# New products for machining technicians

## NEW REAMAX TS

- maximum flexibility and efficiency up to Ø 65.00 mm
- up to 5xD
- can be adjusted for the smallest tolerances and for wear compensation

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## NEW Fullmax high-performance reamers

- solid carbide high-performance reamers
- type UNI, VA, K, ALU and H
- maximum efficiency in all materials
- available as standard H7, as 1/100, and as configurable version

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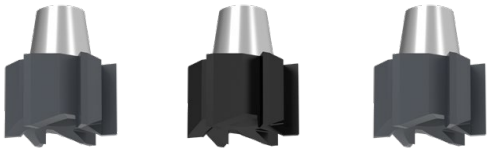
## NEW REAMAX extension



- extension of the proven REAMAX reaming system
- new cutting edge geometries and coatings

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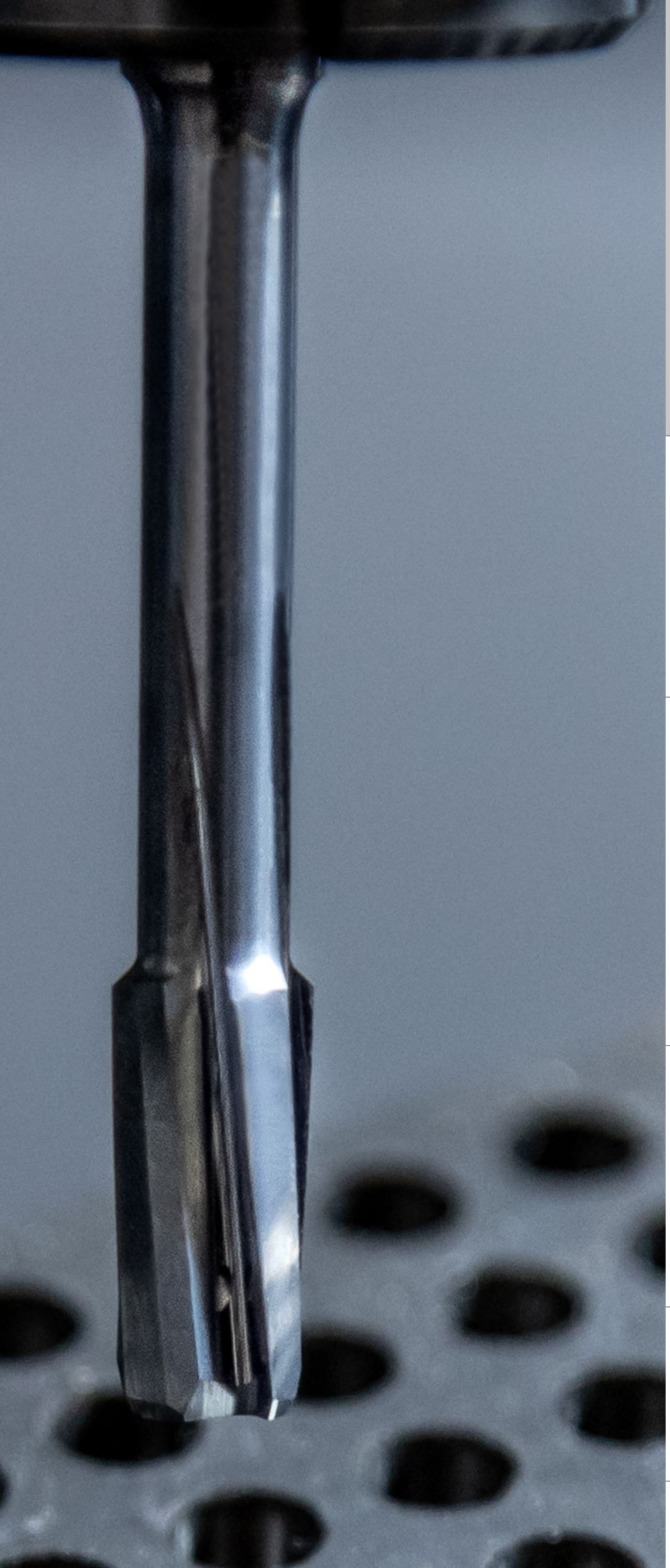
## NEW Monomax extension

- extension of the proven Monomax reamers
- new grades and cutting edge geometries



# Table of contents



## KOMET \ Performance

Premium quality tools for high performance.

The premium quality tools from the **KOMET Performance** product line have been designed for specific applications and are distinguished by their outstanding performance. If you make high demands on the performance of your production and want to achieve the very best results, we recommend the Premium tools in this product line.

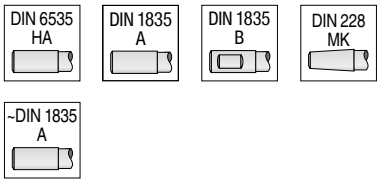
## KOMET \ Standard

Quality tools for standard applications.

The quality tools of the **KOMET Standard** product line are high quality, high performance, reliable and enjoy the highest level of trust among our customers worldwide. Tools from this product line are the first choice for many standard applications and guarantee optimal results.

# Symbol explanation

## Shank




## Version

Central internal coolant

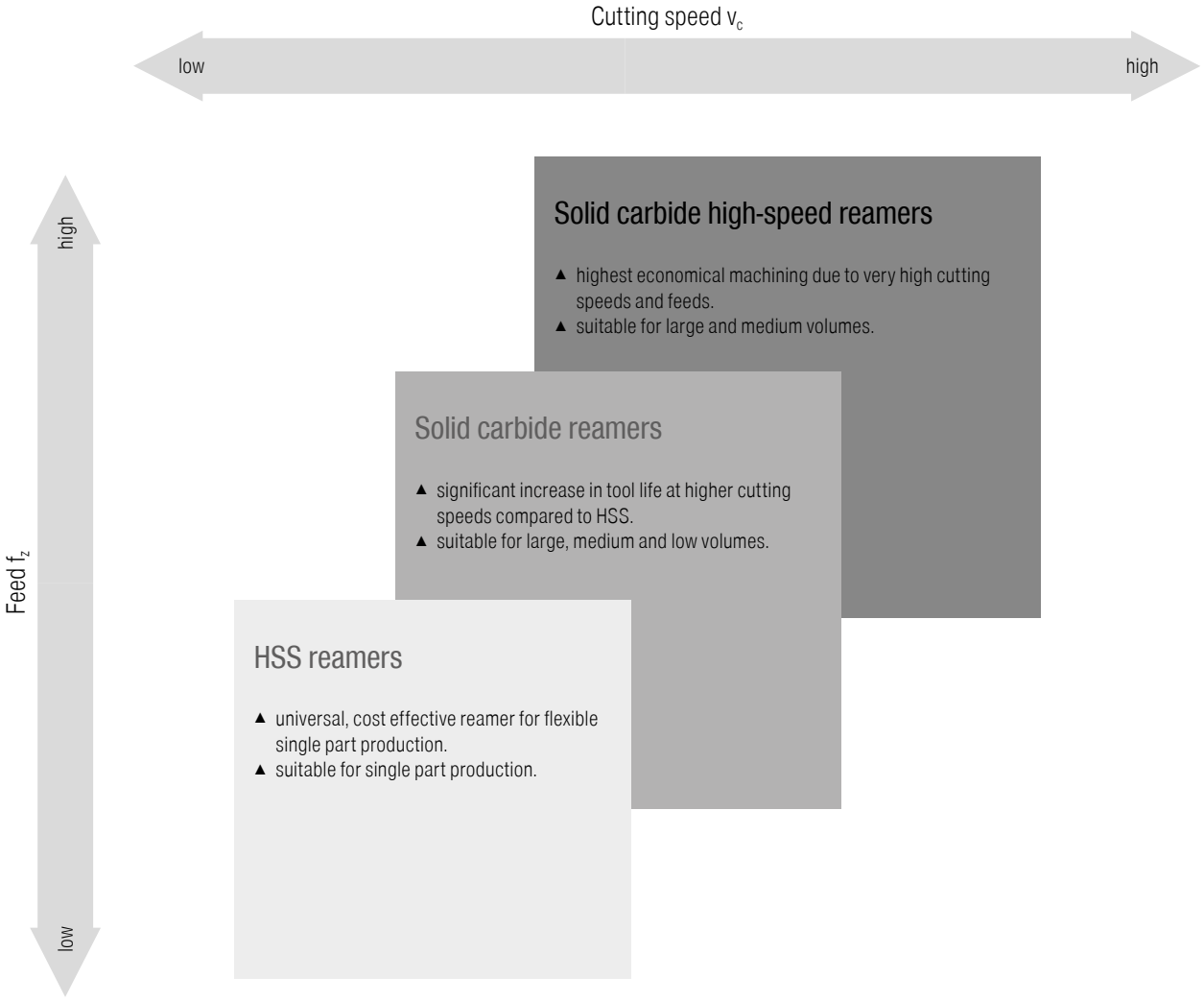
Lateral internal coolant

ZEFP = Number of teeth

● = **Main Application**

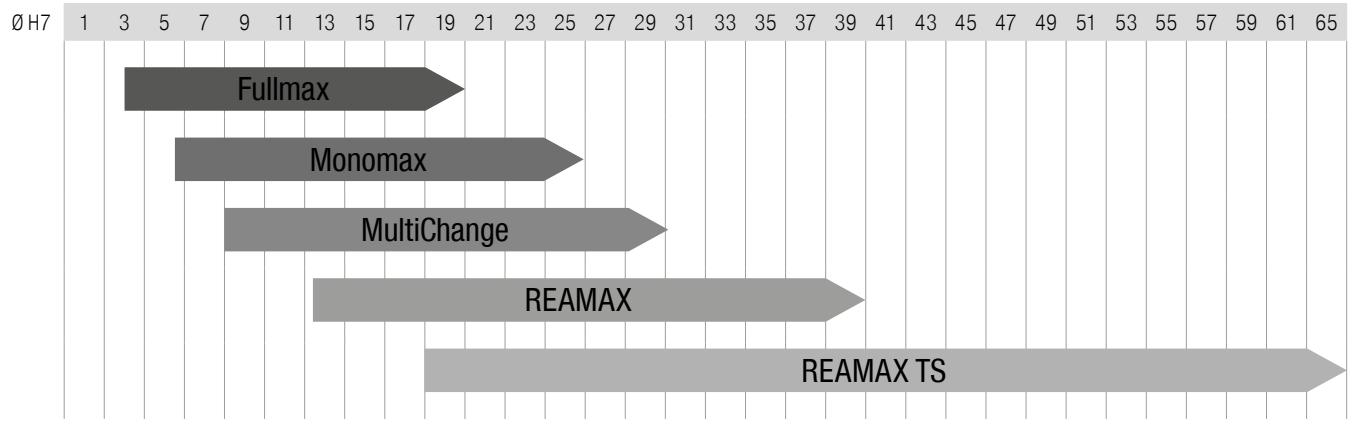
○ = Extended application

# Toolfinder – Reamers




4

# Overview of solid carbide high-speed reamers




| | mono | modular |
|---|---|---|
| fixed | Fullmax | MultiChange<br>REAMAX |
| adjustable | Monomax | REAMAX TS |

# Toolfinder – Reamers

| | | | | |
|---|---|---|---|---|
| Solid carbide – High speed reamers | REAMAX TS | |  | ▲ highly flexible and economical replaceable head system<br>▲ all common materials<br>▲ can be adjusted in µm range |
| | | |  | ▲ holder available in 3xD and 5xD<br>▲ holder type DAH Zero available in 3xD and 5xD |
| | REAMAX | |  | ▲ exchange head system, optimised for use with air mist coolant (MMS)<br>▲ face and taper contact giving run out accuracy ≤ 2 µm |
| | | |  | ▲ holder available in 3xD and 5xD |
| | MultiChange | |  | ▲ flexible quick change system for reaming, countersinking and chamfering<br>▲ face and taper contact giving run out accuracy ≤ 5 µm |
| | | |  | ▲ stable holder in solid carbide and steel, from short to long |
| | Monomax | |  | ▲ adjustable monoblock reamer in 3xD and 5xD<br>▲ regrinding and re-tipping on the base body |
| | Fullmax UNI | |  | ▲ high-speed reamer for universal use<br>▲ extremely irregular pitch<br>▲ standard shank ~ DIN 6535 HA |
| | Fullmax VA | |  | ▲ high speed reamer for corrosion and acid resistant steels<br>▲ extremely irregular pitch<br>▲ DIN 6535 HA shank |
| | Fullmax K | |  | ▲ high-speed reamer for use on cast iron materials<br>▲ extremely irregular pitch<br>▲ standard shank ~ DIN 6535 HA |
| | Fullmax ALU | |  | ▲ high-speed reamer for use on aluminium<br>▲ extremely irregular pitch<br>▲ standard shank ~ DIN 6535 HA |
| | Fullmax H | |  | ▲ high speed reamer for hardened material to 63 HRC<br>▲ extremely irregular pitch<br>▲ DIN 6535 HA shank |
| Solid carbide – Reamers | NC | NC 100 |  | ▲ universal solid carbide reamer without thro' coolant<br>▲ extremely irregular pitch<br>▲ DIN 6535 HA shank |
| | N | |  | ▲ universal solid carbide reamer without thro' coolant<br>▲ extremely irregular pitch |
| HSS – Reamers | NC | NC 100 |  | ▲ HSS-E NC machine reamer<br>▲ DIN 1835 A shank |
| | N | N 100 |  | ▲ HSS-E machine reamer |
| | S | |  | ▲ HSS-E spiral machine reamer DIN 212 |
| | AR | AR 100 |  | ▲ HSS-E automatic machine reamer DIN 8089 |
| | N | |  | ▲ HSS-e machine reamer DIN 208<br>▲ with morse taper |
| | H | |  | ▲ HSS hand reamer with cylindrical shank DIN 206 |

| Hole diameter in mm Ø DC | Standard tolerance | Through hole | Blind hole | Int. coolant supply | Steel | Stainless steel | Cast iron | Non-ferrous metals | Heat-resistant | Hardened materials | KOMET \ Performance | KOMET \ Standard |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18,00–65,00 | H7<br>1/100 | ✓ | ✓ | ✓ | ● | ● | ● | ● | | | 7–9 | |
| | | | | ✓ | | | | | | | 10+11 | |
| 12,50–40,00 | H7<br>1/100 | ✓ | ✓ | ✓ | ● | ● | ● | ● | | | 12+13 | |
| | | | | ✓ | | | | | | | 14 | |
| 8,00–30,20 | H7<br>1/100 | ✓ | ✓ | ✓ | ● | ● | ● | ● | ○ | | 16+17 | |
| | | | | ✓ | | | | | | | → **Chapter 17, Accessories** | |
| 5,60–25,89 | H7<br>1/100 | ✓ | ✓ | ✓ | ● | ● | ● | | | | 18–22 | |
| 4,00–16,00<br>2,96–20,05 | H7<br>1/100 | ✓ | ✓ | ✓ | ● | | ● | | | | 23–28 | |
| 4,00–16,00<br>2,96–20,05 | H7<br>1/100 | ✓ | ✓ | ✓ | | ● | | | | | 23–28 | |
| 2,96–20,05 | 1/100 | ✓ | ✓ | ✓ | | | ● | | | | 25–28 | |
| 4,00–16,00<br>2,96–20,05 | H7<br>1/100 | ✓ | ✓ | ✓ | | | | ● | | | 23–28 | |
| 2,96–20,05 | 1/100 | ✓ | ✓ | ✓ | | | | | | ● | 25–28 | |
| 2,00–30,00<br>0,59–12,05 | H7<br>1/100 | ✓ | | | ● | | ● | ● | ○ | | 29+30 | |
| 2,00–12,00 | H7 | ✓ | | | ● | | ● | ● | ○ | | | 31 |
| 1,50–20,00<br>0,95–12,00 | H7<br>1/100 | ✓ | | | ● | ○ | ● | ● | ○ | | 32+33 | |
| 1,00–20,00<br>0,95–12,00 | H7<br>1/100 | ✓ | | | ● | ○ | ● | ● | ○ | | | 34–36 |
| 1,00–20,00 | H7 | ✓ | | | ● | | | ● | | | | 37 |
| 4,00–20,00<br>3,76–12,00 | H7<br>1/100 | ✓ | | | ● | ○ | ● | ● | ○ | | | 37+38 |
| 16,00–50,00 | H7 | ✓ | | | ● | ○ | ● | ● | ○ | | | 39 |
| 1,00–40,00 | H7 | ✓ | | | ● | ○ | ● | ● | ○ | | | 39 |

4

# Countersinks Overview

| | Tool type | Coating | Hole diameter in mm Ø DC | Point angle | Steel | Stainless steel | Cast iron | Non-ferrous metals | Heat-resistant | Hardened materials | KOMET \ Performance | KOMET \ Standard |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Indexable Insert Counterbore Tool** | | | | | | | | | | | | |
|  | WPS | | 15,0–33,0 | | ● | ○ | ● | ● | ○ | | | 40 |
| **HSS – Counterbores** | | | | | | | | | | | | |
|  | N | | 6,0–20,0 | | ● | ● | ● | ● | ○ | | | 42 |
| **Solid Carbide Countersinks** | | | | | | | | | | | | |
|  | N | TPX76S | 6,3–31,0 | 90° | ● | ○ | ● | ● | ○ | ○ | 43 | |
|  | N | | 12,5–25,0 | 60° | ● | ○ | ● | ● | ○ | | | 44 |
|  | N | | 10,4–31,0 | 90° | ● | ○ | ● | ● | ○ | | | 44 |
| **HSS Countersinks** | | | | | | | | | | | | |
|  | N | | 6,3–25,0 | 60° | ● | ○ | ● | ● | ○ | | | 47 |
|  | N | | 16,0–80,0 | 60° | ● | ○ | ● | ● | ○ | | | 47 |
|  | N | Ti50 | 4,3–31,0 | 90° | ● | ○ | ● | ● | ○ | | 45 | |
|  | N | | 4,3–31,0 | 90° | ● | ○ | ● | ● | ○ | | | 46 |
|  | N | TiN | 5,0–31,0 | 90° | ● | ○ | ● | ● | ○ | | | 46 |
|  | N | TiAlN | 5,0–31,0 | 90° | ● | ○ | ● | ● | ○ | | | 46 |
|  | VA | TiAlN | 6,3–31,0 | 90° | | ● | | | | | | 46 |
|  | AL | | 6,3–31,0 | 90° | | | | ● | | | | 46 |
|  | N | | 16,5–80,0 | 90° | ● | ○ | ● | ● | ○ | | | 48 |
|  | N | | 6,3–25,0 | 120° | ● | ○ | ● | ● | ○ | | | 48 |
| **HSS – Hand deburrer** | | | | | | | | | | | | |
|  | N | | 12,4–25,0 | 90° | | | | | | | | 49 |
| **Deburring Countersink** | | | | | | | | | | | | |
|  | N | | 6,3–35,0 | 90° | ● | | ● | ● | | | | 49 |
|  | N | TiN | 6,3–35,0 | 90° | ● | | ● | ● | | | | 49 |

# REAMAX TS – Selection guide

Ø 18–65 mm

| Material | Preferred type available | KOMET no. | 75J.93 | 75J.65 | 75H.65 | 75J.17 | 75H.17 | 75H.93 | 75H.65 | 75H.71 | 75J.93 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lead | ASG4000 | ASG0106 | ASG0106 | ASG0706 | ASG0706 | ASG3000 | ASG3000 | ASG3000 | ASG3000 |
| | | Lead angle | 25° | 45° | 45° | 45°/8° | 45°/8° | 45° | 45° | 45° | 45° |
| | | Grade / coating | DST | DBG-P | DBG-P | DBC | DBC | DST | DBG-P | TiN | DST |
| | | Article no. | 40 597 ... | 40 521 ... | 40 571 ... | 40 526 ... | 40 580 ... | 40 539 ... | 40 585 ... | 40 535 ... | 40 544 ... |
| | | Application | Through hole | Through hole | Blind hole | Through hole | Blind hole | Blind hole | Blind hole | Blind hole | Through hole |
| Steel up to 1000 N/mm² | ✓ | | ● | | | | | | | | ● |
| | | | | | | | | ● | ○ | ○ | |
| | | | | | | | | | ○ | ○ | |
| | | | | | | | | | ● | ○ | |
| Steel > 1000 N/mm² | | | | ● | | | | | | | |
| | | | | | ● | | | | | ○ | |
| | | | | ● | | | | | | | |
| | | | | | ● | | | | | ○ | |
| Stainless steel | | | | ● | | | | | | | |
| | | | | | ● | | | | | | |
| | | | | ● | | | | | | | |
| | | | | | ● | | | | | | |
| Grey cast iron / alloyed nodular cast iron (0.7661) and vermicular cast iron (5.2200) | | | | | | | | | ○ | | |
| | | | | | | | | | ● | | |
| Nodular cast iron | | | ○ | | | | | | | | ● |
| | | | | | | | | ● | ○ | | |
| | | | | | | | | | ○ | | |
| | | | | | | | | | ● | | |
| Copper, brass, bronze | | | | | | | | | | | ● |
| | | | | | | | | | | ○ | |
| | | | | | | | | | | ○ | |
| | | | | | | | | | | ● | |
| Aluminium | | | | | | ● | | | | | |
| | | | | | | | ● | | | | |
| | | | | | | ● | | | | | |
| | | | | | | | ● | | | | |

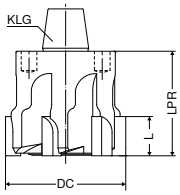
**Applications:**

| | |
|---|---|
| Main application | ● |
| Additional range of application | ○ |

4

# REAMAX TS – Replaceable reaming heads

- ▲ up to tolerance class IT 6 with absolute process security, from the first hole
- ▲ precise repeatability < 3 µm
- ▲ high precision grind for maximum quality
- ▲ can be adjusted for the smallest hole tolerances
- ▲ interface enables head change in the machine
- ▲ retraction from the hole at 3–4 times the cutting feed rate
- ▲ KLG = coupling size




| | DST | DBG-P | DBC | DST |
|---|---|---|---|---|
| |  |  |  |  |
| | 75J.93<br>◁ 25°<br>ASG4000<br>CERMET<br>Through hole | 75J.65<br>◁ 45°<br>ASG0106<br>HM<br>Through hole | 75J.17<br>◁ 45/8°<br>ASG0706<br>HM<br>Through hole | 75J.93<br>◁ 45°<br>ASG3000<br>CERMET<br>Through hole |
| | NEW U3 | NEW U3 | NEW U3 | NEW U3 |
| | Article no. 40 597 ... | Article no. 40 521 ... | Article no. 40 526 ... | Article no. 40 544 ... |
| | EUR | EUR | EUR | EUR |

| DC H7 mm | L mm | LPR mm | ZEFP | KLG | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18,00 | 6 | 20 | 6 | 1 | 326,60 | 18000 | 326,60 | 18000 | 326,60 | 18000 | 326,60 | 18000 |
| 18,01 - 19,99 | 6 | 20 | 6 | 1 | 384,80 | xxxx 1) | 384,80 | xxxx 1) | 384,80 | xxxx 2) | 384,80 | xxxx 1) |
| 20,00 | 6 | 20 | 6 | 2 | 334,90 | 20000 | 334,90 | 20000 | 334,90 | 20000 | 334,90 | 20000 |
| 20,01 - 21,99 | 6 | 20 | 6 | 2 | 451,20 | xxxx 1) | 451,20 | xxxx 1) | 451,20 | xxxx 2) | 451,20 | xxxx 1) |
| 22,00 | 6 | 20 | 6 | 3 | 341,10 | 22000 | 341,10 | 22000 | 341,10 | 22000 | 341,10 | 22000 |
| 22,01 - 23,99 | 6 | 20 | 6 | 3 | 469,40 | xxxx 1) | 469,40 | xxxx 1) | 469,40 | xxxx 2) | 469,40 | xxxx 1) |
| 24,00 | 6 | 20 | 6 | 3 | 351,50 | 24000 | 351,50 | 24000 | 351,50 | 24000 | 351,50 | 24000 |
| 24,01 - 24,99 | 6 | 20 | 6 | 3 | 469,40 | xxxx 1) | 469,40 | xxxx 1) | 469,40 | xxxx 2) | 469,40 | xxxx 1) |
| 25,00 | 6 | 20 | 6 | 3 | 351,50 | 25000 | 351,50 | 25000 | 351,50 | 25000 | 351,50 | 25000 |
| 25,01 - 25,99 | 6 | 20 | 6 | 3 | 469,40 | xxxx 1) | 469,40 | xxxx 1) | 469,40 | xxxx 2) | 469,40 | xxxx 1) |
| 26,00 | 6 | 20 | 6 | 3 | 365,00 | 26000 | 365,00 | 26000 | 469,40 | 26000 2) | 365,00 | 26000 |
| 26,01 - 26,99 | 6 | 20 | 6 | 3 | 469,40 | xxxx 1) | 469,40 | xxxx 1) | 469,40 | xxxx 2) | 469,40 | xxxx 1) |
| 27,00 - 27,99 | 6 | 25 | 6 | 4 | 488,80 | xxxx 1) | 488,80 | xxxx 1) | 488,80 | xxxx 2) | 488,80 | xxxx 1) |
| 28,00 | 6 | 25 | 6 | 4 | 365,00 | 28000 | 365,00 | 28000 | 365,00 | 28000 | 365,00 | 28000 |
| 28,01 - 29,99 | 6 | 25 | 6 | 4 | 488,80 | xxxx 1) | 488,80 | xxxx 1) | 488,80 | xxxx 2) | 488,80 | xxxx 1) |
| 30,00 | 6 | 25 | 6 | 4 | 381,70 | 30000 | 381,70 | 30000 | 381,70 | 30000 | 381,70 | 30000 |
| 30,01 - 31,79 | 6 | 25 | 6 | 4 | 488,80 | xxxx 1) | 488,80 | xxxx 1) | 488,80 | xxxx 2) | 488,80 | xxxx 1) |
| 31,80 - 31,99 | 6 | 25 | 8 | 4 | 511,00 | xxxx 1) | 511,00 | xxxx 1) | 511,00 | xxxx 2) | 511,00 | xxxx 1) |
| 32,00 | 6 | 25 | 8 | 4 | 395,20 | 32000 | 395,20 | 32000 | 395,20 | 32000 | 395,20 | 32000 |
| 32,01 - 34,99 | 6 | 25 | 8 | 4 | 511,00 | xxxx 1) | 511,00 | xxxx 1) | 511,00 | xxxx 2) | 511,00 | xxxx 1) |
| 35,00 | 6 | 25 | 8 | 5 | 413,90 | 35000 | 413,90 | 35000 | 413,90 | 35000 | 413,90 | 35000 |
| 35,01 - 39,99 | 6 | 25 | 8 | 5 | 559,00 | xxxx 1) | 559,00 | xxxx 1) | 559,00 | xxxx 2) | 559,00 | xxxx 1) |
| 40,00 | 6 | 25 | 8 | 5 | 437,80 | 40000 | 437,80 | 40000 | 437,80 | 40000 | 437,80 | 40000 |
| 40,01 - 41,99 | 6 | 25 | 8 | 5 | 559,00 | xxxx 1) | 559,00 | xxxx 1) | 559,00 | xxxx 2) | 559,00 | xxxx 1) |
| 42,00 | 6 | 30 | 8 | 6 | 437,80 | 42000 | 437,80 | 42000 | 607,20 | 42000 2) | 437,80 | 42000 |
| 42,01 - 49,99 | 6 | 30 | 8 | 6 | 607,20 | xxxx 1) | 607,20 | xxxx 1) | 607,20 | xxxx 2) | 607,20 | xxxx 1) |
| 50,00 | 6 | 30 | 8 | 6 | 448,20 | 50000 | 448,20 | 50000 | 448,20 | 50000 | 448,20 | 50000 |
| 50,01 - 51,99 | 6 | 30 | 8 | 6 | 607,20 | xxxx 1) | 607,20 | xxxx 1) | 607,20 | xxxx 2) | 607,20 | xxxx 1) |
| 52,00 - 53,99 | 8 | 35 | 10 | 7 | 673,40 | xxxx 1) | 673,40 | xxxx 1) | 673,40 | xxxx 2) | 673,40 | xxxx 1) |
| 54,00 | 8 | 35 | 10 | 7 | 504,40 | 54000 | 504,40 | 54000 | 673,40 | 54000 2) | 504,40 | 54000 |
| 54,01 - 65,00 | 8 | 35 | 10 | 7 | 673,40 | xxxx 1) | 673,40 | xxxx 1) | 673,40 | xxxx 2) | 673,40 | xxxx 1) |

| | | | | |
|---|---|---|---|---|
| Steel | ● | ● | | ● |
| Stainless steel | | ● | | |
| Cast iron | ● | | | ● |
| Non ferrous metals | | | ● | ○ |
| Heat resistant alloys | | | | |
| Hardened materials | | | | |

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 20 working days / Minimum order 2 pieces

2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 25 working days / Minimum order 2 pieces

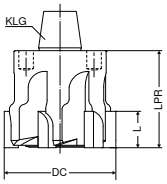
→ $v_c$ Page 51–53

For xxxx when ordering please specifiy the required Ø in H7 (eg Ø 24,12 H7 → Article no. 40 597 2412)!
All other diameters and tolerance classes are also possible (eg 18,5 $^{+0.025}$ or 18 N7)!

Assembly instructions can be found on → **Page 71**

# REAMAX TS – Replaceable reaming heads

- ▲ up to tolerance class IT 6 with absolute process security, from the first hole
- ▲ precise repeatability < 3 µm
- ▲ high precision grind for maximum quality
- ▲ can be adjusted for the smallest hole tolerances
- ▲ interface enables head change in the machine
- ▲ retraction from the hole at 3–4 times the cutting feed rate
- ▲ KLG = coupling size






| | DST | DBG-P | DBC | DBG-P | TiN |
|---|---|---|---|---|---|
| |  |  |  |  |  |
| | 75H.93<br>◁ 45°<br>ASG3000<br>CERMET<br>Blind hole | 75H.65<br>◁ 45°<br>ASG0106<br>HM<br>Blind hole | 75H.17<br>◁ 45/8°<br>ASG0706<br>HM<br>Blind hole | 75H.65<br>◁ 45°<br>ASG3000<br>HM<br>Blind hole | 75H.71<br>◁ 45°<br>ASG3000<br>HM<br>Blind hole |
| | NEW U3 | NEW U3 | NEW U3 | NEW U3 | NEW U3 |
| $DC_{H7}$ mm | L mm | LPR mm | ZEFP | KLG | Article no. 40 539 ... EUR | Article no. 40 571 ... EUR | Article no. 40 580 ... EUR | Article no. 40 585 ... EUR | Article no. 40 535 ... EUR |
| 18,00 | 6 | 20 | 6 | 1 | 326,60 18000 | 326,60 18000 | 384,80 18000 2) | 384,80 18000 1) | 384,80 18000 1) |
| 18,01 - 19,99 | 6 | 20 | 6 | 1 | 384,80 xxxx 1) | 384,80 xxxx 1) | 384,80 xxxx 2) | 384,80 xxxx 1) | 384,80 xxxx 1) |
| 20,00 | 6 | 20 | 6 | 2 | 334,90 20000 | 334,90 20000 | 451,20 20000 2) | 451,20 20000 1) | 451,20 20000 1) |
| 20,01 - 21,99 | 6 | 20 | 6 | 2 | 451,20 xxxx 1) | 451,20 xxxx 1) | 451,20 xxxx 2) | 451,20 xxxx 1) | 451,20 xxxx 1) |
| 22,00 | 6 | 20 | 6 | 3 | 341,10 22000 | 341,10 22000 | 469,40 22000 2) | 469,40 22000 1) | 469,40 22000 1) |
| 22,01 - 23,99 | 6 | 20 | 6 | 3 | 469,40 xxxx 1) | 469,40 xxxx 1) | 469,40 xxxx 2) | 469,40 xxxx 1) | 469,40 xxxx 1) |
| 24,00 | 6 | 20 | 6 | 3 | 351,50 24000 | 351,50 24000 | 469,40 24000 2) | 469,40 24000 1) | 469,40 24000 1) |
| 24,01 - 24,99 | 6 | 20 | 6 | 3 | 469,40 xxxx 1) | 469,40 xxxx 1) | 469,40 xxxx 2) | 469,40 xxxx 1) | 469,40 xxxx 1) |
| 25,00 | 6 | 20 | 6 | 3 | 351,50 25000 | 351,50 25000 | 469,40 25000 2) | 469,40 25000 1) | 469,40 25000 1) |
| 25,01 - 25,99 | 6 | 20 | 6 | 3 | 469,40 xxxx 1) | 469,40 xxxx 1) | 469,40 xxxx 2) | 469,40 xxxx 1) | 469,40 xxxx 1) |
| 26,00 | 6 | 20 | 6 | 3 | 365,00 26000 | 365,00 26000 | 469,40 26000 2) | 469,40 26000 1) | 469,40 26000 1) |
| 26,01 - 26,99 | 6 | 20 | 6 | 3 | 469,40 xxxx 1) | 469,40 xxxx 1) | 469,40 xxxx 2) | 469,40 xxxx 1) | 469,40 xxxx 1) |
| 27,00 - 27,99 | 6 | 25 | 6 | 4 | 488,80 xxxx 1) | 488,80 xxxx 1) | 488,80 xxxx 2) | 488,80 xxxx 1) | 488,80 xxxx 1) |
| 28,00 | 6 | 25 | 6 | 4 | 365,00 28000 | 365,00 28000 | 488,80 28000 2) | 488,80 28000 1) | 488,80 28000 1) |
| 28,01 - 29,99 | 6 | 25 | 6 | 4 | 488,80 xxxx 1) | 488,80 xxxx 1) | 488,80 xxxx 2) | 488,80 xxxx 1) | 488,80 xxxx 1) |
| 30,00 | 6 | 25 | 6 | 4 | 381,70 30000 | 381,70 30000 | 488,80 30000 2) | 488,80 30000 1) | 488,80 30000 1) |
| 30,01 - 31,79 | 6 | 25 | 6 | 4 | 488,80 xxxx 1) | 488,80 xxxx 1) | 488,80 xxxx 2) | 488,80 xxxx 1) | 488,80 xxxx 1) |
| 31,80 - 31,99 | 6 | 25 | 8 | 4 | 511,00 xxxx 1) | 511,00 xxxx 1) | 511,00 xxxx 2) | 511,00 xxxx 1) | 511,00 xxxx 1) |
| 32,00 | 6 | 25 | 8 | 4 | 395,20 32000 | 395,20 32000 | 511,00 32000 2) | 511,00 32000 1) | 511,00 32000 1) |
| 32,01 - 34,99 | 6 | 25 | 8 | 4 | 511,00 xxxx 1) | 511,00 xxxx 1) | 511,00 xxxx 2) | 511,00 xxxx 1) | 511,00 xxxx 1) |
| 35,00 | 6 | 25 | 8 | 5 | 413,90 35000 | 413,90 35000 | 559,00 35000 2) | 559,00 35000 1) | 559,00 35000 1) |
| 35,01 - 39,99 | 6 | 25 | 8 | 5 | 559,00 xxxx 1) | 559,00 xxxx 1) | 559,00 xxxx 2) | 559,00 xxxx 1) | 559,00 xxxx 1) |
| 40,00 | 6 | 25 | 8 | 5 | 437,80 40000 | 437,80 40000 | 559,00 40000 2) | 559,00 40000 1) | 559,00 40000 1) |
| 40,01 - 41,99 | 6 | 25 | 8 | 5 | 559,00 xxxx 1) | 559,00 xxxx 1) | 559,00 xxxx 2) | 559,00 xxxx 1) | 559,00 xxxx 1) |
| 42,00 | 6 | 30 | 8 | 6 | 437,80 42000 | 437,80 42000 | 607,20 42000 2) | 607,20 42000 1) | 607,20 42000 1) |
| 42,01 - 49,99 | 6 | 30 | 8 | 6 | 607,20 xxxx 1) | 607,20 xxxx 1) | 607,20 xxxx 2) | 607,20 xxxx 1) | 607,20 xxxx 1) |
| 50,00 | 6 | 30 | 8 | 6 | 448,20 50000 | 448,20 50000 | 607,20 50000 2) | 607,20 50000 1) | 607,20 50000 1) |
| 50,01 - 51,99 | 6 | 30 | 8 | 6 | 607,20 xxxx 1) | 607,20 xxxx 1) | 607,20 xxxx 2) | 607,20 xxxx 1) | 607,20 xxxx 1) |
| 52,00 - 53,99 | 8 | 35 | 10 | 7 | 673,40 xxxx 1) | 673,40 xxxx 1) | 673,40 xxxx 2) | 673,40 xxxx 1) | 673,40 xxxx 1) |
| 54,00 | 8 | 35 | 10 | 7 | 504,40 54000 | 504,40 54000 | 673,40 54000 2) | 673,40 54000 1) | 673,40 54000 1) |
| 54,01 - 65,00 | 8 | 35 | 10 | 7 | 673,40 xxxx 1) | 673,40 xxxx 1) | 673,40 xxxx 2) | 673,40 xxxx 1) | 673,40 xxxx 1) |
| Steel | | | | | ● | ● | | ● | ○ |
| Stainless steel | | | | | | ● | | | |
| Cast iron | | | | | ● | | | ● | |
| Non ferrous metals | | | | | ○ | | ● | | ● |
| Heat resistant alloys | | | | | | | | | |
| Hardened materials | | | | | | | | | |

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 20 working days / Minimum order 2 pieces

2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 25 working days / Minimum order 2 pieces

→ $v_c$ Page 51–53

For xxxx when ordering please specifiy the required Ø in H7 (eg Ø 24,12 H7 → Article no. 40 539 2412)!
All other diameters and tolerance classes are also possible (eg 18,5 $^{+0.025}$ or 18 N7)!

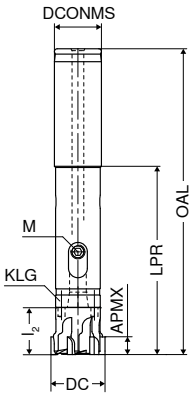
Assembly instructions can be found on → **Page 71**

# REAMAX TS – Holder

▲ KLG = Coupling Size

**Supply details:**

Complete holder incl. pull stud but without exchangeable head






| DC | KOMET no. | KLG | OAL | $l_2$ | LPR | APMX | DCONMS $_{h6}$ | M | NEW U3 Article no. 40 501 ... | | NEW U3 Article no. 40 503 ... | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | | | mm | mm | mm | mm | mm | Nm | EUR | | EUR | |
| **18,00 - 19,99** | 75A.40.13010 | 1 | 130 | 20 | 80 | 6 | 20 | 1,5 | 349,80 | **02099** | | |
| **18,00 - 19,99** | 75A.40.15010 | 1 | 190 | 20 | 140 | 6 | 20 | 1,5 | | | 362,80 | **02099** |
| **20,00 - 21,99** | 75A.40.13020 | 2 | 130 | 20 | 80 | 6 | 20 | 2,5 | 362,80 | **02299** | | |
| **20,00 - 21,99** | 75A.40.15020 | 2 | 190 | 20 | 140 | 6 | 20 | 2,5 | | | 378,40 | **02299** |
| **22,00 - 26,99** | 75A.40.13030 | 3 | 130 | 20 | 80 | 6 | 20 | 4 | 371,80 | **02799** | | |
| **22,00 - 26,99** | 75A.40.15030 | 3 | 210 | 20 | 160 | 6 | 20 | 4 | | | 399,20 | **02799** |
| **27,00 - 34,99** | 75A.40.13040 | 4 | 176 | 25 | 120 | 6 | 25 | 5 | 386,20 | **03599** | | |
| **27,00 - 34,99** | 75A.40.15040 | 4 | 236 | 25 | 180 | 6 | 25 | 5 | | | 410,80 | **03599** |
| **35,00 - 41,99** | 75A.40.13050 | 5 | 176 | 25 | 120 | 6 | 25 | 6 | 440,80 | **04299** | | |
| **35,00 - 41,99** | 75A.40.15050 | 5 | 256 | 25 | 200 | 6 | 25 | 6 | | | 440,80 | **04299** |
| **42,00 - 51,99** | 75A.40.13060 | 6 | 180 | 30 | 120 | 6 | 32 | 10 | 455,00 | **05299** | | |
| **42,00 - 51,99** | 75A.40.15060 | 6 | 280 | 30 | 220 | 6 | 30 | 10 | | | 455,00 | **05299** |
| **52,00 - 65,00** | 75A.40.13070 | 7 | 180 | 30 | 120 | 8 | 32 | 13 | 469,40 | **06599** | | |
| **52,00 - 65,00** | 75A.40.15070 | 7 | 280 | 30 | 220 | 8 | 30 | 13 | | | 469,40 | **06599** |

Do not heat shrink tools!

U3

Reamax TS pull stud

Y7

Clamping key – T

Y7

Key D

| Spare parts DC | Article no. 40 900 ... EUR | | | Article no. 80 397 ... EUR | | | Article no. 80 950 ... EUR | |
|---|---|---|---|---|---|---|---|---|
| 18,00 - 19,99 | 9,38 | **00100** | | | | T08 - IP | 6,28 | **039** |
| 20,00 - 21,99 | 9,38 | **00200** | SW2,5 | 3,97 | **025** | | | |
| 22,00 - 26,99 | 9,38 | **00300** | SW3 | 3,85 | **030** | | | |
| 27,00 - 34,99 | 9,38 | **00400** | SW3 | 3,85 | **030** | | | |
| 35,00 - 41,99 | 13,01 | **00500** | SW3 | 3,85 | **030** | | | |
| 42,00 - 51,99 | 13,01 | **00500** | SW4 | 3,91 | **040** | | | |
| 52,00 - 65,00 | 13,01 | **00700** | SW5 | 4,24 | **050** | | | |

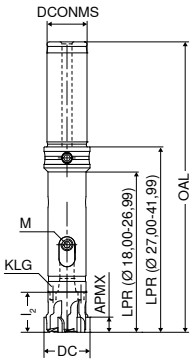
Assembly instructions can be found on → **Page 71**

# REAMAX TS – Holder

- KLG = Coupling size
- adjustment inside the machine
- alignable DAH Zero holder for correction of concentricity error
- DAH Zero holder is pre-loaded and set to a runout of < 0.005 mm

**Supply details:**
Complete holder incl. pull stud but without exchangeable head






DAH Zero

~A
≤ 3xD

DAH Zero

~A
≤ 5xD

| DC mm | KOMET no. | KLG | OAL mm | $l_2$ mm | LPR mm | APMX mm | DCONMS $_{h6}$ mm | M Nm | NEW U3 Article no. 40 504 ... EUR | | NEW U3 Article no. 40 506 ... EUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **18,00 - 19,99** | 75A.41.13010 | 1 | 145 | 20 | 80 | 6 | 20 | 1,5 | 469,40 | **02099** | | |
| **18,00 - 19,99** | 75A.41.15010 | 1 | 205 | 20 | 140 | 6 | 20 | 1,5 | | | 499,20 | **02099** |
| **20,00 - 21,99** | 75A.41.13020 | 2 | 145 | 20 | 80 | 6 | 20 | 2,5 | 474,60 | **02299** | | |
| **20,00 - 21,99** | 75A.41.15020 | 2 | 205 | 20 | 140 | 6 | 20 | 2,5 | | | 514,80 | **02299** |
| **22,00 - 26,99** | 75A.41.13030 | 3 | 145 | 20 | 80 | 6 | 20 | 4 | 486,20 | **02799** | | |
| **22,00 - 26,99** | 75A.41.15030 | 3 | 225 | 20 | 160 | 6 | 20 | 4 | | | 529,20 | **02799** |
| **27,00 - 34,99** | 75A.41.13040 | 4 | 145 | 25 | 120 | 6 | 25 | 5 | 511,00 | **03599** | | |
| **27,00 - 34,99** | 75A.41.15040 | 4 | 236 | 25 | 180 | 6 | 25 | 5 | | | 529,20 | **03599** |
| **35,00 - 41,99** | 75A.41.13050 | 5 | 176 | 25 | 120 | 6 | 25 | 6 | 621,40 | **04299** | | |
| **35,00 - 41,99** | 75A.41.15050 | 5 | 236 | 25 | 200 | 6 | 25 | 6 | | | 633,20 | **04299** |

Do not heat shrink tools!

U3

Reamax TS pull stud

Y7



Clamping key – T

Y7



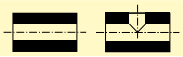
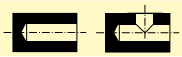
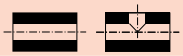
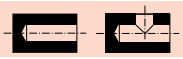
Key D

| Spare parts DC | Article no. 40 900 ... EUR | | | Article no. 80 397 ... EUR | | | Article no. 80 950 ... EUR | |
|---|---|---|---|---|---|---|---|---|
| 18,00 - 19,99 | 9,38 | **00100** | | | | T08 - IP | 6,28 | **039** |
| 20,00 - 21,99 | 9,38 | **00200** | SW2,5 | 3,97 | **025** | | | |
| 22,00 - 26,99 | 9,38 | **00300** | SW3 | 3,85 | **030** | | | |
| 27,00 - 34,99 | 9,38 | **00400** | SW3 | 3,85 | **030** | | | |
| 35,00 - 41,99 | 13,01 | **00500** | SW3 | 3,85 | **030** | | | |

Assembly instructions can be found on → **Page 71**

# REAMAX – Selection guide

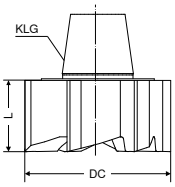
Ø 12,5–40 mm

| Material | KOMET no. | 640.93 | 640.65 | 640.27 | 640.93 | 640.65 | 640.71 |
|---|---|---|---|---|---|---|---|
| | Lead | ASG4000 | ASG0106 | ASG0706 | ASG3000 | ASG3000 | ASG3000 |
| | Lead angle | 25° | 45° | 45°/8° | 45° | 45° | 45° |
| | New grade / coating | DST | DBG-P | DBC | DST | DBG-P | TiN |
| | Old grade / coating | CWC10 | TiALN | DLC | CWC10 | TiALN | CWN10 |
| | Article no. | 40 536 ... | 40 551 ... | 40 570 ... | 40 525 ... | 40 560 ... | 40 505 ... |
| | Application | Through hole | Through hole-Blind hole | | | | |
| | Preferred type available | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Steel up to 1000 N/mm² |  | ● | | | ● | ○ | ○ |
| |  | | | | ● | ○ | ○ |
| |  | | | | | ● | ○ |
| |  | | | | | ● | ○ |
| Steel > 1000 N/mm² |  | | ● | | ● | | |
| |  | | ● | | | | |
| |  | | ● | | | | |
| |  | | ● | | | | |
| Stainless steel |  | | ● | | | | |
| |  | | ● | | | | |
| Grey cast iron / alloyed nodular cast iron (0.7661) and vermicular cast iron (5.2200) |  | | | | | ● | |
| |  | | | | | ● | |
| Nodular cast iron |  | ○ | | | ● | ○ | |
| |  | | | | ● | ○ | |
| |  | | | | | ● | |
| |  | | | | | ● | |
| Copper, brass, bronze |  | | | | ○ | | ● |
| |  | | | | ○ | | ● |
| |  | | | | | | ● |
| |  | | | | | | ● |
| Aluminium |  | | | ● | | | |
| |  | | | ● | | | |
| |  | | | ● | | | |
| |  | | | ● | | | |
| Tempered steel |  | | ● | | | | |
| |  | | ● | | | | |
| |  | | ● | | | | |
| |  | | ● | | | | |

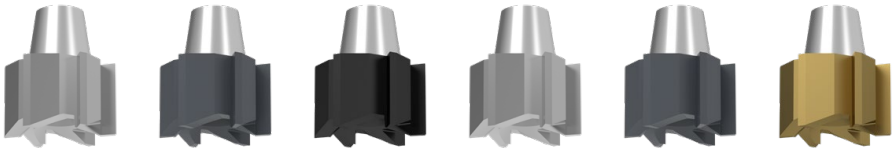
| Applications: | Main application | ● |
|---|---|---|
| | Additional range of application | ○ |

# REAMAX – Replaceable reaming heads

- up to tolerance zone IT 7 with absolute process safety, from the first hole
- precise repeatability < 2 µm
- maximum radial run-out accuracy thanks to precision ground taper location
- no Ø adjustment necessary
- optimised for application with minimum quantity lubrication (MMS)
- retraction from the hole at 3–4 times the cutting feed rate
- KLG = coupling size




| DST | DBG-P | DBC | DST | DBG-P | TiN |
|---|---|---|---|---|---|
| CWC10 | TiAlN | DLC | CWC10 | TiAlN | CWN10 |



640.93 ◁ 25° ASG4000 CERMET Through hole

640.65 ◁ 45° ASG0106 HM Through hole + Blind hole

640.27 ◁ 45° ASG0706 HM Through hole + Blind hole

640.93 ◁ 45° ASG3000 CERMET Through hole + Blind hole

640.65 ◁ 45° ASG3000 HM Through hole + Blind hole

640.71 ◁ 45° ASG3000 HM Through hole + Blind hole

| DC H7 | L | ZEFP | KLG | U3 Article no. 40 536 ... | | NEW U3 Article no. 40 551 ... | | NEW U3 Article no. 40 570 ... | | U3 Article no. 40 525 ... | | NEW U3 Article no. 40 560 ... | | U3 Article no. 40 505 ... | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | mm | | | EUR | | EUR | | EUR | | EUR | | EUR | | EUR | |
| 12,50 - 14,99 | 9 | 6 | 1 | 267,80 | xxxx [2] | 267,80 | xxxx [1] | 267,80 | xxxx [1] | 267,80 | xxxx [2] | 267,80 | xxxx [1] | 267,80 | xxxx [1] |
| 15,00 | 9 | 6 | 1 | 221,50 | 15000 [2] | 221,50 | 15000 [1] | 221,50 | 15000 [1] | 221,50 | 15000 [2] | 221,50 | 15000 | 221,50 | 150 |
| 15,01 - 15,99 | 9 | 6 | 1 | 267,80 | xxxx [2] | 267,80 | xxxx [1] | 267,80 | xxxx [1] | 267,80 | xxxx [2] | 267,80 | xxxx [1] | 267,80 | xxxx [1] |
| 16,00 | 9 | 6 | 2 | 254,80 | 160 | 254,80 | 16000 [1] | 254,80 | 16000 [1] | 254,80 | 160 | 254,80 | 16000 | 254,80 | 160 |
| 16,01 - 17,99 | 9 | 6 | 2 | 305,60 | xxxx [2] | 305,60 | xxxx [1] | 305,60 | xxxx [1] | 305,60 | xxxx [2] | 305,60 | xxxx [1] | 305,60 | xxxx [1] |
| 18,00 | 9 | 6 | 2 | 257,90 | 180 | 257,90 | 18000 [1] | 257,90 | 18000 [1] | 257,90 | 180 | 257,90 | 18000 | 257,90 | 180 |
| 18,01 - 19,99 | 9 | 6 | 2 | 305,60 | xxxx [2] | 305,60 | xxxx [1] | 305,60 | xxxx [1] | 305,60 | xxxx [2] | 305,60 | xxxx [1] | 305,60 | xxxx [1] |
| 20,00 | 9 | 6 | 2 | 263,10 | 200 | 263,10 | 20000 [1] | 263,10 | 20000 [1] | 263,10 | 200 | 263,10 | 20000 | 263,10 | 200 |
| 20,01 - 21,99 | 9 | 6 | 2 | 305,60 | xxxx [2] | 305,60 | xxxx [1] | 305,60 | xxxx [1] | 305,60 | xxxx [2] | 305,60 | xxxx [1] | 305,60 | xxxx [1] |
| 22,00 | 9 | 8 | 3 | 269,40 | 220 | 269,40 | 22000 [1] | 269,40 | 22000 [1] | 269,40 | 220 | 269,40 | 22000 | 269,40 | 220 |
| 22,01 - 23,99 | 9 | 8 | 3 | 330,20 | xxxx [2] | 330,20 | xxxx [1] | 330,20 | xxxx [1] | 330,20 | xxxx [2] | 330,20 | xxxx [1] | 330,20 | xxxx [1] |
| 24,00 | 9 | 8 | 3 | 278,70 | 24000 [2] | 278,70 | 24000 [1] | 278,70 | 24000 [1] | 278,70 | 24000 [2] | 278,70 | 24000 | 278,70 | 240 |
| 24,01 - 24,99 | 9 | 8 | 3 | 330,20 | xxxx [2] | 330,20 | xxxx [1] | 330,20 | xxxx [1] | 330,20 | xxxx [2] | 330,20 | xxxx [1] | 330,20 | xxxx [1] |
| 25,00 | 9 | 8 | 3 | 290,20 | 250 | 290,20 | 25000 [1] | 290,20 | 25000 [1] | 290,20 | 250 | 290,20 | 25000 | 290,20 | 250 |
| 25,01 - 25,99 | 9 | 8 | 3 | 330,20 | xxxx [2] | 330,20 | xxxx [1] | 330,20 | xxxx [1] | 330,20 | xxxx [2] | 330,20 | xxxx [1] | 330,20 | xxxx [1] |
| 26,00 - 27,99 | 9 | 8 | 4 | 378,60 | xxxx [2] | 378,40 | xxxx [1] | 378,40 | xxxx [1] | 378,60 | xxxx [2] | 378,40 | xxxx [1] | 378,60 | xxxx [1] |
| 28,00 | 9 | 8 | 4 | 300,60 | 280 | 300,60 | 28000 [1] | 300,60 | 28000 [1] | 300,60 | 280 | 300,60 | 28000 | 300,60 | 280 |
| 28,01 - 29,99 | 9 | 8 | 4 | 378,40 | xxxx [2] | 378,40 | xxxx [1] | 378,40 | xxxx [1] | 378,40 | xxxx [2] | 378,40 | xxxx [1] | 378,40 | xxxx [1] |
| 30,00 | 9 | 8 | 4 | 315,10 | 300 | 315,10 | 30000 [1] | 315,10 | 30000 [1] | 315,10 | 300 | 315,10 | 30000 | 315,10 | 300 |
| 30,01 - 32,00 | 9 | 8 | 4 | 378,40 | xxxx [2] | 378,40 | xxxx [1] | 378,40 | xxxx [1] | 378,40 | xxxx [2] | 378,40 | xxxx [1] | 378,40 | xxxx [1] |
| 32,01 - 39,99 | 9 | 8 | 5 | 429,00 | xxxx [2] | 429,00 | xxxx [1] | 429,00 | xxxx [1] | 429,00 | xxxx [2] | 429,50 | xxxx [1] | 429,00 | xxxx [1] |
| 40,00 | 9 | 8 | 5 | 333,80 | 400 | 333,80 | 40000 [1] | 333,80 | 40000 [1] | 333,80 | 400 | 333,80 | 40000 | 333,80 | 400 |

| | | | | | |
|---|---|---|---|---|---|
| Steel | ● | ● | | ● | ● | ○ |
| Stainless steel | | ● | | | | |
| Cast iron | ○ | | | ● | ● | |
| Non ferrous metals | | | ● | ○ | | ● |
| Heat resistant alloys | | | | | | |
| Hardened materials | | ● | | | | |

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 25 working days / Minimum order 2 pieces

2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 20 working days / Minimum order 2 pieces

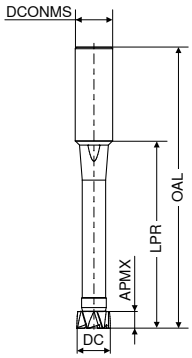
→ $v_c$ Page 55–57

For xxxx when ordering please specifiy the required Ø in H7 (eg Ø 15.12 H7 → Article no. 40 525 1512)!
All other diameters and tolerance classes are also possible (eg 18.5 $^{+0.025}$ or 18 N7)!

