

New products for machining technicians

NEW Fullmax high-performance reamers – short



- ▲ Solid carbide high-performance reamers in short version
- ▲ Type UNI
- ▲ Maximum efficiency in all materials
- ▲ Available as standard H7, as 1/100 and as a configurable variant

→ Page [23-28](#)

NEW NC machine reamer – Type H



- ▲ Solid carbide NC machine reamers for hardened materials
- ▲ Standard shank DIN 6535 HA

→ Page [43+44](#)

NEW Insert countersink 60°/90°



- ▲ Indexable insert countersink for producing 60° and 90° countersinks
- ▲ Ideally suited for use with TOHX indexable inserts

→ Page [55+56](#)

NEW TOHX indexable inserts



BK8425

- ▲ Grade for universal use



K10

- ▲ Grade for use in non-ferrous metals and highly heat-resistant materials

→ Page [57](#)



Solid drilling and bore machining

1 HSS drilling

2 Solid carbide drilling

3 Indexable insert drilling

4 Reaming and Countersinking

5 Spindle Tooling

Threading

6 Taps and thread formers

7 Circular and Thread Milling

8 Thread turning

Turning

9 Turning Tools

10 Multifunctional Tools –
EcoCut and FreeTurn

11 Grooving Tools

12 Miniature turning tools

Milling

13 HSS Milling Cutters

14 Solid Carbide milling cutters

15 Milling tools with indexable
inserts

Catalogue –
Clamping technology

16 Adaptors and Accessories

17 Workpiece clamping

18 Material examples and
article no. Index

Table of contents

Symbol explanation	2
Reamers overview	3
Reamers Toolfinder	4+5
Contents overview – Countersinks	6
Product range – Reamers	
Solid carbide – High speed reamers	7–38
Solid carbide – Reamers	39–44
HSS – Reamers	45–52
Product range – Countersinks	
Technical Information	
Cutting Data	66–97
REAMAX TS assembly and operating instructions	98+99
Problems / possible causes / solutions	100
Types of wear	101
Cutting edge geometries and surface quality	102
Tolerance classes covered with 1/100 reamer	103
Manufacturer's tolerance and coatings	104
Chip Breaker Types and Grade Overview	105

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.

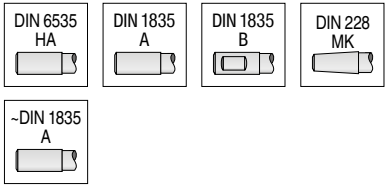
KOMET \ Standard

Quality tools for standard applications.

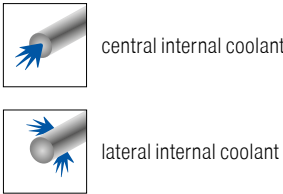
The quality tools of the **KOMET Standard** product line are high quality, high performance, reliable and enjoy the highest level of trust among our customers worldwide. Tools from this product line are the first choice for many standard applications and guarantee optimal results.

Symbol explanation

Shank

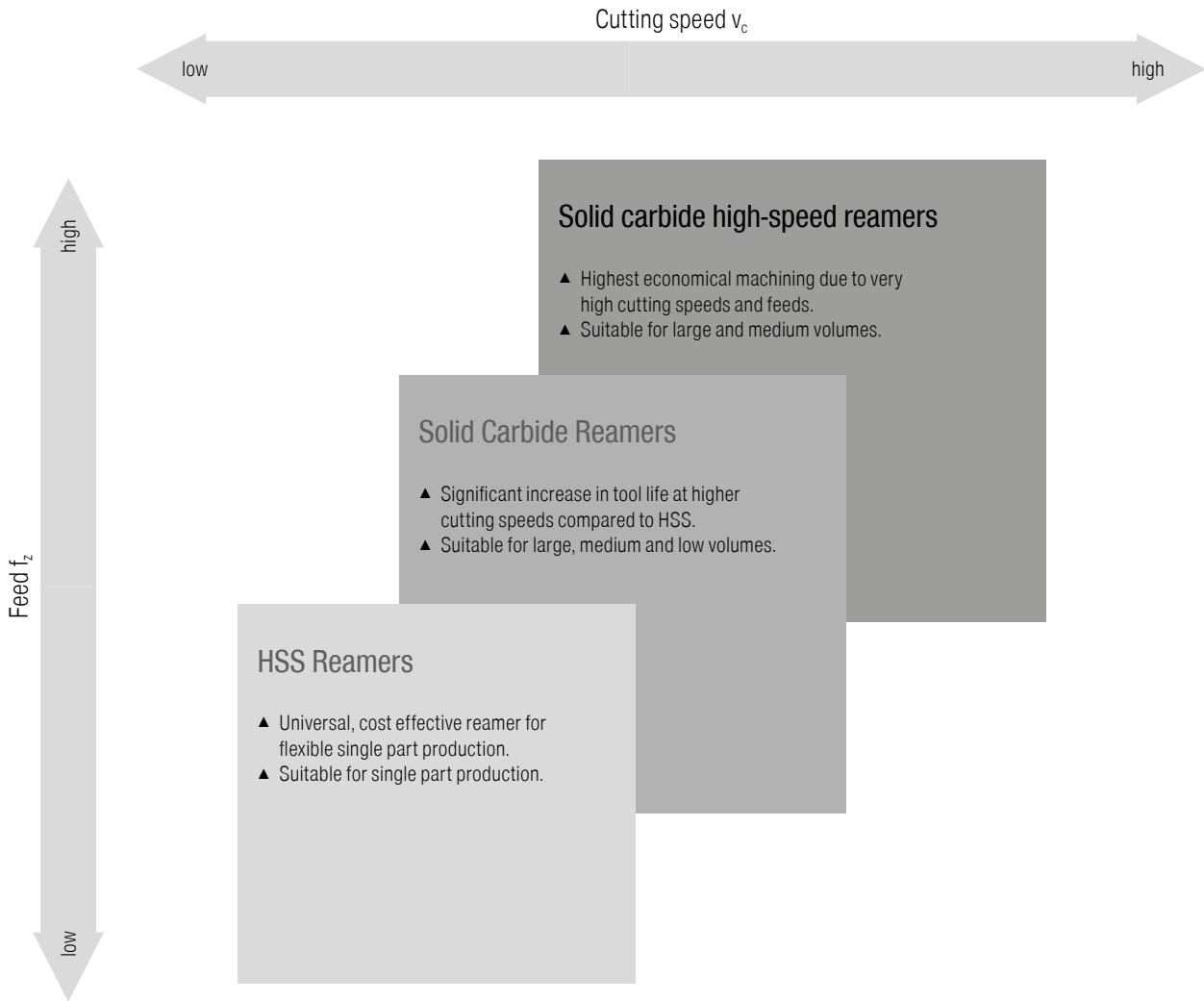


Coolant supply version



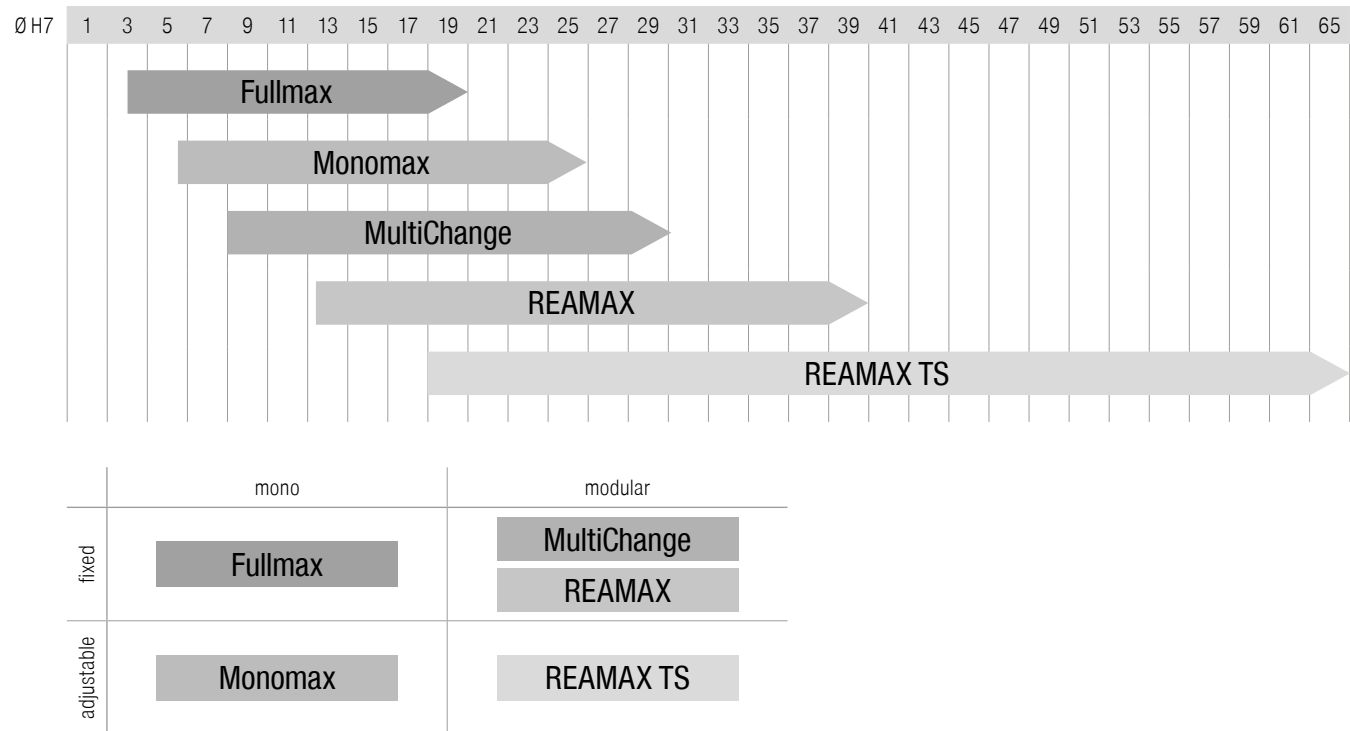
- ZEFP = Number of flutes
- = Main Application
 - = Extended application

Toolfinder – Reamers



4

Overview of solid carbide high-speed reamers

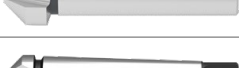


Toolfinder – Reamers

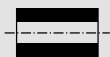
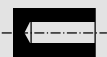
Solid carbide – high speed reamers	REAMAXTS			▲ highly flexible and economical replaceable head system ▲ all common materials ▲ can be adjusted in μm range
	REAMAX			▲ holder available in 3xD and 5xD ▲ holder type DAH Zero available in 3xD and 5xD
	MultiChange			▲ exchange head system, optimised for use with air mist coolant (MMS) ▲ face and taper contact giving run out accuracy $\leq 2 \mu\text{m}$
	Monomax			▲ flexible quick change system for reaming, countersinking and chamfering ▲ face and taper contact giving run out accuracy $\leq 5 \mu\text{m}$
	Fullmax			▲ adjustable monoblock reamer in 3xD and 5xD ▲ regrinding and re-tipping on the base body ▲ all common materials
Solid carbide – Reamers	NC	NC 100		▲ universal solid carbide reamer without thro' coolant ▲ extremely irregular pitch ▲ DIN 6535 HA shank
	NC	NC 100H		▲ Solid carbide reamer without thro' coolant suitable for use in hardened materials ▲ Standard shank ~ DIN 6535 HA
	N			▲ universal solid carbide reamer without thro' coolant ▲ extremely irregular pitch
HSS – Reamers	NC	NC 100		▲ HSS-E NC machine reamer ▲ 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 ▲ 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 Non metal materials P M K N S H O	KOMET \ Performance	KOMET \ Standard
			18,00–65,00	H7	✓	✓	✓	● ● ● ● ○	7–9	
				1/100						
							✓		10+11	
			12,50–40,00	H7	✓	✓	✓	● ● ● ● ● ○	12+13	
				1/100						
							✓		14	
			8,00–30,20	H7	✓	✓	✓	● ● ● ●	15–17	→ Catalogue – Clamping technology, Chapter 16
				1/100						
	short	5,60–25,89	H7	✓	✓	✓	● ● ● ● ○	18–20		
			1/100							
	long	5,60–25,89	H7	✓	✓	✓	● ● ● ● ○	21+22		
			1/100							
	short	4,00–16,00	H7	✓	✓	✓	● ● ● ○ ○ ○	23–28		
		2,96–20,05	1/100							
	long	4,00–16,00	H7	✓	✓	✓	● ● ● ● ○ ● ○	29–38		
		2,96–20,05	1/100							
			2,00–30,00	H7	✓			● ○ ● ● ○ ○ ●	39–41	
			0,59–12,05	1/100						
			0,98–12,05	H7	✓	✓		○ ○ ○ ●	43+44	
			2,00–12,00	H7	✓			● ○ ○ ● ○		42
			1,50–20,00	H7	✓			● ● ● ●	45+46	
			0,95–12,00	1/100						
			1,00–20,00	H7	✓			● ○ ● ● ○ ●	47–49	
			0,95–12,00	1/100						
			1,00–20,00	H7	✓			● ● ○	50	
			4,00–20,00	H7	✓			● ○ ● ● ○ ●	50+51	
			3,76–12,00	1/100						
			16,00–50,00	H7	✓			● ○ ● ● ○ ●	52	
			1,00–40,00	H7	✓			● ○ ● ● ○ ●		52

Countersinks Overview

	Tool type	Coating	Hole diameter in mm Ø DC	Point angle	Steel P	Stainless steel M	Cast iron K	Non ferrous metals N	Heat resistant S	hardened materials H	Non metal materials O	KOMET \ Performance	KOMET \ Standard
Indexable Insert Counterbore Tool													
	WPS		15,0–33,0		●	●	●	●	●			53+54	
	WPS		16,5–25,5 19,0–37,0	60° 90°	●	●	●	●	●			55–57	
HSS – Counterbores													
			6,0–20,0		●	●	●	●	○		●	58	
Solid Carbide Countersinks													
	N	TPX76S	6,3–31,0	90°	●	○	●	●	○	○	○	59	
	N		12,5–25,0	60°	●	○	●	●	○	○		60	
	N		10,4–31,0	90°	●	○	●	●	○	○		60	
HSS Countersinks													
			6,3–25,0	60°	●	○	●	●	○		●	63	
			16,0–80,0	60°	●	○	●	●	○		●	63	
	N	Ti50	4,3–31,0	90°	●	○	●	●	○	○	○	61	
	N		4,3–31,0	90°	●	○	●	●	○		●	62	
	N	TiN	5,0–31,0	90°	●	○	●	●	○	○	●	62	
	N	TiAlN	5,0–31,0	90°	●	○	●	●	○	○	●	62	
	VA	TiAlN	6,3–31,0	90°	○	●	○	○	○	○	●	62	
	AL		6,3–31,0	90°	○	○	○	●	○		●	62	
	N		16,5–80,0	90°	●	○	●	●	○		●	64	
			6,3–25,0	120°	●	○	●	●	○		●	64	
HSS – Hand deburrer													
			12,4–25,0	90°	●	○	●	●	○	○	●	65	
Deburring Countersink													
		blank/ TiN	6,3–35,0	90°	●	○	●	●	○	○	●	65	

REAMAX TS – Selection guide

Ø			18 – 65 mm								
KOMET no.			75J.93	75J.93	75J.65	75J.17	75H.17	75H.93	75H.65	75H.65	75H.71
Lead angle			ASG4000	ASG3000	ASG0106	ASG0706	ASG0706	ASG3000	ASG3000	ASG0106	ASG3000
Lead angle			25°	45°	45°	45°/8°	45°/8°	45°	45°	45°	45°
Grade / coating			DST	DST	DBG-P	DBC	DBC	DST	DBG-P	DBG-P	TiN
Article no.			40 597	40 544	40 521	40 526	40 580	40 539	40 585	40 571	40 535
Preferred type available			✓	✓	✓			✓		✓	
Application			Through hole 				Blind hole 				
Material sub-group		Index									
P	Non alloyed steel	P.1.1	●	●				●	●		○
		P.1.2									
		P.1.3									
		P.1.4									
		P.1.5									
	Low alloyed steel	P.2.1									
		P.2.2									
		P.2.3									
		P.2.4									
	High-alloy steel and high-alloy tool steel	P.3.1									
		P.3.2									
		P.3.3									
Stainless steel	P.4.1										
	P.4.2										
M	Stainless steel	M.1.1			●					●	
		M.2.1									
		M.3.1									
K	Grey cast iron	K.1.1							●		●
		K.1.2									
	Spherulitic graphite cast iron	K.2.1	●	●				●	●		
		K.2.2									
	Malleable iron	K.3.1		●				●	●		
		K.3.2									
N	Aluminum alloys	N.1.1									
		N.1.2									
	Cast Aluminium Alloys	N.2.1				●	●				
		N.2.2									
		N.2.3									
	Copper and copper alloys (Bronze, Brass)	N.3.1		○					○		●
		N.3.2									
		N.3.3									
	Magnesium alloys	N.4.1				●	●				
O	Non metal materials	O.1.1									
		O.1.2									
		O.2.1									
		O.2.2									
		O.3.1									

* for drilling with interrupted cut use coated HM-reamers

Applications:

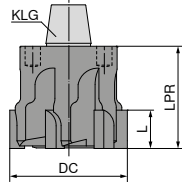
Main application

Additional range of application

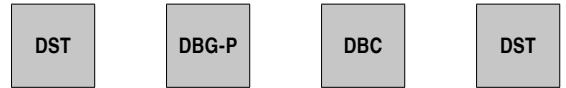
●
○

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



75J.93 ◁ 25° ASG4000 CERMET Through hole	75J.65 ◁ 45° ASG0106 HM Through hole	75J.17 ◁ 45/8° ASG0706 HM Through hole	75J.93 ◁ 45° ASG3000 CERMET Through hole
--	--	--	--

DC _{H7} mm	L mm	LPR mm	ZEFP	KLG	40 597 ...		40 521 ...		40 526 ...		40 544 ...	
					£ U3		£ U3		£ U3		£ U3	
18,00	6	20	6	1	323.47	18000	323.47	18000	323.47	18000	323.47	18000
18,01 - 19,99	6	20	6	1	693.34	xxxx ¹⁾	693.34	xxxx ¹⁾	693.34	xxxx ²⁾	693.34	xxxx ¹⁾
20,00	6	20	6	2	331.72	20000	331.72	20000	331.72	20000	331.72	20000
20,01 - 21,99	6	20	6	2	812.90	xxxx ¹⁾	812.90	xxxx ¹⁾	812.90	xxxx ²⁾	812.90	xxxx ¹⁾
22,00	6	20	6	3	337.90	22000	337.90	22000	337.90	22000	337.90	22000
22,01 - 23,99	6	20	6	3	845.69	xxxx ¹⁾	845.69	xxxx ¹⁾	845.69	xxxx ²⁾	845.69	xxxx ¹⁾
24,00	6	20	6	3	348.20	24000	348.20	24000	348.20	24000	348.20	24000
24,01 - 24,99	6	20	6	3	845.69	xxxx ¹⁾	845.69	xxxx ¹⁾	845.69	xxxx ²⁾	845.69	xxxx ¹⁾
25,00	6	20	6	3	348.20	25000	348.20	25000	348.20	25000	348.20	25000
25,01 - 25,99	6	20	6	3	845.69	xxxx ¹⁾	845.69	xxxx ¹⁾	845.69	xxxx ²⁾	845.69	xxxx ¹⁾
26,00	6	20	6	3	361.60	26000	361.60	26000	845.69	26000 ²⁾	361.60	26000
26,01 - 26,99	6	20	6	3	845.69	xxxx ¹⁾	845.69	xxxx ¹⁾	845.69	xxxx ²⁾	845.69	xxxx ¹⁾
27,00 - 27,99	6	25	6	4	880.73	xxxx ¹⁾	880.73	xxxx ¹⁾	880.73	xxxx ²⁾	880.73	xxxx ¹⁾
28,00	6	25	6	4	361.60	28000	361.60	28000	361.60	28000	361.60	28000
28,01 - 29,99	6	25	6	4	880.73	xxxx ¹⁾	880.73	xxxx ¹⁾	880.73	xxxx ²⁾	880.73	xxxx ¹⁾
30,00	6	25	6	4	378.07	30000	378.07	30000	378.07	30000	378.07	30000
30,01 - 31,99	6	25	6	4	880.73	xxxx ¹⁾	880.73	xxxx ¹⁾	880.73	xxxx ²⁾	880.73	xxxx ¹⁾
31,80 - 31,99	6	25	8	4	920.64	xxxx ¹⁾	920.64	xxxx ¹⁾	920.64	xxxx ²⁾	920.64	xxxx ¹⁾
32,00	6	25	8	4	391.47	32000	391.47	32000	391.47	32000	391.47	32000
32,01 - 34,99	6	25	8	4	920.64	xxxx ¹⁾	920.64	xxxx ¹⁾	920.64	xxxx ²⁾	920.64	xxxx ¹⁾
35,00	6	25	8	5	410.00	35000	410.00	35000	410.00	35000	410.00	35000
35,01 - 39,99	6	25	8	5	1,007.21	xxxx ¹⁾	1,007.21	xxxx ¹⁾	1,007.21	xxxx ²⁾	1,007.21	xxxx ¹⁾
40,00	6	25	8	5	433.70	40000	433.70	40000	433.70	40000	433.70	40000
40,01 - 41,99	6	25	8	5	1,007.21	xxxx ¹⁾	1,007.21	xxxx ¹⁾	1,007.21	xxxx ²⁾	1,007.21	xxxx ¹⁾
42,00	6	30	8	6	433.70	42000	433.70	42000	1,093.97	42000 ²⁾	433.70	42000
42,01 - 49,99	6	30	8	6	1,093.97	xxxx ¹⁾	1,093.97	xxxx ¹⁾	1,093.97	xxxx ²⁾	1,093.97	xxxx ¹⁾
50,00	6	30	8	6	444.00	50000	444.00	50000	444.00	50000	444.00	50000
50,01 - 51,99	6	30	8	6	1,093.97	xxxx ¹⁾	1,093.97	xxxx ¹⁾	1,093.97	xxxx ²⁾	1,093.97	xxxx ¹⁾
52,00 - 53,99	8	35	10	7	1,213.35	xxxx ¹⁾	1,213.35	xxxx ¹⁾	1,213.35	xxxx ²⁾	1,213.35	xxxx ¹⁾
54,00	8	35	10	7	499.63	54000	499.63	54000	1,213.35	54000 ²⁾	499.63	54000
54,01 - 65,00	8	35	10	7	1,213.35	xxxx ¹⁾	1,213.35	xxxx ¹⁾	1,213.35	xxxx ²⁾	1,213.35	xxxx ¹⁾

P												
M												
K												
N												
S												
H												
O												

- 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 67-70

For xxxx please indicate requested Ø in H7 in the order (e.g. Ø 24.12 H7 → article no. 40 597 2412)!

All other diameters and tolerance classes are also possible on request (e.g. 18.5^{+0.025} or 18 N7)!

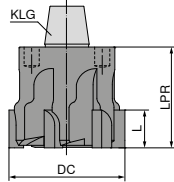
All heads are also available as fixed-head variants (non-adjustable). (Available on request)

Assembly instructions can be found on → **Page 98+99**

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



75H.93
∠ 45°
ASG3000
CERMET
Blind hole

75H.65
∠ 45°
ASG0106
HM
Blind hole

75H.17
∠ 45/8°
ASG0706
HM
Blind hole

75H.65
∠ 45°
ASG3000
HM
Blind hole

75H.71
∠ 45°
ASG3000
HM
Blind hole

DC _{H7} mm	L mm	LPR mm	ZEFP	KLG	40 539 ...		40 571 ...		40 580 ...		40 585 ...		40 535 ...	
					£ U3		£ U3		£ U3		£ U3		£ U3	
18,00	6	20	6	1	323.47	18000	323.47	18000	693.34	18000 ²⁾	693.34	18000 ¹⁾	693.34	18000 ¹⁾
18,01 - 19,99	6	20	6	1	693.34	xxxx ¹⁾	693.34	xxxx ¹⁾	693.34	xxxx ²⁾	693.34	xxxx ¹⁾	693.34	xxxx ¹⁾
20,00	6	20	6	2	331.72	20000	331.72	20000	812.90	20000 ²⁾	812.90	20000 ¹⁾	812.90	20000 ¹⁾
20,01 - 21,99	6	20	6	2	812.90	xxxx ¹⁾	812.90	xxxx ¹⁾	812.90	xxxx ²⁾	812.90	xxxx ¹⁾	812.90	xxxx ¹⁾
22,00	6	20	6	3	337.90	22000	337.90	22000	845.69	22000 ²⁾	845.69	22000 ¹⁾	845.69	22000 ¹⁾
22,01 - 23,99	6	20	6	3	845.69	xxxx ¹⁾	845.69	xxxx ¹⁾	845.69	xxxx ²⁾	845.69	xxxx ¹⁾	845.69	xxxx ¹⁾
24,00	6	20	6	3	348.20	24000	348.20	24000	845.69	24000 ²⁾	845.69	24000 ¹⁾	845.69	24000 ¹⁾
24,01 - 24,99	6	20	6	3	845.69	xxxx ¹⁾	845.69	xxxx ¹⁾	845.69	xxxx ²⁾	845.69	xxxx ¹⁾	845.69	xxxx ¹⁾
25,00	6	20	6	3	348.20	25000	348.20	25000	845.69	25000 ²⁾	845.69	25000 ¹⁾	845.69	25000 ¹⁾
25,01 - 25,99	6	20	6	3	845.69	xxxx ¹⁾	845.69	xxxx ¹⁾	845.69	xxxx ²⁾	845.69	xxxx ¹⁾	845.69	xxxx ¹⁾
26,00	6	20	6	3	361.60	26000	361.60	26000	845.69	26000 ²⁾	845.69	26000 ¹⁾	845.69	26000 ¹⁾
26,01 - 26,99	6	20	6	3	845.69	xxxx ¹⁾	845.69	xxxx ¹⁾	845.69	xxxx ²⁾	845.69	xxxx ¹⁾	845.69	xxxx ¹⁾
27,00	6	25	6	4	880.73	xxxx ¹⁾	880.73	xxxx ¹⁾	880.73	xxxx ²⁾	880.73	xxxx ¹⁾	880.73	xxxx ¹⁾
28,00	6	25	6	4	361.60	28000	361.60	28000	880.73	28000 ²⁾	880.73	28000 ¹⁾	880.73	28000 ¹⁾
28,01 - 29,99	6	25	6	4	880.73	xxxx ¹⁾	880.73	xxxx ¹⁾	880.73	xxxx ²⁾	880.73	xxxx ¹⁾	880.73	xxxx ¹⁾
30,00	6	25	6	4	378.07	30000	378.07	30000	880.73	30000 ²⁾	880.73	30000 ¹⁾	880.73	30000 ¹⁾
30,01 - 31,79	6	25	6	4	880.73	xxxx ¹⁾	880.73	xxxx ¹⁾	880.73	xxxx ²⁾	880.73	xxxx ¹⁾	880.73	xxxx ¹⁾
31,80 - 31,99	6	25	8	4	920.64	xxxx ¹⁾	920.64	xxxx ¹⁾	920.64	xxxx ²⁾	920.64	xxxx ¹⁾	920.64	xxxx ¹⁾
32,00	6	25	8	4	391.47	32000	391.47	32000	920.64	32000 ²⁾	920.64	32000 ¹⁾	920.64	32000 ¹⁾
32,01 - 34,99	6	25	8	4	920.64	xxxx ¹⁾	920.64	xxxx ¹⁾	920.64	xxxx ²⁾	920.64	xxxx ¹⁾	920.64	xxxx ¹⁾
35,00	6	25	8	5	410.00	35000	410.00	35000	1,007.21	35000 ²⁾	1,007.21	35000 ¹⁾	1,007.21	35000 ¹⁾
35,01 - 39,99	6	25	8	5	1,007.21	xxxx ¹⁾	1,007.21	xxxx ¹⁾	1,007.21	xxxx ²⁾	1,007.21	xxxx ¹⁾	1,007.21	xxxx ¹⁾
40,00	6	25	8	5	433.70	40000	433.70	40000	1,007.21	40000 ²⁾	1,007.21	40000 ¹⁾	1,007.21	40000 ¹⁾
40,01 - 41,99	6	25	8	5	1,007.21	xxxx ¹⁾	1,007.21	xxxx ¹⁾	1,007.21	xxxx ²⁾	1,007.21	xxxx ¹⁾	1,007.21	xxxx ¹⁾
42,00	6	30	8	6	433.70	42000	433.70	42000	1,093.97	42000 ²⁾	1,093.97	42000 ¹⁾	1,093.97	42000 ¹⁾
42,01 - 49,99	6	30	8	6	1,093.97	xxxx ¹⁾	1,093.97	xxxx ¹⁾	1,093.97	xxxx ²⁾	1,093.97	xxxx ¹⁾	1,093.97	xxxx ¹⁾
50,00	6	30	8	6	444.00	50000	444.00	50000	1,093.97	50000 ²⁾	1,093.97	50000 ¹⁾	1,093.97	50000 ¹⁾
50,01 - 51,99	6	30	8	6	1,093.97	xxxx ¹⁾	1,093.97	xxxx ¹⁾	1,093.97	xxxx ²⁾	1,093.97	xxxx ¹⁾	1,093.97	xxxx ¹⁾
52,00 - 53,99	8	35	10	7	1,213.35	xxxx ¹⁾	1,213.35	xxxx ¹⁾	1,213.35	xxxx ²⁾	1,213.35	xxxx ¹⁾	1,213.35	xxxx ¹⁾
54,00	8	35	10	7	499.63	54000	499.63	54000	1,213.35	54000 ²⁾	1,213.35	54000 ¹⁾	1,213.35	54000 ¹⁾
54,01 - 65,00	8	35	10	7	1,213.35	xxxx ¹⁾	1,213.35	xxxx ¹⁾	1,213.35	xxxx ²⁾	1,213.35	xxxx ¹⁾	1,213.35	xxxx ¹⁾

P	•	•	•	•	•	•	•	•	•	•	•	•	•	•
M	•	•	•	•	•	•	•	•	•	•	•	•	•	•
K	•	•	•	•	•	•	•	•	•	•	•	•	•	•
N	•	•	•	•	•	•	•	•	•	•	•	•	•	•
S	•	•	•	•	•	•	•	•	•	•	•	•	•	•
H	•	•	•	•	•	•	•	•	•	•	•	•	•	•
O	•	•	•	•	•	•	•	•	•	•	•	•	•	•

- 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 67-70

For xxxx please indicate requested Ø in H7 in the order (e.g. Ø 24.12 H7 → article no. 40 539 2412)!

All other diameters and tolerance classes are also possible on request (e.g. 18.5^{+0.025} or 18 N7)!

All heads are also available as fixed-head variants (non-adjustable). (Available on request)

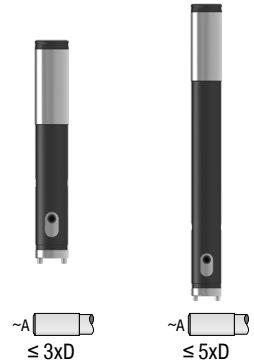
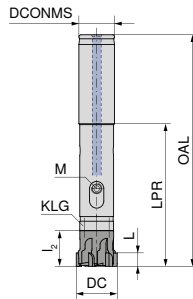
Assembly instructions can be found on → Page 98+99

REAMAX TS – Holder

▲ KLG = Coupling Size

Supply details:

Complete holder incl. pull stud but without exchangeable head



DC mm	KOMET no.	KLG	OAL mm	I ₂ mm	LPR mm	L mm	DCONMS _{h6} mm	M Nm
18,00 - 19,99	75A.40.13010	1	130	20	80	6	20	1,5
18,00 - 19,99	75A.40.15010	1	190	20	140	6	20	1,5
20,00 - 21,99	75A.40.13020	2	130	20	80	6	20	2,5
20,00 - 21,99	75A.40.15020	2	190	20	140	6	20	2,5
22,00 - 26,99	75A.40.13030	3	130	20	80	6	20	4
22,00 - 26,99	75A.40.15030	3	210	20	160	6	20	4
27,00 - 34,99	75A.40.13040	4	176	25	120	6	25	5
27,00 - 34,99	75A.40.15040	4	236	25	180	6	25	5
35,00 - 41,99	75A.40.13050	5	176	25	120	6	25	6
35,00 - 41,99	75A.40.15050	5	256	25	200	6	25	6
42,00 - 51,99	75A.40.13060	6	180	30	120	6	32	10
42,00 - 51,99	75A.40.15060	6	280	30	220	6	32	10
52,00 - 65,00	75A.40.13070	7	180	30	120	8	32	13
52,00 - 65,00	75A.40.15070	7	280	30	220	8	32	13

40 501 ...	40 503 ...
£ U3	£ U3
346.45 02099	359.32 02099
359.32 02299	374.78 02299
368.29 02799	395.38 02799
382.50 03599	406.92 03599
436.58 04299	460.62 04299
450.70 05299	475.51 05299
464.92 06599	490.50 06599

Do not heat shrink tools !

Spare parts		80 397 ...		80 950 ...		40 900 ...	
DC		£ Y7		£ Y7		£ U3	
18,00 - 19,99						14.42	00100
20,00 - 21,99	SW2,5	5.21	025	9.16	039	14.42	00200
22,00 - 26,99	SW3	5.02	030			14.42	00300
27,00 - 34,99	SW3	5.02	030			14.42	00400
35,00 - 41,99	SW3	5.02	030			19.99	00500
42,00 - 51,99	SW4	5.02	040			19.99	00500
52,00 - 65,00	SW5	6.39	050			19.99	00700

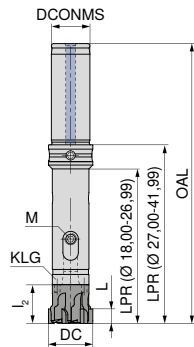
Assembly instructions can be found on → Page 98+99

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



DC mm	KOMET no.	KLK	OAL mm	I ₂ mm	LPR mm	L mm	DCONMS _{hg} mm	M Nm		
18,00 - 19,99	75A.41.13010	1	145	20	80	6	20	1,5		
18,00 - 19,99	75A.41.15010	1	205	20	140	6	20	1,5		
20,00 - 21,99	75A.41.13020	2	145	20	80	6	20	2,5		
20,00 - 21,99	75A.41.15020	2	205	20	140	6	20	2,5		
22,00 - 26,99	75A.41.13030	3	145	20	80	6	20	4		
22,00 - 26,99	75A.41.15030	3	225	20	160	6	20	4		
27,00 - 34,99	75A.41.13040	4	145	25	120	6	25	5		
27,00 - 34,99	75A.41.15040	4	236	25	180	6	25	5		
35,00 - 41,99	75A.41.13050	5	176	25	120	6	25	6		
35,00 - 41,99	75A.41.15050	5	236	25	200	6	25	6		

40 504 ...	40 506 ...
£ U3	£ U3
464.92 02099	494.49 02099
470.07 02299	509.94 02299
481.61 02799	524.15 02799
506.13 03599	524.15 03599
615.53 04299	627.17 04299

Do not heat shrink tools !

Spare parts DC

		80 397 ...	80 950 ...	40 900 ...
18,00 - 19,99		£ Y7	£ Y7	£ U3
20,00 - 21,99	SW2,5	5.21 025	9.16 039	14.42 00100
22,00 - 26,99	SW3	5.02 030		14.42 00200
27,00 - 34,99	SW3	5.02 030		14.42 00300
35,00 - 41,99	SW3	5.02 030		19.99 00400
				00500

Assembly instructions can be found on → **Page 98+99**

REAMAX – Selection guide

Ø		12,5 – 40 mm					
KOMET no.		640.93	640.93	640.65	640.65	640.27	640.71
Lead angle		ASG4000	ASG3000	ASG3000	ASG0106	ASG0706	ASG3000
Lead angle		25°	45°	45°	45°	45°/8°	45°
Grade / coating		DST	DST	DBG-P	DBG-P	DBC	TiN
Article no.		40 536	40 525	40 560	40 551	40 570	40 505
Preferred type available		✓	✓	✓	✓	✓	✓
Application		Through hole	Through hole + blind hole				
							
Material sub-group		Index					
P	Non alloyed steel	P.1.1	●	●	●		○
		P.1.2					
		P.1.3					
		P.1.4					
		P.1.5					
	Low alloyed steel	P.2.1					
		P.2.2					
		P.2.3					
		P.2.4					
	High-alloy steel and high-alloy tool steel	P.3.1					
		P.3.2					
		P.3.3					
	Stainless steel	P.4.1			●		
		P.4.2					
M	Stainless steel	M.1.1			●		
		M.2.1					
		M.3.1					
K	Grey cast iron	K.1.1			●		○
		K.1.2					
	Spherulitic graphite cast iron	K.2.1	○	●	●		
		K.2.2					
	Malleable iron	K.3.1	○	●	●		
		K.3.2					
N	Aluminum alloys,	N.1.1				●	
		N.1.2					
	Cast Aluminium Alloys	N.2.1					
		N.2.2					
		N.2.3					
	Copper and copper alloys (Bronze, Brass)	N.3.1	○				●
		N.3.2					
		N.3.3					
	Magnesium alloys	N.4.1					
H	Hardened steel	H.1.1			●		
		H.1.2					
		H.1.3					
		H.1.4					
	Chilled iron	H.2.1			●		
	Hardened cast iron	H.3.1					
O	Non metal materials	O.1.1					
		O.1.2					
		O.2.1					
		O.2.2					
		O.3.1				○	

* for drilling with interrupted cut use coated HM-reamers

Applications:

Main application

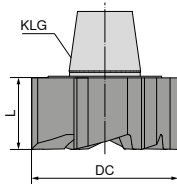
Additional range of application



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



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

				40 536 ...		40 551 ...		40 570 ...		40 525 ...		40 560 ...		40 505 ...	
DC H7 mm	L mm	ZEFP	KLG	£ U3	xxxx ²⁾	£ U3	xxxx ¹⁾	£ U3	xxxx ¹⁾	£ U3	xxxx ²⁾	£ U3	xxxx ¹⁾	£ U3	xxxx ¹⁾
12,50 - 14,99	9	6	1	482.53	xxxx ²⁾	482.53	xxxx ¹⁾	482.53	xxxx ¹⁾	482.53	xxxx ²⁾	482.53	xxxx ¹⁾	482.53	xxxx ¹⁾
15,00	9	6	1	482.53	15000 ²⁾	219.43	15000 ¹⁾	219.43	15000 ¹⁾	482.53	15000 ²⁾	219.43	15000 ¹⁾	401.49	150
15,01 - 15,99	9	6	1	482.53	xxxx ²⁾	482.53	xxxx ¹⁾	482.53	xxxx ¹⁾	482.53	xxxx ²⁾	482.53	xxxx ¹⁾	482.53	xxxx ¹⁾
16,00	9	6	2	461.80	160	252.39	16000 ¹⁾	252.39	16000 ¹⁾	461.80	160	252.39	16000	461.80	160
16,01 - 17,99	9	6	2	550.55	xxxx ²⁾	550.55	xxxx ¹⁾	550.55	xxxx ¹⁾	550.55	xxxx ²⁾	550.55	xxxx ¹⁾	550.55	xxxx ¹⁾
18,00	9	6	2	467.46	180	255.49	18000 ¹⁾	255.49	18000 ¹⁾	467.46	180	255.49	18000	467.46	180
18,01 - 19,99	9	6	2	550.55	xxxx ²⁾	550.55	xxxx ¹⁾	550.55	xxxx ¹⁾	550.55	xxxx ²⁾	550.55	xxxx ¹⁾	550.55	xxxx ¹⁾
20,00	9	6	2	476.88	200	260.64	20000 ¹⁾	260.64	20000 ¹⁾	476.88	200	260.64	20000	476.88	200
20,01 - 21,99	9	6	2	550.55	xxxx ²⁾	550.55	xxxx ¹⁾	550.55	xxxx ¹⁾	550.55	xxxx ²⁾	550.55	xxxx ¹⁾	550.55	xxxx ¹⁾
22,00	9	8	3	488.20	220	266.82	22000 ¹⁾	266.82	22000 ¹⁾	488.20	220	266.82	22000	488.20	220
22,01 - 23,99	9	8	3	594.96	xxxx ²⁾	594.96	xxxx ¹⁾	594.96	xxxx ¹⁾	594.96	xxxx ²⁾	594.96	xxxx ¹⁾	594.96	xxxx ¹⁾
24,00	9	8	3	594.96	24000 ²⁾	276.09	24000 ¹⁾	276.09	24000 ¹⁾	594.96	24000 ²⁾	276.09	24000	505.16	240
24,01 - 24,99	9	8	3	594.96	xxxx ²⁾	594.96	xxxx ¹⁾	594.96	xxxx ¹⁾	594.96	xxxx ²⁾	594.96	xxxx ¹⁾	594.96	xxxx ¹⁾
25,00	9	8	3	525.89	250	287.43	25000 ¹⁾	287.43	25000 ¹⁾	525.89	250	287.43	25000	525.89	250
25,01 - 25,99	9	8	3	594.96	xxxx ²⁾	594.96	xxxx ¹⁾	594.96	xxxx ¹⁾	594.96	xxxx ²⁾	594.96	xxxx ¹⁾	594.96	xxxx ¹⁾
26,00 - 27,99	9	8	4	681.72	xxxx ²⁾	681.72	xxxx ¹⁾	681.72	xxxx ¹⁾	681.72	xxxx ²⁾	681.72	xxxx ¹⁾	681.72	xxxx ¹⁾
28,00	9	8	4	544.74	280	297.72	28000 ¹⁾	297.72	28000 ¹⁾	544.74	280	297.72	28000	544.74	280
28,01 - 29,99	9	8	4	681.72	xxxx ²⁾	681.72	xxxx ¹⁾	681.72	xxxx ¹⁾	681.72	xxxx ²⁾	681.72	xxxx ¹⁾	681.72	xxxx ¹⁾
30,00	9	8	4	571.13	300	312.14	30000 ¹⁾	312.14	30000 ¹⁾	571.13	300	312.14	30000	571.13	300
30,01 - 32,00	9	8	4	681.72	xxxx ²⁾	681.72	xxxx ¹⁾	681.72	xxxx ¹⁾	681.72	xxxx ²⁾	681.72	xxxx ¹⁾	681.72	xxxx ¹⁾
32,01 - 39,99	9	8	5	772.98	xxxx ²⁾	772.98	xxxx ¹⁾	772.98	xxxx ¹⁾	772.98	xxxx ²⁾	772.98	xxxx ¹⁾	772.98	xxxx ¹⁾
40,00	9	8	5	605.06	400	330.69	40000 ¹⁾	330.69	40000 ¹⁾	605.06	400	330.69	40000	605.06	400
P				●		●				●		●		○	
M						●									
K				○							●		●	○	
N								●		○				●	
S															
H						●									
O									○						

- 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. Page 71-73



For xxxx please indicate requested Ø in H7 in the order (e.g. Ø 15.12 H7 → article no. 40 525 1512)!

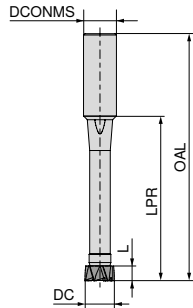
All other diameters and tolerance classes are also possible on request (e.g. 18.5^{+0.025} or 18 N7)!

