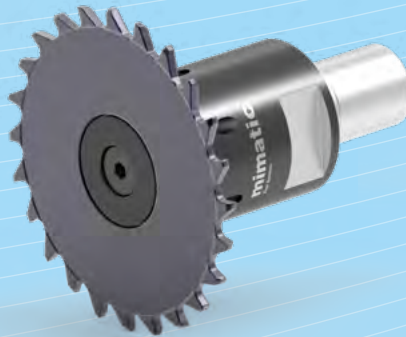
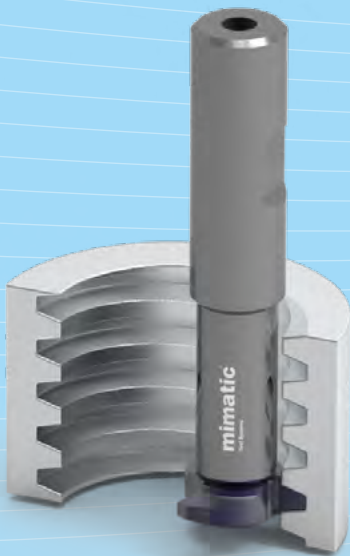


Your Partner For Clever Tooling

Cutting Tools

- Thread milling
- Groove milling
- Gear milling
- Contour and radius milling
- Dovetail milling
- Sawing, cutting, slitting
- etc.



mimatic® GmbH

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 www.mimatic.de

Our Company



Milling

Thread Milling

Extended
program

14-63

1

Face Finish Milling

64-69

2

Notch Impact Test

70-75

3

Gear Milling

76-81

4

Slot Milling
Keyway MillingExtended
program82-
109

5

Contour and Radius Milling
Chamfering, Deburring,
undercut, dovetailExtended
program110-
125

6

Sawing, Slitting

Sawing, Cutting, Slitting

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7

Bore Machining

Reaming

144-
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8

Axial Grooving

Axial Grooving, adjustable

152-
157

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Special Tools

Special- and Combination Tools

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163

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11

Tool Systems for Highest Demands

Since 1974, we have been developing and producing cutting tools and driven tools for CNC machine tools. Our products are used in various fields of application for the machining industry for customers of the automotive industry, automotive suppliers, electrical engineering, vehicle construction, foundries, mechanical engineering and medical technology.

The Allgäu region of Bavaria reputation reaches beyond its borders, because of its natural beauty, undisturbed nature and idyllic landscapes. It is also well known for its industrial power and innovative thinking in toolmaking and mechanical engineering. Our location in the Allgäu has a powerful production with all facilities of a modern industrial enterprise.





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Production
Sales
Service



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Sales
Service



Certificates



DIN EN ISO 9001 : 2015



AEO F Authorized Economic Operator

Products

Cutting Tools



Live Tools for
Turning Machines



Angle Heads for
Milling Machines

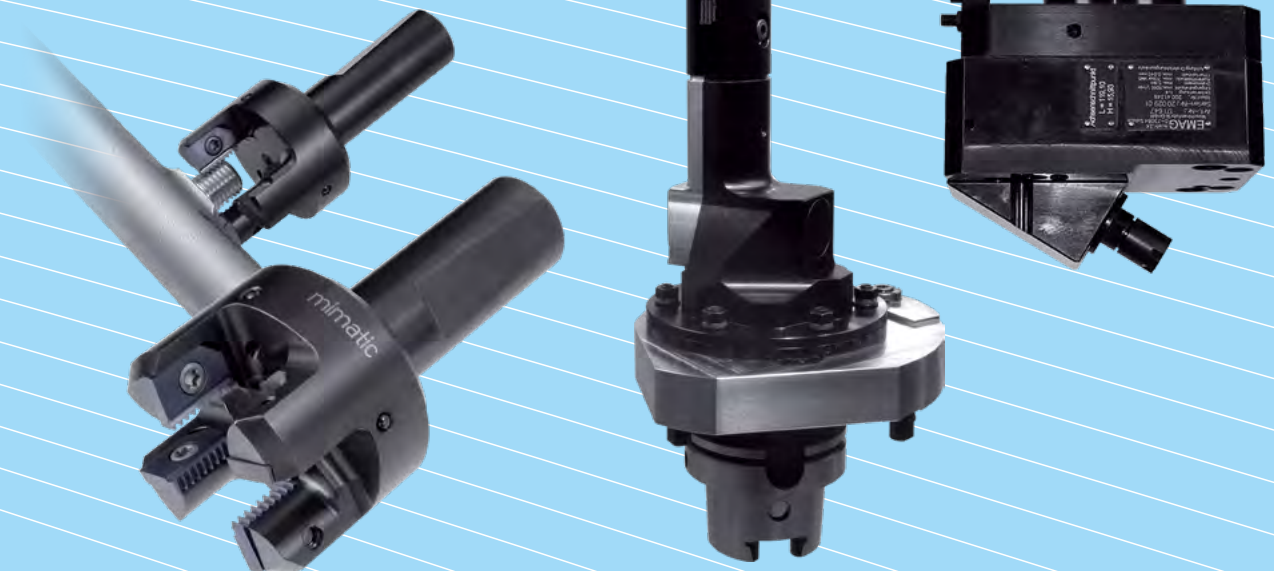
Multi Spindle
Units



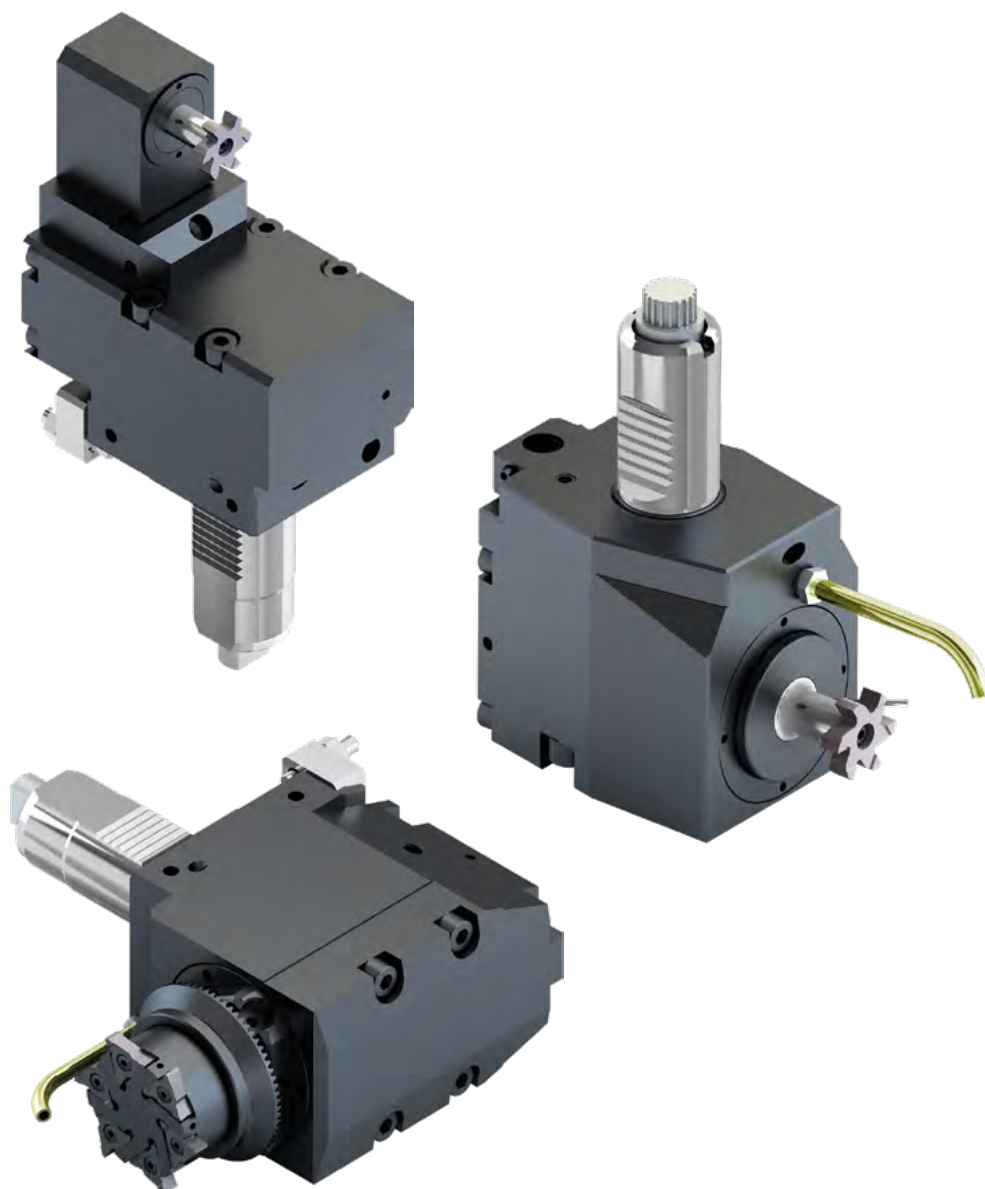
Clamping Technology



Special Solutions



Economical Complete Machining with Live Tools



Our boring and milling units are suitable for most of the popular turning machines and lathe equipment manufacturers. We produce the following types:

- Straight and offset units
- Internal or external coolant supply
- Gear multiplication or reduction
- Single or multi-spindle versions
- Angle heads for the production of angled holes, by means of adjustable and fixed angles
- Sawblade holders for sawing or slotting of workpieces
- Every popular type of tool system can be supplied

Technology and quality

- Highly precise bearing technology (high quality spindle and taper roller bearings)
- Specially optimized gears guarantee an excellently smooth run
- High torque transmission, rigidity and RPM's
- Highest concentricity and facing accuracy $< 3 \mu\text{m}$
- Internal coolant supply up to 70 bar
- Use of high pressure seals and friction optimized special seals
- Additional labyrinth seals protect the bearings from the penetration of dirt and coolant

- Internal clamping nut guarantees a compact tool length and optimum bearing positioning ensures maximum axial and radial support at the spindle and high stability
- Alignment pins/blocks on angle units for minimum setup time and fine centreline adjustment
- Live tools are largely suitable for dry running
- The coolant filtering capabilities of the machine should be $< 40 \mu\text{m}$

Angle Heads

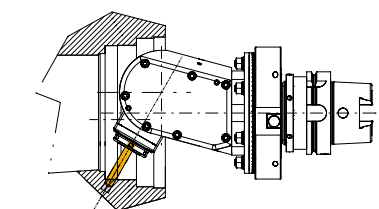
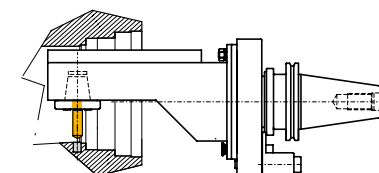
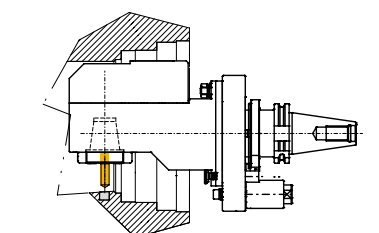
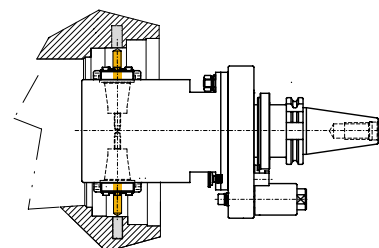
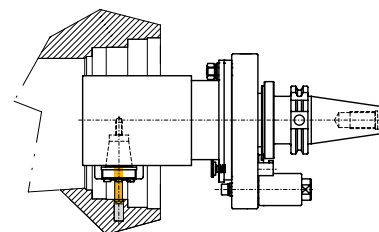
mimatic® has been a reliable partner in project planning and the supply of precision tools worldwide for many years in the field of chip removing production.