# REAMAX – Holder

▲ KLG = Coupling size

**Supply details:**
Tool holder fitted with clamp and hexagonal key, but without replaceable head





| DC mm | KOMET no. | KLG | OAL mm | LPR mm | APMX mm | DCONMS h6 mm | M Nm | U3 Article no. 40 590 ... EUR | | U3 Article no. 40 591 ... EUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **12,50 - 15,99** | 640.01.001 | 1 | 107 | 59 | 9 | 16 | 4 - 5 | 345,80 | **016** | | |
| **12,50 - 15,99** | 640.81.001 | 1 | 137 | 89 | 9 | 16 | 4 - 5 | | | 345,80 | **016** |
| **16,00 - 21,99** | 640.01.002 | 2 | 119 | 69 | 9 | 20 | 6 - 7 | 361,40 | **022** | | |
| **16,00 - 21,99** | 640.81.002 | 2 | 169 | 119 | 9 | 20 | 6 - 7 | | | 361,40 | **022** |
| **22,00 - 25,99** | 640.01.003 | 3 | 140 | 84 | 9 | 25 | 10 - 12 | 384,80 | **026** | | |
| **22,00 - 25,99** | 640.81.003 | 3 | 196 | 140 | 9 | 25 | 10 - 12 | | | 384,80 | **026** |
| **26,00 - 32,00** | 640.01.005 | 4 | 160 | 104 | 9 | 25 | 18 - 20 | 397,80 | **032** | | |
| **26,00 - 32,00** | 640.81.005 | 4 | 226 | 170 | 9 | 25 | 18 - 20 | | | 397,80 | **032** |
| **32,01 - 40,00** | 640.01.006 | 5 | 199 | 139 | 9 | 32 | 26 - 28 | 455,00 | **040** | | |
| **32,01 - 40,00** | 640.81.006 | 5 | 270 | 210 | 9 | 32 | 26 - 28 | | | 455,00 | **040** |

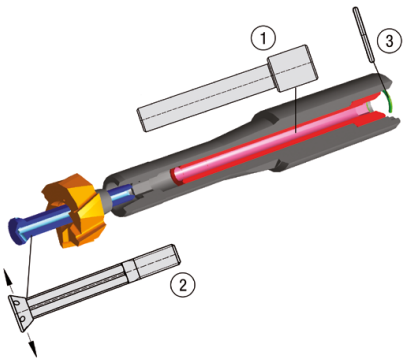
Do not heat shrink tools!





| Spare parts DC | DCONMS h6 | U3 Article no. 40 950 ... EUR | | U3 Article no. 40 950 ... EUR | | U3 Article no. 40 950 ... EUR | | U3 Article no. 40 950 ... EUR | |
|---|---|---|---|---|---|---|---|---|---|
| 12,50 - 15,99 | 16 | | | 47,11 | **101** | 119,60 | **001** | 1,04 | **301** |
| 12,50 - 15,99 | 16 | 46,80 | **107** | | | 119,60 | **001** | 1,04 | **301** |
| 16,00 - 21,99 | 20 | 46,80 | **108** | | | 119,60 | **002** | 1,04 | **302** |
| 16,00 - 21,99 | 20 | | | 47,11 | **102** | 119,60 | **002** | 1,04 | **302** |
| 22,00 - 25,99 | 25 | | | 55,12 | **103** | 124,80 | **003** | 1,04 | **303** |
| 22,00 - 25,99 | 25 | 55,12 | **109** | | | 124,80 | **003** | 1,04 | **303** |
| 26,00 - 32,00 | 25 | | | 63,44 | **104** | 131,40 | **004** | 1,04 | **303** |
| 26,00 - 32,00 | 25 | 63,44 | **110** | | | 131,40 | **004** | 1,04 | **303** |
| 32,01 - 40,00 | 32 | 71,76 | **112** | | | 141,80 | **005** | 1,04 | **304** |
| 32,01 - 40,00 | 32 | | | 71,76 | **106** | 141,80 | **005** | 1,04 | **304** |

1. Draw bolt
2. Draw bar
3. Circlip



# MultiChange Programme Overview

The highly stable „MultiChange“ exchangeable head system enables an extremely fast tool change. Designed to be durable and for a very high radial run-out accuracy, this exchangeable head system is probably the most stable and precise exchangeable head system on the market. The following chapters contain suitable exchangeable heads for almost every application.

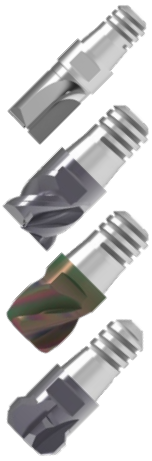
## Solid carbide drilling

- Solid carbide NC Spot Drill
  ◁ 90°, 120°, 142° / Ø 8, 10, 12, 16, 20 mm / ZEFP* 2

→ **Chapter 2, Solid carbide drilling**

*ZEFP = Number of teeth

## Solid carbide milling cutters



- PCD shoulder mills
  Ø 8, 10, 12, 16, 20 mm / ZEFP* 2
- Solid carbide shoulder mills
  Type N, PCR-UNI, PCR-ALU / Ø 8, 10, 12, 16, 20 mm / ZEFP 3+4
- Solid carbide rough and finish milling cutters
  Ø 8, 10, 12, 16, 20 mm / ZEFP* 4–6
- Solid carbide finish milling cutters
  Ø 8, 10, 12, 16, 20 mm / ZEFP* 6
- Solid carbide high-feed cutters
  Ø 8, 10, 12, 16, 20 mm / ZEFP* 6
- Solid carbide ball-nosed end mills
  Ø 10, 12, 16, 20 mm / ZEFP* 4
- Solid carbide torus bull nose milling cutters
  Ø 8, 10, 12, 16, 20 mm / ZEFP* 3+4
- Solid carbide quarter round cutter
  Ø 8, 10, 12, 16, 20 mm
- Solid carbide deburring cutters
  Ø 10, 12, 16, 20 mm / ZEFP* 4+6

→ **Chapter 14, Solid carbide milling cutters**

*ZEFP = Number of teeth

## Tool holder

- Steel holder extra short
  Cylindrical / Tapered 87°
  Length 60–90 mm
  for KLG 8, 10, 12, 16, 20 mm

- Short holder steel/Solid carbide
  Cylindrical
  Length 85–120 mm
  for KLG 8, 10, 12, 16, 20 mm

- Holder steel /Solid carbide, short
  87° Taper
  Length 85–120 mm
  for KLG 8, 10, 12, 16, 20 mm

- Solid carbide holder, medium
  Cylindrical / Tapered 87°
  Length 110–150 mm
  for KLG 8, 10, 12, 16, 20 mm

- Holder steel/Solid carbide, long
  Cylindrical
  Length 150–200 mm
  for KLG 8, 10, 12, 16, 20 mm

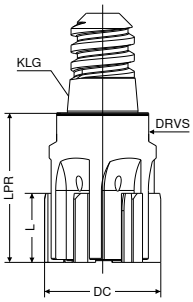
- Holder steel/Solid carbide, long
  87° Taper
  Length 150–200 mm
  for KLG 8, 10, 12, 16, 20 mm

- Steel/Solid carbide holder, extra long
  Cylindrical
  Length 200–250 mm
  for Ø 16 and 20 mm

→ **Chapter 17, Accessories**

# MultiChange – Reaming head, for thro' holes

- ▲ to tolerance zone IT 7 with absolute process security – from the first hole
- ▲ high-speed reaming heads
- ▲ irregular pitch for highest concentricity
- ▲ repeatability ≤ 5 µm
- ▲ KLG = coupling size




| | CWC10 | TiAlN | TiAlN | K10 | PDC |
|---|---|---|---|---|---|
| |  |  |  |  |  |
| | Left Hand Helix ◁ 30° CERMET Through hole | Left Hand Helix ◁ 30° HM Through hole | straight flute ◁ 45° HM Through hole | straight flute ◁ 45° Solid carbide Through hole | straight flute ◁ 45° PDC Through hole |
| | U3 | U3 | U3 | U3 | U3 |
| DC H7 mm | KLG | L mm | LPR mm | ZEFP | DRVS mm | TQX Nm | Article no. 40 210 ... EUR | | Article no. 40 220 ... EUR | | Article no. 40 230 ... EUR | | Article no. 40 240 ... EUR | | Article no. 40 245 ... EUR | |
| 8,00 | 06 | 8 | 18 | 4 | 6 | 5,0 | 170,90 | 080 | 170,90 | 080 | 170,90 | 080 | 154,30 | 080 1) | 412,30 | 080 1) |
| 8,01 - 9,70 | 06 | 8 | 18 | 4 | 6 | 5,0 | 187,30 | xxxx 1) | 186,30 | xxxx 1) | 186,30 | xxxx 1) | 168,60 | xxxx 1) | 463,10 | xxxx 1) |
| 9,71 - 9,99 | 06 | 8 | 18 | 6 | 8 | 5,0 | 210,50 | xxxx 1) | 210,50 | xxxx 1) | 210,50 | xxxx 1) | 189,60 | xxxx 1) | 504,40 | xxxx 1) |
| 10,00 | 06 | 8 | 18 | 6 | 8 | 5,0 | 195,10 | 100 | 195,10 | 100 | 195,10 | 100 | 174,10 | 100 1) | 455,70 | 100 1) |
| 10,01 - 10,70 | 06 | 8 | 18 | 6 | 8 | 5,0 | 210,50 | xxxx 1) | 210,50 | xxxx 1) | 210,50 | xxxx 1) | 189,60 | xxxx 1) | 504,40 | xxxx 1) |
| 10,71 - 11,99 | 08 | 8 | 20 | 6 | 8 | 12,5 | 210,50 | xxxx 1) | 210,50 | xxxx 1) | 210,50 | xxxx 1) | 189,60 | xxxx 1) | 522,50 | xxxx 1) |
| 12,00 | 08 | 8 | 20 | 6 | 8 | 12,5 | 195,10 | 120 | 195,10 | 120 | 195,10 | 120 | 174,10 | 120 1) | 463,10 | 120 1) |
| 12,01 - 12,70 | 08 | 8 | 20 | 6 | 8 | 12,5 | 210,50 | xxxx 1) | 210,50 | xxxx 1) | 210,50 | xxxx 1) | 189,60 | xxxx 1) | 522,50 | xxxx 1) |
| 12,71 - 13,99 | 10 | 8 | 22 | 6 | 10 | 15,0 | 226,00 | xxxx 1) | 224,90 | xxxx 1) | 224,90 | xxxx 1) | 201,80 | xxxx 1) | 522,50 | xxxx 1) |
| 14,00 | 10 | 8 | 22 | 6 | 10 | 15,0 | 206,10 | 140 | 206,10 | 140 | 206,10 | 140 | 186,30 | 140 1) | 463,10 | 140 1) |
| 14,01 - 15,99 | 10 | 8 | 22 | 6 | 10 | 15,0 | 226,00 | xxxx 1) | 224,90 | xxxx 1) | 224,90 | xxxx 1) | 201,80 | xxxx 1) | 522,50 | xxxx 1) |
| 16,00 | 10 | 8 | 22 | 6 | 10 | 15,0 | 206,10 | 160 | 206,10 | 160 | 206,10 | 160 | 186,30 | 160 1) | 488,60 | 160 1) |
| 16,01 - 16,20 | 10 | 8 | 22 | 6 | 10 | 15,0 | 226,00 | xxxx 1) | 224,90 | xxxx 1) | 224,90 | xxxx 1) | 201,80 | xxxx 1) | 548,90 | xxxx 1) |
| 16,21 - 17,20 | 10 | 8 | 22 | 6 | 13 | 15,0 | 226,00 | xxxx 1) | 224,90 | xxxx 1) | 224,90 | xxxx 1) | 201,80 | xxxx 1) | 548,90 | xxxx 1) |
| 17,21 - 17,99 | 12 | 12 | 26 | 6 | 13 | 20,0 | 234,80 | xxxx 1) | 234,80 | xxxx 1) | 234,80 | xxxx 1) | 210,50 | xxxx 1) | 554,20 | xxxx 1) |
| 18,00 | 12 | 12 | 26 | 6 | 13 | 20,0 | 217,10 | 180 | 217,10 | 180 | 217,10 | 180 | 195,10 | 180 1) | 492,80 | 180 1) |
| 18,01 - 19,20 | 12 | 12 | 26 | 6 | 13 | 20,0 | 234,80 | xxxx 1) | 234,80 | xxxx 1) | 234,80 | xxxx 1) | 210,50 | xxxx 1) | 554,20 | xxxx 1) |
| 19,21 - 19,99 | 12 | 12 | 26 | 6 | 16 | 20,0 | 234,80 | xxxx 1) | 234,80 | xxxx 1) | 234,80 | xxxx 1) | 210,50 | xxxx 1) | 554,20 | xxxx 1) |
| 20,00 | 12 | 12 | 26 | 6 | 16 | 20,0 | 217,10 | 200 | 217,10 | 200 | 217,10 | 200 | 195,10 | 200 1) | 492,80 | 200 1) |
| 20,01 - 20,20 | 12 | 12 | 26 | 6 | 16 | 20,0 | 234,80 | xxxx 1) | 234,80 | xxxx 1) | 234,80 | xxxx 1) | 210,50 | xxxx 1) | 554,20 | xxxx 1) |
| 20,21 - 21,20 | 12 | 12 | 26 | 6 | 16 | 20,0 | 245,80 | xxxx 1) | 245,80 | xxxx 1) | 245,80 | xxxx 1) | 220,50 | xxxx 1) | 554,20 | xxxx 1) |
| 21,21 - 21,99 | 16 | 12 | 26 | 6 | 16 | 25,0 | 245,80 | xxxx 1) | 245,80 | xxxx 1) | 245,80 | xxxx 1) | 220,50 | xxxx 1) | 563,80 | xxxx 1) |
| 22,00 | 16 | 12 | 26 | 6 | 16 | 25,0 | 227,00 | 220 | 227,00 | 220 | 227,00 | 220 | 201,80 | 220 1) | 501,30 | 220 1) |
| 22,01 - 23,99 | 16 | 12 | 26 | 6 | 16 | 25,0 | 245,80 | xxxx 1) | 245,80 | xxxx 1) | 245,80 | xxxx 1) | 220,50 | xxxx 1) | 563,80 | xxxx 1) |
| 24,00 | 16 | 12 | 26 | 6 | 16 | 25,0 | 227,00 | 240 | 227,00 | 240 | 227,00 | 240 | 201,80 | 240 1) | 501,30 | 240 1) |
| 24,01 - 24,20 | 16 | 12 | 26 | 6 | 16 | 25,0 | 245,80 | xxxx 1) | 245,80 | xxxx 1) | 245,80 | xxxx 1) | 220,50 | xxxx 1) | 563,80 | xxxx 1) |
| 24,21 - 24,99 | 16 | 12 | 26 | 6 | 19 | 25,0 | 263,30 | xxxx 1) | 263,30 | xxxx 1) | 263,30 | xxxx 1) | 235,90 | xxxx 1) | 580,70 | xxxx 1) |
| 25,00 | 16 | 12 | 26 | 6 | 19 | 25,0 | 240,20 | 250 | 240,20 | 250 | 240,20 | 250 | 218,30 | 250 1) | 518,20 | 250 1) |
| 25,01 - 25,99 | 16 | 12 | 26 | 6 | 19 | 25,0 | 263,30 | xxxx 1) | 263,30 | xxxx 1) | 263,30 | xxxx 1) | 235,90 | xxxx 1) | 580,70 | xxxx 1) |
| 26,00 | 16 | 12 | 26 | 6 | 19 | 25,0 | 240,20 | 260 | 240,20 | 260 | 240,20 | 260 | 218,30 | 260 1) | 518,20 | 260 1) |
| 26,01 - 26,20 | 16 | 12 | 26 | 6 | 19 | 25,0 | 263,30 | xxxx 1) | 263,30 | xxxx 1) | 263,30 | xxxx 1) | 235,90 | xxxx 1) | 580,70 | xxxx 1) |
| 26,21 - 27,99 | 16 | 12 | 26 | 6 | 21 | 25,0 | 263,30 | xxxx 1) | 263,30 | xxxx 1) | 263,30 | xxxx 1) | 235,90 | xxxx 1) | 580,70 | xxxx 1) |
| 28,00 | 16 | 12 | 26 | 6 | 21 | 25,0 | 240,20 | 280 | 240,20 | 280 | 240,20 | 280 | 218,30 | 280 1) | 518,20 | 280 1) |
| 28,01 - 28,20 | 16 | 12 | 26 | 6 | 21 | 25,0 | 263,30 | xxxx 1) | 263,30 | xxxx 1) | 263,30 | xxxx 1) | 235,90 | xxxx 1) | 580,70 | xxxx 1) |
| 28,21 - 29,20 | 16 | 12 | 26 | 6 | 24 | 25,0 | 291,00 | xxxx 1) | 289,90 | xxxx 1) | 289,90 | xxxx 1) | 262,30 | xxxx 1) | 580,70 | xxxx 1) |
| 29,21 - 29,99 | 16 | 12 | 26 | 8 | 24 | 25,0 | 291,00 | xxxx 1) | 289,90 | xxxx 1) | 289,90 | xxxx 1) | 262,30 | xxxx 1) | 614,60 | xxxx 1) |
| 30,00 | 16 | 12 | 26 | 8 | 24 | 25,0 | 266,80 | 300 | 266,80 | 300 | 266,80 | 300 | 240,20 | 300 1) | 548,90 | 300 1) |
| 30,01 - 30,20 | 16 | 12 | 26 | 8 | 24 | 25,0 | 291,00 | xxxx 1) | 289,90 | xxxx 1) | 289,90 | xxxx 1) | 262,30 | xxxx 1) | 614,60 | xxxx 1) |

| | | | | | |
|---|---|---|---|---|---|
| Steel | ● | | | | |
| Stainless steel | | ● | | | |
| Cast iron | | | ● | | |
| Non ferrous metals | | ○ | | ● | ● |
| Heat resistant alloys | | ● | | | |
| Hardened materials | | | | | |

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 23 working days / Minimum order 2 pieces

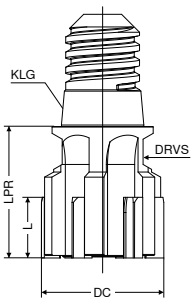
→ $v_c$ Page 58+59

For xxxx please indicate in the order the required diameter to H7 (e.g Ø 10.89 H7 → article no. 40 230 1089)!
All other diameters and tolerances are also possible (e.g. 8.5 $^{+0.025}$ or 11 N7).

Holders and accessories can be found in → **Chapter 17, Accessories**.

# MultiChange – Reaming head, for blind holes

- ▲ to tolerance zone IT 7 with absolute process security – from the first hole
- ▲ hgh-speed reaming heads
- ▲ irregular pitch for highest concentricity
- ▲ repeatability ≤ 5 µm
- ▲ KLG = coupling size




| CWC10 | TiAlN | TiAlN | K10 | PDC |
|---|---|---|---|---|
|  |  |  |  |  |
| straight flute<br>◁ 60°<br>CERMET<br>Blind hole | straight flute<br>◁ 60°<br>HM<br>Blind hole | straight flute<br>◁ 60°<br>HM<br>Blind hole | straight flute<br>◁ 60°<br>Solid carbide<br>Blind hole | straight flute<br>◁ 75°<br>PDC<br>Blind hole |
| U3 | U3 | U3 | U3 | U3 |
| Article no. 40 211 ... | Article no. 40 221 ... | Article no. 40 231 ... | Article no. 40 241 ... | Article no. 40 246 ... |

| DC H7 mm | KLG | L mm | LPR mm | ZEFP | DRVS mm | TQX Nm | EUR | | EUR | | EUR | | EUR | | EUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **12,20 - 12,70** | 06 | 8 | 20 | 6 | 6 | 5,0 | 210,50 | xxxx 1) | 210,50 | xxxx 1) | 210,50 | xxxx 1) | 189,60 | xxxx 1) | 522,50 | xxxx 1) |
| **12,71 - 13,99** | 06 | 8 | 22 | 6 | 6 | 5,0 | 226,00 | xxxx 1) | 224,90 | xxxx 1) | 224,90 | xxxx 1) | 201,80 | xxxx 1) | 522,50 | xxxx 1) |
| **14,00** | 06 | 8 | 22 | 6 | 6 | 5,0 | 206,10 | **140** | 206,10 | **140** | 206,10 | **140** | 186,30 | **140** 1) | 463,10 | **140** 1) |
| **14,01 - 14,20** | 06 | 8 | 22 | 6 | 6 | 5,0 | 226,00 | xxxx 1) | 224,90 | xxxx 1) | 224,90 | xxxx 1) | 201,80 | xxxx 1) | 522,50 | xxxx 1) |
| **14,21 - 15,99** | 08 | 8 | 22 | 6 | 8 | 12,5 | 226,00 | xxxx 1) | 218,30 | xxxx 1) | 218,30 | xxxx 1) | 195,10 | xxxx 1) | 548,90 | xxxx 1) |
| **16,00** | 08 | 8 | 22 | 6 | 8 | 12,5 | 206,10 | **160** | 206,10 | **160** | 206,10 | **160** | 186,30 | **160** 1) | 488,60 | **160** 1) |
| **16,01 - 16,20** | 08 | 8 | 22 | 6 | 8 | 12,5 | 226,00 | xxxx 1) | 224,90 | xxxx 1) | 224,90 | xxxx 1) | 201,80 | xxxx 1) | 548,90 | xxxx 1) |
| **16,21 - 17,20** | 10 | 8 | 22 | 6 | 10 | 15,0 | 234,80 | xxxx 1) | 234,80 | xxxx 1) | 234,80 | xxxx 1) | 210,50 | xxxx 1) | 552,10 | xxxx 1) |
| **17,21 - 17,99** | 10 | 12 | 26 | 6 | 10 | 15,0 | 234,80 | xxxx 1) | 234,80 | xxxx 1) | 234,80 | xxxx 1) | 210,50 | xxxx 1) | 554,20 | xxxx 1) |
| **18,00** | 10 | 12 | 26 | 6 | 10 | 15,0 | 217,10 | **180** | 217,10 | **180** | 217,10 | **180** | 195,10 | **180** 1) | 492,80 | **180** 1) |
| **18,01 - 19,99** | 10 | 12 | 26 | 6 | 10 | 15,0 | 234,80 | xxxx 1) | 234,80 | xxxx 1) | 234,80 | xxxx 1) | 210,50 | xxxx 1) | 554,20 | xxxx 1) |
| **20,00** | 10 | 12 | 26 | 6 | 10 | 15,0 | 217,10 | **200** | 217,10 | **200** | 217,10 | **200** | 195,10 | **200** 1) | 492,80 | **200** 1) |
| **20,01 - 20,20** | 10 | 12 | 26 | 6 | 10 | 15,0 | 234,80 | xxxx 1) | 234,80 | xxxx 1) | 234,80 | xxxx 1) | 210,50 | xxxx 1) | 554,20 | xxxx 1) |
| **20,21 - 21,99** | 12 | 12 | 26 | 6 | 13 | 20,0 | 245,80 | xxxx 1) | 245,80 | xxxx 1) | 245,80 | xxxx 1) | 220,50 | xxxx 1) | 554,20 | xxxx 1) |
| **22,00** | 12 | 12 | 26 | 6 | 13 | 20,0 | 227,00 | **220** | 227,00 | **220** | 227,00 | **220** | 201,80 | **220** 1) | 501,30 | **220** 1) |
| **22,01 - 23,99** | 12 | 12 | 26 | 6 | 13 | 20,0 | 245,80 | xxxx 1) | 245,80 | xxxx 1) | 245,80 | xxxx 1) | 220,50 | xxxx 1) | 563,80 | xxxx 1) |
| **24,00** | 12 | 12 | 26 | 6 | 13 | 20,0 | 227,00 | **240** | 227,00 | **240** | 227,00 | **240** | 201,80 | **240** 1) | 501,30 | **240** 1) |
| **24,01 - 24,20** | 12 | 12 | 26 | 6 | 13 | 20,0 | 245,80 | xxxx 1) | 245,80 | xxxx 1) | 245,80 | xxxx 1) | 220,50 | xxxx 1) | 563,80 | xxxx 1) |
| **24,21 - 24,99** | 16 | 12 | 26 | 6 | 16 | 25,0 | 263,30 | xxxx 1) | 263,30 | xxxx 1) | 263,30 | xxxx 1) | 235,90 | xxxx 1) | 563,80 | xxxx 1) |
| **25,00** | 16 | 12 | 26 | 6 | 16 | 25,0 | 240,20 | **250** | 240,20 | **250** | 240,20 | **250** | 218,30 | **250** 1) | 518,20 | **250** 1) |
| **25,01 - 25,99** | 16 | 12 | 26 | 6 | 16 | 25,0 | 263,30 | xxxx 1) | 263,30 | xxxx 1) | 263,30 | xxxx 1) | 235,90 | xxxx 1) | 563,80 | xxxx 1) |
| **26,00** | 16 | 12 | 26 | 6 | 16 | 25,0 | 240,20 | **260** | 240,20 | **260** | 240,20 | **260** | 218,30 | **260** 1) | 518,20 | **260** 1) |
| **26,01 - 27,99** | 16 | 12 | 26 | 6 | 16 | 25,0 | 263,30 | xxxx 1) | 263,30 | xxxx 1) | 263,30 | xxxx 1) | 235,90 | xxxx 1) | 580,70 | xxxx 1) |
| **28,00** | 16 | 12 | 26 | 6 | 16 | 25,0 | 240,20 | **280** | 240,20 | **280** | 240,20 | **280** | 218,30 | **280** 1) | 518,20 | **280** 1) |
| **28,01 - 28,20** | 16 | 12 | 26 | 6 | 16 | 25,0 | 263,30 | xxxx 1) | 263,30 | xxxx 1) | 263,30 | xxxx 1) | 235,90 | xxxx 1) | 580,70 | xxxx 1) |
| **28,21 - 29,20** | 16 | 12 | 26 | 6 | 16 | 25,0 | 291,00 | xxxx 1) | 289,90 | xxxx 1) | 289,90 | xxxx 1) | 262,30 | xxxx 1) | 580,70 | xxxx 1) |
| **29,21 - 29,99** | 16 | 12 | 26 | 8 | 16 | 25,0 | 291,00 | xxxx 1) | 281,10 | xxxx 1) | 281,10 | xxxx 1) | 252,40 | xxxx 1) | 614,60 | xxxx 1) |
| **30,00** | 16 | 12 | 26 | 8 | 16 | 25,0 | 266,80 | **300** | 266,80 | **300** | 266,80 | **300** | 240,20 | **300** 1) | 548,90 | **300** 1) |
| **30,01 - 30,20** | 16 | 12 | 26 | 8 | 16 | 25,0 | 291,00 | xxxx 1) | 289,90 | xxxx 1) | 289,90 | xxxx 1) | 262,30 | xxxx 1) | 614,60 | xxxx 1) |

| | | | | | |
|---|---|---|---|---|---|
| Steel | ● | | | | |
| Stainless steel | | ● | | | |
| Cast iron | | | ● | | |
| Non ferrous metals | | ○ | | ● | ● |
| Heat resistant alloys | | ● | | | |
| Hardened materials | | | | | |

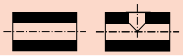
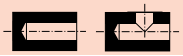
1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 23 working days / Minimum order 2 pieces

→ $v_c$ Page 58+59

For xxxx please indicate in the order the required diameter to H7 (e.g Ø 12.89 H7 – article no. 40 231 1289)!
All other diameters and tolerances are also possible (e.g. 18.5 $^{+0.025}$ or 15 N7).

Holders and accessories can be found in → **Chapter 17, Accessories**.

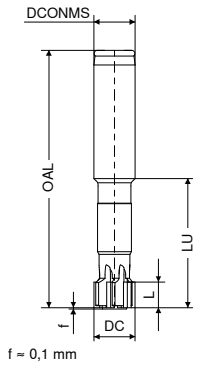
# Monomax – Selection guide

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Ø 5,60–25,89 | **KOMET no. (3xD)** | 56J.93 | 56J.65 | 56H.65 | 56J.17 | 56H.17 | 56J.93 | 56H.65 | 56J.71 |
| | **KOMET no. (5xD)** | 56R.93 | 56R.65 | 56Q.65 | 56R.17 | 56Q.17 | 56R.93 | 56Q.65 | 56R.71 |
| | **Lead** | ASG4000 | ASG0106 | ASG0106 | ASG0706 | ASG0706 | ASG3000 | ASG3000 | ASG3000 |
| | **Lead angle** | 25° | 45° | 45° | 45°/8° | 45°/8° | 45° | 45° | 45° |
| | **New grade / coating** | DST | DBG-P | DBG-P | DBC | DBC | DST | DBG-P | TIN |
| | **Old grade / coating** | CWC10 | TiALN | TiALN | DLC | DLC | CWC10 | TiALN | CWN10 |
| | **Article no. (3xD)** | 40 635 ... | 40 652 ... | 40 644 ... | 40 648 ... | 40 640 ... | 40 625 ... | 40 657 ... | 40 605 ... |
| | **Article no. (5xD)** | 40 636 ... | 40 653 ... | 40 645 ... | 40 649 ... | 40 641 ... | 40 626 ... | 40 665 ... | 40 606 ... |
| | **Application** | Through hole | Through hole | Blind hole | Through hole | Blind hole | Through hole | Blind hole | Through hole |
| **Material** | **Preferred type available** | ✓ | ✓ | | | | ✓ | | ✓ |
| **Steel up to 900 N/mm²** |  | ● | | | | | ● | | ○ |
| |  | | | | | | | ● | |
| |  | | | | | | | | ○ |
| |  | | | | | | | ● | |
| **Steel > 900 N/mm²** |  | | ● | | | | | | |
| |  | | ○ | ● | | | | | |
| |  | | ● | | | | | | |
| |  | | ○ | ● | | | | | |
| **Stainless steel** |  | | ● | | | | | | |
| |  | | ○ | ● | | | | | |
| |  | | ● | | | | | | |
| |  | | ○ | ● | | | | | |
| **Grey cast iron / alloyed nodular cast iron (0.7661) and vermicular cast iron (5.2200)** |  | | | | | | | ○ | ○ |
| |  | | | | | | | ● | |
| **Nodular cast iron** |  | ● | | | | | ● | ○ | ○ |
| |  | | | | | | ○ | ● | |
| |  | | | | | | | ○ | ○ |
| |  | | | | | | | ● | |
| **Copper, brass, bronze** |  | | | | | | ○ | | ● |
| |  | | | | | | | | |
| |  | | | | | | | | ● |
| |  | | | | | | | | |
| **Aluminium** |  | | | | ● | | | | |
| |  | | | | ○ | ● | | | |
| |  | | | | ● | | | | |
| |  | | | | ○ | ● | | | |

| **Applications:** | Main application | ● |
|---|---|---|
| | Additional range of application | ○ |

# Monomax – High-speed reamers, short

- adjustable for smallest bore tolerances
- wear compensation within the tolerance zone
- retraction from the hole at 3–4 times the cutting feed rate
- up to tolerance class IT 5 with absolute process security, from the first hole




f ≈ 0,1 mm

| DST | DBC | DBG-P | DST | TiN |
|---|---|---|---|---|
| CWC10 | DLC | TiAlN | CWC10 | CWN10 |

| 56J.93 | 56J.17 | 56J.65 | 56J.93 | 56J.71 |
|---|---|---|---|---|
| ≤ 3xD | ≤ 3xD | ≤ 3xD | ≤ 3xD | ≤ 3xD |
| ◁ 45° | ◁ 45/8° | ◁ 45° | ◁ 25° | ◁ 45° |
| ASG3000 | ASG0706 | ASG0106 | ASG4000 | ASG3000 |
| CERMET | HM | HM | CERMET | HM |
| Through hole | Through hole | Through hole | Through hole | Through hole |

| DC H7 | OAL | LU | L | DCONMS h6 | ZEFP | U3 Article no. 40 625 ... | | NEW U3 Article no. 40 648 ... | | NEW U3 Article no. 40 652 ... | | U3 Article no. 40 635 ... | | U3 Article no. 40 605 ... | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | mm | | EUR | | EUR | | EUR | | EUR | | EUR | |
| 5,60 - 5,99 | 85 | 40 | 10 | 12 | 4 | 369,20 | xxxx [2] | 369,20 | xxxx [1] | 369,20 | xxxx [1] | 369,20 | xxxx [2] | 369,20 | xxxx [1] |
| 6,00 | 85 | 40 | 10 | 12 | 4 | 303,70 | 060 | 369,20 | 06000 [1] | 303,70 | 06000 | 303,70 | 060 | 303,70 | 060 |
| 6,01 - 7,99 | 85 | 40 | 10 | 12 | 4 | 369,20 | xxxx [2] | 369,20 | xxxx [1] | 369,20 | xxxx [1] | 369,20 | xxxx [2] | 369,20 | xxxx [1] |
| 8,00 | 85 | 40 | 10 | 12 | 4 | 315,10 | 080 | 369,20 | 08000 [1] | 315,10 | 08000 | 315,10 | 080 | 315,10 | 080 |
| 8,01 - 8,89 | 85 | 40 | 10 | 12 | 4 | 369,20 | xxxx [2] | 369,20 | xxxx [1] | 369,20 | xxxx [1] | 369,20 | xxxx [2] | 369,20 | xxxx [1] |
| 8,90 - 9,89 | 95 | 50 | 10 | 12 | 6 | 425,20 | xxxx [2] | 425,20 | xxxx [1] | 425,20 | xxxx [1] | 425,20 | xxxx [2] | 425,20 | xxxx [1] |
| 9,90 - 9,99 | 95 | 50 | 10 | 12 | 6 | 425,20 | xxxx [2] | 425,20 | xxxx [1] | 425,20 | xxxx [1] | 425,20 | xxxx [2] | 425,20 | xxxx [1] |
| 10,00 | 95 | 50 | 10 | 12 | 6 | 341,10 | 100 | 425,20 | 10000 [1] | 341,10 | 10000 | 341,10 | 100 | 341,10 | 100 |
| 10,01 - 11,99 | 95 | 50 | 10 | 12 | 6 | 425,20 | xxxx [2] | 425,20 | xxxx [1] | 425,20 | xxxx [1] | 425,20 | xxxx [2] | 425,20 | xxxx [1] |
| 12,00 | 95 | 50 | 10 | 12 | 6 | 351,50 | 120 | 425,20 | 12000 [1] | 351,50 | 12000 | 351,50 | 120 | 351,50 | 120 |
| 12,01 - 13,99 | 95 | 50 | 10 | 12 | 6 | 425,20 | xxxx [2] | 425,20 | xxxx [1] | 425,20 | xxxx [1] | 425,20 | xxxx [2] | 425,20 | xxxx [1] |
| 14,00 | 95 | 50 | 10 | 12 | 6 | 376,50 | 140 | 425,20 | 14000 [1] | 376,50 | 14000 | 376,50 | 140 | 376,50 | 140 |
| 14,01 - 14,99 | 95 | 50 | 10 | 12 | 6 | 425,20 | xxxx [2] | 425,20 | xxxx [1] | 425,20 | xxxx [1] | 425,20 | xxxx [2] | 425,20 | xxxx [1] |
| 15,00 | 95 | 50 | 10 | 12 | 6 | 385,80 | 150 | 425,20 | 15000 [1] | 385,80 | 15000 | 385,80 | 150 | 385,80 | 150 |
| 15,01 - 15,89 | 95 | 50 | 10 | 12 | 6 | 425,20 | xxxx [2] | 425,20 | xxxx [1] | 425,20 | xxxx [1] | 425,20 | xxxx [2] | 425,20 | xxxx [1] |
| 15,90 - 15,99 | 100 | 50 | 10 | 16 | 6 | 522,60 | xxxx [2] | 522,60 | xxxx [1] | 522,60 | xxxx [1] | 522,60 | xxxx [2] | 522,60 | xxxx [1] |
| 16,00 | 100 | 50 | 10 | 16 | 6 | 395,20 | 160 | 522,60 | 16000 [1] | 395,20 | 16000 | 395,20 | 160 | 395,20 | 160 |
| 16,01 - 17,99 | 100 | 50 | 10 | 16 | 6 | 522,60 | xxxx [2] | 522,60 | xxxx [1] | 522,60 | xxxx [1] | 522,60 | xxxx [2] | 522,60 | xxxx [1] |
| 18,00 | 100 | 50 | 10 | 16 | 6 | 422,20 | 180 | 522,60 | 18000 [1] | 422,20 | 18000 | 422,20 | 180 | 422,20 | 180 |
| 18,01 - 18,89 | 100 | 50 | 10 | 16 | 6 | 522,60 | xxxx [2] | 522,60 | xxxx [1] | 522,60 | xxxx [1] | 522,60 | xxxx [2] | 522,60 | xxxx [1] |
| 18,90 - 19,99 | 120 | 60 | 10 | 20 | 6 | 634,40 | xxxx [2] | 634,40 | xxxx [1] | 634,40 | xxxx [1] | 634,40 | xxxx [2] | 634,40 | xxxx [1] |
| 20,00 | 120 | 60 | 10 | 20 | 6 | 455,50 | 200 | 634,40 | 20000 [1] | 455,50 | 20000 | 455,50 | 200 | 455,50 | 200 |
| 20,01 - 25,89 | 120 | 60 | 10 | 20 | 6 | 634,40 | xxxx [2] | 634,40 | xxxx [1] | 634,40 | xxxx [1] | 634,40 | xxxx [2] | 634,40 | xxxx [1] |

| | | | | | |
|---|---|---|---|---|---|
| Steel | ● | | ● | ● | ○ |
| Stainless steel | | | ● | | |
| Cast iron | ● | | | | |
| Non ferrous metals | | ● | | | ● |
| Heat resistant alloys | | | | | |
| Hardened materials | | | | | |

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 25 working days / Minimum order 2 pieces

2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 20 working days / Minimum order 2 pieces

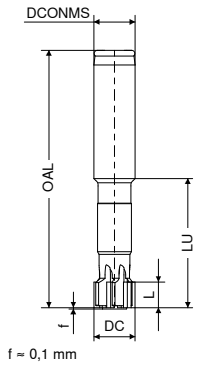
→ $v_c$ Page 60–63

Do not heat shrink tools!

For xxxx when ordering please specifiy the required Ø in H7 (eg Ø 15.89 H7 → Article no. 40 635 1589)!
All other diameters and tolerance classes are also possible (eg 18.5 $^{+0.025}$ or 18 N7)!

# Monomax – High-speed reamers, short

- adjustable for smallest bore tolerances
- wear compensation within the tolerance zone
- retraction from the hole at 3–4 times the cutting feed rate
- up to tolerance class IT 5 with absolute process security, from the first hole




f ≈ 0,1 mm

| | DBG-P | DBC | DBG-P |
|---|---|---|---|
| | TiAlN | DLC | TiAlN |
| |  |  |  |
| | 56H.65<br>≤ 3xD<br>∢ 45°<br>ASG0106<br>HM<br>Blind hole | 56H.17<br>≤ 3xD<br>∢ 45/8°<br>ASG0706<br>HM<br>Blind hole | 56H.65<br>≤ 3xD<br>∢ 45°<br>ASG3000<br>HM<br>Blind hole |
| | NEW U3 | NEW U3 | NEW U3 |
| | Article no. 40 644 ... | Article no. 40 640 ... | Article no. 40 657 ... |
| | EUR | EUR | EUR |

| DC H7 mm | OAL mm | LU mm | L mm | DCONMS h6 mm | ZEFP | EUR | | EUR | | EUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,60 - 5,99 | 85 | 40 | 10 | 12 | 4 | 369,20 | xxxx 1) | 369,20 | xxxx 1) | 634,40 | xxxx 1) |
| 6,00 | 85 | 40 | 10 | 12 | 4 | 369,20 | 06000 1) | 369,20 | 06000 1) | 369,20 | 06000 1) |
| 6,01 - 7,99 | 85 | 40 | 10 | 12 | 4 | 369,20 | xxxx 1) | 369,20 | xxxx 1) | 369,20 | xxxx 1) |
| 8,00 | 85 | 40 | 10 | 12 | 4 | 369,20 | 08000 1) | 369,20 | 08000 1) | 369,20 | 08000 1) |
| 8,01 - 8,89 | 85 | 40 | 10 | 12 | 4 | 369,20 | xxxx 1) | 369,20 | xxxx 1) | 369,20 | xxxx 1) |
| 8,90 - 9,89 | 95 | 50 | 10 | 12 | 6 | 425,20 | xxxx 1) | 425,20 | xxxx 1) | 425,20 | xxxx 1) |
| 9,90 - 9,99 | 95 | 50 | 10 | 12 | 6 | 425,20 | xxxx 1) | 425,20 | xxxx 1) | 425,20 | xxxx 1) |
| 10,00 | 95 | 50 | 10 | 12 | 6 | 425,20 | 10000 1) | 425,20 | 10000 1) | 425,20 | 10000 1) |
| 10,01 - 11,99 | 95 | 50 | 10 | 12 | 6 | 425,20 | xxxx 1) | 425,20 | xxxx 1) | 425,20 | xxxx 1) |
| 12,00 | 95 | 50 | 10 | 12 | 6 | 425,20 | 12000 1) | 425,20 | 12000 1) | 425,20 | 12000 1) |
| 12,01 - 13,99 | 95 | 50 | 10 | 12 | 6 | 425,20 | xxxx 1) | 425,20 | xxxx 1) | 425,20 | xxxx 1) |
| 14,00 | 95 | 50 | 10 | 12 | 6 | 425,20 | 14000 1) | 425,20 | 14000 1) | 425,20 | 14000 1) |
| 14,01 - 14,99 | 95 | 50 | 10 | 12 | 6 | 425,20 | xxxx 1) | 425,20 | xxxx 1) | 425,20 | xxxx 1) |
| 15,00 | 95 | 50 | 10 | 12 | 6 | 425,20 | 15000 1) | 425,20 | 15000 1) | 425,20 | 15000 1) |
| 15,01 - 15,89 | 95 | 50 | 10 | 12 | 6 | 425,20 | xxxx 1) | 425,20 | xxxx 1) | 425,20 | xxxx 1) |
| 15,90 - 15,99 | 100 | 50 | 10 | 16 | 6 | 522,60 | xxxx 1) | 522,60 | xxxx 1) | 522,60 | xxxx 1) |
| 16,00 | 100 | 50 | 10 | 16 | 6 | 522,60 | 16000 1) | 522,60 | 16000 1) | 522,60 | 16000 1) |
| 16,01 - 17,99 | 100 | 50 | 10 | 16 | 6 | 522,60 | xxxx 1) | 522,60 | xxxx 1) | 522,60 | xxxx 1) |
| 18,00 | 100 | 50 | 10 | 16 | 6 | 522,60 | 18000 1) | 522,60 | 18000 1) | 522,60 | 18000 1) |
| 18,01 - 18,89 | 100 | 50 | 10 | 16 | 6 | 522,60 | xxxx 1) | 522,60 | xxxx 1) | 522,60 | xxxx 1) |
| 18,90 - 19,99 | 120 | 60 | 10 | 20 | 6 | 634,40 | xxxx 1) | 634,40 | xxxx 1) | 634,40 | xxxx 1) |
| 20,00 | 120 | 60 | 10 | 20 | 6 | 634,40 | 20000 1) | 634,40 | 20000 1) | 634,40 | 20000 1) |
| 20,01 - 25,89 | 120 | 60 | 10 | 20 | 6 | 634,40 | xxxx 1) | 634,40 | xxxx 1) | 634,40 | xxxx 1) |

| | | | |
|---|---|---|---|
| Steel | ● | | ● |
| Stainless steel | ● | | |
| Cast iron | | | ● |
| Non ferrous metals | | ● | |
| Heat resistant alloys | | | |
| Hardened materials | | | |

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 25 working days / Minimum order 2 pieces

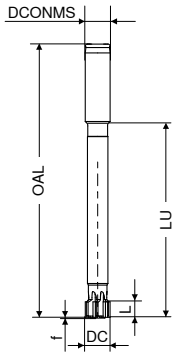
→ $v_c$ Page 60–63

Do not heat shrink tools!

For xxxx when ordering please specifiy the required Ø in H7 (eg Ø 15.89 H7 → Article no. 40 644 1589)!
All other diameters and tolerance classes are also possible (eg 18.5 $^{+0.025}$ or 18 N7)!

# Monomax – High-speed reamers, long

- adjustable for the smallest bore tolerances
- wear compensation within the tolerance zone
- retraction from the hole at 3–4 times the cutting feed rate
- up to tolerance class IT 5 with absolute process security, from the first hole




f ≈ 0,1 mm

| | DST | DBC | DBG-P | DST | TiN |
|---|---|---|---|---|---|
| | CWC10 | DLC | TiAlN | CWC10 | CWN10 |
| |  |  |  |  |  |
| | 56R.93<br>≤ 5xD<br>∢ 45°<br>ASG3000<br>CERMET<br>Through hole | 56R.17<br>≤ 5xD<br>∢ 45/8°<br>ASG0706<br>HM<br>Through hole | 56R.65<br>≤ 5xD<br>∢ 45°<br>ASG0106<br>HM<br>Through hole | 56R.93<br>≤ 5xD<br>∢ 25°<br>ASG4000<br>CERMET<br>Through hole | 56R.71<br>≤ 5xD<br>∢ 45°<br>ASG3000<br>HM<br>Through hole |
| | | U3 | NEW U3 | NEW U3 | U3 | U3 |
| | | Article no. 40 626 ... | Article no. 40 649 ... | Article no. 40 653 ... | Article no. 40 636 ... | Article no. 40 606 ... |

| DC H7 | OAL | LU | L | DCONMS h6 | ZEFP | EUR | | EUR | | EUR | | EUR | | EUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | mm | | | | | | | | | | | |
| 5,60 - 5,99 | 130 | 85 | 10 | 12 | 4 | 369,20 | xxxx 2) | 369,20 | xxxx 1) | 369,20 | xxxx 1) | 369,20 | xxxx 2) | 369,20 | xxxx 1) |
| 6,00 | 130 | 85 | 10 | 12 | 4 | 303,70 | 060 | 369,20 | 06000 1) | 303,70 | 06000 | 303,70 | 060 | 303,70 | 060 |
| 6,01 - 7,99 | 130 | 85 | 10 | 12 | 4 | 369,20 | xxxx 2) | 369,20 | xxxx 1) | 369,20 | xxxx 1) | 369,20 | xxxx 2) | 369,20 | xxxx 1) |
| 8,00 | 130 | 85 | 10 | 12 | 4 | 315,10 | 080 | 369,20 | 08000 1) | 315,10 | 08000 | 315,10 | 080 | 315,10 | 080 |
| 8,01 - 8,89 | 130 | 85 | 10 | 12 | 4 | 369,20 | xxxx 2) | 369,20 | xxxx 1) | 369,20 | xxxx 1) | 369,20 | xxxx 2) | 369,20 | xxxx 1) |
| 8,90 - 9,89 | 130 | 85 | 10 | 12 | 6 | 425,20 | xxxx 2) | 425,20 | xxxx 1) | 425,20 | xxxx 1) | 425,20 | xxxx 2) | 425,20 | xxxx 1) |
| 9,90 - 9,99 | 160 | 115 | 10 | 12 | 6 | 472,00 | xxxx 2) | 472,00 | xxxx 1) | 472,00 | xxxx 1) | 472,00 | xxxx 2) | 472,00 | xxxx 1) |
| 10,00 | 160 | 115 | 10 | 12 | 6 | 341,10 | 100 | 472,00 | 10000 1) | 341,10 | 10000 | 341,10 | 100 | 341,10 | 100 |
| 10,01 - 11,99 | 160 | 115 | 10 | 12 | 6 | 472,00 | xxxx 2) | 472,00 | xxxx 1) | 472,00 | xxxx 1) | 472,00 | xxxx 2) | 472,00 | xxxx 1) |
| 12,00 | 160 | 115 | 10 | 12 | 6 | 351,50 | 120 | 472,00 | 12000 1) | 351,50 | 12000 | 351,50 | 120 | 351,50 | 120 |
| 12,01 - 13,99 | 160 | 115 | 10 | 12 | 6 | 472,00 | xxxx 2) | 472,00 | xxxx 1) | 472,00 | xxxx 1) | 472,00 | xxxx 2) | 472,00 | xxxx 1) |
| 14,00 | 160 | 115 | 10 | 12 | 6 | 376,50 | 140 | 472,00 | 14000 1) | 376,50 | 14000 | 376,50 | 140 | 376,50 | 140 |
| 14,01 - 14,99 | 160 | 115 | 10 | 12 | 6 | 472,00 | xxxx 2) | 472,00 | xxxx 1) | 472,00 | xxxx 1) | 472,00 | xxxx 2) | 472,00 | xxxx 1) |
| 15,00 | 160 | 115 | 10 | 12 | 6 | 385,80 | 150 | 472,00 | 15000 1) | 385,80 | 15000 | 385,80 | 150 | 385,80 | 150 |
| 15,01 - 15,89 | 160 | 115 | 10 | 12 | 6 | 472,00 | xxxx 2) | 472,00 | xxxx 1) | 472,00 | xxxx 1) | 472,00 | xxxx 2) | 472,00 | xxxx 1) |
| 15,90 - 15,99 | 180 | 130 | 10 | 16 | 6 | 522,60 | xxxx 2) | 522,60 | xxxx 1) | 522,60 | xxxx 1) | 522,60 | xxxx 2) | 522,60 | xxxx 1) |
| 16,00 | 180 | 130 | 10 | 16 | 6 | 395,20 | 160 | 522,60 | 16000 1) | 395,20 | 16000 | 395,20 | 160 | 395,20 | 160 |
| 16,01 - 17,99 | 180 | 130 | 10 | 16 | 6 | 522,60 | xxxx 2) | 522,60 | xxxx 1) | 522,60 | xxxx 1) | 522,60 | xxxx 2) | 522,60 | xxxx 1) |
| 18,00 | 180 | 130 | 10 | 16 | 6 | 422,20 | 180 | 522,60 | 18000 1) | 422,20 | 18000 | 422,20 | 180 | 422,20 | 180 |
| 18,01 - 18,89 | 180 | 130 | 10 | 16 | 6 | 522,60 | xxxx 2) | 522,60 | xxxx 1) | 522,60 | xxxx 1) | 522,60 | xxxx 2) | 522,60 | xxxx 1) |
| 18,90 - 19,99 | 200 | 140 | 10 | 20 | 6 | 634,40 | xxxx 2) | 634,40 | xxxx 1) | 634,40 | xxxx 1) | 634,40 | xxxx 2) | 634,40 | xxxx 1) |
| 20,00 | 200 | 140 | 10 | 20 | 6 | 455,50 | 200 | 634,40 | 20000 1) | 455,50 | 20000 | 455,50 | 200 | 455,50 | 200 |
| 20,01 - 25,89 | 200 | 140 | 10 | 20 | 6 | 634,40 | xxxx 2) | 634,40 | xxxx 1) | 634,40 | xxxx 1) | 634,40 | xxxx 2) | 634,40 | xxxx 1) |

| | | | | | |
|---|---|---|---|---|---|
| Steel | ● | | ● | ● | ○ |
| Stainless steel | | | ● | | |
| Cast iron | ● | | | | |
| Non ferrous metals | | ● | | | ● |
| Heat resistant alloys | | | | | |
| Hardened materials | | | | | |

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 25 working days / Minimum order 2 pieces
2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 20 working days / Minimum order 2 pieces

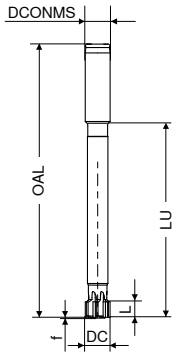
→ $v_c$ Page 60–63

Do not heat shrink tools!

For xxxx when ordering please specifiy the required Ø in H7 (eg Ø 15.89 H7 → Article no. 40 636 1589)!
All other diameters and tolerance classes are also possible (eg 18.5 $^{+0.025}$ or 18 N7)!

# Monomax – High-speed reamers, long

- adjustable for the smallest bore tolerances
- wear compensation within the tolerance zone
- retraction from the hole at 3–4 times the cutting feed rate
- up to tolerance class IT 5 with absolute process security, from the first hole




f ≈ 0,1 mm

| DBG-P | DBC | DBG-P |
|---|---|---|
| TiAlN | DLC | TiAlN |
|  |  |  |
| 56Q.65<br>≤ 5xD<br>∢ 45°<br>ASG0106<br>HM<br>Blind hole | 56Q.17<br>≤ 5xD<br>∢ 45/8°<br>ASG0706<br>HM<br>Blind hole | 56Q.65<br>≤ 5xD<br>∢ 45°<br>ASG3000<br>HM<br>Blind hole |

| DC H7 | OAL | LU | L | DCONMS h6 | ZEFP | NEW U3 Article no. 40 645 ... | | NEW U3 Article no. 40 641 ... | | NEW U3 Article no. 40 665 ... | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | mm | | EUR | | EUR | | EUR | |
| 5,60 - 5,99 | 130 | 85 | 10 | 12 | 4 | 369,20 | xxxx 1) | 369,20 | xxxx 1) | 369,20 | xxxx 1) |
| 6,00 | 130 | 85 | 10 | 12 | 4 | 369,20 | 06000 1) | 369,20 | 06000 1) | 369,20 | 06000 1) |
| 6,01 - 7,99 | 130 | 85 | 10 | 12 | 4 | 369,20 | xxxx 1) | 369,20 | xxxx 1) | 369,20 | xxxx 1) |
| 8,00 | 130 | 85 | 10 | 12 | 4 | 369,20 | 08000 1) | 369,20 | 08000 1) | 369,20 | 08000 1) |
| 8,01 - 8,89 | 130 | 85 | 10 | 12 | 4 | 369,20 | xxxx 1) | 369,20 | xxxx 1) | 369,20 | xxxx 1) |
| 8,90 - 9,89 | 130 | 85 | 10 | 12 | 6 | 425,20 | xxxx 1) | 425,20 | xxxx 1) | 425,20 | xxxx 1) |
| 9,90 - 9,99 | 160 | 115 | 10 | 12 | 6 | 472,00 | xxxx 1) | 472,00 | xxxx 1) | 472,00 | xxxx 1) |
| 10,00 | 160 | 115 | 10 | 12 | 6 | 472,00 | 10000 1) | 472,00 | 10000 1) | 472,00 | 10000 1) |
| 10,01 - 11,99 | 160 | 115 | 10 | 12 | 6 | 472,00 | xxxx 1) | 472,00 | xxxx 1) | 472,00 | xxxx 1) |
| 12,00 | 160 | 115 | 10 | 12 | 6 | 472,00 | 12000 1) | 472,00 | 12000 1) | 472,00 | 12000 1) |
| 12,01 - 13,99 | 160 | 115 | 10 | 12 | 6 | 472,00 | xxxx 1) | 472,00 | xxxx 1) | 472,00 | xxxx 1) |
| 14,00 | 160 | 115 | 10 | 12 | 6 | 472,00 | 14000 1) | 472,00 | 14000 1) | 472,00 | 14000 1) |
| 14,01 - 14,99 | 160 | 115 | 10 | 12 | 6 | 472,00 | xxxx 1) | 472,00 | xxxx 1) | 472,00 | xxxx 1) |
| 15,00 | 160 | 115 | 10 | 12 | 6 | 472,00 | 15000 1) | 472,00 | 15000 1) | 472,00 | 15000 1) |
| 15,01 - 15,89 | 160 | 115 | 10 | 12 | 6 | 472,00 | xxxx 1) | 472,00 | xxxx 1) | 472,00 | xxxx 1) |
| 15,90 - 15,99 | 180 | 130 | 10 | 16 | 6 | 522,60 | xxxx 1) | 522,60 | xxxx 1) | 522,60 | xxxx 1) |
| 16,00 | 180 | 130 | 10 | 16 | 6 | 522,60 | 16000 1) | 522,60 | 16000 1) | 522,60 | 16000 1) |
| 16,01 - 17,99 | 180 | 130 | 10 | 16 | 6 | 522,60 | xxxx 1) | 522,60 | xxxx 1) | 522,60 | xxxx 1) |
| 18,00 | 180 | 130 | 10 | 16 | 6 | 522,60 | 18000 1) | 522,60 | 18000 1) | 522,60 | 18000 1) |
| 18,01 - 18,89 | 180 | 130 | 10 | 16 | 6 | 522,60 | xxxx 1) | 522,60 | xxxx 1) | 522,60 | xxxx 1) |
| 18,90 - 19,99 | 200 | 140 | 10 | 20 | 6 | 634,40 | xxxx 1) | 634,40 | xxxx 1) | 634,40 | xxxx 1) |
| 20,00 | 200 | 140 | 10 | 20 | 6 | 634,40 | 20000 1) | 634,40 | 20000 1) | 634,40 | 20000 1) |
| 20,01 - 25,89 | 200 | 140 | 10 | 20 | 6 | 634,40 | xxxx 1) | 634,40 | xxxx 1) | 634,40 | xxxx 1) |

| | | | |
|---|---|---|---|
| Steel | ● | | ● |
| Stainless steel | ● | | |
| Cast iron | | | ● |
| Non ferrous metals | | ● | |
| Heat resistant alloys | | | |
| Hardened materials | | | |

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 25 working days / Minimum order 2 pieces

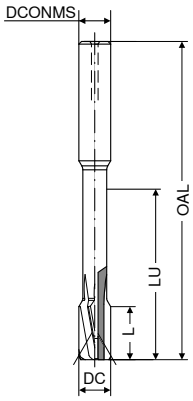
→ $v_c$ Page 60–63

Do not heat shrink tools!

For xxxx when ordering please specifiy the required Ø in H7 (eg Ø 15.89 H7 → Article no. 40 645 1589)!
All other diameters and tolerance classes are also possible (eg 18.5 $^{+0.025}$ or 18 N7)!

