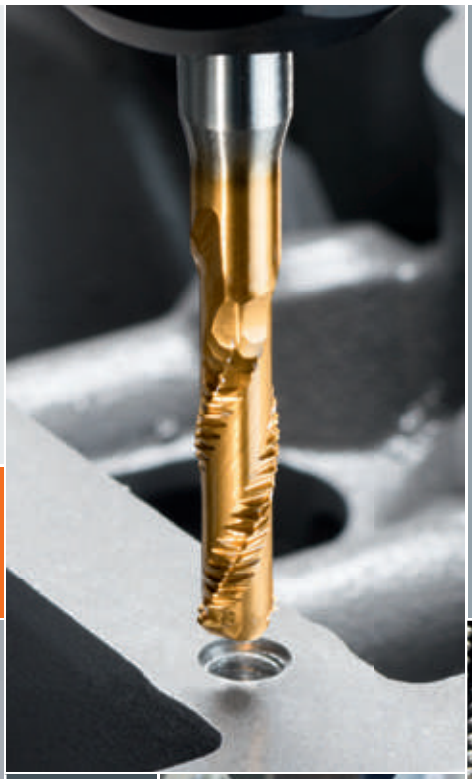
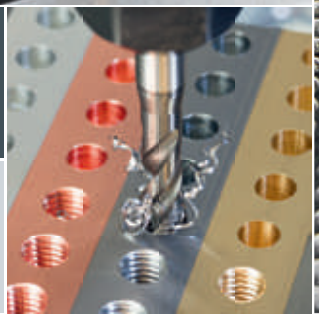
EMUGE FRANKEN

Catalog

520





EMUGE

High Performance Tools

Threading Technology · Clamping Technology

EMUGE

Thread Cutting Technology · Clamping Technology

CATALOG 520

Welcome to our **EMUGE Catalog 520**. Let our new catalog be your guide on a trip to the very leading edge of thread cutting technology and into the twenty-first century!

At **EMUGE** we are dedicated to exhaustive research and development, product manufacturing excellence, and unsurpassed customer service. We have introduced more new and innovative products recently than ever before in our history. These, in combination with our standard lines, comprise the most comprehensive and technologically advanced thread and cutting tool product line in the world.

EMUGE Tools are designed and engineered for use today… and in future. Whether your application requirements are general purpose or high tech, we can find the right thread cutting solution for you.

We can recommend the appropriate tool, monitor initial product tests, provide installation assistance, and offer product support services through-out our relationship with you. That promises to be a very long time because our customer relationship tend to be a long term. We're proud of that.

We have a slogan —

EMUGE Finds Success In Yours.

Let's work together for that success.

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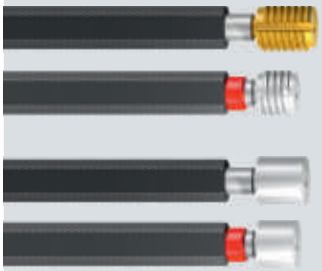

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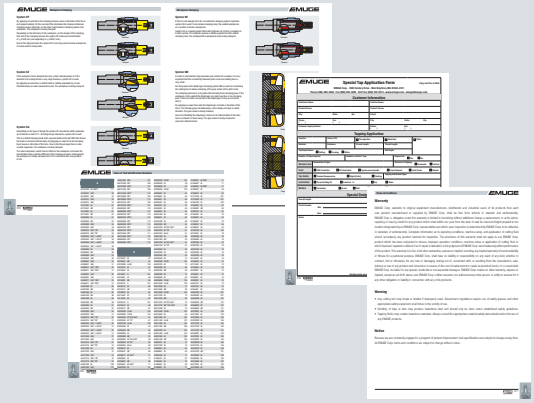

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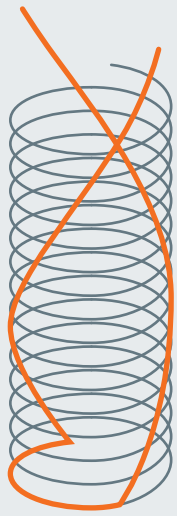
The EMUGE Punch Tap for thread production in Aluminum and similar materials is a faster alternative for mass production environments. Thanks to its innovative, very short motion process, it establishes an entirely new dimension of productivity.

A comparison between the tool path of the EMUGE PunchTap with the tool path of conventional taps or roll form taps shows that the path of the PunchTap is approximately 15 times shorter for a thread M6 with thread depth of 15 mm.

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

Contact Emuge for more information about this revolutionary concept.

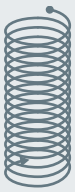
Motion process



Punch Tap

Punch (Plunge)	Thread-forming	Retraction
Step 1	**Step 2**	**Step 3**

Conventional taps or roll form taps

	
Entering workpiece = Threading operation	Retraction

Tool path

Conventional taps or roll form taps

Punch Tap – the shortest way

Time consumption

Conventional taps or roll form taps

Punch Tap – the shortest way

Result

The EMUGE Punch Tap achieves a time saving of up to 75% in a threading cycle thanks to its shorter tool paths.

American units into SI units			SI units into American units		
Length					
1 inch (in)	= 25.4 mm	= 2.54 cm	1 millimeter (mm)		= 0.03937 in
1 foot (ft)	= 12 in	= 0.3048 m	1 centimeter (cm)	= 10 mm	= 0.3937 in
1 yard (yd)	= 3 ft	= 0.9144 m	1 meter (m)	= 100 cm = 3.2808 ft = 1.0936 yd	
1 statute mile	= 1760 yd	= 1.60934 km	1 kilometer (km)	= 1000 m	= 0.62137 statute mile
Area					
1 in^2	= 645.16 mm^2	= 6.4516 cm^2	1 mm^2		= 0.00155 in^2
1 ft^2	= 144 in^2	= 0.0929 m^2	1 cm^2	= 100 mm^2	= 0.155 in^2
1 yd^2	= 9 ft^2	= 0.8361 m^2	1 m^2	= 10000 cm^2 = 10.7642 ft^2 = 1.196 yd^2	
1 $mile^2$		= 2.590 km^2	1 km^2	= 10^6 m^2	= 0.3861 $mile^2$
Volume					
1 in^3	= 16387.064 mm^3	= 16.387 cm^3	1 mm^3		= 0.000061 in^3
1 ft^3	= 1728 in^3	= 0.0283 m^3	1 cm^3	= 1000 mm^3	= 0.0610 in^3
1 yd^3	= 27 ft^3	= 0.765 m^3	1 m^3	= 10^6 cm^3 = 35.3146 ft^3 = 1.3080 yd^3	
1 Quart / US	= 1/4 gal	= 0.946 l	1 Liter (l)	= 1 dm^3 = 0.2642 gal / US = 2.11 US pt	
1 gallon (gal) / US	= 4 quarts	= 3.784 l	1 l	= 1.761 UK pt	
1 gallon (gal) / UK		= 4.546 l			
1 US pint (pt)	= 0.8327 UK pt	= 0.473 l			
1 UK pt	= 1.201 US pt	= 0.568 l			
1 barrel / US (Oil)	= 42 gal	= 158.98 l			
1 barrel / UK	= 36 gal	= 163.66 l			
Weight					
1 ounce (oz)	= 16 drams	= 28.35 g	1 gram (g)		= 0.03527 oz
1 pound (lb)	= 16 oz	= 453.592 g	1 kilogram (kg)	= 1000 g	= 2.20462 lb
1 short ton / US		= 0.907 t	1 ton (t)	= 1000 kg	= 1.1025 short tons / US
1 long ton / UK		= 1.016 t	1 ton (t)	= 1000 kg	= 0.984 long tons / UK
Force					
1 pound force (lbf)	= 4.448 N		1 Newton (N)		= 0.2248 lbf
Pressure/Tensile strength					
1 lbf/ft^2		= 47.8803 Pa	1 Pascal (Pa)	= 10^6 N/mm^2	= 0.02089 lbf/ft^2
1 lbf/in^2	= 6.89476 kPa	= 6.895 · 10^{-3} N/mm^2	1 N/mm^2	= 0.1 bar	= 145 psi
1 psi (pound-force per sq.in)	= $lbwt/in^2$	= 6.895 · 10^{-3} N/mm^2	1 bar	= 10 N/mm^2	= 14.5 psi
1 psi		= 6.895 · 10^{-2} bar			
Power					
1 foot-pounds per second (ft lb/s)		= 1.356 W	1 Watt (W)	= 1 J/s = 1 Nm/s	= 0.7376 ft lb/s
Energy/Torque					
1 foot pound-force (ft·lbf)		= 1.356 J	1 Joule (J)	= 1 Nm	= 0.7376 ft lb
Cutting/Circumferential speed					
1 surface feet per minute (SFM)		= 0.3048 m/min	1 m/min		= 3.2808 SFM
Cutting/Circumferential speed					
in degree Fahrenheit (°F)		= 9/5 Temp.[°C]+32	in degree Celsius (°C)	= (Temp.[°F]-32) · 5/9	

Taps

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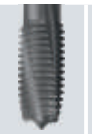
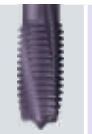
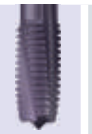
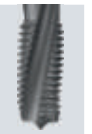
		Rekord B-STEEL-L	Rekord B-VA NT	Rekord B-VA GLT-1	Rekord B-AL GLT-8	Rekord B-AERO NT	Rekord B-Z-PM TIN-70	Rekord B-Z-PM GLT-1	Rekord B-Z-IKZN PM-TIN-70	Rekord B-Z-IKZN PM-GLT-1	 Rekord C-TI NT2	 Rekord C-TI TICN	 Rekord C-NI-PM TICN	 Rekord D-TI NT2
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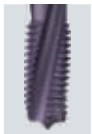
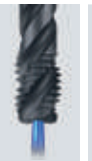
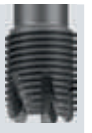
		 Rekord D-TI TICN	Rekord DF-NI-PM TICN	Enorm STEEL	Enorm STEEL TIN	Enorm VA NE2	Enorm VA GLT-1	Enorm AL GLT-8	Enorm AL/E GLT-8	Enorm Z/E	Enorm Z/E TIN	Enorm Z/E GLT-1	 Enorm Z/E-IKZ GLT-1	 Robust 2X-VA NE2
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IKZ

Rekord A-GJV-IKZ PM-TICN	Rekord A-GJV/E-IKZ PM-TICN	Rekord A-GAL/E IKZ-TICN	Rekord A-H-IKZ TICN	VHM/KHM Rekord A-H-IKZ	VHM/KHM Rekord A-H/E-IKZ	Rekord A-Z-IKZ TICN	Rekord A-Z/E-IKZ TICN	Rekord A-SPEED IKZ-TICN	Rekord A-SPEED/E IKZ-TICN	Rekord D-STEEL IKZ-TICN	Rekord D-GAL/E IKZ-TICN	
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IKZ

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IKZN

Rekord A-GJV-IKZN PM-TICN	Rekord A-GJV/E-IKZN PM-TICN	Rekord A-GAL/E IKZN-TICN	Rekord A-H-IKZN TICN	Rekord A-Z-IKZN TICN	Rekord A-SPEED IKZN-TICN	Rekord A-SPEED/E IKZN-TICN	Rekord B-VA-IKZN TICN	Rekord B-Z-IKZN PM-TIN-70	Rekord B-Z-IKZN PM-GLT-1	Rekord B-Z-SPEED IKZN-PM-TIN-70	Rekord D-VA-IKZN TICN	
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EMUGE

Fold-Out Page

This fold-out page is intended to be a guide to the diverse application ranges, organized according to material groups.

Product finder and cutting data

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

The suitability is marked as follows:

- **Preferred suitable tap**
- Suitable tap

= DIN form / threads (chamfer length)

		Application – Material	Hardness Range HRC	BHN	N/mm²	Material Examples
P		**Steel materials**				
P	1.1	Cold-extrusion steels, Construction steels, Free-cutting steels, etc.		≤ 180	≤ 600	1010 / 1018 / 1020 / 12L14 / 12L15 / A36 / T1
P	2.1	Construction steels, Cementation steels, Steel castings, etc.	≤ 22	≤ 235	≤ 800	A36 / T1 / 1030-1095 / 4140 / 4340 / 8620
P	3.1	Cementation steels, Heat-treatable steels, Cold work steels, etc.	≤ 31	≤ 295	≤ 1000	4140 / 4340 / 8620 / P20 / H13 / D2 / A2 / S7 / H1150
P	4.1	Heat-treatable steels, Cold work steels, Nitriding steels, etc.	≤ 38	≤ 355	≤ 1200	4140 / 4340 / 8620 / P20 / H13 / D2 / 300M / 52100 / M1-M42
P	5.1	High-alloyed steels, Cold work steels, Hot work steels, etc.	≤ 44	≤ 415	≤ 1400	4140 / 4340 / 8620 / P20 / H13 / D2 / 300M / 52100
M		**Stainless steel materials**				
M	1.1	Ferritic, martensitic	≤ 29	≤ 280	≤ 950	410 / 440 / 440C / 17-4 PH
M	2.1	Austenitic	≤ 29	≤ 280	≤ 950	303 / 304 / 316 / 316L / 321
M	3.1	Austenitic-ferritic (Duplex)	≤ 35	≤ 325	≤ 1100	
M	4.1	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 39	≤ 370	≤ 1250	
K		**Cast materials**				
K	1.1	Cast iron with lamellar graphite (GJL)		30 - 75	100 - 250	Grey cast irons G10-GG40
K	1.2			75 - 135	250 - 450	
K	2.1	Cast iron with nodular graphite (GJS)		105 - 150	350 - 500	Nodular GGG40-GGG70
K	2.2			150 - 265	500 - 900	
K	3.1	Cast iron with vermicular graphite (GJV)		90 - 120	300 - 400	
K	3.2			120 - 150	400 - 500	Compact graphite iron (CGI)
K	4.1	Malleable cast iron (GTMW, GTMB)		70 - 145	250 - 500	
K	4.2			150 - 235	500 - 800	White iron
N		**Non ferrous materials**				
N		Aluminum alloys				
N	1.1	Aluminum wrought alloys		≤ 60	≤ 200	7075
N	1.2			≤ 105	≤ 350	6061-T6 / 2024-T4
N	1.3			≤ 165	≤ 550	
N	1.4	Aluminum cast alloys Si ≤ 7%				
N	1.5	Aluminum cast alloys 7% < Si ≤ 12%				
N	1.6	Aluminum cast alloys 12% < Si ≤ 17%				
N		Copper alloys				
N	2.1	Pure copper, low-alloyed copper		≤ 120	≤ 400	
N	2.2	Copper-zinc alloys (brass, long-chipping)		≤ 165	≤ 550	
N	2.3	Copper-zinc alloys (brass, short-chipping)		≤ 165	≤ 550	
N	2.4	Copper-aluminum alloys (alu bronze, long-chipping)		≤ 235	≤ 800	
N	2.5	Copper-tin alloys (tin bronze, long-chipping)		≤ 205	≤ 700	
N	2.6	Copper-tin alloys (tin bronze, short-chipping)		≤ 120	≤ 400	
N	2.7	Special copper alloys		≤ 180	≤ 600	
N	2.8		≤ 44	≤ 415	≤ 1400	
N		Magnesium alloys				
N	3.1	Magnesium wrought alloys		≤ 150	≤ 500	
N	3.2	Magnesium cast alloys		≤ 150	≤ 500	
N		Synthetics				
N	4.1	Duroplastics (short-chipping)				
N	4.2	Thermoplastics (long-chipping)				
N	4.3	Fibre-reinforced synthetics (fibre content ≤ 30%)				
N	4.4	Fibre-reinforced synthetics (fibre content > 30%)				
N		Special materials				
N	5.1	Graphite				
N	5.2	Tungsten-copper alloys				
N	5.3	Composite materials				
S		**Special materials**				
S		Titanium alloys				
S	1.1	Pure titanium		≤ 135	≤ 450	CP1 / CP2
S	1.2	Titanium alloys	≤ 27	≤ 265	≤ 900	6AL4V
S	1.3		≤ 39	≤ 370	≤ 1250	
S		Nickel alloys, cobalt alloys and iron alloys				
S	2.1	Pure nickel		≤ 180	≤ 600	
S	2.2	Nickel-base alloys	≤ 31	≤ 295	≤ 1000	Monel 500, 718 Inconel annealed
S	2.3		≤ 49	≤ 475	≤ 1600	718 Inconel
S	2.4	Cobalt-base alloys	≤ 31	≤ 295	≤ 1000	
S	2.5		≤ 49	≤ 475	≤ 1600	Haynes 25
S	2.6	Iron-base alloys	≤ 46	≤ 445	≤ 1500	Incoloy 925
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	EMUGE STEEL											EMUGE VA		
	Rekord A-STEEL	Rekord B-STEEL-L	Rekord B-STEEL-L TIN	Rekord B-STEEL-L GLT-1	Rekord D-STEEL	Rekord D-STEEL/E	Rekord D-STEEL TIN	Rekord D-STEEL/E TIN	Rekord D-STEEL IKZ-TICN	Enorm STEEL	Enorm STEEL TIN	Rekord B-VA NT	Rekord B-VA TIN	Rekord B-VA GLT-1
	C / 2-3	B / 4-5	B / 4-5	B / 4-5	C / 2-3	E / 1.5-2	C / 2-3	E / 1.5-2	C / 2-3	C / 2-3	C / 2-3	B / 4-5	B / 4-5	B / 4-5
Thread Depth and Hole Type	max. 2 x d_1		max. 3 x d_1				max. 2 x d_1			max. 2.5 x d_1		max. 3 x d_1		
UNC			22, 34				22		22	22		34		23
UNF			38, 50				38		38	38		50		39
UNEF, UN-8	54	54				54				54				55
M		59, 60, 78	59, 80	59		78, 80		60, 80		60, 61, 78	60, 61, 80	61, 79, 81		61, 79
MF		82	82, 96			96	82	83, 96		83	83, 96	97		83
NPSM/NPSC	98													
NPSF	99													
Rp (BSPP)	100													
G	102	102	102		102	102				103	103	103		
NPT														
NPTF														
Rc (BSPT)														
STI												119, 121, 124		119, 121, 124
SELF-LOCK		126										129	129	
P 1.1	16 - 82	16 - 82	**49 - 148**	**49 - 148**			49 - 148	49 - 148	49 - 148	16 - 82	**49 - 148**	16 - 82	**49 - 148**	**49 - 148**
P 2.1	16 - 66	16 - 66	**33 - 131**	**33 - 131**	16 - 66	16 - 66	**33 - 131**	**33 - 131**	**33 - 131**	16 - 66	**33 - 131**	16 - 66	**33 - 131**	**33 - 131**
P 3.1	7 - 49	7 - 49	**16 - 82**	**16 - 82**	7 - 49	7 - 49	**16 - 82**	**16 - 82**	**16 - 82**	7 - 49	**16 - 82**	7 - 49	**16 - 82**	**16 - 82**
P 4.1			16 - 66	16 - 66			16 - 66	16 - 66	16 - 66		16 - 66		16 - 66	16 - 66
P 5.1														
M 1.1												7 - 33	16 - 66	**16 - 66**
M 2.1												7 - 33	16 - 66	**16 - 66**
M 3.1													16 - 49	16 - 49
M 4.1														
K 1.1							49 - 148	49 - 148	49 - 148					
K 1.2							33 - 131	33 - 131	33 - 131					
K 2.1			33 - 98	33 - 98			33 - 98	33 - 98	33 - 98		**33 - 98**	**16 - 66**	**33 - 98**	**33 - 98**
K 2.2							33 - 82	33 - 82	33 - 82					
K 3.1							33 - 82	33 - 82	33 - 82					
K 3.2							33 - 66	33 - 66	33 - 66					
K 4.1							49 - 148	49 - 148	49 - 148					
K 4.2							33 - 131	33 - 131	33 - 131					
N Aluminum alloys														
N 1.4							49 - 131	49 - 131	49 - 131					
N 1.5							49 - 131	49 - 131	49 - 131					
N 1.6														
N 2.2					33 - 131	66 - 197				33 - 131	66 - 197	33 - 131	66 - 197	66 - 197
N 2.3	33 - 131													
N 2.4			16 - 82				16 - 82	16 - 82	16 - 82					
N 2.5			16 - 82				16 - 82	16 - 82	16 - 82			7 - 33	16 - 82	
N 2.6												7 - 33	16 - 82	
S 1.1														
S 1.2														
S 1.3														
S 2.1														
S 2.2														
S 2.3														
S 2.4														
S 2.5														
S 2.6														

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Vc in SFM

EMUGE VA						EMUGE GG	EMUGE GJV							
Rekord B-VA TICN	**Rekord B-VA-IKZN TICN**	**Enorm VA**	**Enorm VA NE2**	**Enorm VA GLT-1**	**Robust 2X-VA NE2**	**Rekord A-GG NT**	**Rekord A-GJV PM-TICN**	**Rekord A-GJV-IKZ PM-TICN**	**Rekord A-GJV-IKZN PM-TICN**	**Rekord A-GJV/E PM-TICN**	**Rekord A-GJV/E-IKZ PM-TICN**	**Rekord A-GJV/E-IKZN PM-TICN**		
B / 4-5	B / 4-5	C / 2-3	C / 2-3	C / 2-3	C / 2-3	C / 2-3	C / 2-3	C / 2-3	C / 2-3	E / 1.5-2	E / 1.5-2	E / 1.5-2		
max. 3 x d_1		max. 2.5 x d_1			max. 1.5 x d_1	max. 2 x d_1	max. 2 x d_1	max. 2 x d_1	max. 2 x d_1	max. 2 x d_1	max. 2 x d_1	max. 2 x d_1		Thread Depth and Hole Type
	23		23, 35	23, 24	33									**UNC**
	39		39, 51	39, 40	49									**UNF**
55			55	55	58									**UNEF, UN-8**
		62, 79, 81	62	62, 79	76		62	63	63	63	63	63		**M**
		97	83	83	93-94		84	84	84	84	84	85		**MF**
														NPSM/NPSC
														NPSF
														Rp (BSPP)
				103	106									**G**
														NPT
														NPTF
														Rc (BSPT)
														STI
						129								**SELF-LOCK**
49 - 148	**49 - 148**	16 - 82	16 - 82	**49 - 148**	**7 - 26**								1.1	**P**
33 - 131	**33 - 131**	16 - 66	16 - 66	**33 - 131**	**7 - 20**								2.1	
16 - 82	**16 - 82**	7 - 49	7 - 49	**16 - 82**	**3 - 26**								3.1	
16 - 66	16 - 66			16 - 66	3 - 16								4.1	
													5.1	
16 - 66	16 - 66	7 - 33	7 - 33	**16 - 66**	3 - 26								1.1	**M**
16 - 66	16 - 66	7 - 33	7 - 33	**16 - 66**	3 - 26								2.1	
16 - 49	16 - 49			16 - 49									3.1	
													4.1	
					7 - 33	**33 - 82**	**49 - 148**	**49 - 148**	**49 - 148**	**49 - 148**	**49 - 148**	**49 - 148**	1.1	**K**
					7 - 33	**33 - 66**	**33 - 131**	**33 - 131**	**33 - 131**	**33 - 131**	**33 - 131**	**33 - 131**	1.2	
33 - 98	**33 - 98**	**16 - 66**	**16 - 66**	**33 - 98**	7 - 26		33 - 98	33 - 98	33 - 98	33 - 98	33 - 98	33 - 98	2.1	
					7 - 26		**33 - 82**	**33 - 82**	**33 - 82**	**33 - 82**	**33 - 82**	**33 - 82**	2.2	
					7 - 26		**33 - 82**	**33 - 82**	**33 - 82**	**33 - 82**	**33 - 82**	**33 - 82**	3.1	
					7 - 26		**33 - 66**	**33 - 66**	**33 - 66**	**33 - 66**	**33 - 66**	**33 - 66**	3.2	
					7 - 33		49 - 148	49 - 148	49 - 148	49 - 148	49 - 148	49 - 148	4.1	
					7 - 33		33 - 131	33 - 131	33 - 131	33 - 131	33 - 131	33 - 131	4.2	
													1.1	**N**
													1.2	
													1.3	
													1.4	
													1.5	
													1.6	
66 - 197	66 - 197												2.1	
													2.2	
													2.3	
16 - 82	16 - 82												2.4	
16 - 82	16 - 82												2.5	
													2.6	
													2.7	
													2.8	
													3.1	
													3.2	
													4.1	
													4.2	
													4.3	
													4.4	
													5.1	
													5.2	
													5.3	
													1.1	**S**
													1.2	
													1.3	
													2.1	
													2.2	
													2.3	
													2.4	
													2.5	
													2.6	
													1.1	**H**
													1.2	
													1.3	
													1.4	
													1.5	

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V_c in SFM

Cutting speed v_c in SFM – Preferred suitable tap
Cutting speed v_c in SFM – Suitable tap

1) Threading in through holes is possible only with external cooling/lubrication

		EMUGE AL			EMUGE GAL				EMUGE PVC	AERO	EMUGE TI			
		Rekord B-AL GLT-8	Enorm AL GLT-8	Enorm AL/E GLT-8	Rekord A-GAL/E IKZ-TICN	Rekord A-GAL/E IKZN-TICN	Rekord D-GAL/E IKZ-TICN	VHM-Rekord D-GAL/E IKZ-TICN	Rekord D-PVC/E CRN	Rekord B-AERO NT	Rekord C-TI NT2	Rekord C-TI TICN	Rekord D-TI NT2	Rekord D-TI TICN
		B / approx. 3	C / 2-3	E / 1.5-2	E / 1.5-2	E / 1.5-2	E / 1.5-2	E / 1.5-2	E / 1.5-2	B / approx. 3	D / 4-5	D / 4-5	C / 2-3	C / 2-3
Thread Depth and Hole Type		max. 3 x d_1	max. 2.5 x d_1		max. 2 x d_1 [1)]	max. 2 x d_1	max. 2 x d_1		max. 2 x d_1	max. 3 x d_1	max. 3 x d_1		max. 2 x d_1	
UNC		24	24							25	25, 35	25	25, 35	25
UNF		40	40							41	41, 51	41	41, 51	41
UNEF, UN-8													56	
M		63	63	64	64	64	64	65	65		65	65	65	65
MF														
NPSM/NPSC														
NPSF														
Rp (BSPP)														
G														
NPT														
NPTF														
Rc (BSPT)														
STI		119, 121, 124	124	119, 121									120, 122	
SELF-LOCK												126		126
P	1.1													
	2.1													
	3.1													
	4.1										7 - 33	16 - 66	7 - 33	16 - 66
	5.1										3 - 16	7 - 33	3 - 16	7 - 33
M	1.1													
	2.1													
	3.1										3 - 26	16 - 49	3 - 26	16 - 49
	4.1									7 - 33	3 - 16	7 - 33	3 - 16	7 - 33
K	1.1													
	1.2													
	2.1													
	2.2													
	3.1													
	3.2													
	4.1													
	4.2													
N	1.1	**49 - 131**	**49 - 131**	**49 - 131**										
	1.2	**49 - 131**	**49 - 131**	**49 - 131**										
	1.3	**49 - 131**	**49 - 131**	**49 - 131**										
	1.4	49 - 131	49 - 131	49 - 131	49 - 131	49 - 131	49 - 131	131 - 262						
	1.5				**49 - 131**	**49 - 131**	**49 - 131**	**131 - 262**						
	1.6				33 - 98	33 - 98	33 - 98	98 - 197						
	2.1													
	2.2													
	2.3													
	2.4										7 - 33	16 - 82	7 - 33	16 - 82
	2.5										7 - 33	16 - 82	7 - 33	16 - 82
	2.6													
	2.7										3 - 16	7 - 33	3 - 16	7 - 33
	2.8									3 - 16				
	3.1													
	3.2													
	4.1													
	4.2								**33 - 131**					
	4.3													
	4.4													
	5.1													
	5.2													
	5.3													
S	1.1										7 - 33	16 - 49	7 - 33	16 - 49
	1.2										3 - 26	7 - 33	3 - 26	7 - 33
	1.3										3 - 16	3 - 26	3 - 16	3 - 26
	2.1										3 - 26	7 - 33	3 - 26	7 - 33
	2.2										3 - 26	7 - 33	3 - 26	7 - 33
	2.3									**3 - 26**				
	2.4										3 - 26	7 - 33	3 - 26	7 - 33
	2.5									**3 - 26**				
	2.6									**3 - 26**				
H	1.1													
	1.2													
	1.3													
	1.4													
	1.5													

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V_c in SFM

1) Threading in through holes is possible only with external cooling/lubrication

EMUGE TILEG	EMUGE NI	EMUGE NI	EMUGE H	EMUGE H	EMUGE H	EMUGE H	EMUGE H	EMUGE H	EMUGE H	EMUGE H		
Rekord DF-TILEG TICN	**Rekord C-NI-PM TICN**	**Rekord DF-NI-PM TICN**	**Rekord A-H NT**	**Rekord A-H TICN**	**Rekord A-H-IKZ TICN**	**Rekord A-H-IKZN TICN**	**Rekord A-H/E NT**	**Rekord A-H/E TIN**	**VHM/KHM Rekord A-H-IKZ**	**VHM/KHM Rekord A-H/E-IKZ**		
C / 2-3	D / 4-5	C / 2-3	C / 2-3	C / 2-3	C / 2-3	C / 2-3	E / 1.5-2	E / 1.5-2	C / 2-3	E / 1.5-2		
max. 2 x d_1	max. 3 x d_1	max. 2 x d_1	max. 2 x d_1		max. 2 x d_1 1)	max. 2 x d_1	max. 2 x d_1		max. 2 x d_1 1)		Thread Depth and Hole Type	
	26	26	26, 36	26, 36	27						UNC	
	42	42	42, 52	42, 52	43						UNF	
			56								UNEF, UN-8	
66	66	66	67, 79	67	67	67	81	81	67		M	
			85	85	85	85	97	97	85		MF	
											NPSM/NPSC	
											NPSF	
											Rp (BSPP)	
			103	103						104	G	
											NPT	
											NPTF	
											Rc (BSPT)	
		122									STI	
											SELF-LOCK	
			16 - 82	49 - 148	49 - 148	49 - 148	16 - 82	49 - 148			1.1	P
			16 - 66	**33 - 131**	**33 - 131**	**33 - 131**	**16 - 66**	**33 - 131**			2.1	P
			7 - 49	**16 - 82**	**16 - 82**	**16 - 82**	**7 - 49**	**16 - 82**			3.1	P
				16 - 66	16 - 66	16 - 66		16 - 66			4.1	P
									16 - 49	16 - 49	5.1	P
											1.1	M
											2.1	M
											3.1	M
7 - 33	7 - 33	7 - 33									4.1	M
			33 - 82	**49 - 148**	**49 - 148**	**49 - 148**	**33 - 82**	**49 - 148**	**131 - 262**	**131 - 262**	1.1	K
			33 - 66	**33 - 131**	**33 - 131**	**33 - 131**	**33 - 66**	**33 - 131**	**98 - 197**	**98 - 197**	1.2	K
			16 - 66	33 - 98	33 - 98	33 - 98	16 - 66	33 - 98	98 - 197	98 - 197	2.1	K
			16 - 49	**33 - 82**	**33 - 82**	**33 - 82**	**16 - 49**	**33 - 82**	**66 - 131**	**66 - 131**	2.2	K
			16 - 49	33 - 82	33 - 82	33 - 82	16 - 49	33 - 82	**66 - 131**	**66 - 131**	3.1	K
			16 - 33	33 - 66	33 - 66	33 - 66	16 - 33	33 - 66	**66 - 131**	**66 - 131**	3.2	K
			33 - 82	**49 - 148**	**49 - 148**	**49 - 148**	**33 - 82**	**49 - 148**	**131 - 262**	**131 - 262**	4.1	K
			33 - 66	**33 - 131**	**33 - 131**	**33 - 131**	**33 - 66**	**33 - 131**	**98 - 197**	**98 - 197**	4.2	K
											1.1	N
											1.2	N
											1.3	N
											1.4	N
									66 - 197	**66 - 197**	1.5	N
									66 - 131	**66 - 131**	1.6	N
											2.1	N
											2.2	N
											2.3	N
			7 - 33	16 - 82	16 - 82	16 - 82	7 - 33	16 - 82			2.4	N
			7 - 33	16 - 82	16 - 82	16 - 82	7 - 33	16 - 82			2.5	N
			16 - 66	33 - 98	33 - 98	33 - 98	16 - 66	33 - 98	66 - 131	66 - 131	2.6	N
			3 - 16	7 - 33	7 - 33	7 - 33	3 - 16	7 - 33	16 - 49	16 - 49	2.7	N
	3 - 16	3 - 16							3 - 26	3 - 26	2.8	N
											3.1	N
											3.2	N
			16 - 82	33 - 131	33 - 131	33 - 131	16 - 82	33 - 131	**66 - 197**	**66 - 197**	4.1	N
											4.2	N
									33 - 82	**33 - 82**	4.3	N
									16 - 49	**16 - 49**	4.4	N
			33 - 66	33 - 66	33 - 66	33 - 66	33 - 66	33 - 66	**66 - 197**	**66 - 197**	5.1	N
									33 - 98	33 - 98	5.2	N
											5.3	N
											1.1	S
7 - 33	7 - 33	7 - 33									1.2	S
3 - 26	3 - 26	3 - 26									1.3	S
											2.1	S
											2.2	S
	3 - 26	**3 - 26**									2.3	S
											2.4	S
	3 - 26	**3 - 26**									2.5	S
	3 - 26	**3 - 26**									2.6	S
									3 - 16	3 - 16	1.1	H
									3 - 10	3 - 10	1.2	H
											1.3	H
											1.4	H
											1.5	H

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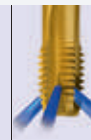
v_c in SFM

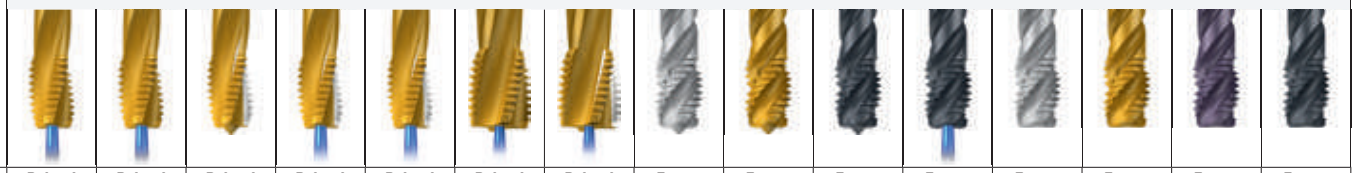
Cutting speed v_c in SFM – Preferred suitable tap
Cutting speed v_c in SFM – Suitable tap

1) Threading in through holes is possible only with external cooling/lubrication

		EMUGE HCUT			EMUGE Z										
															
		Rekord A-HCUT-PM TICN	VHM-Rekord A-HCUT/D TICN	VHM-Rekord A-HCUT/C TICN 3)	Rekord A-Z TICN	Rekord A-Z-IKZ TICN	Rekord A-Z-IKZN TICN	Rekord A-Z/E TICN	Rekord A-Z/E-IKZ TICN	Rekord A-Z-IKZ-LF4 TICN	Rekord B-Z-PM TIN-70	Rekord B-Z-PM GLT-1	Rekord B-Z-IKZN PM-TIN-70	Rekord B-Z-IKZN PM-GLT-1	Rekord D-Z TIN
		C / 2-3	D / 4-5	C / 2-3	C / 2-3	C / 2-3	C / 2-3	E / 1.5-2	E / 1.5-2	C / 2-3	B / 4-5	B / 4-5	B / 4-5	B / 4-5	C / 2-3
Thread Depth and Hole Type		max. 1.5 x d_1		max. 1.5 x d_1	max. 2 x d_1	max. 2 x d_1 1)	max. 2 x d_1	max. 2 x d_1	max. 2 x d_1 1)	max. 4 x d_1 1)	max. 3 x d_1				max. 2 x d_1
UNC		27			27	27	27		27		28	28	28		28
UNF		43			43	43	43		43		44	44	44		44
UNEF, UN-8															
M		68	69	69	70	70	70	70	70	77	71	71	71	71	72
MF		86	87	87	88	88	88	88	88	95	89	89	89	89	89
NPSM/NPSC															
NPSF															
Rp (BSPP)															
G		101, 104	101	101											
NPT															
NPTF															
Rc (BSPT)															
STI															
SELF-LOCK												127, 128			
P	1.1				49 - 148	49 - 148	49 - 148	49 - 148	49 - 148	49 - 148	**49 - 148**	**49 - 148**	**49 - 148**	**49 - 148**	
	2.1				**33 - 131**	**33 - 131**	**33 - 131**	**33 - 131**	**33 - 131**	**33 - 131**	**33 - 131**	**33 - 131**	**33 - 131**	**33 - 131**	**33 - 131**
	3.1				**16 - 82**	**16 - 82**	**16 - 82**	**16 - 82**	**16 - 82**	**16 - 82**	**16 - 82**	**16 - 82**	**16 - 82**	**16 - 82**	**16 - 82**
	4.1				**16 - 66**	**16 - 66**	**16 - 66**	**16 - 66**	**16 - 66**	**16 - 66**	**16 - 66**	**16 - 66**	**16 - 66**	**16 - 66**	**16 - 66**
	5.1										7 - 49	7 - 49	7 - 49	7 - 49	7 - 33
M	1.1										16 - 66	**16 - 66**	16 - 66	**16 - 66**	
	2.1										16 - 66	**16 - 66**	16 - 66	**16 - 66**	
	3.1										16 - 49	**16 - 49**	16 - 49	**16 - 49**	
	4.1														
K	1.1				**49 - 148**	**49 - 148**	**49 - 148**	**49 - 148**	**49 - 148**	**49 - 148**					
	1.2				**33 - 131**	**33 - 131**	**33 - 131**	**33 - 131**	**33 - 131**	**33 - 131**					
	2.1				33 - 98	33 - 98	33 - 98	33 - 98	33 - 98	33 - 98	**33 - 98**	**33 - 98**	**33 - 98**	**33 - 98**	**33 - 98**
	2.2				**33 - 82**	**33 - 82**	**33 - 82**	**33 - 82**	**33 - 82**	**33 - 82**					**33 - 82**
	3.1				33 - 82	33 - 82	33 - 82	33 - 82	33 - 82	33 - 82					
	3.2				33 - 66	33 - 66	33 - 66	33 - 66	33 - 66	33 - 66					
	4.1				**49 - 148**	**49 - 148**	**49 - 148**	**49 - 148**	**49 - 148**	**49 - 148**					
	4.2				**33 - 131**	**33 - 131**	**33 - 131**	**33 - 131**	**33 - 131**	**33 - 131**					
N	1.1														
	1.2														
	1.3														
	1.4				49 - 131	49 - 131	49 - 131	49 - 131	49 - 131	49 - 131	**49 - 131**	**49 - 131**	**49 - 131**	**49 - 131**	**49 - 131**
	1.5				49 - 131	49 - 131	49 - 131	49 - 131	49 - 131	49 - 131	49 - 131	49 - 131	49 - 131	49 - 131	49 - 131
	1.6				33 - 98	33 - 98	33 - 98	**33 - 98**	**33 - 98**	**33 - 98**	33 - 98	33 - 98	33 - 98	33 - 98	33 - 98
	2.1										**16 - 98**	**16 - 98**	**16 - 98**	**16 - 98**	
	2.2										**66 - 197**	**66 - 197**	**66 - 197**	**66 - 197**	
	2.3														
	2.4				16 - 82	16 - 82	16 - 82	16 - 82	16 - 82	16 - 82	16 - 82	16 - 82	16 - 82	16 - 82	16 - 82
	2.5				16 - 82	16 - 82	16 - 82	16 - 82	16 - 82	16 - 82	16 - 82	16 - 82	16 - 82	16 - 82	16 - 82
	2.6				33 - 98	33 - 98	33 - 98	33 - 98	33 - 98	33 - 98					
	2.7				7 - 33	7 - 33	7 - 33	7 - 33	7 - 33	7 - 33					
	2.8														
	3.1														
	3.2														
	4.1				33 - 131	33 - 131	33 - 131	33 - 131	33 - 131	33 - 131					
	4.2														
	4.3														
	4.4														
	5.1														
	5.2														
	5.3														
S	1.1										16 - 49	16 - 49	16 - 49	16 - 49	
	1.2														
	1.3														
	2.1														
	2.2														
	2.3														
	2.4														
	2.5														
	2.6														
H	1.1	**3 - 16**													
	1.2	**3 - 10**													
	1.3		**3 - 10**	**3 - 10**											
	1.4		**3 - 7**	**3 - 7**											
	1.5														

Page
v_c in SFM

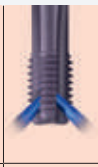
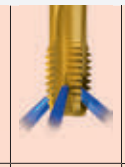
1) Threading in through holes is possible only with external cooling/lubrication
3) Use solid carbide tap VHM-Rekord A-HCUT/D-TICN as No. 1 tap!



Rekord D-Z-IKZ TIN	Rekord D-Z/E-IKZ TIN	Rekord D-Z-BF TIN	Rekord D-Z-BF IKZ-TIN	Rekord D-Z/E-BF IKZ-TIN	Rekord D-Z-IKZ LF4-TIN	Rekord D-Z-BF-IKZ LF4-TIN	Enorm Z	Enorm Z TIN	Enorm Z GLT-1	Enorm Z-IKZ GLT-1	Enorm Z/E	Enorm Z/E TIN	Enorm Z/E TICN	Enorm Z/E GLT-1	
C / 2-3	E / 1.5-2	C / 2-3	C / 2-3	E / 1.5-2	C / 2-3	C / 2-3	C / 2-3	C / 2-3	C / 2-3	C / 2-3	E / 1.5-2	E / 1.5-2	E / 1.5-2	E / 1.5-2	
		max. 2 x d_1			max. 4 x d_1		max. 3 x d_1								Thread Depth and Hole Type
29		29	29					29	29	29	29, 37	29, 37	30	30	UNC
45		45	45					45	45	45	45, 53	45, 53	46	46	UNF
		57	57					57	57						UNEF, UN-8
72			72	72	77	77	72	**73**	73	73	73	73, 81		73	M
89	89		89	90	95	95					90	90, 91		90	MF
											98	98			NPSM/NPSC
											99	99			NPSF
											100	100			Rp (BSPP)
											105	105			G
															NPT
															NPTF
															Rc (BSPT)
							125				120, 123, 125 127, 130	120, 123		120, 123, 125 127, 128	STI SELF-LOCK
							16 - 82	**49 - 148**	**49 - 148**	**49 - 148**	16 - 82	**49 - 148**	**49 - 148**	**49 - 148**	1.1
33 - 131	**33 - 131**	**33 - 131**	**33 - 131**	**33 - 131**	**33 - 131**	**33 - 131**	16 - 66	**33 - 131**	**33 - 131**	**33 - 131**	16 - 66	**33 - 131**	**33 - 131**	**33 - 131**	2.1
16 - 82	**16 - 82**	**16 - 82**	**16 - 82**	**16 - 82**	**16 - 82**	**16 - 82**	7 - 49	**16 - 82**	**16 - 82**	**16 - 82**	7 - 49	**16 - 82**	**16 - 82**	**16 - 82**	3.1 **P**
16 - 66	**16 - 66**	**16 - 66**	**16 - 66**	**16 - 66**	**16 - 66**	**16 - 66**	7 - 33	16 - 66	16 - 66	16 - 66	7 - 33	16 - 66	16 - 66	16 - 66	4.1
7 - 33	7 - 33	7 - 33	7 - 33	7 - 33	7 - 33	7 - 33									5.1
							7 - 33	16 - 66	**16 - 66**	**16 - 66**	7 - 33	16 - 66	16 - 66	**16 - 66**	1.1
							7 - 33	16 - 66	**16 - 66**	**16 - 66**	7 - 33	16 - 66	16 - 66	**16 - 66**	2.1 **M**
								16 - 49	**16 - 49**	**16 - 49**		16 - 49	16 - 49	**16 - 49**	3.1
															4.1
															1.1
															1.2
33 - 98	**33 - 98**	**33 - 98**	**33 - 98**	**33 - 98**	**33 - 98**	**33 - 98**									2.1
33 - 82	**33 - 82**	**33 - 82**	**33 - 82**	**33 - 82**	**33 - 82**	**33 - 82**									2.2 **K**
															3.1
															3.2
															4.1
															4.2
															1.1
															1.2
															1.3
49 - 131	**49 - 131**	**49 - 131**	**49 - 131**	**49 - 131**	**49 - 131**	**49 - 131**		**49 - 131**	**49 - 131**	**49 - 131**		**49 - 131**	**49 - 131**	**49 - 131**	1.4
49 - 131	49 - 131	49 - 131	49 - 131	49 - 131	49 - 131	49 - 131		49 - 131	49 - 131	49 - 131		49 - 131	49 - 131	49 - 131	1.5
33 - 98	33 - 98	33 - 98	33 - 98	33 - 98	33 - 98	33 - 98		33 - 98	33 - 98	33 - 98		33 - 98	33 - 98	33 - 98	1.6
							16 - 66	**16 - 98**	**16 - 98**	**16 - 98**	16 - 66	**16 - 98**	**16 - 98**	**16 - 98**	2.1
								66 - 197	**66 - 197**	**66 - 197**		**66 - 197**	**66 - 197**	**66 - 197**	2.2
															2.3
16 - 82	16 - 82	16 - 82	16 - 82	16 - 82	16 - 82	16 - 82		16 - 82	16 - 82	16 - 82		16 - 82	16 - 82	16 - 82	2.4
16 - 82	16 - 82	16 - 82	16 - 82	16 - 82	16 - 82	16 - 82		16 - 82	16 - 82	16 - 82		16 - 82	16 - 82	16 - 82	2.5
															2.6 **N**
															2.7
															2.8
															3.1
															3.2
															4.1
															4.2
															4.3
															4.4
															5.1
															5.2
															5.3
								16 - 49	16 - 49	16 - 49		16 - 49	16 - 49	16 - 49	1.1
															1.2
															1.3
															2.1
															2.2
															2.3
															2.4 **S**
															2.5
															2.6
															1.1
															1.2
															1.3
															1.4 **H**
															1.5

Page
v_c in SFM

Cutting speed v_c in SFM – Preferred suitable tap
Cutting speed v_c in SFM – Suitable tap

		EMUGE Z			EMUGE SPEED											
														
		Enorm Z/E-IKZ TIN	Enorm Z/E-IKZ TICN	Enorm Z/E-IKZ GLT-1	Rekord A-SPEED IKZ-TICN	Rekord A-SPEED IKZN-TICN	Rekord A-SPEED/E IKZ-TICN	Rekord A-SPEED/E IKZN-TICN	Rekord B-Z-SPEED PM-TIN-70	Rekord B-Z-SPEED-IKZN PM-TIN-70	Rekord D-SPEED TIN	Rekord D-SPEED-IKZ TIN	Enorm SPEED IKZ-TIN	Enorm Z-SPEED-X PM-TIN-60	Enorm Z-SPEED-X-IKZ PM-TIN-60
		E / 1.5-2	E / 1.5-2	E / 1.5-2	C / 2-3	C / 2-3	E / 1.5-2	E / 1.5-2	B / 4-5	B / 4-5	C / 2-3	C / 2-3	C / 2-3	C / 2-3	C / 2-3
Thread Depth and Hole Type		max. 3 x d_1			max. 2 x d_1 1)	max. 2 x d_1	max. 2 x d_1 1)	max. 2 x d_1	max. 3 x d_1		max. 2 x d_1		max. 3 x d_1		
UNC			30	30, 31	31	31	31		31	31	31	32	32		
UNF			46	46, 47	47	47	47		47	47	47	48	48		
UNEF, UN-8															
M		73			74	74	74	74	75	75				75	75
MF		90			91	91	91	91	91	91				92	92
NPSM/NPSC															
NPSF															
Rp (BSPP)															
G															
NPT															
NPTF															
Rc (BSPT)															
STI															
SELF-LOCK															
P	1.1	**49 - 148**	**49 - 148**	**49 - 148**					**131 - 262**	**131 - 262**	**131 - 262**	**131 - 262**	**131 - 262**		
	2.1	**33 - 131**	**33 - 131**	**33 - 131**					**98 - 197**	**98 - 197**	**98 - 197**	**98 - 197**	**98 - 197**	**98 - 197**	**98 - 197**
	3.1	**16 - 82**	**16 - 82**	**16 - 82**					**66 - 131**	**66 - 131**	**66 - 131**	**66 - 131**	**66 - 131**	**66 - 131**	**66 - 131**
	4.1	16 - 66	16 - 66	16 - 66					33 - 98	33 - 98	33 - 98	33 - 98	33 - 98	33 - 98	33 - 98
	5.1														
M	1.1	16 - 66	16 - 66	**16 - 66**							33 - 82	33 - 82	**33 - 82**		
	2.1	16 - 66	16 - 66	**16 - 66**							33 - 82	33 - 82	**33 - 82**		
	3.1	16 - 49	16 - 49	**16 - 49**							16 - 66	16 - 66	16 - 66		
	4.1														
K	1.1				**131 - 262**	**131 - 262**	**131 - 262**	**131 - 262**							
	1.2				**98 - 197**	**98 - 197**	**98 - 197**	**98 - 197**							
	2.1				98 - 197	98 - 197	98 - 197	98 - 197	**98 - 197**	**98 - 197**	**98 - 197**	**98 - 197**	**98 - 197**		
	2.2				**66 - 131**	**66 - 131**	**66 - 131**	**66 - 131**	**66 - 131**	**66 - 131**	**66 - 131**	**66 - 131**			
	3.1				**66 - 131**	**66 - 131**	**66 - 131**	**66 - 131**							
	3.2				**66 - 131**	**66 - 131**	**66 - 131**	**66 - 131**							
	4.1				**131 - 262**	**131 - 262**	**131 - 262**	**131 - 262**							
	4.2				**98 - 197**	**98 - 197**	**98 - 197**	**98 - 197**							
N	1.1												66 - 197		
	1.2												66 - 197		
	1.3												66 - 197		
	1.4	**49 - 131**	**49 - 131**	**49 - 131**	66 - 197	66 - 197	66 - 197	66 - 197	**66 - 197**	**66 - 197**	**66 - 197**	**66 - 197**	**66 - 197**		
	1.5	49 - 131	49 - 131	49 - 131	**66 - 197**	**66 - 197**	**66 - 197**	**66 - 197**	**66 - 197**	**66 - 197**	**66 - 197**	**66 - 197**	**66 - 197**		
	1.6	33 - 98	33 - 98	33 - 98	66 - 131	66 - 131	66 - 131	66 - 131	66 - 131	66 - 131	66 - 131	66 - 131	66 - 131		
	2.1	**16 - 98**	**16 - 98**	**16 - 98**							66 - 131	66 - 131	**66 - 131**		
	2.2	**66 - 197**	**66 - 197**	**66 - 197**									**131 - 262**		
	2.3														
	2.4	16 - 82	16 - 82	16 - 82											
	2.5	16 - 82	16 - 82	16 - 82											
	2.6														
	2.7														
	2.8														
	3.1														
	3.2														
	4.1														
	4.2														
	4.3														
	4.4														
	5.1														
	5.2														
	5.3														
S	1.1	16 - 49	16 - 49	16 - 49											
	1.2														
	1.3														
	2.1														
	2.2														
	2.3														
	2.4														
	2.5														
	2.6														
H	1.1														
	1.2														
	1.3														
	1.4														
	1.5														

Page
v_c in SFM

1) Threading in through holes is possible only with external cooling/lubrication

Tapered Taps

EMUGE STEEL

EMUGE VA

EMUGE NI

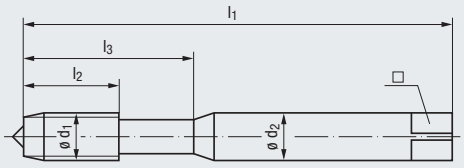
	Rekord A-STEEL	Rekord A-STEEL TIN	Rekord A-VA	Rekord A-VA-AZ	Rekord A-VA-AZ TIN	Rekord D-VA	Rekord D-VA TIN	Rekord D-VA-IKZN TICN	Rekord D-VA-AZ	Rekord D-VA-AZ TIN	Rekord D-R10-NI TICN		
	C / 2-3	C / 2-3	C / 2-3	C / 2-3	C / 2-3	C / 2-3	C / 2-3	C / 2-3	C / 2-3	C / 2-3	C / 2-3		
	—	—	—	—	—	—	—	—	—	—	—		Thread Depth and Hole Type
													UNC
													UNF
													UNEF, UN-8
													M
													MF
													NPSM/NPSC
													NPSF
													Rp (BSPP)
													G
	107, 109 112, 113 117	107, 109 112, 113	116	109 112, 113	109 112, 113	107, 110 114	107, 110 114	110 114	108, 110 114	108, 110 114	111 115		NPT NPTF Rc (BSPT) STI SELF-LOCK
	7 - 26	**7 - 26**	7 - 26	7 - 26	7 - 26	7 - 26	7 - 26	7 - 26	7 - 26	7 - 26		1.1	P
	7 - 20	**7 - 20**	**7 - 20**	**7 - 20**	**7 - 20**	**7 - 20**	**7 - 20**	**7 - 20**	**7 - 20**	**7 - 20**		2.1	P
			3 - 26	**3 - 26**	**3 - 26**	3 - 26	3 - 26	3 - 26	3 - 26	3 - 26		3.1	P
			3 - 16	3 - 16	3 - 16							4.1	P
												5.1	P
			3 - 26	**3 - 26**	**3 - 26**	**3 - 26**	**3 - 26**	**3 - 26**	**3 - 26**	**3 - 26**		1.1	M
			3 - 26	**3 - 26**	**3 - 26**	**3 - 26**	**3 - 26**	**3 - 26**	**3 - 26**	**3 - 26**	**3 - 26**	2.1	M
				3 - 16	3 - 16	3 - 16	3 - 16	3 - 16	3 - 16	3 - 16	**3 - 16**	3.1	M
											3 - 10	4.1	M
	7 - 33	7 - 33										1.1	K
	7 - 33	7 - 33										1.2	K
			7 - 26	**7 - 26**	**7 - 26**							2.1	K
			7 - 26	7 - 26	7 - 26							2.2	K
			7 - 26	7 - 26	7 - 26							3.1	K
			7 - 26	7 - 26	7 - 26							3.2	K
			7 - 33	7 - 33	7 - 33							4.1	K
			7 - 33	7 - 33	7 - 33							4.2	K
												1.1	N
												1.2	N
												1.3	N
			7 - 33									1.4	N
			7 - 33									1.5	N
												1.6	N
	7 - 33	**7 - 33**										2.1	N
	7 - 33	7 - 33										2.2	N
			3 - 26	3 - 26	3 - 26							2.3	N
			3 - 26	3 - 26	3 - 26							2.4	N
			3 - 26	3 - 26	3 - 26							2.5	N
												2.6	N
												2.7	N
												2.8	N
												3.1	N
												3.2	N
												4.1	N
												4.2	N
												4.3	N
												4.4	N
												5.1	N
												5.2	N
												5.3	N
												1.1	S
												1.2	S
												1.3	S
												2.1	S
												2.2	S
											3 - 10	2.3	S
												2.4	S
											3 - 10	2.5	S
											3 - 10	2.6	S
												1.1	H
												1.2	H
												1.3	H
												1.4	H
												1.5	H

Page
v_c in SFM

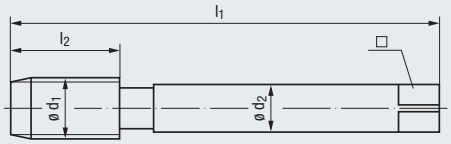
Cutting speed v_c in SFM – Preferred suitable tap
Cutting speed v_c in SFM – Suitable tap

DIN Length · ANSI Shank

Overall length acc. to DIN 371, DIN 376



Reinforced Shank (No.1 - 3/8)



Reduced Shank (7/16 - 2)

UNC

Unified Coarse Thread
ASME B1.1

STEEL
Steel Materials

Class of Fit	2B	2B	2B	2B	3B
Coating	TIN	TIN	TICN		
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics		R15	R15	R35	R35
	B / 4-5	C / 2-3	C / 2-3	C / 2-3	C / 2-3
	E / 0	E / 0	E / 0	E / 0	E / 0
Thread Depth and Hole Shape	max. 3 x d_1	max. 2 x d_1		max. 2.5 x d_1	
Applications – Material	P 1.1-4.1 K 2.1 N 2.2, 2.4-5	P 1.1-4.1 K 1.1-4.2 N 1.4-5, 2.4-5	P 1.1-4.1 K 1.1-4.2 N 1.4-5, 2.4-5	P 1.1-3.1 N 2.2	P 1.1-3.1 N 2.2

Reinforced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification	BU208400 Rekord 1B-STEEL-L TIN	Flutes	BU451400 Rekord 1D-STEEL TIN	Flutes	BU979000 Rekord 1D-STEEL IKZ-TICN	Flutes	BU501000 Enorm 1-STEEL	Flutes	BU501010 Enorm 1-STEEL	Flutes
No. 1	64	1.772	0.276	0.472	0.141	0.110	0.0595	.5000	●	2	●	2			●	2	●	2
No. 2	56	1.772	0.276	0.472	0.141	0.110	0.0700	.5001	●	2	●	2			●	2	●	2
No. 3	48	1.969	0.354	0.551	0.141	0.110	0.0820	.5002	●	2	●	2			●	2	●	2
No. 4	40	2.205	0.433	0.709	0.141	0.110	0.0890	.5003	●	2	●	2			●	2	●	2
No. 5	40	2.205	0.433	0.709	0.141	0.110	0.1015	.5004	●	3	●	2			●	3	●	3
No. 6	32	2.205	0.472	0.787	0.141	0.110	0.1110	.5005	●	3	●	3			●	3	●	3
No. 8	32	2.480	0.512	0.827	0.168	0.131	0.1360	.5006	●	3	●	3			●	3	●	3
No. 10	24	2.756	0.591	0.984	0.194	0.152	0.1520	.5007	●	3	●	3	●	3	●	3	●	3
No. 12	24	3.150	0.630	1.142	0.220	0.165	0.1770	.5008	●	3	●	3			●	3	●	3
1/4	20	3.150	0.669	1.181	0.255	0.191	0.2040	.5009	●	3	●	3	●	3	●	3	●	3
5/16	18	3.543	0.787	1.378	0.318	0.238	0.2610	.5010	●	3	●	3	●	3	●	3	●	3
3/8	16	3.937	0.866	1.535	0.381	0.286	0.3160	.5011	●	3	●	3	●	3	●	3	●	3

Reduced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification	CU208400 Rekord 2B-STEEL-L TIN	Flutes	CU451400 Rekord 2D-STEEL TIN	Flutes	CU979000 Rekord 2D-STEEL IKZ-TICN	Flutes	CU501000 Enorm 2-STEEL	Flutes	CU501010 Enorm 2-STEEL	Flutes
7/16	14	3.937	0.866	—	0.323	0.242	0.3680	.5012	●	3	●	3	●	3	●	3	●	3
1/2	13	4.331	0.984	—	0.367	0.275	0.4219	.5013	●	3	●	3	●	3	●	3	●	3
9/16	12	4.331	1.024	—	0.429	0.322	0.4844	.5014	●	3	●	3			●	3	●	3
5/8	11	4.331	1.063	—	0.480	0.360	0.5313	.5015	●	3	●	3	●	3	●	3	●	3
3/4	10	4.921	1.181	—	0.590	0.442	0.6563	.5016	●	3	●	3	●	3	●	3	●	3
7/8	9	5.512	1.260	—	0.697	0.523	0.7656	.5017	●	3	●	3	●	3	●	4	●	4
1	8	6.299	1.417	—	0.800	0.600	0.8750	.5018	●	3	●	3	●	3	●	4		
1 1/8	7	7.087	1.575	—	0.896	0.672	0.9843	.5019	●	3	●	3			●	4		
1 1/4	7	7.087	1.575	—	1.021	0.766	1.1094	.5020	●	4	●	4			●	4		
1 3/8	6	7.874	1.969	—	1.108	0.831	1.2205	.5021	●	4					●	4		
1 1/2	6	7.874	1.969	—	1.233	0.925	1.3386	.5022	●	4					●	4		
1 3/4	5	8.661	2.283	—	1.430	1.072	1.5551	.5023	●	4					●	5		
2	4 1/2	9.843	2.559	—	1.644	1.233	1.7812	.5024	●	4					●	5		

Ordering Example: **BU208400.5000**

VA
Stainless Steel Materials

2B	2B	3B	Oversize	2B	2B	3B	3B	Class of Fit
GLT-1	TICN	GLT-1	GLT-1	NE2	GLT-1	NE2	GLT-1	Coating
HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	Cutting Material
				R35	R35	R35	R35	Technical Characteristics
B / 4-5	B / 4-5	B / 4-5	B / 4-5	C / 2-3	C / 2-3	C / 2-3	C / 2-3	
E / O / P	E / O	E / O / P	E / O / P	E / O / P	E / O / P	E / O / P	E / O / P	
max. 3 x d_1				max. 2.5 x d_1				Thread Depth and Hole Shape
P 1.1-4.1	P 1.1-4.1	P 1.1-4.1	P 1.1-4.1	P 1.1-3.1	P 1.1-4.1	P 1.1-3.1	P 1.1-4.1	Applications – Material
M 1.1-3.1	M 1.1-3.1	M 1.1-3.1	M 1.1-3.1	M 1.1-2.1	M 1.1-3.1	M 1.1-2.1	M 1.1-3.1	
K 2.1	K 2.1	K 2.1	K 2.1	K 2.1	K 2.1	K 2.1	K 2.1	
N 2.2	N 2.2, 2.5-6	N 2.2	N 2.2					

BU20C300		BU089300		BU20C310		BU20C344		BU503200		BU50C300		BU503210		BU50C310		Tool Identification		
Rekord 1B-VA GLT-1	Flutes	Rekord 1B-VA-IKZN TICN	Flutes	Rekord 1B-VA GLT-1	Flutes	Rekord 1B-VA GLT-1	Flutes	Enorm 1-VA NE2	Flutes	Enorm 1-VA GLT-1	Flutes	Enorm 1-VA NE2	Flutes	Enorm 1-VA GLT-1	Flutes	Dimens. ID	Nominal Size ø d_1	T.P.I.
●	2			●	2			●	2	●	2	●	2	●	2	.5000	No. 1	64
●	2			●	2			●	2	●	2	●	2	●	2	.5001	No. 2	56
●	2			●	2							●	2	●	2	.5002	No. 3	48
●	2			●	2			●	2	●	2	●	2	●	2	.5003	No. 4	40
●	3			●	3			●	3	●	3	●	3	●	3	.5004	No. 5	40
●	3			●	3	[1] ● (+.0035)	3	●	3	●	3	●	3	●	3	.5005	No. 6	32
●	3			●	3	[1] ● (+.0035)	3	●	3	●	3	●	3	●	3	.5006	No. 8	32
●	3	●	3	●	3	[1] ● (+.0035)	3	●	3	●	3	●	3	●	3	.5007	No. 10	24
●	3			●	3			●	3	●	3	●	3	●	3	.5008	No. 12	24
●	3	●	3	●	3	● (+.0050)	3	●	3	●	3	●	3	●	3	.5009	1/4	20
●	3	●	3	●	3	● (+.0050)	3	●	3	●	3	●	3	●	3	.5010	5/16	18
●	3	●	3	●	3	● (+.0050)	3	●	3	●	3	●	3	●	3	.5011	3/8	16

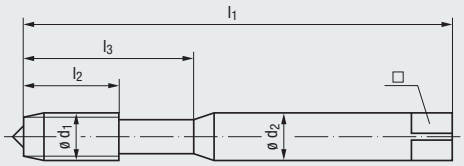
CU20C300		CU089300		CU20C310		CU20C344		CU503200		CU50C300		CU503210		CU50C310		Tool Identification		
Rekord 2B-VA GLT-1	Flutes	Rekord 2B-VA-IKZN TICN	Flutes	Rekord 2B-VA GLT-1	Flutes	Rekord 2B-VA GLT-1	Flutes	Enorm 2-VA NE2	Flutes	Enorm 2-VA GLT-1	Flutes	Enorm 2-VA NE2	Flutes	Enorm 2-VA GLT-1	Flutes	Dimens. ID	Nominal Size ø d_1	T.P.I.
●	3	●	3	●	3	● (+.0050)	3	●	3	●	3	●	3	●	3	.5012	7/16	14
●	3	●	3	●	3	● (+.0050)	3	●	3	●	3	●	3	●	3	.5013	1/2	13
●	3			●	3			●	3	●	3	●	3	●	3	.5014	9/16	12
●	3	●	3	●	3	● (+.0050)	3	●	3	●	3	●	3	●	3	.5015	5/8	11
●	3	●	3	●	3	● (+.0050)	3	●	3	●	3	●	3	●	3	.5016	3/4	10
●	3	●	3	●	3			●	4	●	4	●	4	●	4	.5017	7/8	9
●	3	●	3	●	3			●	4	●	4	●	4	●	4	.5018	1	8
●	3			●	3			●	4	●	4	●	4	●	4	.5019	1 1/8	7
●	4			●	4			●	4	●	4	●	4	●	4	.5020	1 1/4	7
●	4			●	4			●	4	●	4	●	4	●	4	.5021	1 3/8	6
●	4			●	4			●	4	●	4	●	4	●	4	.5022	1 1/2	6
●	4			●	4			●	5	●	5					.5023	1 3/4	5
●	4			●	4			●	5	●	5					.5024	2	4 1/2

● = In stock
★ = Allow 7 days for delivery

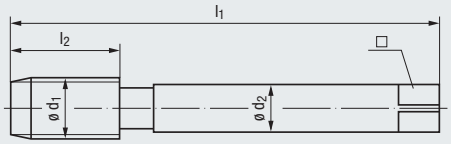
[1] Tool Identification = **BU20C343**

DIN Length · ANSI Shank

Overall length acc. to DIN 371, DIN 376



Reinforced Shank (No.1 - 3/8)



Reduced Shank (7/16 - 2)

UNC

Unified Coarse Thread
ASME B1.1

	VA Stainless Steel Materials		AL Aluminum Wrought Alloys		
	new		new	new	new
Class of Fit	**Oversize**		2B	2B	**3B**
Coating	GLT-1		GLT-8	GLT-8	GLT-8
Cutting Material	HSS Extra		HSS Extra	HSS Extra	HSS Extra
Technical Characteristics	R35			R45	R45
	C / 2-3		B / approx. 3	C / 2-3	C / 2-3
	E / O / P		E / O	E / O	E / O
Thread Depth and Hole Shape	max. 2.5 x d_1		max. 3 x d_1	max. 2.5 x d_1	
Applications – Material	P 1.1-4.1 M 1.1-3.1 K 2.1		N 1.1-4	N 1.1-4	N 1.1-4

Reinforced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	inch l_2	inch l_3	inch ø d_2	inch □	Tool Identification Dimens. ID	BU50C344 Enorm 1-VA GLT-1	Flutes	BU20S800 Rekord 1B-AL GLT-8	Flutes	BU50S800 Enorm 1-AL GLT-8	Flutes	BU50S810 Enorm 1-AL GLT-8	Flutes
No. 1	64	1.772	0.276	0.472	0.141	0.110	0.0595	**.5000**							
No. 2	56	1.772	0.276	0.472	0.141	0.110	0.0700	**.5001**				●	2	●	2	●	2
No. 3	48	1.969	0.354	0.551	0.141	0.110	0.0820	**.5002**							
No. 4	40	2.205	0.433	0.709	0.141	0.110	0.0890	**.5003**				●	2	●	2	●	2
No. 5	40	2.205	0.433	0.709	0.141	0.110	0.1015	**.5004**							
No. 6	32	2.205	0.472	0.787	0.141	0.110	0.1110	**.5005**				●	2	●	2	●	2
No. 8	32	2.480	0.512	0.827	0.168	0.131	0.1360	**.5006**				●	2	●	2	●	2
No. 10	24	2.756	0.591	0.984	0.194	0.152	0.1520	**.5007**	[1] ● (+.0035)	3		●	2	●	2	●	2
No. 12	24	3.150	0.630	1.142	0.220	0.165	0.1770	**.5008**							
1/4	20	3.150	0.669	1.181	0.255	0.191	0.2040	**.5009**	● (+.0050)	3		●	2	●	2	●	2
5/16	18	3.543	0.787	1.378	0.318	0.238	0.2610	**.5010**	● (+.0050)	3		●	2	●	2	●	2
3/8	16	3.937	0.866	1.535	0.381	0.286	0.3160	**.5011**	● (+.0050)	3		●	2	●	2	●	2

Reduced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	inch l_2	inch l_3	inch ø d_2	inch □	Tool Identification Dimens. ID	CU50C344 Enorm 2-VA GLT-1	Flutes	CU20S800 Rekord 2B-AL GLT-8	Flutes	CU50S800 Enorm 2-AL GLT-8	Flutes	CU50S810 Enorm 2-AL GLT-8	Flutes
7/16	14	3.937	0.866	—	0.323	0.242	0.3680	**.5012**	● (+.0050)	3	●	3	●	3	●	3
1/2	13	4.331	0.984	—	0.367	0.275	0.4219	**.5013**	● (+.0050)	3	●	3	●	3	●	3
9/16	12	4.331	1.024	—	0.429	0.322	0.4844	**.5014**							
5/8	11	4.331	1.063	—	0.480	0.360	0.5313	**.5015**	● (+.0050)	3	●	3	●	3	●	3
3/4	10	4.921	1.181	—	0.590	0.442	0.6563	**.5016**	● (+.0050)	3	●	3	●	3	●	3
7/8	9	5.512	1.260	—	0.697	0.523	0.7656	**.5017**							
1	8	6.299	1.417	—	0.800	0.600	0.8750	**.5018**							
1 1/8	7	7.087	1.575	—	0.896	0.672	0.9843	**.5019**							
1 1/4	7	7.087	1.575	—	1.021	0.766	1.1094	**.5020**							
1 3/8	6	7.874	1.969	—	1.108	0.831	1.2205	**.5021**							
1 1/2	6	7.874	1.969	—	1.233	0.925	1.3386	**.5022**							
1 3/4	5	8.661	2.283	—	1.430	1.072	1.5551	**.5023**							
2	4 1/2	9.843	2.559	—	1.644	1.233	1.7812	**.5024**							

[1] Tool Identification = **BU50C343**

Ordering Example: **BU50C343.5007**

AERO Nickel Alloys		TI Titanium							
3BX		2BX	3BX	3BX	2BX	3BX	3BX		Class of Fit
NT		NT2	NT2	TICN	NT2	NT2	TICN		Coating
HSS Extra		HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra		Cutting Material
		L15	L15	L15	R15	R15	R15		Technical Characteristics
B / approx. 3		D / 4-5	D / 4-5	D / 4-5	C / 2-3	C / 2-3	C / 2-3		
O / P		E / O / P	E / O / P	E / O / P	E / O / P	E / O / P	E / O / P		
max. 3 x d_1		max. 3 x d_1			max. 2 x d_1				Thread Depth and Hole Shape
M 4.1 N 2.8 S 2.3, 2.5-6		P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4	P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4	P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4	P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4	P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4	P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4		Applications – Material

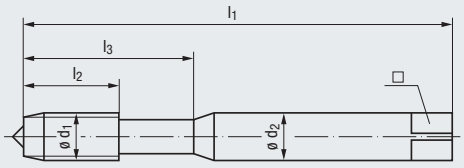
BU206511			BU306001		BU306011		BU309611		BU456001		BU456011		BU459611		Tool Identification		
Rekord 1B-AERO NT	Flutes		Rekord 1C-TI NT2	Flutes	Rekord 1C-TI NT2	Flutes	Rekord 1C-TI TICN	Flutes	Rekord 1D-TI NT2	Flutes	Rekord 1D-TI NT2	Flutes	Rekord 1D-TI TICN	Flutes	Dimens. ID	Nominal Size ø d_1	T.P.I.
					●	2			●	2	●	2			.5000	No. 1	64
			●	2	●	2	●	2	●	2	●	2	●	2	.5001	No. 2	56
					●	2					●	2			.5002	No. 3	48
●	2		●	2	●	2	●	2	●	2	●	2	●	2	.5003	No. 4	40
			●	2	●	2	●	2	●	2	●	2			.5004	No. 5	40
●	3		●	3	●	3	●	3	●	3	●	3	●	3	.5005	No. 6	32
●	3		●	3	●	3	●	3	●	3	●	3	●	3	.5006	No. 8	32
●	3		●	3	●	3	●	3	●	3	●	3	●	3	.5007	No. 10	24
●	3		●	3	●	3			●	3	●	3			.5008	No. 12	24
●	3		●	3	●	3	●	3	●	3	●	3	●	3	.5009	1/4	20
●	3		●	3	●	3	●	3	●	3	●	3	●	3	.5010	5/16	18
●	3		●	3	●	3	●	3	●	3	●	3	●	3	.5011	3/8	16

CU206511			CU306001		CU306011		CU309611		CU456001		CU456011		CU459611		Tool Identification		
Rekord 2B-AERO NT	Flutes		Rekord 2C-TI NT2	Flutes	Rekord 2C-TI NT2	Flutes	Rekord 2C-TI TICN	Flutes	Rekord 2D-TI NT2	Flutes	Rekord 2D-TI NT2	Flutes	Rekord 2D-TI TICN	Flutes	Dimens. ID	Nominal Size ø d_1	T.P.I.
●	3		●	3	●	3	●	3	●	3	●	3	●	3	.5012	7/16	14
●	3		●	3	●	3	●	3	●	3	●	3	●	3	.5013	1/2	13
			●	3	●	3	●	3	●	3	●	3	●	3	.5014	9/16	12
●	3		●	3	●	3	●	3	●	3	●	3	●	3	.5015	5/8	11
●	3		●	3	●	3	●	3	●	3	●	3	●	3	.5016	3/4	10
			●	3	●	3	●	3	●	3	●	3	●	3	.5017	7/8	9
			●	3	●	3	●	3	●	3	●	3	●	3	.5018	1	8
			●	3	●	3									.5019	1 1/8	7
			●	4	●	4									.5020	1 1/4	7
			●	4	●	4									.5021	1 3/8	6
			●	4	●	4									.5022	1 1/2	6
			●	4	●	4									.5023	1 3/4	5
															.5024	2	4 1/2

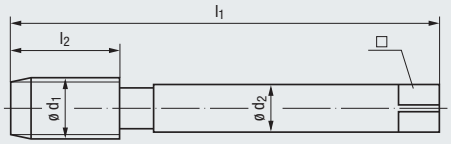
● = In stock
★ = Allow 7 days for delivery

DIN Length · ANSI Shank

Overall length acc. to DIN 371, DIN 376



Reinforced Shank (No.1 - 3/8)



Reduced Shank (7/16 - 2)

UNC

Unified Coarse Thread
ASME B1.1

	NI Nickel Alloys		H Materials of High Tensile Strength	
Class of Fit	3BX	3BX	2BX	2BX
Coating	TICN	TICN	NT	TICN
Cutting Material	HSSE-PM	HSSE-PM	HSS Extra	HSS Extra
Technical Characteristics	L08	R10		
	D / 4-5	C / 2-3	C / 2-3	C / 2-3
	O / P	O / P	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1	max. 2 x d_1	max. 2 x d_1	
Applications – Material	M 4.1 N 2.8 S 1.2-3 S 2.3, 2.5-6	M 4.1 N 2.8 S 1.2-3 S 2.3, 2.5-6	P 1.1-3.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1	P 1.1-4.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1

Reinforced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification	BU30J411 Rekord 1C-NI-PM TICN	Flutes	BU35J411 Rekord 1DF-NI-PM TICN	Flutes	BU100501 Rekord 1A-H NT	Flutes	BU109101 Rekord 1A-H TICN	Flutes
No. 1	64	1.772	0.276	0.472	0.141	0.110	0.0595	.5000					●	2		
No. 2	56	1.772	0.276	0.472	0.141	0.110	0.0700	.5001					●	3	●	3
No. 3	48	1.969	0.354	0.551	0.141	0.110	0.0820	.5002					●	3		
No. 4	40	2.205	0.433	0.709	0.141	0.110	0.0890	.5003	●	2	●	2	●	3	●	3
No. 5	40	2.205	0.433	0.709	0.141	0.110	0.1015	.5004	●	2	●	2	●	3		
No. 6	32	2.205	0.472	0.787	0.141	0.110	0.1110	.5005	●	3	●	3	●	3	●	3
No. 8	32	2.480	0.512	0.827	0.168	0.131	0.1360	.5006	●	3	●	3	●	3	●	3
No. 10	24	2.756	0.591	0.984	0.194	0.152	0.1520	.5007	●	3	●	3	●	3	●	3
No. 12	24	3.150	0.630	1.142	0.220	0.165	0.1770	.5008					●	3		
1/4	20	3.150	0.669	1.181	0.255	0.191	0.2040 2)	.5009	●	3	●	3	●	3	●	3
5/16	18	3.543	0.787	1.378	0.318	0.238	0.2610 2)	.5010	●	3	●	3	●	3	●	3
3/8	16	3.937	0.866	1.535	0.381	0.286	0.3160 2)	.5011	●	3	●	3	●	3	●	3

Reduced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification	CU30J411 Rekord 2C-NI-PM TICN	Flutes	CU35J411 Rekord 2DF-NI-PM TICN	Flutes	CU100501 Rekord 2A-H NT	Flutes	CU109101 Rekord 2A-H TICN	Flutes
7/16	14	3.937	0.866	—	0.323	0.242	0.3680 2)	.5012	●	3	●	3	●	3	●	3
1/2	13	4.331	0.984	—	0.367	0.275	0.4219 2)	.5013	●	3	●	3	●	3	●	3
9/16	12	4.331	1.024	—	0.429	0.322	0.4844	.5014	●	3	●	3	●	3	●	3
5/8	11	4.331	1.063	—	0.480	0.360	0.5313	.5015	●	3	●	3	●	3	●	3
3/4	10	4.921	1.181	—	0.590	0.442	0.6563	.5016	●	3	●	3	●	4	●	4
7/8	9	5.512	1.260	—	0.697	0.523	0.7656	.5017					●	4	●	4
1	8	6.299	1.417	—	0.800	0.600	0.8750	.5018					●	4	●	4
1 1/8	7	7.087	1.575	—	0.896	0.672	0.9843	.5019								
1 1/4	7	7.087	1.575	—	1.021	0.766	1.1094	.5020								
1 3/8	6	7.874	1.969	—	1.108	0.831	1.2205	.5021								
1 1/2	6	7.874	1.969	—	1.233	0.925	1.3386	.5022								
1 3/4	5	8.661	2.283	—	1.430	1.072	1.5551	.5023								
2	4 1/2	9.843	2.559	—	1.644	1.233	1.7812	.5024								

Ordering Example: **BU30J411.5003**

	H Materials of High Tensile Strength		**HCUT** Hardened Steels		**Z** CNC-Controlled Machines				
	new							new	
			2)						
	2BX		2BX		2BX	2BX	2BX	2BX	Class of Fit
	TICN		TICN		TICN	TICN	TICN	TICN	Coating
	HSS Extra		**HSSE-PM**		HSS Extra	HSS Extra	HSS Extra	HSS Extra	Cutting Material
	C / 2-3		C / 2-3		C / 2-3	C / 2-3	C / 2-3	**E / 1.5-2**	Technical Characteristics
	E / O		O / P		E / O / P	E / O	E / O	E / O	
	max. 2 x d_1 1)		max. 1.5 x d_1		max. 2 x d_1	max. 2 x d_1 1)	max. 2 x d_1	max. 2 x d_1 1)	Thread Depth and Hole Shape
	P 1.1-4.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1		H 1.1-2		P 1.1-4.1 K 1.1-4.2 N 1.4-6, 2.4-7 N 4.1	P 1.1-4.1 K 1.1-4.2 N 1.4-6, 2.4-7 N 4.1	P 1.1-4.1 K 1.1-4.2 N 1.4-6, 2.4-7 N 4.1	P 1.1-4.1 K 1.1-4.2 N 1.4-6, 2.4-7 N 4.1	Applications – Material

BU959101			**BU10J901**			**BU109401**		**BU959401**		**BU219401**		**BU969401**		**Tool Identification**		
Rekord 1A-H-IKZ TICN	**Flutes**		**Rekord 1A-HCUT-PM TICN**	**Flutes**		**Rekord 1A-Z TICN**	**Flutes**	**Rekord 1A-Z-IKZ TICN**	**Flutes**	**Rekord 1A-Z-IKZN TICN**	**Flutes**	**Rekord 1A-Z/E-IKZ TICN**	**Flutes**	**Dimens. ID**	**Nominal Size ø d_1**	**T.P.I.**
														.5000	No. 1	64
														.5001	No. 2	56
														.5002	No. 3	48
						●	3							**.5003**	No. 4	40
						●	3							**.5004**	No. 5	40
						●	3							**.5005**	No. 6	32
						●	3							**.5006**	No. 8	32
●	3					●	3	●	3	●	3	●	3	**.5007**	No. 10	24
														.5008	No. 12	24
●	3		●	4		●	3	●	3	●	3	●	3	**.5009**	1/4	20
●	3		●	5		●	3	●	3	●	3	●	3	**.5010**	5/16	18
●	3		●	5		●	3	●	3	●	3	●	3	**.5011**	3/8	16

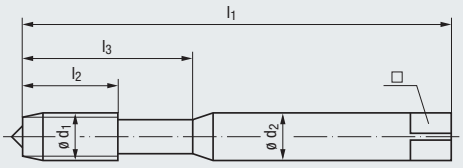
CU959101			**CU10J901**			**CU109401**		**CU959401**		**CU219401**		**CU969401**		**Tool Identification**		
Rekord 2A-H-IKZ TICN	**Flutes**		**Rekord 2A-HCUT-PM TICN**	**Flutes**		**Rekord 2A-Z TICN**	**Flutes**	**Rekord 2A-Z-IKZ TICN**	**Flutes**	**Rekord 2A-Z-IKZN TICN**	**Flutes**	**Rekord 2A-Z/E-IKZ TICN**	**Flutes**	**Dimens. ID**	**Nominal Size ø d_1**	**T.P.I.**
●	3		●	5		●	3	●	3	●	3	●	3	**.5012**	7/16	14
●	3		●	5		●	3	●	3	●	3	●	3	**.5013**	1/2	13
●	3					●	3	●	3	●	3	●	3	**.5014**	9/16	12
●	3					●	3	●	3	●	3	●	3	**.5015**	5/8	11
●	4					●	4	●	4	●	4	●	4	**.5016**	3/4	10
●	4					●	4	●	4			●	4	**.5017**	7/8	9
●	4					●	4	●	4			●	4	**.5018**	1	8
														.5019	1 1/8	7
														.5020	1 1/4	7
														.5021	1 3/8	6
														.5022	1 1/2	6
														.5023	1 3/4	5
														.5024	2	4 1/2

●= In stock
★= Allow 7 days for delivery

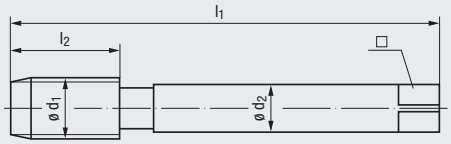
1) Threading in through holes is possible only with external cooling/lubrication
2) Increase drill diameter for taps Rekord 1/2A-HCUT-PM-TICN by 0.004 in

DIN Length · ANSI Shank

Overall length acc. to DIN 371, DIN 376

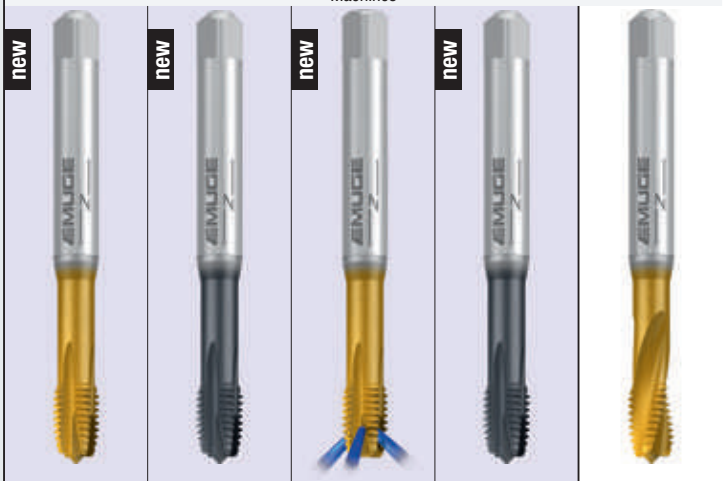


Reinforced Shank
(No.1 - 3/8)



Reduced Shank
(7/16 - 2)

Z
CNC-Controlled Machines



UNC

Unified Coarse Thread
ASME B1.1

Class of Fit	2BX	2BX	2BX	**3BX**	2BX
Coating	TIN-70	GLT-1	TIN-70	GLT-1	TIN
Cutting Material	**HSSE-PM**	**HSSE-PM**	**HSSE-PM**	**HSSE-PM**	HSS Extra
Technical Characteristics					R15
	B / 4-5	B / 4-5	B / 4-5	B / 4-5	C / 2-3
	E / O / P	E / O / P	E / O	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1				max. 2 x d_1
Applications – Material	P 1.1-5.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1	P 1.1-5.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1	P 1.1-5.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1	P 1.1-5.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1	P 2.1-5.1 K 2.1-2 N 1.4-6, 2.4-5

Reinforced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	inch l_2	inch l_3	inch ø d_2	inch □	Dimens. ID	Tool Identification	BU208F01 Rekord 1B-Z-PM TIN-70	Flutes	BU20A601 Rekord 1B-Z-PM GLT-1	Flutes	BU088F01 Rekord 1B-Z-IKZN PM-TIN-70	Flutes	BU20A611 Rekord 1B-Z-PM GLT-1	Flutes	BU453701 Rekord 1D-Z TIN	Flutes
No. 1	64	1.772	0.157	0.472	0.141	0.110	0.0595	**.5000**										
No. 2	56	1.772	0.177	0.472	0.141	0.110	0.0700	**.5001**										
No. 3	48	1.969	0.197	0.551	0.141	0.110	0.0820	**.5002**										
No. 4	40	2.205	0.236	0.709	0.141	0.110	0.0890	**.5003**	●	2	●	2			●	2	●	2
No. 5	40	2.205	0.276	0.709	0.141	0.110	0.1015	**.5004**									●	2
No. 6	32	2.205	0.276	0.787	0.141	0.110	0.1110	**.5005**	●	3	●	3			●	3	●	3
No. 8	32	2.480	0.315	0.827	0.168	0.131	0.1360	**.5006**	●	3	●	3			●	3	●	3
No. 10	24	2.756	0.394	0.984	0.194	0.152	0.1520	**.5007**	●	3	●	3	●	3	●	3	●	3
No. 12	24	3.150	0.394	1.142	0.220	0.165	0.1770	**.5008**										
1/4	20	3.150	0.512	1.181	0.255	0.191	0.2040	**.5009**	●	3	●	3	●	3	●	3	●	3
5/16	18	3.543	0.551	1.378	0.318	0.238	0.2610	**.5010**	●	4	●	4	●	4	●	4	●	3
3/8	16	3.937	0.630	1.535	0.381	0.286	0.3160	**.5011**	●	4	●	4	●	4	●	4	●	3

Reduced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	inch l_2	inch l_3	inch ø d_2	inch □	Dimens. ID	Tool Identification	CU208F01 Rekord 2B-Z-PM TIN-70	Flutes	CU20A601 Rekord 2B-Z-PM GLT-1	Flutes	CU088F01 Rekord 2B-Z-IKZN PM-TIN-70	Flutes	CU20A611 Rekord 2B-Z-PM GLT-1	Flutes	CU453701 Rekord 2D-Z TIN	Flutes
7/16	14	3.937	0.709	—	0.323	0.242	0.3680	**.5012**	●	4	●	4	●	4	●	4	●	3
1/2	13	4.331	0.787	—	0.367	0.275	0.4219	**.5013**	●	4	●	4	●	4	●	4	●	3
9/16	12	4.331	0.787	—	0.429	0.322	0.4844	**.5014**	●	4	●	4	●	4	●	4	●	3
5/8	11	4.331	0.866	—	0.480	0.360	0.5313	**.5015**	●	4	●	4	●	4	●	4	●	3
3/4	10	4.921	0.984	—	0.590	0.442	0.6563	**.5016**	●	4	●	4	●	4	●	4	●	3
7/8	9	5.512	1.063	—	0.697	0.523	0.7656	**.5017**										
1	8	6.299	1.181	—	0.800	0.600	0.8750	**.5018**										
1 1/8	7	7.087	1.378	—	0.896	0.672	0.9843	**.5019**										
1 1/4	7	7.087	1.378	—	1.021	0.766	1.1094	**.5020**										
1 3/8	6	7.874	1.575	—	1.108	0.831	1.2205	**.5021**										
1 1/2	6	7.874	1.575	—	1.233	0.925	1.3386	**.5022**										
1 3/4	5	8.661	1.772	—	1.430	1.072	1.5551	**.5023**										
2	4 1/2	9.843	1.969	—	1.644	1.233	1.7812	**.5024**										

Ordering Example: **BU208F01.5003**

Z
CNC-Controlled Machines

2BX	2BX	2BX	2B	2B	2B	2B	2B	Class of Fit
TIN	TIN	TIN	TIN	GLT-1	GLT-1		TIN	Coating
HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	Cutting Material
R15	R15	R15	R45	R45	R45	R45	R45	Technical Characteristics
C / 2-3	C / 2-3	C / 2-3	C / 2-3	C / 2-3	C / 2-3	**E / 1.5-2**	**E / 1.5-2**	
E / O	E / O / P	E / O	E / O / P	E / O / P	E / O	E / O / P	E / O / P	
max. 2 x d_1			max. 3 x d_1					Thread Depth and Hole Shape
P 2.1-5.1 **K** 2.1-2 **N** 1.4-6, 2.4-5	**P** 2.1-5.1 **K** 2.1-2 **N** 1.4-6, 2.4-5	**P** 2.1-5.1 **K** 2.1-2 **N** 1.4-6, 2.4-5	**P** 1.1-4.1 **M** 1.1-3.1 **N** 1.4-6 **N** 2.1-2, 2.4-5 **S** 1.1	**P** 1.1-4.1 **M** 1.1-3.1 **N** 1.4-6 **N** 2.1-2, 2.4-5 **S** 1.1	**P** 1.1-4.1 **M** 1.1-3.1 **N** 1.4-6 **N** 2.1-2, 2.4-5 **S** 1.1	**P** 1.1-4.1 **M** 1.1-2.1 **N** 2.1	**P** 1.1-4.1 **M** 1.1-3.1 **N** 1.4-6 **N** 2.1-2, 2.4-5 **S** 1.1	Applications – Material

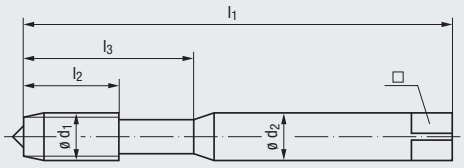
BU973701		BU523701		BU573701				BU50C400		BU94C400		BU513500		BU513700		Tool Identification		
Rekord 1D-Z-IKZ TIN	Flutes	Rekord 1D-Z-BF TIN	Flutes	Rekord 1D-Z-BF IKZ-TIN	Flutes			Enorm 1-Z GLT-1	Flutes	Enorm 1-Z-IKZ GLT-1	Flutes	Enorm 1-Z/E	Flutes	Enorm 1-Z/E TIN	Flutes	Dimens. ID	Nominal Size ø d_1	T.P.I.
												●	2	●	2	.5000	No. 1	64
												●	2	●	2	.5001	No. 2	56
												●	2	●	2	.5002	No. 3	48
		●	2					●	2			●	2	●	2	.5003	No. 4	40
		●	2					●	3			●	3	●	3	.5004	No. 5	40
		●	3					●	3			●	3	●	3	.5005	No. 6	32
		●	3					●	3			●	3	●	3	.5006	No. 8	32
●	3	●	3	●	3			●	3	●	3	●	3	●	3	.5007	No. 10	24
												●	3	●	3	.5008	No. 12	24
●	3	●	3	●	3			●	3	●	3	●	3	●	3	.5009	1/4	20
●	3	●	3	●	3			●	3	●	3	●	3	●	3	.5010	5/16	18
●	3	●	3	●	3			●	3	●	3	●	3	●	3	.5011	3/8	16

CU973701		CU573701		CU583701		CU503700		CU50C400		CU94C400		CU513500		CU513700		Tool Identification		
Rekord 2D-Z-IKZ TIN	Flutes	Rekord 2D-Z-BF TIN	Flutes	Rekord 2D-Z-BF IKZ-TIN	Flutes	Enorm 2-Z TIN	Flutes	Enorm 2-Z GLT-1	Flutes	Enorm 2-Z-IKZ GLT-1	Flutes	Enorm 2-Z/E	Flutes	Enorm 2-Z/E TIN	Flutes	Dimens. ID	Nominal Size ø d_1	T.P.I.
●	3	●	3	●	3			●	4	●	4	●	4	●	4	.5012	7/16	14
●	3	●	3	●	3			●	4	●	4	●	4	●	4	.5013	1/2	13
●	3	●	3	●	3			●	4	●	4	●	4	●	4	.5014	9/16	12
●	3	●	3	●	3			●	4	●	4	●	4	●	4	.5015	5/8	11
●	3	●	3	●	3			●	4	●	4	●	4	●	4	.5016	3/4	10
		●	3	●	3							●	5	●	5	.5017	7/8	9
		●	3	●	3							●	5	●	5	.5018	1	8
		●	3	●	3	●	5	●	5							.5019	1 1/8	7
		●	4	●	4	●	5	●	5							.5020	1 1/4	7
				●	4	●	5	●	5							.5021	1 3/8	6
				●	4	●	5	●	5							.5022	1 1/2	6
						●	6	●	6							.5023	1 3/4	5
						●	6	●	6							.5024	2	4 1/2

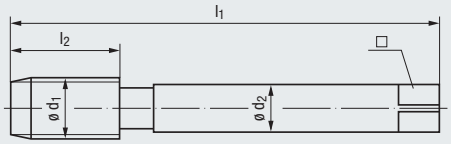
● = In stock
★ = Allow 7 days for delivery

DIN Length · ANSI Shank

Overall length acc. to DIN 371, DIN 376



Reinforced Shank (No.1 - 3/8)



Reduced Shank (7/16 - 2)

UNC

Unified Coarse Thread
ASME B1.1

Z CNC-Controlled Machines

Class of Fit	2B	2B	2B	2B	**3B**
Coating	TICN	GLT-1	TICN	GLT-1	GLT-1
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics	R45	R45	R45	R45	R45
	E / 1.5-2	**E / 1.5-2**	**E / 1.5-2**	**E / 1.5-2**	**E / 1.5-2**
	E / O / P	E / O / P	E / O	E / O	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1				
Applications – Material	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1

Reinforced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification	BU519400 Enorm 1-Z/E TICN	Flutes	BU51C400 Enorm 1-Z/E GLT-1	Flutes	BU999400 Enorm 1-Z/E-IKZ TICN	Flutes	BU99C400 Enorm 1-Z/E-IKZ GLT-1	Flutes	BU51C410 Enorm 1-Z/E GLT-1	Flutes
No. 1	64	1.772	0.157	0.472	0.141	0.110	0.0595	**.5000**										
No. 2	56	1.772	0.177	0.472	0.141	0.110	0.0700	**.5001**										
No. 3	48	1.969	0.197	0.551	0.141	0.110	0.0820	**.5002**										
No. 4	40	2.205	0.236	0.709	0.141	0.110	0.0890	**.5003**	●	2	●	2					●	2
No. 5	40	2.205	0.276	0.709	0.141	0.110	0.1015	**.5004**	●	3	●	3					●	3
No. 6	32	2.205	0.276	0.787	0.141	0.110	0.1110	**.5005**	●	3	●	3					●	3
No. 8	32	2.480	0.315	0.827	0.168	0.131	0.1360	**.5006**	●	3	●	3					●	3
No. 10	24	2.756	0.394	0.984	0.194	0.152	0.1520	**.5007**	●	3	●	3	●	3	●	3	●	3
No. 12	24	3.150	0.394	1.142	0.220	0.165	0.1770	**.5008**										
1/4	20	3.150	0.512	1.181	0.255	0.191	0.2040	**.5009**	●	3	●	3	●	3	●	3	●	3
5/16	18	3.543	0.551	1.378	0.318	0.238	0.2610	**.5010**	●	3	●	3	●	3	●	3	●	3
3/8	16	3.937	0.630	1.535	0.381	0.286	0.3160	**.5011**	●	3	●	3	●	3	●	3	●	3

Reduced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification	CU519400 Enorm 2-Z/E TICN	Flutes	CU51C400 Enorm 2-Z/E GLT-1	Flutes	CU999400 Enorm 2-Z/E-IKZ TICN	Flutes	CU99C400 Enorm 2-Z/E-IKZ GLT-1	Flutes	CU51C410 Enorm 2-Z/E GLT-1	Flutes
7/16	14	3.937	0.709	—	0.323	0.242	0.3680	**.5012**	●	4	●	4	●	4	●	4	●	4
1/2	13	4.331	0.787	—	0.367	0.275	0.4219	**.5013**	●	4	●	4	●	4	●	4	●	4
9/16	12	4.331	0.787	—	0.429	0.322	0.4844	**.5014**	●	4					●	4	●	4
5/8	11	4.331	0.866	—	0.480	0.360	0.5313	**.5015**	●	4	●	4	●	4	●	4	●	4
3/4	10	4.921	0.984	—	0.590	0.442	0.6563	**.5016**	●	4	●	4	●	4	●	4	●	4
7/8	9	5.512	1.063	—	0.697	0.523	0.7656	**.5017**	●	5	●	5	●	5	●	5	●	5
1	8	6.299	1.181	—	0.800	0.600	0.8750	**.5018**	●	5	●	5	●	5	●	5	●	5
1 1/8	7	7.087	1.378	—	0.896	0.672	0.9843	**.5019**										
1 1/4	7	7.087	1.378	—	1.021	0.766	1.1094	**.5020**										
1 3/8	6	7.874	1.575	—	1.108	0.831	1.2205	**.5021**										
1 1/2	6	7.874	1.575	—	1.233	0.925	1.3386	**.5022**										
1 3/4	5	8.661	1.772	—	1.430	1.072	1.5551	**.5023**										
2	4 1/2	9.843	1.969	—	1.644	1.233	1.7812	**.5024**										

Ordering Example: **BU519400.5003**

Z CNC-Controlled Machines

SPEED High-Speed Cutting

new

3B		2BX	2BX	2BX	2BX	2BX	2BX		Class of Fit
GLT-1		TICN	TICN	TICN	TIN-70	TIN-70	TIN		Coating
HSS Extra		HSS Extra	HSS Extra	HSS Extra	HSSE-PM	HSSE-PM	HSS Extra		Cutting Material
R45							R15		Technical Characteristics
E / 1.5-2		C / 2-3	C / 2-3	E / 1.5-2	B / 4-5	B / 4-5	C / 2-3		
E / O		E	E	E	E	E	E		
max. 3 x d_1		max. 2 x d_1 1)	max. 2 x d_1	max. 2 x d_1 1)	max. 3 x d_1		max. 2 x d_1		Thread Depth and Hole Shape
P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1		K 1.1-4.2 N 1.4-6	K 1.1-4.2 N 1.4-6	K 1.1-4.2 N 1.4-6	P 1.1-4.1 K 2.1-2 N 1.4-6	P 1.1-4.1 K 2.1-2 N 1.4-6	P 1.1-4.1 M 1.1-3.1 K 2.1-2 N 1.4-2.1		Applications – Material
BU99C410		**BW159401**	**BW179401**	**BW169401**	**BW138F01**	**BW208F01**	**BU263701**		**Tool Identification**

Enorm 1-Z/E-IKZ GLT-1	Flutes	Rekord 1A-SPEED IKZ-TICN	Flutes	Rekord 1A-SPEED IKZN-TICN	Flutes	Rekord 1A-SPEED/E IKZ-TICN	Flutes	Rekord 1B-Z-SPEED PM-TIN-70	Flutes	Rekord 1B-Z-SPEED IKZN-PM TIN-70	Flutes	Rekord 1D-SPEED TIN	Flutes	Dimens. ID	Nominal Size ø d_1	T.P.I.
														.5000	No. 1	64
														.5001	No. 2	56
														.5002	No. 3	48
								●	2			●	2	.5003	No. 4	40
								●	3			●	2	.5004	No. 5	40
								●	3			●	3	.5005	No. 6	32
								●	3			●	3	.5006	No. 8	32
●	3							●	3	●	3	●	3	.5007	No. 10	24
														.5008	No. 12	24
●	3	●	3	●	3	●	3	●	3	●	3	●	3	.5009	1/4	20
●	3	●	3	●	3	●	3	●	4	●	4	●	3	.5010	5/16	18
●	3	●	3	●	3	●	3	●	4	●	4	●	3	.5011	3/8	16

CU99C410		**CW159401**	**CW179401**	**CW169401**	**CW138F01**	**CW208F01**	**CU263701**	**Tool Identification**

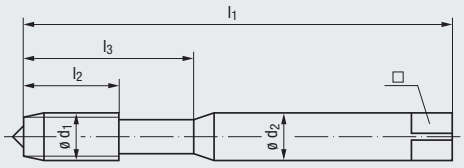
Enorm 2-Z/E-IKZ GLT-1	Flutes	Rekord 2A-SPEED IKZ-TICN	Flutes	Rekord 2A-SPEED IKZN-TICN	Flutes	Rekord 2A-SPEED/E IKZ-TICN	Flutes	Rekord 2B-Z-SPEED PM-TIN-70	Flutes	Rekord 2B-Z-SPEED IKZN-PM TIN-70	Flutes	Rekord 2D-SPEED TIN	Flutes	Dimens. ID	Nominal Size ø d_1	T.P.I.
●	4	●	3	●	3	●	3	●	4	●	4	●	3	.5012	7/16	14
●	4	●	3	●	3	●	3	●	4	●	4	●	3	.5013	1/2	13
●	4	●	3	●	3	●	3							.5014	9/16	12
●	4	●	3	●	3	●	3	●	4	●	4	●	3	.5015	5/8	11
●	4	●	4	●	4	●	4	●	4	●	4	●	3	.5016	3/4	10
		●	4	●	4	●	4							.5017	7/8	9
		●	4	●	4	●	4							.5018	1	8
														.5019	1 1/8	7
														.5020	1 1/4	7
														.5021	1 3/8	6
														.5022	1 1/2	6
														.5023	1 3/4	5
														.5024	2	4 1/2

●= In stock
★= Allow 7 days for delivery

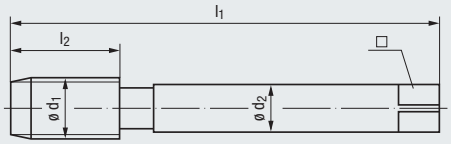
1) Threading in through holes is possible only with external cooling/lubrication

DIN Length · ANSI Shank

Overall length acc. to DIN 371, DIN 376



Reinforced Shank
(No.1 - 3/8)



Reduced Shank
(7/16 - 2)

SPEED
High-Speed Cutting

UNC

Unified Coarse Thread
ASME B1.1

Class of Fit	2BX	2B
Coating	TIN	TIN
Cutting Material	HSS Extra	HSS Extra
Technical Characteristics	R15	R45
	C / 2-3	C / 2-3
	E	E
Thread Depth and Hole Shape	max. 2 x d_1	max. 3 x d_1
Applications – Material	P 1.1-4.1 M 1.1-3.1 K 2.1-2 N 1.4-2.1	P 1.1-4.1 M 1.1-3.1 K 2.1 N 1.1-2.2

Reinforced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Dimens. ID	BU293701 Rekord 1D-SPEED IKZ-TIN	Flutes	BW553700 Enorm 1-SPEED IKZ-TIN	Flutes
No. 1	64	1.772	0.157	0.472	0.141	0.110	0.0595	.5000				
No. 2	56	1.772	0.177	0.472	0.141	0.110	0.0700	.5001				
No. 3	48	1.969	0.197	0.551	0.141	0.110	0.0820	.5002				
No. 4	40	2.205	0.236	0.709	0.141	0.110	0.0890	.5003				
No. 5	40	2.205	0.276	0.709	0.141	0.110	0.1015	.5004				
No. 6	32	2.205	0.276	0.787	0.141	0.110	0.1110	.5005				
No. 8	32	2.480	0.315	0.827	0.168	0.131	0.1360	.5006				
No. 10	24	2.756	0.394	0.984	0.194	0.152	0.1520	.5007	●	3		
No. 12	24	3.150	0.394	1.142	0.220	0.165	0.1770	.5008				
1/4	20	3.150	0.512	1.181	0.255	0.191	0.2040	.5009	●	3	●	3
5/16	18	3.543	0.551	1.378	0.318	0.238	0.2610	.5010	●	3	●	3
3/8	16	3.937	0.630	1.535	0.381	0.286	0.3160	.5011	●	3	●	3

Reduced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Dimens. ID	CU293701 Rekord 2D-SPEED IKZ-TIN	Flutes	CW553700 Enorm 2-SPEED IKZ-TIN	Flutes
7/16	14	3.937	0.709	—	0.323	0.242	0.3680	.5012	●	3	●	4
1/2	13	4.331	0.787	—	0.367	0.275	0.4219	.5013	●	3	●	4
9/16	12	4.331	0.787	—	0.429	0.322	0.4844	.5014				
5/8	11	4.331	0.866	—	0.480	0.360	0.5313	.5015	●	3	●	4
3/4	10	4.921	0.984	—	0.590	0.442	0.6563	.5016	●	3	●	4
7/8	9	5.512	1.063	—	0.697	0.523	0.7656	.5017				
1	8	6.299	1.181	—	0.800	0.600	0.8750	.5018				
1 1/8	7	7.087	1.378	—	0.896	0.672	0.9843	.5019				
1 1/4	7	7.087	1.378	—	1.021	0.766	1.1094	.5020				
1 3/8	6	7.874	1.575	—	1.108	0.831	1.2205	.5021				
1 1/2	6	7.874	1.575	—	1.233	0.925	1.3386	.5022				
1 3/4	5	8.661	1.772	—	1.430	1.072	1.5551	.5023				
2	4 1/2	9.843	1.969	—	1.644	1.233	1.7812	.5024				

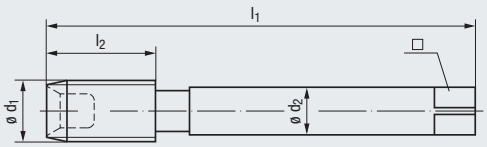
Ordering Example: **BU293701.5007**

DIN Length · ANSI Shank

Overall length acc. to DIN 376

VA
Stainless Steel Materials

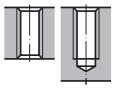
With internal chip collector



Reduced Shank

UNC

Unified Coarse Thread
ASME B1.1

Class of Fit	3BX [2]
Coating	NE2
Cutting Material	HSS Extra
Technical Characteristics	
	C / 2-3
	P / O [1]
Thread Depth and Hole Shape	max. 1.5 x d_1 
Applications – Material	P 1.1-4.1 M 1.1-2.1 K 1.1-4.2

Reduced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	ø d_2	□	Tool Identification Dimens. ID	CU803011 Robust 2X-VA NE2	Flutes
3/4	10	4.921	1.181	0.590	0.442	0.6563 **.5016**	●	5
7/8	9	5.512	1.260	0.697	0.523	0.7656 **.5017**	●	5
1	8	6.299	1.417	0.800	0.600	0.8750 **.5018**	●	5
1 1/8	7	7.087	1.575	0.896	0.672	0.9843 **.5019**	●	5
1 1/4	7	7.087	1.575	1.021	0.766	1.1094 **.5020**	●	6
1 3/8	6	7.874	1.969	1.108	0.831	1.2205 **.5021**	●	6
1 1/2	6	7.874	1.969	1.233	0.925	1.3386 **.5022**	●	6
1 3/4	5	8.661	2.283	1.430	1.072	1.5551 **.5023**	●	6
2	4 1/2	9.843	2.559	1.644	1.233	1.7812 **.5024**	●	6

[1] If possible, use paste lubrication, coating both the tool and the walls of the drilled hole.
Lubrication with oil is possible only in the vertical machining of blind holes, if the hole is entirely filled with oil.

[2] Class 2B threads may be produced with 3BX taps.

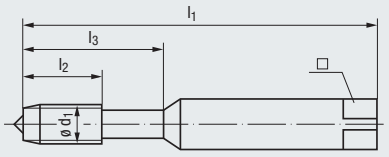
Larger sizes priced upon request. We have experience in making taps as large as 10 inches ø UN.

The Complete Tool System

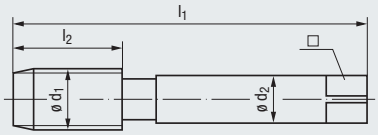
Robust 2X-VA Taps when used with a KSN Type tapping attachment creates the optimal tapping unit!

● = In stock
★ = Allow 7 days for delivery

ANSI Length · ANSI Shank



Reinforced Shank
(No.4 - 3/8)



Reduced Shank
(7/16 - 3/4)

UNC

Unified Coarse Thread
ASME B1.1

	STEEL Steel Materials		VA Stainless Steel Materials		
Class of Fit	2B		2B	3B	Oversize
Coating	TIN		NT	NT	NT
Cutting Material	HSS Extra		HSS Extra	HSS Extra	HSS Extra
Technical Characteristics					
	B / 4-5		B / 4-5	B / 4-5	B / 4-5
	E / O		E / O / P	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1		max. 3 x d_1		
Applications – Material	P 1.1-4.1 K 2.1 N 2.2, 2.4-5		P 1.1-3.1 M 1.1-2.1 K 2.1 N 2.2, 2.5-6	P 1.1-3.1 M 1.1-2.1 K 2.1 N 2.2, 2.5-6	P 1.1-3.1 M 1.1-2.1 K 2.1 N 2.2, 2.5-6

Nominal Size ø d_1	T.P.I.	inch l_1		l_2	l_3	ø d_2	□		Tool Identification Dimens. ID	AU208400 Rekord B-STEEL-L TIN	Flutes		AU203000 Rekord B-VA NT	Flutes	AU203010 Rekord B-VA NT	Flutes	AU203044 Rekord B-VA NT	Flutes
No. 4	40	1 7/8	1.88	0.433	0.709	0.141	0.110	0.0890	.5003	●	2		●	2				
No. 5	40	1 15/16	1.94	0.433	0.709	0.141	0.110	0.1015	.5004	●	3		●	3				
No. 6	32	2	2.00	0.472	0.748	0.141	0.110	0.1110	.5005	●	3		●	3				
No. 8	32	2 1/8	2.13	0.512	0.827	0.168	0.131	0.1360	.5006	●	3		●	3				
No. 10	24	2 3/8	2.38	0.591	0.945	0.194	0.152	0.1520	.5007	●	3		●	3			1) ● (+.0035)	3
1/4	20	2 1/2	2.50	0.669	1.142	0.255	0.191	0.2040	.5009	●	3		●	3	●	3	● (+.0050)	3
5/16	18	2 23/32	2.72	0.787	1.299	0.318	0.238	0.2610	.5010	●	3		●	3	●	3	● (+.0050)	3
3/8	16	2 15/16	2.94	0.866	1.378	0.381	0.286	0.3160	.5011	●	3		●	3	●	3	● (+.0050)	3
7/16	14	3 5/32	3.16	0.866	—	0.323	0.242	0.3680	.5012	●	3		●	3	●	3	● (+.0050)	3
1/2	13	3 3/8	3.38	0.984	—	0.367	0.275	0.4219	.5013	●	3		●	3	●	3	● (+.0050)	3
9/16	12	3 19/32	3.59	1.024	—	0.429	0.322	0.4844	.5014	●	3		●	3				
5/8	11	3 13/16	3.81	1.063	—	0.480	0.360	0.5313	.5015	●	3		●	3	●	3	● (+.0050)	3
3/4	10	4 1/4	4.25	1.181	—	0.590	0.442	0.6563	.5016	●	3		●	3				

1) Tool Identification = **AU203043**

DIN Length · ANSI Shank

All ANSI Length · ANSI Shank taps are available in the popular DIN Length · ANSI Shank style.

The DIN Length · ANSI Shank configuration allows for added reach capabilities and greater chip clearance.

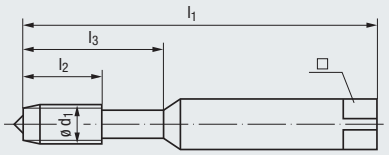
VA Stainless Steel Materials				TI Titanium				
2B	**3B**	**Oversize**		2BX	**3BX**	2BX	**3BX**	Class of Fit
NE2	NE2	NE2		NT2	NT2	NT2	NT2	Coating
HSS Extra	HSS Extra	HSS Extra		HSS Extra	HSS Extra	HSS Extra	HSS Extra	Cutting Material
R35	R35	R35		L15	L15	R15	R15	Technical Characteristics
C / 2-3	C / 2-3	C / 2-3		D / 4-5	D / 4-5	C / 2-3	C / 2-3	
E / O / P	E / O / P	E / O / P		E / O / P	E / O / P	E / O / P	E / O / P	
max. 2.5 x d_1				max. 3 x d_1		max. 2 x d_1		Thread Depth and Hole Shape
P 1.1-3.1 M 1.1-2.1 K 2.1	P 1.1-3.1 M 1.1-2.1 K 2.1	P 1.1-3.1 M 1.1-2.1 K 2.1		P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4	P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4	P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4	P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4	Applications – Material

AU503200		AU503210		AU503244			AU306001		AU306011		AU456001		AU456011		Tool Identification		
Enorm VA NE2	Flutes	Enorm VA NE2	Flutes	Enorm VA NE2	Flutes		Rekord C-TI NT2	Flutes	Rekord C-TI NT2	Flutes	Rekord D-TI NT2	Flutes	Rekord D-TI NT2	Flutes	Dimens. ID	Nominal Size ø d_1	T.P.I.
●	2						●	2			●	2			.5003	No. 4	40
●	3						●	2			●	2			.5004	No. 5	40
●	3						●	3			●	3			.5005	No. 6	32
●	3						●	3			●	3			.5006	No. 8	32
●	3			[2] ● (+.0035)	3		●	3			●	3			.5007	No. 10	24
●	3	●	3	● (+.0050)	3		●	3	●	3	●	3	●	3	.5009	1/4	20
●	3	●	3	● (+.0050)	3		●	3	●	3	●	3	●	3	.5010	5/16	18
●	3	●	3	● (+.0050)	3		●	3	●	3	●	3	●	3	.5011	3/8	16
●	3	●	3	● (+.0050)	3		●	3	●	3	●	3	●	3	.5012	7/16	14
●	3	●	3	● (+.0050)	3		●	3	●	3	●	3	●	3	.5013	1/2	13
●	3						●	3			●	3			.5014	9/16	12
●	3			● (+.0050)	3		●	3	●	3	●	3	●	3	.5015	5/8	11
●	3						●	3			●	3			.5016	3/4	10

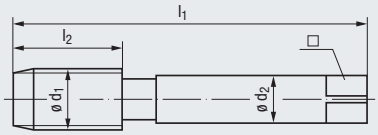
[2] Tool Identification = **AU503243**

● = In stock
★ = Allow 7 days for delivery

ANSI Length · ANSI Shank



Reinforced Shank
(No.4 - 3/8)



Reduced Shank
(7/16 - 3/4)

H
Materials of High Tensile Strength

UNC

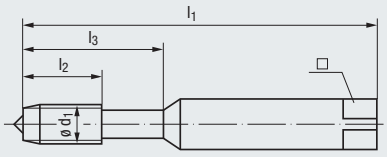
Unified Coarse Thread
ASME B1.1

Class of Fit	2BX	2BX
Coating	NT	TICN
Cutting Material	HSS Extra	HSS Extra
Technical Characteristics		
	C / 2-3	C / 2-3
	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 2 x d_1	
Applications – Material	P 1.1-3.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1	P 1.1-4.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1

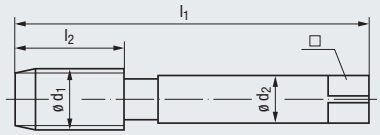
Nominal Size ø d_1	T.P.I.	inch l_1		l_2	l_3	ø d_2	□		Dimens. ID	Tool Identification AU100501 Rekord A-H NT	Flutes	AU109101 Rekord A-H TICN	Flutes
No. 4	40	1 7/8	1.88	0.433	0.709	0.141	0.110	0.0890	.5003	●	3	●	3
No. 5	40	1 15/16	1.94	0.433	0.709	0.141	0.110	0.1015	.5004	●	3	●	3
No. 6	32	2	2.00	0.472	0.748	0.141	0.110	0.1110	.5005	●	3	●	3
No. 8	32	2 1/8	2.13	0.512	0.827	0.168	0.131	0.1360	.5006	●	3	●	3
No. 10	24	2 3/8	2.38	0.591	0.945	0.194	0.152	0.1520	.5007	●	3	●	3
1/4	20	2 1/2	2.50	0.669	1.142	0.255	0.191	0.2040	.5009	●	3	●	3
5/16	18	2 23/32	2.72	0.787	1.299	0.318	0.238	0.2610	.5010	●	3	●	3
3/8	16	2 15/16	2.94	0.866	1.378	0.381	0.286	0.3160	.5011	●	3	●	3
7/16	14	3 5/32	3.16	0.866	—	0.323	0.242	0.3680	.5012	●	3	●	3
1/2	13	3 3/8	3.38	0.984	—	0.367	0.275	0.4219	.5013	●	3	●	3
9/16	12	3 19/32	3.59	1.024	—	0.429	0.322	0.4844	.5014	●	3	●	3
5/8	11	3 13/16	3.81	1.063	—	0.480	0.360	0.5313	.5015	●	3	●	3
3/4	10	4 1/4	4.25	1.181	—	0.590	0.442	0.6563	.5016	●	4	●	4

Ordering Example: **AU100501.5003**

ANSI Length · ANSI Shank



Reinforced Shank
(No.4 - 3/8)



Reduced Shank
(7/16 - 3/8)

UNC

Unified Coarse Thread
ASME B1.1

Z
CNC-Controlled Machines

Class of Fit	2B	2B	**3B**	**3B**
Coating		TIN		TIN
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics	R45	R45	R45	R45
	E / 1.5-2	**E / 1.5-2**	**E / 1.5-2**	**E / 1.5-2**
	E / 0 / P	E / 0 / P	E / 0 / P	E / 0 / P
Thread Depth and Hole Shape	max. 3 x d_1			
Applications – Material	P 1.1-4.1 M 1.1-2.1 N 2.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1	P 1.1-4.1 M 1.1-2.1 N 2.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1

Nominal Size ø d_1	T.P.I.	inch l_1		l_2	l_3	ø d_2	□		Dimens. ID	AU513500 Enorm Z/E	Flutes	AU513700 Enorm Z/E TIN	Flutes	AU513510 Enorm Z/E	Flutes	AU513710 Enorm Z/E TIN	Flutes
Tool Identification										AU513500		AU513700		AU513510		AU513710	
No. 4	40	1 7/8	1.88	0.236	0.709	0.141	0.110	0.0890	**.5003**	●	2	●	2				
No. 5	40	1 15/16	1.94	0.276	0.709	0.141	0.110	0.1015	**.5004**	●	3	●	3				
No. 6	32	2	2.00	0.276	0.748	0.141	0.110	0.1110	**.5005**	●	3	●	3				
No. 8	32	2 1/8	2.13	0.315	0.827	0.168	0.131	0.1360	**.5006**	●	3	●	3				
No. 10	24	2 3/8	2.38	0.354	0.945	0.194	0.152	0.1520	**.5007**	●	3	●	3				
1/4	20	2 1/2	2.50	0.512	1.142	0.255	0.191	0.2040	**.5009**	●	3	●	3	●	3	●	3
5/16	18	2 23/32	2.72	0.551	1.299	0.318	0.238	0.2610	**.5010**	●	3	●	3			●	3
3/8	16	2 15/16	2.94	0.630	1.378	0.381	0.286	0.3160	**.5011**	●	3	●	3	●	3	●	3
7/16	14	3 5/32	3.16	0.709	—	0.323	0.242	0.3680	**.5012**	●	4	●	4	●	4	●	4
1/2	13	3 3/8	3.38	0.787	—	0.367	0.275	0.4219	**.5013**	●	4	●	4	●	4	●	4
9/16	12	3 19/32	3.59	0.787	—	0.429	0.322	0.4844	**.5014**	●	4	●	4				
5/8	11	3 13/16	3.81	0.866	—	0.480	0.360	0.5313	**.5015**	●	4	●	4				
3/4	10	4 1/4	4.25	0.984	—	0.590	0.442	0.6563	**.5016**	●	4	●	4				

DIN Length · ANSI Shank

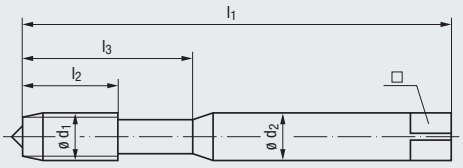
All ANSI Length · ANSI Shank taps are available in the popular DIN Length · ANSI Shank style.

The DIN Length · ANSI Shank configuration allows for added reach capabilities and greater chip clearance.

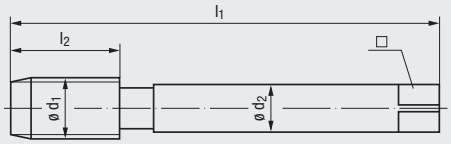
● = In stock
★ = Allow 7 days for delivery

DIN Length · ANSI Shank

Overall length acc. to DIN 371, DIN 374



Reinforced Shank (No.0 - 3/8)



Reduced Shank (7/16 - 1 1/2)

UNF

Unified Fine Thread
ASME B1.1

STEEL
Steel Materials

Class of Fit	2B	2B	2B	2B	3B
Coating	TIN	TIN	TICN		
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics		R15	R15	R35	R35
	B / 4-5	C / 2-3	C / 2-3	C / 2-3	C / 2-3
	E / 0	E / 0	E / 0	E / 0	E / 0
Thread Depth and Hole Shape	max. 3 x d_1	max. 2 x d_1		max. 2.5 x d_1	
Applications – Material	P 1.1-4.1 K 2.1 N 2.2, 2.4-5	P 1.1-4.1 K 1.1-4.2 N 1.4-5, 2.4-5	P 1.1-4.1 K 1.1-4.2 N 1.4-5, 2.4-5	P 1.1-3.1 N 2.2	P 1.1-3.1 N 2.2

Reinforced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification	BU208400 Rekord 1B-STEEL-L TIN	Flutes	BU451400 Rekord 1D-STEEL TIN	Flutes	BU979000 Rekord 1D-STEEL IKZ-TICN	Flutes	BU501000 Enorm 1-STEEL	Flutes	BU501010 Enorm 1-STEEL	Flutes
No. 0	80	1.626	0.236	0.433	0.141	0.110	0.0480	.5033	●	2	●	2			●	2		
No. 1	72	1.772	0.276	0.472	0.141	0.110	0.0595	.5034	●	2	●	2			●	2		
No. 2	64	1.772	0.276	0.472	0.141	0.110	0.0730	.5035	●	2	●	2			●	2		
No. 3	56	1.969	0.354	0.551	0.141	0.110	0.0827	.5036	●	2	●	2			●	2		
No. 4	48	2.205	0.433	0.709	0.141	0.110	0.0945	.5037	●	2	●	2			●	2	●	2
No. 5	44	2.205	0.433	0.709	0.141	0.110	0.1063	.5038	●	3	●	2			●	3	●	3
No. 6	40	2.205	0.472	0.787	0.141	0.110	0.1181	.5039	●	3	●	3			●	3	●	3
No. 8	36	2.480	0.512	0.827	0.168	0.131	0.1378	.5040	●	3	●	3			●	3	●	3
No. 10	32	2.756	0.512	0.984	0.194	0.152	0.1614	.5041	●	3	●	3	●	3	●	3	●	3
No. 12	28	3.150	0.630	1.142	0.220	0.165	0.1820	.5042	●	3	●	3			●	3	●	3
1/4	28	3.150	0.669	1.181	0.255	0.191	0.2165	.5043	●	3	●	3	●	3	●	3	●	3
5/16	24	3.543	0.669	1.260	0.318	0.238	0.2717	.5044	●	3	●	3	●	3	●	3	●	3
3/8	24	3.937	0.709	1.535	0.381	0.286	0.3346	.5045	●	4	●	3	●	3	●	3	●	3

Reduced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification	CU208400 Rekord 2B-STEEL-L TIN	Flutes	CU451400 Rekord 2D-STEEL TIN	Flutes	CU979000 Rekord 2D-STEEL IKZ-TICN	Flutes	CU501000 Enorm 2-STEEL	Flutes	CU501010 Enorm 2-STEEL	Flutes
7/16	20	3.937	0.866	—	0.323	0.242	0.3898	.5046	●	3	●	3	●	3	●	3	●	3
1/2	20	3.937	0.866	—	0.367	0.275	0.4528	.5047	●	3	●	3	●	3	●	4	●	4
9/16	18	3.937	0.866	—	0.429	0.322	0.5118	.5048	●	3	●	3			●	4	●	4
5/8	18	3.937	0.866	—	0.480	0.360	0.5709	.5049	●	3	●	3			●	4	●	4
3/4	16	4.331	0.984	—	0.590	0.442	0.6890	.5050	●	4	●	4			●	4	●	4
7/8	14	4.921	1.024	—	0.697	0.523	0.8071	.5051	●	4	●	4			●	4		
1	12	5.512	1.102	—	0.800	0.600	0.9219	.5052	●	4	●	4			●	4		
1 1/8	12	5.906	1.181	—	0.896	0.672	1.0433	.5053	●	4					●	4		
1 1/4	12	5.906	1.181	—	1.021	0.766	1.1719	.5054	●	4					●	5		
1 3/8	12	6.693	1.299	—	1.108	0.831	1.2992	.5055	●	5					●	5		
1 1/2	12	6.693	1.299	—	1.233	0.925	1.4173	.5056	●	5					●	6		

Ordering Example: **BU208400.5033**

VA
Stainless Steel Materials

2B	2B	3B	Oversize	2B	2B	3B	3B	Class of Fit
GLT-1	TICN	GLT-1	GLT-1	NE2	GLT-1	NE2	GLT-1	Coating
HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	Cutting Material
				R35	R35	R35	R35	Technical Characteristics
B / 4-5	B / 4-5	B / 4-5	B / 4-5	C / 2-3	C / 2-3	C / 2-3	C / 2-3	
E / O / P	E / O / P	E / O / P	E / O / P	E / O / P	E / O / P	E / O / P	E / O / P	
max. 3 x d_1				max. 2.5 x d_1				Thread Depth and Hole Shape
P 1.1-4.1	P 1.1-4.1	P 1.1-4.1	P 1.1-4.1	P 1.1-3.1	P 1.1-4.1	P 1.1-3.1	P 1.1-4.1	Applications – Material
M 1.1-3.1	M 1.1-3.1	M 1.1-3.1	M 1.1-3.1	M 1.1-2.1	M 1.1-3.1	M 1.1-2.1	M 1.1-3.1	
K 2.1	K 2.1	K 2.1	K 2.1	K 2.1	K 2.1	K 2.1	K 2.1	
N 2.2	N 2.2, 2.5-6	N 2.2	N 2.2					

BU20C300		BU089300		BU20C310		BU20C344		BU503200		BU50C300		BU503210		BU50C310		Tool Identification		
Rekord 1B-VA GLT-1	Flutes	Rekord 1B-VA-IKZN TICN	Flutes	Rekord 1B-VA GLT-1	Flutes	Rekord 1B-VA GLT-1	Flutes	Enorm 1-VA NE2	Flutes	Enorm 1-VA GLT-1	Flutes	Enorm 1-VA NE2	Flutes	Enorm 1-VA GLT-1	Flutes	Dimens. ID	Nominal Size ø d_1	T.P.I.
●	2			●	2			●	2	●	2	●	2	●	2	.5033	No. 0	80
●	2			●	2							●	2	●	2	.5034	No. 1	72
●	2			●	2			●	2	●	2	●	2	●	2	.5035	No. 2	64
●	2			●	2							●	2	●	2	.5036	No. 3	56
●	2			●	2			●	2	●	2	●	2	●	2	.5037	No. 4	48
				●	3			●	3	●	3	●	3	●	3	.5038	No. 5	44
●	3			●	3	[1] ● (+.0035)	3	●	3	●	3	●	3	●	3	.5039	No. 6	40
●	3			●	3	[1] ● (+.0035)	3	●	3	●	3	●	3	●	3	.5040	No. 8	36
●	3	●	3	●	3	[1] ● (+.0035)	3	●	3	●	3	●	3	●	3	.5041	No. 10	32
				●	3			●	3	●	3	●	3	●	3	.5042	No. 12	28
●	3	●	3	●	3	● (+.0050)	3	●	3	●	3	●	3	●	3	.5043	1/4	28
●	3	●	3	●	3	● (+.0050)	3	●	3	●	3	●	3	●	3	.5044	5/16	24
●	4	●	4	●	4	● (+.0050)	4	●	3	●	3	●	3	●	3	.5045	3/8	24

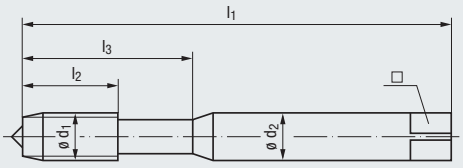
CU20C300		CU089300		CU20C310		CU20C344		CU503200		CU50C300		CU503210		CU50C310		Tool Identification		
Rekord 2B-VA GLT-1	Flutes	Rekord 2B-VA-IKZN TICN	Flutes	Rekord 2B-VA GLT-1	Flutes	Rekord 2B-VA GLT-1	Flutes	Enorm 2-VA NE2	Flutes	Enorm 2-VA GLT-1	Flutes	Enorm 2-VA NE2	Flutes	Enorm 2-VA GLT-1	Flutes	Dimens. ID	Nominal Size ø d_1	T.P.I.
●	3	●	3	●	3	● (+.0050)	3	●	3	●	3	●	3	●	3	.5046	7/16	20
●	3	●	3	●	3	● (+.0050)	3	●	4	●	4	●	4	●	4	.5047	1/2	20
●	3			●	3			●	4	●	4	●	4	●	4	.5048	9/16	18
●	3			●	3	● (+.0050)	3	●	4	●	4	●	4	●	4	.5049	5/8	18
●	4			●	4			●	4	●	4	●	4	●	4	.5050	3/4	16
●	4			●	4			●	4	●	4	●	4	●	4	.5051	7/8	14
●	4			●	4			●	4	●	4	●	4	●	4	.5052	1	12
●	4			●	4			●	4	●	4	●	4	●	4	.5053	1 1/8	12
●	4			●	4			●	5	●	5	●	5	●	5	.5054	1 1/4	12
●	5			●	5			●	5	●	5	●	5	●	5	.5055	1 3/8	12
●	5			●	5			●	6	●	6	●	6	●	6	.5056	1 1/2	12

● = In stock
★ = Allow 7 days for delivery

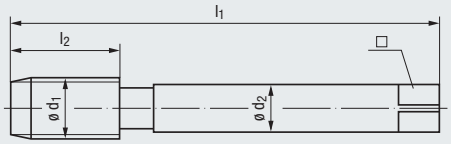
[1] Tool Identification = **BU20C343**

DIN Length · ANSI Shank

Overall length acc. to DIN 371, DIN 374



Reinforced Shank (No.0 - 3/8)



Reduced Shank (7/16 - 1 1/2)

UNF

Unified Fine Thread
ASME B1.1

	VA Stainless Steel Materials		AL Aluminum Wrought Alloys		
	new		new	new	new
Class of Fit	**Oversize**		2B	2B	**3B**
Coating	GLT-1		GLT-8	GLT-8	GLT-8
Cutting Material	HSS Extra		HSS Extra	HSS Extra	HSS Extra
Technical Characteristics	R35			R45	R45
	C / 2-3		B / approx. 3	C / 2-3	C / 2-3
	E / O / P		E / O	E / O	E / O
Thread Depth and Hole Shape	max. 2.5 x d_1		max. 3 x d_1	max. 2.5 x d_1	
Applications – Material	**P** 1.1-4.1 **M** 1.1-3.1 **K** 2.1		**N** 1.1-4	**N** 1.1-4	**N** 1.1-4

Reinforced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification	BU50C344 Enorm 1-VA GLT-1	Flutes	BU20S800 Rekord 1B-AL GLT-8	Flutes	BU50S800 Enorm 1-AL GLT-8	Flutes	BU50S810 Enorm 1-AL GLT-8	Flutes
No. 0	80	1.626	0.236	0.433	0.141	0.110	0.0480	**.5033**			●	2	●	2		
No. 1	72	1.772	0.276	0.472	0.141	0.110	0.0595	**.5034**			●	2	●	2		
No. 2	64	1.772	0.276	0.472	0.141	0.110	0.0730	**.5035**			●	2	●	2		
No. 3	56	1.969	0.354	0.551	0.141	0.110	0.0827	**.5036**			●	2	●	2		
No. 4	48	2.205	0.433	0.709	0.141	0.110	0.0945	**.5037**			●	2	●	2		
No. 5	44	2.205	0.433	0.709	0.141	0.110	0.1063	**.5038**			●	2	●	2		
No. 6	40	2.205	0.472	0.787	0.141	0.110	0.1181	**.5039**	1) ● (+.0035)	3	●	2	●	2		
No. 8	36	2.480	0.512	0.827	0.168	0.131	0.1378	**.5040**	1) ● (+.0035)	3	●	2	●	2		
No. 10	32	2.756	0.512	0.984	0.194	0.152	0.1614	**.5041**	1) ● (+.0035)	3	●	2	●	2	●	2
No. 12	28	3.150	0.630	1.142	0.220	0.165	0.1820	**.5042**			●	2	●	2		
1/4	28	3.150	0.669	1.181	0.255	0.191	0.2165	**.5043**	● (+.0050)	3	●	2	●	2	●	2
5/16	24	3.543	0.669	1.260	0.318	0.238	0.2717	**.5044**	● (+.0050)	3	●	2	●	2	●	2
3/8	24	3.937	0.709	1.535	0.381	0.286	0.3346	**.5045**	● (+.0050)	3	●	3	●	2	●	2

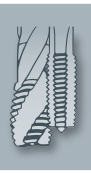
Reduced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification	CU50C344 Enorm 2-VA GLT-1	Flutes	CU20S800 Rekord 2B-AL GLT-8	Flutes	CU50S800 Enorm 2-AL GLT-8	Flutes	CU50S810 Enorm 2-AL GLT-8	Flutes
7/16	20	3.937	0.866	—	0.323	0.242	0.3898	**.5046**	● (+.0050)	3	●	3	●	3	●	3
1/2	20	3.937	0.866	—	0.367	0.275	0.4528	**.5047**	● (+.0050)	4	●	3	●	4	●	4
9/16	18	3.937	0.866	—	0.429	0.322	0.5118	**.5048**			●	3	●	4	●	4
5/8	18	3.937	0.866	—	0.480	0.360	0.5709	**.5049**	● (+.0050)	4	●	3	●	4	●	4
3/4	16	4.331	0.984	—	0.590	0.442	0.6890	**.5050**			●	4	●	4	●	4
7/8	14	4.921	1.024	—	0.697	0.523	0.8071	**.5051**								
1	12	5.512	1.102	—	0.800	0.600	0.9219	**.5052**								
1 1/8	12	5.906	1.181	—	0.896	0.672	1.0433	**.5053**								
1 1/4	12	5.906	1.181	—	1.021	0.766	1.1719	**.5054**								
1 3/8	12	6.693	1.299	—	1.108	0.831	1.2992	**.5055**								
1 1/2	12	6.693	1.299	—	1.233	0.925	1.4173	**.5056**								

1) Tool Identification = **BU50C343**

Ordering Example: **BU50C344.5039**

AERO Nickel Alloys		TI Titanium						
3BX		2BX	3BX	3BX	2BX	3BX	3BX	Class of Fit
NT		NT2	NT2	TICN	NT2	NT2	TICN	Coating
HSS Extra		HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	Cutting Material
		L15	L15	L15	R15	R15	R15	Technical Characteristics
B / approx. 3		D / 4-5	D / 4-5	D / 4-5	C / 2-3	C / 2-3	C / 2-3	
O / P		E / O / P	E / O / P	E / O / P	E / O / P	E / O / P	E / O / P	
max. 3 x d_1		max. 3 x d_1		max. 3 x d_1	max. 2 x d_1			Thread Depth and Hole Shape
M 4.1 N 2.8 S 2.3, 2.5-6		P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4	P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4	P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4	P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4	P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4	P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4	Applications – Material



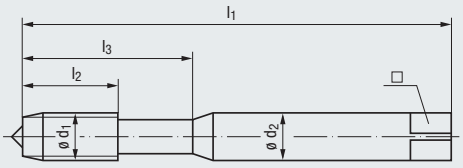
BU206511			BU306001		BU306011		BU309611		BU456001		BU456011		BU459611		Tool Identification		
Rekord 1B-AERO NT	Flutes		Rekord 1C-TI NT2	Flutes	Rekord 1C-TI NT2	Flutes	Rekord 1C-TI TICN	Flutes	Rekord 1D-TI NT2	Flutes	Rekord 1D-TI NT2	Flutes	Rekord 1D-TI TICN	Flutes	Dimens. ID	Nominal Size ø d_1	T.P.I.
			●	2	●	2			●	2	●	2			.5033	No. 0	80
			●	2	●	2			●	2	●	2			.5034	No. 1	72
			●	2	●	2					●	2			.5035	No. 2	64
			●	2	●	2					●	2			.5036	No. 3	56
			●	2	●	2					●	2			.5037	No. 4	48
			●	2	●	2					●	2			.5038	No. 5	44
●	3		●	3	●	3					●	3			.5039	No. 6	40
			●	3	●	3			●	3	●	3			.5040	No. 8	36
●	3		●	3	●	3	●	3	●	3	●	3	●	3	.5041	No. 10	32
●	3		●	3	●	3					●	3			.5042	No. 12	28
●	3		●	3	●	3	●	3	●	3	●	3	●	3	.5043	1/4	28
●	3		●	3	●	3	●	3	●	3	●	3	●	3	.5044	5/16	24
●	4		●	3	●	3	●	3	●	3	●	3	●	3	.5045	3/8	24

CU206511			CU306001		CU306011		CU309611		CU456001		CU456011		CU459611		Tool Identification		
Rekord 2B-AERO NT	Flutes		Rekord 2C-TI NT2	Flutes	Rekord 2C-TI NT2	Flutes	Rekord 2C-TI TICN	Flutes	Rekord 2D-TI NT2	Flutes	Rekord 2D-TI NT2	Flutes	Rekord 2D-TI TICN	Flutes	Dimens. ID	Nominal Size ø d_1	T.P.I.
●	3		●	3	●	3	●	3	●	3	●	3	●	3	.5046	7/16	20
●	3		●	3	●	3	●	3	●	3	●	3	●	3	.5047	1/2	20
			●	3	●	3	●	3	●	3	●	3	●	3	.5048	9/16	18
●	3		●	3	●	3	●	3	●	3	●	3	●	3	.5049	5/8	18
●	4		●	4	●	4	●	4	●	4	●	4	●	4	.5050	3/4	16
			●	4	●	4	●	4	●	4	●	4	●	4	.5051	7/8	14
					●	4	●	4	●	4	●	4	●	4	.5052	1	12
									●	4	●	4			.5053	1 1/8	12
									●	4	●	4			.5054	1 1/4	12
									●	5	●	5			.5055	1 3/8	12
									●	5	●	5			.5056	1 1/2	12

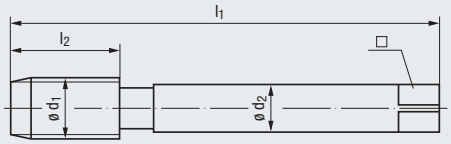
● = In stock
★ = Allow 7 days for delivery

DIN Length · ANSI Shank

Overall length acc. to DIN 371, DIN 374



Reinforced Shank
(No.0 - 3/8)



Reduced Shank
(7/16 - 1 1/2)

UNF

Unified Fine Thread
ASME B1.1

NI
Nickel Alloys

H
Materials of High Tensile Strength

	NI		H	
Class of Fit	3BX	3BX	2BX	2BX
Coating	TICN	TICN	NT	TICN
Cutting Material	HSSE-PM	HSSE-PM	HSS Extra	HSS Extra
Technical Characteristics	L08	R10		
	D / 4-5	C / 2-3	C / 2-3	C / 2-3
	O / P	O / P	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1	max. 2 x d_1	max. 2 x d_1	
Applications – Material	M 4.1 N 2.8 S 1.2-3 S 2.3, 2.5-6	M 4.1 N 2.8 S 1.2-3 S 2.3, 2.5-6	P 1.1-3.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1	P 1.1-4.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1

Reinforced Shank

Nominal Size ø d_1	T.P.I.	l_1	l_2	inch l_3	ø d_2	□	Dimens. ID	Tool Identification	BU30J411 Rekord 1C-NI-PM TICN	Flutes	BU35J411 Rekord 1DF-NI-PM TICN	Flutes		BU100501 Rekord 1A-H NT	Flutes	BU109101 Rekord 1A-H TICN	Flutes
No. 0	80	1.626	0.236	0.433	0.141	0.110	0.0480	**.5033**						●	2	●	2
No. 1	72	1.772	0.276	0.472	0.141	0.110	0.0595	**.5034**						●	2	●	2
No. 2	64	1.772	0.276	0.472	0.141	0.110	0.0730	**.5035**						●	3	●	3
No. 3	56	1.969	0.354	0.551	0.141	0.110	0.0827	**.5036**						●	3	●	3
No. 4	48	2.205	0.433	0.709	0.141	0.110	0.0945	**.5037**						●	3	●	3
No. 5	44	2.205	0.433	0.709	0.141	0.110	0.1063	**.5038**						●	3	●	3
No. 6	40	2.205	0.472	0.787	0.141	0.110	0.1181	**.5039**						●	3	●	3
No. 8	36	2.480	0.512	0.827	0.168	0.131	0.1378	**.5040**						●	3	●	3
No. 10	32	2.756	0.512	0.984	0.194	0.152	0.1614	**.5041**	●	3	●	3		●	3	●	3
No. 12	28	3.150	0.630	1.142	0.220	0.165	0.1820	**.5042**						●	3	●	3
1/4	28	3.150	0.669	1.181	0.255	0.191	0.2165 [2]	**.5043**	●	3	●	3		●	3	●	3
5/16	24	3.543	0.669	1.260	0.318	0.238	0.2717 [2]	**.5044**	●	3	●	3		●	3	●	3
3/8	24	3.937	0.709	1.535	0.381	0.286	0.3346 [2]	**.5045**	●	3	●	3		●	4	●	4

Reduced Shank

Nominal Size ø d_1	T.P.I.	l_1	l_2	inch l_3	ø d_2	□	Dimens. ID	Tool Identification	CU30J411 Rekord 2C-NI-PM TICN	Flutes	CU35J411 Rekord 2DF-NI-PM TICN	Flutes		CU100501 Rekord 2A-H NT	Flutes	CU109101 Rekord 2A-H TICN	Flutes
7/16	20	3.937	0.866	—	0.323	0.242	0.3898 [2]	**.5046**	●	3	●	3		●	4	●	4
1/2	20	3.937	0.866	—	0.367	0.275	0.4528 [2]	**.5047**	●	3	●	3		●	4	●	4
9/16	18	3.937	0.866	—	0.429	0.322	0.5118	**.5048**	●	3	●	3		●	4	●	4
5/8	18	3.937	0.866	—	0.480	0.360	0.5709	**.5049**	●	3	●	3		●	4	●	4
3/4	16	4.331	0.984	—	0.590	0.442	0.6890	**.5050**	●	4	●	4		●	4	●	4
7/8	14	4.921	1.024	—	0.697	0.523	0.8071	**.5051**						●	4	●	4
1	12	5.512	1.102	—	0.800	0.600	0.9219	**.5052**						●	4	●	4
1 1/8	12	5.906	1.181	—	0.896	0.672	1.0433	**.5053**									
1 1/4	12	5.906	1.181	—	1.021	0.766	1.1719	**.5054**									
1 3/8	12	6.693	1.299	—	1.108	0.831	1.2992	**.5055**									
1 1/2	12	6.693	1.299	—	1.233	0.925	1.4173	**.5056**									

Ordering Example: **BU30J411.5041**

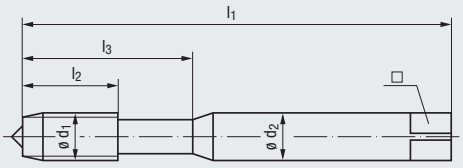
	H Materials of High Tensile Strength		HCUT Hardened Steels		Z CNC-Controlled Machines				
	new							new	
			2)						
	2BX		2BX		2BX	2BX	2BX	2BX	Class of Fit
	TICN		TICN		TICN	TICN	TICN	TICN	Coating
	HSS Extra		**HSSE-PM**		HSS Extra	HSS Extra	HSS Extra	HSS Extra	Cutting Material
	C / 2-3		C / 2-3		C / 2-3	C / 2-3	C / 2-3	**E / 1.5-2**	Technical Characteristics
	E / O		O / P		E / O / P	E / O	E / O	E / O	
	max. 2 x d_1 1)		max. 1.5 x d_1		max. 2 x d_1	max. 2 x d_1 1)	max. 2 x d_1	max. 2 x d_1 1)	Thread Depth and Hole Shape
	P 1.1-4.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1		H 1.1-2		P 1.1-4.1 K 1.1-4.2 N 1.4-6, 2.4-7 N 4.1	P 1.1-4.1 K 1.1-4.2 N 1.4-6, 2.4-7 N 4.1	P 1.1-4.1 K 1.1-4.2 N 1.4-6, 2.4-7 N 4.1	P 1.1-4.1 K 1.1-4.2 N 1.4-6, 2.4-7 N 4.1	Applications – Material
	BU959101		**BU10J901**		**BU109401**	**BU959401**	**BU219401**	**BU969401**	**Tool Identification**
	Rekord 1A-H-IKZ TICN	**Flutes**	**Rekord 1A-HCUT-PM TICN**	**Flutes**	**Rekord 1A-Z TICN**	**Rekord 1A-Z-IKZ TICN**	**Rekord 1A-Z-IKZN TICN**	**Rekord 1A-Z/E-IKZ TICN**	**Dimens. ID** / **Nominal Size ø d_1** / **T.P.I.**
									.5033 No. 0 80
									.5034 No. 1 72
									.5035 No. 2 64
									.5036 No. 3 56
									.5037 No. 4 48
									.5038 No. 5 44
									.5039 No. 6 40
									.5040 No. 8 36
	●	3			●	●	●	●	**.5041** No. 10 32
									.5042 No. 12 28
	●	3	●	4	●	●	●	●	**.5043** 1/4 28
	●	3	●	5	●	●	●	●	**.5044** 5/16 24
	●	4	●	5	●		●	●	**.5045** 3/8 24
	CU959101		**CU10J901**		**CU109401**	**CU959401**	**CU219401**	**CU969401**	**Tool Identification**
	Rekord 2A-H-IKZ TICN	**Flutes**	**Rekord 2A-HCUT-PM TICN**	**Flutes**	**Rekord 2A-Z TICN**	**Rekord 2A-Z-IKZ TICN**	**Rekord 2A-Z-IKZN TICN**	**Rekord 2A-Z/E-IKZ TICN**	**Dimens. ID** / **Nominal Size ø d_1** / **T.P.I.**
	●	4	●	5	●	●	●	●	**.5046** 7/16 20
	●	4	●	5	●	●	●	●	**.5047** 1/2 20
	●	4			●	●	●	●	**.5048** 9/16 18
	●	4			●	●	●	●	**.5049** 5/8 18
	●	4			●	●	●	●	**.5050** 3/4 16
	●	4							**.5051** 7/8 14
	●	4							**.5052** 1 12
									.5053 1 1/8 12
									.5054 1 1/4 12
									.5055 1 3/8 12
									.5056 1 1/2 12

● = In stock
★ = Allow 7 days for delivery

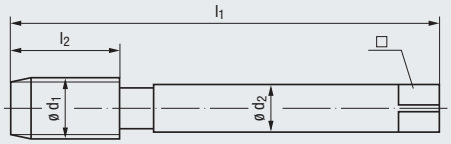
1) Threading in through holes is possible only with external cooling/lubrication
2) Increase drill diameter for taps Rekord 1/2A-HCUT-PM-TICN by 0.004 in

DIN Length · ANSI Shank

Overall length acc. to DIN 371, DIN 374



Reinforced Shank
(No.0 - 3/8)

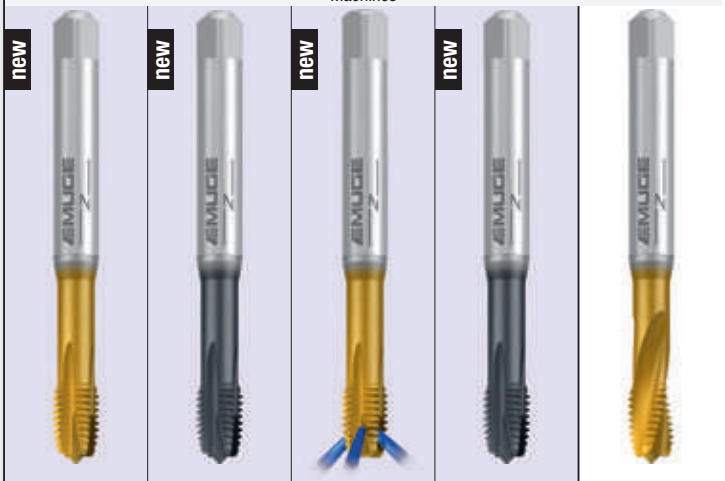


Reduced Shank
(7/16 - 1 1/2)

UNF

Unified Fine Thread
ASME B1.1

Z
CNC-Controlled Machines



Class of Fit	2BX	2BX	2BX	**3BX**	2BX
Coating	TIN-70	GLT-1	TIN-70	GLT-1	TIN
Cutting Material	**HSSE-PM**	**HSSE-PM**	**HSSE-PM**	**HSSE-PM**	HSS Extra
Technical Characteristics					R15
	B / 4-5	B / 4-5	B / 4-5	B / 4-5	C / 2-3
	E / O / P	E / O / P	E / O	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1				max. 2 x d_1
Applications – Material	P 1.1-5.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1	P 1.1-5.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1	P 1.1-5.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1	P 1.1-5.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1	P 2.1-5.1 K 2.1-2 N 1.4-6, 2.4-5

Reinforced Shank

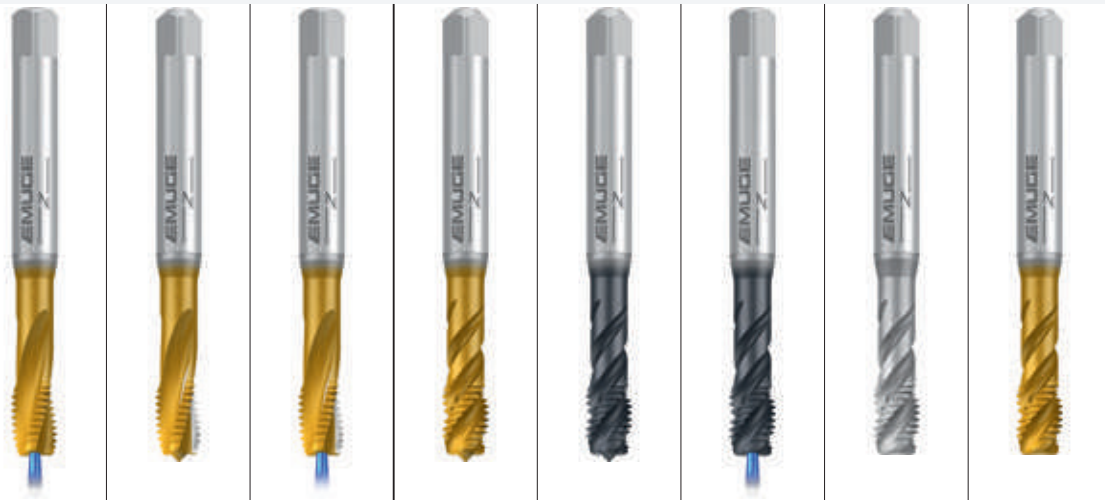
Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification	BU208F01 Rekord 1B-Z-PM TIN-70	Flutes	BU20A601 Rekord 1B-Z-PM GLT-1	Flutes	BU088F01 Rekord 1B-Z-IKZN PM-TIN-70	Flutes	BU20A611 Rekord 1B-Z-PM GLT-1	Flutes	BU453701 Rekord 1D-Z TIN	Flutes
No. 0	80	1.626	0.157	0.433	0.141	0.110	0.0480	.5033										
No. 1	72	1.772	0.157	0.472	0.141	0.110	0.0595	.5034										
No. 2	64	1.772	0.177	0.472	0.141	0.110	0.0730	.5035										
No. 3	56	1.969	0.197	0.551	0.141	0.110	0.0827	.5036										
No. 4	48	2.205	0.236	0.709	0.141	0.110	0.0945	.5037										
No. 5	44	2.205	0.276	0.709	0.141	0.110	0.1063	.5038										
No. 6	40	2.205	0.276	0.787	0.141	0.110	0.1181	.5039										
No. 8	36	2.480	0.315	0.827	0.168	0.131	0.1378	.5040										
No. 10	32	2.756	0.394	0.984	0.194	0.152	0.1614	.5041	●	3	●	3	●	3	●	3	●	3
No. 12	28	3.150	0.394	1.142	0.220	0.165	0.1820	.5042										
1/4	28	3.150	0.394	1.181	0.255	0.191	0.2165	.5043	●	3	●	3	●	3	●	3	●	3
5/16	24	3.543	0.394	1.260	0.318	0.238	0.2717	.5044	●	4	●	4	●	4	●	4	●	3
3/8	24	3.937	0.394	1.535	0.381	0.286	0.3346	.5045	●	4	●	4	●	4	●	4	●	3

Reduced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification	CU208F01 Rekord 2B-Z-PM TIN-70	Flutes	CU20A601 Rekord 2B-Z-PM GLT-1	Flutes	CU088F01 Rekord 2B-Z-IKZN PM-TIN-70	Flutes	CU20A611 Rekord 2B-Z-PM GLT-1	Flutes	CU453701 Rekord 2D-Z TIN	Flutes
7/16	20	3.937	0.512	—	0.323	0.242	0.3898	.5046	●	4	●	4	●	4	●	4	●	3
1/2	20	3.937	0.512	—	0.367	0.275	0.4528	.5047	●	4	●	4	●	4	●	4	●	3
9/16	18	3.937	0.591	—	0.429	0.322	0.5118	.5048	●	4	●	4	●	4	●	4	●	3
5/8	18	3.937	0.591	—	0.480	0.360	0.5709	.5049	●	4	●	4	●	4	●	4	●	3
3/4	16	4.331	0.669	—	0.590	0.442	0.6890	.5050	●	4	●	4	●	4	●	4	●	4
7/8	14	4.921	0.669	—	0.697	0.523	0.8071	.5051	●	4	●	4						
1	12	5.512	0.787	—	0.800	0.600	0.9219	.5052										
1 1/8	12	5.906	0.866	—	0.896	0.672	1.0433	.5053										
1 1/4	12	5.906	0.866	—	1.021	0.766	1.1719	.5054										
1 3/8	12	6.693	0.945	—	1.108	0.831	1.2992	.5055										
1 1/2	12	6.693	0.984	—	1.233	0.925	1.4173	.5056										

Ordering Example: **BU208F01.5041**

Z
CNC-Controlled Machines



2BX	2BX	2BX	2B	2B	2B	2B	2B	Class of Fit
TIN	TIN	TIN	TIN	GLT-1	GLT-1		TIN	Coating
HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	Cutting Material
R15	R15	R15	R45	R45	R45	R45	R45	Technical Characteristics
C / 2-3	C / 2-3	C / 2-3	C / 2-3	C / 2-3	C / 2-3	**E / 1.5-2**	**E / 1.5-2**	
E / O	E / O / P	E / O	E / O / P	E / O / P	E / O	E / O / P	E / O / P	
max. 2 x d_1			max. 3 x d_1					Thread Depth and Hole Shape
P 2.1-5.1 K 2.1-2 N 1.4-6, 2.4-5	P 2.1-5.1 K 2.1-2 N 1.4-6, 2.4-5	P 2.1-5.1 K 2.1-2 N 1.4-6, 2.4-5	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1	P 1.1-4.1 M 1.1-2.1 N 2.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1	Applications – Material

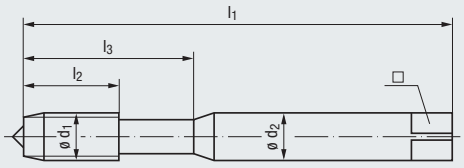
BU973701		BU523701		BU573701				BU50C400		BU94C400		BU513500		BU513700		Tool Identification		
Rekord 1D-Z-IKZ TIN	Flutes	Rekord 1D-Z-BF TIN	Flutes	Rekord 1D-Z-BF IKZ-TIN	Flutes			Enorm 1-Z GLT-1	Flutes	Enorm 1-Z-IKZ GLT-1	Flutes	Enorm 1-Z/E	Flutes	Enorm 1-Z/E TIN	Flutes	Dimens. ID	Nominal Size ø d_1	T.P.I.
												●	2	●	2	.5033	No. 0	80
												●	2	●	2	.5034	No. 1	72
												●	2	●	2	.5035	No. 2	64
												●	2	●	2	.5036	No. 3	56
												●	2	●	2	.5037	No. 4	48
												●	3	●	3	.5038	No. 5	44
												●	3	●	3	.5039	No. 6	40
												●	3	●	3	.5040	No. 8	36
●	3	●	3	●	3			●	3	●	3	●	3	●	3	.5041	No. 10	32
												●	3	●	3	.5042	No. 12	28
●	3	●	3	●	3			●	3	●	3	●	3	●	3	.5043	1/4	28
●	3	●	3	●	3			●	3	●	3	●	3	●	3	.5044	5/16	24
●	3	●	3	●	3			●	3	●	3	●	3	●	3	.5045	3/8	24

CU973701		CU573701		CU583701		CU503700		CU50C400		CU94C400		CU513500		CU513700		Tool Identification		
Rekord 2D-Z-IKZ TIN	Flutes	Rekord 2D-Z-BF TIN	Flutes	Rekord 2D-Z-BF IKZ-TIN	Flutes	Enorm 2-Z TIN	Flutes	Enorm 2-Z GLT-1	Flutes	Enorm 2-Z-IKZ GLT-1	Flutes	Enorm 2-Z/E	Flutes	Enorm 2-Z/E TIN	Flutes	Dimens. ID	Nominal Size ø d_1	T.P.I.
●	3	●	3	●	3			●	4	●	4	●	4	●	4	.5046	7/16	20
●	3	●	3	●	3			●	5	●	5	●	5	●	5	.5047	1/2	20
●	3	●	3					●	5	●	5	●	5	●	5	.5048	9/16	18
●	3	●	3	●	3			●	5	●	5	●	5	●	5	.5049	5/8	18
●	4	●	4	●	4			●	5	●	5	●	5	●	5	.5050	3/4	16
		●	4									●	5	●	5	.5051	7/8	14
												●	5	●	5	.5052	1	12
						●	5									.5053	1 1/8	12
						●	6									.5054	1 1/4	12
						●	6									.5055	1 3/8	12
						●	6									.5056	1 1/2	12

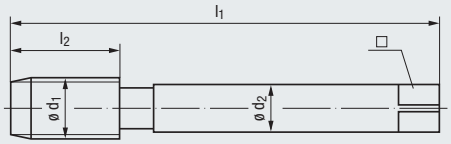
● = In stock
★ = Allow 7 days for delivery

DIN Length · ANSI Shank

Overall length acc. to DIN 371, DIN 374



Reinforced Shank (No.0 - 3/8)



Reduced Shank (7/16 - 1 1/2)

UNF

Unified Fine Thread
ASME B1.1

Z
CNC-Controlled Machines

Class of Fit	2B	2B	2B	2B	**3B**
Coating	TICN	GLT-1	TICN	GLT-1	GLT-1
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics	R45	R45	R45	R45	R45
	E / 1.5-2	**E / 1.5-2**	**E / 1.5-2**	**E / 1.5-2**	**E / 1.5-2**
	E / O / P	E / O / P	E / O	E / O	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1				
Applications – Material	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1

Reinforced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Dimens. ID	BU519400 Enorm 1-Z/E TICN	Flutes	BU51C400 Enorm 1-Z/E GLT-1	Flutes	BU999400 Enorm 1-Z/E-IKZ TICN	Flutes	BU99C400 Enorm 1-Z/E-IKZ GLT-1	Flutes	BU51C410 Enorm 1-Z/E GLT-1	Flutes
No. 0	80	1.626	0.157	0.433	0.141	0.110	0.0480	.5033		●	2						
No. 1	72	1.772	0.157	0.472	0.141	0.110	0.0595	.5034		●	2						
No. 2	64	1.772	0.177	0.472	0.141	0.110	0.0730	.5035		●	2						
No. 3	56	1.969	0.197	0.551	0.141	0.110	0.0827	.5036		●	2						
No. 4	48	2.205	0.236	0.709	0.141	0.110	0.0945	.5037		●	2						
No. 5	44	2.205	0.276	0.709	0.141	0.110	0.1063	.5038		●	3						
No. 6	40	2.205	0.276	0.787	0.141	0.110	0.1181	.5039		●	3						
No. 8	36	2.480	0.315	0.827	0.168	0.131	0.1378	.5040		●	3						
No. 10	32	2.756	0.394	0.984	0.194	0.152	0.1614	.5041	●	3	●	3	●	3	●	3	●	3
No. 12	28	3.150	0.394	1.142	0.220	0.165	0.1820	.5042			●	3						
1/4	28	3.150	0.394	1.181	0.255	0.191	0.2165	.5043	●	3	●	3	●	3	●	3	●	3
5/16	24	3.543	0.394	1.260	0.318	0.238	0.2717	.5044	●	3	●	3	●	3	●	3	●	3
3/8	24	3.937	0.394	1.535	0.381	0.286	0.3346	.5045	●	3	●	3	●	3	●	3	●	3

Reduced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Dimens. ID	CU519400 Enorm 2-Z/E TICN	Flutes	CU51C400 Enorm 2-Z/E GLT-1	Flutes	CU999400 Enorm 2-Z/E-IKZ TICN	Flutes	CU99C400 Enorm 2-Z/E-IKZ GLT-1	Flutes	CU51C410 Enorm 2-Z/E GLT-1	Flutes
7/16	20	3.937	0.512	—	0.323	0.242	0.3898	.5046	●	4	●	4	●	4	●	4	●	4
1/2	20	3.937	0.512	—	0.367	0.275	0.4528	.5047	●	5	●	5	●	5	●	5	●	5
9/16	18	3.937	0.591	—	0.429	0.322	0.5118	.5048	●	5	●	5					●	5
5/8	18	3.937	0.591	—	0.480	0.360	0.5709	.5049	●	5	●	5					●	5
3/4	16	4.331	0.669	—	0.590	0.442	0.6890	.5050	●	5	●	5					●	5
7/8	14	4.921	0.669	—	0.697	0.523	0.8071	.5051										
1	12	5.512	0.787	—	0.800	0.600	0.9219	.5052										
1 1/8	12	5.906	0.866	—	0.896	0.672	1.0433	.5053										
1 1/4	12	5.906	0.866	—	1.021	0.766	1.1719	.5054										
1 3/8	12	6.693	0.945	—	1.108	0.831	1.2992	.5055										
1 1/2	12	6.693	0.984	—	1.233	0.925	1.4173	.5056										

Ordering Example: **BU519400.5041**

Z CNC-Controlled Machines

SPEED High-Speed Cutting

new

3B		2BX	2BX	2BX	2BX	2BX	2BX	Class of Fit
GLT-1		TICN	TICN	TICN	TIN-70	TIN-70	TIN	Coating
HSS Extra		HSS Extra	HSS Extra	HSS Extra	HSSE-PM	HSSE-PM	HSS Extra	Cutting Material
R45							R15	Technical Characteristics
E / 1.5-2		C / 2-3	C / 2-3	E / 1.5-2	B / 4-5	B / 4-5	C / 2-3	
E / O		E	E	E	E	E	E	
max. 3 x d_1		max. 2 x d_1 1)	max. 2 x d_1	max. 2 x d_1 1)	max. 3 x d_1		max. 2 x d_1	Thread Depth and Hole Shape
P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1		K 1.1-4.2 N 1.4-6	K 1.1-4.2 N 1.4-6	K 1.1-4.2 N 1.4-6	P 1.1-4.1 K 2.1-2 N 1.4-6	P 1.1-4.1 K 2.1-2 N 1.4-6	P 1.1-4.1 M 1.1-3.1 K 2.1-2 N 1.4-2.1	Applications – Material
BU99C410		**BW159401**	**BW179401**	**BW169401**	**BW138F01**	**BW208F01**	**BU263701**	**Tool Identification**

Enorm 1-Z/E-IKZ GLT-1	Flutes	Rekord 1A-SPEED IKZ-TICN	Flutes	Rekord 1A-SPEED IKZN-TICN	Flutes	Rekord 1A-SPEED/E IKZ-TICN	Flutes	Rekord 1B-Z-SPEED PM-TIN-70	Flutes	Rekord 1B-Z-SPEED IKZN-PM TIN-70	Flutes	Rekord 1D-SPEED TIN	Flutes	Dimens. ID	Nominal Size ø d_1	T.P.I.
														.5033	No. 0	80
														.5034	No. 1	72
														.5035	No. 2	64
														.5036	No. 3	56
														.5037	No. 4	48
														.5038	No. 5	44
														.5039	No. 6	40
														.5040	No. 8	36
●	3	●	3	●	3	●	3	●	3	●	3	●	3	.5041	No. 10	32
		●	3	●	3	●	3							.5042	No. 12	28
●	3	●	3	●	3	●	3	●	3	●	3	●	3	.5043	1/4	28
●	3	●	3	●	3	●	3	●	4	●	4	●	3	.5044	5/16	24
●	3	●	4	●	4	●	4	●	4	●	4	●	3	.5045	3/8	24

CU99C410		**CW159401**	**CW179401**	**CW169401**	**CW138F01**	**CW208F01**	**CU263701**	**Tool Identification**

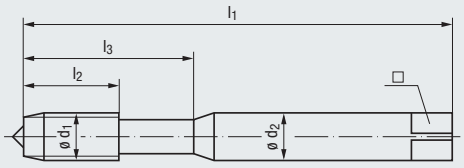
Enorm 2-Z/E-IKZ GLT-1	Flutes	Rekord 2A-SPEED IKZ-TICN	Flutes	Rekord 2A-SPEED IKZN-TICN	Flutes	Rekord 2A-SPEED/E IKZ-TICN	Flutes	Rekord 2B-Z-SPEED PM-TIN-70	Flutes	Rekord 2B-Z-SPEED IKZN-PM TIN-70	Flutes	Rekord 2D-SPEED TIN	Flutes	Dimens. ID	Nominal Size ø d_1	T.P.I.
●	4	●	4	●	4	●	4	●	4	●	4	●	3	.5046	7/16	20
●	5	●	4	●	4	●	4	●	4	●	4	●	3	.5047	1/2	20
●	5	●	4	●	4	●	4	●	4	●	4	●	3	.5048	9/16	18
●	5	●	4	●	4	●	4	●	4	●	4	●	3	.5049	5/8	18
●	5	●	4	●	4	●	4	●	4	●	4	●	4	.5050	3/4	16
														.5051	7/8	14
														.5052	1	12
														.5053	1 1/8	12
														.5054	1 1/4	12
														.5055	1 3/8	12
														.5056	1 1/2	12

● = In stock
★ = Allow 7 days for delivery

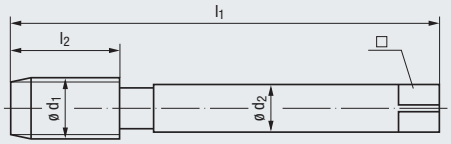
1) Threading in through holes is possible only with external cooling/lubrication

DIN Length · ANSI Shank

Overall length acc. to DIN 371, DIN 374



Reinforced Shank
(No.0 - 3/8)



Reduced Shank
(7/16 - 1 1/2)

SPEED
High-Speed Cutting

UNF

Unified Fine Thread
ASME B1.1

Class of Fit	2BX	2B
Coating	TIN	TIN
Cutting Material	HSS Extra	HSS Extra
Technical Characteristics	R15	R45
	C / 2-3	C / 2-3
	E	E
Thread Depth and Hole Shape	max. 2 x d_1	max. 3 x d_1
Applications – Material	P 1.1-4.1 M 1.1-3.1 K 2.1-2 N 1.4-2.1	P 1.1-4.1 M 1.1-3.1 K 2.1 N 1.1-2.2

Reinforced Shank

Nominal Size ø d_1	T.P.I.	l_1	l_2	inch l_3	ø d_2	□	Dimens. ID	BU293701 Rekord 1D-SPEED IKZ-TIN	Flutes	BW553700 Enorm 1-SPEED IKZ-TIN	Flutes
No. 0	80	1.626	0.157	0.433	0.141	0.110	0.0480	.5033			
No. 1	72	1.772	0.157	0.472	0.141	0.110	0.0595	.5034			
No. 2	64	1.772	0.177	0.472	0.141	0.110	0.0730	.5035			
No. 3	56	1.969	0.197	0.551	0.141	0.110	0.0827	.5036			
No. 4	48	2.205	0.236	0.709	0.141	0.110	0.0945	.5037			
No. 5	44	2.205	0.276	0.709	0.141	0.110	0.1063	.5038			
No. 6	40	2.205	0.276	0.787	0.141	0.110	0.1181	.5039			
No. 8	36	2.480	0.315	0.827	0.168	0.131	0.1378	.5040			
No. 10	32	2.756	0.394	0.984	0.194	0.152	0.1614	.5041	● 3	●	3
No. 12	28	3.150	0.394	1.142	0.220	0.165	0.1820	.5042			
1/4	28	3.150	0.394	1.181	0.255	0.191	0.2165	.5043	● 3	●	3
5/16	24	3.543	0.394	1.260	0.318	0.238	0.2717	.5044	● 3	●	3
3/8	24	3.937	0.394	1.535	0.381	0.286	0.3346	.5045	● 3	●	3

Reduced Shank

Nominal Size ø d_1	T.P.I.	l_1	l_2	inch l_3	ø d_2	□	Dimens. ID	CU293701 Rekord 2D-SPEED IKZ-TIN	Flutes	CW553700 Enorm 2-SPEED IKZ-TIN	Flutes
7/16	20	3.937	0.512	—	0.323	0.242	0.3898	.5046	● 3	●	4
1/2	20	3.937	0.512	—	0.367	0.275	0.4528	.5047	● 3	●	5
9/16	18	3.937	0.591	—	0.429	0.322	0.5118	.5048	● 3	●	5
5/8	18	3.937	0.591	—	0.480	0.360	0.5709	.5049	● 3	●	5
3/4	16	4.331	0.669	—	0.590	0.442	0.6890	.5050	● 4	●	5
7/8	14	4.921	0.669	—	0.697	0.523	0.8071	.5051			
1	12	5.512	0.787	—	0.800	0.600	0.9219	.5052			
1 1/8	12	5.906	0.866	—	0.896	0.672	1.0433	.5053			
1 1/4	12	5.906	0.866	—	1.021	0.766	1.1719	.5054			
1 3/8	12	6.693	0.945	—	1.108	0.831	1.2992	.5055			
1 1/2	12	6.693	0.984	—	1.233	0.925	1.4173	.5056			

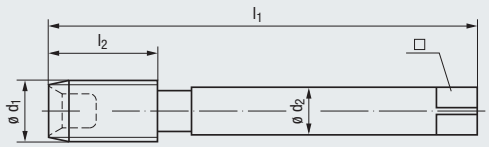
Ordering Example: **BU293701.5041**

DIN Length · ANSI Shank

Overall length acc. to DIN 374

VA
Stainless Steel Materials

With internal chip collector



Reduced Shank

UNF

Unified Fine Thread
ASME B1.1

Class of Fit	**3BX** [2]
Coating	NE2
Cutting Material	HSS Extra
Technical Characteristics	
	C / 2-3
	P / O [1]
Thread Depth and Hole Shape	max. 1.5 x d_1
Applications – Material	**P** 1.1-4.1
	M 1.1-2.1
	K 1.1-4.2

Reduced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	ø d_2	□	Tool Identification Dimens. ID	CU803011 Robust 2X-VA NE2	Flutes
3/4	16	4.331	0.984	0.590	0.442	0.6890 **.5050**	●	5
7/8	14	4.921	1.024	0.697	0.523	0.8071 **.5051**	●	5
1	12	5.512	1.102	0.800	0.600	0.9219 **.5052**	●	5
1 1/8	12	5.906	1.181	0.896	0.672	1.0433 **.5053**	●	5
1 1/4	12	5.906	1.181	1.021	0.766	1.1719 **.5054**	●	6
1 3/8	12	6.693	1.299	1.108	0.831	1.2992 **.5055**	●	6
1 1/2	12	6.693	1.299	1.233	0.925	1.4173 **.5056**	●	6

[1] If possible, use paste lubrication, coating both the tool and the walls of the drilled hole.
Lubrication with oil is possible only in the vertical machining of blind holes, if the hole is entirely filled with oil.

[2] Class 2B threads may be produced with 3BX taps.

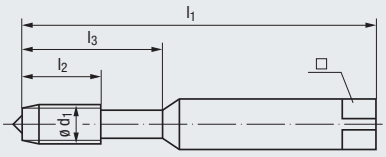
Larger sizes priced upon request. We have experience in making taps as large as 10 inches ø UN.

The Complete Tool System

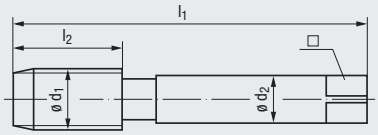
Robust 2X-VA Taps when used with a KSN Type tapping attachment creates the optimal tapping unit!

● = In stock
★ = Allow 7 days for delivery

ANSI Length · ANSI Shank



Reinforced Shank
(No.6 - 3/8)



Reduced Shank
(7/16 - 3/4)

UNF

Unified Fine Thread
ASME B1.1

	STEEL Steel Materials		VA Stainless Steel Materials		
Class of Fit	2B		2B	**3B**	**Oversize**
Coating	TIN		NT	NT	NT
Cutting Material	HSS Extra		HSS Extra	HSS Extra	HSS Extra
Technical Characteristics					
	B / 4-5		B / 4-5	B / 4-5	B / 4-5
	E / O		E / O / P	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1			max. 3 x d_1	
Applications – Material	P 1.1-4.1 K 2.1 N 2.2, 2.4-5		P 1.1-3.1 M 1.1-2.1 K 2.1 N 2.2, 2.5-6	P 1.1-3.1 M 1.1-2.1 K 2.1 N 2.2, 2.5-6	P 1.1-3.1 M 1.1-2.1 K 2.1 N 2.2, 2.5-6
Tool Identification	**AU208400**		**AU203000**	**AU203010**	**AU203044**

Nominal Size ø d_1	T.P.I.	inch l_1		l_2	l_3	ø d_2	□		Dimens. ID	Rekord B-STEEL-L TIN	Flutes		Rekord B-VA NT	Flutes	Rekord B-VA NT	Flutes	Rekord B-VA NT	Flutes
No. 6	40	2	2.00	0.472	0.748	0.141	0.110	0.1181	**.5039**	●	3		●	3				
No. 8	36	2 1/8	2.13	0.512	0.827	0.168	0.131	0.1378	**.5040**	●	3		●	3				
No. 10	32	2 3/8	2.38	0.591	0.945	0.194	0.152	0.1614	**.5041**	●	3		●	3	●	3	[1] ● (+.0035)	3
1/4	28	2 1/2	2.50	0.669	1.142	0.255	0.191	0.2165	**.5043**	●	3		●	3	●	3	● (+.0050)	3
5/16	24	2 23/32	2.72	0.669	1.299	0.318	0.238	0.2717	**.5044**	●	3		●	3	●	3	● (+.0050)	3
3/8	24	2 15/16	2.94	0.709	1.378	0.381	0.286	0.3346	**.5045**	●	4		●	4	●	4	● (+.0050)	4
7/16	20	3 5/32	3.16	0.866	—	0.323	0.242	0.3898	**.5046**	●	3		●	3	●	3	● (+.0050)	3
1/2	20	3 3/8	3.38	0.866	—	0.367	0.275	0.4528	**.5047**	●	3		●	3	●	3	● (+.0050)	3
9/16	18	3 19/32	3.59	0.866	—	0.429	0.322	0.5118	**.5048**	●	3		●	3	●	3		
5/8	18	3 13/16	3.81	0.866	—	0.480	0.360	0.5709	**.5049**	●	3		●	3	●	3	● (+.0050)	3
3/4	16	4 1/4	4.25	0.984	—	0.590	0.442	0.6890	**.5050**	●	4		●	4	●	4		

[1] Tool Identification = **AU203043**

DIN Length · ANSI Shank

All ANSI Length · ANSI Shank taps are available in the popular DIN Length · ANSI Shank style.

The DIN Length · ANSI Shank configuration allows for added reach capabilities and greater chip clearance.

Ordering Example: **AU208400.5039**

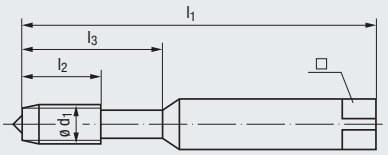
VA Stainless Steel Materials				TI Titanium				
2B	**3B**	**Oversize**		2BX	**3BX**	2BX	**3BX**	Class of Fit
NE2	NE2	NE2		NT2	NT2	NT2	NT2	Coating
HSS Extra	HSS Extra	HSS Extra		HSS Extra	HSS Extra	HSS Extra	HSS Extra	Cutting Material
R35	R35	R35		L15	L15	R15	R15	Technical Characteristics
C / 2-3	C / 2-3	C / 2-3		D / 4-5	D / 4-5	C / 2-3	C / 2-3	
E / O / P	E / O / P	E / O / P		E / O / P	E / O / P	E / O / P	E / O / P	
max. 2.5 x d_1				max. 3 x d_1		max. 2 x d_1		Thread Depth and Hole Shape
P 1.1-3.1 M 1.1-2.1 K 2.1	P 1.1-3.1 M 1.1-2.1 K 2.1	P 1.1-3.1 M 1.1-2.1 K 2.1		P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4	P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4	P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4	P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4	Applications – Material
AU503200	**AU503210**	**AU503244**		**AU306001**	**AU306011**	**AU456001**	**AU456011**	**Tool Identification**

Enorm VA NE2	Flutes	Enorm VA NE2	Flutes	Enorm VA NE2	Flutes		Rekord C-TI NT2	Flutes	Rekord C-TI NT2	Flutes	Rekord D-TI NT2	Flutes	Rekord D-TI NT2	Flutes	Dimens. ID	Nominal Size ø d_1	T.P.I.
●	3						●	3			●	3			**.5039**	No. 6	40
●	3						●	3			●	3			**.5040**	No. 8	36
●	3	●	3	[2] ● (+.0035)	3		●	3	●	3	●	3	●	3	**.5041**	No. 10	32
●	3	●	3	● (+.0050)	3		●	3	●	3	●	3	●	3	**.5043**	1/4	28
●	3	●	3	● (+.0050)	3		●	3	●	3	●	3	●	3	**.5044**	5/16	24
●	3	●	3	● (+.0050)	3		●	3	●	3	●	3	●	3	**.5045**	3/8	24
●	3	●	3	● (+.0050)	3		●	3	●	3	●	3	●	3	**.5046**	7/16	20
●	4	●	4	● (+.0050)	4		●	3	●	3	●	3	●	3	**.5047**	1/2	20
●	4	●	4				●	3	●	3	●	3	●	3	**.5048**	9/16	18
●	4	●	4	● (+.0050)	4		●	3	●	3	●	3	●	3	**.5049**	5/8	18
●	4	●	4				●	4	●	4	●	4	●	4	**.5050**	3/4	16

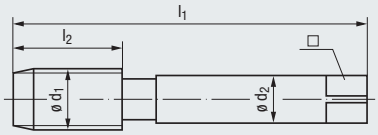
[2] Tool Identification = **AU503243**

● = In stock
★ = Allow 7 days for delivery

ANSI Length · ANSI Shank



Reinforced Shank
(No.6 - 3/8)



Reduced Shank
(7/16 - 3/4)

H
Materials of High Tensile Strength

UNF

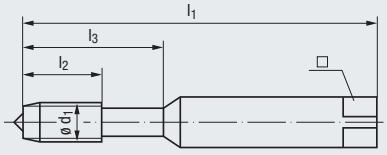
Unified Fine Thread
ASME B1.1

Class of Fit	2BX	2BX
Coating	NT	TICN
Cutting Material	HSS Extra	HSS Extra
Technical Characteristics		
	C / 2-3	C / 2-3
	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 2 x d_1	
Applications – Material	P 1.1-3.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1	P 1.1-4.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1

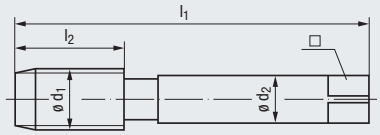
Nominal Size ø d_1	T.P.I.	inch l_1		l_2	l_3	ø d_2	□		Dimens. ID	Tool Identification AU100501 Rekord A-H NT	Flutes	AU109101 Rekord A-H TICN	Flutes
No. 6	40	2	2.00	0.472	0.748	0.141	0.110	0.1181	.5039	●	3	●	3
No. 8	36	2 1/8	2.13	0.512	0.827	0.168	0.131	0.1378	.5040	●	3	●	3
No. 10	32	2 3/8	2.38	0.591	0.945	0.194	0.152	0.1614	.5041	●	3	●	3
1/4	28	2 1/2	2.50	0.669	1.142	0.255	0.191	0.2165	.5043	●	3	●	3
5/16	24	2 23/32	2.72	0.669	1.299	0.318	0.238	0.2717	.5044	●	3	●	3
3/8	24	2 15/16	2.94	0.709	1.378	0.381	0.286	0.3346	.5045	●	4	●	4
7/16	20	3 5/32	3.16	0.866	—	0.323	0.242	0.3898	.5046	●	4	●	4
1/2	20	3 3/8	3.38	0.866	—	0.367	0.275	0.4528	.5047	●	4	●	4
9/16	18	3 19/32	3.59	0.866	—	0.429	0.322	0.5118	.5048	●	4	●	4
5/8	18	3 13/16	3.81	0.866	—	0.480	0.360	0.5709	.5049	●	4	●	4
3/4	16	4 1/4	4.25	0.984	—	0.590	0.442	0.6890	.5050			●	4

Ordering Example: **AU100501.5039**

ANSI Length · ANSI Shank



Reinforced Shank
(No.6 - 3/8)



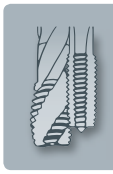
Reduced Shank
(7/16 - 3/4)

UNF

Unified Fine Thread
ASME B1.1

Z
CNC-Controlled Machines

Class of Fit	2B	2B	**3B**	**3B**
Coating		TIN		TIN
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics	R45	R45	R45	R45
	E / 1.5-2	**E / 1.5-2**	**E / 1.5-2**	**E / 1.5-2**
	E / O / P	E / O / P	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1			
Applications – Material	P 1.1-4.1 M 1.1-2.1 N 2.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1	P 1.1-4.1 M 1.1-2.1 N 2.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1



Nominal Size ø d_1	T.P.I.	inch l_1		l_2	l_3	ø d_2	□	Tool Identification	Dimens. ID	AU513500 Enorm Z/E	Flutes	AU513700 Enorm Z/E TIN	Flutes	AU513510 Enorm Z/E	Flutes	AU513710 Enorm Z/E TIN	Flutes
No. 6	40	2	2.00	0.276	0.748	0.141	0.110	0.1181	**.5039**	●	3	●	3				
No. 8	36	2 1/8	2.13	0.315	0.827	0.168	0.131	0.1378	**.5040**	●	3	●	3				
No. 10	32	2 3/8	2.38	0.354	0.945	0.194	0.152	0.1614	**.5041**	●	3	●	3	●	3	●	3
1/4	28	2 1/2	2.50	0.394	1.142	0.255	0.191	0.2165	**.5043**	●	3	●	3	●	3	●	3
5/16	24	2 23/32	2.72	0.394	1.299	0.318	0.238	0.2717	**.5044**	●	3	●	3	●	3	●	3
3/8	24	2 15/16	2.94	0.394	1.378	0.381	0.286	0.3346	**.5045**	●	3	●	3	●	3	●	3
7/16	20	3 5/32	3.16	0.512	—	0.323	0.242	0.3898	**.5046**	●	4	●	4	●	4	●	4
1/2	20	3 3/8	3.38	0.512	—	0.367	0.275	0.4528	**.5047**	●	5	●	5	●	5	●	5
9/16	18	3 19/32	3.59	0.591	—	0.429	0.322	0.5118	**.5048**	●	5	●	5	●	5	●	5
5/8	18	3 13/16	3.81	0.591	—	0.480	0.360	0.5709	**.5049**	●	5	●	5	●	5	●	5
3/4	16	4 1/4	4.25	0.669	—	0.590	0.442	0.6890	**.5050**	●	5	●	5	●	5	●	5

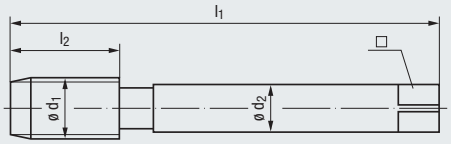
DIN Length · ANSI Shank

All ANSI Length · ANSI Shank taps are available in the popular DIN Length · ANSI Shank style.

The DIN Length · ANSI Shank configuration allows for added reach capabilities and greater chip clearance.

● = In stock
★ = Allow 7 days for delivery

DIN Length · DIN Shank



Reduced Shank

STEEL
Steel Materials

UNEF

Unified Extra Fine Thread
ASME B1.1

Class of Fit	2BX	2B	2B	2B
Coating				
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics			R15	R35
	C / 2-3	B / 4-5	**E / 1.5-2**	C / 2-3
	E / 0	E / 0	E / 0	E / 0
Thread Depth and Hole Shape	max. 2 x d_1	max. 3 x d_1	max. 2 x d_1	max. 2.5 x d_1
Applications – Material	P 1.1-3.1 N 2.3	P 1.1-3.1 N 2.2	P 2.1-3.1	P 1.1-3.1 N 2.2

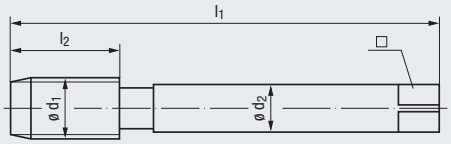
Reduced Shank

Nominal Size ø d_1	T.P.I.	mm l_1	l_2	ø d_2	□	Tool Identification Dimens. ID	C0101001 Rekord 2A-STEEL	Flutes	C0208900 Rekord 2B-STEEL-L	Flutes	C0461000 Rekord 2D-STEEL/E	Flutes	C0501000 Enorm 2-STEEL	Flutes
1/4	32	80	14	4.5	3.4	5.55	**.5058**	★	3	★	3	★	3	★	3
5/16	32	80	14	6	4.9	7.15	**.5059**	★	3	★	3	★	3	★	3
3/8	32	90	18	7	5.5	8.7	**.5060**	★	4	★	4	★	3	★	4
7/16	28	90	18	8	6.2	10.2	**.5061**	★	4	★	4	★	3	★	3
1/2	28	100	18	9	7	11.8	**.5062**	★	4	★	4	★	3	★	4
9/16	24	100	18	11	9	13.2	**.5063**	★	5	★	4	★	4	★	4
5/8	24	100	18	12	9	14.8	**.5064**	★	5	★	4	★	4	★	4
3/4	20	110	25	14	11	17.8	**.5066**	★	4	★	4	★	4	★	4
7/8	20	125	25	18	14.5	20.95	**.5068**	★	4	★	4	★	4	★	4
1	20	140	28	18	14.5	24.15	**.5070**	★	4	★	4	★	4	★	5

Ordering Example: **C0101001.5058**

DIN Length · ANSI Shank

Overall length acc. to DIN 376



Reduced Shank

UN-8

Unified Thread
ASME B1.1

VA
Stainless Steel Materials

Class of Fit	2B	2B	2B	**3B**	**3B**
Coating	GLT-1	TICN	NE2	NE2	GLT-1
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics			R35	R35	R35
	B / 4-5	B / 4-5	C / 2-3	C / 2-3	C / 2-3
	E / O / P	E / O / P	E / O / P	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1		max. 2.5 x d_1		
Applications – Material	P 1.1-4.1 M 1.1-2.1 K 2.1 N 2.2, 2.5-6	P 1.1-4.1 M 1.1-3.1 K 2.1 N 2.2, 2.5-6	P 1.1-3.1 M 1.1-2.1 K 2.1	P 1.1-3.1 M 1.1-2.1 K 2.1	P 1.1-4.1 M 1.1-3.1 K 2.1

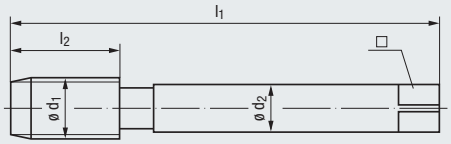
Reduced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	ø d_2	□	Tool Identification Dimens. ID	CU20C300 Rekord 2B-VA GLT-1	Flutes	CU209300 Rekord 2B-VA TICN	Flutes	CU503200 Enorm 2-VA NE2	Flutes	CU503210 Enorm 2-VA NE2	Flutes	CU50C310 Enorm 2-VA GLT-1	Flutes
1	8	6.299	1.417	0.800	0.600	0.8750 **.5018**	●	3	●	3	●	4	●	4	●	4
1 1/8	8	7.087	1.575	0.896	0.672	1.0000 **.5247**	●	4	●	4	●	4	●	4	●	4
1 1/4	8	7.087	1.575	1.021	0.766	1.1250 **.5249**	●	4	●	4	●	4	●	4	●	4
1 3/8	8	7.874	1.654	1.108	0.831	1.2500 **.5251**	●	4	●	4	●	5	●	5	●	5
1 1/2	8	7.874	1.654	1.233	0.925	1.3750 **.5253**	●	4	●	4	●	5	●	5	●	5
1 5/8	8	7.874	1.772	1.305	0.979	1.5000 **.5255**	●	4	●	4	●	5	●	5	●	5
1 3/4	8	7.874	1.772	1.430	1.072	1.6250 **.5257**					●	6	●	6	●	6
1 7/8	8	8.858	1.969	1.519	1.139	1.7500 **.5259**					●	6	●	6	●	6
2	8	8.858	1.969	1.644	1.233	1.8750 **.5261**					●	6	●	6	●	6
2 1/2	8	10.827	2.165	2.100	1.575	2.3750 **.5265**										

● = In stock
★ = Allow 7 days for delivery

DIN Length · ANSI Shank

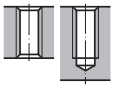
Overall length acc. to DIN 376



Reduced Shank

UN-8

Unified Thread
ASME B1.1

	TI Titanium		H Materials of High Tensile Strength		
Class of Fit	2BX		2BX		
Coating	NT2		NT		
Cutting Material	HSS Extra		HSS Extra		
Technical Characteristics	R15				
	C / 2-3		C / 2-3		
	E / O / P		E / O / P		
Thread Depth and Hole Shape	max. 2 x d_1		max. 2 x d_1 		
Applications – Material	P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4		P 1.1-3.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1		

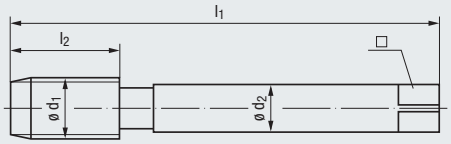
Reduced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	ø d_2	□	Tool Identification	Dimens. ID	CU456001 Rekord 2D-TI NT2	Flutes	CU100501 Rekord 2A-H NT	Flutes
1	8	6.299	1.417	0.800	0.600	0.8750	**.5018**	●	3	●	4
1 1/8	8	7.087	1.575	0.896	0.672	1.0000	**.5247**	●	4	●	4
1 1/4	8	7.087	1.575	1.021	0.766	1.1250	**.5249**	●	4	●	4
1 3/8	8	7.874	1.654	1.108	0.831	1.2500	**.5251**	●	4	●	4
1 1/2	8	7.874	1.654	1.233	0.925	1.3750	**.5253**	●	4	●	4
1 5/8	8	7.874	1.772	1.305	0.979	1.5000	**.5255**	●	4		
1 3/4	8	7.874	1.772	1.430	1.072	1.6250	**.5257**			●	5
1 7/8	8	8.858	1.969	1.519	1.139	1.7500	**.5259**				
2	8	8.858	1.969	1.644	1.233	1.8750	**.5261**	●	6	●	6
2 1/2	8	10.827	2.165	2.100	1.575	2.3750	**.5265**			●	6

Ordering Example: **CU20C300.5018**

DIN Length · ANSI Shank

Overall length acc. to DIN 376



Reduced Shank

Z
CNC-Controlled Machines

UN-8

Unified Thread
ASME B1.1

Class of Fit	2BX	2BX	2B	2B
Coating	TIN	TIN	TIN	GLT-1
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics	R15	R15	R45	R45
	C / 2-3	C / 2-3	C / 2-3	C / 2-3
	E / O / P	E / O	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 2 x d_1		max. 3 x d_1	
Applications – Material	P 2.1-5.1 K 2.1-2 N 1.4-6, 2.4-5	P 2.1-5.1 K 2.1-2 N 1.4-6, 2.4-5	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1

Reduced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	ø d_2	□	Tool Identification Dimens. ID		CU573701 Rekord 2D-Z-BF TIN	Flutes	CU583701 Rekord 2D-Z-BF IKZ-TIN	Flutes	CU503700 Enorm 2-Z TIN	Flutes	CU50C400 Enorm 2-Z GLT-1	Flutes
1	8	6.299	1.417	0.800	0.600	0.8750	**.5018**	●	3	●	3	● [1]	5	● [2]	5
1 1/8	8	7.087	1.575	0.896	0.672	1.0000	**.5247**	●	4	●	4	●	5	●	5
1 1/4	8	7.087	1.575	1.021	0.766	1.1250	**.5249**	●	4	●	4	●	5	●	5
1 3/8	8	7.874	1.654	1.108	0.831	1.2500	**.5251**	●	4	●	4	●	6	●	6
1 1/2	8	7.874	1.654	1.233	0.925	1.3750	**.5253**	●	4	●	4	●	6	●	6
1 5/8	8	7.874	1.772	1.305	0.979	1.5000	**.5255**	●	4	●	4	●	6	●	6
1 3/4	8	7.874	1.772	1.430	1.072	1.6250	**.5257**	●	5	●	5	●	8	●	8
1 7/8	8	8.858	1.969	1.519	1.139	1.7500	**.5259**					●	8	●	8
2	8	8.858	1.969	1.644	1.233	1.8750	**.5261**	●	6	●	6	●	8	●	8
2 1/2	8	10.827	2.165	2.100	1.575	2.3750	**.5265**								

[1] Chamfer form/threads = **E/1.5-2**, Tool Identification = **CU513700**
[2] Chamfer form/threads = **E/1.5-2**, Tool Identification = **CU51C400**

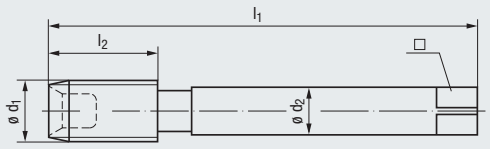
● = In stock
★ = Allow 7 days for delivery

DIN Length · ANSI Shank

Overall length acc. to DIN 376

VA
Stainless Steel Materials

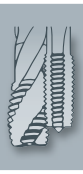
With internal chip collector



Reduced Shank

UN-8

Unified Thread
ASME B1.1



Class of Fit	3BX [2]
Coating	NE2
Cutting Material	HSS Extra
Technical Characteristics	
	C / 2-3
	P / O [1]
Thread Depth and Hole Shape	max. 1.5 x d_1
Applications – Material	P 1.1-4.1
	M 1.1-2.1
	K 1.1-4.2

Reduced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	ø d_2	□	Tool Identification Dimens. ID	CU803011 Robust 2X-VA NE2	Flutes
1	8	6.299	1.417	0.800	0.600	0.8750	**.5018**	●	5
1 1/8	8	7.087	1.575	0.896	0.672	1.0000	**.5247**	●	5
1 1/4	8	7.087	1.575	1.021	0.766	1.1250	**.5249**	●	6
1 3/8	8	7.874	1.654	1.108	0.831	1.2500	**.5251**	●	6
1 1/2	8	7.874	1.654	1.233	0.925	1.3750	**.5253**	●	6
1 5/8	8	7.874	1.772	1.305	0.979	1.5000	**.5255**	●	6
1 3/4	8	7.874	1.772	1.430	1.072	1.6250	**.5257**	●	6
1 7/8	8	8.858	1.969	1.519	1.139	1.7500	**.5259**	●	6
2	8	8.858	1.969	1.644	1.233	1.8750	**.5261**	●	6
2 1/4	8	9.843	1.969	1.894	1.420	2.1250	**.5263**	●	7
2 1/2	8	10.827	2.165	2.100	1.575	2.3750	**.5265**	●	7
3	8	11.810	2.165	2.100	1.575	2.8750	**.5269**	●	8
3 1/2	8	12.795	2.362	2.350	1.762	3.3750	**.5273**	●	10
4	8	13.780	2.362	2.350	1.762	3.8750	**.5277**	●	10
4 1/2	8	13.780	2.559	2.350	1.762	4.3750	**.5281**	●	10

[1] If possible, use paste lubrication, coating both the tool and the walls of the drilled hole.
Lubrication with oil is possible only in the vertical machining of blind holes, if the hole is entirely filled with oil.

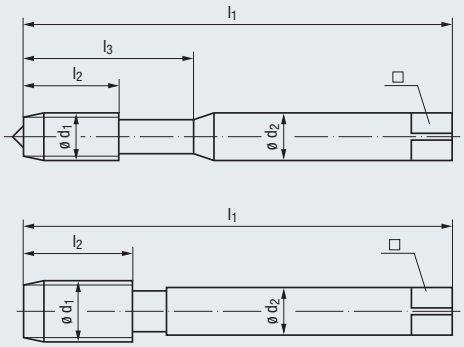
[2] Class 2B threads may be produced with 3BX taps.

Larger sizes priced upon request. We have experience in making taps as large as 10 inches ø UN.

The Complete Tool System

Robust 2X-VA Taps when used with a KSN Type tapping attachment creates the optimal tapping unit!

DIN Length · DIN Shank



Reinforced Shank
(M2 - M10)

Reduced Shank
(M12 - M52)

M

ISO Metric Coarse Thread
DIN 13

STEEL
Steel Materials

Class of Fit	ISO 2/6H	ISO 2/6H	ISO 2/6H	**ISO 3/6G**	**7G**
Coating		TIN	GLT-1		
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics	B / 4-5	B / 4-5	B / 4-5	B / 4-5	B / 4-5
	E / 0	E / 0	E / 0	E / 0	E / 0
Thread Depth and Hole Shape	max. 3 x d_1				
Applications – Material	P 1.1-3.1 N 2.2	P 1.1-4.1 K 2.1 N 2.2, 2.4-5	P 1.1-4.1 K 2.1	P 1.1-3.1 N 2.2	P 1.1-3.1 N 2.2

Reinforced Shank

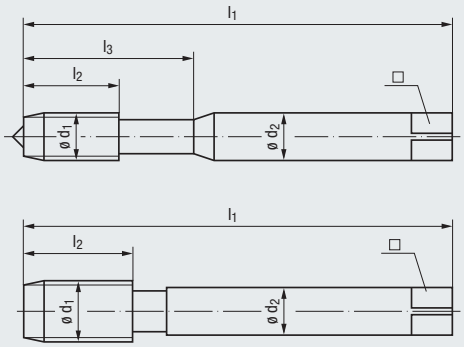
Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	Rekord 1B-STEEL-L	Flutes	Rekord 1B-STEEL-L TIN	Flutes	Rekord 1B-STEEL-L GLT-1	Flutes	Rekord 1B-STEEL-L	Flutes	Rekord 1B-STEEL-L	Flutes
	mm							B0208900		B0208400		B020K500		B0208920		B0208930	
M 2	0.4	45	7	12	2.8	2.1	1.6	.0020	●	2			●	2	★	2	★	2
M 2.5	0.45	50	9	14	2.8	2.1	2.05	.0025	●	2	●	2	●	2	★	2	★	2
M 3	0.5	56	11	18	3.5	2.7	2.5	.0030	●	3	●	3			★	3	★	3
M 3.5	0.6	56	12	20	4	3	2.9	.0035	●	3					★	3		
M 4	0.7	63	13	21	4.5	3.4	3.3	.0040	●	3	●	3			★	3	★	3
M 4.5	0.75	70	14	25	6	4.9	3.7	.0045	●	3								
M 5	0.8	70	15	25	6	4.9	4.2	.0050	●	3	●	3			★	3	★	3
M 6	1	80	17	30	6	4.9	5	.0060	●	3	●	3			★	3	★	3
M 8	1.25	90	20	35	8	6.2	6.8	.0080	●	3	●	3			★	3	★	3
M 10	1.5	100	22	39	10	8	8.5	.0100	●	3	●	3			★	3	★	3

Reduced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	Rekord 2B-STEEL-L	Flutes	Rekord 2B-STEEL-L TIN	Flutes			Rekord 2B-STEEL-L	Flutes	Rekord 2B-STEEL-L	Flutes
	mm							C0208900		C0208400				C0208920		C0208930	
M 12	1.75	110	24	—	9	7	10.2	.0112	●	3	●	3			★	3	★	3
M 14	2	110	26	—	11	9	12	.0114	●	3	●	3						
M 16	2	110	27	—	12	9	14	.0116	●	3	●	3			★	3	★	3
M 18	2.5	125	30	—	14	11	15.5	.0118	●	3	●	3						
M 20	2.5	140	32	—	16	12	17.5	.0120	●	3	●	3			★	3	★	3
M 22	2.5	140	32	—	18	14.5	19.5	.0122	●	3	●	3						
M 24	3	160	34	—	18	14.5	21	.0124	●	3	●	3			★	3	★	3
M 27	3	160	36	—	20	16	24	.0127	★	3	★	3						
M 30	3.5	180	40	—	22	18	26.5	.0130	★	4	★	4						
M 33	3.5	180	40	—	25	20	29.5	.0133	★	4	★	4						
M 36	4	200	50	—	28	22	32	.0136	★	4	★	4						
M 42	4.5	200	56	—	32	24	37.5	.0142	★	4	★	4						
M 45	4.5	220	58	—	36	29	40.5	.0145	★	4	★	4						
M 48	5	250	65	—	36	29	43	.0148	★	4	★	4						
M 52	5	250	65	—	40	32	47	.0152	★	4	★	4						

● = In stock
★ = Allow 7 days for delivery

DIN Length · DIN Shank



STEEL
Steel Materials

M

ISO Metric Coarse Thread
DIN 13

Class of Fit	ISO 2/6H	ISO 2/6H	ISO 2/6H	ISO 2/6H	**ISO 3/6G**
Coating		TIN		TIN	
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics	**LH**	R15	R35	R35	R35
	B / 4-5	**E / 1.5-2**	C / 2-3	C / 2-3	C / 2-3
	E / 0	E / 0	E / 0	E / 0	E / 0
Thread Depth and Hole Shape	max. 3 x d_1	max. 2 x d_1	max. 2.5 x d_1		
Applications – Material	P 1.1-3.1 N 2.2	P 1.1-4.1 K 1.1-4.2 N 1.4-5, 2.4-5	P 1.1-3.1 N 2.2	P 1.1-4.1 K 2.1 N 2.2	P 1.1-3.1 N 2.2

Reinforced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	B0208950 Rekord 1B-STEEL-L LH	Flutes	B0461400 Rekord 1D-STEEL/E TIN	Flutes	B0501000 Enorm 1-STEEL	Flutes	B0501400 Enorm 1-STEEL TIN	Flutes	B0501020 Enorm 1-STEEL	Flutes
				mm				Tool Identification									
M 2	0.4	45	7	12	2.8	2.1	1.6	.0020	★	2	●	2	●	2	★	2	★	2
M 2.5	0.45	50	9	14	2.8	2.1	2.05	.0025	★	2	●	2	★	2	★	2	★	2
M 3	0.5	56	11	18	3.5	2.7	2.5	.0030	★	3	●	2	●	3	★	3	★	3
M 3.5	0.6	56	12	20	4	3	2.9	.0035					●	3				
M 4	0.7	63	13	21	4.5	3.4	3.3	.0040	★	3	●	3	●	3	★	3	★	3
M 4.5	0.75	70	14	25	6	4.9	3.7	.0045					●	3				
M 5	0.8	70	15	25	6	4.9	4.2	.0050	★	3	●	3	●	3	★	3	★	3
M 6	1	80	17	30	6	4.9	5	.0060	★	3	●	3	●	3	★	3	★	3
M 8	1.25	90	20	35	8	6.2	6.8	.0080	★	3	●	3	●	3	★	3	★	3
M 10	1.5	100	22	39	10	8	8.5	.0100	★	3	●	3	●	3	★	3	★	3

Reduced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	C0208950 Rekord 2B-STEEL-L LH	Flutes	C0461400 Rekord 2D-STEEL/E TIN	Flutes	C0501000 Enorm 2-STEEL	Flutes	C0501400 Enorm 2-STEEL TIN	Flutes	C0501020 Enorm 2-STEEL	Flutes
				mm				Tool Identification									
M 12	1.75	110	24	—	9	7	10.2	.0112	★	3	●	3	●	3	★	3	★	3
M 14	2	110	26	—	11	9	12	.0114			●	3	●	3	★	3		
M 16	2	110	27	—	12	9	14	.0116	★	3	●	3	●	3	★	3	★	3
M 18	2.5	125	30	—	14	11	15.5	.0118			●	3	●	3	★	3		
M 20	2.5	140	32	—	16	12	17.5	.0120	★	3	●	3	●	3	★	3	★	3
M 22	2.5	140	32	—	18	14.5	19.5	.0122					●	4	★	4		
M 24	3	160	34	—	18	14.5	21	.0124	★	3	●	3	●	4	★	4	★	4
M 27	3	160	36	—	20	16	24	.0127					★	4	★	4		
M 30	3.5	180	40	—	22	18	26.5	.0130					●	4	★	4		
M 33	3.5	180	40	—	25	20	29.5	.0133					★	4				
M 36	4	200	50	—	28	22	32	.0136					★	4				
M 42	4.5	200	56	—	32	24	37.5	.0142					★	5				
M 45	4.5	220	58	—	36	29	40.5	.0145					★	5				
M 48	5	250	65	—	36	29	43	.0148					★	5				
M 52	5	250	65	—	40	32	47	.0152					★	6				

Ordering Example: **B0208950.0020**

STEEL
Steel Materials

VA
Stainless Steel Materials

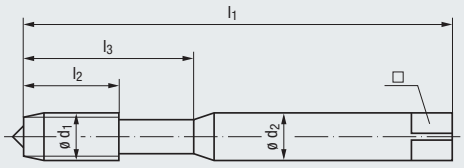
B0501420	B0501030	B0501430	B0501050		B020C300	B0203020	B0203030	Tool Identification
ISO 3/6G	7G	7G	ISO 2/6H		ISO 2/6H	ISO 3/6G	7G	Class of Fit
TIN		TIN			GLT-1	NT	NT	Coating
HSS Extra	HSS Extra	HSS Extra	HSS Extra		HSS Extra	HSS Extra	HSS Extra	Cutting Material
R35	R35	R35	LH, L35					Technical Characteristics
C / 2-3	C / 2-3	C / 2-3	C / 2-3		B / 4-5	B / 4-5	B / 4-5	
E / O	E / O	E / O	E / O		E / O / P	E / O / P	E / O / P	
max. 2.5 x d_1					max. 3 x d_1			Thread Depth and Hole Shape
P 1.1-4.1 K 2.1 N 2.2	P 1.1-3.1 N 2.2	P 1.1-4.1 K 2.1 N 2.2	P 1.1-3.1 N 2.2		P 1.1-4.1 M 1.1-3.1 K 2.1 N 2.2	P 1.1-3.1 M 1.1-2.1 K 2.1 N 2.2, 2.5-6	P 1.1-3.1 M 1.1-2.1 K 2.1 N 2.2, 2.5-6	Applications – Material

Enorm 1-STEEL TIN	Flutes	Enorm 1-STEEL	Flutes	Enorm 1-STEEL TIN	Flutes	Enorm 1-STEEL-LH	Flutes	Rekord 1B-VA GLT-1	Flutes	Rekord 1B-VA NT	Flutes	Rekord 1B-VA NT	Flutes	Dimens. ID	Nominal Size ø d_1	P
★	2	★	2	★	2			●	2	★	2	★	2	.0020	M 2	0.4
★	2	★	2	★	2			●	2	★	2	★	2	.0025	M 2.5	0.45
★	3	★	3	★	3	★	3	●	3	★	3	★	3	.0030	M 3	0.5
														.0035	M 3.5	0.6
★	3	★	3	★	3	★	3	●	3	★	3	★	3	.0040	M 4	0.7
								●	3					.0045	M 4.5	0.75
★	3	★	3	★	3	★	3	●	3	★	3	★	3	.0050	M 5	0.8
★	3	★	3	★	3	★	3	●	3	★	3	★	3	.0060	M 6	1
★	3	★	3	★	3	★	3	●	3	★	3	★	3	.0080	M 8	1.25
★	3	★	3	★	3	★	3	●	3	★	3	★	3	.0100	M 10	1.5

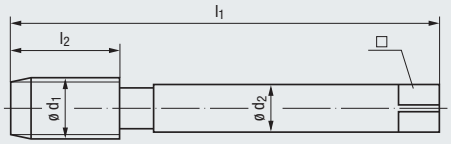
C0501420	C0501030	C0501430	C0501050		C020C300	C0203020	C0203030	Tool Identification
Enorm 2-STEEL TIN	Enorm 2-STEEL	Enorm 2-STEEL TIN	Enorm 2-STEEL-LH		Rekord 2B-VA GLT-1	Rekord 2B-VA NT	Rekord 2B-VA NT	
Flutes	Flutes	Flutes	Flutes		Flutes	Flutes	Flutes	Dimens. ID / Nominal Size ø d_1 / P
★ 3	★ 3	★ 3	★ 3		● 3	★ 3	★ 3	.0112 M 12 1.75
					● 3			.0114 M 14 2
★ 3	★ 3	★ 3	★ 3		● 3	★ 3	★ 3	.0116 M 16 2
					● 3			.0118 M 18 2.5
★ 3	★ 3	★ 3	★ 3		● 3	★ 3	★ 3	.0120 M 20 2.5
					● 3			.0122 M 22 2.5
★ 4	★ 4	★ 4	★ 4		● 3	★ 3	★ 3	.0124 M 24 3
					● 3			.0127 M 27 3
					● 4			.0130 M 30 3.5
					● 4			.0133 M 33 3.5
					● 4			.0136 M 36 4
					● 4			.0142 M 42 4.5
					● 4			.0145 M 45 4.5
					● 4			.0148 M 48 5
					● 4			.0152 M 52 5

● = In stock
★ = Allow 7 days for delivery

DIN Length · DIN Shank



Reinforced Shank (M2 - M10)



Reduced Shank (M12 - M52)

M

ISO Metric Coarse Thread
DIN 13

new

	VA Stainless Steel Materials				GJV Cast Iron Vermicular
Class of Fit	ISO 2/6H	ISO 2/6H	ISO 2/6H		6HX
Coating		NE2	GLT-1		TICN
Cutting Material	HSS Extra	HSS Extra	HSS Extra		HSSE-PM
Technical Characteristics	R35	R35	R35		
	C / 2-3	C / 2-3	C / 2-3		C / 2-3
	E / O / P	E / O / P	E / O / P		E
Thread Depth and Hole Shape	max. 2.5 x d_1				max. 2 x d_1
Applications – Material	P 1.1-3.1 M 1.1-2.1 K 2.1	P 1.1-3.1 M 1.1-2.1 K 2.1	P 1.1-4.1 M 1.1-3.1 K 2.1		K 1.1-4.2

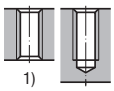
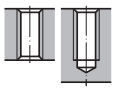
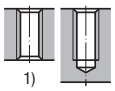
Reinforced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	B0503000 Enorm 1-VA	Flutes	B0503200 Enorm 1-VA NE2	Flutes	B050C300 Enorm 1-VA GLT-1	Flutes	B010R501 Rekord 1A-GJV PM-TICN	Flutes
			mm				Tool Identification								
M 2	0.4	45	7	12	2.8	2.1	1.6	.0020	★	2	●	2	★	2			
M 2.5	0.45	50	9	14	2.8	2.1	2.05	.0025	★	2	★	2	★	2			
M 3	0.5	56	11	18	3.5	2.7	2.5	.0030	★	3	●	3	★	3			
M 3.5	0.6	56	12	20	4	3	2.9	.0035	★	3	●	3					
M 4	0.7	63	13	21	4.5	3.4	3.3	.0040	★	3	●	3	★	3	★	3
M 4.5	0.75	70	14	25	6	4.9	3.7	.0045								
M 5	0.8	70	15	25	6	4.9	4.2	.0050	★	3	●	3	★	3	★	3
M 6	1	80	17	30	6	4.9	5	.0060	★	3	●	3	★	3	★	4
M 8	1.25	90	20	35	8	6.2	6.8	.0080	★	3	●	3	★	3	★	4
M 10	1.5	100	22	39	10	8	8.5	.0100	★	3	●	3	★	3	★	4

Reduced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	C0503000 Enorm 2-VA	Flutes	C0503200 Enorm 2-VA NE2	Flutes	C010R501 Rekord 2A-GJV PM-TICN	Flutes
			mm				Tool Identification						
M 12	1.75	110	24	—	9	7	10.2	.0112	★	3	●	3	★	4
M 14	2	110	26	—	11	9	12	.0114	★	3	●	3		
M 16	2	110	27	—	12	9	14	.0116	★	3	●	3	★	4
M 18	2.5	125	30	—	14	11	15.5	.0118	★	3	●	3		
M 20	2.5	140	32	—	16	12	17.5	.0120	★	3	●	3		
M 22	2.5	140	32	—	18	14.5	19.5	.0122	★	4	●	4		
M 24	3	160	34	—	18	14.5	21	.0124	★	4	●	4		
M 27	3	160	36	—	20	16	24	.0127	★	4	●	4		
M 30	3.5	180	40	—	22	18	26.5	.0130	★	4	●	4		
M 33	3.5	180	40	—	25	20	29.5	.0133						
M 36	4	200	50	—	28	22	32	.0136						
M 42	4.5	200	56	—	32	24	37.5	.0142						
M 45	4.5	220	58	—	36	29	40.5	.0145						
M 48	5	250	65	—	36	29	43	.0148						
M 52	5	250	65	—	40	32	47	.0152						

Ordering Example: **B0503000.0020**

	GJV Cast Iron Vermicular						AL Aluminum Wrought Alloys		
		new			new				
	6HX	6HX	6HX	6HX	6HX		ISO 2/6H	ISO 2/6H	Class of Fit
	TICN	TICN	TICN	TICN	TICN		GLT-8	GLT-8	Coating
	HSSE-PM	**HSSE-PM**	**HSSE-PM**	**HSSE-PM**	**HSSE-PM**		HSS Extra	HSS Extra	Cutting Material
								R45	Technical Characteristics
	C / 2-3	C / 2-3	**E / 1.5-2**	**E / 1.5-2**	**E / 1.5-2**		B / approx. 3	C / 2-3	
	E	E	E	E	E		E / O	E / O	
	max. 2 x d_1  1)	max. 2 x d_1	max. 2 x d_1 	max. 2 x d_1  1)	max. 2 x d_1		max. 3 x d_1	max. 2.5 x d_1	Thread Depth and Hole Shape
	K 1.1-4.2	**K** 1.1-4.2	**K** 1.1-4.2	**K** 1.1-4.2	**K** 1.1-4.2		**N** 1.1-4	**N** 1.1-4	Applications – Material

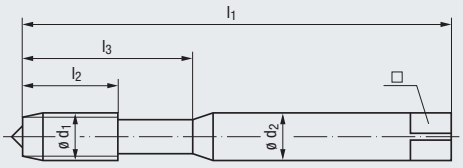
B195R501		B106R501		B011R501		B196R501		B109R501			B020S800		B050S800		Tool Identification		
Rekord 1A-GJV IKZ-PM TICN	Flutes	Rekord 1A-GJV IKZN-PM TICN	Flutes	Rekord 1A-GJV/E PM-TICN	Flutes	Rekord 1A-GJV/E IKZ-PM TICN	Flutes	Rekord 1A-GJV/E IKZN-PM TICN	Flutes		Rekord 1B-AL GLT-8	Flutes	Enorm 1-AL GLT-8	Flutes	Dimens. ID	Nominal Size ø d_1	P
											★	2	★	2	**.0020**	M 2	0.4
		upon						upon			★	2	★	2	**.0025**	M 2.5	0.45
											★	2	★	2	**.0030**	M 3	0.5
		request						request							**.0035**	M 3.5	0.6
				★	3						★	2	★	2	**.0040**	M 4	0.7
															.0045	M 4.5	0.75
★	3			★	3	★	3				★	2	★	2	**.0050**	M 5	0.8
★	4			★	4	★	4				★	2	★	2	**.0060**	M 6	1
★	4			★	4	★	4				★	2	★	2	**.0080**	M 8	1.25
★	4			★	4	★	4				★	2	★	2	**.0100**	M 10	1.5

C195R501		C106R501		C011R501		C196R501		C109R501			C020S800		C050S800		Tool Identification		
Rekord 2A-GJV IKZ-PM TICN	Flutes	Rekord 2A-GJV IKZN-PM TICN	Flutes	Rekord 2A-GJV/E PM-TICN	Flutes	Rekord 2A-GJV/E IKZ-PM TICN	Flutes	Rekord 2A-GJV/E IKZN-PM TICN	Flutes		Rekord 2B-AL GLT-8	Flutes	Enorm 2-AL GLT-8	Flutes	Dimens. ID	Nominal Size ø d_1	P
★	4			★	4	★	4				★	3	★	3	**.0112**	M 12	1.75
		upon						upon							**.0114**	M 14	2
★	4			★	4	★	4				★	3	★	3	**.0116**	M 16	2
		request						request							**.0118**	M 18	2.5
★	4					★	4								**.0120**	M 20	2.5
															.0122	M 22	2.5
															.0124	M 24	3
															.0127	M 27	3
															.0130	M 30	3.5
															.0133	M 33	3.5
															.0136	M 36	4
															.0142	M 42	4.5
															.0145	M 45	4.5
															.0148	M 48	5
															.0152	M 52	5

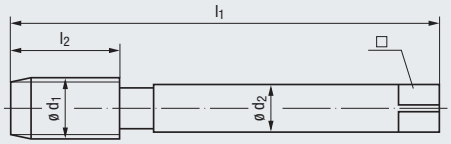
● = In stock
★ = Allow 7 days for delivery

1) Threading in through holes is possible only with external cooling/lubrication

DIN Length · DIN Shank



Reinforced Shank
(M2 - M10)



Reduced Shank
(M12 - M52)

M

ISO Metric Coarse Thread
DIN 13

	AL Aluminum Wrought Alloys		GAL Aluminum Cast Alloys		
	new				
Class of Fit	ISO 2/6H		6HX	6HX	6HX
Coating	GLT-8		TICN	TICN	TICN
Cutting Material	HSS Extra		HSS Extra	HSS Extra	HSS Extra
Technical Characteristics	R45				R15
	E / 1.5-2		E / 1.5-2	E / 1.5-2	E / 1.5-2
	E / O		E / M	E / M	E / M
Thread Depth and Hole Shape	max. 2.5 x d_1		max. 2 x d_1 1)	max. 2 x d_1	
Applications – Material	N 1.1-4		N 1.4-6	N 1.4-6	N 1.4-6

Reinforced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	B051S800 Enorm 1-AL/E GLT-8	Flutes	B1969501 Rekord 1A-GAL/E IKZ-TICN	Flutes	B1099501 Rekord 1A-GAL/E IKZN-TICN	Flutes	B0989501 Rekord 1D-GAL/E IKZ-TICN	Flutes
				mm			Tool Identification								
M 2	0.4	45	7	12	2.8	2.1	1.6	.0020							
M 2.5	0.45	50	9	14	2.8	2.1	2.05	.0025							
M 3	0.5	56	11	18	3.5	2.7	2.5	.0030	★	2					
M 3.5	0.6	56	12	20	4	3	2.9	.0035							
M 4	0.7	63	13	21	4.5	3.4	3.3	.0040	★	2	★	3			★	3
M 4.5	0.75	70	14	25	6	4.9	3.7	.0045								
M 5	0.8	70	15	25	6	4.9	4.2	.0050	★	2	★	3			★	3
M 6	1	80	17	30	6	4.9	5	.0060	★	2	★	3	★	3	★	3
M 8	1.25	90	20	35	8	6.2	6.8	.0080	★	2	★	3	★	3	★	3
M 10	1.5	100	22	39	10	8	8.5	.0100	★	2	★	3	★	3	★	3

Reduced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID
			mm				Tool Identification
M 12	1.75	110	24	—	9	7	10.2	.0112
M 14	2	110	26	—	11	9	12	.0114
M 16	2	110	27	—	12	9	14	.0116
M 18	2.5	125	30	—	14	11	15.5	.0118
M 20	2.5	140	32	—	16	12	17.5	.0120
M 22	2.5	140	32	—	18	14.5	19.5	.0122
M 24	3	160	34	—	18	14.5	21	.0124
M 27	3	160	36	—	20	16	24	.0127
M 30	3.5	180	40	—	22	18	26.5	.0130
M 33	3.5	180	40	—	25	20	29.5	.0133
M 36	4	200	50	—	28	22	32	.0136
M 42	4.5	200	56	—	32	24	37.5	.0142
M 45	4.5	220	58	—	36	29	40.5	.0145
M 48	5	250	65	—	36	29	43	.0148
M 52	5	250	65	—	40	32	47	.0152

1) Threading in through holes is possible only with external cooling/lubrication

Ordering Example: **B051S800.0030**

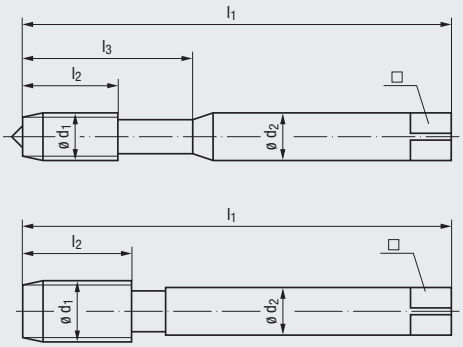
GAL Aluminum Cast Alloys		PVC Long-Chipping Synthetics		TI Titanium				
new								
6HX		6HX		6HX	6HX	6HX	6HX	Class of Fit
TICN		CRN		NT2	TICN	NT2	TICN	Coating
Carbide		HSS Extra		HSS Extra	HSS Extra	HSS Extra	HSS Extra	Cutting Material
R15		R15		L15	L15	R15	R15	Technical Characteristics
E / 1.5-2		**E / 1.5-2**		D / 4-5	D / 4-5	C / 2-3	C / 2-3	
E / M		E		E / O / P	E / O / P	E / O / P	E / O / P	
max. 2 x d_1		max. 2 x d_1		max. 3 x d_1		max. 2 x d_1		Thread Depth and Hole Shape
N **1.4-6**		N **4.2**		P **4.1-5.1** M **3.1-4.1** N **2.4-5, 2.7** S **1.1-2.2, 2.4**	P **4.1-5.1** M **3.1-4.1** N **2.4-5, 2.7** S **1.1-2.2, 2.4**	P **4.1-5.1** M **3.1-4.1** N **2.4-5, 2.7** S **1.1-2.2, 2.4**	P **4.1-5.1** M **3.1-4.1** N **2.4-5, 2.7** S **1.1-2.2, 2.4**	Applications – Material

B098Q801			B046L801			B0306001		B0309601		B0456001		B0459601		Tool Identification		
VHM Rekord 1D-GAL/E IKZ-TICN	Flutes		Rekord 1D-PVC/E CRN	Flutes		Rekord 1C-TI NT2	Flutes	Rekord 1C-TI TICN	Flutes	Rekord 1D-TI NT2	Flutes	Rekord 1D-TI TICN	Flutes	Dimens. ID	Nominal Size ø d_1	P
						★	2	★	2	★	2	★	2	**.0020**	M 2	0.4
						★	2	★	2	★	2	★	2	**.0025**	M 2.5	0.45
			★	2		●	2	★	2	●	2	★	2	**.0030**	M 3	0.5
										●	3			**.0035**	M 3.5	0.6
★	3		★	3		●	3	★	3	●	3	★	3	**.0040**	M 4	0.7
														.0045	M 4.5	0.75
★	3		★	3		●	3	★	3	●	3	★	3	**.0050**	M 5	0.8
★	3		★	3		●	3	★	3	●	3	★	3	**.0060**	M 6	1
★	3		★	3		●	3	★	3	●	3	★	3	**.0080**	M 8	1.25
★	3		★	3		●	3	★	3	●	3	★	3	**.0100**	M 10	1.5

						C0306001		C0309601		C0456001		C0459601		Tool Identification		
						Rekord 2C-TI NT2	Flutes	Rekord 2C-TI TICN	Flutes	Rekord 2D-TI NT2	Flutes	Rekord 2D-TI TICN	Flutes	Dimens. ID	Nominal Size ø d_1	P
						●	3	★	3	●	3	★	3	**.0112**	M 12	1.75
														.0114	M 14	2
						●	3	★	3	●	3	★	3	**.0116**	M 16	2
														.0118	M 18	2.5
						●	3	★	3	●	3	★	3	**.0120**	M 20	2.5
														.0122	M 22	2.5
						●	3	★	3	●	3	★	3	**.0124**	M 24	3
														.0127	M 27	3
														.0130	M 30	3.5
														.0133	M 33	3.5
														.0136	M 36	4
														.0142	M 42	4.5
														.0145	M 45	4.5
														.0148	M 48	5
														.0152	M 52	5

●= In stock
★= Allow 7 days for delivery

DIN Length · DIN Shank



M

ISO Metric Coarse Thread
DIN 13

	TILEG Titanium Alloys		NI Nickel Alloys	
Class of Fit	6HX		6HX	6HX
Coating	TICN		TICN	TICN
Cutting Material	HSS Extra		**HSSE-PM**	**HSSE-PM**
Technical Characteristics	R15		L08	R10
	C / 2-3		D / 4-5	C / 2-3
	E / O / P		O / P	O / P
Thread Depth and Hole Shape	max. 2 x d_1		max. 3 x d_1	max. 2 x d_1
Applications – Material	M 4.1 S 1.2-3		M 4.1 N 2.8 S 1.2-3 S 2.3, 2.5-6	M 4.1 N 2.8 S 1.2-3 S 2.3, 2.5-6

Reinforced Shank

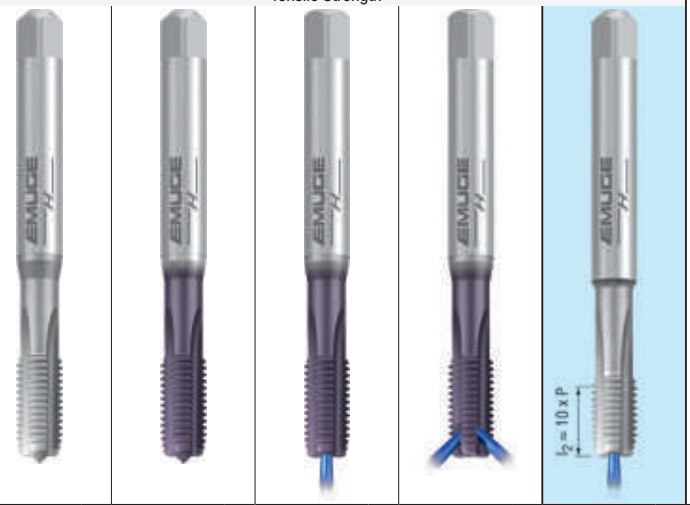
Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	B040V401 Rekord 1DF-TILEG TICN	Flutes	B030J401 Rekord 1C-NI-PM TICN	Flutes	B438J401 Rekord 1DF-NI-PM TICN	Flutes
				mm			Tool Identification						
M 2	0.4	45	7	12	2.8	2.1	1.6	.0020					
M 2.5	0.45	50	9	14	2.8	2.1	2.05	.0025					
M 3	0.5	56	11	18	3.5	2.7	2.5	.0030	★	2	★	2	★	2
M 3.5	0.6	56	12	20	4	3	2.9	.0035						
M 4	0.7	63	13	21	4.5	3.4	3.3	.0040	★	3	★	3	★	3
M 4.5	0.75	70	14	25	6	4.9	3.7	.0045						
M 5	0.8	70	15	25	6	4.9	4.2	.0050	★	3	★	3	★	3
M 6	1	80	17	30	6	4.9	5	.0060	★	3	★	3	★	3
M 8	1.25	90	20	35	8	6.2	6.8	.0080	★	3	★	3	★	3
M 10	1.5	100	22	39	10	8	8.5	.0100	★	3	★	3	★	3

Reduced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	C030J401 Rekord 2C-NI-PM TICN	Flutes	C438J401 Rekord 2DF-NI-PM TICN	Flutes
				mm			Tool Identification				
M 12	1.75	110	24	—	9	7	10.2	.0112	★	3	★	3
M 14	2	110	26	—	11	9	12	.0114	★	3	★	3
M 16	2	110	27	—	12	9	14	.0116	★	3	★	3
M 18	2.5	125	30	—	14	11	15.5	.0118				
M 20	2.5	140	32	—	16	12	17.5	.0120	★	3	★	3
M 22	2.5	140	32	—	18	14.5	19.5	.0122				
M 24	3	160	34	—	18	14.5	21	.0124				
M 27	3	160	36	—	20	16	24	.0127				
M 30	3.5	180	40	—	22	18	26.5	.0130				
M 33	3.5	180	40	—	25	20	29.5	.0133				
M 36	4	200	50	—	28	22	32	.0136				
M 42	4.5	200	56	—	32	24	37.5	.0142				
M 45	4.5	220	58	—	36	29	40.5	.0145				
M 48	5	250	65	—	36	29	43	.0148				
M 52	5	250	65	—	40	32	47	.0152				

Ordering Example: **B040V401.0030**

H
Materials of High Tensile Strength



6HX	6HX	6HX	6HX	6HX				Class of Fit
NT	TICN	TICN	TICN					Coating
HSS Extra	HSS Extra	HSS Extra	HSS Extra	Carbide				Cutting Material
								Technical Characteristics
C / 2-3	C / 2-3	C / 2-3	C / 2-3	C / 2-3				
E / O / P	E / O / P	E / O	E / O	E / O				
max. 2 x d_1		max. 2 x d_1	max. 2 x d_1	max. 2 x d_1				Thread Depth and Hole Shape
		1)		1)				
P 1.1-3.1	P 1.1-4.1	P 1.1-4.1	P 1.1-4.1	P 5.1				Applications – Material
K 1.1-4.2	K 1.1-4.2	K 1.1-4.2	K 1.1-4.2	K 1.1-4.2				
N 2.4-7	N 2.4-7	N 2.4-7	N 2.4-7	N 1.5-6, 2.6-8				
N 4.1, 5.1	N 4.1, 5.1	N 4.1, 5.1	N 4.1, 5.1	N 4.1, 4.3-5.2				
				H 1.1-2				

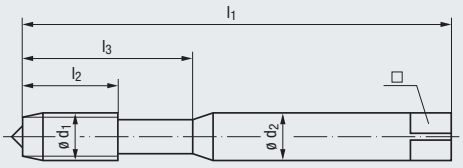
B0100501		B0109101		B1959101		B1069101		B1950901				Tool Identification		
Rekord 1A-H NT	Flutes	Rekord 1A-H TICN	Flutes	Rekord 1A-H-IKZ TICN	Flutes	Rekord 1A-H-IKZN TICN	Flutes	VHM Rekord 1A-H-IKZ	Flutes			Dimens. ID	Nominal Size ø d_1	P
★	3	★	3									.0020	M 2	0.4
★	3	★	3			upon						.0025	M 2.5	0.45
●	3	★	3					★	3			.0030	M 3	0.5
●	3	★	3			request						.0035	M 3.5	0.6
●	3	★	3					★	3			.0040	M 4	0.7
												.0045	M 4.5	0.75
●	3	●	3	★	3			★	3			.0050	M 5	0.8
●	3	●	3	★	3			●	3			.0060	M 6	1
●	3	●	3	★	3			●	3			.0080	M 8	1.25
●	3	★	3	★	3			●	3			.0100	M 10	1.5

C0100501		C0109101		C1959101		C1069101		C1950901				Tool Identification		
Rekord 2A-H NT	Flutes	Rekord 2A-H TICN	Flutes	Rekord 2A-H-IKZ TICN	Flutes	Rekord 2A-H-IKZN TICN	Flutes	KHM Rekord 2A-H-IKZ	Flutes			Dimens. ID	Nominal Size ø d_1	P
●	3	★	3	★	3			●	3			.0112	M 12	1.75
●	3	★	3	★	3	upon		★	4			.0114	M 14	2
●	3	★	3	★	3			★	4			.0116	M 16	2
						request		★	4			.0118	M 18	2.5
●	4	★	4	★	4			★	4			.0120	M 20	2.5
								★	4			.0122	M 22	2.5
●	4	★	4					★	4			.0124	M 24	3
								★	4			.0127	M 27	3
												.0130	M 30	3.5
												.0133	M 33	3.5
												.0136	M 36	4
												.0142	M 42	4.5
												.0145	M 45	4.5
												.0148	M 48	5
												.0152	M 52	5

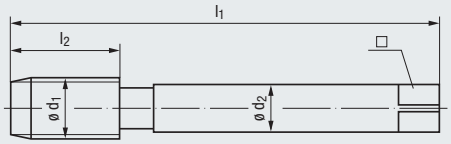
●= In stock
★= Allow 7 days for delivery

1) Threading in through holes is possible only with external cooling/lubrication

DIN Length · DIN Shank



Reinforced Shank
(M4 - M10)



Reduced Shank
(M12 - M20)

HCUT
Hardened Steels

M

ISO Metric Coarse Thread
DIN 13

Class of Fit	6HX
Coating	TICN
Cutting Material	**HSSE-PM**
Technical Characteristics	
	C / 2-3
	O / P
Thread Depth and Hole Shape	max. 1.5 x d_1
Applications – Material	H 1.1-2

Reinforced Shank

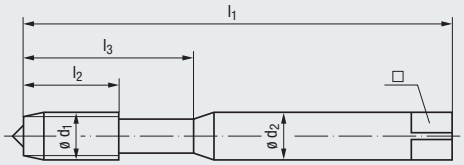
Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification B010J901 Rekord 1A-HCUT-PM TICN	Flutes
	mm								
M 4	0.7	63	7	21	4.5	3.4	3.4	.0040		
M 5	0.8	70	8	25	6	4.9	4.3	.0050		
M 6	1	80	10	30	6	4.9	5.1	.0060	★	4
M 8	1.25	90	14	35	8	6.2	6.9	.0080	★	5
M 10	1.5	100	16	39	10	8	8.6	.0100	★	5

Reduced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification C010J901 Rekord 2A-HCUT-PM TICN	Flutes
	mm								
M 12	1.75	110	18	—	9	7	10.4	.0112	★	5
M 14	2	110	20	—	11	9	12.2	.0114		
M 16	2	110	22	—	12	9	14.2	.0116	★	6
M 20	2.5	140	25	—	16	12	17.7	.0120	★	7

Ordering Example: **B010J901.0060**

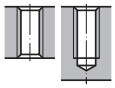
DIN Length · DIN Shank



Reinforced Shank

M

ISO Metric Coarse Thread
DIN 13

	HCUT Hardened Steels	
		2)
Class of Fit	6HX	6HX
Coating	TICN	TICN
Cutting Material	**Carbide**	**Carbide**
Technical Characteristics		
	D / 4-5	**C / 2-3**
	O / P	O / P
Thread Depth and Hole Shape	max. 1.5 x d_1 	max. 1.5 x d_1
Applications – Material	H 1.3-4	H 1.3-4

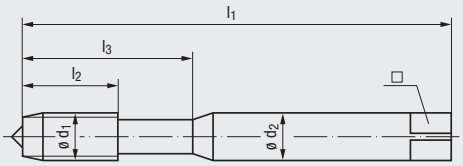
Reinforced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Tool Identification Dimens. ID	B016K101 VHM Rekord 1A-HCUT/D TICN	Flutes	B010K101 VHM Rekord 1A-HCUT/C TICN	Flutes
				mm							
M 3	0.5	63	6	18	4.5	3.4	2.55 **.0030**	★	3	★	3
M 4	0.7	63	8	20	4.5	3.4	3.4 **.0040**	★	4	★	4
M 5	0.8	70	10	26	6	4.9	4.3 **.0050**	★	4	★	4
M 6	1	80	12	28	6	4.9	5.1 **.0060**	★	4	★	4
M 8	1.25	90	15	35	8	6.2	6.9 **.0080**	★	5	★	5
M 10	1.5	100	18	38	10	8	8.6 **.0100**	★	5	★	5
M 12	1.75	110	21	41	12	9	10.4 **.0112**	★	5	★	5
M 14	2	110	24	44	14	11	12.2 **.0114**				
M 16	2	110	24	44	16	12	14.2 **.0116**	★	6	★	6

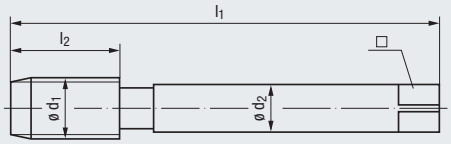
2) Please note: Use solid carbide tap VHM-Rekord 1A-HCUT/D-TICN as No.1 tap!

● = In stock
★ = Allow 7 days for delivery

DIN Length · DIN Shank



Reinforced Shank (M2 - M10)



Reduced Shank (M12 - M52)

Z CNC-Controlled Machines

M

ISO Metric Coarse Thread
DIN 13

Class of Fit	6HX	6HX	6HX	6HX	6HX
Coating	TICN	TICN	TICN	TICN	TICN
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics					
	C / 2-3	C / 2-3	C / 2-3	**E / 1.5-2**	**E / 1.5-2**
	E / O / P	E / O	E / O	E / O / P	E / O
Thread Depth and Hole Shape	max. 2 x d_1	max. 2 x d_1 1)	max. 2 x d_1	max. 2 x d_1	max. 2 x d_1 1)
Applications – Material	P 1.1-4.1 K 1.1-4.2 N 1.4-6, 2.4-7 N 4.1	P 1.1-4.1 K 1.1-4.2 N 1.4-6, 2.4-7 N 4.1	P 1.1-4.1 K 1.1-4.2 N 1.4-6, 2.4-7 N 4.1	P 1.1-4.1 K 1.1-4.2 N 1.4-6, 2.4-7 N 4.1	P 1.1-4.1 K 1.1-4.2 N 1.4-6, 2.4-7 N 4.1

Reinforced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	B0109401 Rekord 1A-Z TICN	Flutes	B1959401 Rekord 1A-Z-IKZ TICN	Flutes	B1069401 Rekord 1A-Z-IKZN TICN	Flutes	B0119401 Rekord 1A-Z/E TICN	Flutes	B1969401 Rekord 1A-Z/E-IKZ TICN	Flutes
				mm				Tool Identification									
M 2	0.4	45	4	12	2.8	2.1	1.6	.0020									
M 2.5	0.45	50	5	14	2.8	2.1	2.05	.0025									
M 3	0.5	56	6	18	3.5	2.7	2.5	.0030	★	3					★	3		
M 3.5	0.6	56	7	20	4	3	2.9	.0035										
M 4	0.7	63	7	21	4.5	3.4	3.3	.0040	★	3	★	3			★	3	★	3
M 4.5	0.75	70	8	25	6	4.9	3.7	.0045										
M 5	0.8	70	8	25	6	4.9	4.2	.0050	★	3	★	3			★	3	★	3
M 6	1	80	10	30	6	4.9	5	.0060	★	3	★	3	★	3	★	3	★	3
M 8	1.25	90	14	35	8	6.2	6.8	.0080	★	3	★	3	★	3	★	3	★	3
M 10	1.5	100	16	39	10	8	8.5	.0100	★	3	★	3	★	3	★	3	★	3

Reduced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	C0109401 Rekord 2A-Z TICN	Flutes	C1959401 Rekord 2A-Z-IKZ TICN	Flutes			C0119401 Rekord 2A-Z/E TICN	Flutes	C1969401 Rekord 2A-Z/E-IKZ TICN	Flutes
				mm				Tool Identification									
M 12	1.75	110	18	—	9	7	10.2	.0112	●	3	★	3			★	3	★	3
M 14	2	110	20	—	11	9	12	.0114	★	3	★	3			★	3	★	3
M 16	2	110	22	—	12	9	14	.0116	★	3	★	3			★	3	★	3
M 18	2.5	125	25	—	14	11	15.5	.0118										
M 20	2.5	140	25	—	16	12	17.5	.0120	★	4	★	4			★	4	★	4
M 22	2.5	140	27	—	18	14.5	19.5	.0122										
M 24	3	160	30	—	18	14.5	21	.0124			★	4						
M 27	3	160	30	—	20	16	24	.0127										
M 30	3.5	180	35	—	22	18	26.5	.0130										
M 33	3.5	180	35	—	25	20	29.5	.0133										
M 36	4	200	40	—	28	22	32	.0136										
M 42	4.5	200	45	—	32	24	37.5	.0142										
M 45	4.5	220	45	—	36	29	40.5	.0145										
M 48	5	250	50	—	36	29	43	.0148										
M 52	5	250	50	—	40	32	47	.0152										

1) Threading in through holes is possible only with external cooling/lubrication

Ordering Example: **B0109401.0030**

Z
CNC-Controlled Machines

new	new	new	new	new	new	new	new	
6HX	6HX	6HX	6HX	**6GX**	**6GX**	**6GX**	**6GX**	Class of Fit
TIN-70	GLT-1	TIN-70	GLT-1	TIN-70	GLT-1	TIN-70	GLT-1	Coating
HSSE-PM	**HSSE-PM**	**HSSE-PM**	**HSSE-PM**	**HSSE-PM**	**HSSE-PM**	**HSSE-PM**	**HSSE-PM**	Cutting Material
								Technical Characteristics
B / 4-5	B / 4-5	B / 4-5	B / 4-5	B / 4-5	B / 4-5	B / 4-5	B / 4-5	
E / O / P	E / O / P	E / O	E / O	E / O / P	E / O / P	E / O	E / O	

max. 3 x d_1

Thread Depth and Hole Shape

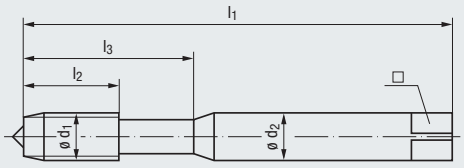
P 1.1-5.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1	P 1.1-5.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1	P 1.1-5.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1	P 1.1-5.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1	P 1.1-5.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1	P 1.1-5.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1	P 1.1-5.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1	P 1.1-5.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1	Applications – Material

B0208F01		B020A601		B1088F01		B108A601		B0208F21		B020A621		B1088F21		B108A621		Tool Identification		
Rekord 1B-Z-PM TIN-70	Flutes	Rekord 1B-Z-PM GLT-1	Flutes	Rekord 1B-Z-IKZN PM-TIN-70	Flutes	Rekord 1B-Z-IKZN PM-GLT-1	Flutes	Rekord 1B-Z-PM TIN-70	Flutes	Rekord 1B-Z-PM GLT-1	Flutes	Rekord 1B-Z-IKZN PM-TIN-70	Flutes	Rekord 1B-Z-IKZN PM-GLT-1	Flutes	Dimens. ID	Nominal Size ø d_1	P
★	2	★	2					★	2	★	2					.0020	M 2	0.4
★	2	★	2	upon		upon		★	2	★	2	upon		upon		.0025	M 2.5	0.45
★	3	★	3					★	3	★	3					.0030	M 3	0.5
★	3	★	3	request		request						request		request		.0035	M 3.5	0.6
★	3	★	3					★	3	★	3					.0040	M 4	0.7
																.0045	M 4.5	0.75
★	3	★	3					★	3	★	3					.0050	M 5	0.8
★	3	★	3					★	3	★	3					.0060	M 6	1
★	4	★	4					★	4	★	4					.0080	M 8	1.25
★	4	★	4					★	4	★	4					.0100	M 10	1.5

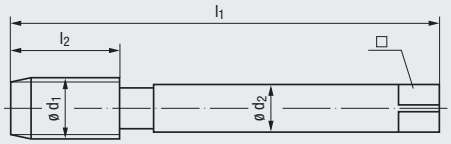
C0208F01		C020A601		C1088F01		C108A601		C0208F21		C020A621		C1088F21		C108A621		Tool Identification		
Rekord 2B-Z-PM TIN-70	Flutes	Rekord 2B-Z-PM GLT-1	Flutes	Rekord 2B-Z-IKZN PM-TIN-70	Flutes	Rekord 2B-Z-IKZN PM-GLT-1	Flutes	Rekord 2B-Z-PM TIN-70	Flutes	Rekord 2B-Z-PM GLT-1	Flutes	Rekord 2B-Z-IKZN PM-TIN-70	Flutes	Rekord 2B-Z-IKZN PM-GLT-1	Flutes	Dimens. ID	Nominal Size ø d_1	P
★	4	★	4					★	4	★	4					.0112	M 12	1.75
★	4	★	4	upon		upon						upon		upon		.0114	M 14	2
★	4	★	4					★	4	★	4					.0116	M 16	2
				request		request						request		request		.0118	M 18	2.5
★	4	★	4					★	4	★	4					.0120	M 20	2.5
																.0122	M 22	2.5
★	4	★	4					★	4	★	4					.0124	M 24	3
																.0127	M 27	3
★	4	★	4													.0130	M 30	3.5
																.0133	M 33	3.5
																.0136	M 36	4
																.0142	M 42	4.5
																.0145	M 45	4.5
																.0148	M 48	5
																.0152	M 52	5

● = In stock
★ = Allow 7 days for delivery

DIN Length · DIN Shank



Reinforced Shank
(M2 - M10)



Reduced Shank
(M12 - M52)

Z
CNC-Controlled Machines

M

ISO Metric Coarse Thread
DIN 13

Class of Fit	6HX	6HX	6HX	6HX	ISO 2/6H
Coating	TIN	TIN	TIN	TIN	
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics	R15	R15	R15	R15	R45
	C / 2-3	C / 2-3	C / 2-3	**E / 1.5-2**	C / 2-3
	E / O / P	E / O	E / O	E / O	E / O / P
Thread Depth and Hole Shape	max. 2 x d_1				max. 3 x d_1
Applications – Material	P 2.1-5.1 K 2.1-2 N 1.4-6, 2.4-5	P 2.1-5.1 K 2.1-2 N 1.4-6, 2.4-5	P 2.1-5.1 K 2.1-2 N 1.4-6, 2.4-5	P 2.1-5.1 K 2.1-2 N 1.4-6, 2.4-5	P 1.1-4.1 M 1.1-2.1 N 2.1

Reinforced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	B0453701 Rekord 1D-Z TIN	Flutes	B0963701 Rekord 1D-Z-IKZ TIN	Flutes	B4253701 Rekord 1D-Z-BF IKZ-TIN	Flutes	B4053701 Rekord 1D-Z/E-BF IKZ-TIN	Flutes	B0503500 Enorm 1-Z	Flutes
				mm				Tool Identification									
M 2	0.4	45	4	12	2.8	2.1	1.6	.0020									
M 2.5	0.45	50	5	14	2.8	2.1	2.05	.0025									
M 3	0.5	56	6	18	3.5	2.7	2.5	.0030	★	2						★	3
M 3.5	0.6	56	7	20	4	3	2.9	.0035								★	3
M 4	0.7	63	7	21	4.5	3.4	3.3	.0040	★	3	★	3	★	3	★	★	3
M 4.5	0.75	70	8	25	6	4.9	3.7	.0045									
M 5	0.8	70	8	25	6	4.9	4.2	.0050	★	3	★	3	★	3	★	★	3
M 6	1	80	10	30	6	4.9	5	.0060	★	3	★	3	★	3	★	★	3
M 8	1.25	90	14	35	8	6.2	6.8	.0080	★	3	★	3	★	3	★	★	3
M 10	1.5	100	16	39	10	8	8.5	.0100	★	3	★	3	★	3	★	★	3

Reduced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	C0453701 Rekord 2D-Z TIN	Flutes	C0963701 Rekord 2D-Z-IKZ TIN	Flutes	C4253701 Rekord 2D-Z-BF IKZ-TIN	Flutes	C4053701 Rekord 2D-Z/E-BF IKZ-TIN	Flutes	C0503500 Enorm 2-Z	Flutes
				mm				Tool Identification									
M 12	1.75	110	18	—	9	7	10.2	.0112	★	3	★	3	★	3	★	3	★	4
M 14	2	110	20	—	11	9	12	.0114									★	4
M 16	2	110	22	—	12	9	14	.0116	★	3	★	3	★	3	★	3	★	4
M 18	2.5	125	25	—	14	11	15.5	.0118									★	4
M 20	2.5	140	25	—	16	12	17.5	.0120	★	3	★	3	★	3	★	3	★	4
M 22	2.5	140	27	—	18	14.5	19.5	.0122									★	5
M 24	3	160	30	—	18	14.5	21	.0124			★	3					★	5
M 27	3	160	30	—	20	16	24	.0127										
M 30	3.5	180	35	—	22	18	26.5	.0130			★	4						
M 33	3.5	180	35	—	25	20	29.5	.0133										
M 36	4	200	40	—	28	22	32	.0136										
M 42	4.5	200	45	—	32	24	37.5	.0142										
M 45	4.5	220	45	—	36	29	40.5	.0145										
M 48	5	250	50	—	36	29	43	.0148										
M 52	5	250	50	—	40	32	47	.0152										

Ordering Example: **B0453701.0030**

Z
CNC-Controlled Machines

ISO 2/6H	ISO 2/6H	ISO 2/6H	ISO 2/6H	ISO 2/6H	ISO 2/6H	ISO 2/6H	**ISO 3/6G**	Class of Fit
TIN	GLT-1	GLT-1		TIN	GLT-1	TIN	TIN	Coating
HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	Cutting Material
R45	R45	R45	R45	R45	R45	R45	R45	Technical Characteristics
C / 2-3	C / 2-3	C / 2-3	**E / 1.5-2**	**E / 1.5-2**	**E / 1.5-2**	**E / 1.5-2**	**E / 1.5-2**	
E / O / P	E / O / P	E / O	E / O / P	E / O / P	E / O / P	E / O	E / O / P	

max. 3 x d_1

Thread Depth and Hole Shape

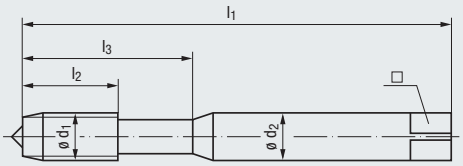
P 1.1-4.1	P 1.1-4.1	P 1.1-4.1	P 1.1-4.1	P 1.1-4.1	P 1.1-4.1	P 1.1-4.1	P 1.1-4.1	Applications – Material
M 1.1-3.1	M 1.1-3.1	M 1.1-3.1	M 1.1-2.1	M 1.1-3.1	M 1.1-3.1	M 1.1-3.1	M 1.1-3.1	
N 1.4-6	N 1.4-6	N 1.4-6	N 2.1	N 1.4-6	N 1.4-6	N 1.4-6	N 1.4-6	
N 2.1-2, 2.4-5	N 2.1-2, 2.4-5	N 2.1-2, 2.4-5		N 2.1-2, 2.4-5	N 2.1-2, 2.4-5	N 2.1-2, 2.4-5	N 2.1-2, 2.4-5	
S 1.1	S 1.1	S 1.1		S 1.1	S 1.1	S 1.1	S 1.1	

B0503700		B050C400		B099C400		B0513500		B0513700		B051C400		B0973700		B0513720		Tool Identification		
Enorm 1-Z TIN	Flutes	Enorm 1-Z GLT-1	Flutes	Enorm 1-Z-IKZ GLT-1	Flutes	Enorm 1-Z/E	Flutes	Enorm 1-Z/E TIN	Flutes	Enorm 1-Z/E GLT-1	Flutes	Enorm 1-Z/E-IKZ TIN	Flutes	Enorm 1-Z/E TIN	Flutes	Dimens. ID	Nominal Size ø d_1	P
																.0020	M 2	0.4
																.0025	M 2.5	0.45
★	3	★	3			★	3	●	3	★	3			★	3	.0030	M 3	0.5
★	3															.0035	M 3.5	0.6
★	3	★	3			●	3	●	3	★	3			★	3	.0040	M 4	0.7
																.0045	M 4.5	0.75
★	3	★	3	★	3	●	3	●	3	★	3	★	3	★	3	.0050	M 5	0.8
★	3	★	3	★	3	★	3	●	3	★	3	●	3	★	3	.0060	M 6	1
★	3	★	3	★	3	●	3	●	3	★	3	●	3	★	3	.0080	M 8	1.25
★	3	★	3	★	3	★	3	●	3	★	3	●	3	★	3	.0100	M 10	1.5

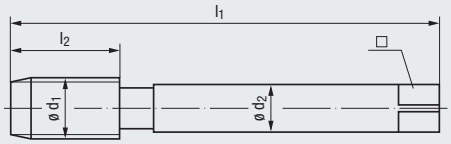
C0503700		C050C400		C099C400		C0513500		C0513700		C051C400		C0973700		C0513720		Tool Identification		
Enorm 2-Z TIN	Flutes	Enorm 2-Z GLT-1	Flutes	Enorm 2-Z-IKZ GLT-1	Flutes	Enorm 2-Z/E	Flutes	Enorm 2-Z/E TIN	Flutes	Enorm 2-Z/E GLT-1	Flutes	Enorm 2-Z/E-IKZ TIN	Flutes	Enorm 2-Z/E TIN	Flutes	Dimens. ID	Nominal Size ø d_1	P
★	4	★	4	★	4	★	4	●	4	★	4	★	4	★	4	.0112	M 12	1.75
						★	4					★	4			.0114	M 14	2
★	4	★	4	★	4	★	4	●	4	★	4	★	4	★	4	.0116	M 16	2
						★	4									.0118	M 18	2.5
★	4	★	4	★	4	★	4	★	4	★	4	★	4	★	4	.0120	M 20	2.5
						★	5									.0122	M 22	2.5
★	5	★	5			★	5	★	5							.0124	M 24	3
																.0127	M 27	3
																.0130	M 30	3.5
																.0133	M 33	3.5
																.0136	M 36	4
																.0142	M 42	4.5
																.0145	M 45	4.5
																.0148	M 48	5
																.0152	M 52	5

● = In stock
★ = Allow 7 days for delivery

DIN Length · DIN Shank



Reinforced Shank
(M2 - M10)



Reduced Shank
(M12 - M52)

SPEED
High-Speed Cutting

M

ISO Metric Coarse Thread
DIN 13

Class of Fit	6HX	6HX	6HX	6HX
Coating	TICN	TICN	TICN	TICN
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics				
	C / 2-3	C / 2-3	**E / 1.5-2**	**E / 1.5-2**
	E	E	E	E
Thread Depth and Hole Shape	max. 2 x d_1 1)	max. 2 x d_1	max. 2 x d_1 1)	max. 2 x d_1
Applications – Material	K 1.1-4.2 N 1.4-6	K 1.1-4.2 N 1.4-6	K 1.1-4.2 N 1.4-6	K 1.1-4.2 N 1.4-6

Reinforced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification	B3159401 Rekord 1A-SPEED IKZ-TICN	Flutes	B3179401 Rekord 1A-SPEED IKZN-TICN	Flutes	B3169401 Rekord 1A-SPEED/E IKZ-TICN	Flutes	B3189401 Rekord 1A-SPEED/E IKZN-TICN	Flutes
				mm												
M 2	0.4	45	4	12	2.8	2.1	1.6	.0020								
M 2.5	0.45	50	5	14	2.8	2.1	2.05	.0025			upon					
M 3	0.5	56	6	18	3.5	2.7	2.5	.0030								
M 3.5	0.6	56	7	20	4	3	2.9	.0035			request					
M 4	0.7	63	7	21	4.5	3.4	3.3	.0040	★	3			★	3		
M 4.5	0.75	70	8	25	6	4.9	3.7	.0045								
M 5	0.8	70	8	25	6	4.9	4.2	.0050	●	3			★	3		
M 6	1	80	10	30	6	4.9	5	.0060	●	3			★	3	★	3
M 8	1.25	90	14	35	8	6.2	6.8	.0080	●	3			★	3	★	3
M 10	1.5	100	16	39	10	8	8.5	.0100	●	3			★	3	★	3

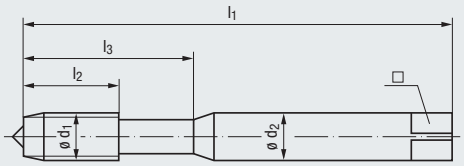
Reduced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification	C3159401 Rekord 2A-SPEED IKZ-TICN	Flutes			C3169401 Rekord 2A-SPEED/E IKZ-TICN	Flutes		
				mm												
M 12	1.75	110	18	—	9	7	10.2	.0112	●	3			★	3		
M 14	2	110	20	—	11	9	12	.0114	★	3			★	3		
M 16	2	110	22	—	12	9	14	.0116	●	3			★	3		
M 18	2.5	125	25	—	14	11	15.5	.0118								
M 20	2.5	140	25	—	16	12	17.5	.0120	●	4			★	4		
M 22	2.5	140	27	—	18	14.5	19.5	.0122								
M 24	3	160	30	—	18	14.5	21	.0124								
M 27	3	160	30	—	20	16	24	.0127								
M 30	3.5	180	35	—	22	18	26.5	.0130								
M 33	3.5	180	35	—	25	20	29.5	.0133								
M 36	4	200	40	—	28	22	32	.0136								
M 42	4.5	200	45	—	32	24	37.5	.0142								
M 45	4.5	220	45	—	36	29	40.5	.0145								
M 48	5	250	50	—	36	29	43	.0148								
M 52	5	250	50	—	40	32	47	.0152								

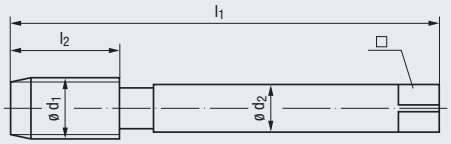
1) Threading in through holes is possible only with external cooling/lubrication

Ordering Example: **B3159401.0040**

DIN Length · DIN Shank

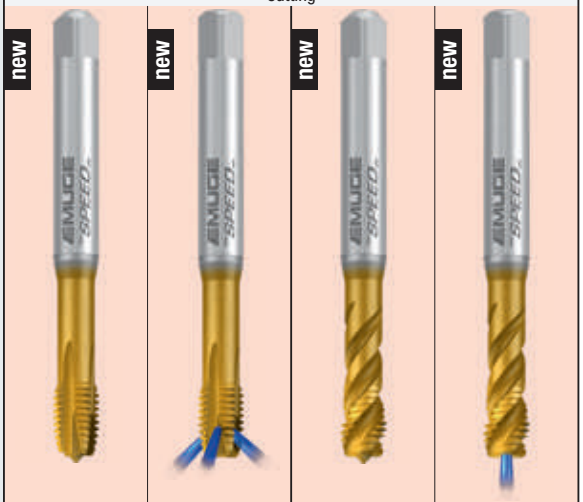


Reinforced Shank
(M2 - M10)



Reduced Shank
(M12 - M52)

SPEED
High-Speed Cutting



M

ISO Metric Coarse Thread
DIN 13

Class of Fit	6HX	6HX	6HX	6HX
Coating	TIN-70	TIN-70	TIN-60	TIN-60
Cutting Material	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM
Technical Characteristics			R45	R45
	B / 4-5	B / 4-5	C / 2-3	C / 2-3
	E	E	E	E
Thread Depth and Hole Shape	max. 3 x d_1		max. 3 x d_1	
Applications – Material	P 1.1-4.1 K 2.1-2 N 1.4-6	P 1.1-4.1 K 2.1-2 N 1.4-6	P 2.1-4.1	P 2.1-4.1

Reinforced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification	B3208F01 Rekord 1B-Z-SPEED PM-TIN-70	Flutes	B3258F01 Rekord 1B-Z-SPEED IKZN-PM TIN-70	Flutes	B3600F01 Enorm 1-Z-SPEED X-PM TIN-60	Flutes	B3650F01 Enorm 1-Z-SPEED X-IKZ-PM TIN-60	Flutes
				mm												
M 2	0.4	45	4	12	2.8	2.1	1.6	.0020								
M 2.5	0.45	50	5	14	2.8	2.1	2.05	.0025			upon					
M 3	0.5	56	6	18	3.5	2.7	2.5	.0030								
M 3.5	0.6	56	7	20	4	3	2.9	.0035			request					
M 4	0.7	63	7	21	4.5	3.4	3.3	.0040	★	3			★	3	★	3
M 4.5	0.75	70	8	25	6	4.9	3.7	.0045								
M 5	0.8	70	8	25	6	4.9	4.2	.0050	★	3			★	3	★	3
M 6	1	80	10	30	6	4.9	5	.0060	★	3			★	3	★	3
M 8	1.25	90	14	35	8	6.2	6.8	.0080	★	4			★	3	★	3
M 10	1.5	100	16	39	10	8	8.5	.0100	★	4			★	3	★	3

Reduced Shank

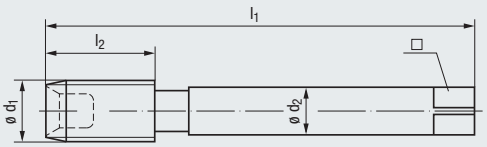
Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification	C3208F01 Rekord 2B-Z-SPEED PM-TIN-70	Flutes			C3600F01 Enorm 2-Z-SPEED X-PM TIN-60	Flutes	C3650F01 Enorm 2-Z-SPEED X-IKZ-PM TIN-60	Flutes
				mm												
M 12	1.75	110	18	—	9	7	10.2	.0112	★	4			★	4	★	4
M 14	2	110	20	—	11	9	12	.0114								
M 16	2	110	22	—	12	9	14	.0116	★	4			★	4	★	4
M 18	2.5	125	25	—	14	11	15.5	.0118								
M 20	2.5	140	25	—	16	12	17.5	.0120	★	4			★	4	★	4
M 22	2.5	140	27	—	18	14.5	19.5	.0122								
M 24	3	160	30	—	18	14.5	21	.0124								
M 27	3	160	30	—	20	16	24	.0127								
M 30	3.5	180	35	—	22	18	26.5	.0130								
M 33	3.5	180	35	—	25	20	29.5	.0133								
M 36	4	200	40	—	28	22	32	.0136								
M 42	4.5	200	45	—	32	24	37.5	.0142								
M 45	4.5	220	45	—	36	29	40.5	.0145								
M 48	5	250	50	—	36	29	43	.0148								
M 52	5	250	50	—	40	32	47	.0152								

● = In stock
★ = Allow 7 days for delivery

DIN Length · DIN Shank

VA
Stainless Steel Materials

With internal chip collector



Reduced Shank

M

ISO Metric Coarse Thread
DIN 13

Class of Fit	6HX
Coating	NE2
Cutting Material	HSS Extra
Technical Characteristics	
	C / 2-3
	P / O [1]
Thread Depth and Hole Shape	max. 1.5 x d_1
Applications – Material	P 1.1-4.1 M 1.1-2.1 K 1.1-4.2

Reduced Shank

Nominal Size ø d_1	P	l_1	mm l_2	ø d_2	□	Tool Identification		C0803001	
							Dimens. ID	Robust 2X-VA NE2	Flutes
M 20	2.5	140	32	16	12	17.5	.0120	★	5
M 22	2.5	140	32	18	14.5	19.5	.0122	★	5
M 24	3	160	34	18	14.5	21	.0124	★	5
M 27	3	160	36	20	16	24	.0127	★	5
M 30	3.5	180	40	22	18	26.5	.0130	★	6
M 33	3.5	180	40	25	20	29.5	.0133	★	6
M 36	4	200	50	28	22	32	.0136	★	6
M 42	4.5	200	56	32	24	37.5	.0142	★	6
M 45	4.5	220	58	36	29	40.5	.0145	★	6
M 48	5	250	65	36	29	43	.0148	★	6
M 52	5	250	65	40	32	47	.0152	★	6
M 56	5.5	250	70	40	32	50.5	.0156	★	7
M 60	5.5	280	70	45	35	54.5	.0160	★	7
M 64	6	315	75	50	39	58	.0164	★	7
M 68	6	315	75	50	39	62	.0168	★	7

≥ M56 Shank with grooves for better handling!