In addition to toolholding systems and cutting tools, the company also provides driven tools for both CNC lathes and CNC machining centers to solve customer-specific problems with chip removal.

The company has provided many special purpose solutions of angle heads since its foundation in 1974. In doing so, mimatic has always placed special emphasis on maximum precision, power transmission, operating safety and quality.

We ensure close cooperation with our customers worldwide, providing advice on all machining problems – even on-site. We realize and implement our solutions on the basis of our comprehensive standard program or by means of customer-specific special developments and designs.

Our program of angle head tools provides our customers with the means for complete, integrated machining. It is now no longer necessary to repeatedly relocate tools, which means a considerable reduction in production costs, rationalization and the increase in flexibility over the entire production process.





Wireless Sensor Control and Entire Ecosystem

Free Your Tool Monitoring



The complete system for digitising of live tools and angle heads



Process Data Acquisition and Evaluation

Proactive Action Instead of Expensive Reactions



Basic Data
Detailed information of the used tool



Operating Hours
Accumulated operating hours since tool use



Tool Temperature
with limit warning for critical conditions



Revolution Informations
Detailed usage values and recorded speed ranges



Load Cycles
For example the number of holes drilled



smart Gateway
Usage close to the machine area
Power supply and internet connection



Vibration Control
Tool breakage and downtime prevention

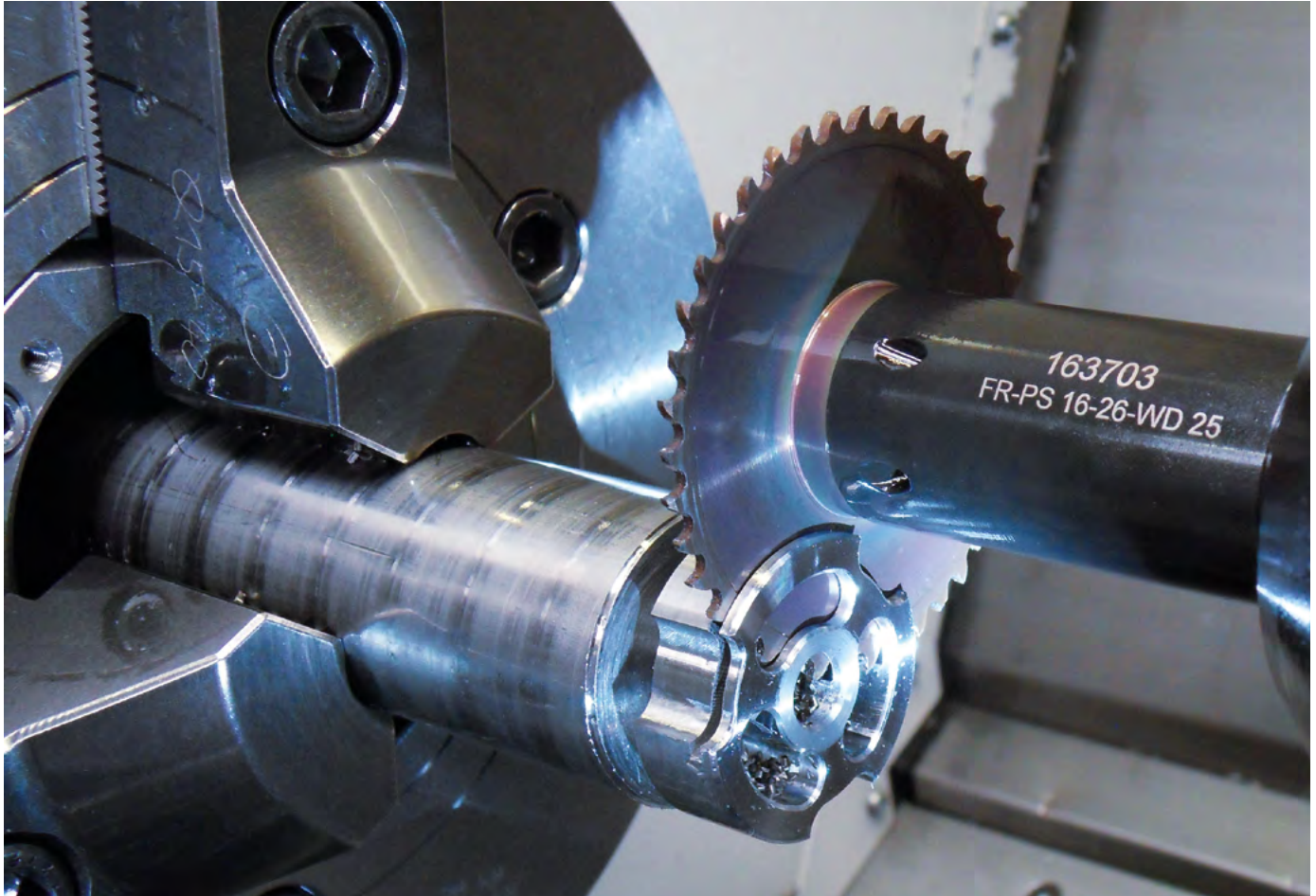
Highly Integrated Sensor System for Most Effective Productivity



Wireless data transfer*
directly via eltimon Reader or eltimon smart gateway to the eltimon® service portal and/or to the machine.

Turn Cut Milling

mimaticDTF



- **Short processing times**
- **High process reliability**
- **Material saving**
- **High surface quality**
- **Absence of burrs**
- **Short chips**

Faster Parting Off Than Anybody Else!
Turn Cut Milling Instead of Parting Off.



Thread Milling



Milling

Thread Milling

Extended
program

14-63

1

Face Finish Milling

64-69

2

Notch Impact Test

70-75

3

Gear Milling

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4

Slot Milling
Keyway MillingExtended
program82-
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Contour and Radius Milling
Chamfering, Deburring,
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Systems for Circular Thread Milling

PolyMILL

Our bestseller system allows **threading** and/or **circlip grooving** in high precision.

The polygonal connection of insert and milling body improves the efficiency and precision of the process significantly:

- **Longer tool life**
- **Higher machining volume**
- **Higher feed rates**
- **Shorter processing times**
- **High stability**
- **High security at interrupted cutting**



TriMILL

Affordable and flexible system for short processing times and long tool lives.

- **Deep, true to gauge threads**
- **Accurate free-form contours**
- **Accurate grooving**

Bottom threads can be cut almost to the bottom without undercuts.

By using the same pitches, the storage and acquisition costs decrease also.



TrioCUT

Smooth cutting and **low cutting pressure** results in high surface quality and long tool lives. A **conical position of insert pocket** guarantees stability of the tool shaft. Further advantages are the **radially back ground thread profile**, extremely high wedge angle, a more stable cutting edge as well as a positive rake angle.

The optimum application area are fine threads and/or very short thread lengths.

- **Thread milling with undercut**
- **Thread milling**
- **Drill thread milling**



SolidCUT

Extensive range of solid carbide thread milling cutters.

- **Spiral-grooved grooves**
- **Soft cut**
- **Excellent surface qualities**
- **Also for thin-walled workpieces**
- **A tool for right- and left-hand threads**
- **Unbeatable in price / performance**



14,5 15 21 26

Multi tooth thread milling cutters, ideal for short thread, small gradients lengths and very rigid clamping of workpiece and cutter.



mimaticSTC

Sectional thread milling for high-quality large threads from M24.

STC-1 with 10 edges

Biggest advantage for any long threads from M24: A shorter process time compared to cutters with inserts and easier assembly.



Symbols

	Type designation		Thread standard
	Steel shaft without clamping surface		Thread with undercut (Trio-Cut)
	Steel shaft with Weldon clamping surface		for right- and left hand internal thread for left hand thread modify your NC-program!
	Solid carbide shaft without clamping surface		for right- and left hand external thread for left hand thread modify your NC-program!
	Solid carbide shaft with Weldon clamping surface		Full form thread milling
	Cutter with tightening thread		Partial form thread milling
	Smallest necessary bore-diameter		Point angle
	Internal coolant supply		Thread standard
	Number of inserts		

Short Descriptions

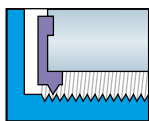
Alpha (α)	Point angle of milling insert	F	Width of trailing chamfer
A	Groove width	H _P	Insert height
A ₁	Basic width in the Groove	H _S	Slider height (Axial grooving tool)
B _{f6}	Insert holder width of axial grooving tool	L	Length of milling tool
B _{H7}	Groove width of axial grooving tool	L ₁	Clamping length of milling tool
B _w	Tool width of axial grooving tool	L ₂	Length of step milling head
C	Chamfer width	L _G	Usable thread length at the multi-tooth thread milling
D	Cutting diameter	L _{HA}	Holder length
d ₁	Milling body diameter (front)	L _{P1}	Insert height of milling body – edge
d ₂	Large diameter of milling body	L _{P2}	Insert height of edge – interfering contour
d _{g6}	Fitting face diameter of threaded milling tool	L _{PF}	Length of fitting face
D _{h6}	Shaft diameter of milling body (Arbor)	L _S	Shaft length – clamping length (Depth)
D _P	Flight circle of insert	M	Thread size
D _R	Nominal diameter of concave radius insert	P	Pitch
E	Width blank insert	R	Radius (general/common)

Formula for Tool Lengths

$$L_{WKZ} = L_{GK} + L_1 + L_{P1} (+L_{P2})$$

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PolyMILL



NEW UNEF thread



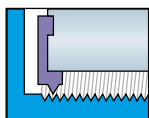
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TriMILL

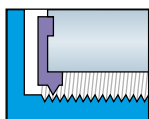


Thread Inserts

M, MF	30
UN, NPT, NPSM	30
G, BSW, BSF, UNC	31

Tool Holders

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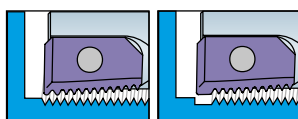
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Tool Holders

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TrioCUT

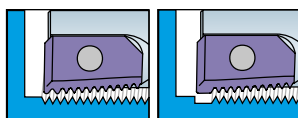


Thread Inserts

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Tool Holders

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Type 17	38



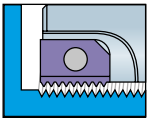
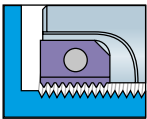
Thread Inserts

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Tool Holders

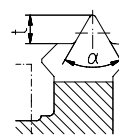
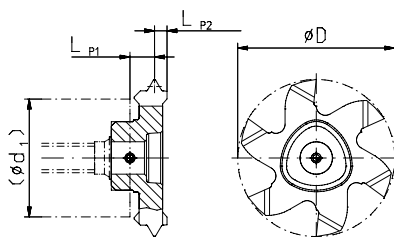
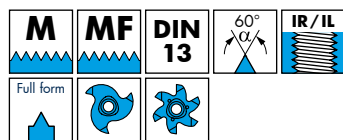
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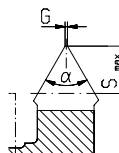
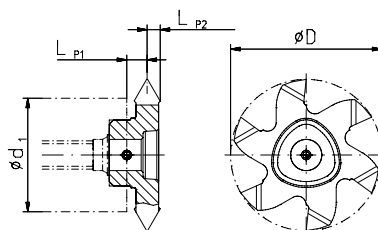
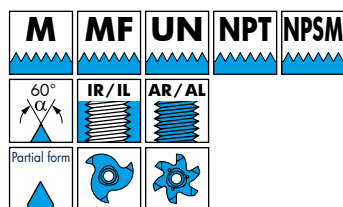
Thread Milling