# Fullmax – High-performance machine reamers

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
- ▲ specialised geometries and coatings






| | Fullmax UNI | Fullmax VA | Fullmax ALU |
|---|---|---|---|
| | DBG-U | DBQ | DBC-N |
| |  |  |  |
| | 52P.57 | 52S.44 | 52N.17 |
| | HA | HA | HA |
| | Left Hand Helix | Left Hand Helix | straight flute |
| | ◁ 30° | ◁ 30° | ◁ 30° |
| | ASG2210 | ASG2231 | ASG2270 |
| | Solid carbide | Solid carbide | Solid carbide |
| | Through hole | Through hole | Through hole |
| | NEW U4 | NEW U4 | NEW U4 |
| | Article no. 40 484 ... | Article no. 40 401 ... | Article no. 40 471 ... |
| | EUR | EUR | EUR |

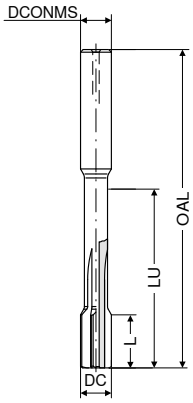
| DC H7 mm | OAL mm | L mm | LU mm | DCONMS h6 mm | ZEFP | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 60 | 12 | 32 | 4 | 4 | 137,30 | 04000 | 150,80 | 04000 | 150,80 | 04000 |
| 5 | 76 | 12 | 40 | 6 | 4 | 139,40 | 05000 | 153,90 | 05000 | 152,90 | 05000 |
| 6 | 76 | 12 | 40 | 6 | 4 | 142,50 | 06000 | 156,00 | 06000 | 156,00 | 06000 |
| 7 | 101 | 16 | 65 | 8 | 6 | 148,70 | 07000 | 163,30 | 07000 | 163,30 | 07000 |
| 8 | 101 | 16 | 65 | 8 | 6 | 148,70 | 08000 | 163,30 | 08000 | 163,30 | 08000 |
| 9 | 108 | 16 | 68 | 10 | 6 | 210,10 | 09000 | 230,90 | 09000 | 231,90 | 09000 |
| 10 | 108 | 16 | 68 | 10 | 6 | 210,10 | 10000 | 230,90 | 10000 | 231,90 | 10000 |
| 11 | 130 | 20 | 85 | 12 | 6 | 278,70 | 11000 | 305,80 | 11000 | 305,80 | 11000 |
| 12 | 130 | 20 | 85 | 12 | 6 | 278,70 | 12000 | 305,80 | 12000 | 305,80 | 12000 |
| 16 | 150 | 20 | 102 | 16 | 6 | 366,10 | 16000 | 402,50 | 16000 | 402,50 | 16000 |

| | | | |
|---|---|---|---|
| Steel | ● | | |
| Stainless steel | ● | ● | |
| Cast iron | ● | | |
| Non ferrous metals | ○ | | ● |
| Heat resistant alloys | ○ | | |
| Hardened materials | ○ | | |

→ $v_c$ Page 64+65

# Fullmax – High-performance machine reamers

- extremely irregular pitch
- designed for high-speed machining
- specialised geometries and coatings




| Fullmax UNI | Fullmax VA | Fullmax ALU |
|---|---|---|
| DBG-U | DBQ | DBC-N |
|  |  |  |
| 52M.57 | 52T.45 | 52Q.17 |
| HA  | HA  | HA  |
| straight flute | straight flute | straight flute |
| ◁ 60° | ◁ 45° | ◁ 60° |
| ASG2110 | ASG2131 | ASG2170 |
| Solid carbide | Solid carbide | Solid carbide |
| Blind hole | Blind hole | Blind hole |
| NEW U4 | NEW U4 | NEW U4 |
| Article no. 40 485 ... | Article no. 40 402 ... | Article no. 40 472 ... |
| EUR | EUR | EUR |

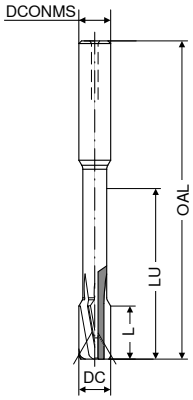
| DC H7 | OAL | L | LU | DCONMS h6 | ZEFP | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | mm | | | | | | |
| 4 | 60 | 12 | 32 | 4 | 4 | 114,40 | 04000 | 125,80 | 04000 | 125,80 | 04000 |
| 5 | 76 | 12 | 40 | 6 | 4 | 116,50 | 05000 | 129,00 | 05000 | 127,90 | 05000 |
| 6 | 76 | 12 | 40 | 6 | 4 | 121,70 | 06000 | 134,20 | 06000 | 133,10 | 06000 |
| 7 | 101 | 16 | 65 | 8 | 6 | 127,90 | 07000 | 140,40 | 07000 | 139,40 | 07000 |
| 8 | 101 | 16 | 65 | 8 | 6 | 127,90 | 08000 | 140,40 | 08000 | 139,40 | 08000 |
| 9 | 108 | 16 | 68 | 10 | 6 | 183,00 | 09000 | 201,80 | 09000 | 199,70 | 09000 |
| 10 | 108 | 16 | 68 | 10 | 6 | 183,00 | 10000 | 201,80 | 10000 | 199,70 | 10000 |
| 11 | 130 | 20 | 85 | 12 | 6 | 243,40 | 11000 | 267,30 | 11000 | 266,20 | 11000 |
| 12 | 130 | 20 | 85 | 12 | 6 | 243,40 | 12000 | 267,30 | 12000 | 266,20 | 12000 |
| 16 | 150 | 20 | 102 | 16 | 6 | 327,60 | 16000 | 360,90 | 16000 | 358,80 | 16000 |

| | | | |
|---|---|---|---|
| Steel | ● | | |
| Stainless steel | ● | ● | |
| Cast iron | ● | | |
| Non ferrous metals | ○ | | ● |
| Heat resistant alloys | ○ | | |
| Hardened materials | ○ | | |

→ $v_c$ Page 64+65

# Fullmax – High-performance machine reamers

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
- ▲ specialised geometries and coatings
- ▲ tolerance: Ø 2,96–5,03 mm = +0,004 mm
- ▲ tolerance: Ø 5,97–12,03 mm = +0,005 mm






| | Fullmax UNI | Fullmax VA | Fullmax K | Fullmax ALU | Fullmax H |
|---|---|---|---|---|---|
| | DBG-U | DBQ | DBG-P | DBC-N | DBF-A |
| |  |  |  |  |  |
| | 52P.57 | 52S.44 | 52J.65 | 52N.17 | 52G.55 |
| | HA | HA | HA | HA | HA |
| | Left Hand Helix | Left Hand Helix | straight flute | straight flute | straight flute |
| | ◁ 30° | ◁ 30° | ◁ 30° | ◁ 30° | ◁ 30° |
| | ASG2210 | ASG2231 | ASG2350 | ASG2270 | ASG2360 |
| | Solid carbide | Solid carbide | Solid carbide | Solid carbide | Solid carbide |
| | Through hole | Through hole | Through hole | Through hole | Through hole |
| | NEW U4 | NEW U4 | NEW U4 | NEW U4 | NEW U4 |
| | Article no. 40 486 ... | Article no. 40 403 ... | Article no. 40 477 ... | Article no. 40 473 ... | Article no. 40 475 ... |

| DC +0,004/+0,005 | OAL | L | LU | DCONMS h6 | ZEFP | EUR | | EUR | | EUR | | EUR | | EUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | mm | | | | | | | | | | | |
| 2,96 - 3,96 | 60 | 12 | 32 | 4 | 4 | 171,60 | xxxxx[1] | 175,60 | xxxxx[2] | 175,60 | xxxxx[1] | 175,60 | xxxxx[1] | 175,60 | xxxxx[1] |
| 3,97 | 60 | 12 | 32 | 4 | 4 | 145,60 | 03970 | 160,20 | 03970 | 175,60 | 03970[1] | 175,60 | 03970[1] | 175,60 | 03970[1] |
| 3,98 | 60 | 12 | 32 | 4 | 4 | 145,60 | 03980 | 160,20 | 03980 | 175,60 | 03980[1] | 175,60 | 03980[1] | 175,60 | 03980[1] |
| 3,99 | 60 | 12 | 32 | 4 | 4 | 145,60 | 03990 | 160,20 | 03990 | 175,60 | 03990[1] | 175,60 | 03990[1] | 175,60 | 03990[1] |
| 4,00 | 60 | 12 | 32 | 4 | 4 | 145,60 | 04000 | 160,20 | 04000 | 200,20 | 04000[1] | 175,60 | 04000[1] | 200,20 | 04000[1] |
| 4,01 | 60 | 12 | 32 | 4 | 4 | 145,60 | 04010 | 160,20 | 04010 | 175,60 | 04010[1] | 175,60 | 04010[1] | 175,60 | 04010[1] |
| 4,02 | 60 | 12 | 32 | 4 | 4 | 145,60 | 04020 | 160,20 | 04020 | 175,60 | 04020[1] | 175,60 | 04020[1] | 175,60 | 04020[1] |
| 4,03 | 60 | 12 | 32 | 4 | 4 | 145,60 | 04030 | 160,20 | 04030 | 175,60 | 04030[1] | 175,60 | 04030[1] | 175,60 | 04030[1] |
| 4,04 - 4,05 | 60 | 12 | 32 | 4 | 4 | 171,60 | xxxxx[1] | 175,60 | xxxxx[2] | 175,60 | xxxxx[1] | 175,60 | xxxxx[1] | 175,60 | xxxxx[1] |
| 4,06 - 4,96 | 76 | 12 | 40 | 6 | 4 | 174,20 | xxxxx[1] | 182,00 | xxxxx[2] | 182,00 | xxxxx[1] | 182,00 | xxxxx[1] | 182,00 | xxxxx[1] |
| 4,97 | 76 | 12 | 40 | 6 | 4 | 148,70 | 04970 | 163,30 | 04970 | 182,00 | 04970[1] | 182,00 | 04970[1] | 182,00 | 04970[1] |
| 4,98 | 76 | 12 | 40 | 6 | 4 | 148,70 | 04980 | 163,30 | 04980 | 182,00 | 04980[1] | 182,00 | 04980[1] | 182,00 | 04980[1] |
| 4,99 | 76 | 12 | 40 | 6 | 4 | 148,70 | 04990 | 163,30 | 04990 | 182,00 | 04990[1] | 182,00 | 04990[1] | 182,00 | 04990[1] |
| 5,00 | 76 | 12 | 40 | 6 | 4 | 148,70 | 05000 | 163,30 | 05000 | 206,80 | 05000[1] | 182,00 | 05000[1] | 206,80 | 05000[1] |
| 5,01 | 76 | 12 | 40 | 6 | 4 | 148,70 | 05010 | 163,30 | 05010 | 182,00 | 05010[1] | 182,00 | 05010[1] | 182,00 | 05010[1] |
| 5,02 | 76 | 12 | 40 | 6 | 4 | 148,70 | 05020 | 163,30 | 05020 | 182,00 | 05020[1] | 182,00 | 05020[1] | 182,00 | 05020[1] |
| 5,03 | 76 | 12 | 40 | 6 | 4 | 148,70 | 05030 | 163,30 | 05030 | 182,00 | 05030[1] | 182,00 | 05030[1] | 182,00 | 05030[1] |
| 5,04 - 5,96 | 76 | 12 | 40 | 6 | 4 | 174,20 | xxxxx[1] | 182,00 | xxxxx[2] | 182,00 | xxxxx[1] | 182,00 | xxxxx[1] | 182,00 | xxxxx[1] |
| 5,97 | 76 | 12 | 40 | 6 | 4 | 149,80 | 05970 | 165,40 | 05970 | 182,00 | 05970[1] | 182,00 | 05970[1] | 182,00 | 05970[1] |
| 5,98 | 76 | 12 | 40 | 6 | 4 | 149,80 | 05980 | 165,40 | 05980 | 182,00 | 05980[1] | 182,00 | 05980[1] | 182,00 | 05980[1] |
| 5,99 | 76 | 12 | 40 | 6 | 4 | 149,80 | 05990 | 165,40 | 05990 | 182,00 | 05990[1] | 182,00 | 05990[1] | 182,00 | 05990[1] |
| 6,00 | 76 | 12 | 40 | 6 | 4 | 149,80 | 06000 | 165,40 | 06000 | 206,80 | 06000[1] | 182,00 | 06000[1] | 206,80 | 06000[1] |
| 6,01 | 76 | 12 | 40 | 6 | 4 | 149,80 | 06010 | 165,40 | 06010 | 182,00 | 06010[1] | 182,00 | 06010[1] | 182,00 | 06010[1] |
| 6,02 | 76 | 12 | 40 | 6 | 4 | 149,80 | 06020 | 165,40 | 06020 | 182,00 | 06020[1] | 182,00 | 06020[1] | 182,00 | 06020[1] |
| 6,03 | 76 | 12 | 40 | 6 | 4 | 149,80 | 06030 | 165,40 | 06030 | 182,00 | 06030[1] | 182,00 | 06030[1] | 182,00 | 06030[1] |
| 6,04 - 6,05 | 76 | 12 | 40 | 6 | 4 | 176,80 | xxxxx[1] | 182,00 | xxxxx[2] | 182,00 | xxxxx[1] | 182,00 | xxxxx[1] | 182,00 | xxxxx[1] |
| 6,06 - 7,96 | 101 | 16 | 65 | 8 | 6 | 183,40 | xxxxx[1] | 187,20 | xxxxx[2] | 187,20 | xxxxx[1] | 187,20 | xxxxx[1] | 187,20 | xxxxx[1] |
| 7,97 | 101 | 16 | 65 | 8 | 6 | 157,00 | 07970 | 172,60 | 07970 | 187,20 | 07970[1] | 187,20 | 07970[1] | 187,20 | 07970[1] |
| 7,98 | 101 | 16 | 65 | 8 | 6 | 157,00 | 07980 | 172,60 | 07980 | 187,20 | 07980[1] | 187,20 | 07980[1] | 187,20 | 07980[1] |

| | | | | | |
|---|---|---|---|---|---|
| Steel | ● | | | | |
| Stainless steel | ● | ● | | | |
| Cast iron | ● | | ● | | |
| Non ferrous metals | ○ | | | ● | |
| Heat resistant alloys | ○ | | | | |
| Hardened materials | ○ | | | | ● |

**1)** Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 25 working days
**2)** Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 32 working days

→ $v_c$ Page 64+65

This tool concept permits numerous tolerances. For sizes covered please refer to the table on → **Page 75**.
For xxxxx please indicate required Ø in the order (e.g. Ø 8.82 mm → Article No. 40 486 08820)!


Continued on next page

# Fullmax – High-performance machine reamers

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
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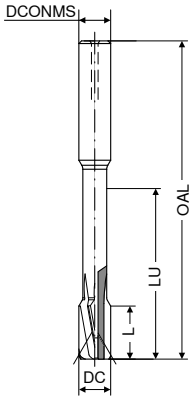
- ▲ tolerance: Ø 2,96–5,03 mm = +0,004 mm
- ▲ tolerance: Ø 5,97–12,03 mm = +0,005 mm




| Fullmax UNI | Fullmax VA | Fullmax K | Fullmax ALU | Fullmax H |
|---|---|---|---|---|
| DBG-U | DBQ | DBG-P | DBC-N | DBF-A |
|  |  |  |  |  |
| 52P.57 | 52S.44 | 52J.65 | 52N.17 | 52G.55 |
| HA | HA | HA | HA | HA |
| Left Hand Helix | Left Hand Helix | straight flute | straight flute | straight flute |
| ◁ 30° | ◁ 30° | ◁ 30° | ◁ 30° | ◁ 30° |
| ASG2210 | ASG2231 | ASG2350 | ASG2270 | ASG2360 |
| Solid carbide | Solid carbide | Solid carbide | Solid carbide | Solid carbide |
| Through hole | Through hole | Through hole | Through hole | Through hole |
| NEW U4 | NEW U4 | NEW U4 | NEW U4 | NEW U4 |
| Article no. 40 486 ... | Article no. 40 403 ... | Article no. 40 477 ... | Article no. 40 473 ... | Article no. 40 475 ... |

| DC +0,004/+0,005 mm | OAL mm | L mm | LU mm | DCONMS h6 mm | ZEFP | EUR | EUR | EUR | EUR | EUR |
|---|---|---|---|---|---|---|---|---|---|---|
| 7,99 | 101 | 16 | 65 | 8 | 6 | 157,00 07990 | 172,60 07990 | 187,20 07990 1) | 187,20 07990 1) | 187,20 07990 1) |
| 8,00 | 101 | 16 | 65 | 8 | 6 | 157,00 08000 | 172,60 08000 | 213,20 08000 1) | 187,20 08000 1) | 213,20 08000 1) |
| 8,01 | 101 | 16 | 65 | 8 | 6 | 157,00 08010 | 172,60 08010 | 187,20 08010 1) | 187,20 08010 1) | 187,20 08010 1) |
| 8,02 | 101 | 16 | 65 | 8 | 6 | 157,00 08020 | 172,60 08020 | 187,20 08020 1) | 187,20 08020 1) | 187,20 08020 1) |
| 8,03 | 101 | 16 | 65 | 8 | 6 | 157,00 08030 | 172,60 08030 | 187,20 08030 1) | 187,20 08030 1) | 187,20 08030 1) |
| 8,04 - 8,05 | 101 | 16 | 65 | 8 | 6 | 183,40 xxxxx 1) | 187,20 xxxxx 2) | 187,20 xxxxx 1) | 187,20 xxxxx 1) | 187,20 xxxxx 1) |
| 8,06 - 9,96 | 108 | 16 | 68 | 10 | 6 | 227,60 xxxxx 1) | 264,00 xxxxx 2) | 264,00 xxxxx 1) | 264,00 xxxxx 1) | 264,00 xxxxx 1) |
| 9,97 | 108 | 16 | 68 | 10 | 6 | 223,60 09970 | 246,50 09970 | 264,00 09970 1) | 264,00 09970 1) | 264,00 09970 1) |
| 9,98 | 108 | 16 | 68 | 10 | 6 | 223,60 09980 | 246,50 09980 | 264,00 09980 1) | 264,00 09980 1) | 264,00 09980 1) |
| 9,99 | 108 | 16 | 68 | 10 | 6 | 223,60 09990 | 246,50 09990 | 264,00 09990 1) | 264,00 09990 1) | 264,00 09990 1) |
| 10,00 | 108 | 16 | 68 | 10 | 6 | 223,60 10000 | 246,50 10000 | 300,40 10000 1) | 264,00 10000 1) | 300,40 10000 1) |
| 10,01 | 108 | 16 | 68 | 10 | 6 | 223,60 10010 | 246,50 10010 | 264,00 10010 1) | 264,00 10010 1) | 264,00 10010 1) |
| 10,02 | 108 | 16 | 68 | 10 | 6 | 223,60 10020 | 246,50 10020 | 264,00 10020 1) | 264,00 10020 1) | 264,00 10020 1) |
| 10,03 | 108 | 16 | 68 | 10 | 6 | 223,60 10030 | 246,50 10030 | 264,00 10030 1) | 264,00 10030 1) | 264,00 10030 1) |
| 10,04 - 10,05 | 108 | 16 | 68 | 10 | 6 | 227,60 xxxxx 1) | 264,00 xxxxx 2) | 264,00 xxxxx 1) | 264,00 xxxxx 1) | 264,00 xxxxx 1) |
| 10,06 - 11,96 | 130 | 20 | 85 | 12 | 6 | 343,20 xxxxx 1) | 353,60 xxxxx 2) | 353,60 xxxxx 1) | 353,60 xxxxx 1) | 353,60 xxxxx 1) |
| 11,97 | 130 | 20 | 85 | 12 | 6 | 297,40 11970 | 327,60 11970 | 353,60 11970 1) | 353,60 11970 1) | 353,60 11970 1) |
| 11,98 | 130 | 20 | 85 | 12 | 6 | 297,40 11980 | 327,60 11980 | 353,60 11980 1) | 353,60 11980 1) | 353,60 11980 1) |
| 11,99 | 130 | 20 | 85 | 12 | 6 | 297,40 11990 | 327,60 11990 | 353,60 11990 1) | 353,60 11990 1) | 353,60 11990 1) |
| 12,00 | 130 | 20 | 85 | 12 | 6 | 297,40 12000 | 327,60 12000 | 401,80 12000 1) | 353,60 12000 1) | 401,80 12000 1) |
| 12,01 | 130 | 20 | 85 | 12 | 6 | 297,40 12010 | 327,60 12010 | 353,60 12010 1) | 353,60 12010 1) | 353,60 12010 1) |
| 12,02 | 130 | 20 | 85 | 12 | 6 | 297,40 12020 | 327,60 12020 | 353,60 12020 1) | 353,60 12020 1) | 353,60 12020 1) |
| 12,03 | 130 | 20 | 85 | 12 | 6 | 297,40 12030 | 327,60 12030 | 353,60 12030 1) | 353,60 12030 1) | 353,60 12030 1) |
| 12,04 - 12,05 | 130 | 20 | 85 | 12 | 6 | 343,20 xxxxx 1) | 353,60 xxxxx 2) | 353,60 xxxxx 1) | 353,60 xxxxx 1) | 353,60 xxxxx 1) |
| 12,06 - 14,05 | 130 | 20 | 85 | 14 | 6 | 400,40 xxxxx 1) | 412,20 xxxxx 2) | 412,20 xxxxx 1) | 412,20 xxxxx 1) | 412,20 xxxxx 1) |
| 14,06 - 16,05 | 150 | 20 | 102 | 16 | 6 | 456,40 xxxxx 1) | 468,00 xxxxx 2) | 468,00 xxxxx 1) | 468,00 xxxxx 1) | 468,00 xxxxx 1) |
| 16,06 - 18,05 | 150 | 20 | 102 | 18 | 6 | 486,20 xxxxx 1) | 508,40 xxxxx 2) | 508,40 xxxxx 1) | 508,40 xxxxx 1) | 508,40 xxxxx 1) |
| 18,06 - 20,05 | 160 | 20 | 110 | 20 | 6 | 516,20 xxxxx 1) | 535,60 xxxxx 2) | 535,60 xxxxx 1) | 535,60 xxxxx 1) | 535,60 xxxxx 1) |

| | | | | | |
|---|---|---|---|---|---|
| Steel | ● | | | | |
| Stainless steel | ● | ● | | | |
| Cast iron | ● | | ● | | |
| Non ferrous metals | ○ | | | ● | |
| Heat resistant alloys | ○ | | | | |
| Hardened materials | ○ | | | | ● |

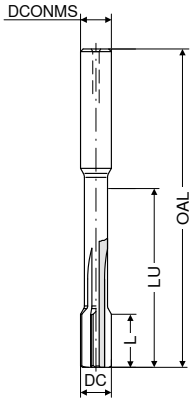
1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 25 working days
2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 32 working days

→ $v_c$ Page 64+65

This tool concept permits numerous tolerances. For sizes covered please refer to the table on → **Page 75**.
For xxxxx please indicate required Ø in the order (e.g. Ø 8.82 mm → Article No. 40 486 08820)!

# Fullmax – High-performance machine reamers

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
- ▲ specialised geometries and coatings
- ▲ tolerance: Ø 2,96–5,03 mm = +0,004 mm
- ▲ tolerance: Ø 5,97–12,03 mm = +0,005 mm






| | Fullmax UNI | Fullmax VA | Fullmax K | Fullmax ALU | Fullmax H |
|---|---|---|---|---|---|
| | DBG-U | DBQ | DBG-P | DBC-N | DBF-A |
| |  |  |  |  |  |
| | 52M.57 | 52T.45 | 52K.65 | 52Q.17 | 52H.55 |
| | HA straight flute | HA straight flute | HA straight flute | HA straight flute | HA straight flute |
| | ◁ 60° | ◁ 45° | ◁ 30° | ◁ 60° | ◁ 30° |
| | ASG2110 | ASG2131 | ASG2350 | ASG2170 | ASG2360 |
| | Solid carbide | Solid carbide | Solid carbide | Solid carbide | Solid carbide |
| | Blind hole | Blind hole | Blind hole | Blind hole | Blind hole |
| | NEW U4 | NEW U4 | NEW U4 | NEW U4 | NEW U4 |
| | Article no. 40 487 ... | Article no. 40 404 ... | Article no. 40 478 ... | Article no. 40 474 ... | Article no. 40 476 ... |

| DC +0,004/+0,005 mm | OAL mm | L mm | LU mm | DCONMS h6 mm | ZEFP | EUR | | EUR | | EUR | | EUR | | EUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,96 - 3,96 | 60 | 12 | 32 | 4 | 4 | 143,00 | xxxxx[1] | 148,20 | xxxxx[2] | 148,20 | xxxxx[2] | 148,20 | xxxxx[1] | 148,20 | xxxxx[1] |
| 3,97 | 60 | 12 | 32 | 4 | 4 | 122,70 | 03970 | 135,20 | 03970 | 148,20 | 03970[2] | 148,20 | 03970[1] | 148,20 | 03970[1] |
| 3,98 | 60 | 12 | 32 | 4 | 4 | 122,70 | 03980 | 135,20 | 03980 | 148,20 | 03980[2] | 148,20 | 03980[1] | 148,20 | 03980[1] |
| 3,99 | 60 | 12 | 32 | 4 | 4 | 122,70 | 03990 | 135,20 | 03990 | 148,20 | 03990[2] | 148,20 | 03990[1] | 148,20 | 03990[1] |
| 4,00 | 60 | 12 | 32 | 4 | 4 | 122,70 | 04000 | 135,20 | 04000 | 148,20 | 04000[2] | 148,20 | 04000[1] | 169,00 | 04000[1] |
| 4,01 | 60 | 12 | 32 | 4 | 4 | 122,70 | 04010 | 135,20 | 04010 | 148,20 | 04010[2] | 148,20 | 04010[1] | 148,20 | 04010[1] |
| 4,02 | 60 | 12 | 32 | 4 | 4 | 122,70 | 04020 | 135,20 | 04020 | 148,20 | 04020[2] | 148,20 | 04020[1] | 148,20 | 04020[1] |
| 4,03 | 60 | 12 | 32 | 4 | 4 | 122,70 | 04030 | 135,20 | 04030 | 148,20 | 04030[2] | 148,20 | 04030[1] | 148,20 | 04030[1] |
| 4,04 - 4,05 | 60 | 12 | 32 | 4 | 4 | 143,00 | xxxxx[1] | 148,20 | xxxxx[2] | 148,20 | xxxxx[2] | 148,20 | xxxxx[1] | 148,20 | xxxxx[1] |
| 4,06 - 4,96 | 76 | 12 | 40 | 6 | 4 | 147,00 | xxxxx[1] | 152,20 | xxxxx[2] | 152,20 | xxxxx[1] | 152,20 | xxxxx[1] | 152,20 | xxxxx[1] |
| 4,97 | 76 | 12 | 40 | 6 | 4 | 125,80 | 04970 | 137,30 | 04970 | 152,20 | 04970[2] | 152,20 | 04970[1] | 152,20 | 04970[1] |
| 4,98 | 76 | 12 | 40 | 6 | 4 | 125,80 | 04980 | 137,30 | 04980 | 152,20 | 04980[2] | 152,20 | 04980[1] | 152,20 | 04980[1] |
| 4,99 | 76 | 12 | 40 | 6 | 4 | 125,80 | 04990 | 137,30 | 04990 | 152,20 | 04990[2] | 152,20 | 04990[1] | 152,20 | 04990[1] |
| 5,00 | 76 | 12 | 40 | 6 | 4 | 125,80 | 05000 | 137,30 | 05000 | 152,20 | 05000[2] | 152,20 | 05000[1] | 173,00 | 05000[1] |
| 5,01 | 76 | 12 | 40 | 6 | 4 | 125,80 | 05010 | 137,30 | 05010 | 152,20 | 05010[2] | 152,20 | 05010[1] | 152,20 | 05010[1] |
| 5,02 | 76 | 12 | 40 | 6 | 4 | 125,80 | 05020 | 137,30 | 05020 | 152,20 | 05020[2] | 152,20 | 05020[1] | 152,20 | 05020[1] |
| 5,03 | 76 | 12 | 40 | 6 | 4 | 125,80 | 05030 | 137,30 | 05030 | 152,20 | 05030[2] | 152,20 | 05030[1] | 152,20 | 05030[1] |
| 5,04 - 5,96 | 76 | 12 | 40 | 6 | 4 | 147,00 | xxxxx[1] | 152,20 | xxxxx[2] | 152,20 | xxxxx[2] | 152,20 | xxxxx[1] | 152,20 | xxxxx[1] |
| 5,97 | 76 | 12 | 40 | 6 | 4 | 127,90 | 05970 | 140,40 | 05970 | 152,20 | 05970[2] | 152,20 | 05970[1] | 152,20 | 05970[1] |
| 5,98 | 76 | 12 | 40 | 6 | 4 | 127,90 | 05980 | 140,40 | 05980 | 152,20 | 05980[2] | 152,20 | 05980[1] | 152,20 | 05980[1] |
| 5,99 | 76 | 12 | 40 | 6 | 4 | 127,90 | 05990 | 140,40 | 05990 | 152,20 | 05990[2] | 152,20 | 05990[1] | 152,20 | 05990[1] |
| 6,00 | 76 | 12 | 40 | 6 | 4 | 127,90 | 06000 | 140,40 | 06000 | 152,20 | 06000[2] | 152,20 | 06000[1] | 173,00 | 06000[1] |
| 6,01 | 76 | 12 | 40 | 6 | 4 | 127,90 | 06010 | 140,40 | 06010 | 152,20 | 06010[2] | 152,20 | 06010[1] | 152,20 | 06010[1] |
| 6,02 | 76 | 12 | 40 | 6 | 4 | 127,90 | 06020 | 140,40 | 06020 | 152,20 | 06020[2] | 152,20 | 06020[1] | 152,20 | 06020[1] |
| 6,03 | 76 | 12 | 40 | 6 | 4 | 127,90 | 06030 | 140,40 | 06030 | 152,20 | 06030[2] | 152,20 | 06030[1] | 152,20 | 06030[1] |
| 6,04 - 6,05 | 76 | 12 | 40 | 6 | 4 | 148,20 | xxxxx[1] | 152,20 | xxxxx[2] | 152,20 | xxxxx[2] | 152,20 | xxxxx[1] | 152,20 | xxxxx[1] |
| 6,06 - 7,96 | 101 | 16 | 65 | 8 | 6 | 158,60 | xxxxx[1] | 163,80 | xxxxx[2] | 163,80 | xxxxx[1] | 163,80 | xxxxx[1] | 163,80 | xxxxx[1] |
| 7,97 | 101 | 16 | 65 | 8 | 6 | 134,20 | 07970 | 147,70 | 07970 | 163,80 | 07970[2] | 163,80 | 07970[1] | 163,80 | 07970[1] |
| 7,98 | 101 | 16 | 65 | 8 | 6 | 134,20 | 07980 | 147,70 | 07980 | 163,80 | 07980[2] | 163,80 | 07980[1] | 163,80 | 07980[1] |

| | | | | | |
|---|---|---|---|---|---|
| Steel | ● | | | | |
| Stainless steel | ● | ● | | | |
| Cast iron | ● | | ● | | |
| Non ferrous metals | ○ | | | ● | |
| Heat resistant alloys | ○ | | | | |
| hardened materials | ○ | | | | ● |

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 25 working days
2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 32 working days

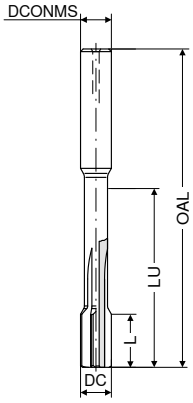
→ $v_c$ Page 64+65

This tool concept permits numerous tolerances. For sizes covered please refer to the table on → **Page 75**.
For xxxxx please indicate required Ø in the order (e.g. Ø 8.82 mm → Article no. 40 487 08820)!


Continued on next page

# Fullmax – High-performance machine reamers

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
- ▲ specialised geometries and coatings
- ▲ tolerance: Ø 2,96–5,03 mm = +0,004 mm
- ▲ tolerance: Ø 5,97–12,03 mm = +0,005 mm




| Fullmax UNI | Fullmax VA | Fullmax K | Fullmax ALU | Fullmax H |
|---|---|---|---|---|
| DBG-U | DBQ | DBG-P | DBC-N | DBF-A |
|  |  |  |  |  |
| 52M.57 | 52T.45 | 52K.65 | 52Q.17 | 52H.55 |
| HA | HA | HA | HA | HA |
| straight flute | straight flute | straight flute | straight flute | straight flute |
| ◁ 60° | ◁ 45° | ◁ 30° | ◁ 60° | ◁ 30° |
| ASG2110 | ASG2131 | ASG2350 | ASG2170 | ASG2360 |
| Solid carbide | Solid carbide | Solid carbide | Solid carbide | Solid carbide |
| Blind hole | Blind hole | Blind hole | Blind hole | Blind hole |

| DC +0,004/+0,005 | OAL | L | LU | DCONMS h6 | ZEFP | NEW U4 Article no. 40 487 ... | NEW U4 Article no. 40 404 ... | NEW U4 Article no. 40 478 ... | NEW U4 Article no. 40 474 ... | NEW U4 Article no. 40 476 ... |
|---|---|---|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | mm | | EUR | EUR | EUR | EUR | EUR |
| 7,99 | 101 | 16 | 65 | 8 | 6 | 134,20 07990 | 147,70 07990 | 163,80 07990 2) | 163,80 07990 1) | 163,80 07990 1) |
| 8,00 | 101 | 16 | 65 | 8 | 6 | 134,20 08000 | 147,70 08000 | 163,80 08000 2) | 163,80 08000 1) | 187,20 08000 1) |
| 8,01 | 101 | 16 | 65 | 8 | 6 | 134,20 08010 | 147,70 08010 | 163,80 08010 2) | 163,80 08010 1) | 163,80 08010 1) |
| 8,02 | 101 | 16 | 65 | 8 | 6 | 134,20 08020 | 147,70 08020 | 163,80 08020 2) | 163,80 08020 1) | 163,80 08020 1) |
| 8,03 | 101 | 16 | 65 | 8 | 6 | 134,20 08030 | 147,70 08030 | 163,80 08030 2) | 163,80 08030 1) | 163,80 08030 1) |
| 8,04 - 8,05 | 101 | 16 | 65 | 8 | 6 | 158,60 xxxxx 1) | 163,80 xxxxx 2) | 163,80 xxxxx 2) | 163,80 xxxxx 1) | 163,80 xxxxx 1) |
| 8,06 - 9,96 | 108 | 16 | 68 | 10 | 6 | 201,60 xxxxx 1) | 236,60 xxxxx 2) | 236,60 xxxxx 1) | 236,60 xxxxx 1) | 236,60 xxxxx 1) |
| 9,97 | 108 | 16 | 68 | 10 | 6 | 195,50 09970 | 215,30 09970 | 236,60 09970 2) | 236,60 09970 1) | 236,60 09970 1) |
| 9,98 | 108 | 16 | 68 | 10 | 6 | 195,50 09980 | 215,30 09980 | 236,60 09980 2) | 236,60 09980 1) | 236,60 09980 1) |
| 9,99 | 108 | 16 | 68 | 10 | 6 | 195,50 09990 | 215,30 09990 | 236,60 09990 2) | 236,60 09990 1) | 236,60 09990 1) |
| 10,00 | 108 | 16 | 68 | 10 | 6 | 195,50 10000 | 215,30 10000 | 236,60 10000 2) | 236,60 10000 1) | 269,20 10000 1) |
| 10,01 | 108 | 16 | 68 | 10 | 6 | 195,50 10010 | 215,30 10010 | 236,60 10010 2) | 236,60 10010 1) | 236,60 10010 1) |
| 10,02 | 108 | 16 | 68 | 10 | 6 | 195,50 10020 | 215,30 10020 | 236,60 10020 2) | 236,60 10020 1) | 236,60 10020 1) |
| 10,03 | 108 | 16 | 68 | 10 | 6 | 195,50 10030 | 215,30 10030 | 236,60 10030 2) | 236,60 10030 1) | 236,60 10030 1) |
| 10,04 - 10,05 | 108 | 16 | 68 | 10 | 6 | 201,60 xxxxx 1) | 236,60 xxxxx 2) | 236,60 xxxxx 2) | 236,60 xxxxx 1) | 236,60 xxxxx 1) |
| 10,06 - 11,96 | 130 | 20 | 85 | 12 | 6 | 305,60 xxxxx 1) | 322,40 xxxxx 2) | 322,40 xxxxx 1) | 322,40 xxxxx 1) | 322,40 xxxxx 1) |
| 11,97 | 130 | 20 | 85 | 12 | 6 | 261,00 11970 | 287,00 11970 | 322,40 11970 2) | 322,40 11970 1) | 322,40 11970 1) |
| 11,98 | 130 | 20 | 85 | 12 | 6 | 261,00 11980 | 287,00 11980 | 322,40 11980 2) | 322,40 11980 1) | 322,40 11980 1) |
| 11,99 | 130 | 20 | 85 | 12 | 6 | 261,00 11990 | 287,00 11990 | 322,40 11990 2) | 322,40 11990 1) | 322,40 11990 1) |
| 12,00 | 130 | 20 | 85 | 12 | 6 | 261,00 12000 | 287,00 12000 | 322,40 12000 2) | 322,40 12000 1) | 366,60 12000 1) |
| 12,01 | 130 | 20 | 85 | 12 | 6 | 261,00 12010 | 287,00 12010 | 322,40 12010 2) | 322,40 12010 1) | 322,40 12010 1) |
| 12,02 | 130 | 20 | 85 | 12 | 6 | 261,00 12020 | 287,00 12020 | 322,40 12020 2) | 322,40 12020 1) | 322,40 12020 1) |
| 12,03 | 130 | 20 | 85 | 12 | 6 | 261,00 12030 | 287,00 12030 | 322,40 12030 2) | 322,40 12030 1) | 322,40 12030 1) |
| 12,04 - 12,05 | 130 | 20 | 85 | 12 | 6 | 305,60 xxxxx 1) | 322,40 xxxxx 2) | 322,40 xxxxx 2) | 322,40 xxxxx 1) | 322,40 xxxxx 1) |
| 12,06 - 14,05 | 130 | 20 | 85 | 14 | 6 | 355,00 xxxxx 1) | 370,60 xxxxx 2) | 370,60 xxxxx 1) | 370,60 xxxxx 1) | 370,60 xxxxx 1) |
| 14,06 - 16,05 | 150 | 20 | 102 | 16 | 6 | 410,80 xxxxx 1) | 427,80 xxxxx 2) | 427,80 xxxxx 1) | 427,80 xxxxx 1) | 427,80 xxxxx 1) |
| 16,06 - 18,05 | 150 | 20 | 102 | 18 | 6 | 435,60 xxxxx 1) | 452,40 xxxxx 2) | 452,40 xxxxx 1) | 452,40 xxxxx 1) | 452,40 xxxxx 1) |
| 18,06 - 20,05 | 160 | 20 | 110 | 20 | 6 | 472,00 xxxxx 1) | 486,20 xxxxx 2) | 486,20 xxxxx 1) | 486,20 xxxxx 1) | 486,20 xxxxx 1) |

| | | | | | |
|---|---|---|---|---|---|
| Steel | ● | | | | |
| Stainless steel | ● | ● | | | |
| Cast iron | ● | | ● | | |
| Non ferrous metals | ○ | | | ● | |
| Heat resistant alloys | ○ | | | | |
| hardened materials | ○ | | | | ● |

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 25 working days
2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 32 working days

→ $v_c$ Page 64+65

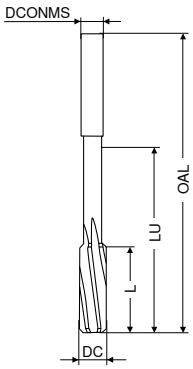
This tool concept permits numerous tolerances. For sizes covered please refer to the table on → **Page 75**.
For xxxxx please indicate required Ø in the order (e.g. Ø 8.82 mm → Article no. 40 487 08820)!

# NC machine reamers, DIN 8093-2B

- ▲ extremely irregular pitch
- ▲ Ø 2–3.5 mm with centres both ends
- ▲ Ø 4–13 mm with protected centres
- ▲ from Ø 22 mm, similar to DIN 8093-2B

**NC**

**TiAlN**






Left Hand Helix
Solid carbide


Left Hand Helix
Solid carbide

| DC $_{H7}$ | OAL | L | LU | DCONMS $_{h6}$ | ZEFP | U4 Article no. 40 420 ... | | U4 Article no. 40 421 ... | |
|---|---|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | mm | | EUR | | EUR | |
| 2,0 | 50 | 12 | 18,5 | 3 | 4 | 43,32 | 020 | 52,14 | 020 |
| 2,5 | 60 | 16 | 29,0 | 3 | 4 | 43,32 | 025 | 52,14 | 025 |
| 3,0 | 65 | 17 | 33,0 | 4 | 6 | 45,08 | 030 | 54,44 | 030 |
| 3,2 | 65 | 18 | 33,0 | 4 | 6 | 45,08 | 032 | 54,44 | 032 |
| 3,5 | 75 | 18 | 43,0 | 4 | 6 | 45,08 | 035 | 54,44 | 035 |
| 4,0 | 75 | 19 | 43,0 | 4 | 6 | 54,01 | 040 | 65,14 | 040 |
| 4,5 | 80 | 21 | 39,0 | 6 | 6 | 54,01 | 045 | 65,14 | 045 |
| 5,0 | 93 | 23 | 52,0 | 6 | 6 | 60,62 | 050 | 72,97 | 050 |
| 5,5 | 93 | 26 | 53,0 | 6 | 6 | 60,62 | 055 | 72,97 | 055 |
| 6,0 | 93 | 26 | 53,0 | 6 | 6 | 65,24 | 060 | 78,70 | 060 |
| 6,5 | 101 | 28 | 61,0 | 6 | 6 | 65,24 | 065 | 78,70 | 065 |
| 7,0 | 109 | 31 | 68,0 | 8 | 6 | 72,30 | 070 | 87,29 | 070 |
| 7,5 | 109 | 31 | 68,0 | 8 | 6 | 72,30 | 075 | 87,29 | 075 |
| 8,0 | 117 | 33 | 77,0 | 8 | 6 | 84,31 | 080 | 101,50 | 080 |
| 8,5 | 117 | 33 | 77,0 | 8 | 6 | 84,31 | 085 | 101,50 | 085 |
| 9,0 | 125 | 36 | 80,0 | 10 | 6 | 91,92 | 090 | 111,30 | 090 |
| 9,5 | 125 | 36 | 80,0 | 10 | 6 | 91,92 | 095 | 111,30 | 095 |
| 10,0 | 133 | 38 | 88,0 | 10 | 6 | 98,31 | 100 | 119,10 | 100 |
| 10,5 | 133 | 38 | 88,0 | 10 | 6 | 98,31 | 105 | 119,10 | 105 |
| 11,0 | 142 | 41 | 97,0 | 10 | 6 | 126,80 | 110 | 153,20 | 110 |
| 12,0 | 151 | 44 | 100,0 | 12 | 6 | 126,80 | 120 | 153,20 | 120 |
| 13,0 | 151 | 44 | 100,0 | 12 | 6 | 124,60 | 130 | 151,00 | 130 |
| 14,0 | 160 | 47 | 106,0 | 16 | 6 | 124,60 | 140 1) | 151,00 | 140 1) |
| 15,0 | 162 | 50 | 108,0 | 16 | 6 | 131,30 | 150 1) | 159,90 | 150 1) |
| 16,0 | 170 | 52 | 116,0 | 16 | 6 | 137,80 | 160 1) | 164,20 | 160 1) |
| 17,0 | 175 | 52 | 121,0 | 18 | 6 | 140,00 | 170 1) | 168,60 | 170 1) |
| 18,0 | 182 | 52 | 128,0 | 18 | 6 | 141,00 | 180 1) | 169,70 | 180 1) |
| 19,0 | 189 | 52 | 133,0 | 20 | 6 | 147,80 | 190 1) | 177,50 | 190 1) |
| 20,0 | 195 | 52 | 139,0 | 20 | 6 | 147,80 | 200 1) | 179,60 | 200 1) |
| 22,0 | 160 | 25 | 105,0 | 20 | 6 | 147,80 | 220 1) | | |
| 24,0 | 180 | 25 | 125,0 | 20 | 8 | 180,80 | 240 1) | | |
| 25,0 | 180 | 25 | 125,0 | 20 | 8 | 180,80 | 250 1) | | |
| 26,0 | 180 | 25 | 125,0 | 20 | 8 | 201,80 | 260 1) | | |
| 28,0 | 180 | 25 | 119,0 | 25 | 8 | 212,80 | 280 1) | | |
| 30,0 | 200 | 25 | 139,0 | 25 | 8 | 220,50 | 300 1) | | |

| | | |
|---|---|---|
| Steel | ● | ● |
| Stainless steel | | |
| Cast iron | ○ | ● |
| Non ferrous metals | ● | |
| Heat resistant alloys | ○ | |
| Hardened materials | | |

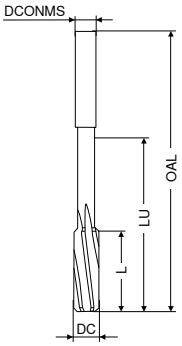
1) with carbide cutting edges

→ $v_c$ Page 66+67

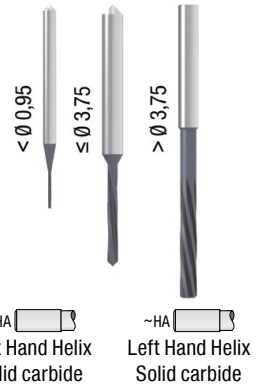
# NC machine reamers, DIN 8093-2B

- ▲ 0,01 mm steps
- ▲ extremely irregular pitch
- ▲ Ø 0,59–0,95 mm similar to DIN 8093-B
- ▲ Ø 0,96–3,75 mm with centres both ends
- ▲ Ø 3,76–12,05 mm with protected centres

**NC 100**




**TiAlN**




Left Hand Helix
Solid carbide

Left Hand Helix
Solid carbide

| DC +0,004 | OAL | L | LU | DCONMS h6 | ZEFP | U4 Article no. 40 430 ... | | U4 Article no. 40 431 ... | |
|---|---|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | mm | | EUR | | EUR | |
| 0,59 - 0,64 | 45 | 5 | 7,5 | 3 | 4 | 76,71 | xxxxx[2] | | |
| 0,65 - 0,74 | 45 | 5 | 7,5 | 3 | 4 | 76,71 | xxxxx[2] | | |
| 0,75 - 0,84 | 45 | 6 | 8,0 | 3 | 4 | 76,71 | xxxxx[2] | | |
| 0,85 - 0,95 | 45 | 6 | 8,0 | 3 | 4 | 76,71 | xxxxx[2] | | |
| 0,96 | 50 | 6 | 17,5 | 3 | 3 | 68,89 | 00960[2] | | |
| 0,97 | 50 | 6 | 17,5 | 3 | 3 | 68,89 | 00970[2] | | |
| 0,98 | 50 | 6 | 17,5 | 3 | 3 | 68,89 | 00980[1] | | |
| 0,99 | 50 | 6 | 17,5 | 3 | 3 | 68,89 | 00990[1] | | |
| 1,00 | 50 | 6 | 17,5 | 3 | 3 | 68,89 | 01000[1] | 83,21 | 01000[1] |
| 1,01 | 50 | 6 | 17,5 | 3 | 3 | 68,89 | 01010[1] | 83,21 | 01010[1] |
| 1,02 | 50 | 6 | 17,5 | 3 | 3 | 68,89 | 01020[1] | 83,21 | 01020[1] |
| 1,03 | 50 | 6 | 17,5 | 3 | 3 | 68,89 | 01030[1] | 83,21 | 01030[1] |
| 1,04 - 1,06 | 50 | 6 | 17,5 | 3 | 3 | 68,89 | xxxxx[1] | 83,21 | xxxxx[1] |
| 1,07 - 1,18 | 50 | 9 | 17,5 | 3 | 3 | 68,89 | xxxxx[1] | 83,21 | xxxxx[1] |
| 1,19 - 1,32 | 50 | 9 | 17,5 | 3 | 3 | 68,89 | xxxxx[1] | 83,21 | xxxxx[1] |
| 1,33 - 1,50 | 50 | 9 | 18,0 | 3 | 3 | 68,89 | xxxxx[1] | 83,21 | xxxxx[1] |
| 1,51 - 1,70 | 50 | 10 | 18,0 | 3 | 3 | 68,89 | xxxxx[1] | 83,21 | xxxxx[1] |
| 1,71 - 1,90 | 50 | 11 | 18,5 | 3 | 4 | 68,89 | xxxxx[1] | 83,21 | xxxxx[1] |
| 1,91 - 1,97 | 50 | 12 | 18,5 | 3 | 4 | 77,92 | xxxxx[1] | 94,12 | xxxxx[1] |
| 1,98 | 50 | 12 | 18,5 | 3 | 4 | 77,92 | 01980 | 94,12 | 01980 |
| 1,99 | 50 | 12 | 18,5 | 3 | 4 | 77,92 | 01990 | 94,12 | 01990 |
| 2,00 | 50 | 12 | 18,5 | 3 | 4 | 77,92 | 02000 | 82,12 | 02000 |
| 2,01 | 50 | 12 | 18,5 | 3 | 4 | 77,92 | 02010 | 94,12 | 02010 |
| 2,02 | 50 | 12 | 18,5 | 3 | 4 | 77,92 | 02020 | 94,12 | 02020 |
| 2,03 | 50 | 12 | 18,5 | 3 | 4 | 77,92 | 02030 | 94,12 | 02030 |
| 2,04 - 2,12 | 50 | 12 | 18,5 | 3 | 4 | 77,92 | xxxxx[1] | 94,12 | xxxxx[1] |
| 2,13 - 2,36 | 50 | 12 | 18,5 | 3 | 4 | 77,92 | xxxxx[1] | 94,12 | xxxxx[1] |
| 2,37 - 2,47 | 60 | 16 | 29,0 | 3 | 4 | 59,96 | xxxxx[1] | 72,42 | xxxxx[1] |
| 2,48 | 60 | 16 | 29,0 | 3 | 4 | 59,96 | 02480 | 72,42 | 02480 |
| 2,49 | 60 | 16 | 29,0 | 3 | 4 | 59,96 | 02490 | 72,42 | 02490 |
| 2,50 | 60 | 16 | 29,0 | 3 | 4 | 59,96 | 02500 | 72,42 | 02500 |
| 2,51 | 60 | 16 | 29,0 | 3 | 4 | 59,96 | 02510 | 72,42 | 02510 |
| 2,52 | 60 | 16 | 29,0 | 3 | 4 | 59,96 | 02520 | 72,42 | 02520 |
| 2,53 | 60 | 16 | 29,0 | 3 | 4 | 59,96 | 02530 | 72,42 | 02530 |
| 2,54 - 2,65 | 60 | 16 | 29,0 | 3 | 4 | 59,96 | xxxxx[1] | 72,42 | xxxxx[1] |
| 2,66 - 2,80 | 65 | 17 | 33,0 | 4 | 6 | 59,96 | xxxxx[1] | 72,42 | xxxxx[1] |
| 2,81 - 2,96 | 65 | 17 | 33,0 | 4 | 6 | 51,47 | xxxxx[1] | 62,26 | xxxxx[1] |
| 2,97 | 65 | 17 | 33,0 | 4 | 6 | 51,47 | 02970 | 62,26 | 02970 |
| 2,98 | 65 | 17 | 33,0 | 4 | 6 | 51,47 | 02980 | 62,26 | 02980 |
| 2,99 | 65 | 17 | 33,0 | 4 | 6 | 51,47 | 02990 | 62,26 | 02990 |
| 3,00 | 65 | 17 | 33,0 | 4 | 6 | 45,08 | 03000 | 54,44 | 03000 |
| 3,01 | 65 | 17 | 33,0 | 4 | 6 | 51,47 | 03010 | 62,26 | 03010 |
| 3,02 | 65 | 17 | 33,0 | 4 | 6 | 51,47 | 03020 | 62,26 | 03020 |
| 3,03 | 65 | 17 | 33,0 | 4 | 6 | 51,47 | 03030 | 62,26 | 03030 |
| 3,04 - 3,35 | 65 | 18 | 33,0 | 4 | 6 | 60,62 | xxxxx[1] | 72,97 | xxxxx[1] |
| 3,36 - 3,75 | 75 | 18 | 43,0 | 4 | 6 | 60,62 | xxxxx[1] | 72,97 | xxxxx[1] |
| 3,76 - 3,96 | 75 | 19 | 43,0 | 4 | 6 | 60,62 | xxxxx[1] | 72,97 | xxxxx[1] |
| 3,97 | 75 | 19 | 43,0 | 4 | 6 | 60,62 | 03970 | 72,97 | 03970 |
| 3,98 | 75 | 19 | 43,0 | 4 | 6 | 60,62 | 03980 | 72,97 | 03980 |
| 3,99 | 75 | 19 | 43,0 | 4 | 6 | 60,62 | 03990 | 72,97 | 03990 |
| 4,00 | 75 | 19 | 43,0 | 4 | 6 | 54,01 | 04000 | 65,14 | 04000 |
| 4,01 | 75 | 19 | 43,0 | 4 | 6 | 60,62 | 04010 | 72,97 | 04010 |
| 4,02 | 75 | 19 | 43,0 | 4 | 6 | 60,62 | 04020 | 72,97 | 04020 |
| 4,03 | 75 | 19 | 43,0 | 4 | 6 | 60,62 | 04030 | 72,97 | 04030 |
| 4,04 - 4,25 | 75 | 19 | 43,0 | 4 | 6 | 60,62 | xxxxx[1] | 72,97 | xxxxx[1] |
| 4,26 - 4,75 | 80 | 21 | 39,0 | 6 | 6 | 68,89 | xxxxx[1] | 80,24 | xxxxx[1] |
| 4,76 - 4,96 | 93 | 23 | 52,0 | 6 | 6 | 68,89 | xxxxx[1] | 80,24 | xxxxx[1] |
| 4,97 | 93 | 23 | 52,0 | 6 | 6 | 68,89 | 04970 | 80,24 | 04970 |
| 4,98 | 93 | 23 | 52,0 | 6 | 6 | 68,89 | 04980 | 80,24 | 04980 |
| 4,99 | 93 | 23 | 52,0 | 6 | 6 | 68,89 | 04990 | 80,24 | 04990 |
| 5,00 | 93 | 23 | 52,0 | 6 | 6 | 60,62 | 05000 | 72,97 | 05000 |
| 5,01 | 93 | 23 | 52,0 | 6 | 6 | 68,89 | 05010 | 80,24 | 05010 |
| 5,02 | 93 | 23 | 52,0 | 6 | 6 | 68,89 | 05020 | 80,24 | 05020 |
| 5,03 | 93 | 23 | 52,0 | 6 | 6 | 68,89 | 05030 | 80,24 | 05030 |
| 5,04 - 5,30 | 93 | 23 | 52,0 | 6 | 6 | 68,89 | xxxxx[1] | 80,24 | xxxxx[1] |
| 5,31 - 5,96 | 93 | 26 | 53,0 | 6 | 6 | 75,06 | xxxxx[1] | 87,29 | xxxxx[1] |
| 5,97 | 93 | 26 | 53,0 | 6 | 6 | 74,51 | 05970 | 87,29 | 05970 |
| 5,98 | 93 | 26 | 53,0 | 6 | 6 | 74,51 | 05980 | 87,29 | 05980 |
| 5,99 | 93 | 26 | 53,0 | 6 | 6 | 74,51 | 05990 | 87,29 | 05990 |
| 6,00 | 93 | 26 | 53,0 | 6 | 6 | 65,24 | 06000 | 78,70 | 06000 |
| 6,01 | 93 | 26 | 53,0 | 6 | 6 | 75,06 | 06010 | 87,29 | 06010 |
| 6,02 | 93 | 26 | 53,0 | 6 | 6 | 75,06 | 06020 | 87,29 | 06020 |
| 6,03 | 93 | 26 | 53,0 | 6 | 6 | 75,06 | 06030 | 87,29 | 06030 |
| 6,04 - 6,70 | 101 | 28 | 61,0 | 6 | 6 | 90,15 | xxxxx[1] | 108,80 | xxxxx[1] |
| 6,71 - 7,50 | 109 | 31 | 68,0 | 8 | 6 | 90,15 | xxxxx[1] | 108,80 | xxxxx[1] |
| 7,51 - 7,96 | 117 | 33 | 77,0 | 8 | 6 | 90,15 | xxxxx[1] | 108,80 | xxxxx[1] |
| 7,97 | 117 | 33 | 77,0 | 8 | 6 | 90,15 | 07970 | 108,80 | 07970 |
| 7,98 | 117 | 33 | 77,0 | 8 | 6 | 90,15 | 07980 | 108,80 | 07980 |
| 7,99 | 117 | 33 | 77,0 | 8 | 6 | 90,15 | 07990 | 108,80 | 07990 |
| 8,00 | 117 | 33 | 77,0 | 8 | 6 | 84,31 | 08000 | 101,50 | 08000 |
| 8,01 | 117 | 33 | 77,0 | 8 | 6 | 90,15 | 08010 | 108,80 | 08010 |
| 8,02 | 117 | 33 | 77,0 | 8 | 6 | 90,15 | 08020 | 108,80 | 08020 |
| 8,03 | 117 | 33 | 77,0 | 8 | 6 | 90,15 | 08030 | 108,80 | 08030 |
| 8,04 | 117 | 33 | 77,0 | 8 | 6 | 90,15 | 08040 | 108,80 | 08040 |
| 8,05 - 8,50 | 117 | 33 | 77,0 | 8 | 6 | 105,50 | xxxxx[1] | 126,80 | xxxxx[1] |
| 8,51 - 9,04 | 125 | 36 | 80,0 | 10 | 6 | 105,50 | xxxxx[1] | 126,80 | xxxxx[1] |
| 9,05 - 9,50 | 125 | 36 | 80,0 | 10 | 6 | 105,50 | xxxxx[1] | 126,80 | xxxxx[1] |
| 9,51 - 9,96 | 133 | 38 | 88,0 | 10 | 6 | 105,50 | xxxxx[1] | 126,80 | xxxxx[1] |
| 9,97 | 133 | 38 | 88,0 | 10 | 6 | 105,50 | 09970 | 126,80 | 09970 |
| 9,98 | 133 | 38 | 88,0 | 10 | 6 | 105,50 | 09980 | 126,80 | 09980 |
| 9,99 | 133 | 38 | 88,0 | 10 | 6 | 105,50 | 09990 | 126,80 | 09990 |
| 10,00 | 133 | 38 | 88,0 | 10 | 6 | 98,31 | 10000 | 119,10 | 10000 |
| 10,01 | 133 | 38 | 88,0 | 10 | 6 | 105,50 | 10010 | 126,80 | 10010 |
| 10,02 | 133 | 38 | 88,0 | 10 | 6 | 105,50 | 10020 | 126,80 | 10020 |
| 10,03 | 133 | 38 | 88,0 | 10 | 6 | 105,50 | 10030 | 126,80 | 10030 |
| 10,04 | 133 | 38 | 88,0 | 10 | 6 | 105,50 | 10040 | 126,80 | 10040 |
| 10,05 | 133 | 38 | 88,0 | 10 | 6 | 105,50 | 10050 | 126,80 | 10050 |
| 10,06 - 10,60 | 133 | 38 | 88,0 | 10 | 6 | 126,80 | xxxxx[1] | 153,20 | xxxxx[1] |
| 10,61 - 11,80 | 142 | 41 | 97,0 | 10 | 6 | 126,80 | xxxxx[1] | 153,20 | xxxxx[1] |
| 11,81 - 11,96 | 151 | 44 | 100,0 | 12 | 6 | 126,80 | xxxxx[1] | 153,20 | xxxxx[1] |
| 11,97 | 151 | 44 | 100,0 | 12 | 6 | 126,80 | 11970 | 153,20 | 11970 |
| 11,98 | 151 | 44 | 100,0 | 12 | 6 | 126,80 | 11980 | 153,20 | 11980 |
| 11,99 | 151 | 44 | 100,0 | 12 | 6 | 126,80 | 11990 | 153,20 | 11990 |
| 12,00 | 151 | 44 | 100,0 | 12 | 6 | 120,10 | 12000 | 144,40 | 12000 |
| 12,01 | 151 | 44 | 100,0 | 12 | 6 | 126,80 | 12010 | 153,20 | 12010 |
| 12,02 | 151 | 44 | 100,0 | 12 | 6 | 126,80 | 12020 | 153,20 | 12020 |
| 12,03 | 151 | 44 | 100,0 | 12 | 6 | 126,80 | 12030 | 153,20 | 12030 |
| 12,04 | 151 | 44 | 100,0 | 12 | 6 | 126,80 | 12040 | 153,20 | 12040 |
| 12,05 | 151 | 44 | 100,0 | 12 | 6 | 126,80 | 12050 | 153,20 | 12050 |

| | U4 Article no. 40 430 ... | U4 Article no. 40 431 ... |
|---|---|---|
| Steel | ● | ● |
| Stainless steel | | |
| Cast iron | ○ | ● |
| Non ferrous metals | ● | |
| Heat resistant alloys | ○ | |
| Hardened materials | | |

→ $v_c$ Page 66+67

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 14 working days

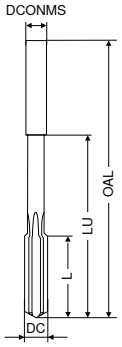
2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 14 working days / Minimum order 3 pieces

This tool concept permits numerous tolerances.
Please refer to the table on → **Page 75** for tolerances covered.
For xxxxx please indicate required Ø in the order
(e.g. Ø 8,05 mm → Article no. 40 430 08050)!