[1] If possible, use paste lubrication, coating both the tool and the walls of the drilled hole.
Lubrication with oil is possible only in the vertical machining of blind holes, if the hole is entirely filled with oil.

Larger sizes priced upon request.

The Complete Tool System

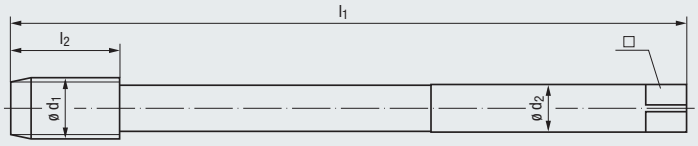
Robust 2X-VA Taps when used with a KSN Type tapping attachment creates the optimal tapping unit!

Ordering Example: **CU803001.0120**

Extra Length · DIN Shank

Z
CNC-Controlled Machines

With long flutes and long shank for thread depths up to max. 4 x d_1



Reduced Shank

M

ISO Metric Coarse Thread
DIN 13

Class of Fit	6HX	6HX	6HX
Coating	TICN	TIN	TIN
Cutting Material	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics		R15	R15
	C / 2-3	C / 2-3	C / 2-3
	E / O	E / O	E / O
Thread Depth and Hole Shape	max. 4 x d_1 1)	max. 4 x d_1	max. 4 x d_1
Applications – Material	P 1.1-4.1 K 1.1-4.2 N 1.4-6, 2.4-7 N 4.1	P 2.1-5.1 K 2.1-2 N 1.4-6, 2.4-5	P 2.1-5.1 K 2.1-2 N 1.4-6, 2.4-5

Reduced Shank

Nominal Size ø d_1	P	mm l_1	mm l_2	ø d_2	□	Dimens. ID	C0539401 Rekord 2A-Z-IKZ-LF4 TICN	Flutes	C4283701 Rekord 2D-Z-IKZ-LF4 TIN	Flutes	C4063701 Rekord 2D-Z-BF-IKZ-LF4 TIN	Flutes
						Tool Identification						
M 20	2.5	190	25	16	12	.0120	★	4	★	3	★	3
M 22	2.5	230	27	18	14.5	.0122	★	4	★	3		
M 24	3	240	30	18	14.5	.0124	★	4	★	3	★	3
M 27	3	250	30	20	16	.0127	★	4	★	3		
M 30	3.5	270	35	22	18	.0130	★	4	★	4	★	4
M 33	3.5	290	35	25	20	.0133	★	4	★	4		
M 36	4	310	40	28	22	.0136	★	4	★	4		
M 42	4.5	340	45	32	24	.0142	★	4	★	4		
M 45	4.5	360	45	36	29	.0145	★	4	★	4		

1) Threading in through holes is possible only with external cooling/lubrication

● = In stock
★ = Allow 7 days for delivery

Extra Length · DIN Shank

STEEL
Steel Materials

new

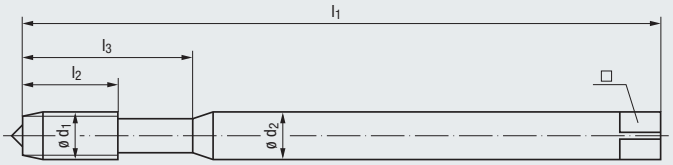
2)

new

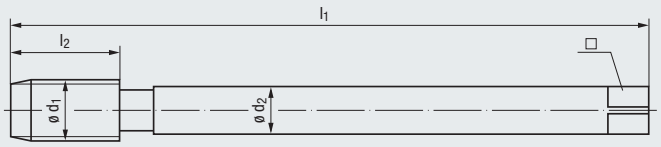
1)

1)

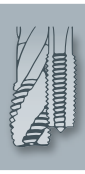
With extra long shank



Reinforced Shank (M3 - M8)



Reduced Shank (M6 - M20)



M

ISO Metric Coarse Thread
DIN 13

Class of Fit	ISO 2/6H	ISO 2/6H	ISO 2/6H
Coating			
Cutting Material	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics		R15	R35
	B / 4-5	**E / 1.5-2**	C / 2-3
	E / O	E / O	E / O
Thread Depth and Hole Shape	max. 3 x d_1	max. 2 x d_1	max. 2.5 x d_1
Applications – Material	P 1.1-3.1 N 2.2	P 2.1-3.1	P 1.1-3.1 N 2.2

Reinforced Shank

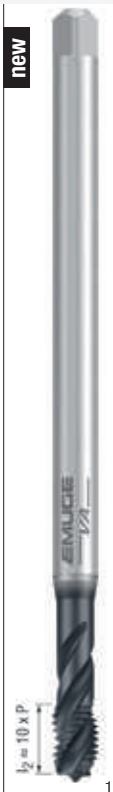
Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	B2208900 Rekord 1B-STEEL-L LS	Flutes	B2461000 Rekord 1D-STEEL/E LS	Flutes	B2501000 Enorm 1-STEEL-LS	Flutes
				mm				Tool Identification					
M 3	0.5	100	11	18	3.5	2.7	2.5	**.0030**	★	3	★	3	★	3
M 4	0.7	125	13	21	4.5	3.4	3.3	**.0040**	★	3	★	3	★	3
M 5	0.8	140	15	25	6	4.9	4.2	**.0050**	★	3	●	3	★	3
M 6	1	160	17	30	6	4.9	5	**.0060**	★	3	●	3	★	3
M 8	1.25	180	20	35	8	6.2	6.8	**.0080**	★	3	●	3	★	3

Reduced Shank

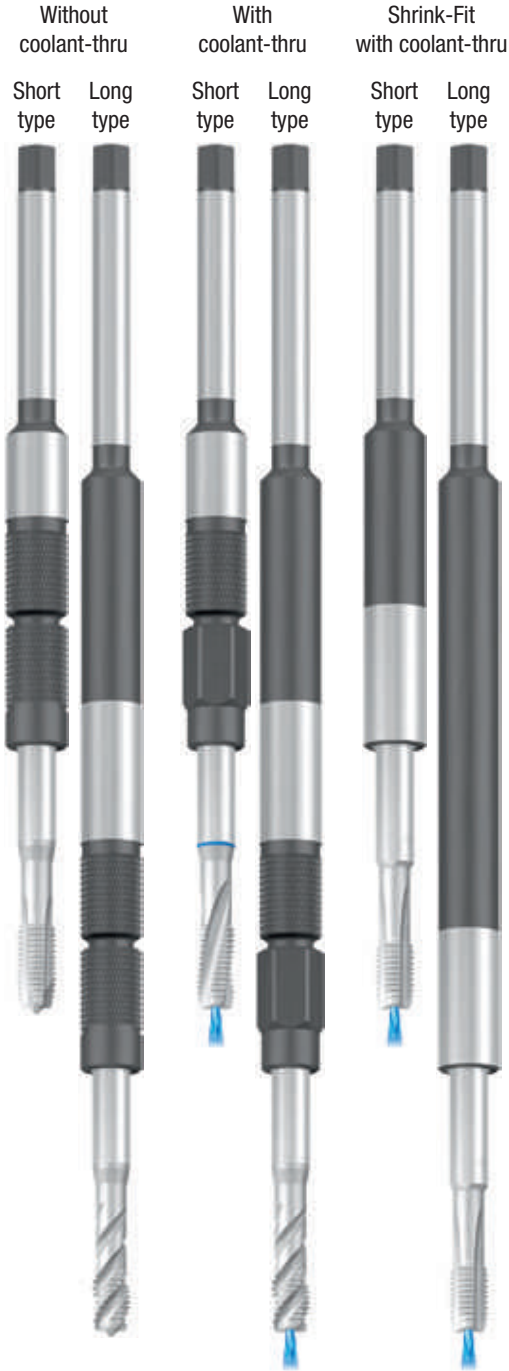
Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	C2208900 Rekord 2B-STEEL-L LS	Flutes	C2461000 Rekord 2D-STEEL/E LS	Flutes	C2501000 Enorm 2-STEEL-LS	Flutes
				mm				Tool Identification					
M 6	1	160	17	—	4.5	3.4	5	**.0060**	★	3	★	3	★	3
M 8	1.25	180	20	—	6	4.9	6.8	**.0080**	★	3	★	3	★	3
M 10	1.5	200	22	—	7	5.5	8.5	**.0100**	★	3	★	3	★	3
M 12	1.75	224	24	—	9	7	10.2	**.0112**	★	3	★	3	★	3
M 14	2	224	26	—	11	9	12	**.0114**	★	3	★	3	★	3
M 16	2	224	27	—	12	9	14	**.0116**	★	3	★	3	★	3
M 18	2.5	250	30	—	14	11	15.5	**.0118**	★	3	★	3	★	3
M 20	2.5	280	32	—	16	12	17.5	**.0120**	★	3	★	3	★	3

1) From M4 also available with IKZ (axial coolant-thru)
2) From M5 also available with IKZN (axial coolant-thru with radial flow into the flutes)

Ordering Example: **B2208900.0030**

VA Stainless Steel Materials					H Materials of High Tensile Strength
2)	new 2)	1)	new  1)		1) 2)
ISO 2/6H	ISO 2/6H	ISO 2/6H	ISO 2/6H		6HX
NT	GLT-1		GLT-1		NT
HSS Extra	HSS Extra	HSS Extra	HSS Extra		HSS Extra
		R35	R35		
B / 4-5	B / 4-5	C / 2-3	C / 2-3		C / 2-3
E / O / P	E / O / P	E / O / P	E / O / P		E / O / P
max. 3 x d_1		max. 2.5 x d_1			max. 2 x d_1
P 1.1-3.1	P 1.1-4.1	P 1.1-3.1	P 1.1-4.1		P 1.1-3.1
M 1.1-2.1	M 1.1-3.1	M 1.1-2.1	M 1.1-3.1		K 1.1-4.2
K 2.1	K 2.1	K 2.1	K 2.1		N 2.4-7
N 2.2, 2.5-6	N 2.2				N 4.1, 5.1
B2203000	**B220C300**	**B2503000**	**B250C300**		**B2100501**
Rekord 1B-VA-LS NT / **Flutes**	**Rekord 1B-VA-LS GLT-1** / **Flutes**	**Enorm 1-VA-LS** / **Flutes**	**Enorm 1-VA-LS GLT-1** / **Flutes**		**Rekord 1A-H-LS NT** / **Flutes**
★ 3		★ 3	★ 3		★ 3
★ 3	upon	★ 3	★ 3		★ 3
★ 3		★ 3	★ 3		★ 3
★ 3	request	★ 3	★ 3		★ 3
★ 3		★ 3	★ 3		★ 3
C2203000	**C220C300**	**C2503000**			**C2100501**
Rekord 2B-VA-LS NT / **Flutes**	**Rekord 2B-VA-LS GLT-1** / **Flutes**	**Enorm 2-VA-LS** / **Flutes**			**Rekord 2A-H-LS NT** / **Flutes**
★ 3		★ 3			★ 3
★ 3	upon	★ 3			★ 3
★ 3		★ 3			★ 3
★ 3	request	★ 3			★ 3
★ 3		★ 3			★ 3
★ 3		★ 3			★ 3
★ 3		★ 3			★ 4
★ 3		★ 3			★ 4

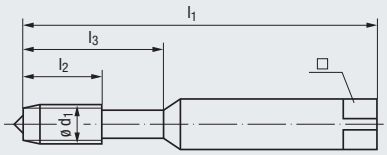
As a further alternative to our compact types LS we can offer you our special shank extensions without and with coolant-thru (IKZ) for standard taps (see pages 132-138).



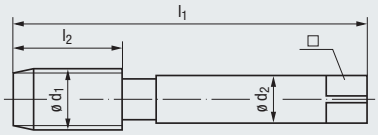
● = In stock
★ = Allow 7 days for delivery

1) From M4 also available with IKZ (axial coolant-thru)
2) From M5 also available with IKZN (axial coolant-thru with radial flow into the flutes)

ANSI Length · ANSI Shank



Reinforced Shank
(M4 - M10)



Reduced Shank
(M12 - M24)

M

ISO Metric Coarse Thread
DIN 13

STEEL
Steel Materials

Class of Fit	ISO 2/6H	ISO 2/6H	ISO 2/6H	ISO 2/6H
Coating	TIN		TIN	TIN
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics		R15	R15	R35
	B / 4-5	**E / 1.5-2**	**E / 1.5-2**	C / 2-3
	E / 0	E / 0	E / 0	E / 0
Thread Depth and Hole Shape	max. 3 x d_1	max. 2 x d_1		max. 2.5 x d_1
Applications – Material	P 1.1-4.1 K 2.1 N 2.2, 2.4-5	P 2.1-3.1	P 1.1-4.1 K 1.1-4.2 N 1.4-5, 2.4-5	P 1.1-4.1 K 2.1 N 2.2

Nominal Size ø d_1	P mm	inch l_1	l_2	l_3	ø d_2	□	mm	Dimens. ID	AU208400 Rekord B-STEEL-L TIN	Flutes	AU461000 Rekord D-STEEL/E	Flutes	AU461400 Rekord D-STEEL/E TIN	Flutes	AU501400 Enorm STEEL TIN	Flutes
M 4	0.7	2 1/8 2.13	0.512	0.827	0.168	0.131	3.3	.0040	●	3			●	3	●	3
M 5	0.8	2 3/8 2.38	0.591	0.945	0.194	0.152	4.2	.0050	●	3	●	3	●	3	●	3
M 6	1	2 1/2 2.50	0.669	1.102	0.255	0.191	5	.0060	●	3	●	3	●	3	●	3
M 8	1.25	2 23/32 2.72	0.787	1.299	0.318	0.238	6.8	.0080	●	3	●	3	●	3	●	3
M 10	1.5	2 15/16 2.94	0.866	1.378	0.381	0.286	8.5	.0100	●	3	●	3	●	3	●	3
M 12	1.75	3 3/8 3.38	0.984	—	0.367	0.275	10.2	.0112	●	3	●	3	●	3	●	3
M 14	2	3 19/32 3.59	1.024	—	0.429	0.322	12	.0114	●	3	●	3	●	3	●	3
M 16	2	3 13/16 3.81	1.063	—	0.480	0.360	14	.0116	●	3	●	3	●	3	●	3
M 20	2.5	4 15/32 4.47	1.181	—	0.652	0.489	17.5	.0120	●	3					●	3
M 24	3	4 29/32 4.91	1.339	—	0.760	0.570	21	.0124	●	3					●	4

DIN Length · DIN Shank

All ANSI Length · ANSI Shank taps are available in the popular DIN Length · DIN Shank style.

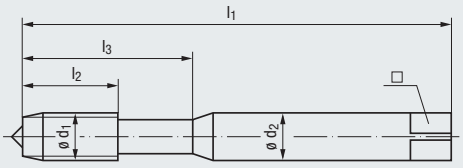
The DIN Length · DIN Shank configuration allows for added reach capabilities and greater chip clearance.

Ordering Example: **AU208400.0040**

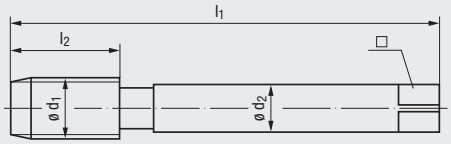
VA Stainless Steel Materials			**H** Materials of High Tensile Strength			**Z** CNC-Controlled Machines		
ISO 2/6H	ISO 2/6H		6HX	6HX		ISO 2/6H		Class of Fit
NT			NT	TIN		TIN		Coating
HSS Extra	HSS Extra		HSS Extra	HSS Extra		HSS Extra		Cutting Material
	R35					R45		Technical Characteristics
B / 4-5	C / 2-3		**E / 1.5-2**	**E / 1.5-2**		**E / 1.5-2**		
E / O / P	E / O / P		E / O / P	E / O / P		E / O / P		
max. 3 x d_1	max. 2.5 x d_1		max. 2 x d_1			max. 3 x d_1		Thread Depth and Hole Shape
P 1.1-3.1 M 1.1-2.1 K 2.1 N 2.2, 2.5-6	P 1.1-3.1 M 1.1-2.1 K 2.1		P 1.1-3.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1	P 1.1-4.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1		P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1		Applications – Material
AU203000	**AU503000**		**AU110501**	**AU110601**		**AU513700**		**Tool Identification**
Rekord B-VA NT	**Flutes**	**Enorm VA**	**Flutes**	**Rekord A-H/E NT**	**Flutes**	**Rekord A-H/E TIN**	**Flutes**	**Enorm Z/E TIN**	**Flutes**	**Dimens. ID**	**Nominal Size ø d_1**	**P mm**
●	3	●	3	●	3	●	3			**.0040**	M 4	0.7
●	3	●	3	●	3	●	3			**.0050**	M 5	0.8
●	3	●	3	●	3	●	3	●	3	**.0060**	M 6	1
●	3	●	3	●	3	●	3	●	3	**.0080**	M 8	1.25
●	3	●	3	●	3	●	3	●	3	**.0100**	M 10	1.5
●	3	●	3	●	3	●	3	●	4	**.0112**	M 12	1.75
●	3	●	3	●	3	●	3			**.0114**	M 14	2
●	3	●	3	●	3	●	3			**.0116**	M 16	2
●	3	●	3	●	4	●	4			**.0120**	M 20	2.5
●	3	●	4	●	4	●	4			**.0124**	M 24	3

● = In stock
★ = Allow 7 days for delivery

DIN Length · DIN Shank



Reinforced Shank
(M3x0.35 - M10x1.25)



Reduced Shank
(M8x1 - M30x2)

MF

ISO Metric Fine Thread
DIN 13

STEEL
Steel Materials

	new	new	new	new	new
Class of Fit	ISO 2/6H	ISO 2/6H	**ISO 3/6G**	ISO 2/6H	ISO 2/6H
Coating		TIN			TIN
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics				**LH**	R15
	B / 4-5	B / 4-5	B / 4-5	B / 4-5	C / 2-3
	E / 0	E / 0	E / 0	E / 0	E / 0
Thread Depth and Hole Shape	max. 3 x d_1				max. 2 x d_1
Applications – Material	P 1.1-3.1 N 2.2	P 1.1-4.1 K 2.1 N 2.2, 2.4-5	P 1.1-3.1 N 2.2	P 1.1-3.1 N 2.2	P 1.1-4.1 K 1.1-4.2 N 1.4-5, 2.4-5

Reinforced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	B0208900 Rekord 1B-STEEL-L	Flutes	B0208400 Rekord 1B-STEEL-L TIN	Flutes
		mm					Tool Identification				
M 3 x	0.35	56	8	18	3.5	2.7	2.65	.0202			
M 4 x	0.5	63	10	21	4.5	3.4	3.5	.0210	● 3	●	3
M 5 x	0.5	70	11	25	6	4.9	4.5	.0218	● 3	●	3
M 6 x	0.75	80	13	30	6	4.9	5.2	.0229	● 3	●	3
M 8 x	0.75	80	14	30	8	6.2	7.2	.0250	● 3	●	3
M 8 x	1	90	17	35	8	6.2	7	.0251	● 3	●	3
M 10 x	1	90	18	35	10	8	9	.0276	● 4	●	4
M 10 x	1.25	100	18	39	10	8	8.8	.0277	● 3	●	3

Reduced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	C0208900 Rekord 2B-STEEL-L	Flutes	C0208400 Rekord 2B-STEEL-L TIN	Flutes	C0208920 Rekord 2B-STEEL-L	Flutes	C0208950 Rekord 2B-STEEL-L LH	Flutes	C0451400 Rekord 2D-STEEL TIN	Flutes
		mm					Tool Identification										
M 8 x	1	90	17	—	6	4.9	7	.0251	● 3	●	3	★	3	★	3	★	3
M 10 x	1	90	18	—	7	5.5	9	.0276	● 4	●	4	★	4	★	4	★	3
M 10 x	1.25	100	22	—	7	5.5	8.8	.0277	● 3	●	3					★	3
M 12 x	1.5	100	22	—	9	7	10.5	.0303	● 3	●	3	★	3	★	3	★	3
M 14 x	1.5	100	22	—	11	9	12.5	.0331	● 3	●	3	★	3	★	3	★	3
M 16 x	1.5	100	22	—	12	9	14.5	.0359	● 3	●	3	★	3	★	3	★	3
M 18 x	1.5	110	25	—	14	11	16.5	.0390	● 4	●	4	★	4	★	4	★	4
M 20 x	1.5	125	25	—	16	12	18.5	.0422	● 4	●	4	★	4	★	4	★	4
M 22 x	1.5	125	25	—	18	14.5	20.5	.0438	★ 4	★	4						
M 22 x	2	140	27	—	18	14.5	20	.0439	★ 3	★	3						
M 24 x	1.5	140	27	—	18	14.5	22.5	.0452	★ 4	★	4						
M 24 x	2	140	27	—	18	14.5	22	.0453	★ 4	★	4						
M 27 x	1.5	140	28	—	20	16	25.5	.0470	★ 5	★	5						
M 27 x	2	140	28	—	20	16	25	.0471	★ 4	★	4						
M 30 x	1.5	150	28	—	22	18	28.5	.0490	★ 5	★	5						
M 30 x	2	150	28	—	22	18	28	.0491	★ 4	★	4						

Ordering Example: **B0208900.0210**

STEEL
Steel Materials

VA
Stainless Steel Materials

ISO 2/6H	ISO 2/6H	ISO 2/6H	ISO 2/6H	ISO 2/6H	ISO 2/6H	ISO 2/6H	Class of Fit
TIN		TIN		GLT-1	NE2	GLT-1	Coating
HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	Cutting Material
R15	R35	R35	**LH, L35**		R35	R35	Technical Characteristics
E / 1.5-2	C / 2-3	C / 2-3	C / 2-3	B / 4-5	C / 2-3	C / 2-3	
E / 0	E / 0	E / 0	E / 0	E / 0 / P	E / 0 / P	E / 0 / P	
max. 2 x d_1	max. 2.5 x d_1			max. 3 x d_1	max. 2.5 x d_1		Thread Depth and Hole Shape
P 1.1-**4**.1 **K** 1.1-**4**.2 **N** 1.4-5, **2**.4-5	**P** 1.1-**3**.1 **N** 2.2	**P** 1.1-**4**.1 **K** 2.1 **N** 2.2	**P** 1.1-**3**.1 **N** 2.2	**P** 1.1-**4**.1 **M** 1.1-**3**.1 **K** 2.1 **N** 2.2	**P** 1.1-**3**.1 **M** 1.1-**2**.1 **K** 2.1	**P** 1.1-**4**.1 **M** 1.1-**3**.1 **K** 2.1	Applications – Material
	B0501000	**B0501400**			**B0503200**	**B050C300**	**Tool Identification**
	Enorm 1-STEEL Flutes	**Enorm 1-STEEL TIN** Flutes			**Enorm 1-VA NE2** Flutes	**Enorm 1-VA GLT-1** Flutes	**Dimens. ID** / **Nominal Size ø d_1** / **P**
	★ 3						**.0202** M 3 x 0.35
	★ 3	★ 3			● 3	★ 3	**.0210** M 4 x 0.5
	★ 3	★ 3			● 3	★ 3	**.0218** M 5 x 0.5
	★ 3	★ 3			● 3	★ 3	**.0229** M 6 x 0.75
	★ 3				● 3		**.0250** M 8 x 0.75
	★ 3	★ 3					**.0251** M 8 x 1
	★ 3	★ 3					**.0276** M 10 x 1
	★ 3	★ 3			● 3		**.0277** M 10 x 1.25

C0461400		**C0501000**		**C0501400**		**C0501050**			**C020C300**		**C0503200**		**C050C300**		**Tool Identification**
Rekord 2D-STEEL/E TIN	**Flutes**	**Enorm 2-STEEL**	**Flutes**	**Enorm 2-STEEL TIN**	**Flutes**	**Enorm 2-STEEL-LH**	**Flutes**		**Rekord 2B-VA GLT-1**	**Flutes**	**Enorm 2-VA NE2**	**Flutes**	**Enorm 2-VA GLT-1**	**Flutes**	**Dimens. ID** / **Nominal Size ø d_1** / **P**
★	3	★	3	★	3	★	3		★	3	●	3	★	3	**.0251** M 8 x 1
★	3	★	3	★	3	★	3		★	4	●	3	★	3	**.0276** M 10 x 1
		★	3												**.0277** M 10 x 1.25
★	3	★	4	★	4	★	4		★	3	●	4	★	4	**.0303** M 12 x 1.5
★	3	★	4	★	4	★	4		★	3	●	4	★	4	**.0331** M 14 x 1.5
★	3	★	4	★	4	★	4		★	3	●	4	★	4	**.0359** M 16 x 1.5
★	4	★	4	★	4	★	4		★	4	●	4	★	4	**.0390** M 18 x 1.5
★	4	★	4	★	4	★	4		★	4	●	4	★	4	**.0422** M 20 x 1.5
★	4	★	4		4										**.0438** M 22 x 1.5
		★	4								●	4			**.0439** M 22 x 2
★	4	★	5		5										**.0452** M 24 x 1.5
		★	4		4						●	4			**.0453** M 24 x 2
		★	5												**.0470** M 27 x 1.5
		★	4								●	4			**.0471** M 27 x 2
		★	6								●	6			**.0490** M 30 x 1.5
		★	5												**.0491** M 30 x 2

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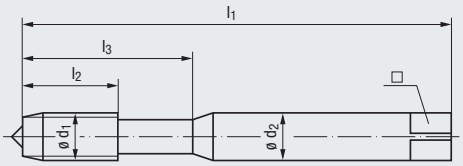
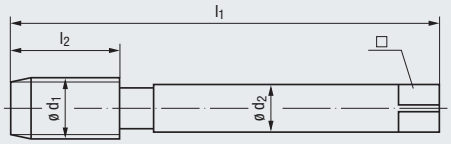
DIN Length · DIN Shank



Reinforced Shank
(M3x0.35 - M10x1.25)



Reduced Shank
(M8x1 - M30x2)

MF

ISO Metric Fine Thread
DIN 13

GJV
Cast Iron
Vermicular

Class of Fit	6HX	6HX	6HX	6HX	6HX
Coating	TICN	TICN	TICN	TICN	TICN
Cutting Material	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM
Technical Characteristics					
	C / 2-3	C / 2-3	C / 2-3	E / 1.5-2	E / 1.5-2
	E	E	E	E	E
Thread Depth and Hole Shape	max. 2 x d_1	max. 2 x d_1 1)	max. 2 x d_1	max. 2 x d_1	max. 2 x d_1 1)
Applications – Material	K 1.1-4.2	K 1.1-4.2	K 1.1-4.2	K 1.1-4.2	K 1.1-4.2

Reinforced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID
			mm				
M 3 x	0.35	56	8	18	3.5	2.7	.0202
M 4 x	0.5	63	10	21	4.5	3.4	.0210
M 5 x	0.5	70	11	25	6	4.9	.0218
M 6 x	0.75	80	13	30	6	4.9	.0229
M 8 x	0.75	80	14	30	8	6.2	.0250
M 8 x	1	90	17	35	8	6.2	.0251
M 10 x	1	90	18	35	10	8	.0276
M 10 x	1.25	100	18	39	10	8	.0277

Reduced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	C010R501 Rekord 2A-GJV PM-TICN	Flutes	C195R501 Rekord 2A-GJV IKZ-PM TICN	Flutes	C106R501 Rekord 2A-GJV IKZN-PM TICN	Flutes	C011R501 Rekord 2A-GJV/E PM-TICN	Flutes	C196R501 Rekord 2A-GJV/E IKZ-PM TICN	Flutes
			mm				Tool Identification										
M 8 x	1	90	17	—	6	4.9	7	.0251									
M 10 x	1	90	18	—	7	5.5	9	.0276				upon					
M 10 x	1.25	100	22	—	7	5.5	8.8	.0277									
M 12 x	1.5	100	22	—	9	7	10.5	.0303	★	4	★	4	request		★	4	★	4
M 14 x	1.5	100	22	—	11	9	12.5	.0331	★	4	★	4			★	4	★	4
M 16 x	1.5	100	22	—	12	9	14.5	.0359	★	4	★	4			★	4	★	4
M 18 x	1.5	110	25	—	14	11	16.5	.0390	★	4	★	4			★	4	★	4
M 20 x	1.5	125	25	—	16	12	18.5	.0422	★	4	★	4			★	4	★	4
M 22 x	1.5	125	25	—	18	14.5	20.5	.0438										
M 22 x	2	140	27	—	18	14.5	20	.0439										
M 24 x	1.5	140	27	—	18	14.5	22.5	.0452										
M 24 x	2	140	27	—	18	14.5	22	.0453										
M 27 x	1.5	140	28	—	20	16	25.5	.0470										
M 27 x	2	140	28	—	20	16	25	.0471										
M 30 x	1.5	150	28	—	22	18	28.5	.0490										
M 30 x	2	150	28	—	22	18	28	.0491										

1) Threading in through holes is possible only with external cooling/lubrication

Ordering Example: **C010R501.0303**

	GJV Cast Iron Vermicular		H Materials of High Tensile Strength					
	new							
	6HX		6HX	6HX	6HX	6HX	6HX	Class of Fit
	TICN		NT	TICN	TICN	TICN		Coating
	HSSE-PM		HSS Extra	HSS Extra	HSS Extra	HSS Extra	**Carbide**	Cutting Material
								Technical Characteristics
	E / 1.5-2		C / 2-3	C / 2-3	C / 2-3	C / 2-3	C / 2-3	
	E		E / O / P	E / O / P	E / O	E / O	E / O	
	max. 2 x d_1		max. 2 x d_1		max. 2 x d_1	max. 2 x d_1	max. 2 x d_1	Thread Depth and Hole Shape
					1)		1)	
	K 1.1-4.2		P 1.1-3.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1	P 1.1-4.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1	P 1.1-4.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1	P 1.1-4.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1	P 5.1 K 1.1-4.2 N 1.5-6, 2.6-8 N 4.1, 4.3-5.2 H 1.1-2	Applications – Material

			B0100501								B1950901			Tool Identification		
			Rekord 1A-H NT	Flutes							VHM Rekord 1A-H-IKZ	Flutes		Dimens. ID	Nominal Size ø d_1	P
			★	3										.0202	M 3 x	0.35
			★	3										.0210	M 4 x	0.5
			★	3										.0218	M 5 x	0.5
			★	3							★	3		.0229	M 6 x	0.75
														.0250	M 8 x	0.75
											★	3		.0251	M 8 x	1
											★	4		.0276	M 10 x	1
											★	3		.0277	M 10 x	1.25

C109R501			C0100501		C0109101		C1959101		C1069101		C1950901			Tool Identification		
Rekord 2A-GJV/E IKZN-PM TICN	Flutes		Rekord 2A-H NT	Flutes	Rekord 2A-H TICN	Flutes	Rekord 2A-H-IKZ TICN	Flutes	Rekord 2A-H-IKZN TICN	Flutes	KHM Rekord 2A-H-IKZ	Flutes		Dimens. ID	Nominal Size ø d_1	P
			●	3	★	3								.0251	M 8 x	1
upon			●	4	★	4			upon					.0276	M 10 x	1
					★	3								.0277	M 10 x	1.25
request			●	4	★	4	★	4	request		★	4		.0303	M 12 x	1.5
			●	4	★	4	★	4			★	4		.0331	M 14 x	1.5
			●	4	★	4	★	4			★	4		.0359	M 16 x	1.5
			●	4	★	4								.0390	M 18 x	1.5
			●	4	★	4	★	4			★	4		.0422	M 20 x	1.5
					★	4								.0438	M 22 x	1.5
														.0439	M 22 x	2
					★	4								.0452	M 24 x	1.5
														.0453	M 24 x	2
														.0470	M 27 x	1.5
														.0471	M 27 x	2
														.0490	M 30 x	1.5
														.0491	M 30 x	2

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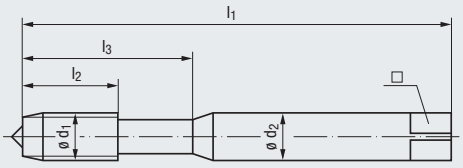
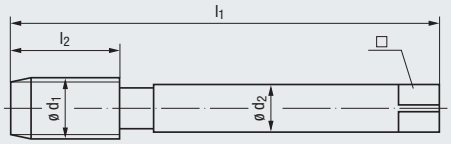
1) Threading in through holes is possible only with external cooling/lubrication

DIN Length · DIN Shank



Reinforced Shank
(M8x1 - M10x1)



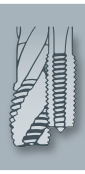
Reduced Shank
(M12x1.5 - M16x1.5)

HCUT
Hardened Steels

MF

ISO Metric Fine Thread
DIN 13

Class of Fit	6HX
Coating	TICN
Cutting Material	**HSSE-PM**
Technical Characteristics	
	C / 2-3
	O / P
Thread Depth and Hole Shape	max. 1.5 x d_1
Applications – Material	H 1.1-2



Reinforced Shank

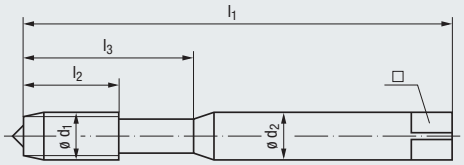
Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	Rekord 1A-HCUT-PM TICN	Flutes
		mm					Tool Identification	B010J901	
M 8 x	1	90	10	35	8	6.2	7.1	.0251	★	5
M 10 x	1	90	10	35	10	8	9.1	.0276	★	5

Reduced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	Rekord 2A-HCUT-PM TICN	Flutes
		mm					Tool Identification	C010J901	
M 12 x	1.5	100	15	—	9	7	10.6	.0303	★	5
M 14 x	1.5	100	15	—	11	9	12.6	.0331	★	6
M 16 x	1.5	100	15	—	12	9	14.6	.0359	★	6

Ordering Example: **B010J901.0251**

DIN Length · DIN Shank



Reinforced Shank

HCUT
Hardened Steels

2)

MF

ISO Metric Fine Thread
DIN 13

Class of Fit	6HX	6HX
Coating	TICN	TICN
Cutting Material	**Carbide**	**Carbide**
Technical Characteristics		
	D / 4-5	**C / 2-3**
	O / P	O / P
Thread Depth and Hole Shape	max. 1.5 x d_1	max. 1.5 x d_1
Applications – Material	H 1.3-4	H 1.3-4

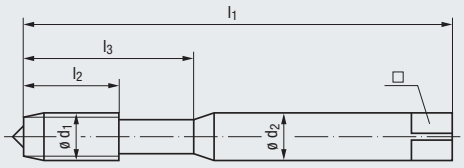
Reinforced Shank

Nominal Size ø d_1		P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	B016K101 VHM Rekord 1A-HCUT/D TICN	Flutes	B010K101 VHM Rekord 1A-HCUT/C TICN	Flutes
					mm			Tool Identification				
M 8	x	1	90	15	35	8	6.2	7.1	**.0251**	★	5	★	5
M 10	x	1	100	18	38	10	8	9.1	**.0276**	★	5	★	5
M 12	x	1.5	110	21	41	12	9	10.6	**.0303**	★	5	★	5
M 14	x	1.5	110	24	44	14	11	12.6	**.0331**	★	6	★	6
M 16	x	1.5	110	24	44	16	12	14.6	**.0359**	★	6	★	6

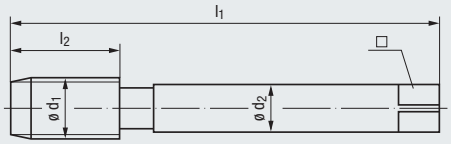
2) Please note: Use solid carbide tap VHM-Rekord 1A-HCUT/D-TICN as No.1 tap!

● = In stock
★ = Allow 7 days for delivery

DIN Length · DIN Shank



Reinforced Shank
(M3x0.35 - M10x1.25)



Reduced Shank
(M8x1 - M30x2)

MF

ISO Metric Fine Thread
DIN 13

Z
CNC-Controlled Machines

Class of Fit	6HX	6HX	6HX	6HX	6HX
Coating	TICN	TICN	TICN	TICN	TICN
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics					
	C / 2-3	C / 2-3	C / 2-3	**E / 1.5-2**	**E / 1.5-2**
	E / O / P	E / O	E / O	E / O / P	E / O
Thread Depth and Hole Shape	max. 2 x d_1	max. 2 x d_1 1)	max. 2 x d_1	max. 2 x d_1	max. 2 x d_1 1)
Applications – Material	P 1.1-4.1 K 1.1-4.2 N 1.4-6, 2.4-7 N 4.1	P 1.1-4.1 K 1.1-4.2 N 1.4-6, 2.4-7 N 4.1	P 1.1-4.1 K 1.1-4.2 N 1.4-6, 2.4-7 N 4.1	P 1.1-4.1 K 1.1-4.2 N 1.4-6, 2.4-7 N 4.1	P 1.1-4.1 K 1.1-4.2 N 1.4-6, 2.4-7 N 4.1

Reinforced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Tool Identification Dimens. ID
			mm				
M 3 x	0.35	56	4.5	18	3.5	2.7	2.65 **.0202**
M 4 x	0.5	63	5	21	4.5	3.4	3.5 **.0210**
M 5 x	0.5	70	5	25	6	4.9	4.5 **.0218**
M 6 x	0.75	80	8	30	6	4.9	5.2 **.0229**
M 8 x	0.75	80	8	30	8	6.2	7.2 **.0250**
M 8 x	1	90	10	35	8	6.2	7 **.0251**
M 10 x	1	90	10	35	10	8	9 **.0276**
M 10 x	1.25	100	16	39	10	8	8.8 **.0277**

Reduced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Tool Identification Dimens. ID	C0109401 Rekord 2A-Z TICN	Flutes	C1959401 Rekord 2A-Z-IKZ TICN	Flutes	C1069401 Rekord 2A-Z-IKZN TICN	Flutes	C0119401 Rekord 2A-Z/E TICN	Flutes	C1969401 Rekord 2A-Z/E-IKZ TICN	Flutes
			mm														
M 8 x	1	90	10	—	6	4.9	7 **.0251**	★	3	★	3			★	3	★	3
M 10 x	1	90	10	—	7	5.5	9 **.0276**	★	4	●	4	upon		★	4	★	4
M 10 x	1.25	100	16	—	7	5.5	8.8 **.0277**	★	3	●	3			★	3	★	3
M 12 x	1.5	100	15	—	9	7	10.5 **.0303**	★	4	★	4	request		★	4	★	4
M 14 x	1.5	100	15	—	11	9	12.5 **.0331**	★	4	★	4			★	4	★	4
M 16 x	1.5	100	15	—	12	9	14.5 **.0359**	★	4	★	4			★	4	★	4
M 18 x	1.5	110	17	—	14	11	16.5 **.0390**										
M 20 x	1.5	125	17	—	16	12	18.5 **.0422**										
M 22 x	1.5	125	17	—	18	14.5	20.5 **.0438**										
M 22 x	2	140	20	—	18	14.5	20 **.0439**										
M 24 x	1.5	140	20	—	18	14.5	22.5 **.0452**										
M 24 x	2	140	20	—	18	14.5	22 **.0453**										
M 27 x	1.5	140	20	—	20	16	25.5 **.0470**										
M 27 x	2	140	20	—	20	16	25 **.0471**										
M 30 x	1.5	150	22	—	22	18	28.5 **.0490**										
M 30 x	2	150	22	—	22	18	28 **.0491**										

1) Threading in through holes is possible only with external cooling/lubrication

Ordering Example: **C0109401.0251**

Z
CNC-Controlled Machines

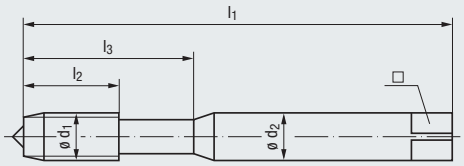
new	new	new	new			new		
6HX	6HX	6HX	6HX	6HX	6HX	6HX	6HX	Class of Fit
TIN-70	GLT-1	TIN-70	GLT-1	TIN	TIN	TIN	TIN	Coating
HSSE-PM	**HSSE-PM**	**HSSE-PM**	**HSSE-PM**	HSS Extra	HSS Extra	HSS Extra	HSS Extra	Cutting Material
				R15	R15	R15	R15	Technical Characteristics
B / 4-5	B / 4-5	B / 4-5	B / 4-5	C / 2-3	C / 2-3	**E / 1.5-2**	C / 2-3	
E / O / P	E / O / P	E / O	E / O	E / O / P	E / O	E / O	E / O	
max. 3 x d_1				max. 2 x d_1				Thread Depth and Hole Shape
P 1.1-5.1	P 1.1-5.1	P 1.1-5.1	P 1.1-5.1	P 2.1-5.1	P 2.1-5.1	P 2.1-5.1	P 2.1-5.1	Applications – Material
M 1.1-3.1	M 1.1-3.1	M 1.1-3.1	M 1.1-3.1	K 2.1-2	K 2.1-2	K 2.1-2	K 2.1-2	
K 2.1	K 2.1	K 2.1	K 2.1	N 1.4-6, 2.4-5	N 1.4-6, 2.4-5	N 1.4-6, 2.4-5	N 1.4-6, 2.4-5	
N 1.4-2.2, 2.4-5	N 1.4-2.2, 2.4-5	N 1.4-2.2, 2.4-5	N 1.4-2.2, 2.4-5					
S 1.1	S 1.1	S 1.1	S 1.1					
B0208F01	**B020A601**							**Tool Identification**

Rekord 1B-Z-PM TIN-70	Flutes	Rekord 1B-Z-PM GLT-1	Flutes	Dimens. ID	Nominal Size ø d_1	P
				.0202	M 3	0.35
★	3	★	3	.0210	M 4	0.5
★	3	★	3	.0218	M 5	0.5
				.0229	M 6	0.75
				.0250	M 8	0.75
				.0251	M 8	1
				.0276	M 10	1
				.0277	M 10	1.25

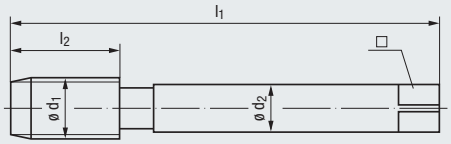
C0208F01		C020A601		C1088F01		C108A601		C0453701		C0963701		C0983701		C4253701		Tool Identification		
Rekord 2B-Z-PM TIN-70	Flutes	Rekord 2B-Z-PM GLT-1	Flutes	Rekord 2B-Z-IKZN PM-TIN-70	Flutes	Rekord 2B-Z-IKZN PM-GLT-1	Flutes	Rekord 2D-Z TIN	Flutes	Rekord 2D-Z-IKZ TIN	Flutes	Rekord 2D-Z/E-IKZ TIN	Flutes	Rekord 2D-Z-BF IKZ-TIN	Flutes	Dimens. ID	Nominal Size ø d_1	P
★	4	★	4					★	3	★	3	★	3	★	3	.0251	M 8	1
★	4	★	4	upon		upon		★	3	★	3	★	3	★	3	.0276	M 10	1
★	4	★	4					★	3	★	3	★	3	★	3	.0277	M 10	1.25
★	4	★	4	request		request		★	3	★	3	★	3	★	3	.0303	M 12	1.5
★	4	★	4							★	3	★	3	★	3	.0331	M 14	1.5
★	4	★	4							★	3	★	3	★	3	.0359	M 16	1.5
★	4	★	4													.0390	M 18	1.5
★	4	★	4													.0422	M 20	1.5
																.0438	M 22	1.5
																.0439	M 22	2
																.0452	M 24	1.5
																.0453	M 24	2
																.0470	M 27	1.5
																.0471	M 27	2
																.0490	M 30	1.5
																.0491	M 30	2

● = In stock
★ = Allow 7 days for delivery

DIN Length · DIN Shank



Reinforced Shank
(M3x0.35 - M10x1.25)



Reduced Shank
(M8x1 - M30x2)

MF

ISO Metric Fine Thread
DIN 13

Z
CNC-Controlled Machines

new

Class of Fit	6HX	ISO 2/6H	ISO 2/6H	ISO 2/6H	ISO 2/6H
Coating	TIN		TIN	GLT-1	TIN
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics	R15	R45	R45	R45	R45
	E / 1.5-2	**E / 1.5-2**	**E / 1.5-2**	**E / 1.5-2**	**E / 1.5-2**
	E / O	E / O / P	E / O / P	E / O / P	E / O
Thread Depth and Hole Shape	max. 2 x d_1	max. 3 x d_1			
Applications – Material	P 2.1-5.1 K 2.1-2 N 1.4-6, 2.4-5	P 1.1-4.1 M 1.1-2.1 N 2.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1

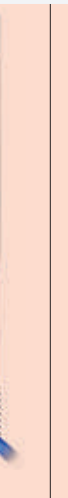
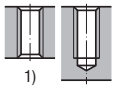
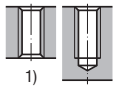
Reinforced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	B0513500 Enorm 1-Z/E	Flutes	B0513700 Enorm 1-Z/E TIN	Flutes
				mm			Tool Identification				
M 3 x	0.35	56	4.5	18	3.5	2.7	2.65	.0202			
M 4 x	0.5	63	5	21	4.5	3.4	3.5	.0210	★	3	★	3
M 5 x	0.5	70	5	25	6	4.9	4.5	.0218	★	3	★	3
M 6 x	0.75	80	8	30	6	4.9	5.2	.0229	★	3	★	3
M 8 x	0.75	80	8	30	8	6.2	7.2	.0250				
M 8 x	1	90	10	35	8	6.2	7	.0251				
M 10 x	1	90	10	35	10	8	9	.0276				
M 10 x	1.25	100	16	39	10	8	8.8	.0277				

Reduced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	C4053701 Rekord 2D-Z/E-BF IKZ-TIN	Flutes	C0513500 Enorm 2-Z/E	Flutes	C0513700 Enorm 2-Z/E TIN	Flutes	C051C400 Enorm 2-Z/E GLT-1	Flutes	C0973700 Enorm 2-Z/E-IKZ TIN	Flutes
			mm				Tool Identification										
M 8 x	1	90	10	—	6	4.9	7	.0251	★	3	★	3	★	3	★	3		
M 10 x	1	90	10	—	7	5.5	9	.0276	★	3	★	4	★	4	★	4		
M 10 x	1.25	100	16	—	7	5.5	8.8	.0277	★	3								
M 12 x	1.5	100	15	—	9	7	10.5	.0303	★	3	★	5	★	5	★	5	★	5
M 14 x	1.5	100	15	—	11	9	12.5	.0331	★	3	★	5	★	5	★	5	★	5
M 16 x	1.5	100	15	—	12	9	14.5	.0359	★	3	★	5	★	5	★	5	★	5
M 18 x	1.5	110	17	—	14	11	16.5	.0390			★	5	★	5	★	5		
M 20 x	1.5	125	17	—	16	12	18.5	.0422			★	5	★	5	★	5	★	5
M 22 x	1.5	125	17	—	18	14.5	20.5	.0438										
M 22 x	2	140	20	—	18	14.5	20	.0439										
M 24 x	1.5	140	20	—	18	14.5	22.5	.0452										
M 24 x	2	140	20	—	18	14.5	22	.0453										
M 27 x	1.5	140	20	—	20	16	25.5	.0470										
M 27 x	2	140	20	—	20	16	25	.0471										
M 30 x	1.5	150	22	—	22	18	28.5	.0490										
M 30 x	2	150	22	—	22	18	28	.0491										

Ordering Example: **C4053701.0251**

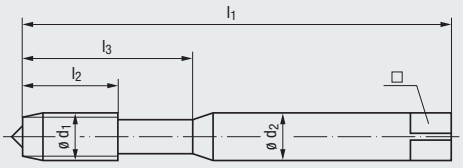
		Z CNC-Controlled Machines	SPEED High-Speed Cutting						
		new	new	new	new 	new	new		
		ISO 3/6G	6HX	6HX	6HX	6HX	6HX	6HX	Class of Fit
		TIN	TICN	TICN	TICN	TICN	TIN-70	TIN-70	Coating
		HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	**HSSE-PM**	**HSSE-PM**	Cutting Material
		R45							Technical Characteristics
		E / 1.5-2	C / 2-3	C / 2-3	**E / 1.5-2**	**E / 1.5-2**	B / 4-5	B / 4-5	
		E / O / P	E	E	E	E	E	E	
		max. 3 x d_1	max. 2 x d_1  1)	max. 2 x d_1	max. 2 x d_1  1)	max. 2 x d_1	max. 3 x d_1		Thread Depth and Hole Shape
		P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1	K 1.1-4.2 N 1.4-6	K 1.1-4.2 N 1.4-6	K 1.1-4.2 N 1.4-6	K 1.1-4.2 N 1.4-6	P 1.1-4.1 K 2.1-2 N 1.4-6	P 1.1-4.1 K 2.1-2 N 1.4-6	Applications – Material
B0513720									**Tool Identification**
Enorm 1-Z/E TIN	**Flutes**								**Dimens. ID** / **Nominal Size ø d_1** / **P**
									.0202 M 3 x 0.35
★	3								**.0210** M 4 x 0.5
★	3								**.0218** M 5 x 0.5
★	3								**.0229** M 6 x 0.75
									.0250 M 8 x 0.75
									.0251 M 8 x 1
									.0276 M 10 x 1
									.0277 M 10 x 1.25

C0513720			**C3159401**		**C3179401**		**C3169401**		**C3189401**		**C3208F01**		**C3258F01**		**Tool Identification**
Enorm 2-Z/E TIN	**Flutes**		**Rekord 2A-SPEED IKZ-TICN**	**Flutes**	**Rekord 2A-SPEED IKZN-TICN**	**Flutes**	**Rekord 2A-SPEED/E IKZ-TICN**	**Flutes**	**Rekord 2A-SPEED/E IKZN-TICN**	**Flutes**	**Rekord 2B-Z-SPEED PM-TIN-70**	**Flutes**	**Rekord 2B-Z-SPEED IKZN-PM TIN-70**	**Flutes**	**Dimens. ID** / **Nominal Size ø d_1** / **P**
★	3		★	3							★	4			**.0251** M 8 x 1
★	4		★	4	upon				upon		★	4	upon		**.0276** M 10 x 1
			●	3							★	4			**.0277** M 10 x 1.25
★	5		★	4	request		★	4	request		★	4	request		**.0303** M 12 x 1.5
★	5		●	4			★	4			★	4			**.0331** M 14 x 1.5
★	5		●	4			★	4			★	4			**.0359** M 16 x 1.5
											★	4			**.0390** M 18 x 1.5
											★	4			**.0422** M 20 x 1.5
															.0438 M 22 x 1.5
															.0439 M 22 x 2
															.0452 M 24 x 1.5
															.0453 M 24 x 2
															.0470 M 27 x 1.5
															.0471 M 27 x 2
															.0490 M 30 x 1.5
															.0491 M 30 x 2

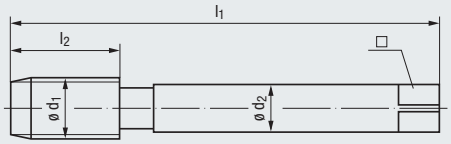
●= In stock
★= Allow 7 days for delivery

1) Threading in through holes is possible only with external cooling/lubrication

DIN Length · DIN Shank



Reinforced Shank
(M3x0.35 - M10x1.25)



Reduced Shank
(M8x1 - M30x2)

SPEED
High-Speed Cutting

new

MF

ISO Metric Fine Thread
DIN 13

Class of Fit	6HX	6HX
Coating	TIN-60	TIN-60
Cutting Material	**HSSE-PM**	**HSSE-PM**
Technical Characteristics	R45	R45
	C / 2-3	C / 2-3
	E	E
Thread Depth and Hole Shape	max. 3 x d_1	
Applications – Material	P 2.1-4.1	P 2.1-4.1

Reinforced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Tool Identification: Dimens. ID
		mm					
M 3 x	0.35	56	4.5	18	3.5	2.7	2.65 **.0202**
M 4 x	0.5	63	5	21	4.5	3.4	3.5 **.0210**
M 5 x	0.5	70	5	25	6	4.9	4.5 **.0218**
M 6 x	0.75	80	8	30	6	4.9	5.2 **.0229**
M 8 x	0.75	80	8	30	8	6.2	7.2 **.0250**
M 8 x	1	90	10	35	8	6.2	7 **.0251**
M 10 x	1	90	10	35	10	8	9 **.0276**
M 10 x	1.25	100	16	39	10	8	8.8 **.0277**

Reduced Shank

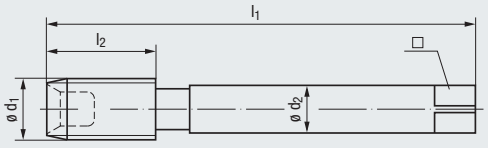
Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Tool Identification: Dimens. ID	C3600F01 Enorm 2-Z-SPEED X-PM TIN-60	Flutes	C3650F01 Enorm 2-Z-SPEED X-IKZ-PM TIN-60	Flutes
		mm									
M 8 x	1	90	10	—	6	4.9	7 **.0251**	★	3	★	3
M 10 x	1	90	10	—	7	5.5	9 **.0276**	★	4	★	4
M 10 x	1.25	100	16	—	7	5.5	8.8 **.0277**	★	4	★	4
M 12 x	1.5	100	15	—	9	7	10.5 **.0303**	★	5	★	5
M 14 x	1.5	100	15	—	11	9	12.5 **.0331**	★	5	★	5
M 16 x	1.5	100	15	—	12	9	14.5 **.0359**	★	5	★	5
M 18 x	1.5	110	17	—	14	11	16.5 **.0390**	★	5	★	5
M 20 x	1.5	125	17	—	16	12	18.5 **.0422**	★	5	★	5
M 22 x	1.5	125	17	—	18	14.5	20.5 **.0438**				
M 22 x	2	140	20	—	18	14.5	20 **.0439**				
M 24 x	1.5	140	20	—	18	14.5	22.5 **.0452**				
M 24 x	2	140	20	—	18	14.5	22 **.0453**				
M 27 x	1.5	140	20	—	20	16	25.5 **.0470**				
M 27 x	2	140	20	—	20	16	25 **.0471**				
M 30 x	1.5	150	22	—	22	18	28.5 **.0490**				
M 30 x	2	150	22	—	22	18	28 **.0491**				

Ordering Example: **C3600F01.0251**

DIN Length · DIN Shank

VA
Stainless Steel Materials

With internal chip collector



Reduced Shank

MF

ISO Metric Fine Thread
DIN 13

Class of Fit	6HX
Coating	NE2
Cutting Material	HSS Extra
Technical Characteristics	
	C / 2-3
	P / O [1]
Thread Depth and Hole Shape	max. 1.5 x d_1
Applications – Material	P 1.1-4.1 M 1.1-2.1 K 1.1-4.2

Reduced Shank

Nominal Size ø d_1		P	l_1	mm l_2	ø d_2	□	Tool Identification	Dimens. ID	C0803001 Robust 2X-VA NE2	Flutes
M 20	x	1.5	125	25	16	12	18.5	.0422	★	5
M 22	x	1.5	125	25	18	14.5	20.5	.0438	★	5
M 24	x	1.5	140	27	18	14.5	22.5	.0452	★	5
M 24	x	2	140	27	18	14.5	22	.0453	★	5
M 27	x	1.5	140	28	20	16	25.5	.0470	★	5
M 27	x	2	140	28	20	16	25	.0471	★	5
M 30	x	1.5	150	28	22	18	28.5	.0490	★	6
M 33	x	1.5	160	30	25	20	31.5	.0511	★	6
M 33	x	2	160	30	25	20	31	.0512	★	6
M 36	x	1.5	170	30	28	22	34.5	.0532	★	6
M 36	x	2	170	30	28	22	34	.0533	★	6
M 36	x	3	200	42	28	22	33	.0534	★	6
M 38	x	1.5	170	30	28	22	36.5	.0546	★	6
M 39	x	3	200	42	32	24	36	.0555	★	6
M 40	x	2	170	30	32	24	38	.0561	★	6
M 42	x	1.5	170	30	32	24	40.5	.0574	★	6
M 42	x	2	170	30	32	24	40	.0575	★	6
M 42	x	3	200	45	32	24	39	.0576	★	6
M 45	x	3	200	45	36	29	42	.0597	★	6
M 48	x	1.5	190	32	36	29	46.5	.0616	★	8
M 48	x	2	190	32	36	29	46	.0617	★	7
M 48	x	3	225	50	36	29	45	.0618	★	6
M 52	x	3	225	50	40	32	49	.0646	★	6
M 56	x	3	225	50	40	32	53	.0661	★	7
M 56	x	4	250	60	40	32	52	.0662	★	7
M 60	x	4	280	60	45	35	56	.0672	★	7
M 64	x	3	275	55	50	39	61	.0681	★	8
M 64	x	4	315	65	50	39	60	.0682	★	7
M 68	x	4	315	65	50	39	64	.0692	★	7
M 70	x	3	275	55	50	39	67	.0696	★	8

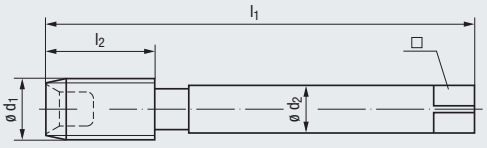
● = In stock
★ = Allow 7 days for delivery

M70x4 - M120x6 ➟

DIN Length · DIN Shank

VA
Stainless Steel Materials

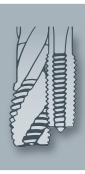
With internal chip collector



Reduced Shank

MF

ISO Metric Fine Thread
DIN 13



Class of Fit	6HX
Coating	NE2
Cutting Material	HSS Extra
Technical Characteristics	
	C / 2-3
	P / O [1]
Thread Depth and Hole Shape	max. 1.5 x d_1
Applications – Material	P 1.1-4.1
	M 1.1-2.1
	K 1.1-4.2

Reduced Shank

Nominal Size ø d_1	P	l_1	l_2	ø d_2	□	Tool Identification Dimens. ID	C0803001 Robust 2X-VA NE2	Flutes
		mm						
M 70 x	4	340	65	50	39	66	**.0697**	★	7
M 72 x	3	275	55	50	39	69	**.0702**	★	8
M 72 x	4	340	65	50	39	68	**.0703**	★	8
M 72 x	6	340	80	50	39	66	**.0704**	★	7
M 76 x	3	275	55	50	39	73	**.0714**	★	8
M 76 x	4	340	65	50	39	72	**.0715**	★	8
M 76 x	6	340	80	50	39	70	**.0716**	★	7
M 80 x	4	360	65	50	39	76	**.0727**	★	10
M 80 x	6	360	80	50	39	74	**.0728**	★	8
M 85 x	3	325	60	50	39	82	**.0736**	★	10
M 85 x	4	380	70	50	39	81	**.0737**	★	10
M 90 x	3	325	60	50	39	87	**.0746**	★	10
M 90 x	4	380	70	50	39	86	**.0747**	★	10
M 90 x	6	380	80	50	39	84	**.0748**	★	9
M 95 x	6	400	85	56	44	89	**.0758**	★	9
M 100 x	4	400	70	56	44	96	**.0767**	★	10
M 100 x	6	400	85	56	44	94	**.0768**	★	10
M 110 x	6	400	85	56	44	104	**.0788**	★	10
M 115 x	3	350	65	56	44	112	**.0791**	★	12
M 120 x	4	400	75	56	44	116	**.0797**	★	12
M 120 x	6	400	90	56	44	114	**.0798**	★	10

≥ M56 Shank with grooves for better handling!

[1] If possible, use paste lubrication, coating both the tool and the walls of the drilled hole.
Lubrication with oil is possible only in the vertical machining of blind holes, if the hole is entirely filled with oil.

Larger sizes priced upon request.

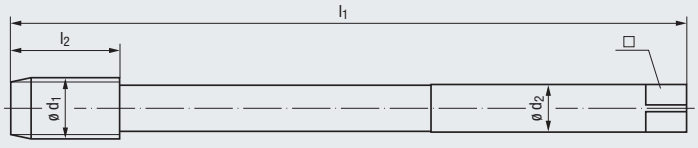
The Complete Tool System

Robust 2X-VA Taps when used with a KSN Type tapping attachment creates the optimal tapping unit!

Extra Length · DIN Shank

Z
CNC-Controlled Machines

With long flutes and long shank for thread depths up to max. 4 x d_1



MF

ISO Metric Fine Thread
DIN 13

Class of Fit	6HX	6HX	6HX
Coating	TICN	TIN	TIN
Cutting Material	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics		R15	R15
	C / 2-3	C / 2-3	C / 2-3
	E / O	E / O	E / O
Thread Depth and Hole Shape	max. 4 x d_1 1)	max. 4 x d_1	max. 4 x d_1
Applications – Material	P 1.1-4.1 K 1.1-4.2 N 1.4-6, 2.4-7 N 4.1	P 2.1-5.1 K 2.1-2 N 1.4-6, 2.4-5	P 2.1-5.1 K 2.1-2 N 1.4-6, 2.4-5

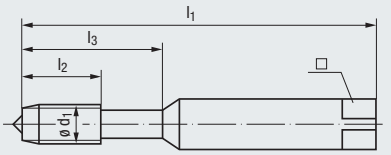
Reduced Shank

Nominal Size ø d_1		P	mm l_1	l_2	ø d_2	□	Tool Identification Dimens. ID	C0539401 Rekord 2A-Z-IKZ-LF4 TICN	Flutes	C4283701 Rekord 2D-Z-IKZ-LF4 TIN	Flutes	C4063701 Rekord 2D-Z-BF-IKZ-LF4 TIN	Flutes
M 24	x	2	240	20	18	14.5	22 .0453						
M 30	x	2	270	22	22	18	28 .0491	upon		upon		upon	
M 36	x	3	310	30	28	22	33 .0534						
								request		request		request	

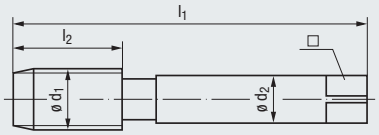
1) Threading in through holes is possible only with external cooling/lubrication

● = In stock
★ = Allow 7 days for delivery

ANSI Length · ANSI Shank



Reinforced Shank
(M10x1 - M10x1.25)



Reduced Shank
(M12x1.5 - M14x1.5)

MF

ISO Metric Fine Thread
DIN 13

STEEL
Steel Materials

Class of Fit	ISO 2/6H	ISO 2/6H	ISO 2/6H	ISO 2/6H
Coating	TIN		TIN	TIN
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics		R15	R15	R35
	B / 4-5	**E / 1.5-2**	**E / 1.5-2**	C / 2-3
	E / 0	E / 0	E / 0	E / 0
Thread Depth and Hole Shape	max. 3 x d_1	max. 2 x d_1		max. 2.5 x d_1
Applications – Material	P 1.1-4.1 K 2.1 N 2.2, 2.4-5	P 2.1-3.1	P 1.1-4.1 K 1.1-4.2 N 1.4-5, 2.4-5	P 1.1-4.1 K 2.1 N 2.2

Nominal Size ø d_1	P mm	inch l_1	l_1	l_2	l_3	ø d_2	□	mm	Dimens. ID	AU208400 Rekord B-STEEL-L TIN	Flutes	AU461000 Rekord D-STEEL/E	Flutes	AU461400 Rekord D-STEEL/E TIN	Flutes	AU501400 Enorm STEEL TIN	Flutes
M 10 x	1	2 15/16	2.94	0.709	1.378	0.381	0.286	9	.0276	●	4	●	3	●	3	●	3
M 10 x	1.25	2 15/16	2.94	0.709	1.378	0.381	0.286	8.8	.0277	●	3	●	3	●	3	●	3
M 12 x	1.5	3 3/8	3.38	0.866	—	0.367	0.275	10.5	.0303	●	3	●	3	●	3	●	4
M 14 x	1.5	3 19/32	3.59	0.866	—	0.429	0.322	12.5	.0331	●	3	●	3	●	3	●	4

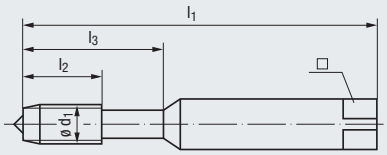
DIN Length · DIN Shank

All ANSI Length · ANSI Shank taps are available in the popular DIN Length · DIN Shank style.

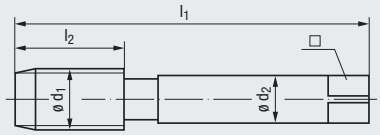
The DIN Length · DIN Shank configuration allows for added reach capabilities and greater chip clearance.

Ordering Example: **AU208400.0276**

ANSI Length · ANSI Shank



Reinforced Shank
(M10x1 - M10x1.25)



Reduced Shank
(M12x1.5 - M14x1.5)

MF

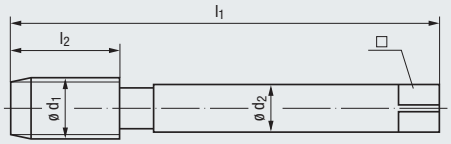
ISO Metric Fine Thread
DIN 13

	VA Stainless Steel Materials			H Materials of High Tensile Strength	
Class of Fit	ISO 2/6H	ISO 2/6H		6HX	6HX
Coating	NT			NT	TIN
Cutting Material	HSS Extra	HSS Extra		HSS Extra	HSS Extra
Technical Characteristics		R35			
	B / 4-5	C / 2-3		**E / 1.5-2**	**E / 1.5-2**
	E / O / P	E / O / P		E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1	max. 2.5 x d_1		max. 2 x d_1	
Applications – Material	P 1.1-3.1 M 1.1-2.1 K 2.1 N 2.2, 2.5-6	P 1.1-3.1 M 1.1-2.1 K 2.1		P 1.1-3.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1	P 1.1-4.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1

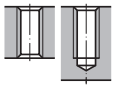
Nominal Size ø d_1	P mm	inch l_1	l_2	l_3	ø d_2	□	mm	Dimens. ID	AU203000 Rekord B-VA NT	Flutes	AU503000 Enorm VA	Flutes		AU110501 Rekord A-H/E NT	Flutes	AU110601 Rekord A-H/E TIN	Flutes
M 10 x	1	2 15/16 2.94	0.709	1.378	0.381	0.286	9	.0276	●	4	●	3		●	4	●	4
M 10 x	1.25	2 15/16 2.94	0.709	1.378	0.381	0.286	8.8	.0277	●	3	●	3		●	3	●	3
M 12 x	1.5	3 3/8 3.38	0.866	—	0.367	0.275	10.5	.0303	●	3	●	4		●	4	●	4
M 14 x	1.5	3 19/32 3.59	0.866	—	0.429	0.322	12.5	.0331	●	3	●	4		●	4	●	4

● = In stock
★ = Allow 7 days for delivery

DIN Length · DIN Shank



Reduced Shank

	STEEL Steel Materials		Z CNC-Controlled Machines	
Class of Fit	"X"			
Coating				TIN
Cutting Material	HSS Extra		HSS Extra	HSS Extra
Technical Characteristics			R45	R45
	C / 2-3		**E / 1.5-2**	**E / 1.5-2**
	E / O		E / O / P	E / O / P
Thread Depth and Hole Shape	max. 2 x d_1 		max. 3 x d_1	
Applications – Material	P 1.1-3.1 N 2.3		P 1.1-4.1 M 1.1-2.1 N 2.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1

NPSM/ NPSC

American Standard Straight Pipe Thread ANSI B1.20.1

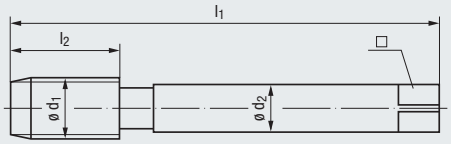
For mechanical joints (previously NPS)

Reduced Shank

Nominal Size ø d_1	T.P.I.	mm ø d_1	l_1	l_2	ø d_2	□	Tool Identification NPSM	NPSC	Dimens. ID	C0101001 Rekord 2A-STEEL	Flutes	C0513500 Enorm 2-Z/E	Flutes	C0513700 Enorm 2-Z/E TIN	Flutes
1/8	27	10.100	90	18	7	5.5	9.1	8.8	**.5858**	●	4	●	4	●	4
1/4	18	13.404	100	22	11	9	12	11.4	**.5859**	●	4	●	5	●	5
3/8	18	16.843	100	22	12	9	15.5	14.9	**.5860**			●	5	●	5
1/2	14	20.949	125	25	16	12	19	18.4	**.5861**			●	5	●	5
3/4	14	26.296	140	28	20	16	24.5	23.7	**.5862**			●	5		
1	11 1/2	32.895	160	30	25	20	30.5	29.8	**.5863**						

NPSM can also be used for NPSC thread

DIN Length · DIN Shank



Reduced Shank

NPSF

American Standard Straight Pipe Thread ANSI B1.20.3

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

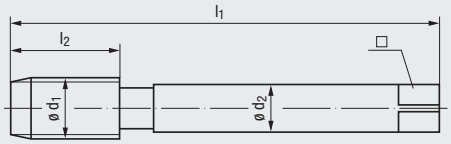
	STEEL Steel Materials		Z CNC-Controlled Machines	
Class of Fit	"X"			
Coating				TIN
Cutting Material	HSS Extra		HSS Extra	HSS Extra
Technical Characteristics			R45	R45
	C / 2-3		**E / 1.5-2**	**E / 1.5-2**
	E / O		E / O / P	E / O / P
Thread Depth and Hole Shape	max. 2 x d_1		max. 3 x d_1	
Applications – Material	P 1.1-3.1 N 2.3		P 1.1-4.1 M 1.1-2.1 N 2.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1

Reduced Shank

Nominal Size ø d_1	T.P.I.	mm ø d_1	l_1	l_2	ø d_2	□	Tool Identification Dimens. ID	C0101001 Rekord 2A-STEEL	Flutes	C0513500 Enorm 2-Z/E	Flutes	C0513700 Enorm 2-Z/E TIN	Flutes
1/16	27	7.582	90	17	6	4.9	6.35 .5904	★	3	●	3	●	3
1/8	27	9.929	90	18	7	5.5	8.7 .5905	●	4	●	4	●	4
1/4	18	13.236	100	22	11	9	11.3 .5906	●	4	●	5	●	5
3/8	18	16.673	100	22	12	9	14.75 .5907	●	4	●	5	●	5
1/2	14	20.819	125	25	16	12	18.2 .5908	●	4	●	5	●	5
3/4	14	26.166	140	28	20	16	23.5 .5909	●	4				
1	11 1/2	32.718	160	30	25	20	29.5 .5910						

● = In stock
★ = Allow 7 days for delivery

DIN Length · DIN Shank

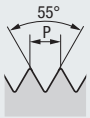


Reduced Shank

STEEL Steel Materials

Z CNC-Controlled Machines

Rp (BSPP)



Cylindrical Whitworth Pipe Thread
DIN EN 10226-1 and ISO 7-1

Where pressure-tight joints are made on the threads

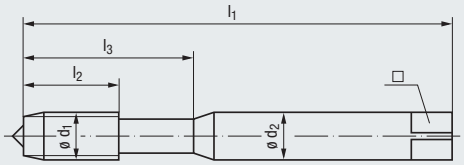
Class of Fit	"X"			
Coating				TIN
Cutting Material	HSS Extra		HSS Extra	HSS Extra
Technical Characteristics			R45	R45
	C / 2-3		**E / 1.5-2**	**E / 1.5-2**
	E / O		E / O / P	E / O / P
Thread Depth and Hole Shape	max. 2 x d_1		max. 3 x d_1	
Applications – Material	P 1.1-3.1 N 2.3		P 1.1-4.1 M 1.1-2.1 N 2.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1

Reduced Shank

Nominal Size ø d_1	T.P.I.	ø d_1	l_1	mm l_2	ø d_2	□	Tool Identification Dimens. ID	C0101001 Rekord 2A-STEEL	Flutes	C0513500 Enorm 2-Z/E	Flutes	C0513700 Enorm 2-Z/E TIN	Flutes
Rp 1/8	28	9.73	90	18	7	5.5	8.6	**.4092**	★	4	●	4	★	4
Rp 1/4	19	13.16	100	22	11	9	11.5	**.4093**	★	4	●	5	★	5
Rp 3/8	19	16.66	100	22	12	9	15	**.4094**	★	4	●	5	★	5
Rp 1/2	14	20.96	125	25	16	12	18.5	**.4095**	★	4	●	5	★	5
Rp 3/4	14	26.44	140	28	20	16	24	**.4096**	★	4	●	5		
Rp 1	11	33.25	160	30	25	20	30.25	**.4097**	★	5	●	6		

Ordering Example: **C0101001.4092**

DIN Length · DIN Shank



Reinforced Shank

HCUT
Hardened Steels

2)

G

Whitworth Pipe Thread
DIN EN ISO 228

Class of Fit	"X"	"X"	"X"
Coating	TICN	TICN	TICN
Cutting Material	**HSSE-PM**	**Carbide**	**Carbide**
Technical Characteristics			
	C / 2-3	**D / 4-5**	**C / 2-3**
	O / P	O / P	O / P
Thread Depth and Hole Shape	max. 1.5 x d_1		max. 1.5 x d_1
Applications – Material	H 1.1-2	H 1.3-4	H 1.3-4

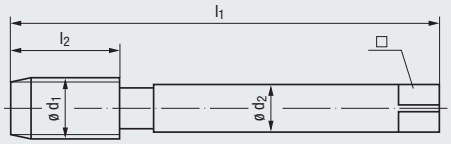
Reinforced Shank

Nominal Size ø d_1	T.P.I.	mm ø d_1	l_1	l_2	l_3	ø d_2	□	Tool Identification Dimens. ID	B010J901 Rekord 1A-HCUT-PM TICN	Flutes	B016K101 VHM Rekord 1A-HCUT/D TICN	Flutes	B010K101 VHM Rekord 1A-HCUT/C TICN	Flutes
G 1/8	28	9.73	90	10	35	10	8	.4035	★	5				
G 1/8	28	9.73	100	18	38	10	8	.4035			★	5	★	5
G 1/4	19	13.16	110	24	44	14	11	.4036			★	6	★	6

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

● = In stock
★ = Allow 7 days for delivery

DIN Length · DIN Shank



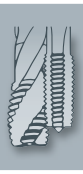
Reduced Shank

STEEL
Steel Materials

G

Whitworth Pipe Thread
DIN EN ISO 228

Class of Fit	"X"				
Coating			TIN		
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics				R15	R15
	C / 2-3	B / 4-5	B / 4-5	C / 2-3	**E / 1.5-2**
	E / 0	E / 0	E / 0	E / 0	E / 0
Thread Depth and Hole Shape	max. 2 x d_1	max. 3 x d_1		max. 2 x d_1	
Applications – Material	P 1.1-3.1 N 2.3	P 1.1-3.1 N 2.2	P 1.1-4.1 K 2.1 N 2.2, 2.4-5	P 2.1-3.1	P 2.1-3.1



Reduced Shank

Nominal Size ø d_1	T.P.I.	ø d_1	l_1	mm l_2	ø d_2	□	Tool Identification	Dimens. ID	C0101001 Rekord 2A-STEEL	Flutes	C0208900 Rekord 2B-STEEL-L	Flutes	C0208400 Rekord 2B-STEEL-L TIN	Flutes	C0451000 Rekord 2D-STEEL	Flutes	C0461000 Rekord 2D-STEEL/E	Flutes
G 1/16	28	7.72	90	17	6	4.9	6.8	.4034	★	3								
G 1/8	28	9.73	90	18	7	5.5	8.8	.4035	★	4	★	3	★	3	★	3	★	3
G 1/4	19	13.16	100	22	11	9	11.8	.4036	★	4	★	3	★	3	★	3	★	3
G 3/8	19	16.66	100	22	12	9	15.25	.4037	★	4	★	3	★	3	★	3	★	3
G 1/2	14	20.96	125	25	16	12	19	.4038	★	4	★	4	★	4	★	4	★	4
G 5/8	14	22.91	125	25	18	14.5	21	.4039			★	4						
G 3/4	14	26.44	140	28	20	16	24.5	.4040	★	4	★	4	★	4	★	4	★	4
G 7/8	14	30.20	150	28	22	18	28.25	.4041										
G 1	11	33.25	160	30	25	20	30.75	.4042	★	5	★	4	★	4	★	4	★	4
G 1 1/8	11	37.90	170	30	28	22	35.5	.4043			★	5						
G 1 1/4	11	41.91	170	30	32	24	39.5	.4044	★	6	★	6						
G 1 3/8	11	44.32	180	32	36	29	41.75	.4045			★	6						
G 1 1/2	11	47.80	190	32	36	29	45.25	.4046	★	6	★	6						
G 1 5/8	11	52.00	190	32	40	32	49.5	.4047			★	6						
G 1 3/4	11	53.75	190	32	40	32	51	.4048			★	6						
G 2	11	59.61	220	40	45	35	57	.4050			★	8						

Ordering Example: **C0101001.4034**

STEEL
Steel Materials

VA
Stainless Steel Materials

new

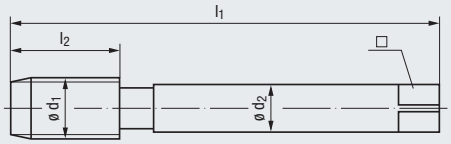
H
Materials of High Tensile Strength

					Class of Fit
	TIN	NT	GLT-1	"X" / NT	Coating
HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra	Cutting Material
R35	R35		R35		Technical Characteristics
C / 2-3	C / 2-3	B / 4-5	C / 2-3	C / 2-3	
E / O	E / O	E / O / P	E / O / P	E / O / P	
max. 2.5 x d_1		max. 3 x d_1	max. 2.5 x d_1	max. 2 x d_1	Thread Depth and Hole Shape
P 1.1-3.1 N 2.2	P 1.1-4.1 K 2.1 N 2.2	P 1.1-3.1 M 1.1-2.1 K 2.1 N 2.2, 2.5-6	P 1.1-4.1 M 1.1-3.1 K 2.1	P 1.1-3.1 K 1.1-4.2 N 2.4-7 N 4.1, 5.1	Applications – Material
C0501000	C0501400	C0203000	C050C300	C0100501	C0109101	Tool Identification

Enorm 2-STEEL	Flutes	Enorm 2-STEEL TIN	Flutes	Rekord 2B-VA NT	Flutes	Enorm 2-VA GLT-1	Flutes	Rekord 2A-H NT	Flutes	Rekord 2A-H TICN	Flutes	Dimens. ID	Nominal Size ø d_1	T.P.I.
												.4034	G 1/16	28
★	3	★	3	★	3	★	3	★	4	★	4	.4035	G 1/8	28
★	4	★	4	★	3	★	3	★	4	★	4	.4036	G 1/4	19
★	4	★	4	★	3	★	3	★	4	★	4	.4037	G 3/8	19
★	4	★	4	★	4	★	4	★	4	★	4	.4038	G 1/2	14
												.4039	G 5/8	14
★	4	★	4	★	4	★	4	★	4			.4040	G 3/4	14
												.4041	G 7/8	14
★	5	★	5	★	4	★	4	★	5			.4042	G 1	11
												.4043	G 1 1/8	11
★	6							★	6			.4044	G 1 1/4	11
												.4045	G 1 3/8	11
★	6							★	6			.4046	G 1 1/2	11
												.4047	G 1 5/8	11
												.4048	G 1 3/4	11
												.4050	G 2	11

● = In stock
★ = Allow 7 days for delivery

DIN Length · DIN Shank



Reduced Shank

H Materials of High Tensile Strength

HCUT Hardened Steels

G

Whitworth Pipe Thread
DIN EN ISO 228

	H		HCUT		
Class of Fit	"X"		"X"		
Coating			TICN		
Cutting Material	Carbide		HSSE-PM		
Technical Characteristics					
	E / 1.5-2		C / 2-3		
	E / O		O / P		
Thread Depth and Hole Shape	max. 2 x d_1 1)		max. 1.5 x d_1		
Applications – Material	P 5.1 K 1.1-4.2 N 1.5-6, 2.6-8 N 4.1, 4.3-5.2 H 1.1-2		H 1.1-2		

Reduced Shank

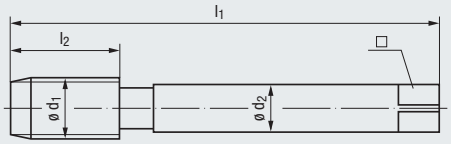
Nominal Size ø d_1	T.P.I.	ø d_1	l_1	mm l_2	ø d_2	□	Tool Identification Dimens. ID	C1960901 VHM/KHM Rekord 2A-H/E-IKZ	Flutes		C010J901 Rekord 2A-HCUT-PM TICN	Flutes		
G 1/16	28	7.72	90	10	6	4.9	6.8	.4034						
G 1/8	28	9.73	90	10	7	5.5	8.8	.4035	★	4	★	5		
G 1/4	19	13.16	100	15	11	9	11.8 2)	.4036	★	4	★	6		
G 3/8	19	16.66	100	15	12	9	15.25 2)	.4037	★	4	★	6		
G 1/2	14	20.96	125	17	16	12	19 2)	.4038	★	4	★	6		

1) Threading in through holes is possible only with external cooling/lubrication

2) Increase drill diameter for taps Rekord 1/2A-HCUT-PM-TICN from G 1/4 by 0.1 mm

Ordering Example: **C1960901.4035**

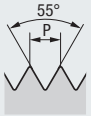
DIN Length · DIN Shank



Reduced Shank

Z
CNC-Controlled Machines

G



Whitworth Pipe Thread
DIN EN ISO 228

Class of Fit		
Coating		TIN
Cutting Material	HSS Extra	HSS Extra
Technical Characteristics	R45	R45
	E / 1.5-2	**E / 1.5-2**
	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1	
Applications – Material	P 1.1-4.1 M 1.1-2.1 N 2.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1

Reduced Shank

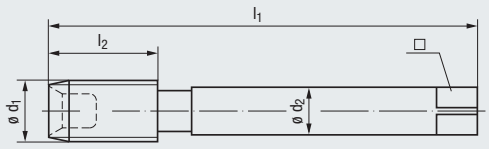
Nominal Size ø d_1	T.P.I.	ø d_1	l_1	mm l_2	ø d_2	□	Tool Identification Dimens. ID	C0513500 Enorm 2-Z/E	Flutes	C0513700 Enorm 2-Z/E TIN	Flutes
G 1/16	28	7.72	90	10	6	4.9	6.8	**.4034**				
G 1/8	28	9.73	90	10	7	5.5	8.8	**.4035**	★	4	●	4
G 1/4	19	13.16	100	15	11	9	11.8	**.4036**	★	5	●	5
G 3/8	19	16.66	100	15	12	9	15.25	**.4037**	★	5	●	5
G 1/2	14	20.96	125	17	16	12	19	**.4038**	★	5	★	5
G 5/8	14	22.91	125	17	18	14.5	21	**.4039**				
G 3/4	14	26.44	140	20	20	16	24.5	**.4040**	★	5	★	5
G 7/8	14	30.20	150	22	22	18	28.25	**.4041**				
G 1	11	33.25	160	24	25	20	30.75	**.4042**	★	6	★	6
G 1 1/8	11	37.90	170	24	28	22	35.5	**.4043**				
G 1 1/4	11	41.91	170	25	32	24	39.5	**.4044**				
G 1 3/8	11	44.32	180	27	36	29	41.75	**.4045**				
G 1 1/2	11	47.80	190	27	36	29	45.25	**.4046**				
G 1 5/8	11	52.00	190	27	40	32	49.5	**.4047**				
G 1 3/4	11	53.75	190	27	40	32	51	**.4048**				
G 2	11	59.61	220	32	45	35	57	**.4050**				

● = In stock
★ = Allow 7 days for delivery

DIN Length · DIN Shank

VA
Stainless Steel Materials

With internal chip collector



Reduced Shank

G

Whitworth Pipe Thread
DIN EN ISO 228

Class of Fit	"X"
Coating	NE2
Cutting Material	HSS Extra
Technical Characteristics	
	C / 2-3
	P / O [1]
Thread Depth and Hole Shape	max. 1.5 x d_1
Applications – Material	P 1.1-4.1 M 1.1-2.1 K 1.1-4.2

Reduced Shank

Nominal Size ø d_1	T.P.I.	ø d_1	l_1	inch l_2	ø d_2	□	Tool Identification	Dimens. ID	C0803001 Robust 2X-VA NE2	Flutes
G 1	11	33.25	160	30	25	20	30.75	**.4042**	★	6
G 1 1/4	11	41.91	170	30	32	24	39.5	**.4044**	★	6
G 1 1/2	11	47.80	190	32	36	29	45.25	**.4046**	★	6
G 1 3/4	11	53.75	190	32	40	32	51	**.4048**	★	7
G 2	11	59.61	220	40	45	35	57	**.4050**	★	8
G 2 1/4	11	65.71	275	45	50	39	63.3	**.4051**	★	8
G 2 1/2	11	75.18	275	45	50	39	72.8	**.4053**	★	8
G 2 3/4	11	81.53	325	50	50	39	79.1	**.4054**	★	10
G 3	11	87.88	325	50	50	39	85.5	**.4055**	★	10

≥ G2 Shank with grooves for better handling!

[1] If possible, use paste lubrication, coating both the tool and the walls of the drilled hole.
Lubrication with oil is possible only in the vertical machining of blind holes, if the hole is entirely filled with oil.

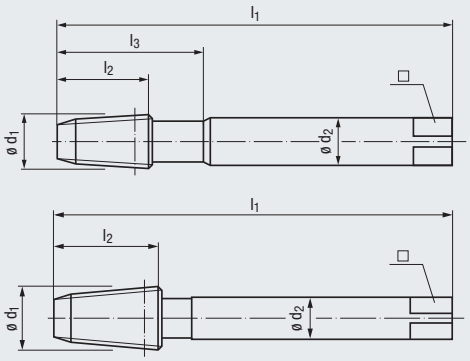
Larger sizes priced upon request.

The Complete Tool System

Robust 2X-VA Taps when used with a KSN Type tapping attachment creates the optimal tapping unit!

Ordering Example: **C0803001.4042**

Extra Length · ANSI Shank



NPT

American Tapered Pipe Thread, ANSI/ASME B1.20.1

For threads **with dryseal material**, taper 1:16

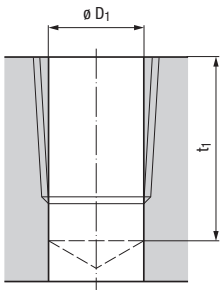
Class of Fit				
Coating		TIN		TIN
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics			R15	R15
	C / 2-3	C / 2-3	C / 2-3	C / 2-3
	E / 0	E / 0	E / 0	E / 0
Applications – Material	P 1.1-2.1 K 1.1-2 N 2.2-3	P 1.1-2.1 K 1.1-2 N 2.2-3	P 1.1-3.1 M 1.1-3.1	P 1.1-3.1 M 1.1-3.1

Tool Identification								CW181000		CW181400			CW483000		CW483100	
Nominal Size ø d_1	T.P.I.	l_1	l_2	inch l_3	ø d_2	□	Dimens. ID	Rekord 2A-STEEL	Flutes	Rekord 2A-STEEL TIN	Flutes		Rekord 2D-VA	Flutes	Rekord 2D-VA TIN	Flutes
1/16	27	3.543	0.69	1.161	0.3125	0.234	.5763	●	4	●	4		●	3	●	3
1/8	27	3.937	0.75	1.299	0.4375	0.328	.5764	●	5	●	5		●	3	●	3
1/4	18	3.937	1.06	1.772	0.5625	0.421	.5765	●	5	●	5		●	3	●	3
3/8	18	4.331	1.06	1.850	0.7000	0.531	.5766	●	5	●	5		●	3	●	3
1/2	14	5.512	1.38	—	0.6875	0.515	.5767	●	5	●	5		●	5	●	5
3/4	14	5.512	1.38	—	0.9063	0.679	.5768	●	6	●	6		●	5	●	5
1	11 1/2	6.299	1.75	—	1.1250	0.843	.5769	●	6	●	6					
1 1/4	11 1/2	6.693	1.75	—	1.3125	0.984	.5770	●	6	●	6					
1 1/2	11 1/2	7.480	1.75	—	1.5000	1.125	.5771	●	7	●	7					
2	11 1/2	7.874	1.75	—	1.8750	1.406	.5772	●	7	●	7					

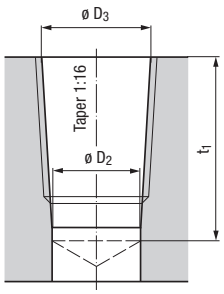
Taper reamers for taper holes 1:16, see page 118.

Thread Hole Preparatory Diameters for Tapered Pipe Thread NPT, Taper 1:16

A) Cylindrical preparation of thread hole



B) Tapered preparation of thread hole

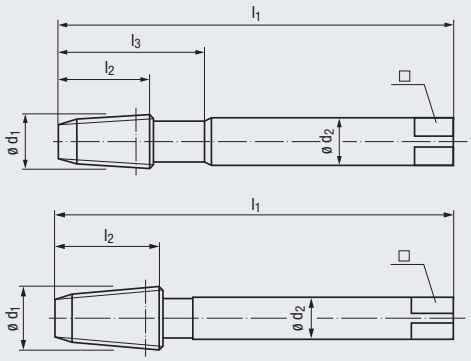


Nominal Size ø d_1	T.P.I.	inch ø D_1	ø D_2	ø D_3 (+0.002)	t_1
1/16	27	0.2421	0.2343	0.2516	0.4646
1/8	27	0.3346	0.3268	0.3441	0.4685
1/4	18	0.4331	0.4232	0.4472	0.6850
3/8	18	0.5669	0.5571	0.5827	0.6969
1/2	14	0.7008	0.6870	0.7213	0.9094
3/4	14	0.9114	0.8976	0.9319	0.9291
1	11 1/2	1.1437	1.1280	1.1689	1.1181
1 1/4	11 1/2	1.4882	1.4705	1.5138	1.1378
1 1/2	11 1/2	1.7264	1.7106	1.7528	1.1378
2	11 1/2	2.1988	2.1831	2.2268	1.1535

The minimum drilling depth t_1 includes the reach of screw by hand L_1 and the effective depth L_3 to ANSI/ASME B1.20.1 as well as the chamfer of the tap. Additional drilling-down has to be determined by the user according to the construction of the workpiece. For series production it is recommended that the minor thread dia. be made as per B. Special taps are required for blind holes where the minimum depths t_1 as listed in the above table cannot be met. In this case please supply a sketch with blind hole dimensions along with the order.

● = In stock
★ = Allow 7 days for delivery

Extra Length · ANSI Shank



Reinforced Shank
($1/16$ - $3/8$)

Reduced Shank
($1/2$ - 2)

VA
Stainless Steel Materials

NPT

American Tapered Pipe Thread, ANSI/ASME B1.20.1

For threads **with dryseal material**, taper 1:16

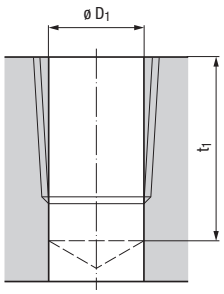
Class of Fit		
Coating		TIN
Cutting Material	HSS Extra	HSS Extra
Technical Characteristics	R15	R15
	C / 2-3	C / 2-3
	E / O	E / O
Applications – Material	P 1.1-3.1	P 1.1-3.1
	M 1.1-3.1	M 1.1-3.1

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Dimens. ID	Rekord 2D-VA-AZ	Flutes	Rekord 2D-VA-AZ TIN	Flutes
	Tool Identification							**CW493000**		**CW493100**	
1/16	27	3.543	0.69	1.161	0.3125	0.234	**.5763**	●	3	●	3
1/8	27	3.937	0.75	1.299	0.4375	0.328	**.5764**	●	3	●	3
1/4	18	3.937	1.06	1.772	0.5625	0.421	**.5765**	●	3	●	3
3/8	18	4.331	1.06	1.850	0.7000	0.531	**.5766**	●	3	●	3
1/2	14	5.512	1.38	—	0.6875	0.515	**.5767**	●	5	●	5
3/4	14	5.512	1.38	—	0.9063	0.679	**.5768**	●	5	●	5
1	11 1/2	6.299	1.75	—	1.1250	0.843	**.5769**				
1 1/4	11 1/2	6.693	1.75	—	1.3125	0.984	**.5770**				
1 1/2	11 1/2	7.480	1.75	—	1.5000	1.125	**.5771**				
2	11 1/2	7.874	1.75	—	1.8750	1.406	**.5772**				

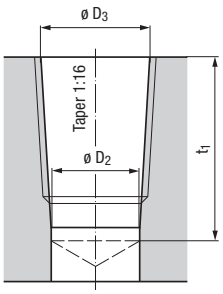
Taper reamers for taper holes 1:16, see page 118

Thread Hole Preparatory Diameters for Tapered Pipe Thread NPT, Taper 1:16

A) Cylindrical preparation of thread hole



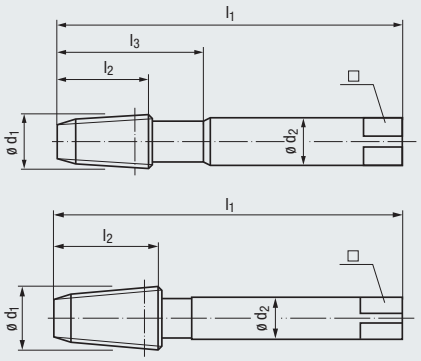
B) Tapered preparation of thread hole



Nominal Size ø d_1	T.P.I.	inch ø D_1	ø D_2	ø D_3 (+0.002)	t_1
1/16	27	0.2421	0.2343	0.2516	0.4646
1/8	27	0.3346	0.3268	0.3441	0.4685
1/4	18	0.4331	0.4232	0.4472	0.6850
3/8	18	0.5669	0.5571	0.5827	0.6969
1/2	14	0.7008	0.6870	0.7213	0.9094
3/4	14	0.9114	0.8976	0.9319	0.9291
1	11 1/2	1.1437	1.1280	1.1689	1.1181
1 1/4	11 1/2	1.4882	1.4705	1.5138	1.1378
1 1/2	11 1/2	1.7264	1.7106	1.7528	1.1378
2	11 1/2	2.1988	2.1831	2.2268	1.1535

The minimum drilling depth t_1 includes the reach of screw by hand L_1 and the effective depth L_3 to ANSI/ASME B1.20.1 as well as the chamfer of the tap. Additional drilling-down has to be determined by the user according to the construction of the workpiece. For series production it is recommended that the minor thread dia. be made as per B. Special taps are required for blind holes where the minimum depths t_1 as listed in the above table cannot be met. In this case please supply a sketch with blind hole dimensions along with the order.

ANSI Length · ANSI Shank



NPT

American Tapered Pipe Thread, ANSI/ASME B1.20.1

For threads **with dryseal material**, taper 1:16

STEEL Steel Materials

VA Stainless Steel Materials

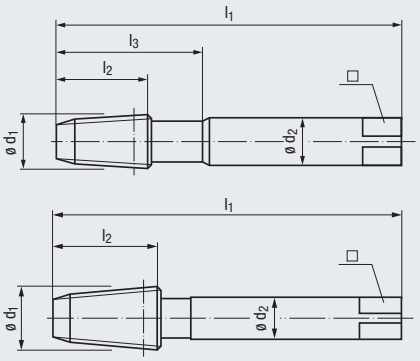
Class of Fit				
Coating		TIN		TIN
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics				
	C / 2-3	C / 2-3	C / 2-3	C / 2-3
	E / O	E / O	E / O	E / O
Applications – Material	P 1.1-2.1 K 1.1-2 N 2.2-3	P 1.1-2.1 K 1.1-2 N 2.2-3	P 1.1-4.1 M 1.1-3.1 K 2.1-4.2 N 2.4-6	P 1.1-4.1 M 1.1-3.1 K 2.1-4.2 N 2.4-6

Nominal Size ø d_1	T.P.I.	inch l_1		l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification AW181000 Rekord A-STEEL	Flutes	AW181400 Rekord A-STEEL TIN	Flutes	AW193000 Rekord A-VA-AZ	Flutes	AW193100 Rekord A-VA-AZ TIN	Flutes
1/16	27	2 1/8	2.13	0.69	0.925	0.3125	0.234	.5763	●	4	●	4	●	3	●	3
1/8	27	2 1/8	2.13	0.75	0.984	0.4375	0.328	.5764	●	5	●	5	●	3	●	3
1/4	18	2 7/16	2.44	1.06	1.280	0.5625	0.421	.5765	●	5	●	5	●	3	●	3
3/8	18	2 9/16	2.56	1.06	1.339	0.7000	0.531	.5766	●	5	●	5	●	3	●	3
1/2	14	3 1/8	3.13	1.38	—	0.6875	0.515	.5767	●	5	●	5	●	5	●	5
3/4	14	3 1/4	3.25	1.38	—	0.9063	0.679	.5768	●	6	●	6	●	5	●	5
1	11 1/2	3 3/4	3.75	1.75	—	1.1250	0.843	.5769	●	6	●	6	●	5	●	5
1 1/4	11 1/2	4	4.00	1.75	—	1.3125	0.984	.5770	●	6	●	6				
1 1/2	11 1/2	4 1/4	4.25	1.75	—	1.5000	1.125	.5771	●	7	●	7				
2	11 1/2	4 1/2	4.50	1.75	—	1.8750	1.406	.5772	●	7	●	7				

Taper reamers for taper holes 1:16, see page 118

● = In stock
★ = Allow 7 days for delivery

ANSI Length · ANSI Shank



Reinforced Shank
(1/16 - 3/8)

Reduced Shank
(1/2 - 2)

NPT

American Tapered Pipe Thread, ANSI/ASME B1.20.1

For threads **with dryseal material**, taper 1:16

VA
Stainless Steel Materials

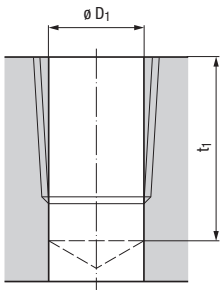
Class of Fit					
Coating		TIN	TICN		TIN
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics	R15	R15	R15	R15	R15
	C / 2-3	C / 2-3	C / 2-3	C / 2-3	C / 2-3
	E / O	E / O	E / O	E / O	E / O
Applications – Material	P 1.1-3.1	P 1.1-3.1	P 1.1-3.1	P 1.1-3.1	P 1.1-3.1
	M 1.1-3.1	M 1.1-3.1	M 1.1-3.1	M 1.1-3.1	M 1.1-3.1

Nominal Size ø d_1	T.P.I.	inch l_1		l_2	l_3	ø d_2	□	Dimens. ID	AW483000 Rekord D-VA	Flutes	AW483100 Rekord D-VA TIN	Flutes	AW889300 Rekord D-VA-IKZN TICN	Flutes	AW493000 Rekord D-VA-AZ	Flutes	AW493100 Rekord D-VA-AZ TIN	Flutes
1/16	27	2 1/8	2.13	0.69	0.925	0.3125	0.234	.5763	●	3	●	3	●	3	●	3	●	3
1/8	27	2 1/8	2.13	0.75	0.984	0.4375	0.328	.5764	●	3	●	3	●	3	●	3	●	3
1/4	18	2 7/16	2.44	1.06	1.280	0.5625	0.421	.5765	●	3	●	3	●	3	●	3	●	3
3/8	18	2 9/16	2.56	1.06	1.339	0.7000	0.531	.5766	●	3	●	3	●	3	●	3	●	3
1/2	14	3 1/8	3.13	1.38	—	0.6875	0.515	.5767	●	5	●	5	●	5	●	5	●	5
3/4	14	3 1/4	3.25	1.38	—	0.9063	0.679	.5768	●	5	●	5	●	5	●	5	●	5
1	11 1/2	3 3/4	3.75	1.75	—	1.1250	0.843	.5769	●	5	●	5	●	5	●	5	●	5
1 1/4	11 1/2	4	4.00	1.75	—	1.3125	0.984	.5770	●	5	●	5						
1 1/2	11 1/2	4 1/4	4.25	1.75	—	1.5000	1.125	.5771	●	5	●	5						
2	11 1/2	4 1/2	4.50	1.75	—	1.8750	1.406	.5772	●	7	●	7						

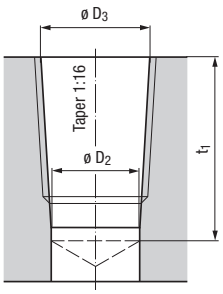
Taper reamers for taper holes 1:16, see page 118

Thread Hole Preparatory Diameters for Tapered Pipe Thread NPT, Taper 1:16

A) Cylindrical preparation of thread hole



B) Tapered preparation of thread hole

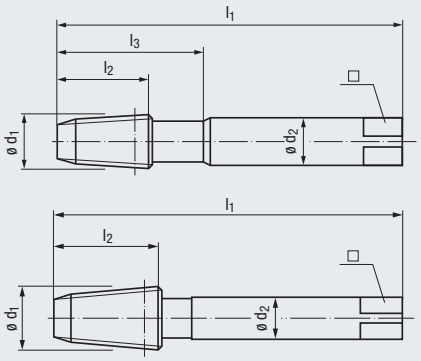


Nominal Size ø d_1	T.P.I.	inch ø D_1	ø D_2	ø D_3 (+0.002)	t_1
1/16	27	0.2421	0.2343	0.2516	0.4646
1/8	27	0.3346	0.3268	0.3441	0.4685
1/4	18	0.4331	0.4232	0.4472	0.6850
3/8	18	0.5669	0.5571	0.5827	0.6969
1/2	14	0.7008	0.6870	0.7213	0.9094
3/4	14	0.9114	0.8976	0.9319	0.9291
1	11 1/2	1.1437	1.1280	1.1689	1.1181
1 1/4	11 1/2	1.4882	1.4705	1.5138	1.1378
1 1/2	11 1/2	1.7264	1.7106	1.7528	1.1378
2	11 1/2	2.1988	2.1831	2.2268	1.1535

The minimum drilling depth t_1 includes the reach of screw by hand L_1 and the effective depth L_3 to ANSI/ASME B1.20.1 as well as the chamfer of the tap. Additional drilling-down has to be determined by the user according to the construction of the workpiece. For series production it is recommended that the minor thread dia. be made as per B. Special taps are required for blind holes where the minimum depths t_1 as listed in the above table cannot be met. In this case please supply a sketch with blind hole dimensions along with the order.

Ordering Example: **AW483000.5763**

ANSI Length · ANSI Shank



Reinforced Shank
(1/16 - 3/8)

Reduced Shank
(1/2 - 2)

NI
Nickel Alloys

NPT

American Tapered Pipe Thread, ANSI/ASME B1.20.1

For threads **with dryseal material**, taper 1:16

Class of Fit	
Coating	TICN
Cutting Material	**HSSE-PM**
Technical Characteristics	R10
	C / 2-3
	O / P
Applications – Material	M 2.1-4.1
	S 2.3, 2.5-6

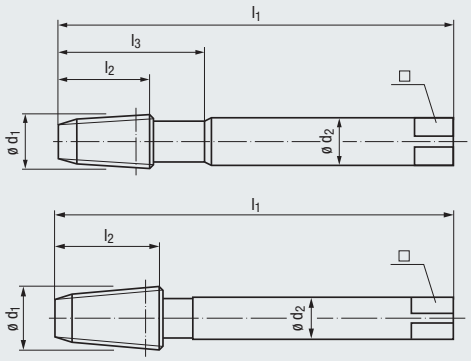
Tool Identification	AW79J400

Nominal Size ø d_1	T.P.I.	inch l_1		l_2	l_3	ø d_2	□	Dimens. ID	Rekord D-R10-NI TICN	Flutes
1/16	27	2 1/8	2.13	0.69	0.925	0.3125	0.234	**.5763**	●	3
1/8	27	2 1/8	2.13	0.75	0.984	0.4375	0.328	**.5764**	●	3
1/4	18	2 7/16	2.44	1.06	1.280	0.5625	0.421	**.5765**	●	3
3/8	18	2 9/16	2.56	1.06	1.339	0.7000	0.531	**.5766**	●	4
1/2	14	3 1/8	3.13	1.38	—	0.6875	0.515	**.5767**	●	4
3/4	14	3 1/4	3.25	1.38	—	0.9063	0.679	**.5768**	●	4
1	11 1/2	3 3/4	3.75	1.75	—	1.1250	0.843	**.5769**	●	4
1 1/4	11 1/2	4	4.00	1.75	—	1.3125	0.984	**.5770**	●	6
1 1/2	11 1/2	4 1/4	4.25	1.75	—	1.5000	1.125	**.5771**	●	6
2	11 1/2	4 1/2	4.50	1.75	—	1.8750	1.406	**.5772**	●	6

Taper reamers for taper holes 1:16, see page 118

● = In stock
★ = Allow 7 days for delivery

Extra Length · ANSI Shank



NPTF

American Tapered Pipe Thread, ANSI/ASME B1.20.3

For threads **without dryseal material**, taper 1:16

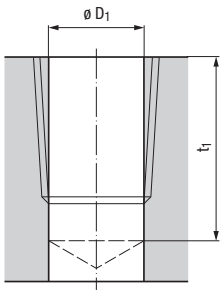
	STEEL Steel Materials			VA Stainless Steel Materials	
Class of Fit					
Coating		TIN			TIN
Cutting Material	HSS Extra	HSS Extra		HSS Extra	HSS Extra
Technical Characteristics					
	C / 2-3	C / 2-3		C / 2-3	C / 2-3
	E / O	E / O		E / O	E / O
Applications – Material	P 1.1-2.1 K 1.1-2 N 2.2-3	P 1.1-2.1 K 1.1-2 N 2.2-3		P 1.1-4.1 M 1.1-3.1 K 2.1-4.2 N 2.4-6	P 1.1-4.1 M 1.1-3.1 K 2.1-4.2 N 2.4-6

Tool Identification								CW181000		CW181400			CW193000		CW193100	
Nominal Size ø d_1	T.P.I.	l_1	l_2	inch l_3	ø d_2	□	Dimens. ID	Rekord 2A-STEEL	Flutes	Rekord 2A-STEEL TIN	Flutes		Rekord 2A-VA-AZ	Flutes	Rekord 2A-VA-AZ TIN	Flutes
1/16	27	3.543	0.69	1.161	0.3125	0.234	.5782	●	4	●	4		●	3	●	3
1/8	27	3.937	0.75	1.299	0.4375	0.328	.5783	●	5	●	5		●	3	●	3
1/4	18	3.937	1.06	1.772	0.5625	0.421	.5784	●	5	●	5		●	3	●	3
3/8	18	4.331	1.06	1.850	0.7000	0.531	.5785	●	5	●	5		●	3	●	3
1/2	14	5.512	1.38	—	0.6875	0.515	.5786	●	5	●	5		●	5	●	5
3/4	14	5.512	1.38	—	0.9063	0.679	.5787	●	6	●	6		●	5	●	5
1	11 1/2	6.299	1.75	—	1.1250	0.843	.5788	●	6	●	6		●	5	●	5
1 1/4	11 1/2	6.693	1.75	—	1.3125	0.984	.5789	●	6	●	6		●	5	●	5
1 1/2	11 1/2	7.480	1.75	—	1.5000	1.125	.5790	●	7	●	7		●	5	●	5
2	11 1/2	7.874	1.75	—	1.8750	1.406	.5791	●	7	●	7		●	7	●	7

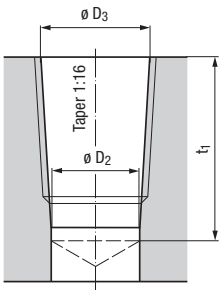
Taper reamers for taper holes 1:16, see page 118

Thread Hole Preparatory Diameters for Tapered Pipe Thread NPTF, Taper 1:16

A) Cylindrical preparation of thread hole



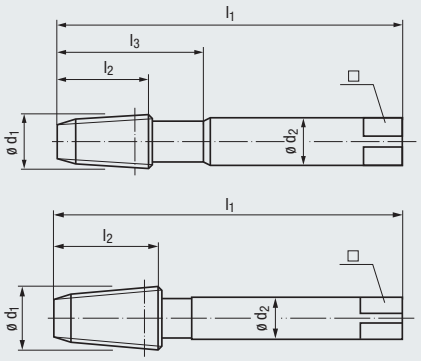
B) Tapered preparation of thread hole



Nominal Size ø d_1	T.P.I.	inch ø D_1	ø D_2	ø D_3 (+0.002)	t_1
1/16	27	0.2402	0.2343	0.2524	0.4646
1/8	27	0.3327	0.3268	0.3449	0.4685
1/4	18	0.4291	0.4232	0.4488	0.6850
3/8	18	0.5630	0.5571	0.5843	0.6969
1/2	14	0.6929	0.6870	0.7217	0.9094
3/4	14	0.9055	0.8976	0.9323	0.9291
1	11 1/2	1.1319	1.1280	1.1701	1.1181
1 1/4	11 1/2	1.4764	1.4705	1.5150	1.1378
1 1/2	11 1/2	1.7224	1.7106	1.7539	1.1378
2	11 1/2	2.1949	2.1831	2.2280	1.1535

The minimum drilling depth t_1 includes the reach of screw by hand L_1 and the effective depth L_3 to ANSI B1.20.3 as well as the chamfer of the tap. Additional drilling-down has to be determined by the user according to the construction of the workpiece. For series production it is recommended that the minor thread dia. be made as per B. Special taps are required for blind holes where the minimum depths t_1 as listed in the above table cannot be met. In this case please supply a sketch with blind hole dimensions along with the order.

ANSI Length · ANSI Shank



NPTF

American Tapered Pipe Thread, ANSI/ASME B1.20.3

For threads **without dryseal material**, taper 1:16

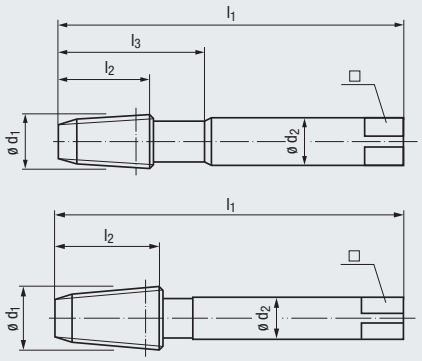
	STEEL Steel Materials			VA Stainless Steel Materials	
Class of Fit					
Coating		TIN			TIN
Cutting Material	HSS Extra	HSS Extra		HSS Extra	HSS Extra
Technical Characteristics					
	C / 2-3	C / 2-3		C / 2-3	C / 2-3
	E / O	E / O		E / O	E / O
Applications – Material	P 1.1-2.1 K 1.1-2 N 2.2-3	P 1.1-2.1 K 1.1-2 N 2.2-3		P 1.1-4.1 M 1.1-3.1 K 2.1-4.2 N 2.4-6	P 1.1-4.1 M 1.1-3.1 K 2.1-4.2 N 2.4-6
Tool Identification	**AW181000**	**AW181400**		**AW193000**	**AW193100**

Nominal Size ø d_1	T.P.I.	inch l_1		l_2	l_3	ø d_2	□	Dimens. ID	Rekord A-STEEL	Flutes	Rekord A-STEEL TIN	Flutes	Rekord A-VA-AZ	Flutes	Rekord A-VA-AZ TIN	Flutes
1/16	27	2 1/8	2.13	0.69	0.925	0.3125	0.234	.5782	●	4	●	4	●	3	●	3
1/8	27	2 1/8	2.13	0.75	0.984	0.4375	0.328	.5783	●	5	●	5	●	3	●	3
1/4	18	2 7/16	2.44	1.06	1.280	0.5625	0.421	.5784	●	5	●	5	●	3	●	3
3/8	18	2 9/16	2.56	1.06	1.339	0.7000	0.531	.5785	●	5	●	5	●	3	●	3
1/2	14	3 1/8	3.13	1.38	—	0.6875	0.515	.5786	●	5	●	5	●	5	●	5
3/4	14	3 1/4	3.25	1.38	—	0.9063	0.679	.5787	●	6	●	6	●	5	●	5
1	11 1/2	3 3/4	3.75	1.75	—	1.1250	0.843	.5788	●	6	●	6	●	5	●	5
1 1/4	11 1/2	4	4.00	1.75	—	1.3125	0.984	.5789	●	6	●	6	●	5	●	5
1 1/2	11 1/2	4 1/4	4.25	1.75	—	1.5000	1.125	.5790	●	7	●	7	●	5	●	5
2	11 1/2	4 1/2	4.50	1.75	—	1.8750	1.406	.5791	●	7	●	7	●	7	●	7

Taper reamers for taper holes 1:16, see page 118

● = In stock
★ = Allow 7 days for delivery

ANSI Length · ANSI Shank



Reinforced Shank
(1/16 - 3/8)

Reduced Shank
(1/2 - 2)

VA
Stainless Steel Materials

NPTF

American Tapered Pipe Thread, ANSI/ASME B1.20.3

For threads **without dryseal material**, taper 1:16

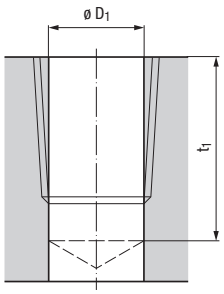
Class of Fit					
Coating		TIN	TICN		TIN
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics	R15	R15	R15	R15	R15
	C / 2-3	C / 2-3	C / 2-3	C / 2-3	C / 2-3
	E / O	E / O	E / O	E / O	E / O
Applications – Material	P 1.1-3.1	P 1.1-3.1	P 1.1-3.1	P 1.1-3.1	P 1.1-3.1
	M 1.1-3.1	M 1.1-3.1	M 1.1-3.1	M 1.1-3.1	M 1.1-3.1

Nominal Size ø d_1	T.P.I.	inch l_1		l_2	l_3	ø d_2	□	Dimens. ID	AW483000 Rekord D-VA	Flutes	AW483100 Rekord D-VA TIN	Flutes	AW889300 Rekord D-VA-IKZN TICN	Flutes	AW493000 Rekord D-VA-AZ	Flutes	AW493100 Rekord D-VA-AZ TIN	Flutes
1/16	27	2 1/8	2.13	0.69	0.925	0.3125	0.234	.5782	●	3	●	3	●	3	●	3	●	3
1/8	27	2 1/8	2.13	0.75	0.984	0.4375	0.328	.5783	●	3	●	3	●	3	●	3	●	3
1/4	18	2 7/16	2.44	1.06	1.280	0.5625	0.421	.5784	●	3	●	3	●	3	●	3	●	3
3/8	18	2 9/16	2.56	1.06	1.339	0.7000	0.531	.5785	●	3	●	3	●	3	●	3	●	3
1/2	14	3 1/8	3.13	1.38	—	0.6875	0.515	.5786	●	5	●	5	●	5	●	5	●	5
3/4	14	3 1/4	3.25	1.38	—	0.9063	0.679	.5787	●	5	●	5	●	5	●	5	●	5
1	11 1/2	3 3/4	3.75	1.75	—	1.1250	0.843	.5788	●	5	●	5	●	5	●	5	●	5
1 1/4	11 1/2	4	4.00	1.75	—	1.3125	0.984	.5789	●	5	●	5						
1 1/2	11 1/2	4 1/4	4.25	1.75	—	1.5000	1.125	.5790	●	5	●	5						
2	11 1/2	4 1/2	4.50	1.75	—	1.8750	1.406	.5791	●	7	●	7						

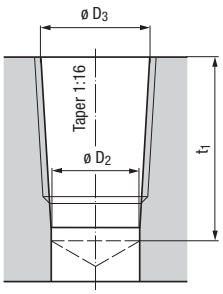
Taper reamers for taper holes 1:16, see page 118

Thread Hole Preparatory Diameters for Tapered Pipe Thread NPTF, Taper 1:16

A) Cylindrical preparation of thread hole



B) Tapered preparation of thread hole

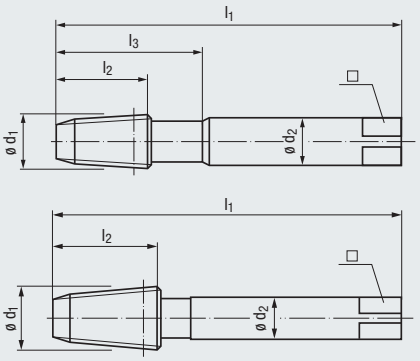


Nominal Size ø d_1	T.P.I.	inch ø D_1	ø D_2	ø D_3 (+0.002)	t_1
1/16	27	0.2402	0.2343	0.2524	0.4646
1/8	27	0.3327	0.3268	0.3449	0.4685
1/4	18	0.4291	0.4232	0.4488	0.6850
3/8	18	0.5630	0.5571	0.5843	0.6969
1/2	14	0.6929	0.6870	0.7217	0.9094
3/4	14	0.9055	0.8976	0.9323	0.9291
1	11 1/2	1.1319	1.1280	1.1701	1.1181
1 1/4	11 1/2	1.4764	1.4705	1.5150	1.1378
1 1/2	11 1/2	1.7224	1.7106	1.7539	1.1378
2	11 1/2	2.1949	2.1831	2.2280	1.1535

The minimum drilling depth t_1 includes the reach of screw by hand L_1 and the effective depth L_3 to ANSI B1.20.3 as well as the chamfer of the tap. Additional drilling-down has to be determined by the user according to the construction of the workpiece. For series production it is recommended that the minor thread dia. be made as per B. Special taps are required for blind holes where the minimum depths t_1 as listed in the above table cannot be met. In this case please supply a sketch with blind hole dimensions along with the order.

Ordering Example: **AW483000.5782**

ANSI Length · ANSI Shank



Reinforced Shank
(1/16 - 3/8)

Reduced Shank
(1/2 - 2)

NI
Nickel Alloys

NPTF

American Tapered Pipe Thread, ANSI/ASME B1.20.3

For threads **without dryseal material**, taper 1:16

Class of Fit	
Coating	TICN
Cutting Material	**HSSE-PM**
Technical Characteristics	R10
	C / 2-3
	O / P
Applications – Material	M 2.1-4.1
	S 2.3, 2.5-6

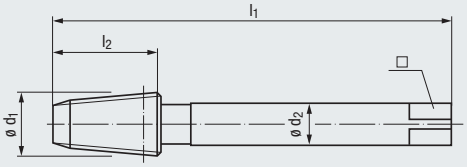
Tool Identification	AW79J400

Nominal Size ø d_1	T.P.I.	inch l_1		l_2	l_3	ø d_2	□	Dimens. ID	Rekord D-R10-NI TICN	Flutes
1/16	27	2 1/8	2.13	0.69	0.925	0.3125	0.234	.5782	●	3
1/8	27	2 1/8	2.13	0.75	0.984	0.4375	0.328	.5783	●	3
1/4	18	2 7/16	2.44	1.06	1.280	0.5625	0.421	.5784	●	3
3/8	18	2 9/16	2.56	1.06	1.339	0.7000	0.531	.5785	●	4
1/2	14	3 1/8	3.13	1.38	—	0.6875	0.515	.5786	●	4
3/4	14	3 1/4	3.25	1.38	—	0.9063	0.679	.5787	●	4
1	11 1/2	3 3/4	3.75	1.75	—	1.1250	0.843	.5788	●	4
1 1/4	11 1/2	4	4.00	1.75	—	1.3125	0.984	.5789	●	6
1 1/2	11 1/2	4 1/4	4.25	1.75	—	1.5000	1.125	.5790	●	6
2	11 1/2	4 1/2	4.50	1.75	—	1.8750	1.406	.5791	●	6

Taper reamers for taper holes 1:16, see page 118

● = In stock
★ = Allow 7 days for delivery

DIN Length · DIN Shank



Reduced Shank

VA
Stainless Steel Materials

new

Rc (BSPT)

Tapered Whitworth Pipe Thread, DIN EN ISO 10226-2 and ISO 7-1

Where pressure-tight joints are made on the threads, taper 1:16

Class of Fit	
Coating	
Cutting Material	HSS Extra
Technical Characteristics	
	C / 2-3
	E / 0
Applications – Material	P 1.1-4.1 M 1.1-2.1 K 2.1-4.2 N 1.4-5, 2.4-6

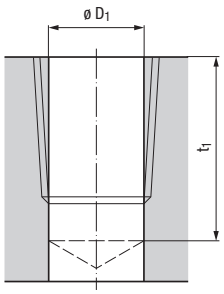
Nominal Size ø d_1	T.P.I.	mm l_1	l_2	ø d_2	□	Dimens. ID	Rekord 2A-VA	Flutes
Rc 1/4	19	100	18	11	9	**.4116**	★	3
Rc 3/8	19	110	18	14	11	**.4117**	★	5
Rc 1/2	14	140	23	16	12	**.4118**	★	5
Rc 3/4	14	150	24	20	16	**.4119**	★	5
Rc 1	11	170	30	25	20	**.4120**	★	7

Tool Identification **C0183000**

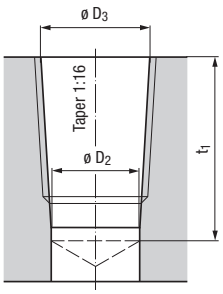
Taper reamers for taper holes 1:16, see page 118

Thread Hole Preparatory Diameters for Tapered Pipe Thread Rc (BSPT), Taper 1:16

A) Cylindrical preparation of thread hole



B) Tapered preparation of thread hole



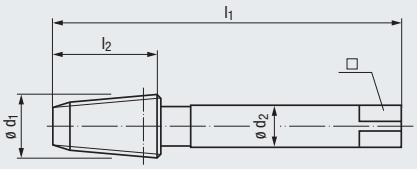
Nominal Size ø d_1	T.P.I.	mm ø D_1	ø D_2	ø D_3 (JS11)	t_1
Rc 1/16	28	6.15	6.10	6.56	11.1
Rc 1/8	28	8.15	8.10	8.57	11.1
Rc 1/4	19	10.85	10.75	11.45	16.3
Rc 3/8	19	14.30	14.25	14.95	16.7
Rc 1/2	14	17.80	17.70	18.63	22.3
Rc 3/4	14	23.20	23.10	24.12	23.6
Rc 1	11	29.20	29.10	30.29	28.3

The minimum drilling depth t_1 includes the reach of screw by hand L_1 and the effective depth L_3 to DIN EN ISO 10226-2 and ISO 7-1 as well as the chamfer of the tap. Additional drilling-down has to be determined by the user according to the construction of the workpiece. For series production it is recommended that the minor thread dia. be made as per B. Special taps are required for blind holes where the minimum depths t_1 as listed in the above table cannot be met. In this case please supply a sketch with blind hole dimensions along with the order.

Ordering Example: **C0183000.4116**

DIN Length · DIN Shank

STEEL
Steel Materials



Reduced Shank

Rc (BSPT)

Tapered Whitworth Pipe Thread, DIN EN ISO 10226-2 and ISO 7-1

Where pressure-tight joints are made on the threads, taper 1:16

Class of Fit	
Coating	
Cutting Material	HSS Extra
Technical Characteristics	C / 2-3
	E / 0
Applications – Material	P 1.1-2.1
	K 1.1-2
	N 2.2-3

Nominal Size ø d_1	T.P.I.	mm l_1	l_2	ø d_2	□	Dimens. ID	Rekord A-STEEL	Flutes
Rc 1/16	28	63	12	6	4.9	.4114	★	4
Rc 1/8	28	63	12	7	5.5	.4115	★	5
Rc 1/4	19	63	18	11	9	.4116	★	5
Rc 3/8	19	70	18	12	9	.4117	★	5
Rc 1/2	14	80	23	16	12	.4118	★	5
Rc 3/4	14	100	24	20	16	.4119	★	6
Rc 1	11	110	30	25	20	.4120	★	6

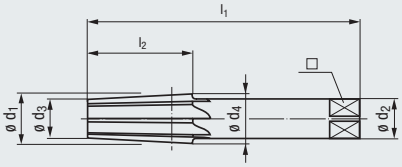
Tool Identification A0181000

Taper reamers for taper holes 1:16, see page 118

● = In stock
★ = Allow 7 days for delivery

For the Preparation of a Tapered Hole

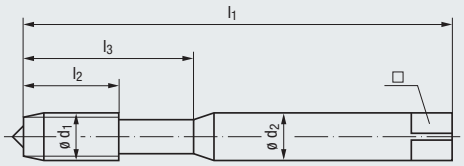
For tapered pipe threads NPT, NPTF, Rc (BSPT), taper 1:16



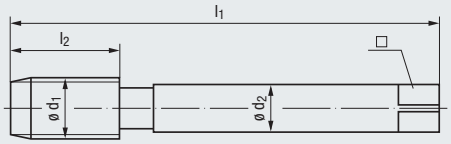
| | | |

DIN Length · ANSI Shank

Overall length acc. to DIN 371, DIN 376



Reinforced Shank
(STI-No.2 - STI 5/16)



Reduced Shank
(STI 3/8 - STI 1)

STI-UNC

Unified Coarse Thread
ASME B18.29.1

For wire thread inserts

VA Stainless Steel Materials

AL Aluminum Wrought Alloys

	BU203010	BU20C310	BU20S810	BU51S810
Class of Fit	3B	3B	3B	3B
Coating	NT	GLT-1	GLT-8	GLT-8
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics				R45
	B / 4-5	B / 4-5	B / approx. 3	**E / 1.5-2**
	E / O / P	E / O / P	E / O	E / O
Thread Depth and Hole Shape	max. 3 x d_1		max. 3 x d_1	max. 2.5 x d_1
Applications – Material	P 1.1-3.1 M 1.1-2.1 K 2.1 N 2.2, 2.5-6	P 1.1-4.1 M 1.1-3.1 K 2.1 N 2.2	N 1.1-4	N 1.1-4

Reinforced Shank

Nominal Size ø d_1	T.P.I.	inch ø d_1	l_1	l_2	l_3	ø d_2	□	Dimens. ID	BU203010 Rekord 1B-VA NT	Flutes	BU20C310 Rekord 1B-VA GLT-1	Flutes	BU20S810 Rekord 1B-AL GLT-8	Flutes	BU51S810 Enorm 1-AL/E GLT-8	Flutes
STI-No. 2	56	0.1092	2.205	0.433	0.709	0.141	0.110	0.0906	.5609						●	2
STI-No. 4	40	0.1445	2.205	0.472	0.787	0.141	0.110	0.1220	.5611	●	3	●	3	●	2	●	2
STI-No. 5	40	0.1575	2.480	0.512	0.827	0.168	0.131	0.1339	.5612	●	3	●	3				
STI-No. 6	32	0.1786	2.756	0.512	0.984	0.194	0.152	0.1496	.5613	●	3	●	3	●	2	●	2
STI-No. 8	32	0.2046	3.150	0.512	1.142	0.220	0.165	0.1732	.5614	●	3	●	3	●	2	●	2
STI-No. 10	24	0.2441	3.150	0.669	1.181	0.255	0.191	0.2047	.5615	●	3	●	3	●	2	●	2
STI-No. 12	24	0.2701	3.543	0.669	1.260	0.318	0.238	0.2283	.5616	●	3	●	3				
STI 1/4	20	0.3150	3.543	0.787	1.378	0.318	0.238	0.2638	.5617	●	3	●	3	●	2	●	2
STI 5/16	18	0.3847	3.937	0.866	1.535	0.381	0.286	0.3307	.5618	●	3	●	3	●	3	●	2

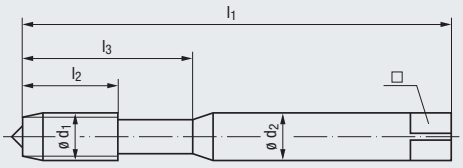
Reduced Shank

Nominal Size ø d_1	T.P.I.	inch ø d_1	l_1	l_2	l_3	ø d_2	□	Dimens. ID	CU203010 Rekord 2B-VA NT	Flutes	CU20C310 Rekord 2B-VA GLT-1	Flutes	CU20S810 Rekord 2B-AL GLT-8	Flutes	CU51S810 Enorm 2-AL/E GLT-8	Flutes
STI 3/8	16	0.4562	3.937	0.866	—	0.367	0.275	0.3937	.5619	●	3	●	3	●	3	●	3
STI 7/16	14	0.5303	4.331	1.024	—	0.429	0.322	0.4567	.5620	●	3	●	3			●	3
STI 1/2	13	0.5999	4.331	1.063	—	0.480	0.360	0.5236	.5621	●	3	●	3	●	3	●	3
STI 9/16	12	0.6708	4.921	1.024	—	0.542	0.406	0.5866	.5622								
STI 5/8	11	0.7431	4.921	1.181	—	0.590	0.442	0.6496	.5623	●	3	●	3				
STI 3/4	10	0.8799	5.512	1.260	—	0.697	0.523	0.7776	.5624	●	3	●	3				
STI 7/8	9	1.0193	6.299	1.417	—	0.800	0.600	0.9055	.5625			●	3				
STI 1	8	1.1624	7.087	1.575	—	1.021	0.766	1.0335	.5626			●	4				

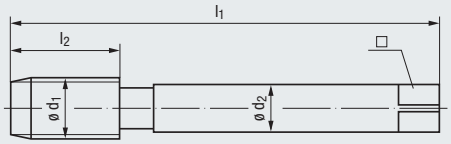
● = In stock
★ = Allow 7 days for delivery

DIN Length · ANSI Shank

Overall length acc. to DIN 371, DIN 376



Reinforced Shank
(STI-No.2 - STI 5/16)

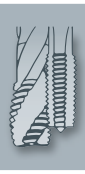


Reduced Shank
(STI 3/8 - STI 1)

STI-UNC

Unified Coarse Thread
ASME B18.29.1

For wire thread inserts



	TI Titanium		Z CNC-Controlled Machines		
				new	new
Class of Fit	3BX		3B	3B	3B
Coating	NT2			TIN	GLT-1
Cutting Material	HSS Extra		HSS Extra	HSS Extra	HSS Extra
Technical Characteristics	R15		R45	R45	R45
	C / 2-3		E / 1.5-2	E / 1.5-2	E / 1.5-2
	E / O / P		E / O / P	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 2 x d_1		max. 3 x d_1		
Applications – Material	P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4		P 1.1-4.1 M 1.1-2.1 N 2.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1

Reinforced Shank

Nominal Size ø d_1	T.P.I.	inch ø d_1	l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification BU456011 Rekord 1D-TI NT2	Flutes		BU513510 Enorm 1-Z/E	Flutes		BU513710 Enorm 1-Z/E TIN	Flutes		BU51C410 Enorm 1-Z/E GLT-1	Flutes
STI-No. 2	56	0.1092	2.205	0.433	0.709	0.141	0.110	0.0906	.5609			●	2					●	2
STI-No. 4	40	0.1445	2.205	0.472	0.787	0.141	0.110	0.1220	.5611	●	3	●	3		●	3		●	3
STI-No. 5	40	0.1575	2.480	0.512	0.827	0.168	0.131	0.1339	.5612	●	3	●	3					●	3
STI-No. 6	32	0.1786	2.756	0.512	0.984	0.194	0.152	0.1496	.5613	●	3	●	3		●	3		●	3
STI-No. 8	32	0.2046	3.150	0.512	1.142	0.220	0.165	0.1732	.5614	●	3	●	3		●	3		●	3
STI-No. 10	24	0.2441	3.150	0.669	1.181	0.255	0.191	0.2047	.5615	●	3	●	3		●	3		●	3
STI-No. 12	24	0.2701	3.543	0.669	1.260	0.318	0.238	0.2283	.5616	●	3	●	3					●	3
STI 1/4	20	0.3150	3.543	0.787	1.378	0.318	0.238	0.2638	.5617	●	3	●	3		●	3		●	3
STI 5/16	18	0.3847	3.937	0.866	1.535	0.381	0.286	0.3307	.5618	●	3	●	3		●	3		●	3

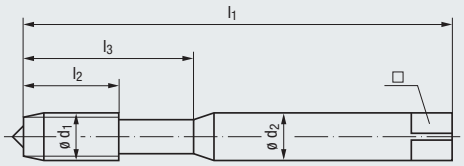
Reduced Shank

Nominal Size ø d_1	T.P.I.	inch ø d_1	l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification CU456011 Rekord 2D-TI NT2	Flutes		CU513510 Enorm 2-Z/E	Flutes		CU513710 Enorm 2-Z/E TIN	Flutes		CU51C410 Enorm 2-Z/E GLT-1	Flutes
STI 3/8	16	0.4562	3.937	0.866	—	0.367	0.275	0.3937	.5619	●	3	●	5		●	5		●	5
STI 7/16	14	0.5303	4.331	1.024	—	0.429	0.322	0.4567	.5620	●	3	●	4					●	4
STI 1/2	13	0.5999	4.331	1.063	—	0.480	0.360	0.5236	.5621	●	3	●	4		●	4		●	4
STI 9/16	12	0.6708	4.921	1.024	—	0.542	0.406	0.5866	.5622	●	3								
STI 5/8	11	0.7431	4.921	1.181	—	0.590	0.442	0.6496	.5623	●	3	●	5		●	5		●	5
STI 3/4	10	0.8799	5.512	1.260	—	0.697	0.523	0.7776	.5624	●	3	●	5		●	5		●	5
STI 7/8	9	1.0193	6.299	1.417	—	0.800	0.600	0.9055	.5625									●	5
STI 1	8	1.1624	7.087	1.575	—	1.021	0.766	1.0335	.5626									●	5

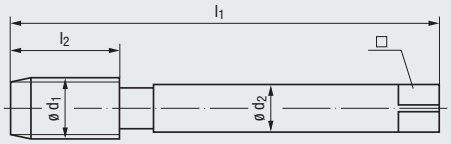
Ordering Example: **BU456011.5611**

DIN Length · ANSI Shank

Overall length acc. to DIN 371, DIN 374



Reinforced Shank
(STI-No.4 - STI 5/16)



Reduced Shank
(STI 3/8 - STI 1)

STI-UNF

Unified Fine Thread
ASME B18.29.1

For wire thread inserts

VA Stainless Steel Materials

new

AL Aluminum Wrought Alloys

new

new

	VA			AL	
Class of Fit	3B	3B		3B	3B
Coating	NT	GLT-1		GLT-8	GLT-8
Cutting Material	HSS Extra	HSS Extra		HSS Extra	HSS Extra
Technical Characteristics					R45
	B / 4-5	B / 4-5		B / approx. 3	**E / 1.5-2**
	E / O / P	E / O / P		E / O	E / O
Thread Depth and Hole Shape	max. 3 x d_1			max. 3 x d_1	max. 2.5 x d_1
Applications – Material	P 1.1-3.1 M 1.1-2.1 K 2.1 N 2.2, 2.5-6	P 1.1-4.1 M 1.1-3.1 K 2.1 N 2.2		N 1.1-4	N 1.1-4

Reinforced Shank

Nominal Size ø d_1	T.P.I.	inch ø d_1	l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification	BU203010 Rekord 1B-VA NT	Flutes	BU20C310 Rekord 1B-VA GLT-1	Flutes	BU20S810 Rekord 1B-AL GLT-8	Flutes	BU51S810 Enorm 1-AL/E GLT-8	Flutes
STI-No. 4	48	0.1391	2.205	0.472	0.787	0.141	0.110	0.1181	.5633	●	3	●	3			●	2
STI-No. 6	40	0.1705	2.480	0.512	0.827	0.168	0.131	0.1457	.5635	●	3	●	3	●	2	●	2
STI-No. 8	36	0.2001	3.150	0.512	1.142	0.220	0.165	0.1732	.5636	●	3	●	3	●	2	●	2
STI-No. 10	32	0.2306	3.150	0.512	1.181	0.255	0.191	0.2008	.5637	●	3	●	3	●	2	●	2
STI 1/4	28	0.2964	3.543	0.669	1.260	0.318	0.238	0.2598	.5639	●	3	●	3	●	2	●	2
STI 5/16	24	0.3666	3.937	0.709	1.535	0.381	0.286	0.3248	.5640	●	4	●	4	●	3	●	2

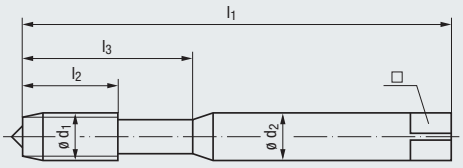
Reduced Shank

Nominal Size ø d_1	T.P.I.	inch ø d_1	l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification	CU203010 Rekord 2B-VA NT	Flutes	CU20C310 Rekord 2B-VA GLT-1	Flutes	CU20S810 Rekord 2B-AL GLT-8	Flutes	CU51S810 Enorm 2-AL/E GLT-8	Flutes
STI 3/8	24	0.4291	3.937	0.709	—	0.323	0.242	0.3858	.5641	●	4	●	4	●	4	●	3
STI 7/16	20	0.5025	3.937	0.866	—	0.367	0.275	0.4528	.5642	●	3	●	3			●	4
STI 1/2	20	0.5650	3.937	0.866	—	0.429	0.322	0.5157	.5643	●	3	●	3	●	3	●	4
STI 9/16	18	0.6347	3.937	0.866	—	0.480	0.360	0.5787	.5644	●	3	●	3				
STI 5/8	18	0.6972	4.331	0.984	—	0.542	0.406	0.6398	.5645	●	4	●	4				
STI 3/4	16	0.8312	4.921	0.984	—	0.652	0.489	0.7677	.5646	●	4	●	4				
STI 7/8	14	0.9677	5.512	1.102	—	0.800	0.600	0.8957	.5647			●	4				
STI 1	12	1.1083	5.986	1.181	—	0.896	0.672	1.0236	.5648			●	4				

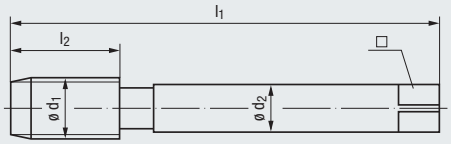
● = In stock
★ = Allow 7 days for delivery

DIN Length · ANSI Shank

Overall length acc. to DIN 371, DIN 374



Reinforced Shank
(STI-No.4 - STI 5/16)



Reduced Shank
(STI 3/8 - STI 1)

STI-UNF

Unified Fine Thread
ASME B18.29.1

For wire thread inserts

	TI Titanium		NI Nickel Alloys	
			new	
Class of Fit	3BX		3BX	
Coating	NT2		TICN	
Cutting Material	HSS Extra		HSSE-PM	
Technical Characteristics	R15		R10	
	C / 2-3		C / 2-3	
	E / O / P		O / P	
Thread Depth and Hole Shape	max. 2 x d_1		max. 2 x d_1	
Applications – Material	P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4		M 4.1 N 2.8 S 1.2-3 S 2.3, 2.5-6	

Reinforced Shank

Nominal Size ø d_1	T.P.I.	inch ø d_1	l_1	l_2	l_3	ø d_2	□	Tool Identification Dimens. ID	BU456011 Rekord 1D-TI NT2	Flutes	BU35J411 Rekord 1DF-NI-PM TICN	Flutes
STI-No. 4	48	0.1391	2.205	0.472	0.787	0.141	0.110	0.1181	.5633	●	3		
STI-No. 6	40	0.1705	2.480	0.512	0.827	0.168	0.131	0.1457	.5635	●	3		
STI-No. 8	36	0.2001	3.150	0.512	1.142	0.220	0.165	0.1732	.5636	●	3		
STI-No. 10	32	0.2306	3.150	0.512	1.181	0.255	0.191	0.2008	.5637	●	3	●	3
STI 1/4	28	0.2964	3.543	0.669	1.260	0.318	0.238	0.2598	.5639	●	3	●	3
STI 5/16	24	0.3666	3.937	0.709	1.535	0.381	0.286	0.3248	.5640	●	3	●	3

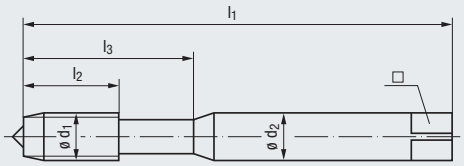
Reduced Shank

Nominal Size ø d_1	T.P.I.	inch ø d_1	l_1	l_2	l_3	ø d_2	□	Tool Identification Dimens. ID	CU456011 Rekord 2D-TI NT2	Flutes	CU35J411 Rekord 2DF-NI-PM TICN	Flutes
STI 3/8	24	0.4291	3.937	0.709	—	0.323	0.242	0.3858	.5641	●	3	●	3
STI 7/16	20	0.5025	3.937	0.866	—	0.367	0.275	0.4528	.5642	●	3	●	3
STI 1/2	20	0.5650	3.937	0.866	—	0.429	0.322	0.5157	.5643	●	3		
STI 9/16	18	0.6347	3.937	0.866	—	0.480	0.360	0.5787	.5644	●	3		
STI 5/8	18	0.6972	4.331	0.984	—	0.542	0.406	0.6398	.5645	●	4		
STI 3/4	16	0.8312	4.921	0.984	—	0.652	0.489	0.7677	.5646	●	4		
STI 7/8	14	0.9677	5.512	1.102	—	0.800	0.600	0.8957	.5647				
STI 1	12	1.1083	5.986	1.181	—	0.896	0.672	1.0236	.5648				

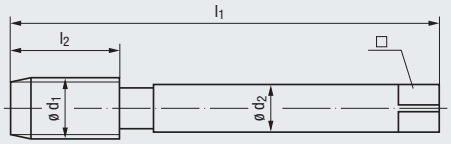
Ordering Example: **BU456011.5633**

DIN Length · ANSI Shank

Overall length acc. to DIN 371, DIN 374



Reinforced Shank
(STI-No.4 - STI 5/16)



Reduced Shank
(STI 3/8 - STI 1)

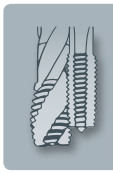
STI-UNF

Unified Fine Thread
ASME B18.29.1

For wire thread inserts

Z
CNC-Controlled Machines

Class of Fit	3B	3B	3B
Coating		TIN	GLT-1
Cutting Material	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics	R45	R45	R45
	E / 1.5-2	E / 1.5-2	E / 1.5-2
	E / O / P	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1		
Applications – Material	P 1.1-4.1 M 1.1-2.1 N 2.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1



Reinforced Shank

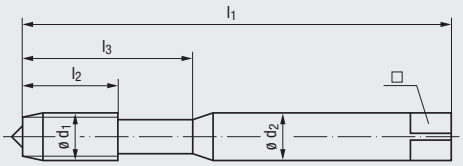
Nominal Size ø d_1	T.P.I.	inch ø d_1	l_1	l_2	l_3	ø d_2	□	Tool Identification	Dimens. ID	BU513510 Enorm 1-Z/E	Flutes	BU513710 Enorm 1-Z/E TIN	Flutes	BU51C410 Enorm 1-Z/E GLT-1	Flutes
STI-No. 4	48	0.1391	2.205	0.276	0.787	0.141	0.110	0.1181	.5633	●	3			●	3
STI-No. 6	40	0.1705	2.480	0.276	0.827	0.168	0.131	0.1457	.5635	●	3			●	3
STI-No. 8	36	0.2001	3.150	0.315	1.142	0.220	0.165	0.1732	.5636	●	3			●	3
STI-No. 10	32	0.2306	3.150	0.394	1.181	0.255	0.191	0.2008	.5637	●	3	●	3	●	3
STI 1/4	28	0.2964	3.543	0.394	1.260	0.318	0.238	0.2598	.5639	●	3	●	3	●	3
STI 5/16	24	0.3666	3.937	0.394	1.535	0.381	0.286	0.3248	.5640	●	3	●	3	●	3

Reduced Shank

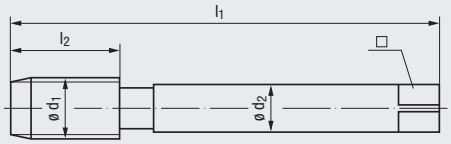
Nominal Size ø d_1	T.P.I.	inch ø d_1	l_1	l_2	l_3	ø d_2	□	Tool Identification	Dimens. ID	CU513510 Enorm 2-Z/E	Flutes	CU513710 Enorm 2-Z/E TIN	Flutes	CU51C410 Enorm 2-Z/E GLT-1	Flutes
STI 3/8	24	0.4291	3.937	0.394	—	0.323	0.242	0.3858	.5641	●	4	●	4	●	4
STI 7/16	20	0.5025	3.937	0.512	—	0.367	0.275	0.4528	.5642	●	5	●	5	●	5
STI 1/2	20	0.5650	3.937	0.591	—	0.429	0.322	0.5157	.5643	●	5	●	5	●	5
STI 9/16	18	0.6347	3.937	0.591	—	0.480	0.360	0.5787	.5644	●	5			●	5
STI 5/8	18	0.6972	4.331	0.669	—	0.542	0.406	0.6398	.5645	●	5	●	5	●	5
STI 3/4	16	0.8312	4.921	0.669	—	0.652	0.489	0.7677	.5646	●	5			●	5
STI 7/8	14	0.9677	5.512	0.787	—	0.800	0.600	0.8957	.5647					●	5
STI 1	12	1.1083	5.986	0.866	—	0.896	0.672	1.0236	.5648					●	5

● = In stock
★ = Allow 7 days for delivery

DIN Length · DIN Shank



Reinforced Shank
(STI-M2.5 - STI-M8)



Reduced Shank
(STI-M10 - STI-M20)

STI-M

ISO Metric Coarse Thread
DIN 8140-2

For wire thread inserts

	VA Stainless Steel Materials			AL Aluminum Wrought Alloys	
Class of Fit	6H mod.	6H mod.		6H mod.	6H mod.
Coating	NT	GLT-1		GLT-8	GLT-8
Cutting Material	HSS Extra	HSS Extra		HSS Extra	HSS Extra
Technical Characteristics					R45
	B / 4-5	B / 4-5		B / approx. 3	C / 2-3
	E / O / P	E / O / P		E / O	E / O
Thread Depth and Hole Shape	max. 3 x d_1			max. 3 x d_1	max. 2.5 x d_1
Applications – Material	P 1.1-3.1 M 1.1-2.1 K 2.1 N 2.2, 2.5-6	P 1.1-4.1 M 1.1-3.1 K 2.1 N 2.2		N 1.1-4	N 1.1-4

Reinforced Shank

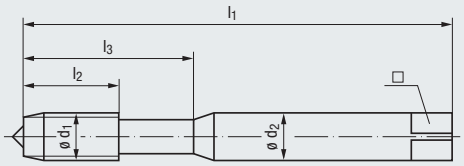
Nominal Size ø d_1	P	ø d_1	mm l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification B0203000 Rekord 1B-VA NT	Flutes	B020C300 Rekord 1B-VA GLT-1	Flutes	B020S800 Rekord 1B-AL GLT-8	Flutes	B050S800 Enorm 1-AL GLT-8	Flutes
STI-M 2.5	0.45	3.085	56	11	18	3.5	2.7	2.65	.0965	●	3	●	3	●	2	●	2
STI-M 3	0.5	3.650	63	10	21	4.5	3.4	3.15	.0966	●	3	●	3	●	2	●	2
STI-M 4	0.7	4.910	70	12	25	6	4.9	4.2	.0968	●	3	●	3	●	2	●	2
STI-M 5	0.8	6.040	80	13	30	6	4.9	5.25	.0970	●	3	●	3	●	2	●	2
STI-M 6	1	7.300	90	17	35	8	6.2	6.3	.0971	●	3	●	3	●	2	●	2
STI-M 8	1.25	9.624	100	18	39	10	8	8.4	.0973	●	3	●	3	●	3	●	2

Reduced Shank

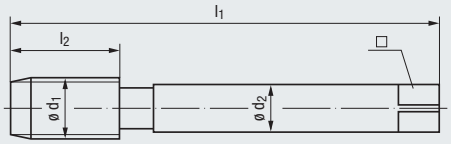
Nominal Size ø d_1	P	ø d_1	mm l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification C0203000 Rekord 2B-VA NT	Flutes	C020C300 Rekord 2B-VA GLT-1	Flutes	C020S800 Rekord 2B-AL GLT-8	Flutes
STI-M 10	1.5	11.948	100	22	—	9	7	10.5	.0975	●	3	●	3	●	3
STI-M 12	1.75	14.274	110	26	—	11	9	12.5	.0977	●	3	●	3	●	3
STI-M 14	2	16.598	110	27	—	12	9	14.5	.0978						
STI-M 16	2	18.598	125	27	—	14	11	16.5	.0979	●	3	●	3		
STI-M 18	2.5	21.248	140	32	—	18	14.5	18.75	.0980						
STI-M 20	2.5	23.248	160	34	—	18	14.5	20.75	.0981	●	3	●	3		

Ordering Example: **B0203000.0965**

DIN Length · DIN Shank



Reinforced Shank
(STI-M2.5 - STI-M8)



Reduced Shank
(STI-M10 - STI-M20)

Z
CNC-Controlled Machines

new

STI-M

ISO Metric Coarse Thread
DIN 8140-2

For wire thread inserts

Class of Fit	6H mod.	6H mod.	6H mod.
Coating			GLT-1
Cutting Material	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics	R45	R45	R45
	C / 2-3	**E / 1.5-2**	**E / 1.5-2**
	E / O / P	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1		
Applications – Material	P 1.1-4.1 M 1.1-2.1 N 2.1	P 1.1-4.1 M 1.1-2.1 N 2.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1

Reinforced Shank

Nominal Size ø d_1	P	ø d_1	l_1	mm l_2	l_3	ø d_2	□	Tool Identification		B0503500		B0513500		B051C400	
									Dimens. ID	Enorm 1-Z	Flutes	Enorm 1-Z/E	Flutes	Enorm 1-Z/E GLT-1	Flutes
STI-M 2.5	0.45	3.085	56	5	18	3.5	2.7	2.65	**.0965**	●	3	●	3	●	3
STI-M 3	0.5	3.650	63	5	21	4.5	3.4	3.15	**.0966**	●	3	●	3	●	3
STI-M 4	0.7	4.910	70	8	25	6	4.9	4.2	**.0968**	●	3	●	3	●	3
STI-M 5	0.8	6.040	80	8	30	6	4.9	5.25	**.0970**	●	3	●	3	●	3
STI-M 6	1	7.300	90	10	35	8	6.2	6.3	**.0971**	●	3	●	3	●	3
STI-M 8	1.25	9.624	100	16	39	10	8	8.4	**.0973**	●	3	●	3	●	3

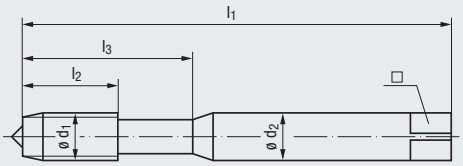
Reduced Shank

Nominal Size ø d_1	P	ø d_1	l_1	mm l_2	l_3	ø d_2	□	Tool Identification		C0503500		C0513500		C051C400	
									Dimens. ID	Enorm 2-Z	Flutes	Enorm 2-Z/E	Flutes	Enorm 2-Z/E GLT-1	Flutes
STI-M 10	1.5	11.948	100	15	—	9	7	10.5	**.0975**	●	5	●	5	●	5
STI-M 12	1.75	14.274	110	20	—	11	9	12.5	**.0977**	●	4	●	4	●	4
STI-M 14	2	16.598	110	20	—	12	9	14.5	**.0978**						
STI-M 16	2	18.598	125	20	—	14	11	16.5	**.0979**	●	5	●	5	●	5
STI-M 18	2.5	21.248	140	27	—	18	14.5	18.75	**.0980**						
STI-M 20	2.5	23.248	160	30	—	18	14.5	20.75	**.0981**	●	5	●	5	●	5

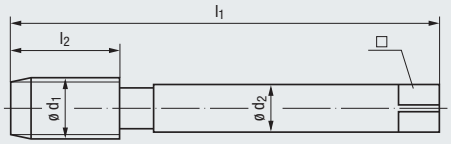
● = In stock
★ = Allow 7 days for delivery

DIN Length · ANSI Shank

Overall length acc. to DIN 371, DIN 376



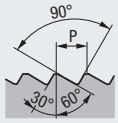
Reinforced Shank
(LK No.4 - LK 3/8)



Reduced Shank
(LK 7/16 - LK 1)

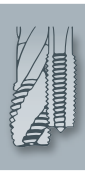
LK-UNC

BT



≥ 36 T.P.I.

Unified SELF-LOCK Coarse Thread
EMUGE Standard



	STEEL Steel Materials		TI Titanium	
Type	BT		BT	BT
Coating			TICN	TICN
Cutting Material	HSS Extra		HSS Extra	HSS Extra
Technical Characteristics			L15	R15
	B / 4-5		D / 4-5	C / 2-3
	E / O		E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1		max. 3 x d_1	max. 2 x d_1
Applications – Material	P 1.1-3.1 N 2.2		P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4	P 4.1-5.1 M 3.1-4.1 N 2.4-5, 2.7 S 1.1-2.2, 2.4

Reinforced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Tool Identification Dimens. ID	BU208900 Rekord 1B-STEEL-L	Flutes	BU309600 Rekord 1C-TI TICN	Flutes	BU459600 Rekord 1D-TI TICN	Flutes
LK No. 4	40	2.205	0.443	0.709	0.141	0.110	0.0965 **.5656**			●	2	●	2
LK No. 6	32	2.205	0.472	0.787	0.141	0.110	0.1142 **.5658**			●	3	●	3
LK No. 8	32	2.480	0.512	0.827	0.168	0.131	0.1417 **.5659**			●	3	●	3
LK No. 10	24	2.756	0.591	0.984	0.194	0.152	0.1575 **.5660**			●	3	●	3
LK No. 12	24	3.150	0.630	1.142	0.220	0.165	0.1850 **.5661**			●	3	●	3
LK 1/4	20	3.150	0.669	1.181	0.255	0.191	0.2087 **.5662**	●	3	●	3	●	3
LK 5/16	18	3.543	0.787	1.378	0.318	0.238	0.2677 **.5663**	●	3	●	3	●	3
LK 3/8	16	3.937	0.866	1.535	0.381	0.286	0.3268 **.5664**	●	3	●	3	●	3

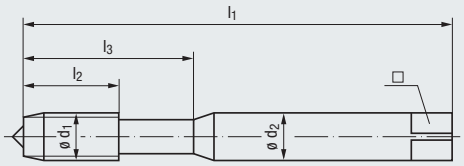
Reduced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Tool Identification Dimens. ID	CU208900 Rekord 2B-STEEL-L	Flutes	CU309600 Rekord 2C-TI TICN	Flutes	CU459600 Rekord 2D-TI TICN	Flutes
LK 7/16	14	3.937	0.866	—	0.323	0.242	0.3819 **.5665**			●	3	●	3
LK 1/2	13	4.331	0.984	—	0.367	0.275	0.4409 **.5666**	●	3	●	3	●	3
LK 9/16	12	4.331	1.024	—	0.429	0.322	0.4961 **.5667**						
LK 5/8	11	4.331	1.063	—	0.480	0.360	0.5512 **.5668**						
LK 3/4	10	4.921	1.181	—	0.590	0.442	0.6693 **.5669**						
LK 7/8	9	5.512	1.260	—	0.697	0.523	0.7874 **.5670**						
LK 1	8	6.299	1.417	—	0.800	0.600	0.8976 **.5671**						

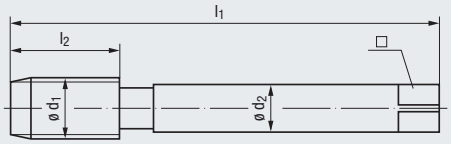
Ordering Example: **BU208900.5662**

DIN Length · ANSI Shank

Overall length acc. to DIN 371, DIN 376



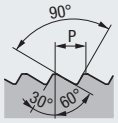
Reinforced Shank
(LK No.4 - LK 3/8)



Reduced Shank
(LK 7/16 - LK 1)

LK-UNC

BT



≥ 36 T.P.I.

Unified SELF-LOCK Coarse Thread
EMUGE Standard

Z
CNC-Controlled Machines

Type	BT	BT	BT
Coating	GLT-1		GLT-1
Cutting Material	HSSE-PM	HSS Extra	HSS Extra
Technical Characteristics		R45	R45
	B / 4-5	E / 1.5-2	E / 1.5-2
	E / O / P	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1	max. 3 x d_1	
Applications – Material	P 1.1-5.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1	P 1.1-4.1 M 1.1-2.1 N 2.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1

Reinforced Shank

Nominal Size ø d_1	T.P.I.	l_1	l_2	inch l_3	ø d_2	□	Tool Identification Dimens. ID	BU20A600 Rekord 1B-Z-PM GLT-1	Flutes	BU513500 Enorm 1-Z/E	Flutes	BU51C400 Enorm 1-Z/E GLT-1	Flutes
LK No. 4	40	2.205	0.236	0.709	0.141	0.110	0.0965 .5656	●	2			●	2
LK No. 6	32	2.205	0.276	0.787	0.141	0.110	0.1142 .5658	●	3			●	3
LK No. 8	32	2.480	0.315	0.827	0.168	0.131	0.1417 .5659	●	3			●	3
LK No. 10	24	2.756	0.394	0.984	0.194	0.152	0.1575 .5660	●	3			●	3
LK No. 12	24	3.150	0.394	1.142	0.220	0.165	0.1850 .5661	●	3			●	3
LK 1/4	20	3.150	0.512	1.181	0.255	0.191	0.2087 .5662	●	3	●	3	●	3
LK 5/16	18	3.543	0.551	1.378	0.318	0.238	0.2677 .5663	●	4	●	3	●	3
LK 3/8	16	3.937	0.630	1.535	0.381	0.286	0.3268 .5664	●	4	●	3	●	3

Reduced Shank

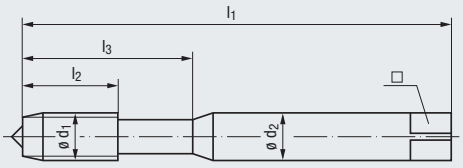
Nominal Size ø d_1	T.P.I.	l_1	l_2	inch l_3	ø d_2	□	Tool Identification Dimens. ID	CU20A600 Rekord 2B-Z-PM GLT-1	Flutes	CU513500 Enorm 2-Z/E	Flutes	CU51C400 Enorm 2-Z/E GLT-1	Flutes
LK 7/16	14	3.937	0.709	—	0.323	0.242	0.3819 .5665	●	4			●	4
LK 1/2	13	4.331	0.787	—	0.367	0.275	0.4409 .5666	●	4	●	4	●	4
LK 9/16	12	4.331	0.787	—	0.429	0.322	0.4961 .5667	●	4			●	4
LK 5/8	11	4.331	0.866	—	0.480	0.360	0.5512 .5668	●	4			●	4
LK 3/4	10	4.921	0.984	—	0.590	0.442	0.6693 .5669	●	4			●	4
LK 7/8	9	5.512	1.063	—	0.697	0.523	0.7874 .5670	●	4			●	5
LK 1	8	6.299	1.181	—	0.800	0.600	0.8976 .5671	●	4			●	5

Gages for Unified SELF-LOCK coarse thread, see page 455

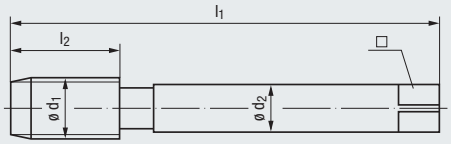
● = In stock
★ = Allow 7 days for delivery

DIN Length · ANSI Shank

Overall length acc. to DIN 371, DIN 374



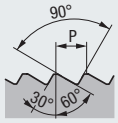
Reinforced Shank
(LK No.4 - LK 3/8)



Reduced Shank
(LK 7/16 - LK 3/4)

LK-UNF

BT

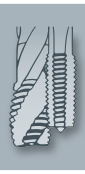


≥ 36 T.P.I.

Unified SELF-LOCK Fine Thread
EMUGE Standard

Z
CNC-Controlled Machines

Type	BT	BT
Coating	GLT-1	GLT-1
Cutting Material	**HSSE-PM**	HSS Extra
Technical Characteristics		R45
	B / 4-5	**E / 1.5-2**
	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1	max. 3 x d_1
Applications – Material	P 1.1-5.1 M 1.1-3.1 K 2.1 N 1.4-2.2, 2.4-5 S 1.1	P 1.1-4.1 M 1.1-3.1 N 1.4-6 N 2.1-2, 2.4-5 S 1.1



Reinforced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Tool Identification Dimens. ID	BU20A600 Rekord 1B-Z-PM GLT-1	Flutes	BU51C400 Enorm 1-Z/E GLT-1	Flutes
LK No. 4	48	2.205	0.236	0.709	0.141	0.110	0.0996 **.5707**	●	2	●	2
LK No. 6	40	2.205	0.276	0.787	0.141	0.110	0.1220 **.5709**	●	3	●	3
LK No. 8	36	2.480	0.315	0.827	0.168	0.131	0.1476 **.5710**	●	3	●	3
LK No. 10	32	2.756	0.394	0.984	0.194	0.152	0.1654 **.5711**	●	3	●	3
LK 1/4	28	3.150	0.394	1.181	0.255	0.191	0.2244 **.5713**	●	3	●	3
LK 5/16	24	3.543	0.394	1.260	0.318	0.238	0.2835 **.5714**	●	4	●	3
LK 3/8	24	3.937	0.394	1.535	0.381	0.286	0.3425 **.5715**	●	4	●	3

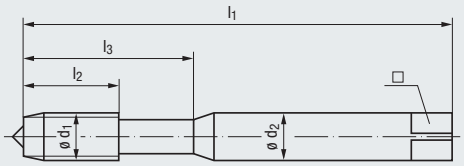
Reduced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Tool Identification Dimens. ID	CU20A600 Rekord 2B-Z-PM GLT-1	Flutes	CU51C400 Enorm 2-Z/E GLT-1	Flutes
LK 7/16	20	3.937	0.512	—	0.323	0.242	0.4016 **.5716**	●	4	●	4
LK 1/2	20	3.937	0.512	—	0.367	0.275	0.4606 **.5717**	●	4	●	5
LK 9/16	18	3.937	0.591	—	0.429	0.322	0.5197 **.5718**	●	4	●	5
LK 5/8	18	3.937	0.591	—	0.480	0.360	0.5827 **.5719**	●	4	●	5
LK 3/4	16	4.331	0.669	—	0.590	0.442	0.7008 **.5720**	●	4	●	5

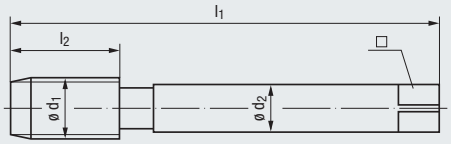
Gages for Unified SELF-LOCK fine thread, see page 456

Ordering Example: **BU20A600.5707**

DIN Length · DIN Shank

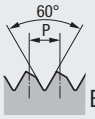


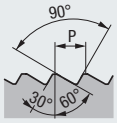
Reinforced Shank
(LK-M3 - LK-M10)



Reduced Shank
(LK-M12 - LK-M24)

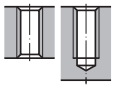
LK-M





P ≤ 0.7mm

Metric SELF-LOCK Coarse Thread
EMUGE Standard

	VA Stainless Steel Materials			GG Cast Iron
Type	BT	BT		BT
Coating	NT	TIN		NT
Cutting Material	HSS Extra	HSS Extra		HSS Extra
Technical Characteristics	B / 4-5	B / 4-5		C / 2-3
	E / O / P	E / O / P		E
Thread Depth and Hole Shape	max. 3 x d_1			max. 2 x d_1 
Applications – Material	P 1.1-3.1 M 1.1-2.1 K 2.1 N 2.2, 2.5-6	P 1.1-4.1 M 1.1-3.1 K 2.1 N 2.2, 2.5-6		K 1.1-2

Reinforced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	B0203000 Rekord 1B-VA NT	Flutes	B0203100 Rekord 1B-VA TIN	Flutes	B0102000 Rekord 1A-GG NT	Flutes
				mm			Tool Identification						
LK-M 3	0.5	56	11	18	3.5	2.7	2.7	.1046					
LK-M 4	0.7	63	13	21	4.5	3.4	3.55	.1048					
LK-M 5	0.8	70	15	25	6	4.9	4.4	.1050					
LK-M 6	1	80	17	30	6	4.9	5.2	.1052	●	3	●	3	●	3
LK-M 8	1.25	90	20	35	8	6.2	7	.1054	●	3	●	3	●	3
LK-M 10	1.5	100	22	39	10	8	8.8	.1056	●	3	●	3	●	3

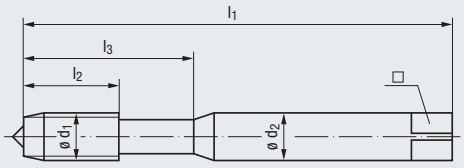
Reduced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	C0203000 Rekord 2B-VA NT	Flutes	C0203100 Rekord 2B-VA TIN	Flutes	C0102000 Rekord 2A-GG NT	Flutes
				mm			Tool Identification						
LK-M 12	1.75	110	24	—	9	7	10.7	.1058	●	3	●	3	●	3
LK-M 14	2	110	26	—	11	9	12.5	.1059						
LK-M 16	2	110	27	—	12	9	14.5	.1060	●	3	●	3	●	3
LK-M 20	2.5	140	32	—	16	12	18	.1062					●	4
LK-M 24	3	160	34	—	18	14.5	21.5	.1064					●	4

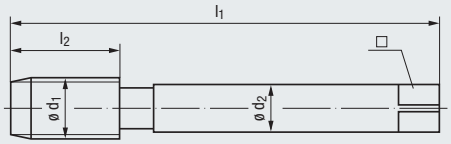
Gages for Metric SELF-LOCK coarse thread, see page 457

● = In stock
★ = Allow 7 days for delivery

DIN Length · DIN Shank



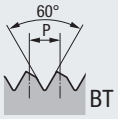
Reinforced Shank
(LK-M3 - LK-M10)

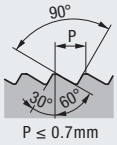


Reduced Shank
(LK-M12 - LK-M24)

Z
CNC-Controlled Machines

LK-M





Metric SELF-LOCK Coarse Thread
EMUGE Standard

Type	BT
Coating	
Cutting Material	HSS Extra
Technical Characteristics	R45
	E / 1.5-2
	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1
Applications – Material	P 1.1-4.1
	M 1.1-2.1
	N 2.1

Reinforced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Tool Identification Dimens. ID	Enorm 1-Z/E	Flutes
				mm				B0513500	
LK-M 3	0.5	56	6	18	3.5	2.7	2.7 **.1046**	●	3
LK-M 4	0.7	63	7	21	4.5	3.4	3.55 **.1048**	●	3
LK-M 5	0.8	70	8	25	6	4.9	4.4 **.1050**	●	3
LK-M 6	1	80	10	30	6	4.9	5.2 **.1052**	●	3
LK-M 8	1.25	90	14	35	8	6.2	7 **.1054**	●	3
LK-M 10	1.5	100	16	39	10	8	8.8 **.1056**	●	3

Reduced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Tool Identification Dimens. ID	Enorm 2-Z/E	Flutes
				mm				C0513500	
LK-M 12	1.75	110	18	—	9	7	10.7 **.1058**	●	4
LK-M 14	2	110	20	—	11	9	12.5 **.1059**		
LK-M 16	2	110	22	—	12	9	14.5 **.1060**	●	4
LK-M 20	2.5	140	25	—	16	12	18 **.1062**		
LK-M 24	3	160	30	—	18	14.5	21.5 **.1064**		

Gages for Metric SELF-LOCK coarse thread, see page 457

Ordering Example: **B0513500.1046**

Increase Productivity and Tap Life

EMUGE Tapping Fluid is an extreme duty drilling and tapping fluid. It does not contain chlorinated solvents and is considered environmentally safe. EMUGE Tapping Fluid is thick like honey and will stick to the tap throughout the tapping operation. Ideal for tapping and drilling stainless steel, carbon steel, inconel, monel, hastalloy, titanium, aluminum and other alloys and exotics.

- Greatly extends tap and drill life
- Reduces torque
- Improves finish and size
- Mild pleasant odor
- Does not contain chlorinated solvents

Typical Analysis

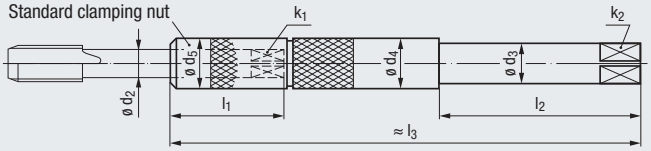
Appearance:	Light amber oil
Specific Gravity:	1.108
Viscosity @100° F:	> 900 SUS
Flash Point (PMCC):	415° F
% Petroleum Distillate:	None

			FZ191900
4 oz.	24 units in case	**.JM321**	●
16 oz.	12 units in case	**.JM322**	●
1 gallon	6 units in case	**.JM323**	●
5 gallon	Plastic can with spout	**.JM324**	●
55 gallon	Drum	**.JM325**	●

For safety and disposal information please request a Material Safety Data Sheet (MSDS).

For use on CNC machines and conventional thread cutting machinery

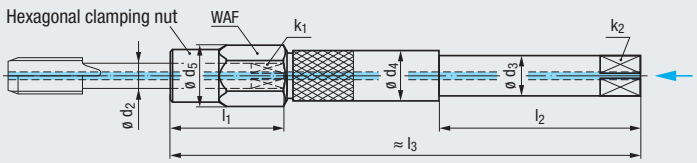
Short type



Size	Tap Dimensions ø d_2	k_1			Extension Dimensions l_1	ø d_3 h9	k_2 h12	l_2	ø d_4 / d_5	l_3	EDP Number	
101	**0.141**	0.110	No. 0 - No. 6	–	0.91	0.255	0.191	2.36	0.295	5.12	**FZ111900.101**	●
102	**0.168**	0.131	No. 8	–	0.91	0.255	0.191	2.36	0.331	5.12	**FZ111900.102**	●
103	**0.194**	0.152	No. 10	–	0.91	0.255	0.191	2.36	0.398	5.12	**FZ111900.103**	●
104	**0.220**	0.165	No. 12	–	1.02	0.255	0.191	2.36	0.476	5.12	**FZ111900.104**	●
105	**0.255**	0.191	1/4	–	1.02	0.255	0.191	2.36	0.476	5.12	**FZ111900.105**	●
106	**0.318**	0.238	5/16	–	1.18	0.318	0.238	2.36	0.512	5.12	**FZ111900.106**	●
107	**0.323**	0.242	–	7/16	1.18	0.323	0.242	3.54	0.512	7.09	**FZ111900.107**	●
108	**0.367**	0.275	–	1/2	1.22	0.367	0.275	3.54	0.591	7.09	**FZ111900.108**	●
109	**0.381**	0.286	3/8	–	1.30	0.381	0.286	2.36	0.591	5.12	**FZ111900.109**	●
110	**0.429**	0.322	–	9/16	1.42	0.429	0.322	3.54	0.709	7.09	**FZ111900.110**	●
111	**0.480**	0.360	–	5/8	1.42	0.480	0.360	3.54	0.709	7.09	**FZ111900.111**	●
112	**0.590**	0.442	–	3/4	1.57	0.590	0.442	3.54	0.866	7.09	**FZ111900.112**	●
113	**0.697**	0.523	–	7/8	1.69	0.697	0.523	3.94	1.024	7.87	**FZ111900.113**	●
114	**0.800**	0.600	–	1	1.77	0.800	0.600	3.94	1.102	7.87	**FZ111900.114**	●
115	**0.896**	0.672	–	1 1/8	1.85	0.896	0.672	3.94	1.260	7.87	**FZ111900.115**	●
116	**1.021**	0.766	–	1 1/4	1.97	1.021	0.766	3.94	1.378	7.87	**FZ111900.116**	●
117	**1.108**	0.831	–	1 3/8	2.13	1.108	0.831	3.94	1.496	7.87	**FZ111900.117**	●
118	**1.233**	0.925	–	1 1/2	2.44	1.233	0.925	3.94	1.654	7.87	**FZ111900.118**	●

For use on CNC machines and conventional thread cutting machinery

Short type with coolant-thru (IKZ)



IKZ

p_{max} 700psi (50bar)

Size	Tap Dimensions ø d_2	k_1			Extension Dimensions l_1	ø d_3 h9	k_2 h12	l_2	ø d_4	ø d_5	l_3	Clamping nut WAF	M_d [1] ft lbs	EDP Number	
101	**0.141**	0.110	No. 0 - No. 6	–	0.91	0.255	0.191	2.36	0.295	0.354	5.12	0.315	1.5	**FZ112320.101**	●
102	**0.168**	0.131	No. 8	–	0.91	0.255	0.191	2.36	0.331	0.394	5.12	0.354	2.1	**FZ112320.102**	●
103	**0.194**	0.152	No. 10	–	0.91	0.255	0.191	2.36	0.398	0.531	5.12	0.472	2.4	**FZ112320.103**	●
104	**0.220**	0.165	No. 12	–	1.02	0.255	0.191	2.36	0.476	0.531	5.12	0.472	2.6	**FZ112320.104**	●
105	**0.255**	0.191	1/4	–	1.02	0.255	0.191	2.36	0.476	0.531	5.12	0.472	3.1	**FZ112320.105**	●
106	**0.318**	0.238	5/16	–	1.18	0.318	0.238	2.36	0.512	0.571	5.12	0.512	4.4	**FZ112320.106**	●
107	**0.323**	0.242	–	7/16	1.18	0.323	0.242	3.54	0.512	0.571	7.09	0.512	4.9	**FZ112320.107**	●
108	**0.367**	0.275	–	1/2	1.22	0.367	0.275	3.54	0.591	0.650	7.09	0.591	5.9	**FZ112320.108**	●
109	**0.381**	0.286	3/8	–	1.30	0.381	0.286	2.36	0.591	0.650	5.12	0.591	8.1	**FZ112320.109**	●
110	**0.429**	0.322	–	9/16	1.42	0.429	0.322	3.54	0.709	0.787	7.09	0.709	11.1	**FZ112320.110**	●
111	**0.480**	0.360	–	5/8	1.42	0.480	0.360	3.54	0.709	0.787	7.09	0.709	14.8	**FZ112320.111**	●
112	**0.590**	0.442	–	3/4	1.57	0.590	0.442	3.54	0.866	0.984	7.09	0.866	20.7	**FZ112320.112**	●
113	**0.697**	0.523	–	7/8	1.69	0.697	0.523	3.94	1.024	1.142	7.87	1.024	33.2	**FZ112320.113**	●
114	**0.800**	0.600	–	1	1.77	0.800	0.600	3.94	1.102	1.260	7.87	1.102	44.3	**FZ112320.114**	●
115	**0.896**	0.672	–	1 1/8	1.85	0.896	0.672	3.94	1.260	1.339	7.87	1.181	56.8	**FZ112320.115**	●
116	**1.021**	0.766	–	1 1/4	1.97	1.021	0.766	3.94	1.378	1.614	7.87	1.417	88.5	**FZ112320.116**	●

[1] Recommend tightening torque

Accessories

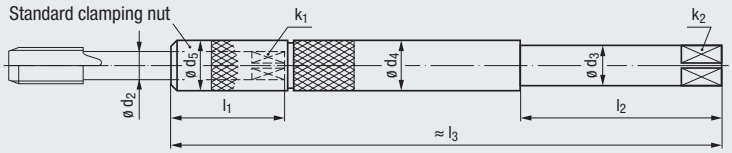
Spare clamping nuts ▸▸ 139

Torque wrenches ▸▸ 139

Ordering Example: **FZ111900.101**

For use on CNC machines and conventional thread cutting machinery

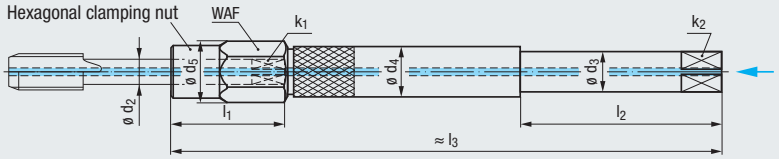
Long type



Size	Tap Dimensions ø d_2	k_1			Extension Dimensions l_1	ø d_3 h9	k_2 h12	l_2	ø d_4 / d_5	l_3	EDP Number	
101	**0.141**	0.110	No. 0 - No. 6	–	0.91	0.255	0.191	2.76	0.295	9.06	**FZ111910.101**	●
102	**0.168**	0.131	No. 8	–	0.91	0.255	0.191	2.76	0.331	9.06	**FZ111910.102**	●
103	**0.194**	0.152	No. 10	–	0.91	0.255	0.191	2.76	0.398	9.06	**FZ111910.103**	●
104	**0.220**	0.165	No. 12	–	1.02	0.255	0.191	2.76	0.476	9.06	**FZ111910.104**	●
105	**0.255**	0.191	1/4	–	1.02	0.255	0.191	2.76	0.476	9.06	**FZ111910.105**	●
106	**0.318**	0.238	5/16	–	1.18	0.318	0.238	3.15	0.512	9.06	**FZ111910.106**	●
107	**0.323**	0.242	–	7/16	1.18	0.323	0.242	3.54	0.512	9.06	**FZ111910.107**	●
108	**0.367**	0.275	–	1/2	1.22	0.367	0.275	3.54	0.591	9.06	**FZ111910.108**	●
109	**0.381**	0.286	3/8	–	1.30	0.381	0.286	3.54	0.591	9.06	**FZ111910.109**	●
110	**0.429**	0.322	–	9/16	1.42	0.429	0.322	3.54	0.709	12.99	**FZ111910.110**	●
111	**0.480**	0.360	–	5/8	1.42	0.480	0.360	3.54	0.709	12.99	**FZ111910.111**	●
112	**0.590**	0.442	–	3/4	1.57	0.590	0.442	3.54	0.866	12.99	**FZ111910.112**	●
113	**0.697**	0.523	–	7/8	1.69	0.697	0.523	3.94	1.024	12.99	**FZ111910.113**	●
114	**0.800**	0.600	–	1	1.77	0.800	0.600	3.94	1.102	12.99	**FZ111910.114**	●
115	**0.896**	0.672	–	1 1/8	1.85	0.896	0.672	3.94	1.260	12.99	**FZ111910.115**	●
116	**1.021**	0.766	–	1 1/4	1.97	1.021	0.766	3.94	1.378	12.99	**FZ111910.116**	●
117	**1.108**	0.831	–	1 3/8	2.13	1.108	0.831	3.94	1.496	12.99	**FZ111910.117**	●
118	**1.233**	0.925	–	1 1/2	2.44	1.233	0.925	3.94	1.654	12.99	**FZ111910.118**	●

For use on CNC machines and conventional thread cutting machinery

Long type with coolant-thru (IKZ)



IKZ

pmax 700psi (50bar)

Size	Tap Dimensions ø d_2	k_1			Extension Dimensions l_1	ø d_3 h9	k_2 h12	l_2	ø d_4	ø d_5	l_3	Clamping nut WAF	M_d 1) ft lbs	EDP Number	
101	**0.141**	0.110	No. 0 - No. 6	–	0.91	0.255	0.191	2.76	0.295	0.354	9.06	0.315	1.5	**FZ112330.101**	●
102	**0.168**	0.131	No. 8	–	0.91	0.255	0.191	2.76	0.331	0.394	9.06	0.354	2.1	**FZ112330.102**	●
103	**0.194**	0.152	No. 10	–	0.91	0.255	0.191	2.76	0.398	0.531	9.06	0.472	2.4	**FZ112330.103**	●
104	**0.220**	0.165	No. 12	–	1.02	0.255	0.191	2.76	0.476	0.531	9.06	0.472	2.6	**FZ112330.104**	●
105	**0.255**	0.191	1/4	–	1.02	0.255	0.191	2.76	0.476	0.531	9.06	0.472	3.1	**FZ112330.105**	●
106	**0.318**	0.238	5/16	–	1.18	0.318	0.238	3.15	0.512	0.571	9.06	0.512	4.4	**FZ112330.106**	●
107	**0.323**	0.242	–	7/16	1.18	0.323	0.242	3.54	0.512	0.571	9.06	0.512	4.9	**FZ112330.107**	●
108	**0.367**	0.275	–	1/2	1.22	0.367	0.275	3.54	0.591	0.650	9.06	0.591	5.9	**FZ112330.108**	●
109	**0.381**	0.286	3/8	–	1.30	0.381	0.286	3.54	0.591	0.650	9.06	0.591	8.1	**FZ112330.109**	●
110	**0.429**	0.322	–	9/16	1.42	0.429	0.322	3.54	0.709	0.787	12.99	0.709	11.1	**FZ112330.110**	●
111	**0.480**	0.360	–	5/8	1.42	0.480	0.360	3.54	0.709	0.787	12.99	0.709	14.8	**FZ112330.111**	●
112	**0.590**	0.442	–	3/4	1.57	0.590	0.442	3.54	0.866	0.984	12.99	0.866	20.7	**FZ112330.112**	●
113	**0.697**	0.523	–	7/8	1.69	0.697	0.523	3.94	1.024	1.142	12.99	1.024	33.2	**FZ112330.113**	●
114	**0.800**	0.600	–	1	1.77	0.800	0.600	3.94	1.102	1.260	12.99	1.102	44.3	**FZ112330.114**	●
115	**0.896**	0.672	–	1 1/8	1.85	0.896	0.672	3.94	1.260	1.339	12.99	1.181	56.8	**FZ112330.115**	●
116	**1.021**	0.766	–	1 1/4	1.97	1.021	0.766	3.94	1.378	1.614	12.99	1.417	88.5	**FZ112330.116**	●

1) Recommend tightening torque

Accessories

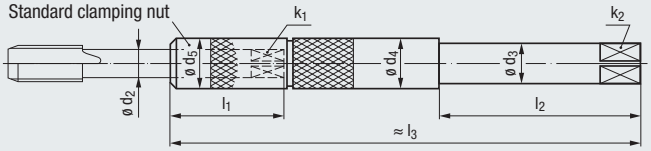
Spare clamping nuts ▸▸ 139

Torque wrenches ▸▸ 140

● = In stock
★ = Allow 7 days for delivery

For use on CNC machines and conventional thread cutting machinery

Short type



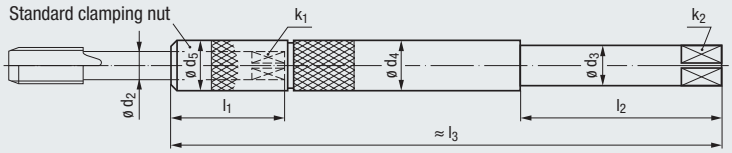
Size	Tap Dimensions ø d_2	k_1			Extension Dimensions l_1	ø d_3	k_2	l_2	ø d_4 / d_5	l_3	EDP Number	
150	**0.3125**	0.234	1/16 - 27	–	1.10	0.3125	0.234	2.36	0.512	5.12	**FZ111900.150**	●
151	**0.4375**	0.328	1/8 - 27	–	1.10	0.4375	0.328	3.54	0.709	7.09	**FZ111900.151**	●
152	**0.5625**	0.421	1/4 - 18	–	1.10	0.5625	0.421	3.54	0.866	7.09	**FZ111900.152**	●
153	**0.6875**	0.515	–	1/2 - 14	1.46	0.6875	0.515	3.94	1.024	7.87	**FZ111900.153**	●
154	**0.7000**	0.531	3/8 - 18	–	1.20	0.7000	0.531	3.94	1.024	7.87	**FZ111900.154**	●
155	**0.9063**	0.679	–	3/4 - 14	1.69	0.9063	0.679	3.94	1.260	7.87	**FZ111900.155**	●
156	**1.1250**	0.843	–	1 - 11 1/2	1.81	1.1250	0.843	3.94	1.535	7.87	**FZ111900.156**	●

Accessories

Spare clamping nuts ▸▸ 139

For use on CNC machines and conventional thread cutting machinery

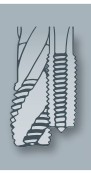
Long type



Size	Tap Dimensions ø d_2	k_1			Extension Dimensions l_1	ø d_3	k_2	l_2	ø d_4 / d_5	l_3	EDP Number	
150	**0.3125**	0.234	1/16 - 27	–	1.10	0.3125	0.234	3.15	0.512	9.06	**FZ111910.150**	●
151	**0.4375**	0.328	1/8 - 27	–	1.10	0.4375	0.328	3.54	0.709	12.99	**FZ111910.151**	●
152	**0.5625**	0.421	1/4 - 18	–	1.10	0.5625	0.421	3.94	0.866	12.99	**FZ111910.152**	●
153	**0.6875**	0.515	–	1/2 - 14	1.46	0.6875	0.515	3.94	1.024	12.99	**FZ111910.153**	●
154	**0.7000**	0.531	3/8 - 18	–	1.20	0.7000	0.531	3.94	1.024	12.99	**FZ111910.154**	●
155	**0.9063**	0.679	–	3/4 - 14	1.69	0.9063	0.679	3.94	1.260	12.99	**FZ111910.155**	●
156	**1.1250**	0.843	–	1 - 11 1/2	1.81	1.1250	0.843	3.94	1.535	12.99	**FZ111910.156**	●

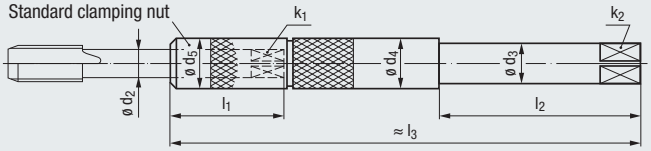
Accessories

Spare clamping nuts ▸▸ 139



For use on CNC machines and conventional thread cutting machinery

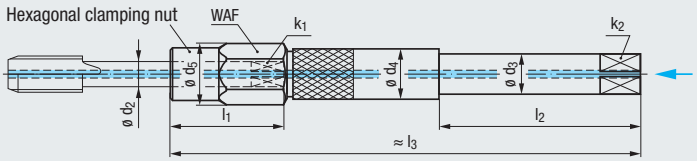
Short type



Size	Tap Dimensions ø d_2	k_1			Extension Dimensions l_1	ø d_3 h9	k_2 h12	l_2	ø d_4 / d_5	l_3	EDP Number	
1	**2.8**	2.1	M 2 - M2.6	M 4	21	6	4.9	60	6.1	130	**FZ111300.01**	●
2	**3.5**	2.7	M 3	M 4.5 - M5	22	6	4.9	60	7.5	130	**FZ111300.02**	●
3	**4**	3	M 3.5	M 5.5	22	6	4.9	60	8.4	130	**FZ111300.03**	●
4	**4.5**	3.4	M 4	M 6	22	6	4.9	60	8.4	130	**FZ111300.04**	●
5	**6**	4.9	M 4.5 - M6	M 8	25	7	5.5	60	12.1	130	**FZ111300.05**	●
6	**7**	5.5	M 7	M 9 - M10	25	7	5.5	60	12.1	130	**FZ111300.06**	●
7	**8**	6.2	M 8	M11	29	8	6.2	60	13	130	**FZ111300.07**	●
8	**9**	7	M 9	M12	30	9	7	60	15	130	**FZ111300.08**	●
9	**10**	8	M10	–	32	10	8	60	15	130	**FZ111300.09**	●
10	**11**	9	–	M14	35	11	9	90	18	180	**FZ111300.10**	●
11	**12**	9	(M12)	M16	35	12	9	90	18	180	**FZ111300.11**	●
12	**14**	11	–	M18	39	14	11	90	22	180	**FZ111300.12**	●
13	**16**	12	–	M20	40	16	12	90	22	180	**FZ111300.13**	●
14	**18**	14.5	–	M22 - M24	42	18	14.5	100	26	200	**FZ111300.14**	●
15	**20**	16	–	M27	44	20	16	100	28	200	**FZ111300.15**	●
16	**22**	18	–	M30	46	22	18	100	30	200	**FZ111300.16**	●
17	**25**	20	–	M33	49	25	20	100	35	200	**FZ111300.17**	●

For use on CNC machines and conventional thread cutting machinery

Short type with coolant-thru (IKZ)



IKZ

p_{max} 700psi (50bar)

Size	Tap Dimensions ø d_2	k_1			Extension Dimensions l_1	ø d_3 h9	k_2 h12	l_2	ø d_4	ø d_5	l_3	Clamping nut WAF	M_d [1] ft lbs	EDP Number	
1	**2.8**	2.1	M 2 - M2.6	M 4	21	6	4.9	60	6.1	6.5	130	6	1.5	**FZ112600.01**	●
2	**3.5**	2.7	M 3	M 4.5 - M5	22	6	4.9	60	7.5	9	130	8	1.5	**FZ112600.02**	●
3	**4**	3	M 3.5	M 5.5	22	6	4.9	60	8.4	10	130	9	1.8	**FZ112600.03**	●
4	**4.5**	3.4	M 4	M 6	22	6	4.9	60	8.4	10	130	9	2.2	**FZ112600.04**	●
5	**6**	4.9	M 4.5 - M6	M 8	25	7	5.5	60	12.1	13.5	130	12	2.6	**FZ112600.05**	●
6	**7**	5.5	M 7	M 9 - M10	25	7	5.5	60	12.1	13.5	130	12	3.7	**FZ112600.06**	●
7	**8**	6.2	M 8	M11	29	8	6.2	60	13	14.5	130	13	4.4	**FZ112600.07**	●
8	**9**	7	M 9	M12	30	9	7	60	15	16.5	130	15	5.9	**FZ112600.08**	●
9	**10**	8	M10	–	32	10	8	60	15	16.5	130	15	8.1	**FZ112600.09**	●
10	**11**	9	–	M14	35	11	9	90	18	20	180	18	11.1	**FZ112600.10**	●
11	**12**	9	(M12)	M16	35	12	9	90	18	20	180	18	14.8	**FZ112600.11**	●
12	**14**	11	–	M18	39	14	11	90	22	25	180	22	18.4	**FZ112600.12**	●
13	**16**	12	–	M20	40	16	12	90	22	25	180	22	24.3	**FZ112600.13**	●
14	**18**	14.5	–	M22 - M24	42	18	14.5	100	26	29	200	26	33.2	**FZ112600.14**	●
15	**20**	16	–	M27	44	20	16	100	28	32	200	28	44.3	**FZ112600.15**	●
16	**22**	18	–	M30	46	22	18	100	30	34	200	30	56.8	**FZ112600.16**	●
17	**25**	20	–	M33	49	25	20	100	35	41	200	36	73.8	**FZ112600.17**	●

[1] Recommend tightening torque

Accessories

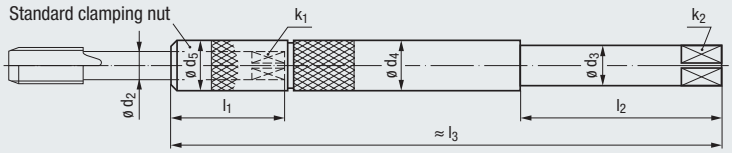
Spare clamping nuts ▸▸ 139

Torque wrenches ▸▸ 140

Ordering Example: **FZ111300.01**

For use on CNC machines and conventional thread cutting machinery

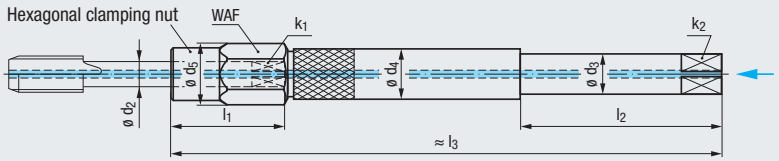
Long type



Size	Tap Dimensions ø d_2	k_1			Extension Dimensions l_1	ø d_3 h9	k_2 h12	l_2	ø d_4 / d_5	l_3	EDP Number	
1	**2.8**	2.1	M 2 - M2.6	M 4	21	6	4.9	65	6.1	230	**FZ111310.01**	●
2	**3.5**	2.7	M 3	M 4.5 - M5	22	6	4.9	70	7.5	230	**FZ111310.02**	●
3	**4**	3	M 3.5	M 5.5	22	6	4.9	70	8.4	230	**FZ111310.03**	●
4	**4.5**	3.4	M 4	M 6	22	6	4.9	70	8.4	230	**FZ111310.04**	●
5	**6**	4.9	M 4.5 - M6	M 8	25	7	5.5	70	12.1	230	**FZ111310.05**	●
6	**7**	5.5	M 7	M 9 - M10	25	7	5.5	70	12.1	230	**FZ111310.06**	●
7	**8**	6.2	M 8	M11	29	8	6.2	80	13	230	**FZ111310.07**	●
8	**9**	7	M 9	M12	30	9	7	80	15	230	**FZ111310.08**	●
9	**10**	8	M10	–	32	10	8	80	15	230	**FZ111310.09**	●
10	**11**	9	–	M14	35	11	9	90	18	330	**FZ111310.10**	●
11	**12**	9	(M12)	M16	35	12	9	90	18	330	**FZ111310.11**	●
12	**14**	11	–	M18	39	14	11	90	22	330	**FZ111310.12**	●
13	**16**	12	–	M20	40	16	12	90	22	330	**FZ111310.13**	●
14	**18**	14.5	–	M22 - M24	42	18	14.5	100	26	330	**FZ111310.14**	●
15	**20**	16	–	M27	44	20	16	100	28	330	**FZ111310.15**	●
16	**22**	18	–	M30	46	22	18	100	30	330	**FZ111310.16**	●
17	**25**	20	–	M33	49	25	20	100	35	330	**FZ111310.17**	●

For use on CNC machines and conventional thread cutting machinery

Long type with coolant-thru (IKZ)



IKZ

p_{max} 700psi (50bar)

Size	Tap Dimensions ø d_2	k_1			Extension Dimensions l_1	ø d_3 h9	k_2 h12	l_2	ø d_4	ø d_5	l_3	Clamping nut WAF	M_d [1] ft lbs	EDP Number	
1	**2.8**	2.1	M 2 - M2.6	M 4	21	6	4.9	65	6.1	6.5	230	6	1.5	**FZ112610.01**	●
2	**3.5**	2.7	M 3	M 4.5 - M5	22	6	4.9	70	7.5	9	230	8	1.5	**FZ112610.02**	●
3	**4**	3	M 3.5	M 5.5	22	6	4.9	70	8.4	10	230	9	1.8	**FZ112610.03**	●
4	**4.5**	3.4	M 4	M 6	22	6	4.9	70	8.4	10	230	9	2.2	**FZ112610.04**	●
5	**6**	4.9	M 4.5 - M6	M 8	25	7	5.5	70	12.1	13.5	230	12	2.6	**FZ112610.05**	●
6	**7**	5.5	M 7	M 9 - M10	25	7	5.5	70	12.1	13.5	230	12	3.7	**FZ112610.06**	●
7	**8**	6.2	M 8	M11	29	8	6.2	80	13	14.5	230	13	4.4	**FZ112610.07**	●
8	**9**	7	M 9	M12	30	9	7	80	15	16.5	230	15	5.9	**FZ112610.08**	●
9	**10**	8	M10	–	32	10	8	80	15	16.5	230	15	8.1	**FZ112610.09**	●
10	**11**	9	–	M14	35	11	9	90	18	20	330	18	11.1	**FZ112610.10**	●
11	**12**	9	(M12)	M16	35	12	9	90	18	20	330	18	14.8	**FZ112610.11**	●
12	**14**	11	–	M18	39	14	11	90	22	25	330	22	18.4	**FZ112610.12**	●
13	**16**	12	–	M20	40	16	12	90	22	25	330	22	24.3	**FZ112610.13**	●
14	**18**	14.5	–	M22 - M24	42	18	14.5	100	26	29	330	26	33.2	**FZ112610.14**	●
15	**20**	16	–	M27	44	20	16	100	28	32	330	28	44.3	**FZ112610.15**	●
16	**22**	18	–	M30	46	22	18	100	30	34	330	30	56.8	**FZ112610.16**	●
17	**25**	20	–	M33	49	25	20	100	35	41	330	36	73.8	**FZ112610.17**	●

[1] Recommend tightening torque

Accessories

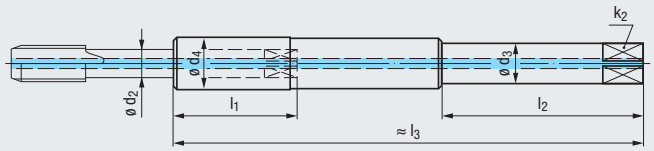
Spare clamping nuts ▸▸ 139

Torque wrenches ▸▸ 140

● = In stock
★ = Allow 7 days for delivery

For thermic shrinking of carbide tools with h6 shank tolerance

Short type with coolant-thru (IKZ)



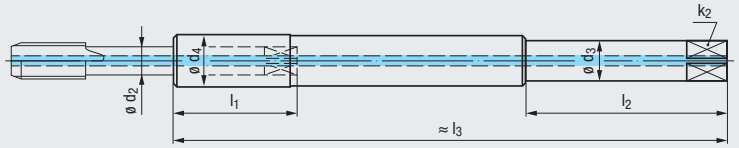
IKZ

pmax 700psi (50bar)

Size	Tap Dimensions ø d_2			Extension Dimensions l_1	ø d_3 h6	k_2 h12	l_2	ø d_4	l_3	EDP Number	
5	**6**	M 4.5 - M6	M 8	31	7	5.5	60	12.1	130	**FZ131500.05**	★
6	**7**	M 7	M 9 - M10	31	7	5.5	60	12.1	130	**FZ131500.06**	★
7	**8**	M 8	M11	32	8	6.2	60	13	130	**FZ131500.07**	★
8	**9**	M 9	M12	33	9	7	60	15	130	**FZ131500.08**	★
9	**10**	M10	–	34	10	8	60	15	130	**FZ131500.09**	★
10	**11**	–	M14	46	11	9	90	18	180	**FZ131500.10**	★
11	**12**	(M12)	M16	46	12	9	90	18	180	**FZ131500.11**	★
12	**14**	–	M18	48	14	11	90	22	180	**FZ131500.12**	★
13	**16**	–	M20	49	16	12	90	22	180	**FZ131500.13**	★

For thermic shrinking of carbide tools with h6 shank tolerance

Long type with coolant-thru (IKZ)



IKZ

pmax 700psi (50bar)

Size	Tap Dimensions ø d_2			Extension Dimensions l_1	ø d_3 h6	k_2 h12	l_2	ø d_4	l_3	EDP Number	
5	**6**	M 4.5 - M6	M 8	31	7	5.5	70	12.1	230	**FZ131510.05**	★
6	**7**	M 7	M 9 - M10	31	7	5.5	70	12.1	230	**FZ131510.06**	★
7	**8**	M 8	M11	32	8	6.2	80	13	230	**FZ131510.07**	★
8	**9**	M 9	M12	33	9	7	80	15	230	**FZ131510.08**	★
9	**10**	M10	–	34	10	8	80	15	230	**FZ131510.09**	★
10	**11**	–	M14	46	11	9	90	18	330	**FZ131510.10**	★
11	**12**	(M12)	M16	46	12	9	90	18	330	**FZ131510.11**	★
12	**14**	–	M18	48	14	11	90	22	330	**FZ131510.12**	★
13	**16**	–	M20	49	16	12	90	22	330	**FZ131510.13**	★

Ordering Example: **FZ131500.05**

Standard Clamping Nuts

Inch Sizes		Tool Identification	FZ112110
Size	ø d_2	Dimens. ID	
101	0.141	.101	★
102	0.168	.102	★
103	0.194	.103	★
104	0.220	.104	★
105	0.255	.105	★
106	0.318	.106	★
107	0.323	.107	★
108	0.367	.108	★
109	0.381	.109	★
110	0.429	.110	★
111	0.480	.111	★
112	0.590	.112	★
113	0.697	.113	★
114	0.800	.114	★
115	0.896	.115	★
116	1.021	.116	★
117	1.108	.117	★
118	1.233	.118	★
150	0.3125	.150	★
151	0.4375	.151	★
152	0.5625	.152	★
153	0.6875	.153	★
154	0.7000	.154	★
155	0.9063	.155	★
156	1.1250	.156	★

Metric Sizes		Tool Identification	FZ112100
Size	ø d_2	Dimens. ID	
1	2.8	.01	★
2	3.5	.02	★
3	4	.03	★
4	4.5	.04	★
5	6	.05	★
6	7	.06	★
7	8	.07	★
8	9	.08	★
9	10	.09	★
10	11	.10	★
11	12	.11	★
12	14	.12	★
13	16	.13	★
14	18	.14	★
15	20	.15	★
16	22	.16	★
17	25	.17	★

Hexagonal Clamping Nuts

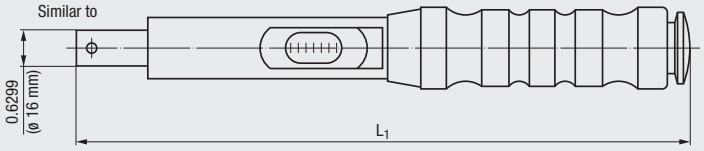
Inch Sizes					Tool Identification	FZ112030
Size	ø d_2	WAF	Recommended tightening torque ft lbs	Nm	Dimens. ID	
101	0.141	0.315	1.5	2	.101	★
102	0.168	0.354	2.1	2.8	.102	★
103	0.194	0.472	2.4	3.3	.103	★
104	0.220	0.472	2.6	3.5	.104	★
105	0.255	0.472	3.1	4.2	.105	★
106	0.318	0.512	4.4	6	.106	★
107	0.323	0.512	4.9	6.6	.107	★
108	0.367	0.591	5.9	8	.108	★
109	0.381	0.591	8.1	11	.109	★
110	0.429	0.709	11.1	15	.110	★
111	0.480	0.709	14.8	20	.111	★
112	0.590	0.866	20.7	28	.112	★
113	0.697	1.024	33.2	45	.113	★
114	0.800	1.102	44.3	60	.114	★
115	0.896	1.181	56.8	77	.115	★
116	1.021	1.417	88.5	120	.116	★

Metric Sizes					Tool Identification	FZ112000
Size	ø d_2	WAF	Recommended tightening torque ft lbs	Nm	Dimens. ID	
1	2.8	6	1.5	2	.01	★
2	3.5	8	1.5	2	.02	★
3	4	9	1.8	2.5	.03	★
4	4.5	9	2.2	3	.04	★
5	6	12	2.6	3.5	.05	★
6	7	12	3.7	5	.06	★
7	8	13	4.4	6	.07	★
8	9	15	5.9	8	.08	★
9	10	15	8.1	11	.09	★
10	11	18	11.1	15	.10	★
11	12	18	14.8	20	.11	★
12	14	22	18.4	25	.12	★
13	16	22	24.3	33	.13	★
14	18	26	33.2	45	.14	★
15	20	28	44.3	60	.15	★
16	22	30	56.8	77	.16	★
17	25	30	73.8	100	.17	★

Torque wrenches

MANOSKOP

TORCO-FIX

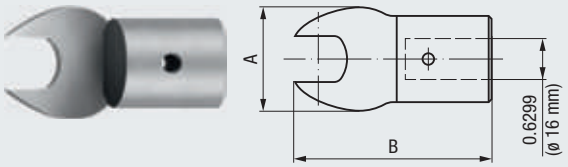


Type	Torque	inch L_1	EDP Number	
MANOSKOP 730N	1.5 - 15 ft lbs (2 - 20 Nm)	11.890	**F0900005**	★
TORCO-FIX I	7 - 37 ft lbs (10 - 50 Nm)	13.189	**F0908005**	★
TORCO-FIX II	30 - 148 ft lbs (40 - 200 Nm)	18.307	**F0908020**	★

Type	Size for Special Shank Extension	MANOSKOP/ TORCO-FIX	inch A	inch B	EDP Number	
A-SW 6	01	730N	0.650	2.087	**F0908500.06**	★
A-SW 8	02	730N	0.807	2.165	**F0908500.08**	★
A-SW 9	03, 04	730N	0.807	2.165	**F0908500.09**	★
A-SW 12	05, 06	730N	1.142	2.244	**F0908500.12**	★
A-SW 13	07	730N	1.358	2.323	**F0908500.13**	★
A-SW 15	08, 09	730N	1.358	2.323	**F0908500.15**	★
A-SW 18	10, 11	I	1.634	2.323	**F0908500.18**	★
A-SW 22	12, 13	I	2.205	2.520	**F0908500.22**	★
A-SW 26	14	II	2.205	2.520	**F0908500.26**	★
A-SW 28	15	II	2.677	2.559	**F0908500.28**	★
A-SW 30	16	II	2.677	2.559	**F0908500.30**	★
A-SW 36	17	II	2.677	2.559	**F0908500.36**	★

Shell-type wrenches

A-SW



Ordering Example: **F0900005**

Technical Information

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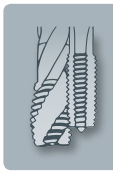


1.1 General technical information regarding EMUGE threading tools

EMUGE threading tools are made exclusively of high-performance high-speed steels according to EMUGE specifications. Our modified tool steels are based on the material alloy group HSSE acc. DIN ISO 11054.

As for tools which are designed for a special application, these generally used tool materials do not come up to our requirements. In such cases we use special high-speed steel alloys and carbide materials which are specially selected for the work case in question. A rigorous quality control of these materials forms the basis of our high-quality tools. Research and development work is carried out in a specially equipped laboratory, and serves as an indispensable precondition for the further development of cutting geometries and other parameters necessary for thread production. Extensive tests and trials on CNC machines, conventional drilling and thread cutting machines guarantee the performance and economic efficiency of our tools.

1.2 Dimensions and technical sales conditions

The dimensional specifications of our threading tools are adjusted to the currently valid standards, with the exception of special tools made to EMUGE standards.

The DIN standards for taps are based on the General Plans of Dimensions for Taps acc. DIN 2184-1 and -2.

Please read the notes in this catalog and in the technical introduction carefully.

The technical sales conditions for taps acc. DIN 2197 and roll form taps acc. DIN 2175 have been taken into account.

The manufacturing tolerances for the thread part are in accordance with DIN EN 22857 and DIN 802.

All specifications, illustrations and dimensions are subject to change due to technical progress and possible changes of the standards, and are consequently without obligation.

1.3 Constructional designs of our EMUGE taps

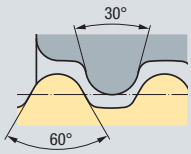
	Constructional design	EMUGE designation
	Hand taps, short machine taps	**Rekord** **Enorm**
	Machine taps with reinforced shank	**Rekord 1** **Enorm 1**
	Machine taps with reduced shank	**Rekord 2** **Enorm 2** **Robust 2X**
	Machine taps with long flutes and long shank	**LF**
	Machine taps with extra long shank	**LS**

1.4 Special tap types (examples)

Special taps to customers' specifications
EMUGE produces special taps to customers' drawings and proper specifications.

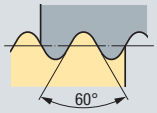
Special threads (examples)

GL



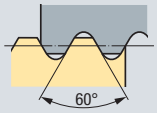
Cylindrical round thread
acc. DIN 168-1

FG



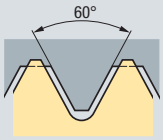
Bicycle thread
acc. DIN 79012

Vg



Valve thread
acc. DIN 7756

MFS

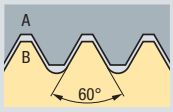


ISO Metric thread for tight fit
acc. DIN 8141-1

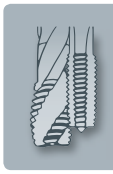
ST

Sheet metal screw thread
acc. DIN EN ISO 1478

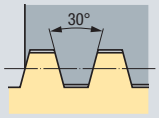
A/B



Tripod connection thread
acc. DIN 4503

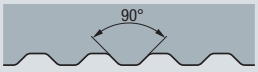


Tr



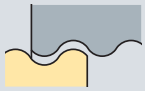
Flat ISO metric trapezoidal thread
(one-start and multi-start) acc. DIN 380-1 and -2

GEWI



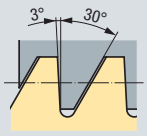
Special profile

E



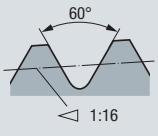
Electrical thread
acc. DIN 40400

S

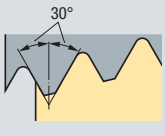


Metric buttress thread (one-start and multi-start)
acc. DIN 513-1 to -3

M



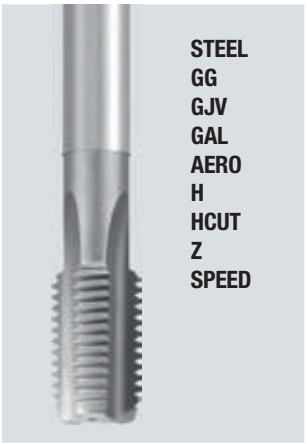
Metric tapered external thread
acc. DIN 158-1



Thread for wire release connection
acc. DIN 19004

1.5 Basic types of our EMUGE taps

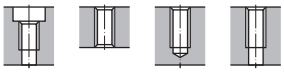
Rekord A



STEEL
GG
GJV
GAL
AERO
H
HCUT
Z
SPEED

- Straight flutes
- Chamfer form C (2-3 threads)
- Chamfer form E (1.5-2 threads)
- For blind hole and through hole threads

Note:
Especially for short-chipping material. The flutes can hold only a part of the chips. There is practically no chip transport in an axial direction. We do not recommend using this tap type in deep blind hole or through hole threads in long-chipping material.

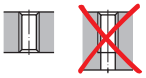


Rekord B

STEEL-L
VA
AL
Z
Z-SPEED

- Straight flutes with spiral point
- Chamfer form B (4-5 threads)
- For through hole threads

Note:
Typical tool for through hole threads in long-chipping material. The spiral point pushes the tightly rolled chips ahead and prevents clogging of the flutes. Coolant-lubricant can flow freely. Do not use this tap type for a reverse cut!



Rekord C

TI
NI

- 8-15° left-hand spiral flutes
- Chamfer form D (4-5 threads)
- For through hole threads

Note:
The left-hand spiral flutes push the chips ahead. As opposed to the spiral-point design (Rekord B), the rake angle remains constant over the complete length of the chamfer. This means extremely stable chamfer teeth for high-strength materials.

Rekord D

STEEL
GAL
PVC
TI
Z
SPEED

- 10-15° right-hand spiral flutes
- Chamfer form E (1.5-2 threads)
- Chamfer form C (2-3 threads)
- For blind hole threads

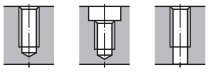
Note:
Especially to be recommended on automatic lathes and multi-spindle machines. The slow spiral flutes will be especially helpful in thread holes beginning with an increased diameter (counterbore or enlarged bore). Provided with internal coolant supply, this tap type will help to solve chip problems on CNC machines.

Rekord DF

TILEG
NI

- 10-15° right-hand spiral flutes
- Additional helix correction “F” (relief)
- Chamfer form C (2-3 threads)
- For blind hole threads

Note:
Especially to be recommended on automatic lathes and multi-spindle machines. The slow spiral flutes will be especially helpful in thread holes beginning with an increased diameter (counterbore or enlarged bore).
The additional helix correction “F” (relief) produces smaller, and tightly rolled chips. Provided with internal coolant supply, this tap type will help to solve chip problems on CNC machines.

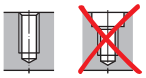


Enorm

STEEL
VA
AL
Z
SPEED
Z-SPEED

- 35-50° right-hand spiral flutes
- Chamfer form E (1.5-2 threads)
- Chamfer form C (2-3 threads)
- For blind hole threads in long-chipping materials

Note:
Typical tool for blind hole threads in long-chipping materials. The fast spiral flutes provide good chip removal from the blind hole. Depending on design and size, threads up to 3 x d_1 can be cut. Not to be recommended for threads beginning with an increased diameter.



1.5 Basic types of our EMUGE taps

Robust 2X

- Provided with a hollow face
- Chamfer form C (2-3 threads)
- For blind hole and through hole threads

Note:
The special crown-shaped front portion of this tool provides excellent accuracy even in the first stage of the cutting process. Extra clean and accurate threads can be cut in this way. The swarf is collected in the hollow face of the tap (internal chip collector) when cutting blind hole threads. For this tool, we recommend using paste lubrication wherever possible. Please make sure to cover not only the tool but also the walls of the hole with paste!
Oil lubrication is possible only in vertical machining, if the blind hole can be completely filled with oil.

1.6 Our EMUGE geometries

EMUGE STEEL

Rekord A
Rekord B
Rekord D
Enorm

For steel materials

Geometry with very good proper guidance for true-to-gauge thread cutting on all machines. Available ex stock in many thread systems and sizes. By combination with hard surface coatings, cutting data and tool life increases can be achieved.

- **Rekord B-STEEL-L**
  For low strength steels

EMUGE VA

Rekord B
Enorm

For stainless steel materials and steel materials

With tough and long-chipping materials, the chips must be transported in an axial direction in order to avoid chip jams.
An increased profile relief angle reduces friction and with it, the danger of cold welding.

EMUGE GG

Rekord A

For cast iron

Since cast iron is a very abrasive material, these taps are always provided with a surface treatment in addition to a low rake angle. In general, straight flutes are sufficient for such short-chipping materials.

EMUGE GJV

Rekord A

For cast iron with vermicular graphite

Newly developed cast materials often show very special grain structures.
In combination with an increased number of flutes and a specially adjusted geometry, these tools permit long tool life even in these highly abrasive materials as well as in normal cast iron.

EMUGE AL

Rekord B
Enorm

For aluminum wrought alloys

In the machining of long-chipping aluminum, it is absolutely necessary to provide chip transport in an axial direction. In addition to the large rake angle, these tools are made with a reduced number of flutes so that there is even more room for the swarf. This helps to avoid clogging of the flutes.

EMUGE GAL

Rekord A
Rekord D

For aluminum cast alloys

In order to achieve a long tool life in this highly abrasive material, all the tools are provided with a hard surface coating. Internal coolant supply also is very helpful.

1.6 Our EMUGE geometries

EMUGE PVC

Rekord D

For long-chipping synthetics

The chamfer of this tool has been optimized in order to ensure a safe shearing off of the chip root in the thread. An elevated tolerance, combined with a hard surface coating, guarantees true-to-gauge threads in these elastic materials.

AERO

Rekord B

For tough materials with high tensile strength

Negative rake angle values gives a very strong cutting edge. Especially in tough materials with high tensile strength this will lead to a safe tapping process.

EMUGE TI

Rekord C
Rekord D

For titanium

These alloys are usually very strong, long-chipping and clamping. Small rake angles and very high relief angles are necessary.
Often, it is necessary also to specially adjust the tool to the individual alloy and the specific work conditions.

EMUGE TILEG

Rekord DF

For titanium alloys

Titanium alloys are becoming more and more popular in modern industry. The geometry of this tool has been specially adjusted to the machining of these materials. Cold welding is prevented by the extra high relief angle values. A helix correction provides short chips.

EMUGE NI

Rekord C
Rekord DF

For nickel alloys

Nickel alloys are usually very tough, clamping and of high tensile strength, e.g. Inconel 718. Negative rake angles, very high relief angles and a hard surface coating are an unconditional necessity. Lubrication with paste or oil is necessary in most cases.

EMUGE H

Rekord A

For materials of high tensile strength

Relatively high relief angle values in combination with a surface treatment or a hard surface coating ensure extra long tool life in abrasive materials.

EMUGE HCUT

Rekord A

For hardened steels

This geometry with its specially adjusted flute profiles and its special rake and relief angles makes thread cutting in hardened steel possible.
Made of cutting material HSS-E-PM, these tools are suitable for a material hardness of 44-55 HRC, while solid carbide tools will work in a hardness of 55-63 HRC.

EMUGE Z

Rekord A
Rekord B
Rekord D
Enorm

For CNC-controlled machines

This very keen cutting geometry with elevated rake and relief angles is suitable for a multitude of long-chipping materials. It is designed especially for CNC-controlled machine tools. Synchronous feed control, especially in connection with our collet holders of the Softsynchro® series, will bring out the full performance potential of these tools.

EMUGE SPEED

Rekord A
Rekord B
Rekord D
Enorm

For high-speed tapping

CNC machines, especially in combination with our Speedsynchro®, make very high speeds possible.
The special geometry of these tools, combined with a hard surface coating, offers you the chance to do your machining at the highest speeds your machine can manage.

1.7 Our EMUGE surface treatments and coatings

NE2

Oxidation

In a special installation, the tools are exposed to hot steam. This leads to the formation of a dark oxide layer on the tool surface. This oxide layer protects the surface, and acts as a good carrier of lubricants. Cold welding which occurs especially with low-carbon, soft steels, can be prevented in this way.

NT

Nitriding

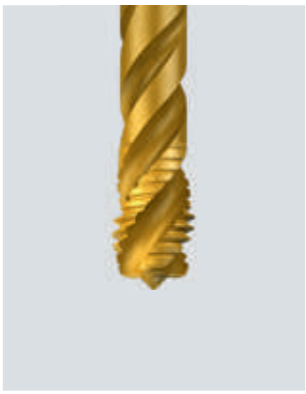
In a thermo-chemical treatment, the surface is enriched with nitrogen to a depth of approx. 0.03 to 0.05 mm. Since the surface becomes very hard (1000-1250 HV) and brittle, nitrided tools can be used with certain restrictions only in blind holes and in all work cases which necessitate reversing.
In abrasive materials like cast iron, spheroidal cast iron, cast aluminum and duroplastics, tool life can be increased in a decisive manner.

NT2

Nitriding and oxidation

The surface of the tools is first nitrided and then oxidized (NT + NE2).
This treatment combines increased surface hardness with an improved lubricant-holding capacity.

TIN



Titanium nitride (gold-yellow)

In a PVD process (500 °C) a coating thickness of 3-7 µm can be realized. The coatings feature a high adhesion strength and TIN-typical properties against cold welding.

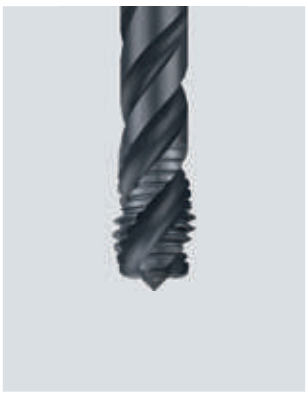
TIN coating systems with additional code number (e.g. TIN-60, TIN-70) are optimized with regard to substrate and application.

TICN

Titanium carbonitride (blue-grey)

In a PVD process (500 °C) a coating thickness of 2-4 µm can be realized. The hardness is approx. 3000 HV. The TICN coating will resist up to approx. 400 °C.

GLT-1



Hard surface coating with anti-friction layer (dark-grey)

In a PVD process (500 °C) a coating thickness of 2-4 µm can be realized. The combination of a hard surface coating (approx. 3000 HV) with a superimposed anti-friction layer yields decisive tool life advantages. Also, the chip flow can be very positively influenced.
Please note:
Before re-coating, tools need to be de-coated!

GLT-8

Diamond-like, amorphous carbon coating (black-grey)

In a PVD process a coating thickness of 1-2 µm can be realized.
The hardness is approx. 2500 HV.
This mono-layer coating is an excellent choice for the machining of non-ferrous metals and aluminum with a low silicon content (< 7% Si). Thanks to the low friction, material adhesion is drastically reduced. This coating will remain resistant up to approx. 350 °C.

CRN

Chromium nitride (silver-grey)

In a PVD process (500 °C) coating thicknesses of up to 6 µm can be realized. With a hardness of 1750 HV, the excellent sliding properties will help to achieve long tool life in non-ferrous metals and thermoplastics (even at high temperatures).

1.8 Other EMUGE abbreviations

AZ

With alternating teeth

With “alternating teeth”, flank friction can be reduced. Coolant-lubricant can flow freely between the friction partners.

X

With back taper

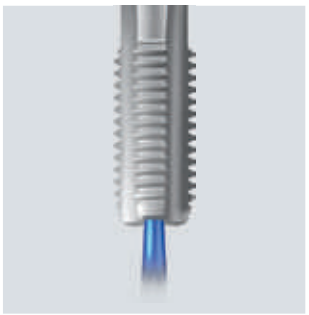
Tooth chipping due to chip jams can be prevented by grinding off the tooth crests in the guide thread area.

BF

With bright face

“Bright Face” grinding in combination with a special edge preparation ensures that chips will break in steel materials. Short chips will be evacuated without “birdnesting”.

IKZ



Internal coolant supply, axial (DIN designation: KA)

The axial exit of coolant-lubricant provides optimum cooling and lubrication in the chamfer area. Chips are evacuated easily from blind holes.

IKZN

Internal coolant supply, axial, with coolant exiting in the flutes (DIN designation: KR)

Radial exit of coolant-lubricant is the safest solution for providing coolant supply in the chamfer area even in through holes.

LF

Machine taps with long flutes and long shank

Depending on the workpiece material, thread depths of up to 4 x d_1 can be achieved with the extended thread part and the long flutes.

LS

Machine taps with extra long shank

Threads with bad access can be easily machined with these tools.

VHM

Solid carbide

Tools with a thread diameter < 12.0 mm are made of solid carbide (thread part and shank).

KHM

Solid carbide head

With tools with a thread diameter ≥ 12.0 mm, the head, or thread part, is made of solid carbide, the shank of tool steel.

LH

Left-hand thread

Left-hand taps are mirror-image designs of the right-hand taps.

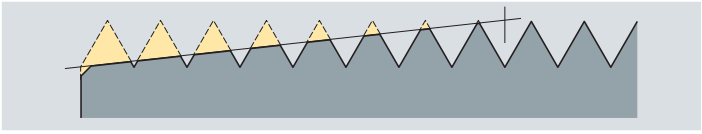
1.9 Chamfer forms

Chamfer forms and chamfer lengths for taps acc. DIN 2197.

Form A

Chamfer length 6-8 threads

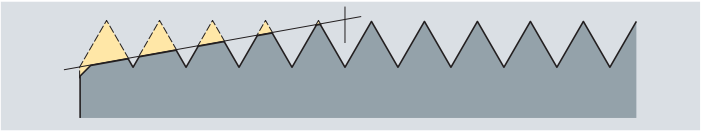
For straight flutes



Form B

Chamfer length 3.5-5.5 threads

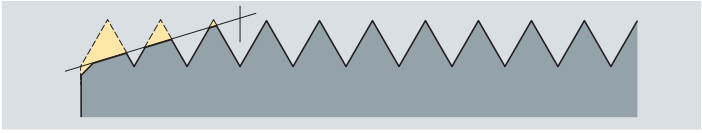
For straight flutes with spiral point



Form C

Chamfer length 2-3 threads

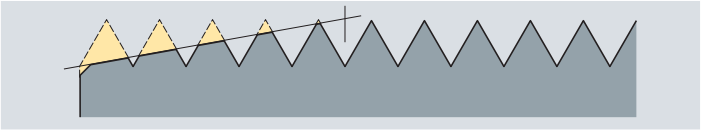
For straight or spiral flutes



Form D

Chamfer length 3.5-5 threads

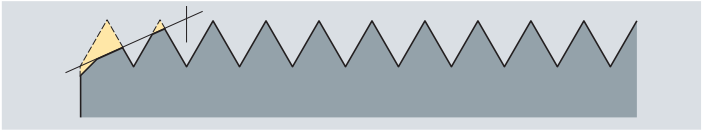
For straight or spiral flutes



Form E

Chamfer length 1.5-2 threads

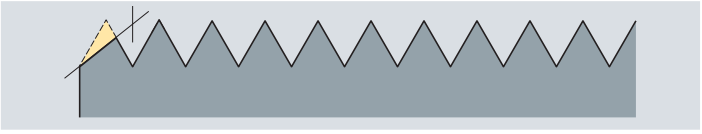
For straight or spiral flutes



Form F

Chamfer length 1-1.5 threads

For straight or spiral flutes



The chamfer length of our EMUGE taps is adjusted to the workpiece material in each individual case.

1.10 Cooling and lubrication agents

Lubricants are often, if not generally, given too little consideration.
If you want to get the best performance out of your tool you have to take care to use the best coolant-lubricant available.

In general, we distinguish the following types of cooling and lubrication:

A

Dry machining, pressurized air, cold pressurized air

"Real" dry machining is mostly used only in cast iron. Pressurized air, sometimes cooled, is used in some cases for chip removal.

E

Emulsion

The most common type of coolant-lubricant on machining centres.

M

Minimum-quantity lubrication (MQL)

Due to the more and more common option of supplying aerosol through the spindle on modern machining centres, this type of cooling and lubrication is gaining more and more popularity.

O

Thread cutting oil

With these oils which are perfectly adjusted to specific materials, excellent thread surfaces and tool life can be achieved.

P

Thread cutting paste

Perfectly suitable for the cold forming of threads. Especially useful in horizontal machining, with large thread sizes and through hole threads. To be used only for brush lubrication.

1.11 Tolerance chart – UNC/UNF

EMUGE has determined that the tolerance of the tap should be manufactured as close as possible to the finished internal thread tolerance.

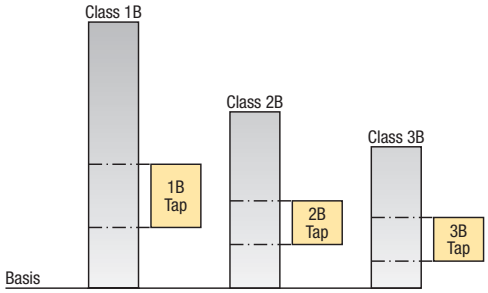
This practice ensures that the threads produced will comply to the gage tolerances providing that the working conditions such as machine, chucking tools, and workpiece match the application.

EMUGE taps are marked with the appropriate tolerance class for their intended use. The U.S. GH thread class numbers are not marked on the tap.

Tolerances for the various GH numbers are shown in the chart opposite.

Classification for the tolerance 1B can be provided upon request.

Taps for cast iron and titanium tapping are designed one GH class higher to provide better tool life.



UNC Thread	Tap Limit	
	3B (Tap)	2B (Tap)
No. 1 - 64	H1 / H2	H2 / H3
No. 2 - 56	H1 / H2	H2 / H3
No. 3 - 48	H1 / H2	H2 / H3
No. 4 - 40	H2	H2 / H3
No. 5 - 40	H2	H2 / H3
No. 6 - 32	H2	H3 / H4
No. 8 - 32	H2	H3 / H4
No. 10 - 24	H2 / H3	H3 / H4
No. 12 - 24	H2 / H3	H3 / H4
1/4 - 20	H3	H4 / H5
5/16 - 18	H3	H4 / H5
3/8 - 16	H3 / H4	H4 / H5
7/16 - 14	H3 / H4	H4 / H5
1/2 - 13	H4	H5 / H6
9/16 - 12	H4	H5 / H6
5/8 - 11	H4	H5 / H6
3/4 - 10	H4 / H5	H6 / H7
7/8 - 9	H4 / H5	H6 / H7
1 - 8	H5	H6 / H7
1 1/8 - 7	H5	H7 / H8
1 1/4 - 7	H5 / H6	H7 / H8
1 3/8 - 6	H6	H7 / H8
1 1/2 - 6	H6	H7 / H8
1 3/4 - 5	H6 / H7	H8 / H9
2 - 4 1/2	H7	H8 / H9

UNF Thread	Tap Limit	
	3B (Tap)	2B (Tap)
No. 0 - 80	H1	H1 / H2
No. 1 - 72	H1 / H2	H2 / H3
No. 2 - 64	H1 / H2	H2 / H3
No. 3 - 56	H1 / H2	H2 / H3
No. 4 - 48	H2	H2 / H3
No. 5 - 44	H2	H2 / H3
No. 6 - 40	H2	H2 / H3
No. 8 - 36	H2	H2 / H3
No. 10 - 32	H2	H2 / H3
No. 12 - 28	H2 / H3	H3 / H4
1/4 - 28	H2 / H3	H3 / H4
5/16 - 24	H3	H3 / H4
3/8 - 24	H3	H3 / H4
7/16 - 20	H3	H4 / H5
1/2 - 20	H3	H4 / H5
9/16 - 18	H3 / H4	H4 / H5
5/8 - 18	H3 / H4	H5 / H6
3/4 - 16	H4	H5 / H6
7/8 - 14	H4	H5 / H6
1 - 12	H4 / H5	H5 / H6
1 1/8 - 12	H4 / H5	H6 / H7
1 1/4 - 12	H4 / H5	H6 / H7
1 3/8 - 12	H4 / H5	H6 / H7
1 1/2 - 12	H4 / H5	H6 / H7

1.12 Tolerance chart – Metric coarse/fine

The approved tap tolerance system for metric ISO threads is International Standard ISO 2857.

- 4H tap corresponds to ISO 1
- 6H tap corresponds to ISO 2
- 6G tap corresponds to ISO 3

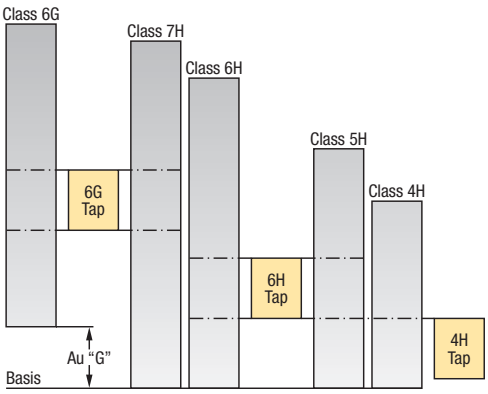
4H and 6G taps can be supplied upon request. 6G taps are Oversize.

Please refer to the Au "G" values table below.

The U.S. GD tap class numbers are not marked on our taps.

Taps for cast iron and titanium tapping are designed one GH class higher to provide better tool life.

For the special tolerance "7G", an oversize of approx. 2 x Au "G" has been taken into account.



Metric Coarse Thread	Pitch	Tap Tolerance 4H	6H
M 1.6	0.35	D2	D2 / D3
M 1.8	0.35	D2	D2 / D3
M 2	0.4	D2	D3
M 2.2	0.45	D2	D3
M 2.5	0.45	D2	D3
M 3	0.5	D2	D3
M 3.5	0.6	D2	D3 / D4
M 4	0.7	D2 / D3	D3 / D4
M 4.5	0.75	D2 / D3	D3 / D4
M 5	0.8	D2 / D3	D3 / D4
M 6	1	D2 / D3	D4 / D5
M 7	1	D2 / D3	D4 / D5
M 8	1.25	D3	D4 / D5
M 10	1.5	D3	D4 / D5
M 12	1.75	D3 / D4	D5 / D6
M 14	2	D3 / D4	D5 / D6
M 16	2	D3 / D4	D5 / D6
M 18	2.5	D4	D6 / D7
M 20	2.5	D4	D6 / D7
M 22	2.5	D4	D6 / D7
M 24	3	D4 / D5	D7 / D8
M 27	3	D4 / D5	D7 / D8
M 30	3.5	D4 / D5	D7 / D8
M 33	3.5	D4 / D5	D8 / D9
M 36	4	D5	D8 / D9
M 39	4	D5	D8 / D9
M 42	4.5	D5	D8 / D9
M 45	4.5	D5	D8 / D9
M 48	5	D5 / D6	D9 / D10
M 52	5	D5 / D6	D9 / D10

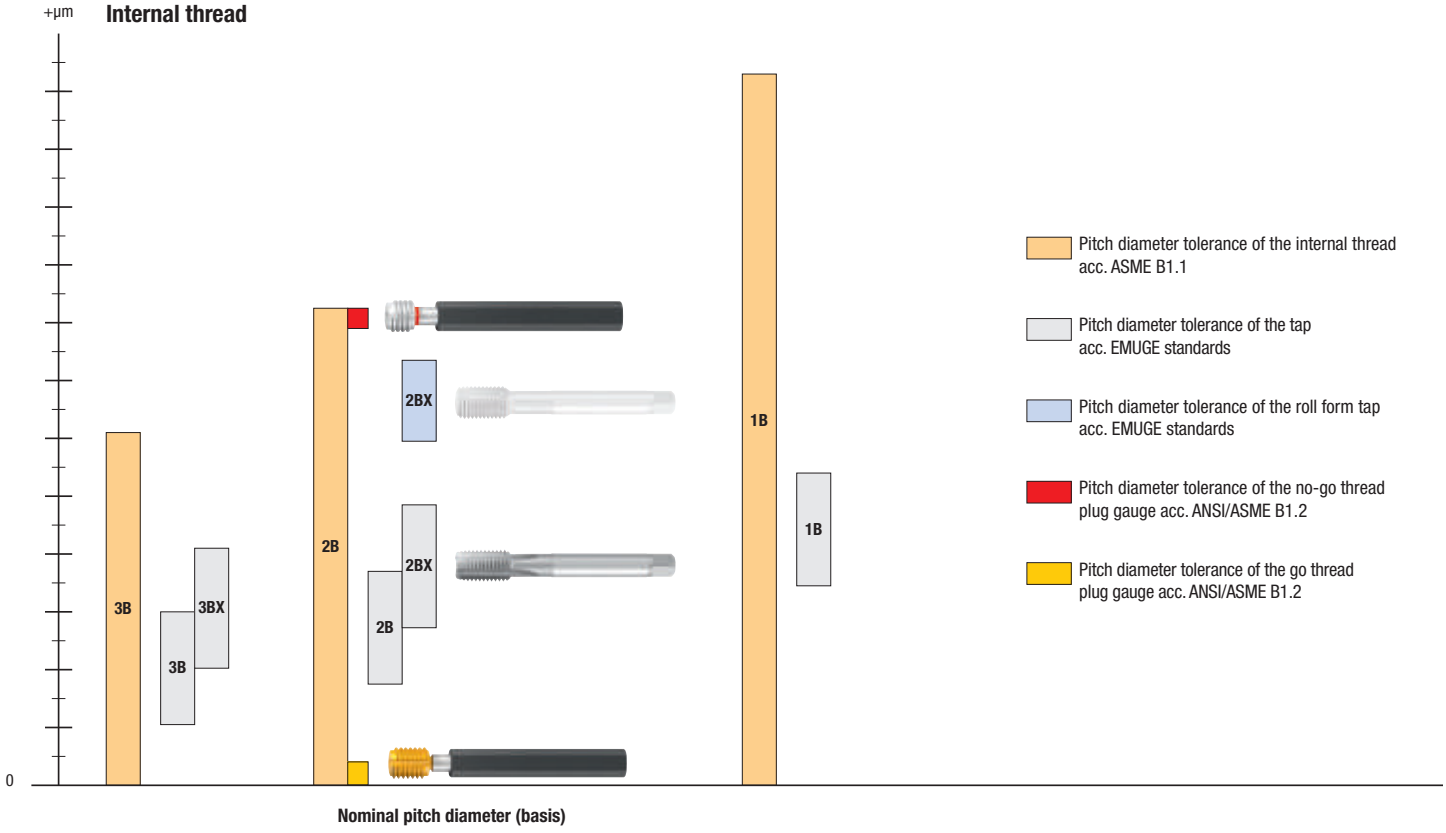
Metric Fine Thread (choice)	Tap Tolerance 4H	6H
M 3 x 0.35	D2	D3
M 4 x 0.5	D2	D3
M 6 x 0.5	D2 / D3	D3 / D4
M 6 x 0.75	D2 / D3	D4
M 8 x 0.75	D2 / D3	D4
M 8 x 1	D3	D4 / D5
M 12 x 1	D3	D4 / D5
M 10 x 1.25	D3	D4 / D5
M 14 x 1.25	D3	D4 / D5
M 12 x 1.5	D3 / D4	D5 / D6
M 20 x 1.5	D3 / D4	D5 / D6
M 24 x 1.5	D3 / D4	D5 / D6
M 42 x 1.5	D3 / D4	D5 / D6
M 18 x 2	D3 / D4	D6 / D7
M 24 x 2	D4	D6 / D7
M 42 x 2	D4	D6 / D7
M 36 x 3	D4 / D5	D7 / D8
M 42 x 3	D4 / D5	D7 / D8
M 52 x 3	D4 / D5	D7 / D8

1.13 Tolerance chart – Oversize 6G taps

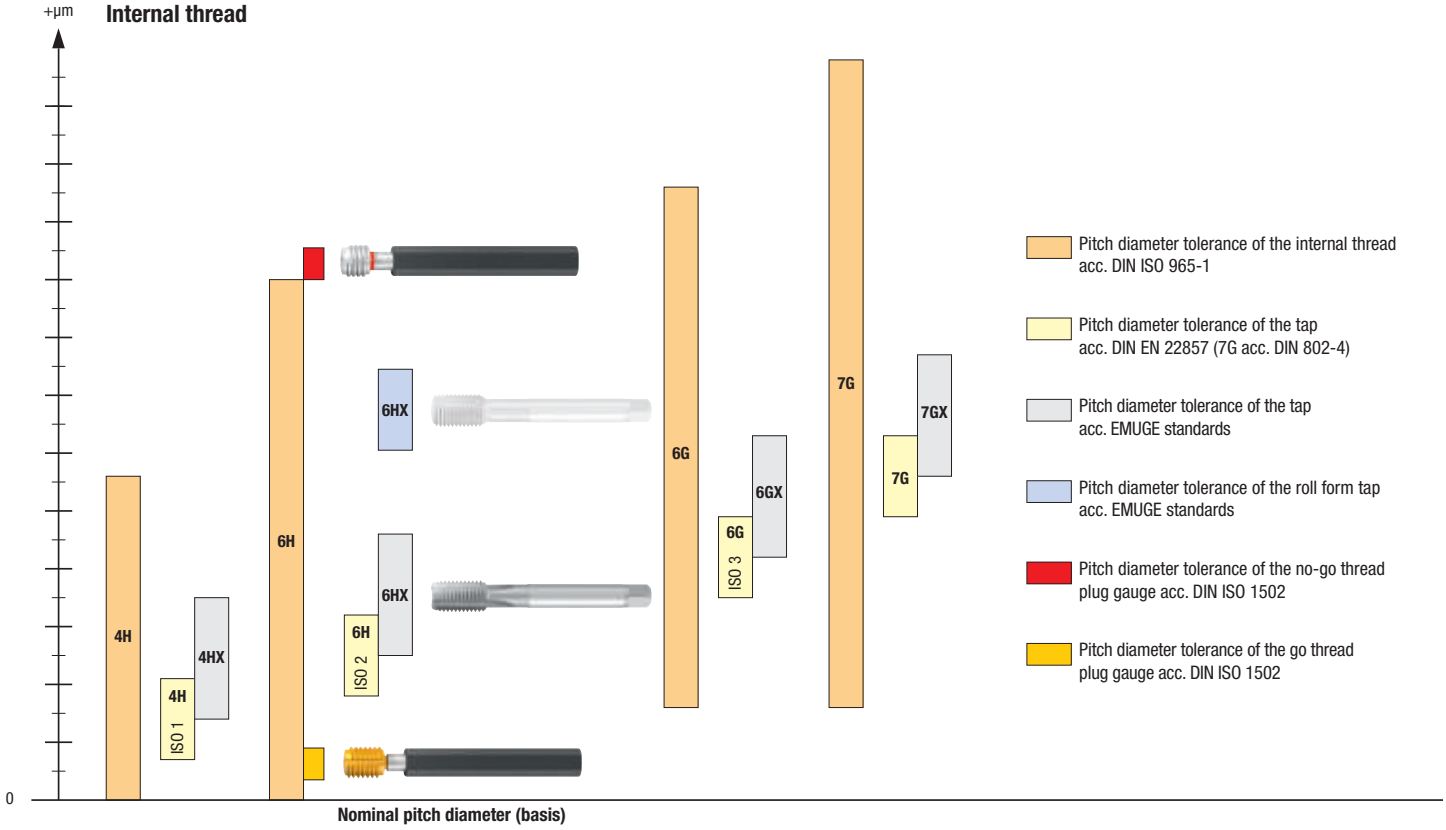
Au "G" Values for Oversize Taps "6G Taps"

Pitch	Tap Tolerance mm	inch
0.35 - 0.4	0.019	.00075
0.45 - 0.5	0.020	.00079
0.6	0.021	.00083
0.7 - 0.75	0.022	.00087
0.8	0.024	.00094
1	0.026	.0010
1.25	0.028	.0011
1.5	0.032	.0013
1.75	0.034	.0013
2	0.038	.0015
2.5	0.042	.0017
3	0.048	.0019
3.5	0.053	.0021
4	0.060	.0024
4.5	0.063	.0025
5	0.071	.0028

1.14 Tolerance zones of the pitch diameter on the Unified thread (graphic representation)

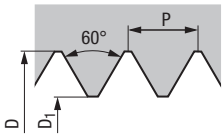


1.15 Tolerance zones of the pitch diameter on the Metric thread (graphic representation)



1.16 Recommended tap drill sizes for tapping internal threads

American Standard Threads



UNC

Unified coarse thread
ASME B1.1, Table 2

Nominal Size D	P [T.P.I.]	Minor thread dia. of the internal thread (Tol. 2B) D_1 min.	D_1 max.	Rec. tap drill size
No. 1 (0.073)	64	0.0561	0.0622	**0.0595**
No. 2 (0.086)	56	0.0667	0.0737	**0.0700**
No. 3 (0.099)	48	0.0764	0.0845	**0.0820**
No. 4 (0.112)	40	0.0849	0.0939	**0.0890**
No. 5 (0.125)	40	0.0979	0.1062	**0.1015**
No. 6 (0.138)	32	0.1040	0.1140	**0.1110**
No. 8 (0.164)	32	0.1300	0.1390	**0.1360**
No. 10 (0.190)	24	0.1450	0.1550	**0.1520**
No. 12 (0.216)	24	0.1710	0.1810	**0.1770**
1/4	20	0.1960	0.2070	**0.2040**
5/16	18	0.2520	0.2650	**0.2610**
3/8	16	0.3070	0.3210	**0.3160**
7/16	14	0.3600	0.3760	**0.3680**
1/2	13	0.4170	0.4340	**0.4219**
9/16	12	0.4720	0.4900	**0.4844**
5/8	11	0.5270	0.5460	**0.5313**
3/4	10	0.6420	0.6630	**0.6563**
7/8	9	0.7550	0.7780	**0.7656**
1	8	0.8650	0.8900	**0.8750**
1 1/8	7	0.9700	0.9980	**0.9843**
1 1/4	7	1.0950	1.1230	**1.1094**
1 3/8	6	1.1950	1.2250	**1.2205**
1 1/2	6	1.3200	1.3500	**1.3386**
1 3/4	5	1.5330	1.5670	**1.5551**
2	4 1/2	1.7590	1.7950	**1.7812**
2 1/4	4 1/2	2.0090	2.0450	**2.0312**
2 1/2	4	2.2290	2.2670	**2.2500**
2 3/4	4	2.4790	2.5170	**2.5000**
3	4	2.7290	2.7670	**2.7500**

UNF

Unified fine thread
ASME B1.1, Table 2

Nominal Size D	P [T.P.I.]	Minor thread dia. of the internal thread (Tol. 2B) D_1 min.	D_1 max.	Rec. tap drill size
No. 0 (0.060)	80	0.0465	0.0514	**0.0480**
No. 1 (0.073)	72	0.0580	0.0634	**0.0595**
No. 2 (0.086)	64	0.0691	0.0752	**0.0730**
No. 3 (0.099)	56	0.0797	0.0865	**0.0827**
No. 4 (0.112)	48	0.0894	0.0968	**0.0945**
No. 5 (0.125)	44	0.1004	0.1079	**0.1063**
No. 6 (0.138)	40	0.1110	0.1190	**0.1181**
No. 8 (0.164)	36	0.1340	0.1420	**0.1378**
No. 10 (0.190)	32	0.1560	0.1640	**0.1614**
No. 12 (0.216)	28	0.1770	0.1860	**0.1820**
1/4	28	0.2110	0.2200	**0.2165**
5/16	24	0.2670	0.2770	**0.2717**
3/8	24	0.3300	0.3400	**0.3346**
7/16	20	0.3830	0.3950	**0.3898**
1/2	20	0.4460	0.4570	**0.4528**
9/16	18	0.5020	0.5150	**0.5118**
5/8	18	0.5650	0.5780	**0.5709**
3/4	16	0.6820	0.6960	**0.6890**
7/8	14	0.7980	0.8130	**0.8071**
1	12	0.9100	0.9280	**0.9219**
1 1/8	12	1.0350	1.0530	**1.0433**
1 1/4	12	1.1600	1.1780	**1.1719**
1 3/8	12	1.2850	1.3030	**1.2992**
1 1/2	12	1.4100	1.4280	**1.4173**

UNEF

Unified extra fine thread
ASME B1.1, Table 2

Nominal Size D	P [T.P.I.]	Minor thread dia. of the internal thread (Tol. 2B) D_1 min.	D_1 max.	Rec. tap drill size
No. 12 (0.216)	32	0.1820	0.1900	**0.1875**
1/4	32	0.2160	0.2240	**0.2205**
5/16	32	0.2790	0.2860	**0.2835**
3/8	32	0.3410	0.3490	**0.3465**
7/16	28	0.3990	0.4070	**0.4040**
1/2	28	0.4610	0.4700	**0.4646**
9/16	24	0.5170	0.5270	**0.5236**
5/8	24	0.5800	0.5900	**0.5807**
3/4	20	0.6960	0.7070	**0.6988**
7/8	20	0.8210	0.8320	**0.8268**
1	20	0.9460	0.9570	**0.9531**
1 1/8	18	1.0650	1.0780	**1.0728**
1 1/4	18	1.1900	1.2030	**1.2008**
1 3/8	18	1.3150	1.3280	**1.3189**
1 1/2	18	1.4400	1.4530	**1.4488**

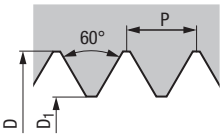
UN-8

Unified thread
ASME B1.1, Table 2

Nominal Size D	P [T.P.I.]	Minor thread dia. of the internal thread (Tol. 2B) D_1 min.	D_1 max.	Rec. tap drill size
1 1/8	8	0.9900	1.0150	**1.0000**
1 1/4	8	1.1150	1.1400	**1.1250**
1 3/8	8	1.2400	1.2650	**1.2500**
1 1/2	8	1.3650	1.3900	**1.3750**
1 5/8	8	1.4900	1.5150	**1.5000**
1 3/4	8	1.6150	1.6400	**1.6250**
1 7/8	8	1.7400	1.7650	**1.7500**
2	8	1.8650	1.8900	**1.8750**
2 1/4	8	2.1150	2.1400	**2.1250**
2 1/2	8	2.3650	2.3900	**2.3750**
2 3/4	8	2.6150	2.6400	**2.6250**
3	8	2.8650	2.8900	**2.8750**
3 1/2	8	3.3650	3.3900	**3.3750**
4	8	3.8650	3.8900	**3.8750**
4 1/2	8	4.3650	4.3900	**4.3750**

1.16 Recommended tap drill sizes for tapping internal threads

ISO Metric Threads



M

ISO Metric coarse thread
DIN 13 and DIN ISO 965-1, ASME B1.13M

Nominal Size D	P [mm]	Minor thread dia. of the internal thread (Tol. 6H) D_1 min. [mm]	D_1 max. [mm]	Rec. tap drill size [mm]	[inch]
M 2	0.4	1.567	1.679	**1.6**	**0.0630**
M 2.5	0.45	2.013	2.138	**2.05**	**0.0807**
M 3	0.5	2.459	2.599	**2.5**	**0.0984**
M 3.5	0.6	2.850	3.010	**2.9**	**0.1142**
M 4	0.7	3.242	3.422	**3.3**	**0.1299**
M 4.5	0.75	3.688	3.878	**3.7**	**0.1457**
M 5	0.8	4.134	4.334	**4.2**	**0.1654**
M 6	1	4.917	5.153	**5**	**0.1969**
M 7	1	5.917	6.153	**6**	**0.2362**
M 8	1.25	6.647	6.912	**6.8**	**0.2677**
M 9	1.25	7.647	7.912	**7.8**	**0.3071**
M 10	1.5	8.376	8.676	**8.5**	**0.3346**
M 11	1.5	9.376	9.676	**9.5**	**0.3740**
M 12	1.75	10.106	10.441	**10.2**	**0.4016**
M 14	2	11.835	12.210	**12**	**0.4724**
M 16	2	13.835	14.210	**14**	**0.5512**
M 18	2.5	15.294	15.744	**15.5**	**0.6102**
M 20	2.5	17.294	17.744	**17.5**	**0.6890**
M 22	2.5	19.294	19.744	**19.5**	**0.7677**
M 24	3	20.752	21.252	**21**	**0.8268**
M 27	3	23.752	24.252	**24**	**0.9449**
M 30	3.5	26.211	26.771	**26.5**	**1.0433**
M 33	3.5	29.211	29.771	**29.5**	**1.1614**
M 36	4	31.670	32.270	**32**	**1.2598**
M 39	4	34.670	35.270	**35**	**1.3780**
M 42	4.5	37.129	37.799	**37.5**	**1.4764**
M 45	4.5	40.129	40.799	**40.5**	**1.5945**
M 48	5	42.587	43.297	**43**	**1.6929**
M 52	5	46.587	47.297	**47**	**1.8504**

MF

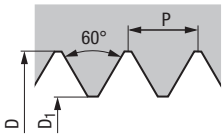
ISO Metric fine thread
DIN 13 and DIN ISO 965-1, ASME B1.13M

Nominal Size D	P [mm]	Minor thread dia. of the internal thread (Tol. 6H) D_1 min. [mm]	D_1 max. [mm]	Rec. tap drill size [mm]	[inch]
M 4 x 0.5		3.459	3.599	**3.5**	**0.1378**
M 5 x 0.5		4.459	4.599	**4.5**	**0.1772**
M 6 x 0.75		5.188	5.378	**5.2**	**0.2047**
M 8 x 0.75		7.188	7.378	**7.2**	**0.2835**
M 8 x 1		6.917	7.153	**7**	**0.2756**
M 10 x 1		8.917	9.153	**9**	**0.3543**
M 10 x 1.25		8.647	8.912	**8.8**	**0.3465**
M 12 x 1.5		10.376	10.676	**10.5**	**0.4134**
M 14 x 1.5		12.376	12.676	**12.5**	**0.4921**
M 16 x 1.5		14.376	14.676	**14.5**	**0.5709**
M 18 x 1.5		16.376	16.676	**16.5**	**0.6496**
M 20 x 1.5		18.376	18.676	**18.5**	**0.7283**
M 22 x 2		19.835	20.210	**20**	**0.7874**
M 24 x 2		21.835	22.210	**22**	**0.8661**
M 27 x 2		24.835	25.210	**25**	**0.9843**
M 30 x 2		27.835	28.210	**28**	**1.1024**
M 36 x 3		32.752	33.252	**33**	**1.2992**
M 42 x 3		38.752	39.252	**39**	**1.5354**
M 48 x 3		44.752	45.252	**45**	**1.7717**
M 52 x 4		47.670	48.270	**48**	**1.8898**

Tap drill sizes of Metric fine threads which are not listed can be found by considering the diameter difference.

