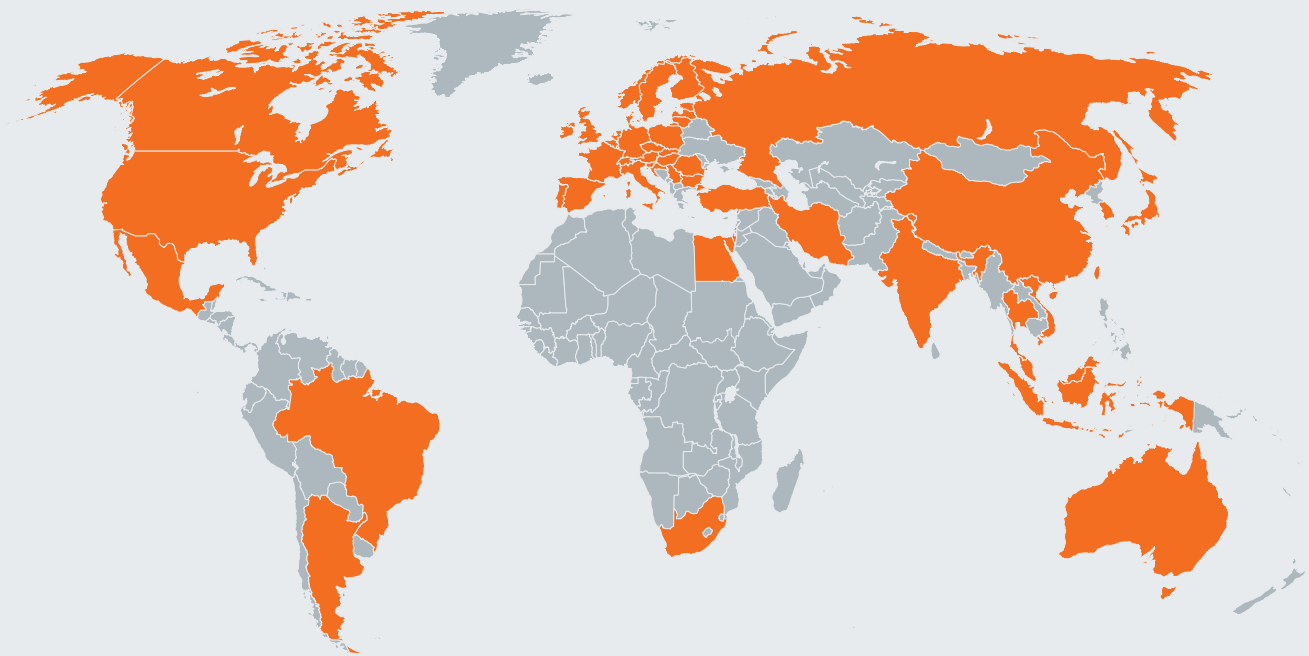
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