# Machine reamers, similar to DIN 8093-A / -B

▲ extremely irregular pitch

N




Left Hand Helix
Solid carbide

straight flute
Solid carbide

| DC $_{H7}$ | OAL | L | LU | DCONMS $_{h7}$ | ZEFP | U4 Article no. 40 410 ... | | U4 Article no. 40 400 ... | |
|---|---|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | mm | | EUR | | EUR | |
| 2,0 | 49 | 11 | 31 | 2,0 | 4 | 22,48 | 020 | 22,48 | 020 |
| 2,1 | 49 | 11 | 31 | 2,0 | 4 | 26,88 | 021 | 26,88 | 021 |
| 2,2 | 53 | 12 | 35 | 2,2 | 4 | 26,88 | 022 | 26,88 | 022 |
| 2,3 | 53 | 12 | 35 | 2,2 | 4 | 26,88 | 023 | 26,88 | 023 |
| 2,4 | 57 | 14 | 34 | 2,5 | 4 | 26,88 | 024 | 26,88 | 024 |
| 2,5 | 57 | 14 | 34 | 2,5 | 4 | 24,14 | 025 | 24,14 | 025 |
| 2,6 | 57 | 14 | 34 | 2,5 | 4 | 28,88 | 026 | 28,88 | 026 |
| 2,7 | 61 | 15 | 36 | 3,0 | 4 | 28,88 | 027 | 28,88 | 027 |
| 2,8 | 61 | 15 | 36 | 3,0 | 4 | 28,88 | 028 | 28,88 | 028 |
| 2,9 | 61 | 15 | 36 | 3,0 | 4 | 28,88 | 029 | 28,88 | 029 |
| 3,0 | 61 | 15 | 36 | 3,0 | 4 | 26,01 | 030 | 26,01 | 030 |
| 3,1 | 61 | 15 | 36 | 3,0 | 4 | 31,19 | 031 | 31,19 | 031 |
| 3,2 | 70 | 18 | 40 | 3,5 | 4 | 31,19 | 032 | 31,19 | 032 |
| 3,3 | 70 | 18 | 40 | 3,5 | 4 | 31,19 | 033 | 31,19 | 033 |
| 3,4 | 70 | 18 | 40 | 3,5 | 4 | 31,19 | 034 | 31,19 | 034 |
| 3,5 | 70 | 18 | 40 | 3,5 | 4 | 29,65 | 035 | 29,65 | 035 |
| 3,6 | 70 | 18 | 40 | 3,5 | 4 | 35,60 | 036 | 35,60 | 036 |
| 3,7 | 70 | 18 | 40 | 3,5 | 4 | 35,60 | 037 | 35,60 | 037 |
| 3,8 | 75 | 19 | 43 | 4,0 | 4 | 35,60 | 038 | 35,60 | 038 |
| 3,9 | 75 | 19 | 43 | 4,0 | 4 | 35,60 | 039 | 35,60 | 039 |
| 4,0 | 75 | 19 | 43 | 4,0 | 4 | 31,86 | 040 | 31,86 | 040 |
| 4,1 | 75 | 19 | 43 | 4,0 | 4 | 38,36 | 041 | 38,36 | 041 |
| 4,2 | 75 | 19 | 43 | 4,0 | 4 | 38,36 | 042 | 38,36 | 042 |
| 4,3 | 75 | 21 | 42 | 4,5 | 4 | 38,36 | 043 | 38,36 | 043 |
| 4,4 | 75 | 21 | 42 | 4,5 | 4 | 38,36 | 044 | 38,36 | 044 |
| 4,5 | 75 | 21 | 42 | 4,5 | 4 | 34,72 | 045 | 34,72 | 045 |
| 4,6 | 75 | 21 | 42 | 4,5 | 4 | 41,66 | 046 | 41,66 | 046 |
| 4,7 | 75 | 21 | 42 | 4,5 | 4 | 41,66 | 047 | 41,66 | 047 |
| 4,8 | 86 | 23 | 52 | 5,0 | 4 | 41,66 | 048 | 41,66 | 048 |
| 4,9 | 86 | 23 | 52 | 5,0 | 4 | 41,66 | 049 | 41,66 | 049 |
| 5,0 | 86 | 23 | 52 | 5,0 | 4 | 39,12 | 050 | 39,12 | 050 |
| 5,1 | 86 | 23 | 52 | 5,0 | 4 | 45,08 | 051 | 45,08 | 051 |
| 5,2 | 86 | 23 | 52 | 5,0 | 4 | 45,08 | 052 | 45,08 | 052 |
| 5,3 | 86 | 23 | 52 | 5,0 | 6 | 45,08 | 053 | 45,08 | 053 |
| 5,4 | 93 | 26 | 57 | 5,6 | 6 | 45,08 | 054 | 45,08 | 054 |
| 5,5 | 93 | 26 | 57 | 5,6 | 6 | 41,43 | 055 | 41,43 | 055 |
| 5,6 | 93 | 26 | 57 | 5,6 | 6 | 47,72 | 056 | 47,72 | 056 |
| 5,7 | 93 | 26 | 57 | 5,6 | 6 | 47,72 | 057 | 47,72 | 057 |
| 5,8 | 93 | 26 | 57 | 5,6 | 6 | 47,72 | 058 | 47,72 | 058 |
| 5,9 | 93 | 26 | 57 | 5,6 | 6 | 47,72 | 059 | 47,72 | 059 |
| 6,0 | 93 | 26 | 57 | 5,6 | 6 | 49,60 | 060 | 49,60 | 060 |
| 6,1 | 93 | 26 | 57 | 5,6 | 6 | 57,09 | 061 | 57,09 | 061 |
| 6,2 | 93 | 26 | 57 | 5,6 | 6 | 57,09 | 062 | 57,09 | 062 |
| 6,3 | 101 | 28 | 63 | 6,3 | 6 | 57,09 | 063 | 57,09 | 063 |
| 6,4 | 101 | 28 | 63 | 6,3 | 6 | 57,09 | 064 | 57,09 | 064 |
| 6,5 | 101 | 28 | 63 | 6,3 | 6 | 55,55 | 065 | 55,55 | 065 |
| 6,6 | 101 | 28 | 63 | 6,3 | 6 | 64,03 | 066 | 64,03 | 066 |
| 6,7 | 101 | 28 | 63 | 6,3 | 6 | 64,03 | 067 | 64,03 | 067 |
| 6,8 | 109 | 31 | 69 | 7,1 | 6 | 64,03 | 068 | 64,03 | 068 |
| 6,9 | 109 | 31 | 69 | 7,1 | 6 | 64,03 | 069 | 64,03 | 069 |
| 7,0 | 109 | 31 | 69 | 7,1 | 6 | 62,16 | 070 | 62,16 | 070 |
| 7,1 | 109 | 31 | 69 | 7,1 | 6 | 71,42 | 071 | 71,42 | 071 |
| 7,2 | 109 | 31 | 69 | 7,1 | 6 | 71,42 | 072 | 71,42 | 072 |
| 7,3 | 109 | 31 | 69 | 7,1 | 6 | 71,42 | 073 | 71,42 | 073 |
| 7,4 | 109 | 31 | 69 | 7,1 | 6 | 71,42 | 074 | 71,42 | 074 |
| 7,5 | 109 | 31 | 69 | 7,1 | 6 | 67,24 | 075 | 67,24 | 075 |
| 7,6 | 117 | 33 | 75 | 8,0 | 6 | 77,37 | 076 | 77,37 | 076 |
| 7,7 | 117 | 33 | 75 | 8,0 | 6 | 77,37 | 077 | 77,37 | 077 |
| 7,8 | 117 | 33 | 75 | 8,0 | 6 | 77,37 | 078 | 77,37 | 078 |
| 7,9 | 117 | 33 | 75 | 8,0 | 6 | 77,37 | 079 | 77,37 | 079 |
| 8,0 | 117 | 33 | 75 | 8,0 | 6 | 71,42 | 080 | 71,42 | 080 |
| 8,1 | 117 | 33 | 75 | 8,0 | 6 | 78,70 | 081 | 78,70 | 081 |
| 8,2 | 117 | 33 | 75 | 8,0 | 6 | 78,70 | 082 | 78,70 | 082 |
| 8,3 | 117 | 33 | 75 | 8,0 | 6 | 78,70 | 083 | 78,70 | 083 |
| 8,4 | 117 | 33 | 75 | 8,0 | 6 | 78,70 | 084 | 78,70 | 084 |
| 8,5 | 117 | 33 | 75 | 8,0 | 6 | 77,59 | 085 | 77,59 | 085 |
| 8,6 | 125 | 36 | 81 | 9,0 | 6 | 85,20 | 086 | 85,20 | 086 |
| 8,7 | 125 | 36 | 81 | 9,0 | 6 | 85,20 | 087 | 85,20 | 087 |
| 8,8 | 125 | 36 | 81 | 9,0 | 6 | 85,20 | 088 | 85,20 | 088 |
| 8,9 | 125 | 36 | 81 | 9,0 | 6 | 85,20 | 089 | 85,20 | 089 |
| 9,0 | 125 | 36 | 81 | 9,0 | 6 | 83,10 | 090 | 83,10 | 090 |
| 9,1 | 125 | 36 | 81 | 9,0 | 6 | 91,37 | 091 | 91,37 | 091 |
| 9,2 | 125 | 36 | 81 | 9,0 | 6 | 91,37 | 092 | 91,37 | 092 |
| 9,3 | 125 | 36 | 81 | 9,0 | 6 | 91,37 | 093 | 91,37 | 093 |
| 9,4 | 125 | 36 | 81 | 9,0 | 6 | 91,37 | 094 | 91,37 | 094 |
| 9,5 | 125 | 36 | 81 | 9,0 | 6 | 89,06 | 095 | 89,06 | 095 |
| 9,6 | 133 | 38 | 87 | 10,0 | 6 | 97,98 | 096 | 97,98 | 096 |
| 9,7 | 133 | 38 | 87 | 10,0 | 6 | 97,98 | 097 | 97,98 | 097 |
| 9,8 | 133 | 38 | 87 | 10,0 | 6 | 97,98 | 098 | 97,98 | 098 |
| 9,9 | 133 | 38 | 87 | 10,0 | 6 | 97,98 | 099 | 97,98 | 099 |
| 10,0 | 133 | 38 | 87 | 10,0 | 6 | 95,89 | 100 | 95,89 | 100 |
| 10,1 | 133 | 38 | 87 | 10,0 | 6 | 105,60 | 101 | 105,60 | 101 |
| 10,2 | 133 | 38 | 87 | 10,0 | 6 | 105,60 | 102 | 105,60 | 102 |
| 10,3 | 133 | 38 | 87 | 10,0 | 6 | 105,60 | 103 | 105,60 | 103 |
| 10,4 | 133 | 38 | 87 | 10,0 | 6 | 105,60 | 104 | 105,60 | 104 |
| 10,5 | 133 | 38 | 87 | 10,0 | 6 | 100,40 | 105 | 100,40 | 105 |
| 10,6 | 133 | 38 | 87 | 10,0 | 6 | 110,20 | 106 | 110,20 | 106 |
| 10,7 | 142 | 41 | 96 | 10,0 | 6 | 110,20 | 107 | 110,20 | 107 |
| 10,8 | 142 | 41 | 96 | 10,0 | 6 | 110,20 | 108 | 110,20 | 108 |
| 10,9 | 142 | 41 | 96 | 10,0 | 6 | 110,20 | 109 | 110,20 | 109 |
| 11,0 | 142 | 41 | | 10,0 | 6 | 108,60 | 110 | 108,60 | 110 |
| 11,1 | 142 | 41 | | 10,0 | 6 | 120,10 | 111 | 120,10 | 111 |
| 11,2 | 142 | 41 | | 10,0 | 6 | 120,10 | 112 | 120,10 | 112 |
| 11,3 | 142 | 41 | | 10,0 | 6 | 120,10 | 113 | 120,10 | 113 |
| 11,4 | 142 | 41 | | 10,0 | 6 | 120,10 | 114 | 120,10 | 114 |
| 11,5 | 142 | 41 | | 10,0 | 6 | 115,80 | 115 | 115,80 | 115 |
| 11,6 | 142 | 41 | | 10,0 | 6 | 126,80 | 116 | 126,80 | 116 |
| 11,7 | 142 | 41 | | 10,0 | 6 | 126,80 | 117 | 126,80 | 117 |
| 11,8 | 142 | 41 | | 10,0 | 6 | 126,80 | 118 | 126,80 | 118 |
| 11,9 | 151 | 44 | | 10,0 | 6 | 126,80 | 119 | 126,80 | 119 |
| 12,0 | 151 | 44 | | 10,0 | 6 | 124,60 | 120 | 124,60 | 120 |

| | | |
|---|---|---|
| Steel | ● | ● |
| Stainless steel | | |
| Cast iron | ○ | ○ |
| Non ferrous metals | ● | ● |
| Heat resistant alloys | ○ | ○ |
| Hardened materials | | |

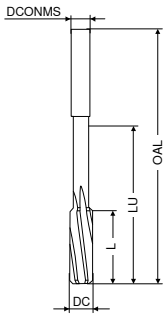
→ $v_c$ Page 66+67

4

# NC machine reamers, DIN 212-3-B

▲ maximum radial run-out accuracy

**NC**





Left Hand Helix
HSS-E

| DC H7 | OAL | L | LU | DCONMS h6 | ZEFP | U2 Article no. 40 110 ... EUR | |
|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | mm | | | |
| 1,5 | 40 | 8 | 15,5 | 2 | 3 | 10,34 | 015 |
| 1,6 | 43 | 9 | 16,0 | 2 | 3 | 11,55 | 016 |
| 1,7 | 43 | 9 | 16,0 | 2 | 3 | 11,55 | 017 |
| 1,8 | 46 | 10 | 19,0 | 2 | 4 | 11,55 | 018 |
| 1,9 | 46 | 10 | 19,0 | 2 | 4 | 11,55 | 019 |
| 2,0 | 49 | 11 | 21,0 | 2 | 4 | 10,05 | 020 |
| 2,1 | 49 | 11 | 21,0 | 2 | 4 | 12,08 | 021 |
| 2,2 | 53 | 12 | 22,0 | 3 | 4 | 12,08 | 022 |
| 2,3 | 53 | 12 | 22,0 | 3 | 4 | 12,08 | 023 |
| 2,4 | 57 | 14 | 26,0 | 3 | 4 | 12,08 | 024 |
| 2,5 | 57 | 14 | 26,0 | 3 | 4 | 10,05 | 025 |
| 2,6 | 57 | 14 | 26,0 | 3 | 4 | 12,72 | 026 |
| 2,7 | 61 | 15 | 30,0 | 3 | 6 | 12,72 | 027 |
| 2,8 | 61 | 15 | 30,0 | 3 | 6 | 12,72 | 028 |
| 2,9 | 61 | 15 | 30,0 | 3 | 6 | 12,72 | 029 |
| 3,0 | 61 | 15 | 30,0 | 3 | 6 | 9,18 | 030 |
| 3,1 | 65 | 16 | 34,0 | 4 | 6 | 12,08 | 031 |
| 3,2 | 65 | 16 | 34,0 | 4 | 6 | 12,08 | 032 |
| 3,3 | 65 | 16 | 34,0 | 4 | 6 | 12,08 | 033 |
| 3,4 | 70 | 18 | 39,0 | 4 | 6 | 12,08 | 034 |
| 3,5 | 70 | 18 | 39,0 | 4 | 6 | 10,81 | 035 |
| 3,6 | 70 | 18 | 39,0 | 4 | 6 | 13,46 | 036 |
| 3,7 | 70 | 18 | 39,0 | 4 | 6 | 13,46 | 037 |
| 3,8 | 75 | 19 | 44,0 | 4 | 6 | 13,46 | 038 |
| 3,9 | 75 | 19 | 44,0 | 4 | 6 | 9,76 | 039 |
| 4,0 | 75 | 19 | 44,0 | 4 | 6 | 10,05 | 040 |
| 4,1 | 75 | 19 | 44,0 | 4 | 6 | 12,62 | 041 |
| 4,2 | 75 | 19 | 44,0 | 4 | 6 | 12,62 | 042 |
| 4,3 | 80 | 21 | 48,0 | 5 | 6 | 12,62 | 043 |
| 4,4 | 80 | 21 | 48,0 | 5 | 6 | 12,62 | 044 |
| 4,5 | 80 | 21 | 48,0 | 5 | 6 | 10,81 | 045 |
| 4,6 | 80 | 21 | 48,0 | 5 | 6 | 13,56 | 046 |
| 4,7 | 80 | 21 | 48,0 | 5 | 6 | 13,56 | 047 |
| 4,8 | 86 | 23 | 54,0 | 5 | 6 | 13,56 | 048 |
| 4,9 | 86 | 23 | 54,0 | 5 | 6 | 13,56 | 049 |
| 5,0 | 86 | 23 | 54,0 | 5 | 6 | 10,34 | 050 |
| 5,1 | 86 | 23 | 54,0 | 5 | 6 | 13,56 | 051 |
| 5,2 | 86 | 23 | 54,0 | 5 | 6 | 13,56 | 052 |
| 5,3 | 86 | 23 | 54,0 | 5 | 6 | 13,56 | 053 |
| 5,4 | 93 | 26 | 53,0 | 6 | 6 | 13,56 | 054 |
| 5,5 | 93 | 26 | 53,0 | 6 | 6 | 12,62 | 055 |
| 5,6 | 93 | 26 | 53,0 | 6 | 6 | 13,56 | 056 |
| 5,7 | 93 | 26 | 53,0 | 6 | 6 | 13,56 | 057 |
| 5,8 | 93 | 26 | 53,0 | 6 | 6 | 13,56 | 058 |
| 5,9 | 93 | 26 | 53,0 | 6 | 6 | 13,56 | 059 |
| 6,0 | 93 | 26 | 53,0 | 6 | 6 | 11,13 | 060 |
| 6,1 | 101 | 28 | 61,0 | 6 | 6 | 13,56 | 061 |
| 6,2 | 101 | 28 | 61,0 | 6 | 6 | 13,56 | 062 |
| 6,3 | 101 | 28 | 61,0 | 6 | 6 | 13,56 | 063 |
| 6,4 | 101 | 28 | 61,0 | 6 | 6 | 13,56 | 064 |
| 6,5 | 101 | 28 | 61,0 | 6 | 6 | 13,15 | 065 |
| 6,6 | 101 | 28 | 61,0 | 6 | 6 | 13,56 | 066 |
| 6,7 | 101 | 28 | 61,0 | 6 | 6 | 13,56 | 067 |
| 6,8 | 109 | 31 | 69,0 | 8 | 6 | 13,56 | 068 |
| 6,9 | 109 | 31 | 69,0 | 8 | 6 | 13,56 | 069 |
| 7,0 | 109 | 31 | 69,0 | 8 | 6 | 13,15 | 070 |
| 7,1 | 109 | 31 | 69,0 | 8 | 6 | 15,37 | 071 |
| 7,2 | 109 | 31 | 69,0 | 8 | 6 | 15,37 | 072 |
| 7,3 | 109 | 31 | 69,0 | 8 | 6 | 15,37 | 073 |
| 7,4 | 109 | 31 | 69,0 | 8 | 6 | 15,37 | 074 |
| 7,5 | 109 | 31 | 69,0 | 8 | 6 | 15,15 | 075 |
| 7,6 | 117 | 33 | 77,0 | 8 | 6 | 16,11 | 076 |
| 7,7 | 117 | 33 | 77,0 | 8 | 6 | 16,11 | 077 |
| 7,8 | 117 | 33 | 77,0 | 8 | 6 | 16,11 | 078 |
| 7,9 | 117 | 33 | 77,0 | 8 | 6 | 16,11 | 079 |
| 8,0 | 117 | 33 | 77,0 | 8 | 6 | 13,56 | 080 |
| 8,1 | 117 | 33 | 77,0 | 8 | 6 | 18,65 | 081 |
| 8,2 | 117 | 33 | 77,0 | 8 | 6 | 18,65 | 082 |
| 8,3 | 117 | 33 | 77,0 | 8 | 6 | 18,65 | 083 |
| 8,4 | 117 | 33 | 77,0 | 8 | 6 | 18,65 | 084 |
| 8,5 | 117 | 33 | 77,0 | 8 | 6 | 17,27 | 085 |
| 8,6 | 125 | 36 | 81,0 | 10 | 6 | 17,48 | 086 |
| 8,7 | 125 | 36 | 81,0 | 10 | 6 | 17,48 | 087 |
| 8,8 | 125 | 36 | 81,0 | 10 | 6 | 17,48 | 088 |
| 8,9 | 125 | 36 | 81,0 | 10 | 6 | 17,48 | 089 |
| 9,0 | 125 | 36 | 81,0 | 10 | 6 | 15,79 | 090 |
| 9,1 | 125 | 36 | 81,0 | 10 | 6 | 18,12 | 091 |
| 9,2 | 125 | 36 | 81,0 | 10 | 6 | 18,12 | 092 |
| 9,3 | 125 | 36 | 81,0 | 10 | 6 | 18,12 | 093 |
| 9,4 | 125 | 36 | 81,0 | 10 | 6 | 18,12 | 094 |
| 9,5 | 125 | 36 | 81,0 | 10 | 6 | 17,60 | 095 |
| 9,6 | 133 | 38 | 89,0 | 10 | 6 | 18,44 | 096 |
| 9,7 | 133 | 38 | 89,0 | 10 | 6 | 18,44 | 097 |
| 9,8 | 133 | 38 | 89,0 | 10 | 6 | 18,44 | 098 |
| 9,9 | 133 | 38 | 89,0 | 10 | 6 | 18,44 | 099 |
| 10,0 | 133 | 38 | 89,0 | 10 | 6 | 16,11 | 100 |
| 11,0 | 142 | 41 | 98,0 | 10 | 6 | 22,57 | 110 |
| 12,0 | 151 | 44 | 106,0 | 10 | 6 | 23,52 | 120 |
| 13,0 | 151 | 44 | 106,0 | 10 | 6 | 26,18 | 130 |
| 14,0 | 160 | 47 | 110,0 | 14 | 8 | 27,13 | 140 |
| 15,0 | 162 | 50 | 112,0 | 14 | 8 | 27,77 | 150 |
| 16,0 | 170 | 52 | 120,0 | 14 | 8 | 28,83 | 160 |
| 17,0 | 175 | 54 | 125,0 | 14 | 8 | 34,44 | 170 |
| 18,0 | 182 | 56 | 132,0 | 14 | 8 | 35,39 | 180 |
| 19,0 | 189 | 58 | 136,0 | 16 | 8 | 41,12 | 190 |
| 20,0 | 195 | 60 | 142,0 | 16 | 8 | 39,53 | 200 |

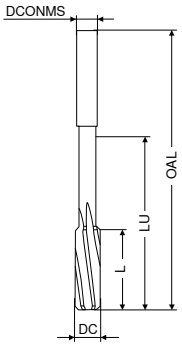
| | |
|---|---|
| Steel | ● |
| Stainless steel | ○ |
| Cast iron | ● |
| Non ferrous metals | ● |
| Heat resistant alloys | ○ |
| Hardened materials | |

→ $v_c$ Page 68+69

# NC machine reamers, DIN 212-3-B

- 0,01 mm steps
- tolerance: Ø 0,95–5,50 mm = +0,004 mm
- tolerance: Ø 5,51–12,00 mm = +0,005 mm

**NC 100**





Left Hand Helix
HSS-E

| DC +0,004/+0,005 | OAL | L | LU | DCONMS h6 | ZEFP | U2 Article no. 40 115 ... | |
|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | mm | | EUR | |
| 0,95 - 0,99 | 34 | 5,5 | 12,5 | 1 | 3 | 15,90 | xxxxx[1] |
| 1,00 | 34 | 5,5 | 12,5 | 1 | 3 | 15,15 | 01000 |
| 1,01 | 34 | 5,5 | 12,5 | 1 | 3 | 15,15 | 01010 |
| 1,02 | 34 | 5,5 | 12,5 | 1 | 3 | 15,15 | 01020 |
| 1,03 - 1,06 | 34 | 5,5 | 12,5 | 1 | 3 | 15,90 | xxxxx[1] |
| 1,07 - 1,18 | 36 | 6,5 | 13,0 | 1 | 3 | 15,90 | xxxxx[1] |
| 1,19 - 1,32 | 38 | 7,5 | 14,0 | 2 | 3 | 15,90 | xxxxx[1] |
| 1,33 - 1,41 | 40 | 8,0 | 15,5 | 2 | 3 | 15,90 | xxxxx[1] |
| 1,42 - 1,49 | 40 | 8,0 | 15,5 | 2 | 3 | 15,90 | xxxxx[1] |
| 1,50 | 40 | 8,0 | 15,5 | 2 | 3 | 13,15 | 01500 |
| 1,51 | 43 | 9,0 | 16,0 | 2 | 3 | 13,15 | 01510 |
| 1,52 | 43 | 9,0 | 16,0 | 2 | 3 | 13,15 | 01520 |
| 1,53 - 1,70 | 43 | 9,0 | 16,0 | 2 | 3 | 15,90 | xxxxx[1] |
| 1,71 - 1,90 | 46 | 10,0 | 19,0 | 2 | 4 | 15,90 | xxxxx[1] |
| 1,91 - 1,96 | 49 | 11,0 | 21,0 | 2 | 4 | 15,90 | xxxxx[1] |
| 1,97 | 49 | 11,0 | 21,0 | 2 | 4 | 13,15 | 01970 |
| 1,98 | 49 | 11,0 | 21,0 | 2 | 4 | 13,15 | 01980 |
| 1,99 | 49 | 11,0 | 21,0 | 2 | 4 | 13,15 | 01990 |
| 2,00 | 49 | 11,0 | 21,0 | 2 | 4 | 11,66 | 02000 |
| 2,01 | 49 | 11,0 | 21,0 | 2 | 4 | 11,66 | 02010 |
| 2,02 | 49 | 11,0 | 21,0 | 2 | 4 | 11,66 | 02020 |
| 2,03 - 2,12 | 49 | 11,0 | 21,0 | 2 | 4 | 15,90 | xxxxx[1] |
| 2,13 - 2,36 | 53 | 12,0 | 22,0 | 3 | 4 | 15,90 | xxxxx[1] |
| 2,37 - 2,47 | 57 | 14,0 | 26,0 | 3 | 4 | 15,90 | xxxxx[1] |
| 2,48 | 57 | 14,0 | 26,0 | 3 | 4 | 13,35 | 02480 |
| 2,49 | 57 | 14,0 | 26,0 | 3 | 4 | 13,35 | 02490 |
| 2,50 | 57 | 14,0 | 26,0 | 3 | 4 | 11,34 | 02500 |
| 2,51 | 57 | 14,0 | 26,0 | 3 | 4 | 11,34 | 02510 |
| 2,52 | 57 | 14,0 | 26,0 | 3 | 4 | 11,34 | 02520 |
| 2,53 - 2,65 | 57 | 14,0 | 26,0 | 3 | 4 | 15,90 | xxxxx[1] |
| 2,66 - 2,96 | 61 | 15,0 | 30,0 | 3 | 6 | 15,90 | xxxxx[1] |
| 2,97 | 61 | 15,0 | 30,0 | 3 | 6 | 13,68 | 02970 |
| 2,98 | 61 | 15,0 | 30,0 | 3 | 6 | 13,68 | 02980 |
| 2,99 | 61 | 15,0 | 30,0 | 3 | 6 | 13,68 | 02990 |
| 3,00 | 61 | 15,0 | 30,0 | 3 | 6 | 10,15 | 03000 |
| 3,01 | 61 | 15,0 | 30,0 | 3 | 6 | 10,15 | 03010 |
| 3,02 | 61 | 15,0 | 30,0 | 3 | 6 | 10,15 | 03020 |
| 3,03 | 61 | 15,0 | 30,0 | 3 | 6 | 15,90 | 03030[1] |
| 3,04 - 3,35 | 65 | 16,0 | 34,0 | 4 | 6 | 15,90 | xxxxx[1] |
| 3,36 - 3,75 | 70 | 18,0 | 39,0 | 4 | 6 | 15,90 | xxxxx[1] |
| 3,76 - 3,96 | 75 | 19,0 | 44,0 | 4 | 6 | 15,90 | xxxxx[1] |
| 3,97 | 75 | 19,0 | 44,0 | 4 | 6 | 11,13 | 03970 |
| 3,98 | 75 | 19,0 | 44,0 | 4 | 6 | 11,13 | 03980 |
| 3,99 | 75 | 19,0 | 44,0 | 4 | 6 | 11,13 | 03990 |
| 4,00 | 75 | 19,0 | 44,0 | 4 | 6 | 11,13 | 04000 |
| 4,01 | 75 | 19,0 | 44,0 | 4 | 6 | 11,13 | 04010 |
| 4,02 | 75 | 19,0 | 44,0 | 4 | 6 | 11,13 | 04020 |
| 4,03 - 4,25 | 75 | 19,0 | 44,0 | 4 | 6 | 15,90 | xxxxx[1] |
| 4,26 - 4,75 | 80 | 21,0 | 48,0 | 5 | 6 | 15,90 | xxxxx[1] |
| 4,76 - 4,96 | 86 | 23,0 | 54,0 | 5 | 6 | 15,90 | xxxxx[1] |
| 4,97 | 86 | 23,0 | 54,0 | 5 | 6 | 12,08 | 04970 |
| 4,98 | 86 | 23,0 | 54,0 | 5 | 6 | 12,08 | 04980 |
| 4,99 | 86 | 23,0 | 54,0 | 5 | 6 | 12,08 | 04990 |
| 5,00 | 86 | 23,0 | 54,0 | 5 | 6 | 12,08 | 05000 |
| 5,01 | 86 | 23,0 | 54,0 | 5 | 6 | 12,08 | 05010 |
| 5,02 | 86 | 23,0 | 54,0 | 5 | 6 | 12,08 | 05020 |
| 5,03 - 5,30 | 86 | 23,0 | 54,0 | 5 | 6 | 15,90 | xxxxx[1] |
| 5,31 - 5,60 | 93 | 26,0 | 53,0 | 6 | 6 | 15,90 | xxxxx[1] |
| 5,61 - 5,96 | 93 | 26,0 | 53,0 | 6 | 6 | 15,90 | xxxxx[1] |
| 5,97 | 93 | 26,0 | 53,0 | 6 | 6 | 13,35 | 05970 |
| 5,98 | 93 | 26,0 | 53,0 | 6 | 6 | 13,35 | 05980 |
| 5,99 | 93 | 26,0 | 53,0 | 6 | 6 | 13,35 | 05990 |
| 6,00 | 93 | 26,0 | 53,0 | 6 | 6 | 13,35 | 06000 |
| 6,01 | 93 | 26,0 | 53,0 | 6 | 6 | 13,35 | 06010 |
| 6,02 | 93 | 26,0 | 53,0 | 6 | 6 | 13,35 | 06020 |
| 6,03 | 93 | 26,0 | 53,0 | 6 | 6 | 15,90 | 06030[1] |
| 6,04 - 6,70 | 101 | 28,0 | 61,0 | 6 | 6 | 15,90 | xxxxx[1] |
| 6,71 - 7,20 | 109 | 31,0 | 69,0 | 8 | 6 | 15,90 | xxxxx[1] |
| 7,21 - 7,50 | 109 | 31,0 | 69,0 | 8 | 6 | 15,90 | xxxxx[1] |
| 7,51 - 7,96 | 117 | 33,0 | 77,0 | 8 | 6 | 21,20 | xxxxx[1] |
| 7,97 | 117 | 33,0 | 77,0 | 8 | 6 | 14,31 | 07970 |
| 7,98 | 117 | 33,0 | 77,0 | 8 | 6 | 14,31 | 07980 |
| 7,99 | 117 | 33,0 | 77,0 | 8 | 6 | 14,31 | 07990 |
| 8,00 | 117 | 33,0 | 77,0 | 8 | 6 | 14,31 | 08000 |
| 8,01 | 117 | 33,0 | 77,0 | 8 | 6 | 14,31 | 08010 |
| 8,02 | 117 | 33,0 | 77,0 | 8 | 6 | 14,31 | 08020 |
| 8,03 - 8,20 | 117 | 33,0 | 77,0 | 8 | 6 | 21,20 | xxxxx[1] |
| 8,21 - 8,50 | 117 | 33,0 | 77,0 | 8 | 6 | 21,20 | xxxxx[1] |
| 8,51 - 8,99 | 125 | 36,0 | 81,0 | 10 | 6 | 21,20 | xxxxx[1] |
| 9,00 | 125 | 36,0 | 81,0 | 10 | 6 | 18,23 | 09000 |
| 9,01 | 125 | 36,0 | 81,0 | 10 | 6 | 18,23 | 09010 |
| 9,02 | 125 | 36,0 | 81,0 | 10 | 6 | 18,23 | 09020 |
| 9,03 - 9,20 | 125 | 36,0 | 81,0 | 10 | 6 | 21,20 | xxxxx[1] |
| 9,21 - 9,50 | 125 | 36,0 | 81,0 | 10 | 6 | 21,20 | xxxxx[1] |
| 9,51 - 9,96 | 133 | 38,0 | 89,0 | 10 | 6 | 31,58 | xxxxx[1] |
| 9,97 | 133 | 38,0 | 89,0 | 10 | 6 | 18,23 | 09970 |
| 9,98 | 133 | 38,0 | 89,0 | 10 | 6 | 18,23 | 09980 |
| 9,99 | 133 | 38,0 | 89,0 | 10 | 6 | 18,23 | 09990 |
| 10,00 | 133 | 38,0 | 89,0 | 10 | 6 | 18,23 | 10000 |
| 10,01 | 133 | 38,0 | 89,0 | 10 | 6 | 18,23 | 10010 |
| 10,02 | 133 | 38,0 | 89,0 | 10 | 6 | 18,23 | 10020 |
| 10,03 - 10,20 | 133 | 38,0 | 89,0 | 10 | 6 | 31,58 | xxxxx[1] |
| 10,21 - 10,60 | 133 | 38,0 | 89,0 | 10 | 6 | 31,58 | xxxxx[1] |
| 10,61 - 11,20 | 142 | 41,0 | 98,0 | 10 | 6 | 31,58 | xxxxx[1] |
| 11,21 - 11,80 | 142 | 41,0 | 98,0 | 10 | 6 | 31,58 | xxxxx[1] |
| 11,81 - 11,96 | 151 | 44,0 | 106,0 | 10 | 6 | 31,58 | xxxxx[1] |
| 11,97 | 151 | 44,0 | 106,0 | 10 | 6 | 26,18 | 11970 |
| 11,98 | 151 | 44,0 | 106,0 | 10 | 6 | 26,18 | 11980 |
| 11,99 | 151 | 44,0 | 106,0 | 10 | 6 | 26,18 | 11990 |
| 12,00 | 151 | 44,0 | 106,0 | 10 | 6 | 26,18 | 12000 |

| | |
|---|---|
| Steel | ● |
| Stainless steel | ○ |
| Cast iron | ● |
| Non ferrous metals | ● |
| Heat resistant alloys | ○ |
| Hardened materials | |

→ $v_c$ Page 68+69

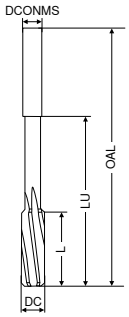
**1)** Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 14 working days / Minimum order 5 pieces

This tool concept permits numerous tolerances.
Please refer to the table on → **Page 75** for tolerances covered.
For xxxxx please indicate required Ø in the order
(e.g. Ø 8,03 mm → Article no. 40 115 08030)!

4

# Machine reamers, DIN 212-B

N





Left Hand Helix
HSS-E

| DC H7 | OAL | L | LU | DCONMS h9 | ZEFP | U2 Article no. 40 150 ... EUR | |
|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | mm | | | |
| 1,0 | 34 | 5,5 | 15,0 | 1,0 | 3 | 18,01 | 010 |
| 1,1 | 36 | 6,5 | 15,5 | 1,1 | 3 | 18,97 | 011 |
| 1,2 | 38 | 7,5 | 16,5 | 1,2 | 3 | 17,60 | 012 |
| 1,3 | 38 | 7,5 | 16,5 | 1,2 | 3 | 19,60 | 013 |
| 1,4 | 40 | 8,0 | 18,0 | 1,4 | 3 | 16,11 | 014 |
| 1,5 | 40 | 8,0 | 18,0 | 1,5 | 3 | 14,94 | 015 |
| 1,6 | 43 | 9,0 | 20,0 | 1,6 | 3 | 16,42 | 016 |
| 1,7 | 43 | 9,0 | 20,0 | 1,6 | 3 | 16,42 | 017 |
| 1,8 | 46 | 10,0 | 22,0 | 1,8 | 4 | 16,42 | 018 |
| 1,9 | 46 | 10,0 | 22,0 | 1,8 | 4 | 16,42 | 019 |
| 2,0 | 49 | 11,0 | 24,0 | 2,0 | 4 | 14,62 | 020 |
| 2,1 | 49 | 11,0 | 24,0 | 2,0 | 4 | 17,60 | 021 |
| 2,2 | 53 | 12,0 | 25,0 | 2,2 | 4 | 17,60 | 022 |
| 2,3 | 53 | 12,0 | 25,0 | 2,2 | 4 | 17,60 | 023 |
| 2,4 | 57 | 14,0 | 29,0 | 2,5 | 4 | 17,60 | 024 |
| 2,5 | 57 | 14,0 | 29,0 | 2,5 | 4 | 14,62 | 025 |
| 2,6 | 57 | 14,0 | 29,0 | 2,5 | 4 | 18,23 | 026 |
| 2,7 | 61 | 15,0 | 33,0 | 2,8 | 6 | 18,23 | 027 |
| 2,8 | 61 | 15,0 | 33,0 | 2,8 | 6 | 18,23 | 028 |
| 2,9 | 61 | 15,0 | 36,0 | 3,0 | 6 | 18,23 | 029 |
| 3,0 | 61 | 15,0 | 36,0 | 3,0 | 6 | 13,03 | 030 |
| 3,1 | 65 | 16,0 | 36,0 | 3,2 | 6 | 17,27 | 031 |
| 3,2 | 65 | 16,0 | 36,0 | 3,2 | 6 | 17,27 | 032 |
| 3,3 | 65 | 16,0 | 36,0 | 3,2 | 6 | 17,27 | 033 |
| 3,4 | 70 | 18,0 | 41,0 | 3,5 | 6 | 17,27 | 034 |
| 3,5 | 70 | 18,0 | 41,0 | 3,5 | 6 | 15,26 | 035 |
| 3,6 | 70 | 18,0 | 41,0 | 3,5 | 6 | 19,18 | 036 |
| 3,7 | 70 | 18,0 | 41,0 | 3,5 | 6 | 19,18 | 037 |
| 3,8 | 75 | 19,0 | 44,0 | 4,0 | 6 | 19,18 | 038 |
| 3,9 | 75 | 19,0 | 44,0 | 4,0 | 6 | 14,09 | 039 |
| 4,0 | 75 | 19,0 | 44,0 | 4,0 | 6 | 14,62 | 040 |
| 4,1 | 75 | 19,0 | 44,0 | 4,0 | 6 | 18,01 | 041 |
| 4,2 | 75 | 19,0 | 44,0 | 4,0 | 6 | 18,01 | 042 |
| 4,3 | 80 | 21,0 | 48,0 | 4,5 | 6 | 18,01 | 043 |
| 4,4 | 80 | 21,0 | 48,0 | 4,5 | 6 | 18,01 | 044 |
| 4,5 | 80 | 21,0 | 48,0 | 4,5 | 6 | 15,26 | 045 |
| 4,6 | 80 | 21,0 | 48,0 | 4,5 | 6 | 19,60 | 046 |
| 4,7 | 80 | 21,0 | 48,0 | 4,5 | 6 | 19,60 | 047 |
| 4,8 | 86 | 23,0 | 53,0 | 5,0 | 6 | 19,60 | 048 |
| 4,9 | 86 | 23,0 | 53,0 | 5,0 | 6 | 19,60 | 049 |
| 5,0 | 86 | 23,0 | 53,0 | 5,0 | 6 | 14,94 | 050 |
| 5,1 | 86 | 23,0 | 53,0 | 5,0 | 6 | 19,60 | 051 |
| 5,2 | 86 | 23,0 | 53,0 | 5,0 | 6 | 19,60 | 052 |
| 5,3 | 86 | 23,0 | 53,0 | 5,0 | 6 | 19,60 | 053 |
| 5,4 | 93 | 26,0 | 58,0 | 5,6 | 6 | 19,60 | 054 |
| 5,5 | 93 | 26,0 | 58,0 | 5,6 | 6 | 18,01 | 055 |
| 5,6 | 93 | 26,0 | 58,0 | 5,6 | 6 | 19,60 | 056 |
| 5,7 | 93 | 26,0 | 58,0 | 5,6 | 6 | 19,60 | 057 |
| 5,8 | 93 | 26,0 | 58,0 | 5,6 | 6 | 19,60 | 058 |
| 5,9 | 93 | 26,0 | 58,0 | 5,6 | 6 | 19,60 | 059 |
| 6,0 | 93 | 26,0 | 58,0 | 5,6 | 6 | 15,58 | 060 |
| 6,1 | 101 | 28,0 | 64,0 | 6,3 | 6 | 19,60 | 061 |
| 6,2 | 101 | 28,0 | 64,0 | 6,3 | 6 | 19,60 | 062 |
| 6,3 | 101 | 28,0 | 64,0 | 6,3 | 6 | 19,60 | 063 |
| 6,4 | 101 | 28,0 | 64,0 | 6,3 | 6 | 19,60 | 064 |
| 6,5 | 101 | 28,0 | 64,0 | 6,3 | 6 | 18,97 | 065 |
| 6,6 | 101 | 28,0 | 64,0 | 6,3 | 6 | 19,60 | 066 |
| 6,7 | 101 | 28,0 | 64,0 | 6,3 | 6 | 19,60 | 067 |
| 6,8 | 109 | 31,0 | 70,0 | 7,1 | 6 | 19,93 | 068 |
| 6,9 | 109 | 31,0 | 70,0 | 7,1 | 6 | 19,93 | 069 |
| 7,0 | 109 | 31,0 | 70,0 | 7,1 | 6 | 18,97 | 070 |
| 7,1 | 109 | 31,0 | 70,0 | 7,1 | 6 | 21,93 | 071 |
| 7,2 | 109 | 31,0 | 70,0 | 7,1 | 6 | 21,93 | 072 |
| 7,3 | 109 | 31,0 | 70,0 | 7,1 | 6 | 21,93 | 073 |
| 7,4 | 109 | 31,0 | 70,0 | 7,1 | 6 | 21,93 | 074 |
| 7,5 | 109 | 31,0 | 70,0 | 7,1 | 6 | 21,20 | 075 |
| 7,6 | 117 | 33,0 | 76,0 | 8,0 | 6 | 22,99 | 076 |
| 7,7 | 117 | 33,0 | 76,0 | 8,0 | 6 | 22,99 | 077 |
| 7,8 | 117 | 33,0 | 76,0 | 8,0 | 6 | 22,99 | 078 |
| 7,9 | 117 | 33,0 | 76,0 | 8,0 | 6 | 22,99 | 079 |
| 8,0 | 117 | 33,0 | 76,0 | 8,0 | 6 | 19,60 | 080 |
| 8,1 | 117 | 33,0 | 76,0 | 8,0 | 6 | 27,24 | 081 |
| 8,2 | 117 | 33,0 | 76,0 | 8,0 | 6 | 27,24 | 082 |
| 8,3 | 117 | 33,0 | 76,0 | 8,0 | 6 | 27,24 | 083 |
| 8,4 | 117 | 33,0 | 76,0 | 8,0 | 6 | 27,24 | 084 |
| 8,5 | 117 | 33,0 | 76,0 | 8,0 | 6 | 24,69 | 085 |
| 8,6 | 125 | 36,0 | 82,0 | 9,0 | 6 | 25,01 | 086 |
| 8,7 | 125 | 36,0 | 82,0 | 9,0 | 6 | 25,01 | 087 |
| 8,8 | 125 | 36,0 | 82,0 | 9,0 | 6 | 25,01 | 088 |
| 8,9 | 125 | 36,0 | 82,0 | 9,0 | 6 | 25,01 | 089 |
| 9,0 | 125 | 36,0 | 82,0 | 9,0 | 6 | 22,57 | 090 |
| 9,1 | 125 | 36,0 | 82,0 | 9,0 | 6 | 25,97 | 091 |
| 9,2 | 125 | 36,0 | 82,0 | 9,0 | 6 | 25,97 | 092 |
| 9,3 | 125 | 36,0 | 82,0 | 9,0 | 6 | 25,97 | 093 |
| 9,4 | 125 | 36,0 | 82,0 | 9,0 | 6 | 25,97 | 094 |
| 9,5 | 125 | 36,0 | 82,0 | 9,0 | 6 | 25,22 | 095 |
| 9,6 | 133 | 38,0 | 88,0 | 10,0 | 6 | 27,02 | 096 |
| 9,7 | 133 | 38,0 | 88,0 | 10,0 | 6 | 27,02 | 097 |
| 9,8 | 133 | 38,0 | 88,0 | 10,0 | 6 | 27,02 | 098 |
| 9,9 | 133 | 38,0 | 88,0 | 10,0 | 6 | 27,02 | 099 |
| 10,0 | 133 | 38,0 | 88,0 | 10,0 | 6 | 22,99 | 100 |
| 11,0 | 142 | 41,0 | 97,0 | 10,0 | 6 | 32,43 | 110 |
| 12,0 | 151 | 44,0 | 106,0 | 10,0 | 6 | 33,81 | 120 |
| 13,0 | 151 | 44,0 | 106,0 | 10,0 | 6 | 37,73 | 130 |
| 14,0 | 160 | 47,0 | 111,0 | 12,5 | 8 | 39,00 | 140 |
| 15,0 | 162 | 50,0 | 113,0 | 12,5 | 8 | 40,37 | 150 |
| 16,0 | 170 | 52,0 | 121,0 | 12,5 | 8 | 41,65 | 160 |
| 17,0 | 175 | 54,0 | 124,0 | 14,0 | 8 | 49,28 | 170 |
| 18,0 | 182 | 56,0 | 131,0 | 14,0 | 8 | 50,55 | 180 |
| 19,0 | 189 | 58,0 | 132,0 | 16,0 | 8 | 59,24 | 190 |
| 20,0 | 195 | 60,0 | 136,0 | 16,0 | 8 | 56,48 | 200 |

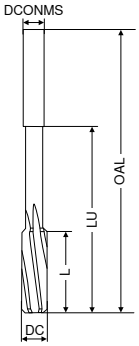
| | |
|---|---|
| Steel | ● |
| Stainless steel | ○ |
| Cast iron | ● |
| Non ferrous metals | ● |
| Heat resistant alloys | ○ |
| Hardened materials | |

→ $v_c$ Page 68+69

# Machine reamers, DIN 212-B

- ▲ 0,01 mm steps
- ▲ tolerance: Ø 0,95–5,50 mm = +0,004 mm
- ▲ tolerance: Ø 5,51–12,00 mm = +0,005 mm

**N 100**





Left Hand Helix
HSS-E

| DC +0,004/+0,005 | OAL | L | LU | DCONMS h9 | ZEFP | U2 Article no. 40 140 ... | |
|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | mm | | EUR | |
| 0,95 - 1,06 | 34 | 5,5 | 15,0 | 1,0 | 3 | 20,46 | xxxxx[1] |
| 1,07 - 1,18 | 36 | 6,5 | 15,5 | 1,1 | 3 | 20,46 | xxxxx[1] |
| 1,19 - 1,32 | 38 | 7,5 | 16,5 | 1,2 | 3 | 20,46 | xxxxx[1] |
| 1,33 - 1,39 | 40 | 8,0 | 18,0 | 1,4 | 3 | 20,46 | xxxxx[1] |
| 1,40 - 1,47 | 40 | 8,0 | 18,0 | 1,4 | 3 | 18,87 | xxxxx[1] |
| 1,48 | 40 | 8,0 | 18,0 | 1,4 | 3 | 18,87 | 01480 |
| 1,49 | 40 | 8,0 | 18,0 | 1,4 | 3 | 18,87 | 01490 |
| 1,50 | 40 | 8,0 | 18,0 | 1,4 | 3 | 17,91 | 01500 |
| 1,51 - 1,70 | 43 | 9,0 | 20,0 | 1,6 | 3 | 17,91 | xxxxx[1] |
| 1,71 - 1,90 | 46 | 10,0 | 22,0 | 1,8 | 4 | 17,91 | xxxxx[1] |
| 1,91 - 1,97 | 49 | 11,0 | 24,0 | 2,0 | 4 | 17,91 | xxxxx[1] |
| 1,98 | 49 | 11,0 | 24,0 | 2,0 | 4 | 17,91 | 01980 |
| 1,99 | 49 | 11,0 | 24,0 | 2,0 | 4 | 17,91 | 01990 |
| 2,00 | 49 | 11,0 | 24,0 | 2,0 | 4 | 16,42 | 02000 |
| 2,01 | 49 | 11,0 | 24,0 | 2,0 | 4 | 16,42 | 02010 |
| 2,02 | 49 | 11,0 | 24,0 | 2,0 | 4 | 16,42 | 02020 |
| 2,03 | 49 | 11,0 | 24,0 | 2,0 | 4 | 16,42 | 02030 |
| 2,04 | 49 | 11,0 | 24,0 | 2,0 | 4 | 16,42 | 02040 |
| 2,05 | 49 | 11,0 | 24,0 | 2,0 | 4 | 16,42 | 02050 |
| 2,06 - 2,09 | 49 | 11,0 | 24,0 | 2,0 | 4 | 16,42 | xxxxx[1] |
| 2,10 - 2,12 | 49 | 11,0 | 24,0 | 2,0 | 4 | 19,07 | xxxxx[1] |
| 2,13 - 2,36 | 53 | 12,0 | 25,0 | 2,2 | 4 | 19,07 | xxxxx[1] |
| 2,37 - 2,49 | 57 | 14,0 | 29,0 | 2,5 | 4 | 19,07 | xxxxx[1] |
| 2,50 - 2,59 | 57 | 14,0 | 29,0 | 2,5 | 4 | 16,21 | xxxxx[1] |
| 2,60 - 2,65 | 57 | 14,0 | 29,0 | 2,5 | 4 | 19,93 | xxxxx[1] |
| 2,66 - 2,80 | 61 | 15,0 | 33,0 | 2,8 | 6 | 19,93 | xxxxx[1] |
| 2,81 - 2,94 | 61 | 15,0 | 36,0 | 3,0 | 6 | 19,93 | xxxxx[1] |
| 2,95 | 61 | 15,0 | 36,0 | 3,0 | 6 | 19,93 | 02950 |
| 2,96 | 61 | 15,0 | 36,0 | 3,0 | 6 | 19,93 | 02960 |
| 2,97 | 61 | 15,0 | 36,0 | 3,0 | 6 | 19,93 | 02970 |
| 2,98 | 61 | 15,0 | 36,0 | 3,0 | 6 | 19,93 | 02980 |
| 2,99 | 61 | 15,0 | 36,0 | 3,0 | 6 | 19,93 | 02990 |
| 3,00 | 61 | 15,0 | 36,0 | 3,0 | 6 | 14,94 | 03000 |
| 3,01 | 65 | 16,0 | 36,0 | 3,2 | 6 | 14,94 | 03010 |
| 3,02 | 65 | 16,0 | 36,0 | 3,2 | 6 | 14,94 | 03020 |
| 3,03 | 65 | 16,0 | 36,0 | 3,2 | 6 | 14,94 | 03030 |
| 3,04 | 65 | 16,0 | 36,0 | 3,2 | 6 | 14,94 | 03040 |
| 3,05 | 65 | 16,0 | 36,0 | 3,2 | 6 | 14,94 | 03050 |
| 3,06 | 65 | 16,0 | 36,0 | 3,2 | 6 | 14,94 | 03060 |
| 3,07 | 65 | 16,0 | 36,0 | 3,2 | 6 | 14,94 | 03070 |
| 3,08 - 3,09 | 65 | 16,0 | 36,0 | 3,2 | 6 | 14,94 | xxxxx[1] |
| 3,10 - 3,35 | 65 | 16,0 | 36,0 | 3,2 | 6 | 18,87 | xxxxx[1] |
| 3,36 - 3,49 | 70 | 18,0 | 41,0 | 3,5 | 6 | 18,87 | xxxxx[1] |
| 3,50 - 3,59 | 70 | 18,0 | 41,0 | 3,5 | 6 | 16,21 | xxxxx[1] |
| 3,60 - 3,75 | 70 | 18,0 | 41,0 | 3,5 | 6 | 20,87 | xxxxx[1] |
| 3,76 - 3,81 | 75 | 19,0 | 44,0 | 4,0 | 6 | 20,87 | xxxxx[1] |
| 3,82 - 3,94 | 75 | 19,0 | 44,0 | 4,0 | 6 | 15,79 | xxxxx[1] |
| 3,95 | 75 | 19,0 | 44,0 | 4,0 | 6 | 15,79 | 03950 |
| 3,96 | 75 | 19,0 | 44,0 | 4,0 | 6 | 15,79 | 03960 |
| 3,97 | 75 | 19,0 | 44,0 | 4,0 | 6 | 15,79 | 03970 |
| 3,98 | 75 | 19,0 | 44,0 | 4,0 | 6 | 15,79 | 03980 |
| 3,99 | 75 | 19,0 | 44,0 | 4,0 | 6 | 15,79 | 03990 |
| 4,00 | 75 | 19,0 | 44,0 | 4,0 | 6 | 15,79 | 04000 |
| 4,01 | 75 | 19,0 | 44,0 | 4,0 | 6 | 15,79 | 04010 |
| 4,02 | 75 | 19,0 | 44,0 | 4,0 | 6 | 15,79 | 04020 |
| 4,03 | 75 | 19,0 | 44,0 | 4,0 | 6 | 15,79 | 04030 |
| 4,04 | 75 | 19,0 | 44,0 | 4,0 | 6 | 15,79 | 04040 |
| 4,05 | 75 | 19,0 | 44,0 | 4,0 | 6 | 15,79 | 04050 |
| 4,06 | 75 | 19,0 | 44,0 | 4,0 | 6 | 15,79 | 04060 |
| 4,07 | 75 | 19,0 | 44,0 | 4,0 | 6 | 15,79 | 04070 |
| 4,08 | 75 | 19,0 | 44,0 | 4,0 | 6 | 15,79 | 04080 |
| 4,09 - 4,20 | 75 | 19,0 | 44,0 | 4,0 | 6 | 15,79 | xxxxx[1] |
| 4,21 - 4,25 | 75 | 19,0 | 44,0 | 4,0 | 6 | 19,60 | xxxxx[1] |
| 4,26 - 4,75 | 80 | 21,0 | 48,0 | 4,5 | 5 | 19,60 | xxxxx[1] |
| 4,76 - 4,95 | 86 | 23,0 | 53,0 | 5,0 | 6 | 17,48 | xxxxx[1] |
| 4,96 | 86 | 23,0 | 53,0 | 5,0 | 6 | 17,48 | 04960 |
| 4,97 | 86 | 23,0 | 53,0 | 5,0 | 6 | 17,48 | 04970 |
| 4,98 | 86 | 23,0 | 53,0 | 5,0 | 6 | 17,48 | 04980 |
| 4,99 | 86 | 23,0 | 53,0 | 5,0 | 6 | 17,48 | 04990 |
| 5,00 | 86 | 23,0 | 53,0 | 5,0 | 6 | 17,48 | 05000 |
| 5,01 | 86 | 23,0 | 53,0 | 5,0 | 6 | 17,48 | 05010 |
| 5,02 | 86 | 23,0 | 53,0 | 5,0 | 6 | 17,48 | 05020 |
| 5,03 | 86 | 23,0 | 53,0 | 5,0 | 6 | 17,48 | 05030 |
| 5,04 | 86 | 23,0 | 53,0 | 5,0 | 6 | 17,48 | 05040 |
| 5,05 | 86 | 23,0 | 53,0 | 5,0 | 6 | 17,48 | 05050 |
| 5,06 | 86 | 23,0 | 53,0 | 5,0 | 6 | 17,48 | 05060 |
| 5,07 | 86 | 23,0 | 53,0 | 5,0 | 6 | 17,48 | 05070 |
| 5,08 - 5,20 | 86 | 23,0 | 53,0 | 5,0 | 6 | 17,48 | xxxxx[1] |
| 5,21 - 5,30 | 86 | 23,0 | 53,0 | 5,0 | 6 | 19,07 | xxxxx[1] |
| 5,31 - 5,94 | 93 | 26,0 | 58,0 | 5,6 | 6 | 19,07 | xxxxx[1] |
| 5,95 | 93 | 26,0 | 58,0 | 5,6 | 6 | 19,07 | 05950 |
| 5,96 | 93 | 26,0 | 58,0 | 5,6 | 6 | 19,07 | 05960 |
| 5,97 | 93 | 26,0 | 58,0 | 5,6 | 6 | 19,07 | 05970 |
| 5,98 | 93 | 26,0 | 58,0 | 5,6 | 6 | 19,07 | 05980 |
| 5,99 | 93 | 26,0 | 58,0 | 5,6 | 6 | 19,07 | 05990 |

| | |
|---|---|
| Steel | ● |
| Stainless steel | ○ |
| Cast iron | ● |
| Non ferrous metals | ● |
| Heat resistant alloys | ○ |
| Hardened materials | |

→ $v_c$ Page 68+69

**1)** Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 14 working days

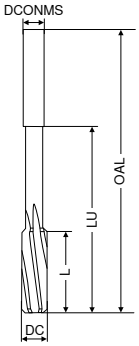
This tool concept permits numerous tolerances.
For achievable tolerances covered, please see the table on → **Page 75**.
For xxxxx please indicate requested Ø in the order
(e.g. Ø 10,06 mm → Article no. 40 140 10060)!