1.16 Recommended tap drill sizes for tapping internal threads

Straight Pipe Threads



NPSM

American Standard straight pipe thread
ANSI/ASME B1.20.1

For mechanical joints (previously NPS)

Nominal Size D	P [T.P.I.]	Minor thread dia. of the internal thread D_1 min.	D_1 max.	Rec. tap drill size [mm]	[inch]
1/8	27	0.358	0.364	**9.1**	**0.3583**
1/4	18	0.468	0.481	**12**	**0.4724**
3/8	18	0.603	0.612	**15.5**	**0.6102**
1/2	14	0.747	0.759	**19**	**0.7480**
3/4	14	0.958	0.970	**24.5**	**0.9646**
1	11 1/2	1.201	1.211	**30.5**	**1.2008**

NPSF

American Standard straight pipe thread
ANSI B1.20.3, Table B1

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

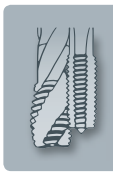
Nominal Size D	P [T.P.I.]	Minor thread dia. of the internal thread D_1 min.	Rec. tap drill size [mm]	[inch]
1/16	27	0.2482	**6.25**	**0.246**
1/8	27	0.3406	**8.6**	**0.339**
1/4	18	0.4422	**11.15**	**0.438**
3/8	18	0.5776	**14.7**	**0.578**
1/2	14	0.7133	**17.85**	**0.703**
3/4	14	0.9238	**23.4**	**0.922**
1	11 1/2	1.1600	**29.35**	**1.156**

NPSC

American Standard internal straight thread
ANSI/ASME B1.20.1, Table A1

In pipe coupling

Nominal Size D	P [T.P.I.]	Minor thread dia. of the internal thread D_1 min.	Rec. tap drill size [mm]	[inch]
1/8	27	0.340	**8.75**	**0.344**
1/4	18	0.442	**11.1**	**0.438**
3/8	18	0.577	**14.7**	**0.578**
1/2	14	0.715	**18.25**	**0.719**
3/4	14	0.925	**23.4**	**0.922**
1	11 1/2	1.161	**29.35**	**1.156**



Rp (BSPP)

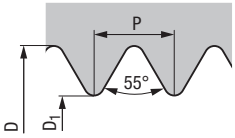
Cylindrical Whitworth pipe thread
DIN EN 10226-1 and ISO 7-1

Where pressure-tight joints are made on the threads

Nominal Size D	P [T.P.I.]	Minor thread dia. of the internal thread D_1 min. [mm]	D_1 max. [mm]	Rec. tap drill size [mm]	[inch]
Rp 1/16	28	6.490	6.632	**6.55**	**0.2579**
Rp 1/8	28	8.495	8.637	**8.6**	**0.3386**
Rp 1/4	19	11.341	11.549	**11.5**	**0.4528**
Rp 3/8	19	14.846	15.054	**15**	**0.5906**
Rp 1/2	14	18.489	18.773	**18.5**	**0.7283**
Rp 3/4	14	23.975	24.259	**24**	**0.9449**
Rp 1	11	30.111	30.471	**30.25**	**1.1909**

G

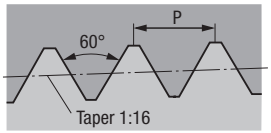
Whitworth pipe thread
DIN EN ISO 228



Nominal Size D	P [T.P.I.]	Minor thread dia. of the internal thread D_1 min. [mm]	D_1 max. [mm]	Rec. tap drill size [mm]	[inch]
G 1/16	28	6.561	6.843	**6.8**	**0.2677**
G 1/8	28	8.566	8.848	**8.8**	**0.3465**
G 1/4	19	11.445	11.890	**11.8**	**0.4646**
G 3/8	19	14.950	15.395	**15.25**	**0.6004**
G 1/2	14	18.631	19.172	**19**	**0.7480**
G 5/8	14	20.587	21.128	**21**	**0.8268**
G 3/4	14	24.117	24.658	**24.5**	**0.9646**
G 7/8	14	27.877	28.418	**28.25**	**1.1122**
G 1	11	30.291	30.931	**30.75**	**1.2106**
G 1 1/8	11	34.939	35.579	**35.5**	**1.3976**
G 1 1/4	11	38.952	39.592	**39.5**	**1.5551**
G 1 3/8	11	41.365	42.005	**41.75**	**1.6437**
G 1 1/2	11	44.845	45.485	**45.25**	**1.7815**
G 1 5/8	11	49.030	49.670	**49.5**	**1.9488**
G 1 3/4	11	50.788	51.428	**51**	**2.0079**
G 2	11	56.656	57.296	**57**	**2.2441**
G 2 1/4	11	62.752	63.392	**63.3**	**2.4921**
G 2 1/2	11	72.226	72.866	**72.8**	**2.8661**
G 2 3/4	11	78.576	79.216	**79.1**	**3.1142**
G 3	11	84.926	85.566	**85.5**	**3.3661**

1.16 Recommended tap drill sizes for tapping internal threads

Taper Pipe Threads



NPT

American tapered pipe thread, ANSI/ASME B1.20.1

For threads **with dryseal material**, taper 1:16

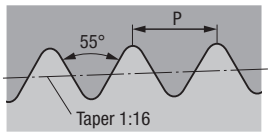
Nominal Size	P [T.P.I.]	D_1	D_2	D_3 (+0.002)	t_1
1/16	27	0.2421	0.2343	0.2516	0.4646
1/8	27	0.3346	0.3268	0.3441	0.4685
1/4	18	0.4331	0.4232	0.4472	0.6850
3/8	18	0.5669	0.5571	0.5827	0.6969
1/2	14	0.7008	0.6870	0.7213	0.9094
3/4	14	0.9114	0.8976	0.9319	0.9291
1	11 1/2	1.1437	1.1280	1.1689	1.1181
1 1/4	11 1/2	1.4882	1.4705	1.5138	1.1378
1 1/2	11 1/2	1.7264	1.7106	1.7528	1.1378
2	11 1/2	2.1988	2.1831	2.2268	1.1535

NPTF

American tapered pipe thread, ANSI B1.20.3

For threads **without dryseal material**, taper 1:16

Nominal Size	P [T.P.I.]	D_1	D_2	D_3 (+0.002)	t_1
1/16	27	0.2402	0.2343	0.2524	0.4646
1/8	27	0.3327	0.3268	0.3449	0.4685
1/4	18	0.4291	0.4232	0.4488	0.6850
3/8	18	0.5630	0.5571	0.5843	0.6969
1/2	14	0.6929	0.6870	0.7217	0.9094
3/4	14	0.9055	0.8976	0.9323	0.9291
1	11 1/2	1.1319	1.1280	1.1701	1.1181
1 1/4	11 1/2	1.4764	1.4705	1.5150	1.1378
1 1/2	11 1/2	1.7224	1.7106	1.7539	1.1378
2	11 1/2	2.1949	2.1831	2.2280	1.1535

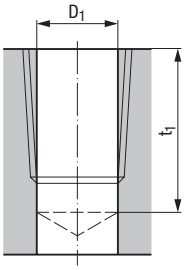


Rc (BSPT)

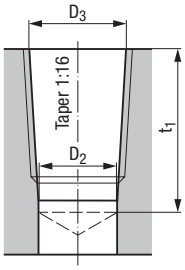
Tapered Whitworth pipe thread DIN EN 10226-2 and ISO 7-1

Where pressure-tight joints are made on the threads, taper 1:16

Nominal Size	P [T.P.I.]	D_1 [mm]	D_2 [mm]	D_3 (JS11) [mm]	t_1 [mm]
Rc 1/16	28	6.15	6.1	6.56	11.1
Rc 1/8	28	8.15	8.1	8.57	11.1
Rc 1/4	19	10.85	10.75	11.45	16.3
Rc 3/8	19	14.3	14.25	14.95	16.7
Rc 1/2	14	17.8	17.7	18.63	22.3
Rc 3/4	14	23.2	23.1	24.12	23.6
Rc 1	11	29.2	29.1	30.29	28.3



Drill cylindrically without using a reamer

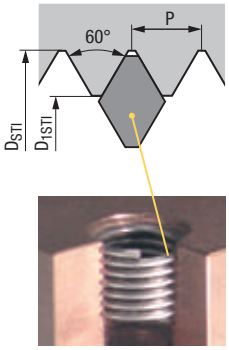


Drill cylindrically and prepare tapered hole with reamer

The minimum drilling depth t_1 includes the reach of screw by hand L_1 and the effective depth L_3 to ANSI/ASME B1.20.1 as well as the chamfer of the tap. Additional drilling-down has to be determined by the user according to the construction of the workpiece.
For series production it is recommended that the minor thread dia. be made as per B. Special taps are required for blind holes where the minimum depths t_1 as listed in the above table cannot be met. In this case please supply a sketch with blind hole dimensions along with the order.

1.16 Recommended tap drill sizes for tapping internal threads

Screw Thread Insert Threads (STI)



STI-UNC

Unified coarse thread
ASME B18.29.1

For wire thread inserts

Nominal Size	P [T.P.I.]	Major thread dia. of the internal thread (Tol. 2B) D_{STI} min.	Minor thread dia. of the internal thread (Tol. 2B) D_{1STI} min.	D_{1STI} max.	Rec. tap drill size
STI-No. 2	56	0.1092	0.0899	0.0961	**0.0906**
STI-No. 3	48	0.1261	0.1036	0.1104	**0.1063**
STI-No. 4	40	0.1445	0.1175	0.1252	**0.1220**
STI-No. 5	40	0.1575	0.1305	0.1373	**0.1339**
STI-No. 6	32	0.1786	0.1448	0.1527	**0.1496**
STI-No. 8	32	0.2046	0.1708	0.1781	**0.1732**
STI-No. 10	24	0.2441	0.1990	0.2080	**0.2047**
STI-No. 12	24	0.2701	0.2250	0.2340	**0.2283**
STI- 1/4	20	0.3150	0.2608	0.2704	**0.2638**
STI- 5/16	18	0.3847	0.3245	0.3342	**0.3307**
STI- 3/8	16	0.4562	0.3885	0.3987	**0.3937**
STI- 7/16	14	0.5303	0.4530	0.4639	**0.4567**
STI- 1/2	13	0.5999	0.5166	0.5273	**0.5236**
STI- 9/16	12	0.6708	0.5806	0.5918	**0.5866**
STI- 5/8	11	0.7431	0.6447	0.6564	**0.6496**
STI- 3/4	10	0.8799	0.7716	0.7838	**0.7776**
STI- 7/8	9	1.0193	0.8990	0.9119	**0.9055**
STI- 1	8	1.1624	1.0271	1.0421	**1.0335**
STI- 1 1/8	7	1.3106	1.1559	1.1730	**1.1614**
STI- 1 1/4	7	1.4356	1.2809	1.2980	**1.2894**
STI- 1 3/8	6	1.5915	1.4110	1.4310	**1.4173**
STI- 1 1/2	6	1.7165	1.5360	1.5560	**1.5453**

STI-UNF

Unified fine thread
ASME B18.29.1

For wire thread inserts

Nominal Size	P [T.P.I.]	Major thread dia. of the internal thread (Tol. 2B) D_{STI} min.	Minor thread dia. of the internal thread (Tol. 2B) D_{1STI} min.	D_{1STI} max.	Rec. tap drill size
STI-No. 2	64	0.1063	0.0894	0.0947	**0.0906**
STI-No. 3	56	0.1222	0.1029	0.1086	**0.1063**
STI-No. 4	48	0.1391	0.1166	0.1229	**0.1181**
STI-No. 6	40	0.1705	0.1435	0.1503	**0.1457**
STI-No. 8	36	0.2001	0.1701	0.1771	**0.1732**
STI-No. 10	32	0.2306	0.1968	0.2041	**0.2008**
STI- 1/4	28	0.2964	0.2577	0.2646	**0.2598**
STI- 5/16	24	0.3666	0.3215	0.3288	**0.3248**
STI- 3/8	24	0.4291	0.3840	0.3910	**0.3858**
STI- 7/16	20	0.5025	0.4483	0.4561	**0.4528**
STI- 1/2	20	0.5650	0.5108	0.5186	**0.5157**
STI- 9/16	18	0.6347	0.5745	0.5826	**0.5787**
STI- 5/8	18	0.6972	0.6370	0.6451	**0.6398**
STI- 3/4	16	0.8312	0.7635	0.7720	**0.7677**
STI- 7/8	14	0.9678	0.8905	0.8994	**0.8957**
STI- 1	12	1.1083	1.0181	1.0281	**1.0236**
STI- 1 1/8	12	1.2333	1.1431	1.1531	**1.1516**
STI- 1 1/4	12	1.3583	1.2681	1.2781	**1.2795**
STI- 1 3/8	12	1.4833	1.3931	1.4031	**1.3976**
STI- 1 1/2	12	1.6083	1.5181	1.5281	**1.5256**

STI-M

ISO Metric coarse thread
DIN 8140-2

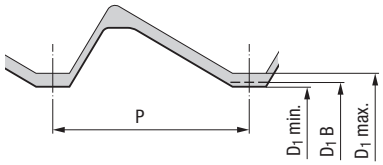
For wire thread inserts

Nominal Size	P [mm]	Major thread dia. of the internal thread (Tol. 6H mod.) D_{STI} min. [mm]	Minor thread dia. of the internal thread (Tol. 6H mod.) D_{1STI} min. [mm]	D_{1STI} max. [mm]	Rec. tap drill size [mm]	[inch]
STI-M 2	0.4	2.520	2.087	2.177	**2.1**	**0.0827**
STI-M 2.5	0.45	3.084	2.597	2.697	**2.65**	**0.1043**
STI-M 3	0.5	3.650	3.108	3.220	**3.15**	**0.1240**
STI-M 4	0.7	4.910	4.152	4.292	**4.2**	**0.1654**
STI-M 5	0.8	6.040	5.174	5.334	**5.25**	**0.2067**
STI-M 6	1	7.300	6.217	6.407	**6.3**	**0.2480**
STI-M 8	1.25	9.624	8.271	8.483	**8.4**	**0.3307**
STI-M 10	1.5	11.948	10.324	10.560	**10.5**	**0.4134**
STI-M 12	1.75	14.274	12.379	12.644	**12.5**	**0.4921**
STI-M 14	2	16.598	14.433	14.733	**14.5**	**0.5709**
STI-M 16	2	18.598	16.433	16.733	**16.5**	**0.6496**
STI-M 18	2.5	21.248	18.541	18.896	**18.75**	**0.7382**
STI-M 20	2.5	23.248	20.541	20.896	**20.75**	**0.8169**
STI-M 22	2.5	25.248	22.541	22.896	**22.75**	**0.8957**
STI-M 24	3	27.897	24.649	25.049	**24.75**	**0.9744**
STI-M 27	3	30.897	27.649	28.049	**27.75**	**1.0925**
STI-M 30	3.5	34.546	30.757	31.207	**31**	**1.2205**

1.16 Recommended tap drill sizes for tapping internal threads

Self-Locking Threads

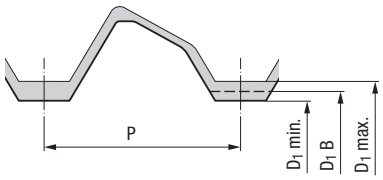
Sawtooth Profile
P ≥ 36 T.P.I. (P ≤ 0.7 mm)



With the Sawtooth profile the mentioned drill sizes have to be considered. If the hole diameter becomes too large, safe functioning is jeopardized.

Self-locking taps are produced with an accurate profile. The Metric LK-female thread mates with a Metric ISO bolt of grade "6g". Thread sizes of male fasteners are according to DIN 13, part 19.20.

LK Thread Profile
P < 36 T.P.I. (P > 0.7 mm)



For the specification of the maximum core hole minor diameter, as a general rule, use Line 1. For special applications, machining heavy materials for example, depth of thread is 2 x diameter, or if higher tool life is required, it is possible to use Line 2.
The maximum LK-minor core hole diameter listed in Line 2 cannot be exceeded as the performance of the EMUGE SELF-LOCK system would be negatively affected. Minimum LK-minor diameters should not go below those listed.

LK-UNC

Unified SELF-LOCK coarse thread
EMUGE standard

Nominal Size D	P [T.P.I.]	LK-Core hole dia. D_1 min.	D_1 max. Line 1	D_1 max. Line 2	D_1 B Drill dia. (Line 1)
LK-No. 6	32	0.1119	0.1219	0.1217	**0.1142**
LK-No. 8	32	0.1378	0.1468	0.1476	**0.1417**
LK-No. 10	24	0.1544	0.1654	0.1675	**0.1575**
LK-No. 12	24	0.1804	0.1904	0.1935	**0.1850**
LK- 1/4	20	0.2069	0.2179	0.2226	**0.2087**
LK- 5/16	18	0.2644	0.2774	0.2818	**0.2677**
LK- 3/8	16	0.3204	0.3344	0.3400	**0.3268**
LK- 7/16	14	0.3748	0.3908	0.3972	**0.3819**
LK- 1/2	13	0.4323	0.4493	0.4564	**0.4375**
LK- 9/16	12	0.4887	0.5067	0.5148	**0.5000**
LK- 5/8	11	0.5443	0.5633	0.5728	**0.5512**
LK- 3/4	10	0.6609	0.6819	0.6922	**0.6693**

LK-M

Metric SELF-LOCK coarse thread
EMUGE standard

Nominal Size D	P [mm]	LK-Core hole dia. D_1 min. [mm]	D_1 max. Line 1 [mm]	D_1 max. Line 2 [mm]	D_1 B Drill dia. (Line 1) [mm]	[inch]
LK-M 3	0.5	2.673	2.745	—	**2.7**	**0.1063**
LK-M 4	0.7	3.549	3.639	—	**3.55**	**0.1398**
LK-M 5	0.8	4.324	4.524	4.574	**4.4**	**0.1732**
LK-M 6	1	5.152	5.388	5.465	**5.2**	**0.2047**
LK-M 8	1.25	6.931	7.196	7.322	**7**	**0.2756**
LK-M 10	1.5	8.700	9.000	9.170	**8.8**	**0.3465**
LK-M 12	1.75	10.477	10.812	11.024	**10.7**	**0.4213**
LK-M 14	2	12.237	12.612	12.863	**12.5**	**0.4921**
LK-M 16	2	14.237	14.612	14.863	**14.5**	**0.5709**
LK-M 18	2.5	15.787	16.237	16.569	**16**	**0.6299**
LK-M 20	2.5	17.787	18.237	18.569	**18**	**0.7087**
LK-M 24	3	21.320	21.820	22.259	**21.5**	**0.8465**

It is possible to use Line 2 when machining heavy materials.

1.17 Decimal equivalents for tap drill selection

Inch-Wire [mm]	Decimal Inch	Inch-Wire [mm]	Decimal Inch	Inch-Wire [mm]	Decimal Inch	Inch-Wire [mm]	Decimal Inch	Inch-Wire [mm]	Decimal Inch
0.1 mm	0.0039	2.1 mm	0.0827	15	0.1800	M	0.2950	33/64	0.5156
0.2 mm	0.0079	44	0.0860	4.6 mm	0.1811	7.5 mm	0.2953	17/32	0.5313
0.3 mm	0.0118	2.2 mm	0.0866	14	0.1820	19/64	0.2969	13.5 mm	0.5315
80	0.0135	43	0.0890	13 / 4.7 mm	0.1850	7.6 mm	0.2992	35/64	0.5469
79	0.0145	2.3 mm	0.0906	3/16	0.1875	N	0.3020	14 mm	0.5512
1/64	0.0156	42	0.0935	12 / 4.8 mm	0.1890	7.7 mm	0.3031	9/16	0.5625
0.4 mm	0.0157	3/32	0.0938	11	0.1910	7.8 mm	0.3071	14.5 mm	0.5709
78	0.0160	2.4 mm	0.0945	4.9 mm	0.1929	7.9 mm	0.3110	37/64	0.5781
77	0.0180	41	0.0960	10	0.1935	5/16	0.3125	15 mm	0.5906
0.5 mm	0.0197	40	0.0980	9	0.1960	8 mm	0.3150	19/32	0.5938
76	0.0200	2.5 mm	0.0984	5 mm	0.1969	O	0.3160	39/64	0.6094
75	0.0210	39	0.0995	8	0.1990	8.1 mm	0.3189	15.5 mm	0.6102
74	0.0225	38	0.1015	5.1 mm	0.2008	8.2 mm	0.3228	5/8	0.6250
0.6 mm	0.0236	2.6 mm	0.1024	7	0.2010	P	0.3230	16 mm	0.6299
73	0.0240	37	0.1040	13/64	0.2031	8.3 mm	0.3268	41/64	0.6406
72	0.0250	2.7 mm	0.1063	6	0.2040	21/64	0.3281	16.5 mm	0.6496
71	0.0260	36	0.1065	5.2 mm	0.2047	8.4 mm	0.3307	21/32	0.6563
0.7 mm	0.0276	7/64	0.1094	5	0.2055	Q	0.3320	17 mm	0.6693
70	0.0280	35	0.1100	5.3 mm	0.2087	8.5 mm	0.3346	43/64	0.6719
69	0.0292	2.8 mm	0.1102	4	0.2090	8.6 mm	0.3386	11/16	0.6875
68	0.0310	34	0.1110	5.4 mm	0.2126	R	0.3390	17.5 mm	0.6890
1/32	0.0312	33	0.1130	3	0.2130	8.7 mm	0.3425	45/64	0.7031
0.8 mm	0.0315	2.9 mm	0.1142	5.5 mm	0.2165	11/32	0.3438	18 mm	0.7087
67	0.0320	32	0.1160	7/32	0.2188	8.8 mm	0.3465	23/32	0.7188
66	0.0330	3 mm	0.1181	5.6 mm	0.2205	S	0.3480	18.5 mm	0.7283
65	0.0350	31	0.1200	2	0.2210	8.9 mm	0.3504	47/64	0.7344
0.9 mm	0.0354	3.1 mm	0.1220	5.7 mm	0.2244	9 mm	0.3543	19 mm	0.7480
64	0.0360	1/8	0.1250	1	0.2280	T	0.3580	3/4	0.7500
63	0.0370	3.2 mm	0.1260	5.8 mm	0.2283	9.1 mm	0.3583	49/64	0.7656
62	0.0380	30	0.1285	5.9 mm	0.2323	23/64	0.3594	19.5 mm	0.7677
61	0.0390	3.3 mm	0.1299	A	0.2340	9.2 mm	0.3622	25/32	0.7813
1.0 mm	0.0394	3.4 mm	0.1339	15/64	0.2344	9.3 mm	0.3661	20 mm	0.7874
60	0.0400	29	0.1360	6 mm	0.2362	U	0.3680	51/64	0.7969
59	0.0410	3.5 mm	0.1378	B	0.2380	9.4 mm	0.3701	20.5 mm	0.8071
58	0.0420	28	0.1405	6.1 mm	0.2402	9.5 mm	0.3740	13/16	0.8125
57	0.0430	9/64	0.1406	C	0.2420	3/8	0.3750	21 mm	0.8268
56	0.0465	3.6 mm	0.1417	6.2 mm	0.2441	V	0.3770	53/64	0.8281
3/64	0.0469	27	0.1440	D	0.2460	9.6 mm	0.3780	27/32	0.8438
1.2 mm	0.0472	3.7 mm	0.1457	6.3 mm	0.2480	9.7 mm	0.3819	21.5 mm	0.8465
1.3 mm	0.0512	26	0.1470	1/4 / E	0.2500	9.8 mm	0.3858	55/64	0.8594
55	0.0520	25	0.1495	6.4 mm	0.2520	W	0.3860	22 mm	0.8661
54	0.0550	3.8 mm	0.1496	6.5 mm	0.2559	9.9 mm	0.3898	7/8	0.8750
1.4 mm	0.0551	24	0.1520	F	0.2570	25/64	0.3906	22.5 mm	0.8858
1.5 mm	0.0591	3.9 mm	0.1535	6.6 mm	0.2598	10 mm	0.3937	57/64	0.8906
53	0.0595	23	0.1540	G	0.2610	X	0.3970	23 mm	0.9055
1/16	0.0625	5/32	0.1563	6.7 mm	0.2638	Y	0.4040	29/32	0.9063
1.6 mm	0.0630	22	0.1570	17/64	0.2656	13/32	0.4063	59/64	0.9219
52	0.0635	4 mm	0.1575	H	0.2660	Z	0.4130	23.5 mm	0.9252
1.7 mm	0.0669	21	0.1590	6.8 mm	0.2677	10.5 mm	0.4134	15/16	0.9375
51	0.0670	20	0.1610	6.9 mm	0.2717	27/64	0.4219	24 mm	0.9449
50	0.0700	4.1 mm	0.1614	I	0.2720	11 mm	0.4331	61/64	0.9531
1.8 mm	0.0709	4.2 mm	0.1654	7 mm	0.2756	7/16	0.4375	24.5 mm	0.9646
49	0.0730	19	0.1660	J	0.2770	11.5 mm	0.4528	31/32	0.9688
1.9 mm	0.0748	4.3 mm	0.1693	7.1 mm	0.2795	29/64	0.4531	25 mm	0.9843
48	0.0760	18	0.1695	K	0.2810	15/32	0.4688	63/64	0.9844
5/64	0.0781	11/64	0.1719	9/32	0.2813	12 mm	0.4724	1	1.0000
47	0.0785	17	0.1730	7.2 mm	0.2835	31/64	0.4844		
2 mm	0.0787	4.4 mm	0.1732	7.3 mm	0.2874	12.5 mm	0.4921		
46	0.0810	16	0.1770	L	0.2900	1/2	0.5000		
45	0.0820	4.5 mm	0.1772	7.4 mm	0.2913	13 mm	0.5118		

The tap drill sizes shown are reference values and may have to be altered to meet specific tapping requirements. EMUGE shall have no liability or responsibility of any kind resulting from the selection of a tap drill size from this chart. Values printed are correct at the time of printing and subject to change without notice.

1.18 Conversion table SFM to RPM for taps

UNC/UNF and NPT/NPTF

Tap Sizes UNC UNF	Tap Sizes NPT NPTF	Surface Feet per Minute 5'	10'	15'	20'	25'	30'	40'	50'	60'	70'	80'	90'	100'	110'	120'	130'	140'	150'
		Revolutions per Minute																	
No. 0		318	637	955	1273	1592	1910	2546	3183	3820	4456	5093	5729	6366	7003	7639	8276	8913	9549
No. 1		273	546	819	1046	1308	1570	2093	2617	3140	3663	4186	4710	5233	5756	6279	6805	7326	7849
No. 2		212	424	637	888	1110	1333	1777	2221	2665	3109	3554	3999	4442	4886	5330	5774	6218	6662
No. 3		191	382	573	772	964	1157	1543	1929	2315	2701	3086	3472	3858	4244	4629	5015	5401	5787
No. 4		174	347	521	682	853	1023	1364	1705	2046	2387	2728	3069	3411	3751	4092	4434	4775	5116
No. 5		147	294	441	611	764	917	1222	1528	1833	2139	2445	2750	3056	3361	3667	3973	4278	4584
No. 6		136	273	409	553	691	829	1106	1382	1659	1935	2212	2488	2766	3042	3318	3595	3871	4148
No. 8		119	239	358	466	583	699	932	1165	1398	1631	1864	2097	2330	2563	2796	3029	3262	3495
No. 10		101	201	302	402	502	603	804	1005	1205	1406	1607	1808	2009	2210	2411	2612	2813	3014
No. 12		87	174	260	354	442	531	707	884	1061	1238	1415	1592	1769	1945	2122	2300	2476	2653
1/4		76	153	229	306	382	458	611	764	917	1070	1222	1375	1528	1681	1833	1968	2139	2292
5/16		62	123	185	245	306	367	489	611	733	856	978	1100	1222	1345	1467	1589	1711	1833
3/8		50	101	151	204	255	305	407	509	611	713	815	917	1019	1120	1222	1324	1426	1528
7/16	1/8	43	87	130	175	219	262	349	437	524	611	698	786	873	960	1048	1135	1222	1310
1/2	–	38	76	115	153	191	229	305	382	458	535	611	688	764	840	917	993	1070	1146
9/16	1/4	34	68	102	137	172	206	274	342	410	478	547	616	683	752	820	888	952	1020
5/8	–	32	64	96	122	153	183	244	306	367	428	489	550	611	672	733	794	856	917
11/16	3/8	28	55	83	111	138	167	222	278	333	389	444	500	556	611	667	722	778	833
3/4	–	25	51	76	102	128	153	203	255	305	357	407	458	509	560	611	662	713	764
7/8	1/2	22	43	65	87	109	131	175	218	262	306	350	392	437	480	524	568	611	655
1	–	19	38	57	76	96	115	153	191	230	268	305	344	382	420	458	497	535	573
1 1/8	3/4	17	34	51	68	84	102	136	170	204	238	272	306	340	373	407	441	475	509
1 1/4	–	15	31	46	61	76	92	122	153	183	214	244	275	305	336	367	397	428	458
1 3/8	1	14	28	42	56	69	83	111	139	167	194	222	250	278	306	333	361	389	417
1 1/2	–	13	25	38	51	63	76	102	127	153	178	204	229	255	280	305	331	356	382
1 5/8		12	23	35	47	59	71	94	118	141	165	188	212	235	259	282	306	329	353
1 3/4		11	22	33	44	55	65	87	109	131	153	175	196	218	240	262	284	306	327
1 7/8		10	20	30	41	51	61	81	102	122	143	163	183	204	224	244	265	285	306
2		9	19	29	38	48	57	76	96	115	134	153	172	191	210	229	248	267	287

Metric Taps

M 1	490	979	1469	1959	2449	2938	3918	4897	5877	6856	7836	8815	9795	10774	11754	12733	13713	14692
M 2	242	484	725	967	1209	1451	1934	2418	2901	3385	3868	4352	4835	5319	5803	6286	6770	7253
M 3	162	324	486	647	809	971	1295	1619	1942	2266	2590	2914	3237	3561	3885	4208	4532	4856
M 3.5	138	277	415	554	692	830	1107	1384	1661	1938	2214	2491	2768	3045	3322	3599	3875	4152
M 4	122	243	365	487	608	730	973	1217	1460	1703	1946	2190	2433	2676	2920	3163	3406	3650
M 5	97	194	291	388	485	582	776	970	1163	1357	1551	1745	1939	2133	2327	2521	2715	2909
M 6	81	162	243	324	405	486	647	809	971	1133	1295	1457	1619	1781	1942	2104	2266	2428
M 7	69	138	208	277	346	415	554	692	830	969	1107	1246	1384	1522	1661	1799	1938	2076
M 8	61	121	182	243	303	364	485	606	728	849	970	1091	1213	1334	1455	1577	1698	1819
M 10	48	97	145	194	242	291	388	485	582	679	776	873	970	1067	1163	1260	1357	1454
M 12	40	81	121	162	202	243	324	405	486	567	647	728	809	890	971	1052	1133	1214
M 14	35	69	104	139	173	208	277	347	416	485	555	624	693	763	832	901	971	1040
M 16	30	61	91	121	152	182	243	303	364	424	485	546	606	667	728	788	849	910
M 18	27	54	81	108	135	162	216	269	323	377	431	485	539	593	547	700	754	808
M 20	24	49	73	97	121	146	194	243	291	340	388	437	485	534	582	631	680	728
M 22	22	44	66	88	110	132	176	221	265	309	353	397	441	485	529	573	618	662
M 24	20	40	61	81	101	121	162	202	243	283	323	364	404	445	485	526	566	606
M 27	18	36	54	72	90	108	144	180	216	252	287	323	359	395	431	467	503	539
M 30	16	32	49	65	81	97	129	162	194	226	259	291	323	356	388	420	453	485

For tap sizes not listed, please contact an EMUGE Technical Representative at 800-323-3013.

1.19 Troubleshooting guide for tapping

Problem: Tapping oversized threads (no-go gage too loose)

Possible Cause	Possible Remedy
▪ Improper tap for material and thread application.	· Use a suitable tap for the hole style and material being tapped. Reference the EMUGE Tap Finder for proper selection.
▪ Cutting speed to high.	· Reduce cutting speed. · Improve coolant/lubrication.
▪ Cold welding on the flanks of the tap (loading).	· Use a new tool. · Use surface treated taps. · Improve coolant/lubrication. · Grind away chipped and damaged teeth.
▪ Chip packing in flutes.	· Use tap with different flute geometry/angle. · Possibly use set of taps.
▪ Grinding burr.	· Remove burr with soft wire or fiber brush.
▪ Incorrect fixturing or positioning of part.	· Use tap holders with axial and parallel floating. · Check clamping of part for correct alignment.
▪ Inconsistent feed of tap.	· Tap with controlled feed. · Check CNC programs. · Check lead screw for backlash. · Use compensating tension/compression tap holder.

Problem: Tapping oversized threads (no-go gage loose)

Possible Cause	Possible Remedy
▪ Tap selected too large for class of thread fit required.	· Review markings on tap and determine if it is suitable for the class of fit required. · If in doubt, contact an EMUGE Representative.
▪ Improper reconditioning of tap.	· Reconditioning of tap requires that all ground surfaces maintain the orginal geometry put on by the manufacturer. · Contact an EMUGE Representative for instructive information.

Problem: Tapping bellmouthed hole (first few threads gage oversize)

Possible Cause	Possible Remedy
▪ Wrong initial starting pressure.	· Work with controlled tap feed.
▪ Axially hard working spindle.	· Use a tap holder with length compensation.
▪ Incorrect fixturing or positioning of part.	· Use a tap holder with axial and parallel floating. · Check clamping of part for correct alignment.

EMUGE Taps are very free cutting and will easily cut oversize threads if overfed or pushed. For the best results, we recommend the use of an EMUGE Quick-Change Tap Holder with built-in tension, compression and overload clutch features. Always utilize your holder's tension feature by programming spindle feed to 95-98% of the calculated feed rate.

Call an EMUGE Representative at 800-323-3013 if you need assistance.

Problem: Torn and rough threads

Possible Cause	Possible Remedy
▪ Improper selection of tap for material and thread application.	· Use a suitable tap for the hole style and material being tapped. Reference the EMUGE Tap Finder for proper selection.
▪ Cutting speed too fast or slow.	· Select proper cutting speed. · Improve coolant selection to assist the effects of tap speed.
▪ Cold welding on the flanks of the tap (loading).	· Use a new tool. · Use surface treated taps. · Improve coolant/lubrication. · Find away chipped and damaged teeth.
▪ Chips packing in flutes.	· Use tap with different flute geometry/angle. · Use set of taps.
▪ Grinding burr.	· Remove burr with soft wire or brush.
▪ Tap drill too small.	· Use correct size drill. · Reference recommended sizes listed in EMUGE catalog. Note that cutting and roll form taps use different size tap drills for the same size thread. · If in doubt, contact an EMUGE Representative.
▪ Insufficient coolant/ lubrication.	· Selection of suitable coolant/lubrication for material being tapped. · Use adequate amounts of coolant/lubrication.
▪ Tool overloading due to coarse pitch, hard materials or short chamfers.	· Use a set of taps.

Problem: Tapping undersized threads (go gage won't enter/binds up part way into hole)

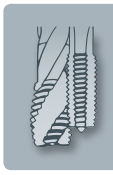
Possible Cause	Possible Remedy
▪ Tap selected too small to do multiple regrinds.	· Limit the number of regrinds a tap has. · Use a new tap.
▪ Area of wear not removed when tap was resharpened.	· Grind tap again. · Use a new tap.
▪ Improper tap for material and thread application.	· Use suitable tap for the hole style and material being tapped. · Reference the EMUGE Tap Finder for proper selection.
▪ Go gage binds up part way into hole.	· Tap is dull – recondition or replace tap. · Avoid too much axial force during tapping operation (this caused the tap to cut out of lead) · Use tap holders with length compensation.
▪ Tap selected too small for class of thread fit required.	· Review markings on tap and determine if it is suitable for class of fit required. · If in doubt, contact an EMUGE Representative.

Problem: Tap life too low

Possible Cause	Possible Remedy
▪ All reasons stated in torn and rough threads.	· See torn and rough threads.
▪ Loss of tap hardness by excess hear during regrinding.	· Change the specification of the grinding wheel. · Use coolant while grinding.
▪ Loss of surface treatment from regrinding.	· Retreatment of the tap surface. · Check suitability of surface treatment for material being tapped.
▪ Work hardened drill hole and hole chamfer.	· Change or regrind tap drill more frequently. · Check proper drilling speed and feed. · Anneal part before tapping.

Problem: Tap breakage

Possible Cause	Possible Remedy
▪ Improper selection of tap for material and threading application.	· Use a suitable tap for the hole style and material being tapped. · Reference the EMUGE Tap Finder for proper selection.
▪ Tap drill too small.	· Use correct size drill. Recommended size drills listed in EMUGE catalog. Note that cutting and roll form taps use different size tap drills for same size thread. · If in doubt, contact an EMUGE Representative.
▪ Tap hole not deep enough.	· Check actual drill depth, drill may have slipped back into holder.
▪ Missing tap drill hole.	· Ensure tap drill hole is present. Common problem in multiple spindle applications on transfer lines.
▪ Chips packing in flutes.	· Use tap with different flute geometry/angle. · Use a set of taps.
▪ Cutting speed too high or low.	· Select proper cutting speed. · Improve coolant/lubrication to assist the effects of the tap speed.
▪ Cold welding on the flanks of the tap (loading).	· Use a new tool. · Use surface treated taps. · Improve coolant/lubrication. · Grind away chipped and damaged teeth.
▪ Overload of the chamfer teeth.	· Use longer chamfer. · Increase number of tap flutes to provide more chamfered teeth.
▪ Incorrect fixturing or positioning of part.	· Use tap holders with axial/parallel floating. · Check clamping of part for correct alignment.
▪ Tap hitting the bottom of hole.	· Use tap holder with length compensation and torque overload system.
▪ Tapping hard or high tensile materials.	· Check selection of tap, carbide tap may be more suitable then high speed steel taps.



Cut&Form – Production of internal threads by a combination of machining and cold forming

The internal thread production system Cut&Form is a combination of machining and cold-forming processes which each produce a specific part of the thread profile.

- Strengthened threads and increased long-term resistance
- Cold forming of large threads with coarse pitch
- Cold forming of threads in difficult materials
- Production of a narrow-tolerance minor diameter without space pocket
- Extra smooth thread surfaces

Roll Form Taps

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	Roll form taps with reinforced shank		Roll form taps with reduced shank		Short roll form taps
	Druck 1 InnoForm 1		**Druck 2 InnoForm 2**		**Druck**
	DIN Length ANSI Shank	DIN Length DIN Shank	DIN Length ANSI Shank	DIN Length DIN Shank	ANSI Length ANSI Shank
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Special Shank Extensions		132 - 140
EF-Drill C – Chamfer Drills 90°		412

IKZ

Druck STEEL-SN IKZ-TIN	VHM-Druck STEEL SN-IKZ	InnoForm STEEL-M-SN-IKZ PM-TIN-66	InnoForm STEEL-M/E-SN-IKZ PM-TIN-66	InnoForm STEEL-H-SN-IKZ PM-TICN-67	InnoForm STEEL-H/E-SN-IKZ PM-TICN-67	InnoForm VA/E-SN-IKZ PM-TIN-T26	InnoForm AL-SN-IKZ PM-GLT-8	InnoForm AL/E-SN-IKZ PM-GLT-8	
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170		171	171	171	171	172		172	UNC
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									G

IKZ

InnoForm GAL-SN-IKZ PM-TICN	InnoForm GAL/E-SN-IKZ PM-TICN	InnoForm H-SN-IKZ PM-TIN-T26	Druck Z-SN-IKZ PM-TIN-T1	InnoForm Z-SN-IKZ PM-TIN-80	InnoForm Z/E-SN-IKZ PM-TIN-80	VHM-InnoForm Z-SN-IKZ TIN-80	VHM-InnoForm Z/E-SN-IKZ TIN-80		
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173	173		173	174	174	174	174		UNC
178	179		179	179	180	180	180		UNF
185	185	185		185	186	186	186		M
				191					MF
				192					G

IKZN

Druck Z-SN-IKZN PM-TIN-T1	Druck GAL-SPEED/E-SN IKZN-TICN	VHM-Druck GAL-SPEED/E-SN IKZN-TICN							
Page									
173									UNC
179									UNF
	187	187							M
	191	191							MF

Product finder and cutting data

Please note:
The circumferential speeds (v_c in SFM) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.).

The suitability is marked as follows:

- **Preferred suitable roll form tap**
- Suitable roll form tap

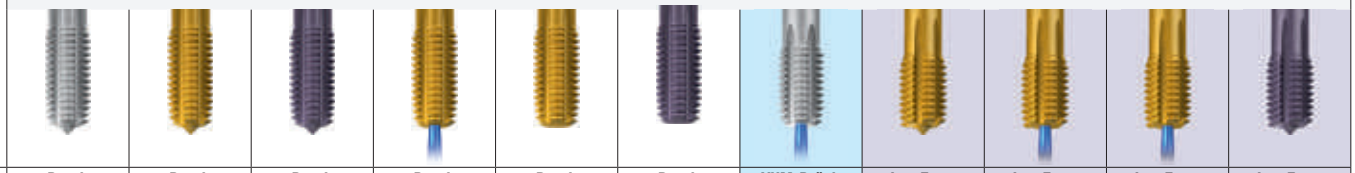
= DIN form / threads (Lead taper length)

EMUGE STEEL

	Druck STEEL NT	Druck STEEL TIN
	C / 2-3	C / 2-3
Thread Depth and Hole Type	max. 3 x d_1	
UNC		
UNF		
UNEF, UN-8		
M	182	182
MF		190
NPSM/NPSC		
NPSF		
Rp (BSPP)		
G		192
NPT		
NPTF		
Rc (BSPT)		
STI		
SELF-LOCK		197

		Application – Material	Hardness Range HRC	BHN	N/mm²	Material Examples			
		Steel materials							
P	1.1	Cold-extrusion steels, Construction steels, Free-cutting steels, etc.		≤ 180	≤ 600	1010 / 1018 / 1020 / 12L14 / 12L15 / A36 / T1		49 - 148	**66 - 262**
P	2.1	Construction steels, Cementation steels, Steel castings, etc.	≤ 22	≤ 235	≤ 800	A36 / T1 / 1030-1095 / 4140 / 4340 / 8620		33 - 131	**66 - 197**
P	3.1	Cementation steels, Heat-treatable steels, Cold work steels, etc.	≤ 31	≤ 295	≤ 1000	4140 / 4340 / 8620 / P20 / H13 / D2 / A2 / S7 / H1150		16 - 82	33 - 131
P	4.1	Heat-treatable steels, Cold work steels, Nitriding steels, etc.	≤ 38	≤ 355	≤ 1200	4140 / 4340 / 8620 / P20 / H13 / D2 / 300M / 52100 / M1-M42			
P	5.1	High-alloyed steels, Cold work steels, Hot work steels, etc.	≤ 44	≤ 415	≤ 1400	4140 / 4340 / 8620 / P20 / H13 / D2 / 300M / 52100			
		Stainless steel materials							
M	1.1	Ferritic, martensitic	≤ 29	≤ 280	≤ 950	410 / 440 / 440C / 17-4 PH			33 - 82 [2]
M	2.1	Austenitic	≤ 29	≤ 280	≤ 950	303 / 304 / 316 / 316L / 321			33 - 82 [2]
M	3.1	Austenitic-ferritic (Duplex)	≤ 35	≤ 325	≤ 1100				
M	4.1	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 39	≤ 370	≤ 1250				
		Cast materials							
K	1.1	Cast iron with lamellar graphite (GJL)		30 - 75	100 - 250	Grey cast irons G10-GG40			
K	1.2			75 - 135	250 - 450				
K	2.1	Cast iron with nodular graphite (GJS)		105 - 150	350 - 500	Nodular GGG40-GGG70			
K	2.2			150 - 265	500 - 900				
K	3.1	Cast iron with vermicular graphite (GJV)		90 - 120	300 - 400				
K	3.2			120 - 150	400 - 500	Compact graphite iron (CGI)			
K	4.1	Malleable cast iron (GTMW, GTMB)		70 - 145	250 - 500				
K	4.2			150 - 235	500 - 800	White iron			
		Non ferrous materials							
		Aluminum alloys							
N	1.1	Aluminum wrought alloys		≤ 60	≤ 200	7075			
N	1.2			≤ 105	≤ 350	6061-T6 / 2024-T4			
N	1.3			≤ 165	≤ 550				
N	1.4	Aluminum cast alloys Si ≤ 7%							66 - 197
N	1.5	Aluminum cast alloys 7% < Si ≤ 12%							66 - 197
N	1.6	Aluminum cast alloys 12% < Si ≤ 17%							
		Copper alloys							
N	2.1	Pure copper, low-alloyed copper		≤ 120	≤ 400				66 - 131
N	2.2	Copper-zinc alloys (brass, long-chipping)		≤ 165	≤ 550				131 - 262
N	2.3	Copper-zinc alloys (brass, short-chipping)		≤ 165	≤ 550				
N	2.4	Copper-aluminum alloys (alu bronze, long-chipping)		≤ 235	≤ 800				
N	2.5	Copper-tin alloys (tin bronze, long-chipping)		≤ 205	≤ 700				
N	2.6	Copper-tin alloys (tin bronze, short-chipping)		≤ 120	≤ 400				
N	2.7	Special copper alloys		≤ 180	≤ 600				
N	2.8		≤ 44	≤ 415	≤ 1400				
		Magnesium alloys							
N	3.1	Magnesium wrought alloys		≤ 150	≤ 500				
N	3.2	Magnesium cast alloys		≤ 150	≤ 500				
		Synthetics							
N	4.1	Duroplastics (short-chipping)							
N	4.2	Thermoplastics (long-chipping)							
N	4.3	Fibre-reinforced synthetics (fibre content ≤ 30%)							
N	4.4	Fibre-reinforced synthetics (fibre content > 30%)							
		Special materials							
N	5.1	Graphite							
N	5.2	Tungsten-copper alloys							
N	5.3	Composite materials							
		Special materials							
		Titanium alloys							
S	1.1	Pure titanium		≤ 135	≤ 450	CP1 / CP2			
S	1.2	Titanium alloys	≤ 27	≤ 265	≤ 900	6AL4V			
S	1.3		≤ 39	≤ 370	≤ 1250				
		Nickel alloys, cobalt alloys and iron alloys							
S	2.1	Pure nickel		≤ 180	≤ 600				
S	2.2	Nickel-base alloys	≤ 31	≤ 295	≤ 1000	Monel 500, 718 Inconel annealed			
S	2.3		≤ 49	≤ 475	≤ 1600	718 Inconel			
S	2.4	Cobalt-base alloys	≤ 31	≤ 295	≤ 1000				
S	2.5		≤ 49	≤ 475	≤ 1600	Haynes 25			
S	2.6	Iron-base alloys	≤ 46	≤ 445	≤ 1500	Incoloy 925			
		Hard materials							
H	1.1	High strength steels, hardened steels, hard castings	44 - 50						
H	1.2		50 - 55						
H	1.3		55 - 60						
H	1.4		60 - 63						
H	1.5		63 - 66						

[2] Restricted application possibilities with emulsion

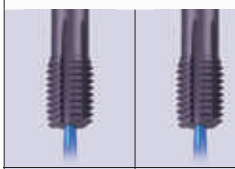


Druck STEEL-SN NT	Druck STEEL-SN TIN	Druck STEEL-SN TICN	Druck STEEL-SN IKZ-TIN	Druck STEEL/E-SN TIN	Druck STEEL/E-SN TICN	VHM-Drück STEEL SN-IKZ	InnoForm STEEL-M-SN PM-TIN-66	InnoForm STEEL-M-SN IKZ-PM-TIN-66	InnoForm STEEL-M/E-SN IKZ-PM-TIN-66	InnoForm STEEL-H-SN PM-TICN-67		
C / 2-3	C / 2-3	C / 2-3	C / 2-3	E / 1.5-2	E / 1.5-2	C / 2-3	C / 2-3	C / 2-3	E / 1.5-2	C / 2-3		
	max. 3 x d_1		max. 3 x d_1	max. 3 x d_1		max. 3 x d_1	max. 3 x d_1	max. 3 x d_1		max. 3 x d_1		Thread Depth and Hole Type
			1)			1)			1)			
170	170, 175		170	170	170		171	171	171	171		UNC
176	176, 181		176	176	176		177	177	177	177		UNF
												UNEF, UN-8
182	182, 188					182	183	183	183	183		M
	190						190	190	190	191		MF
												NPSM/NPSC
												NPSF
												Rp (BSPP)
	192											G
												NPT
												NPTF
		193, 194										Rc (BSPT)
												STI
	197			195, 196								SELF-LOCK
49 - 148	**66 - 262**	**66 - 262**	**66 - 262**	**66 - 262**	**66 - 262**		66 - 262	66 - 262	66 - 262		1.1	P
33 - 131	**66 - 197**	**66 - 197**	**66 - 197**	**66 - 197**	**66 - 197**	33 - 131	**66 - 197**	**66 - 197**	**66 - 197**		2.1	P
16 - 82	33 - 131	33 - 131	33 - 131	33 - 131	33 - 131	16 - 82	**33 - 131**	**33 - 131**	**33 - 131**	**33 - 131**	3.1	P
						7 - 66	**33 - 98**	**33 - 98**	**33 - 98**	**33 - 98**	4.1	P
										33 - 66	5.1	P
	33 - 82 2)	33 - 82 2)	33 - 82 2)	33 - 82 2)	33 - 82 2)						1.1	M
	33 - 82 2)	33 - 82 2)	33 - 82 2)	33 - 82 2)	33 - 82 2)						2.1	M
											3.1	M
											4.1	M
											1.1	K
											1.2	K
							66 - 197	**66 - 197**	**66 - 197**	**66 - 197**	2.1	K
											2.2	K
											3.1	K
											3.2	K
											4.1	K
											4.2	K
											1.1	N
											1.2	N
											1.3	N
	66 - 197	66 - 197	66 - 197	66 - 197	66 - 197	66 - 197					1.4	N
	66 - 197	66 - 197	66 - 197	66 - 197	66 - 197	66 - 197					1.5	N
											1.6	N
	66 - 131	66 - 131	66 - 131	66 - 131	66 - 131						2.1	N
	131 - 262	131 - 262	131 - 262	131 - 262	131 - 262						2.2	N
											2.3	N
											2.4	N
											2.5	N
											2.6	N
											2.7	N
											2.8	N
											3.1	N
											3.2	N
											4.1	N
											4.2	N
											4.3	N
											4.4	N
											5.1	N
											5.2	N
											5.3	N
											1.1	S
											1.2	S
											1.3	S
											2.1	S
											2.2	S
											2.3	S
											2.4	S
											2.5	S
											2.6	S
											1.1	H
											1.2	H
											1.3	H
											1.4	H
											1.5	H

Page
Vc in SFM

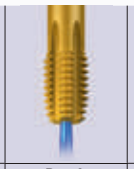
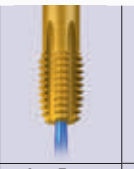
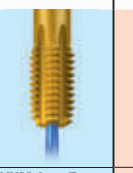
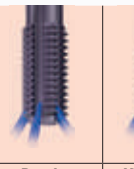
Circumferential speed v_c in SFM – Preferred suitable roll form tap
Circumferential speed v_c in SFM – Suitable roll form tap

1) Threading in through holes is possible only with external cooling/lubrication
2) Restricted application possibilities with emulsion

		EMUGE STEEL_		EMUGE VA__		EMUGE AL__			EMUGE GAL__			EMUGE H__	
													
		InnoForm STEEL-H-SN IKZ-PM-TICN-67	InnoForm STEEL-H/E-SN IKZ-PM-TICN-67	InnoForm VA/E-SN PM-TIN-T26	InnoForm VA/E-SN-IKZ PM-TIN-T26	InnoForm AL-SN PM-GLT-8	InnoForm AL-SN-IKZ PM-GLT-8	InnoForm AL/E-SN-IKZ PM-GLT-8	InnoForm GAL-SN PM-TICN	InnoForm GAL-SN-IKZ PM-TICN	InnoForm GAL/E-SN-IKZ PM-TICN	InnoForm H-SN PM-TIN-T26	InnoForm H-SN-IKZ PM-TIN-T26
		C / 2-3	C / 2-3	E / 1.5-2	E / 1.5-2	C / 2-3	C / 2-3	E / 1.5-2	C / 2-3	C / 2-3	E / 1.5-2	C / 2-3	C / 2-3
Thread Depth and Hole Type		max. 3 x d_1 1)		max. 3 x d_1	max. 3 x d_1 1)	max. 3 x d_1	max. 3 x d_1 1)		max. 3 x d_1	max. 3 x d_1 1)		max. 3 x d_1	max. 3 x d_1 1)
UNC		171	171	171	172	172		172	173	173	173		
UNF		177		177	177	178		178	178	178	179		
UNEF, UN-8													
M		183		183	183	184	184	184	184	185	185	185	185
MF		191											
NPSM/NPSC													
NPSF													
Rp (BSPP)													
G													
NPT													
NPTF													
Rc (BSPT)													
STI													
SELF-LOCK													
P	1.1			66 - 262	66 - 262								
	2.1			66 - 197	66 - 197							66 - 197	66 - 197
	3.1	**33 - 131**	**33 - 131**	33 - 131	33 - 131							**33 - 131**	**33 - 131**
	4.1	**33 - 98**	**33 - 98**	33 - 98	33 - 98							**33 - 98**	**33 - 98**
	5.1	**33 - 66**	**33 - 66**									16 - 66	16 - 66
M	1.1			**33 - 82** 2)	**33 - 82** 2)								
	2.1			**33 - 82** 2)	**33 - 82** 2)								
	3.1			16 - 66 2)	16 - 66 2)								
	4.1												
K	1.1												
	1.2												
	2.1	**66 - 197**	**66 - 197**									**66 - 197**	**66 - 197**
	2.2												
	3.1												
	3.2												
	4.1												
	4.2												
N	1.1					**66 - 197**	**66 - 197**	**66 - 197**					
	1.2					**66 - 197**	**66 - 197**	**66 - 197**					
	1.3					**66 - 197**	**66 - 197**	**66 - 197**					
	1.4					66 - 197	66 - 197	66 - 197	**66 - 197**	**66 - 197**	**66 - 197**		
	1.5								**66 - 197**	**66 - 197**	**66 - 197**		
	1.6								66 - 131	66 - 131	66 - 131		
	2.1					66 - 131	66 - 131	66 - 131					
	2.2					131 - 262	131 - 262	131 - 262					
	2.3												
	2.4												
	2.5												
	2.6												
	2.7												
	2.8												
	3.1												
	3.2												
	4.1												
	4.2												
	4.3												
	4.4												
	5.1												
	5.2												
	5.3												
S	1.1												
	1.2												
	1.3												
	2.1												
	2.2												
	2.3												
	2.4												
	2.5												
	2.6												
H	1.1												
	1.2												
	1.3												
	1.4												
	1.5												

Page
Vc in SFM

1) Threading in through holes is possible only with external cooling/lubrication
2) Restricted application possibilities with emulsion

EMUGE Z									EMUGE SPEED		
											
Druck Z-SN PM-TIN-T1	**Druck Z-SN-IKZ PM-TIN-T1**	**Druck Z-SN-IKZN PM-TIN-T1**	**InnoForm Z-SN PM-TIN-80**	**InnoForm Z-SN-IKZ PM-TIN-80**	**InnoForm Z/E-SN PM-TIN-80**	**InnoForm Z/E-SN-IKZ PM-TIN-80**	**VHM-InnoForm Z-SN-IKZ TIN-80**	**VHM-InnoForm Z/E-SN-IKZ TIN-80**	**Druck GAL-SPEED/E SN-IKZN-TICN**	**VHM-Druck GAL-SPEED/E SN-IKZN-TICN**	
C / 2-3	C / 2-3	C / 2-3	C / 2-3	C / 2-3	E / 1.5-2	E / 1.5-2	C / 2-3	E / 1.5-2	E / 1.5-2	E / 1.5-2	
max. 3 x d_1	max. 3 x d_1 1)	max. 3 x d_1	max. 3 x d_1	max. 3 x d_1 1)	max. 3 x d_1	max. 3 x d_1	max. 3 x d_1 1)		max. 3 x d_1		Thread Depth and Hole Type
173 179	173 179	173 179	173 179	174 179	174 179	174 180	174 180	174 180			UNC UNF
			185 191	185 191		186	186	186	187 191	187 191	UNEF, UN-8 M MF
											NPSM/NPSC
											NPSF
			192	192							Rp (BSPP) G
											NPT
											NPTF
											Rc (BSPT)
											STI
											SELF-LOCK
66 - 262	**66 - 262**	**66 - 262**	**66 - 262**	**66 - 262**	**66 - 262**	**66 - 262**					1.1 P
66 - 197	**66 - 197**	**66 - 197**	**66 - 197**	**66 - 197**	**66 - 197**	**66 - 197**	66 - 197	66 - 197			2.1 P
33 - 131	**33 - 131**	**33 - 131**	**33 - 131**	**33 - 131**	**33 - 131**	**33 - 131**	**33 - 131**	**33 - 131**			3.1 P
33 - 98	**33 - 98**	**33 - 98**	**33 - 98**	**33 - 98**	**33 - 98**	**33 - 98**	**33 - 98**	**33 - 98**			4.1 P
			16 - 66	16 - 66	16 - 66	16 - 66	**16 - 66**	**16 - 66**			5.1 P
33 - 82 2) 33 - 82 2) 16 - 66 2)	33 - 82 2) 33 - 82 2) 16 - 66 2)	33 - 82 2) 33 - 82 2) 16 - 66 2)	33 - 82 2) 33 - 82 2) 16 - 66 2)	33 - 82 2) 33 - 82 2) 16 - 66 2)	33 - 82 2) 33 - 82 2) 16 - 66 2)	33 - 82 2) 33 - 82 2) 16 - 66 2)					1.1 M 2.1 M 3.1 M 4.1 M
											1.1 K
											1.2 K
66 - 197	66 - 197	66 - 197	66 - 197	66 - 197	66 - 197	66 - 197					2.1 K
											2.2 K
											3.1 K
											3.2 K
											4.1 K
											4.2 K
											1.1 N
											1.2 N
											1.3 N
							66 - 262 **66 - 262**	**66 - 262** **66 - 262**	**66 - 262** **66 - 262**	**131 - 525** **131 - 525**	1.4 N 1.5 N
											1.6 N
66 - 131 131 - 262	66 - 131 131 - 262	66 - 131 131 - 262	66 - 131 131 - 262	66 - 131 131 - 262	66 - 131 131 - 262	66 - 131 131 - 262					2.1 N 2.2 N
											2.3 N
66 - 131 66 - 131	66 - 131 66 - 131	66 - 131 66 - 131	66 - 131 66 - 131	66 - 131 66 - 131	66 - 131 66 - 131	66 - 131 66 - 131	66 - 131 66 - 131	66 - 131 66 - 131			2.4 N 2.5 N
											2.6 N
											2.7 N
											2.8 N
											3.1 N
											3.2 N
											4.1 N
											4.2 N
											4.3 N
											4.4 N
											5.1 N
											5.2 N
											5.3 N
16 - 66 2) 16 - 49 2) 16 - 33 2)	16 - 66 2) 16 - 49 2) 16 - 33 2)	16 - 66 2) 16 - 49 2) 16 - 33 2)	16 - 66 2) 16 - 49 2) 16 - 33 2)	16 - 66 2) 16 - 49 2) 16 - 33 2)	16 - 66 2) 16 - 49 2) 16 - 33 2)	16 - 66 2) 16 - 49 2) 16 - 33 2)					1.1 S 1.2 S 1.3 S
16 - 49 2) 16 - 33 2)	16 - 49 2) 16 - 33 2)	16 - 49 2) 16 - 33 2)	16 - 33 2) 16 - 33 2)	16 - 33 2) 16 - 33 2)	16 - 33 2) 16 - 33 2)	16 - 33 2) 16 - 33 2)					2.1 S 2.2 S
											2.3 S
16 - 33 2)	16 - 33 2)	16 - 33 2)	16 - 33 2)	16 - 33 2)	16 - 33 2)	16 - 33 2)					2.4 S 2.5 S
											2.6 S
											1.1 H
											1.2 H
											1.3 H
											1.4 H
											1.5 H

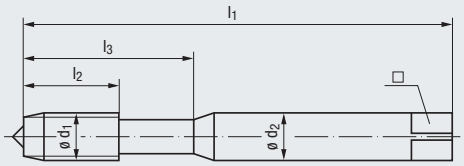
Page
v_c in SFM

Circumferential speed v_c in SFM – Preferred suitable roll form tap
Circumferential speed v_c in SFM – Suitable roll form tap

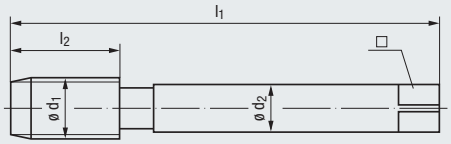
1) Threading in through holes is possible only with external cooling/lubrication
2) Restricted application possibilities with emulsion

DIN Length · ANSI Shank

Overall length acc. to DIN 2174



Reinforced Shank
(No.1 - 3/8)



Reduced Shank
(7/16 - 1)

STEEL
Steel Materials

UNC

Unified Coarse Thread
ASME B1.1

Class of Fit	2BX	2BX	2BX	2BX	2BX
Coating	NT	TIN	TIN	TIN	TICN
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics					
	C / 2-3	C / 2-3	C / 2-3	**E / 1.5-2**	**E / 1.5-2**
	O / P	E / O / P	E / O	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1		max. 3 x d_1 1)		max. 3 x d_1
Applications – Material	P 1.1-3.1	P 1.1-3.1 M 1.1-2.1 2) N 1.4-5, 2.1-2	P 1.1-3.1 M 1.1-2.1 2) N 1.4-5, 2.1-2	P 1.1-3.1 M 1.1-2.1 2) N 1.4-5, 2.1-2	P 1.1-3.1 M 1.1-2.1 2) N 1.4-5, 2.1-2

Reinforced Shank

Nominal Size ø d_1	T.P.I.	l_1	l_2	inch l_3	ø d_2	□	Dimens. ID	Tool Identification	BU921000 Druck 1-STEEL-SN NT	BU921400 Druck 1-STEEL-SN TIN	BW921400 Druck 1-STEEL-SN IKZ-TIN	BU931400 Druck 1-STEEL/E-SN TIN	BU939000 Druck 1-STEEL/E-SN TICN
No. 1	64	1.772	0.276	0.472	0.141	0.110	0.0669	.5000					
No. 2	56	1.772	0.276	0.472	0.141	0.110	0.0787	.5001	●			●	●
No. 3	48	1.969	0.354	0.551	0.141	0.110	0.0906	.5002	●				
No. 4	40	2.205	0.433	0.709	0.141	0.110	0.1004	.5003	●	●		●	●
No. 5	40	2.205	0.433	0.709	0.141	0.110	0.1142	.5004	●	●			
No. 6	32	2.205	0.472	0.787	0.141	0.110	0.1240	.5005	●	●		●	●
No. 8	32	2.480	0.512	0.827	0.168	0.131	0.1496	.5006	●	●		●	●
No. 10	24	2.756	0.591	0.984	0.194	0.152	0.1713	.5007	●	●		●	●
No. 12	24	3.150	0.630	1.142	0.220	0.165	0.1969	.5008	●	●			
1/4	20	3.150	0.669	1.181	0.255	0.191	0.2264	.5009	●	●	●	●	●
5/16	18	3.543	0.787	1.378	0.318	0.238	0.2874	.5010	●	●	●	●	●
3/8	16	3.937	0.866	1.535	0.381	0.286	0.3465	.5011	●	●	●	●	●

Reduced Shank

Nominal Size ø d_1	T.P.I.	l_1	l_2	inch l_3	ø d_2	□	Dimens. ID	Tool Identification	CU921000 Druck 2-STEEL-SN NT	CU921400 Druck 2-STEEL-SN TIN	CW921400 Druck 2-STEEL-SN IKZ-TIN		
7/16	14	3.937	0.866	—	0.323	0.242	0.4035	.5012	●	●	●		
1/2	13	4.331	0.984	—	0.367	0.275	0.4646	.5013	●	●	●		
9/16	12	4.331	1.024	—	0.429	0.322	0.5236	.5014	●				
5/8	11	4.331	1.063	—	0.480	0.360	0.5827	.5015	●	●	●		
3/4	10	4.921	1.181	—	0.590	0.442	0.7028	.5016	●	●	●		
7/8	9	5.512	1.260	—	0.697	0.523	0.8228	.5017	●	●	●		
1	8	6.299	1.417	—	0.800	0.600	0.9409	.5018		●	●		

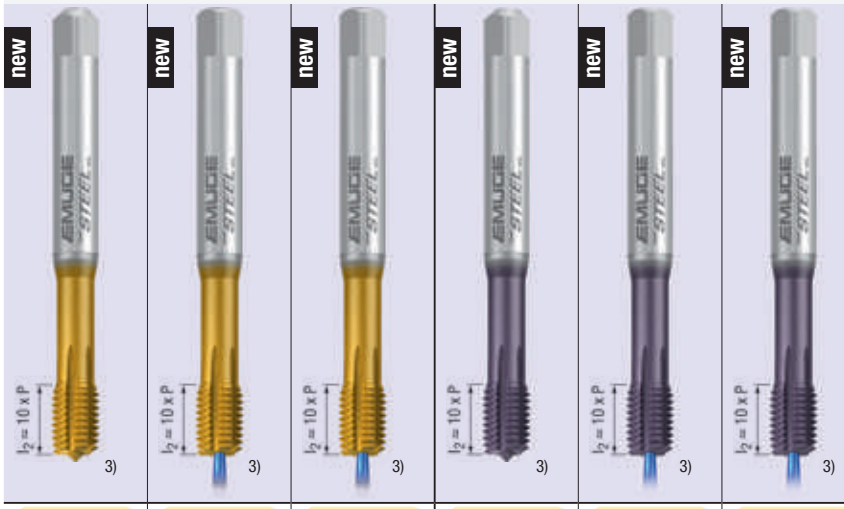
We recommend a smaller preparatory diameter by 0.002 in for difficult to form materials (such as aluminum cast alloys) for P = 24 T.P.I. and coarser threads.
For further information regarding the recommended preparatory diameters, see page 208 - 209.

1) Cold-forming in through holes is possible only with external cooling/lubrication
2) Restricted application possibilities with emulsion

Ordering Example: **BU921000.5001**

STEEL
Steel Materials

VA
Stainless steel materials



2BX	2BX	2BX	2BX	2BX	2BX		2BX	Class of Fit
TIN-66	TIN-66	TIN-66	TICN-67	TICN-67	TICN-67		TIN-T26	Coating
HSSE-PM	**HSSE-PM**	**HSSE-PM**	**HSSE-PM**	**HSSE-PM**	**HSSE-PM**		**HSSE-PM**	Cutting Material
								Technical Characteristics
C / 2-3	C / 2-3	**E / 1.5-2**	C / 2-3	C / 2-3	**E / 1.5-2**		**E / 1.5-2**	
E / O / P	E / O	E / O	E / O / P	E / O	E / O		E / O / P	
max. 3 x d_1	max. 3 x d_1 1)		max. 3 x d_1	max. 3 x d_1 1)			max. 3 x d_1	Thread Depth and Hole Shape
P 1.1-4.1 K 2.1	P 1.1-4.1 K 2.1	P 1.1-4.1 K 2.1	P 3.1-5.1 K 2.1	P 3.1-5.1 K 2.1	P 3.1-5.1 K 2.1		P 1.1-4.1 M 1.1-3.1 2)	Applications – Material

BU377F00	BU387F00	BU447F00	BU376F00	BU386F00	BU446F00		BU396A00	Tool Identification		
InnoForm 1-STEEL-M SN-PM TIN-66	InnoForm 1-STEEL-M SN-IKZ-PM TIN-66	InnoForm 1-STEEL-M/E SN-IKZ-PM TIN-66	InnoForm 1-STEEL-H SN-PM TICN-67	InnoForm 1-STEEL-H SN-IKZ-PM TICN-67	InnoForm 1-STEEL-H/E SN-IKZ-PM TICN-67		InnoForm 1-VA/E-SN PM-TIN-T26	Dimens. ID	Nominal Size ø d_1	T.P.I.
								.5000	No. 1	64
							●	.5001	No. 2	56
●			●					.5002	No. 3	48
●			●				●	.5003	No. 4	40
●			●					.5004	No. 5	40
●			●				●	.5005	No. 6	32
●			●				●	.5006	No. 8	32
●			●				●	.5007	No. 10	24
●			●	●	●			.5008	No. 12	24
●	●	●	●	●	●		●	.5009	1/4	20
●	●	●	●	●			●	.5010	5/16	18
●	●	●	●	●	●		●	.5011	3/8	16

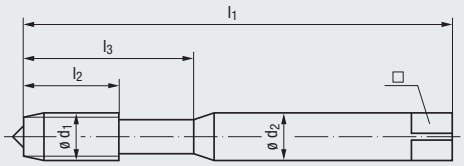
CU377F00	CU387F00		CU376F00	CU386F00	CU446F00		CU396A00	Tool Identification		
InnoForm 2-STEEL-M SN-PM TIN-66	InnoForm 2-STEEL-M SN-IKZ-PM TIN-66		InnoForm 2-STEEL-H SN-PM TICN-67	InnoForm 2-STEEL-H SN-IKZ-PM TICN-67	InnoForm 2-STEEL-H SN-IKZ-PM TICN-67		InnoForm 2-VA/E-SN PM-TIN-T26	Dimens. ID	Nominal Size ø d_1	T.P.I.
●	●		●	●			●	.5012	7/16	14
●	●		●	●	●		●	.5013	1/2	13
●	●		●	●			●	.5014	9/16	12
●	●		●	●	●		●	.5015	5/8	11
●	●		●	●	●		●	.5016	3/4	10
●	●		●	●			●	.5017	7/8	9
●	●		●	●	●			.5018	1	8

1) Cold-forming in through holes is possible only with external cooling/lubrication
2) Restricted application possibilities with emulsion
3) Patent pending

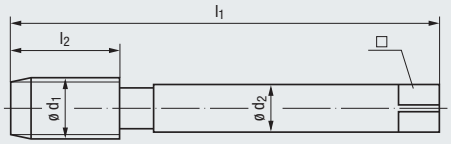
● = In stock
★ = Allow 7 days for delivery

DIN Length · ANSI Shank

Overall length acc. to DIN 2174



Reinforced Shank
(No.1 - 3/8)



Reduced Shank
(7/16 - 1)

UNC

Unified Coarse Thread
ASME B1.1

	VA Stainless steel materials		AL Aluminum Wrought Alloys	
	new		new	new
Class of Fit	2BX		2BX	2BX
Coating	TIN-T26		GLT-8	GLT-8
Cutting Material	**HSSE-PM**		**HSSE-PM**	**HSSE-PM**
Technical Characteristics				
	E / 1.5-2		C / 2-3	**E / 1.5-2**
	E / O		E / O / P	E / O
Thread Depth and Hole Shape	max. 3 x d_1 1)		max. 3 x d_1	max. 3 x d_1 1)
Applications – Material	P 1.1-4.1 M 1.1-3.1 2)		N 1.1-4, 2.1-2	N 1.1-4, 2.1-2

Reinforced Shank

Nominal Size ø d_1	T.P.I.	l_1	l_2	inch l_3	ø d_2	□	Dimens. ID	Tool Identification	BU446A00 InnoForm 1-VA/E-SN IKZ-PM TIN-T26		BU37Y700 InnoForm 1-AL-SN-PM GLT-8	BU44Y700 InnoForm 1-AL/E-SN IKZ-PM GLT-8	
No. 1	64	1.772	0.157	0.472	0.141	0.110	0.0669	.5000					
No. 2	56	1.772	0.177	0.472	0.141	0.110	0.0787	.5001			●		
No. 3	48	1.969	0.197	0.551	0.141	0.110	0.0906	.5002			●		
No. 4	40	2.205	0.236	0.709	0.141	0.110	0.1004	.5003			●		
No. 5	40	2.205	0.276	0.709	0.141	0.110	0.1142	.5004			●		
No. 6	32	2.205	0.276	0.787	0.141	0.110	0.1240	.5005			●		
No. 8	32	2.480	0.315	0.827	0.168	0.131	0.1496	.5006			●		
No. 10	24	2.756	0.394	0.984	0.194	0.152	0.1713	.5007	●		●	●	
No. 12	24	3.150	0.394	1.142	0.220	0.165	0.1969	.5008					
1/4	20	3.150	0.512	1.181	0.255	0.191	0.2264	.5009	●		●	●	
5/16	18	3.543	0.551	1.378	0.318	0.238	0.2874	.5010	●		●	●	
3/8	16	3.937	0.630	1.535	0.381	0.286	0.3465	.5011	●		●	●	

Reduced Shank

Nominal Size ø d_1	T.P.I.	l_1	l_2	inch l_3	ø d_2	□	Dimens. ID	Tool Identification	CU446A00 InnoForm 2-VA/E-SN IKZ-PM TIN-T26		CU37Y700 InnoForm 1-AL-SN-PM GLT-8	CU44Y700 InnoForm 1-AL/E-SN IKZ-PM GLT-8	
7/16	14	3.937	0.709	—	0.323	0.242	0.4035	.5012	●		●	●	
1/2	13	4.331	0.787	—	0.367	0.275	0.4646	.5013	●		●	●	
9/16	12	4.331	0.787	—	0.429	0.322	0.5236	.5014					
5/8	11	4.331	0.866	—	0.480	0.360	0.5827	.5015	●		●	●	
3/4	10	4.921	0.984	—	0.590	0.442	0.7028	.5016	●		●	●	
7/8	9	5.512	1.063	—	0.697	0.523	0.8228	.5017	●				
1	8	6.299	1.181	—	0.800	0.600	0.9409	.5018					

We recommend a smaller preparatory diameter by 0.002 in for difficult to form materials (such as aluminum cast alloys) for P = 24 T.P.I. and coarser threads.
For further information regarding the recommended preparatory diameters, see page 208 - 209.

1) Cold-forming in through holes is possible only with external cooling/lubrication
2) Restricted application possibilities with emulsion

Ordering Example: **BU446A00.5007**

GAL Aluminum Cast Alloys				Z CNC-Controlled Machines				
new	new	new			new			
2BX	2BX	2BX		2BX	2BX	2BX	2BX	Class of Fit
TICN	TICN	TICN		TIN-T1	TIN-T1	TIN-T1	TIN-80	Coating
HSSE-PM	HSSE-PM	HSSE-PM		HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	Cutting Material
								Technical Characteristics
C / 2-3	C / 2-3	**E / 1.5-2**		C / 2-3	C / 2-3	C / 2-3	C / 2-3	
E / 0 / P	E / 0	E / 0		E / 0 / P	E / 0	E / 0	E / 0 / P	
max. 3 x d_1	max. 3 x d_1	max. 3 x d_1		max. 3 x d_1	max. 3 x d_1	max. 3 x d_1		Thread Depth and Hole Shape
	1)	1)			1)			
N 1.4-6	N 1.4-6	N 1.4-6		P 1.1-4.1 M 1.1-3.1 2) K 2.1 N 2.1-2, 2.4-5 S 1.1-2.2 2) S 2.4 2)	P 1.1-4.1 M 1.1-3.1 2) K 2.1 N 2.1-2, 2.4-5 S 1.1-2.2 2) S 2.4 2)	P 1.1-4.1 M 1.1-3.1 2) K 2.1 N 2.1-2, 2.4-5 S 1.1-2.2 2) S 2.4 2)	P 1.1-5.1 M 1.1-3.1 2) K 2.1 N 2.1-2, 2.4-5 S 1.1-2.2 2) S 2.4 2)	Applications – Material

BU37Q200	BU38Q200	BU44Q200		BU92F000	BW92F000	BW10F000	BU37Z700	Tool Identification		
InnoForm 1-GAL-SN PM-TICN	InnoForm 1-GAL-SN IKZ-PM-TICN	InnoForm 1-GAL/E-SN IKZ-PM-TICN		Druck 1-Z-SN PM-TIN-T1	Druck 1-Z-SN-IKZ PM-TIN-T1	Druck 1-Z-SN-IKZN PM-TIN-T1	InnoForm 1-Z-SN-PM TIN-80	Dimens. ID	Nominal Size ø d_1	T.P.I.
								.5000	No. 1	64
●								.5001	No. 2	56
●								.5002	No. 3	48
●				●			●	.5003	No. 4	40
●				●			●	.5004	No. 5	40
●				●			●	.5005	No. 6	32
●				●			●	.5006	No. 8	32
●	●	●		●	●	●	●	.5007	No. 10	24
								.5008	No. 12	24
●	●	●		●	●	●	●	.5009	1/4	20
●	●	●		●	●	●	●	.5010	5/16	18
●	●	●		●	●	●	●	.5011	3/8	16

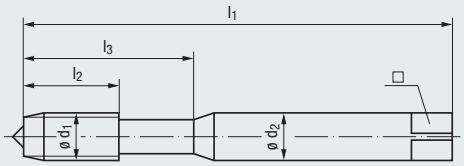
CU37Q200	CU38Q200	CU44Q200		CU92F000	CW92F000	CW10F000	CU37Z700	Tool Identification		
InnoForm 2-GAL-SN PM-TICN	InnoForm 2-GAL-SN IKZ-PM-TICN	InnoForm 2-GAL/E-SN IKZ-PM-TICN		Druck 2-Z-SN PM-TIN-T1	Druck 2-Z-SN-IKZ PM-TIN-T1	Druck 2-Z-SN-IKZN PM-TIN-T1	InnoForm 2-Z-SN-PM TIN-80	Dimens. ID	Nominal Size ø d_1	T.P.I.
●	●	●		●	●	●	●	.5012	7/16	14
●	●	●		●	●	●	●	.5013	1/2	13
				●	●	●	●	.5014	9/16	12
●	●	●		●	●	●	●	.5015	5/8	11
●	●	●		●	●	●	●	.5016	3/4	10
								.5017	7/8	9
								.5018	1	8

1) Cold-forming in through holes is possible only with external cooling/lubrication
2) Restricted application possibilities with emulsion

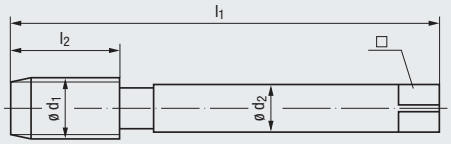
● = In stock
★ = Allow 7 days for delivery

DIN Length · ANSI Shank

Overall length acc. to DIN 2174



Reinforced Shank (No.1 - 3/8)



Reduced Shank (7/16 - 1)

Z
CNC-Controlled Machines

UNC

Unified Coarse Thread
ASME B1.1

Class of Fit	2BX	2BX	2BX	2BX	2BX
Coating	TIN-80	TIN-80	TIN-80	TIN-80	TIN-80
Cutting Material	HSSE-PM	HSSE-PM	HSSE-PM	Carbide	Carbide
Technical Characteristics					
	C / 2-3	E / 1.5-2	E / 1.5-2	C / 2-3	E / 1.5-2
	E / O	E / O / P	E / O	E / O	E / O
Thread Depth and Hole Shape	max. 3 x d_1 1)	max. 3 x d_1		max. 3 x d_1 1)	
Applications – Material	P 1.1-5.1 M 1.1-3.1 2) K 2.1 N 2.1-2, 2.4-5 S 1.1-2.2 2) S 2.4 2)	P 1.1-5.1 M 1.1-3.1 2) K 2.1 N 2.1-2, 2.4-5 S 1.1-2.2 2) S 2.4 2)	P 1.1-5.1 M 1.1-3.1 2) K 2.1 N 2.1-2, 2.4-5 S 1.1-2.2 2) S 2.4 2)	P 2.1-5.1 N 1.4-5, 2.4-5	P 2.1-5.1 N 1.4-5, 2.4-5

Reinforced Shank

Nominal Size ø d_1	T.P.I.	l_1	l_2	inch l_3	ø d_2	□	Dimens. ID	BU38Z700 InnoForm 1-Z-SN-IKZ PM-TIN-80	BU39Z700 InnoForm 1-Z/E-SN PM-TIN-80	BU44Z700 InnoForm 1-Z/E-SN-IKZ PM-TIN-80	BU38Z800 VHM InnoForm 1-Z-SN-IKZ TIN-80	BU44Z800 VHM InnoForm 1-Z/E-SN-IKZ TIN-80
No. 1	64	1.772	0.157	0.472	0.141	0.110	0.0669	.5000					
No. 2	56	1.772	0.177	0.472	0.141	0.110	0.0787	.5001					
No. 3	48	1.969	0.197	0.551	0.141	0.110	0.0906	.5002					
No. 4	40	2.205	0.236	0.709	0.141	0.110	0.1004	.5003		●			
No. 5	40	2.205	0.276	0.709	0.141	0.110	0.1142	.5004		●			
No. 6	32	2.205	0.276	0.787	0.141	0.110	0.1240	.5005		●			
No. 8	32	2.480	0.315	0.827	0.168	0.131	0.1496	.5006		●			
No. 10	24	2.756	0.394	0.984	0.194	0.152	0.1713	.5007	●	●	●	●	●
No. 12	24	3.150	0.394	1.142	0.220	0.165	0.1969	.5008					
1/4	20	3.150	0.512	1.181	0.255	0.191	0.2264	.5009	●	●	●	●	●
5/16	18	3.543	0.551	1.378	0.318	0.238	0.2874	.5010	●	●	●	●	●
3/8	16	3.937	0.630	1.535	0.381	0.286	0.3465	.5011	●	●	●	●	●

Reduced Shank

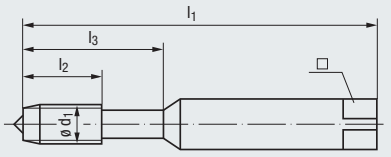
Nominal Size ø d_1	T.P.I.	l_1	l_2	inch l_3	ø d_2	□	Dimens. ID	CU38Z700 InnoForm 2-Z-SN-IKZ PM-TIN-80	CU39Z700 InnoForm 2-Z/E-SN PM-TIN-80	CU44Z700 InnoForm 2-Z/E-SN-IKZ PM-TIN-80		
7/16	14	3.937	0.709	—	0.323	0.242	0.4035	.5012	●	●	●		
1/2	13	4.331	0.787	—	0.367	0.275	0.4646	.5013	●	●	●		
9/16	12	4.331	0.787	—	0.429	0.322	0.5236	.5014	●	●	●		
5/8	11	4.331	0.866	—	0.480	0.360	0.5827	.5015	●	●	●		
3/4	10	4.921	0.984	—	0.590	0.442	0.7028	.5016	●	●	●		
7/8	9	5.512	1.063	—	0.697	0.523	0.8228	.5017			●		
1	8	6.299	1.181	—	0.800	0.600	0.9409	.5018			●		

We recommend a smaller preparatory diameter by 0.002 in for difficult to form materials (such as aluminum cast alloys) for P = 24 T.P.I. and coarser threads.
For further information regarding the recommended preparatory diameters, see page 208 - 209.

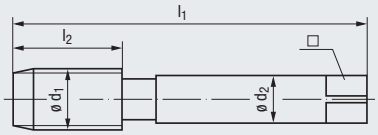
1) Cold-forming in through holes is possible only with external cooling/lubrication
2) Restricted application possibilities with emulsion

Ordering Example: **BU38Z700.5007**

ANSI Length · ANSI Shank



Reinforced Shank
(No.4 - 3/8)



Reduced Shank
(7/16 - 3/4)

STEEL
Steel Materials

UNC

Unified Coarse Thread
ASME B1.1

Class of Fit	2BX
Coating	TIN
Cutting Material	HSS Extra
Technical Characteristics	C / 2-3
	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1
Applications – Material	P 1.1-3.1
	M 1.1-2.1 2)
	N 1.4-5, 2.1-2

Nominal Size ø d_1	T.P.I.	inch l_1		l_2	l_3	ø d_2	□	Tool Identification Dimens. ID		AU921400 Druck STEEL-SN TIN
No. 4	40	1 7/8	1.88	0.433	0.709	0.141	0.110	0.1004	**.5003**	●
No. 5	40	1 15/16	1.94	0.433	0.709	0.141	0.110	0.1142	**.5004**	●
No. 6	32	2	2.00	0.472	0.748	0.141	0.110	0.1240	**.5005**	●
No. 8	32	2 1/8	2.13	0.512	0.827	0.168	0.131	0.1496	**.5006**	●
No. 10	24	2 3/8	2.38	0.591	0.945	0.194	0.152	0.1713	**.5007**	
1/4	20	2 1/2	2.50	0.669	1.142	0.255	0.191	0.2264	**.5009**	●
5/16	18	2 23/32	2.72	0.787	1.299	0.318	0.238	0.2874	**.5010**	●
3/8	16	2 15/16	2.94	0.866	1.378	0.381	0.286	0.3465	**.5011**	●
7/16	14	3 5/32	3.16	0.866	—	0.323	0.242	0.4035	**.5012**	●
1/2	13	3 3/8	3.38	0.984	—	0.367	0.275	0.4646	**.5013**	●
9/16	12	3 19/32	3.59	1.024	—	0.429	0.322	0.5236	**.5014**	●
5/8	11	3 13/16	3.81	1.063	—	0.480	0.360	0.5827	**.5015**	●
3/4	10	4 1/4	4.25	1.181	—	0.590	0.442	0.7028	**.5016**	●

2) Restricted application possibilities with emulsion

We recommend a smaller preparatory diameter by 0.002 in for difficult to form materials (such as aluminum cast alloys) for P = 24 T.P.I. and coarser threads.
For further information regarding the recommended preparatory diameters, see page 208 - 209.

DIN Length · ANSI Shank

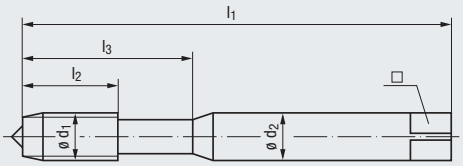
All ANSI Length · ANSI Shank taps are available in the popular DIN Length · ANSI Shank style.

The DIN Length · ANSI Shank configuration allows for added reach capabilities and greater chip clearance.

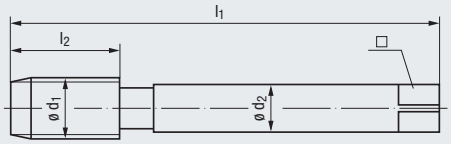
● = In stock
★ = Allow 7 days for delivery

DIN Length · ANSI Shank

Overall length acc. to DIN 2174



Reinforced Shank
(No.0 - 3/8)



Reduced Shank
(7/16 - 7/8)

STEEL
Steel Materials

UNF

Unified Fine Thread
ASME B1.1

Class of Fit	2BX	2BX	2BX	2BX	2BX
Coating	NT	TIN	TIN	TIN	TICN
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics					
	C / 2-3	C / 2-3	C / 2-3	**E / 1.5-2**	**E / 1.5-2**
	O / P	E / O / P	E / O	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1		max. 3 x d_1 1)		max. 3 x d_1
Applications – Material	P 1.1-3.1	P 1.1-3.1 M 1.1-2.1 2) N 1.4-5, 2.1-2	P 1.1-3.1 M 1.1-2.1 2) N 1.4-5, 2.1-2	P 1.1-3.1 M 1.1-2.1 2) N 1.4-5, 2.1-2	P 1.1-3.1 M 1.1-2.1 2) N 1.4-5, 2.1-2

Reinforced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification	BU921000 Druck 1-STEEL-SN NT	BU921400 Druck 1-STEEL-SN TIN	BW921400 Druck 1-STEEL-SN IKZ-TIN	BU931400 Druck 1-STEEL/E-SN TIN	BU939000 Druck 1-STEEL/E-SN TICN
No. 0	80	1.626	0.236	0.433	0.141	0.110	0.0551	**.5033**	●				
No. 1	72	1.772	0.276	0.472	0.141	0.110	0.0669	**.5034**	●				
No. 2	64	1.772	0.276	0.472	0.141	0.110	0.0795	**.5035**	●				
No. 3	56	1.969	0.354	0.551	0.141	0.110	0.0913	**.5036**	●				
No. 4	48	2.205	0.433	0.709	0.141	0.110	0.1031	**.5037**	●	●			
No. 5	44	2.205	0.433	0.709	0.141	0.110	0.1150	**.5038**	●	●			
No. 6	40	2.205	0.472	0.787	0.141	0.110	0.1268	**.5039**	●	●			
No. 8	36	2.480	0.512	0.827	0.168	0.131	0.1516	**.5040**	●	●			
No. 10	32	2.756	0.512	0.984	0.194	0.152	0.1752	**.5041**	●	●	●	●	●
No. 12	28	3.150	0.630	1.142	0.220	0.165	0.2008	**.5042**	●	●			
1/4	28	3.150	0.669	1.181	0.255	0.191	0.2343	**.5043**	●	●	●	●	●
5/16	24	3.543	0.669	1.260	0.318	0.238	0.2933	**.5044**	●	●	●	●	●
3/8	24	3.937	0.709	1.535	0.381	0.286	0.3563	**.5045**	●	●	●	●	●

Reduced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification	CU921000 Druck 2-STEEL-SN NT	CU921400 Druck 2-STEEL-SN TIN
7/16	20	3.937	0.866	—	0.323	0.242	0.4154	**.5046**	●	●
1/2	20	3.937	0.866	—	0.367	0.275	0.4783	**.5047**	●	●
9/16	18	3.937	0.866	—	0.429	0.322	0.5374	**.5048**	●	
5/8	18	3.937	0.866	—	0.480	0.360	0.6004	**.5049**	●	●
3/4	16	4.331	0.984	—	0.590	0.442	0.7224	**.5050**	●	●
7/8	14	4.921	1.024	—	0.697	0.523	0.8425	**.5051**	●	●

We recommend a smaller preparatory diameter by 0.002 in for difficult to form materials (such as aluminum cast alloys) for P = 24 T.P.I. and coarser threads.
For further information regarding the recommended preparatory diameters, see page 208 - 209.

1) Cold-forming in through holes is possible only with external cooling/lubrication
2) Restricted application possibilities with emulsion

Ordering Example: **BU921000.5033**

STEEL
Steel Materials

VA
Stainless steel materials

2BX	2BX	2BX	2BX	2BX	2BX	2BX	Class of Fit
TIN-66	TIN-66	TIN-66	TICN-67	TICN-67	TIN-T26	TIN-T26	Coating
HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	HSSE-PM	Cutting Material
C / 2-3	C / 2-3	**E / 1.5-2**	C / 2-3	C / 2-3	**E / 1.5-2**	**E / 1.5-2**	Technical Characteristics
E / O / P	E / O	E / O	E / O / P	E / O	E / O / P	E / O	
max. 3 x d_1	max. 3 x d_1 1)		max. 3 x d_1	max. 3 x d_1 1)	max. 3 x d_1	max. 3 x d_1 1)	Thread Depth and Hole Shape
P 1.1-4.1 K 2.1	P 1.1-4.1 K 2.1	P 1.1-4.1 K 2.1	P 3.1-5.1 K 2.1	P 3.1-5.1 K 2.1	P 1.1-4.1 M 1.1-3.1 2)	P 1.1-4.1 M 1.1-3.1 2)	Applications – Material

BU377F00	BU387F00	BU447F00	BU376F00	BU386F00	BU396A00	BU446A00	Tool Identification		
InnoForm 1-STEEL-M SN-PM TIN-66	InnoForm 1-STEEL-M SN-IKZ-PM TIN-66	InnoForm 1-STEEL-M/E SN-IKZ-PM TIN-66	InnoForm 1-STEEL-H SN-PM TICN-67	InnoForm 1-STEEL-H SN-IKZ-PM TICN-67	InnoForm 1-VA/E-SN PM-TIN-T26	InnoForm 1-VA/E-SN IKZ-PM TIN-T26	Dimens. ID	Nominal Size ø d_1	T.P.I.
							.5033	No. 0	80
							.5034	No. 1	72
					●		.5035	No. 2	64
					●		.5036	No. 3	56
					●		.5037	No. 4	48
					●		.5038	No. 5	44
					●		.5039	No. 6	40
					●		.5040	No. 8	36
●	●	●	●	●	●	●	.5041	No. 10	32
					●		.5042	No. 12	28
●	●	●	●	●	●	●	.5043	1/4	28
●	●	●	●	●	●	●	.5044	5/16	24
●	●	●	●	●	●	●	.5045	3/8	24

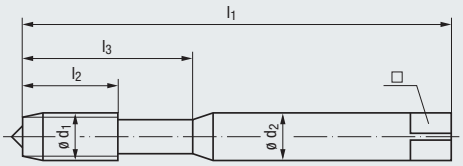
CU377F00	CU387F00	CU447F00	CU376F00	CU386F00	CU396A00	CU446A00	Tool Identification		
InnoForm 2-STEEL-M SN-PM TIN-66	InnoForm 2-STEEL-M SN-IKZ-PM TIN-66	InnoForm 2-STEEL-M/E SN-IKZ-PM TIN-66	InnoForm 2-STEEL-H SN-PM TICN-67	InnoForm 2-STEEL-H SN-IKZ-PM TICN-67	InnoForm 2-VA/E-SN PM-TIN-T26	InnoForm 2-VA/E-SN IKZ-PM TIN-T26	Dimens. ID	Nominal Size ø d_1	T.P.I.
●	●	●	●	●	●	●	.5046	7/16	20
●	●	●	●	●	●	●	.5047	1/2	20
●	●	●	●	●	●	●	.5048	9/16	18
●	●	●	●	●	●	●	.5049	5/8	18
●	●	●	●	●	●	●	.5050	3/4	16
							.5051	7/8	14

1) Cold-forming in through holes is possible only with external cooling/lubrication
2) Restricted application possibilities with emulsion
3) Patent pending

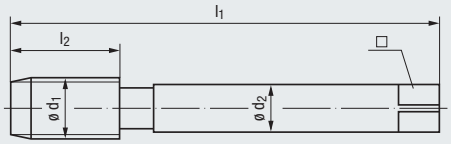
● = In stock
★ = Allow 7 days for delivery

DIN Length · ANSI Shank

Overall length acc. to DIN 2174



Reinforced Shank
(No.0 - 3/8)



Reduced Shank
(7/16 - 7/8)

UNF

Unified Fine Thread
ASME B1.1

	AL Aluminum Wrought Alloys			GAL Aluminum Cast Alloys	
Class of Fit	2BX	2BX		2BX	2BX
Coating	GLT-8	GLT-8		TICN	TICN
Cutting Material	HSSE-PM	HSSE-PM		HSSE-PM	HSSE-PM
Technical Characteristics					
	C / 2-3	**E / 1.5-2**		C / 2-3	C / 2-3
	E / O / P	E / O		E / O / P	E / O
Thread Depth and Hole Shape	max. 3 x d_1	max. 3 x d_1 1)		max. 3 x d_1	max. 3 x d_1 1)
Applications – Material	N 1.1-4, 2.1-2	N 1.1-4, 2.1-2		N 1.4-6	N 1.4-6

Reinforced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification	BU37Y700 InnoForm 1-AL-SN-PM GLT-8	BU44Y700 InnoForm 1-AL/E-SN IKZ-PM GLT-8		BU37Q200 InnoForm 1-GAL-SN PM-TICN	BU38Q200 InnoForm 1-GAL-SN IKZ-PM-TICN
No. 0	80	1.626	0.157	0.433	0.141	0.110	0.0551	.5033					
No. 1	72	1.772	0.157	0.472	0.141	0.110	0.0669	.5034					
No. 2	64	1.772	0.177	0.472	0.141	0.110	0.0795	.5035	●			●	
No. 3	56	1.969	0.197	0.551	0.141	0.110	0.0913	.5036	●			●	
No. 4	48	2.205	0.236	0.709	0.141	0.110	0.1031	.5037	●			●	
No. 5	44	2.205	0.276	0.709	0.141	0.110	0.1150	.5038	●			●	
No. 6	40	2.205	0.276	0.787	0.141	0.110	0.1268	.5039	●			●	
No. 8	36	2.480	0.315	0.827	0.168	0.131	0.1516	.5040	●			●	
No. 10	32	2.756	0.394	0.984	0.194	0.152	0.1752	.5041	●	●		●	●
No. 12	28	3.150	0.394	1.142	0.220	0.165	0.2008	.5042	●			●	
1/4	28	3.150	0.394	1.181	0.255	0.191	0.2343	.5043	●	●		●	●
5/16	24	3.543	0.394	1.260	0.318	0.238	0.2933	.5044	●	●		●	●
3/8	24	3.937	0.394	1.535	0.381	0.286	0.3563	.5045	●	●		●	●

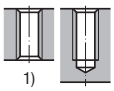
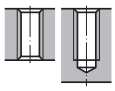
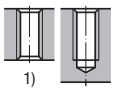
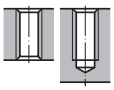
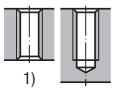
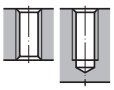
Reduced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification	CU37Y700 InnoForm 2-AL-SN-PM GLT-8	CU44Y700 InnoForm 2-AL/E-SN IKZ-PM GLT-8		CU37Q200 InnoForm 2-GAL-SN PM-TICN	CU38Q200 InnoForm 2-GAL-SN IKZ-PM-TICN
7/16	20	3.937	0.512	—	0.323	0.242	0.4154	.5046	●	●		●	●
1/2	20	3.937	0.512	—	0.367	0.275	0.4783	.5047	●	●		●	●
9/16	18	3.937	0.591	—	0.429	0.322	0.5374	.5048	●	●		●	●
5/8	18	3.937	0.591	—	0.480	0.360	0.6004	.5049	●	●		●	●
3/4	16	4.331	0.669	—	0.590	0.442	0.7224	.5050	●	●		●	●
7/8	14	4.921	0.669	—	0.697	0.523	0.8425	.5051					

We recommend a smaller preparatory diameter by 0.002 in for difficult to form materials (such as aluminum cast alloys) for P = 24 T.P.I. and coarser threads.
For further information regarding the recommended preparatory diameters, see page 208 - 209.

1) Cold-forming in through holes is possible only with external cooling/lubrication
2) Restricted application possibilities with emulsion

Ordering Example: **BU37Y700.5035**

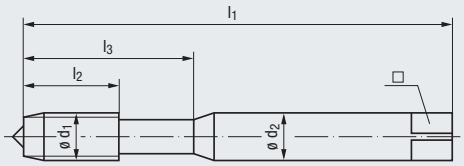
GAL Aluminum Cast Alloys		Z CNC-Controlled Machines						
new					new	new	new	
2BX		2BX	2BX	2BX	2BX	2BX	2BX	Class of Fit
TICN		TIN-T1	TIN-T1	TIN-T1	TIN-80	TIN-80	TIN-80	Coating
HSSE-PM		**HSSE-PM**	**HSSE-PM**	**HSSE-PM**	**HSSE-PM**	**HSSE-PM**	**HSSE-PM**	Cutting Material
								Technical Characteristics
E / 1.5-2		C / 2-3	C / 2-3	C / 2-3	C / 2-3	C / 2-3	**E / 1.5-2**	
E / O		E / O / P	E / O	E / O	E / O / P	E / O	E / O / P	
max. 3 x d_1  1)		max. 3 x d_1 	max. 3 x d_1  1)	max. 3 x d_1 		max. 3 x d_1  1)	max. 3 x d_1 	Thread Depth and Hole Shape
N 1.4-6		P 1.1-4.1 M 1.1-3.1 2) K 2.1 N 2.1-2, 2.4-5 S 1.1-2.2 2) S 2.4 2)	P 1.1-4.1 M 1.1-3.1 2) K 2.1 N 2.1-2, 2.4-5 S 1.1-2.2 2) S 2.4 2)	P 1.1-4.1 M 1.1-3.1 2) K 2.1 N 2.1-2, 2.4-5 S 1.1-2.2 2) S 2.4 2)	P 1.1-5.1 M 1.1-3.1 2) K 2.1 N 2.1-2, 2.4-5 S 1.1-2.2 2) S 2.4 2)	P 1.1-5.1 M 1.1-3.1 2) K 2.1 N 2.1-2, 2.4-5 S 1.1-2.2 2) S 2.4 2)	P 1.1-5.1 M 1.1-3.1 2) K 2.1 N 2.1-2, 2.4-5 S 1.1-2.2 2) S 2.4 2)	Applications – Material
BU44Q200		**BU92F000**	**BW92F000**	**BW10F000**	**BU37Z700**	**BU38Z700**	**BU39Z700**	**Tool Identification**
InnoForm 1-GAL/E-SN IKZ-PM-TICN		**Druck 1-Z-SN PM-TIN-T1**	**Druck 1-Z-SN-IKZ PM-TIN-T1**	**Druck 1-Z-SN-IKZN PM-TIN-T1**	**InnoForm 1-Z-SN-PM TIN-80**	**InnoForm 1-Z-SN-IKZ PM-TIN-80**	**InnoForm 1-Z/E-SN PM-TIN-80**	**Dimens. ID** / **Nominal Size ø d_1** / **T.P.I.**
								.5033 — No. 0 — 80
								.5034 — No. 1 — 72
								.5035 — No. 2 — 64
								.5036 — No. 3 — 56
								.5037 — No. 4 — 48
								.5038 — No. 5 — 44
								.5039 — No. 6 — 40
								.5040 — No. 8 — 36
●		●	●	●	●	●	●	.5041 — No. 10 — 32
								.5042 — No. 12 — 28
●		●	●	●	●	●	●	.5043 — 1/4 — 28
●		●	●	●	●	●	●	.5044 — 5/16 — 24
●		●	●	●	●	●	●	.5045 — 3/8 — 24
CU44Q200		**CU92F000**	**CW92F000**	**CW10F000**	**CU37Z700**	**CU38Z700**	**CU39Z700**	**Tool Identification**
InnoForm 2-GAL/E-SN IKZ-PM-TICN		**Druck 2-Z-SN PM-TIN-T1**	**Druck 2-Z-SN-IKZ PM-TIN-T1**	**Druck 2-Z-SN-IKZN PM-TIN-T1**	**InnoForm 2-Z-SN-PM TIN-80**	**InnoForm 2-Z-SN-IKZ PM-TIN-80**	**InnoForm 2-Z/E-SN PM-TIN-80**	**Dimens. ID** / **Nominal Size ø d_1** / **T.P.I.**
●		●	●	●	●	●	●	.5046 — 7/16 — 20
●		●	●	●	●	●	●	.5047 — 1/2 — 20
●		●	●	●	●	●	●	.5048 — 9/16 — 18
●		●	●	●	●	●	●	.5049 — 5/8 — 18
●		●	●	●	●	●	●	.5050 — 3/4 — 16
								.5051 — 7/8 — 14

1) Cold-forming in through holes is possible only with external cooling/lubrication
2) Restricted application possibilities with emulsion

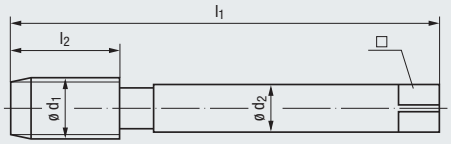
● = In stock
★ = Allow 7 days for delivery

DIN Length · ANSI Shank

Overall length acc. to DIN 2174

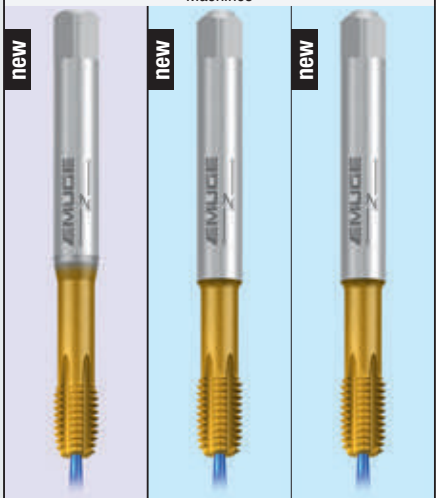


Reinforced Shank
(No.0 - 3/8)



Reduced Shank
(7/16 - 7/8)

Z
CNC-Controlled Machines



UNF

Unified Fine Thread
ASME B1.1

Class of Fit	2BX	2BX	2BX
Coating	TIN-80	TIN-80	TIN-80
Cutting Material	**HSSE-PM**	**Carbide**	**Carbide**
Technical Characteristics			
	E / 1.5-2	C / 2-3	**E / 1.5-2**
	E / 0	E / 0	E / 0
Thread Depth and Hole Shape	max. 3 x d_1 1)		
Applications – Material	**P** 1.1-5.1 **M** 1.1-3.1 2) **K** 2.1 **N** 2.1-2, 2.4-5 **S** 1.1-2.2 2) **S** 2.4 2)	**P** 2.1-5.1 **N** 1.4-5, 2.4-5	**P** 2.1-5.1 **N** 1.4-5, 2.4-5

Reinforced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification	BU44Z700 InnoForm 1-Z/E-SN-IKZ PM-TIN-80	BU38Z800 VHM InnoForm 1-Z-SN-IKZ TIN-80	BU44Z800 VHM InnoForm 1-Z/E-SN-IKZ TIN-80
No. 0	80	1.626	0.157	0.433	0.141	0.110	0.0551	**.5033**			
No. 1	72	1.772	0.157	0.472	0.141	0.110	0.0669	**.5034**			
No. 2	64	1.772	0.177	0.472	0.141	0.110	0.0795	**.5035**			
No. 3	56	1.969	0.197	0.551	0.141	0.110	0.0913	**.5036**			
No. 4	48	2.205	0.236	0.709	0.141	0.110	0.1031	**.5037**			
No. 5	44	2.205	0.276	0.709	0.141	0.110	0.1150	**.5038**			
No. 6	40	2.205	0.276	0.787	0.141	0.110	0.1268	**.5039**			
No. 8	36	2.480	0.315	0.827	0.168	0.131	0.1516	**.5040**			
No. 10	32	2.756	0.394	0.984	0.194	0.152	0.1752	**.5041**	●	●	●
No. 12	28	3.150	0.394	1.142	0.220	0.165	0.2008	**.5042**			
1/4	28	3.150	0.394	1.181	0.255	0.191	0.2343	**.5043**	●	●	●
5/16	24	3.543	0.394	1.260	0.318	0.238	0.2933	**.5044**	●	●	●
3/8	24	3.937	0.394	1.535	0.381	0.286	0.3563	**.5045**	●	●	●

Reduced Shank

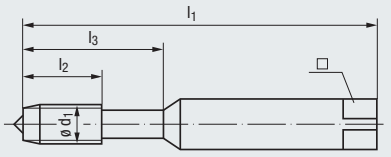
Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification	CU44Z700 InnoForm 2-Z/E-SN-IKZ PM-TIN-80
7/16	20	3.937	0.512	—	0.323	0.242	0.4154	**.5046**	●
1/2	20	3.937	0.512	—	0.367	0.275	0.4783	**.5047**	●
9/16	18	3.937	0.591	—	0.429	0.322	0.5374	**.5048**	●
5/8	18	3.937	0.591	—	0.480	0.360	0.6004	**.5049**	●
3/4	16	4.331	0.669	—	0.590	0.442	0.7224	**.5050**	●
7/8	14	4.921	0.669	—	0.697	0.523	0.8425	**.5051**	

We recommend a smaller preparatory diameter by 0.002 in for difficult to form materials (such as aluminum cast alloys) for P = 24 T.P.I. and coarser threads.
For further information regarding the recommended preparatory diameters, see page 208 - 209.

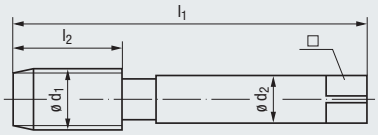
1) Cold-forming in through holes is possible only with external cooling/lubrication
2) Restricted application possibilities with emulsion

Ordering Example: **BU44Z700.5041**

ANSI Length · ANSI Shank



Reinforced Shank
(No.6 - 3/8)



Reduced Shank
(7/16 - 3/4)

STEEL
Steel Materials

UNF

Unified Fine Thread
ASME B1.1

Class of Fit	2BX
Coating	TIN
Cutting Material	HSS Extra
Technical Characteristics	C / 2-3
	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1
Applications – Material	P 1.1-3.1
	M 1.1-2.1 [2]
	N 1.4-5, 2.1-2

Nominal Size ø d_1	T.P.I.	inch l_1		l_2	l_3	ø d_2	□	Tool Identification Dimens. ID		AU921400 Druck STEEL-SN TIN
No. 6	40	2	2.00	0.472	0.748	0.141	0.110	0.1268	**.5039**	●
No. 8	36	2 1/8	2.13	0.512	0.827	0.168	0.131	0.1516	**.5040**	●
No. 10	32	2 3/8	2.38	0.591	0.945	0.194	0.152	0.1752	**.5041**	●
1/4	28	2 1/2	2.50	0.669	1.142	0.255	0.191	0.2343	**.5043**	●
5/16	24	2 23/32	2.72	0.669	1.299	0.318	0.238	0.2933	**.5044**	●
3/8	24	2 15/16	2.94	0.709	1.378	0.381	0.286	0.3563	**.5045**	●
7/16	20	3 5/32	3.16	0.866	—	0.323	0.242	0.4154	**.5046**	●
1/2	20	3 3/8	3.38	0.866	—	0.367	0.275	0.4783	**.5047**	●
9/16	18	3 19/32	3.59	0.866	—	0.429	0.322	0.5374	**.5048**	●
5/8	18	3 13/16	3.81	0.866	—	0.480	0.360	0.6004	**.5049**	●
3/4	16	4 1/4	4.25	0.984	—	0.590	0.442	0.7224	**.5050**	●

[1] Cold-forming in through holes is possible only with external cooling/lubrication
[2] Restricted application possibilities with emulsion

We recommend a smaller preparatory diameter by 0.002 in for difficult to form materials (such as aluminum cast alloys) for P = 24 T.P.I. and coarser threads.
For further information regarding the recommended preparatory diameters, see page 208 - 209.

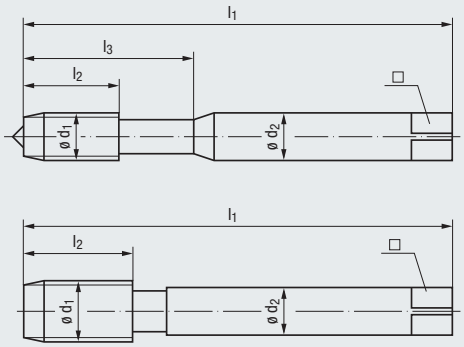
DIN Length · ANSI Shank

All ANSI Length · ANSI Shank taps are available in the popular DIN Length · ANSI Shank style.

The DIN Length · ANSI Shank configuration allows for added reach capabilities and greater chip clearance.

● = In stock
★ = Allow 7 days for delivery

DIN Length · DIN Shank



Reinforced Shank (M2 - M10)

Reduced Shank (M12 - M20)

STEEL
Steel Materials

M

ISO Metric Coarse Thread
DIN 13

Class of Fit	6HX	6HX	6HX	6HX	6HX
Coating	NT	TIN	NT	TIN	
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra	**Carbide**
Technical Characteristics					
	C / 2-3	C / 2-3	C / 2-3	C / 2-3	C / 2-3
	O / P	E / O / P	O / P	E / O / P	E / O
Thread Depth and Hole Shape		max. 3 x d_1			max. 3 x d_1 1)
Applications – Material	P 1.1-3.1	P 1.1-3.1 M 1.1-2.1 2) N 1.4-5, 2.1-2	P 1.1-3.1	P 1.1-3.1 M 1.1-2.1 2) N 1.4-5, 2.1-2	P 2.1-4.1 N 1.4-5

Reinforced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	B0911000 Druck 1-STEEL NT	B0911400 Druck 1-STEEL TIN	B0921000 Druck 1-STEEL-SN NT	B0921400 Druck 1-STEEL-SN TIN	B1970100 VHM Druck 1-STEEL SN-IKZ
				mm			Tool Identification					
M 2	0.4	45	7	12	2.8	2.1	1.85	.0020	★	★		★	
M 2.5	0.45	50	9	14	2.8	2.1	2.33	.0025	★	★		★	
M 3	0.5	56	11	18	3.5	2.7	2.8	.0030	★	★	●	●	
M 3.5	0.6	56	12	20	4	3	3.25	.0035	★	★		★	
M 4	0.7	63	13	21	4.5	3.4	3.7	.0040	★	★	●	●	
M 4.5	0.75	70	14	25	6	4.9	4.2	.0045					
M 5	0.8	70	15	25	6	4.9	4.65	.0050	★	★	●	●	★
M 6	1	80	17	30	6	4.9	5.6	.0060	★	★	●	●	★
M 8	1.25	90	20	35	8	6.2	7.45	.0080	★	★	●	●	★
M 10	1.5	100	22	39	10	8	9.35	.0100	★	★	●	●	★

Reduced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	C0911400 Druck 2-STEEL TIN	C0921400 Druck 2-STEEL-SN TIN
			mm				Tool Identification		
M 12	1.75	110	24	—	9	7	11.25	.0112	★	●
M 14	2	110	26	—	11	9	13.1	.0114	★	★
M 16	2	110	27	—	12	9	15.1	.0116	★	●
M 18	2.5	125	30	—	14	11	16.85	.0118		
M 20	2.5	140	32	—	16	12	18.85	.0120		

1) Cold-forming in through holes is possible only with external cooling/lubrication
2) Restricted application possibilities with emulsion

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminum cast alloys) for P ≥ 1 mm.
For further information regarding the recommended preparatory diameters, see page 208 - 209.

Ordering Example: **B0911000.0020**

STEEL
Steel Materials

VA
Stainless steel materials

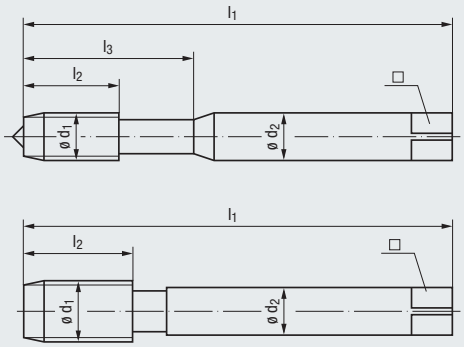
6HX	6HX	6HX	6HX	6HX	6HX	6HX	Class of Fit
TIN-66	TIN-66	TIN-66	TIN	TICN-67	TIN-T26	TIN-T26	Coating
HSSE-PM	**HSSE-PM**	**HSSE-PM**	**HSSE-PM**	**HSSE-PM**	**HSSE-PM**	**HSSE-PM**	Cutting Material
							Technical Characteristics
C / 2-3	C / 2-3	**E / 1.5-2**	C / 2-3	C / 2-3	**E / 1.5-2**	**E / 1.5-2**	
E / O / P	E / O	E / O	E / O / P	E / O	E / O / P	E / O	
max. 3 x d_1	max. 3 x d_1 1)		max. 3 x d_1	max. 3 x d_1 1)	max. 3 x d_1	max. 3 x d_1 1)	Thread Depth and Hole Shape
P 1.1-4.1	P 1.1-4.1	P 1.1-4.1	P 3.1-5.1	P 3.1-5.1	P 1.1-4.1	P 1.1-4.1	Applications – Material
K 2.1	K 2.1	K 2.1	K 2.1	K 2.1	M 1.1-3.1 2)	M 1.1-3.1 2)	

B5217F00	B5237F00	B5317F00	B5216F00	B5236F00	B5296A00	B5316A00	Tool Identification		
InnoForm 1-STEEL-M SN-PM TIN-66	InnoForm 1-STEEL-M SN-IKZ-PM TIN-66	InnoForm 1-STEEL-M/E SN-IKZ-PM TIN-66	InnoForm 1-STEEL-H SN-PM TICN-67	InnoForm 1-STEEL-H SN-IKZ-PM TICN-67	InnoForm 1-VA/E-SN PM-TIN-T26	InnoForm 1-VA/E-SN IKZ-PM TIN-T26	Dimens. ID	Nominal Size ø d_1	P
							.0020	M 2	0.4
							.0025	M 2.5	0.45
★					★		.0030	M 3	0.5
							.0035	M 3.5	0.6
★	★	★	★	★	★	★	.0040	M 4	0.7
							.0045	M 4.5	0.75
★	★	★	★	★	★	★	.0050	M 5	0.8
★	★	★	★	★	★	★	.0060	M 6	1
★	★	★	★	★	★	★	.0080	M 8	1.25
★	★	★	★	★	★	★	.0100	M 10	1.5

C5217F00	C5237F00	C5317F00	C5216F00	C5236F00			Tool Identification		
InnoForm 2-STEEL-M SN-PM TIN-66	InnoForm 2-STEEL-M SN-IKZ-PM TIN-66	InnoForm 2-STEEL-M/E SN-IKZ-PM TIN-66	InnoForm 2-STEEL-H SN-PM TICN-67	InnoForm 2-STEEL-H SN-IKZ-PM TICN-67			Dimens. ID	Nominal Size ø d_1	P
★	★	★	★	★			.0112	M 12	1.75
							.0114	M 14	2
★	★	★	★	★			.0116	M 16	2
							.0118	M 18	2.5
							.0120	M 20	2.5

1) Cold-forming in through holes is possible only with external cooling/lubrication
2) Restricted application possibilities with emulsion
3) Patent pending

DIN Length · DIN Shank



Reinforced Shank (M2 - M10)

Reduced Shank (M12 - M20)

M

ISO Metric Coarse Thread
DIN 13

AL Aluminum Wrought Alloys

GAL Aluminum Cast Alloys

	AL	AL	AL		GAL
Class of Fit	6HX	6HX	6HX		6HX
Coating	GLT-8	GLT-8	GLT-8		TICN
Cutting Material	HSSE-PM	HSSE-PM	HSSE-PM		HSSE-PM
Technical Characteristics					
	C / 2-3	C / 2-3	E / 1.5-2		C / 2-3
	E / O / P	E / O	E / O		E / O / P
Thread Depth and Hole Shape	max. 3 x d_1	max. 3 x d_1 1)			max. 3 x d_1
Applications – Material	N 1.1-4, 2.1-2	N 1.1-4, 2.1-2	N 1.1-4, 2.1-2		N 1.4-6

Reinforced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	B521Y700 InnoForm 1-AL-SN-PM GLT-8	B523Y700 InnoForm 1-AL-SN IKZ-PM GLT-8	B531Y700 InnoForm 1-AL/E-SN IKZ-PM GLT-8		B521Q200 InnoForm 1-GAL-SN PM-TICN
				mm			Tool Identification					
M 2	0.4	45	4	12	2.8	2.1	1.85	.0020	★			
M 2.5	0.45	50	5	14	2.8	2.1	2.33	.0025	★			
M 3	0.5	56	6	18	3.5	2.7	2.8	.0030	★			
M 3.5	0.6	56	7	20	4	3	3.25	.0035				
M 4	0.7	63	7	21	4.5	3.4	3.7	.0040	★	★	★	
M 4.5	0.75	70	8	25	6	4.9	4.2	.0045				
M 5	0.8	70	8	25	6	4.9	4.65	.0050	★	★	★	★
M 6	1	80	10	30	6	4.9	5.6	.0060	★	★	★	★
M 8	1.25	90	14	35	8	6.2	7.45	.0080	★	★	★	★
M 10	1.5	100	16	39	10	8	9.35	.0100	★	★	★	★

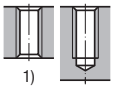
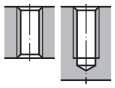
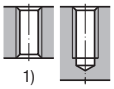
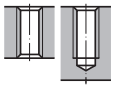
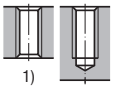
Reduced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID
				mm			Tool Identification
M 12	1.75	110	18	—	9	7	11.25	.0112
M 14	2	110	20	—	11	9	13.1	.0114
M 16	2	110	22	—	12	9	15.1	.0116
M 18	2.5	125	25	—	14	11	16.85	.0118
M 20	2.5	140	25	—	16	12	18.85	.0120

1) Cold-forming in through holes is possible only with external cooling/lubrication
2) Restricted application possibilities with emulsion

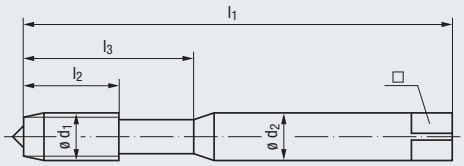
We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminum cast alloys) for P ≥ 1 mm.
For further information regarding the recommended preparatory diameters, see page 208 - 209.

Ordering Example: **B521Y700.0020**

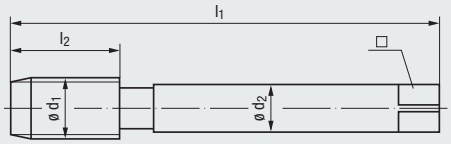
GAL Aluminum Cast Alloys			H Materials of high tensile strength			Z CNC-Controlled Machines		
new	new					new	new	
6HX	6HX		6HX	6HX		6HX	6HX	Class of Fit
TICN	TICN		TIN-T26	TIN-T26		TIN-80	TIN-80	Coating
HSSE-PM	HSSE-PM		HSSE-PM	HSSE-PM		HSSE-PM	HSSE-PM	Cutting Material
								Technical Characteristics
C / 2-3	**E / 1.5-2**		C / 2-3	C / 2-3		C / 2-3	C / 2-3	
E / O	E / O		E / O / P	E / O		E / O / P	E / O	
max. 3 x d_1			max. 3 x d_1	max. 3 x d_1		max. 3 x d_1	max. 3 x d_1	Thread Depth and Hole Shape
 1)				 1)			 1)	
N 1.4-6	N 1.4-6		P 2.1-5.1 K 2.1	P 2.1-5.1 K 2.1		P 1.1-5.1 M 1.1-3.1 2) K 2.1 N 2.1-2, 2.4-5 S 1.1-2.2 2) S 2.4 2)	P 1.1-5.1 M 1.1-3.1 2) K 2.1 N 2.1-2, 2.4-5 S 1.1-2.2 2) S 2.4 2)	Applications – Material
B523Q200	**B531Q200**		**B521W700**	**B523W700**		**B521Z700**	**B523Z700**	**Tool Identification**
InnoForm 1-GAL-SN IKZ-PM-TICN	**InnoForm 1-GAL/E-SN IKZ-PM-TICN**		**InnoForm 1-H-SN-PM TIN-T26**	**InnoForm 1-H-SN-IKZ PM-TIN-T26**		**InnoForm 1-Z-SN-PM TIN-80**	**InnoForm 1-Z-SN-IKZ PM-TIN-80**	**Dimens. ID** / **Nominal Size ø d_1** / **P**
								.0020 M 2 0.4
								.0025 M 2.5 0.45
						★		**.0030** M 3 0.5
								.0035 M 3.5 0.6
						★	★	**.0040** M 4 0.7
								.0045 M 4.5 0.75
★	★		★	★		★	★	**.0050** M 5 0.8
★	★		★	★		★	★	**.0060** M 6 1
★	★		★	★		★	★	**.0080** M 8 1.25
★	★		★	★		★	★	**.0100** M 10 1.5
			C521W700	**C523W700**		**C521Z700**	**C523Z700**	**Tool Identification**
			InnoForm 2-H-SN-PM TIN-T26	**InnoForm 2-H-SN-IKZ PM-TIN-T26**		**InnoForm 2-Z-SN-PM TIN-80**	**InnoForm 2-Z-SN-IKZ PM-TIN-80**	**Dimens. ID** / **Nominal Size ø d_1** / **P**
			★	★		★	★	**.0112** M 12 1.75
						★	★	**.0114** M 14 2
			★	★		★	★	**.0116** M 16 2
								.0118 M 18 2.5
			★	★		★	★	**.0120** M 20 2.5

●= In stock
★= Allow 7 days for delivery

DIN Length · DIN Shank

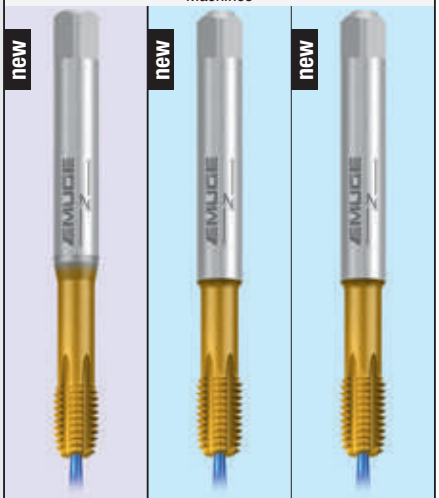


Reinforced Shank
(M2 - M10)



Reduced Shank
(M12 - M20)

Z
CNC-Controlled Machines



M

ISO Metric Coarse Thread
DIN 13

Class of Fit	6HX	6HX	6HX
Coating	TIN-80	TIN-80	TIN-80
Cutting Material	**HSSE-PM**	**Carbide**	**Carbide**
Technical Characteristics			
	E / 1.5-2	C / 2-3	**E / 1.5-2**
	E / 0	E / 0	E / 0
Thread Depth and Hole Shape	max. 3 x d_1 1)		
Applications – Material	P 1.1-5.1 M 1.1-3.1 2) K 2.1 N 2.1-2, 2.4-5 S 1.1-2.2 2) S 2.4 2)	P 2.1-5.1 N 1.4-5, 2.4-5	P 2.1-5.1 N 1.4-5, 2.4-5

Reinforced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	B531Z700 InnoForm 1-Z/E-SN-IKZ PM-TIN-80	B523Z800 VHM InnoForm 1-Z-SN-IKZ TIN-80	B531Z800 VHM InnoForm 1-Z/E-SN-IKZ TIN-80
		mm					Tool Identification			
M 2	0.4	45	4	12	2.8	2.1	1.85	.0020			
M 2.5	0.45	50	5	14	2.8	2.1	2.33	.0025			
M 3	0.5	56	6	18	3.5	2.7	2.8	.0030			
M 3.5	0.6	56	7	20	4	3	3.25	.0035			
M 4	0.7	63	7	21	4.5	3.4	3.7	.0040	★		
M 4.5	0.75	70	8	25	6	4.9	4.2	.0045			
M 5	0.8	70	8	25	6	4.9	4.65	.0050	★	★	★
M 6	1	80	10	30	6	4.9	5.6	.0060	★	★	★
M 8	1.25	90	14	35	8	6.2	7.45	.0080	★	★	★
M 10	1.5	100	16	39	10	8	9.35	.0100	★	★	★

Reduced Shank

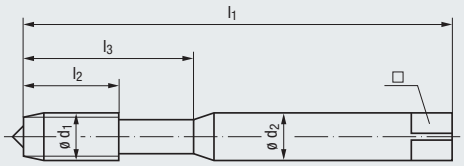
Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	C531Z700 InnoForm 2-Z/E-SN-IKZ PM-TIN-80
		mm					Tool Identification	
M 12	1.75	110	18	—	9	7	11.25	.0112	★
M 14	2	110	20	—	11	9	13.1	.0114	★
M 16	2	110	22	—	12	9	15.1	.0116	★
M 18	2.5	125	25	—	14	11	16.85	.0118	
M 20	2.5	140	25	—	16	12	18.85	.0120	

1) Cold-forming in through holes is possible only with external cooling/lubrication
2) Restricted application possibilities with emulsion

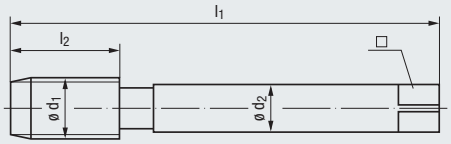
We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminum cast alloys) for P ≥ 1 mm.
For further information regarding the recommended preparatory diameters, see page 208 - 209.

Ordering Example: **B531Z700.0040**

DIN Length · DIN Shank



Reinforced Shank
(M2 - M10)



Reduced Shank
(M12 - M20)

SPEED
High-Speed Cutting

M

ISO Metric Coarse Thread
DIN 13

Class of Fit	6HX	6HX
Coating	TICN	TICN
Cutting Material	HSS Extra	**Carbide**
Technical Characteristics		
	E / 1.5-2	**E / 1.5-2**
	E / 0	E / 0
Thread Depth and Hole Shape	max. 3 x d_1	
Applications – Material	N 1.4-5	N 1.4-5

Reinforced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Tool Identification Dimens. ID	B5059500 Druck 1-GAL SPEED/E-SN IKZN-TICN	B505Q800 VHM-Druck 1-GAL SPEED/E-SN IKZN-TICN
	mm								
M 2	0.4	45	4	12	2.8	2.1	1.85 .0020		
M 2.5	0.45	50	5	14	2.8	2.1	2.33 .0025		
M 3	0.5	56	6	18	3.5	2.7	2.8 .0030		
M 3.5	0.6	56	7	20	4	3	3.25 .0035		
M 4	0.7	63	7	21	4.5	3.4	3.7 .0040		
M 4.5	0.75	70	8	25	6	4.9	4.2 .0045		
M 5	0.8	70	8	25	6	4.9	4.65 .0050		
M 6	1	80	10	30	6	4.9	5.6 .0060	★	★
M 8	1.25	90	14	35	8	6.2	7.45 .0080	★	★
M 10	1.5	100	16	39	10	8	9.35 .0100	★	★

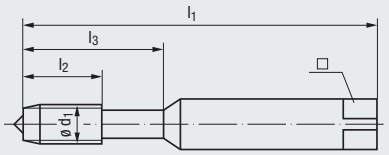
Reduced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Tool Identification Dimens. ID	C5059500 Druck 2-GAL SPEED/E-SN IKZN-TICN	C505Q800 VHM-Druck 2-GAL SPEED/E-SN IKZN-TICN
	mm								
M 12	1.75	110	18	—	9	7	11.25 .0112	★	★
M 14	2	110	20	—	11	9	13.1 .0114		
M 16	2	110	22	—	12	9	15.1 .0116		
M 18	2.5	125	25	—	14	11	16.85 .0118		
M 20	2.5	140	25	—	16	12	18.85 .0120		

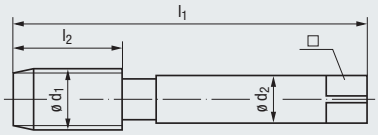
We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminum cast alloys) for P ≥ 1 mm.
For further information regarding the recommended preparatory diameters, see page 208 - 209.

●= In stock
★= Allow 7 days for delivery

ANSI Length · ANSI Shank



Reinforced Shank
(M4 - M10)



Reduced Shank
(M12 - M20)

STEEL
Steel Materials

M

ISO Metric Coarse Thread
DIN 13

Class of Fit	6HX
Coating	TIN
Cutting Material	HSS Extra
Technical Characteristics	
	C / 2-3
	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1
Applications – Material	P 1.1-3.1
	M 1.1-2.1 2)
	N 1.4-5, 2.1-2

Nominal Size ø d_1	P mm	inch l_1		l_2	l_3	ø d_2	□	mm	Dimens. ID	Tool Identification AU921400 Druck STEEL-SN TIN
M 4	0.7	2 1/8	2.13	0.512	0.827	0.168	0.131	3.7	.0040	
M 5	0.8	2 3/8	2.38	0.591	0.945	0.194	0.152	4.65	.0050	
M 6	1	2 1/2	2.50	0.669	1.102	0.255	0.191	5.6	.0060	●
M 8	1.25	2 23/32	2.72	0.787	1.299	0.318	0.238	7.45	.0080	●
M 10	1.5	2 15/16	2.94	0.866	1.378	0.381	0.286	9.35	.0100	●
M 12	1.75	3 3/8	3.38	0.984	—	0.367	0.275	11.25	.0112	●
M 14	2	3 19/32	3.59	1.024	—	0.429	0.322	13.1	.0114	
M 16	2	3 13/16	3.81	1.063	—	0.480	0.360	15.1	.0116	
M 20	2.5	4 15/32	4.47	1.181	—	0.652	0.489	18.85	.0120	

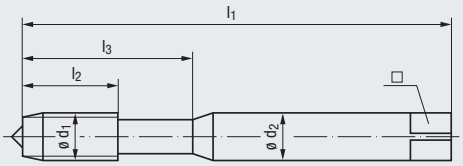
We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminum cast alloys) for P ≥ 1 mm.
For further information regarding the recommended preparatory diameters, see page 208 - 209.

DIN Length · DIN Shank

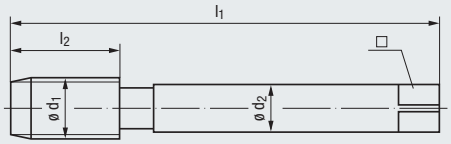
All ANSI Length · ANSI Shank taps are available in the popular DIN Length · DIN Shank style.

The DIN Length · DIN Shank configuration allows for added reach capabilities and greater chip clearance.

DIN Length · DIN Shank



Reinforced Shank
(M3x0.35 - M10x1.25)



Reduced Shank
(M12x1.5 - M20x1.5)

MF

ISO Metric Fine Thread
DIN 13

STEEL
Steel Materials

Class of Fit	6HX	6HX	6HX	6HX	6HX
Coating	TIN	TIN	TIN-66	TIN-66	TIN-66
Cutting Material	HSS Extra	HSS Extra	**HSSE-PM**	**HSSE-PM**	**HSSE-PM**
Technical Characteristics					
	C / 2-3	C / 2-3	C / 2-3	C / 2-3	**E / 1.5-2**
	E / O / P	E / O / P	E / O / P	E / O	E / O
Thread Depth and Hole Shape		max. 3 x d_1		max. 3 x d_1 1)	
Applications – Material	P 1.1-3.1 M 1.1-2.1 2) N 1.4-5, 2.1-2	P 1.1-3.1 M 1.1-2.1 2) N 1.4-5, 2.1-2	P 1.1-4.1 K 2.1	P 1.1-4.1 K 2.1	P 1.1-4.1 K 2.1

Reinforced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Tool Identification Dimens. ID	B0911400 Druck 1-STEEL TIN	B0921400 Druck 1-STEEL-SN TIN			
				mm								
M 3	x 0.35	56	8	18	3.5	2.7	2.88	.0202					
M 4	x 0.5	63	10	21	4.5	3.4	3.8	.0210	★	★			
M 5	x 0.5	70	11	25	6	4.9	4.8	.0218	★	★			
M 6	x 0.75	80	13	30	6	4.9	5.7	.0229	★	★			
M 8	x 0.75	80	14	30	8	6.2	7.7	.0250	★	★			
M 8	x 1	90	17	35	8	6.2	7.6	.0251	★	★			
M 10	x 1	90	18	35	10	8	9.6	.0276	★	★			
M 10	x 1.25	100	18	39	10	8	9.45	.0277					

Reduced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Tool Identification Dimens. ID	C0911400 Druck 2-STEEL TIN	C0921400 Druck 2-STEEL-SN TIN	C5217F00 InnoForm 2-STEEL-M SN-PM TIN-66	C5237F00 InnoForm 2-STEEL-M SN-IKZ-PM TIN-66	C5317F00 InnoForm 2-STEEL-M/E SN-IKZ-PM TIN-66
			mm									
M 12	x 1.25	100	22	—	9	7	11.45	.0302					
M 12	x 1.5	100	22	—	9	7	11.35	.0303	★	★	★	★	★
M 14	x 1.25	100	22	—	11	9	13.45	.0330					
M 14	x 1.5	100	22	—	11	9	13.35	.0331	★	★	★	★	★
M 16	x 1.5	100	22	—	12	9	15.35	.0359	★	★	★	★	★
M 18	x 1.5	110	25	—	14	11	17.35	.0390					
M 20	x 1.5	125	25	—	16	12	19.35	.0422	★	★			

1) Cold-forming in through holes is possible only with external cooling/lubrication
2) Restricted application possibilities with emulsion
3) Patent pending

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminum cast alloys) for P ≥ 1 mm.
For further information regarding the recommended preparatory diameters, see page 208 - 209.

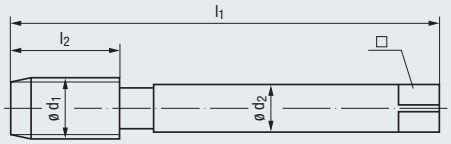
Ordering Example: **B0911400.210**

STEEL Steel Materials			Z CNC-Controlled Machines			SPEED High-Speed Cutting		
new	new		new	new				
6HX	6HX		6HX	6HX		6HX	6HX	Class of Fit
TICN-67	TICN-67		TIN-80	TIN-80		TICN	TICN	Coating
HSSE-PM	**HSSE-PM**		**HSSE-PM**	**HSSE-PM**		HSS Extra	**Carbide**	Cutting Material
C / 2-3	C / 2-3		C / 2-3	C / 2-3		**E / 1.5-2**	**E / 1.5-2**	Technical Characteristics
E / O / P	E / O		E / O / P	E / O		E / O	E / O	
max. 3 x d_1	max. 3 x d_1		max. 3 x d_1	max. 3 x d_1		max. 3 x d_1		Thread Depth and Hole Shape
P 3.1-5.1 K 2.1	P 3.1-5.1 K 2.1		P 1.1-5.1 M 1.1-3.1 2) K 2.1 N 2.1-2, 2.4-5 S 1.1-2.2 2) S 2.4 2)	P 1.1-5.1 M 1.1-3.1 2) K 2.1 N 2.1-2, 2.4-5 S 1.1-2.2 2) S 2.4 2)		N 1.4-5	N 1.4-5	Applications – Material
			B521Z700	B523Z700		B5059500	B505Q800	Tool Identification
			InnoForm 1-Z-SN-PM TIN-80	InnoForm 1-Z-SN-IKZ PM-TIN-80		Druck 1-GAL SPEED/E-SN IKZN-TICN	VHM-Druck 1-GAL SPEED/E-SN IKZN-TICN	Dimens. ID / Nominal Size ø d_1 / P
								.0202 M 3 x 0.35
								.0210 M 4 x 0.5
								.0218 M 5 x 0.5
								.0229 M 6 x 0.75
								.0250 M 8 x 0.75
			★	★		★	★	.0251 M 8 x 1
			★	★				.0276 M 10 x 1
						★	★	.0277 M 10 x 1.25
C5216F00	C5236F00		C521Z700	C523Z700		C5059500	C505Q800	Tool Identification
InnoForm 2-STEEL-H SN-PM TICN-67	InnoForm 2-STEEL-H SN-IKZ-PM TICN-67		InnoForm 2-Z-SN-PM TIN-80	InnoForm 2-Z-SN-IKZ PM-TIN-80		Druck 2-GAL SPEED/E-SN IKZN-TICN	VHM-Druck 2-GAL SPEED/E-SN IKZN-TICN	Dimens. ID / Nominal Size ø d_1 / P
						★	★	.0302 M 12 x 1.25
★	★		★	★		★	★	.0303 M 12 x 1.5
								.0330 M 14 x 1.25
★	★		★	★		★	★	.0331 M 14 x 1.5
★	★		★	★		★	★	.0359 M 16 x 1.5
								.0390 M 18 x 1.5
								.0422 M 20 x 1.5

1) 2) 3)

● = In stock
★ = Allow 7 days for delivery

DIN Length · DIN Shank



Reduced Shank

STEEL
Steel Materials

Z
CNC-Controlled Machines

G

Whitworth Pipe Thread
DIN EN ISO 228

	STEEL			Z	
Class of Fit	"X"	"X"		"X"	"X"
Coating	TIN	TIN		TIN-80	TIN-80
Cutting Material	HSS Extra	HSS Extra		**HSSE-PM**	**HSSE-PM**
Technical Characteristics					
	C / 2-3	C / 2-3		C / 2-3	C / 2-3
	E / O / P	E / O / P		E / O / P	E / O
Thread Depth and Hole Shape	max. 3 x d_1			max. 3 x d_1	max. 3 x d_1 1)
Applications – Material	P 1.1-3.1 M 1.1-2.1 2) N 1.4-5, 2.1-2	P 1.1-3.1 M 1.1-2.1 2) N 1.4-5, 2.1-2		P 1.1-5.1 M 1.1-3.1 2) K 2.1 N 2.1-2, 2.4-5 S 1.1-2.2 2) S 2.4 2)	P 1.1-5.1 M 1.1-3.1 2) K 2.1 N 2.1-2, 2.4-5 S 1.1-2.2 2) S 2.4 2)

Reduced Shank

Nominal Size ø d_1	T.P.I.	ø d_1	l_1	mm l_2	ø d_2	□	Tool Identification Dimens. ID	C0911400 Druck 2-STEEL TIN	C0921400 Druck 2-STEEL-SN TIN		C521Z700 InnoForm 2-Z-SN-PM TIN-80	C523Z700 InnoForm 2-Z-SN-IKZ PM-TIN-80
G 1/16	7.72	28	90	17	6	4.9	7.25 .4034					
G 1/8	9.73	28	90	18	7	5.5	9.25 .4035	★	★		★	★
G 1/4	13.16	19	100	22	11	9	12.55 .4036	★	★		★	★
G 3/8	16.66	19	100	22	12	9	16.05 .4037	★	★		★	★
G 1/2	20.96	14	125	25	16	12	20.1 .4038	★	★		★	★
G 5/8	22.91	14	125	25	18	14.5	22.05 .4039					
G 3/4	26.44	14	140	28	20	16	25.6 .4040					
G 7/8	30.20	14	150	28	22	18	29.35 .4041					
G 1	33.25	11	160	30	25	20	32.15 .4042					

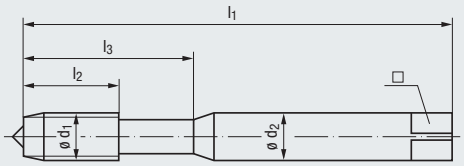
1) Cold-forming in through holes is possible only with external cooling/lubrication
2) Restricted application possibilities with emulsion

We recommend a smaller preparatory diameter by 0.002 in for difficult to form materials (such as aluminum cast alloys) for P = 24 T.P.I. and coarser threads.
For further information regarding the recommended preparatory diameters, see page 208 - 209.

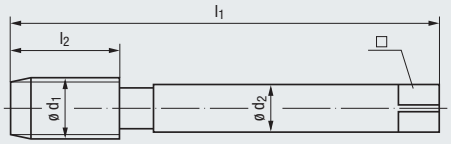
Ordering Example: **C0911400.4035**

DIN Length • ANSI Shank

Overall length acc. to DIN 2174



Reinforced Shank
(STI-No.2 - STI 5/16)



Reduced Shank
(STI 3/8 - STI 1/2)

STEEL
Steel Materials

new

STI-UNC

Unified Coarse Thread
ASME B18.29.1

For wire thread inserts

Class of Fit	2BX
Coating	TICN
Cutting Material	HSS Extra
Technical Characteristics	C / 2-3
	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1
Applications – Material	P 1.1-3.1
	M 1.1-2.1 2)
	N 1.4-5, 2.1-2

Reinforced Shank

Nominal Size ø d_1	T.P.I.	inch ø d_1	l_1	l_2	l_3	ø d_2	□	Tool Identification Dimens. ID	BU929000 Druck 1-STEEL-SN TICN
STI-No. 2	56	0.1092	2.205	0.433	0.709	0.141	0.110	0.1004 **.5609**	●
STI-No. 4	40	0.1445	2.205	0.472	0.787	0.141	0.110	0.1327 **.5611**	●
STI-No. 6	32	0.1786	2.756	0.512	0.984	0.194	0.152	0.1634 **.5613**	●
STI-No. 8	32	0.2046	3.150	0.512	1.142	0.220	0.165	0.1909 **.5614**	●
STI-No. 10	24	0.2441	3.150	0.669	1.181	0.255	0.191	0.2244 **.5615**	●
STI 1/4	20	0.3150	3.543	0.787	1.378	0.318	0.238	0.2913 **.5617**	●
STI 5/16	18	0.3847	3.937	0.866	1.535	0.381	0.286	0.3583 **.5618**	●

Reduced Shank

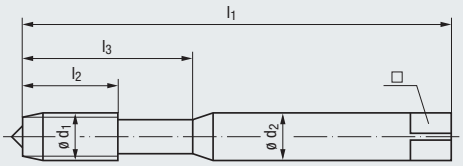
Nominal Size ø d_1	T.P.I.	inch ø d_1	l_1	l_2	l_3	ø d_2	□	Tool Identification Dimens. ID	CU929000 Druck 2-STEEL-SN TICN
STI 3/8	16	0.4562	3.937	0.866	—	0.367	0.275	0.4272 **.5619**	●
STI 7/16	14	0.5303	4.331	1.024	—	0.429	0.322	0.4961 **.5620**	●
STI 1/2	13	0.5999	4.331	1.063	—	0.480	0.360	0.5630 **.5621**	●

We recommend a smaller preparatory diameter by 0.002 in for difficult to form materials (such as aluminum cast alloys) for P = 24 T.P.I. and coarser threads.
For further information regarding the recommended preparatory diameters, see page 208 - 209.

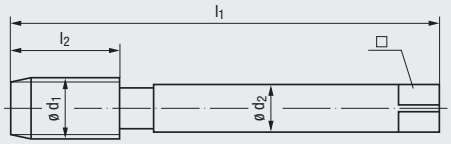
●= In stock
★= Allow 7 days for delivery

DIN Length · ANSI Shank

Overall length acc. to DIN 2174



Reinforced Shank
(STI-No.4 - STI 5/16)



Reduced Shank
(STI 3/8 - STI 1/2)

STEEL
Steel Materials

new

STI-UNF

Unified Fine Thread
ASME B18.29.1

For wire thread inserts

Class of Fit	2BX
Coating	TICN
Cutting Material	HSS Extra
Technical Characteristics	C / 2-3
	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1
Applications – Material	P 1.1-3.1
	M 1.1-2.1 2)
	N 1.4-5, 2.1-2

Reinforced Shank

Nominal Size ø d_1	T.P.I.	inch ø d_1	l_1	l_2	l_3	ø d_2	□	Tool Identification Dimens. ID	BU929000 Druck 1-STEEL-SN TICN
STI-No. 4	48	0.1391	2.205	0.472	0.787	0.141	0.110	0.1299	**.5633** ●
STI-No. 6	40	0.1705	2.480	0.512	0.827	0.168	0.131	0.1594	**.5635** ●
STI-No. 8	36	0.2001	3.150	0.512	1.142	0.220	0.165	0.1870	**.5636** ●
STI-No. 10	32	0.2306	3.150	0.512	1.181	0.255	0.191	0.2165	**.5637** ●
STI 1/4	28	0.2964	3.543	0.669	1.260	0.318	0.238	0.2795	**.5639** ●
STI 5/16	24	0.3666	3.937	0.709	1.535	0.381	0.286	0.3465	**.5640** ●

Reduced Shank

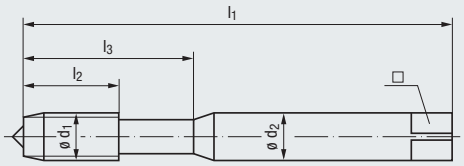
Nominal Size ø d_1	T.P.I.	inch ø d_1	l_1	l_2	l_3	ø d_2	□	Tool Identification Dimens. ID	CU929000 Druck 2-STEEL-SN TICN
STI 3/8	24	0.4291	3.937	0.709	—	0.323	0.242	0.4094	**.5641** ●
STI 7/16	20	0.5025	3.937	0.866	—	0.367	0.275	0.4783	**.5642** ●
STI 1/2	20	0.5650	3.937	0.866	—	0.429	0.322	0.5413	**.5643** ●

We recommend a smaller preparatory diameter by 0.002 in for difficult to form materials (such as aluminum cast alloys) for P = 24 T.P.I. and coarser threads.
For further information regarding the recommended preparatory diameters, see page 208 - 209.

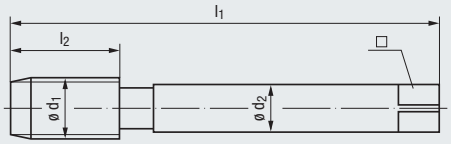
Ordering Example: **BU929000.5633**

DIN Length · ANSI Shank

Overall length acc. to DIN 2174



Reinforced Shank
(LK No.4 - LK 3/8)



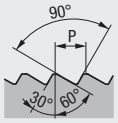
Reduced Shank
(LK 7/16 - LK 1/2)

STEEL
Steel Materials

new

LK-UNC

BT



≥ 36 T.P.I.

Unified SELF-LOCK Coarse Thread
EMUGE Standard

Type	BT
Coating	TIN
Cutting Material	HSS Extra
Technical Characteristics	E / 1.5-2
	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1
Applications – Material	P 1.1-3.1
	M 1.1-2.1 2)
	N 1.4-5, 2.1-2

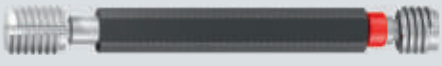
Reinforced Shank

Nominal Size ø d_1	T.P.I.	l_1	l_2	l_3	ø d_2	□	Tool Identification Dimens. ID	BU931400 Druck 1-STEEL/E-SN TIN
LK No. 4	40	2.205	0.433	0.709	0.141	0.110	0.1043 **.5656**	●
LK No. 6	32	2.205	0.472	0.787	0.141	0.110	0.1280 **.5658**	●
LK No. 8	32	2.480	0.512	0.827	0.168	0.131	0.1555 **.5659**	●
LK No. 10	24	2.756	0.591	0.984	0.194	0.152	0.1772 **.5660**	●
LK No. 12	24	3.150	0.630	1.142	0.220	0.165	0.2028 **.5661**	●
LK 1/4	20	3.150	0.669	1.181	0.255	0.191	0.2323 **.5662**	●
LK 5/16	18	3.543	0.787	1.378	0.318	0.238	0.2933 **.5663**	●
LK 3/8	16	3.937	0.866	1.535	0.381	0.286	0.3524 **.5664**	●

Reduced Shank

Nominal Size ø d_1	T.P.I.	l_1	l_2	l_3	ø d_2	□	Tool Identification Dimens. ID	CU931400 Druck 2-STEEL/E-SN TIN
LK 7/16	14	3.937	0.866	—	0.323	0.242	0.4094 **.5665**	●
LK 1/2	13	4.331	0.984	—	0.367	0.275	0.4724 **.5666**	●

We recommend a smaller preparatory diameter by 0.002 in for difficult to form materials (such as aluminum cast alloys) for P = 24 T.P.I. and coarser threads.
For further information regarding the recommended preparatory diameters, see page 208 - 209.

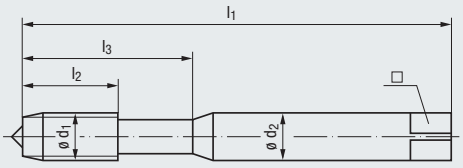


Gages for Unified SELF-LOCK coarse thread, see page 455

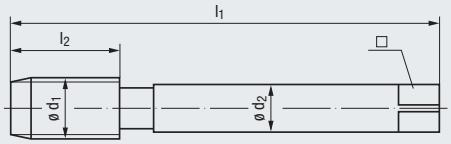
● = In stock
★ = Allow 7 days for delivery

DIN Length · ANSI Shank

Overall length acc. to DIN 2174



Reinforced Shank
(LK No.4 - LK 3/8)



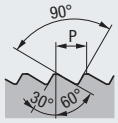
Reduced Shank
(LK 7/16 - LK 1/2)

STEEL
Steel Materials

new

LK-UNF

BT



≥ 36 T.P.I.

Unified SELF-LOCK Fine Thread
EMUGE Standard

Type	BT
Coating	TIN
Cutting Material	HSS Extra
Technical Characteristics	E / 1.5-2
	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1
Applications – Material	P 1.1-3.1
	M 1.1-2.1 2)
	N 1.4-5, 2.1-2

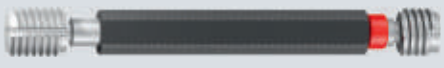
Reinforced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Tool Identification Dimens. ID	BU931400 Druck 1-STEEL/E-SN TIN
LK No. 4	48	2.205	0.433	0.709	0.141	0.110	0.1055 **.5707**	●
LK No. 6	40	2.205	0.472	0.787	0.141	0.110	0.1299 **.5709**	●
LK No. 8	36	2.480	0.512	0.827	0.168	0.131	0.1555 **.5710**	●
LK No. 10	32	2.756	0.512	0.984	0.194	0.152	0.1811 **.5711**	●
LK 1/4	28	3.150	0.669	1.181	0.255	0.191	0.2382 **.5713**	●
LK 5/16	24	3.543	0.669	1.260	0.318	0.238	0.2992 **.5714**	●
LK 3/8	24	3.937	0.709	1.535	0.381	0.286	0.3622 **.5715**	●

Reduced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Tool Identification Dimens. ID	CU931400 Druck 2-STEEL/E-SN TIN
LK 7/16	20	3.937	0.866	—	0.323	0.242	0.4213 **.5716**	●
LK 1/2	20	3.937	0.866	—	0.367	0.275	0.4843 **.5717**	●

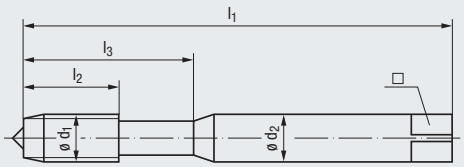
We recommend a smaller preparatory diameter by 0.002 in for difficult to form materials (such as aluminum cast alloys) for P = 24 T.P.I. and coarser threads.
For further information regarding the recommended preparatory diameters, see page 208 - 209.



Gages for Unified SELF-LOCK fine thread, see page 456

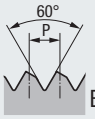
Ordering Example: **BU931400.5707**

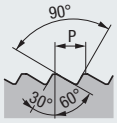
DIN Length · DIN Shank



Reinforced Shank

LK-M





P ≤ 0.7mm

Metric SELF-LOCK Coarse Thread
EMUGE Standard

STEEL
Steel Materials

Type	BT	BT
Coating	TIN	TIN
Cutting Material	HSS Extra	HSS Extra
Technical Characteristics		
	C / 2-3	C / 2-3
	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1	
Applications – Material	P 1.1-3.1 M 1.1-2.1 2) N 1.4-5, 2.1-2	P 1.1-3.1 M 1.1-2.1 2) N 1.4-5, 2.1-2

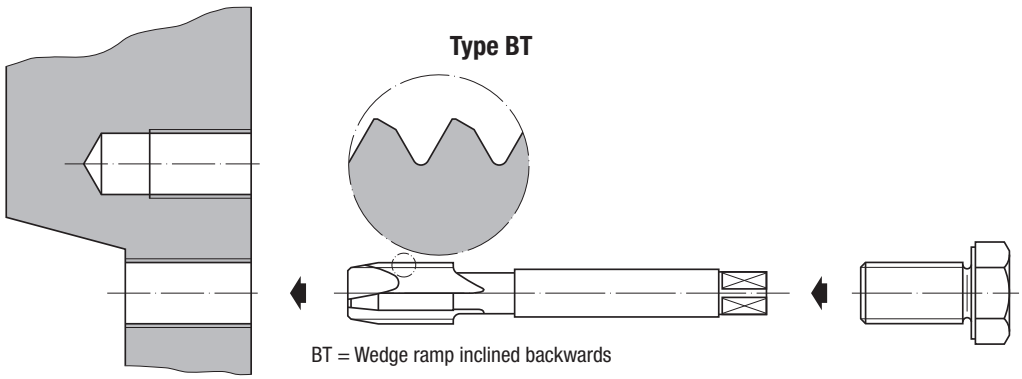
Reinforced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Tool Identification	Dimens. ID	B0911400 Druck 1-STEEL TIN	B0921400 Druck 1-STEEL-SN TIN
				mm						
LK-M 3	0.5	56	11	18	3.5	2.7	2.85	.1046	★	★
LK-M 4	0.7	63	13	21	4.5	3.4	3.8	.1048	★	★
LK-M 5	0.8	70	15	25	6	4.9	4.8	.1050	★	★
LK-M 6	1	80	17	30	6	4.9	5.7	.1052	★	★
LK-M 8	1.25	90	20	35	8	6.2	7.6	.1054	★	★
LK-M 10	1.5	100	22	39	10	8	9.5	.1056	★	★

2) Restricted application possibilities with emulsion

The alternative in locking thread technology and thread stripping prevention.

- Self-locking internal thread form
- For standard external fasteners
- Eliminates need for costly and ineffective inserts or locking parts
- Ease of assembly
- Provides uniform distribution of load over the entire thread length
- Reduces probability of thread stripping in aluminum and other soft materials



BT = Wedge ramp inclined backwards

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminum cast alloys) for P ≥ 1 mm.
For further information regarding the recommended preparatory diameters, see page 208 - 209.

●= In stock
★= Allow 7 days for delivery

Leading Solutions for Chamfered / Threaded Holes

Technical Information

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2.1 General technical information regarding EMUGE threading tools

EMUGE threading tools are made exclusively of high-performance high-speed steels according to EMUGE specifications. Our modified tool steels are based on the material alloy group HSSE acc. DIN ISO 11054.

As for tools which are designed for a special application, these generally used tool materials do not come up to our requirements. In such cases we use special high-speed steel alloys and carbide materials which are specially selected for the work case in question. A rigorous quality control of these materials forms the basis of our high-quality tools. Research and development work is carried out in a specially equipped laboratory, and serves as an indispensable precondition for the further development of cutting geometries and other parameters necessary for thread production. Extensive tests and trials on CNC machines, conventional drilling and thread cutting machines guarantee the performance and economic efficiency of our tools.

2.2 Dimensions and technical sales conditions

The dimensional specifications of our threading tools are adjusted to the currently valid standards, with the exception of special tools made to EMUGE standards.

The DIN standards for taps are based on the General Plans of Dimensions for Taps acc. DIN 2184-1 and -2.

Please read the notes in this catalog and in the technical introduction carefully.

The technical sales conditions for taps acc. DIN 2197 and roll form taps acc. DIN 2175 have been taken into account.

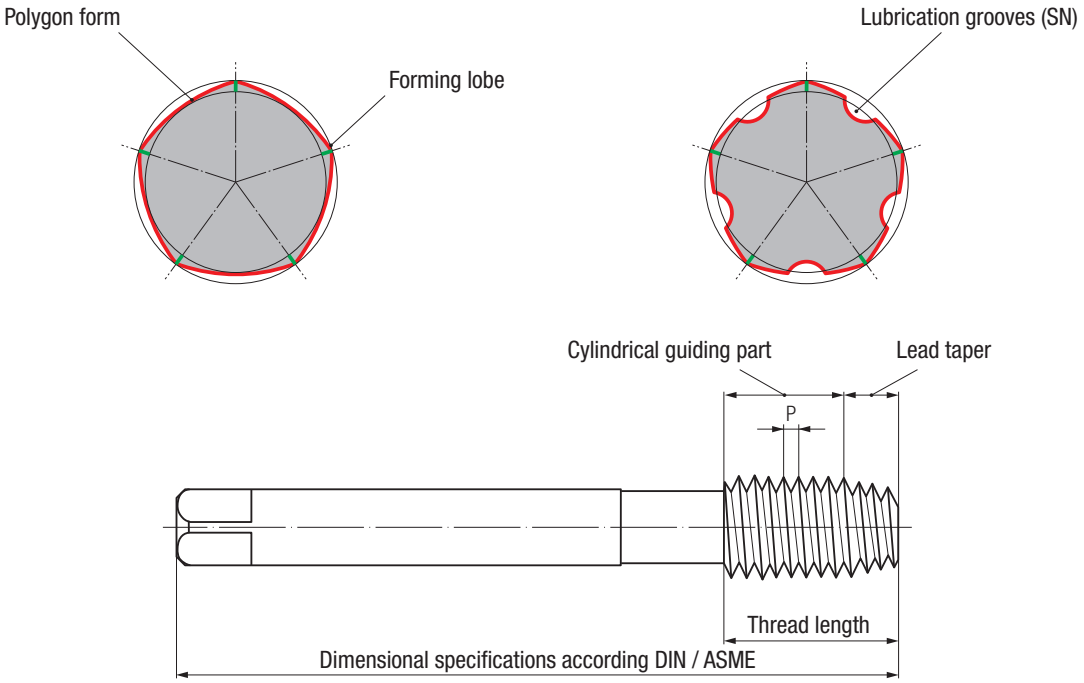
The manufacturing tolerances for the thread part are in accordance with DIN EN 22857 and DIN 802.

All specifications, illustrations and dimensions are subject to change due to technical progress and possible changes of the standards, and are consequently without obligation.

2.3 Constructional designs of our EMUGE roll form taps

	Constructional design	EMUGE designation
	Short machine roll form taps	**Druck**
	Machine roll form taps with reinforced shank	**Druck 1** **InnoForm 1**
	Machine roll form taps with reduced shank	**Druck 2** **InnoForm 2**

Geometric construction of a roll form tap



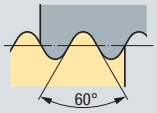
2.4 Special roll form tap types (examples)

Special taps to customers' specifications
EMUGE produces special roll form taps to customers' drawings and proper specifications.

InnoForm special tools
If our comprehensive InnoForm program of roll form taps does not include a suitable tool design for a specific application, we will be happy to furnish a custom-made, special InnoForm tool designed for the work conditions and according to the workpiece drawing of the individual customer. Such special designs can be made in special thread sizes and tolerances, with special thread profiles and dimensional specifications, or for special processes involving combined thread cutting and cold forming.

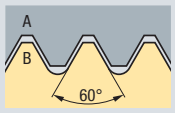
Special threads (examples)

FG



Bicycle thread
acc. DIN 79012

A/B

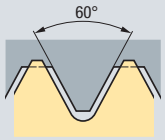


Tripod connection thread
acc. DIN 4503

ST

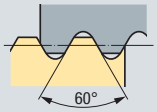
Sheet metal screw thread
acc. DIN EN ISO 1478

MFS



ISO Metric thread for tight fit
acc. DIN 8141-1

Vg



Valve thread
acc. DIN 7756

2.5 Basic types of our EMUGE roll form taps

EMUGE is the first threading tool manufacturer worldwide to introduce a program of roll form taps specially designed for the machining of specific materials or material groups. While this was possible only for cutting tools, we have succeeded in designing roll form taps especially for the special properties of single materials and material groups, sometimes increasing performance in a dramatic way.
Until then conventional roll form taps were made for the use in all ductile materials: potential performance features in defined applications were simply wasted in the process.
EMUGE has made extensive investigations into the mechanisms of cold forming for years, and developed an entirely new tool generation from the results. In order to highlight the uniqueness of this highly innovative program of roll form taps, we have thought of a new name: **InnoForm**

Druck

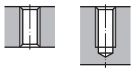
STEEL
GAL
Z
SPEED

- Roll form tap for the chipless production of internal threads
- Lead taper form E (1.5-2 threads)
- Lead taper form C (2-3 threads)
- Lead taper form D (4-5 threads)
- For blind hole and through hole threads

Note:
Depending on the workpiece material, the essential advantages of the cold-forming of threads are not only excellent surface quality but also higher static and dynamic strength of the thread.
The length of the thread to be produced is not limited by chips which must be removed. The tools feature an excellent stability, especially with small thread sizes. All ductile materials can be cold-formed. Sufficient lubrication is essential. We generally recommend using oil grooves for through hole threads and horizontal machining. (Exception: very short through hole threads, e.g. sheet metal components).

InnoForm

STEEL-M
STEEL-H
VA
AL
GAL
H
Z



Sometimes, it is necessary to adjust the recommended thread hole preparatory diameter to work conditions.

2.6 Our EMUGE geometries

EMUGE STEEL
Druck
InnoForm

For steel materials

This highly successful geometry has been designed for general use in steel. It is available ex stock in numerous thread systems and sizes. Circumference speeds can be increased by combining it with a suitable hard surface coating.

- **InnoForm STEEL-M** – For medium strength steels
- **InnoForm STEEL-H** – For high strength steels

EMUGE AL
InnoForm

For aluminum wrought alloys

Under the usual lubrication conditions, e.g. emulsion lubrication, these materials show a strong inclination to adhesion in the cold forming of threads. In order to obtain satisfactory work results in spite of these unfavourable material properties, this geometry was provided with a coating that offers excellent friction characteristics and, as a result, a perfect degree of process safety.

EMUGE H
InnoForm

For materials of high tensile strength

This geometry was designed for the cold forming of materials with restricted ductile properties. The special tool geometry, combined with an appropriate hard surface coating, provides excellent quality of the finished threads and very good wear resistance.

EMUGE SPEED
Druck
InnoForm

For high-speed tapping

CNC machines, especially in combination with the collet holders of our Speedsynchro® Modular series, make very high speeds possible.
The special geometry of these tools, combined with a hard surface coating, offers you the chance to do your machining at the highest speeds your machine can manage.

EMUGE VA
InnoForm

For stainless steel materials and steel materials

These materials show a high degree of adhesion which can lead to cold-welding effects. Also, they tend to strengthening during the forming process which puts more stress on the forming lobes.
In order to compensate this, we have developed a geometry which meets the elevated requirements towards stability perfectly.

EMUGE GAL
Druck
InnoForm

For aluminum cast alloys

Cast aluminum materials exert a very strong abrasive stress on the forming lobes of a roll form tap during work. In addition, the ductile properties of these rather brittle materials must be regarded as relatively poor.
In order to achieve easier thread production and better wear resistance even under these bad conditions, we have given this tool type a specially adjusted geometry and an additional hard surface coating.

EMUGE Z
Druck
InnoForm

For CNC-controlled machines

This geometry is aimed at reducing the unavoidable friction forces and the heat stress on the forming lobes especially for use on CNC-controlled machines. With a synchronous feed control, the performance potential of these tools can be used to the full, especially in combination with the collet holders of our Softsynchro® series.

2.7 Our EMUGE surface treatments and coatings

NT

Nitriding

In a thermo-chemical treatment, the surface is enriched with nitrogen to a depth of approx. 0.03 to 0.05 mm. Since the surface becomes very hard (1000-1250 HV), nitrided tools are a very good choice for abrasive materials like cast iron, spheroidal cast iron, cast aluminum and duroplastics. Tool life is increased in a decisive manner.

TIN

Titanium nitride (gold-yellow)

In a PVD process (500 °C) a coating thickness of 3-7 µm can be realized. The smooth coatings feature a high adhesion strength and TIN-typical properties against cold welding.

TIN coating systems with additional code number (e.g. TIN-66, TIN-80) are optimized with regard to substrate, tool geometry and application.

TICN

Titanium carbonitride (blue-grey)

In a PVD process (500 °C) a coating thickness of 2-4 µm can be realized. The hardness is approx. 3000 HV. The TICN coating will resist up to approx. 400 °C.

TICN coating systems with additional code number (e.g. TICN-67) are optimized with regard to substrate and application.

GLT-8

Diamond-like, amorphous carbon coating (black-grey)

In a PVD process a coating thickness of 1-2 µm can be realized. The hardness is approx. 2500 HV. This mono-layer coating is an excellent choice for the machining of non-ferrous metals and aluminum with a low silicon content (< 7% Si). Thanks to the low friction, material adhesion is drastically reduced. This coating will remain resistant up to approx. 350 °C.

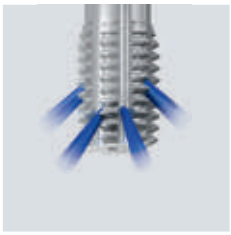
2.8 Other EMUGE abbreviations

IKZ

Internal coolant supply, axial (DIN designation: KA)

The axial exit of coolant-lubricant provides optimum cooling and lubrication in the lead taper area.

IKZN



Internal coolant supply, axial, with coolant exiting in the flutes (DIN designation: KR)

Radial exit of coolant-lubricant is the safest solution for providing coolant supply in the lead taper area even in through holes.

VHM

Solid carbide

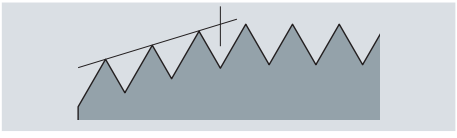
Tools with a thread diameter < 12.0 mm are made of solid carbide (thread part and shank).

2.9 Lead taper forms

Lead taper forms and lead taper lengths for roll form taps acc. DIN 2175.

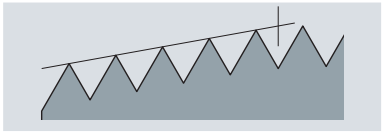
Form C

Lead taper length 2-3 threads



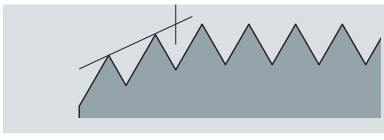
Form D

Lead taper length 3-5.5 threads



Form E

Lead taper length 1.5-2 threads



The chamfer length of our EMUGE taps is adjusted to the workpiece material in each individual case.

2.10 Cooling and lubrication agents

Lubricants are often, if not generally, given too little consideration. If you want to get the best performance out of your tool you have to take care to use the best coolant-lubricant available.

In general, we distinguish the following types of cooling and lubrication:

A

Dry machining, pressurized air, cold pressurized air

"Real" dry machining is mostly used only in cast iron. Pressurized air, sometimes cooled, is used in some cases for chip removal.

E

Emulsion

The most common type of coolant-lubricant on machining centres.

M

Minimum-quantity lubrication (MQL)

Due to the more and more common option of supplying aerosol through the spindle on modern machining centres, this type of cooling and lubrication is gaining more and more popularity.

O

Thread cutting oil

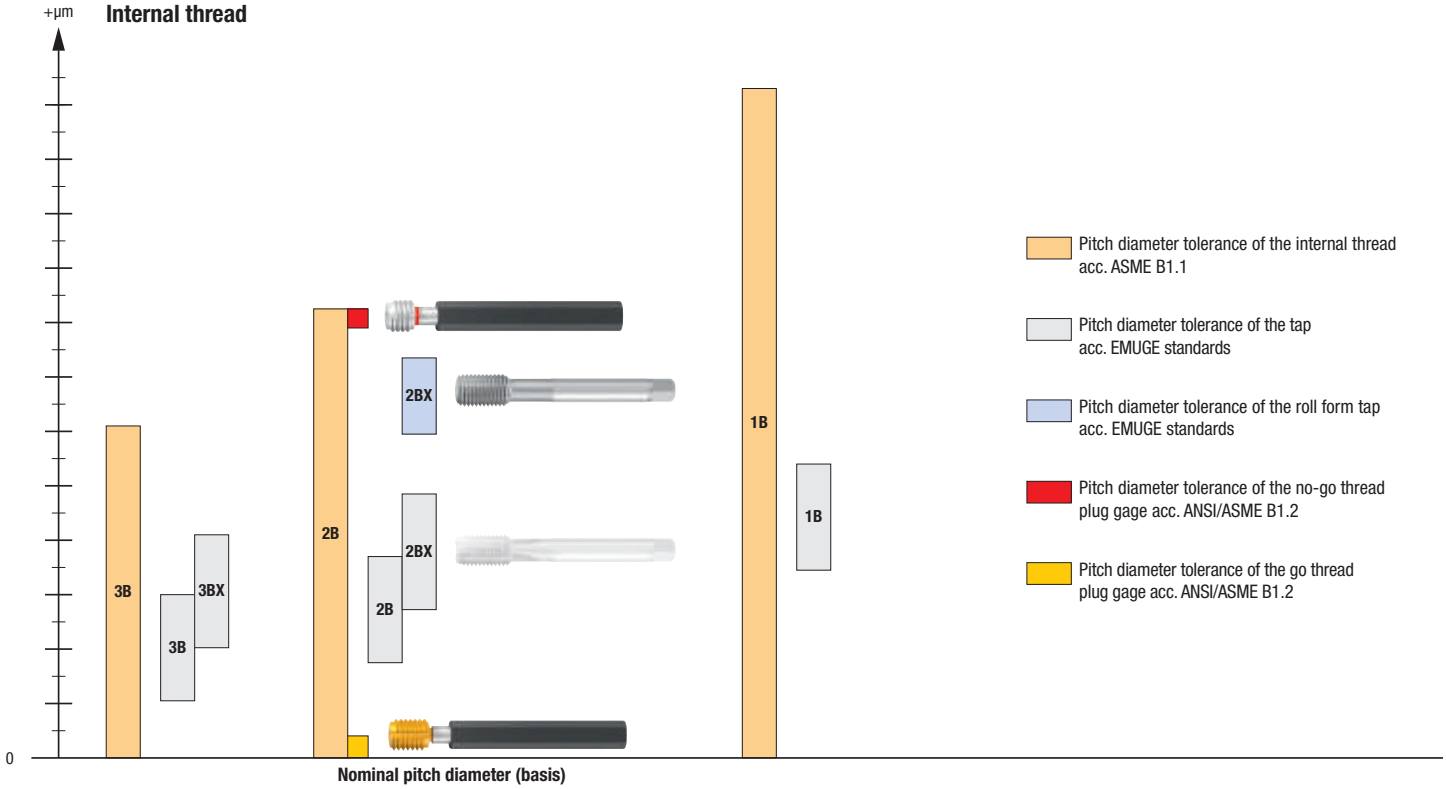
With these oils which are perfectly adjusted to specific materials, excellent thread surfaces and tool life can be achieved.

P

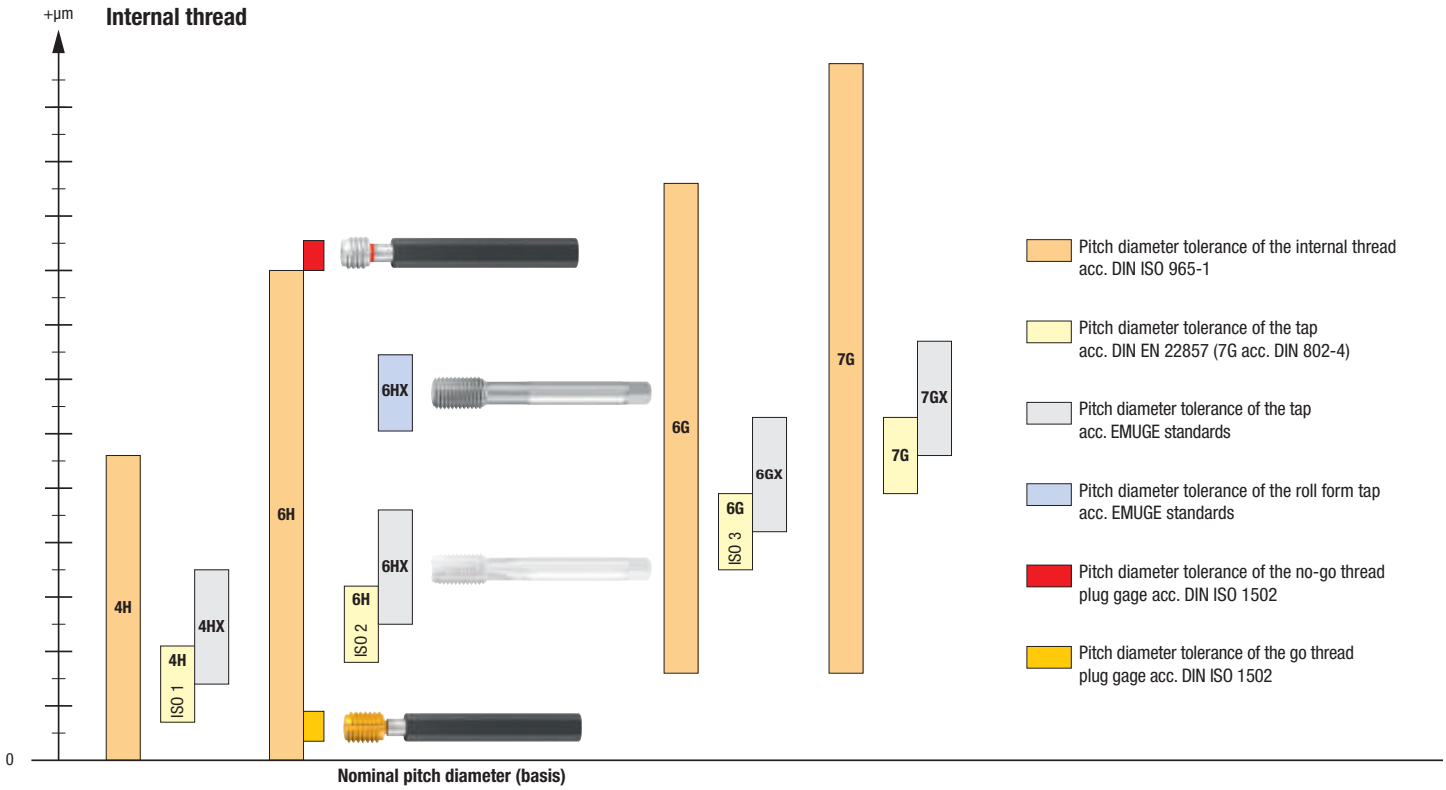
Thread cutting paste

Perfectly suitable for the cold forming of threads. Especially useful in horizontal machining, with large thread sizes and through hole threads. To be used only for brush lubrication.

2.11 Tolerance zones of the pitch diameter on the Unified thread (graphic representation)



2.12 Tolerance zones of the pitch diameter on the Metric thread (graphic representation)



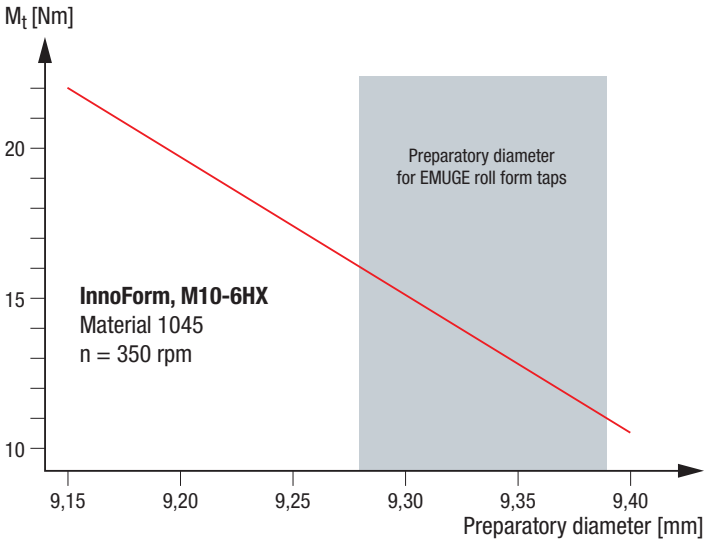
2.13 Cold forming and torque

Technical data of the workpiece material

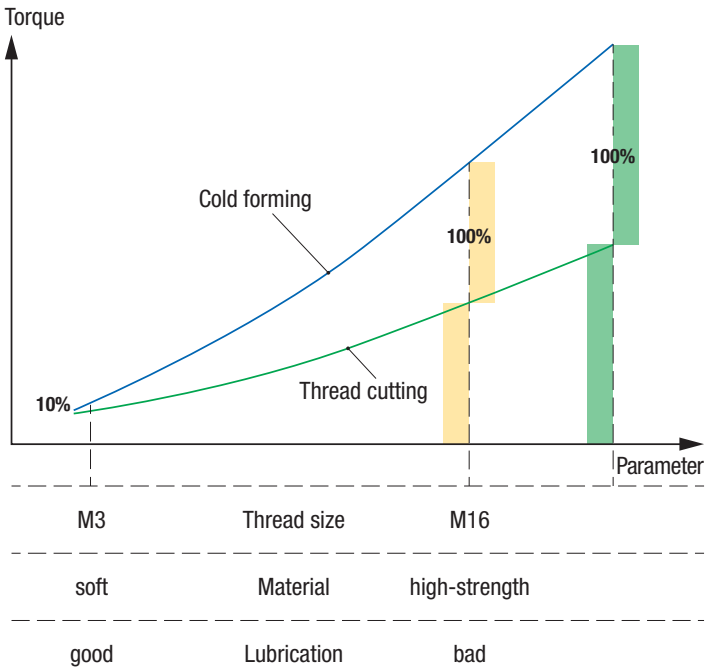
Not all materials are suitable for cold forming. For that, they must show a minimum value of ductility and must not exceed a certain maximum strength. Suitable materials usually have a tensile strength of less than 1400 N/mm^2 and a minimum fracture strain of 5%. In addition, different materials and their alloys lead to very specific flow properties and strengthening characteristics. Obviously, wrought aluminum, high-strength steel or stainless materials will react in very different ways.

Torque

Torque, in the cold forming of threads, depends mostly on the workpiece material, the thread size, lubrication and thread hole preparatory diameter, as well as on the geometry and the coating of the tool. The influence of the preparatory diameter on torque is shown in the following diagram.



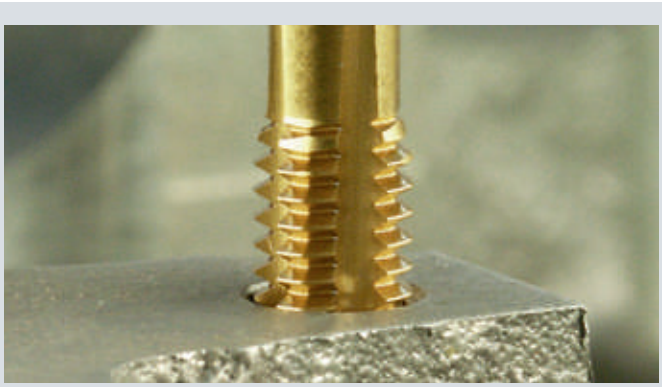
The following diagram demonstrates the difference in torque between thread cutting and cold forming.

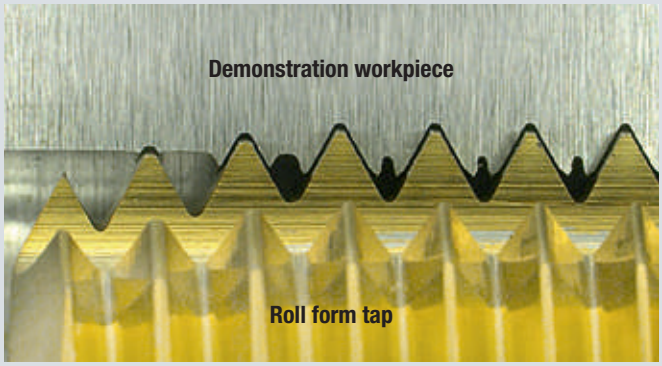


2.14 Cold forming as a production process

The cold forming of threads, according to DIN 8583-5, belongs to the pressure-forming processes. The internal thread is produced by the impression of a helical sequence of thread teeth into the formerly prepared thread hole, the desired profile is formed by pressure.
A roll form tap is provided with a lead taper and a cylindrical guiding part. The thread helix runs on through both parts. If you look at a cross-section of the tool, there is a polygon shape to be recognized at a right angle to the tool axis. This polygon shape provides forming lobes which carry the effective thread profile.

The lead portion of a roll form tap is made as a lead taper, in which the helical thread line is continuously increasing in diameter. In the cold-forming process, the lead taper produces the thread, the forming lobes penetrating the workpiece successively in a radial direction by forming the thread. During this process, the workpiece material “flows” from the thread crests along the thread flanks into the area of the minor thread diameter. This creates smooth flank surfaces and, in the minor diameter area, the typical space pocket.
The cylindrical guiding part of the roll form tap makes the surface of the produced thread even smoother, and serves to firmly guide the tool axially. Depending on the workpiece material, the essential advantages of cold forming include excellent surface quality but also increased static and dynamic strength of the thread. The length of the thread to be produced is not limited by chips which need to be removed, so process safety is extremely good.
The excellent self-guiding characteristics of a roll form tap prevent axial “miscutting”. The extraordinary stability of the tools is very helpful, especially with small diameters.





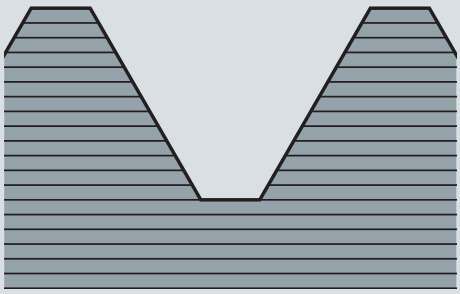
2.15 The difference between a cut thread and a cold-formed thread

With a cut thread, the permissible stress values are limited due to the fact that the grain structure of the material is cut. Also, flank angle errors can occur easily; these will cause a very unfavourable distribution of stress on the thread and limit its holding strength. With a cold-formed thread, the grain of the material is not cut or interrupted, and the material itself shows increased strength, due to its having been compressed by cold-forming. Flank angle errors which are quite common in cut threads are prevented by the material being formed, without any play, along the thread flanks of the tap. The incomplete minor diameter, typical for cold-formed threads, has no influence on the stripping resistance of the thread.
Cold forming causes material strengthening on the thread flanks and especially in the root area of the thread. This strengthening of the material structure has a very positive influence on the vibration properties and the general resistance of the thread under dynamic stress.

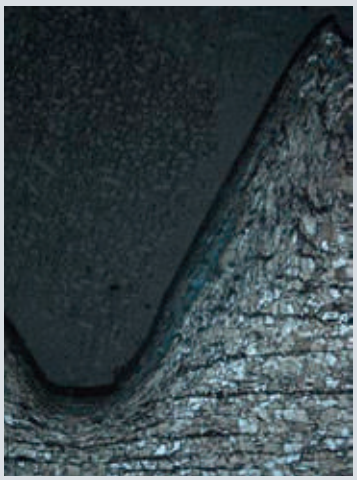
Maximum thread depth, maximum thread pitch

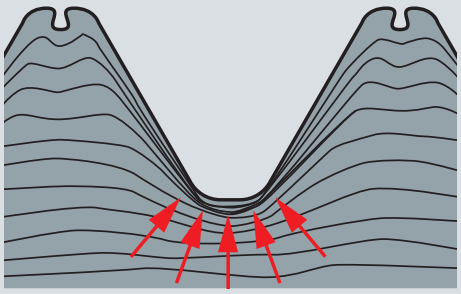
The maximum thread depth to be achieved and the fastest possible thread pitch to be produced by cold-forming are a topic about which a general statement is impossible. The possible thread depth is definitely larger than it could be with a cutting tap. In practical work, it depends primarily on the quality of cooling/lubrication, and is limited by the constructional length of the tool.
The maximum thread pitch in cold forming is limited by the workpiece material properties.

Cut thread	Cold-formed thread



Grain structure
in a cut thread





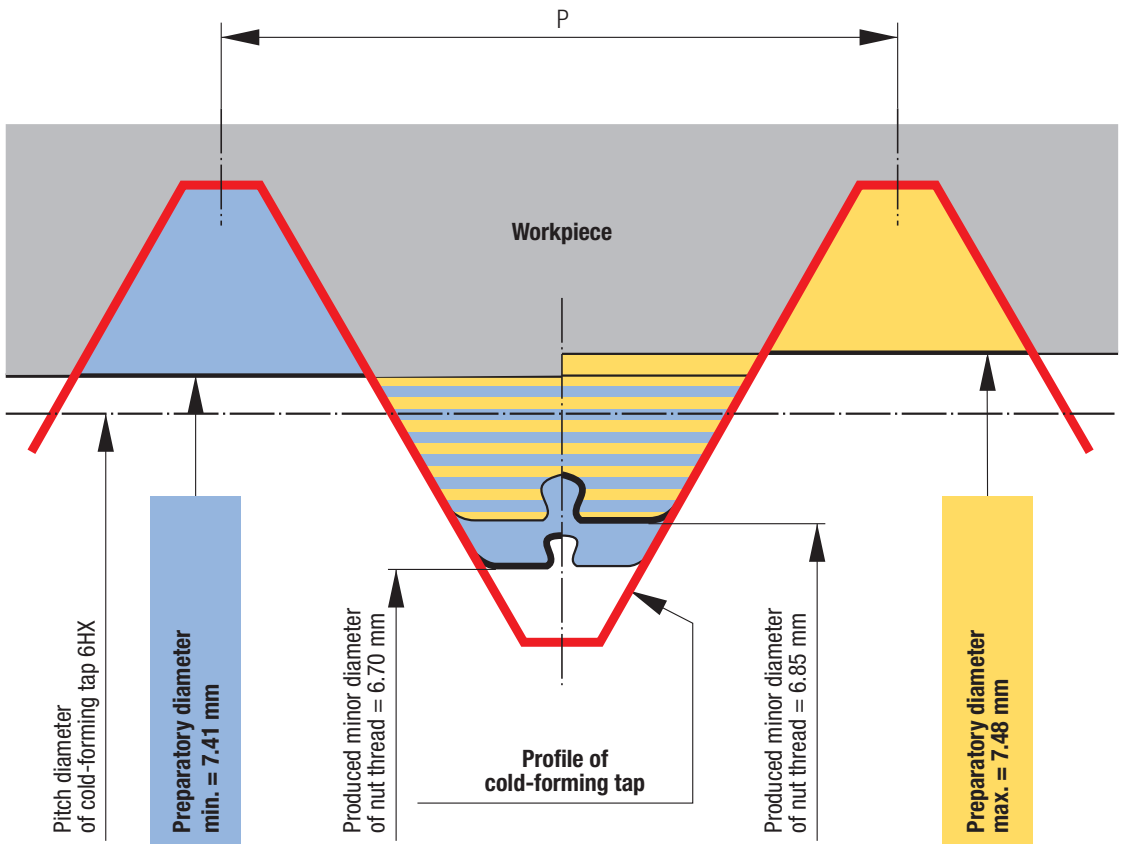
Grain structure in a cold-formed thread, strengthening in the root area / on the major diameter which is especially exposed to the danger of crack formation increases resistance

2.16 Thread hole preparatory diameter for roll form taps

The influence of the preparatory diameter

If the preparatory diameter is too small the workpiece material is overformed in the thread root and there are excessive process forces. If the preparatory diameter is too large the thread root is not sufficiently formed, the minor diameter is too small. In order to preclude such negative effects, the tolerance of the preparatory diameter is narrowed down from the start.
In some cases where the forming characteristics are very extraordinary it may be necessary to go without a standard preparatory diameter entirely, and to find the correct diameter by testing.

It is important to know that the preparatory diameter has a decisive influence on the minor diameter of the nut thread, as the following example shows. Every lack of precision, every kind of surface roughness will be mirrored in the finished internal thread and its minor diameter.



Cold-formed thread M8-6HX in corrosion- and acid-proof material, e.g. material no. 1.4571 or 1.4401, with different preparatory diameters.

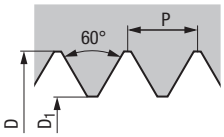
Nut height = 2 x d
v_c = 21 SFM
n = 255 rpm

Coolant-lubricant:
EMUGE thread cutting oil no. 5+ HIGH ALLOY

While the observation of the pitch diameter tolerance of the internal thread, e.g. ISO metric thread 6H, offers no problems usually, deviations in the minor diameter of the internal or nut thread must be expected, as demonstrated above.
The extended minor diameter tolerances for cold-formed internal threads are specified in DIN 13-50. This standard allows a 7H tolerance for the minor diameter of the nut thread, with a pitch diameter tolerance of 6H.

2.17 Recommended tap drill sizes for cold-forming internal threads

American Standard Threads



UNC

Unified coarse thread ASME B1.1 (Tol. 2B)

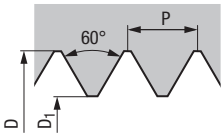
Nominal Size D	P [T.P.I.]	D_1 (2B) min.	D_1 (2B) max.	Rec. tap drill size
No. 1	64	0.0661	0.0681	**0.0669**
No. 2	56	0.0780	0.0799	**0.0787**
No. 3	48	0.0894	0.0917	**0.0906**
No. 4	40	0.1004	0.1016	**0.1004**
No. 5	40	0.1134	0.1154	**0.1142**
No. 6	32	0.1228	0.1252	**0.1240**
No. 8	32	0.1492	0.1508	**0.1496**
No. 10	24	0.1697	0.1724	**0.1713**
No. 12	24	0.1957	0.1980	**0.1969**
1/4	20	0.2252	0.2276	**0.2264**
5/16	18	0.2846	0.2890	**0.2874**
3/8	16	0.3437	0.3480	**0.3465**
7/16	14	0.4016	0.4051	**0.4035**
1/2	13	0.4610	0.4661	**0.4646**
9/16	12	0.5201	0.5252	**0.5236**
5/8	11	0.5787	0.5843	**0.5827**
3/4	10	0.6980	0.7043	**0.7028**
7/8	9	0.8169	0.8248	**0.8228**
1	8	0.9346	0.9429	**0.9409**

UNF

Unified fine thread ASME B1.1 (Tol. 2B)

Nominal Size D	P [T.P.I.]	D_1 (2B) min.	D_1 (2B) max.	Rec. tap drill size
No. 0	80	0.0547	0.0563	**0.0551**
No. 1	72	0.0669	0.0681	**0.0669**
No. 2	64	0.0791	0.0807	**0.0795**
No. 3	56	0.0909	0.0925	**0.0913**
No. 4	48	0.1024	0.1043	**0.1031**
No. 5	44	0.1146	0.1161	**0.1150**
No. 6	40	0.1264	0.1280	**0.1268**
No. 8	36	0.1508	0.1528	**0.1516**
No. 10	32	0.1752	0.1764	**0.1752**
No. 12	28	0.1988	0.2020	**0.2008**
1/4	28	0.2331	0.2354	**0.2343**
5/16	24	0.2925	0.2949	**0.2933**
3/8	24	0.3551	0.3579	**0.3563**
7/16	20	0.4130	0.4169	**0.4154**
1/2	20	0.4756	0.4799	**0.4783**
9/16	18	0.5354	0.5390	**0.5374**
5/8	18	0.5980	0.6020	**0.6004**
3/4	16	0.7193	0.7244	**0.7224**
7/8	14	0.8398	0.8445	**0.8425**
1	12	0.9583	0.9646	**0.9626**

ISO Metric Threads



M

ISO Metric coarse thread DIN 13 (Tol. 6H)

Nominal Size D	P [mm]	D_1 (6H) min. [mm]	D_1 (6H) max. [mm]	Rec. tap drill size [mm]	Rec. tap drill size [inch]
M 2	0.4	1.84	1.88	**1.85**	**0.0728**
M 2.5	0.45	2.32	2.36	**2.33**	**0.0917**
M 3	0.5	2.79	2.83	**2.8**	**0.1102**
M 3.5	0.6	3.24	3.28	**3.25**	**0.1280**
M 4	0.7	3.69	3.73	**3.7**	**0.1457**
M 4.5	0.75	4.16	4.23	**4.2**	**0.1654**
M 5	0.8	4.64	4.68	**4.65**	**0.1831**
M 6	1	5.55	5.63	**5.6**	**0.2205**
M 7	1	6.55	6.64	**6.6**	**0.2598**
M 8	1.25	7.41	7.49	**7.45**	**0.2933**
M 10	1.5	9.28	9.39	**9.35**	**0.3681**
M 12	1.75	11.16	11.29	**11.25**	**0.4429**
M 14	2	13.02	13.14	**13.1**	**0.5157**
M 16	2	15.02	15.14	**15.1**	**0.5945**
M 18	2.5	16.73	16.89	**16.85**	**0.6634**
M 20	2.5	18.73	18.9	**18.85**	**0.7421**
M 22	2.5	20.73	20.9	**20.85**	**0.8209**
M 24	3	22.47	22.65	**22.6**	**0.8898**

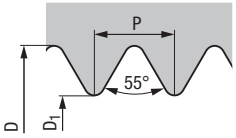
MF

ISO Metric fine thread DIN 13 (Tol. 6H)

Nominal Size D	P [mm]	D_1 (6H) min. [mm]	D_1 (6H) max. [mm]	Rec. tap drill size [mm]	Rec. tap drill size [inch]
M 4 x	0.5	3.79	3.83	**3.8**	**0.1496**
M 5 x	0.5	4.79	4.83	**4.8**	**0.1890**
M 6 x	0.75	5.67	5.73	**5.7**	**0.2244**
M 8 x	0.75	7.67	7.74	**7.7**	**0.3031**
M 8 x	1	7.55	7.64	**7.6**	**0.2992**
M 10 x	1	9.55	9.64	**9.6**	**0.3780**
M 10 x	1.25	9.41	9.49	**9.45**	**0.3720**
M 12 x	1.5	11.29	11.39	**11.35**	**0.4469**
M 14 x	1.5	13.29	13.39	**13.35**	**0.5256**
M 16 x	1.5	15.29	15.39	**15.35**	**0.6043**
M 18 x	1.5	17.29	17.39	**17.35**	**0.6831**
M 20 x	1.5	19.29	19.40	**19.35**	**0.7618**
M 22 x	1.5	21.29	21.40	**21.35**	**0.8406**
M 24 x	1.5	23.30	23.40	**23.35**	**0.9193**

Tap drill sizes of Metric fine threads which are not listed can be found by considering the diameter difference.

Straight Pipe Threads



G

Whitworth pipe thread DIN EN ISO 228

Nominal Size D	P [T.P.I.]	D_1 min. [mm]	D_1 max. [mm]	Rec. tap drill size [mm]	Rec. tap drill size [inch]
G 1/16	28	7.25	7.29	**7.25**	**0.2854**
G 1/8	28	9.25	9.29	**9.25**	**0.3642**
G 1/4	19	12.48	12.59	**12.55**	**0.4941**
G 3/8	19	15.99	16.09	**16.05**	**0.6319**
G 1/2	14	20.02	20.15	**20.1**	**0.7913**
G 5/8	14	21.97	22.1	**22.05**	**0.8681**
G 3/4	14	25.5	25.65	**25.6**	**1.0079**
G 7/8	14	29.26	29.4	**29.35**	**1.1555**
G 1	11	32.05	32.21	**32.15**	**1.2657**

2.17 Recommended tap drill sizes for cold-forming internal threads

STI-UNC

Unified coarse thread
ASME B18.29.1

For wire thread inserts

Nominal Size	P [T.P.I.]	D_1 (2B) min.	D_1 (2B) max.	Rec. tap drill size
STI-No. 2	56	0.1004	0.1016	**0.1004**
STI-No. 4	40	0.1323	0.1339	**0.1327**
STI-No. 6	32	0.1630	0.1646	**0.1634**
STI-No. 8	32	0.1894	0.1921	**0.1909**
STI-No. 10	24	0.2228	0.2256	**0.2244**
STI 1/4	20	0.2894	0.2929	**0.2913**
STI 5/16	18	0.3563	0.3598	**0.3583**
STI 3/8	16	0.4240	0.4287	**0.4272**
STI 7/16	14	0.4933	0.4976	**0.4961**
STI 1/2	13	0.5602	0.5646	**0.5630**

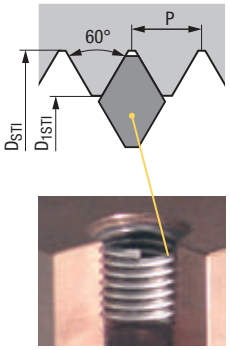
STI-UNF

Unified fine thread
ASME B18.29.1

For wire thread inserts

Nominal Size	P [T.P.I.]	D_1 (2B) min.	D_1 (2B) max.	Rec. tap drill size
STI-No. 4	48	0.1291	0.1311	**0.1299**
STI-No. 6	40	0.1583	0.1606	**0.1594**
STI-No. 8	36	0.1866	0.1882	**0.1870**
STI-No. 10	32	0.2150	0.2177	**0.2165**
STI 1/4	28	0.2783	0.2811	**0.2795**
STI 5/16	24	0.3457	0.3480	**0.3465**
STI 3/8	24	0.4083	0.4110	**0.4094**
STI 7/16	20	0.4772	0.4799	**0.4783**
STI 1/2	20	0.5398	0.5429	**0.5413**

Screw Thread Insert Threads (STI)



LK-UNC

Unified SELF-LOCK coarse thread
EMUGE standard

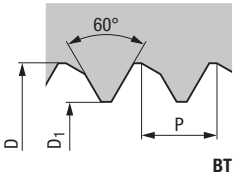
Nominal Size D	P [T.P.I.]	D_1 min.	D_1 max.	Rec. tap drill size
LK No. 4	40	0.1035	0.1055	**0.1043**
LK No. 6	32	0.1280	0.1303	**0.1280**
LK No. 8	32	0.1539	0.1563	**0.1555**
LK No. 10	24	0.1752	0.1783	**0.1772**
LK No. 12	24	0.2012	0.2047	**0.2028**
LK 1/4	20	0.2315	0.2354	**0.2323**
LK 5/16	18	0.2913	0.2961	**0.2933**
LK 3/8	16	0.3508	0.3559	**0.3524**
LK 7/16	14	0.4091	0.4146	**0.4094**
LK 1/2	13	0.4689	0.4752	**0.4724**

LK-UNF

Unified SELF-LOCK fine thread
EMUGE standard

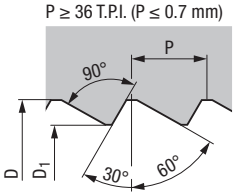
Nominal Size D	P [T.P.I.]	D_1 min.	D_1 max.	Rec. tap drill size
LK No. 4	48	0.1047	0.1067	**0.1055**
LK No. 6	40	0.1295	0.1315	**0.1299**
LK No. 8	36	0.1543	0.1567	**0.1555**
LK No. 10	32	0.1799	0.1823	**0.1811**
LK 1/4	28	0.2382	0.2409	**0.2382**
LK 5/16	24	0.2980	0.3016	**0.2992**
LK 3/8	24	0.3606	0.3638	**0.3622**
LK 7/16	20	0.4193	0.4232	**0.4213**
LK 1/2	20	0.4819	0.4858	**0.4843**

Self-Locking Threads



BT

P ≥ 36 T.P.I. (P ≤ 0.7 mm)



LK-M

Metric SELF-LOCK coarse thread
EMUGE standard

Nominal Size D	P [mm]	D_1 min. [mm]	D_1 max. [mm]	Rec. tap drill size [mm]	Rec. tap drill size [inch]
LK-M 3	0.5	2.82	2.88	**2.85**	**0.1122**
LK-M 4	0.7	3.77	3.83	**3.8**	**0.1496**
LK-M 5	0.8	4.77	4.83	**4.8**	**0.1890**
LK-M 6	1	5.7	5.78	**5.7**	**0.2244**
LK-M 8	1.25	7.58	7.68	**7.6**	**0.2992**
LK-M 10	1.5	9.48	9.58	**9.5**	**0.3740**

The recommended preparatory diameters enable a cold-formed minor diameter of the thread within tolerance (for M and MF according to DIN 13-50). Preconditions include a stable clamping of tool and workpiece as well as solid carbide twist drills which are new or as good as new.

In order to optimize tool life, larger thread hole preparatory diameters may be used. But it is necessary to ensure that the minor diameter of the thread complies with the tolerance (for M and MF according to DIN 13-50).

We recommend a smaller preparatory diameter by 0.05 mm respectively 0.002 in for difficult to form materials (such as aluminum cast alloys) for P ≥ 1 mm respectively from 24 T.P.I.

The recommended preparatory diameters were carefully determined and tested in the field. In rare cases it may happen that the recommended preparatory diameters do not provide the desired minor diameter of the internal thread. In such cases the suitable preparatory diameters must be determined in tests.

Multi Taps and Multi Roll Form Taps

	Page
Contents	212 - 213
Product Finder and Cutting Data	214 - 215
Product Pages	216 - 226

The Original

MultiTAP™ by EMUGE

Introducing the EXPANDED MultiTAP line.

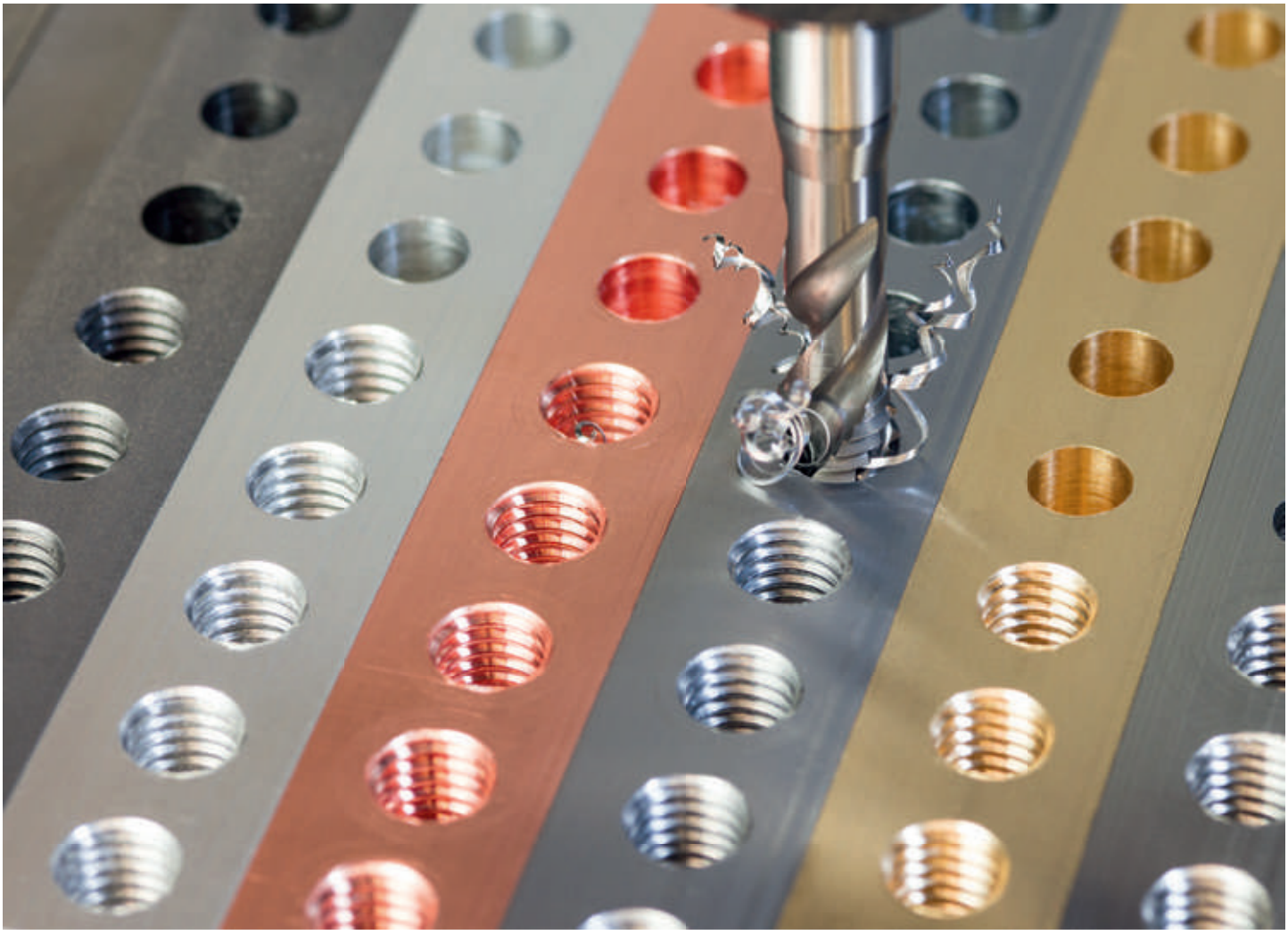
From cut taps to form taps, extended lengths to different coatings, EMUGE, the inventor and leader of the high performance multi-purpose tap, now offers the broadest line in the industry.

MultiTAP cuts a wide range of materials – carbon steel, steel alloys, stainless steel, aluminum, cast iron, copper, brass, and bronze. And MultiTAP is uniquely designed to produce threads within both **2B and 3B classes** of fit, eliminating the guesswork required when calculating H-limits.

MultiTAP features an innovative geometric design and a special base material and surface treatment, allowing it to handle numerous materials and applications. EMUGE has designed MultiTAP as an **affordable**, yet high performance tapping solution.

MultiTAP will significantly improve thread quality and boost output while reducing production costs, handling most common materials and applications. **MultiTAP eliminates the need to stock numerous types of taps in the tool crib.**

Taps with reinforced shank		Taps with reduced shank		Taps with extra long shank		Roll form taps with reinforced shank		Roll form taps with reduced shank	
Rekord 1 – Plug Enorm 1 – Semi Bottoming		**Rekord 2 – Plug Enorm 2 – Semi Bottoming**		**Rekord 1/2-LS – Plug Enorm 1/2-LS – Semi Bottoming**		**MultiForm 1**		**MultiForm 2**	
DIN Length ANSI Shank	DIN Length DIN Shank	DIN Length ANSI Shank	DIN Length DIN Shank	Extra Length ANSI Shank	Extra Length DIN Shank	DIN Length ANSI Shank	DIN Length DIN Shank	DIN Length ANSI Shank	
Page									
216		216		217		223		223	UNC
218		218		219		224		224	UNF
220	221	220	221		222		225		M



Product finder and cutting data

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

The suitability is marked as follows:

- **Preferred suitable tap / roll form tap**
- Suitable tap / roll form tap

= DIN form / threads (chamfer length)

= DIN form / threads (lead taper length)

		Application – Material	Hardness Range HRC	Hardness Range BHN	Hardness Range N/mm²	Material Examples
P		**Steel materials**				
	1.1	Cold-extrusion steels, Construction steels, Free-cutting steels, etc.		≤ 180	≤ 600	1010 / 1018 / 1020 / 12L14 / 12L15 / A36 / T1
	2.1	Construction steels, Cementation steels, Steel castings, etc.	≤ 22	≤ 235	≤ 800	A36 / T1 / 1030-1095 / 4140 / 4340 / 8620
	3.1	Cementation steels, Heat-treatable steels, Cold work steels, etc.	≤ 31	≤ 295	≤ 1000	4140 / 4340 / 8620 / P20 / H13 / D2 / A2 / S7 / H1150
	4.1	Heat-treatable steels, Cold work steels, Nitriding steels, etc.	≤ 38	≤ 355	≤ 1200	4140 / 4340 / 8620 / P20 / H13 / D2 / 300M / 52100 / M1-M42
	5.1	High-alloyed steels, Cold work steels, Hot work steels, etc.	≤ 44	≤ 415	≤ 1400	4140 / 4340 / 8620 / P20 / H13 / D2 / 300M / 52100
M		**Stainless steel materials**				
	1.1	Ferritic, martensitic	≤ 29	≤ 280	≤ 950	410 / 440 / 440C / 17-4 PH
	2.1	Austenitic	≤ 29	≤ 280	≤ 950	303 / 304 / 316 / 316L / 321
	3.1	Austenitic-ferritic (Duplex)	≤ 35	≤ 325	≤ 1100	
	4.1	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 39	≤ 370	≤ 1250	
K		**Cast materials**				
	1.1	Cast iron with lamellar graphite (GJL)		30 - 75	100 - 250	Grey cast irons G10-GG40
	1.2			75 - 135	250 - 450	
	2.1	Cast iron with nodular graphite (GJS)		105 - 150	350 - 500	Nodular GGG40-GGG70
	2.2			150 - 265	500 - 900	
	3.1	Cast iron with vermicular graphite (GJV)		90 - 120	300 - 400	
	3.2			120 - 150	400 - 500	Compact graphite iron (CGI)
	4.1	Malleable cast iron (GTMW, GTMB)		70 - 145	250 - 500	
	4.2			150 - 235	500 - 800	White iron
N		**Non ferrous materials**				
		Aluminum alloys				
	1.1	Aluminum wrought alloys		≤ 60	≤ 200	7075
	1.2			≤ 105	≤ 350	6061-T6 / 2024-T4
	1.3			≤ 165	≤ 550	
	1.4	Aluminum cast alloys Si ≤ 7%				
	1.5	Aluminum cast alloys 7% < Si ≤ 12%				
	1.6	Aluminum cast alloys 12% < Si ≤ 17%				
		Copper alloys				
	2.1	Pure copper, low-alloyed copper		≤ 120	≤ 400	
	2.2	Copper-zinc alloys (brass, long-chipping)		≤ 165	≤ 550	
	2.3	Copper-zinc alloys (brass, short-chipping)		≤ 165	≤ 550	
	2.4	Copper-aluminum alloys (alu bronze, long-chipping)		≤ 235	≤ 800	
	2.5	Copper-tin alloys (tin bronze, long-chipping)		≤ 205	≤ 700	
	2.6	Copper-tin alloys (tin bronze, short-chipping)		≤ 120	≤ 400	
	2.7	Special copper alloys		≤ 180	≤ 600	
	2.8		≤ 44	≤ 415	≤ 1400	
		Magnesium alloys				
	3.1	Magnesium wrought alloys		≤ 150	≤ 500	
	3.2	Magnesium cast alloys		≤ 150	≤ 500	
		Synthetics				
	4.1	Duroplastics (short-chipping)				
	4.2	Thermoplastics (long-chipping)				
	4.3	Fibre-reinforced synthetics (fibre content ≤ 30%)				
	4.4	Fibre-reinforced synthetics (fibre content > 30%)				
		Special materials				
	5.1	Graphite				
	5.2	Tungsten-copper alloys				
	5.3	Composite materials				
S		**Special materials**				
		Titanium alloys				
	1.1	Pure titanium		≤ 135	≤ 450	CP1 / CP2
	1.2	Titanium alloys	≤ 27	≤ 265	≤ 900	6AL4V
	1.3		≤ 39	≤ 370	≤ 1250	
		Nickel alloys, cobalt alloys and iron alloys				
	2.1	Pure nickel		≤ 180	≤ 600	
	2.2	Nickel-base alloys	≤ 31	≤ 295	≤ 1000	Monel 500, 718 Inconel annealed
	2.3		≤ 49	≤ 475	≤ 1600	718 Inconel
	2.4	Cobalt-base alloys	≤ 31	≤ 295	≤ 1000	
	2.5		≤ 49	≤ 475	≤ 1600	Haynes 25
	2.6	Iron-base alloys	≤ 46	≤ 445	≤ 1500	Incoloy 925
H		**Hard materials**				
	1.1	High strength steels, hardened steels, hard castings	44 - 50			
	1.2		50 - 55			
	1.3		55 - 60			
	1.4		60 - 63			
	1.5		63 - 66			

MultiTAP

Taps

	Rekord B-MULTI NT2	Rekord B-MULTI TICN	Enorm MULTI NE2	Enorm MULTI TICN
	B / 4-5	B / 4-5	C / 2-3	C / 2-3
Thread Depth and Hole Type	max. 3 x d_1		max. 2.5 x d_1	
UNC	216, 217	216	216, 217	216
UNF	218, 219	218	218, 219	218
UNEF, UN-8				
M	220 - 222	220, 221	220 - 222	220, 221
MF				
NPSM/NPSC				
NPSF				
Rp (BSPP)				
G				
NPT				
NPTF				
Rc (BSPT)				
STI				
SELF-LOCK				

MultiTAP

Roll Form Taps

	InnoForm MULTI/E-SN TIN	InnoForm MULTI/E-SN TICN	
	E / 1.5-2	E / 1.5-2	
Thread Depth and Hole Type	max. 3 x d_1		Thread Depth and Hole Type
UNC	223	223	UNC
UNF	224	224	UNF
UNEF, UN-8			UNEF, UN-8
M	225	225	M
MF			MF
NPSM/NPSC			NPSM/NPSC
NPSF			NPSF
Rp (BSPP)			Rp (BSPP)
G			G
NPT			NPT
NPTF			NPTF
Rc (BSPT)			Rc (BSPT)
STI			STI
SELF-LOCK			SELF-LOCK

P	1.1	25 - 60	25 - 60	25 - 60	25 - 60	35 - 85	35 - 85	1.1	P
	2.1	25 - 60	25 - 60	25 - 60	25 - 60	35 - 85	35 - 85	2.1	
	3.1	15 - 40	15 - 40	15 - 40	15 - 40	35 - 75	35 - 75	3.1	
	4.1	10 - 35	10 - 35	10 - 35	10 - 35	15 - 40	15 - 40	4.1	
	5.1							5.1	
M	1.1	10 - 30	10 - 30	10 - 30	10 - 30	15 - 45 [2]	15 - 45 [2]	1.1	M
	2.1	10 - 25	10 - 25	10 - 25	10 - 25	15 - 45 [2]	15 - 45 [2]	2.1	
	3.1							3.1	
	4.1							4.1	
K	1.1	35 - 65	35 - 65	35 - 65	35 - 65			1.1	K
	1.2							1.2	
	2.1	15 - 50	15 - 50	15 - 50	15 - 50			2.1	
	2.2							2.2	
	3.1	15 - 50	15 - 50	15 - 50	15 - 50			3.1	
	3.2							3.2	
	4.1	35 - 65	35 - 65	35 - 65	35 - 65			4.1	
	4.2							4.2	
N	1.1	35 - 65	35 - 65	35 - 65	35 - 65	35 - 100	35 - 100	1.1	N
	1.2	35 - 65	35 - 65	35 - 65	35 - 65	35 - 100	35 - 100	1.2	
	1.3	35 - 65	35 - 65	35 - 65	35 - 65	35 - 100	35 - 100	1.3	
	1.4	20 - 50	20 - 50	20 - 50	20 - 50	35 - 85	35 - 85	1.4	
	1.5							1.5	
	1.6							1.6	
	2.1	15 - 40	15 - 40	15 - 40	15 - 40	35 - 100	35 - 100	2.1	
	2.2	35 - 80	35 - 80	35 - 80	35 - 80	35 - 100	35 - 100	2.2	
	2.3	35 - 80	35 - 80	35 - 80	35 - 80	35 - 100	35 - 100	2.3	
	2.4	10 - 35	10 - 35	10 - 35	10 - 35	20 - 50	20 - 50	2.4	
	2.5	15 - 45	15 - 45	15 - 45	15 - 45	35 - 85	35 - 85	2.5	
	2.6							2.6	
	2.7							2.7	
	2.8							2.8	
	3.1							3.1	
	3.2							3.2	
	4.1							4.1	
	4.2							4.2	
	4.3							4.3	
	4.4							4.4	
	5.1							5.1	
	5.2							5.2	
	5.3							5.3	
S	1.1							1.1	S
	1.2							1.2	
	1.3							1.3	
	2.1							2.1	
	2.2							2.2	
	2.3							2.3	
	2.4							2.4	
	2.5							2.5	
	2.6							2.6	
H	1.1							1.1	H
	1.2							1.2	
	1.3							1.3	
	1.4							1.4	
	1.5							1.5	

Page
v_c in SFM

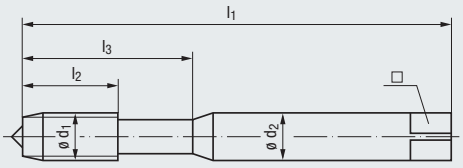
Cutting / circumferential speed v_c in SFM – Preferred suitable tap / roll form tap
Cutting / circumferential speed v_c in SFM – Suitable tap / roll form tap

[2] Restricted application possibilities with emulsion

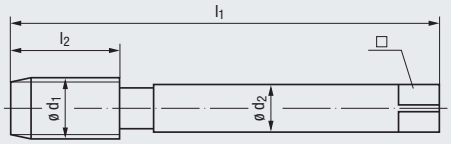
DIN Length · ANSI Shank

Overall length acc. to DIN 371, DIN 376

MultiTAP™



Reinforced Shank
(No.1 - 3/8)



Reduced Shank
(7/16 - 1)

MULTI
Wide Material Range

UNC

Unified Coarse Thread
ASME B1.1

Class of Fit	2B	2B	2B	2B
Coating	NT2	TICN	NE2	TICN
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics			R35	R35
	B / 4-5	B / 4-5	C / 2-3	C / 2-3
	E / O / P	E / O / P	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1		max. 2.5 x d_1	
Applications – Material	P 1.1-4.1 M 1.1-2.1 K 1.1, 2.1 K 3.1, 4.1 N 1.1-1.4, 2.1-5	P 1.1-4.1 M 1.1-2.1 K 1.1, 2.1 K 3.1, 4.1 N 1.1-1.4, 2.1-5	P 1.1-4.1 M 1.1-2.1 K 1.1, 2.1 K 3.1, 4.1 N 1.1-1.4, 2.1-5	P 1.1-4.1 M 1.1-2.1 K 1.1, 2.1 K 3.1, 4.1 N 1.1-1.4, 2.1-5

Reinforced Shank

Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification	BU497300 Rekord 1B-MULTI NT2	Flutes	BU499300 Rekord 1B-MULTI TICN	Flutes	BU533200 Enorm 1-MULTI NE2	Flutes	BU539300 Enorm 1-MULTI TICN	Flutes
No. 1	64	1.772	0.276	0.472	0.141	0.110	0.0595	.5000								
No. 2	56	1.772	0.276	0.472	0.141	0.110	0.0700	.5001								
No. 3	48	1.969	0.354	0.551	0.141	0.110	0.0820	.5002								
No. 4	40	2.205	0.433	0.709	0.141	0.110	0.0890	.5003	●	2	●	2	●	2	●	2
No. 5	40	2.205	0.433	0.709	0.141	0.110	0.1015	.5004	●	3	●	3	●	3	●	3
No. 6	32	2.205	0.472	0.787	0.141	0.110	0.1110	.5005	●	3	●	3	●	3	●	3
No. 8	32	2.480	0.512	0.827	0.168	0.131	0.1360	.5006	●	3	●	3	●	3	●	3
No. 10	24	2.756	0.591	0.984	0.194	0.152	0.1520	.5007	●	3	●	3	●	3	●	3
No. 12	24	3.150	0.630	1.142	0.220	0.165	0.1770	.5008	●	3	●	3	●	3	●	3
1/4	20	3.150	0.669	1.181	0.255	0.191	0.2040	.5009	●	3	●	3	●	3	●	3
5/16	18	3.543	0.787	1.378	0.318	0.238	0.2610	.5010	●	3	●	3	●	3	●	3
3/8	16	3.937	0.866	1.535	0.381	0.286	0.3160	.5011	●	3	●	3	●	3	●	3

Reduced Shank

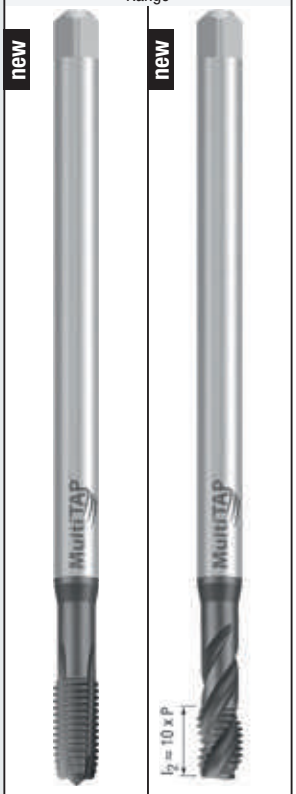
Nominal Size ø d_1	T.P.I.	inch l_1	l_2	l_3	ø d_2	□	Dimens. ID	Tool Identification	CU497300 Rekord 2B-MULTI NT2	Flutes	CU499300 Rekord 2B-MULTI TICN	Flutes	CU533200 Enorm 2-MULTI NE2	Flutes	CU539300 Enorm 2-MULTI TICN	Flutes
7/16	14	3.937	0.866	—	0.323	0.242	0.3680	.5012	●	3	●	3	●	3	●	3
1/2	13	4.331	0.984	—	0.367	0.275	0.4219	.5013	●	3	●	3	●	3	●	3
9/16	12	4.331	1.024	—	0.429	0.322	0.4844	.5014	●	3	●	3	●	3	●	3
5/8	11	4.331	1.063	—	0.480	0.360	0.5313	.5015	●	3	●	3	●	3	●	3
3/4	10	4.921	1.181	—	0.590	0.442	0.6563	.5016	●	3	●	3	●	3	●	3
7/8	9	5.512	1.260	—	0.697	0.523	0.7656	.5017	●	3	●	3	●	4	●	4
1	8	6.299	1.417	—	0.800	0.600	0.8750	.5018	●	3	●	3	●	4	●	4

Ordering Example: **BU497300.5003**

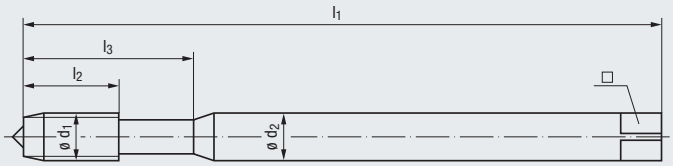
Extra Length · ANSI Shank

MultiTAP™

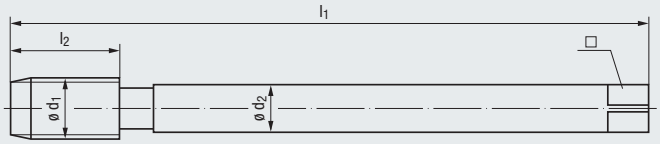
MULTI
Wide Material Range



With extra long shank



Reinforced Shank (No.6 - 3/8)



Reduced Shank (7/16 - 5/8)

UNC

Unified Coarse Thread
ASME B1.1

Class of Fit	2B	2B
Coating	NT2	NE2
Cutting Material	HSS Extra	HSS Extra
Technical Characteristics		R35
	B / 4-5	C / 2-3
	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1	max. 2.5 x d_1
Applications – Material	P 1.1-4.1 M 1.1-2.1 K 1.1, 2.1 K 3.1, 4.1 N 1.1-1.4, 2.1-5	P 1.1-4.1 M 1.1-2.1 K 1.1, 2.1 K 3.1, 4.1 N 1.1-1.4, 2.1-5

Reinforced Shank

Nominal Size ø d_1	T.P.I.	l_1	l_2	inch l_3	ø d_2	□	Tool Identification Dimens. ID	BU797300 Rekord 1B-MULTI LS-NT2	Flutes	BU783200 Enorm 1-MULTI LS-NE2	Flutes
No. 6	32	4.409	0.472	0.787	0.141	0.110	0.1110 **.5005**	●	3	●	3
No. 8	32	4.921	0.512	0.827	0.168	0.131	0.1360 **.5006**	●	3	●	3
No. 10	24	5.512	0.591	0.984	0.194	0.152	0.1520 **.5007**	●	3	●	3
1/4	20	6.299	0.669	1.181	0.255	0.191	0.2040 **.5009**	●	3	●	3
5/16	18	7.087	0.787	1.378	0.318	0.238	0.2610 **.5010**	●	3	●	3
3/8	16	7.087	0.866	1.535	0.381	0.286	0.3160 **.5011**	●	3	●	3

Reduced Shank

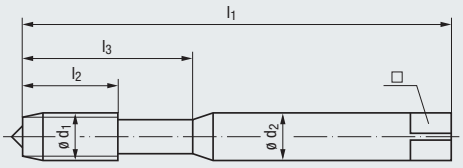
Nominal Size ø d_1	T.P.I.	l_1	l_2	inch l_3	ø d_2	□	Tool Identification Dimens. ID	CU797300 Rekord 2B-MULTI LS-NT2	Flutes	CU783200 Enorm 2-MULTI LS-NE2	Flutes
7/16	14	7.874	0.866	—	0.323	0.242	0.3680 **.5012**	●	3	●	3
1/2	13	8.819	0.984	—	0.367	0.275	0.4219 **.5013**	●	3	●	3
5/8	11	8.819	1.063	—	0.480	0.360	0.5313 **.5015**	●	3	●	3

● = In stock
★ = Allow 7 days for delivery

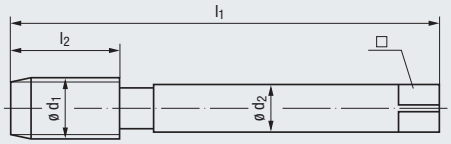
DIN Length · ANSI Shank

Overall length acc. to DIN 371, DIN 374

MultiTAP™



Reinforced Shank
(No.4 - 3/8)



Reduced Shank
(7/16 - 1)

MULTI
Wide Material Range

UNF

Unified Fine Thread
ASME B1.1

Class of Fit	2B	2B	2B	2B
Coating	NT2	TICN	NE2	TICN
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics			R35	R35
	B / 4-5	B / 4-5	C / 2-3	C / 2-3
	E / O / P	E / O / P	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1		max. 2.5 x d_1	
Applications – Material	P 1.1-4.1 M 1.1-2.1 K 1.1, 2.1 K 3.1, 4.1 N 1.1-1.4, 2.1-5	P 1.1-4.1 M 1.1-2.1 K 1.1, 2.1 K 3.1, 4.1 N 1.1-1.4, 2.1-5	P 1.1-4.1 M 1.1-2.1 K 1.1, 2.1 K 3.1, 4.1 N 1.1-1.4, 2.1-5	P 1.1-4.1 M 1.1-2.1 K 1.1, 2.1 K 3.1, 4.1 N 1.1-1.4, 2.1-5

Reinforced Shank

Nominal Size ø d_1	T.P.I.	l_1	l_2	inch l_3	ø d_2	□	Dimens. ID	Tool Identification BU497300 Rekord 1B-MULTI NT2	Flutes	BU499300 Rekord 1B-MULTI TICN	Flutes	BU533200 Enorm 1-MULTI NE2	Flutes	BU539300 Enorm 1-MULTI TICN	Flutes
No. 4	48	2.205	0.433	0.709	0.141	0.110	0.0945	**.5037**	●	2	●	2	●	2	●	2
No. 5	44	2.205	0.433	0.709	0.141	0.110	0.1063	**.5038**	●	3	●	3	●	3	●	3
No. 6	40	2.205	0.472	0.787	0.141	0.110	0.1181	**.5039**	●	3	●	3	●	3	●	3
No. 8	36	2.480	0.512	0.827	0.168	0.131	0.1378	**.5040**	●	3	●	3	●	3	●	3
No. 10	32	2.756	0.512	0.984	0.194	0.152	0.1614	**.5041**	●	3	●	3	●	3	●	3
No. 12	28	3.150	0.630	1.142	0.220	0.165	0.1820	**.5042**	●	3	●	3	●	3	●	3
1/4	28	3.150	0.669	1.181	0.255	0.191	0.2165	**.5043**	●	3	●	3	●	3	●	3
5/16	24	3.543	0.669	1.260	0.318	0.238	0.2717	**.5044**	●	3	●	3	●	3	●	3
3/8	24	3.937	0.709	1.535	0.381	0.286	0.3346	**.5045**	●	4	●	4	●	3	●	3

Reduced Shank

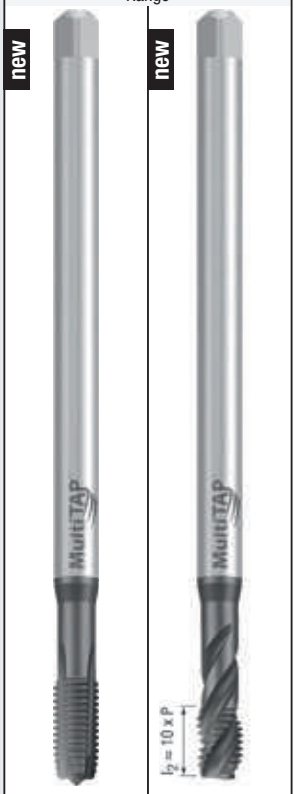
Nominal Size ø d_1	T.P.I.	l_1	l_2	inch l_3	ø d_2	□	Dimens. ID	Tool Identification CU497300 Rekord 2B-MULTI NT2	Flutes	CU499300 Rekord 2B-MULTI TICN	Flutes	CU533200 Enorm 2-MULTI NE2	Flutes	CU539300 Enorm 2-MULTI TICN	Flutes
7/16	20	3.937	0.866	—	0.323	0.242	0.3898	**.5046**	●	3	●	3	●	3	●	3
1/2	20	3.937	0.866	—	0.367	0.275	0.4528	**.5047**	●	3	●	3	●	4	●	4
9/16	18	3.937	0.866	—	0.429	0.322	0.5118	**.5048**	●	3	●	3	●	4	●	4
5/8	18	3.937	0.866	—	0.480	0.360	0.5709	**.5049**	●	3	●	3	●	4	●	4
3/4	16	4.331	0.984	—	0.590	0.442	0.6890	**.5050**	●	4	●	4	●	4	●	4
7/8	14	4.921	1.024	—	0.697	0.523	0.8071	**.5051**	●	4	●	4	●	4	●	4
1	12	5.512	1.102	—	0.800	0.600	0.9219	**.5052**	●	4	●	4	●	4	●	4

Ordering Example: **BU497300.5037**

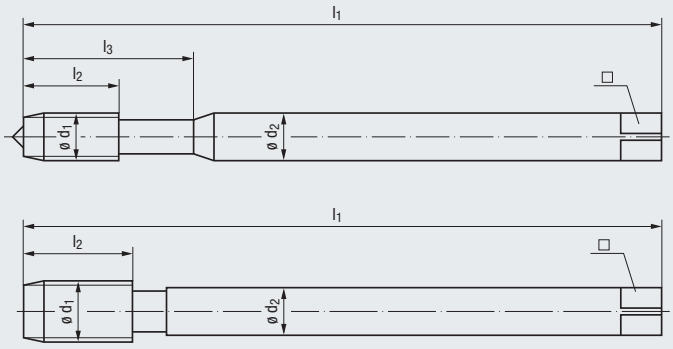
Extra Length · ANSI Shank

MultiTAP™

MULTI
Wide Material Range



With extra long shank



Reinforced Shank (No.6 - 3/8)

Reduced Shank (7/16 - 5/8)

UNF

Unified Fine Thread
ASME B1.1

Class of Fit	2B	2B
Coating	NT2	NE2
Cutting Material	HSS Extra	HSS Extra
Technical Characteristics		R35
	B / 4-5	C / 2-3
	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1	max. 2.5 x d_1
Applications – Material	P 1.1-4.1 M 1.1-2.1 K 1.1, 2.1 K 3.1, 4.1 N 1.1-1.4, 2.1-5	P 1.1-4.1 M 1.1-2.1 K 1.1, 2.1 K 3.1, 4.1 N 1.1-1.4, 2.1-5

Reinforced Shank

Nominal Size ø d_1	T.P.I.	l_1	l_2	inch l_3	ø d_2	□	Tool Identification Dimens. ID	BU797300 Rekord 1B-MULTI LS-NT2	Flutes	BU783200 Enorm 1-MULTI LS-NE2	Flutes
No. 6	40	4.409	0.472	0.787	0.141	0.110	0.1181 **.5039**	●	3	●	3
No. 8	36	4.921	0.512	0.827	0.168	0.131	0.1378 **.5040**	●	3	●	3
No. 10	32	5.512	0.512	0.984	0.194	0.152	0.1614 **.5041**	●	3	●	3
1/4	28	6.299	0.669	1.181	0.255	0.191	0.2165 **.5043**	●	3	●	3
5/16	24	7.087	0.669	1.260	0.318	0.238	0.2717 **.5044**	●	3	●	3
3/8	24	7.087	0.709	1.535	0.381	0.286	0.3346 **.5045**	●	4	●	3

Reduced Shank

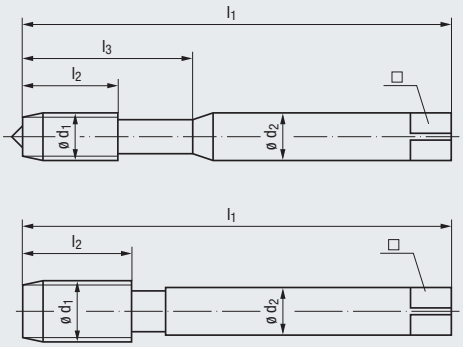
Nominal Size ø d_1	T.P.I.	l_1	l_2	inch l_3	ø d_2	□	Tool Identification Dimens. ID	CU797300 Rekord 2B-MULTI LS-NT2	Flutes	CU783200 Enorm 2-MULTI LS-NE2	Flutes
7/16	20	7.874	0.866	—	0.323	0.242	0.3898 **.5046**	●	3	●	3
1/2	20	7.874	0.866	—	0.367	0.275	0.4528 **.5047**	●	3	●	4
5/8	18	7.874	0.866	—	0.480	0.360	0.5709 **.5049**	●	3	●	4

● = In stock
★ = Allow 7 days for delivery

DIN Length · ANSI Shank

Overall length acc. to DIN 371, DIN 376

MultiTAP™



Reinforced Shank
(M4 - M10)

Reduced Shank
(M12 - M24)

MULTI
Wide Material Range

M

ISO Metric Coarse Thread
DIN 13

Class of Fit	ISO 2/6H	ISO 2/6H	ISO 2/6H	ISO 2/6H
Coating	NT2	TICN	NE2	TICN
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics			R35	R35
	B / 4-5	B / 4-5	C / 2-3	C / 2-3
	E / O / P	E / O / P	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1		max. 2.5 x d_1	
Applications – Material	P 1.1-4.1 M 1.1-2.1 K 1.1, 2.1 K 3.1, 4.1 N 1.1-1.4, 2.1-5	P 1.1-4.1 M 1.1-2.1 K 1.1, 2.1 K 3.1, 4.1 N 1.1-1.4, 2.1-5	P 1.1-4.1 M 1.1-2.1 K 1.1, 2.1 K 3.1, 4.1 N 1.1-1.4, 2.1-5	P 1.1-4.1 M 1.1-2.1 K 1.1, 2.1 K 3.1, 4.1 N 1.1-1.4, 2.1-5

Reinforced Shank

Nominal Size ø d_1	P mm	l_1 inch	l_2 inch	l_3 inch	ø d_2 inch	□ inch	Dimens. ID	Tool Identification	BU497300 Rekord 1B-MULTI NT2	Flutes	BU499300 Rekord 1B-MULTI TICN	Flutes	BU533200 Enorm 1-MULTI NE2	Flutes	BU539300 Enorm 1-MULTI TICN	Flutes
M 4	0.7	2.4803	0.5118	0.8268	0.168	0.131	0.1299	**.0040**	●	3	●	3	●	3	●	3
M 5	0.8	2.7559	0.5906	0.9843	0.194	0.152	0.1654	**.0050**	●	3	●	3	●	3	●	3
M 6	1	3.1496	0.6693	1.1811	0.255	0.191	0.1969	**.0060**	●	3	●	3	●	3	●	3
M 8	1.25	3.5433	0.7874	1.3780	0.318	0.238	0.2677	**.0080**	●	3	●	3	●	3	●	3
M 10	1.5	3.9370	0.8661	1.5354	0.381	0.286	0.3346	**.0100**	●	3	●	3	●	3	●	3

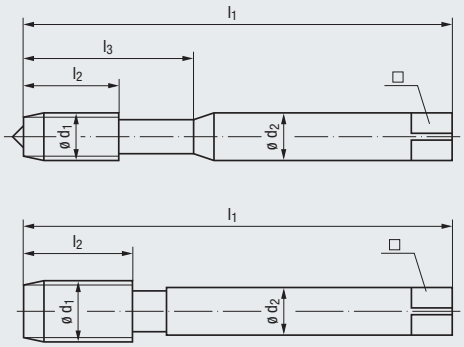
Reduced Shank

Nominal Size ø d_1	P mm	l_1 inch	l_2 inch	l_3 inch	ø d_2 inch	□ inch	Dimens. ID	Tool Identification	CU497300 Rekord 2B-MULTI NT2	Flutes	CU499300 Rekord 2B-MULTI TICN	Flutes	CU533200 Enorm 2-MULTI NE2	Flutes	CU539300 Enorm 2-MULTI TICN	Flutes
M 12	1.75	4.3307	0.9449	—	0.367	0.275	0.4016	**.0112**	●	3	●	3	●	3	●	3
M 16	2	4.3307	1.0630	—	0.480	0.360	0.5512	**.0116**	●	3	●	3	●	3	●	3
M 18	2.5	4.9213	1.1811	—	0.542	0.406	0.6102	**.0118**	●	3	●	3	●	3	●	3
M 20	2.5	5.5118	1.2598	—	0.652	0.489	0.6890	**.0120**	●	3	●	3	●	3	●	3
M 24	3	6.2992	1.3386	—	0.760	0.570	0.8268	**.0124**	●	3	●	3	●	4	●	4

Ordering Example: **BU497300.0040**

DIN Length · DIN Shank

MultiTAP™



MULTI
Wide Material Range

M

ISO Metric Coarse Thread
DIN 13

Class of Fit	ISO 2/6H	ISO 2/6H	ISO 2/6H	ISO 2/6H
Coating	NT2	TICN	NE2	TICN
Cutting Material	HSS Extra	HSS Extra	HSS Extra	HSS Extra
Technical Characteristics			R35	R35
	B / 4-5	B / 4-5	C / 2-3	C / 2-3
	E / O / P	E / O / P	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1		max. 2.5 x d_1	
Applications – Material	P 1.1-4.1 M 1.1-2.1 K 1.1, 2.1 K 3.1, 4.1 N 1.1-1.4, 2.1-5	P 1.1-4.1 M 1.1-2.1 K 1.1, 2.1 K 3.1, 4.1 N 1.1-1.4, 2.1-5	P 1.1-4.1 M 1.1-2.1 K 1.1, 2.1 K 3.1, 4.1 N 1.1-1.4, 2.1-5	P 1.1-4.1 M 1.1-2.1 K 1.1, 2.1 K 3.1, 4.1 N 1.1-1.4, 2.1-5

Reinforced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	B1577300 Rekord 1B-MULTI NT2	Flutes	B1579300 Rekord 1B-MULTI TICN	Flutes	B4933200 Enorm 1-MULTI NE2	Flutes	B4939300 Enorm 1-MULTI TICN	Flutes
				mm			Tool Identification								
M 4	0.7	63	13	21	4.5	3.4	3.3	.0040	●	3	●	3	●	3	●	3
M 5	0.8	70	15	25	6	4.9	4.2	.0050	●	3	●	3	●	3	●	3
M 6	1	80	17	30	6	4.9	5	.0060	●	3	●	3	●	3	●	3
M 8	1.25	90	20	35	8	6.2	6.8	.0080	●	3	●	3	●	3	●	3
M 10	1.5	100	22	39	10	8	8.5	.0100	●	3	●	3	●	3	●	3

Reduced Shank

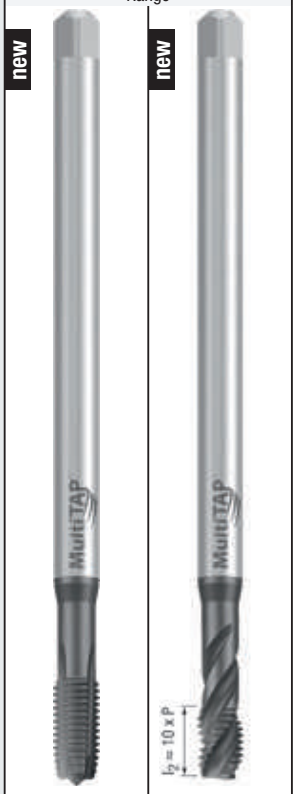
Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Dimens. ID	C1577300 Rekord 2B-MULTI NT2	Flutes	C1579300 Rekord 2B-MULTI TICN	Flutes	C4933200 Enorm 2-MULTI NE2	Flutes	C4939300 Enorm 2-MULTI TICN	Flutes
				mm			Tool Identification								
M 12	1.75	110	24	—	9	7	10.2	.0112	●	3	●	3	●	3	●	3
M 16	2	110	27	—	12	9	14	.0116	●	3	●	3	●	3	●	3
M 18	2.5	125	30	—	14	11	15.5	.0118	●	3	●	3	●	3	●	3
M 20	2.5	140	32	—	16	12	17.5	.0120	●	3	●	3	●	3	●	3
M 24	3	160	34	—	18	14.5	21	.0124	●	3	●	3	●	4	●	4

● = In stock
★ = Allow 7 days for delivery

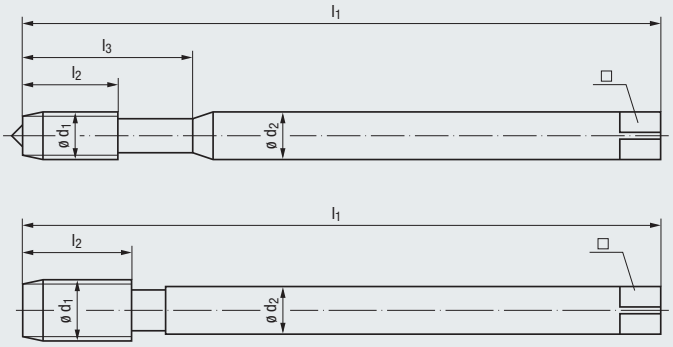
Extra Length · DIN Shank

MultiTAP™

MULTI
Wide Material Range



With extra long shank



Reinforced Shank (M3 - M8)

Reduced Shank (M10 - M20)

M

ISO Metric Coarse Thread
DIN 13

Class of Fit	ISO 2/6H	ISO 2/6H
Coating	NT2	NE2
Cutting Material	HSS Extra	HSS Extra
Technical Characteristics		R35
	B / 4-5	C / 2-3
	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1	max. 2.5 x d_1
Applications – Material	P 1.1-4.1 M 1.1-2.1 K 1.1, 2.1 K 3.1, 4.1 N 1.1-1.4, 2.1-5	P 1.1-4.1 M 1.1-2.1 K 1.1, 2.1 K 3.1, 4.1 N 1.1-1.4, 2.1-5

Reinforced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Tool Identification Dimens. ID	B1667300 Rekord 1B-MULTI LS-NT2	Flutes	B5863200 Enorm 1-MULTI LS-NE2	Flutes
				mm							
M 3	0.5	100	11	18	3.5	2.7	2.5	.0030	●	3	●	3
M 4	0.7	125	13	21	4.5	3.4	3.3	.0040	●	3	●	3
M 5	0.8	140	15	25	6	4.9	4.2	.0050	●	3	●	3
M 6	1	160	17	30	6	4.9	5	.0060	●	3	●	3
M 8	1.25	180	20	35	8	6.2	6.8	.0080	●	3	●	3

Reduced Shank

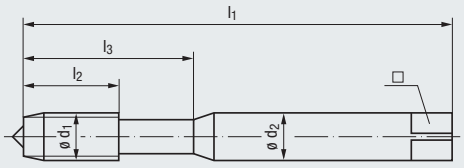
Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Tool Identification Dimens. ID	C1667300 Rekord 2B-MULTI LS-NT2	Flutes	C5863200 Enorm 2-MULTI LS-NE2	Flutes
				mm							
M 10	1.5	200	22	—	7	5.5	8.5	.0100	●	3	●	3
M 12	1.75	224	24	—	9	7	10.2	.0112	●	3	●	3
M 14	2	224	26	—	11	9	12	.0114	●	3	●	3
M 16	2	224	27	—	12	9	14	.0116	●	3	●	3
M 18	2.5	250	30	—	14	11	15.5	.0118	●	3	●	3
M 20	2.5	280	32	—	16	12	17.5	.0120	●	3	●	3

Ordering Example: **B1667300.0030**

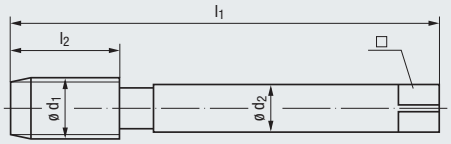
DIN Length · ANSI Shank

Overall length acc. to DIN 2174

MultiTAP™-Form



Reinforced Shank
(No.4 - 3/8)



Reduced Shank
(7/16 - 1/2)

MULTI
Wide Material Range

UNC

Unified Coarse Thread
ASME B1.1

Class of Fit	3BX	3BX
Coating	TIN	TICN
Cutting Material	HSS Extra	HSS Extra
Technical Characteristics	E / 1.5-2	E / 1.5-2
	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1	
Applications – Material	P 1.1-4.1 M 1.1-2.1 N 1.1-1.4, 2.1-5	P 1.1-4.1 M 1.1-2.1 N 1.1-1.4, 2.1-5

Reinforced Shank

Nominal Size ø d_1	T.P.I.	l_1	l_2	inch l_3	ø d_2	□	Dimens. ID	Tool Identification BU591410 InnoForm 1-MULTI/E-SN TIN	BU599010 InnoForm 1-MULTI/E-SN TICN
No. 4	40	2.205	0.433	0.709	0.141	0.110	0.1004	.5003	●	●
No. 5	40	2.205	0.433	0.709	0.141	0.110	0.1142	.5004	●	●
No. 6	32	2.205	0.472	0.787	0.141	0.110	0.1240	.5005	●	●
No. 8	32	2.480	0.512	0.827	0.168	0.131	0.1496	.5006	●	●
No. 10	24	2.756	0.591	0.984	0.194	0.152	0.1713	.5007	●	●
No. 12	24	3.150	0.630	1.142	0.220	0.165	0.1969	.5008	●	●
1/4	20	3.150	0.669	1.181	0.255	0.191	0.2264	.5009	●	●
5/16	18	3.543	0.787	1.378	0.318	0.238	0.2874	.5010	●	●
3/8	16	3.937	0.866	1.535	0.381	0.286	0.3465	.5011	●	●

Reduced Shank

Nominal Size ø d_1	T.P.I.	l_1	l_2	inch l_3	ø d_2	□	Dimens. ID	Tool Identification CU031410 InnoForm 2-MULTI/E-SN TIN	CU039010 InnoForm 2-MULTI/E-SN TICN
7/16	14	3.937	0.866	—	0.323	0.242	0.4035	.5012	●	●
1/2	13	4.331	0.984	—	0.367	0.275	0.4646	.5013	●	●

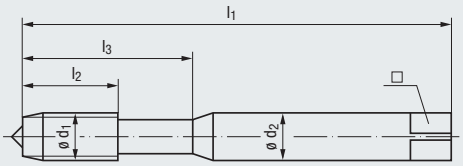
We recommend a smaller preparatory diameter by 0.002 in for difficult to form materials (such as aluminum cast alloys) for P = 24 T.P.I. and coarser threads.
For further information regarding the recommended preparatory diameters, see page 208 - 209.

● = In stock
★ = Allow 7 days for delivery

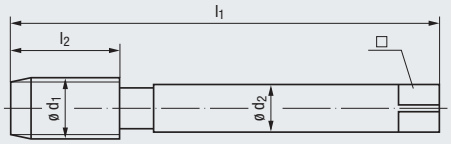
DIN Length · ANSI Shank

Overall length acc. to DIN 2174

MultiTAP™-Form



Reinforced Shank
(No.4 - 3/8)



Reduced Shank
(7/16 - 1/2)

MULTI
Wide Material Range

UNF

Unified Fine Thread
ASME B1.1

Class of Fit	3BX	3BX
Coating	TIN	TICN
Cutting Material	HSS Extra	HSS Extra
Technical Characteristics	E / 1.5-2	E / 1.5-2
	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1	
Applications – Material	P 1.1-4.1 M 1.1-2.1 N 1.1-1.4, 2.1-5	P 1.1-4.1 M 1.1-2.1 N 1.1-1.4, 2.1-5

Reinforced Shank

Nominal Size ø d_1	T.P.I.	l_1	l_2	inch l_3	ø d_2	□	Dimens. ID	Tool Identification BU591410 InnoForm 1-MULTI/E-SN TIN	Tool Identification BU599010 InnoForm 1-MULTI/E-SN TICN
No. 4	48	2.205	0.433	0.709	0.141	0.110	0.1031	.5037	●	●
No. 5	44	2.205	0.433	0.709	0.141	0.110	0.1150	.5038	●	●
No. 6	40	2.205	0.472	0.787	0.141	0.110	0.1268	.5039	●	●
No. 8	36	2.480	0.512	0.827	0.168	0.131	0.1516	.5040	●	●
No. 10	32	2.756	0.512	0.984	0.194	0.152	0.1752	.5041	●	●
No. 12	28	3.150	0.630	1.142	0.220	0.165	0.2008	.5042	●	●
1/4	28	3.150	0.669	1.181	0.255	0.191	0.2343	.5043	●	●
5/16	24	3.543	0.669	1.260	0.318	0.238	0.2933	.5044	●	●
3/8	24	3.937	0.709	1.535	0.381	0.286	0.3563	.5045	●	●

Reduced Shank

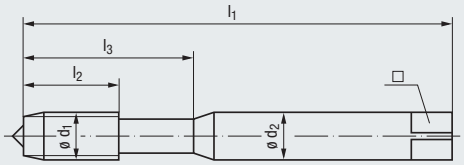
Nominal Size ø d_1	T.P.I.	l_1	l_2	inch l_3	ø d_2	□	Dimens. ID	Tool Identification CU031410 InnoForm 2-MULTI/E-SN TIN	Tool Identification CU039010 InnoForm 2-MULTI/E-SN TICN
7/16	20	3.937	0.866	—	0.323	0.242	0.4154	.5046	●	●
1/2	20	3.937	0.866	—	0.367	0.275	0.4783	.5047	●	●

We recommend a smaller preparatory diameter by 0.002 in for difficult to form materials (such as aluminum cast alloys) for P = 24 T.P.I. and coarser threads.
For further information regarding the recommended preparatory diameters, see page 208 - 209.