REAMAX – Holder, short

▲ KLG = Coupling Size

Supply details:

Complete holder, but without exchangeable head



DC mm	KOMET no.	KLG	OAL mm	LPR mm	L mm	DCONMS _{h6} mm	M Nm
12,50 - 15,99	640.01.001	1	107	59	9	16	4 - 5
12,50 - 15,99	640.81.001	1	137	89	9	16	4 - 5
16,00 - 21,99	640.01.002	2	119	69	9	20	6 - 7
16,00 - 21,99	640.81.002	2	169	119	9	20	6 - 7
22,00 - 25,99	640.01.003	3	140	84	9	25	10 - 12
22,00 - 25,99	640.81.003	3	196	140	9	25	10 - 12
26,00 - 32,00	640.01.005	4	160	104	9	25	18 - 20
26,00 - 32,00	640.81.005	4	226	170	9	25	18 - 20
32,01 - 40,00	640.01.006	5	199	139	9	32	26 - 28
32,01 - 40,00	640.81.006	5	270	210	9	32	26 - 28

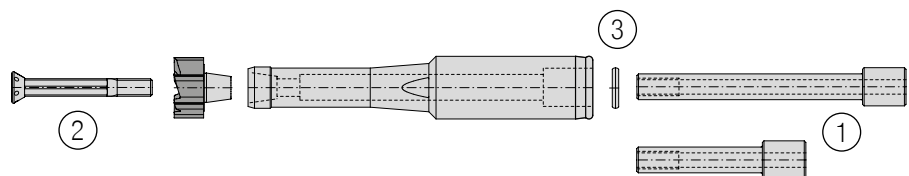
40 590 ...	40 591 ...
£ U3	£ U3
626.75 016	626.75 016
655.01 022	655.01 022
697.42 026	697.42 026
720.98 032	720.98 032
824.66 040	824.66 040

1 Do not heat shrink tools !

Spare parts

DC	DCONMS	40 950 ...	40 950 ...	40 950 ...	40 950 ...
		£ U3		£ U3	£ U3
12,50 - 15,99	16				
12,50 - 15,99	16	87.37	107	85.39	216.76 001 1.03 301
16,00 - 21,99	20	87.37	108		216.76 001 1.03 301
16,00 - 21,99	20			85.39	216.76 002 1.03 302
22,00 - 25,99	25			99.90	216.76 002 1.03 302
22,00 - 25,99	25	102.89	109		226.19 003 1.03 303
26,00 - 32,00	25			114.98	226.19 003 1.03 303
26,00 - 32,00	25	118.43	110		238.07 004 1.03 303
32,01 - 40,00	32	133.97	112		238.07 004 1.03 303
32,01 - 40,00	32			130.06	256.91 005 1.03 304
					256.91 005 1.03 304

- 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
 $\angle 90^\circ, 120^\circ, 142^\circ$ / $\varnothing 8, 10, 12, 16, 20$ mm / ZEFP* 2

→ **Chapter 2, Solid carbide drilling**

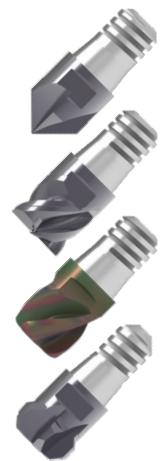


*ZEFP = Number of teeth

Solid Carbide milling cutters

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



- ▲ Short Holder Steel / Solid Carbide
 cylindrical
 Length 85–120 mm
 for SZID 8, 10, 12, 16, 20 mm



- ▲ Short Holder Steel / Solid Carbide
 87° taper
 Length 85–120 mm
 for SZID 8, 10, 12, 16, 20 mm



- ▲ Solid Carbide Holder, Medium
 Cylindrical / Tapered 87°
 Length 110–150 mm
 for SZID 8, 10, 12, 16, 20 mm



- ▲ Holder Steel / Solid Carbide, Long
 cylindrical
 Length 150–200 mm
 for SZID 8, 10, 12, 16, 20 mm



- ▲ Holder Steel / Solid Carbide, Long
 87° taper
 Length 150–200 mm
 for SZID 8, 10, 12, 16, 20 mm

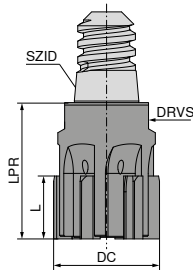


- ▲ Holder Steel / Solid Carbide, Extra Long
 cylindrical
 Length 200–250 mm
 For SZID 16 and 20 mm

→ **Catalogue – Clamping technology, Chapter 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
- ▲ SZID = 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

DC _{H7} mm	SZID	L mm	LPR mm	ZEFP	DRVS mm	TQX Nm	40 210 ...		40 220 ...		40 230 ...		40 240 ...		40 245 ...	
							£ U3	080	£ U3	080	£ U3	080	£ U3	080	£ U3	080
8,00	06	8	18	4	6	5.0	280.20	080	280.20	080	280.20	080	252.55	080	698.64	080
8,01 - 9,70	06	8	18	4	6	5.0	304.17	xxxx ¹⁾	304.17	xxxx ¹⁾	304.17	xxxx ¹⁾	274.67	xxxx ¹⁾	785.31	xxxx ¹⁾
9,71 - 9,99	06	8	18	6	8	5.0	344.72	xxxx ¹⁾	344.72	xxxx ¹⁾	344.72	xxxx ¹⁾	309.69	xxxx ¹⁾	855.34	xxxx ¹⁾
10,00	06	8	18	6	8	5.0	317.06	100	317.06	100	317.06	100	285.74	100	770.55	100
10,01 - 10,70	06	8	18	6	8	5.0	344.72	xxxx ¹⁾	344.72	xxxx ¹⁾	344.72	xxxx ¹⁾	309.69	xxxx ¹⁾	855.34	xxxx ¹⁾
10,71 - 11,99	08	8	20	6	8	12.5	344.72	xxxx ¹⁾	344.72	xxxx ¹⁾	344.72	xxxx ¹⁾	309.69	xxxx ¹⁾	882.99	xxxx ¹⁾
12,00	08	8	20	6	8	12.5	317.06	120	317.06	120	317.06	120	285.74	120	785.31	120
12,01 - 12,70	08	8	20	6	8	12.5	344.72	xxxx ¹⁾	344.72	xxxx ¹⁾	344.72	xxxx ¹⁾	309.69	xxxx ¹⁾	882.99	xxxx ¹⁾
12,71 - 13,99	10	8	22	6	10	15.0	366.84	xxxx ¹⁾	366.84	xxxx ¹⁾	366.84	xxxx ¹⁾	329.98	xxxx ¹⁾	882.99	xxxx ¹⁾
14,00	10	8	22	6	10	15.0	337.33	140	337.33	140	337.33	140	304.17	140	785.31	140
14,01 - 15,99	10	8	22	6	10	15.0	366.84	xxxx ¹⁾	366.84	xxxx ¹⁾	366.84	xxxx ¹⁾	329.98	xxxx ¹⁾	882.99	xxxx ¹⁾
16,00	10	8	22	6	10	15.0	337.33	160	337.33	160	337.33	160	304.17	160	825.85	160
16,01 - 16,20	10	8	22	6	10	15.0	366.84	xxxx ¹⁾	366.84	xxxx ¹⁾	366.84	xxxx ¹⁾	329.98	xxxx ¹⁾	927.24	xxxx ¹⁾
16,21 - 17,20	10	8	22	6	13	15.0	366.84	xxxx ¹⁾	366.84	xxxx ¹⁾	366.84	xxxx ¹⁾	329.98	xxxx ¹⁾	927.24	xxxx ¹⁾
17,21 - 17,99	12	12	26	6	13	20.0	383.43	xxxx ¹⁾	383.43	xxxx ¹⁾	383.43	xxxx ¹⁾	344.72	xxxx ¹⁾	938.29	xxxx ¹⁾
18,00	12	12	26	6	13	20.0	352.11	180	352.11	180	352.11	180	317.06	180	835.07	180
18,01 - 19,20	12	12	26	6	13	20.0	383.43	xxxx ¹⁾	383.43	xxxx ¹⁾	383.43	xxxx ¹⁾	344.72	xxxx ¹⁾	938.29	xxxx ¹⁾
19,21 - 19,99	12	12	26	6	16	20.0	383.43	xxxx ¹⁾	383.43	xxxx ¹⁾	383.43	xxxx ¹⁾	344.72	xxxx ¹⁾	938.29	xxxx ¹⁾
20,00	12	12	26	6	16	20.0	352.11	200	352.11	200	352.11	200	317.06	200	835.07	200
20,01 - 20,20	12	12	26	6	16	20.0	383.43	xxxx ¹⁾	383.43	xxxx ¹⁾	383.43	xxxx ¹⁾	344.72	xxxx ¹⁾	938.29	xxxx ¹⁾
20,21 - 21,20	12	12	26	6	16	20.0	400.02	xxxx ¹⁾	400.02	xxxx ¹⁾	400.02	xxxx ¹⁾	359.47	xxxx ¹⁾	938.29	xxxx ¹⁾
21,21 - 21,99	16	12	26	6	16	25.0	400.02	xxxx ¹⁾	400.02	xxxx ¹⁾	400.02	xxxx ¹⁾	359.47	xxxx ¹⁾	954.87	xxxx ¹⁾
22,00	16	12	26	6	16	25.0	368.69	220	368.69	220	368.69	220	329.98	220	849.80	220
22,01 - 23,99	16	12	26	6	16	25.0	400.02	xxxx ¹⁾	400.02	xxxx ¹⁾	400.02	xxxx ¹⁾	359.47	xxxx ¹⁾	954.87	xxxx ¹⁾
24,00	16	12	26	6	16	25.0	368.69	240	368.69	240	368.69	240	329.98	240	849.80	240
24,01 - 24,20	16	12	26	6	16	25.0	400.02	xxxx ¹⁾	400.02	xxxx ¹⁾	400.02	xxxx ¹⁾	359.47	xxxx ¹⁾	954.87	xxxx ¹⁾
24,21 - 24,99	16	12	26	6	19	25.0	427.68	xxxx ¹⁾	427.68	xxxx ¹⁾	427.68	xxxx ¹⁾	385.29	xxxx ¹⁾	984.38	xxxx ¹⁾
25,00	16	12	26	6	19	25.0	392.64	250	392.64	250	392.64	250	353.92	250	875.62	250
25,01 - 25,99	16	12	26	6	19	25.0	427.68	xxxx ¹⁾	427.68	xxxx ¹⁾	427.68	xxxx ¹⁾	385.29	xxxx ¹⁾	984.38	xxxx ¹⁾
26,00	16	12	26	6	19	25.0	392.64	260	392.64	260	392.64	260	353.92	260	875.62	260
26,01 - 26,20	16	12	26	6	19	25.0	427.68	xxxx ¹⁾	427.68	xxxx ¹⁾	427.68	xxxx ¹⁾	385.29	xxxx ¹⁾	984.38	xxxx ¹⁾
26,21 - 27,99	16	12	26	6	21	25.0	427.68	xxxx ¹⁾	427.68	xxxx ¹⁾	427.68	xxxx ¹⁾	385.29	xxxx ¹⁾	984.38	xxxx ¹⁾
28,00	16	12	26	6	21	25.0	392.64	280	392.64	280	392.64	280	353.92	280	875.62	280
28,01 - 28,20	16	12	26	6	21	25.0	427.68	xxxx ¹⁾	427.68	xxxx ¹⁾	427.68	xxxx ¹⁾	385.29	xxxx ¹⁾	984.38	xxxx ¹⁾
28,21 - 29,20	16	12	26	6	24	25.0	473.75	xxxx ¹⁾	473.75	xxxx ¹⁾	473.75	xxxx ¹⁾	425.83	xxxx ¹⁾	984.38	xxxx ¹⁾
29,21 - 29,99	16	12	26	8	24	25.0	473.75	xxxx ¹⁾	473.75	xxxx ¹⁾	473.75	xxxx ¹⁾	425.83	xxxx ¹⁾	1,041.52	xxxx ¹⁾
30,00	16	12	26	8	24	25.0	435.06	300	435.06	300	435.06	300	392.64	300	927.24	300
30,01 - 30,20	16	12	26	8	24	25.0	473.75	xxxx ¹⁾	473.75	xxxx ¹⁾	473.75	xxxx ¹⁾	425.83	xxxx ¹⁾	1,041.52	xxxx ¹⁾
P																
M																
K																
N																
S																
H																
O																

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 21 working days / Minimum order 2 pieces

→ v_e Page 74+75



For xxxx please indicate requested diameter in H7 in the order (e.g. 10.89 H7 → article no. 40 230 1089)!

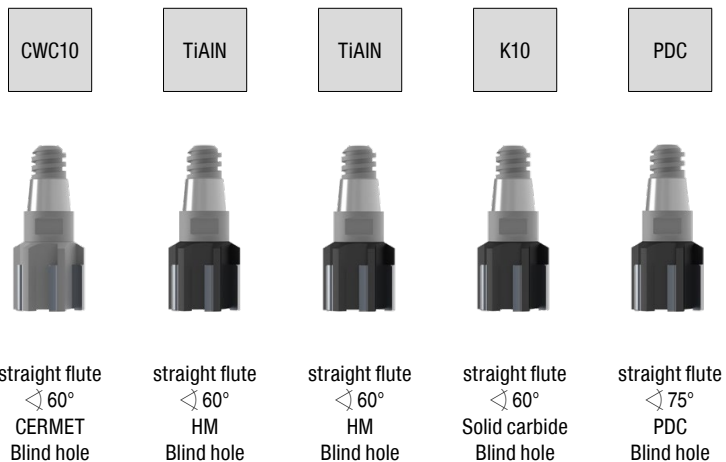
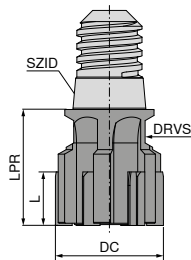
All other diameters and tolerance classes are also possible on request (e.g. 8.5 ^{+0.025} or 11 N7).



Holders and accessories can be found in → **Catalogue – Clamping technology, Chapter 16.**

MultiChange – Reaming Head, for blind 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
- ▲ SZID = Coupling Size



DC _{H7} mm	SZID	L mm	LPR mm	ZEFP	DRVS mm	TQX Nm	40 211 ...		40 221 ...		40 231 ...		40 241 ...		40 246 ...	
							£		£		£		£		£	
12,20 - 12,70	06	8	20	6	6	5.0	344.72	xxxx ¹⁾	344.72	xxxx ¹⁾	344.72	xxxx ¹⁾	309.69	xxxx ¹⁾	882.99	xxxx ¹⁾
12,71 - 13,99	06	8	22	6	6	5.0	366.84	xxxx ¹⁾	366.84	xxxx ¹⁾	366.84	xxxx ¹⁾	329.98	xxxx ¹⁾	882.99	xxxx ¹⁾
14,00	06	8	22	6	6	5.0	337.33	140	337.33	140	337.33	140	304.17	140	785.31	140
14,01 - 14,20	06	8	22	6	6	5.0	366.84	xxxx ¹⁾	366.84	xxxx ¹⁾	366.84	xxxx ¹⁾	329.98	xxxx ¹⁾	882.99	xxxx ¹⁾
14,21 - 15,99	08	8	22	6	8	12.5	366.84	xxxx ¹⁾	366.84	xxxx ¹⁾	366.84	xxxx ¹⁾	329.98	xxxx ¹⁾	927.24	xxxx ¹⁾
16,00	08	8	22	6	8	12.5	337.33	160	337.33	160	337.33	160	304.17	160	825.85	160
16,01 - 16,20	08	8	22	6	8	12.5	366.84	xxxx ¹⁾	366.84	xxxx ¹⁾	366.84	xxxx ¹⁾	329.98	xxxx ¹⁾	927.24	xxxx ¹⁾
16,21 - 17,20	10	8	22	6	10	15.0	366.84	xxxx ¹⁾	366.84	xxxx ¹⁾	366.84	xxxx ¹⁾	329.98	xxxx ¹⁾	927.24	xxxx ¹⁾
17,21 - 17,99	10	12	26	6	10	15.0	383.43	xxxx ¹⁾	383.43	xxxx ¹⁾	383.43	xxxx ¹⁾	344.72	xxxx ¹⁾	938.29	xxxx ¹⁾
18,00	10	12	26	6	10	15.0	352.11	180	352.11	180	352.11	180	317.06	180	835.07	180
18,01 - 19,99	10	12	26	6	10	15.0	383.43	xxxx ¹⁾	383.43	xxxx ¹⁾	383.43	xxxx ¹⁾	344.72	xxxx ¹⁾	938.29	xxxx ¹⁾
20,00	10	12	26	6	10	15.0	352.11	200	352.11	200	352.11	200	317.06	200	835.07	200
20,01 - 20,20	10	12	26	6	10	15.0	383.43	xxxx ¹⁾	383.43	xxxx ¹⁾	383.43	xxxx ¹⁾	344.72	xxxx ¹⁾	938.29	xxxx ¹⁾
20,21 - 21,99	12	12	26	6	13	20.0	400.02	xxxx ¹⁾	400.02	xxxx ¹⁾	400.02	xxxx ¹⁾	359.47	xxxx ¹⁾	938.29	xxxx ¹⁾
22,00	12	12	26	6	13	20.0	368.69	220	368.69	220	368.69	220	329.98	220	849.80	220
22,01 - 23,99	12	12	26	6	13	20.0	400.02	xxxx ¹⁾	400.02	xxxx ¹⁾	400.02	xxxx ¹⁾	359.47	xxxx ¹⁾	954.87	xxxx ¹⁾
24,00	12	12	26	6	13	20.0	368.69	240	368.69	240	368.69	240	329.98	240	849.80	240
24,01 - 24,20	12	12	26	6	13	20.0	400.02	xxxx ¹⁾	400.02	xxxx ¹⁾	400.02	xxxx ¹⁾	359.47	xxxx ¹⁾	954.87	xxxx ¹⁾
24,21 - 24,99	16	12	26	6	16	25.0	427.68	xxxx ¹⁾	427.68	xxxx ¹⁾	427.68	xxxx ¹⁾	385.29	xxxx ¹⁾	954.87	xxxx ¹⁾
25,00	16	12	26	6	16	25.0	392.64	250	392.64	250	392.64	250	353.92	250	875.62	250
25,01 - 25,99	16	12	26	6	16	25.0	427.68	xxxx ¹⁾	427.68	xxxx ¹⁾	427.68	xxxx ¹⁾	385.29	xxxx ¹⁾	954.87	xxxx ¹⁾
26,00	16	12	26	6	16	25.0	392.64	260	392.64	260	392.64	260	353.92	260	875.62	260
26,01 - 27,99	16	12	26	6	16	25.0	427.68	xxxx ¹⁾	427.68	xxxx ¹⁾	427.68	xxxx ¹⁾	385.29	xxxx ¹⁾	984.38	xxxx ¹⁾
28,00	16	12	26	6	16	25.0	392.64	280	392.64	280	392.64	280	353.92	280	875.62	280
28,01 - 28,20	16	12	26	6	16	25.0	427.68	xxxx ¹⁾	427.68	xxxx ¹⁾	427.68	xxxx ¹⁾	385.29	xxxx ¹⁾	984.38	xxxx ¹⁾
28,21 - 29,20	16	12	26	6	16	25.0	473.75	xxxx ¹⁾	473.75	xxxx ¹⁾	473.75	xxxx ¹⁾	425.83	xxxx ¹⁾	984.38	xxxx ¹⁾
29,21 - 29,99	16	12	26	8	16	25.0	473.75	xxxx ¹⁾	473.75	xxxx ¹⁾	473.75	xxxx ¹⁾	425.83	xxxx ¹⁾	1,041.52	xxxx ¹⁾
30,00	16	12	26	8	16	25.0	435.06	300	435.06	300	435.06	300	392.64	300	927.24	300
30,01 - 30,20	16	12	26	8	16	25.0	473.75	xxxx ¹⁾	473.75	xxxx ¹⁾	473.75	xxxx ¹⁾	425.83	xxxx ¹⁾	1,041.52	xxxx ¹⁾
P								•		•		•				
M										•						
K								•				•				
N													•		•	
S																
H																
O																

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 21 working days / Minimum order 2 pieces

→ v. Page 74+75



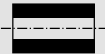
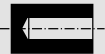
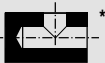
For xxxx please indicate requested diameter in H7 in the order (e.g. 12.89 H7 → article no. 40 231 1289)!

All other diameters and tolerance classes are also possible on request (e.g. 18.5^{+0.025} or 15 N7).



Holders and accessories can be found in → **Catalogue – Clamping technology, Chapter 16.**

Monomax – Selection guide

Ø			5,60 – 25,89 mm																
KOMET no. (3xD)			56J.93	56J.93	56J.65	56J.17	56J.71	56H.65	56H.65	56H.17									
KOMET no. (5xD)			56R.93	56R.93	56R.65	56R.17	56R.71	56Q.65	56Q.65	56Q.17									
Lead angle			ASG4000	ASG3000	ASG0106	ASG0706	ASG3000	ASG3000	ASG0106	ASG0706									
Lead angle			25°	45°	45°	45°/8°	45°	45°	45°	45°/8°									
New grade / coating			DST	DST	DBG-P	DBC	TIN	DBG-P	DBG-P	DBC									
Article no. (3xD)			40 635	40 625	40 652	40 648	40 605	40 657	40 644	40 640									
Article no. (5xD)			40 636	40 626	40 653	40 649	40 606	40 665	40 645	40 641									
Preferred type available			✓	✓	✓		✓												
Application			Through hole				Blind hole												
																			
Material sub-group		Index																	
P	Non alloyed steel	P.1.1																	
		P.1.2																	
		P.1.3																	
		P.1.4																	
		P.1.5																	
	Low alloyed steel	P.2.1																	
		P.2.2																	
		P.2.3																	
		P.2.4																	
	High-alloy steel and high-alloy tool steel	P.3.1																	
		P.3.2																	
		P.3.3																	
	Stainless steel	P.4.1																	
		P.4.2																	
M	Stainless steel	M.1.1																	
		M.2.1																	
		M.3.1																	
K	Grey cast iron	K.1.1																	
		K.1.2																	
	Spherulitic graphite cast iron	K.2.1																	
		K.2.2																	
	Malleable iron	K.3.1																	
		K.3.2																	
N	Aluminum alloys	N.1.1																	
		N.1.2																	
	Cast Aluminium Alloys	N.2.1																	
		N.2.2																	
		N.2.3																	
	Copper and copper alloys (Bronze, Brass)	N.3.1																	
		N.3.2																	
		N.3.3																	
	Magnesium alloys	N.4.1																	
O	Non metal materials	O.1.1																	
		O.1.2																	
		O.2.1																	
		O.2.2																	
		O.3.1																	

* for drilling with interrupted cut use coated HM-reamers

Applications:

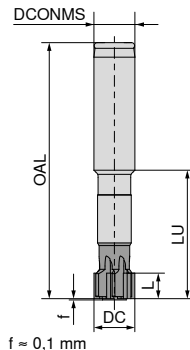
Main application

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



DST	DBC	DBG-P	DST	TiN
56J.93 ≤ 3xD ∠ 45° ASG3000 CERMET Through hole	56J.17 ≤ 3xD ∠ 45/8° ASG0706 HM Through hole	56J.65 ≤ 3xD ∠ 45° ASG0106 HM Through hole	56J.93 ≤ 3xD ∠ 25° ASG4000 CERMET Through hole	56J.71 ≤ 3xD ∠ 45° ASG3000 HM Through hole

40 625 ...						40 648 ...						40 652 ...						40 635 ...						40 605 ...					
DC _{H7} mm	OAL mm	LU mm	L mm	DCONMS _{h6} mm	ZEFP	£ U3		£ U3		£ U3		£ U3		£ U3		£ U3		£ U3		£ U3		£ U3		£ U3		£ U3		£ U3	
5,60 - 5,99	85	40	10	12	4	665.23	xxxx ²⁾	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾	665.23	xxxx ²⁾	665.23	xxxx ²⁾	665.23	xxxx ²⁾	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾
6,00	85	40	10	12	4	550.40	060	665.23	06000 ¹⁾	300.81	06000	550.40	060	550.40	060	550.40	060	550.40	060	550.40	060	550.40	060	550.40	060	550.40	060	550.40	060
6,01 - 7,99	85	40	10	12	4	665.23	xxxx ²⁾	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾	665.23	xxxx ²⁾	665.23	xxxx ²⁾	665.23	xxxx ²⁾	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾
8,00	85	40	10	12	4	571.13	080	665.23	08000 ¹⁾	312.14	08000	571.13	080	571.13	080	571.13	080	571.13	080	571.13	080	571.13	080	571.13	080	571.13	080	571.13	080
8,01 - 8,89	85	40	10	12	4	665.23	xxxx ²⁾	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾	665.23	xxxx ²⁾	665.23	xxxx ²⁾	665.23	xxxx ²⁾	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾
8,90 - 9,89	95	50	10	12	6	766.05	xxxx ²⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ²⁾	766.05	xxxx ²⁾	766.05	xxxx ²⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾
9,90 - 9,99	95	50	10	12	6	766.05	xxxx ²⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ²⁾	766.05	xxxx ²⁾	766.05	xxxx ²⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾
10,00	95	50	10	12	6	618.25	100	766.05	10000 ¹⁾	337.90	10000	618.25	100	618.25	100	618.25	100	618.25	100	618.25	100	618.25	100	618.25	100	618.25	100	618.25	100
10,01 - 11,99	95	50	10	12	6	766.05	xxxx ²⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ²⁾	766.05	xxxx ²⁾	766.05	xxxx ²⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾
12,00	95	50	10	12	6	637.10	120	766.05	12000 ¹⁾	348.20	12000	637.10	120	637.10	120	637.10	120	637.10	120	637.10	120	637.10	120	637.10	120	637.10	120	637.10	120
12,01 - 13,99	95	50	10	12	6	766.05	xxxx ²⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ²⁾	766.05	xxxx ²⁾	766.05	xxxx ²⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾
14,00	95	50	10	12	6	682.34	140	766.05	14000 ¹⁾	372.93	14000	682.34	140	682.34	140	682.34	140	682.34	140	682.34	140	682.34	140	682.34	140	682.34	140	682.34	140
14,01 - 14,99	95	50	10	12	6	766.05	xxxx ²⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ²⁾	766.05	xxxx ²⁾	766.05	xxxx ²⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾
15,00	95	50	10	12	6	699.30	150	766.05	15000 ¹⁾	382.20	15000	699.30	150	699.30	150	699.30	150	699.30	150	699.30	150	699.30	150	699.30	150	699.30	150	699.30	150
15,01 - 15,89	95	50	10	12	6	766.05	xxxx ²⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ²⁾	766.05	xxxx ²⁾	766.05	xxxx ²⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾
15,90 - 15,99	100	50	10	16	6	941.63	xxxx ²⁾	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾	941.63	xxxx ²⁾	941.63	xxxx ²⁾	941.63	xxxx ²⁾	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾
16,00	100	50	10	16	6	716.27	160	941.63	16000 ¹⁾	391.47	16000	716.27	160	716.27	160	716.27	160	716.27	160	716.27	160	716.27	160	716.27	160	716.27	160	716.27	160
16,01 - 17,99	100	50	10	16	6	941.63	xxxx ²⁾	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾	941.63	xxxx ²⁾	941.63	xxxx ²⁾	941.63	xxxx ²⁾	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾
18,00	100	50	10	16	6	765.27	180	941.63	18000 ¹⁾	418.26	18000	765.27	180	765.27	180	765.27	180	765.27	180	765.27	180	765.27	180	765.27	180	765.27	180	765.27	180
18,01 - 18,89	100	50	10	16	6	941.63	xxxx ²⁾	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾	941.63	xxxx ²⁾	941.63	xxxx ²⁾	941.63	xxxx ²⁾	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾
18,90 - 19,99	120	60	10	20	6	1,143.07	xxxx ²⁾	1,143.07	xxxx ¹⁾	1,143.07	xxxx ¹⁾	1,143.07	xxxx ¹⁾	1,143.07	xxxx ²⁾	1,143.07	xxxx ²⁾	1,143.07	xxxx ²⁾	1,143.07	xxxx ¹⁾	1,143.07	xxxx ¹⁾	1,143.07	xxxx ¹⁾	1,143.07	xxxx ¹⁾	1,143.07	xxxx ¹⁾
20,00	120	60	10	20	6	825.59	200	1,143.07	20000 ¹⁾	451.23	20000	825.59	200	825.59	200	825.59	200	825.59	200	825.59	200	825.59	200	825.59	200	825.59	200	825.59	200
20,01 - 25,89	120	60	10	20	6	1,143.07	xxxx ²⁾	1,143.07	xxxx ¹⁾	1,143.07	xxxx ¹⁾	1,143.07	xxxx ¹⁾	1,143.07	xxxx ²⁾	1,143.07	xxxx ²⁾	1,143.07	xxxx ²⁾	1,143.07	xxxx ¹⁾	1,143.07	xxxx ¹⁾	1,143.07	xxxx ¹⁾	1,143.07	xxxx ¹⁾	1,143.07	xxxx ¹⁾
P							●				●				●							○							
M											●																		
K							●												○								○		
N							○		●																	●			
S																													
H																													
O											○																		

- 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. Page 76–79



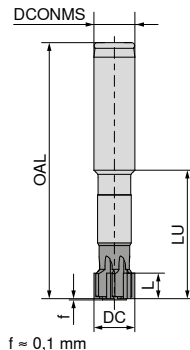
Do not heat shrink tools !



For xxxx please indicate requested Ø in H7 in the order (e.g. 15.89 H7 → article no. 40 635 1589) !
 All other diameters and tolerance classes are also possible on request (e.g. 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



DC _{H7} mm	OAL mm	LU mm	L mm	DCONMS _{h6} mm	ZEFP	40 644 ... £ U3	40 640 ... £ U3	40 657 ... £ U3
5,60 - 5,99	85	40	10	12	4	665.23	665.23	665.23
6,00	85	40	10	12	4	665.23	665.23	665.23
6,01 - 7,99	85	40	10	12	4	665.23	665.23	665.23
8,00	85	40	10	12	4	665.23	665.23	665.23
8,01 - 8,89	85	40	10	12	4	665.23	665.23	665.23
8,90 - 9,89	95	50	10	12	6	766.05	766.05	766.05
9,90 - 9,99	95	50	10	12	6	766.05	766.05	766.05
10,00	95	50	10	12	6	766.05	766.05	766.05
10,01 - 11,99	95	50	10	12	6	766.05	766.05	766.05
12,00	95	50	10	12	6	766.05	766.05	766.05
12,01 - 13,99	95	50	10	12	6	766.05	766.05	766.05
14,00	95	50	10	12	6	766.05	766.05	766.05
14,01 - 14,99	95	50	10	12	6	766.05	766.05	766.05
15,00	95	50	10	12	6	766.05	766.05	766.05
15,01 - 15,89	95	50	10	12	6	766.05	766.05	766.05
15,90 - 15,99	100	50	10	16	6	941.63	941.63	941.63
16,00	100	50	10	16	6	941.63	941.63	941.63
16,01 - 17,99	100	50	10	16	6	941.63	941.63	941.63
18,00	100	50	10	16	6	941.63	941.63	941.63
18,01 - 18,89	100	50	10	16	6	941.63	941.63	941.63
18,90 - 19,99	120	60	10	20	6	1,143.07	1,143.07	1,143.07
20,00	120	60	10	20	6	1,143.07	1,143.07	1,143.07
20,01 - 25,89	120	60	10	20	6	1,143.07	1,143.07	1,143.07
P								
M								
K								
N								
S								
H								
O								

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

→ v. Page 76–79



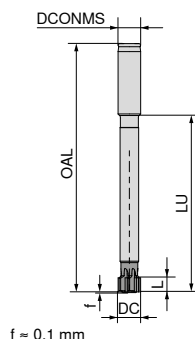
Do not heat shrink tools !



For xxxx please indicate requested Ø in H7 in the order (e.g. 15.89 H7 → article no. 40 644 1589)!
All other diameters and tolerance classes are also possible on request (e.g. 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



DST	DBC	DBG-P	DST	TiN
56R.93 ≤ 5xD ∠ 45° ASG3000 CERMET Through hole	56R.17 ≤ 5xD ∠ 45/8° ASG0706 HM Through hole	56R.65 ≤ 5xD ∠ 45° ASG0106 HM Through hole	56R.93 ≤ 5xD ∠ 25° ASG4000 CERMET Through hole	56R.71 ≤ 5xD ∠ 45° ASG3000 HM Through hole

DC H7 mm	OAL mm	LU mm	L mm	DCONMS h6 mm	ZEFP	40 626 ...		40 649 ...		40 653 ...		40 636 ...		40 606 ...	
						£	U3	£	U3	£	U3	£	U3	£	U3
5,60 - 5,99	130	85	10	12	4	665.23	xxxx ²⁾	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾	665.23	xxxx ²⁾	665.23	xxxx ¹⁾
6,00	130	85	10	12	4	550.40	060	665.23	06000 ¹⁾	300.81	06000	550.40	060	550.40	060
6,01 - 7,99	130	85	10	12	4	665.23	xxxx ²⁾	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾	665.23	xxxx ²⁾	665.23	xxxx ¹⁾
8,00	130	85	10	12	4	571.13	080	665.23	08000 ¹⁾	312.14	08000	571.13	080	571.13	080
8,01 - 8,89	130	85	10	12	4	665.23	xxxx ²⁾	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾	665.23	xxxx ²⁾	665.23	xxxx ¹⁾
8,90 - 9,89	130	85	10	12	6	766.05	xxxx ²⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ²⁾	766.05	xxxx ¹⁾
9,90 - 9,99	160	115	10	12	6	850.37	xxxx ²⁾	850.37	xxxx ¹⁾	850.37	xxxx ¹⁾	850.37	xxxx ²⁾	850.37	xxxx ¹⁾
10,00	160	115	10	12	6	618.25	100	850.37	10000 ¹⁾	337.90	10000	618.25	100	618.25	100
10,01 - 11,99	160	115	10	12	6	850.37	xxxx ²⁾	850.37	xxxx ¹⁾	850.37	xxxx ¹⁾	850.37	xxxx ²⁾	850.37	xxxx ¹⁾
12,00	160	115	10	12	6	637.10	120	850.37	12000 ¹⁾	348.20	12000	637.10	120	637.10	120
12,01 - 13,99	160	115	10	12	6	850.37	xxxx ²⁾	850.37	xxxx ¹⁾	850.37	xxxx ¹⁾	850.37	xxxx ²⁾	850.37	xxxx ¹⁾
14,00	160	115	10	12	6	682.34	140	850.37	14000 ¹⁾	372.93	14000	682.34	140	682.34	140
14,01 - 14,99	160	115	10	12	6	850.37	xxxx ²⁾	850.37	xxxx ¹⁾	850.37	xxxx ¹⁾	850.37	xxxx ²⁾	850.37	xxxx ¹⁾
15,00	160	115	10	12	6	699.30	150	850.37	15000 ¹⁾	382.20	15000	699.30	150	699.30	150
15,01 - 15,89	160	115	10	12	6	850.37	xxxx ²⁾	850.37	xxxx ¹⁾	850.37	xxxx ¹⁾	850.37	xxxx ²⁾	850.37	xxxx ¹⁾
15,90 - 15,99	180	130	10	16	6	941.63	xxxx ²⁾	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾	941.63	xxxx ²⁾	941.63	xxxx ¹⁾
16,00	180	130	10	16	6	716.27	160	941.63	16000 ¹⁾	391.47	16000	716.27	160	716.27	160
16,01 - 17,99	180	130	10	16	6	941.63	xxxx ²⁾	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾	941.63	xxxx ²⁾	941.63	xxxx ¹⁾
18,00	180	130	10	16	6	765.27	180	941.63	18000 ¹⁾	418.26	18000	765.27	180	765.27	180
18,01 - 18,89	180	130	10	16	6	941.63	xxxx ²⁾	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾	941.63	xxxx ²⁾	941.63	xxxx ¹⁾
18,90 - 19,99	200	140	10	20	6	1,143.07	xxxx ²⁾	1,143.07	xxxx ¹⁾	1,143.07	xxxx ¹⁾	1,143.07	xxxx ²⁾	1,143.07	xxxx ¹⁾
20,00	200	140	10	20	6	825.59	200	1,143.07	20000 ¹⁾	451.23	20000	825.59	200	825.59	200
20,01 - 25,89	200	140	10	20	6	1,143.07	xxxx ²⁾	1,143.07	xxxx ¹⁾	1,143.07	xxxx ¹⁾	1,143.07	xxxx ²⁾	1,143.07	xxxx ¹⁾
P							●				●		●		○
M											●				
K							●						○		○
N							○		●						●
S															
H															
O											○				

- 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

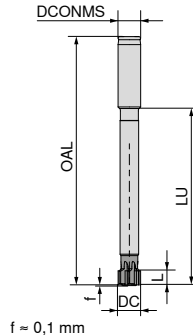
→ v_c Page 76–79

Do not heat shrink tools !

For xxxx please indicate requested Ø in H7 in the order (e.g. 15.89 H7 → article no. 40 636 1589) !
 All other diameters and tolerance classes are also possible on request (e.g. 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



DBG-P	DBC	DBG-P
		
56Q.65 ≤ 5xD ◊ 45° ASG0106 HM Blind hole	56Q.17 ≤ 5xD ◊ 45/8° ASG0706 HM Blind hole	56Q.65 ≤ 5xD ◊ 45° ASG3000 HM Blind hole

DC _{H7} mm	OAL mm	LU mm	L mm	DCONMS _{h6} mm	ZEFP	40 645 ...		40 641 ...		40 665 ...	
						£ U3		£ U3		£ U3	
5,60 - 5,99	130	85	10	12	4	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾
6,00	130	85	10	12	4	665.23	06000 ¹⁾	665.23	06000 ¹⁾	665.23	06000 ¹⁾
6,01 - 7,99	130	85	10	12	4	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾
8,00	130	85	10	12	4	665.23	08000 ¹⁾	665.23	08000 ¹⁾	665.23	08000 ¹⁾
8,01 - 8,89	130	85	10	12	4	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾	665.23	xxxx ¹⁾
8,90 - 9,89	130	85	10	12	6	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾	766.05	xxxx ¹⁾
9,90 - 9,99	160	115	10	12	6	850.37	xxxx ¹⁾	850.37	xxxx ¹⁾	850.37	xxxx ¹⁾
10,00	160	115	10	12	6	850.37	10000 ¹⁾	850.37	10000 ¹⁾	850.37	10000 ¹⁾
10,01 - 11,99	160	115	10	12	6	850.37	xxxx ¹⁾	850.37	xxxx ¹⁾	850.37	xxxx ¹⁾
12,00	160	115	10	12	6	850.37	12000 ¹⁾	850.37	12000 ¹⁾	850.37	12000 ¹⁾
12,01 - 13,99	160	115	10	12	6	850.37	xxxx ¹⁾	850.37	xxxx ¹⁾	850.37	xxxx ¹⁾
14,00	160	115	10	12	6	850.37	14000 ¹⁾	850.37	14000 ¹⁾	850.37	14000 ¹⁾
14,01 - 14,99	160	115	10	12	6	850.37	xxxx ¹⁾	850.37	xxxx ¹⁾	850.37	xxxx ¹⁾
15,00	160	115	10	12	6	850.37	15000 ¹⁾	850.37	15000 ¹⁾	850.37	15000 ¹⁾
15,01 - 15,89	160	115	10	12	6	850.37	xxxx ¹⁾	850.37	xxxx ¹⁾	850.37	xxxx ¹⁾
15,90 - 15,99	180	130	10	16	6	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾
16,00	180	130	10	16	6	941.63	16000 ¹⁾	941.63	16000 ¹⁾	941.63	16000 ¹⁾
16,01 - 17,99	180	130	10	16	6	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾
18,00	180	130	10	16	6	941.63	18000 ¹⁾	941.63	18000 ¹⁾	941.63	18000 ¹⁾
18,01 - 18,89	180	130	10	16	6	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾	941.63	xxxx ¹⁾
18,90 - 19,99	200	140	10	20	6	1,143.07	xxxx ¹⁾	1,143.07	xxxx ¹⁾	1,143.07	xxxx ¹⁾
20,00	200	140	10	20	6	1,143.07	20000 ¹⁾	1,143.07	20000 ¹⁾	1,143.07	20000 ¹⁾
20,01 - 25,89	200	140	10	20	6	1,143.07	xxxx ¹⁾	1,143.07	xxxx ¹⁾	1,143.07	xxxx ¹⁾
P							•		•		•
M							•		•		•
K											•
N									•		
S											
H											
O									○		

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

→ v. Page 76–79



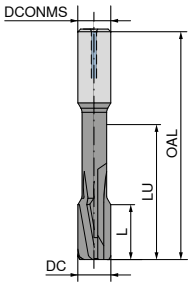
Do not heat shrink tools!



For xxxx please indicate requested Ø in H7 in the order (e.g. 15.89 H7 → article no. 40 645 1589)!
All other diameters and tolerance classes are also possible on request (e.g. 18.5^{+0.025} or 18 N7).

Fullmax – High-performance machine reamers, short

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



51P.57
HA
Left Hand Helix
◁ 30°
ASG2210
Solid carbide
Through hole

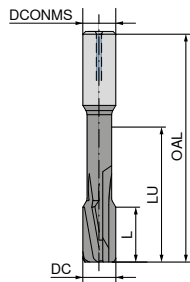
40 483 ...

DC _{H7} mm	OAL mm	L mm	LU mm	DCONMS _{h6} mm	ZEFP	£ U4	
4	50	12	22	4	4	101.57	04000
5	64	12	28	6	4	103.09	05000
6	64	12	28	6	4	105.38	06000
7	70	16	34	8	6	109.97	07000
8	70	16	34	8	6	109.97	08000
9	80	16	40	10	6	155.40	09000
10	80	16	40	10	6	155.40	10000
11	90	20	45	12	6	206.18	11000
12	90	20	45	12	6	206.18	12000
16	93	20	45	16	8	305.74	16000
P							●
M							●
K							●
N							○
S							○
H							○
O							

→ v_c Page 82

Fullmax – High-performance machine reamers, short

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
- ▲ specialised geometries and coatings
- ▲ tolerance: Ø 2,96 – 5,96 mm = +0,004 mm
- ▲ tolerance: Ø 5,97 – 20,05 mm = +0,005 mm



51P.57

HA

Left Hand Helix

30°

ASG2210
Solid carbide
Through hole

40 489 ...

DC +0,004/+0,005 mm	OAL mm	L mm	LU mm	DCONMS _{h6} mm	ZEFP	£ U4	
2,96 - 3,96	50	12	22	4	4	126.96	xxxxx ¹⁾
3,97	50	12	22	4	4	107.68	03970
3,98	50	12	22	4	4	107.68	03980
3,99	50	12	22	4	4	107.68	03990
4,00	50	12	22	4	4	107.68	04000
4,01	50	12	22	4	4	107.68	04010
4,02	50	12	22	4	4	107.68	04020
4,03	50	12	22	4	4	107.68	04030
4,04 - 4,05	50	12	22	4	4	126.96	xxxxx ¹⁾
4,06 - 4,96	64	12	28	6	4	128.87	xxxxx ¹⁾
4,97	64	12	28	6	4	109.97	04970
4,98	64	12	28	6	4	109.97	04980
4,99	64	12	28	6	4	109.97	04990
5,00	64	12	28	6	4	109.97	05000
5,01	64	12	28	6	4	109.97	05010
5,02	64	12	28	6	4	109.97	05020
5,03	64	12	28	6	4	109.97	05030
5,04 - 5,96	64	12	28	6	4	128.87	xxxxx ¹⁾
5,97	64	12	28	6	4	110.83	05970
5,98	64	12	28	6	4	110.83	05980
5,99	64	12	28	6	4	110.83	05990
6,00	64	12	28	6	4	110.83	06000
6,01	64	12	28	6	4	110.83	06010
6,02	64	12	28	6	4	110.83	06020
6,03	64	12	28	6	4	110.83	06030
6,04 - 6,05	64	12	28	6	4	130.78	xxxxx ¹⁾
6,06 - 7,96	70	16	34	8	6	135.64	xxxxx ¹⁾
7,97	70	16	34	8	6	116.17	07970
7,98	70	16	34	8	6	116.17	07980
7,99	70	16	34	8	6	116.17	07990
P							●
M							●
K							●
N							○
S							○
H							○
O							

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

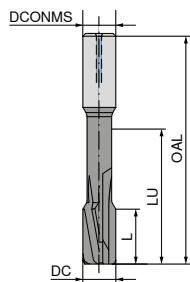
→ v. Page 82



This tool concept permits numerous tolerances. For sizes covered please refer to the table on → **page 103**.
For xxxxx please indicate required Ø in the order (e.g. Ø 8.82 mm → Article No. 40 489 08820)!

Fullmax – High-performance machine reamers, short

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
- ▲ specialised geometries and coatings
- ▲ tolerance: Ø 2,96 – 5,96 mm = +0,004 mm
- ▲ tolerance: Ø 5,97 – 20,05 mm = +0,005 mm



51P.57
HA
Left Hand Helix
◁ 30°
ASG2210
Solid carbide
Through hole

40 489 ...

DC +0,004/+0,005 mm	OAL mm	L mm	LU mm	DCONMS _{h6} mm	ZEFP	£ U4	
8,00	70	16	34	8	6	116.17	08000
8,01	70	16	34	8	6	116.17	08010
8,02	70	16	34	8	6	116.17	08020
8,03	70	16	34	8	6	116.17	08030
8,04 - 8,05	70	16	34	8	6	135.64	xxxxx ¹⁾
8,06 - 9,96	80	16	40	10	6	168.38	xxxxx ¹⁾
9,97	80	16	40	10	6	165.43	09970
9,98	80	16	40	10	6	165.43	09980
9,99	80	16	40	10	6	165.43	09990
10,00	80	16	40	10	6	165.43	10000
10,01	80	16	40	10	6	165.43	10010
10,02	80	16	40	10	6	165.43	10020
10,03	80	16	40	10	6	165.43	10030
10,04 - 10,05	80	16	40	10	6	168.38	xxxxx ¹⁾
10,06 - 11,96	90	20	45	12	6	253.91	xxxxx ¹⁾
11,97	90	20	45	12	6	220.03	11970
11,98	90	20	45	12	6	220.03	11980
11,99	90	20	45	12	6	220.03	11990
12,00	90	20	45	12	6	220.03	12000
12,01	90	20	45	12	6	220.03	12010
12,02	90	20	45	12	6	220.03	12020
12,03	90	20	45	12	6	220.03	12030
12,04 - 12,05	90	20	45	12	6	253.91	xxxxx ¹⁾
12,06 - 14,05	90	20	45	14	6	296.19	xxxxx ¹⁾
14,06 - 15,96	93	20	48	16	6	337.63	xxxxx ¹⁾
15,97 - 16,05	93	20	48	16	8	381.24	xxxxx ¹⁾
16,06 - 18,05	100	20	52	18	8	406.07	xxxxx ¹⁾
18,06 - 20,05	102	20	52	20	8	431.17	xxxxx ¹⁾
P							●
M							●
K							●
N							○
S							○
H							○
O							

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

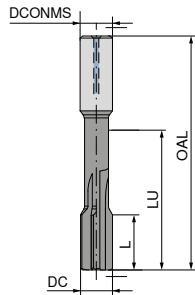
→ v. Page 82



This tool concept permits numerous tolerances. For sizes covered please refer to the table on → **page 103**.
For xxxxx please indicate required Ø in the order (e.g. Ø 8.82 mm → Article No. 40 489 08820)!

Fullmax – High-performance machine reamers, short

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



51M.57
HA straight flute
60°
ASG2110
Solid carbide
Blind hole

40 481 ...

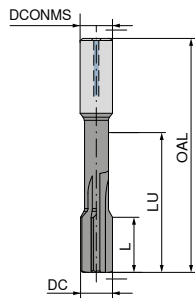
DC _{H7} mm	OAL mm	L mm	LU mm	DCONMS _{h6} mm	ZEFP	£ U4	
4	50	12	22	4	4	84.62	04000
5	64	12	28	6	4	86.18	05000
6	64	12	28	6	4	90.04	06000
7	70	16	34	8	6	94.62	07000
8	70	16	34	8	6	94.62	08000
9	80	16	40	10	6	135.36	09000
10	80	16	40	10	6	135.36	10000
11	90	20	45	12	6	180.02	11000
12	90	20	45	12	6	180.02	12000
16	93	20	45	16	8	273.67	16000

P	•
M	•
K	•
N	○
S	○
H	○
O	

→ v_c Page 82

Fullmax – High-performance machine reamers, short

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
- ▲ specialised geometries and coatings
- ▲ tolerance: $\varnothing 2,96 - 5,96 \text{ mm} = +0,004 \text{ mm}$
- ▲ tolerance: $\varnothing 5,97 - 20,05 \text{ mm} = +0,005 \text{ mm}$



51M.57
HA straight flute
 $\angle 60^\circ$
ASG2110
Solid carbide
Blind hole

40 488 ...

DC +0,004/+0,005 mm	OAL mm	L mm	LU mm	DCONMS _{h6} mm	ZEFP	£ U4	
2,96 - 3,96	50	12	22	4	4	105.77	xxxxx ¹⁾
3,97	50	12	22	4	4	90.77	03970
3,98	50	12	22	4	4	90.77	03980
3,99	50	12	22	4	4	90.77	03990
4,00	50	12	22	4	4	90.77	04000
4,01	50	12	22	4	4	90.77	04010
4,02	50	12	22	4	4	90.77	04020
4,03	50	12	22	4	4	90.77	04030
4,04 - 4,05	50	12	22	4	4	105.77	xxxxx ¹⁾
4,06 - 4,96	64	12	28	6	4	108.73	xxxxx ¹⁾
4,97	64	12	28	6	4	93.06	04970
4,98	64	12	28	6	4	93.06	04980
4,99	64	12	28	6	4	93.06	04990
5,00	64	12	28	6	4	93.06	05000
5,01	64	12	28	6	4	93.06	05010
5,02	64	12	28	6	4	93.06	05020
5,03	64	12	28	6	4	93.06	05030
5,04 - 5,96	64	12	28	6	4	108.73	xxxxx ¹⁾
5,97	64	12	28	6	4	94.62	05970
5,98	64	12	28	6	4	94.62	05980
5,99	64	12	28	6	4	94.62	05990
6,00	64	12	28	6	4	94.62	06000
6,01	64	12	28	6	4	94.62	06010
6,02	64	12	28	6	4	94.62	06020
6,03	64	12	28	6	4	94.62	06030
6,04 - 6,05	64	12	28	6	4	109.67	xxxxx ¹⁾
6,06 - 7,96	70	16	34	8	6	117.32	xxxxx ¹⁾
7,97	70	16	34	8	6	99.28	07970
7,98	70	16	34	8	6	99.28	07980
7,99	70	16	34	8	6	99.28	07990

P	●
M	●
K	●
N	○
S	○
H	○
O	

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

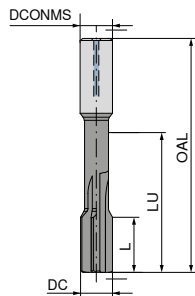
→ v. Page 82



This tool concept permits numerous tolerances. For sizes covered please refer to the table on → **page 103**.
For xxxxx please indicate required $\varnothing$ in the order (e.g. $\varnothing 8.82 \text{ mm}$ → Article No. 40 488 08820)!

Fullmax – High-performance machine reamers, short

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
- ▲ specialised geometries and coatings
- ▲ tolerance: Ø 2,96 – 5,96 mm = +0,004 mm
- ▲ tolerance: Ø 5,97 – 20,05 mm = +0,005 mm

**NEW****DBG-U**

51M.57
HA straight flute
60°
ASG2110
Solid carbide
Blind hole

40 488 ...

DC +0,004/+0,005 mm	OAL mm	L mm	LU mm	DCONMS _{h6} mm	ZEFP	£ U4	
8,00	70	16	34	8	6	99.28	08000
8,01	70	16	34	8	6	99.28	08010
8,02	70	16	34	8	6	99.28	08020
8,03	70	16	34	8	6	99.28	08030
8,04 - 8,05	70	16	34	8	6	117.32	xxxxx ¹⁾
8,06 - 9,96	80	16	40	10	6	149.10	xxxxx ¹⁾
9,97	80	16	40	10	6	144.62	09970
9,98	80	16	40	10	6	144.62	09980
9,99	80	16	40	10	6	144.62	09990
10,00	80	16	40	10	6	144.62	10000
10,01	80	16	40	10	6	144.62	10010
10,02	80	16	40	10	6	144.62	10020
10,03	80	16	40	10	6	144.62	10030
10,04 - 10,05	80	16	40	10	6	149.10	xxxxx ¹⁾
10,06 - 11,96	90	20	45	12	6	226.03	xxxxx ¹⁾
11,97	90	20	45	12	6	193.11	11970
11,98	90	20	45	12	6	193.11	11980
11,99	90	20	45	12	6	193.11	11990
12,00	90	20	45	12	6	193.11	12000
12,01	90	20	45	12	6	193.11	12010
12,02	90	20	45	12	6	193.11	12020
12,03	90	20	45	12	6	193.11	12030
12,04 - 12,05	90	20	45	12	6	226.03	xxxxx ¹⁾
12,06 - 14,05	90	20	45	14	6	262.59	xxxxx ¹⁾
14,06 - 15,96	93	20	48	16	6	303.92	xxxxx ¹⁾
15,97 - 16,05	93	20	48	16	8	343.07	xxxxx ¹⁾
16,06 - 18,05	100	20	52	18	8	363.88	xxxxx ¹⁾
18,06 - 20,05	102	20	52	20	8	394.22	xxxxx ¹⁾
P							●
M							●
K							●
N							○
S							○
H							○
O							

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

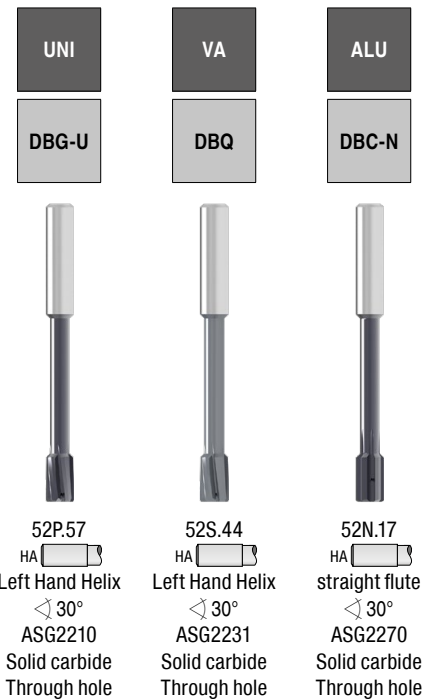
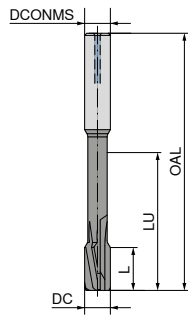
→ v. Page 82



This tool concept permits numerous tolerances. For sizes covered please refer to the table on → **page 103**.
For xxxxx please indicate required Ø in the order (e.g. Ø 8.82 mm → Article No. 40 488 08820)!