4

# Machine reamers, DIN 212-B

- ▲ 0,01 mm steps
- ▲ tolerance: Ø 0,95–5,50 mm = +0,004 mm
- ▲ tolerance: Ø 5,51–12,00 mm = +0,005 mm

**N 100**





Left Hand Helix
HSS-E

| DC | OAL | L | LU | DCONMS h9 | ZEFP | U2 Article no. 40 140 ... EUR | |
|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | mm | | | |
| 6,00 | 93 | 26 | 58 | 5,6 | 6 | 19,07 | 06000 |
| 6,01 | 101 | 28 | 64 | 6,3 | 6 | 19,07 | 06010 |
| 6,02 | 101 | 28 | 64 | 6,3 | 6 | 19,07 | 06020 |
| 6,03 | 101 | 28 | 64 | 6,3 | 6 | 19,07 | 06030 |
| 6,04 | 101 | 28 | 64 | 6,3 | 6 | 19,07 | 06040 |
| 6,05 | 101 | 28 | 64 | 6,3 | 6 | 19,07 | 06050 |
| 6,06 - 6,11 | 101 | 28 | 64 | 6,3 | 6 | 19,07 | xxxxx 1) |
| 6,12 - 6,34 | 101 | 28 | 64 | 6,3 | 6 | 20,87 | xxxxx 1) |
| 6,35 | 101 | 28 | 64 | 6,3 | 6 | 20,87 | 06350 |
| 6,36 | 101 | 28 | 64 | 6,3 | 6 | 20,87 | 06360 1) |
| 6,71 - 6,94 | 109 | 31 | 70 | 7,1 | 6 | 20,87 | xxxxx 1) |
| 6,95 | 109 | 31 | 70 | 7,1 | 6 | 20,87 | 06950 |
| 6,96 | 109 | 31 | 70 | 7,1 | 6 | 20,87 | 06960 |
| 6,97 | 109 | 31 | 70 | 7,1 | 6 | 20,87 | 06970 |
| 6,98 | 109 | 31 | 70 | 7,1 | 6 | 20,87 | 06980 |
| 6,99 | 109 | 31 | 70 | 7,1 | 6 | 20,87 | 06990 |
| 7,00 | 109 | 31 | 70 | 7,1 | 6 | 20,87 | 07000 |
| 7,01 | 109 | 31 | 70 | 7,1 | 6 | 20,87 | 07010 |
| 7,02 | 109 | 31 | 70 | 7,1 | 6 | 20,87 | 07020 |
| 7,03 | 109 | 31 | 70 | 7,1 | 6 | 20,87 | 07030 |
| 7,04 - 7,50 | 109 | 31 | 70 | 7,1 | 6 | 20,87 | xxxxx 1) |
| 7,51 - 7,63 | 109 | 31 | 76 | 7,1 | 6 | 20,87 | xxxxx 1) |
| 7,64 - 7,94 | 117 | 33 | 76 | 8,0 | 6 | 20,87 | xxxxx 1) |
| 7,95 | 117 | 33 | 76 | 8,0 | 6 | 20,87 | 07950 |
| 7,96 | 117 | 33 | 76 | 8,0 | 6 | 20,87 | 07960 |
| 7,97 | 117 | 33 | 76 | 8,0 | 6 | 20,87 | 07970 |
| 7,98 | 117 | 33 | 76 | 8,0 | 6 | 20,87 | 07980 |
| 7,99 | 117 | 33 | 76 | 8,0 | 6 | 20,87 | 07990 |
| 8,00 | 117 | 33 | 76 | 8,0 | 6 | 20,87 | 08000 |
| 8,01 | 117 | 33 | 76 | 8,0 | 6 | 20,87 | 08010 |
| 8,02 | 117 | 33 | 76 | 8,0 | 6 | 20,87 | 08020 |
| 8,03 | 117 | 33 | 76 | 8,0 | 6 | 20,87 | 08030 |
| 8,04 | 117 | 33 | 76 | 8,0 | 6 | 20,87 | 08040 |
| 8,05 | 117 | 33 | 76 | 8,0 | 6 | 20,87 | 08050 |
| 8,06 - 8,20 | 117 | 33 | 76 | 8,0 | 6 | 20,87 | xxxxx 1) |
| 8,21 - 8,50 | 117 | 33 | 76 | 8,0 | 6 | 26,28 | xxxxx 1) |
| 8,51 - 8,63 | 117 | 33 | 82 | 8,0 | 6 | 26,28 | xxxxx 1) |
| 8,64 - 8,95 | 125 | 36 | 82 | 9,0 | 6 | 26,28 | xxxxx 1) |
| 8,96 | 125 | 36 | 82 | 9,0 | 6 | 26,28 | 08960 |
| 8,97 | 125 | 36 | 82 | 9,0 | 6 | 26,28 | 08970 |
| 8,98 | 125 | 36 | 82 | 9,0 | 6 | 26,28 | 08980 |
| 8,99 | 125 | 36 | 82 | 9,0 | 6 | 26,28 | 08990 |
| 9,00 | 125 | 36 | 82 | 9,0 | 6 | 26,28 | 09000 |
| 9,01 | 125 | 36 | 82 | 9,0 | 6 | 26,28 | 09010 |
| 9,02 | 125 | 36 | 82 | 9,0 | 6 | 26,28 | 09020 |
| 9,03 - 9,50 | 125 | 36 | 82 | 9,0 | 6 | 26,28 | xxxxx 1) |
| 9,51 - 9,63 | 125 | 36 | 88 | 9,0 | 6 | 26,28 | xxxxx 1) |
| 9,64 - 9,95 | 133 | 38 | 88 | 10,0 | 6 | 26,28 | xxxxx 1) |
| 9,96 | 133 | 38 | 88 | 10,0 | 6 | 26,28 | 09960 |
| 9,97 | 133 | 38 | 88 | 10,0 | 6 | 26,28 | 09970 |
| 9,98 | 133 | 38 | 88 | 10,0 | 6 | 26,28 | 09980 |
| 9,99 | 133 | 38 | 88 | 10,0 | 6 | 26,28 | 09990 |
| 10,00 | 133 | 38 | 88 | 10,0 | 6 | 26,28 | 10000 |
| 10,01 | 133 | 38 | 88 | 10,0 | 6 | 26,28 | 10010 |
| 10,02 | 133 | 38 | 88 | 10,0 | 6 | 26,28 | 10020 |
| 10,03 | 133 | 38 | 88 | 10,0 | 6 | 26,28 | 10030 |
| 10,04 | 133 | 38 | 88 | 10,0 | 6 | 26,28 | 10040 |
| 10,05 | 133 | 38 | 88 | 10,0 | 6 | 26,28 | 10050 |
| 10,06 - 10,09 | 133 | 38 | 88 | 10,0 | 6 | 26,28 | xxxxx 1) |
| 10,10 | 133 | 38 | 88 | 10,0 | 6 | 26,28 | 10100 |
| 10,11 - 10,19 | 133 | 38 | 88 | 10,0 | 6 | 26,28 | xxxxx 1) |
| 10,20 | 133 | 38 | 88 | 10,0 | 6 | 26,28 | 10200 |
| 10,21 - 10,69 | 133 | 38 | 88 | 10,0 | 6 | 32,96 | xxxxx 1) |
| 10,70 - 11,20 | 142 | 41 | 97 | 10,0 | 6 | 32,96 | xxxxx 1) |
| 11,21 - 11,80 | 142 | 41 | 97 | 10,0 | 6 | 37,62 | xxxxx 1) |
| 11,81 - 11,95 | 151 | 44 | 106 | 10,0 | 6 | 37,62 | xxxxx 1) |
| 11,96 | 151 | 44 | 106 | 10,0 | 6 | 37,62 | 11960 |
| 11,97 | 151 | 44 | 106 | 10,0 | 6 | 37,62 | 11970 |
| 11,98 | 151 | 44 | 106 | 10,0 | 6 | 37,62 | 11980 |
| 11,99 | 151 | 44 | 106 | 10,0 | 6 | 37,62 | 11990 |
| 12,00 | 151 | 44 | 106 | 10,0 | 6 | 37,62 | 12000 |

| | |
|---|---|
| Steel | ● |
| Stainless steel | ○ |
| Cast iron | ● |
| Non ferrous metals | ● |
| Heat resistant alloys | ○ |
| Hardened materials | |

→ $v_c$ Page 68+69

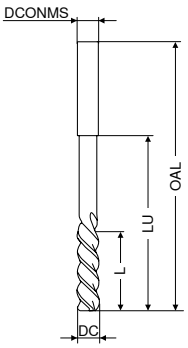
**1)** Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 14 working days

This tool concept permits numerous tolerances.
For achievable tolerances covered, please see the table on → **Page 75**.
For xxxxx please indicate requested Ø in the order
(e.g. Ø 10,06 mm → Article no. 40 140 10060)!

# Quick spiral machine reamers, DIN 212-C

- with 45° left-hand helix and conical chamfer
- for reaming through holes in long chipping materials
- not suitable for blind holes
- the reaming allowance should be for at least 50 % greater and the feed up to 100 % higher than the normal values for reamers. This gives a clean, chatter-free surface, high roundness of the bore and a longer service life.

**S**




Left Hand Helix
HSS-E
Through hole

| DC $_{H7}$ | OAL | L | LU | DCONMS $_{h9}$ | ZEFP | U2 Article no. 40 155 ... EUR | |
|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | mm | | | |
| 1,0 | 34 | 5,5 | 15 | 1,0 | 2 | 20,66 | 010 1) |
| 1,5 | 40 | 8,0 | 18 | 1,5 | 2 | 15,90 | 015 1) |
| 1,8 | 46 | 10,0 | 22 | 1,8 | 2 | 19,18 | 018 1) |
| 2,0 | 49 | 11,0 | 24 | 2,0 | 3 | 16,11 | 020 1) |
| 2,2 | 53 | 12,0 | 25 | 2,2 | 3 | 24,27 | 022 1) |
| 2,5 | 57 | 14,0 | 29 | 2,5 | 3 | 17,38 | 025 1) |
| 2,8 | 61 | 15,0 | 33 | 2,8 | 3 | 26,81 | 028 1) |
| 3,0 | 61 | 15,0 | 36 | 3,0 | 3 | 19,50 | 030 1) |
| 3,2 | 65 | 16,0 | 36 | 3,2 | 3 | 28,83 | 032 1) |
| 3,5 | 70 | 18,0 | 41 | 3,5 | 3 | 22,36 | 035 1) |
| 4,0 | 75 | 19,0 | 44 | 4,0 | 3 | 19,50 | 040 |
| 4,5 | 80 | 21,0 | 48 | 4,5 | 3 | 22,36 | 045 |
| 5,0 | 86 | 23,0 | 53 | 5,0 | 3 | 21,30 | 050 |
| 6,0 | 93 | 26,0 | 58 | 5,6 | 3 | 21,09 | 060 |
| 6,5 | 101 | 28,0 | 64 | 6,3 | 3 | 25,22 | 065 |
| 7,0 | 109 | 31,0 | 70 | 7,1 | 3 | 23,63 | 070 |
| 8,0 | 117 | 33,0 | 76 | 8,0 | 3 | 23,63 | 080 |
| 9,0 | 125 | 36,0 | 82 | 9,0 | 3 | 31,47 | 090 |
| 10,0 | 133 | 38,0 | 88 | 10,0 | 3 | 29,78 | 100 |
| 11,0 | 142 | 41,0 | 97 | 10,0 | 3 | 38,04 | 110 |
| 12,0 | 151 | 44,0 | 106 | 10,0 | 3 | 35,82 | 120 |
| 13,0 | 151 | 44,0 | 106 | 10,0 | 3 | 50,44 | 130 |
| 14,0 | 160 | 47,0 | 111 | 12,5 | 3 | 46,95 | 140 |
| 15,0 | 162 | 50,0 | 113 | 12,5 | 3 | 47,80 | 150 |
| 16,0 | 170 | 52,0 | 121 | 12,5 | 3 | 50,44 | 160 |
| 17,0 | 175 | 54,0 | 124 | 14,0 | 3 | 75,14 | 170 |
| 18,0 | 182 | 56,0 | 131 | 14,0 | 3 | 68,99 | 180 |
| 19,0 | 189 | 58,0 | 132 | 16,0 | 3 | 78,00 | 190 |
| 20,0 | 195 | 60,0 | 136 | 16,0 | 3 | 75,14 | 200 |

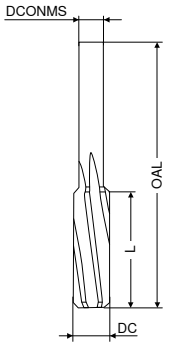
| | |
|---|---|
| Steel | ● |
| Stainless steel | |
| Cast iron | |
| Non ferrous metals | ● |
| Heat resistant alloys | |
| Hardened materials | |

→ $v_c$ Page 68+69

1) not standardised

# Stub reamers, DIN 8089-B

**AR**




Left Hand Helix
HSS-E
Through hole

| DC $_{H7}$ | OAL | L | DCONMS $_{h8}$ | ZEFP | U2 Article no. 40 145 ... EUR | |
|---|---|---|---|---|---|---|
| mm | mm | mm | mm | | | |
| 4,0 | 56 | 20 | 3,55 | 6 | 14,09 | 040 |
| 4,5 | 63 | 22 | 4,00 | 6 | 16,11 | 045 |
| 5,0 | 63 | 22 | 4,00 | 6 | 15,58 | 050 |
| 5,5 | 63 | 22 | 5,00 | 6 | 18,01 | 055 |
| 6,0 | 63 | 22 | 5,00 | 6 | 15,58 | 060 |
| 6,5 | 63 | 22 | 5,00 | 6 | 18,97 | 065 |
| 7,0 | 71 | 25 | 6,30 | 6 | 18,97 | 070 |
| 8,0 | 71 | 25 | 6,30 | 6 | 18,54 | 080 |
| 9,0 | 71 | 25 | 8,00 | 6 | 22,36 | 090 |
| 10,0 | 71 | 25 | 8,00 | 6 | 22,57 | 100 |
| 11,0 | 80 | 28 | 10,00 | 6 | 30,94 | 110 |
| 12,0 | 80 | 28 | 10,00 | 6 | 33,06 | 120 |
| 13,0 | 80 | 28 | 10,00 | 6 | 37,10 | 130 |
| 14,0 | 90 | 32 | 12,50 | 8 | 37,73 | 140 |
| 15,0 | 90 | 32 | 12,50 | 8 | 39,00 | 150 |
| 16,0 | 90 | 32 | 12,50 | 8 | 41,12 | 160 |
| 17,0 | 90 | 32 | 12,50 | 8 | 47,05 | 170 |
| 18,0 | 100 | 36 | 16,00 | 8 | 50,02 | 180 |
| 19,0 | 100 | 36 | 16,00 | 8 | 57,97 | 190 |
| 20,0 | 100 | 36 | 16,00 | 8 | 54,58 | 200 |

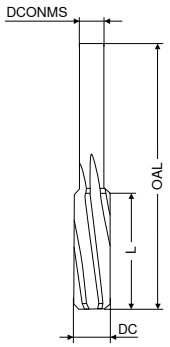
| | |
|---|---|
| Steel | ● |
| Stainless steel | ○ |
| Cast iron | ● |
| Non ferrous metals | ● |
| Heat resistant alloys | ○ |
| Hardened materials | |

→ $v_c$ Page 68+69

# Stub reamers, DIN 8089-B

- 0,01 mm steps
- tolerance: Ø 3,76–5,50 mm = +0,004 mm
- tolerance: Ø 5,51–12,00 mm = +0,005 mm

**AR 100**




Left Hand Helix
HSS-E

| DC +0,004/+0,005 | OAL | L | DCONMS h8 | ZEFP | U2 Article no. 40 139 ... | |
|---|---|---|---|---|---|---|
| mm | mm | mm | mm | | EUR | |
| 3,76 - 3,81 | 56 | 20 | 3,55 | 6 | 21,62 | xxxxx 1) |
| 3,82 - 3,94 | 56 | 20 | 3,55 | 6 | 15,79 | xxxxx 1) |
| 3,95 | 56 | 20 | 3,55 | 6 | 15,79 | 03950 |
| 3,96 | 56 | 20 | 3,55 | 6 | 15,79 | 03960 |
| 3,97 | 56 | 20 | 3,55 | 6 | 15,79 | 03970 |
| 3,98 | 56 | 20 | 3,55 | 6 | 15,79 | 03980 |
| 3,99 | 56 | 20 | 3,55 | 6 | 15,79 | 03990 |
| 4,00 | 56 | 20 | 3,55 | 6 | 15,79 | 04000 |
| 4,01 | 56 | 20 | 3,55 | 6 | 15,79 | 04010 |
| 4,02 | 56 | 20 | 3,55 | 6 | 15,79 | 04020 |
| 4,03 - 4,20 | 56 | 20 | 3,55 | 6 | 15,79 | xxxxx 1) |
| 4,21 - 4,25 | 56 | 20 | 3,55 | 6 | 19,07 | xxxxx 1) |
| 4,26 - 4,75 | 63 | 22 | 4,00 | 6 | 19,07 | xxxxx 1) |
| 4,76 - 4,94 | 63 | 22 | 4,00 | 6 | 16,74 | xxxxx 1) |
| 4,95 | 63 | 22 | 4,00 | 6 | 16,74 | 04950 |
| 4,96 | 63 | 22 | 4,00 | 6 | 16,74 | 04960 |
| 4,97 | 63 | 22 | 4,00 | 6 | 16,74 | 04970 |
| 4,98 | 63 | 22 | 4,00 | 6 | 16,74 | 04980 |
| 4,99 | 63 | 22 | 4,00 | 6 | 16,74 | 04990 |
| 5,00 | 63 | 22 | 4,00 | 6 | 16,74 | 05000 |
| 5,01 | 63 | 22 | 4,00 | 6 | 16,74 | 05010 |
| 5,02 | 63 | 22 | 4,00 | 6 | 16,74 | 05020 |
| 5,03 | 63 | 22 | 4,00 | 6 | 16,74 | 05030 |
| 5,04 | 63 | 22 | 4,00 | 6 | 16,74 | 05040 |
| 5,05 | 63 | 22 | 4,00 | 6 | 16,74 | 05050 |
| 5,06 - 5,20 | 63 | 22 | 4,00 | 6 | 16,74 | xxxxx 1) |
| 5,21 - 5,30 | 63 | 22 | 4,00 | 6 | 19,07 | xxxxx 1) |
| 5,31 - 5,70 | 63 | 22 | 5,00 | 6 | 19,07 | xxxxx 1) |
| 5,71 - 5,94 | 63 | 22 | 5,00 | 6 | 19,07 | xxxxx 1) |
| 5,95 | 63 | 22 | 5,00 | 6 | 19,07 | 05950 |
| 5,96 | 63 | 22 | 5,00 | 6 | 19,07 | 05960 |
| 5,97 | 63 | 22 | 5,00 | 6 | 19,07 | 05970 |
| 5,98 | 63 | 22 | 5,00 | 6 | 19,07 | 05980 |
| 5,99 | 63 | 22 | 5,00 | 6 | 19,07 | 05990 |
| 6,00 | 63 | 22 | 5,00 | 6 | 19,07 | 06000 |
| 6,01 | 63 | 22 | 5,00 | 6 | 19,07 | 06010 |
| 6,02 | 63 | 22 | 5,00 | 6 | 19,07 | 06020 |
| 6,03 - 6,11 | 63 | 22 | 5,00 | 6 | 19,07 | xxxxx 1) |
| 6,12 - 6,70 | 63 | 22 | 5,00 | 6 | 20,46 | xxxxx 1) |
| 6,71 - 6,94 | 71 | 25 | 6,30 | 6 | 20,46 | xxxxx 1) |
| 6,95 | 71 | 25 | 6,30 | 6 | 20,46 | 06950 |
| 6,96 | 71 | 25 | 6,30 | 6 | 20,46 | 06960 |
| 6,97 | 71 | 25 | 6,30 | 6 | 20,46 | 06970 |
| 6,98 | 71 | 25 | 6,30 | 6 | 20,46 | 06980 |
| 6,99 | 71 | 25 | 6,30 | 6 | 20,46 | 06990 |
| 7,00 | 71 | 25 | 6,30 | 6 | 20,46 | 07000 |
| 7,01 | 71 | 25 | 6,30 | 6 | 20,46 | 07010 |
| 7,02 | 71 | 25 | 6,30 | 6 | 20,46 | 07020 |
| 7,03 - 7,25 | 71 | 25 | 6,30 | 6 | 20,46 | xxxxx 1) |
| 7,26 - 7,94 | 71 | 25 | 6,30 | 6 | 20,46 | xxxxx 1) |
| 7,95 | 71 | 25 | 6,30 | 6 | 20,46 | 07950 |
| 7,96 | 71 | 25 | 6,30 | 6 | 20,46 | 07960 |
| 7,97 | 71 | 25 | 6,30 | 6 | 20,46 | 07970 |
| 7,98 | 71 | 25 | 6,30 | 6 | 20,46 | 07980 |
| 7,99 | 71 | 25 | 6,30 | 6 | 20,46 | 07990 |
| 8,00 | 71 | 25 | 6,30 | 6 | 20,46 | 08000 |
| 8,01 | 71 | 25 | 6,30 | 6 | 20,46 | 08010 |
| 8,02 | 71 | 25 | 6,30 | 6 | 20,46 | 08020 |
| 8,03 | 71 | 25 | 6,30 | 6 | 20,46 | 08030 |
| 8,04 | 71 | 25 | 6,30 | 6 | 20,46 | 08040 |
| 8,05 - 8,20 | 71 | 25 | 6,30 | 6 | 20,46 | xxxxx 1) |
| 8,21 - 8,50 | 71 | 25 | 6,30 | 6 | 25,85 | xxxxx 1) |
| 8,51 - 8,94 | 71 | 25 | 8,00 | 6 | 25,85 | xxxxx 1) |
| 8,95 | 71 | 25 | 8,00 | 6 | 25,85 | 08950 |
| 8,96 | 71 | 25 | 8,00 | 6 | 25,85 | 08960 |
| 8,97 | 71 | 25 | 8,00 | 6 | 25,85 | 08970 |
| 8,98 | 71 | 25 | 8,00 | 6 | 25,85 | 08980 |
| 8,99 | 71 | 25 | 8,00 | 6 | 25,85 | 08990 |
| 9,00 | 71 | 25 | 8,00 | 6 | 25,85 | 09000 |
| 9,01 | 71 | 25 | 8,00 | 6 | 25,85 | 09010 1) |
| 9,02 | 71 | 25 | 8,00 | 6 | 25,85 | 09020 |
| 9,03 - 9,25 | 71 | 25 | 8,00 | 6 | 25,85 | xxxxx |
| 9,26 - 9,94 | 71 | 25 | 8,00 | 6 | 25,85 | xxxxx 1) |
| 9,95 | 71 | 25 | 8,00 | 6 | 25,85 | 09950 |
| 9,96 | 71 | 25 | 8,00 | 6 | 25,85 | 09960 |
| 9,97 | 71 | 25 | 8,00 | 6 | 25,85 | 09970 |
| 9,98 | 71 | 25 | 8,00 | 6 | 25,85 | 09980 |
| 9,99 | 71 | 25 | 8,00 | 6 | 25,85 | 09990 |
| 10,00 | 71 | 25 | 8,00 | 6 | 25,85 | 10000 |
| 10,01 | 71 | 25 | 8,00 | 6 | 25,85 | 10010 |
| 10,02 | 71 | 25 | 8,00 | 6 | 25,85 | 10020 |
| 10,03 - 10,20 | 71 | 25 | 8,00 | 6 | 25,85 | xxxxx 1) |
| 10,21 - 10,60 | 71 | 25 | 8,00 | 6 | 32,96 | xxxxx 1) |
| 10,61 - 11,20 | 80 | 28 | 10,00 | 6 | 32,96 | xxxxx 1) |
| 11,21 - 11,25 | 80 | 28 | 10,00 | 6 | 38,37 | xxxxx 1) |
| 11,26 - 11,94 | 80 | 28 | 10,00 | 6 | 38,37 | xxxxx 1) |
| 11,95 | 80 | 28 | 10,00 | 6 | 38,37 | 11950 |
| 11,96 | 80 | 28 | 10,00 | 6 | 38,37 | 11960 |
| 11,97 | 80 | 28 | 10,00 | 6 | 38,37 | 11970 |
| 11,98 | 80 | 28 | 10,00 | 6 | 38,37 | 11980 |
| 11,99 | 80 | 28 | 10,00 | 6 | 38,37 | 11990 |
| 12,00 | 80 | 28 | 10,00 | 6 | 38,37 | 12000 |

| | |
|---|---|
| Steel | ● |
| Stainless steel | ○ |
| Cast iron | ● |
| Non ferrous metals | ● |
| Heat resistant alloys | ○ |
| Hardened materials | |

→ $v_c$ Page 68+69

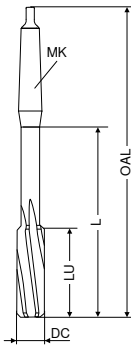
**1)** Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 14 working days

This tool concept permits numerous tolerances.
For achievable tolerances covered, please see the table on → **Page 75**.
For xxxxx please indicate required diameter in the order
(e.g. Ø 3.82 mm → Article no. 40 139 03820)!

# Machine reamers HSS-E, DIN 208

▲ the circular land on the cutting edge burnishes the hole and guides the reamer

**N**




Left Hand Helix
HSS-E
Through hole

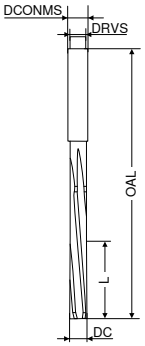
| DC H7 | OAL | L | LU | MK | ZEFP | U2 Article no. 40 160 ... EUR | |
|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | | | | |
| 16 | 210 | 52 | 130 | 2 | 8 | 48,33 | 160 |
| 17 | 214 | 54 | 134 | 2 | 8 | 51,93 | 170 |
| 18 | 219 | 56 | 139 | 2 | 8 | 53,84 | 180 |
| 19 | 223 | 58 | 143 | 2 | 8 | 56,48 | 190 |
| 20 | 228 | 60 | 148 | 2 | 8 | 56,48 | 200 |
| 21 | 232 | 62 | 152 | 2 | 8 | 64,22 | 210 |
| 22 | 237 | 64 | 157 | 2 | 8 | 64,22 | 220 |
| 23 | 241 | 66 | 161 | 2 | 8 | 73,86 | 230 |
| 24 | 268 | 68 | 169 | 3 | 8 | 75,77 | 240 |
| 25 | 268 | 68 | 169 | 3 | 8 | 78,00 | 250 |
| 26 | 273 | 70 | 174 | 3 | 8 | 83,51 | 260 |
| 27 | 277 | 71 | 178 | 3 | 10 | 92,62 | 270 |
| 28 | 277 | 71 | 178 | 3 | 10 | 92,62 | 280 |
| 29 | 281 | 73 | 182 | 3 | 10 | 103,50 | 290 |
| 30 | 281 | 73 | 182 | 3 | 10 | 95,70 | 300 |
| 32 | 317 | 77 | 193 | 4 | 10 | 126,20 | 320 |
| 34 | 321 | 78 | 197 | 4 | 10 | 139,90 | 340 |
| 35 | 321 | 78 | 197 | 4 | 10 | 139,90 | 350 |
| 36 | 325 | 79 | 201 | 4 | 10 | 153,70 | 360 |
| 38 | 329 | 81 | 205 | 4 | 10 | 167,40 | 380 |
| 40 | 329 | 81 | 205 | 4 | 10 | 168,50 | 400 |
| 42 | 333 | 82 | 209 | 4 | 12 | 184,40 | 420 |
| 44 | 336 | 83 | 212 | 4 | 12 | 219,30 | 440 |
| 45 | 336 | 83 | 212 | 4 | 12 | 220,50 | 450 |
| 46 | 340 | 84 | 216 | 4 | 12 | 260,70 | 460 |
| 47 | 340 | 84 | 216 | 4 | 12 | 274,50 | 470 |
| 48 | 344 | 86 | 220 | 4 | 12 | 275,50 | 480 |
| 50 | 344 | 86 | 220 | 4 | 12 | 275,50 | 500 |

| | |
|---|---|
| Steel | ● |
| Stainless steel | ○ |
| Cast iron | ● |
| Non ferrous metals | ● |
| Heat resistant alloys | ○ |
| Hardened materials | |

→ $v_c$ Page 68+69

# Hand reamers, DIN 206-B

**H**




Left Hand Helix
HSS

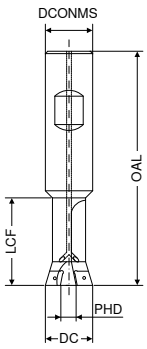
| DC H7 | OAL | L | DRVS | DCONMS | ZEFP | U2 Article no. 40 100 ... EUR | |
|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | mm | | | |
| 1,0 | 34 | 13 | | 1,0 | 3 | 26,60 | 010 |
| 1,2 | 38 | 17 | | 1,2 | 3 | 25,22 | 012 |
| 1,3 | 38 | 17 | | 1,3 | 3 | 26,71 | 013 |
| 1,4 | 41 | 20 | 1,12 | 1,4 | 3 | 23,10 | 014 |
| 1,5 | 41 | 20 | 1,12 | 1,5 | 3 | 21,30 | 015 |
| 1,6 | 44 | 21 | 1,25 | 1,6 | 3 | 22,68 | 016 |
| 1,8 | 47 | 23 | 1,40 | 1,8 | 4 | 24,27 | 018 |
| 2,0 | 50 | 25 | 1,60 | 2,0 | 4 | 19,71 | 020 |
| 2,2 | 54 | 27 | 1,80 | 2,2 | 4 | 23,10 | 022 |
| 2,5 | 58 | 29 | 2,00 | 2,5 | 4 | 19,50 | 025 |
| 2,8 | 62 | 31 | 2,24 | 2,8 | 6 | 23,95 | 028 |
| 3,0 | 62 | 31 | 2,24 | 3,0 | 6 | 20,34 | 030 |
| 3,2 | 66 | 33 | 25,00 | 3,2 | 6 | 25,22 | 032 |
| 3,5 | 71 | 35 | 2,80 | 3,5 | 6 | 23,95 | 035 |
| 4,0 | 76 | 38 | 3,15 | 4,0 | 6 | 17,38 | 040 |
| 4,5 | 81 | 41 | 3,55 | 4,5 | 6 | 21,09 | 045 |
| 5,0 | 87 | 44 | 4,00 | 5,0 | 6 | 20,34 | 050 |
| 5,5 | 93 | 47 | 4,50 | 5,5 | 6 | 21,83 | 055 |
| 6,0 | 93 | 47 | 4,50 | 6,0 | 6 | 19,71 | 060 |
| 7,0 | 107 | 54 | 5,60 | 7,0 | 6 | 21,30 | 070 |
| 8,0 | 115 | 58 | 6,30 | 8,0 | 6 | 22,36 | 080 |
| 9,0 | 124 | 62 | 7,10 | 9,0 | 6 | 25,22 | 090 |
| 10,0 | 133 | 66 | 8,00 | 10,0 | 6 | 25,22 | 100 |
| 11,0 | 142 | 71 | 9,00 | 11,0 | 6 | 27,87 | 110 |
| 12,0 | 152 | 76 | 10,00 | 12,0 | 6 | 30,10 | 120 |
| 13,0 | 152 | 76 | 10,00 | 13,0 | 6 | 44,41 | 130 |
| 14,0 | 163 | 81 | 11,20 | 14,0 | 8 | 48,33 | 140 |
| 15,0 | 163 | 81 | 11,20 | 15,0 | 8 | 51,19 | 150 |
| 16,0 | 175 | 87 | 12,50 | 16,0 | 8 | 52,99 | 160 |
| 17,0 | 175 | 87 | 14,00 | 17,0 | 8 | 56,07 | 170 |
| 18,0 | 188 | 93 | 14,00 | 18,0 | 8 | 62,10 | 180 |
| 19,0 | 188 | 93 | 14,00 | 19,0 | 8 | 66,98 | 190 |
| 20,0 | 201 | 100 | 16,00 | 20,0 | 8 | 65,81 | 200 |
| 22,0 | 215 | 107 | 18,00 | 22,0 | 8 | 75,77 | 220 |
| 24,0 | 231 | 115 | 20,00 | 24,0 | 8 | 90,82 | 240 |
| 25,0 | 231 | 115 | 20,00 | 25,0 | 8 | 89,76 | 250 |
| 26,0 | 231 | 115 | 20,00 | 26,0 | 8 | 95,70 | 260 |
| 28,0 | 247 | 124 | 22,40 | 28,0 | 10 | 122,90 | 280 |
| 30,0 | 247 | 124 | 22,40 | 30,0 | 10 | 128,20 | 300 |
| 32,0 | 265 | 133 | 25,00 | 32,0 | 10 | 142,10 | 320 |
| 34,0 | 284 | 142 | 28,00 | 34,0 | 10 | 172,70 | 340 |
| 35,0 | 284 | 142 | 28,00 | 35,0 | 10 | 173,80 | 350 |
| 36,0 | 284 | 142 | 28,00 | 36,0 | 10 | 189,70 | 360 |
| 38,0 | 305 | 152 | 31,50 | 38,0 | 10 | 220,50 | 380 |
| 40,0 | 305 | 152 | 31,50 | 40,0 | 10 | 229,90 | 400 |

# Insert Countersink

- ▲ 2 cutting edges, right-hand cutting for countersinking according to DIN 974-1
- ▲ for countersinking of hexagon socket screws ISO 1207, ISO 4762 (DIN 912), DIN 6912, DIN 7984
- ▲ for sinking cap screws the recommended inserts are specified

**Supply details:**
Indexable insert countersink including clamping screws

WPS




B

| for screws | DC | PHD | DCONMS h6 | OAL | LCF | Insert | U3 Article no. 30 195 ... EUR | |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | | | |
| **M8** | 15 | 4,0 | 16 | 90 | 25 | CC.T 060204 | 87,44 | **015** |
| **M10** | 18 | 7,0 | 16 | 90 | 31 | CC.T 060204 | 92,80 | **018** |
| **M12** | 20 | 9,0 | 20 | 100 | 40 | CC.T 060204 | 95,62 | **020** |
| **M16** | 26 | 8,5 | 25 | 110 | 52 | CC.T 09T304 | 103,80 | **026** |
| **M20** | 33 | 15,5 | 32 | 130 | 66 | CC.T 09T304 | 109,10 | **033** |

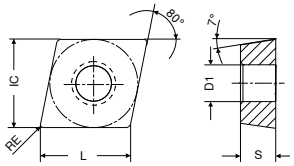
Key D

Clamping screw

| Spare parts | | Y7 Article no. 80 950 ... EUR | | | 2A Article no. 70 950 ... EUR | |
|---|---|---|---|---|---|---|
| **Insert** | | | | | | |
| CC.T 060204 | T08 | 7,80 | **110** | M2,5x6 | 2,36 | **112** |
| CC.T 09T304 | T15 | 9,28 | **113** | M3,5x7,2 | 3,14 | **110** |

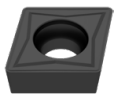
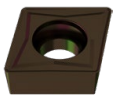
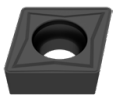
# CCMT / CCGT

| Designation | L | S | D1 | IC |
|---|---|---|---|---|
| | mm | mm | mm | mm |
| CC.T 0602.. | 6,4 | 2,38 | 2,8 | 6,35 |
| CC.T 09T3.. | 9,7 | 3,97 | 4,4 | 9,52 |

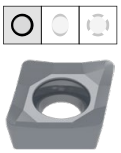





## CCMT

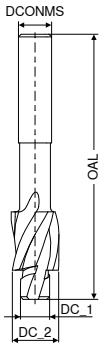
| | -SM CTCP125 | -SM CTCP135 | -SM CTC2135 | -SM CTCK110 |
|---|---|---|---|---|
| | -ZM HCX1125 | -ZM HCR1135 | -ZM CWN2135 | -ZM DCX3110 |
| | DRAGONSKIN | DRAGONSKIN | | DRAGONSKIN |
| |  |  |  |  |
| | M | M | M | M |
| | CCMT | CCMT | CCMT | CCMT |
| | 1A/08 | 1A/08 | 1A/08 | 1A/08 |
| ISO / RE mm | Article no. 76 252 ... EUR | Article no. 76 252 ... EUR | Article no. 70 252 ... EUR | Article no. 70 252 ... EUR |
| 060204EN 0,4 | 7,78 504 | 7,78 704 | 7,54 670 | 7,78 004 |
| 060208EN 0,8 | | 7,78 706 | | 7,78 006 |
| 09T304EN 0,4 | 9,70 516 | 9,70 716 | 9,68 674 | 9,70 016 |
| 09T308EN 0,8 | 9,70 518 | 9,70 718 | 9,68 676 | 9,70 018 |
| 09T312EN 1,2 | | | | 9,70 020 |
| Steel | ● | ● | ○ | ● |
| Stainless steel | ○ | ○ | ● | ○ |
| Cast iron | ○ | | | ● |
| Non ferrous metals | | | | |
| Heat resistant alloys | | ○ | ● | |
| Hardened materials | | | | |

## CCGT

| | -27 H10T | -27 CWN15 | -27 AMZ |
|---|---|---|---|
| | -AL CWK15 | -AL CWN15 | -AL AMZ |
| |  |  |  |
| | M | M | M |
| | CCGT | CCGT | CCGT |
| | 1A/90 | 1A | 1A/90 |
| ISO / RE mm | Article no. 70 254 ... EUR | Article no. 70 254 ... EUR | Article no. 70 254 ... EUR |
| 060202FN 0,2 | 10,22 600 | 12,97 300 | 12,42 450 |
| 060204FN 0,4 | 10,22 602 | 12,97 302 | 12,42 452 |
| 09T302FN 0,2 | 10,91 604 | 13,41 304 | 12,75 454 |
| 09T304FN 0,4 | 10,91 606 | 13,41 306 | 12,75 456 |
| 09T308FN 0,8 | 10,91 608 | 13,41 308 | 12,75 458 |
| Steel | | | ○ |
| Stainless steel | | ○ | ○ |
| Cast iron | ○ | | ○ |
| Non ferrous metals | ● | ● | ● |
| Heat resistant alloys | ○ | | |
| Hardened materials | | | |

# Counterbore, DIN 373

- with fixed pilot
- with 3 cutting edges, right-hand flutes for counterbores according to DIN 74
- for countersinking to suit hexagon socket screws according to DIN 912, DIN 6912, DIN 7984 and cap screws according to DIN 84




HSS
Core hole

fine
HSS
Through hole

medium
HSS
Through hole

| Thread | DC_2 z9 | DCONMS h9 | OAL | DC_1 e8 | U1 Article no. 30 192 ... | | U1 Article no. 30 190 ... | | U1 Article no. 30 191 ... | |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | EUR | | EUR | | EUR | |
| M3 | 6 | 5,0 | 71 | 2,5 | 13,46 | 030 | | | | |
| M3 | 6 | 5,0 | 71 | 3,2 | | | 13,46 | 030 1) | | |
| M3 | 6 | 5,0 | 71 | 3,4 | | | | | 13,46 | 030 1) |
| M4 | 8 | 5,0 | 71 | 3,3 | 10,92 | 040 | | | | |
| M4 | 8 | 5,0 | 71 | 4,3 | | | 10,92 | 040 1) | | |
| M4 | 8 | 5,0 | 71 | 4,5 | | | | | 10,92 | 040 1) |
| M5 | 10 | 8,0 | 80 | 4,2 | 11,97 | 050 | | | | |
| M5 | 10 | 8,0 | 80 | 5,3 | | | 11,97 | 050 1) | | |
| M5 | 10 | 8,0 | 80 | 5,5 | | | | | 11,97 | 050 1) |
| M6 | 11 | 8,0 | 80 | 5,0 | 12,82 | 060 | | | | |
| M6 | 11 | 8,0 | 80 | 6,4 | | | 12,82 | 060 1) | | |
| M6 | 11 | 8,0 | 80 | 6,6 | | | | | 12,82 | 060 1) |
| M8 | 15 | 12,5 | 100 | 6,8 | 20,46 | 080 | | | | |
| M8 | 15 | 12,5 | 100 | 8,4 | | | 20,46 | 080 1) | | |
| M8 | 15 | 12,5 | 100 | 9,0 | | | | | 20,46 | 080 1) |
| M10 | 18 | 12,5 | 100 | 8,5 | 24,16 | 100 | | | | |
| M10 | 18 | 12,5 | 100 | 10,5 | | | 24,16 | 100 1) | | |
| M10 | 18 | 12,5 | 100 | 11,0 | | | | | 24,16 | 100 1) |
| M12 | 20 | 12,5 | 100 | 10,2 | 26,60 | 120 | | | | |
| M12 | 20 | 12,5 | 100 | 13,0 | | | 26,60 | 120 | | |
| M12 | 20 | 12,5 | 100 | 13,5 | | | | | 26,60 | 120 |

1) included in the set

# Counterbore, DIN 373 – Set

**Scope of supply:**
Counterbores M3; M4; M5; M6; M8; M10 in case

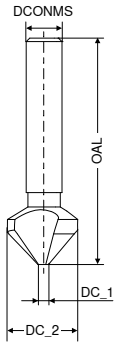
| U1 Article no. 30 190 ... | | U1 Article no. 30 191 ... | |
|---|---|---|---|
| EUR | | EUR | |
| 104,30 | 999 | 104,30 | 999 |

# Countersink 90° with irregular pitch, DIN 335-C

- ▲ all sizes with 3 cutting edges and highly irregular pitch, resulting in smooth running, excellent roundness and chatter reduction giving the highest surface quality
- ▲ special TPX76S coating
- ▲ for very high tool life in almost all materials
- ▲ greatly reduced axial and radial forces
- ▲ for countersinking to DIN 7991

**N**

TPX76S




90°
Solid carbide

| DC_2 z9 | DC_1 | DCONMS h6 | OAL | DIN 7991 | U1 Article no. 30 116 ... | |
|---|---|---|---|---|---|---|
| mm | mm | mm | mm | | EUR | |
| **6,3** | 1,5 | 5 | 45 | M3 | 117,90 | **063** |
| **8,3** | 2,0 | 6 | 50 | M4 | 126,80 | **083** |
| **10,4** | 2,5 | 6 | 50 | M5 | 132,30 | **104** |
| **12,4** | 2,8 | 8 | 56 | M6 | 138,80 | **124** |
| **16,5** | 3,2 | 10 | 60 | M8 | 169,70 | **165** |
| **20,5** | 3,5 | 10 | 63 | M10 | 195,10 | **205** |
| **25,0** | 3,8 | 10 | 67 | M12 | 224,90 | **250** |
| **31,0** | 4,2 | 12 | 71 | M16 | 266,80 | **310** |

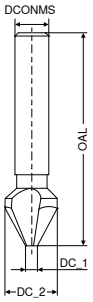
| | |
|---|---|
| Steel | ● |
| Stainless steel | ○ |
| Cast iron | ● |
| Non ferrous metals | ● |
| Heat resistant alloys | ○ |
| Hardened materials | ○ |

→ $v_c$ Page 70

# Countersink 60°, factory standard-C

▲ with 3 cutting edges for countersinking and deburring in high-tensile steels, grey cast iron, aluminium alloys containing silicon and corrosion resistant steels

**N**



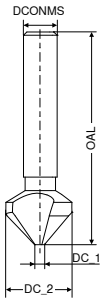

◁ 60°
Solid carbide

| DC_2 z9 | DC_1 | DCONMS h9 | OAL | U1 Article no. 30 160 ... | |
|---|---|---|---|---|---|
| mm | mm | mm | mm | EUR | |
| **12,5** | 3,2 | 8 | 56 | 173,10 | **125** |
| **16,0** | 4,0 | 10 | 63 | 241,40 | **160** |
| **20,0** | 5,0 | 10 | 67 | 277,80 | **200** |
| **25,0** | 6,3 | 10 | 71 | 307,50 | **250** |

# Countersink 90°, factory standard-C

▲ with 3 cutting edges for countersinking and deburring in high-tensile steels, grey cast iron, alumínium alloys containing silicon and corrosion resistant steels
▲ from Ø 12,4 mm with solid carbide head

**N**




◁ 90°
Solid carbide

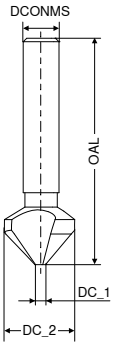
| DC_2 z9 | DC_1 | DCONMS h9 | OAL | DIN ISO 7721 | DIN 7991 | U1 Article no. 30 115 ... | |
|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | | | EUR | |
| **10,4** | 2,5 | 8 | 46 | M5 | | 129,00 | **100** |
| **12,4** | 2,8 | 8 | 56 | | M6 | 137,80 | **124** |
| **15,0** | 3,2 | 10 | 60 | M8 | | 144,40 | **150** |
| **16,5** | 3,2 | 10 | 60 | | M8 | 169,70 | **165** |
| **20,5** | 3,5 | 10 | 63 | | M10 | 180,80 | **205** |
| **25,0** | 3,8 | 10 | 67 | | M12 | 203,80 | **250** |
| **31,0** | 4,2 | 12 | 71 | | M16 | 289,90 | **310** |

# Countersink 90° with irregular pitch, DIN 335-C

- ▲ all sizes with 3 cutting edges and highly irregular pitch, resulting in smooth running, excellent roundness and chatter reduction giving the highest surface quality
- ▲ special Ti50 coating
- ▲ for very high tool life in almost all materials
- ▲ greatly reduced axial and radial forces
- ▲ for countersinking to DIN ISO 7721 and DIN 7991

**N**

Ti50




4

90°
HSS

| DC_2 z9 | DC_1 | DCONMS | OAL | DIN ISO 7721 | DIN 7991 | U1 Article no. 30 140 ... EUR | | |
|---|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | | | | | |
| 4,3 | 1,3 | 4 | 40 | M2 | | 21,73 | 043 | |
| 6,0 | 1,5 | 5 | 45 | M3 | | 23,21 | 060 | |
| 6,3 | 1,5 | 5 | 45 | | M3 | 23,52 | 063 | |
| 8,0 | 2,0 | 6 | 50 | M4 | | 25,54 | 080 | |
| 8,3 | 2,0 | 6 | 50 | | M4 | 26,07 | 083 | |
| 10,0 | 2,5 | 6 | 50 | M5 | | 26,50 | 100 | |
| 10,4 | 2,5 | 6 | 50 | | M5 | 26,71 | 104 | 1) |
| 11,5 | 2,8 | 8 | 56 | M6 | | 30,42 | 115 | |
| 12,4 | 2,8 | 8 | 56 | | M6 | 31,79 | 124 | |
| 15,0 | 3,2 | 10 | 60 | M8 | | 35,82 | 150 | |
| 16,5 | 3,2 | 10 | 60 | | M8 | 36,77 | 165 | 1) |
| 19,0 | 3,5 | 10 | 63 | M10 | | 40,49 | 190 | |
| 20,5 | 3,5 | 10 | 63 | | M10 | 45,68 | 205 | |
| 23,0 | 3,8 | 10 | 67 | M12 | | 49,91 | 230 | |
| 25,0 | 3,8 | 10 | 67 | | M12 | 55,11 | 250 | 1) |
| 31,0 | 4,2 | 12 | 71 | | M16 | 67,51 | 310 | |

| | |
|---|---|
| Steel | ● |
| Stainless steel | ○ |
| Cast iron | ● |
| Non ferrous metals | ● |
| Heat resistant alloys | ○ |
| Hardened materials | |

1) included in the set

→ $v_c$ Page 70

# Countersink 90° with irregular pitch, DIN 335-C – Set

**Scope of supply:**

Countersinks Ø 10,4 / 16,5 / 25,0 mm in storage case

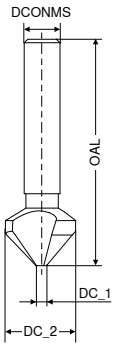
**N**

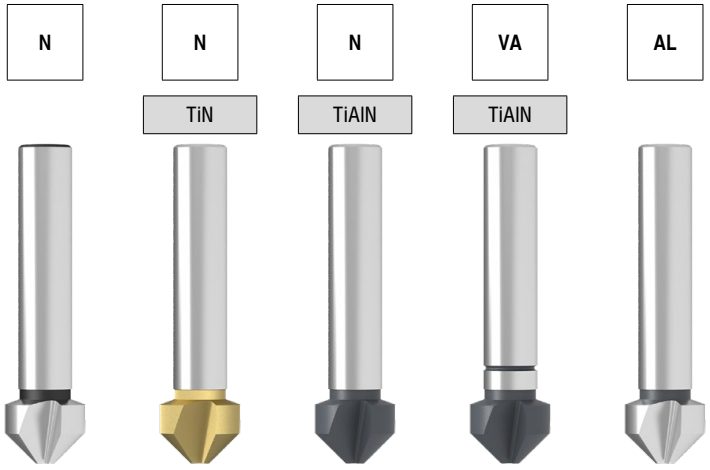
Ti50

| U1 Article no. 30 140 ... EUR | |
|---|---|
| 113,40 | 999 |

# Countersink 90°, DIN 335-C

- 3 cutting edges to avoid burrs and chatter marks when countersinking and deburring in virtually all materials. Particularly suitable for DIN screws according to DIN ISO 7721 and 7991, as the countersink diameters are matched to the heads of these screws.
- the TiN version makes high cutting rates possible; very long tool life and very good friction resistance properties in order to avoid material sticking.
- TiAlN version shows considerably improved performance compared to TiN version. Particularly suitable for all abrasive materials (cast iron, AlSi) and/or at high temperature.




| DC_2 z9 | DC_1 | DCONMS | OAL | DIN ISO 7721 | DIN 7991 | U1 Article no. 30 100 ... | | U1 Article no. 30 110 ... | | U1 Article no. 30 130 ... | | U1 Article no. 30 132 ... | | U1 Article no. 30 102 ... | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | | | EUR | | EUR | | EUR | | EUR | | EUR | |
| 4,3 | 1,3 | 4 | 40 | M2 | | 6,98 | 043 | | | | | | | | |
| 5,0 | 1,5 | 4 | 40 | M2,5 | | 7,22 | 050 | 14,09 | 050 | 18,97 | 050 | | | | |
| 6,0 | 1,5 | 5 | 45 | M3 | | 7,34 | 060 | | | | | | | | |
| 6,3 | 1,5 | 5 | 45 | | M3 | 7,34 | 063 1) | 14,09 | 063 1) | 19,07 | 063 | 15,37 | 063 | 10,58 | 063 |
| 7,0 | 1,8 | 6 | 50 | M3,5 | | 7,75 | 070 | | | | | | | | |
| 8,0 | 2,0 | 6 | 50 | M4 | | 8,01 | 080 | 16,32 | 080 | 20,03 | 080 | | | | |
| 8,3 | 2,0 | 6 | 50 | | M4 | 8,30 | 083 1) | 16,32 | 083 1) | 20,13 | 083 | 18,12 | 083 | 11,34 | 083 |
| 9,4 | 2,2 | 6 | 50 | | | 9,09 | 094 | | | | | | | | |
| 10,0 | 2,5 | 6 | 50 | M5 | | 9,66 | 100 | 17,70 | 100 | 21,52 | 100 | | | | |
| 10,4 | 2,5 | 6 | 50 | | M5 | 10,08 | 104 1) | 19,50 | 104 1) | 21,73 | 104 | 20,13 | 104 | 12,93 | 104 |
| 11,5 | 2,8 | 8 | 56 | M6 | | 10,46 | 115 | | | | | | | | |
| 12,4 | 2,8 | 8 | 56 | | M6 | 10,70 | 124 1) | 21,40 | 124 1) | 27,87 | 124 | 22,15 | 124 | 13,46 | 124 |
| 13,4 | 2,9 | 8 | 56 | | | 11,55 | 134 | | | | | | | | |
| 15,0 | 3,2 | 10 | 60 | M8 | | 12,72 | 150 | 24,48 | 150 | 35,29 | 150 | 28,08 | 150 | 15,58 | 150 |
| 16,5 | 3,2 | 10 | 60 | | M8 | 13,78 | 165 1) | 25,97 | 165 1) | 36,88 | 165 | 29,78 | 165 | 16,42 | 165 |
| 19,0 | 3,5 | 10 | 63 | M10 | | 17,27 | 190 | | | | | | | | |
| 20,5 | 3,5 | 10 | 63 | | M10 | 18,01 | 205 1) | 36,57 | 205 1) | 47,58 | 205 | 35,29 | 205 | 22,89 | 205 |
| 23,0 | 3,8 | 10 | 67 | M12 | | 22,46 | 230 | | | | | | | | |
| 25,0 | 3,8 | 10 | 67 | | M12 | 23,95 | 250 | 50,13 | 250 | 68,24 | 250 | 46,21 | 250 | 30,52 | 250 |
| 31,0 | 4,2 | 12 | 71 | | M16 | 36,57 | 310 | 64,65 | 310 | 93,15 | 310 | 68,78 | 310 | | |
| 31,0 | 4,2 | 12 | 67 | | M16 | | | | | | | | | 48,86 | 310 |

1) included in the set

# Countersink 90°, DIN 335-C – set

**Scope of supply:**

Countersinks Ø 6,3; 8,3; 10,4; 12,4; 16,5; 20,5 in case

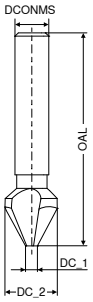
N

TiN

| U1 Article no. 30 100 ... | | U1 Article no. 30 110 ... | |
|---|---|---|---|
| EUR | | EUR | |
| 71,64 | 999 | 136,80 | 999 |

# Countersink 60°, DIN 334-C

▲ 3 cutting edges for countersinking and deburring in virtually all materials



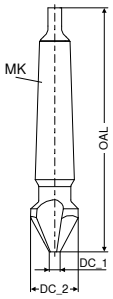

60°
HSS

| DC_2 z9 | DC_1 | DCONMS h9 | OAL | U1 Article no. 30 150 ... | |
|---|---|---|---|---|---|
| mm | mm | mm | mm | EUR | |
| **6,3** | 1,6 | 5 | 45 | 8,04 | **063** 1) |
| **8,0** | 2,0 | 6 | 50 | 8,17 | **080** 1) |
| **10,0** | 2,5 | 6 | 52 | 10,31 | **100** 1) |
| **12,5** | 3,2 | 8 | 56 | 10,58 | **125** 1) |
| **16,0** | 4,0 | 10 | 63 | 13,35 | **160** 1) |
| **20,0** | 5,0 | 10 | 67 | 18,65 | **200** 1) |
| **25,0** | 6,3 | 10 | 71 | 25,01 | **250** |

1) included in the set

# Countersink 60°, DIN 334-D

▲ 3 cutting edges for countersinking and deburring in virtually all materials




MK
60°
HSS

| DC_2 z9 | DC_1 | OAL | MK | U1 Article no. 30 155 ... | |
|---|---|---|---|---|---|
| mm | mm | mm | | EUR | |
| **16,0** | 4,0 | 90 | 1 | 29,99 | **160** |
| **20,0** | 5,0 | 106 | 2 | 37,51 | **200** |
| **25,0** | 6,3 | 112 | 2 | 41,12 | **250** |
| **31,5** | 10,0 | 118 | 2 | 42,82 | **315** |
| **40,0** | 12,5 | 150 | 3 | 71,00 | **400** |
| **50,0** | 16,0 | 160 | 3 | 91,35 | **500** |
| **63,0** | 20,0 | 190 | 4 | 144,10 | **630** |
| **80,0** | 25,0 | 200 | 4 | 237,40 | **800** |

# Countersink 60°, DIN 334-C – set

**Scope of supply:**

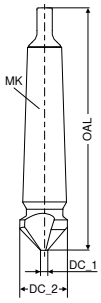
Countersinks Ø 6,3; 8,0; 10,0; 12,5; 16,0; 20,0 in case

| U1 Article no. 30 150 ... | |
|---|---|
| EUR | |
| 78,21 | **999** |

# Countersink 90°, DIN 335-C

▲ 3 cutting edges to avoid burrs and chatter marks when countersinking and deburring in virtually all materials. Particularly suitable for DIN screws according to DIN ISO 7721 and 7991, as the countersink diameters are matched to the heads of these screws.