- Insert holder see page 27-29
- Cutting data see page 166



Type	Pitch mm	D mm	LP1 mm	LP2 mm	t mm	Thread	Number of teeth	Order No. TINAMATIC	
P12	P1210 *	1,00	9,6	2,65	0,80	0,572	≥ M12x1	3	171875
	P1210 *	1,50	9,6	2,50	0,95	0,875	≥ M14x1,5	3	171876
	P1210 *	1,75	9,6	2,25	1,20	1,010	only M12	3	175479
	P1211 *	2,00	10,5	2,25	1,20	1,127	only M14, M16	3	160857
	P1211 *	2,00	10,5	2,25	1,20	1,157	≥ M18x2	3	171877
P16	P1616	1,00	16,0	2,80	1,03	0,572	≥ M18x1	6	107240
	P1616	1,50	16,0	2,55	1,28	0,864	≥ M20x1,5	6	142569
	P1616	2,00	16,0	2,55	1,28	1,157	≥ M22x2	6	142570
	P1616	2,50	16,0	2,05	1,78	1,400	only M20, M22	6	142534
	P1616	2,50	16,0	2,05	1,78	1,444	≥ M24 x2,5	6	142543
P20	P1616	3,00	16,0	3,05	1,78	1,702	≥ M24	6	142575
	P2020	1,50	20,0	2,55	1,28	0,875	≥ M24x1,5	6	168683
	P2020	2,00	20,0	2,55	1,28	1,157	≥ M27x2	6	168684
	P2020	3,00	20,0	2,15	1,68	1,745	only M24, M27	6	168685
	P25	P2526	1,50	26,0	2,15	1,28	0,875	≥ M30x1,5	6
P2526		2,00	26,0	2,55	1,28	1,159	≥ M33x2	6	142644
P2526		3,00	26,0	2,95	1,88	1,702	≥ M39x3	6	142599
P2524		3,50	24,0	2,75	2,08	1,960	only M30, M33	6	142671
P2526		3,50	26,0	2,90	1,93	1,980	≥ M42x3,5	6	142623
P2526		4,00	26,0	2,65	2,18	2,262	M36 - M45 x 4	6	169675
P2526		4,00	26,0	2,90	1,93	2,262	≥ M48x4	6	142624
P2526		4,50	26,0	2,65	2,18	2,602	≥ M42	6	142638
P2526		5,00	26,0	3,85	3,48	2,836	≥ M48	6	107275
P2526		5,50	26,0	3,85	3,48	3,182	≥ M56	6	161786
P2526	6,00	26,0	3,85	3,48	3,467	≥ M64	6	175645	

i External thread according to DIN 13 on request



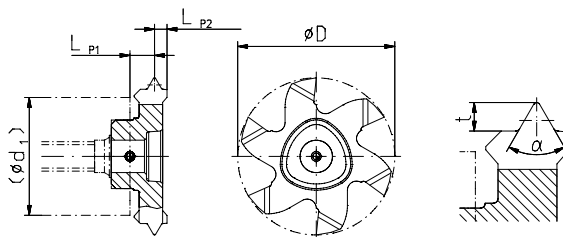
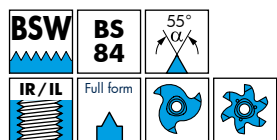
Type		Pitch mm	Thread Nominal Ø	D mm	LP1 mm	LP2 mm	G mm	S _{max.} mm	Number of teeth	Order No. TINAMATIC
P12	P1212	1-3	≥16	11,7	2,125	1,33	0,10	1,81	3	171911
P16	P1616 **	1-4	≥20	16,0	2,70	1,68	0,10	2,45	6	142580
	P1616 **	2,5-4	≥22	16,0	2,70	1,68	0,25	2,45	6	142544
	P1618	1-3	≥22	17,7	2,70	1,05	0,10	1,81	6	171954
P20	P2020	1-3	≥24	20,0	2,15	1,68	0,10	1,81	6	168686
	P2022	1-2	≥27	21,7	4,15	1,00	0,10	1,15	6	171972
	P2022	2-4	≥30	21,7	2,95	1,80	0,15	2,45	6	171973
P25	P2526	1-3	≥32	26,0	2,75	2,08	0,10	1,81	6	142647
	P2526	2,5-5	≥36	26,0	2,65	2,18	0,25	3,20	6	142592
	P2526	3,5-6	≥52	26,0	3,85	2,93	0,40	4,20	6	175936

* Not suited for cutter 177676

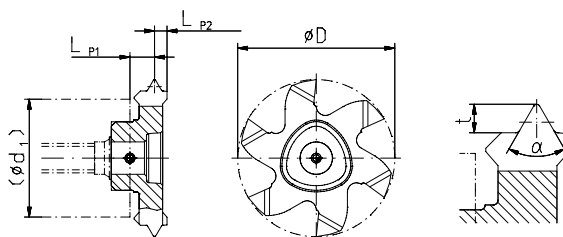
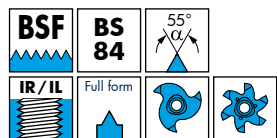
** Not suited for pitch 4,0 mm with the cutters 123588 and 123590

Thread Milling

- Insert holder see page 27-29
- Cutting data see page 166
- Further sizes on request



Type	Pitch mm	Pitch /"	D mm	LP1 mm	LP2 mm	t mm	Thread	Number of teeth	Order No. TINAMATIC
P12	P1210 *	2,117	12	10	2,25	1,1	1,371 BSW 5/16	3	162119
	P1210 *	2,309	11	10,4	2,15	1,5	1,494 BSW 5/8 + 1/16	3	160998
	P1212 *	2,540	10	11,7	2,2	1,4	1,455 BSW 3/4 + 1/16	3	160663
P16	P1616	2,822	9	16	2,15	1,675	1,622 BSW 7/8 + 1/16	6	160940
	P1616	3,175	8	16	2,65	1,84	1,83 BSW 1	6	161053
	P1616 **	3,629	7	16	2,65	2,05	2,098 BSW 1 1/8 + 1/4	6	161166
	P1616 **	4,233	6	16	3,175	2,2	2,455 BSW 1 1/2 + 1/2	6	162371
P20	P2020	3,629	7	20	2,7	2,225	2,098 BSW 1 1/8 + 1/4	6	160959
	P2020 ***	4,233	6	20	3,15	2,675	2,455 BSW 1 3/8 + 1/2	6	161270
P25	P2524	4,233	6	24	4,4	2,675	2,455 BSW 1 3/8	6	161466
	P2524	4,233	6	24	4,4	2,675	2,455 BSW 1 1/2	6	162615
	P2524	5,080	5	24	3,9	2,875	2,955 BSW 1 5/8 + 3/4	6	161100



Type	Pitch mm	Pitch /"	D mm	LP1 mm	LP2 mm	t mm	Thread	Number of teeth	Order No. TINAMATIC
P12	P1210 *	1,814	14	9,6	2,25	1,1	1,177 BSF 5/8 + 1/16	3	160930
	P1210 *	2,117	12	10	2,25	1,1	1,371 BSF 3/4 + 1/16	3	161623
	P1210 *	2,309	11	10,4	2,15	1,5	1,494 BSF 7/8	3	160951
	P1212 *	2,540	10	11,7	2,20	1,4	1,455 BSF 1	3	161797
P16	P1616	2,822	9	16	2,15	1,675	1,622 BSF 1 1/8 + 1/4	6	160989
	P1616	3,175	8	16	2,15	1,675	1,83 BSF 1 1/8 - 1/8	6	162077
	P1616 **	3,629	7	16	2,65	2,05	2,098 BSF 1 1/4 + 2	6	160960
	P1616 **	4,233	6	16	3,175	2,2	2,455 BSF 2 1/4 - 2 1/4	6	162305
P20	P2020	3,175	8	20	2,15	1,675	1,83 BSF 1 3/8 - 1/8	6	161089
	P2020	3,629	7	20	2,7	2,225	2,098 BSF 1 1/4 + 2	6	161341
	P2020 ***	4,233	6	20	3,15	2,675	2,455 BSF 2 1/4 - 2 3/4	6	160942
P25	P2524	3,175	8	24	2,1	1,675	1,83 BSF 1 3/8 - 1/8	6	162051
	P2524	3,629	7	24	2,65	2,175	2,098 BSF 1 1/4 + 2	6	161436
	P2524	4,233	6	24	4,4	2,675	2,455 BSF 2 1/4 - 2 3/4	6	161887
	P2524	5,080	5	24	3,9	2,875	2,955 BSF 3 - 3 1/4	6	161250



External thread BSW / BSF see next page

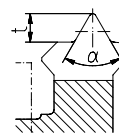
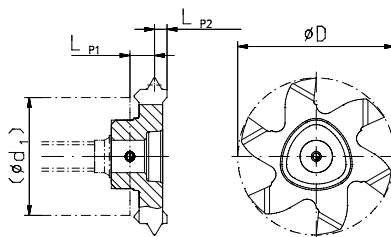
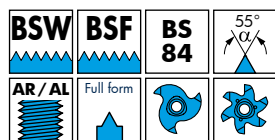
* Not suited for cutter 17766

** Not suited for cutters 123588 and 123590

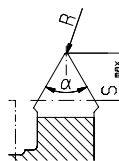
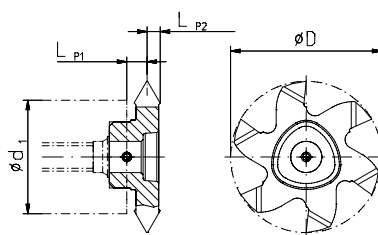
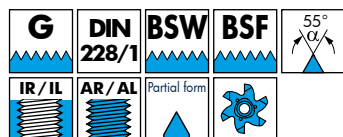
*** Not suited for cutter 174314

Thread Milling

- Insert holder see page 27-29
- Cutting data see page 166
- Further sizes on request