Fullmax – High-performance machine reamers, long

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



DC _{H7} mm	OAL mm	L mm	LU mm	DCONMS _{h6} mm	ZEFP
4	60	12	32	4	4
5	76	12	40	6	4
6	76	12	40	6	4
7	101	16	65	8	6
8	101	16	65	8	6
9	108	16	68	10	6
10	108	16	68	10	6
11	130	20	85	12	6
12	130	20	85	12	6
16	150	20	102	16	6

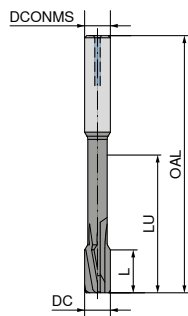
40 484 ...	40 401 ...	40 471 ...
£ U4	£ U4	£ U4
135.98 04000	149.37 04000	149.37 04000
138.04 05000	151.43 05000	151.43 05000
141.14 06000	154.53 06000	154.53 06000
147.32 07000	161.74 07000	161.74 07000
147.32 08000	161.74 08000	161.74 08000
208.10 09000	229.73 09000	229.73 09000
208.10 10000	229.73 10000	229.73 10000
276.09 11000	302.87 11000	302.87 11000
276.09 12000	302.87 12000	302.87 12000
362.62 16000	398.67 16000	398.67 16000

P	•	•
M	•	•
K	•	
N	○	•
S	○	
H	○	
O		○

→ v_c Page 80+81

Fullmax – High-performance machine reamers, long

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
- ▲ specialised geometries and coatings
- ▲ tolerance: Ø 2,96 – 5,96 mm = +0,004 mm
- ▲ tolerance: Ø 5,97 – 20,05 mm = +0,005 mm



UNI	VA	K	ALU	H
DBG-U	DBQ	DBG-P	DBC-N	DBF-A
52P.57 HA Left Hand Helix ◁ 30° ASG2210 Solid carbide Through hole	52S.44 HA Left Hand Helix ◁ 30° ASG2231 Solid carbide Through hole	52J.65 HA straight flute ◁ 30° ASG2350 Solid carbide Through hole	52N.17 HA straight flute ◁ 30° ASG2270 Solid carbide Through hole	52G.55 HA straight flute ◁ 30° ASG2360 Solid carbide Through hole

DC +0,004/+0,005 mm	OAL mm	L mm	LU mm	DCONMS mm	h ₆	ZEFP	40 486 ...		40 403 ...		40 477 ...		40 473 ...		40 475 ...	
							£	U4	£	U4	£	U4	£	U4	£	U4
2,96 - 3,96	60	12	32	4	6											
2,96 - 3,96	60	12	32	4	4		309.19	xxxxx ¹⁾	316.31	xxxxx ²⁾	316.31	xxxxx ¹⁾	316.31	xxxxx ¹⁾	316.31	xxxxx ¹⁾
3,97	60	12	32	4	4		144.23	03970	158.66	03970	316.31	03970 ¹⁾	316.31	03970 ¹⁾	316.31	03970 ¹⁾
3,97	60	12	32	4	6						316.31	03970 ¹⁾				
3,98	60	12	32	4	4		144.23	03980	158.66	03980			316.31	03980 ¹⁾	316.31	03980 ¹⁾
3,98	60	12	32	4	6						316.31	03980 ¹⁾				
3,99	60	12	32	4	4		144.23	03990	158.66	03990			316.31	03990 ¹⁾	316.31	03990 ¹⁾
3,99	60	12	32	4	6						316.31	03990 ¹⁾				
4,00	60	12	32	4	4		144.23	04000	158.66	04000			316.31	04000 ¹⁾	360.73	04000 ¹⁾
4,00	60	12	32	4	6						360.73	04000 ¹⁾				
4,01	60	12	32	4	4		144.23	04010	158.66	04010			316.31	04010 ¹⁾	316.31	04010 ¹⁾
4,01	60	12	32	4	6						316.31	04010 ¹⁾				
4,02	60	12	32	4	4		144.23	04020	158.66	04020			316.31	04020 ¹⁾	316.31	04020 ¹⁾
4,02	60	12	32	4	6						316.31	04020 ¹⁾				
4,03	60	12	32	4	4		144.23	04030	158.66	04030			316.31	04030 ¹⁾	316.31	04030 ¹⁾
4,03	60	12	32	4	6						316.31	04030 ¹⁾				
4,04 - 4,05	60	12	32	4	4		309.19	xxxxx ¹⁾	316.31	xxxxx ²⁾			316.31	xxxxx ¹⁾	316.31	xxxxx ¹⁾
4,04 - 4,05	60	12	32	4	6						316.31	xxxxx ¹⁾				
4,06 - 4,96	76	12	40	6	6						327.94	xxxxx ¹⁾				
4,06 - 4,96	76	12	40	6	4		313.88	xxxxx ¹⁾	327.94	xxxxx ²⁾			327.94	xxxxx ¹⁾	327.94	xxxxx ¹⁾
4,97	76	12	40	6	4		147.32	04970	161.74	04970			327.94	04970 ¹⁾	327.94	04970 ¹⁾
4,97	76	12	40	6	6						327.94	04970 ¹⁾				
4,98	76	12	40	6	4		147.32	04980	161.74	04980			327.94	04980 ¹⁾	327.94	04980 ¹⁾
4,98	76	12	40	6	6						327.94	04980 ¹⁾				
4,99	76	12	40	6	4		147.32	04990	161.74	04990			327.94	04990 ¹⁾	327.94	04990 ¹⁾
4,99	76	12	40	6	6						327.94	04990 ¹⁾				
5,00	76	12	40	6	4		147.32	05000	161.74	05000			327.94	05000 ¹⁾	372.53	05000 ¹⁾
5,00	76	12	40	6	6						372.53	05000 ¹⁾				
5,01	76	12	40	6	4		147.32	05010	161.74	05010			327.94	05010 ¹⁾	327.94	05010 ¹⁾
P																
M																
K																
N																
S																
H																
O																

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

→ v_c Page 80+81

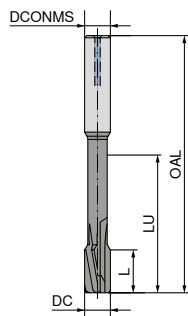
2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 32 working days



This tool concept permits numerous tolerances. For sizes covered please refer to the table on → page 103.
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, long

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
- ▲ specialised geometries and coatings
- ▲ tolerance: Ø 2,96 – 5,96 mm = +0,004 mm
- ▲ tolerance: Ø 5,97 – 20,05 mm = +0,005 mm



UNI	VA	K	ALU	H
DBG-U	DBQ	DBG-P	DBC-N	DBF-A
52P.57 HA Left Hand Helix ◁ 30° ASG2210 Solid carbide Through hole	52S.44 HA Left Hand Helix ◁ 30° ASG2231 Solid carbide Through hole	52J.65 HA straight flute ◁ 30° ASG2350 Solid carbide Through hole	52N.17 HA straight flute ◁ 30° ASG2270 Solid carbide Through hole	52G.55 HA straight flute ◁ 30° ASG2360 Solid carbide Through hole

DC +0,004/+0,005 mm	OAL mm	L mm	LU mm	DCONMS mm	h ₆	ZEFP	40 486 ...		40 403 ...		40 477 ...		40 473 ...		40 475 ...	
							£		£		£		£		£	
5,01	76	12	40	6	6	6					327.94	05010 ¹⁾				
5,02	76	12	40	6	4	4	147.32	05020	161.74	05020			327.94	05020 ¹⁾	327.94	05020 ¹⁾
5,02	76	12	40	6	6	6					327.94	05020 ¹⁾				
5,03	76	12	40	6	4	4	147.32	05030	161.74	05030			327.94	05030 ¹⁾	327.94	05030 ¹⁾
5,03	76	12	40	6	6	6					327.94	05030 ¹⁾				
5,04 - 5,96	76	12	40	6	4	4	313.88	xxxxx ¹⁾	327.94	xxxxx ²⁾			327.94	xxxxx ¹⁾	327.94	xxxxx ¹⁾
5,04 - 5,96	76	12	40	6	6	6					327.94	xxxxx ¹⁾				
5,97	76	12	40	6	4	4	148.34	05970	163.80	05970			327.94	05970 ¹⁾	327.94	05970 ¹⁾
5,97	76	12	40	6	6	6					327.94	05970 ¹⁾				
5,98	76	12	40	6	4	4	148.34	05980	163.80	05980			327.94	05980 ¹⁾	327.94	05980 ¹⁾
5,98	76	12	40	6	6	6					327.94	05980 ¹⁾				
5,99	76	12	40	6	4	4	148.34	05990	163.80	05990			327.94	05990 ¹⁾	327.94	05990 ¹⁾
5,99	76	12	40	6	6	6					327.94	05990 ¹⁾				
6,00	76	12	40	6	4	4	148.34	06000	163.80	06000			327.94	06000 ¹⁾	372.53	06000 ¹⁾
6,00	76	12	40	6	6	6					372.53	06000 ¹⁾				
6,01	76	12	40	6	4	4	148.34	06010	163.80	06010			327.94	06010 ¹⁾	327.94	06010 ¹⁾
6,01	76	12	40	6	6	6					327.94	06010 ¹⁾				
6,02	76	12	40	6	4	4	148.34	06020	163.80	06020			327.94	06020 ¹⁾	327.94	06020 ¹⁾
6,02	76	12	40	6	6	6					327.94	06020 ¹⁾				
6,03	76	12	40	6	4	4	148.34	06030	163.80	06030			327.94	06030 ¹⁾	327.94	06030 ¹⁾
6,03	76	12	40	6	6	6					327.94	06030 ¹⁾				
6,04 - 6,05	76	12	40	6	4	4	318.56	xxxxx ¹⁾	327.94	xxxxx ²⁾			327.94	xxxxx ¹⁾	327.94	xxxxx ¹⁾
6,04 - 6,05	76	12	40	6	6	6					327.94	xxxxx ¹⁾				
6,06 - 7,96	101	16	65	8	8	8					337.30	xxxxx ¹⁾				
6,06 - 7,96	101	16	65	8	6	6	330.37	xxxxx ¹⁾	337.30	xxxxx ²⁾			337.30	xxxxx ¹⁾	337.30	xxxxx ¹⁾
7,97	101	16	65	8	6	6	155.56	07970	171.01	07970			337.30	07970 ¹⁾	337.30	07970 ¹⁾
7,97	101	16	65	8	8	8					337.30	07970 ¹⁾				
7,98	101	16	65	8	6	6	155.56	07980	171.01	07980			337.30	07980 ¹⁾	337.30	07980 ¹⁾
7,98	101	16	65	8	8	8					337.30	07980 ¹⁾				
P																
M																
K																
N																
S																
H																
O																

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

→ v_c Page 80+81

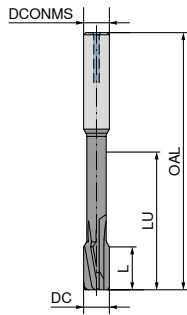
2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 32 working days



This tool concept permits numerous tolerances. For sizes covered please refer to the table on → page 103.
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, long

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
- ▲ specialised geometries and coatings
- ▲ tolerance: Ø 2,96 – 5,96 mm = +0,004 mm
- ▲ tolerance: Ø 5,97 – 20,05 mm = +0,005 mm



UNI	VA	K	ALU	H
DBG-U	DBQ	DBG-P	DBC-N	DBF-A
52P.57 HA Left Hand Helix ◁ 30° ASG2210 Solid carbide Through hole	52S.44 HA Left Hand Helix ◁ 30° ASG2231 Solid carbide Through hole	52J.65 HA straight flute ◁ 30° ASG2350 Solid carbide Through hole	52N.17 HA straight flute ◁ 30° ASG2270 Solid carbide Through hole	52G.55 HA straight flute ◁ 30° ASG2360 Solid carbide Through hole

DC +0,004/+0,005 mm	OAL mm	L mm	LU mm	DCONMS mm	h ₆	ZEFP	40 486 ...		40 403 ...		40 477 ...		40 473 ...		40 475 ...	
							£		£		£		£		£	
7,99	101	16	65	8	6		155.56	07990	171.01	07990	337.30	07990 ¹⁾	337.30	07990 ¹⁾	337.30	07990 ¹⁾
7,99	101	16	65	8	8											
8,00	101	16	65	8	6		155.56	08000	171.01	08000	337.30	08000 ¹⁾	337.30	08000 ¹⁾	384.15	08000 ¹⁾
8,00	101	16	65	8	8											
8,01	101	16	65	8	6		155.56	08010	171.01	08010	337.30	08010 ¹⁾	337.30	08010 ¹⁾	337.30	08010 ¹⁾
8,01	101	16	65	8	8											
8,02	101	16	65	8	6		155.56	08020	171.01	08020	337.30	08020 ¹⁾	337.30	08020 ¹⁾	337.30	08020 ¹⁾
8,02	101	16	65	8	8											
8,03	101	16	65	8	6		155.56	08030	171.01	08030	337.30	08030 ¹⁾	337.30	08030 ¹⁾	337.30	08030 ¹⁾
8,03	101	16	65	8	8											
8,04 - 8,05	101	16	65	8	6		330.37	xxxxx ¹⁾	337.30	xxxxx ²⁾	337.30	xxxxx ¹⁾	337.30	xxxxx ¹⁾	337.30	xxxxx ¹⁾
8,04 - 8,05	101	16	65	8	8											
8,06 - 9,96	108	16	68	10	8											
8,06 - 9,96	108	16	68	10	6		410.00	xxxxx ¹⁾	475.60	xxxxx ²⁾	475.60	xxxxx ¹⁾	475.60	xxxxx ¹⁾	475.60	xxxxx ¹⁾
9,97	108	16	68	10	6		221.49	09970	244.16	09970	475.60	09970 ¹⁾	475.60	09970 ¹⁾	475.60	09970 ¹⁾
9,97	108	16	68	10	8											
9,98	108	16	68	10	6		221.49	09980	244.16	09980	475.60	09980 ¹⁾	475.60	09980 ¹⁾	475.60	09980 ¹⁾
9,98	108	16	68	10	8											
9,99	108	16	68	10	6		221.49	09990	244.16	09990	475.60	09990 ¹⁾	475.60	09990 ¹⁾	475.60	09990 ¹⁾
9,99	108	16	68	10	8											
10,00	108	16	68	10	6		221.49	10000	244.16	10000	475.60	10000 ¹⁾	475.60	10000 ¹⁾	541.18	10000 ¹⁾
10,00	108	16	68	10	8											
10,01	108	16	68	10	6		221.49	10010	244.16	10010	475.60	10010 ¹⁾	475.60	10010 ¹⁾	475.60	10010 ¹⁾
10,01	108	16	68	10	8											
10,02	108	16	68	10	6		221.49	10020	244.16	10020	475.60	10020 ¹⁾	475.60	10020 ¹⁾	475.60	10020 ¹⁾
10,02	108	16	68	10	8											
10,03	108	16	68	10	6		221.49	10030	244.16	10030	475.60	10030 ¹⁾	475.60	10030 ¹⁾	475.60	10030 ¹⁾
10,03	108	16	68	10	8											
10,04 - 10,05	108	16	68	10	6		410.00	xxxxx ¹⁾	475.60	xxxxx ²⁾	475.60	xxxxx ¹⁾	475.60	xxxxx ¹⁾	475.60	xxxxx ¹⁾
P																
M																
K																
N																
S																
H																
O																

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

→ v_c Page 80+81

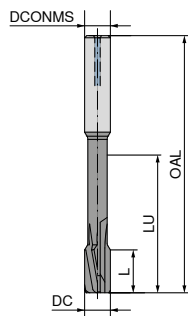
2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 32 working days



This tool concept permits numerous tolerances. For sizes covered please refer to the table on → page 103.
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, long

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
- ▲ specialised geometries and coatings
- ▲ tolerance: $\varnothing 2,96 - 5,96 \text{ mm} = +0,004 \text{ mm}$
- ▲ tolerance: $\varnothing 5,97 - 20,05 \text{ mm} = +0,005 \text{ mm}$



UNI	VA	K	ALU	H
DBG-U	DBQ	DBG-P	DBC-N	DBF-A
52P.57 HA Left Hand Helix $\angle 30^\circ$ ASG2210 Solid carbide Through hole	52S.44 HA Left Hand Helix $\angle 30^\circ$ ASG2231 Solid carbide Through hole	52J.65 HA straight flute $\angle 30^\circ$ ASG2350 Solid carbide Through hole	52N.17 HA straight flute $\angle 30^\circ$ ASG2270 Solid carbide Through hole	52G.55 HA straight flute $\angle 30^\circ$ ASG2360 Solid carbide Through hole

DC +0,004/+0,005 mm	OAL mm	L mm	LU mm	DCONMS mm	ZEFP	40 486 ...		40 403 ...		40 477 ...		40 473 ...		40 475 ...	
						£	U4	£	U4	£	U4	£	U4	£	U4
10,04 - 10,05	108	16	68	10	8					475.60	xxxxx ¹⁾				
10,06 - 11,96	130	20	85	12	8					637.12	xxxxx ¹⁾				
10,06 - 11,96	130	20	85	12	6	618.39	xxxxx ¹⁾	637.12	xxxxx ²⁾			637.12	xxxxx ¹⁾	637.12	xxxxx ¹⁾
11,97	130	20	85	12	6	294.63	11970	324.50	11970	637.12	11970 ¹⁾	637.12	11970 ¹⁾	637.12	11970 ¹⁾
11,97	130	20	85	12	8					637.12	11970 ¹⁾				
11,98	130	20	85	12	6	294.63	11980	324.50	11980	637.12	11980 ¹⁾	637.12	11980 ¹⁾	637.12	11980 ¹⁾
11,98	130	20	85	12	8					637.12	11980 ¹⁾				
11,99	130	20	85	12	6	294.63	11990	324.50	11990	637.12	11990 ¹⁾	637.12	11990 ¹⁾	637.12	11990 ¹⁾
11,99	130	20	85	12	8					637.12	11990 ¹⁾				
12,00	130	20	85	12	6	294.63	12000	324.50	12000	637.12	12000 ¹⁾	637.12	12000 ¹⁾	723.88	12000 ¹⁾
12,00	130	20	85	12	8					723.88	12000 ¹⁾				
12,01	130	20	85	12	6	294.63	12010	324.50	12010	637.12	12010 ¹⁾	637.12	12010 ¹⁾	637.12	12010 ¹⁾
12,01	130	20	85	12	8					637.12	12010 ¹⁾				
12,02	130	20	85	12	6	294.63	12020	324.50	12020	637.12	12020 ¹⁾	637.12	12020 ¹⁾	637.12	12020 ¹⁾
12,02	130	20	85	12	8					637.12	12020 ¹⁾				
12,03	130	20	85	12	6	294.63	12030	324.50	12030	637.12	12030 ¹⁾	637.12	12030 ¹⁾	637.12	12030 ¹⁾
12,03	130	20	85	12	8					637.12	12030 ¹⁾				
12,04 - 12,05	130	20	85	12	6	618.39	xxxxx ¹⁾	637.12	xxxxx ²⁾			637.12	xxxxx ¹⁾	637.12	xxxxx ¹⁾
12,04 - 12,05	130	20	85	12	8					637.12	xxxxx ¹⁾				
12,06 - 14,05	130	20	85	14	8					742.62	xxxxx ¹⁾				
12,06 - 14,05	130	20	85	14	6	721.44	xxxxx ¹⁾	742.62	xxxxx ²⁾			742.62	xxxxx ¹⁾	742.62	xxxxx ¹⁾
14,06 - 16,05	150	20	102	16	6	822.27	xxxxx ¹⁾	843.26	xxxxx ²⁾			843.26	xxxxx ¹⁾	843.26	xxxxx ¹⁾
14,06 - 16,05	150	20	102	16	8					843.26	xxxxx ¹⁾				
16,06 - 18,05	150	20	102	18	6	876.05	xxxxx ¹⁾	915.96	xxxxx ²⁾			915.96	xxxxx ¹⁾	915.96	xxxxx ¹⁾
16,06 - 18,05	150	20	102	18	8					915.96	xxxxx ¹⁾				
18,06 - 20,05	160	20	110	20	6	930.02	xxxxx ¹⁾	965.06	xxxxx ²⁾			965.06	xxxxx ¹⁾	965.06	xxxxx ¹⁾
18,06 - 20,05	160	20	110	20	8					965.06	xxxxx ¹⁾				
P							●		●						
M							●		●						
K							●				●				
N							○						●		
S							○								
H							○								●
O													○		

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

→ v_c Page 80+81

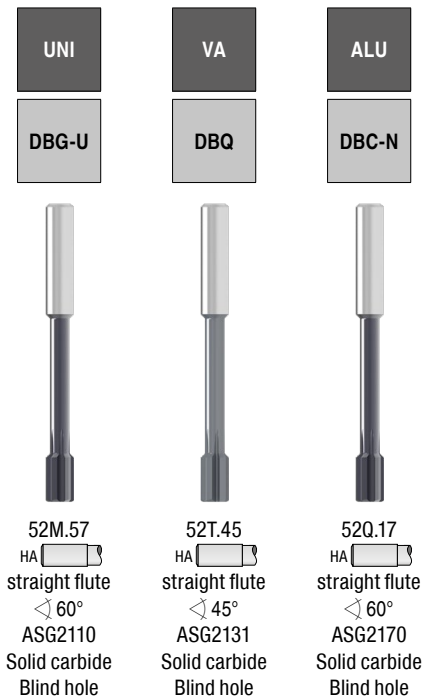
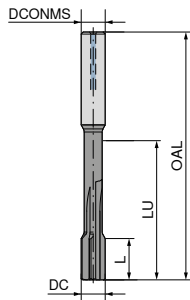
2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 32 working days



This tool concept permits numerous tolerances. For sizes covered please refer to the table on → page 103.
For xxxxx please indicate required $\varnothing$ in the order (e.g. $\varnothing 8.82 \text{ mm}$ → Article No. 40 486 08820!)

Fullmax – High-performance machine reamers, long

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

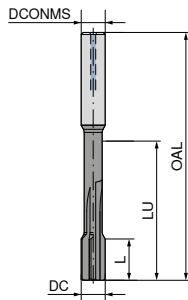


DC _{H7} mm	OAL mm	L mm	LU mm	DCONMS _{h6} mm	ZEFP	40 485 ... £ U4	40 402 ... £ U4	40 472 ... £ U4
4	60	12	32	4	4	113.32 04000	124.65 04000	124.65 04000
5	76	12	40	6	4	115.37 05000	127.74 05000	127.74 05000
6	76	12	40	6	4	120.54 06000	132.89 06000	132.89 06000
7	101	16	65	8	6	126.70 07000	139.07 07000	139.07 07000
8	101	16	65	8	6	126.70 08000	139.07 08000	139.07 08000
9	108	16	68	10	6	181.31 09000	199.86 09000	199.86 09000
10	108	16	68	10	6	181.31 10000	199.86 10000	199.86 10000
11	130	20	85	12	6	241.06 11000	264.76 11000	264.76 11000
12	130	20	85	12	6	241.06 12000	264.76 12000	264.76 12000
16	150	20	102	16	6	324.50 16000	357.47 16000	357.47 16000
P						●	●	
M						●	●	
K						●		
N						○		●
S						○		
H						○		
O								○

→ v_c Page 80+81

Fullmax – High-performance machine reamers, long

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
- ▲ specialised geometries and coatings
- ▲ tolerance: Ø 2,96 – 5,96 mm = +0,004 mm
- ▲ tolerance: Ø 5,97 – 20,05 mm = +0,005 mm



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

DC +0,004/+0,005 mm	OAL mm	L mm	LU mm	DCONMS mm	h ₆	ZEFP	40 487 ...		40 404 ...		40 478 ...		40 474 ...		40 476 ...	
							£	U4	£	U4	£	U4	£	U4	£	U4
2,96 - 3,96	60	12	32	4	6						267.03	xxxxx ²⁾				
2,96 - 3,96	60	12	32	4	4		257.66	xxxxx ¹⁾	267.03	xxxxx ²⁾			267.03	xxxxx ¹⁾	267.03	xxxxx ¹⁾
3,97	60	12	32	4	4		121.56	03970	133.93	03970			267.03	03970 ¹⁾	267.03	03970 ¹⁾
3,97	60	12	32	4	6						267.03	03970 ²⁾				
3,98	60	12	32	4	4		121.56	03980	133.93	03980			267.03	03980 ¹⁾	267.03	03980 ¹⁾
3,98	60	12	32	4	6						267.03	03980 ²⁾				
3,99	60	12	32	4	4		121.56	03990	133.93	03990			267.03	03990 ¹⁾	267.03	03990 ¹⁾
3,99	60	12	32	4	6						267.03	03990 ²⁾				
4,00	60	12	32	4	4		121.56	04000	133.93	04000			267.03	04000 ¹⁾	267.03	04000 ¹⁾
4,00	60	12	32	4	6						267.03	04000 ²⁾				
4,01	60	12	32	4	4		121.56	04010	133.93	04010			267.03	04010 ¹⁾	267.03	04010 ¹⁾
4,01	60	12	32	4	6						267.03	04010 ²⁾				
4,02	60	12	32	4	4		121.56	04020	133.93	04020			267.03	04020 ¹⁾	267.03	04020 ¹⁾
4,02	60	12	32	4	6						267.03	04020 ²⁾				
4,03	60	12	32	4	4		121.56	04030	133.93	04030			267.03	04030 ¹⁾	267.03	04030 ¹⁾
4,03	60	12	32	4	6						267.03	04030 ²⁾				
4,04 - 4,05	60	12	32	4	4		257.66	xxxxx ¹⁾	267.03	xxxxx ²⁾			267.03	xxxxx ¹⁾	267.03	xxxxx ¹⁾
4,04 - 4,05	60	12	32	4	6						267.03	xxxxx ²⁾				
4,06 - 4,96	76	12	40	6	6						274.16	xxxxx ¹⁾				
4,06 - 4,96	76	12	40	6	4		264.78	xxxxx ¹⁾	274.16	xxxxx ²⁾			274.16	xxxxx ¹⁾	274.16	xxxxx ¹⁾
4,97	76	12	40	6	4		124.65	04970	135.98	04970			274.16	04970 ¹⁾	274.16	04970 ¹⁾
4,97	76	12	40	6	6						274.16	04970 ²⁾				
4,98	76	12	40	6	4		124.65	04980	135.98	04980			274.16	04980 ¹⁾	274.16	04980 ¹⁾
4,98	76	12	40	6	6						274.16	04980 ²⁾				
4,99	76	12	40	6	4		124.65	04990	135.98	04990			274.16	04990 ¹⁾	274.16	04990 ¹⁾
4,99	76	12	40	6	6						274.16	04990 ²⁾				
5,00	76	12	40	6	4		124.65	05000	135.98	05000			274.16	05000 ¹⁾	274.16	05000 ¹⁾
5,00	76	12	40	6	6						274.16	05000 ²⁾				
5,01	76	12	40	6	4		124.65	05010	135.98	05010			274.16	05010 ¹⁾	274.16	05010 ¹⁾
P																
M																
K																
N																
S																
H																
O																

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

→ v_c Page 80+81

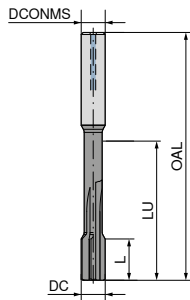
2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 32 working days



This tool concept permits numerous tolerances. For sizes covered please refer to the table on → page 103.
For xxxxx please indicate required Ø in the order (e.g. Ø 8.82 mm → Article no. 40 487 08820)!

Fullmax – High-performance machine reamers, long

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
- ▲ specialised geometries and coatings
- ▲ tolerance: $\varnothing 2,96 - 5,96 \text{ mm} = +0,004 \text{ mm}$
- ▲ tolerance: $\varnothing 5,97 - 20,05 \text{ mm} = +0,005 \text{ mm}$



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

DC +0,004/+0,005 mm	OAL mm	L mm	LU mm	DCONMS mm	h ₆	ZEFP	40 487 ...		40 404 ...		40 478 ...		40 474 ...		40 476 ...	
							£		£		£		£		£	
5,01	76	12	40	6	6		U4		U4		U4		U4		U4	
5,02	76	12	40	6	4		124.65	05020	135.98	05020	274.16	05010 ²⁾	274.16	05020 ¹⁾	274.16	05020 ¹⁾
5,02	76	12	40	6	6						274.16	05020 ²⁾	274.16	05030 ¹⁾	274.16	05030 ¹⁾
5,03	76	12	40	6	4		124.65	05030	135.98	05030	274.16	05030 ²⁾	274.16	05030 ¹⁾	274.16	05030 ¹⁾
5,03	76	12	40	6	6						274.16	05030 ²⁾	274.16	05030 ¹⁾	274.16	05030 ¹⁾
5,04 - 5,96	76	12	40	6	4		264.78	xxxxx ¹⁾	274.16	xxxxx ²⁾	274.16	xxxxx ²⁾	274.16	xxxxx ¹⁾	274.16	xxxxx ¹⁾
5,04 - 5,96	76	12	40	6	6						274.16	xxxxx ²⁾	274.16	05970 ¹⁾	274.16	05970 ¹⁾
5,97	76	12	40	6	4		126.70	05970	139.07	05970	274.16	05970 ²⁾	274.16	05970 ¹⁾	274.16	05970 ¹⁾
5,97	76	12	40	6	6						274.16	05970 ²⁾	274.16	05980 ¹⁾	274.16	05980 ¹⁾
5,98	76	12	40	6	4		126.70	05980	139.07	05980	274.16	05980 ²⁾	274.16	05980 ¹⁾	274.16	05980 ¹⁾
5,98	76	12	40	6	6						274.16	05980 ²⁾	274.16	05990 ¹⁾	274.16	05990 ¹⁾
5,99	76	12	40	6	4		126.70	05990	139.07	05990	274.16	05990 ²⁾	274.16	05990 ¹⁾	274.16	05990 ¹⁾
5,99	76	12	40	6	6						274.16	05990 ²⁾	274.16	06000 ¹⁾	274.16	06000 ¹⁾
6,00	76	12	40	6	4		126.70	06000	139.07	06000	274.16	06000 ²⁾	274.16	06000 ¹⁾	274.16	06000 ¹⁾
6,00	76	12	40	6	6						274.16	06000 ²⁾	274.16	06010 ¹⁾	274.16	06010 ¹⁾
6,01	76	12	40	6	4		126.70	06010	139.07	06010	274.16	06010 ²⁾	274.16	06010 ¹⁾	274.16	06010 ¹⁾
6,01	76	12	40	6	6						274.16	06010 ²⁾	274.16	06020 ¹⁾	274.16	06020 ¹⁾
6,02	76	12	40	6	4		126.70	06020	139.07	06020	274.16	06020 ²⁾	274.16	06020 ¹⁾	274.16	06020 ¹⁾
6,02	76	12	40	6	6						274.16	06020 ²⁾	274.16	06030 ¹⁾	274.16	06030 ¹⁾
6,03	76	12	40	6	4		126.70	06030	139.07	06030	274.16	06030 ²⁾	274.16	06030 ¹⁾	274.16	06030 ¹⁾
6,03	76	12	40	6	6						274.16	06030 ²⁾	274.16	xxxxx ¹⁾	274.16	xxxxx ¹⁾
6,04 - 6,05	76	12	40	6	4		267.03	xxxxx ¹⁾	274.16	xxxxx ²⁾	274.16	xxxxx ²⁾	274.16	xxxxx ¹⁾	274.16	xxxxx ¹⁾
6,04 - 6,05	76	12	40	6	6						274.16	xxxxx ²⁾				
6,06 - 7,96	101	16	65	8	8						295.13	xxxxx ¹⁾				
6,06 - 7,96	101	16	65	8	6		285.77	xxxxx ¹⁾	295.13	xxxxx ²⁾			295.13	xxxxx ¹⁾	295.13	xxxxx ¹⁾
7,97	101	16	65	8	6		132.89	07970	146.29	07970			295.13	07970 ¹⁾	295.13	07970 ¹⁾
7,97	101	16	65	8	8						295.13	07970 ²⁾				
7,98	101	16	65	8	6		132.89	07980	146.29	07980			295.13	07980 ¹⁾	295.13	07980 ¹⁾
7,98	101	16	65	8	8						295.13	07980 ²⁾				
P																
M																
K																
N																
S																
H																
O																

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

→ v_c Page 80+81

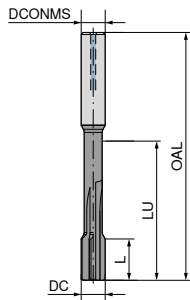
2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 32 working days



This tool concept permits numerous tolerances. For sizes covered please refer to the table on → page 103.
For xxxxx please indicate required $\varnothing$ in the order (e.g. $\varnothing 8.82 \text{ mm}$ → Article no. 40 487 08820!)

Fullmax – High-performance machine reamers, long

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
- ▲ specialised geometries and coatings
- ▲ tolerance: $\varnothing 2,96 - 5,96 \text{ mm} = +0,004 \text{ mm}$
- ▲ tolerance: $\varnothing 5,97 - 20,05 \text{ mm} = +0,005 \text{ mm}$



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

DC +0,004/+0,005 mm	OAL mm	L mm	LU mm	DCONMS mm	h ₆	ZEFP	40 487 ...		40 404 ...		40 478 ...		40 474 ...		40 476 ...	
							£ U4		£ U4		£ U4		£ U4		£ U4	
7,99	101	16	65	8	6		132.89	07990	146.29	07990	295.13	07990 ²⁾	295.13	07990 ¹⁾	295.13	07990 ¹⁾
7,99	101	16	65	8	8						295.13	08000 ²⁾	295.13	08000 ¹⁾	295.13	08000 ¹⁾
8,00	101	16	65	8	6		132.89	08000	146.29	08000	295.13	08000 ²⁾	295.13	08000 ¹⁾	295.13	08000 ¹⁾
8,00	101	16	65	8	8						295.13	08010 ²⁾	295.13	08010 ¹⁾	295.13	08010 ¹⁾
8,01	101	16	65	8	6		132.89	08010	146.29	08010	295.13	08010 ²⁾	295.13	08010 ¹⁾	295.13	08010 ¹⁾
8,01	101	16	65	8	8						295.13	08020 ²⁾	295.13	08020 ¹⁾	295.13	08020 ¹⁾
8,02	101	16	65	8	6		132.89	08020	146.29	08020	295.13	08020 ²⁾	295.13	08020 ¹⁾	295.13	08020 ¹⁾
8,02	101	16	65	8	8						295.13	08030 ²⁾	295.13	08030 ¹⁾	295.13	08030 ¹⁾
8,03	101	16	65	8	6		132.89	08030	146.29	08030	295.13	08030 ²⁾	295.13	08030 ¹⁾	295.13	08030 ¹⁾
8,03	101	16	65	8	8						295.13	08040 ²⁾	295.13	08040 ¹⁾	295.13	08040 ¹⁾
8,04 - 8,05	101	16	65	8	6		285.77	xxxxx ¹⁾	295.13	xxxxx ²⁾	295.13	xxxxx ²⁾	295.13	xxxxx ¹⁾	295.13	xxxxx ¹⁾
8,04 - 8,05	101	16	65	8	8						295.13	xxxxx ²⁾	295.13	xxxxx ¹⁾	295.13	xxxxx ¹⁾
8,06 - 9,96	108	16	68	10	8						426.31	xxxxx ¹⁾	426.31	xxxxx ¹⁾	426.31	xxxxx ¹⁾
8,06 - 9,96	108	16	68	10	6		363.16	xxxxx ¹⁾	426.31	xxxxx ²⁾			426.31	xxxxx ¹⁾	426.31	xxxxx ¹⁾
9,97	108	16	68	10	6		193.67	09970	213.24	09970	426.31	09970 ²⁾	426.31	09970 ¹⁾	426.31	09970 ¹⁾
9,97	108	16	68	10	8						426.31	09980 ²⁾	426.31	09980 ¹⁾	426.31	09980 ¹⁾
9,98	108	16	68	10	6		193.67	09980	213.24	09980	426.31	09980 ²⁾	426.31	09980 ¹⁾	426.31	09980 ¹⁾
9,98	108	16	68	10	8						426.31	09990 ²⁾	426.31	09990 ¹⁾	426.31	09990 ¹⁾
9,99	108	16	68	10	6		193.67	09990	213.24	09990	426.31	09990 ²⁾	426.31	09990 ¹⁾	426.31	09990 ¹⁾
9,99	108	16	68	10	8						426.31	10000 ²⁾	426.31	10000 ¹⁾	426.31	10000 ¹⁾
10,00	108	16	68	10	6		193.67	10000	213.24	10000	426.31	10000 ²⁾	426.31	10000 ¹⁾	426.31	10000 ¹⁾
10,00	108	16	68	10	8						426.31	10010 ²⁾	426.31	10010 ¹⁾	426.31	10010 ¹⁾
10,01	108	16	68	10	6		193.67	10010	213.24	10010	426.31	10010 ²⁾	426.31	10010 ¹⁾	426.31	10010 ¹⁾
10,01	108	16	68	10	8						426.31	10020 ²⁾	426.31	10020 ¹⁾	426.31	10020 ¹⁾
10,02	108	16	68	10	6		193.67	10020	213.24	10020	426.31	10020 ²⁾	426.31	10020 ¹⁾	426.31	10020 ¹⁾
10,02	108	16	68	10	8						426.31	10030 ²⁾	426.31	10030 ¹⁾	426.31	10030 ¹⁾
10,03	108	16	68	10	6		193.67	10030	213.24	10030	426.31	10030 ²⁾	426.31	10030 ¹⁾	426.31	10030 ¹⁾
10,03	108	16	68	10	8						426.31	10040 ²⁾	426.31	10040 ¹⁾	426.31	10040 ¹⁾
10,04 - 10,05	108	16	68	10	6		363.16	xxxxx ¹⁾	426.31	xxxxx ²⁾			426.31	xxxxx ¹⁾	426.31	xxxxx ¹⁾
P																
M																
K																
N																
S																
H																
O																

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

→ v_c Page 80+81

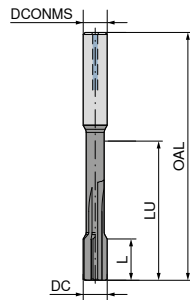
2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 32 working days



This tool concept permits numerous tolerances. For sizes covered please refer to the table on → page 103.
For xxxxx please indicate required $\varnothing$ in the order (e.g. $\varnothing 8.82 \text{ mm}$ → Article no. 40 487 08820)!

Fullmax – High-performance machine reamers, long

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
- ▲ specialised geometries and coatings
- ▲ tolerance: $\varnothing 2,96 - 5,96 \text{ mm} = +0,004 \text{ mm}$
- ▲ tolerance: $\varnothing 5,97 - 20,05 \text{ mm} = +0,005 \text{ mm}$



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

DC +0,004/+0,005 mm	OAL mm	L mm	LU mm	DCONMS mm	ZEFP	40 487 ...		40 404 ...		40 478 ...		40 474 ...		40 476 ...	
						£	U4	£	U4	£	U4	£	U4	£	U4
10,04 - 10,05	108	16	68	10	8					426.31	xxxxx ²⁾				
10,06 - 11,96	130	20	85	12	8					580.90	xxxxx ¹⁾				
10,06 - 11,96	130	20	85	12	6	550.55	xxxxx ¹⁾	580.90	xxxxx ²⁾			580.90	xxxxx ¹⁾	580.90	xxxxx ¹⁾
11,97	130	20	85	12	6	258.57	11970	284.33	11970	580.90	11970 ²⁾	580.90	11970 ¹⁾	580.90	11970 ¹⁾
11,97	130	20	85	12	8					580.90	11970 ²⁾	580.90	11970 ¹⁾	580.90	11970 ¹⁾
11,98	130	20	85	12	6	258.57	11980	284.33	11980	580.90	11980 ²⁾	580.90	11980 ¹⁾	580.90	11980 ¹⁾
11,98	130	20	85	12	8					580.90	11980 ²⁾	580.90	11980 ¹⁾	580.90	11980 ¹⁾
11,99	130	20	85	12	6	258.57	11990	284.33	11990	580.90	11990 ²⁾	580.90	11990 ¹⁾	580.90	11990 ¹⁾
11,99	130	20	85	12	8					580.90	11990 ²⁾	580.90	11990 ¹⁾	580.90	11990 ¹⁾
12,00	130	20	85	12	6	258.57	12000	284.33	12000	580.90	12000 ²⁾	580.90	12000 ¹⁾	580.90	12000 ¹⁾
12,00	130	20	85	12	8					580.90	12000 ²⁾	580.90	12000 ¹⁾	580.90	12000 ¹⁾
12,01	130	20	85	12	6	258.57	12010	284.33	12010	580.90	12010 ²⁾	580.90	12010 ¹⁾	580.90	12010 ¹⁾
12,01	130	20	85	12	8					580.90	12010 ²⁾	580.90	12010 ¹⁾	580.90	12010 ¹⁾
12,02	130	20	85	12	6	258.57	12020	284.33	12020	580.90	12020 ²⁾	580.90	12020 ¹⁾	580.90	12020 ¹⁾
12,02	130	20	85	12	8					580.90	12020 ²⁾	580.90	12020 ¹⁾	580.90	12020 ¹⁾
12,03	130	20	85	12	6	258.57	12030	284.33	12030	580.90	12030 ²⁾	580.90	12030 ¹⁾	580.90	12030 ¹⁾
12,03	130	20	85	12	8					580.90	12030 ²⁾	580.90	12030 ¹⁾	580.90	12030 ¹⁾
12,04 - 12,05	130	20	85	12	6	550.55	xxxxx ¹⁾	580.90	xxxxx ²⁾			580.90	xxxxx ¹⁾	580.90	xxxxx ¹⁾
12,04 - 12,05	130	20	85	12	8					580.90	xxxxx ²⁾	580.90	xxxxx ¹⁾	580.90	xxxxx ¹⁾
12,06 - 14,05	130	20	85	14	8					667.66	xxxxx ¹⁾				
12,06 - 14,05	130	20	85	14	6	639.56	xxxxx ¹⁾	667.66	xxxxx ²⁾			667.66	xxxxx ¹⁾	667.66	xxxxx ¹⁾
14,06 - 16,05	150	20	102	16	6	740.19	xxxxx ¹⁾	770.73	xxxxx ²⁾			770.73	xxxxx ¹⁾	770.73	xxxxx ¹⁾
14,06 - 16,05	150	20	102	16	8					770.73	xxxxx ¹⁾				
16,06 - 18,05	150	20	102	18	6	784.79	xxxxx ¹⁾	815.15	xxxxx ²⁾			815.15	xxxxx ¹⁾	815.15	xxxxx ¹⁾
16,06 - 18,05	150	20	102	18	8					815.15	xxxxx ¹⁾				
18,06 - 20,05	160	20	110	20	6	850.37	xxxxx ¹⁾	876.05	xxxxx ²⁾			876.05	xxxxx ¹⁾	876.05	xxxxx ¹⁾
18,06 - 20,05	160	20	110	20	8					876.05	xxxxx ¹⁾				
P															
M															
K															
N															
S															
H															
O															

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

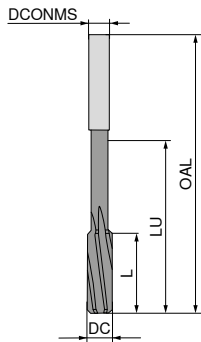
→ v_c Page 80+81

This tool concept permits numerous tolerances. For sizes covered please refer to the table on → page 103.
For xxxxx please indicate required $\varnothing$ in the order (e.g. $\varnothing 8.82 \text{ mm}$ → 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



~HA
Left Hand Helix
Solid carbide

40 420 ...

DC _{H7} mm	OAL mm	L mm	LU mm	DCONMS _{h6} mm	ZEFP	£ U4	
2.0	50	12	18.5	3	4	65.38	020
2.5	60	16	29.0	3	4	65.38	025
3.0	65	17	33.0	4	6	68.07	030
3.2	65	18	33.0	4	6	68.07	032
3.5	75	18	43.0	4	6	68.07	035
4.0	75	19	43.0	4	6	81.50	040
4.5	80	21	39.0	6	6	81.50	045
5.0	93	23	52.0	6	6	91.34	050
5.5	93	26	53.0	6	6	91.34	055
6.0	93	26	53.0	6	6	98.48	060
6.5	101	28	61.0	6	6	98.48	065
7.0	109	31	68.0	8	6	109.22	070
7.5	109	31	68.0	8	6	109.22	075
8.0	117	33	77.0	8	6	127.19	080
8.5	117	33	77.0	8	6	127.19	085
9.0	125	36	80.0	10	6	138.81	090
9.5	125	36	80.0	10	6	138.81	095
10.0	133	38	88.0	10	6	148.67	100
10.5	133	38	88.0	10	6	148.67	105
11.0	142	41	97.0	10	6	191.64	110
12.0	151	44	100.0	12	6	191.64	120
13.0	151	44	100.0	12	6	188.08	130
14.0	160	47	106.0	16	6	188.08	140 ¹⁾
15.0	162	50	108.0	16	6	200.63	150 ¹⁾
16.0	170	52	116.0	16	6	205.92	160 ¹⁾
17.0	175	52	121.0	18	6	211.31	170 ¹⁾
18.0	182	52	128.0	18	6	213.12	180 ¹⁾
19.0	189	52	133.0	20	6	222.04	190 ¹⁾
20.0	195	52	139.0	20	6	223.88	200 ¹⁾
22.0	160	25	105.0	20	6	223.88	220 ¹⁾
24.0	180	25	125.0	20	8	272.25	240 ¹⁾
25.0	180	25	125.0	20	8	272.25	250 ¹⁾
26.0	180	25	125.0	20	8	306.27	260 ¹⁾
28.0	180	25	119.0	25	8	320.58	280 ¹⁾
30.0	200	25	139.0	25	8	331.32	300 ¹⁾
P							●
M							○
K							○
N							●
S							○
H							○
O							●

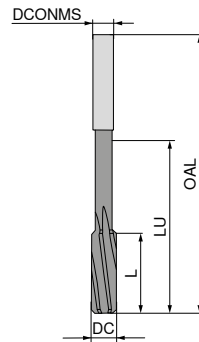
1) with carbide cutting edges

→ v_c Page 84+85

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



~HA
Left Hand Helix
Solid carbide

40 421 ...

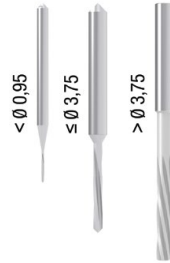
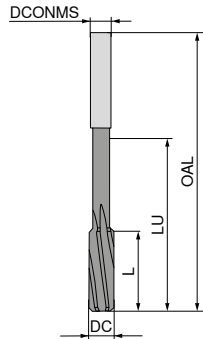
DC _{H7} mm	OAL mm	L mm	LU mm	DCONMS _{h6} mm	ZEFP	£ U4	
2.0	50	12	18.5	3	4	86.53	020
2.5	60	16	29.0	3	4	86.53	025
3.0	65	17	33.0	4	6	90.22	030
3.2	65	18	33.0	4	6	90.22	032
3.5	75	18	43.0	4	6	90.22	035
4.0	75	19	43.0	4	6	107.95	040
4.5	80	21	39.0	6	6	107.95	045
5.0	93	23	52.0	6	6	121.00	050
5.5	93	26	53.0	6	6	121.00	055
6.0	93	26	53.0	6	6	130.57	060
6.5	101	28	61.0	6	6	130.57	065
7.0	109	31	68.0	8	6	144.77	070
7.5	109	31	68.0	8	6	144.77	075
8.0	117	33	77.0	8	6	168.35	080
8.5	117	33	77.0	8	6	168.35	085
9.0	125	36	80.0	10	6	183.95	090
9.5	125	36	80.0	10	6	183.95	095
10.0	133	38	88.0	10	6	196.80	100
10.5	133	38	88.0	10	6	196.80	105
11.0	142	41	97.0	10	6	253.30	110
12.0	151	44	100.0	12	6	253.30	120
13.0	151	44	100.0	12	6	249.41	130
14.0	160	47	106.0	16	6	249.41	140 ¹⁾
15.0	162	50	108.0	16	6	264.99	150 ¹⁾
16.0	170	52	116.0	16	6	272.81	160 ¹⁾
17.0	175	52	121.0	18	6	280.58	170 ¹⁾
18.0	182	52	128.0	18	6	282.56	180 ¹⁾
19.0	189	52	133.0	20	6	294.22	190 ¹⁾
20.0	195	52	139.0	20	6	296.18	200 ¹⁾
P							●
M							○
K							○
N							●
S							○
H							○
O							○

1) with carbide cutting edges

→ v_c Page 84+85

NC machine reamers, DIN 8093-2B

- ▲ 0.01 mm steps
- ▲ extremely irregular pitch
- ▲ Ø 0.6–0.94 mm similar to DIN 8093-B
- ▲ Ø 0.95–3.75 mm with centres both ends

NC
100

~HA
Left Hand Helix
Solid carbide

40 430 ...