**N**

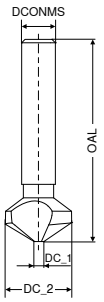



MK
90°
HSS

| DC_2 z9 | DC_1 | OAL | MK | U1 Article no. 30 105 ... | |
|---|---|---|---|---|---|
| mm | mm | mm | | EUR | |
| **16,5** | 3,2 | 85 | 1 | 30,31 | **165** |
| **19,0** | 3,2 | 100 | 2 | 39,31 | **190** |
| **20,5** | 3,5 | 100 | 2 | 40,70 | **205** |
| **23,0** | 3,8 | 106 | 2 | 40,70 | **230** |
| **25,0** | 3,8 | 106 | 2 | 42,07 | **250** |
| **26,0** | 3,8 | 106 | 2 | 42,07 | **260** |
| **28,0** | 4,0 | 112 | 2 | 45,04 | **280** |
| **30,0** | 4,2 | 112 | 2 | 45,04 | **300** |
| **31,0** | 4,2 | 112 | 2 | 48,33 | **310** |
| **34,0** | 4,5 | 118 | 2 | 44,94 | **340** |
| **37,0** | 4,8 | 118 | 2 | 55,11 | **370** |
| **40,0** | 10,0 | 140 | 3 | 66,77 | **400** |
| **50,0** | 14,0 | 150 | 3 | 80,01 | **500** |
| **63,0** | 16,0 | 180 | 4 | 127,20 | **630** |
| **80,0** | 22,0 | 190 | 4 | 206,70 | **800** |

# Countersink 120°, factory standard-C

▲ 3 cutting edges for countersinking and deburring in virtually all materials

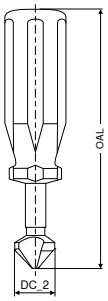



120°
HSS

| DC_2 z9 | DC_1 | DCONMS h9 | OAL | U1 Article no. 30 170 ... | |
|---|---|---|---|---|---|
| mm | mm | mm | mm | EUR | |
| **6,3** | 1,5 | 5 | 45 | 10,00 | **063** |
| **8,3** | 2,0 | 6 | 50 | 10,00 | **083** |
| **10,4** | 2,5 | 6 | 50 | 11,13 | **104** |
| **12,4** | 2,8 | 8 | 56 | 11,87 | **124** |
| **16,5** | 3,2 | 10 | 60 | 17,27 | **165** |
| **20,5** | 3,5 | 10 | 60 | 23,74 | **205** |
| **25,0** | 3,8 | 10 | 63 | 29,04 | **250** |

# Hand deburring tool 90°

- 3 cutting edges and non-slip plastic handle
- for countersinking and deburring on all materials



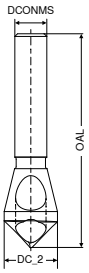

90°
HSS

| DC_2 | OAL | U1 Article no. 30 125 ... | |
|---|---|---|---|
| mm | mm | EUR | |
| 12,4 | 135 | 14,84 | 124 |
| 15,0 | 135 | 17,48 | 150 |
| 16,5 | 135 | 18,01 | 165 |
| 20,5 | 135 | 21,40 | 205 |
| 25,0 | 135 | 25,97 | 250 |

# Deburring countersink 90°, factory standard-A

- with angled hole to avoid burrs and chattermarks when countersinking and deburring in soft long-chipping materials, e.g. aluminium, plastics etc.

TiN




90°
HSS-E

90°
HSS-E

| DC_2 | $D_{min}$ - $D_{max}$ | DCONMS h9 | OAL | U1 Article no. 30 120 ... | | U1 Article no. 30 121 ... | |
|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | EUR | | EUR | |
| 6,3 | 1 - 4 | 6,3 | 45 | 16,74 | 040 [1] | 25,85 | 040 [1] |
| 10,0 | 2 - 5 | 6,0 | 45 | 10,30 | 050 | 15,48 | 050 |
| 14,0 | 5 - 10 | 8,0 | 48 | 12,72 | 101 | 20,66 | 101 |
| 21,0 | 10 - 15 | 10,0 | 65 | 21,83 | 150 | 30,10 | 150 |
| 28,0 | 15 - 20 | 12,0 | 85 | 44,09 | 200 | 61,36 | 200 |
| 35,0 | 20 - 25 | 15,0 | 102 | 61,36 | 250 | 90,50 | 250 |

1) can be used in both directions

# Material examples referring to the cutting data tables

| | Index | Material | Strength N/mm² / HB / HRC | Material number | Material designation | Material number | Material designation | Material number | Material designation |
|---|---|---|---|---|---|---|---|---|---|
| P | 1.1 | General construction steel | < 800 N/mm² | 1.0402 | EN3B | | | | |
| | 1.2 | Free cutting steel | < 800 N/mm² | 1.0711 | EN1A | | | | |
| | 1.3 | Hardened steel, non alloyed | < 800 N/mm² | 1.0401 | EN32C | | | | |
| | 1.4 | Alloyed hardened steel | < 1000 N/mm² | 1.7325 | 25 CD4 | | | | |
| | 1.5 | Tempering steel, unalloyed | < 850 N/mm² | 1.5752 | EN36 | 1.0535 | EN9 | | |
| | 1.6 | Tempering steel, unalloyed | < 1000 N/mm² | 1.6582 | EN24 | | | | |
| | 1.7 | Tempering steel, alloyed | < 800 N/mm² | 1.7225 | EN19 | | | | |
| | 1.8 | Tempering steel, alloyed | < 1300 N/mm² | 1.8515 | EN40B | | | | |
| | 1.9 | Steel castings | < 850 N/mm² | 0.9650 | G-X 260 Cr 27 | 1.6750 | GS-20 NiCrMo 3.7 | 1.6582 | GS-34 CrNiMo 6 |
| | 1.10 | Nitriding steel | < 1000 N/mm² | 1.8509 | EN41B | | | | |
| | 1.11 | Nitriding steel | < 1200 N/mm² | 1.1186 | EN8 | 1.1160 | EN14A | | |
| | 1.12 | Roller bearing steel | < 1200 N/mm² | 1.3505 | 534A99 | | | | |
| | 1.13 | Spring steel | < 1200 N/mm² | | EN45 | | EN47 | | EN43 |
| | 1.14 | High-speed steel | < 1300 N/mm² | 1.3343 | M2 | 1.3249 | M34 | | |
| | 1.15 | Cold working tool steel | < 1300 N/mm² | 1.2379 | D2 | 1.2311 | P20 | | |
| | 1.16 | Hot working tool steel | < 1300 N/mm² | 1.2344 | H13 | | | | |
| M | 2.1 | Cast steel and sulphured stainless steel | < 850 N/mm² | 1.4581 | 318 | | | | |
| | 2.2 | Stainless steel, ferritic | < 750 N/mm² | 1.4000 | 403 | | | | |
| | 2.3 | Stainless steel, martensitic | < 900 N/mm² | 1.4057 | EN57 | | | | |
| | 2.4 | Stainless steel, ferritic / martensitic | <1100 N/mm² | 1.4028 | EN56B | | | | |
| | 2.5 | Stainless steel, austenitic / ferritic | < 850 N/mm² | 1.4542 | 17-4PH | | | | |
| | 2.6 | Stainless steel, austenitic | < 750 N/mm² | 1.4305 | 303 | 1.4401 | 316 | 1.4301 | 304 |
| | 2.7 | Heat resistant steel | < 1100 N/mm² | 1.4876 | Incoloy 800 | | | | |
| K | 3.1 | Grey cast iron with lamellar graphite | 100–350 N/mm² | 0.6015 | Grade 150 | 0.6020 | Grade 220 | 0.6025 | Grade 260 |
| | 3.2 | Grey cast iron with lamellar graphite | 300–500 N/mm² | 0.6030 | Grade 300 | 0.6035 | Grade 350 | 0.6040 | Grade 400 |
| | 3.3 | Gray cast iron with spheroidal graphite | 300–500 N/mm² | 0.7040 | SG 400-12 | 0.7043 | SG 370-17 | 0.7050 | SG 500-7 |
| | 3.4 | Gray cast iron with spheroidal graphite | 500–900 N/mm² | 0.7060 | SG 600-3 | 0.7070 | SG 700-2 | 0.7080 | SG 800-2 |
| | 3.5 | White malleable cast iron | 270–450 N/mm² | 0.8035 | GTW-35 | 0.8045 | GTW-45 | | |
| | 3.6 | White malleable cast iron | 500–650 N/mm² | 0.8055 | GTW-55 | 0.8065 | GTW-65 | | |
| | 3.7 | Black malleable cast iron | 300–450 N/mm² | 0.8135 | GTS-35 | 0.8145 | GTS-45 | | |
| | 3.8 | Black malleable cast iron | 500–800 N/mm² | 0.8155 | GTS-55 | 0.8170 | GTS-70 | | |
| N | 4.1 | Aluminium (non alloyed, low alloyed) | < 350 N/mm² | 3.0255 | 1050 A | 3.0275 | 1070 A | 3.0285 | 1080 A (A8) |
| | 4.2 | Aluminium alloys < 0.5 % Si | < 500 N/mm² | 3.1325 | 2017 A (AU4G) | 3.4335 | 7005 (AZ5G) | 3.4365 | 7075 (AZ5GU) |
| | 4.3 | Aluminium alloy 0.5–10 % Si | < 400 N/mm² | 3.2315 | A- G S1 | 3.2373 | A-S9 G | 3.2151 | A-S 6 U4 |
| | 4.4 | Aluminium alloys 10–15 % Si | < 400 N/mm² | 3.2581 | A-S12 | 3.2583 | A-S12 U | | |
| | 4.5 | Aluminum alloys > 15 % Si | < 400 N/mm² | | A-S18 | A-S17 U4 | | | |
| | 4.6 | Copper (non alloyed, low alloyed) | < 350 N/mm² | 2.0040 | Cu-c1 | 2.0060 | Cu-a1 | 2.0090 | Cu-b1 |
| | 4.7 | Copper wrought alloys | < 700 N/mm² | 2.1247 | Cub2 (Berylium Copper) | 2.0855 | CuN2S (Nickel Copper) | 2.1310 | CU-Fe2P |
| | 4.8 | Special copper alloys | < 200 HB | 2.0916 | Cu-A5 | 2.1525 | Cu-S3 M | | Ampco 8 (Cu-A6Fe2) |
| | 4.9 | Special copper alloys | < 300 HB | 2.0978 | Cu-Al11 Fe5 Ni5) | | Ampco 18 (Cu- A10 Fe3) | | |
| | 4.10 | Special copper alloys | > 300 HB | 2.1247 | Cu Be2 | | Ampco M4 | | |
| | 4.11 | Short-chipping brass, bronze, red bronze | < 600 N/mm² | 2.0331 | Cu Zn36 Pb1,5 | 2.0380 | Cu Zn39 Pb2 (Ms 56) | 2.0410 | Cu Zn44 Pb2 |
| | 4.12 | Long-chipping brass | < 600 N/mm² | 2.0335 | Cu Zn 36 (Ms63) | 2.1293 | Cu Cr1 Zr | | |
| | 4.13 | Thermoplastics | | PE | PVC | PS | Polystyrene | | Plexiglas |
| | 4.14 | Duroplastics | | PF | Bakelite | | Pertinax | | |
| | 4.15 | Fibre-reinforced plastics | | | Carbon Fibre | | Fibreglass | | Aramid Fibre (Kevlar) |
| | 4.16 | Magnesium and magnesium alloys | < 850 N/mm² | 3.5812 | Mg A7 Z1 | 3.5662 | Mg A9 | 3.5105 | Mg Tr3 Z2 Zn 1 |
| | 4.17 | Graphite | | | R8500X | | R8650 | | Technograph 15 |
| | 4.18 | Tungsten and tungsten alloys | | | W-Ni Fe (Densimet) | | W- Ni Cu (Inermet) | | Denal |
| | 4.19 | Molybdenum and molybdenum alloys | | | TZM | | MHQ | | Mo W |
| S | 5.1 | Pure nickel | | 2.4066 | Ni99 (Nickel 200) | 2.4068 | Lc Ni99 (Nickel 201) | | |
| | 5.2 | Nickel alloys | | 1.3912 | Fe-Ni36 (Invar) | 1.3917 | Fe -Ni42 (N42) | 1.3922 | Fe-Ni48 (N48) |
| | 5.3 | Nickel alloys | < 850 N/mm² | 2.4375 | Ni Cu30 Al (Monel K500) | 2.4360 | Ni Cu30Fe (Monel 400) | 2.4668 | |
| | 5.4 | Nickel molybdenum alloys | | 2.4600 | Ni Mo30Cr2 (Hastelloy B4) | 2.4617 | Ni Mo28 (Hastelloy B2) | 2.4819 | Ni Mo16Cr16 Hastell. C276 |
| | 5.5 | Nickel-chromium alloys | < 1300 N/mm² | 2.4951 | Ni Cr20TiAl (Nimonic 80A) | 2.4858 | Ni Cr21Mo (Inconel 825) | 2.4856 | Ni Cr22Mo9Nb Inconel 625 |
| | 5.6 | Cobalt Chrome Alloys | < 1300 N/mm² | 2.4964 | Co Cr20 W15 Ni10 | | Co Cr20 Ni16 Mo7 | | Co Cr28 Mo 6 |
| | 5.7 | Heat resistant alloys | < 1300 N/mm² | 1.4718 | Z45 C S 9-3 | 1.4747 | Z80 CSN 20-02 | 1.4845 | Z12 CN 25-20 |
| | 5.8 | Nickel-cobalt-chromium alloys | < 1400 N/mm² | 2.4851 | Ni Cr23Fe (Inconel 601) | 2.4668 | Ni Cr19NbMo (Inconel 718) | 2.4602 | Ni Cr21Mo14 Hastelloy C22 |
| | 5.9 | Pure titanium | < 900 N/mm² | 3.7025 | T35 (Titanium Grade 1) | 3.7034 | T40 (Titanium Grade 2) | 3.7064 | T60 (Titanium Grade 4) |
| | 5.10 | Titanium alloys | < 700 N/mm² | | T-A6-Nb7 (367) | | T-A5-Sn2-Mo4-Cr4 (Ti17) | | T-A3-V2,5 (Gr18) |
| | 5.11 | Titanium alloys | < 1200 N/mm² | 3.7165 | T-A6-V4 (Ta6V) | | T-A4-3V-Mo2-Fe2 (SP700) | | T-A5-Sn1-Zr1-V1-Mo (Gr32) |
| H | 6.1 | | < 45 HRC | | | | | | |
| | 6.2 | | 46–55 HRC | | | | | | |
| | 6.3 | Tempered steel | 56–60 HRC | | | | | | |
| | 6.4 | | 61–65 HRC | | | | | | |
| | 6.5 | | 65–70 HRC | | | | | | |

# Cutting data standard values for REAMAX TS

| | Grade / coating | HM-DBG-P / Ti700 | | | | HM-DBG-P / Ti700 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Article no. / type | 40 585 ... / 75H.65 – ASG3000 | | | | 40 521 ..., 40 571 ... / 75J.65, 75H.65 – ASG0106 | | | | |
| | Nominal Ø in mm | 18–21,999 | 22–31,799 | 31,8–51,999 | 52–65 | 18–21,999 | 22–31,799 | 31,8–51,999 | 52–65 | |
| | Reaming allowance Ø | 0,20–0,30 | 0,20–0,30 | 0,30–0,40 | 0,30–0,50 | 0,20–0,30 | 0,20–0,30 | 0,30–0,40 | 0,30–0,50 | |
| | Number of teeth | 6 | 6 | 8 | 10 | 6 | 6 | 8 | 10 | |
| Index | $v_c$ m/min | | f | f | f | $v_c$ m/min | | f | f | f | f |
| | 3xD | 5xD | mm/rev. | mm/rev. | mm/rev. | mm/rev. | 3xD | 5xD | mm/rev. | mm/rev. | mm/rev. | mm/rev. |
| 1.1 | 150–200 | 120–160 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | | | | | | |
| 1.2 | 150–200 | 120–160 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | | | | | | |
| 1.3 | 150–200 | 120–160 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | | | | | | |
| 1.4 | 150–200 | 120–160 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | | | | | | |
| 1.5 | 150–200 | 120–160 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | | | | | | |
| 1.6 | 150–200 | 120–160 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | | | | | | |
| 1.7 | 150–200 | 120–160 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | | | | | | |
| 1.8 | 80–120 | 80–100 | 0,50–0,80 | 0,70–1,00 | 0,90–1,30 | 1,30–2,00 | | | | | | |
| 1.9 | 80–120 | 80–100 | 0,50–0,80 | 0,70–1,00 | 0,90–1,30 | 1,30–2,00 | | | | | | |
| 1.10 | 80–120 | 80–100 | 0,50–0,80 | 0,70–1,00 | 0,90–1,30 | 1,30–2,00 | | | | | | |
| 1.11 | | | | | | | 80–120 | 80–100 | 0,50–0,80 | 0,70–1,00 | 0,90–1,30 | 1,30–2,00 |
| 1.12 | | | | | | | 60–100 | 60–100 | 0,50–0,80 | 0,70–1,00 | 0,90–1,30 | 1,30–2,00 |
| 1.13 | | | | | | | 60–100 | 60–100 | 0,50–0,80 | 0,70–1,00 | 0,90–1,30 | 1,30–2,00 |
| 1.14 | | | | | | | 40–60 | 40–60 | 0,50–0,80 | 0,70–1,00 | 0,90–1,30 | 1,30–2,00 |
| 1.15 | | | | | | | 40–60 | 40–60 | 0,50–0,80 | 0,70–1,00 | 0,90–1,30 | 1,30–2,00 |
| 1.16 | | | | | | | 40–60 | 40–60 | 0,50–0,80 | 0,70–1,00 | 0,90–1,30 | 1,30–2,00 |
| 2.1 | | | | | | | 45–60 | 40–50 | 0,60–0,90 | 0,80–1,10 | 1,10–1,50 | 1,50–2,30 |
| 2.2 | | | | | | | 45–60 | 40–50 | 0,60–0,90 | 0,80–1,10 | 1,10–1,50 | 1,50–2,30 |
| 2.3 | | | | | | | 30–50 | 30–40 | 0,60–0,90 | 0,80–1,10 | 1,10–1,50 | 1,50–2,30 |
| 2.4 | | | | | | | 30–50 | 30–40 | 0,60–0,90 | 0,80–1,10 | 1,10–1,50 | 1,50–2,30 |
| 2.5 | | | | | | | 30–50 | 30–40 | 0,60–0,90 | 0,80–1,10 | 1,10–1,50 | 1,50–2,30 |
| 2.6 | | | | | | | 45–60 | 40–50 | 0,60–0,90 | 0,80–1,10 | 1,10–1,50 | 1,50–2,30 |
| 2.7 | | | | | | | 30–50 | 30–40 | 0,60–0,90 | 0,80–1,10 | 1,10–1,50 | 1,50–2,30 |
| 3.1 | 150–220 | 120–150 | 0,90–1,30 | 1,20–1,70 | 1,60–2,30 | 2,30–3,40 | | | | | | |
| 3.2 | 150–220 | 120–150 | 0,90–1,30 | 1,20–1,70 | 1,60–2,30 | 2,30–3,40 | | | | | | |
| 3.3 | 175–300 | 150–180 | 0,90–1,30 | 1,20–1,70 | 1,60–2,30 | 2,30–3,40 | | | | | | |
| 3.4 | 120–180 | 120–150 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | | | | | | |
| 3.5 | 150–250 | 120–160 | 0,90–1,30 | 1,20–1,70 | 1,60–2,30 | 2,30–3,40 | | | | | | |
| 3.6 | 150–250 | 120–160 | 0,90–1,30 | 1,20–1,70 | 1,60–2,30 | 2,30–3,40 | | | | | | |
| 3.7 | 120–180 | 120–150 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | | | | | | |
| 3.8 | 120–180 | 120–150 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | | | | | | |
| 4.1 | | | | | | | | | | | | |
| 4.2 | | | | | | | | | | | | |
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| 4.4 | | | | | | | | | | | | |
| 4.5 | | | | | | | | | | | | |
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| 4.9 | | | | | | | | | | | | |
| 4.10 | | | | | | | | | | | | |
| 4.11 | | | | | | | | | | | | |
| 4.12 | | | | | | | | | | | | |
| 4.13 | | | | | | | | | | | | |
| 4.14 | | | | | | | | | | | | |
| 4.15 | | | | | | | | | | | | |
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| 4.17 | | | | | | | | | | | | |
| 4.18 | | | | | | | | | | | | |
| 4.19 | | | | | | | | | | | | |
| 5.1 | | | | | | | | | | | | |
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| 5.3 | | | | | | | | | | | | |
| 5.4 | | | | | | | | | | | | |
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| 5.11 | | | | | | | | | | | | |
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| 6.3 | | | | | | | | | | | | |
| 6.4 | | | | | | | | | | | | |
| 6.5 | | | | | | | | | | | | |

The cutting data depends on the external conditions, e.g. stability of the tools and tool clamping, material and machine type.
The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

4

# Cutting data standard values for REAMAX TS

| | Grade / coating | HM-TiN / CWN10 | | | | HM-DBC / CWN10 | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Article no. / type | 40 535 ... / 75H.71 – ASG3000 | | | | 40 526 ..., 40 580 ... / 75J.17, 75H.17 – ASG0706 | | | |
| | Nominal Ø in mm | 18–21,999 | 22–31,799 | 31,8–51,999 | 52–65 | 18–21,999 | 22–31,799 | 31,8–51,999 | 52–65 |
| | Reaming allowance Ø | 0,20–0,30 | 0,20–0,30 | 0,30–0,40 | 0,30–0,50 | 0,20–0,30 | 0,20–0,30 | 0,30–0,40 | 0,30–0,50 |
| | Number of teeth | 6 | 6 | 8 | 10 | 6 | 6 | 8 | 10 |
| Index | $v_c$ m/min | | f | f | f | $v_c$ m/min | | f | f | f | f |
| | 3xD | 5xD | mm/rev. | mm/rev. | mm/rev. | mm/rev. | 3xD | 5xD | mm/rev. | mm/rev. | mm/rev. | mm/rev. |
| **1.1** | 100–140 | 80–120 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | | | | | | |
| **1.2** | 100–140 | 80–120 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | | | | | | |
| **1.3** | 100–140 | 80–120 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | | | | | | |
| **1.4** | 100–140 | 80–120 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | | | | | | |
| **1.5** | 100–140 | 80–120 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | | | | | | |
| **1.6** | 100–140 | 80–120 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | | | | | | |
| **1.7** | 100–140 | 80–120 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | | | | | | |
| **1.8** | 30–45 | 30–45 | 0,50–0,80 | 0,70–1,00 | 0,90–1,30 | 1,30–2,00 | | | | | | |
| **1.9** | 30–45 | 30–45 | 0,50–0,80 | 0,70–1,00 | 0,90–1,30 | 1,30–2,00 | | | | | | |
| **1.10** | 30–45 | 30–45 | 0,50–0,80 | 0,70–1,00 | 0,90–1,30 | 1,30–2,00 | | | | | | |
| **1.11** | | | | | | | | | | | | |
| **1.12** | | | | | | | | | | | | |
| **1.13** | | | | | | | | | | | | |
| **1.14** | | | | | | | | | | | | |
| **1.15** | | | | | | | | | | | | |
| **1.16** | | | | | | | | | | | | |
| **2.1** | | | | | | | | | | | | |
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| **2.4** | | | | | | | | | | | | |
| **2.5** | | | | | | | | | | | | |
| **2.6** | | | | | | | | | | | | |
| **2.7** | | | | | | | | | | | | |
| **3.1** | | | | | | | | | | | | |
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| **3.3** | | | | | | | | | | | | |
| **3.4** | | | | | | | | | | | | |
| **3.5** | | | | | | | | | | | | |
| **3.6** | | | | | | | | | | | | |
| **3.7** | | | | | | | | | | | | |
| **3.8** | | | | | | | | | | | | |
| **4.1** | | | | | | | **150–300** | **150–200** | 0,90–1,30 | 1,10–1,70 | 1,50–2,30 | 2,20–3,40 |
| **4.2** | | | | | | | **150–300** | **150–200** | 0,90–1,30 | 1,10–1,70 | 1,50–2,30 | 2,20–3,40 |
| **4.3** | | | | | | | **200–300** | **150–200** | 0,90–1,30 | 1,10–1,70 | 1,50–2,30 | 2,20–3,40 |
| **4.4** | | | | | | | **200–300** | **150–200** | 0,90–1,30 | 1,10–1,70 | 1,50–2,30 | 2,20–3,40 |
| **4.5** | | | | | | | **200–300** | **150–200** | 0,90–1,30 | 1,10–1,70 | 1,50–2,30 | 2,20–3,40 |
| **4.6** | **80–150** | **80–120** | 0,70–1,10 | 0,90–1,40 | 1,20–1,90 | 1,70–2,60 | | | | | | |
| **4.7** | **120–200** | **120–150** | 0,70–1,10 | 0,90–1,40 | 1,20–1,90 | 1,70–2,60 | | | | | | |
| **4.8** | | | | | | | | | | | | |
| **4.9** | | | | | | | | | | | | |
| **4.10** | | | | | | | | | | | | |
| **4.11** | **120–200** | **120–200** | 0,90–1,30 | 1,10–1,70 | 1,50–2,30 | 2,20–3,40 | | | | | | |
| **4.12** | **80–150** | **80–120** | 0,90–1,30 | 1,10–1,70 | 1,50–2,30 | 2,20–3,40 | | | | | | |
| **4.13** | | | | | | | | | | | | |
| **4.14** | | | | | | | | | | | | |
| **4.15** | | | | | | | | | | | | |
| **4.16** | | | | | | | | | | | | |
| **4.17** | | | | | | | | | | | | |
| **4.18** | | | | | | | | | | | | |
| **4.19** | | | | | | | | | | | | |
| **5.1** | | | | | | | | | | | | |
| **5.2** | | | | | | | | | | | | |
| **5.3** | | | | | | | | | | | | |
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| **5.8** | | | | | | | | | | | | |
| **5.9** | | | | | | | | | | | | |
| **5.10** | | | | | | | | | | | | |
| **5.11** | | | | | | | | | | | | |
| **6.1** | | | | | | | | | | | | |
| **6.2** | | | | | | | | | | | | |
| **6.3** | | | | | | | | | | | | |
| **6.4** | | | | | | | | | | | | |
| **6.5** | | | | | | | | | | | | |

The cutting data depends on the external conditions, e.g. stability of the tools and tool clamping, material and machine type.
The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

# Cutting data standard values for REAMAX TS

| | Grade / coating | DST / CWC10 | | | | DST / CWC10 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Article no. / type | 40 539 ... / 75H.93 – ASG3000 | | | | 40 597 ... / 75J.93 – ASG4000 | | | | |
| | Nominal Ø in mm | 18–21,999 | 22–31,799 | 31,8–51,999 | 52–65 | 18–21,999 | 22–31,799 | 31,8–51,999 | 52–65 | |
| | Reaming allowance Ø | 0,20–0,30 | 0,20–0,30 | 0,30–0,40 | 0,30–0,50 | 0,20–0,30 | 0,20–0,30 | 0,30–0,40 | 0,30–0,50 | |
| | Number of teeth | 6 | 6 | 8 | 10 | 6 | 6 | 8 | 10 | |
| Index | $v_c$ m/min | | f | f | f | $v_c$ m/min | | f | f | f | f |
| | 3xD | 5xD | mm/rev. | mm/rev. | mm/rev. | mm/rev. | 3xD | 5xD | mm/rev. | mm/rev. | mm/rev. | mm/rev. |
| 1.1 | **150–200** | **120–160** | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | **150–200** | **120–160** | 1,00–1,30 | 1,20–1,70 | 1,70–2,30 | 2,40–3,40 |
| 1.2 | **150–200** | **120–160** | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | **150–200** | **120–160** | 1,00–1,30 | 1,20–1,70 | 1,70–2,30 | 2,40–3,40 |
| 1.3 | **150–200** | **120–160** | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | **150–200** | **120–160** | 1,00–1,30 | 1,20–1,70 | 1,70–2,30 | 2,40–3,40 |
| 1.4 | **150–200** | **120–160** | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | **150–200** | **120–160** | 1,00–1,30 | 1,20–1,70 | 1,70–2,30 | 2,40–3,40 |
| 1.5 | **150–200** | **120–160** | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | **150–200** | **120–160** | 1,00–1,30 | 1,20–1,70 | 1,70–2,30 | 2,40–3,40 |
| 1.6 | **150–200** | **120–160** | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | **150–200** | **120–160** | 1,00–1,30 | 1,20–1,70 | 1,70–2,30 | 2,40–3,40 |
| 1.7 | **150–200** | **120–160** | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | **150–200** | **120–160** | 1,00–1,30 | 1,20–1,70 | 1,70–2,30 | 2,40–3,40 |
| 1.8 | | | | | | | | | | | | |
| 1.9 | **80–120** | **80–100** | 0,50–0,80 | 0,70–1,00 | 0,90–1,30 | 1,30–2,00 | **80–120** | **80–100** | 0,50–0,80 | 0,70–1,00 | 0,90–1,30 | 1,30–2,00 |
| 1.10 | **80–120** | **80–100** | 0,50–0,80 | 0,70–1,00 | 0,90–1,30 | 1,30–2,00 | **80–120** | **80–100** | 0,50–0,80 | 0,70–1,00 | 0,90–1,30 | 1,30–2,00 |
| 1.11 | **80–120** | **80–100** | 0,50–0,80 | 0,70–1,00 | 0,90–1,30 | 1,30–2,00 | **80–120** | **80–100** | 0,50–0,80 | 0,70–1,00 | 0,90–1,30 | 1,30–2,00 |
| 1.12 | **80–120** | **80–100** | 0,50–0,80 | 0,70–1,00 | 0,90–1,30 | 1,30–2,00 | **80–120** | **80–100** | 0,50–0,80 | 0,70–1,00 | 0,90–1,30 | 1,30–2,00 |
| 1.13 | | | | | | | | | | | | |
| 1.14 | | | | | | | | | | | | |
| 1.15 | | | | | | | | | | | | |
| 1.16 | | | | | | | | | | | | |
| 2.1 | | | | | | | | | | | | |
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| 2.5 | | | | | | | | | | | | |
| 2.6 | | | | | | | | | | | | |
| 2.7 | | | | | | | | | | | | |
| 3.1 | | | | | | | | | | | | |
| 3.2 | | | | | | | | | | | | |
| 3.3 | **175–300** | **150–180** | 0,90–1,30 | 1,20–1,70 | 1,60–2,30 | 2,30–3,40 | 225–300 | 180–240 | 1,20–1,60 | 1,50–2,00 | 2,00–2,70 | 2,90–4,10 |
| 3.4 | **120–150** | **100–120** | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | 120–150 | 100–120 | 1,20–1,60 | 1,50–2,00 | 2,00–2,70 | 2,90–4,10 |
| 3.5 | **150–250** | **120–200** | 0,90–1,30 | 1,20–1,70 | 1,60–2,30 | 2,30–3,40 | | | | | | |
| 3.6 | **150–250** | **120–200** | 0,90–1,30 | 1,20–1,70 | 1,60–2,30 | 2,30–3,40 | | | | | | |
| 3.7 | **120–180** | **120–150** | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | 120–180 | 120–150 | 1,00–1,30 | 1,20–1,70 | 1,70–2,30 | 2,40–3,40 |
| 3.8 | **120–180** | **120–150** | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 | 120–180 | 120–150 | 1,00–1,30 | 1,20–1,70 | 1,70–2,30 | 2,40–3,40 |
| 4.1 | | | | | | | | | | | | |
| 4.2 | | | | | | | | | | | | |
| 4.3 | | | | | | | | | | | | |
| 4.4 | | | | | | | | | | | | |
| 4.5 | | | | | | | | | | | | |
| 4.6 | 150–320 | 150–200 | 0,90–1,30 | 1,10–1,70 | 1,50–2,30 | 2,10–3,10 | | | | | | |
| 4.7 | 150–320 | 150–200 | 0,90–1,30 | 1,10–1,70 | 1,50–2,30 | 2,10–3,10 | | | | | | |
| 4.8 | | | | | | | | | | | | |
| 4.9 | | | | | | | | | | | | |
| 4.10 | | | | | | | | | | | | |
| 4.11 | 150–320 | 150–200 | 0,90–1,30 | 1,10–1,70 | 1,50–2,30 | 2,10–3,10 | | | | | | |
| 4.12 | 150–320 | 150–200 | 0,90–1,30 | 1,10–1,70 | 1,50–2,30 | 2,10–3,10 | | | | | | |
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| 6.3 | | | | | | | | | | | | |
| 6.4 | | | | | | | | | | | | |
| 6.5 | | | | | | | | | | | | |

The cutting data depends on the external conditions, e.g. stability of the tools and tool clamping, material and machine type.
The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

4

# Cutting data standard values for REAMAX TS

| | Grade / coating | | DST / CWC10 | | | |
|---|---|---|---|---|---|---|
| | Article no. / type | | 40 544 ... / 75J.93 – ASG3000 | | | |
| | Nominal Ø in mm | | 18–21,999 | 22–31,799 | 31,8–51,999 | 52–65 |
| | Reaming allowance Ø | | 0,20–0,30 | 0,20–0,30 | 0,30–0,40 | 0,30–0,50 |
| | Number of teeth | | 6 | 6 | 8 | 10 |
| Index | $V_c$ m/min | | f mm/rev. | f mm/rev. | f mm/rev. | f mm/rev. |
| | 3xD | 5xD | | | | |
| 1.1 | 150–200 | 120–160 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 |
| 1.2 | 150–200 | 120–160 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 |
| 1.3 | 150–200 | 120–160 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 |
| 1.4 | 150–200 | 120–160 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 |
| 1.5 | 150–200 | 120–160 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 |
| 1.6 | 150–200 | 120–160 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 |
| 1.7 | 150–200 | 120–160 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 |
| 1.8 | | | | | | |
| 1.9 | 80–120 | 80–100 | 0,50–0,80 | 0,70–1,00 | 0,90–1,30 | 1,30–2,00 |
| 1.10 | 80–120 | 80–100 | 0,50–0,80 | 0,70–1,00 | 0,90–1,30 | 1,30–2,00 |
| 1.11 | 80–120 | 80–100 | 0,50–0,80 | 0,70–1,00 | 0,90–1,30 | 1,30–2,00 |
| 1.12 | 80–120 | 80–100 | 0,50–0,80 | 0,70–1,00 | 0,90–1,30 | 1,30–2,00 |
| 1.13 | | | | | | |
| 1.14 | | | | | | |
| 1.15 | | | | | | |
| 1.16 | | | | | | |
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| 2.5 | | | | | | |
| 2.6 | | | | | | |
| 2.7 | | | | | | |
| 3.1 | | | | | | |
| 3.2 | | | | | | |
| 3.3 | 175–300 | 150–180 | 0,90–1,30 | 1,20–1,70 | 1,60–2,30 | 2,30–3,40 |
| 3.4 | 120–150 | 100–120 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 |
| 3.5 | 150–250 | 120–200 | 0,90–1,30 | 1,20–1,70 | 1,60–2,30 | 2,30–3,40 |
| 3.6 | 150–250 | 120–200 | 0,90–1,30 | 1,20–1,70 | 1,60–2,30 | 2,30–3,40 |
| 3.7 | 120–180 | 120–150 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 |
| 3.8 | 120–180 | 120–150 | 0,80–1,10 | 1,00–1,40 | 1,30–1,90 | 1,90–2,80 |
| 4.1 | | | | | | |
| 4.2 | | | | | | |
| 4.3 | | | | | | |
| 4.4 | | | | | | |
| 4.5 | | | | | | |
| 4.6 | 150–320 | 150–200 | 0,90–1,30 | 1,10–1,70 | 1,50–2,30 | 2,10–3,10 |
| 4.7 | 150–320 | 150–200 | 0,90–1,30 | 1,10–1,70 | 1,50–2,30 | 2,10–3,10 |
| 4.8 | | | | | | |
| 4.9 | | | | | | |
| 4.10 | | | | | | |
| 4.11 | 150–320 | 150–200 | 0,90–1,30 | 1,10–1,70 | 1,50–2,30 | 2,10–3,10 |
| 4.12 | 150–320 | 150–200 | 0,90–1,30 | 1,10–1,70 | 1,50–2,30 | 2,10–3,10 |
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| 6.3 | | | | | | |
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| 6.5 | | | | | | |

The cutting data depends on the external conditions, e.g. stability of the tools and tool clamping, material and machine type.
The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

# Cutting data standard values for REAMAX

| | Grade / coating | HM-TiN / CWN 10 | | | | | HM-DBC | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Article no. / type | 40 505 ... / 640.71 – ASG3000 | | | | | 40 570 ... / 640.27 – ASG0706 | | | | |
| | Nominal Ø in mm | 12–21,999 | 22–32,000 | 32,001–40 | | | 12–21,999 | 22–32,000 | 32,001–40 | | |
| | Reaming allowance Ø | 0,10–0,30 | 0,20–0,40 | 0,20–0,40 | | | 0,10–0,30 | 0,20–0,40 | 0,20–0,40 | | |
| | Number of teeth | 6 | 8 | 8 | | | 6 | 8 | 8 | | |
| Index | $v_c$ m/min | | f mm/rev. | f mm/rev. | f mm/rev. | | $v_c$ m/min | | f mm/rev. | f mm/rev. | f mm/rev. |
| | 3xD | 5xD | | | | | 3xD | 5xD | | | |
| 1.1 | 100–140 | 80–120 | 0,90–1,20 | 1,50–2,00 | 1,50–2,00 | | | | | | |
| 1.2 | 100–140 | 80–120 | 0,90–1,20 | 1,50–2,00 | 1,50–2,00 | | | | | | |
| 1.3 | 100–140 | 80–120 | 0,90–1,20 | 1,50–2,00 | 1,50–2,00 | | | | | | |
| 1.4 | 100–140 | 80–120 | 0,90–1,20 | 1,50–2,00 | 1,50–2,00 | | | | | | |
| 1.5 | 100–140 | 80–120 | 0,90–1,20 | 1,50–2,00 | 1,50–2,00 | | | | | | |
| 1.6 | 100–140 | 80–120 | 0,90–1,20 | 1,50–2,00 | 1,50–2,00 | | | | | | |
| 1.7 | 100–140 | 80–120 | 0,90–1,20 | 1,50–2,00 | 1,50–2,00 | | | | | | |
| 1.8 | 30–45 | 30–45 | 0,60–0,80 | 1,00–1,40 | 1,00–1,40 | | | | | | |
| 1.9 | 30–45 | 30–45 | 0,60–0,80 | 1,00–1,40 | 1,00–1,40 | | | | | | |
| 1.10 | 30–45 | 30–45 | 0,60–0,80 | 1,00–1,40 | 1,00–1,40 | | | | | | |
| 1.11 | | | | | | | | | | | |
| 1.12 | | | | | | | | | | | |
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| 3.7 | | | | | | | | | | | |
| 3.8 | | | | | | | | | | | |
| 4.1 | | | | | | | 150–300 | 150–300 | 1,00–1,40 | 1,70–2,40 | 1,70–2,40 |
| 4.2 | | | | | | | 150–300 | 150–300 | 1,00–1,40 | 1,70–2,40 | 1,70–2,40 |
| 4.3 | | | | | | | 200–300 | 150–300 | 1,00–1,40 | 1,70–2,40 | 1,70–2,40 |
| 4.4 | | | | | | | 200–300 | 150–300 | 1,00–1,40 | 1,70–2,40 | 1,70–2,40 |
| 4.5 | | | | | | | 200–300 | 150–300 | 1,00–1,40 | 1,70–2,40 | 1,70–2,40 |
| 4.6 | 80–150 | 80–120 | 0,80–1,20 | 1,40–2,00 | 1,40–2,00 | | | | | | |
| 4.7 | 120–200 | 120–150 | 1,00–1,40 | 1,70–2,40 | 1,70–2,40 | | | | | | |
| 4.8 | | | | | | | | | | | |
| 4.9 | | | | | | | | | | | |
| 4.10 | | | | | | | | | | | |
| 4.11 | 120–200 | 120–200 | 1,00–1,40 | 1,70–2,40 | 1,70–2,40 | | | | | | |
| 4.12 | 120–200 | 120–200 | 1,00–1,40 | 1,70–2,40 | 1,70–2,40 | | | | | | |
| 4.13 | | | | | | | | | | | |
| 4.14 | | | | | | | | | | | |
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The cutting data depends on the external conditions, e.g. stability of the tools and tool clamping, material and machine type.
The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

4

# Cutting data standard values for REAMAX

| | Grade / coating | DST / CWC 10 | | | | DST / CWC 10 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Article no. / type | 40 525 ... / 640.93 – ASG3000 | | | | 40 536 ... / 640.93 – ASG4000 | | | | |
| | Nominal Ø in mm | 12–21,999 | 22–32,000 | 32,001–40 | | 12–21,999 | 22–32,000 | 32,001–40 | | |
| | Reaming allowance Ø | 0,10–0,30 | 0,20–0,40 | 0,20–0,40 | | 0,10–0,30 | 0,20–0,40 | 0,20–0,40 | | |
| | Number of teeth | 6 | 8 | 8 | | 6 | 8 | 8 | | |
| Index | $v_c$ m/min | | f | f | f | $v_c$ m/min | | f | f | f |
| | 3xD | 5xD | mm/rev. | mm/rev. | mm/rev. | 3xD | 5xD | mm/rev. | mm/rev. | mm/rev. |
| 1.1 | 150–200 | 120–160 | 0,90–1,20 | 1,50–2,00 | 1,50–2,00 | 150–200 | 120–160 | 1,10–1,40 | 1,80–2,40 | 1,80–2,40 |
| 1.2 | 150–200 | 120–160 | 0,90–1,20 | 1,50–2,00 | 1,50–2,00 | 150–200 | 120–160 | 1,10–1,40 | 1,80–2,40 | 1,80–2,40 |
| 1.3 | 150–200 | 120–160 | 0,90–1,20 | 1,50–2,00 | 1,50–2,00 | 150–200 | 120–160 | 1,10–1,40 | 1,80–2,40 | 1,80–2,40 |
| 1.4 | 150–200 | 120–160 | 0,90–1,20 | 1,50–2,00 | 1,50–2,00 | 150–200 | 120–160 | 1,10–1,40 | 1,80–2,40 | 1,80–2,40 |
| 1.5 | 150–200 | 120–160 | 0,90–1,20 | 1,50–2,00 | 1,50–2,00 | 150–200 | 120–160 | 1,10–1,40 | 1,80–2,40 | 1,80–2,40 |
| 1.6 | 150–200 | 120–160 | 0,90–1,20 | 1,50–2,00 | 1,50–2,00 | 150–200 | 120–160 | 1,10–1,40 | 1,80–2,40 | 1,80–2,40 |
| 1.7 | 150–200 | 120–160 | 0,90–1,20 | 1,50–2,00 | 1,50–2,00 | 150–200 | 120–160 | 1,10–1,40 | 1,80–2,40 | 1,80–2,40 |
| 1.8 | | | | | | | | | | |
| 1.9 | 80–120 | 80–120 | 0,90–1,20 | 1,50–2,00 | 1,50–2,00 | 80–120 | 80–120 | 1,10–1,40 | 1,80–2,40 | 1,80–2,40 |
| 1.10 | 80–120 | 80–120 | 0,90–1,20 | 1,50–2,00 | 1,50–2,00 | 80–120 | 80–120 | 1,10–1,40 | 1,80–2,40 | 1,80–2,40 |
| 1.11 | 80–120 | 80–120 | 0,90–1,20 | 1,50–2,00 | 1,50–2,00 | 80–120 | 80–120 | 1,10–1,40 | 1,80–2,40 | 1,80–2,40 |
| 1.12 | | | | | | | | | | |
| 1.13 | | | | | | | | | | |
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| 2.7 | | | | | | | | | | |
| 3.1 | | | | | | | | | | |
| 3.2 | | | | | | | | | | |
| 3.3 | 175–300 | 150–180 | 1,00–1,40 | 1,80–2,40 | 1,80–2,40 | 175–300 | 150–180 | 1,20–1,60 | 1,50–2,00 | 2,00–2,70 |
| 3.4 | 150–250 | 120–160 | 1,00–1,40 | 1,80–2,40 | 1,80–2,40 | 120–180 | 120–150 | 1,20–1,60 | 1,50–2,00 | 2,00–2,70 |
| 3.5 | 150–250 | 120–160 | 1,00–1,40 | 1,80–2,40 | 1,80–2,40 | | | | | |
| 3.6 | 150–250 | 120–160 | 1,00–1,40 | 1,80–2,40 | 1,80–2,40 | | | | | |
| 3.7 | 120–180 | 120–150 | 0,90–1,20 | 1,50–2,00 | 1,50–2,00 | 120–180 | 120–150 | 1,00–1,30 | 1,20–1,70 | 1,70–2,30 |
| 3.8 | 120–180 | 120–150 | 0,90–1,20 | 1,50–2,00 | 1,50–2,00 | 120–180 | 120–150 | 1,00–1,30 | 1,20–1,70 | 1,70–2,30 |
| 4.1 | | | | | | | | | | |
| 4.2 | | | | | | | | | | |
| 4.3 | | | | | | | | | | |
| 4.4 | | | | | | | | | | |
| 4.5 | | | | | | | | | | |
| 4.6 | 150–300 | 150–200 | 1,00–1,40 | 1,70–2,40 | 1,70–2,40 | | | | | |
| 4.7 | 150–300 | 150–200 | 1,00–1,40 | 1,70–2,40 | 1,70–2,40 | | | | | |
| 4.8 | | | | | | | | | | |
| 4.9 | | | | | | | | | | |
| 4.10 | | | | | | | | | | |
| 4.11 | 150–300 | 150–200 | 1,00–1,40 | 1,70–2,40 | 1,70–2,40 | | | | | |
| 4.12 | 150–300 | 150–200 | 1,00–1,40 | 1,70–2,40 | 1,70–2,40 | | | | | |
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| 6.5 | | | | | | | | | | |

The cutting data depends on the external conditions, e.g. stability of the tools and tool clamping, material and machine type.
The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

# Cutting data standard values for REAMAX

| | Grade / coating | HM-DBG-P / Ti700 | | | HM-DBG-P / Ti700 | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Article no. / type | 40 560 ... / 640.65 – ASG3000 | | | 40 551 ... / 640.65 – ASG0106 | | | | |
| | Nominal Ø in mm | 12–21,999 | 22–32,000 | 32,001–40 | 12–21,999 | 22–32,000 | 32,001–40 | | |
| | Reaming allowance Ø | 0,10–0,30 | 0,20–0,40 | 0,20–0,40 | 0,10–0,30 | 0,20–0,40 | 0,20–0,40 | | |
| | Number of teeth | 6 | 8 | 8 | 6 | 8 | 8 | | |
| Index | $v_c$ m/min | | f | f | f | $v_c$ m/min | | f | f | f |
| | 3xD | 5xD | mm/rev. | mm/rev. | mm/rev. | 3xD | 5xD | mm/rev. | mm/rev. | mm/rev. |
| 1.1 | 150–200 | 120–160 | 0,90–1,20 | 1,50–2,00 | 1,50–2,00 | | | | | |
| 1.2 | 150–200 | 120–160 | 0,90–1,20 | 1,50–2,00 | 1,50–2,00 | | | | | |
| 1.3 | 150–200 | 120–160 | 0,90–1,20 | 1,50–2,00 | 1,50–2,00 | | | | | |
| 1.4 | 150–200 | 120–160 | 0,90–1,20 | 1,50–2,00 | 1,50–2,00 | | | | | |
| 1.5 | 150–200 | 120–160 | 0,90–1,20 | 1,50–2,00 | 1,50–2,00 | | | | | |
| 1.6 | 150–200 | 120–160 | 0,90–1,20 | 1,50–2,00 | 1,50–2,00 | | | | | |
| 1.7 | 150–200 | 120–160 | 0,90–1,20 | 1,50–2,00 | 1,50–2,00 | | | | | |
| 1.8 | 80–120 | 80–100 | 0,70–1,00 | 0,90–1,30 | 0,90–1,30 | | | | | |
| 1.9 | 80–120 | 80–100 | 0,70–1,00 | 0,90–1,30 | 0,90–1,30 | | | | | |
| 1.10 | 80–120 | 80–100 | 0,70–1,00 | 0,90–1,30 | 0,90–1,30 | | | | | |
| 1.11 | | | | | | 80–120 | 80–100 | 0,70–1,00 | 0,90–1,30 | 0,90–1,30 |
| 1.12 | | | | | | 60–100 | 60–100 | 0,70–1,00 | 0,90–1,30 | 0,90–1,30 |
| 1.13 | | | | | | 60–100 | 60–100 | 0,70–1,00 | 0,90–1,30 | 0,90–1,30 |
| 1.14 | | | | | | 40–60 | 40–60 | 0,60–0,80 | 0,90–1,10 | 0,90–1,10 |
| 1.15 | | | | | | 40–60 | 40–60 | 0,60–0,80 | 0,90–1,10 | 0,90–1,10 |
| 1.16 | | | | | | 40–60 | 40–60 | 0,60–0,80 | 0,90–1,10 | 0,90–1,10 |
| 2.1 | | | | | | 45–60 | 40–50 | 0,70–0,90 | 1,20–1,60 | 1,20–1,60 |
| 2.2 | | | | | | 45–60 | 40–50 | 0,70–0,90 | 1,20–1,60 | 1,20–1,60 |
| 2.3 | | | | | | 30–50 | 30–40 | 0,70–0,90 | 1,20–1,60 | 1,20–1,60 |
| 2.4 | | | | | | 30–50 | 30–40 | 0,70–0,90 | 1,20–1,60 | 1,20–1,60 |
| 2.5 | | | | | | 30–50 | 30–40 | 0,70–0,90 | 1,20–1,60 | 1,20–1,60 |
| 2.6 | | | | | | 45–60 | 40–50 | 0,70–0,90 | 1,20–1,60 | 1,20–1,60 |
| 2.7 | | | | | | 30–50 | 30–40 | 0,70–0,90 | 1,20–1,60 | 1,20–1,60 |
| 3.1 | 200–250 | 160–200 | 1,00–1,40 | 1,30–1,90 | 1,30–1,90 | | | | | |
| 3.2 | 200–250 | 160–200 | 1,00–1,40 | 1,30–1,90 | 1,30–1,90 | | | | | |
| 3.3 | 225–300 | 180–240 | 1,00–1,40 | 1,30–1,90 | 1,30–1,90 | | | | | |
| 3.4 | 120–150 | 100–120 | 0,90–1,20 | 1,20–1,60 | 1,20–1,60 | | | | | |
| 3.5 | 150–250 | 120–200 | 0,90–1,20 | 1,20–1,60 | 1,20–1,60 | | | | | |
| 3.6 | 150–250 | 120–200 | 0,90–1,20 | 1,20–1,60 | 1,20–1,60 | | | | | |
| 3.7 | 120–150 | 100–120 | 0,90–1,20 | 1,20–1,60 | 1,20–1,60 | | | | | |
| 3.8 | 120–150 | 100–120 | 0,90–1,20 | 1,20–1,60 | 1,20–1,60 | | | | | |
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| 5.10 | | | | | | | | | | |
| 5.11 | | | | | | | | | | |
| 6.1 | | | | | | 40–60 | 40–60 | 0,40–0,80 | 0,60–1,00 | 0,60–1,00 |
| 6.2 | | | | | | 40–60 | 40–60 | 0,40–0,80 | 0,60–1,00 | 0,60–1,00 |
| 6.3 | | | | | | 30–50 | 30–50 | 0,40–0,80 | 0,60–1,00 | 0,60–1,00 |
| 6.4 | | | | | | 30–50 | 30–50 | 0,40–0,80 | 0,60–1,00 | 0,60–1,00 |
| 6.5 | | | | | | | | | | |

The cutting data depends on the external conditions, e.g. stability of the tools and tool clamping, material and machine type.
The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