Type		Pitch mm	Pitch / "	D mm	LP1 mm	LP2 mm	t mm	Thread	Number of teeth	Order No. TINAMATIC
P12	P1212 *	1,814	14	11,7	2,30	1,3	1,178	BSW / BSF - 14 Gg	3	160943
	P1212 *	2,117	12	11,7	2,25	1,4	1,374	BSW / BSF - 12 Gg	3	160967
	P1212 *	2,309	11	11,7	2,25	1,4	1,498	BSW / BSF - 11 Gg	3	161112
	P1212 *	2,540	10	11,7	2,25	1,4	1,646	BSW / BSF - 10 Gg	3	161184
P16	P1616	1,814	14	16	2,15	1,675	1,178	BSW / BSF - 14 Gg	6	142576
	P1616	2,117	12	16	2,15	1,675	1,374	BSW / BSF - 12 Gg	6	160947
	P1616	2,309	11	16	2,75	2,075	1,498	BSW / BSF - 11 Gg	6	142549
	P1616	2,540	10	16	2,15	1,675	1,646	BSW / BSF - 10 Gg	6	167014
	P1616	2,822	9	16	2,15	1,675	1,829	BSW / BSF - 9 Gg	6	160977
	P1616 **	3,175	8	16	2,65	1,820	2,056	BSW / BSF - 8 Gg	6	161744
	P1616 **	3,629	7	16	3,15	2,225	2,348	BSW / BSF - 7 Gg	6	162097
	P1616 **	4,233	6	16	3,15	2,225	2,737	BSW / BSF - 6 Gg	6	162650
P20	P2020	1,814	14	20	2,10	1,725	1,178	BSW / BSF - 14 Gg	6	168688
	P2020	2,117	12	20	2,10	1,725	1,374	BSW / BSF - 12 Gg	6	160963
	P2020	2,309	11	20	2,10	1,725	1,498	BSW / BSF - 11 Gg	6	168687
	P2020	2,540	10	20	2,10	1,725	1,646	BSW / BSF - 10 Gg	6	160984
	P2020	2,822	9	20	2,10	1,725	1,829	BSW / BSF - 9 Gg	6	160997
	P2020 ***	3,175	8	20	2,65	2,175	2,056	BSW / BSF - 8 Gg	6	161113
	P2020 ***	3,629	7	20	2,65	2,175	2,348	BSW / BSF - 7 Gg	6	161259
	P2020 ***	4,233	6	20	3,15	2,675	2,737	BSW / BSF - 6 Gg	6	161325
P25	P2526	2,309	11	26	2,75	2,075	1,478	BSW / BSF - 11 Gg	6	142600
	P2526	3,175	8	26	2,60	2,175	2,056	BSW / BSF - 8 Gg	6	160949
	P2526	3,629	7	26	2,60	2,175	2,348	BSW / BSF - 7 Gg	6	160950
	P2524	4,233	6	24	4,40	2,675	2,737	BSW / BSF - 6 Gg	6	161130
	P2524 ****	5,080	5	24	4,40	2,675	3,281	BSW / BSF - 5 Gg	6	161400



Type		Pitch mm	Pitch / "	D mm	LP1 mm	LP2 mm	r mm	S _{max.} mm	Number of teeth	Order No. TINAMATIC
P16	P1616	1,814-3,175	14-8	16	2,75	1,625	0,35	2,5	6	173906
P25	P2526	3,175-6,35	8-4	26	2,65	2,175	0,6	2,8	6	177427

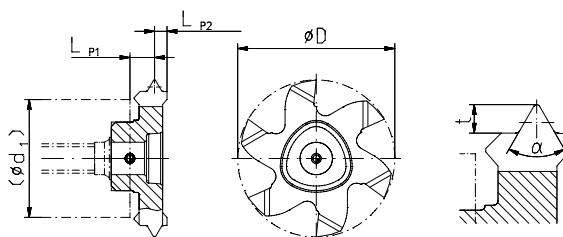
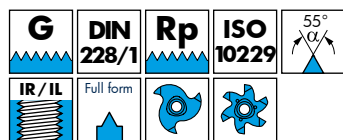
i Taper pipe thread BSPT according to BS.84 on request

- * Not suited for cutter 177676
- ** Not suited for cutters 123588 and 123590
- *** Not suited for cutter 174314
- **** Not suited for cutter 123613 and 161205

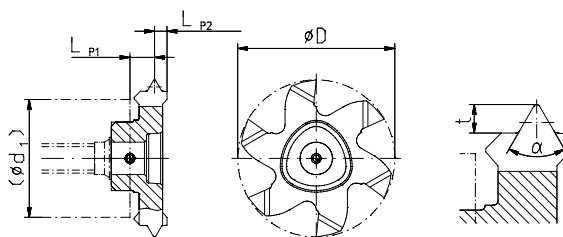
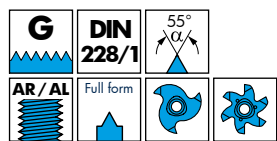
PolyMILL

Thread Milling

- Insert holder see page 27-29
- Cutting data see page 166
- Further sizes on request



Type	Pitch mm	Pitch / "	D mm	LP1 mm	LP2 mm	t mm	Thread	Number of teeth	Order No. TINAMATIC
P12	P1210 *	1,337	19	9,6	2,25	1,2	G ¼	3	160952
	P1210 *	1,337	19	9,6	2,25	1,2	G ¾	3	171912
	P1212 *	1,814	14	11,7	2,25	1,2	G ½ - G ¾	3	160970
	P1212 *	2,309	11	11,7	2,15	1,5	G 1 - G 6	3	160996
P16	P1616	1,814	14	16	2,15	1,675	G ½ - G ¾	6	160620
	P1616	1,814	14	16	2,15	1,675	G ¾ - G ¾	6	142576
	P1616	2,309	11	16	2,75	2,075	G 1 - G 6	6	142549
P20	P2020	1,814	14	20	3,95	1,725	G ¾ - G ¾	6	168688
	P2020	2,309	11	20	3,95	1,725	G 1 - G 6	6	168687
P25	P2526	2,309	11	26	2,15	1,675	G 1 - G 1 ¼	6	160980
	P2526	2,309	11	26	2,75	2,075	G 1 ½ - G 6	6	142600

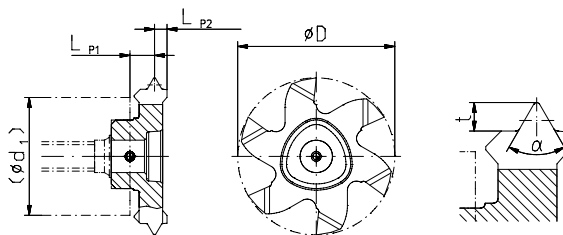
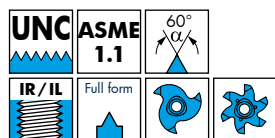


Type	Pitch mm	Pitch / "	D mm	LP1 mm	LP2 mm	t mm	Thread	Number of teeth	Order No. TINAMATIC
P12	P1210 *	1,337	19	9,6	2,25	1,2	G ¼ - G ¾	3	171912
	P1212 *	1,814	14	11,7	2,3	1,1	G ½ - G ¾	3	160943
	P1212 *	2,309	11	11,7	2,25	1,2	G 1 - G 6	3	161112
P16	P1616	1,814	14	16	2,15	1,675	G ½ - G ¾	6	142576
	P1616	2,309	11	16	2,75	2,075	G 1 - G 6	6	142549
	P1618	1,814	14	17,7	3,15	0,95	G ½ - G ¾	6	171949
P20	P2020	1,814	14	20	3,95	1,725	G ¾ - G ¾	6	168688
	P2020	2,309	11	20	3,95	1,725	G 1 - G 6	6	168687
P25	P2526	2,309	11	26	2,75	2,075	G 1 - G 6	6	142600

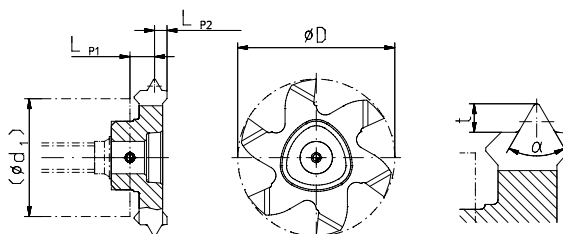
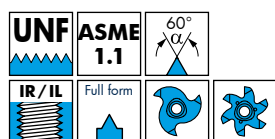
i Taper pipe thread R according to ISO 10226 on request

Thread Milling

- Insert holder see page 27-29
- Cutting data see page 166

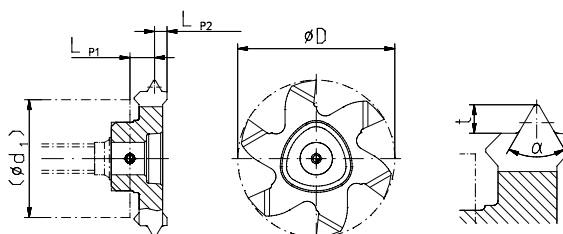
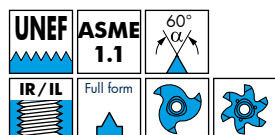


Type		Pitch mm	Pitch / "	D mm	LP1 mm	LP2 mm	t mm	Thread	Number of teeth	Order No. TINAMATIC
P12	P1210 *	1,954	13	10	2,25	1,2	1,10	UNC ½ - 13	3	192134
	P1210 *	2,117	12	10	2,25	1,2	1,29	UNC ⅝ - 12	3	171883
	P1211 *	2,309	11	10,5	2,13	1,52	1,35	UNC ⅝ - 11	3	171880
	P1212 *	2,540	10	11,7	2,13	1,52	1,485	UNC ¾ - 10	3	171879
P16	P1616	2,822	9	16	2,05	1,775	1,577	UNC ⅞ - 9	6	172148
P20	P2018 **	3,175	8	18	2,65	2,175	1,809	UNC 1 - 8	6	172149
	P2020 **	3,629	7	20	2,65	2,175	2,043	UNC 1⅛ - 1¼ - 7	6	172150
P25	P2524	4,233	6	24	4,05	3,275	2,454	UNC 1⅜ - 1½ - 6	6	172151
	P2526	5,080	5	26	3,85	3,475	2,979	UNC 1¾ - 5	6	172152
	P2526 ***	5,644	4,5	26	3,85	3,475	3,289	UNC 2 - 2¼ - 4½	6	172153



Type		Pitch mm	Pitch / "	D mm	LP1 mm	LP2 mm	t mm	Thread	Number of teeth	Order No. TINAMATIC
P12	P1210 *	1,270	20	9,6	2,5	0,95	0,733	UNF ½ - 20	3	171884
	P1211 *	1,411	18	10,5	2,5	0,95	0,827	UNF ⅝ - 18	3	171885
	P1212	1,588	16	11,7	2,5	0,95	0,945	UNF ¾ - 16	3	171900
P16	P1618	1,814	14	17,7	3,15	0,95	1,071	UNF ⅞ - 14	6	171950
P20	P2020	2,117	12	20	2,15	1,675	1,228	UNF 1 - 12	6	171951

Article conditioned on stock



Type		Pitch mm	Pitch/ "	D mm	LP1 mm	LP2 mm	t mm	Thread	Number of teeth	Order No. TINAMATIC
P12	P1210 *	0,907	28	9,6	2,5	0,95	0,491	UNEF 7/16 - 1/2	3	161798
	P1212	1,058	24	11,7	2,5	0,95	0,59	UNEF 9/16 - 11/16	3	161833
P16	P1616	1,270	20	16	2,05	1,775	0,733	UNEF 3/4 - 1	6	161868
P20	P2020	1,411	18	20	2,15	1,675	0,827	UNEF 1 1/16 - 1 11/16	6	162008

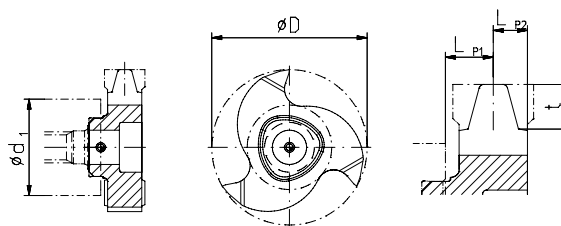
* Not suited for cutter 177676

** Not suited for cutter 174314

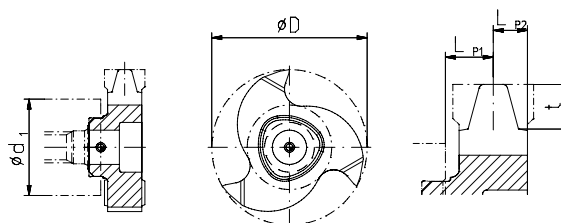
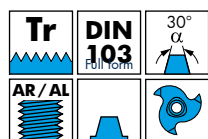
*** Not suited for cutter 123613 and 161205