DC ^{+0,004} mm	OAL mm	L mm	LU mm	DCONMS _{h6} mm	ZEFP	£ U4	
0,59 - 0,64	45	5	7,5	3	4	115.90	xxxxx ¹⁾
0,65 - 0,74	45	5	7,5	3	4	115.90	xxxxx ¹⁾
0,75 - 0,84	45	6	8,0	3	4	115.90	xxxxx ¹⁾
0,85 - 0,95	45	6	8,0	3	4	115.90	xxxxx ¹⁾
0,96	50	6	17,5	3	3	90.56	00960 ¹⁾
0,97	50	6	17,5	3	3	90.56	00970 ¹⁾
0,98	50	6	17,5	3	3	90.56	00980 ²⁾
0,99	50	6	17,5	3	3	90.56	00990 ²⁾
1,00	50	6	17,5	3	3	90.56	01000 ²⁾
1,01	50	6	17,5	3	3	90.56	01010 ²⁾
1,02	50	6	17,5	3	3	90.56	01020 ²⁾
1,03	50	6	17,5	3	3	90.56	01030 ²⁾
1,04 - 1,06	50	6	17,5	3	3	104.17	xxxxx ²⁾
1,07 - 1,18	50	9	17,5	3	3	104.17	xxxxx ²⁾
1,19 - 1,32	50	9	17,5	3	3	104.17	xxxxx ²⁾
1,33 - 1,50	50	9	18,0	3	3	104.17	xxxxx ²⁾
1,51 - 1,70	50	10	18,0	3	3	104.17	xxxxx ²⁾
1,71 - 1,90	50	11	18,5	3	4	117.73	xxxxx ²⁾
1,91 - 1,97	50	12	18,5	3	4	117.73	xxxxx ²⁾
1,98	50	12	18,5	3	4	117.73	01980
1,99	50	12	18,5	3	4	117.73	01990
2,00	50	12	18,5	3	4	117.73	02000
2,01	50	12	18,5	3	4	117.73	02010
2,02	50	12	18,5	3	4	117.73	02020
2,03	50	12	18,5	3	4	117.73	02030
2,04 - 2,12	50	12	18,5	3	4	103.76	xxxxx ²⁾
2,13 - 2,36	50	12	18,5	3	4	103.76	xxxxx ²⁾
2,37 - 2,47	60	16	29,0	3	4	90.56	xxxxx ²⁾
2,48	60	16	29,0	3	4	90.56	02480
2,49	60	16	29,0	3	4	90.56	02490
2,50	60	16	29,0	3	4	90.56	02500
2,51	60	16	29,0	3	4	90.56	02510
2,52	60	16	29,0	3	4	90.56	02520
2,53	60	16	29,0	3	4	90.56	02530
2,54 - 2,65	60	16	29,0	3	4	90.56	xxxxx ²⁾
2,66 - 2,80	65	17	33,0	4	6	90.56	xxxxx ²⁾
2,81 - 2,96	65	17	33,0	4	6	90.56	xxxxx ²⁾
2,97	65	17	33,0	4	6	77.92	02970
2,98	65	17	33,0	4	6	77.92	02980
2,99	65	17	33,0	4	6	77.92	02990
3,00	65	17	33,0	4	6	68.07	03000
3,01	65	17	33,0	4	6	77.92	03010
3,02	65	17	33,0	4	6	77.92	03020
3,03	65	17	33,0	4	6	77.92	03030
3,04 - 3,35	65	18	33,0	4	6	104.17	xxxxx ²⁾
3,36 - 3,75	75	18	43,0	4	6	104.17	xxxxx ²⁾
3,76 - 3,96	75	19	43,0	4	6	104.17	xxxxx ²⁾
3,97	75	19	43,0	4	6	91.34	03970
3,98	75	19	43,0	4	6	91.34	03980
3,99	75	19	43,0	4	6	91.34	03990
4,00	75	19	43,0	4	6	81.50	04000
4,01	75	19	43,0	4	6	91.34	04010
4,02	75	19	43,0	4	6	91.34	04020
4,03	75	19	43,0	4	6	91.34	04030
4,04 - 4,25	75	19	43,0	4	6	113.20	xxxxx ²⁾
4,26 - 4,75	80	21	39,0	6	6	113.20	xxxxx ²⁾
4,76 - 4,96	93	23	52,0	6	6	113.20	xxxxx ²⁾
4,97	93	23	52,0	6	6	100.30	04970
4,98	93	23	52,0	6	6	100.30	04980
4,99	93	23	52,0	6	6	100.30	04990

40 430 ...

DC ^{+0,004} mm	OAL mm	L mm	LU mm	DCONMS _{h6} mm	ZEFP	£ U4	
5,00	93	23	52,0	6	6	91.34	05000
5,01	93	23	52,0	6	6	100.30	05010
5,02	93	23	52,0	6	6	100.30	05020
5,03	93	23	52,0	6	6	100.30	05030
5,04 - 5,30	93	23	52,0	6	6	122.24	xxxxx ²⁾
5,31 - 5,96	93	26	53,0	6	6	122.24	xxxxx ²⁾
5,97	93	26	53,0	6	6	109.22	05970
5,98	93	26	53,0	6	6	109.22	05980
5,99	93	26	53,0	6	6	109.22	05990
6,00	93	26	53,0	6	6	98.48	06000
6,01	93	26	53,0	6	6	109.22	06010
6,02	93	26	53,0	6	6	109.22	06020
6,03	93	26	53,0	6	6	109.22	06030
6,04 - 6,70	101	28	61,0	6	6	149.44	xxxxx ²⁾
6,71 - 7,50	109	31	68,0	8	6	149.44	xxxxx ²⁾
7,51 - 7,96	117	33	77,0	8	6	149.44	xxxxx ²⁾
7,97	117	33	77,0	8	6	136.10	07970
7,98	117	33	77,0	8	6	136.10	07980
7,99	117	33	77,0	8	6	136.10	07990
8,00	117	33	77,0	8	6	127.19	08000
8,01	117	33	77,0	8	6	136.10	08010
8,02	117	33	77,0	8	6	136.10	08020
8,03	117	33	77,0	8	6	136.10	08030
8,04	117	33	77,0	8	6	136.10	08040
8,05 - 8,50	117	33	77,0	8	6	167.55	xxxxx ²⁾
8,51 - 9,04	125	36	80,0	10	6	167.55	xxxxx ²⁾
9,05 - 9,50	125	36	80,0	10	6	167.55	xxxxx ²⁾
9,51 - 9,96	133	38	88,0	10	6	167.55	xxxxx ²⁾
9,97	133	38	88,0	10	6	159.41	09970
9,98	133	38	88,0	10	6	159.41	09980
9,99	133	38	88,0	10	6	159.41	09990
10,00	133	38	88,0	10	6	148.67	10000
10,01	133	38	88,0	10	6	159.41	10010
10,02	133	38	88,0	10	6	159.41	10020
10,03	133	38	88,0	10	6	159.41	10030
10,04	133	38	88,0	10	6	159.41	10040
10,05	133	38	88,0	10	6	159.41	10050
10,06 - 10,60	133	38	88,0	10	6	199.24	xxxxx ²⁾
10,61 - 11,80	142	41	97,0	10	6	199.24	xxxxx ²⁾
11,81 - 11,96	151	44	100,0	12	6	199.24	xxxxx ²⁾
11,97	151	44	100,0	12	6	191.64	11970
11,98	151	44	100,0	12	6	191.64	11980
11,99	151	44	100,0	12	6	191.64	11990
12,00	151	44	100,0	12	6	180.96	12000
12,01	151	44	100,0	12	6	191.64	12010
12,02	151	44	100,0	12	6	191.64	12020
12,03	151	44	100,0	12	6	191.64	12030
12,04	151	44	100,0	12	6	191.64	12040
12,05	151	44	100,0	12	6	191.64	12050

P	●
M	
K	○
N	●
S	
H	
O	●

→ v_e Page 84+85

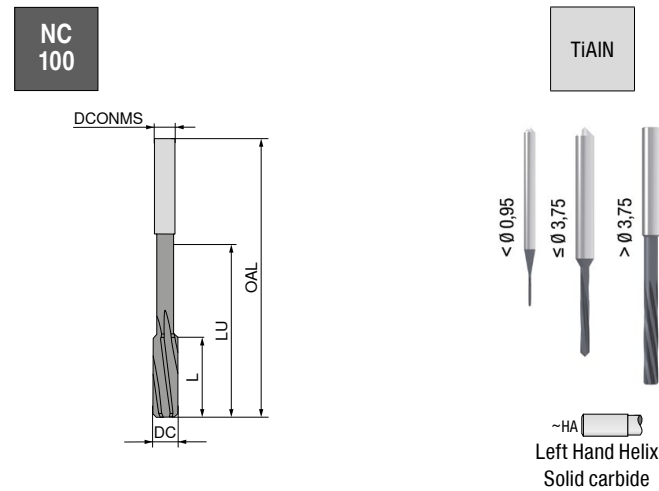
- Not available ex stock, articles are non-returnable and cannot be exchanged /
Delivery time 12 working days / Minimum order 3 pieces
- Not available ex stock, articles are non-returnable and cannot be exchanged /
Delivery time 12 working days



This tool concept permits numerous tolerances.
Please refer to the table on → **page 103** for tolerances covered.
For xxxxx please indicate required Ø in the order
(e.g. Ø 8.05 mm → Article no. 40 430 08050)!

NC machine reamers, DIN 8093-2B

- ▲ 0.01 mm steps
- ▲ extremely irregular pitch
- ▲ Ø 0.6–0.94 mm similar to DIN 8093-B
- ▲ Ø 0.95–3.75 mm with centres both ends



DC ^{+0,004} mm	OAL mm	L mm	LU mm	DCONMS _{h6} mm	ZEFP	£ U4	40 431 ...
1,00	50	6	17.5	3	3	137.96	01000 ¹⁾
1,01	50	6	17.5	3	3	137.96	01010 ¹⁾
1,02	50	6	17.5	3	3	137.96	01020 ¹⁾
1,03	50	6	17.5	3	3	137.96	01030 ¹⁾
1,04 - 1,06	50	6	17.5	3	3	137.96	xxxxx ¹⁾
1,07 - 1,18	50	9	17.5	3	3	137.96	xxxxx ¹⁾
1,19 - 1,32	50	9	17.5	3	3	137.96	xxxxx ¹⁾
1,33 - 1,50	50	9	18.0	3	3	137.96	xxxxx ¹⁾
1,51 - 1,70	50	10	18.0	3	3	137.96	xxxxx ¹⁾
1,71 - 1,90	50	11	18.5	3	4	137.96	xxxxx ¹⁾
1,91 - 1,97	50	12	18.5	3	4	137.96	xxxxx ¹⁾
1,98	50	12	18.5	3	4	156.06	01980
1,99	50	12	18.5	3	4	156.06	01990
2,00	50	12	18.5	3	4	156.06	02000
2,01	50	12	18.5	3	4	156.06	02010
2,02	50	12	18.5	3	4	156.06	02020
2,03	50	12	18.5	3	4	156.06	02030
2,04 - 2,12	50	12	18.5	3	4	137.96	xxxxx ¹⁾
2,13 - 2,36	50	12	18.5	3	4	137.96	xxxxx ¹⁾
2,37 - 2,47	60	16	29.0	3	4	137.96	xxxxx ¹⁾
2,48	60	16	29.0	3	4	120.04	02480
2,49	60	16	29.0	3	4	120.04	02490
2,50	60	16	29.0	3	4	120.04	02500
2,51	60	16	29.0	3	4	120.04	02510
2,52	60	16	29.0	3	4	120.04	02520
2,53	60	16	29.0	3	4	120.04	02530
2,54 - 2,65	60	16	29.0	3	4	120.04	xxxxx ¹⁾
2,66 - 2,80	65	17	33.0	4	6	120.04	xxxxx ¹⁾
2,81 - 2,96	65	17	33.0	4	6	120.04	xxxxx ¹⁾
2,97	65	17	33.0	4	6	103.29	02970
2,98	65	17	33.0	4	6	103.29	02980
2,99	65	17	33.0	4	6	103.29	02990
3,00	65	17	33.0	4	6	90.22	03000
3,01	65	17	33.0	4	6	103.29	03010
3,02	65	17	33.0	4	6	103.29	03020
3,03	65	17	33.0	4	6	103.29	03030
3,04 - 3,35	65	18	33.0	4	6	137.96	xxxxx ¹⁾
3,36 - 3,75	75	18	43.0	4	6	137.96	xxxxx ¹⁾
3,76 - 3,96	75	19	43.0	4	6	137.96	xxxxx ¹⁾
3,97	75	19	43.0	4	6	121.00	03970
3,98	75	19	43.0	4	6	121.00	03980
3,99	75	19	43.0	4	6	121.00	03990
4,00	75	19	43.0	4	6	107.95	04000
4,01	75	19	43.0	4	6	121.00	04010
4,02	75	19	43.0	4	6	121.00	04020
4,03	75	19	43.0	4	6	121.00	04030
4,04 - 4,25	75	19	43.0	4	6	150.05	xxxxx ¹⁾
4,26 - 4,75	80	21	39.0	6	6	150.05	xxxxx ¹⁾
4,76 - 4,96	93	23	52.0	6	6	150.05	xxxxx ¹⁾
4,97	93	23	52.0	6	6	132.89	04970
4,98	93	23	52.0	6	6	132.89	04980
4,99	93	23	52.0	6	6	132.89	04990
5,00	93	23	52.0	6	6	121.00	05000
5,01	93	23	52.0	6	6	132.89	05010
5,02	93	23	52.0	6	6	132.89	05020
5,03	93	23	52.0	6	6	132.89	05030
5,04 - 5,30	93	23	52.0	6	6	161.92	xxxxx ¹⁾
5,31 - 5,96	93	26	53.0	6	6	161.92	xxxxx ¹⁾
5,97	93	26	53.0	6	6	144.77	05970
5,98	93	26	53.0	6	6	144.77	05980

DC ^{+0,004} mm	OAL mm	L mm	LU mm	DCONMS _{h6} mm	ZEFP	£ U4	40 431 ...
5,99	93	26	53.0	6	6	144.77	05990
6,00	93	26	53.0	6	6	130.57	06000
6,01	93	26	53.0	6	6	144.77	06010
6,02	93	26	53.0	6	6	144.77	06020
6,03	93	26	53.0	6	6	144.77	06030
6,04 - 6,70	101	28	61.0	6	6	197.97	xxxxx ¹⁾
6,71 - 7,50	109	31	68.0	8	6	197.97	xxxxx ¹⁾
7,51 - 7,96	117	33	77.0	8	6	197.97	xxxxx ¹⁾
7,97	117	33	77.0	8	6	180.43	07970
7,98	117	33	77.0	8	6	180.43	07980
7,99	117	33	77.0	8	6	180.43	07990
8,00	117	33	77.0	8	6	168.35	08000
8,01	117	33	77.0	8	6	180.43	08010
8,02	117	33	77.0	8	6	180.43	08020
8,03	117	33	77.0	8	6	180.43	08030
8,04	117	33	77.0	8	6	180.43	08040
8,05 - 8,50	117	33	77.0	8	6	221.94	xxxxx ¹⁾
8,51 - 9,04	125	36	80.0	10	6	221.94	xxxxx ¹⁾
9,05 - 9,50	125	36	80.0	10	6	221.94	xxxxx ¹⁾
9,51 - 9,96	133	38	88.0	10	6	221.94	xxxxx ¹⁾
9,97	133	38	88.0	10	6	210.45	09970
9,98	133	38	88.0	10	6	210.45	09980
9,99	133	38	88.0	10	6	210.45	09990
10,00	133	38	88.0	10	6	196.80	10000
10,01	133	38	88.0	10	6	210.45	10010
10,02	133	38	88.0	10	6	210.45	10020
10,03	133	38	88.0	10	6	210.45	10030
10,04	133	38	88.0	10	6	210.45	10040
10,05	133	38	88.0	10	6	210.45	10050
10,06 - 10,60	133	38	88.0	10	6	264.03	xxxxx ¹⁾
10,61 - 11,80	142	41	97.0	10	6	264.03	xxxxx ¹⁾
11,81 - 11,96	151	44	100.0	12	6	264.03	xxxxx ¹⁾
11,97	151	44	100.0	12	6	253.30	11970
11,98	151	44	100.0	12	6	253.30	11980
11,99	151	44	100.0	12	6	253.30	11990
12,00	151	44	100.0	12	6	239.67	12000
12,01	151	44	100.0	12	6	253.30	12010
12,02	151	44	100.0	12	6	253.30	12020
12,03	151	44	100.0	12	6	253.30	12030
12,04	151	44	100.0	12	6	253.30	12040
12,05	151	44	100.0	12	6	253.30	12050

P	●
M	○
K	●
N	
S	○
H	○
O	

→ v. Page 84+85

1) Not available ex stock, articles are non-returnable and cannot be exchanged /
Delivery time 12 working days

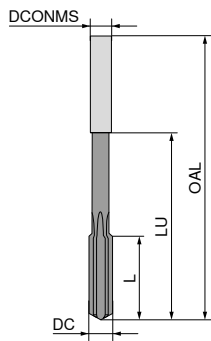


This tool concept permits numerous tolerances.
Please refer to the table on → **page 103** for tolerances covered.
For xxxxx please indicate required Ø in the order
(e.g. Ø 8.05 mm → Article no. 40 431 08050)!

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

▲ extremely irregular pitch

N

Left Hand Helix
Solid carbidestraight flute
Solid carbide

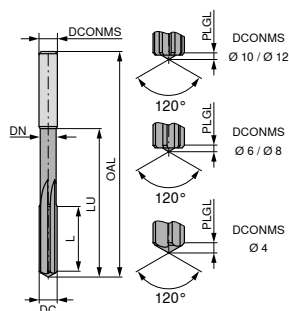
40 410 ...							£		40 400 ...			
DC _{H7}	OAL	L	LU	DCONMS _{H7}	ZEFP	£	U4		£	U4		
2.0	49	11	31	2.0	4	29.03	020		29.03	020		
2.1	49	11	31	2.0	4	34.88	021		34.88	021		
2.2	53	12	35	2.2	4	34.88	022		34.88	022		
2.3	53	12	35	2.2	4	34.88	023		34.88	023		
2.4	57	14	34	2.5	4	34.88	024		34.88	024		
2.5	57	14	34	2.5	4	31.13	025		31.13	025		
2.6	57	14	34	2.5	4	37.36	026		37.36	026		
2.7	61	15	36	3.0	4	37.36	027		37.36	027		
2.8	61	15	36	3.0	4	37.36	028		37.36	028		
2.9	61	15	36	3.0	4	37.36	029		37.36	029		
3.0	61	15	36	3.0	4	33.44	030		33.44	030		
3.1	61	15	36	3.0	4	40.19	031		40.19	031		
3.2	70	18	40	3.5	4	40.19	032		40.19	032		
3.3	70	18	40	3.5	4	40.19	033		40.19	033		
3.4	70	18	40	3.5	4	40.19	034		40.19	034		
3.5	70	18	40	3.5	4	38.26	035		38.26	035		
3.6	70	18	40	3.5	4	45.89	036		45.89	036		
3.7	70	18	40	3.5	4	45.89	037		45.89	037		
3.8	75	19	43	4.0	4	45.89	038		45.89	038		
3.9	75	19	43	4.0	4	45.89	039		45.89	039		
4.0	75	19	43	4.0	4	41.16	040		41.16	040		
4.1	75	19	43	4.0	4	49.36	041		49.36	041		
4.2	75	19	43	4.0	4	49.36	042		49.36	042		
4.3	75	21	42	4.5	4	49.36	043		49.36	043		
4.4	75	21	42	4.5	4	49.36	044		49.36	044		
4.5	75	21	42	4.5	4	44.75	045		44.75	045		
4.6	75	21	42	4.5	4	53.71	046		53.71	046		
4.7	75	21	42	4.5	4	53.71	047		53.71	047		
4.8	86	23	52	5.0	4	53.71	048		53.71	048		
4.9	86	23	52	5.0	4	53.71	049		53.71	049		
5.0	86	23	52	5.0	4	50.56	050		50.56	050		
5.1	86	23	52	5.0	4	58.18	051		58.18	051		
5.2	86	23	52	5.0	4	58.18	052		58.18	052		
5.3	86	23	52	5.0	6	58.18	053		58.18	053		
5.4	93	26	57	5.6	6	58.18	054		58.18	054		
5.5	93	26	57	5.6	6	53.52	055		53.52	055		
5.6	93	26	57	5.6	6	61.49	056		61.49	056		
5.7	93	26	57	5.6	6	61.49	057		61.49	057		
5.8	93	26	57	5.6	6	61.49	058		61.49	058		
5.9	93	26	57	5.6	6	61.49	059		61.49	059		
6.0	93	26	57	5.6	6	64.02	060		64.02	060		
6.1	93	26	57	5.6	6	73.58	061		73.58	061		
6.2	93	26	57	5.6	6	73.58	062		73.58	062		
6.3	101	28	63	6.3	6	73.58	063		73.58	063		
6.4	101	28	63	6.3	6	73.58	064		73.58	064		
6.5	101	28	63	6.3	6	71.86	065		71.86	065		
6.6	101	28	63	6.3	6	82.62	066		82.62	066		
6.7	101	28	63	6.3	6	82.62	067		82.62	067		
6.8	109	31	69	7.1	6	82.62	068		82.62	068		
6.9	109	31	69	7.1	6	82.62	069		82.62	069		
7.0	109	31	69	7.1	6	80.22	070		80.22	070		
7.1	109	31	69	7.1	6	92.26	071		92.26	071		
7.2	109	31	69	7.1	6	92.26	072		92.26	072		
7.3	109	31	69	7.1	6	92.26	073		92.26	073		
7.4	109	31	69	7.1	6	92.26	074		92.26	074		

40 410 ...							£		40 400 ...			
DC _{H7}	OAL	L	LU	DCONMS _{H7}	ZEFP	£	U4		£	U4		
7.5	109	31	69	7.1	6	86.72	075		86.72	075		
7.6	117	33	75	8.0	6	99.70	076		99.70	076		
7.7	117	33	75	8.0	6	99.70	077		99.70	077		
7.8	117	33	75	8.0	6	99.70	078		99.70	078		
7.9	117	33	75	8.0	6	99.70	079		99.70	079		
8.0	117	33	75	8.0	6	92.32	080		92.32	080		
8.1	117	33	75	8.0	6	101.57	081		101.57	081		
8.2	117	33	75	8.0	6	101.57	082		101.57	082		
8.3	117	33	75	8.0	6	101.57	083		101.57	083		
8.4	117	33	75	8.0	6	101.57	084		101.57	084		
8.5	117	33	75	8.0	6	100.11	085		100.11	085		
8.6	125	36	81	9.0	6	110.09	086		110.09	086		
8.7	125	36	81	9.0	6	110.09	087		110.09	087		
8.8	125	36	81	9.0	6	110.09	088		110.09	088		
8.9	125	36	81	9.0	6	110.09	089		110.09	089		
9.0	125	36	81	9.0	6	107.34	090		107.34	090		
9.1	125	36	81	9.0	6	118.03	091		118.03	091		
9.2	125	36	81	9.0	6	118.03	092		118.03	092		
9.3	125	36	81	9.0	6	118.03	093		118.03	093		
9.4	125	36	81	9.0	6	118.03	094		118.03	094		
9.5	125	36	81	9.0	6	115.10	095		115.10	095		
9.6	133	38	87	10.0	6	126.60	096		126.60	096		
9.7	133	38	87	10.0	6	126.60	097		126.60	097		
9.8	133	38	87	10.0	6	126.60	098		126.60	098		
9.9	133	38	87	10.0	6	126.60	099		126.60	099		
10.0	133	38	87	10.0	6	123.86	100		123.86	100		
10.1	133	38	87	10.0	6	136.25	101		136.25	101		
10.2	133	38	87	10.0	6	136.25	102		136.25	102		
10.3	133	38	87	10.0	6	136.25	103		136.25	103		
10.4	133	38	87	10.0	6	136.25	104		136.25	104		
10.5	133	38	87	10.0	6	129.45	105		129.45	105		
10.6	133	38	87	10.0	6	142.42	106		142.42	106		
10.7	142	41	96	10.0	6	142.42	107		142.42	107		
10.8	142	41	96	10.0	6	142.42	108		142.42	108		
10.9	142	41	96	10.0	6	142.42	109		142.42	109		
11.0	142	41		10.0	6	140.30	110		140.30	110		
11.1	142	41		10.0	6	154.32	111		154.32	111		
11.2	142	41		10.0	6	154.32	112		154.32	112		
11.3	142	41		10.0	6	154.32	113		154.32	113		
11.4	142	41		10.0	6	154.32	114		154.32	114		
11.5	142	41		10.0	6	148.83	115		148.83	115		
11.6	142	41		10.0	6	163.79	116		163.79	116		
11.7	142	41		10.0	6	163.79	117		163.79	117		
11.8	142	41		10.0	6	163.79	118		163.79	118		
11.9	151	44		10.0	6	163.79	119		163.79	119		
12.0	151	44		10.0	6	161.33	120		161.33	120		

P	●	●
M	○	○
K	○	○
N	●	●
S	○	○
H		
O		

→ v_c Page 83

NC machine reamers, sim. DIN 8093-A

NC100
H

NEW

TiAlSiN



HA

straight flute

45°

Solid carbide
Through hole +
blind hole

40 435 ...

DC _{H7} mm	OAL mm	L mm	LU mm	DCONMS _{H5} mm	PLGL mm	£ U4	
0.98	50	6	16	4	0.12	91.12	00980
0.99	50	6	16	4	0.12	91.12	00990
1.00	50	6	16	4	0.12	91.12	01000
1.01	50	6	16	4	0.12	91.12	01010
1.02	50	6	16	4	0.12	91.12	01020
1.03	50	6	16	4	0.12	91.12	01030
1.48	50	9	16	4	0.12	99.45	01480
1.49	50	9	16	4	0.12	99.45	01490
1.50	50	9	16	4	0.12	99.45	01500
1.51	50	9	16	4	0.12	99.45	01510
1.52	50	9	16	4	0.12	99.45	01520
1.60	50	10	16	4	0.12	99.45	01600
1.70	50	10	16	4	0.12	99.45	01700
1.80	50	11	16	4	0.12	99.45	01800
1.90	50	11	16	4	0.12	99.45	01900
1.97	50	12	16	4	0.30	99.45	01970
1.98	50	12	16	4	0.30	99.45	01980
1.99	50	12	16	4	0.30	99.45	01990
2.00	50	12	16	4	0.30	99.45	02000
2.01	50	12	16	4	0.30	99.45	02010
2.02	50	12	16	4	0.30	99.45	02020
2.03	50	12	16	4	0.30	99.45	02030
2.05	50	12	16	4	0.30	99.45	02050
2.10	50	12	16	4	0.30	99.45	02100
2.20	50	13	16	4	0.30	99.45	02200
2.30	50	13	16	4	0.30	99.45	02300
2.40	60	16	26	4	0.30	99.45	02400
2.50	60	16	26	4	0.30	99.45	02500
2.60	60	16	26	4	0.30	99.45	02600
2.70	64	17	30	4	0.30	99.45	02700
2.80	64	17	30	4	0.30	99.45	02800
2.90	64	17	30	4	0.30	99.45	02900
2.97	64	17	30	4	0.30	99.45	02970
2.98	64	17	30	4	0.30	99.45	02980
2.99	64	17	30	4	0.30	99.45	02990
3.00	64	17	30	4	0.30	99.45	03000
3.01	64	17	30	4	0.30	99.45	03010
3.02	64	17	30	4	0.30	99.45	03020
3.03	64	17	30	4	0.30	99.45	03030
3.05	68	18	34	4	0.30	99.45	03050
3.10	68	18	34	4	0.30	99.45	03100
3.20	68	18	34	4	0.30	99.45	03200
3.30	68	18	34	4	0.30	99.45	03300
3.40	74	20	40	4	0.30	99.45	03400
3.50	74	20	40	4	0.30	99.45	03500
3.60	74	20	40	4	0.30	99.45	03600
3.70	74	20	40	4	0.30	99.45	03700
3.80	77	21	43	4	0.40	99.45	03800
3.90	77	21	43	4	0.40	99.45	03900
3.97	77	21	43	4	0.40	99.45	03970
3.98	77	21	43	4	0.40	99.45	03980
3.99	77	21	43	4	0.40	99.45	03990
4.00	77	21	43	4	0.40	99.45	04000
4.01	77	21	43	4	0.40	99.45	04010
4.02	77	21	43	4	0.40	99.45	04020
4.03	77	21	43	4	0.40	99.45	04030
4.05	82	21	40	6	0.40	122.71	04050
4.10	82	21	40	6	0.40	122.71	04100
4.20	82	21	40	6	0.40	122.71	04200
4.30	82	23	40	6	0.40	122.71	04300

40 435 ...

£

U4

DC _{H7} mm	OAL mm	L mm	LU mm	DCONMS _{H5} mm	PLGL mm	£ U4	
4.40	82	23	40	6	0.40	122.71	04400
4.50	82	23	40	6	0.40	122.71	04500
4.60	82	23	40	6	0.40	122.71	04600
4.70	82	23	40	6	0.40	122.71	04700
4.80	93	26	51	6	0.50	122.71	04800
4.90	93	26	51	6	0.50	122.71	04900
4.97	93	26	51	6	0.50	122.71	04970
4.98	93	26	51	6	0.50	122.71	04980
4.99	93	26	51	6	0.50	122.71	04990
5.00	93	26	51	6	0.50	122.71	05000
5.01	93	26	51	6	0.50	122.71	05010
5.02	93	26	51	6	0.50	122.71	05020
5.03	93	26	51	6	0.50	122.71	05030
5.05	93	26	51	6	0.50	122.71	05050
5.10	93	26	51	6	0.50	122.71	05100
5.20	93	26	51	6	0.50	122.71	05200
5.30	93	26	51	6	0.50	122.71	05300
5.40	93	26	51	6	0.50	122.71	05400
5.50	93	26	51	6	0.50	122.71	05500
5.60	93	26	51	6	0.50	122.71	05600
5.70	93	26	51	6	0.50	122.71	05700
5.80	93	26	51	6	0.50	122.71	05800
5.90	93	26	51	6	0.50	122.71	05900
5.97	93	26	51	6	0.50	122.71	05970
5.98	93	26	51	6	0.50	122.71	05980
5.99	93	26	51	6	0.50	122.71	05990
6.00	93	26	51	6	0.50	122.71	06000

P	○
M	○
K	○
N	
S	
H	●
O	

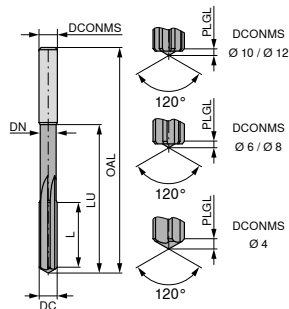
→ v_c Page 90

This tool concept permits numerous tolerances.

Please refer to the table on → page 103 for tolerances covered.

Intermediate dimensions available on request.

NC machine reamers, sim. DIN 8093-A

NC100
H

NEW

TiAlSiN

HA
straight flute
45°Solid carbide
Through hole +
blind hole

40 435 ...

DC _{H7} mm	OAL mm	L mm	LU mm	DCONMS _{H5} mm	PLGL mm	£ U4	
11.17	150	44	99	12	0.8	245.54	11170
11.97	150	44	99	12	0.8	245.54	11970
11.98	150	44	99	12	0.8	245.54	11980
11.99	150	44	99	12	0.8	245.54	11990
12.00	150	44	99	12	0.8	245.54	12000
12.01	150	44	99	12	0.8	245.54	12010
12.02	150	44	99	12	0.8	245.54	12020
12.03	150	44	99	12	0.8	245.54	12030
12.04	150	44	99	12	0.8	245.54	12040
12.05	150	44	99	12	0.8	245.54	12050

P	○
M	○
K	○
N	
S	
H	●
O	

→ v_c Page 90

40 435 ...

DC _{H7} mm	OAL mm	L mm	LU mm	DCONMS _{H5} mm	PLGL mm	£ U4	
6.01	93	26	51	6	0.5	122.71	06010
6.02	93	26	51	6	0.5	122.71	06020
6.03	93	26	51	6	0.5	122.71	06030
6.05	101	26	59	8	0.5	153.11	06050
6.10	101	26	59	8	0.5	153.11	06100
6.20	101	26	59	8	0.5	153.11	06200
6.30	101	26	59	8	0.5	153.11	06300
6.40	101	26	59	8	0.5	153.11	06400
6.50	101	26	59	8	0.5	153.11	06500
6.60	101	26	59	8	0.5	153.11	06600
6.70	101	26	59	8	0.5	153.11	06700
6.80	109	31	67	8	0.6	153.11	06800
6.85	109	31	67	8	0.6	153.11	06850
6.90	109	31	67	8	0.6	153.11	06900
7.00	109	31	67	8	0.6	153.11	07000
7.10	109	31	67	8	0.6	153.11	07100
7.20	109	31	67	8	0.6	153.11	07200
7.30	109	31	67	8	0.6	153.11	07300
7.40	109	31	67	8	0.6	153.11	07400
7.50	109	31	67	8	0.6	153.11	07500
7.60	109	31	67	8	0.6	153.11	07600
7.70	117	33	75	8	0.6	153.11	07700
7.80	117	33	75	8	0.6	153.11	07800
7.90	117	33	75	8	0.6	153.11	07900
7.97	117	33	75	8	0.6	153.11	07970
7.98	117	33	75	8	0.6	153.11	07980
7.99	117	33	75	8	0.6	153.11	07990
8.00	117	33	75	8	0.6	153.11	08000
8.01	117	33	75	8	0.7	153.11	08010
8.02	117	33	75	8	0.7	153.11	08020
8.03	117	33	75	8	0.7	153.11	08030
8.05	117	33	71	10	0.7	187.43	08050
8.10	117	33	71	10	0.7	187.43	08100
8.20	117	33	71	10	0.7	187.43	08200
8.30	117	33	71	10	0.7	187.43	08300
8.40	117	33	71	10	0.7	187.43	08400
8.50	117	33	71	10	0.7	187.43	08500
8.60	117	33	71	10	0.7	187.43	08600
8.70	125	36	79	10	0.7	187.43	08700
8.80	125	36	79	10	0.7	187.43	08800
8.90	125	36	79	10	0.7	187.43	08900
9.00	125	36	79	10	0.7	187.43	09000
9.10	125	36	79	10	0.7	187.43	09100
9.20	125	36	79	10	0.7	187.43	09200
9.30	125	36	79	10	0.7	187.43	09300
9.40	125	36	79	10	0.7	187.43	09400
9.50	125	36	79	10	0.7	187.43	09500
9.60	125	36	79	10	0.7	187.43	09600
9.70	133	38	87	10	0.7	187.43	09700
9.80	133	38	87	10	0.7	187.43	09800
9.90	133	38	87	10	0.7	187.43	09900
9.97	133	41	87	10	0.7	187.43	09970
9.98	133	41	87	10	0.7	187.43	09980
9.99	133	41	87	10	0.7	187.43	09990
10.00	133	41	87	10	0.7	187.43	10000
10.01	133	41	87	10	0.7	187.43	10010
10.02	133	41	87	10	0.8	187.43	10020
10.03	133	41	87	10	0.8	187.43	10030
10.04	133	41	87	10	0.8	187.43	10040
10.05	133	41	87	10	0.8	187.43	10050



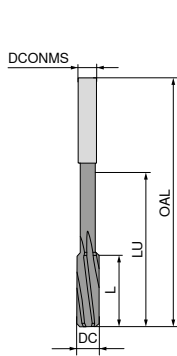
This tool concept permits numerous tolerances.

Please refer to the table on → **page 103** for tolerances covered.
Intermediate dimensions available on request.

NC machine reamers, DIN 212-3-B

▲ maximum radial run-out accuracy

NC

Left Hand Helix
HSS-E

DC _{H7} mm	OAL mm	L mm	LU mm	DCONMS _{h6} mm	ZEFP	£ U2	40 110 ...
1.5	40	8	15.5	2	3	17.91	015
1.6	43	9	16.0	2	3	20.07	016
1.7	43	9	16.0	2	3	20.07	017
1.8	46	10	19.0	2	4	20.07	018
1.9	46	10	19.0	2	4	20.07	019
2.0	49	11	21.0	2	4	17.43	020
2.1	49	11	21.0	2	4	21.16	021
2.2	53	12	22.0	3	4	21.16	022
2.3	53	12	22.0	3	4	21.16	023
2.4	57	14	26.0	3	4	21.16	024
2.5	57	14	26.0	3	4	17.43	025
2.6	57	14	26.0	3	4	22.38	026
2.7	61	15	30.0	3	6	22.38	027
2.8	61	15	30.0	3	6	22.38	028
2.9	61	15	30.0	3	6	22.38	029
3.0	61	15	30.0	3	6	16.00	030
3.1	65	16	34.0	4	6	21.16	031
3.2	65	16	34.0	4	6	21.16	032
3.3	65	16	34.0	4	6	21.16	033
3.4	70	18	39.0	4	6	21.16	034
3.5	70	18	39.0	4	6	18.80	035
3.6	70	18	39.0	4	6	23.46	036
3.7	70	18	39.0	4	6	23.46	037
3.8	75	19	44.0	4	6	23.46	038
3.9	75	19	44.0	4	6	17.00	039
4.0	75	19	44.0	4	6	17.43	040
4.1	75	19	44.0	4	6	22.03	041
4.2	75	19	44.0	4	6	22.03	042
4.3	80	21	48.0	5	6	22.03	043
4.4	80	21	48.0	5	6	22.03	044
4.5	80	21	48.0	5	6	18.80	045
4.6	80	21	48.0	5	6	23.85	046
4.7	80	21	48.0	5	6	23.85	047
4.8	86	23	54.0	5	6	23.85	048
4.9	86	23	54.0	5	6	23.85	049
5.0	86	23	54.0	5	6	17.91	050
5.1	86	23	54.0	5	6	23.85	051
5.2	86	23	54.0	5	6	23.85	052
5.3	86	23	54.0	5	6	23.85	053
5.4	93	26	53.0	6	6	23.85	054
5.5	93	26	53.0	6	6	22.03	055
5.6	93	26	53.0	6	6	23.85	056
5.7	93	26	53.0	6	6	23.85	057
5.8	93	26	53.0	6	6	23.85	058
5.9	93	26	53.0	6	6	23.85	059
6.0	93	26	53.0	6	6	19.15	060
6.1	101	28	61.0	6	6	23.85	061
6.2	101	28	61.0	6	6	23.85	062
6.3	101	28	61.0	6	6	23.85	063
6.4	101	28	61.0	6	6	23.85	064
6.5	101	28	61.0	6	6	22.94	065
6.6	101	28	61.0	6	6	23.85	066
6.7	101	28	61.0	6	6	23.85	067
6.8	109	31	69.0	8	6	23.85	068

40 110 ...

DC _{H7} mm	OAL mm	L mm	LU mm	DCONMS _{h6} mm	ZEFP	£ U2	40 110 ...
6.9	109	31	69.0	8	6	23.85	069
7.0	109	31	69.0	8	6	22.94	070
7.1	109	31	69.0	8	6	26.69	071
7.2	109	31	69.0	8	6	26.69	072
7.3	109	31	69.0	8	6	26.69	073
7.4	109	31	69.0	8	6	26.69	074
7.5	109	31	69.0	8	6	26.11	075
7.6	117	33	77.0	8	6	28.16	076
7.7	117	33	77.0	8	6	28.16	077
7.8	117	33	77.0	8	6	28.16	078
7.9	117	33	77.0	8	6	28.16	079
8.0	117	33	77.0	8	6	23.85	080
8.1	117	33	77.0	8	6	32.83	081
8.2	117	33	77.0	8	6	32.83	082
8.3	117	33	77.0	8	6	32.83	083
8.4	117	33	77.0	8	6	32.83	084
8.5	117	33	77.0	8	6	29.90	085
8.6	125	36	81.0	10	6	30.41	086
8.7	125	36	81.0	10	6	30.41	087
8.8	125	36	81.0	10	6	30.41	088
8.9	125	36	81.0	10	6	30.41	089
9.0	125	36	81.0	10	6	27.57	090
9.1	125	36	81.0	10	6	31.38	091
9.2	125	36	81.0	10	6	31.38	092
9.3	125	36	81.0	10	6	31.38	093
9.4	125	36	81.0	10	6	31.38	094
9.5	125	36	81.0	10	6	30.78	095
9.6	133	38	89.0	10	6	32.22	096
9.7	133	38	89.0	10	6	32.22	097
9.8	133	38	89.0	10	6	32.22	098
9.9	133	38	89.0	10	6	32.22	099
10.0	133	38	89.0	10	6	28.16	100
11.0	142	41	98.0	10	6	39.41	110
12.0	151	44	106.0	10	6	41.19	120
13.0	151	44	106.0	10	6	45.73	130
14.0	160	47	110.0	14	8	47.42	140
15.0	162	50	112.0	14	8	48.39	150
16.0	170	52	120.0	14	8	50.12	160
17.0	175	54	125.0	14	8	60.03	170
18.0	182	56	132.0	14	8	61.77	180
19.0	189	58	136.0	16	8	71.59	190
20.0	195	60	142.0	16	8	68.99	200

P	●
M	
K	●
N	●
S	
H	
O	●

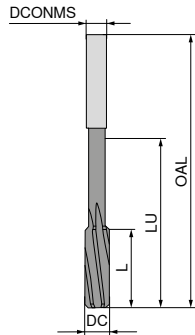
→ v_c Page 86+87

NC machine reamers, DIN 212-3-B

▲ 0.01 mm steps

▲ tolerance: Ø 1.00 - Ø 5.50 mm = +0.004 mm

▲ tolerance: Ø 5.51 - Ø 12.00 mm = +0.005 mm

NC
100Left Hand Helix
HSS-E

DC +0,004/+0,005 mm	OAL mm	L mm	LU mm	DCONMS _{h6} mm	ZEFP	£ U2	
0,95 - 0,99	34	5.5	12.5	1	3	25.86	xxxxx ¹⁾
1,00	34	5.5	12.5	1	3	26.11	01000
1,01	34	5.5	12.5	1	3	26.11	01010
1,02	34	5.5	12.5	1	3	26.11	01020
1,03 - 1,06	34	5.5	12.5	1	3	27.21	xxxxx ¹⁾
1,07 - 1,18	36	6.5	13.0	1	3	27.21	xxxxx ¹⁾
1,19 - 1,32	38	7.5	14.0	2	3	27.21	xxxxx ¹⁾
1,33 - 1,41	40	8.0	15.5	2	3	25.86	xxxxx ¹⁾
1,42 - 1,49	40	8.0	15.5	2	3	27.21	xxxxx ¹⁾
1,50	40	8.0	15.5	2	3	22.94	01500
1,51	43	9.0	16.0	2	3	22.94	01510
1,52	43	9.0	16.0	2	3	22.94	01520
1,53 - 1,70	43	9.0	16.0	2	3	27.21	xxxxx ¹⁾
1,71 - 1,90	46	10.0	19.0	2	4	27.21	xxxxx ¹⁾
1,91 - 1,96	49	11.0	21.0	2	4	27.21	xxxxx ¹⁾
1,97	49	11.0	21.0	2	4	22.94	01970
1,98	49	11.0	21.0	2	4	22.94	01980
1,99	49	11.0	21.0	2	4	22.94	01990
2,00	49	11.0	21.0	2	4	21.54	02000
2,01	49	11.0	21.0	2	4	21.54	02010
2,02	49	11.0	21.0	2	4	21.54	02020
2,03 - 2,12	49	11.0	21.0	2	4	27.21	xxxxx ¹⁾
2,13 - 2,36	53	12.0	22.0	3	4	27.21	xxxxx ¹⁾
2,37 - 2,47	57	14.0	26.0	3	4	27.21	xxxxx ¹⁾
2,48	57	14.0	26.0	3	4	24.69	02480
2,49	57	14.0	26.0	3	4	24.69	02490
2,50	57	14.0	26.0	3	4	21.16	02500
2,51	57	14.0	26.0	3	4	21.16	02510
2,52	57	14.0	26.0	3	4	21.16	02520
2,53 - 2,65	57	14.0	26.0	3	4	27.21	xxxxx ¹⁾
2,66 - 2,96	61	15.0	30.0	3	6	25.86	xxxxx ¹⁾
2,97	61	15.0	30.0	3	6	25.27	02970
2,98	61	15.0	30.0	3	6	25.27	02980
2,99	61	15.0	30.0	3	6	25.27	02990
3,00	61	15.0	30.0	3	6	18.80	03000
3,01	61	15.0	30.0	3	6	18.80	03010
3,02	61	15.0	30.0	3	6	18.80	03020
3,03	61	15.0	30.0	3	6	27.21	03030 ¹⁾
3,04 - 3,35	65	16.0	34.0	4	6	27.21	xxxxx ¹⁾
3,36 - 3,75	70	18.0	39.0	4	6	27.21	xxxxx ¹⁾
3,76 - 3,96	75	19.0	44.0	4	6	27.21	xxxxx ¹⁾
3,97	75	19.0	44.0	4	6	20.61	03970
3,98	75	19.0	44.0	4	6	20.61	03980
3,99	75	19.0	44.0	4	6	20.61	03990
4,00	75	19.0	44.0	4	6	20.61	04000
4,01	75	19.0	44.0	4	6	20.61	04010
4,02	75	19.0	44.0	4	6	20.61	04020
4,03 - 4,25	75	19.0	44.0	4	6	27.21	xxxxx ¹⁾
4,26 - 4,75	80	21.0	48.0	5	6	25.86	xxxxx ¹⁾
4,76 - 4,96	86	23.0	54.0	5	6	27.21	xxxxx ¹⁾
4,97	86	23.0	54.0	5	6	22.38	04970
4,98	86	23.0	54.0	5	6	22.38	04980
4,99	86	23.0	54.0	5	6	22.38	04990
5,00	86	23.0	54.0	5	6	22.38	05000
5,01	86	23.0	54.0	5	6	22.38	05010
5,02	86	23.0	54.0	5	6	22.38	05020

40 115 ...