4

# Cutting data for MultiChange exchange head reamers

| | Coating | CWC 10 | | | TiAlN | | | TiAlN | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Article no. | 40 210 ... / 40 211 ... | | | 40 220 ... / 40 221 ... | | | 40 230 ... / 40 231 ... | | |
| | Nominal Ø in mm | 8,0–12,59 | 12,6–29,99 | 30,0–30,20 | 8,0–12,59 | 12,6–29,99 | 30,0–30,20 | 8,0–12,59 | 12,6–18,59 | 18,6–30,20 |
| | Reaming allowance Ø | 0,15–0,3 | 0,2–0,4 | 0,2–0,4 | 0,15–0,3 | 0,15–0,3 | 0,15–0,3 | 0,15–0,4 | 0,2–0,5 | 0,2–0,5 |
| | Number of teeth | 4/6 | 6 | 8 | 4/6 | 6 | 8 | 4/6 | 6 | 8 |
| Index | $v_c$ | f | f | f | f | f | f | f | f | f |
| | m/min | mm/rev. | mm/rev. | mm/rev. | mm/rev. | mm/rev. | mm/rev. | mm/rev. | mm/rev. | mm/rev. |
| 1.1 | 120–200 | 0,60–1,00 | 0,90–1,50 | 1,20–2,00 | | | | | | |
| 1.2 | 120–200 | 0,60–1,00 | 0,90–1,50 | 1,20–2,00 | | | | | | |
| 1.3 | 120–200 | 0,60–1,00 | 0,90–1,50 | 1,20–2,00 | | | | | | |
| 1.4 | 120–200 | 0,60–1,00 | 0,90–1,50 | 1,20–2,00 | | | | | | |
| 1.5 | 120–200 | 0,60–1,00 | 0,90–1,50 | 1,20–2,00 | | | | | | |
| 1.6 | 100–160 | 0,60–1,00 | 0,90–1,50 | 1,20–2,00 | | | | | | |
| 1.7 | 100–160 | 0,60–1,00 | 0,90–1,50 | 1,20–2,00 | | | | | | |
| 1.8 | 100–160 | 0,60–1,00 | 0,90–1,50 | 1,20–2,00 | | | | | | |
| 1.9 | 100–160 | 0,60–1,00 | 0,90–1,50 | 1,20–2,00 | | | | | | |
| 1.10 | 100–160 | 0,60–1,00 | 0,90–1,50 | 1,20–2,00 | | | | | | |
| 1.11 | 100–160 | 0,60–1,00 | 0,90–1,50 | 1,20–2,00 | | | | | | |
| 1.12 | 100–160 | 0,60–1,00 | 0,90–1,50 | 1,20–2,00 | | | | | | |
| 1.13 | 100–160 | 0,60–1,00 | 0,90–1,50 | 1,20–2,00 | | | | | | |
| 1.14 | 100–160 | 0,60–1,00 | 0,90–1,50 | 1,20–2,00 | | | | | | |
| 1.15 | 80–140 | 0,60–1,00 | 0,90–1,50 | 1,20–2,00 | | | | | | |
| 1.16 | 80–140 | 0,60–1,00 | 0,90–1,50 | 1,20–2,00 | | | | | | |
| 2.1 | 20–40 | | | | 0,32–0,60 | 0,48–0,90 | 0,64–1,20 | | | |
| 2.2 | 20–40 | | | | 0,32–0,60 | 0,48–0,90 | 0,64–1,20 | | | |
| 2.3 | 20–40 | | | | 0,32–0,60 | 0,48–0,90 | 0,64–1,20 | | | |
| 2.4 | 10–30 | | | | 0,32–0,60 | 0,48–0,90 | 0,64–1,20 | | | |
| 2.5 | 20–40 | | | | 0,32–0,60 | 0,48–0,90 | 0,64–1,20 | | | |
| 2.6 | 20–40 | | | | 0,32–0,60 | 0,48–0,90 | 0,64–1,20 | | | |
| 2.7 | 10–20 | | | | 0,32–0,60 | 0,48–0,90 | 0,64–1,20 | | | |
| 3.1 | 80–120 | | | | | | | 0,40–0,80 | 0,90–1,50 | 0,90–2,40 |
| 3.2 | 80–120 | | | | | | | 0,40–0,80 | 0,90–1,50 | 0,90–2,40 |
| 3.3 | 80–120 | | | | | | | 0,40–0,80 | 0,90–1,50 | 0,90–2,40 |
| 3.4 | 60–100 | | | | | | | 0,32–0,48 | 0,60–1,20 | 0,60–1,20 |
| 3.5 | 80–120 | | | | | | | 0,40–0,80 | 0,60–1,20 | 0,60–1,20 |
| 3.6 | 80–120 | | | | | | | 0,40–0,80 | 0,60–1,20 | 0,60–1,20 |
| 3.7 | 80–120 | | | | | | | 0,40–0,80 | 0,60–1,20 | 0,60–1,20 |
| 3.8 | 60–100 | | | | | | | 0,32–0,48 | 0,60–1,20 | 0,60–1,20 |
| 4.1 | | | | | | | | | | |
| 4.2 | | | | | | | | | | |
| 4.3 | | | | | | | | | | |
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| 4.9 | | | | | | | | | | |
| 4.10 | | | | | | | | | | |
| 4.11 | | | | | | | | | | |
| 4.12 | 80–120 | | | | 0,40–1,00 | 0,60–1,50 | 0,80–2,00 | | | |
| 4.13 | | | | | | | | | | |
| 4.14 | | | | | | | | | | |
| 4.15 | | | | | | | | | | |
| 4.16 | | | | | | | | | | |
| 4.17 | 10–30 | | | | 0,24–0,72 | 0,36–1,08 | 0,48–1,44 | | | |
| 4.18 | | | | | | | | | | |
| 4.19 | | | | | | | | | | |
| 5.1 | 10–30 | | | | 0,60–1,40 | 0,90–1,80 | 1,20–2,00 | | | |
| 5.2 | 10–30 | | | | 0,60–1,50 | 0,90–1,80 | 1,20–2,00 | | | |
| 5.3 | 10–30 | | | | 0,60–1,60 | 0,90–1,80 | 1,20–2,00 | | | |
| 5.4 | 10–30 | | | | 0,60–1,70 | 0,90–1,80 | 1,20–2,00 | | | |
| 5.5 | 10–25 | | | | 0,60–1,80 | 0,90–1,80 | 1,20–2,00 | | | |
| 5.6 | 10–25 | | | | 0,60–1,90 | 0,90–1,80 | 1,20–2,00 | | | |
| 5.7 | 10–20 | | | | 0,20–0,48 | 0,30–0,72 | 0,40–0,96 | | | |
| 5.8 | 10–20 | | | | 0,20–0,48 | 0,30–0,72 | 0,40–0,96 | | | |
| 5.9 | 10–30 | | | | 0,20–0,48 | 0,30–0,48 | 0,48–1,00 | | | |
| 5.10 | 10–30 | | | | 0,20–0,48 | 0,30–0,48 | 0,48–1,00 | | | |
| 5.11 | 10–30 | | | | 0,20–0,48 | 0,30–0,48 | 0,48–1,00 | | | |
| 6.1 | | | | | | | | | | |
| 6.2 | | | | | | | | | | |
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| 6.4 | | | | | | | | | | |
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The cutting data depends on the external conditions, e.g. stability of the tools and tool clamping, material and machine type.
The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

# Cutting data for MultiChange exchange head reamers

| | Coating | K10 | | | | PDC | | |
|---|---|---|---|---|---|---|---|---|
| | Article no. | 40 240 ... / 40 241 ... | | | | 40 245 ... / 40 246 ... | | |
| | Nominal Ø in mm | 8,0–12,59 | 12,6–29,99 | 30,0–30,20 | | 8,0–12,59 | 12,6–29,99 | 30,0–30,20 |
| | Reaming allowance Ø | 0,15–0,5 | 0,15–0,5 | 0,15–0,5 | | 0,15–0,5 | 0,15–0,5 | 0,15–0,5 |
| | Number of teeth | 4/6 | 6 | 8 | | 4/6 | 6 | 8 |
| Index | $v_c$ m/min | f mm/rev. | f mm/rev. | f mm/rev. | $v_c$ m/min | f mm/rev. | f mm/rev. | f mm/rev. |
| 1.1 | | | | | | | | |
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| 3.8 | | | | | | | | |
| 4.1 | **100–300** | 0,40–1,20 | 0,60–1,80 | 0,80–2,40 | **100–500** | 0,40–1,20 | 0,90–2,10 | 1,20–2,80 |
| 4.2 | **100–300** | 0,40–0,80 | 0,60–1,20 | 1,20–2,00 | **100–500** | 0,40–1,20 | 0,90–2,10 | 1,20–2,80 |
| 4.3 | **100–300** | 0,40–0,80 | 0,60–1,20 | 1,20–2,00 | | | | |
| 4.4 | **100–300** | 0,40–0,80 | 0,60–1,20 | 1,20–2,00 | | | | |
| 4.5 | | | | | **100–200** | 0,40–1,20 | 0,90–2,10 | 1,20–2,80 |
| 4.6 | **50–100** | 0,40–1,00 | 0,60–1,50 | 0,80–2,00 | | | | |
| 4.7 | **50–150** | 0,40–1,00 | 0,60–1,50 | 0,80–2,00 | | | | |
| 4.8 | | | | | | | | |
| 4.9 | | | | | | | | |
| 4.10 | **15–40** | 0,48–1,00 | 0,72–1,50 | 0,96–2,00 | | | | |
| 4.11 | **15–40** | 0,48–1,00 | 0,72–1,50 | 0,96–2,00 | | | | |
| 4.12 | | | | | | | | |
| 4.13 | | | | | | | | |
| 4.14 | | | | | | | | |
| 4.15 | | | | | **10–40** | 0,10–0,32 | 0,15–0,48 | 0,20–0,64 |
| 4.16 | **25–50** | 0,40–1,00 | 0,60–1,50 | 0,80–2,00 | **100–250** | 0,10–0,25 | 0,60–1,50 | 0,80–2,00 |
| 4.17 | | | | | | | | |
| 4.18 | **10–25** | 0,60–1,00 | 0,90–1,50 | 1,20–2,00 | | | | |
| 4.19 | **10–25** | 0,60–1,00 | 0,90–1,50 | 1,20–2,00 | | | | |
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| 6.5 | | | | | | | | |

The cutting data depends on the external conditions, e.g. stability of the tools and tool clamping, material and machine type.
The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

# Cutting data standard values for Monomax

| | Grade / coating | DBC | | | | DBC | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Article no. / type | 40 648 ..., 40 649 ... / 56J.17, 56R.17 – ASG0706 | | | | 40 640..., 40 641... / 56H.17, 56Q.17 – ASG0706 | | | | |
| | Nominal Ø in mm | 5,60–8,89 | 8,90–12,00 | 12,01–22,00 | 22,01–25,89 | 5,60–8,89 | 8,90–12,00 | 12,01–22,00 | 22,01–25,89 | |
| | Reaming allowance Ø | 0,10–0,20 | 0,10–0,30 | 0,20–0,30 | 0,20–0,40 | 0,10–0,20 | 0,10–0,30 | 0,20–0,30 | 0,20–0,40 | |
| | Number of teeth | 4 | 6 | 6 | 6 | 4 | 6 | 6 | 6 | |
| Index | $v_c$ m/min | | f | f | f | $v_c$ m/min | | f | f | f | f |
| | 3xD | 5xD | mm/rev. | mm/rev. | mm/rev. | mm/rev. | 3xD | 5xD | mm/rev. | mm/rev. | mm/rev. | mm/rev. |
| 1.1 | | | | | | | | | | | | |
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| 1.3 | | | | | | | | | | | | |
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| 3.7 | | | | | | | | | | | | |
| 3.8 | | | | | | | | | | | | |
| 4.1 | 150–300 | 150–200 | 0,40–0,60 | 0,60–0,90 | 0,80–1,20 | 1,10–1,50 | 150–300 | 150–200 | 0,40–0,60 | 0,60–0,90 | 0,80–1,20 | 1,10–1,50 |
| 4.2 | 150–300 | 150–200 | 0,40–0,60 | 0,60–0,90 | 0,80–1,20 | 1,10–1,50 | 150–300 | 150–200 | 0,40–0,60 | 0,60–0,90 | 0,80–1,20 | 1,10–1,50 |
| 4.3 | 200–300 | 150–200 | 0,40–0,60 | 0,60–0,90 | 0,80–1,20 | 1,10–1,50 | 200–300 | 150–200 | 0,40–0,60 | 0,60–0,90 | 0,80–1,20 | 1,10–1,50 |
| 4.4 | 200–300 | 150–200 | 0,40–0,60 | 0,60–0,90 | 0,80–1,20 | 1,10–1,50 | 200–300 | 150–200 | 0,40–0,60 | 0,60–0,90 | 0,80–1,20 | 1,10–1,50 |
| 4.5 | 200–300 | 150–200 | 0,40–0,60 | 0,60–0,90 | 0,80–1,20 | 1,10–1,50 | 200–300 | 150–200 | 0,40–0,60 | 0,60–0,90 | 0,80–1,20 | 1,10–1,50 |
| 4.6 | | | | | | | | | | | | |
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| 5.5 | | | | | | | | | | | | |
| 5.6 | | | | | | | | | | | | |
| 5.7 | | | | | | | | | | | | |
| 5.8 | | | | | | | | | | | | |
| 5.9 | | | | | | | | | | | | |
| 5.10 | | | | | | | | | | | | |
| 5.11 | | | | | | | | | | | | |
| 6.1 | | | | | | | | | | | | |
| 6.2 | | | | | | | | | | | | |
| 6.3 | | | | | | | | | | | | |
| 6.4 | | | | | | | | | | | | |
| 6.5 | | | | | | | | | | | | |

The cutting data depends on the external conditions, e.g. stability of the tools and tool clamping, material and machine type.
The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

# Cutting data standard values for Monomax

| | Grade / coating | HM-DBG-P / Ti700 | | | | HM-DBG-P / Ti700 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Article no. / type | 40 657 ... , 40 665 ... / 56H.65, 56Q.65 – ASG3000 | | | | 40 652 ..., 40 653 ... / 56J.65, 56R.65 – ASG0106 | | | | |
| | Nominal Ø in mm | 5,60–8,89 | 8,90–12,00 | 12,01–22,00 | 22,01–25,89 | 5,60–8,89 | 8,90–12,00 | 12,01–22,00 | 22,01–25,89 | |
| | Reaming allowance Ø | 0,10–0,20 | 0,10–0,30 | 0,20–0,30 | 0,20–0,40 | 0,10–0,20 | 0,10–0,30 | 0,20–0,30 | 0,20–0,40 | |
| | Number of teeth | 4 | 6 | 6 | 6 | 4 | 6 | 6 | 6 | |
| Index | $v_c$ m/min | | f | f | f | $v_c$ m/min | | f | f | f | f |
| | 3xD | 5xD | mm/rev. | mm/rev. | mm/rev. | mm/rev. | 3xD | 5xD | mm/rev. | mm/rev. | mm/rev. | mm/rev. |
| 1.1 | 150–200 | 120–160 | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 | | | | | | |
| 1.2 | 150–200 | 120–160 | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 | | | | | | |
| 1.3 | 150–200 | 120–160 | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 | | | | | | |
| 1.4 | 150–200 | 120–160 | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 | | | | | | |
| 1.5 | 150–200 | 120–160 | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 | | | | | | |
| 1.6 | 150–200 | 120–160 | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 | | | | | | |
| 1.7 | 150–200 | 120–160 | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 | | | | | | |
| 1.8 | 80–120 | 80–100 | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 | | | | | | |
| 1.9 | 80–120 | 80–100 | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 | | | | | | |
| 1.10 | 80–120 | 80–100 | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 | | | | | | |
| 1.11 | | | | | | | 80–120 | 80–100 | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 |
| 1.12 | | | | | | | 60–100 | 60–100 | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 |
| 1.13 | | | | | | | 60–100 | 60–100 | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 |
| 1.14 | | | | | | | 40–60 | 40–60 | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 |
| 1.15 | | | | | | | 40–60 | 40–60 | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 |
| 1.16 | | | | | | | 40–60 | 40–60 | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 |
| 2.1 | | | | | | | 45–60 | 40–50 | 0,30–0,40 | 0,40–0,60 | 0,60–0,80 | 0,70–1,00 |
| 2.2 | | | | | | | 45–60 | 40–50 | 0,30–0,40 | 0,40–0,60 | 0,60–0,80 | 0,70–1,00 |
| 2.3 | | | | | | | 30–50 | 30–40 | 0,30–0,40 | 0,40–0,60 | 0,60–0,80 | 0,70–1,00 |
| 2.4 | | | | | | | 30–50 | 30–40 | 0,30–0,40 | 0,40–0,60 | 0,60–0,80 | 0,70–1,00 |
| 2.5 | | | | | | | 30–50 | 30–40 | 0,30–0,40 | 0,40–0,60 | 0,60–0,80 | 0,70–1,00 |
| 2.6 | | | | | | | 45–60 | 40–50 | 0,30–0,40 | 0,40–0,60 | 0,60–0,80 | 0,70–1,00 |
| 2.7 | | | | | | | 30–50 | 30–40 | 0,30–0,40 | 0,40–0,60 | 0,60–0,80 | 0,70–1,00 |
| 3.1 | 150–220 | 120–150 | 0,40–0,60 | 0,70–0,90 | 0,90–1,20 | 1,10–1,50 | | | | | | |
| 3.2 | 150–220 | 120–150 | 0,40–0,60 | 0,70–0,90 | 0,90–1,20 | 1,10–1,50 | | | | | | |
| 3.3 | 175–300 | 150–180 | 0,40–0,60 | 0,70–0,90 | 0,90–1,20 | 1,10–1,50 | | | | | | |
| 3.4 | 120–180 | 120–150 | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 | | | | | | |
| 3.5 | 150–250 | 120–160 | 0,40–0,60 | 0,70–0,90 | 0,90–1,20 | 1,10–1,50 | | | | | | |
| 3.6 | 150–250 | 120–160 | 0,40–0,60 | 0,70–0,90 | 0,90–1,20 | 1,10–1,50 | | | | | | |
| 3.7 | 120–180 | 120–150 | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 | | | | | | |
| 3.8 | 120–180 | 120–150 | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 | | | | | | |
| 4.1 | | | | | | | | | | | | |
| 4.2 | | | | | | | | | | | | |
| 4.3 | | | | | | | | | | | | |
| 4.4 | | | | | | | | | | | | |
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| 6.3 | | | | | | | | | | | | |
| 6.4 | | | | | | | | | | | | |
| 6.5 | | | | | | | | | | | | |

The cutting data greatly depends on the external conditions, the material and the machine.
The indicated values are possible cutting data, which may need to be increased or decreased according to the conditions.

4

# Cutting data standard values for Monomax

| | Grade / coating | DST / CWC 10 | | | | | | DST / CWC 10 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Article no. / type | 40 625 ..., 40 626 ... / 56J.93, 56R.93 – ASG3000 | | | | | | 40 635 ... , 40 636 ... / 56J.93, 56R.93 – ASG4000 | | | | | |
| | Nominal Ø in mm | 5,60–8,89 | | 8,90–12,00 | 12,01–22,00 | 22,01–25,89 | | 5,60–8,89 | | 8,90–12,00 | 12,01–22,00 | 22,01–25,89 | |
| | Reaming allowance Ø | 0,10–0,20 | | 0,10–0,30 | 0,20–0,30 | 0,20–0,40 | | 0,10–0,20 | | 0,10–0,30 | 0,20–0,30 | 0,20–0,40 | |
| | Number of teeth | 4 | | 6 | 6 | 6 | | 4 | | 6 | 6 | 6 | |
| Index | $v_c$ m/min | | f | f | f | f | $v_c$ m/min | | f | f | f | f | |
| | 3xD | 5xD | mm/rev. | mm/rev. | mm/rev. | mm/rev. | 3xD | 5xD | mm/rev. | mm/rev. | mm/rev. | mm/rev. | |
| 1.1 | **150–200** | **120–160** | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 | **150–200** | **120–160** | 0,40–0,60 | 0,70–0,90 | 0,90–1,20 | 1,20–1,50 | |
| 1.2 | **150–200** | **120–160** | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 | **150–200** | **120–160** | 0,40–0,60 | 0,70–0,90 | 0,90–1,20 | 1,20–1,50 | |
| 1.3 | **150–200** | **120–160** | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 | **150–200** | **120–160** | 0,40–0,60 | 0,70–0,90 | 0,90–1,20 | 1,20–1,50 | |
| 1.4 | **150–200** | **120–160** | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 | **150–200** | **120–160** | 0,40–0,60 | 0,70–0,90 | 0,90–1,20 | 1,20–1,50 | |
| 1.5 | **150–200** | **120–160** | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 | **150–200** | **120–160** | 0,40–0,60 | 0,70–0,90 | 0,90–1,20 | 1,20–1,50 | |
| 1.6 | **150–200** | **120–160** | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 | **150–200** | **120–160** | 0,40–0,60 | 0,70–0,90 | 0,90–1,20 | 1,20–1,50 | |
| 1.7 | **150–200** | **120–160** | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 | **150–200** | **120–160** | 0,40–0,60 | 0,70–0,90 | 0,90–1,20 | 1,20–1,50 | |
| 1.8 | | | | | | | | | | | | | |
| 1.9 | **80–120** | **80–100** | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 | **80–120** | **80–100** | 0,40–0,60 | 0,70–0,90 | 0,90–1,20 | 1,20–1,50 | |
| 1.10 | **80–120** | **80–100** | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 | **80–120** | **80–100** | 0,40–0,60 | 0,70–0,90 | 0,90–1,20 | 1,20–1,50 | |
| 1.11 | **80–120** | **80–100** | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 | **80–120** | **80–100** | 0,40–0,60 | 0,70–0,90 | 0,90–1,20 | 1,20–1,50 | |
| 1.12 | | | | | | | | | | | | | |
| 1.13 | | | | | | | | | | | | | |
| 1.14 | | | | | | | | | | | | | |
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| 2.7 | | | | | | | | | | | | | |
| 3.1 | | | | | | | | | | | | | |
| 3.2 | | | | | | | | | | | | | |
| 3.3 | **175–300** | **150–180** | 0,40–0,60 | 0,70–0,90 | 0,90–1,20 | 1,10–1,50 | **175–300** | **150–180** | 0,40–0,60 | 0,70–0,90 | 0,90–1,20 | 1,10–1,50 | |
| 3.4 | **120–150** | **100–120** | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 | **120–180** | **120–150** | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 | |
| 3.5 | **150–250** | **120–200** | 0,40–0,60 | 0,70–0,90 | 0,90–1,20 | 1,10–1,50 | | | | | | | |
| 3.6 | **150–250** | **120–200** | 0,40–0,60 | 0,70–0,90 | 0,90–1,20 | 1,10–1,50 | | | | | | | |
| 3.7 | **120–180** | **120–150** | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 | **120–180** | **120–150** | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 | |
| 3.8 | **120–180** | **120–150** | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 | **120–180** | **120–150** | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 | |
| 4.1 | | | | | | | | | | | | | |
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| 4.5 | | | | | | | | | | | | | |
| 4.6 | 150–320 | 150–200 | 0,40–0,60 | 0,60–0,90 | 0,80–1,20 | 1,10–1,50 | | | | | | | |
| 4.7 | 150–320 | 150–200 | 0,40–0,60 | 0,60–0,90 | 0,80–1,20 | 1,10–1,50 | | | | | | | |
| 4.8 | | | | | | | | | | | | | |
| 4.9 | | | | | | | | | | | | | |
| 4.10 | | | | | | | | | | | | | |
| 4.11 | 150–320 | 150–200 | 0,40–0,60 | 0,60–0,90 | 0,80–1,20 | 1,10–1,50 | | | | | | | |
| 4.12 | 150–320 | 150–200 | 0,40–0,60 | 0,60–0,90 | 0,80–1,20 | 1,10–1,50 | | | | | | | |
| 4.13 | | | | | | | | | | | | | |
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| 6.4 | | | | | | | | | | | | | |
| 6.5 | | | | | | | | | | | | | |

The cutting data greatly depends on the external conditions, the material and the machine.
The indicated values are possible cutting data, which may need to be increased or decreased according to the conditions.

# Cutting data standard values for Monomax

| | Grade / coating | HM-DBG-P / Ti700 | | | | HM-TiN / CWN 10 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Article no. / type | 40 644 ..., 40 645 ... / 56H.65, 56Q.65 – ASG0106 | | | | 40 605 ..., 40 606 ... / 56J.71, 56R.71 – ASG3000 | | | | |
| | Nominal Ø in mm | 5,60–8,89 | 8,90–12,00 | 12,01–22,00 | 22,01–25,89 | 5,60–8,89 | 8,90–12,00 | 12,01–22,00 | 22,01–25,89 | |
| | Reaming allowance Ø | 0,10–0,20 | 0,10–0,30 | 0,20–0,30 | 0,20–0,40 | 0,10–0,20 | 0,10–0,30 | 0,20–0,30 | 0,20–0,40 | |
| | Number of teeth | 4 | 6 | 6 | 6 | 4 | 6 | 6 | 6 | |
| Index | $v_c$ m/min | | f | f | f | $v_c$ m/min | | f | f | f | f |
| | 3xD | 5xD | mm/rev. | mm/rev. | mm/rev. | mm/rev. | 3xD | 5xD | mm/rev. | mm/rev. | mm/rev. | mm/rev. |
| 1.1 | | | | | | | 100–140 | 80–120 | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 |
| 1.2 | | | | | | | 100–140 | 80–120 | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 |
| 1.3 | | | | | | | 100–140 | 80–120 | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 |
| 1.4 | | | | | | | 100–140 | 80–120 | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 |
| 1.5 | | | | | | | 100–140 | 80–120 | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 |
| 1.6 | | | | | | | 100–140 | 80–120 | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 |
| 1.7 | | | | | | | 100–140 | 80–120 | 0,30–0,50 | 0,50–0,70 | 0,70–1,00 | 0,90–1,30 |
| 1.8 | | | | | | | 30–45 | 30–45 | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 |
| 1.9 | | | | | | | 30–45 | 30–45 | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 |
| 1.10 | | | | | | | 30–45 | 30–45 | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 |
| 1.11 | 80–120 | 80–100 | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 | 30–45 | 30–45 | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 |
| 1.12 | 60–100 | 60–100 | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 | 30–45 | 30–45 | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 |
| 1.13 | 60–100 | 60–100 | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 | 30–45 | 30–45 | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 |
| 1.14 | 40–60 | 40–60 | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 | 30–45 | 30–45 | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 |
| 1.15 | 40–60 | 40–60 | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 | 30–45 | 30–45 | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 |
| 1.16 | 40–60 | 40–60 | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 | 30–45 | 30–45 | 0,20–0,30 | 0,40–0,50 | 0,50–0,70 | 0,60–0,90 |
| 2.1 | 45–60 | 40–50 | 0,30–0,40 | 0,40–0,60 | 0,60–0,80 | 0,70–1,00 | | | | | | |
| 2.2 | 45–60 | 40–50 | 0,30–0,40 | 0,40–0,60 | 0,60–0,80 | 0,70–1,00 | | | | | | |
| 2.3 | 30–50 | 30–40 | 0,30–0,40 | 0,40–0,60 | 0,60–0,80 | 0,70–1,00 | | | | | | |
| 2.4 | 30–50 | 30–40 | 0,30–0,40 | 0,40–0,60 | 0,60–0,80 | 0,70–1,00 | | | | | | |
| 2.5 | 30–50 | 30–40 | 0,30–0,40 | 0,40–0,60 | 0,60–0,80 | 0,70–1,00 | | | | | | |
| 2.6 | 45–60 | 40–50 | 0,30–0,40 | 0,40–0,60 | 0,60–0,80 | 0,70–1,00 | | | | | | |
| 2.7 | 30–50 | 30–40 | 0,30–0,40 | 0,40–0,60 | 0,60–0,80 | 0,70–1,00 | | | | | | |
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| 4.4 | | | | | | | | | | | | |
| 4.5 | | | | | | | | | | | | |
| 4.6 | | | | | | | 80–150 | 80–120 | 0,40–0,60 | 0,60–0,90 | 0,80–1,20 | 1,10–1,50 |
| 4.7 | | | | | | | 120–200 | 120–150 | 0,40–0,60 | 0,60–0,90 | 0,80–1,20 | 1,10–1,50 |
| 4.8 | | | | | | | | | | | | |
| 4.9 | | | | | | | | | | | | |
| 4.10 | | | | | | | | | | | | |
| 4.11 | | | | | | | 120–200 | 120–200 | 0,40–0,60 | 0,60–0,90 | 0,80–1,20 | 1,10–1,50 |
| 4.12 | | | | | | | 80–150 | 80–120 | 0,40–0,60 | 0,60–0,90 | 0,80–1,20 | 1,10–1,50 |
| 4.13 | | | | | | | | | | | | |
| 4.14 | | | | | | | | | | | | |
| 4.15 | | | | | | | | | | | | |
| 4.16 | | | | | | | | | | | | |
| 4.17 | | | | | | | | | | | | |
| 4.18 | | | | | | | | | | | | |
| 4.19 | | | | | | | | | | | | |
| 5.1 | | | | | | | | | | | | |
| 5.2 | | | | | | | | | | | | |
| 5.3 | | | | | | | | | | | | |
| 5.4 | | | | | | | | | | | | |
| 5.5 | | | | | | | | | | | | |
| 5.6 | | | | | | | | | | | | |
| 5.7 | | | | | | | | | | | | |
| 5.8 | | | | | | | | | | | | |
| 5.9 | | | | | | | | | | | | |
| 5.10 | | | | | | | | | | | | |
| 5.11 | | | | | | | | | | | | |
| 6.1 | | | | | | | | | | | | |
| 6.2 | | | | | | | | | | | | |
| 6.3 | | | | | | | | | | | | |
| 6.4 | | | | | | | | | | | | |
| 6.5 | | | | | | | | | | | | |

The cutting data greatly depends on the external conditions, the material and the machine.
The indicated values are possible cutting data, which may need to be increased or decreased according to the conditions.

4

# Cutting data standard values for Fullmax

| Type UNI | | 40 484 ... / 40 485 ... / 40 486 ... / 40 487 ... | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Ø 2,97 – 4,05 | | Ø 4,06 – 6,05 | | Ø 6,06 – 7,55 | | Ø 7,56 – 12,05 | | Ø 12,06 – 16,05 | | Ø 16,06 – 20,05 | |
| Number of teeth | | 4 | | 4 | | 6 | | 6 | | 6 | | 6 | |
| Index | $v_c$ m/min | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm |
| 1.1 | 180–250 | 0,60–0,80 | 0,10–0,20 | 0,70–0,90 | 0,10–0,20 | 1,30–1,60 | 0,20 | 1,40–1,80 | 0,20 | 1,50–1,90 | 0,20–0,30 | 1,80–2,20 | 0,30 |
| 1.2 | 180–250 | 0,60–0,80 | 0,10–0,20 | 0,70–0,90 | 0,10–0,20 | 1,30–1,60 | 0,20 | 1,40–1,80 | 0,20 | 1,50–1,90 | 0,20–0,30 | 1,80–2,20 | 0,30 |
| 1.3 | 180–250 | 0,60–0,80 | 0,10–0,20 | 0,70–0,90 | 0,10–0,20 | 1,30–1,60 | 0,20 | 1,40–1,80 | 0,20 | 1,50–1,90 | 0,20–0,30 | 1,80–2,20 | 0,30 |
| 1.4 | 180–250 | 0,60–0,80 | 0,10–0,20 | 0,70–0,90 | 0,10–0,20 | 1,30–1,60 | 0,20 | 1,40–1,80 | 0,20 | 1,50–1,90 | 0,20–0,30 | 1,80–2,20 | 0,30 |
| 1.5 | 180–250 | 0,60–0,80 | 0,10–0,20 | 0,70–0,90 | 0,10–0,20 | 1,30–1,60 | 0,20 | 1,40–1,80 | 0,20 | 1,50–1,90 | 0,20–0,30 | 1,80–2,20 | 0,30 |
| 1.6 | 180–250 | 0,60–0,80 | 0,10–0,20 | 0,70–0,90 | 0,10–0,20 | 1,30–1,60 | 0,20 | 1,40–1,80 | 0,20 | 1,50–1,90 | 0,20–0,30 | 1,80–2,20 | 0,30 |
| 1.7 | 180–250 | 0,60–0,80 | 0,10–0,20 | 0,70–0,90 | 0,10–0,20 | 1,30–1,60 | 0,20 | 1,40–1,80 | 0,20 | 1,50–1,90 | 0,20–0,30 | 1,80–2,20 | 0,30 |
| 1.8 | 80–120 | 0,40–0,50 | 0,10–0,20 | 0,40–0,60 | 0,10–0,20 | 0,90–1,10 | 0,20 | 1,00–1,20 | 0,20 | 1,00–1,30 | 0,20–0,30 | 1,30–1,50 | 0,30 |
| 1.9 | 80–120 | 0,40–0,50 | 0,10–0,20 | 0,40–0,60 | 0,10–0,20 | 0,90–1,10 | 0,20 | 1,00–1,20 | 0,20 | 1,00–1,30 | 0,20–0,30 | 1,30–1,50 | 0,30 |
| 1.10 | 80–120 | 0,40–0,50 | 0,10–0,20 | 0,40–0,60 | 0,10–0,20 | 0,90–1,10 | 0,20 | 1,00–1,20 | 0,20 | 1,00–1,30 | 0,20–0,30 | 1,30–1,50 | 0,30 |
| 1.11 | 80–120 | 0,40–0,50 | 0,10–0,20 | 0,40–0,60 | 0,10–0,20 | 0,90–1,10 | 0,20 | 1,00–1,20 | 0,20 | 1,00–1,30 | 0,20–0,30 | 1,30–1,50 | 0,30 |
| 1.12 | 60–100 | 0,40–0,50 | 0,10–0,20 | 0,40–0,60 | 0,10–0,20 | 0,90–1,10 | 0,20 | 1,00–1,20 | 0,20 | 1,00–1,30 | 0,20–0,30 | 1,30–1,50 | 0,30 |
| 1.13 | 60–100 | 0,40–0,50 | 0,10–0,20 | 0,40–0,60 | 0,10–0,20 | 0,90–1,10 | 0,20 | 1,00–1,20 | 0,20 | 1,00–1,30 | 0,20–0,30 | 1,30–1,50 | 0,30 |
| 1.14 | | | | | | | | | | | | | |
| 1.15 | 40–60 | 0,40–0,50 | 0,10–0,20 | 0,40–0,60 | 0,10–0,20 | 0,90–1,10 | 0,20 | 1,00–1,20 | 0,20 | 1,00–1,30 | 0,20–0,30 | 1,30–1,50 | 0,30 |
| 1.16 | 40–60 | 0,40–0,50 | 0,10–0,20 | 0,40–0,60 | 0,10–0,20 | 0,90–1,10 | 0,20 | 1,00–1,20 | 0,20 | 1,00–1,30 | 0,20–0,30 | 1,30–1,50 | 0,30 |
| 2.1 | 20–40 | 0,32–0,50 | 0,10–0,20 | 0,32–0,50 | 0,10–0,20 | 0,48–0,60 | 0,20 | 0,48–0,60 | 0,20 | 0,60–0,72 | 0,20–0,30 | 0,60–0,72 | 0,30 |
| 2.2 | 20–40 | 0,32–0,50 | 0,10–0,20 | 0,32–0,50 | 0,10–0,20 | 0,48–0,60 | 0,20 | 0,48–0,60 | 0,20 | 0,60–0,72 | 0,20–0,30 | 0,60–0,72 | 0,30 |
| 2.3 | 20–40 | 0,32–0,50 | 0,10–0,20 | 0,32–0,50 | 0,10–0,20 | 0,48–0,60 | 0,20 | 0,48–0,60 | 0,20 | 0,60–0,72 | 0,20–0,30 | 0,60–0,72 | 0,30 |
| 2.4 | 20–40 | 0,32–0,50 | 0,10–0,20 | 0,32–0,50 | 0,10–0,20 | 0,48–0,60 | 0,20 | 0,48–0,60 | 0,20 | 0,60–0,72 | 0,20–0,30 | 0,60–0,72 | 0,30 |
| 2.5 | 15–30 | 0,32–0,50 | 0,10–0,20 | 0,32–0,50 | 0,10–0,20 | 0,48–0,60 | 0,20 | 0,48–0,60 | 0,20 | 0,60–0,72 | 0,20–0,30 | 0,60–0,72 | 0,30 |
| 2.6 | 20–40 | 0,32–0,50 | 0,10–0,20 | 0,32–0,50 | 0,10–0,20 | 0,48–0,60 | 0,20 | 0,48–0,60 | 0,20 | 0,60–0,72 | 0,20–0,30 | 0,60–0,72 | 0,30 |
| 2.7 | 15–30 | 0,32–0,50 | 0,10–0,20 | 0,32–0,50 | 0,10–0,20 | 0,48–0,60 | 0,20 | 0,48–0,60 | 0,20 | 0,60–0,72 | 0,20–0,30 | 0,60–0,72 | 0,30 |
| 3.1 | 120–180 | 0,60–0,80 | 0,10–0,20 | 0,70–0,90 | 0,10–0,20 | 1,30–1,60 | 0,20 | 1,30–1,60 | 0,20 | 1,60–2,00 | 0,20–0,30 | 1,90–2,20 | 0,30 |
| 3.2 | 120–180 | 0,60–0,80 | 0,10–0,20 | 0,70–0,90 | 0,10–0,20 | 1,30–1,60 | 0,20 | 1,30–1,60 | 0,20 | 1,60–2,00 | 0,20–0,30 | 1,90–2,20 | 0,30 |
| 3.3 | 200–250 | 0,60–0,80 | 0,10–0,20 | 0,70–0,90 | 0,10–0,20 | 1,30–1,60 | 0,20 | 1,30–1,60 | 0,20 | 1,60–2,00 | 0,20–0,30 | 1,90–2,20 | 0,30 |
| 3.4 | 120–150 | 0,50–0,60 | 0,10–0,20 | 0,50–0,70 | 0,10–0,20 | 1,00–1,30 | 0,20 | 1,00–1,30 | 0,20 | 1,30–1,60 | 0,20–0,30 | 1,50–1,80 | 0,30 |
| 3.5 | 200–250 | 0,60–0,80 | 0,10–0,20 | 0,70–0,90 | 0,10–0,20 | 1,30–1,60 | 0,20 | 1,30–1,60 | 0,20 | 1,60–2,00 | 0,20–0,30 | 1,90–2,20 | 0,30 |
| 3.6 | 200–250 | 0,60–0,80 | 0,10–0,20 | 0,70–0,90 | 0,10–0,20 | 1,30–1,60 | 0,20 | 1,30–1,60 | 0,20 | 1,60–2,00 | 0,20–0,30 | 1,90–2,20 | 0,30 |
| 3.7 | 120–150 | 0,50–0,60 | 0,10–0,20 | 0,50–0,70 | 0,10–0,20 | 1,00–1,30 | 0,20 | 1,00–1,30 | 0,20 | 1,30–1,60 | 0,20–0,30 | 1,50–1,80 | 0,30 |
| 3.8 | 120–150 | 0,50–0,60 | 0,10–0,20 | 0,50–0,70 | 0,10–0,20 | 1,00–1,30 | 0,20 | 1,00–1,30 | 0,20 | 1,30–1,60 | 0,20–0,30 | 1,50–1,80 | 0,30 |
| 4.1 | | | | | | | | | | | | | |
| 4.2 | | | | | | | | | | | | | |
| 4.3 | | | | | | | | | | | | | |
| 4.4 | | | | | | | | | | | | | |
| 4.5 | | | | | | | | | | | | | |
| 4.6 | | | | | | | | | | | | | |
| 4.7 | | | | | | | | | | | | | |
| 4.8 | | | | | | | | | | | | | |
| 4.9 | | | | | | | | | | | | | |
| 4.10 | | | | | | | | | | | | | |
| 4.11 | 150–250 | 0,50–0,80 | 0,10–0,20 | 0,70–0,90 | 0,10–0,20 | 1,30–1,40 | 0,20 | 1,40–1,70 | 0,20 | 1,60–1,90 | 0,20–0,30 | 1,90–2,20 | 0,30 |
| 4.12 | 100–150 | 0,40–0,60 | 0,10–0,20 | 0,60–0,80 | 0,10–0,20 | 1,00–1,30 | 0,20 | 1,20–1,40 | 0,20 | 1,30–1,60 | 0,20–0,30 | 1,60–1,80 | 0,30 |
| 4.13 | | | | | | | | | | | | | |
| 4.14 | | | | | | | | | | | | | |
| 4.15 | | | | | | | | | | | | | |
| 4.16 | | | | | | | | | | | | | |
| 4.17 | | | | | | | | | | | | | |
| 4.18 | | | | | | | | | | | | | |
| 4.19 | | | | | | | | | | | | | |
| 5.1 | | | | | | | | | | | | | |
| 5.2 | | | | | | | | | | | | | |
| 5.3 | | | | | | | | | | | | | |
| 5.4 | 40–60 | 0,30–0,40 | 0,10–0,20 | 0,40–0,50 | 0,10–0,20 | 0,70–0,90 | 0,20 | 0,80–1,10 | 0,20 | 0,90–1,10 | 0,20–0,30 | 1,10–1,30 | 0,30 |
| 5.5 | 40–60 | 0,30–0,40 | 0,10–0,20 | 0,40–0,50 | 0,10–0,20 | 0,70–0,90 | 0,20 | 0,80–1,10 | 0,20 | 0,90–1,10 | 0,20–0,30 | 1,10–1,30 | 0,30 |
| 5.6 | | | | | | | | | | | | | |
| 5.7 | | | | | | | | | | | | | |
| 5.8 | 40–60 | 0,30–0,40 | 0,10–0,20 | 0,40–0,50 | 0,10–0,20 | 0,70–0,90 | 0,20 | 0,80–1,10 | 0,20 | 0,90–1,10 | 0,20–0,30 | 1,10–1,30 | 0,30 |
| 5.9 | 30–60 | 0,30–0,40 | 0,10–0,20 | 0,40–0,50 | 0,10–0,20 | 0,70–0,90 | 0,20 | 0,80–1,10 | 0,20 | 0,90–1,10 | 0,20–0,30 | 1,10–1,30 | 0,30 |
| 5.10 | 30–60 | 0,30–0,40 | 0,10–0,20 | 0,40–0,50 | 0,10–0,20 | 0,70–0,90 | 0,20 | 0,80–1,10 | 0,20 | 0,90–1,10 | 0,20–0,30 | 1,10–1,30 | 0,30 |
| 5.11 | 30–60 | 0,30–0,40 | 0,10–0,20 | 0,40–0,50 | 0,10–0,20 | 0,70–0,90 | 0,20 | 0,80–1,10 | 0,20 | 0,90–1,10 | 0,20–0,30 | 1,10–1,30 | 0,30 |
| 6.1 | 40–60 | 0,50–0,60 | 0,10–0,20 | 0,60–0,90 | 0,10–0,20 | 1,10–1,60 | 0,20 | 1,20–1,60 | 0,20 | 1,20–1,80 | 0,20–0,30 | 1,20–1,80 | 0,30 |
| 6.2 | 40–60 | 0,50–0,60 | 0,10–0,20 | 0,60–0,90 | 0,10–0,20 | 1,10–1,60 | 0,20 | 1,20–1,60 | 0,20 | 1,20–1,80 | 0,20–0,30 | 1,20–1,80 | 0,30 |
| 6.3 | 30–50 | 0,50–0,70 | 0,10–0,20 | 0,70–1,00 | 0,10–0,20 | 1,20–1,70 | 0,20 | 1,30–1,70 | 0,20 | 1,30–2,00 | 0,20–0,30 | 1,30–2,00 | 0,30 |
| 6.4 | 30–50 | 0,50–0,70 | 0,10–0,20 | 0,70–1,00 | 0,10–0,20 | 1,20–1,70 | 0,20 | 1,30–1,70 | 0,20 | 1,30–2,00 | 0,20–0,30 | 1,30–2,00 | 0,30 |
| 6.5 | | | | | | | | | | | | | |

The cutting data greatly depends on the external conditions, the material and the machine.
The indicated values are possible cutting data, which may need to be increased or decreased according to the conditions.

# Cutting data standard values for Fullmax



## Type K

| | | 40 477 ... / 40 478 ... | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Ø 2,97 – 4,05 | | Ø 4,06 – 6,05 | | Ø 6,06 – 7,55 | | Ø 7,56 – 12,05 | | Ø 12,06 – 16,05 | | Ø 16,06 – 20,05 | |
| Number of teeth | | 6 | | 6 | | 8 | | 8 | | 8 | | 8 | |
| Index | $v_c$ m/min | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm |
| 3.1 | 200–250 | 0,80–1,00 | 0,10–0,20 | 0,90–1,20 | 0,10–0,20 | 1,50–1,90 | 0,20 | 1,50–1,90 | 0,20 | 1,80–2,30 | 0,20–0,30 | 2,20–2,60 | 0,30 |
| 3.2 | 200–250 | 0,80–1,00 | 0,10–0,20 | 0,90–1,20 | 0,10–0,20 | 1,50–1,90 | 0,20 | 1,50–1,90 | 0,20 | 1,80–2,30 | 0,20–0,30 | 2,20–2,60 | 0,30 |
| 3.3 | 225–300 | 0,80–1,00 | 0,10–0,20 | 0,90–1,20 | 0,10–0,20 | 1,50–1,90 | 0,20 | 1,50–1,90 | 0,20 | 1,80–2,30 | 0,20–0,30 | 2,20–2,60 | 0,30 |
| 3.4 | 120–150 | 0,60–0,90 | 0,10–0,20 | 0,70–1,00 | 0,10–0,20 | 1,20–1,60 | 0,20 | 1,20–1,60 | 0,20 | 1,50–1,90 | 0,20–0,30 | 1,80–2,20 | 0,30 |
| 3.5 | 225–300 | 0,80–1,00 | 0,10–0,20 | 0,90–1,20 | 0,10–0,20 | 1,50–1,90 | 0,20 | 1,50–1,90 | 0,20 | 1,80–2,30 | 0,20–0,30 | 2,20–2,60 | 0,30 |
| 3.6 | 225–300 | 0,80–1,00 | 0,10–0,20 | 0,90–1,20 | 0,10–0,20 | 1,50–1,90 | 0,20 | 1,50–1,90 | 0,20 | 1,80–2,30 | 0,20–0,30 | 2,20–2,60 | 0,30 |
| 3.7 | 120–150 | 0,60–0,90 | 0,10–0,20 | 0,70–1,00 | 0,10–0,20 | 1,20–1,60 | 0,20 | 1,20–1,60 | 0,20 | 1,50–1,90 | 0,20–0,30 | 1,80–2,20 | 0,30 |
| 3.8 | 120–150 | 0,60–0,90 | 0,10–0,20 | 0,70–1,00 | 0,10–0,20 | 1,20–1,60 | 0,20 | 1,20–1,60 | 0,20 | 1,50–1,90 | 0,20–0,30 | 1,80–2,20 | 0,30 |

## Type VA

| | | 40 401 ... / 40 402 ... / 40 403 ... / 40 404 ... | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Ø 2,97 – 4,05 | | Ø 4,06 – 6,05 | | Ø 6,06 – 7,55 | | Ø 7,56 – 12,05 | | Ø 12,06 – 16,05 | | Ø 16,06 – 20,05 | |
| Number of teeth | | 4 | | 4 | | 6 | | 6 | | 6 | | 6 | |
| Index | $v_c$ m/min | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm |
| 2.1 | 20–40 | 0,32–0,50 | 0,10–0,20 | 0,32–0,50 | 0,10–0,20 | 0,48–0,6 | 0,20 | 0,48–0,6 | 0,20 | 0,6–0,72 | 0,20–0,30 | 0,6–0,72 | 0,30 |
| 2.2 | 20–40 | 0,32–0,50 | 0,10–0,20 | 0,32–0,50 | 0,10–0,20 | 0,48–0,6 | 0,20 | 0,48–0,6 | 0,20 | 0,6–0,72 | 0,20–0,30 | 0,6–0,72 | 0,30 |
| 2.3 | 20–40 | 0,32–0,50 | 0,10–0,20 | 0,32–0,50 | 0,10–0,20 | 0,48–0,6 | 0,20 | 0,48–0,6 | 0,20 | 0,6–0,72 | 0,20–0,30 | 0,6–0,72 | 0,30 |
| 2.4 | 20–40 | 0,32–0,50 | 0,10–0,20 | 0,32–0,50 | 0,10–0,20 | 0,48–0,6 | 0,20 | 0,48–0,6 | 0,20 | 0,6–0,72 | 0,20–0,30 | 0,6–0,72 | 0,30 |
| 2.5 | 15–30 | 0,32–0,50 | 0,10–0,20 | 0,32–0,50 | 0,10–0,20 | 0,48–0,6 | 0,20 | 0,48–0,6 | 0,20 | 0,6–0,72 | 0,20–0,30 | 0,6–0,72 | 0,30 |
| 2.6 | 20–40 | 0,32–0,50 | 0,10–0,20 | 0,32–0,50 | 0,10–0,20 | 0,48–0,6 | 0,20 | 0,48–0,6 | 0,20 | 0,6–0,72 | 0,20–0,30 | 0,6–0,72 | 0,30 |
| 2.7 | 15–30 | 0,32–0,50 | 0,10–0,20 | 0,32–0,50 | 0,10–0,20 | 0,48–0,6 | 0,20 | 0,48–0,6 | 0,20 | 0,6–0,72 | 0,20–0,30 | 0,6–0,72 | 0,30 |

## Type ALU

| | | 40 471 ... / 40 472 ... / 40 473 ... / 40 474 ... | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Ø 2,97 – 4,05 | | Ø 4,06 – 6,05 | | Ø 6,06 – 7,55 | | Ø 7,56 – 12,05 | | Ø 12,06 – 16,05 | | Ø 16,06 – 20,05 | |
| Number of teeth | | 4 | | 4 | | 6 | | 6 | | 6 | | 6 | |
| Index | $v_c$ m/min | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm |
| 4.1 | 200–300 | 0,50–0,60 | 0,10–0,20 | 0,60–0,90 | 0,10–0,20 | 1,10–1,60 | 0,20 | 1,20–1,60 | 0,20 | 1,20–1,80 | 0,20–0,30 | 1,20–1,80 | 0,30 |
| 4.2 | 200–300 | 0,50–0,60 | 0,10–0,20 | 0,60–0,90 | 0,10–0,20 | 1,10–1,60 | 0,20 | 1,20–1,60 | 0,20 | 1,20–1,80 | 0,20–0,30 | 1,20–1,80 | 0,30 |
| 4.3 | 200–300 | 0,50–0,70 | 0,10–0,20 | 0,70–1,00 | 0,10–0,20 | 1,20–1,70 | 0,20 | 1,30–1,70 | 0,20 | 1,30–2,00 | 0,20–0,30 | 1,30–2,00 | 0,30 |
| 4.4 | 200–250 | 0,50–0,70 | 0,10–0,20 | 0,70–1,00 | 0,10–0,20 | 1,20–1,70 | 0,20 | 1,30–1,70 | 0,20 | 1,30–2,00 | 0,20–0,30 | 1,30–2,00 | 0,30 |
| 4.5 | 200–250 | 0,50–0,70 | 0,10–0,20 | 0,70–1,00 | 0,10–0,20 | 1,20–1,70 | 0,20 | 1,30–1,70 | 0,20 | 1,30–2,00 | 0,20–0,30 | 1,30–2,00 | 0,30 |

## Type H

| | | 40 475 ... / 40 476 ... | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Ø 2,97 – 4,05 | | Ø 4,06 – 6,05 | | Ø 6,06 – 7,55 | | Ø 7,56 – 12,05 | | Ø 12,06 – 16,05 | | Ø 16,06 – 20,05 | |
| Number of teeth | | 4 | | 4 | | 6 | | 6 | | 6 | | 6 | |
| Index | $v_c$ m/min | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm |
| 6.1 | 40–60 | 0,20–0,30 | 0,10–0,20 | 0,20–0,30 | 0,10–0,20 | 0,40–0,60 | 0,20 | 0,50–0,60 | 0,20 | 0,50–0,70 | 0,20 | 0,60–0,80 | 0,20 |
| 6.2 | 40–60 | 0,20–0,30 | 0,10–0,20 | 0,20–0,30 | 0,10–0,20 | 0,40–0,60 | 0,20 | 0,50–0,60 | 0,20 | 0,50–0,70 | 0,20 | 0,60–0,80 | 0,20 |
| 6.3 | 30–50 | 0,20–0,30 | 0,10 | 0,20–0,30 | 0,10 | 0,40–0,60 | 0,10 | 0,50–0,60 | 0,10 | 0,50–0,70 | 0,20 | 0,60–0,80 | 0,20 |
| 6.4 | 30–50 | 0,20–0,30 | 0,10 | 0,20–0,30 | 0,10 | 0,40–0,60 | 0,10 | 0,50–0,60 | 0,10 | 0,50–0,70 | 0,20 | 0,60–0,80 | 0,20 |

The cutting data greatly depends on the external conditions, the material and the machine.
The indicated values are possible cutting data, which may need to be increased or decreased according to the conditions.