Thread Milling

- Insert holder see page 27-29
- Cutting data see page 166



Type		Pitch mm	D mm	LP1 mm	LP2 mm	t mm	Thread	Chip angle	Number of teeth	Order No. TINAMATIC
P12	P1210 *	1,5	9,6	2,775	0,575	0,9	Tr 14x1,5	6°	3	160689
	P1210 *	1,5	9,6	2,775	0,575	0,9	Tr 20x1,5	6°	3	161243
	P1212 *	2,0	11,7	2,5	1,1	1,25	Tr 16x2 - Tr 20x2	6°	3	177717
	P1211 *	3,0	11,0	2,23	1,42	1,75	Tr 18x3 - Tr 20x3	6°	3	160862
	P1212 *	4,0	12,0	2,15	1,5	2,25	Tr 20x4	6°	3	160308
P16	P1614 **	3,0	14,0	2,3	1,5	1,75	TR 24x3 - Tr 32x3	8°	3	162630
	P1615 **	5,0	15,3	3,06	2,19	2,75	Tr 24x5	8°	3	161652
	P1615 **	5,0	15,3	3,15	2,1	2,75	Tr 26x5	8°	3	166213
	P1615 **	5,0	15,3	3,15	2,1	2,75	Tr 28x5 - Tr 36x5	8°	3	150365
	P1616 **	6,0	16,2	4,27	3,0	3,5	Tr 30x6 - Tr 32x6	8°	3	182498
	P1616 **	6,0	16,2	4,22	3,03	3,5	Tr 34x6 - Tr 42x6	8°	3	161736
P25	P2524	3,0	24,0	2,6	2,1	1,75	Tr 36x3 - Tr 40x3	8°	3	160972
	P2524	4,0	24,0	1,85	2,0	2,25	≥ Tr 65x4	8°	3	161124
	P2525	5,0	25,0	3,2	2,37	2,75	Tr 44x5 - Tr 48x5	8°	3	160872
	P2521 ***	6,0	21,0	3,85	2,75	3,5	Tr 32x6 - Tr 36x6	8°	3	149185 NEW
	P2524 ***	6,0	24,0			3,5	Tr 36x6 - Tr 38x6	8°	3	182872 NEW
	P2522 ***	7,0	22,0	4,0	2,65	4,00	Tr 38x7 - Tr 42x7	8°	3	162648
	P2522 ***	7,0	22,0	4,0	2,65	4,00	Tr 44x7	8°	3	161111
	P2525 ***	8,0	25,0	4,75	3,4	4,5	Tr 46x8 - Tr 48x8	8°	3	162257
	P2525 ***	8,0	25,0	5,03	3,13	4,5	Tr 50x8 - Tr 52x8	8°	3	110966
	P2525 ***	9,0	25,0	4,73	3,42	5,00	Tr 55x9 - Tr 60x9	8°	3	160869
	P2525 ***	10,0	25,0	4,65	3,5	5,5	Tr 65x10 - Tr 80x10	8°	3	167236



Type		Pitch mm	D mm	LP1 mm	LP2 mm	t mm	Thread	Chip angle	Number of teeth	Order No. TINAMATIC
P12	P1210 *	1,5	9,6	2,775	0,575	0,90	≥ Tr 8x1,5 External	6°	3	161243
	P1212 *	2,0	11,7			1,25		6°	3	200635 NEW
	P1212 *	3,0	11,7			1,75		6°	3	On request
	P1212 *	4,0	11,7			2,25		6°	3	On request
P16	P1616	3,0	16,0			1,75		8°	3	198335 NEW
	P1616 **	4,0	16,0	2,4	1,63	2,25	≥ Tr 16x4 External	8°	3	161588
	P1616 **	5,0	16,0			2,75		8° / 6°	3 / 6	On request
	P1616 **	6,0	16,0			3,5		8° / 6°	3 / 6	On request
P25	P2526	4,0	26			2,25		8°	6	195655 NEW
	P2525 ***	5,0	25 / 26			2,75		8° / 6°	3 / 6	On request
	P2525 ***	6,0	25 / 26			3,5		8° / 6°	3 / 6	On request
	P2525 ***	7,0	25 / 26			3,75		8° / 6°	3 / 6	On request
	P2525 ***	8,0	25 / 26			4,25		8° / 6°	3 / 6	On request
	P2525 ***	9,0	25			5,0		8°	3	194539 NEW
	P2525 ***	10,0	25 / 26			5,5		8° / 6°	3 / 6	On request

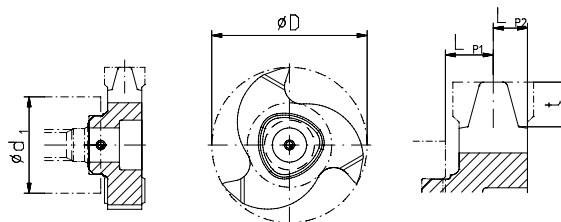
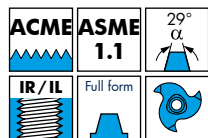
* Not suited for cutter 177676

** Not suited for cutters 123588 and 123590

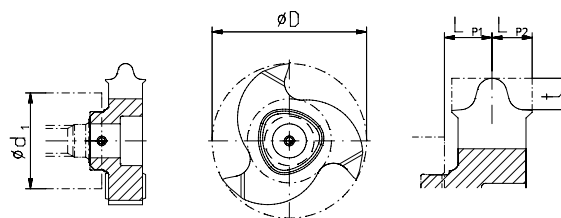
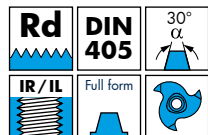
*** Not suited for cutters 123613, 123609, 123611 and 161205

Thread Milling

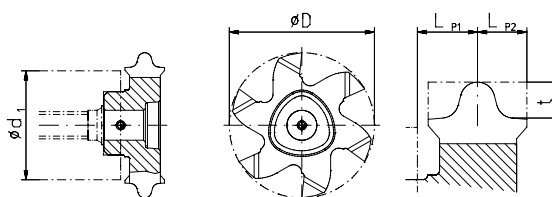
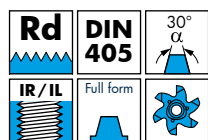
- Insert holder see page 27-29
- Cutting data see page 166
- Further sizes on request



Type	Pitch mm	Pitch / °	D mm	LP1 mm	LP2 mm	t mm	Thread	Chip angle	Number of teeth	Order No. TINAMATIC	
P16	P1616	5,08	5	16	3,02	2,23	2,85	1"-5Gg - 1½"-5Gg	8°	3	182614
	P1616 *	6,35	4	16	4,04	3,21	3,43	1¼"-4Gg - 1½"-4Gg	8°	3	172556
P25	P2524	6,35	4	24	3,9	2,75	3,47	1¾"-4Gg - 2"-4Gg	8°	3	162654
	P2525	8,467	3	25	4,65	3,5	4,51	2¼"-3Gg - 2¾"-3Gg	8°	3	161935



Type		Pitch mm	Pitch / °	D mm	LP1 mm	LP2 mm	t mm	Thread	Chip angle	Number of teeth	Order No. TINAMATIC
P16	P1613 *	3,175	8	13	3,15	2,1	1,588	Rd 20 x ½	8°	3	174442
	P1614 *	3,175	8	14	3,15	2,1	1,588	Rd 22 x ½	8°	3	161424
	P1615	3,175	8	15,3	2,4	1,9	1,588	Rd 24 x ½- Rd 26 x ½	8°	3	161156
	P1616	3,175	8	16	2,4	1,9	1,588	Rd 28 x ½- Rd 32 x ½	8°	3	174421
	P1616	3,175	8	16	2,4	1,9	1,588	Rd 34 x ½- Rd 38 x ½	8°	3	162544
	P1616 *	4,233	6	16	3,15	2,575	2,117	Rd 40 x ½- Rd 55 x ½	8°	3	160954
	P1616 *	4,233	6	16	3,15	2,575	2,117	Rd 58 x ½- Rd 80 x ½	8°	3	161067
	P1616 *	4,233	6	16	3,15	2,575	2,117	Rd 82 x ½- Rd 100 x ½	8°	3	161110
	P1616 *	6,35	4	16	4,15	3,125	3,175	Rd 105 x ¼- Rd 200 x ¼	8°	3	160995



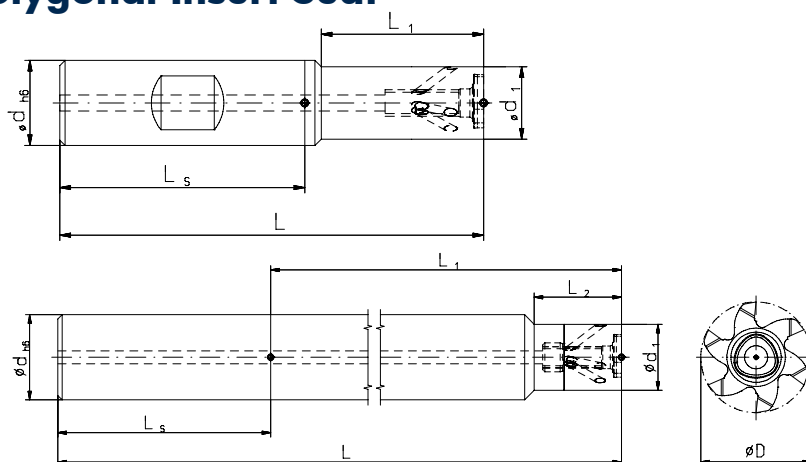
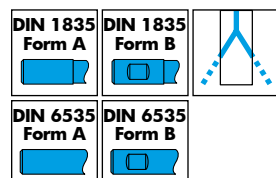
Type		Pitch mm	Pitch / °	D mm	LP1 mm	LP2 mm	t mm	Thread	Chip angle	Number of teeth	Order No.
											TINAMATIC
P16	P1616	3,175	8	16	2,65	2	1,588	Rd 28 x ½	6°	6	175137
P25	P2526	4,233	6	26	3,85	3,4	2,117	Rd 65 x ½	6°	6	172430
	P2526	6,35	4	26	3,85	3,4	3,175	Rd 105 x ¼ · Rd 120 x ¼	6°	6	168288