DC +0,004/+0,005 mm	OAL mm	L mm	LU mm	DCONMS _{h6} mm	ZEFP	£ U2	
5,03 - 5,30	86	23.0	54.0	5	6	27.21	xxxxx ¹⁾
5,31 - 5,60	93	26.0	53.0	6	6	27.21	xxxxx ¹⁾
5,61 - 5,96	93	26.0	53.0	6	6	25.86	xxxxx ¹⁾
5,97	93	26.0	53.0	6	6	24.69	05970
5,98	93	26.0	53.0	6	6	24.69	05980
5,99	93	26.0	53.0	6	6	24.69	05990
6,00	93	26.0	53.0	6	6	24.69	06000
6,01	93	26.0	53.0	6	6	24.69	06010
6,02	93	26.0	53.0	6	6	24.69	06020
6,03	93	26.0	53.0	6	6	27.21	06030 ¹⁾
6,04 - 6,70	101	28.0	61.0	6	6	27.21	xxxxx ¹⁾
6,71 - 7,20	109	31.0	69.0	8	6	27.21	xxxxx ¹⁾
7,21 - 7,50	109	31.0	69.0	8	6	25.86	xxxxx ¹⁾
7,51 - 7,96	117	33.0	77.0	8	6	30.37	xxxxx ¹⁾
7,97	117	33.0	77.0	8	6	26.69	07970
7,98	117	33.0	77.0	8	6	26.69	07980
7,99	117	33.0	77.0	8	6	26.69	07990
8,00	117	33.0	77.0	8	6	26.69	08000
8,01	117	33.0	77.0	8	6	26.69	08010
8,02	117	33.0	77.0	8	6	26.69	08020
8,03 - 8,20	117	33.0	77.0	8	6	36.24	xxxxx ¹⁾
8,21 - 8,50	117	33.0	77.0	8	6	36.24	xxxxx ¹⁾
8,51 - 8,99	125	36.0	81.0	10	6	36.24	xxxxx ¹⁾
9,00	125	36.0	81.0	10	6	33.69	09000
9,01	125	36.0	81.0	10	6	33.69	09010
9,02	125	36.0	81.0	10	6	33.69	09020
9,03 - 9,20	125	36.0	81.0	10	6	36.24	xxxxx ¹⁾
9,21 - 9,50	125	36.0	81.0	10	6	34.78	xxxxx ¹⁾
9,51 - 9,96	133	38.0	89.0	10	6	52.76	xxxxx ¹⁾
9,97	133	38.0	89.0	10	6	33.69	09970
9,98	133	38.0	89.0	10	6	33.69	09980
9,99	133	38.0	89.0	10	6	33.69	09990
10,00	133	38.0	89.0	10	6	33.69	10000
10,01	133	38.0	89.0	10	6	33.69	10010
10,02	133	38.0	89.0	10	6	33.69	10020
10,03 - 10,20	133	38.0	89.0	10	6	54.30	xxxxx ¹⁾
10,21 - 10,60	133	38.0	89.0	10	6	54.30	xxxxx ¹⁾
10,61 - 11,20	142	41.0	98.0	10	6	51.36	xxxxx ¹⁾
11,21 - 11,80	142	41.0	98.0	10	6	54.30	xxxxx ¹⁾
11,81 - 11,96	151	44.0	106.0	10	6	51.36	xxxxx ¹⁾
11,97	151	44.0	106.0	10	6	48.39	11970
11,98	151	44.0	106.0	10	6	48.39	11980
11,99	151	44.0	106.0	10	6	48.39	11990
12,00	151	44.0	106.0	10	6	48.39	12000

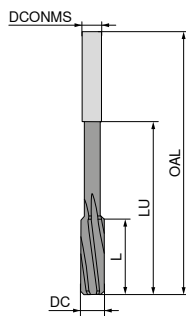
P	●
M	
K	●
N	●
S	
H	
O	●

→ v_c Page 86+871) Not available ex stock, articles are non-returnable and cannot be exchanged /
Delivery time 8 working days / Minimum order 5 pieces

This tool concept permits numerous tolerances.
Please refer to the table on → **page 103** for tolerances covered.
For xxxxx please indicate required Ø in the order
(e.g. Ø 8.03 mm → Article no. 40 115 08030)!

Machine reamers, DIN 212-B

N

Left Hand Helix
HSS-E

DC _{H7} mm	OAL mm	L mm	LU mm	DCONMS _{H9} mm	ZEFP	£ U2	40 150 ...
1.0	34	5.5	15.0	1.0	3	22.97	010
1.1	36	6.5	15.5	1.1	3	24.22	011
1.2	38	7.5	16.5	1.2	3	22.44	012
1.3	38	7.5	16.5	1.2	3	25.06	013
1.4	40	8.0	18.0	1.4	3	20.75	014
1.5	40	8.0	18.0	1.5	3	19.05	015
1.6	43	9.0	20.0	1.6	3	21.19	016
1.7	43	9.0	20.0	1.6	3	21.19	017
1.8	46	10.0	22.0	1.8	4	21.19	018
1.9	46	10.0	22.0	1.8	4	21.19	019
2.0	49	11.0	24.0	2.0	4	18.68	020
2.1	49	11.0	24.0	2.0	4	22.44	021
2.2	53	12.0	25.0	2.2	4	22.44	022
2.3	53	12.0	25.0	2.2	4	22.44	023
2.4	57	14.0	29.0	2.5	4	22.44	024
2.5	57	14.0	29.0	2.5	4	18.68	025
2.6	57	14.0	29.0	2.5	4	23.31	026
2.7	61	15.0	33.0	2.8	6	23.31	027
2.8	61	15.0	33.0	2.8	6	23.31	028
2.9	61	15.0	36.0	3.0	6	23.31	029
3.0	61	15.0	36.0	3.0	6	16.83	030
3.1	65	16.0	36.0	3.2	6	22.06	031
3.2	65	16.0	36.0	3.2	6	22.06	032
3.3	65	16.0	36.0	3.2	6	22.06	033
3.4	70	18.0	41.0	3.5	6	22.06	034
3.5	70	18.0	41.0	3.5	6	19.45	035
3.6	70	18.0	41.0	3.5	6	24.69	036
3.7	70	18.0	41.0	3.5	6	24.69	037
3.8	75	19.0	44.0	4.0	6	24.69	038
3.9	75	19.0	44.0	4.0	6	18.18	039
4.0	75	19.0	44.0	4.0	6	18.68	040
4.1	75	19.0	44.0	4.0	6	22.97	041
4.2	75	19.0	44.0	4.0	6	22.97	042
4.3	80	21.0	48.0	4.5	6	22.97	043
4.4	80	21.0	48.0	4.5	6	22.97	044
4.5	80	21.0	48.0	4.5	6	19.45	045
4.6	80	21.0	48.0	4.5	6	25.06	046
4.7	80	21.0	48.0	4.5	6	25.06	047
4.8	86	23.0	53.0	5.0	6	25.06	048
4.9	86	23.0	53.0	5.0	6	25.06	049
5.0	86	23.0	53.0	5.0	6	19.05	050
5.1	86	23.0	53.0	5.0	6	25.06	051
5.2	86	23.0	53.0	5.0	6	25.06	052
5.3	86	23.0	53.0	5.0	6	25.06	053
5.4	93	26.0	58.0	5.6	6	25.06	054
5.5	93	26.0	58.0	5.6	6	22.97	055
5.6	93	26.0	58.0	5.6	6	25.06	056
5.7	93	26.0	58.0	5.6	6	25.06	057
5.8	93	26.0	58.0	5.6	6	25.06	058
5.9	93	26.0	58.0	5.6	6	25.06	059
6.0	93	26.0	58.0	5.6	6	19.95	060
6.1	101	28.0	64.0	6.3	6	25.06	061
6.2	101	28.0	64.0	6.3	6	25.06	062
6.3	101	28.0	64.0	6.3	6	25.06	063
6.4	101	28.0	64.0	6.3	6	25.06	064

40 150 ...

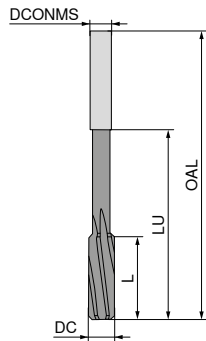
DC _{H7} mm	OAL mm	L mm	LU mm	DCONMS _{H9} mm	ZEFP	£ U2	40 150 ...
6.5	101	28.0	64.0	6.3	6	24.22	065
6.6	101	28.0	64.0	6.3	6	25.06	066
6.7	101	28.0	64.0	6.3	6	25.06	067
6.8	109	31.0	70.0	7.1	6	25.55	068
6.9	109	31.0	70.0	7.1	6	25.55	069
7.0	109	31.0	70.0	7.1	6	24.22	070
7.1	109	31.0	70.0	7.1	6	28.12	071
7.2	109	31.0	70.0	7.1	6	28.12	072
7.3	109	31.0	70.0	7.1	6	28.12	073
7.4	109	31.0	70.0	7.1	6	28.12	074
7.5	109	31.0	70.0	7.1	6	27.24	075
7.6	117	33.0	76.0	8.0	6	29.39	076
7.7	117	33.0	76.0	8.0	6	29.39	077
7.8	117	33.0	76.0	8.0	6	29.39	078
7.9	117	33.0	76.0	8.0	6	29.39	079
8.0	117	33.0	76.0	8.0	6	25.06	080
8.1	117	33.0	76.0	8.0	6	34.99	081
8.2	117	33.0	76.0	8.0	6	34.99	082
8.3	117	33.0	76.0	8.0	6	34.99	083
8.4	117	33.0	76.0	8.0	6	34.99	084
8.5	117	33.0	76.0	8.0	6	31.65	085
8.6	125	36.0	82.0	9.0	6	32.00	086
8.7	125	36.0	82.0	9.0	6	32.00	087
8.8	125	36.0	82.0	9.0	6	32.00	088
8.9	125	36.0	82.0	9.0	6	32.00	089
9.0	125	36.0	82.0	9.0	6	28.94	090
9.1	125	36.0	82.0	9.0	6	33.30	091
9.2	125	36.0	82.0	9.0	6	33.30	092
9.3	125	36.0	82.0	9.0	6	33.30	093
9.4	125	36.0	82.0	9.0	6	33.30	094
9.5	125	36.0	82.0	9.0	6	32.38	095
9.6	133	38.0	88.0	10.0	6	34.60	096
9.7	133	38.0	88.0	10.0	6	34.60	097
9.8	133	38.0	88.0	10.0	6	34.60	098
9.9	133	38.0	88.0	10.0	6	34.60	099
10.0	133	38.0	88.0	10.0	6	29.39	100
11.0	142	41.0	97.0	10.0	6	41.50	110
12.0	151	44.0	106.0	10.0	6	43.17	120
13.0	151	44.0	106.0	10.0	6	48.39	130
14.0	160	47.0	111.0	12.5	8	50.21	140
15.0	162	50.0	113.0	12.5	8	51.86	150
16.0	170	52.0	121.0	12.5	8	53.71	160
17.0	175	54.0	124.0	14.0	8	63.20	170
18.0	182	56.0	131.0	14.0	8	64.84	180
19.0	189	58.0	132.0	16.0	8	76.14	190
20.0	195	60.0	136.0	16.0	8	72.69	200

P	●
M	○
K	●
N	●
S	○
H	●
O	●

→ v_c Page 88+89

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
100Left Hand Helix
HSS-E

DC mm	OAL mm	L mm	LU mm	DCONMS _{hg} mm	ZEFP	£ U2	
0,95 - 1,06	34	5.5	15.0	1.0	3	25.06	xxxxx ¹⁾
1,07 - 1,18	36	6.5	15.5	1.1	3	25.06	xxxxx ¹⁾
1,19 - 1,32	38	7.5	16.5	1.2	3	25.06	xxxxx ¹⁾
1,33 - 1,39	40	8.0	18.0	1.4	3	25.06	xxxxx ¹⁾
1,40 - 1,47	40	8.0	18.0	1.4	3	22.97	xxxxx ¹⁾
1,48	40	8.0	18.0	1.4	3	22.97	01480
1,49	40	8.0	18.0	1.4	3	22.97	01490
1,50	40	8.0	18.0	1.4	3	21.70	01500
1,51 - 1,70	43	9.0	20.0	1.6	3	21.70	xxxxx ¹⁾
1,71 - 1,90	46	10.0	22.0	1.8	4	21.70	xxxxx ¹⁾
1,91 - 1,97	49	11.0	24.0	2.0	4	21.70	xxxxx ¹⁾
1,98	49	11.0	24.0	2.0	4	21.70	01980
1,99	49	11.0	24.0	2.0	4	21.70	01990
2,00	49	11.0	24.0	2.0	4	20.36	02000
2,01	49	11.0	24.0	2.0	4	20.36	02010
2,02	49	11.0	24.0	2.0	4	20.36	02020
2,03	49	11.0	24.0	2.0	4	20.36	02030
2,04	49	11.0	24.0	2.0	4	20.36	02040
2,05	49	11.0	24.0	2.0	4	20.36	02050
2,06 - 2,09	49	11.0	24.0	2.0	4	20.36	xxxxx ¹⁾
2,10 - 2,12	49	11.0	24.0	2.0	4	23.31	xxxxx ¹⁾
2,13 - 2,36	53	12.0	25.0	2.2	4	23.31	xxxxx ¹⁾
2,37 - 2,49	57	14.0	29.0	2.5	4	23.31	xxxxx ¹⁾
2,50 - 2,59	57	14.0	29.0	2.5	4	19.95	xxxxx ¹⁾
2,60 - 2,65	57	14.0	29.0	2.5	4	24.22	xxxxx ¹⁾
2,66 - 2,80	61	15.0	33.0	2.8	6	24.22	xxxxx ¹⁾
2,81 - 2,94	61	15.0	36.0	3.0	6	24.22	xxxxx ¹⁾
2,95	61	15.0	36.0	3.0	6	24.22	02950
2,96	61	15.0	36.0	3.0	6	24.22	02960
2,97	61	15.0	36.0	3.0	6	24.22	02970
2,98	61	15.0	36.0	3.0	6	24.22	02980
2,99	61	15.0	36.0	3.0	6	24.22	02990
3,00	61	15.0	36.0	3.0	6	19.41	03000
3,01	65	16.0	36.0	3.2	6	18.18	03010
3,02	65	16.0	36.0	3.2	6	18.18	03020
3,03	65	16.0	36.0	3.2	6	18.18	03030
3,04	65	16.0	36.0	3.2	6	18.18	03040
3,05	65	16.0	36.0	3.2	6	18.18	03050
3,06	65	16.0	36.0	3.2	6	18.18	03060
3,07	65	16.0	36.0	3.2	6	18.18	03070
3,08 - 3,09	65	16.0	36.0	3.2	6	18.18	xxxxx ¹⁾
3,10 - 3,35	65	16.0	36.0	3.2	6	22.97	xxxxx ¹⁾
3,36 - 3,49	70	18.0	41.0	3.5	6	22.97	xxxxx ¹⁾
3,50 - 3,59	70	18.0	41.0	3.5	6	19.95	xxxxx ¹⁾
3,60 - 3,75	70	18.0	41.0	3.5	6	25.55	xxxxx ¹⁾
3,76 - 3,81	75	19.0	44.0	4.0	6	25.55	xxxxx ¹⁾
3,82 - 3,94	75	19.0	44.0	4.0	6	19.45	xxxxx ¹⁾
3,95	75	19.0	44.0	4.0	6	19.45	03950
3,96	75	19.0	44.0	4.0	6	19.45	03960
3,97	75	19.0	44.0	4.0	6	19.45	03970
3,98	75	19.0	44.0	4.0	6	19.45	03980
3,99	75	19.0	44.0	4.0	6	19.45	03990

40 140 ...

DC mm	OAL mm	L mm	LU mm	DCONMS _{hg} mm	ZEFP	£ U2	
4,00	75	19.0	44.0	4.0	6	19.45	04000
4,01	75	19.0	44.0	4.0	6	19.45	04010
4,02	75	19.0	44.0	4.0	6	19.45	04020
4,03	75	19.0	44.0	4.0	6	19.45	04030
4,04	75	19.0	44.0	4.0	6	19.45	04040
4,05	75	19.0	44.0	4.0	6	19.45	04050
4,06	75	19.0	44.0	4.0	6	19.45	04060
4,07	75	19.0	44.0	4.0	6	19.45	04070
4,08	75	19.0	44.0	4.0	6	19.45	04080
4,09 - 4,20	75	19.0	44.0	4.0	6	19.45	xxxxx ¹⁾
4,21 - 4,25	75	19.0	44.0	4.0	6	23.85	xxxxx ¹⁾
4,26 - 4,75	80	21.0	48.0	4.5	5	23.85	xxxxx ¹⁾
4,76 - 4,95	86	23.0	53.0	5.0	6	21.19	xxxxx ¹⁾
4,96	86	23.0	53.0	5.0	6	21.19	04960
4,97	86	23.0	53.0	5.0	6	21.19	04970
4,98	86	23.0	53.0	5.0	6	21.19	04980
4,99	86	23.0	53.0	5.0	6	21.19	04990
5,00	86	23.0	53.0	5.0	6	21.19	05000
5,01	86	23.0	53.0	5.0	6	21.19	05010
5,02	86	23.0	53.0	5.0	6	21.19	05020
5,03	86	23.0	53.0	5.0	6	21.19	05030
5,04	86	23.0	53.0	5.0	6	21.19	05040
5,05	86	23.0	53.0	5.0	6	21.19	05050
5,06	86	23.0	53.0	5.0	6	21.19	05060
5,07	86	23.0	53.0	5.0	6	21.19	05070
5,08 - 5,20	86	23.0	53.0	5.0	6	21.19	xxxxx ¹⁾
5,21 - 5,30	86	23.0	53.0	5.0	6	23.31	xxxxx ¹⁾
5,31 - 5,94	93	26.0	58.0	5.6	6	23.31	xxxxx ¹⁾
5,95	93	26.0	58.0	5.6	6	23.31	05950
5,96	93	26.0	58.0	5.6	6	23.31	05960
5,97	93	26.0	58.0	5.6	6	23.31	05970
5,98	93	26.0	58.0	5.6	6	23.31	05980
5,99	93	26.0	58.0	5.6	6	23.31	05990

P	●
M	○
K	●
N	●
S	○
H	
O	●

→ v_c Page 88+89

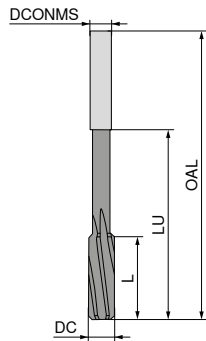
- 1) Not available ex stock, articles are non-returnable and cannot be exchanged /
Delivery time 14 working days



This tool concept permits numerous tolerances.
For achievable tolerances covered, please see the table on → page 103.
For xxxxx please indicate required Ø in the order
(e.g. Ø 10.06 mm → Article no. 40 140 10060)!

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
100Left Hand Helix
HSS-E

DC mm	OAL mm	L mm	LU mm	DCONMS _{h9} mm	ZEFP	£ U2	40 140 ...
6,00	93	26	58	6.3	6	23.31	06000
6,01	101	28	64	6.3	6	23.31	06010
6,02	101	28	64	6.3	6	23.31	06020
6,03	101	28	64	6.3	6	23.31	06030
6,04	101	28	64	6.3	6	23.31	06040
6,05	101	28	64	6.3	6	23.31	06050
6,06 - 6,11	101	28	64	6.3	6	23.31	xxxxx ¹⁾
6,12 - 6,34	101	28	64	6.3	6	25.55	xxxxx ¹⁾
6,35	101	28	64	6.3	6	25.55	06350
6,36	101	28	64	6.3	6	25.55	06360 ¹⁾
6,71 - 6,94	109	31	70	7.1	6	25.55	xxxxx ¹⁾
6,95	109	31	70	7.1	6	25.55	06950
6,96	109	31	70	7.1	6	25.55	06960
6,97	109	31	70	7.1	6	25.55	06970
6,98	109	31	70	7.1	6	25.55	06980
6,99	109	31	70	7.1	6	25.55	06990
7,00	109	31	70	7.1	6	25.55	07000
7,01	109	31	70	7.1	6	25.55	07010
7,02	109	31	70	7.1	6	25.55	07020
7,03	109	31	70	7.1	6	25.55	07030
7,04 - 7,50	109	31	70	7.1	6	25.55	xxxxx ¹⁾
7,51 - 7,63	109	31	76	7.1	6	25.55	xxxxx ¹⁾
7,64 - 7,94	117	33	76	8.0	6	25.55	xxxxx ¹⁾
7,95	117	33	76	8.0	6	25.55	07950
7,96	117	33	76	8.0	6	25.55	07960
7,97	117	33	76	8.0	6	25.55	07970
7,98	117	33	76	8.0	6	25.55	07980
7,99	117	33	76	8.0	6	25.55	07990
8,00	117	33	76	8.0	6	25.55	08000
8,01	117	33	76	8.0	6	25.55	08010
8,02	117	33	76	8.0	6	25.55	08020
8,03	117	33	76	8.0	6	25.55	08030
8,04	117	33	76	8.0	6	25.55	08040
8,05	117	33	76	8.0	6	25.55	08050
8,06 - 8,20	117	33	76	8.0	6	25.55	xxxxx ¹⁾
8,21 - 8,50	117	33	76	8.0	6	32.00	xxxxx ¹⁾
8,51 - 8,63	117	33	82	8.0	6	32.00	xxxxx ¹⁾
8,64 - 8,95	125	36	82	9.0	6	32.00	xxxxx ¹⁾
8,96	125	36	82	9.0	6	32.00	08960
8,97	125	36	82	9.0	6	32.00	08970
8,98	125	36	82	9.0	6	32.00	08980
8,99	125	36	82	9.0	6	32.00	08990
9,00	125	36	82	9.0	6	32.00	09000
9,01	125	36	82	9.0	6	32.00	09010
9,02	125	36	82	9.0	6	32.00	09020
9,03 - 9,50	125	36	82	9.0	6	32.00	xxxxx ¹⁾
9,51 - 9,63	125	36	88	9.0	6	32.00	xxxxx ¹⁾
9,64 - 9,95	133	38	88	10.0	6	32.00	xxxxx ¹⁾
9,96	133	38	88	10.0	6	32.00	09960
9,97	133	38	88	10.0	6	32.00	09970
9,98	133	38	88	10.0	6	32.00	09980
9,99	133	38	88	10.0	6	32.00	09990

40 140 ...

DC mm	OAL mm	L mm	LU mm	DCONMS _{h9} mm	ZEFP	£ U2	40 140 ...
10,00	133	38	88	10.0	6	32.00	10000
10,01	133	38	88	10.0	6	32.00	10010
10,02	133	38	88	10.0	6	32.00	10020
10,03	133	38	88	10.0	6	32.00	10030
10,04	133	38	88	10.0	6	32.00	10040
10,05	133	38	88	10.0	6	32.00	10050
10,06 - 10,09	133	38	88	10.0	6	32.00	xxxxx ¹⁾
10,10	133	38	88	10.0	6	32.00	10100
10,11 - 10,19	133	38	88	10.0	6	32.00	xxxxx ¹⁾
10,20	133	38	88	10.0	6	32.00	10200
10,21 - 10,69	133	38	88	10.0	6	40.14	xxxxx ¹⁾
10,70 - 11,20	142	41	97	10.0	6	40.14	xxxxx ¹⁾
11,21 - 11,80	142	41	97	10.0	6	45.81	xxxxx ¹⁾
11,81 - 11,95	151	44	106	10.0	6	45.81	xxxxx ¹⁾
11,96	151	44	106	10.0	6	45.81	11960
11,97	151	44	106	10.0	6	45.81	11970
11,98	151	44	106	10.0	6	45.81	11980
11,99	151	44	106	10.0	6	45.81	11990
12,00	151	44	106	10.0	6	45.81	12000

P	●
M	○
K	●
N	●
S	○
H	●
O	●

→ v. Page 88+89

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

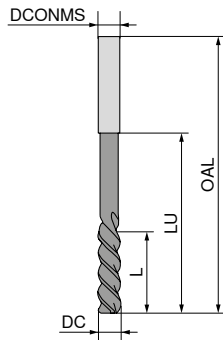


This tool concept permits numerous tolerances.
 For achievable tolerances covered, please see the table on → page 103.
 For xxxxx please indicate required Ø in the order
 (e.g. Ø 10.06 mm → Article no. 40 140 10060!)

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

40 155 ...

DC _{H7} mm	OAL mm	L mm	LU mm	DCONMS _{H9} mm	ZEFP	£ U2	
1.0	34	5.5	15	1.0	2	27.60	010 ¹⁾
1.5	40	8.0	18	1.5	2	21.19	015 ¹⁾
1.8	46	10.0	22	1.8	2	25.31	018 ¹⁾
2.0	49	11.0	24	2.0	3	21.67	020 ¹⁾
2.2	53	12.0	25	2.2	3	32.17	022 ¹⁾
2.5	57	14.0	29	2.5	3	23.06	025 ¹⁾
2.8	61	15.0	33	2.8	3	35.91	028 ¹⁾
3.0	61	15.0	36	3.0	3	25.82	030 ¹⁾
3.2	65	16.0	36	3.2	3	38.19	032 ¹⁾
3.5	70	18.0	41	3.5	3	29.90	035 ¹⁾
4.0	75	19.0	44	4.0	3	25.82	040
4.5	80	21.0	48	4.5	3	29.90	045
5.0	86	23.0	53	5.0	3	28.55	050
6.0	93	26.0	58	5.6	3	28.08	060
6.5	101	28.0	64	6.3	3	33.61	065
7.0	109	31.0	70	7.1	3	31.25	070
8.0	117	33.0	76	8.0	3	31.25	080
9.0	125	36.0	82	9.0	3	41.86	090
10.0	133	38.0	88	10.0	3	39.53	100
11.0	142	41.0	97	10.0	3	50.61	110
12.0	151	44.0	106	10.0	3	47.76	120
13.0	151	44.0	106	10.0	3	67.20	130
14.0	160	47.0	111	12.5	3	62.58	140
15.0	162	50.0	113	12.5	3	63.55	150
16.0	170	52.0	121	12.5	3	67.20	160
17.0	175	54.0	124	14.0	3	100.23	170
18.0	182	56.0	131	14.0	3	91.96	180
19.0	189	58.0	132	16.0	3	103.96	190
20.0	195	60.0	136	16.0	3	100.23	200

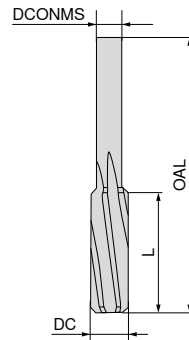
P	●
M	○
K	●
N	●
S	○
H	
O	○

→ v_c Page 88+89

1) not standardised

Stub reamers, DIN 8089-B

AR



Left Hand Helix
HSS-E
Through hole

40 145 ...

DC _{H7} mm	OAL mm	L mm	DCONMS _{H8} mm	ZEFP	£ U2	
4.0	56	20	3.55	6	19.35	040
4.5	63	22	4.00	6	22.06	045
5.0	63	22	4.00	6	21.19	050
5.5	63	22	5.00	6	24.41	055
6.0	63	22	5.00	6	21.19	060
6.5	63	22	5.00	6	25.82	065
7.0	71	25	6.30	6	25.82	070
8.0	71	25	6.30	6	25.31	080
9.0	71	25	8.00	6	29.90	090
10.0	71	25	8.00	6	30.81	100
11.0	80	28	10.00	6	42.33	110
12.0	80	28	10.00	6	45.07	120
13.0	80	28	10.00	6	50.69	130
14.0	90	32	12.50	8	51.47	140
15.0	90	32	12.50	8	53.42	150
16.0	90	32	12.50	8	56.14	160
17.0	90	32	12.50	8	64.26	170
18.0	100	36	16.00	8	68.03	180
19.0	100	36	16.00	8	79.10	190
20.0	100	36	16.00	8	74.43	200

P	●
M	○
K	●
N	●
S	○
H	
O	●

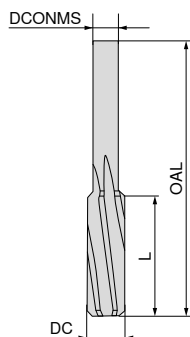
→ v_c Page 88+89

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
100HSS-E
Left Hand Helix

DC mm	OAL mm	L mm	DCONMS _{h8} mm	ZEFP	£ U2	40 139 ...
3,76 - 3,81	56	20	3.55	6	28.08	xxxxx ¹⁾
3,82 - 3,94	56	20	3.55	6	20.72	xxxxx ¹⁾
3,95	56	20	3.55	6	20.72	03950
3,96	56	20	3.55	6	20.72	03960
3,97	56	20	3.55	6	20.72	03970
3,98	56	20	3.55	6	20.72	03980
3,99	56	20	3.55	6	20.72	03990
4,00	56	20	3.55	6	20.72	04000
4,01	56	20	3.55	6	20.72	04010
4,02	56	20	3.55	6	20.72	04020
4,03 - 4,20	56	20	3.55	6	20.72	xxxxx ¹⁾
4,21 - 4,25	56	20	3.55	6	24.84	xxxxx ¹⁾
4,26 - 4,75	63	22	4.00	6	24.84	xxxxx ¹⁾
4,76 - 4,94	63	22	4.00	6	22.06	xxxxx ¹⁾
4,95	63	22	4.00	6	22.06	04950
4,96	63	22	4.00	6	22.06	04960
4,97	63	22	4.00	6	22.06	04970
4,98	63	22	4.00	6	22.06	04980
4,99	63	22	4.00	6	22.06	04990
5,00	63	22	4.00	6	22.06	05000
5,01	63	22	4.00	6	22.06	05010
5,02	63	22	4.00	6	22.06	05020
5,03	63	22	4.00	6	22.06	05030
5,04	63	22	4.00	6	22.06	05040
5,05	63	22	4.00	6	22.06	05050
5,06 - 5,20	63	22	4.00	6	22.06	xxxxx ¹⁾
5,21 - 5,30	63	22	4.00	6	24.84	xxxxx ¹⁾
5,31 - 5,70	63	22	5.00	6	24.84	xxxxx ¹⁾
5,71 - 5,94	63	22	5.00	6	24.84	xxxxx ¹⁾
5,95	63	22	5.00	6	24.84	05950
5,96	63	22	5.00	6	24.84	05960
5,97	63	22	5.00	6	24.84	05970
5,98	63	22	5.00	6	24.84	05980
5,99	63	22	5.00	6	24.84	05990
6,00	63	22	5.00	6	24.84	06000
6,01	63	22	5.00	6	24.84	06010
6,02	63	22	5.00	6	24.84	06020
6,03 - 6,11	63	22	5.00	6	24.84	xxxxx ¹⁾
6,12 - 6,70	63	22	5.00	6	26.69	xxxxx ¹⁾
6,71 - 6,94	71	25	6.30	6	26.69	xxxxx ¹⁾
6,95	71	25	6.30	6	26.69	06950
6,96	71	25	6.30	6	26.69	06960
6,97	71	25	6.30	6	26.69	06970
6,98	71	25	6.30	6	26.69	06980
6,99	71	25	6.30	6	26.69	06990
7,00	71	25	6.30	6	26.69	07000
7,01	71	25	6.30	6	26.69	07010
7,02	71	25	6.30	6	26.69	07020
7,03 - 7,25	71	25	6.30	6	26.69	xxxxx ¹⁾
7,26 - 7,94	71	25	6.30	6	26.69	xxxxx ¹⁾
7,95	71	25	6.30	6	26.69	07950
7,96	71	25	6.30	6	26.69	07960

40 139 ...

DC mm	OAL mm	L mm	DCONMS _{h8} mm	ZEFP	£ U2	40 139 ...
7,97	71	25	6.30	6	26.69	07970
7,98	71	25	6.30	6	26.69	07980
7,99	71	25	6.30	6	26.69	07990
8,00	71	25	6.30	6	26.69	08000
8,01	71	25	6.30	6	26.69	08010
8,02	71	25	6.30	6	26.69	08020
8,03	71	25	6.30	6	26.69	08030
8,04	71	25	6.30	6	26.69	08040
8,05 - 8,20	71	25	6.30	6	26.69	xxxxx ¹⁾
8,21 - 8,50	71	25	6.30	6	33.61	xxxxx ¹⁾
8,51 - 8,94	71	25	8.00	6	33.61	xxxxx ¹⁾
8,95	71	25	8.00	6	33.61	08950
8,96	71	25	8.00	6	33.61	08960
8,97	71	25	8.00	6	33.61	08970
8,98	71	25	8.00	6	33.61	08980
8,99	71	25	8.00	6	33.61	08990
9,00	71	25	8.00	6	33.61	09000
9,01	71	25	8.00	6	33.61	09010 ¹⁾
9,02	71	25	8.00	6	33.61	09020
9,03 - 9,25	71	25	8.00	6	33.61	xxxxx ¹⁾
9,26 - 9,94	71	25	8.00	6	33.61	xxxxx ¹⁾
9,95	71	25	8.00	6	33.61	09950
9,96	71	25	8.00	6	33.61	09960
9,97	71	25	8.00	6	33.61	09970
9,98	71	25	8.00	6	33.61	09980
9,99	71	25	8.00	6	33.61	09990
10,00	71	25	8.00	6	33.61	10000
10,01	71	25	8.00	6	33.61	10010
10,02	71	25	8.00	6	33.61	10020
10,03 - 10,20	71	25	8.00	6	33.61	xxxxx ¹⁾
10,21 - 10,60	71	25	8.00	6	42.76	xxxxx ¹⁾
10,61 - 11,20	80	28	10.00	6	42.76	xxxxx ¹⁾
11,21 - 11,25	80	28	10.00	6	49.64	xxxxx ¹⁾
11,26 - 11,94	80	28	10.00	6	49.64	xxxxx ¹⁾
11,95	80	28	10.00	6	49.64	11950
11,96	80	28	10.00	6	49.64	11960
11,97	80	28	10.00	6	49.64	11970
11,98	80	28	10.00	6	49.64	11980
11,99	80	28	10.00	6	49.64	11990
12,00	80	28	10.00	6	49.64	12000

P	●
M	○
K	●
N	●
S	○
H	●
O	●

→ v. Page 88+89

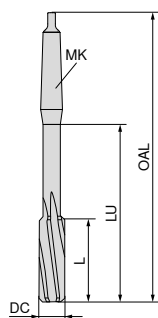
1) Not available ex stock, articles are non-returnable and cannot be exchanged /
Delivery time 14 working days

This tool concept permits numerous tolerances.
For achievable tolerances covered, please see the table on → page 103.
For xxxxx please indicate required Ø in the order
(e.g. Ø 10.06 mm → Article no. 40 139 10060)!

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

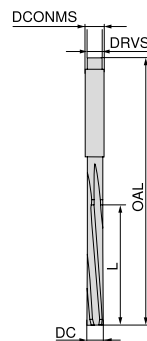
DC mm	OAL mm	L mm	LU mm	MK	ZEFP	£ U2	40 160 ...
16	210	52	130	2	8	64.26	160
17	214	54	134	2	8	68.99	170
18	219	56	139	2	8	71.70	180
19	223	58	143	2	8	75.41	190
20	228	60	148	2	8	75.41	200
21	232	62	152	2	8	85.49	210
22	237	64	157	2	8	85.49	220
23	241	66	161	2	8	98.31	230
24	268	68	169	3	8	101.19	240
25	268	68	169	3	8	103.96	250
26	273	70	174	3	8	111.35	260
27	277	71	178	3	10	123.22	270
28	277	71	178	3	10	123.22	280
29	281	73	182	3	10	137.98	290
30	281	73	182	3	10	127.87	300
32	317	77	193	4	10	167.31	320
34	321	78	197	4	10	186.61	340
35	321	78	197	4	10	186.61	350
36	325	79	201	4	10	203.13	360
38	329	81	205	4	10	223.35	380
40	329	81	205	4	10	225.24	400
42	333	82	209	4	12	246.39	420
44	336	83	212	4	12	290.49	440
45	336	83	212	4	12	293.24	450
46	340	84	216	4	12	346.50	460
47	340	84	216	4	12	366.75	470
48	344	86	220	4	12	368.59	480
50	344	86	220	4	12	368.59	500

P	●
M	○
K	●
N	●
S	○
H	●
O	●

→ v_c Page 88+89

Hand reamers, DIN 206-B

H



Left Hand Helix
HSS

DC mm	OAL mm	L mm	DRVS mm	DCONMS mm	ZEFP	£ U2	40 100 ...
1.0	34	13		1.0	3	35.45	010
1.2	38	17		1.2	3	33.61	012
1.3	38	17		1.3	3	34.48	013
1.4	41	20	1.12	1.4	3	29.90	014
1.5	41	20	1.12	1.5	3	28.55	015
1.6	44	21	1.25	1.6	3	30.37	016
1.8	47	23	1.40	1.8	4	30.81	018
2.0	50	25	1.60	2.0	4	26.24	020
2.2	54	27	1.80	2.2	4	30.81	022
2.5	58	29	2.00	2.5	4	25.82	025
2.8	62	31	2.24	2.8	6	31.73	028
3.0	62	31	2.24	3.0	6	27.16	030
3.2	66	33	25.00	3.2	6	33.61	032
3.5	71	35	2.80	3.5	6	31.73	035
4.0	76	38	3.15	4.0	6	23.06	040
4.5	81	41	3.55	4.5	6	28.08	045
5.0	87	44	4.00	5.0	6	27.16	050
5.5	93	47	4.50	5.5	6	28.94	055
6.0	93	47	4.50	6.0	6	26.24	060
7.0	107	54	5.60	7.0	6	28.55	070
8.0	115	58	6.30	8.0	6	29.90	080
9.0	124	62	7.10	9.0	6	33.61	090
10.0	133	66	8.00	10.0	6	33.61	100
11.0	142	71	9.00	11.0	6	37.26	110
12.0	152	76	10.00	12.0	6	40.01	120
13.0	152	76	10.00	13.0	6	58.88	130
14.0	163	81	11.20	14.0	8	64.26	140
15.0	163	81	11.20	15.0	8	68.03	150
16.0	175	87	12.50	16.0	8	70.95	160
17.0	175	87	14.00	17.0	8	74.43	170
18.0	188	93	14.00	18.0	8	82.77	180
19.0	188	93	14.00	19.0	8	89.22	190
20.0	201	100	16.00	20.0	8	87.42	200
22.0	215	107	18.00	22.0	8	101.19	220
24.0	231	115	20.00	24.0	8	116.78	240
25.0	231	115	20.00	25.0	8	119.50	250
26.0	231	115	20.00	26.0	8	127.87	260
28.0	247	124	22.40	28.0	10	163.62	280
30.0	247	124	22.40	30.0	10	172.01	300
32.0	265	133	25.00	32.0	10	189.49	320
34.0	284	142	28.00	34.0	10	229.90	340
35.0	284	142	28.00	35.0	10	231.67	350
36.0	284	142	28.00	36.0	10	250.89	360
38.0	305	152	31.50	38.0	10	292.33	380
40.0	305	152	31.50	40.0	10	306.06	400

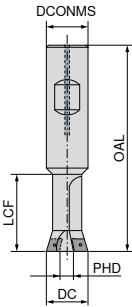
P	●
M	○
K	●
N	●
S	○
H	●
O	●

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 (page 54)

Supply details:

Indexable insert countersink including clamping screws



4

for screws	DC mm	PHD mm	DCONMS _{h6} mm	OAL mm	LCF mm	Insert
M8	15	4.0	16	90	25	CC.T 060204
M10	18	7.0	16	90	31	CC.T 060204
M12	20	9.0	20	100	40	CC.T 060204
M16	26	8.5	25	110	52	CC.T 09T304
M20	33	15.5	32	130	66	CC.T 09T304



30 195 ...

£

U3

263.22

015

279.78

018

288.23

020

312.76

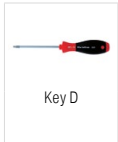
026

329.16

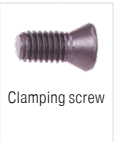
033

Spare parts
Insert

CC.T 060204	T08	£ 10.82	110	M2,5x6	£ 2.26	112
CC.T 09T304	T15	£ 12.87	113	M3,5x7,2	£ 2.99	110



Key D



Clamping screw

80 950 ...

£

Y7

10.82

110

70 950 ...

£

2A

2.26

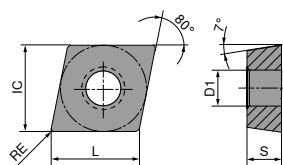
112

2.99

110

CCMT / CCGT

Designation	L mm	S mm	D1 mm	IC mm
CC.T 0602..	6.4	2.38	2.8	6.35
CC.T 09T3..	9.7	3.97	4.4	9.52



CCMT

ISO	RE mm	-SM CTCP125			-SM CTCP135			-SM CTCK110		
		DRAGONSKIN			DRAGONSKIN			DRAGONSKIN		
		M CCMT			M CCMT			M CCMT		
		76 252 ...			76 252 ...			70 252 ...		
		£ 1A/08			£ 1A/08			£ 1A/08		
060204EN	0.4	7.42 504			7.42 704			7.42 004		
060208EN	0.8	9.26 516			9.26 716			9.26 016		
09T304EN	0.4	9.26 518			9.26 718			9.26 018		
09T308EN	0.8									
09T312EN	1.2									
P		●			●			○		
M					○					
K		○						●		
N										
S										
H										
O										

CCGT

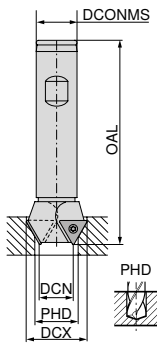
ISO	RE mm	-27 H10T			-27 CWN15		
		M CCGT			M CCGT		
		70 254 ...			70 254 ...		
		£ 1A/90			£ 1A		
060202FN	0.2	9.75 600			12.38 300		
060204FN	0.4	9.75 602			12.38 302		
09T302FN	0.2	10.42 604			12.80 304		
09T304FN	0.4	10.42 606			12.80 306		
09T308FN	0.8	10.42 608			12.80 308		
P							
M					○		
K					○		
N					●		
S					●		
H							
O					○		

Insert countersink 90°

Supply details:

Indexable insert countersink including clamping screws

WPS



NEW



30 196 ...

DCX mm	DCN mm	PHD mm	ZEFP	ZNF	DCONMS mm	OAL mm	Insert	£ U1	
19	7	9.5	2	2	16	100	TOHX 090204	385.65	19000
23	11	12.0	2	2	16	100	TOHX 090204	391.03	23000
26	11	12.0	1	2	16	100	TOHX 090204	394.66	26000
30	12	13.0	2	2	20	100	TOHX 140305	412.68	30000
34	16	17.0	2	2	20	100	TOHX 140305	419.79	34000
37	19	20.0	2	2	20	100	TOHX 140305	419.79	37000



TORX® Screws



Key D

62 950 ...

80 950 ...

Spare parts

DCX		£ W7		£ Y7	
19 - 26	M2,6x6,2 - 08IP	2.34	09900	T08 - IP	14.16 125
30 - 37	M3,5x7,3 - 10IP	2.34	12600	T10 - IP	16.08 127

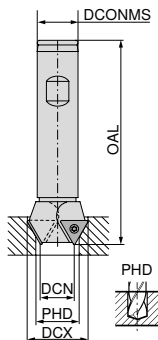
Insert countersink 60°

Supply details:

Indexable insert countersink including clamping screws

WPS

NEW



30 197 ...

DCX mm	DCN mm	PHD mm	ZEFP	ZNF	DCONMS mm	OAL mm	Insert
16.5	8.1	8.5	1	1	16	100	TOHX 090204
20.0	11.6	12.0	2	2	16	100	TOHX 090204
22.0	13.6	14.0	2	2	16	100	TOHX 090204
23.5	15.1	15.5	2	2	16	100	TOHX 090204
25.5	17.1	17.5	2	2	16	100	TOHX 090204

£	
U1	
391.03	16500
394.66	20000
412.68	22000
419.79	23500
419.79	25500



TORX® Screws



Key D

62 950 ...

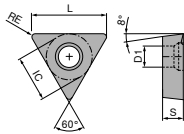
80 950 ...

Spare parts
DCX

	£		£	
16,5 - 22	W7		Y7	
23,5 - 25,5	2.34	12000	14.16	125
	2.34	09900	14.16	125

TOHX

Designation	L mm	S mm	D1 mm	IC mm
090204EN	9.12	2.50	2.8	5.6
090204FN	9.12	2.50	2.8	5.6
140305EN	13.62	3.00	3.8	8.2
140305FN	13.62	3.00	3.8	8.2



TOHX

		NEW		NEW		NEW	
		-G06 BK8425		-U877 BK8425		-G12 BK8425	
		F TOHX		F TOHX		F TOHX	
		62 602 ...		62 604 ...		62 603 ...	
		£ 1A/3#		£ 1A/3#		£ 1A/3#	
ISO	RE mm						
090204EN	0.4						
140305EN	0.5	23.63 33000		20.44 31400		21.05 31400	
P		●		●		●	
M		●		●		●	
K		●		●		●	
N		●		●		●	
S		●		●		●	
H		○		○		○	
O							

→ v_c Page 91

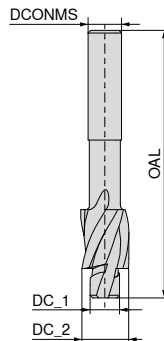
TOHX

		NEW		NEW	
		-U877 K10		-G12 K10	
		F TOHX		F TOHX	
		62 604 ...		62 603 ...	
		£ 1A/3#		£ 1A/3#	
ISO	RE mm				
090204EN	0.4				
090204FN	0.4	18.07 51400		17.27 51600	
140305FN	0.5			20.15 52800	
P					
M					
K					
N				●	
S				●	
H				●	
O				●	

→ v_c Page 91

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 holefine
HSS
Through holemedium
HSS
Through hole

Thread	DC_2 _{z9} mm	DCONMS _{h9} mm	OAL mm	DC_1 _{e8} mm	30 192 ... £ U1 23.64	030	30 190 ... £ U1 21.83	030 ¹⁾	30 191 ... £ U1 21.83	030 ¹⁾
M3	6	5.0	71	2.5						
M3	6	5.0	71	3.2						
M3	6	5.0	71	3.4						
M4	8	5.0	71	3.3	22.75	040	19.16	040 ¹⁾	19.16	040 ¹⁾
M4	8	5.0	71	4.3						
M4	8	5.0	71	4.5						
M5	10	8.0	80	4.2	21.70	050	20.91	050 ¹⁾	20.91	050 ¹⁾
M5	10	8.0	80	5.3						
M5	10	8.0	80	5.5						
M6	11	8.0	80	5.0	23.94	060	22.31	060 ¹⁾	22.31	060 ¹⁾
M6	11	8.0	80	6.4						
M6	11	8.0	80	6.6						
M8	15	12.5	100	6.8	37.26	080	36.15	080 ¹⁾	36.15	080 ¹⁾
M8	15	12.5	100	8.4						
M8	15	12.5	100	9.0						
M10	18	12.5	100	8.5	46.24	100	43.19	100 ¹⁾	43.19	100 ¹⁾
M10	18	12.5	100	10.5						
M10	18	12.5	100	11.0						
M12	20	12.5	100	10.2	50.28	120	46.99	120	46.99	120
M12	20	12.5	100	13.5						
P					•		•		•	
M					•		•		•	
K					•		•		•	
N					•		•		•	
S					○		○		○	
H										
O					•		•		•	

1) Included in the set

→ v_c Page 96

Counterbore, DIN 373 – Set

Scope of supply:

Counterbores M3; M4; M5; M6; M8; M10 in case

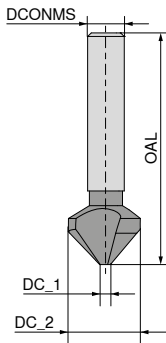


30 190 ...	30 191 ...
£ U1 191.87	£ U1 191.87
999	999

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
mm	mm	mm	mm	7991
6.3	1.5	5	45	M3
8.3	2.0	6	50	M4
10.4	2.5	6	50	M5
12.4	2.8	8	56	M6
16.5	3.2	10	60	M8
20.5	3.5	10	63	M10
25.0	3.8	10	67	M12
31.0	4.2	12	71	M16

30 116 ...

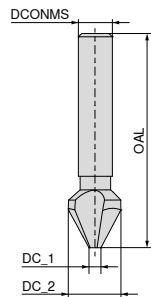
£	
U1	
152.13	063
164.12	083
171.31	104
179.69	124
219.22	165
252.77	205
291.10	250
345.00	310

P	●
M	○
K	●
N	●
S	○
H	○
O	○

→ v_c Page 93

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.



60°
Solid carbide

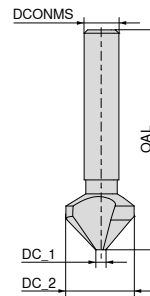
DC_2 _{z9} mm	DC_1 mm	DCONMS _{h9} mm	OAL mm	£ U1	
12.5	3.2	8	56	250.78	125
16.0	4.0	10	63	341.32	160
20.0	5.0	10	67	395.88	200
25.0	6.3	10	71	441.56	250

P	●
M	○
K	●
N	●
S	○
H	○
O	○

→ v_c Page 92

Countersink 90°, 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.