Ordering Example: **BU591410.5037**

DIN Length · DIN Shank

MultiTAP™-Form



Reinforced Shank

MULTI
Wide Material Range

M

ISO Metric Coarse Thread
DIN 13

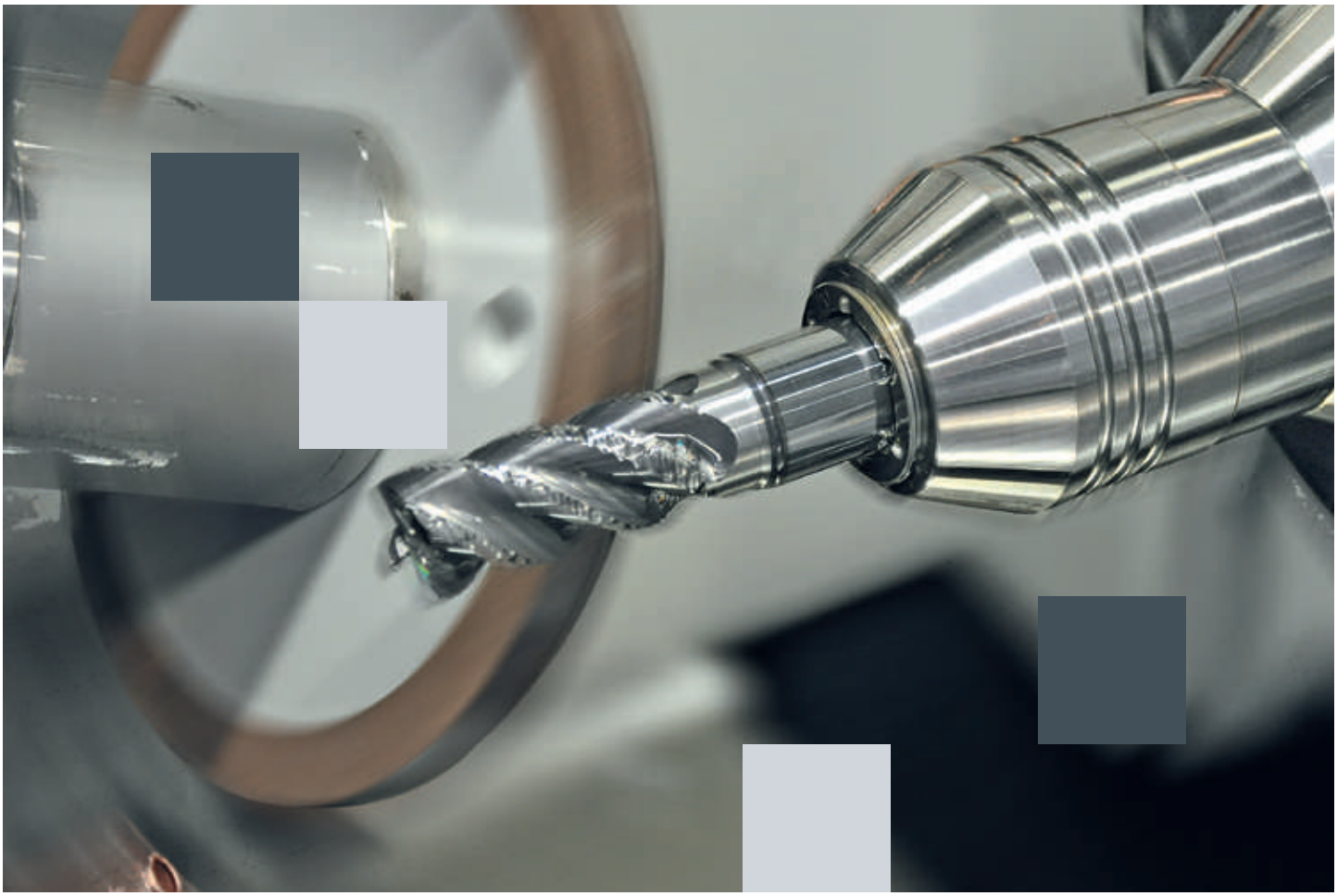
Class of Fit	6HX	6HX
Coating	TIN	TICN
Cutting Material	HSS Extra	HSS Extra
Technical Characteristics		
	E / 1.5-2	**E / 1.5-2**
	E / O / P	E / O / P
Thread Depth and Hole Shape	max. 3 x d_1	
Applications – Material	P 1.1-4.1 M 1.1-2.1 N 1.1-1.4, 2.1-5	P 1.1-4.1 M 1.1-2.1 N 1.1-1.4, 2.1-5

Reinforced Shank

Nominal Size ø d_1	P	l_1	l_2	l_3	ø d_2	□	Tool Identification	Dimens. ID	B5991400 InnoForm 1-MULTI/E-SN TIN	B5999000 InnoForm 1-MULTI/E-SN TICN
	mm									
M 2	0.4	45	7	12	2.8	2.1	1.85	.0020	●	●
M 3	0.5	56	11	18	3.5	2.7	2.8	.0030	●	●
M 4	0.7	63	13	21	4.5	3.4	3.7	.0040	●	●
M 5	0.8	70	15	25	6	4.9	4.65	.0050	●	●
M 6	1	80	17	30	6	4.9	5.6	.0060	●	●
M 8	1.25	90	20	35	8	6.2	7.45	.0080	●	●
M 10	1.5	100	22	39	10	8	9.35	.0100	●	●

We recommend a smaller preparatory diameter by 0.05 mm for difficult to form materials (such as aluminum cast alloys) for P ≥ 1 mm.
For further information regarding the recommended preparatory diameters, see page 208 - 209.

● = In stock
★ = Allow 7 days for delivery

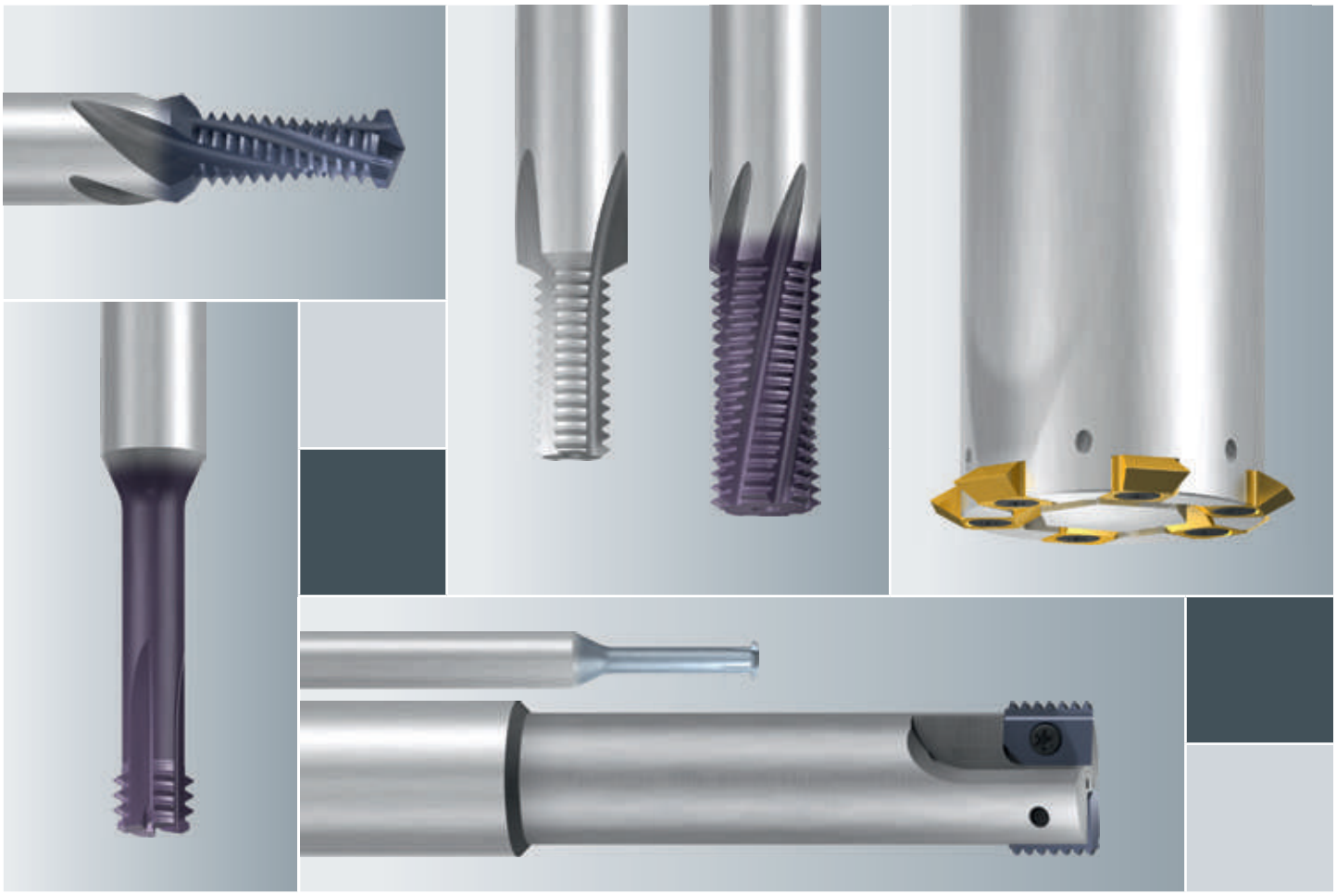


Multi TAP

Tool Reconditioning

USA Service Center

Taps – Carbide End Mills – Carbide Drills – Alterations



Thread Mills

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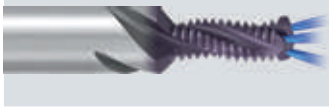
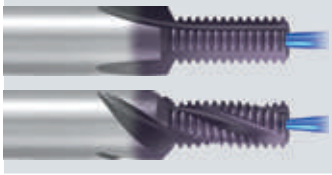
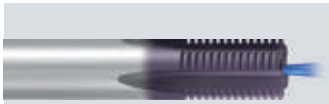
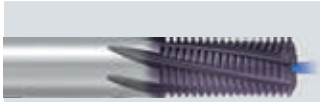
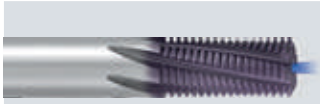
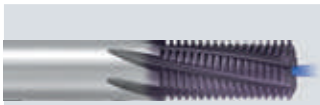
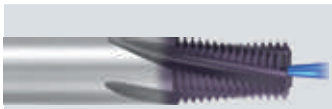
Contents	228 - 229
Product Finder and Cutting Data	230 - 234
Product Pages	235 - 352
Technical Information	353 - 362

		Page
BGF 	**Solid Carbide Drill Thread Mills** • For the complete machining of thread hole, chamfer and thread in one work process • With corrected thread profile (for one single thread size only)	235 - 242
ZBGF	**Solid Carbide Circular Drill Thread Mills** • For the machining of thread hole and thread in one work process • With corrected thread profile (for different thread sizes, but for one pitch only)	243 - 250
GSF, GSF Aero 	**Solid Carbide Thread Mills with Countersinking Step** • For the machining of countersunk edge and thread in one work process • With corrected thread profile (for one single thread size only)	251 - 261
GSF-Z	**Solid Carbide Thread Mills with Countersinking Step** • For the machining of countersunk edge and thread in one work process • With corrected thread profile (for one single thread size only) • Increased number of flutes • Optimized cutting geometry	
GF, GFI 	**Solid Carbide Thread Mills** • With standard thread profile (for different thread sizes, but for one pitch only)	262 - 284
GF-Z 	**Solid Carbide Thread Mills** • With standard thread profile (for different thread sizes, but for one pitch only) • Increased number of flutes • Optimized cutting geometry	
GF-Vario-Z 	**Solid Carbide Thread Mills, Variable** • With corrected thread profile (for different thread sizes, but for one pitch only) • Increased number of flutes • Optimized cutting geometry	
GF-H 	**Solid Carbide Thread Mills for Hard Machining** • With corrected thread profile (for one single thread size only)	
GF-KEG, GFI-KEG, GFI-ECO-KEG 	**Solid Carbide Thread Mills for Tapered Pipe Threads** • With corrected thread profile (for one single thread size, resp. for one pitch only)	285 - 298

Page

ZGF, ZGFI

Solid Carbide Circular Thread Mills

- With corrected thread profile (for different thread sizes and pitches)
- For the machining of threads from M 1

ZGF-S-CUT

Solid Carbide Circular Thread Mills

- With corrected thread profile (for one single thread size only)

299 - 310

ZGF-HCUT

Solid Carbide Circular Thread Mills

- With corrected thread profile (for one single thread size only)

CIRC-GF

Circular Thread Milling Bodies

- With one or two multi-tooth inserts (for different thread sizes, but for one pitch only)

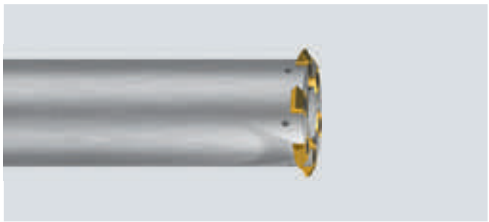
CIRC-GF

Circular Thread Milling Bodies

- With infeed indexable insert “3-tooth” (for different thread sizes and pitches)

311 - 315

Gigant

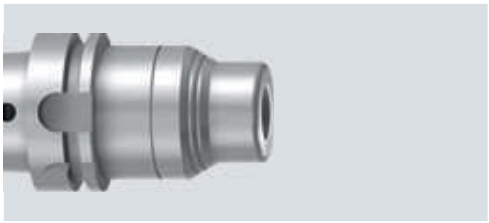


Circular Thread Milling Bodies

- Specially made for large thread sizes
- With up to ten 4-tooth indexable inserts (for different thread sizes and pitches)

316 - 337

FPC

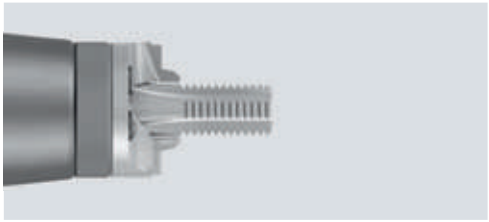


High Precision FPC Milling / Thread Milling / Drilling Chucks

- Increase your machining speed and tool life to the highest possible levels

338 - 349

MoSys



Counterbore and Stepped Bore System for Free Combination

- For the complete machining of thread hole, thread and spot face

350 - 352

Product Finder
v_c / f_z
UNC
UNF
UN
M
MF
NPSF
Rp (BSPP)
G
W
BSW, BSF
NPT
NPTF
Rc (BSPT)
STI
SELF-LOCK
Accessories
Tech. Info
BGF
ZBGF
GSF (Aero)
GSF-Z
GF(I), GF-Z
GF-Vario-Z
GF-H
GF(I)-KEG
ZGF(I)
CIRC-GF
Gigant
FPC, FMC
MoSys

Product finder and cutting data

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

The suitability is marked as follows:

- **Preferred suitable thread mill**
- Suitable thread mill

v_c = Cutting speed [SFM]
f_z = Feed per tooth [inch]
f_b = Drilling feed [inch/rev.]

		Application – Material	Hardness Range HRC	Hardness Range BHN	Hardness Range N/mm²	Material Examples
P		**Steel materials**				
	1.1	Cold-extrusion steels, Construction steels, Free-cutting steels, etc.		≤ 180	≤ 600	1010 / 1018 / 1020 / 12L14 / 12L15 / A36 / T1
	2.1	Construction steels, Cementation steels, Steel castings, etc.	≤ 22	≤ 235	≤ 800	A36 / T1 / 1030-1095 / 4140 / 4340 / 8620
	3.1	Cementation steels, Heat-treatable steels, Cold work steels, etc.	≤ 31	≤ 295	≤ 1000	4140 / 4340 / 8620 / P20 / H13 / D2 / A2 / S7 / H1150
	4.1	Heat-treatable steels, Cold work steels, Nitriding steels, etc.	≤ 38	≤ 355	≤ 1200	4140 / 4340 / 8620 / P20 / H13 / D2 / 300M / 52100 / M1-M42
	5.1	High-alloyed steels, Cold work steels, Hot work steels, etc.	≤ 44	≤ 415	≤ 1400	4140 / 4340 / 8620 / P20 / H13 / D2 / 300M / 52100
M		**Stainless steel materials**				
	1.1	Ferritic, martensitic	≤ 29	≤ 280	≤ 950	410 / 440 / 440C / 17-4 PH
	2.1	Austenitic	≤ 29	≤ 280	≤ 950	303 / 304 / 316 / 316L / 321
	3.1	Austenitic-ferritic (Duplex)	≤ 35	≤ 325	≤ 1100	
	4.1	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 39	≤ 370	≤ 1250	
K		**Cast materials**				
	1.1	Cast iron with lamellar graphite (GJL)		30 - 75	100 - 250	Grey cast irons G10-GG40
	1.2			75 - 135	250 - 450	
	2.1	Cast iron with nodular graphite (GJS)		105 - 150	350 - 500	Nodular GGG40-GGG70
	2.2			150 - 265	500 - 900	
	3.1	Cast iron with vermicular graphite (GJV)		90 - 120	300 - 400	
	3.2			120 - 150	400 - 500	Compact graphite iron (CGI)
	4.1	Malleable cast iron (GTMW, GTMB)		70 - 145	250 - 500	
	4.2			150 - 235	500 - 800	White iron
N		**Non ferrous materials**				
		Aluminum alloys				
	1.1	Aluminum wrought alloys		≤ 60	≤ 200	7075
	1.2			≤ 105	≤ 350	6061-T6 / 2024-T4
	1.3			≤ 165	≤ 550	
	1.4	Aluminum cast alloys Si ≤ 7%				
	1.5	Aluminum cast alloys 7% < Si ≤ 12%				
	1.6	Aluminum cast alloys 12% < Si ≤ 17%				
		Copper alloys				
	2.1	Pure copper, low-alloyed copper		≤ 120	≤ 400	
	2.2	Copper-zinc alloys (brass, long-chipping)		≤ 165	≤ 550	
	2.3	Copper-zinc alloys (brass, short-chipping)		≤ 165	≤ 550	
	2.4	Copper-aluminum alloys (alu bronze, long-chipping)		≤ 235	≤ 800	
	2.5	Copper-tin alloys (tin bronze, long-chipping)		≤ 205	≤ 700	
	2.6	Copper-tin alloys (tin bronze, short-chipping)		≤ 120	≤ 400	
	2.7	Special copper alloys		≤ 180	≤ 600	
	2.8		≤ 44	≤ 415	≤ 1400	
		Magnesium alloys				
	3.1	Magnesium wrought alloys		≤ 150	≤ 500	
	3.2	Magnesium cast alloys		≤ 150	≤ 500	
		Synthetics				
	4.1	Duroplastics (short-chipping)				
	4.2	Thermoplastics (long-chipping)				
	4.3	Fibre-reinforced synthetics (fibre content ≤ 30%)				
	4.4	Fibre-reinforced synthetics (fibre content > 30%)				
		Special materials				
	5.1	Graphite				
	5.2	Tungsten-copper alloys				
	5.3	Composite materials				
S		**Special materials**				
		Titanium alloys				
	1.1	Pure titanium		≤ 135	≤ 450	CP1 / CP2
	1.2	Titanium alloys	≤ 27	≤ 265	≤ 900	6AL4V
	1.3		≤ 39	≤ 370	≤ 1250	
		Nickel alloys, cobalt alloys and iron alloys				
	2.1	Pure nickel		≤ 180	≤ 600	
	2.2	Nickel-base alloys	≤ 31	≤ 295	≤ 1000	Monel 500, 718 Inconel annealed
	2.3		≤ 49	≤ 475	≤ 1600	718 Inconel
	2.4	Cobalt-base alloys	≤ 31	≤ 295	≤ 1000	
	2.5		≤ 49	≤ 475	≤ 1600	Haynes 25
	2.6	Iron-base alloys	≤ 46	≤ 445	≤ 1500	Incoloy 925
H		**Hard materials**				
	1.1	High strength steels, hardened steels, hard castings	44 - 50			
	1.2		50 - 55			
	1.3		55 - 60			
	1.4		60 - 63			
	1.5		63 - 66			

GSF
GSF-Z

GSF Aero

GF
GFI
GF-Z

GF-Vario-Z

GF-KEG
GFI-KEG
GFI-ECO-KEG

CIRC-GF

GF-H

Straight flutes and 15° spiral flutes (R15)		30° Spiral flutes (R30)								
v_c		v_c		f_z			v_c	f_z		
Uncoated	TICN	Uncoated	TICN	ø d_1 ≤ 0.1575	ø d_1 ≤ 0.3150	ø d_1 > 0.3150	TICN			
131 - 328	**262 - 820**	131 - 328	**262 - 820**	.0002 - .0016	.0016 - .0028	.0020 - .0059			1.1	P
98 - 262	**197 - 492**	98 - 262	**197 - 492**	.0002 - .0016	.0016 - .0028	.0020 - .0059			2.1	P
66 - 197	**131 - 394**	66 - 197	**131 - 394**	.0002 - .0012	.0012 - .0020	.0016 - .0047			3.1	P
66 - 197	**131 - 394**			.0001 - .0008	.0008 - .0020	.0016 - .0047			4.1	P
66 - 197	**131 - 394**			.0001 - .0008	.0008 - .0020	.0016 - .0047			5.1	P
	131 - 394		**131 - 394**	.0001 - .0012	.0012 - .0020	.0016 - .0047			1.1	M
	131 - 394		**131 - 394**	.0001 - .0012	.0012 - .0020	.0016 - .0047			2.1	M
	98 - 262			.0001 - .0008	.0008 - .0020	.0016 - .0039			3.1	M
	98 - 197			.0001 - .0008	.0008 - .0016	.0012 - .0031			4.1	M
262 - 459	**328 - 656**	262 - 459	**328 - 656**		.0016 - .0028	.0020 - .0059			1.1	K
262 - 459	**328 - 656**	262 - 459	**328 - 656**		.0016 - .0028	.0020 - .0059			1.2	K
197 - 394	**262 - 656**	197 - 394	**262 - 656**		.0016 - .0028	.0020 - .0059			2.1	K
197 - 394	**262 - 656**	197 - 394	**262 - 656**		.0016 - .0028	.0020 - .0059			2.2	K
197 - 394	**262 - 656**	197 - 394	**262 - 656**		.0016 - .0028	.0020 - .0059			3.1	K
197 - 394	**262 - 656**	197 - 394	**262 - 656**		.0016 - .0028	.0020 - .0059			3.2	K
197 - 394	**262 - 656**	197 - 394	**262 - 656**		.0016 - .0028	.0020 - .0059			4.1	K
197 - 394	**262 - 656**	197 - 394	**262 - 656**		.0016 - .0028	.0020 - .0059			4.2	K
328 - 820	**492 - 1312**	**328 - 820**	**492 - 1312**	.0004 - .0020	.0020 - .0031	.0028 - .0079			1.1	N
328 - 820	**492 - 1312**	**328 - 820**	**492 - 1312**	.0004 - .0020	.0020 - .0031	.0028 - .0079			1.2	N
328 - 820	**492 - 1312**	**328 - 820**	**492 - 1312**	.0004 - .0020	.0020 - .0031	.0028 - .0079			1.3	N
492 - 820	**492 - 1312**	**492 - 820**	**492 - 1312**	.0004 - .0020	.0020 - .0031	.0028 - .0079			1.4	N
492 - 820	**492 - 1312**	492 - 820	**492 - 1312**	.0004 - .0020	.0020 - .0031	.0028 - .0079			1.5	N
	328 - 656		**328 - 656**	.0004 - .0020	.0020 - .0031	.0028 - .0079			1.6	N
328 - 820	**492 - 1312**	328 - 820	**492 - 1312**	.0003 - .0020	.0020 - .0031	.0028 - .0079			2.1	N
328 - 820	**492 - 1312**	328 - 820	**492 - 1312**	.0003 - .0020	.0020 - .0031	.0028 - .0079			2.2	N
328 - 820	**492 - 1312**	328 - 820	**492 - 1312**	.0003 - .0020	.0020 - .0031	.0028 - .0079			2.3	N
197 - 492	**328 - 820**	197 - 492	**328 - 820**	.0003 - .0016	.0016 - .0028	.0020 - .0059			2.4	N
197 - 492	**328 - 820**	197 - 492	**328 - 820**	.0003 - .0016	.0016 - .0028	.0020 - .0059			2.5	N
262 - 656	**328 - 820**	262 - 656	**328 - 820**	.0003 - .0016	.0016 - .0028	.0020 - .0059			2.6	N
	131 - 262		**131 - 262**	.0001 - .0008	.0008 - .0020	.0016 - .0059	131 - 197	.0003 - .0012	2.7	N
	98 - 197			.0001 - .0008	.0008 - .0020	.0016 - .0059	131 - 197	.0003 - .0012	2.8	N
492 - 820	**492 - 1312**	492 - 820	**492 - 1312**	.0004 - .0020	.0020 - .0031	.0028 - .0079			3.1	N
492 - 820	**492 - 1312**	492 - 820	**492 - 1312**	.0004 - .0020	.0020 - .0031	.0028 - .0079			3.2	N
197 - 492	**328 - 1312**	**197 - 492**	**328 - 1312**	.0004 - .0020	.0020 - .0039	.0031 - .0098			4.1	N
197 - 492	**328 - 1312**	**197 - 492**	**328 - 1312**	.0004 - .0020	.0020 - .0039	.0031 - .0098			4.2	N
	262 - 394		**262 - 394**	.0004 - .0020	.0020 - .0039	.0031 - .0098			4.3	N
	262 - 394		**262 - 394**	.0004 - .0020	.0020 - .0039	.0031 - .0098			4.4	N
	328 - 656		**328 - 656**		.0016 - .0028	.0031 - .0098			5.1	N
49 - 131	**98 - 197**	49 - 131	**98 - 197**		.0008 - .0016	.0012 - .0031			5.2	N
									5.3	N
49 - 164	**98 - 262**	49 - 164	**98 - 262**	.0001 - .0012	.0012 - .0020	.0016 - .0039			1.1	S
49 - 164	**98 - 262**	49 - 164	**98 - 262**	.0001 - .0012	.0012 - .0020	.0016 - .0039			1.2	S
49 - 131	**98 - 197**			.0001 - .0008	.0008 - .0016	.0012 - .0031			1.3	S
	98 - 197		98 - 197	.0001 - .0008	.0008 - .0016	.0012 - .0031			2.1	S
	98 - 197			.0001 - .0008	.0008 - .0016	.0012 - .0031			2.2	S
	98 - 131			.0001 - .0008	.0008 - .0016	.0012 - .0031			2.3	S
	98 - 197			.0001 - .0008	.0008 - .0016	.0012 - .0031			2.4	S
	98 - 131			.0001 - .0008	.0008 - .0016	.0012 - .0031			2.5	S
	98 - 131			.0001 - .0008	.0008 - .0016	.0012 - .0031			2.6	S
	98 - 197				.0006 - .0016	.0012 - .0031			1.1	H
	98 - 197				.0006 - .0016	.0012 - .0031			1.2	H
							131 - 197	.0002 - .0010	1.3	H
							98 - 131	.0002 - .0006	1.4	H
							98 - 131	.0002 - .0006	1.5	H

Cutting speed v_c in SFM – Preferred suitable thread mill
Cutting speed v_c in SFM – Suitable thread mill

BGF-Z2

BGF-Z3

		v_c		v_c		f_b		f_z	
		Uncoated	TICN	Uncoated	TICN	ø $d_1 \leq 0.3150$	ø $d_1 > 0.3150$	ø $d_1 \leq 0.3150$	ø $d_1 > 0.3150$
P	1.1								
	2.1								
	3.1								
	4.1								
	5.1								
M	1.1								
	2.1								
	3.1								
	4.1								
K	1.1	262 - 459	**262 - 525**	262 - 459	**262 - 525**	.0039 - .0098	.0079 - .0157	.0016 - .0028	.0020 - .0047
	1.2	262 - 459	**262 - 525**	262 - 459	**262 - 525**	.0039 - .0098	.0079 - .0157	.0016 - .0028	.0020 - .0047
	2.1	262 - 459	262 - 525			.0039 - .0059	.0059 - .0098	.0016 - .0028	.0020 - .0047
	2.2	262 - 459	262 - 525			.0039 - .0059	.0059 - .0098	.0016 - .0028	.0020 - .0047
	3.1	262 - 459	**262 - 525**			.0039 - .0098	.0079 - .0157	.0016 - .0028	.0020 - .0047
	3.2	262 - 459	**262 - 525**			.0039 - .0098	.0079 - .0157	.0016 - .0028	.0020 - .0047
	4.1								
	4.2								
N	1.1	**328 - 820**	492 - 820			.0031 - .0059	.0059 - .0098	.0016 - .0031	.0028 - .0059
	1.2	**328 - 820**	492 - 820			.0031 - .0059	.0059 - .0098	.0016 - .0031	.0028 - .0059
	1.3	**328 - 820**	492 - 820			.0031 - .0059	.0059 - .0098	.0016 - .0031	.0028 - .0059
	1.4	**328 - 820**	492 - 1312			.0059 - .0098	.0079 - .0157	.0016 - .0031	.0028 - .0059
	1.5	328 - 820	**492 - 1312**	328 - 820	**492 - 1312**	.0059 - .0098	.0079 - .0157	.0016 - .0031	.0028 - .0059
	1.6		**328 - 656**		**328 - 656**	.0059 - .0098	.0079 - .0157	.0016 - .0031	.0028 - .0059
	2.1								
	2.2	328 - 820	492 - 1312			.0039 - .0079	.0059 - .0118	.0020 - .0031	.0028 - .0059
	2.3	328 - 820	492 - 1312	328 - 820	492 - 1312	.0039 - .0079	.0059 - .0118	.0020 - .0031	.0028 - .0059
	2.4								
	2.5								
	2.6	262 - 656	328 - 820			.0039 - .0098	.0079 - .0157	.0016 - .0028	.0020 - .0047
	2.7								
	2.8								
	3.1	328 - 820	**492 - 1312**			.0039 - .0079	.0059 - .0118	.0016 - .0031	.0028 - .0059
	3.2	328 - 820	**492 - 1312**			.0059 - .0118	.0079 - .0157	.0016 - .0031	.0028 - .0059
	4.1	197 - 492	328 - 1312			.0059 - .0118	.0079 - .0157	.0020 - .0039	.0031 - .0079
	4.2								
	4.3								
	4.4								
	5.1								
	5.2								
	5.3								
S	1.1								
	1.2								
	1.3								
	2.1								
	2.2								
	2.3								
	2.4								
	2.5								
	2.6								
H	1.1								
	1.2								
	1.3								
	1.4								
	1.5								

ZGF
ZGFI

ZGF-S-CUT

ZGF-HCUT

v_c Uncoated	v_c TICN	f_z ø $d_1 \leq 0.1575$	f_z ø $d_1 \leq 0.3150$	f_z ø $d_1 > 0.3150$	v_c TICN	f_z		
131 - 328	**262 - 820**	.0002 - .0016	.0016 - .0028	.0020 - .0059			1.1	P
98 - 262	**197 - 492**	.0002 - .0016	.0016 - .0028	.0020 - .0059			2.1	
66 - 197	**131 - 394**	.0002 - .0012	.0012 - .0020	.0016 - .0047			3.1	
66 - 197	**131 - 394**	.0001 - .0008	.0008 - .0020	.0016 - .0047			4.1	
66 - 197	**131 - 394**	.0001 - .0008	.0008 - .0020	.0016 - .0047			5.1	
	131 - 394	.0001 - .0012	.0012 - .0020	.0016 - .0047			1.1	M
	131 - 394	.0001 - .0012	.0012 - .0020	.0016 - .0047			2.1	
	98 - 262	.0001 - .0008	.0008 - .0020	.0016 - .0039			3.1	
	98 - 197	.0001 - .0008	.0008 - .0016	.0012 - .0031			4.1	
262 - 459	**328 - 656**		.0016 - .0028	.0020 - .0059			1.1	K
262 - 459	**328 - 656**		.0016 - .0028	.0020 - .0059			1.2	
197 - 394	**262 - 656**		.0016 - .0028	.0020 - .0059			2.1	
197 - 394	**262 - 656**		.0016 - .0028	.0020 - .0059			2.2	
197 - 394	**262 - 656**		.0016 - .0028	.0020 - .0059			3.1	
197 - 394	**262 - 656**		.0016 - .0028	.0020 - .0059			3.2	
197 - 394	**262 - 656**		.0016 - .0028	.0020 - .0059			4.1	
197 - 394	**262 - 656**		.0016 - .0028	.0020 - .0059			4.2	
328 - 820	**492 - 1312**	.0004 - .0020	.0020 - .0031	.0028 - .0079			1.1	N
328 - 820	**492 - 1312**	.0004 - .0020	.0020 - .0031	.0028 - .0079			1.2	
328 - 820	**492 - 1312**	.0004 - .0020	.0020 - .0031	.0028 - .0079			1.3	
492 - 820	**492 - 1312**	.0004 - .0020	.0020 - .0031	.0028 - .0079			1.4	
492 - 820	**492 - 1312**	.0004 - .0020	.0020 - .0031	.0028 - .0079			1.5	
	328 - 656	.0004 - .0020	.0020 - .0031	.0028 - .0079			1.6	
328 - 820	**492 - 1312**	.0003 - .0020	.0020 - .0031	.0028 - .0079			2.1	
328 - 820	**492 - 1312**	.0003 - .0020	.0020 - .0031	.0028 - .0079			2.2	
328 - 820	**492 - 1312**	.0003 - .0020	.0020 - .0031	.0028 - .0079			2.3	
197 - 492	**328 - 820**	.0003 - .0016	.0016 - .0028	.0020 - .0059			2.4	
197 - 492	**328 - 820**	.0003 - .0016	.0016 - .0028	.0020 - .0059			2.5	
262 - 656	**328 - 820**	.0003 - .0016	.0016 - .0028	.0020 - .0059			2.6	
	131 - 262	.0001 - .0008	.0008 - .0020	.0016 - .0059			2.7	
	98 - 197	.0001 - .0008	.0008 - .0020	.0016 - .0059			2.8	
492 - 820	**492 - 1312**	.0004 - .0020	.0020 - .0031	.0028 - .0079			3.1	
492 - 820	**492 - 1312**	.0004 - .0020	.0020 - .0031	.0028 - .0079			3.2	
197 - 492	**328 - 1312**	.0004 - .0020	.0020 - .0039	.0031 - .0098			4.1	
197 - 492	**328 - 1312**	.0004 - .0020	.0020 - .0039	.0031 - .0098			4.2	
	262 - 394	.0004 - .0020	.0020 - .0039	.0031 - .0098			4.3	
	262 - 394	.0004 - .0020	.0020 - .0039	.0031 - .0098			4.4	
	328 - 656		.0016 - .0028	.0031 - .0098			5.1	
49 - 131	**98 - 197**		.0008 - .0016	.0012 - .0031			5.2	
							5.3	
49 - 164	**98 - 262**	.0001 - .0012	.0012 - .0020	.0016 - .0039			1.1	S
49 - 164	**98 - 262**	.0001 - .0012	.0012 - .0020	.0016 - .0039			1.2	
49 - 131	**98 - 197**	.0001 - .0008	.0008 - .0016	.0012 - .0031			1.3	
	98 - 197	.0001 - .0008	.0008 - .0016	.0012 - .0031			2.1	
	98 - 197	.0001 - .0008	.0008 - .0016	.0012 - .0031			2.2	
	98 - 131	.0001 - .0008	.0008 - .0016	.0012 - .0031			2.3	
	98 - 197	.0001 - .0008	.0008 - .0016	.0012 - .0031			2.4	
	98 - 131	.0001 - .0008	.0008 - .0016	.0012 - .0031			2.5	
	98 - 131	.0001 - .0008	.0008 - .0016	.0012 - .0031			2.6	
	98 - 197		.0006 - .0016	.0012 - .0031	**98 - 197**	.0002 - .0031	1.1	H
	98 - 197		.0006 - .0016	.0012 - .0031	**98 - 197**	.0002 - .0031	1.2	
					98 - 197	.0002 - .0024	1.3	
					98 - 197	.0002 - .0024	1.4	
					98 - 197	.0002 - .0024	1.5	

Cutting speed v_c in SFM – Preferred suitable thread mill
Cutting speed v_c in SFM – Suitable thread mill

ZBGF-T

ZBGF-W

ZBGF-H

Gigant

		v_c Coated	f_z	v_c Coated	f_z	v_c Coated	f_z	v_c Coated	f_z
P	1.1			**492 - 820**	.0016 - .0031			**820 - 1640**	.0059 - .0098
	2.1			**492 - 820**	.0016 - .0031			**820 - 1640**	.0059 - .0098
	3.1			**328 - 820**	.0012 - .0031			**492 - 820**	.0039 - .0059
	4.1			328 - 820	.0012 - .0031			**492 - 820**	.0039 - .0059
	5.1			328 - 656	.0008 - .0024			**492 - 820**	.0039 - .0059
M	1.1			**328 - 591**	.0008 - .0020			**262 - 492**	.0039 - .0059
	2.1			**328 - 591**	.0008 - .0020			**262 - 492**	.0039 - .0059
	3.1			197 - 394	.0008 - .0016			**197 - 394**	.0031 - .0047
	4.1			197 - 394	.0008 - .0016			197 - 394	.0031 - .0047
K	1.1	**656 - 984**	.0016 - .0047	**656 - 984**	.0016 - .0039			**591 - 1312**	.0059 - .0098
	1.2	**656 - 984**	.0016 - .0047	**656 - 984**	.0016 - .0039			**591 - 1312**	.0059 - .0098
	2.1			**492 - 820**	.0020 - .0031			**591 - 1312**	.0059 - .0098
	2.2			**492 - 820**	.0020 - .0031			**591 - 1312**	.0059 - .0098
	3.1			**492 - 820**	.0020 - .0031			**492 - 820**	.0039 - .0059
	3.2			**492 - 820**	.0020 - .0031			**492 - 820**	.0039 - .0059
	4.1			**656 - 984**	.0020 - .0039			**591 - 1312**	.0059 - .0098
	4.2			**656 - 984**	.0020 - .0039			**591 - 1312**	.0059 - .0098
N	1.1	656 - 984	.0016 - .0031	**656 - 984**	.0020 - .0039			**1312 - 1640**	.0059 - .0118
	1.2	656 - 984	.0016 - .0031	**656 - 984**	.0020 - .0039			**1312 - 1640**	.0059 - .0118
	1.3	656 - 984	.0016 - .0031	**656 - 984**	.0020 - .0039			**1312 - 1640**	.0059 - .0118
	1.4	656 - 984	.0016 - .0031	**656 - 984**	.0020 - .0039			**1312 - 1640**	.0059 - .0118
	1.5	**656 - 984**	.0016 - .0039	**656 - 984**	.0020 - .0039			**1312 - 1640**	.0059 - .0118
	1.6	**328 - 656**	.0016 - .0039	328 - 656	.0020 - .0039			**492 - 820**	.0059 - .0118
	2.1			**328 - 591**	.0012 - .0020			**820 - 1640**	.0059 - .0098
	2.2			**492 - 820**	.0020 - .0031			**820 - 1640**	.0059 - .0098
	2.3			**656 - 984**	.0020 - .0039			**820 - 1640**	.0059 - .0098
	2.4			**328 - 591**	.0012 - .0020			**492 - 820**	.0039 - .0098
	2.5			**328 - 591**	.0012 - .0020			**492 - 820**	.0039 - .0098
	2.6			**656 - 984**	.0020 - .0039			**492 - 820**	.0039 - .0098
	2.7					131 - 197	.0008 - .0016	**262 - 492**	.0039 - .0059
	2.8					131 - 197	.0008 - .0016	**262 - 492**	.0039 - .0059
	3.1	**656 - 984**	.0016 - .0039	656 - 984	.0020 - .0039			**1312 - 1640**	.0059 - .0118
	3.2	**656 - 984**	.0016 - .0039	656 - 984	.0020 - .0039			**1312 - 1640**	.0059 - .0118
	4.1			**492 - 820**	.0020 - .0031			**591 - 1312**	.0059 - .0098
	4.2							**591 - 1312**	.0059 - .0098
	4.3			262 - 492	.0020 - .0031			**262 - 492**	.0059 - .0098
	4.4			262 - 492	.0020 - .0031			**262 - 492**	.0059 - .0098
	5.1								
	5.2								
	5.3								
S	1.1			197 - 394	.0008 - .0016			**197 - 394**	.0031 - .0047
	1.2			197 - 394	.0008 - .0016			**197 - 394**	.0031 - .0047
	1.3			197 - 394	.0008 - .0016			**197 - 394**	.0031 - .0047
	2.1			**197 - 394**	.0008 - .0016				
	2.2			197 - 394	.0008 - .0016				
	2.3								
	2.4			**197 - 394**	.0008 - .0016				
	2.5								
	2.6								
H	1.1			197 - 328	.0008 - .0024	197 - 328	.0012 - .0024		
	1.2			197 - 328	.0008 - .0024	197 - 328	.0012 - .0024		
	1.3					**131 - 230**	.0008 - .0016		
	1.4					**98 - 197**	.0008 - .0016		
	1.5					**98 - 197**	.0008 - .0016		

Cutting speed v_c in SFM – Preferred suitable thread mill
Cutting speed v_c in SFM – Suitable thread mill

With 2 Flutes **BGF-Z2**	With 3 Flutes **BGF-Z3**
Metric Shank	Metric Shank

Page		
236		UNC
237		UNF
238	239	M
240		MF
241		STI-M

Possible modifications

Face chamfer on the drill part

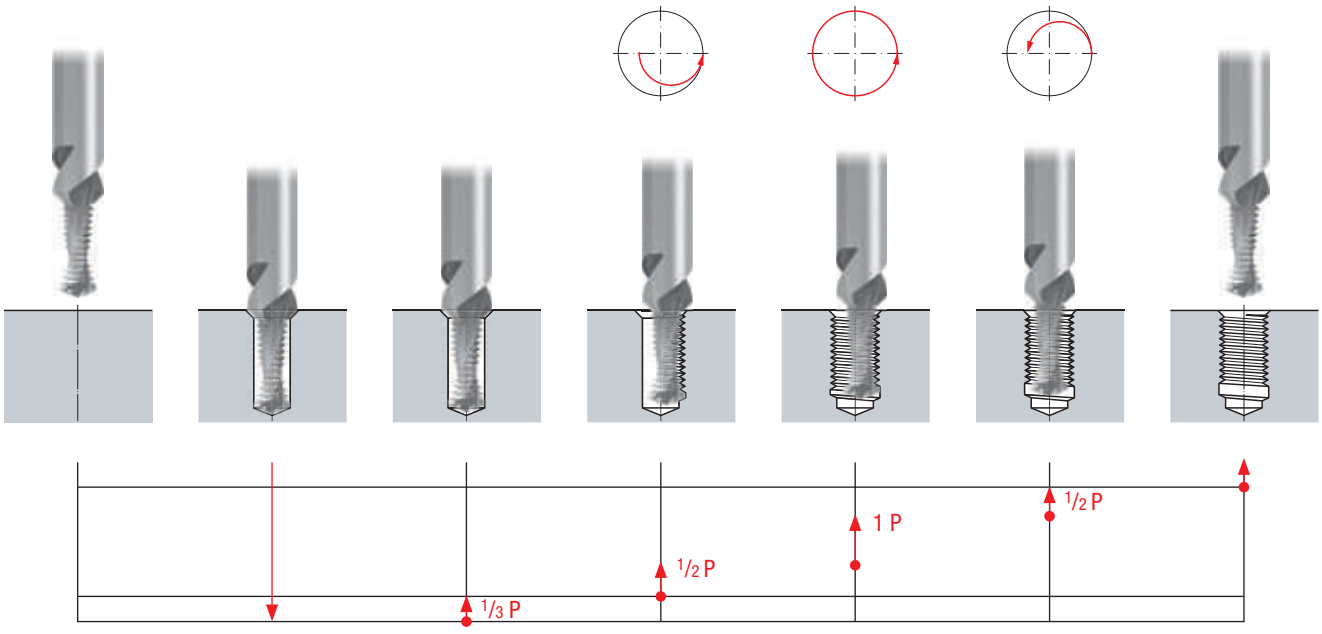
AZR/AZ (alternating teeth)

Remove incomplete thread

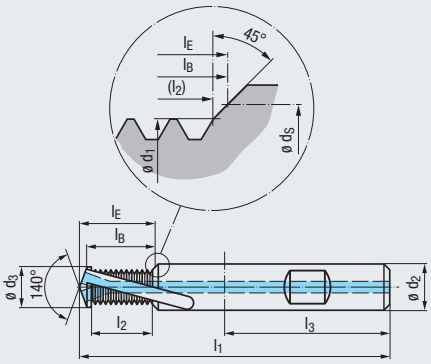
Coolant grooves along the shank

For a description of these modifications, see page 357

Thread milling cycle



Metric Shank



Carbide

R30

RH + LH

2 Flutes

DIN 6535
HB
HE
HA

90°

ø D

UNC

Unified Coarse Thread
ASME B1.1

Coating		TICN
Applications – Material	K 1.1-3.2 N 1.1-5 N 2.2-3, 2.6 N 3.1-2, 4.1	K 1.1-3.2 N 1.1-6 N 2.2-3, 2.6 N 3.1-2, 4.1
Thread Depth	**1.5 x D**	

Tool Identification													GF422201	GF422206
Nominal Size ø D	T.P.I.	l_1	l_2	l_3	ø d_1	ø d_3	ø d_S	l_B	l_E	ø d_2 inch	ø d_2 mm	Dimens. ID	BGF-VHM-Z2 1.5xD R30-IKZ-HB	BGF-VHM-Z2 1.5xD R30-IKZ-HB TICN
		inch												
No. 12	24	2.441	0.295	1.417	0.166	0.177	0.228	0.362	0.394	0.315	8	.5008		
1/4	20	2.441	0.354	1.417	0.191	0.205	0.262	0.437	0.472	0.315	8	.5009	●	●
5/16	18	2.913	0.448	1.575	0.246	0.260	0.325	0.539	0.587	0.394	10	.5010	●	●
3/8	16	3.110	0.567	1.772	0.301	0.315	0.387	0.665	0.724	0.472	12	.5011	●	●
7/16	14	3.110	0.648	1.772	0.354	0.370	0.450	0.760	0.827	0.472	12	.5012	●	●
1/2	13	3.504	0.697	1.772	0.407	0.423	0.512	0.819	0.898	0.551	14	.5013	●	●
9/16	12	4.016	0.839	1.890	0.465	0.482	0.575	0.972	1.059	0.630	16	.5014	●	●
5/8	11	4.016	0.914	1.890	0.516	0.531	0.637	1.059	1.154	0.709	18	.5015	●	●
3/4	10	4.528	1.106	1.969	0.630	0.650	0.762	1.264	1.382	0.787	20	.5016		

Thread Depth	**2 x D**

Tool Identification													GF432201	GF432206
Nominal Size ø D	T.P.I.	l_1	l_2	l_3	ø d_1	ø d_3	ø d_S	l_B	l_E	ø d_2 inch	ø d_2 mm	Dimens. ID	BGF-VHM-Z2 2xD R30-IKZ-HB	BGF-VHM-Z2 2xD R30-IKZ-HB TICN
		inch												
No. 12	24	2.441	0.420	1.417	0.166	0.177	0.228	0.488	0.520	0.315	8	.5008		
1/4	20	2.441	0.504	1.417	0.191	0.205	0.262	0.587	0.622	0.315	8	.5009	●	●
5/16	18	2.913	0.615	1.575	0.246	0.260	0.325	0.705	0.752	0.394	10	.5010	●	●
3/8	16	3.110	0.754	1.772	0.301	0.315	0.387	0.854	0.913	0.472	12	.5011	●	●
7/16	14	3.110	0.862	1.772	0.354	0.370	0.450	0.976	1.043	0.472	12	.5012	●	●
1/2	13	3.504	1.005	1.772	0.407	0.423	0.512	1.126	1.205	0.551	14	.5013	●	●
9/16	12	4.016	1.089	1.890	0.465	0.482	0.575	1.220	1.307	0.630	16	.5014	●	●
5/8	11	4.016	1.187	1.890	0.516	0.531	0.637	1.331	1.425	0.709	18	.5015	●	●
3/4	10	4.528	1.506	1.969	0.630	0.650	0.762	1.661	1.780	0.787	20	.5016		

Thread Depth	**2.5 x D**

Tool Identification													GF442201	GF442206
Nominal Size ø D	T.P.I.	l_1	l_2	l_3	ø d_1	ø d_3	ø d_S	l_B	l_E	ø d_2 inch	ø d_2 mm	Dimens. ID	BGF-VHM-Z2 2.5xD R30-IKZ-HB	BGF-VHM-Z2 2.5xD R30-IKZ-HB TICN
		inch												
3/8	16	3.346	0.942	1.772	0.301	0.315	0.387	1.043	1.098	0.472	12	.5011	●	●
7/16	14	3.346	1.076	1.772	0.354	0.370	0.450	1.189	1.256	0.472	12	.5012	●	●
1/2	13	3.740	1.236	1.772	0.407	0.423	0.512	1.358	1.437	0.551	14	.5013	●	●
9/16	12	4.331	1.339	1.890	0.465	0.482	0.575	1.469	1.559	0.630	16	.5014	●	●
5/8	11	4.331	1.550	1.890	0.516	0.531	0.637	1.693	1.791	0.709	18	.5015		
3/4	10	4.921	1.806	1.969	0.630	0.650	0.762	1.965	2.083	0.787	20	.5016		

Other sizes upon request

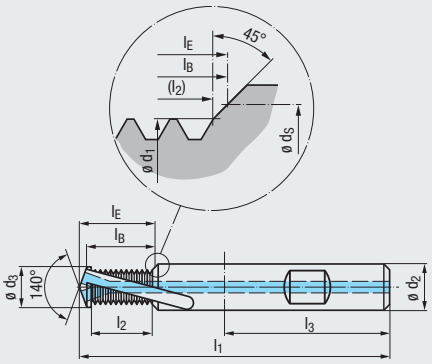
Ordering Example: **GF422201.5009**

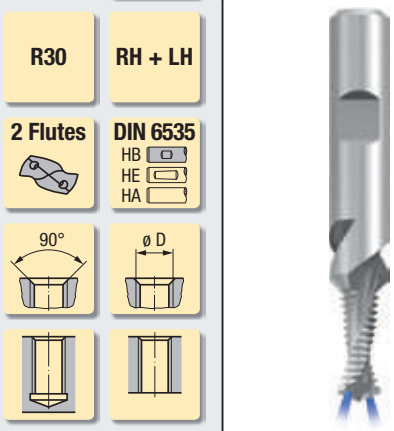
Metric Shank

Carbide

R30 | RH + LH

2 Flutes | DIN 6535 HB HE HA





UNF

Unified Fine Thread
ASME B1.1

Coating		TICN
Applications – Material	K 1.1-3.2 N 1.1-5 N 2.2-3, 2.6 N 3.1-2, 4.1	K 1.1-3.2 N 1.1-6 N 2.2-3, 2.6 N 3.1-2, 4.1

Thread Depth **1.5 x D**

Tool Identification													GF422201	GF422206
Nominal Size ø D	T.P.I.	l_1	l_2	l_3	ø d_1	ø d_3	ø d_S	l_B	l_E	ø d_2 inch	ø d_2 mm	Dimens. ID	BGF-VHM-Z2 1.5xD R30-IKZ-HB	BGF-VHM-Z2 1.5xD R30-IKZ-HB TICN
						inch								
No. 10	32	2.165	0.285	1.417	0.150	0.161	0.203	0.339	0.366	0.236	6	.5041		
No. 12	28	2.441	0.326	1.417	0.172	0.183	0.228	0.386	0.417	0.315	8	.5042		
1/4	28	2.441	0.361	1.417	0.207	0.217	0.262	0.417	0.457	0.315	8	.5043	●	●
5/16	24	2.913	0.462	1.575	0.260	0.272	0.325	0.531	0.579	0.394	10	.5044	●	●
3/8	24	3.110	0.546	1.772	0.323	0.335	0.388	0.614	0.677	0.472	12	.5045	●	●
7/16	20	3.110	0.705	1.772	0.376	0.390	0.449	0.783	0.854	0.472	12	.5046	●	●
1/2	20	3.504	0.756	1.772	0.437	0.453	0.512	0.835	0.917	0.551	14	.5047	●	●
9/16	18	4.016	0.839	1.890	0.492	0.508	0.575	0.929	1.020	0.630	16	.5048	●	●
5/8	18	4.016	0.895	1.890	0.555	0.571	0.638	0.984	1.087	0.709	18	.5049	●	●
3/4	16	4.528	1.133	1.969	0.669	0.689	0.764	1.232	1.358	0.787	20	.5050		

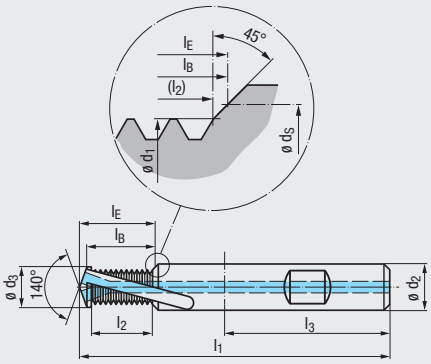
Thread Depth **2 x D**

Tool Identification													GF432201	GF432206
Nominal Size ø D	T.P.I.	l_1	l_2	l_3	ø d_1	ø d_3	ø d_S	l_B	l_E	ø d_2 inch	ø d_2 mm	Dimens. ID	BGF-VHM-Z2 2xD R30-IKZ-HB	BGF-VHM-Z2 2xD R30-IKZ-HB TICN
						inch								
No. 10	32	2.165	0.379	1.417	0.150	0.161	0.203	0.433	0.461	0.236	6	.5041		
No. 12	28	2.441	0.433	1.417	0.172	0.183	0.228	0.492	0.524	0.315	8	.5042		
1/4	28	2.441	0.504	1.417	0.207	0.217	0.262	0.563	0.602	0.315	8	.5043	●	●
5/16	24	2.913	0.629	1.575	0.260	0.272	0.325	0.697	0.748	0.394	10	.5044	●	●
3/8	24	3.110	0.754	1.772	0.323	0.335	0.388	0.823	0.882	0.472	12	.5045	●	●
7/16	20	3.110	0.855	1.772	0.376	0.390	0.449	0.937	1.004	0.472	12	.5046	●	●
1/2	20	3.504	1.006	1.772	0.437	0.453	0.512	1.087	1.169	0.551	14	.5047	●	●
9/16	18	4.016	1.117	1.890	0.492	0.508	0.575	1.205	1.299	0.630	16	.5048	●	●
5/8	18	4.016	1.229	1.890	0.555	0.571	0.638	1.319	1.421	0.709	18	.5049	●	●
3/4	16	4.528	1.508	1.969	0.669	0.689	0.764	1.610	1.736	0.787	20	.5050		

Other sizes upon request

● = In stock
★ = Allow 7 days for delivery

Metric Shank



Carbide

R30

RH + LH

2 Flutes

DIN 6535
HB
HE
HA

90°

ø D

M

ISO Metric Coarse Thread
DIN 13

Coating		TICN
Applications – Material	K 1.1-3.2 N 1.1-5 N 2.2-3, 2.6 N 3.1-2, 4.1	K 1.1-3.2 N 1.1-6 N 2.2-3, 2.6 N 3.1-2, 4.1

Thread Depth **1.5 x D**

Tool Identification													GF422201	GF422206
Nominal Size ø D	P mm	l_1	l_2	l_3	ø d_1	mm ø d_3	ø d_S	l_B	l_E	ø d_2	Dimens. ID		BGF-VHM-Z2 1.5xD R30-IKZ-HB	BGF-VHM-Z2 1.5xD R30-IKZ-HB TICN
M 4	0.7	49	5.64	36	3.16	3.3	4.3	6.8	7.4	6	.0040		●	●
M 5	0.8	55	7.25	36	4.04	4.2	5.3	8.6	9.4	6	.0050		●	●
M 6	1	62	9.06	36	4.8	5	6.3	10.7	11.6	8	.0060		●	●
M 8	1.25	74	11.33	40	6.5	6.75	8.3	13.4	14.6	10	.0080		●	●
M 10	1.5	79	15.09	45	8.2	8.5	10.3	17.5	19.1	12	.0100		●	●
M 12	1.75	89	17.61	45	9.9	10.25	12.3	20.4	22.3	14	.0112		●	●
M 14	2	102	20.12	48	11.6	12	14.3	23.3	25.5	16	.0114		●	●
M 16	2	102	24.13	48	13.6	14	16.3	27.3	29.9	18	.0116		●	●

Thread Depth **2 x D**

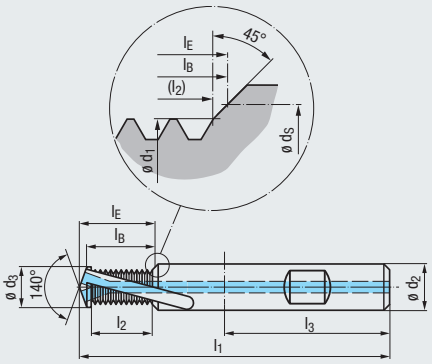
Tool Identification													GF432201	GF432206
Nominal Size ø D	P mm	l_1	l_2	l_3	ø d_1	mm ø d_3	ø d_S	l_B	l_E	ø d_2	Dimens. ID		BGF-VHM-Z2 2xD R30-IKZ-HB	BGF-VHM-Z2 2xD R30-IKZ-HB TICN
M 4	0.7	49	7.74	36	3.16	3.3	4.3	8.9	9.5	6	.0040		●	●
M 5	0.8	55	9.65	36	4.04	4.2	5.3	11	11.8	6	.0050		●	●
M 6	1	62	12.06	36	4.8	5	6.3	13.7	14.6	8	.0060		●	●
M 8	1.25	74	15.08	40	6.5	6.75	8.3	17.1	18.3	10	.0080		●	●
M 10	1.5	79	19.59	45	8.2	8.5	10.3	22	23.6	12	.0100		●	●
M 12	1.75	89	22.86	45	9.9	10.25	12.3	25.7	27.5	14	.0112		●	●
M 14	2	102	28.12	48	11.6	12	14.3	31.3	33.5	16	.0114		●	●
M 16	2	102	32.13	48	13.6	14	16.3	35.3	37.9	18	.0116		●	●

Thread Depth **2.5 x D**

Tool Identification													GF442201	GF442206
Nominal Size ø D	P mm	l_1	l_2	l_3	ø d_1	mm ø d_3	ø d_S	l_B	l_E	ø d_2	Dimens. ID		BGF-VHM-Z2 2.5xD R30-IKZ-HB	BGF-VHM-Z2 2.5xD R30-IKZ-HB TICN
M 6	1	65	15.10	36	4.8	5	6.3	16.7	17.6	8	.0060		●	●
M 8	1.25	80	20.08	40	6.5	6.75	8.3	22.1	23.3	10	.0080		●	●
M 10	1.5	85	25.59	45	8.2	8.5	10.3	28	29.6	12	.0100		●	●
M 12	1.75	95	29.86	45	9.9	10.25	12.3	32.7	34.5	14	.0112		●	●
M 14	2	110	36.12	48	11.6	12	14.3	39.3	41.5	16	.0114			
M 16	2	110	40.13	48	13.6	14	16.3	43.3	45.9	18	.0116			

Other sizes upon request

Metric Shank



Carbide

R30

RH + LH

3 Flutes

DIN 6535
HB
HE
HA

90°

ø D

M

ISO Metric Coarse Thread
DIN 13

Coating		TICN
Applications – Material	K 1.1-2 N 1.5, 2.3	K 1.1-2 N 1.5-6, 2.3
Thread Depth	**1.5 x D**	

Tool Identification												GF422251	GF422256
Nominal Size ø D	P mm	l_1	l_2	l_3	ø d_1	mm ø d_3	ø d_S	l_B	l_E	ø d_2	Dimens. ID	BGF-VHM-Z3 1.5xD R30-IKZ-HB	BGF-VHM-Z3 1.5xD R30-IKZ-HB TICN
M 6	1	62	9.06	36	4.8	5	6.3	10.7	11.6	8	.0060	●	●
M 8	1.25	74	11.33	40	6.5	6.75	8.3	13.4	14.6	10	.0080	●	●
M 10	1.5	79	15.09	45	8.2	8.5	10.3	17.5	19.1	12	.0100	●	●
M 12	1.75	89	17.61	45	9.9	10.25	12.3	20.4	22.3	14	.0112	●	●
M 16	2	102	24.13	48	13.6	14	16.3	27.3	29.9	18	.0116	●	●

Thread Depth	**2 x D**	

Tool Identification												GF432251	GF432256
Nominal Size ø D	P mm	l_1	l_2	l_3	ø d_1	mm ø d_3	ø d_S	l_B	l_E	ø d_2	Dimens. ID	BGF-VHM-Z3 2xD R30-IKZ-HB	BGF-VHM-Z3 2xD R30-IKZ-HB TICN
M 6	1	62	12.06	36	4.8	5	6.3	13.7	14.6	8	.0060	●	●
M 8	1.25	74	15.08	40	6.5	6.75	8.3	17.1	18.3	10	.0080	●	●
M 10	1.5	79	19.59	45	8.2	8.5	10.3	22	23.6	12	.0100	●	●
M 12	1.75	89	22.86	45	9.9	10.25	12.3	25.7	27.5	14	.0112	●	●
M 16	2	102	32.13	48	13.6	14	16.3	35.3	37.9	18	.0116	●	●

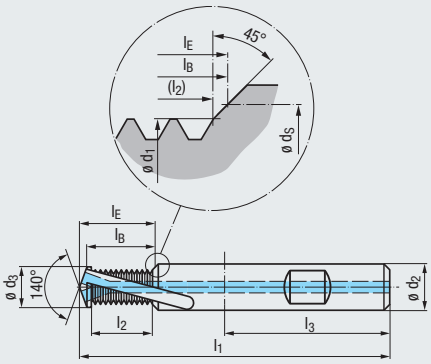
Thread Depth	**2.5 x D**	

Tool Identification												GF442251	GF442256
Nominal Size ø D	P mm	l_1	l_2	l_3	ø d_1	mm ø d_3	ø d_S	l_B	l_E	ø d_2	Dimens. ID	BGF-VHM-Z3 2.5xD R30-IKZ-HB	BGF-VHM-Z3 2.5xD R30-IKZ-HB TICN
M 6	1	65	15.10	36	4.8	5	6.3	16.7	17.6	8	.0060	●	●
M 8	1.25	80	20.08	40	6.5	6.75	8.3	22.1	23.3	10	.0080	●	●
M 10	1.5	85	25.59	45	8.2	8.5	10.3	28	29.6	12	.0100	●	●
M 12	1.75	95	29.86	45	9.9	10.25	12.3	32.7	34.5	14	.0112	●	●
M 16	2	110	40.13	48	13.6	14	16.3	43.3	45.9	18	.0116	●	●

Other sizes upon request

● = In stock
★ = Allow 7 days for delivery

Metric Shank



Carbide

R30

RH + LH

2 Flutes

DIN 6535
HB
HE
HA

90°

ø D

MF

ISO Metric Fine Thread
DIN 13

Coating		TICN
Applications – Material	K 1.1-3.2 N 1.1-5 N 2.2-3, 2.6 N 3.1-2, 4.1	K 1.1-3.2 N 1.1-6 N 2.2-3, 2.6 N 3.1-2, 4.1
Thread Depth	**1.5 x D**	

Tool Identification													GF422201	GF422206
Nominal Size ø D	P mm	l_1	l_2	l_3	ø d_1	ø d_3	ø d_S	l_B	l_E	ø d_2	Dimens. ID		BGF-VHM-Z2 1.5xD R30-IKZ-HB	BGF-VHM-Z2 1.5xD R30-IKZ-HB TICN
						mm								
M 4	x 0.5	49	5.05	36	3.36	3.5	4.3	7	7.6	6	.0210			
M 5	x 0.5	55	7.56	36	4.34	4.5	5.3	8.5	9.3	6	.0218			
M 6	x 0.75	62	9.07	36	5.05	5.25	6.3	10.4	11.3	8	.0229		●	●
M 8	x 1	74	12.09	40	6.75	7	8.3	13.8	15	10	.0251		●	●
M 10	x 1	79	15.11	45	8.7	9	10.3	16.8	18.4	12	.0276		●	●
M 10	x 1.25	79	15.11	45	8.4	8.75	10.3	17.2	18.8	12	.0277		●	●
M 12	x 1	89	17.14	45	10.65	11	12.3	18.8	20.8	14	.0301			
M 12	x 1.25	89	18.88	45	10.4	10.75	12.3	20.9	22.9	14	.0302		●	●
M 12	x 1.5	89	18.12	45	10.15	10.5	12.3	20.5	22.5	14	.0303		●	●
M 14	x 1.5	102	21.14	48	12.1	12.5	14.3	23.6	25.8	16	.0331		●	●
M 16	x 1.5	102	24.15	48	14.1	14.5	16.3	26.6	29.2	18	.0359		●	●

Thread Depth	**2 x D**

Tool Identification													GF432201	GF432206
Nominal Size ø D	P mm	l_1	l_2	l_3	ø d_1	ø d_3	ø d_S	l_B	l_E	ø d_2	Dimens. ID		BGF-VHM-Z2 2xD R30-IKZ-HB	BGF-VHM-Z2 2xD R30-IKZ-HB TICN
						mm								
M 4	x 0.5	49	8.05	36	3.36	3.5	4.3	9	9.6	6	.0210			
M 5	x 0.5	55	10.06	36	4.34	4.5	5.3	11	11.8	6	.0218			
M 6	x 0.75	62	12.07	36	5.05	5.25	6.3	13.4	14.3	8	.0229		●	●
M 8	x 1	74	16.09	40	6.75	7	8.3	17.8	19	10	.0251		●	●
M 10	x 1	79	20.11	45	8.7	9	10.3	21.8	23.4	12	.0276		●	●
M 10	x 1.25	79	20.11	45	8.4	8.75	10.3	22.2	23.8	12	.0277		●	●
M 12	x 1	89	24.14	45	10.65	11	12.3	25.8	27.8	14	.0301			
M 12	x 1.25	89	23.88	45	10.4	10.75	12.3	25.9	27.9	14	.0302		●	●
M 12	x 1.5	89	24.12	45	10.15	10.5	12.3	26.5	28.5	14	.0303		●	●
M 14	x 1.5	102	27.14	48	12.1	12.5	14.3	29.6	31.8	16	.0331		●	●
M 16	x 1.5	102	31.65	48	14.1	14.5	16.3	34.1	36.7	18	.0359		●	●

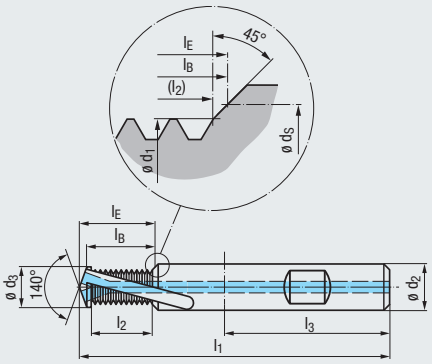
Other sizes upon request

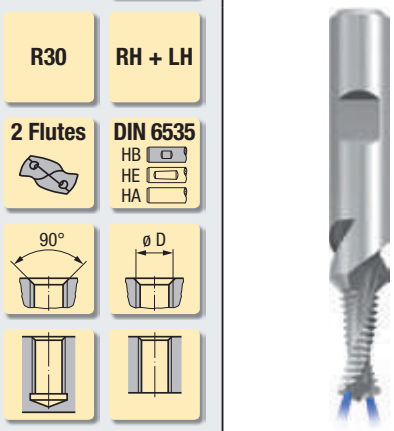
Metric Shank

Carbide

R30 | RH + LH

2 Flutes | DIN 6535 HB HE HA





STI-M

ISO Metric Coarse Thread DIN 8140-2

For wire thread inserts

Coating		TICN
Applications – Material	K 1.1-3.2 N 1.1-5 N 2.2-3, 2.6 N 3.1-2, 4.1	K 1.1-3.2 N 1.1-6 N 2.2-3, 2.6 N 3.1-2, 4.1
Thread Depth	**1.5 x D**	

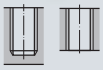
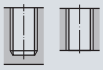
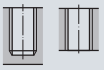
Tool Identification												GF422201	GF422206
Nominal Size ø D	P mm	l_1	l_2	l_3	ø d_1	mm ø d_3	ø d_S	l_B	l_E	ø d_2	Dimens. ID	BGF-VHM-Z2 1.5xD R30-IKZ-HB	BGF-VHM-Z2 1.5xD R30-IKZ-HB TICN
STI-M 6	1	74	10.10	40	6	6.3	7.6	11.8	12.9	10	.0971	●	●
STI-M 8	1.25	79	12.60	45	8.1	8.4	9.9	14.6	16.1	12	.0973	●	●
STI-M 10	1.5	89	16.63	45	10	10.4	12.25	19.1	21	14	.0975	●	●
STI-M 12	1.75	102	19.38	48	12.1	12.5	14.6	22.2	24.5	16	.0977	●	●
STI-M 14	2	102	22.12	48	14.1	14.5	16.9	25.3	28	18	.0978	●	●
STI-M 16	2	115	26.17	50	16	16.5	18.9	29.4	32.4	20	.0979	●	●

Thread Depth	**2 x D**	

Tool Identification												GF432201	GF432206
Nominal Size ø D	P mm	l_1	l_2	l_3	ø d_1	mm ø d_3	ø d_S	l_B	l_E	ø d_2	Dimens. ID	BGF-VHM-Z2 2xD R30-IKZ-HB	BGF-VHM-Z2 2xD R30-IKZ-HB TICN
STI-M 6	1	74	13.10	40	6	6.3	7.6	14.8	15.9	10	.0971	●	●
STI-M 8	1.25	79	16.35	45	8.1	8.4	9.9	18.4	19.9	12	.0973	●	●
STI-M 10	1.5	89	21.13	45	10	10.4	12.25	23.6	25.5	14	.0975	●	●
STI-M 12	1.75	102	24.63	48	12.1	12.5	14.6	27.5	29.7	16	.0977	●	●
STI-M 14	2	102	30.12	48	14.1	14.5	16.9	33.3	36	18	.0978	●	●
STI-M 16	2	115	34.17	50	16	16.5	18.9	37.4	40.4	20	.0979	●	●

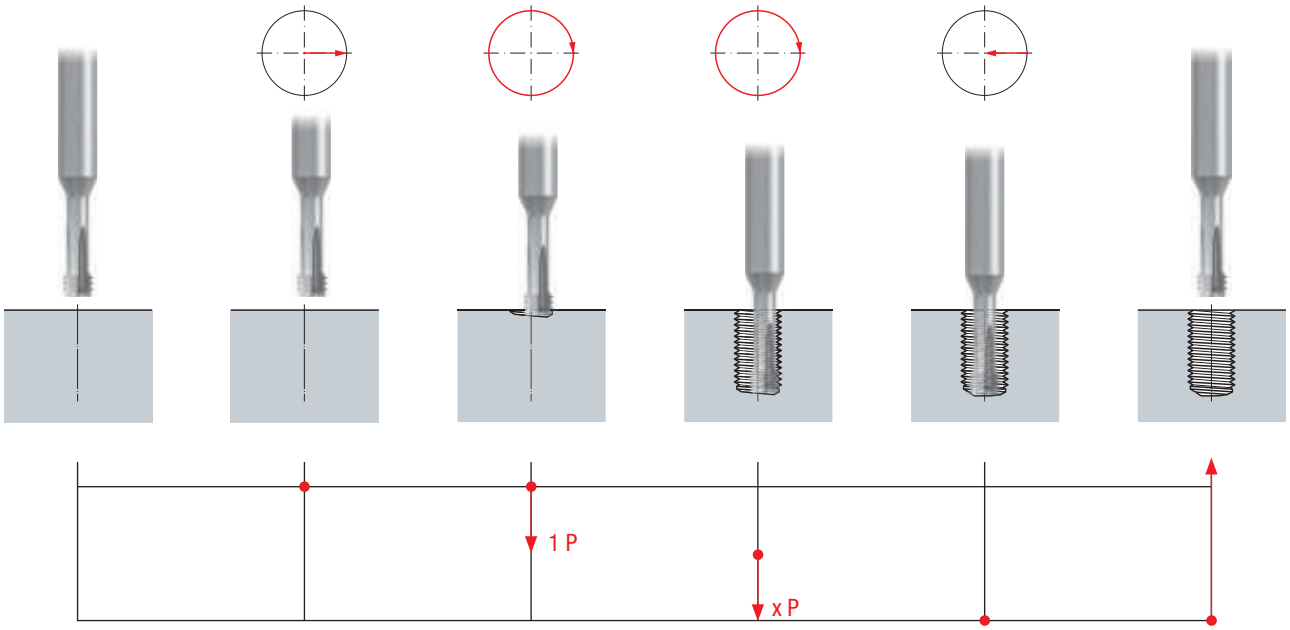
Other sizes upon request

Product Finder
v_c / f_z
UNC
UNF
UN
M
MF
NPSF
Rp (BSPP)
G
W
BSW, BSF
NPT
NPTF
Rc (BSPT)
STI
SELF-LOCK
Accessories
Tech. Info
BGF
ZBGF
GSF (Aero)
GSF-Z
GF(I), GF-Z
GF-Vario-Z
GF-H
GF(I)-KEG
ZGF(I)
CIRC-GF
Gigant
FPC, FMC
MoSys

For Soft/Unhardened Materials **ZBGF-W**	For Hard Materials **ZBGF-H**	For the Machining of Aluminum and Cast Iron **ZBGF-T**
		
Metric Shank	Metric Shank	Metric Shank

Page			
244	245		UNC
246	247		UNF
248	249	250	M, MF

Thread milling cycle

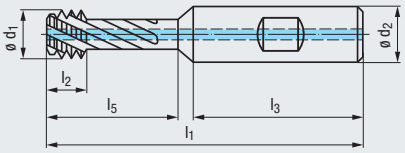


Need programming assistance?

EMUGE's trained thread milling specialist can assist you with advice and guidance in writing the correct program for your CNC machine tool. Thread milling experts will analyze your exact application and help guide you through the proper line code programming.

Contact EMUGE Technical Support department or visit **www.emuge.com**

Metric Shank



Carbide

RH + LH | RH-rot.

R30 | 3-5 Flutes

DIN 6535 HB HE HA | ø D

ZBGF-W

For soft/unhardened materials

UNC

Unified Coarse Thread
ASME B1.1

Coating	TIALN-T4
Applications – Material	P 1.1-5.1 · M 1.1-4.1 · K 1.1-4.2 · N 1.1-6, 2.1-6 · N 3.1-2 · N 4.1, 4.3-4 · S 1.1-3 · S 2.1-2, 2.4 · H 1.1-2
Thread Depth	**2 x D**

Tool Identification — GF732257

Nominal Size ø D	T.P.I.	l_1	l_2	inch l_3	l_5	ø d_1	ø d_2 inch	ø d_2 mm	Flutes	Dimens. ID	ZBGF-W-VHM 2xD R30-IKZ-HB TIALN-T4
1/4	20	2.362	0.228	1.417	0.669	0.183	0.315	8	3	.5009	●
5/16	18	2.992	0.252	1.575	0.866	0.222	0.394	10	4	.5010	●
3/8	16	2.992	0.283	1.575	1.024	0.282	0.394	10	4	.5011	●
7/16	14	3.386	0.319	1.772	1.220	0.333	0.472	12	4	.5012	●
1/2	13	3.386	0.350	1.772	1.299	0.397	0.472	12	4	.5013	●
5/8	11	3.858	0.409	1.890	1.654	0.507	0.630	16	4	.5015	●
3/4	10	4.370	0.449	1.969	2.008	0.610	0.787	20	5	.5016	●

Other sizes upon request

Metric Shank

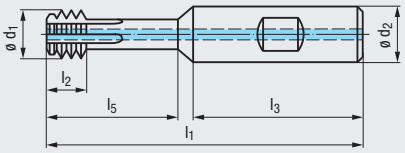
Carbide

RH | LH-rot.

4-5 Flutes

DIN 6535
HB
HE
HA

ø D



ZBGF-H
For hard materials

UNC

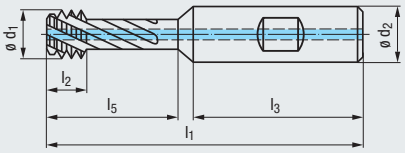
Unified Coarse Thread
ASME B1.1

Coating	TIALN-T3
Applications – Material	N 2.7-8 H 1.1-5
Thread Depth	**2 x D**

Tool Identification										GF733208
Nominal Size ø D	T.P.I.	inch l_1	inch l_2	inch l_3	inch l_5	inch ø d_1	ø d_2 inch	ø d_2 mm	Flutes	Dimens. ID	ZBGF-H-VHM 2xD IKZ-HB TIALN-T3
5/16	18	2.992	0.220	1.575	0.866	0.222	0.394	10	4	.5010	●
3/8	16	2.992	0.252	1.575	1.063	0.282	0.394	10	4	.5011	●
7/16	14	3.386	0.287	1.772	1.220	0.333	0.472	12	4	.5012	●
1/2	13	3.386	0.307	1.772	1.299	0.397	0.472	12	4	.5013	●
5/8	11	3.858	0.362	1.890	1.654	0.507	0.630	16	4	.5015	●
3/4	10	4.370	0.402	1.969	2.008	0.610	0.787	20	5	.5016	●

Other sizes upon request

Metric Shank



Carbide

RH + LH | RH-rot.

R30 | 3-5 Flutes

DIN 6535 HB HE HA | ø D

ZBGF-W

For soft/unhardened materials

UNF

Unified Fine Thread
ASME B1.1

Coating	TIALN-T4
Applications – Material	P 1.1-5.1 · M 1.1-4.1 · K 1.1-4.2 · N 1.1-6, 2.1-6 · N 3.1-2 · N 4.1, 4.3-4 · S 1.1-3 · S 2.1-2, 2.4 · H 1.1-2
Thread Depth	**2 x D**

Tool Identification — GF732257

Nominal Size ø D	T.P.I.	l_1	l_2	inch l_3	l_5	ø d_1	ø d_2 inch	ø d_2 mm	Flutes	Dimens. ID	ZBGF-W-VHM 2xD R30-IKZ-HB TIALN-T4
1/4	28	2.362	0.165	1.417	0.669	0.183	0.315	8	3	.5043	●
5/16	24	2.992	0.189	1.575	0.866	0.222	0.394	10	4	.5044	●
3/8	24	2.992	0.189	1.575	1.024	0.281	0.394	10	4	.5045	●
7/16 - 1/2	20	3.386	0.228	1.772	1.299	0.333	0.472	12	4	.5046	●
9/16 - 5/8	18	3.858	0.252	1.890	1.614	0.444	0.630	16	4	.5048	●
3/4	16	4.370	0.283	1.969	2.008	0.606	0.787	20	5	.5050	●

Other sizes upon request

Ordering Example: **GF732257.5043**

Metric Shank

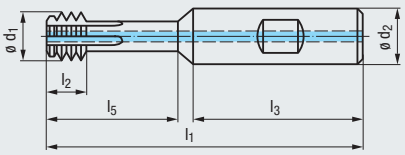
Carbide

RH | LH-rot.

4-5 Flutes

DIN 6535
HB
HE
HA

ø D



ZBGF-H
For hard materials

UNF

Unified Fine Thread
ASME B1.1

Coating	TIALN-T3
Applications – Material	N 2.7-8 H 1.1-5
Thread Depth	**2 x D**

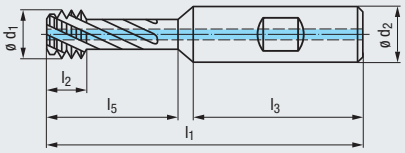
Tool Identification — **GF733208**

Nominal Size ø D	T.P.I.	inch l_1	l_2	l_3	l_5	ø d_1	ø d_2 inch	ø d_2 mm	Flutes	Dimens. ID	ZBGF-H-VHM 2xD IKZ-HB TIALN-T3
5/16	24	2.992	0.165	1.575	0.866	0.222	0.394	10	4	.5044	●
3/8	24	2.992	0.165	1.575	1.063	0.281	0.394	10	4	.5045	●
7/16 - 1/2	20	3.386	0.201	1.772	1.299	0.333	0.472	12	4	.5046	●
9/16 - 5/8	18	3.858	0.220	1.890	1.614	0.444	0.630	16	4	.5048	●
3/4	16	4.370	0.252	1.969	2.008	0.606	0.787	20	5	.5050	●

Other sizes upon request

● = In stock
★ = Allow 7 days for delivery

Metric Shank



Carbide

RH + LH | RH-rot.

R30 | 3-4 Flutes

DIN 6535
HB
HE
HA

ø D

ZBGF-W
For soft/unhardened materials

M, MF

ISO Metric Threads
DIN 13

Coating	TIALN-T4
Applications – Material	P 1.1-5.1 · M 1.1-4.1 · K 1.1-4.2 · N 1.1-6, 2.1-6 · N 3.1-2 · N 4.1, 4.3-4 · S 1.1-3 · S 2.1-2, 2.4 · H 1.1-2
Thread Depth	**2 x D**

Tool Identification — **GF732257**

P mm	ø D	l_1	l_2	l_3	l_5	ø d_1	ø d_2	Flutes	Dimens. ID	ZBGF-W-VHM 2xD R30-IKZ-HB TIALN-T4
				mm						
1	M 6 - M 7	60	4.6	36	16	4.51	8	3	**.0060**	●
1.25	M 8 - M10 x 1.25	71	5.7	40	21	6.23	10	4	**.0080**	●
1.5	M10 - M12 x 1.5	76	6.9	40	26	7.75	10	4	**.0100**	●
1.75	M12	86	7.9	45	32	9.16	12	4	**.0112**	●
2	M14 - M16	98	9.1	48	41	11.08	16	4	**.0114**	●

Other sizes upon request

Metric Shank

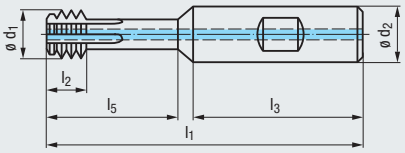
Carbide

RH | LH-rot.

4 Flutes

DIN 6535
HB
HE
HA

ø D



ZBGF-H
For hard materials

M, MF

ISO Metric Threads
DIN 13

Coating	TIALN-T3
Applications – Material	N 2.7-8 H 1.1-5
Thread Depth	**2 x D**

Tool Identification — GF733208

P mm	ø D	mm l_1	l_2	l_3	l_5	ø d_1	ø d_2	Flutes	Dimens. ID	ZBGF-H-VHM 2xD IKZ-HB TIALN-T3
1.25	M 8 - M10 x 1.25	71	5	40	19	6.2	10	4	**.0080**	●
1.5	M10 - M12 x 1.5	76	6	40	25	7.75	10	4	**.0100**	●
1.75	M12	86	7	45	31	9.2	12	4	**.0112**	●
2	M14 - M16	98	8	48	36	11.1	16	4	**.0114**	●

Other sizes upon request

Metric Shank

Carbide

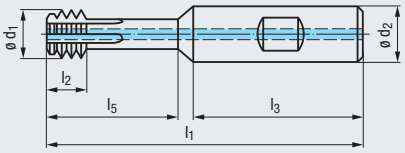
RH + LH

RH-rot.

3-4 Flutes

DIN 6535
HB
HE
HA

ø D



ZBGF-T

For the machining of aluminum and cast iron

M, MF

ISO Metric Threads
DIN 13

Coating	TICN
Applications – Material	K 1.1-2 N 1.1-6, 3.1-2
Thread Depth	3 x D

Tool Identification										GF753276
P mm	ø D	l_1	l_2	l_3	l_5	ø d_1	ø d_2	Flutes	Dimens. ID	ZBGF-T-VHM 3xD IKZ-HB TICN
				mm						
1	M 6 - M 7	65	4	36	20	4.5	8	3	**.0060**	●
1.25	M 8 - M10 x 1.25	80	5	40	27	6.2	10	4	**.0080**	●
1.5	M10 - M12 x 1.5	85	6	40	34	7.75	10	4	**.0100**	●
1.75	M12	100	7	45	39	9.2	12	4	**.0112**	●

Other sizes upon request

Straight Flutes **GSF**	Right-Hand Spiral Flutes **GSF**	Right-Hand Spiral Flutes **GSF Aero**	Right-Hand Spiral Flutes **GSF-Z**	
Metric Shank	Metric Shank	Metric Shank	Metric Shank	

Page				
	252	253		UNC
	254	255		UNF
	256		257	M
	258		259	MF
	260			G (BSP)
261				LK-M

Possible modifications

Face chamfer with/without cutting face

Remove incomplete thread

Recessed neck

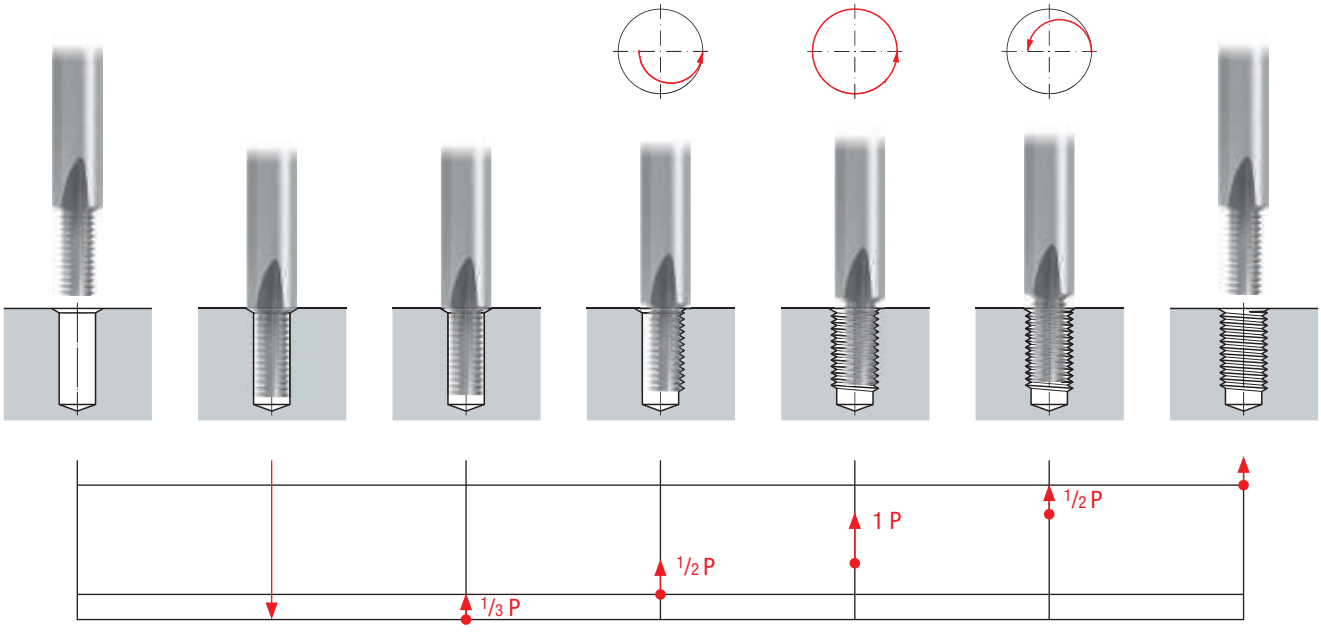
AZR/AZ (alternating teeth)

IKZN (internal coolant supply exiting in the flutes)

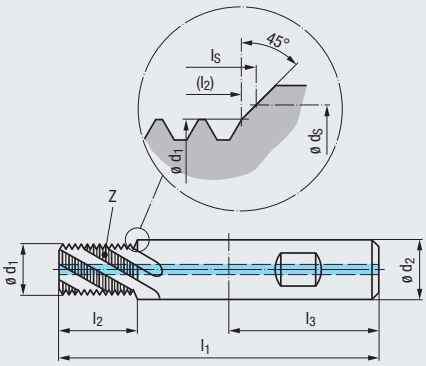
Coolant grooves along the shank

For a description of these modifications, see page 357

Thread milling cycle



Metric Shank



Carbide

R30 | RH + LH

3-5 Flutes | DIN 6535 HB HE HA

90° | ø D

UNC

Unified Coarse Thread
ASME B1.1

Coating		TICN
Applications – Material	P 1.1-3.1, K 1.1-4.2, N 1.1-5, N 2.1-6, N 3.1-4.2, 5.2, S 1.1-2	P 1.1-3.1, M 1.1-2.1, K 1.1-4.2, N 1.1-2.7, N 3.1-5.2, S 1.1-2, 2.1
Thread Depth	**1.5 x D**	

Tool Identification												GF322101	GF322106
Nominal Size ø D	T.P.I.	inch l_1	inch l_2	inch l_3	inch ø d_1	inch ø d_S	inch l_S	ø d_2 inch	ø d_2 mm	Flutes	Dimens. ID	GSF-VHM 1.5xD R30-IKZ-HB	GSF-VHM 1.5xD R30-IKZ-HB TICN
No. 12	24	2.441	0.354	1.417	0.163	0.228	0.382	0.315	8	3	.5008		
1/4	20	2.441	0.425	1.417	0.185	0.262	0.461	0.315	8	3	.5009	●	●
5/16	18	2.913	0.528	1.575	0.242	0.325	0.567	0.394	10	3	.5010	●	●
3/8	16	3.150	0.594	1.772	0.301	0.387	0.634	0.472	12	3	.5011	●	●
7/16	14	3.150	0.681	1.772	0.354	0.450	0.720	0.472	12	3	.5012	●	●
1/2	13	3.543	0.811	1.772	0.407	0.512	0.854	0.551	14	4	.5013	●	●
9/16	12	3.937	0.878	1.890	0.465	0.575	0.925	0.630	16	4	.5014	●	●
5/8	11	4.016	0.957	1.890	0.516	0.637	1.008	0.709	18	4	.5015	●	●
3/4	10	4.331	1.154	1.969	0.630	0.762	1.209	0.787	20	5	.5016		

Thread Depth	**2 x D**

Tool Identification												GF332101	GF332106
Nominal Size ø D	T.P.I.	inch l_1	inch l_2	inch l_3	inch ø d_1	inch ø d_S	inch l_S	ø d_2 inch	ø d_2 mm	Flutes	Dimens. ID	GSF-VHM 2xD R30-IKZ-HB	GSF-VHM 2xD R30-IKZ-HB TICN
No. 12	24	2.441	0.437	1.417	0.163	0.228	0.469	0.315	8	3	.5008		
1/4	20	2.441	0.524	1.417	0.185	0.262	0.559	0.315	8	3	.5009	●	●
5/16	18	2.913	0.638	1.575	0.242	0.325	0.677	0.394	10	3	.5010	●	●
3/8	16	3.150	0.783	1.772	0.301	0.387	0.819	0.472	12	3	.5011	●	●
7/16	14	3.150	0.894	1.772	0.354	0.450	0.937	0.472	12	3	.5012	●	●
1/2	13	3.543	1.039	1.772	0.407	0.512	1.087	0.551	14	4	.5013	●	●
9/16	12	3.937	1.209	1.890	0.465	0.575	1.260	0.630	16	4	.5014	●	●
5/8	11	4.016	1.319	1.890	0.516	0.637	1.374	0.709	18	4	.5015	●	●
3/4	10	4.331	1.551	1.969	0.630	0.762	1.610	0.787	20	5	.5016		

Thread Depth	**2.5 x D**

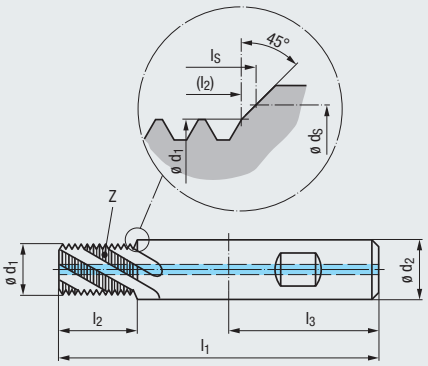
Tool Identification												GF342101	GF342106
Nominal Size ø D	T.P.I.	inch l_1	inch l_2	inch l_3	inch ø d_1	inch ø d_S	inch l_S	ø d_2 inch	ø d_2 mm	Flutes	Dimens. ID	GSF-VHM 2.5xD R30-IKZ-HB	GSF-VHM 2.5xD R30-IKZ-HB TICN
3/8	16	3.346	0.969	1.772	0.301	0.387	1.008	0.472	12	3	.5011	●	●
7/16	14	3.346	1.110	1.772	0.354	0.450	1.150	0.472	12	3	.5012	●	●
1/2	13	3.780	1.272	1.772	0.407	0.512	1.315	0.551	14	4	.5013	●	●
9/16	12	4.213	1.461	1.890	0.465	0.575	1.508	0.630	16	4	.5014	●	●
5/8	11	4.331	1.594	1.890	0.516	0.637	1.646	0.709	18	4	.5015	●	●
3/4	10	4.921	1.953	1.969	0.630	0.762	2.012	0.787	20	5	.5016		

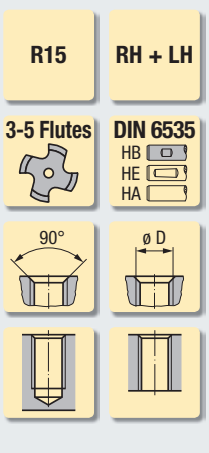
Metric Shank

Carbide

R15 | RH + LH

3-5 Flutes | DIN 6535 HB HE HA





UNC

Unified Coarse Thread
ASME B1.1

Coating		TICN
Applications – Material	P 1.1-5.1, K 1.1-4.2, N 1.1-5, N 2.1-6, N 3.1-4.2, 5.2, S 1.1-3	P 1.1-5.1, M 1.1-4.1, K 1.1-4.2, N 1.1-5.2, S 1.1-2.6, H 1.1-2
Thread Depth	2 x D	

Tool Identification

Nominal Size ø D	T.P.I.	inch l_1	l_2	l_3	ø d_1	ø d_S	l_S	ø d_2 inch	ø d_2 mm	Flutes	Dimens. ID	GF335101 GSF-VHM 2xD R15-IKZ-HB	GF335106 GSF-VHM 2xD R15-IKZ-HB TICN
No. 10	24	2.165	0.397	1.417	0.136	0.202	0.425	0.236	6	3	.5007	●	●
No. 12	24	2.441	0.437	1.417	0.163	0.228	0.469	0.315	8	3	.5008		
1/4	20	2.441	0.524	1.417	0.185	0.262	0.559	0.315	8	3	.5009	●	●
5/16	18	2.913	0.638	1.575	0.242	0.325	0.677	0.394	10	3	.5010	●	●
3/8	16	3.150	0.783	1.772	0.301	0.387	0.819	0.472	12	3	.5011	●	●
7/16	14	3.150	0.894	1.772	0.354	0.450	0.937	0.472	12	3	.5012	●	●
1/2	13	3.543	1.039	1.772	0.407	0.512	1.087	0.551	14	4	.5013	●	●
9/16	12	3.937	1.209	1.890	0.465	0.575	1.260	0.630	16	4	.5014	●	●
5/8	11	4.016	1.319	1.890	0.516	0.637	1.374	0.709	18	4	.5015	●	●
3/4	10	4.331	1.551	1.969	0.630	0.762	1.610	0.787	20	5	.5016		

Other sizes upon request

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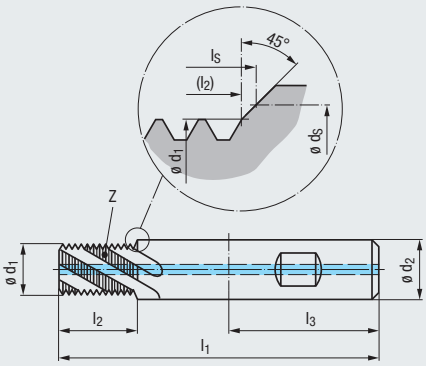
● = In stock
★ = Allow 7 days for delivery

Metric Shank



Carbide

R30

RH + LH

3-5 Flutes

DIN 6535
HB
HE
HA

90°

ø D

UNF

Unified Fine Thread
ASME B1.1

Coating		TICN
Applications – Material	P 1.1-3.1 K 1.1-4.2 N 1.1-5 N 2.1-6 N 3.1-4.2, 5.2 S 1.1-2	P 1.1-3.1 M 1.1-2.1 K 1.1-4.2 N 1.1-2.7 N 3.1-5.2 S 1.1-2, 2.1
Thread Depth	**1.5 x D**	

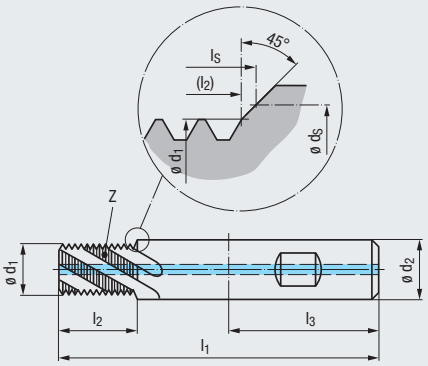
Tool Identification												GF322101	GF322106
Nominal Size ø D	T.P.I.	inch l_1	l_2	l_3	ø d_1	ø d_S	l_S	ø d_2 inch	ø d_2 mm	Flutes	Dimens. ID	GSF-VHM 1.5xD R30-IKZ-HB	GSF-VHM 1.5xD R30-IKZ-HB TICN
No. 10	32	2.165	0.299	1.417	0.150	0.202	0.319	0.236	6	3	.5041	●	●
No. 12	28	2.441	0.339	1.417	0.169	0.228	0.366	0.315	8	3	.5042		
1/4	28	2.441	0.413	1.417	0.203	0.262	0.437	0.315	8	3	.5043	●	●
5/16	24	2.913	0.480	1.575	0.260	0.325	0.508	0.394	10	3	.5044	●	●
3/8	24	3.150	0.563	1.772	0.323	0.387	0.591	0.472	12	3	.5045	●	●
7/16	20	3.150	0.677	1.772	0.376	0.450	0.709	0.472	12	3	.5046	●	●
1/2	20	3.543	0.776	1.772	0.437	0.512	0.807	0.551	14	4	.5047	●	●
9/16	18	3.937	0.862	1.890	0.492	0.575	0.898	0.630	16	4	.5048	●	●
5/8	18	4.016	0.976	1.890	0.555	0.637	1.008	0.709	18	4	.5049	●	●
3/4	16	4.331	1.161	1.969	0.669	0.762	1.197	0.787	20	5	.5050		

Thread Depth	**2 x D**

Tool Identification												GF332101	GF332106
Nominal Size ø D	T.P.I.	inch l_1	l_2	l_3	ø d_1	ø d_S	l_S	ø d_2 inch	ø d_2 mm	Flutes	Dimens. ID	GSF-VHM 2xD R30-IKZ-HB	GSF-VHM 2xD R30-IKZ-HB TICN
No. 10	32	2.165	0.390	1.417	0.150	0.202	0.413	0.236	6	3	.5041	●	●
No. 12	28	2.441	0.449	1.417	0.169	0.228	0.472	0.315	8	3	.5042		
1/4	28	2.441	0.520	1.417	0.203	0.262	0.543	0.315	8	3	.5043	●	●
5/16	24	2.913	0.646	1.575	0.260	0.325	0.673	0.394	10	3	.5044	●	●
3/8	24	3.150	0.772	1.772	0.323	0.387	0.799	0.472	12	3	.5045	●	●
7/16	20	3.150	0.878	1.772	0.376	0.450	0.909	0.472	12	3	.5046	●	●
1/2	20	3.543	1.028	1.772	0.437	0.512	1.059	0.551	14	4	.5047	●	●
9/16	18	3.937	1.142	1.890	0.492	0.575	1.177	0.630	16	4	.5048	●	●
5/8	18	4.016	1.307	1.890	0.555	0.637	1.343	0.709	18	4	.5049	●	●
3/4	16	4.331	1.535	1.969	0.669	0.762	1.575	0.787	20	5	.5050		

Other sizes upon request

Metric Shank



Carbide

R15

RH + LH

3-5 Flutes

DIN 6535
HB
HE
HA

90°

ø D

UNF

Unified Fine Thread
ASME B1.1

Coating		TICN
Applications – Material	P 1.1-5.1 K 1.1-4.2 N 1.1-5 N 2.1-6 N 3.1-4.2, 5.2 S 1.1-3	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2
Thread Depth	2 x D	

Tool Identification												GF335101	GF335106
Nominal Size ø D	T.P.I.	inch l_1	l_2	l_3	ø d_1	ø d_S	l_S	ø d_2 inch	ø d_2 mm	Flutes	Dimens. ID	GSF-VHM 2xD R15-IKZ-HB	GSF-VHM 2xD R15-IKZ-HB TICN
No. 10	32	2.165	0.390	1.417	0.150	0.202	0.413	0.236	6	3	.5041	●	●
No. 12	28	2.441	0.449	1.417	0.169	0.228	0.472	0.315	8	3	.5042		
1/4	28	2.441	0.520	1.417	0.203	0.262	0.543	0.315	8	3	.5043	●	●
5/16	24	2.913	0.646	1.575	0.260	0.325	0.673	0.394	10	3	.5044	●	●
3/8	24	3.150	0.772	1.772	0.323	0.387	0.799	0.472	12	3	.5045	●	●
7/16	20	3.150	0.878	1.772	0.376	0.450	0.909	0.472	12	3	.5046	●	●
1/2	20	3.543	1.028	1.772	0.437	0.512	1.059	0.551	14	4	.5047	●	●
9/16	18	3.937	1.142	1.890	0.492	0.575	1.177	0.630	16	4	.5048	●	●
5/8	18	4.016	1.307	1.890	0.555	0.637	1.343	0.709	18	4	.5049	●	●
3/4	16	4.331	1.535	1.969	0.669	0.762	1.575	0.787	20	5	.5050		

Other sizes upon request

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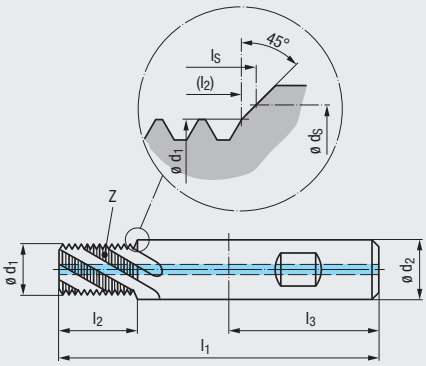
● = In stock
★ = Allow 7 days for delivery

Metric Shank



Carbide

R30

RH + LH

3-4 Flutes

DIN 6535
HB
HE
HA

90°

ø D

M

ISO Metric Coarse Thread
DIN 13

Coating		TICN
Applications – Material	P 1.1-3.1, K 1.1-4.2, N 1.1-5, N 2.1-6, N 3.1-4.2, 5.2, S 1.1-2	P 1.1-3.1, M 1.1-2.1, K 1.1-4.2, N 1.1-2.7, N 3.1-5.2, S 1.1-2, 2.1
Thread Depth	**1.5 x D**	

Tool Identification												GF322101	GF322106
Nominal Size ø D	P mm	l_1	l_2	l_3	ø d_1	ø d_S	l_S	ø d_2	Flutes	Dimens. ID		GSF-VHM 1.5xD R30-IKZ-HB	GSF-VHM 1.5xD R30-IKZ-HB TICN
					mm								
M 5	0.8	55	7.6	36	4	5.3	8.2	6	3	.0050		●	●
M 6	1	62	9.5	36	4.8	6.3	10.2	8	3	.0060		●	●
M 8	1.25	74	13.1	40	6.5	8.3	13.9	10	3	.0080		●	●
M 10	1.5	80	15.8	45	8.2	10.3	16.7	12	3	.0100		●	●
M 12	1.75	90	18.4	45	9.9	12.3	19.5	14	4	.0112		●	●
M 14	2	100	23	48	11.6	14.3	24.2	16	4	.0114		●	●
M 16	2	102	25	48	13.6	16.3	26.2	18	4	.0116		●	●

Thread Depth	**2 x D**

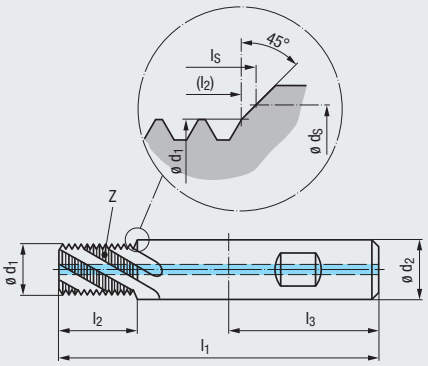
Tool Identification												GF332101	GF332106
Nominal Size ø D	P mm	l_1	l_2	l_3	ø d_1	ø d_S	l_S	ø d_2	Flutes	Dimens. ID		GSF-VHM 2xD R30-IKZ-HB	GSF-VHM 2xD R30-IKZ-HB TICN
					mm								
M 5	0.8	55	10.8	36	4	5.3	11.4	6	3	.0050		●	●
M 6	1	62	12.5	36	4.8	6.3	13.2	8	3	.0060		●	●
M 8	1.25	74	16.9	40	6.5	8.3	17.7	10	3	.0080		●	●
M 10	1.5	80	20.3	45	8.2	10.3	21.2	12	3	.0100		●	●
M 12	1.75	90	25.4	45	9.9	12.3	26.5	14	4	.0112		●	●
M 14	2	100	29	48	11.6	14.3	30.2	16	4	.0114		●	●
M 16	2	102	33	48	13.6	16.3	34.2	18	4	.0116		●	●

Thread Depth	**2.5 x D**

Tool Identification												GF342101	GF342106
Nominal Size ø D	P mm	l_1	l_2	l_3	ø d_1	ø d_S	l_S	ø d_2	Flutes	Dimens. ID		GSF-VHM 2.5xD R30-IKZ-HB	GSF-VHM 2.5xD R30-IKZ-HB TICN
					mm								
M 5	0.8	58	13.2	36	4	5.3	13.8	6	3	.0050			
M 6	1	65	15.5	36	4.8	6.3	16.2	8	3	.0060		●	●
M 8	1.25	78	20.6	40	6.5	8.3	21.4	10	3	.0080		●	●
M 10	1.5	85	26.3	45	8.2	10.3	27.2	12	3	.0100		●	●
M 12	1.75	95	30.7	45	9.9	12.3	31.7	14	4	.0112		●	●
M 14	2	110	37	48	11.6	14.3	38.2	16	4	.0114			
M 16	2	110	41	48	13.6	16.3	42.2	18	4	.0116		●	●

Other sizes upon request

Metric Shank



Carbide

R15

RH + LH

4-5 Flutes

DIN 6535
HB
HE
HA

90°

ø D

With increased number of flutes

M

ISO Metric Coarse Thread
DIN 13

Coating	TICN
Applications – Material	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2
Thread Depth	**2 x D**

Tool Identification											GF335126
Nominal Size ø D	P mm	mm l_1	l_2	l_3	ø d_1	ø d_S	l_S	ø d_2	Flutes	Dimens. ID	GSF-Z-VHM 2xD R15-IKZ-HB TICN
M 6	1	62	12.5	36	4.8	6.3	13.2	8	4	.0060	●
M 8	1.25	74	16.9	40	6.5	8.3	17.7	10	4	.0080	●
M 10	1.5	80	20.3	45	8.2	10.3	21.2	12	5	.0100	●
M 12	1.75	90	25.4	45	9.9	12.3	26.5	14	5	.0112	●

Other sizes upon request

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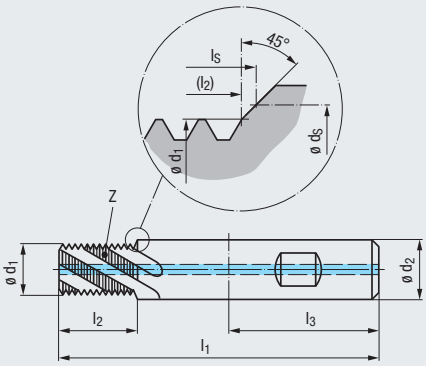
Metric Shank



Carbide

R30

RH + LH

3-4 Flutes

DIN 6535
HB
HE
HA

90°

ø D

MF

ISO Metric Fine Thread
DIN 13

Coating		TICN
Applications – Material	P 1.1-3.1 K 1.1-4.2 N 1.1-5 N 2.1-6 N 3.1-4.2, 5.2 S 1.1-2	P 1.1-3.1 M 1.1-2.1 K 1.1-4.2 N 1.1-2.7 N 3.1-5.2 S 1.1-2, 2.1
Thread Depth	**1.5 x D**	

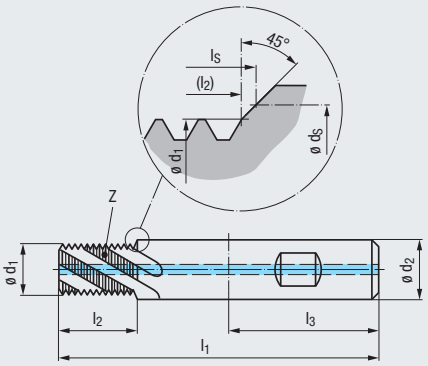
Tool Identification												GF322101	GF322106
Nominal Size ø D		P mm	l_1	l_2	l_3	ø d_1	ø d_S	l_S	ø d_2	Flutes	Dimens. ID	GSF-VHM 1.5xD R30-IKZ-HB	GSF-VHM 1.5xD R30-IKZ-HB TICN
						mm							
M 6	x	0.75	62	9.4	36	5	6.3	10	8	3	.0229	●	●
M 8	x	1	74	12.5	40	6.7	8.3	13.2	10	3	.0251	●	●
M 10	x	1	80	15.5	45	8.7	10.3	16.2	12	3	.0276	●	●
M 10	x	1.25	80	15.7	45	8.4	10.3	16.5	12	3	.0277		
M 12	x	1	90	18.5	45	10.6	12.3	19.3	14	4	.0301	●	●
M 12	x	1.25	90	18.2	45	10.4	12.3	19	14	4	.0302		
M 12	x	1.5	90	18.8	45	10.1	12.3	19.7	14	4	.0303	●	●
M 14	x	1.5	100	21.8	48	12.1	14.3	22.7	16	4	.0331	●	●
M 16	x	1.5	102	24.8	48	14	16.3	25.8	18	4	.0359	●	●

Thread Depth	**2 x D**	

Tool Identification												GF332101	GF332106
Nominal Size ø D		P mm	l_1	l_2	l_3	ø d_1	ø d_S	l_S	ø d_2	Flutes	Dimens. ID	GSF-VHM 2xD R30-IKZ-HB	GSF-VHM 2xD R30-IKZ-HB TICN
						mm							
M 6	x	0.75	62	12.4	36	5	6.3	13	8	3	.0229	●	●
M 8	x	1	74	16.5	40	6.7	8.3	17.2	10	3	.0251	●	●
M 10	x	1	80	20.5	45	8.7	10.3	21.2	12	3	.0276	●	●
M 10	x	1.25	80	20.7	45	8.4	10.3	21.5	12	3	.0277		
M 12	x	1	90	24.5	45	10.6	12.3	25.3	14	4	.0301	●	●
M 12	x	1.25	90	24.4	45	10.4	12.3	25.2	14	4	.0302		
M 12	x	1.5	90	24.8	45	10.1	12.3	25.7	14	4	.0303	●	●
M 14	x	1.5	100	29.3	48	12.1	14.3	30.2	16	4	.0331	●	●
M 16	x	1.5	102	32.3	48	14	16.3	33.3	18	4	.0359	●	●

Other sizes upon request

Metric Shank



Carbide

R15

RH + LH

4-5 Flutes

DIN 6535
HB
HE
HA

90°

ø D

With increased number of flutes

MF

ISO Metric Fine Thread
DIN 13

Coating	TICN
Applications – Material	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2
Thread Depth	**2 x D**

Tool Identification												GF335126
Nominal Size ø D	P mm	mm l_1	l_2	l_3	ø d_1	ø d_S	l_S	ø d_2	Flutes	Dimens. ID		GSF-Z-VHM 2xD R15-IKZ-HB TICN
M 8	x 1	74	16.5	40	6.7	8.3	17.2	10	4	.0251		●
M 10	x 1	80	20.5	45	8.7	10.3	21.2	12	5	.0276		●
M 12	x 1.25	90	24.4	45	10.4	12.3	25.2	14	5	.0302		●

Other sizes upon request

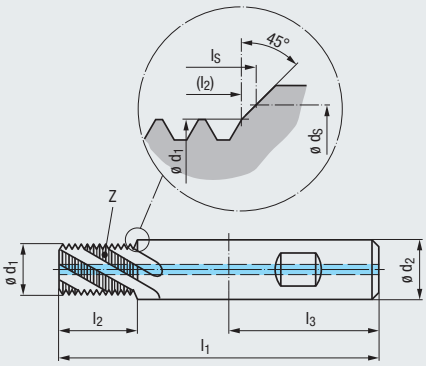
Need programming assistance?

EMUGE's trained thread milling specialist can assist you with advice and guidance in writing the correct program for your CNC machine tool. Thread milling experts will analyze your exact application and help guide you through the proper line code programming.

Contact EMUGE Technical Support department or visit **www.emuge.com**

● = In stock
★ = Allow 7 days for delivery

Metric Shank



Carbide

R30

RH + LH

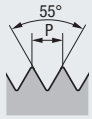
3-4 Flutes

DIN 6535
HB
HE
HA

90°

ø D

G



Whitworth Pipe Thread
DIN EN ISO 228

Coating		TICN
Applications – Material	P 1.1-3.1 K 1.1-4.2 N 1.1-5 N 2.1-6 N 3.1-4.2, 5.2 S 1.1-2	P 1.1-3.1 M 1.1-2.1 K 1.1-4.2 N 1.1-2.7 N 3.1-5.2 S 1.1-2, 2.1
Thread Depth	**1.5 x D**	

Tool Identification												GF322101	GF322106
Nominal Size ø D	T.P.I.	inch l_1	l_2	l_3	ø d_1	ø d_S	l_S	ø d_2 inch	ø d_2 mm	Flutes	Dimens. ID	GSF-VHM 1.5xD R30-IKZ-HB	GSF-VHM 1.5xD R30-IKZ-HB TICN
G 1/8	28	3.150	0.591	1.772	0.323	0.394	0.618	0.472	12	3	.4035	●	●
G 1/4	19	3.937	0.815	1.890	0.433	0.531	0.858	0.630	16	4	.4036	●	●
G 3/8	19	4.016	1.028	1.890	0.571	0.669	1.071	0.709	18	4	.4037	●	●

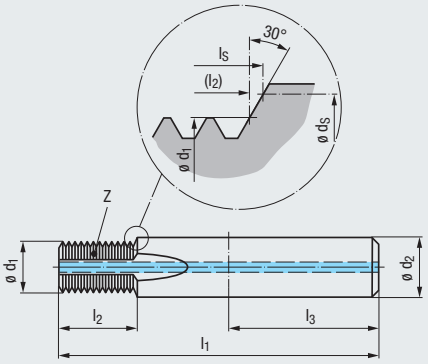
Thread Depth	**2 x D**	

Tool Identification												GF332101	GF332106
Nominal Size ø D	T.P.I.	inch l_1	l_2	l_3	ø d_1	ø d_S	l_S	ø d_2 inch	ø d_2 mm	Flutes	Dimens. ID	GSF-VHM 2xD R30-IKZ-HB	GSF-VHM 2xD R30-IKZ-HB TICN
G 1/8	28	3.150	0.803	1.772	0.323	0.394	0.835	0.472	12	3	.4035	●	●
G 1/4	19	3.937	1.079	1.890	0.433	0.531	1.122	0.630	16	4	.4036	●	●
G 3/8	19	4.016	1.343	1.890	0.571	0.669	1.386	0.709	18	4	.4037	●	●

Other sizes upon request

Ordering Example: **GF322101.4035**

Metric Shank



Carbide

RH + LH

3-4 Flutes

DIN 6535
HB
HE
HA

120°

ø D

LK-M

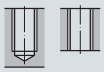
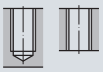
BT

Metric SELF-LOCK Coarse Thread
EMUGE Standard

Coating		TICN
Applications – Material	P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6 N 3.1-2 N 4.1-2, 5.2 S 1.1-3	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2
Thread Depth	2 x D	

Tool Identification											GF333101	GF333106
Nominal Size ø D	P mm	l_1	l_2	l_3	ø d_1	ø d_S	l_S	ø d_2	Flutes	Dimens. ID	GSF-VHM 2xD IKZ-HB	GSF-VHM 2xD IKZ-HB TICN
					mm							
LK-M 5	0.8	55	10.7	36	4	5.3	11.1	6	3	.1050	●	●
LK-M 6	1	62	12.4	36	4.8	6.3	12.8	8	3	.1052	●	●
LK-M 8	1.25	74	16.7	40	6.5	8.3	17.3	10	3	.1054	●	●
LK-M 10	1.5	80	20.1	45	8.2	10.3	20.7	12	3	.1056	●	●
LK-M 12	1.75	90	25.2	45	9.9	12.3	25.9	14	4	.1058	●	●

Other sizes upon request

Right-Hand Spiral Flutes **GFI**	Straight Flutes **GF**	Right-Hand Spiral Flutes **GF**	Right-Hand Spiral Flutes, Long Design **GF**
			
Inch Shank	Metric Shank	Metric Shank	Metric Shank

	Page					
UNC	264					
UNF	265					
UN		266		267		
M	270	271	274	272		273
MF		271	274	272		273
G (BSP), Rp (BSPP), W		279	279	280	280	
NPSF				282		
LK-M, LK-MF		283				

Possible modifications

Face chamfer with/without cutting face

Remove incomplete thread

Recessed neck

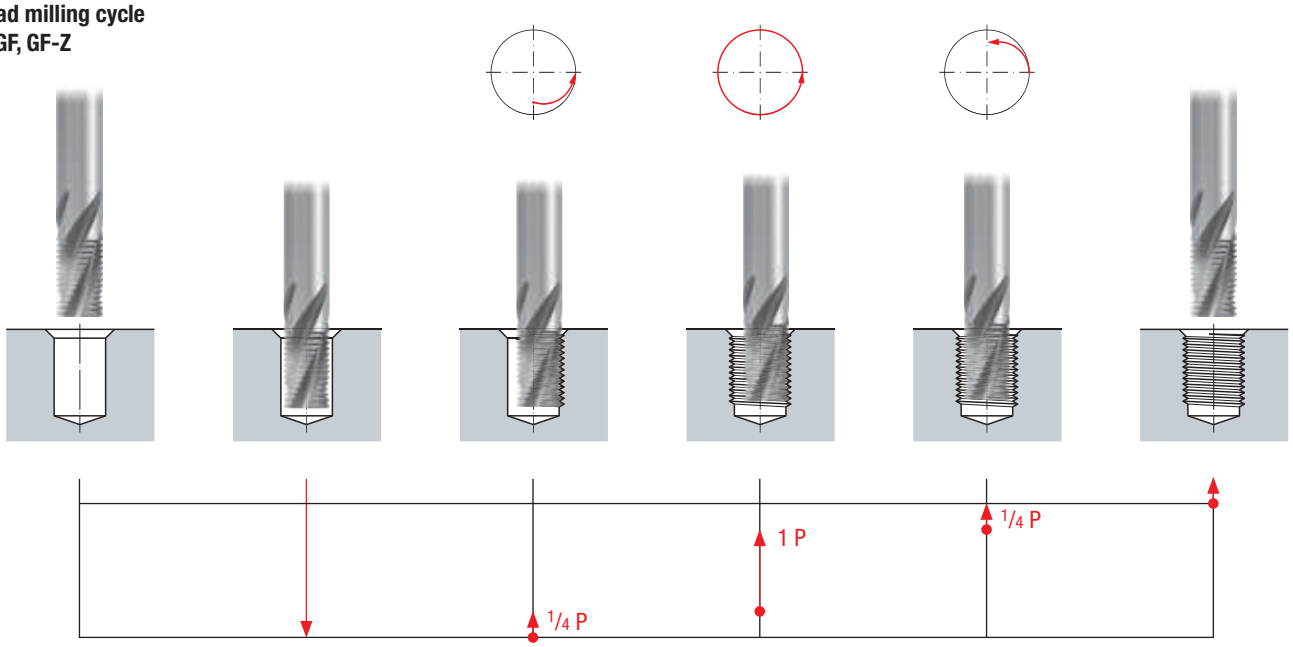
AZR/AZ (alternating teeth)

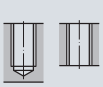
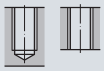
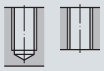
IKZN (internal coolant supply exiting in the flutes)

Coolant grooves along the shank

For a description of these modifications, see page 357

Thread milling cycle
GFI, GF, GF-Z



Right-Hand Spiral Flutes **GF-Z**		Right-Hand Spiral Flutes **GF-Vario-Z**	For Hard Materials **GF-H**	
				
Metric Shank		Metric Shank	Metric Shank	
Page				
		268		UNC
		269		UNF
		268, 269		UN
275		276	278	M
275		276, 277		MF
281	281			G (BSP), Rp (BSPP), W
				NPSF
				LK-M, LK-MF

Possible modifications

Face chamfer with/without cutting face

Remove incomplete thread

Recessed neck

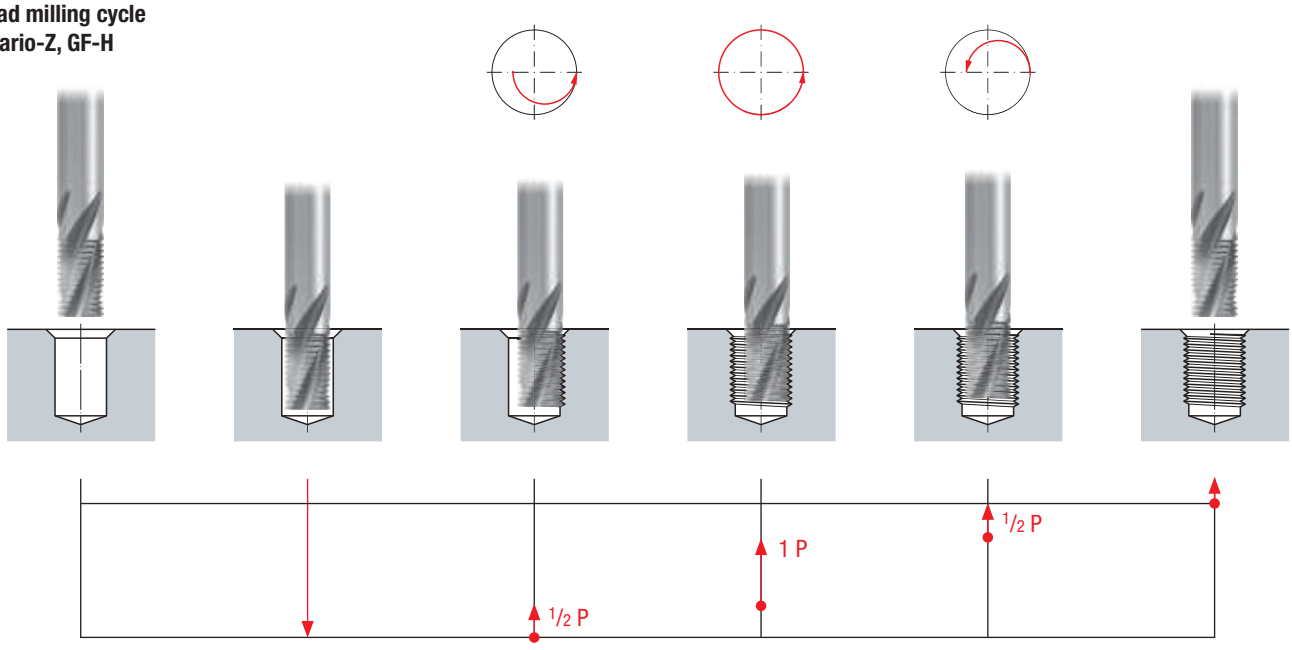
AZR/AZ (alternating teeth)

IKZN (internal coolant supply exiting in the flutes)

Coolant grooves along the shank

For a description of these modifications, see page 357

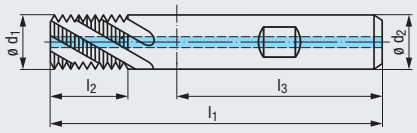
Thread milling cycle
GF-Vario-Z, GF-H

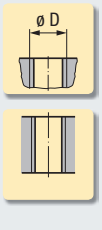


Inch Shank

Carbide | R15 | RH + LH | 3-4 Flutes | ASME B94.19

For internal threads





Without internal coolant supply (IKZ)

With internal coolant supply (IKZ)

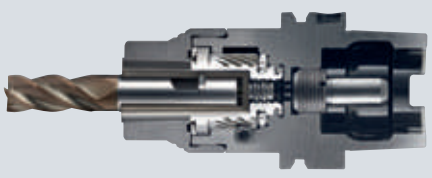
UNC

Unified Coarse Thread
ASME B1.1

	Without internal coolant supply (IKZ)	With internal coolant supply (IKZ)
Coating	TICN	TICN
Applications – Material	P 1.1-5.1, M 1.1-4.1, K 1.1-4.2, N 1.1-5.2, S 1.1-2.6, H 1.1-2	P 1.1-5.1, M 1.1-4.1, K 1.1-4.2, N 1.1-5.2, S 1.1-2.6, H 1.1-2

Nominal Size ø D	T.P.I.	ø d_1	l_1	inch l_2	l_3	ø d_2	Flutes	GFI-VHM R15-HB TICN		GFI-VHM R15-IKZ-HB TICN	
No. 10	24	0.136	2 1/2	0.395	1 3/8	1/4	3	GFR15106.5007	●	GFR35106.5007	●
1/4	20	0.185	2 1/2	0.524	1 3/8	1/4	3	GFR15106.5009	●	GFR35106.5009	●
5/16	18	0.242	2 1/2	0.637	1 3/8	1/4	3	GFR15106.5010	●	GFR35106.5010	●
3/8	16	0.301	2 1/2	0.780	1 3/8	5/16	3	GFR15106.5011	●	GFR35106.5011	●
7/16	14	0.354	3	0.891	1 9/16	3/8	3	GFR15106.5012	●	GFR35106.5012	●
1/2	13	0.371	3	1.036	1 9/16	3/8	3	GFR15106.5013	●	GFR35106.5013	●
5/8	11	0.496	3 3/4	1.316	1 25/32	1/2	4	GFR15106.5015	●	GFR35106.5015	●
3/4	10	0.621	4 1/4	1.548	1 29/32	5/8	4	GFR15106.5016	●	GFR35106.5016	●
7/8	9	0.621	4 1/4	1.829	1 29/32	5/8	4	GFR15106.5017	●	GFR35106.5017	●
1	8	0.746	4 3/4	2.058	2 1/32	3/4	4	GFR15106.5018	●	GFR35106.5018	●
1 1/8	8										

Tools for different thread pitch upon request



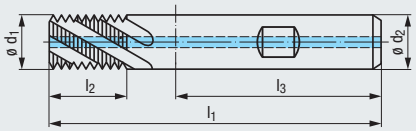
Improve the thread milling process by using a rigid tool holder.
The EMUGE FPC chuck provides the accuracy of a shrink-fit holder with the convenience of an hydraulic chuck.

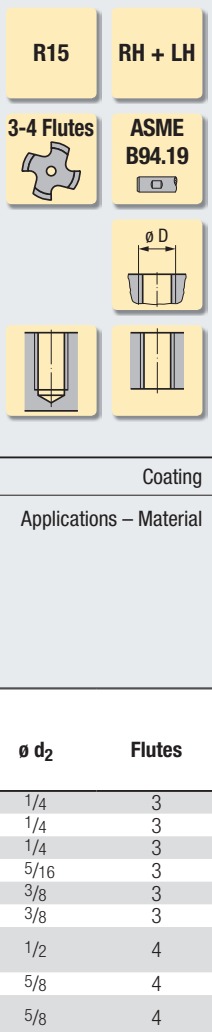
See page 338 - 349 for more information.

Inch Shank

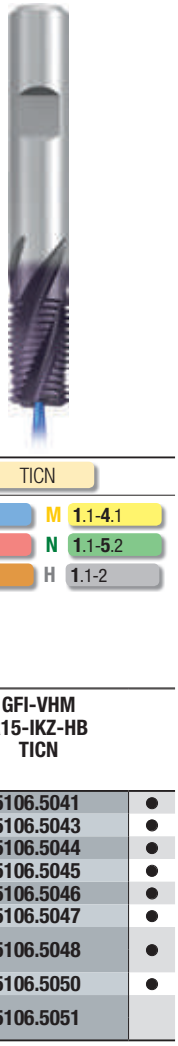
Carbide | R15 | RH + LH | 3-4 Flutes | ASME B94.19

For internal threads





Without internal coolant supply (IKZ)



With internal coolant supply (IKZ)

UNF

Unified Fine Thread
ASME B1.1

	Without internal coolant supply (IKZ)	With internal coolant supply (IKZ)
Coating	TICN	TICN
Applications – Material	P 1.1-5.1, M 1.1-4.1, K 1.1-4.2, N 1.1-5.2, S 1.1-2.6, H 1.1-2	P 1.1-5.1, M 1.1-4.1, K 1.1-4.2, N 1.1-5.2, S 1.1-2.6, H 1.1-2

Nominal Size ø D	T.P.I.	ø d_1	l_1	inch l_2	l_3	ø d_2	Flutes	GFI-VHM R15-HB TICN		GFI-VHM R15-IKZ-HB TICN	
No. 10	32	0.150	2 1/2	0.390	1 3/8	1/4	3	GFR15106.5041	●	GFR35106.5041	●
1/4	28	0.203	2 1/2	0.517	1 3/8	1/4	3	GFR15106.5043	●	GFR35106.5043	●
5/16	24	0.246	2 1/2	0.644	1 3/8	1/4	3	GFR15106.5044	●	GFR35106.5044	●
3/8	24	0.309	2 1/2	0.769	1 3/8	5/16	3	GFR15106.5045	●	GFR35106.5045	●
7/16	20	0.371	3	0.874	1 9/16	3/8	3	GFR15106.5046	●	GFR35106.5046	●
1/2	20	0.371	3	1.023	1 9/16	3/8	3	GFR15106.5047	●	GFR35106.5047	●
9/16 5/8	18 18	0.496	3 3/4	1.138	1 25/32	1/2	4			GFR35106.5048	●
3/4	16	0.621	4 1/4	1.530	1 29/32	5/8	4	GFR15106.5050	●	GFR35106.5050	●
7/8 1	14 14	0.621	4 1/4	1.817	1 29/32	5/8	4			GFR35106.5051	

Tools for different thread pitch upon request

● = In stock
★ = Allow 7 days for delivery

Metric Shank

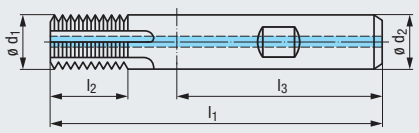
Carbide

RH + LH

4-5 Flutes

DIN 6535
HB
HE
HA

For internal threads



UN

Unified Threads
ASME B1.1

		TICN
Coating		
Applications – Material	P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6 N 3.1-2 N 4.1-2, 5.2 S 1.1-3	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2

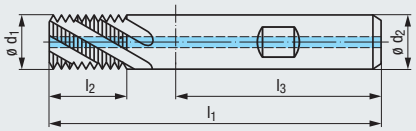
T.P.I.	ø $D_{min.}$	ø d_1	inch l_1	l_2	l_3	ø d_2 inch	ø d_2 mm	Flutes	GF-VHM IKZ-HB		GF-VHM IKZ-HB TICN	
24	1/2	0.390	2.756	0.642	1.575	0.394	10	4	**GF163211.9579**	●	**GF163216.9579**	●
20	1/2	0.390	2.756	0.673	1.575	0.394	10	4	**GF163211.9580**	●	**GF163216.9580**	●
20	11/16	0.469	3.150	0.823	1.772	0.472	12	4	**GF163121.9580**	●	**GF163126.9580**	●
20	7/8	0.626	3.543	1.020	1.890	0.630	16	5	**GF163131.9580**	●	**GF163136.9580**	●
20	1	0.783	4.134	1.272	1.969	0.787	20	5	**GF163151.9580**	●	**GF163156.9580**	●
18	1/2	0.390	2.756	0.689	1.575	0.394	10	4	**GF163211.9581**	●	**GF163216.9581**	●
16	1/2	0.390	2.756	0.654	1.575	0.394	10	4	**GF163211.9582**	●	**GF163216.9582**	●
16	11/16	0.469	3.150	0.839	1.772	0.472	12	4	**GF163121.9582**	●	**GF163126.9582**	●
16	7/8	0.626	3.543	1.031	1.890	0.630	16	5	**GF163131.9582**	●	**GF163136.9582**	●
16	1	0.783	4.134	1.276	1.969	0.787	20	5	**GF163151.9582**	●	**GF163156.9582**	●
14	7/8	0.626	3.543	1.031	1.890	0.630	16	5	**GF163131.9583**	●	**GF163136.9583**	●
12	11/16	0.469	3.150	0.870	1.772	0.472	12	4	**GF163121.9585**	●	**GF163126.9585**	●
12	7/8	0.626	3.543	1.035	1.890	0.630	16	5	**GF163131.9585**	●	**GF163136.9585**	●
12	1	0.783	4.134	1.287	1.969	0.787	20	5	**GF163151.9585**	●	**GF163156.9585**	●
10	11/16	0.469	3.150	0.843	1.772	0.472	12	4	**GF163121.9587**	●	**GF163126.9587**	●
9	11/16	0.469	3.150	0.827	1.772	0.472	12	4	**GF163121.9588**	●	**GF163126.9588**	●
8	7/8	0.626	3.543	1.055	1.890	0.630	16	5	**GF163131.9589**	●	**GF163136.9589**	●
8	1	0.783	4.134	1.307	1.969	0.787	20	5	**GF163151.9589**	●	**GF163156.9589**	●
6	1	0.783	4.134	1.409	1.969	0.787	20	5	**GF163151.9591**	●	**GF163156.9591**	●

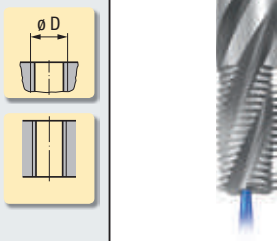
Tools for different thread pitch upon request

Metric Shank

Carbide | R30 | RH + LH | 4-5 Flutes | DIN 6535 HB HE HA

For internal threads





UN

Unified Threads
ASME B1.1

		TICN
Coating		
Applications – Material	P 1.1-3.1 K 1.1-4.2 N 1.1-5 N 2.1-6 N 3.1-4.2, 5.2 S 1.1-2	P 1.1-3.1 M 1.1-2.1 K 1.1-4.2 N 1.1-2.7 N 3.1-5.2 S 1.1-2, 2.1

T.P.I.	ø $D_{min.}$	ø d_1	inch l_1	l_2	l_3	ø d_2 inch	ø d_2 mm	Flutes	GF-VHM R30-lg-IKZ-HB		GF-VHM R30-lg-IKZ-HB TICN	
24	1/2	0.390	3.150	0.811	1.575	0.394	10	4	GF162311.9579	●	GF162316.9579	●
20	1/2	0.390	3.150	0.823	1.575	0.394	10	4	GF162311.9580	●	GF162316.9580	●
20	11/16	0.469	3.543	1.024	1.772	0.472	12	4	GF162321.9580	●	GF162326.9580	●
20	7/8	0.626	3.937	1.272	1.890	0.630	16	5	GF162331.9580	●	GF162336.9580	●
20	1	0.783	4.528	1.622	1.969	0.787	20	5	GF162351.9580	●	GF162356.9580	●
18	1/2	0.390	3.150	0.803	1.575	0.394	10	4	GF162311.9581	●	GF162316.9581	●
16	1/2	0.390	3.150	0.839	1.575	0.394	10	4	GF162311.9582	●	GF162316.9582	●
16	11/16	0.469	3.543	1.028	1.772	0.472	12	4	GF162321.9582	●	GF162326.9582	●
16	7/8	0.626	3.937	1.276	1.890	0.630	16	5	GF162331.9582	●	GF162336.9582	●
16	1	0.783	4.528	1.591	1.969	0.787	20	5	GF162351.9582	●	GF162356.9582	●
14	7/8	0.626	3.937	1.315	1.890	0.630	16	5	GF162331.9583	●	GF162336.9583	●
12	11/16	0.469	3.543	1.035	1.772	0.472	12	4	GF162321.9585	●	GF162326.9585	●
12	7/8	0.626	3.937	1.287	1.890	0.630	16	5	GF162331.9585	●	GF162336.9585	●
12	1	0.783	4.528	1.618	1.969	0.787	20	5	GF162351.9585	●	GF162356.9585	●
10	11/16	0.469	3.543	1.043	1.772	0.472	12	4	GF162321.9587	●	GF162326.9587	●
9	11/16	0.469	3.543	1.047	1.772	0.472	12	4	GF162321.9588	●	GF162326.9588	●
8	7/8	0.626	3.937	1.303	1.890	0.630	16	5	GF162331.9589	●	GF162336.9589	●
8	1	0.783	4.528	1.681	1.969	0.787	20	5	GF162351.9589	●	GF162356.9589	●
6	1	0.783	4.528	1.744	1.969	0.787	20	5	GF162351.9591	●	GF162356.9591	●

Tools for different thread pitch upon request

Metric Shank

Carbide

R15

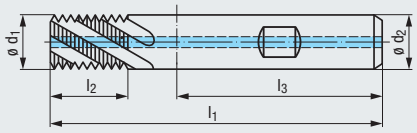
RH + LH

4-6 Flutes

DIN 6535
HB
HE
HA

ø D

For internal threads



new

With increased number of flutes

UNC, UN

Unified Coarse Threads
ASME B1.1

Coating: TICN

Applications – Material

P	1.1-5.1	M	1.1-4.1
K	1.1-4.2	N	1.1-5.2
S	1.1-2.6	H	1.1-2

T.P.I.	ø $D_{min.}$	inch ø d_1	inch l_1	inch l_2	inch l_3	ø d_2 inch	ø d_2 mm	Flutes	GF-VZ-VHM R15-IKZ-HB TICN	
24	≥ No. 10	0.146	2.165	0.394	1.417	0.236	6	4	**GFB35106.5007**	●
20	≥ 1/4	0.195	2.283	0.524	1.417	0.236	6	4	**GFB35106.5009**	●
18	≥ 5/16	0.248	2.441	0.638	1.417	0.315	8	4	**GFB35106.5010**	●
16	≥ 3/8	0.301	2.559	0.780	1.417	0.315	8	5	**GFB35106.5011**	●
14	≥ 7/16	0.354	2.913	0.890	1.575	0.394	10	5	**GFB35106.5012**	●
13	≥ 1/2	0.409	3.150	1.035	1.772	0.472	12	5	**GFB35106.5013**	●
12	≥ 9/16	0.465	3.346	1.205	1.772	0.472	12	5	**GFB35106.5014**	●
11	≥ 5/8	0.512	3.543	1.315	1.772	0.551	14	5	**GFB35106.5015**	●
10	≥ 3/4	0.626	3.937	1.547	1.890	0.630	16	5	**GFB35106.5016**	●
9	≥ 7/8	0.744	4.331	1.831	1.969	0.787	20	6	**GFB35106.5017**	●
8	≥ 1	0.850	4.921	2.059	2.205	0.984	25	6	**GFB35106.5018**	●

Tools for different thread pitch upon request

Metric Shank

Carbide

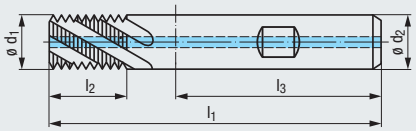
R15 | RH + LH

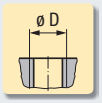
4-8 Flutes | DIN 6535 HB HE HA

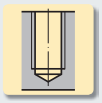
new

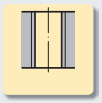
With increased number of flutes

For internal threads









UNF, UN

Unified Fine Threads
ASME B1.1

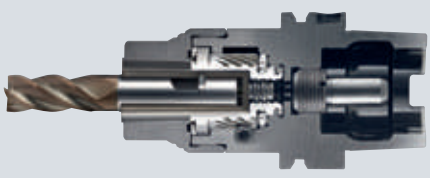
Coating: TICN

Applications – Material:

P	1.1-5.1	M	1.1-4.1
K	1.1-4.2	N	1.1-5.2
S	1.1-2.6	H	1.1-2

T.P.I.	ø $D_{min.}$	inch ø d_1	inch l_1	inch l_2	inch l_3	ø d_2 inch	ø d_2 mm	Flutes	GF-VZ-VHM R15-IKZ-HB TICN	
32	≥ No. 10	0.154	2.165	0.390	1.417	0.236	6	4	**GFB35106.5041**	●
28	≥ No. 12	0.175	2.283	0.445	1.417	0.236	6	4	**GFB35106.5042**	●
28	≥ 1/4	0.209	2.283	0.516	1.417	0.236	6	4	**GFB35106.5043**	●
24	≥ 5/16	0.260	2.441	0.646	1.417	0.315	8	5	**GFB35106.5044**	●
20	≥ 7/16	0.376	2.913	0.874	1.575	0.394	10	6	**GFB35106.5046**	●
18	≥ 9/16	0.492	3.346	1.138	1.772	0.551	14	7	**GFB35106.5048**	●
16	≥ 3/4	0.669	4.016	1.528	1.890	0.709	18	8	**GFB35106.5050**	●

Tools for different thread pitch upon request



Improve the thread milling process by using a rigid tool holder.
The EMUGE FPC chuck provides the accuracy of a shrink-fit holder with the convenience of an hydraulic chuck.

See page 338 - 349 for more information.

● = In stock
★ = Allow 7 days for delivery

Inch Shank

Carbide

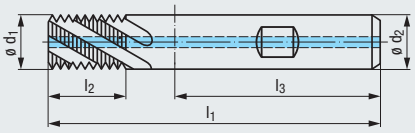
R15

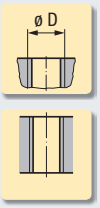
RH + LH

3 Flutes

ASME B94.19

For internal threads





Without internal coolant supply (IKZ)

M

ISO Metric Coarse Thread
DIN 13

Coating: TICN

Applications – Material:
P 1.1-5.1 M 1.1-4.1
K 1.1-4.2 N 1.1-5.2
S 1.1-2.6 H 1.1-2

Nominal Size ø D	P mm	ø d_1	l_1	inch l_2	l_3	ø d_2	Flutes	GFI-VHM R15-HB TICN	
M 6	1	0.189	2 1/2	0.491	1 3/8	1/4	3	GFR15106.0060	●
M 8	1.25	0.246	2 1/2	0.663	1 3/8	1/4	3	GFR15106.0080	●
M 10	1.5	0.309	2 1/2	0.796	1 3/8	5/16	3	GFR15106.0100	●
M 12	1.75	0.371	3	0.997	1 9/16	3/8	3	GFR15106.0112	●

Tools for different thread pitch upon request

Metric Shank

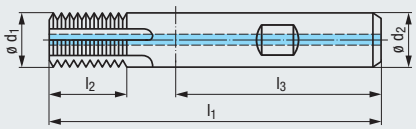
Carbide

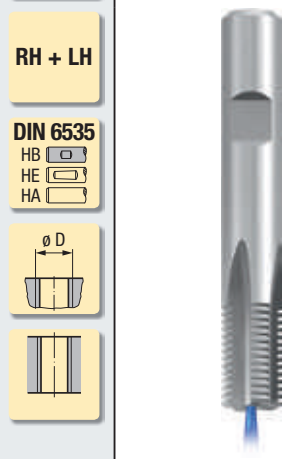
RH + LH

3-5 Flutes

DIN 6535 HB HE HA

For internal threads





M, MF

ISO Metric Thread
DIN 13

		TICN
Coating		
Applications – Material	P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6 N 3.1-2 N 4.1-2, 5.2 S 1.1-3	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2

P mm	ø $D_{min.}$	ø d_1	l_1	mm l_2	l_3	ø d_2	Flutes	GF-VHM IKZ-HB		GF-VHM IKZ-HB TICN	
0.5	10	7.9	63	12.2	36	8	3	**GF163101.9506**	●	**GF163106.9506**	●
0.5	12	9.9	70	16.2	40	10	4	**GF163211.9506**	●	**GF163216.9506**	●
0.75	11	7.9	63	12.3	36	8	3	**GF163101.9509**	●	**GF163106.9509**	●
0.75	13	9.9	70	16.8	40	10	4	**GF163211.9509**	●	**GF163216.9509**	●
1	14	9.9	70	16.4	40	10	4	**GF163211.9512**	●	**GF163216.9512**	●
1	16	11.9	80	20.4	45	12	4	**GF163121.9512**	●	**GF163126.9512**	●
1	22	15.9	90	25.4	48	16	5	**GF163131.9512**	●	**GF163136.9512**	●
1	27	19.9	105	32.4	50	20	5	**GF163151.9512**	●	**GF163156.9512**	●
1.5	14	9.9	70	17.1	40	10	4	**GF163211.9514**	●	**GF163216.9514**	●
1.5	16	11.9	80	21.6	45	12	4	**GF163121.9514**	●	**GF163126.9514**	●
1.5	22	15.9	90	26.1	48	16	5	**GF163131.9514**	●	**GF163136.9514**	●
1.5	27	19.9	105	33.6	50	20	5	**GF163151.9514**	●	**GF163156.9514**	●
2	18	11.9	80	20.9	45	12	4	**GF163121.9516**		**GF163126.9516**	
2	22	15.9	90	26.9	48	16	5	**GF163131.9516**	●	**GF163136.9516**	●
2	27	19.9	105	32.9	50	20	5	**GF163151.9516**	●	**GF163156.9516**	●
3	24	15.9	90	28.3	48	16	5	**GF163131.9518**	●	**GF163136.9518**	●
3	30	19.9	105	34.3	50	20	5	**GF163151.9518**	●	**GF163156.9518**	●

Tools for different thread pitch upon request

● = In stock
★ = Allow 7 days for delivery

Metric Shank

Carbide

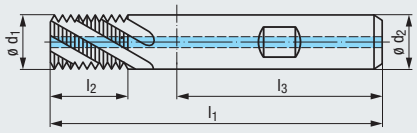
R30

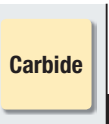
RH + LH

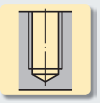
3-5 Flutes

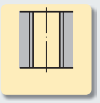
DIN 6535
HB
HE
HA

For internal threads









new

new

M, MF

ISO Metric Threads
DIN 13

		TICN
Coating		
Applications – Material	P 1.1-3.1 K 1.1-4.2 N 1.1-5 N 2.1-6 N 3.1-4.2, 5.2 S 1.1-2	P 1.1-3.1 M 1.1-2.1 K 1.1-4.2 N 1.1-2.7 N 3.1-5.2 S 1.1-2, 2.1

P mm	ø $D_{min.}$	ø d_1	l_1	mm l_2	l_3	ø d_2	Flutes	GF-VHM R30-IKZ-HB		GF-VHM R30-IKZ-HB TICN	
0.5	10	7.9	63	12.2	36	8	3	**GF162101.9506**	●	**GF162106.9506**	●
0.75	11	7.9	63	12.3	36	8	3	**GF162101.9509**	●	**GF162106.9509**	●
1	14	9.9	70	16.4	40	10	4	**GF162211.9512**	●	**GF162216.9512**	●
1	16	11.9	80	20.4	45	12	4	**GF162121.9512**	●	**GF162126.9512**	●
1	22	15.9	90	25.4	48	16	5	**GF162131.9512**	●	**GF162136.9512**	●
1	27	19.9	105	32.4	50	20	5	**GF162151.9512**	●	**GF162156.9512**	●
1.5	14	9.9	70	17.1	40	10	4	**GF162211.9514**	●	**GF162216.9514**	●
1.5	16	11.9	80	21.6	45	12	4	**GF162121.9514**	●	**GF162126.9514**	●
1.5	22	15.9	90	26.1	48	16	5	**GF162131.9514**	●	**GF162136.9514**	●
1.5	27	19.9	105	33.6	50	20	5	**GF162151.9514**	●	**GF162156.9514**	●
2	18	11.9	80	20.9	45	12	4	**GF162121.9516**	●	**GF162126.9516**	●
2	22	15.9	90	26.9	48	16	5	**GF162131.9516**	●	**GF162136.9516**	●
2	27	19.9	105	32.9	50	20	5	**GF162151.9516**	●	**GF162156.9516**	●
3	24	15.9	90	28.3	48	16	5	**GF162131.9518**	●	**GF162136.9518**	●
3	30	19.9	105	34.9	50	20	5	**GF162151.9518**	●	**GF162156.9518**	●

Tools for different thread pitch upon request

Ordering Example: **GF162101.9506**

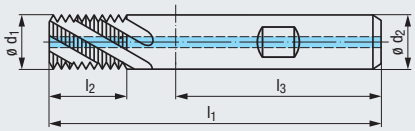
Metric Shank

Carbide

R30 | RH + LH

4-5 Flutes | DIN 6535 HB HE HA

For internal threads



M, MF

ISO Metric Threads
DIN 13

		TICN
Coating		
Applications – Material	P 1.1-3.1 K 1.1-4.2 N 1.1-5 N 2.1-6 N 3.1-4.2, 5.2 S 1.1-2	P 1.1-3.1 M 1.1-2.1 K 1.1-4.2 N 1.1-2.7 N 3.1-5.2 S 1.1-2, 2.1

P mm	ø $D_{min.}$	ø d_1	l_1	mm l_2	l_3	ø d_2	Flutes	GF-VHM R30-lg-IKZ-HB		GF-VHM R30-lg-IKZ-HB TICN	
1	14	9.9	80	20.4	40	10	4	GF162311.9512	●	GF162316.9512	●
1	16	11.9	90	25.4	45	12	4	GF162321.9512	●	GF162326.9512	●
1	22	15.9	100	32.4	48	16	5	GF162331.9512	●	GF162336.9512	●
1	27	19.9	115	40.4	50	20	5	GF162351.9512		GF162356.9512	
1.5	14	9.9	80	21.6	40	10	4	GF162311.9514	●	GF162316.9514	●
1.5	16	11.9	90	26.1	45	12	4	GF162321.9514	●	GF162326.9514	●
1.5	22	15.9	100	33.6	48	16	5	GF162331.9514	●	GF162336.9514	●
1.5	27	19.9	115	41.1	50	20	5	GF162351.9514	●	GF162356.9514	●
2	18	11.9	90	26.9	45	12	4	GF162321.9516	●	GF162326.9516	●
2	22	15.9	100	32.9	48	16	5	GF162331.9516	●	GF162336.9516	●
2	27	19.9	115	40.9	50	20	5	GF162351.9516	●	GF162356.9516	●
3	24	15.9	100	34.3	48	16	5	GF162331.9518	●	GF162336.9518	●
3	30	19.9	115	43.3	50	20	5	GF162351.9518	●	GF162356.9518	●

Tools for different thread pitch upon request

Metric Shank

Carbide

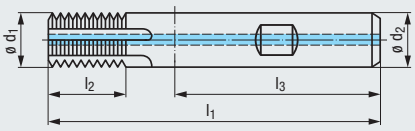
RH + LH

4-5 Flutes

DIN 6535
HB
HE
HA

ø D

For external threads



new

new

M, MF

ISO Metric Threads
DIN 13

Coating		TICN
Applications – Material	P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6 N 3.1-2 N 4.1-2, 5.2 S 1.1-3	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2

P mm	ø $D_{min.}$	ø d_1	l_1	mm l_2	l_3	ø d_2	Flutes	GF-VHM Ext.-IKZ-HB		GF-VHM Ext.-IKZ-HB TICN	
1	10	9.9	70	16.5	40	10	4	**GF161211.9512**	●	**GF161216.9512**	●
1	12	11.9	80	20.5	45	12	4	**GF161121.9512**	●	**GF161126.9512**	●
1.5	12	11.9	80	21.75	45	12	4	**GF161121.9514**	●	**GF161126.9514**	●
1.5	16	15.9	90	26.25	48	16	5	**GF161131.9514**	●	**GF161136.9514**	●
1.5	20	19.9	105	33.75	50	20	5	**GF161151.9514**	●	**GF161156.9514**	●
2	16	15.9	90	27	48	16	5	**GF161131.9516**	●	**GF161136.9516**	●
2	20	19.9	105	33	50	20	5	**GF161151.9516**	●	**GF161156.9516**	●
3	20	19.9	105	34.5	50	20	5	**GF161151.9518**	●	**GF161156.9518**	●

Tools for different thread pitch upon request

With right-hand spiral flutes upon request

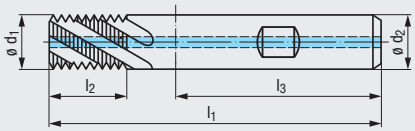
Metric Shank

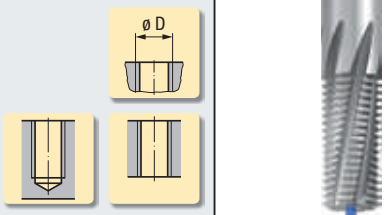
Carbide

R15 | RH + LH

6 Flutes | DIN 6535 HB HE HA

For internal threads





With increased number of flutes

M, MF

ISO Metric Threads
DIN 13

		TiCN
Coating		
Applications – Material	P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6 N 3.1-2 N 4.1-2, 5.2 S 1.1-3	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2

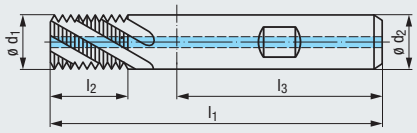
P mm	ø $D_{min.}$	ø d_1	l_1	mm l_2	l_3	ø d_2	Flutes	GF-Z-VHM R15-IKZ-HB		GF-Z-VHM R15-IKZ-HB TICN	
1	14	9.9	70	20.4	40	10	6	**GF165361.9512**	●	**GF165366.9512**	●
1.5	16	11.9	80	26.1	45	12	6	**GF165371.9514**	●	**GF165376.9514**	●
2	22	15.9	90	32.9	48	16	6	**GF165381.9516**	●	**GF165386.9516**	●
3	30	19.9	105	43.3	50	20	6	**GF165391.9518**	●	**GF165396.9518**	●

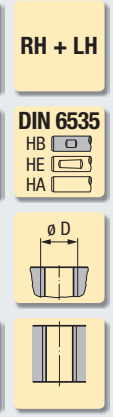
Tools for different thread pitch upon request

Metric Shank

Carbide | R15 | RH + LH | 4-6 Flutes | DIN 6535 HB HE HA

For internal threads





With increased number of flutes

M, MF

ISO Metric Threads
DIN 13

Coating		TICN
Applications – Material	P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6 N 3.1-2 N 4.1-2, 5.2 S 1.1-3	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2

P mm	ø D	ø d_1	l_1	mm l_2	l_3	ø d_2	Flutes	GF-VZ-VHM R15-IKZ-HB		GF-VZ-VHM R15-IKZ-HB TICN	
0.5	≥ M 3	2.4	51	6.2	36	6	4	**GFB35101.0030**	●	**GFB35106.0030**	●
0.7	≥ M 4	3.15	55	8.7	36	6	4	**GFB35101.0040**	●	**GFB35106.0040**	●
0.8	≥ M 5	4	55	10.8	36	6	4	**GFB35101.0050**	●	**GFB35106.0050**	●
1	≥ M 6	4.8	55	12.4	36	6	4	**GFB35101.0060**	●	**GFB35106.0060**	●
1.25	≥ M 8	6.5	63	16.8	36	8	4	**GFB35101.0080**	●	**GFB35106.0080**	●
1.5	≥ M10	8.2	70	21.7	40	10	5	**GFB35101.0100**	●	**GFB35106.0100**	●
1.75	≥ M12	9.9	74	25.3	40	10	5	**GFB35101.0112**	●	**GFB35106.0112**	●
2	≥ M14	11.6	85	28.9	45	12	5	**GFB35101.0114**	●	**GFB35106.0114**	●
2.5	≥ M18	15	100	38.6	48	16	5	**GFB35101.0118**	●	**GFB35106.0118**	●
3	≥ M24	19.9	115	49.4	50	20	6	**GFB35101.0124**	●	**GFB35106.0124**	●

Tools for different thread pitch upon request

Metric Shank

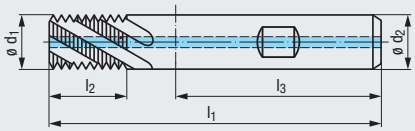
Carbide

R15 | RH + LH

4-5 Flutes | DIN 6535 HB HE HA

ø D

For internal threads



With increased number of flutes

MF

ISO Metric Fine Thread
DIN 13

		TICN
Coating		
Applications – Material	P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6 N 3.1-2 N 4.1-2, 5.2 S 1.1-3	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2

P mm	ø D	ø d_1	l_1	mm l_2	l_3	ø d_2	Flutes	GF-VZ-VHM R15-IKZ-HB		GF-VZ-VHM R15-IKZ-HB TICN	
1	≥ M 8	6.7	63	16.4	36	8	4	**GFB35101.0251**	●	**GFB35106.0251**	●
1	≥ M10	8.7	70	20.4	40	10	5	**GFB35101.0276**	●	**GFB35106.0276**	●
1.5	≥ M16	14.1	95	33.7	48	16	5	**GFB35101.0359**	●	**GFB35106.0359**	●

Tools for different thread pitch upon request

Metric Shank

Carbide

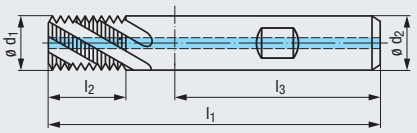
R10

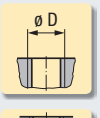
RH + LH

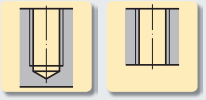
4-5 Flutes

DIN 6535
HB
HE
HA

For internal threads







For hard materials

Coating: TICN

Applications – Material: N 2.7-8 H 1.3-5

M

ISO Metric Coarse Thread
DIN 13

Nominal Size ø D	P mm	ø d_1	l_1	mm l_2	l_3	ø d_2	Flutes	GF-H-VHM R10-IKZ-HB TICN	
M 6	1	4.6	55	9.4	36	6	4	GF927126.0060	●
M 8	1.25	6.25	63	13.1	36	8	5	GF927126.0080	●
M 10	1.5	7.9	63	15.7	36	8	5	GF927126.0100	●
M 12	1.75	9.55	70	18.3	40	10	5	GF927126.0112	●
M 16	2	13.2	90	24.9	45	14	5	GF927126.0116	●
M 20	2.5	15.9	100	33.6	48	16	5	GF927126.0120	●

Tools for different thread pitch upon request

Metric Shank

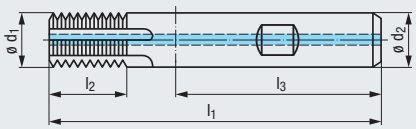
Carbide

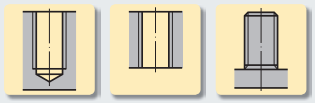
RH + LH

4-5 Flutes

DIN 6535 HB HE HA

For internal and external threads





G (BSP), Rp (BSPP), W

Whitworth Pipe Threads
DIN EN ISO 228, DIN EN 10226-1, ISO 7/1, BS 84

Coating		TICN
Applications – Material	P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6 N 3.1-2 N 4.1-2, 5.2 S 1.1-3	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2

T.P.I.	ø $D_{min.}$ [1]	inch ø d_1	inch l_1	inch l_2	inch l_3	ø d_2 inch	ø d_2 mm	Flutes	GF-VHM IKZ-HB		GF-VHM IKZ-HB TICN	
19	1/4	0.390	2.756	0.657	1.575	0.394	10	4	**GF163211.9545**	●	**GF163216.9545**	●
14	1/2	0.626	3.543	1.035	1.890	0.630	16	5	**GF163131.9548**	●	**GF163136.9548**	●
14	3/4	0.783	4.134	1.319	1.969	0.787	20	5	**GF163151.9548**		**GF163156.9548**	
11	1	0.626	3.543	1.043	1.890	0.630	16	5	**GF163131.9550**	●	**GF163136.9550**	●
11	1	0.783	4.134	1.319	1.969	0.787	20	5	**GF163151.9550**	●	**GF163156.9550**	●

[1] Diameter related to internal pipe thread resp. external pipe thread

Metric Shank

Carbide

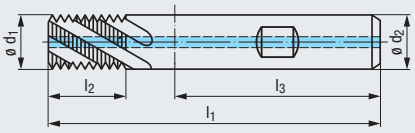
R30

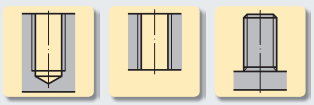
RH + LH

4-5 Flutes

DIN 6535
HB
HE
HA

For internal and external threads





G (BSP), Rp (BSPP), W

Whitworth Pipe Threads
DIN EN ISO 228, DIN EN 10226-1, ISO 7/1, BS 84

Coating		TICN
Applications – Material	P 1.1-3.1 K 1.1-4.2 N 1.1-5 N 2.1-6 N 3.1-4.2, 5.2 S 1.1-2	P 1.1-3.1 M 1.1-2.1 K 1.1-4.2 N 1.1-2.7 N 3.1-5.2 S 1.1-2, 2.1

T.P.I.	ø $D_{min.}$ [1]	ø d_1	inch l_1	inch l_2	inch l_3	ø d_2 inch	ø d_2 mm	Flutes	GF-VHM R30-IKZ-HB		GF-VHM R30-IKZ-HB TICN	
19	1/4	0.390	2.756	0.657	1.575	0.394	10	4	**GF162211.9545**	●	**GF162216.9545**	●
14	1/2	0.469	3.150	0.823	1.772	0.472	12	4	**GF162121.9548**	●	**GF162126.9548**	●
14	1/2	0.626	3.543	1.035	1.890	0.630	16	5	**GF162131.9548**	●	**GF162136.9548**	●
14	3/4	0.783	4.134	1.319	1.969	0.787	20	5	**GF162151.9548**		**GF162156.9548**	
11	1	0.626	3.543	1.043	1.890	0.630	16	5	**GF162131.9550**	●	**GF162136.9550**	●
11	1	0.783	4.134	1.319	1.969	0.787	20	5	**GF162151.9550**	●	**GF162156.9550**	●

[1] Diameter related to internal pipe thread resp. external pipe thread

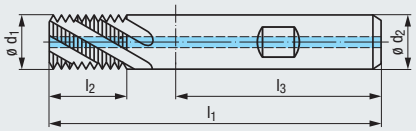
Metric Shank

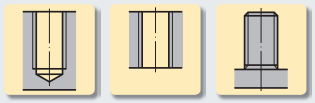
Carbide

R15 | RH + LH

5-8 Flutes | DIN 6535 HB HE HA

For internal and external threads





With increased number of flutes

new

new

G (BSP), Rp (BSPP), W

Whitworth Pipe Threads
DIN EN ISO 228, DIN EN 10226-1, ISO 7/1, BS 84

Coating		TICN
Applications – Material	P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6 N 3.1-2 N 4.1-2, 5.2 S 1.1-3	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2

T.P.I.	ø $D_{min.}$ [1)]	inch ø d_1	inch l_1	inch l_2	inch l_3	ø d_2 inch	ø d_2 mm	Flutes	GF-Z-VHM R15-IKZ-HB		GF-Z-VHM R15-IKZ-HB TICN	
19	1/4	0.390	2.756	0.815	1.575	0.394	10	6	**GF165361.9545**	●	**GF165366.9545**	●
14	1/2	0.469	3.150	1.035	1.772	0.472	12	5	**GF165371.9548**	●	**GF165376.9548**	●
14	1/2	0.626	3.543	1.323	1.890	0.630	16	6	**GF165381.9548**	●	**GF165386.9548**	●
14	3/4	0.783	4.134	1.606	1.969	0.787	20	8	**GF165391.9548**	★	**GF165396.9548**	★
11	1	0.626	3.543	1.319	1.890	0.630	16	5	**GF165381.9550**	●	**GF165386.9550**	●
11	1	0.783	4.134	1.681	1.969	0.787	20	6	**GF165391.9550**	●	**GF165396.9550**	●

Tools for different thread pitch upon request

● = In stock
★ = Allow 7 days for delivery

Metric Shank

Carbide

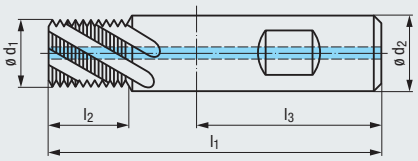
R30

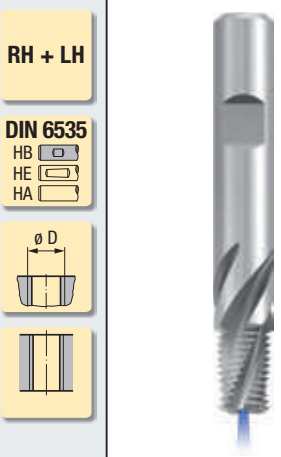
RH + LH

3-5 Flutes

DIN 6535
HB
HE
HA

For internal threads





NPSF

American Standard Straight Pipe Thread
ANSI B1.20.3

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

		TICN
Coating		
Applications – Material	P 1.1-3.1 K 1.1-4.2 N 1.1-5 N 2.1-6 N 3.1-4.2, 5.2 S 1.1-2	P 1.1-3.1 M 1.1-2.1 K 1.1-4.2 N 1.1-2.7 N 3.1-5.2 S 1.1-2, 2.1

Nominal Size ø D	T.P.I.	inch ø d_1	l_1	l_2	l_3	ø d_2 inch	ø d_2 mm	Flutes	GF-VHM R30-IKZ-HB		GF-VHM R30-IKZ-HB TICN	
1/16	27	0.232	2.480	0.424	1.417	0.315	8	3	GF172101.5904		GF172106.5904	
1/8	27	0.301	2.480	0.424	1.417	0.315	8	3	GF172101.5905	●	GF172106.5905	●
1/4	18	0.400	3.150	0.637	1.772	0.472	12	4	GF172111.5906	●	GF172116.5906	●
3/8	18	0.439	3.150	0.636	1.772	0.472	12	4	GF172111.5907	●	GF172116.5907	●
1/2	14	0.561	3.543	0.819	1.890	0.630	16	4	GF172131.5908	●	GF172136.5908	●
3/4	14	0.561	3.543	0.819	1.890	0.630	16	4	GF172131.5909		GF172136.5909	
1	11 1/2	0.772	4.134	1.000	1.969	0.787	20	5	GF172151.5910		GF172156.5910	

NPSF cutters are manufactured with a corrected profile

Metric Shank

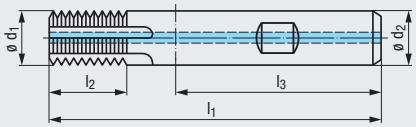
Carbide

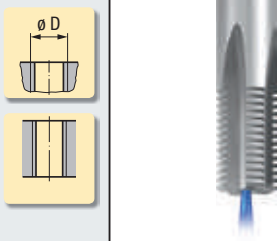
RH + LH

4-5 Flutes

DIN 6535
HB
HE
HA

For internal threads





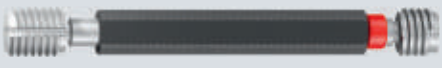
LK-M
LK-MF

Metric SELF-LOCK Thread
EMUGE Standard

BT

								Coating		TICN	
								Applications – Material			
								P 1.1-5.1 K 1.1-4.2		P 1.1-5.1 M 1.1-4.1	
								N 1.1-5, 2.1-6 N 3.1-2		K 1.1-4.2 N 1.1-5.2	
								N 4.1-2, 5.2 S 1.1-3		S 1.1-2.6 H 1.1-2	
P mm	ø $D_{min.}$	ø d_1	l_1	mm l_2	l_3	ø d_2	Flutes	GF-VHM IKZ-HB		GF-VHM IKZ-HB TICN	
1	14	9.9	70	16.4	40	10	4	GF163211.9757	●	GF163216.9757	●
1	16	11.9	80	20.4	45	12	4	GF163121.9757	●	GF163126.9757	●
1.5	14	9.9	70	17	40	10	4	GF163211.9664	●	GF163216.9664	●
1.5	16	11.9	80	21.5	45	12	4	GF163121.9664	●	GF163126.9664	●
2	22	15.9	90	26.7	48	16	5	GF163131.9705	●	GF163136.9705	●
3	30	19.9	105	34.1	50	20	5	GF163151.9767	●	GF163156.9767	●

Tools for different thread pitch upon request



Gages for Metric SELF-LOCK Coarse Thread, see page 457

● = In stock
★ = Allow 7 days for delivery

Product Finder
v_c / f_z
UNC
UNF
UN
M
MF
NPSF
Rp (BSPP)
G
W
BSW, BSF
NPT
NPTF
Rc (BSPT)
STI
SELF-LOCK
Accessories
Tech. Info
BGF
ZBGF
GSF (Aero)
GSF-Z
GF(I), GF-Z
GF-Vario-Z
GF-H
GF(I)-KEG
ZGF(I)
CIRC-GF
Gigant
FPC, FMC
MoSys

Straight Flutes **GFI-KEG** **GFI-KEG-ECO**	Left-Hand Spiral Flutes **GFI-KEG**	Straight Flutes **GF-KEG**		Right-Hand Spiral Flutes, Long Design **GF-KEG**		
Inch Shank	Inch Shank	Metric Shank	Metric Shank	Metric Shank	Metric Shank	
Page						
286, 287	292	288	289	290	291	**NPT** (API-LP)
		293	294	295	296	**NPTF**
		297	298			**Rc** (BSPT)

Possible modifications

Face chamfer with/without cutting face

Remove incomplete thread

Recessed neck

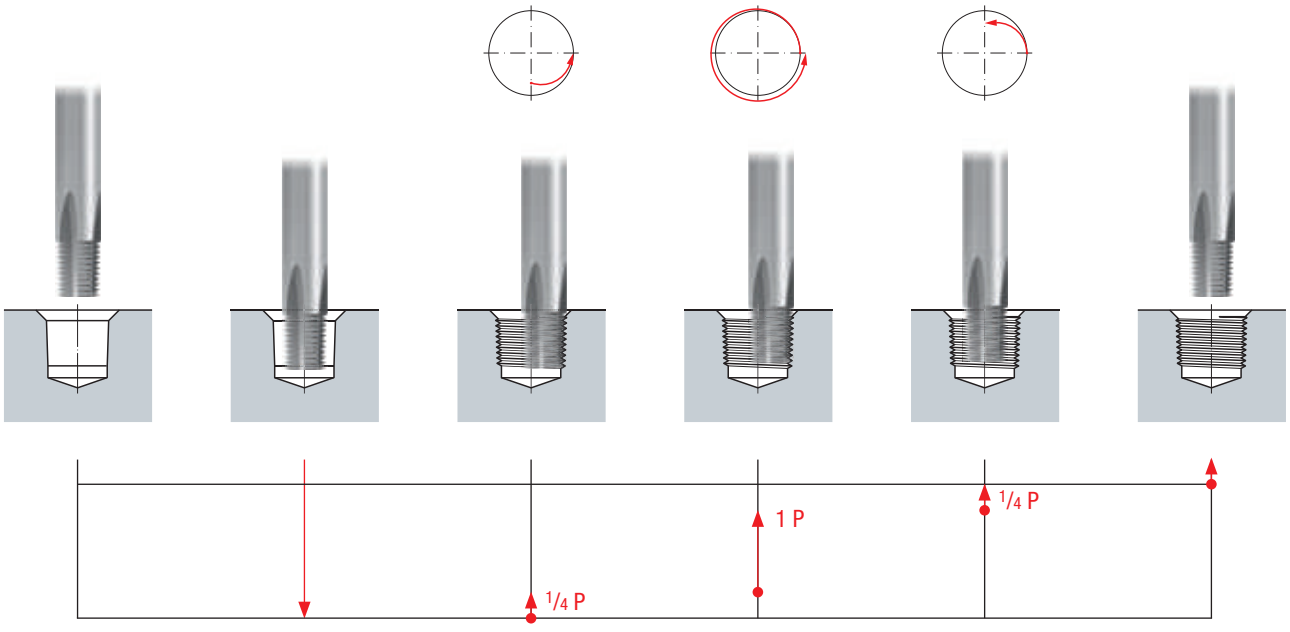
AZR/AZ (alternating teeth)

IKZN (internal coolant supply exiting in the flutes)

Coolant grooves along the shank

For a description of these modifications, see page 357

Thread milling cycle



Inch Shank

Carbide

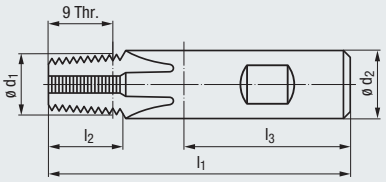
RH + LH

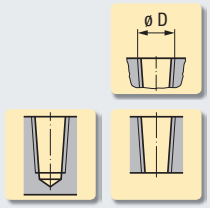
3-5 Flutes

ASME B94.19

Without internal coolant supply (IKZ)

For internal tapered threads





NPT

American Tapered Pipe Thread, ANSI/ASME B1.20.1

For threads **with dryseal material**, taper 1:16

Coating: TICN

Applications – Material

P	1.1-5.1	M	1.1-4.1
K	1.1-4.2	N	1.1-5.2
S	1.1-2.6	H	1.1-2

Nominal Size ø D	T.P.I.	l_1	l_2	inch l_3	ø d_1	ø d_2	Flutes	GFI-KEG-VHM HB TICN	
1/16	27	2 1/4	0.388	1 3/8	0.232	5/16	3	GFT53106.5763	●
1/8	27	2 1/4	0.388	1 3/8	0.301	5/16	3	GFT53106.5764	●
1/4	18	3 1/4	0.582	1 25/32	0.400	1/2	4	GFT53116.5765	●
3/8	18	3 1/4	0.582	1 25/32	0.439	1/2	4	GFT53116.5766	●
1/2	14	3 1/2	0.749	1 29/32	0.561	5/8	4	GFT53136.9678	●
3/4	14								
1	11 1/2	3 3/4	0.913	2 1/32	0.772	3/4	5	GFT53156.9679	●
1 1/4	11 1/2								
1 1/2	11 1/2								
2	11 1/2								

NPT cutters are manufactured with a corrected profile

Application recommendation: You must have an NC program for a spiral formed helix to prevent a profile step

Inch Shank

The ECO design is perfect for short run manufacturers looking for economical tooling solution without sacrificing quality

Carbide

RH + LH

3-4 Flutes

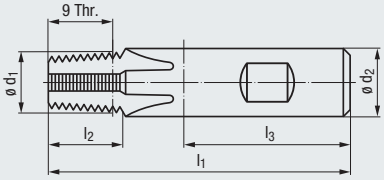
ASME B94.19

ø D

new

Without internal coolant supply (IKZ)

For internal tapered threads



NPT

American Tapered Pipe Thread, ANSI/ASME B1.20.1

For threads **with dryseal material**, taper 1:16

Coating: TICN

Applications – Material: P 1.1-5.1, M 1.1-4.1, K 1.1-4.2, N 1.1-5.2, S 1.1-2.6, H 1.1-2

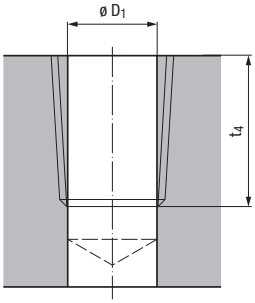
Nominal Size ø D	T.P.I.	inch l_1	l_2	l_3	ø d_1	ø d_2	Flutes	GFI-ECO-KEG-VHM HB TICN	
1/16	27	2 1/2	0.388	1 3/8	0.232	1/4	3	GFT53AA6.5763	●
1/8	27	2 1/2	0.388	1 3/8	0.246	1/4	3	GFT53AA6.5764	●
1/4	18	2 1/2	0.582	1 3/8	0.307	5/16	3	GFT53A06.9677	●
3/8	18								
1/2	14	3 1/2	0.748	1 25/32	0.488	1/2	4	GFT53A16.9678	●
3/4	14								
1	11 1/2	4	0.911	1 29/32	0.606	5/8	4	GFT53A36.9679	●
1 1/4	11 1/2								
1 1/2	11 1/2								
2	11 1/2								

NPT cutters are manufactured with a corrected profile

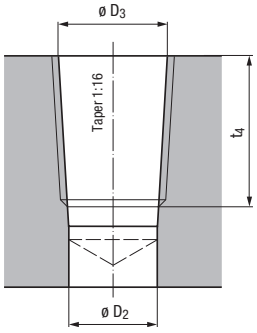
Application recommendation: You must have an NC program for a spiral formed helix to prevent a profile step

Thread Hole Preparatory Diameters for Tapered Pipe Thread NPT, Taper 1:16

A) Cylindrical preparation of thread hole



B) Tapered preparation of thread hole



Nominal size ø D	T.P.I.	inch ø D_1	ø D_2	ø D_3 (+0.002)	t_4
1/16	27	0.2421	0.2343	0.2516	0.3268
1/8	27	0.3346	0.3268	0.3441	0.3268
1/4	18	0.4331	0.4232	0.4472	0.4783
3/8	18	0.5669	0.5571	0.5827	0.4902
1/2	14	0.7008	0.6870	0.7213	0.6417
3/4	14	0.9114	0.8976	0.9319	0.6417
1	11 1/2	1.1437	1.1280	1.1689	0.7697
1 1/4	11 1/2	1.4882	1.4705	1.5138	0.7894
1 1/2	11 1/2	1.7264	1.7106	1.7528	0.7894
2	11 1/2	2.1988	2.1831	2.2268	0.8051

● = In stock
★ = Allow 7 days for delivery

Metric Shank

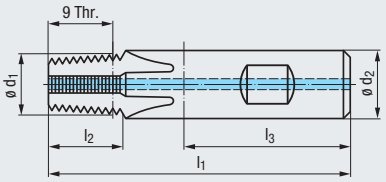
Carbide

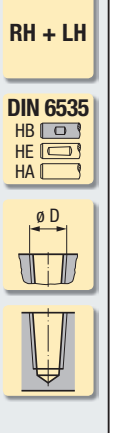
RH + LH

3-5 Flutes

DIN 6535
HB
HE
HA

For internal tapered threads





NPT

American Tapered Pipe Thread, ANSI/ASME B1.20.1

For threads **with dryseal material**, taper 1:16

Coating		TICN
Applications – Material	P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6 N 3.1-2 N 4.1-2, 5.2 S 1.1-3	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2

Nominal Size ø D	T.P.I.	inch l_1	l_2	l_3	ø d_1	ø d_2 inch	ø d_2 mm	Flutes	GF-KEG-VHM IKZ-HB		GF-KEG-VHM IKZ-HB TICN	
1/16	27	2.165	0.388	1.417	0.232	0.315	8	3	GF173101.5763	●	GF173106.5763	●
1/8	27	2.165	0.388	1.417	0.301	0.315	8	3	GF173101.5764	●	GF173106.5764	●
1/4	18	2.953	0.582	1.772	0.400	0.472	12	4	GF173111.5765	●	GF173116.5765	●
3/8	18	2.953	0.582	1.772	0.439	0.472	12	4	GF173111.5766	●	GF173116.5766	●
1/2	14	3.150	0.749	1.890	0.561	0.630	16	4	GF173131.9678	●	GF173136.9678	●
3/4	14											
1	11 1/2	3.543	0.911	1.969	0.772	0.787	20	5	GF173151.9679	●	GF173156.9679	●
1 1/4	11 1/2											
1 1/2	11 1/2											
2	11 1/2											

NPT cutters are manufactured with a corrected profile

Application recommendation: You must have an NC program for a spiral formed helix to prevent a profile step

Metric Shank

Carbide

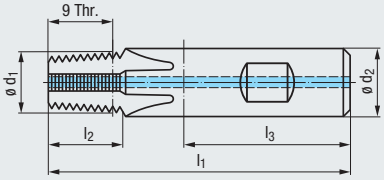
RH + LH

3-5 Flutes

DIN 6535 HB HE HA

ø D

For internal tapered threads



new

new

NPT

American Tapered Pipe Thread, ANSI/ASME B1.20.1

For threads **with dryseal material**, taper 1:16

Coating		TICN
Applications – Material	P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6 N 3.1-2 N 4.1-2, 5.2 S 1.1-3	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2

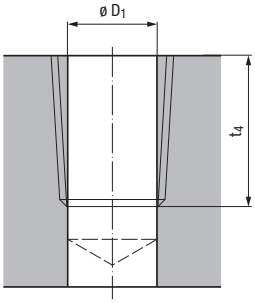
Nominal Size ø D	T.P.I.	inch l_1	l_2	l_3	ø d_1	ø d_2 inch	ø d_2 mm	Flutes	GF-KEG-VHM IKZN-HB		GF-KEG-VHM IKZN-HB TICN	
1/16	27	2.165	0.388	1.417	0.232	0.315	8	3	GF193101.5763	●	GF193106.5763	●
1/8	27	2.165	0.388	1.417	0.301	0.315	8	3	GF193101.5764	●	GF193106.5764	●
1/4	18	2.953	0.582	1.772	0.400	0.472	12	4	GF193111.5765	●	GF193116.5765	●
3/8	18	2.953	0.582	1.772	0.439	0.472	12	4	GF193111.5766	●	GF193116.5766	●
1/2	14	3.150	0.749	1.890	0.561	0.630	16	4	GF193131.9678	●	GF193136.9678	●
3/4	14											
1	11 1/2	3.543	0.911	1.969	0.772	0.787	20	5	GF193151.9679	●	GF193156.9679	●
1 1/4	11 1/2											
1 1/2	11 1/2											
2	11 1/2											

NPT cutters are manufactured with a corrected profile

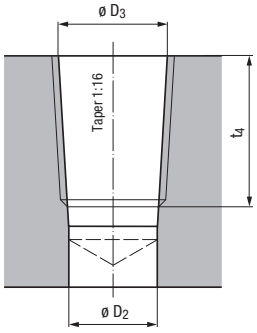
Application recommendation: You must have an NC program for a spiral formed helix to prevent a profile step

Thread Hole Preparatory Diameters for Tapered Pipe Thread NPT, Taper 1:16

A) Cylindrical preparation of thread hole



B) Tapered preparation of thread hole



Nominal size ø D	T.P.I.	inch ø D_1	ø D_2	ø D_3 (+0.002)	t_4
1/16	27	0.2421	0.2343	0.2516	0.3268
1/8	27	0.3346	0.3268	0.3441	0.3268
1/4	18	0.4331	0.4232	0.4472	0.4783
3/8	18	0.5669	0.5571	0.5827	0.4902
1/2	14	0.7008	0.6870	0.7213	0.6417
3/4	14	0.9114	0.8976	0.9319	0.6417
1	11 1/2	1.1437	1.1280	1.1689	0.7697
1 1/4	11 1/2	1.4882	1.4705	1.5138	0.7894
1 1/2	11 1/2	1.7264	1.7106	1.7528	0.7894
2	11 1/2	2.1988	2.1831	2.2268	0.8051

● = In stock
★ = Allow 7 days for delivery

Metric Shank

Carbide

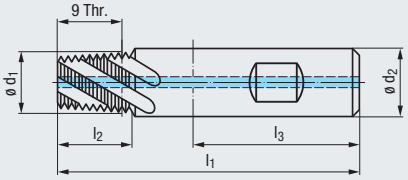
R15

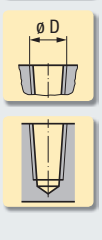
RH + LH

3-5 Flutes

DIN 6535 HB HE HA

For internal tapered threads





NPT (API-LP)

American Tapered Pipe Thread, ANSI/ASME B1.20.1

For threads **with dryseal material**, taper 1:16

Coating		TICN
Applications – Material	P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6 N 3.1-2 N 4.1-2, 5.2 S 1.1-3	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2

Nominal Size ø D	T.P.I.	inch l_1	l_2	l_3	ø d_1	ø d_2 inch	ø d_2 mm	Flutes	GF-KEG-VHM R15-lg-IKZ-HB		GF-KEG-VHM R15-lg-IKZ-HB TICN	
1/16	27	2.362	0.537	1.417	0.232	0.315	8	3	GF175301.5763	●	GF175306.5763	●
1/8	27	2.362	0.537	1.417	0.301	0.315	8	3	GF175301.5764	●	GF175306.5764	●
1/4	18	3.150	0.805	1.772	0.400	0.472	12	4	GF175311.5765	●	GF175316.5765	●
3/8	18	3.150	0.804	1.772	0.439	0.472	12	4	GF175311.5766	●	GF175316.5766	●
1/2	14	3.346	1.034	1.890	0.561	0.630	16	4	GF175331.9678	●	GF175336.9678	●
3/4	14											
1	11 1/2	3.740	1.259	1.969	0.772	0.787	20	5	GF175351.9679	●	GF175356.9679	●
1 1/4	11 1/2											
1 1/2	11 1/2											
2	11 1/2											

NPT/API-LP cutters are manufactured with a corrected profile

Application recommendation: You must have an NC program for a spiral formed helix to prevent a profile step

Metric Shank

Carbide

R15

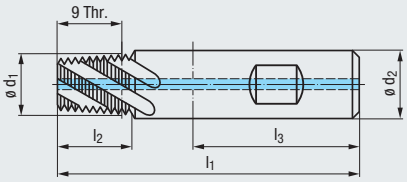
RH + LH

3-5 Flutes

DIN 6535 HB HE HA

ø D

For internal tapered threads



new

new

NPT (API-LP)

American Tapered Pipe Thread, ANSI/ASME B1.20.1

For threads **with dryseal material**, taper 1:16

		TICN
Coating		
Applications – Material	P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6 N 3.1-2 N 4.1-2, 5.2 S 1.1-3	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2

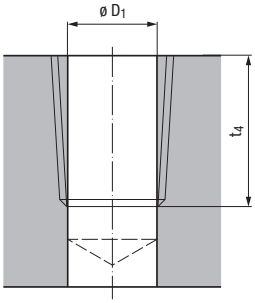
Nominal Size ø D	T.P.I.	inch l_1	l_2	l_3	ø d_1	ø d_2 inch	ø d_2 mm	Flutes	GF-KEG-VHM R15-lg-IKZN-HB		GF-KEG-VHM R15-lg-IKZN-HB TICN	
1/16	27	2.362	0.537	1.417	0.232	0.315	8	3	GF195301.5763	●	GF195306.5763	●
1/8	27	2.362	0.537	1.417	0.301	0.315	8	3	GF195301.5764	●	GF195306.5764	●
1/4	18	3.150	0.805	1.772	0.400	0.472	12	4	GF195311.5765	●	GF195316.5765	●
3/8	18	3.150	0.804	1.772	0.439	0.472	12	4	GF195311.5766	●	GF195316.5766	●
1/2	14	3.346	1.034	1.890	0.561	0.630	16	4	GF195331.9678	●	GF195336.9678	●
3/4	14											
1	11 1/2	3.740	1.259	1.969	0.772	0.787	20	5	GF195351.9679	●	GF195356.9679	●
1 1/4	11 1/2											
1 1/2	11 1/2											
2	11 1/2											

NPT/API-LP cutters are manufactured with a corrected profile

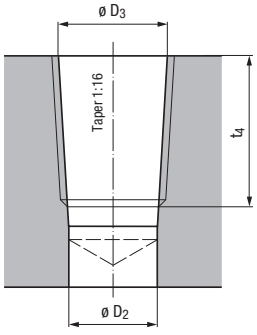
Application recommendation: You must have an NC program for a spiral formed helix to prevent a profile step

Thread Hole Preparatory Diameters for Tapered Pipe Thread NPT, Taper 1:16

A) Cylindrical preparation of thread hole



B) Tapered preparation of thread hole



Nominal size ø D	T.P.I.	inch ø D_1	ø D_2	ø D_3 (+0.002)	t_4
1/16	27	0.2421	0.2343	0.2516	0.3268
1/8	27	0.3346	0.3268	0.3441	0.3268
1/4	18	0.4331	0.4232	0.4472	0.4783
3/8	18	0.5669	0.5571	0.5827	0.4902
1/2	14	0.7008	0.6870	0.7213	0.6417
3/4	14	0.9114	0.8976	0.9319	0.6417
1	11 1/2	1.1437	1.1280	1.1689	0.7697
1 1/4	11 1/2	1.4882	1.4705	1.5138	0.7894
1 1/2	11 1/2	1.7264	1.7106	1.7528	0.7894
2	11 1/2	2.1988	2.1831	2.2268	0.8051

● = In stock
★ = Allow 7 days for delivery

Inch Shank

Carbide

L15

RH + LH

4-5 Flutes

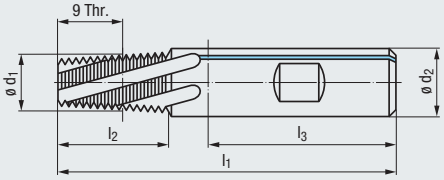
DIN 6535 HB HE HA

ø D

new

With coolant grooves along the shank

For internal tapered threads



NPT (API-LP)

American Tapered Pipe Thread, ANSI/ASME B1.20.1

For threads **with dryseal material**, taper 1:16

Coating: TIALN-T46

Applications – Material:

P	1.1-5.1	M	1.1-4.1
K	1.1-4.2	N	1.1-5.2
S	1.1-2.6	H	1.1-2

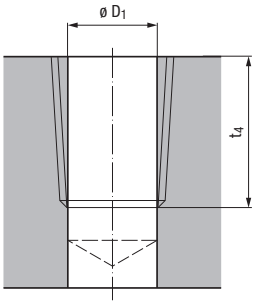
Nominal Size ø D	T.P.I.	l_1	l_2	inch l_3	ø d_1	ø d_2	Flutes	GFI-KEG-VHM L15-SKN-HB TIALN-T46	
1/16 1/8	27 27	2 1/4	0.536	1 3/8	0.232	5/16	4	GFT8B209.9676	●
1/4 3/8	18 18	3 1/4	0.804	1 25/32	0.399	1/2	4	GFT8B219.9677	●
1/2 3/4	14 14	3 1/2	1.034	1 29/32	0.561	5/8	4	GFT8B239.9678	●
1 1 1/4 1 1/2 2	11 1/2 11 1/2 11 1/2 11 1/2	3 3/4	1.259	2 1/32	0.772	3/4	5	GFT8B259.9679	●

NPT/API-LP cutters are manufactured with a corrected profile

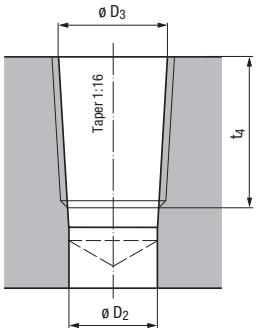
Application recommendation: You must have an NC program for a spiral formed helix to prevent a profile step

Thread Hole Preparatory Diameters for Tapered Pipe Thread NPT, Taper 1:16

A) Cylindrical preparation of thread hole



B) Tapered preparation of thread hole



Nominal size ø D	T.P.I.	ø D_1	inch ø D_2	ø D_3 (+0.002)	t_4
1/16	27	0.2421	0.2343	0.2516	0.3268
1/8	27	0.3346	0.3268	0.3441	0.3268
1/4	18	0.4331	0.4232	0.4472	0.4783
3/8	18	0.5669	0.5571	0.5827	0.4902
1/2	14	0.7008	0.6870	0.7213	0.6417
3/4	14	0.9114	0.8976	0.9319	0.6417
1	11 1/2	1.1437	1.1280	1.1689	0.7697
1 1/4	11 1/2	1.4882	1.4705	1.5138	0.7894
1 1/2	11 1/2	1.7264	1.7106	1.7528	0.7894
2	11 1/2	2.1988	2.1831	2.2268	0.8051

Metric Shank

Carbide

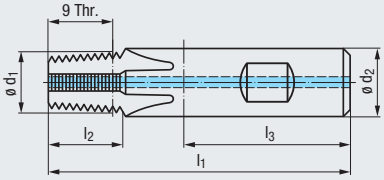
RH + LH

3-5 Flutes

DIN 6535
HB
HE
HA

ø D

For internal tapered threads



NPTF

American Tapered Pipe Thread, ANSI/ASME B1.20.3

For threads **without dryseal material**, taper 1:16

Coating		TICN
Applications – Material	P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6 N 3.1-2 N 4.1-2, 5.2 S 1.1-3	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2

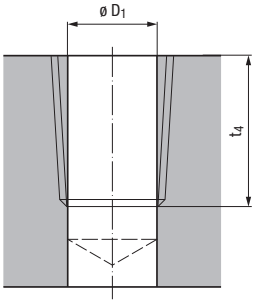
Nominal Size ø D	T.P.I.	inch l1	l2	l3	ø d1	ø d2 inch	ø d2 mm	Flutes	GF-KEG-VHM IKZ-HB		GF-KEG-VHM IKZ-HB TICN	
1/16	27	2.165	0.387	1.417	0.232	0.315	8	3	GF173101.5782	●	GF173106.5782	●
1/8	27	2.165	0.387	1.417	0.301	0.315	8	3	GF173101.5783	●	GF173106.5783	●
1/4	18	2.953	0.581	1.772	0.400	0.472	12	4	GF173111.5784	●	GF173116.5784	●
3/8	18	2.953	0.581	1.772	0.439	0.472	12	4	GF173111.5785	●	GF173116.5785	●
1/2	14	3.150	0.748	1.890	0.561	0.630	16	4	GF173131.5786	●	GF173136.5786	●
3/4	14	3.150	0.748	1.890	0.561	0.630	16	4	GF173131.5787	●	GF173136.5787	●
1	11 1/2	3.543	0.911	1.969	0.772	0.787	20	5	GF173151.9684	●	GF173156.9684	●
1 1/4	11 1/2											
1 1/2	11 1/2											
2	11 1/2											

NPTF cutters are manufactured with a corrected profile

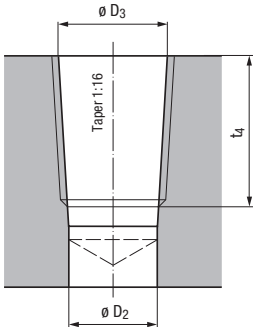
Application recommendation: You must have an NC program for a spiral formed helix to prevent a profile step

Thread Hole Preparatory Diameters for Tapered Pipe Thread NPTF, Taper 1:16

A) Cylindrical preparation of thread hole



B) Tapered preparation of thread hole



Nominal size ø D	T.P.I.	inch ø D1	ø D2	ø D3 (+0.002)	t4
1/16	27	0.2402	0.2343	0.2524	0.3268
1/8	27	0.3327	0.3268	0.3449	0.3268
1/4	18	0.4291	0.4232	0.4488	0.4783
3/8	18	0.5630	0.5571	0.5843	0.4902
1/2	14	0.6929	0.6870	0.7217	0.6417
3/4	14	0.9055	0.8976	0.9323	0.6417
1	11 1/2	1.1319	1.1280	1.1701	0.7697
1 1/4	11 1/2	1.4764	1.4705	1.5150	0.7894
1 1/2	11 1/2	1.7224	1.7106	1.7539	0.7894
2	11 1/2	2.1949	2.1831	2.2280	0.8051

● = In stock
★ = Allow 7 days for delivery

Metric Shank

Carbide

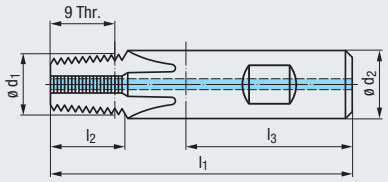
RH + LH

3-5 Flutes

DIN 6535 HB HE HA

ø D

For internal tapered threads



new

new

NPTF

American Tapered Pipe Thread, ANSI/ASME B1.20.3

For threads **without dryseal material**, taper 1:16

Coating		TICN
Applications – Material	P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6 N 3.1-2 N 4.1-2, 5.2 S 1.1-3	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2

Nominal Size ø D	T.P.I.	inch l_1	l_2	l_3	ø d_1	ø d_2 inch	ø d_2 mm	Flutes	GF-KEG-VHM IKZN-HB		GF-KEG-VHM IKZN-HB TICN	
1/16	27	2.165	0.387	1.417	0.232	0.315	8	3	GF193101.5782	●	GF193106.5782	●
1/8	27	2.165	0.387	1.417	0.301	0.315	8	3	GF193101.5783	●	GF193106.5783	●
1/4	18	2.953	0.581	1.772	0.400	0.472	12	4	GF193111.5784	●	GF193116.5784	●
3/8	18	2.953	0.581	1.772	0.439	0.472	12	4	GF193111.5785	●	GF193116.5785	●
1/2	14	3.150	0.748	1.890	0.561	0.630	16	4	GF193131.5786	●	GF193136.5786	●
3/4	14	3.150	0.748	1.890	0.561	0.630	16	4	GF193131.5787	●	GF193136.5787	●
1	11 1/2	3.543	0.911	1.969	0.772	0.787	20	5	GF193151.9684	●	GF193156.9684	●
1 1/4	11 1/2											
1 1/2	11 1/2											
2	11 1/2											

NPTF cutters are manufactured with a corrected profile

Application recommendation: You must have an NC program for a spiral formed helix to prevent a profile step

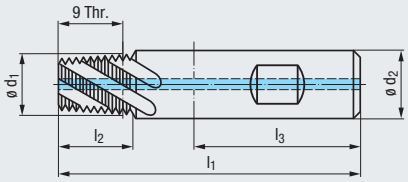
Metric Shank

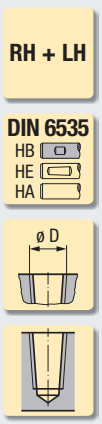
Carbide

R15 | RH + LH

3-5 Flutes | DIN 6535 HB HE HA

For internal tapered threads





NPTF

American Tapered Pipe Thread, ANSI/ASME B1.20.3

For threads **without dryseal material**, taper 1:16

Coating: TICN

Applications – Material

	GF-KEG-VHM R15-lg-IKZ-HB	GF-KEG-VHM R15-lg-IKZ-HB TICN
		P 1.1-5.1 M 1.1-4.1
	P 1.1-5.1 K 1.1-4.2	K 1.1-4.2 N 1.1-5.2
	N 1.1-5, 2.1-6 N 3.1-2	S 1.1-2.6 H 1.1-2
	N 4.1-2, 5.2 S 1.1-3	

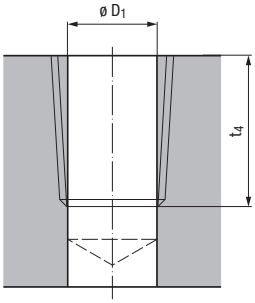
Nominal Size ø D	T.P.I.	inch l_1	l_2	l_3	ø d_1	ø d_2 inch	ø d_2 mm	Flutes	GF-KEG-VHM R15-lg-IKZ-HB		GF-KEG-VHM R15-lg-IKZ-HB TICN	
1/16	27	2.362	0.535	1.417	0.232	0.315	8	3	GF175301.5782	●	GF175306.5782	●
1/8	27	2.362	0.535	1.417	0.301	0.315	8	3	GF175301.5783	●	GF175306.5783	●
1/4	18	3.150	0.804	1.772	0.400	0.472	12	4	GF175311.5784	●	GF175316.5784	●
3/8	18	3.150	0.803	1.772	0.439	0.472	12	4	GF175311.5785	●	GF175316.5785	●
1/2	14	3.346	1.033	1.890	0.561	0.630	16	4	GF175331.5786	●	GF175336.5786	●
3/4	14	3.346	1.033	1.890	0.561	0.630	16	4	GF175331.5787	●	GF175336.5787	●
1	11 1/2	3.740	1.258	1.969	0.772	0.787	20	5	GF175351.9684	●	GF175356.9684	●
1 1/4	11 1/2											
1 1/2	11 1/2											
2	11 1/2											

NPTF cutters are manufactured with a corrected profile

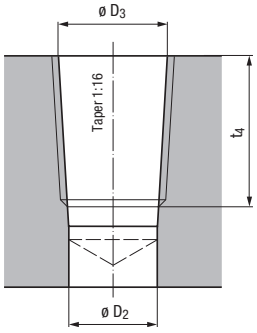
Application recommendation: You must have an NC program for a spiral formed helix to prevent a profile step

Thread Hole Preparatory Diameters for Tapered Pipe Thread NPTF, Taper 1:16

A) Cylindrical preparation of thread hole



B) Tapered preparation of thread hole



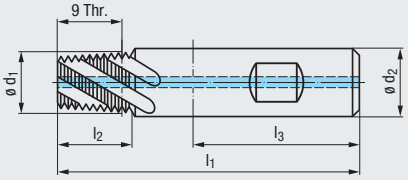
Nominal size ø D	T.P.I.	inch ø D_1	ø D_2	ø D_3 (+0.002)	t_4
1/16	27	0.2402	0.2343	0.2524	0.3268
1/8	27	0.3327	0.3268	0.3449	0.3268
1/4	18	0.4291	0.4232	0.4488	0.4783
3/8	18	0.5630	0.5571	0.5843	0.4902
1/2	14	0.6929	0.6870	0.7217	0.6417
3/4	14	0.9055	0.8976	0.9323	0.6417
1	11 1/2	1.1319	1.1280	1.1701	0.7697
1 1/4	11 1/2	1.4764	1.4705	1.5150	0.7894
1 1/2	11 1/2	1.7224	1.7106	1.7539	0.7894
2	11 1/2	2.1949	2.1831	2.2280	0.8051

● = In stock
★ = Allow 7 days for delivery

Metric Shank

Carbide | R15 | RH + LH | 3-5 Flutes | DIN 6535 HB HE HA | ø D

For internal tapered threads



new

new

NPTF

American Tapered Pipe Thread, ANSI/ASME B1.20.3

For threads **without dryseal material**, taper 1:16

Coating		TICN
Applications – Material	P 1.1-5.1, K 1.1-4.2, N 1.1-5, 2.1-6, N 3.1-2, N 4.1-2, 5.2, S 1.1-3	P 1.1-5.1, M 1.1-4.1, K 1.1-4.2, N 1.1-5.2, S 1.1-2.6, H 1.1-2

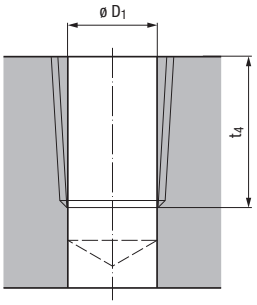
Nominal Size ø D	T.P.I.	inch l_1	l_2	l_3	ø d_1	ø d_2 inch	ø d_2 mm	Flutes	GF-KEG-VHM R15-lg-IKZN-HB		GF-KEG-VHM R15-lg-IKZN-HB TICN	
1/16	27	2.362	0.535	1.417	0.232	0.315	8	3	GF195301.5782	●	GF195306.5782	●
1/8	27	2.362	0.535	1.417	0.301	0.315	8	3	GF195301.5783	●	GF195306.5783	●
1/4	18	3.150	0.804	1.772	0.400	0.472	12	4	GF195311.5784	●	GF195316.5784	●
3/8	18	3.150	0.803	1.772	0.439	0.472	12	4	GF195311.5785	●	GF195316.5785	●
1/2	14	3.346	1.033	1.890	0.561	0.630	16	4	GF195331.5786	●	GF195336.5786	●
3/4	14	3.346	1.033	1.890	0.561	0.630	16	4	GF195331.5787	●	GF195336.5787	●
1	11 1/2	3.740	1.258	1.969	0.772	0.787	20	5	GF195351.9684	●	GF195356.9684	●
1 1/4	11 1/2											
1 1/2	11 1/2											
2	11 1/2											

NPTF cutters are manufactured with a corrected profile

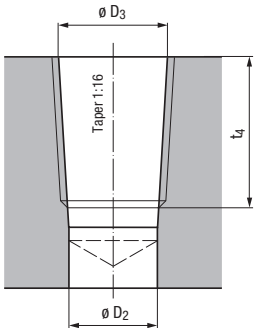
Application recommendation: You must have an NC program for a spiral formed helix to prevent a profile step

Thread Hole Preparatory Diameters for Tapered Pipe Thread NPTF, Taper 1:16

A) Cylindrical preparation of thread hole



B) Tapered preparation of thread hole



Nominal size ø D	T.P.I.	inch ø D_1	ø D_2	ø D_3 (+0.002)	t_4
1/16	27	0.2402	0.2343	0.2524	0.3268
1/8	27	0.3327	0.3268	0.3449	0.3268
1/4	18	0.4291	0.4232	0.4488	0.4783
3/8	18	0.5630	0.5571	0.5843	0.4902
1/2	14	0.6929	0.6870	0.7217	0.6417
3/4	14	0.9055	0.8976	0.9323	0.6417
1	11 1/2	1.1319	1.1280	1.1701	0.7697
1 1/4	11 1/2	1.4764	1.4705	1.5150	0.7894
1 1/2	11 1/2	1.7224	1.7106	1.7539	0.7894
2	11 1/2	2.1949	2.1831	2.2280	0.8051

Metric Shank

Carbide

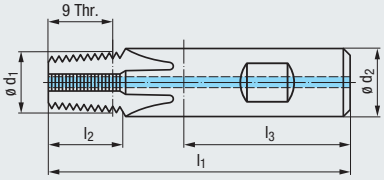
RH + LH

3-5 Flutes

DIN 6535 HB HE HA

ø D

For internal tapered threads



Rc (BSPT)

Tapered Whitworth Pipe Thread, DIN EN ISO 10226-2 and ISO 7-1

Where pressure-tight joints are made on the threads, taper 1:16

Coating		TICN
Applications – Material	P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6 N 3.1-2 N 4.1-2, 5.2 S 1.1-3	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2

Nominal Size ø D	T.P.I.	inch l_1	l_2	l_3	ø d_1	ø d_2 inch	ø d_2 mm	Flutes	GF-KEG-VHM IKZ-HB		GF-KEG-VHM IKZ-HB TICN	
1/16	28	2.165	0.337	1.417	0.232	0.315	8	3	GF173101.4114		GF173106.4114	
1/8	28	2.165	0.337	1.417	0.301	0.315	8	3	GF173101.4115	●	GF173106.4115	●
1/4	19	2.953	0.550	1.772	0.400	0.472	12	4	GF173111.4116	●	GF173116.4116	●
3/8	19	2.953	0.549	1.772	0.439	0.472	12	4	GF173111.4117	●	GF173116.4117	●
1/2	14	3.150	0.750	1.890	0.561	0.630	16	4	GF173131.9561	●	GF173136.9561	●
3/4	14											
1	11	3.543	0.955	1.969	0.772	0.787	20	5	GF173151.9562	●	GF173156.9562	●
1 1/4	11											
1 1/2	11											
2	11											

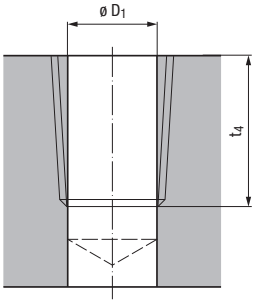
Rc cutters are manufactured with a corrected profile

Application recommendation: You must have an NC program for a spiral formed helix to prevent a profile step

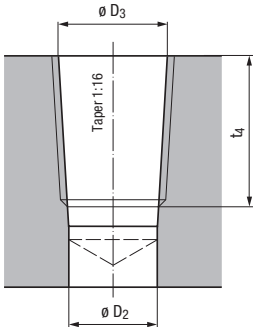
Thread Hole Preparatory Diameters for Tapered Pipe Thread Rc (BSPT), Taper 1:16

Hole type A) can be used when there is no reason to worry about sealing problems

A) Cylindrical preparation of thread hole



B) Tapered preparation of thread hole



Nominal size ø D	T.P.I.	inch ø D_1	ø D_2	ø D_3 (JS11)	t_4
1/16	28	0.2421	0.2402	0.2583	0.3091
1/8	28	0.3209	0.3189	0.3374	0.3091
1/4	19	0.4272	0.4232	0.4508	0.4587
3/8	19	0.5630	0.5610	0.5886	0.4744
1/2	14	0.7008	0.6969	0.7335	0.6260
3/4	14	0.9134	0.9094	0.9496	0.6594
1	11	1.1496	1.1457	1.1925	0.7736
1 1/4	11	1.4882	1.4803	1.5335	0.8642
1 1/2	11	1.7205	1.7126	1.7657	0.8642
2	11	2.1732	2.1654	2.2307	1.0335

● = In stock
★ = Allow 7 days for delivery

Metric Shank

Carbide

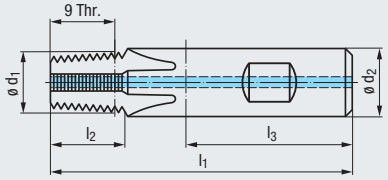
RH + LH

3-5 Flutes

DIN 6535
HB
HE
HA

ø D

For internal tapered threads



new

new

Rc (BSPT)

Tapered Whitworth Pipe Thread, DIN EN ISO 10226-2 and ISO 7-1

Where pressure-tight joints are made on the threads, taper 1:16

Coating		TICN
Applications – Material	P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6 N 3.1-2 N 4.1-2, 5.2 S 1.1-3	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2

Nominal Size ø D	T.P.I.	inch l_1	l_2	l_3	ø d_1	ø d_2 inch	ø d_2 mm	Flutes	GF-KEG-VHM IKZN-HB		GF-KEG-VHM IKZN-HB TICN	
1/16	28	2.165	0.337	1.417	0.232	0.315	8	3	GF193101.4114		GF193106.4114	
1/8	28	2.165	0.337	1.417	0.301	0.315	8	3	GF193101.4115	●	GF193106.4115	●
1/4	19	2.953	0.550	1.772	0.400	0.472	12	4	GF193111.4116	●	GF193116.4116	●
3/8	19	2.953	0.549	1.772	0.439	0.472	12	4	GF193111.4117	●	GF193116.4117	●
1/2	14	3.150	0.750	1.890	0.561	0.630	16	4	GF193131.9561	●	GF193136.9561	●
3/4	14											
1	11	3.543	0.955	1.969	0.772	0.787	20	5	GF193151.9562	●	GF193156.9562	●
1 1/4	11											
1 1/2	11											
2	11											

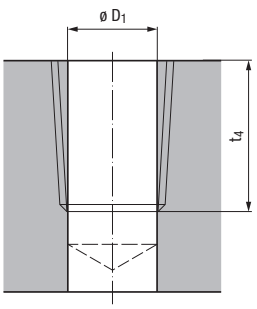
Rc cutters are manufactured with a corrected profile

Application recommendation: You must have an NC program for a spiral formed helix to prevent a profile step

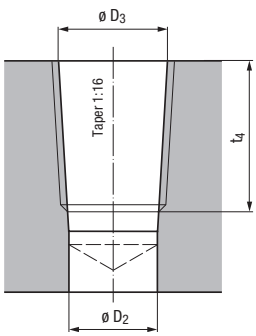
Thread Hole Preparatory Diameters for Tapered Pipe Thread Rc (BSPT), Taper 1:16

Hole type A) can be used when there is no reason to worry about sealing problems

A) Cylindrical preparation of thread hole

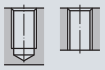
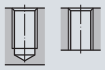
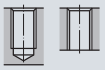
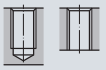
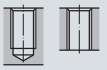
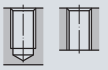


B) Tapered preparation of thread hole

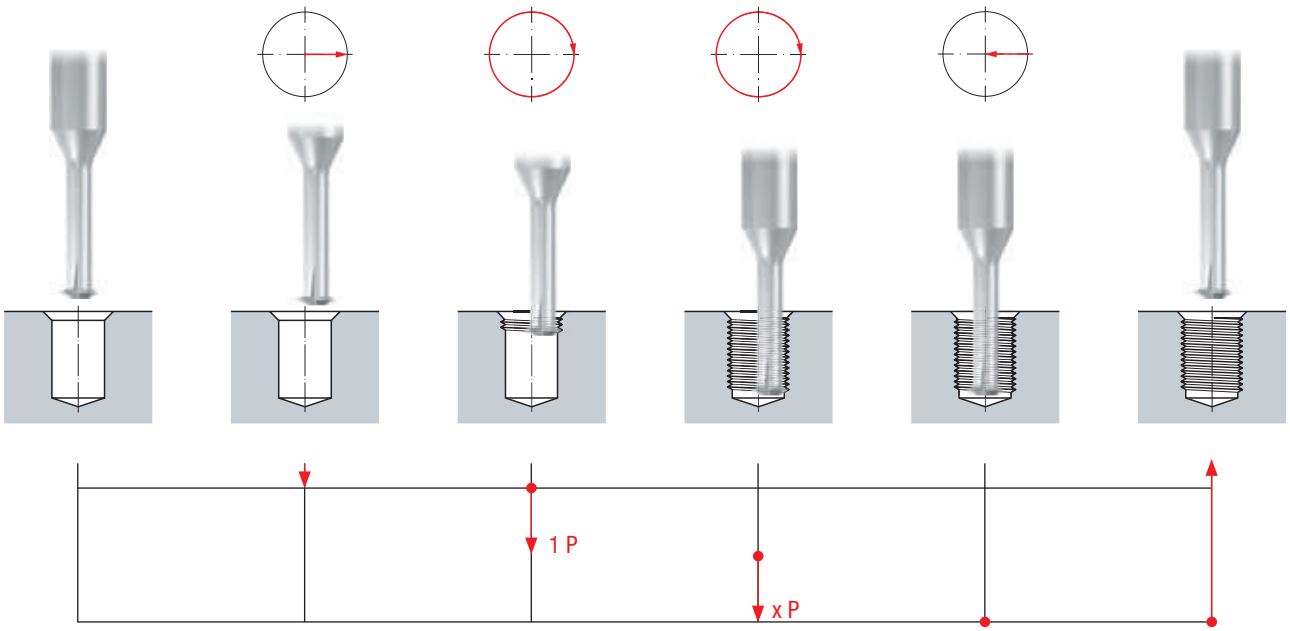


Nominal size ø D	T.P.I.	inch ø D_1	ø D_2	ø D_3 (JS11)	t_4
1/16	28	0.2421	0.2402	0.2583	0.3091
1/8	28	0.3209	0.3189	0.3374	0.3091
1/4	19	0.4272	0.4232	0.4508	0.4587
3/8	19	0.5630	0.5610	0.5886	0.4744
1/2	14	0.7008	0.6969	0.7335	0.6260
3/4	14	0.9134	0.9094	0.9496	0.6594
1	11	1.1496	1.1457	1.1925	0.7736
1 1/4	11	1.4882	1.4803	1.5335	0.8642
1 1/2	11	1.7205	1.7126	1.7657	0.8642
2	11	2.1732	2.1654	2.2307	1.0335

Ordering Example: **GF193101.4115**

ZGFI		ZGF		ZGF-S-CUT	ZGF-HCUT	
2 x D	3 x D	2 x D	3 x D	2 x D	2 x D	
						
Inch Shank	Inch Shank	Metric Shank	Metric Shank	Metric Shank	Metric Shank	
300	301	302	303	304		UNC
300	301	302	303	304		UNF
		305	306 - 307	308	309	M, MF
310						STI-UNC

Thread milling cycle



Need programming assistance?

EMUGE's trained thread milling specialist can assist you with advice and guidance in writing the correct program for your CNC machine tool. Thread milling experts will analyze your exact application and help guide you through the proper line code programming.

Contact EMUGE Technical Support department or visit **www.emuge.com**

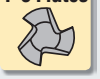
Inch Shank

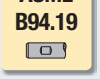
Carbide

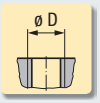
RH + LH

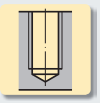
1-6 Flutes

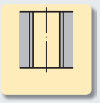
ASME B94.19



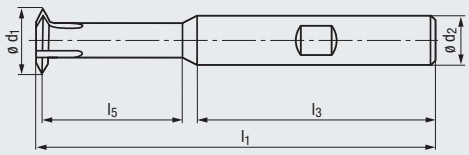








For internal threads



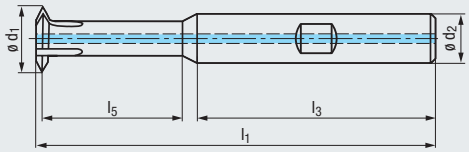
UNC, UNF

Unified Threads
ASME B1.1

Coating	TICN
Applications – Material	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2
Thread Depth	2 x D

Nominal Size ø D	T.P.I.	l_1	l_3	inch l_5	ø d_1	ø d_2	Flutes	ZGFI-VHM 2xD HA TICN		ZGFI-VHM 2xD HB TICN	
No. 0	80	1 5/8	1 3/32	0.126	0.045	1/8	1	GFS13706.5033	●		
No. 1	64 - 72	1 5/8	1 3/32	0.157	0.056	1/8	3	GFS23706.5000	●		
No. 2	56 - 64	1 5/8	1 3/32	0.181	0.065	1/8	3	GFS23706.5001	●		
No. 4	40 - 48	1 5/8	1 3/32	0.237	0.081	1/8	3	GFS23706.5003	●		
No. 5	40 - 44	1 5/8	1 3/32	0.260	0.094	1/8	3	GFS23706.5004	●		
No. 6	32 - 40	1 5/8	1 3/32	0.287	0.100	1/8	3	GFS23706.5005	●		
No. 8	32 - 36	1 5/8	1 3/32	0.339	0.122	1/8	3	GFS23706.5006	●		
No. 10	24 - 32	2 1/2	1 3/8	0.404	0.136	1/4	3			GFS23106.5007	●
1/4	20 - 28	2 1/2	1 3/8	0.528	0.185	1/4	3			GFS23106.5009	●

For internal threads



Nominal Size ø D	T.P.I.	l_1	l_3	inch l_5	ø d_1	ø d_2	Flutes	ZGFI-VHM 2xD IKZ-HB TICN	
5/16	18 - 24	2 1/2	1 3/8	0.642	0.242	1/4	4	GFS33106.5010	●
3/8	16 - 24	2 1/2	1 3/8	0.776	0.301	5/16	5	GFS33106.5011	●
7/16	14 - 20	3	1 9/16	0.909	0.354	3/8	5	GFS33106.5012	●
1/2	13 - 20	3 3/4	1 25/32	1.024	0.407	1/2	5	GFS33106.5013	●
5/8	11 - 18	3 3/4	1 25/32	1.291	0.512	1/2	5	GFS33106.5015	●
3/4	10 - 16	4 1/4	1 29/32	1.543	0.630	5/8	6	GFS33106.5016	●

Other sizes upon request

Ordering Example: **GFS23706.5033**

Inch Shank

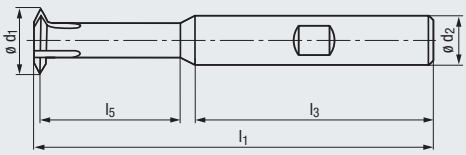
Carbide

RH + LH

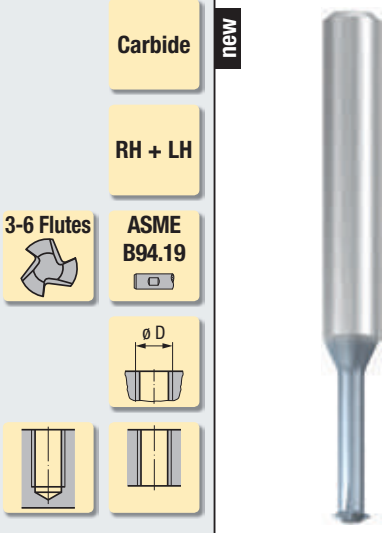
3-6 Flutes

ASME B94.19

ø D



For internal threads



new

new

Coating: TICN

Applications – Material: P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2

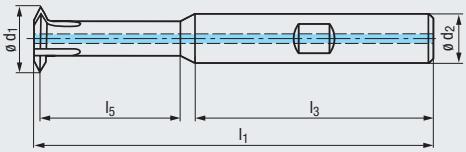
Thread Depth: 3 x D

UNC, UNF

Unified Threads
ASME B1.1

Nominal Size ø D	T.P.I.	l_1	l_3	inch l_5	ø d_1	ø d_2	Flutes	ZGFI-VHM 3xD HA TICN		ZGFI-VHM 3xD HB TICN	
No. 2	56 - 64	1 5/8	1 3/32	0.268	0.067	1/8	3	GFS83706.5001	●		
No. 4	40 - 48	1 5/8	1 3/32	0.349	0.085	1/8	3	GFS83706.5003	●		
No. 6	32 - 40	1 5/8	1 3/32	0.433	0.106	1/8	3	GFS83706.5005	●		
No. 8	32 - 36	1 3/4	1 3/32	0.510	0.132	3/16	3	GFS83706.5006	●		
No. 10	24	1 7/8	1 3/32	0.596	0.146	3/16	3	GFS83706.5007	●		
No. 10	32	1 7/8	1 3/32	0.586	0.154	3/16	4	GFS83706.5041	●		
1/4	20	2 3/8	1 3/8	0.781	0.195	1/4	4			GFS83106.5009	●
1/4	28	2 3/8	1 3/8	0.769	0.207	1/4	4			GFS83106.5043	●

For internal threads



new

Nominal Size ø D	T.P.I.	l_1	l_3	inch l_5	ø d_1	ø d_2	Flutes	ZGFI-VHM 3xD IKZ-HB TICN	
5/16	18	2 9/16	1 3/8	0.970	0.248	5/16	4	GFS83106.5010	●
5/16	24	2 9/16	1 3/8	0.962	0.260	5/16	5	GFS83106.5044	●
3/8	16	2 3/4	1 3/8	1.162	0.303	5/16	5	GFS83106.5011	●
3/8	24	2 7/8	1 9/16	1.147	0.323	3/8	5	GFS83106.5045	●
7/16	14	3 1/8	1 9/16	1.352	0.323	3/8	5	GFS83106.5012	●
7/16	20	3 1/16	1 9/16	1.342	0.376	3/8	5	GFS83106.5046	●
1/2	13 - 20	3 5/8	1 25/32	1.543	0.409	1/2	5	GFS83106.5013	●
5/8	11 - 18	4 1/8	1 29/32	1.923	0.514	5/8	5	GFS83106.5015	●
3/4	10 - 16	4 1/2	1 29/32	2.303	0.639	5/8	6	GFS83106.5016	●

Other sizes upon request

Metric Shank

Carbide

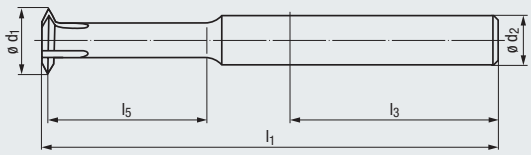
RH + LH

3 Flutes

DIN 6535 HA

ø D

For internal threads



new

new

UNC, UNF

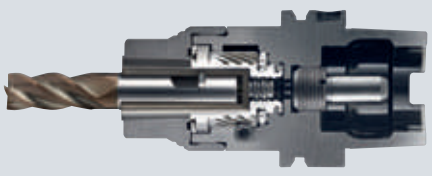
Unified Threads
ASME B1.1

Coating		TICN
Applications – Material	P 1.1-5.1, K 1.1-4.2, N 1.1-5, 2.1-6, N 3.1-2, N 4.1-2, 5.2, S 1.1-3	P 1.1-5.1, M 1.1-4.1, K 1.1-4.2, N 1.1-5.2, S 1.1-2.6, H 1.1-2
Thread Depth	2 x D	

Nominal Size ø D	$P_{max.}$	l_1	inch l_3	l_5	ø d_1	ø d_2 inch	ø d_2 mm	Flutes	ZGF-VHM 2xD HA		ZGF-VHM 2xD HA TICN	
No. 4 - 40	0.025	1.535	1.102	0.250	0.081	0.118	3	3	GF253701.5003	●	GF253706.5003	●
No. 6 - 32	0.031	1.535	1.102	0.276	0.100	0.118	3	3	GF253701.5005	●	GF253706.5005	●
No. 8 - 32	0.031	1.654	1.102	0.329	0.126	0.157	4	3	GF253701.5006	●	GF253706.5006	●

Suitable also for UNF threads

Other sizes upon request



Improve the thread milling process by using a rigid tool holder.
The EMUGE FPC chuck provides the accuracy of a shrink-fit holder with the convenience of an hydraulic chuck.

See page 338 - 349 for more information.

Ordering Example: **GF253701.5003**

Metric Shank

Carbide

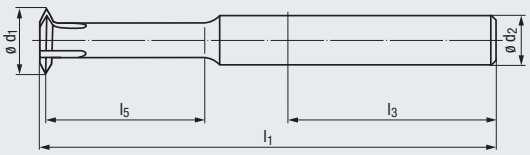
RH + LH

3-5 Flutes

DIN 6535 HA HB

ø D

For internal threads



new

new

UNC

Unified Coarse Thread
ASME B1.1

Coating: TICN

Applications – Material: P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2

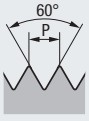
Thread Depth: **3 x D**

Nominal Size ø D	$P_{max.}$	l_1	inch l_3	l_5	ø d_1	ø d_2 inch	ø d_2 mm	Flutes	ZGF-VHM 3xD HA TICN		ZGF-VHM 3xD HB TICN	
No. 2 - 56	0.018	1.535	1.102	0.266	0.067	0.118	3	3	GF273706.5001	●		
No. 4 - 40	0.025	1.575	1.102	0.348	0.085	0.118	3	3	GF273706.5003	●		
No. 6 - 32	0.031	1.654	1.102	0.429	0.106	0.118	3	3	GF273706.5005	●		
No. 10 - 24	0.042	1.811	1.102	0.591	0.146	0.157	4	3	GF273706.5007	●		
1/4 - 20	0.050	2.323	1.417	0.793	0.195	0.236	6	4	GF273706.5009	●	GF273106.5009	●
5/16 - 18 1)	0.056	2.559	1.417	0.965	0.248	0.315	8	4	GF273706.5010	●	GF273106.5010	●
3/8 - 16 1)	0.063	2.677	1.417	1.157	0.303	0.315	8	5	GF273706.5011	●	GF273106.5011	●

new

new

UNF



Unified Fine Thread
ASME B1.1

Coating: TICN

Applications – Material: P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2

Thread Depth: **3 x D**

Nominal Size ø D	$P_{max.}$	l_1	inch l_3	l_5	ø d_1	ø d_2 inch	ø d_2 mm	Flutes	ZGF-VHM 3xD HA TICN		ZGF-VHM 3xD HB TICN	
No. 10 - 32	0.031	1.811	1.102	0.585	0.154	0.157	4	4	GF273706.5041	●		
1/4 - 28	0.036	2.323	1.417	0.768	0.207	0.236	6	4	GF273706.5043	●	GF273106.5043	●
5/16 - 24 1)	0.042	2.559	1.417	0.957	0.260	0.315	8	5	GF273706.5044	●	GF273106.5044	●
7/16 - 20 1)	0.050	3.031	1.575	1.337	0.376	0.394	10	5	GF273706.5046	●	GF273106.5046	●

1) Design with internal coolant supply IKZ

Partly suitable also for Metric threads

Other sizes upon request

Product Finder
v_c / f_z
UNC
UNF
UN
M
MF
NPSF
Rp (BSPP)
G
W
BSW, BSF
NPT
NPTF
Rc (BSPT)
STI
SELF-LOCK
Accessories
Tech. Info
BGF
ZBGF
GSF (Aero)
GSF-Z
GF(I), GF-Z
GF-Vario-Z
GF-H
GF(I)-KEG
ZGF
CIRC-GF
Gigant
FPC, FMC
MoSys

● = In stock
★ = Allow 7 days for delivery

Metric Shank

Carbide

RH + LH

LH-rot.

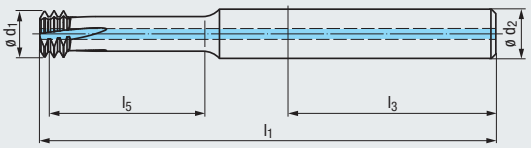
L10

3-6 Flutes

DIN 6535 HA HB

ø D

For internal threads



new

new

UNC

Unified Coarse Thread
ASME B1.1

Coating: TIALN-T46

Applications – Material: P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2

Thread Depth: **2 x D**

Nominal Size ø D	$P_{max.}$	l_1	inch l_3	l_5	ø d_1	ø d_2 inch	ø d_2 mm	Flutes	ZGF-S-CUT-VHM 2xD IKZ-HA TIALN-T46		ZGF-S-CUT-VHM 2xD IKZ-HB TIALN-T46	
No. 4 - 40 [2]	0.025	1.535	1.102	0.234	0.085	0.118	3	3	GF26A729.5003	●		
No. 6 - 32 [2]	0.031	1.535	1.102	0.287	0.106	0.118	3	3	GF26A729.5005	●		
No. 10 - 24 [2]	0.042	1.654	1.102	0.398	0.146	0.157	4	3	GF26A729.5007	●		
1/4 - 20	0.050	2.165	1.417	0.520	0.195	0.236	6	3	GF26A729.5009	●	GF26A129.5009	●
5/16 - 18	0.056	2.283	1.417	0.648	0.248	0.315	8	4	GF26A729.5010	●	GF26A129.5010	●
3/8 - 16	0.063	2.441	1.417	0.774	0.303	0.315	8	4	GF26A729.5011	●	GF26A129.5011	●

new

new

UNF

Unified Fine Thread
ASME B1.1

Coating: TIALN-T46

Applications – Material: P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2

Thread Depth: **2 x D**

Nominal Size ø D	$P_{max.}$	l_1	inch l_3	l_5	ø d_1	ø d_2 inch	ø d_2 mm	Flutes	ZGF-S-CUT-VHM 2xD IKZ-HA TIALN-T46		ZGF-S-CUT-VHM 2xD IKZ-HB TIALN-T46	
No. 10 - 32 [2]	0.031	1.654	1.102	0.392	0.154	0.157	4	4	GF26A729.5041	●		
1/4 - 28	0.036	2.165	1.417	0.516	0.207	0.236	6	5	GF26A729.5043	●	GF26A129.5043	●
5/16 - 24	0.042	2.283	1.417	0.642	0.260	0.315	8	5	GF26A729.5044	●	GF26A129.5044	●
7/16 - 20	0.050	2.913	1.575	0.896	0.376	0.394	10	6	GF26A729.5046	●	GF26A129.5046	●

[2] Design without internal coolant supply IKZ

Other sizes upon request

Ordering Example: **GF26A729.5003**

Metric Shank

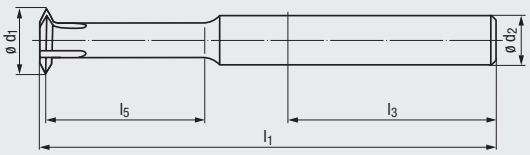
Carbide

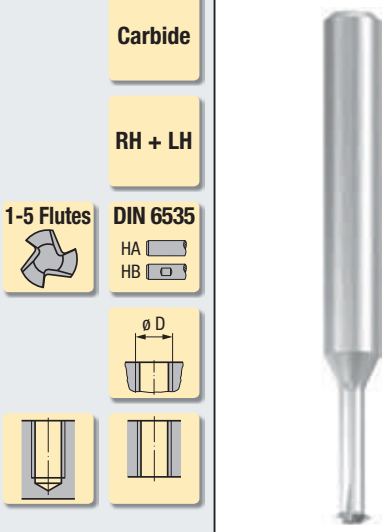
RH + LH

1-5 Flutes

DIN 6535 HA HB

For internal threads





new

M, MF

ISO Metric Threads
DIN 13

Coating

Applications – Material

P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6
N 3.1-2 N 4.1-2, 5.2 S 1.1-3

Thread Depth **2 x D**

Nominal Size ø D	$P_{max.}$ mm	l_1	l_3	mm l_5	ø d_1	ø d_2	Flutes	ZGF-VHM 2xD HA		ZGF-VHM 2xD HB	
M1 - M1.2	0.25	39	28	2.8	0.7	3	1	GF243701.0010	●		
M1.4 - M1.8	0.35	39	28	3.5	1.04	3	2	GF253701.0014	●		
M2 - M2.3	0.45	39	28	4.8	1.52	3	3	GF253701.0020	●		
M2.5 - M3	0.5	39	28	6	1.95	3	3	GF253701.0025	●		
M3.5 - M4.5	0.75	42	28	9	2.78	4	3	GF253701.0035	●		
M5 - M7	1	55	36	14	4	6	4	GF253701.0050	●	GF253101.0050	●
M8 - M10 [1]	1.5	62	36	19.8	6.5	8	5	GF253701.0080	●	GF253101.0080	●
M12 - M16 [1]	2	78	40	31.8	9.9	10	5	GF253701.0112	●	GF253101.0112	●

new

Coating TICN

Applications – Material

P 1.1-5.1 M 1.1-4.1 K 1.1-4.2
N 1.1-5.2 S 1.1-2.6 H 1.1-2

Thread Depth **2 x D**

Nominal Size ø D	$P_{max.}$ mm	l_1	l_3	mm l_5	ø d_1	ø d_2	Flutes	ZGF-VHM 2xD HA TICN		ZGF-VHM 2xD HB TICN	
M1 - M1.2	0.25	39	28	2.8	0.7	3	1	GF243706.0010	●		
M1.4 - M1.8	0.35	39	28	3.5	1.04	3	2	GF253706.0014	●		
M2 - M2.3	0.45	39	28	4.8	1.52	3	3	GF253706.0020	●		
M2.5 - M3	0.5	39	28	6	1.95	3	3	GF253706.0025	●		
M3.5 - M4.5	0.75	42	28	9	2.78	4	3	GF253706.0035	●		
M5 - M7	1	55	36	14	4	6	4	GF253706.0050	●	GF253106.0050	●
M8 - M10 [1]	1.5	62	36	19.8	6.5	8	5	GF253706.0080	●	GF253106.0080	●
M12 - M16 [1]	2	78	40	31.8	9.9	10	5	GF253706.0112	●	GF253106.0112	●

[1] Design with internal coolant supply IKZ

Partly suitable also for UN threads

Other sizes upon request

● = In stock
★ = Allow 7 days for delivery

Metric Shank

Carbide

new

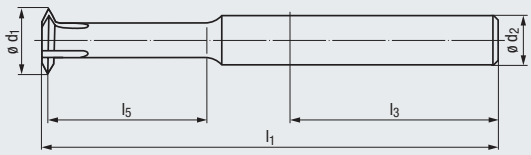
RH + LH

1-5 Flutes

DIN 6535
HA
HB

ø D

For internal threads



M, MF

ISO Metric Threads
DIN 13

Coating

Applications – Material

P 1.1-5.1 K 1.1-4.2 N 1.1-5, 2.1-6
N 3.1-2 N 4.1-2, 5.2 S 1.1-3

Thread Depth **3 x D**

Nominal Size ø D	$P_{max.}$ mm	l_1	l_3	mm l_5	ø d_1	ø d_2	Flutes	ZGF-VHM 3xD HA	
M1	0.25	39	28	3.1	0.7	3	1	**GF273701.0010**	●
M1.6	0.35	39	28	4.95	1.18	3	2	**GF273701.0016**	●
M2	0.4	39	28	6.2	1.52	3	3	**GF273701.0020**	●
M2.5	0.45	39	28	7.7	1.96	3	3	**GF273701.0025**	●
M3	0.5	41	28	9.25	2.4	3	3	**GF273701.0030**	●
M4	0.7	44	28	12.35	3.15	4	3	**GF273701.0040**	●
M5	0.8	56	36	15.4	4.04	6	4	**GF273701.0050**	●
M6	1	59	36	18.5	4.8	6	4	**GF273701.0060**	●
M8 [1]	1.25	65	36	24.65	6.5	8	5	**GF273701.0080**	●
M10 [1]	1.5	77	40	30.75	8.2	10	5	**GF273701.0100**	●
M12 [1]	1.75	82	40	36.85	9.9	10	5	**GF273701.0112**	●
M14 [1]	2	94	45	43	11.6	12	5	**GF273701.0114**	●
M16 [1]	2	100	45	49	13.6	14	5	**GF273701.0116**	●

[1] Design with internal coolant supply IKZ

Partly suitable also for UN threads

Other sizes upon request

Metric Shank

Carbide

RH + LH

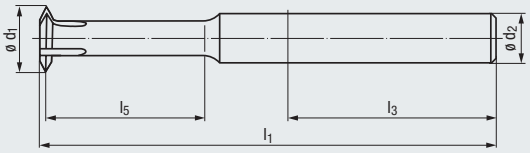
1-5 Flutes

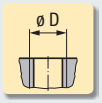
DIN 6535
HA
HB

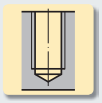
new

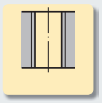
new

For internal threads









M, MF

ISO Metric Threads
DIN 13

Coating	TICN
Applications – Material	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2
Thread Depth	**3 x D**

Nominal Size ø D	$P_{max.}$ mm	l_1	l_3	mm l_5	ø d_1	ø d_2	Flutes	ZGF-VHM 3xD HA TICN		ZGF-VHM 3xD HB TICN	
M1	0.25	39	28	3.1	0.7	3	1	GF273706.0010	●		
M1.6	0.35	39	28	4.95	1.18	3	2	GF273706.0016	●		
M2	0.4	39	28	6.2	1.52	3	3	GF273706.0020	●		
M2.5	0.45	39	28	7.7	1.96	3	3	GF273706.0025	●		
M3	0.5	41	28	9.25	2.4	3	3	GF273706.0030	●		
M4	0.7	44	28	12.35	3.15	4	3	GF273706.0040	●		
M5	0.8	56	36	15.4	4.04	6	4	GF273706.0050	●	GF273106.0050	●
M6	1	59	36	18.5	4.8	6	4	GF273706.0060	●	GF273106.0060	●
M8 [1]	1.25	65	36	24.65	6.5	8	5	GF273706.0080	●	GF273106.0080	●
M10 [1]	1.5	77	40	30.75	8.2	10	5	GF273706.0100	●	GF273106.0100	●
M12 [1]	1.75	82	40	36.85	9.9	10	5	GF273706.0112	●	GF273106.0112	●
M14 [1]	2	94	45	43	11.6	12	5	GF273706.0114	●	GF273106.0114	●
M16 [1]	2	100	45	49	13.6	14	5	GF273706.0116	●	GF273106.0116	●

[1] Design with internal coolant supply IKZ

Partly suitable also for UN threads

Other sizes upon request

● = In stock
★ = Allow 7 days for delivery

Metric Shank

Carbide

RH + LH

LH-rot.

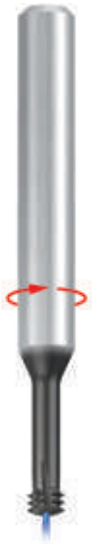
L10

4-5 Flutes

DIN 6535
HA
HB

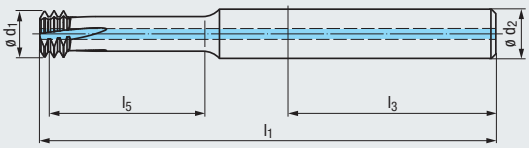
ø D

new



new

For internal threads



M, MF

ISO Metric Threads
DIN 13

Coating	TIALN-T46
Applications – Material	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2
Thread Depth	2 x D

Nominal Size ø D	$P_{max.}$ mm	mm l_1	l_3	l_5	ø d_1	ø d_2	Flutes	ZGF-S-CUT-VHM 2xD IKZ-HA TIALN-T46		ZGF-S-CUT-VHM 2xD IKZ-HB TIALN-T46	
M 3 [2]	0.5	39	28	6.2	2.4	3	4	GF26A729.0030	●		
M 4 [2]	0.7	42	28	8.3	3.15	4	4	GF26A729.0040	●		
M 5	0.8	52	36	10.3	4.04	6	4	GF26A729.0050	●	GF26A129.0050	●
M 6	1	55	36	12.43	4.8	6	4	GF26A729.0060	●	GF26A129.0060	●
M 8	1.25	60	36	16.7	6.5	8	4	GF26A729.0080	●	GF26A129.0080	●
M10	1.5	70	40	20.7	8.2	10	5	GF26A729.0100	●	GF26A129.0100	●

[2] Design without internal coolant supply IKZ

Other sizes upon request

Ordering Example: **GF26A729.0030**

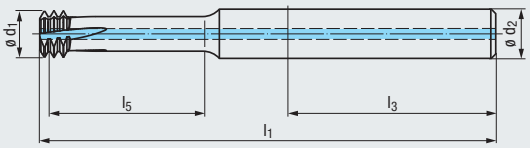
Metric Shank

Carbide

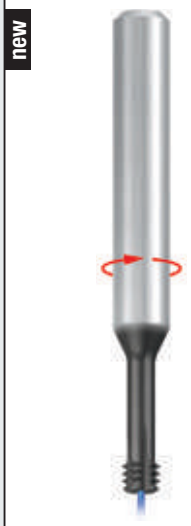
RH + LH | LH-rot.

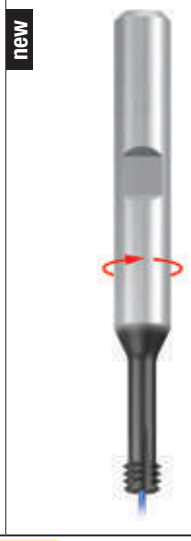
L10 | 4-5 Flutes

DIN 6535 HA HB | ø D



For internal threads





M, MF

ISO Metric Threads
DIN 13

Coating: TIALN-T46

Applications – Material: H 1.1-5

Thread Depth: **2 x D**

Nominal Size ø D	$P_{max.}$ mm	l_1	l_3	mm l_5	ø d_1	ø d_2	Flutes	ZGF-HCUT-VHM 2xD IKZ-HA TIALN-T46		ZGF-HCUT-VHM 2xD IKZ-HB TIALN-T46	
M 3 [2]	0.5	51	36	6.25	2.4	6	4	GF283729.0030	●	GF283129.0030	●
M 4 [2]	0.7	51	36	8.35	3.15	6	4	GF283729.0040	●	GF283129.0040	●
M 5	0.8	52	36	10.4	4.04	6	4	GF283729.0050	●	GF283129.0050	●
M 6	1	55	36	12.3	4.8	6	4	GF283729.0060	●	GF283129.0060	●
M 8	1.25	60	36	16.6	6.5	8	4	GF283729.0080	●	GF283129.0080	●
M10	1.5	70	40	20.75	8.2	10	5	GF283729.0100	●	GF283129.0100	●
M12	1.75	74	40	24.85	9.9	10	5	GF283729.0112	●	GF283129.0112	●
M14	2	85	45	29	11.6	12	5	GF283729.0114	●	GF283129.0114	●
M16	2	90	45	33	13.6	14	5	GF283729.0116	●	GF283129.0116	●

[2] Design without internal coolant supply IKZ

Other sizes upon request

● = In stock
★ = Allow 7 days for delivery

Inch Shank

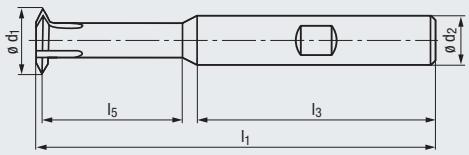
Carbide

RH + LH

3 Flutes

ASME B94.19

For internal threads



STI-UNC

Unified Coarse Thread
ASME B18.29.1

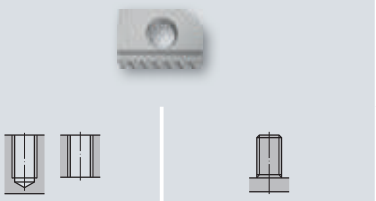
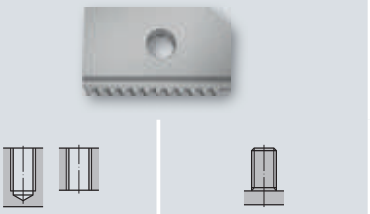
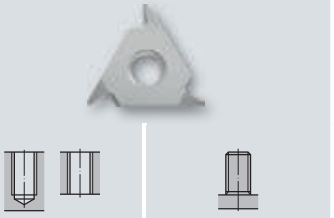
For wire thread inserts

Coating	TICN
Applications – Material	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2
Thread Depth	2 x D

Nominal Size ø D	T.P.I.	l_1	l_3	inch l_5	ø d_1	ø d_2	Flutes	ZGFI-VHM 2xD HA TICN		ZGFI-VHM 2xD HB TICN	
STI-No. 4	40	1 5/8	1 3/32	0.291	0.117	1/8	3	GFS23706.5611	●		
STI-No. 6	32	2 1/2	1 3/8	0.366	0.143	1/4	3			GFS23106.5613	●
STI-No. 8	32	2 1/2	1 3/8	0.417	0.167	1/4	3			GFS23106.5614	●

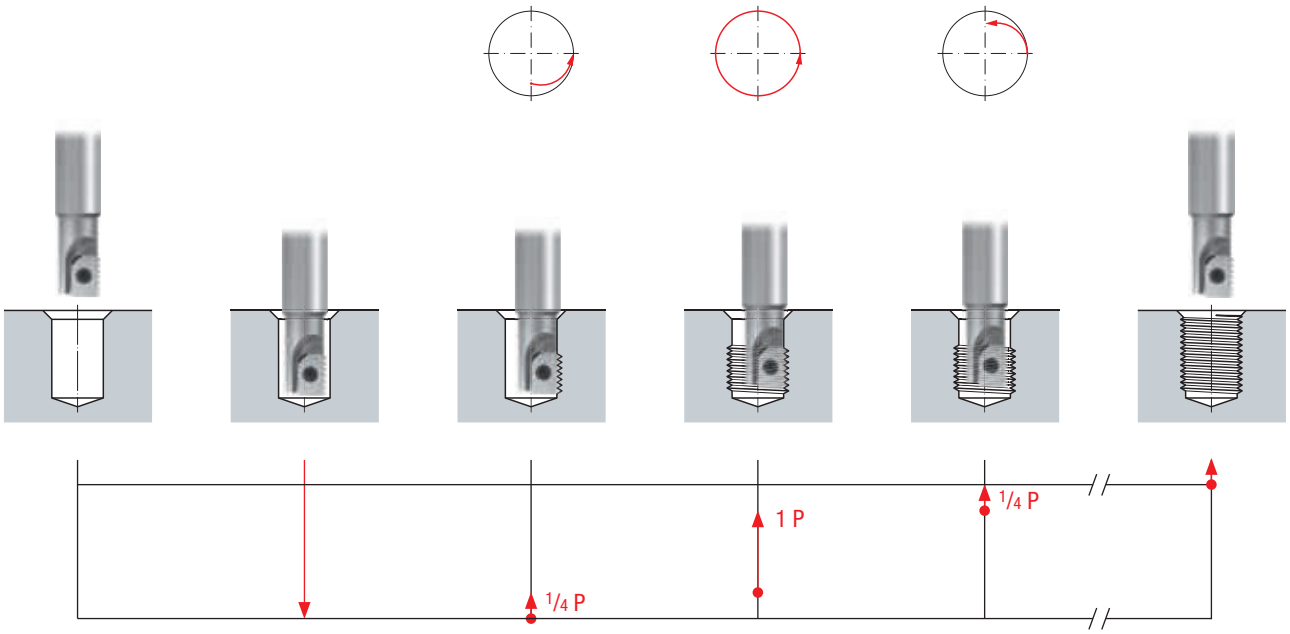
Other sizes upon request

Circular Thread Milling Bodies with 1 Insert 15 mm	Circular Thread Milling Bodies with 2 Inserts 15 mm	Circular Thread Milling Bodies with 1 Insert 26 mm	Circular Thread Milling Bodies with Indexable Infeed Insert “3-Tooth”
CIRC-GF	**CIRC-GF**	**CIRC-GF**	**CIRC-GF** [1]
Page			
312	312	314	315

Standard Inserts 15 mm		Long Inserts 26 mm		Indexable Infeed Inserts, “3-Tooth” Design		
						
Page						
313						UN
313		314		315		M, MF
313	313	314	314	315	315	G (BSP), BSW, BSF, W

[1] Thread milling cycle corresponding to that of the Gigant design, see page 316

Thread milling cycle

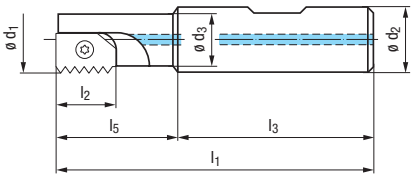


Design for 1 standard insert 15 mm

DIN 1835
B

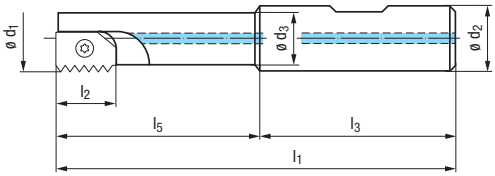
Short design

P mm	l_1	l_2	l_3	mm l_5	ø d_1	ø d_2	ø d_3	CIRC-GF 15 mm-Z1 IKZN	
0.5 - 2.5	78	15	48	30	16	16	13	GZ301110	●



Long design

P mm	l_1	l_2	l_3	mm l_5	ø d_1	ø d_2	ø d_3	CIRC-GF 15 mm-Z1 IKZN	
0.5 - 2.5	98	15	48	50	16	16	13	GZ301310 [2]	●
0.5 - 2.5	110	15	50	60	20	20	17	GZ301320	●
3.0 - 3.5 [1]	110	15	50	60	22	20	17	GZ301340	●

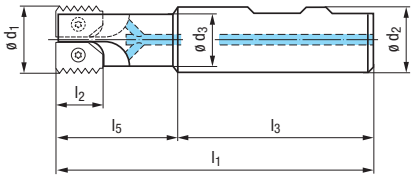


Design for 2 standard inserts 15 mm

DIN 1835
B

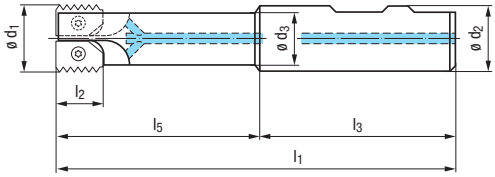
Short design

P mm	l_1	l_2	l_3	mm l_5	ø d_1	ø d_2	ø d_3	CIRC-GF 15 mm-Z2 IKZN	
0.5 - 2.5	106	15	56	50	25	25	21	GZ301130	●
3.0 - 3.5 [1]	106	15	56	50	27	25	21	GZ301140	●



Long design

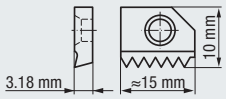
P mm	l_1	l_2	l_3	mm l_5	ø d_1	ø d_2	ø d_3	CIRC-GF 15 mm-Z2 IKZN	
0.5 - 2.5	150	15	56	94	25	25	21	GZ301330 [2]	●



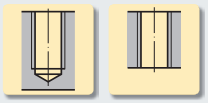
[1] Reinforced design
[2] Of vibration-absorbing heavy metal

UN

Unified Threads
ASME B1.1



Carbide | RH + LH



For internal threads

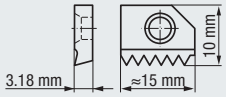
Standard inserts 15 mm

Coating										TIALN-T4							
Range of Application	P	1.1-5.1	K	1.1-4.2	N	1.1-5	P	1.1-5.1	M	1.1-4.1	K	1.1-4.2					
	N	2.1-6	N	3.1-4.2, 5.2	S	1.1-3	N	1.1-5.2	S	1.1-2.6	H	1.1-2					

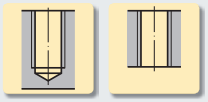
T.P.I.	HM-FP-Z1 15 mm		HM-FP-Z1 15 mm TIALN-T4	
20	GF603111.9580	●	GF603117.9580	
16	GF603111.9582	●	GF603117.9582	
14	GF603111.9583	●	GF603117.9583	
12	GF603111.9585	●	GF603117.9585	●

M, MF

ISO Metric Threads
DIN 13



Carbide | RH + LH



For internal threads

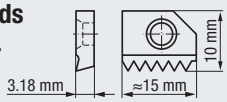
Standard inserts 15 mm

Coating										TIALN-T4							
Range of Application	P	1.1-5.1	K	1.1-4.2	N	1.1-5	P	1.1-5.1	M	1.1-4.1	K	1.1-4.2					
	N	2.1-6	N	3.1-4.2, 5.2	S	1.1-3	N	1.1-5.2	S	1.1-2.6	H	1.1-2					

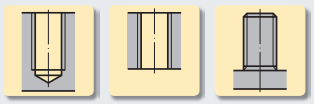
P mm	HM-FP-Z1 15 mm		HM-FP-Z1 15 mm TIALN-T4	
0.5	GF603111.9506	●	GF603117.9506	
0.75	GF603111.9509	●	GF603117.9509	
1	GF603111.9512	●	GF603117.9512	●
1.25	GF603111.9513	●	GF603117.9513	
1.5	GF603111.9514	●	GF603117.9514	●
1.75	GF603111.9515	●	GF603117.9515	
2	GF603111.9516	●	GF603117.9516	●
2.5	GF603111.9517	●	GF603117.9517	●
3 [1)]	GF603111.9518	●	GF603117.9518	●
3.5 [1)]	GF603111.9519	●	GF603117.9519	

G (BSP), BSW, BSF, W

Whitworth Pipe Threads
DIN EN ISO 228, BS 84



Carbide | RH + LH



For internal and external threads

Standard inserts 15 mm

Coating										TIALN-T4							
Range of Application	P	1.1-5.1	K	1.1-4.2	N	1.1-5	P	1.1-5.1	M	1.1-4.1	K	1.1-4.2					
	N	2.1-6	N	3.1-4.2, 5.2	S	1.1-3	N	1.1-5.2	S	1.1-2.6	H	1.1-2					

T.P.I.	HM-FP-Z1 15 mm		HM-FP-Z1 15 mm TIALN-T4	
14	GF603111.9548	●	GF603117.9548	●
11	GF603111.9550	●	GF603117.9550	●

Accessories

GZ309010 Spare screw M4 x 7; Torx T15

GZ309020 Screw driver Torx T15

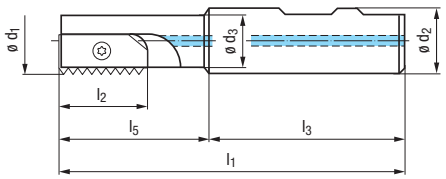
● = In stock
★ = Allow 7 days for delivery

Design for 1 long insert 26 mm

DIN 1835
B

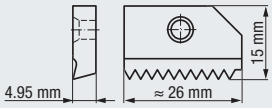
Short design

P mm	l_1	l_2	l_3	l_5	ø d_1	ø d_2	ø d_3	CIRK-GF 26 mm-Z1 IKZN	
1 - 4	107	26	56	48	25	25	20	GZ303010	●

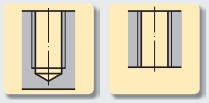


M, MF

ISO Metric Threads
DIN 13



Carbide | RH + LH



For internal threads

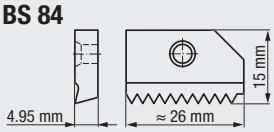
Long inserts 26 mm

	Coating	TIALN-T4
	Range of Application	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2

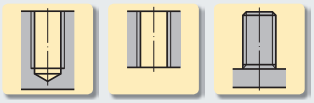
T.P.I.	HM-FP-Z1 26 mm TIALN-T4	
1.5	GF603147.9514	●
2	GF603147.9516	●
2.5	GF603147.9517	●
3	GF603147.9518	●
3.5	GF603147.9519	●
4	GF603147.9520	●

G (BSP), BSW, BSF, W

Whitworth Pipe Threads
DIN EN ISO 228, BS 84



Carbide | RH + LH



For internal and external threads

Long inserts 26 mm

	Coating	TIALN-T4
	Range of Application	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-5.2 S 1.1-2.6 H 1.1-2

P mm	HM-FP-Z1 26 mm TIALN-T4	
14	GF603147.9548	●
11	GF603147.9550	●

Accessories

GZ309210 Spare screw M4 x 13; Torx T15

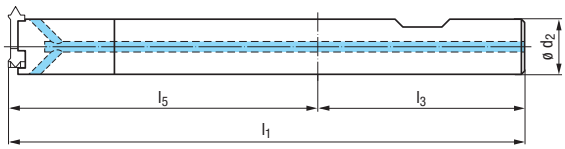
GZ309020 Screw driver Torx T15

For indexable infeed inserts, “3-tooth” design

DIN 6535 HB

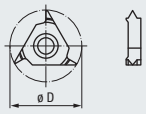
Carbide design

Insert Size	l_1	l_3	l_5	ø d_2	CIRC-GF Size 02 IKZN	
		mm				
02	112	45	67	12	GZ311330	●

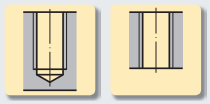


M, MF

ISO Metric Threads
DIN 13



Carbide | RH + LH



For internal threads

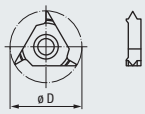
Indexable infeed inserts, “3-tooth” design

Coating									TIALN-T4				
Range of Application	P	1.1-5.1	K	1.1-4.2	N	1.1-5	P	1.1-5.1	M	1.1-4.1	K	1.1-4.2
	N	2.1-6	N	3.1-4.2, 5.2	S	1.1-3	N	1.1-5.2	S	1.1-2.6	H	1.1-2

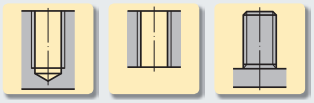
Insert Size	P mm	ø D	HM-EP-Z3 Size 02		HM-EP-Z3 Size 02 TIALN-T4	
02	1 - 3.5	17.5	GF613121.9512	●	GF613127.9512	●
02	3	17.5	GF613121.9518	●	GF613127.9518	●
02	2.5 (M20)	16	GF613121.0120	●	GF613127.0120	●

G (BSP), BSW, BSF, W

Whitworth Pipe Threads
DIN EN ISO 228, BS 84



Carbide | RH + LH



For internal and external threads

Indexable infeed inserts, “3-tooth” design

new

new

Coating									TIALN-T4				
Range of Application	P	1.1-5.1	K	1.1-4.2	N	1.1-5	P	1.1-5.1	M	1.1-4.1	K	1.1-4.2
	N	2.1-6	N	3.1-4.2, 5.2	S	1.1-3	N	1.1-5.2	S	1.1-2.6	H	1.1-2

Insert Size	T.P.I.	ø D	HM-EP-Z3 Size 02		HM-EP-Z3 Size 02 TIALN-T4	
02	14	17.5	GF613121.9548	●	GF613127.9548	●
02	11	17.5	GF613121.9550	●	GF613127.9550	●

Accessories

GZ319020 Spare screw M4 x 11; Torx T15

GZ319060 Screw driver Torx T15

● = In stock
★ = Allow 7 days for delivery

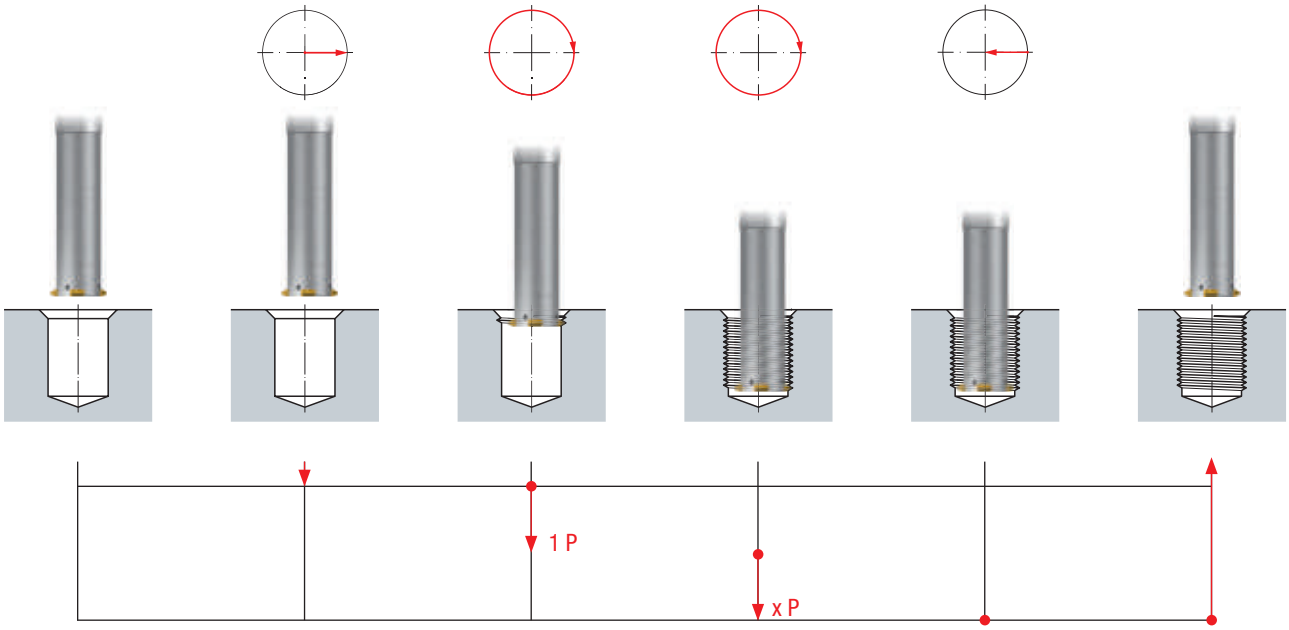
Tool description:

Circular thread milling bodies with exchangeable inserts for the production of large internal and external threads (from M20). The inserts can mostly be used universally (they are not limited to a single pitch). A ready prepared thread hole, countersunk if necessary, is needed.