# Cutting data standard values for solid carbide reamers

| | 40 430 ... | | | 40 420 ... / 40 421 ... / 40 430 ... / 40 431 ... / 40 410 ... / 40 400 ... | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | uncoated | to Ø 0,94 mm | | uncoated | TiAlN | to Ø 5 mm | | to Ø 8 mm | | to Ø 10 mm | |
| Index | $v_c$ m/min | f mm/rev. | Reaming allowance Ø mm | $v_c$ m/min | $v_c$ m/min | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm |
| 1.1 | | | | | | | | | | | |
| 1.2 | 10–15 | 0,1–0,15 | 0,03–0,05 | 15–20 | 25–35 | 0,1–0,15 | 0,1 | 0,15 | 0,1–0,2 | 0,15 | 0,1–0,2 |
| 1.3 | | | | | | | | | | | |
| 1.4 | 8–12 | 0,1–0,15 | 0,03–0,05 | 12–15 | 20–30 | 0,1–0,15 | 0,1 | 0,15 | 0,1–0,2 | 0,15 | 0,1–0,2 |
| 1.5 | 10–15 | 0,1–0,15 | 0,03–0,05 | 15–20 | 25–35 | 0,1–0,15 | 0,1 | 0,15 | 0,1–0,2 | 0,15 | 0,1–0,2 |
| 1.6 | 8–12 | 0,1–0,15 | 0,03–0,05 | 12–15 | 20–30 | 0,1–0,15 | 0,1 | 0,15 | 0,1–0,2 | 0,15 | 0,1–0,2 |
| 1.7 | 10–15 | 0,1–0,15 | 0,03–0,05 | 15–20 | 25–35 | 0,1–0,15 | 0,1 | 0,15 | 0,1–0,2 | 0,15 | 0,1–0,2 |
| 1.8 | 8–12 | 0,1–0,15 | 0,03–0,05 | 12–15 | 20–30 | 0,1–0,15 | 0,1 | 0,15 | 0,1–0,2 | 0,15 | 0,1–0,2 |
| 1.9 | 10–15 | 0,1–0,15 | 0,03–0,05 | 15–20 | 25–35 | 0,1–0,15 | 0,1 | 0,15 | 0,1–0,2 | 0,15 | 0,1–0,2 |
| 1.10 | 8–12 | 0,1–0,15 | 0,03–0,05 | 12–15 | 20–30 | 0,1–0,15 | 0,1 | 0,15 | 0,1–0,2 | 0,15 | 0,1–0,2 |
| 1.11 | | | | | | | | | | | |
| 1.12 | | | | | | | | | | | |
| 1.13 | 6–8 | 0,1–0,15 | 0,03–0,05 | 8–12 | 12–20 | 0,1–0,15 | 0,1 | 0,15 | 0,1–0,2 | 0,15 | 0,1–0,2 |
| 1.14 | | | | | | | | | | | |
| 1.15 | | | | | | | | | | | |
| 1.16 | | | | | | | | | | | |
| 2.1 | | | | | | | | | | | |
| 2.2 | | | | | | | | | | | |
| 2.3 | | | | | | | | | | | |
| 2.4 | | | | | | | | | | | |
| 2.5 | | | | | | | | | | | |
| 2.6 | | | | | | | | | | | |
| 2.7 | | | | | | | | | | | |
| 3.1 | 10–15 | 0,1–0,15 | 0,03–0,05 | 12–20 | 20–35 | 0,1–0,15 | 0,1 | 0,15–0,2 | 0,1–0,2 | 0,15–0,2 | 0,1–0,2 |
| 3.2 | | | | | | | | | | | |
| 3.3 | 8–12 | 0,1–0,15 | 0,03–0,05 | 12–15 | 20–30 | 0,1–0,15 | 0,1 | 0,15–0,2 | 0,1–0,2 | 0,15–0,2 | 0,1–0,2 |
| 3.4 | 8–10 | 0,1–0,15 | 0,03–0,05 | 10–15 | 15–20 | 0,1–0,15 | 0,1 | 0,15–0,2 | 0,1–0,2 | 0,15–0,2 | 0,1–0,2 |
| 3.5 | | | | | | | | | | | |
| 3.6 | 10–15 | 0,1–0,15 | 0,03–0,05 | 12–20 | 20–35 | 0,1–0,15 | 0,1 | 0,15–0,2 | 0,1–0,2 | 0,15–0,2 | 0,1–0,2 |
| 3.7 | | | | | | | | | | | |
| 3.8 | | | | | | | | | | | |
| 4.1 | | | | | | | | | | | |
| 4.2 | 10–30 | 0,12–0,16 | 0,03–0,05 | 20–60 | | 0,12–0,16 | 0,1–0,15 | 0,15–0,2 | 0,15–0,2 | 0,15–0,2 | 0,15–0,2 |
| 4.3 | | | | | | | | | | | |
| 4.4 | 10–15 | 0,12–0,16 | 0,03–0,05 | 20–30 | | 0,12–0,16 | 0,1–0,15 | 0,15–0,2 | 0,15–0,2 | 0,15–0,2 | 0,15–0,2 |
| 4.5 | | | | | | | | | | | |
| 4.6 | 10–30 | 0,12–0,16 | 0,03–0,05 | 20–80 | | 0,12–0,16 | 0,1–0,15 | 0,15–0,2 | 0,15–0,2 | 0,15–0,2 | 0,15–0,2 |
| 4.7 | 10–25 | 0,12–0,16 | 0,03–0,05 | 25–60 | | 0,12–0,16 | 0,1–0,15 | 0,15–0,2 | 0,15–0,2 | 0,15–0,2 | 0,15–0,2 |
| 4.8 | | | | | | | | | | | |
| 4.9 | 8–15 | 0,12–0,16 | 0,03–0,05 | 15–30 | | 0,12–0,16 | 0,1–0,15 | 0,15–0,2 | 0,15–0,2 | 0,15–0,2 | 0,15–0,2 |
| 4.10 | | | | | | | | | | | |
| 4.11 | | | | | | | | | | | |
| 4.12 | 10–25 | 0,12–0,16 | 0,03–0,05 | 20–50 | | 0,12–0,16 | 0,1–0,15 | 0,15–0,2 | 0,15–0,2 | 0,15–0,2 | 0,15–0,2 |
| 4.13 | | | | | | | | | | | |
| 4.14 | | | | | | | | | | | |
| 4.15 | 6–10 | 0,12–0,16 | 0,03–0,05 | 10–15 | | 0,12–0,16 | 0,1–0,15 | 0,15–0,2 | 0,15–0,2 | 0,15–0,2 | 0,15–0,2 |
| 4.16 | 6–10 | 0,06–0,1 | 0,03–0,05 | 15–20 | | 0,06–0,1 | 0,05–0,1 | 0,1 | 0,1 | 0,15 | 0,1 |
| 4.17 | 5–10 | 0,06–0,1 | 0,03–0,05 | 10–20 | | 0,06–0,1 | 0,05–0,1 | 0,1 | 0,1 | 0,15 | 0,1 |
| 4.18 | 5–8 | 0,06–0,1 | 0,03–0,05 | 7–12 | | 0,06–0,1 | 0,05–0,1 | 0,1 | 0,1 | 0,15 | 0,1 |
| 4.19 | 5–8 | | | | | | | | | | |
| 5.1 | | | | | | | | | | | |
| 5.2 | 8–12 | 0,06–0,1 | 0,03–0,05 | 10–20 | | 0,06–0,1 | 0,05–0,1 | 0,1 | 0,1 | 0,15 | 0,1 |
| 5.3 | | | | | | | | | | | |
| 5.4 | | | | | | | | | | | |
| 5.5 | | | | 8–10 | | 0,06–0,1 | 0,05–0,1 | 0,1 | 0,1 | 0,15 | 0,1 |
| 5.6 | 5–8 | 0,06–0,1 | 0,03–0,05 | | | | | | | | |
| 5.7 | | | | 6–10 | | 0,06–0,1 | 0,05–0,1 | 0,1 | 0,1 | 0,15 | 0,1 |
| 5.8 | 3–5 | 0,06–0,1 | 0,03–0,05 | 5–8 | | 0,06–0,1 | 0,05–0,1 | 0,1 | 0,1 | 0,15 | 0,1 |
| 5.9 | 5–8 | 0,06–0,1 | 0,03–0,05 | 6–10 | | 0,06–0,1 | 0,05–0,1 | 0,1 | 0,1 | 0,15 | 0,1 |
| 5.10 | | | | | | | | | | | |
| 5.11 | 3–5 | 0,06–0,1 | 0,03–0,05 | 6–8 | | 0,06–0,1 | 0,05–0,1 | 0,1 | 0,1 | 0,15 | 0,1 |
| 6.1 | | | | | | | | | | | |
| 6.2 | | | | | | | | | | | |
| 6.3 | | | | | | | | | | | |
| 6.4 | | | | | | | | | | | |
| 6.5 | | | | | | | | | | | |

The cutting data depends on the external conditions, e.g. stability of the tools and tool clamping, material and machine type.
The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

# Cutting data standard values for solid carbide reamers

| | 40 420 ... / 40 421 ... / 40 430 ... / 40 431 ... / 40 410 ... / 40 400 ... | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | uncoated | TiAlN | to Ø 12 mm | | to Ø 15 mm | | to Ø 20 mm | | to Ø 25 mm | | to Ø 30 mm | |
| Index | $v_c$ m/min | $v_c$ m/min | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm |
| 1.1 | | | | | | | | | | | | |
| 1.2 | 15–20 | 25–35 | 0,15–0,2 | 0,1–0,2 | 0,2–0,25 | 0,2–0,3 | 0,2–0,3 | 0,2–0,3 | 0,3–0,4 | 0,3 | 0,3–0,5 | 0,3–0,4 |
| 1.3 | | | | | | | | | | | | |
| 1.4 | 12–15 | 20–30 | 0,15–0,2 | 0,1–0,2 | 0,2–0,25 | 0,2–0,3 | 0,2–0,3 | 0,2–0,3 | 0,3–0,4 | 0,3 | 0,3–0,5 | 0,3–0,4 |
| 1.5 | 15–20 | 25–35 | 0,15–0,2 | 0,1–0,2 | 0,2–0,25 | 0,2–0,3 | 0,2–0,3 | 0,2–0,3 | 0,3–0,4 | 0,3 | 0,3–0,5 | 0,3–0,4 |
| 1.6 | 12–15 | 20–30 | 0,15–0,2 | 0,1–0,2 | 0,2–0,25 | 0,2–0,3 | 0,2–0,3 | 0,2–0,3 | 0,3–0,4 | 0,3 | 0,3–0,5 | 0,3–0,4 |
| 1.7 | 15–20 | 25–35 | 0,15–0,2 | 0,1–0,2 | 0,2–0,25 | 0,2–0,3 | 0,2–0,3 | 0,2–0,3 | 0,3–0,4 | 0,3 | 0,3–0,5 | 0,3–0,4 |
| 1.8 | 12–15 | 20–30 | 0,15–0,2 | 0,1–0,2 | 0,2–0,25 | 0,2–0,3 | 0,2–0,3 | 0,2–0,3 | 0,3–0,4 | 0,3 | 0,3–0,5 | 0,3–0,4 |
| 1.9 | 15–20 | 25–35 | 0,15–0,2 | 0,1–0,2 | 0,2–0,25 | 0,2–0,3 | 0,2–0,3 | 0,2–0,3 | 0,3–0,4 | 0,3 | 0,3–0,5 | 0,3–0,4 |
| 1.10 | 12–15 | 20–30 | 0,15–0,2 | 0,1–0,2 | 0,2–0,25 | 0,2–0,3 | 0,2–0,3 | 0,2–0,3 | 0,3–0,4 | 0,3 | 0,3–0,5 | 0,3–0,4 |
| 1.11 | | | | | | | | | | | | |
| 1.12 | | | | | | | | | | | | |
| 1.13 | 8–12 | 12–20 | 0,15–0,2 | 0,1–0,2 | 0,2–0,25 | 0,2–0,3 | 0,2–0,3 | 0,2–0,3 | 0,3–0,4 | 0,3 | 0,3–0,5 | 0,3–0,4 |
| 1.14 | | | | | | | | | | | | |
| 1.15 | | | | | | | | | | | | |
| 1.16 | | | | | | | | | | | | |
| 2.1 | | | | | | | | | | | | |
| 2.2 | | | | | | | | | | | | |
| 2.3 | | | | | | | | | | | | |
| 2.4 | | | | | | | | | | | | |
| 2.5 | | | | | | | | | | | | |
| 2.6 | | | | | | | | | | | | |
| 2.7 | | | | | | | | | | | | |
| 3.1 | | | | | | | | | | | | |
| 3.2 | 12–20 | 20–35 | 0,15–0,3 | 0,15–0,25 | 0,2–0,3 | 0,2–0,3 | 0,2–0,4 | 0,2–0,4 | 0,3–0,4 | 0,3–0,4 | 0,3–0,5 | 0,3–0,5 |
| 3.3 | 12–15 | 20–30 | 0,15–0,3 | 0,15–0,25 | 0,2–0,3 | 0,2–0,3 | 0,2–0,4 | 0,2–0,4 | 0,3–0,4 | 0,3–0,4 | 0,3–0,5 | 0,3–0,5 |
| 3.4 | 10–15 | 15–20 | 0,15–0,3 | 0,15–0,25 | 0,2–0,3 | 0,2–0,3 | 0,2–0,4 | 0,2–0,4 | 0,3–0,4 | 0,3–0,4 | 0,3–0,5 | 0,3–0,5 |
| 3.5 | | | | | | | | | | | | |
| 3.6 | 12–20 | 20–35 | 0,15–0,3 | 0,15–0,25 | 0,2–0,3 | 0,2–0,3 | 0,2–0,4 | 0,2–0,4 | 0,3–0,4 | 0,3–0,4 | 0,3–0,5 | 0,3–0,5 |
| 3.7 | | | | | | | | | | | | |
| 3.8 | | | | | | | | | | | | |
| 4.1 | | | | | | | | | | | | |
| 4.2 | 20–60 | | 0,15–0,25 | 0,15–0,2 | 0,2–0,3 | 0,2–0,3 | 0,2–0,3 | 0,2–0,3 | 0,3–0,4 | 0,3–0,4 | 0,3–0,5 | 0,3–0,5 |
| 4.3 | | | | | | | | | | | | |
| 4.4 | 20–30 | | 0,15–0,25 | 0,15–0,2 | 0,2–0,3 | 0,2–0,3 | 0,2–0,3 | 0,2–0,3 | 0,3–0,4 | 0,3–0,4 | 0,3–0,5 | 0,3–0,5 |
| 4.5 | | | | | | | | | | | | |
| 4.6 | 20–80 | | 0,15–0,3 | 0,15–0,2 | 0,25–0,35 | 0,2–0,3 | 0,2–0,4 | 0,2–0,3 | 0,3–0,4 | 0,3–0,4 | 0,3–0,5 | 0,3–0,5 |
| 4.7 | 25–60 | | 0,15–0,3 | 0,15–0,2 | 0,25–0,35 | 0,2–0,3 | 0,2–0,4 | 0,2–0,3 | 0,3–0,4 | 0,3–0,4 | 0,3–0,5 | 0,3–0,5 |
| 4.8 | | | | | | | | | | | | |
| 4.9 | 15–30 | | 0,15–0,3 | 0,15–0,2 | 0,25–0,35 | 0,2–0,3 | 0,2–0,4 | 0,2–0,3 | 0,3–0,4 | 0,3–0,4 | 0,3–0,5 | 0,3–0,5 |
| 4.10 | | | | | | | | | | | | |
| 4.11 | | | | | | | | | | | | |
| 4.12 | 20–50 | | 0,15–0,3 | 0,15–0,2 | 0,25–0,35 | 0,2–0,3 | 0,2–0,4 | 0,2–0,3 | 0,3–0,4 | 0,3–0,4 | 0,3–0,5 | 0,3–0,5 |
| 4.13 | | | | | | | | | | | | |
| 4.14 | | | | | | | | | | | | |
| 4.15 | 10–15 | | 0,15–0,3 | 0,15–0,2 | 0,25–0,35 | 0,2–0,3 | 0,2–0,4 | 0,2–0,3 | 0,3–0,4 | 0,3–0,4 | 0,3–0,5 | 0,3–0,5 |
| 4.16 | 15–20 | | 0,15–0,2 | 0,15 | 0,2–0,25 | 0,2 | 0,2–0,3 | 0,2 | 0,25–0,35 | 0,3 | 0,3–0,35 | 0,3 |
| 4.17 | 10–20 | | 0,15–0,2 | 0,15 | 0,2–0,25 | 0,2 | 0,2–0,3 | 0,2 | 0,25–0,35 | 0,3 | 0,3–0,35 | 0,3 |
| 4.18 | 7–12 | | 0,15–0,2 | 0,15 | 0,2–0,25 | 0,2 | 0,2–0,3 | 0,2 | 0,25–0,35 | 0,3 | 0,3–0,35 | 0,3 |
| 4.19 | | | | | | | | | | | | |
| 5.1 | | | | | | | | | | | | |
| 5.2 | 10–20 | | 0,15–0,2 | 0,15 | 0,2–0,25 | 0,2 | 0,2–0,3 | 0,2 | 0,25–0,35 | 0,3 | 0,3–0,35 | 0,3 |
| 5.3 | | | | | | | | | | | | |
| 5.4 | | | | | | | | | | | | |
| 5.5 | 8–10 | | 0,15–0,2 | 0,15 | 0,2–0,25 | 0,2 | 0,2–0,3 | 0,2 | 0,25–0,35 | 0,3 | 0,3–0,35 | 0,3 |
| 5.6 | | | | | | | | | | | | |
| 5.7 | 6–10 | | 0,15–0,2 | 0,15 | 0,2–0,25 | 0,2 | 0,2–0,3 | 0,2 | 0,25–0,35 | 0,3 | 0,3–0,35 | 0,3 |
| 5.8 | 5–8 | | 0,15–0,2 | 0,15 | 0,2–0,25 | 0,2 | 0,2–0,3 | 0,2 | 0,25–0,35 | 0,3 | 0,3–0,35 | 0,3 |
| 5.9 | 6–10 | | 0,15–0,2 | 0,15 | 0,2–0,25 | 0,2 | 0,2–0,3 | 0,2 | 0,25–0,35 | 0,3 | 0,3–0,35 | 0,3 |
| 5.10 | | | | | | | | | | | | |
| 5.11 | 6–8 | | 0,15–0,2 | 0,15 | 0,2–0,25 | 0,2 | 0,2–0,3 | 0,2 | 0,25–0,35 | 0,3 | 0,3–0,35 | 0,3 |
| 6.1 | | | | | | | | | | | | |
| 6.2 | | | | | | | | | | | | |
| 6.3 | | | | | | | | | | | | |
| 6.4 | | | | | | | | | | | | |
| 6.5 | | | | | | | | | | | | |

The cutting data depends on the external conditions, e.g. stability of the tools and tool clamping, material and machine type.
The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

4

# Cutting data for HSS-E reamers

| | | 40 110 ... / 40 115 ... / 40 139 ... / 40 140 ... 40 145 ... / 40 150 ... / 40 155 ... / 40 160 ... | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | to Ø 5 mm | | to Ø 8 mm | | to Ø 12 mm | | to Ø 15 mm | | to Ø 20 mm | |
| Index | $v_c$ m/min | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm |
| 1.1 | 18 | 0,1–0,15 | 0,1 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 |
| 1.2 | 15 | 0,1–0,15 | 0,1 | 0,2–0,3 | 0,2–0,3 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 |
| 1.3 | | | | | | | | | | | |
| 1.4 | 12 | 0,1–0,15 | 0,1 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 |
| 1.5 | | | | | | | | | | | |
| 1.6 | | | | | | | | | | | |
| 1.7 | | | | | | | | | | | |
| 1.8 | 10 | 0,1–0,15 | 0,1 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 |
| 1.9 | 14 | 0,1–0,15 | 0,1 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 |
| 1.10 | 12 | 0,1–0,15 | 0,1 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 |
| 1.11 | 10 | 0,1–0,15 | 0,1 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 |
| 1.12 | | | | | | | | | | | |
| 1.13 | | | | | | | | | | | |
| 1.14 | | | | | | | | | | | |
| 1.15 | | | | | | | | | | | |
| 1.16 | | | | | | | | | | | |
| 2.1 | 10 | 0,1–0,15 | 0,1 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 |
| 2.2 | 8 | 0,1–0,15 | 0,1 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 |
| 2.3 | | | | | | | | | | | |
| 2.4 | | | | | | | | | | | |
| 2.5 | | | | | | | | | | | |
| 2.6 | | | | | | | | | | | |
| 2.7 | | | | | | | | | | | |
| 3.1 | 14 | 0,1–0,15 | 0,1 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 |
| 3.2 | | | | | | | | | | | |
| 3.3 | 12 | 0,1–0,15 | 0,1 | 0,2 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 |
| 3.4 | 10 | 0,1–0,15 | 0,1 | 0,2 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 |
| 3.5 | 12 | 0,1–0,15 | 0,1 | 0,2 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 |
| 3.6 | 10 | 0,1–0,15 | 0,1 | 0,2 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 |
| 3.7 | 12 | 0,1–0,15 | 0,1 | 0,2 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 |
| 3.8 | 10 | 0,1–0,15 | 0,1 | 0,2 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 | 0,2–0,3 | 0,2 |
| 4.1 | 20 | 0,15 | 0,1 | 0,2 | 0,2 | 0,3 | 0,2 | 0,3 | 0,2 | 0,3 | 0,2 |
| 4.2 | | | | | | | | | | | |
| 4.3 | | | | | | | | | | | |
| 4.4 | 18 | 0,15 | 0,1 | 0,2 | 0,2 | 0,3 | 0,2 | 0,3 | 0,2 | 0,3 | 0,2 |
| 4.5 | 16 | 0,15 | 0,1 | 0,2 | 0,2 | 0,3 | 0,2 | 0,3 | 0,2 | 0,3 | 0,2 |
| 4.6 | 20 | 0,15 | 0,1 | 0,2 | 0,2 | 0,3 | 0,2 | 0,3 | 0,2 | 0,3 | 0,2 |
| 4.7 | | | | | | | | | | | |
| 4.8 | | | | | | | | | | | |
| 4.9 | | | | | | | | | | | |
| 4.10 | | | | | | | | | | | |
| 4.11 | | | | | | | | | | | |
| 4.12 | | | | | | | | | | | |
| 4.13 | 14 | 0,15 | 0,1 | 0,2 | 0,2 | 0,3 | 0,2 | 0,3 | 0,2 | 0,3 | 0,2 |
| 4.14 | | | | | | | | | | | |
| 4.15 | 10 | 0,15 | 0,1 | 0,2 | 0,2 | 0,3 | 0,2 | 0,3 | 0,2 | 0,3 | 0,2 |
| 4.16 | 22 | 0,15 | 0,1 | 0,2 | 0,2 | 0,3 | 0,2 | 0,3 | 0,2 | 0,3 | 0,2 |
| 4.17 | | | | | | | | | | | |
| 4.18 | | | | | | | | | | | |
| 4.19 | | | | | | | | | | | |
| 5.1 | 6 | 0,1–0,15 | 0,1 | 0,2 | 0,2 | 0,25 | 0,2 | 0,3 | 0,2 | 0,4 | 0,3 |
| 5.2 | | | | | | | | | | | |
| 5.3 | | | | | | | | | | | |
| 5.4 | | | | | | | | | | | |
| 5.5 | 5 | 0,1–0,15 | 0,1 | 0,2 | 0,2 | 0,25 | 0,25 | 0,3 | 0,2 | 0,4 | 0,3 |
| 5.6 | | | | | | | | | | | |
| 5.7 | | | | | | | | | | | |
| 5.8 | | | | | | | | | | | |
| 5.9 | | | | | | | | | | | |
| 5.10 | 3 | 0,1 | 0,1 | 0,1 | 0,2 | 0,12 | 0,2 | 0,15 | 0,2 | 0,2 | 0,2 |
| 5.11 | | | | | | | | | | | |
| 6.1 | | | | | | | | | | | |
| 6.2 | | | | | | | | | | | |
| 6.3 | | | | | | | | | | | |
| 6.4 | | | | | | | | | | | |
| 6.5 | | | | | | | | | | | |

The cutting data depends on the external conditions, e.g. stability of the tools and tool clamping, material and machine type.
The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

# Cutting data for HSS-E reamers

| | | 40 110 ... / 40 115 ... / 40 139 ... / 40 140 ... 40 145 ... / 40 150 ... / 40 155 ... / 40 160 ... | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | to Ø 25 mm | | to Ø 30 mm | | to Ø 40 mm | | to Ø 50 mm | |
| Index | $v_c$ m/min | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm | f mm/rev. | Reaming allowance Ø mm |
| 1.1 | 18 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 |
| 1.2 | 15 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 |
| 1.3 | | | | | | | | | |
| 1.4 | 12 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 |
| 1.5 | | | | | | | | | |
| 1.6 | | | | | | | | | |
| 1.7 | | | | | | | | | |
| 1.8 | 10 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 |
| 1.9 | 14 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 |
| 1.10 | 12 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 |
| 1.11 | 10 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 |
| 1.12 | | | | | | | | | |
| 1.13 | | | | | | | | | |
| 1.14 | | | | | | | | | |
| 1.15 | | | | | | | | | |
| 1.16 | | | | | | | | | |
| 2.1 | 10 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 |
| 2.2 | 8 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 |
| 2.3 | | | | | | | | | |
| 2.4 | | | | | | | | | |
| 2.5 | | | | | | | | | |
| 2.6 | | | | | | | | | |
| 2.7 | | | | | | | | | |
| 3.1 | 14 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 |
| 3.2 | | | | | | | | | |
| 3.3 | 12 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 |
| 3.4 | 10 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 |
| 3.5 | 12 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 |
| 3.6 | 10 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 |
| 3.7 | 12 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 |
| 3.8 | 10 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 | 0,3–0,5 | 0,4 |
| 4.1 | 20 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 |
| 4.2 | | | | | | | | | |
| 4.3 | | | | | | | | | |
| 4.4 | 18 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 |
| 4.5 | 16 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 |
| 4.6 | 20 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 |
| 4.7 | | | | | | | | | |
| 4.8 | | | | | | | | | |
| 4.9 | | | | | | | | | |
| 4.10 | | | | | | | | | |
| 4.11 | | | | | | | | | |
| 4.12 | | | | | | | | | |
| 4.13 | 14 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 |
| 4.14 | | | | | | | | | |
| 4.15 | 10 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 |
| 4.16 | 22 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 |
| 4.17 | | | | | | | | | |
| 4.18 | | | | | | | | | |
| 4.19 | | | | | | | | | |
| 5.1 | 6 | 0,5 | 0,4 | 0,5 | 0,4 | 0,6 | 0,4 | 0,8 | 0,4 |
| 5.2 | | | | | | | | | |
| 5.3 | | | | | | | | | |
| 5.4 | | | | | | | | | |
| 5.5 | 5 | 0,5 | 0,4 | 0,5 | 0,4 | 0,6 | 0,4 | 0,8 | 0,4 |
| 5.6 | | | | | | | | | |
| 5.7 | | | | | | | | | |
| 5.8 | | | | | | | | | |
| 5.9 | | | | | | | | | |
| 5.10 | 3 | 0,25 | 0,3 | 0,25 | 0,3 | 0,3 | 0,4 | 0,3 | 0,4 |
| 5.11 | | | | | | | | | |
| 6.1 | | | | | | | | | |
| 6.2 | | | | | | | | | |
| 6.3 | | | | | | | | | |
| 6.4 | | | | | | | | | |
| 6.5 | | | | | | | | | |

The cutting data depends on the external conditions, e.g. stability of the tools and tool clamping, material and machine type.
The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

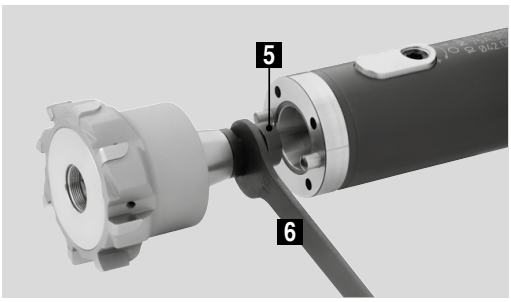
4

# Cutting data for countersinks with irregular pitch

| | | 30 116 ... TPX76S | | | | | | 30 140 ... Ti50 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Ø 4,3–8,0 mm | Ø 8,00–12,4 mm | Ø 12,40–16,5 mm | Ø 16,5–20,5 mm | Ø 20,5–25,0 mm | Ø 25,0–31,0 mm | Ø 4,3–8,0 mm | Ø 8,0–12,4 mm | Ø 12,4–16,5 mm | Ø 16,5–20,5 mm | Ø 20,5–25,0 mm | Ø 25,0–31,0 mm |
| **Index** | $v_c$ m/min | f in mm/rev. | | | | | | $v_c$ m/min | f in mm/rev. | | | | |
| **1.1** | **60** | **0,08** | **0,1** | **0,12** | **0,14** | **0,18** | **0,22** | **36** | 0,08 | 0,10 | 0,12 | 0,14 | 0,18 | 0,22 |
| **1.2** | **60** | **0,08** | **0,1** | **0,12** | **0,14** | **0,18** | **0,22** | **36** | 0,08 | 0,10 | 0,12 | 0,14 | 0,18 | 0,22 |
| **1.3** | **60** | **0,08** | **0,1** | **0,12** | **0,14** | **0,18** | **0,22** | **36** | 0,08 | 0,1 | 0,12 | 0,14 | 0,18 | 0,22 |
| **1.4** | **50** | **0,06** | **0,08** | **0,1** | **0,12** | **0,14** | **0,18** | **36** | 0,08 | 0,1 | 0,12 | 0,14 | 0,18 | 0,22 |
| **1.5** | **50** | **0,06** | **0,08** | **0,1** | **0,12** | **0,14** | **0,18** | **36** | 0,08 | 0,1 | 0,12 | 0,14 | 0,18 | 0,22 |
| **1.6** | **50** | **0,06** | **0,08** | **0,1** | **0,12** | **0,14** | **0,18** | **36** | 0,08 | 0,1 | 0,12 | 0,14 | 0,18 | 0,22 |
| **1.7** | **50** | **0,06** | **0,08** | **0,1** | **0,12** | **0,14** | **0,18** | **30** | 0,06 | 0,08 | 0,1 | 0,12 | 0,14 | 0,18 |
| **1.8** | **40** | **0,04** | **0,05** | **0,06** | **0,1** | **0,12** | **0,16** | **30** | 0,06 | 0,08 | 0,1 | 0,12 | 0,14 | 0,18 |
| **1.9** | **50** | **0,06** | **0,08** | **0,1** | **0,12** | **0,14** | **0,18** | **36** | 0,08 | 0,1 | 0,12 | 0,14 | 0,18 | 0,22 |
| **1.10** | **40** | **0,04** | **0,05** | **0,06** | **0,1** | **0,12** | **0,16** | **36** | 0,08 | 0,1 | 0,12 | 0,14 | 0,18 | 0,22 |
| **1.11** | **40** | **0,04** | **0,05** | **0,06** | **0,1** | **0,12** | **0,16** | **36** | 0,08 | 0,1 | 0,12 | 0,14 | 0,18 | 0,22 |
| **1.12** | **40** | **0,04** | **0,05** | **0,06** | **0,1** | **0,12** | **0,16** | **30** | 0,06 | 0,08 | 0,1 | 0,12 | 0,14 | 0,18 |
| **1.13** | **40** | **0,04** | **0,05** | **0,06** | **0,1** | **0,12** | **0,16** | 8 | 0,04 | 0,05 | 0,06 | 0,08 | 0,10 | 0,12 |
| **1.14** | **40** | **0,04** | **0,05** | **0,06** | **0,1** | **0,12** | **0,16** | 12 | 0,04 | 0,05 | 0,06 | 0,08 | 0,10 | 0,12 |
| **1.15** | **40** | **0,04** | **0,05** | **0,06** | **0,1** | **0,12** | **0,16** | 12 | 0,04 | 0,05 | 0,06 | 0,08 | 0,10 | 0,12 |
| **1.16** | **40** | **0,04** | **0,05** | **0,06** | **0,1** | **0,12** | **0,16** | 12 | 0,04 | 0,05 | 0,06 | 0,08 | 0,10 | 0,12 |
| **2.1** | 30 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 | 10 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 |
| **2.2** | 30 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 | 10 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 |
| **2.3** | 25 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 | 10 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 |
| **2.4** | 25 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 | 10 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 |
| **2.5** | 30 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 | 10 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 |
| **2.6** | 30 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 | 10 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 |
| **2.7** | 25 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 | 10 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 |
| **3.1** | **50** | **0,1** | **0,12** | **0,14** | **0,18** | **0,2** | **0,25** | **14** | 0,1 | 0,12 | 0,14 | 0,18 | 0,2 | 0,25 |
| **3.2** | **45** | **0,1** | **0,12** | **0,14** | **0,18** | **0,2** | **0,25** | **14** | 0,1 | 0,12 | 0,14 | 0,18 | 0,2 | 0,25 |
| **3.3** | **45** | **0,1** | **0,12** | **0,14** | **0,18** | **0,2** | **0,25** | **14** | 0,1 | 0,12 | 0,14 | 0,18 | 0,2 | 0,25 |
| **3.4** | **45** | **0,1** | **0,12** | **0,14** | **0,18** | **0,2** | **0,25** | **12** | 0,1 | 0,12 | 0,14 | 0,18 | 0,2 | 0,25 |
| **3.5** | **35** | **0,1** | **0,12** | **0,14** | **0,18** | **0,2** | **0,25** | **14** | 0,1 | 0,12 | 0,14 | 0,18 | 0,2 | 0,25 |
| **3.6** | **35** | **0,1** | **0,12** | **0,14** | **0,18** | **0,2** | **0,25** | **14** | 0,1 | 0,12 | 0,14 | 0,18 | 0,2 | 0,25 |
| **3.7** | **35** | **0,1** | **0,12** | **0,14** | **0,18** | **0,2** | **0,25** | **14** | 0,1 | 0,12 | 0,14 | 0,18 | 0,2 | 0,25 |
| **3.8** | **35** | **0,1** | **0,12** | **0,14** | **0,18** | **0,2** | **0,25** | **14** | 0,1 | 0,12 | 0,14 | 0,18 | 0,2 | 0,25 |
| **4.1** | **80** | **0,1** | **0,12** | **0,14** | **0,18** | **0,22** | **0,26** | 42 | 0,08 | 0,1 | 0,12 | 0,14 | 0,18 | 0,22 |
| **4.2** | **80** | **0,1** | **0,12** | **0,14** | **0,18** | **0,22** | **0,26** | 42 | 0,08 | 0,1 | 0,12 | 0,14 | 0,18 | 0,22 |
| **4.3** | **80** | **0,1** | **0,12** | **0,14** | **0,18** | **0,22** | **0,26** | 42 | 0,08 | 0,1 | 0,12 | 0,14 | 0,18 | 0,22 |
| **4.4** | **60** | **0,1** | **0,12** | **0,14** | **0,18** | **0,22** | **0,26** | | | | | | | |
| **4.5** | **60** | **0,1** | **0,12** | **0,14** | **0,18** | **0,22** | **0,26** | | | | | | | |
| **4.6** | **70** | **0,12** | **0,14** | **0,18** | **0,2** | **0,24** | **0,30** | 42 | 0,1 | 0,12 | 0,14 | 0,18 | 0,2 | 0,24 |
| **4.7** | **70** | **0,12** | **0,14** | **0,18** | **0,2** | **0,24** | **0,30** | 42 | 0,1 | 0,12 | 0,14 | 0,18 | 0,2 | 0,24 |
| **4.8** | **70** | **0,12** | **0,14** | **0,18** | **0,2** | **0,24** | **0,30** | 42 | 0,1 | 0,12 | 0,14 | 0,18 | 0,2 | 0,24 |
| **4.9** | **70** | **0,12** | **0,14** | **0,18** | **0,2** | **0,24** | **0,30** | 42 | 0,1 | 0,12 | 0,14 | 0,18 | 0,2 | 0,24 |
| **4.10** | **70** | **0,12** | **0,14** | **0,18** | **0,2** | **0,24** | **0,30** | 42 | 0,1 | 0,12 | 0,14 | 0,18 | 0,2 | 0,24 |
| **4.11** | **70** | **0,12** | **0,14** | **0,18** | **0,2** | **0,24** | **0,30** | 42 | 0,1 | 0,12 | 0,14 | 0,18 | 0,2 | 0,24 |
| **4.12** | **70** | **0,12** | **0,14** | **0,18** | **0,2** | **0,24** | **0,30** | 42 | 0,1 | 0,12 | 0,14 | 0,18 | 0,2 | 0,24 |
| **4.13** | **70** | **0,12** | **0,14** | **0,18** | **0,2** | **0,24** | **0,3** | 42 | 0,12 | 0,14 | 0,18 | 0,20 | 0,24 | 0,30 |
| **4.14** | **70** | **0,12** | **0,14** | **0,18** | **0,2** | **0,24** | **0,30** | 42 | 0,12 | 0,14 | 0,18 | 0,20 | 0,24 | 0,30 |
| **4.15** | **25** | **0,1** | **0,12** | **0,14** | **0,18** | **0,2** | **0,25** | | | | | | | |
| **4.16** | | | | | | | | | | | | | | |
| **4.17** | **25** | **0,1** | **0,12** | **0,14** | **0,18** | **0,2** | **0,25** | | | | | | | |
| **4.18** | **15** | **0,05** | **0,06** | **0,07** | **0,08** | **0,09** | **0,12** | | | | | | | |
| **4.19** | **15** | **0,05** | **0,06** | **0,07** | **0,08** | **0,09** | **0,12** | | | | | | | |
| **5.1** | 25 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 | 10 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 |
| **5.2** | 25 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 | 10 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 |
| **5.3** | 25 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 | 10 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 |
| **5.4** | 25 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 | 10 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 |
| **5.5** | 25 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 | 10 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 |
| **5.6** | 25 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 | 10 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 |
| **5.7** | 25 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 | 10 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 |
| **5.8** | 25 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 | 10 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 |
| **5.9** | 25 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 | | | | | | | |
| **5.10** | 15 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 | | | | | | | |
| **5.11** | 15 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 | | | | | | | |
| **6.1** | 12 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 | | | | | | | |
| **6.2** | 8 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 | | | | | | | |
| **6.3** | 8 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 | | | | | | | |
| **6.4** | 8 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,12 | | | | | | | |
| **6.5** | | | | | | | | | | | | | | |

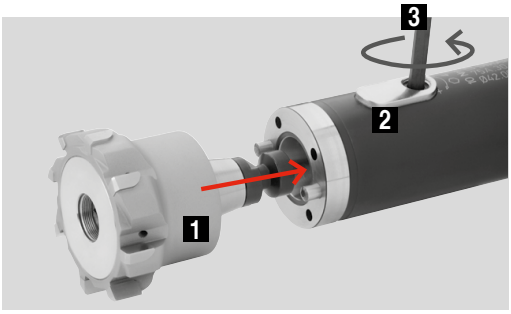
The cutting data depends on the external conditions, e.g. stability of the tools and tool clamping, material and machine type.
The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

# REAMAX TS – Assembly instructions

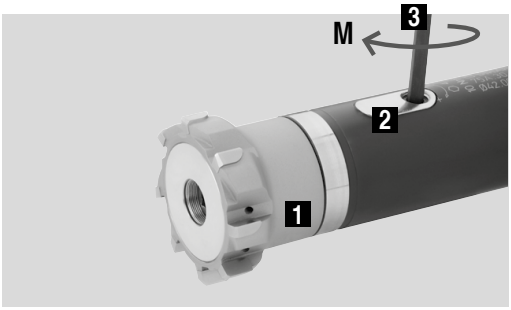



Clean the Morse taper adapter/face contact → grease-free.
Screw the pull stud (5) into the reaming head and tighten using the open-ended spanner (6).



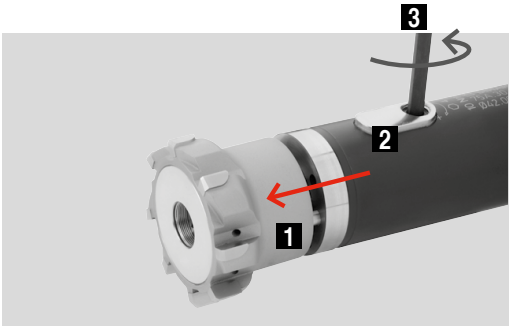



Use key (3) to open jaws (2), but do not fully release, and insert reaming head (1).

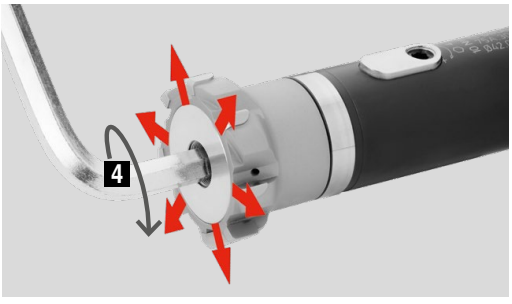



Use the key (3) to close the jaws (2), observe the recommended tightening torque. When inserting the reaming head (1), this is pulled into its final position when the jaws (2) are closed.

| x Range | Tightening torque (M) |
|---|---|
| 18,000 – 19,999 | 1,5 Nm |
| 20,000 – 21,999 | 2,5 Nm |
| 22,000 – 26,999 | 4 Nm |
| 27,000 – 34,999 | 5 Nm |
| 35,000 – 41,999 | 6 Nm |
| 42,000 – 51,999 | 10 Nm |
| 52,000 – 70,000 | 13 Nm |




When removing the reamer head (1), this is pressed out of its position by the jaws (2) and can thus be easily removed from the holder:
Use key (3) to open the jaws (2) but do not fully release, and remove reamer head (1).



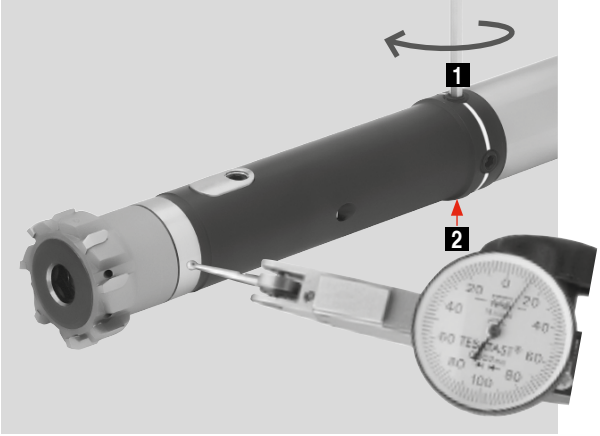

Adjustment for wear compensation:
The smallest drilling tolerances up to IT 4 can be achieved through adjustment with the hex key (4).

# REAMAX TS – Operating instructions

## Aligning the DAH Zero holder

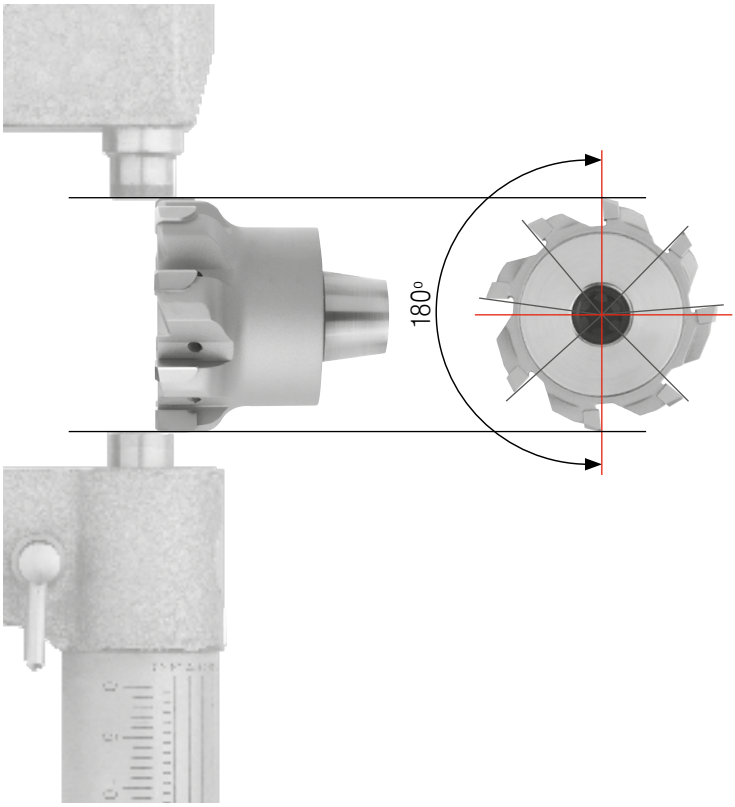
The tool is recommended for radial alignment of max. 20 µm.

1. Loosen all adjustment screws and pre-load with 1 Nm (new tools are already supplied like this).
2. Place dial gauge with µm display on the ground bezel diameter.
3. Turn the tool to determine the point with the largest runout error using the dial gauge.
4. Adjust the corresponding adjustment screw with the hex key clockwise (1) until half the runout error has been corrected. In doing so, over-tighten by approx. 5 µm.
5. Release the opposite adjustment screw (2) by the over-tightened amount.
6. Adjust all 4 adjustment screws until the runout is < 2 µm.



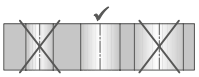

Please note:
- the runout must be checked and if necessary re-aligned after an adapter changeover, change of application, after any adjustment for wear compensation and before every re-commissioning, using adjustment steps 1 to 6
- adjustment screws must always be tightened during usage with at least 1 Nm
- the max. re-adjustment torque is 4,5 Nm

Caution!
- uneven angle distribution!
- there are 2 cutting edges 180° opposite each other = measuring teeth
- measure the diameter at the front on the cutting edge (due to back taper, see diagram)
- avoid damage to the cutting edge



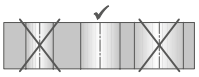
# Problems / possible causes / solutions





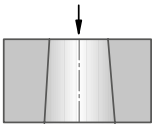
## Hole too large

- runout error for reamer in the spindle → use DAH compensation system and correct runout
- inaccurate alignment, reamer back-cuts → correct alignment and use DPS floating holder
- built-up edge → reduce cutting speed $v_c$ for uncoated carbide cutting material, increase it for DST and coated cutting material or increase the oil content of the coolant
- reamer too large → have reamer adapted



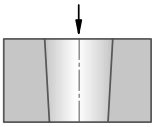
## Hole too small

- worn reamer → have reamer adjusted, replaced or repaired
- reaming allowance too small → increase reaming allowance
- cutting force too high → reduce feed or select other lead geometry (ASG)
- reamer too small → have reamer adjusted, replaced or repaired



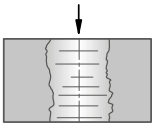
## Conical hole, tapered backwards

- inaccurate alignment → correct alignment and use DPS floating holder
- misalignment between headstock and turret → correct turret and use DPS floating holder



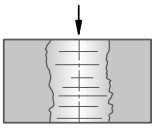
## Conical hole, tapered forwards

- poor alignment, cutting edges push initially → correct alignment and use DPS floating holder



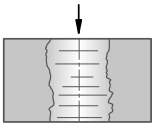
## Hole is not round

- reamer runout error too large → correct the runout with DAH compensation system
- alignment error → correct alignment error and use DPS floating holder
- asymmetric initial cutting through angled entry surface → countersink hole
- workpiece tensioning → correct clamping of the workpieces
- poor pre-machining → optimise pre-machining
- feed too high → reduce feed



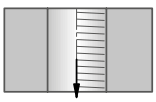
## Hole exhibits chatter marks

- cutting speed $v_c$ too high → reduce cutting speed
- OAL to DC ratio too high→ reduce the speed of entry, pilot the bore or select other lead geometry (ASG)



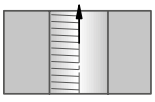
## Non clean-up

- built-up edge → reduce cutting speed $v_c$ for uncoated carbide cutting material, increase it for DST and coated cutting material or increase the oil content of the coolant
- cutting edge worn→ have cutting edge repaired or replace the tool
- reamer runout error → correct the runout with DAH compensation system
- no or insufficient cooling, chips are getting trapped → use thro' coolant supply and increase coolant pressure
- unsuitable coolant → increase the oil content of the coolant
- incorrect cutting data→ use data according to catalogue recommendation



## Grooves in the hole "feed marking"

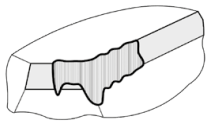
- faulty cutting edge (edge breakage) → have reamer replaced or repaired
- built-up edges → reduce cutting speed $v_c$ for uncoated carbide cutting material, increase it for DST and coated cutting material or increase the oil content of the coolant



## Grooves in the hole "retraction marking"

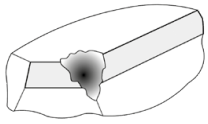
- cutting edges moved too far out of the hole → move no more than lead length + 2 mm out of the hole
- material springs back → do not retract at high speed but with increased (2-3 times) feed rate

# Types of wear



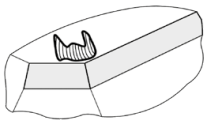
## Wear on clearance face

Reduce the cutting speed and select a more wear resistant cutting material or coating.



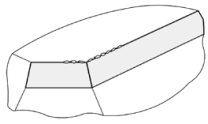
## Cutting edge breakage

Reduce feed and reaming allowance. In the case of interrupted holes, use coated carbide instead of DST.



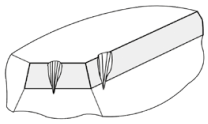
## Cratering

Reduce the cutting speed and use a positive cutting edge geometry.



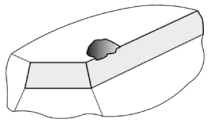
## Edge breakages

Increase the cutting speed and use larger rake angle.



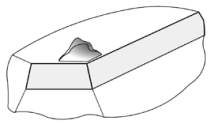
## Notch wear

Reduce the cutting speed and select a more wear resistant cutting material or coating.



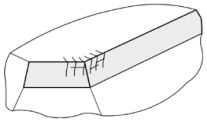
## Fatigue fracture

Reduce feed, increase reamer stability.



## Built-up edge

Use positive cutting edge geometry, increase the oil content of the coolant, reduce the cutting speed $v_c$ for uncoated carbide cutting material, increase it for DST and coated cutting material.



## Cracks at right angles to the cutting edge

Use sufficient coolant and thro' coolant, reduce the cutting speed.

# Tolerance classes covered with 1/100 reamer

The most common tolerance is H7, so most reamers configured for an H7 fit tolerance.
With the 1/100 reamers, increments of 0,01 mm can be covered, but are also suitable for various other dimensions.
For example, a 1/100 reamer diameter 8,02 mm can be used for a 8,0 fit F7.
Other fit sizes shown in the table.

| Tolerance zone | Nominal Ø in mm | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1,0 | 2,0 | 3,0 | 4,0 | 5,0 | 6,0 | 7,0 | 8,0 | 9,0 | 10,0 | 11,0 | 12,0 |
| A9 | | | | 4,29 | 5,29 | 6,29 | 7,30 | 8,30 | 9,30 | 10,30 | 11,32 | 12,32 |
| A11 | 1,31 | 2,31 | 3,31 | 4,32 | 5,32 | 6,32 | 7,35 | 8,35 | 9,35 | 10,35 | 11,37 | 12,37 |
| B8 | | | | 4,15 | 5,15 | 6,15 | 7,16 | 8,16 | 9,16 | 10,16 | | |
| B9 | | | | 4,16 | 5,16 | 6,16 | 7,17 | 8,17 | 9,17 | 10,17 | 11,18 | 12,18 |
| B10 | 1,17 | 2,17 | 3,17 | 4,17 | 5,17 | 6,17 | 7,19 | 8,19 | 9,19 | 10,19 | 11,20 | 12,20 |
| B11 | 1,18 | 2,18 | 3,18 | 4,19 | 5,19 | 6,19 | 7,22 | 8,22 | 9,22 | 10,22 | 11,23 | 12,23 |
| C8 | | | | 4,08 | 5,08 | 6,08 | 7,09 | 8,09 | 9,09 | 10,09 | 11,11 | 12,11 |
| C9 | 1,07 | 2,07 | 3,07 | 4,09 | 5,09 | 6,09 | 7,10 | 8,10 | 9,10 | 10,10 | 11,12 | 12,12 |
| C10 | 1,09 | 2,09 | 3,09 | 4,10 | 5,10 | 6,10 | 7,12 | 8,12 | 9,12 | 10,12 | 11,14 | 12,14 |
| C11 | 1,10 | 2,10 | 3,10 | 4,12 | 5,12 | 6,12 | 7,15 | 8,15 | 9,15 | 10,15 | 11,18 | 12,18 |
| D7 | | | | | | | | | | | 11,06 | 12,06 |
| D8 | | | | 4,04 | 5,04 | 6,04 | 7,05 | 8,05 | 9,05 | 10,05 | 11,06 | 12,06 |
| D9 | | | | 4,05 | 5,05 | 6,05 | 7,06 | 8,06 | 9,06 | 10,06 | 11,08 | 12,08 |
| D10 | 1,05 | 2,05 | 3,05 | 4,06 | 5,06 | 6,06 | 7,08 | 8,08 | 9,08 | 10,08 | 11,10 | 12,10 |
| D11 | 1,06 | 2,06 | 3,06 | 4,08 | 5,08 | 6,08 | 7,10 | 8,10 | 9,10 | 10,10 | 11,13 | 12,13 |
| E7 | | | | | | | 7,03 | 8,03 | 9,03 | 10,03 | 11,04 | 12,04 |
| E8 | 1,02 | 2,02 | 3,02 | 4,03 | 5,03 | 6,03 | 7,04 | 8,04 | 9,04 | 10,04 | 11,05 | 12,05 |
| E9 | 1,03 | 2,03 | 3,03 | 4,04 | 5,04 | 6,04 | 7,05 | 8,05 | 9,05 | 10,05 | 11,06 | 12,06 |
| F7 | 1,01 | 2,01 | 3,01 | | | | 7,02 | 8,02 | 9,02 | 10,02 | 11,02 | 12,02 |
| F8 | 1,01 | 2,01 | 3,01 | 4,02 | 5,02 | 6,02 | 7,02 | 8,02 | 9,02 | 10,02 | 11,03 | 12,03 |
| F9 | 1,02 | 2,02 | 3,02 | 4,03 | 5,03 | 6,03 | 7,03 | 8,03 | 9,03 | 10,03 | 11,04 | 12,04 |
| F10 | | | | 4,04 | 5,04 | 6,04 | 7,05 | 8,05 | 9,05 | 10,05 | 11,07 | 12,07 |
| G7 | | | | 4,01 | 5,01 | 6,01 | 7,01 | 8,01 | 9,01 | 10,01 | | |
| H7 | | | | | | | | | | 10,01 | 11,01 | 12,01 |
| H8 | | | | 4,01 | 5,01 | 6,01 | 7,01 | 8,01 | 9,01 | 10,01 | 11,02 | 12,02 |
| H9 | 1,01 | 2,01 | 3,01 | 4,02 | 5,02 | 6,02 | 7,02 | 8,02 | 9,02 | 10,02 | 11,03 | 12,03 |
| H10 | 1,03 | 2,03 | 3,03 | 4,03 | 5,03 | 6,03 | 7,04 | 8,04 | 9,04 | 10,04 | 11,05 | 12,05 |
| H11 | 1,04 | 2,04 | 3,04 | 4,05 | 5,05 | 6,05 | 7,06 | 8,06 | 9,06 | 10,06 | 11,08 | 12,08 |
| H12 | 1,07 | 2,07 | 3,07 | 4,08 | 5,08 | 6,08 | 7,10 | 8,10 | 9,10 | 10,10 | 11,13 | 12,13 |
| H13 | 1,11 | 2,11 | 3,11 | 4,14 | 5,14 | 6,14 | 7,18 | 8,18 | 9,18 | 10,18 | 11,22 | 12,22 |
| J6 | | | | 4,00 | 5,00 | 6,00 | 7,00 | 8,00 | 9,00 | 10,00 | 11,00 | 12,00 |
| J7 | | | | 4,00 | 5,00 | 6,00 | 7,00 | 8,00 | 9,00 | 10,00 | 11,00 | 12,00 |
| J8 | 1,00 | 2,00 | 3,00 | 4,00 | 5,00 | 6,00 | 7,00 | 8,00 | 9,00 | 10,00 | 11,00 | 12,00 |
| JS7 | | | | 4,00 | 5,00 | 6,00 | 7,00 | 8,00 | 9,00 | 10,00 | 11,00 | 12,00 |
| JS8 | 1,00 | 2,00 | 3,00 | 4,00 | 5,00 | 6,00 | 7,00 | 8,00 | 9,00 | 10,00 | 11,00 | 12,00 |
| JS9 | 1,00 | 2,00 | 3,00 | 4,00 | 5,00 | 6,00 | 7,00 | 8,00 | 9,00 | 10,00 | 11,01 | 12,01 |
| K8 | 0,99 | 1,99 | 2,99 | | | | 6,99 | 7,99 | 8,99 | 9,99 | 10,99 | 11,99 |
| M6 | | | | | | | 6,99 | 7,99 | 8,99 | 9,99 | 10,99 | 11,99 |
| M7 | | | | | | | 6,99 | 7,99 | 8,99 | 9,99 | 10,99 | 11,99 |
| M8 | 0,99 | 1,99 | 2,99 | 3,99 | 4,99 | 5,99 | 6,99 | 7,99 | 8,99 | 9,99 | 10,99 | 11,99 |
| N6 | | | | 3,99 | 4,99 | 5,99 | | | | | | |
| N7 | 0,99 | 1,99 | 2,99 | 3,99 | 4,99 | 5,99 | 6,99 | 7,99 | 8,99 | 9,99 | 10,99 | 11,99 |
| N8 | 0,99 | 1,99 | 2,99 | 3,99 | 4,99 | 5,99 | 6,99 | 7,99 | 8,99 | 9,99 | 10,98 | 11,98 |
| N9 | 0,98 | 1,98 | 2,98 | 3,99 | 4,99 | 5,99 | 6,99 | 7,99 | 8,99 | 9,99 | 10,98 | 11,98 |
| N10 | 0,98 | 1,98 | 2,98 | 3,98 | 4,94 | 5,98 | 6,98 | 7,98 | 8,98 | 9,98 | 10,98 | 11,98 |
| N11 | 0,98 | 1,98 | 2,98 | 3,98 | 4,94 | 5,98 | 6,98 | 7,98 | 8,98 | 9,98 | 10,97 | 11,97 |
| P6 | 0,99 | 1,99 | 2,99 | | | | | | | | 10,98 | 11,98 |
| P7 | 0,99 | 1,99 | 2,99 | | | | 6,98 | 7,98 | 8,98 | 9,98 | 10,98 | 11,98 |
| P8 | 0,99 | 1,99 | 2,99 | 3,98 | 4,98 | 5,98 | | | | | 10,97 | 11,97 |
| R6 | | | | | | | 6,98 | 7,98 | 8,98 | 9,98 | | |
| R7 | | | | 3,98 | 4,98 | 5,98 | 6,98 | 7,98 | 8,98 | 9,98 | 10,97 | 11,97 |
| S6 | | | | 3,98 | 4,98 | 5,98 | | | | | 10,97 | 11,97 |
| S7 | 0,98 | 1,98 | 2,98 | 3,98 | 4,98 | 5,98 | 6,97 | 7,97 | 8,97 | 9,97 | 10,97 | 11,97 |
| U6 | | | | | | | 6,97 | 7,97 | 8,97 | 9,97 | | |
| U7 | | | | 3,97 | 4,97 | 5,97 | 6,97 | 7,97 | 8,97 | 9,97 | | |
| X7 | | | | 3,97 | 4,97 | 5,97 | | | | | | |
| X8 | 0,97 | 1,97 | 2,97 | | | | 6,96 | 7,96 | 8,96 | 9,96 | 10,95 | 11,95 |
| X9 | 0,97 | 1,97 | 2,97 | 3,96 | 4,96 | 5,96 | 6,95 | 7,95 | 8,95 | 9,95 | | |
| Z7 | 0,97 | 1,97 | 2,97 | 3,96 | 4,96 | 5,96 | 6,96 | 7,96 | 8,96 | 9,96 | 10,95 | 11,95 |
| Z8 | 0,97 | 1,97 | 2,97 | 3,96 | 4,96 | 5,96 | 6,95 | 7,95 | 8,95 | 9,95 | 10,94 | 11,94 |
| Z9 | | | | 3,95 | 4,95 | 5,95 | | | | | | |
| Z10 | 0,96 | 1,96 | 2,96 | 3,95 | 4,95 | 5,95 | 6,94 | 7,94 | 8,94 | 9,94 | 10,93 | 11,93 |
| ZA7 | 0,96 | 1,96 | 2,96 | 3,95 | 4,95 | 5,95 | 6,94 | 7,94 | 8,94 | 9,94 | | |
| ZA8 | | | | | | | 6,94 | 7,94 | 8,94 | 9,94 | 10,93 | 11,93 |
| ZB8 | 0,95 | 1,95 | 2,95 | 3,94 | 4,94 | 5,94 | | | | | 10,90 | 11,90 |
| ZB9 | 0,95 | 1,95 | 2,95 | 3,94 | 4,94 | 5,94 | 6,92 | 7,92 | 8,92 | 9,92 | 10,90 | 11,90 |

# Coatings

**AlTiN**
- ▲ AlTiN nanolayer coating
- ▲ maximum application temperature: 1100 °C

**Ti700**
- ▲ TiAlN multilayer coating
- ▲ maximum application temperature: 1100 °C

**DBC**
**DLC**
- ▲ diamond-like carbon coating
- ▲ specially for machining non-ferrous metals
- ▲ maximum application temperature: 400 °C

**DBG-P**
**TiAlN**
- ▲ TiAlN multilayer coating
- ▲ maximum application temperature: 900 °C

**Ti50**
- ▲ TiN multilayer coating
- ▲ maximum application temperature: 400 °C

**TiN**
**CWN10**
- ▲ TiN coating
- ▲ maximum application temperature: 450 °C

**TPX76S**
- ▲ TiN-TiAlN-ZrN Monolayer coating
- ▲ maximum application temperature: 800 °C

# Type

**AMZ**
- ▲ carbide, TiAlN-coated
- ▲ ISO | P10 | K10 | **N10** | S10
- ▲ the coated carbide grade for aluminium machining

**CWN15**
- ▲ carbide, TiN-coated
- ▲ ISO | **K15**
- ▲ special carbide grade for abrasive aluminium alloys

**DST**
**CWC10**
- ▲ cermet, uncoated
- ▲ ISO | **P15** | **M10** | K10
- ▲ the uncoated cermet grade for finish machining stainless and hardened steel
- ▲ particularly wear resistant thanks to high heat resistance

**CWN 2135**
- ▲ carbide, TiCN-TiNB-coated
- ▲ ISO | P35 | **M30** | S35
- ▲ the turning grade for general stainless machining

**CWK10**
- ▲ carbide, uncoated
- ▲ ISO | **K10**
- ▲ the uncoated carbide grade for universal application

**DCX3110**
- ▲ carbide, TiCN-$Al_2O_3$-coated
- ▲ ISO | P05 | **K10**
- ▲ the wear-resistant grade for machining cast iron materials at high cutting speeds in a continuous cut

**CWK15**
- ▲ carbide, uncoated
- ▲ ISO | **K15** | **N15**
- ▲ the uncoated carbide grade for machining aluminium and other non-ferrous metals

**HCR1135**
- ▲ carbide, TiCN-$Al_2O_3$-coated
- ▲ ISO | **P35** | M25 | S25
- ▲ the tough alternative for heavily interrupted cut and unstable conditions

**TiN**
**CWN10**
- ▲ carbide, TiN-coated
- ▲ ISO | **K10**
- ▲ the carbide grade for machining steels, stainless steels and non-ferrous metals

**HCX1125**
- ▲ carbide, TiCN-$Al_2O_3$-coated
- ▲ ISO | P25 | M20 | **K30**
- ▲ the first choice for universal machining of steels