90°
Solid carbide

DC_2 _{z9} mm	DC_1 mm	DCONMS _{h9} mm	OAL mm	DIN ISO 7721	DIN 7991	£ U1	
10.4	2.5	8	46	M5		174.04	100
12.4	2.8	8	56		M6	174.04	124
15.0	3.2	10	60	M8		214.46	150
16.5	3.2	10	60		M8	227.28	165
20.5	3.5	10	63		M10	271.19	205
25.0	3.8	10	67		M12	311.46	250
31.0	4.2	12	71		M16	415.78	310

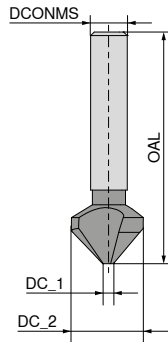
P	●
M	○
K	●
N	●
S	○
H	○
O	○

→ v_c Page 92

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


 $\angle 90^\circ$
HSS

DC_2 _{z9}	DC_1	DCONMS	OAL	DIN ISO 7721	DIN 7991	£ U1	30 140 ...
4.3	1.3	4	40	M2		26.76	043
6.0	1.5	5	45	M3		33.17	060
6.3	1.5	5	45		M3	33.17	063
8.0	2.0	6	50	M4		31.12	080
8.3	2.0	6	50		M4	31.96	083
10.0	2.5	6	50	M5		32.35	100
10.4	2.5	6	50		M5	33.81	104 ¹⁾
11.5	2.8	8	56	M6		37.10	115
12.4	2.8	8	56		M6	39.09	124
15.0	3.2	10	60	M8		43.70	150
16.5	3.2	10	60		M8	46.24	165 ¹⁾
19.0	3.5	10	63	M10		53.63	190
20.5	3.5	10	63		M10	64.68	205
23.0	3.8	10	67	M12		80.65	230
25.0	3.8	10	67		M12	88.63	250 ¹⁾
31.0	4.2	12	71		M16	114.85	310
P							●
M							○
K							●
N							●
S							○
H							○
O							○

1) Included in the set

→ v_c Page 93

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



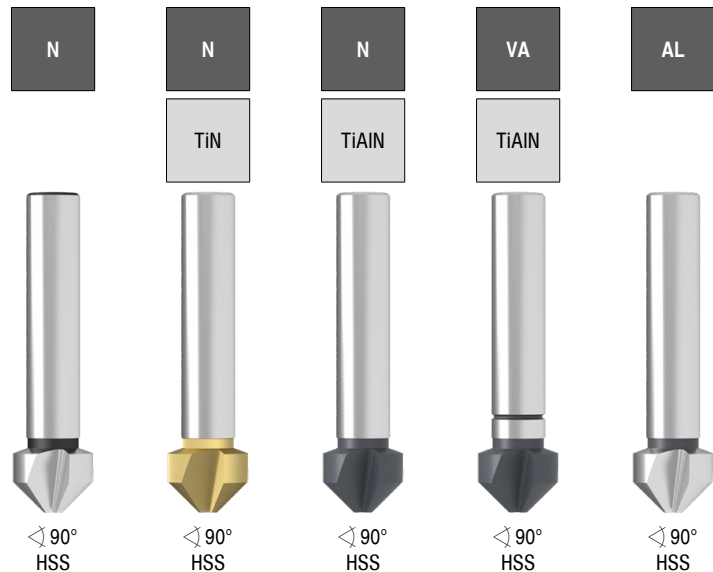
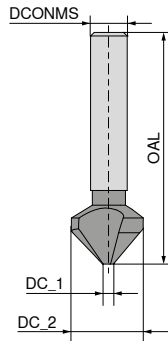
Ti50

30 140 ...

£ U1
246.96 999

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 ₂₉ mm	DC_1 mm	DCONMS mm	OAL mm	DIN ISO 7721	DIN 7991	30 100 ...		30 110 ...		30 130 ...		30 132 ...		30 102 ...	
						£ U1		£ U1		£ U1		£ U1		£ U1	
4.3	1.3	4	40	M2		12.83	043								
5.0	1.5	4	40	M2,5		12.83	050	24.39	050	33.23	050				
6.0	1.5	5	45	M3		12.83	060								
6.3	1.5	5	45		M3	12.83	063 ¹⁾	24.39	063 ¹⁾	34.03	063	21.34	063	14.63	063
7.0	1.8	6	50	M3,5		13.80	070								
8.0	2.0	6	50	M4		14.23	080	29.14	080	35.55	080				
8.3	2.0	6	50		M4	15.25	083 ¹⁾	29.14	083 ¹⁾	35.19	083	25.27	083	15.45	083
9.4	2.2	6	50			15.72	094								
10.0	2.5	6	50	M5		16.86	100	31.73	100	37.26	100				
10.4	2.5	6	50		M5	17.37	104 ¹⁾	33.81	104 ¹⁾	38.72	104	35.68	104	17.90	104
11.5	2.8	8	56	M6		17.80	115								
12.4	2.8	8	56		M6	18.42	124 ¹⁾	37.26	124 ¹⁾	49.29	124	31.08	124	19.05	124
13.4	2.9	8	56			19.83	134								
15.0	3.2	10	60	M8		21.97	150	39.84	150	63.03	150	38.41	150	21.51	150
16.5	3.2	10	60		M8	23.94	165 ¹⁾	46.24	165 ¹⁾	65.01	165	41.61	165	23.14	165
19.0	3.5	10	63	M10		30.25	190								
20.5	3.5	10	63		M10	31.73	205 ¹⁾	64.68	205 ¹⁾	84.82	205	49.46	205	31.86	205
23.0	3.8	10	67	M12		40.13	230								
25.0	3.8	10	67		M12	42.41	250	88.63	250	121.12	250	64.47	250	42.35	250
31.0	4.2	12	71		M16	64.68	310	114.85	310	165.22	310	95.74	310	68.01	310
31.0	4.2	12	67		M16										
P						●		●		●		○		○	
M						○		○		○		●		○	
K						●		●		●		○		○	
N						●		●		●		○		●	
S						○		○		○		○		○	
H								○		○		○			
O						●		●		●		●		●	

1) Included in the set

→ v_c Page 94+95

Countersink 90°, DIN 335-C – set

Scope of supply:

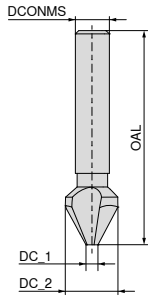
Countersinks Ø 6,3; 8,3; 10,4; 12,4; 16,5; 20,5 in case



30 100 ...		30 110 ...	
£ U1		£ U1	
123.54	999	246.96	999

Countersink 60°, DIN 334-C

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



60°
HSS

30 150 ...

DC_2 _{z9} mm	DC_1 mm	DCONMS _{h9} mm	OAL mm	£ U1	
6.3	1.6	5	45	14.81	063 1)
8.0	2.0	6	50	14.81	080 1)
10.0	2.5	6	52	18.25	100 1)
12.5	3.2	8	56	18.69	125 1)
16.0	4.0	10	63	23.36	160 1)
20.0	5.0	10	67	33.72	200 1)
25.0	6.3	10	71	44.29	250

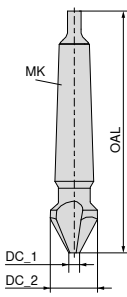
P	●
M	○
K	●
N	●
S	○
H	○
O	●

1) Included in the set

→ v_c Page 92

Countersink 60°, DIN 334-D

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



MK
60°
HSS

30 155 ...

DC_2 _{z9} mm	DC_1 mm	OAL mm	MK	£ U1	
16.0	4.0	90	1	52.84	160
20.0	5.0	106	2	62.99	200
25.0	6.3	112	2	65.99	250
31.5	10.0	118	2	73.40	315
40.0	12.5	150	3	115.86	400
50.0	16.0	160	3	147.82	500
63.0	20.0	190	4	273.19	630
80.0	25.0	200	4	374.41	800

P	●
M	○
K	●
N	●
S	○
H	○
O	●

→ v_c Page 96

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



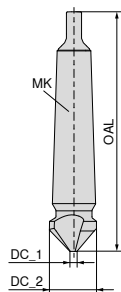
30 150 ...

£ U1	
137.13	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

30 105 ...

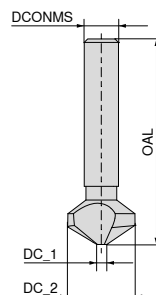
DC_2 _{z9} mm	DC_1 mm	OAL mm	MK	£ U1	
16.5	3.2	85	1	47.30	165
19.0	3.2	100	2	60.15	190
20.5	3.5	100	2	63.60	205
23.0	3.8	106	2	63.60	230
25.0	3.8	106	2	65.59	250
26.0	3.8	106	2	60.62	260
28.0	4.0	112	2	68.69	280
30.0	4.2	112	2	68.69	300
31.0	4.2	112	2	73.40	310
34.0	4.5	118	2	73.40	340
37.0	4.8	118	2	95.34	370
40.0	10.0	140	3	109.00	400
50.0	14.0	150	3	135.26	500
63.0	16.0	180	4	214.13	630
80.0	22.0	190	4	363.04	800

P	●
M	○
K	●
N	●
S	○
H	
O	●

→ v_c Page 96

Countersink 120°, factory standard-C

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



120°
HSS

30 170 ...

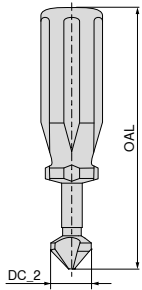
DC_2 _{z9} mm	DC_1 mm	DCONMS _{h9} mm	OAL mm	£ U1	
6.3	1.5	5	45	17.84	063
8.3	2.0	6	50	17.84	083
10.4	2.5	6	50	19.83	104
12.4	2.8	8	56	20.81	124
16.5	3.2	10	60	30.25	165
20.5	3.5	10	60	41.64	205
25.0	3.8	10	63	51.86	250

P	●
M	○
K	●
N	●
S	○
H	
O	●

→ v_c Page 96

Hand deburring tool 90°

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



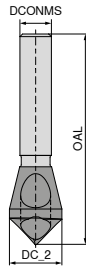
90°
HSS

DC_2 mm	OAL mm	£ U1	30 125 ...
12.4	135	26.20	124
15.0	135	30.69	150
16.5	135	32.50	165
20.5	135	37.83	205
25.0	135	45.78	250

P	●
M	○
K	○
N	●
S	○
H	○
O	●

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.



90°
HSS-E



90°
HSS-E

DC_2 mm	PHD mm	DCONMS _{h9} mm	OAL mm	£ U1	30 120 ...	£ U1	30 121 ...
6.3	1 - 4	6.3	45	28.41	040 ¹⁾	41.22	040 ¹⁾
10.0	2 - 5	6.0	45	17.79	050	26.80	050
14.0	5 - 10	8.0	48	21.61	101	38.72	101
21.0	10 - 15	10.0	65	37.14	150	63.03	150
28.0	15 - 20	12.0	85	77.99	200	127.98	200
35.0	20 - 25	15.0	102	106.75	250	162.45	250

P	●	●
M	○	○
K	●	●
N	●	●
S	○	○
H		○
O	●	●

1) can be used in both directions

Material examples for cutting data tables

	Material sub-group	Index	Composition / Structure / Heat treatment	Tensile strength N/mm ² / HB / HRC	Material number	Material designation	Material number	Material designation
P	Unalloyed steel	P.1.1	< 0,15 % C	Annealed	420 N/mm ² / 125 HB	1.0401	C15	1.1141 Ck15
		P.1.2	< 0,45 % C	Annealed	640 N/mm ² / 190 HB	1.1191	C45E	1.0718 9SMnPb28
		P.1.3		Tempered	840 N/mm ² / 250 HB	1.1191	C45E	1.0535 C55
		P.1.4	< 0,75 % C	Annealed	910 N/mm ² / 270 HB	1.1223	C60R	1.0535 C55
		P.1.5		Tempered	1010 N/mm ² / 300 HB	1.1223	C60R	1.0727 45S20
	Low-alloy steel	P.2.1		Annealed	610 N/mm ² / 180 HB	1.7131	16MnCr5	1.6587 17CrNiMo6
		P.2.2		Tempered	930 N/mm ² / 275 HB	1.7131	16MnCr5	1.6587 17CrNiMo6
		P.2.3		Tempered	1010 N/mm ² / 300 HB	1.7225	42CrMo4	1.3505 100Cr6
		P.2.4		Tempered	1200 N/mm ² / 375 HB	1.7225	42CrMo4	1.3505 100Cr6
	High-alloy steel and high-alloy tool steel	P.3.1		Annealed	680 N/mm ² / 200 HB	1.4021	X20Cr13	1.4034 X46Cr13
		P.3.2		Hardened and tempered	1100 N/mm ² / 300 HB	1.2343	X38CrMoV5-1	1.4034 X46Cr13
		P.3.3		Hardened and tempered	1300 N/mm ² / 400 HB	1.2343	X38CrMoV5-1	1.4034 X46Cr13
	Stainless steel	P.4.1	Ferritic / martensitic	Annealed	680 N/mm ² / 200 HB	1.4016	X6Cr17	1.2316 X36CrMo16
		P.4.2	Martensitic	Tempered	1010 N/mm ² / 300 HB	1.4112	X90CrMoV18	1.2316 X36CrMo16
M	Stainless steel	M.1.1	Austenitic / austenitic-ferritic	Quenched	610 N/mm ² / 180 HB	1.4301	X5CrNi18-10	1.4571 X6CrNiMoTi17-12-2
		M.2.1	Austenitic	Tempered	300 HB	1.4841	X15CrNiSi25-21	1.4539 X1NiCrMoCu25-20-5
		M.3.1	Austenitic / ferritic (Duplex)		780 N/mm ² / 230 HB	1.4462	X2CrNiMoN22-5-3	1.4501 X2CrNiMoCuWN25-7-4
K	Grey cast iron	K.1.1	Pearlitic / ferritic		350 N/mm ² / 180 HB	0.6010	GG-10	0.6025 GG-25
		K.1.2	Pearlitic (martensitic)		500 N/mm ² / 260 HB	0.6030	GG-30	0.6045 GG-45
	Spherulitic graphite cast iron	K.2.1	Ferritic		540 N/mm ² / 160 HB	0.7040	GGG-40	0.7060 GGG-60
		K.2.2	Pearlitic		845 N/mm ² / 250 HB	0.7070	GGG-70	0.7080 GGG-80
	Malleable iron	K.3.1	Ferritic		440 N/mm ² / 130 HB	0.8035	GTW-35-04	0.8045 GTW-45
		K.3.2	Pearlitic		780 N/mm ² / 230 HB	0.8165	GTS-65-02	0.8170 GTS-70-02
N	Aluminium wrought alloy	N.1.1	Non-hardenable		60 HB	3.0255	Al99,5	3.3315 AlMg1
		N.1.2	Hardenable	Age-hardened	340 N/mm ² / 100 HB	3.1355	AlCuMg2	3.2315 AlMgSi1
	Cast aluminium alloy	N.2.1	≤ 12 % Si, non-hardenable		250 N/mm ² / 75 HB	3.2581	G-AlSi12	3.2163 G-AlSi9Cu3
		N.2.2	≤ 12 % Si, hardenable	Age-hardened	300 N/mm ² / 90 HB	3.2134	G-AlSi5Cu1Mg	3.2373 G-AlSi9Mg
		N.2.3	> 12 % Si, non-hardenable		440 N/mm ² / 130 HB		G-AlSi17Cu4Mg	G-AlSi18CuNiMg
	Copper and copper alloys (bronze/brass)	N.3.1	Free-machining alloys, PB > 1 %		375 N/mm ² / 110 HB	2.0380	CuZn39Pb2 (Ms58)	2.0410 CuZn44Pb2
		N.3.2	CuZn, CuSnZn		300 N/mm ² / 90 HB	2.0331	CuZn15	2.4070 CuZn28Sn1As
		N.3.3	CuSn, lead-free copper and electrolytic copper		340 N/mm ² / 100 HB	2.0060	E-Cu57	2.0590 CuZn40Fe
	Magnesium alloys	N.4.1	Magnesium and magnesium alloys		70 HB	3.5612	MgAl6Zn	3.5312 MgAl3Zn
S	Heat-resistant alloys	S.1.1	Fe - basis	Annealed	680 N/mm ² / 200 HB	1.4864	X12NiCrSi 36-16	1.4865 G-X40NiCrSi38-18
		S.1.2		Age-hardened	950 N/mm ² / 280 HB	1.4980	X6NiCrTiMoVB25-15-2	1.4876 X10NiCrAlTi32-20
		S.2.1	Ni or Co basis	Annealed	840 N/mm ² / 250 HB	2.4631	NiCr20TiAl (Nimonic80A)	3.4856 NiCr22Mo9Nb
		S.2.2		Age-hardened	1180 N/mm ² / 350 HB	2.4668	NiCr19Nb5Mo3 (Inconel 718)	2.4955 NiFe25Cr20NbTi
		S.2.3		Cast	1080 N/mm ² / 320 HB	2.4765	CoCr20W15Ni	1.3401 G-X120Mn12
	Titanium alloys	S.3.1	Pure titanium		400 N/mm ²	3.7025	Ti99,8	3.7034 Ti99,7
		S.3.2	Alpha + beta alloys	Age-hardened	1050 N/mm ² / 320 HB	3.7165	TiAl6V4	Ti-6246 Ti-6Al-2Sn-4Zr-6Mo
		S.3.3	Beta alloys		1400 N/mm ² / 410 HB	Ti555.3	Ti-5Al-5V-5Mo-3Cr	R56410 Ti-10V-2Fe-3Al
H	Hardened steel	H.1.1		Hardened and tempered	46-55 HRC			
		H.1.2		Hardened and tempered	56-60 HRC			
		H.1.3		Hardened and tempered	61-65 HRC			
		H.1.4		Hardened and tempered	66-70 HRC			
	Chilled iron	H.2.1		Cast	400 HB			
	Hardened cast iron	H.3.1		Hardened and tempered	55 HRC			
O	Non-metal materials	O.1.1	Plastics, duroplastic		≤ 150 N/mm ²			
		O.1.2	Plastics, thermoplastic		≤ 100 N/mm ²			
		O.2.1	Aramid fibre-reinforced		≤ 1000 N/mm ²			
		O.2.2	Glass/carbon-fibre reinforced		≤ 1000 N/mm ²			
		O.3.1	Graphite					

* Tensile strength

Cutting data standard values for REAMAX TS

	Grade / coating		HM-DBG-P				HM-DBG-P					
	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 flutes		6	6	8	10	6	6	8	10		
Index	V _c m/min		f mm/rev.	f mm/rev.	f mm/rev.	f mm/rev.	V _c m/min		f mm/rev.	f mm/rev.	f mm/rev.	f mm/rev.
	3xD	5xD					3xD	5xD				
P.1.1	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80						
P.1.2	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80						
P.1.3	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80						
P.1.4	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80						
P.1.5	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80						
P.2.1	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80						
P.2.2	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80						
P.2.3	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80						
P.2.4	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80						
P.3.1							30 (25–50)	30 (25–40)	0,60–0,90	0,80–1,10	1,10–1,50	1,50–2,30
P.3.2							30 (25–50)	30 (25–40)	0,60–0,90	0,80–1,10	1,10–1,50	1,50–2,30
P.3.3							30 (25–50)	30 (25–40)	0,60–0,90	0,80–1,10	1,10–1,50	1,50–2,30
P.4.1							45 (35–60)	40 (35–50)	0,60–0,90	0,80–1,10	1,10–1,50	1,50–2,30
P.4.2							45 (35–60)	40 (35–50)	0,60–0,90	0,80–1,10	1,10–1,50	1,50–2,30
M.1.1							45 (35–60)	40 (30–50)	0,60–0,90	0,80–1,10	1,10–1,50	1,50–2,30
M.2.1							45 (35–60)	40 (30–50)	0,60–0,90	0,80–1,10	1,10–1,50	1,50–2,30
M.3.1							30 (25–50)	30 (25–40)	0,60–0,90	0,80–1,10	1,10–1,50	1,50–2,30
K.1.1	150 (130–220)	120 (100–150)	0,90–1,30	1,20–1,70	1,60–2,30	2,30–3,40						
K.1.2	150 (130–220)	120 (100–150)	0,90–1,30	1,20–1,70	1,60–2,30	2,30–3,40						
K.2.1	175 (150–300)	150 (130–180)	0,90–1,30	1,20–1,70	1,60–2,30	2,30–3,40						
K.2.2	120 (100–180)	120 (100–150)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80						
K.3.1	120 (100–180)	120 (100–150)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80						
K.3.2	120 (100–180)	120 (100–150)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80						
N.1.1												
N.1.2												
N.2.1												
N.2.2												
N.2.3												
N.3.1												
N.3.2												
N.3.3												
N.4.1												
S.1.1												
S.1.2												
S.2.1												
S.2.2												
S.2.3												
S.3.1												
S.3.2												
S.3.3												
H.1.1												
H.1.2												
H.1.3												
H.1.4												
H.2.1												
H.3.1												
O.1.1												
O.1.2												
O.2.1												
O.2.2												
O.3.1												



The cutting data depend extremely on the external conditions, the material and machine type.

The indicated values are possible values which have to be increased or reduced, inside the bracket, according to the application conditions.

Cutting data standard values for REAMAX TS

Index	Grade / coating		HM-TiN				HM-DBC			
	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 flutes		6	6	8	10	6	6	8	10
	V _c m/min		f mm/rev.		f mm/rev.		f mm/rev.		f mm/rev.	
	3xD	5xD								
P.1.1	100 (80–140)	80 (60–120)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80				
P.1.2	100 (80–140)	80 (60–120)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80				
P.1.3	100 (80–140)	80 (60–120)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80				
P.1.4	100 (80–140)	80 (60–120)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80				
P.1.5	100 (80–140)	80 (60–120)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80				
P.2.1	100 (80–140)	80 (60–120)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80				
P.2.2	100 (80–140)	80 (60–120)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80				
P.2.3	100 (80–140)	80 (60–120)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80				
P.2.4	100 (80–140)	80 (60–120)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80				
P.3.1										
P.3.2										
P.3.3										
P.4.1										
P.4.2										
M.1.1										
M.2.1										
M.3.1										
K.1.1	80 (60–130)	80 (60–120)	0,90–1,30	1,20–1,70	1,60–2,30	2,30–3,40				
K.1.2	80 (60–130)	80 (60–120)	0,90–1,30	1,20–1,70	1,60–2,30	2,30–3,40				
K.2.1										
K.2.2										
K.3.1										
K.3.2										
N.1.1							150 (130–300)	150 (130–200)	0,90–1,30	1,10–1,70
N.1.2							150 (130–300)	150 (130–200)	0,90–1,30	1,10–1,70
N.2.1							200 (180–300)	150 (130–200)	0,90–1,30	1,10–1,70
N.2.2							200 (180–300)	150 (130–200)	0,90–1,30	1,10–1,70
N.2.3							200 (180–300)	150 (130–200)	0,90–1,30	1,10–1,70
N.3.1	120 (100–200)	120 (100–200)	0,90–1,30	1,10–1,70	1,50–2,30	2,20–3,40				
N.3.2	80 (60–150)	80 (60–120)	0,70–1,10	0,90–1,40	1,20–1,90	1,70–2,60				
N.3.3	120 (100–200)	120 (100–150)	0,70–1,10	0,90–1,40	1,20–1,90	1,70–2,60				
N.4.1							150 (180–300)	150 (130–200)	0,90–1,30	1,10–1,70
S.1.1										
S.1.2										
S.2.1										
S.2.2										
S.2.3										
S.3.1										
S.3.2										
S.3.3										
H.1.1										
H.1.2										
H.1.3										
H.1.4										
H.2.1										
H.3.1										
O.1.1										
O.1.2										
O.2.1										
O.2.2										
O.3.1							250 (220–270)	250 (220–270)	0,90–1,30	1,10–1,70
									1,50–2,30	2,20–3,40



The cutting data depend extremely on the external conditions, the material and machine type.

The indicated values are possible values which have to be increased or reduced, inside the bracket, according to the application conditions.

Cutting data standard values for REAMAX TS

Index	Grade / coating		DST				DST			
	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 flutes		6	6	8	10	6	6	8	10
	V _c m/min		f				f			
	3xD	5xD	mm/rev.	mm/rev.	mm/rev.	mm/rev.	3xD	5xD	mm/rev.	mm/rev.
P.1.1	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80	150 (130–200)	120 (100–160)	1,00–1,30	1,20–1,70
P.1.2	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80	150 (130–200)	120 (100–160)	1,00–1,30	1,20–1,70
P.1.3	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80	150 (130–200)	120 (100–160)	1,00–1,30	1,20–1,70
P.1.4	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80	150 (130–200)	120 (100–160)	1,00–1,30	1,20–1,70
P.1.5	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80	150 (130–200)	120 (100–160)	1,00–1,30	1,20–1,70
P.2.1	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80	150 (130–200)	120 (100–160)	1,00–1,30	1,20–1,70
P.2.2	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80	150 (130–200)	120 (100–160)	1,00–1,30	1,20–1,70
P.2.3	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80	150 (130–200)	120 (100–160)	1,00–1,30	1,20–1,70
P.2.4	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80	150 (130–200)	120 (100–160)	1,00–1,30	1,20–1,70
P.3.1										
P.3.2										
P.3.3										
P.4.1										
P.4.2										
M.1.1										
M.2.1										
M.3.1										
K.1.1										
K.1.2										
K.2.1	175 (150–300)	150 (130–180)	0,90–1,30	1,20–1,70	1,60–2,30	2,30–3,40	225 (200–300)	180 (160–240)	1,20–1,60	1,50–2,00
K.2.2	120 (100–150)	100 (80–120)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80	120 (100–150)	100 (80–120)	1,20–1,60	1,50–2,00
K.3.1	120 (100–180)	120 (100–150)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80				
K.3.2	120 (100–180)	120 (100–150)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80	120 (100–180)	120 (100–150)	1,00–1,30	1,20–1,70
N.1.1										
N.1.2										
N.2.1										
N.2.2										
N.2.3										
N.3.1	150 (130–320)	150 (130–200)	0,90–1,30	1,10–1,70	1,50–2,30	2,10–3,10				
N.3.2	150 (130–320)	150 (130–200)	0,90–1,30	1,10–1,70	1,50–2,30	2,10–3,10				
N.3.3										
N.4.1										
S.1.1										
S.1.2										
S.2.1										
S.2.2										
S.2.3										
S.3.1										
S.3.2										
S.3.3										
H.1.1										
H.1.2										
H.1.3										
H.1.4										
H.2.1										
H.3.1										
O.1.1										
O.1.2										
O.2.1										
O.2.2										
O.3.1										



The cutting data depend extremely on the external conditions, the material and machine type.

The indicated values are possible values which have to be increased or reduced, inside the bracket, according to the application conditions.

Cutting data standard values for REAMAX TS

Index	Grade / coating		DST			
	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 flutes		6	6	8	10
	V_c m/min		f mm/rev.	f mm/rev.	f mm/rev.	f mm/rev.
	3xD	5xD				
P.1.1	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80
P.1.2	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80
P.1.3	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80
P.1.4	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80
P.1.5	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80
P.2.1	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80
P.2.2	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80
P.2.3	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80
P.2.4	150 (130–200)	120 (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80
P.3.1						
P.3.2						
P.3.3						
P.4.1						
P.4.2						
M.1.1						
M.2.1						
M.3.1						
K.1.1						
K.1.2						
K.2.1	175 (150–300)	150 (130–180)	0,90–1,30	1,20–1,70	1,60–2,30	2,30–3,40
K.2.2	120 (100–150)	100 (80–120)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80
K.3.1	120 (100–180)	120 (100–150)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80
K.3.2	120 (100–180)	120 (100–150)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80
N.1.1						
N.1.2						
N.2.1						
N.2.2						
N.2.3						
N.3.1	150 (130–320)	150 (130–200)	0,90–1,30	1,10–1,70	1,50–2,30	2,10–3,10
N.3.2	150 (130–320)	150 (130–200)	0,90–1,30	1,10–1,70	1,50–2,30	2,10–3,10
N.3.3						
N.4.1						
S.1.1						
S.1.2						
S.2.1						
S.2.2						
S.2.3						
S.3.1						
S.3.2						
S.3.3						
H.1.1						
H.1.2						
H.1.3						
H.1.4						
H.2.1						
H.3.1						
O.1.1						
O.1.2						
O.2.1						
O.2.2						
O.3.1						



The cutting data depend extremely on the external conditions, the material and machine type.

The indicated values are possible values which have to be increased or reduced, inside the bracket, according to the application conditions.

Cutting data standard values for REAMAX

Index	Grade / coating		HM-TiN			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	23,001–40	12–21,999	22–32,000	23,001–40		
	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 flutes		6	8	8	6	8	8		
	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			
P.1.1	100 (80–140)	80 (60–120)	0,90–1,20	1,50–2,00	1,50–2,00					
P.1.2	100 (80–140)	80 (60–120)	0,90–1,20	1,50–2,00	1,50–2,00					
P.1.3	100 (80–140)	80 (60–120)	0,90–1,20	1,50–2,00	1,50–2,00					
P.1.4	100 (80–140)	80 (60–120)	0,90–1,20	1,50–2,00	1,50–2,00					
P.1.5	100 (80–140)	80 (60–120)	0,90–1,20	1,50–2,00	1,50–2,00					
P.2.1	100 (80–140)	80 (60–120)	0,90–1,20	1,50–2,00	1,50–2,00					
P.2.2	100 (80–140)	80 (60–120)	0,90–1,20	1,50–2,00	1,50–2,00					
P.2.3	100 (80–140)	80 (60–120)	0,90–1,20	1,50–2,00	1,50–2,00					
P.2.4	100 (80–140)	80 (60–120)	0,90–1,20	1,50–2,00	1,50–2,00					
P.3.1										
P.3.2										
P.3.3										
P.4.1										
P.4.2										
M.1.1										
M.2.1										
M.3.1										
K.1.1	80 (60–130)	80 (60–120)	1,00–1,40	1,80–2,40	1,80–2,40					
K.1.2	80 (60–130)	80 (60–120)	1,00–1,40	1,80–2,40	1,80–2,40					
K.2.1										
K.2.2										
K.3.1										
K.3.2										
N.1.1						150 (130–300)	150 (130–200)	1,00–1,40	1,70–2,40	1,70–2,40
N.1.2						200 (180–300)	150 (130–200)	1,00–1,40	1,70–2,40	1,70–2,40
N.2.1						200 (180–300)	150 (130–200)	1,00–1,40	1,70–2,40	1,70–2,40
N.2.2						200 (180–300)	150 (130–200)	1,00–1,40	1,70–2,40	1,70–2,40
N.2.3										
N.3.1	120 (100–200)	120 (100–150)	1,00–1,40	1,70–2,40	1,70–2,40					
N.3.2	120 (100–200)	120 (100–150)	1,00–1,40	1,70–2,40	1,70–2,40					
N.3.3	80 (60–150)	80 (60–120)	0,80–1,20	1,40–2,00	1,40–2,00					
N.4.1										
S.1.1										
S.1.2										
S.2.1										
S.2.2										
S.2.3										
S.3.1										
S.3.2										
S.3.3										
H.1.1										
H.1.2										
H.1.3										
H.1.4										
H.2.1										
H.3.1										
O.1.1										
O.1.2										
O.2.1										
O.2.2										
O.3.1						250 (220–270)	250 (220–270)	1,00–1,40	1,70–2,40	1,70–2,40



The cutting data depend extremely on the external conditions, the material and machine type.

The indicated values are possible values which have to be increased or reduced, inside the bracket, according to the application conditions.

Cutting data standard values for REAMAX

Index	Grade / coating		DST					DST		
	Article no. / type		40 525 ... / 640.93 – ASG3000					40 536 ... / 640.93 – ASG4000		
	Nominal Ø in mm		12–21,999	22–32,000	23,001–40			12–21,999	22–32,000	23,001–40
	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 flutes		6	8	8			6	8	8
	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			
P.1.1	150 (130–200)	120 (100–160)	0,90–1,20	1,50–2,00	1,50–2,00	150 (130–200)	120 (100–160)	1,10–1,40	1,80–2,40	1,80–2,40
P.1.2	150 (130–200)	120 (100–160)	0,90–1,20	1,50–2,00	1,50–2,00	150 (130–200)	120 (100–160)	1,10–1,40	1,80–2,40	1,80–2,40
P.1.3	150 (130–200)	120 (100–160)	0,90–1,20	1,50–2,00	1,50–2,00	150 (130–200)	120 (100–160)	1,10–1,40	1,80–2,40	1,80–2,40
P.1.4	150 (130–200)	120 (100–160)	0,90–1,20	1,50–2,00	1,50–2,00	150 (130–200)	120 (100–160)	1,10–1,40	1,80–2,40	1,80–2,40
P.1.5	150 (130–200)	120 (100–160)	0,90–1,20	1,50–2,00	1,50–2,00	150 (130–200)	120 (100–160)	1,10–1,40	1,80–2,40	1,80–2,40
P.2.1	150 (130–200)	120 (100–160)	0,90–1,20	1,50–2,00	1,50–2,00	150 (130–200)	120 (100–160)	1,10–1,40	1,80–2,40	1,80–2,40
P.2.2	150 (130–200)	120 (100–160)	0,90–1,20	1,50–2,00	1,50–2,00	150 (130–200)	120 (100–160)	1,10–1,40	1,80–2,40	1,80–2,40
P.2.3	150 (130–200)	120 (100–160)	0,90–1,20	1,50–2,00	1,50–2,00	150 (130–200)	120 (100–160)	1,10–1,40	1,80–2,40	1,80–2,40
P.2.4										
P.3.1										
P.3.2										
P.3.3										
P.4.1										
P.4.2										
M.1.1										
M.2.1										
M.3.1										
K.1.1										
K.1.2										
K.2.1	175 (150–300)	150 (130–180)	1,00–1,40	1,80–2,40	1,80–2,40	175 (150–300)	150 (130–180)	1,20–1,60	1,50–2,00	2,00–2,70
K.2.2	150 (130–250)	120 (100–160)	1,00–1,40	1,80–2,40	1,80–2,40	120 (100–180)	120 (100–150)	1,20–1,60	1,50–2,00	2,00–2,70
K.3.1	150 (130–250)	120 (100–160)	1,00–1,40	1,80–2,40	1,80–2,40					
K.3.2	120 (100–180)	120 (100–150)	0,90–1,20	1,50–2,00	1,50–2,00	120 (100–180)	120 (100–150)	1,00–1,30	1,20–1,70	1,70–2,30
N.1.1										
N.1.2										
N.2.1										
N.2.2										
N.2.3										
N.3.1	150 (130–300)	150 (130–200)	1,00–1,40	1,70–2,40	1,70–2,40					
N.3.2	150 (130–300)	150 (130–200)	1,00–1,40	1,70–2,40	1,70–2,40					
N.3.3										
N.4.1										
S.1.1										
S.1.2										
S.2.1										
S.2.2										
S.2.3										
S.3.1										
S.3.2										
S.3.3										
H.1.1										
H.1.2										
H.1.3										
H.1.4										
H.2.1										
H.3.1										
O.1.1										
O.1.2										
O.2.1										
O.2.2										
O.3.1										



The cutting data depend extremely on the external conditions, the material and machine type.

The indicated values are possible values which have to be increased or reduced, inside the bracket, according to the application conditions.

Cutting data standard values for REAMAX

Index	Grade / coating		HM-DBG-P					HM-DBG-P							
	Article no. / type		40 560 ... / 640.65 – ASG3000					40 551 ... / 640.65 – ASG0106							
	Nominal Ø in mm		12–21,999	22–32,000	23,001–40			12–21,999	22–32,000	23,001–40					
	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 flutes		6	8	8			6	8	8					
	V _c m/min		f mm/rev.	f mm/rev.	f mm/rev.			f mm/rev.	f mm/rev.	f mm/rev.					
	3xD	5xD									3xD	5xD			
P.1.1	150 (130–200)	120 (100–160)	0,90–1,20	1,50–2,00	1,50–2,00										
P.1.2	150 (130–200)	120 (100–160)	0,90–1,20	1,50–2,00	1,50–2,00										
P.1.3	150 (130–200)	120 (100–160)	0,90–1,20	1,50–2,00	1,50–2,00										
P.1.4	150 (130–200)	120 (100–160)	0,90–1,20	1,50–2,00	1,50–2,00										
P.1.5	150 (130–200)	120 (100–160)	0,90–1,20	1,50–2,00	1,50–2,00										
P.2.1	150 (130–200)	120 (100–160)	0,90–1,20	1,50–2,00	1,50–2,00										
P.2.2	150 (130–200)	120 (100–160)	0,90–1,20	1,50–2,00	1,50–2,00										
P.2.3	150 (130–200)	120 (100–160)	0,90–1,20	1,50–2,00	1,50–2,00										
P.2.4	150 (130–200)	120 (100–160)	0,90–1,20	1,50–2,00	1,50–2,00										
P.3.1											150 (130–200)	120 (100–160)	0,90–1,20	1,50–2,00	1,50–2,00
P.3.2						30 (25–50)	30 (25–40)	0,70–0,90	1,20–1,60	1,20–1,60					
P.3.3						30 (25–50)	30 (25–40)	0,70–0,90	1,20–1,60	1,20–1,60					
P.4.1						30 (25–50)	30 (25–40)	0,70–0,90	1,20–1,60	1,20–1,60					
P.4.2						45 (35–60)	40 (35–50)	0,70–0,90	1,20–1,60	1,20–1,60					
M.1.1						45 (35–60)	40 (35–50)	0,70–0,90	1,20–1,60	1,20–1,60					
M.2.1						30 (25–50)	30 (25–40)	0,70–0,90	1,20–1,60	1,20–1,60					
M.3.1						30 (25–50)	30 (25–40)	0,70–0,90	1,20–1,60	1,20–1,60					
K.1.1	200 (180–250)	160 (140–200)	1,00–1,40	1,30–1,90	1,30–1,90										
K.1.2	200 (180–250)	160 (140–200)	1,00–1,40	1,30–1,90	1,30–1,90										
K.2.1	225 (200–300)	180 (160–240)	1,00–1,40	1,30–1,90	1,30–1,90										
K.2.2	120 (100–150)	100 (80–120)	0,90–1,20	1,20–1,60	1,20–1,60										
K.3.1	150 (130–250)	120 (100–200)	0,90–1,20	1,20–1,60	1,20–1,60										
K.3.2	120 (100–150)	100 (80–120)	0,90–1,20	1,20–1,60	1,20–1,60										
N.1.1															
N.1.2															
N.2.1															
N.2.2															
N.2.3															
N.3.1															
N.3.2															
N.3.3															
N.4.1															
S.1.1															
S.1.2															
S.2.1															
S.2.2															
S.2.3															
S.3.1															
S.3.2															
S.3.3															
H.1.1											40 (35–60)	40 (35–60)	0,40–0,80	0,60–1,00	0,60–1,00
H.1.2											40 (35–60)	40 (35–60)	0,40–0,80	0,60–1,00	0,60–1,00
H.1.3						30 (25–50)	30 (25–50)	0,40–0,80	0,60–1,00	0,60–1,00					
H.1.4															
H.2.1											40 (35–60)	40 (35–60)	0,40–0,80	0,60–1,00	0,60–1,00
H.3.1											40 (35–60)	40 (35–60)	0,40–0,80	0,60–1,00	0,60–1,00
O.1.1															
O.1.2															
O.2.1															
O.2.2															
O.3.1															



The cutting data depend extremely on the external conditions, the material and machine type.

The indicated values are possible values which have to be increased or reduced, inside the bracket, according to the application conditions.

Cutting data for MultiChange exchange head reamers

	Coating	CWC 10				TiAIN				TiAIN		
	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	30,0–32,00		8,0–12,59	12,6–29,99	30,0–32,00		8,0–12,59	12,6–18,59	18,6–32,00
	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 flutes	4/6	6	8		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.	v _c m/min	f mm/rev.	f mm/rev.	f mm/rev.
P.1.1	140	0,6	0,8	1,0					160	0,7	1,0	1,5
P.1.2	140	0,6	0,8	1,0					160	0,7	1,0	1,5
P.1.3	90	0,6	0,8	1,0					160	0,7	1,0	1,5
P.1.4	90	0,6	0,8	1,0					160	0,7	1,0	1,5
P.1.5	90	0,6	0,8	1,0					160	0,7	1,0	1,5
P.2.1	140	0,6	0,8	1,0					160	0,7	1,0	1,5
P.2.2	140	0,6	0,8	1,0					160	0,7	1,0	1,5
P.2.3	90	0,6	0,8	1,0					160	0,7	1,0	1,5
P.2.4	90	0,6	0,8	1,0					160	0,7	1,0	1,5
P.3.1	120	0,6	0,8	1,0					160	0,7	1,0	1,5
P.3.2	90	0,6	0,8	1,0					160	0,7	1,0	1,5
P.3.3	90	0,6	0,8	1,0					160	0,7	1,0	1,5
P.4.1					40	0,3	0,4	0,5				
P.4.2					40	0,3	0,4	0,5				
M.1.1					40	0,3	0,4	0,5				
M.2.1					40	0,3	0,4	0,5				
M.3.1					30	0,3	0,4	0,5				
K.1.1									120	0,6	0,6	1,2
K.1.2									120	0,6	0,6	1,2
K.2.1	120	0,7	1,2	1,6					120	0,4	0,6	1,2
K.2.2	90	0,7	1,2	1,6					100	0,4	0,6	1,2
K.3.1	90	0,7	1,2	1,6					100	0,4	0,6	1,2
K.3.2	90	0,7	1,2	1,6					100	0,4	0,6	1,2
N.1.1												
N.1.2												
N.2.1												
N.2.2												
N.2.3												
N.3.1												
N.3.2												
N.3.3												
N.4.1												
S.1.1												
S.1.2												
S.2.1												
S.2.2												
S.2.3												
S.3.1												
S.3.2												
S.3.3												
H.1.1												
H.1.2												
H.1.3												
H.1.4												
H.2.1												
H.3.1												
O.1.1												
O.1.2												
O.2.1												
O.2.2												
O.3.1												



The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine. The specified values represent guideline cutting data that can be adjusted by approx. **±20%** according to the usage conditions.

Cutting data for MultiChange exchange head reamers

Index	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	30,0–32,00	8,0–12,59	12,6–29,99	30,0–32,00
	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 flutes	4/6	6	8	4/6	6	8
	v_c m/min	f mm/rev.	f mm/rev.	f mm/rev.	v_c m/min	f mm/rev.	f mm/rev.
P.1.1							
P.1.2							
P.1.3							
P.1.4							
P.1.5							
P.2.1							
P.2.2							
P.2.3							
P.2.4							
P.3.1							
P.3.2							
P.3.3							
P.4.1							
P.4.2							
M.1.1							
M.2.1							
M.3.1							
K.1.1							
K.1.2							
K.2.1							
K.2.2							
K.3.1							
K.3.2							
N.1.1	30	0,4	0,5	0,6	200	0,6	1,5
N.1.2	30	0,4	0,5	0,6	200	0,6	1,5
N.2.1	30	0,4	0,5	0,6	200	0,6	1,5
N.2.2	30	0,4	0,5	0,6	200	0,6	1,5
N.2.3	30	0,4	0,5	0,6	200	0,6	1,5
N.3.1	30	0,4	0,5	0,6			
N.3.2	30	0,4	0,5	0,6			
N.3.3	30	0,4	0,5	0,6			
N.4.1							
S.1.1							
S.1.2							
S.2.1							
S.2.2							
S.2.3							
S.3.1							
S.3.2							
S.3.3							
H.1.1							
H.1.2							
H.1.3							
H.1.4							
H.2.1							
H.3.1							
O.1.1							
O.1.2							
O.2.1							
O.2.2							
O.3.1							



The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine. The specified values represent guideline cutting data that can be adjusted by approx. **±20%** according to the usage conditions.

Cutting data standard values for Monomax

Index	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		5,6–8,899	8,9–12,00	12,01–22,00	22,01–25,899			5,6–8,899	8,9–12,00	12,01–22,00	22,01–25,899
	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 flutes		4	6	6	6			4	6	6	6
	V _c m/min		f mm/rev.	f mm/rev.	f mm/rev.	f mm/rev.	V _c m/min		f mm/rev.	f mm/rev.	f mm/rev.	f mm/rev.
	3xD	5xD					3xD	5xD				
P.1.1												
P.1.2												
P.1.3												
P.1.4												
P.1.5												
P.2.1												
P.2.2												
P.2.3												
P.2.4												
P.3.1												
P.3.2												
P.3.3												
P.4.1												
P.4.2												
M.1.1												
M.2.1												
M.3.1												
K.1.1												
K.1.2												
K.2.1												
K.2.2												
K.3.1												
K.3.2												
N.1.1	150 (130–300)	150 (130–200)	0,40–0,60	0,40–0,60	0,80–1,20	0,80–1,50	150 (130–300)	150 (130–200)	0,40–0,60	0,40–0,60	0,80–1,20	0,80–1,50
N.1.2	150 (130–300)	150 (130–200)	0,40–0,60	0,40–0,60	0,80–1,20	0,80–1,50	150 (130–300)	150 (130–200)	0,40–0,60	0,40–0,60	0,80–1,20	0,80–1,50
N.2.1	200 (180–300)	150 (130–200)	0,40–0,60	0,40–0,60	0,80–1,20	0,80–1,50	200 (180–300)	150 (130–200)	0,40–0,60	0,40–0,60	0,80–1,20	0,80–1,50
N.2.2	200 (180–300)	150 (130–200)	0,40–0,60	0,40–0,60	0,80–1,20	0,80–1,50	200 (180–300)	150 (130–200)	0,40–0,60	0,40–0,60	0,80–1,20	0,80–1,50
N.2.3	200 (180–300)	150 (130–200)	0,40–0,60	0,40–0,60	0,80–1,20	0,80–1,50	200 (180–300)	150 (130–200)	0,40–0,60	0,40–0,60	0,80–1,20	0,80–1,50
N.3.1												
N.3.2												
N.3.3												
N.4.1												
S.1.1												
S.1.2												
S.2.1												
S.2.2												
S.2.3												
S.3.1												
S.3.2												
S.3.3												
H.1.1												
H.1.2												
H.1.3												
H.1.4												
H.2.1												
H.3.1												
O.1.1												
O.1.2												
O.2.1												
O.2.2												
O.3.1	250 (220–270)	250 (220–270)	0,40–0,60	0,40–0,60	0,80–1,20	0,80–1,50	250 (220–270)	250 (220–270)	0,40–0,60	0,40–0,60	0,80–1,20	0,80–1,50



The cutting data depend extremely on the external conditions, the material and machine type.

The indicated values are possible values which have to be increased or reduced, inside the bracket, according to the application conditions.

Cutting data standard values for Monomax

Index	Grade / coating		HM-DBG-P				HM-DBG-P			
	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		5,6–8,899	8,9–12,00	12,01–22,00	22,01–25,899	5,6–8,899	8,9–12,00	12,01–22,00	22,01–25,899
	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 flutes		4	6	6	6	4	6	6	6
	V_c m/min		f mm/rev.		f mm/rev.		V_c m/min		f mm/rev.	
	3xD	5xD	mm/rev.	mm/rev.	mm/rev.	mm/rev.	3xD	5xD	mm/rev.	mm/rev.
P.1.1	150 (130–200)	120 (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30				
P.1.2	150 (130–200)	120 (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30				
P.1.3	150 (130–200)	120 (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30				
P.1.4	150 (130–200)	120 (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30				
P.1.5	150 (130–200)	120 (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30				
P.2.1	150 (130–200)	120 (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30				
P.2.2	150 (130–200)	120 (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30				
P.2.3	150 (130–200)	120 (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30				
P.2.4	60 (50–100)	60 (50–100)	0,20–0,30	0,40–0,50	0,50–0,70	0,60–0,90	60 (50–100)	60 (50–100)	0,20–0,30	0,40–0,50
P.3.1							40 (35–60)	40 (35–60)	0,20–0,30	0,40–0,50
P.3.2							40 (35–60)	40 (35–60)	0,20–0,30	0,40–0,50
P.3.3							30 (25–50)	30 (25–40)	0,30–0,40	0,40–0,60
P.4.1							45 (35–60)	40 (35–50)	0,30–0,40	0,40–0,60
P.4.2							45 (35–60)	40 (35–50)	0,30–0,40	0,40–0,60
M.1.1							30 (25–50)	30 (25–40)	0,30–0,40	0,40–0,60
M.2.1							30 (25–50)	30 (25–40)	0,30–0,40	0,40–0,60
M.3.1							30 (25–50)	30 (25–40)	0,30–0,40	0,40–0,60
K.1.1	150 (130–220)	120 (100–150)	0,40–0,60	0,70–0,90	0,90–1,20	1,10–1,50				
K.1.2	150 (130–220)	120 (100–150)	0,40–0,60	0,70–0,90	0,90–1,20	1,10–1,50				
K.2.1	175 (150–300)	150 (130–180)	0,40–0,60	0,70–0,90	0,90–1,20	1,10–1,50				
K.2.2	120 (100–180)	120 (100–150)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30				
K.3.1	150 (130–250)	120 (100–160)	0,40–0,60	0,70–0,90	0,90–1,20	1,10–1,50				
K.3.2	120 (100–180)	120 (100–150)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30				
N.1.1										
N.1.2										
N.2.1										
N.2.2										
N.2.3										
N.3.1										
N.3.2										
N.3.3										
N.4.1										
S.1.1										
S.1.2										
S.2.1										
S.2.2										
S.2.3										
S.3.1										
S.3.2										
S.3.3										
H.1.1										
H.1.2										
H.1.3										
H.1.4										
H.2.1										
H.3.1										
O.1.1										
O.1.2										
O.2.1										
O.2.2										
O.3.1										



The cutting data depend extremely on the external conditions, the material and machine type.