Application range:

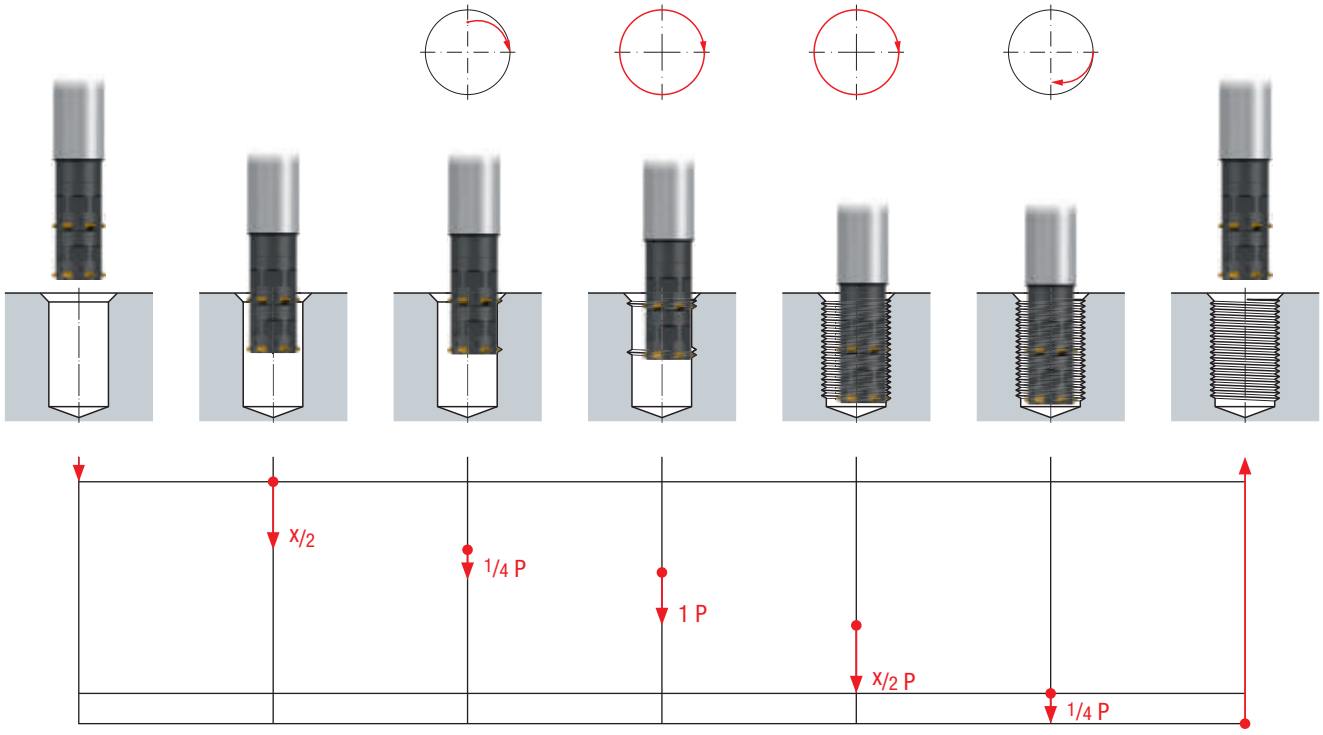
Low- and high-alloyed steels up to 1400 N/mm^2, stainless steel materials, cast materials, aluminum alloys, copper alloys, magnesium alloys, synthetics as well as titanium alloys.

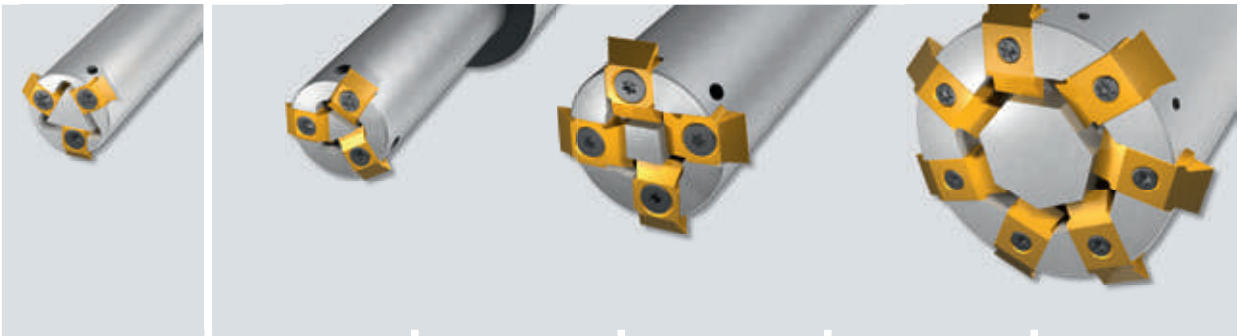
Thread milling cycle



Thread milling cycle

Gigant modular sprinter





≥ 7/8 in. (≥ 20 mm)	≥ 1 1/8 in. (≥ 30 mm)	≥ 1 1/2 in. (≥ 40 mm)	≥ 2 in. (≥ 48 mm)	≥ 2 1/2 in. (≥ 64 mm)	≥ 4 1/2 in. (≥ 115 mm)
Size 10	Size 11	Size 12	Size 13	Size 14	Size 15
Page					
320	322	324	326, 328	330	332

24 - 8 T.P.I. ≤ 3 mm	24 - 6 T.P.I. ≤ 4 mm	16 - 4.5 T.P.I. ≤ 5.5 mm	16 - 4 T.P.I. ≤ 6 mm	16 - 4 T.P.I. ≤ 6 mm	16 - 4 T.P.I. ≤ 8 mm	
Size 10	Size 11	Size 12	Size 13	Size 14	Size 15	
Page						
321	323	325	327, 329	331	333	UN
321 321	323 323	325 325	327, 329 327, 329	331 331	333	M, MF
321 321	323 323	325 325	327, 329 327, 329	331 331		G (BSP), BSW, BSF, W
	323	325				NPT

	Page
Milling rings for removal of the incomplete thread	334
Holders for Gigant	336 - 337

Need programming assistance?

EMUGE's trained thread milling specialist can assist you with advice and guidance in writing the correct program for your CNC machine tool. Thread milling experts will analyze your exact application and help guide you through the proper line code programming.

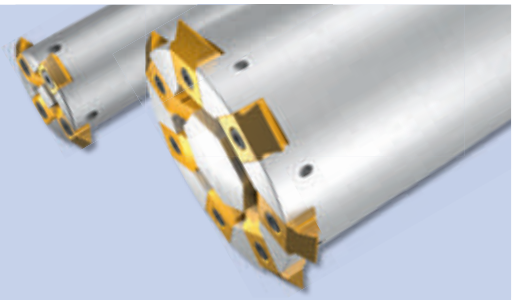
Contact EMUGE Technical Support department or visit **www.emuge.com**

Product Finder
v_c / f_z
UNC
UNF
UN
M
MF
NPSF
Rp (BSPP)
G
W
BSW, BSF
NPT
NPTF
Rc (BSPT)
STI
SELF-LOCK
Accessories
Tech. Info
BGF
ZBGF
GSF (Aero)
GSF-Z
GF(I), GF-Z
GF-Vario-Z
GF-H
GF(I)-KEG
ZGF(I)
CIRC-GF
Gigant
FPC, FMC
MoSys

Gigant-ic

Advantages:

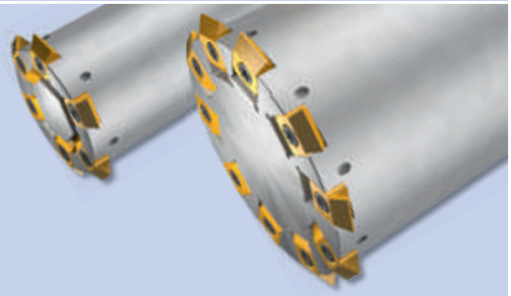
- Flexibility



Gigant sprinter

Advantages:

- Fast operation

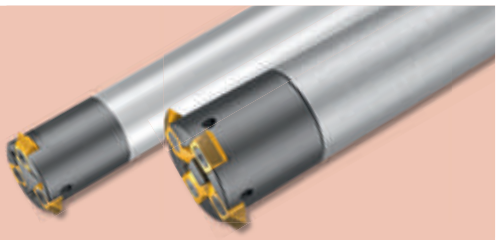


Gigant soft run

Carbide tool body

Advantages:

- Smooth operation
- Stability

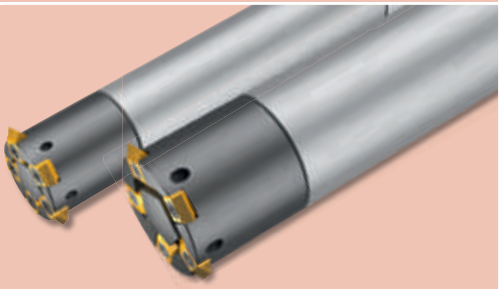


Gigant soft run sprinter

Carbide tool body

Advantages:

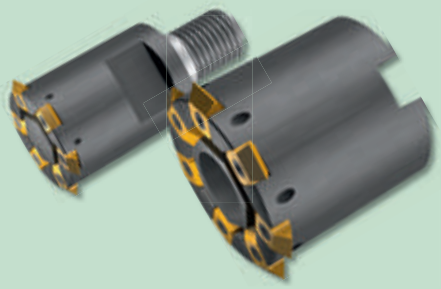
- Fast operation
- Smooth operation
- Stability



Gigant modular

Advantages:

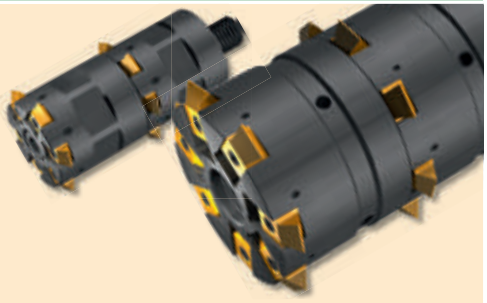
- Modular construction



Gigant modular sprinter

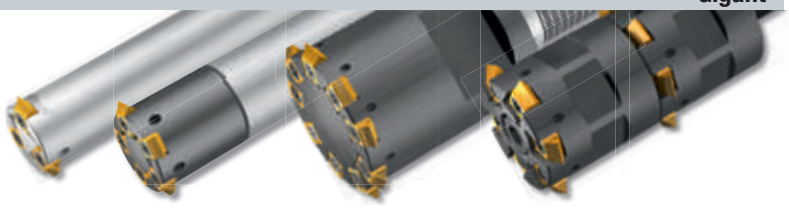
Advantages:

- Flexible lenghts
- Reduced machining times



10

For large thread sizes, from thread diameter 7/8 in. (20 mm)



Gigant-ic

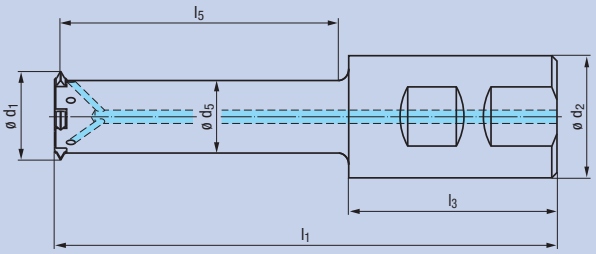
Gigant sprinter

ASME B94.19 | ø D | 3 Inserts | 2-5 Ins.

ø $D_{min.}$	l_1	l_3	l_5	ø d_1	ø d_2	ø d_5	Ins.	Gigant-ic Size 10-IKZN		Gigant sprinter Size 10-IKZN	
inch											
7/8	3.425	1 25/32	1.575	0.669	1/2	0.470	2			GZ340000	●
1	4.567	1 29/32	2.575	0.807	5/8	0.626	3	GZ340050	●		
1 1/8	5.610	2 9/32	3.150	0.939	1 1/4	0.748	5			GZ340200	●

DIN 1835 B | ø D | 2-3 Ins. | 5 Inserts

ø $D_{min.}$	l_1	l_3	l_5	ø d_1	ø d_2 h6	ø d_5	Ins.	Gigant-ic Size 10-IKZN		Gigant sprinter Size 10-IKZN	
mm											
20	87	45	40	17	12	12	2	GZ341000	●		
24	100	48	50	20.5	16	15.9	3	GZ341040	●		
24	115	48	65	20.5	16	15.9	3	GZ341050	●		
30	145	60	80	23.85	32	19	5			GZ341200	●

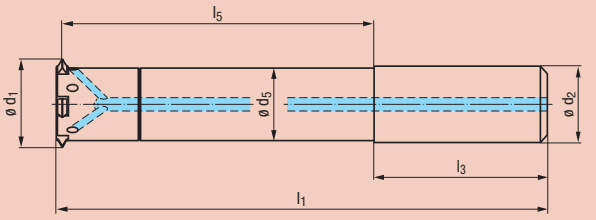


Gigant soft run

Gigant soft run sprinter

DIN 6535 HA | ø D | 2-3 Ins. | 5-8 Ins.

ø $D_{min.}$	l_1	l_3	l_5	ø d_1	ø d_2 h6	ø d_5	Ins.	Gigant soft run Size 10-IKZN		Gigant soft run sprinter Size 10-IKZN	
mm											
20	97	45	50	17	12	12	2	GZ34A010	●		
24	115	48	65	20.5	16	15.9	3	GZ34A000	●		
30	142	50	90	23.85	20	19	5			GZ34C000	●
36	153	56	95	30	25	25	7			GZ34C010	●
40	178	60	115	32.85	32	27.7	8			GZ34C020	●



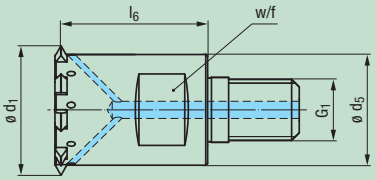
With variable length upon request

Gigant modular

M | ø D | 9 Inserts

ø $D_{min.}$	l_6	ø d_1	ø d_5	G_1	w/f	Ins.	Gigant modular Size 10-IKZN	
mm								
40	38	34.25	28.8	M16	22	9	GZ351000	●

Can only be used individually



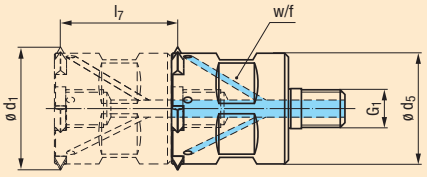
Gigant modular sprinter

MF | ø D | 6 Inserts

new	ø $D_{min.}$	l_7	ø d_1	ø d_5	G_1	w/f	Ins.	Gigant modular sprinter Size 10-IKZN	
	mm								
	32	24	27	22.15	M8 x 1	19	6	GZ353000	●

The measurement l_7 must be a multiple of the pitch P of the thread to be produced

Depending on the application, we recommend to combine up to a maximum of 3 Gigant modular sprinter



The hexagon socket screw to close the coolant hole on the face side is included with the delivery

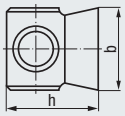
Milling rings for removal of the incomplete thread, see page 334

Holders and extensions for Gigant modular and Gigant modular sprinter, see pages 336 - 337

Ordering Example: **GZ340000**

10

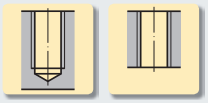
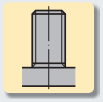
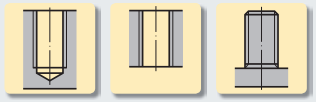
2-tooth indexable inserts for a pitch range from 24 - 8 T.P.I. (up to 3 mm)



Carbide | RH + LH

Coating: TIN | TIALN-T4

Applications – Material: P 1.1-5.1 | M 1.1-4.1 | K 1.1-4.2 | N 1.1-4.4 | S 1.1-3

T.P.I.	P mm	b mm	b inch	h mm	h inch	HM-WP-Z2 Size 10 TIN		HM-WP-Z2 Size 10 TIALN-T4	
UN, M, MF Unified threads ANSI B1.1 and ISO Metric threads DIN 13				For internal threads 					
24 - 10	1 - 2.5	5	0.197	7	0.276	GF643005.9512	●	GF643007.9512	●
16 - 8	1.5 - 3	5	0.197	7	0.276	GF643005.9514	●	GF643007.9514	●
M, MF ISO Metric threads DIN 13				For external threads 					
	1.5	5	0.197	7	0.276			GF641007.9514	●
	2	5	0.197	7	0.276			GF641007.9516	●
G (BSP), BSW, BSF, W Whitworth pipe threads DIN EN ISO 228 and Whitworth threads BS 84				For internal and external threads 					
14 (28 - 9)	(1.814)	5	0.197	7	0.276	GF643005.9548	●	GF643007.9548	●

Other designs upon request, e.g.

ACME thread | Round thread | Buttress thread

Infeed inserts in various designs

Accessories

Spare screw M2.5 x 8.5; Torx T7 — **GZ349010**

Screw driver Torx T7 — **GZ349020**

Torque screw driver Torx T7 — **GZ349040**

Screw plug M8x1 x 10; w/f 4 — **GZ359310**

● = In stock
★ = Allow 7 days for delivery

11

For large thread sizes, from thread diameter 1 1/8 in. (30 mm)

Gigant-ic

Gigant sprinter

ASME B94.19 | ø D | 3-5 Ins. | 6-8 Ins.

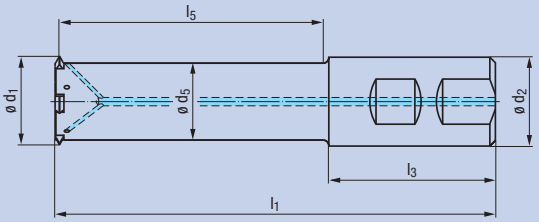
inch

ø $D_{min.}$	l_1	l_3	l_5	ø d_1	ø d_2	ø d_5	Ins.	Gigant-ic Size 11-IKZN		Gigant sprinter Size 11-IKZN	
1 1/8	4.744	2 9/32	2.362	0.939	1 1/4	0.748	3	GZ340121	●		
1 1/8	5.512	2 9/32	3.150	0.939	1 1/4	0.748	3	GZ340001	●		
1 1/8	5.906	2 9/32	3.543	0.939	1 1/4	0.748	3	GZ340101	●		
1 1/2	5.945	2 9/32	3.543	1.102	1 1/4	0.906	5	GZ340211	●		
1 1/2	6.244	2 9/32	3.740	1.293	1 1/4	1.091	5	GZ340201	●		
1 3/4	4.799	2 9/32	2.398	1.339	1 1/4	1.134	6			GZ340221	●
2	5.591	2 9/32	3.150	1.585	1 1/4	1.378	8			GZ340231	●

DIN 1835 B | ø D | 3 Inserts | 5-8 Ins.

mm

ø $D_{min.}$	l_1	l_3	l_5	ø d_1	ø d_2 h6	ø d_5	Ins.	Gigant-ic Size 11-IKZN		Gigant sprinter Size 11-IKZN	
30	122	60	60	23.85	32	19	3	GZ341121	●		
30	138	56	80	23.85	25	19	3	GZ341021	●		
30	142	60	80	23.85	32	19	3	GZ341001	●		
30	152	60	90	23.85	32	19	3	GZ341101	●		
34	153	60	90	28	32	23	5			GZ341211	●
36	157	60	95	29.5	32	24.5	3	GZ341131	●		
40	159	60	95	32.85	32	27.7	5			GZ341201	●
40	124	60	60	34	32	28.8	6			GZ341221	●
48	144	60	80	40.25	32	35	8			GZ341231	●



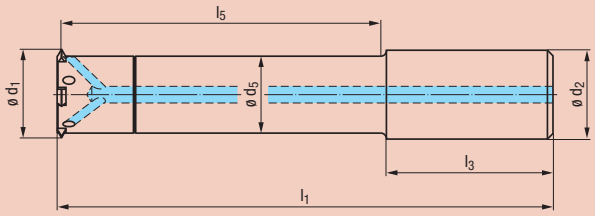
Gigant soft run

Gigant soft run sprinter

DIN 6535 HA | ø D | 3 Inserts | 5 Inserts

mm

ø $D_{min.}$	l_1	l_3	l_5	ø d_1	ø d_2 h6	ø d_5	Ins.	Gigant soft run Size 11-IKZN		Gigant soft run sprinter Size 11-IKZN	
30	142	50	90	23.85	20	19	3	GZ34A001	●		
40	179	60	115	32.85	32	27.7	5			GZ34C001	●



With variable length upon request

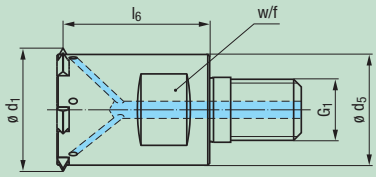
Gigant modular

M | ø D | 6 Inserts

Can only be used individually

mm

ø $D_{min.}$	l_6	ø d_1	ø d_5	G_1	w/f	Ins.	Gigant modular Size 11-IKZN	
42	38	34.25	28.8	M16	22	6	GZ351001	●



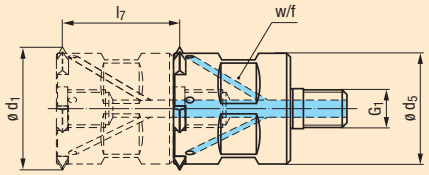
Gigant modular sprinter

MF | ø D | 6 Inserts

Depending on the application, we recommend to combine up to a maximum of 3 Gigant modular sprinter

mm

new	ø $D_{min.}$	l_7	ø d_1	ø d_5	G_1	w/f	Ins.	Gigant modular sprinter Size 11-IKZN	
	42	24	34.25	29.15	M10 x 1	25	6	GZ353001	●

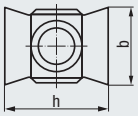


The hexagon socket screw to close the coolant hole on the face side is included with the delivery

The measurement l_7 must be a multiple of the pitch P of the thread to be produced

11

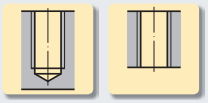
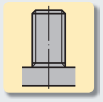
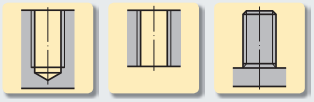
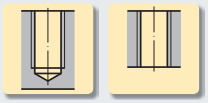
4-tooth indexable inserts for a pitch range from 24 - 6 T.P.I. (up to 4 mm)



Carbide | RH + LH

Coating: TIN | TIALN-T4

Applications – Material: P 1.1-5.1 | M 1.1-4.1 | K 1.1-4.2 | N 1.1-4.4 | S 1.1-3

T.P.I.	P mm	b mm	b inch	h mm	h inch	HM-WP-Z4 Size 11 TIN		HM-WP-Z4 Size 11 TIALN-T4	
UN, M, MF **Unified threads ANSI B1.1 and ISO Metric threads DIN 13**				For internal threads 					
24 - 10	1 - 2.5	6.35	0.250	9.52	0.375	GF643105.9512	●	GF643107.9512	●
16 - 10	1.5 - 2.5	6.35	0.250	9.52	0.375	GF643105.9514	●	GF643107.9514	●
10 - 6	2.5 - 4	6.35	0.250	9.52	0.375	GF643105.9517	●	GF643107.9517	●
M, MF **ISO Metric threads DIN 13**				For external threads 					
	2.5	6.35	0.250	9.52	0.375			GF641107.9517	●
	3	6.35	0.250	9.52	0.375			GF641107.9518	●
G (BSP), BSW, BSF, W **Whitworth pipe threads DIN EN ISO 228 and Whitworth threads BS 84**				For internal and external threads 					
11 (28 - 9)	(2.309)	6.35	0.250	9.52	0.375	GF643105.9550	●	GF643107.9550	●
NPT **American tapered pipe thread, ANSI/ASME B1.20.1** for threads **with dryseal material**, taper 1:16				For internal threads 					
11 1/2	(2.209)	6.35	0.250	9.52	0.375			GF643107.9679	●

Milling rings for removal of the incomplete thread, see page 334

Holders and extensions for Gigant modular and Gigant modular sprinter, see pages 336 - 337

Other designs upon request, e.g.

ACME thread

Round thread

Buttress thread

Infeed inserts in various designs

Accessories

Spare screw M2.5 x 8.5; Torx T7 — **GZ349011**

Screw driver Torx T7 — **GZ349021**

Torque screw driver Torx T7 — **GZ349041**

Screw plug M10x1 x 12; w/f 5 — **GZ359311**

● = In stock
★ = Allow 7 days for delivery

12

For large thread sizes, from thread diameter 1 1/2 in. (40 mm)

Gigant-ic

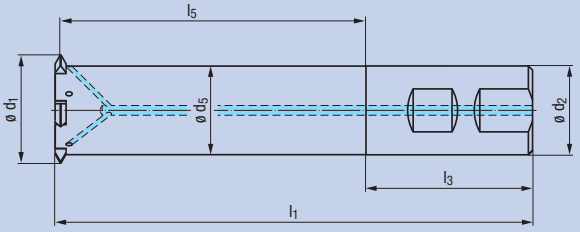
Gigant sprinter

ASME B94.19 | ø D | 3 Inserts | 4-5 Ins.

inch								Gigant-ic Size 12-IKZN		Gigant sprinter Size 12-IKZN	
ø $D_{min.}$	l_1	l_3	l_5	ø d_1	ø d_2	ø d_5	Ins.				
1 1/2	6.102	2 9/32	3.740	1.293	1 1/4	0.965	3	GZ340012	●		
1 1/2	6.890	2 9/32	4.528	1.293	1 1/4	0.965	3	GZ340112	●		
1 3/4	7.555	2 9/32	5.118	1.417	1 1/4	1.094	4			GZ340212	●
2	6.772	2 9/32	4.331	1.585	1 1/4	1.256	5			GZ340202	●

DIN 1835 B | ø D | 3 Inserts | 5 Inserts

mm								Gigant-ic Size 12-IKZN		Gigant sprinter Size 12-IKZN	
ø $D_{min.}$	l_1	l_3	l_5	ø d_1	ø d_2 h6	ø d_5	Ins.				
40	153	56	95	32.85	25	24.5	3	GZ341032	●		
40	158	60	95	32.85	32	24.5	3	GZ341012	●		
40	178	60	115	32.85	32	24.5	3	GZ341112	●		
48	172	60	110	40.25	32	31.9	5			GZ341202	●

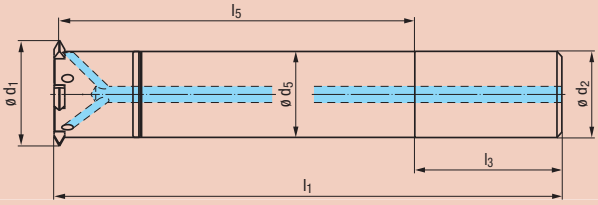


Gigant soft run

Gigant soft run sprinter

DIN 6535 HA | ø D | 3 Inserts | 5 Inserts

mm								Gigant soft run Size 12-IKZN		Gigant soft run sprinter Size 12-IKZN	
ø $D_{min.}$	l_1	l_3	l_5	ø d_1	ø d_2 h6	ø d_5	Ins.				
40	173	56	115	32.85	25	24.5	3	GZ34A002	●		
48	207	60	145	40.25	32	31.9	5			GZ34C002	●



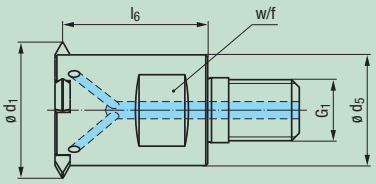
With variable length upon request

Gigant modular

M | ø D | 4 Inserts

mm							Gigant modular Size 12-IKZN	
ø $D_{min.}$	l_6	ø d_1	ø d_5	G_1	w/f	Ins.		
46	38	37.5	28.8	M16	22	4	GZ351002	●

Can only be used individually



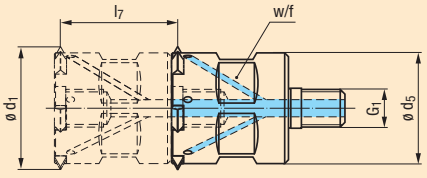
Gigant modular sprinter

MF | ø D | 6 Inserts

new	mm							Gigant modular sprinter Size 12-IKZN	
	ø $D_{min.}$	l_7	ø d_1	ø d_5	G_1	w/f	Ins.		
	58	36	46	37.65	M12 x 1	32	6	GZ353002	●

The measurement l_7 must be a multiple of the pitch P of the thread to be produced

Depending on the application, we recommend to combine up to a maximum of 3 Gigant modular sprinter



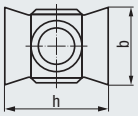
The hexagon socket screw to close the coolant hole on the face side is included with the delivery

Milling rings for removal of the incomplete thread, see page 334

Holders and extensions for Gigant modular and Gigant modular sprinter, see pages 336 - 337

12

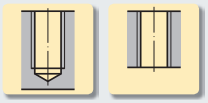
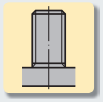
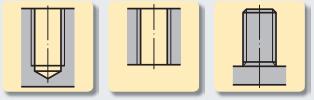
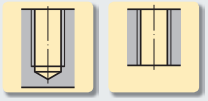
4-tooth indexable inserts for a pitch range from 16 - 4.5 T.P.I. (up to 5.5 mm)



Carbide | RH + LH

Coating: TIN | TIALN-T4

Applications – Material: P 1.1-5.1 | M 1.1-4.1 | K 1.1-4.2 | N 1.1-4.4 | S 1.1-3

T.P.I.	P mm	b mm	b inch	h mm	h inch	HM-WP-Z4 Size 12 TIN		HM-WP-Z4 Size 12 TIALN-T4	
UN, M, MF **Unified threads ANSI B1.1 and ISO Metric threads DIN 13**				For internal threads 					
16 - 10	1.5 - 2.5	8.5	0.335	13.5	0.531	GF643205.9514	●	GF643207.9514	●
10 - 4.5	2.5 - 5.5	8.5	0.335	13.5	0.531	GF643205.9517	●	GF643207.9517	●
M, MF **ISO Metric threads DIN 13**				For external threads 					
	3.5	8.5	0.335	13.5	0.531			GF641207.9519	●
	4	8.5	0.335	13.5	0.531			GF641207.9520	●
G (BSP), BSW, BSF, W **Whitworth pipe threads DIN EN ISO 228 and Whitworth threads BS 84**				For internal and external threads 					
11 (28 - 5)	(2.309)	8.5	0.335	13.5	0.531	GF643205.9550	●	GF643207.9550	●
NPT **American tapered pipe thread, ANSI/ASME B1.20.1** for threads **with dryseal material**, taper 1:16				For internal threads 					
8	(3.175)	8.5	0.335	13.5	0.531			GF643207.9680	●

Other designs upon request, e.g.

ACME thread | Round thread | Buttress thread

Infeed inserts in various designs

Accessories

Spare screw M3 x 11; Torx T9 — **GZ349012**

Screw driver Torx T9 — **GZ349022**

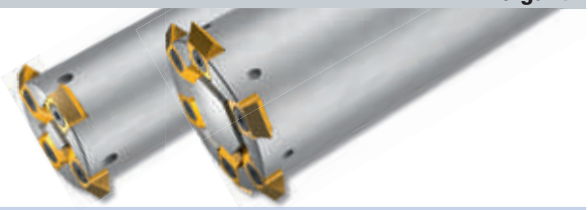
Torque screw driver Torx T9 — **GZ349042**

Screw plug M12x1 x 16; w/f 6 — **GZ359312**

● = In stock
★ = Allow 7 days for delivery

13

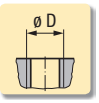
For large thread sizes, from thread diameter 2 in. (48 mm)



Gigant-ic

Gigant sprinter

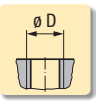
ASME B94.19



inch

ø $D_{min.}$	l_1	l_3	l_5	ø d_1	ø d_2	ø d_5	Ins.	4 Inserts Gigant-ic Size 13-IKZN		5 Inserts Gigant sprinter Size 13-IKZN	
2	6.732	2 9/32	4.331	1.585	1 1/4	1.220	4	GZ340153	●		
2	8.110	2 9/32	5.709	1.585	1 1/4	1.220	4	GZ340143	●		
2 1/4	9.559	2 11/16	6.693	1.890	1 1/2	1.496	5			GZ340203	●

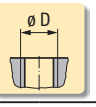
DIN 1835 B



mm

ø $D_{min.}$	l_1	l_3	l_5	ø d_1	ø d_2 h6	ø d_5	Ins.	4 Inserts Gigant-ic Size 13-IKZN	
48	173	60	110	40.25	32	31	4	GZ341153	●
48	208	60	145	40.25	32	31	4	GZ341143	●

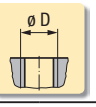
DIN 69871 AD/B



mm

ø $D_{min.}$	l_1	l_5	ø d_1	Taper Size	ø d_5	Ins.	4 Inserts Gigant-ic Size 13-IKZN		6 Inserts Gigant sprinter Size 13-IKZN	
48	212	110	40.25	SK 40	31	4	GZ343003	●		
48	245	110	40.25	SK 50	31	4	GZ344003	●		
48	247	145	40.25	SK 40	31	4	GZ343103	●		
48	280	145	40.25	SK 50	31	4	GZ344103	●		
64	333	195	52.55	SK 50	43.75	6			GZ344203	●

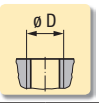
ASME B5.50



inch

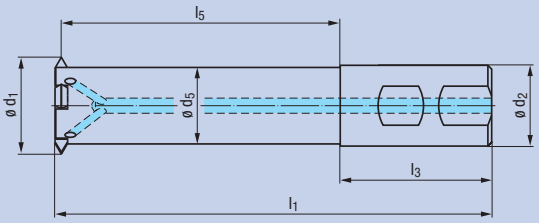
ø $D_{min.}$	l_1	l_5	ø d_1	Taper Size	ø d_5	Ins.	4 Inserts Gigant-ic Size 13-IKZN	
2	9.620	4.331	1.585	CAT 50	1.220	4	GZ346013	●
2	11.000	5.709	1.585	CAT 50	1.220	4	GZ346003	●

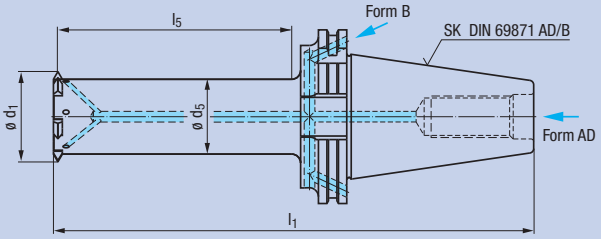
JIS B 6339

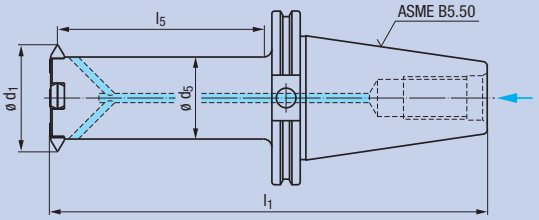


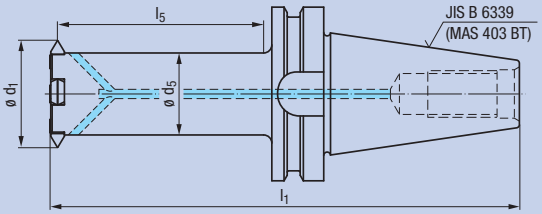
inch

ø $D_{min.}$	l_1	l_5	ø d_1	Taper Size	ø d_5	Ins.	4 Inserts Gigant-ic Size 13-IKZN	
2	11.772	5.709	1.585	BT 50	1.220	4	GZ348103	●









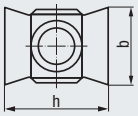
Milling rings for removal of the incomplete thread, see page 334

Holders and extensions for Gigant modular and Gigant modular sprinter, see pages 336 - 337

Ordering Example: **GZ340153**

13

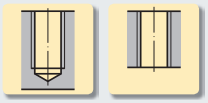
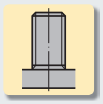
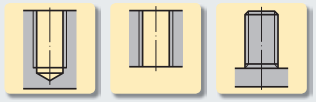
4-tooth indexable inserts for a pitch range from 16 - 4 T.P.I. (up to 6 mm)



Carbide | RH + LH

Coating: TIN | TIALN-T4

Applications – Material: P 1.1-5.1 | M 1.1-4.1 | K 1.1-4.2 | N 1.1-4.4 | S 1.1-3

T.P.I.	P mm	b mm	b inch	h mm	h inch	HM-WP-Z4 Size 13 TIN		HM-WP-Z4 Size 13 TIALN-T4	
UN, M, MF **Unified threads ANSI B1.1 and ISO Metric threads DIN 13**				For internal threads 					
16 - 9	1.5 - 3	9.5	0.374	15.5	0.610	GF643305.9514	●	GF643307.9514	●
9 - 4	3 - 6	9.5	0.374	15.5	0.610	GF643305.9518	●	GF643307.9518	●
M, MF **ISO Metric threads DIN 13**				For external threads 					
	4.5	9.5	0.374	15.5	0.610			GF641307.9521	●
	5	9.5	0.374	15.5	0.610			GF641307.9522	●
G (BSP), BSW, BSF, W **Whitworth pipe threads DIN EN ISO 228 and Whitworth threads BS 84**				For internal and external threads 					
11 (12 - 4.5)	(2.309)	9.5	0.374	15.5	0.610	GF643305.9550	●	GF643307.9550	●

Other designs upon request, e.g.

ACME thread

Round thread

Buttress thread

Infeed inserts in various designs

Accessories

Spare screw M4 x 13; Torx T15 — **GZ349013**

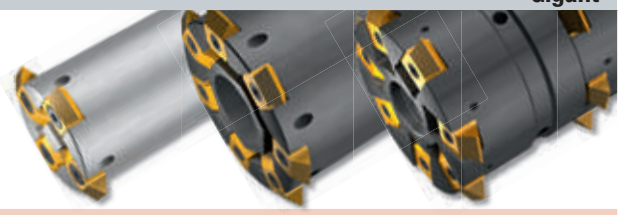
Screw driver Torx T15 — **GZ349023**

Torque screw driver Torx T15 — **GZ349043**

● = In stock
★ = Allow 7 days for delivery

13

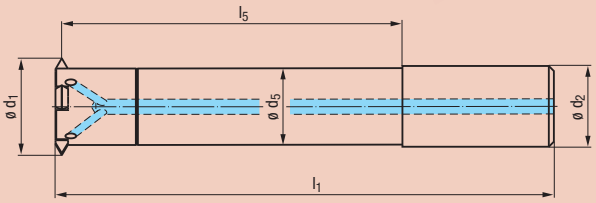
For large thread sizes, from thread diameter 2 in. (48 mm)



Gigant soft run

DIN 6535 HA | ø D | 4 Inserts

mm								
ø $D_{min.}$	l_1	l_3	l_5	ø d_1	ø d_2 h6	ø d_5	Ins.	Gigant soft run Size 13-IKZN
48	207	60	145	40.25	32	31	4	GZ34A003 ●



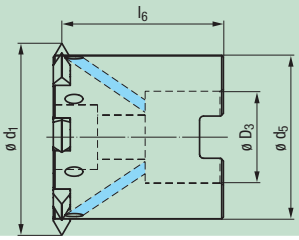
With variable length upon request

Gigant modular

DIN 138 | ø D | 7 Inserts

mm						
ø $D_{min.}$	l_6	ø d_1	ø d_5	ø D_3	Ins.	Gigant modular Size 13-IKZN
66	47.5	57.5	48	27	7	GZ352003 ●

Can only be used individually



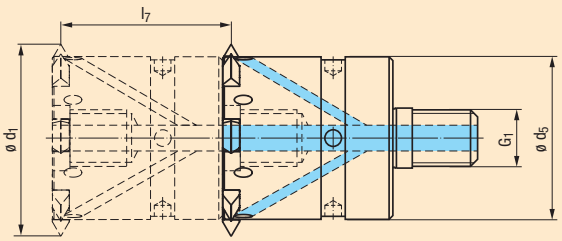
Gigant modular sprinter

MF | ø D | 7 Inserts

new	mm						
	ø $D_{min.}$	l_7	ø d_1	ø d_5	G_1	Ins.	Gigant modular sprinter Size 13-IKZN
	66	48	57.5	48	M18 x 1.5	7	GZ353003 ●

The measurement l_7 must be a multiple of the pitch P of the thread to be produced

Depending on the application, we recommend to combine up to a maximum of 3 Gigant modular sprinter



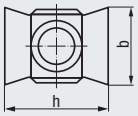
The hexagon socket screw to close the coolant hole on the face side is included with the delivery

Milling rings for removal of the incomplete thread, see page 334

Holders and extensions for Gigant modular and Gigant modular sprinter, see pages 336 - 337

13

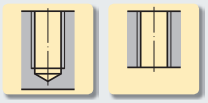
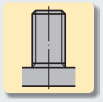
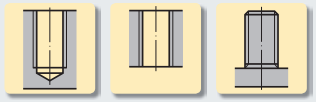
4-tooth indexable inserts for a pitch range from 16 - 4 T.P.I. (up to 6 mm)



Carbide | RH + LH

Coating: TIN | TIALN-T4

Applications – Material: P 1.1-5.1 | M 1.1-4.1 | K 1.1-4.2 | N 1.1-4.4 | S 1.1-3

T.P.I.	P mm	b mm	b inch	h mm	h inch	HM-WP-Z4 Size 13 TIN		HM-WP-Z4 Size 13 TIALN-T4	
UN, M, MF Unified threads ANSI B1.1 and ISO Metric threads DIN 13				For internal threads 					
16 - 9	1.5 - 3	9.5	0.374	15.5	0.610	GF643305.9514	●	GF643307.9514	●
9 - 4	3 - 6	9.5	0.374	15.5	0.610	GF643305.9518	●	GF643307.9518	●
M, MF ISO Metric threads DIN 13				For external threads 					
	4.5	9.5	0.374	15.5	0.610			GF641307.9521	●
	5	9.5	0.374	15.5	0.610			GF641307.9522	●
G (BSP), BSW, BSF, W Whitworth pipe threads DIN EN ISO 228 and Whitworth threads BS 84				For internal and external threads 					
11 (12 - 4.5)	(2.309)	9.5	0.374	15.5	0.610	GF643305.9550	●	GF643307.9550	●

Other designs upon request, e.g.

ACME thread | Round thread | Buttress thread

Infeed inserts in various designs

Accessories

Spare screw M4 x 13; Torx T15 — **GZ349013**

Screw driver Torx T15 — **GZ349023**

Torque screw driver Torx T15 — **GZ349043**

Hook wrench type B with pin acc. to DIN 1810-B 45-50 mm — **GZ349053**

Screw plug M18x1.5 x 20; w/f 10 — **GZ359313**

● = In stock
★ = Allow 7 days for delivery

14

For large thread sizes, from thread diameter 2 1/2 in. (64 mm)

Gigant-ic

Gigant sprinter

DIN 69871 AD/B | ø D | 4-7 Ins. | Z10

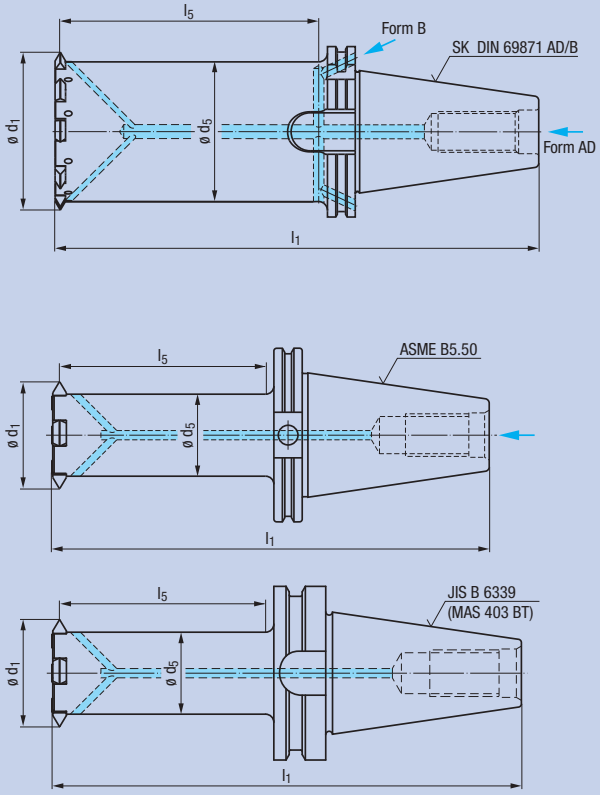
mm ø $D_{min.}$	l_1	l_5	ø d_1	Taper Size	ø d_5	Ins.	Gigant-ic Size 14-IKZN		Gigant sprinter Size 14-IKZN	
64	253	150	52.55	SK 40	41	4	GZ343014	●		
64	286	150	52.55	SK 50	41	4	GZ344014	●		
64	298	195	52.55	SK 40	41	4	GZ343114	●		
64	331	195	52.55	SK 50	41	4	GZ344114	●		
80	308	170	66.55	SK 50	55	7	GZ344024	●		
80	398	260	66.55	SK 50	55	7	GZ344124	●		
115	489	360	92	SK 50	80	10			GZ344204	●

ASME B5.50 | ø D | 4 Inserts

inch ø $D_{min.}$	l_1	l_5	ø d_1	Taper Size	ø d_5	Ins.	Gigant-ic Size 14-IKZN	
2 1/2	13.000	7.677	2.069	CAT 50	1.614	4	GZ346024	●

JIS B 6339 | ø D | 4 Inserts

inch ø $D_{min.}$	l_1	l_5	ø d_1	Taper Size	ø d_5	Ins.	Gigant-ic Size 14-IKZN	
2 1/2	13.780	7.677	2.069	BT 50	1.614	4	GZ348114	●

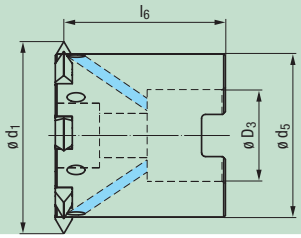


Gigant modular

Can only be used individually

DIN 138 | ø D | 7 Inserts

ø $D_{min.}$	l_6	mm ø d_1	ø d_5	ø D_3	Ins.	Gigant modular Size 14-IKZN	
80	47	71.5	60	27	7	GZ352004	●



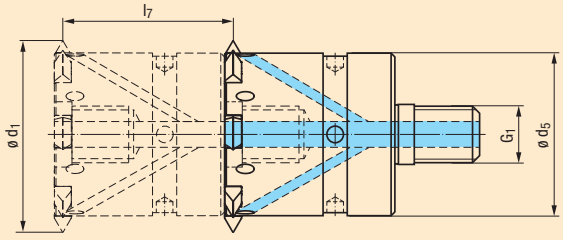
Gigant modular sprinter

Depending on the application, we recommend to combine up to a maximum of 3 Gigant modular sprinter

MF | ø D | 7 Inserts

new	ø $D_{min.}$	l_7	mm ø d_1	ø d_5	G_1	Ins.	Gigant modular sprinter Size 14-IKZN	
	80	60	71.5	60	M24 x 1.5	7	GZ353004	●

The measurement l_7 must be a multiple of the pitch P of the thread to be produced



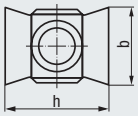
The hexagon socket screw to close the coolant hole on the face side is included with the delivery

Milling rings for removal of the incomplete thread, see page 334

Holders and extensions for Gigant modular and Gigant modular sprinter, see pages 336 - 337

14

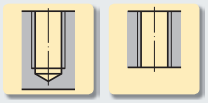
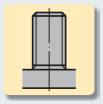
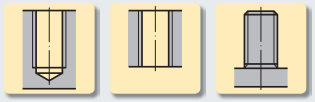
4-tooth indexable inserts for a pitch range from 16 - 4 T.P.I. (up to 6 mm)



Carbide | RH + LH

Coating: TIN | TIALN-T4

Applications – Material: P 1.1-5.1 | M 1.1-4.1 | K 1.1-4.2 | N 1.1-4.4 | S 1.1-3

T.P.I.	P mm	b mm	b inch	h mm	h inch	HM-WP-Z4 Size 14 TIN		HM-WP-Z4 Size 14 TIALN-T4	
UN, M, MF **Unified threads ANSI B1.1 and ISO Metric threads DIN 13**						For internal threads 			
16 - 9	1.5 - 3	12.5	0.492	19	0.748	GF643405.9514	●	GF643407.9514	●
9 - 4	3 - 6	12.5	0.492	19	0.748	GF643405.9518	●	GF643407.9518	●
M, MF **ISO Metric threads DIN 13**						For external threads 			
	5.5	12.5	0.492	19	0.748			GF641407.9709	●
	6	12.5	0.492	19	0.748			GF641407.9523	●
G (BSP), BSW, BSF, W **Whitworth pipe threads DIN EN ISO 228 and Whitworth threads BS 84**						For internal and external threads 			
11 (12 - 3.5)	(2.309)	12.5	0.492	19	0.748	GF643405.9550	●	GF643407.9550	●

Other designs upon request, e.g.

ACME thread | Round thread | Buttress thread

Infeed inserts in various designs

Accessories

Spare screw M5 x 15; Torx T20 — **GZ349014**

Screw driver Torx T20 — **GZ349024**

Torque screw driver Torx T20 — **GZ349044**

Hook wrench type B with pin acc. to DIN 1810-B 58-62 mm — **GZ349054**

Screw plug M24x1.5 x 25; w/f 12 — **GZ359314**

● = In stock
★ = Allow 7 days for delivery

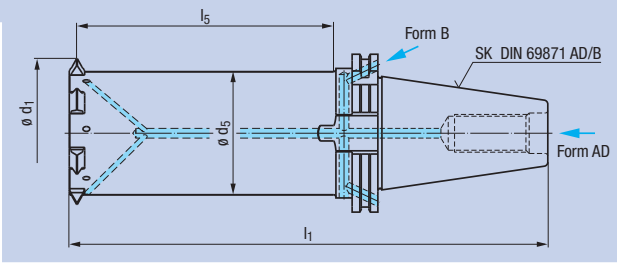
15

For large thread sizes, from thread diameter 4 1/2 in. (115 mm)

Gigant-ic

DIN 69871 AD/B | ø D | Z7

mm ø $D_{min.}$	l_1	l_5	ø d_1	Taper Size	ø d_5	Ins.	Gigant-ic Size 15-IKZN	
115	341	204	92	SK 50	76	7	GZ344035	●
115	497	360	92	SK 50	76	7	GZ344045	●

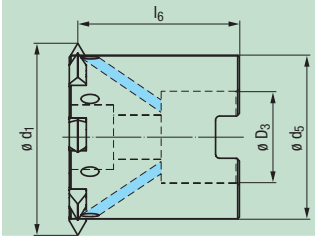


Gigant modular

DIN 138 | ø D | Z7

Can only be used individually

mm ø $D_{min.}$	l_6	ø d_1	ø d_5	ø D_3	Ins.	Gigant modular Size 15-IKZN	
115	55	94	78	32	7	GZ352005	●



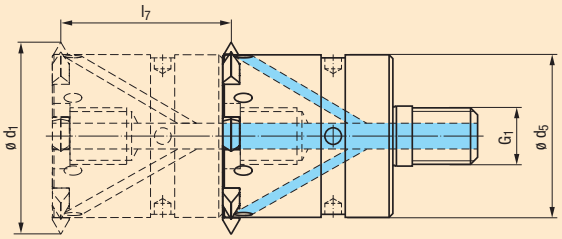
Gigant modular sprinter

MF | ø D | Z7

Depending on the application, we recommend to combine up to a maximum of 3 Gigant modular sprinter

new	mm ø $D_{min.}$	l_7	ø d_1	ø d_5	G_1	Ins.	Gigant modular sprinter Size 15-IKZN	
	115	60	94	78	M24 x 1.5	7	GZ353005	●

The measurement l_7 must be a multiple of the pitch P of the thread to be produced

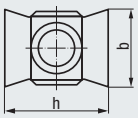


The hexagon socket screw to close the coolant hole on the face side is included with the delivery

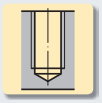
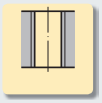
Holders and extensions for Gigant modular and Gigant modular sprinter, see pages 336 - 337

15

4-tooth indexable inserts for a pitch range from 16 - 4 T.P.I. (up to 8 mm)



Carbide | RH + LH

						Coating	TIN		TIALN-T4	
						Applications – Material	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-4.4 S 1.1-3			
T.P.I.	P mm	b mm	b inch	h mm	h inch		HM-WP-Z4 Size 15 TIN		HM-WP-Z4 Size 15 TIALN-T4	
UN, M, MF **Unified threads ANSI B1.1 and ISO Metric threads DIN 13**						For internal threads  				
16 - 4	1.5 - 6	14.3	0.563	28.58	1.125		GF643505.9514	●	GF643507.9514	●
4	6 - 8	14.3	0.563	28.58	1.125		GF643505.9523	●	GF643507.9523	●

Other designs upon request, e.g.

ACME thread

Round thread

Buttress thread

Infeed inserts in various designs

Accessories

Spare screw M5 x 18; Torx T20 — **GZ349015**

Screw driver Torx T20 — **GZ349025**

Torque screw driver Torx T20 — **GZ349045**

Hook wrench type B with pin acc. to DIN 1810-B 68-75 mm — **GZ349055**

Screw plug M24x1.5 x 25; w/f 12 — **GZ359315**

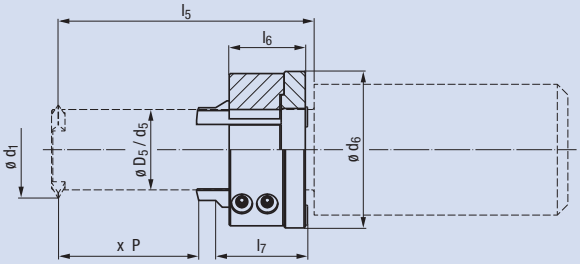
● = In stock
★ = Allow 7 days for delivery

10-14

Milling rings for removal of the incomplete thread

Gigant-ic

3-4 Ins.

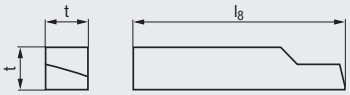


new	Size	ø d_1 inch	ø d_1 mm	ø D_5 / d_5 inch	ø D_5 / d_5 mm	mm l_6	l_7	ø d_6	Ins.		
	10	0.807	20.5	0.626	15.9	18	23	33	3	**GZ80F0C4.010040**	●
	11	0.939	23.85	0.748	19	18	22	37	3	**GZ80G0C4.011040**	●
	12	1.293	32.85	0.965	24.5	22	24	47	3	**GZ80H0C4.012060**	●
	13	1.585	40.25	1.220	31	22	24	55	4	**GZ80I0C4.013060**	●
	14	2.069	52.55	1.614	41	22	23	65	4	**GZ80J0C4.014060**	●

The measurement “x P” must be a multiple of the pitch P of the thread to be produced

The usable depth l_5 of the circular thread milling body is reduced by dimension l_7

1-tooth milling inserts for milling rings



Carbide | RH + LH

new

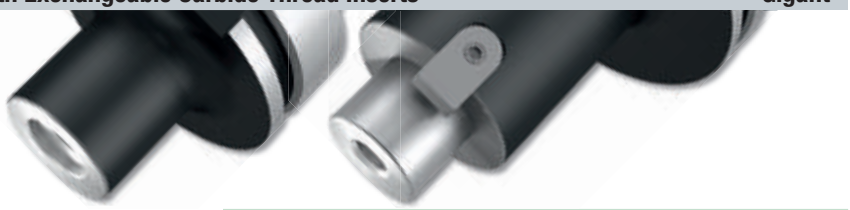
new

	TIN	TIALN-T4
Coating		
Applications – Material	P 1.1-5.1 M 1.1-4.1 K 1.1-4.2 N 1.1-4.4 S 1.1-3	

Size	mm l_8	t	HM-FP-Z1 TIN		HM-FP-Z1 TIALN-T4	
10	20	4	**GF663005**	●	**GF663007**	●
11	20	4	**GF663105**	●	**GF663107**	●
12	25	6	**GF663205**	●	**GF663207**	●
13	25	6	**GF663305**	●	**GF663307**	●
14	25	6	**GF663405**	●	**GF663407**	●

● = In stock
★ = Allow 7 days for delivery

10-15



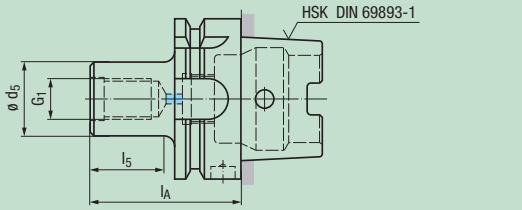
Holders for Gigant modular

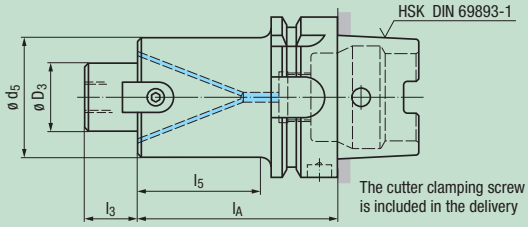
HSK-A — DIN 69893-1 — M

Size	G_1	ø d_5	l_5	l_A	Taper Size		
		mm					
10-12	M16	29	29	59	HSK-A63	**GZ5391A4.116059**	●

DIN 138

Size	ø D_3	ø d_5	l_5	l_3	l_A	Taper Size		
			mm					
13	27	48	131	21	160	HSK-A63	**GZ5391B4.270160**	●
14	27	60	131	21	160	HSK-A63	**GZ5391B5.270160**	●
15	32	78	171	24	200	HSK-A63	**GZ5391B4.320200**	●



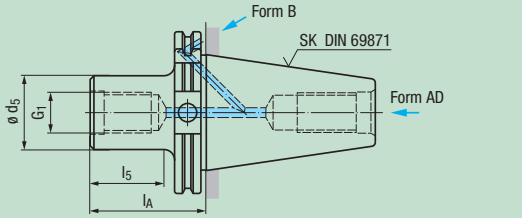


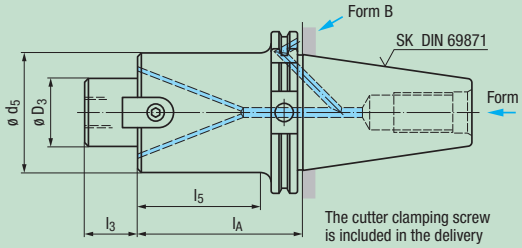
SK (ISO) — DIN 69871 AD/B — M

Size	G_1	ø d_5	l_5	l_A	Taper Size		
		mm					
10-12	M16	29	11	36	SK 40	**GZ5243A4.116036**	●
10-12	M16	29	11	36	SK 50	**GZ5263A4.116036**	●

DIN 138

Size	ø D_3	ø d_5	l_5	l_3	l_A	Taper Size		
			mm					
13	27	48	132	21	160	SK 50	**GZ5263B4.270160**	●
14	27	60	132	21	160	SK 50	**GZ5263B5.270160**	●
15	32	78	174	24	200	SK 50	**GZ5263B4.320200**	●

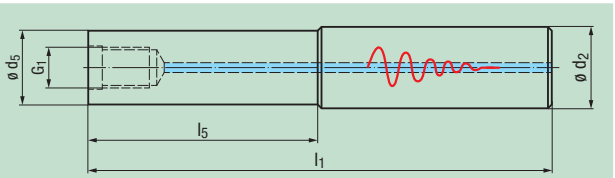




HSS extensions for Gigant modular

32 mm — DIN 1835 A — M

Size	G_1	ø d_5	l_5	l_1	ø d_2 h6		
			mm				
10-12	M16	29.4	108	200	32	**GZ5521A4.320108**	●

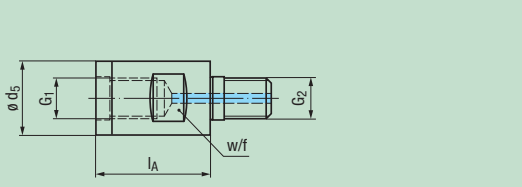


Special design for reduced vibration, with carbide core

Intermediate adapters for Gigant modular

M16 — M

Size	G_1	ø d_5	l_A	w/f	G_2		
			mm				
10-12	M16	29	40	22	M16	**GZ56E1A4.116040**	●
10-12	M16	29	90	22	M16	**GZ56E1A4.116090**	●



10-15

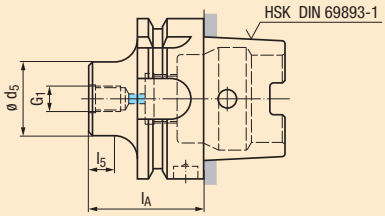
Holders for Gigant modular sprinter

HSK-A

DIN 69893-1

MF

Size	G_1	ø d_5	l_5	l_A	Taper Size		
		mm					
10	M 8 x 1	22.15	10	45	HSK-A63	**GZ7391AA.251010**	●
11	M10 x 1	29.15	10	45	HSK-A63	**GZ7391AB.276010**	●
12	M12 x 1	37.65	12	45	HSK-A63	**GZ7391AC.301012**	●
13	M18 x 1.5	48	32	60	HSK-A63	**GZ7391AD.390032**	●
14	M24 x 1.5	60	40	80	HSK-A100	**GZ73A1AE.452040**	●
15	M24 x 1.5	78	45	76	HSK-A100	**GZ73A1AF.452045**	●

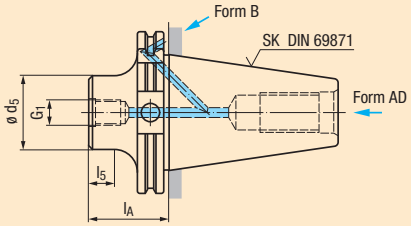


SK (ISO)

DIN 69871 AD/B

MF

Size	G_1	ø d_5	l_5	l_A	Taper Size		
		mm					
10	M 8 x 1	22.15	10	35	SK 40	**GZ7243AA.251010**	●
11	M10 x 1	29.15	10	35	SK 40	**GZ7243AB.276010**	●
12	M12 x 1	37.65	12	35	SK 40	**GZ7243AC.301012**	●
13	M18 x 1.5	48	15	37	SK 40	**GZ7243AD.390015**	●
14	M24 x 1.5	60	15	40	SK 50	**GZ7263AE.452015**	●
15	M24 x 1.5	78	20	45	SK 50	**GZ7263AF.452020**	●

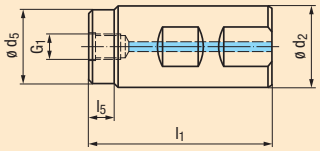


25-32 mm

DIN 1835 B

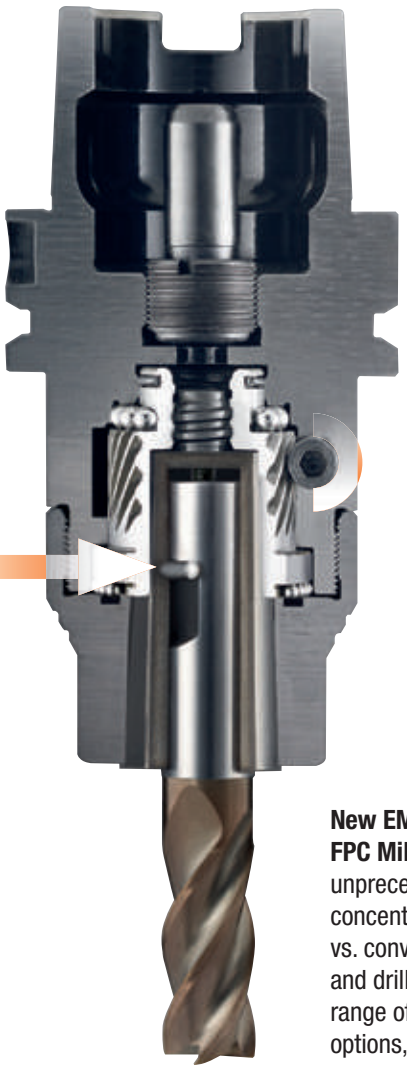
MF

Size	G_1	ø d_5	l_5	l_1	ø d_2 h6		
		mm					
10	M 8 x 1	22.15	10	68	25	**GZ75D1AA.251010**	●
11	M10 x 1	29.15	10	72	32	**GZ7521AB.276010**	●
12	M12 x 1	37.65	12	77	32	**GZ7521AC.301012**	●



● = In stock
★ = Allow 7 days for delivery

Introducing the Ultimate Precision Chuck



1. **World's only chuck with 1:16 worm gear,** a patented design delivering 3 tons of traction force.
2. **Optimal pull-out protection** via optional Pin-Lock Collet System.
3. **High rigidity.** Patented design and body provides 100% holding power.
4. **Mechanical drive actuated with a hex wrench.** Simple design, highly accurate.
5. **Maximum dampening.** Colletcone assembly absorbs virtually all vibration.

New EMUGE high precision / performance FPC Mill / Thread Mill / Drill Chucks provide unprecedented rigidity, vibration dampening, concentricity, machining speed and tool life vs. conventional chuck technologies for milling and drilling applications. Available in a wide range of styles. Internal and peripheral coolant options, and MQL-adaptable.

Increase your machining speed and tool life to the highest possible levels

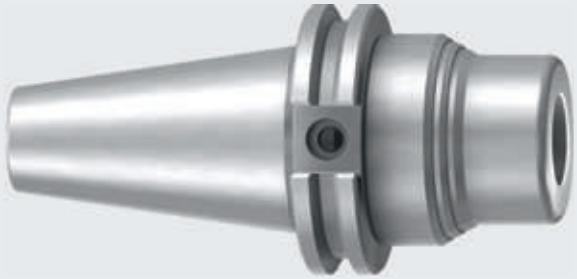
EMUGE FPC Chuck Advantages:

- **Reliability**
  Extremely high transferable torque provides maximum process reliability. Transferred torque on a tool shank diameter of 20 mm is 295 ft lbs / 400 Nm.
- **More accurate**
  With a 3 x D tool length, concentricity is ≤ 3 µm, guaranteeing long tool life and quality surface finishes.
- **Longer tool life**
  Special holder design reduces vibration, dramatically improving work piece surface finishes and providing exceptionally long tool life.
- **Fast tool change**
  Simple, highly accurate design enables quick tool change in seconds, via hex wrench.

FPC

CAT Shank

ASME B5.50



FPC

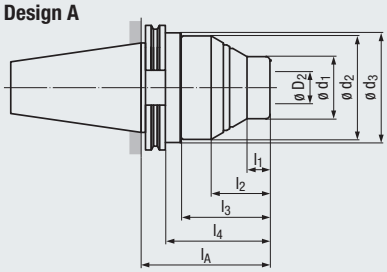
≤ 3 µm

AT3

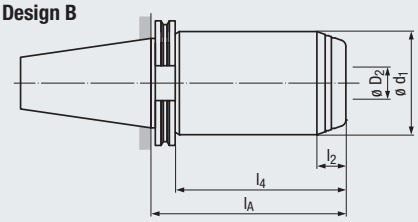
G2.5
20 000 RPM

IKZ

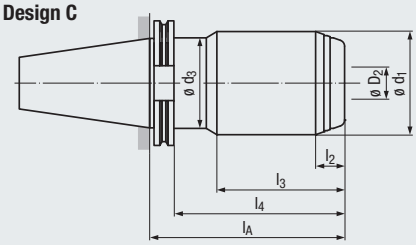
Design A



Design B



Design C



new					inch									
Size	ø D_2 inch	ø D_2 mm	Shank Size	Design	ø d_1	ø d_2	ø d_3	l_1	l_2	l_3	l_4	l_A	EDP Number	
FPC 14	1/8 - 9/16	2 - 14	CAT 40	A	1.1811	1.9685	–	0.4331	1.1024	–	1.6929	2.4409	**6494.401406 ***	●
			CAT 40	A	1.1811	1.9685	–	2.4016	3.0709	–	3.6614	4.4094	**6494.401411**	●
			CAT 40	A	1.1811	1.9685	–	3.3465	4.0551	–	5.0787	5.8268	**6494.401414 ***	●
			CAT 50	A	1.1811	1.9685	–	0.4331	1.1024	–	1.6929	2.4409	**6494.501406**	●
			CAT 50	A	1.1811	1.9685	–	3.3465	4.0551	–	5.1181	5.8268	**6494.501414**	●
			CAT 50	A	1.1811	1.9685	2.7559	3.3465	4.0551	5.1181	5.7087	6.4567	**6494.501416**	●
FPC 20	1/8 - 3/4	2 - 20	CAT 40	A	1.5748	1.9685	–	0.7874	1.1024	–	1.6929	2.4409	**6494.402006 ***	●
			CAT 40	A	1.5748	1.9685	–	2.7165	3.0709	–	3.6614	4.4094	**6494.402011 ***	●
			CAT 40	A	1.5748	1.9685	–	3.7008	4.0551	–	5.0787	5.8661	**6494.402014 ***	●
			CAT 50	A	1.5748	2.4803	–	0.7087	1.4961	–	1.6929	2.4409	**6494.502006**	●
			CAT 50	A	1.5748	2.4803	–	3.3071	4.0945	–	5.0787	5.8661	**6494.502014**	●
FPC 25	5/8 - 1 1/4	16 - 32	CAT 40	C	2.4803	–	1.9685	0.5512	–	3.2677	2.4016	4.0157	**6494.402510 ***	●
			CAT 50	B	2.7559	–	–	0.5906	–	–	3.2677	4.0157	**6494.502510**	●

Note: Mechanical drive torque wrench must be set at **max.** 7.38 ft lbs / 10 Nm

Fine balanced design and ultra slim design available upon request

Length stop available upon request

Description of the symbols, see page 348

*** Caution: tool does not have a safety zone.**
Be sure to check for tool changer interference before using.

Accessories

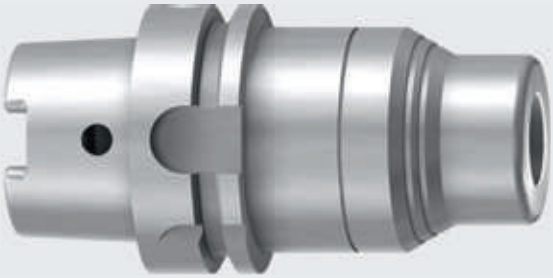
FPC Collets and accessories ▸▸ 345 - 348

● = In stock
★ = Allow 7 days for delivery

FPC

HSK-A Shank

DIN 69893 A



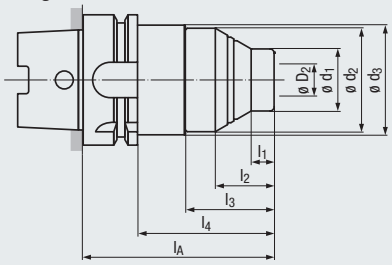
FPC

≤ 3 µm

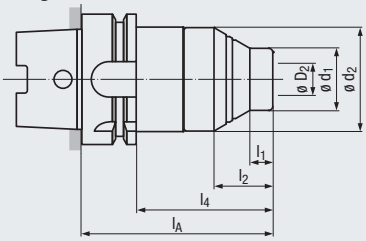
G2.5
20 000 RPM

IKZ

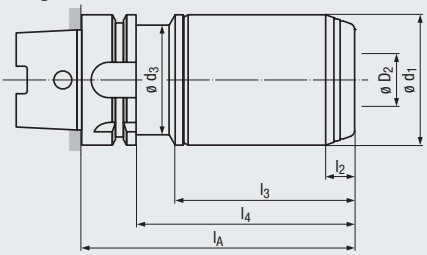
Design A



Design B



Design C



new	Size	ø D_2 inch	ø D_2 mm	Shank Size	Design	ø d_1	ø d_2	ø d_3	l_1	l_2	l_3	l_4	l_A	EDP Number	
						mm									
	FPC 14	1/8 - 9/16	2 - 14	HSK-A50	A	30	50	–	11	28	55	75	101	6492.501410	●
				HSK-A50	A	30	50	–	85	103	141	161	187	6492.501418	●
				HSK-A63	A	30	50	53	11	28	43	66	92	6492.631409	●
				HSK-A63	A	30	50	53	61	78	93	116	142	6492.631414	●
				HSK-A63	A	30	50	53	85	103	129	152	178	6492.631417	●
	FPC 20	1/8 - 3/4	2 - 20	HSK-A50	A	40	50	–	20	28	55	75	101	6492.502010	●
				HSK-A63	B	40	53	–	20	31	–	66	92	6492.632009	●
				HSK-A63	B	40	53	–	69	81	–	116	142	6492.632014	●
				HSK-A63	B	40	53	–	94	105	–	152	178	6492.632017	●
				HSK-A80	B	40	63	–	18	38	–	72	98	6492.802009	●
				HSK-A100	A	40	63	70	18	38	43	71	100	6492.102010	●
				HSK-A100	A	40	63	70	48	68	93	121	150	6492.102014	●
				HSK-A100	A	40	63	70	84	104	129	157	186	6492.102018	●
	FPC 25	5/8 - 1 1/4	16 - 32	HSK-A63	C	63	–	53	–	14	87	106	132	6492.632513	●
				HSK-A80	C	63	–	–	–	14	–	111	137	6492.802513	●
				HSK-A100	C	70	–	–	–	14	–	110	139	6492.102514	●

Note: Mechanical drive torque wrench must be set at **max.** 7.38 ft lbs / 10 Nm

Fine balanced design and ultra slim design available upon request

Length stop available upon request

Description of the symbols, see page 348

Accessories

FPC Collets and accessories ▸▸ 345 - 348

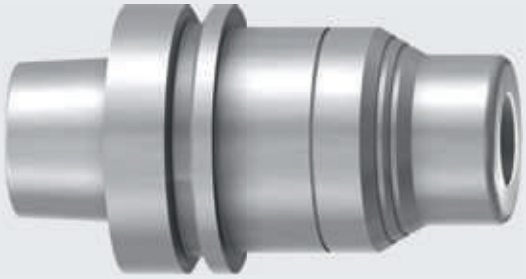
Coolant tubes and wrenches ▸▸ 606 - 607

Ordering Example: **6492.501410**

FPC

HSK-F Shank

DIN 69893 F



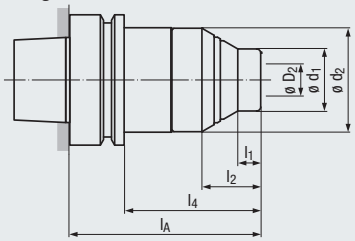
FPC

≤ 3 µm

G2.5
20 000 RPM

IKZ

Design B



new				mm								
Size	ø D_2 inch	ø D_2 mm	Shank Size	Design	ø d_1	ø d_2	l_1	l_2	l_4	l_A	EDP Number	
FPC 20	**1/8 - 3/4**	**2 - 20**	HSK-F63	B	40	50	20	28.5	66	92	**6497.632009**	●

Note: Mechanical drive torque wrench must be set at **max.** 7.38 ft lbs / 10 Nm

Fine balanced design and ultra slim design available upon request

Length stop available upon request

Description of the symbols, see page 348

Accessories

FPC Collets and accessories ▸▸ 345 - 348

● = In stock
★ = Allow 7 days for delivery

FPC

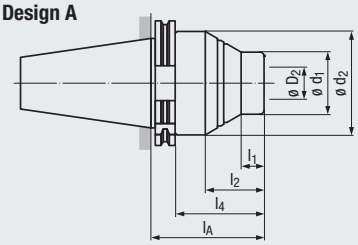
SK Shank

DIN ISO 7388-1

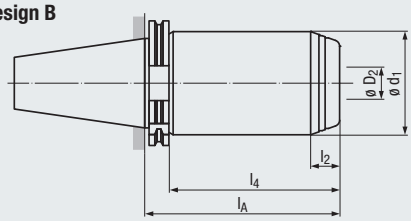
(formerly DIN 69871 AD, DIN 69871 B)

FPC | ≤ 3 µm | AT3 | G2.5 20 000 RPM | IKZ

Design A



Design B



new Size	ø D_2 inch	ø D_2 mm	Shank Size	Design	mm ø d_1	ø d_2	l_1	l_2	l_4	l_A	EDP Number	
FPC 14	1/8 - 9/16	2 - 14	SK 30	A	30	50	11	28	73	92	6491.301409	●
			SK 40	A	30	50	11	28	43	63	6491.401406	●
			SK 40	A	30	50	61	78	93	112	6491.401411	●
			SK 40	A	30	50	85	103	129	149	6491.401414	●
			SK 50	A	30	50	11	28	43	63	6491.501406	●
			SK 50	A	30	50	85	103	129	149	6491.501414	●
FPC 20	1/8 - 3/4	2 - 20	SK 30	A	40	50	20	28	73	92	6491.302009	●
			SK 40	A	40	50	20	28	43	63	6491.402006	●
			SK 40	A	40	50	69	78	93	112	6491.402011	●
			SK 40	A	40	50	94	103	129	149	6491.402014	●
			SK 50	A	40	63	18	38	43	62	6491.502006	●
			SK 50	A	40	63	84	104	129	149	6491.502014	●
FPC 25	5/8 - 1 1/4	16 - 32	SK 40	B	63	–	–	14	83	102	6491.402510 *	●
			SK 50	B	70	–	–	15	83	102	6491.502510	●

Note: Mechanical drive torque wrench must be set at **max.** 7.38 ft lbs / 10 Nm

*** Caution: tool does not have a safety zone. Be sure to check for tool changer interference before using.**

Fine balanced design and ultra slim design available upon request

Length stop available upon request

Description of the symbols, see page 348

Accessories

FPC Collets and accessories ▸▸ 345 - 348

Pull studs available upon request

FPC

BT Shank

DIN ISO 7388-2
(formerly JIS B 6339, MAS 403 BT)

FPC

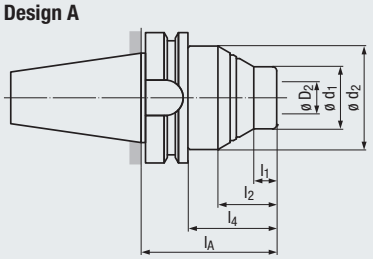
≤ 3 µm

AT3

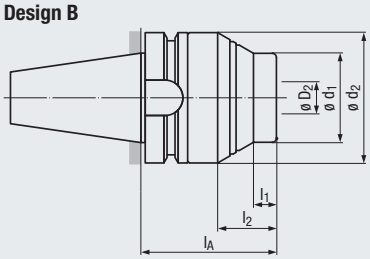
G2.5
20 000 RPM

IKZ

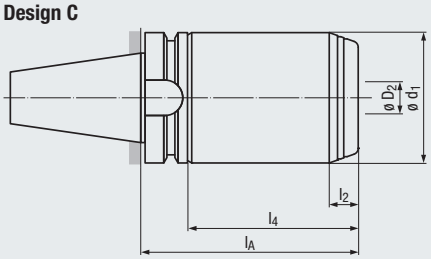
Design A



Design B



Design C



new					mm								
Size	ø D_2 inch	ø D_2 mm	Shank Size	Design	ø d_1	ø d_2	l_1	l_2	l_4	l_A	EDP Number	
FPC 14	1/8 - 9/16	2 - 14	BT 30	A	30	53	11	28	56	82	6493.301408	●
			BT 40	A	30	50	11	28	43	70	6493.401407	●
			BT 40	A	30	50	61	78	93	120	6493.401412	●
			BT 40	A	30	50	85	103	129	156	6493.401415	●
FPC 20	1/8 - 3/4	2 - 20	BT 30	A	40	53	20	31	56	82	6493.302008	●
			BT 40	B	40	63	18	38	–	70	6493.402007	●
			BT 40	B	40	63	48	68	–	120	6493.402012	●
			BT 40	B	40	63	84	104	–	156	6493.402015	●
			BT 50	A	40	63	18	38	43	81	6493.502008	●
			BT 50	A	40	63	84	104	129	167	6493.502016	●
FPC 25	5/8 - 1 1/4	16 - 32	BT 40	C	63	–	14	–	–	110	6493.402511	●
			BT 50	C	70	–	15	–	83	121	6493.502512	●

Note: Mechanical drive torque wrench must be set at **max.** 7.38 ft lbs / 10 Nm

Fine balanced design and ultra slim design available upon request

Length stop available upon request

Description of the symbols, see page 348

Accessories

FPC Collets and accessories ▸▸ 345 - 348

Pull studs available upon request

● = In stock
★ = Allow 7 days for delivery

FPC

PSC Shank

ISO 26623-1

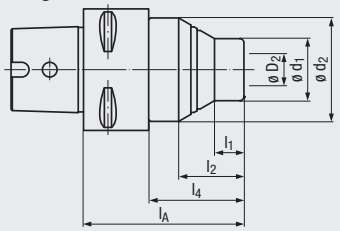
FPC

≤ 3 µm

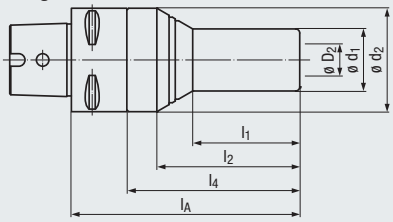
G2.5
20 000 RPM

IKZ

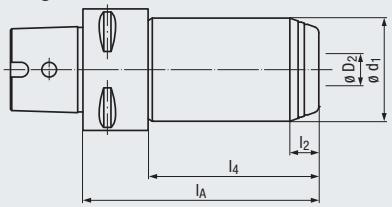
Design A



Design B



Design C



new Size	ø D_2 inch	ø D_2 mm	Shank Size	Design	mm ø d_1	ø d_2	l_1	l_2	l_4	l_A	EDP Number	
FPC 14	1/8 - 9/16	2 - 14	PSC 50	A	30	50	61	78	93	127	6496.051412	●
			PSC 63	A	30	50	11	28	43	80	6496.061408	●
			PSC 63	A	30	50	61	78	93	130	6496.061413	●
			PSC 63	A	30	50	85	103	129	166	6496.061416	●
FPC 20	1/8 - 3/4	2 - 20	PSC 50	B	40	53	20	28.5	57	77	6496.052007	●
			PSC 63	B	40	63	18	38	–	80	6496.062008	●
			PSC 63	B	40	63	48	68	–	130	6496.062013	●
			PSC 63	B	40	63	84	104	–	166	6496.062016	●
			PSC 80	B	40	63	18	38	43	90	6496.082009	●
			PSC 80	B	40	63	48	68	93	140	6496.082014	●
FPC 25	5/8 - 1 1/4	16 - 32	PSC 63	C	63	–	–	14	–	119	6496.062511	●
			PSC 80	C	70	–	–	15	83	129	6496.082512	●

Note: Mechanical drive torque wrench must be set at **max.** 7.38 ft lbs / 10 Nm

Ultra slim design available upon request

Length stop available upon request

Description of the symbols, see page 348

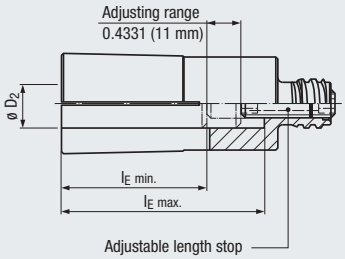
Accessories

FPC Collets and accessories ▸▸ 345 - 348

Ordering Example: **6496.051412**

FPC

± 0.217 in
(± 5,5 mm)



Standard version
for coolant supply
via slots in the collet

new

Sealed version
for tools with
internal coolant supply

new

Inch Size	inch ø D_2	l_E min.	l_E max.	Adjusting range	EDP Number		EDP Number	
FPC 14	1/8	0.6693	1.8898	0.4331	6638.140125	●	6639.140125	●
	3/16	0.6693	1.8898	0.4331	6638.140188	●	6639.140188	●
	1/4	0.9843	1.8898	0.4331	6638.140250	●	6639.140250	●
	5/16	0.9843	1.8898	0.4331	6638.140313	●	6639.140313	●
	3/8	1.1417	1.8898	0.4331	6638.140375	●	6639.140375	●
	7/16	1.3386	1.8898	0.4331	6638.140438	●	6639.140438	●
	1/2	1.3386	1.8898	0.4331	6638.140500	●	6639.140500	●
	9/16	1.3386	1.8898	0.4331	6638.140563	●	6639.140563	●
FPC 20	1/8	0.6693	1.8898	0.4331	6638.200125	●	6639.200125	●
	3/16	0.6693	1.8898	0.4331	6638.200188	●	6639.200188	●
	1/4	0.9843	1.8898	0.4331	6638.200250	●	6639.200250	●
	5/16	0.9843	1.8898	0.4331	6638.200313	●	6639.200313	●
	3/8	1.1417	1.8898	0.4331	6638.200375	●	6639.200375	●
	7/16	1.3386	1.8898	0.4331	6638.200438	●	6639.200438	●
	1/2	1.3386	1.8898	0.4331	6638.200500	●	6639.200500	●
	9/16	1.3386	1.8898	0.4331	6638.200563	●	6639.200563	●
	5/8	1.4567	1.8898	0.4331	6638.200625	●	6639.200625	●
	11/16	1.4567	1.8898	0.4331	6638.200688	●	6639.200688	●
	3/4	1.5354	1.8898	0.4331	6638.200750	●	6639.200750	●
FPC 25	5/8	1.4567	2.3622	0.4331	6638.250625	●	6639.250625	●
	3/4	1.5354	2.3622	0.4331	6638.250750	●	6639.250750	●
	1	1.7717	2.3622	0.4331	6638.251000	●	6639.251000	●
	1 1/4	1.8898	2.3622	0.4331	6638.251250	●	6639.251250	●

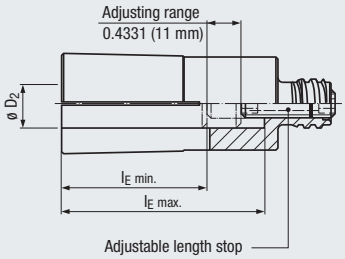
Minimum quantity lubrication (1-channel or 2-channel MQL systems) possible by exchanging the length stop, available on request

$l_{E\ min.}$ = Minimum clamping length of the tool with length stop
$l_{E\ max.}$ = Maximum clamping length of the tool without length stop

● = In stock
★ = Allow 7 days for delivery

FPC

± 0.217 in
(± 5,5 mm)



Standard version
for coolant supply
via slots in the collet

new

Sealed version
for tools with
internal coolant supply

new

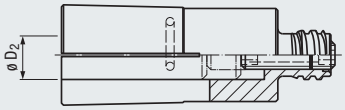
Metric Size	mm ø D_2	l_E min.	l_E max.	Adjusting range	EDP Number		EDP Number	
FPC 14	**2**	17	48	11	**6638.1402**	●	**6639.1402**	●
	3	17	48	11	**6638.1403**	●	**6639.1403**	●
	4	17	48	11	**6638.1404**	●	**6639.1404**	●
	5	17	48	11	**6638.1405**	●	**6639.1405**	●
	6	25	48	11	**6638.1406**	●	**6639.1406**	●
	7	25	48	11	**6638.1407**	●	**6639.1407**	●
	8	25	48	11	**6638.1408**	●	**6639.1408**	●
	9	29	48	11	**6638.1409**	●	**6639.1409**	●
	10	29	48	11	**6638.1410**	●	**6639.1410**	●
	11	34	48	11	**6638.1411**	●	**6639.1411**	●
	12	34	48	11	**6638.1412**	●	**6639.1412**	●
	14	34	48	11	**6638.1414**	●	**6639.1414**	●
FPC 20	**2**	17	48	11	**6638.2002**	●	**6639.2002**	●
	3	17	48	11	**6638.2003**	●	**6639.2003**	●
	4	17	48	11	**6638.2004**	●	**6639.2004**	●
	5	17	48	11	**6638.2005**	●	**6639.2005**	●
	6	25	48	11	**6638.2006**	●	**6639.2006**	●
	8	25	48	11	**6638.2008**	●	**6639.2008**	●
	10	29	48	11	**6638.2010**	●	**6639.2010**	●
	11	34	48	11	**6638.2011**	●	**6639.2011**	●
	12	34	48	11	**6638.2012**	●	**6639.2012**	●
	14	34	48	11	**6638.2014**	●	**6639.2014**	●
	15	37	48	11	**6638.2015**	●	**6639.2015**	●
	16	37	48	11	**6638.2016**	●	**6639.2016**	●
	18	37	48	11	**6638.2018**	●	**6639.2018**	●
	20	39	48	11	**6638.2020**	●	**6639.2020**	●
FPC 25	**16**	37	60	11	**6638.2516**	●	**6639.2516**	●
	18	37	60	11	**6638.2518**	●	**6639.2518**	●
	20	39	60	11	**6638.2520**	●	**6639.2520**	●
	22	39	60	11	**6638.2522**	●	**6639.2522**	●
	25	45	60	11	**6638.2525**	●	**6639.2525**	●
	32	48	60	11	**6638.2532**	●	**6639.2532**	●

Minimum quantity lubrication (1-channel or 2-channel MQL systems) possible by exchanging the length stop, available on request

l_E min. = Minimum clamping length of the tool with length stop
l_E max. = Maximum clamping length of the tool without length stop

FPC

Use with straight shank standard tools according to DIN 6535 HB or DIN 1835 B (with Weldon flat)



Standard version
for coolant supply via slots in the collet

new

Sealed version
for tools with internal coolant supply

new

Inch Size	inch ø D_2	EDP Number		EDP Number	
FPC 20	1/4	6637.200250	●	6633.200250	●
	5/16	6637.200313	●	6633.200313	●
	3/8	6637.200375	●	6633.200375	●
	1/2	6637.200500	●	6633.200500	●
	5/8	6637.200625	●	6633.200625	●
FPC 25	1/2	6637.250500	●	6633.250500	●
	5/8	6637.250625	●	6633.250625	●
	3/4	6637.250750	●	6633.250750	●
	7/8	6637.250875	●	6633.250875	●
	1	6637.251000	●	6633.251000	●

Metric Size	mm ø D_2	EDP Number		EDP Number	
FPC 20	6	6637.2006	●	6633.2006	●
	8	6637.2008	●	6633.2008	●
	10	6637.2010	●	6633.2010	●
	12	6637.2012	●	6633.2012	●
	14	6637.2014	●	6633.2014	●
	16	6637.2016	●	6633.2016	●
	18	6637.2018	●	6633.2018	●
	20	6637.2020	●	6633.2020	●
FPC 25	16	6637.2516	●	6633.2516	●
	18	6637.2518	●	6633.2518	●
	20	6637.2520	●	6633.2520	●
	22	6637.2522	●	6633.2522	●
	25	6637.2525	●	6633.2525	●

Minimum quantity lubrication (1-channel or 2-channel MQL systems) possible by exchanging the length stop, available on request

Assembly tool and 3 locking pins are included in the delivery!

Assembly Tool

new	Size	ø D_2 inch	ø D_2 mm	ø D mm	WAF mm	EDP Number	
	FPC 20	1/4 - 1/8	6 - 16 / 20	2	4	6665.055	●
		–	18	1	4	6665.056	●
	FPC 25	1/2 - 1	16 - 25	2	5	6665.057	●

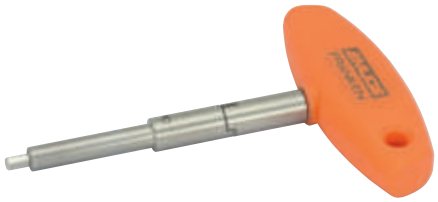
3 Spare Locking Pins

new	Size	ø D_2 inch	ø D_2 mm	ø D x L	EDP Number	
	FPC 20	1/4 - 1/2	6 - 14	3 x 14	6665.041	●
		5/8	16	3 x 12	6665.040	●
		–	18	2 x 12	6665.044	●
		–	20	3 x 8	6665.045	●
	FPC 25	1/2 - 3/4	16 - 20	4 x 26	6665.043	●
		7/8 - 1	22 - 25	4 x 20	6665.042	●

● = In stock
★ = Allow 7 days for delivery

Hexagon Torque Wrench

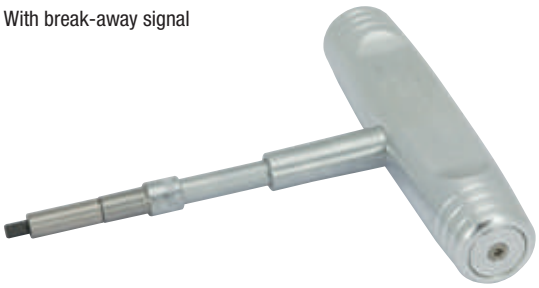
With marking for torque applied



new	Width across flats	Torque	EDP Number	
	SW4 (4 mm)	7.38 ft lbs / 10 Nm	6665.014	●

Hexagon Torque Wrench

With break-away signal



new	Width across flats	Torque	EDP Number	
	SW4 (4 mm)	7.38 ft lbs / 10 Nm	6665.011	●

Spare Bit

With guidance tube

new	Width across flats	EDP Number	
	SW4 (4 mm)	6665.018	●

Taper Cleaners

For cleaning the inside cone of FPC collet holders

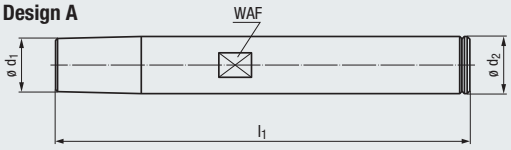
new	For Size	EDP Number	
	FPC 14	6665.030	●
	FPC 20	6665.031	●
	FPC 25	6665.032	●

Description of the Symbols

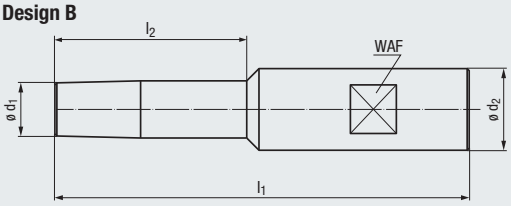
FPC	For use with FPC collets only	≤3µm	< 3µm (micron) runout at 3 x diameter length
G2.5 20000 RPM	Balanced to G2.5, 20,000 RPM	AT3	Taper quality AT3

FMC
Cylindrical Shank

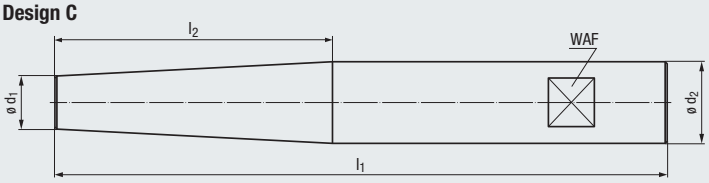
Design A



Design B



Design C



≤3µm IKZ

new

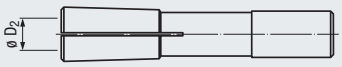
new

mm

Size	Design	ø d_1	l_2	ø d_2 h6	WAF	EDP Number		EDP Number	
100	A	13	–	14	13	6495.14100A	●		
150	A	13	–	14	13	6495.14150A	●		
190	A	13	–	14	13	6495.14190A	●		
100	B	13	45	20	16			6495.14100B	●
150	C	13	67	20	16			6495.14150B	●

A hexagon wrench is included in delivery

FMC



new

Standard version
for coolant supply
via slots in the collet

new

Sealed version
for tools with
internal coolant supply

Inch

ø D_2	EDP Number		EDP Number	
1/8	6648.060125	●	6649.060125	●
3/16	6648.060188	●	6649.060188	●
1/4	6648.060250	●	6649.060250	●

Metric

ø D_2 mm	EDP Number		EDP Number	
1	6648.0601	●	6649.0601	●
2	6648.0602	●	6649.0602	●
3	6648.0603	●	6649.0603	●
4	6648.0604	●	6649.0604	●
5	6648.0605	●	6649.0605	●
6	6648.0606	●	6649.0606	●

Hexagon Torque Wrench

for FMC collet extensions

new

Width across flats	L	Torque	EDP Number	
SW4 (4 mm)	220	1.11 - 2.21 ft lbs / 1.5 - 3 Nm	6665.020	●

● = In stock
★ = Allow 7 days for delivery

"MoSys" makes a large number of counterbore and stepped bore operations possible!

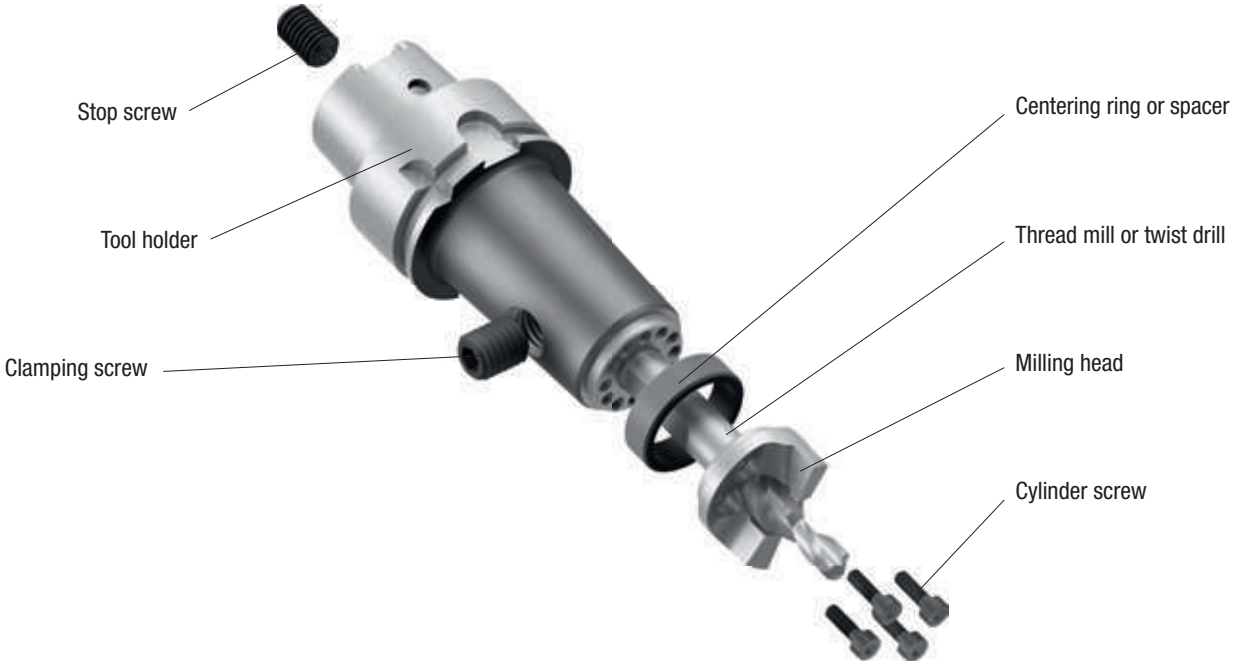
With just one clamping operation, you enjoy a number of advantages:

- Smaller tool quantities
- Fewer magazine places and reduced stocking costs
- Shorter machining times

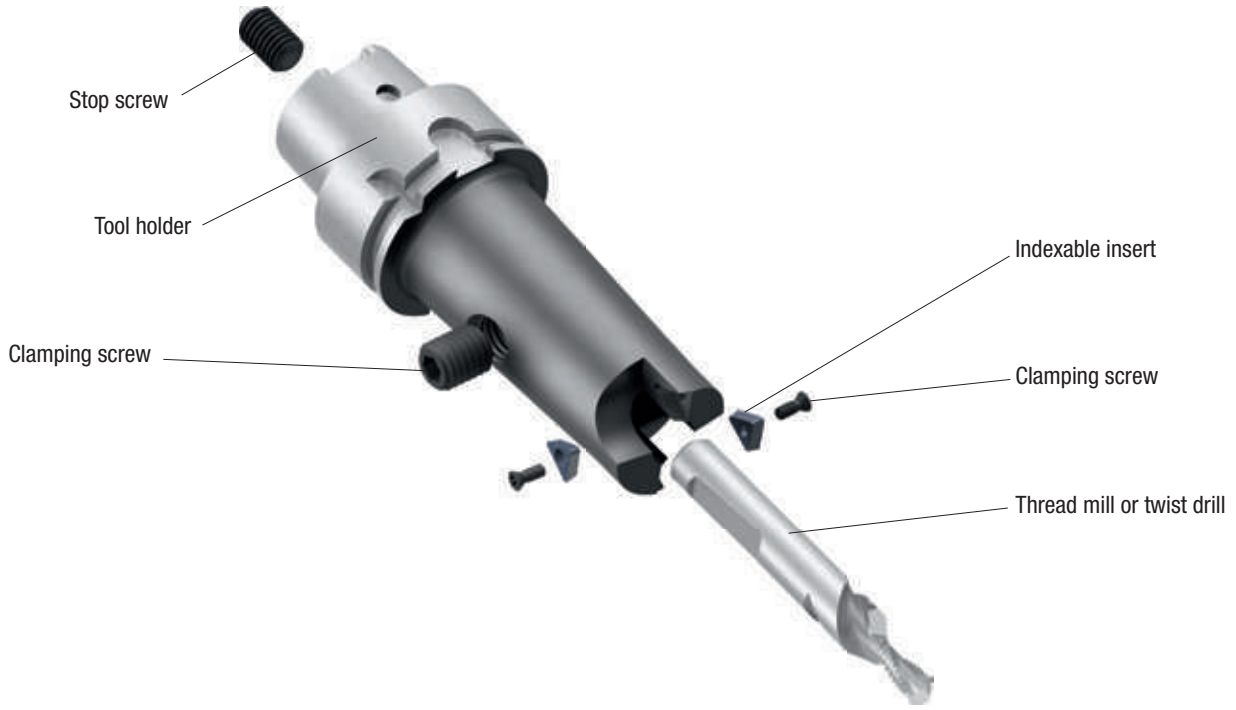
"MoSys" answers to the following requirements:

- Easy assembly
- High degree of rigidity
- High dimensional precision
- Modular construction for universal application

MoSys with solid carbide head



MoSys with indexable inserts



ISO taper shanks

Hollow taper shanks

Connection for milling head

Connection for indexable inserts

Centering ring

Indexable inserts
for plane milling and chamfering

Indexable inserts
for plane milling

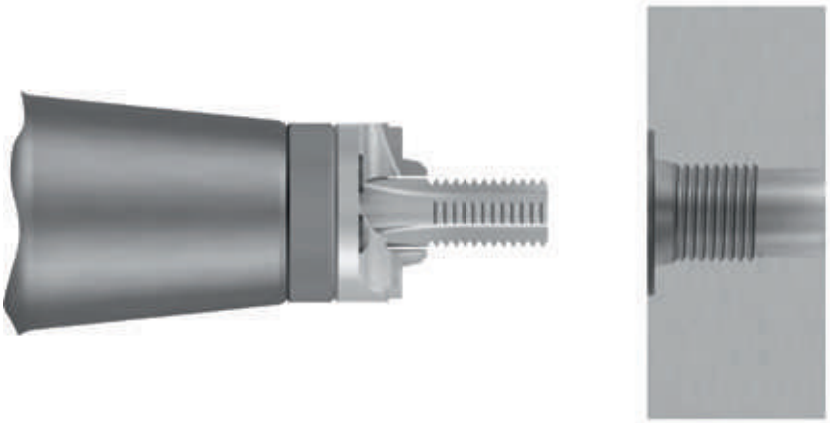
Solid carbide milling heads

Thread mills or twist drills

For submitting an offer, we need the following information:

- Workpiece drawing with possible obstruction contours
- Shank connection on the machine side, with coolant supply
- Detailed countersink contour
- Size of the thread to be produced, including thread depth
- Type of hole (through hole or blind hole)
- Drilled hole diameter (if known)
- Workpiece material

Example for machining with solid carbide head



Example for machining with indexable inserts

Technical Information

		Page
4.1	Characteristics and advantages of thread milling	354
4.2	Our EMUGE thread mill types	354 - 356
4.3	Possible modifications on thread mills	357
4.4	Calculation of cutting data	358
4.5	Thread milling processes (right-hand thread)	359
4.6	Problems, possible causes and solutions in thread milling	360 - 361

4.1 Characteristics and advantages of thread milling

Thread milling – A technology which can reduce your production costs considerably!

With the more and more widespread use of CNC technology, the basic conditions for a future-oriented technique of producing internal and external threads have been created.

Thread milling can be practiced without any trouble and with a high degree of process safety if your CNC machine is provided with a control for 3D-interpolation. In addition to that, you need stable and vibration-free tool and workpiece clamping, and internal coolant supply.

In case you should have little or no experience with the programming of the control, our technicians will be happy to help you by word and deed. We are also ready, at any time, to provide in-house or on-location training for you with practical machining examples.

Please contact our sales personnel.

Thread milling is, in a multitude of application cases, a highly recommendable alternative to tapping or cold-forming of threads, with the following advantages:

- Short production times
- High degree of process safety
- Very good surface quality
- Combination of different machining jobs with one tool
- Usable thread depth down to the very bottom of the hole
- No expensive lubricants are needed
- No chip problems, since only short milling chips are created
- No axial miscutting (overcut) of the thread
- Universal use in the most different materials up to approx. 60 HRC
- Blind hole and through hole threads produced with one tool
- Thread production independent of thread size and tolerance
- One tool only for right-hand and left-hand threads
- Low cutting forces
- Suitable also for thin-walled components

4.2 Our EMUGE thread mill types

BGF

Solid carbide drill thread mills

- For the production of internal threads
- For the complete machining of thread hole, chamfer and thread in one work process
- Tool for one single thread size with corrected thread profile

Designs:

2-fluted: For work in solid material

3-fluted: For work in pre-cast thread holes and in solid material

ZBGF

Solid carbide circular drill thread mills

- For the production of internal threads
- For the machining of thread hole and thread in one work process
- Tool for different thread sizes but for one pitch only, with corrected thread profile

Designs:

ZBGF-T: For thread depths up to 3 x D in aluminum and cast iron

ZBGF-H: For hard machining from 44 HRC

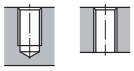
ZBGF-W: For the most different materials up to 44 HRC

4.2 Our EMUGE thread mill types

GSF, GSF Aero

Solid carbide thread mills with countersinking step

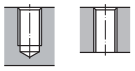
- For the production of internal threads
- For the machining of chamfer and thread in one work process
- Tool for one single thread size, with corrected thread profile
- A ready prepared thread hole is necessary



GSF-Z

Solid carbide thread mills with countersinking step

- For the production of internal threads
- For the machining of chamfer and thread in one work process
- Tool for one single thread size, with corrected thread profile
- Increased number of flutes compared with type GSF
- Optimized cutting geometry
- A ready prepared thread hole is necessary



GF, GFI

Solid carbide thread mills

- For the production of internal and external threads
- Tool for different thread sizes with standard thread profile (but for one pitch only)
- A ready prepared thread hole is necessary, including chamfer if needed
- In order to avoid serious profile deviation in internal threads, the cutter diameter should not exceed 2/3 (with fine threads, 3/4) of the thread to be produced
- With external threads, the cutter diameter should not exceed the diameter of the thread to be produced

GF-Z

Solid carbide thread mills

- For the production of internal threads
- Tool for different thread sizes with standard thread profile (but for one pitch only)
- Increased number of flutes compared with type GF
- Optimized cutting geometry
- A ready prepared thread hole is necessary, including chamfer if needed
- In order to avoid serious profile deviation in internal threads, the cutter diameter should not exceed 2/3 (with fine threads, 3/4) of the thread to be produced

GF-Vario-Z

Solid carbide thread mills, variable

- For the production of internal threads
- Tool for different thread sizes, but for one pitch only, with corrected thread profile
- Large number of flutes
- Optimized cutting geometry
- A ready prepared thread hole is necessary, including chamfer if needed

GF-H

Solid carbide thread mills for hard machining

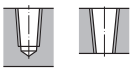
- For the production of internal threads
- Tool for one single thread size, with corrected thread profile
- A ready prepared thread hole is necessary, including chamfer if needed

4.2 Our EMUGE thread mill types

GF-KEG, GFI-KEG, GFI-ECO-KEG

Solid carbide thread mills for tapered threads

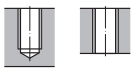
- For the production of tapered internal threads
- Tool for one single thread size, resp. for one pitch only, with corrected thread profile
- A ready prepared cylindrical, or even better, tapered, thread hole is necessary, including chamfer if needed



ZGF, ZGFI

Solid carbide circular thread mills

- For the production of internal threads from No. 0-80 or M1
- **ZGF**
  Tool for different thread sizes and pitches, with corrected thread profile
- **ZGF-S-CUT**
  Tool for one single thread size, with corrected thread profile
- **ZGF-HCUT**
  Tool for one single thread size, with corrected thread profile
- A ready prepared thread hole is necessary, including chamfer if needed



CIRC-GF

Circular thread milling bodies

- For the production of internal and external threads
- With one or two multi-tooth inserts
- Tool for different thread sizes, but for one pitch only
- A ready prepared thread hole is necessary, including chamfer if needed
- In order to avoid serious profile deviation in internal threads, the cutter diameter should not exceed $^2/_3$ (with fine threads, $^3/_4$) of the thread to be produced

CIRC-GF

Circular thread milling bodies

- For the production of internal and external threads
- With one infeed indexable insert, “3-tooth” design
- Tool for different thread sizes and pitches
- A ready prepared thread hole is necessary, including chamfer if needed
- In order to avoid serious profile deviation in internal threads, the cutter diameter should not exceed $^2/_3$ (with fine threads, $^3/_4$) of the thread to be produced

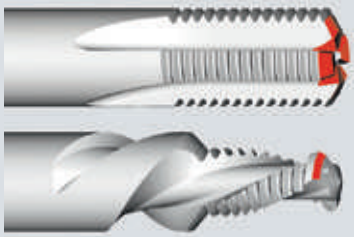
Gigant

Circular thread milling bodies

- For the production of large internal and external threads
- With up to ten 4-tooth indexable inserts (independent of pitch)
- Tool for different thread sizes and pitches
- A ready prepared thread hole is necessary, including chamfer if needed

4.3 Possible modifications on thread mills

Face chamfer (with or without cutting face)



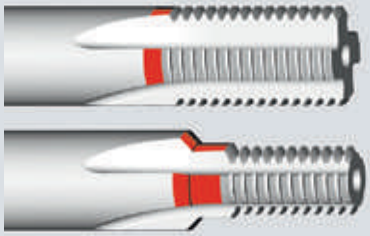
Suitable for:

- All types GF and GSF
- All types BGF (face chamfer on the drilling part)

Note:

- Face chamfer for circular chamfering of the thread hole
- Additional cutting face for circular face milling

Removal of incomplete thread



Suitable for:

- All types GF, GSF and BGF

Note:

- At the rear end of the thread part, a step with a length of min. 1 x P is relief-ground
- If the tool plunges to a correct depth during the thread milling process, the incomplete thread run-out with its burr is milled off (removed)

Recessed neck

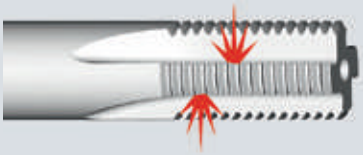
Suitable for:

- All types GF and GSF (no countersinking step)

Note:

- For larger thread depths (total thread depth is achieved by a double milling process)
- For constant cutting pressure, the thread part length and the neck length are arranged in a ratio of 1:1!
- The thread part length and the offset for a second milling process are always a whole-number multiple of the thread pitch

IKZN – Internal coolant supply exiting in the flutes



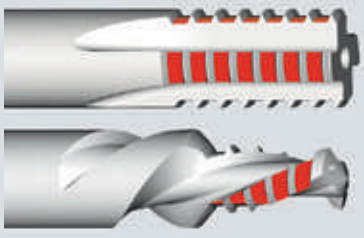
Suitable for:

- All types GF and GSF

Note:

- Axial coolant bore closed up at the tool face for the production of through hole threads
- For maximum stability of the cutting part, the lateral coolant holes are axially staggered

AZR – Radially alternating tooth rows



Suitable for:

- All types GF, GSF and BGF

Note:

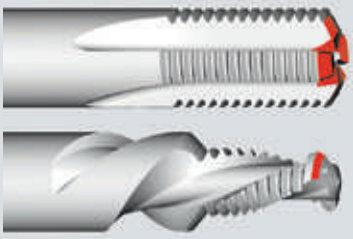
- **AZR** helps to reduce lateral forces in thread milling; the alternating missing gaps in the thread are produced by additional circular milling orbits

There is another variant, not shown here, called **AZ** (alternating teeth in a staggered sequence)

Advantage:

- No additional circular orbits are necessary; due to this, there is a perfectly normal recess depth at the hole bottom, if BGF type tools are used

Coolant grooves along the shank



Suitable for:

- All types GF, GSF and BGF

Note:

- For the production of through hole threads
- In addition or as an alternative to IKZ or IKZN
- Possible support in the cooling of the countersinking step of GSF and BGF type tools, or of the plane milling head in MoSys applications

4.4 Calculation of cutting data

Cutting speed v_c

$$v_c = \frac{d_1 \cdot \pi \cdot n}{12} \text{ [SFM]}$$

d_1 = Milling part diameter in inch
n = Speed in rpm

$$v_c = \frac{d_1 \cdot \pi \cdot n}{1000} \text{ [m/min]}$$

d_1 = Milling part diameter in mm
n = Speed in rpm

Speed n

$$n = \frac{v_c \cdot 12}{d_1 \times \pi} \text{ [rpm]}$$

d_1 = Milling part diameter in inch
v_c = Cutting speed in SFM

$$n = \frac{v_c \cdot 1000}{d_1 \times \pi} \text{ [rpm]}$$

d_1 = Milling part diameter in mm
v_c = Cutting speed in m/min

Feed speed contour v_f

$$v_f = f_z \cdot Z \cdot n \text{ [inch/min]}$$

f_z = Feed per tooth in inch
Z = No. of flutes

$$v_f = f_z \cdot Z \cdot n \text{ [mm/min]}$$

f_z = Feed per tooth in mm
Z = No. of flutes

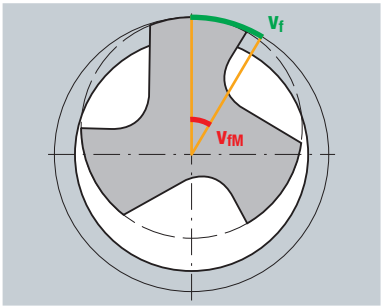
Feed speed center orbit (with internal threads) v_{fM}

$$v_{fM} = \frac{v_f \cdot (D - d_1)}{D} \text{ [inch/min]}$$

v_f = Feed speed in inch/min
D = Nominal thread diameter in inch
d_1 = Milling part diameter in inch

$$v_{fM} = \frac{v_f \cdot (D - d_1)}{D} \text{ [mm/min]}$$

v_f = Feed speed in mm/min
D = Nominal thread diameter in mm
d_1 = Milling part diameter in mm



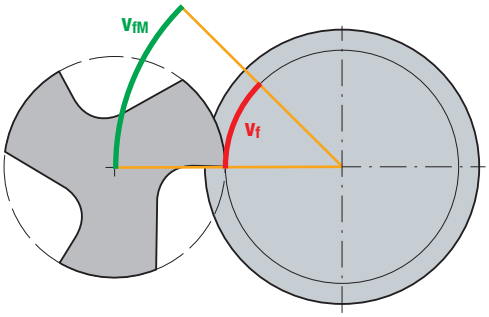
Feed speed center orbit (with external threads) v_{fM}

$$v_{fM} = \frac{v_f \cdot (D + d_1)}{D} \text{ [inch/min]}$$

v_f = Feed speed in inch/min
D = Nominal thread diameter in inch
d_1 = Milling part diameter in inch

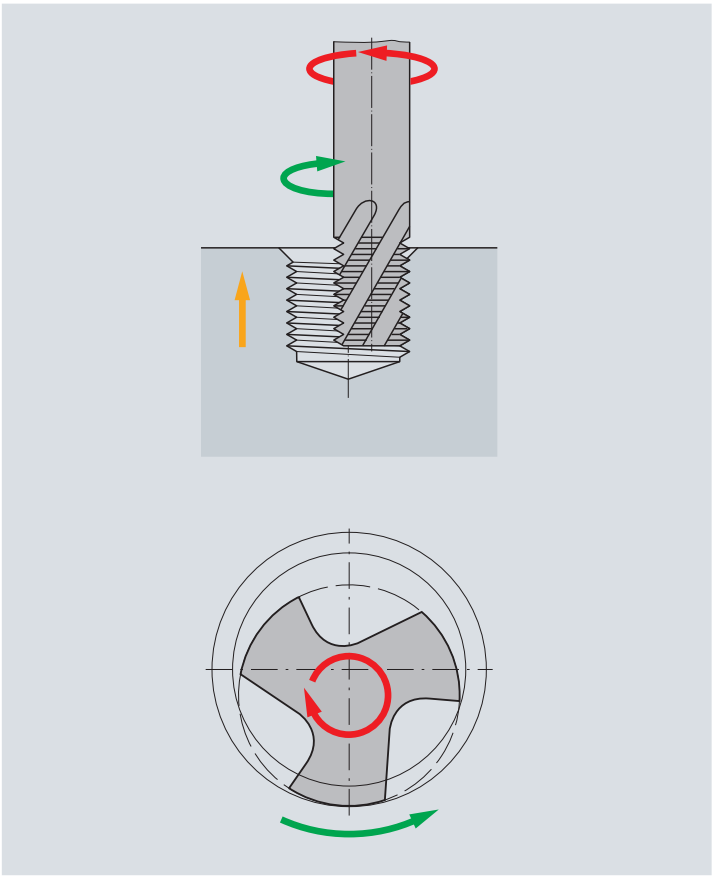
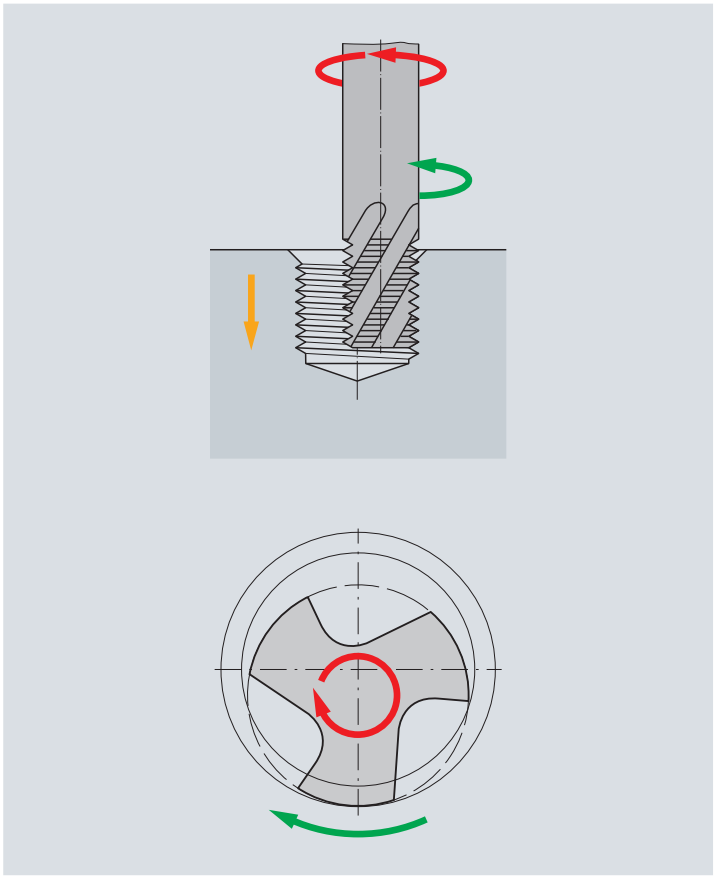
$$v_{fM} = \frac{v_f \cdot (D + d_1)}{D} \text{ [mm/min]}$$

v_f = Feed speed in mm/min
D = Nominal thread diameter in mm
d_1 = Milling part diameter in mm



The contour feed entered is recalculated to the center orbit by the machine!
If this should not happen (to be recognized by the noticeably increased machining speed or by tool breakage), then the center orbit feed must be entered manually.

4.5 Thread milling processes (right-hand thread)

Climb milling	Conventional milling
	
Sense of rotation of tool “right-hand”	Sense of rotation of tool “right-hand”
Feed movement in counter-clock-wise direction	Feed movement in clock-wise direction
Pitch “upwards”	Pitch “downwards”

4.6 Problems, possible causes and solutions in thread milling

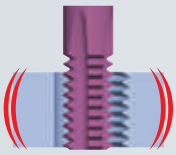
~ Check

⇧ Increase

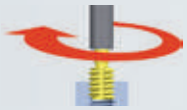
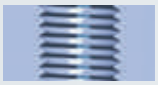
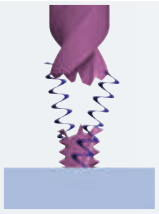
⇩ Decrease

CLM Climb milling

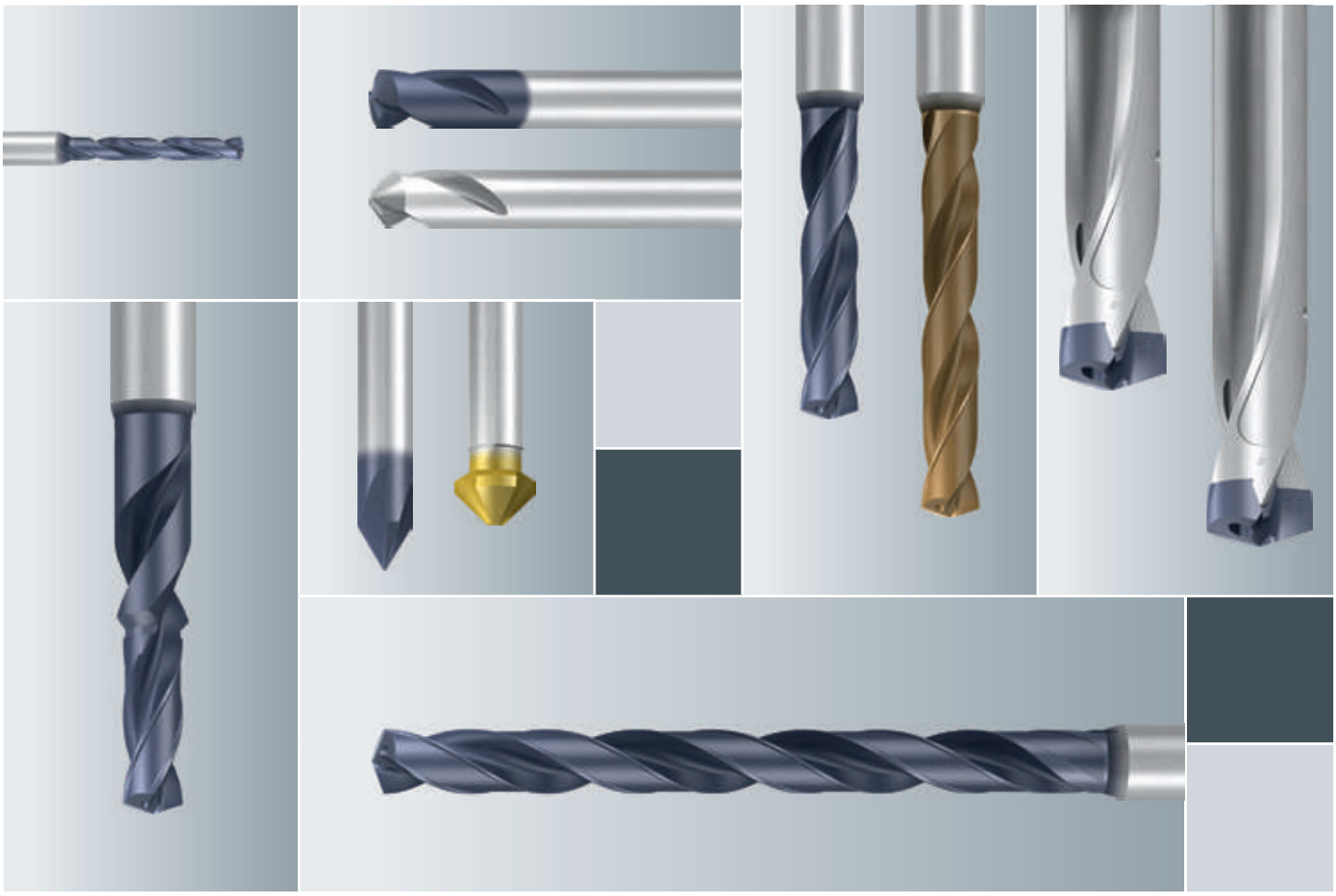
COM Conventional milling

Possible causes	Thread milling in general			
	 Chattering, vibrations	Bad surface quality on workpiece	Excessive wear	Chipped cutting edges
	Solutions			
Cutting speed	~	~	⇩	
Feed per tooth	~	~	⇧	⇩
Stability (workpiece/workpiece clamping)	⇧	⇧	⇧	⇧
Stability (tool/machine)	⇧	⇧	⇧	⇧
Protruding length (of tool)	⇩	⇩	⇩	~
Tool helix (spiral flutes)	⇧	⇧	~	~
Concentricity	~	~	~	
Coating (e.g. TIN, TICN)			⇧	⇧
Milling process/program/programmed radius			CLM	CLM
Work case (relation of tool/thread diameters)				
Tool change (worn tool)				
NC axis/path speed (computer)	~	~	~	~
Drilling speed (lifting)				
Coolant pressure (exit bore)			~	~

4.6 Problems, possible causes and solutions in thread milling

Thread milling in general			Drill thread milling	
Tapered thread shape (gage jams after reaching a certain depth)	 Small difference between go and no-go gaging	 Marks in the run-in area	Tooth chipping on the drill thread mill	 Tool breakage during the drilling process
Solutions				
			~	
⇩			~	
⇧		~		
⇧		~		
⇩				
~				
	~		~	~
COM		~	~	
	~			
	~			
~		~	~	
			~	⇩ ~
			~	~

Product Finder
v_c / f_z
UNC
UNF
UN
M
MF
NPSF
Rp (BSPP)
G
W
BSW, BSF
NPT
NPTF
Rc (BSPT)
STI
SELF-LOCK
Accessories
Tech. Info
BGF
ZBGF
GSF (Aero)
GSF-Z
GF(I), GF-Z
GF-Vario-Z
GF-H
GF(I)-KEG
ZGF(I)
CIRC-GF
Gigant
FPC, FMC
MoSys



Twist Drills

	Page
Contents	364 - 365
Product Finder and Cutting Data	366 - 379
Product Pages	380 - 418
Technical Information	419 - 428

	EF-Drill Micro	EF-Drill	EF-Drill	EF-Drill
	6 x D	DIN 6537 K 3 x D	DIN 6537 K 3 x D	DIN 6537 L 5 x D
	Page			
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VA			398 - 401	402 - 405

		Page
142° NC Spot Drills		414
NC Spot / Chamfer Drills		415
Chamfer Mills		416
HSS Countersinks		417

EF-Drill	EF-Drill Modular	Chamfer drills 90° EF-Drill C	
8 x D	3 x D, 5 x D	2 - 3.5 x D	
Page			
394 - 397	406 - 411	412	STEEL
			VA

Product finder and cutting data

Please note:
The suitability of the twist drills is marked in the respective columns as follows:

- ■ = **very suitable**
- □ = suitable

The appropriate cutting speeds v_c [SFM] and feed per revolution values f [in/rev.] are to be found on pages 370 - 379

		Application – Material	Hardness Range HRC	BHN	N/mm²	Material Examples	Coolant-lubricant recommendation: Emulsion	Oil	Minimum quantity lubrication (MQL)	Dry / Pressurized air
P		**Steel materials**								
	1.1	Cold-extrusion steels, Construction steels, Free-cutting steels, etc.		≤ 180	≤ 600	1010 / 1018 / 1020 / 12L14 / 12L15 / A36 / T1	■	■	□	
	2.1	Construction steels, Cementation steels, Steel castings, etc.	≤ 22	≤ 235	≤ 800	A36 / T1 / 1030-1095 / 4140 / 4340 / 8620	■	■	□	
	3.1	Cementation steels, Heat-treatable steels, Cold work steels, etc.	≤ 31	≤ 295	≤ 1000	4140 / 4340 / 8620 / P20 / H13 / D2 / A2 / S7 / H1150	■	■	□	
	4.1	Heat-treatable steels, Cold work steels, Nitriding steels, etc.	≤ 38	≤ 355	≤ 1200	4140 / 4340 / 8620 / P20 / H13 / D2 / 300M / 52100 / M1-M42	■	■	□	
	5.1	High-alloyed steels, Cold work steels, Hot work steels, etc.	≤ 44	≤ 415	≤ 1400	4140 / 4340 / 8620 / P20 / H13 / D2 / 300M / 52100	■	■	□	
M		**Stainless steel materials**								
	1.1	Ferritic, martensitic	≤ 29	≤ 280	≤ 950	410 / 440 / 440C / 17-4 PH	■	□		
	2.1	Austenitic	≤ 29	≤ 280	≤ 950	303 / 304 / 316 / 316L / 321	■	□		
	3.1	Austenitic-ferritic (Duplex)	≤ 35	≤ 325	≤ 1100		■	□		
	4.1	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 39	≤ 370	≤ 1250		■	□		
K		**Cast materials**								
	1.1	Cast iron with lamellar graphite (GJL)		30 - 75	100 - 250	Grey cast irons G10-GG40	■		□	□
	1.2			75 - 135	250 - 450		■		□	□
	2.1	Cast iron with nodular graphite (GJS)		105 - 150	350 - 500	Nodular GGG40-GGG70	■		□	□
	2.2			150 - 265	500 - 900		■		□	□
	3.1	Cast iron with vermicular graphite (GJV)		90 - 120	300 - 400		■		□	□
	3.2			120 - 150	400 - 500	Compact graphite iron (CGI)	■		□	□
	4.1	Malleable cast iron (GTMW, GTMB)		70 - 145	250 - 500		■		□	□
	4.2			150 - 235	500 - 800	White iron	■		□	□
N		**Non ferrous materials**								
		Aluminum alloys								
	1.1	Aluminum wrought alloys		≤ 60	≤ 200	7075	■	□		
	1.2			≤ 105	≤ 350	6061-T6 / 2024-T4	■	□		
	1.3			≤ 165	≤ 550		■	□		
	1.4	Aluminum cast alloys Si ≤ 7%					■	□		
	1.5	Aluminum cast alloys 7% < Si ≤ 12%					■	□		
	1.6	Aluminum cast alloys 12% < Si ≤ 17%					■	□		
		Copper alloys								
	2.1	Pure copper, low-alloyed copper		≤ 120	≤ 400		■	□		
	2.2	Copper-zinc alloys (brass, long-chipping)		≤ 165	≤ 550		■	□		
	2.3	Copper-zinc alloys (brass, short-chipping)		≤ 165	≤ 550		■	□		
	2.4	Copper-aluminum alloys (alu bronze, long-chipping)		≤ 235	≤ 800		■	□		
	2.5	Copper-tin alloys (tin bronze, long-chipping)		≤ 205	≤ 700		■	□		
	2.6	Copper-tin alloys (tin bronze, short-chipping)		≤ 120	≤ 400		■	□		
	2.7	Special copper alloys		≤ 180	≤ 600		■	□		
	2.8		≤ 44	≤ 415	≤ 1400		■	□		
		Magnesium alloys								
	3.1	Magnesium wrought alloys		≤ 150	≤ 500					
	3.2	Magnesium cast alloys		≤ 150	≤ 500					
		Synthetics								
	4.1	Duroplastics (short-chipping)								
	4.2	Thermoplastics (long-chipping)								
	4.3	Fibre-reinforced synthetics (fibre content ≤ 30%)								
	4.4	Fibre-reinforced synthetics (fibre content > 30%)								
		Special materials								
	5.1	Graphite								■
	5.2	Tungsten-copper alloys								
	5.3	Composite materials								
S		**Special materials**								
		Titanium alloys								
	1.1	Pure titanium		≤ 135	≤ 450	CP1 / CP2				
	1.2	Titanium alloys	≤ 27	≤ 265	≤ 900	6AL4V	■	□		
	1.3		≤ 39	≤ 370	≤ 1250		■	□		
		Nickel alloys, cobalt alloys and iron alloys								
	2.1	Pure nickel		≤ 180	≤ 600					
	2.2	Nickel-base alloys	≤ 31	≤ 295	≤ 1000	Monel 500, 718 Inconel annealed	■			
	2.3		≤ 49	≤ 475	≤ 1600	718 Inconel	■			
	2.4	Cobalt-base alloys	≤ 31	≤ 295	≤ 1000					
	2.5		≤ 49	≤ 475	≤ 1600	Haynes 25				
	2.6	Iron-base alloys	≤ 46	≤ 445	≤ 1500	Incoloy 925				
H		**Hard materials**								
	1.1	High strength steels, hardened steels, hard castings	44 - 50				■	■	□	□
	1.2		50 - 55				■	■	□	□
	1.3		55 - 60							
	1.4		60 - 63							
	1.5		63 - 66							

	EF-Drill Micro STEEL	EF-Drill STEEL	EF-Drill STEEL			EF-Drill VA		Type	
	6 x D	3 x D	3 x D	5 x D	8 x D	3 x D	5 x D	Drill depth	
	381	382 - 385	386 - 389	390 - 393	394 - 397	398 - 401	402 - 405	Page	
	■	■	■	■	■			1.1	P
	■	□	■	■	■			2.1	
	■	□	■	■	■			3.1	
	■	□	■	■	■			4.1	
	■	□	■	■	■			5.1	
	■		■	■	■	■	■	1.1	M
	□					■	■	2.1	
	□					■	■	3.1	
	□					■	■	4.1	
	□	□	□	□	□			1.1	K
	□	□	□	□	□			1.2	
	□	□	□	□	□			2.1	
	□	□	■	■	■			2.2	
	□	□	□	□	□			3.1	
	□	□	□	□	□			3.2	
	□	□	□	□	□			4.1	
	□	□	□	□	□			4.2	
	□	□	□	□	□	□	□	1.1	N
	■	□	□	□	□	□	□	1.2	
	■	□	□	□	□	□	□	1.3	
	■	□	□	□	□			1.4	
	■	□	□	□	□			1.5	
	□							1.6	
		□	■	■	■			2.1	
	■	□	■	■	■			2.2	
	■	□	■	■	■			2.3	
		□	■	■	■			2.4	
		□	■	■	■			2.5	
		□	■	■	■			2.6	
		□	■	■	■			2.7	
		□	■	■	■			2.8	
								3.1	
								3.2	
								4.1	
								4.2	
								4.3	
								4.4	
		□						5.1	
								5.2	
								5.3	
						□	□	1.1	S
	□					□	□	1.2	
	□					□	□	1.3	
								2.1	
			■	■	■	□	□	2.2	
			■	■	■	□	□	2.3	
						□	□	2.4	
								2.5	
						□	□	2.6	
		□	■	■				1.1	H
		□	□	□				1.2	
								1.3	
								1.4	
								1.5	

		Coolant-lubricant recommendation							
		Emulsion	Oil	Minimum quantity lubrication (MQL)	Dry / Pressurized air	EF-Drill Modular STEEL		EF-Drill C STEEL	
						3 x D	5 x D	2-3.5 x D	
						406 - 409, 410	406 - 409, 411	412	
P	1.1	■	■	□		■	■	■	
	2.1	■	■	□		■	■	■	
	3.1	■	■	□		■	■	■	
	4.1	■	■	□		■	■	■	
	5.1	■	■	□		■	■	■	
M	1.1	■	□			■	■	■	
	2.1	■	□						
	3.1	■	□						
	4.1	■	□						
K	1.1	■		□	□	■	■	□	
	1.2	■		□	□	■	■	□	
	2.1	■		□	□	■	■	□	
	2.2	■		□	□	■	■	■	
	3.1	■		□	□	□	□	□	
	3.2	■		□	□	□	□	□	
	4.1	■		□	□	□	□	□	
	4.2	■		□	□	□	□	□	
N	1.1	■	□					□	
	1.2	■	□					□	
	1.3	■	□					□	
	1.4	■	□			□	□	□	
	1.5	■	□			□	□	□	
	1.6	■	□						
	2.1	■	□					■	
	2.2	■	□					■	
	2.3	■	□					■	
	2.4	■	□					■	
	2.5	■	□					■	
	2.6	■	□					■	
	2.7	■	□					■	
	2.8	■	□					■	
	3.1								
	3.2								
	4.1								
	4.2								
	4.3								
	4.4								
	5.1				■				
	5.2								
	5.3								
S	1.1								
	1.2	■	□						
	1.3	■	□						
	2.1								
	2.2							■	
	2.3							■	
	2.4								
	2.5								
	2.6								
H	1.1	■	■	□	□			■	
	1.2	■	■	□	□			□	
	1.3								
	1.4								
	1.5								

	142° NC Spot Drills	NC Spot / Chamfer Drills	Chamfer Mills	HSS Countersinks		Type	
	–	–	–	–		Drill depth	
	414	415	416	417		Page	
	■	■	■	■	■	1.1	P
	■	■	■	■	■	2.1	
	■	□	■	□	■	3.1	
	■		■		□	4.1	
	■		□			5.1	
	□	□	□	□	□	1.1	M
	□	□	□	□	□	2.1	
	□		□			3.1	
			□			4.1	
	■	■	■	■	■	1.1	K
	■	■	■	■	■	1.2	
	■	■	■	■	■	2.1	
	□	□	□	□	□	2.2	
	□	□	□	□	□	3.1	
	□		□			3.2	
	□	□	■	□	□	4.1	
	□	□	□	□	□	4.2	
	□	□	□	□	□	1.1	N
	□	□	□	□	□	1.2	
	□	□	□	□	□	1.3	
	□	□	□	□	□	1.4	
	□	□	□	□	□	1.5	
			□			1.6	
	□	□	□	□	□	2.1	
	□	□	□	□	□	2.2	
	□	□	□	□	□	2.3	
	□	□	□	□	□	2.4	
	□	□	□	□	□	2.5	
	□	□	□	□	□	2.6	
	□		□			2.7	
	□		□			2.8	
	□	□	□	□	□	3.1	
	□	□	□	□	□	3.2	
	□	□	□	□	□	4.1	
	□	□	□	□	□	4.2	
			□			4.3	
						4.4	
	□		□			5.1	
			□			5.2	
			□			5.3	
	□	□	□	□	□	1.1	S
			□			1.2	
			□			1.3	
			□			2.1	
	□	□	□			2.2	
						2.3	
	□					2.4	
						2.5	
	□					2.6	
	□					1.1	H
						1.2	
						1.3	
						1.4	
						1.5	

EF-Drill Micro
STEEL
6 x D

		D = 0.8 mm D = 0.031 inch			D = 1 mm D = 0.039 inch			D = 1.25 mm D = 0.049 inch					
		Cutting speed v_c [SFM]			Feed per revolution f [inch/rev.]								
		min.	**rec.**	max.	min.	**rec.**	max.	min.	**rec.**	max.	min.	**rec.**	max.
P	1.1	262	**295**	328	.0008	**.0010**	.0012	.0012	**.0014**	.0016	.0016	**.0018**	.0020
	2.1	230	**279**	328	.0008	**.0010**	.0012	.0012	**.0014**	.0016	.0016	**.0018**	.0020
	3.1	197	**213**	230	.0004	**.0006**	.0008	.0008	**.0010**	.0012	.0012	**.0014**	.0016
	4.1	164	**180**	197	.0004	**.0006**	.0008	.0008	**.0010**	.0012	.0012	**.0014**	.0016
	5.1	148	**164**	180	.0004	**.0006**	.0008	.0008	**.0010**	.0012	.0012	**.0014**	.0016
M	1.1	131	**157**	180	.0002	**.0003**	.0004	.0004	**.0005**	.0006	.0008	**.0009**	.0010
	2.1	98	**115**	131	.0004	**.0006**	.0008	.0006	**.0008**	.0010	.0010	**.0012**	.0014
	3.1	98	**115**	131	.0002	**.0003**	.0004	.0004	**.0005**	.0006	.0008	**.0009**	.0010
	4.1	98	**115**	131	.0002	**.0003**	.0004	.0004	**.0005**	.0006	.0008	**.0009**	.0010
K	1.1	394	**476**	558	.0008	**.0010**	.0012	.0016	**.0020**	.0024	.0024	**.0028**	.0031
	1.2	394	**476**	558	.0008	**.0010**	.0012	.0016	**.0020**	.0024	.0024	**.0028**	.0031
	2.1	394	**443**	492	.0008	**.0010**	.0012	.0016	**.0020**	.0024	.0024	**.0028**	.0031
	2.2	295	**344**	394	.0004	**.0006**	.0008	.0012	**.0016**	.0020	.0020	**.0024**	.0028
	3.1	197	**230**	262	.0008	**.0010**	.0012	.0012	**.0016**	.0020	.0016	**.0020**	.0024
	3.2	197	**230**	262	.0004	**.0006**	.0008	.0008	**.0012**	.0016	.0012	**.0016**	.0020
	4.1	197	**230**	262	.0008	**.0010**	.0012	.0012	**.0016**	.0020	.0016	**.0020**	.0024
	4.2	197	**230**	262	.0004	**.0006**	.0008	.0008	**.0012**	.0016	.0012	**.0016**	.0020
N	1.1	328	**459**	591	.0012	**.0014**	.0016	.0016	**.0018**	.0020	.0020	**.0022**	.0024
	1.2	328	**459**	591	.0012	**.0014**	.0016	.0016	**.0018**	.0020	.0020	**.0022**	.0024
	1.3	328	**459**	591	.0012	**.0014**	.0016	.0016	**.0018**	.0020	.0020	**.0022**	.0024
	1.4	262	**377**	492	.0012	**.0014**	.0016	.0016	**.0018**	.0020	.0020	**.0022**	.0024
	1.5	262	**377**	492	.0008	**.0010**	.0012	.0012	**.0014**	.0016	.0016	**.0018**	.0020
	1.6	262	**377**	492	.0008	**.0010**	.0012	.0012	**.0014**	.0016	.0016	**.0018**	.0020
	2.1												
	2.2	394	**443**	492	.0004	**.0008**	.0012	.0008	**.0012**	.0016	.0012	**.0016**	.0020
	2.3	394	**443**	492	.0004	**.0008**	.0012	.0008	**.0012**	.0016	.0012	**.0016**	.0020
	2.4												
	2.5												
	2.6												
	2.7												
	2.8												
	3.1												
	3.2												
	4.1												
	4.2												
	4.3												
	4.4												
	5.1												
	5.2												
	5.3												
S	1.1												
	1.2	66	**82**	98	.0004	**.0006**	.0008	.0004	**.0006**	.0008	.0010	**.0012**	.0014
	1.3	49	**66**	82	.0004	**.0006**	.0008	.0004	**.0006**	.0008	.0010	**.0012**	.0014
	2.1												
	2.2												
	2.3												
	2.4												
	2.5												
	2.6												
H	1.1												
	1.2												
	1.3												
	1.4												
	1.5												

Cutting data

Please note that these data are standard values only.

- We recommend the standard values in bold print (**rec.**) for stable work conditions and for high-performance machine tools with sufficient speed capability.
- Correspondingly, the lower cutting speeds (**min.**) in connection with higher feed values (up to **max.**) should be used for machine tools with lower spindle speeds.
- For optimum workpiece conditions, and for machine tools with extremely high performance and high spindle speeds, the high cutting speeds (**max.**) in connection with possibly reduced feed values can be applied.

D = 1.5 mm / D = 0.059 inch			D = 2 mm / D = 0.079 inch			D = 2.5 mm / D = 0.098 inch			D = 3 mm / D = 0.118 inch				
Feed per revolution f [inch/rev.]													
min.	**rec.**	max.	min.	**rec.**	max.	min.	**rec.**	max.	min.	**rec.**	max.		
.0024	**.0026**	.0028	.0035	**.0039**	.0043	.0047	**.0051**	.0055	.0059	**.0063**	.0067	1.1	P
.0024	**.0026**	.0028	.0035	**.0039**	.0043	.0047	**.0051**	.0055	.0059	**.0063**	.0067	2.1	
.0016	**.0018**	.0020	.0024	**.0026**	.0028	.0031	**.0033**	.0035	.0047	**.0049**	.0051	3.1	
.0016	**.0018**	.0020	.0024	**.0026**	.0028	.0031	**.0033**	.0035	.0047	**.0049**	.0051	4.1	
.0016	**.0018**	.0020	.0024	**.0026**	.0028	.0031	**.0033**	.0035	.0047	**.0049**	.0051	5.1	
.0012	**.0014**	.0016	.0020	**.0022**	.0024	.0024	**.0026**	.0028	.0028	**.0030**	.0031	1.1	M
.0014	**.0017**	.0020	.0022	**.0025**	.0028	.0026	**.0029**	.0031	.0030	**.0033**	.0035	2.1	
.0012	**.0014**	.0016	.0020	**.0022**	.0024	.0024	**.0026**	.0028	.0028	**.0030**	.0031	3.1	
.0012	**.0014**	.0016	.0020	**.0022**	.0024	.0024	**.0026**	.0028	.0028	**.0030**	.0031	4.1	
.0031	**.0035**	.0039	.0039	**.0043**	.0047	.0051	**.0055**	.0059	.0063	**.0067**	.0071	1.1	K
.0031	**.0035**	.0039	.0039	**.0043**	.0047	.0051	**.0055**	.0059	.0063	**.0067**	.0071	1.2	
.0031	**.0035**	.0039	.0039	**.0043**	.0047	.0051	**.0055**	.0059	.0063	**.0067**	.0071	2.1	
.0028	**.0031**	.0035	.0035	**.0039**	.0043	.0047	**.0051**	.0055	.0059	**.0063**	.0067	2.2	
.0020	**.0024**	.0028	.0028	**.0031**	.0035	.0035	**.0039**	.0043	.0043	**.0047**	.0051	3.1	
.0016	**.0020**	.0024	.0020	**.0024**	.0028	.0024	**.0030**	.0035	.0031	**.0037**	.0043	3.2	
.0020	**.0024**	.0028	.0028	**.0031**	.0035	.0035	**.0039**	.0043	.0043	**.0047**	.0051	4.1	
.0016	**.0020**	.0024	.0020	**.0024**	.0028	.0024	**.0030**	.0035	.0031	**.0037**	.0043	4.2	
.0028	**.0030**	.0031	.0039	**.0043**	.0047	.0051	**.0055**	.0059	.0063	**.0067**	.0071	1.1	N
.0028	**.0030**	.0031	.0039	**.0043**	.0047	.0051	**.0055**	.0059	.0063	**.0067**	.0071	1.2	
.0028	**.0030**	.0031	.0039	**.0043**	.0047	.0051	**.0055**	.0059	.0063	**.0067**	.0071	1.3	
.0028	**.0030**	.0031	.0039	**.0043**	.0047	.0051	**.0055**	.0059	.0063	**.0067**	.0071	1.4	
.0024	**.0026**	.0028	.0035	**.0039**	.0043	.0047	**.0051**	.0055	.0059	**.0063**	.0067	1.5	
.0024	**.0026**	.0028	.0035	**.0039**	.0043	.0047	**.0051**	.0055	.0059	**.0063**	.0067	1.6	
												2.1	
.0020	**.0024**	.0028	.0031	**.0037**	.0043	.0043	**.0049**	.0055	.0055	**.0061**	.0067	2.2	
.0020	**.0024**	.0028	.0031	**.0037**	.0043	.0043	**.0049**	.0055	.0055	**.0061**	.0067	2.3	
												2.4	
												2.5	
												2.6	
												2.7	
												2.8	
												3.1	
												3.2	
												4.1	
												4.2	
												4.3	
												4.4	
												5.1	
												5.2	
												5.3	
												1.1	S
.0012	**.0016**	.0020	.0016	**.0020**	.0024	.0022	**.0026**	.0030	.0026	**.0030**	.0033	1.2	
.0012	**.0016**	.0020	.0016	**.0020**	.0024	.0022	**.0026**	.0030	.0026	**.0030**	.0033	1.3	
												2.1	
												2.2	
												2.3	
												2.4	
												2.5	
												2.6	
												1.1	H
												1.2	
												1.3	
												1.4	
												1.5	

		EF-Drill STEEL 3 x D			EF-Drill STEEL 3 x D			EF-Drill STEEL 5 x D			EF-Drill STEEL 8 x D			EF-Drill C STEEL 2 - 3.5 x D		
		Cutting speed v_c [SFM]														
		min.	**rec.**	max.	min.	**rec.**	max.	min.	**rec.**	max.	min.	**rec.**	max.	min.	**rec.**	max.
P	1.1	328	**394**	459	459	**525**	656	459	**525**	656	394	**459**	525	459	**525**	656
	2.1	279	**328**	377	394	**476**	558	394	**476**	558	312	**377**	443	394	**476**	558
	3.1	230	**279**	328	328	**394**	459	328	**394**	459	295	**328**	377	328	**394**	459
	4.1	197	**230**	262	262	**328**	394	262	**328**	394	230	**279**	328	262	**328**	394
	5.1	148	**180**	213	197	**230**	262	197	**230**	262	164	**197**	230	197	**230**	262
M	1.1				197	**262**	328	197	**262**	328	180	**230**	295	197	**262**	328
	2.1															
	3.1															
	4.1															
K	1.1	394	**492**	591	427	**525**	623	427	**525**	623	377	**459**	541	427	**525**	623
	1.2	328	**427**	492	361	**459**	525	361	**459**	525	312	**410**	459	361	**459**	525
	2.1	328	**427**	525	361	**459**	558	361	**459**	558	312	**410**	492	361	**459**	558
	2.2	328	**394**	459	394	**459**	525	394	**459**	525	344	**410**	459	394	**459**	525
	3.1	230	**262**	295	230	**295**	328	230	**295**	328	197	**262**	295	230	**295**	328
	3.2	230	**262**	295	230	**295**	328	230	**295**	328	197	**262**	295	230	**295**	328
	4.1	361	**427**	492	394	**459**	525	394	**459**	525	344	**410**	459	394	**459**	525
	4.2	295	**361**	427	328	**394**	459	328	**394**	459	295	**344**	410	328	**394**	459
N	1.1	689	**787**	886	722	**853**	919	722	**853**	919	640	**755**	804	722	**853**	919
	1.2	689	**787**	886	722	**853**	919	722	**853**	919	640	**755**	804	722	**853**	919
	1.3	591	**656**	722	656	**755**	853	656	**755**	853	574	**656**	755	656	**755**	853
	1.4	591	**656**	722	656	**755**	853	656	**755**	853	574	**656**	755	656	**755**	853
	1.5	492	**558**	591	541	**607**	656	541	**607**	656	476	**541**	574	541	**607**	656
	1.6															
	2.1	361	**427**	525	377	**443**	558	377	**443**	558	328	**394**	492	377	**443**	558
	2.2	492	**525**	558	525	**574**	623	525	**574**	623	459	**509**	541	525	**574**	623
	2.3	591	**689**	787	623	**722**	820	623	**722**	820	541	**640**	722	623	**722**	820
	2.4	197	**262**	295	230	**295**	361	230	**295**	361	197	**262**	312	230	**295**	361
	2.5	295	**361**	459	394	**525**	591	394	**525**	591	361	**459**	525	394	**525**	591
	2.6	295	**328**	361	328	**377**	427	328	**377**	427	295	**328**	377	328	**377**	427
	2.7	164	**180**	197	197	**213**	230	197	**213**	230	164	**180**	197	197	**213**	230
	2.8	164	**180**	197	213	**230**	246	213	**230**	246	180	**197**	213	213	**230**	246
	3.1															
	3.2															
	4.1															
	4.2															
	4.3															
	4.4															
	5.1	230	**295**	394												
	5.2															
	5.3															
S	1.1															
	1.2															
	1.3															
	2.1															
	2.2				60	**80**	100	60	**80**	100	60	**80**	100	60	**80**	100
	2.3				50	**65**	80	50	**65**	80	50	**65**	80	50	**65**	80
	2.4															
	2.5															
	2.6															
H	1.1	98	**115**	131	115	**131**	148	115	**131**	148				115	**131**	148
	1.2	66	**82**	98	98	**115**	131	98	**115**	131				98	**115**	131
	1.3															
	1.4															
	1.5															

Cutting data

Please note that these data are standard values only.

- We recommend the standard values in bold print (**rec.**) for stable work conditions and for high-performance machine tools with sufficient speed capability.
- Correspondingly, the lower cutting speeds (**min.**) in connection with higher feed values (up to **max.**) should be used for machine tools with lower spindle speeds.
- For optimum workpiece conditions, and for machine tools with extremely high performance and high spindle speeds, the high cutting speeds (**max.**) in connection with possibly reduced feed values can be applied.

EF-Drill-STEEL 8 x D:

- **Preparatory centering with a pilot drill is recommended.**
- **Reduce the recommended feed per revolution value f [inch/rev.] by 15%!**

D = 3 mm / D = 0.118 inch			D = 5 mm / D = 0.197 inch			D = 8 mm / D = 0.315 inch			D = 10 mm / D = 0.394 inch			D = 12 mm / D = 0.472 inch			D = 16 mm / D = 0.630 inch			D = 20 mm / D = 0.787 inch				
Feed per revolution f [inch/rev.]																						
min.	**rec.**	max.	min.	**rec.**	max.	min.	**rec.**	max.	min.	**rec.**	max.	min.	**rec.**	max.	min.	**rec.**	max.	min.	**rec.**	max.		
.0031	**.0043**	.0051	.0043	**.0059**	.0075	.0055	**.0071**	.0098	.0079	**.0094**	.0114	.0087	**.0098**	.0126	.0098	**.0122**	.0150	.0114	**.0138**	.0165	1.1	P
.0031	**.0039**	.0047	.0035	**.0043**	.0055	.0059	**.0071**	.0083	.0067	**.0083**	.0094	.0079	**.0094**	.0106	.0094	**.0110**	.0126	.0110	**.0126**	.0142	2.1	P
.0031	**.0039**	.0047	.0035	**.0043**	.0055	.0059	**.0071**	.0083	.0067	**.0083**	.0094	.0079	**.0094**	.0106	.0094	**.0110**	.0126	.0110	**.0126**	.0142	3.1	P
.0024	**.0031**	.0039	.0031	**.0039**	.0055	.0047	**.0063**	.0071	.0059	**.0071**	.0083	.0063	**.0079**	.0094	.0071	**.0094**	.0118	.0087	**.0110**	.0134	4.1	P
.0012	**.0024**	.0031	.0024	**.0031**	.0039	.0039	**.0047**	.0059	.0043	**.0055**	.0067	.0055	**.0063**	.0071	.0067	**.0079**	.0091	.0083	**.0094**	.0106	5.1	P
.0016	**.0024**	.0031	.0028	**.0035**	.0039	.0035	**.0043**	.0051	.0043	**.0055**	.0067	.0059	**.0075**	.0087	.0071	**.0087**	.0102	.0087	**.0102**	.0118	1.1	M
																					2.1	M
																					3.1	M
																					4.1	M
.0047	**.0063**	.0079	.0067	**.0087**	.0102	.0094	**.0118**	.0134	.0106	**.0130**	.0154	.0118	**.0142**	.0181	.0138	**.0161**	.0205	.0154	**.0177**	.0220	1.1	K
.0039	**.0051**	.0063	.0059	**.0075**	.0091	.0079	**.0102**	.0126	.0091	**.0114**	.0138	.0102	**.0134**	.0165	.0126	**.0150**	.0197	.0142	**.0165**	.0213	1.2	K
.0039	**.0055**	.0067	.0059	**.0079**	.0094	.0083	**.0106**	.0130	.0094	**.0118**	.0142	.0106	**.0138**	.0169	.0130	**.0154**	.0201	.0146	**.0169**	.0217	2.1	K
.0035	**.0047**	.0059	.0051	**.0067**	.0083	.0063	**.0087**	.0110	.0071	**.0091**	.0114	.0079	**.0106**	.0126	.0094	**.0122**	.0146	.0110	**.0138**	.0161	2.2	K
.0039	**.0047**	.0055	.0051	**.0059**	.0075	.0067	**.0083**	.0102	.0083	**.0102**	.0122	.0106	**.0126**	.0146	.0126	**.0146**	.0161	.0142	**.0161**	.0177	3.1	K
.0039	**.0047**	.0055	.0051	**.0059**	.0075	.0067	**.0083**	.0102	.0083	**.0102**	.0122	.0106	**.0126**	.0146	.0126	**.0146**	.0161	.0142	**.0161**	.0177	3.2	K
.0039	**.0051**	.0063	.0055	**.0067**	.0083	.0071	**.0094**	.0118	.0087	**.0118**	.0134	.0094	**.0126**	.0157	.0110	**.0150**	.0181	.0126	**.0165**	.0197	4.1	K
.0035	**.0047**	.0059	.0047	**.0063**	.0079	.0063	**.0083**	.0106	.0079	**.0106**	.0122	.0087	**.0114**	.0142	.0106	**.0134**	.0165	.0122	**.0150**	.0181	4.2	K
.0047	**.0055**	.0067	.0071	**.0087**	.0098	.0094	**.0110**	.0126	.0118	**.0138**	.0157	.0150	**.0169**	.0189	.0177	**.0205**	.0236	.0193	**.0220**	.0252	1.1	N
.0047	**.0055**	.0067	.0071	**.0087**	.0098	.0094	**.0110**	.0126	.0118	**.0138**	.0157	.0150	**.0169**	.0189	.0177	**.0205**	.0236	.0193	**.0220**	.0252	1.2	N
.0047	**.0055**	.0067	.0071	**.0087**	.0098	.0094	**.0110**	.0126	.0118	**.0138**	.0157	.0150	**.0169**	.0189	.0177	**.0205**	.0236	.0193	**.0220**	.0252	1.3	N
.0047	**.0055**	.0067	.0071	**.0087**	.0098	.0094	**.0110**	.0126	.0118	**.0138**	.0157	.0150	**.0169**	.0189	.0177	**.0205**	.0236	.0193	**.0220**	.0252	1.4	N
.0047	**.0055**	.0063	.0063	**.0071**	.0087	.0087	**.0102**	.0118	.0114	**.0134**	.0150	.0138	**.0154**	.0173	.0157	**.0177**	.0197	.0173	**.0193**	.0213	1.5	N
																					1.6	N
.0028	**.0035**	.0055	.0035	**.0047**	.0063	.0051	**.0063**	.0071	.0063	**.0075**	.0091	.0071	**.0087**	.0106	.0083	**.0102**	.0118	.0098	**.0118**	.0134	2.1	N
.0024	**.0035**	.0043	.0047	**.0055**	.0063	.0063	**.0079**	.0094	.0079	**.0094**	.0110	.0094	**.0110**	.0126	.0110	**.0130**	.0146	.0126	**.0146**	.0161	2.2	N
.0047	**.0055**	.0063	.0055	**.0063**	.0079	.0079	**.0098**	.0118	.0094	**.0118**	.0150	.0110	**.0142**	.0161	.0126	**.0150**	.0177	.0142	**.0165**	.0193	2.3	N
.0020	**.0028**	.0031	.0028	**.0035**	.0043	.0047	**.0055**	.0063	.0055	**.0063**	.0079	.0063	**.0071**	.0087	.0071	**.0079**	.0098	.0087	**.0094**	.0114	2.4	N
.0024	**.0031**	.0039	.0031	**.0047**	.0055	.0055	**.0071**	.0079	.0063	**.0079**	.0094	.0079	**.0091**	.0102	.0087	**.0098**	.0118	.0102	**.0114**	.0134	2.5	N
.0028	**.0035**	.0043	.0035	**.0043**	.0051	.0059	**.0067**	.0079	.0071	**.0083**	.0091	.0083	**.0094**	.0106	.0094	**.0110**	.0126	.0110	**.0126**	.0142	2.6	N
.0012	**.0016**	.0020	.0016	**.002**	.0028	.0031	**.0035**	.0039	.0035	**.0039**	.0047	.0039	**.0047**	.0055	.0047	**.0055**	.0063	.0063	**.0071**	.0079	2.7	N
.0012	**.0016**	.0020	.0016	**.002**	.0028	.0031	**.0035**	.0039	.0035	**.0039**	.0047	.0039	**.0047**	.0055	.0047	**.0055**	.0063	.0063	**.0071**	.0079	2.8	N
																					3.1	N
																					3.2	N
																					4.1	N
																					4.2	N
																					4.3	N
																					4.4	N
.0039	**.0047**	.0055	.0047	**.0055**	.0063	.0055	**.0063**	.0071	.0063	**.0075**	.0083	.0071	**.0083**	.0094	.0079	**.0094**	.0110	.0094	**.0110**	.0126	5.1	N
																					5.2	N
																					5.3	N
																					1.1	S
																					1.2	S
																					1.3	S
																					2.1	S
.0012	**.0016**	.0020	.0020	**.0025**	.0031	.0024	**.0029**	.0035	.0031	**.0037**	.0043	.0039	**.0045**	.0051	.0047	**.0057**	.0067	.0059	**.0071**	.0083	2.2	S
.0012	**.0016**	.0020	.0020	**.0025**	.0031	.0024	**.0029**	.0035	.0031	**.0037**	.0043	.0039	**.0045**	.0051	.0047	**.0057**	.0067	.0059	**.0071**	.0083	2.3	S
																					2.4	S
																					2.5	S
																					2.6	S
.0016	**.0024**	.0031	.0024	**.0028**	.0031	.0039	**.0047**	.0055	.0047	**.0055**	.0063	.0055	**.0063**	.0071	.0063	**.0071**	.0079	.0079	**.0087**	.0094	1.1	H
.0012	**.0020**	.0024	.0016	**.0024**	.0028	.0031	**.0039**	.0047	.0039	**.0047**	.0055	.0047	**.0055**	.0063	.0055	**.0063**	.0071	.0071	**.0079**	.0087	1.2	H
																					1.3	H
																					1.4	H
																					1.5	H

		EF-Drill Modular STEEL 3 x D			EF-Drill Modular STEEL 5 x D		
		Cutting speed v_c [SFM]					
		min.	**rec.**	max.	min.	**rec.**	max.
P	1.1	328	**459**	459	328	**459**	459
	2.1	295	**377**	427	295	**377**	427
	3.1	230	**328**	361	230	**328**	361
	4.1	197	**262**	328	197	**262**	328
	5.1	164	**197**	230	164	**197**	230
M	1.1	131	**164**	197	131	**164**	197
	2.1						
	3.1						
	4.1						
K	1.1	328	**394**	541	328	**394**	541
	1.2	279	**410**	459	279	**410**	459
	2.1	279	**410**	492	279	**410**	492
	2.2	295	**410**	459	295	**410**	459
	3.1	164	**230**	295	164	**230**	295
	3.2	164	**230**	295	164	**230**	295
	4.1	295	**410**	459	295	**410**	459
	4.2	295	**295**	410	295	**295**	410
N	1.1						
	1.2						
	1.3						
	1.4	328	**492**	656	328	**492**	656
	1.5	262	**394**	525	262	**394**	525
	1.6						
	2.1						
	2.2						
	2.3						
	2.4						
	2.5						
	2.6						
	2.7						
	2.8						
	3.1						
	3.2						
	4.1						
	4.2						
	4.3						
	4.4						
	5.1						
	5.2						
	5.3						
S	1.1						
	1.2						
	1.3						
	2.1						
	2.2						
	2.3						
	2.4						
	2.5						
	2.6						
H	1.1						
	1.2						
	1.3						
	1.4						
	1.5						

Cutting data

Please note that these data are standard values only.

- We recommend the standard values in bold print (**rec.**) for stable work conditions and for high-performance machine tools with sufficient speed capability.
- Correspondingly, the lower cutting speeds (**min.**) in connection with higher feed values (up to **max.**) should be used for machine tools with lower spindle speeds.
- For optimum workpiece conditions, and for machine tools with extremely high performance and high spindle speeds, the high cutting speeds (**max.**) in connection with possibly reduced feed values can be applied.

D = 14 mm / D = 0.551 inch			D = 16 mm / D = 0.630 inch			D = 20 mm / D = 0.787 inch			D = 24 mm / D = 0.945 inch			D = 28 mm / D = 1.102 inch			D = 32 mm / D = 1.259 inch				
Feed per revolution f [inch/rev.]																			
min.	rec.	max.	min.	rec.	max.	min.	rec.	max.	min.	rec.	max.	min.	rec.	max.	min.	rec.	max.		
.0059	**.0087**	.0110	.0071	**.0098**	.0122	.0083	**.0110**	.0134	.0102	**.0130**	.0154	.0118	**.0146**	.0169	.0134	**.0161**	.0185	1.1	P
.0063	**.0091**	.0118	.0075	**.0102**	.013	.0087	**.0114**	.0142	.0106	**.0134**	.0161	.0122	**.0150**	.0177	.0138	**.0165**	.0193	2.1	
.0087	**.0106**	.0122	.0098	**.0118**	.0134	.0110	**.0130**	.0146	.0130	**.0150**	.0165	.0146	**.0165**	.0181	.0161	**.0181**	.0197	3.1	
.0067	**.0087**	.0106	.0079	**.0098**	.0118	.0091	**.0110**	.0130	.0110	**.0130**	.0150	.0126	**.0146**	.0165	.0142	**.0161**	.0181	4.1	
.0063	**.0083**	.0102	.0075	**.0094**	.0114	.0087	**.0106**	.0126	.0106	**.0126**	.0146	.0122	**.0142**	.0161	.0138	**.0157**	.0177	5.1	
.0051	**.0067**	.0079	.0059	**.0075**	.0087	.0067	**.0083**	.0094	.0079	**.0094**	.0106	.0087	**.0102**	.0114	.0094	**.0110**	.0122	1.1	M
																		2.1	
																		3.1	
																		4.1	
.0091	**.0130**	.0169	.0122	**.0161**	.0201	.0154	**.0193**	.0232	.0193	**.0232**	.0272	.0224	**.0264**	.0303	.0256	**.0295**	.0335	1.1	K
.0075	**.0118**	.0157	.0106	**.0150**	.0189	.0138	**.0181**	.0220	.0177	**.0220**	.0260	.0209	**.0252**	.0291	.0240	**.0283**	.0323	1.2	
.0083	**.0122**	.0157	.0114	**.0154**	.0189	.0146	**.0185**	.0220	.0185	**.0224**	.0260	.0217	**.0256**	.0291	.0248	**.0287**	.0323	2.1	
.0067	**.0110**	.0150	.0098	**.0142**	.0181	.0130	**.0173**	.0213	.0169	**.0213**	.0252	.0201	**.0244**	.0283	.0232	**.0276**	.0315	2.2	
.0059	**.0094**	.0130	.0091	**.0126**	.0161	.0122	**.0157**	.0193	.0161	**.0197**	.0232	.0193	**.0228**	.0264	.0224	**.0260**	.0295	3.1	
.0059	**.0094**	.0130	.0091	**.0126**	.0161	.0122	**.0157**	.0193	.0161	**.0197**	.0232	.0193	**.0228**	.0264	.0224	**.0260**	.0295	3.2	
.0055	**.0087**	.0114	.0087	**.0118**	.0146	.0118	**.0150**	.0177	.0157	**.0189**	.0217	.0189	**.0220**	.0248	.0220	**.0252**	.0280	4.1	
.0051	**.0079**	.0106	.0083	**.0110**	.0138	.0114	**.0142**	.0169	.0154	**.0181**	.0209	.0185	**.0213**	.0240	.0217	**.0244**	.0272	4.2	
																		1.1	N
																		1.2	
																		1.3	
.0118	**.0138**	.0157	.0138	**.0157**	.0177	.0157	**.0177**	.0197	.0177	**.0197**	.0217	.0197	**.0217**	.0236	.0217	**.0236**	.0256	1.4	
.0157	**.0177**	.0197	.0177	**.0197**	.0217	.0197	**.0217**	.0236	.0217	**.0236**	.0256	.0236	**.0256**	.0276	.0256	**.0276**	.0295	1.5	
																		1.6	
																		2.1	
																		2.2	
																		2.3	
																		2.4	
																		2.5	
																		2.6	
																		2.7	
																		2.8	
																		3.1	
																		3.2	
																		4.1	
																		4.2	
																		4.3	
																		4.4	
																		5.1	
																		5.2	
																		5.3	
																		1.1	S
																		1.2	
																		1.3	
																		2.1	
																		2.2	
																		2.3	
																		2.4	
																		2.5	
																		2.6	
																		1.1	H
																		1.2	
																		1.3	
																		1.4	
																		1.5	

		EF-Drill VA 3 x D			EF-Drill VA 5 x D		
		Cutting speed v_c [SFM]					
		min.	**rec.**	max.	min.	**rec.**	max.
P	1.1						
	2.1						
	3.1						
	4.1						
	5.1						
M	1.1	197	**262**	328	197	**262**	328
	2.1	131	**164**	197	131	**164**	197
	3.1	115	**131**	148	115	**131**	148
	4.1	98	**115**	131	98	**115**	131
K	1.1						
	1.2						
	2.1						
	2.2						
	3.1						
	3.2						
	4.1						
	4.2						
N	1.1	722	**853**	919	722	**853**	919
	1.2	722	**853**	919	722	**853**	919
	1.3	656	**755**	853	656	**755**	853
	1.4						
	1.5						
	1.6						
	2.1						
	2.2						
	2.3						
	2.4						
	2.5						
	2.6						
	2.7						
	2.8						
	3.1						
	3.2						
	4.1						
	4.2						
	4.3						
	4.4						
	5.1						
	5.2						
	5.3						
S	1.1	148	**180**	213	148	**180**	213
	1.2	98	**148**	180	98	**148**	180
	1.3	98	**115**	131	98	**115**	131
	2.1						
	2.2	33	**66**	98	33	**66**	98
	2.3	50	**65**	80	50	**65**	80
	2.4	98	**148**	180	98	**148**	180
	2.5						
	2.6	98	**115**	131	98	**115**	131
H	1.1						
	1.2						
	1.3						
	1.4						
	1.5						

Cutting data

Please note that these data are standard values only.

- We recommend the standard values in bold print (**rec.**) for stable work conditions and for high-performance machine tools with sufficient speed capability.
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- For optimum workpiece conditions, and for machine tools with extremely high performance and high spindle speeds, the high cutting speeds (**max.**) in connection with possibly reduced feed values can be applied.

D = 3 mm / D = 0.118 inch			D = 5 mm / D = 0.197 inch			D = 8 mm / D = 0.315 inch			D = 10 mm / D = 0.394 inch			D = 12 mm / D = 0.472 inch			D = 16 mm / D = 0.630 inch			D = 20 mm / D = 0.787 inch				
Feed per revolution f [inch/rev.]																						
min.	**rec.**	max.	min.	**rec.**	max.	min.	**rec.**	max.	min.	**rec.**	max.	min.	**rec.**	max.	min.	**rec.**	max.	min.	**rec.**	max.		
																					1.1	P
																					2.1	
																					3.1	
																					4.1	
																					5.1	
.0020	**.0024**	.0031	.0024	**.0031**	.0039	.0031	**.0047**	.0063	.0047	**.0067**	.0079	.0055	**.0075**	.0091	.0071	**.0087**	.0106	.0087	**.0102**	.0122	1.1	M
.0012	**.0020**	.0028	.0020	**.0028**	.0035	.0031	**.0039**	.0047	.0039	**.0047**	.0055	.0047	**.0055**	.0063	.0055	**.0063**	.0079	.0071	**.0079**	.0094	2.1	
.0012	**.0020**	.0028	.0020	**.0028**	.0035	.0031	**.0039**	.0047	.0039	**.0047**	.0055	.0047	**.0055**	.0063	.0055	**.0063**	.0079	.0071	**.0079**	.0094	3.1	
.0012	**.0020**	.0028	.0020	**.0028**	.0035	.0031	**.0039**	.0047	.0039	**.0047**	.0055	.0047	**.0055**	.0063	.0055	**.0063**	.0079	.0071	**.0079**	.0094	4.1	
.0047	**.0063**	.0079	.0067	**.0087**	.0102	.0094	**.0118**	.0134	.0106	**.0130**	.0154	.0118	**.0142**	.0181	.0138	**.0161**	.0205	.0154	**.0177**	.0220	1.1	K
.0039	**.0051**	.0063	.0059	**.0075**	.0091	.0079	**.0102**	.0126	.0091	**.0114**	.0138	.0102	**.0134**	.0165	.0126	**.0150**	.0197	.0142	**.0165**	.0213	1.2	
.0039	**.0055**	.0067	.0059	**.0079**	.0094	.0083	**.0106**	.0130	.0094	**.0118**	.0142	.0106	**.0138**	.0169	.0130	**.0154**	.0201	.0146	**.0169**	.0217	2.1	
.0035	**.0047**	.0059	.0051	**.0067**	.0083	.0063	**.0087**	.0110	.0071	**.0091**	.0114	.0079	**.0106**	.0126	.0094	**.0122**	.0146	.0110	**.0138**	.0161	2.2	
.0039	**.0047**	.0055	.0051	**.0059**	.0075	.0067	**.0083**	.0102	.0083	**.0102**	.0122	.0106	**.0126**	.0146	.0126	**.0146**	.0161	.0142	**.0161**	.0177	3.1	
.0039	**.0047**	.0055	.0051	**.0059**	.0075	.0067	**.0083**	.0102	.0083	**.0102**	.0122	.0106	**.0126**	.0146	.0126	**.0146**	.0161	.0142	**.0161**	.0177	3.2	
.0039	**.0051**	.0063	.0055	**.0067**	.0083	.0071	**.0094**	.0118	.0087	**.0118**	.0134	.0094	**.0126**	.0157	.0110	**.0150**	.0181	.0126	**.0165**	.0197	4.1	
.0035	**.0047**	.0059	.0047	**.0063**	.0079	.0063	**.0083**	.0106	.0079	**.0106**	.0122	.0087	**.0114**	.0142	.0106	**.0134**	.0165	.0122	**.0150**	.0181	4.2	
.0047	**.0055**	.0067	.0071	**.0087**	.0098	.0094	**.0110**	.0126	.0118	**.0138**	.0157	.0150	**.0169**	.0189	.0177	**.0205**	.0236	.0193	**.0220**	.0252	1.1	N
.0047	**.0055**	.0067	.0071	**.0087**	.0098	.0094	**.0110**	.0126	.0118	**.0138**	.0157	.0150	**.0169**	.0189	.0177	**.0205**	.0236	.0193	**.0220**	.0252	1.2	
.0047	**.0055**	.0067	.0071	**.0087**	.0098	.0094	**.0110**	.0126	.0118	**.0138**	.0157	.0150	**.0169**	.0189	.0177	**.0205**	.0236	.0193	**.0220**	.0252	1.3	
																					1.4	
																					1.5	
																					1.6	
																					2.1	
																					2.2	
																					2.3	
																					2.4	
																					2.5	
																					2.6	
																					2.7	
																					2.8	
																					3.1	
																					3.2	
																					4.1	
																					4.2	
																					4.3	
																					4.4	
																					5.1	
																					5.2	
																					5.3	
.0012	**.0016**	.0024	.0016	**.0024**	.0035	.0024	**.0031**	.0039	.0031	**.0039**	.0047	.0039	**.0047**	.0055	.0047	**.0055**	.0075	.0063	**.0071**	.0091	1.1	S
.0008	**.0012**	.0016	.0016	**.0020**	.0024	.0024	**.0028**	.0031	.0028	**.0035**	.0043	.0016	**.0035**	.0043	.0035	**.0043**	.0051	.0051	**.0059**	.0067	1.2	
.0008	**.0012**	.0016	.0016	**.0020**	.0024	.0024	**.0028**	.0031	.0028	**.0035**	.0043	.0016	**.0035**	.0043	.0035	**.0043**	.0051	.0051	**.0059**	.0067	1.3	
																					2.1	
.0012	**.0024**	.0031	.0024	**.0031**	.0039	.0020	**.0028**	.0043	.0031	**.0043**	.0055	.0039	**.0051**	.0063	.0051	**.0059**	.0071	.0067	**.0075**	.0087	2.2	
.0012	**.0016**	.0020	.0020	**.0025**	.0031	.0024	**.0029**	.0035	.0031	**.0037**	.0043	.0039	**.0045**	.0051	.0047	**.0057**	.0067	.0059	**.0071**	.0083	2.3	
.0008	**.0012**	.0016	.0016	**.0020**	.0024	.0024	**.0028**	.0031	.0028	**.0035**	.0043	.0016	**.0035**	.0043	.0035	**.0043**	.0051	.0051	**.0059**	.0067	2.4	
																					2.5	
.0008	**.0012**	.0016	.0016	**.0020**	.0024	.0024	**.0028**	.0031	.0028	**.0035**	.0043	.0016	**.0035**	.0043	.0035	**.0043**	.0051	.0051	**.0059**	.0067	2.6	
																					1.1	H
																					1.2	
																					1.3	
																					1.4	
																					1.5	

Cutting data

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		NC Spot / Chamfer Drills			NC Spot Drills			D ≤ 6 mm D ≤ 1/4			D > 6 mm D > 1/4		
		Cutting speed v_c [SFM]						Feed per revolution f [inch/rev.]					
		min.	**rec.**	max.	min.	**rec.**	max.	min.	**rec.**	max.	min.	**rec.**	max.
P	1.1	197	**230**	279	328	**394**	459	.0020	**.0028**	.0035	.0031	**.0039**	.0047
	2.1	164	**197**	230	279	**328**	377	.0020	**.0028**	.0035	.0031	**.0039**	.0047
	3.1	131	**164**	197	230	**279**	328	.0020	**.0028**	.0035	.0031	**.0039**	.0047
	4.1				197	**230**	262	.0020	**.0024**	.0028	.0031	**.0035**	.0039
	5.1				148	**180**	213	.0020	**.0024**	.0028	.0031	**.0035**	.0039
M	1.1	115	**164**	197	197	**262**	328	.0020	**.0024**	.0028	.0031	**.0035**	.0039
	2.1	82	**98**	115	131	**164**	197	.0020	**.0024**	.0028	.0031	**.0035**	.0039
	3.1				115	**131**	148	.0020	**.0024**	.0028	.0031	**.0035**	.0039
	4.1												
K	1.1	230	**295**	361	394	**492**	591	.0020	**.0039**	.0059	.0031	**.0047**	.0063
	1.2	197	**262**	295	328	**427**	492	.0020	**.0039**	.0059	.0031	**.0047**	.0063
	2.1	197	**262**	312	328	**427**	525	.0020	**.0031**	.0043	.0031	**.0043**	.0055
	2.2	197	**230**	279	328	**394**	459	.0020	**.0031**	.0043	.0031	**.0043**	.0055
	3.1	131	**164**	180	230	**262**	295	.0020	**.0028**	.0035	.0031	**.0039**	.0047
	3.2				230	**262**	295	.0020	**.0028**	.0035	.0031	**.0039**	.0047
	4.1	213	**262**	295	361	**427**	492	.0020	**.0031**	.0043	.0031	**.0043**	.0055
	4.2	180	**213**	262	295	**361**	427	.0020	**.0031**	.0043	.0031	**.0043**	.0055
N	1.1	410	**476**	525	689	**787**	886	.0031	**.0047**	.0063	.0043	**.0059**	.0071
	1.2	410	**476**	525	689	**787**	886	.0031	**.0047**	.0063	.0043	**.0059**	.0071
	1.3	361	**394**	427	591	**656**	722	.0024	**.0039**	.0055	.0035	**.0051**	.0063
	1.4	361	**394**	427	591	**656**	722	.0031	**.0047**	.0063	.0043	**.0059**	.0071
	1.5	295	**328**	361	492	**558**	591	.0031	**.0047**	.0063	.0043	**.0059**	.0071
	1.6												
	2.1	213	**262**	312	361	**427**	525	.0024	**.0031**	.0039	.0035	**.0043**	.0051
	2.2	295	**312**	328	492	**525**	558	.0024	**.0031**	.0039	.0035	**.0043**	.0051
	2.3	361	**410**	476	591	**689**	787	.0031	**.0039**	.0047	.0043	**.0051**	.0059
	2.4	115	**164**	180	197	**262**	295	.0020	**.0028**	.0035	.0031	**.0039**	.0047
	2.5	180	**213**	279	295	**361**	459	.0020	**.0028**	.0035	.0031	**.0039**	.0047
	2.6	180	**197**	213	295	**328**	361	.0031	**.0039**	.0047	.0043	**.0051**	.0059
	2.7				164	**180**	197	.0020	**.0028**	.0035	.0031	**.0039**	.0047
	2.8				164	**180**	197	.0020	**.0028**	.0035	.0031	**.0039**	.0047
	3.1	180	**213**	279	295	**361**	459	.0020	**.0028**	.0035	.0031	**.0039**	.0047
	3.2	115	**164**	180	197	**262**	295	.0020	**.0028**	.0035	.0031	**.0039**	.0047
	4.1	262	**279**	295	427	**459**	492	.0016	**.0024**	.0031	.0028	**.0035**	.0043
	4.2	295	**312**	328	492	**525**	558	.0016	**.0024**	.0031	.0028	**.0035**	.0043
	4.3												
	4.4												
	5.1				230	**295**	394	.0024	**.0031**	.0039	.0035	**.0043**	.0051
	5.2												
	5.3												
S	1.1	82	**98**	115	131	**164**	197	.0020	**.0024**	.0028	.0031	**.0035**	.0039
	1.2				82	**131**	164	.0020	**.0024**	.0028	.0031	**.0035**	.0039
	1.3												
	2.1												
	2.2	16	**33**	66	33	**66**	98	.0020	**.0024**	.0028	.0031	**.0035**	.0039
	2.3												
	2.4				98	**148**	180	.0020	**.0024**	.0028	.0031	**.0035**	.0039
	2.5												
	2.6				98	**115**	131	.0020	**.0024**	.0028	.0031	**.0035**	.0039
H	1.1				98	**115**	131	.0020	**.0024**	.0028	.0031	**.0035**	.0039
	1.2												
	1.3												
	1.4												
	1.5												

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HSS Countersinks

HSS Countersinks TIN

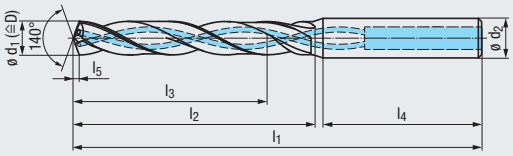
		Cutting speed v_c [SFM]						Feed per revolution f [inch/rev.]		
		min.	**rec.**	max.	min.	**rec.**	max.	min.	**rec.**	max.
P	1.1	33	**49**	66	66	**82**	98	.0012	**.0020**	.0028
	2.1	16	**33**	33	33	**49**	66	.0012	**.0020**	.0028
	3.1	16	**16**	33	26	**39**	49	.0008	**.0012**	.0016
	4.1				16	**26**	33	.0008	**.0012**	.0016
	5.1									
M	1.1	13	**16**	20	20	**26**	33	.0008	**.0012**	.0016
	2.1	7	**13**	20	13	**20**	33	.0008	**.0012**	.0016
	3.1									
	4.1									
K	1.1	49	**59**	69	82	**98**	115	.0024	**.0031**	.0039
	1.2	30	**39**	49	49	**66**	82	.0024	**.0031**	.0039
	2.1	23	**26**	33	39	**46**	52	.0024	**.0031**	.0039
	2.2	20	**23**	26	33	**39**	46	.0024	**.0031**	.0039
	3.1	16	**20**	13	26	**33**	20	.0028	**.0028**	.0035
	3.2									
	4.1	16	**20**	23	26	**33**	39	.0031	**.0031**	.0039
	4.2	13	**16**	20	20	**26**	33	.0031	**.0031**	.0039
N	1.1	66	**98**	131	98	**164**	230	.0020	**.0024**	.0028
	1.2	33	**82**	115	66	**131**	197	.0020	**.0024**	.0028
	1.3	16	**66**	98	33	**98**	164	.0020	**.0024**	.0028
	1.4	33	**49**	82	49	**82**	131	.0020	**.0024**	.0028
	1.5	16	**33**	66	33	**66**	98	.0020	**.0024**	.0028
	1.6									
	2.1	16	**66**	98	33	**98**	164	.0028	**.0031**	.0035
	2.2	33	**82**	115	66	**131**	197	.0028	**.0031**	.0035
	2.3	66	**115**	131	115	**180**	213	.0028	**.0031**	.0035
	2.4	16	**33**	66	33	**66**	98	.0024	**.0028**	.0031
	2.5	16	**66**	98	33	**98**	164	.0024	**.0028**	.0031
	2.6	16	**33**	66	33	**66**	98	.0028	**.0031**	.0035
	2.7									
	2.8									
	3.1	82	**115**	164	131	**197**	262	.0035	**.0039**	.0043
	3.2	66	**98**	131	98	**164**	230	.0035	**.0039**	.0043
	4.1	82	**131**	164	148	**213**	279	.0016	**.0020**	.0024
	4.2	98	**131**	180	164	**230**	295	.0016	**.0020**	.0024
	4.3									
	4.4									
	5.1									
	5.2									
	5.3									
S	1.1	10	**16**	20	16	**26**	33	.0012	**.0016**	.0020
	1.2									
	1.3									
	2.1									
	2.2									
	2.3									
	2.4									
	2.5									
	2.6									
H	1.1									
	1.2									
	1.3									
	1.4									
	1.5									

Metric Shank

Carbide | TIALN T99 | R30 | 2 Flutes | 2FF | 140° | IT9-IT10 | DIN 6535 HA

STEEL
Steel & Universal Applications

new



Applications – Material

P 1.1-5.1 | M 1.1-4.1 | K 1.1-4.2 | N 1.1-6 | N 2.2-3 | S 1.2-3

Drill Depth **6 x D**

Tool Identification — TE213324

Nominal Size ø d_1 k5 inch	mm	Taps	Roll Form Taps	mm l_1	l_2	l_3	l_4	l_5	ø d_2	Dimens. ID	EF-Drill Micro-STEEL HA-IK-2FF TIALN-T99
0.0295	0.75	M1		51.5	6.8	4.5	40	0.105	3	.0075	●
0.0315	0.80	M1x0.2		51.5	7.2	4.8	40	0.112	3	.0080	●
0.0335	0.85	M1.1		51.5	7.7	5.1	40	0.119	3	.0085	●
0.0354	0.90	M1.1x.2	M1	51.5	8.1	5.4	40	0.126	3	.0090	●
0.0374	0.95	M1.2		51.5	8.6	5.7	40	0.132	3	.0095	●
0.0394	1.00	M1.2x0.2	M1.1	55	9	6	40	0.139	4	.0100	●
0.0433	1.10	M1.4	M1.2	55	9.9	6.6	40	0.153	4	.0110	●
0.0472	1.20	M1.4x0.2		55	10.8	7.2	40	0.167	4	.0120	●
0.0492	1.25	M1.6		55	11.3	7.5	40	0.174	4	.0125	●
0.0504	1.28		M1.4	55	11.3	7.7	40	0.178	4	.0128	●
0.0512	1.30	MJ1.6x0.35		57	11.7	7.8	40	0.181	4	.0130	●
0.0531	1.35	M1.7		57	12.2	8.1	40	0.188	4	.0135	●
0.0551	1.40	M1.6x0.2		57	12.6	8.4	40	0.195	4	.0140	●
0.0571	1.45	M1.8		57	13	8.7	40	0.202	4	.0145	●
0.0579	1.47		M1.6	57	13	8.8	40	0.202	4	.0147	●
0.0591	1.50			57	13.5	9	40	0.209	4	.0150	●
0.0618	1.57		M1.7	59	14	9.4	40	0.219	4	.0157	●
0.0630	1.60	M2 / M1.8x0.2		59	14.4	9.6	40	0.223	4	.0160	●
0.0657	1.67		M1.8	59	14.9	10	40	0.233	4	.0167	●
0.0669	1.70			59	15.3	10.2	40	0.237	4	.0170	●
0.0689	1.75	M2.2 / M2x0.25		59	15.8	10.5	40	0.244	4	.0175	●
0.0709	1.80			61	16.2	10.8	40	0.251	4	.0180	●
0.0728	1.85		M2	61	16.7	11.1	40	0.258	4	.0185	●
0.0748	1.90	M2.3	M2x0.25	61	17.1	11.4	40	0.265	4	.0190	●
0.0768	1.95	M2.2x0.25 / M2.3x0.35		61	17.6	11.7	40	0.272	4	.0195	●
0.0787	2.00			63	18	12	40	0.279	4	.0200	●
0.0799	2.03		M2.2	63	18	12.2	40	0.283	4	.0203	●
0.0807	2.05	M2.5 / M2.3x0.25		63	18.5	12.3	40	0.286	4	.0205	●
0.0827	2.10	MJ2.5x0.45	M2.2x0.25	63	18.9	12.6	40	0.293	4	.0210	●
0.0846	2.15	M2.6 / M2.5x0.35	M2.3	63	19.4	12.9	40	0.300	4	.0215	●
0.0866	2.20		M2.3x0.25	63	19.8	13.2	40	0.307	4	.0220	●
0.0906	2.30			65	20.7	13.8	40	0.321	4	.0230	●
0.0917	2.33		M2.5	65	21.2	14	40	0.325	4	.0233	●
0.0945	2.40		M2.5x0.25	65	21.6	14.4	40	0.335	4	.0240	●
0.0957	2.43		M2.6	65	21.6	14.6	40	0.339	4	.0243	●
0.0984	2.50	M3	M2.6x0.25	65	22.5	15	40	0.349	4	.0250	●
0.1024	2.60	MJ3x0.5		66.5	23.4	15.6	40	0.363	4	.0260	●
0.1043	2.65	M3x0.35		66.5	23.9	15.9	40	0.370	4	.0265	●
0.1063	2.70			66.5	24.3	16.2	40	0.377	4	.0270	●
0.1102	2.80		M3	68.5	25.2	16.8	40	0.390	4	.0280	●
0.1142	2.90	M3.5	M3x0.25	68.5	26.1	17.4	40	0.404	4	.0290	●
0.1181	3.00	M3.5x0.5 / MJ3.5x0.6		73	27	18	40	0.418	4	.0300	●

● = In stock
★ = Allow 7 days for delivery

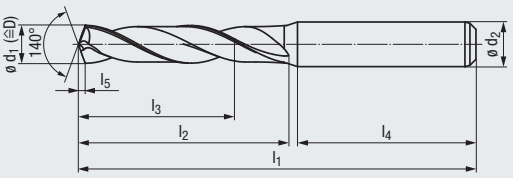
Metric Shank

Carbide | TIALN T14 | DIN 6537 K | R30 | 2 Flutes | 2FF | 140° | IT9-IT10 | DIN 6535 HA HE

STEEL
Steel & Universal Applications

new new

Stub Length



Applications – Material

P 1.1-5.1 | K 1.1-4.2 | N 1.1-5 | N 2.1-8 | N 5.1 | H 1.1-2

Drill Depth **3 x D**

Tool Identification

Nominal Size ø d_1 m7 inch	Fraction	Wire letter	mm	Taps	Roll Form Taps	mm l_1	l_2	l_3	l_4	l_5	ø d_2 h6	Dimens. ID	TA103324 EF-Drill-STEEL DIN6537K-HA AK-2FF TIALN-T14	TA403324 EF-Drill-STEEL DIN6537K-HE AK-2FF TIALN-T14
0.1102			2.800	#6-32 UNC	M3	57	16	11	36	0.6	6	.0280	●	★
0.1142			2.900	#6-32 UNJC	#5-40 UNC	57	16	11	36	0.6	6	.0290	●	★
0.1150			2.920		#5-44 UNF	57	16	11	36	0.6	6	.0292	●	★
0.1181			3.000	#6-40 UNF		62	20	14	36	0.6	6	.0300	●	★
0.1220			3.100	STI-#4-40		62	20	14	36	0.6	6	.0310	●	★
0.1240			3.150	M3.5x0.35	#6-32 UNC	62	20	14	36	0.7	6	.0315	●	★
0.1250	1/8		3.175			62	20	14	36	0.7	6	.0318	●	★
0.1260			3.200	BSW 5/32-32	#6-40 UNF	62	20	14	36	0.7	6	.0320	●	★
0.1280			3.250		M3.5	62	20	14	36	0.7	6	.0325	●	★
0.1299			3.300	M4		62	20	14	36	0.7	6	.0330	●	★
0.1331			3.380		M3.5x0.35	62	20	14	36	0.7	6	.0338	●	★
0.1339			3.400	MJ4x0.7		62	20	14	36	0.7	6	.0340	●	★
0.1378			3.500	#8-32 UNC		62	20	14	36	0.7	6	.0350	●	★
0.1406	9/64	#28	3.571			62	20	14	36	0.7	6	.0357	●	★
0.1417			3.600	#8-36 UNJF		62	20	14	36	0.7	6	.0360	●	★
0.1457			3.700	M4.5	M4	62	20	14	36	0.8	6	.0370	●	★
0.1496		#25	3.800	STI-#6-32	#8-32 UNC	66	24	17	36	0.8	6	.0380	●	★
0.1516			3.850		#8-36 UNF	66	24	17	36	0.8	6	.0385	●	★
0.1535			3.900	#10-24 UNC		66	24	17	36	0.8	6	.0390	●	★
0.1563	5/32		3.970			66	24	17	36	0.8	6	.0397	●	★
0.1575			4.000	M4.5x0.5		66	24	17	36	0.8	6	.0400	●	★
0.1590		#21	4.038			66	24	17	36	0.8	6	.0404	●	★
0.1614			4.100	#10-32 UNF		66	24	17	36	0.8	6	.0410	●	★
0.1654			4.200	M5 / STI-M4	M4.5	66	24	17	36	0.9	6	.0420	●	★
0.1693		#18	4.300	MJ5x0.8		66	24	17	36	0.9	6	.0430	●	★
0.1713			4.350		#10-24 UNC	66	24	17	36	0.9	6	.0435	●	★
0.1719	11/64		4.366			66	24	17	36	0.9	6	.0437	●	★
0.1732			4.400	M5x0.75		66	24	17	36	0.9	6	.0440	●	★
0.1752			4.450		#10-32 UNF	66	24	17	36	0.9	6	.0445	●	★
0.1772			4.500	#12-24 UNC		66	24	17	36	0.9	6	.0450	●	★
0.1811			4.600	#12-28 UNF		66	24	17	36	0.9	6	.0460	●	★
0.1831			4.650	#12-24 UNJC	M5	66	24	17	36	0.9	6	.0465	●	★
0.1850		#13	4.700	LK-UNC #12-24		66	24	17	36	1.0	6	.0470	●	★
0.1875	3/16		4.763	#12-28 UNJF		66	28	20	36	1.0	6	.0476	●	★
0.1890		#12	4.800	#12-32 UNEF	M5x0.5 / STI-M5	66	28	20	36	1.0	6	.0480	●	★
0.1929			4.900			66	28	20	36	1.0	6	.0490	●	★
0.1969			5.000	M6	#12-24 UNC	66	28	20	36	1.0	6	.0500	●	★
0.2008			5.100	MJ6x1	#12-28 UNF	66	28	20	36	1.0	6	.0510	●	★
0.2010		#7	5.106			66	28	20	36	1.0	6	.0511	●	★
0.2031	13/64		5.159			66	28	20	36	1.0	6	.0516	●	★
0.2047			5.200	1/4-20 UNC		66	28	20	36	1.0	6	.0520	●	★
0.2087			5.300	1/4-20 UNJC		66	28	20	36	1.1	6	.0530	●	★
0.2126			5.400			66	28	20	36	1.1	6	.0540	●	★
0.2130		#3	5.410			66	28	20	36	1.1	6	.0541	●	★

Ordering Example: **TA103324.0280**

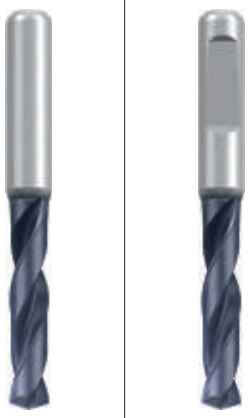
Metric Shank

Carbide | TIALN T14 | DIN 6537 K | R30 | 2 Flutes | 2FF | 140° | IT9-IT10

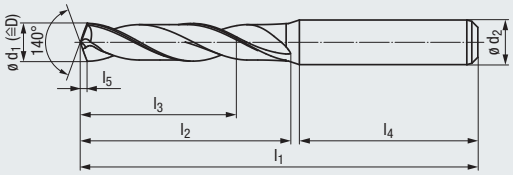
DIN 6535 HA HE

STEEL
Steel & Universal Applications

new new



Stub Length



Applications – Material

P 1.1-5.1 | K 1.1-4.2 | N 1.1-5 | N 2.1-8 | N 5.1 | H 1.1-2

Drill Depth **3 x D**

3 x D
5 x D
6 x D
8 x D
2-3.5 x D

Tool Identification						mm							TA103324	TA403324
Nominal Size ø d_1 m7				Taps	Roll Form Taps								EF-Drill-STEEL DIN6537K-HA AK-2FF TIALN-T14	EF-Drill-STEEL DIN6537K-HE AK-2FF TIALN-T14
inch	Fraction	Wire letter	mm			l_1	l_2	l_3	l_4	l_5	ø d_2 h6	Dimens. ID		
0.2165			5.500	1/4-28 UNF		66	28	20	36	1.1	6	.0550	●	★
0.2187	7/32		5.556	1/4-28 UNJF		66	28	20	36	1.1	6	.0556	●	★
0.2205			5.600	1/4-32 UNEF	M6	66	28	20	36	1.1	6	.0560	●	★
0.2264			5.750		1/4-20 UNC	66	28	20	36	1.2	6	.0575	●	★
0.2283			5.800		M6x0.5	66	28	20	36	1.2	6	.0580	●	★
0.2323			5.900			66	28	20	36	1.2	6	.0590	●	★
0.2344	15/64		5.954		1/4-28 UNF	66	28	20	36	1.2	6	.0595	●	★
0.2362			6.000	M7 / Rd8x1/10		66	28	20	36	1.2	6	.0600	●	★
0.2402			6.100	MJ7x1		79	34	24	36	1.2	8	.0610	●	★
0.2441			6.200	M7x0.75		79	34	24	36	1.2	8	.0620	●	★
0.2480			6.300	M7x0.5 / STI-M6		79	34	24	36	1.3	8	.0630	●	★
0.2500	1/4	E	6.350	1/16-27 NPSF		79	34	24	36	1.3	8	.0635	●	★
0.2520			6.400			79	34	24	36	1.3	8	.0640	●	★
0.2559			6.500	BSW 5/16-18		79	34	24	36	1.3	8	.0650	●	★
0.2570		F	6.528			79	34	24	36	1.3	8	.0653	●	★
0.2598			6.600	5/16-18 UNC	M7	79	34	24	36	1.3	8	.0660	●	★
0.2638			6.700	5/16-18 UNJC	M7x0.75	79	34	24	36	1.3	8	.0670	●	★
0.2656	17/64		6.746			79	34	24	36	1.3	8	.0675	●	★
0.2677			6.800	M8 / G 1/16		79	34	24	36	1.4	8	.0680	●	★
0.2717			6.900	5/16-24 UNF		79	34	24	36	1.4	8	.0690	●	★
0.2756			7.000	5/16-24 UNJF		79	34	24	36	1.4	8	.0700	●	★
0.2795			7.100	MJ8x1		79	41	29	36	1.4	8	.0710	●	★
0.2813	9/32	K	7.145			79	41	29	36	1.4	8	.0715	●	★
0.2835			7.200	5/16-32 UNEF		79	41	29	36	1.4	8	.0720	●	★
0.2854			7.250		5/16-18 UNC	79	41	29	36	1.4	8	.0725	●	★
0.2874			7.300			79	41	29	36	1.5	8	.0730	●	★
0.2913			7.400			79	41	29	36	1.5	8	.0740	●	★
0.2933			7.450		5/16-24 UNF / M8	79	41	29	36	1.5	8	.0745	●	★
0.2953			7.500	M8x0.5		79	41	29	36	1.5	8	.0750	●	★
0.2969	19/64		7.541			79	41	29	36	1.5	8	.0754	●	★
0.2992			7.600	Tr 9x1.5	M8x1 / STI-M8	79	41	29	36	1.5	8	.0760	●	★
0.3031			7.700		M8x0.75	79	41	29	36	1.5	8	.0770	●	★
0.3071			7.800	M9		79	41	29	36	1.5	8	.0780	●	★
0.3110			7.900	BSW 3/8-16		79	41	29	36	1.6	8	.0790	●	★
0.3125	5/16		7.938			79	41	29	36	1.6	8	.0794	●	★
0.3150			8.000	3/8-16 UNC		79	41	29	36	1.6	8	.0800	●	★
0.3189			8.100	3/8-16 UNJC		89	47	35	40	1.6	10	.0810	●	★
0.3228			8.200	M9x0.75		89	47	35	40	1.6	10	.0820	●	★
0.3268			8.300	LK-UNC 3/8-16		89	47	35	40	1.6	10	.0830	●	★
0.3281	21/64		8.334			89	47	35	40	1.6	10	.0833	●	★
0.3307			8.400	STI-UNC 5/16-18		89	47	35	40	1.7	10	.0840	●	★
0.3346			8.500	3/8-24 UNF / M10		89	47	35	40	1.7	10	.0850	●	★
0.3386			8.600	3/8-24 UNJF	M9x1	89	47	35	40	1.7	10	.0860	●	★
0.3425			8.700	3/8-32 UNEF	M9x0.75	89	47	35	40	1.7	10	.0870	●	★

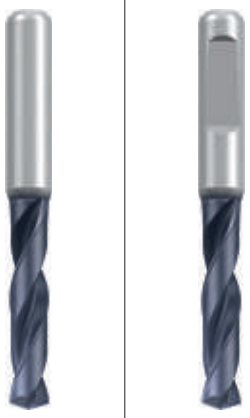
● = In stock
★ = Allow 7 days for delivery

Metric Shank

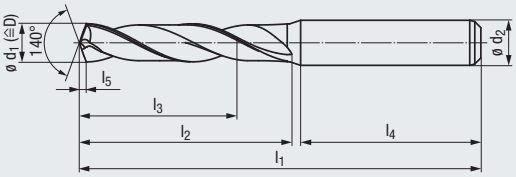
Carbide | TIALN T14
DIN 6537 K | R30
2 Flutes | 2FF
140° | IT9-IT10
DIN 6535 HA HE

STEEL
Steel & Universal Applications

new new



Stub Length



Applications – Material

P 1.1-5.1 | K 1.1-4.2 | N 1.1-5
N 2.1-8 | N 5.1 | H 1.1-2

Drill Depth **3 x D**

Tool Identification

Nominal Size ø d_1 m7				Taps	Roll Form Taps	mm						Dimens. ID	TA103324 EF-Drill-STEEL DIN6537K-HA AK-2FF TIALN-T14	TA403324 EF-Drill-STEEL DIN6537K-HE AK-2FF TIALN-T14
inch	Fraction	Wire letter	mm			l_1	l_2	l_3	l_4	l_5	ø d_2 h6			
0.3438	11/32		8.733	1/8-27 NPSC		89	47	35	40	1.7	10	.0873	●	★
0.3465			8.800	M10x1.25	3/8-16 UNC	89	47	35	40	1.7	10	.0880	●	★
0.3504			8.900	MJ10x1.25		89	47	35	40	1.8	10	.0890	●	★
0.3543			9.000	M10x1		89	47	35	40	1.8	10	.0900	●	★
0.3563			9.050		3/8-24 UNF	89	47	35	40	1.8	10	.0905	●	★
0.3583			9.100	1/8-27 NPSM		89	47	35	40	1.8	10	.0910	●	★
0.3594	23/64		9.129			89	47	35	40	1.8	10	.0913	●	★
0.3622			9.200	M10x0.75		89	47	35	40	1.8	10	.0920	●	★
0.3642			9.250		G 1/2-28	89	47	35	40	1.8	10	.0925	●	★
0.3661			9.300			89	47	35	40	1.8	10	.0930	●	★
0.3681			9.350		M10	89	47	35	40	1.8	10	.0935	●	★
0.3701			9.400	7/16-14 UNC		89	47	35	40	1.9	10	.0940	●	★
0.3740			9.500	7/16-14 UNJC	STI-M10	89	47	35	40	1.9	10	.0950	●	★
0.3750	3/8		9.525			89	47	35	40	1.9	10	.0953	●	★
0.3780			9.600		M10x1	89	47	35	40	1.9	10	.0960	●	★
0.3819			9.700	LK-UNC 7/16-14	M10x0.75	89	47	35	40	1.9	10	.0970	●	★
0.3858			9.800	STI-UNF 3/8-24		89	47	35	40	1.9	10	.0980	●	★
0.3898			9.900	7/16-20 UNF		89	47	35	40	2.0	10	.0990	●	★
0.3906	25/64		9.921			89	47	35	40	2.0	10	.0992	●	★
0.3937			10.000	7/16-20 UNJF		89	47	35	40	2.0	10	.1000	●	★
0.3976			10.100			102	55	40	45	2.0	12	.1010	●	★
0.4016			10.200	7/16-28 UNEF		102	55	40	45	2.0	12	.1020	●	★
0.4035			10.250		7/16-14 UNC	102	55	40	45	2.0	12	.1025	●	★
0.4055			10.300			102	55	40	45	2.0	12	.1030	●	★
0.4063	13/32		10.320			102	55	40	45	2.0	12	.1032	●	★
0.4134			10.500	M12x1.5		102	55	40	45	2.1	12	.1050	●	★
0.4154			10.550		7/16-20 UNF	102	55	40	45	2.1	12	.1055	●	★
0.4213			10.700	LK-M12		102	55	40	45	2.1	12	.1070	●	★
0.4219	27/64		10.716	1/2-13 UNC		102	55	40	45	2.1	12	.1072	●	★
0.4252			10.800	M12x1.25		102	55	40	45	2.1	12	.1080	●	★
0.4291			10.900	1/2-13 UNJC		102	55	40	45	2.1	12	.1090	●	★
0.4331			11.000	M12x1		102	55	40	45	2.2	12	.1100	●	★
0.4370			11.100	BSF 1/2-16		102	55	40	45	2.2	12	.1110	●	★
0.4375	7/16		11.113	LK-UNC 1/2-13		102	55	40	45	2.2	12	.1111	●	★
0.4409			11.200			102	55	40	45	2.2	12	.1120	●	★
0.4429			11.250	M12x0.75	M12	102	55	40	45	2.2	12	.1125	●	★
0.4469			11.350	Pg 7	M12x1.5	102	55	40	45	2.2	12	.1135	●	★
0.4488			11.400	1/4-18 NPSC		102	55	40	45	2.2	12	.1140	●	★
0.4508			11.450		M12x1.25	102	55	40	45	2.2	12	.1145	●	★
0.4528			11.500	1/2-20 UNF		102	55	40	45	2.3	12	.1150	●	★
0.4531	29/64		11.509			102	55	40	45	2.3	12	.1151	●	★
0.4567			11.600	1/2-20 UNJF	M12x1	102	55	40	45	2.3	12	.1160	●	★
0.4606			11.700			102	55	40	45	2.3	12	.1170	●	★
0.4646			11.800	1/2-28 UNEF	1/2-13 UNC	102	55	40	45	2.3	12	.1180	●	★

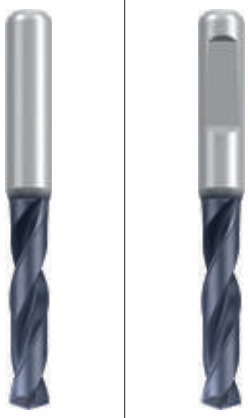
Ordering Example: **TA103324.0873**

Metric Shank

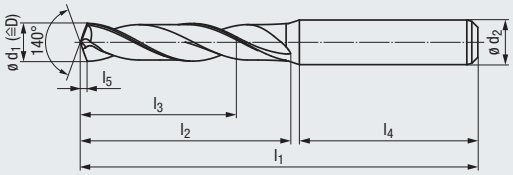
Carbide | TIALN T14 | DIN 6537 K | R30 | 2 Flutes | 2FF | 140° | IT9-IT10 | DIN 6535 HA HE

STEEL
Steel & Universal Applications

new new



Stub Length



Applications – Material

P 1.1-5.1 | K 1.1-4.2 | N 1.1-5 | N 2.1-8 | N 5.1 | H 1.1-2

Drill Depth **3 x D**

Tool Identification														TA103324	TA403324
Nominal Size ø d_1 m7				Taps	Roll Form Taps	mm									
inch	Fraction	Wire letter	mm			l_1	l_2	l_3	l_4	l_5	ø d_2 h6	Dimens. ID		EF-Drill-STEEL DIN6537K-HA AK-2FF TIALN-T14	EF-Drill-STEEL DIN6537K-HE AK-2FF TIALN-T14
0.4685			11.900			102	55	40	45	2.3	12	.1190		●	★
0.4688	15/32		11.908			102	55	40	45	2.3	12	.1191		●	★
0.4724			12.000	M14		102	55	40	45	2.4	12	.1200		●	★
0.4783			12.150		1/2-20 UNF	107	60	43	45	2.4	14	.1215		●	★
0.4803			12.200	Tr 14x2		107	60	43	45	2.4	14	.1220		●	★
0.4844	31/64		12.304	9/16-12 UNC		107	60	43	45	2.4	14	.1230		●	★
0.4921			12.500	M14x1.5		107	60	43	45	2.4	14	.1250		●	★
0.4941			12.550		G 1/4-19	107	60	43	45	2.5	14	.1255		●	★
0.5000	1/2		12.700	LK-UNC 9/16-12		107	60	43	45	2.5	14	.1270		●	★
0.5039			12.800	M14x1.25		107	60	43	45	2.5	14	.1280		●	★
0.5118			13.000	9/16-18 UNJF		107	60	43	45	2.5	14	.1300		●	★
0.5157			13.100	STI-UNF 1/2-20	M14	107	60	43	45	2.6	14	.1310		●	★
0.5236			13.300	9/16-24 UNEF	9/16-12 UNC	107	60	43	45	2.6	14	.1330		●	★
0.5256			13.350		M14x1.5	107	60	43	45	2.6	14	.1335		●	★
0.5295			13.450		M14x1.25	107	60	43	45	2.6	14	.1345		●	★
0.5313	17/32		13.495	5/8-11 UNC		107	60	43	45	2.6	14	.1349		●	★
0.5315			13.500			107	60	43	45	2.6	14	.1350		●	★
0.5374			13.650	5/8-11 UNJC	9/16-18 UNF	107	60	43	45	2.7	14	.1365		●	★
0.5394			13.700			107	60	43	45	2.7	14	.1370		●	★
0.5469	35/64		13.891			107	60	43	45	2.7	14	.1389		●	★
0.5512			14.000	M16 / M15x1		107	60	43	45	2.7	14	.1400		●	★
0.5551			14.100			115	65	45	48	2.8	16	.1410		●	★
0.5625	9/16		14.288			115	65	45	48	2.8	16	.1429		●	★
0.5709			14.500	5/8-18 UNF		115	65	45	48	2.8	16	.1450		●	★
0.5748			14.600	5/8-18 UNJF	M15x1	115	65	45	48	2.9	16	.1460		●	★
0.5781	37/64		14.684	3/8-18 NPSC		115	65	45	48	2.9	16	.1468		●	★
0.5827			14.800		5/8-11 UNC	115	65	45	48	2.9	16	.1480		●	★
0.5906			15.000	M16x1		115	65	45	48	2.9	16	.1500		●	★
0.5938	19/32		15.083			115	65	45	48	2.9	16	.1508		●	★
0.5945			15.100		M16	115	65	45	48	2.9	16	.1510		●	★
0.6102			15.500	M18		115	65	45	48	3.0	16	.1550		●	★
0.6142			15.600		M16x1	115	65	45	48	3.0	16	.1560		●	★
0.6250	5/8		15.875			115	65	45	48	3.1	16	.1588		●	★
0.6299			16.000	M18x2		115	65	45	48	3.1	16	.1600		●	★
0.6406	41/64		16.272			123	73	51	48	3.2	18	.1627		●	★
0.6496			16.500	STI-UNC 5/8-11		123	73	51	48	3.2	18	.1650		●	★
0.6563	21/32		16.669	3/4-10 UNC		123	73	51	48	3.2	18	.1667		●	★
0.6693			17.000	M18x1		123	73	51	48	3.3	18	.1700		●	★
0.6875	11/16		17.463			123	73	51	48	3.4	18	.1746		●	★
0.6890			17.500	3/4-16 UNF / M20		123	73	51	48	3.4	18	.1750		●	★
0.7087			18.000	M20x2 / LK-M16		123	73	51	48	3.5	18	.1800		●	★
0.7480			19.000	M20x1		131	79	55	50	3.7	20	.1900		●	★
0.7500	3/4		19.050			131	79	55	50	3.7	20	.1905		●	★
0.7874			20.000	M22x2	G 1/2-14	131	79	55	50	3.9	20	.2000		●	★

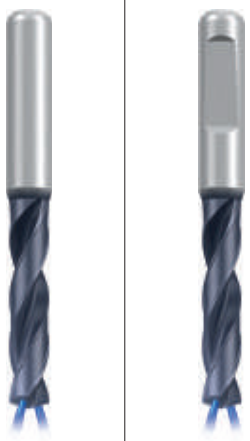
● = In stock
★ = Allow 7 days for delivery

Metric Shank

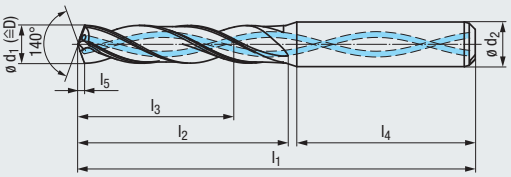
Carbide | TIALN T14 | DIN 6537 K | R30 | 2 Flutes | 4FF | 140° | IT9-IT10 | DIN 6535 HA HE

STEEL
Steel & Universal Applications

new new



Stub Length
Coolant Fed



Applications – Material

P 1.1-5.1 M 1.1 K 1.1-4.2
N 1.1-5, 2.1-8 S 2.2-3 H 1.1-2

Drill Depth **3 x D**

3 x D
5 x D
6 x D
8 x D
2-3.5 x D

Tool Identification

Nominal Size ø d_1 m7				Taps	Roll Form Taps	mm						Dimens. ID	TA203344 EF-Drill-STEEL DIN6537K-HA IK-4FF TIALN-T14	TA503344 EF-Drill-STEEL DIN6537K-HE IK-4FF TIALN-T14
inch	Fraction	Wire letter	mm			l_1	l_2	l_3	l_4	l_5	ø d_2 h6			
0.1102			2.800	#6-32 UNC	M3	57	16	11	36	0.6	6	.0280	●	★
0.1142			2.900	#6-32 UNJC	#5-40 UNC	57	16	11	36	0.6	6	.0290	●	★
0.1150			2.920		#5-44 UNF	57	16	11	36	0.6	6	.0292	●	★
0.1181			3.000	#6-40 UNF		62	20	14	36	0.6	6	.0300	●	★
0.1220			3.100	STI-#4-40		62	20	14	36	0.6	6	.0310	●	★
0.1240			3.150	M3.5x0.35	#6-32 UNC	62	20	14	36	0.7	6	.0315	●	★
0.1250	1/8		3.175			62	20	14	36	0.7	6	.0318	●	★
0.1260			3.200	BSW 5/32-32	#6-40 UNF	62	20	14	36	0.7	6	.0320	●	★
0.1280			3.250		M3.5	62	20	14	36	0.7	6	.0325	●	★
0.1299			3.300	M4		62	20	14	36	0.7	6	.0330	●	★
0.1331			3.380		M3.5x0.35	62	20	14	36	0.7	6	.0338	●	★
0.1339			3.400	MJ4x0.7		62	20	14	36	0.7	6	.0340	●	★
0.1378			3.500	#8-32 UNC		62	20	14	36	0.7	6	.0350	●	★
0.1406	9/64	#28	3.571			62	20	14	36	0.7	6	.0357	●	★
0.1417			3.600	#8-36 UNJF		62	20	14	36	0.7	6	.0360	●	★
0.1457			3.700	M4.5	M4	62	20	14	36	0.8	6	.0370	●	★
0.1496		#25	3.800	STI-#6-32	#8-32 UNC	66	24	17	36	0.8	6	.0380	●	★
0.1516			3.850		#8-36 UNF	66	24	17	36	0.8	6	.0385	●	★
0.1535			3.900	#10-24 UNC		66	24	17	36	0.8	6	.0390	●	★
0.1563	5/32		3.970			66	24	17	36	0.8	6	.0397	●	★
0.1575			4.000	M4.5x0.5		66	24	17	36	0.8	6	.0400	●	★
0.1590		#21	4.038			66	24	17	36	0.8	6	.0404	●	★
0.1614			4.100	#10-32 UNF		66	24	17	36	0.8	6	.0410	●	★
0.1654			4.200	M5 / STI-M4	M4.5	66	24	17	36	0.9	6	.0420	●	★
0.1693		#18	4.300	MJ5x0.8		66	24	17	36	0.9	6	.0430	●	★
0.1713			4.350		#10-24 UNC	66	24	17	36	0.9	6	.0435	●	★
0.1719	11/64		4.366			66	24	17	36	0.9	6	.0437	●	★
0.1732			4.400	M5x0.75		66	24	17	36	0.9	6	.0440	●	★
0.1752			4.450		#10-32 UNF	66	24	17	36	0.9	6	.0445	●	★
0.1772			4.500	#12-24 UNC		66	24	17	36	0.9	6	.0450	●	★
0.1811			4.600	#12-28 UNF		66	24	17	36	0.9	6	.0460	●	★
0.1831			4.650	#12-24 UNJC	M5	66	24	17	36	0.9	6	.0465	●	★
0.1850		#13	4.700	LK-UNC #12-24		66	24	17	36	1.0	6	.0470	●	★
0.1875	3/16		4.763	#12-28 UNJF		66	28	20	36	1.0	6	.0476	●	★
0.1890		#12	4.800	#12-32 UNEF	M5x0.5 / STI-M5	66	28	20	36	1.0	6	.0480	●	★
0.1929			4.900			66	28	20	36	1.0	6	.0490	●	★
0.1969			5.000	M6	#12-24 UNC	66	28	20	36	1.0	6	.0500	●	★
0.2008			5.100	MJ6x1	#12-28 UNF	66	28	20	36	1.0	6	.0510	●	★
0.2010		#7	5.106			66	28	20	36	1.0	6	.0511	●	★
0.2031	13/64		5.159			66	28	20	36	1.0	6	.0516	●	★
0.2047			5.200	1/4-20 UNC		66	28	20	36	1.0	6	.0520	●	★
0.2087			5.300	1/4-20 UNJC		66	28	20	36	1.1	6	.0530	●	★
0.2126			5.400			66	28	20	36	1.1	6	.0540	●	★
0.2130		#3	5.410			66	28	20	36	1.1	6	.0541	●	★

Ordering Example: **TA203344.0280**

Metric Shank

Carbide | TIALN T14

DIN 6537 K | R30

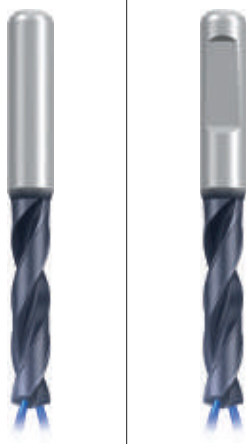
2 Flutes | 4FF

140° | IT9-IT10

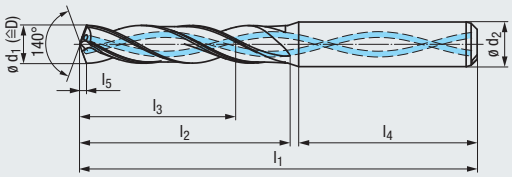
DIN 6535 HA HE

STEEL
Steel & Universal Applications

new new



Stub Length
Coolant Fed



Applications – Material

P 1.1-5.1 M 1.1 K 1.1-4.2
N 1.1-5, 2.1-8 S 2.2-3 H 1.1-2

Drill Depth **3 x D**

3 x D
5 x D
6 x D
8 x D
2-3.5 x D

Tool Identification						mm							TA203344	TA503344
Nominal Size ø d_1 m7				Taps	Roll Form Taps	l_1	l_2	l_3	l_4	l_5	ø d_2 h6	Dimens. ID	EF-Drill-STEEL DIN6537K-HA IK-4FF TIALN-T14	EF-Drill-STEEL DIN6537K-HE IK-4FF TIALN-T14
inch	Fraction	Wire letter	mm											
0.2165			5.500	1/4-28 UNF		66	28	20	36	1.1	6	.0550	●	★
0.2187	7/32		5.556	1/4-28 UNJF		66	28	20	36	1.1	6	.0556	●	★
0.2205			5.600	1/4-32 UNEF	M6	66	28	20	36	1.1	6	.0560	●	★
0.2264			5.750		1/4-20 UNC	66	28	20	36	1.2	6	.0575	●	★
0.2283			5.800		M6x0.5	66	28	20	36	1.2	6	.0580	●	★
0.2323			5.900			66	28	20	36	1.2	6	.0590	●	★
0.2344	15/64		5.954		1/4-28 UNF	66	28	20	36	1.2	6	.0595	●	★
0.2362			6.000	M7 / Rd8x1/10		66	28	20	36	1.2	6	.0600	●	★
0.2402			6.100	MJ7x1		79	34	24	36	1.2	8	.0610	●	★
0.2441			6.200	M7x0.75		79	34	24	36	1.2	8	.0620	●	★
0.2480			6.300	M7x0.5 / STI-M6		79	34	24	36	1.3	8	.0630	●	★
0.2500	1/4	E	6.350	1/16-27 NPSF		79	34	24	36	1.3	8	.0635	●	★
0.2520			6.400			79	34	24	36	1.3	8	.0640	●	★
0.2559			6.500	BSW 5/16-18		79	34	24	36	1.3	8	.0650	●	★
0.2570		F	6.528			79	34	24	36	1.3	8	.0653	●	★
0.2598			6.600	5/16-18 UNC	M7	79	34	24	36	1.3	8	.0660	●	★
0.2638			6.700	5/16-18 UNJC	M7x0.75	79	34	24	36	1.3	8	.0670	●	★
0.2656	17/64		6.746			79	34	24	36	1.3	8	.0675	●	★
0.2677			6.800	M8 / G 1/16		79	34	24	36	1.4	8	.0680	●	★
0.2717			6.900	5/16-24 UNF		79	34	24	36	1.4	8	.0690	●	★
0.2756			7.000	5/16-24 UNJF		79	34	24	36	1.4	8	.0700	●	★
0.2795			7.100	MJ8x1		79	41	29	36	1.4	8	.0710	●	★
0.2813	9/32	K	7.145			79	41	29	36	1.4	8	.0715	●	★
0.2835			7.200	5/16-32 UNEF		79	41	29	36	1.4	8	.0720	●	★
0.2854			7.250		5/16-18 UNC	79	41	29	36	1.4	8	.0725	●	★
0.2874			7.300			79	41	29	36	1.5	8	.0730	●	★
0.2913			7.400			79	41	29	36	1.5	8	.0740	●	★
0.2933			7.450		5/16-24 UNF / M8	79	41	29	36	1.5	8	.0745	●	★
0.2953			7.500	M8x0.5		79	41	29	36	1.5	8	.0750	●	★
0.2969	19/64		7.541			79	41	29	36	1.5	8	.0754	●	★
0.2992			7.600	Tr 9x1.5	M8x1 / STI-M8	79	41	29	36	1.5	8	.0760	●	★
0.3031			7.700		M8x0.75	79	41	29	36	1.5	8	.0770	●	★
0.3071			7.800	M9		79	41	29	36	1.5	8	.0780	●	★
0.3110			7.900	BSW 3/8-16		79	41	29	36	1.6	8	.0790	●	★
0.3125	5/16		7.938			79	41	29	36	1.6	8	.0794	●	★
0.3150			8.000	3/8-16 UNC		79	41	29	36	1.6	8	.0800	●	★
0.3189			8.100	3/8-16 UNJC		89	47	35	40	1.6	10	.0810	●	★
0.3228			8.200	M9x0.75		89	47	35	40	1.6	10	.0820	●	★
0.3268			8.300	LK-UNC 3/8-16		89	47	35	40	1.6	10	.0830	●	★
0.3281	21/64		8.334			89	47	35	40	1.6	10	.0833	●	★
0.3307			8.400	STI-UNC 5/16-18		89	47	35	40	1.7	10	.0840	●	★
0.3346			8.500	3/8-24 UNF / M10		89	47	35	40	1.7	10	.0850	●	★
0.3386			8.600	3/8-24 UNJF	M9x1	89	47	35	40	1.7	10	.0860	●	★
0.3425			8.700	3/8-32 UNEF	M9x0.75	89	47	35	40	1.7	10	.0870	●	★

● = In stock
★ = Allow 7 days for delivery

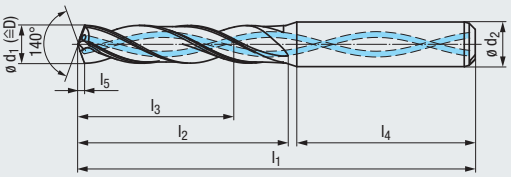
Metric Shank

Carbide | TIALN T14
DIN 6537 K | R30
2 Flutes | 4FF
140° | IT9-IT10
DIN 6535 HA HE

STEEL
Steel & Universal Applications

new new

Stub Length
Coolant Fed



Applications – Material

P 1.1-5.1 | M 1.1 | K 1.1-4.2
N 1.1-5, 2.1-8 | S 2.2-3 | H 1.1-2

Drill Depth **3 x D**

3 x D
5 x D
6 x D
8 x D
2-3.5 x D

Tool Identification

Nominal Size ø d_1 m7				Taps	Roll Form Taps	mm							TA203344	TA503344
inch	Fraction	Wire letter	mm			l_1	l_2	l_3	l_4	l_5	ø d_2 h6	Dimens. ID	EF-Drill-STEEL DIN6537K-HA IK-4FF TIALN-T14	EF-Drill-STEEL DIN6537K-HE IK-4FF TIALN-T14
0.3438	11/32		8.733	1/8-27 NPSC		89	47	35	40	1.7	10	**.0873**	●	★
0.3465			8.800	M10x1.25	3/8-16 UNC	89	47	35	40	1.7	10	**.0880**	●	★
0.3504			8.900	MJ10x1.25		89	47	35	40	1.8	10	**.0890**	●	★
0.3543			9.000	M10x1		89	47	35	40	1.8	10	**.0900**	●	★
0.3563			9.050		3/8-24 UNF	89	47	35	40	1.8	10	**.0905**	●	★
0.3583			9.100	1/8-27 NPSM		89	47	35	40	1.8	10	**.0910**	●	★
0.3594	23/64		9.129			89	47	35	40	1.8	10	**.0913**	●	★
0.3622			9.200	M10x0.75		89	47	35	40	1.8	10	**.0920**	●	★
0.3642			9.250		G 1/2-28	89	47	35	40	1.8	10	**.0925**	●	★
0.3661			9.300			89	47	35	40	1.8	10	**.0930**	●	★
0.3681			9.350		M10	89	47	35	40	1.8	10	**.0935**	●	★
0.3701			9.400	7/16-14 UNC		89	47	35	40	1.9	10	**.0940**	●	★
0.3740			9.500	7/16-14 UNJC	STI-M10	89	47	35	40	1.9	10	**.0950**	●	★
0.3750	3/8		9.525			89	47	35	40	1.9	10	**.0953**	●	★
0.3780			9.600		M10x1	89	47	35	40	1.9	10	**.0960**	●	★
0.3819			9.700	LK-UNC 7/16-14	M10x0.75	89	47	35	40	1.9	10	**.0970**	●	★
0.3858			9.800	STI-UNF 3/8-24		89	47	35	40	1.9	10	**.0980**	●	★
0.3898			9.900	7/16-20 UNF		89	47	35	40	2.0	10	**.0990**	●	★
0.3906	25/64		9.921			89	47	35	40	2.0	10	**.0992**	●	★
0.3937			10.000	7/16-20 UNJF		89	47	35	40	2.0	10	**.1000**	●	★
0.3976			10.100			102	55	40	45	2.0	12	**.1010**	●	★
0.4016			10.200	7/16-28 UNEF		102	55	40	45	2.0	12	**.1020**	●	★
0.4035			10.250		7/16-14 UNC	102	55	40	45	2.0	12	**.1025**	●	★
0.4055			10.300			102	55	40	45	2.0	12	**.1030**	●	★
0.4063	13/32		10.320			102	55	40	45	2.0	12	**.1032**	●	★
0.4134			10.500	M12x1.5		102	55	40	45	2.1	12	**.1050**	●	★
0.4154			10.550		7/16-20 UNF	102	55	40	45	2.1	12	**.1055**	●	★
0.4213			10.700	LK-M12		102	55	40	45	2.1	12	**.1070**	●	★
0.4219	27/64		10.716	1/2-13 UNC		102	55	40	45	2.1	12	**.1072**	●	★
0.4252			10.800	M12x1.25		102	55	40	45	2.1	12	**.1080**	●	★
0.4291			10.900	1/2-13 UNJC		102	55	40	45	2.1	12	**.1090**	●	★
0.4331			11.000	M12x1		102	55	40	45	2.2	12	**.1100**	●	★
0.4370			11.100	BSF 1/2-16		102	55	40	45	2.2	12	**.1110**	●	★
0.4375	7/16		11.113	LK-UNC 1/2-13		102	55	40	45	2.2	12	**.1111**	●	★
0.4409			11.200			102	55	40	45	2.2	12	**.1120**	●	★
0.4429			11.250	M12x0.75	M12	102	55	40	45	2.2	12	**.1125**	●	★
0.4469			11.350	Pg 7	M12x1.5	102	55	40	45	2.2	12	**.1135**	●	★
0.4488			11.400	1/4-18 NPSC		102	55	40	45	2.2	12	**.1140**	●	★
0.4508			11.450		M12x1.25	102	55	40	45	2.2	12	**.1145**	●	★
0.4528			11.500	1/2-20 UNF		102	55	40	45	2.3	12	**.1150**	●	★
0.4531	29/64		11.509			102	55	40	45	2.3	12	**.1151**	●	★
0.4567			11.600	1/2-20 UNJF	M12x1	102	55	40	45	2.3	12	**.1160**	●	★
0.4606			11.700			102	55	40	45	2.3	12	**.1170**	●	★
0.4646			11.800	1/2-28 UNEF	1/2-13 UNC	102	55	40	45	2.3	12	**.1180**	●	★

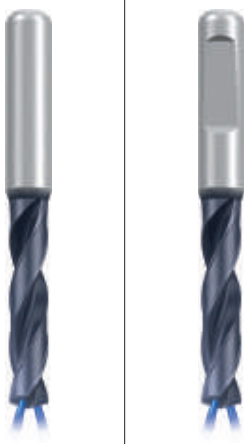
Ordering Example: **TA203344.0873**

Metric Shank

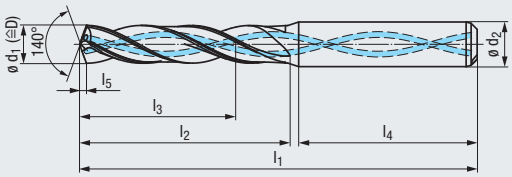
Carbide | TIALN T14 | DIN 6537 K | R30 | 2 Flutes | 4FF | 140° | IT9-IT10 | DIN 6535 HA HE

STEEL
Steel & Universal Applications

new new



Stub Length
Coolant Fed



Applications – Material

P 1.1-5.1 M 1.1 K 1.1-4.2
N 1.1-5, 2.1-8 S 2.2-3 H 1.1-2

Drill Depth **3 x D**

Tool Identification														TA203344	TA503344
Nominal Size ø d_1 m7				Taps	Roll Form Taps	mm									
inch	Fraction	Wire letter	mm			l_1	l_2	l_3	l_4	l_5	ø d_2 h6	Dimens. ID		EF-Drill-STEEL DIN6537K-HA IK-4FF TIALN-T14	EF-Drill-STEEL DIN6537K-HE IK-4FF TIALN-T14
0.4685			11.900			102	55	40	45	2.3	12	.1190		●	★
0.4688	15/32		11.908			102	55	40	45	2.3	12	.1191		●	★
0.4724			12.000	M14		102	55	40	45	2.4	12	.1200		●	★
0.4783			12.150		1/2-20 UNF	107	60	43	45	2.4	14	.1215		●	★
0.4803			12.200	Tr 14x2		107	60	43	45	2.4	14	.1220		●	★
0.4844	31/64		12.304	9/16-12 UNC		107	60	43	45	2.4	14	.1230		●	★
0.4921			12.500	M14x1.5		107	60	43	45	2.4	14	.1250		●	★
0.4941			12.550		G 1/4-19	107	60	43	45	2.5	14	.1255		●	★
0.5000	1/2		12.700	LK-UNC 9/16-12		107	60	43	45	2.5	14	.1270		●	★
0.5039			12.800	M14x1.25		107	60	43	45	2.5	14	.1280		●	★
0.5118			13.000	9/16-18 UNJF		107	60	43	45	2.5	14	.1300		●	★
0.5157			13.100	STI-UNF 1/2-20	M14	107	60	43	45	2.6	14	.1310		●	★
0.5236			13.300	9/16-24 UNEF	9/16-12 UNC	107	60	43	45	2.6	14	.1330		●	★
0.5256			13.350		M14x1.5	107	60	43	45	2.6	14	.1335		●	★
0.5295			13.450		M14x1.25	107	60	43	45	2.6	14	.1345		●	★
0.5313	17/32		13.495	5/8-11 UNC		107	60	43	45	2.6	14	.1349		●	★
0.5315			13.500			107	60	43	45	2.6	14	.1350		●	★
0.5374			13.650	5/8-11 UNJC	9/16-18 UNF	107	60	43	45	2.7	14	.1365		●	★
0.5394			13.700			107	60	43	45	2.7	14	.1370		●	★
0.5469	35/64		13.891			107	60	43	45	2.7	14	.1389		●	★
0.5512			14.000	M16 / M15x1		107	60	43	45	2.7	14	.1400		●	★
0.5551			14.100			115	65	45	48	2.8	16	.1410		●	★
0.5625	9/16		14.288			115	65	45	48	2.8	16	.1429		●	★
0.5709			14.500	5/8-18 UNF		115	65	45	48	2.8	16	.1450		●	★
0.5748			14.600	5/8-18 UNJF	M15x1	115	65	45	48	2.9	16	.1460		●	★
0.5781	37/64		14.684	3/8-18 NPSC		115	65	45	48	2.9	16	.1468		●	★
0.5827			14.800		5/8-11 UNC	115	65	45	48	2.9	16	.1480		●	★
0.5906			15.000	M16x1		115	65	45	48	2.9	16	.1500		●	★
0.5938	19/32		15.083			115	65	45	48	2.9	16	.1508		●	★
0.5945			15.100		M16	115	65	45	48	2.9	16	.1510		●	★
0.6102			15.500	M18		115	65	45	48	3.0	16	.1550		●	★
0.6142			15.600		M16x1	115	65	45	48	3.0	16	.1560		●	★
0.6250	5/8		15.875			115	65	45	48	3.1	16	.1588		●	★
0.6299			16.000	M18x2		115	65	45	48	3.1	16	.1600		●	★
0.6406	41/64		16.272			123	73	51	48	3.2	18	.1627		●	★
0.6496			16.500	STI-UNC 5/8-11		123	73	51	48	3.2	18	.1650		●	★
0.6563	21/32		16.669	3/4-10 UNC		123	73	51	48	3.2	18	.1667		●	★
0.6693			17.000	M18x1		123	73	51	48	3.3	18	.1700		●	★
0.6875	11/16		17.463			123	73	51	48	3.4	18	.1746		●	★
0.6890			17.500	3/4-16 UNF / M20		123	73	51	48	3.4	18	.1750		●	★
0.7087			18.000	M20x2 / LK-M16		123	73	51	48	3.5	18	.1800		●	★
0.7480			19.000	M20x1		131	79	55	50	3.7	20	.1900		●	★
0.7500	3/4		19.050			131	79	55	50	3.7	20	.1905		●	★
0.7874			20.000	M22x2	G 1/2-14	131	79	55	50	3.9	20	.2000		●	★

● = In stock
★ = Allow 7 days for delivery

Metric Shank

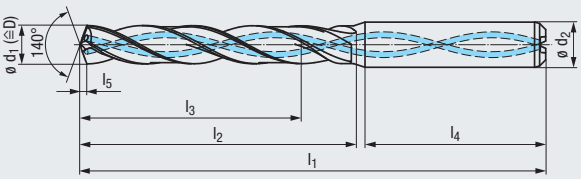
Carbide | TIALN T14 | DIN 6537 L | R30 | 2 Flutes | 4FF | 140° | IT9-IT10 | DIN 6535 HA HE

STEEL
Steel & Universal Applications

new

new

Standard Length
Coolant Fed



Applications – Material

P 1.1-5.1 | M 1.1 | K 1.1-4.2
N 1.1-5, 2.1-8 | S 2.2-3 | H 1.1-2

Drill Depth **5 x D**

Tool Identification													TA213344	TA513344
Nominal Size ø d_1 m7				Taps	Roll Form Taps	mm						Dimens. ID	EF-Drill-STEEL DIN6537L-HA IK-4FF TIALN-T14	EF-Drill-STEEL DIN6537L-HE IK-4FF TIALN-T14
inch	Fraction	Wire letter	mm			l_1	l_2	l_3	l_4	l_5	ø d_2 h6			
0.1102			2.800	#6-32 UNC	M3	61	22	17	36	0.6	6	**.0280**	●	★
0.1142			2.900	#6-32 UNJC	#5-40 UNC	61	22	17	36	0.6	6	**.0290**	●	★
0.1150			2.920		#5-44 UNF	61	22	17	36	0.6	6	**.0292**	●	★
0.1181			3.000	#6-40 UNF		66	28	23	36	0.6	6	**.0300**	●	★
0.1220			3.100	STI-#4-40		66	28	23	36	0.6	6	**.0310**	●	★
0.1240			3.150	M3.5x0.35	#6-32 UNC	66	28	23	36	0.7	6	**.0315**	●	★
0.1250	1/8		3.175			66	28	23	36	0.7	6	**.0318**	●	★
0.1260			3.200	BSW 5/32-32	#6-40 UNF	66	28	23	36	0.7	6	**.0320**	●	★
0.1280			3.250		M3.5	66	28	23	36	0.7	6	**.0325**	●	★
0.1299			3.300	M4		66	28	23	36	0.7	6	**.0330**	●	★
0.1331			3.380		M3.5x0.35	66	28	23	36	0.7	6	**.0338**	●	★
0.1339			3.400	MJ4x0.7		66	28	23	36	0.7	6	**.0340**	●	★
0.1378			3.500	#8-32 UNC		66	28	23	36	0.7	6	**.0350**	●	★
0.1406	9/64	#28	3.571			66	28	23	36	0.7	6	**.0357**	●	★
0.1417			3.600	#8-36 UNJF		66	28	23	36	0.7	6	**.0360**	●	★
0.1457			3.700	M4.5	M4	66	28	23	36	0.8	6	**.0370**	●	★
0.1496		#25	3.800	STI-#6-32	#8-32 UNC	74	36	29	36	0.8	6	**.0380**	●	★
0.1516			3.850		#8-36 UNF	74	36	29	36	0.8	6	**.0385**	●	★
0.1535			3.900	#10-24 UNC		74	36	29	36	0.8	6	**.0390**	●	★
0.1563	5/32		3.970			74	36	29	36	0.8	6	**.0397**	●	★
0.1575			4.000	M4.5x0.5		74	36	29	36	0.8	6	**.0400**	●	★
0.1590		#21	4.038			74	36	29	36	0.8	6	**.0404**	●	★
0.1614			4.100	#10-32 UNF		74	36	29	36	0.8	6	**.0410**	●	★
0.1654			4.200	M5 / STI-M4	M4.5	74	36	29	36	0.9	6	**.0420**	●	★
0.1693		#18	4.300	MJ5x0.8		74	36	29	36	0.9	6	**.0430**	●	★
0.1713			4.350		#10-24 UNC	74	36	29	36	0.9	6	**.0435**	●	★
0.1719	11/64		4.366			74	36	29	36	0.9	6	**.0437**	●	★
0.1732			4.400	M5x0.75		74	36	29	36	0.9	6	**.0440**	●	★
0.1752			4.450		#10-32 UNF	74	36	29	36	0.9	6	**.0445**	●	★
0.1772			4.500	#12-24 UNC		74	36	29	36	0.9	6	**.0450**	●	★
0.1811			4.600	#12-28 UNF		74	36	29	36	0.9	6	**.0460**	●	★
0.1831			4.650	#12-24 UNJC	M5	74	36	29	36	0.9	6	**.0465**	●	★
0.1850		#13	4.700	LK-UNC #12-24		74	36	29	36	1.0	6	**.0470**	●	★
0.1875	3/16		4.763	#12-28 UNJF		82	44	35	36	1.0	6	**.0476**	●	★
0.1890		#12	4.800	#12-32 UNEF	M5x0.5 / STI-M5	82	44	35	36	1.0	6	**.0480**	●	★
0.1929			4.900			82	44	35	36	1.0	6	**.0490**	●	★
0.1969			5.000	M6	#12-24 UNC	82	44	35	36	1.0	6	**.0500**	●	★
0.2008			5.100	MJ6x1	#12-28 UNF	82	44	35	36	1.0	6	**.0510**	●	★
0.2010		#7	5.106			82	44	35	36	1.0	6	**.0511**	●	★
0.2031	13/64		5.159			82	44	35	36	1.0	6	**.0516**	●	★
0.2047			5.200	1/4-20 UNC		82	44	35	36	1.0	6	**.0520**	●	★
0.2087			5.300	1/4-20 UNJC		82	44	35	36	1.1	6	**.0530**	●	★
0.2126			5.400			82	44	35	36	1.1	6	**.0540**	●	★
0.2130		#3	5.410			82	44	35	36	1.1	6	**.0541**	●	★

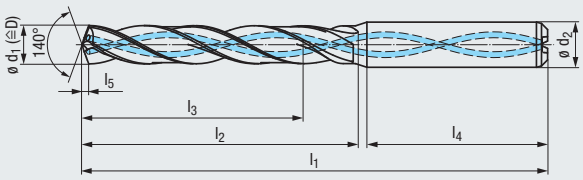
Ordering Example: **TA213344.0280**

Metric Shank

Carbide | TIALN T14 | DIN 6537 L | R30 | 2 Flutes | 4FF | 140° | IT9-IT10 | DIN 6535 HA HE

STEEL
Steel & Universal Applications

Standard Length
Coolant Fed



Applications – Material

P 1.1-5.1 | M 1.1 | K 1.1-4.2
N 1.1-5, 2.1-8 | S 2.2-3 | H 1.1-2

Drill Depth **5 x D**

3 x D
5 x D
6 x D
8 x D
2-3.5 x D

Tool Identification														TA213344	TA513344
Nominal Size ø d_1 m7				Taps	Roll Form Taps	mm						Dimens. ID		EF-Drill-STEEL DIN6537L-HA IK-4FF TIALN-T14	EF-Drill-STEEL DIN6537L-HE IK-4FF TIALN-T14
inch	Fraction	Wire letter	mm			l_1	l_2	l_3	l_4	l_5	ø d_2 h6				
0.2165			5.500	1/4-28 UNF		82	44	35	36	1.1	6	.0550		●	★
0.2187	7/32		5.556	1/4-28 UNJF		82	44	35	36	1.1	6	.0556		●	★
0.2205			5.600	1/4-32 UNEF	M6	82	44	35	36	1.1	6	.0560		●	★
0.2264			5.750		1/4-20 UNC	82	44	35	36	1.2	6	.0575		●	★
0.2283			5.800		M6x0.5	82	44	35	36	1.2	6	.0580		●	★
0.2323			5.900			82	44	35	36	1.2	6	.0590		●	★
0.2344	15/64		5.954		1/4-28 UNF	82	44	35	36	1.2	6	.0595		●	★
0.2362			6.000	M7 / Rd8x1/10		82	44	35	36	1.2	6	.0600		●	★
0.2402			6.100	MJ7x1		91	53	43	36	1.2	8	.0610		●	★
0.2441			6.200	M7x0.75		91	53	43	36	1.2	8	.0620		●	★
0.2480			6.300	M7x0.5 / STI-M6		91	53	43	36	1.3	8	.0630		●	★
0.2500	1/4	E	6.350	1/16-27 NPSF		91	53	43	36	1.3	8	.0635		●	★
0.2520			6.400			91	53	43	36	1.3	8	.0640		●	★
0.2559			6.500	BSW 5/16-18		91	53	43	36	1.3	8	.0650		●	★
0.2570		F	6.528			91	53	43	36	1.3	8	.0653		●	★
0.2598			6.600	5/16-18 UNC	M7	91	53	43	36	1.3	8	.0660		●	★
0.2638			6.700	5/16-18 UNJC	M7x0.75	91	53	43	36	1.3	8	.0670		●	★
0.2656	17/64		6.746			91	53	43	36	1.3	8	.0675		●	★
0.2677			6.800	M8 / G 1/16		91	53	43	36	1.4	8	.0680		●	★
0.2717			6.900	5/16-24 UNF		91	53	43	36	1.4	8	.0690		●	★
0.2756			7.000	5/16-24 UNJF		91	53	43	36	1.4	8	.0700		●	★
0.2795			7.100	MJ8x1		91	53	43	36	1.4	8	.0710		●	★
0.2813	9/32	K	7.145			91	53	43	36	1.4	8	.0715		●	★
0.2835			7.200	5/16-32 UNEF		91	53	43	36	1.4	8	.0720		●	★
0.2854			7.250		5/16-18 UNC	91	53	43	36	1.4	8	.0725		●	★
0.2874			7.300			91	53	43	36	1.5	8	.0730		●	★
0.2913			7.400			91	53	43	36	1.5	8	.0740		●	★
0.2933			7.450		5/16-24 UNF / M8	91	53	43	36	1.5	8	.0745		●	★
0.2953			7.500	M8x0.5		91	53	43	36	1.5	8	.0750		●	★
0.2969	19/64		7.541			91	53	43	36	1.5	8	.0754		●	★
0.2992			7.600	Tr 9x1.5	M8x1 / STI-M8	91	53	43	36	1.5	8	.0760		●	★
0.3031			7.700		M8x0.75	91	53	43	36	1.5	8	.0770		●	★
0.3071			7.800	M9		91	53	43	36	1.5	8	.0780		●	★
0.3110			7.900	BSW 3/8-16		91	53	43	36	1.6	8	.0790		●	★
0.3125	5/16		7.938			91	53	43	36	1.6	8	.0794		●	★
0.3150			8.000	3/8-16 UNC		91	53	43	36	1.6	8	.0800		●	★
0.3189			8.100	3/8-16 UNJC		103	61	49	40	1.6	10	.0810		●	★
0.3228			8.200	M9x0.75		103	61	49	40	1.6	10	.0820		●	★
0.3268			8.300	LK-UNC 3/8-16		103	61	49	40	1.6	10	.0830		●	★
0.3281	21/64		8.334			103	61	49	40	1.6	10	.0833		●	★
0.3307			8.400	STI-UNC 5/16-18		103	61	49	40	1.7	10	.0840		●	★
0.3346			8.500	3/8-24 UNF / M10		103	61	49	40	1.7	10	.0850		●	★
0.3386			8.600	3/8-24 UNJF	M9x1	103	61	49	40	1.7	10	.0860		●	★
0.3425			8.700	3/8-32 UNEF	M9x0.75	103	61	49	40	1.7	10	.0870		●	★

● = In stock
★ = Allow 7 days for delivery

Metric Shank

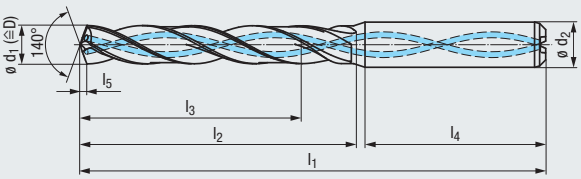
Carbide | TIALN T14 | DIN 6537 L | R30 | 2 Flutes | 4FF | 140° | IT9-IT10 | DIN 6535 HA HE