i Knuckle thread acc. to DIN 20400 on request

PolyMILL

Circular Milling Tools with Polygonal Insert Seat

- Inserts see page 20-26
- Cutting data see page 166



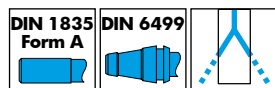
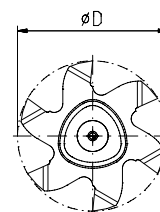
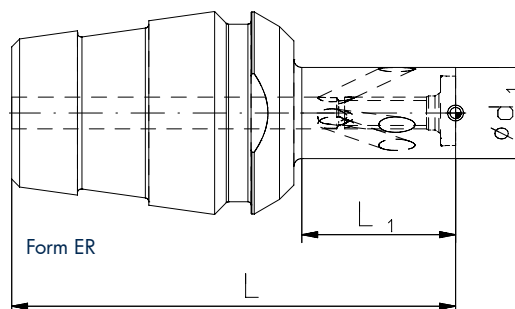
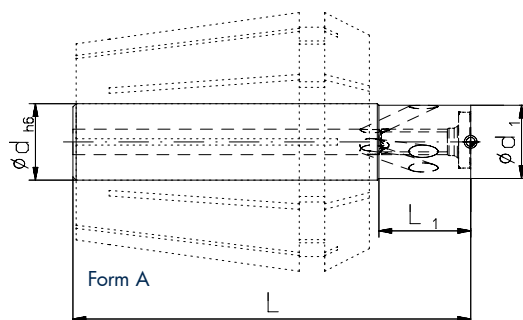
											Spare part No.	
Type	Order No.	Form	d h6 mm	d1 mm	D max. mm	S max. (D-d1)/2 mm	L mm	L1 mm	L2 mm	Shaft	Screw-driver *	Screw *
P12	177170	A	10	7,0	11,7	2,35	54	8	-	Steel	T8 IP 111656	M2,5x7 107596
	123619	B	12	7,0	11,7	2,35	67,5	20	-	Steel		
	100228	B	12	7,0	11,7	2,35	67,5	20	-	Carbide		
	171778	A	12	7,0	11,7	2,35	67,5	20	-	Carbide		
	171780	B	12	7,0	11,7	2,35	80	30	-	Carbide		
	171781	A	12	7,0	11,7	2,35	80	30	-	Carbide		
	171783	B	12	7,0	11,7	2,35	100	40	-	Carbide		
	171784	A	12	7,0	11,7	2,35	100	40	-	Carbide		
P16	177174	A	10	9,0	17,7	4,35	60	11	-	Steel	T8 IP 111656	M3x12 143158
	123573	B	12	9,0	17,7	4,35	67,4	21	-	Steel		
	123577	B	12	9,0	17,7	4,35	67,4	21	-	Carbide		
	171787	A	12	9,0	17,7	4,35	67,4	21	-	Carbide		
	123580	B	12	9,0	17,7	4,35	82,4	36	-	Carbide		
	171789	A	12	9,0	17,7	4,35	82,4	36	-	Carbide		
	123584	A	12	9,0	17,7	4,35	100	30	-	Carbide		
	123588	A	12	11,5	17,7	2,85	82,4	37,4	13	Carbide		
P20	123590	A	12	12,0	17,7	2,85	122,5	77,5	-	Carbide	T15 IP 111671	M4x13 107597
	177178	A	12	11,5	21,7	5,1	62,4	14,4	-	Steel		
	123615	B	16	11,5	21,7	5,1	80	30	-	Steel		
	123616	B	16	11,5	21,7	5,1	80	30	-	Carbide		
	171794	A	16	11,5	21,7	5,1	80	30	-	Carbide		
	123617	B	16	11,5	21,7	5,1	100	50	-	Carbide		
	171796	A	16	11,5	21,7	5,1	100	50	-	Carbide		
	174314	A	16	15,5	21,7	3,1	105,5	57,5	20	Carbide		
P25	177182	A	16	13,6	27,7	7,05	69,6	20,4	-	Steel	T20 IP 111594	M5x13,5 107529
	123592	B	16	13,6	27,7	7,05	79,6	30,5	-	Steel		
	123598	B	16	13,6	27,7	7,05	79,6	30,5	-	Carbide		
	171855	A	16	13,6	27,7	7,05	79,6	30,5	-	Carbide		
	123600	B	16	13,6	27,7	7,05	94,6	45,5	-	Carbide		
	171857	A	16	13,6	27,7	7,05	94,6	45,5	-	Carbide		
	123603	B	16	13,6	27,7	7,05	109,6	60,5	-	Carbide		
	171859	A	16	13,6	27,7	7,05	109,6	60,5	-	Carbide		
	123609	A	16	15,5	27,7	6,1	105	57	21,5	Carbide		
	123611	A	16	15,5	27,7	6,1	149,5	101,5	21,5	Carbide		
	161205 NEW	A	20	15,5	27,7	6,1	100	52	21,5	Carbide		
	123613	A	20	15,5	27,7	6,1	174,45	128,5	21,5	Carbide		

* Screwdriver and clamping screw included in delivery

Screw torques max.
 107596 T08 IP 1,0 Nm
 143158 T08 IP 1,1 Nm
 107597 T15 IP 3,8 Nm
 107529 T20 IP 5,5 Nm

Circular Milling Tools for Driven Toolholders

- Inserts see page 20-26
- Cutting data see page 166



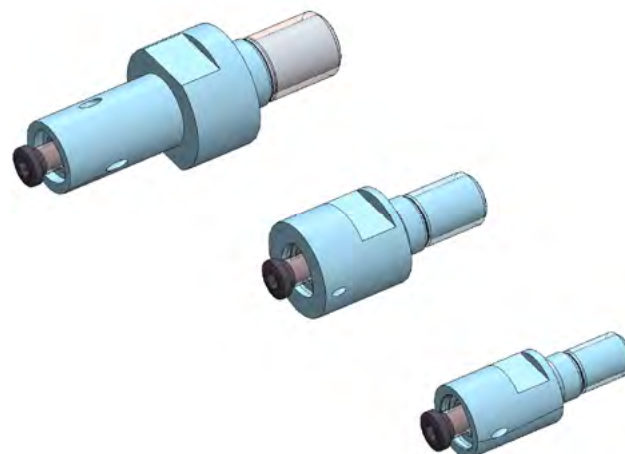
Type	Order No.	Form	d_{h6} mm	d_1 mm	$D_{max.}$ mm	$S_{max.}$ ($D-d_1$)/2 mm	L mm	L ₁ mm	Shaft	Spare part No.	
										Screw-driver *	Screw *
P12	177170	A	10	7,0	11,7	2,35	54	8	Steel	T8 IP 111656	M2,5x7 107596
	177172	ER 16		7,0	11,7	2,35	37,5	8	Steel		
	177173	ER 20		7,0	11,7	2,35	47	13	Steel		
P16	177174	A	10	9,0	17,7	4,35	60	11	Steel	T8 IP 111656	M3x12 143158
	177176	ER 16		9,0	17,7	4,35	41,4	11	Steel		
	177177	ER 20		9,0	17,7	4,35	51	16	Steel		
P20	177178	A	12	11,5	21,7	5,1	62,4	14,4	Steel	T15 IP 111671	M4x13 107597
	177180	ER 20		11,5	21,7	5,1	49,5	14,5	Steel		
	177181	ER 25		11,5	21,7	5,1	56	19,4	Steel		
P25	177182	A	16	13,6	27,7	7,05	69,6	20,4	Steel	T20 IP 111594	M5x13,5 107529
	177184	ER 25		13,6	27,7	7,05	56	19,4	Steel		
	177185	ER 32		13,6	27,7	7,05	73	30,4	Steel		

Screw torques max.

107596	T8 IP	1,0 Nm
143158	T8 IP	1,1 Nm
107597	T15 IP	3,8 Nm
107529	T20 IP	5,5 Nm

Changing Inserts

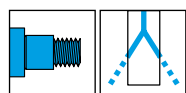
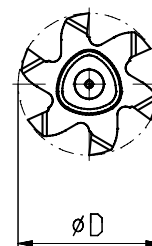
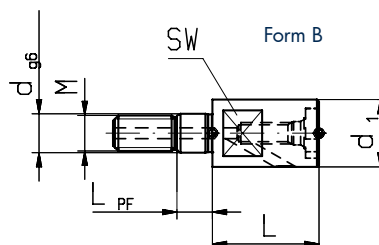
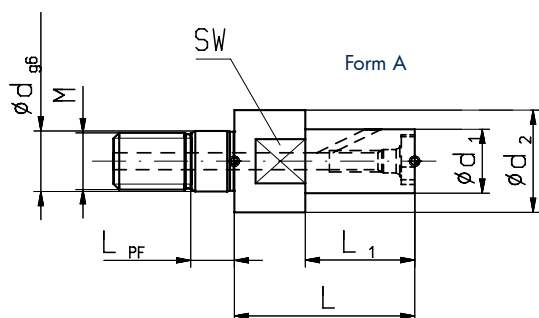
Clamp cutter before changing insert. Loosen insert screw. Remove used insert and clean the insert pocket before clamping new insert. Please use the appropriate TIP hex key for the tightening of the inserts and consider the screw tightening torques in the tables.



* Screwdriver and clamping screw included in delivery

Circular Milling Tools with Polygonal Insert Seat

- Inserts see page 20-26
- Cutting data see page 166



Please adapt cutting data to overhangs length

Type	Order No.	Form	d1 mm	d2 mm	D _{max.} mm	S _{max.} (D-d1)/2 mm	L mm	L1 mm	M	dg6 mm	L _{PF} mm	Spare part No.	
												Screw-driver *	Screw *
P12***	177676	B	9,5	–	11,7	1,1	10,0	–	M5	5,5	5,0	111656	107596
P16	123586	A	9,0	14,4	17,7	4,35	25,4	15,4	M8	8,5	5,5	111656	143158
P16**	177683	B	9,5	–	17,7	4,1	15,0	–	M5	5,5	5,0	111656	143158
P16***	177698	B	11,0	–	17,7	3,35	15,0	–	M6	6,5	5,0	111656	143158
P20	123618	A	11,5	18,0	21,7	5,1	29,4	19,4	M10	10,5	5,5	111671	107597
P20**	177734	B	11,5	–	21,7	5,1	15,0	–	M6	6,5	5,0	111671	107597
P20***	177735	B	13,5	–	21,7	4,1	15,0	–	M8	8,5	5,5	111671	107597
P25	123605	A	13,6	22,5	27,7	7,05	37,9	24,9	M12	12,5	5,5	111594	107529
P25**	177747	B	13,6	–	27,7	7,05	18,0	–	M8	8,5	5,5	111594	107529
P25***	177767	B	18,0	–	27,7	4,85	18,0	–	M10	10,5	5,5	111594	107529

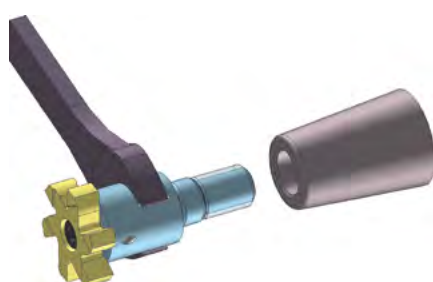
- * Screwdriver and clamping screw included in delivery
- ** Slim design for thread milling
- *** Reinforced design

Screw torques max.