The indicated values are possible values which have to be increased or reduced, inside the bracket, according to the application conditions.

Cutting data standard values for Monomax

Index	Grade / coating		DST				DST					
	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		5,6–8,899	8,9–12,00	12,01–22,00	22,01–25,899	5,6–8,899	8,9–12,00	12,01–22,00	22,01–25,899		
	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 flutes		4	6	6	6	4	6	6	6		
	V _c m/min		f		f		V _c m/min		f		f	
	3xD	5xD	mm/rev.	mm/rev.	mm/rev.	mm/rev.	3xD	5xD	mm/rev.	mm/rev.	mm/rev.	mm/rev.
P.1.1	150 (130–200)	120 (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30	150 (130–200)	120 (100–160)	0,40–0,60	0,70–0,90	0,90–1,20	1,20–1,50
P.1.2	150 (130–200)	120 (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30	150 (130–200)	120 (100–160)	0,40–0,60	0,70–0,90	0,90–1,20	1,20–1,50
P.1.3	150 (130–200)	120 (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30	150 (130–200)	120 (100–160)	0,40–0,60	0,70–0,90	0,90–1,20	1,20–1,50
P.1.4	150 (130–200)	120 (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30	150 (130–200)	120 (100–160)	0,40–0,60	0,70–0,90	0,90–1,20	1,20–1,50
P.1.5	150 (130–200)	120 (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30	150 (130–200)	120 (100–160)	0,40–0,60	0,70–0,90	0,90–1,20	1,20–1,50
P.2.1	150 (130–200)	120 (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30	150 (130–200)	120 (100–160)	0,40–0,60	0,70–0,90	0,90–1,20	1,20–1,50
P.2.2	150 (130–200)	120 (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30	150 (130–200)	120 (100–160)	0,40–0,60	0,70–0,90	0,90–1,20	1,20–1,50
P.2.3	150 (130–200)	120 (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30	150 (130–200)	120 (100–160)	0,40–0,60	0,70–0,90	0,90–1,20	1,20–1,50
P.2.4												
P.3.1												
P.3.2												
P.3.3												
P.4.1												
P.4.2												
M.1.1												
M.2.1												
M.3.1												
K.1.1												
K.1.2												
K.2.1	175 (150–300)	150 (130–180)	0,40–0,60	0,70–0,90	0,90–1,20	1,10–1,50	175 (150–300)	150 (130–180)	0,40–0,60	0,70–0,90	0,90–1,20	1,10–1,50
K.2.2	120 (100–150)	100 (80–120)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30	120 (100–180)	120 (100–150)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30
K.3.1	150 (130–250)	120 (100–200)	0,40–0,60	0,70–0,90	0,90–1,20	1,10–1,50	120 (100–180)	120 (100–150)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30
K.3.2	120 (100–180)	120 (100–150)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30	120 (100–180)	120 (100–150)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30
N.1.1												
N.1.2												
N.2.1												
N.2.2												
N.2.3												
N.3.1	150 (130–300)	150 (130–200)	0,40–0,60	0,60–0,90	0,80–1,20	1,10–1,50						
N.3.2	150 (130–300)	150 (130–200)	0,40–0,60	0,60–0,90	0,80–1,20	1,10–1,50						
N.3.3												
N.4.1												
S.1.1												
S.1.2												
S.2.1												
S.2.2												
S.2.3												
S.3.1												
S.3.2												
S.3.3												
H.1.1												
H.1.2												
H.1.3												
H.1.4												
H.2.1												
H.3.1												
O.1.1												
O.1.2												
O.2.1												
O.2.2												
O.3.1												



The cutting data depend extremely on the external conditions, the material and machine type.

The indicated values are possible values which have to be increased or reduced, inside the bracket, according to the application conditions.

Cutting data standard values for Monomax

Index	Grade / coating		HM-DBG-P				HM-TiN			
	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		5,6–8,899	8,9–12,00	12,01–22,00	22,01–25,899	5,6–8,899	8,9–12,00	12,01–22,00	22,01–25,899
	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 flutes		4	6	6	6	4	6	6	6
	V_c m/min		f mm/rev.		f mm/rev.		V_c m/min		f mm/rev.	
	3xD	5xD	mm/rev.	mm/rev.	mm/rev.	mm/rev.	3xD	5xD	mm/rev.	mm/rev.
P.1.1							100 (80–140)	80 (60–120)	0,30–0,50	0,50–0,70
P.1.2							100 (80–140)	80 (60–120)	0,30–0,50	0,50–0,70
P.1.3							100 (80–140)	80 (60–120)	0,30–0,50	0,50–0,70
P.1.4							100 (80–140)	80 (60–120)	0,30–0,50	0,50–0,70
P.1.5							100 (80–140)	80 (60–120)	0,30–0,50	0,50–0,70
P.2.1							100 (80–140)	80 (60–120)	0,30–0,50	0,50–0,70
P.2.2							100 (80–140)	80 (60–120)	0,30–0,50	0,50–0,70
P.2.3							100 (80–140)	80 (60–120)	0,30–0,50	0,50–0,70
P.2.4							100 (80–140)	80 (60–120)	0,30–0,50	0,50–0,70
P.3.1	30 (25–50)	30 (25–40)	0,30–0,40	0,40–0,60	0,60–0,80	0,70–1,00				
P.3.2	30 (25–50)	30 (25–40)	0,30–0,40	0,40–0,60	0,60–0,80	0,70–1,00				
P.3.3	30 (25–50)	30 (25–40)	0,30–0,40	0,40–0,60	0,60–0,80	0,70–1,00				
P.4.1	45 (35–60)	40 (35–50)	0,30–0,40	0,40–0,60	0,60–0,80	0,70–1,00				
P.4.2	45 (35–60)	40 (35–50)	0,30–0,40	0,40–0,60	0,60–0,80	0,70–1,00				
M.1.1	45 (35–60)	40 (35–50)	0,30–0,40	0,40–0,60	0,60–0,80	0,70–1,00				
M.2.1	45 (35–60)	40 (35–50)	0,30–0,40	0,40–0,60	0,60–0,80	0,70–1,00				
M.3.1	30 (25–50)	30 (25–40)	0,30–0,40	0,40–0,60	0,60–0,80	0,70–1,00				
K.1.1							80 (60–130)	80 (60–120)	0,40–0,60	0,70–0,90
K.1.2							80 (60–130)	80 (60–120)	0,40–0,60	0,70–0,90
K.2.1										
K.2.2										
K.3.1										
K.3.2										
N.1.1										
N.1.2										
N.2.1										
N.2.2										
N.2.3										
N.3.1							120 (–200)	120 (–200)	0,40–0,60	0,60–0,90
N.3.2							120 (–200)	120 (–200)	0,40–0,60	0,60–0,90
N.3.3							80 (–150)	80 (–120)	0,40–0,60	0,60–0,90
N.4.1										
S.1.1										
S.1.2										
S.2.1										
S.2.2										
S.2.3										
S.3.1										
S.3.2										
S.3.3										
H.1.1										
H.1.2										
H.1.3										
H.1.4										
H.2.1										
H.3.1										
O.1.1										
O.1.2										
O.2.1										
O.2.2										
O.3.1										



The cutting data depend extremely on the external conditions, the material and machine type.

The indicated values are possible values which have to be increased or reduced, inside the bracket, according to the application conditions.

Cutting data standard values for Fullmax, long

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 flutes		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
P.1.1	180 (160–250)	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
P.1.2	180 (160–250)	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
P.1.3	180 (160–250)	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
P.1.4	180 (160–250)	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
P.1.5	180 (160–250)	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
P.2.1	180 (160–250)	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
P.2.2	180 (160–250)	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
P.2.3	180 (160–250)	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
P.2.4	80 (70–120)	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
P.3.1	20 (15–40)	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
P.3.2	20 (15–40)	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
P.3.3	20 (15–40)	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
P.4.1	20 (15–40)	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
P.4.2	20 (15–40)	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
M.1.1	20 (15–40)	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
M.2.1	20 (15–40)	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
M.3.1	15 (10–30)	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
K.1.1	120 (100–180)	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
K.1.2	120 (100–180)	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
K.2.1	200 (180–250)	0,60–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,60	0,20	1,30–1,60	0,20	1,60–2,00	0,20–0,30	1,90–2,20	0,30
K.2.2	120 (100–150)	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
K.3.1	200 (180–250)	0,60–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,60	0,20	1,30–1,60	0,20	1,60–2,00	0,20–0,30	1,90–2,20	0,30
K.3.2	120 (100–150)	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
N.1.1													
N.1.2													
N.2.1													
N.2.2													
N.2.3													
N.3.1	150 (130–250)	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
N.3.2	100 (80–150)	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
N.3.3													
N.4.1													
S.1.1													
S.1.2													
S.2.1	40 (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
S.2.2	40 (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
S.2.3													
S.3.1	30 (25–60)	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
S.3.2	30 (25–60)	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
S.3.3													
H.1.1	40 (35–60)	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
H.1.2	40 (35–60)	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
H.1.3	30 (25–50)	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
H.1.4													
H.2.1	40 (35–60)	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
H.3.1	40 (35–60)	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
O.1.1													
O.1.2													
O.2.1													
O.2.2													
O.3.1													



The cutting data depend extremely on the external conditions, the material and machine type.

The indicated values are possible values which have to be increased or reduced, inside the bracket, according to the application conditions.

Cutting data standard values for Fullmax, long

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 flutes		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
K.1.1	200 (180–250)	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
K.1.2	200 (180–250)	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
K.2.1	225 (200–300)	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
K.2.2	120 (100–150)	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
K.3.1	225 (200–300)	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
K.3.2	120 (100–150)	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 flutes		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
P.1.1													
P.1.2													
P.1.3													
P.1.4													
P.1.5													
P.2.1													
P.2.2													
P.2.3													
P.2.4													
P.3.1	20 (15–40)	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
P.3.2	20 (15–40)	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
P.3.3	20 (15–40)	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
P.4.1	20 (15–40)	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
P.4.2	20 (15–40)	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
M.1.1	20 (15–40)	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
M.2.1	15 (10–30)	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
M.3.1	15 (10–30)	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

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 flutes		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
N.1.1	200 (180–300)	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
N.1.2	200 (180–300)	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
N.2.1	200 (180–250)	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
N.2.2	200 (180–300)	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
N.2.3	200 (180–250)	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
N.3.1													
N.3.2													
N.3.3													
N.4.1													
O.3.1	250 (220–270)	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 flutes		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
H.1.1	40 (35–60)	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
H.1.2	30 (25–50)	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
H.1.3	30 (25–50)	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
H.1.4	30 (25–50)	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
H.2.1	40 (35–60)	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
H.3.1	40 (35–60)	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



The cutting data depend extremely on the external conditions, the material and machine type.

The indicated values are possible values which have to be increased or reduced, inside the bracket, according to the application conditions.

Cutting data standard values for Fullmax, short

Type UNI		40 481 ... / 40 483 ... / 40 488 ... / 40 489 ...											
		Ø 2,97 – 4,05		Ø 4,06 – 6,05		Ø 6,06 – 7,55		Ø 7,56 – 12,05		Ø 12,06 – 15,97		Ø 15,98 – 20,05	
Number of flutes		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
P.1.1	200 (180–250)	0,65–0,80	0,10–0,20	0,75–0,90	0,10–0,20	1,40–1,60	0,20	1,65–1,80	0,20	1,65–1,90	0,20–0,30	2,56–3,00	0,30
P.1.2	200 (180–250)	0,65–0,80	0,10–0,20	0,75–0,90	0,10–0,20	1,40–1,60	0,20	1,65–1,80	0,20	1,65–1,90	0,20–0,30	2,56–3,00	0,30
P.1.3	200 (180–250)	0,65–0,80	0,10–0,20	0,75–0,90	0,10–0,20	1,40–1,60	0,20	1,65–1,80	0,20	1,65–1,90	0,20–0,30	2,56–3,00	0,30
P.1.4	200 (180–250)	0,65–0,80	0,10–0,20	0,75–0,90	0,10–0,20	1,40–1,60	0,20	1,65–1,80	0,20	1,65–1,90	0,20–0,30	2,56–3,00	0,30
P.1.5	200 (180–250)	0,65–0,80	0,10–0,20	0,75–0,90	0,10–0,20	1,40–1,60	0,20	1,65–1,80	0,20	1,65–1,90	0,20–0,30	2,56–3,00	0,30
P.2.1	200 (180–250)	0,65–0,80	0,10–0,20	0,75–0,90	0,10–0,20	1,40–1,60	0,20	1,65–1,80	0,20	1,65–1,90	0,20–0,30	2,56–3,00	0,30
P.2.2	200 (180–250)	0,65–0,80	0,10–0,20	0,75–0,90	0,10–0,20	1,40–1,60	0,20	1,65–1,80	0,20	1,65–1,90	0,20–0,30	2,56–3,00	0,30
P.2.3	200 (180–250)	0,65–0,80	0,10–0,20	0,75–0,90	0,10–0,20	1,40–1,60	0,20	1,65–1,80	0,20	1,65–1,90	0,20–0,30	2,56–3,00	0,30
P.2.4	65 (55–110)	0,45–0,50	0,10–0,20	0,45–0,60	0,10–0,20	1,00–1,10	0,20	1,20–1,30	0,20	1,20–1,40	0,20–0,30	1,90–2,10	0,30
P.3.1	40 (30–80)	0,40–0,60	0,10–0,20	0,50–0,70	0,10–0,20	1,00–1,30	0,20	1,10–1,40	0,20	1,20–1,50	0,20–0,30	1,90–2,25	0,30
P.3.2	40 (30–80)	0,40–0,60	0,10–0,20	0,50–0,70	0,10–0,20	1,00–1,30	0,20	1,10–1,40	0,20	1,20–1,50	0,20–0,30	1,90–2,25	0,30
P.3.3	40 (30–80)	0,40–0,60	0,10–0,20	0,50–0,70	0,10–0,20	1,00–1,30	0,20	1,10–1,40	0,20	1,20–1,50	0,20–0,30	1,90–2,25	0,30
P.4.1	45 (40–65)	0,45–0,50	0,10–0,20	0,45–0,60	0,10–0,20	1,00–1,10	0,20	1,20–1,30	0,20	1,20–1,40	0,20–0,30	1,90–2,10	0,30
P.4.2	45 (40–65)	0,45–0,50	0,10–0,20	0,45–0,60	0,10–0,20	1,00–1,10	0,20	1,20–1,30	0,20	1,20–1,40	0,20–0,30	1,90–2,10	0,30
M.1.1	40 (35–60)	0,40–0,60	0,10–0,20	0,50–0,70	0,10–0,20	1,00–1,30	0,20	1,10–1,40	0,20	1,20–1,50	0,20–0,30	1,90–2,25	0,30
M.2.1	40 (35–60)	0,40–0,60	0,10–0,20	0,50–0,70	0,10–0,20	1,00–1,30	0,20	1,10–1,40	0,20	1,20–1,50	0,20–0,30	1,90–2,25	0,30
M.3.1	40 (35–60)	0,40–0,60	0,10–0,20	0,50–0,70	0,10–0,20	1,00–1,30	0,20	1,10–1,40	0,20	1,20–1,50	0,20–0,30	1,90–2,25	0,30
K.1.1	200 (180–250)	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	2,50–2,90	0,30
K.1.2	200 (180–250)	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	2,50–2,90	0,30
K.2.1	225 (200–300)	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	2,50–2,90	0,30
K.2.2	120 (100–150)	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	2,00–2,40	0,30
K.3.1	225 (200–300)	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	2,00–2,40	0,30
K.3.2	120 (100–150)	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	2,00–2,40	0,30
N.1.1													
N.1.2													
N.2.1													
N.2.2													
N.2.3													
N.3.1	150 (120–250)	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	2,50–2,90	0,30
N.3.2	100 (80–150)	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	2,10–2,40	0,30
N.3.3													
N.4.1													
S.1.1													
S.1.2													
S.2.1	40 (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
S.2.2	40 (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
S.2.3													
S.3.1	30 (25–60)	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
S.3.2	30 (25–60)	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
S.3.3													
H.1.1	40 (35–60)	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	0,80–1,00	0,20
H.1.2	30 (25–50)	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	0,80–1,00	0,20
H.1.3	30 (25–50)	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	0,80–1,00	0,20
H.1.4													
H.2.1	40 (35–60)	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
H.3.1	40 (35–60)	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
O.1.1													
O.1.2													
O.2.1													
O.2.2													
O.3.1													



The cutting data depend extremely on the external conditions, the material and machine type.

The indicated values are possible values which have to be increased or reduced, inside the bracket, according to the application conditions.

Cutting data standard values for solid carbide reamers

Index	40 410 ... / 40 400 ...								
	uncoated	to Ø 5 mm		to Ø 8 mm		to Ø 10 mm		to Ø 12 mm	
	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
P.1.1	30	0,10	0,10	0,15	0,10	0,175	0,10	0,20	0,20
P.1.2	15	0,10	0,10	0,15	0,10	0,175	0,10	0,20	0,20
P.1.3	15	0,10	0,10	0,15	0,10	0,175	0,10	0,20	0,20
P.1.4	15	0,10	0,10	0,15	0,10	0,175	0,10	0,20	0,20
P.1.5	15	0,10	0,10	0,15	0,10	0,175	0,10	0,20	0,20
P.2.1	25	0,10	0,10	0,15	0,10	0,175	0,10	0,20	0,20
P.2.2	15	0,10	0,10	0,15	0,10	0,175	0,10	0,20	0,20
P.2.3	15	0,10	0,10	0,15	0,10	0,175	0,10	0,20	0,20
P.2.4	15	0,10	0,10	0,15	0,10	0,175	0,10	0,20	0,20
P.3.1	25	0,10	0,10	0,15	0,10	0,175	0,10	0,20	0,20
P.3.2	15	0,10	0,10	0,15	0,10	0,175	0,10	0,20	0,20
P.3.3	15	0,10	0,10	0,15	0,10	0,175	0,10	0,20	0,20
P.4.1	15	0,10	0,10	0,15	0,10	0,175	0,10	0,20	0,20
P.4.2	15	0,10	0,10	0,15	0,10	0,175	0,10	0,20	0,20
M.1.1	15	0,08	0,08	0,10	0,10	0,125	0,10	0,15	0,10
M.2.1	15	0,08	0,08	0,10	0,10	0,125	0,10	0,15	0,10
M.3.1	10	0,08	0,08	0,10	0,10	0,125	0,10	0,15	0,10
K.1.1	30	0,10	0,10	0,20	0,10	0,25	0,10	0,30	0,20
K.1.2	20	0,10	0,10	0,20	0,10	0,25	0,10	0,30	0,20
K.2.1	25	0,10	0,10	0,20	0,10	0,25	0,10	0,30	0,20
K.2.2	20	0,10	0,10	0,20	0,10	0,25	0,10	0,30	0,20
K.3.1	25	0,10	0,10	0,20	0,10	0,25	0,10	0,30	0,20
K.3.2	20	0,10	0,10	0,20	0,10	0,25	0,10	0,30	0,20
N.1.1	50	0,10	0,10	0,15	0,10	0,175	0,10	0,20	0,20
N.1.2	50	0,10	0,10	0,15	0,10	0,175	0,10	0,20	0,20
N.2.1	50	0,10	0,10	0,15	0,10	0,175	0,10	0,20	0,20
N.2.2	50	0,10	0,10	0,15	0,10	0,175	0,10	0,20	0,20
N.2.3	50	0,10	0,10	0,15	0,10	0,175	0,10	0,20	0,20
N.3.1	50	0,10	0,10	0,15	0,10	0,175	0,10	0,20	0,20
N.3.2	50	0,10	0,10	0,15	0,10	0,175	0,10	0,20	0,20
N.3.3	50	0,10	0,10	0,15	0,10	0,175	0,10	0,20	0,20
N.4.1	50	0,10	0,10	0,15	0,10	0,175	0,10	0,20	0,20
S.1.1	10	0,06	0,05	0,10	0,10	0,11	0,10	0,12	0,10
S.1.2	10	0,06	0,05	0,10	0,10	0,11	0,10	0,12	0,10
S.2.1	10	0,06	0,05	0,10	0,10	0,11	0,10	0,12	0,10
S.2.2	10	0,06	0,05	0,10	0,10	0,11	0,10	0,12	0,10
S.2.3	10	0,06	0,05	0,10	0,10	0,11	0,10	0,12	0,10
S.3.1	10	0,06	0,05	0,10	0,10	0,11	0,10	0,12	0,10
S.3.2	10	0,06	0,05	0,10	0,10	0,11	0,10	0,12	0,10
S.3.3	10	0,06	0,05	0,10	0,10	0,11	0,10	0,12	0,10
H.1.1									
H.1.2									
H.1.3									
H.1.4									
H.2.1									
H.3.1									
O.1.1									
O.1.2									
O.2.1									
O.2.2									
O.3.1									



The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine. The specified values represent guideline cutting data that can be adjusted by approx. **±20 %** according to the usage conditions.

Cutting data standard values for solid carbide reamers

Index	40 430 ...			40 420 ... / 40 421 ... / 40 430 ... / 40 431 ...							
	uncoated		to Ø 0.94 mm	uncoated		TiAlN	to Ø 5 mm		to Ø 8 mm		to Ø 10 mm
	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
P.1.1	20	0,10	0,10	20	30	0,10	0,10	0,15	0,15	0,20	0,20
P.1.2	20	0,10	0,10	20	30	0,10	0,10	0,15	0,15	0,20	0,20
P.1.3	12	0,10	0,10	12	15	0,10	0,10	0,15	0,15	0,20	0,20
P.1.4	12	0,10	0,10	12	15	0,10	0,10	0,15	0,15	0,20	0,20
P.1.5	12	0,10	0,10	12	15	0,10	0,10	0,15	0,15	0,20	0,20
P.2.1	15	0,10	0,10	15	25	0,10	0,10	0,15	0,15	0,20	0,20
P.2.2	12	0,10	0,10	12	15	0,10	0,10	0,15	0,15	0,20	0,20
P.2.3	12	0,10	0,10	12	15	0,10	0,10	0,15	0,15	0,20	0,20
P.2.4	12	0,10	0,10	12	15	0,10	0,10	0,15	0,15	0,20	0,20
P.3.1	15	0,10	0,10	15	25	0,10	0,10	0,15	0,15	0,20	0,20
P.3.2	12	0,10	0,10	12	15	0,10	0,10	0,15	0,15	0,20	0,20
P.3.3	12	0,10	0,10	12	15	0,10	0,10	0,15	0,15	0,20	0,20
P.4.1											
P.4.2											
M.1.1					15	0,08	0,08	0,10	0,10	0,15	0,10
M.2.1					15	0,08	0,08	0,10	0,10	0,15	0,10
M.3.1					10	0,08	0,08	0,10	0,10	0,15	0,10
K.1.1	18	0,10	0,10	18	30	0,10	0,10	0,20	0,15	0,30	0,20
K.1.2	18	0,10	0,10	18	30	0,10	0,10	0,20	0,15	0,30	0,20
K.2.1	15	0,10	0,10	15	25	0,10	0,10	0,20	0,15	0,30	0,20
K.2.2	10	0,10	0,10	10	20	0,10	0,10	0,20	0,15	0,30	0,20
K.3.1	15	0,10	0,10	15	25	0,10	0,10	0,20	0,15	0,30	0,20
K.3.2	10	0,10	0,10	10	20	0,10	0,10	0,20	0,15	0,30	0,20
N.1.1	40	0,15	0,10	40		0,15	0,10	0,20	0,15	0,25	0,20
N.1.2	40	0,15	0,10	40		0,15	0,10	0,20	0,15	0,25	0,20
N.2.1	25	0,15	0,10	20		0,15	0,10	0,20	0,15	0,25	0,20
N.2.2	25	0,15	0,10	20		0,15	0,10	0,20	0,15	0,25	0,20
N.2.3											
N.3.1	30	0,15	0,10	30		0,15	0,10	0,20	0,15	0,25	0,20
N.3.2	30	0,15	0,10	30		0,15	0,10	0,20	0,15	0,25	0,20
N.3.3	30	0,15	0,10	30		0,15	0,10	0,20	0,15	0,25	0,20
N.4.1											
S.1.1					10	0,06	0,05	0,10	0,10	0,12	0,10
S.1.2					10	0,06	0,05	0,10	0,10	0,12	0,10
S.2.1					10	0,06	0,05	0,10	0,10	0,12	0,10
S.2.2					10	0,06	0,05	0,10	0,10	0,12	0,10
S.2.3					10	0,06	0,05	0,10	0,10	0,12	0,10
S.3.1					10	0,06	0,05	0,10	0,10	0,12	0,10
S.3.2					10	0,06	0,05	0,10	0,10	0,12	0,10
S.3.3					10	0,06	0,05	0,10	0,10	0,12	0,10
H.1.1					8	0,05	0,05	0,08	0,05	0,10	0,10
H.1.2					8	0,05	0,05	0,08	0,05	0,10	0,10
H.1.3											
H.1.4											
H.2.1					8	0,05	0,05	0,08	0,05	0,10	0,10
H.3.1											
O.1.1	40	0,15	0,10	40		0,15	0,10	0,20	0,15	0,25	0,20
O.1.2	40	0,15	0,10	40		0,15	0,10	0,20	0,15	0,25	0,20
O.2.1											
O.2.2											
O.3.1											



The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine. The specified values represent guideline cutting data that can be adjusted by approx. **±20 %** according to the usage conditions.

Cutting data standard values for solid carbide reamers

Index	40 420 ... / 40 421 ... / 40 430 ... / 40 431 ...											
	uncoated	TiAlN	to Ø 12 mm		to Ø 15 mm		to Ø 20 mm		to Ø 25 mm		to Ø 30 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	f mm/rev.	Reaming Allowance Ø mm	f mm/rev.	Reaming Allowance Ø mm
P.1.1	20	30	0,20	0,20	0,25	0,20	0,30	0,30	0,30	0,30	0,30	0,30
P.1.2	20	30	0,20	0,20	0,25	0,20	0,30	0,30	0,30	0,30	0,30	0,30
P.1.3	12	15	0,20	0,20	0,25	0,20	0,30	0,30	0,30	0,30	0,30	0,30
P.1.4	12	15	0,20	0,20	0,25	0,20	0,30	0,30	0,30	0,30	0,30	0,30
P.1.5	12	15	0,20	0,20	0,25	0,20	0,30	0,30	0,30	0,30	0,30	0,30
P.2.1	15	25	0,20	0,20	0,25	0,20	0,30	0,30	0,30	0,30	0,30	0,30
P.2.2	12	15	0,20	0,20	0,25	0,20	0,30	0,30	0,30	0,30	0,30	0,30
P.2.3	12	15	0,20	0,20	0,25	0,20	0,30	0,30	0,30	0,30	0,30	0,30
P.2.4	12	15	0,20	0,20	0,25	0,20	0,30	0,30	0,30	0,30	0,30	0,30
P.3.1	15	25	0,20	0,20	0,25	0,20	0,30	0,30	0,30	0,30	0,30	0,30
P.3.2	12	15	0,20	0,20	0,25	0,20	0,30	0,30	0,30	0,30	0,30	0,30
P.3.3	12	15	0,20	0,20	0,25	0,20	0,30	0,30	0,30	0,30	0,30	0,30
P.4.1												
P.4.2												
M.1.1		15	0,15	0,10	0,20	0,20	0,25	0,20	0,25	0,20	0,25	0,20
M.2.1		15	0,15	0,10	0,20	0,20	0,25	0,20	0,25	0,20	0,25	0,20
M.3.1		10	0,15	0,10	0,20	0,20	0,25	0,20	0,25	0,20	0,25	0,20
K.1.1	18	30	0,30	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
K.1.2	18	30	0,30	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
K.2.1	15	25	0,30	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
K.2.2	10	20	0,30	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
K.3.1	15	25	0,30	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
K.3.2	10	20	0,30	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
N.1.1	40		0,25	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
N.1.2	40		0,25	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
N.2.1	25		0,25	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
N.2.2	25		0,25	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
N.2.3												
N.3.1	30		0,25	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
N.3.2	30		0,25	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
N.3.3	30		0,25	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
N.4.1												
S.1.1		10	0,12	0,10	0,18	0,15–0,20	0,20	0,20	0,20	0,20	0,20	0,20
S.1.2		10	0,12	0,10	0,18	0,15–0,20	0,20	0,20	0,20	0,20	0,20	0,20
S.2.1		10	0,12	0,10	0,18	0,15–0,20	0,20	0,20	0,20	0,20	0,20	0,20
S.2.2		10	0,12	0,10	0,18	0,15–0,20	0,20	0,20	0,20	0,20	0,20	0,20
S.2.3		10	0,12	0,10	0,18	0,15–0,20	0,20	0,20	0,20	0,20	0,20	0,20
S.3.1		10	0,12	0,10	0,18	0,15–0,20	0,20	0,20	0,20	0,20	0,20	0,20
S.3.2		10	0,12	0,10	0,18	0,15–0,20	0,20	0,20	0,20	0,20	0,20	0,20
S.3.3		10	0,12	0,10	0,18	0,15–0,20	0,20	0,20	0,20	0,20	0,20	0,20
H.1.1		8	0,10	0,10	0,13	0,10	0,15	0,15	0,15	0,15	0,15	0,15
H.1.2		8	0,10	0,10	0,13	0,10	0,15	0,15	0,15	0,15	0,15	0,15
H.1.3												
H.1.4												
H.2.1		8	0,10	0,10	0,13	0,10	0,15	0,15	0,15	0,15	0,15	0,15
H.3.1												
O.1.1	40		0,25	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
O.1.2	40		0,25	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
O.2.1												
O.2.2												
O.3.1												



The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine. The specified values represent guideline cutting data that can be adjusted by approx. **±20 %** according to the usage conditions.

Cutting data for HSS-E reamers

Index	V _c m/min	40 110 ... / 40 115 ...									
		to Ø 5 mm		to Ø 8 mm		to Ø 12 mm		to Ø 15 mm		to Ø 20 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
P.1.1	12	0,10	0,10	0,15	0,15	0,20	0,20	0,25	0,20	0,30	0,30
P.1.2	12	0,10	0,10	0,15	0,15	0,20	0,20	0,25	0,20	0,30	0,30
P.1.3	10	0,10	0,10	0,15	0,15	0,20	0,20	0,25	0,20	0,30	0,30
P.1.4	10	0,10	0,10	0,15	0,15	0,20	0,20	0,25	0,20	0,30	0,30
P.1.5	10	0,10	0,10	0,15	0,15	0,20	0,20	0,25	0,20	0,30	0,30
P.2.1	12	0,10	0,10	0,15	0,15	0,20	0,20	0,25	0,20	0,30	0,30
P.2.2	12	0,10	0,10	0,15	0,15	0,20	0,20	0,25	0,20	0,30	0,30
P.2.3	10	0,10	0,10	0,15	0,15	0,20	0,20	0,25	0,20	0,30	0,30
P.2.4	10	0,10	0,10	0,15	0,15	0,20	0,20	0,25	0,20	0,30	0,30
P.3.1	12	0,10	0,10	0,15	0,15	0,20	0,20	0,25	0,20	0,30	0,30
P.3.2	10	0,10	0,10	0,15	0,15	0,20	0,20	0,25	0,20	0,30	0,30
P.3.3	10	0,10	0,10	0,15	0,15	0,20	0,20	0,25	0,20	0,30	0,30
P.4.1											
P.4.2											
M.1.1											
M.2.1											
M.3.1											
K.1.1	12	0,15	0,10	0,20	0,15	0,25	0,20	0,30	0,20	0,35	0,30
K.1.2	12	0,15	0,10	0,20	0,15	0,25	0,20	0,30	0,20	0,35	0,30
K.2.1	10	0,15	0,10	0,20	0,15	0,25	0,20	0,30	0,20	0,35	0,30
K.2.2	10	0,15	0,10	0,20	0,15	0,25	0,20	0,30	0,20	0,35	0,30
K.3.1	10	0,15	0,10	0,20	0,15	0,25	0,20	0,30	0,20	0,35	0,30
K.3.2	10	0,15	0,10	0,20	0,15	0,25	0,20	0,30	0,20	0,35	0,30
N.1.1	15	0,15	0,10	0,20	0,15	0,20	0,20	0,25	0,20	0,30	0,30
N.1.2	15	0,15	0,10	0,20	0,15	0,20	0,20	0,25	0,20	0,30	0,30
N.2.1											
N.2.2											
N.2.3											
N.3.1	20	0,15	0,10	0,20	0,15	0,20	0,20	0,25	0,20	0,30	0,30
N.3.2	20	0,15	0,10	0,20	0,15	0,20	0,20	0,25	0,20	0,30	0,30
N.3.3	20	0,15	0,10	0,20	0,15	0,20	0,20	0,25	0,20	0,30	0,30
N.4.1											
S.1.1											
S.1.2											
S.2.1											
S.2.2											
S.2.3											
S.3.1											
S.3.2											
S.3.3											
H.1.1											
H.1.2											
H.1.3											
H.1.4											
H.2.1											
H.3.1											
O.1.1	25	0,15	0,10	0,20	0,15	0,20	0,20	0,25	0,20	0,30	0,30
O.1.2	25	0,15	0,10	0,20	0,15	0,20	0,20	0,25	0,20	0,30	0,30
O.2.1											
O.2.2											
O.3.1											



The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine. The specified values represent guideline cutting data that can be adjusted by approx. **±20 %** according to the usage conditions.

Cutting data for HSS-E reamers

Index	V _c m/min	40 110 ... / 40 115 ...							
		to Ø 25 mm		to Ø 30 mm		to Ø 40 mm		to Ø 50 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
P.1.1	12	0,30	0,30	0,30	0,30	0,40	0,30	0,40	0,30
P.1.2	12	0,30	0,30	0,30	0,30	0,40	0,30	0,40	0,30
P.1.3	10	0,30	0,30	0,30	0,30	0,40	0,30	0,40	0,30
P.1.4	10	0,30	0,30	0,30	0,30	0,40	0,30	0,40	0,30
P.1.5	10	0,30	0,30	0,30	0,30	0,40	0,30	0,40	0,30
P.2.1	12	0,30	0,30	0,30	0,30	0,40	0,30	0,40	0,30
P.2.2	12	0,30	0,30	0,30	0,30	0,40	0,30	0,40	0,30
P.2.3	10	0,30	0,30	0,30	0,30	0,40	0,30	0,40	0,30
P.2.4	10	0,30	0,30	0,30	0,30	0,40	0,30	0,40	0,30
P.3.1	12	0,30	0,30	0,30	0,30	0,40	0,30	0,40	0,30
P.3.2	10	0,30	0,30	0,30	0,30	0,40	0,30	0,40	0,30
P.3.3	10	0,30	0,30	0,30	0,30	0,40	0,30	0,40	0,30
P.4.1									
P.4.2									
M.1.1									
M.2.1									
M.3.1									
K.1.1	12	0,35	0,30	0,35	0,30	0,40	0,30	0,40	0,30
K.1.2	12	0,35	0,30	0,35	0,30	0,40	0,30	0,40	0,30
K.2.1	10	0,35	0,30	0,35	0,30	0,40	0,30	0,40	0,30
K.2.2	10	0,35	0,30	0,35	0,30	0,40	0,30	0,40	0,30
K.3.1	10	0,35	0,30	0,35	0,30	0,40	0,30	0,40	0,30
K.3.2	10	0,35	0,30	0,35	0,30	0,40	0,30	0,40	0,30
N.1.1	15	0,30	0,30	0,30	0,30	0,40	0,30	0,40	0,30
N.1.2	15	0,30	0,30	0,30	0,30	0,40	0,30	0,40	0,30
N.2.1									
N.2.2									
N.2.3									
N.3.1	20	0,30	0,30	0,30	0,30	0,40	0,30	0,40	0,30
N.3.2	20	0,30	0,30	0,30	0,30	0,40	0,30	0,40	0,30
N.3.3	20	0,30	0,30	0,30	0,30	0,40	0,30	0,40	0,30
N.4.1									
S.1.1									
S.1.2									
S.2.1									
S.2.2									
S.2.3									
S.3.1									
S.3.2									
S.3.3									
H.1.1									
H.1.2									
H.1.3									
H.1.4									
H.2.1									
H.3.1									
O.1.1	25	0,30	0,30	0,30	0,30	0,40	0,30	0,40	0,30
O.1.2	25	0,30	0,30	0,30	0,30	0,40	0,30	0,40	0,30
O.2.1									
O.2.2									
O.3.1									



The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine. The specified values represent guideline cutting data that can be adjusted by approx. **±20 %** according to the usage conditions.

Cutting data for HSS-E reamers

40 140 ... / 40 150 ... / 40 155 ... / 40 145 ... / 40 139 ... / 40 160 ...											
Index	v _c m/min	to Ø 5 mm		to Ø 8 mm		to Ø 12 mm		to Ø 15 mm		to Ø 20 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
P.1.1	15	0,10	0,10–0,15	0,20	0,15–0,20	0,25	0,20	0,30	0,25	0,35	0,30
P.1.2	12	0,10	0,10–0,15	0,20	0,15–0,20	0,25	0,20	0,30	0,25	0,35	0,30
P.1.3	10	0,10	0,10–0,15	0,20	0,15–0,20	0,25	0,20	0,30	0,25	0,35	0,30
P.1.4	10	0,08	0,10–0,15	0,15	0,15–0,20	0,20	0,20	0,25	0,25	0,30	0,30
P.1.5	8	0,08	0,10–0,15	0,15	0,15–0,20	0,20	0,20	0,25	0,25	0,30	0,30
P.2.1	10	0,10	0,10–0,15	0,20	0,15–0,20	0,25	0,20	0,25	0,25	0,35	0,30
P.2.2	8	0,08	0,10–0,15	0,15	0,15–0,20	0,20	0,20	0,25	0,25	0,30	0,30
P.2.3	8	0,08	0,10–0,15	0,15	0,15–0,20	0,20	0,20	0,25	0,25	0,30	0,30
P.2.4	8	0,08	0,10–0,15	0,15	0,15–0,20	0,20	0,20	0,25	0,25	0,30	0,30
P.3.1	8	0,08	0,10–0,15	0,12	0,15–0,20	0,20	0,20	0,20	0,25	0,25	0,30
P.3.2	6	0,08	0,10–0,15	0,12	0,15–0,20	0,20	0,20	0,20	0,25	0,25	0,25
P.3.3	6	0,08	0,10–0,15	0,12	0,15–0,20	0,20	0,20	0,20	0,25	0,25	0,25
P.4.1	6	0,08	0,10–0,15	0,12	0,15–0,20	0,20	0,20	0,20	0,25	0,25	0,25
P.4.2	6	0,08	0,10–0,15	0,12	0,15–0,20	0,20	0,20	0,20	0,25	0,25	0,25
M.1.1	6	0,08	0,10	0,12	0,15	0,20	0,20	0,20	0,20	0,25	0,25
M.2.1	4	0,08	0,10	0,12	0,15	0,20	0,20	0,20	0,20	0,25	0,25
M.3.1	4	0,08	0,10	0,12	0,15	0,20	0,20	0,20	0,20	0,25	0,25
K.1.1	14	0,10	0,10–0,15	0,16	0,20	0,24	0,20	0,28	0,25	0,35	0,30
K.1.2	12	0,10	0,10–0,15	0,16	0,20	0,24	0,20	0,28	0,25	0,35	0,30
K.2.1	12	0,10	0,10–0,15	0,16	0,15–0,20	0,20	0,20	0,25	0,25	0,35	0,30
K.2.2	10	0,10	0,10–0,15	0,16	0,15–0,20	0,20	0,20	0,25	0,25	0,30	0,30
K.3.1	12	0,10	0,10–0,15	0,16	0,20	0,24	0,20	0,28	0,25	0,35	0,30
K.3.2	10	0,10	0,10–0,15	0,16	0,15–0,20	0,20	0,20	0,25	0,25	0,30	0,30
N.1.1	20	0,10	0,15	0,20	0,20	0,25	0,20	0,30	0,25	0,40	0,30
N.1.2	20	0,10	0,15	0,20	0,20	0,25	0,20	0,30	0,25	0,40	0,30
N.2.1	18	0,10	0,15	0,20	0,20	0,25	0,20	0,30	0,25	0,40	0,30
N.2.2	18	0,10	0,15	0,20	0,20	0,25	0,20	0,30	0,25	0,40	0,30
N.2.3											
N.3.1	18	0,10	0,15	0,18	0,30	0,20	0,30	0,25	0,30	0,30	0,30
N.3.2	15	0,10	0,15	0,18	0,30	0,20	0,30	0,25	0,30	0,30	0,30
N.3.3	15	0,10	0,15	0,18	0,30	0,20	0,30	0,25	0,30	0,30	0,30
N.4.1	18	0,10	0,15	0,18	0,30	0,20	0,30	0,25	0,30	0,30	0,30
S.1.1											
S.1.2											
S.2.1	4	0,08	0,10	0,12	0,15	0,16	0,20	0,20	0,20	0,25	0,20
S.2.2	4	0,08	0,10	0,12	0,15	0,16	0,20	0,20	0,20	0,25	0,20
S.2.3											
S.3.1	6	0,08	0,10	0,12	0,15	0,16	0,20	0,20	0,20	0,25	0,20
S.3.2	4	0,08	0,10	0,10	0,15	0,125	0,20	0,20	0,20	0,25	0,20
S.3.3											
H.1.1											
H.1.2											
H.1.3											
H.1.4											
H.2.1											
H.3.1											
O.1.1	15	0,15	0,15	0,20	0,20	0,25	0,20	0,25	0,25	0,30	0,30
O.1.2	12	0,12	0,15	0,16	0,20	0,20	0,20	0,20	0,25	0,25	0,30
O.2.1											
O.2.2											
O.3.1											



The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine. The specified values represent guideline cutting data that can be adjusted by approx. **±20 %** according to the usage conditions.

Cutting data for HSS-E reamers

40 140 ... / 40 150 ... / 40 155 ... / 40 145 ... / 40 139 ... / 40 160 ...									
Index	v _c m/min	to Ø 25 mm		to Ø 30 mm		to Ø 40 mm		to Ø 50 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
P.1.1	15	0,40	0,30	0,40	0,35	0,40	0,40	0,50	0,50
P.1.2	12	0,40	0,30	0,40	0,35	0,40	0,40	0,50	0,50
P.1.3	10	0,40	0,30	0,40	0,35	0,40	0,40	0,50	0,50
P.1.4	10	0,40	0,30	0,40	0,35	0,40	0,40	0,50	0,50
P.1.5	8	0,30	0,30	0,40	0,35	0,40	0,40	0,50	0,50
P.2.1	10	0,40	0,30	0,40	0,35	0,40	0,40	0,50	0,50
P.2.2	8	0,30	0,30	0,40	0,35	0,40	0,40	0,50	0,50
P.2.3	8	0,30	0,30	0,40	0,35	0,40	0,40	0,50	0,50
P.2.4	8	0,30	0,30	0,40	0,35	0,40	0,40	0,50	0,50
P.3.1	8	0,30	0,30	0,30	0,35	0,35	0,40	0,40	0,50
P.3.2	6	0,30	0,30	0,30	0,35	0,35	0,40	0,40	0,50
P.3.3	6	0,30	0,30	0,30	0,35	0,35	0,40	0,40	0,50
P.4.1	6	0,30	0,30	0,30	0,35	0,35	0,40	0,40	0,50
P.4.2	6	0,30	0,30	0,30	0,35	0,35	0,40	0,40	0,50
M.1.1	6	0,30	0,25	0,30	0,30	0,35	0,30	0,40	0,35
M.2.1	4	0,30	0,25	0,30	0,30	0,35	0,30	0,40	0,35
M.3.1	4	0,30	0,25	0,30	0,30	0,35	0,30	0,40	0,35
K.1.1	14	0,35	0,35	0,35	0,35	0,40	0,40	0,50	0,40
K.1.2	12	0,35	0,35	0,35	0,35	0,40	0,40	0,50	0,40
K.2.1	12	0,35	0,35	0,35	0,35	0,40	0,40	0,50	0,40
K.2.2	10	0,30	0,35	0,35	0,35	0,40	0,40	0,40	0,40
K.3.1	12	0,35	0,35	0,35	0,35	0,40	0,40	0,50	0,40
K.3.2	10	0,30	0,35	0,35	0,35	0,40	0,40	0,40	0,40
N.1.1	20	0,40	0,35	0,50	0,40	0,60	0,45	0,80	0,50
N.1.2	20	0,40	0,35	0,50	0,40	0,60	0,45	0,80	0,50
N.2.1	18	0,40	0,35	0,50	0,40	0,60	0,45	0,80	0,50
N.2.2	18	0,40	0,35	0,50	0,40	0,50	0,45	0,80	0,50
N.2.3									
N.3.1	18	0,30	0,40	0,30	0,40	0,40	0,50	0,40	0,50
N.3.2	15	0,30	0,40	0,30	0,40	0,40	0,50	0,40	0,50
N.3.3	15	0,30	0,40	0,30	0,40	0,40	0,50	0,40	0,50
N.4.1	18	0,30	0,40	0,30	0,40	0,40	0,50	0,40	0,50
S.1.1									
S.1.2									
S.2.1	4	0,30	0,25	0,30	0,30	0,35	0,35	0,40	0,35
S.2.2	4	0,30	0,25	0,30	0,30	0,35	0,35	0,40	0,35
S.2.3									
S.3.1	6	0,30	0,25	0,30	0,30	0,35	0,35	0,40	0,35
S.3.2	4	0,30	0,25	0,30	0,30	0,35	0,35	0,40	0,35
S.3.3									
H.1.1									
H.1.2									
H.1.3									
H.1.4									
H.2.1									
H.3.1									
O.1.1	15	0,30	0,30	0,35	0,35	0,40	0,40	0,40	0,50
O.1.2	12	0,25	0,30	0,30	0,35	0,30	0,40	0,35	0,50
O.2.1									
O.2.2									
O.3.1									



The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine. The specified values represent guideline cutting data that can be adjusted by approx. **±20 %** according to the usage conditions.

Cutting data standard values for solid carbide reamers – Type H

Index	v _c in m/min	40 435 ... – Type H							
		Ø 0,98–3,99 mm		Ø 4,00–8,00 mm		Ø 8,01–16,00 mm		Ø 16,01–20,00 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
P.1.1	16	0,10	0,20	0,20	0,20	0,238	0,30	0,275	0,30
P.1.2	13	0,08	0,20	0,16	0,20	0,195	0,30	0,23	0,30
P.1.3	12	0,075	0,20	0,15	0,20	0,175	0,30	0,20	0,30
P.1.4	12	0,075	0,20	0,15	0,20	0,175	0,30	0,20	0,30
P.1.5	19	0,08	0,20	0,16	0,20	0,195	0,30	0,23	0,30
P.2.1	15	0,08	0,20	0,16	0,20	0,195	0,30	0,23	0,30
P.2.2	14	0,08	0,20	0,16	0,20	0,195	0,30	0,23	0,30
P.2.3	13	0,08	0,20	0,16	0,20	0,195	0,30	0,23	0,30
P.2.4	12	0,075	0,20	0,15	0,20	0,175	0,30	0,20	0,30
P.3.1									
P.3.2	11	0,063	0,20	0,125	0,20	0,15	0,30	0,175	0,30
P.3.3	11	0,063	0,20	0,125	0,20	0,15	0,30	0,175	0,30
P.4.1	11	0,063	0,20	0,125	0,20	0,15	0,30	0,175	0,30
P.4.2	8	0,05	0,20	0,10	0,20	0,113	0,30	0,125	0,30
M.1.1									
M.2.1	9	0,063	0,10	0,125	0,10	0,15	0,20	0,175	0,20
M.3.1	9	0,063	0,10	0,125	0,10	0,15	0,20	0,175	0,20
K.1.1	17	0,125	0,20	0,25	0,20	0,325	0,30	0,40	0,30
K.1.2	14	0,113	0,20	0,225	0,20	0,275	0,30	0,325	0,30
K.2.1	17	0,113	0,20	0,225	0,20	0,275	0,30	0,325	0,30
K.2.2	14	0,10	0,20	0,20	0,20	0,238	0,30	0,275	0,30
K.3.1	17	0,113	0,20	0,225	0,20	0,275	0,30	0,325	0,30
K.3.2	14	0,10	0,20	0,20	0,20	0,238	0,30	0,275	0,30
N.1.1									
N.1.2									
N.2.1									
N.2.2									
N.2.3									
N.3.1									
N.3.2									
N.3.3									
N.4.1									
S.1.1									
S.1.2									
S.2.1									
S.2.2									
S.2.3									
S.3.1									
S.3.2									
S.3.3									
H.1.1	8	0,075	0,10	0,15	0,20	0,175	0,30	0,20	0,30
H.1.2	7	0,063	0,10	0,125	0,20	0,15	0,30	0,175	0,30
H.1.3	5	0,05	0,10	0,10	0,20	0,113	0,30	0,125	0,30
H.1.4									
H.2.1									
H.3.1									
O.1.1									
O.1.2									
O.2.1									
O.2.2									
O.3.1									



The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine. The specified values represent guideline cutting data that can be adjusted by approx. **±20 %** according to the usage conditions.