STEEL
Steel & Universal Applications

new

new

Standard Length
Coolant Fed



Applications – Material

P 1.1-5.1 | M 1.1 | K 1.1-4.2
N 1.1-5, 2.1-8 | S 2.2-3 | H 1.1-2

Drill Depth **5 x D**

Tool Identification

Nominal Size ø d_1 m7				Taps	Roll Form Taps	mm						Dimens. ID	TA213344 EF-Drill-STEEL DIN6537L-HA IK-4FF TIALN-T14	TA513344 EF-Drill-STEEL DIN6537L-HE IK-4FF TIALN-T14
inch	Fraction	Wire letter	mm			l_1	l_2	l_3	l_4	l_5	ø d_2 h6			
0.3438	11/32		8.733	1/8-27 NPSC		103	61	49	40	1.7	10	.0873	●	★
0.3465			8.800	M10x1.25	3/8-16 UNC	103	61	49	40	1.7	10	.0880	●	★
0.3504			8.900	MJ10x1.25		103	61	49	40	1.8	10	.0890	●	★
0.3543			9.000	M10x1		103	61	49	40	1.8	10	.0900	●	★
0.3563			9.050		3/8-24 UNF	103	61	49	40	1.8	10	.0905	●	★
0.3583			9.100	1/8-27 NPSM		103	61	49	40	1.8	10	.0910	●	★
0.3594	23/64		9.129			103	61	49	40	1.8	10	.0913	●	★
0.3622			9.200	M10x0.75		103	61	49	40	1.8	10	.0920	●	★
0.3642			9.250		G 1/2-28	103	61	49	40	1.8	10	.0925	●	★
0.3661			9.300			103	61	49	40	1.8	10	.0930	●	★
0.3681			9.350		M10	103	61	49	40	1.8	10	.0935	●	★
0.3701			9.400	7/16-14 UNC		103	61	49	40	1.9	10	.0940	●	★
0.3740			9.500	7/16-14 UNJC	STI-M10	103	61	49	40	1.9	10	.0950	●	★
0.3750	3/8		9.525			103	61	49	40	1.9	10	.0953	●	★
0.3780			9.600		M10x1	103	61	49	40	1.9	10	.0960	●	★
0.3819			9.700	LK-UNC 7/16-14	M10x0.75	103	61	49	40	1.9	10	.0970	●	★
0.3858			9.800	STI-UNF 3/8-24		103	61	49	40	1.9	10	.0980	●	★
0.3898			9.900	7/16-20 UNF		103	61	49	40	2.0	10	.0990	●	★
0.3906	25/64		9.921			103	61	49	40	2.0	10	.0992	●	★
0.3937			10.000	7/16-20 UNJF		103	61	49	40	2.0	10	.1000	●	★
0.3976			10.100			118	71	56	45	2.0	12	.1010	●	★
0.4016			10.200	7/16-28 UNEF		118	71	56	45	2.0	12	.1020	●	★
0.4035			10.250		7/16-14 UNC	118	71	56	45	2.0	12	.1025	●	★
0.4055			10.300			118	71	56	45	2.0	12	.1030	●	★
0.4063	13/32		10.320			118	71	56	45	2.0	12	.1032	●	★
0.4134			10.500	M12x1.5		118	71	56	45	2.1	12	.1050	●	★
0.4154			10.550		7/16-20 UNF	118	71	56	45	2.1	12	.1055	●	★
0.4213			10.700	LK-M12		118	71	56	45	2.1	12	.1070	●	★
0.4219	27/64		10.716	1/2-13 UNC		118	71	56	45	2.1	12	.1072	●	★
0.4252			10.800	M12x1.25		118	71	56	45	2.1	12	.1080	●	★
0.4291			10.900	1/2-13 UNJC		118	71	56	45	2.1	12	.1090	●	★
0.4331			11.000	M12x1		118	71	56	45	2.2	12	.1100	●	★
0.4370			11.100	BSF 1/2-16		118	71	56	45	2.2	12	.1110	●	★
0.4375	7/16		11.113	LK-UNC 1/2-13		118	71	56	45	2.2	12	.1111	●	★
0.4409			11.200			118	71	56	45	2.2	12	.1120	●	★
0.4429			11.250	M12x0.75	M12	118	71	56	45	2.2	12	.1125	●	★
0.4469			11.350	Pg 7	M12x1.5	118	71	56	45	2.2	12	.1135	●	★
0.4488			11.400	1/4-18 NPSC		118	71	56	45	2.2	12	.1140	●	★
0.4508			11.450		M12x1.25	118	71	56	45	2.2	12	.1145	●	★
0.4528			11.500	1/2-20 UNF		118	71	56	45	2.3	12	.1150	●	★
0.4531	29/64		11.509			118	71	56	45	2.3	12	.1151	●	★
0.4567			11.600	1/2-20 UNJF	M12x1	118	71	56	45	2.3	12	.1160	●	★
0.4606			11.700			118	71	56	45	2.3	12	.1170	●	★
0.4646			11.800	1/2-28 UNEF	1/2-13 UNC	118	71	56	45	2.3	12	.1180	●	★

Ordering Example: **TA213344.0873**

Metric Shank

Carbide | TIALN T14

DIN 6537 L | R30

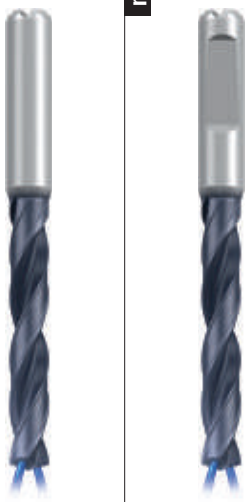
2 Flutes | 4FF

140° | IT9-IT10

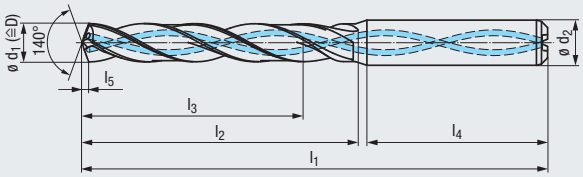
DIN 6535 HA HE

STEEL
Steel & Universal Applications

new new



Standard Length
Coolant Fed



Applications – Material

P 1.1-5.1 M 1.1 K 1.1-4.2
N 1.1-5, 2.1-8 S 2.2-3 H 1.1-2

Drill Depth **5 x D**

3 x D
5 x D
6 x D
8 x D
2-3.5 x D

Tool Identification														TA213344	TA513344
Nominal Size ø d_1 m7				Taps	Roll Form Taps	mm						Dimens. ID		EF-Drill-STEEL DIN6537L-HA IK-4FF TIALN-T14	EF-Drill-STEEL DIN6537L-HE IK-4FF TIALN-T14
inch	Fraction	Wire letter	mm			l_1	l_2	l_3	l_4	l_5	ø d_2 h6				
0.4685			11.900			118	71	56	45	2.3	12	.1190		●	★
0.4688	15/32		11.908			118	71	56	45	2.3	12	.1191		●	★
0.4724			12.000	M14		118	71	56	45	2.4	12	.1200		●	★
0.4783			12.150		1/2-20 UNF	124	77	60	45	2.4	14	.1215		●	★
0.4803			12.200	Tr 14x2		124	77	60	45	2.4	14	.1220		●	★
0.4844	31/64		12.304	9/16-12 UNC		124	77	60	45	2.4	14	.1230		●	★
0.4921			12.500	M14x1.5		124	77	60	45	2.4	14	.1250		●	★
0.4941			12.550		G 1/4-19	124	77	60	45	2.5	14	.1255		●	★
0.5000	1/2		12.700	LK-UNC 9/16-12		124	77	60	45	2.5	14	.1270		●	★
0.5039			12.800	M14x1.25		124	77	60	45	2.5	14	.1280		●	★
0.5118			13.000	9/16-18 UNJF		124	77	60	45	2.5	14	.1300		●	★
0.5157			13.100	STI-UNF 1/2-20	M14	124	77	60	45	2.6	14	.1310		●	★
0.5236			13.300	9/16-24 UNEF	9/16-12 UNC	124	77	60	45	2.6	14	.1330		●	★
0.5256			13.350		M14x1.5	124	77	60	45	2.6	14	.1335		●	★
0.5295			13.450		M14x1.25	124	77	60	45	2.6	14	.1345		●	★
0.5313	17/32		13.495	5/8-11 UNC		124	77	60	45	2.6	14	.1349		●	★
0.5315			13.500			124	77	60	45	2.6	14	.1350		●	★
0.5374			13.650	5/8-11 UNJC	9/16-18 UNF	124	77	60	45	2.7	14	.1365		●	★
0.5394			13.700			124	77	60	45	2.7	14	.1370		●	★
0.5469	35/64		13.891			124	77	60	45	2.7	14	.1389		●	★
0.5512			14.000	M16 / M15x1		124	77	60	45	2.7	14	.1400		●	★
0.5551			14.100			133	83	63	48	2.8	16	.1410		●	★
0.5625	9/16		14.288			133	83	63	48	2.8	16	.1429		●	★
0.5709			14.500	5/8-18 UNF		133	83	63	48	2.8	16	.1450		●	★
0.5748			14.600	5/8-18 UNJF	M15x1	133	83	63	48	2.9	16	.1460		●	★
0.5781	37/64		14.684	3/8-18 NPSC		133	83	63	48	2.9	16	.1468		●	★
0.5827			14.800		5/8-11 UNC	133	83	63	48	2.9	16	.1480		●	★
0.5906			15.000	M16x1		133	83	63	48	2.9	16	.1500		●	★
0.5938	19/32		15.083			133	83	63	48	2.9	16	.1508		●	★
0.5945			15.100		M16	133	83	63	48	2.9	16	.1510		●	★
0.6102			15.500	M18		133	83	63	48	3.0	16	.1550		●	★
0.6142			15.600		M16x1	133	83	63	48	3.0	16	.1560		●	★
0.6250	5/8		15.875			133	83	63	48	3.1	16	.1588		●	★
0.6299			16.000	M18x2		133	83	63	48	3.1	16	.1600		●	★
0.6406	41/64		16.272			143	93	71	48	3.2	18	.1627		●	★
0.6496			16.500	STI-UNC 5/8-11		143	93	71	48	3.2	18	.1650		●	★
0.6563	21/32		16.669	3/4-10 UNC		143	93	71	48	3.2	18	.1667		●	★
0.6693			17.000	M18x1		143	93	71	48	3.3	18	.1700		●	★
0.6875	11/16		17.463			143	93	71	48	3.4	18	.1746		●	★
0.6890			17.500	3/4-16 UNF / M20		143	93	71	48	3.4	18	.1750		●	★
0.7087			18.000	M20x2 / LK-M16		143	93	71	48	3.5	18	.1800		●	★
0.7480			19.000	M20x1		153	101	77	50	3.7	20	.1900		●	★
0.7500	3/4		19.050			153	101	77	50	3.7	20	.1905		●	★
0.7874			20.000	M22x2	G 1/2-14	153	101	77	50	3.9	20	.2000		●	★

● = In stock
★ = Allow 7 days for delivery

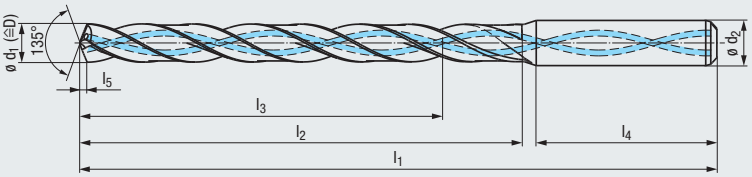
Metric Shank

Carbide | TIALN T14 | R30 | 2 Flutes | 4FF | 135° | IT9-IT11 | DIN 6535 HA

STEEL
Steel & Universal Applications

new

Long Length
Coolant Fed



Preparatory centering with a centering drill (p.ex. EF-Drill acc. DIN 6537 K) is recommended

Applications – Material

P 1.1-5.1 | M 1.1 | K 1.1-4.2
N 1.1-5 | N 2.1-8 | S 2.2-3

Drill Depth **8 x D**

3 x D
5 x D
6 x D
8 x D
2-3.5 x D

Tool Identification													TA223344	
Nominal Size ø d_1 m7				Taps	Roll Form Taps	mm						Dimens. ID	EF-Drill-STEEL 8xD-HA IK-4FF TIALN-T14	
inch	Fraction	Wire letter	mm			l_1	l_2	l_3	l_4	l_5	ø d_2 h6			
0.1102			2.800	#6-32 UNC	M3	70	30	24	36	0.7	6	**.0280**	●	
0.1142			2.900	#6-32 UNJC	#5-40 UNC	70	30	24	36	0.7	6	**.0290**	●	
0.1150			2.920		#5-44 UNF	70	30	24	36	0.7	6	**.0292**	●	
0.1181			3.000	#6-40 UNF		78	38	30	36	0.7	6	**.0300**	●	
0.1220			3.100	STI-#4-40		78	38	30	36	0.7	6	**.0310**	●	
0.1240			3.150	M3.5x0.35	#6-32 UNC	78	38	30	36	0.7	6	**.0315**	●	
0.1250	1/8		3.175			78	38	30	36	0.7	6	**.0318**	●	
0.1260			3.200	BSW 5/32-32	#6-40 UNF	78	38	30	36	0.7	6	**.0320**	●	
0.1280			3.250		M3.5	78	38	30	36	0.8	6	**.0325**	●	
0.1299			3.300	M4		78	38	30	36	0.8	6	**.0330**	●	
0.1331			3.380		M3.5x0.35	78	38	30	36	0.8	6	**.0338**	●	
0.1339			3.400	MJ4x0.7		78	38	30	36	0.8	6	**.0340**	●	
0.1378			3.500	#8-32 UNC		78	38	30	36	0.8	6	**.0350**	●	
0.1406	9/64	#28	3.571			78	38	30	36	0.8	6	**.0357**	●	
0.1417			3.600	#8-36 UNJF		78	38	30	36	0.8	6	**.0360**	●	
0.1457			3.700	M4.5	M4	78	38	30	36	0.9	6	**.0370**	●	
0.1496		#25	3.800	STI-#6-32	#8-32 UNC	88	48	38	36	0.9	6	**.0380**	●	
0.1516			3.850		#8-36 UNF	88	48	38	36	0.9	6	**.0385**	●	
0.1535			3.900	#10-24 UNC		88	48	38	36	0.9	6	**.0390**	●	
0.1563	5/32		3.970			88	48	38	36	0.9	6	**.0397**	●	
0.1575			4.000	M4.5x0.5		88	48	38	36	0.9	6	**.0400**	●	
0.1590		#21	4.038			88	48	38	36	0.9	6	**.0404**	●	
0.1614			4.100	#10-32 UNF		88	48	38	36	0.9	6	**.0410**	●	
0.1654			4.200	M5 / STI-M4	M4.5	88	48	38	36	1.0	6	**.0420**	●	
0.1693		#18	4.300	MJ5x0.8		88	48	38	36	1.0	6	**.0430**	●	
0.1713			4.350		#10-24 UNC	88	48	38	36	1.0	6	**.0435**	●	
0.1719	11/64		4.366			88	48	38	36	1.0	6	**.0437**	●	
0.1732			4.400	M5x0.75		88	48	38	36	1.0	6	**.0440**	●	
0.1752			4.450		#10-32 UNF	88	48	38	36	1.0	6	**.0445**	●	
0.1772			4.500	#12-24 UNC		88	48	38	36	1.0	6	**.0450**	●	
0.1811			4.600	#12-28 UNF		88	48	38	36	1.1	6	**.0460**	●	
0.1831			4.650	#12-24 UNJC	M5	88	48	38	36	1.1	6	**.0465**	●	
0.1850		#13	4.700	LK-UNC #12-24		88	48	38	36	1.1	6	**.0470**	●	
0.1875	3/16		4.763	#12-28 UNJF		97	60	48	36	1.1	6	**.0476**	●	
0.1890		#12	4.800	#12-32 UNEF	M5x0.5 / STI-M5	97	60	48	36	1.1	6	**.0480**	●	
0.1929			4.900			97	60	48	36	1.1	6	**.0490**	●	
0.1969			5.000	M6	#12-24 UNC	97	60	48	36	1.1	6	**.0500**	●	
0.2008			5.100	MJ6x1	#12-28 UNF	97	60	48	36	1.2	6	**.0510**	●	
0.2010		#7	5.106			97	60	48	36	1.2	6	**.0511**	●	
0.2031	13/64		5.159			97	60	48	36	1.2	6	**.0516**	●	
0.2047			5.200	1/4-20 UNC		97	60	48	36	1.2	6	**.0520**	●	
0.2087			5.300	1/4-20 UNJC		97	60	48	36	1.2	6	**.0530**	●	
0.2126			5.400			97	60	48	36	1.2	6	**.0540**	●	
0.2130		#3	5.410			97	60	48	36	1.2	6	**.0541**	●	

Ordering Example: **TA223344.0280**

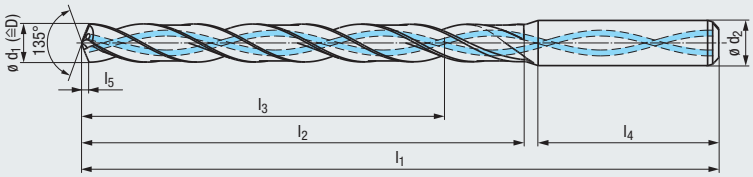
Metric Shank

Carbide | TIALN T14 | R30 | 2 Flutes | 4FF | 135° | IT9-IT11 | DIN 6535 HA

STEEL
Steel & Universal Applications

new

Long Length
Coolant Fed



Preparatory centering with a centering drill (p.ex. EF-Drill acc. DIN 6537 K) is recommended

Applications – Material

P	1.1-5.1	M	1.1	K	1.1-4.2
N	1.1-5	N	2.1-8	S	2.2-3

Drill Depth **8 x D**

Tool Identification — TA223344

Nominal Size ø d_1 m7 inch	Fraction	Wire letter	mm	Taps	Roll Form Taps	mm l_1	l_2	l_3	l_4	l_5	ø d_2 h6	Dimens. ID	EF-Drill-STEEL 8xD-HA IK-4FF TIALN-T14
0.2165			5.500	1/4-28 UNF		97	60	48	36	1.2	6	**.0550**	●
0.2187	7/32		5.556	1/4-28 UNJF		97	60	48	36	1.3	6	**.0556**	●
0.2205			5.600	1/4-32 UNEF	M6	97	60	48	36	1.3	6	**.0560**	●
0.2264			5.750		1/4-20 UNC	97	60	48	36	1.3	6	**.0575**	●
0.2283			5.800		M6x0.5	97	60	48	36	1.3	6	**.0580**	●
0.2323			5.900			97	60	48	36	1.3	6	**.0590**	●
0.2344	15/64		5.954		1/4-28 UNF	97	60	48	36	1.3	6	**.0595**	●
0.2362			6.000	M7 / Rd 8x1/10		97	60	48	36	1.4	6	**.0600**	●
0.2402			6.100	MJ7x1		107	70	56	36	1.4	8	**.0610**	●
0.2441			6.200	M7x0.75		107	70	56	36	1.4	8	**.0620**	●
0.2480			6.300	M7x0.5 / STI-M6		107	70	56	36	1.4	8	**.0630**	●
0.2500	1/4	E	6.350	1/16-27 NPSF		107	70	56	36	1.4	8	**.0635**	●
0.2520			6.400			107	70	56	36	1.4	8	**.0640**	●
0.2559			6.500	BSW 5/16-18		107	70	56	36	1.5	8	**.0650**	●
0.2570		F	6.528			107	70	56	36	1.5	8	**.0653**	●
0.2598			6.600	5/16-18 UNC	M7	107	70	56	36	1.5	8	**.0660**	●
0.2638			6.700	5/16-18 UNJC	M7x0.75	107	70	56	36	1.5	8	**.0670**	●
0.2656	17/64		6.746			107	70	56	36	1.5	8	**.0675**	●
0.2677			6.800	M8 / G 1/16		107	70	56	36	1.5	8	**.0680**	●
0.2717			6.900	5/16-24 UNF		107	70	56	36	1.6	8	**.0690**	●
0.2756			7.000	5/16-24 UNJF		107	70	56	36	1.6	8	**.0700**	●
0.2795			7.100	MJ8x1		117	80	64	36	1.6	8	**.0710**	●
0.2813	9/32	K	7.145			117	80	64	36	1.6	8	**.0715**	●
0.2835			7.200	5/16-32 UNEF		117	80	64	36	1.6	8	**.0720**	●
0.2854			7.250		5/16-18 UNC	117	80	64	36	1.6	8	**.0725**	●
0.2874			7.300			117	80	64	36	1.6	8	**.0730**	●
0.2913			7.400			117	80	64	36	1.7	8	**.0740**	●
0.2933			7.450		5/16-24 UNF / M8	117	80	64	36	1.7	8	**.0745**	●
0.2953			7.500	M8x0.5		117	80	64	36	1.7	8	**.0750**	●
0.2969	19/64		7.541			117	80	64	36	1.7	8	**.0754**	●
0.2992			7.600	Tr 9x1.5	M8x1 / STI-M8	117	80	64	36	1.7	8	**.0760**	●
0.3031			7.700		M8x0.75	117	80	64	36	1.7	8	**.0770**	●
0.3071			7.800	M9		117	80	64	36	1.7	8	**.0780**	●
0.3110			7.900	BSW 3/8-16		117	80	64	36	1.8	8	**.0790**	●
0.3125	5/16		7.938			117	80	64	36	1.8	8	**.0794**	●
0.3150			8.000	3/8-16 UNC		117	80	64	36	1.8	8	**.0800**	●
0.3189			8.100	3/8-16 UNJC		141	100	80	40	1.8	10	**.0810**	●
0.3228			8.200	M9x0.75		141	100	80	40	1.8	10	**.0820**	●
0.3268			8.300	LK-UNC 3/8-16		141	100	80	40	1.9	10	**.0830**	●
0.3281	21/64		8.334			141	100	80	40	1.9	10	**.0833**	●
0.3307			8.400	STI-UNC 5/16-18		141	100	80	40	1.9	10	**.0840**	●
0.3346			8.500	3/8-24 UNF / M10		141	100	80	40	1.9	10	**.0850**	●
0.3386			8.600	3/8-24 UNJF	M9x1	141	100	80	40	1.9	10	**.0860**	●
0.3425			8.700	3/8-32 UNEF	M9x0.75	141	100	80	40	1.9	10	**.0870**	●

● = In stock
★ = Allow 7 days for delivery

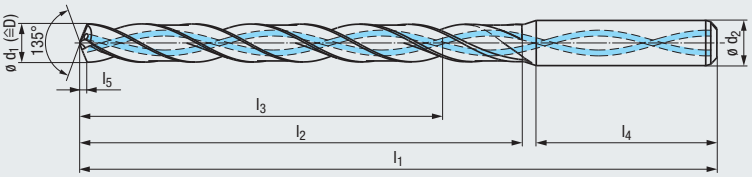
Metric Shank

Carbide | TIALN T14 | R30 | 2 Flutes | 4FF | 135° | IT9-IT11 | DIN 6535 HA

STEEL
Steel & Universal Applications

new

Long Length
Coolant Fed



Preparatory centering with a centering drill (p.ex. EF-Drill acc. DIN 6537 K) is recommended

Applications – Material

P 1.1-5.1 | M 1.1 | K 1.1-4.2
N 1.1-5 | N 2.1-8 | S 2.2-3

Drill Depth **8 x D**

3 x D
5 x D
6 x D
8 x D
2-3.5 x D

Tool Identification — TA223344

Nominal Size ø d_1 m7				Taps	Roll Form Taps	mm						Dimens. ID	EF-Drill-STEEL 8xD-HA IK-4FF TIALN-T14
inch	Fraction	Wire letter	mm			l_1	l_2	l_3	l_4	l_5	ø d_2 h6		
0.3438	11/32		8.733	1/8-27 NPSC		141	100	80	40	1.9	10	**.0873**	●
0.3465			8.800	M10x1.25	3/8-16 UNC	141	100	80	40	2.0	10	**.0880**	●
0.3504			8.900	MJ10x1.25		141	100	80	40	2.0	10	**.0890**	●
0.3543			9.000	M10x1		141	100	80	40	2.0	10	**.0900**	●
0.3563			9.050		3/8-24 UNF	141	100	80	40	2.0	10	**.0905**	●
0.3583			9.100	1/8-27 NPSM		141	100	80	40	2.0	10	**.0910**	●
0.3594	23/64		9.129			141	100	80	40	2.0	10	**.0913**	●
0.3622			9.200	M10x0.75		141	100	80	40	2.1	10	**.0920**	●
0.3642			9.250		G 1/2-28	141	100	80	40	2.1	10	**.0925**	●
0.3661			9.300			141	100	80	40	2.1	10	**.0930**	●
0.3681			9.350		M10	141	100	80	40	2.1	10	**.0935**	●
0.3701			9.400	7/16-14 UNC		141	100	80	40	2.1	10	**.0940**	●
0.3740			9.500	7/16-14 UNJC	STI-M10	141	100	80	40	2.1	10	**.0950**	●
0.3750	3/8		9.525			141	100	80	40	2.1	10	**.0953**	●
0.3780			9.600		M10x1	141	100	80	40	2.1	10	**.0960**	●
0.3819			9.700	LK-UNC 7/16-14	M10x0.75	141	100	80	40	2.2	10	**.0970**	●
0.3858			9.800	STI-UNF 3/8-24		141	100	80	40	2.2	10	**.0980**	●
0.3898			9.900	7/16-20 UNF		141	100	80	40	2.2	10	**.0990**	●
0.3906	25/64		9.921			141	100	80	40	2.2	10	**.0992**	●
0.3937			10.000	7/16-20 UNJF		141	100	80	40	2.2	10	**.1000**	●
0.3976			10.100			166	120	96	45	2.2	12	**.1010**	●
0.4016			10.200	7/16-28 UNEF		166	120	96	45	2.3	12	**.1020**	●
0.4035			10.250		7/16-14 UNC	166	120	96	45	2.3	12	**.1025**	●
0.4055			10.300			166	120	96	45	2.3	12	**.1030**	●
0.4063	13/32		10.320			166	120	96	45	2.3	12	**.1032**	●
0.4134			10.500	M12x1.5		166	120	96	45	2.3	12	**.1050**	●
0.4154			10.550		7/16-20 UNF	166	120	96	45	2.3	12	**.1055**	●
0.4213			10.700	LK-M12		166	120	96	45	2.4	12	**.1070**	●
0.4219	27/64		10.716	1/2-13 UNC		166	120	96	45	2.4	12	**.1072**	●
0.4252			10.800	M12x1.25		166	120	96	45	2.4	12	**.1080**	●
0.4291			10.900	1/2-13 UNJC		166	120	96	45	2.4	12	**.1090**	●
0.4331			11.000	M12x1		166	120	96	45	2.4	12	**.1100**	●
0.4370			11.100	BSF 1/2-16		166	120	96	45	2.5	12	**.1110**	●
0.4375	7/16		11.113	LK-UNC 1/2-13		166	120	96	45	2.5	12	**.1111**	●
0.4409			11.200			166	120	96	45	2.5	12	**.1120**	●
0.4429			11.250	M12x0.75	M12	166	120	96	45	2.5	12	**.1125**	●
0.4469			11.350	Pg 7	M12x1.5	166	120	96	45	2.5	12	**.1135**	●
0.4488			11.400	1/4-18 NPSC		166	120	96	45	2.5	12	**.1140**	●
0.4508			11.450		M12x1.25	166	120	96	45	2.5	12	**.1145**	●
0.4528			11.500	1/2-20 UNF		166	120	96	45	2.6	12	**.1150**	●
0.4531	29/64		11.509			166	120	96	45	2.6	12	**.1151**	●
0.4567			11.600	1/2-20 UNJF	M12x1	166	120	96	45	2.6	12	**.1160**	●
0.4606			11.700			166	120	96	45	2.6	12	**.1170**	●
0.4646			11.800	1/2-28 UNEF	1/2-13 UNC	166	120	96	45	2.6	12	**.1180**	●

Ordering Example: **TA223344.0873**

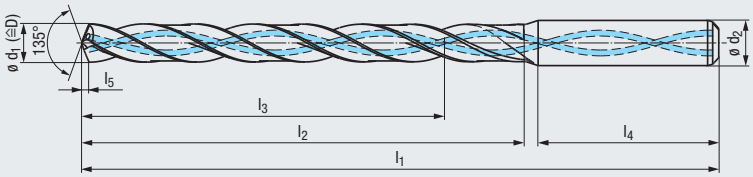
Metric Shank

Carbide | TIALN T14 | R30 | 2 Flutes | 4FF | 135° | IT9-IT11 | DIN 6535 HA

STEEL
Steel & Universal Applications

new

Long Length
Coolant Fed



Preparatory centering with a centering drill (p.ex. EF-Drill acc. DIN 6537 K) is recommended

Applications – Material

P	1.1-5.1	M	1.1	K	1.1-4.2
N	1.1-5	N	2.1-8	S	2.2-3

Drill Depth **8 x D**

Tool Identification — TA223344

Nominal Size ø d_1 m7 inch	Fraction	Wire letter	mm	Taps	Roll Form Taps	mm l_1	l_2	l_3	l_4	l_5	ø d_2 h6	Dimens. ID	EF-Drill-STEEL 8xD-HA IK-4FF TIALN-T14
0.4685			11.900			166	120	96	45	2.6	12	**.1190**	●
0.4688	15/32		11.908			166	120	96	45	2.6	12	**.1191**	●
0.4724			12.000	M14		166	120	96	45	2.7	12	**.1200**	●
0.4783			12.150		1/2-20 UNF	186	140	112	45	2.7	14	**.1215**	●
0.4803			12.200	Tr 14x2		186	140	112	45	2.7	14	**.1220**	●
0.4844	31/64		12.304	9/16-12 UNC		186	140	112	45	2.7	14	**.1230**	●
0.4921			12.500	M14x1.5		186	140	112	45	2.8	14	**.1250**	●
0.4941			12.550		G 1/4-19	186	140	112	45	2.8	14	**.1255**	●
0.5000	1/2		12.700	LK-UNC 9/16-12		186	140	112	45	2.8	14	**.1270**	●
0.5039			12.800	M14x1.25		186	140	112	45	2.8	14	**.1280**	●
0.5118			13.000	9/16-18 UNJF		186	140	112	45	2.9	14	**.1300**	●
0.5157			13.100	STI-UNF 1/2-20	M14	186	140	112	45	2.9	14	**.1310**	●
0.5236			13.300	9/16-24 UNEF	9/16-12 UNC	186	140	112	45	2.9	14	**.1330**	●
0.5256			13.350		M14x1.5	186	140	112	45	3.0	14	**.1335**	●
0.5295			13.450		M14x1.25	186	140	112	45	3.0	14	**.1345**	●
0.5313	17/32		13.495	5/8-11 UNC		186	140	112	45	3.0	14	**.1349**	●
0.5315			13.500			186	140	112	45	3.0	14	**.1350**	●
0.5374			13.650	5/8-11 UNJC	9/16-18 UNF	186	140	112	45	3.0	14	**.1365**	●
0.5394			13.700			186	140	112	45	3.0	14	**.1370**	●
0.5469	35/64		13.891			186	140	112	45	3.1	14	**.1389**	●
0.5512			14.000	M16 / M15x1		186	140	112	45	3.1	14	**.1400**	●
0.5551			14.100			209	160	128	48	3.1	16	**.1410**	●
0.5625	9/16		14.288			209	160	128	48	3.2	16	**.1429**	●
0.5709			14.500	5/8-18 UNF		209	160	128	48	3.2	16	**.1450**	●
0.5748			14.600	5/8-18 UNJF	M15x1	209	160	128	48	3.2	16	**.1460**	●
0.5781	37/64		14.684	3/8-18 NPSC		209	160	128	48	3.2	16	**.1468**	●
0.5827			14.800		5/8-11 UNC	209	160	128	48	3.3	16	**.1480**	●
0.5906			15.000	M16x1		209	160	128	48	3.3	16	**.1500**	●
0.5938	19/32		15.083			209	160	128	48	3.3	16	**.1508**	●
0.5945			15.100		M16	209	160	128	48	3.3	16	**.1510**	●
0.6102			15.500	M18		209	160	128	48	3.4	16	**.1550**	●
0.6142			15.600		M16x1	209	160	128	48	3.4	16	**.1560**	●
0.6250	5/8		15.875			209	160	128	48	3.5	16	**.1588**	●
0.6299			16.000	M18x2		209	160	128	48	3.5	16	**.1600**	●
0.6406	41/64		16.272			229	180	144	48	3.6	18	**.1627**	●
0.6496			16.500	STI-UNC 5/8-11		229	180	144	48	3.6	18	**.1650**	●
0.6563	21/32		16.669	3/4-10 UNC		229	180	144	48	3.7	18	**.1667**	●
0.6693			17.000	M18x1		229	180	144	48	3.7	18	**.1700**	●
0.6875	11/16		17.463			229	180	144	48	3.8	18	**.1746**	●
0.6890			17.500	3/4-16 UNF / M20		229	180	144	48	3.9	18	**.1750**	●
0.7087			18.000	M20x2 / LK-M16		229	180	144	48	4.0	18	**.1800**	●
0.7480			19.000	M20x1		251	200	160	50	4.2	20	**.1900**	●
0.7500	3/4		19.050			251	200	160	50	4.2	20	**.1905**	●
0.7874			20.000	M22x2	G 1/2-14	251	200	160	50	4.4	20	**.2000**	●

● = In stock
★ = Allow 7 days for delivery

Metric Shank

For the machining of stainless steel materials

Carbide | ALCR T37

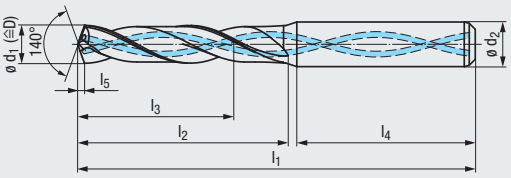
DIN 6537 K | R30

2 Flutes | 2FF

140° | IT9-IT10

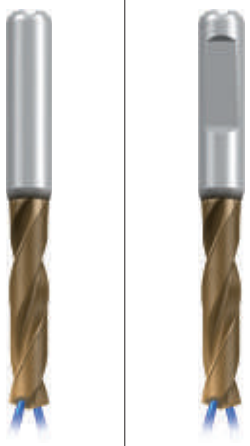
DIN 6535 HA HE

Stub Length
Coolant Fed



VA
Stainless Steel Materials

new new



Applications – Material: M 1.1-4.1 | S 1.1-3 | S 2.2-4, 2.6 | N 1.1-3

Drill Depth: **3 x D**

3 x D
5 x D
6 x D
8 x D
2-3.5 x D

Tool Identification													TA204524	TA504524
Nominal Size ø d_1 m7				Taps	Roll Form Taps	mm						Dimens. ID	EF-Drill-VA DIN6537K-HA IK-2FF ALCR-T37	EF-Drill-VA DIN6537K-HE IK-2FF ALCR-T37
inch	Fraction	Wire letter	mm			l_1	l_2	l_3	l_4	l_5	ø d_2 h6			
0.1102			2.800	#6-32 UNC	M3	57	16	11	36	0.6	6	.0280	●	★
0.1142			2.900	#6-32 UNJC	#5-40 UNC	57	16	11	36	0.6	6	.0290	●	★
0.1150			2.920		#5-44 UNF	57	16	11	36	0.6	6	.0292	●	★
0.1181			3.000	#6-40 UNF		62	20	14	36	0.6	6	.0300	●	★
0.1220			3.100	STI-#4-40		62	20	14	36	0.6	6	.0310	●	★
0.1240			3.150	M3.5x0.35	#6-32 UNC	62	20	14	36	0.7	6	.0315	●	★
0.1250	1/8		3.175			62	20	14	36	0.7	6	.0318	●	★
0.1260			3.200	BSW 5/32-32	#6-40 UNF	62	20	14	36	0.7	6	.0320	●	★
0.1280			3.250		M3.5	62	20	14	36	0.7	6	.0325	●	★
0.1299			3.300	M4		62	20	14	36	0.7	6	.0330	●	★
0.1331			3.380		M3.5x0.35	62	20	14	36	0.7	6	.0338	●	★
0.1339			3.400	MJ4x0.7		62	20	14	36	0.7	6	.0340	●	★
0.1378			3.500	#8-32 UNC		62	20	14	36	0.7	6	.0350	●	★
0.1406	9/64	#28	3.571			62	20	14	36	0.7	6	.0357	●	★
0.1417			3.600	#8-36 UNJF		62	20	14	36	0.7	6	.0360	●	★
0.1457			3.700	M4.5	M4	62	20	14	36	0.8	6	.0370	●	★
0.1496		#25	3.800	STI-#6-32	#8-32 UNC	66	24	17	36	0.8	6	.0380	●	★
0.1516			3.850		#8-36 UNF	66	24	17	36	0.8	6	.0385	●	★
0.1535			3.900	#10-24 UNC		66	24	17	36	0.8	6	.0390	●	★
0.1563	5/32		3.970			66	24	17	36	0.8	6	.0397	●	★
0.1575			4.000	M4.5x0.5		66	24	17	36	0.8	6	.0400	●	★
0.1590		#21	4.038			66	24	17	36	0.8	6	.0404	●	★
0.1614			4.100	#10-32 UNF		66	24	17	36	0.8	6	.0410	●	★
0.1654			4.200	M5 / STI-M4	M4.5	66	24	17	36	0.9	6	.0420	●	★
0.1693		#18	4.300	MJ5x0.8		66	24	17	36	0.9	6	.0430	●	★
0.1713			4.350		#10-24 UNC	66	24	17	36	0.9	6	.0435	●	★
0.1719	11/64		4.366			66	24	17	36	0.9	6	.0437	●	★
0.1732			4.400	M5x0.75		66	24	17	36	0.9	6	.0440	●	★
0.1752			4.450		#10-32 UNF	66	24	17	36	0.9	6	.0445	●	★
0.1772			4.500	#12-24 UNC		66	24	17	36	0.9	6	.0450	●	★
0.1811			4.600	#12-28 UNF		66	24	17	36	0.9	6	.0460	●	★
0.1831			4.650	#12-24 UNJC	M5	66	24	17	36	0.9	6	.0465	●	★
0.1850		#13	4.700	LK-UNC #12-24		66	24	17	36	1.0	6	.0470	●	★
0.1875	3/16		4.763	#12-28 UNJF		66	28	20	36	1.0	6	.0476	●	★
0.1890		#12	4.800	#12-32 UNEF	M5x0.5 / STI-M5	66	28	20	36	1.0	6	.0480	●	★
0.1929			4.900			66	28	20	36	1.0	6	.0490	●	★
0.1969			5.000	M6	#12-24 UNC	66	28	20	36	1.0	6	.0500	●	★
0.2008			5.100	MJ6x1	#12-28 UNF	66	28	20	36	1.0	6	.0510	●	★
0.2010		#7	5.106			66	28	20	36	1.0	6	.0511	●	★
0.2031	13/64		5.159			66	28	20	36	1.0	6	.0516	●	★
0.2047			5.200	1/4-20 UNC		66	28	20	36	1.0	6	.0520	●	★
0.2087			5.300	1/4-20 UNJC		66	28	20	36	1.1	6	.0530	●	★
0.2126			5.400			66	28	20	36	1.1	6	.0540	●	★
0.2130		#3	5.410			66	28	20	36	1.1	6	.0541	●	★

Ordering Example: **TA204524.0280**

Metric Shank

For the machining of stainless steel materials

Carbide | ALCR T37

DIN 6537 K | R30

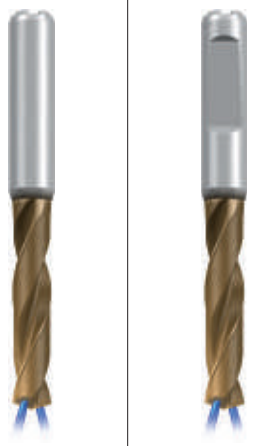
2 Flutes | 2FF

140° | IT9-IT10

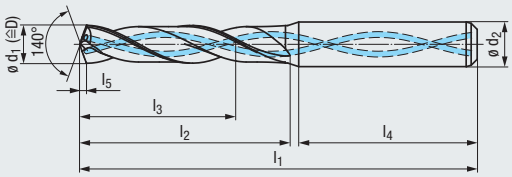
DIN 6535 HA HE

VA
Stainless Steel Materials

new new



Stub Length
Coolant Fed



Applications – Material: M 1.1-4.1 | S 1.1-3 | S 2.2-4, 2.6 | N 1.1-3

Drill Depth: **3 x D**

3 x D
5 x D
6 x D
8 x D
2-3.5 x D

Tool Identification						mm							TA204524	TA504524
Nominal Size ø d_1 m7				Taps	Roll Form Taps	l_1	l_2	l_3	l_4	l_5	ø d_2 h6	Dimens. ID	EF-Drill-VA DIN6537K-HA IK-2FF ALCR-T37	EF-Drill-VA DIN6537K-HE IK-2FF ALCR-T37
inch	Fraction	Wire letter	mm											
0.2165			5.500	1/4-28 UNF		66	28	20	36	1.1	6	.0550	●	★
0.2187	7/32		5.556	1/4-28 UNJF		66	28	20	36	1.1	6	.0556	●	★
0.2205			5.600	1/4-32 UNEF	M6	66	28	20	36	1.1	6	.0560	●	★
0.2264			5.750		1/4-20 UNC	66	28	20	36	1.2	6	.0575	●	★
0.2283			5.800		M6x0.5	66	28	20	36	1.2	6	.0580	●	★
0.2323			5.900			66	28	20	36	1.2	6	.0590	●	★
0.2344	15/64		5.954		1/4-28 UNF	66	28	20	36	1.2	6	.0595	●	★
0.2362			6.000	M7 / Rd8x1/10		66	28	20	36	1.2	6	.0600	●	★
0.2402			6.100	MJ7x1		79	34	24	36	1.2	8	.0610	●	★
0.2441			6.200	M7x0.75		79	34	24	36	1.2	8	.0620	●	★
0.2480			6.300	M7x0.5 / STI-M6		79	34	24	36	1.3	8	.0630	●	★
0.2500	1/4	E	6.350	1/16-27 NPSF		79	34	24	36	1.3	8	.0635	●	★
0.2520			6.400			79	34	24	36	1.3	8	.0640	●	★
0.2559			6.500	BSW 5/16-18		79	34	24	36	1.3	8	.0650	●	★
0.2570		F	6.528			79	34	24	36	1.3	8	.0653	●	★
0.2598			6.600	5/16-18 UNC	M7	79	34	24	36	1.3	8	.0660	●	★
0.2638			6.700	5/16-18 UNJC	M7x0.75	79	34	24	36	1.3	8	.0670	●	★
0.2656	17/64		6.746			79	34	24	36	1.3	8	.0675	●	★
0.2677			6.800	M8 / G 1/16		79	34	24	36	1.4	8	.0680	●	★
0.2717			6.900	5/16-24 UNF		79	34	24	36	1.4	8	.0690	●	★
0.2756			7.000	5/16-24 UNJF		79	34	24	36	1.4	8	.0700	●	★
0.2795			7.100	MJ8x1		79	41	29	36	1.4	8	.0710	●	★
0.2813	9/32	K	7.145			79	41	29	36	1.4	8	.0715	●	★
0.2835			7.200	5/16-32 UNEF		79	41	29	36	1.4	8	.0720	●	★
0.2854			7.250		5/16-18 UNC	79	41	29	36	1.4	8	.0725	●	★
0.2874			7.300			79	41	29	36	1.5	8	.0730	●	★
0.2913			7.400			79	41	29	36	1.5	8	.0740	●	★
0.2933			7.450		5/16-24 UNF / M8	79	41	29	36	1.5	8	.0745	●	★
0.2953			7.500	M8x0.5		79	41	29	36	1.5	8	.0750	●	★
0.2969	19/64		7.541			79	41	29	36	1.5	8	.0754	●	★
0.2992			7.600	Tr 9x1.5	M8x1 / STI-M8	79	41	29	36	1.5	8	.0760	●	★
0.3031			7.700		M8x0.75	79	41	29	36	1.5	8	.0770	●	★
0.3071			7.800	M9		79	41	29	36	1.5	8	.0780	●	★
0.3110			7.900	BSW 3/8-16		79	41	29	36	1.6	8	.0790	●	★
0.3125	5/16		7.938			79	41	29	36	1.6	8	.0794	●	★
0.3150			8.000	3/8-16 UNC		79	41	29	36	1.6	8	.0800	●	★
0.3189			8.100	3/8-16 UNJC		89	47	35	40	1.6	10	.0810	●	★
0.3228			8.200	M9x0.75		89	47	35	40	1.6	10	.0820	●	★
0.3268			8.300	LK-UNC 3/8-16		89	47	35	40	1.6	10	.0830	●	★
0.3281	21/64		8.334			89	47	35	40	1.6	10	.0833	●	★
0.3307			8.400	STI-UNC 5/16-18		89	47	35	40	1.7	10	.0840	●	★
0.3346			8.500	3/8-24 UNF / M10		89	47	35	40	1.7	10	.0850	●	★
0.3386			8.600	3/8-24 UNJF	M9x1	89	47	35	40	1.7	10	.0860	●	★
0.3425			8.700	3/8-32 UNEF	M9x0.75	89	47	35	40	1.7	10	.0870	●	★

● = In stock
★ = Allow 7 days for delivery

Metric Shank

For the machining of stainless steel materials

Carbide | ALCR T37

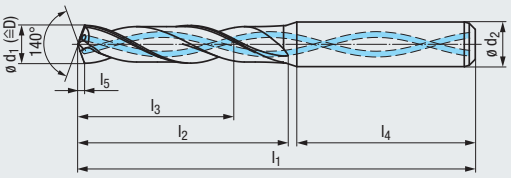
DIN 6537 K | R30

2 Flutes | 2FF

140° | IT9-IT10

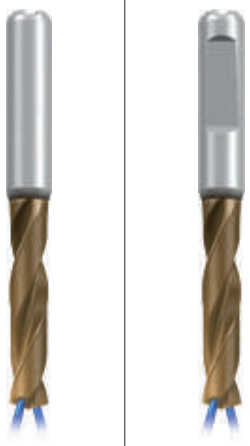
DIN 6535 HA HE

Stub Length
Coolant Fed



VA
Stainless Steel Materials

new new



Applications – Material: M 1.1-4.1 | S 1.1-3 | S 2.2-4, 2.6 | N 1.1-3

Drill Depth: **3 x D**

3 x D
5 x D
6 x D
8 x D
2-3.5 x D

Tool Identification

Nominal Size ø d_1 m7 inch	Fraction	Wire letter	mm	Taps	Roll Form Taps	mm l_1	l_2	l_3	l_4	l_5	ø d_2 h6	Dimens. ID	TA204524 EF-Drill-VA DIN6537K-HA IK-2FF ALCR-T37	TA504524 EF-Drill-VA DIN6537K-HE IK-2FF ALCR-T37
0.3438	11/32		8.733	1/8-27 NPSC		89	47	35	40	1.7	10	**.0873**	●	★
0.3465			8.800	M10x1.25	3/8-16 UNC	89	47	35	40	1.7	10	**.0880**	●	★
0.3504			8.900	MJ10x1.25		89	47	35	40	1.8	10	**.0890**	●	★
0.3543			9.000	M10x1		89	47	35	40	1.8	10	**.0900**	●	★
0.3563			9.050		3/8-24 UNF	89	47	35	40	1.8	10	**.0905**	●	★
0.3583			9.100	1/8-27 NPSM		89	47	35	40	1.8	10	**.0910**	●	★
0.3594	23/64		9.129			89	47	35	40	1.8	10	**.0913**	●	★
0.3622			9.200	M10x0.75		89	47	35	40	1.8	10	**.0920**	●	★
0.3642			9.250		G 1/2-28	89	47	35	40	1.8	10	**.0925**	●	★
0.3661			9.300			89	47	35	40	1.8	10	**.0930**	●	★
0.3681			9.350		M10	89	47	35	40	1.8	10	**.0935**	●	★
0.3701			9.400	7/16-14 UNC		89	47	35	40	1.9	10	**.0940**	●	★
0.3740			9.500	7/16-14 UNJC	STI-M10	89	47	35	40	1.9	10	**.0950**	●	★
0.3750	3/8		9.525			89	47	35	40	1.9	10	**.0953**	●	★
0.3780			9.600		M10x1	89	47	35	40	1.9	10	**.0960**	●	★
0.3819			9.700	LK-UNC 7/16-14	M10x0.75	89	47	35	40	1.9	10	**.0970**	●	★
0.3858			9.800	STI-UNF 3/8-24		89	47	35	40	1.9	10	**.0980**	●	★
0.3898			9.900	7/16-20 UNF		89	47	35	40	2.0	10	**.0990**	●	★
0.3906	25/64		9.921			89	47	35	40	2.0	10	**.0992**	●	★
0.3937			10.000	7/16-20 UNJF		89	47	35	40	2.0	10	**.1000**	●	★
0.3976			10.100			102	55	40	45	2.0	12	**.1010**	●	★
0.4016			10.200	7/16-28 UNEF		102	55	40	45	2.0	12	**.1020**	●	★
0.4035			10.250		7/16-14 UNC	102	55	40	45	2.0	12	**.1025**	●	★
0.4055			10.300			102	55	40	45	2.0	12	**.1030**	●	★
0.4063	13/32		10.320			102	55	40	45	2.0	12	**.1032**	●	★
0.4134			10.500	M12x1.5		102	55	40	45	2.1	12	**.1050**	●	★
0.4154			10.550		7/16-20 UNF	102	55	40	45	2.1	12	**.1055**	●	★
0.4213			10.700	LK-M12		102	55	40	45	2.1	12	**.1070**	●	★
0.4219	27/64		10.716	1/2-13 UNC		102	55	40	45	2.1	12	**.1072**	●	★
0.4252			10.800	M12x1.25		102	55	40	45	2.1	12	**.1080**	●	★
0.4291			10.900	1/2-13 UNJC		102	55	40	45	2.1	12	**.1090**	●	★
0.4331			11.000	M12x1		102	55	40	45	2.2	12	**.1100**	●	★
0.4370			11.100	BSF 1/2-16		102	55	40	45	2.2	12	**.1110**	●	★
0.4375	7/16		11.113	LK-UNC 1/2-13		102	55	40	45	2.2	12	**.1111**	●	★
0.4409			11.200			102	55	40	45	2.2	12	**.1120**	●	★
0.4429			11.250	M12x0.75	M12	102	55	40	45	2.2	12	**.1125**	●	★
0.4469			11.350	Pg 7	M12x1.5	102	55	40	45	2.2	12	**.1135**	●	★
0.4488			11.400	1/4-18 NPSC		102	55	40	45	2.2	12	**.1140**	●	★
0.4508			11.450		M12x1.25	102	55	40	45	2.2	12	**.1145**	●	★
0.4528			11.500	1/2-20 UNF		102	55	40	45	2.3	12	**.1150**	●	★
0.4531	29/64		11.509			102	55	40	45	2.3	12	**.1151**	●	★
0.4567			11.600	1/2-20 UNJF	M12x1	102	55	40	45	2.3	12	**.1160**	●	★
0.4606			11.700			102	55	40	45	2.3	12	**.1170**	●	★
0.4646			11.800	1/2-28 UNEF	1/2-13 UNC	102	55	40	45	2.3	12	**.1180**	●	★

Ordering Example: **TA204524.0873**

Metric Shank

For the machining of stainless steel materials

Carbide | ALCR T37

DIN 6537 K | R30

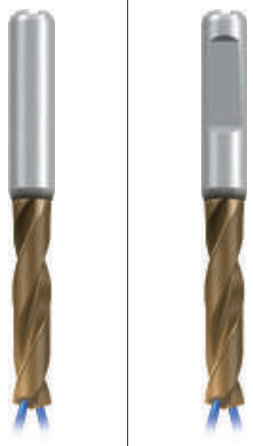
2 Flutes | 2FF

140° | IT9-IT10

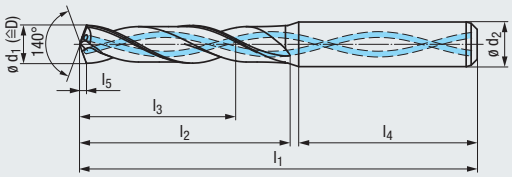
DIN 6535 HA HE

VA
Stainless Steel Materials

new new



Stub Length
Coolant Fed



Applications – Material: M 1.1-4.1 | S 1.1-3 | S 2.2-4, 2.6 | N 1.1-3

Drill Depth: **3 x D**

Tool Identification													TA204524	TA504524
Nominal Size ø d_1 m7				Taps	Roll Form Taps	mm								
inch	Fraction	Wire letter	mm			l_1	l_2	l_3	l_4	l_5	ø d_2 h6	Dimens. ID	EF-Drill-VA DIN6537K-HA IK-2FF ALCR-T37	EF-Drill-VA DIN6537K-HE IK-2FF ALCR-T37
0.4685			11.900			102	55	40	45	2.3	12	**.1190**	●	★
0.4688	15/32		11.908			102	55	40	45	2.3	12	**.1191**	●	★
0.4724			12.000	M14		102	55	40	45	2.4	12	**.1200**	●	★
0.4783			12.150		1/2-20 UNF	107	60	43	45	2.4	14	**.1215**	●	★
0.4803			12.200	Tr 14x2		107	60	43	45	2.4	14	**.1220**	●	★
0.4844	31/64		12.304	9/16-12 UNC		107	60	43	45	2.4	14	**.1230**	●	★
0.4921			12.500	M14x1.5		107	60	43	45	2.4	14	**.1250**	●	★
0.4941			12.550		G 1/4-19	107	60	43	45	2.5	14	**.1255**	●	★
0.5000	1/2		12.700	LK-UNC 9/16-12		107	60	43	45	2.5	14	**.1270**	●	★
0.5039			12.800	M14x1.25		107	60	43	45	2.5	14	**.1280**	●	★
0.5118			13.000	9/16-18 UNJF		107	60	43	45	2.5	14	**.1300**	●	★
0.5157			13.100	STI-UNF 1/2-20	M14	107	60	43	45	2.6	14	**.1310**	●	★
0.5236			13.300	9/16-24 UNEF	9/16-12 UNC	107	60	43	45	2.6	14	**.1330**	●	★
0.5256			13.350		M14x1.5	107	60	43	45	2.6	14	**.1335**	●	★
0.5295			13.450		M14x1.25	107	60	43	45	2.6	14	**.1345**	●	★
0.5313	17/32		13.495	5/8-11 UNC		107	60	43	45	2.6	14	**.1349**	●	★
0.5315			13.500			107	60	43	45	2.6	14	**.1350**	●	★
0.5374			13.650	5/8-11 UNJC	9/16-18 UNF	107	60	43	45	2.7	14	**.1365**	●	★
0.5394			13.700			107	60	43	45	2.7	14	**.1370**	●	★
0.5469	35/64		13.891			107	60	43	45	2.7	14	**.1389**	●	★
0.5512			14.000	M16 / M15x1		107	60	43	45	2.7	14	**.1400**	●	★
0.5551			14.100			115	65	45	48	2.8	16	**.1410**	●	★
0.5625	9/16		14.288			115	65	45	48	2.8	16	**.1429**	●	★
0.5709			14.500	5/8-18 UNF		115	65	45	48	2.8	16	**.1450**	●	★
0.5748			14.600	5/8-18 UNJF	M15x1	115	65	45	48	2.9	16	**.1460**	●	★
0.5781	37/64		14.684	3/8-18 NPSC		115	65	45	48	2.9	16	**.1468**	●	★
0.5827			14.800		5/8-11 UNC	115	65	45	48	2.9	16	**.1480**	●	★
0.5906			15.000	M16x1		115	65	45	48	2.9	16	**.1500**	●	★
0.5938	19/32		15.083			115	65	45	48	2.9	16	**.1508**	●	★
0.5945			15.100		M16	115	65	45	48	2.9	16	**.1510**	●	★
0.6102			15.500	M18		115	65	45	48	3.0	16	**.1550**	●	★
0.6142			15.600		M16x1	115	65	45	48	3.0	16	**.1560**	●	★
0.6250	5/8		15.875			115	65	45	48	3.1	16	**.1588**	●	★
0.6299			16.000	M18x2		115	65	45	48	3.1	16	**.1600**	●	★
0.6406	41/64		16.272			123	73	51	48	3.2	18	**.1627**	●	★
0.6496			16.500	STI-UNC 5/8-11		123	73	51	48	3.2	18	**.1650**	●	★
0.6563	21/32		16.669	3/4-10 UNC		123	73	51	48	3.2	18	**.1667**	●	★
0.6693			17.000	M18x1		123	73	51	48	3.3	18	**.1700**	●	★
0.6875	11/16		17.463			123	73	51	48	3.4	18	**.1746**	●	★
0.6890			17.500	3/4-16 UNF / M20		123	73	51	48	3.4	18	**.1750**	●	★
0.7087			18.000	M20x2 / LK-M16		123	73	51	48	3.5	18	**.1800**	●	★
0.7480			19.000	M20x1		131	79	55	50	3.7	20	**.1900**	●	★
0.7500	3/4		19.050			131	79	55	50	3.7	20	**.1905**	●	★
0.7874			20.000	M22x2	G 1/2-14	131	79	55	50	3.9	20	**.2000**	●	★

● = In stock
★ = Allow 7 days for delivery

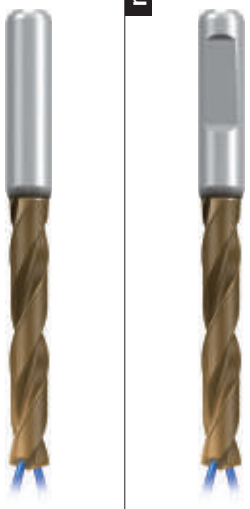
Metric Shank

For the machining of stainless steel materials

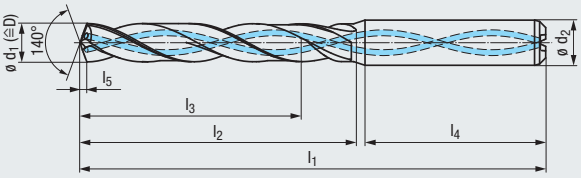
Carbide | ALCR T37
DIN 6537 L | R30
2 Flutes | 2FF
140° | IT9-IT10
DIN 6535 HA HE

VA
Stainless Steel Materials

new new



Standard Length
Coolant Fed



Applications – Material: M 1.1-4.1 | S 1.1-3 | S 2.2-4, 2.6

Drill Depth: **5 x D**

3 x D
5 x D
6 x D
8 x D
2-3.5 x D

Tool Identification

Nominal Size ø d_1 m7				Taps	Roll Form Taps	mm						Dimens. ID	TA214524 EF-Drill-VA DIN6537L-HA IK-2FF ALCR-T37	TA514524 EF-Drill-VA DIN6537L-HE IK-2FF ALCR-T37
inch	Fraction	Wire letter	mm			l_1	l_2	l_3	l_4	l_5	ø d_2 h6			
0.1102			2.800	#6-32 UNC	M3	61	22	17	36	0.6	6	**.0280**	●	★
0.1142			2.900	#6-32 UNJC	#5-40 UNC	61	22	17	36	0.6	6	**.0290**	●	★
0.1150			2.920		#5-44 UNF	61	22	17	36	0.6	6	**.0292**	●	★
0.1181			3.000	#6-40 UNF		66	28	23	36	0.6	6	**.0300**	●	★
0.1220			3.100	STI-#4-40		66	28	23	36	0.6	6	**.0310**	●	★
0.1240			3.150	M3.5x0.35	#6-32 UNC	66	28	23	36	0.7	6	**.0315**	●	★
0.1250	1/8		3.175			66	28	23	36	0.7	6	**.0318**	●	★
0.1260			3.200	BSW 5/32-32	#6-40 UNF	66	28	23	36	0.7	6	**.0320**	●	★
0.1280			3.250		M3.5	66	28	23	36	0.7	6	**.0325**	●	★
0.1299			3.300	M4		66	28	23	36	0.7	6	**.0330**	●	★
0.1331			3.380		M3.5x0.35	66	28	23	36	0.7	6	**.0338**	●	★
0.1339			3.400	MJ4x0.7		66	28	23	36	0.7	6	**.0340**	●	★
0.1378			3.500	#8-32 UNC		66	28	23	36	0.7	6	**.0350**	●	★
0.1406	9/64	#28	3.571			66	28	23	36	0.7	6	**.0357**	●	★
0.1417			3.600	#8-36 UNJF		66	28	23	36	0.7	6	**.0360**	●	★
0.1457			3.700	M4.5	M4	66	28	23	36	0.8	6	**.0370**	●	★
0.1496		#25	3.800	STI-#6-32	#8-32 UNC	74	36	29	36	0.8	6	**.0380**	●	★
0.1516			3.850		#8-36 UNF	74	36	29	36	0.8	6	**.0385**	●	★
0.1535			3.900	#10-24 UNC		74	36	29	36	0.8	6	**.0390**	●	★
0.1563	5/32		3.970			74	36	29	36	0.8	6	**.0397**	●	★
0.1575			4.000	M4.5x0.5		74	36	29	36	0.8	6	**.0400**	●	★
0.1590		#21	4.038			74	36	29	36	0.8	6	**.0404**	●	★
0.1614			4.100	#10-32 UNF		74	36	29	36	0.8	6	**.0410**	●	★
0.1654			4.200	M5 / STI-M4	M4.5	74	36	29	36	0.9	6	**.0420**	●	★
0.1693		#18	4.300	MJ5x0.8		74	36	29	36	0.9	6	**.0430**	●	★
0.1713			4.350		#10-24 UNC	74	36	29	36	0.9	6	**.0435**	●	★
0.1719	11/64		4.366			74	36	29	36	0.9	6	**.0437**	●	★
0.1732			4.400	M5x0.75		74	36	29	36	0.9	6	**.0440**	●	★
0.1752			4.450		#10-32 UNF	74	36	29	36	0.9	6	**.0445**	●	★
0.1772			4.500	#12-24 UNC		74	36	29	36	0.9	6	**.0450**	●	★
0.1811			4.600	#12-28 UNF		74	36	29	36	0.9	6	**.0460**	●	★
0.1831			4.650	#12-24 UNJC	M5	74	36	29	36	0.9	6	**.0465**	●	★
0.1850		#13	4.700	LK-UNC #12-24		74	36	29	36	1.0	6	**.0470**	●	★
0.1875	3/16		4.763	#12-28 UNJF		82	44	35	36	1.0	6	**.0476**	●	★
0.1890		#12	4.800	#12-32 UNEF	M5x0.5 / STI-M5	82	44	35	36	1.0	6	**.0480**	●	★
0.1929			4.900			82	44	35	36	1.0	6	**.0490**	●	★
0.1969			5.000	M6	#12-24 UNC	82	44	35	36	1.0	6	**.0500**	●	★
0.2008			5.100	MJ6x1	#12-28 UNF	82	44	35	36	1.0	6	**.0510**	●	★
0.2010		#7	5.106			82	44	35	36	1.0	6	**.0511**	●	★
0.2031	13/64		5.159			82	44	35	36	1.0	6	**.0516**	●	★
0.2047			5.200	1/4-20 UNC		82	44	35	36	1.0	6	**.0520**	●	★
0.2087			5.300	1/4-20 UNJC		82	44	35	36	1.1	6	**.0530**	●	★
0.2126			5.400			82	44	35	36	1.1	6	**.0540**	●	★
0.2130		#3	5.410			82	44	35	36	1.1	6	**.0541**	●	★

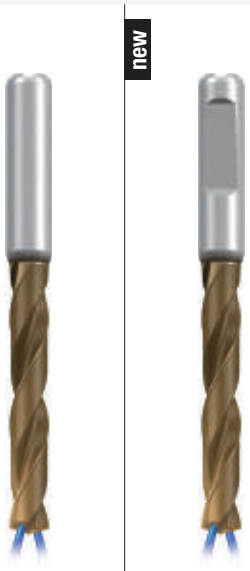
Ordering Example: **TA214524.0280**

Metric Shank

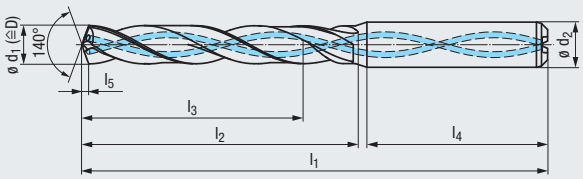
For the machining of stainless steel materials

Carbide | ALCR T37 | DIN 6537 L | R30 | 2 Flutes | 2FF | 140° | IT9-IT10 | DIN 6535 HA HE

VA
Stainless Steel Materials



Standard Length
Coolant Fed



Applications – Material: M 1.1-4.1 S 1.1-3 S 2.2-4, 2.6

Drill Depth: **5 x D**

Tool Identification														TA214524	TA514524
Nominal Size ø d_1 m7				Taps	Roll Form Taps	mm						Dimens. ID		EF-Drill-VA DIN6537L-HA IK-2FF ALCR-T37	EF-Drill-VA DIN6537L-HE IK-2FF ALCR-T37
inch	Fraction	Wire letter	mm			l_1	l_2	l_3	l_4	l_5	ø d_2 h6				
0.2165			5.500	1/4-28 UNF		82	44	35	36	1.1	6	.0550		●	★
0.2187	7/32		5.556	1/4-28 UNJF		82	44	35	36	1.1	6	.0556		●	★
0.2205			5.600	1/4-32 UNEF	M6	82	44	35	36	1.1	6	.0560		●	★
0.2264			5.750		1/4-20 UNC	82	44	35	36	1.2	6	.0575		●	★
0.2283			5.800		M6x0.5	82	44	35	36	1.2	6	.0580		●	★
0.2323			5.900			82	44	35	36	1.2	6	.0590		●	★
0.2344	15/64		5.954		1/4-28 UNF	82	44	35	36	1.2	6	.0595		●	★
0.2362			6.000	M7 / Rd8x1/10		82	44	35	36	1.2	6	.0600		●	★
0.2402			6.100	MJ7x1		91	53	43	36	1.2	8	.0610		●	★
0.2441			6.200	M7x0.75		91	53	43	36	1.2	8	.0620		●	★
0.2480			6.300	M7x0.5 / STI-M6		91	53	43	36	1.3	8	.0630		●	★
0.2500	1/4	E	6.350	1/16-27 NPSF		91	53	43	36	1.3	8	.0635		●	★
0.2520			6.400			91	53	43	36	1.3	8	.0640		●	★
0.2559			6.500	BSW 5/16-18		91	53	43	36	1.3	8	.0650		●	★
0.2570		F	6.528			91	53	43	36	1.3	8	.0653		●	★
0.2598			6.600	5/16-18 UNC	M7	91	53	43	36	1.3	8	.0660		●	★
0.2638			6.700	5/16-18 UNJC	M7x0.75	91	53	43	36	1.3	8	.0670		●	★
0.2656	17/64		6.746			91	53	43	36	1.3	8	.0675		●	★
0.2677			6.800	M8 / G 1/16		91	53	43	36	1.4	8	.0680		●	★
0.2717			6.900	5/16-24 UNF		91	53	43	36	1.4	8	.0690		●	★
0.2756			7.000	5/16-24 UNJF		91	53	43	36	1.4	8	.0700		●	★
0.2795			7.100	MJ8x1		91	53	43	36	1.4	8	.0710		●	★
0.2813	9/32	K	7.145			91	53	43	36	1.4	8	.0715		●	★
0.2835			7.200	5/16-32 UNEF		91	53	43	36	1.4	8	.0720		●	★
0.2854			7.250		5/16-18 UNC	91	53	43	36	1.4	8	.0725		●	★
0.2874			7.300			91	53	43	36	1.5	8	.0730		●	★
0.2913			7.400			91	53	43	36	1.5	8	.0740		●	★
0.2933			7.450		5/16-24 UNF / M8	91	53	43	36	1.5	8	.0745		●	★
0.2953			7.500	M8x0.5		91	53	43	36	1.5	8	.0750		●	★
0.2969	19/64		7.541			91	53	43	36	1.5	8	.0754		●	★
0.2992			7.600	Tr 9x1.5	M8x1 / STI-M8	91	53	43	36	1.5	8	.0760		●	★
0.3031			7.700		M8x0.75	91	53	43	36	1.5	8	.0770		●	★
0.3071			7.800	M9		91	53	43	36	1.5	8	.0780		●	★
0.3110			7.900	BSW 3/8-16		91	53	43	36	1.6	8	.0790		●	★
0.3125	5/16		7.938			91	53	43	36	1.6	8	.0794		●	★
0.3150			8.000	3/8-16 UNC		91	53	43	36	1.6	8	.0800		●	★
0.3189			8.100	3/8-16 UNJC		103	61	49	40	1.6	10	.0810		●	★
0.3228			8.200	M9x0.75		103	61	49	40	1.6	10	.0820		●	★
0.3268			8.300	LK-UNC 3/8-16		103	61	49	40	1.6	10	.0830		●	★
0.3281	21/64		8.334			103	61	49	40	1.6	10	.0833		●	★
0.3307			8.400	STI-UNC 5/16-18		103	61	49	40	1.7	10	.0840		●	★
0.3346			8.500	3/8-24 UNF / M10		103	61	49	40	1.7	10	.0850		●	★
0.3386			8.600	3/8-24 UNJF	M9x1	103	61	49	40	1.7	10	.0860		●	★
0.3425			8.700	3/8-32 UNEF	M9x0.75	103	61	49	40	1.7	10	.0870		●	★

● = In stock
★ = Allow 7 days for delivery

Metric Shank

For the machining of stainless steel materials

Carbide | ALCR T37

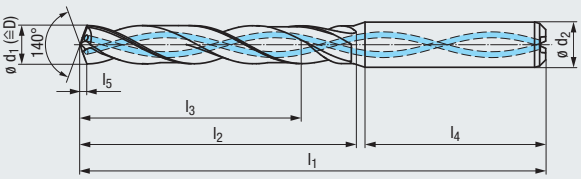
DIN 6537 L | R30

2 Flutes | 2FF

140° | IT9-IT10

DIN 6535 HA HE

Standard Length
Coolant Fed



VA
Stainless Steel Materials

new

new

Applications – Material: M 1.1-4.1 | S 1.1-3 | S 2.2-4, 2.6

Drill Depth: **5 x D**

3 x D
5 x D
6 x D
8 x D
2-3.5 x D

Tool Identification														TA214524	TA514524
Nominal Size ø d_1 m7				Taps	Roll Form Taps	mm						Dimens. ID		EF-Drill-VA DIN6537L-HA IK-2FF ALCR-T37	EF-Drill-VA DIN6537L-HE IK-2FF ALCR-T37
inch	Fraction	Wire letter	mm			l_1	l_2	l_3	l_4	l_5	ø d_2 h6				
0.3438	11/32		8.733	1/8-27 NPSC		103	61	49	40	1.7	10	**.0873**		●	★
0.3465			8.800	M10x1.25	3/8-16 UNC	103	61	49	40	1.7	10	**.0880**		●	★
0.3504			8.900	MJ10x1.25		103	61	49	40	1.8	10	**.0890**		●	★
0.3543			9.000	M10x1		103	61	49	40	1.8	10	**.0900**		●	★
0.3563			9.050		3/8-24 UNF	103	61	49	40	1.8	10	**.0905**		●	★
0.3583			9.100	1/8-27 NPSM		103	61	49	40	1.8	10	**.0910**		●	★
0.3594	23/64		9.129			103	61	49	40	1.8	10	**.0913**		●	★
0.3622			9.200	M10x0.75		103	61	49	40	1.8	10	**.0920**		●	★
0.3642			9.250		G 1/2-28	103	61	49	40	1.8	10	**.0925**		●	★
0.3661			9.300			103	61	49	40	1.8	10	**.0930**		●	★
0.3681			9.350		M10	103	61	49	40	1.8	10	**.0935**		●	★
0.3701			9.400	7/16-14 UNC		103	61	49	40	1.9	10	**.0940**		●	★
0.3740			9.500	7/16-14 UNJC	STI-M10	103	61	49	40	1.9	10	**.0950**		●	★
0.3750	3/8		9.525			103	61	49	40	1.9	10	**.0953**		●	★
0.3780			9.600		M10x1	103	61	49	40	1.9	10	**.0960**		●	★
0.3819			9.700	LK-UNC 7/16-14	M10x0.75	103	61	49	40	1.9	10	**.0970**		●	★
0.3858			9.800	STI-UNF 3/8-24		103	61	49	40	1.9	10	**.0980**		●	★
0.3898			9.900	7/16-20 UNF		103	61	49	40	2.0	10	**.0990**		●	★
0.3906	25/64		9.921			103	61	49	40	2.0	10	**.0992**		●	★
0.3937			10.000	7/16-20 UNJF		103	61	49	40	2.0	10	**.1000**		●	★
0.3976			10.100			118	71	56	45	2.0	12	**.1010**		●	★
0.4016			10.200	7/16-28 UNEF		118	71	56	45	2.0	12	**.1020**		●	★
0.4035			10.250		7/16-14 UNC	118	71	56	45	2.0	12	**.1025**		●	★
0.4055			10.300			118	71	56	45	2.0	12	**.1030**		●	★
0.4063	13/32		10.320			118	71	56	45	2.0	12	**.1032**		●	★
0.4134			10.500	M12x1.5		118	71	56	45	2.1	12	**.1050**		●	★
0.4154			10.550		7/16-20 UNF	118	71	56	45	2.1	12	**.1055**		●	★
0.4213			10.700	LK-M12		118	71	56	45	2.1	12	**.1070**		●	★
0.4219	27/64		10.716	1/2-13 UNC		118	71	56	45	2.1	12	**.1072**		●	★
0.4252			10.800	M12x1.25		118	71	56	45	2.1	12	**.1080**		●	★
0.4291			10.900	1/2-13 UNJC		118	71	56	45	2.1	12	**.1090**		●	★
0.4331			11.000	M12x1		118	71	56	45	2.2	12	**.1100**		●	★
0.4370			11.100	BSF 1/2-16		118	71	56	45	2.2	12	**.1110**		●	★
0.4375	7/16		11.113	LK-UNC 1/2-13		118	71	56	45	2.2	12	**.1111**		●	★
0.4409			11.200			118	71	56	45	2.2	12	**.1120**		●	★
0.4429			11.250	M12x0.75	M12	118	71	56	45	2.2	12	**.1125**		●	★
0.4469			11.350	Pg 7	M12x1.5	118	71	56	45	2.2	12	**.1135**		●	★
0.4488			11.400	1/4-18 NPSC		118	71	56	45	2.2	12	**.1140**		●	★
0.4508			11.450		M12x1.25	118	71	56	45	2.2	12	**.1145**		●	★
0.4528			11.500	1/2-20 UNF		118	71	56	45	2.3	12	**.1150**		●	★
0.4531	29/64		11.509			118	71	56	45	2.3	12	**.1151**		●	★
0.4567			11.600	1/2-20 UNJF	M12x1	118	71	56	45	2.3	12	**.1160**		●	★
0.4606			11.700			118	71	56	45	2.3	12	**.1170**		●	★
0.4646			11.800	1/2-28 UNEF	1/2-13 UNC	118	71	56	45	2.3	12	**.1180**		●	★

Ordering Example: **TA214524.0873**

Metric Shank

For the machining of stainless steel materials

Carbide | ALCR T37

DIN 6537 L | R30

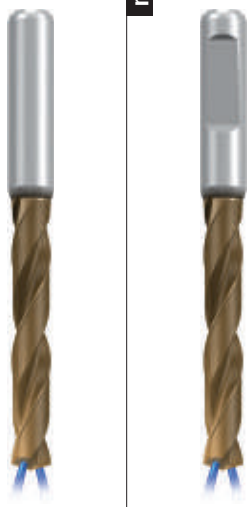
2 Flutes | 2FF

140° | IT9-IT10

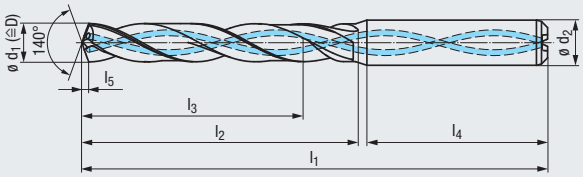
DIN 6535 HA HE

VA
Stainless Steel Materials

new new



Standard Length
Coolant Fed



Applications – Material: M 1.1-4.1 S 1.1-3 S 2.2-4, 2.6

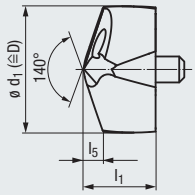
Drill Depth: **5 x D**

3 x D
5 x D
6 x D
8 x D
2-3.5 x D

Tool Identification														TA214524	TA514524
Nominal Size ø d_1 m7				Taps	Roll Form Taps	mm						Dimens. ID		EF-Drill-VA DIN6537L-HA IK-2FF ALCR-T37	EF-Drill-VA DIN6537L-HE IK-2FF ALCR-T37
inch	Fraction	Wire letter	mm			l_1	l_2	l_3	l_4	l_5	ø d_2 h6				
0.4685			11.900			118	71	56	45	2.3	12	**.1190**		●	★
0.4688	15/32		11.908			118	71	56	45	2.3	12	**.1191**		●	★
0.4724			12.000	M14		118	71	56	45	2.4	12	**.1200**		●	★
0.4783			12.150		1/2-20 UNF	124	77	60	45	2.4	14	**.1215**		●	★
0.4803			12.200	Tr 14x2		124	77	60	45	2.4	14	**.1220**		●	★
0.4844	31/64		12.304	9/16-12 UNC		124	77	60	45	2.4	14	**.1230**		●	★
0.4921			12.500	M14x1.5		124	77	60	45	2.4	14	**.1250**		●	★
0.4941			12.550		G 1/4-19	124	77	60	45	2.5	14	**.1255**		●	★
0.5000	1/2		12.700	LK-UNC 9/16-12		124	77	60	45	2.5	14	**.1270**		●	★
0.5039			12.800	M14x1.25		124	77	60	45	2.5	14	**.1280**		●	★
0.5118			13.000	9/16-18 UNJF		124	77	60	45	2.5	14	**.1300**		●	★
0.5157			13.100	STI-UNF 1/2-20	M14	124	77	60	45	2.6	14	**.1310**		●	★
0.5236			13.300	9/16-24 UNEF	9/16-12 UNC	124	77	60	45	2.6	14	**.1330**		●	★
0.5256			13.350		M14x1.5	124	77	60	45	2.6	14	**.1335**		●	★
0.5295			13.450		M14x1.25	124	77	60	45	2.6	14	**.1345**		●	★
0.5313	17/32		13.495	5/8-11 UNC		124	77	60	45	2.6	14	**.1349**		●	★
0.5315			13.500			124	77	60	45	2.6	14	**.1350**		●	★
0.5374			13.650	5/8-11 UNJC	9/16-18 UNF	124	77	60	45	2.7	14	**.1365**		●	★
0.5394			13.700			124	77	60	45	2.7	14	**.1370**		●	★
0.5469	35/64		13.891			124	77	60	45	2.7	14	**.1389**		●	★
0.5512			14.000	M16 / M15x1		124	77	60	45	2.7	14	**.1400**		●	★
0.5551			14.100			133	83	63	48	2.8	16	**.1410**		●	★
0.5625	9/16		14.288			133	83	63	48	2.8	16	**.1429**		●	★
0.5709			14.500	5/8-18 UNF		133	83	63	48	2.8	16	**.1450**		●	★
0.5748			14.600	5/8-18 UNJF	M15x1	133	83	63	48	2.9	16	**.1460**		●	★
0.5781	37/64		14.684	3/8-18 NPSC		133	83	63	48	2.9	16	**.1468**		●	★
0.5827			14.800		5/8-11 UNC	133	83	63	48	2.9	16	**.1480**		●	★
0.5906			15.000	M16x1		133	83	63	48	2.9	16	**.1500**		●	★
0.5938	19/32		15.083			133	83	63	48	2.9	16	**.1508**		●	★
0.5945			15.100		M16	133	83	63	48	2.9	16	**.1510**		●	★
0.6102			15.500	M18		133	83	63	48	3.0	16	**.1550**		●	★
0.6142			15.600		M16x1	133	83	63	48	3.0	16	**.1560**		●	★
0.6250	5/8		15.875			133	83	63	48	3.1	16	**.1588**		●	★
0.6299			16.000	M18x2		133	83	63	48	3.1	16	**.1600**		●	★
0.6406	41/64		16.272			143	93	71	48	3.2	18	**.1627**		●	★
0.6496			16.500	STI-UNC 5/8-11		143	93	71	48	3.2	18	**.1650**		●	★
0.6563	21/32		16.669	3/4-10 UNC		143	93	71	48	3.2	18	**.1667**		●	★
0.6693			17.000	M18x1		143	93	71	48	3.3	18	**.1700**		●	★
0.6875	11/16		17.463			143	93	71	48	3.4	18	**.1746**		●	★
0.6890			17.500	3/4-16 UNF / M20		143	93	71	48	3.4	18	**.1750**		●	★
0.7087			18.000	M20x2 / LK-M16		143	93	71	48	3.5	18	**.1800**		●	★
0.7480			19.000	M20x1		153	101	77	50	3.7	20	**.1900**		●	★
0.7500	3/4		19.050			153	101	77	50	3.7	20	**.1905**		●	★
0.7874			20.000	M22x2	G 1/2-14	153	101	77	50	3.9	20	**.2000**		●	★

● = In stock
★ = Allow 7 days for delivery

Solid Carbide Cutting Head



Carbide | TIALN T21 | R30 | 2 Flutes | 2FF | 140° | IT9-IT11

STEEL
Steel & Universal Applications

new

Applications – Material

P 1.1-5.1 M 1.1
K 1.1-4.2 N 1.4-5

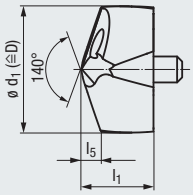
Tool Identification

TM003324

Nominal Size ø d_1 k8 inch	Fraction	mm	Taps	Roll Form Taps	Size of Insert Seat	mm l_1	mm l_5	Dimens. ID	EF-Drill Modular STEEL AK-2FF TIALN-T21
0.5512		14.00	M16 / M15x1		**2**	8	2.7	**.1400**	●
0.5551		14.10	MJ15x1		**2**	8	2.8	**.1410**	●
0.5591		14.20	M15x0.75		**2**	8	2.8	**.1420**	●
0.5625	9/16	14.29			**2**	8	2.8	**.1429**	●
0.5630		14.30			**2**	8	2.8	**.1430**	●
0.5669		14.40			**2**	8	2.8	**.1440**	●
0.5709		14.50	5/8-18 UNF		**2**	8	2.8	**.1450**	●
0.5748		14.60	5/8-18 UNJF	M15x1	**2**	8	2.9	**.1460**	●
0.5781	37/64	14.68	3/8-18 NPSC		**2**	8	2.9	**.1468**	●
0.5787		14.70	STI-UNF 9/16-18	M15x0.75	**2**	8	2.9	**.1470**	●
0.5827		14.80		5/8-11 UNC	**2**	8	2.9	**.1480**	●
0.5866		14.90	STI-UNC 9/16-12		**2**	8	2.9	**.1490**	●
0.5906		15.00	M16x1		**2**	8	2.9	**.1500**	●
0.5937	19/32	15.08			**2**	8	2.9	**.1508**	●
0.5945		15.10	MJ16x1	M16	**2**	8	2.9	**.1510**	●
0.5984		15.20	M16x0.75		**2**	8	3.0	**.1520**	●
0.6024		15.30			**2**	8	3.0	**.1530**	●
0.6043		15.35		M16x1.5	**2**	8	3.0	**.1535**	●
0.6063		15.40			**2**	8	3.0	**.1540**	●
0.6094	39/64	15.48			**2**	8	3.0	**.1548**	●
0.6102		15.50	M18		**2**	8	3.0	**.1550**	●
0.6142		15.60		M16x1	**2**	8	3.0	**.1560**	●
0.6181		15.70		M16x0.75	**2**	8	3.1	**.1570**	●
0.6220		15.80	MJ18x2.5		**2**	8	3.1	**.1580**	●
0.6252	5/8	15.88			**2**	8	3.1	**.1588**	●
0.6260		15.90			**2**	8	3.1	**.1590**	●
0.6299		16.00	M18x2		**3**	9	3.1	**.1600**	●
0.6339		16.10	MJ17x1		**3**	9	3.1	**.1610**	●
0.6378		16.20			**3**	9	3.2	**.1620**	●
0.6406	41/64	16.27			**3**	9	3.2	**.1627**	●
0.6417		16.30			**3**	9	3.2	**.1630**	●
0.6457		16.40			**3**	9	3.2	**.1640**	●
0.6496		16.50	STI-UNC 5/8-11		**3**	9	3.2	**.1650**	●
0.6535		16.60	MJ18x1.5		**3**	9	3.2	**.1660**	●
0.6563	21/32	16.67	3/4-10 UNC		**3**	9	3.2	**.1667**	●
0.6575		16.70			**3**	9	3.3	**.1670**	●
0.6614		16.80			**3**	9	3.3	**.1680**	●
0.6634		16.85		M18	**3**	9	3.3	**.1685**	●
0.6654		16.90			**3**	9	3.3	**.1690**	●
0.6693		17.00	M18x1		**3**	9	3.3	**.1700**	●
0.6719	43/64	17.07			**3**	9	3.3	**.1707**	●
0.6732		17.10	MJ18x1	M18x2	**3**	9	3.3	**.1710**	●
0.6772		17.20			**3**	9	3.4	**.1720**	●
0.6811		17.30			**3**	9	3.4	**.1730**	●
0.6831		17.35		M18x1.5	**3**	9	3.4	**.1735**	●
0.6850		17.40			**3**	9	3.4	**.1740**	●
0.6870	11/16	17.45			**3**	9	3.4	**.1745**	●
0.6890		17.50	3/4-16 UNF / M20		**3**	9	3.4	**.1750**	●
0.6929		17.60		M18x1	**3**	9	3.4	**.1760**	●
0.6969		17.70			**3**	9	3.4	**.1770**	●
0.7008		17.80	MJ20x2.5		**3**	9	3.5	**.1780**	●
0.7047		17.90			**3**	9	3.5	**.1790**	●
0.7087		18.00	M20x2 / LK-M16		**3**	9	3.5	**.1800**	●
0.7126		18.10			**3**	9	3.5	**.1810**	●
0.7165		18.20			**3**	9	3.5	**.1820**	●
0.7188	23/32	18.26			**3**	9	3.6	**.1826**	●

Ordering Example: **TM003324.1400**

Solid Carbide Cutting Head



Carbide | TIALN T21 | R30 | 2 Flutes | 2FF | 140° | IT9-IT11

new

STEEL
Steel & Universal Applications

Applications – Material

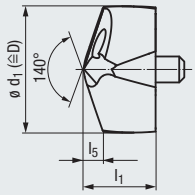
P 1.1-5.1 | M 1.1
K 1.1-4.2 | N 1.4-5

Tool Identification | TM003324

Nominal Size ø d_1 k8 inch	Fraction	mm	Taps	Roll Form Taps	Size of Insert Seat	mm l_1	mm l_5	Dimens. ID	EF-Drill Modular STEEL AK-2FF TIALN-T21
0.7205		18.30			**3**	9	3.6	**.1830**	●
0.7244		18.40			**3**	9	3.6	**.1840**	●
0.7283		18.50	M20x1.5		**3**	9	3.6	**.1850**	●
0.7323		18.60	MJ20x1.5		**3**	9	3.6	**.1860**	●
0.7344	47/64	18.65			**3**	9	3.6	**.1865**	●
0.7362		18.70			**3**	9	3.6	**.1870**	●
0.7402		18.80			**3**	9	3.7	**.1880**	●
0.7421		18.85		M20	**3**	9	3.7	**.1885**	●
0.7441		18.90			**3**	9	3.7	**.1890**	●
0.7480		19.00	M20x1		**4**	11	3.7	**.1900**	●
0.7500	3/4	19.05			**4**	11	3.7	**.1905**	●
0.7520		19.10	MJ20x1	M20x2	**4**	11	3.7	**.1910**	●
0.7559		19.20			**4**	11	3.7	**.1920**	●
0.7598		19.30			**4**	11	3.8	**.1930**	●
0.7618		19.35		M20x1.5	**4**	11	3.8	**.1935**	●
0.7638		19.40			**4**	11	3.8	**.1940**	●
0.7657	49/64	19.45			**4**	11	3.8	**.1945**	●
0.7677		19.50	STI-UNF 3/4-16		**4**	11	3.8	**.1950**	●
0.7717		19.60		M20x1	**4**	11	3.8	**.1960**	●
0.7756		19.70			**4**	11	3.8	**.1970**	●
0.7795		19.80			**4**	11	3.9	**.1980**	●
0.7815	25/32	19.85			**4**	11	3.9	**.1985**	●
0.7835		19.90			**4**	11	3.9	**.1990**	●
0.7874		20.00	M22x2	G 1/2-14	**4**	11	3.9	**.2000**	●
0.7913		20.10			**4**	11	3.9	**.2010**	●
0.7953		20.20			**4**	11	3.9	**.2020**	●
0.7969	51/64	20.24			**4**	11	3.9	**.2024**	●
0.7992		20.30			**4**	11	3.9	**.2030**	●
0.8310		20.40			**4**	11	4.0	**.2040**	●
0.8710		20.50	M22x1.5		**4**	11	4.0	**.2050**	●
0.8110		20.60	MJ22x1.5		**4**	11	4.0	**.2060**	●
0.8126	13/16	20.64			**4**	11	4.0	**.2064**	●
0.8150		20.70			**4**	11	4.0	**.2070**	●
0.8189		20.80			**4**	11	4.0	**.2080**	●
0.8209		20.85		M22	**4**	11	4.1	**.2085**	●
0.8228		20.90		7/8-9 UNC	**4**	11	4.1	**.2090**	●
0.8268		21.00	M24 / M22x1		**4**	11	4.1	**.2100**	●
0.8307		21.10	MJ22x1	M22x2	**4**	11	4.1	**.2110**	●
0.8346		21.20			**4**	11	4.1	**.2120**	●
0.8386		21.30			**4**	11	4.1	**.2130**	●
0.8406		21.35		M22x1.5	**4**	11	4.1	**.2135**	●
0.8425		21.40		7/8-14 UNF	**4**	11	4.2	**.2140**	●
0.8438	27/32	21.43			**4**	11	4.2	**.2143**	●
0.8465		21.50			**4**	11	4.2	**.2150**	●
0.8504		21.60		M22x1	**4**	11	4.2	**.2160**	●
0.8543		21.70			**4**	11	4.2	**.2170**	●
0.8583		21.80			**4**	11	4.2	**.2180**	●
0.8594	55/64	21.83			**4**	11	4.2	**.2183**	●
0.8622		21.90			**4**	11	4.3	**.2190**	●
0.8661		22.00	M24x2		**5**	12.5	4.3	**.2200**	●
0.8701		22.10			**5**	12.5	4.3	**.2210**	●
0.8740		22.20			**5**	12.5	4.3	**.2220**	●
0.8750	7/8	22.23	1-8 UNC		**5**	12.5	4.3	**.2223**	●
0.8780		22.30			**5**	12.5	4.3	**.2230**	●
0.8819		22.40			**5**	12.5	4.3	**.2240**	●
0.8858		22.50	M24x1.5		**5**	12.5	4.4	**.2250**	●

● = In stock
★ = Allow 7 days for delivery

Solid Carbide Cutting Head



Carbide | TIALN T21 | R30 | 2 Flutes | 2FF | 140° | IT9-IT11

STEEL
Steel & Universal Applications

new

Applications – Material

P 1.1-5.1 M 1.1
K 1.1-4.2 N 1.4-5

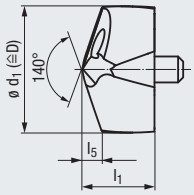
Tool Identification

TM003324

Nominal Size ø d_1 k8 inch	Fraction	mm	Taps	Roll Form Taps	Size of Insert Seat	mm l_1	mm l_5	Dimens. ID	EF-Drill Modular STEEL AK-2FF TIALN-T21
0.8898		22.60	MJ24x1.5	M24	5	12.5	4.4	.2260	●
0.8917		22.65			5	12.5	4.4	.2265	●
0.8937		22.70			5	12.5	4.4	.2270	●
0.8976		22.80			5	12.5	4.4	.2280	●
0.9016		22.90			5	12.5	4.4	.2290	●
0.9055		23.00	M24x1		5	12.5	4.5	.2300	●
0.9063	29/32	23.02			5	12.5	4.5	.2302	●
0.9094		23.10		M24x2	5	12.5	4.5	.2310	●
0.9134		23.20			5	12.5	4.5	.2320	●
0.9173		23.30			5	12.5	4.5	.2330	●
0.9193		23.35		M24x1.5	5	12.5	4.5	.2335	●
0.9213		23.40			5	12.5	4.5	.2340	●
0.9219	59/64	23.42	1-12 UNF		5	12.5	4.5	.2342	●
0.9252		23.50	M25x1.5		5	12.5	4.6	.2350	●
0.9291		23.60	MJ25x1.5	M24x1	5	12.5	4.6	.2360	●
0.9331		23.70			5	12.5	4.6	.2370	●
0.9370		23.80			5	12.5	4.6	.2380	●
0.9375	15/16	23.81			5	12.5	4.6	.2381	●
0.9409		23.90		1-8 UNC	5	12.5	4.6	.2390	●
0.9449		24.00	M27		5	12.5	4.7	.2400	●
0.9488		24.10	MJ25x1		5	12.5	4.7	.2410	●
0.9528		24.20			5	12.5	4.7	.2420	●
0.9567		24.30			5	12.5	4.7	.2430	●
0.9606		24.40			5	12.5	4.7	.2440	●
0.9646		24.50	M26x1.5 / G3/4		5	12.5	4.8	.2450	●
0.9685		24.60	MJ26x1.5		5	12.5	4.8	.2460	●
0.9688	31/32	24.61			5	12.5	4.8	.2461	●
0.9724		24.70			5	12.5	4.8	.2470	●
0.9764		24.80			5	12.5	4.8	.2480	●
0.9803		24.90			5	12.5	4.8	.2490	●
0.9843		25.00	1 1/8-7 UNC		5	12.5	4.8	.2500	●
0.9882		25.10			5	12.5	4.9	.2510	●
0.9921		25.20			5	12.5	4.9	.2520	●
0.9961		25.30			5	12.5	4.9	.2530	●
1.0000		25.40	1 1/8-8 UN		5	12.5	4.9	.2540	●
1.0039		25.50	M27x1.5		5	12.5	4.9	.2550	●
1.0079		25.60	MJ27x1.5	M27	5	12.5	5.0	.2560	●
1.0098		25.65			5	12.5	5.0	.2565	●
1.0118		25.70			5	12.5	5.0	.2570	●
1.0157		25.80			5	12.5	5.0	.2580	●
1.0197		25.90			5	12.5	5.0	.2590	●
1.0236		26.00	M27x1 / M28x2		6	15	5.0	.2600	●
1.0276		26.10		M27x2	6	15	5.1	.2610	●
1.0315		26.20			6	15	5.1	.2620	●
1.0354		26.30			6	15	5.1	.2630	●
1.0394		26.40			6	15	5.1	.2640	●
1.0433		26.50	1 1/8-12 UNF		6	15	5.1	.2650	●
1.0469	1 3/64	26.59			6	15	5.2	.2659	●
1.0472		26.60	MJ28x1.5	M27x1	6	15	5.2	.2660	●
1.0512		26.70			6	15	5.2	.2670	●
1.0551		26.80			6	15	5.2	.2680	●
1.0591		26.90			6	15	5.2	.2690	●
1.0626	1 1/16	26.99			6	15	5.2	.2699	●
1.0630		27.00	M30x3		6	15	5.2	.2700	●
1.0669		27.10	MJ28x1		6	15	5.3	.2710	●
1.0709		27.20			6	15	5.3	.2720	●

Ordering Example: **TM003324.2260**

Solid Carbide Cutting Head



Carbide | TIALN T21 | R30 | 2 Flutes | 2FF | 140° | IT9-IT11

new

STEEL
Steel & Universal Applications

Applications – Material

P 1.1-5.1 M 1.1
K 1.1-4.2 N 1.4-5

Tool Identification

Nominal Size ø d_1 k8 inch	Fraction	mm	Taps	Roll Form Taps	Size of Insert Seat	mm l_1	mm l_5	Dimens. ID	TM003324 EF-Drill Modular STEEL AK-2FF TIALN-T21
1.0748		27.30			**6**	15	5.3	**.2730**	●
1.0787		27.40			**6**	15	5.3	**.2740**	●
1.0827		27.50			**6**	15	5.3	**.2750**	●
1.0866		27.60			**6**	15	5.3	**.2760**	●
1.0906		27.70			**6**	15	5.4	**.2770**	●
1.0937	1 3/32	27.78			**6**	15	5.4	**.2778**	●
1.0945		27.80			**6**	15	5.4	**.2780**	●
1.0984		27.90			**6**	15	5.4	**.2790**	●
1.1024		28.00	M30x2		**6**	15	5.4	**.2800**	●
1.1063		28.10			**6**	15	5.4	**.2810**	●
1.1102		28.20			**6**	15	5.5	**.2820**	●
1.1142		28.30			**6**	15	5.5	**.2830**	●
1.1181		28.40			**6**	15	5.5	**.2840**	●
1.1220		28.50	M30x1.5		**6**	15	5.5	**.2850**	●
1.1252	1 1/8	28.58			**6**	15	5.5	**.2858**	●
1.1260		28.60	MJ30x1.5	M30x3	**6**	15	5.5	**.2860**	●
1.1299		28.70			**6**	15	5.6	**.2870**	●
1.1339		28.80			**6**	15	5.6	**.2880**	●
1.1378		28.90			**6**	15	5.6	**.2890**	●
1.1417		29.00	M30x1		**6**	15	5.6	**.2900**	●
1.1457		29.10	MJ30x1	M30x2	**6**	15	5.6	**.2910**	●
1.1496		29.20			**6**	15	5.7	**.2920**	●
1.1535		29.30			**6**	15	5.7	**.2930**	●
1.1555		29.35		M30x1.5	**6**	15	5.7	**.2935**	●
1.1563	1 5/32	29.37			**6**	15	5.7	**.2937**	●
1.1575		29.40			**6**	15	5.7	**.2940**	●
1.1614		29.50	M33		**6**	15	5.7	**.2950**	●
1.1654		29.60		M30x1	**6**	15	5.7	**.2960**	●
1.1693		29.70			**6**	15	5.8	**.2970**	●
1.1732		29.80			**6**	15	5.8	**.2980**	●
1.1772		29.90			**6**	15	5.8	**.2990**	●
1.1811		30.00	M32x2 / M33x3		**7**	17	5.8	**.3000**	●
1.1850		30.10			**7**	17	5.8	**.3010**	●
1.1874	1 3/16	30.16			**7**	17	5.8	**.3016**	●
1.1890		30.20			**7**	17	5.8	**.3020**	●
1.1929		30.30			**7**	17	5.9	**.3030**	●
1.1969		30.40			**7**	17	5.9	**.3040**	●
1.2008		30.50	M32x1.5		**7**	17	5.9	**.3050**	●
1.2047		30.60	MJ32x1.5		**7**	17	5.9	**.3060**	●
1.2087		30.70			**7**	17	5.9	**.3070**	●
1.2126		30.80			**7**	17	6.0	**.3080**	●
1.2165		30.90			**7**	17	6.0	**.3090**	●
1.2189	1 7/32	30.96			**7**	17	6.0	**.3096**	●
1.2205		31.00	1 3/8-6 UNC		**7**	17	6.0	**.3100**	●
1.2244		31.10	MJ32x1		**7**	17	6.0	**.3110**	●
1.2283		31.20			**7**	17	6.0	**.3120**	●
1.2323		31.30			**7**	17	6.1	**.3130**	●
1.2362		31.40			**7**	17	6.1	**.3140**	●
1.2402		31.50	M33x1.5		**7**	17	6.1	**.3150**	●
1.2441		31.60		M33x3	**7**	17	6.1	**.3160**	●
1.2480		31.70			**7**	17	6.1	**.3170**	●
1.2500	1 1/4	31.75	1 3/8-8 UN		**7**	17	6.1	**.3175**	●
1.2520		31.80			**7**	17	6.2	**.3180**	●
1.2559		31.90			**7**	17	6.2	**.3190**	●
1.2598		32.00	M36		**7**	17	6.2	**.3200**	●

● = In stock
★ = Allow 7 days for delivery

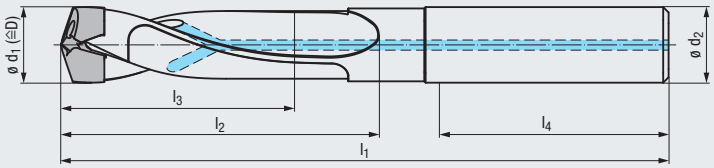
Metric Shank

R30
2 Flutes
2FF
DIN 6535 HA HE
IT9-IT10

new

new

Tool Body, Stub Length
Coolant Fed



Drill Depth

3 x D

Tool Identification											TM200000	TM500000
Nominal Size ø d_1 inch min.	inch max.	mm min.	mm max.	Size of Insert Seat	mm l_1	l_2	l_3	l_4	ø d_2 h6	Dimens. ID	EF-Drill Modular DIN 6535 HA 3 x D	EF-Drill Modular DIN 6535 HE 3 x D
0.5512	0.5705	14.00	14.49	2	124	65	43	48	16	.1400	●	★
0.5709	0.5902	14.50	14.99	2	125	67	45	48	16	.1450	●	★
0.5906	0.6295	15.00	15.99	2	129	72	48	48	16	.1500	●	★
0.6299	0.6689	16.00	16.99	3	136	76	51	48	18	.1600	●	★
0.6693	0.7083	17.00	17.99	3	139	81	54	48	18	.1700	●	★
0.7087	0.7476	18.00	18.99	3	147	85	57	50	20	.1800	●	★
0.7480	0.7870	19.00	19.99	4	150	90	60	50	20	.1900	●	★
0.7874	0.8264	20.00	20.99	4	165	94	63	56	25	.2000	●	★
0.8268	0.8657	21.00	21.99	4	169	99	66	56	25	.2100	●	★
0.8661	0.9051	22.00	22.99	5	173	103	69	56	25	.2200	●	★
0.9055	0.9445	23.00	23.99	5	177	108	72	56	25	.2300	●	★
0.9449	0.9839	24.00	24.99	5	181	112	75	56	25	.2400	●	★
0.9843	1.0232	25.00	25.99	5	194	117	78	60	32	.2500	●	★
1.0236	1.0626	26.00	26.99	6	199	121	81	60	32	.2600	●	★
1.0630	1.1020	27.00	27.99	6	202	126	84	60	32	.2700	●	★
1.1024	1.1413	28.00	28.99	6	207	130	87	60	32	.2800	●	★
1.1417	1.1807	29.00	29.99	6	210	135	90	60	32	.2900	●	★
1.1811	1.2201	30.00	30.99	7	215	139	93	60	32	.3000	●	★
1.2205	1.2594	31.00	31.99	7	218	144	96	60	32	.3100	●	★
1.2598	1.2988	32.00	32.99	7	223	148	99	60	32	.3200	●	★

Delivery: without solid carbide cutting head, with Torx screws

Solid carbide cutting heads, see page 406 - 409

Screwdriver

Size of Insert Seat	Size	Blade Diameter	Article no.	
2	Torx T7	2.5	TM919099	●
3	Torx T8	3.5	TM919199	●
4	Torx T8	3.5	TM919199	●
5	Torx T9	4	TM919299	●
6	Torx T15	4	TM919399	●
7	Torx T15	4	TM919399	●

Clamping Screw

Size of Insert Seat	Size	M_d max.	Article no.	
2	M2.2 x 6 x Torx T7	0.60 Nm	TM909090.0600	●
3	M2.5 x 6.5 x Torx T8	0.88 Nm	TM909191.0650	●
4	M3 x 7.5 x Torx T8	1.53 Nm	TM909192.0750	●
5	M3.5 x 8.5 x Torx T9	2.44 Nm	TM909293.0850	●
6	M4 x 10 x Torx T15	3.66 Nm	TM909394.1000	●
7	M4.5 x 11 x Torx T15	5.22 Nm	TM909395.1100	●

Ordering Example: **TM200000.1400**

Metric Shank

R30

2 Flutes

2FF

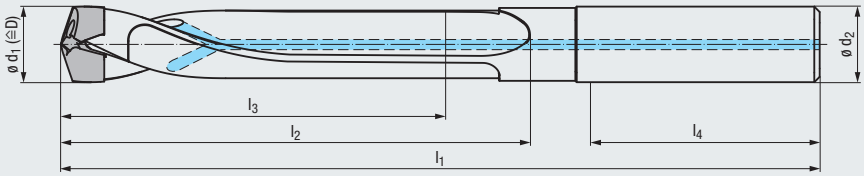
DIN 6535 HA HE

IT10-IT11

new

new

Tool Body, Standard Length
Coolant Fed



Drill Depth **5 x D**

3 x D
5 x D
6 x D
8 x D
2-3.5 x D

Tool Identification												TM210000	TM510000
Nominal Size ø d_1 inch min.	inch max.	mm min.	mm max.	Size of Insert Seat	mm l_1	l_2	l_3	l_4	ø d_2 h6	Dimens. ID		EF-Drill Modular DIN 6535 HA 5 x D	EF-Drill Modular DIN 6535 HE 5 x D
0.5512	0.5705	14.00	14.49	2	153	94	72	48	16	.1400		●	★
0.5709	0.5902	14.50	14.99	2	155	97	75	48	16	.1450		●	★
0.5906	0.6295	15.00	15.99	2	161	104	80	48	16	.1500		●	★
0.6299	0.6689	16.00	16.99	3	170	110	85	48	18	.1600		●	★
0.6693	0.7083	17.00	17.99	3	175	117	90	48	18	.1700		●	★
0.7087	0.7476	18.00	18.99	3	185	123	95	50	20	.1800		●	★
0.7480	0.7870	19.00	19.99	4	190	130	100	50	20	.1900		●	★
0.7874	0.8264	20.00	20.99	4	207	136	105	56	25	.2000		●	★
0.8268	0.8657	21.00	21.99	4	213	143	110	56	25	.2100		●	★
0.8661	0.9051	22.00	22.99	5	219	149	115	56	25	.2200		●	★
0.9055	0.9445	23.00	23.99	5	225	156	120	56	25	.2300		●	★
0.9449	0.9839	24.00	24.99	5	231	162	125	56	25	.2400		●	★
0.9843	1.0232	25.00	25.99	5	246	169	130	60	32	.2500		●	★
1.0236	1.0626	26.00	26.99	6	253	175	135	60	32	.2600		●	★
1.0630	1.1020	27.00	27.99	6	258	182	140	60	32	.2700		●	★
1.1024	1.1413	28.00	28.99	6	265	188	145	60	32	.2800		●	★
1.1417	1.1807	29.00	29.99	6	270	195	150	60	32	.2900		●	★
1.1811	1.2201	30.00	30.99	7	277	201	155	60	32	.3000		●	★
1.2205	1.2594	31.00	31.99	7	282	208	160	60	32	.3100		●	★
1.2598	1.2988	32.00	32.99	7	289	214	165	60	32	.3200		●	★

Delivery: without solid carbide cutting head, with Torx screws

Solid carbide cutting heads, see page 406 - 409

Screwdriver

Size of Insert Seat	Size	Blade Diameter	Article no.	
2	Torx T7	2.5	TM919099	●
3	Torx T8	3.5	TM919199	●
4	Torx T8	3.5	TM919199	●
5	Torx T9	4	TM919299	●
6	Torx T15	4	TM919399	●
7	Torx T15	4	TM919399	●

Clamping Screw

Size of Insert Seat	Size	M_d max.	Article no.	
2	M2.2 x 6 x Torx T7	0.60 Nm	TM909090.0600	●
3	M2.5 x 6.5 x Torx T8	0.88 Nm	TM909191.0650	●
4	M3 x 7.5 x Torx T8	1.53 Nm	TM909192.0750	●
5	M3.5 x 8.5 x Torx T9	2.44 Nm	TM909293.0850	●
6	M4 x 10 x Torx T15	3.66 Nm	TM909394.1000	●
7	M4.5 x 11 x Torx T15	5.22 Nm	TM909395.1100	●

● = In stock
★ = Allow 7 days for delivery

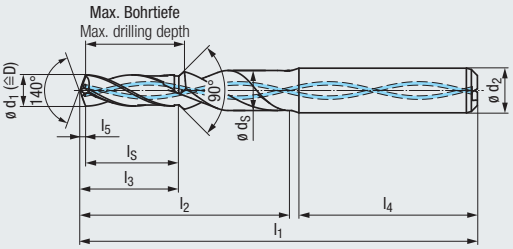
Metric Shank

Variable step length in millimeter steps

Carbide | TIALN T14 | ≈ DIN 6537 K | 2 Flutes | 4FF | 140° | IT8-IT10 | DIN 6535 HA

STEEL
Steel & Universal Applications

new



Applications – Material

P	1.1-5.1	M	1.1
K	1.1-4.2	N	1.1-5
N	2.1-8	H	1.1-2

Drill Depth **2 - 3.5 x D**

Tool Identification — TG203344

Nominal Size ø d_1 m7 inch	mm	Taps	Roll Form Taps	mm ø d_S	l_1	l_2	l_3 2 x D min. - 3.5 x D max.	l_4	l_5	l_S 2 x D min. - 3.5 x D max.	ø d_2 h6	Dimens.-Ident	EF-Drill C-STEEL HA IK-4FF TIALN-T14
0.1102	2.80	#6-32 UNC	M3	4	57	17	6.6 - 10.6	36	0.6	6 - 10	6	.028006 - .028010	●
0.1142	2.90	#6-32 UNJC	#5-40 UNC	4	57	18	6.6 - 10.6	36	0.6	6 - 10	6	.029006 - .029010	●
0.1280	3.25		M3.5	5	62	24	7.7 - 11.7	36	0.6	7 - 11	6	.032507 - .032511	●
0.1299	3.30	M4		5	62	24	7.7 - 12.7	36	0.7	7 - 12	6	.033007 - .033012	●
0.1457	3.70	M4.5	M4	5	62	24	7.8 - 13.8	36	0.7	7 - 13	6	.037007 - .037013	●
0.1654	4.20	M5 / STI-M4	M4.5	6	66	29	8.9 - 15.9	36	0.8	8 - 15	6	.042008 - .042015	●
0.1831	4.65	#12-24 UNJC	M5	6	66	29	9.9 - 16.9	36	0.9	9 - 16	6	.046509 - .046516	●
0.1969	5.00	M6	#12-24 UNC	7	79	40	11.0 - 19.0	36	1.0	10 - 18	8	.050010 - .050018	●
0.2205	5.60	1/4-32 UNEF	M6	7	79	40	12.1 - 21.1	36	1.1	11 - 20	8	.056011 - .056020	●
0.2362	6.00	M7 / Rd8x1/10		8	79	42	13.2 - 22.2	36	1.1	12 - 21	8	.060012 - .060021	●
0.2598	6.60	5/16-18 UNC	M7	8	89	45	14.3 - 24.3	40	1.3	13 - 23	10	.066013 - .066023	●
0.2677	6.80	M8 / G 1/16		9	89	46	15.4 - 25.4	40	1.3	14 - 24	10	.068014 - .068024	●
0.2756	7.00	5/16-24 UNJF		9	89	46	15.4 - 26.4	40	1.3	14 - 25	10	.070014 - .070025	●
0.2933	7.45		5/16-24 UNF / M8	9	89	46	16.5 - 27.5	40	1.4	15 - 26	10	.074515 - .074526	●
0.2992	7.60	Tr 9x1.5	M8x1 / STI-M8	9	89	46	16.5 - 28.5	40	1.4	15 - 27	10	.076015 - .076027	●
0.3071	7.80	M9		10	89	48	17.5 - 28.5	40	1.5	16 - 27	10	.078016 - .078027	●
0.3327	8.45		M9	12	102	56	18.7 - 31.7	45	1.6	17 - 30	12	.084517 - .084530	●
0.3346	8.50	3/8-24 UNF / M10		12	102	56	18.7 - 31.7	45	1.6	17 - 30	12	.085017 - .085030	●
0.3543	9.00	M10x1		12	102	56	19.8 - 33.8	45	1.7	18 - 32	12	.090018 - .090032	●
0.3681	9.35		M10	12	102	56	20.8 - 34.8	45	1.8	19 - 33	12	.093519 - .093533	●
0.3740	9.50	7/16-14 UNJC	STI-M10	12	102	56	20.9 - 34.9	45	1.8	19 - 33	12	.095019 - .095033	●
0.3780	9.60		M10x1	12	102	56	20.9 - 35.9	45	1.8	19 - 34	12	.096019 - .096034	●
0.4016	10.20	7/16-28 UNEF		14	107	61	22.0 - 38.0	45	1.9	20 - 36	14	.102020 - .102036	●
0.4075	10.35			14	107	61	23.0 - 38.0	45	1.9	21 - 36	14	.103521 - .103536	●
0.4134	10.50	M12x1.5		14	107	61	23.1 - 39.1	45	2.0	21 - 37	14	.105021 - .105037	●
0.4429	11.25	M12x0.75	M12	14	107	61	25.2 - 41.2	45	2.1	23 - 39	14	.112523 - .112539	●
0.4469	11.35	Pg 7	M12x1.5	14	107	61	25.2 - 42.2	45	2.1	23 - 40	14	.113523 - .113540	●
0.4724	12.00	M14		16	115	66	26.4 - 44.4	48	2.2	24 - 42	16	.120024 - .120042	●
0.4921	12.50	M14x1.5		16	115	66	27.4 - 46.4	48	2.3	25 - 44	16	.125025 - .125044	●
0.5157	13.10	STI-UNF 1/2-20	M14	16	115	66	28.6 - 48.6	48	2.4	26 - 46	16	.131026 - .131046	●
0.5256	13.35		M14x1.5	16	115	66	29.6 - 49.6	48	2.5	27 - 47	16	.133527 - .133547	●
0.5512	14.00	M16 / M15x1		18	123	74	30.7 - 51.7	48	2.6	28 - 49	18	.140028 - .140049	●
0.5709	14.50	5/8-18 UNF		18	123	74	31.8 - 53.8	48	2.7	29 - 51	18	.145029 - .145051	●
0.5945	15.10		M16	18	123	74	32.9 - 55.9	48	2.8	30 - 53	18	.151030 - .151053	●
0.6043	15.35			18	123	74	34.0 - 57.0	48	2.8	31 - 54	18	.153531 - .153554	●
0.6102	15.50	M18		20	131	80	34.0 - 57.0	50	2.9	31 - 54	20	.155031 - .155054	●

Visit EMUGE's EF-Drill C quick finder application at **www.emuge.com/products/drills/ef-c-drills** for a complete listing of stocked tap drill sizes.

Ordering Example: **TG203344.0280 07**

Drill diameter d_1 = 2.80 mm

Step length l_S = 7 mm

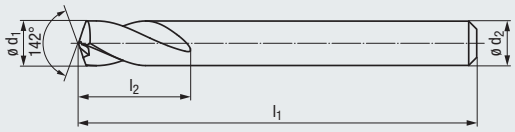
● = In stock
★ = Allow 7 days for delivery

Inch / Metric Shank

Carbide | TIALN T14 | 2 Flutes | ≈ ASME B94.19 | DIN 6535 HA

new

Pre-drill for 135° or 140° point carbide drill



Applications – Material

P	1.1-5.1	M	1.1-3.1	K	1.1-4.2
N	1.1-1.5	N	2.1-4.2	N	5.1
S	1.1, 2.2	S	2.4, 2.6	H	1.1

Point Angle **142°**

Tool Identification					EFUT3300	
Inch		inch				
ø d_1	ø d_2 h6	l_1	l_2	Dimens. ID		
1/8	1/8	2.00	0.75	.0317	●	
1/4	1/4	2.50	0.75	.0635	●	
3/8	3/8	3.00	1.00	.0952	●	
1/2	1/2	3.00	1.00	.1270	●	
5/8	5/8	4.00	1.25	.1587	●	
3/4	3/4	4.00	1.75	.1905	●	

Tool Identification					EFUT3300	
Metric	mm	inch				
ø d_1 mm	ø d_2 h6	l_1	l_2	Dimens. ID		
3	3	2.00	0.50	.0300	●	
4	4	2.25	0.75	.0400	●	
5	5	2.25	0.75	.0500	●	
6	6	2.25	0.75	.0600	●	
8	8	2.75	1.00	.0800	●	
10	10	2.88	1.00	.1000	●	
12	12	2.92	1.00	.1200	●	
16	16	4.00	1.00	.1600	●	

Ordering Example: **EFUT3300.0317**

Inch / Metric Shank

Carbide

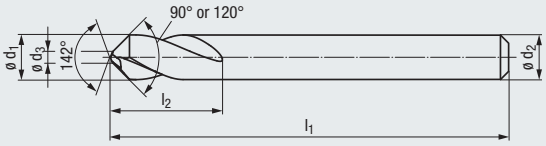
2 Flutes

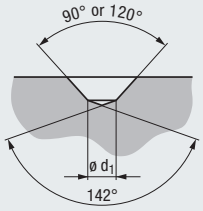
≈ ASME B94.19

DIN 6535 HA

EMUGE spot / chamfer drills are designed with a double angle that allows easy drill starts and perfect 90° or 120° degree chamfer angles. Extensive testing has shown superior cutting action at the tip angle with a 142° angle which is well suited for a wide range of materials. This double angle eliminates tip breakage that is sometimes associated with 90° or 120° spot drills.

- Double tip angle with short chisel edge reduces axial force requirement
- 142° entry point angle creates better chip flow
- Secondary 90° or 120° angle creates desired chamfer





new

new

Applications – Material

P	1.1-3.1	M	1.1-2.1	K	1.1-3.1
K	4.1-4.2	N	1.1-1.5	N	2.1-2.6
N	3.1-4.2	S	1.1	S	2.2

Double Angle: **90° / 142°** | **120° / 142°**

Product Finder
v_c / f
STEEL
VA
Accessories
Tech. Info
3 x D
5 x D
6 x D
8 x D
2-3.5 x D

Tool Identification						EFUT3100	EFUT3200
Inch ø d_1 inch	inch ø d_3	ø d_2	l_1	l_2	Dimens. ID		
1/8	0.034	1/8	2.00	0.75	.0317	●	
1/4	0.068	1/4	2.50	0.75	.0635	●	
3/8	0.101	3/8	3.00	1.00	.0952	●	
1/2	0.135	1/2	3.00	1.00	.1270	●	
5/8	0.169	5/8	4.00	1.25	.1587	●	
3/4	0.203	3/4	4.00	1.75	.1905	●	
1/8	0.029	1/8	2.00	0.75	.0317		●
1/4	0.059	1/4	2.50	0.75	.0635		●
3/8	0.089	3/8	3.00	1.00	.0952		●
1/2	0.118	1/2	3.00	1.00	.1270		●
5/8	0.148	5/8	4.00	1.25	.1587		●
3/4	0.177	3/4	4.00	1.75	.1905		●

Tool Identification						EFUT3100	EFUT3200
Metric ø d_1 mm	mm ø d_3	ø d_2	inch l_1	l_2	Dimens. ID		
3	0.81	3	2.00	0.50	.0300	●	
4	1.08	4	2.25	0.75	.0400	●	
5	1.35	5	2.25	0.75	.0500	●	
6	1.62	6	2.25	0.75	.0600	●	
8	2.16	8	2.75	1.00	.0800	●	
10	2.70	10	2.88	1.00	.1000	●	
12	3.25	12	2.92	1.00	.1200	●	
16	4.33	16	4.00	1.00	.1600	●	
3	0.71	3	2.00	0.50	.0300		●
4	0.95	4	2.25	0.75	.0400		●
5	1.18	5	2.25	0.75	.0500		●
6	1.42	6	2.25	0.75	.0600		●
8	1.89	8	2.75	1.00	.0800		●
10	2.36	10	2.88	1.00	.1000		●
12	2.84	12	2.92	1.00	.1200		●
16	3.78	16	4.00	1.00	.1600		●

● = In stock
★ = Allow 7 days for delivery

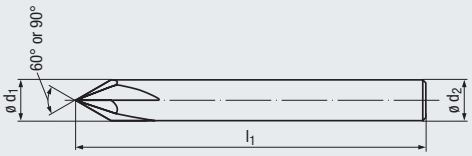
Inch Shank

- Multi-functional tool
- With 4 flutes
- Taper angle 60° or 90°

Carbide

TIALN

≈ ASME B94.19



new

new

Applications – Material

P 1.1-5.1 M 1.1-3.1 K 1.1-4.2
N 1.2-4.3 N 5.1-5.3 S 1.1-2.2

Point Angle: 60° | 90°

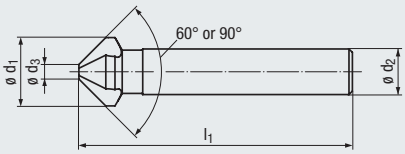
Tool Identification	inch				1715A	
ø d_1	ø d_2 h6	l_1	Flutes	Dimens. ID		
1/8	1/8	2.0	4	.060125	●	
1/4	1/4	2.5	4	.060250	●	
3/8	3/8	3.0	4	.060375	●	
1/2	1/2	3.0	4	.060500	●	
5/8	5/8	4.0	4	.060625	●	
1/8	1/8	2.0	4	.090125		●
1/4	1/4	2.5	4	.090250		●
3/8	3/8	3.0	4	.090375		●
1/2	1/2	3.0	4	.090500		●
5/8	5/8	4.0	4	.090625		●

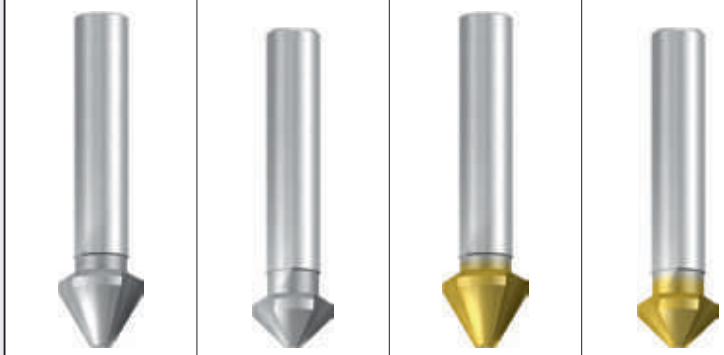
Ordering Example: **EFUT3300.0317**

Metric Shank

HSS

- Circumference radially and axially relieved
- Fully ground flutes
- Geometry for countersinks without chatter marks
- For deburring and counterboring drilled holes and tap holes
- Countersink for screw heads





Coating			TIN	
Applications – Material	P 1.1-3.1 M 1.1-2.1 K 1.1-3.1 K 4.1-4.2 N 1.1-1.5 N 2.1-2.6 N 3.1-4.2 S 1.1		P 1.1-4.1 M 1.1-2.1 K 1.1-3.1 K 4.1-4.2 N 1.1-1.5 N 2.1-2.6 N 3.1-4.2 S 1.1	
Chamfer Angle	60°	90°	60°	90°
Tool Identification	7550	7560	7550T	7560T

mm

ø d_1	ø d_3	l_1	ø d_2 h9	Flutes	Dimens. ID				
6.3	1.6	45	5	3	.060063	●		●	
8	2	50	6	3	.06008	●		●	
12.5	3.2	56	8	3	.060125	●		●	
16	4	63	10	3	.06016	●		●	
20	5	67	10	3	.06020	●		●	
25	6.3	71	10	3	.06025	●		●	
6	1.5	45	5	3	.09006		●		●
8	2	50	6	3	.09008		●		●
12.4	2.8	56	8	3	.090124		●		●
15	3.2	60	10	3	.09015		●		●
25	3.8	67	10	3	.09025		●		●

● = In stock
★ = Allow 7 days for delivery

FRANKEN Advanced Milling Technology

Complete milling solutions from EMUGE.
Visit **www.emuge.com** for additional information.

Technical Information

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5.1 Regrinding and recoating service

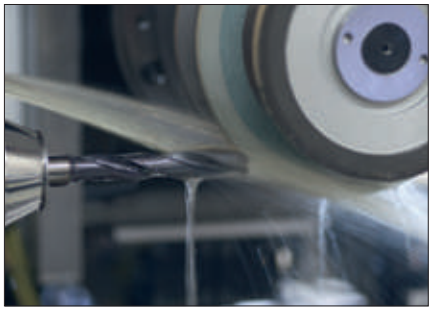
Regrinding and recoating form an essential contribution to the economically efficient use of drilling tools.

The EMUGE regrinding and recoating service guarantees the restoration of the original geometry and the original coating of the tool.

Customer

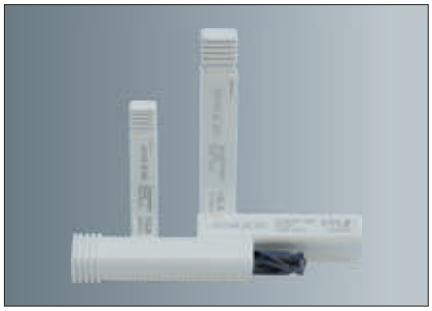
Transport

The tools can be sent either to EMUGE directly, or picked up by your local EMUGE sales contact. Our special TOOL BOX is available for that if you need it.



Regrinding and recoating

Before the actual refitting, the tools are checked carefully for their condition. If found suitable, the twist drills are resharpened on production machines, and subject to the same quality inspection as new tools.



Shipping

The reground and recoated drilling tools are returned after 2-3 weeks to the address specified by you, safely packed.

Customer

5.2 Typical chip forms

Start-of-drilling chip

This chip type is produced in the start of the drilling process, before the cutting corners are engaged.

Chamfer chip

This chip type is created in the production of the chamfer.

Optimal drilling chip

This chip type is created when the cutting data are chosen to perfection.

Step-drill chip

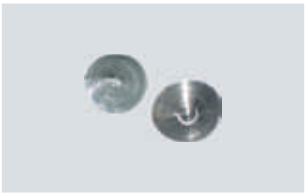
The length of this chip type can be controlled by means of dwell times in long-chipping material.

Drill-through chip

Note: There is need for increased space between workpiece and tool holder.

Hooked up chips

These chips are produced especially in long-chipping materials, or when cutting data are not optimally chosen. Single entangled chips are not such a big issue, but when the entanglement of the chips becomes permanent it will soon lead to chip clogging, and with it to drill breakage.



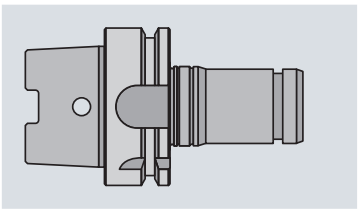
Drill-through slug

Note: There is need for increased space for chips and lid in drilling through!

Ribbon chip / flow chip

Note: When you observe this chip type, the drill already has serious damage on primary cutting edge and chisel edge! This means an end to tool life.

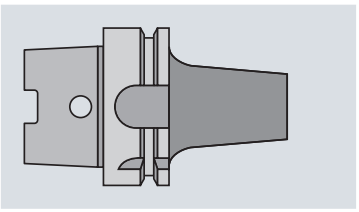
5.3 Tool clamping



Collet holders type PGR

Concentricity < 3 µm

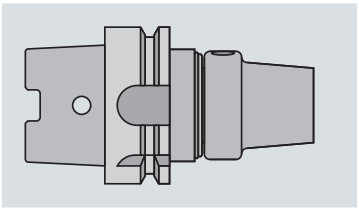
- Slender construction
- Reduced vibrations



Shrink-fit chucks

Concentricity < 3 µm

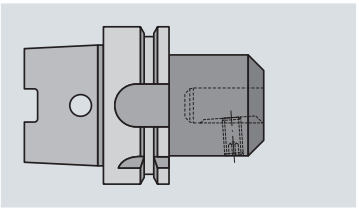
- Slender construction



Hydraulic expansion chucks

Concentricity < 3 µm

- Reduced vibrations

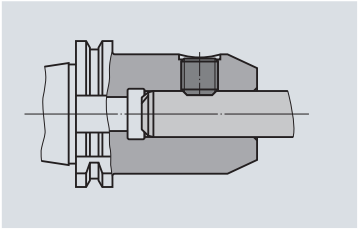


Tool holders for straight shanks with inclined clamping flat

Concentricity < 15 µm

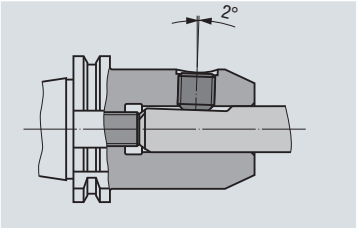
- Economically efficient

5.4 Differences in tool clamping with lateral driving flat and inclined clamping flat



Lateral driving flat

Clamping of tools with lateral driving flat acc. DIN 6535 HB resp. DIN 1835 B.This type of clamping has **no** axial support and is therefore **not** suitable for drilling operations.



Inclined clamping flat

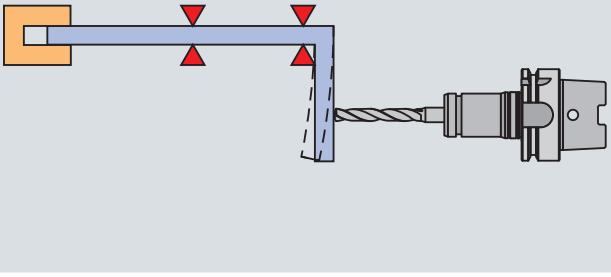
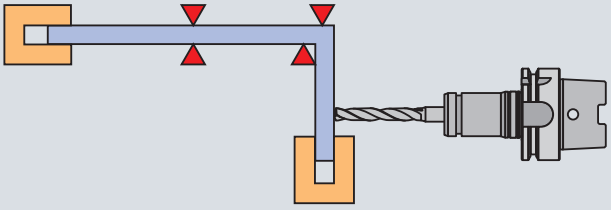
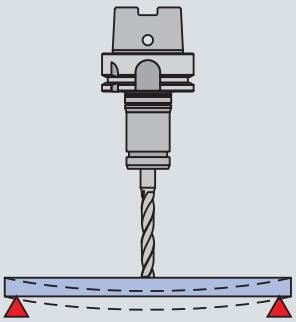
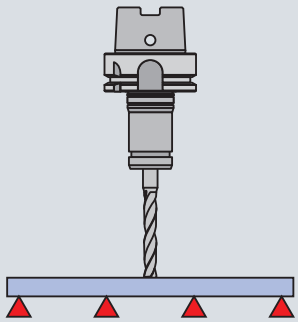
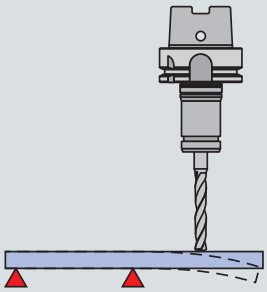
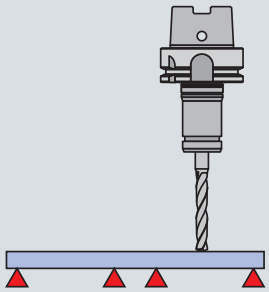
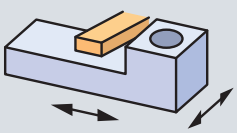
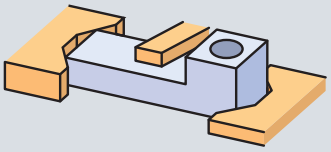
Clamping of tools with inclined clamping flat acc. DIN 6535 HE resp. DIN 1835 E.

5.5 Workpiece clamping

Basic conditions for the use of twist drills:

- The workpiece must be firmly supported, without a chance to bounce or bend
- Additional support points will help
- With thin-walled workpieces, feed must be reduced

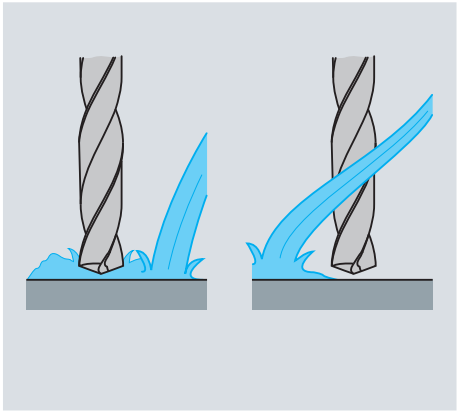
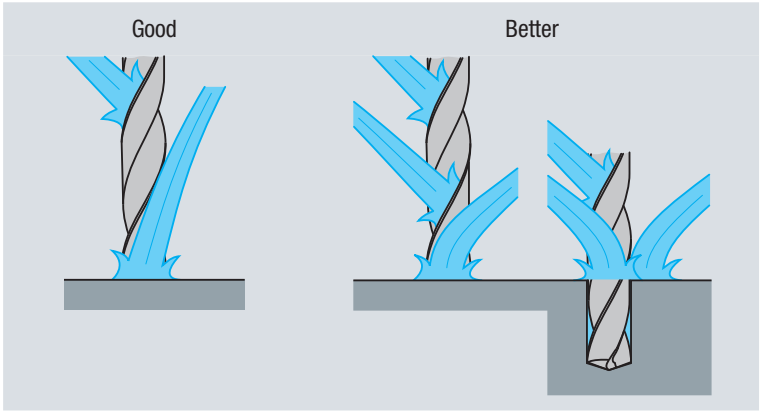
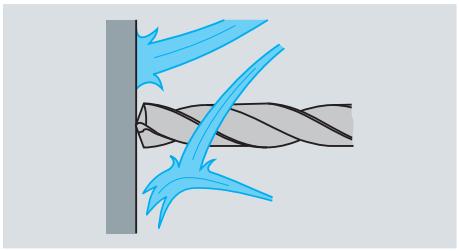
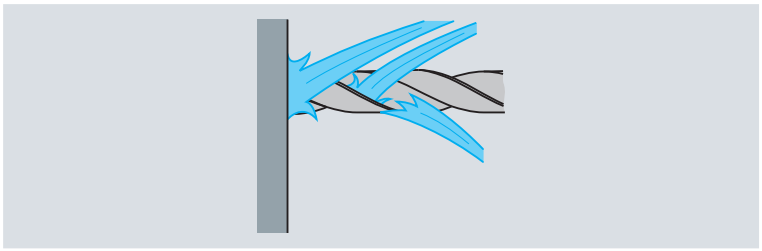
Solid carbide twist drills are extremely sensitive to bending stress!

Wrong workpiece clamping	Correct workpiece clamping
	
	
	
	

5.6 Coolant supply

Internal cooling is always to be recommended when drill depth exceeds 2 x D. From a drill depth of 5 x D, it is absolutely necessary.
With external cooling, make sure to provide not only sufficient coolant pressure but also the right type of supply.

Wherever possible, three coolant-lubricant jets should hit the twist drill directly.

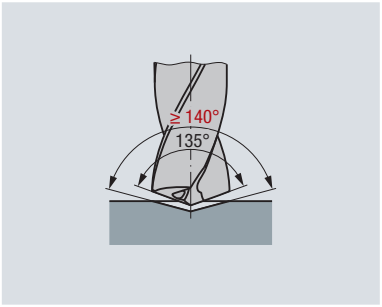
	Bad coolant supply	Good coolant supply
Vertical machining		
Horizontal machining		

5.7 Point angle

Centering and pilot hole

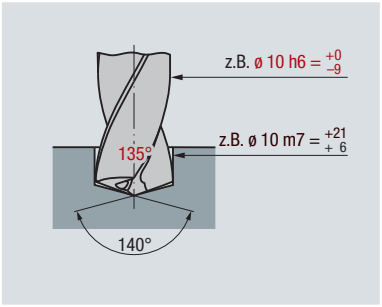
With large clamping-related extension lengths, it is necessary to provide either a centering or a pilot hole.

With tool lengths exceeding 8 x D, it is highly recommended to either start drilling with reduced feed, or to provide a centering or a pilot hole.



Centering

Please note that the point angle of the first, or preparatory drill must be larger than that of the subsequent drill.
We recommend our twist drills EF-Drill acc. DIN 6537 K.
The centering should not be deeper than the point length l_5.

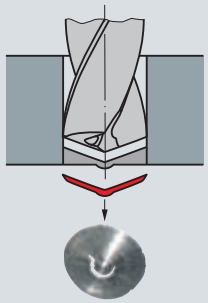


Pilot hole

A pilot hole is used for deep-hole drilling. Please note that the point angle and the diameter of the pilot drill must be larger than those of the subsequent drill.
For the pilot hole, a depth of 1 x D is sufficient.

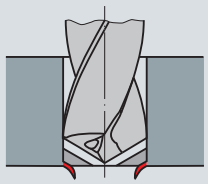
3 x D
5 x D
6 x D
8 x D
2-3.5 x D

5.8 Influence of the point angle



Standard point angle 140° (EF-Drill)

- Stable point
- Short chips
- Good centering
- Reduced power consumption
- Reduced torque
- Formation of slug
- Minimal burr formation
- Long tool life



Point angle 118°

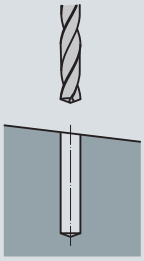
- Unstable point
- High torque
- High power consumption
- Unstable primary cutting edges
- Slug formation very much reduced
- Formation of burr during the exit of the drill

5.9 Reduce feed on angled entry / exit surfaces

The EMUGE double margin design provides excellent guiding ability that is especially effective in work with transverse holes or angled exits.

The EMUGE EF-Drill self-centers primarily by means of the chisel edge. With slanted, concave, convex or very rough entry surfaces, the tool is being deflected. That is why feed must be reduced in the first drilling stage.

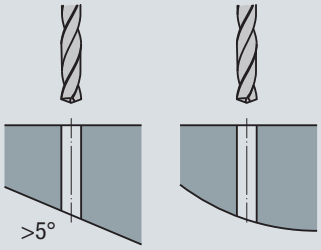
Angled entry surfaces



Feed must be reduced during the first drilling stage:

- DIN 6537 short (3 x d_1)
  - 1…2°: by 20%
  - 2…3°: by 40%
  - 3…4°: by 50%
  - 4…5°: by 70%
- DIN 6537 long (5 x d_1)
  - < 1°: by 30%
  - 1…2°: by 40%
  - 2…3°: by 50%

Angled or rounded exit surfaces



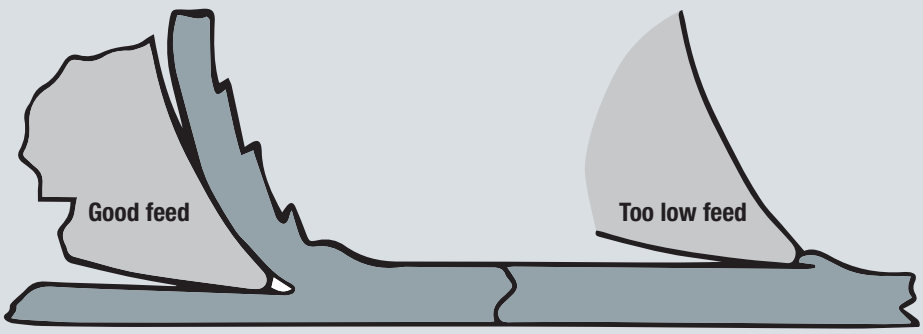
Feed must be reduced during the breaking through stage:

- For EF-Drill with single margin by 70%
- For EF-Drill with double margins by 50%

5.10 Proper edge preparation (honing)

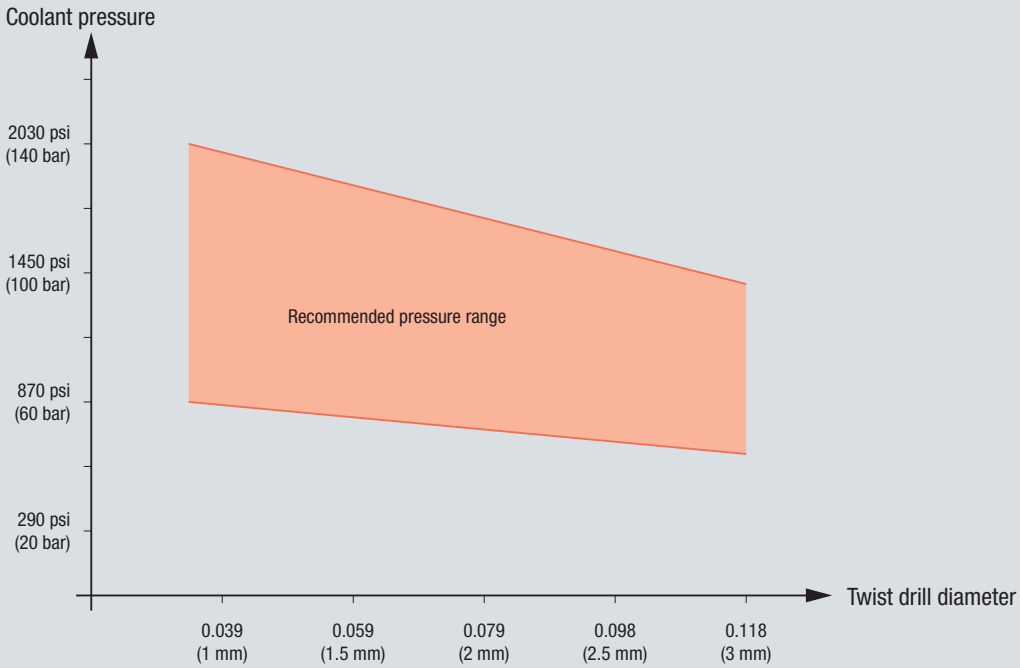
Every drill has an edge preparation (hone) which is in relation to the drill diameter and material to be cut.

The edge preparation is for stabilizing the cutting edge. The feed is in relation to the edge preparation and material.

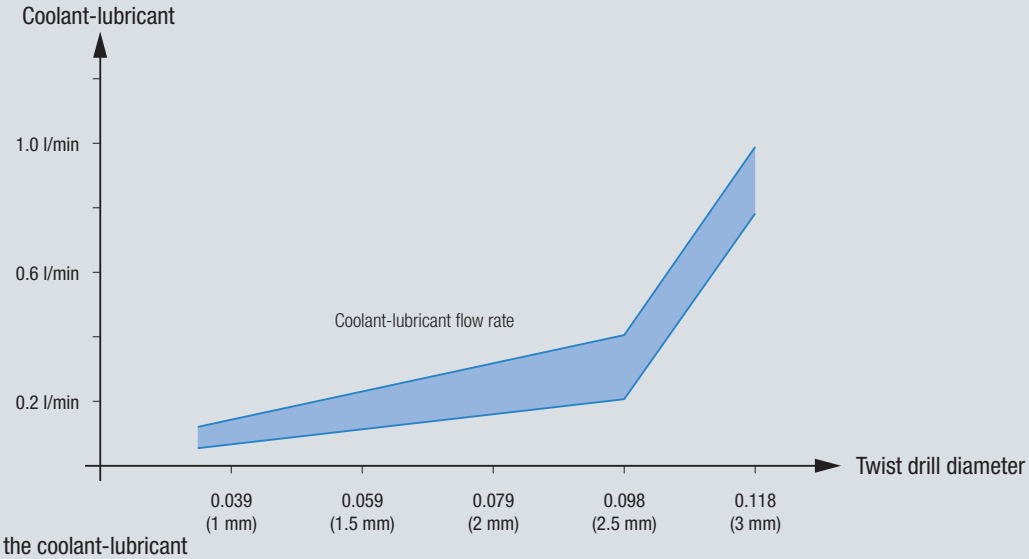


5.11 Technical information EF-Drill Micro

Recommended coolant pressure EF-Drill Micro



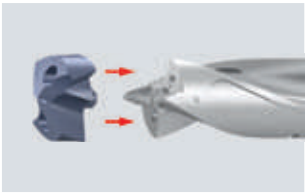
Coolant-lubricant flow rate EF-Drill Micro



Use a micro filter for the coolant-lubricant

5.12 Technical information EF-Drill Modular

Assembly of drill head into holder

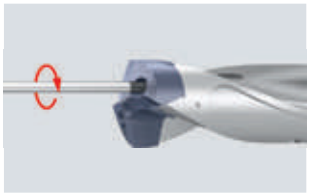


1. Insert the cutting head into the cleaned holder.

2. Turn the cutting head clockwise up to the stop.

3. Insert a screw into the mounting bore and tighten it gently.

4. Insert the second screw into the mounting bore and tighten it firmly.



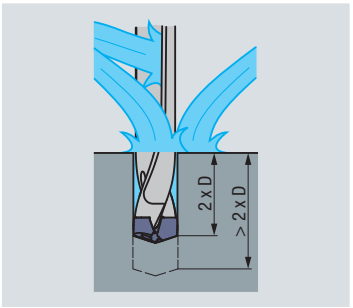
5. Tighten the first screw with the recommended torque.
Retighten the second screw with the recommended torque.

6. Tool completely assembled.

Tightening torques for clamping screws

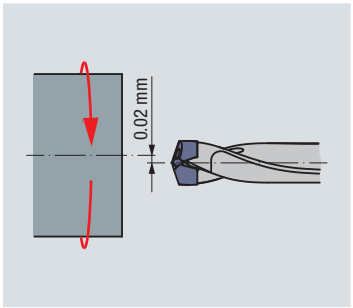
Size of insert seat	Size	Rec. tightening torque ft lbs	Nm
2	Torx T7	0.44	0.60
3	Torx T8	0.65	0.88
4	Torx T8	1.13	1.53
5	Torx T9	1.80	2.44
6	Torx T15	2.70	3.66
7	Torx T15	3.85	5.22

Machining condition

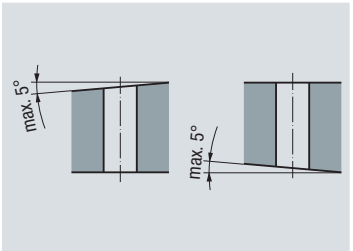


External cooling possible up to 2 x D.
From 2 x D drill in steps.

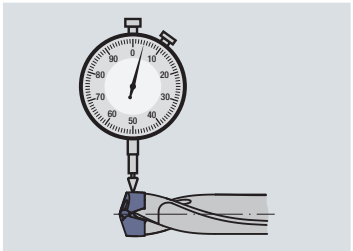
Internal cooling should always be preferred.
Recommended coolant pressure:
> 20 bar.



Maximum axle offset 0.02 mm.

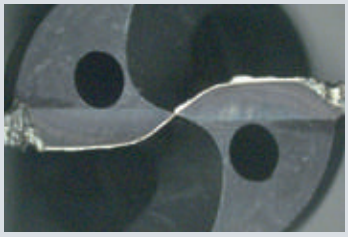


Slanting entering and exit ≤ 5°.



Maximum run-out < 0.04 mm.

5.13 Problems, possible causes and solutions in drilling



Problems:

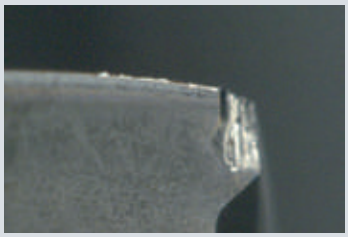
- Excessive wear on the corners
- Built-up edge
- Wear on the margins

Possible causes:

- Excessive machining times
- High temperature and/or friction
- Concentricity run-out > 0.02 mm
- Unstable clamping of workpiece or tool
- Coolant-lubricant too dry

Solutions:

- Exchange twist drill in time and regrind
- Increase coolant-lubricant volume
- Use coolant-lubricant with higher oil content, or additives
- Reduce cutting speed
- Reduce feed for drilling through



Problem:

- Chipping on the cutting corners

Possible causes:

- Excessive feed
- Workpiece moves when the drill breaks through
- Machine is unstable
- Twist drill slips due to unsatisfactory tool clamping
- Concentricity run-out > 0.02 mm

Solutions:

- Improve workpiece clamping
- Use a different clamping tool, e.g. clamping system PGR or hydraulic expansion chuck
- Reduce feed

Problem:

- Coating coming off on the margins

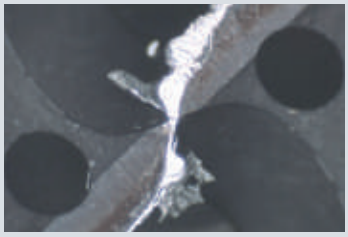
Possible causes:

- Excessive friction
- Slanted exit
- Adhesive workpiece material
- Reground too many times (excessive coating thickness)

Solutions:

- Use coolant-lubricant with higher oil content, or additives
- Reduce feed for exiting
- Reduce the number of times you regrind your drills

5.13 Problems, possible causes and solutions in drilling



Problem:

- Built-up edge on the primary cutting edge

Possible causes:

- Wrong cutting data
- Excessive wear on relief surfaces
- Damage on the cutting edges
- Bad coolant supply

Solutions:

- Use coolant-lubricant with higher oil content, or additives
- Increase cutting speed
- Reduce feed
- Exchange tools

Problem:

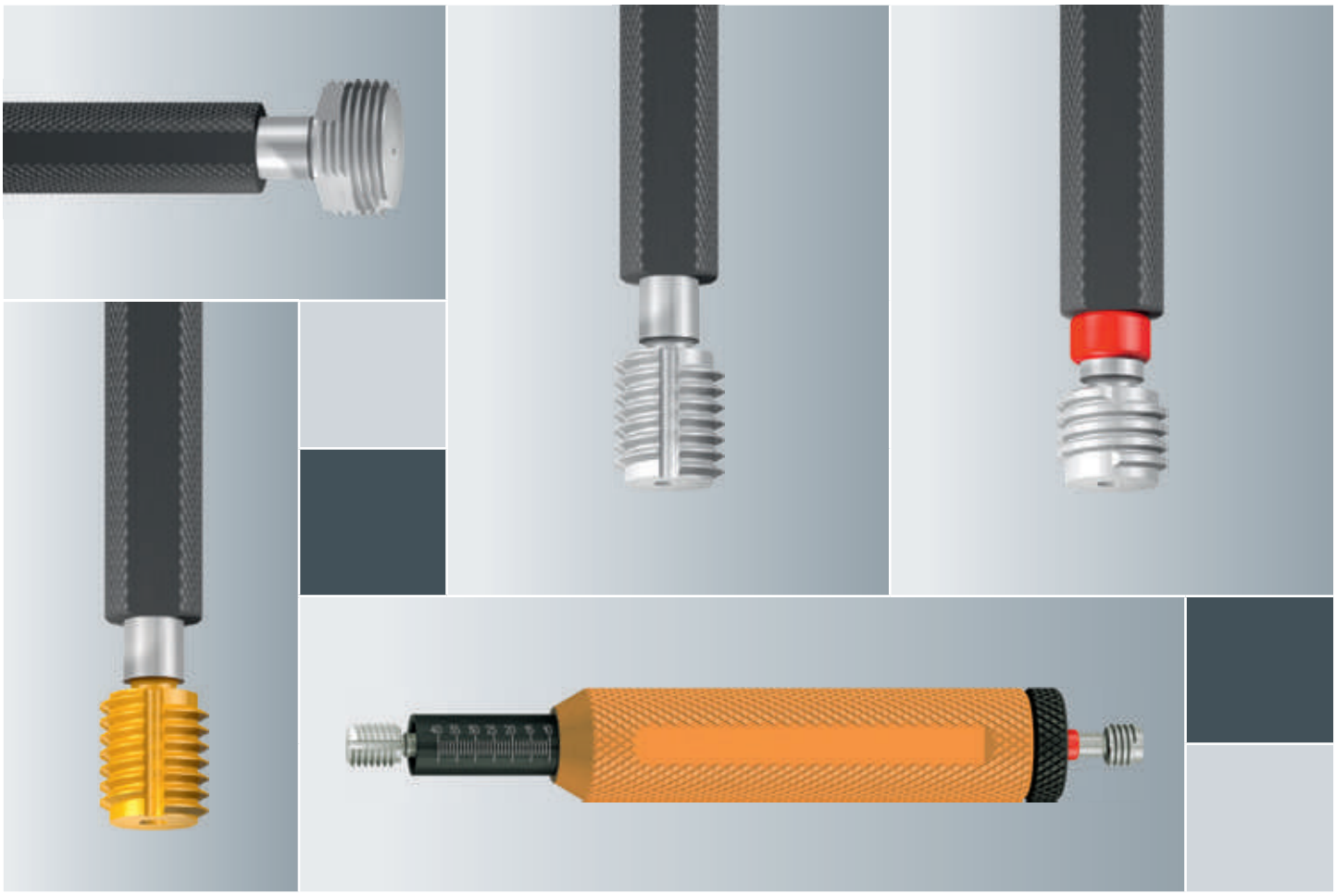
- Splintering on the chisel edge

Possible causes:

- Vibrations
- Concentricity run-out > 0.02 mm
- Rough or slanted workpiece surface

Solutions:

- Reduce feed
- Use a different clamping tool
- Improve workpiece surface (e.g. by spot-facing)



Thread Gages

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UNC

Unified Coarse Thread
ASME B1.1

Gage dimensions acc. ANSI/ASME B1.2

		Class of Fit	2B	**3B**	2B	2B
		Coating				
		Tool Identification	**L0100100**	**L0100110**	**L0120100**	**L0140100**
Nominal Size ø d_1	**T.P.I.**	**Dimens. ID**	**G-GR-LD**	**G-GR-LD**	**G-GUT-LD**	**G-AUS-LD**
No. 1	64	**.5000**	●		★	★
No. 2	56	**.5001**	●		★	★
No. 3	48	**.5002**	●		★	★
No. 4	40	**.5003**	●		★	★
No. 5	40	**.5004**	●		★	★
No. 6	32	**.5005**	●		★	★
No. 8	32	**.5006**	●		★	★
No. 10	24	**.5007**	●		★	★
No. 12	24	**.5008**	●		★	★
1/4	20	**.5009**	●		★	★
5/16	18	**.5010**	●		★	★
3/8	16	**.5011**	●	●	★	★
7/16	14	**.5012**	●	●	★	★
1/2	13	**.5013**	●	●	★	★
9/16	12	**.5014**	●	●	★	★
5/8	11	**.5015**	●	●	★	★
3/4	10	**.5016**	●	●	★	★
7/8	9	**.5017**	●		★	★
1	8	**.5018**	●		★	★
1 1/8	7	**.5019**	●		★	★
1 1/4	7	**.5020**	●		★	★
1 3/8	6	**.5021**	●		★	★
1 1/2	6	**.5022**	●		★	★
1 3/4	5	**.5023**			★	★
2	4 1/2	**.5024**			★	★

> ø 1 1/2 available only as separate plug gages (G-GUT-LD, G-AUS-LD)

Thread gages for UNEF and UN upon request

Short Form Certificate of Accuracy is furnished free with each gage,
Long Form Certificates are available upon request

Thread ring gages GO/NO-GO upon request

UNF

Unified Fine Thread
ASME B1.1

Gage dimensions acc. ANSI/ASME B1.2

		Class of Fit	2B	**3B**	2B	2B
		Coating				
		Tool Identification	**L0100100**	**L0100110**	**L0120100**	**L0140100**
Nominal Size ø d_1	**T.P.I.**	**Dimens. ID**	**G-GR-LD**	**G-GR-LD**	**G-GUT-LD**	**G-AUS-LD**
No. 0	80	**.5033**	●		★	★
No. 1	72	**.5034**	●		★	★
No. 2	64	**.5035**	●		★	★
No. 3	56	**.5036**	●		★	★
No. 4	48	**.5037**	●		★	★
No. 5	44	**.5038**	●		★	★
No. 6	40	**.5039**	●		★	★
No. 8	36	**.5040**	●		★	★
No. 10	32	**.5041**	●		★	★
No. 12	28	**.5042**	●		★	★
1/4	28	**.5043**	●		★	★
5/16	24	**.5044**	●		★	★
3/8	24	**.5045**	●	●	★	★
7/16	20	**.5046**	●	●	★	★
1/2	20	**.5047**	●	●	★	★
9/16	18	**.5048**	●	●	★	★
5/8	18	**.5049**	●	●	★	★
3/4	16	**.5050**	●	●	★	★
7/8	14	**.5051**	●		★	★
1	12	**.5052**	●		★	★
1 1/8	12	**.5053**	●		★	★
1 1/4	12	**.5054**	●		★	★
1 3/8	12	**.5055**	●		★	★
1 1/2	12	**.5056**	●		★	★

Short Form Certificate of Accuracy is furnished free with each gage,
Long Form Certificates are available upon request

Thread gages for UNEF and UN upon request

Thread ring gages GO/NO-GO upon request

● = In stock
★ = Allow 7 days for delivery

UNS

Unified Thread
ASME B1.1

Gage dimensions acc. ANSI/ASME B1.2

		Class of Fit	2B	**3B**		
		Coating				
		Tool Identification	**L0100100**	**L0100110**		
Nominal Size ø d_1	**T.P.I.**	**Dimens. ID**	**G-GR-LD**	**G-GR-LD**		
1	14	**.5404**	●	●		

Short Form Certificate of Accuracy is furnished free with each gage,
Long Form Certificates are available upon request

M

ISO Metric Coarse Thread
DIN 13

Gage dimensions acc. ASME B1.16M

Nominal Size ø d_1	P mm	Tool Identification	LU100100
		Dimens. ID	G-GR-LD
M 1.6	0.35	.0016	●
M 2	0.4	.0020	●
M 2.5	0.45	.0025	●
M 3	0.5	.0030	●
M 3.5	0.6	.0035	●
M 4	0.7	.0040	●
M 5	0.8	.0050	●
M 6	1	.0060	●
M 8	1.25	.0080	●
M 10	1.5	.0100	●
M 11	1.5	.0111	●
M 12	1.75	.0112	●
M 14	2	.0114	●
M 16	2	.0116	●
M 18	2.5	.0118	●
M 20	2.5	.0120	●
M 22	2.5	.0122	●
M 24	3	.0124	●
M 30	3.5	.0130	●
M 36	4	.0136	●

Class of Fit: 6H
Coating:

Short Form Certificate of Accuracy is furnished free with each gage,
Long Form Certificates are available upon request

Thread ring gages GO/NO-GO upon request

● = In stock
★ = Allow 7 days for delivery

M

ISO Metric Coarse Thread
DIN 13

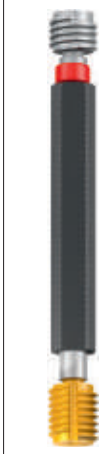
Gage dimensions acc. DIN ISO 1502

		Class of Fit	6H	6H	6H	**4H**	**4H**	**4H**
		Coating		TIN	CR		TIN	CR
		Tool Identification	**L0100100**	**L0105100**	**L0101100**	**L0100110**	**L0105110**	**L0101110**
Nominal Size ø d_1	**P mm**	**Dimens. ID**	**G-GR-LD**	**G-GR-LD TIN**	**G-GR-LD CR**	**G-GR-LD**	**G-GR-LD TIN**	**G-GR-LD CR**
M 1	0.25	**.0010**	★*)					
M 1.1	0.25	**.0011**	★*)					
M 1.2	0.25	**.0012**	★*)					
M 1.4	0.3	**.0014**	★*)					
M 1.6	0.35	**.0016**	★					
M 1.7	0.35	**.0017**	★					
M 1.8	0.35	**.0018**	★					
M 2	0.4	**.0020**	★			★	upon	upon
M 2.2	0.45	**.0022**	★			★		
M 2.3	0.4	**.0023**	★				request	request
M 2.5	0.45	**.0025**	★			★		
M 2.6	0.45	**.0026**	★					
M 3	0.5	**.0030**	★	★	★	★		
M 3.5	0.6	**.0035**	★			★		
M 4	0.7	**.0040**	★	★	★	★		
M 4.5	0.75	**.0045**	★					
M 5	0.8	**.0050**	★	★	★	★		
M 6	1	**.0060**	★	★	★	★		
M 7	1	**.0070**	★					
M 8	1.25	**.0080**	★	★	★	★		
M 9	1.25	**.0090**	★					
M 10	1.5	**.0100**	★	★	★	★		
M 11	1.5	**.0111**	★					
M 12	1.75	**.0112**	★	★	★	★		
M 14	2	**.0114**	★	★	★	★		
M 16	2	**.0116**	★	★	★	★		
M 18	2.5	**.0118**	★			★		
M 20	2.5	**.0120**	★	★	★	★		
M 22	2.5	**.0122**	★			★		
M 24	3	**.0124**	★	★	★	★		
M 27	3	**.0127**	★					
M 30	3.5	**.0130**	★					
M 33	3.5	**.0133**	★					
M 36	4	**.0136**	★					
M 39	4	**.0139**	★					
M 42	4.5	**.0142**						
M 45	4.5	**.0145**						
M 48	5	**.0148**						
M 52	5	**.0152**						
M 56	5.5	**.0156**						
M 60	5.5	**.0160**						
M 64	6	**.0164**						
M 68	6	**.0168**						

*) ≤ M1.4 Class of Fit "5H"

Short Form Certificate of Accuracy is furnished free with each gage,
Long Form Certificates are available upon request

Ordering Example: **L0100100.0010**



6G	6G TIN	6G CR	6E	6H LH	6H	6H TIN	6H CR	6H	Class of Fit Coating
L0100120	L0105120	L0101120	L0100130	L0100150	L0120100	L0125100	L0121100	L0140100	
G-GR-LD	G-GR-LD TIN	G-GR-LD CR	G-GR-LD	G-GR-LD LH	G-GUT-LD	G-GUT-LD TIN	G-GUT-LD CR	G-AUS-LD	Nominal Size ø d_1 / P mm
					★*)			★*)	M 1 0.25
					★*)			★*)	M 1.1 0.25
					★*)			★*)	M 1.2 0.25
					★*)			★*)	M 1.4 0.3
					★			★	M 1.6 0.35
					★			★	M 1.7 0.35
					★			★	M 1.8 0.35
★	upon	upon		★	★			★	M 2 0.4
★				★	★			★	M 2.2 0.45
	request	request		★	★			★	M 2.3 0.4
★				★	★			★	M 2.5 0.45
				★	★			★	M 2.6 0.45
★			★	★	★	★	★	★	M 3 0.5
★				★	★			★	M 3.5 0.6
★			★	★	★	★	★	★	M 4 0.7
					★			★	M 4.5 0.75
★			★	★	★	★	★	★	M 5 0.8
★			★	★	★	★	★	★	M 6 1
				★	★			★	M 7 1
★			★	★	★	★	★	★	M 8 1.25
					★			★	M 9 1.25
★			★	★	★	★	★	★	M 10 1.5
					★			★	M 11 1.5
★				★	★	★	★	★	M 12 1.75
★				★	★	★	★	★	M 14 2
★				★	★	★	★	★	M 16 2
★				★	★			★	M 18 2.5
★				★	★	★	★	★	M 20 2.5
★				★	★			★	M 22 2.5
★				★	★	★	★	★	M 24 3
					★			★	M 27 3
					★			★	M 30 3.5
					★			★	M 33 3.5
					★			★	M 36 4
					★			★	M 39 4
					★			★	M 42 4.5
					★			★	M 45 4.5
					★			★	M 48 5
					★			★	M 52 5
					★			★	M 56 5.5
					★			★	M 60 5.5
					★			★	M 64 6
					★			★	M 68 6

> ø 40 mm available only as separate plug gages (G-GUT-LD, G-AUS-LD)

Thread ring gages GO/NO-GO upon request

●= In stock
★= Allow 7 days for delivery

Product Finder
UNC
UNF
UNS
M
MF
G (BSP)
Rp, R, Rc
NPT
NPTF
STI
SELF-LOCK
Smooth
GT, TD
Accessories
Calibration
Tech. Info

MF

ISO Metric Fine Thread
DIN 13

Gage dimensions acc. ASME B1.16M

			Class of Fit	6H					
			Coating						
			Tool Identification	**LU100100**					
Nominal Size ø d_1		**P mm**	**Dimens. ID**	**G-GR-LD**					
M 5	x	0.5	**.0218**	●					
M 6	x	0.75	**.0229**	●					
M 8	x	0.75	**.0250**	●					
M 8	x	1	**.0251**	●					
M 10	x	1	**.0276**	●					
M 10	x	1.25	**.0277**	●					
M 12	x	1.25	**.0302**	●					
M 12	x	1.5	**.0303**	●					
M 14	x	1.5	**.0331**	●					
M 15	x	1.5	**.0345**	●					
M 16	x	1.5	**.0359**	●					
M 18	x	1.5	**.0390**	●					
M 20	x	1.5	**.0422**	●					
M 22	x	1.5	**.0438**	●					

Short Form Certificate of Accuracy is furnished free with each gage,
Long Form Certificates are available upon request

Thread ring gages GO/NO-GO upon request

● = In stock
★ = Allow 7 days for delivery

MF

ISO Metric Fine Thread
DIN 13

Gage dimensions acc. DIN ISO 1502

	Class of Fit	6H	6H	6H	4H	6G	6H	4H	6G
	Coating		TIN	CR					
							LH	LH	LH
	Tool Identification	L0100100	L0105100	L0101100	L0100110	L0100120	L0100150	L0100160	L0100170
ø d_1 mm	P mm	Dimens. ID	G-GR-LD	G-GR-LD TIN 1)	G-GR-LD CR 1)	G-GR-LD	G-GR-LD	G-GR-LD LH	G-GR-LD LH	G-GR-LD LH
M 2	x 0.25	.0186				★				
M 2.2	x 0.25	.0189				★				
M 2.3	x 0.25	.0192				★				
M 2.5	x 0.35	.0196	★							
M 2.6	x 0.35	.0199	★							
M 3	x 0.35	.0202	★					★		
M 3.5	x 0.35	.0205	★					★		
M 4	x 0.35	.0209	★					★		
M 4	x 0.5	.0210	★			★	★	★		
M 4.5	x 0.5	.0214	★							
M 5	x 0.5	.0218	★			★	★	★		
M 6	x 0.5	.0228	★			★	★	★		
M 6	x 0.75	.0229	★			★	★	★		
M 7	x 0.75	.0239	★							
M 8	x 0.5	.0249	★							
M 8	x 0.75	.0250	★			★	★	★		
M 8	x 1	.0251	★	★	★	★	★	★	★	★
M 9	x 1	.0263	★			★	★	★	★	★
M 10	x 0.75	.0275	★							
M 10	x 1	.0276	★	★	★	★	★	★	★	★
M 10	x 1.25	.0277	★			★	★			
M 11	x 1	.0288	★			★	★	★	★	★
M 12	x 1	.0301	★	★	★	★	★	★	★	★
M 12	x 1.25	.0302	★							
M 12	x 1.5	.0303	★	★	★	★	★	★	★	★
M 13	x 1	.0315	★			★	★	★	★	★
M 13	x 1.5	.0317	★			★	★	★	★	★
M 14	x 1	.0329	★			★	★	★	★	★
M 14	x 1.25	.0330	★							
M 14	x 1.5	.0331	★	★	★	★	★	★	★	★
M 15	x 1	.0343	★			★	★	★	★	★
M 15	x 1.5	.0345	★			★	★	★	★	★
M 16	x 1	.0357	★			★	★	★	★	★
M 16	x 1.5	.0359	★	★	★	★	★	★	★	★
M 17	x 1	.0372	★			★	★	★	★	★
M 17	x 1.5	.0374	★			★	★	★	★	★
M 18	x 1	.0388	★			★	★	★	★	★
M 18	x 1.5	.0390	★	★	★	★	★	★	★	★
M 18	x 2	.0391	★							
M 19	x 1	.0404	★			★	★	★	★	★
M 20	x 1	.0420	★			★	★	★	★	★
M 20	x 1.5	.0422	★	★	★	★	★	★	★	★
M 20	x 2	.0423	★			★	★	★	★	★
M 21	x 1	.0428	★			★	★	★	★	★
M 22	x 1	.0436	★			★	★	★	★	★
M 22	x 1.5	.0438	★			★	★	★	★	★
M 22	x 2	.0439	★			★	★	★	★	★
M 23	x 1	.0443	★			★	★	★	★	★
M 24	x 1	.0450	★			★	★	★	★	★
M 24	x 1.5	.0452	★			★	★	★	★	★
M 24	x 2	.0453	★			★	★	★	★	★

Ordering Example: **L0100100.0186**

MF

ISO Metric Fine Thread
DIN 13

Gage dimensions acc. DIN ISO 1502

Class of Fit	6H	6H	6H	4H	6G	6H	4H	6G
Coating		TIN	CR					
						LH	LH	LH
Tool Identification	**L0100100**	**L0105100**	**L0101100**	**L0100110**	**L0100120**	**L0100150**	**L0100160**	**L0100170**
ø d_1 mm **P mm** **Dimens. ID**	**G-GR-LD**	**G-GR-LD TIN** 1)	**G-GR-LD CR** 1)	**G-GR-LD**	**G-GR-LD**	**G-GR-LD LH**	**G-GR-LD LH**	**G-GR-LD LH**
M 25 x 1 .0456	★			★	★	★	★	★
M 25 x 1.5 .0458	★			★	★	★	★	★
M 25 x 2 .0459	★			★	★	★	★	★
M 26 x 1 .0462	★			★	★	★	★	★
M 26 x 1.5 .0464	★			★	★	★	★	★
M 26 x 2 .0465	★			★	★	★	★	★
M 27 x 1 .0468	★			★	★	★	★	★
M 27 x 1.5 .0470	★			★	★	★	★	★
M 27 x 2 .0471	★			★	★	★	★	★
M 28 x 1 .0474	★			★	★	★	★	★
M 28 x 1.5 .0476	★			★	★	★	★	★
M 28 x 2 .0477	★			★	★	★	★	★
M 30 x 1 .0488	★			★	★	★	★	★
M 30 x 1.5 .0490	★			★	★	★	★	★
M 30 x 2 .0491	★			★	★	★	★	★
M 30 x 3 .0492	★			★	★	★	★	★
M 32 x 1 .0502	★			★	★	★	★	★
M 32 x 1.5 .0504	★			★	★	★	★	★
M 32 x 2 .0505	★			★	★	★	★	★
M 33 x 1 .0509	★			★	★	★	★	★
M 33 x 1.5 .0511	★			★	★	★	★	★
M 33 x 2 .0512	★			★	★	★	★	★
M 33 x 3 .0513	★			★	★	★	★	★
M 34 x 1 .0516	★			★	★	★	★	★
M 34 x 1.5 .0518	★			★	★	★	★	★
M 34 x 2 .0519	★			★	★	★	★	★
M 35 x 1 .0523	★			★	★	★	★	★
M 35 x 1.5 .0525	★			★	★	★	★	★
M 35 x 2 .0526	★			★	★	★	★	★
M 36 x 1 .0530	★			★	★	★	★	★
M 36 x 1.5 .0532	★			★	★	★	★	★
M 36 x 2 .0533	★			★	★	★	★	★
M 36 x 3 .0534	★			★	★	★	★	★
M 38 x 1 .0544	★			★	★	★	★	★
M 38 x 1.5 .0546	★			★	★	★	★	★
M 38 x 2 .0547	★			★	★	★	★	★
M 39 x 1 .0551	★			★	★	★	★	★
M 39 x 1.5 .0553	★			★	★	★	★	★
M 39 x 2 .0554	★			★	★	★	★	★
M 39 x 3 .0555	★			★	★	★	★	★
M 40 x 1 .0558	★			★	★	★	★	★
M 40 x 1.5 .0560	★			★	★	★	★	★
M 40 x 2 .0561	★			★	★	★	★	★
M 40 x 3 .0562	★			★	★	★	★	★

> ø 40 mm available only as separate plug gages (G-GUT-LD, G-AUS-LD), see page 442 - 449

1) Class of Fit "4H" and "6G" upon request

Short Form Certificate of Accuracy is furnished free with each gage,
Long Form Certificates are available upon request

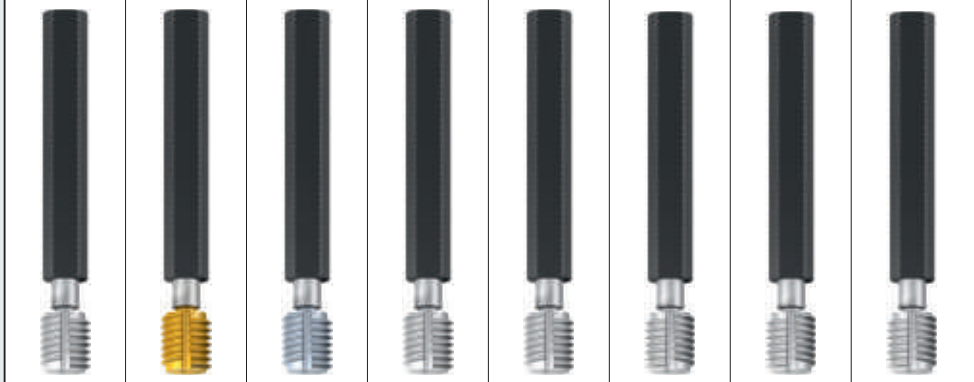
Thread ring gages GO/NO-GO upon request

● = In stock
★ = Allow 7 days for delivery

MF

ISO Metric Fine Thread
DIN 13

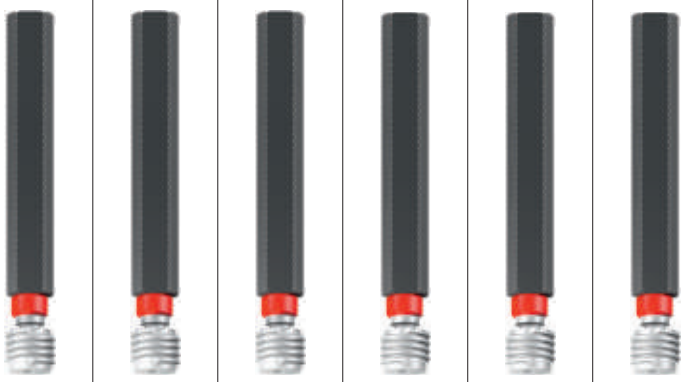
Gage dimensions acc. DIN ISO 1502



Class of Fit		6H	6H	6H	4H	6G	6H	4H	6G
Coating			TIN	CR					
							LH	LH	LH
	Tool Identification	L0120100	L0125100	L0121100	L0120110	L0120120	L0120150	L0120160	L0120170
ø d_1 mm	P mm	Dimens. ID	G-GUT-LD	G-GUT-LD TIN	G-GUT-LD CR	G-GUT-LD	G-GUT-LD	G-GUT-LD LH	G-GUT-LD LH	G-GUT-LD LH
M 2	x 0.25	.0186								
M 2.2	x 0.25	.0189								
M 2.3	x 0.25	.0192								
M 2.5	x 0.35	.0196	★							
M 2.6	x 0.35	.0199	★							
M 3	x 0.35	.0202	★							
M 3.5	x 0.35	.0205	★							
M 4	x 0.35	.0209	★							
M 4	x 0.5	.0210	★							
M 4.5	x 0.5	.0214	★							
M 5	x 0.5	.0218	★							
M 6	x 0.5	.0228	★							
M 6	x 0.75	.0229	★							
M 7	x 0.75	.0239	★							
M 8	x 0.5	.0249	★							
M 8	x 0.75	.0250	★							
M 8	x 1	.0251	★	★	★	★	★	★	★	★
M 9	x 1	.0263	★			★	★	★	★	★
M 10	x 0.75	.0275	★							
M 10	x 1	.0276	★	★	★	★	★	★	★	★
M 10	x 1.25	.0277	★							
M 11	x 1	.0288	★			★	★	★	★	★
M 12	x 1	.0301	★	★	★	★	★	★	★	★
M 12	x 1.25	.0302	★							
M 12	x 1.5	.0303	★	★	★	★	★	★	★	★
M 13	x 1	.0315	★			★	★	★	★	★
M 13	x 1.5	.0317	★			★	★	★	★	★
M 14	x 1	.0329	★			★	★	★	★	★
M 14	x 1.25	.0330	★							
M 14	x 1.5	.0331	★	★	★	★	★	★	★	★
M 15	x 1	.0343	★			★	★	★	★	★
M 15	x 1.5	.0345	★			★	★	★	★	★
M 16	x 1	.0357	★			★	★	★	★	★
M 16	x 1.5	.0359	★	★	★	★	★	★	★	★
M 17	x 1	.0372	★			★	★	★	★	★
M 17	x 1.5	.0374	★			★	★	★	★	★
M 18	x 1	.0388	★			★	★	★	★	★
M 18	x 1.5	.0390	★	★	★	★	★	★	★	★
M 18	x 2	.0391	★							
M 19	x 1	.0404	★			★	★	★	★	★
M 20	x 1	.0420	★			★	★	★	★	★
M 20	x 1.5	.0422	★	★	★	★	★	★	★	★
M 20	x 2	.0423	★			★	★	★	★	★
M 21	x 1	.0428	★			★	★	★	★	★
M 22	x 1	.0436	★			★	★	★	★	★
M 22	x 1.5	.0438	★			★	★	★	★	★
M 22	x 2	.0439	★			★	★	★	★	★
M 23	x 1	.0443	★			★	★	★	★	★
M 24	x 1	.0450	★			★	★	★	★	★
M 24	x 1.5	.0452	★			★	★	★	★	★
M 24	x 2	.0453	★			★	★	★	★	★

Short Form Certificate of Accuracy is furnished free with each gage, Long Form Certificates are available upon request

Ordering Example: **L0120100.0196**



6H	4H	6G	6H LH	4H LH	6G LH					Class of Fit Coating
L0140100	L0140110	L0140120	L0140150	L0140160	L0140170					
G-AUS-LD	G-AUS-LD	G-AUS-LD	G-AUS-LD LH	G-AUS-LD LH	G-AUS-LD LH					Nominal Size ø d_1 — P mm
										M 2 x 0.25
										M 2.2 x 0.25
										M 2.3 x 0.25
★										M 2.5 x 0.35
★										M 2.6 x 0.35
★										M 3 x 0.35
★										M 3.5 x 0.35
★										M 4 x 0.35
★										M 4 x 0.5
★										M 4.5 x 0.5
★										M 5 x 0.5
★										M 6 x 0.5
★										M 6 x 0.75
★										M 7 x 0.75
★										M 8 x 0.5
★										M 8 x 0.75
★	★	★	★	★	★					M 8 x 1
★	★	★	★	★	★					M 9 x 1
★										M 10 x 0.75
★	★	★	★	★	★					M 10 x 1
★										M 10 x 1.25
★	★	★	★	★	★					M 11 x 1
★	★	★	★	★	★					M 12 x 1
★										M 12 x 1.25
★	★	★	★	★	★					M 12 x 1.5
★	★	★	★	★	★					M 13 x 1
★	★	★	★	★	★					M 13 x 1.5
★	★	★	★	★	★					M 14 x 1
★										M 14 x 1.25
★	★	★	★	★	★					M 14 x 1.5
★	★	★	★	★	★					M 15 x 1
★	★	★	★	★	★					M 15 x 1.5
★	★	★	★	★	★					M 16 x 1
★	★	★	★	★	★					M 16 x 1.5
★	★	★	★	★	★					M 17 x 1
★	★	★	★	★	★					M 17 x 1.5
★	★	★	★	★	★					M 18 x 1
★	★	★	★	★	★					M 18 x 1.5
★										M 18 x 2
★	★	★	★	★	★					M 19 x 1
★	★	★	★	★	★					M 20 x 1
★	★	★	★	★	★					M 20 x 1.5
★	★	★	★	★	★					M 20 x 2
★	★	★	★	★	★					M 21 x 1
★	★	★	★	★	★					M 22 x 1
★	★	★	★	★	★					M 22 x 1.5
★	★	★	★	★	★					M 22 x 2
★	★	★	★	★	★					M 23 x 1
★	★	★	★	★	★					M 24 x 1
★	★	★	★	★	★					M 24 x 1.5
★	★	★	★	★	★					M 24 x 2

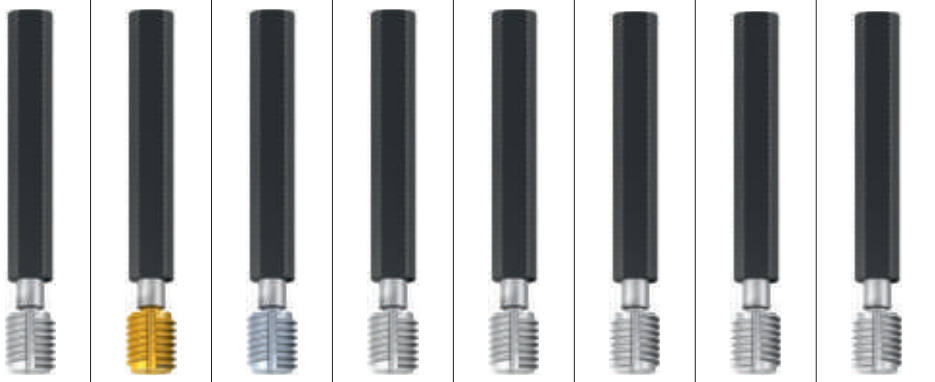
● = In stock
★ = Allow 7 days for delivery

M25 x 1 - M45 x 2 ➟

MF

ISO Metric Fine Thread
DIN 13

Gage dimensions acc. DIN ISO 1502

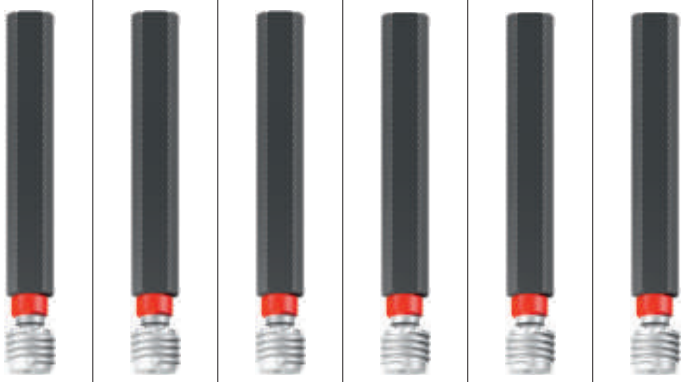


		Class of Fit	6H	6H	6H	4H	6G	6H	4H	6G
		Coating		TIN	CR					
								LH	LH	LH
		Tool Identification	L0120100	L0125100	L0121100	L0120110	L0120120	L0120150	L0120160	L0120170
ø d_1 mm	P mm	Dimens. ID	G-GUT-LD	G-GUT-LD TIN	G-GUT-LD CR	G-GUT-LD	G-GUT-LD	G-GUT-LD LH	G-GUT-LD LH	G-GUT-LD LH
M 25 x	1	.0456	★			★	★	★	★	★
M 25 x	1.5	.0458	★			★	★	★	★	★
M 25 x	2	.0459	★			★	★	★	★	★
M 26 x	1	.0462	★			★	★	★	★	★
M 26 x	1.5	.0464	★			★	★	★	★	★
M 26 x	2	.0465	★			★	★	★	★	★
M 27 x	1	.0468	★			★	★	★	★	★
M 27 x	1.5	.0470	★			★	★	★	★	★
M 27 x	2	.0471	★			★	★	★	★	★
M 28 x	1	.0474	★			★	★	★	★	★
M 28 x	1.5	.0476	★			★	★	★	★	★
M 28 x	2	.0477	★			★	★	★	★	★
M 30 x	1	.0488	★			★	★	★	★	★
M 30 x	1.5	.0490	★			★	★	★	★	★
M 30 x	2	.0491	★			★	★	★	★	★
M 30 x	3	.0492	★			★	★	★	★	★
M 32 x	1	.0502	★			★	★	★	★	★
M 32 x	1.5	.0504	★			★	★	★	★	★
M 32 x	2	.0505	★			★	★	★	★	★
M 33 x	1	.0509	★			★	★	★	★	★
M 33 x	1.5	.0511	★			★	★	★	★	★
M 33 x	2	.0512	★			★	★	★	★	★
M 33 x	3	.0513	★			★	★	★	★	★
M 34 x	1	.0516	★			★	★	★	★	★
M 34 x	1.5	.0518	★			★	★	★	★	★
M 34 x	2	.0519	★			★	★	★	★	★
M 35 x	1	.0523	★			★	★	★	★	★
M 35 x	1.5	.0525	★			★	★	★	★	★
M 35 x	2	.0526	★			★	★	★	★	★
M 36 x	1	.0530	★			★	★	★	★	★
M 36 x	1.5	.0532	★			★	★	★	★	★
M 36 x	2	.0533	★			★	★	★	★	★
M 36 x	3	.0534	★			★	★	★	★	★
M 38 x	1	.0544	★			★	★	★	★	★
M 38 x	1.5	.0546	★			★	★	★	★	★
M 38 x	2	.0547	★			★	★	★	★	★
M 39 x	1	.0551	★			★	★	★	★	★
M 39 x	1.5	.0553	★			★	★	★	★	★
M 39 x	2	.0554	★			★	★	★	★	★
M 39 x	3	.0555	★			★	★	★	★	★
M 40 x	1	.0558	★			★	★	★	★	★
M 40 x	1.5	.0560	★			★	★	★	★	★
M 40 x	2	.0561	★			★	★	★	★	★
M 40 x	3	.0562	★			★	★	★	★	★
M 42 x	1	.0572	★			★	★	★	★	★
M 42 x	1.5	.0574	★			★	★	★	★	★
M 42 x	2	.0575	★			★	★	★	★	★
M 42 x	3	.0576	★			★	★	★	★	★
M 45 x	1	.0593	★			★	★	★	★	★
M 45 x	1.5	.0595	★			★	★	★	★	★
M 45 x	2	.0596	★			★	★	★	★	★

← M2 x 0.25 - M24 x 2

Short Form Certificate of Accuracy is furnished free with each gage, Long Form Certificates are available upon request

Ordering Example: **L0120100.0456**



6H	4H	6G	6H LH	4H LH	6G LH					Class of Fit Coating
L0140100	L0140110	L0140120	L0140150	L0140160	L0140170					
G-AUS-LD	G-AUS-LD	G-AUS-LD	G-AUS-LD LH	G-AUS-LD LH	G-AUS-LD LH					Nominal Size ø d_1 — P mm
★	★	★	★	★	★					M 25 x 1
★	★	★	★	★	★					M 25 x 1.5
★	★	★	★	★	★					M 25 x 2
★	★	★	★	★	★					M 26 x 1
★	★	★	★	★	★					M 26 x 1.5
★	★	★	★	★	★					M 26 x 2
★	★	★	★	★	★					M 27 x 1
★	★	★	★	★	★					M 27 x 1.5
★	★	★	★	★	★					M 27 x 2
★	★	★	★	★	★					M 28 x 1
★	★	★	★	★	★					M 28 x 1.5
★	★	★	★	★	★					M 28 x 2
★	★	★	★	★	★					M 30 x 1
★	★	★	★	★	★					M 30 x 1.5
★	★	★	★	★	★					M 30 x 2
★	★	★	★	★	★					M 30 x 3
★	★	★	★	★	★					M 32 x 1
★	★	★	★	★	★					M 32 x 1.5
★	★	★	★	★	★					M 32 x 2
★	★	★	★	★	★					M 33 x 1
★	★	★	★	★	★					M 33 x 1.5
★	★	★	★	★	★					M 33 x 2
★	★	★	★	★	★					M 33 x 3
★	★	★	★	★	★					M 34 x 1
★	★	★	★	★	★					M 34 x 1.5
★	★	★	★	★	★					M 34 x 2
★	★	★	★	★	★					M 35 x 1
★	★	★	★	★	★					M 35 x 1.5
★	★	★	★	★	★					M 35 x 2
★	★	★	★	★	★					M 36 x 1
★	★	★	★	★	★					M 36 x 1.5
★	★	★	★	★	★					M 36 x 2
★	★	★	★	★	★					M 36 x 3
★	★	★	★	★	★					M 38 x 1
★	★	★	★	★	★					M 38 x 1.5
★	★	★	★	★	★					M 38 x 2
★	★	★	★	★	★					M 39 x 1
★	★	★	★	★	★					M 39 x 1.5
★	★	★	★	★	★					M 39 x 2
★	★	★	★	★	★					M 39 x 3
★	★	★	★	★	★					M 40 x 1
★	★	★	★	★	★					M 40 x 1.5
★	★	★	★	★	★					M 40 x 2
★	★	★	★	★	★					M 40 x 3
★	★	★	★	★	★					M 42 x 1
★	★	★	★	★	★					M 42 x 1.5
★	★	★	★	★	★					M 42 x 2
★	★	★	★	★	★					M 42 x 3
★	★	★	★	★	★					M 45 x 1
★	★	★	★	★	★					M 45 x 1.5
★	★	★	★	★	★					M 45 x 2

● = In stock
★ = Allow 7 days for delivery

M45 x 3 - M72 x 1.5 ➟

MF

ISO Metric Fine Thread
DIN 13

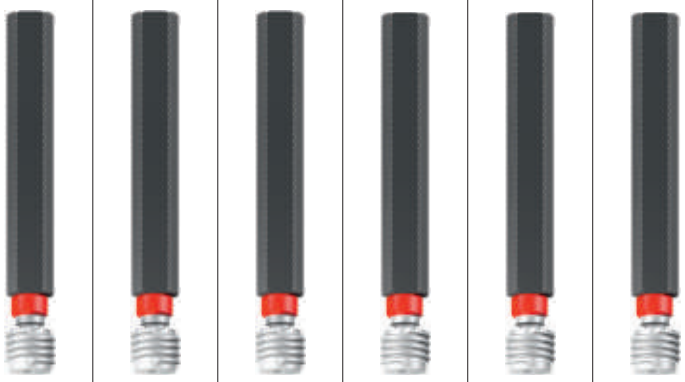
Gage dimensions acc. DIN ISO 1502

		Class of Fit	6H	6H	6H	4H	6G	6H	4H	6G
		Coating		TIN	CR					
								LH	LH	LH
		Tool Identification	L0120100	L0125100	L0121100	L0120110	L0120120	L0120150	L0120160	L0120170
ø d_1 mm	P mm	Dimens. ID	G-GUT-LD	G-GUT-LD TIN	G-GUT-LD CR	G-GUT-LD	G-GUT-LD	G-GUT-LD LH	G-GUT-LD LH	G-GUT-LD LH
M 45	x 3	.0597	★			★	★	★	★	★
M 48	x 1	.0614	★			★	★	★	★	★
M 48	x 1.5	.0616	★			★	★	★	★	★
M 48	x 2	.0617	★			★	★	★	★	★
M 48	x 3	.0618	★			★	★	★	★	★
M 50	x 1	.0628	★			★	★	★	★	★
M 50	x 1.5	.0630	★			★	★	★	★	★
M 50	x 2	.0631	★			★	★	★	★	★
M 50	x 3	.0632	★			★	★	★	★	★
M 52	x 1	.0642	★			★	★	★	★	★
M 52	x 1.5	.0644	★			★	★	★	★	★
M 52	x 2	.0645	★			★	★	★	★	★
M 52	x 3	.0646	★			★	★	★	★	★
M 55	x 1	.0653	★			★	★	★	★	★
M 55	x 1.5	.0654	★			★	★	★	★	★
M 55	x 2	.0655	★			★	★	★	★	★
M 55	x 3	.0656	★			★	★	★	★	★
M 56	x 1	.0658	★			★	★	★	★	★
M 56	x 1.5	.0659	★			★	★	★	★	★
M 56	x 2	.0660	★			★	★	★	★	★
M 56	x 3	.0661	★			★	★	★	★	★
M 58	x 1	.0663	★			★	★	★	★	★
M 58	x 1.5	.0664	★			★	★	★	★	★
M 58	x 2	.0665	★			★	★	★	★	★
M 58	x 3	.0666	★			★	★	★	★	★
M 60	x 1	.0668	★			★	★	★	★	★
M 60	x 1.5	.0669	★			★	★	★	★	★
M 60	x 2	.0670	★			★	★	★	★	★
M 60	x 3	.0671	★			★	★	★	★	★
M 62	x 1	.0673	★			★	★	★	★	★
M 62	x 1.5	.0674	★			★	★	★	★	★
M 62	x 2	.0675	★			★	★	★	★	★
M 62	x 3	.0676	★			★	★	★	★	★
M 64	x 1	.0678	★			★	★	★	★	★
M 64	x 1.5	.0679	★			★	★	★	★	★
M 64	x 2	.0680	★			★	★	★	★	★
M 64	x 3	.0681	★			★	★	★	★	★
M 65	x 1	.0683	★			★	★	★	★	★
M 65	x 1.5	.0684	★			★	★	★	★	★
M 65	x 2	.0685	★			★	★	★	★	★
M 65	x 3	.0686	★			★	★	★	★	★
M 68	x 1	.0688	★			★	★	★	★	★
M 68	x 1.5	.0689	★			★	★	★	★	★
M 68	x 2	.0690	★			★	★	★	★	★
M 68	x 3	.0691	★			★	★	★	★	★
M 70	x 1	.0693	★			★	★	★	★	★
M 70	x 1.5	.0694	★			★	★	★	★	★
M 70	x 2	.0695	★			★	★	★	★	★
M 70	x 3	.0696	★			★	★	★	★	★
M 72	x 1	.0699	★			★	★	★	★	★
M 72	x 1.5	.0700	★			★	★	★	★	★

← M25 x 1 - M45 x 2

Short Form Certificate of Accuracy is furnished free with each gage, Long Form Certificates are available upon request

Ordering Example: **L0120100.0597**



6H	4H	6G	6H LH	4H LH	6G LH					Class of Fit Coating
L0140100	L0140110	L0140120	L0140150	L0140160	L0140170					
G-AUS-LD	G-AUS-LD	G-AUS-LD	G-AUS-LD LH	G-AUS-LD LH	G-AUS-LD LH					Nominal Size ø d_1 / P mm
★	★	★	★	★	★					M 45 x 3
★	★	★	★	★	★					M 48 x 1
★	★	★	★	★	★					M 48 x 1.5
★	★	★	★	★	★					M 48 x 2
★	★	★	★	★	★					M 48 x 3
★	★	★	★	★	★					M 50 x 1
★	★	★	★	★	★					M 50 x 1.5
★	★	★	★	★	★					M 50 x 2
★	★	★	★	★	★					M 50 x 3
★	★	★	★	★	★					M 52 x 1
★	★	★	★	★	★					M 52 x 1.5
★	★	★	★	★	★					M 52 x 2
★	★	★	★	★	★					M 52 x 3
★	★	★	★	★	★					M 55 x 1
★	★	★	★	★	★					M 55 x 1.5
★	★	★	★	★	★					M 55 x 2
★	★	★	★	★	★					M 55 x 3
★	★	★	★	★	★					M 56 x 1
★	★	★	★	★	★					M 56 x 1.5
★	★	★	★	★	★					M 56 x 2
★	★	★	★	★	★					M 56 x 3
★	★	★	★	★	★					M 58 x 1
★	★	★	★	★	★					M 58 x 1.5
★	★	★	★	★	★					M 58 x 2
★	★	★	★	★	★					M 58 x 3
★	★	★	★	★	★					M 60 x 1
★	★	★	★	★	★					M 60 x 1.5
★	★	★	★	★	★					M 60 x 2
★	★	★	★	★	★					M 60 x 3
★	★	★	★	★	★					M 62 x 1
★	★	★	★	★	★					M 62 x 1.5
★	★	★	★	★	★					M 62 x 2
★	★	★	★	★	★					M 62 x 3
★	★	★	★	★	★					M 64 x 1
★	★	★	★	★	★					M 64 x 1.5
★	★	★	★	★	★					M 64 x 2
★	★	★	★	★	★					M 64 x 3
★	★	★	★	★	★					M 65 x 1
★	★	★	★	★	★					M 65 x 1.5
★	★	★	★	★	★					M 65 x 2
★	★	★	★	★	★					M 65 x 3
★	★	★	★	★	★					M 68 x 1
★	★	★	★	★	★					M 68 x 1.5
★	★	★	★	★	★					M 68 x 2
★	★	★	★	★	★					M 68 x 3
★	★	★	★	★	★					M 70 x 1
★	★	★	★	★	★					M 70 x 1.5
★	★	★	★	★	★					M 70 x 2
★	★	★	★	★	★					M 70 x 3
★	★	★	★	★	★					M 72 x 1
★	★	★	★	★	★					M 72 x 1.5

● = In stock
★ = Allow 7 days for delivery

M72 x 2 - M100 x 3 ➟

MF

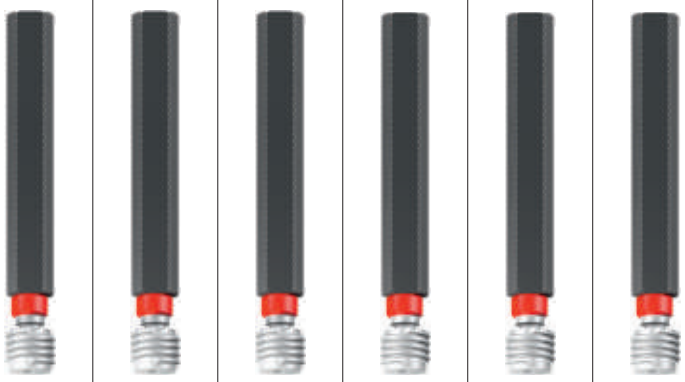
ISO Metric Fine Thread
DIN 13

Gage dimensions acc. DIN ISO 1502

Class of Fit	6H	6H	6H	**4H**	**6G**	6H	**4H**	**6G**
Coating		TIN	CR					
						LH	**LH**	**LH**
Tool Identification	**L0120100**	**L0125100**	**L0121100**	**L0120110**	**L0120120**	**L0120150**	**L0120160**	**L0120170**
ø d_1 mm — P mm / **Dimens. ID**	**G-GUT-LD**	**G-GUT-LD TIN**	**G-GUT-LD CR**	**G-GUT-LD**	**G-GUT-LD**	**G-GUT-LD LH**	**G-GUT-LD LH**	**G-GUT-LD LH**
M 72 x 2	**.0701**	★			★	★	★	★	★
M 72 x 3	**.0702**	★			★	★	★	★	★
M 75 x 1	**.0705**	★			★	★	★	★	★
M 75 x 1.5	**.0706**	★			★	★	★	★	★
M 75 x 2	**.0707**	★			★	★	★	★	★
M 75 x 3	**.0708**	★			★	★	★	★	★
M 76 x 1	**.0711**	★			★	★	★	★	★
M 76 x 1.5	**.0712**	★			★	★	★	★	★
M 76 x 2	**.0713**	★			★	★	★	★	★
M 76 x 3	**.0714**	★			★	★	★	★	★
M 78 x 1	**.0717**	★			★	★	★	★	★
M 78 x 1.5	**.0718**	★			★	★	★	★	★
M 78 x 2	**.0719**	★			★	★	★	★	★
M 80 x 1	**.0723**	★			★	★	★	★	★
M 80 x 1.5	**.0724**	★			★	★	★	★	★
M 80 x 2	**.0725**	★			★	★	★	★	★
M 80 x 3	**.0726**	★			★	★	★	★	★
M 82 x 1.5	**.0729**	★			★	★	★	★	★
M 82 x 2	**.0730**	★			★	★	★	★	★
M 85 x 1.5	**.0734**	★			★	★	★	★	★
M 85 x 2	**.0735**	★			★	★	★	★	★
M 85 x 3	**.0736**	★			★	★	★	★	★
M 88 x 1.5	**.0739**	★			★	★	★	★	★
M 88 x 2	**.0740**	★			★	★	★	★	★
M 90 x 1.5	**.0744**	★			★	★	★	★	★
M 90 x 2	**.0745**	★			★	★	★	★	★
M 90 x 3	**.0746**	★			★	★	★	★	★
M 92 x 1.5	**.0749**	★			★	★	★	★	★
M 92 x 2	**.0750**	★			★	★	★	★	★
M 95 x 1.5	**.0754**	★			★	★	★	★	★
M 95 x 2	**.0755**	★			★	★	★	★	★
M 95 x 3	**.0756**	★			★	★	★	★	★
M 98 x 1.5	**.0759**	★			★	★	★	★	★
M 98 x 2	**.0760**	★			★	★	★	★	★
M 100 x 1.5	**.0764**	★			★	★	★	★	★
M 100 x 2	**.0765**	★			★	★	★	★	★
M 100 x 3	**.0766**	★			★	★	★	★	★

← M45 x 3 - M72 x 1.5

Short Form Certificate of Accuracy is furnished free with each gage,
Long Form Certificates are available upon request



6H	4H	6G	6H LH	4H LH	6G LH					Class of Fit Coating
L0140100	L0140110	L0140120	L0140150	L0140160	L0140170					
G-AUS-LD	G-AUS-LD	G-AUS-LD	G-AUS-LD LH	G-AUS-LD LH	G-AUS-LD LH					Nominal Size ø d_1 / P mm
★	★	★	★	★	★					M 72 x 2
★	★	★	★	★	★					M 72 x 3
★	★	★	★	★	★					M 75 x 1
★	★	★	★	★	★					M 75 x 1.5
★	★	★	★	★	★					M 75 x 2
★	★	★	★	★	★					M 75 x 3
★	★	★	★	★	★					M 76 x 1
★	★	★	★	★	★					M 76 x 1.5
★	★	★	★	★	★					M 76 x 2
★	★	★	★	★	★					M 76 x 3
★	★	★	★	★	★					M 78 x 1
★	★	★	★	★	★					M 78 x 1.5
★	★	★	★	★	★					M 78 x 2
★	★	★	★	★	★					M 80 x 1
★	★	★	★	★	★					M 80 x 1.5
★	★	★	★	★	★					M 80 x 2
★	★	★	★	★	★					M 80 x 3
★	★	★	★	★	★					M 82 x 1.5
★	★	★	★	★	★					M 82 x 2
★	★	★	★	★	★					M 85 x 1.5
★	★	★	★	★	★					M 85 x 2
★	★	★	★	★	★					M 85 x 3
★	★	★	★	★	★					M 88 x 1.5
★	★	★	★	★	★					M 88 x 2
★	★	★	★	★	★					M 90 x 1.5
★	★	★	★	★	★					M 90 x 2
★	★	★	★	★	★					M 90 x 3
★	★	★	★	★	★					M 92 x 1.5
★	★	★	★	★	★					M 92 x 2
★	★	★	★	★	★					M 95 x 1.5
★	★	★	★	★	★					M 95 x 2
★	★	★	★	★	★					M 95 x 3
★	★	★	★	★	★					M 98 x 1.5
★	★	★	★	★	★					M 98 x 2
★	★	★	★	★	★					M 100 x 1.5
★	★	★	★	★	★					M 100 x 2
★	★	★	★	★	★					M 100 x 3

Thread ring gages GO/NO-GO upon request

● = In stock
★ = Allow 7 days for delivery

G (BSP)

Whitworth Pipe Thread
DIN EN ISO 228

Gage dimensions acc. DIN EN ISO 228-2

Nominal Size ø d_1		ø d_1 mm	T.P.I.	Tool Identification Dimens. ID	L0100100 G-GR-LD	L0120100 G-GUT-LD	L0140100 G-AUS-LD			
G	1/16	7.72	28	**.4034**	★	★	★			
G	1/8	9.73	28	**.4035**	★	★	★			
G	1/4	13.16	19	**.4036**	★	★	★			
G	3/8	16.66	19	**.4037**	★	★	★			
G	1/2	20.96	14	**.4038**	★	★	★			
G	5/8	22.91	14	**.4039**	★	★	★			
G	3/4	26.44	14	**.4040**	★	★	★			
G	7/8	30.20	14	**.4041**	★	★	★			
G	1	33.25	11	**.4042**	★	★	★			
G	1 1/8	37.90	11	**.4043**	★	★	★			
G	1 1/4	41.91	11	**.4044**		★	★			
G	1 3/8	44.32	11	**.4045**		★	★			
G	1 1/2	47.80	11	**.4046**		★	★			
G	1 5/8	52.00	11	**.4047**						
G	1 3/4	53.75	11	**.4048**		★	★			
G	2	59.61	11	**.4050**		★	★			

> G 1 1/8 available only as separate plug gages (G-GUT-LD, G-AUS-LD)

Short Form Certificate of Accuracy is furnished free with each gage,
Long Form Certificates are available upon request

Thread ring gages GO/NO-GO upon request

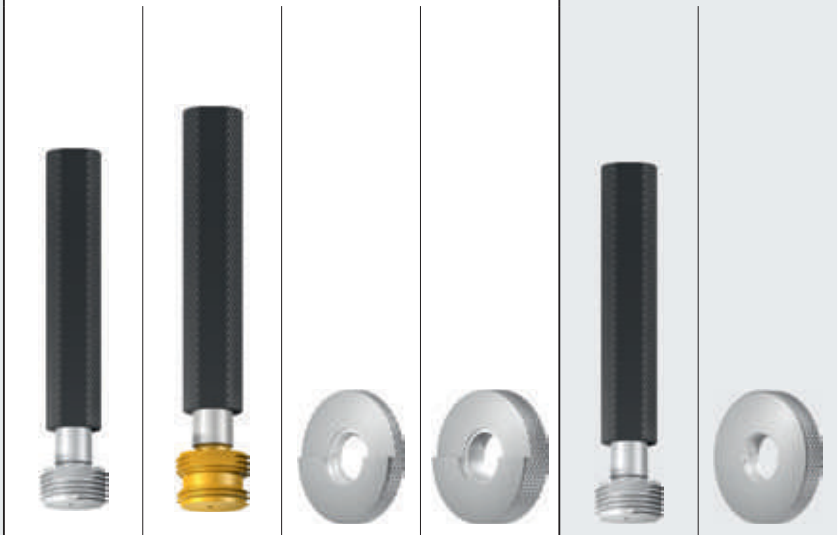
Rp

R, Rc

Tapered Whitworth Pipe Thread, DIN EN ISO 10226-1, DIN EN ISO 10226-2 and ISO 7-1

Where pressure-tight joints are made on the threads, taper 1:16

Gage system acc. DIN EN 10226-3, ISO 7-2



				Gage no.	1	2 [1]	3	4	5	6
				Tool Identification	L1800101	L1815101	L1850501	L1860501	L1830501	L1870101
Nominal Size ø d_1		ø d_1 mm	T.P.I.	Dimens. ID	Keg. G-GR-LD	Keg. G-GR-LD Aussp. TIN	Zyl. G-GR-LR	Keg. G-GR-LR (glatt)	Keg. G-Prüfdorn	Zyl. G-Prüfring
R	1/16	7.72	28	.4068	★	★	★	★	★	★
R	1/8	9.73	28	.4069	★	★	★	★	★	★
R	1/4	13.16	19	.4070	★	★	★	★	★	★
R	3/8	16.66	19	.4071	★	★	★	★	★	★
R	1/2	20.96	14	.4072	★	★	★	★	★	★
R	3/4	26.44	14	.4073	★	★	★	★	★	★
R	1	32.25	11	.4074	★	★	★	★	★	★
R	1 1/4	41.91	11	.4075	★	★	★	★	★	★
R	1 1/2	47.80	11	.4076	★	★	★	★	★	★
R	2	59.61	11	.4077	★	★	★	★	★	★
R	2 1/2	75.18	11	.4078	★	★	★	★	★	★
R	3	87.88	11	.4079	★	★	★	★	★	★
R	4	113.03	11	.4080	★	★	★	★	★	★

[1] The thread plug gage no. 2 is exposed to strong wear due to its recess, and is therefore TIN-coated

Short Form Certificate of Accuracy is furnished free with each gage, Long Form Certificates are available upon request

The new gage system acc. DIN EN 10226-3, ISO 7-2

The standardization has been undertaken with the aim of providing a worldwide accepted gage system for the **tapered external thread R**, the **cylindrical internal thread Rp** and the **tapered internal thread Rc** acc. ISO 7.

Previous standards, e.g. the German standards DIN 2999-2 to -6, the British standard BS 21, the French standard NF-E 03-165 and the Italian standard UNI ISO 7-2:1984 do not apply anymore.

NPT

American Tapered Pipe Thread, ANSI/ASME B1.20.1

For threads **with dryseal material**, taper 1:16

Gage system sim. ANSI/ASME B1.20.1

"3-Step" Design

Nominal Size ø d_1	T.P.I.	Tool Identification	L0500100			
		Dimens. ID	G-GR-LD (L_1) NPT			
1/16	27	.5763	●			
1/8	27	.5764	●			
1/4	18	.5765	●			
3/8	18	.5766	●			
1/2	14	.5767	●			
3/4	14	.5768	●			
1	11 1/2	.5769	●			
1 1/4	11 1/2	.5770	★			
1 1/2	11 1/2	.5771	★			
2	11 1/2	.5772	★			

Short Form Certificate of Accuracy is furnished free with each gage, Long Form Certificates are available upon request

Thread ring gages GO/NO-GO upon request

NPTF

American Tapered Pipe Thread, ANSI/ASME B1.20.3

For threads **without dryseal material**, taper 1:16

Gage system NPTF-1 acc. ASME B1.20.5

"3-Step" Design

Nominal Size ø d_1	T.P.I.	Tool Identification Dimens. ID	L0520100 G-GR-LD (L_1 + L_3) NPTF	L0500100 G-GR-LD (L_1) NPTF	L0510100 G-GR-LD (L_3) NPTF	
1/16	27	.5782	●			
1/8	27	.5783	●			
1/4	18	.5784	●			
3/8	18	.5785	●			
1/2	14	.5786	●			
3/4	14	.5787	●			
1	11 1/2	.5788	★			
1 1/4	11 1/2	.5789		★	★	
1 1/2	11 1/2	.5790		★	★	
2	11 1/2	.5791		★	★	

> ø 1" available only as separate plug gages (G-GR-LD (L_1), G-GR-LD (L_3))

Short Form Certificate of Accuracy is furnished free with each gage, Long Form Certificates are available upon request

Gage system NPTF-2 acc. ASME B1.20.5

for NPTF internal thread
- L_1 thread plug gage ("4-step" design)
- L_3 thread plug gage ("4-step" design)
- Plug gage "Crest Check" ("6-step"), for checking the thread crest on the minor diameter
- Plug gage "Root Check" ("6-step"), for checking the thread root on the major diameter

for NPTF external thread
- L_1 thread ring gage ("4-step" design)
- L_2 thread ring gage ("4-step" design)
- Ring gage "Crest Check" ("6-step"), for checking the thread crest on the major diameter
- Ring gage "Root Check" ("6-step"), for checking the thread root on the minor diameter

Thread gages GO/NO-GO for gage system NPTF-2 upon request

Thread ring gages GO/NO-GO upon request

●= In stock
★= Allow 7 days for delivery

STI-M

ISO Metric Coarse Thread
DIN 8140-2

For wire thread inserts

Gage dimensions acc. DIN ISO 1502

Class of Fit	6H mod.
Coating	

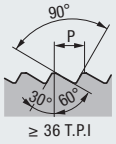
Nominal Size ø d_1	P mm	Tool Identification	L0100100
		Dimens. ID	G-GR-LD
STI-M 2.5	0.45	**.0965**	★
STI-M 3	0.5	**.0966**	★
STI-M 3.5	0.6	**.0967**	★
STI-M 4	0.7	**.0968**	★
STI-M 5	0.8	**.0970**	★
STI-M 6	1	**.0971**	★
STI-M 8	1.25	**.0973**	★
STI-M 10	1.5	**.0975**	★
STI-M 12	1.75	**.0977**	★
STI-M 14	2	**.0978**	★
STI-M 16	2	**.0979**	★
STI-M 18	2.5	**.0980**	★
STI-M 20	2.5	**.0981**	★

STI thread plug gages for UNC, UNF thread and ISO Metric fine thread upon request

Short Form Certificate of Accuracy is furnished free with each gage,
Long Form Certificates are available upon request

LK-UNC

BT



≥ 36 T.P.I

Unified SELF-LOCK Coarse Thread
EMUGE Standard

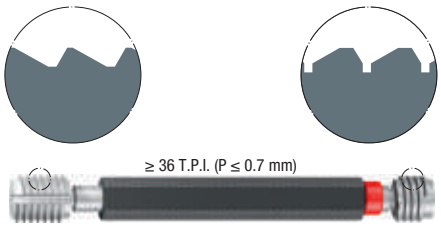
Gage dimensions acc. EMUGE standard

Nominal Size ø d_1	T.P.I.	Tool Identification: Dimens. ID	L0100100: G-GR-LD			
No. 4	40	.5656	●			
No. 6	32	.5668	●			
No. 8	32	.5659	●			
No. 10	24	.5660	●			
No. 12	24	.5661	●			
1/4	20	.5662	●			
5/16	18	.5663	●			
3/8	16	.5664	●			
7/16	14	.5665	●			
1/2	13	.5666	●			
9/16	12	.5667	●			
5/8	11	.5668	●			
3/4	10	.5669	●			
7/8	9	.5670	●			
1	8	.5671	●			

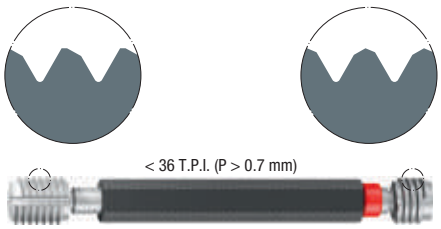
Short Form Certificate of Accuracy is furnished free with each gage,
Long Form Certificates are available upon request

The gaging of the EMUGE SELF-LOCK thread

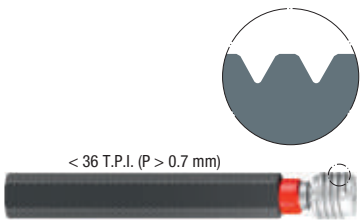
We recommend using our two-piece gage system which corresponds to the usual combination of GO and NO-GO gage and is perfectly sufficient for the gaging of the thread, provided that the LK threads were produced with our true-to-profile EMUGE taps.
There is no generally applicable standard (e.g. DIN standard) for the EMUGE SELF-LOCK thread, so other manufacturers may use different limit sizes for their threads. For this reason, we recommend gaging EMUGE SELF-LOCK threads exclusively with EMUGE SELF-LOCK gages.



The gaging of the saw-tooth profile works on the same principle, with the only difference that both the GO and the NO-GO plug gage have to be used in the correct direction.

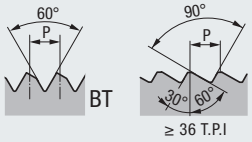


If chasers or thread milling cutters are used, we recommend using an additional EMUGE HRPG gage. This gage serves to check the lower ramp point or possible ramp angle errors.



● = In stock
★ = Allow 7 days for delivery

LK-UNF



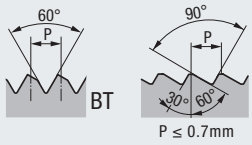
Unified SELF-LOCK Fine Thread
EMUGE Standard

Gage dimensions acc. EMUGE standard

Nominal Size ø d_1	T.P.I.	Tool Identification	L0100100			
		Dimens. ID	G-GR-LD			
No. 4	48	**.5707**	●			
No. 6	40	**.5709**	●			
No. 8	36	**.5710**	●			
No. 10	32	**.5711**	●			
1/4	28	**.5713**	●			
5/16	24	**.5714**	●			
3/8	24	**.5715**	●			
7/16	20	**.5716**	●			
1/2	20	**.5717**	●			
9/16	18	**.5718**	●			
5/8	18	**.5719**	●			
3/4	16	**.5720**	●			

Short Form Certificate of Accuracy is furnished free with each gage,
Long Form Certificates are available upon request

LK-M



Metric SELF-LOCK Coarse Thread
EMUGE Standard

Gage dimensions acc. EMUGE standard

Nominal Size ø d_1	P mm	Tool Identification Dimens. ID	L0100100 G-GR-LD			
LK-M 3	0.5	.1046	●			
LK-M 4	0.7	.1048	●			
LK-M 5	0.8	.1050	●			
LK-M 6	1	.1052	●			
LK-M 8	1.25	.1054	●			
LK-M 10	1.5	.1056	●			
LK-M 12	1.75	.1058	●			
LK-M 14	2	.1059	●			
LK-M 16	2	.1060	●			
LK-M 20	2.5	.1062	●			
LK-M 24	3	.1064	●			

Short Form Certificate of Accuracy is furnished free with each gage,
Long Form Certificates are available upon request

● = In stock
★ = Allow 7 days for delivery

Gage dimensions acc. DIN EN ISO 1938-1

	Class of Fit	H7	H7	H7
	Tool Identification	L14000H7	L14200H7	L14400H7
Nominal Diameter mm	Dimens. ID	GR-LD DIN 2245 Form Z	GUT-LD DIN 2246 Form ZG	AUS-LD DIN 2247 Form ZA
3	.0030	★		
3.5	.0035	★		
4	.0040	★		
4.5	.0045	★		
5	.0050	★		
5.5	.0055	★		
6	.0060	★		
7	.0070	★		
8	.0080	★		
9	.0090	★		
10	.0100	★		
11	.0110	★		
12	.0120	★		
13	.0130	★		
14	.0140	★		
15	.0150	★		
16	.0160	★		
17	.0170	★		
18	.0180	★		
19	.0190	★		
20	.0200	★		
21	.0210	★		
22	.0220	★		
23	.0230	★		
24	.0240	★		
25	.0250	★		
26	.0260	★		
27	.0270	★		
28	.0280	★		
30	.0300	★		
32	.0320	★		
33	.0330	★		
34	.0340	★		
35	.0350	★		
36	.0360	★		
37	.0370	★		
40	.0400	★		
44	.0440	★		
45	.0450	★		
46	.0460	★		
47	.0470	★		
48	.0480	★		
50	.0500	★		
52	.0520	★		
55	.0550	★		
58	.0580	★		
60	.0600	★		
62	.0620	★		
65	.0650	★		
68	.0680		★	★
70	.0700		★	★
72	.0720		★	★
75	.0750		★	★
78	.0780		★	★
80	.0800		★	★

> ø 65 mm available only as separate plug gages (GUT-LD, AUS-LD)

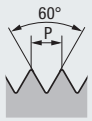
Further classes of fit according to DIN ISO 286-2 can be produced upon request

Short Form Certificate of Accuracy is furnished free with each gage, Long Form Certificates are available upon request

Ordering Example: **L14000H7.0030**

For Cut Threads

M



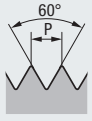
ISO Metric Coarse Thread
DIN 13

Gage dimensions acc. DIN ISO 1502

Metric Threads	Minor dia. of the internal thread mm min.	max.	Tool Identification / Dimens. ID	L0160100 Glatt-GR-LD		
			Class of Fit	6H		
M 3	2.459	2.599	.0030	●		
M 3.5	2.850	3.010	.0035			
M 4	3.242	3.422	.0040	●		
M 4.5	3.688	3.878	.0045			
M 5	4.134	4.334	.0050	●		
M 6	4.917	5.153	.0060	●		
M 7	5.917	6.153	.0070	●		
M 8	6.647	6.912	.0080	●		
M 9	7.647	7.912	.0090			
M 10	8.376	8.676	.0100	●		
M 11	9.376	9.676	.0111			
M 12	10.106	10.441	.0112	●		
M 14	11.835	12.210	.0114			
M 16	13.835	14.210	.0116	●		
M 18	15.294	15.744	.0118			
M 20	17.294	17.744	.0120			

For Cold-Formed Threads

M



ISO Metric Coarse Thread
DIN 13

Gage dimensions acc. DIN ISO 1502

According to DIN 13-50, in a cold-formed thread the **class of fit** for the pitch diameter is 6H, for the **minor diameter of the internal thread** it is **7H**.

Metric Threads	Minor dia. of the internal thread mm min.	max.	Tool Identification / Dimens. ID	L0160105 Glatt-GR-LD		
			Class of Fit	7H		
M 3	2.459	2.639	.0030	●		
M 3.5	2.850	3.050	.0035			
M 4	3.242	3.466	.0040	●		
M 5	4.134	4.384	.0050	●		
M 6	4.917	5.217	.0060	●		
M 7	5.917	6.217	.0070	●		
M 8	6.647	6.982	.0080	●		
M 10	8.376	8.751	.0100	●		
M 12	10.106	10.531	.0112	●		
M 14	11.835	12.310	.0114			
M 16	13.835	14.310	.0116	●		

Short Form Certificate of Accuracy is furnished free with each gage,
Long Form Certificates are available upon request

Further designs upon request

● = In stock
★ = Allow 7 days for delivery

UNC

Unified Coarse Thread
ASME B1.1

Gage dimensions acc. ANSI/ASME B1.2

		Class of Fit	2B	2B		
		Max. Thread Depth	**4 x D**	**2.5 x D**		
		Tool Identification	**L1010100**	**L1040100**		
Nominal Size ø d_1	**T.P.I.**	**Dimens. ID**	**GT-GR-LD "analog"**	**TD-Bit-GUT "analog"**		
No. 1	64	**.5000**	★			
No. 2	56	**.5001**	★			
No. 3	48	**.5002**	★			
No. 4	40	**.5003**	★			
No. 5	40	**.5004**	★	★		
No. 6	32	**.5005**	★	★		
No. 8	32	**.5006**	★	★		
No. 10	24	**.5007**	★	★		
No. 12	24	**.5008**	★	★		
1/4	20	**.5009**	★	★		
5/16	18	**.5010**	★	★		
3/8	16	**.5011**	★	★		
7/16	14	**.5012**	★	★		
1/2	13	**.5013**	★	★		
9/16	12	**.5014**	★			
5/8	11	**.5015**	★			
3/4	10	**.5016**	★			
7/8	9	**.5017**	★			

Short Form Certificate of Accuracy is furnished free with each gage,
Long Form Certificates are available upon request

Torque limiter for thread depth plug gages GT-GR-LD "analog" available on request

Accessories

Pulling sleeves for exchange of the GO gage body for all versions ▸▸ 464

Hook spanner for tightening the counter nut of GT-GR-LD ▸▸ 464

UNF

Unified Fine Thread
ASME B1.1

Gage dimensions acc. ANSI/ASME B1.2

		Class of Fit	2B	2B		
		Max. Thread Depth	**4 x D**	**2.5 x D**		
		Tool Identification	**L1010100**	**L1040100**		
Nominal Size ø d_1	**T.P.I.**	**Dimens. ID**	**GT-GR-LD "analog"**	**TD-Bit-GUT "analog"**		
No. 0	80	**.5033**	★			
No. 1	72	**.5034**	★			
No. 2	64	**.5035**	★			
No. 3	56	**.5036**	★			
No. 4	48	**.5037**	★			
No. 5	44	**.5038**	★	★		
No. 6	40	**.5039**	★	★		
No. 8	36	**.5040**	★	★		
No. 10	32	**.5041**	★	★		
No. 12	28	**.5042**	★	★		
1/4	28	**.5043**	★	★		
5/16	24	**.5044**	★	★		
3/8	24	**.5045**	★	★		
7/16	20	**.5046**	★	★		
1/2	20	**.5047**	★	★		
9/16	18	**.5048**	★			
5/8	18	**.5049**	★			
3/4	16	**.5050**	★			
7/8	14	**.5051**	★			

Short Form Certificate of Accuracy is furnished free with each gage,
Long Form Certificates are available upon request

Torque limiter for thread depth plug gages GT-GR-LD "analog" available on request

Accessories

Pulling sleeves for exchange of the GO gage body for all versions ▸▸ 464

Hook spanner for tightening the counter nut of GT-GR-LD ▸▸ 464

● = In stock
★ = Allow 7 days for delivery

M

ISO Metric Coarse Thread
DIN 13

Gage dimensions acc. DIN ISO 1502

		Class of Fit	6H	6H		
		Max. Thread Depth	**4 x D**	**2.5 x D**		
		Tool Identification	**L1010100**	**L1040100**		
Nominal Size ø d_1	**P mm**	**Dimens. ID**	**GT-GR-LD "analog"**	**TD-Bit-GUT "analog"**		
M 2	0.4	**.0020**	★			
M 3	0.5	**.0030**	★			
M 4	0.7	**.0040**	★	★		
M 5	0.8	**.0050**	★	★		
M 6	1	**.0060**	★	★		
M 8	1.25	**.0080**	★	★		
M 10	1.5	**.0100**	★	★		
M 12	1.75	**.0112**	★	★		
M 14	2	**.0114**	★	★		
M 16	2	**.0116**	★			
M 18	2.5	**.0118**	★			
M 20	2.5	**.0120**	★			
M 22	2.5	**.0122**	★			
M 24	3	**.0124**	★			

Short Form Certificate of Accuracy is furnished free with each gage,
Long Form Certificates are available upon request

MF

ISO Metric fine threads DIN 13
with identical thread dimensions are available on request

Torque limiter for thread depth plug gages GT-GR-LD "analog" available on request

Accessories

Pulling sleeves for exchange of the GO gage body for all versions ▸▸ 464

Hook spanner for tightening the counter nut of GT-GR-LD ▸▸ 464

G (BSP)

Whitworth Pipe Thread
DIN EN ISO 228

Gage dimensions acc. DIN EN ISO 228-1

				Class of Fit				
				Max. Thread Depth	**4 x D**	**2.5 x D**		
				Tool Identification	**L1010100**	**L1040100**		
Nominal Size ø d_1		**ø d_1 mm**	**T.P.I.**	**Dimens. ID**	**GT-GR-LD "analog"**	**TD-Bit-GUT "analog"**		
G	1/16	7.72	28	**.4034**	★	★		
G	1/8	9.73	28	**.4035**	★	★		
G	1/4	13.16	19	**.4036**	★	★		
G	3/8	16.66	19	**.4037**	★			
G	1/2	20.96	14	**.4038**	★			
G	5/8	22.91	14	**.4039**	★			

Short Form Certificate of Accuracy is furnished free with each gage,
Long Form Certificates are available upon request

Torque limiter for thread depth plug gages GT-GR-LD "analog" available on request

Accessories

Pulling sleeves for exchange of the GO gage body for all versions ▸▸ 464

Hook spanner for tightening the counter nut of GT-GR-LD ▸▸ 464

● = In stock
★ = Allow 7 days for delivery

Hexagon bit adapters 1/4" for gaging bodies "GO"

The hexagon bit adapter serves as holder for the gage body "GO" in a power driven unit.
It is used for repeatably gaging thread holes with a maximum depth of 4 x D.
As a power driven unit such as cordless or pressurized air screwdrivers or drill machines provide the rotation, an effortless and long-term working is possible.

				Max. Thread Depth	4 x D
				Tool Identification	**L0091070**
Unified Threads	**Metric Threads**	**Whitworth Pipe Threads**	**Recommended Torque**	**Dimens. ID**	
No.1 - No. 4	M 2 - M 3	–	6 Ncm	**.02.5**	★
No.5 - No.12	M 4 - M 6	–	8 Ncm	**.04**	★
1/4 - 3/8	M 8 - M10	G 1/16 - G 1/8	14 Ncm	**.05.5**	★
7/16 - 1/2	M12 - M14	G 1/4	20 Ncm	**.07**	★
9/16 - 5/8	M16 - M18	G 3/8	30 Ncm	**.09**	★
3/4 - 1 1/8	M20 - M30	G 1/2 - G 7/8	40 Ncm	**.12**	★

Gauging bodies "GO" upon request (not included)

Pulling sleeves

For the exchange of gaging bodies in thread depth plug gages

	Tool Identification	**L0091040**
Seat Diameter	**Dimens. ID**	
2.5	**.02.5**	★
4	**.04**	★
5.5	**.05.5**	★
7	**.07**	★
9	**.09**	★
12	**.12**	★

Hook spanner

For tightening the counter nut

				Tool Identification	**L0091410**
Nominal dia.	**Unified Threads**	**Metric Threads**	**Whitworth Pipe Threads**	**Dimens. ID**	
≤ 3 mm	No.1 - No. 4	M 2 - M 3	–	**.02.5**	★
> 3 - 6 mm	No.5 - No.12	M 4 - M 6	–	**.04**	★
> 6 - 10 mm	1/4 - 3/8	M 8 - M10	G 1/16 - G 1/8	**.05.5**	★
> 10 - 14 mm	7/16 - 1/2	M12 - M14	G 1/4	**.07**	★
> 14 - 18 mm	9/16 - 5/8	M16 - M18	G 3/8	**.09**	★
> 18 - 24 mm	3/4 - 15/16	M20 - M24	G 1/2 - G 5/8	**.12**	★

Ordering Example: **L0091070.02.5**

DECOM UGK GmbH

EMUGE offers you comprehensive services for the calibration of your gages and measuring tools by our cooperation partner DECOM UGK GmbH, an independent calibration laboratory on the premises of EMUGE-Werk at Lauf.

DECOM UGK GmbH has been a DAkkS-accredited calibration laboratory for length and other geometric quantities (e.g. thread gages, dial gages, dial gage instruments, dial test indicators, micrometer gages, caliper gages etc.) acc. EN/ISO/IEC 17025 since 1998.

The technical measuring equipment, the personnel and the environmental conditions are subject to surveillance by the DAkkS (German Accreditation Body).

www.decom-ugk.de

Technical Equipment

Reference Standards and Standard Measuring Devices:
The compliance with national and international standards of all measurements commissioned by customers is guaranteed.
All necessary standards and standard measuring devices are at our disposal and are regularly recalibrated by calibration laboratories authorized by the WECC.

Traceability of measuring devices to national standards.

An extensive range of equipment is available to conduct inspection monitoring of operating equipment.
The measuring devices and measuring equipment are certified to be in compliance with national standards by means of regular in-house calibrations using reference standards and standard measuring devices.

For more information please contact the sales organisation of the company association EMUGE-FRANKEN (www.emuge-franken.com/sales).

Inspection monitoring according to VDI/VDE/DGQ-directive 2618, sheet 4.8 "Ü"

- Cleaning
- Demagnetizing
- Visual inspection for damage
- Rework of minor damages with oil stone and lapping cloth
- Determine marking, if applicable, establish ID number and apply marking
- Tempering (min. 5 hours)
- Visual inspection for correct marking, if applicable colour marking
- Determination of specific values: pitch diameter at the start of the thread on 2 measuring locations off-set by 90°
- Evaluation of measuring results and creation of calibration certificate
- Preservation and single packaging

All necessary data and measuring results will be documented in a calibration certificate.

M10-6H
EMUGE
40 35 30 25

Technical Information

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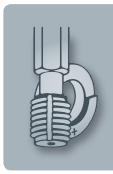


6.1 General information

Gage systems are specified for the respective types of threads for the purpose of securing an unlimited exchangeability of workpiece threads.

The following basic principles apply:

1. The manufacturer must not supply a workpiece thread the actual thread size of which is outside of the specified limits (e.g. pitch diameter or mating pitch diameter).
2. The buyer must not reject a workpiece thread the actual thread size of which is inside of the specified limits (e.g. pitch diameter or mating pitch diameter).

In modern thread production, there are of course other inspection methods also, e.g. measuring with dial-type measuring instruments. Whenever other methods are applied it is important to make sure that the same results are achieved.

In case of doubt, the gages recommended in the respective standard will decide the inspection result of the thread to be examined.

If the inspection work in production is done mainly by measuring, it is still absolutely necessary to perform random sample inspection with the standardized gages. The reference temperature for the gage and workpiece dimensions is 68 °F (20 °C). If inspections are done at other temperatures, the corresponding expansion coefficients have to be taken into account.

6.2 Precision fixed limit thread gages

EMUGE's comprehensive line of thread gages consist of GO/NO-GO plug gages and thread depth plug gages. Gages inspect the pitch diameter and functional thread for internal-threaded components.

Features:

- Exceptionally hardened tool steel and highly accurate
- Full range of inch, metric sizes in coarse, fine, UNC, UNF, UNS, NPT, NPTF, along with EMUGE SELF-LOCK threads forms
- Accommodates 2B, 3B, 6H classes of fit
- Stable thread start for easy insertion
- Eliminate thread damage in demanding environments
- Short Form Certificate of Accuracy is furnished free with each gage, Long Form Certificates are available upon request

  Gage certification is performed by accredited calibration service "DECOM UGK GmbH" calibration laboratory

6.3 EMUGE thread gages – Gaging technology to perfection

Accommodates **2B, 3B, 6H classes of fit**

Starting from dia. 5.5 mm a **dirt flute** is provided on the GO side to eliminate thread damage in demanding environments

Exceptionally hardened tool steel and highly accurate

A full range of stocked inch and Metric gages are manufactured to **ANSI B1.2** (Unified screw threads) and **ISO 1502** resp. **ANSI B1.16M** (Metric M series screw threads)

Incomplete threads are removed until the beginning of the full thread, in order to create a stable thread start

Gage handles with double surfaces for marking, leaving ample space for custom marking requirements (an EMUGE service that is available)

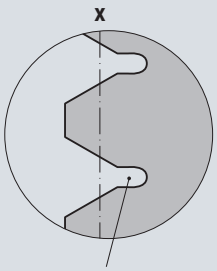
Knurled handles for maximum gripping ability and safety

Clearly identified with the size and EMUGE identification number for traceability

Short form **Certificate of Accuracy** is furnished free with each gage, long form Certificates are available upon request

The NO-GO side is clearly marked with a **red ring**

Reduced thread start for easy insertion of the NO-GO gage body



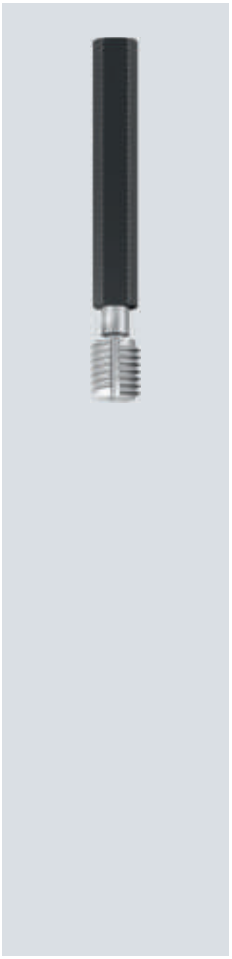
Recessed minor thread diameter of the NO-GO gages for safe function

6.4 Thread gages for internal threads and smooth gages for thread minor diameters

The GO thread plug gage and the NO-GO thread plug gage are used for the gaging of internal threads. GO and NO-GO plug gages are mounted on a common handle for thread diameters up to 40 mm and are designated as GO/NO-GO thread plug gages.

For exceptional cases handles for GO/NO-GO thread plug gages up to a thread diameter of 62 mm are standardized in DIN 2240-2.
A (smooth) GO and NO-GO plug gage is recommended for gaging the internal thread minor diameter.

G-GUT-LD



- The GO thread plug gage checks the so-called "mating size" of the internal thread and the screwing-in capability. In doing so, it checks the smallest size of the internal thread pitch diameter D_2 including certain form deviations in the thread, e.g. pitch and thread profile angle deviations. It also checks the smallest size of the major diameter. The minor diameter D_1 of the internal thread is not checked.
- The GO thread plug gage must be able to be screwed by hand into the full length of the workpiece thread without using particular force. The permissible wear of the GO thread plug gage is determined by measurement based on the three-wire-method. The GO thread plug gage is subject to heavy wear and should be checked at regular intervals. EMUGE therefore recommends using GO thread plug gages in the hard-chrome-plated or coated version.
- Dimensions of the GO thread plug gage acc. DIN 2281 and DIN 2282.
- The GO thread plug gage has a full thread profile along its thread length. It should be noted that the thread length is not less than 80% of the screw-in length of the workpiece thread. GO thread plug gages, starting from a thread diameter of 5.5 mm, are provided by EMUGE with a dirt flute.
- According to DIN ISO 1502, no so-called "acceptance" GO plug gages are standardized.
- It is advisable to always use the new plug gages for production and keep those that are close to the wear limit for acceptance.

G-AUS-LD

NO-GO thread plug gage

- The NO-GO thread plug gage checks whether the actual pitch diameter of the workpiece internal thread exceeds the prescribed largest size. The internal thread major diameter and internal thread minor diameter are not checked.
- It must not be possible to screw the NO-GO thread plug gage into the workpiece thread by hand for more than two revolutions (from both sides) without the use of particular force. The two revolutions are determined on screwing out the plug gage.
- The NO-GO thread plug gage has a thread length of at least three threads. The thread profile has a truncated crest.
- The gages are marked with a red coloured ring.
- Dimensions acc. DIN 2283 and DIN 2284.

G-GR-LD

GO/NO-GO thread plug gage

- The GO/NO-GO thread plug gage is the combination of a GO thread plug gage and a NO-GO thread plug gage on one handle.
- The dimensions of the GO/NO-GO thread plug gages are specified up to a nominal dimension diameter of 40 mm in DIN 2280. The functionality corresponds to the GO and NO-GO thread plug gages previously described.

Glatt-GR-LD

Gages for the internal thread minor diameter

- The internal thread minor diameter D_1 is checked with a smooth, cylindrical GO and NO-GO plug gage or a GO/NO-GO plug gage. As the minor diameter can change through thread tapping, an inspection is required after the thread has been completed. Specific gages are available to check the extended minor diameter tolerance of cold-formed Metric internal threads. Basically, the internal thread minor diameter should be checked before gaging the internal thread pitch diameter.
- It must be possible to guide the smooth GO plug gage by hand through the workpiece thread without the use of particular force.
- It must not be possible to insert the smooth NO-GO plug gage into the workpiece thread from both sides deeper than one pitch (1 x P) from the start of the thread.

6.5 Smooth plug gages for drilled holes acc. DIN EN ISO 1938-1

The smooth GO plug gage and the smooth NO-GO plug gage are used for gaging fitting drilled holes. GO and NO-GO plug gages are mounted on one handle for drilled hole diameters up to 65 mm and are designated as smooth GO/NO-GO plug gages.

Glatt-GUT-LD

Smooth GO plug gage

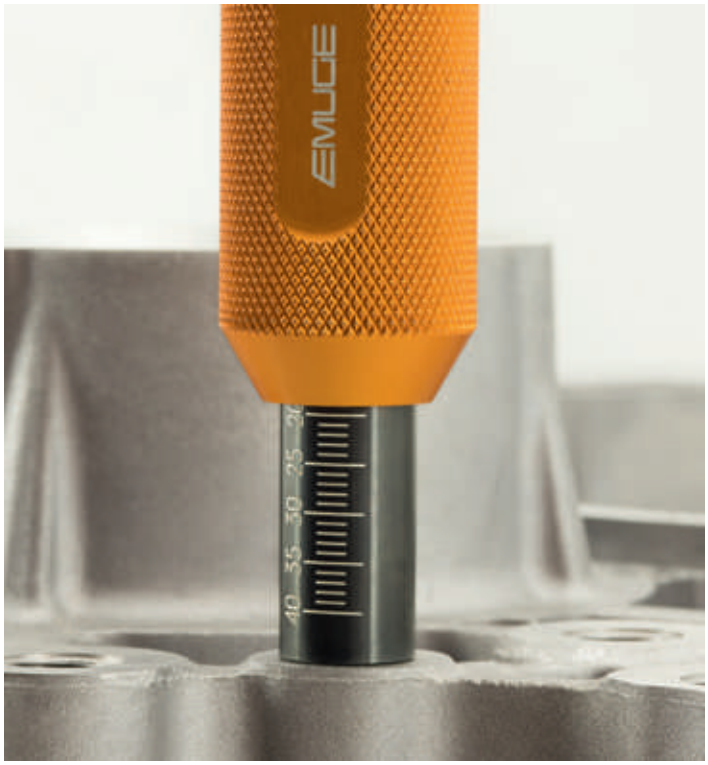
- The smooth GO plug gage checks the minimum drilled hole dimension including certain form deviations, e.g. circularity and cylindricity.
- It must be possible to push the smooth GO plug gage by hand into the full length of the drilled hole without the use of particular force.
- To achieve higher wear resistance, EMUGE recommends using the smooth GO plug gage in the hard-chrome-plated or carbide version.
- Dimensions of the smooth GO plug gage acc. DIN 2246 and DIN 2248.

Glatt-AUS-LD

Smooth NO-GO plug gage

- The smooth NO-GO plug gage checks whether the drilled hole diameter has exceeded the prescribed maximum size.
- It must not be possible to insert the smooth NO-GO plug gage into the drilled hole without the use of particular force.
- The smooth NO-GO plug gage is marked with a red coloured ring.
- Dimensions of the smooth NO-GO plug gage acc. DIN 2247 and DIN 2249.

6.6 GT Thread depth plug gages



Introduction

The thread depth plug gages permit gaging and measuring of threads in one single step. These gages are used in components with identical thread dimensions but different thread depths as well as for setting up a thread depth for any kind of internal thread production.

The **GT-GR-LD** is a manually operated gage for gaging threads and their depths in one single step.

The **TD-Bit-GUT** is an automatically operated gage with bit holder (DIN ISO 1173) for use on cordless or pressurized air screwdrivers or drill machines in order to check any thread and its depth in one single step.

By pushing the spring-loaded scaled sleeve into the handle, the fully cut thread depth can be read off quickly and precisely from the display.

GT-GR-LD	TD-Bit-GUT
Manually operated gages	Automatically operated gages
4 x D	2.5 x D

Notable Features

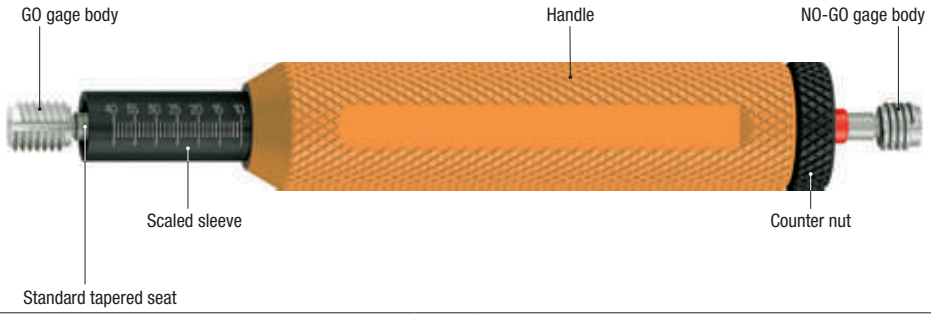
- Reduction of the gaging time by approx. 50%
- Available in various sizes
- Easily adjustable
- Universally applicable
- Gages can be coated on demand
- Dimension accuracy 0.5 mm
- Set screw for fixing the scaled sleeve included on request
- Easy and safe performance
- Manually operated gages available on request with torque limiter

6.6 GT thread depth plug gages

The **thread depth plug gage "analog"** is plugged into the thread to be checked and then screwed down to the bottom. The total thread depth can be read off the scale from the point where the scaled sleeve disappears into the handle with a preciseness of 0.5 mm.

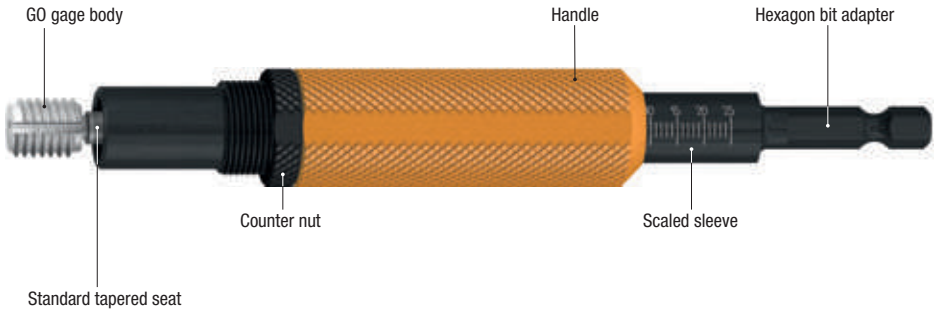
GT-GR-LD "analog" 4 x D

Manually operated gages
GT-GR-LD "analog" for manually gaging threads and their depths simultaneously.
Manually operated gages can be fitted with a torque limiter on request for fine-adjustment of measuring depth of the thread.
It allows to maintain a consistent screw-in torque but does not serve to transmit torque.



TD-Bit-GUT "analog" 2.5 x D

Automatically operated gages
The **TD-Bit-GUT "analog"** used together with a drive unit (e.g. a cordless or pressurized air screwdriver or drill machines) shortens gaging time and enables an effortless long-term working.
Due to the DIN ISO 1173 hexagon 1/4" interface many **"TD-Bit-GUT"** might be driven with one single unit and can be exchanged rapidly.
Independently of the user, automatic gaging with a constant torque improves the reproducibility of the results.



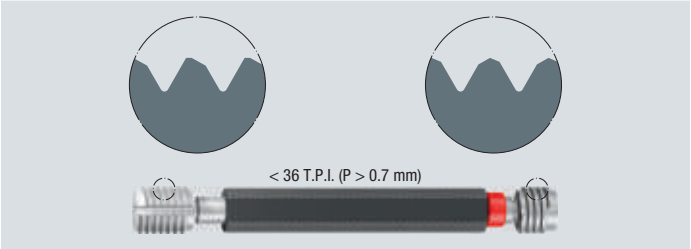
6.7 Gaging of other threads

Thread gages for other threads (sealing threads, tapered threads, threads for tight fit, SELF-LOCK threads etc.) often deviate considerably from the normal gage design. They are usually adjusted to the special design and function of these threads.
One good example are the thread gages for sealing threads, e.g. NPT and NPTF threads acc. US standards, or pipe sealing threads acc. DIN EN 10226 / ISO 7. In such cases, the instructions for the gaging of these threads must be observed in every detail.

6.7.1 The gaging of the EMUGE SELF-LOCK thread

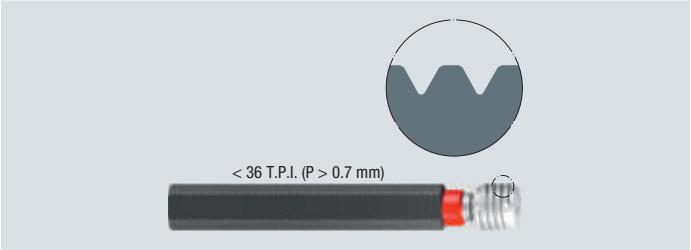
We recommend using our two-piece gage system which corresponds to the usual combination of GO and NO-GO gage and is perfectly sufficient for the gaging of the thread, provided that the SELF-LOCK threads were produced with our true-to-profile EMUGE taps.
There is no generally applicable standard (e.g. DIN standard) for the EMUGE SELF-LOCK thread, so other manufacturers may use different limit sizes for their threads. For this reason, we recommend gaging EMUGE SELF-LOCK threads exclusively with EMUGE SELF-LOCK gages.
With the GO plug gage, it is important to observe the correct screw-in direction. The NO-GO side can be used in either screw-in direction.

GO/NO-GO plug gage for the EMUGE SELF-LOCK thread



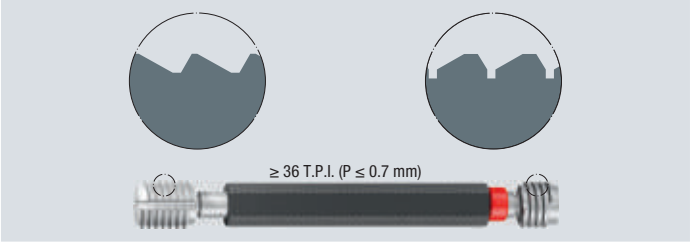
Whenever threads are produced by chasing or thread milling, we recommend the additional use of our EMUGE HRPG gage which checks the lower end of the ramp, and helps to identify any deviations in the angle of the ramp.

HRPG NO-GO plug gage for the EMUGE SELF-LOCK thread



The gaging of the buttress profile works on the same principle, with the only difference that both the GO and the NO-GO plug gage have to be used in the correct direction.

GO/NO-GO plug gage for the EMUGE SELF-LOCK buttress thread



6.7.2 American Pipe Thread, thread angle 60°

6.7.2.1 Pipe thread for general applications (with sealant) according to ANSI/ASME B1.20.1

Overview: **NPT**
NPSC
NPTR
NPSM
NPSL
NPSH

Each letter in the designation has the following meaning:

N	National (American) Standard
P	Pipe
T	Taper
C	Coupling
S	Straight
M	Mechanical
L	Locknut
H	Hose coupling
R	Railing fittings

The thread profile is **symmetrical** and **perpendicular** to the thread axle!

NPT thread
- Tapered internal thread and external thread
- Tapered plug gages L_1 with 3 measuring steps (Min., Basis, Max.)
- Tapered ring gages L_1 with 3 measuring steps (Min., Basis, Max.)

NPSC thread
- Cylindrical internal thread for pressure-tight connections, is screwed with a tapered external thread NPT and an additional sealing
- Tapered plug gages L_1 mit 3 measuring steps (Min., Basis, Max.)

NPTR threads
- Tapered internal thread and external thread for the rigid mechanical screwing of railing fittings (similar to NPT).

NPSM thread
- Cylindrical internal and external thread for mechanical “Free-Fitting” connections and fastening primarily of pipes without internal pressure
- Ring gages and plug gages GO and NO-GO are cylindrical!

NPSL thread
- Cylindrical internal and external thread for mechanical “Loose-Fitting” connections with locknut, e.g. through container walls and tightened with locknuts on both sides
- Ring gages and plug gages GO and NO-GO are cylindrical!

NPSH thread
- Cylindrical internal and external thread for mechanical “Loose-Fitting“ connections of hose couplings
- Ring gages and plug gages GO and NO-GO are cylindrical!

6.7 Gaging of other threads

6.7.2.2 Pipe thread for dryseal connections (without sealant) according ANSI B1.20.3

Overview: **NPTF**
PTF-SAE-SHORT
NPSF
NPSI

Each letter in the designation has the following meaning:

N	National (American) Standard
P	Pipe
T	Taper
S	Straight
F	Fuel and oil
I	Intermediate

The thread profile is **asymmetrical** and **perpendicular** to the thread axle!

NPTF thread
- Tapered internal thread and external thread

Gage system NPTF-1
- Tapered plug gages L_1 with 3 measuring steps (Min., Basis, Max.)
- Tapered plug gages L_3 with 3 measuring steps (Min., Basis, Max.)
- Tapered ring gages L_1 with 3 measuring steps (Min., Basis, Max.)
- Tapered ring gages L_2 with 3 measuring steps (Min., Basis, Max.)

Gage system NPTF-2 according to ASME B1.20.5
- Tapered plug gage L_1 with 4 measuring steps
- Tapered plug gage L_3 with 4 measuring steps
- Tapered smooth plug gage “Crest Check” with 6 measuring steps for minor diameter of nut
- Tapered plug gage “Root Check”, thread angle 50°, with 6 measuring steps for major diameter of nut

- Tapered ring gage L_1 with 4 measuring steps
- Tapered ring gage L_2 with 4 measuring steps
- Tapered smooth ring gage “Crest Check” with 6 measuring steps for major diameter of bolt
- Tapered ring gage “Root Check”, thread angle 50°, with 6 measuring steps for minor diameter of bolt

PTF-SAE-SHORT thread
- Tapered internal thread PTF-SAE-SHORT, is coupled with a tapered NPTF external thread
- Tapered plug gages L_1 with 3 measuring steps (Min., Basis, Max.)
- Tapered plug gages L_3 with 3 measuring steps (Min., Basis, Max.)

NPSF thread
- Cylindrical internal thread, is screwed with a tapered external thread NPTF
- Tapered plug gages L_1 with 3 measuring steps (Min., Basis, Max.)

NPSI thread
- Cylindrical internal thread, is screwed with a tapered external thread NPTF
- Tapered plug gages L_1 with 3 measuring steps (Min., Basis, Max.)

6.7.3 Whitworth Pipe Thread, thread angle 55°

6.7.3.1 Pipe thread for general applications

Rp	= Cylindrical internal pipe thread (parallel)
Rc	= Tapered internal pipe thread
R	= Tapered external pipe thread

The thread profile is **symmetrical** with top and bottom triangles rounded to a circular peak!

The thread dimensions of bolt and nut are specified in several national and international standards,
e.g.: **ISO 7/1**
DIN EN ISO 10226-1
DIN EN ISO 10226-2
etc.

Internal threads Rp and Rc
Gaging is done according to ISO 7/2 resp. DIN EN 10226-3

- Tapered plug gages no. 1 with 1 measuring step (“+”, “–”) for standard screw connections
- Tapered plug gages no. 2 with 1 measuring step (“+”, “–”) for checking screw-in depth
- Cylindrical check ring gage no. 6 without measuring step for checking gages no. 1 and no. 2

Tapered external thread R
Gaging is done according to ISO 7/2 resp. DIN EN 10226-3

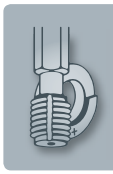
- Cylindrical ring gage no. 3 with 1 measuring step (“+”, “–”)
- Tapered smooth ring gage no. 4 with measuring step (“+”, “–”) for checking the major diameter of the bolt
- Tapered plug gage no. 5 with 1 measuring step for checking gage no. 3

6.7.3.2 Whitworth pipe thread for special screw connections

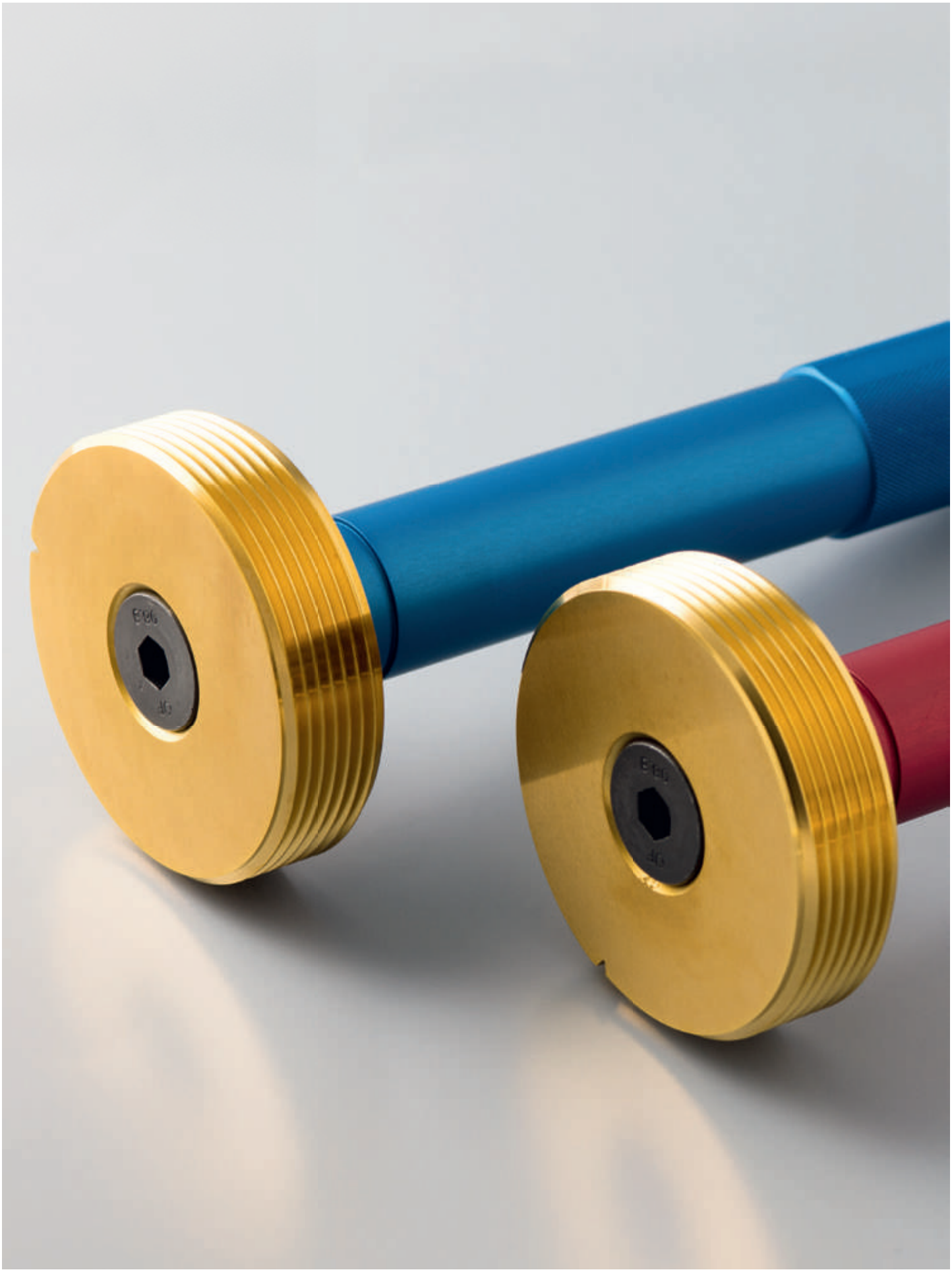
- **DIN 3858** = shorter thread lengths
- **DIN 477, DIN EN 144-1, DIN EN ISO 11363** = gas cylinder valves

DIN 3858
Cylindrical internal thread for pipe screw connections with short thread length, is screwed with tapered external thread!

- Cylindrical ring gage with 1 measuring step for **standard version (tolerance zone position 1)**
- Cylindrical ring gage with 1 measuring step for **short version (tolerance zone position 2)**
- Cylindrical plug gage GO/NO-GO for checking the Rp internal thread



Product Finder
UNC
UNF
UNS
M
MF
G (BSP)
Rp, R, Rc
NPT
NPTF
STI
SELF-LOCK
Smooth
GT, TD
Accessories
Calibration
Tech. Info



Tap Holders

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Product Pages	483 - 630
Technical Information	631 - 650

	Cooling and lubrication					Functions						
	Internal coolant supply (IKZ)	Minimum-quantity lubrication (MQL)	Coolant pressure at the entry to the holder		Air pressure at the entry to the holder	Length compensation on compression and tension	Minimal length compensation	Length compensation on tension	Length readjustment	Pressure-point mechanism	Front release	Axial-parallel floating
	IKZ	MMS MQL	pmax 100bar (1400psi)	pmax 50bar (700psi)	pmax 6bar (85psi)	C T	C T Soft	T	L+ 2 mm	F		
Softsynchro® Micro							■					
Softsynchro® 0-5	■			■			■					
Softsynchro® 6	■			■			■					
Softsynchro®/PGR	■			■			■					
Softsynchro®/Modular/IKZ	■			■			■		■			
Softsynchro®/MMS		■			■		■					
Softsynchro®/Modular/MQL		■			■		■		■			
Speedsynchro®/Modular/IKZ	■			■			■		■			
Speedsynchro®/Modular/MQL		■			■		■		■			
KSN						■				■	■	
KSN/HD	■			■		■				■	■	
KSN/HD/ER	■			■		■				■		
KSN/HD/PGR	■			■		■				■		
KSN/Synchro	■		■									
KSN/MQL		■			■	■				■	■	
SFM												
SFM-NP												■
SFM-L-DZ						■				■		
HF						■						

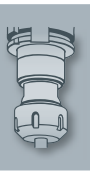
Description of the symbols of performance characteristics ▸▸ 632 - 635

New EC Machinery Directive 2006/42/EC

The new version of the EC Machinery Directive 2006/42/EC which became effective on 31 December 2009 now also contains requirements for so-called incomplete machines. This includes also tool and workpiece clamping devices which are installed into other machines as machine components, or assembled into a unit with them.