107596	T8 IP	1,0 Nm
143158	T8 IP	1,1 Nm
107597	T15 IP	3,8 Nm
107529	T20 IP	5,5 Nm

Assembling Instructions

- Recommended tightening torque for screw-in circular milling body
- End-wrench see page 151

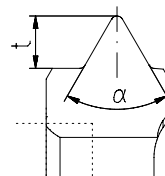
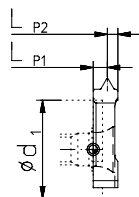
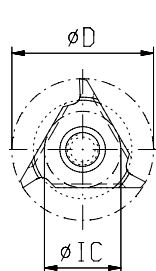
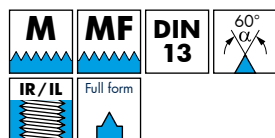


Thread size (M)	Wrench size mm	Tightening torque Nm
M5	7	8
M6	9	10
M8	11	25
M10	15	40
M12	19	60
M16	24	80

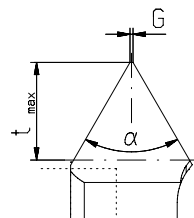
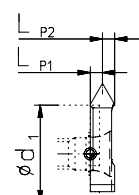
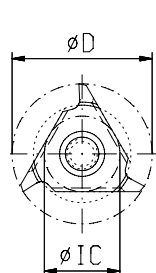
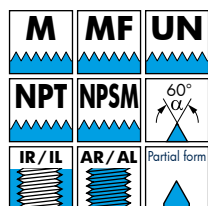
TriMILL

Thread Milling

- Insert holder see page 32
- Cutting data see page 166



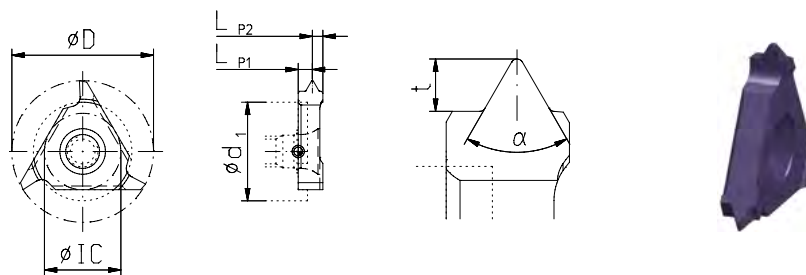
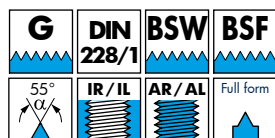
Type	Pitch mm	D mm	IC mm	LP1 mm	LP2 mm	t mm	Thread	Order No. TINAMATIC
03	1,0	10,6	5,5	1,64	0,7	0,578	≥ M12 x 1	141613
	1,5	10,6	5,5	1,39	0,95	0,864	≥ M14 x 1,5	141674
	2,0	10,6	5,5	2,0	1,0	1,159	≥ M16 x 2	141647
02	1,0	17,5	9,2	2,8	0,7	0,578	≥ M20 x 1	141443
	1,5	17,5	9,2	2,55	0,95	0,864	≥ M22 x 1,5	141482
	2,0	17,5	9,2	2,3	1,2	1,159	≥ M24 x 2	141484
	2,5	16,0	9,2	1,75	1,75	1,444	only M20, M22	141516
	2,5	17,5	9,2	2,05	1,45	1,444	≥ M24 x 2,5	141514
	3,0	17,5	9,2	2,1	1,4	1,728	≥ M24	141494
	3,0	17,5	9,2	2,1	1,4	1,728	≥ M24	141494
01	1,0	23,0	12,4	3,3	0,7	0,578	≥ M25 x 1	141317
	1,5	23,0	12,4	3,05	0,95	0,864	≥ M27 x 1,5	141291
	2,0	23,0	12,4	2,8	1,2	1,159	≥ M30 x 2	141312
	2,5	23,0	12,4	2,55	1,45	1,444	≥ M33 x 2,5	141287
	3,0	23,0	12,4	2,3	1,7	1,728	≥ M36 x 3	141339
	3,5	23,0	12,4	2,3	1,7	2,023	≥ M36 x 3,5	141300
	4,0	23,0	12,4	2,3	1,7	2,308	≥ M36	141347
	4,5	23,0	12,4	4,0	2,5	2,602	≥ M42	141365
	5,0	23,0	12,4	4,0	2,5	2,887	≥ M48	141342
	5,5*	23,0	12,4	3,6	2,9	3,182	≥ M56	141350
	6,0*	23,0	12,4	3,2	3,3	3,467	≥ M64	141369



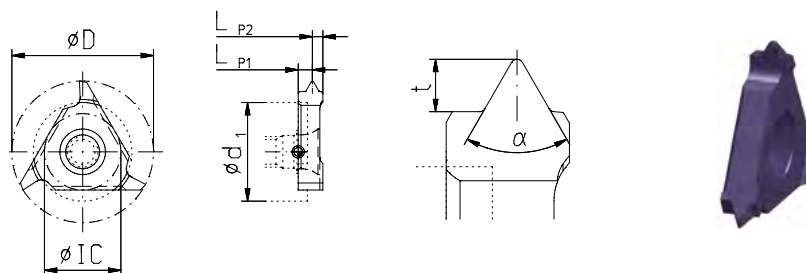
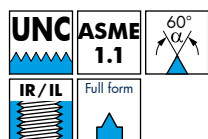
Type	Pitch mm	Thread Nominal Ø	D mm	IC mm	LP1 mm	LP2 mm	G mm	t _{max.} mm	Order No. TINAMATIC
03	1-2,0	≥ 14	10,6	5,5	1,5	1,5	0,1	1,6	141677
02	1-3,5	≥ 22	17,5	9,2	1,59	1,91	0,1	2,15	141528
01	1-4,0	≥ 27	23,0	12,4	1,85	2,15	0,1	2,45	141366

Thread Milling

- Insert holder see page 32
- Cutting data see page 166



Type	Pitch mm	Pitch / "	D mm	IC mm	LP1 mm	LP2 mm	t mm	Thread	TINAMATIC
03	1,337 *	19	10,6	5,5	1,25	1,09	0,871	G 1/4"	141652
	1,337	19	10,6	5,5	1,25	1,09	0,871	G 3/8"	141682
	1,814 *	14	16,0	9,2	1,75	1,75	1,162	G 1/2"	141508
02	1,814	14	17,5	9,2	2,2	1,3	1,162	G 3/4"	141488
	2,309	11	17,5	9,2	1,9	1,6	1,494	≥ G 1"	141522
	3,175	8	17,5	9,2	1,75	1,75	1,830	BSW 1"	160665
	3,175	8	17,5	9,2	1,75	1,75	1,830	BSW 1 1/8" - 1 1/2"	161718
01	2,309	11	23,0	12,4	2,4	1,6	1,494	≥ G 1"	141381



Type	Pitch mm	Pitch / "	D mm	IC mm	LP1 mm	LP2 mm	t mm	Thread	TINAMATIC
03	1,954 **	13	10,0	5,5	1,17	1,17	1,099	UNC 1/2" - 13	149460
	2,309 **	11	10,6	5,5	1,17	1,17	1,349	UNC 5/8" - 11	149204
	2,540 **	10	10,6	5,5	1,17	1,17	1,470	UNC 3/4" - 10	149732

Request Form for Tread Milling

Please download our fillable PDF form for a detailed thread milling request and send us back via email: info@mimatic.de

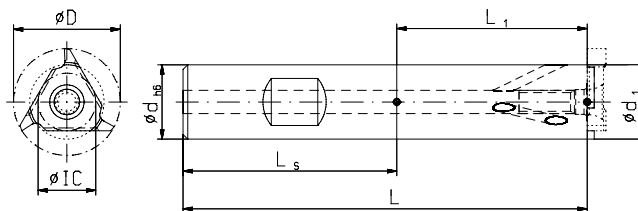
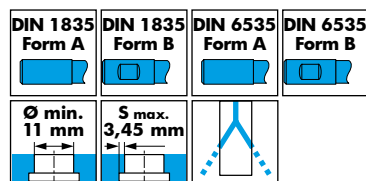
Request form:
www.mimatic.de/Gew_EN.pdf



* Only for external threads
** Not suited for cutters 123489

Circular Milling Tools

- Inserts see page 30-31
- Cutting data see page 166



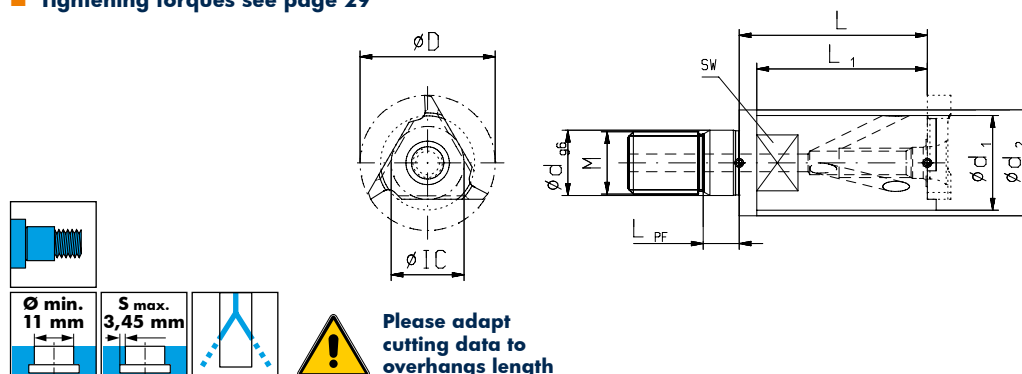
											Spare part No.	
Type	Order No.	Form	D mm	IC mm	dh6 mm	d1 mm	S max. mm	L mm	L1 mm	Shaft	Screw-driver *	Screw *
03	123477 **	B	10,6	5,5	10	7,4	1,6	57,2	17,2	Steel	T6 IP 111705	107530
	123478 **	B	10,6	5,5	12	7,4	1,6	64,66	17,2	Steel		
	123479 **	A	10,6	5,5	12	7,4	1,6	64,66	17,2	Steel		
	123480	B	10,6	5,5	10	7,4	1,6	74,2	34,2	Carbide		
	123489	A	10,6	5,5	8	8	1,25	77,66	41,0	Carbide		
02	123445	B	17,5	9,2	12	12	2,6	74,05	28,7	Steel	T15 IP 111671	107547
	123446	B	17,5	9,2	16	12	2,6	78,6	28,7	Steel		
	123447	A	17,5	9,2	16	12	2,6	78,6	28,7	Steel		
	123448	B	17,5	9,2	12	12	2,6	108,7	63,7	Carbide		
	123470	A	17,5	9,2	12	12	2,6	79,3	34,3	Carbide		
	123471	A	17,5	9,2	12	12	2,6	96,5	51,5	Carbide		
01	123474	A	17,5	9,2	12	12	2,6	121,5	76,5	Carbide	T20 IP 111594	107551
	123412	B	23,0	12,4	16	16	3,45	87,0	38,5	Steel		
	123414	B	23,0	12,4	16	16	3,45	116,0	67,5	Steel		
	123415 ***	A	23,0	12,4	20	17	3,0	93,0	41,0	Steel		
	170320	A	23,0	12,4	16	17	3,0	137,0	88,5	Carbide		
	123416	B	23,0	12,4	16	17	3,0	137,0	88,5	Carbide		
	123440	A	23,0	12,4	16	16	3,45	111,0	63,0	Carbide		
	123441	A	23,0	12,4	16	16	3,45	148,5	100,0	Carbide		

** Without internal coolant supply *** Also suitable as basic body for a tandem cutter.

Screw torques max.

107530	T6 IP	0,9 Nm
107547	T15 IP	3,8 Nm
107551	T20 IP	5,5 Nm

- Tightening torques see page 29



											Spare part No.	
Type	Order No.	D mm	IC mm	dg6 mm	d1 mm	d2 mm	S max. mm	L mm	L1 mm	M	Screw-driver *	Screw *
03	123481	10,6	5,5	6,5	7,4	10,0	1,60	22,66	13,66		111705	107530
02	123450	17,5	9,2	8,5	12,2	15,4	2,60	27,5	18,5		111671	107547
01	123419	23,0	12,4	10,5	16,1	18,0	3,45	32,0	29,0		111594	107551

Screw torques max.