Cutting data standard values indexable insert countersink

Index	30 196 ... / 30 197 ...		
	Insert		Tool diameter
	BK8425	K10	Ø 16,5–37 mm
	v _c in m/min		f in mm/rev.
P.1.1	200		0,12–0,16
P.1.2	200		0,20–0,30
P.1.3	200		0,20–0,30
P.1.4	180		0,20–0,30
P.1.5	180		0,17–0,27
P.2.1	160		0,20–0,30
P.2.2	160		0,20–0,30
P.2.3	160		0,15–0,20
P.2.4	160		0,10–0,16
P.3.1	140		0,10–0,15
P.3.2	140		0,08–0,13
P.3.3	140		0,06–0,12
P.4.1	120		0,10–0,16
P.4.2	120		0,06–0,12
M.1.1	160		0,10–0,15
M.2.1	140		0,10–0,15
M.3.1	100		0,07–0,13
K.1.1	180		0,40
K.1.2	160		0,32
K.2.1	140		0,30
K.2.2	140		0,18
K.3.1	120		0,20
K.3.2	120		0,18
N.1.1		250	0,20
N.1.2		250	0,20
N.2.1		250	0,30
N.2.2		250	0,30
N.2.3		250	0,25
N.3.1		230	0,30
N.3.2		230	0,32
N.3.3		230	0,22
N.4.1		230	0,30
S.1.1	60	20	0,12
S.1.2	50	20	0,10
S.2.1	60	20	0,12
S.2.2	50	20	0,10
S.2.3	30	20	0,06
S.3.1	100	60	0,22
S.3.2	80	30	0,20
S.3.3	50	30	0,12
H.1.1	100		0,10
H.1.2	80		0,08
H.1.3	50		0,05
H.1.4			
H.2.1	100		0,10
H.3.1	80		0,08
O.1.1		100	0,10
O.1.2		100	0,10
O.2.1			
O.2.2		100	0,03
O.3.1		100	0,08



The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine. The specified values represent guideline cutting data that can be adjusted by approx. **±20 %** according to the usage conditions.

Cutting data for solid carbide countersinks

		30 115 ...							30 160 ...		
Index	V _c m/min	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	V _c m/min	Ø 12,4–16,5 mm	Ø 16,5–20,5 mm	Ø 20,5–25,0 mm	
		f in mm/rev.						f in mm/rev.			
P.1.1	40	0,10	0,12	0,14	0,18	0,22	40	0,12	0,14	0,18	
P.1.2	40	0,10	0,12	0,14	0,18	0,22	40	0,12	0,14	0,18	
P.1.3	30	0,08	0,10	0,10	0,14	0,18	30	0,10	0,10	0,14	
P.1.4	30	0,08	0,10	0,12	0,14	0,18	30	0,10	0,12	0,14	
P.1.5	18	0,05	0,06	0,08	0,10	0,12	18	0,06	0,08	0,10	
P.2.1	30	0,08	0,10	0,12	0,14	0,18	30	0,10	0,12	0,14	
P.2.2	20	0,05	0,06	0,08	0,10	0,12	20	0,06	0,08	0,10	
P.2.3	18	0,05	0,06	0,08	0,10	0,12	18	0,06	0,08	0,10	
P.2.4	18	0,05	0,06	0,08	0,10	0,12	18	0,06	0,08	0,10	
P.3.1	18	0,05	0,06	0,08	0,10	0,12	18	0,06	0,08	0,10	
P.3.2	18	0,05	0,06	0,08	0,10	0,12	18	0,06	0,08	0,10	
P.3.3	18	0,05	0,06	0,08	0,10	0,12	18	0,06	0,08	0,10	
P.4.1											
P.4.2											
M.1.1	15	0,06	0,07	0,08	0,09	0,12	15	0,07	0,08	0,09	
M.2.1	15	0,06	0,07	0,08	0,09	0,12	15	0,07	0,08	0,09	
M.3.1	15	0,06	0,07	0,08	0,09	0,12	15	0,07	0,08	0,09	
K.1.1	24	0,12	0,14	0,18	0,20	0,25	24	0,14	0,18	0,20	
K.1.2	24	0,12	0,14	0,18	0,20	0,25	24	0,14	0,18	0,20	
K.2.1	18	0,12	0,14	0,18	0,20	0,25	18	0,14	0,18	0,20	
K.2.2	18	0,12	0,14	0,18	0,20	0,25	18	0,14	0,18	0,20	
K.3.1	24	0,12	0,14	0,18	0,20	0,25	24	0,14	0,18	0,20	
K.3.2	18	0,12	0,14	0,18	0,20	0,25	18	0,14	0,18	0,20	
N.1.1	58	0,12	0,14	0,18	0,22	0,26	58	0,14	0,18	0,22	
N.1.2	58	0,12	0,14	0,18	0,22	0,26	58	0,14	0,18	0,22	
N.2.1	45	0,12	0,14	0,18	0,22	0,26	45	0,14	0,18	0,22	
N.2.2	45	0,12	0,14	0,18	0,22	0,26	45	0,14	0,18	0,22	
N.2.3	50	0,14	0,18	0,20	0,24	0,30	50	0,18	0,20	0,24	
N.3.1	50	0,14	0,18	0,20	0,24	0,30	50	0,18	0,20	0,24	
N.3.2	50	0,14	0,18	0,20	0,24	0,30	50	0,18	0,20	0,24	
N.3.3	50	0,14	0,18	0,20	0,24	0,30	50	0,18	0,20	0,24	
N.4.1	50	0,14	0,18	0,20	0,24	0,30	50	0,18	0,20	0,24	
S.1.1	12	0,05	0,06	0,07	0,08	0,10	12	0,06	0,07	0,08	
S.1.2	12	0,05	0,06	0,07	0,08	0,10	12	0,06	0,07	0,08	
S.2.1	12	0,05	0,06	0,07	0,08	0,10	12	0,06	0,07	0,08	
S.2.2	12	0,05	0,06	0,07	0,08	0,10	12	0,06	0,07	0,08	
S.2.3	12	0,05	0,06	0,07	0,08	0,10	12	0,06	0,07	0,08	
S.3.1	12	0,05	0,06	0,07	0,08	0,10	12	0,06	0,07	0,08	
S.3.2	12	0,05	0,06	0,07	0,08	0,10	12	0,06	0,07	0,08	
S.3.3	12	0,05	0,06	0,07	0,08	0,10	12	0,06	0,07	0,08	
H.1.1	8	0,06	0,08	0,08	0,10	0,12	8	0,08	0,08	0,10	
H.1.2											
H.1.3											
H.1.4											
H.2.1											
H.3.1											
O.1.1											
O.1.2											
O.2.1											
O.2.2											
O.3.1											



The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine. The specified values represent guideline cutting data that can be adjusted by approx. **±20 %** according to the usage conditions.

Cutting data for solid carbide countersinks

		30 116 ...								30 140 ...					
		TPX76S								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.						
P.1.1	60	0,08	0,10	0,12	0,14	0,18	0,22	40	0,08	0,10	0,12	0,14	0,18	0,22	
P.1.2	60	0,08	0,10	0,12	0,14	0,18	0,22	40	0,08	0,10	0,12	0,14	0,18	0,22	
P.1.3	50	0,06	0,08	0,10	0,12	0,14	0,18	30	0,06	0,08	0,10	0,12	0,14	0,18	
P.1.4	50	0,06	0,08	0,10	0,12	0,14	0,18	30	0,06	0,08	0,10	0,12	0,14	0,18	
P.1.5	50	0,06	0,08	0,10	0,12	0,14	0,18	30	0,06	0,08	0,10	0,12	0,14	0,18	
P.2.1	50	0,06	0,08	0,10	0,12	0,14	0,18	30	0,06	0,08	0,10	0,12	0,14	0,18	
P.2.2	50	0,06	0,08	0,10	0,12	0,14	0,18	12	0,04	0,05	0,06	0,08	0,10	0,12	
P.2.3	40	0,04	0,05	0,06	0,08	0,10	0,12	12	0,04	0,05	0,06	0,08	0,10	0,12	
P.2.4	40	0,04	0,05	0,06	0,08	0,10	0,12	12	0,04	0,05	0,06	0,08	0,10	0,12	
P.3.1	50	0,06	0,08	0,10	0,12	0,14	0,18	30	0,06	0,08	0,10	0,12	0,14	0,18	
P.3.2	40	0,04	0,05	0,06	0,08	0,10	0,12	12	0,04	0,05	0,06	0,08	0,10	0,12	
P.3.3	40	0,04	0,05	0,06	0,08	0,10	0,12	12	0,04	0,05	0,06	0,08	0,10	0,12	
P.4.1	30	0,05	0,06	0,07	0,08	0,09	0,12	15	0,05	0,06	0,07	0,08	0,09	0,12	
P.4.2	30	0,05	0,06	0,07	0,08	0,09	0,12	15	0,05	0,06	0,07	0,08	0,09	0,12	
M.1.1	30	0,05	0,06	0,07	0,08	0,09	0,12	15	0,05	0,06	0,07	0,08	0,09	0,12	
M.2.1	30	0,05	0,06	0,07	0,08	0,09	0,12	15	0,05	0,06	0,07	0,08	0,09	0,12	
M.3.1	25	0,05	0,06	0,07	0,08	0,09	0,12								
K.1.1	50	0,10	0,12	0,14	0,18	0,20	0,25	20	0,10	0,12	0,14	0,18	0,20	0,25	
K.1.2	50	0,10	0,12	0,14	0,18	0,20	0,25	20	0,10	0,12	0,14	0,18	0,20	0,25	
K.2.1	45	0,10	0,12	0,14	0,18	0,20	0,25	20	0,10	0,12	0,14	0,18	0,20	0,25	
K.2.2	45	0,10	0,12	0,14	0,18	0,20	0,25	20	0,10	0,12	0,14	0,18	0,20	0,25	
K.3.1	35	0,10	0,12	0,14	0,18	0,20	0,25	20	0,10	0,12	0,14	0,18	0,20	0,25	
K.3.2	35	0,10	0,12	0,14	0,18	0,20	0,25	20	0,10	0,12	0,14	0,18	0,20	0,25	
N.1.1	80	0,10	0,12	0,14	0,18	0,22	0,26	50	0,10	0,12	0,14	0,18	0,22	0,26	
N.1.2	80	0,10	0,12	0,14	0,18	0,22	0,26	50	0,10	0,12	0,14	0,18	0,22	0,26	
N.2.1	60	0,10	0,12	0,14	0,18	0,22	0,26	40	0,10	0,12	0,14	0,18	0,22	0,26	
N.2.2	60	0,10	0,12	0,14	0,18	0,22	0,26	40	0,10	0,12	0,14	0,18	0,22	0,26	
N.2.3	60	0,10	0,12	0,14	0,18	0,22	0,26	40	0,10	0,12	0,14	0,18	0,22	0,26	
N.3.1	70	0,12	0,14	0,18	0,20	0,24	0,30	40	0,12	0,14	0,18	0,20	0,24	0,30	
N.3.2	70	0,12	0,14	0,18	0,20	0,24	0,30	40	0,12	0,14	0,18	0,20	0,24	0,30	
N.3.3	70	0,12	0,14	0,18	0,20	0,24	0,30	40	0,12	0,14	0,18	0,20	0,24	0,30	
N.4.1															
S.1.1	15	0,06	0,07	0,08	0,09	0,10	0,12	10	0,05	0,06	0,07	0,08	0,09	0,12	
S.1.2	15	0,06	0,07	0,08	0,09	0,10	0,12	10	0,05	0,06	0,07	0,08	0,09	0,12	
S.2.1	15	0,06	0,07	0,08	0,09	0,10	0,12	10	0,05	0,06	0,07	0,08	0,09	0,12	
S.2.2	15	0,06	0,07	0,08	0,09	0,10	0,12	10	0,05	0,06	0,07	0,08	0,09	0,12	
S.2.3	15	0,06	0,07	0,08	0,09	0,10	0,12	10	0,05	0,06	0,07	0,08	0,09	0,12	
S.3.1	15	0,06	0,07	0,08	0,09	0,10	0,12	10	0,05	0,06	0,07	0,08	0,09	0,12	
S.3.2	15	0,06	0,07	0,08	0,09	0,10	0,12	10	0,05	0,06	0,07	0,08	0,09	0,12	
S.3.3	15	0,06	0,07	0,08	0,09	0,10	0,12	10	0,05	0,06	0,07	0,08	0,09	0,12	
H.1.1	12	0,05	0,06	0,08	0,08	0,10		6	0,05	0,06	0,08	0,08	0,10		
H.1.2	8	0,05	0,06	0,08	0,08	0,10									
H.1.3															
H.1.4															
H.2.1	12	0,05	0,06	0,08	0,08	0,10									
H.3.1															
O.1.1	70	0,12	0,14	0,18	0,20	0,24	0,30	40	0,12	0,14	0,18	0,20	0,24	0,30	
O.1.2	70	0,12	0,14	0,18	0,20	0,24	0,30	40	0,12	0,14	0,18	0,20	0,24	0,30	
O.2.1	25	0,10	0,12	0,14	0,18	0,20	0,25								
O.2.2	25	0,10	0,12	0,14	0,18	0,20	0,25								
O.3.1	25	0,10	0,12	0,14	0,18	0,20	0,25								



The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine. The specified values represent guideline cutting data that can be adjusted by approx. **±20 %** according to the usage conditions.

Cutting data standard values for HSS countersink

		30 100 ...							30 102 ...					
		Type N							Type AL					
		Ø	Ø	Ø	Ø	Ø	Ø		Ø	Ø	Ø	Ø	Ø	Ø
		4,3–8,0 mm	8,0–12,4 mm	12,4–16,5 mm	16,5–20,5 mm	20,5–25,0 mm	25,0–31,0 mm		4,3–8,0 mm	8,0–12,4 mm	12,4–16,5 mm	16,5–20,5 mm	20,5–25,0 mm	25,0–31,0 mm
Index	V _c m/min	f in mm/rev.						V _c m/min	f in mm/rev.					
P.1.1	30	0,06–0,08	0,10	0,12	0,14	0,18	0,22	30	0,06–0,08	0,10	0,12	0,14	0,18	0,22
P.1.2	30	0,06–0,08	0,10	0,12	0,14	0,18	0,22	30	0,06–0,08	0,10	0,12	0,14	0,18	0,22
P.1.3	25	0,04–0,06	0,04–0,06	0,08	0,10	0,12	0,14	25	0,04–0,06	0,04–0,06	0,08	0,10	0,12	0,14
P.1.4	25	0,04–0,06	0,04–0,06	0,08	0,10	0,12	0,14	25	0,04–0,06	0,04–0,06	0,08	0,10	0,12	0,14
P.1.5	12	0,03–0,04	0,05	0,06	0,08	0,10	0,12	12	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.2.1	25	0,04–0,06	0,08	0,10	0,12	0,14	0,18	25	0,04–0,06	0,08	0,10	0,12	0,14	0,18
P.2.2	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.2.3	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.2.4	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.3.1	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.3.2	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.3.3	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.4.1														
P.4.2														
M.1.1	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
M.2.1	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
M.3.1	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
K.1.1	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25
K.1.2	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25
K.2.1	10	0,06–0,10	0,12	0,14	0,18	0,20	0,25	10	0,06–0,10	0,12	0,14	0,18	0,20	0,25
K.2.2	10	0,06–0,10	0,12	0,14	0,18	0,20	0,25	10	0,06–0,10	0,12	0,14	0,18	0,20	0,25
K.3.1	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25
K.3.2	10	0,06–0,10	0,12	0,14	0,18	0,20	0,25	10	0,06–0,10	0,12	0,14	0,18	0,20	0,25
N.1.1	35	0,08–0,10	0,12	0,14	0,18	0,22	0,26	39	0,08–0,10	0,12	0,14	0,18	0,22	0,26
N.1.2	35	0,08–0,10	0,12	0,14	0,18	0,22	0,26	39	0,08–0,10	0,12	0,14	0,18	0,22	0,26
N.2.1	25	0,08–0,10	0,12	0,14	0,18	0,22	0,26	28	0,08–0,10	0,12	0,14	0,18	0,22	0,26
N.2.2	25	0,08–0,10	0,12	0,14	0,18	0,22	0,26	28	0,08–0,10	0,12	0,14	0,18	0,22	0,26
N.2.3	25	0,08–0,10	0,12	0,14	0,18	0,22	0,26	28	0,08–0,10	0,12	0,14	0,18	0,22	0,26
N.3.1	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	39	0,10–0,12	0,14	0,18	0,20	0,24	0,30
N.3.2	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	39	0,10–0,12	0,14	0,18	0,20	0,24	0,30
N.3.3	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	39	0,10–0,12	0,14	0,18	0,20	0,24	0,30
N.4.1	60	0,10–0,13	0,16	0,2	0,23	0,26	0,30	66	0,10–0,13	0,16	0,20	0,23	0,26	0,30
S.1.1	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.1.2	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.2.1	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.2.2	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.2.3	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.3.1	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.3.2	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.3.3	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
H.1.1														
H.1.2														
H.1.3														
H.1.4														
H.2.1														
H.3.1														
O.1.1	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30
O.1.2	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30
O.2.1	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30
O.2.2	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30
O.3.1														



The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine. The specified values represent guideline cutting data that can be adjusted by approx. **±20 %** according to the usage conditions.

Cutting data standard values for HSS countersink

		30 110 ... / 30 130 ...							30 132 ...					
		Type N – TiN / TiAlN							Type VA – TiAlN					
		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		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.					
P.1.1	35	0,06–0,08	0,10	0,12	0,14	0,18	0,22	35	0,06–0,08	0,10	0,12	0,14	0,18	0,22
P.1.2	35	0,06–0,08	0,10	0,12	0,14	0,18	0,22	35	0,06–0,08	0,10	0,12	0,14	0,18	0,22
P.1.3	29	0,04–0,06	0,04–0,06	0,08	0,10	0,12	0,14	29	0,04–0,06	0,04–0,06	0,08	0,10	0,12	0,14
P.1.4	29	0,04–0,06	0,04–0,06	0,08	0,10	0,12	0,14	29	0,04–0,06	0,04–0,06	0,08	0,10	0,12	0,14
P.1.5	14	0,03–0,04	0,05	0,06	0,08	0,10	0,12	14	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.2.1	29	0,04–0,06	0,08	0,10	0,12	0,14	0,18	29	0,04–0,06	0,08	0,10	0,12	0,14	0,18
P.2.2	12	0,03–0,04	0,05	0,06	0,08	0,10	0,12	12	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.2.3	12	0,03–0,04	0,05	0,06	0,08	0,10	0,12	12	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.2.4	12	0,03–0,04	0,05	0,06	0,08	0,10	0,12	12	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.3.1	12	0,03–0,04	0,05	0,06	0,08	0,10	0,12	13	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.3.2	12	0,03–0,04	0,05	0,06	0,08	0,10	0,12	13	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.3.3	12	0,03–0,04	0,05	0,06	0,08	0,10	0,12	13	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.4.1														
P.4.2														
M.1.1	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12	11	0,04–0,05	0,06	0,07	0,08	0,09	0,12
M.2.1	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12	11	0,04–0,05	0,06	0,07	0,08	0,09	0,12
M.3.1	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12	11	0,04–0,05	0,06	0,07	0,08	0,09	0,12
K.1.1	9	0,06–0,10	0,12	0,14	0,18	0,20	0,25	14	0,06–0,10	0,12	0,14	0,18	0,20	0,25
K.1.2	9	0,06–0,10	0,12	0,14	0,18	0,20	0,25	14	0,06–0,10	0,12	0,14	0,18	0,20	0,25
K.2.1	9	0,06–0,10	0,12	0,14	0,18	0,20	0,25	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25
K.2.2	14	0,06–0,10	0,12	0,14	0,18	0,20	0,25	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25
K.3.1	14	0,06–0,10	0,12	0,14	0,18	0,20	0,25	14	0,06–0,10	0,12	0,14	0,18	0,20	0,25
K.3.2	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25
N.1.1	40	0,08–0,10	0,12	0,14	0,18	0,22	0,26	40	0,08–0,10	0,12	0,14	0,18	0,22	0,26
N.1.2	40	0,08–0,10	0,12	0,14	0,18	0,22	0,26	40	0,08–0,10	0,12	0,14	0,18	0,22	0,26
N.2.1	29	0,08–0,10	0,12	0,14	0,18	0,22	0,26	29	0,08–0,10	0,12	0,14	0,18	0,22	0,26
N.2.2	29	0,08–0,10	0,12	0,14	0,18	0,22	0,26	29	0,08–0,10	0,12	0,14	0,18	0,22	0,26
N.2.3	29	0,08–0,10	0,12	0,14	0,18	0,22	0,26	29	0,08–0,10	0,12	0,14	0,18	0,22	0,26
N.3.1	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30
N.3.2	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30
N.3.3	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30
N.4.1	69	0,10–0,13	0,16	0,20	0,23	0,26	0,30	69	0,10–0,13	0,16	0,20	0,23	0,26	0,30
S.1.1	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.1.2	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.2.1	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.2.2	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.2.3	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.3.1	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.3.2	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.3.3	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12
H.1.1	5	0,04–0,05	0,06	0,07	0,08	0,10	0,12	5	0,04–0,05	0,06	0,07	0,08	0,10	0,12
H.1.2														
H.1.3														
H.1.4														
H.2.1														
H.3.1	5	0,04–0,05	0,06	0,07	0,08	0,10	0,12	5	0,04–0,05	0,06	0,07	0,08	0,10	0,12
O.1.1	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30
O.1.2	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30
O.2.1	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30
O.2.2	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30
O.3.1														



The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine. The specified values represent guideline cutting data that can be adjusted by approx. **±20 %** according to the usage conditions.

Cutting data standard values for HSS countersink and counterbore

		30 150 ... / 30 155 ... / 30 105 ... / 30 170 ...							30 190 ... / 30 191 ... / 30 192 ...		
		HSS – 60° / 90° / 120°							HSS		
		Ø	Ø	Ø	Ø	Ø	Ø		DC_2	DC_2	DC_2
		4,3–8,0 mm	8,0–12,4 mm	12,4–16,5 mm	16,5–20,5 mm	20,5–25,0 mm	25,0–31,0 mm		Ø 6,3 mm	Ø 10,0 mm	Ø 14,0 mm
Index	v _c m/min	f in mm/rev.						v _c m/min	f in mm/rev.		
P.1.1	30	0,06–0,08	0,10	0,12	0,14	0,18	0,22	30	0,07	0,10	0,12
P.1.2	30	0,06–0,08	0,10	0,12	0,14	0,18	0,22	30	0,07	0,10	0,12
P.1.3	25	0,04–0,06	0,04–0,06	0,08	0,10	0,12	0,14	25	0,05	0,07	0,09
P.1.4	25	0,04–0,06	0,04–0,06	0,08	0,10	0,12	0,14	25	0,05	0,07	0,09
P.1.5	12	0,03–0,04	0,05	0,06	0,08	0,10	0,12	12	0,04	0,05	0,07
P.2.1	25	0,04–0,06	0,08	0,10	0,12	0,14	0,18	25	0,05	0,07	0,09
P.2.2	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12	10	0,04	0,05	0,06
P.2.3	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12	10	0,04	0,05	0,06
P.2.4	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12	10	0,04	0,05	0,06
P.3.1	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12	10	0,04	0,05	0,06
P.3.2	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12	10	0,04	0,05	0,06
P.3.3	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12	10	0,04	0,05	0,06
P.4.1											
P.4.2											
M.1.1	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04	0,06	0,07
M.2.1	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04	0,06	0,07
M.3.1	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04	0,06	0,07
K.1.1	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25	12	0,08	0,13	0,16
K.1.2	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25	12	0,08	0,13	0,16
K.2.1	10	0,06–0,10	0,12	0,14	0,18	0,20	0,25	10	0,08	0,13	0,16
K.2.2	10	0,06–0,10	0,12	0,14	0,18	0,20	0,25	10	0,08	0,13	0,16
K.3.1	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25	12	0,08	0,13	0,16
K.3.2	10	0,06–0,10	0,12	0,14	0,18	0,20	0,25	10	0,08	0,13	0,16
N.1.1	35	0,08–0,10	0,12	0,14	0,18	0,22	0,26	35	0,09	0,13	0,16
N.1.2	35	0,08–0,10	0,12	0,14	0,18	0,22	0,26	35	0,09	0,13	0,16
N.2.1	25	0,08–0,10	0,12	0,14	0,18	0,22	0,26	25	0,09	0,13	0,16
N.2.2	25	0,08–0,10	0,12	0,14	0,18	0,22	0,26	25	0,09	0,13	0,16
N.2.3	25	0,08–0,10	0,12	0,14	0,18	0,22	0,26	25	0,09	0,13	0,16
N.3.1	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	35	0,11	0,16	0,18
N.3.2	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	35	0,11	0,16	0,18
N.3.3	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	35	0,11	0,16	0,18
N.4.1	60	0,10–0,13	0,16	0,20	0,23	0,26	0,30	60	0,12	0,18	0,21
S.1.1	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04	0,06	0,07
S.1.2	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04	0,06	0,07
S.2.1	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04	0,06	0,07
S.2.2	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04	0,06	0,07
S.2.3	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04	0,06	0,07
S.3.1	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04	0,06	0,07
S.3.2	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04	0,06	0,07
S.3.3	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04	0,06	0,07
H.1.1											
H.1.2											
H.1.3											
H.1.4											
H.2.1											
H.3.1											
O.1.1	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	35	0,11	0,16	0,18
O.1.2	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	35	0,11	0,16	0,18
O.2.1	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	35	0,11	0,16	0,18
O.2.2	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	35	0,11	0,16	0,18
O.3.1											



The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine. The specified values represent guideline cutting data that can be adjusted by approx. **±20 %** according to the usage conditions.

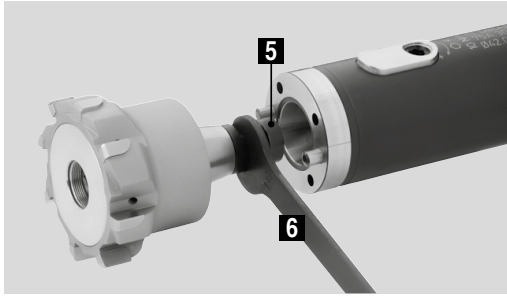
Cutting data standard values for HSS-E deburring countersink

Index			30 120 ... / 30 121 ...					
			HSS-E – 90°					
	TiN	uncoated	Ø 6,3 mm	Ø 10,0 mm	Ø 14,0 mm	Ø 21,0 mm	Ø 28,0 mm	Ø 35,0 mm
	v_c m/min	v_c m/min	f in mm/rev.					
P.1.1	35	30	0,06–0,08	0,10	0,12	0,14	0,18	0,22
P.1.2	35	30	0,06–0,08	0,10	0,12	0,14	0,18	0,22
P.1.3	29	25	0,04–0,06	0,04–0,06	0,08	0,10	0,12	0,14
P.1.4	29	25	0,04–0,06	0,04–0,06	0,08	0,10	0,12	0,14
P.1.5	14	12	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.2.1	29	25	0,04–0,06	0,08	0,10	0,12	0,14	0,18
P.2.2	12	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.2.3	12	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.2.4	12	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.3.1	12	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.3.2	12	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.3.3	12	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.4.1								
P.4.2								
M.1.1	9	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
M.2.1	9	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
M.3.1	9	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
K.1.1	9	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25
K.1.2	9	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25
K.2.1	9	10	0,06–0,10	0,12	0,14	0,18	0,20	0,25
K.2.2	14	10	0,06–0,10	0,12	0,14	0,18	0,20	0,25
K.3.1	14	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25
K.3.2	12	10	0,06–0,10	0,12	0,14	0,18	0,20	0,25
N.1.1	40	35	0,08–0,1	0,12	0,14	0,18	0,22	0,26
N.1.2	40	35	0,08–0,1	0,12	0,14	0,18	0,22	0,26
N.2.1	29	25	0,08–0,1	0,12	0,14	0,18	0,22	0,26
N.2.2	29	25	0,08–0,1	0,12	0,14	0,18	0,22	0,26
N.2.3	29	25	0,08–0,1	0,12	0,14	0,18	0,22	0,26
N.3.1	40	35	0,1–0,12	0,14	0,18	0,20	0,24	0,30
N.3.2	40	35	0,1–0,12	0,14	0,18	0,20	0,24	0,30
N.3.3	40	35	0,1–0,12	0,14	0,18	0,20	0,24	0,30
N.4.1	69	60	0,1–0,13	0,16	0,20	0,23	0,26	0,30
S.1.1	9	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.1.2	9	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.2.1	9	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.2.2	9	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.2.3	9	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.3.1	9	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.3.2	9	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.3.3	9	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
H.1.1	4		0,04–0,05	0,06	0,07	0,08	0,10	0,12
H.1.2								
H.1.3								
H.1.4								
H.2.1								
H.3.1	4		0,04–0,05	0,06	0,07	0,08	0,10	0,12
O.1.1	40	35	0,1–0,12	0,14	0,18	0,20	0,24	0,30
O.1.2	40	35	0,1–0,12	0,14	0,18	0,20	0,24	0,30
O.2.1	40	35	0,1–0,12	0,14	0,18	0,20	0,24	0,30
O.2.2	40	35	0,1–0,12	0,14	0,18	0,20	0,24	0,30
O.3.1								

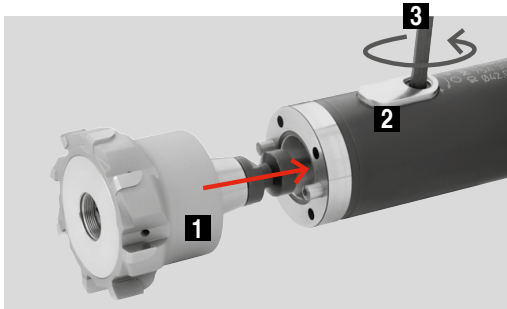


The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine. The specified values represent guideline cutting data that can be adjusted by approx. **±20 %** according to the usage conditions.

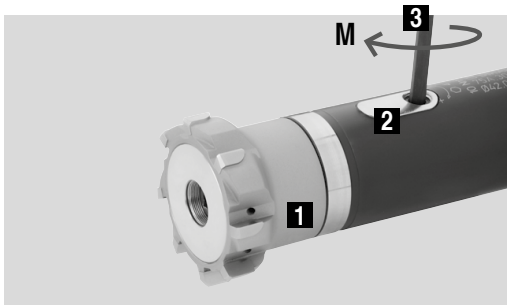
REAMAX TS – Assembly instructions



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).

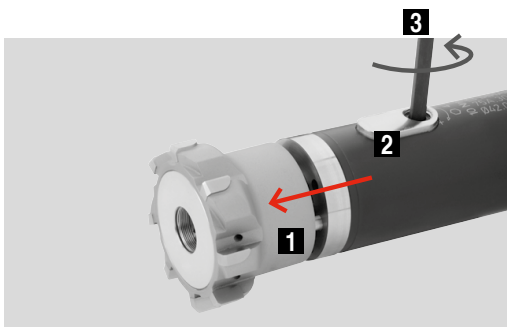


Use key (3) to open jaws (2), but do not fully release, and insert reaming head (1).

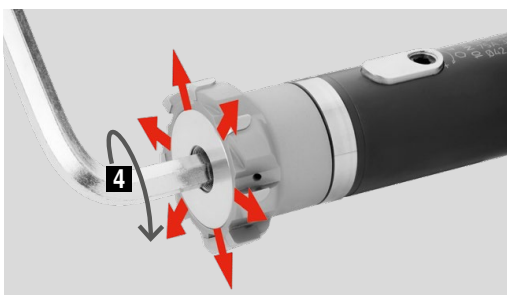


Use the key (3) to close the jaws (2), observe the recommended tightening torque. When inserting the reaming head (1), this is pulled into its final position when the jaws (2) are closed.

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).



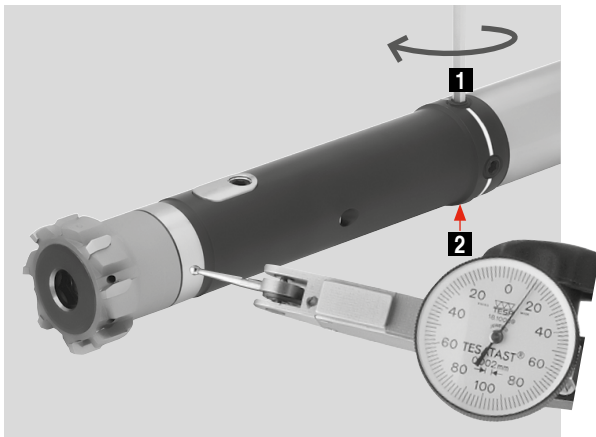
Adjustment for wear compensation:
The smallest drilling tolerances up to IT4 can be achieved through adjustment with the hex key (4).

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 $< 2 \mu\text{m}$.

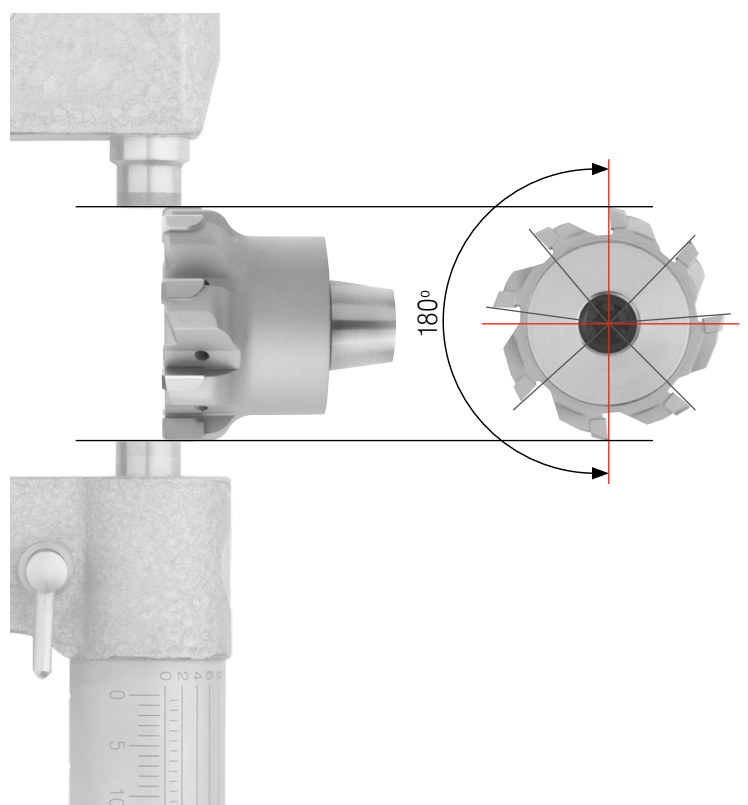


Please note:

- ▲ 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

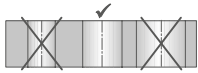
Caution!

- ▲ 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



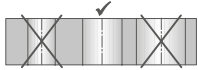
Problems / possible causes / solutions

Hole too large



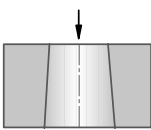
- ▲ Runout error for reamer in the spindle → use DAH compensation system and correct runout
- ▲ Inaccurate alignment, reamer back-cuts → correct alignment and use DPS floating holder
- ▲ Built-up edge → reduce cutting speed v_c for uncoated carbide cutting material, increase it for DST and coated cutting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

Hole too small



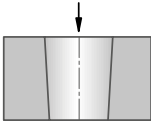
- ▲ Worn reamer → have reamer adjusted, replaced or repaired
- ▲ Reaming allowance too small → increase reaming allowance
- ▲ Cutting force too high → reduce feed or select other lead geometry (ASG)
- ▲ Reamer too small → have reamer adjusted, replaced or repaired

Conical hole, tapered backwards



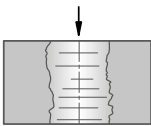
- ▲ Inaccurate alignment → correct alignment and use DPS floating holder
- ▲ Misalignment between headstock and turret → correct turret and use DPS floating holder

Conical hole, tapered forwards



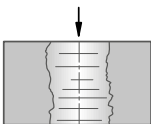
- ▲ Poor alignment, cutting edges push initially → correct alignment and use DPS floating holder

Hole is not round



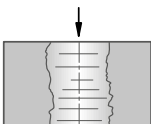
- ▲ Reamer runout error too large → correct the runout with DAH compensation system
- ▲ Alignment error → correct alignment error and use DPS floating holder
- ▲ Asymmetric initial cutting through angled entry surface → countersink hole
- ▲ Workpiece tensioning → correct clamping of the workpieces
- ▲ Poor pre-machining → optimise pre-machining
- ▲ Feed too high → reduce feed

Hole exhibits chatter marks



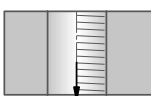
- ▲ Cutting speed v_c too high → reduce cutting speed
- ▲ L to D ratio too high → reduce the speed of entry, pilot the bore or select other lead geometry (ASG)

Non clean-up



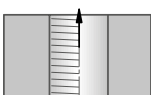
- ▲ Built-up edge → reduce cutting speed v_c for uncoated carbide cutting material, increase it for DST and coated cutting material or increase the oil content of the coolant
- ▲ Cutting edge worn → have cutting edge repaired or replace the tool
- ▲ Reamer runout error → correct the runout with DAH compensation 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"



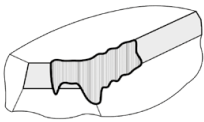
- ▲ Faulty cutting edge (edge breakage) → have reamer replaced or repaired
- ▲ Built-up edges → reduce cutting speed v_c for uncoated carbide cutting material, increase it for DST and coated cutting material or increase the oil content of the coolant

Grooves in the hole "Retraction marking"



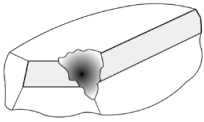
- ▲ Cutting edges moved too far out of the hole → move no more than lead length + 2 mm out of the hole
- ▲ Material springs back → do not retract at high speed but with increased (2–3 times) feed rate

Types of wear



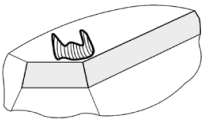
Wear on clearance face

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



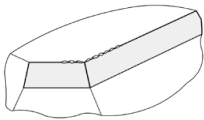
Cutting edge breakage

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



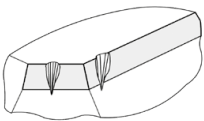
Cratering

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



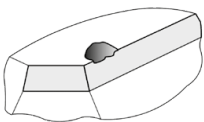
Edge breakages

Increase the cutting speed and use larger rake angle.



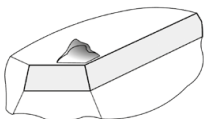
Notch wear

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



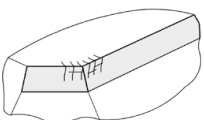
Fatigue fracture

Reduce feed, increase reamer stability.



Built-up edge

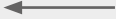
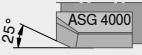
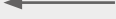
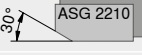
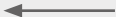
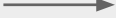
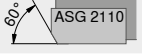
Use positive cutting edge geometry, increase the oil content of the coolant, reduce the cutting speed v_c for uncoated carbide cutting material, increase it for DST and coated cutting material.

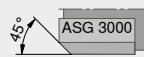
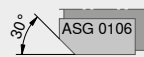


Cracks at right angles to the cutting edge

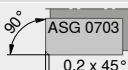
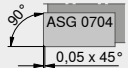
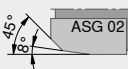
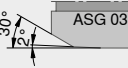
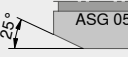
Use sufficient coolant and thro' coolant, reduce the cutting speed.

Common cutting edge geometries in the performance area

Standard geometries				
Geometry	Flute type	Chip flow	Lead angle	
ASG4000	straight			Through hole
ASG2210	left-hand helix			
ASG2231	left-hand helix			
ASG2270	straight			
ASG2110	straight			Blind hole
ASG2131	straight			
ASG2170	straight			

Standard geometries			
Geometry	Flute type	Chip flow	Lead angle
ASG3000	straight	↔	
ASG0706	straight	↔	
ASG0106	straight	↔	
ASG2350	straight	↔	
ASG2360	straight	↔	

Through hole-Blind hole

Special geometries			
Geometry	Flute type	Chip flow Comments	Lead angle
ASG0703	straight	Leading edge	90° 
ASG0704	straight	Leading edge with increased positional accuracy	90° 
ASG09B	straight	Swarf control < x 32 mm	
ASG1402	straight	Swarf control > 32 mm	
ASG02	straight	↔	45° 
ASG03	straight	↔	90° 
ASG05	left-handed		25° 

Achievable surface quality

Material group		Roughness	N11	N10	N9	N8		N7	N6		N5	N4	N3	N2	N1
		Average roughness R _a	25	12,5	6,3	3,2		1,6	0,8		0,4	0,2	0,1	0,05	0,025
		Surface roughness R _z	100	63	40	25	16	10	6,3	4	2,5	1,6	1	0,63	0,25
P	1.0 – 4.2														
M	1.1 – 3.1														
K	1.1 + 2.1 + 3.1														
	1.2 + 2.2 + 3.2														
N	1.1 – 2.3														
	3.1 – 3.3														
S	1.1 – 3.3														
H	1.1 – 1.3														

reachable  conditionally reachable

This information is based on experience and may vary from case to case, depending on the prevailing conditions.
(all other surface values on request)

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.

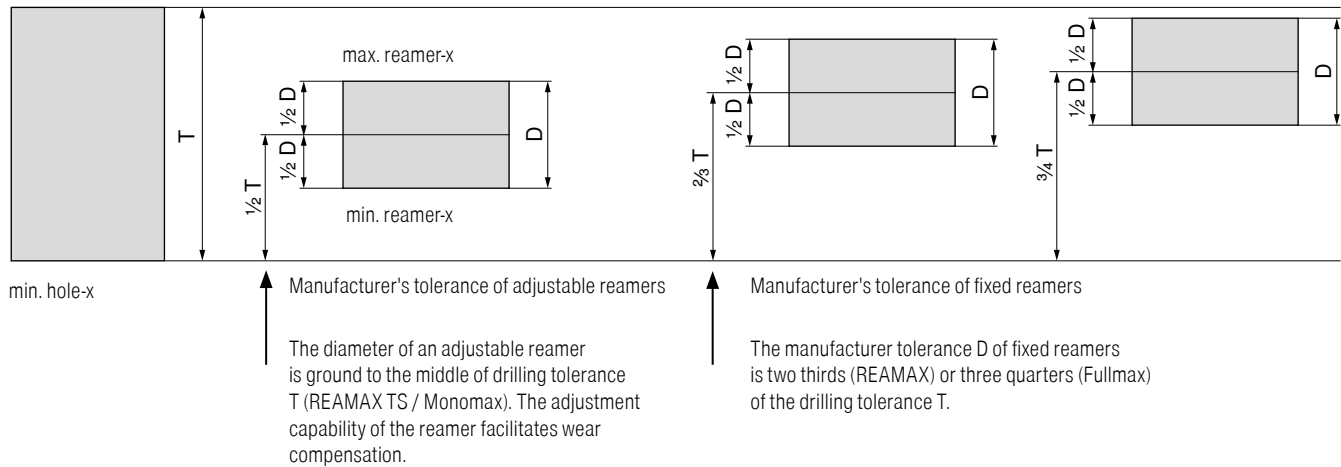
Tolerance zone	Nominal Ø in mm											
	1,0	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0	11,0	12,0
A9				4,29	5,29	6,29	7,30	8,30	9,30	10,30	11,32	12,32
A11	1,31	2,31	3,31	4,32	5,32	6,32	7,35	8,35	9,35	10,35	11,37	12,37
B8				4,15	5,15	6,15	7,16	8,16	9,16	10,16		
B9				4,16	5,16	6,16	7,17	8,17	9,17	10,17	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

Manufacturer's tolerance of the reamers

T = Hole tolerance field

D = Manufacturer's tolerance of the reamer

max. hole-x



Coatings – Reaming and Countersinking

TPX76S

- ▲ TiN-TiAlN-ZrN Monolayer coating
- ▲ Maximum application temperature: 800 °C

Ti50

- ▲ TiN multilayer coating
- ▲ Maximum application temperature: 400 °C

TiAlSiN

- ▲ TiAlSiN- Multilayer coating
- ▲ Maximum application temperature: 800 °C
- ▲ Specially designed for machining hardened steels: high hardness and heat resistance with low thermal conductivity.

TiN

- ▲ TiN coating
- ▲ Maximum application temperature: 450 °C

TiAlN

- ▲ TiAlN multilayer coating
- ▲ Maximum application temperature: 900 °C

DBG-P

- ▲ AlTiN Multilayer coating
- ▲ Especially for universal use in a variety of materials at high cutting speeds
- ▲ Suitable for MMS application
- ▲ Maximum application temperature: 1000 °C

DBF-A

- ▲ AlCrN Multilayer coating
- ▲ specially developed for the machining of tempered materials < 62 HRC
- ▲ maximum application temperature: > 1100 °C

DBC-N

- ▲ Diamond-like ta-C-Multilayer-carbon coating
- ▲ Particularly hard and smooth coating and therefore especially for machining non-ferrous metals
- ▲ Maximum application temperature: 500 °C

DBC

- ▲ Diamond-like carbon coating
- ▲ Specially for machining non-ferrous metals
- ▲ Maximum application temperature: 400 °C

DBQ

- ▲ AlCrN-Multilayer-Beschichtung
- ▲ Particularly suitable for machining stainless steels and titanium
- ▲ Low formation of built-up edges
- ▲ Maximum application temperature: > 1000 °C

DBG-U

- ▲ AlTiN Multilayer coating
- ▲ Especially for universal use in a variety of materials as well as for the machining of tempered materials < 62 HRC
- ▲ For high cutting speeds and suitable for MMS application
- ▲ Maximum application temperature: 1000 °C

Grade description – Reamers

DST	▲ 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	K10	▲ Carbide, uncoated ▲ ISO K10 ▲ Uncoated carbide grade for machining grey cast iron or non-ferrous metals, depending on the cutting edge geometry
CWK10	▲ Carbide, uncoated ▲ ISO K10 ▲ The uncoated carbide grade for universal application	PDC	▲ Polycrystalline diamond cutting material, uncoated ▲ Particularly wear-resistant PCD grade for process reliable machining of aluminium

4

Grade description – Indexable insert countersink

BK8425	▲ Carbide, TiAlN/TiN-coated ▲ ISO P25 M25 K25 ▲ Universal grade with greater wear resistance thanks to innovative PVD multi-layer coating	K10	▲ Carbide, uncoated ▲ ISO K10 ▲ Uncoated carbide grade for machining grey cast iron or non-ferrous metals, depending on the cutting edge geometry
HCR1135	▲ Carbide, TiCN-Al₂O₃-coated ▲ ISO P35 M25 S25 ▲ The tough alternative for heavily interrupted cut and unstable conditions	HGX1125	▲ Carbide, TiCN-Al₂O₃-coated ▲ ISO P25 M20 K30 ▲ The first choice for universal machining of steels
CWN2135	▲ Carbide, TiCN-TiNB-coated ▲ ISO P35 M30 S35 ▲ The turning grade for general stainless machining	DCX3110	▲ Carbide, TiCN-Al₂O₃-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	CWN15	▲ Carbide, TiN-coated ▲ ISO K15 ▲ Special carbide grade for abrasive aluminium alloys
AMZ	▲ Carbide, TiAlN-coated ▲ ISO P10 K10 N10 S10 ▲ The coated carbide grade for aluminium machining		

Chip breakers

-SM	▲ Rake angle 15° ▲ For universal use with medium machining ▲ Stable cutting edge	-U877	▲ Rake angle 6° ▲ circumferentially ground ▲ Three-ground chip breaker with second clearance angle for clearance with small tool diameters
-G06	▲ Rake angle 6° ▲ Preferred application in P / M / K ▲ Characterized by a particularly stable wedge angle	-G12	▲ Rake angle 12° ▲ Preferred application in P / N / S ▲ is characterized by a particularly high cutting performance
-27	▲ Rake angle 19-25° ▲ Universal aluminium geometry ▲ High cutting performance and therefore high feed rates possible ▲ Low adhesion		