On **manuals.emugedownloads.com** we have compiled for you all the information from the EC Machinery Directive 2006/42/EC which may be necessary for the use of our products.

Functions			Tool adaptation				Recommended range of application				
Transmission gearing rapid traverse	Overload clutch	Drilling and countersinking	Tool adaptation by means of quick-change adapters, EM series	Tool adaptation by means of quick-change adapters, HE series	Tool adaptation by means of collets, type ER (GB)	Tool adaptation by means of collets, type PGR-GB	For use on machines with synchronous spindle	For use on CNC machining centres and other machine tools	For use on multi-spindle machines and transfer lines	For use on pillar drilling machines	
					■		■				Softsynchro® Micro
					■		■				Softsynchro® 0-5
				■			■				Softsynchro® 6
						■	■				Softsynchro®/PGR
					■		■				Softsynchro®/Modular/IKZ
					■		■				Softsynchro®/MMS
					■		■				Softsynchro®/Modular/MQL
■					■		■				Speedsynchro®/Modular/IKZ
■					■		■				Speedsynchro®/Modular/MQL
			■					■		■	KSN
			■					■			KSN/HD
					■			■			KSN/HD/ER
						■		■			KSN/HD/PGR
					■						KSN/Synchro
			■					■			KSN/MQL
			■						■		SFM
			■						■		SFM-NP
			■						■		SFM-L-DZ
	■	■		■				■		■	HF



	HSK-A Shank	HSK-C Shank	Polygon Shank	Cylindrical Shanks			Weldon Shank	CAT Shank	SK Shanks	
	DIN 69893 A	DIN 69893 C	ISO 26623-1	DIN 1835 A	DIN 1835 B	DIN 1835 B+E	ASME B94.19	ASME B5.50 UNC	ASME B5.50 Metric	DIN 69871 A, AD, B
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Softsynchro® Micro	484			495, 496		492				
Softsynchro® 0-5	485 - 486, 488	490	491			493	494	497		498 - 499
Softsynchro® 6	487									500
Softsynchro®/Modular/IKZ	489									
Softsynchro®/PGR	505					506				
Softsynchro®/MMS	548 -549	550								
Softsynchro®/Modular/MQL	552 - 555	556 - 557								
Speedsynchro®/Modular/IKZ					508					
Speedsynchro®/Modular/MQL										
KSN	512	513				514	515	516	517	518
KSN/HD	527	528	529			530	531			532
KSN/HD/ER	537	538				539				
KSN/HD/PGR	540					541				
KSN/Synchro	542					543	544			545
KSN/MQL	559 - 560	561								
SFM										
SFM-NP										
SFM-L-DZ										
HF								576 - 577		576 - 577

Further shank types upon request

	Shanks for Driven Tools		
	mimatic®	heimatec®	W&F
Softsynchro® 1	502	503	504

SK Shanks		BT Shank	Morse Taper Shank	Trapezoidal Shank	ACME Shank	VDI Shank	ABS® Shank	
DIN 2080	ANSI B5.18 NMPT	JIS B 6339 (MAS 403 BT)	DIN 228 B (ASME B5.10)	DIN 6327	ASME B5.11	DIN ISO 10889 (VDI 3425)	ABS® (System KOMET)	

Page								
								Softsynchro® Micro
		501						Softsynchro® 0-5
								Softsynchro® 6
								Softsynchro®/Modular/IKZ
								Softsynchro®/PGR
								Softsynchro®/MMS
								Softsynchro®/Modular/MQL
							509	Speedsynchro®/Modular/IKZ
							510, 558	Speedsynchro®/Modular/MQL
519	520	521	522	523	524	525	526	KSN
				533	534	535	536	KSN/HD
								KSN/HD/ER
								KSN/HD/PGR
								KSN/Synchro
								KSN/MQL
			566	567	568			SFM
				569	570			SFM-NP
			571	572	573			SFM-L-DZ
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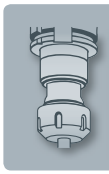
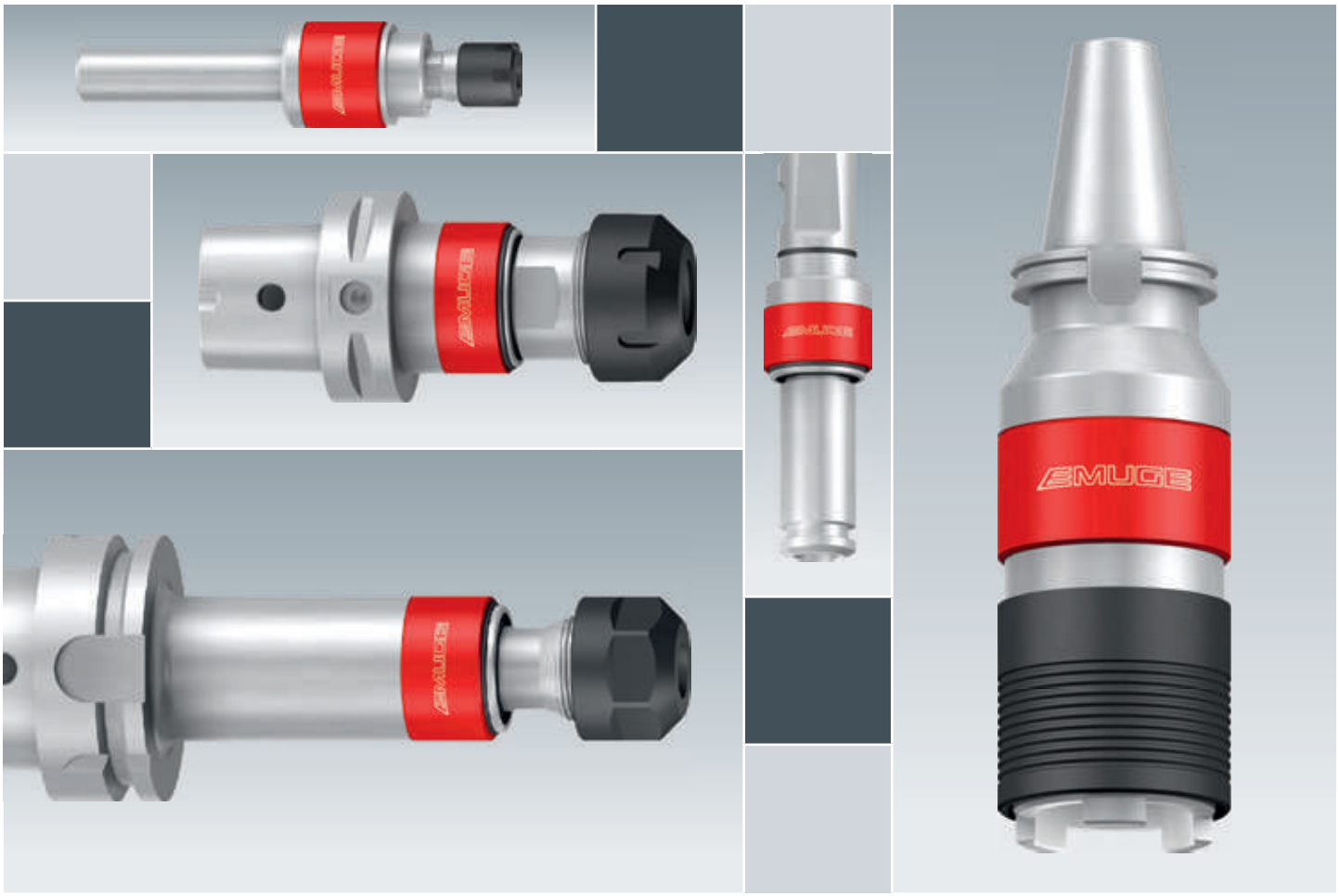
	Accessories for tap holders	603 - 630



EMUGE
SOFTSYNCHRO® 1
HSK-A63 DIN69893
EMUGE



Softsynchro® Series

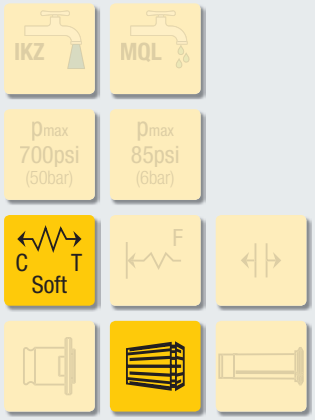
Application on machines with synchronous spindle

The threading tool is pitch-controlled by the synchronous spindle; eventually arising axial forces caused by synchronisation faults are minimized by a patent-protected minimum length compensation on tension and on compression.

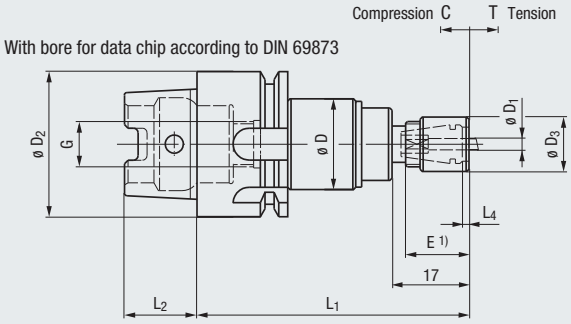
Softsynchro®

HSK-A Shank

DIN 69893 A



For use on machines with synchronous spindle



Type		ø D_1			Shank Size ø D_2	mm ø D	ø D_3	L_1	L_2	L_4	G	C	T	EDP Number	
Softsynchro® Micro	M0.5 - M4 (No.0 - No.8)	2 - 4.5 mm 0.141 - 0.168	ER 8	Hi-Q/ERM 8	HSK-A32	20	12	60	16	1.5	M10 x 1	0.2	0.2	**F3150C01**	★

1) Clamping depths E, see page 624 - 625

Further designs upon request

Clamping nut without integrated seal is included in the delivery

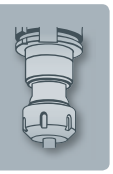
Accessories

Collets type ER (GB) ▸▸ 610 - 613

Set of clamping wrenches ▸▸ 621

Coolant tubes and wrenches ▸▸ 606 - 607

Torque wrenches TORCO-FIX ▸▸ 623

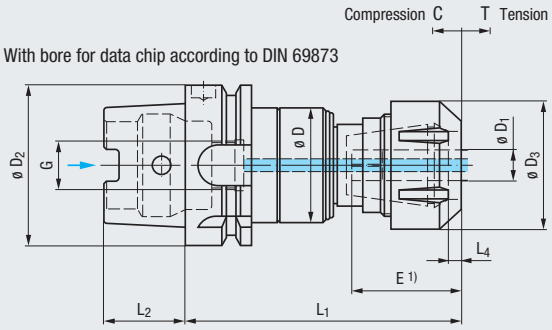


EMUGE

Softsynchro®

HSK-A Shank

DIN 69893 A



For use on machines with synchronous spindle

Type		ø D_1			Shank Size ø D_2	mm ø D	ø D_3	L_1 ER	L_1 ER-GB	L_2	L_4	G	C	T	EDP Number	
Softsynchro® 0	M2 - M8 (No.2 - 5/16)	2.5 - 7 mm 0.141 - 0.194	ER 11 (GB)	Hi-Q/ERM 11	HSK-A40	34	16	89.2	87.5	20	0.9	M12 x 1	0.5	0.5	**F3150C02.1**	★
					HSK-A50	34	16	93.2	91.5	25	0.9	M16 x 1	0.5	0.5	**F3150C03.1**	
					HSK-A63	34	16	95.2	93.5	32	0.9	M18 x 1	0.5	0.5	**F3150C04.1**	★
					HSK-A80	34	16	99.7	98	40	0.9	M20 x 1.5	0.5	0.5	**F3150C05.1**	
					HSK-A100	34	16	101.7	100	50	0.9	M24 x 1.5	0.5	0.5	**F3150C06.1**	
Softsynchro® 1	M4 - M12 (No.8 - 7/16)	4.5 - 10 mm 0.168 - 0.381	ER 20 (GB)	Hi-Q/ERC 20	HSK-A40	34	34	–	89.5	20	5	M12 x 1	0.5	0.5	**F3151C02.1**	★
					HSK-A50	34	34	–	93.5	25	5	M16 x 1	0.5	0.5	**F3151C03.1**	★
					HSK-A63	34	34	–	95.5	32	5	M18 x 1	0.5	0.5	**F3151C04.1**	★
					HSK-A80	34	34	–	100	40	5	M20 x 1.5	0.5	0.5	**F3151C05.1**	★
					HSK-A100	34	34	–	102	50	5	M24 x 1.5	0.5	0.5	**F3151C06.1**	★
Softsynchro® 3	M4 - M20 (1/4 - 3/4)	4.5 - 16 mm 0.255 - 0.590	ER 32 (GB)	Hi-Q/ERC 32	HSK-A50	45	50	–	116.3	25	5	M16 x 1	0.5	0.5	**F3153C03.1**	★
					HSK-A63	45	50	–	108.8	32	5	M18 x 1	0.5	0.5	**F3153C04.1**	★
					HSK-A80	45	50	–	113.3	40	5	M20 x 1.5	0.5	0.5	**F3153C05.1**	★
					HSK-A100	45	50	–	115.3	50	5	M24 x 1.5	0.5	0.5	**F3153C06.1**	★
Softsynchro® 4	M12 - M30 (7/16 - 1 1/8)	9 - 22 mm 0.255 - 0.800	ER 40 (GB)	Hi-Q/ERC 40	HSK-A63	63	63	–	146.5	32	5	M18 x 1	0.7	0.7	**F3154C04.1**	★
					HSK-A80	63	63	–	136	40	5	M20 x 1.5	0.7	0.7	**F3154C05.1**	★
					HSK-A100	63	63	–	138	50	5	M24 x 1.5	0.7	0.7	**F3154C06.1**	★

1) Clamping depths E, see page 624 - 625

Further designs upon request

Softsynchro® 0
Clamping nut without integrated seal is included in the delivery

Softsynchro® 1-4
Clamping nut for sealing disks is included in the delivery

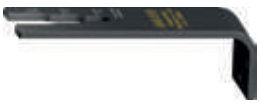
Accessories

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

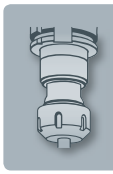
Clamping nut with integrated seal, type Hi-Q/ERMC 11 ▸▸ 618

Set of clamping wrenches ▸▸ 621


Assembly device ▸▸ 621

Coolant tubes and wrenches ▸▸ 606 - 607

Torque wrenches TORCO-FIX ▸▸ 623



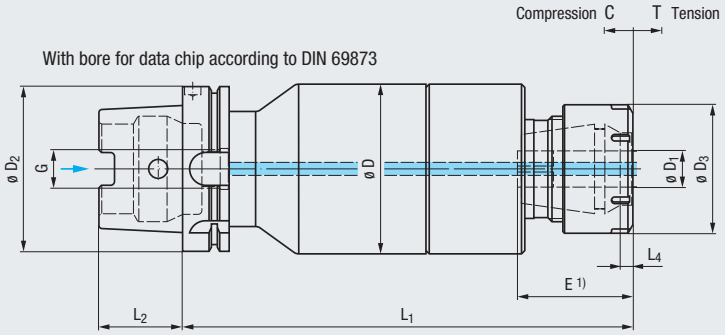
● = In stock
★ = Allow 7 days for delivery

Softsynchro®

HSK-A Shank

DIN 69893 A

For use on machines with synchronous spindle



Type		ø D_1			Shank Size ø D_2	mm ø D	ø D_3	L_1 ER	L_1 ER-GB	L_2	L_4	G	C	T	EDP Number	
Softsynchro® 5	M30 - M48 (1 - 1 1/2)	22 - 36 mm 0.800 - 1.233	ER 50 (GB)	Hi-Q/ERBC 50	HSK-A100	103	78	269	265.6	50	8	M24 x 1.5	2	2	**F3155C06.1**	★

1) Clamping depths E, see page 624 - 625

Further designs upon request

Clamping nut for sealing disks is included in the delivery

Square seat for tools with shank diameter 36 mm is integrated in the tap holder body

Accessories

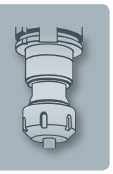
Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Clamping wrenches ▸▸ 621

Coolant tubes and wrenches ▸▸ 606 - 607

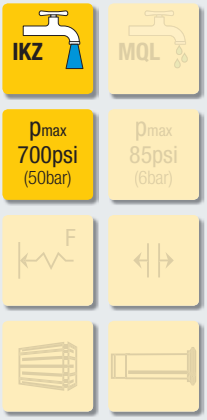
Torque wrenches TORCO-FIX ▸▸ 623

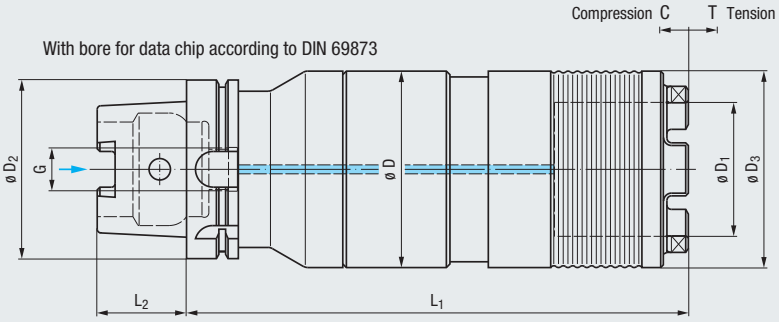


Softsynchro®

HSK-A Shank

DIN 69893 A





For use on machines with synchronous spindle

Type			Shank Size ø D_2	mm ø D	ø D_1	ø D_3	L_1	L_2	G	C	T	EDP Number	
Softsynchro® 6	M45 - M76 (1 3/8 - 2 3/8)	HE2/IKZZ	HSK-A100	110	75	110	281	50	M24 x 1.5	2	2	**F3156C06.1**	★

Further designs upon request

Accessories

Quick-change adapters type HE2/IKZZ ▸▸ 578 - 579

Coolant tubes and wrenches ▸▸ 606 - 607

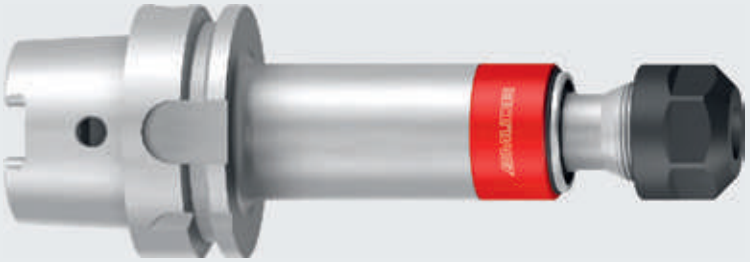
Further quick-change tap holders (HF series) for the production of large threads, see pages 576

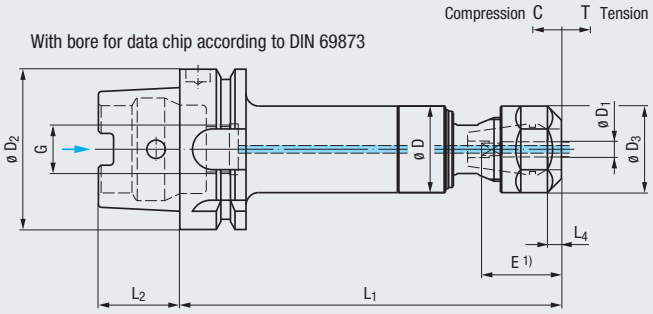
● = In stock
★ = Allow 7 days for delivery

Softsynchro®

HSK-A Shank

DIN 69893 A





For use on machines
with synchronous spindle

Type		ø D_1			Shank Size ø D_2	mm ø D	ø D_3	L_1	L_2	L_4	G	C	T	EDP Number	
Softsynchro® 1	M4 - M12 (No.8 - 7/16)	4.5 - 10 mm 0.168 - 0.381	ER 20 (GB)	Hi-Q/ERC 20	HSK-A63	34	34	125	32	5	M18 x 1	0.5	0.5	**F3151037.1**	★
					HSK-A63	34	34	150	32	5	M18 x 1	0.5	0.5	**F3151918.1**	★
					HSK-A63	34	34	175	32	5	M18 x 1	0.5	0.5	**F3151038.1**	★

1) Clamping depths E, see page 624 - 625

Further designs upon request

Clamping nut for sealing disks is included in the delivery

Accessories

Collets type ER (GB) ▸▸ 610 - 613

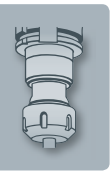
Sealing disks type DS/ER ▸▸ 616

Set of clamping wrenches ▸▸ 621

Assembly device ▸▸ 621

Coolant tubes and wrenches ▸▸ 606 - 607

Torque wrenches TORCO-FIX ▸▸ 623



EMUGE

Softsynchro® Modular/IKZ

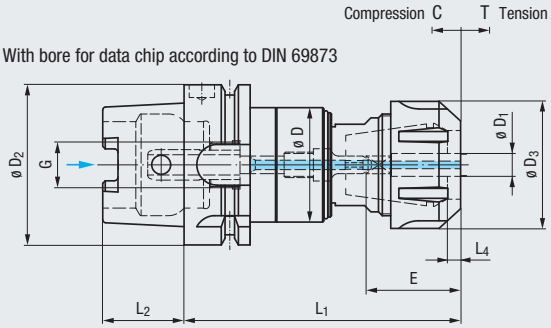
HSK-A Shank

DIN 69893 A

IKZ | MQL

p_{max} 700psi (50bar) | p_{max} 85psi (6bar)

L+ 2 mm | C T Soft



For use on machines with synchronous spindle

new Type		ø D_1			Shank Size ø D_2	mm ø D	ø D_3	L_1	L_2	L_4	G	C	T	EDP Number	
Softsynchro® 1/Modular/IKZ	M4.5 - M10	6 / 7 mm	ER 20 (GB)	Hi-Q/ERC 20	HSK-A40	34	34	89.5	20	5	M12 x 1	0.5	0.5	F3541C02.1.01	★
					HSK-A63	34	34	95.5	32	5	M18 x 1	0.5	0.5	F3541C04.1.01	★
					HSK-A100	34	34	102	50	5	M24 x 1.5	0.5	0.5	F3541C06.1.01	★
	M8, M9, M11, M12	8 / 9 mm			HSK-A40	34	34	89.5	20	5	M12 x 1	0.5	0.5	F3541C02.1.02	★
					HSK-A63	34	34	95.5	32	5	M18 x 1	0.5	0.5	F3541C04.1.02	★
					HSK-A100	34	34	102	50	5	M24 x 1.5	0.5	0.5	F3541C06.1.02	★
	M10	10 mm			HSK-A40	34	34	89.5	20	5	M12 x 1	0.5	0.5	F3541C02.1.03	★
					HSK-A63	34	34	95.5	32	5	M18 x 1	0.5	0.5	F3541C04.1.03	★
					HSK-A100	34	34	102	50	5	M24 x 1.5	0.5	0.5	F3541C06.1.03	★
Softsynchro® 3/Modular/IKZ	M12	9 mm	ER 32 (GB)	Hi-Q/ERC 32	HSK-A63	45	50	108.8	32	5	M18 x 1	0.5	0.5	F3543C04.1.01	★
					HSK-A100	50	50	115.3	50	5	M24 x 1.5	0.5	0.5	F3543C06.1.01	★
	M10 - M16	10 - 12 mm			HSK-A63	45	50	108.8	32	5	M18 x 1	0.5	0.5	F3543C04.1.02	★
					HSK-A100	50	50	115.3	50	5	M24 x 1.5	0.5	0.5	F3543C06.1.02	★
	M18 - M20	14 - 16 mm			HSK-A63	45	50	108.8	32	5	M18 x 1	0.5	0.5	F3543C04.1.03	★
					HSK-A100	50	50	115.3	50	5	M24 x 1.5	0.5	0.5	F3543C06.1.03	★

Clamping nut for sealing disks, coolant tube and length adjustment screw are included in the delivery

Further designs upon request

Clamping depths

ø D_1 mm	E mm	
	min.	max.
6	29	31
7	29	31
8	34	36
9	35	37
10	39	41
11	40	42
12	40	42
14	42	44
16	43	45

Accessories

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Set of clamping wrenches ▸▸ 621

Assembly device ▸▸ 621

Length adjustment screws ▸▸ 608

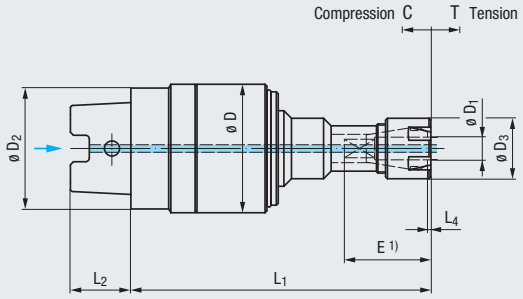
Torque wrenches TORCO-FIX ▸▸ 623

● = In stock
★ = Allow 7 days for delivery

Softsynchro®

HSK-C Shank

DIN 69893 C



For use on machines with synchronous spindle

Type		ø D_1			Shank Size ø D_2	mm ø D	ø D_3	L_1 ER	L_1 ER-GB	L_2	L_4	C	T	EDP Number	
Softsynchro® 0	M2 - M8 (No.2 - 5/16)	2.5 - 7 mm 0.141 - 0.194	ER 11 (GB)	Hi-Q/ERM 11	HSK-C32	34	16	81.2	79.5	16	0.9	0.5	0.5	**F3150K01.1**	★
					HSK-C40	34	16	81.2	79.5	20	0.9	0.5	0.5	**F3150K02.1**	★
Softsynchro® 1	M4 - M12 (No.8 - 7/16)	4.5 - 10 mm 0.168 - 0.381	ER 20 (GB)	Hi-Q/ERC 20	HSK-C32	34	34	–	81.5	16	5	0.5	0.5	**F3151K01.1**	★
					HSK-C40	34	34	–	81.5	20	5	0.5	0.5	**F3151K02.1**	★

1) Clamping depths E, see page 624 - 625

Further designs upon request

Softsynchro® 0
Clamping nut without integrated seal is included in the delivery

Softsynchro® 1
Clamping nut for sealing disks is included in the delivery

Accessories

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Clamping nut with integrated seal, type Hi-Q/ERMC 11 ▸▸ 618

Set of clamping wrenches ▸▸ 621

Assembly device ▸▸ 621

Torque wrenches TORCO-FIX ▸▸ 623

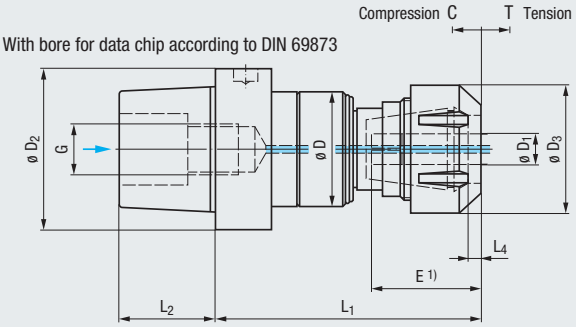
Ordering Example: **F3150K01.1**

Softsynchro®

PSC Shank

ISO 26623-1

With bore for data chip according to DIN 69873



For use on machines with synchronous spindle

Type		ø D_1			Shank Size ø D_2	mm ø D	ø D_3	L_1 ER	L_1 ER-GB	L_2	L_4	G	C	T	EDP Number	
Softsynchro® 0	M2 - M8 (No.2 - 5/16)	2.5 - 7 mm 0.141 - 0.194	ER 11 (GB)	Hi-Q/ERM 11	PSC 63	34	16	95	93.2	38	0.9	M20 x 2	0.5	0.5	**F3150T06.1**	★
Softsynchro® 1	M4 - M12 (No.8 - 7/16)	4.5 - 10 mm 0.168 - 0.381	ER 20 (GB)	Hi-Q/ERC 20	PSC 40	34	34	–	89.5	24	5	M14 x 1.5	0.5	0.5	**F3151T04.1**	★
					PSC 50	34	34	–	89.5	30	5	M16 x 1.5	0.5	0.5	**F3151T05.1**	★
					PSC 63	34	34	–	93.5	38	5	M20 x 2	0.5	0.5	**F3151T06.1**	★
Softsynchro® 3	M4 - M20 (1/4 - 3/4)	4.5 - 16 mm 0.255 - 0.590	ER 32 (GB)	Hi-Q/ERC 32	PSC 40	45	50	–	104	24	5	M14 x 1.5	0.5	0.5	**F3153T04.1**	★
					PSC 50	45	50	–	103	30	5	M16 x 1.5	0.5	0.5	**F3153T05.1**	★
					PSC 63	45	50	–	107	38	5	M20 x 2	0.5	0.5	**F3153T06.1**	★
Softsynchro® 4	M12 - M30 (7/16 - 1 1/8)	9 - 22 mm 0.255 - 0.800	ER 40 (GB)	Hi-Q/ERC 40	PSC 63	63	63	–	129.5	38	5	M20 x 2	0.7	0.7	**F3154T06.1**	★
					PSC 80	63	63	–	134	48	5	M20 x 2	0.7	0.7	**F3154T08.1**	★

1) Clamping depths E, see page 624 - 625

Further designs upon request

Softsynchro® 0
Clamping nut without integrated seal is included in the delivery

Softsynchro® 1-4
Clamping nut for sealing disks is included in the delivery

Accessories

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Clamping nut with integrated seal, type Hi-Q/ERMC 11 ▸▸ 618

Set of clamping wrenches ▸▸ 621

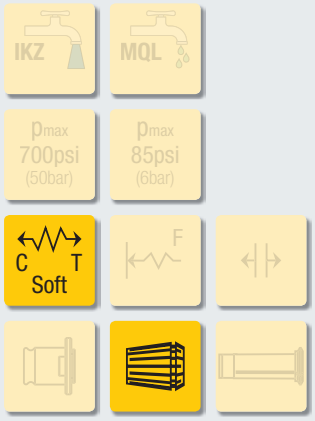
Assembly device ▸▸ 621

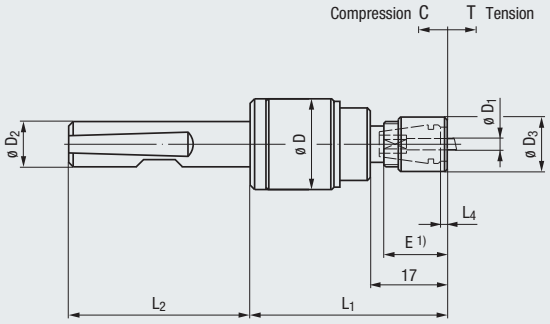
Torque wrenches TORCO-FIX ▸▸ 623

Softsynchro®

Cylindrical Shank

DIN 1835 B+E





For use on machines with synchronous spindle

Type		ø D_1			Shank Size ø D_2	mm ø D	ø D_3	L_1	L_2	L_4	C	T	EDP Number	
Softsynchro® Micro	M0.5 - M4 (No.0 - No.8)	2 - 4.5 mm 0.141 - 0.168	ER 8	Hi-Q/ERM 8	10	20	12	43.5	40	1.5	0.2	0.2	**F3150G22**	★

1) Clamping depths E, see page 624 - 625

Further designs upon request

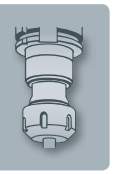
Clamping nut without integrated seal is included in the delivery

Accessories

Collets type ER (GB) ▸▸ 610 - 613

Set of clamping wrenches ▸▸ 621

Torque wrenches TORCO-FIX ▸▸ 623



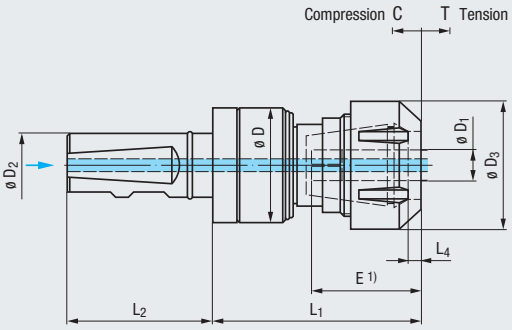
Ordering Example: **F3150G22**

EMUGE

Softsynchro®

Cylindrical Shank

DIN 1835 B+E



For use on machines with synchronous spindle

Type		ø D_1			Shank Size ø D_2	mm ø D	ø D_3	L_1 ER	L_1 ER-GB	L_2	L_4	C	T	EDP Number	
Softsynchro® 0	M2 - M8 (No.2 - 5/16)	2.5 - 7 mm 0.141 - 0.194	ER 11 (GB)	Hi-Q/ERM 11	16	34	16	72.7	71	49	0.9	0.5	0.5	**F3150G24.1.44**	★
					20	34	16	72.7	71	51	0.9	0.5	0.5	**F3150G25.1.44**	★
					25	34	16	72.7	71	57	0.9	0.5	0.5	**F3150G26.1.44**	★
Softsynchro® 1	M4 - M12 (No.8 - 7/16)	4.5 - 10 mm 0.168 - 0.381	ER 20 (GB)	Hi-Q/ERC 20	20	34	34	–	73	51	5	0.5	0.5	**F3151G25.1.44**	★
					25	34	34	–	73	57	5	0.5	0.5	**F3151G26.1.44**	★
Softsynchro® 3	M4 - M20 (1/4 - 3/4)	4.5 - 16 mm 0.255 - 0.590	ER 32 (GB)	Hi-Q/ERC 32	25	45	50	–	87.3	57	5	0.5	0.5	**F3153G26.1.44**	★
Softsynchro® 4	M12 - M30 (7/16 - 1 1/8)	9 - 22 mm 0.255 - 0.800	ER 40 (GB)	Hi-Q/ERC 40	32	63	63	–	113.5	61	5	0.7	0.7	**F3154G27.1**	★

1) Clamping depths E, see page 624 - 625

Further designs upon request

Softsynchro® 0
Clamping nut without integrated seal is included in the delivery

Softsynchro® 1-4
Clamping nut for sealing disks is included in the delivery

Accessories

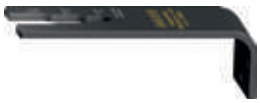
Adapter shanks ▸▸ 604

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Clamping nut with integrated seal, type Hi-Q/ERMC 11 ▸▸ 618

Set of clamping wrenches ▸▸ 621


Assembly device ▸▸ 621

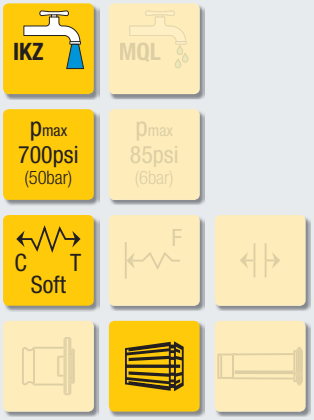
Torque wrenches TORCO-FIX ▸▸ 623

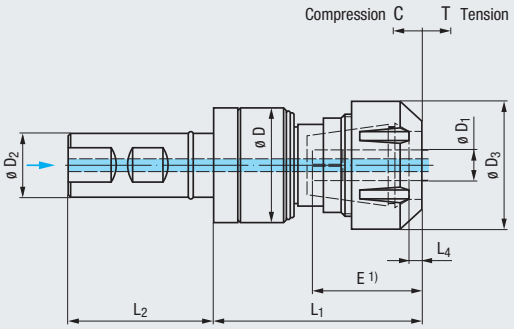
● = In stock
★ = Allow 7 days for delivery

Softsynchro®

Weldon Shank

ASME B94.19





For use on machines
with synchronous spindle

Type		ø D_1			Shank Size ø D_2	inch ø D	ø D_3	L_1 ER	L_1 ER-GB	L_2	L_4	C	T	EDP Number	
Softsynchro® 0	M2 - M8 (No.2 - 5/16)	2.5 - 7 mm 0.141 - 0.194	ER 11 (GB)	Hi-Q/ERM 11	1	1.3386	0.6299	2.8622	2.7953	2.2835	0.0354	0.0197	0.0197	**F3150H36.1.44**	●
Softsynchro® 1	M4 - M12 (No.8 - 7/16)	4.5 - 10 mm 0.168 - 0.381	ER 20 (GB)	Hi-Q/ERC 20	1	1.3386	1.3386	–	2.8740	2.2835	0.1969	0.0197	0.0197	**F3151H36.1.44**	●
Softsynchro® 3	M4 - M20 (1/4 - 3/4)	4.5 - 16 mm 0.255 - 0.590	ER 32 (GB)	Hi-Q/ERC 32	1	1.7717	1.9685	–	3.4370	2.2835	0.1969	0.0197	0.0197	**F3153H36.1.44**	●
Softsynchro® 4	M12 - M30 (7/16 - 1 1/8)	9 - 22 mm 0.255 - 0.800	ER 40 (GB)	Hi-Q/ERC 40	1 1/4	2.4803	2.4803	–	4.4685	2.2835	0.1969	0.0276	0.0276	**F3154H38.1**	●

1) Clamping depths E, see page 624 - 625

Further designs upon request

Softsynchro® 0
Clamping nut without integrated seal is included in the delivery

Softsynchro® 1-4
Clamping nut for sealing disks is included in the delivery

Accessories

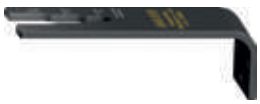
Adapter shanks ▸▸ 604

Collets type ER (GB) ▸▸ 610 - 613

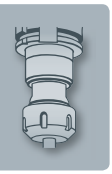
Sealing disks type DS/ER ▸▸ 616

Clamping nut with integrated seal, type Hi-Q/ERMC 11 ▸▸ 618

Set of clamping wrenches ▸▸ 621


Assembly device ▸▸ 621

Torque wrenches TORCO-FIX ▸▸ 623

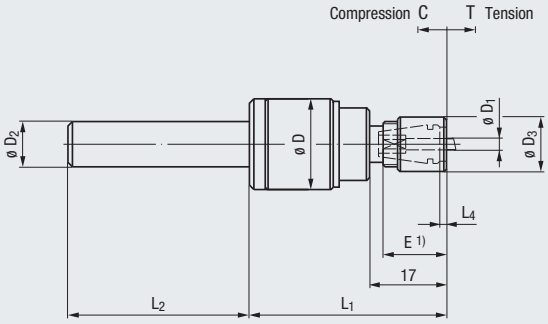


Ordering Example: **F3150H36.1.44**

Softsynchro®

Cylindrical Shank

DIN 1835 A



For use on machines with synchronous spindle

Type		ø D_1			Shank Size ø D_2 h6	mm ø D	ø D_3	L_1	L_2	L_4	C	T	EDP Number	
Softsynchro® Micro	M0.5 - M4 (No.0 - No.8)	2 - 4.5 mm 0-141 - 0.168	ER 8	Hi-Q/ERM 8	10	20	12	43.5	40	1.5	0.2	0.2	**F3150900**	★

1) Clamping depths E, see page 624 - 625

Further designs upon request

Clamping nut without integrated seal is included in the delivery

Accessories

Collets type ER (GB) ▸▸ 610 - 613

Set of clamping wrenches ▸▸ 621

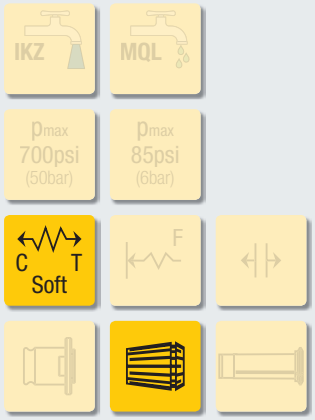
Torque wrenches TORCO-FIX ▸▸ 623

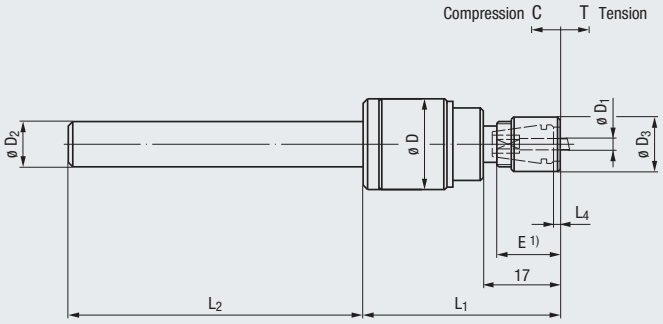
Softsynchro®

Cylindrical Shank

≈ DIN 1835 A

Long design





For use on machines with synchronous spindle

Type		ø D_1			Shank Size ø D_2 h6	mm ø D	ø D_3	L_1	L_2	L_4	C	T	EDP Number	
Softsynchro® Micro	M0.5 - M4 (No.0 - No.8)	2 - 4.5 mm 0.141 - 0.168	ER 8	Hi-Q/ERM 8	10	20	12	43.5	66	1.5	0.2	0.2	**F3150901**	★

1) Clamping depths E, see page 624 - 625

Further designs upon request

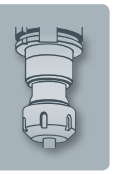
Clamping nut without integrated seal is included in the delivery

Accessories

Collets type ER (GB) ▸▸ 610 - 613

Set of clamping wrenches ▸▸ 621

Torque wrenches TORCO-FIX ▸▸ 623

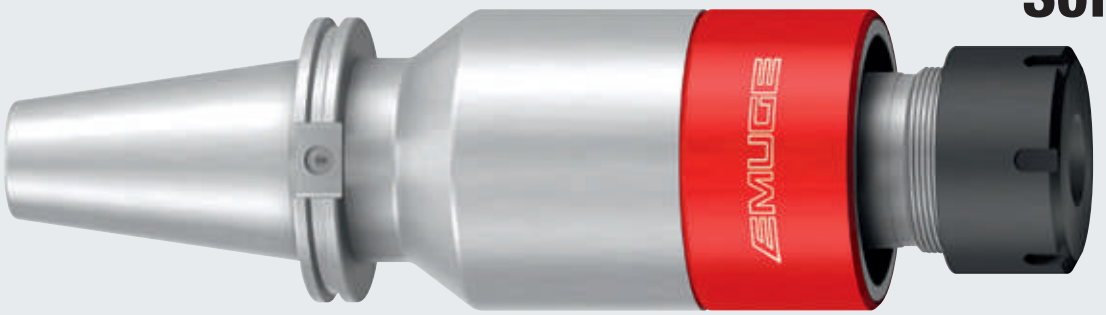


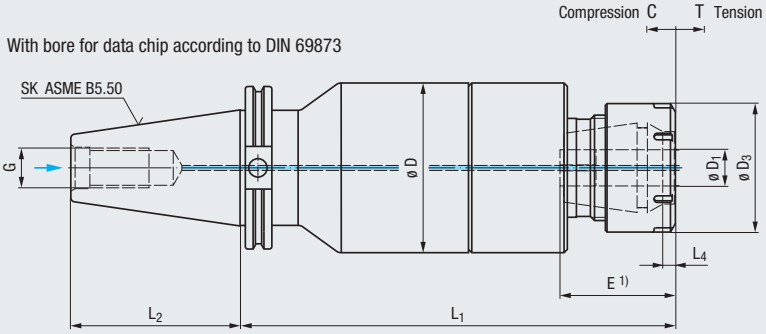
Ordering Example: **F3150901**

Softsynchro®

CAT Shank

ASME B5.50
UNC drawbolt thread





For use on machines with synchronous spindle

Type		ø D_1			Shank Size	mm ø D	ø D_3	L_1 ER	L_1 ER-GB	L_2	L_4	G	C	T	EDP Number	
Softsynchro® 5	M30 - M48 (1 - 1 1/2)	22 - 36 mm 0.800 - 1.233	ER 50 (GB)	Hi-Q/ERBC 50	CAT 50	3.0709	4.0551	10.5315	10.3937	4.0000	0.3150	1 - 8	0.0787	0.0787	**F3155783.1.16**	★

1) Clamping depths E, see page 624 - 625

Further designs upon request

Clamping nut for sealing disks is included in the delivery

Square seat for tools with shank diameter 36 mm is integrated in the tap holder body

Accessories

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Clamping wrenches ▸▸ 621

Torque wrenches TORCO-FIX ▸▸ 623

Softsynchro®

SK Shank

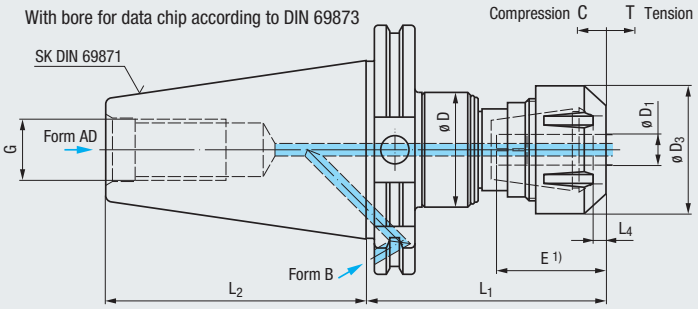
DIN 69871 AD
DIN 69871 B

IKZ | MQL

pmax 700psi (50bar) | pmax 85psi (6bar)

C T Soft | F

For use on machines with synchronous spindle



new Type		ø D_1			Shank Size	mm ø D	ø D_3	L_1	L_2	L_4	G	C	T	EDP Number	
Softsynchro® 1	M4 - M12 (No.8 - 7/16)	4.5 - 10 mm 0.168 - 0.381	ER 20 (GB)	Hi-Q/ERC 20	SK 40 AD	34	34	85	68.4	5	M16	0.5	0.5	**F3151651.1**	★
					SK 40 B	34	34	85	68.4	5	M16	0.5	0.5	**F3151651.2**	★
					SK 50 AD	34	34	85	101.75	5	M24	0.5	0.5	**F3151653.1**	★
					SK 50 B	34	34	85	101.75	5	M24	0.5	0.5	**F3151653.2**	★
Softsynchro® 3	M4 - M20 (1/4 - 3/4)	4.5 - 16 mm 0.255 - 0.590	ER 32 (GB)	Hi-Q/ERC 32	SK 40 AD	45	50	93.5	68.4	5	M16	0.5	0.5	**F3153651.1**	★
					SK 40 B	45	50	93.5	68.4	5	M16	0.5	0.5	**F3153651.2**	★
					SK 50 AD	45	50	93.5	101.75	5	M24	0.5	0.5	**F3153653.1**	★
					SK 50 B	45	50	93.5	101.75	5	M24	0.5	0.5	**F3153653.2**	★

1) Clamping depths E, see page 624 - 625

Further designs upon request

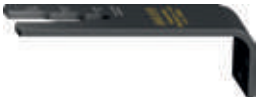
Clamping nut for sealing disks is included in the delivery

Accessories

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Set of clamping wrenches ▸▸ 621

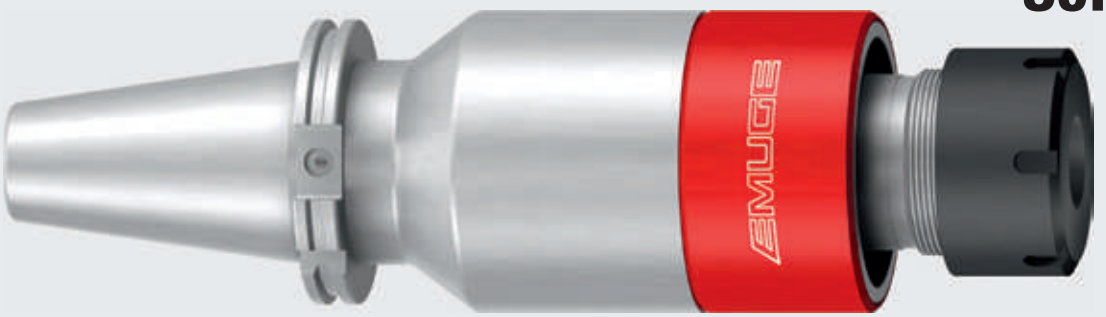

Assembly device ▸▸ 621

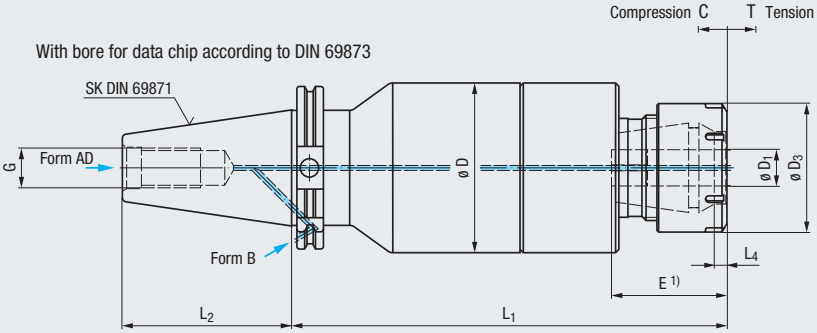
Torque wrenches TORCO-FIX ▸▸ 623

Softsynchro®

SK Shank

DIN 69871 AD
DIN 69871 B





For use on machines with synchronous spindle

new Type		ø D_1			Shank Size	mm ø D	ø D_3	L_1 ER	L_1 ER-GB	L_2	L_4	G	C	T	EDP Number	
Softsynchro® 5	M30 - M48 (1 - 1 1/2)	22 - 36 mm 0.800 - 1.233	ER 50 (GB)	Hi-Q/ERBC 50	SK 50 AD	103	78	267.5	264	101.75	8	M24	2	2	**F3155653.1**	★
					SK 50 B	103	78	267.5	264	101.75	8	M24	2	2	**F3155653.2**	

1) Clamping depths E, see page 624 - 625

Further designs upon request

Clamping nut for sealing disks is included in the delivery

Square seat for tools with shank diameter 36 mm is integrated in the tap holder body

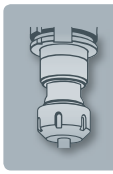
Accessories

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Clamping wrenches ▸▸ 621

Torque wrenches TORCO-FIX ▸▸ 623



● = In stock
★ = Allow 7 days for delivery

Softsynchro®

SK Shank

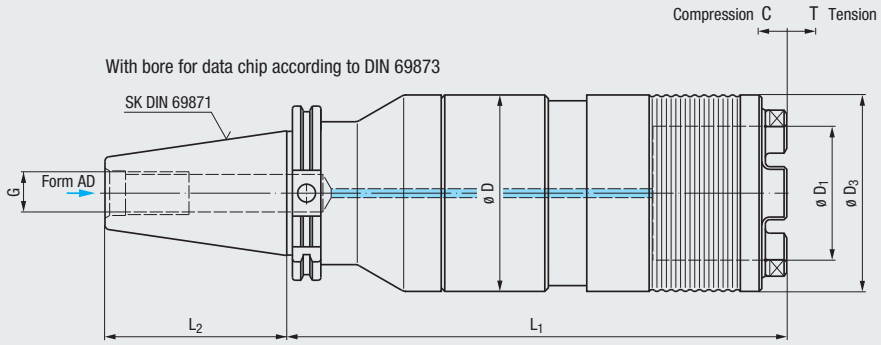
DIN 69871 AD

IKZ | MQL

p_{max} 700psi (50bar) | p_{max} 85psi (6bar)

C T Soft | F

For use on machines with synchronous spindle



Type			Shank Size	mm ø D	ø D_1	ø D_3	L_1	L_2	G	C	T	EDP Number	
Softsynchro® 6	M45 - M76 (1 3/8 - 2 3/8)	HE2/IKZZ	SK 50 AD	110	75	110	280	101.75	M24	2	2	**F3156653.1**	★

Further designs upon request

Accessories

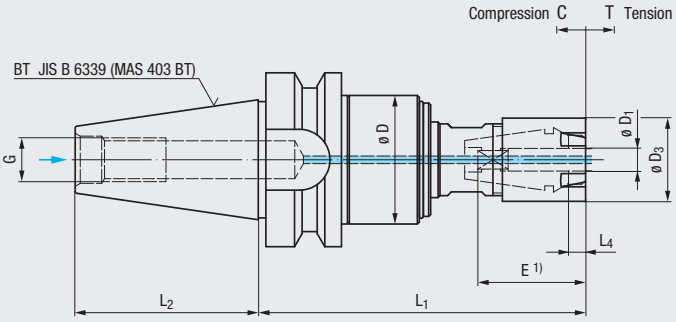
Quick-change adapters type HE2/IKZZ ▸▸ 578 - 579

Further quick-change tap holders (HF series) for the production of large threads, see pages 576

Softsynchro®

BT Shank

JIS B 6339 (MAS 403 BT)



IKZ | MQL

pmax 700psi (50bar) | pmax 85psi (6bar)

C T Soft | F

For use on machines with synchronous spindle

Type		ø D_1			Shank Size	inch								EDP Number	
						ø D	ø D_3	L_1	L_2	L_4	G	C	T		
Softsynchro® 1	M4 - M12	4.5 - 10 mm	ER 16 (GB)	Hi-Q/ERMC 16	BT 30	1.3386	0.8661	3.4055	1.9055	0.1969	M12	0.0197	0.0197	**F3151049.1**	★

1) Clamping depths E, see page 624 - 625

Further designs upon request

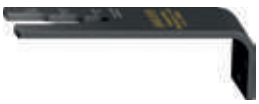
Clamping nut for sealing disks is included in the delivery

Accessories

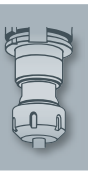
Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Set of clamping wrenches ▸▸ 621

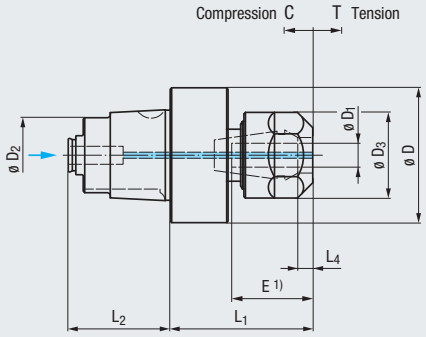

Assembly device ▸▸ 621

Torque wrenches TORCO-FIX ▸▸ 623



Softsynchro®
mimatic®

For driven tools



For use on machines
with synchronous spindle

Type		ø D_1				mm ø D_2	ø D	ø D_3	L_1 ER	L_1 ER-GB	L_2	L_4	C	T	EDP Number	
Softsynchro® 1	M4 - M12	4.5 - 10 mm	ER 16 (GB)	Hi-Q/ERC 16	MI 40	25	45	28	51	47.5	34	5	0.5	0.5	**F3151Z40.M01001**	★
					MI 50	33	55	28	48	44.5	41	5	0.5	0.5	**F3151Z50.M01001**	★

[1] Clamping depths E, see page 624 - 625

Further designs upon request

Clamping nut for sealing disks is included in the delivery

Square seat for tools with shank diameter 9 and 10 mm is integrated in the tap holder body

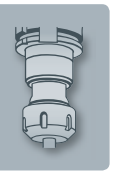
Accessories

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Set of clamping wrenches ▸▸ 621

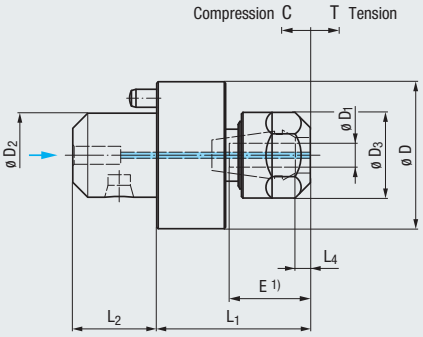
Torque wrenches TORCO-FIX ▸▸ 623



Ordering Example: **F3151Z40.M01001**

For driven tools

Softsynchro®
heimatec®



For use on machines with synchronous spindle

Type		ø D_1				mm ø D_2	ø D	ø D_3	L_1 ER	L_1 ER-GB	L_2	L_4	C	T	EDP Number	
Softsynchro® 1	M4 - M12	4.5 - 10 mm	ER 16 (GB)	Hi-Q/ERC 16	HT4	22	39	28	55	51.5	21.5	5	0.5	0.5	**F3151Z04.H01001**	★
					HT5	28	49	28	55	51.5	28	5	0.5	0.5	**F3151Z05.H01001**	★
					HT6	36	64	28	48	44.5	28	5	0.5	0.5	**F3151Z06.H01001**	★

1) Clamping depths E, see page 624 - 625

Further designs upon request

Clamping nut for sealing disks is included in the delivery

Square seat for tools with shank diameter 9 and 10 mm is integrated in the tap holder body

Accessories

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

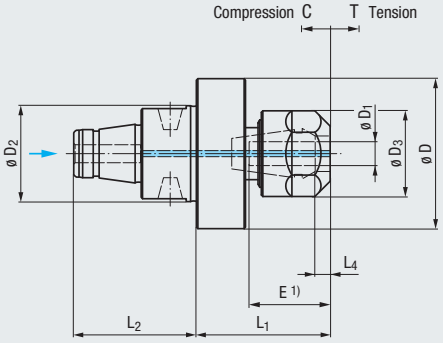
Set of clamping wrenches ▸▸ 621

Torque wrenches TORCO-FIX ▸▸ 623

Softsynchro®

W&F

For driven tools



For use on machines with synchronous spindle

Type		ø D_1			mm										EDP Number	
						ø D_2	ø D	ø D_3	L_1 ER	L_1 ER-GB	L_2	L_4	C	T		
Softsynchro® 1	M4 - M12	4.5 - 10 mm	ER 16 (GB)	Hi-Q/ERC 16	WFB 32-20	32	50	28	48	44.5	41	5	0.5	0.5	**F3151Z32.W01001**	★
					WFB 40-25	40	63	28	48	44.5	46	5	0.5	0.5	**F3151Z40.W01001**	★
					WFB 50-32	48	75	28	48	44.5	54	5	0.5	0.5	**F3151Z50.W01001**	★

[1] Clamping depths E, see page 624 - 625

Further designs upon request

Clamping nut for sealing disks is included in the delivery

Square seat for tools with shank diameter 9 and 10 mm is integrated in the tap holder body

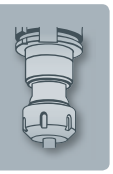
Accessories

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Set of clamping wrenches ▸▸ 621

Torque wrenches TORCO-FIX ▸▸ 623



Ordering Example: **F3151Z32.W01001**

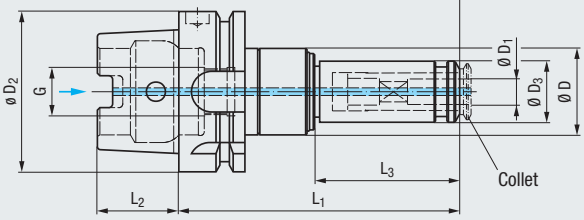
Softsynchro®/PGR

HSK-A Shank

DIN 69893 A

Compression C T Tension

With bore for data chip according to DIN 69873



For use on machines with synchronous spindle

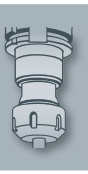
Type		ø D_1		Shank Size ø D_2	mm ø D	ø D_3	L_1	L_2	L_3	G	C	T	EDP Number	
Softsynchro® 1/PGR	M4 - M12 (No.10 - 1/4)	4.5 - 10 mm 0.194 - 0.255	PGR 15 GB	HSK-A50	34	24	108	25	57	M16 x 1	0.5	0.5	**F3221C03.1**	
				HSK-A63	34	24	110	32	57	M18 x 1	0.5	0.5	**F3221C04.1**	★
				HSK-A80	34	24	114.5	40	57	M20 x 1.5	0.5	0.5	**F3221C05.1**	
				HSK-A100	34	24	116.5	50	57	M24 x 1.5	0.5	0.5	**F3221C06.1**	★
Softsynchro® 3/PGR	M8 - M20 (1/4 - 3/4)	8 - 16 mm 0.255 - 0.590	PGR 25 GB	HSK-A50	45	40	132.5	25	67	M16 x 1	0.5	0.5	**F3223C03.1**	
				HSK-A63	45	40	125	32	67	M18 x 1	0.5	0.5	**F3223C04.1**	★
				HSK-A80	45	40	129.5	40	67	M20 x 1.5	0.5	0.5	**F3223C05.1**	★
				HSK-A100	45	40	131.5	50	67	M24 x 1.5	0.5	0.5	**F3223C06.1**	★

Further designs upon request

Accessories

Collets type PGR-GB ▸▸ 630

Coolant tubes and wrenches ▸▸ 606 - 607



● = In stock
★ = Allow 7 days for delivery

powRgrip® is a registered trademark of REGO-FIX AG

Softsynchro®/PGR

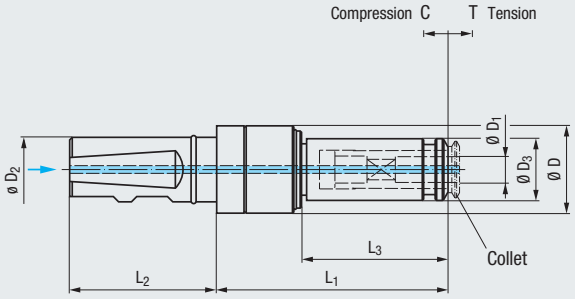
Cylindrical Shank

DIN 1835 B+E

IKZ | MQL

pmax 700psi (50bar) | pmax 85psi (6bar)

C T Soft | F



For use on machines
with synchronous spindle

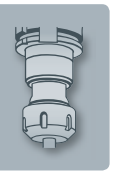
Type		ø D_1		ø D_2	mm ø D	ø D_3	L_1	L_2	L_3	C	T	EDP Number	
Softsynchro® 1/PGR	M4 - M12 (No.10 - 1/4)	4.5 - 10 mm 0.194 - 0.255	PGR 15 GB	25	34	24	87.5	57	57	0.5	0.5	**F3221G26.1.44**	★
Softsynchro® 3/PGR	M8 - M20 (1/4 - 3/4)	8 - 16 mm 0.255 - 0.590	PGR 25 GB	25	45	40	103.5	57	67	0.5	0.5	**F3223G26.1.44**	★

Further designs upon request

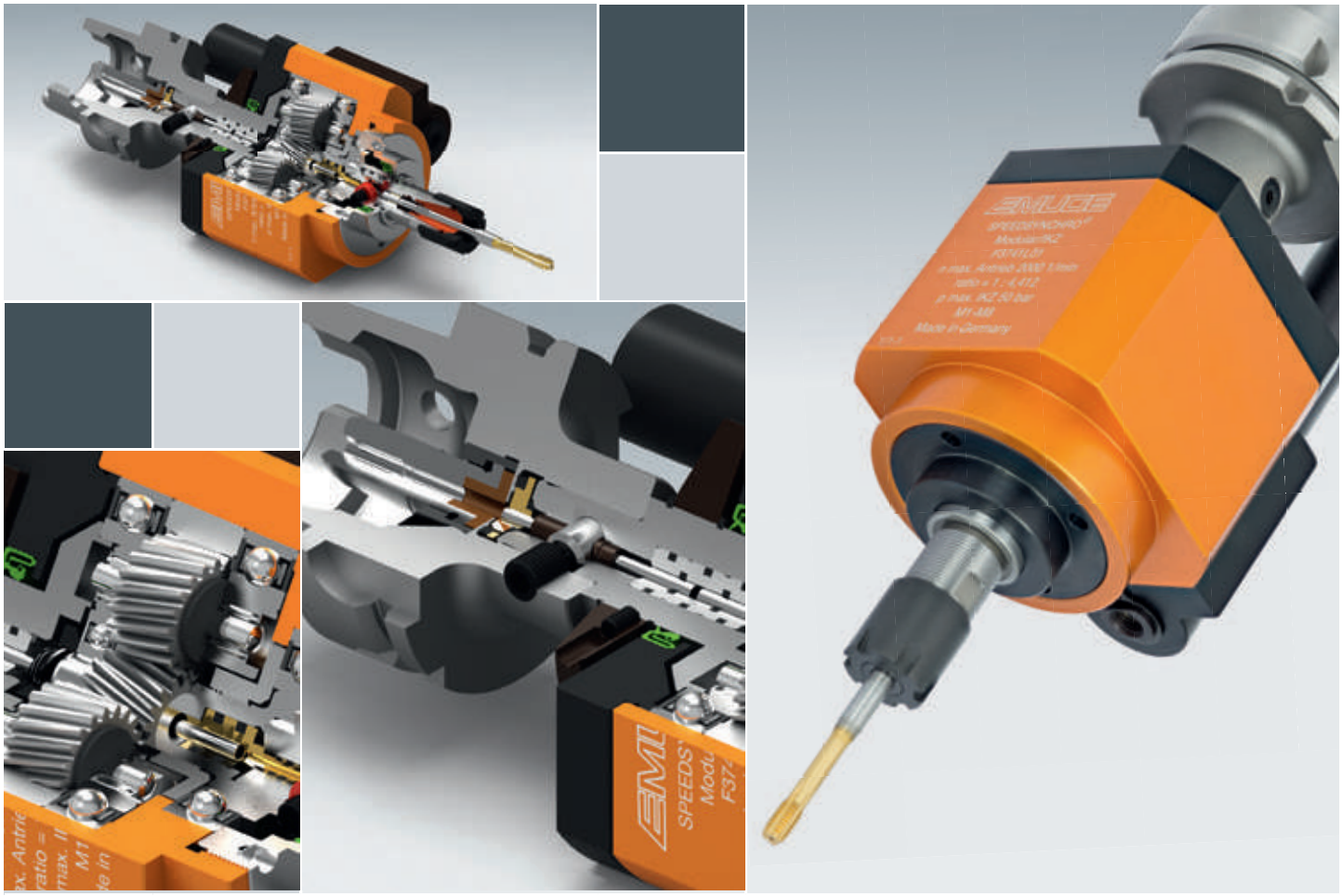
Accessories

Collets type PGR-GB ▸▸ 630

Adapter shanks ▸▸ 604



powRgrip® is a registered trademark of REGO-FIX AG



Speedsynchro® Modular Series

Softsynchro® technology with transmission gearing

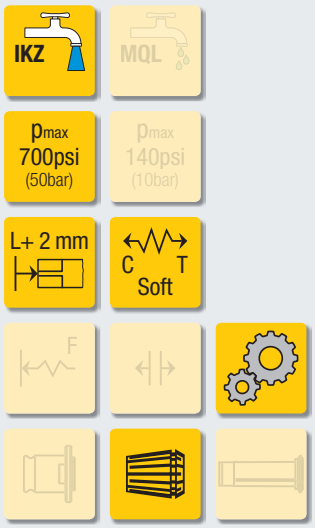
The Speedsynchro® Modular uses an integrated transmission gearing with a transmission ratio of 1:4.412 and combines it with the patented Softsynchro® minimal length compensation function.

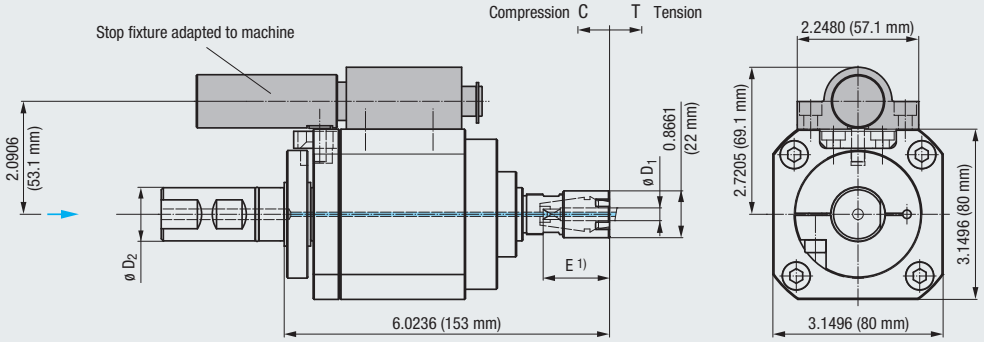
For achieving a high tool speed at a low spindle speed in order to reduce cycle time, save energy, reduce axial force and increase efficiency.

Speedsynchro® Modular/IKZ

Cylindrical Shank

DIN 1835 B





For use on machines with synchronous spindle

new Type				mm ø D_2	mm ø D_1	Max. Spindle Speed	Transmission Ratio	mm C	mm T	EDP Number	
Speedsynchro® Modular/IKZ	M1 - M8	ER 16 (GB)	Hi-Q/ERMC 16	25	2.5 - 8	2000	1:4.412	0.5	0.5	**F3741G26**	●

1) Clamping depths E, see page 624 - 625

Adapter shank, stop fixture (see also page 646) and length adjustment screw are not included in the delivery, please order separately

Accessories

Adapter shanks ▸▸ 604

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Assembly device ▸▸ 621

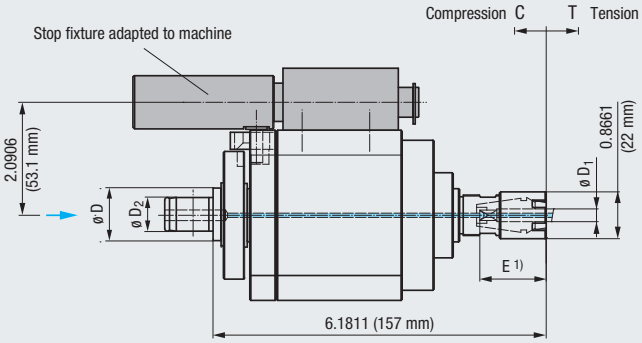
Length adjustment screws ▸▸ 609

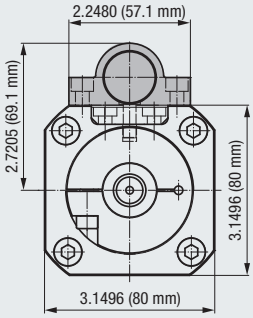
More information regarding Speedsynchro® Modular at
www.speedsynchro.com

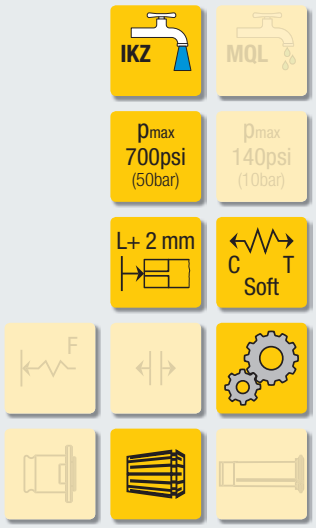
Speedsynchro® Modular/IKZ

ABS® Shank

ABS®-clutch (System KOMET)







For use on machines with synchronous spindle

new Type				mm ø D	ø D_2	ø D_1	Max. Spindle Speed	Transmission Ratio	mm C	T	EDP Number	
Speedsynchro® Modular/IKZ	M1 - M8	ER 16 (GB)	Hi-Q/ERMC 16	ABS 32	16	2.5 - 8	2000	1:4.412	0.5	0.5	**F3741L01**	●

1) Clamping depths E, see page 624 - 625

Adapter shank, stop fixture (see also page 646) and length adjustment screw are not included in the delivery, please order separately

Accessories

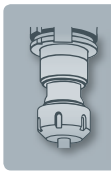
Adapter shanks ▸▸ 605

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Assembly device ▸▸ 621

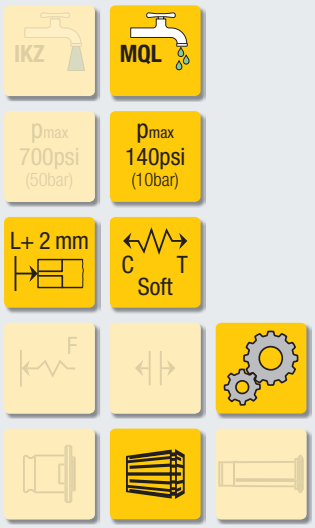
Length adjustment screws ▸▸ 609

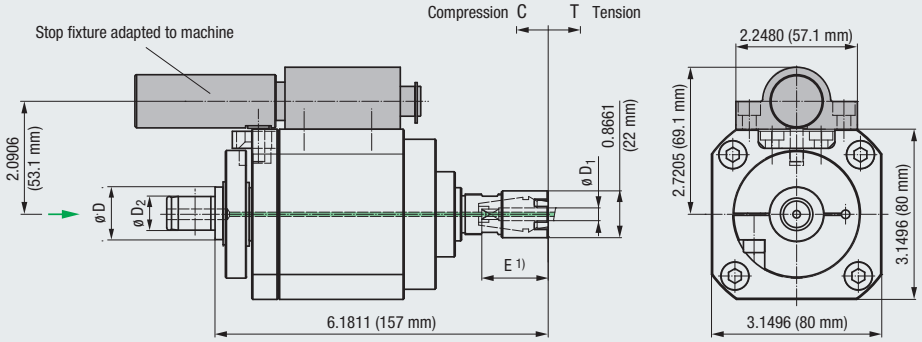


Speedsynchro® Modular/MQL

ABS® Shank

ABS®-clutch (System KOMET)





For use on machines
with synchronous spindle

new				mm					mm			
Type				ø D	ø D_2	ø D_1	Max. Spindle Speed	Transmission Ratio	C	T	EDP Number	
Speedsynchro® Modular/MQL	M1 - M8	ER 16 (GB)	Hi-Q/ERMC 16	ABS 32	16	2.5 - 8	2000	1 : 4.412	0.5	0.5	**F3751L01**	●

1) Clamping depths E, see page 624 - 625

Adapter shank, stop fixture (see also page 646) and length adjustment screw are not included in the delivery, please order separately

Accessories

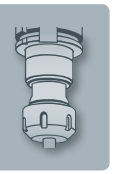
Adapter shanks ▸▸ 605

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Assembly device ▸▸ 621

Length adjustment screws ▸▸ 609



Ordering Example: **F3751L01**

KSN Series

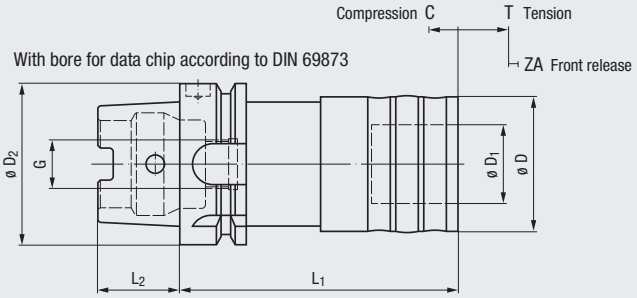
Application on CNC machining centers and conventional machine tools

The accuracy of the programmed thread depth is guaranteed by a patent-protected pressure point mechanism. Arising differences between spindle feed and thread pitch are compensated by a length compensation.

KSN

HSK-A Shank

DIN 69893 A



For use on CNC machining centers,
other machine tools and pillar drilling machines

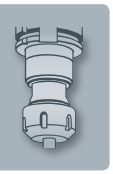
Type			Shank Size ø D_2	mm ø D	ø D_1	L_1	L_2	G	C	T	ZA	EDP Number	
KSN 1	M3 - M14 (No.0 - 9/16)	EM 01	HSK-A32	36	19	71	16	M10 x 1	5	8	2.1	**F3301C01.30**	★
			HSK-A40	36	19	73	20	M12 x 1	5	8	2.1	**F3301C02.30**	★
			HSK-A50	36	19	77	25	M16 x 1	5	8	2.1	**F3301C03.30**	★
			HSK-A63	36	19	79	32	M18 x 1	5	8	2.1	**F3301C04.30**	★
			HSK-A80	36	19	83.5	40	M20 x 1.5	5	8	2.1	**F3301C05.30**	★
			HSK-A100	36	19	85.5	50	M24 x 1.5	5	8	2.1	**F3301C06.30**	★
KSN 3	M4.5 - M24 (1/4 - 7/8)	EM 03	HSK-A40	53	31	107	20	M12 x 1	8.5	15	2.8	**F3303C02.30**	
			HSK-A50	53	31	111	25	M16 x 1	8.5	15	2.8	**F3303C03.30**	★
			HSK-A63	53	31	113	32	M18 x 1	8.5	15	2.8	**F3303C04.30**	★
			HSK-A80	53	31	117.5	40	M20 x 1.5	8.5	15	2.8	**F3303C05.30**	★
			HSK-A100	53	31	119.5	50	M24 x 1.5	8.5	15	2.8	**F3303C06.30**	★
KSN 4	M14 - M36 (5/8 - 1 3/8)	EM 04	HSK-A63	78	48	164	32	M18 x 1	15	23.5	4.1	**F3304C04.30**	★
			HSK-A80	78	48	168.5	40	M20 x 1.5	15	23.5	4.1	**F3304C05.30**	
			HSK-A100	78	48	170.5	50	M24 x 1.5	15	23.5	4.1	**F3304C06.30**	★
KSN 5	M22 - M48 (7/8 - 1 7/8)	EM 05	HSK-A80	96	60	203	40	M20 x 1.5	16.5	25	5.7	**F3305C05.30**	
			HSK-A100	96	60	205	50	M24 x 1.5	16.5	25	5.7	**F3305C06.30**	★

Further designs upon request

Accessories

Quick-change adapters EM series ▸▸ 583 - 601

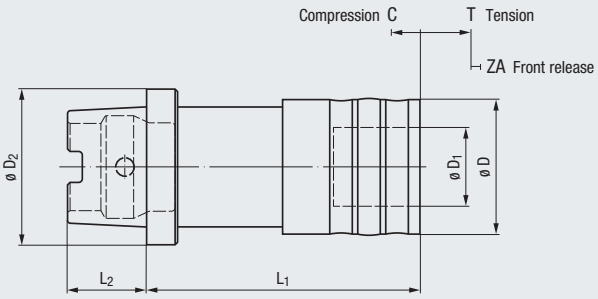
Coolant tubes and wrenches ▸▸ 606 - 607



KSN

HSK-C Shank

DIN 69893 C



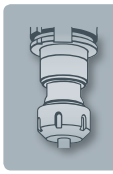
For use on CNC machining centers, other machine tools and pillar drilling machines

Type			Shank Size ø D_2	mm ø D	ø D_1	L_1	L_2	C	T	ZA	EDP Number	
KSN 1	M3 - M14 (No.0 - 9/16)	EM 01	HSK-C32	36	19	65	16	5	8	2.1	**F3301K01.30**	★
			HSK-C40	36	19	65	20	5	8	2.1	**F3301K02.30**	★
			HSK-C50	36	19	67	25	5	8	2.1	**F3301K03.30**	★
			HSK-C63	36	19	67	32	5	8	2.1	**F3301K04.30**	★
			HSK-C80	36	19	70	40	5	8	2.1	**F3301K05.30**	
KSN 3	M4.5 - M24 (1/4 - 7/8)	EM 03	HSK-C40	53	31	99	20	8.5	15	2.8	**F3303K02.30**	★
			HSK-C50	53	31	101	25	8.5	15	2.8	**F3303K03.30**	★
			HSK-C63	53	31	101	32	8.5	15	2.8	**F3303K04.30**	★
			HSK-C80	53	31	104	40	8.5	15	2.8	**F3303K05.30**	
			HSK-C100	53	31	104	50	8.5	15	2.8	**F3303K06.30**	
KSN 4	M14 - M36 (5/8 - 1 3/8)	EM 04	HSK-C63	78	48	152	32	15	23.5	4.1	**F3304K04.30**	★
			HSK-C80	78	48	155	40	15	23.5	4.1	**F3304K05.30**	
			HSK-C100	78	48	155	50	15	23.5	4.1	**F3304K06.30**	
KSN 5	M22 - M48 (7/8 - 1 7/8)	EM 05	HSK-C80	96	60	189	40	16.5	25	5.7	**F3305K05.30**	
			HSK-C100	96	60	189	50	16.5	25	5.7	**F3305K06.30**	

Further designs upon request

Accessories

Quick-change adapters EM series ▸▸ 583 - 601

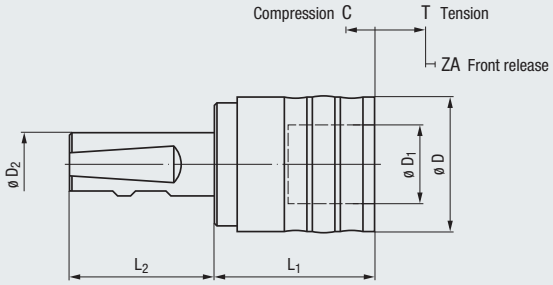


● = In stock
★ = Allow 7 days for delivery

KSN

Cylindrical Shank

DIN 1835 B+E



For use on CNC machining centers,
other machine tools and pillar drilling machines

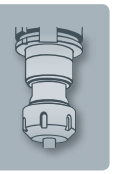
Type			Shank Size ø D_2	mm ø D	ø D_1	L_1	L_2	C	T	ZA	EDP Number	
KSN 0	M1 - M10 (No.0 - 1/4)	EM 00	16	26	13	38	49	5	7.5	1.7	**F3300G24**	★
			20	26	13	38	51	5	7.5	1.7	**F3300G25**	★
KSN 1	M3 - M14 (No.0 - 9/16)	EM 01	16	36	19	39	49	5	8	2.1	**F3301G24**	★
			20	36	19	39	51	5	8	2.1	**F3301G25**	★
			25	36	19	39	57	5	8	2.1	**F3301G26**	★
KSN 3	M4.5 - M24 (1/4 - 7/8)	EM 03	25	53	31	63	57	8.5	15	2.8	**F3303G26**	★
			32	53	31	63	61	8.5	15	2.8	**F3303G27**	★
KSN 4	M14 - M36 (5/8 - 1 3/8)	EM 04	32	78	48	124	61	15	23.5	4.1	**F3304G27**	★
KSN 5	M22 - M48 (7/8 - 1 7/8)	EM 05	40	96	60	135.5	71	16.5	25	5.7	**F3305G28**	★

Further designs upon request

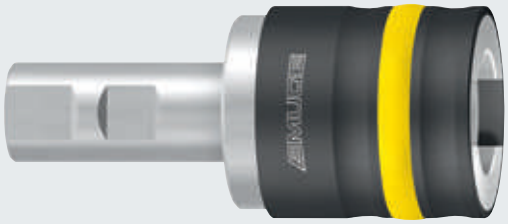
Accessories

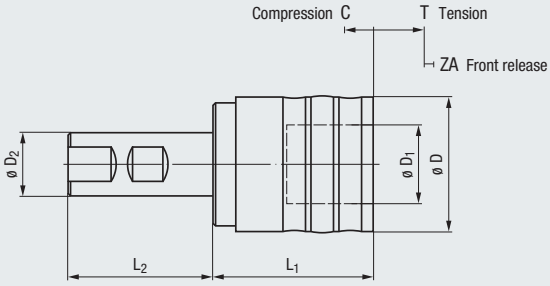
Quick-change adapters EM series ▸▸ 583 - 601

Adapter shanks ▸▸ 604



KSN
Weldon Shank
ASME B94.19





For use on CNC machining centers,
other machine tools and pillar drilling machines

Type			Shank Size ø D_2	inch ø D	ø D_1	L_1	L_2	C	T	ZA	EDP Number	
KSN 1	M3 - M14 (No.0 - 9/16)	EM 01	1	1.4173	0.7480	1.5354	2.2835	0.1969	0.3150	0.0827	**F3301H36**	●
			1 1/4	1.4173	0.7480	1.5354	2.2835	0.1969	0.3150	0.0827	**F3301H38**	●
KSN 3	M4.5 - M24 (1/4 - 7/8)	EM 03	1 1/4	2.0866	1.2205	2.4803	2.2835	0.3346	0.5906	0.1102	**F3303H38**	●
			1 1/2	2.0866	1.2205	2.4803	2.6890	0.3346	0.5906	0.1102	**F3303H40**	●
KSN 4	M14 - M36 (5/8 - 1 3/8)	EM 04	1 1/2	3.0709	1.8898	4.8819	2.6890	0.5906	0.9252	0.1614	**F3304H40**	●
KSN 5	M22 - M48 (7/8 - 1 7/8)	EM 05	1 1/2	3.7795	2.3622	5.3346	2.6890	0.6496	0.9843	0.2244	**F3305H40**	●

Further designs upon request

Accessories

Quick-change adapters EM series ▸▸ 583 - 601

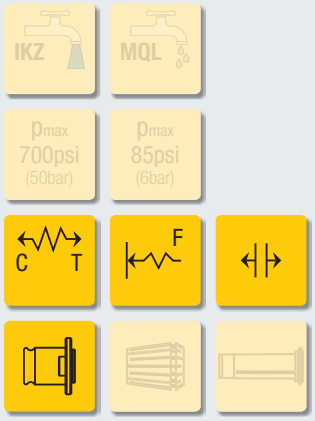
Adapter shanks ▸▸ 604

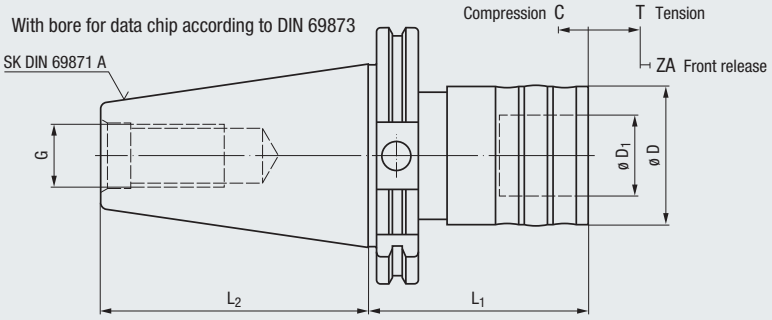
● = In stock
★ = Allow 7 days for delivery

KSN

SK Shank

DIN 69871 A





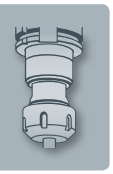
For use on CNC machining centers,
other machine tools and pillar drilling machines

Type			Shank Size	mm ø D	ø D_1	L_1	L_2	G	C	T	ZA	EDP Number	
KSN 1	M3 - M14 (No.0 - 9/16)	EM 01	SK 40	36	19	60	68.4	M16	5	8	2.1	**F3301651**	★
			SK 50	36	19	60	101.75	M24	5	8	2.1	**F3301653**	★
KSN 3	M4.5 - M24 (1/4 - 7/8)	EM 03	SK 40	53	31	98	68.4	M16	8.5	15	2.8	**F3303651**	★
			SK 50	53	31	84	101.75	M24	8.5	15	2.8	**F3303653**	★
KSN 4	M14 - M36 (5/8 - 1 3/8)	EM 04	SK 40	78	48	150	68.4	M16	15	23.5	4.1	**F3304651**	★
			SK 50	78	48	139	101.75	M24	15	23.5	4.1	**F3304653**	★
KSN 5	M22 - M48 (7/8 - 1 7/8)	EM 05	SK 40	96	60	166	68.4	M16	16.5	25	5.7	**F3305651**	★
			SK 50	96	60	153	101.75	M24	16.5	25	5.7	**F3305653**	★

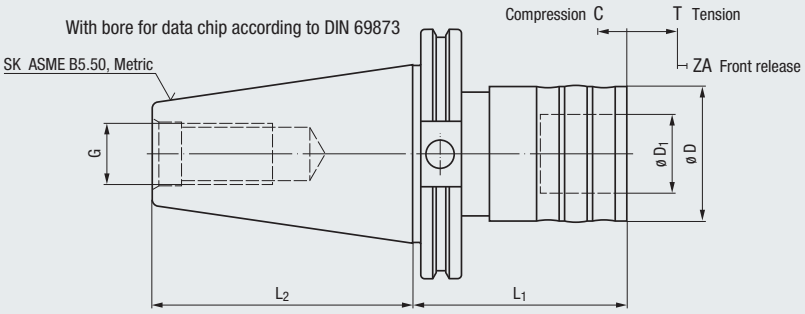
Further designs upon request

Accessories

Quick-change adapters EM series ▸▸ 583 - 601



Ordering Example: **F3301651**



KSN

SK Shank

ASME B5.50, Metric drawbolt thread

For use on CNC machining centers, other machine tools and pillar drilling machines

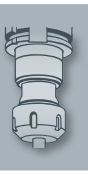
Type			Shank Size	mm ø D	ø D_1	L_1	L_2	G	C	T	ZA	EDP Number	
KSN 1	M3 - M14 (No.0 - 9/16)	EM 01	SK 40 [1]	36	19	74	68.25	M16	5	8	2.1	**F3301781**	★
			SK 50 [1]	36	19	74	101.60	M24	5	8	2.1	**F3301783**	★
KSN 3	M4.5 - M24 (1/4 - 7/8)	EM 03	SK 40 [1]	53	31	98	68.25	M16	8.5	15	2.8	**F3303781**	★
			SK 50 [1]	53	31	99	101.60	M24	8.5	15	2.8	**F3303783**	★
KSN 4	M14 - M36 (5/8 - 1 3/8)	EM 04	SK 40	78	48	147	68.25	M16	15	23.5	4.1	**F3304781**	★
			SK 50 [1]	78	48	159	101.60	M24	15	23.5	4.1	**F3304783**	★
KSN 5	M22 - M48 (7/8 - 1 7/8)	EM 05	SK 40	96	60	160	68.25	M16	16.5	25	5.7	**F3305781**	★
			SK 50	96	60	160	101.60	M24	16.5	25	5.7	**F3305783**	★

[1] Adaption by DIN 1835 B

Further designs upon request

Accessories

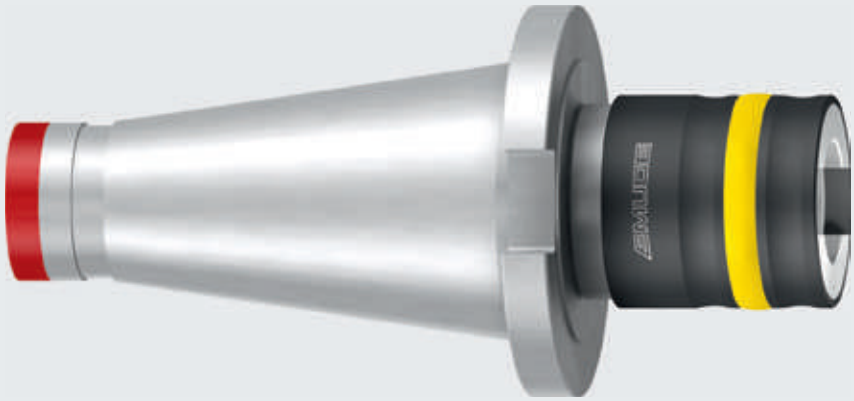
Quick-change adapters EM series ▸▸ 583 - 601

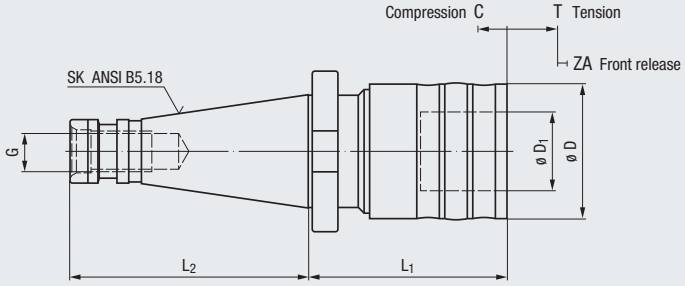


KSN

SK Shank

ANSI B5.18, NMTP





For use on CNC machining centers,
other machine tools and pillar drilling machines

Type			Shank Size	inch ø D	ø D_1	L_1	L_2	G	C	T	ZA	EDP Number	
KSN 1	M3 - M14 (No.0 - 9/16)	EM 01	SK 40 [1]	1.4173	0.7480	2.3858	3.6772	5/8 - 11	0.1969	0.3150	0.0827	**F3301541.16**	★
			SK 50 [1]	1.4173	0.7480	2.1654	4.9921	1 - 8	0.1969	0.3150	0.0827	**F3301543.16**	★
KSN 3	M4.5 - M24 (1/4 - 7/8)	EM 03	SK 40 [1]	2.0866	1.2205	3.3307	3.6772	5/8 - 11	0.3346	0.5906	0.1102	**F3303541.16**	★
			SK 50 [1]	2.0866	1.2205	3.1102	4.9921	1 - 8	0.3346	0.5906	0.1102	**F3303543.16**	★
KSN 4	M14 - M36 (5/8 - 1 3/8)	EM 04	SK 40	3.0709	1.8898	5.6299	3.6772	5/8 - 11	0.5906	0.9252	0.1614	**F3304541.16**	★
			SK 50 [1]	3.0709	1.8898	5.5118	4.9921	1 - 8	0.5906	0.9252	0.1614	**F3304543.16**	★
KSN 5	M22 - M48 (7/8 - 1 7/8)	EM 05	SK 40	3.7795	2.3622	6.1811	3.6772	5/8 - 11	0.6496	0.9843	0.2244	**F3305541.16**	★
			SK 50	3.7795	2.3622	5.6693	4.9921	1 - 8	0.6496	0.9843	0.2244	**F3305543.16**	★

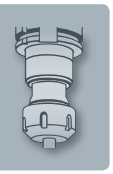
[1] Adaption by DIN 1835 B

Further designs upon request

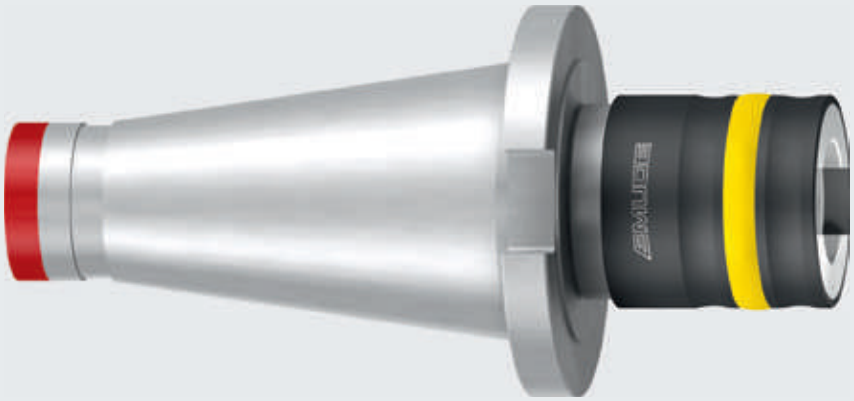
SK 40 and SK 50 shanks are equipped with a ring groove for MAHO and Deckel

Accessories

Quick-change adapters EM series ▸▸ 583 - 601



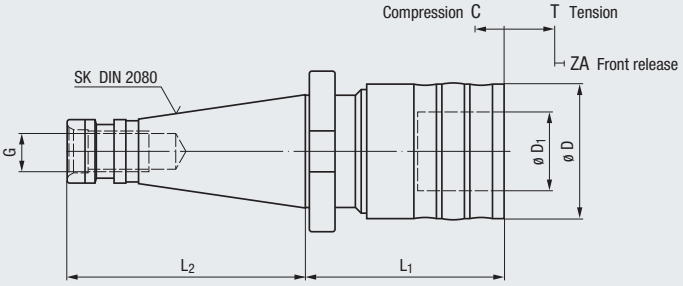
Ordering Example: **F3301541.16**



KSN

SK Shank

DIN 2080



For use on CNC machining centers,
other machine tools and pillar drilling machines

Type			Shank Size	mm ø D	ø D_1	L_1	L_2	G	C	T	ZA	EDP Number	
KSN 1	M3 - M14 (No.0 - 9/16)	EM 01	SK 30 [1]	36	19	73	68.4	M12	5	8	2.1	**F3301540**	★
			SK 40 [1]	36	19	60.6	93.4	M16	5	8	2.1	**F3301541**	★
			SK 50 [1]	36	19	55	126.8	M24	5	8	2.1	**F3301543**	★
KSN 3	M4.5 - M24 (1/4 - 7/8)	EM 03	SK 30	53	31	97	68.4	M12	8.5	15	2.8	**F3303540**	
			SK 40 [1]	53	31	84.6	93.4	M16	8.5	15	2.8	**F3303541**	★
			SK 50 [1]	53	31	79	126.8	M24	8.5	15	2.8	**F3303543**	★
KSN 4	M14 - M36 (5/8 - 1 3/8)	EM 04	SK 40	78	48	143	93.4	M16	15	23.5	4.1	**F3304541**	★
			SK 50 [1]	78	48	140	126.8	M24	15	23.5	4.1	**F3304543**	★
KSN 5	M22 - M48 (7/8 - 1 7/8)	EM 05	SK 40	96	60	157	93.4	M16	16.5	25	5.7	**F3305541**	★
			SK 50	96	60	144	126.8	M24	16.5	25	5.7	**F3305543**	★

[1] Adaption by DIN 1835 B

Further designs upon request

SK 40 and SK 50 shanks are equipped with a ring groove for MAHO and Deckel

Accessories

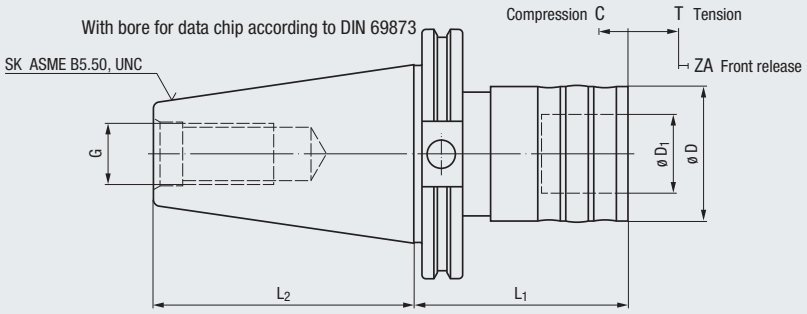
Quick-change adapters EM series ▸▸ 583 - 601

● = In stock
★ = Allow 7 days for delivery

KSN

CAT Shank

ASME B5.50, UNC drawbolt thread



For use on CNC machining centers,
other machine tools and pillar drilling machines

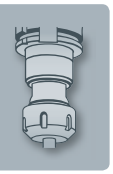
Type			Shank Size	inch ø D	ø D_1	L_1	L_2	G	C	T	ZA	EDP Number	
KSN 1	M3 - M14 (No.0 - 9/16)	EM 01	CAT 40 1)	1.4173	0.7480	2.9134	2.6870	5/8 - 11	0.1969	0.3150	0.0827	**F3301781.16**	●
			CAT 50 1)	1.4173	0.7480	2.9134	4.0000	1 - 8	0.1969	0.3150	0.0827	**F3301783.16**	●
KSN 3	M4.5 - M24 (1/4 - 7/8)	EM 03	CAT 40 1)	2.0866	1.2205	3.8583	2.6870	5/8 - 11	0.3346	0.5906	0.1102	**F3303781.16**	●
			CAT 50 1)	2.0866	1.2205	3.8583	4.0000	1 - 8	0.3346	0.5906	0.1102	**F3303783.16**	●
KSN 4	M14 - M36 (5/8 - 1 3/8)	EM 04	CAT 40	3.0709	1.8898	5.7874	2.6870	5/8 - 11	0.5906	0.9252	0.1614	**F3304781.16**	●
			CAT 50 1)	3.0709	1.8898	6.2598	4.0000	1 - 8	0.5906	0.9252	0.1614	**F3304783.16**	●
KSN 5	M22 - M48 (7/8 - 1 7/8)	EM 05	CAT 40	3.7795	2.3622	6.2992	2.6870	5/8 - 11	0.6496	0.9843	0.2244	**F3305781.16**	●
			CAT 50	3.7795	2.3622	6.2992	4.0000	1 - 8	0.6496	0.9843	0.2244	**F3305783.16**	●

1) Adaption by DIN 1835 B

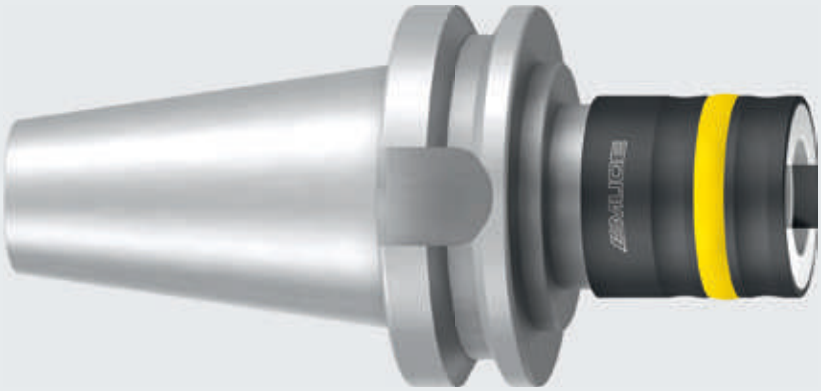
Further designs upon request

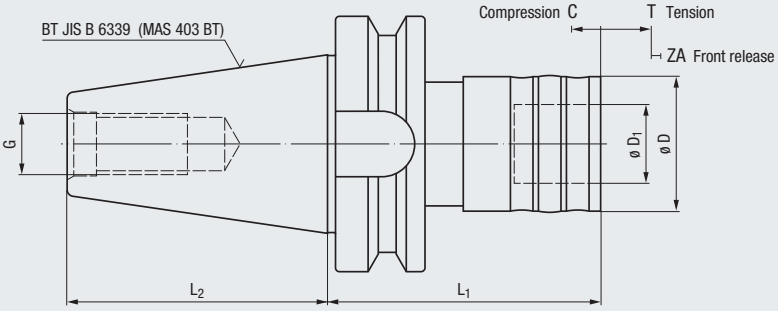
Accessories

Quick-change adapters EM series ▸▸ 583 - 601



Ordering Example: **F3301781.16**





KSN

BT Shank

JIS B 6339 (MAS 403 BT)

For use on CNC machining centers, other machine tools and pillar drilling machines

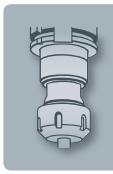
Type			Shank Size	inch ø D	ø D_1	L_1	L_2	G	C	T	ZA	EDP Number	
KSN 1	M3 - M14 (No.0 - 9/16)	EM 01	BT 40 [1]	1.4173	0.7480	2.9134	2.5748	M16	0.1969	0.3150	0.0827	**F3301891**	★
			BT 50 [1]	1.4173	0.7480	3.2677	4.0079	M24	0.1969	0.3150	0.0827	**F3301893**	★
KSN 3	M4.5 - M24 (1/4 - 7/8)	EM 03	BT 40 [1]	2.0866	1.2205	3.8583	2.5748	M16	0.3346	0.5906	0.1102	**F3303891**	★
			BT 50 [1]	2.0866	1.2205	4.2126	4.0079	M24	0.3346	0.5906	0.1102	**F3303893**	★
KSN 4	M14 - M36 (5/8 - 1 3/8)	EM 04	BT 40	3.0709	1.8898	6.4567	2.5748	M16	0.5906	0.9252	0.1614	**F3304891**	★
			BT 50 [1]	3.0709	1.8898	6.6142	4.0079	M24	0.5906	0.9252	0.1614	**F3304893**	★
KSN 5	M22 - M48 (7/8 - 1 7/8)	EM 05	BT 40	3.7795	2.3622	6.5945	2.5748	M16	0.6496	0.9843	0.2244	**F3305891**	★
			BT 50	3.7795	2.3622	6.5157	4.0079	M24	0.6496	0.9843	0.2244	**F3305893**	★

[1] Adaption by DIN 1835 B

Further designs upon request

Accessories

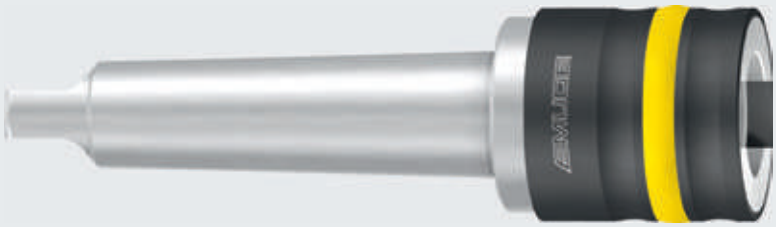
Quick-change adapters EM series ▸▸ 583 - 601

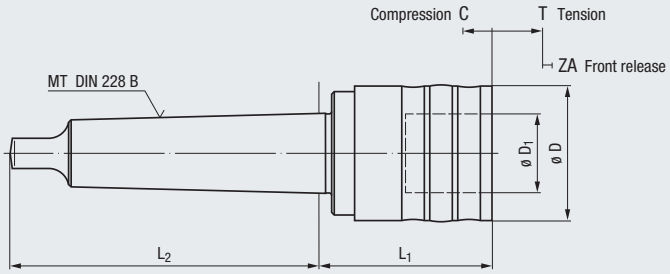


KSN

Morse Taper Shank

DIN 228 B (ASME B5.10)





For use on CNC machining centers,
other machine tools and pillar drilling machines

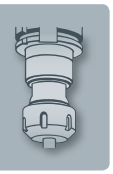
Type			Shank Size	inch ø D	ø D_1	L_1	L_2	C	T	ZA	EDP Number	
KSN 0	M1 - M10 (No.0 - 1/4)	EM 00	MT 1	1.0236	0.5118	1.7126	2.4409	0.1969	0.2953	0.0669	**F3300101**	★
			MT 2	1.0236	0.5118	1.7717	2.9528	0.1969	0.2953	0.0669	**F3300102**	●
KSN 1	M3 - M14 (No.0 - 9/16)	EM 01	MT 2	1.4173	0.7480	1.8504	2.9528	0.1969	0.3150	0.0827	**F3301102**	●
			MT 3	1.4173	0.7480	1.8504	3.7008	0.1969	0.3150	0.0827	**F3301103**	●
KSN 3	M4.5 - M24 (1/4 - 7/8)	EM 03	MT 3	2.0866	1.2205	2.7953	3.7008	0.3346	0.5906	0.1102	**F3303103**	●
			MT 4	2.0866	1.2205	2.8346	4.6260	0.3346	0.5906	0.1102	**F3303104**	●
			MT 5	2.0866	1.2205	2.8543	5.8858	0.3346	0.5906	0.1102	**F3303105**	●
KSN 4	M14 - M36 (5/8 - 1 3/8)	EM 04	MT 4	3.0709	1.8898	4.1339	4.6260	0.5906	0.9252	0.1614	**F3304104**	●
			MT 5	3.0709	1.8898	4.1535	5.8858	0.5906	0.9252	0.1614	**F3304105**	●
KSN 5	M22 - M48 (7/8 - 1 7/8)	EM 05	MT 5	3.7795	2.3622	4.5866	5.8858	0.6496	0.9843	0.2244	**F3305105**	●
			MT 6	3.7795	2.3622	4.6654	8.2677	0.6496	0.9843	0.2244	**F3305106**	★

Morse taper shank with clamping thread acc. DIN 228 A upon request

Further designs upon request

Accessories

Quick-change adapters EM series ▸▸ 583 - 601

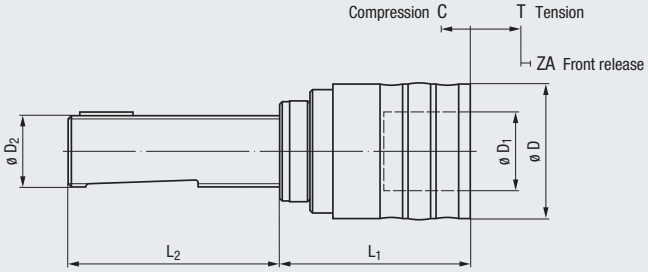


Ordering Example: **F3300101**

KSN

Trapezoidal Shank

DIN 6327



For use on CNC machining centers, other machine tools and pillar drilling machines

Type			Shank Size ø D_2	mm ø D	ø D_1	L_1	L_2	C	T	ZA	EDP Number	
KSN 0	M1 - M10 (No.0 - 1/4)	EM 00	Tr 16 x 1.5	26	13	50	73	5	7.5	1.7	**F3300213**	★
			Tr 20 x 2	26	13	50	76	5	7.5	1.7	**F3300214**	★
KSN 1	M3 - M14 (No.0 - 9/16)	EM 01	Tr 16 x 1.5	36	19	52	73	5	8	2.1	**F3301213**	★
			Tr 20 x 2	36	19	52	76	5	8	2.1	**F3301214**	★
			Tr 28 x 2	36	19	52	83	5	8	2.1	**F3301216**	★
			Tr 36 x 2	36	19	54	104	5	8	2.1	**F3301218**	★
KSN 3	M4.5 - M24 (1/4 - 7/8)	EM 03	Tr 20 x 2	53	31	76	76	8.5	15	2.8	**F3303214**	★
			Tr 28 x 2	53	31	76	83	8.5	15	2.8	**F3303216**	★
			Tr 36 x 2	53	31	78	104	8.5	15	2.8	**F3303218**	★
KSN 4	M14 - M36 (5/8 - 1 3/8)	EM 04	Tr 28 x 2	78	48	109	83	15	23.5	4.1	**F3304216**	★
			Tr 36 x 2	78	48	111	104	15	23.5	4.1	**F3304218**	★
			Tr 48 x 2	78	48	115	126	15	23.5	4.1	**F3304219**	★
KSN 5	M22 - M48 (7/8 - 1 7/8)	EM 05	Tr 36 x 2	96	60	122	104	16.5	25	5.7	**F3305218**	★
			Tr 48 x 2	96	60	126	126	16.5	25	5.7	**F3305219**	★

Further designs upon request

Accessories

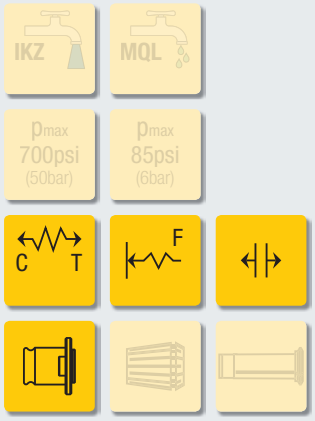
Quick-change adapters EM series ▸▸ 583 - 601

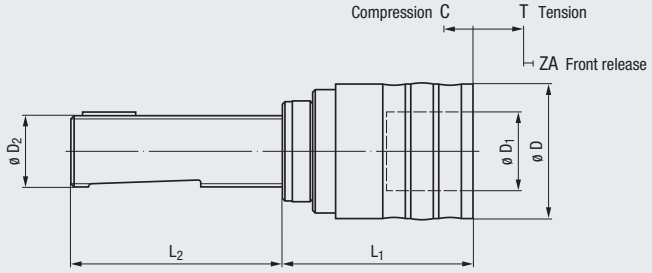
● = In stock
★ = Allow 7 days for delivery

KSN

ACME Shank

ASME B5.11





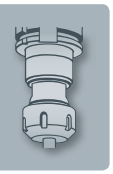
For use on CNC machining centers,
other machine tools and pillar drilling machines

Type			Shank Size ø D_2 ACME	inch ø D	ø D_1	L_1	L_2	C	T	ZA	EDP Number	
KSN 1	M3 - M14 (No.0 - 9/16)	EM 01	5/8 x 16	1.4173	0.7480	1.9882	2.5787	0.1969	0.3150	0.0827	**F3301M33**	★
			3/4 x 12	1.4173	0.7480	1.9882	2.5787	0.1969	0.3150	0.0827	**F3301M34**	★
			1 1/16 x 12	1.4173	0.7480	1.9882	3.2087	0.1969	0.3150	0.0827	**F3301M37**	★
KSN 3	M4.5 - M24 (1/4 - 7/8)	EM 03	1 1/16 x 12	2.0866	1.2205	2.9331	3.2087	0.3346	0.5906	0.1102	**F3303M37**	★
			1 3/8 x 12	2.0866	1.2205	2.9331	4.2126	0.3346	0.5906	0.1102	**F3303M39**	★
KSN 4	M14 - M36 (5/8 - 1 3/8)	EM 04	1 3/8 x 12	3.0709	1.8898	4.2323	4.2126	0.5906	0.9252	0.1614	**F3304M39**	★
			1 7/8 x 12	3.0709	1.8898	4.2323	5.1772	0.5906	0.9252	0.1614	**F3304M41**	★

Further designs upon request

Accessories

Quick-change adapters EM series ▸▸ 583 - 601

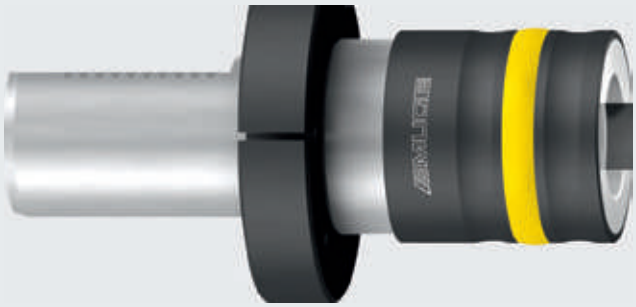


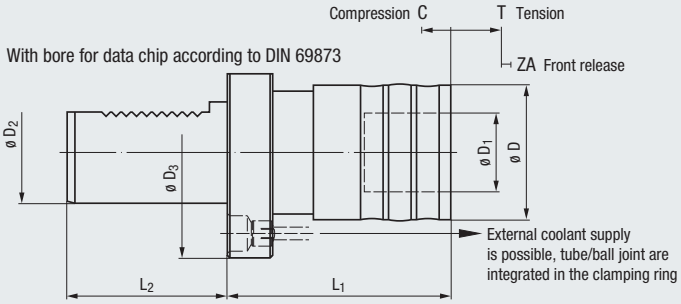
Ordering Example: **F3301M33**

KSN

VDI Shank

DIN ISO 10889 (VDI 3425)





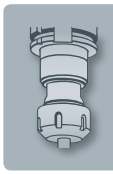
For use on CNC machining centers,
other machine tools and pillar drilling machines

Type			Shank Size ø D_2	ø D_3	ø D	ø D_1	L_1	L_2	C	T	ZA	EDP Number	
						mm							
KSN 1	M3 - M14 (No.0 - 9/16)	EM 01	20	50	36	19	57	40	5	8	2.1	**F3301430**	★
			30	68	36	19	57	55	5	8	2.1	**F3301431**	★
			40	83	36	19	57	63	5	8	2.1	**F3301432**	★
			50	98	36	19	57	78	5	8	2.1	**F3301433**	★
KSN 3	M4.5 - M24 (1/4 - 7/8)	EM 03	30	68	53	31	88	55	8.5	15	2.8	**F3303431**	★
			40	83	53	31	88	63	8.5	15	2.8	**F3303432**	★
			50	98	53	31	88	78	8.5	15	2.8	**F3303433**	★
KSN 4	M14 - M36 (5/8 - 1 3/8)	EM 04	40	83	78	48	123	63	15	23.5	4.1	**F3304432**	★
			50	98	78	48	123	78	15	23.5	4.1	**F3304433**	★
			60	123	78	48	123	94	15	23.5	4.1	**F3304434**	★
KSN 5	M22 - M48 (7/8 - 1 7/8)	EM 05	50	98	96	60	140	78	16.5	25	5.7	**F3305433**	★
			60	123	96	60	140	94	16.5	25	5.7	**F3305434**	★

Further designs upon request

Accessories

Quick-change adapters EM series ▸▸ 583 - 601

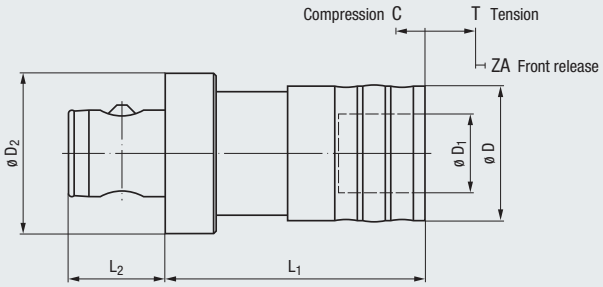


● = In stock
★ = Allow 7 days for delivery

KSN

ABS® Shank

ABS®-clutch (System KOMET)



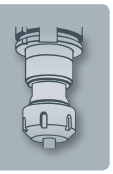
For use on CNC machining centers,
other machine tools and pillar drilling machines

Type			Shank Size ø D_2	mm ø D	ø D_1	L_1	L_2	C	T	ZA	EDP Number	
KSN 1	M3 - M14 (No.0 - 9/16)	EM 01	ABS 32	36	19	72	23	5	8	2.1	**F3301L01**	★
			ABS 40	36	19	72	26	5	8	2.1	**F3301L02**	★
			ABS 50	36	19	72	31	5	8	2.1	**F3301L03**	★
			ABS 63	36	19	72	38	5	8	2.1	**F3301L04**	★
KSN 3	M4.5 - M24 (1/4 - 7/8)	EM 03	ABS 50	53	31	102	31	8.5	15	2.8	**F3303L03**	★
			ABS 63	53	31	102	38	8.5	15	2.8	**F3303L04**	★
KSN 4	M14 - M36 (5/8 - 1 3/8)	EM 04	ABS 63	78	48	155	38	15	23.5	4.1	**F3304L04**	★

Further designs upon request

Accessories

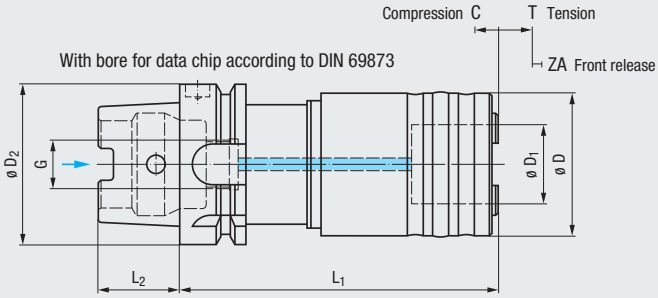
Quick-change adapters EM series ▸▸ 583 - 601



KSN/HD

HSK-A Shank

DIN 69893 A



For use on CNC machining centers and other machine tools

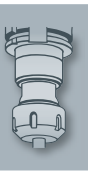
Type			Shank Size ø D_2	mm ø D	ø D_1	L_1	L_2	G	C	T	ZA	EDP Number	
KSN 1/HD	M3 - M14 (No.0 - 9/16)	EM 01	HSK-A50	40	19	91	25	M16 x 1	5	7.5	2.5	**F3101C03.1.30**	★
			HSK-A63	40	19	93	32	M18 x 1	5	7.5	2.5	**F3101C04.1.30**	★
			HSK-A80	40	19	97	40	M20 x 1.5	5	7.5	2.5	**F3101C05.1.30**	
			HSK-A100	40	19	98	50	M24 x 1.5	5	7.5	2.5	**F3101C06.1.30**	★
KSN 3/HD	M4.5 - M24 (1/4 - 7/8)	EM 03	HSK-A50	56	31	140	25	M16 x 1	7	10	3	**F3103C03.1.30**	★
			HSK-A63	56	31	130	32	M18 x 1	7	10	3	**F3103C04.1.30**	★
			HSK-A80	56	31	133	40	M20 x 1.5	7	10	3	**F3103C05.1.30**	★
			HSK-A100	56	31	135	50	M24 x 1.5	7	10	3	**F3103C06.1.30**	★

Further designs upon request

Accessories

Quick-change adapters EM series ▸▸ 583 - 601

Coolant tubes and wrenches ▸▸ 606 - 607

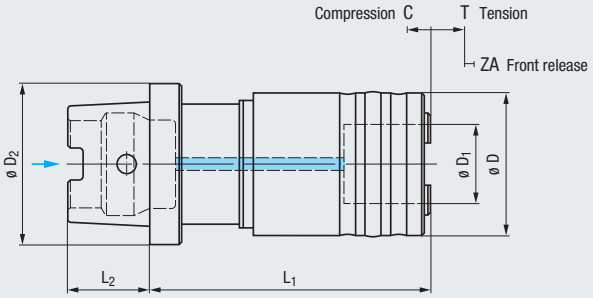


● = In stock
★ = Allow 7 days for delivery

KSN/HD

HSK-C Shank

DIN 69893 C



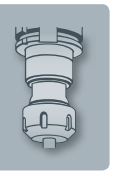
For use on CNC machining centers and other machine tools

Type			Shank Size ø D_2	mm ø D	ø D_1	L_1	L_2	C	T	ZA	EDP Number	
KSN 1/HD	M3 - M14 (No.0 - 9/16)	EM 01	HSK-C40	40	19	75	20	5	7.5	2.5	**F3101K02.1.30**	★
			HSK-C50	40	19	78	25	5	7.5	2.5	**F3101K03.1.30**	★
			HSK-C63	40	19	78	32	5	7.5	2.5	**F3101K04.1.30**	★
			HSK-C80	40	19	81	40	5	7.5	2.5	**F3101K05.1.30**	
			HSK-C100	40	19	81	50	5	7.5	2.5	**F3101K06.1.30**	
KSN 3/HD	M4.5 - M24 (1/4 - 7/8)	EM 03	HSK-C50	56	31	118	25	7	10	3	**F3103K03.1.30**	★
			HSK-C63	56	31	110	32	7	10	3	**F3103K04.1.30**	★
			HSK-C80	56	31	113	40	7	10	3	**F3103K05.1.30**	
			HSK-C100	56	31	115	50	7	10	3	**F3103K06.1.30**	

Further designs upon request

Accessories

Quick-change adapters EM series ▸▸ 583 - 601

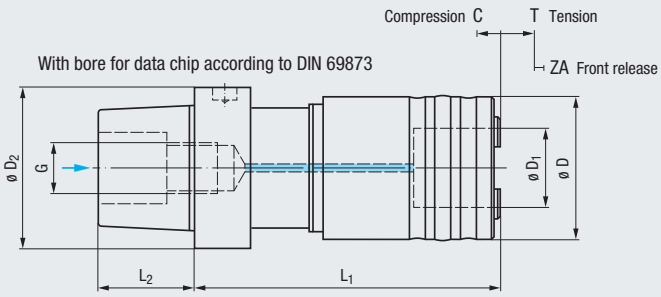


Ordering Example: **F3101K02.1.30**

KSN/HD

PSC Shank

ISO 26623-1



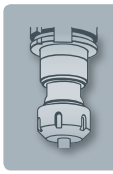
For use on CNC machining centers and other machine tools

Type			Shank Size ø D_2	mm ø D	ø D_1	L_1	L_2	G	C	T	ZA	EDP Number	
KSN 1/HD	M3 - M14 (No.0 - 9/16)	EM 01	PSC 63	40	19	86.5	38	M20 x 2	5	7.5	2.5	**F3101T06.1**	★
KSN 3/HD	M4.5 - M24 (1/4 - 7/8)	EM 03	PSC 63	56	31	120	38	M20 x 2	7	10	3	**F3103T06.1**	★

Further designs upon request

Accessories

Quick-change adapters EM series ▸▸ 583 - 601



● = In stock
★ = Allow 7 days for delivery

KSN/HD

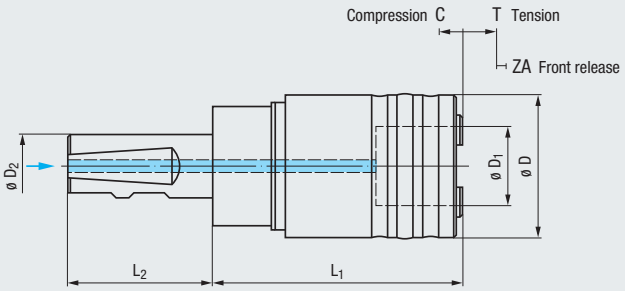
Cylindrical Shank

DIN 1835 B+E

IKZ | MQL

pmax 700psi (50bar) | pmax 85psi (6bar)

C T | F



For use on CNC machining centers and other machine tools

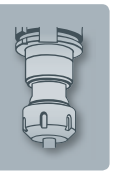
Type			Shank Size ø D_2	mm ø D	ø D_1	L_1	L_2	C	T	ZA	EDP Number	
KSN 1/HD	M3 - M14 (No.0 - 9/16)	EM 01	25	40	19	62	57	5	7.5	2.5	**F3101G26.1**	★
KSN 3/HD	M4.5 - M24 (1/4 - 7/8)	EM 03	25	56	31	98	57	7	10	3	**F3103G26.1**	★
KSN 4/HD	M14 - M36 (5/8 - 1 3/8)	EM 04	32	80	48	147	61	15	20	5	**F3104G27.1**	★

Further designs upon request

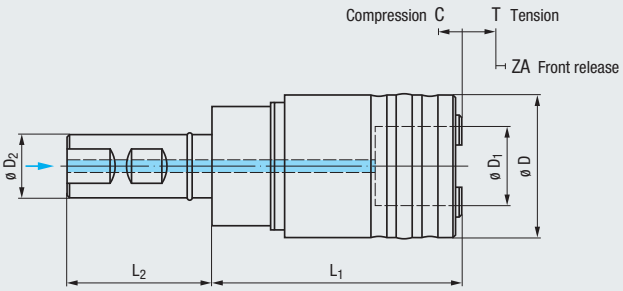
Accessories

Quick-change adapters EM series ▸▸ 583 - 601

Adapter shanks ▸▸ 604



Ordering Example: **F3101G26.1**



KSN/HD

Weldon Shank

ASME B94.19

For use on CNC machining centers and other machine tools

Type			Shank Size ø D_2	inch ø D	ø D_1	L_1	L_2	C	T	ZA	EDP Number	
KSN 1/HD	M3 - M14 (No.0 - 9/16)	EM 01	1	1.5748	0.7480	2.4409	2.2835	0.1969	0.2953	0.0984	**F3101H36.1**	●
			1 1/4	1.5748	0.7480	2.4409	2.2835	0.1969	0.2953	0.0984	**F3101H38.1**	●
KSN 3/HD	M4.5 - M24 (1/4 - 7/8)	EM 03	1 1/4	2.2047	1.2205	3.8583	2.2835	0.2756	0.3937	0.1181	**F3103H38.1**	●
			1 1/2	2.2047	1.2205	3.8583	2.6890	0.2756	0.3937	0.1181	**F3103H40.1**	●
KSN 4/HD	M14 - M36 (5/8 - 1 3/8)	EM 04	1 1/2	3.1496	1.8898	5.7874	2.6890	0.5906	0.7874	0.1969	**F3104H40.1**	●

Further designs upon request

Accessories

Quick-change adapters EM series ▸▸ 583 - 601

Adapter shanks ▸▸ 604

● = In stock
★ = Allow 7 days for delivery

KSN/HD

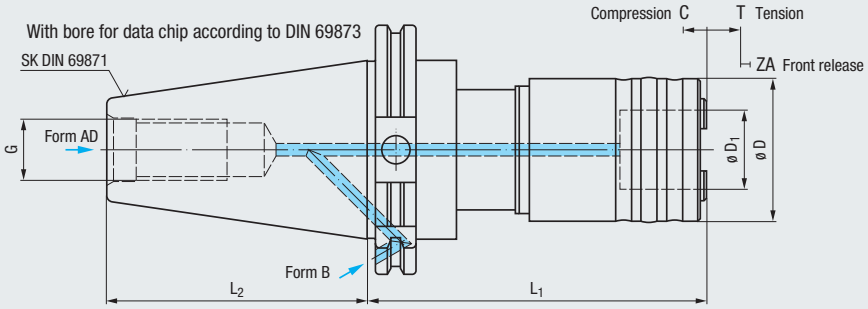
SK Shank

DIN 69871 AD
DIN 69871 B

IKZ | MQL

p_{max} 700psi (50bar) | p_{max} 85psi (6bar)

C T | F



For use on CNC machining centers and other machine tools

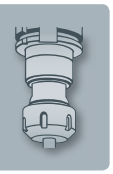
Type			Shank Size 1)	mm ø D	ø D_1	L_1	L_2	G	C	T	ZA	EDP Number	
KSN 1/HD	M3 - M14 (No.0 - 9/16)	EM 01	SK 40 AD	40	19	98	68.4	M16	5	7.5	2.5	F3101651.1	★
			SK 40 B	40	19	98	68.4	M16	5	7.5	2.5	F3101651.2	★
			SK 50 AD	40	19	98	101.75	M24	5	7.5	2.5	F3101653.1	★
			SK 50 B	40	19	98	101.75	M24	5	7.5	2.5	F3101653.2	★
KSN 3/HD	M4.5 - M24 (1/4 - 7/8)	EM 03	SK 40 AD	56	31	134	68.4	M16	7	10	3	F3103651.1	★
			SK 40 B	56	31	134	68.4	M16	7	10	3	F3103651.2	★
			SK 50 AD	56	31	134	101.75	M24	7	10	3	F3103653.1	★
			SK 50 B	56	31	134	101.75	M24	7	10	3	F3103653.2	★

1) Adaptation by DIN 1835 B

Further designs upon request

Accessories

Quick-change adapters EM series ▸▸ 583 - 601

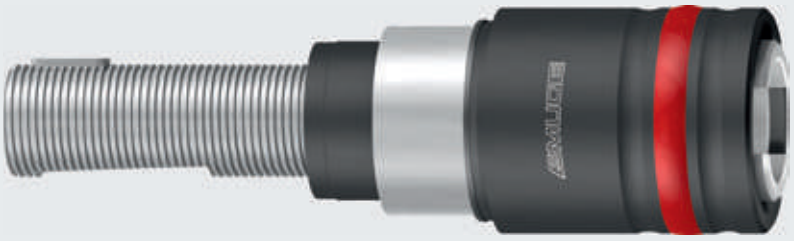


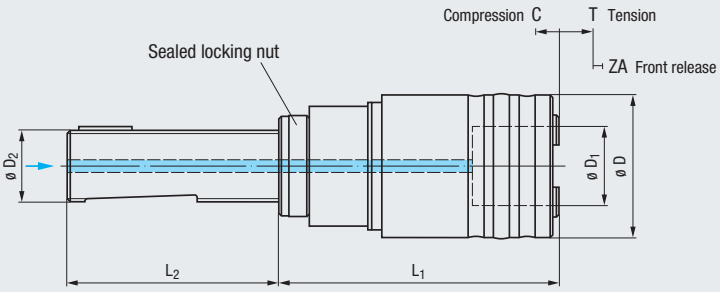
Ordering Example: **F3101651.1**

KSN/HD

Trapezoidal Shank

DIN 6327





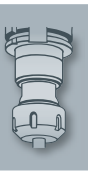
For use on CNC machining centers and other machine tools

Type			Shank Size ø D_2	mm ø D	ø D_1	L_1	L_2	C	T	ZA	EDP Number	
KSN 1/HD	M3 - M14 (No.0 - 9/16)	EM 01	Tr 20 x 2	40	19	79	71	5	7.5	2.5	**F3101214.1**	★
			Tr 28 x 2	40	19	80	77	5	7.5	2.5	**F3101216.1**	★
KSN 3/HD	M4.5 - M24 (1/4 - 7/8)	EM 03	Tr 28 x 2	56	31	116	77	7	10	3	**F3103216.1**	★
			Tr 36 x 2	56	31	118	98	7	10	3	**F3103218.1**	★

Further designs upon request

Accessories

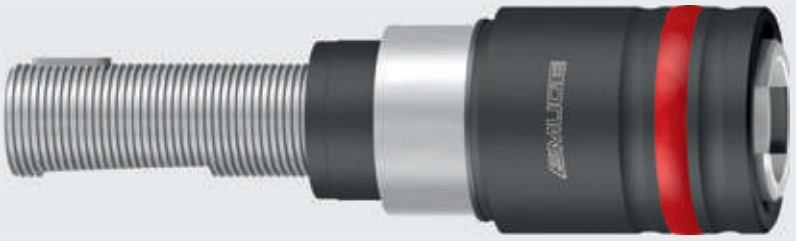
Quick-change adapters EM series ▸▸ 583 - 601



KSN/HD

ACME Shank

ASME B5.11

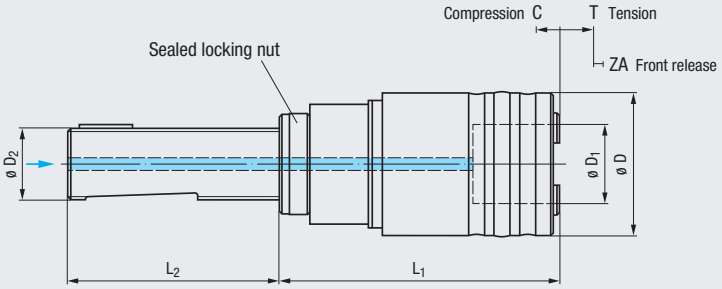


IKZ | MQL

p_{max} 700psi (50bar) | p_{max} 85psi (6bar)

C T | F

For use on CNC machining centers and other machine tools

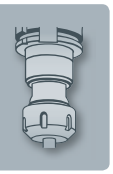


Type			Shank Size ø D_2 ACME	inch ø D	ø D_1	L_1	L_2	C	T	ZA	EDP Number	
KSN 1/HD	M3 - M14 (No.0 - 9/16)	EM 01	3/4 x 12	1.5748	0.7480	3.1890	2.2441	0.1969	0.2953	0.0984	F3101M34.1	★
			1 1/16 x 12	1.5748	0.7480	3.1890	2.8740	0.1969	0.2953	0.0984	F3101M37.1	★
KSN 3/HD	M4.5 - M24 (1/4 - 7/8)	EM 03	1 1/16 x 12	2.2047	1.2205	4.6063	2.8740	0.2756	0.3937	0.1181	F3103M37.1	★
			1 3/8 x 12	2.2047	1.2205	4.6063	3.8780	0.2756	0.3937	0.1181	F3103M39.1	★

Further designs upon request

Accessories

Quick-change adapters EM series ▸▸ 583 - 601

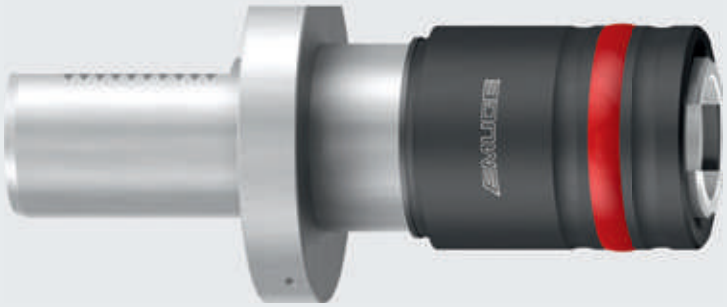


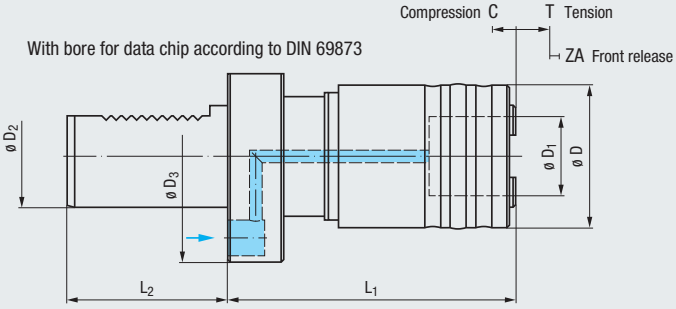
Ordering Example: **F3101M34.1**

KSN/HD

VDI Shank

DIN ISO 10889 (VDI 3425)





IKZ | MQL

pmax 700psi (50bar) | pmax 85psi (6bar)

C T | F

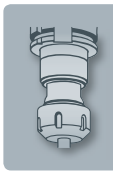
For use on CNC machining centers and other machine tools

Type			Shank Size ø D_2	ø D_3	ø D	ø D_1	L_1	L_2	C	T	ZA	EDP Number	
			mm										
KSN 1/HD	M3 - M14 (No.0 - 9/16)	EM 01	30	68	40	19	77	55	5	7.5	2.5	**F3101431.1**	★
			40	83	40	19	77	63	5	7.5	2.5	**F3101432.1**	★
			50	98	40	19	77	78	5	7.5	2.5	**F3101433.1**	
KSN 3/HD	M4.5 - M24 (1/4 - 7/8)	EM 03	30	68	56	31	113	55	7	10	3	**F3103431.1**	★
			40	83	56	31	113	63	7	10	3	**F3103432.1**	★
			50	98	56	31	113	78	7	10	3	**F3103433.1**	★

Further designs upon request

Accessories

Quick-change adapters EM series ▸▸ 583 - 601

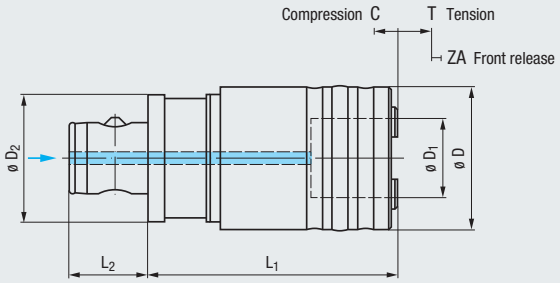


● = In stock
★ = Allow 7 days for delivery

KSN/HD

ABS® Shank

ABS®-clutch (System KOMET)



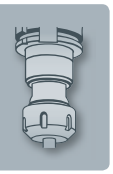
For use on CNC machining centers and other machine tools

Type			Shank Size ø D_2	mm ø D	ø D_1	L_1	L_2	C	T	ZA	EDP Number	
KSN 1/HD	M3 - M14 (No.0 - 9/16)	EM 01	ABS 32	40	19	69	23	5	7.5	2.5	**F3101L01.1**	★
KSN 3/HD	M4.5 - M24 (1/4 - 7/8)	EM 03	ABS 50	56	31	98	31	7	10	3	**F3103L03.1**	★

Further designs upon request

Accessories

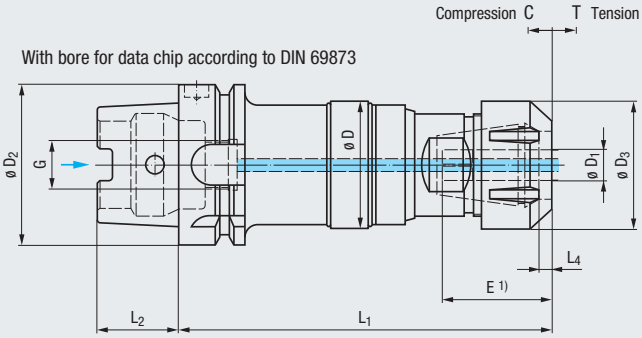
Quick-change adapters EM series ▸▸ 583 - 601



KSN/HD/ER

HSK-A Shank

DIN 69893 A



For use on CNC machining centers and other machine tools

Type		ø D_1			Shank Size ø D_2	ø D	ø D_3	L_1	L_2	L_4	G	C	T	EDP Number	
						mm									
KSN 1/HD/ER	M4 - M12 (No.8 - 1/2)	4.5 - 10 mm 0.168 - 0.381	ER 20 (GB)	Hi-Q/ERMC 20	HSK-A50	38	28	114	25	5	M16 x 1	5	7.5	**F3231C03.1**	★
					HSK-A63	38	28	116	32	5	M18 x 1	5	7.5	**F3231C04.1**	★
					HSK-A80	38	28	120	40	5	M20 x 1.5	5	7.5	**F3231C05.1**	
					HSK-A100	38	28	121	50	5	M24 x 1.5	5	7.5	**F3231C06.1**	★
KSN 3/HD/ER	M4 - M20 (1/4 - 3/4)	4.5 - 16 mm 0.255 - 0.590	ER 32 (GB)	Hi-Q/ERC 32	HSK-A50	52	50	157	25	5	M16 x 1	7	10	**F3233C03.1**	
					HSK-A63	52	50	147	32	5	M18 x 1	7	10	**F3233C04.1**	★
					HSK-A80	52	50	150	40	5	M20 x 1.5	7	10	**F3233C05.1**	
					HSK-A100	52	50	152	50	5	M24 x 1.5	7	10	**F3233C06.1**	★

1) Clamping depths E, see page 624 - 625

Further designs upon request

Clamping nut for sealing disks is included in the delivery

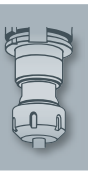
Accessories

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Set of clamping wrenches ▸▸ 622

Coolant tubes and wrenches ▸▸ 606 - 607

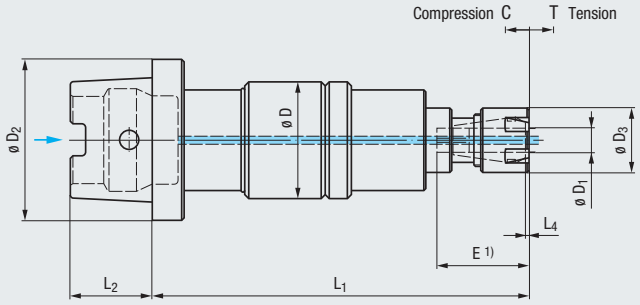


● = In stock
★ = Allow 7 days for delivery

KSN/HD/ER

HSK-C Shank

DIN 69893 C



For use on CNC machining centers and other machine tools

Type		ø D_1			Shank Size ø D_2	mm ø D	ø D_3	L_1 ER	L_1 ER-GB	L_2	L_4	C	T	EDP Number	
KSN 0/HD/ER	M2 - M8 (No.0 - No.10)	2.5 - 6 mm 0.141 - 0.194	ER 11 (GB)	Hi-Q/ERM 11	HSK-C32	29	16	97.3	95.5	16	0.9	6	6	**F3230K01.1**	★
					HSK-C40	29	16	97.3	95.5	20	0.9	6	6	**F3230K02.1**	★

1) Clamping depths E, see page 624 - 625

Further designs upon request

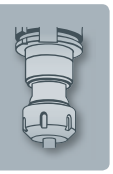
Clamping nut without integrated seal is included in the delivery

Accessories

Collets type ER (GB) ▸▸ 610 - 613

Clamping nut with integrated seal, type Hi-Q/ERMC 11 ▸▸ 618

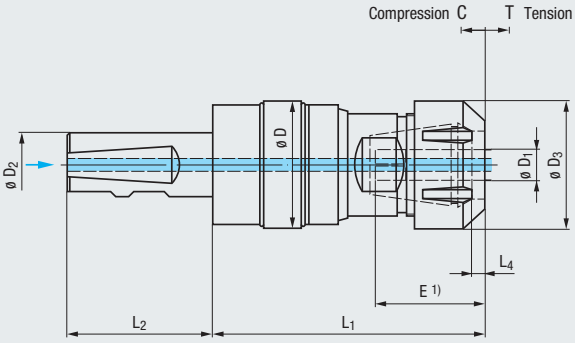
Set of clamping wrenches ▸▸ 622



KSN/HD/ER

Cylindrical Shank

DIN 1835 B+E



For use on CNC machining centers and other machine tools

Type		ø D_1			Shank Size ø D_2	mm ø D	ø D_3	L_1	L_2	L_4	C	T	EDP Number	
KSN 1/HD/ER	M4 - M12 (No.8 - 1/2)	4.5 - 10 mm 0.168 - 0.381	ER 20 (GB)	Hi-Q/ERMC 20	25	38	28	85	57	5	5	7.5	**F3231G26.1**	★
KSN 3/HD/ER	M4 - M20 (1/4 - 3/4)	4.5 - 16 mm 0.255 - 0.590	ER 32 (GB)	Hi-Q/ERC 32	25	52	50	115	57	5	7	10	**F3233G26.1**	★

1) Clamping depths E, see page 624 - 625

Further designs upon request

Clamping nut for sealing disks is included in the delivery

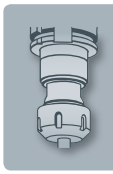
Accessories

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Set of clamping wrenches ▸▸ 622

Adapter shanks ▸▸ 604

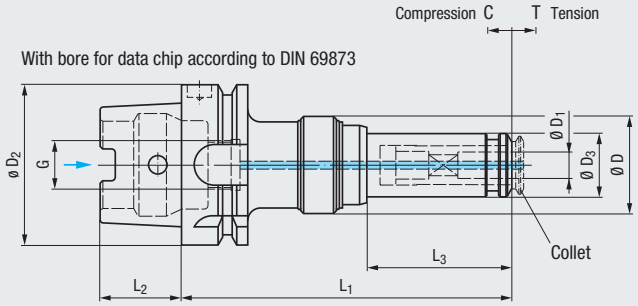


● = In stock
★ = Allow 7 days for delivery

KSN/HD/PGR

HSK-A Shank

DIN 69893 A



For use on CNC machining centers and other machine tools

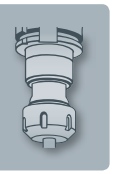
Type		ø D_1		Shank Size ø D_2	mm ø D	ø D_3	L_1	L_2	L_3	G	C	T	EDP Number	
KSN 1/HD/PGR	M4 - M12 (No.10 - 1/4)	4.5 - 10 mm 0.194 - 0.255	PGR 15 GB	HSK-A50	38	24	124	25	55	M16 x 1	5	7.5	**F3241C03.1**	★
				HSK-A63	38	24	126	32	55	M18 x 1	5	7.5	**F3241C04.1**	★
				HSK-A80	38	24	130	40	55	M20 x 1.5	5	7.5	**F3241C05.1**	
				HSK-A100	38	24	131	50	55	M24 x 1.5	5	7.5	**F3241C06.1**	
KSN 3/HD/PGR	M8 - M20 (1/4 - 3/4)	8 - 16 mm 0.255 - 0.590	PGR 25 GB	HSK-A50	52	40	170	25	66.5	M16 x 1	7	10	**F3243C03.1**	★
				HSK-A63	52	40	160	32	66.5	M18 x 1	7	10	**F3243C04.1**	★
				HSK-A80	52	40	163	40	66.5	M20 x 1.5	7	10	**F3243C05.1**	★
				HSK-A100	52	40	165	50	66.5	M24 x 1.5	7	10	**F3243C06.1**	★

Further designs upon request

Accessories

Collets type PGR-GB ▸▸ 630

Coolant tubes and wrenches ▸▸ 606 - 607

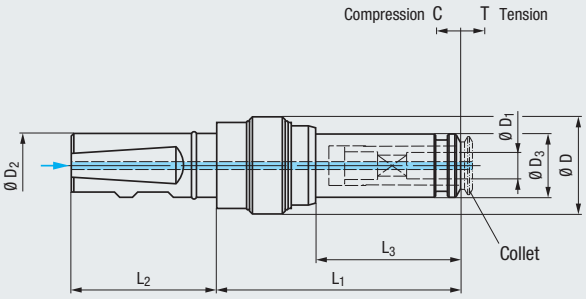


powRgrip® is a registered trademark of REGO-FIX AG

KSN/HD/PGR

Cylindrical Shank

DIN 1835 B+E



For use on CNC machining centers and other machine tools

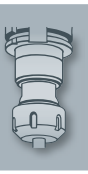
Type		ø D_1		Shank Size ø D_2	mm ø D	ø D_3	L_1	L_2	L_3	C	T	EDP Number	
KSN 1/HD/PGR	M4 - M12 (No.10 - 1/4)	4.5 - 10 mm 0.194 - 0.255	PGR 15 GB	25	38	24	95	57	55	5	7.5	**F3241G26.1**	★
KSN 3/HD/PGR	M8 - M20 (1/4 - 3/4)	8 - 16 mm 0.255 - 0.590	PGR 25 GB	25	52	40	128	57	66.5	7	10	**F3243G26.1**	★

Further designs upon request

Accessories

Collets type PGR-GB ▸▸ 630

Adapter shanks ▸▸ 604



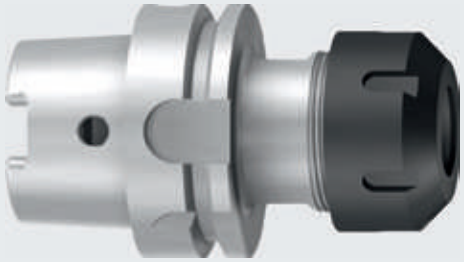
● = In stock
★ = Allow 7 days for delivery

powRgrip® is a registered trademark of REGO-FIX AG

KSN/Synchro

HSK-A Shank

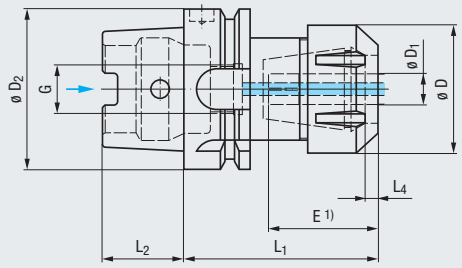
DIN 69893 A



IKZ | MQL

pmax 1400psi (100bar) | pmax 85psi (6bar)

With bore for data chip according to DIN 69873



Type		ø D_1			Shank Size ø D_2	ø D	L_1	L_2	L_4	G	EDP Number	
						mm						
KSN 1/ Synchro	M4 - M12 (No.8 - 1/2)	4.5 - 10 mm 0.168 - 0.381	ER 20 (GB)	Hi-Q/ERC 20	HSK-A50	34	68	25	5	M16 x 1	**F3131C03.1.30**	★
					HSK-A63	34	68	32	5	M18 x 1	**F3131C04.1.30**	★
					HSK-A100	34	74	50	5	M24 x 1.5	**F3131C06.1.30**	★
KSN 3/ Synchro	M4 - M20 (1/4 - 3/4)	4.5 - 16 mm 0.255 - 0.590	ER 32 (GB)	Hi-Q/ERC 32	HSK-A50	50	76	25	5	M16 x 1	**F3133C03.1.30**	★
					HSK-A63	50	77	32	5	M18 x 1	**F3133C04.1.30**	★
					HSK-A100	50	84	50	5	M24 x 1.5	**F3133C06.1.30**	★
KSN 4/ Synchro	M10 - M30 (1/4 - 1)	7 - 22 mm 0.255 - 0.800	ER 40 (GB)	Hi-Q/ERC 40	HSK-A63	63	80	32	5	M18 x 1	**F3134C04.1.30**	
					HSK-A100	63	91	50	5	M24 x 1.5	**F3134C06.1.30**	★

1) Clamping depths E, see page 624 - 625

Further designs upon request

Clamping nut for sealing disks is included in the delivery

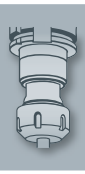
Accessories

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Clamping wrench ▸▸ 622

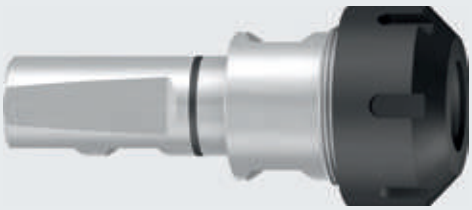
Coolant tubes and wrenches ▸▸ 606 - 607

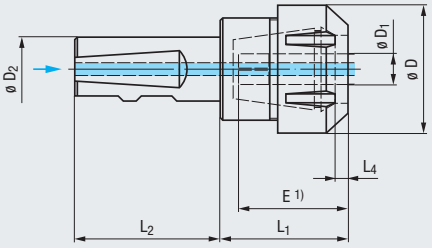


KSN/Synchro

Cylindrical Shank

DIN 1835 B+E





Type		ø D_1			Shank Size ø D_2	mm ø D	L_1	L_2	L_4	EDP Number	
KSN 1/ Synchro	M4 - M12 (No.8 - 1/2)	4.5 - 10 mm 0.168 - 0.381	ER 20 (GB)	Hi-Q/ERC 20	25	34	42	57	5	**F3131G26.1.24**	★
KSN 3/ Synchro	M4 - M20 (1/4 - 3/4)	4.5 - 16 mm 0.255 - 0.590	ER 32 (GB)	Hi-Q/ERC 32	25	50	56	57	5	**F3133G26.1.24**	★
KSN 4/ Synchro	M10 - M30 (1/4 - 1)	7 - 22 mm 0.255 - 0.800	ER 40 (GB)	Hi-Q/ERC 40	25	63	65	57	5	**F3134G26.1.24**	★

1) Clamping depths E, see page 624 - 625

Further designs upon request

Clamping nut for sealing disks is included in the delivery

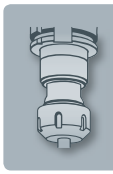
Accessories

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Clamping wrench ▸▸ 622

Adapter shanks ▸▸ 604

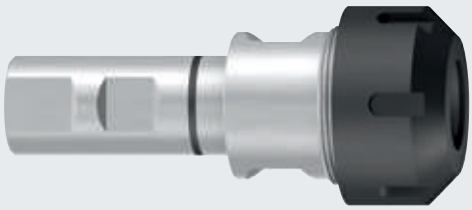


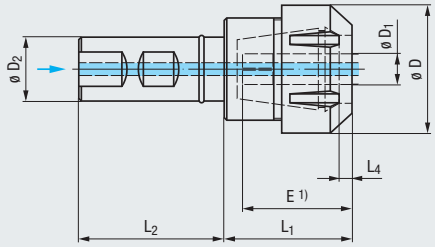
● = In stock
★ = Allow 7 days for delivery

KSN/Synchro

Weldon Shank

ASME B94.19





Type		ø D_1			Shank Size ø D_2	inch ø D	L_1	L_2	L_4	EDP Number	
KSN 1/ Synchro	M4 - M12 (No.8 - 1/2)	4.5 - 10 mm 0.168 - 0.381	ER 20 (GB)	Hi-Q/ERC 20	1	1.3386	1.6142	2.2835	0.1969	**F3131H36.1.24**	★
KSN 3/ Synchro	M4 - M20 (1/4 - 3/4)	4.5 - 16 mm 0.255 - 0.590	ER 32 (GB)	Hi-Q/ERC 32	1	1.9685	2.1654	2.2835	0.1969	**F3133H36.1.24**	★
KSN 4/ Synchro	M10 - M30 (1/4 - 1)	7 - 22 mm 0.255 - 0.800	ER 40 (GB)	Hi-Q/ERC 40	1	2.4803	2.5591	2.2835	0.1969	**F3134H36.1.24**	★

[1] Clamping depths E, see page 624 - 625

Further designs upon request

Clamping nut for sealing disks is included in the delivery

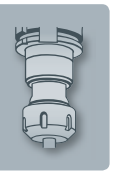
Accessories

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Clamping wrench ▸▸ 622

Adapter shanks ▸▸ 604



KSN/Synchro

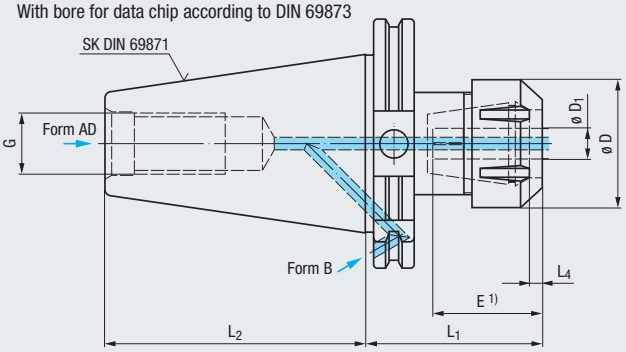
SK Shank

DIN 69871 AD
DIN 69871 B

IKZ | MQL

pmax 1400psi (100bar) | pmax 85psi (6bar)

With bore for data chip according to DIN 69873



Type		ø D_1			Shank Size ø D_2	mm ø D	L_1	L_2	L_4	G	EDP Number	
KSN 0/ Synchro	M1 - M10 (No.0 - No.10)	2.5 - 7 mm 0.141 - 0.194	ER 11 (GB)	Hi-Q/ER 11	SK 40 AD	19	58	68.4	–	M16	**F3130651.1**	★
					SK 40 B	19	58	68.4	–	M16	**F3130651.2**	
					SK 50 AD	19	58	101.75	–	M24	**F3130653.1**	★
					SK 50 B	19	58	101.75	–	M24	**F3130653.2**	
KSN 1/ Synchro	M4 - M12 (No.8 - 1/2)	4.5 - 10 mm 0.168 - 0.381	ER 20 (GB)	Hi-Q/ERC 20	SK 40 AD	34	68	68.4	5	M16	**F3131651.1.24**	★
					SK 40 B	34	68	68.4	5	M16	**F3131651.2.24**	★
					SK 50 AD	34	68	101.75	5	M24	**F3131653.1.24**	★
					SK 50 B	34	68	101.75	5	M24	**F3131653.2.24**	★
KSN 3/ Synchro	M4 - M20 (1/4 - 3/4)	4.5 - 16 mm 0.255 - 0.590	ER 32 (GB)	Hi-Q/ERC 32	SK 40 AD	50	76	68.4	5	M16	**F3133651.1.24**	★
					SK 40 B	50	76	68.4	5	M16	**F3133651.2.24**	★
					SK 50 AD	50	76	101.75	5	M24	**F3133653.1.24**	★
					SK 50 B	50	76	101.75	5	M24	**F3133653.2.24**	★
KSN 4/ Synchro	M10 - M30 (1/4 - 1)	7 - 22 mm 0.255 - 0.800	ER 40 (GB)	Hi-Q/ERC 40	SK 40 AD	63	85	68.4	5	M16	**F3134651.1.24**	★
					SK 40 B	63	85	68.4	5	M16	**F3134651.2.24**	★
					SK 50 AD	63	85	101.75	5	M24	**F3134653.1.24**	★
					SK 50 B	63	85	101.75	5	M24	**F3134653.2.24**	★

1) Clamping depths E, see page 624 - 625

Further designs upon request

KSN 0/Synchro
Clamping nut without integrated seal is included in the delivery

KSN 1-4/Synchro
Clamping nut for sealing disks is included in the delivery

Accessories

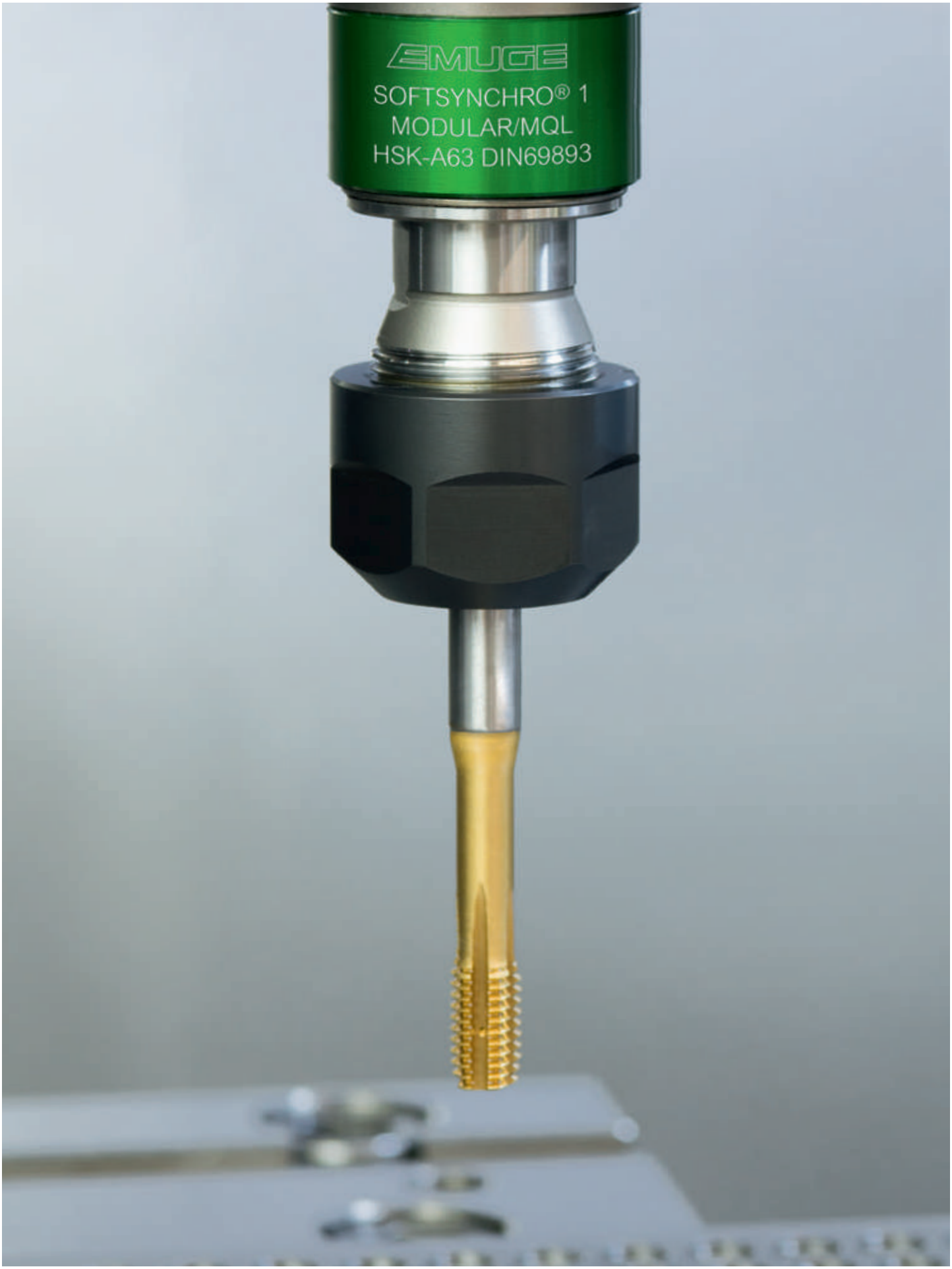
Collets type ER (GB) ▸▸ 610 - 613

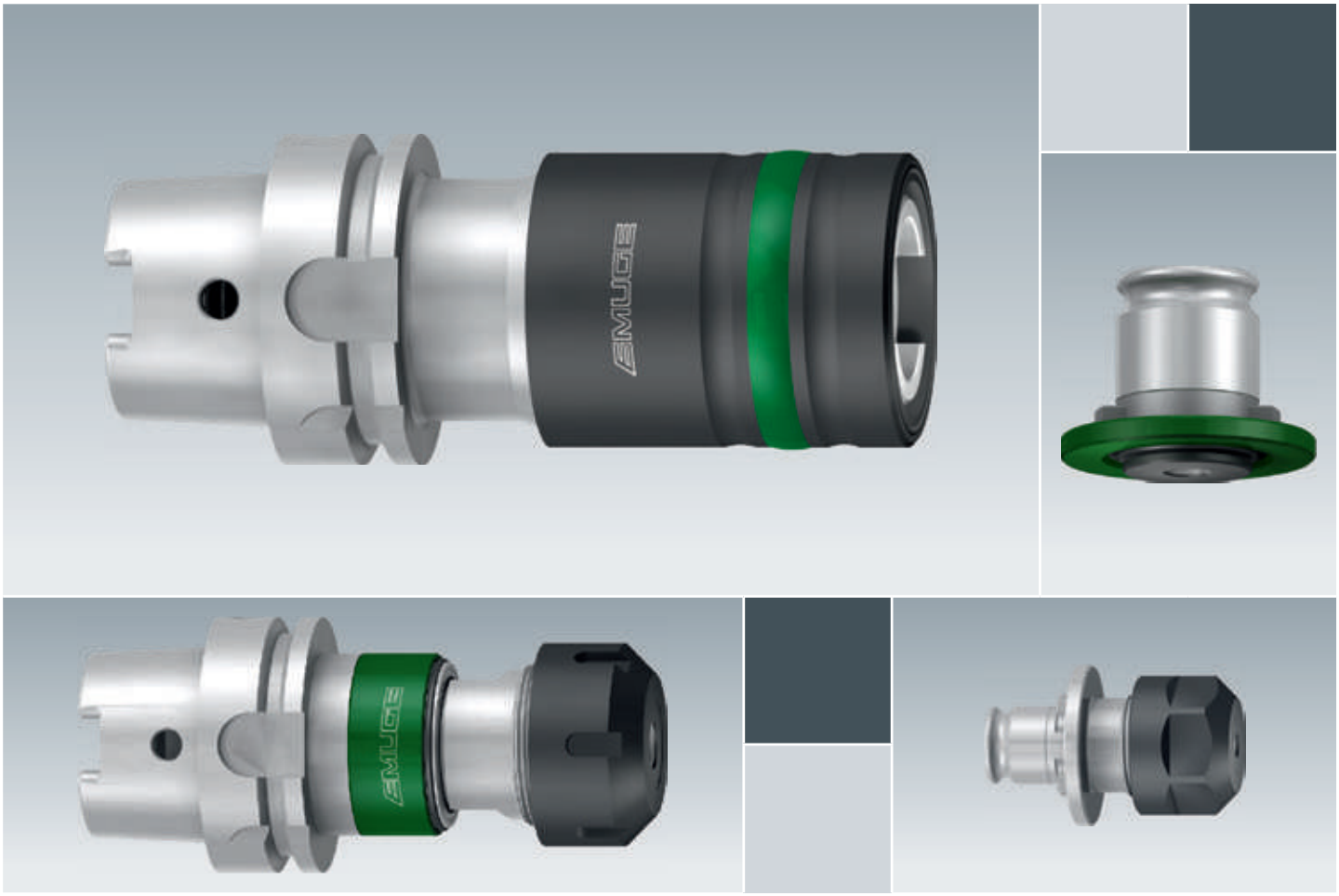
Sealing disks type DS/ER ▸▸ 616

Clamping nut with integrated seal, type Hi-Q/ERC 11 ▸▸ 619

Clamping wrench ▸▸ 622

● = In stock
★ = Allow 7 days for delivery


EMUGE
SOFTSYNCHRO® 1
MODULAR/MQL
HSK-A63 DIN69893



Minimum Quantity Lubrication Series

Application on machines with minimum-quantity lubrication (MQL)

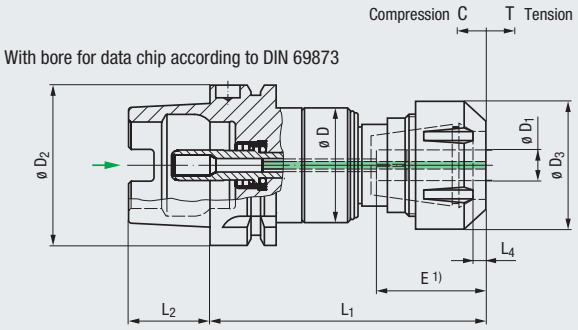
Flow-optimized transfer of the MQL medium from machine spindle to threading tool.

Softsynchro®/MMS

HSK-A Shank

DIN 69893 A

For use on machines with synchronous spindle



Type		ø D_1			Shank Size ø D_2	mm ø D	ø D_3	L_1	L_2	L_4	C	T	EDP Number	
Softsynchro® 1/MMS	M4.5 - M10	6 - 8 mm	ER 20 (GB)	Hi-Q/ERC 20	HSK-A50	34	34	93.5	25	5	0.5	0.5	**F3491C03.1.68**	★
					HSK-A63	34	34	95.5	32	5	0.5	0.5	**F3491C04.1.68**	★
					HSK-A100	34	34	102	50	5	0.5	0.5	**F3491C06.1.68**	★
	M10 - M12	9 - 10 mm			HSK-A50	34	34	93.5	25	5	0.5	0.5	**F3491C03.1**	★
					HSK-A63	34	34	95.5	32	5	0.5	0.5	**F3491C04.1**	★
					HSK-A100	34	34	102	50	5	0.5	0.5	**F3491C06.1**	★
Softsynchro® 3/MMS	M10 - M20	9 - 16 mm	ER 32 (GB)	Hi-Q/ERC 32	HSK-A50	45	50	116.3	25	5	0.5	0.5	**F3493C03.1**	★
					HSK-A63	45	50	108.8	32	5	0.5	0.5	**F3493C04.1**	★
					HSK-A100	45	50	115.3	50	5	0.5	0.5	**F3493C06.1**	★

1) Clamping depths E, see page 624 - 625

Further designs upon request

The coolant tube is integrated into the shank and must not be disassembled, otherwise the function of the MQL transfer is no longer warranted!

MQL supply according to DIN 69090-4 and many internal standards

Clamping nut for sealing disks is included in the delivery

Accessories

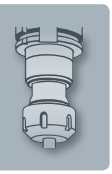
Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Set of clamping wrenches ▸▸ 621

Assembly device ▸▸ 621

Torque wrenches TORCO-FIX ▸▸ 623



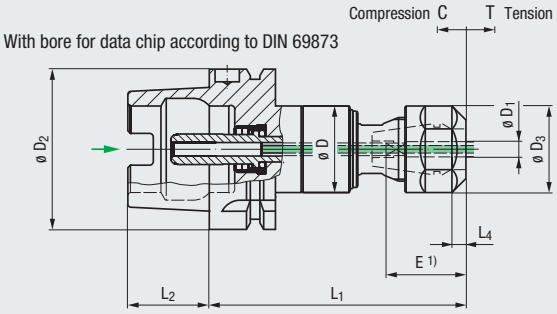
Ordering Example: **F3491C03.1.68**

Softsynchro®/MMS

HSK-A Shank

DIN 69893 A

With bore for data chip according to DIN 69873



For use on machines with synchronous spindle

Type		ø D_1			Shank Size ø D_2	mm ø D	ø D_3	L_1	L_2	L_4	C	T	EDP Number	
Softsynchro® 1/MMS	M4.5 - M12	6 - 10 mm	ER 20 (GB)	Hi-Q/ERC 20	HSK-A50	34	34	93.5	25	5	0.5	0.5	**F3511C03.1**	★
					HSK-A63	34	34	95.5	32	5	0.5	0.5	**F3511C04.1**	★
					HSK-A100	34	34	102	50	5	0.5	0.5	**F3511C06.1**	★

1) Clamping depths E, see page 624 - 625

Further designs upon request

The coolant tube is integrated into the shank and must not be disassembled, otherwise the function of the MQL transfer is no longer warranted!

MQL supply according to DIN 69090-4 and many internal standards

Clamping nut for sealing disks is included in the delivery

Accessories

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Set of clamping wrenches ▸▸ 621

Assembly device ▸▸ 621

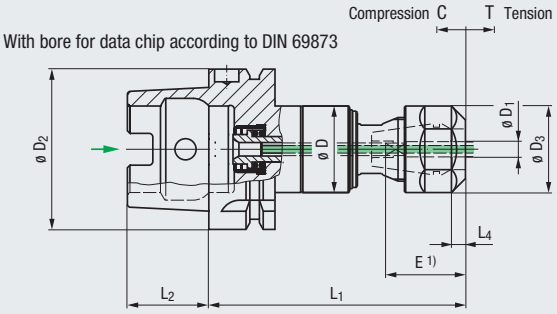
Torque wrenches TORCO-FIX ▸▸ 623

● = In stock
★ = Allow 7 days for delivery

Softsynchro®/MMS

HSK-C Shank

≈ DIN 69893 C 2)



For use on machines with synchronous spindle

Type		ø D_1			Shank Size ø D_2	mm ø D	ø D_3	L_1	L_2	L_4	C	T	EDP Number	
Softsynchro® 1/MMS	M4.5 - M10	6 - 8 mm	ER 20 (GB)	Hi-Q/ERC 20	HSK-A63	34	34	95.5	32	5	0.5	0.5	**F3491C04.1.5268**	★
	M10 - M12	9 - 10 mm			HSK-A63	34	34	95.5	32	5	0.5	0.5	**F3491C04.1.52**	★

1) Clamping depths E, see page 624 - 625

Further designs upon request

2) Outside contour acc. DIN 69893 A, inside contour acc. DIN 69893 C

The coolant tube is integrated into the shank and must not be disassembled, otherwise the function of the MQL transfer is no longer warranted!

MQL supply according to DIN 69090-4 and many internal standards

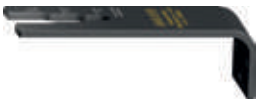
Clamping nut for sealing disks is included in the delivery

Accessories

Collets type ER (GB) ▸▸ 610 - 613

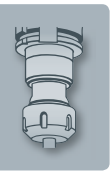
Sealing disks type DS/ER ▸▸ 616

Set of clamping wrenches ▸▸ 621



Assembly device ▸▸ 621

Torque wrenches TORCO-FIX ▸▸ 623



Ordering Example: **F3491C04.1.5268**

EMUGE
SOFTSYNCHRO® 1
MODULAR/MQL
HSK-A/C 63 DIN69893

Softsynchro® Modular/MQL

HSK-A Shank

DIN 69893 A

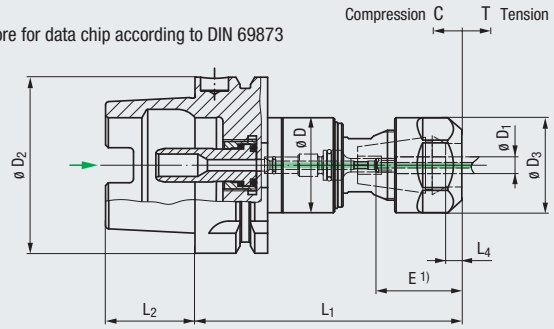
IKZ | MQL | MQL 1

pmax 700psi (50bar) | pmax 85psi (6bar)

C T Soft | F | L+ 2 mm

For use on machines with synchronous spindle

With bore for data chip according to DIN 69873

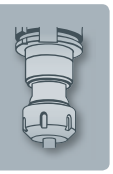


new Type		ø D_1	Tool Taper			Shank Size ø D_2	mm ø D	ø D_3	L_1	L_2	L_4	C	T	EDP Number	
Softsynchro® 1 Modular/MQL	M4.5 - M10	6 / 7 mm	Internal taper 60°	ER 20 (GB)	Hi-Q/ERC 20	HSK-A40	34	34	89.5	20	5	0.5	0.5	F3551C02.53.I01	★
						HSK-A63	34	34	95.5	32	5	0.5	0.5	F3551C04.53.I01	★
						HSK-A100	34	34	102	50	5	0.5	0.5	F3551C06.53.I01	★
	M8, M9, M11, M12	8 / 9 mm				HSK-A40	34	34	89.5	20	5	0.5	0.5	F3551C02.53.I02	★
						HSK-A63	34	34	95.5	32	5	0.5	0.5	F3551C04.53.I02	★
						HSK-A100	34	34	102	50	5	0.5	0.5	F3551C06.53.I02	★
	M10	10 mm				HSK-A40	34	34	89.5	20	5	0.5	0.5	F3551C02.53.I03	★
						HSK-A63	34	34	95.5	32	5	0.5	0.5	F3551C04.53.I03	★
						HSK-A100	34	34	102	50	5	0.5	0.5	F3551C06.53.I03	★
	M4.5 - M6 M8	6 mm	External taper 90°	ER 20 (GB)	Hi-Q/ERC 20	HSK-A40	34	34	89.5	20	5	0.5	0.5	F3551C02.53.A04	★
						HSK-A63	34	34	95.5	32	5	0.5	0.5	F3551C04.53.A04	★
						HSK-A100	34	34	102	50	5	0.5	0.5	F3551C06.53.A04	★
	M7, M10	7 mm				HSK-A40	34	34	89.5	20	5	0.5	0.5	F3551C02.53.A05	★
						HSK-A63	34	34	95.5	32	5	0.5	0.5	F3551C04.53.A05	★
						HSK-A100	34	34	102	50	5	0.5	0.5	F3551C06.53.A05	★
	M8	8 mm				HSK-A40	34	34	89.5	20	5	0.5	0.5	F3551C02.53.A06	★
						HSK-A63	34	34	95.5	32	5	0.5	0.5	F3551C04.53.A06	★
						HSK-A100	34	34	102	50	5	0.5	0.5	F3551C06.53.A06	★
	M12	9 mm				HSK-A40	34	34	89.5	20	5	0.5	0.5	F3551C02.53.A07	★
						HSK-A63	34	34	95.5	32	5	0.5	0.5	F3551C04.53.A07	★
						HSK-A100	34	34	102	50	5	0.5	0.5	F3551C06.53.A07	★
	M10	10 mm				HSK-A40	34	34	89.5	20	5	0.5	0.5	F3551C02.53.A08	★
						HSK-A63	34	34	95.5	32	5	0.5	0.5	F3551C04.53.A08	★
						HSK-A100	34	34	102	50	5	0.5	0.5	F3551C06.53.A08	★

1) Clamping depths E, see page 624 - 625

Coolant tube, length adjustment screw as well as clamping nut for sealing disks are included in the delivery

MQL supply according to DIN 69090-4 and many internal standards



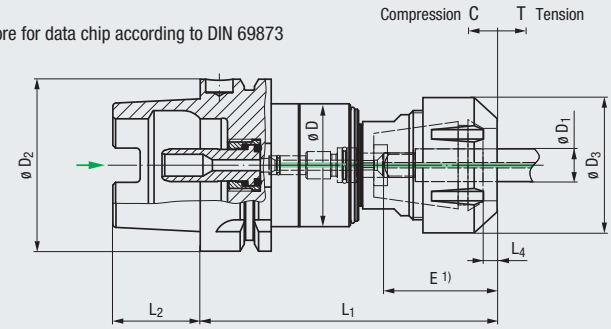
Ordering Example: **F3551C02.53.I01**

Softsynchro® Modular/MQL

HSK-A Shank

DIN 69893 A

With bore for data chip according to DIN 69873



For use on machines with synchronous spindle

new Type		ø D_1	Tool Taper			Shank Size ø D_2	mm ø D	ø D_3	L_1	L_2	L_4	C	T	EDP Number	
Softsynchro® 3 Modular/MQL	M12	9 mm	Internal taper 60°	ER 32 (GB)	Hi-Q/ERC 32	HSK-A63	45	50	108.8	32	5	0.5	0.5	F3553C04.53.I01	★
						HSK-A100	50	50	115.3	50	5	0.5	0.5	F3553C06.53.I01	★
	M10 - M16	10 - 12 mm				HSK-A63	45	50	108.8	32	5	0.5	0.5	F3553C04.53.I02	★
						HSK-A100	50	50	115.3	50	5	0.5	0.5	F3553C06.53.I02	★
	M18 - M20	14 - 16 mm				HSK-A63	45	50	108.8	32	5	0.5	0.5	F3553C04.53.I03	★
						HSK-A100	50	50	115.3	50	5	0.5	0.5	F3553C06.53.I03	★
	M12	9 mm	External taper 90°	ER 32 (GB)	Hi-Q/ERC 32	HSK-A63	45	50	108.8	32	5	0.5	0.5	F3553C04.53.A04	★
						HSK-A100	50	50	115.3	50	5	0.5	0.5	F3553C06.53.A04	★
	M10	10 mm				HSK-A63	45	50	108.8	32	5	0.5	0.5	F3553C04.53.A05	★
						HSK-A100	50	50	115.3	50	5	0.5	0.5	F3553C06.53.A05	★
	M14 - M16	11 - 12 mm				HSK-A63	45	50	108.8	32	5	0.5	0.5	F3553C04.53.A06	★
						HSK-A100	50	50	115.3	50	5	0.5	0.5	F3553C06.53.A06	★
	M18	14 mm				HSK-A63	45	50	108.8	32	5	0.5	0.5	F3553C04.53.A07	★
						HSK-A100	50	50	115.3	50	5	0.5	0.5	F3553C06.53.A07	★
	M20	16 mm				HSK-A63	45	50	108.8	32	5	0.5	0.5	F3553C04.53.A08	★
						HSK-A100	50	50	115.3	50	5	0.5	0.5	F3553C06.53.A08	★

1) Clamping depths E, see page 624 - 625

Accessories

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Length adjustment screws ▸▸ 608

Set of clamping wrenches ▸▸ 621

Assembly device ▸▸ 621

Torque wrenches TORCO-FIX ▸▸ 623

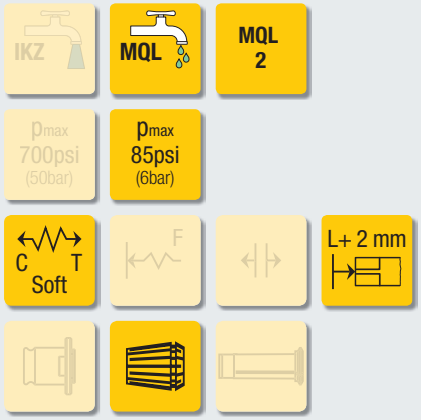
Coolant tubes and wrenches ▸▸ 606 - 607

● = In stock
★ = Allow 7 days for delivery

Softsynchro® Modular/MQL

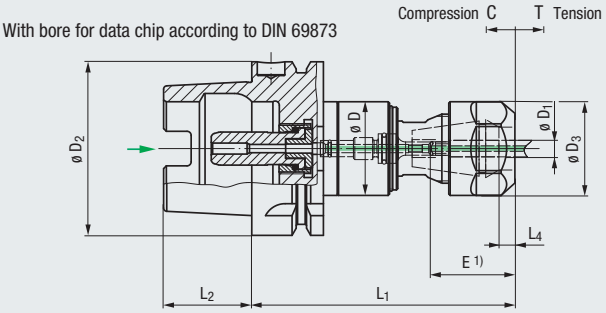
HSK-A Shank

DIN 69893 A



For use on machines
with synchronous spindle

With bore for data chip according to DIN 69873

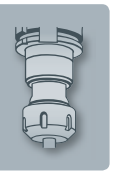


new Type		ø D_1	Tool taper			Shank Size ø D_2	mm ø D	ø D_3	L_1	L_2	L_4	C	T	EDP Number	
Softsynchro® 1 Modular/MQL	M4.5 - M10	6 / 7 mm	Internal taper 60°	ER 20 (GB)	Hi-Q/ERC 20	HSK-A40	34	34	89.5	20	5	0.5	0.5	F3551C02.54.I01	★
						HSK-A63	34	34	95.5	32	5	0.5	0.5	F3551C04.54.I01	★
						HSK-A100	34	34	102	50	5	0.5	0.5	F3551C06.54.I01	★
	M8, M9, M11, M12	8 / 9 mm				HSK-A40	34	34	89.5	20	5	0.5	0.5	F3551C02.54.I02	★
						HSK-A63	34	34	95.5	32	5	0.5	0.5	F3551C04.54.I02	★
						HSK-A100	34	34	102	50	5	0.5	0.5	F3551C06.54.I02	★
	M10	10 mm				HSK-A40	34	34	89.5	20	5	0.5	0.5	F3551C02.54.I03	★
						HSK-A63	34	34	95.5	32	5	0.5	0.5	F3551C04.54.I03	★
						HSK-A100	34	34	102	50	5	0.5	0.5	F3551C06.54.I03	★
	M4.5 - M6 M8	6 mm	External taper 90°	ER 20 (GB)	Hi-Q/ERC 20	HSK-A40	34	34	89.5	20	5	0.5	0.5	F3551C02.54.A04	★
						HSK-A63	34	34	95.5	32	5	0.5	0.5	F3551C04.54.A04	★
						HSK-A100	34	34	102	50	5	0.5	0.5	F3551C06.54.A04	★
	M7, M10	7 mm				HSK-A40	34	34	89.5	20	5	0.5	0.5	F3551C02.54.A05	★
						HSK-A63	34	34	95.5	32	5	0.5	0.5	F3551C04.54.A05	★
						HSK-A100	34	34	102	50	5	0.5	0.5	F3551C06.54.A05	★
	M8	8 mm				HSK-A40	34	34	89.5	20	5	0.5	0.5	F3551C02.54.A06	★
						HSK-A63	34	34	95.5	32	5	0.5	0.5	F3551C04.54.A06	★
						HSK-A100	34	34	102	50	5	0.5	0.5	F3551C06.54.A06	★
	M12	9 mm				HSK-A40	34	34	89.5	20	5	0.5	0.5	F3551C02.54.A07	★
						HSK-A63	34	34	95.5	32	5	0.5	0.5	F3551C04.54.A07	★
						HSK-A100	34	34	102	50	5	0.5	0.5	F3551C06.54.A07	★
	M10	10 mm				HSK-A40	34	34	89.5	20	5	0.5	0.5	F3551C02.54.A08	★
						HSK-A63	34	34	95.5	32	5	0.5	0.5	F3551C04.54.A08	★
						HSK-A100	34	34	102	50	5	0.5	0.5	F3551C06.54.A08	★

1) Clamping depths E, see page 624 - 625

Coolant tube, length adjustment screw as well as clamping nut for sealing disks are included in the delivery

MQL supply according to DIN 69090-4 and many internal standards



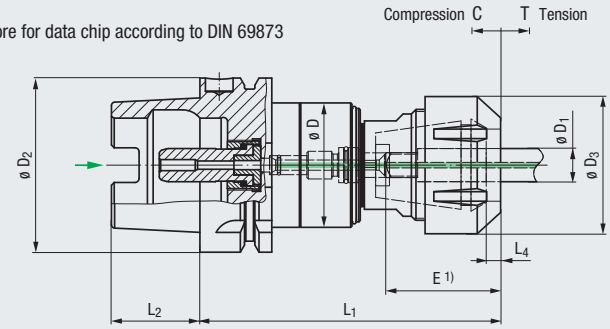
Ordering Example: **F3551C02.54.I01**

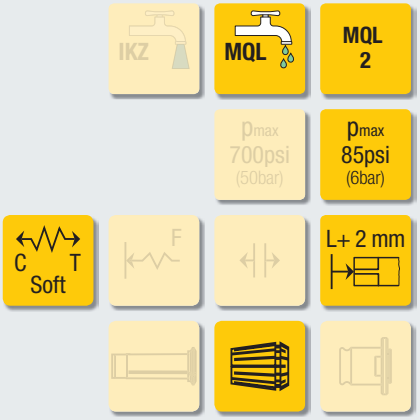
Softsynchro® Modular/MQL

HSK-A Shank

DIN 69893 A

With bore for data chip according to DIN 69873





For use on machines with synchronous spindle

new Type		ø D_1	Tool Taper			Shank Size ø D_2	mm ø D	ø D_3	L_1	L_2	L_4	C	T	EDP Number	
Softsynchro® 3 Modular/MQL	M12	9 mm	Internal taper 60°	ER 32 (GB)	Hi-Q/ERC 32	HSK-A63	45	50	108.8	32	5	0.5	0.5	F3553C04.54.I01	★
						HSK-A100	50	50	115.3	50	5	0.5	0.5	F3553C06.54.I01	★
	M10 - M16	10 - 12 mm				HSK-A63	45	50	108.8	32	5	0.5	0.5	F3553C04.54.I02	★
						HSK-A100	50	50	115.3	50	5	0.5	0.5	F3553C06.54.I02	★
	M18 - M20	14 - 16 mm				HSK-A63	45	50	108.8	32	5	0.5	0.5	F3553C04.54.I03	★
						HSK-A100	50	50	115.3	50	5	0.5	0.5	F3553C06.54.I03	★
	M12	9 mm	External taper 90°	ER 32 (GB)	Hi-Q/ERC 32	HSK-A63	45	50	108.8	32	5	0.5	0.5	F3553C04.54.A04	★
						HSK-A100	50	50	115.3	50	5	0.5	0.5	F3553C06.54.A04	★
	M10	10 mm				HSK-A63	45	50	108.8	32	5	0.5	0.5	F3553C04.54.A05	★
						HSK-A100	50	50	115.3	50	5	0.5	0.5	F3553C06.54.A05	★
	M14 - M16	11 - 12 mm				HSK-A63	45	50	108.8	32	5	0.5	0.5	F3553C04.54.A06	★
						HSK-A100	50	50	115.3	50	5	0.5	0.5	F3553C06.54.A06	★
	M18	14 mm				HSK-A63	45	50	108.8	32	5	0.5	0.5	F3553C04.54.A07	★
						HSK-A100	50	50	115.3	50	5	0.5	0.5	F3553C06.54.A07	★
	M20	16 mm				HSK-A63	45	50	108.8	32	5	0.5	0.5	F3553C04.54.A08	★
						HSK-A100	50	50	115.3	50	5	0.5	0.5	F3553C06.54.A08	★

1) Clamping depths E, see page 624 - 625

Accessories

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

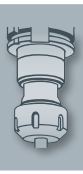
Length adjustment screws ▸▸ 608

Set of clamping wrenches ▸▸ 621

Assembly device ▸▸ 621

Torque wrenches TORCO-FIX ▸▸ 623

Coolant tubes and wrenches ▸▸ 606 - 607



● = In stock
★ = Allow 7 days for delivery

Softsynchro® Modular/MQL

HSK-C Shank

≈ DIN 69893 C 2)

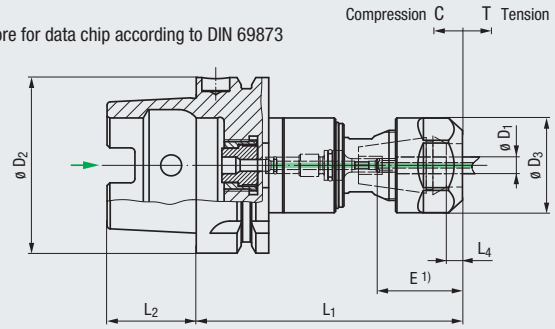
IKZ | MQL | MQL 1

pmax 700psi (50bar) | pmax 85psi (6bar)

C T Soft | F | L+ 2 mm

For use on machines with synchronous spindle

With bore for data chip according to DIN 69873



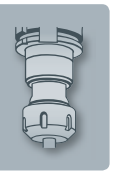
new Type		ø D_1	Tool Taper			Shank Size ø D_2	mm ø D	ø D_3	L_1	L_2	L_4	C	T	EDP Number	
Softsynchro® 1 Modular/MQL	M4.5 - M10	6 / 7 mm	Internal taper 60°	ER 20 (GB)	Hi-Q/ERC 20	HSK-A40	34	34	89.5	20	5	0.5	0.5	F3551C02.52.I01	★
						HSK-A63	34	34	95.5	32	5	0.5	0.5	F3551C04.52.I01	★
						HSK-A100	34	34	102	50	5	0.5	0.5	F3551C06.52.I01	★
	M8, M9, M11, M12	8 / 9 mm				HSK-A40	34	34	89.5	20	5	0.5	0.5	F3551C02.52.I02	★
						HSK-A63	34	34	95.5	32	5	0.5	0.5	F3551C04.52.I02	★
						HSK-A100	34	34	102	50	5	0.5	0.5	F3551C06.52.I02	★
	M10	10 mm				HSK-A40	34	34	89.5	20	5	0.5	0.5	F3551C02.52.I03	★
						HSK-A63	34	34	95.5	32	5	0.5	0.5	F3551C04.52.I03	★
						HSK-A100	34	34	102	50	5	0.5	0.5	F3551C06.52.I03	★
	M4.5 - M6 M8	6 mm	External taper 90°	ER 20 (GB)	Hi-Q/ERC 20	HSK-A40	34	34	89.5	20	5	0.5	0.5	F3551C02.52.A04	★
						HSK-A63	34	34	95.5	32	5	0.5	0.5	F3551C04.52.A04	★
						HSK-A100	34	34	102	50	5	0.5	0.5	F3551C06.52.A04	★
	M7, M10	7 mm				HSK-A40	34	34	89.5	20	5	0.5	0.5	F3551C02.52.A05	★
						HSK-A63	34	34	95.5	32	5	0.5	0.5	F3551C04.52.A05	★
						HSK-A100	34	34	102	50	5	0.5	0.5	F3551C06.52.A05	★
	M8	8 mm				HSK-A40	34	34	89.5	20	5	0.5	0.5	F3551C02.52.A06	★
						HSK-A63	34	34	95.5	32	5	0.5	0.5	F3551C04.52.A06	★
						HSK-A100	34	34	102	50	5	0.5	0.5	F3551C06.52.A06	★
	M12	9 mm				HSK-A40	34	34	89.5	20	5	0.5	0.5	F3551C02.52.A07	★
						HSK-A63	34	34	95.5	32	5	0.5	0.5	F3551C04.52.A07	★
						HSK-A100	34	34	102	50	5	0.5	0.5	F3551C06.52.A07	★
	M10	10 mm				HSK-A40	34	34	89.5	20	5	0.5	0.5	F3551C02.52.A08	★
						HSK-A63	34	34	95.5	32	5	0.5	0.5	F3551C04.52.A08	★
						HSK-A100	34	34	102	50	5	0.5	0.5	F3551C06.52.A08	★

1) Clamping depths E, see page 624 - 625

2) Outside contour acc. DIN 69893 A, inside contour acc. DIN 69893 C

Adapter, length adjustment screw as well as clamping nut for sealing disks are included in the delivery

MQL supply according to DIN 69090-4 and many internal standards



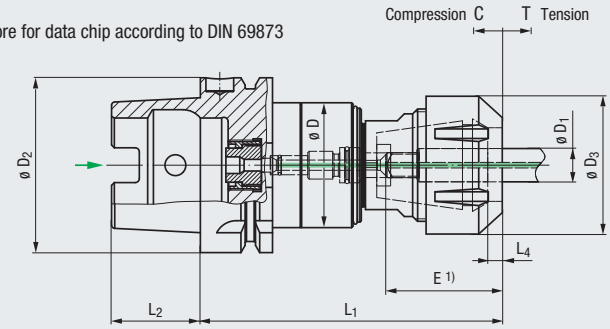
Ordering Example: **F3551C02.52.I01**

Softsynchro® Modular/MQL

HSK-C Shank

≈ DIN 69893 C [2)]

With bore for data chip according to DIN 69873



For use on machines with synchronous spindle

new Type		ø D_1	Tool Taper			Shank Size ø D_2	mm ø D	ø D_3	L_1	L_2	L_4	C	T	EDP Number	
Softsynchro® 3 Modular/MQL	M12	9 mm	Internal taper 60°	ER 32 (GB)	Hi-Q/ERC 32	HSK-A63	45	50	108.8	32	5	0.5	0.5	F3553C04.52.I01	★
						HSK-A100	50	50	115.3	50	5	0.5	0.5	F3553C06.52.I01	★
	M10 - M16	10 - 12 mm				HSK-A63	45	50	108.8	32	5	0.5	0.5	F3553C04.52.I02	★
						HSK-A100	50	50	115.3	50	5	0.5	0.5	F3553C06.52.I02	★
	M18 - M20	14 - 16 mm				HSK-A63	45	50	108.8	32	5	0.5	0.5	F3553C04.52.I03	★
						HSK-A100	50	50	115.3	50	5	0.5	0.5	F3553C06.52.I03	★
	M12	9 mm	External taper 90°	ER 32 (GB)	Hi-Q/ERC 32	HSK-A63	45	50	108.8	32	5	0.5	0.5	F3553C04.52.A04	★
						HSK-A100	50	50	115.3	50	5	0.5	0.5	F3553C06.52.A04	★
	M10	10 mm				HSK-A63	45	50	108.8	32	5	0.5	0.5	F3553C04.52.A05	★
						HSK-A100	50	50	115.3	50	5	0.5	0.5	F3553C06.52.A05	★
	M14 - M16	11 - 12 mm				HSK-A63	45	50	108.8	32	5	0.5	0.5	F3553C04.52.A06	★
						HSK-A100	50	50	115.3	50	5	0.5	0.5	F3553C06.52.A06	★
	M18	14 mm				HSK-A63	45	50	108.8	32	5	0.5	0.5	F3553C04.52.A07	★
						HSK-A100	50	50	115.3	50	5	0.5	0.5	F3553C06.52.A07	★
	M20	16 mm				HSK-A63	45	50	108.8	32	5	0.5	0.5	F3553C04.52.A08	★
						HSK-A100	50	50	115.3	50	5	0.5	0.5	F3553C06.52.A08	★

[1)] Clamping depths E, see page 624 - 625

Accessories

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Length adjustment screws ▸▸ 608

Set of clamping wrenches ▸▸ 621

Assembly device ▸▸ 621

Torque wrenches TORCO-FIX ▸▸ 623

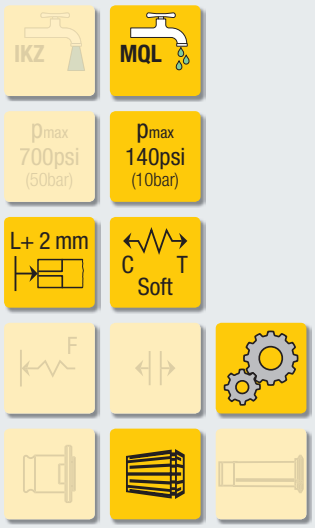
Adapter ▸▸ 607

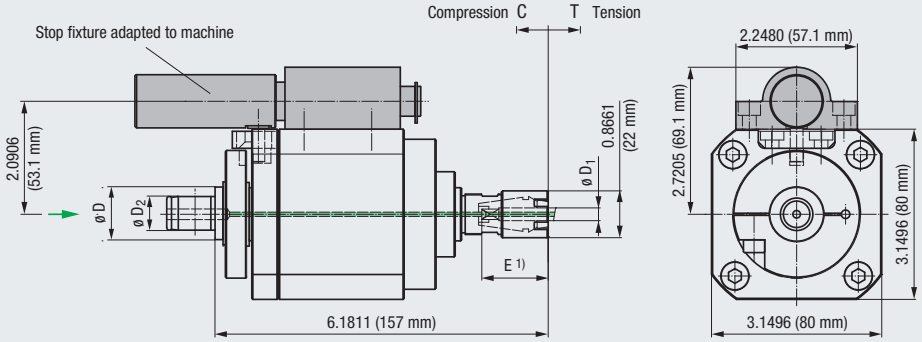
● = In stock
★ = Allow 7 days for delivery

Speedsynchro® Modular/MQL

ABS® Shank

ABS®-clutch (System KOMET)





For use on machines
with synchronous spindle

new				mm					mm			
Type				ø D	ø D_2	ø D_1	Max. Spindle Speed	Transmission Ratio	C	T	EDP Number	
Speedsynchro® Modular/MQL	M1 - M8	ER 16 (GB)	Hi-Q/ERMC 16	ABS 32	16	2.5 - 8	2000	1 : 4.412	0.5	0.5	**F3751L01**	●

1) Clamping depths E, see page 624 - 625

Adapter shank, stop fixture (see also page 646) and length adjustment screw are not included in the delivery, please order separately

Accessories

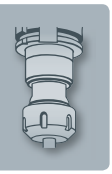
Adapter shanks ▸▸ 605

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Assembly device ▸▸ 621

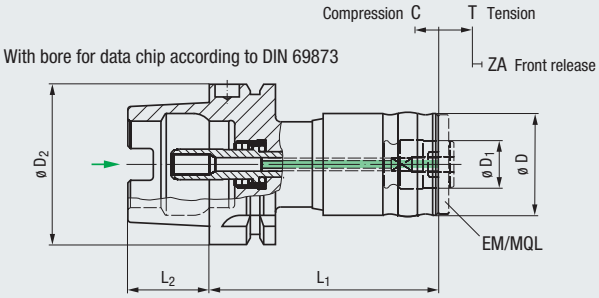
Length adjustment screws ▸▸ 609

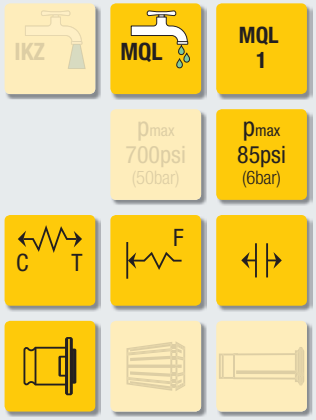


KSN/MQL

HSK-A Shank

DIN 69893 A





For use on CNC machining centers and other machine tools

Type			Shank Size ø D_2	mm ø D	ø D_1	L_1	L_2	C	T	ZA	EDP Number	
KSN 1/MQL	M6 - M12	EM 01/MQL	HSK-A40	40	19	88	20	5	5	2.5	**F3471C02.1**	★
			HSK-A50	40	19	90	25	5	5	2.5	**F3471C03.1**	★
			HSK-A63	40	19	90	32	5	5	2.5	**F3471C04.1**	★
			HSK-A80	40	19	93	40	5	5	2.5	**F3471C05.1**	★
			HSK-A100	40	19	93	50	5	5	2.5	**F3471C06.1**	★
KSN 3/MQL	M10 - M24	EM 03/MQL	HSK-A63	56	31	120	32	7	7	3	**F3473C04.1**	★
			HSK-A80	56	31	125	40	7	7	3	**F3473C05.1**	★
			HSK-A100	56	31	128	50	7	7	3	**F3473C06.1**	★

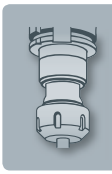
The coolant tube is integrated into the shank and must not be disassembled, otherwise the function of the MQL transfer is no longer warranted! Further designs upon request

MQL supply according to DIN 69090-4 and many internal standards

Accessories

Quick-change adapters type EM/MQL ▸▸ 562

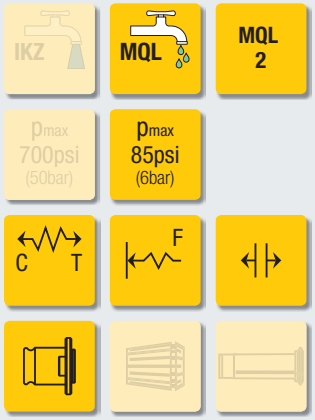
Quick-change adapters type EM-Z/MQL ▸▸ 563 - 564

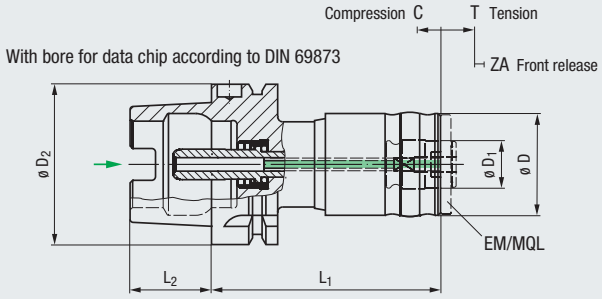


KSN/MQL

HSK-A Shank

DIN 69893 A





For use on CNC machining centers and other machine tools

Type			Shank Size ø D_2	mm ø D	ø D_1	L_1	L_2	C	T	ZA	EDP Number	
KSN 1/MQL	M6 - M12	EM 01/MQL	HSK-A40	40	19	88	20	5	5	2.5	**F3481C02.1**	★
			HSK-A50	40	19	90	25	5	5	2.5	**F3481C03.1**	★
			HSK-A63	40	19	90	32	5	5	2.5	**F3481C04.1**	★
			HSK-A80	40	19	93	40	5	5	2.5	**F3481C05.1**	★
			HSK-A100	40	19	93	50	5	5	2.5	**F3481C06.1**	★

The coolant tube is integrated into the shank and must not be disassembled, otherwise the function of the MQL transfer is no longer warranted!

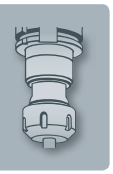
Further designs upon request

MQL supply according to DIN 69090-4 and many internal standards

Accessories

Quick-change adapters type EM/MQL ▸▸ 562

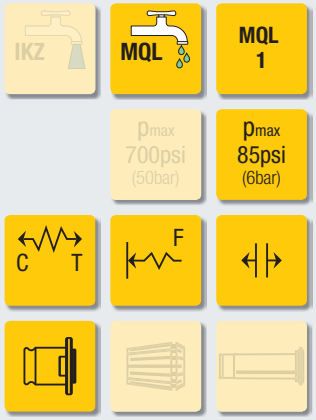
Quick-change adapters type EM-Z/MQL ▸▸ 563

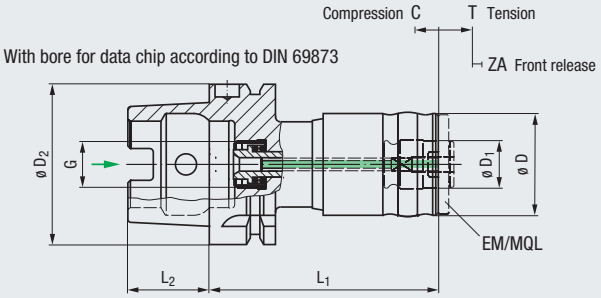


KSN/MQL

HSK-C Shank

≈ DIN 69893 C [2)]





For use on CNC machining centers and other machine tools

Type			Shank Size ø D_2	mm ø D	ø D_1	L_1	L_2	C	T	ZA	EDP Number	
KSN 1/MQL	M6 - M12	EM 01/MQL	HSK-A40	40	19	88	20	5	5	2.5	**F3471C02.1.52**	★
			HSK-A50	40	19	90	25	5	5	2.5	**F3471C03.1.52**	★
			HSK-A63	40	19	90	32	5	5	2.5	**F3471C04.1.52**	★
KSN 3/MQL	M10 - M24	EM 03/MQL	HSK-A63	56	31	120	32	7	7	3	**F3473C04.1.52**	★
			HSK-A80	56	31	125	40	7	7	3	**F3473C05.1.52**	★
			HSK-A100	56	31	128	50	7	7	3	**F3473C06.1.52**	★

[1)] Outside contour acc. DIN 69893 A, inside contour acc. DIN 69893 C

Further designs upon request

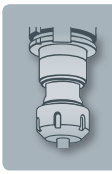
The coolant tube is integrated into the shank and must not be disassembled, otherwise the function of the MQL transfer is no longer warranted!

MQL supply according to DIN 69090-4 and many internal standards

Accessories

Quick-change adapters type EM/MQL ▸▸ 562

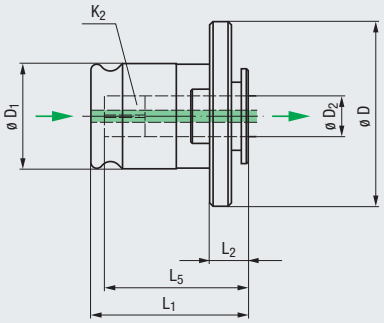
Quick-change adapters type EM-Z/MQL ▸▸ 563 - 564



EM/MQL

Metric

DIN

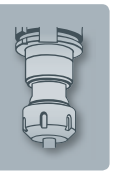


Type		EM 01/MQL	EM 03/MQL
		M6 - M12	M10 - M24
Quick-Change Adapter Dimensions (mm)	ø D	39	55
	ø D_1	19	31
	L_1	29	45
	L_2	7.5	10

mm ø D_2	mm K_2			EM 01/MQL EDP Number	EM 01/MQL L_5		EM 03/MQL EDP Number	EM 03/MQL L_5	
6	4.9	M6	M8	**F4491106.6**	25	★			
7	5.5	M7	M9 - M10	**F4491107.6**	25	★			
8	6.2	M8	M11	**F4491108.6**	26	★			
9	7	M9	M12	**F4491109.6**	27	★			
10	8	M10		**F4491110.6**	27	★	**F4493110.6**	40	★
11	9		M14				**F4493111.6**	41	★
12	9		M16				**F4493112.6**	41	★
14	11		M18				**F4493113.6**	43	★
16	12		M20				**F4493114.6**	44	★
18	14.5		M22 - M24				**F4493115.6**	44	★

1) If used with taps / roll form taps with internal coolant supply

Only suitable for quick-change tap holders type KSN/MQL

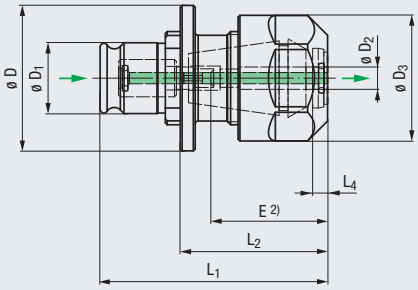


Ordering Example: **F4491106.6**

EM-Z/MQL

Metric

DIN



new Type		ø D_2	Tool Taper			mm ø D	ø D_1	ø D_3	L_1	L_2	EDP Number	
EM 01-Z/MQL	M4.5 - M10	6 / 7 mm	Internal taper 60°	ER 20 (GB)	Hi-Q/ERC 20	39	19	34	61	39.5	F4501001.13D6	★
	M8, M9, M11, M12	8 / 9 mm				39	19	34	61	39.5	F4501001.13D8	★
	M10	10 mm				39	19	34	61	39.5	F4501001.13D10	★
	M4.5 - M6 M8	6 mm	External taper 90°	ER 20 (GB)	Hi-Q/ERC 20	39	19	34	61	39.5	F4501001.23D6	★
	M7, M10	7 mm				39	19	34	61	39.5	F4501001.23D7	★
	M8	8 mm				39	19	34	61	39.5	F4501001.23D8	★
	M12	9 mm				39	19	34	61	39.5	F4501001.23D9	★
	M10	10 mm				39	19	34	61	39.5	F4501001.23D10	★

1) If used with taps / roll form taps with internal coolant supply

1) Clamping depths E, see page 624 - 625

Only suitable for quick-change tap holders type KSN/MQL

Length adjustment screw as well as clamping nut for sealing disks are included in the delivery

Accessories

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

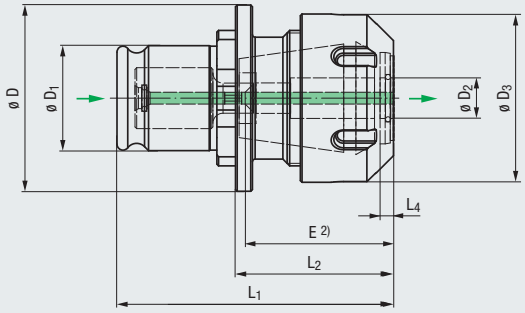
Clamping wrench ▸▸ 622

● = In stock
★ = Allow 7 days for delivery

EM-Z/MQL

Metric

DIN



new Type		ø D_2	Tool taper			mm ø D	ø D_1	ø D_3	L_1	L_2	EDP Number	
EM 03-Z/MQL	M10 - M16	10 - 12 mm	Internal taper 60°	ER 32 (GB)	Hi-Q/ERC 32	55	31	50	81.5	46.5	F4503001.13D10	★
	M18 - M20	14 - 16 mm				55	31	50	81.5	46.5	F4503001.13D14	★
	M10	10 mm	External taper 90°	ER 32 (GB)	Hi-Q/ERC 32	55	31	50	81.5	46.5	F4503001.23D10	★
	M14 - M16	11 - 12 mm				55	31	50	81.5	46.5	F4503001.23D12	★
	M18	14 mm				55	31	50	81.5	46.5	F4503001.23D14	★
	M20	16 mm				55	31	50	81.5	46.5	F4503001.23D16	★

1) If used with taps / roll form taps with internal coolant supply

1) Clamping depths E, see page 624 - 625

Only suitable for quick-change tap holders type KSN/MQL

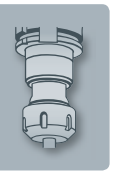
Length adjustment screw as well as clamping nut for sealing disks are included in the delivery

Accessories

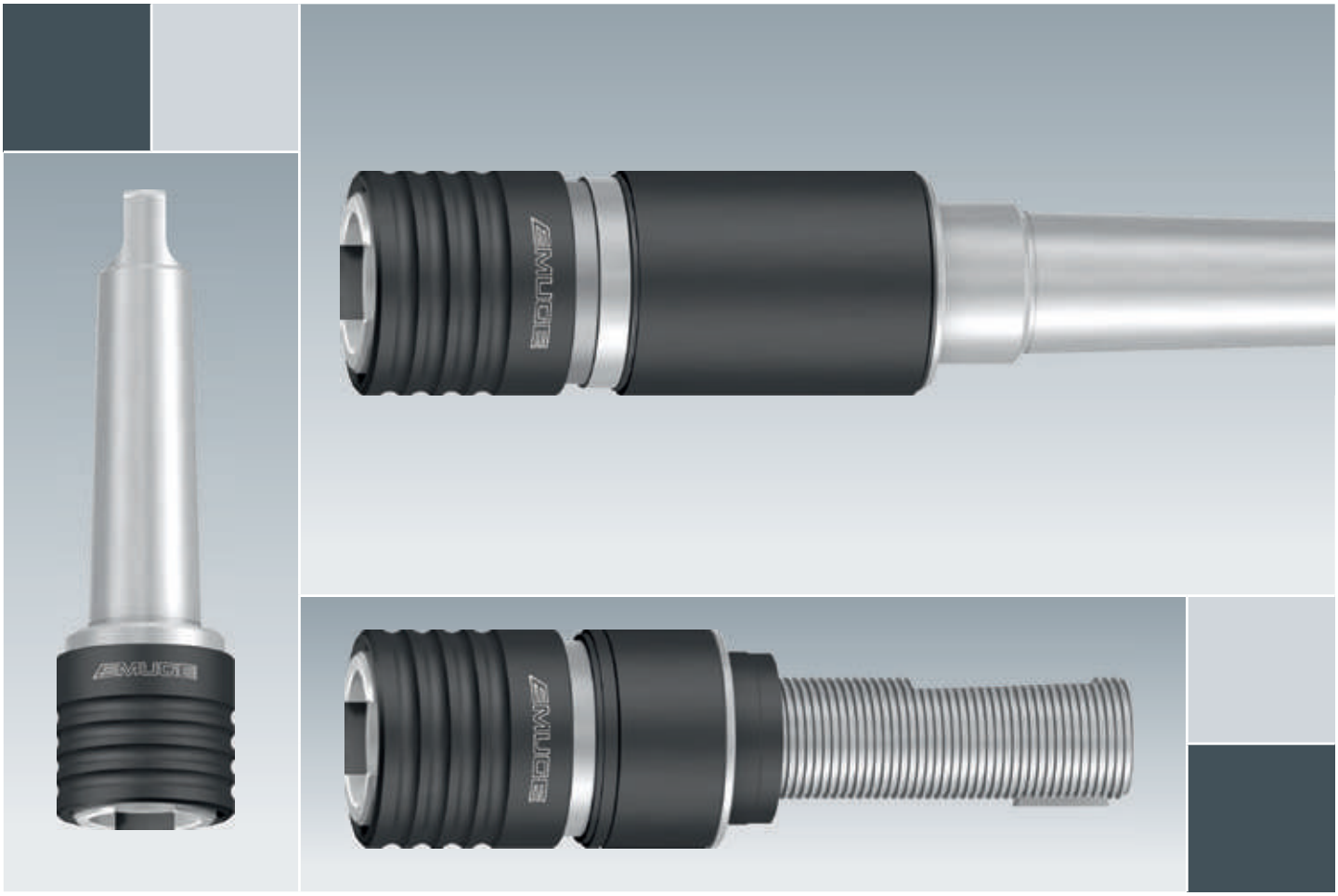
Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Clamping wrench ▸▸ 622



Ordering Example: **F4503001.13D10**



SFM Series

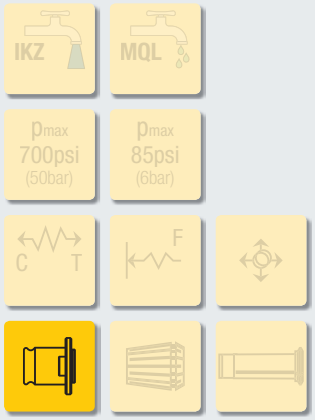
Application on multi-spindle machines and transfer lines

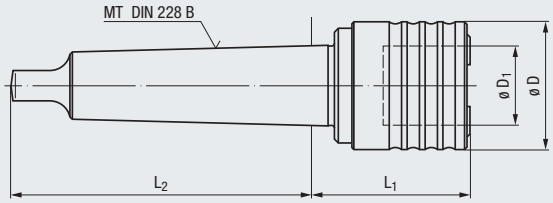
Especially suitable, too, for multi-spindle heads due to their slim design.

SFM

Morse Taper Shank

DIN 228 B (ASME B5.10)





For use on multi-spindle machines and transfer lines

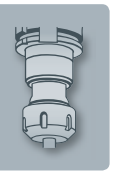
Type			Shank Size	mm ø D	ø D_1	L_1	L_2	EDP Number	
SFM 00	M1 - M10 (No.0 - 1/4)	EM 00	MT 1	23	13	39	62	**F0100101**	★
			MT 2	23	13	40	75	**F0100102**	★
SFM 01	M3 - M14 (No.0 - 9/16)	EM 01	MT 1	32	19	43	62	**F0101101**	★
			MT 2	32	19	44	75	**F0101102**	★
			MT 3	32	19	44	94	**F0101103**	★
SFM 03	M4.5 - M24 (1/4 - 7/8)	EM 03	MT 2	50	31	61	75	**F0103102**	★
			MT 3	50	31	61	94	**F0103103**	★
			MT 4	50	31	62	117.5	**F0103104**	★
SFM 04	M14 - M36 (5/8 - 1 3/8)	EM 04	MT 3	72	48	90	94	**F0104103**	★
			MT 4	72	48	91	117.5	**F0104104**	★
			MT 5	72	48	95	149.5	**F0104105**	★

Morse taper shank with clamping thread acc. DIN 228 A upon request

Further designs upon request

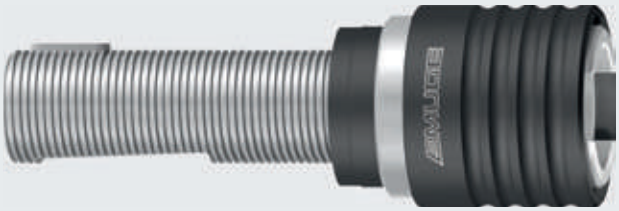
Accessories

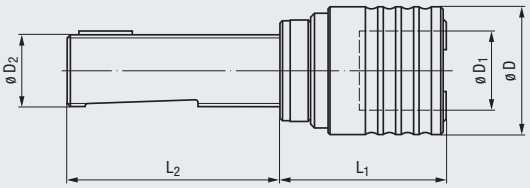
Quick-change adapters EM series ▸▸ 583 - 601

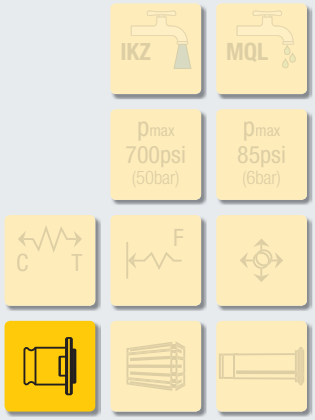


Ordering Example: **F0100101**

SFM
Trapezoidal Shank
DIN 6327







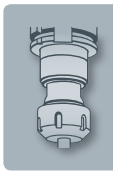
For use on multi-spindle machines and transfer lines

Type			Shank Size ø D_2	mm ø D	ø D_1	L_1	L_2	EDP Number	
SFM 00	M1 - M10 (No.0 - 1/4)	EM 00	Tr 16 x 1.5	23	13	45	73	**F0100213**	★
			Tr 20 x 2	23	13	45	76	**F0100214**	
SFM 01	M3 - M14 (No.0 - 9/16)	EM 01	Tr 16 x 1.5	32	19	49	73	**F0101213**	★
			Tr 20 x 2	32	19	49	76	**F0101214**	★
			Tr 28 x 2	32	19	49	83	**F0101216**	★
SFM 03	M4.5 - M24 (1/4 - 7/8)	EM 03	Tr 20 x 2	50	31	66	76	**F0103214**	★
			Tr 28 x 2	50	31	66	83	**F0103216**	★
			Tr 36 x 2	50	31	68	104	**F0103218**	★
SFM 04	M14 - M36 (5/8 - 1 3/8)	EM 04	Tr 28 x 2	72	48	95	83	**F0104216**	
			Tr 36 x 2	72	48	97	104	**F0104218**	★
			Tr 48 x 2	72	48	101	126	**F0104219**	

Further designs upon request

Accessories

Quick-change adapters EM series ▸▸ 583 - 601

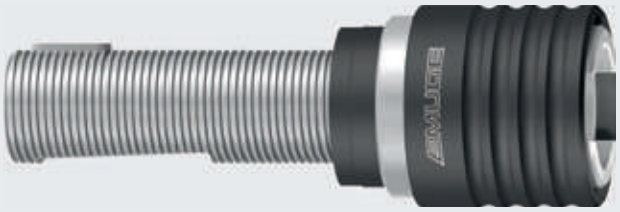


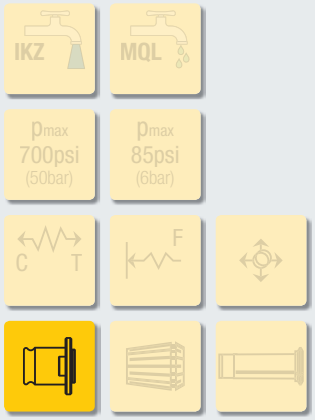
● = In stock
★ = Allow 7 days for delivery

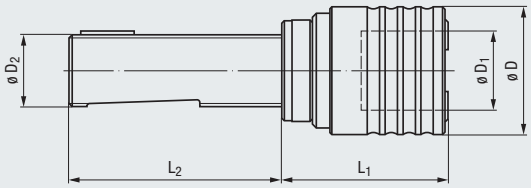
SFM

ACME Shank

ASME B5.11







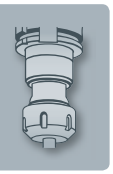
For use on multi-spindle machines and transfer lines

Type			Shank Size ø D_2 ACME	inch ø D	ø D_1	L_1	L_2	EDP Number	
SFM 00	M1 - M10 (No.0 - 1/4)	EM 00	5/8 x 16	0.9055	0.5118	1.7126	2.5787	**F0100271**	★
			3/4 x 12	0.9055	0.5118	1.7126	2.5787	**F0100272**	★
SFM 01	M3 - M14 (No.0 - 9/16)	EM 01	5/8 x 16	1.2598	0.7480	1.8701	2.5787	**F0101271**	★
			3/4 x 12	1.2598	0.7480	1.8701	2.5787	**F0101272**	★
			1 1/16 x 12	1.2598	0.7480	1.8307	3.2087	**F0101275**	★
SFM 03	M4.5 - M24 (1/4 - 7/8)	EM 03	1 1/16 x 12	1.9685	1.2205	2.5394	3.2087	**F0103275**	★
			1 3/8 x 12	1.9685	1.2205	2.4213	4.2126	**F0103276**	★
SFM 04	M14 - M36 (5/8 - 1 3/8)	EM 04	1 3/8 x 12	2.8346	1.8898	3.6811	4.2126	**F0104276**	★
			1 7/8 x 12	2.8346	1.8898	3.6811	5.2165	**F0104277**	★

Further designs upon request

Accessories

Quick-change adapters EM series ▸▸ 583 - 601

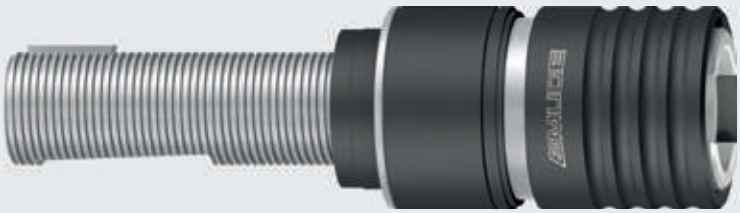


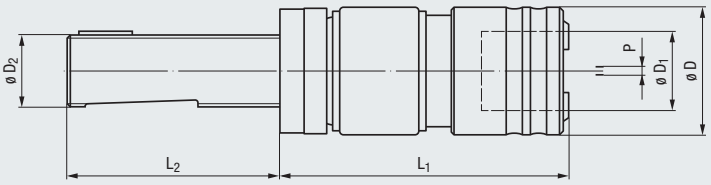
Ordering Example: **F0100271**

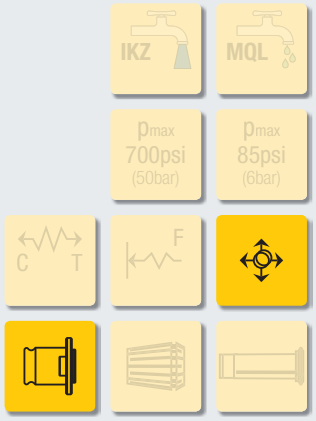
SFM-NP

Trapezoidal Shank

DIN 6327







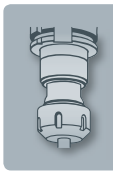
For use on multi-spindle machines and transfer lines

Type			Shank Size ø D_2	ø D	ø D_1	mm L_1	L_2	P	EDP Number	
SFM 00-NP	M1 - M10 (No.0 - 1/4)	EM 00	Tr 16 x 1.5	23	13	65	73	0.8	**F2110213**	upon request
			Tr 20 x 2	23	13	65	76	0.8	**F2110214**	
SFM 01-NP	M3 - M14 (No.0 - 9/16)	EM 01	Tr 16 x 1.5	32	19	70	73	1.4	**F2111213**	upon request
			Tr 20 x 2	32	19	70	76	1.4	**F2111214**	
			Tr 28 x 2	32	19	70	83	1.4	**F2111216**	
SFM 03-NP	M4.5 - M24 (1/4 - 7/8)	EM 03	Tr 20 x 2	50	31	96	76	2.5	**F2113214**	upon request
			Tr 28 x 2	50	31	96	83	2.5	**F2113216**	
			Tr 36 x 2	50	31	98	104	2.5	**F2113218**	

Further designs upon request

Accessories

Quick-change adapters EM series ▸▸ 583 - 601

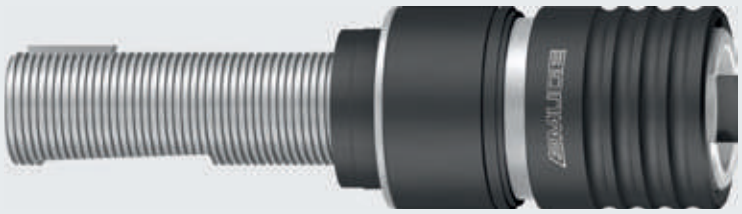


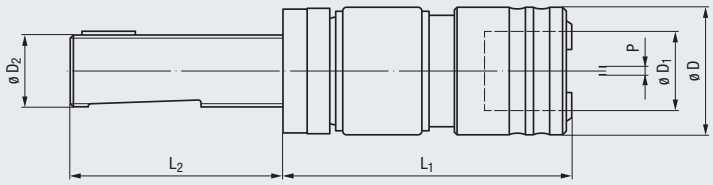
● = In stock
★ = Allow 7 days for delivery

SFM-NP

ACME Shank

ASME B5.11





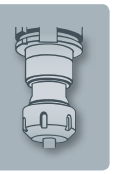
For use on multi-spindle machines and transfer lines

Type			Shank Size ø D_2 ACME	ø D	ø D_1	inch L_1	L_2	P	EDP Number	
SFM 00-NP	M1 - M10 (No.0 - 1/4)	EM 00	5/8 x 16	0.9055	0.5118	2.5000	2.5787	0.0315	**F2110M33**	upon request
			3/4 x 12	0.9055	0.5118	2.5000	2.5787	0.0315	**F2110M34**	
SFM 01-NP	M3 - M14 (No.0 - 9/16)	EM 01	3/4 x 12	1.2598	0.7480	2.6969	2.5787	0.0551	**F2111M34**	upon request
			1 1/16 x 12	1.2598	0.7480	2.6969	3.2087	0.0551	**F2111M37**	
SFM 03-NP	M4.5 - M24 (1/4 - 7/8)	EM 03	1 1/16 x 12	1.9685	1.2205	3.7205	3.2087	0.0984	**F2113M37**	upon request
			1 3/8 x 12	1.9685	1.2205	3.7205	4.2126	0.0984	**F2113M39**	

Further designs upon request

Accessories

Quick-change adapters EM series ▸▸ 583 - 601

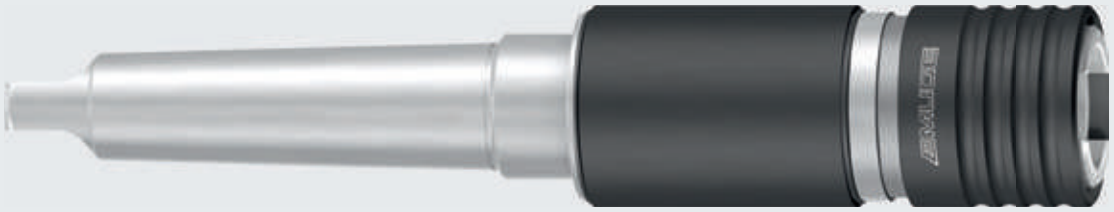


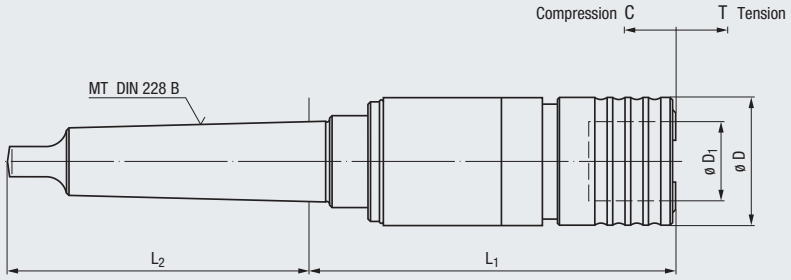
Ordering Example: **F2110M33**

SFM-L-DZ

Morse Taper Shank

DIN 228 B (ASME B5.10)





IKZ · MQL · pmax 700psi (50bar) · pmax 85psi (6bar)

C T · F

For use on multi-spindle machines and transfer lines

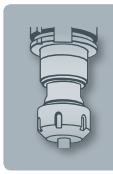
Type			Shank Size	mm ø D	ø D_1	L_1	L_2	C	T	EDP Number	
SFM 00-L20-DZ	M1 - M10 (No.0 - 1/4)	EM 00	MT 1	23	13	90	62	10	10	**F0180101.7**	★
			MT 2	23	13	91	75	10	10	**F0180102.7**	★
SFM 00-L30-DZ			MT 1	23	13	105	62	15	15	**F0190101.7**	★
			MT 2	23	13	106	75	15	15	**F0190102.7**	★
SFM 01-L20-DZ	M3 - M14 (No.0 - 9/16)	EM 01	MT 1	32	19	102	62	10	10	**F0181101.7**	
			MT 2	32	19	103	75	10	10	**F0181102.7**	★
			MT 3	32	19	103	94	10	10	**F0181103.7**	★
SFM 01-L30-DZ			MT 1	32	19	117	62	15	15	**F0191101.7**	
			MT 2	32	19	118	75	15	15	**F0191102.7**	★
			MT 3	32	19	118	94	15	15	**F0191103.7**	★
SFM 01-L40-DZ			MT 1	32	19	132	62	20	20	**F0201101.7**	
			MT 2	32	19	133	75	20	20	**F0201102.7**	★
			MT 3	32	19	133	94	20	20	**F0201103.7**	★
SFM 03-L30-DZ	M4.5 - M24 (1/4 - 7/8)	EM 03	MT 2	50	31	142	75	15	15	**F0183102.7**	
			MT 3	50	31	142	94	15	15	**F0183103.7**	★
			MT 4	50	31	143	117.5	15	15	**F0183104.7**	★
SFM 03-L40-DZ			MT 2	50	31	157	75	20	20	**F0193102.7**	
			MT 3	50	31	157	94	20	20	**F0193103.7**	★
			MT 4	50	31	158	117.5	20	20	**F0193104.7**	★
SFM 04-L30-DZ	M14 - M36 (5/8 - 1 3/8)	EM 04	MT 3	72	48	188	94	15	15	**F0184103.7**	
			MT 4	72	48	189	117.5	15	15	**F0184104.7**	★
			MT 5	72	48	190	149.5	15	15	**F0184105.7**	★
SFM 04-L40-DZ			MT 3	72	48	203	94	20	20	**F0194103.7**	
			MT 4	72	48	204	117.5	20	20	**F0194104.7**	★
			MT 5	72	48	205	149.5	20	20	**F0194105.7**	★

Morse taper shank with clamping thread acc. DIN 228 A upon request

Further designs upon request

Accessories

Quick-change adapters EM series ▸▸ 583 - 601

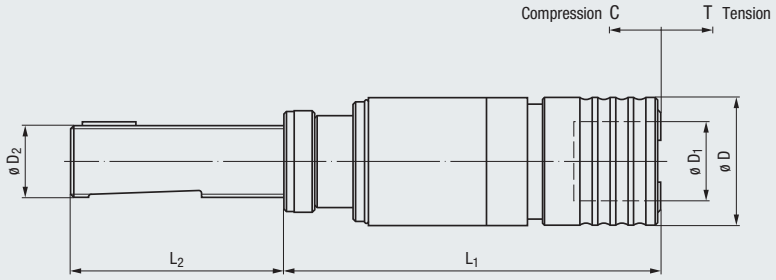


● = In stock
★ = Allow 7 days for delivery

SFM-L-DZ

Trapezoidal Shank

DIN 6327



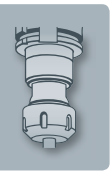
For use on multi-spindle machines and transfer lines

Type			Shank Size ø D_2	mm ø D	ø D_1	L_1	L_2	C	T	EDP Number	
SFM 00-L20-DZ	M1 - M10 (No.0 - 1/4)	EM 00	Tr 16 x 1.5	23	13	96	73	10	10	**F0180213.7**	★
			Tr 20 x 2	23	13	96	76	10	10	**F0180214.7**	★
SFM 00-L30-DZ			Tr 16 x 1.5	23	13	111	73	15	15	**F0190213.7**	★
			Tr 20 x 2	23	13	111	76	15	15	**F0190214.7**	★
SFM 01-L20-DZ	M3 - M14 (No.0 - 9/16)	EM 01	Tr 16 x 1.5	32	19	108	73	10	10	**F0181213.7**	★
			Tr 20 x 2	32	19	108	76	10	10	**F0181214.7**	★
			Tr 28 x 2	32	19	108	83	10	10	**F0181216.7**	★
SFM 01-L30-DZ			Tr 16 x 1.5	32	19	123	73	15	15	**F0191213.7**	★
			Tr 20 x 2	32	19	123	76	15	15	**F0191214.7**	★
			Tr 28 x 2	32	19	123	83	15	15	**F0191216.7**	
SFM 01-L40-DZ			Tr 16 x 1.5	32	19	138	73	20	20	**F0201213.7**	★
			Tr 20 x 2	32	19	138	76	20	20	**F0201214.7**	★
			Tr 28 x 2	32	19	138	83	20	20	**F0201216.7**	★
SFM 03-L30-DZ	M4.5 - M24 (1/4 - 7/8)	EM 03	Tr 20 x 2	50	31	147	76	15	15	**F0183214.7**	★
			Tr 28 x 2	50	31	147	83	15	15	**F0183216.7**	★
			Tr 36 x 2	50	31	149	104	15	15	**F0183218.7**	★
SFM 03-L40-DZ			Tr 20 x 2	50	31	162	76	20	20	**F0193214.7**	★
			Tr 28 x 2	50	31	162	83	20	20	**F0193216.7**	★
			Tr 36 x 2	50	31	164	104	20	20	**F0193218.7**	
SFM 04-L30-DZ	M14 - M36 (5/8 - 1 3/8)	EM 04	Tr 28 x 2	72	48	193	83	15	15	**F0184216.7**	
			Tr 36 x 2	72	48	195	104	15	15	**F0184218.7**	★
			Tr 48 x 2	72	48	199	126	15	15	**F0184219.7**	
SFM 04-L40-DZ			Tr 28 x 2	72	48	208	83	20	20	**F0194216.7**	
			Tr 36 x 2	72	48	210	104	20	20	**F0194218.7**	★
			Tr 48 x 2	72	48	214	126	20	20	**F0194219.7**	

Further designs upon request

Accessories

Quick-change adapters EM series ▸▸ 583 - 601

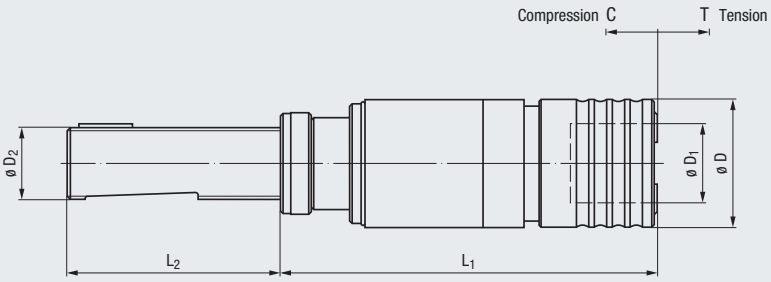


Ordering Example: **F0180213.7**

SFM-L-DZ

ACME Shank

ASME B5.11



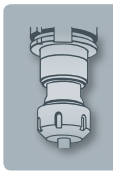
For use on multi-spindle machines and transfer lines

Type			Shank Size ø D_2 ACME	inch ø D	ø D_1	L_1	L_2	C	T	EDP Number	
SFM 00-L20-DZ	M1 - M10 (No.0 - 1/4)	EM 00	5/8 x 16	0.9055	0.5118	3.7205	2.5787	0.3937	0.3937	**F0180271.7**	★
			3/4 x 12	0.9055	0.5118	3.7205	2.5787	0.3937	0.3937	**F0180272.7**	★
SFM 00-L30-DZ			5/8 x 16	0.9055	0.5118	4.3110	2.5787	0.5906	0.5906	**F0190271.7**	★
			3/4 x 12	0.9055	0.5118	4.3110	2.5787	0.5906	0.5906	**F0190272.7**	★
SFM 01-L20-DZ	M3 - M14 (No.0 - 9/16)	EM 01	5/8 x 16	1.2598	0.7480	4.1929	2.5787	0.3937	0.3937	**F0181271.7**	★
			3/4 x 12	1.2598	0.7480	4.1929	2.5787	0.3937	0.3937	**F0181272.7**	★
			1 1/16 x 12	1.2598	0.7480	4.1929	3.2087	0.3937	0.3937	**F0181275.7**	★
SFM 01-L30-DZ			5/8 x 16	1.2598	0.7480	4.7835	2.5787	0.5906	0.5906	**F0191271.7**	★
			3/4 x 12	1.2598	0.7480	4.7835	2.5787	0.5906	0.5906	**F0191272.7**	★
			1 1/16 x 12	1.2598	0.7480	4.7835	3.2087	0.5906	0.5906	**F0191275.7**	★
SFM 03-L30-DZ	M4.5 - M24 (1/4 - 7/8)	EM 03	3/4 x 12	1.9685	1.2205	5.7283	2.5787	0.5906	0.5906	**F0183272.7**	★
			1 1/16 x 12	1.9685	1.2205	5.7283	3.2087	0.5906	0.5906	**F0183275.7**	★
			1 3/8 x 12	1.9685	1.2205	5.7283	4.2126	0.5906	0.5906	**F0183276.7**	★
SFM 03-L40-DZ			3/4 x 12	1.9685	1.2205	6.3189	2.5787	0.7874	0.7874	**F0193272.7**	★
			1 1/16 x 12	1.9685	1.2205	6.3189	3.2087	0.7874	0.7874	**F0193275.7**	★
			1 3/8 x 12	1.9685	1.2205	6.3189	4.2126	0.7874	0.7874	**F0193276.7**	★
SFM 04-L30-DZ	M14 - M36 (5/8 - 1 3/8)	EM 04	1 1/16 x 12	2.8346	1.8898	7.5394	3.2087	0.5906	0.5906	**F0184275.7**	★
			1 3/8 x 12	2.8346	1.8898	7.5394	4.2126	0.5906	0.5906	**F0184276.7**	★
			1 7/8 x 12	2.8346	1.8898	7.5394	5.2165	0.5906	0.5906	**F0184277.7**	★
SFM 04-L40-DZ			1 1/16 x 12	2.8346	1.8898	8.1299	3.2087	0.7874	0.7874	**F0194275.7**	★
			1 3/8 x 12	2.8346	1.8898	8.1299	4.2126	0.7874	0.7874	**F0194276.7**	★
			1 7/8 x 12	2.8346	1.8898	8.1299	5.2165	0.7874	0.7874	**F0194277.7**	★

Further designs upon request

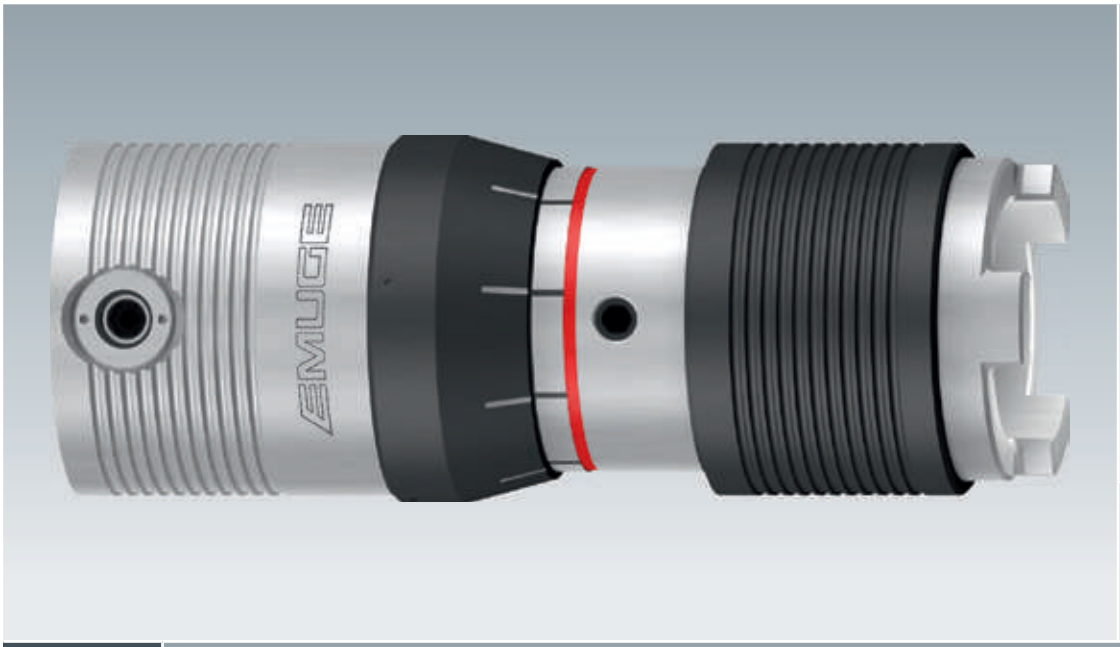
Accessories

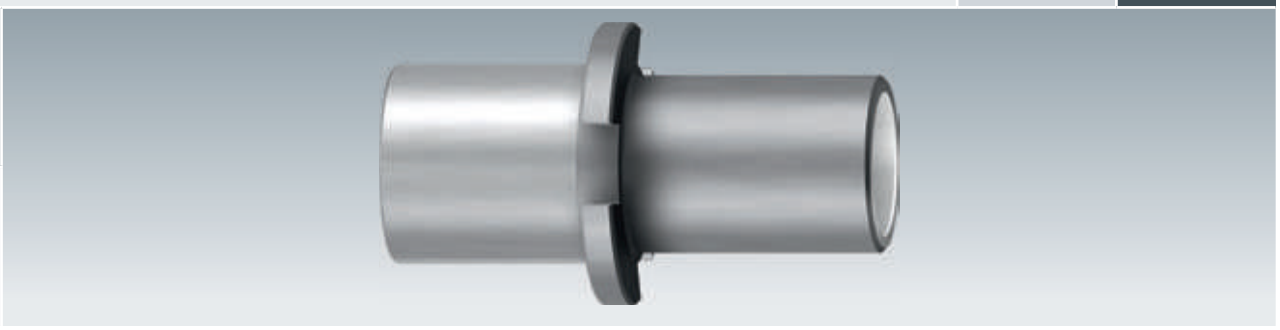
Quick-change adapters EM series ▸▸ 583 - 601



● = In stock
★ = Allow 7 days for delivery

EMUGE
SPEEDSYNCHRO ®
Modular/IKZ
F3741L01
n max. Antrieb 2000 1/min
ratio = 1 : 4,412
p max. IKZ 50 bar
M1-M8
Made in Germany
11/1-02



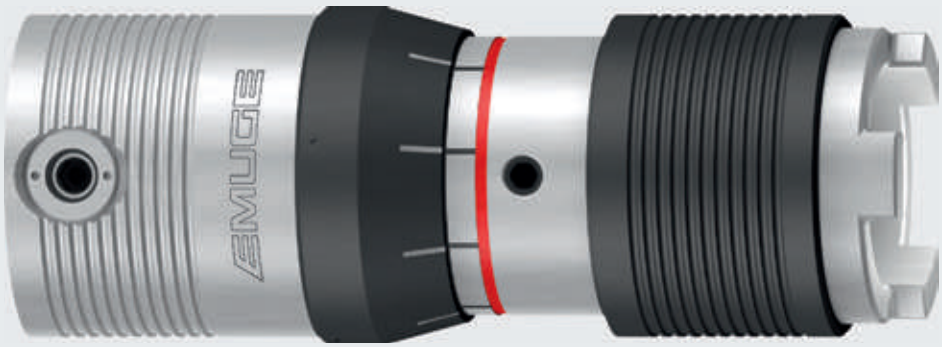


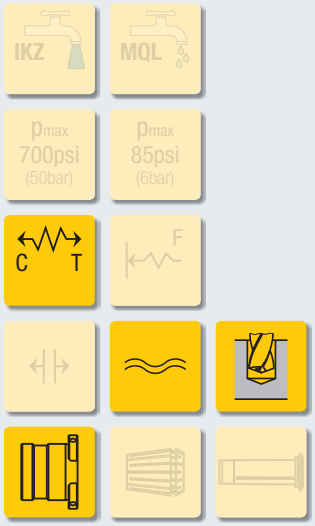
HF Series

Application on CNC machining centers and boring mills

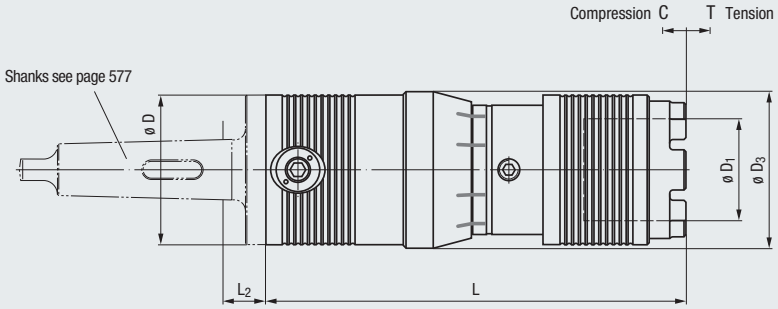
For the production of big threads up to M160. Depending on the type: equipped with safety functions just like adjustable overload clutch and large length compensation.

HF





For use on CNC machining centers, other machine tools and pillar drilling machines



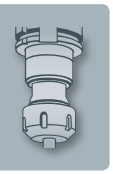
Type			Maximum Permissible Torque	inch ø D	ø D_1	ø D_3	L	C	T	Weight (lbs)	EDP Number	
HF 20	M24 - M76 (1 - 2 1/2)	HE 2	958 ft lbs (1300 Nm)	4.3307	2.9528	4.5276	12.1260	0.5906	0.5906	32.56	**F0332999**	★
HF 30	M36 - M160 (1 3/8 - 3 1/2)	HE 3	2213 ft lbs (3000 Nm)	6.2992	3.5433	6.2992	14.6457	0.7874	0.7874	80.30	**F0333999**	★

Available with internal coolant supply up to 145 psi (10 bar) upon request

Accessories

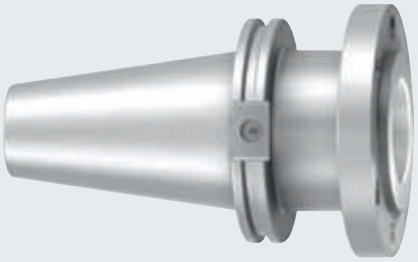
Quick-change adapters type HE ▸▸ 578 - 581

Shanks type HF ▸▸ 577

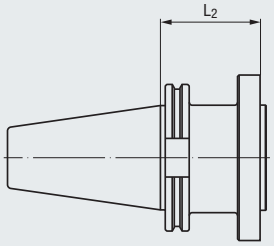


For Type	Shank Size	inch L_2	Weight (lbs)	EDP Number	
HF 20	CAT 50	2.6142	8.38	F033207.02	★
HF 30	CAT 50	2.0079	12.79	F033307.01	★

Available with internal coolant supply up to 145 psi (10 bar) upon request



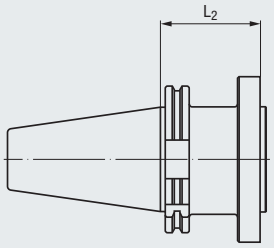
HF
CAT Shank
ASME B5.50,
UNC drawbolt thread



For Type	Shank Size	mm L_2	Weight (lbs)	EDP Number	
HF 20	SK 50	66	8.38	F033206.02	★
HF 30	SK 50	51	12.79	F033306.01	★

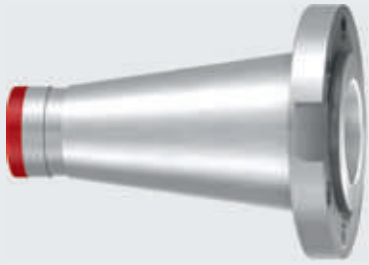
Available with internal coolant supply up to 145 psi (10 bar) upon request

HF
SK Shank
DIN 69871 A

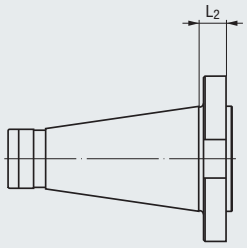


For Type	Shank Size	inch L_2	Weight (lbs)	EDP Number	
HF 20	SK 40	0.8661	3.74	F033205.12	★
	SK 50	0.7087	6.60	F033205.11	★
HF 30	SK 50	0.7480	9.46	F033305.03	★
	SK 60	0.7480	22.22	F033305.04	★

Available with internal coolant supply up to 145 psi (10 bar) upon request

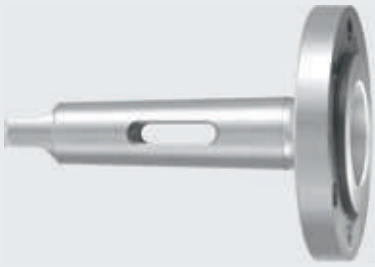


KSN
SK Shank
ANSI B5.18, NMTP

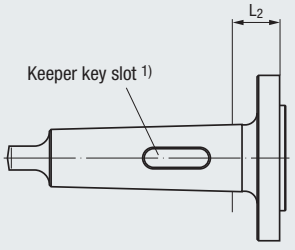


For Type	Shank Size	inch L_2	Weight (lbs)	EDP Number	
HF 20	MT 4	1.3386	3.74	F033201.04	★
	MT 5	1.2598	6.16	F033201.05	★
	MT 6	1.2205	10.56	F033201.06	★
HF 30	MT 5	1.1811	8.58	F033301.01	★
	MT 6	1.2598	13.64	F033301.02	★

1) The “Keeper key slot” shown here is to DIN 228 B specifications and is different than ANSI B5.10 and ANSI B5.40. The taper shank will fit into Morse Taper Shank spindles, however the “Keeper key slot” is dimensionally different from the American Standard. “Keeper key slot” to ANSI B5.10 or ANSI B5.40 standards are available on a special order basis.



KSN
Morse Taper Shank
DIN 228 B (ASME B5.10)



● = In stock
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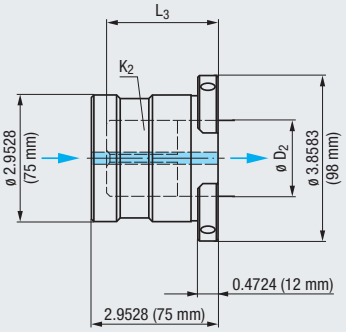
HE 2/IKZZ

For taps/roll form taps

IKZ

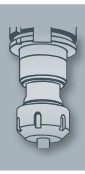
pmax 700psi (50bar)



ASME

inch ø D_2	inch K_2		inch L_3	Weight (lbs)	EDP Number	
0.800	0.600	1	2.0866	4.62	**F0632325.6**	★
0.896	0.672	1 1/8	2.0866	4.62	**F0632326.6**	★
0.9063	0.679	3/4 NPT	1.6929	4.62	**F0632355.6**	★
1.021	0.766	1 1/4	2.0866	4.62	**F0632327.6**	★
1.108	0.831	1 3/8	2.0866	4.62	**F0632328.6**	★
1.125	0.843	1 NPT	1.6929	4.40	**F0632356.6**	★
1.233	0.925	1 1/2	2.0866	4.40	**F0632329.6**	★
1.305	0.979	1 5/8	2.0866	4.40	**F0632330.6**	★
1.3125	0.984	1 1/4 NPT	1.8504	4.40	**F0632357.6**	★
1.430	1.072	1 3/4	2.5984	4.18	**F0632331.6**	★
1.500	1.125	1 1/2 NPT	2.5984	4.18	**F0632358.6**	★
1.519	1.139	1 7/8	2.5984	3.96	**F0632332.6**	★
1.644	1.233	2	2.5984	3.96	**F0632333.6**	★
1.769	1.327	2 1/8	2.5984	3.74	**F0632334.6**	★
1.875	1.406	2 NPT	2.0866	3.74	**F0632359.6**	★
1.894	1.420	2 1/4	2.5984	3.52	**F0632335.6**	★
2.019	1.514	2 3/8	2.5984	3.52	**F0632336.6**	★
2.100	1.575	2 1/2 - 3 [1]	2.5984	3.30	**F0632337.6**	★
2.225	1.669	2 5/8 [1]	2.5984	2.86	**F0632338.6**	★
2.250	1.687	2 1/2 NPT	2.0866	2.86	**F0632360.6**	★

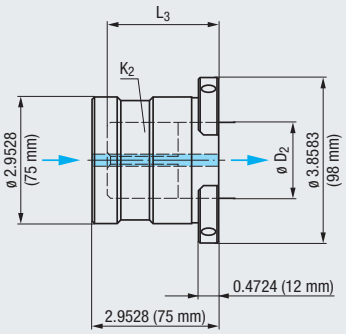
[1] Fine threads



Ordering Example: **F0632325.6**

For taps/roll form taps

HE 2/IKZZ



IKZ

pmax 700psi (50bar)

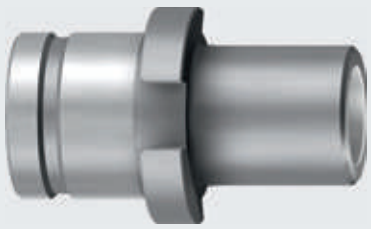
DIN

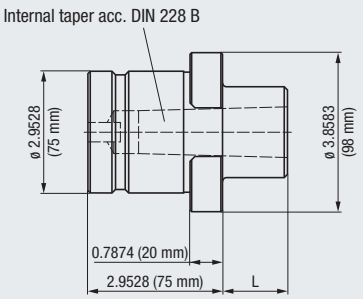
mm ø D_2	mm K_2		mm L_3	Weight (lbs)	EDP Number	
18	14.5	M24	53	4.85	**F0632115.6**	★
20	16	M27	53	4.85	**F0632116.6**	★
22	18	M30	53	4.63	**F0632117.6**	★
25	20	M33	53	4.63	**F0632118.6**	★
28	22	M36	53	4.63	**F0632119.6**	★
32	24	M39 - M42	53	4.41	**F0632120.6**	★
36	29	M45 - M48	66	4.19	**F0632121.6**	★
40	32	M52 - M56	66	3.97	**F0632122.6**	★
45	35	M60	66	3.75	**F0632123.6**	★
50	39	M64 - M76 / M80 [1] - M90 [1]	66	3.53	**F0632124.6**	★
56	44	M92 [1] - M120 [1]	66	3.09	**F0632125.6**	★

[1] Fine threads

For drilling and countersinking

HE 2

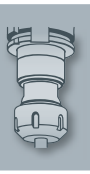




IKZ

pmax 700psi (50bar)

Internal Taper MT	inch L	Weight (lbs)	EDP Number	
MT 3	0.9843	7.05	**F0642803**	★
MT 4	1.8898	7.28	**F0642804**	★
MT 5	3.1496	7.50	**F0642805**	★



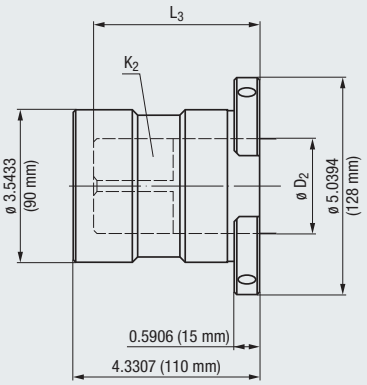
● = In stock
★ = Allow 7 days for delivery

HE 3

For taps/roll form taps

IKZ

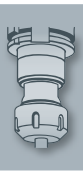
pmax 700psi (50bar)



ASME

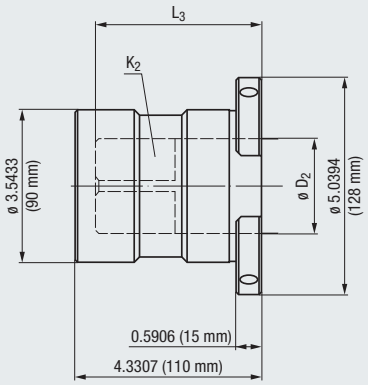
inch ø D_2	inch K_2		inch L_3	Weight (lbs)	EDP Number	
1.108	0.831	1 3/8	2.9921	9.68	**F0633328**	★
1.125	0.843	1 NPT	1.4567	9.68	**F0633356**	★
1.233	0.925	1 1/2	2.9921	9.46	**F0633329**	★
1.305	0.979	1 5/8	2.9921	9.46	**F0633330**	★
1.3125	0.984	1 1/4 NPT	1.5748	9.46	**F0633357**	★
1.430	1.072	1 3/4	2.9921	9.24	**F0633331**	★
1.500	1.125	1 1/2 NPT	1.7717	9.02	**F0633358**	★
1.519	1.139	1 7/8	2.9921	9.02	**F0633332**	★
1.644	1.233	2	2.9921	8.80	**F0633333**	★
1.769	1.327	2 1/8	2.9921	8.58	**F0633334**	★
1.875	1.406	2 NPT	1.9685	8.36	**F0633359**	★
1.894	1.420	2 1/4	2.9921	8.36	**F0633335**	★
2.019	1.514	2 3/8	2.9921	8.14	**F0633336**	★
2.100	1.575	2 1/2 - 3	2.9921	7.92	**F0633337**	★
2.225	1.669	2 5/8	3.6220	7.48	**F0633338**	★
2.250	1.687	2 1/2 NPT	2.1654	7.48	**F0633360**	★
2.350	1.762	2 3/4	3.6220	7.04	**F0633339**	★
2.475	1.856	2 7/8	3.6220	6,60	**F0633340**	★
2.543	1.907	3	3.6220	6.38	**F0633341**	★
2.625	1.968	3 NPT	2.5591	6.16	**F0633361**	★
2.668	2.001	3 1/8	3.6220	6.16	**F0633342**	★
2.793	2.095	3 1/4	3.6220	7.02	**F0633343**	★
2.8125	2.108	3 1/2 NPT	2.9921	5.72	**F0633362**	★

Available with internal coolant supply up to 145 psi (10 bar) upon request



For taps/roll form taps

HE 3



IKZ

pmax 700psi (50bar)

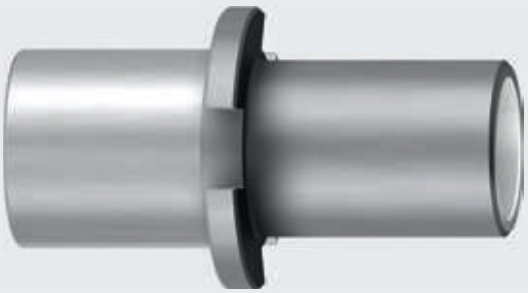
DIN

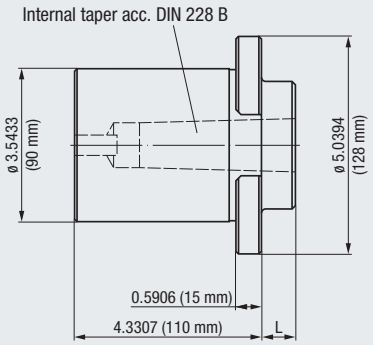
mm ø D_2	mm K_2		mm L_3	Weight (lbs)	EDP Number	
28	22	M36	76	9.70	**F0633119**	★
32	24	M39 - M42	76	9.48	**F0633120**	★
36	29	M45 - M48	76	9.26	**F0633121**	★
40	32	M52 - M56	76	8.82	**F0633122**	★
45	35	M60	76	8.60	**F0633123**	★
50	39	M64 - M90	76	8.16	**F0633124**	★
56	44	M92 - M120	98	7.50	**F0633125**	★
63	49	M122 - M150	98	6.61	**F0633126**	★
70	55	M155 - M160	98	5.95	**F0633127**	★

Available with internal coolant supply up to 145 psi (10 bar) upon request

For drilling and countersinking

HE 3

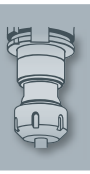




IKZ

pmax 700psi (50bar)

Internal Taper MT	inch L	Weight (lbs)	EDP Number	
MT 3	0.7874	13.01	**F0643804**	★
MT 4	1.9685	13.23	**F0643805**	★
MT 5	4.5276	12.79	**F0643806**	★



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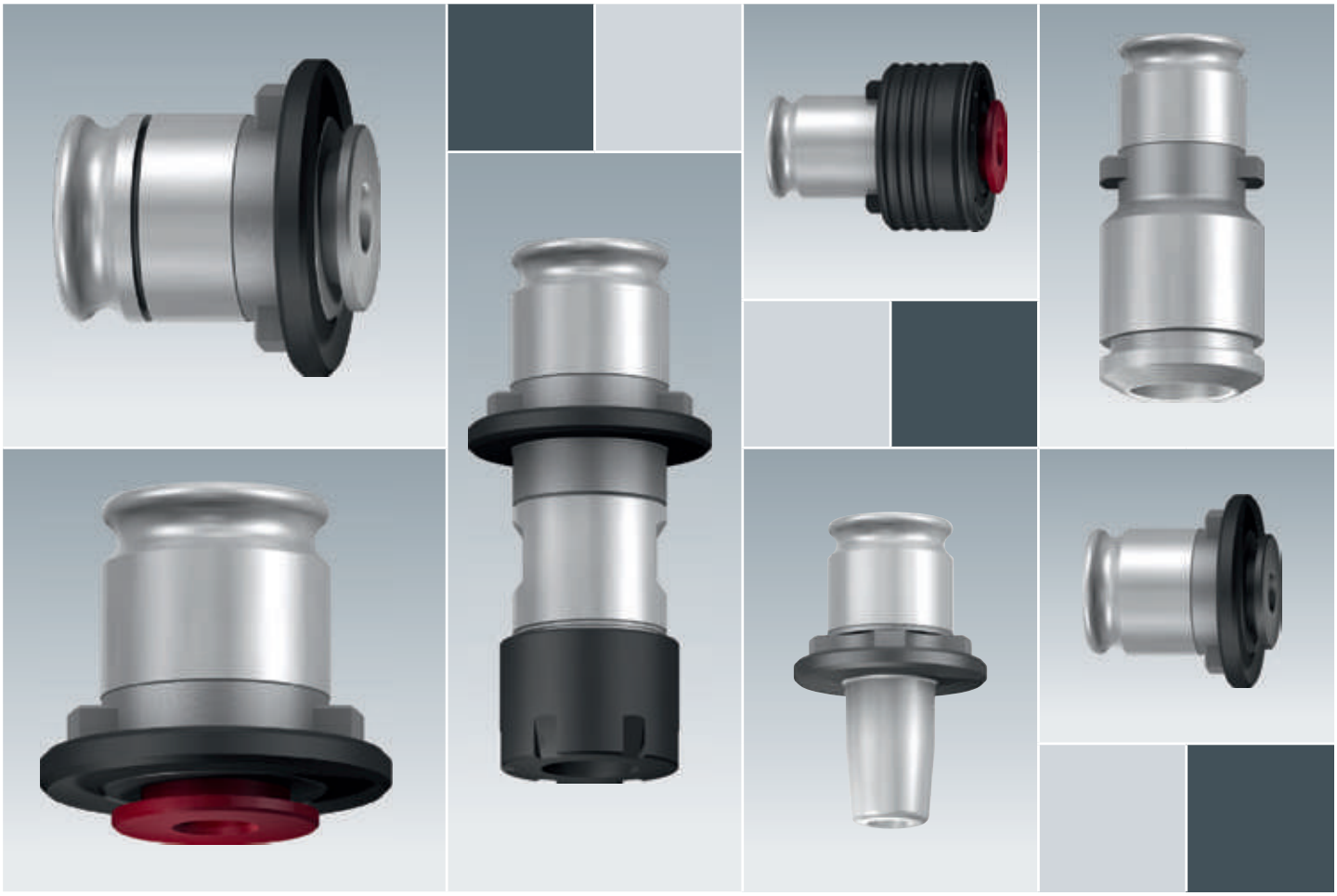
EMUGE
F0332653.1.49



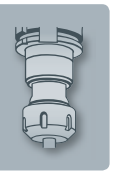
EM Series

Suitable for all our quick-change tap holders of KSN and SFM series

Depending on the type: with coolant supply through the tool center or along the shank, overload clutch and length adjustment. Clamping of the tool is achieved – depending on the type – by a ball clamping system, collets type ER (GB) or collets type PGR (GB).

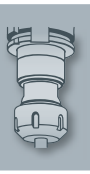
			Tool Adaption			Functions		Cooling and Lubrication	
			Quick-change ball clamping system or clamping on the square	Collets, type ER (GB)	Collets, type PGR (GB)	Overload clutch	Length adjustment	Through the tool axis	Along the tool shank
	DIN	ASME							
	Page								
EM	586	587	■					■	
EM-E	588	588	■					■	
EM/IKZ	589	590	■						■
EM-U	591	592	■			■		■	
EM-U-E	593	593	■			■		■	
EM-U/IKZ	594	595	■			■			■
EM-Z/ER/IKZ	596	596		■				■	■
EM-L/ER/IKZ	597	597		■			■	■	■
EM/PGR/IKZ	598				■			■	
EM-R	599	599							
EM-S	600							■	
EM-LS	601						■	■	

Description of the symbols for performance characteristics ▸▸ 632 - 635

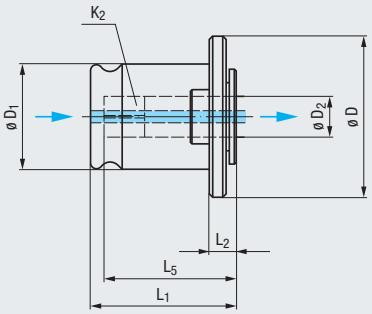


Recommended Range of Application

Blind hole threads	Through hole threads	Coarse thread	Fine thread	Clamping of solid carbide tools	For thermic shrinking of carbide tools with h6 shank tolerance	High-speed machining	High coolant pressure	For use on multi-spindle machines and transfer lines	
	■	■							EM
	■		■						EM-E
	■	■							EM/IKZ
■		■							EM-U
■			■						EM-U-E
■		■							EM-U/IKZ
	■	■		■		■	■		EM-Z/ER/IKZ
	■	■		■		■	■	■	EM-L/ER/IKZ
	■	■		■		■	■		EM/PGR/IKZ
■	■	■							EM-R
					■				EM-L
					■				EM-L-E



EM
Metric
DIN



Type		EM 00/DIN	EM 01/DIN	EM 03/DIN	EM 04/DIN	EM 05/DIN
		M1 - M10	M3 - M14	M4.5 - M24	M14 - M36	M22 - M48
Quick-Change Adapter Dimensions (mm)	ø D	23	30	48	70	92
	ø D_1	13	19	31	48	60
	L_1	27	29	45	67	111
	L_2	7	7	10	11	48

DIN

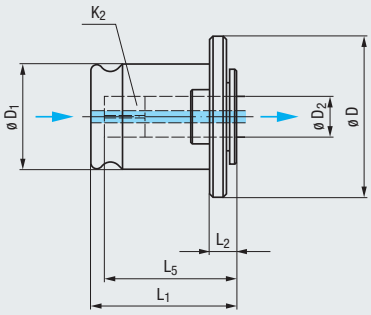
mm ø D_2	mm K_2			EM 00/DIN EDP Number	L_5		EM 01/DIN EDP Number	L_5		EM 03/DIN EDP Number	L_5		EM 04/DIN EDP Number	L_5		EM 05/DIN EDP Number	L_5	
2.5	2.1	M1 - M1.8	M3.5	**F0560100**	20	●												
2.8	2.1	M2 - M2.6	M4	**F0560101**	20	●												
3.5	2.7	M3	M4.5 - M5	**F0560102**	21	●	**F0561102**	23	●									
4	3	M3.5	M5.5	**F0560103**	21	●	**F0561103**	23	●									
4.5	3.4	M4	M6	**F0560104**	21	●	**F0561104**	23	●									
6	4.9	M4.5 - M6	M8	**F0560106**	23	●	**F0561106**	25	●	**F0563106**	37	●						
7	5.5	M7	M9 - M10	**F0560107**	23	●	**F0561107**	25	●	**F0563107**	37	●						
8	6.2	M8	M11	2)			**F0561108**	26	●	**F0563108**	38	●						
9	7	M9	M12				**F0561109**	27	●	**F0563109**	39	●						
10	8	M10					**F0561110**	27	●	**F0563110**	40	●						
11	9		M14				**F0561111**	27	●	**F0563111**	41	●	**F0564111**	53	●			
12	9		M16				2)			**F0563112**	41	●	**F0564112**	53	●			
14	11		M18							**F0563113**	43	●	**F0564113**	55	●			
16	12		M20							**F0563114**	44	●	**F0564114**	56	●			
18	14.5		M22 - M24							**F0563115**	44	●	**F0564115**	58	●	**F0565115**	94	●
20	16		M27							2)			**F0564116**	60	●	**F0565116**	96	●
22	18		M30							2)			**F0564117**	62	●	**F0565117**	98	●
25	20		M33										**F0564118**	64	●	**F0565118**	100	●
28	22		M36										**F0564119**	66	●	**F0565119**	102	●
32	24		M39 - M42										2)			**F0565120**	104	●
36	29		M45 - M48										2)			**F0565121**	109	●
40	32		M52 - M56													2)		
45	35		M68													2)		

1) If used with taps / roll form taps with internal coolant supply

2) Quick-change adapters with extended clamping range type EM-E, see page 588

Ordering Example: **F0560100**

EM
Inch
ASME



IKZ 1) | MQL | pmax 700psi (50bar) | pmax 85psi (6bar) | L+

Type		EM 00/ASME	EM 01/ASME	EM 03/ASME	EM 04/ASME	EM 05/ASME
		No.0 - 1/4	No.0 - 9/16	1/4 - 7/8	5/8 - 1 3/8	7/8 - 1 7/8
Quick-Change Adapter Dimensions (inch)	ø D	0.91	1.18	1.89	2.76	3.62
	ø D_1	0.512	0.748	1.220	1.890	2.362
	L_1	1.06	1.14	1.77	2.60	4.09
	L_2	0.28	0.28	0.39	0.43	1.61

ASME

inch ø D_2	inch K_2			EDP Number	L_5		EDP Number	L_5		EDP Number	L_5		EDP Number	L_5		EDP Number	L_5	
0.141	0.110	No.0 - No.6		F0560300	0.787	●	F0561300	0.866	●									
0.168	0.131	No.8		F0560301	0.846	●	F0561301	0.945	●									
0.194	0.152	No.10		F0560302	0.846	●	F0561302	0.945	●									
0.220	0.165	No.12		F0560303	0.886	●	F0561303	0.965	●									
0.255	0.191	1/4		F0560304	0.925	●	F0561304	1.004	●	F0563304	1.339	●						
0.3125	0.234	1/16 NPT					F0561350	1.063	●	F0563350	1.181	●						
0.318	0.238	5/16					F0561306	1.063	●	F0563306	1.398	●						
0.381	0.286	3/8					F0561311	1.122	●	F0563311	1.457	●						
0.323	0.242		7/16				F0561307	1.102	●	F0563307	1.437	●						
0.367	0.275		1/2				F0561310	1.122	●	F0563310	1.457	●						
0.429	0.322		9/16				F0561313	1.102	●	F0563313	1.535	●						
0.4375	0.328	1/8 NPT					F0561351	1.063	●	F0563351	1.181	●						
0.480	0.360		5/8				2)			F0563315	1.594	●	F0564315	1.673	●			
0.542	0.406		11/16							F0563317	1.654	●	F0564317	1.732	●			
0.5625	0.421	1/4 NPT								F0563352	1.161	●	F0564352	1.240	●			
0.590	0.442		3/4							F0563319	1.713	●	F0564319	1.791	●			
0.652	0.489		13/16							F0563321	1.713	●	F0564321	1.791	●			
0.6875	0.515		1/2 NPT							F0563353	1.417	●	F0564353	1.496	●			
0.697	0.523		7/8							F0563323	1.772	●	F0564323	1.850	●	F0565323	2.402	●
0.700	0.531	3/8 NPT								F0563354	1.299	●	F0564354	1.378	●	F0565354	1.398	●
0.800	0.600		1							2)			F0564325	2.382	●	F0565325	2.461	●
0.896	0.672		1 1/8							2)			F0564326	2.441	●	F0565326	2.520	●
0.9063	0.679		3/4 NPT										F0564355	1.634	●	F0565355	1.673	●
1.021	0.766		1 1/4										F0564327	2.579	●	F0565327	2.657	●
1.108	0.831		1 3/8										F0564328	2.638	●	F0565328	2.717	●
1.125	0.843		1 NPT										F0564356	1.752	●	F0565356	1.791	●
1.233	0.925		1 1/2										2)			F0565329	2.776	●
1.305	0.979		1 5/8													F0565330	2.776	●
1.430	1.072		1 3/4													F0565331	2.913	●
1.519	1.139		1 7/8													F0565332	2.913	●
1.644	1.233		2													2)		

1) If used with taps / roll form taps with internal coolant supply

2) Quick-change adapters with extended clamping range type EM-E, see page 588

● = In stock
★ = Allow 7 days for delivery

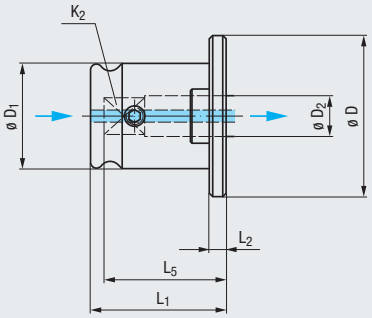
EM-E

Metric / Inch

DIN / ASME

For the cutting of fine threads **MF**

IKZ 1) | MQL | pmax 700psi (50bar) | pmax 85psi (6bar)



Type		EM 00-E/DIN	EM 01-E/DIN	EM 03-E/DIN	EM 04-E/DIN	EM 05-E/DIN
Fine thread	MF	M8 - M11	M16	M27 - M30	M39 - M48	M52 - M60
Quick-Change Adapter Dimensions (mm)	ø D	23	30	48	70	92
	ø D_1	13	19	31	48	60
	L_1	23.5	25.5	40	61.5	84
	L_2	7	4	5	6	21

DIN

mm ø D_2	mm K_2			EM 00-E/DIN EDP Number	L_5		EM 01-E/DIN EDP Number	L_5		EM 03-E/DIN EDP Number	L_5		EM 04-E/DIN EDP Number	L_5		EM 05-E/DIN EDP Number	L_5	
8	6.2	M8	M11	**F0800108**	21	●												
12	9		M16				**F0801112**	25	●									
20	16		M27							**F0803116**	39	●						
22	18		M30							**F0803117**	39	●						
32	24		M39 - M42										**F0804120**	61	●			
36	29		M45 - M48										**F0804121**	60	●			
40	32		M52 - M56													**F0805122**	83	●
45	35		M60													**F0805123**	83	●

Type			EM 01-E/ASME	EM 03-E/ASME	EM 04-E/ASME	EM 05-E/ASME
Fine thread			5/8	1 - 1 1/8	1 1/2	2
Quick-Change Adapter Dimensions (inch)	ø D		1.18	1.89	2.76	3.62
	ø D_1		0.748	1.220	1.890	2.362
	L_1		1.00	1.57	2.42	3.78
	L_2		0.16	0.20	0.24	1.30

ASME

inch ø D_2	inch K_2						EM 01-E/ASME EDP Number	L_5		EM 03-E/ASME EDP Number	L_5		EM 04-E/ASME EDP Number	L_5		EM 05-E/ASME EDP Number	L_5	
0.480	0.360		5/8				**F0801315**	1.004	●									
0.800	0.600		1							**F0803325**	1.516	●						
0.896	0.672		1 1/8							**F0803326**	1.535	●						
1.233	0.925		1 1/2										**F0804329**	2.244	●			
1.644	1.233		2													**F0805333**	3.346	●

1) If used with taps / roll form taps with internal coolant supply

Ordering Example: **F0800108**

EMUGE

For taps / roll form taps without internal coolant supply

EM/IKZ

Metric

DIN

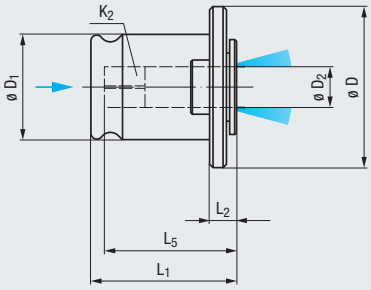
Along the tool shank

IKZ

MQL

pmax 700psi (50bar)

pmax 85psi (6bar)



Type		EM 01/IKZ/DIN	EM 03/IKZ/DIN	EM 04/IKZ/DIN	EM 05/IKZ/DIN
		M3 - M14	M4.5 - M24	M14 - M36	M22 - M48
Quick-Change Adapter Dimensions (mm)	ø D	30	48	70	92
	ø D_1	19	31	48	60
	L_1	29	45	67	111
	L_2	7	10	11	48

DIN

mm ø D_2	mm K_2			EM 01/IKZ/DIN EDP Number	L_5		EM 03/IKZ/DIN EDP Number	L_5		EM 04/IKZ/DIN EDP Number	L_5		EM 05/IKZ/DIN EDP Number	L_5				
2.5	2.1	M1 - M1.8	M3.5															
2.8	2.1	M2 - M2.6	M4															
3.5	2.7	M3	M4.5 - M5	**F0561102.5**	23	●												
4	3	M3.5	M5.5	**F0561103.5**	23	●												
4.5	3.4	M4	M6	**F0561104.5**	23	●												
6	4.9	M4.5 - M6	M8	**F0561106.5**	25	●	**F0563106.5**	37	●									
7	5.5	M7	M9 - M10	**F0561107.5**	25	●	**F0563107.5**	37	●									
8	6.2	M8	M11	**F0561108.5**	26	●	**F0563108.5**	38	●									
9	7	M9	M12	**F0561109.5**	27	●	**F0563109.5**	39	●									
10	8	M10		**F0561110.5**	27	●	**F0563110.5**	40	●									
11	9		M14	**F0561111.5**	27	●	**F0563111.5**	41	●	**F0564111.5**	53	●						
12	9		M16				**F0563112.5**	41	●	**F0564112.5**	53	●						
14	11		M18				**F0563113.5**	43	●	**F0564113.5**	55	●						
16	12		M20				**F0563114.5**	44	●	**F0564114.5**	56	●						
18	14.5		M22 - M24				**F0563115.5**	44	●	**F0564115.5**	58	●	**F0565115.5**	94	●			
20	16		M27							**F0564116.5**	60	●	**F0565116.5**	96	●			
22	18		M30							**F0564117.5**	62	●	**F0565117.5**	98	●			
25	20		M33							**F0564118.5**	64	●	**F0565118.5**	100	●			
28	22		M36							**F0564119.5**	66	●	**F0565119.5**	102	●			
32	24		M39 - M42										**F0565120.5**	104	●			
36	29		M45 - M48										**F0565121.5**	109	●			

● = In stock
★ = Allow 7 days for delivery

EM/IKZ

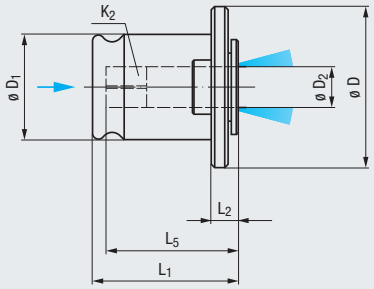
Inch

ASME

For taps / roll form taps without internal coolant supply

MQL | **IKZ** Along the tool shank

pmax 85psi (6bar) | **pmax 700psi (50bar)**



Type		EM01/IKZ/ASME	EM03/IKZ/ASME	EM04/IKZ/ASME	EM05/IKZ/ASME
		No.0 - 9/16	1/4 - 7/8	5/8 - 1 3/8	7/8 - 1 7/8
Quick-Change Adapter Dimensions (inch)	ø D	1.18	1.89	2.76	3.62
	ø D_1	0.748	1.220	1.890	2.362
	L_1	1.14	1.77	2.60	4.09
	L_2	0.28	0.39	0.43	1.61

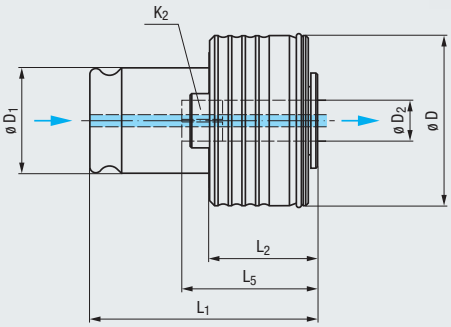
ASME

inch ø D_2	inch K_2			EM01/IKZ/ASME EDP Number	L_5		EM03/IKZ/ASME EDP Number	L_5		EM04/IKZ/ASME EDP Number	L_5		EM05/IKZ/ASME EDP Number	L_5	
0.141	0.110	No.0 - No.6		**F0561300.5**	0.866	●									
0.168	0.131	No.8		**F0561301.5**	0.945	●									
0.194	0.152	No.10		**F0561302.5**	0.945	●									
0.220	0.165	No.12		**F0561303.5**	0.965	●									
0.255	0.191	1/4		**F0561304.5**	1.004	●	**F0563304.5**	1.339	●						
0.3125	0.234	1/16 NPT		**F0561350.5**	1.063	●	**F0563350.5**	1.181	●						
0.318	0.238	5/16		**F0561306.5**	1.063	●	**F0563306.5**	1.398	●						
0.381	0.286	3/8		**F0561311.5**	1.122	●	**F0563311.5**	1.457	●						
0.323	0.242		7/16	**F0561307.5**	1.102	●	**F0563307.5**	1.437	●						
0.367	0.275		1/2	**F0561310.5**	1.122	●	**F0563310.5**	1.457	●						
0.429	0.322		9/16	**F0561313.5**	1.102	●	**F0563313.5**	1.535	●						
0.4375	0.328	1/8 NPT		**F0561351.5**	1.063	●	**F0563351.5**	1.181	●						
0.480	0.360		5/8				**F0563315.5**	1.594	●	**F0564315.5**	1.673	●			
0.542	0.406		11/16				**F0563317.5**	1.654	●	**F0564317.5**	1.732	●			
0.5625	0.421	1/4 NPT					**F0563352.5**	1.161	●	**F0564352.5**	1.240	●			
0.590	0.442		3/4				**F0563319.5**	1.713	●	**F0564319.5**	1.791	●			
0.652	0.489		13/16				**F0563321.5**	1.713	●	**F0564321.5**	1.791	●			
0.6875	0.515		1/2 NPT				**F0563353.5**	1.417	●	**F0564353.5**	1.496	●			
0.697	0.523		7/8				**F0563323.5**	1.772	●	**F0564323.5**	1.850	●	**F0565323.5**	2.402	●
0.700	0.531	3/8 NPT					**F0563354.5**	1.299	●	**F0564354.5**	1.378	●	**F0565354.5**	1.398	●
0.800	0.600		1							**F0564325.5**	2.382	●	**F0565325.5**	2.461	●
0.896	0.672		1 1/8							**F0564326.5**	2.441	●	**F0565326.5**	2.520	●
0.9063	0.679		3/4 NPT							**F0564355.5**	1.634	●	**F0565355.5**	1.673	●
1.021	0.766		1 1/4							**F0564327.5**	2.579	●	**F0565327.5**	2.657	●
1.108	0.831		1 3/8							**F0564328.5**	2.638	●	**F0565328.5**	2.717	●
1.125	0.843		1 NPT							**F0564356.5**	1.752	●	**F0565356.5**	1.791	●
1.233	0.925		1 1/2										**F0565329.5**	2.776	●
1.305	0.979		1 5/8										**F0565330.5**	2.776	●
1.430	1.072		1 3/4										**F0565331.5**	2.913	●
1.519	1.139		1 7/8										**F0565332.5**	2.913	●

EMUGE

With overload clutch

EM-U
Metric
DIN



IKZ 1) | MQL

pmax 700psi (50bar) | pmax 85psi (6bar)

L+

Type		EM 00-U/DIN	EM 01-U/DIN	EM 03-U/DIN	EM 04-U/DIN	EM 05-U/DIN
		M1 - M10	M3 - M14	M4.5 - M24	M14 - M36	M22 - M48
Quick-Change Adapter Dimensions (mm)	ø D	24	33	50	72	95
	ø D_1	13	19	31	48	60
	L_1	41.5	47	69	101	138
	L_2	22	25	34	45	75

DIN

mm ø D_2	mm K_2			EM 00-U/DIN EDP Number	L_5		EM 01-U/DIN EDP Number	L_5		EM 03-U/DIN EDP Number	L_5		EM 04-U/DIN EDP Number	L_5		EM 05-U/DIN EDP Number	L_5	
2.5	2.1	M1 - M1.8		F0570100.1	21	●												
2.5	2.1		M3.5	F0570100.2	21	●												
2.8	2.1	M2		F0570101.1	21	●												
2.8	2.1	M2.5		F0570101.2	21	●												
2.8	2.1		M4	F0570101.3	21	●												
3.5	2.7	M3		F0570102.1	22	●	F0571102.1	23	●									
3.5	2.7		M4.5 - M5	F0570102.2	22	●	F0571102.2	23	●									
4	3	M3.5		F0570103	22	●	F0571103	23	●									
4.5	3.4	M4		F0570104.1	22	●	F0571104.1	23	●									
4.5	3.4		M6	F0570104.2	22	●	F0571104.2	23	●									
6	4.9	M4.5 - M5		F0570106.1	24	●	F0571106.1	25	●	F0573106.1	38	●						
6	4.9	M6		F0570106.2	24	●	F0571106.2	25	●	F0573106.2	38	●						
6	4.9		M8	F0570106.3	24	●	F0571106.3	25	●	F0573106.3	38	●						
7	5.5		M10	F0570107	24	●	F0571107	25	●	F0573107	38	●						
8	6.2	M8		2)			F0571108	26	●	F0573108	39	●						
9	7		M12				F0571109	27	●	F0573109	40	●						
10	8	M10					F0571110	28	●	F0573110	41	●						
11	9		M14				F0571111	29	●	F0573111	42	●	F0574111	56	●			
12	9		M16				2)			F0573112	42	●	F0574112	56	●			
14	11		M18							F0573113	44	●	F0574113	58	●			
16	12		M20							F0573114	45	●	F0574114	59	●			
18	14.5		M22 - M24							F0573115	47	●	F0574115	61	●	F0575115	94	●
20	16		M27							2)			F0574116	63	●	F0575116	96	●
22	18		M30							2)			F0574117	65	●	F0575117	98	●
25	20		M33										F0574118	67	●	F0575118	100	●
28	22		M36										F0574119	69	●	F0575119	102	●
32	24		M39 - M42										2)			F0575120	104	●
36	29		M45 - M48										2)			F0575121	109	●
40	32		M52 - M56													2)		
45	35		M60													2)		

1) If used with taps / roll form taps with internal coolant supply

2) Quick-change adapters with extended clamping range type EM-U-E, see page 593

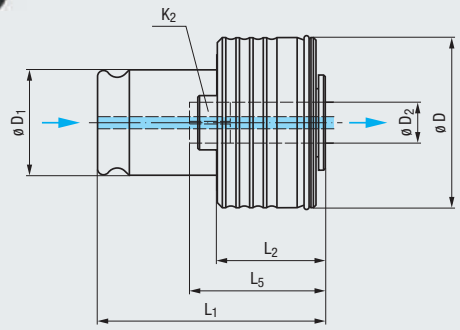
● = In stock
★ = Allow 7 days for delivery

EM-U

Inch

ASME

With overload clutch



Type		EM00-U/ASME	EM01-U/ASME	EM03-U/ASME	EM04-U/ASME	EM05-U/ASME
		No.0 - 1/4	No.0 - 9/16	1/4 - 7/8	5/8 - 1 3/8	7/8 - 1 7/8
Quick-Change Adapter Dimensions (inch)	ø D	0.94	1.30	1.97	2.83	3.74
	ø D_1	0.512	0.748	1.220	1.890	2.362
	L_1	1.63	1.85	2.72	3.98	5.16
	L_2	0.87	0.98	1.34	1.77	2.68

ASME

inch ø D_2	inch K_2			EM00-U/ASME EDP Number	EM00-U/ASME L_5		EM01-U/ASME EDP Number	EM01-U/ASME L_5		EM03-U/ASME EDP Number	EM03-U/ASME L_5		EM04-U/ASME EDP Number	EM04-U/ASME L_5		EM05-U/ASME EDP Number	EM05-U/ASME L_5	
0.141	0.110	No.0 - No.6		F0570300	0.819	●	F0571300	0.870	●									
0.168	0.131	No.8		F0570301	0.882	●	F0571301	0.933	●									
0.194	0.152	No.10		F0570302	0.882	●	F0571302	0.933	●									
0.220	0.165	No.12		F0570303	0.909	●	F0571303	0.961	●									
0.255	0.191	1/4		F0570304	0.941	●	F0571304	0.992	●	F0573304	1.280	●						
0.3125	0.234	1/16 NPT					F0571350	1.055	●	F0573350	1.055	●						
0.318	0.238	5/16					F0571306	1.055	●	F0573306	1.343	●						
0.381	0.286	3/8					F0571311	1.118	●	F0573311	1.406	●						
0.323	0.242		7/16				F0571307	1.087	●	F0573307	1.374	●						
0.367	0.275		1/2				F0571310	1.118	●	F0573310	1.406	●						
0.429	0.322		9/16				F0571313	1.181	●	F0573313	1.469	●						
0.4375	0.328	1/8 NPT					F0571351	1.055	●	F0573351	1.055	●						
0.480	0.360		5/8				2)			F0573315	1.531	●	F0574315	1.531	●			
0.542	0.406		11/16							F0573317	1.594	●	F0574317	1.594	●			
0.5625	0.421	1/4 NPT								F0573352	1.110	●	F0574352	1.110	●			
0.590	0.442		3/4							F0573319	1.657	●	F0574319	1.657	●			
0.652	0.489		13/16							F0573321	1.657	●	F0574321	1.657	●			
0.6875	0.515		1/2 NPT							F0573353	1.339	●	F0574353	1.339	●			
0.697	0.523		7/8							F0573323	1.720	●	F0574323	1.720	●	F0575323	2.319	●
0.700	0.531	3/8 NPT								F0573354	1.213	●	F0574354	1.213	●	F0575354 3)	1.213	●
0.800	0.600		1							2)			F0574325	2.315	●	F0575325	2.378	●
0.896	0.672		1 1/8							2)			F0574326	2.350	●	F0575326	2.441	●
0.9063	0.679		3/4 NPT										F0574355	1.496	●	F0575355 3)	1.496	●
1.021	0.766		1 1/4										F0574327	2.476	●	F0575327	2.567	●
1.108	0.831		1 3/8										F0574328	2.539	●	F0575328	2.630	●
1.125	0.843		1 NPT										F0574356	1.618	●	F0575356 3)	1.618	●
1.233	0.925		1 1/2										2)			F0575329	2.693	●
1.305	0.979		1 5/8													F0575330	2.693	●
1.430	1.072		1 3/4													F0575331	2.819	●
1.519	1.139		1 7/8													F0575332	2.819	●
1.644	1.233		2													2)		

1) If used with taps / roll form with internal coolant supply

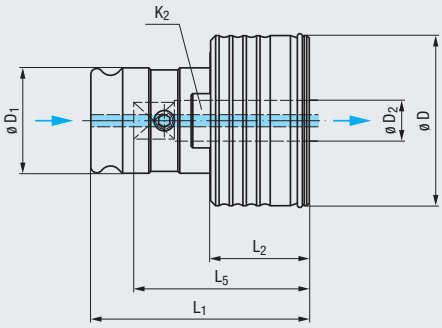
2) Quick-change adapters with extended clamping range type EM-U-E, see page 593

3) L_1 = 5.00
L_2 = 2.52

Ordering Example: **F0570300**

MF For the cutting of fine threads

With overload clutch



EM-U-E

Metric / Inch

DIN / ASME

IKZ 1) | MQL

pmax 700psi (50bar) | pmax 85psi (6bar)

Type		EM 00-U-E/DIN	EM 01-U-E/DIN	EM 03-U-E/DIN	EM 04-U-E/DIN	EM 05-U-E/DIN
Fine thread	MF	M8 - M11	M16	M27 - M30	M39 - M48	M52 - M60
Quick-Change Adapter Dimensions (mm)	ø D	24	33	50	72	95
	ø D_1	13	19	31	48	60
	L_1	38.5	44	64.5	96	125
	L_2	19	22.5	29.5	40.5	62

DIN

mm ø D_2	mm K_2			EM 00-U-E/DIN EDP Number	EM 00-U-E/DIN L_5		EM 01-U-E/DIN EDP Number	EM 01-U-E/DIN L_5		EM 03-U-E/DIN EDP Number	EM 03-U-E/DIN L_5		EM 04-U-E/DIN EDP Number	EM 04-U-E/DIN L_5		EM 05-U-E/DIN EDP Number	EM 05-U-E/DIN L_5	
8	6.2	M8	M11	**F0810108**	28	●												
12	9		M16				**F0811112**	37	●									
20	16		M27							**F0813116**	50	●						
22	18		M30							**F0813117**	52	●						
32	24		M39 - M42										**F0814120**	66	●			
36	29		M45 - M48										**F0814121**	71	●			
40	32		M52 - M56													**F0815122**	91	●
45	35		M60													**F0815123**	94	●

Type			EM 01-U-E/ASME	EM 03-U-E/ASME	EM 04-U-E/ASME	EM 05-U-E/ASME
Fine thread			5/8	1 - 1 1/8	1 1/2	2
Quick-Change Adapter Dimensions (inch)	ø D		1.30	1.97	2.83	3.74
	ø D_1		0.748	1.220	1.890	2.362
	L_1		1.73	2.54	3.78	4.84
	L_2		0.87	1.16	1.59	2.83

ASME

inch ø D_2	inch K_2			EM 01-U-E/ASME EDP Number	EM 01-U-E/ASME L_5		EM 03-U-E/ASME EDP Number	EM 03-U-E/ASME L_5		EM 04-U-E/ASME EDP Number	EM 04-U-E/ASME L_5		EM 05-U-E/ASME EDP Number	EM 05-U-E/ASME L_5	
0.480	0.360		5/8	**F0811315**	1.535	●									
0.800	0.600		1				**F0813325**	2.047	●						
0.896	0.672		1 1/8				**F0813326**	2.106	●						
1.233	0.925		1 1/2							**F0814329**	2.598	●			
1.644	1.233		2										**F0815333**	3.425	●

1) If used with taps / roll form taps with internal coolant supply

● = In stock
★ = Allow 7 days for delivery

EM-U/IKZ

Metric

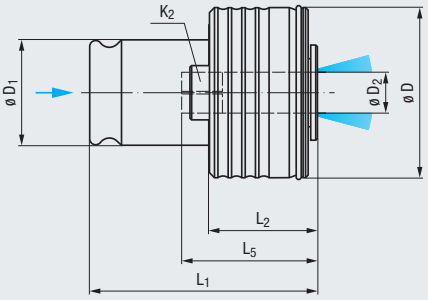
DIN

For taps / roll form taps without internal coolant supply

With overload clutch

MQL | **IKZ** Along the tool shank

p_{max} 85psi (6bar) | p_{max} 700psi (50bar)



Type		EM 01-U/IKZ/DIN	EM 03-U/IKZ/DIN	EM 04-U/IKZ/DIN	EM 05-U/IKZ/DIN
		M3 - M14	M4.5 - M24	M14 - M36	M22 - M48
Quick-Change Adapter Dimensions (mm)	ø D	33	50	72	95
	ø D_1	19	31	48	60
	L_1	47	69	101	138
	L_2	25	34	45	75

DIN

mm ø D_2	mm K_2			EDP Number	L_5		EDP Number	L_5		EDP Number	L_5		EDP Number	L_5	
2.5	2.1	M1 - M1.8	M3.5												
2.8	2.1	M2 - M2.5	M4												
3.5	2.7	M3		**F0571102.1.5**	22	●									
3.5	2.7		M4.5 - M5	**F0571102.2.5**	22	●									
4	3	M3.5		**F0571103.5**	22	●									
4.5	3.4	M4		**F0571104.1.5**	23	●									
4.5	3.4		M6	**F0571104.2.5**	23	●									
6	4.9	M4.5 - M5		**F0571106.1.5**	25	●	**F0573106.1.5**	38	●						
6	4.9	M6		**F0571106.2.5**	25	●	**F0573106.2.5**	38	●						
6	4.9		M8	**F0571106.3.5**	25	●	**F0573106.3.5**	38	●						
7	5.5		M10	**F0571107.5**	25	●	**F0573107.5**	38	●						
8	6.2	M8		**F0571108.5**	26	●	**F0573108.5**	39	●						
9	7		M12	**F0571109.5**	27	●	**F0573109.5**	40	●						
10	8	M10		**F0571110.5**	28	●	**F0573110.5**	41	●						
11	9		M14	**F0571111.5**	29	●	**F0573111.5**	42	●	**F0574111.5**	56	●			
12	9		M16				**F0573112.5**	42	●	**F0574112.5**	56	●			
14	11		M18				**F0573113.5**	44	●	**F0574113.5**	58	●			
16	12		M20				**F0573114.5**	45	●	**F0574114.5**	59	●			
18	14.5		M22 - M24				**F0573115.5**	47	●	**F0574115.5**	61	●	**F0575115.5**	94	●
20	16		M27							**F0574116.5**	63	●	**F0575116.5**	96	●
22	18		M30							**F0574117.5**	65	●	**F0575117.5**	98	●
25	20		M33							**F0574118.5**	67	●	**F0575118.5**	100	●
28	22		M36							**F0574119.5**	69	●	**F0575119.5**	102	●
32	24		M39 - M42										**F0575120.5**	104	●
36	29		M45 - M48										**F0575121.5**	109	●

EMUGE

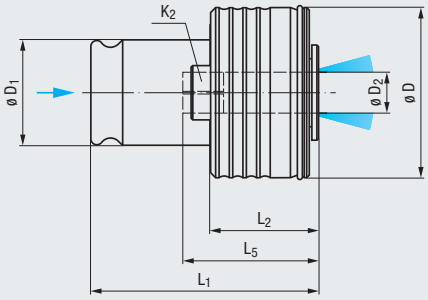
For taps / roll form taps without internal coolant supply

With overload clutch

EM-U/IKZ

Inch

ASME



Along the tool shank

Type		EM01-U/IKZ/ASME	EM03-U/IKZ/ASME	EM04-U/IKZ/ASME	EM05-U/IKZ/ASME
		No.0 - 9/16	1/4 - 7/8	5/8 - 1 3/8	7/8 - 1 7/8
Quick-Change Adapter Dimensions (inch)	ø D	1.30	1.97	2.83	3.74
	ø D_1	0.748	1.220	1.890	2.362
	L_1	1.85	2.72	3.98	5.43
	L_2	0.98	1.34	1.77	2.95

ASME

inch ø D_2	inch K_2			EDP Number	L_5		EDP Number	L_5		EDP Number	L_5		EDP Number	L_5	
0.141	0.110	No.0 - No.6		F0571300.5	0.870	●									
0.168	0.131	No.8		F0571301.5	0.933	●									
0.194	0.152	No.10		F0571302.5	0.933	●									
0.220	0.165	No.12		F0571303.5	0.961	●									
0.255	0.191	1/4		F0571304.5	0.992	●	F0573304.5	1.280	●						
0.3125	0.234	1/16 NPT		F0571350.5	1.055	●	F0573350.5	1.055	●						
0.318	0.238	5/16		F0571306.5	1.055	●	F0573306.5	1.343	●						
0.381	0.286	3/8		F0571311.5	1.118	●	F0573311.5	1.406	●						
0.323	0.242		7/16	F0571307.5	1.087	●	F0573307.5	1.374	●						
0.367	0.275		1/2	F0571310.5	1.181	●	F0573310.5	1.406	●						
0.429	0.322		9/16	F0571313.5	1.181	●	F0573313.5	1.469	●						
0.4375	0.328	1/8 NPT					F0573351.5	1.055	●						
0.480	0.360		5/8				F0573315.5	1.531	●	F0574315.5	1.531	●			
0.542	0.406		11/16				F0573317.5	1.594	●	F0574317.5	1.594	●			
0.5625	0.421	1/4 NPT					F0573352.5	1.110	●	F0574352.5	1.110	●			
0.590	0.442		3/4				F0573319.5	1.657	●	F0574319.5	1.657	●			
0.652	0.489		13/16				F0573321.5	1.657	●	F0574321.5	1.657	●			
0.6875	0.515		1/2 NPT				F0573353.5	1.339	●	F0574353.5	1.339	●			
0.697	0.523		7/8				F0573323.5	1.720	●	F0574323.5	1.720	●	F0575323.5	2.319	●
0.700	0.531	3/8 NPT					F0573354.5	1.213	●	F0574354.5	1.213	●	F0575354.5 [3]	1.213	●
0.800	0.600		1							F0574325.5	2.315	●	F0575325.5	2.378	●
0.896	0.672		1 1/8							F0574326.5	2.350	●	F0575326.5	2.441	●
0.9063	0.679		3/4 NPT							F0574355.5	1.496	●	F0575355.5 [3]	1.496	●
1.021	0.766		1 1/4							F0574327.5	2.476	●	F0575327.5	2.567	●
1.108	0.831		1 3/8							F0574328.5	2.539	●	F0575328.5	2.630	●
1.125	0.843		1 NPT							F0574356.5	1.618	●	F0575356.5 [3]	1.618	●
1.233	0.925		1 1/2										F0575329.5	2.693	●
1.305	0.979		1 5/8										F0575330.5	2.693	●
1.430	1.072		1 3/4										F0575331.5	2.819	●
1.519	1.139		1 7/8										F0575332.5	2.819	●

[3] L_1 = 5.00
L_2 = 2.52

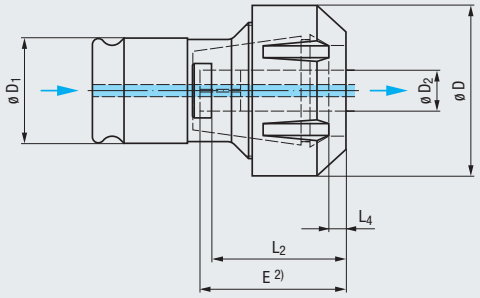
● = In stock
★ = Allow 7 days for delivery

EM-Z/ER/IKZ

Metric / Inch

DIN / ASME

With collet adaption



Type		ø D_2			mm ø D	ø D_1	L_2	L_4	EDP Number	
EM 00-Z/ ER/IKZ	M2 - M8 (No.2 - No.10)	2.5 - 7 mm 0.141 - 0.194	ER 11 (GB)	Hi-Q/ER 11	19	13	23	0.9	**F0860001**	●
EM 01-Z/ ER/IKZ	M4 - M12 (No.8 - 1/2)	4.5 - 10 mm 0.168 - 0.381	ER 20 (GB)	Hi-Q/ERC 20	34	19	34.5	5	**F0861001.13**	●
EM 03-Z/ ER/IKZ	M4 - M20 (1/4 - 3/4)	4.5 - 16 mm 0.255 - 0.590	ER 32 (GB)	Hi-Q/ERC 32	50	31	41.5	5	**F0863001.13**	●

1) If used with taps / roll form taps with internal coolant supply

1) Clamping depths E, see page 624 - 625

EM00-Z/ER/IKZ:
Clamping nut without integrated seal is included in the delivery

EM01-Z/ER/IKZ, EM03-Z/ER/IKZ:
Clamping nut for sealing disks is included in the delivery

Accessories

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Clamping nut with integrated seal, type Hi-Q/ERC 11 ▸▸ 619

Clamping wrench ▸▸ 622

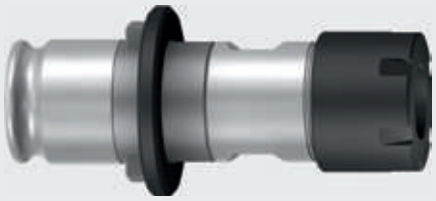
EMUGE

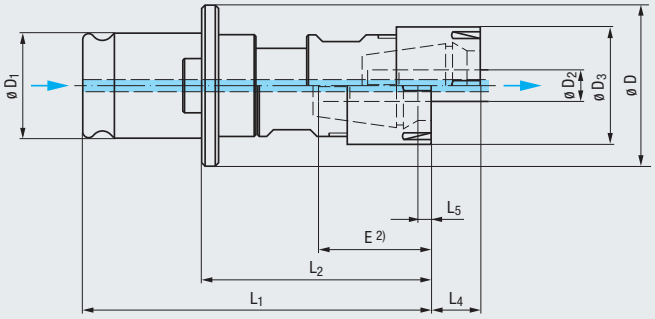
With collet adaption and length adjustment

EM-L/ER/IKZ

Metric / Inch

DIN / ASME





Type		ø D_2			mm ø D	ø D_1	ø D_3	L_1	L_2	L_4	L_5	EDP Number	
EM 00-L/ ER/IKZ	M2 - M8 (No.2 - No.10)	2.5 - 7 mm 0.141 - 0.194	ER 11 (GB)	Hi-Q/ERM 11	23	13	16	57.5	38	8	0.9	**F3500011**	●
EM 01-L/ ER/IKZ	M4 - M12 (No.8 - 1/2)	4.5 - 9 mm 0.168 - 0.381	ER 16 (GB)	Hi-Q/ERMC 16	30	19	22	72	50.5	10	5	**F3501016**	●
EM 03-L/ ER/IKZ	M8 - M20	8 - 16 mm	ER 25 (GB)	Hi-Q/ERMC 25	48	31	35	103	68	15	5	**F3503025**	●

1) If used with taps / roll form taps with internal coolant supply

1) Clamping depths E, see page 624 - 625

EM00-L/ER/IKZ:
Clamping nut without integrated seal is included in the delivery

EM01-L/ER/IKZ, EM03-L/ER/IKZ:
Clamping nut for sealing disks is included in the delivery

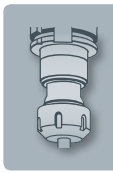
Accessories

Collets type ER (GB) ▸▸ 610 - 613

Sealing disks type DS/ER ▸▸ 616

Clamping nut with integrated seal, type Hi-Q/ERMC 11 ▸▸ 618

Set of clamping wrenches ▸▸ 622

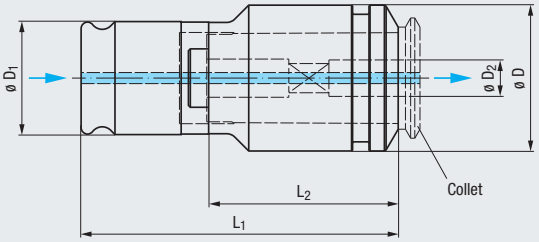


● = In stock
★ = Allow 7 days for delivery

EM/PGR/IKZ

IKZ 1) | MQL

pmax 700psi (50bar) | pmax 85psi (6bar)

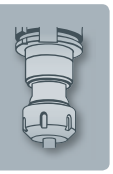


Type		ø D_2		inch ø D	ø D_1	L_1	L_2	EDP Number	
EM 01/PGR/IKZ	M4 - M12 (No.10 - 1/4)	4.5 - 10 mm	PGR 15 (GB)	0.9449	0.7480	2.5197	1.6535	**F3561015**	★
EM 03/PGR/IKZ	M8 - M20 (1/4 - 3/4)	8 - 16 mm	PGR 25 (GB)	1.5748	1.2205	3.4252	2.0472	**F3563025**	★

1) If used with taps / roll form taps with internal coolant supply

Accessories

Collets type PGR-GB ▸▸ 630



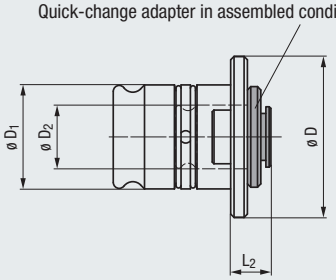
powRgrip® is a registered trademark of REGO-FIX AG

EM-R

Metric / Inch

DIN / ASME

Quick-change adapter in assembled condition



Type		inch ø D	ø D_1	ø D_2	L_2	EDP Number	
EM 01/00-R	EM 00	1.1811	0.7480	0.5118	0.4331	**F0891000**	★
EM 03/00-R	EM 00	1.8898	1.2205	0.5118	0.4724	**F0893000**	★
EM 03/01-R	EM 01	1.8898	1.2205	0.7480	0.4724	**F0893001**	★
EM 04/01-R	EM 01	2.7559	1.8898	0.7480	0.5118	**F0894001**	★
EM 04/03-R	EM 03	2.7559	1.8898	1.2205	0.6693	**F0894003**	★
EM 05/03-R	EM 03	3.6220	2.3622	1.2205	0.9449	**F0895003**	★
EM 05/04-R	EM 04	3.6220	2.3622	1.8898	1.0630	**F0895004**	★

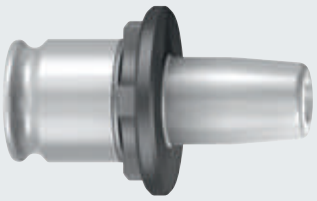
● = In stock
★ = Allow 7 days for delivery

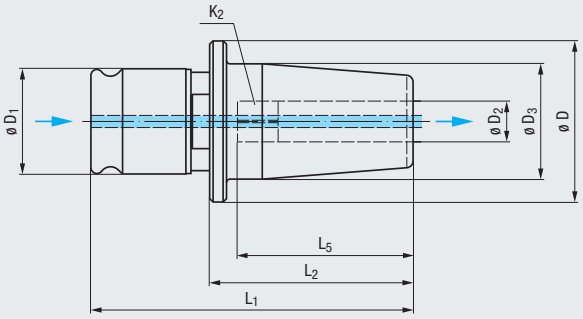
EM-S

Metric

DIN

For thermic shrinking of carbide tools with h6 shank tolerance





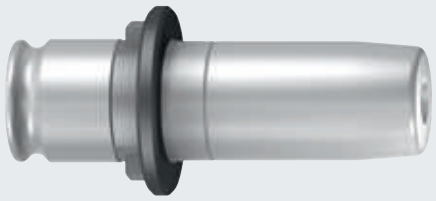
Type		EM01-S/DIN	EM03-S/DIN	
Solid carbide		M4.5 - M12	M4.5 - M20	
Quick-Change Adapter Dimensions (mm)	ø D	30	48	
	ø D_1	19	31	
	ø D_3	22	22	34
	L_1	61.5	75	95
	L_2	40	40	60

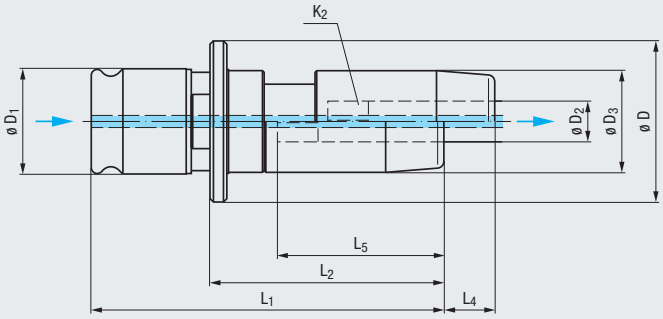
DIN

mm ø D_2	mm K_2			EDP Number	L_5 min.	L_5 max.		EDP Number	L_5 min.	L_5 max.		EDP Number	L_5 min.	L_5 max.	
6	4.9	M4.5 - M6	M8	**F6561106**	26	31	★	**F6563106**	26	31	★				
7	5.5	M7	M9 - M10	**F6561107**	26	31	★	**F6563107**	26	31	★				
8	6.2	M8	M11	**F6561108**	27	32	★	**F6563108**	27	32	★				
9	7	M9	M12	**F6561109**	28	33	★	**F6563109**	28	33	★				
10	8	M10		**F6561110**	29	34	★	**F6563110**	29	34	★				
11	9		M14									**F6563111**	41	46	★
12	9		M16									**F6563112**	41	46	★
14	11		M18									**F6563113**	43	48	★
16	12		M20									**F6563114**	44	49	★

For thermic shrinking of carbide tools with h6 shank tolerance

EM-LS
Metric
DIN





IKZ 1) | MQL | pmax 700psi (50bar) | pmax 85psi (6bar) | L+

Type		EM01-LS/DIN	EM03-LS/DIN		
Solid carbide		M4.5 - M12	M4.5 - M20		
Quick-Change Adapter Dimensions (mm)	ø D	30	48		
	ø D_1	19	31		
	ø D_3	22	30		
	L_1	69	104		
	L_2	49	69		
	L_4	10	15		

DIN

mm ø D_2	mm K_2			EDP Number	L_5		EDP Number	L_5								
6	4.9	M4.5 - M6	M8	**F6581106**	31	★										
7	5.5	M7	M9 - M10	**F6581107**	31	★										
8	6.2	M8	M11	**F6581108**	32	★										
9	7	M9	M12	**F6581109**	33	★										
10	8	M10		**F6581110**	34	★	**F6583110**	34	★							
11	9		M14				**F6583111**	46	★							
12	9		M16				**F6583112**	46	★							
14	11		M18				**F6583113**	48	★							
16	12		M20				**F6583114**	49	★							

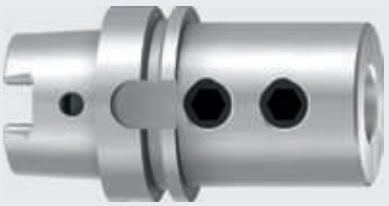
● = In stock
★ = Allow 7 days for delivery

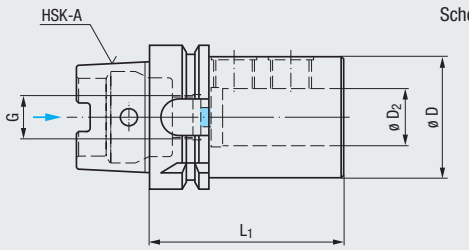
EMUGE
SOFTSYNCHRO® 1
QuickLock
HSK-A63 DIN69893

Accessories for Tap Holders

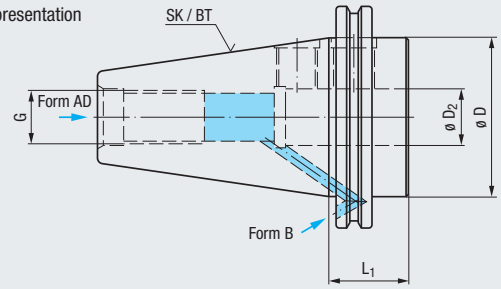
With Shank Adaption according DIN 1835 B

IKZ





Schematic representation



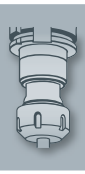
Type	Form	Shank Size	mm ø D_2	ø D	G	L_1	EDP Number	
DIN 69893 A [1] [2]		HSK-A40	20	52	M12 x 1	75	F33000C.02	★
		HSK-A40	25	65	M12 x 1	105	F33000C.03	★
		HSK-A50	20	52	M16 x 1	80	F33000C.04	★
		HSK-A50	25	65	M16 x 1	107	F33000C.05	★
		HSK-A50	32	77	M16 x 1	114	F33000C.06	★
		HSK-A63	25	53	M18 x 1	85	F33000C.07	★
		HSK-A63	32	72	M18 x 1	110	F33000C.08	★
		HSK-A80	25	65	M20 x 1.5	90	F33000C.09	★
		HSK-A80	32	72	M20 x 1.5	110	F33000C.10	★
		HSK-A100	25	65	M24 x 1.5	100	F33000C.11	★
		HSK-A100	32	72	M24 x 1.5	96	F33000C.12	★
DIN 69871 AD [1]	AD	SK 40	25	45	M16	35	F330006.01	★
		SK 50	25	70	M24	35	F330006.02	★
		SK 50	32	70	M24	35	F330006.05	★
DIN 69871 B [1]	B	SK 40	25	45	M16	35	F330006.03	★
		SK 50	25	70	M24	35	F330006.04	★
		SK 50	32	70	M24	35	F330006.06	★
DIN 2080	AD	SK 30	20	36	M12	34	F330005.03	★
		SK 40	25	44	M16	22	F330005.01	★
		SK 50	25	70	M24	16	F330005.02	★
		SK 50	32	70	M24	16	F330005.04	★
ASME B5.50 Metr.	AD	SK 40	25	45	M16	35	F330007.01	upon reqest
		SK 50	25	70	M24	35	F330007.02	upon reqest
		SK 50	32	70	M24	35	F330007.06	upon reqest
ASME B5.50 UNC	AD	SK 40	25	44.5	5/8 - 11	35	F330007.03	●
		SK 50	25	70	1" - 8	35	F330007.04	●
		SK 50	32	70	1" - 8	35	F330007.05	●
JIS B 6339 (MAS 403 BT)	AD	BT 30	20	36	M12	35	F330008.04	★
		BT 40	25	45	M16	35	F330008.01	★
		BT 50	25	70	M24	44	F330008.02	★
		BT 50	32	70	M24	44	F330008.03	★

[1] With bore for data chip according to DIN 69873

Further designs upon request

[2] Coolant tubes and wrenches see page 606 - 607, please order separately

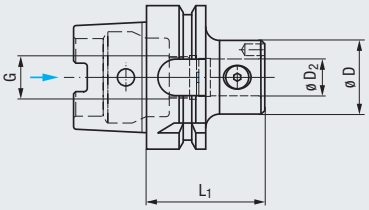
The locking screw is included in the delivery



Ordering Example: **F33000C.02**

With Shank Adaption ABS®

IKZ



Type	Shank Size	mm ø D_2	ø D	G	L_1	EDP Number	
DIN 69893 A [1]	HSK-A63	16	ABS 32	M18 x 1	50	**F33000C.48**	★
	HSK-A100	16	ABS 32	M24 x 1.5	60	**F33000C.50**	★

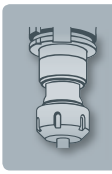
[1] With bore for data chip according to DIN 69873

Further designs upon request

The locking screw is included in the delivery

Accessories

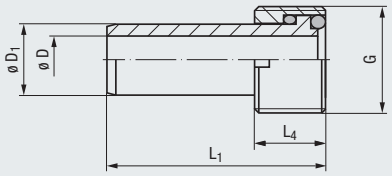
Coolant tubes, adapters and wrenches ▸▸ 606 - 607



● = In stock
★ = Allow 7 days for delivery

Coolant Tubes

IKZ



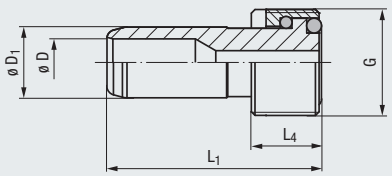
DIN 69895

For Shank Size	mm ø D	ø D1	L4	L1	G	EDP Number	
HSK-A40	5	8	8	29.5	M12 x 1	**F330049.02**	★
HSK-A50	6.4	10	10	33	M16 x 1	**F330049.03**	★
HSK-A63	8	12	12	36.5	M18 x 1	**F330049.04**	★
HSK-A80	10	14	14	40	M20 x 1.5	**F330049.05**	★
HSK-A100	12	16	16	44	M24 x 1.5	**F330049.06**	★

Coolant Tubes

MQL

MQL 1



Suitable for Softsynchro® Modular/MQL and Speedsynchro® Modular/MQL

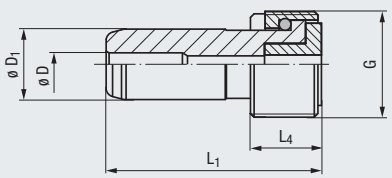
DIN 69090-4

new For Shank Size	mm ø D	ø D1	L4	L1	G	EDP Number	
HSK-A40	5	8	8	29.5	M12 x 1	**F355149.13**	★
HSK-A63	8	12	12	36.5	M18 x 1	**F355149.03**	★
HSK-A100	12	16	16	44	M24 x 1.5	**F355149.06**	★

Coolant Tubes

MQL

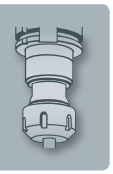
MQL 2



Suitable for Softsynchro® Modular/MQL and Speedsynchro® Modular/MQL

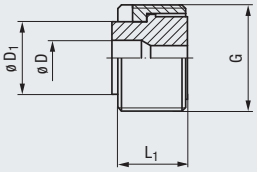
DIN 69090-4

For Design	For Shank Size	mm ø D	ø D1	L4	L1	G	EDP Number	
Softsynchro® 1 Modular/MQL Speedsynchro® Modular/MQL	HSK-A40	4	8	8	29.5	M12 x 1	**F355149.11**	★
	HSK-A63	4	12	12	36.5	M18 x 1	**F355149.04**	★
	HSK-A100	4	16	16	44	M24 x 1.5	**F355149.08**	★
Softsynchro® 3 Modular/MQL	HSK-A63	4	12	12	36.5	M18 x 1	**F355349.02**	★
	HSK-A100	4	16	16	44	M24 x 1.5	**F355349.04**	★



Ordering Example: **F330049.02**

Adapters [1)]



MQL 1

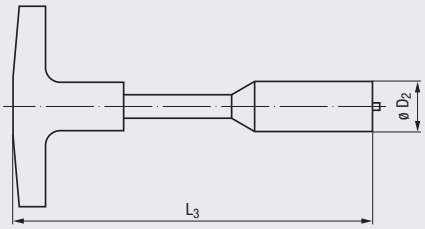
Suitable for Softsynchro® Modular/MQL
and Speedsynchro® Modular/MQL

DIN 69090-4

new	mm					
For Shank Size	ø D	ø D_1	L_1	G	EDP Number	
HSK-A40	4	8.4	8.3	M12 x 1	**F355335.01**	★
HSK-A63	6	12.4	12.3	M18 x 1	**F355135.01**	★
HSK-A100	10	16.4	16.4	M24 x 1.5	**F355135.02**	★

[1)] Adapters are used for HSK-A shanks, that means outside contour acc. DIN 69893 A, inside contour acc. DIN 69893 C

Assembly wrenches



mm			
For Shank Size	ø D_2	L_3	EDP Number	
HSK-A40	11	111	**F330099.02**	★
HSK-A50	15	120	**F330099.03**	★
HSK-A63	17	122	**F330099.04**	★
HSK-A80	18.5	126	**F330099.05**	★
HSK-A100	22	141	**F330099.06**	★

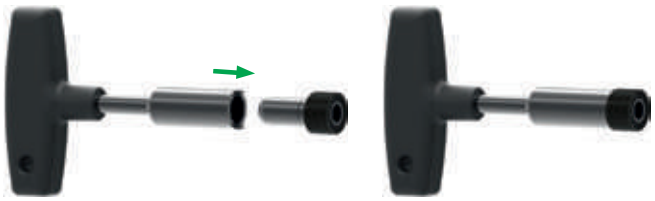
Use of coolant tubes with hollow taper shanks according to DIN 69893 A

The coolant tube is necessary for connecting the internal coolant supply of the machine spindle with the hollow taper shank of the tap holder.

Please note: We recommend screwing the coolant tube into the hollow taper shank even when tap holders without internal coolant supply are used (e.g. type KSN); this will help to prevent damage to the hollow taper shank clamping system in case of unintentional switching on of the internal coolant supply.

Assembly of the coolant tube in the hollow taper (HSK) shank

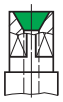
1. Put assembly wrench on the coolant tube.
   Important: Watch the position of the pins against the grooves!



2. Screw coolant tube into the shank.

Adjustable from both sides, for tool shanks with female center 60°

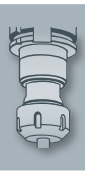
Suitable for Softsynchro® Modular/IKZ
and Softsynchro® Modular/MQL

new For Design	Tool Taper		mm ø D_1		EDP Number	
Softsynchro® 1 Modular/IKZ Softsynchro® 1 Modular/MQL	Internal taper 60° 	M4.5 - M10	6 / 7		F355188.01	★
		M8, M9, M11, M12	8 / 9		F355188.02	★
		M10	10		F355188.03	★
Softsynchro® 3 Modular/IKZ Softsynchro® 3 Modular/MQL		M12	9		F355388.01	★
		M10 - M16	10 - 12		F355388.02	★
		M18 - M20	14 - 16		F355388.03	★

Adjustable from both sides, for tool shanks with male center 90°

Suitable for Softsynchro® Modular/MQL

new For Design	Tool Taper		mm ø D_1		EDP Number	
Softsynchro® 1 Modular/MQL	External taper 90°	M4.5 - M6, M8	6		F355188.04	★
		M7, M10	7		F355188.05	★
		M8	8		F355188.06	★
		M12	9		F355188.07	★
		M10	10		F355188.08	★
Softsynchro® 3 Modular/MQL		M12	9		F355388.04	★
		M10	10		F355388.05	★
		M14 - M16	11 - 12		F355388.06	★
		M18	14		F355388.07	★
		M20	16		F355388.08	★



Ordering Example: **F355188.01**

For tool shanks with female center 60°

Suitable for Speedsynchro® Modular/IKZ
and Speedsynchro® Modular/MQL

new For Design	Tool Taper		mm ø D_1		EDP Number	
Speedsynchro® Modular/IKZ Speedsynchro® Modular/MQL	Internal taper 60° 	M4.5 - M10	6 / 7		F375188.01	★
		M8	8		F375188.02	★

For tool shanks with male center 90°

Suitable for Speedsynchro® Modular/MQL

new For Design	Tool Taper		mm ø D_1		EDP Number	
Speedsynchro® Modular/MQL	External taper 90° 	M4.5 - M6, M8	6		F375188.03	★
		M7	7		F375188.04	★
		M8	8		F375188.05	★

● = In stock
★ = Allow 7 days for delivery

ER-GB

Metric

DIN ISO 15488 (DIN 6499)

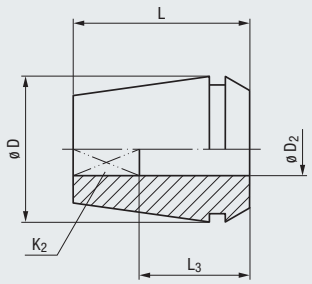
With square drive

IKZ

MQL

pmax 700psi (50bar)

pmax 1400psi (100bar)



Type		ER 11 GB	ER 16 GB	ER 20 GB
		M2 - M8	M4 - M12	M4 - M12
Collet Dimensions (mm)	ø D	11	16	20
	L	18	27.5	31.5

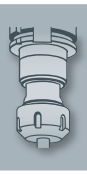
DIN

mm ø D_2	mm K_2			ER 11 GB EDP Number	L_3		ER 16 GB EDP Number	L_3		ER 20 GB EDP Number	L_3				
2.8	2.1	M2 - M2.6	M4	**F0942011.2.8**	12	●									
3.5	2.7	M3	M4.5 - M5	**F0942011.3.5**	14	●									
4	3	M3.5	M5.5	**F0942011.4**	14	●									
4.5	3.4	M4	M6	**F0942011.4.5**	14	●	**F0942016.4.5**	15	●	**F0942020.4.5**	15	●			
6	4.9	M4.5 - M6	M8	**F0942011.6**	14	●	**F0942016.6**	18	●	**F0942020.6**	18	●			
7	5.5	M7	M9 - M10				**F0942016.7**	18	●	**F0942020.7**	18	●			
8	6.2	M8	M11				**F0942016.8**	22	●	**F0942020.8**	22	●			
9	7	M9	M12				**F0942016.9**	22	●	**F0942020.9**	22	●			
10	8	M10								**F0942020.10**	25	●			

Type		ER 25 GB	ER 32 GB	ER 40 GB	ER 50 GB
		M4 - M20	M4 - M20	M10 - M30	M30 - M42
Collet Dimensions (mm)	ø D	25	32	40	51
	L	34	40	46	60

DIN

mm ø D_2	mm K_2			ER 25 GB EDP Number	L_3		ER 32 GB EDP Number	L_3		ER 40 GB EDP Number	L_3		ER 50 GB EDP Number	L_3	
4.5	3.4	M4	M6	**F0942025.4.5**	15	●	**F0942032.4.5**	15	●						
6	4.9	M4.5 - M6	M8	**F0942025.6**	18	●	**F0942032.6**	18	●						
7	5.5	M7	M9 - M10	**F0942025.7**	18	●	**F0942032.7**	18	●						
8	6.2	M8	M11	**F0942025.8**	22	●	**F0942032.8**	22	●						
9	7	M9	M12	**F0942025.9**	22	●	**F0942032.9**	22	●	**F0942040.9**	22	●			
10	8	M10		**F0942025.10**	25	●	**F0942032.10**	25	●	**F0942040.10**	25	●			
11	9		M14	**F0942025.11**	25	●	**F0942032.11**	25	●	**F0942040.11**	25	●			
12	9		M16	**F0942025.12**	25	●	**F0942032.12**	25	●	**F0942040.12**	25	●			
14	11		M18	**F0942025.14**	25	●	**F0942032.14**	25	●	**F0942040.14**	25	●			
16	12		M20	**F0942025.16**	25	●	**F0942032.16**	25	●	**F0942040.16**	25	●			
18	14.5		M22 - M24							**F0942040.18**	25	●			
20	16		M27							**F0942040.20**	28	●			
22	18		M30							**F0942040.22**	28	●	**F0942050.22**	41	●
25	20		M33										**F0942050.25**	41	●
28	22		M36										**F0942050.28**	41	●
32	24		M39 - M42										**F0942050.32**	41	●



Ordering Example: **F0942011.2.8**

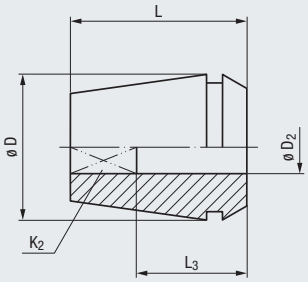
EMUGE

With square drive

ER-GB

Inch

DIN ISO 15488 (DIN 6499)



IKZ

MQL

p_{max} 700psi (50bar)

p_{max} 1400psi (100bar)

Type		ER 11 GB	ER 20 GB	ER 32 GB	ER 40 GB	ER 50 GB
		No.0 - No.6	No.8 - 1/2	1/4 - 3/4	1/4 - 1	1 - 1 1/2
Collet	ø D	0.433	0.787	1.260	1.575	2.008
Dimensions (inch)	L	0.709	1.240	1.575	1.811	2.362

ASME

inch ø D_2	inch K_2			EDP Number	L_3		EDP Number	L_3		EDP Number	L_3		EDP Number	L_3		EDP Number	L_3	
0.141	0.110	No.0-No.6		**F0942011.3.58**	0.55	●												
0.168	0.131	No.8		**F0942011.4.27**		●	**F0942020.4.27**	0.71	●									
0.194	0.152	No.10		**F0942011.4.93**		●	**F0942020.4.93**	0.71	●									
0.220	0.165	No.12					**F0942020.5.59**	0.71	●									
0.255	0.191	1/4					**F0942020.6.48**	0.71	●	**F0942032.6.48**	0.71	●	**F0942040.6.48**	0.71	●			
0.318	0.238	5/16					**F0942020.8.08**	0.87	●	**F0942032.8.08**	0.87	●	**F0942040.8.08**	0.87	●			
0.323	0.242		7/16				**F0942020.8.20**	0.87	●	**F0942032.8.20**	0.87	●	**F0942040.8.20**	0.87	●			
0.367	0.275		1/2				**F0942020.9.32**	0.87	●	**F0942032.9.32**	0.87	●	**F0942040.9.32**	0.87	●			
0.381	0.286	3/8					**F0942020.9.68**	0.87	●	**F0942032.9.68**	0.87	●	**F0942040.9.68**	0.87	●			
0.429	0.322		9/16							**F0942032.10.90**	0.98	●	**F0942040.10.90**	0.98	●			
0.4375	0.328	1/8 NPT								**F0942032.11.11**	0.98	●	**F0942040.11.11**	0.98	●			
0.480	0.360		5/8							**F0942032.12.19**	0.98	●	**F0942040.12.19**	0.98	●			
0.542	0.406		11/16							**F0942032.13.77**	0.98	●	**F0942040.13.77**	0.98	●			
0.5625	0.421	1/4 NPT								**F0942032.14.29**	0.98	●	**F0942040.14.29**	0.98	●			
0.590	0.442		3/4							**F0942032.14.99**	0.98	●	**F0942040.14.99**	0.98	●			
0.697	0.523		7/8										**F0942040.17.70**	0.98	●			
0.800	0.600		1										**F0942040.20.32**	1.10	●	**F0942050.20.32**	1.61	●
0.896	0.672		1 1/8													**F0942050.22.75**	1.61	●
1.021	0.766		1 1/4													**F0942050.25.93**	1.61	●
1.108	0.831		1 3/8													**F0942050.28.14**	1.61	●
1.233	0.925		1 1/2													**F0942050.31.31**	1.61	●

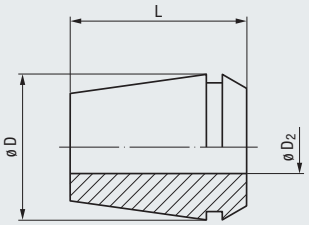
● = In stock
★ = Allow 7 days for delivery

ER

Metric / Inch

DIN ISO 15488 (DIN 6499)

Without square drive



Type		ER 8		ER 11		ER 16		ER 20	
		1.5 - 4.5 mm 0.0591 - 0.1772		1.5 - 7 mm 0.0591 - 0.2756		2 - 10 mm 0.0787 - 0.3937		3 - 11 mm 0.1181 - 0.4331	
Collet Dimensions	ø D	8 mm (0.315)		11 mm (0.433)		16 mm (0.630)		20 mm (0.787)	
	L	13.6 mm (0.535)		18 mm (0.709)		27.5 mm (1.083)		31.5 mm (1.240)	
ø D_2 mm	ø D_2 inch	EDP Number		EDP Number		EDP Number		EDP Number	
2 - 1.5	0.0787 - 0.0591	**F0943008.2**	●	**F0943011.2**	●				
2.5 - 2	0.0984 - 0.0787	**F0943008.2.5**	●	**F0943011.2.5**	●				
3 - 2.5	0.1181 - 0.0984	**F0943008.3**	●	**F0943011.3**	●				
3 - 2	0.1181 - 0.0787					**F0943016.3**	●		
3.5 - 3	0.1378 - 0.1181	**F0943008.3.5**	●	**F0943011.3.5**	●				
4 - 3.5	0.1575 - 0.1378	**F0943008.4**	●	**F0943011.4**	●				
4 - 3	0.1575 - 0.1181					**F0943016.4**	●	**F0943020.4**	●
4.5 - 4	0.1772 - 0.1575	**F0943008.4.5**	●	**F0943011.4.5**	●				
5 - 4.5	0.1969 - 0.1772			**F0943011.5**	●				
5 - 4	0.1969 - 0.1575					**F0943016.5**	●	**F0943020.5**	●
6 - 5.5	0.2362 - 0.2165			**F0943011.6**	●				
6 - 5	0.2362 - 0.1969					**F0943016.6**	●	**F0943020.6**	●
7 - 6.5	0.2756 - 0.2559			**F0943011.7**	●				
7 - 6	0.2756 - 0.2362					**F0943016.7**	●	**F0943020.7**	●
9 - 8	0.3543 - 0.3150					**F0943016.9**	●	**F0943020.9**	●
10 - 9	0.3937 - 0.3543					**F0943016.10**	●		
11 - 10	0.4331 - 0.3937							**F0943020.11**	●
12 - 11	0.4724 - 0.4331								
14 - 13	0.5512 - 0.5118								
16 - 15	0.6299 - 0.5906								
18 - 17	0.7087 - 0.6693								
20 - 19	0.7874 - 0.7480								
22 - 21	0.8661 - 0.8268								
36 - 34	1.4173 - 1.3386								

Further designs upon request

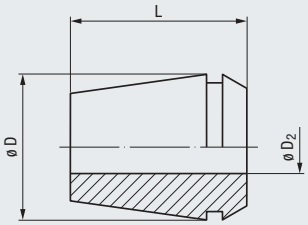
EMUGE

Without square drive

ER

Metric / Inch

DIN ISO 15488 (DIN 6499)



IKZ

MQL

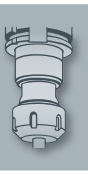
p_{max} 700psi (50bar)

p_{max} 1400psi (100bar)

Type		ER 32		ER 40		ER 50		
		3 - 18 mm 0.1181 - 0.7087		11 - 22 mm 0.4331 - 0.8661		34 - 36 mm 1.3386 - 1.4173		
Collet	ø D	32 mm (1.260)		40 mm (1.575)		50 mm (1.969)		
Dimensions	L	40 mm (1.575)		46 mm (1.811)		60 mm (2.362)		

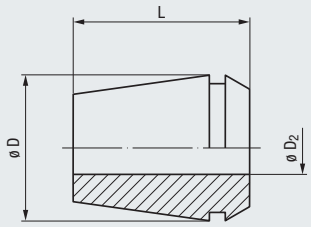
ø D_2 mm	ø D_2 inch	EDP Number		EDP Number		EDP Number		
2 - 1.5	0.0787 - 0.0591							
2.5 - 2	0.0984 - 0.0787							
3 - 2.5	0.1181 - 0.0984							
3 - 2	0.1181 - 0.0787							
3.5 - 3	0.1378 - 0.1181							
4 - 3.5	0.1575 - 0.1378							
4 - 3	0.1575 - 0.1181	**F0943032.4**	●					
4.5 - 4	0.1772 - 0.1575							
5 - 4.5	0.1969 - 0.1772							
5 - 4	0.1969 - 0.1575	**F0943032.5**	●					
6 - 5.5	0.2362 - 0.2165							
6 - 5	0.2362 - 0.1969	**F0943032.6**	●					
7 - 6.5	0.2756 - 0.2559							
7 - 6	0.2756 - 0.2362	**F0943032.7**	●					
9 - 8	0.3543 - 0.3150	**F0943032.9**	●					
10 - 9	0.3937 - 0.3543							
11 - 10	0.4331 - 0.3937	**F0943032.11**	●					
12 - 11	0.4724 - 0.4331	**F0943032.12**	●	**F0943040.12**	●			
14 - 13	0.5512 - 0.5118	**F0943032.14**	●	**F0943040.14**	●			
16 - 15	0.6299 - 0.5906	**F0943032.16**	●	**F0943040.16**	●			
18 - 17	0.7087 - 0.6693	**F0943032.18**	●	**F0943040.18**	●			
20 - 19	0.7874 - 0.7480			**F0943040.20**	●			
22 - 21	0.8661 - 0.8268			**F0943040.22**	●			
36 - 34	1.4173 - 1.3386					**F0943050.36**	●	

Further designs upon request



PCM ET1
Metric

With square drive and length compensation on tension, not suitable for internal coolant supply



Type		PCM ET1-12	PCM ET1-20	PCM ET1-32	PCM ET1-40
		M2 - M4	M2 - M10	M4 - M16	M4.5 - M20
Collet Dimensions (mm)	T	5.5	7	10	13
	ø D	11.5	21	33	41
	L	21.5	31	43	54

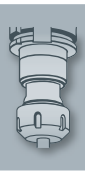
DIN

mm ø D_2	mm K_2			EDP Number		EDP Number		EDP Number		EDP Number	
2.8	2.1	M2 - M2.6	M4	**F0945011.2.8**	★	**F0945020.2.8**	★				
3.5	2.7	M3	M4.5 - M5			**F0945020.3.5**	★				
4	3	M3.5	M5.5			**F0945020.4**	★				
4.5	3.4	M4	M6			**F0945020.4.5**	★	**F0945032.4.5**	★		
6	4.9	M4.5 - M6	M8			**F0945020.6**	★	**F0945032.6**	★	**F0945040.6**	★
7	5.5	M7	M9 - M10			**F0945020.7**	★	**F0945032.7**	★	**F0945040.7**	★
8	6.2	M8	M11					**F0945032.8**	★	**F0945040.8**	★
9	7	M9	M12					**F0945032.9**	★	**F0945040.9**	★
10	8	M10						**F0945032.10**	★	**F0945040.10**	★
11	9		M14					**F0945032.11**	★	**F0945040.11**	★
12	9		M16					**F0945032.12**	★	**F0945040.12**	★
14	11		M18							**F0945040.14**	★
16	12		M20							**F0945040.16**	★

The threading tool is clamped by means of 4 worm screws on the square

Further designs upon request

Due to the length compensation, sealing disks cannot be used in the clamping nut

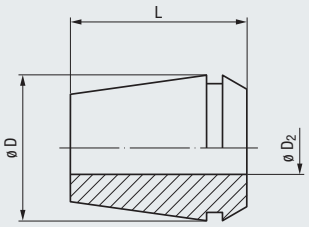


Ordering Example: **F0945011.2.8**

EMUGE

With square drive and length compensation on tension, not suitable for internal coolant supply

PCM ET1
inch



IKZ | MQL | pmax 700psi (50bar) | pmax 1400psi (100bar) | T

Type		PCM ET1-20	PCM ET1-32	PCM ET1-40
		1/4	1/4 - 5/8	1/4 - 7/8
Collet Dimensions (inch)	T	0.276	0.394	0.512
	ø D	0.827	1.299	1.614
	L	1.220	1.693	2.126

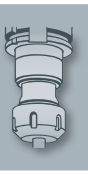
ASME

inch ø D_2	inch K_2			EDP Number		EDP Number		EDP Number			
0.255	0.191	1/4		F0945020.6.48	★	F0945032.6.48	★	F0945040.6.48	★		
0.318	0.238	5/16				F0945032.8.08	★	F0945040.8.08	★		
0.381	0.286	3/8				F0945032.9.68	★	F0945040.9.68	★		
0.323	0.242		7/16			F0945032.8.20	★	F0945040.8.20	★		
0.367	0.275		1/2			F0945032.9.32	★	F0945040.9.32	★		
0.429	0.322		9/16			F0945032.10.90	★	F0945040.10.90	★		
0.480	0.360		5/8			F0945032.12.19	★	F0945040.12.19	★		
0.590	0.442		3/4					F0945040.14.99	★		
0.697	0.523		7/8					F0945040.17.70	★		
0.800	0.600		1								
0.896	0.672		1 1/8								
1.021	0.766		1 1/4								
1.108	0.831		1 3/8								
1.233	0.925		1 1/2								
1.430	1.072		1 3/4								

The threading tool is clamped by means of 4 worm screws on the square

Due to the length compensation, sealing disks cannot be used in the clamping nut

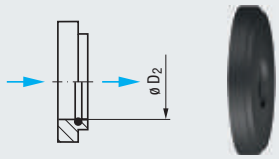
Further designs upon request



DS/ER

Metric / Inch

DIN / ASME

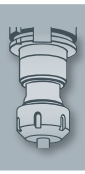


IKZ

pmax 1400psi (100bar)

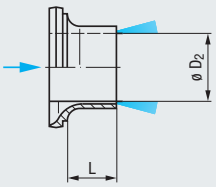
Type				DS/ER 16		DS/ER 20		DS/ER 25		DS/ER 32		DS/ER 40		DS/ER 50	
DIN															
mm															
ø D_2	K_2			EDP Number		EDP Number		EDP Number		EDP Number		EDP Number		EDP Number	
4	3	M3.5	M5.5	F0941516.4	●										
4.5	3.4	M4	M6	F0941516.4.5	●	F0941520.4.5	●	F0941525.4.5	●						
6	4.9	M4.5 - M6	M8	F0941516.6	●	F0941520.6	●	F0941525.6	●	F0941532.6	●				
7	5.5	M7	M9 - M10	F0941516.7	●	F0941520.7	●	F0941525.7	●	F0941532.7	●				
8	6.2	M8	M11	F0941516.8	●	F0941520.8	●	F0941525.8	●	F0941532.8	●				
9	7	M9	M12	F0941516.9	●	F0941520.9	●	F0941525.9	●	F0941532.9	●	F0941540.9	●		
10	8	M10		F0941516.10	●	F0941520.10	●	F0941525.10	●	F0941532.10	●	F0941540.10	●		
11	9		M14					F0941525.11	●	F0941532.11	●	F0941540.11	●		
12	9		M16					F0941525.12	●	F0941532.12	●	F0941540.12	●		
14	11		M18					F0941525.14	●	F0941532.14	●	F0941540.14	●		
16	12		M20					F0941525.16	●	F0941532.16	●	F0941540.16	●		
18	14.5		M22 - M24									F0941540.18	●		
20	16		M27									F0941540.20	●		
22	18		M30									F0941540.22	●	F0941550.22	★
25	20		M33											F0941550.25	★
28	22		M36											F0941550.28	★
32	24		M39 - M42											F0941550.32	★
36	29		M45 - M48											F0941550.36	★

Type				DS/ER 16		DS/ER 20		DS/ER 25		DS/ER 32		DS/ER 40		
ASME														
inch														
ø D_2	K_2			EDP Number		EDP Number		EDP Number		EDP Number		EDP Number		
0.141	0.110	No.1 - No.6		F0941516.4	●									
0.168	0.131	No.8		F0941516.4.5	●	F0941520.4.5	●	F0941525.4.5	●					
0.194	0.152	No.10		F0941516.5	●	F0941520.5	●	F0941525.5	●					
0.220	0.165	No.12		F0941516.6	●	F0941520.6	●	F0941525.6	●	F0941532.6	●	F0941540.6	●	
0.255	0.191	1/4		F0941516.6.5	●	F0941520.6.5	●	F0941525.6.5	●	F0941532.6.5	●	F0941540.6.5	●	
0.318	0.238	5/16		F0941516.8.5	●	F0941520.8.5	●	F0941525.8.5	●	F0941532.8.5	●	F0941540.8.5	●	
0.323	0.242		7/16	F0941516.8.5	●	F0941520.8.5	●	F0941525.8.5	●	F0941532.8.5	●	F0941540.8.5	●	
0.367	0.275		1/2	F0941516.9.5	●	F0941520.9.5	●	F0941525.9.5	●	F0941532.9.5	●	F0941540.9.5	●	
0.381	0.286	3/8		F0941516.10	●	F0941520.10	●	F0941525.10	●	F0941532.10	●	F0941540.10	●	
0.429	0.322		9/16					F0941525.11	●	F0941532.11	●	F0941540.11	●	
0.4375	0.328	1/8 NPT						F0941525.11.5	●	F0941532.11.5	●	F0941540.11.5	●	
0.480	0.360		5/8					F0941525.12.5	●	F0941532.12.5	●	F0941540.12.5	●	
0.5625	0.421	1/4 NPT						F0941525.14.5	●	F0941532.14.5	●	F0941540.14.5	●	
0.590	0.442		3/4					F0941525.15	●	F0941532.15	●	F0941540.15	●	
0.6875			1/2 NPT									F0941540.17.5	●	
0.697	0.523		7/8									F0941540.18	●	
0.700		3/8 NPT										F0941540.18	●	
0.800	0.600		1									F0941540.20.5	●	



Ordering Example: **F0941516.4**

KS/ER
Metric
DIN



IKZ

pmax 1400psi (100bar)

Type				KS/ER 16			KS/ER 20			KS/ER 32					
DIN															
mm															
ø D_2	K_2			EDP Number	L_3		EDP Number	L_3		EDP Number	L_3				
4	3	M3.5	M5.5	**F0941716.4**	11	★									
6	4.9	M4.5 - M6	M8	**F0941716.6**	11	★	**F0941720.6**	11	★	**F0941732.6**	11	★			
7	5.5	M7	M9 - M10	**F0941716.7**	11	★	**F0941720.7**	11	★	**F0941732.7**	11	★			
8	6.2	M8	M11	**F0941716.8**	11	★	**F0941720.8**	11	★	**F0941732.8**	11	★			
9	7	M9	M12	**F0941716.9**	11	★	**F0941720.9**	11	★	**F0941732.9**	11	★			
10	8	M10		**F0941716.10**	2	★	**F0941720.10**	11	★	**F0941732.10**	11	★			
11	9		M14							**F0941732.11**	11	★			
12	9		M16							**F0941732.12**	11	★			
14	11		M18							**F0941732.14**	11	★			
16	12		M20							**F0941732.16**	11	★			

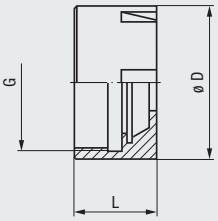
● = In stock
★ = Allow 7 days for delivery

Hi-Q/ERM

Without sealing

IKZ

pmax 1400psi (100bar)



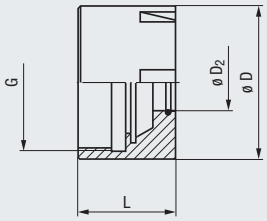
Type		Hi-Q/ERM 8		Hi-Q/ERM 11	
Dimensions (mm)	ø D	12		16	
	L	10.8		12	
	G	M10 x 0.75		M13 x 0.75	
For Collets		EDP Number		EDP Number	
ER 8		**F0940308**	★		
ER 11 (GB)				**F0940311**	★

Hi-Q/ERMC

With integrated sealing

IKZ

pmax 1400psi (100bar)



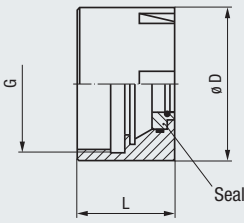
Type						Hi-Q/ERMC 11	
Dimensions (mm)					ø D	16	
					L	14.6	
					G	M13 x 0.75	
DIN							
mm							
ø D_2	K_2			For Collets		EDP Number	
6	4.9	M4.5 - M6	M8	ER 11 (GB)		**F0943511.6**	★
7	5.5	M7	M9 - M10	ER 11 (GB)		**F0943511.7**	★

Hi-Q/ERMC

For sealing disks

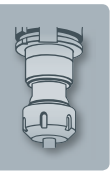
IKZ

pmax 1400psi (100bar)



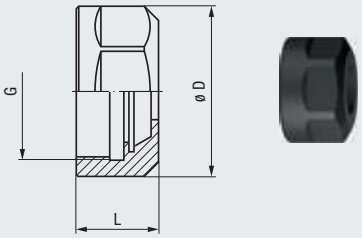
Type		Hi-Q/ERMC 16		Hi-Q/ERMC 20		Hi-Q/ERMC 25		
Dimensions (mm)	ø D	22		28		35		
	L	22		24		25		
	G	M19 x 1		M24 x 1		M30 x 1		
For Collets	Sealing Disks	EDP Number		EDP Number		EDP Number		
ER 16 (GB)	DS/ER 16	**F0943516**	★					
ER 20 (GB)	DS/ER 20			**F0943520**	★			
ER 25 (GB)	DS/ER 25					**F0943525**	★	

Sealing disks are not included in the delivery, please order separately (see page 616)



Without sealing

Hi-Q/ER



IKZ

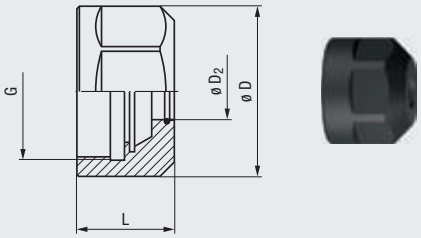
pmax 1400psi (100bar)

Type		Hi-Q/ER 11
Dimensions (mm)	ø D	19
	L	11.3
	G	M14 x 0.75

For Collets	EDP Number	
ER 11 (GB)	**F0940911**	★

With integrated sealing

Hi-Q/ERC



IKZ

pmax 1400psi (100bar)

Type		Hi-Q/ERC 11
Dimensions (mm)	ø D	19
	L	14.6
	G	M14 x 0.75

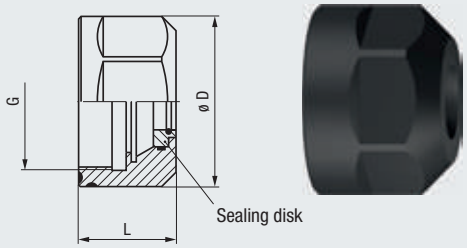
DIN

mm ø D_2	mm K_2			For Collets	EDP Number	
6	4.9	M4.5 - M6	M8	ER 11 (GB)	**F0940711.6**	★
7	5.5	M7	M9 - M10	ER 11 (GB)	**F0940711.7**	★

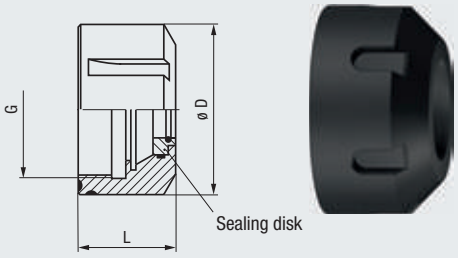
For sealing disks

Hi-Q/ERC

Hi-Q/ERC 16-20



Hi-Q/ERC 25-40



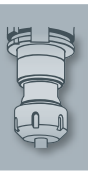
IKZ

pmax 1400psi (100bar)

Type		Hi-Q/ERC 16	Hi-Q/ERC 20	Hi-Q/ERC 25	Hi-Q/ERC 32	Hi-Q/ERC 40
Dimensions (mm)	ø D	28	34	42	50	63
	L	22.5	24	25	27.5	30.5
	G	M22 x 1.5	M25 x 1.5	M32 x 1.5	M40 x 1.5	M50 x 1.5

For Collets	Sealing Disks	EDP Number		EDP Number		EDP Number		EDP Number		EDP Number	
ER 16 (GB)	DS/ER 16	**F0940716**	★								
ER 20 (GB)	DS/ER 20			**F0940720**	★						
ER 25 (GB)	DS/ER 25					**F0940725**	★				
ER 32 (GB)	DS/ER 32							**F0940732**	★		
ER 40 (GB)	DS/ER 40									**F0940740**	★

Sealing disks are not included in the delivery, please order separately (see page 616)



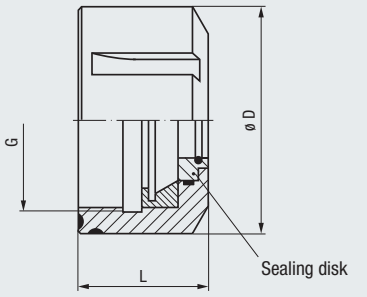
● = In stock
★ = Allow 7 days for delivery

Hi-Q/ERBC

For sealing disks

IKZ

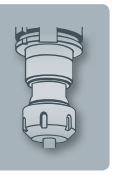
pmax 1400psi (100bar)



Type		Hi-Q/ERBC 50 AF
Dimensions (mm)	ø D	77.7
	L	42.5
	G	M64 x 2

For Collets	Sealing Disks	EDP Number	
ER 50 (GB)	DS/ER 50	**F0941650**	★

Sealing disks are not included in the delivery, please order separately (see page 616)



Ordering Example: **F0941650**

Sets of clamping wrenches

Softsynchro®

Softsynchro® Micro, Softsynchro® 0

Softsynchro® 1

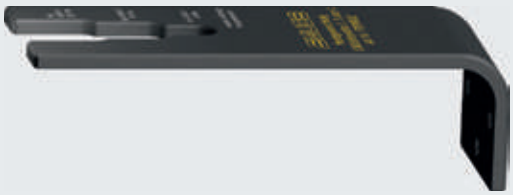
Softsynchro® 3, Softsynchro® 4

Softsynchro® 5

For Collet Holders	Components	EDP Number	
Softsynchro® Micro	E8M / SW8	**F315098.03**	★
Softsynchro® 0	E11M / SW14	**F315098.02**	★
Softsynchro® 1	SW30 / SW19	**F315198.02**	★
Softsynchro® 1 for driven tools	SW25 / SW17	**F315198.03**	★
Softsynchro® 3	E32 / SW32	**F315398.01**	★
Softsynchro® 4	E40 / SW41	**F315498.01**	★
Softsynchro® 5	E50	**F315598.02**	★

Assembly device

Softsynchro®



For Collet Holders	EDP Number	
Softsynchro® 1 - Softsynchro® 4	**F315199.02**	★

Assembly device

Speedsynchro® Modular

For Collet Holders with Integrated Transmission	EDP Number	
Speedsynchro® Modular	**F3741909**	★

● = In stock
★ = Allow 7 days for delivery

KSN/HD/ER

Sets of clamping wrenches

KSN 1/HD/ER

KSN 3/HD/ER

For Collet Holders	Components	EDP Number	
KSN 1/HD/ER	E20M / SW24	**F323198.01**	★
KSN 3/HD/ER	E32 / SW34	**F323398.01**	★

EM-L/ER/IKZ

Sets of clamping wrenches

EM 00-L/ER/IKZ - EM 03-L/ER/IKZ

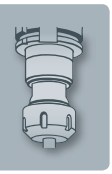
For Collet Holders	Components	EDP Number	
EM 00-L/ER/IKZ	E11M / SW11	**F350098.01**	★
EM 01-L/ER/IKZ	E16M / SW17	**F350198.01**	★
EM 03-L/ER/IKZ	E25M / SW26	**F350398.01**	★

Hi-Q/ER, Hi-Q/ERC

Clamping wrenches

Hi-Q/ER 11, Hi-Q/ERC 20

Hi-Q/ERC 32, Hi-Q/ERC 40

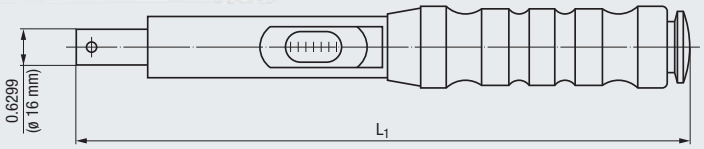


For Clamping Nuts	EDP Number	
Hi-Q/ER 11	**QB002002.00170**	★
Hi-Q/ERC 20	**QB002002.00300**	★
Hi-Q/ERC 32	**QB002003.0320**	★
Hi-Q/ERC 40	**QB002003.0400**	★

Ordering Example: **F323198.01**

Torque wrenches

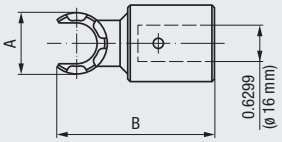
TORCO-FIX



Type	Torque ft lbs	Torque Nm	inch L_1	EDP Number	
TORCO-FIX 0	4 - 18	5 - 25	11.417	**F0908002**	★
TORCO-FIX I	7 - 37	10 - 50	13.189	**F0908005**	★
TORCO-FIX II	30 - 148	40 - 200	18.307	**F0908020**	★
TORCO-FIX III	44 - 221	60 - 300	22.244	**F0908060**	★

Shell-type wrenches

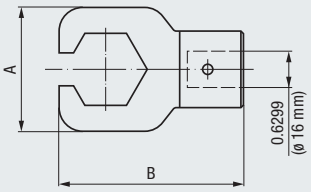
A-EM



Type	For Clamping Nuts	TORCO-FIX	inch A	inch B	EDP Number	
A-E 8 M	Hi-Q/ERM 8	0	0.488	2.087	**F0908500.AE8M**	★
A-E 11 M	Hi-Q/ERMC 11, Hi-Q/ERM 11	0	0.661	2.126	**F0908500.AE11M**	★
A-E 16 M	Hi-Q/ERMC 16	I	0.886	2.205	**F0908500.AE16M**	★
A-E 20 M	Hi-Q/ERMC 20	I	1.142	2.677	**F0908500.AE20M**	★
A-E 25 M	Hi-Q/ERMC 25	I	1.417	2.756	**F0908500.AE25M**	★

Shell-type wrenches

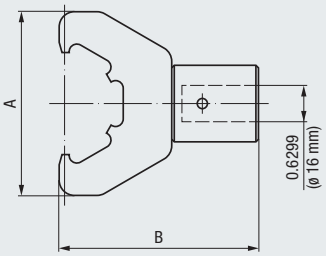
A-EP



Type	For Clamping Nuts	TORCO-FIX	inch A	inch B	EDP Number	
A-E 11 P	Hi-Q/ERC 11, Hi-Q/ER 11	0	1.260	2.402	**F0908500.AE11P**	★
A-E 16 P	Hi-Q/ERC 16	I	1.732	2.795	**F0908500.AE16P**	★
A-E 20 P	Hi-Q/ERC 20	I	2.047	3.189	**F0908500.AE20P**	★

Shell-type wrenches

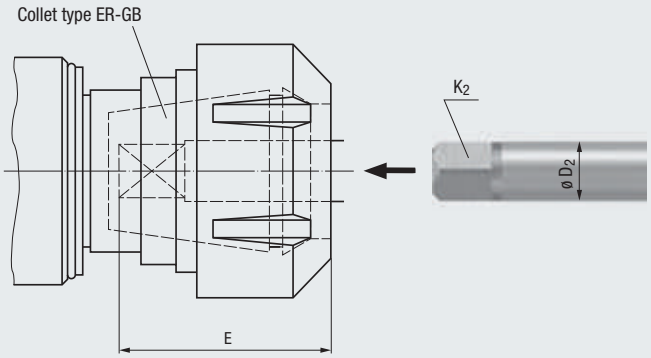
A-E



Type	For Clamping Nuts	TORCO-FIX	inch A	inch B	EDP Number	
A-E 25	Hi-Q/ERC 25	II, III	2.756	2.835	**F0908500.AE25**	★
A-E 32	Hi-Q/ERC 32	II, III	3.150	2.835	**F0908500.AE32**	★
A-E 40	Hi-Q/ERC 40	III	3.780	3.228	**F0908500.AE40**	★
A-E 50	Hi-Q/ERBC 50	III	4.370	3.701	**F0908500.AE50**	★

● = In stock
★ = Allow 7 days for delivery

Metric



Collets	ER 8	ER 11 GB			ER 16 GB
Clamping Nuts	Hi-Q/ERM 8	Hi-Q/ERM 11	Hi-Q/ER 11	Hi-Q/ERMC 11 Hi-Q/ERC 11	Hi-Q/ERMC 16 Hi-Q/ERC 16

DIN

mm				Clamping Depths E mm		Clamping Depths E mm			
ø D_2	K_2			min.	max.				
2	–	M0.5 - M0.9		9	20				
2.2	–		M3	9	20				
2.5	2.1	M1 - M1.8	M3.5	14	20				
2.8	2.1	M2 - M2.6	M4	15	20	18	17	21	
3.5	2.7	M3	M4.5 - M5	15	19.5	21	20	24	
4	3	M3.5	M5.5	15	19	21	20	24	
4.5	3.4	M4	M6	15	19	21	20	24	26
6	4.9	M4.5 - M6	M8			23	22	26	31
7	5.5	M7	M9 - M10						31
8	6.2	M8	M11						36
9	7	M9	M12						37 / 48 [1]
10	8	M10							43 [1]

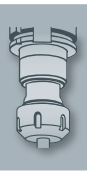
[1] In combination with collets type ER 16 and Softsynchro® 1 for driven tools

Collets	ER 20 GB	ER 25 GB	ER 32 GB	ER 40 GB	ER 50 GB
Clamping Nuts	Hi-Q/ERMC 20 Hi-Q/ERC 20	Hi-Q/ERMC 25 Hi-Q/ERC 25	Hi-Q/ERC 32	Hi-Q/ERC 40	Hi-Q/ERBC 50 AF

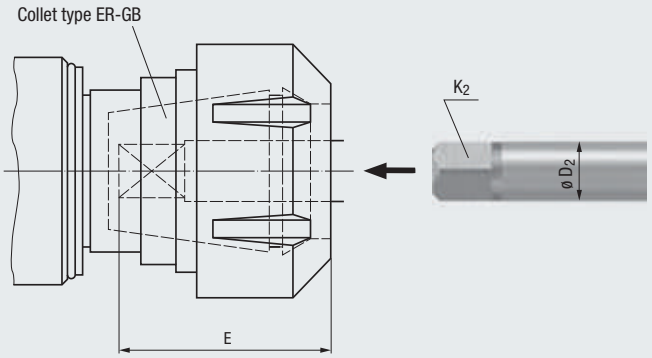
DIN

mm				Clamping Depths E mm				
ø D_2	K_2							
4.5	3.4	M4	M6	26	26	26		
6	4.9	M4.5 - M6	M8	31	31	31		
7	5.5	M7	M9 - M10	31	31	31		
8	6.2	M8	M11	36	36	36		
9	7	M9	M12	37	37	37	37	
10	8	M10		41	41	41	41	
11	9		M14		42	42	42	
12	9		M16		42	42	42	
14	11		M18		44	44	44	
16	12		M20		45	45	45	
18	14.5		M22 - M24				47	
20	16		M27				52	
22	18		M30				54	70
25	20		M33					72
28	22		M36					74
32	24		M39 - M42					76
36	29		M45 - M48					111 [2]

[2] In combination with collets type ER 50 and Softsynchro® 5

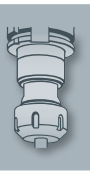


Inch



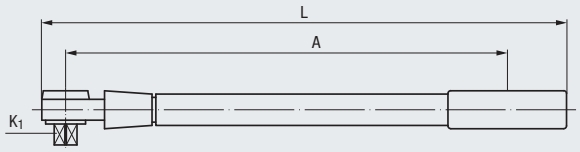
Collets				ER 8		ER 11 GB		
Clamping Nuts				Hi-Q/ERM 8		Hi-Q/ERM 11	Hi-Q/ER 11	Hi-Q/ERMC 11 Hi-Q/ERC 11
ASME								
inch				Clamping Depths E inch		Clamping Depths E inch		
ø D_2	K_2			min.	max.			
0.141	0.110	No.0 - No.6		0.59	0.75	0.78	0.74	0.90
0.168	0.131	No.8		0.59	0.75			

Collets				ER 20 GB	ER 32 GB	ER 40 GB	ER 50 GB	
Clamping Nuts				Hi-Q/ERMC 20 Hi-Q/ERC 20	Hi-Q/ERC 32	Hi-Q/ERC 40	Hi-Q/ERBC 50 AF	
ASME								
inch				Clamping Depths E inch				
ø D_2	K_2							
0.168	0.131	No.8		1.16				
0.194	0.152	No.10		1.16				
0.220	0.165	No.12		1.19				
0.255	0.191	1/4		1.22	1.22	1.22		
0.318	0.238	5/16		1.45	1.45	1.45		
0.323	0.242		7/16	1.48	1.48	1.48		
0.367	0.275		1/2	1.51	1.51	1.51		
0.381	0.286	3/8		1.51	1.51	1.51		
0.429	0.322		9/16		1.68	1.68		
0.4375	0.328	1/8 NPT			1.56	1.56		
0.480	0.360		5/8		1.74	1.74		
0.542	0.406		11/16		1.81	1.81		
0.5625	0.421	1/4 NPT			1.62	1.62		
0.590	0.442		3/4		1.87	1.87		
0.697	0.523		7/8			1.93		
0.800	0.600		1			2.11	2.73	
0.896	0.672		1 1/8				2.80	
1.021	0.766		1 1/4				2.92	
1.108	0.831		1 3/8				2.98	
1.233	0.925		1 1/2				3.05	



DEU

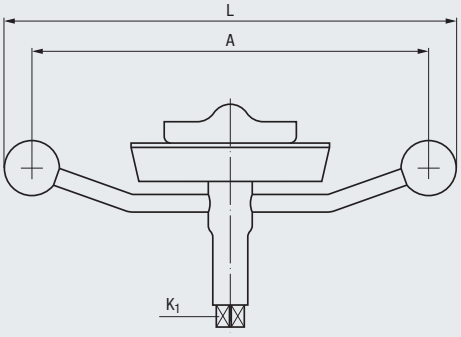
Single-armed torque wrench



Type	For Adapter Size	Torque ft lbs	Torque Nm	Measuring Range	inch A	inch L	inch k_1	EDP Number	
DEU-00/1	00	0 - 4.43	0 - 6	M2 - M6 (No.2 - No.12)	8.6614	10.2362	1/4	**F0900001**	★
DEU-00/1	00/01 (03)	2.21 - 18.44	3 - 25	M6 - M12 (No.10 - 7/16)	7.8740	9.6457	3/8	**F0900004**	★
DEU-10/1	03/04	14.75 - 147.52	20 - 200	M12 - M27 (7/16 - 1)	16.1417	19.6850	1/2	**F0901002**	★
DEU-20/1	04/05	51.63 - 516.32	70 - 700	M24 - M52 (7/8 - 1 3/4)	45.2756	49.6063	3/4	**F0902002**	★

DEU

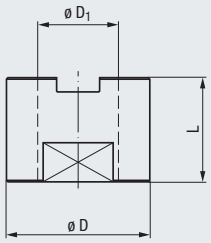
Double-armed torque wrench



Type	For Adapter Size	Torque ft lbs	Torque Nm	Measuring Range	inch A	inch L	inch k_1	EDP Number	
DEU-00/1	00	2.21 - 16.96	3 - 23 Nm	M6 - M12 (No.10 - 7/16)	7.0866	8.0709	3/8	**F0900000**	upon reqest
DEU-00/1	00/01 (03)	14.75 - 132.77	20 - 180 Nm	M12 - M27 (7/16 - 1)	24.4094	25.8268	1/2	**F0901000**	upon reqest
DEU-20/1	04/05	51.63 - 516.32	70 - 700 Nm	M24 - M52 (7/8 - 1 3/4)	45.2756	51.1811	3/4	**F0902000**	upon reqest

AEU

Adapter head

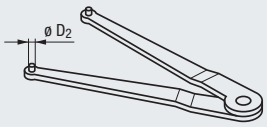


Type	For Adapter Size	inch ø D	inch ø D_1	inch L	EDP Number	
AEU-00	00	0.9843	0.5118	0.9843	**F0920000**	★
AEU-01	01	1.3780	0.7480	1.1024	**F0921000**	★
AEU-03	03	2.1654	1.2205	1.5748	**F0923000**	★
AEU-04	04	2.9528	1.8898	2.3622	**F0924000**	★
AEU-05	05	3.9370	2.3622	2.7559	**F0925000**	★

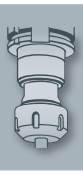
The adapter head serves for holding the quick-change adapters and features clamping flats for holding in a vise

VS

Spanner with pins



Type	For Adapter Size	inch ø D_2	EDP Number	
VS-00	00	0.0787	**F0930000**	★
VS-01	01	0.0984	**F0931000**	★
VS-03	03	0.1575	**F0933000**	★
VS-04	04	0.1969	**F0934000**	★
VS-05	05	0.2362	**F0935000**	★



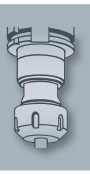
Ordering Example: **F0900001**

VEU

Square pin

Type	For Adapter Size	inch	mm				inch			
		K_1	ø D_2	K_2	EDP Number		ø D_2	K_2	EDP Number	
VEU-00	DEU-00	3/8	2.5	2.1	**F0910100**	●	0.141	0.110	**F0910300**	●
			2.8	2.1	**F0910101**	●	0.168	0.131	**F0910301**	●
			3.5	2.7	**F0910102**	●	0.194	0.152	**F0910302**	●
			4	3	**F0910103**	●	0.220	0.165	**F0910303**	●
			4.5	3.4	**F0910104**	●	0.255	0.191	**F0910304**	●
			6	4.9	**F0910106**	●	0.318	0.238	**F0910306**	●
			7	5.5	**F0910107**	●	0.323	0.242	**F0910307**	●
			8	6.2	**F0910108**	●	0.367	0.275	**F0910310**	●
			9	7	**F0910109**	●	0.381	0.286	**F0910311**	●
			10	8	**F0910110**	●				
			11	9	**F0910111**	●				
			12	9	**F0910112**	●				
			14	11	**F0910113**	●				
			16	12	**F0910114**	●				
			18	14.5	**F0910115**	●				
VEU-10	DEU-10	1/2	4.5	3.4	**F0911104**	●	0.318	0.238	**F0911306**	●
			6	4.9	**F0911106**	●	0.323	0.242	**F0911307**	●
			7	5.5	**F0911107**	●	0.367	0.275	**F0911310**	●
			8	6.2	**F0911108**	●	0.381	0.286	**F0911311**	●
			9	7	**F0911109**	●	0.429	0.322	**F0911313**	●
			10	8	**F0911110**	●	0.480	0.360	**F0911315**	●
			11	9	**F0911111**	●	0.590	0.442	**F0911319**	●
			12	9	**F0911112**	●	0.697	0.523	**F0911323**	●
			14	11	**F0911113**	●	0.800	0.600	**F0911325**	●
			16	12	**F0911114**	●	0.896	0.672	**F0911326**	●
			18	14.5	**F0911115**	●	1.021	0.766	**F0911327**	●
			20	16	**F0911116**	●	1.108	0.831	**F0911328**	●
			22	18	**F0911117**	●	0.3125	0.234	**F0911350**	●
			25	20	**F0911118**	●	0.4375	0.328	**F0911351**	●
			28	22	**F0911119**	●	0.5625	0.421	**F0911352**	●
			32	24	**F0911120**	●	0.6875	0.515	**F0911353**	●
			36	29	**F0911121**	●	0.700	0.531	**F0911354**	●
							0.9063	0.679	**F0911355**	●
							1.125	0.843	**F0911356**	●
VEU-20	DEU-20	3/4	18	14.5	**F0912115**	●	0.697	0.523	**F0912323**	●
			20	16	**F0912116**	●	0.800	0.600	**F0912325**	●
			22	18	**F0912117**	●	0.896	0.672	**F0912326**	●
			25	20	**F0912118**	●	1.021	0.766	**F0912327**	●
			28	22	**F0912119**	●	1.108	0.831	**F0912328**	●
			32	24	**F0912120**	●	1.233	0.925	**F0912329**	●
			36	29	**F0912121**	●	1.305	0.979	**F0912330**	●
			40	32	**F0912122**	●	1.430	1.072	**F0912331**	●
			45	35	**F0912123**	●	1.519	1.139	**F0912332**	●
							1.644	1.233	**F0912333**	●
							0.700	0.531	**F0912354**	●
							0.9063	0.679	**F0912355**	●
							1.125	0.843	**F0912356**	●

These square pins establish the connection between torque wrench and adapter:
the square K_1 is inserted into the square seat of the torque wrench, and the shank end D_2 with square K_2 is clamped in the adapter



Setting and checking of the overload clutch on quick-change adapters of types EM-U, EM-UL and HF:

Generally speaking, the torque to be set depends on

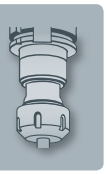
- Size
- Geometry and coating of the tool
- Workpiece material
- Type and quality of the coolant-lubricant
- Drilled hole diameter

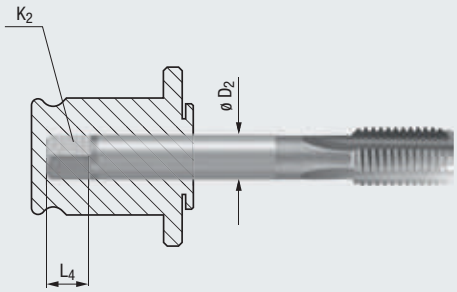
The table contains standard values for thread cutting in steel with a tensile strength of 600-800 N/mm².

These values generally need to be adjusted to the individual work case (e.g. for cold-forming of threads).

Torque		Thread type					
Nm	ft lbs	UNC	UNF	M	G (Whw.) BSP	NPT NPTF	Rc (BSPT)
0.3	0.2	No. 2	No. 2	M2			
0.4	0.3		No. 3	M2.5			
0.5	0.4	No. 3	No. 4				
0.6	0.5			M3			
0.8	0.6	No. 4	No. 5				
1	0.7	No. 5	No. 6	M3.5			
1.2	0.9	No. 6	No. 8				
1.6	1.2	No. 8		M4			
2	1.5		No. 10				
2.5	1.8		No. 12	M5			
3	2.2	No. 10	1/4				
4	3	No. 12					
5	3.7		5/16	M6			
6	4.4	1/4	3/8		G 1/8		
8	6						
10	7.4	5/16	7/16	M8			
12	8.9		1/2				
16	12	3/8				1/16	Rc 1/16
18	13		9/16	M10	G 1/4		
20	15		5/8				
22	16	7/16			G 3/8		
25	18			M12		1/8	Rc 1/8
28	21						
32	24	1/2	3/4				
40	30	9/16					
45	33		7/8	M14			
50	37	5/8		M16	G 1/2		
56	41				G 5/8		Rc 1/4
63	46					1/4	
70	52	3/4	1		G 3/4		
80	59		1 1/8	M18	G 7/8		
90	66		1 1/4	M20		3/8	Rc 3/8
100	74	7/8	1 3/8	M22			
110	81		1 1/2				
125	92						
140	103	1		M24	G 1		
160	118			M27	G 1 1/8	1/2	Rc 1/2
180	133				G 1 1/4		
200	148				G 1 3/8	3/4	Rc 3/4

Torque		Thread type					
Nm	ft lbs	UNC	UNF	M	G (Whw.) BSP	NPT NPTF	Rc (BSPT)
220	162	1 1/8		M30	G 1 1/2		
240	177	1 1/4		M33	G 1 3/4		
260	192				G 2		
280	207			M36			
300	221				G 2 1/4		
320	236			M39			
340	250	1 3/8			G 2 1/2	1	Rc 1
360	266	1 1/2			G 2 3/4		
400	295			M42	G 3		
420	310			M45	G 3 1/4		
450	332				G 3 1/2	1 1/4	Rc 1 1/4
480	354				G 3 3/4		
500	369				G 4		
560	413			M48		1 1/2	Rc 1 1/2
630	465	1 3/4		M52			
710	524			M56		2	Rc 2
800	590			M60			
900	664			M64			
1000	738	2		M68			
1100	811	2 1/4					
1170	863			M72			
1230	907			M76			
1300	959			M80			
1380	1018			M85			
1400	1033	2 1/2				2 1/2	Rc 2 1/2
1460	1077			M90			
1540	1136			M95			
1620	1195			M100			
1700	1254			M105			
1780	1313			M110			
1860	1372			M115			
1940	1431			M120			
2000	1475	2 3/4				3	Rc 3
2020	1490			M125			
2110	1556			M130			
2200	1623						
2270	1674			M140			
2430	1792			M150			
2680	1977			M160			





DIN

mm

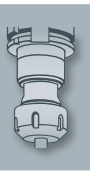
ø D_2	K_2	L_4
2.5	2.1	5
2.8	2.1	5
3.5	2.7	6
4	3	6
4.5	3.4	6
6	4.9	8
7	5.5	8
8	6.2	9
9	7	10
10	8	11
11	9	12
12	9	12
14	11	14
16	12	15
18	14.5	17
20	16	19
22	18	21
25	20	23
28	22	25
32	24	27
36	29	32
40	32	35
45	35	38

ASME

inch

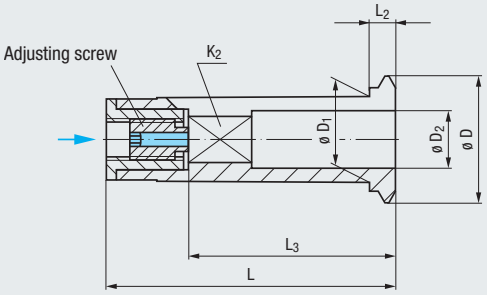
ø D_2	K_2	L_4
0.141	0.110	0.19
0.168	0.131	0.25
0.194	0.152	0.25
0.220	0.165	0.28
0.255	0.191	0.31
0.3125 [1]	0.234	0.38
0.318	0.238	0.38
0.323	0.242	0.41
0.367	0.275	0.44
0.381	0.286	0.44
0.429	0.322	0.50
0.4375 [1]	0.328	0.38
0.480	0.360	0.56
0.542	0.406	0.63
0.5625 [1]	0.421	0.44
0.590	0.442	0.69
0.652	0.489	0.69
0.6875 [1]	0.515	0.63
0.697	0.523	0.75
0.700 [1]	0.531	0.50
0.800	0.600	0.81
0.896	0.672	0.88
0.9063 [1]	0.679	0.69
1.021	0.766	1.00
1.108	0.831	1.06
1.125 [1]	0.843	0.81
1.233	0.925	1.13
1.305	0.979	1.13
1.430	1.072	1.25
1.519	1.139	1.25
1.644	1.233	1.38

[1] NPT/NPTF thread



PGR-GB

With square drive and length adjustment



Type		PGR 15 GB	PGR 25 GB
		M4 - M12	M8 - M20
Collet Dimensions (mm)	ø D	22	33
	ø D_1	15	25
	L	50.5	60.5
	L_2	4.5	6

DIN

mm ø D_2	mm K_2			EDP Number	mm L_3 min.	mm L_3 max.		EDP Number	mm L_3 min.	mm L_3 max.	
4.5	3.4	M4	M6	**F0942615.4.5**	27	29	★				
6	4.9	M4.5 - M6	M8	**F0942615.6**	29	31	★				
7	5.5	M7	M9 - M10	**F0942615.7**	29	31	★				
8	6.2	M8	M11	**F0942615.8**	33.5	36	★	**F0942625.8**	33.5	36	★
9	7	M9	M12	**F0942615.9**	34.5	37	★	**F0942625.9**	34.5	37	★
10	8	M10		**F0942615.10**	35.5	38	★	**F0942625.10**	38.5	41	★
11	9		M14					**F0942625.11**	39.5	42	★
12	9		M16					**F0942625.12**	39.5	42	★
14	11		M18					**F0942625.14**	41.5	44	★
16	12		M20					**F0942625.16**	42.5	45	★

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Technical Information

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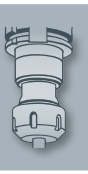


7.1 Description of the symbols for performance characteristics

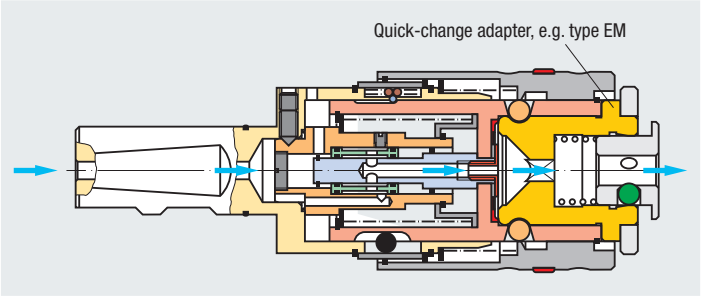
Internal coolant supply (IKZ)

If a machine tool is equipped with internal coolant supply through the machine spindle, then the thread production cycle can be done with special economic efficiency by conducting the coolant-lubricant through the axial bore in the tool, or along the tool shank.

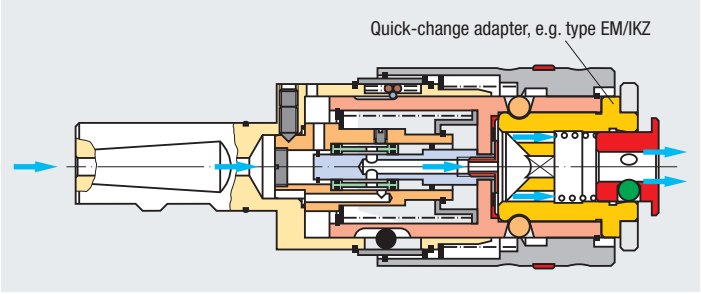
The advantages of this arrangement are:
- Perfect lubrication at the cutting edge of the tool
- Improved thread quality
- Chips are washed out of the thread hole

It is, however, necessary to make sure that the coolant-lubricant used is appropriately filtered and that the tap holder used is suitable for the coolant pressure of the machine. Depending on the design of the tool, with or without internal coolant supply, the quick-change adapters are available in two versions:

Conduction of internal coolant supply with tools with IKZ



Conduction of internal coolant supply with tools without IKZ



Minimum-quantity lubrication (MQL)

Suitable for machines which are equipped with a central minimum-quantity lubrication system – this is often called “dry machining”. In addition to the advantages described under “IKZ” this lubrication technology is very friendly to the environment. The high cutting data common in wet machining can be used without any change.
Another advantage is the reduction of costs, since there is no need to purchase and maintain expensive filter installations, or to dispose of used emulsions.
For more detailed information, see **7.6 Minimum-quantity lubrication (MQL)**.

Minimum-quantity lubrication (1-channel MQL system)

In a **1-channel MQL** system, the aerosol is generated in the MQL device before it enters into the machine spindle, and is then conducted through the work spindle and the clamping system to the point where it is needed.

For more detailed information, see **7.6 Minimum-quantity lubrication (MQL)**.

Minimum-quantity lubrication (2-channel MQL system)

In a **2-channel MQL** system, oil and air are conducted through the spindle separately, the mixing of the two media is done only at the point where they enter the tool holder.

For more detailed information, see **7.6 Minimum-quantity lubrication (MQL)**.

p_{max} 85psi (6bar) | p_{max} 140psi (10bar) | p_{max} 700psi (50bar) | p_{max} 1400psi (100bar)

Coolant pressure at the entry to the holder

For the sake of trouble-free operation of the tool holders, it is vital not to exceed the specified maximum coolant pressures.

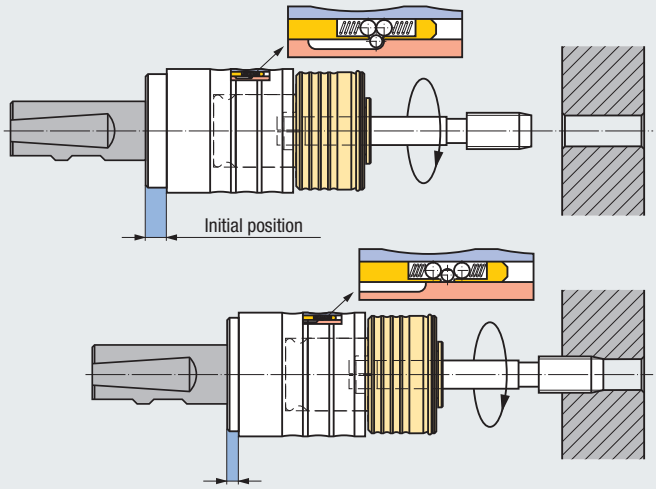
7.1 Description of the symbols for performance characteristics

Length compensation on compression and tension

Length compensation on compression

This type of length compensation compensates differences between spindle feed and the pitch of the thread to be produced. If a quick-change adapter with overload clutch is used, the length compensation on compression accommodates spindle feed as soon as the overload clutch responds.

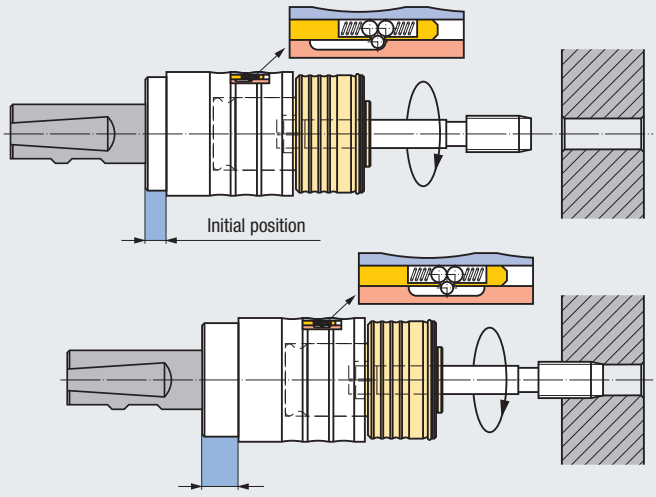
Activated length compensation on compression at
- Plus programming of the control
- Overload on the quick-change adapter with overload clutch



Length compensation on tension

This type of length compensation compensates differences between spindle feed and the pitch of the thread to be produced, as well as a spindle overrun at the point of reversal of the thread production cycle. With the tapping attachments, the length compensation on tension assumes the function of switching the sense of rotation from right-hand to left-hand rotation.

Activated length compensation on tension at
- Minus programming of the control
- Manual retraction



Minimal length compensation

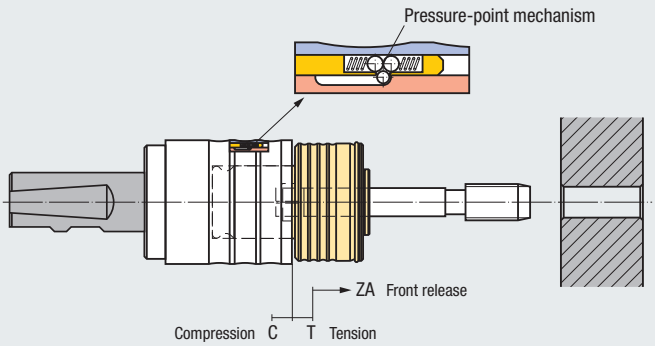
An integrated minimal length compensation on compression and tension compensates minimal pitch differences between synchronous spindle and tool which would lead to excessive friction forces on the thread flanks. A possible increase of axial force during the thread production cycle is reduced to a minimum.

The resulting advantages are:
- No miscut threads
- Optimized tool life
- Suitable for internal coolant supply

For more detailed information, see **7.4 Rigid tapping**.

Pressure-point mechanism

The patented pressure-point mechanism guarantees a safe start of the thread cutting process. The length compensation movement is released by the pressure-point mechanism only when the effective axial force exceeds the normal, permissible start-of-cut force. This helps to achieve reproducible, uniform thread depths.

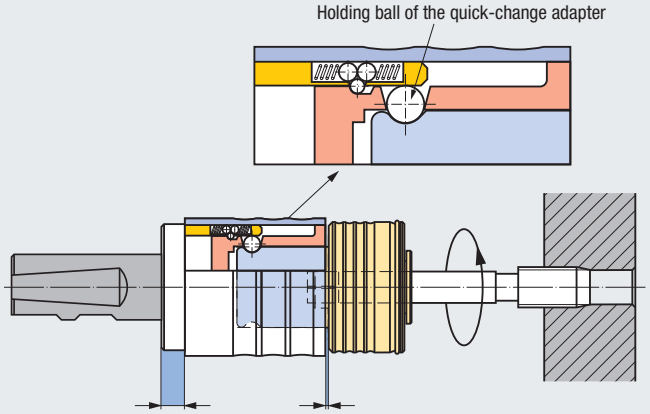


7.1 Description of the symbols for performance characteristics

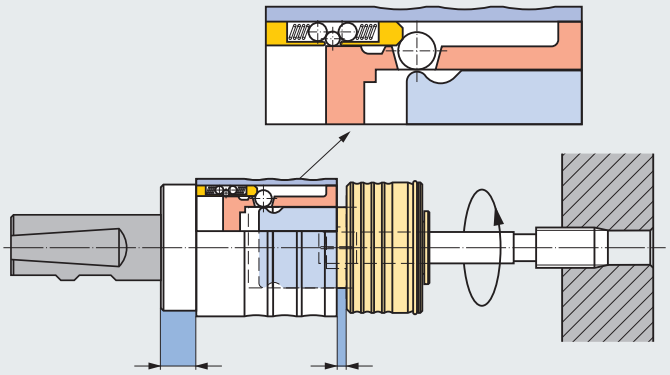
Front release

The front release protects the quick-change tap holder, the quick-change adapter and the tool, as well as the workpiece, against damage caused by excessive axial tension. Such tension may occur if the length compensation path is exceeded due to afterrunning of the spindle at the point of reversal, or when the fast-feed function of the tool retraction movement is activated before the tool has come free from the workpiece. In these situations, the quick-change adapter is detached from the holder automatically, avoiding expensive damage.

Situation before the triggering of the front release



Situation after the triggering of the front release



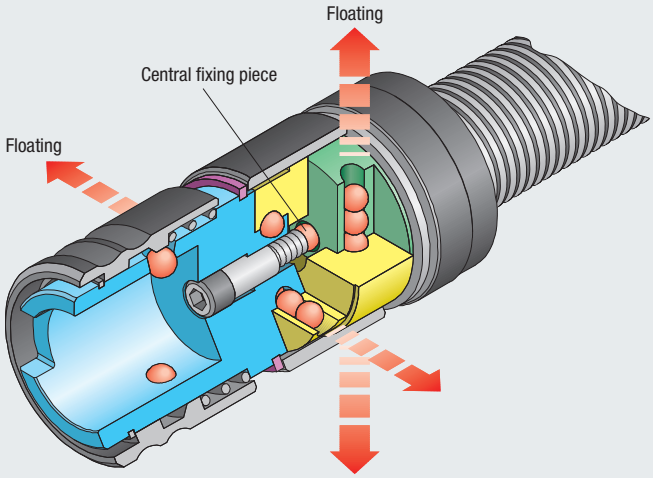
Transmission gearing rapid traverse

Due to the integrated transmission gearing rapid traverse, the spindle speed is multiplied. Consequently the threading tool speed is increased by the transmission factor.

Axial-parallel floating

A ball-based floating system guarantees that small errors of alignment between machine spindle and thread hole, or concentricity run-out on the side of the machine spindle, are compensated.

Two parallel drilled holes, offset by 90°, form a precise ball-based linear guide. This arrangement is the perfect solution for the function of the “parallel floating” feature.



Overload clutch

The **wave-line profile overload clutch** as developed by EMUGE is characterized by its great wear resistance. Grease chambers between the upper and lower clutch ring provide permanent lubrication during the overload process. When the set torque is exceeded during a threading process, the overload clutch immediately interrupts the torque transfer between machine spindle and tool. This protects the tap against damage.

7.1 Description of the symbols for performance characteristics

Length adjustment

With the length adjustment, the projection length of the quick-change adapter can be re-adjusted or increased in case of need.

Length adjustment by 2 mm

The projecting length of the tool can be extended by 2 mm (0.0787 inch) with the length adjustment screw.

Drilling and countersinking

Drilling and countersinking operations can be done without exchanging the quick-change holder, simply by blocking the length compensation with a locking screw.

The resulting advantages are:

- Alignment offset between drilled hole and thread reduced to a minimum
- No time-consuming re-tooling, with according cost reduction

Tool adaption by means of quick-change adapters, EM series

The quick-change adapters of our EM series have been designed for use in the quick-change tap holders of our KSN and SFM series. The five sizes have been divided into corresponding thread size ranges, and are available in different types. The adaption of the tool is made by means of a quick-change ball clamping system in most quick-change adapters, with a separate adapter being necessary for each shank diameter. Our quick-change adapters are suitable for the production of right-hand and left-hand threads.

Tool adaption by means of quick-change adapters, HE series

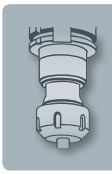
The tool adaption is effected by means of quick-change adapters of our HE series. The clamping of the tool is provided by threaded pins. For our adapters type HE 2/IKZZ, we recommend a fastening torque of 11.06 ft lbs / 15 Nm.

Tool adaption by means of collets, type ER (GB)

The tool adaption is effected by means of collets of our ER, or our ER-GB series (with integrated square) acc. DIN ISO 15488 (formerly DIN 6499). This type of clamping helps to achieve very good concentricity and a safe clamping of the tool, especially with high cutting speeds and coolant pressures.

Tool adaption by means of collets, type PGR-GB

The tool adaption is effected by means of collets of type PGR-GB (with integrated square).

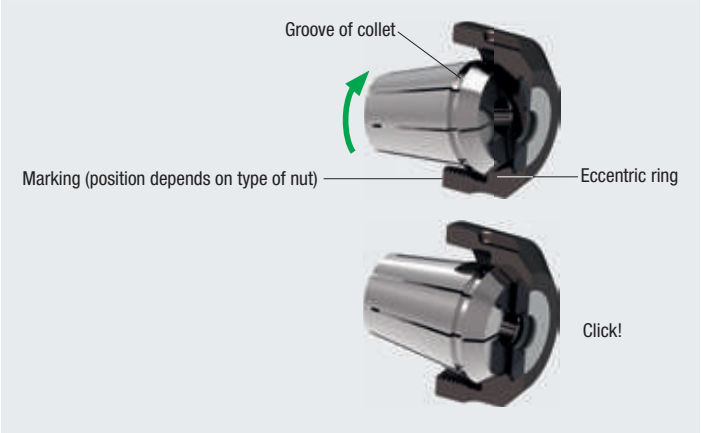


7.2 Assembly of sealing disk, collet and tool

Assembly of sealing disk in the sizes 1-5

1. Insert the sealing disk into the clamping nut as shown in the illustration, and push it forward until you can clearly hear it engaging. After that, the sealing disk is flush with the clamping nut.
   In **size 0**, you can use clamping nuts with integrated sealing system – a separate sealing disk is not needed then. The clamping nut must be selected in accordance with the clamping diameter used.

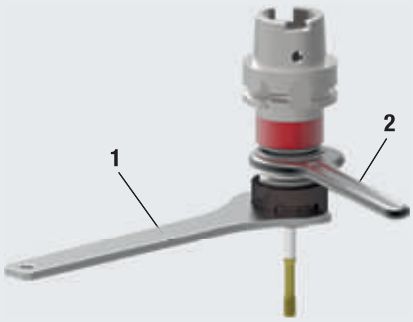
2. Insert the collet into the clamping nut, then tilt it. The groove of the collet must engage in the eccentric ring of the clamping nut at the marked position. Now, tilt the collet in the opposite direction until you clearly hear it engaging.



3. Screw the clamping nut with the engaged collet onto the thread of the holder.
   Important: Only screw on clamping nuts with correctly engaged collet!

4. Insert tool.
   Important: If you use a collet with integrated square, make sure to turn the tool around until it is in a position that allows it to be pushed into the square seat of the collet.

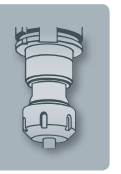
5. Tighten the clamping nut with the wrench.
   Observe the rec. torque values in the table.



Type	Recommended Tightening Torque	
	ft lbs	Nm
Hi-Q/ERM 8	4	6
Hi-Q/ERM 11	9	12
Hi-Q/ER 11	10	14
Hi-Q/ER 50	221	300
Hi-Q/ERMC 11	9	12
Hi-Q/ERMC 16	18	24
Hi-Q/ERMC 20	21	28
Hi-Q/ERMC 25	24	32
Hi-Q/ERC 11	10	14
Hi-Q/ERC 16	30	40
Hi-Q/ERC 20	24	32
Hi-Q/ERC 25	59	80
Hi-Q/ERC 32	66	90
Hi-Q/ERC 40	133	180
Hi-Q/ERBC 50 AF	221	300

The indicated values apply to collets type ER-GB. The maximum tightening torque must not be more than 25% above the recommended tightening torque. Higher tightening torque may result in the damage of the collet. For the setting of the correct torque, we recommend using a torque wrench, see page 623.

Important: In order to avoid damage to the holder, please counter with open-ended spanner **2** while tightening the clamping nut with wrench **1**.
For suitable tool sets, see pages 621 - 622.

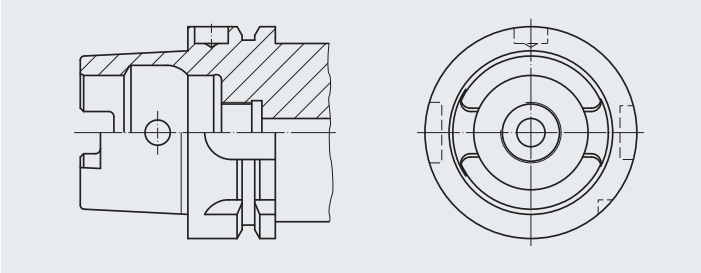


7.3 Overview of hollow taper shanks with flange contact surface (HSK)

DIN 69893-1, ISO 12164-1

Form A

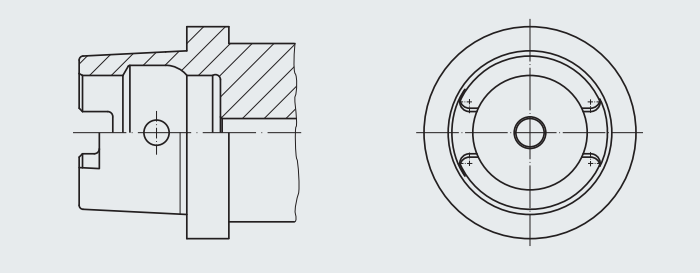
- Standard design for machining centers
- For automatic tool change with gripper and indexing groove
- Central coolant supply by way of coolant tube
- Drive-key slots at the end of the taper
- Bore for data chip (DIN 69873)
- Useable as Form C also, since clamping activation bore is included



DIN 69893-6

Form F

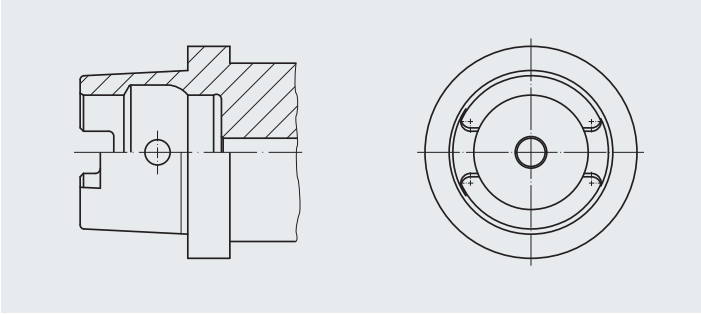
- For high-speed machining, mostly in woodworking
- With extended flange contact surface for increased radial strength
- For automatic tool change
- Central coolant supply by way of a coolant tube is possible
- Without drive-key slots, rotationally symmetric



DIN 69893-1, ISO 12164-1

Form C

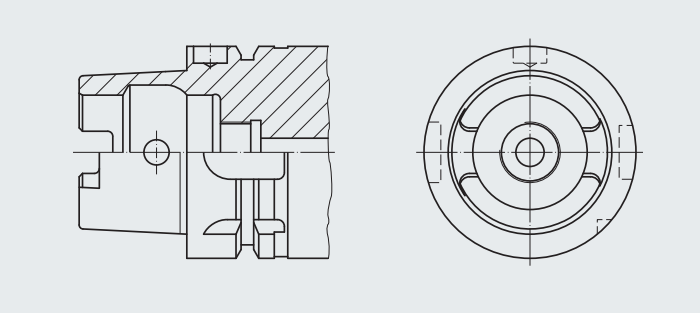
- For special machines and modular tool systems
- For manual tool change
- Central coolant supply
- Drive-key slots at the end of the taper



ISO 12164-2

Form T

- For turning and milling machines
- For automatic tool change
- Central coolant supply by way of coolant tube
- Modified drive-key slots
- Bore for data chip (DIN 69873)
- Useable as Form C also, since clamping activation bore is included



7.4 Rigid tapping

Why synchronous thread production with rigid collet holders will not result in optimum tool lives.

When producing a thread on a CNC machine with taps or roll form taps (for simplicity's sake, we will call them threading tools in the following) the speed of the rotation movement of the machine spindle with the speed of the feed axis must be registered, accounted and synchronized. When accounting the threading tool pitch and the cutting speed – giving the feed speed, faults may occur caused by parameters not being considered during the control.

Two main influencing variables are:

1. Influencing factors by the CNC machining center
Computer speed, resolution of the axis detection (linear axis, turning axis, C-axis), mechanical condition of the machine.

2. Influencing factors by the threading tool
a) Tolerances of the thread pitch acc. to DIN EN 22857
b) Change of thread pitch and length of the threading tool when $t_{Work} \neq t_{Measurement}$

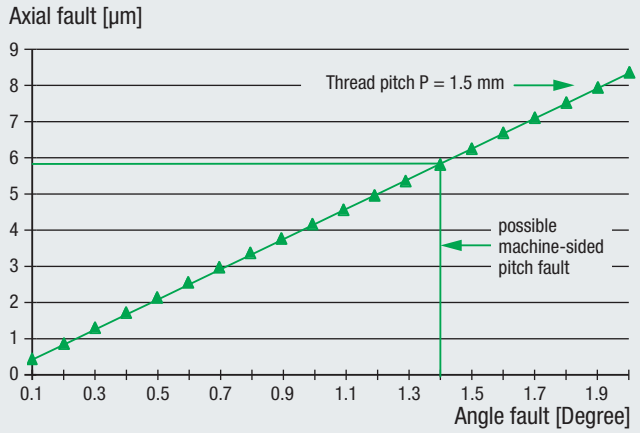
1. Influencing factors by the CNC machining center
Regarding the formfitting between tool and workpiece, the cutting and forming of threads with synchronous spindles requires permanent µ-exact control and adjusting of the feed axis movement in relation to the rotation movement of the tool spindle. Thus the thread production differs from other known kinds of machining eg drilling, reaming or milling. These processings only require an exact linear movement of the control for positioning purposes, as these tools are not connected formfitting with the workpiece. Consequently, the main emphasis of machine manufacturers is on the control of the linear axis. In practice today simply rotary pick-ups with 256 impulses per spindle rotation (360°) are used to control the rotation axis. This corresponds to an angle and so a control gap of 1.4° per impulse.

➡ Axial forces during thread machining arise caused by control faults or control inaccuracies.

Example:
Tap M10
Thread pitch 1.5 mm
Possible uncontrolled spindle rotation 1.4°

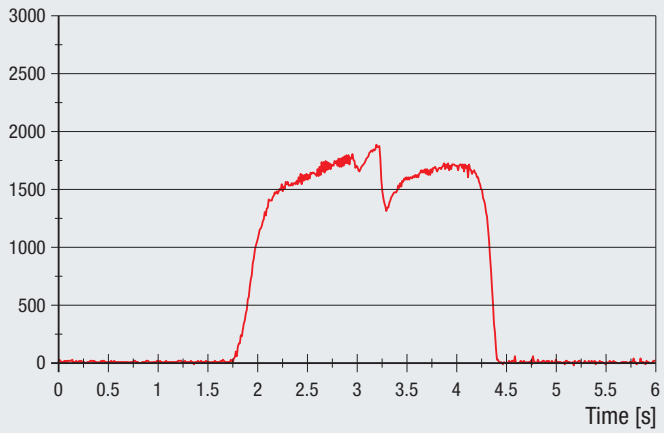
➡ Possible axial position fault of about 5.8 µm between threading tool specified position and machine spindle real position.

Graph machine spindle turning position fault /axial pitch fault
(depends on thread pitch)
Effect of machine turning movement fault on the tool

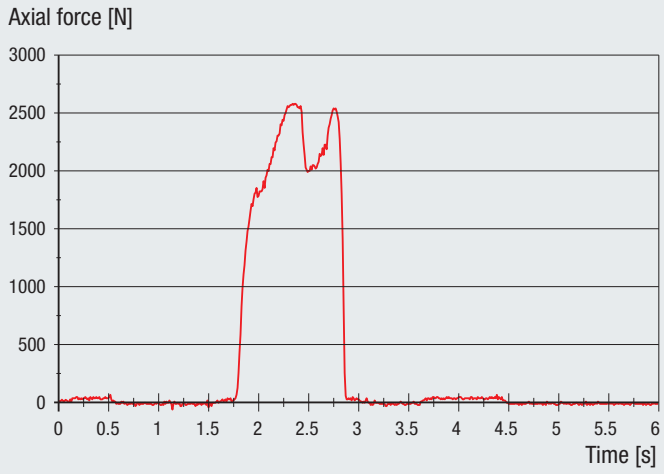


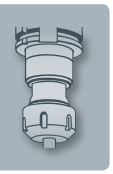
Additionally, the computer speed of modern CNC machining centers is not sufficient to handle a higher number of impulses of the rotary pick-up in the range of n = 0 up to the max. spindle speed and to adjust the axis to be synchronized. The example of a CNC machining center with 256 impulses per spindle rotation shows that the axial force working on the tool flanks, increases with growing cutting speed.
The following graphs show that the axial force for forming an M10 thread with 500 rpm (about 51.5 SFM / 15.7 m/min) is at about 427 lbf (1900 N); with an increase of the speed to 2000 rpm (about 208 SFM / 62.8 m/min) at over 562 lbf (2500 N). This clearly shows that the arising axial force, caused by the synchronisation fault, depends on the speed.

Speed 500 rpm Roll form tap M10 in material 1045



Speed 2000 rpm Roll form tap M10 in material 1045





7.4 Rigid tapping

2. Influencing factors by the threading tool

a) Tolerances of the thread pitch

For threading tools the European standard DIN EN 22857 defines the dimensions and tolerances for ground threads.

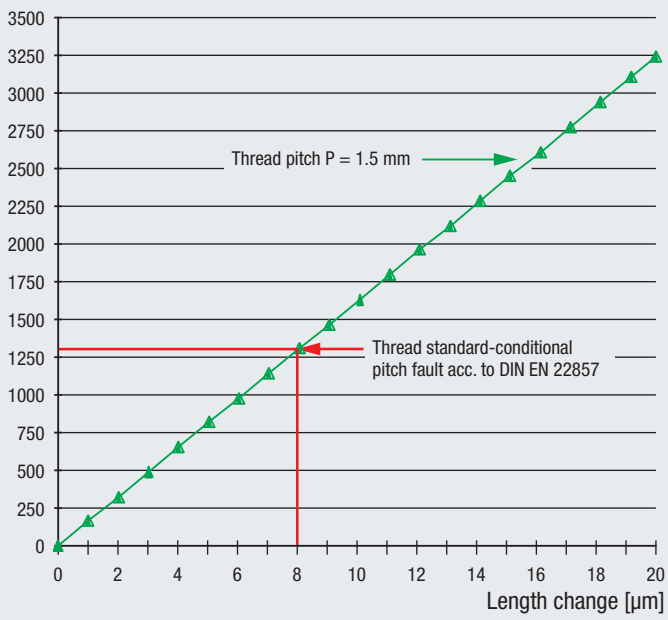
For the tool tolerance the standard allows a smallest deviation of ± 8 µm referred to a defined number of threads.

Example:

Tap M10
Thread pitch 1.5 mm
Check length 7 threads
➡ Allowed pitch tolerance ± 8 µm

Force/Movement graph

Required force for the length change of threading tool with shank diameter 10 mm



b) Change of thread pitch and length of the threading tool when $t_{Work} \neq t_{Measurement}$

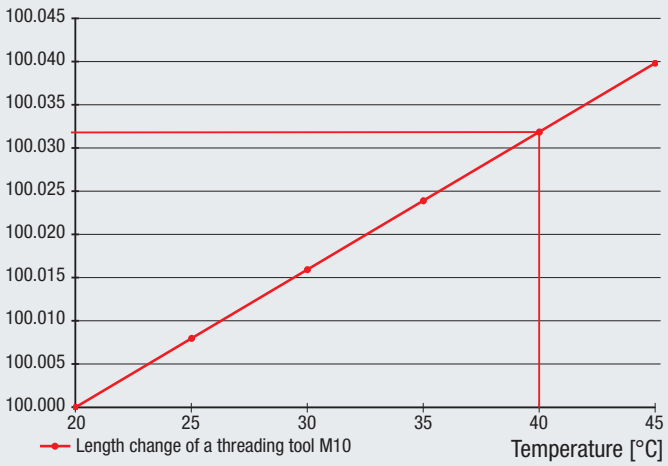
Each tool temperature – differing from the measuring temperature 20°C – causes a change in length. For an M10 tap with 100 mm length the temperature change from 20 °C to e.g. 40 °C causes a length change of 32 µm.

Considering a check length of 7 threads acc. to standard DIN EN 22857 the following **example** results:

Tap M10
Thread pitch 1.5 mm
Tap length 100 mm
Check length 7 threads = 10.5
➡ Axial growth of the tool and thread pitch of 3.4 µm

Temperature change development of a threading tool M10

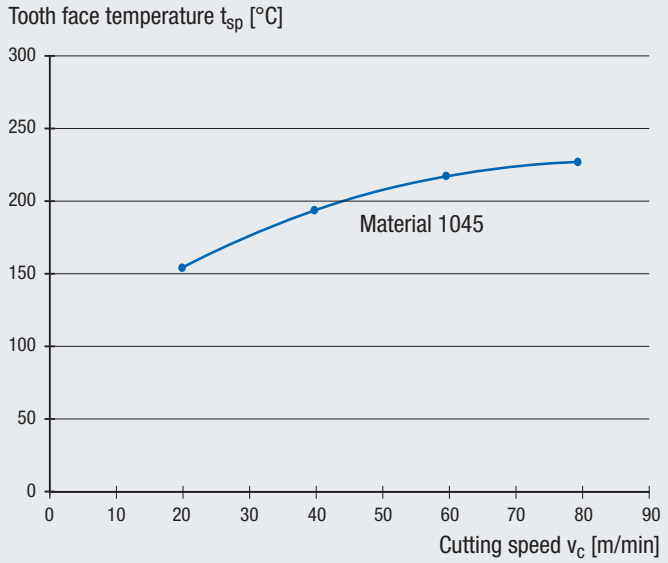
Length 100 mm, temperature change 20 °C, length change 32 µm



Referred to a check length of 7 threads acc. to DIN EN 22857 and a pitch of 1.5 mm the **axial length** would **change by 3.4 µm**.

The proof of a change in temperature of the threading tool can be given by measuring the cutting face being heaviest used during the thread production. The following graph shows the temperature of the cutting face for a threading tool M10 with various cutting speeds. Material used is 1045, coolant-lubricant is 5% emulsion.

Temperature progressing on the tool tooth face (M10), emulsion as coolant-lubricant



7.4 Rigid tapping

Summary

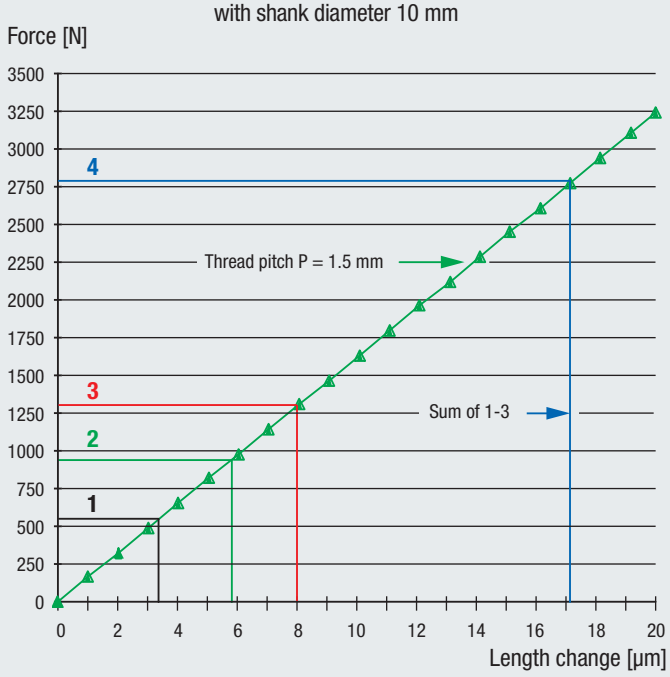
To realize the total effect of the individual influencing factors mentioned before on the axial force component of the thread producing process, the shown possible position faults, length changes resp. the forces causing length changes must be combined.

The following **graph** shows:

- With an addition of possible axial faults caused by machine pitch tolerance or temperature influencing factors a position fault between specified position of the tap and real position of the machine spindle of more then 17 µm may arise
- **This position fault results in an axial force of about 2800 N** in the shown example with a threading tool M10.
- This force is taken up by the flanks of the tool resulting in increasing flank friction and increased tool wear.

Force/Movement graph

Required force for the length change of threading tool with shank diameter 10 mm



1 Possible temperature-caused pitch fault

2 Possible machine-caused pitch fault

3 Possible standard resp. threading tool caused pitch fault

4 Possible axial force on the tool flanks

These perhaps theoretical reflections of the processes during production of a thread can be proven in practice.

As an **example** an M10 thread with three different tool holders is formed in material 1045. The axial forces were recorded at two speeds which were 500 rpm = 51.5 SFM (15.7 m/min) and 2000 rpm = 206 SFM (62.8 m/min). The following collet adaptions have been tested:

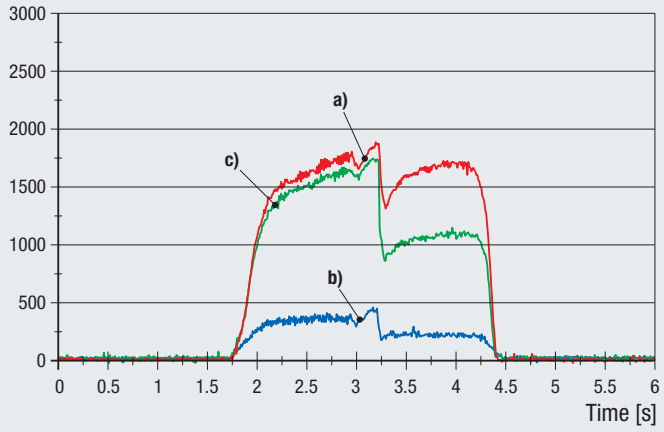
a) Rigid synchronous collet adaption

b) EMUGE collet adaption Softsynchro® size 1 with minimum length compensation on compression and tension

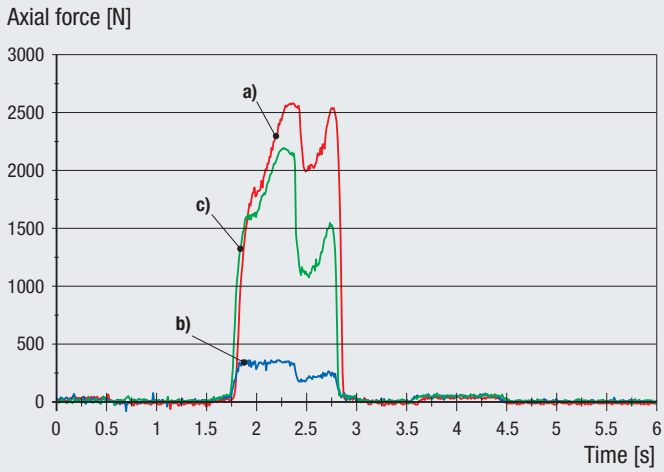
c) Synchronous collet adaption of a competitor with minimum length compensation with axial damping

With all tested collet adaptions a collet type ER20-GB with integrated square was used.

Speed 500 rpm Roll form tap M10 in material 1045

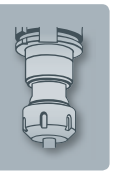


Speed 2000 rpm Roll form tap M10 in material 1045



The following results were verified in these tests:

- Axial forces increase with the raise of speed
- The forces which come into play in the cold forming of threads are considerably higher with a rigid collet holder than with an EMUGE collet holder type Softsynchro®
- The competition collet holder can absorb the upcoming forces only lightly, in comparison with the rigid collet holder



7.4 Rigid tapping

What is the reason for the outstanding axial force performance of the EMUGE Softsynchro® tap holders with minimum length compensation?

Important feature is the patented designed separation of torque and axial force transmission.

Further design features of the EMUGE Softsynchro® tap holders are:

- **Clearance-free C-axes by formfitting torque transmission over steel balls**
- **Smooth response of the pre-stressed minimum length compensation after exceeding the constructive defined guiding force by nearly loss-free roll friction of the torque transmission balls in their ball tracks**
- **Minimum length compensation and axial force transmission over pre-stressed elastomer springs**
- **Elastomer springs preventing the tool cutting edge from bracing by their damping characteristics**

If the separation of torque and axial force transmission is disregarded, an axial fault is caused immediately when starting the thread cutting process, see example of the competition collet holder. Consequently, the axial force immediately increases heavily, see graphs on the preceding page. This is avoided by the practical-related design of the Softsynchro®.

For machine tools not providing the feature of synchronous thread machining it is necessary to use a larger length compensation than the minimum length compensation of the Softsynchro® holders.

EMUGE supplies length compensation holders KSN/HD with collet adaption and internal coolant supply. The advantages of clamping the tool over collets are combined with those of a classic length compensation holder.

7.5 Tool monitoring system DDU4

The new tool monitoring system DDU4 is a newly developed system, consequently following upon the already successful ICS and TTS systems. In addition to the current torque indication, you can now also monitor the axial force, contact-free, in real-time. With the option to set fixed response and breakage limits in N or Nm in combination with the ARTIS process monitoring systems, the following recognition features become possible in addition to the standard functions:

- Tool wear
- Missing tool
- Defective thread holes
- Different thread depths
- Material contact
- Tool breakage

Digital signal processing made it possible also to enlarge the measuring range for torque and axial force. These measuring ranges are each subdivided into three steps, each of which can be called off externally.

The DDU4 system is available in two versions:

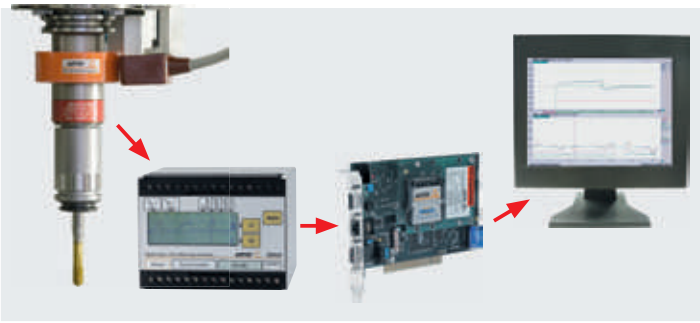
1. Basic solution: DDU4 as “stand-alone system”

This is an economically efficient upgrading system for tool monitoring. For both torque and axial force, two fixed limit values in Nm or kN can be set. An integrated LCD display will visualize the curve progress, and serve for entering the requested values. Alarm signals are emitted by one switch each for torque and axial force.
In combination with the process monitoring system CTM, the DDU4 system will serve as a 2-channel measuring converter.

2. DDU4 in combination with CTM

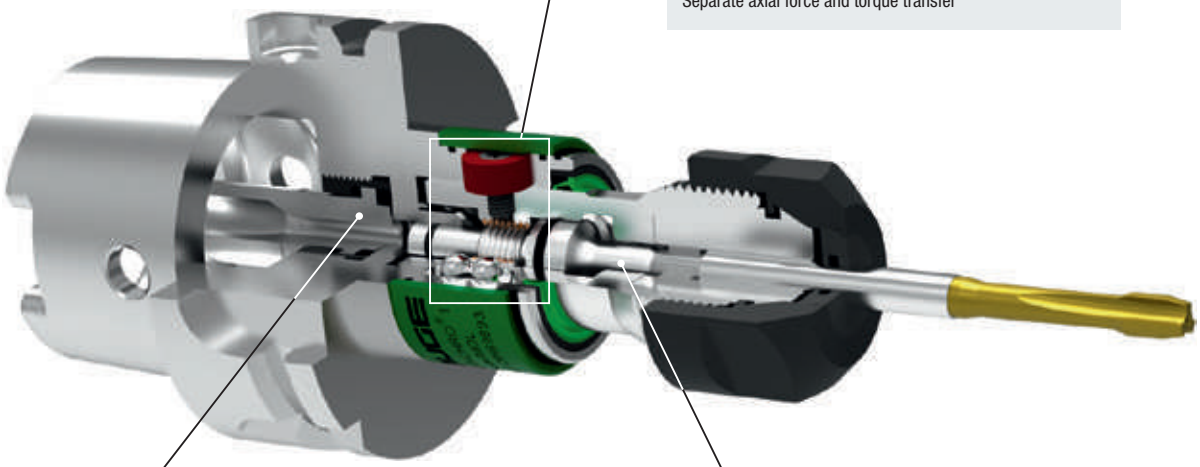
In combination with the CTM process monitoring system, the DDU4 system will offer you as additional performance characteristics the recognition of:

- Tool wear
- Defective thread holes
- Material contact
- Chip clogging
- Missing tool
- Different thread depths
- Tool breakage
- Evaluation for statistical purposes



7.6 Collet holders Softsynchro® Modular

Softsynchro® Modular/MQL



Patented Softsynchro® technology

Separate axial force and torque transfer

MQL transfer element

Coolant tube HSK-A
for 1-channel MQL system

Coolant tube HSK-A
for 2-channel MQL system

Adapter for application of HSK-A
as HSK-C for 1-channel MQL system

Length adjustment screw

Internal taper, for tool shank
with male center 90°

External taper, for tool shank
with female center 60°

Completion of the Softsynchro® series

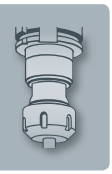
Because of the requirement of various users from the automotive industry, the successful Softsynchro® series has been expanded by the version Softsynchro® Modular.

The **modularity** of the collet holders consists of **variable exchangeable transfer elements** and **length adjustment screws**.

A wire thread insert allows a force-dependent minimal axial movement of the length adjustment screw. The axial force between length adjustment screw and threading tool – arising during tightening the clamping nut to the required tightening torque – is minimized by this design.

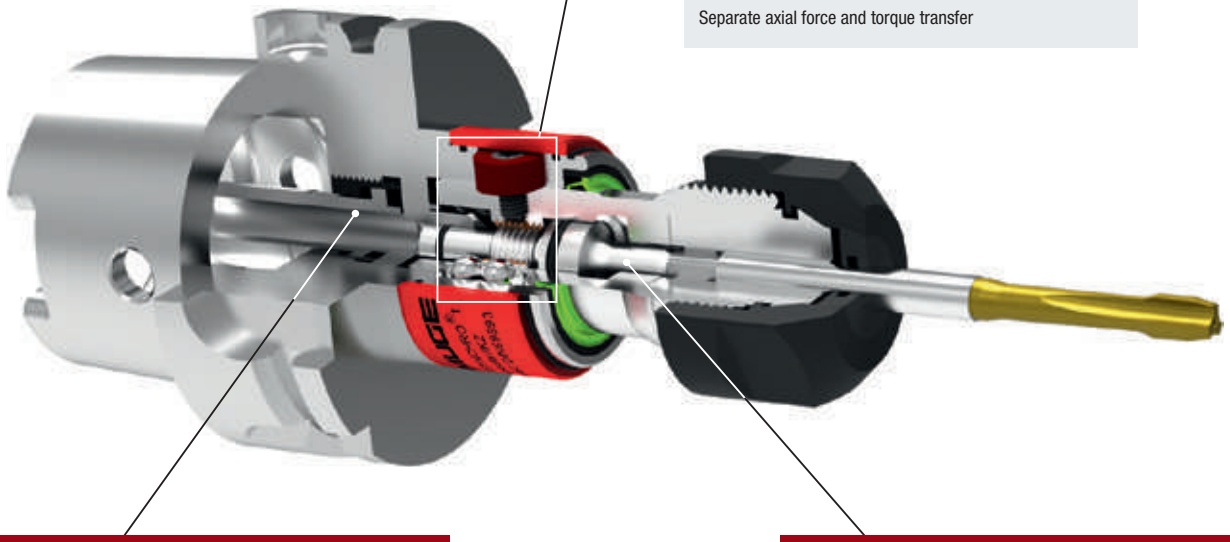
Modern machine tools stand out with a high rotation acceleration of the spindle. The wire thread insert secures the length adjustment screw additionally against twisting during switching of the spindle rotation direction.

The new version Softsynchro® Modular is available for minimum quantity lubrication (MQL) as **Softsynchro® Modular/MQL** and for internal coolant supply (IKZ) as **Softsynchro® Modular/IKZ**.



7.6 Collet holders Softsynchro® Modular

Softsynchro® Modular/IKZ



Patented Softsynchro® technology

Separate axial force and torque transfer

MQL transfer element

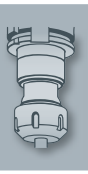
Standard coolant tube HSK-A
acc. DIN 69895

Length adjustment screw

For tool shank with male
or female center

The Softsynchro® Modular offers the same advantages of the minimum length compensation as in a synchronous thread machining. For more information on this topic, see **7.4 Rigid Tapping**.

For an instruction on how to assemble the sealing disk, collet and tool as well as correct torques, please refer to chapter **7.2 Assembly of sealing disk, collet and tool.**



7.7 Minimum-quantity lubrication (MQL)

General information

By minimum-quantity lubrication, we mean the cooling of machining processes with very small amounts of coolant-lubricant. In this, it is important that the coolant-lubricant is conveyed directly to the point of contact between tool and workpiece in order to reduce the generation of heat by friction there. Even with repeated tool changes, the coolant-lubricant must be dosed and transported to the tool with the highest possible degree of process safety. The term minimum-quantity lubrication applies when a quantity of 5 to 50 ml/h of the MQL medium is consumed, air is used as a carrier medium. This technique is a redeveloped version of wet machining where the machining area is flooded with coolant-lubricant. Another technique is dry machining which is done completely without coolant-lubricant.

Different MQL systems

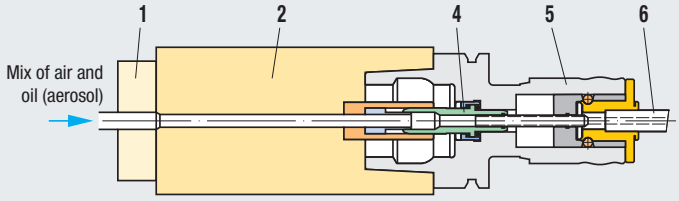
Generally, we make a distinction between **external** and **internal** MQL systems:

- With **external** supply systems, the aerosol containing the oil is sprayed onto the point of machining through a jet installed in the machining space of the machine tool. No special holders or tools are needed.
- With **internal** supply systems, the MQL medium is conveyed through a rotary transmission, the work spindle, the tool holder and the tool itself, directly to the cutting edge of the tool. For such systems, special holders with a straight feed-through of the MQL medium for perfect flow are necessary. What is also needed are tools specially designed for MQL, with a transfer chamfer adjusted to the holder and with optimized coolant-lubricant outlets.

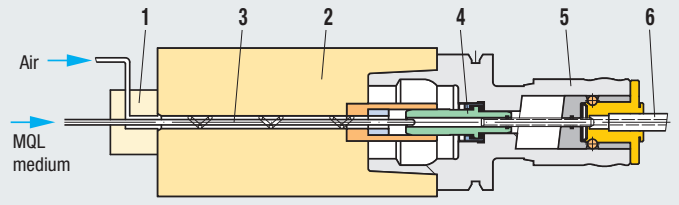
With the **internal** supply systems, we make a further distinction between **1-channel MQL** systems and **2-channel MQL** systems:

- In a **1-channel MQL** system, the aerosol is generated in the MQL device before it enters into the machine spindle, and is then conducted through the work spindle and the clamping system to the point where it is needed.
- In a **2-channel MQL** system, oil and air are conducted through the spindle separately, the mixing of the two media is done only at the point where they enter the tool holder.

1-channel MQL system



2-channel MQL system



1 Rotary transmission
2 Work spindle
3 MQL medium lance
4 Transfer unit
5 Tool holder
6 Tool

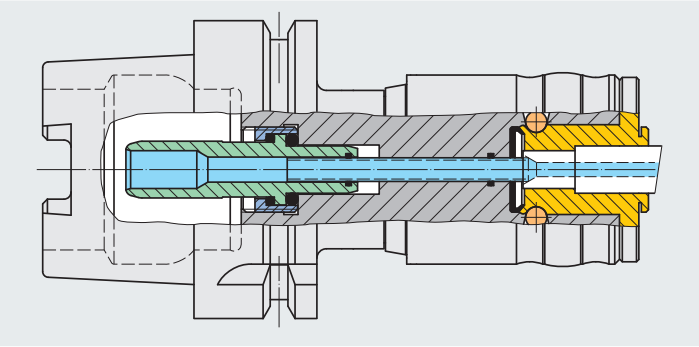
The tool holders

Tool holders for minimum-quantity lubrication must not only provide safe clamping for the tool, but must also permit unhindered, loss-free and free-flow through-feed of the aerosol. In 2-channel MQL systems, it is also necessary to produce the mix of oil and air during the transfer from the spindle to the shank. These challenges have lead to the design of special quick-change tap holder and collet holders which meet the requirements of the different MQL systems. Additionally, several company standards and the standard E DIN 69090 were established for a clear specification of the point of transfer from spindle to tool holder. Our EMUGE holders, needless to say, meet all the requirements of these standards, too.
In order to avoid dead spaces and oil clogs, EMUGE offers also the suitable tools for minimum-quantity lubrication. With their detailed adjustment to the holders, an optimized transfer from tool holder to tool can be guaranteed.

The following tool holders are available:

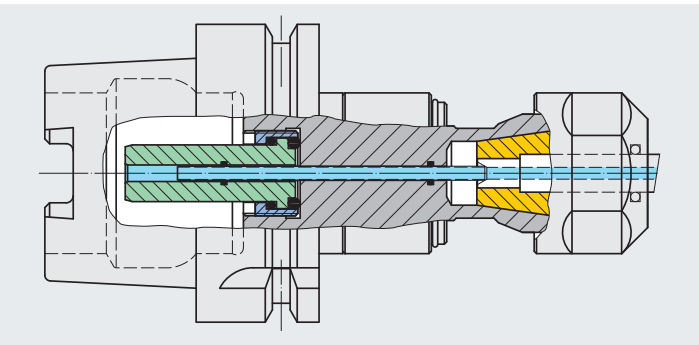
1. KSN/MQL

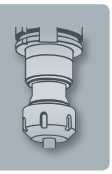
These quick-change tap holders are equipped with length compensation on tension and compression, with the EMUGE patented pressure-point mechanism and the proven front release. In addition, a spring-loaded tube guarantees a disturbance-free feed-through of the aerosol. This same tube also provides the permanent transfer of the aerosol from the tool holder to the tool. As a complement, EMUGE offers adapters type EM/MQL which provide a sealing surface between quick-change tap holder and quick-change adapter.
This sealing surface is especially helpful in the machining of cast materials and in “overhead” machining situations.



2. Softsynchro®/MQL

These collet holders are equipped with the well-known minimal length compensation with separate transfer of torque and axial force, see also chapter **7.4 Rigid tapping**. Again, there is an optimized feed-through for perfect flow ensured by a spring-loaded tube. This tube is always in firm contact with the end of the tool shank due to the spring pressure, and guarantees loss-free transfer.





7.8 Collet holders Speedsynchro® Modular

Application range

Speedsynchro® Modular are designed for use on CNC-controlled machine tools.

Functionality

The Speedsynchro® Modular uses an integrated transmission gearing with a transmission ratio of 1 : 4.412 and combines it with the patented Softsynchro® minimal length compensation function.

The transmission gearing allows

- To work in the unproblematic and relatively low synchronous spindle speed range (< 1500 rpm) of the machine tool
- To achieve high cutting speeds of the threading tool due to a multiplication of the spindle speed

General specifications

- **Higher cutting speeds**
  In a synchronous thread production machine spindles do not achieve the programmed rotational speeds above a certain spindle speed. The transmission gearing of the Speedsynchro® Modular keeps up with the programmed speeds.
- **Longer tool life**
  The patented minimal length compensation function reduces the axial force on the tap.
- **Reduction of energy consumption**
  Thanks to the transmission gearing the rotational speed of the machine spindle is reduced which results in energy savings of more than 90% compared to synchronous thread machining.
- **Reduced installation costs**
  Lower energy consumption due to the use of minimum quantity lubrication (MQL).
  - **Modular MQL tubes**
    Conversion from 1-channel to 2-channel MQL-systems.
  - **Modular length adjustment screws**
    Adaption of length adjustment screws to threading tools with male or female center.

Technical characteristics

- Cutting range: M1 - M8
- Collet: ER16
- Transmission ratio: 1 : 4.412
- Max. spindle speed: 2000 rpm
- Max. tool speed: 8824 rpm
- Internal coolant supply
- MQL for 1-channel or 2-channel systems

More information regarding Speedsynchro® Modular at

www.speedsynchro.com

Advantages of the Speedsynchro® Modular

- Simple programming as synchronous cycle with feed program adapted to the transmission ratio
- Evaluation of time benefit of the Speedsynchro® Modular / synchronous cycle by a “simulation” without Speedsynchro® Modular and tool
- Accurate thread depths – no variations in thread depths associated with conventional tapping attachments since the Speedsynchro® Modular in contrast to tapping attachments does not reverse the sense of rotation
- The reversal of the threading tool is done by the machine drive spindle:
  - No switching components in the Speedsynchro® Modular
  - Low wear and longer maintenance intervals
  - Maintenance independent of number of threads produced
- Patented constructive independent transfer of the machining torque in the production of threads
- Mechanically independent compensation of the axial forces at the threading tool flanks caused by synchronization faults
- Minimum length compensation ± 0.5 mm
- Spring-loaded bearing of the length adjustment screw for compensation of the occurring axial force between length adjustment screw and threading tool when tightening the clamping nut
- Self-locking of the length adjustment screw against unwanted length displacement caused by rotation acceleration during reversal of rotation direction of the machine spindle

Thread production cycle with the Speedsynchro® Modular

The Speedsynchro® Modular is changed into the machine by means of the tool exchanging device, the stop fixture bolt engages in the stop block, the locking device is released and the Speedsynchro® Modular is ready for operation.

Some programming references

The transmission ratio of the Speedsynchro® Modular is 1:4.412 which results in the following programming guidelines:

- Feed f

$$f = P \times 4.412 \quad \text{[mm/rev. resp. inch/rev.]}$$

- Rotational speed n of machine spindle for the desired tool speed

$$n_{MSP} = n_{TOOL} / 4.412 \quad \text{[rpm]}$$

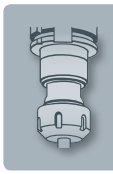
P = Pitch of threading tool [mm resp. inch]
n_{MSP} = Rotational speed of machine spindle [rpm]
n_{TOOL} = Rotational speed of threading tool [rpm]

Example thread M6 / pitch P = 1 mm:

- Desired rotational speed of threading tool:
  n_{TOOL} = 3000 rpm
- Required rotational speed of machine spindle:
  n_{MSP} = 3000 rpm / 4.412 = 680 rpm
- Required feed:
  f = 1 x 4.412 mm/rev. = 4.412 mm/rev.

Service

In case spare parts need to be exchanged, EMUGE offers you a repair service that includes e.g. competent repair and maintenance, a professional pressure check and function control with full guarantee.



7.8 Collet holders Speedsynchro® Modular

Technical design of the stop fixture for the Speedsynchro® Modular

For the use of the Speedsynchro® Modular, a stop fixture is needed for the following functions:

- Supporting the torque caused by the operation of the Speedsynchro® Modular
- Correct definition of the position between machine spindle and stop fixture whenever automatic tool exchange devices are used

The stop fixture is normally fitted individually to the customer's machine before shipping of the attachment.

Specifications of the stop fixture

Address:

.....

.....

.....

Machine manufacturer / designation:

.....

Locking block available on machine?

☐ Yes ☐ No

Shank type and size:

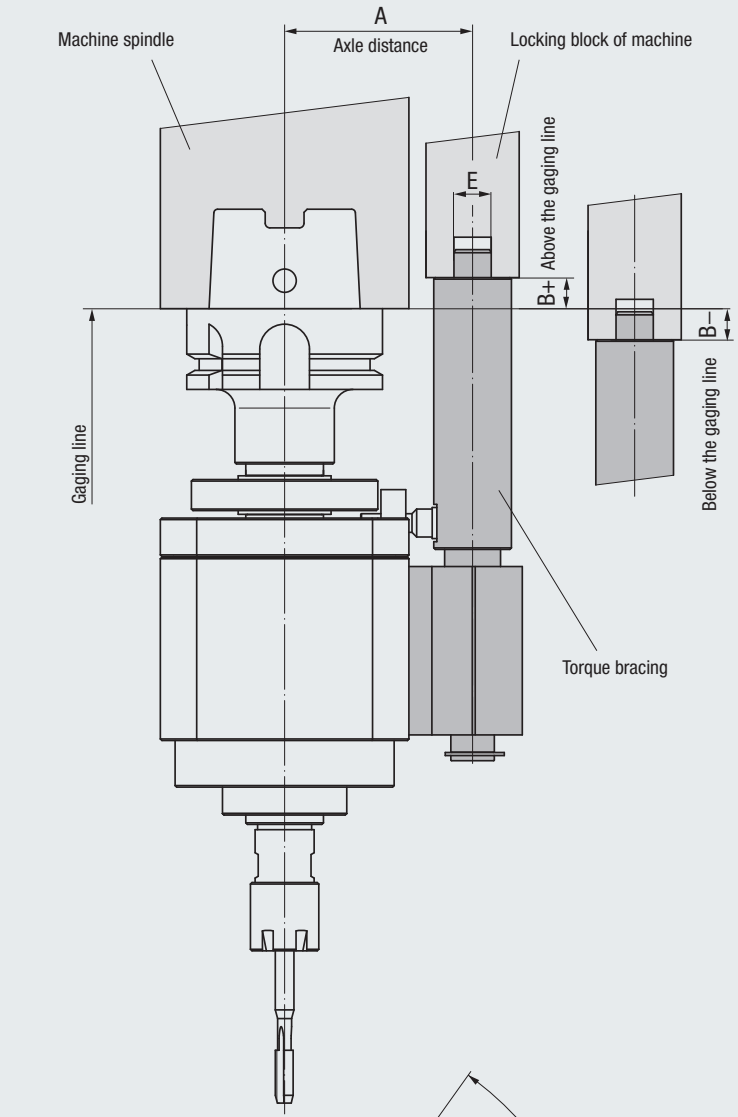
.....

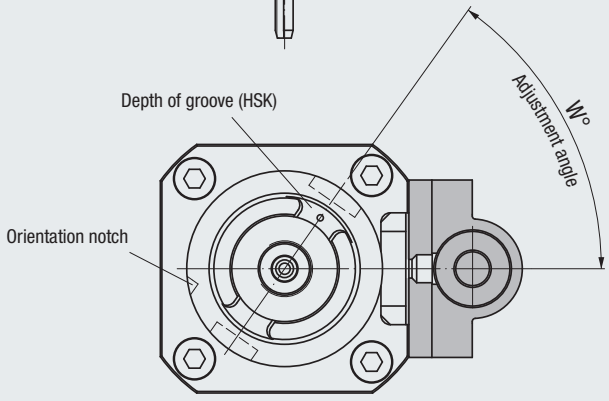
Spindle designation with connecting dimensions for stop fixture available?

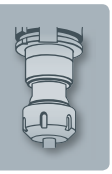
☐ Yes (please enclose a copy)

☐ No, dimensions: A: ..... B: .....

E: ..... W: .....







7.9 Adjusting the overload clutch of quick-change tap holders type HF

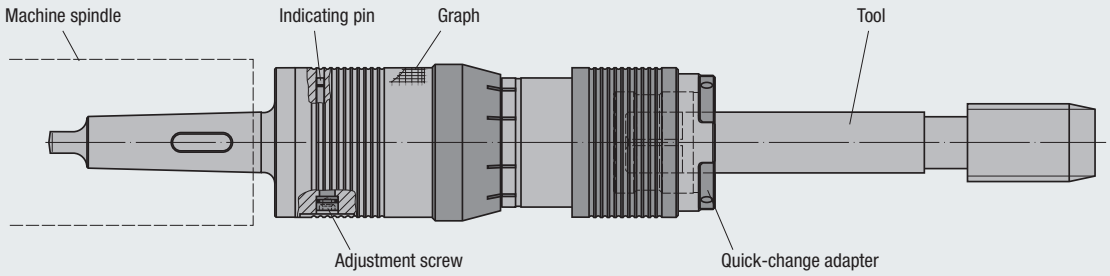
Adjusting the torque of the overload clutch

The torque to be set depends, among other things, on the type of machining and on the workpiece material to be machined. If the exact torque is not known, we recommend setting a low value first, and approaching the correct torque value step by step.

Attention:
The adjustment must not be carried out while the machine spindle rotates!

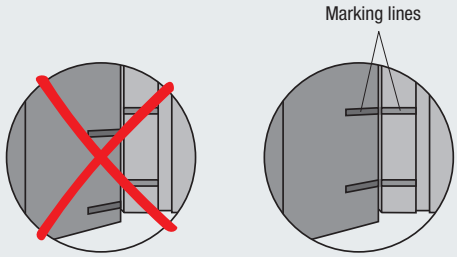
Required tools:
- Hexagon socket wrench with pin, width across flats 10 mm
- Depth measurement device or caliper gage with depth measurement

1. Clamp the quick-change tap holder in the machine spindle.



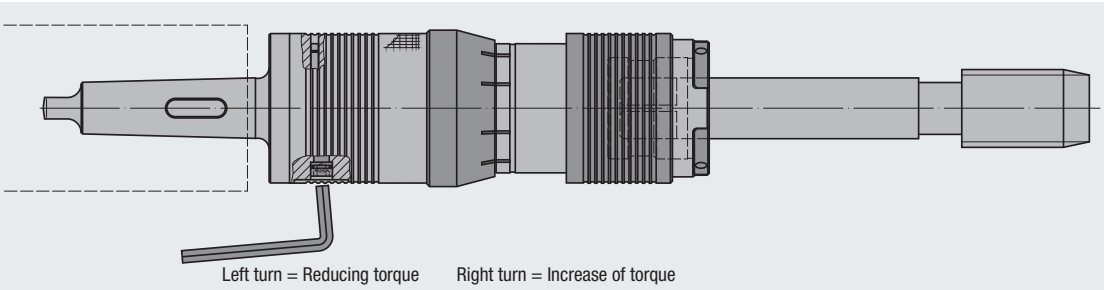
2. For torque adjustment, the marking rings must coincide.
   If this is not the case, proceed as follows:
   - Put machine into operation
   - Let the tool start the cutting process
   - Stop machine

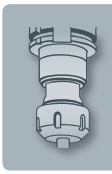
Attention:
Repeat this until the marking lines coincide!



3. Adjust torque by turning adjustment screw.

Attention:
Do not use any extension for adjusting the torque!



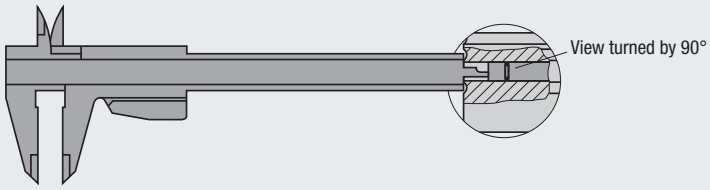


7.9 Adjusting the overload clutch of quick-change tap holders type HF

4. Check torque by:
   - Measuring the position of the indicating pin using the depth measurement device
   - Reading the torque from the graph (the graph is fixed on the quick-change tap holder body)

Example: HF 20, measuring depth 2.7 mm
Torque read from graph: 625 Nm

The max. torque is adjusted if the indicating pin matches with the quick-change tap holder diameter.

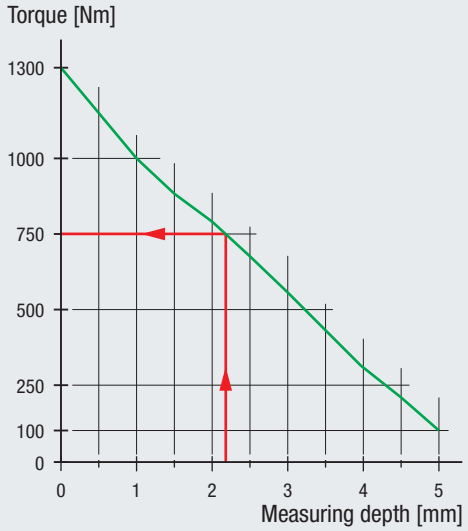


Torque progression

The following graphs are printed onto the quick-change tap holder near the adjustment unit in similar form.

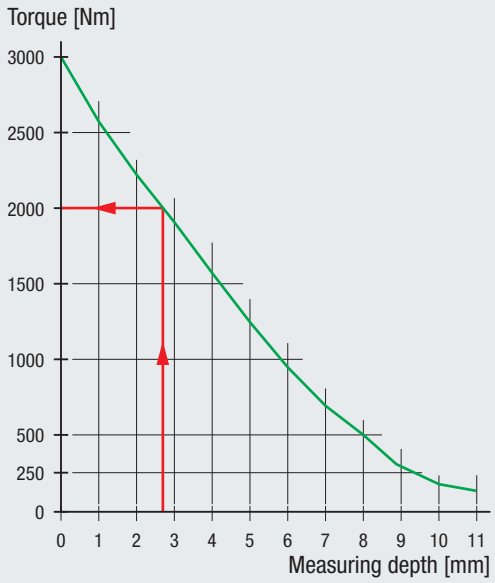
Torque progression for the quick-change tap holder HF 20

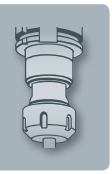
Example: Measuring depth 2.2 mm
From graph: 750 Nm adjusted torque



Torque progression for the quick-change tap holder HF 30

Example: Measuring depth 2.75 mm
From graph: 2000 Nm adjusted torque



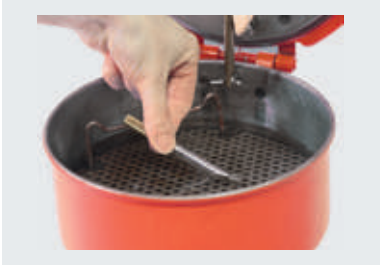


7.10 Cleaning of collet holder and collet type PGR

Clean the PGR interface of the collet holder,
e.g. with a taper cleaner or with a clean towel.

Degrease PGR collet, dip in a clean, fat-dissolving and
oil-free solvent, e.g. alcohol or cleaning solvent.
Dry collet. Only use compressed air if it is clean and oil-free
(no preceding maintenance unit).

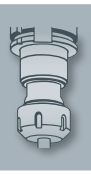
Set collet into tool holder.



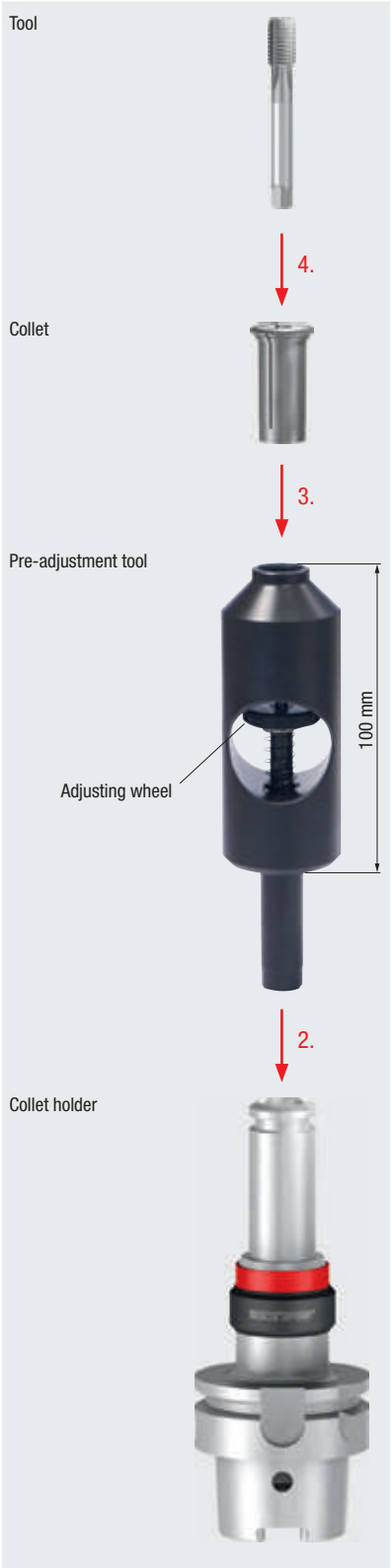
Degrease tool shank by dipping into clean, fat-dissolving and
oil-free solvent, e.g. alcohol or cleaning solvent.

Insert tool into the PGR collet.
When using a PGR-GB collet with integrated square,
the tool must be turned into position in order to be
inserted into the square of the collet.

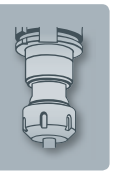
Press in tool by means of PGR clamping unit, or
perform length adjustment as described under
7.11 Length adjustment of collet holders type PGR.

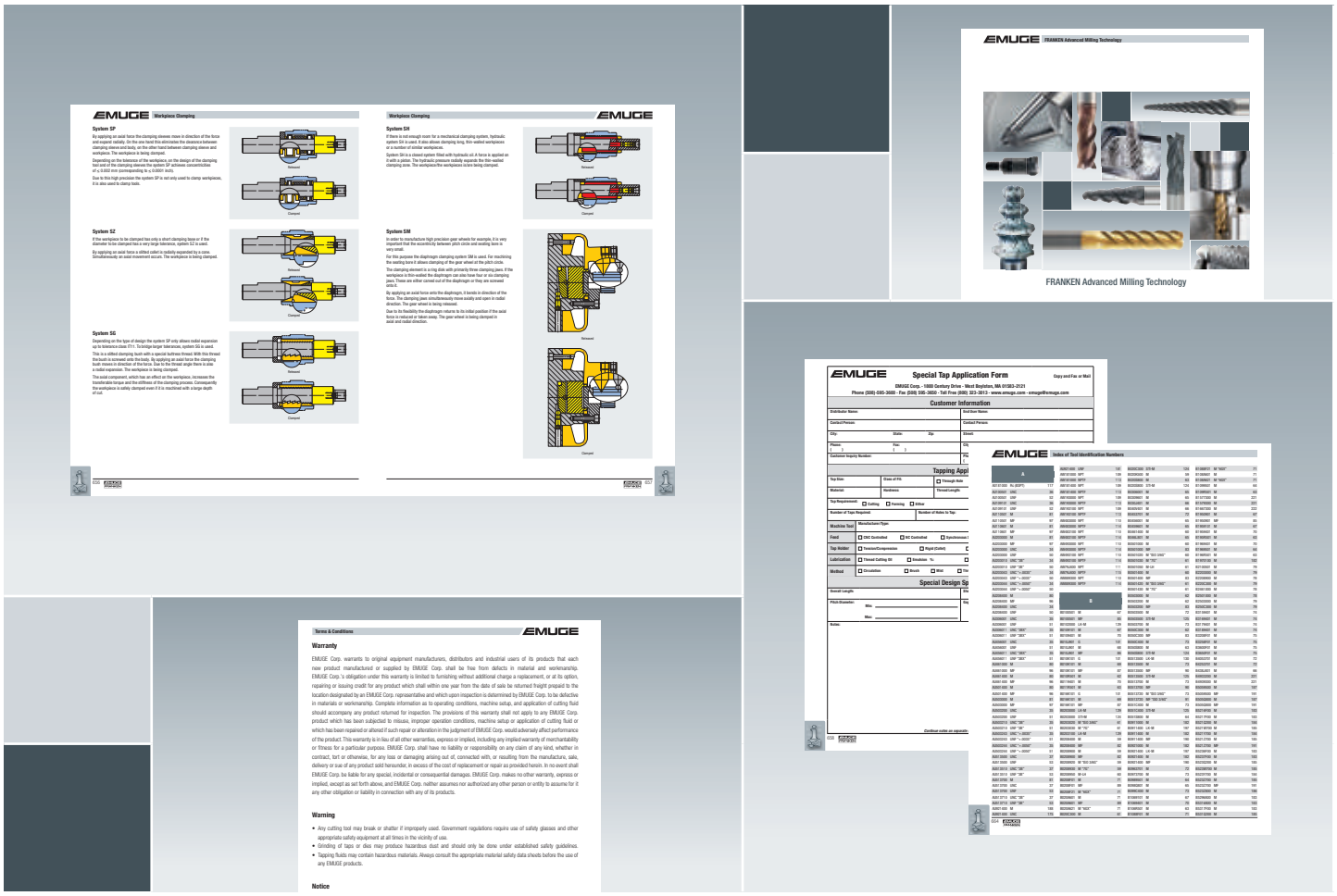


7.11 Length adjustment of collet holders type PGR



1. Pick up collet holder
2. Insert pre-adjustment tool in the collet holder
3. Insert collet into pre-adjustment tool
4. Insert tool into collet
5. Adjust tool length by turning the adjusting wheel
   Attention:
   Observe min./max. clamping length for tool shanks
6. Measure overall length, deduct 100 mm from the overall length measured with pre-adjustment tool
7. Remove pre-adjustment tool
8. Press in tool using the clamping unit





General Information

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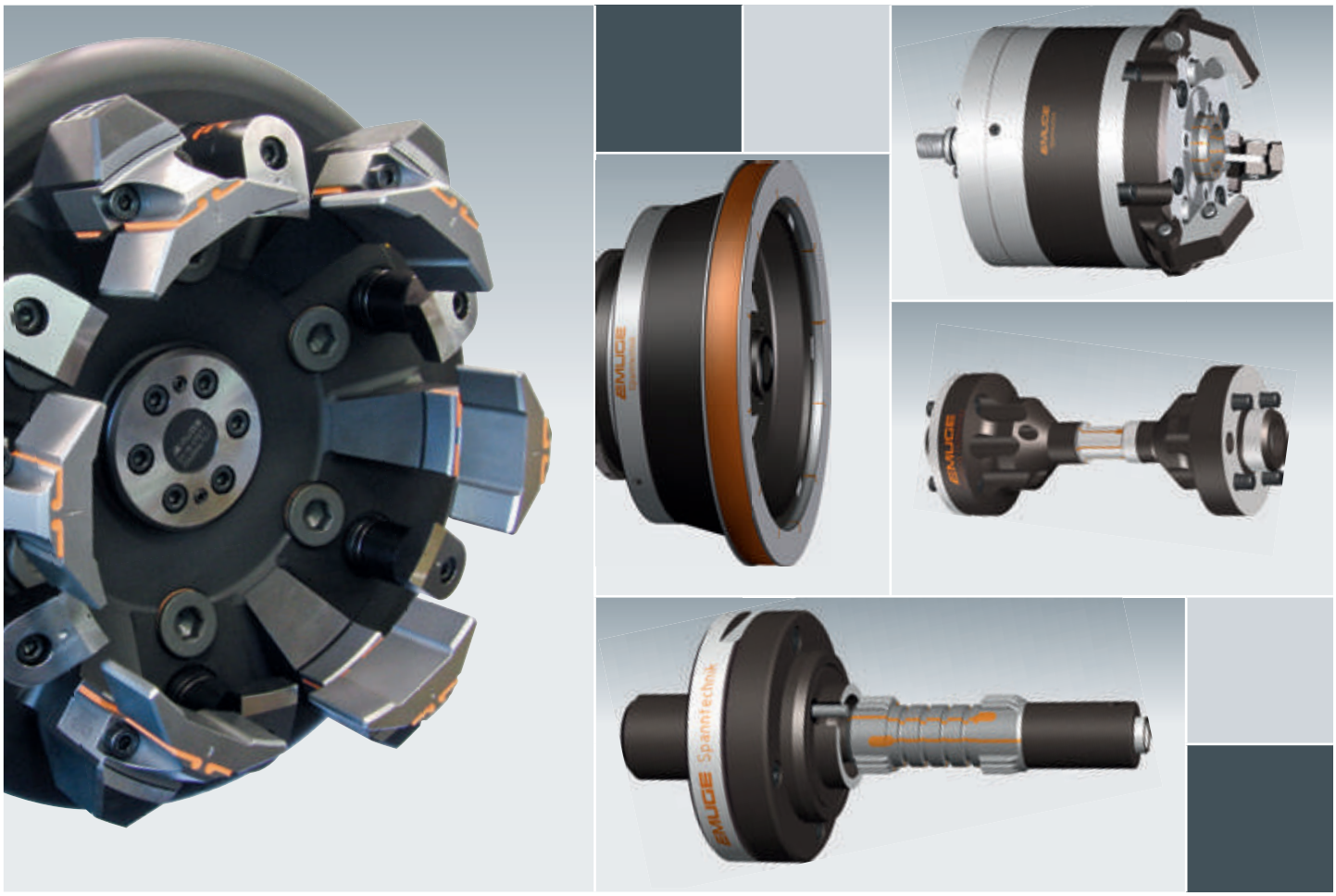
FRANKEN Advanced Milling Technology

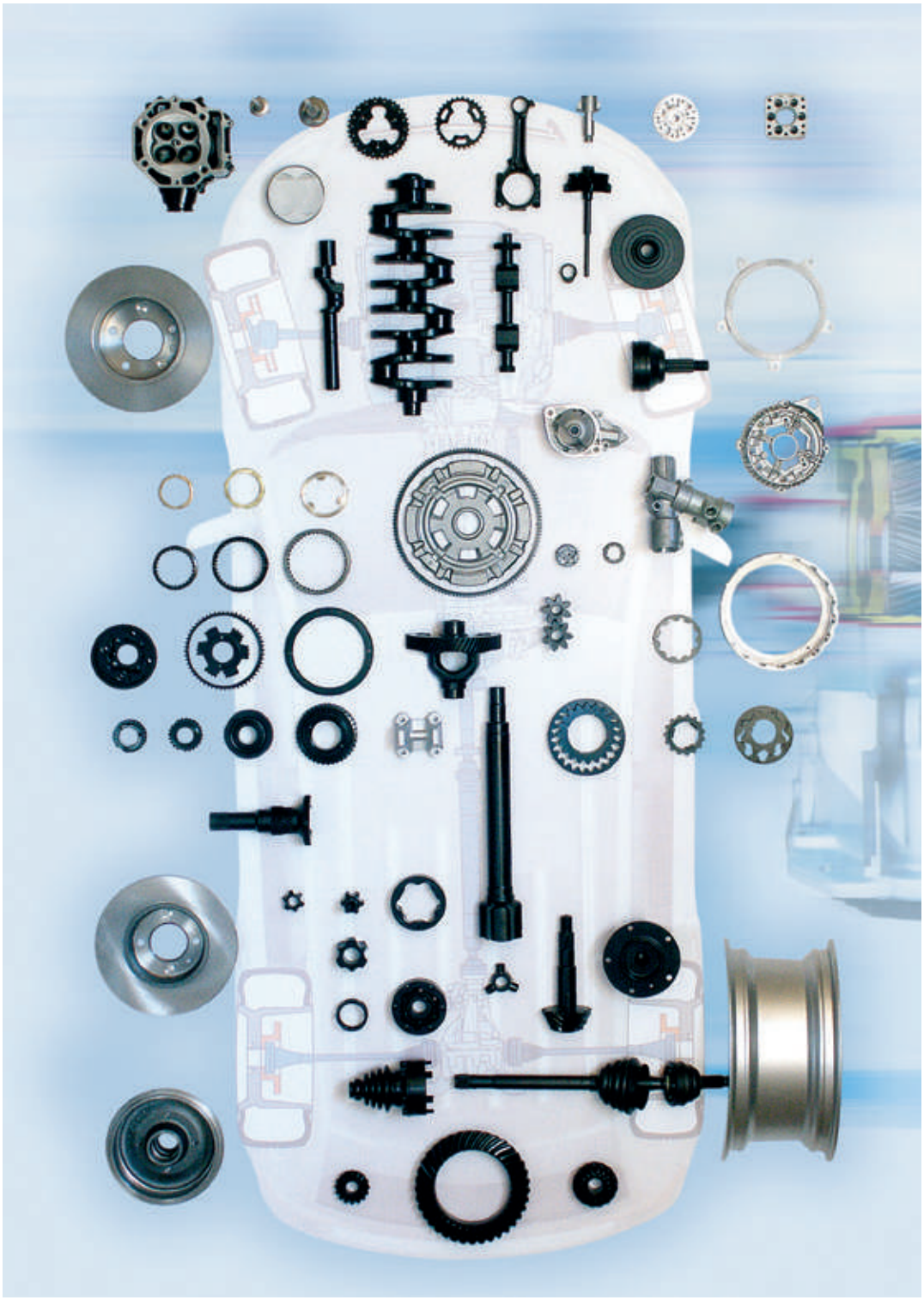
FRANKEN has a 100 year history of milling tool development, and today offers a broad range of solid carbide and HSS milling cutters. The FRANKEN program includes end mills, slot drills, die-sinking cutters, shell end mills, gear cutters and highly sophisticated profile cutters that include “Christmas Tree” cutters used in the manufacture of jet engines and power generation turbines.

In addition, FRANKEN has been at the forefront of process and tooling development in the areas of Hard Machining, High Speed Cutting and High Productivity Cutting. Expertise in these areas enabled FRANKEN to develop a complete program for the Mold & Die Industry that includes extra long solid carbide ball and torus end mills, screw-in and shell type cutters with indexable inserts, as well as a complete line of tool holders and tool holding solutions with the SHRINK-MASTER induction shrink-fit system and the powRgrip® tool clamping system.

With this large variety of tool types, the highest production standards and uncompromising precision, the FRANKEN product range will answer the most unyielding quality requirements.



Workpiece Clamping

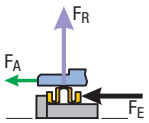
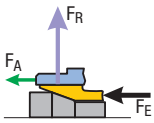
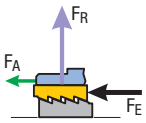
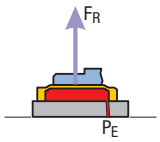
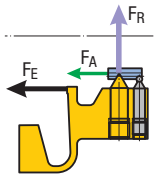


In addition to our collet holders, quick-change holders and tapping attachments, EMUGE also offers **precision clamping tools for workpiece clamping**. The largest part of these clamping tools are designed especially for individual customers' applications, and are, as a consequence, **highly optimized special solutions for specific production processes**. In order to achieve such solutions, it is strictly necessary to analyze all the basic conditions, e.g. machine equipment, precision requirements, details of the production process etc., even in the first planning stage, with a close view to practical work conditions.

System specifications

Workpiece clamping is an essential element of the production process. The largest part of these clamping tools are specially designed for the application case described by the user, which means they are special solutions optimized for the individual production process.
In the development of these clamping tools, all basic conditions like machine equipment, precision requirements and process sequence, must be taken into account with as much regard to practical conditions as possible.

EMUGE, as one of the leading manufacturers of such clamping equipment, uses various clamping principles which we will describe in detail below. The values listed below are only **reference values**.

Features	System SP	SZ	SG	SH	SM
					
System set-up	mechanical	mechanical	mechanical	hydraulic	mechanical
Achievable concentricity	2 µm	4 µm	4 µm	2 µm	4 µm
Max. expansion in reference to clamping diameter	IT7 (11)	IT13	IT13	IT7	0.1 - 0.6 mm
Clamping ranges, workpiece outside diameter	5 - 400 mm	5 - 400 mm	6 - 300 mm	5 - 300 mm	6 - 300 mm
Clamping ranges, workpiece inside diameter	12 - 400 mm	8 - 400 mm	12 - 300 mm	12 - 300 mm	–
Safety function against over-clamping	yes	yes	yes	partially	yes
Wear protection coating possible	yes	yes	yes	yes	yes

F_R = Radial force F_A = Axial force F_E = Application of force P_E = Application of pressure

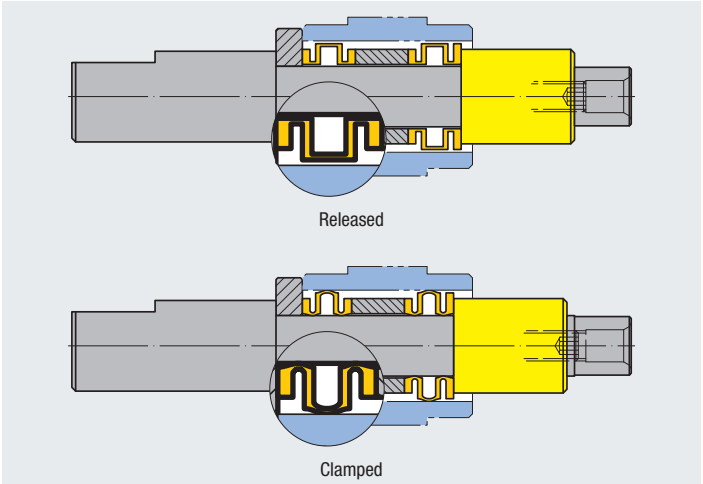
Degree of tolerance	Nominal size range in mm											
	≤ 3	> 3 ≤ 6	> 6 ≤ 10	> 10 ≤ 18	> 18 ≤ 30	> 30 ≤ 50	> 50 ≤ 80	> 80 ≤ 120	> 120 ≤ 180	> 180 ≤ 250	> 250 ≤ 315	> 315 ≤ 400
IT7	10	12	15	18	21	25	30	35	40	46	52	57
IT11	60	75	90	110	130	160	190	220	250	290	320	360
IT13	140	180	220	270	330	390	460	540	630	720	810	890

System SP

By applying an axial force the clamping sleeves move in direction of the force and expand radially. On the one hand this eliminates the clearance between clamping sleeve and body, on the other hand between clamping sleeve and workpiece. The workpiece is being clamped.

Depending on the tolerance of the workpiece, on the design of the clamping tool and of the clamping sleeves the system SP achieves concentricities of ≤ 0.002 mm (corresponding to ≤ 0.0001 inch).

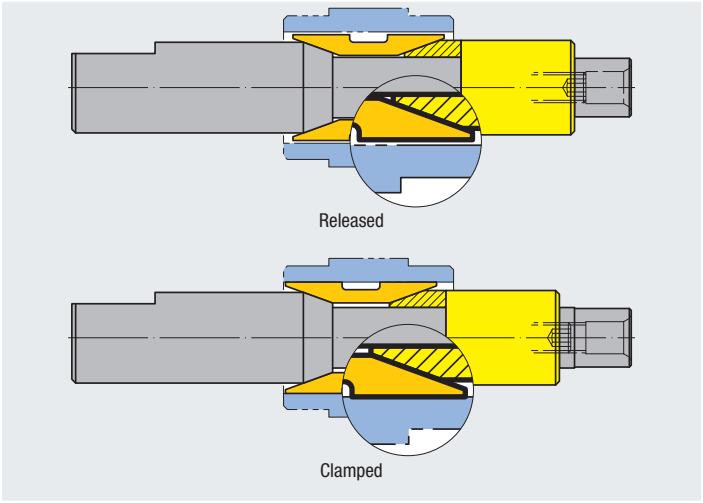
Due to this high precision the system SP is not only used to clamp workpieces, it is also used to clamp tools.



System SZ

If the workpiece to be clamped has only a short clamping base or if the diameter to be clamped has a very large tolerance, system SZ is used.

By applying an axial force a slitted collet is radially expanded by a cone. Simultaneously an axial movement occurs. The workpiece is being clamped.

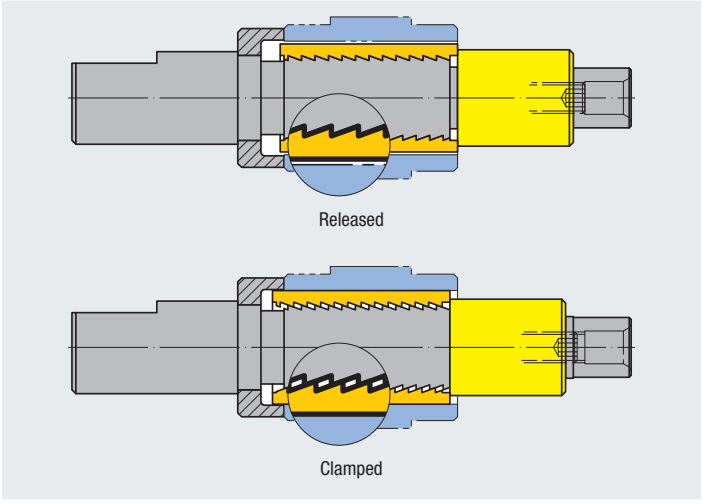


System SG

Depending on the type of design the system SP only allows radial expansion up to tolerance class IT11. To bridge larger tolerances, system SG is used.

This is a slitted clamping bush with a special buttress thread. With this thread the bush is screwed onto the body. By applying an axial force the clamping bush moves in direction of the force. Due to the thread angle there is also a radial expansion. The workpiece is being clamped.

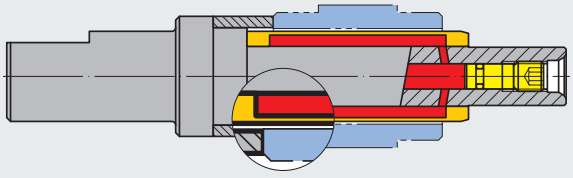
The axial component, which has an effect on the workpiece, increases the transferable torque and the stiffness of the clamping process. Consequently the workpiece is safely clamped even if it is machined with a large depth of cut.



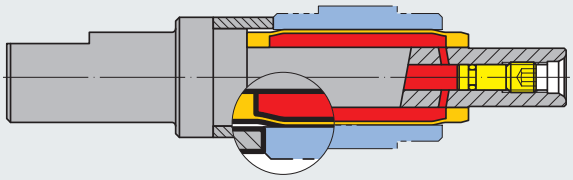
System SH

If there is not enough room for a mechanical clamping system, hydraulic system SH is used. It also allows clamping long, thin-walled workpieces or a number of similar workpieces.

System SH is a closed system filled with hydraulic oil. A force is applied on it with a piston. The hydraulic pressure radially expands the thin-walled clamping zone. The workpiece/the workpieces is/are being clamped.



Released



Clamped

System SM

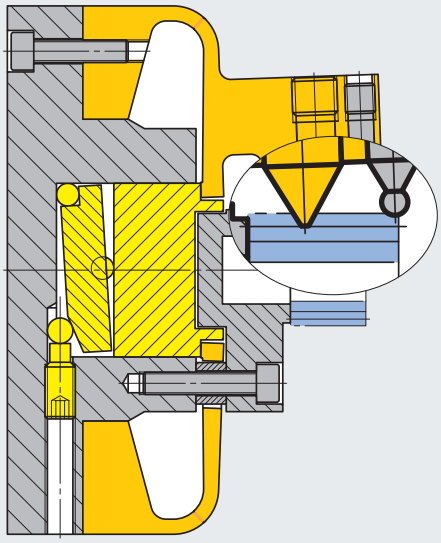
In order to manufacture high precision gear wheels for example, it is very important that the eccentricity between pitch circle and seating bore is very small.

For this purpose the diaphragm clamping system SM is used. For machining the seating bore it allows clamping of the gear wheel at the pitch circle.

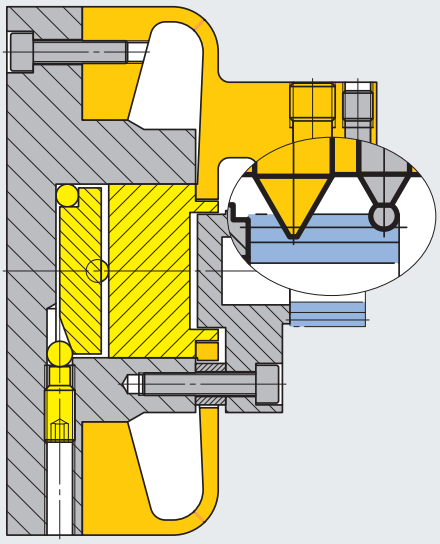
The clamping element is a ring disk with primarily three clamping jaws. If the workpiece is thin-walled the diaphragm can also have four or six clamping jaws. These are either carved out of the diaphragm or they are screwed onto it.

By applying an axial force onto the diaphragm, it bends in direction of the force. The clamping jaws simultaneously move axially and open in radial direction. The gear wheel is being released.

Due to its flexibility the diaphragm returns to its initial position if the axial force is reduced or taken away. The gear wheel is being clamped in axial and radial direction.



Released



Clamped

Special Tap Application Form

Copy and Fax or Mail

EMUGE Corp. · 1800 Century Drive · West Boylston, MA 01583-2121
Phone (508)-595-3600 · Fax (508) 595-3650 · Toll Free (800) 323-3013 · www.emuge.com · emuge@emuge.com

Customer Information

Distributor Name:	**End User Name:**
Contact Person:	**Contact Person:**
City: **State:** **Zip:**	**Street:**
Phone: ( ) **Fax:** ( )	**City:** **State:** **Zip:**
Customer Inquiry Number:	**Phone:** ( ) **Fax:** ( )

Tapping Application

Tap Size:	**Class of Fit:**	☐ **Through Hole**	☐ **Blind Hole**	☐ **Other:**
Material:	**Hardness:**	**Thread Length:**	**Thread Length:**	
Tap Requirement: ☐ **Cutting** ☐ **Forming** ☐ **Either**			**Drill Depth:**	
Number of Taps Required:		**Number of Holes to Tap:**	**Repeat Job:** ☐ **Yes** ☐ **No**	
Machine Tool	**Manufacturer/Type:**		**Direction of Tapping:** ☐ **Horizontal** ☐ **Vertical**	
Feed	☐ **CNC Controlled** ☐ **NC Controlled** ☐ **Synchronous Spindle** ☐ **Cam Followed** ☐ **Lead Screw** ☐ **Manual**			
Tap Holder	☐ **Tension/Compression** ☐ **Rigid (Collet)** ☐ **Floating**		**Tapping Attachment/Type:**	
Lubrication	☐ **Thread Cutting Oil** ☐ **Emulsion %:** ☐ **Dry** ☐ **Other:**			
Method	☐ **Circulation** ☐ **Brush** ☐ **Mist** ☐ **Thru Tap** ☐ **Other:**			

Special Design Specifications

Overall Length:	**Shank Diameter:**
Pitch Diameter: **Min:** _____ **Max:** _____	**Gage Limits:** **Go:** _____ **No Go:** _____

Notes:

Continue notes on separate sheet if necessary

Test-A-Tap Application Form

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Customer Information

Distributor Name:			**End User Name:**		
City:	**State:**	**Zip:**	**Division:**		
Phone: ( )	**Fax:** ( )		**Street:**		
Contact Person:			**City:**	**State:**	**Zip:**
Purchase Order #:			**Phone:** ( )	**Fax:** ( )	
Ship Via:			**Contact Person:**		
End User Reference #:			**EMUGE Customer:** ☐ Yes ☐ No	**Needs Catalogs:** ☐ Yes ☐ No	**Needs Engineer:** ☐ Yes ☐ No

Tapping Application

Tap Size:	**Class of Fit:**	☐ **Through Hole**	☐ **Blind Hole**	☐ **Other:**
Material:	**Hardness:**	**Thread Length:**	**Thread Length:**	
Tap Requirement: ☐ Cutting ☐ Forming ☐ Either		**Lubrication:**	**Drill Depth:**	

Machine Tool Manufacturer/Type:	**Tap Holder Manufacturer/Type:**	**Direction of Tapping:** ☐ Horizontal ☐ Vertical
Number of Taps in Setup:	**Tap Make Presently Used:**	**Performance/Comments:**
Criteria for a Successful Test:		

EMUGE Tap Recommendation

Quantity:	**EDP#:**	**Description:**	**List Price-$/each:**

Speed/SFM:	**Tap Drill Size:**	**Lubrication:**	**Tap Holder:**

EMUGE taps are very free cutting and will easily cut oversize threads if fed out of lead. For the best result, we recommend the use of an EMUGE Quick-Change Tap Holder with built-in tension, compression, and overload clutch features.
Always utilize your holder's tension feature by programming spindle feed to 95-98% of the calculated feed rate.
CALL AN EMUGE ENGINEER AT THE HOTLINE, 800-323-3013, IF YOU NEED TECHNICAL ASSISTANCE.

Test Result: Please Fax a Copy Immediately to EMUGE at (508) 595-3650

Tapped Holes: ☐ Yes ☐ No	**Thread Quality:** ☐ Good ☐ Poor	**Tap Life:** ☐ Long ☐ Short	**Overall Performance:** Scale 1 to 10	**Tap Life:** ☐ Yes ☐ No ☐ Call Me
Comments:				**Name:** **Date:**
				Phone: ( ) **Ext.**

Continue notes on separate sheet if necessary

EMUGE Clamping System Application Form

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Customer Information

Distributor Name:			**End User Name:**		
City:	**State:**	**Zip:**	**Division:**		
Phone: ( )	**Fax:** ( )		**Street:**		
Contact Person:			**City:**	**State:**	**Zip:**
Purchase Order #:	**Date:**		**Phone:** ( )	**Fax:** ( )	
Ship Via:	**To:**		**Contact Person:**		
End User Reference #:	**EMUGE Order #:**		**EMUGE Customer:** ☐ Yes ☐ No	**Needs Catalogs:** ☐ Yes ☐ No	**Needs Engineer:** ☐ Yes ☐ No

Workpiece Data

Drawing No.:		**Title:**	
Material:		**Hardness:**	
Type of Working:	☐ Turning	☐ Grinding	☐ Milling ☐ Control
Operation:	☐ Roughing	☐ Semifinishing	☐ Finishing ☐ Other Operations
Tolerance of Working Diameter:	**Errors:**	☐ Form ☐ Geometrical	☐ T.I.R. ☐ Other

Machine Data

Type of Machine:	**RPM:**	**Spindlenose:**	**Direction of Rotation:** ☐ Left ☐ Right
Power Chucking:	**Force:**	**Manual Chucking:**	
Feed:	**Cut Depth:**	**Speed-RPM:**	
Other Information:			

Clamping Device

Chuck:	**Mandrel:**	**Auto Load:**	**Manual Load:**	**Load Space:**
Clamping Diameter:	**Clamp Length:**	**Max. (Min.) Diameter Opening:**	**Stop:** ☐ Solid ☐ Floating	
Other Information:				

Remarks/Sketch

Continue notes on separate sheet if necessary

Test-A-Holder Application Form

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Customer Information

Distributor Name:			**End User Name:**		
Street:			**Division:**		
City:	**State:**	**Zip:**	**Street:**		
Contact Person:			**City:**	**State:**	**Zip:**
Phone: ( )	**Fax: ( )**		**Contact Person:**		
Purchase Order #:	**Date:**		**Phone: ( )**	**Fax: ( )**	
Ship Via:	**To:**		**EMUGE Customer:** ☐ Yes ☐ No	**Needs Catalogs:** ☐ Yes ☐ No	**Needs Engineer:** ☐ Yes ☐ No
End User Reference #:	**EMUGE Order #:**				

Tapping Application

Tap Size:	**Machine Tool Type & Mgr:**
Class of Fit:	**Spindle Connection:**
Material:	**Tapping Horizontal:**
Hardness:	**Tapping Vertical:**
Through Hole:	**Type of Feed:**
Thread Length:	**Tap Holder Type being Used:**
Blind Hole:	**Number of Holders in Set Up:**
Thread Length:	**Tap Presently Used:**
Drill Depth:	
Cutting Tap:	
Forming Tap:	

Performance Comments:

Criteria for a Successful Test:

EMUGE Tap Holder Recommendation

Quantity:	EDP#:	Description:	List Price-$/each:

EMUGE taps are very free cutting and will easily cut oversize threads if fed out of lead. For the best result, we recommend the use of an EMUGE Quick-Change Tap Holder with built-in tension, compression, and overload clutch features.
Always utilize your holder's tension feature by programming spindle feed to 95-98% of the calculated feed rate.
When using Full-Speed taps, Rigid Tapping use KSN-Softsynchro Tap Holders for best results
CALL AN EMUGE ENGINEER AT THE HOTLINE, 800-323-3013, IF YOU NEED TECHNICAL ASSISTANCE.

Test Result: Please Fax a Copy Immediately to EMUGE at (508) 595-3650

Comments:	**Overall Performance:** Scale 1 to 10	**Additional Testing Required:** ☐ Yes ☐ No ☐ Call Me
		Name: **Date:**
		Phone: **Ext.** ( )

Continue notes on separate sheet if necessary

EMUGE Test-A-Thread Mill Application Form

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Customer Information

Distributor Name:			**End User Name:**		
City:	**State:**	**Zip:**	**Division:**		
Phone: ( )	**Fax:** ( )		**Street:**		
Contact Person:			**City:**	**State:**	**Zip:**
Purchase Order #:	**Date:**		**Phone:** ( )	**Fax:** ( )	
Ship Via:	**To:**		**Contact Person:**		
End User Reference #:	**EMUGE Order #:**		**EMUGE Customer:** ☐ Yes ☐ No	**Needs Catalogs:** ☐ Yes ☐ No	**Needs Engineer:** ☐ Yes ☐ No

Thread Milling Application

Thread Size:	**Pitch:**	**Class of Fit:**	**Hole Type:** ☐ Through ☐ Blind
Material:	**Hardness:**	**Thread Length:**	**Drill Depth:**
Machine Tool Manufacturer:		**Position of Spindle:** ☐ Vertical ☐ Horizontal	
Maximum RPM of Spindle:		**Type of Controller:**	
Coolant System: ☐ Through Spindle ☐ External		**Type of Shank Connection:**	

EMUGE Recommendation

Quantity:	EDP#:	Description:	List Price-$/each:

CALL EMUGE's THREAD MILLING DEPARTMENT IF YOU NEED TECHNICAL ASSISTANCE.

Remarks/Sketch

Continue notes on separate sheet if necessary

Test-A-Tool Mill Application Form

Copy and Fax or Mail

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Customer Information

Distributor Name:			**End User Name:**		
City:	**State:**	**Zip:**	**Division:**		
Phone: ( )	**Fax:** ( )		**Street:**		
Contact Person:			**City:**	**State:**	**Zip:**
Purchase Order #:	**Date:**		**Phone:** ( )	**Fax:** ( )	
Ship Via:	**To:**		**Contact Person:**		
End User Reference #:	**EMUGE Order #:**		**EMUGE Customer:** ☐ Yes ☐ No	**Needs Catalogs:** ☐ Yes ☐ No	**Needs Engineer:** ☐ Yes ☐ No

Mold Milling Application

Machine Type:	**Year of Manufacture:**	**Control Type:**	
Maximum RPM of Spindle:	**Maximum Feed Rate:**	**Material:**	**Hardness:**
Minimum RPM of Spindle:	**Minimum Feed Rate:**	**Tool Holding System:**	**Programming Method:**

Test Criteria

Please detail what factors will contitute a successful test:

Test Tools Recommended

Tool Recommendation: | **Recommended Cutting Parameters:** ☐ Inches ☐ Metric

Quantity:	EDP#:	Description:	Speed (RPM):	Feed (mm/min):	SFM (m/min):	Depth of Cut:	Chip per tooth:

A		
A0181000	Rc (BSPT)	117
AU100501	UNC	36
AU100501	UNF	52
AU109101	UNC	36
AU109101	UNF	52
AU110501	M	81
AU110501	MF	97
AU110601	M	81
AU110601	MF	97
AU203000	M	81
AU203000	MF	97
AU203000	UNC	34
AU203000	UNF	50
AU203010	UNC “3B”	34
AU203010	UNF “3B”	50
AU203043	UNC “+.0035”	34
AU203043	UNF “+.0035”	50
AU203044	UNC “+.0050”	34
AU203044	UNF “+.0050”	50
AU208400	M	80
AU208400	MF	96
AU208400	UNC	34
AU208400	UNF	50
AU306001	UNC	35
AU306001	UNF	51
AU306011	UNC “3BX”	35
AU306011	UNF “3BX”	51
AU456001	UNC	35
AU456001	UNF	51
AU456011	UNC “3BX”	35
AU456011	UNF “3BX”	51
AU461000	M	80
AU461000	MF	96
AU461400	M	80
AU461400	MF	96
AU501400	M	80
AU501400	MF	96
AU503000	M	81
AU503000	MF	97
AU503200	UNC	35
AU503200	UNF	51
AU503210	UNC “3B”	35
AU503210	UNF “3B”	51
AU503243	UNC “+.0035”	35
AU503243	UNF “+.0035”	51
AU503244	UNC “+.0050”	35
AU503244	UNF “+.0050”	51
AU513500	UNC	37
AU513500	UNF	53
AU513510	UNC “3B”	37
AU513510	UNF “3B”	53
AU513700	M	81
AU513700	UNC	37
AU513700	UNF	53
AU513710	UNC “3B”	37
AU513710	UNF “3B”	53
AU921400	M	188
AU921400	UNC	175
AU921400	UNF	181
AW181000	NPT	109
AW181000	NPTF	113
AW181400	NPT	109
AW181400	NPTF	113
AW193000	NPT	109
AW193000	NPTF	113
AW193100	NPT	109
AW193100	NPTF	113
AW483000	NPT	110
AW483000	NPTF	114
AW483100	NPT	110
AW483100	NPTF	114
AW493000	NPT	110
AW493000	NPTF	114
AW493100	NPT	110
AW493100	NPTF	114
AW79J400	NPT	111
AW79J400	NPTF	115
AW889300	NPT	110
AW889300	NPTF	114

B		
B0100501	M	67
B0100501	MF	85
B0102000	LK-M	129
B0109101	M	67
B0109401	M	70
B010J901	G	101
B010J901	M	68
B010J901	MF	86
B010K101	G	101
B010K101	M	69
B010K101	MF	87
B010R501	M	62
B0119401	M	70
B011R501	M	63
B016K101	G	101
B016K101	M	69
B016K101	MF	87
B0203000	LK-M	129
B0203000	STI-M	124
B0203020	M “ISO 3/6G”	61
B0203030	M “7G”	61
B0203100	LK-M	129
B0208400	M	59
B0208400	MF	82
B0208900	M	59
B0208900	MF	82
B0208920	M “ISO 3/6G”	59
B0208930	M “7G”	59
B0208950	M-LH	60
B0208F01	M	71
B0208F01	MF	89
B0208F21	M “6GX”	71
B020A601	M	71
B020A601	MF	89
B020A621	M “6GX”	71
B020C300	M	61
B020C300	STI-M	124
B020K500	M	59
B020S800	M	63
B020S800	STI-M	124
B0306001	M	65
B0309601	M	65
B030J401	M	66
B040V401	M	66
B0453701	M	72
B0456001	M	65
B0459601	M	65
B0461400	M	60
B046L801	M	65
B0501000	M	60
B0501000	MF	83
B0501020	M “ISO 3/6G”	60
B0501030	M “7G”	61
B0501050	M-LH	61
B0501400	M	60
B0501400	MF	83
B0501420	M “ISO 3/6G”	61
B0501430	M “7G”	61
B0503000	M	62
B0503200	M	62
B0503200	MF	83
B0503500	M	72
B0503500	STI-M	125
B0503700	M	73
B050C300	M	62
B050C300	MF	83
B050C400	M	73
B050S800	M	63
B050S800	STI-M	124
B0513500	LK-M	130
B0513500	M	73
B0513500	MF	90
B0513500	STI-M	125
B0513700	M	73
B0513700	MF	90
B0513720	M “ISO 3/6G”	73
B0513720	MF “ISO 3/6G”	91
B051C400	M	73
B051C400	STI-M	125
B051S800	M	64
B0911000	M	182
B0911400	LK-M	197
B0911400	M	182
B0911400	MF	190
B0921000	M	182
B0921400	LK-M	197
B0921400	M	182
B0921400	MF	190
B0963701	M	72
B0973700	M	73
B0989501	M	64
B098Q801	M	65
B099C400	M	73
B1069101	M	67
B1069401	M	70
B106R501	M	63
B1088F01	M	71
B1088F21	M “6GX”	71
B108A601	M	71
B108A621	M “6GX”	71
B1099501	M	64
B109R501	M	63
B1577300	M	221
B1579300	M	221
B1667300	M	222
B1950901	M	67
B1950901	MF	85
B1959101	M	67
B1959401	M	70
B195R501	M	63
B1969401	M	70
B1969501	M	64
B196R501	M	63
B1970100	M	182
B2100501	M	79
B2203000	M	79
B2208900	M	78
B220C300	M	79
B2461000	M	78
B2501000	M	78
B2503000	M	79
B250C300	M	79
B3159401	M	74
B3169401	M	74
B3179401	M	74
B3189401	M	74
B3208F01	M	75
B3258F01	M	75
B3600F01	M	75
B3650F01	M	75
B4053701	M	72
B4253701	M	72
B438J401	M	66
B4933200	M	221
B4939300	M	221
B5059500	M	187
B5059500	MF	191
B505Q800	M	187
B505Q800	MF	191
B5216F00	M	183
B5217F00	M	183
B521Q200	M	184
B521W700	M	185
B521Y700	M	184
B521Z700	M	185
B521Z700	MF	191
B5236F00	M	183
B5237F00	M	183
B523Q200	M	185
B523W700	M	185
B523Y700	M	184
B523Z700	M	185
B523Z700	MF	191
B523Z800	M	186
B5296A00	M	183
B5316A00	M	183
B5317F00	M	183
B531Q200	M	185

B531Y700	M	184
B531Z700	M	186
B531Z800	M	186
B5863200	M	222
B5991400	M	225
B5999000	M	225
BU088F01	UNC	28
BU088F01	UNF	44
BU089300	UNC	23
BU089300	UNF	39
BU100501	UNC	26
BU100501	UNF	42
BU109101	UNC	26
BU109101	UNF	42
BU109401	UNC	27
BU109401	UNF	43
BU10J901	UNC	27
BU10J901	UNF	43
BU203010	STI-UNC “3B”	119
BU203010	STI-UNF “3B”	121
BU206511	UNC “3BX”	25
BU206511	UNF “3BX”	41
BU208400	UNC	22
BU208400	UNF	38
BU208900	LK-UNC	126
BU208F01	UNC	28
BU208F01	UNF	44
BU20A600	LK-UNC	127
BU20A600	LK-UNF	128
BU20A601	UNC	28
BU20A601	UNF	44
BU20A611	UNC “3BX”	28
BU20A611	UNF “3BX”	44
BU20C300	UNC	23
BU20C300	UNF	39
BU20C310	STI-UNC “3B”	119
BU20C310	STI-UNF “3B”	121
BU20C310	UNC “3B”	23
BU20C310	UNF “3B”	39
BU20C343	UNC “+.0035”	23
BU20C343	UNF “+.0035”	39
BU20C344	UNC “+.0050”	23
BU20C344	UNF “+.0050”	39
BU20S800	UNC	24
BU20S800	UNF	40
BU20S810	STI-UNC “3B”	119
BU20S810	STI-UNF “3B”	121
BU219401	UNC	27
BU219401	UNF	43
BU263701	UNC	31
BU263701	UNF	47
BU293701	UNC	32
BU293701	UNF	48
BU306001	UNC	25
BU306001	UNF	41
BU306011	UNC “3BX”	25
BU306011	UNF “3BX”	41
BU309600	LK-UNC	126
BU309611	UNC “3BX”	25
BU309611	UNF “3BX”	41
BU30J411	UNC “3BX”	26
BU30J411	UNF “3BX”	42
BU35J411	STI-UNF “3BX”	122
BU35J411	UNC “3BX”	26
BU35J411	UNF “3BX”	42
BU376F00	UNC	171
BU376F00	UNF	177
BU377F00	UNC	171
BU377F00	UNF	177
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BU37Q200	UNF	178
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BU37Z700	UNC	173
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BU38Z800	UNC	174
BU38Z800	UNF	180
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BU396A00	UNF	177
BU39Z700	UNC	174
BU39Z700	UNF	179
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BU446A00	UNF	177
BU446F00	UNC	171
BU447F00	UNC	171
BU447F00	UNF	177
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BU44Q200	UNF	179
BU44Y700	UNC	172
BU44Y700	UNF	178
BU44Z700	UNC	174
BU44Z700	UNF	180
BU44Z800	UNC	174
BU44Z800	UNF	180
BU451400	UNC	22
BU451400	UNF	38
BU453701	UNC	28
BU453701	UNF	44
BU456001	UNC	25
BU456001	UNF	41
BU456011	STI-UNC “3BX”	120
BU456011	STI-UNF “3BX”	122
BU456011	UNC “3BX”	25
BU456011	UNF “3BX”	41
BU459600	LK-UNC	126
BU459611	UNC “3BX”	25
BU459611	UNF “3BX”	41
BU497300	M	220
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BU497300	UNF	218
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BU499300	UNC	216
BU499300	UNF	218
BU501000	UNC	22
BU501000	UNF	38
BU501010	UNC “3B”	22
BU501010	UNF “3B”	38
BU503200	UNC	23
BU503200	UNF	39
BU503210	UNC “3B”	23
BU503210	UNF “3B”	39
BU50C300	UNC	23
BU50C300	UNF	39
BU50C310	UNC “3B”	23
BU50C310	UNF “3B”	39
BU50C343	UNC “+.0035”	24
BU50C343	UNF “+.0035”	40
BU50C344	UNC “+.0050”	24
BU50C344	UNF “+.0050”	40
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BU50S800	UNF	40
BU50S810	UNC “3B”	24
BU50S810	UNF “3B”	40
BU513500	LK-UNC	127
BU513500	UNC	29
BU513500	UNF	45
BU513510	STI-UNC “3B”	120
BU513510	STI-UNF “3B”	123
BU513700	UNC	29
BU513700	UNF	45
BU513710	STI-UNC “3B”	120
BU513710	STI-UNF “3B”	123
BU519400	UNC	30
BU519400	UNF	46
BU51C400	LK-UNC	127
BU51C400	LK-UNF	128
BU51C400	UNC	30
BU51C400	UNF	46
BU51C410	STI-UNC “3B”	120
BU51C410	STI-UNF “3B”	123
BU51C410	UNC “3B”	30
BU51C410	UNF “3B”	46
BU51S810	STI-UNC “3B”	119
BU51S810	STI-UNF “3B”	121
BU523701	UNC	29
BU523701	UNF	45
BU533200	M	220
BU533200	UNC	216
BU533200	UNF	218
BU539300	M	220
BU539300	UNC	216
BU539300	UNF	218
BU573701	UNC	29
BU573701	UNF	45
BU591410	UNC “3BX”	223
BU591410	UNF “3BX”	224
BU599010	UNC “3BX”	223
BU599010	UNF “3BX”	224
BU783200	UNC	217
BU783200	UNF	219
BU797300	UNC	217
BU797300	UNF	219
BU921000	UNC	170
BU921000	UNF	176
BU921400	UNC	170
BU921400	UNF	176
BU929000	STI-UNC	193
BU929000	STI-UNF	194
BU92F000	UNC	173
BU92F000	UNF	179
BU931400	LK-UNC	195
BU931400	LK-UNF	196
BU931400	UNC	170
BU931400	UNF	176
BU939000	UNC	170
BU939000	UNF	176
BU94C400	UNC	29
BU94C400	UNF	45
BU959101	UNC	27
BU959101	UNF	43
BU959401	UNC	27
BU959401	UNF	43
BU969401	UNC	27
BU969401	UNF	43
BU973701	UNC	29
BU973701	UNF	45
BU979000	UNC	22
BU979000	UNF	38
BU999400	UNC	30
BU999400	UNF	46
BU99C400	UNC	30
BU99C400	UNF	46
BU99C410	UNC “3B”	31
BU99C410	UNF “3B”	47
BW10F000	UNC	173
BW10F000	UNF	179
BW138F01	UNC	31
BW138F01	UNF	47
BW159401	UNC	31
BW159401	UNF	47
BW169401	UNC	31
BW169401	UNF	47
BW179401	UNC	31
BW179401	UNF	47
BW208F01	UNC	31
BW208F01	UNF	47
BW553700	UNC	32
BW553700	UNF	48
BW921400	UNC	170
BW921400	UNF	176
BW92F000	UNC	173
BW92F000	UNF	179

C

C0100501	G	103
C0100501	M	67
C0100501	MF	85
C0101001	G	102
C0101001	NPSF	99
C0101001	NPSM / NPSC	98
C0101001	Rp (BSPP)	100
C0101001	UNEF	54

C0102000	LK-M	129
C0109101	G	103
C0109101	M	67
C0109101	MF	85
C0109401	M	70
C0109401	MF	88
C010J901	G	104
C010J901	M	68
C010J901	MF	86
C010R501	M	62
C010R501	MF	84
C0119401	M	70
C0119401	MF	88
C011R501	M	63
C011R501	MF	84
C0183000	Rc (BSPT)	116
C0203000	G	103
C0203000	LK-M	129
C0203000	STI-M	124
C0203020	M “ISO 3/6G”	61
C0203030	M “7G”	61
C0203100	LK-M	129
C0208400	G	102
C0208400	M	59
C0208400	MF	82
C0208900	G	102
C0208900	M	59
C0208900	MF	82
C0208900	UNEF	54
C0208920	M “ISO 3/6G”	59
C0208920	MF “ISO 3/6G”	82
C0208930	M “7G”	59
C0208950	M-LH	60
C0208950	MF-LH	82
C0208F01	M	71
C0208F01	MF	89
C0208F21	M “6GX”	71
C020A601	M	71
C020A601	MF	89
C020A621	M “6GX”	71
C020C300	M	61
C020C300	MF	83
C020C300	STI-M	124
C020S800	M	63
C020S800	STI-M	124
C0306001	M	65
C0309601	M	65
C030J401	M	66
C0451000	G	102
C0451400	MF	82
C0453701	M	72
C0453701	MF	89
C0456001	M	65
C0459601	M	65
C0461000	G	102
C0461000	UNEF	54
C0461400	M	60
C0461400	MF	83
C0501000	G	103
C0501000	M	60
C0501000	MF	83
C0501000	UNEF	54
C0501020	M “ISO 3/6G”	60
C0501030	M “7G”	61
C0501050	M-LH	61
C0501050	MF-LH	83
C0501400	G	103
C0501400	M	60
C0501400	MF	83
C0501420	M “ISO 3/6G”	61
C0501430	M “7G”	61
C0503000	M	62
C0503200	M	62
C0503200	MF	83
C0503500	M	72
C0503500	STI-M	125
C0503700	M	73
C050C300	G	103
C050C300	MF	83
C050C400	M	73
C050S800	M	63
C0513500	G	105
C0513500	LK-M	130
C0513500	M	73
C0513500	MF	90
C0513500	NPSF	99
C0513500	NPSM / NPSC	98
C0513500	Rp (BSPP)	100
C0513500	STI-M	125
C0513700	G	105
C0513700	M	73
C0513700	MF	90
C0513700	NPSF	99
C0513700	NPSM / NPSC	98
C0513700	Rp (BSPP)	100
C0513720	M “ISO 3/6G”	73
C0513720	MF “ISO 3/6G”	91
C051C400	M	73
C051C400	MF	90
C051C400	STI-M	125
C0539401	M	77
C0539401	MF	95
C0803001	G	106
C0803001	M	76
C0803001	MF	93-94
C0911400	G	192
C0911400	M	182
C0911400	MF	190
C0921400	G	192
C0921400	M	182
C0921400	MF	190
C0963701	M	72
C0963701	MF	89
C0973700	M	73
C0973700	MF	90
C0983701	MF	89
C099C400	M	73
C1069101	M	67
C1069101	MF	85
C1069401	MF	88
C106R501	M	63
C106R501	MF	84
C1088F01	M	71
C1088F01	MF	89
C1088F21	M “6GX”	71
C108A601	M	71
C108A601	MF	89
C108A621	M “6GX”	71
C109R501	M	63
C109R501	MF	85
C1577300	M	221
C1579300	M	221
C1667300	M	222
C1950901	M	67
C1950901	MF	85
C1959101	M	67
C1959101	MF	85
C1959401	M	70
C1959401	MF	88
C195R501	M	63
C195R501	MF	84
C1960901	G	104
C1969401	M	70
C1969401	MF	88
C196R501	M	63
C196R501	MF	84
C2100501	M	79
C2203000	M	79
C2208900	M	78
C220C300	M	79
C2461000	M	78
C2501000	M	78
C2503000	M	79
C3159401	M	74
C3159401	MF	91
C3169401	M	74
C3169401	MF	91
C3179401	MF	91
C3189401	MF	91
C3208F01	M	75
C3208F01	MF	91
C3258F01	MF	91
C3600F01	M	75
C3600F01	MF	92
C3650F01	M	75
C3650F01	MF	92
C4053701	M	72
C4053701	MF	90
C4063701	M	77
C4063701	MF	95
C4253701	M	72
C4253701	MF	89
C4283701	M	77
C4283701	MF	95
C438J401	M	66
C4933200	M	221
C4939300	M	221
C5059500	M	187
C5059500	MF	191
C505Q800	M	187
C505Q800	MF	191
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C5216F00	MF	191
C5217F00	M	183
C5217F00	MF	190
C521W700	M	185
C521Z700	G	192
C521Z700	M	185
C521Z700	MF	191
C5236F00	M	183
C5236F00	MF	191
C5237F00	M	183
C5237F00	MF	190
C523W700	M	185
C523Z700	G	192
C523Z700	M	185
C523Z700	MF	191
C5317F00	M	183
C5317F00	MF	190
C531Z700	M	186
C5863200	M	222
CU031410	UNC “3BX”	223
CU031410	UNF “3BX”	224
CU039010	UNC “3BX”	223
CU039010	UNF “3BX”	224
CU088F01	UNC	28
CU088F01	UNF	44
CU089300	UNC	23
CU089300	UNF	39
CU100501	UN-8	56
CU100501	UNC	26
CU100501	UNF	42
CU109101	UNC	26
CU109101	UNF	42
CU109401	UNC	27
CU109401	UNF	43
CU10J901	UNC	27
CU10J901	UNF	43
CU203010	STI-UNC “3B”	119
CU203010	STI-UNF “3B”	121
CU206511	UNC “3BX”	25
CU206511	UNF “3BX”	41
CU208400	UNC	22
CU208400	UNF	38
CU208900	LK-UNC	126
CU208F01	UNC	28
CU208F01	UNF	44
CU209300	UN-8	55
CU20A600	LK-UNC	127
CU20A600	LK-UNF	128
CU20A601	UNC	28
CU20A601	UNF	44
CU20A611	UNC “3BX”	28
CU20A611	UNF “3BX”	44
CU20C300	UN-8	55
CU20C300	UNC	23
CU20C300	UNF	39
CU20C310	STI-UNC “3B”	119
CU20C310	STI-UNF “3B”	121
CU20C310	UNC “3B”	23
CU20C310	UNF “3B”	39
CU20C344	UNC “+.0050”	23
CU20C344	UNF “+.0050”	39
CU20S800	UNC	24

CU20S800	UNF	40
CU20S810	STI-UNC “3B”	119
CU20S810	STI-UNF “3B”	121
CU219401	UNC	27
CU219401	UNF	43
CU263701	UNC	31
CU263701	UNF	47
CU293701	UNC	32
CU293701	UNF	48
CU306001	UNC	25
CU306001	UNF	41
CU306011	UNC “3BX”	25
CU306011	UNF “3BX”	41
CU309600	LK-UNC	126
CU309611	UNC “3BX”	25
CU309611	UNF “3BX”	41
CU30J411	UNC “3BX”	26
CU30J411	UNF “3BX”	42
CU35J411	STI-UNF “3BX”	122
CU35J411	UNC “3BX”	26
CU35J411	UNF “3BX”	42
CU376F00	UNC	171
CU376F00	UNF	177
CU377F00	UNC	171
CU377F00	UNF	177
CU37Q200	UNC	173
CU37Q200	UNF	178
CU37Y700	UNC	172
CU37Y700	UNF	178
CU37Z700	UNC	173
CU37Z700	UNF	179
CU386F00	UNC	171
CU386F00	UNF	177
CU387F00	UNC	171
CU387F00	UNF	177
CU38Q200	UNC	173
CU38Q200	UNF	178
CU38Z700	UNC	174
CU38Z700	UNF	179
CU396A00	UNC	171
CU396A00	UNF	177
CU39Z700	UNC	174
CU39Z700	UNF	179
CU446A00	UNC	172
CU446A00	UNF	177
CU446F00	UNC	171
CU447F00	UNF	177
CU44Q200	UNC	173
CU44Q200	UNF	179
CU44Y700	UNC	172
CU44Y700	UNF	178
CU44Z700	UNC	174
CU44Z700	UNF	180
CU451400	UNC	22
CU451400	UNF	38
CU453701	UNC	28
CU453701	UNF	44
CU456001	UN-8	56
CU456001	UNC	25
CU456001	UNF	41
CU456011	STI-UNC “3BX”	120
CU456011	STI-UNF “3BX”	122
CU456011	UNC “3BX”	25
CU456011	UNF “3BX”	41
CU459600	LK-UNC	126
CU459611	UNC “3BX”	25
CU459611	UNF “3BX”	41
CU497300	M	220
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CU497300	UNF	218
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CU499300	UNC	216
CU499300	UNF	218
CU501000	UNC	22
CU501000	UNF	38
CU501010	UNC “3B”	22
CU501010	UNF “3B”	38
CU503200	UN-8	55
CU503200	UNC	23
CU503200	UNF	39
CU503210	UN-8 “3B”	55
CU503210	UNC “3B”	23
CU503210	UNF “3B”	39
CU503700	UN-8	57
CU503700	UNC	29
CU503700	UNF	45
CU50C300	UNC	23
CU50C300	UNF	39
CU50C310	UN-8 “3B”	55
CU50C310	UNC “3B”	23
CU50C310	UNF “3B”	39
CU50C344	UNC “+.0050”	24
CU50C344	UNF “+.0050”	40
CU50C400	UN-8	57
CU50C400	UNC	29
CU50C400	UNF	45
CU50S800	UNC	24
CU50S800	UNF	40
CU50S810	UNC “3B”	24
CU50S810	UNF “3B”	40
CU513500	LK-UNC	127
CU513500	UNC	29
CU513500	UNF	45
CU513510	STI-UNC “3B”	120
CU513510	STI-UNF “3B”	123
CU513700	UNC	29
CU513700	UNF	45
CU513710	STI-UNC “3B”	120
CU513710	STI-UNF “3B”	123
CU519400	UNC	30
CU519400	UNF	46
CU51C400	LK-UNC	127
CU51C400	LK-UNF	128
CU51C400	UNC	30
CU51C400	UNF	46
CU51C410	STI-UNC “3B”	120
CU51C410	STI-UNF “3B”	123
CU51C410	UNC “3B”	30
CU51C410	UNF “3B”	46
CU51S810	STI-UNC “3B”	119
CU51S810	STI-UNF “3B”	121
CU533200	M	220
CU533200	UNC	216
CU533200	UNF	218
CU539300	M	220
CU539300	UNC	216
CU539300	UNF	218
CU573701	UN-8	57
CU573701	UNC	29
CU573701	UNF	45
CU583701	UN-8	57
CU583701	UNC	29
CU583701	UNF	45
CU783200	UNC	217
CU783200	UNF	219
CU797300	UNC	217
CU797300	UNF	219
CU803011	UN-8 “3BX”	58
CU803011	UNC “3BX”	33
CU803011	UNF “3BX”	49
CU921000	UNC	170
CU921000	UNF	176
CU921400	UNC	170
CU921400	UNF	176
CU929000	STI-UNC	193
CU929000	STI-UNF	194
CU92F000	UNC	173
CU92F000	UNF	179
CU931400	LK-UNC	195
CU931400	LK-UNF	196
CU94C400	UNC	29
CU94C400	UNF	45
CU959101	UNC	27
CU959101	UNF	43
CU959401	UNC	27
CU959401	UNF	43
CU969401	UNC	27
CU969401	UNF	43
CU973701	UNC	29
CU973701	UNF	45
CU979000	UNC	22
CU979000	UNF	38
CU999400	UNC	30
CU999400	UNF	46
CU99C400	UNC	30
CU99C400	UNF	46
CU99C410	UNC “3B”	31
CU99C410	UNF “3B”	47
CW10F000	UNC	173
CW10F000	UNF	179
CW138F01	UNC	31
CW138F01	UNF	47
CW159401	UNC	31
CW159401	UNF	47
CW169401	UNC	31
CW169401	UNF	47
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Warranty

EMUGE Corp. warrants to original equipment manufacturers, distributors and industrial users of its products that each new product manufactured or supplied by EMUGE Corp. shall be free from defects in material and workmanship. EMUGE Corp.'s obligation under this warranty is limited to furnishing without additional charge a replacement, or at its option, repairing or issuing credit for any product which shall within one year from the date of sale be returned freight prepaid to the location designated by an EMUGE Corp. representative and which upon inspection is determined by EMUGE Corp. to be defective in materials or workmanship. Complete information as to operating conditions, machine setup, and application of cutting fluid should accompany any product returned for inspection. The provisions of this warranty shall not apply to any EMUGE Corp. product which has been subjected to misuse, improper operation conditions, machine setup or application of cutting fluid or which has been repaired or altered if such repair or alteration in the judgment of EMUGE Corp. would adversely affect performance of the product. This warranty is in lieu of all other warranties, express or implied, including any implied warranty of merchantability or fitness for a particular purpose. EMUGE Corp. shall have no liability or responsibility on any claim of any kind, whether in contract, tort or otherwise, for any loss or damaging arising out of, connected with, or resulting from the manufacture, sale, delivery or sue of any product sold hereunder, in excess of the cost of replacement or repair as provided herein. In no event shall EMUGE Corp. be liable for any special, incidental or consequential damages. EMUGE Corp. makes no other warranty, express or implied, except as set forth above, and EMUGE Corp. neither assumes nor authorized any other person or entity to assume for it any other obligation or liability in connection with any of its products.

Warning

- Any cutting tool may break or shatter if improperly used. Government regulations require use of safety glasses and other appropriate safety equipment at all times in the vicinity of use.
- Grinding of taps or dies may produce hazardous dust and should only be done under established safety guidelines.
- Tapping fluids may contain hazardous materials. Always consult the appropriate material safety data sheets before the use of any EMUGE products.

Notice

Because we are constantly engaged in a program of product improvement, tool specifications are subject to change at any time. All EMUGE Corp. terms and conditions are subject to change without notice.

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