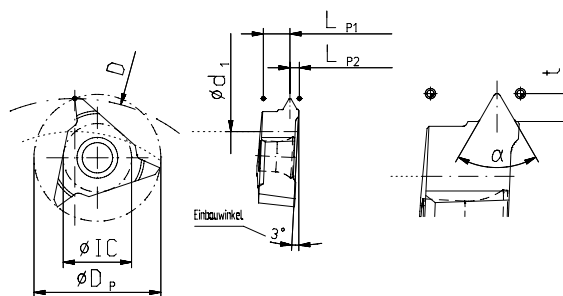
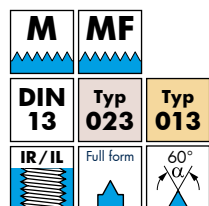
107530	T6 IP	0,9 Nm
107547	T15 IP	3,8 Nm
107551	T20 IP	5,5 Nm

* Screwdriver and clamping screw included in delivery

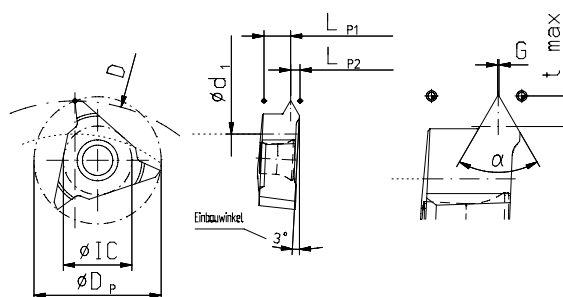
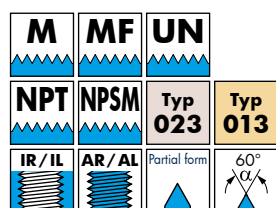
TriMILL

Thread Milling

- Insert holder see page 34-36
- Cutting data see page 166



Type	Pitch mm	Thread Nominal Ø	DP mm	IC mm	LP1 mm	LP2 mm	t mm	Order No. TINAMATIC
023	1,5	≥ M36 x 1,5	17,5	9,2	4,08	0,95	0,864	142020
	2,0	≥ M39 x 2	17,5	9,2	3,83	1,2	1,159	142003
	2,5	≥ M42 x 2,5	17,5	9,2	3,52	1,51	1,444	141989
	3,0	≥ M45 x 3	17,5	9,2	3,33	1,7	1,728	141988
	4,0	≥ M52 x 4	17,5	9,2	2,63	2,4	2,308	142028
	4,5*	≥ M56 x 4,5	17,5	9,2	2,53	2,5	2,602	141998
	5,0*	≥ M60 x 5	17,5	9,2	2,13	2,9	2,887	142009
	5,5*	≥ M60 x 5,5	17,5	9,2	2,7	3,33	3,128	142032
	6,0*	≥ M64	17,5	9,2	2,7	3,33	3,467	142000
013	1,5	≥ M68 x 1,5	23,0	12,4	5,58	0,95	0,864	141920
	2,0	≥ M72 x 2	23,0	12,4	5,33	1,2	1,159	141910
	2,5	≥ M76 x 2,5	23,0	12,4	5,02	1,51	1,444	141935
	3,0	≥ M78 x 3	23,0	12,4	4,83	1,7	1,728	141943
	3,5	≥ M85 x 3,5	23,0	12,4	4,83	1,7	2,023	141961
	4,0	≥ M85 x 4	23,0	12,4	4,63	1,9	2,308	141947
	4,5	≥ M88 x 4,5	23,0	12,4	4,03	2,5	2,602	141964
	5,0	≥ M90 x 5	23,0	12,4	4,03	2,5	2,887	141955
	6,0	≥ M100 x 6	23,0	12,4	3,23	3,3	3,467	141976
	8,0	≥ M120 x 8	23,0	12,4	3,454	3,941	4,731	150338



Type	Pitch mm	Thread Nominal Ø	DP mm	IC mm	LP1 mm	LP2 mm	G mm	S max. mm	Order No. TINAMATIC
023	1-3,5	≥ 38	17,5	9,2	3,28	1,75	0,10	2,15	141996
	3-6,0*	≥ 42	17,5	9,2	2,7	3,33	0,25	3,75	142010
013	1-3,5	≥ 68	23,0	12,4	4,88	1,65	0,10	2,15	141969
	3,5-6	≥ 80	23,0	12,4	2,8	3,73	0,40	3,75	141951

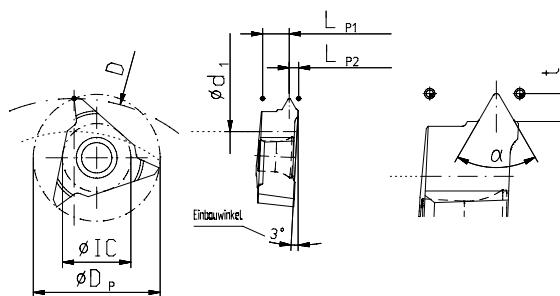
* Not suited for cutters 123462

TriMILL

Thread Milling

- Insert holder see page 34-36
- Cutting data see page 166

G	DIN 228/1	BSW	BSF	Typ 023	Typ 013
IR/IL	AR/AL	Full form	55°		



Type	Pitch mm	Pitch / "	DP mm	IC mm	LP1 mm	LP2 mm	t mm	Order No.
023	2,309	11	17,5	9,2	3,33	1,7	1,494	TINAMATIC 142022
013	2,309	11	23,0	12,4	4,14	2,39	1,494	141941

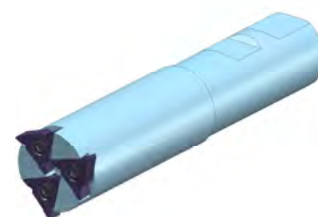
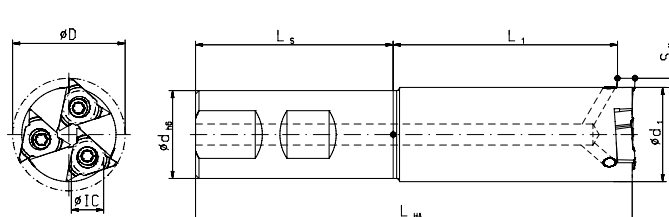


TriMILL 023

Circular Milling Tools

- Inserts see page 33-34
- Cutting data see page 166

Typ 023	DIN 1835 Form B	IC 9,2
Ø min. 33 mm	S max. 2,6 mm	



Order No.	D mm	d h6 mm	d1 mm	S max. mm	LHA mm	L mm	L1 mm	Inserts	Shaft	Spare part No.	
123462	32	25	26,8	2,6	124,2	119,97	61,97	3	Steel	T15 IP Screw-driver*	Screw *
										111671	107547

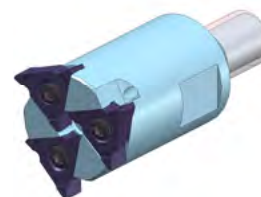
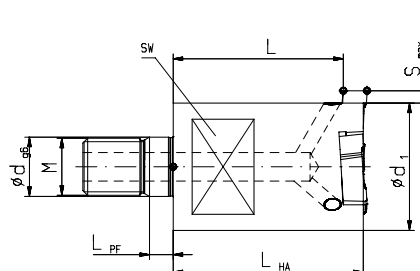
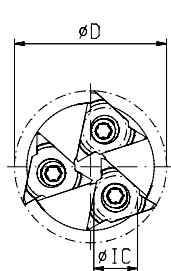
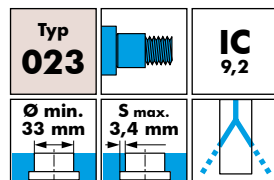
Screw torque max. 3,8 Nm

Circular Milling Tools

- Inserts see page 33-34
- Cutting data see page 166
- Tightening torques see page 29



Please adapt cutting data to overhangs length



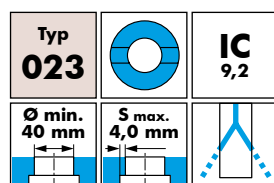
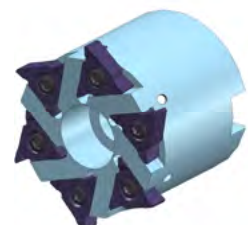
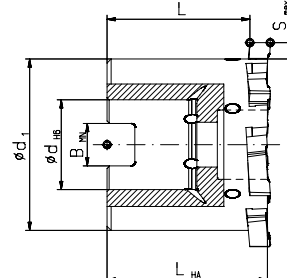
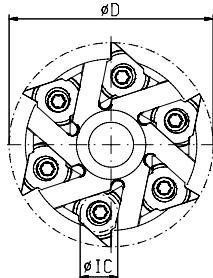
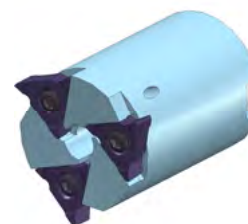
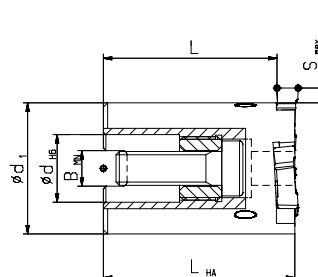
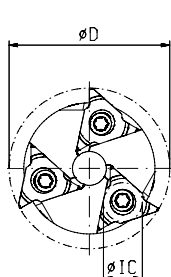
Order No.	D mm	d _{g6} mm	d ₁ mm	S _{max.} mm	L _{HA} mm	L mm	Inserts	M
123465	32	12,5	24,3	3,8	40	34,97	3	M12

Spare part No.

T15 IP Screw- driver*	Screw *
111671	107547

Screw torque max. 3,8 Nm

- Assembly instruction see page 176



Order No.	D mm	d _{H6} mm	d ₁ mm	S _{max.} mm	L _{HA} mm	L mm	B _{MN} mm	Inserts
123464	38	16	31	3,4	45,3	40,97	8,4	3
123461 *	50	22	42	3,9	39,3	34,97	10,4	6
161485 *	63	27	55	4,0	39,3	34,97	12,4	8

Accessories



Key

134984

Spare part No.

T15 IP Screw- driver*	Screw *
111671	107547
111671	107547
111671	107547

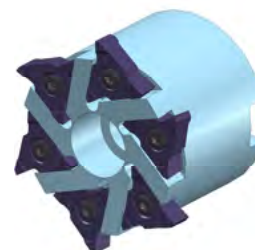
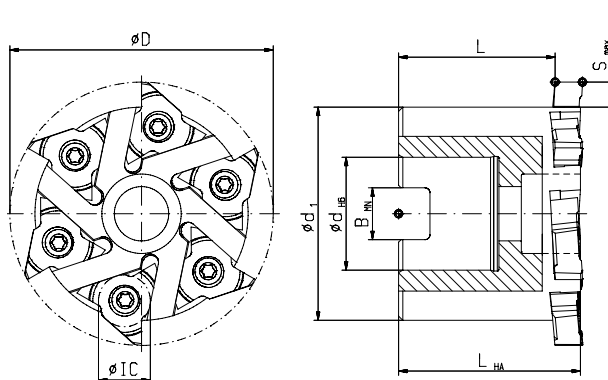
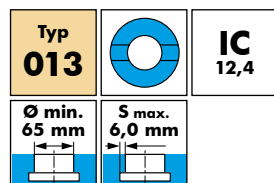
Screw torque max. 3,8 Nm

* Cutter clamping screw internal hexagon

Order No. 114684

Circular Milling Tools

- Inserts see page 33-34
- Cutting data see page 166



Order No.	D mm	dH6 mm	d1 mm	S max. mm	LHA mm	L mm	B MN mm	Inserts
123435	63	27	51	6	43,5	37,5	12,4	6

Spare part No.

T20 IP
Screw-
driver *

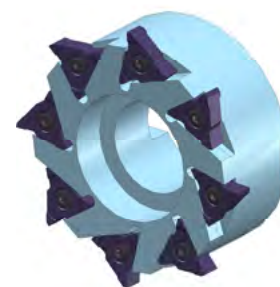
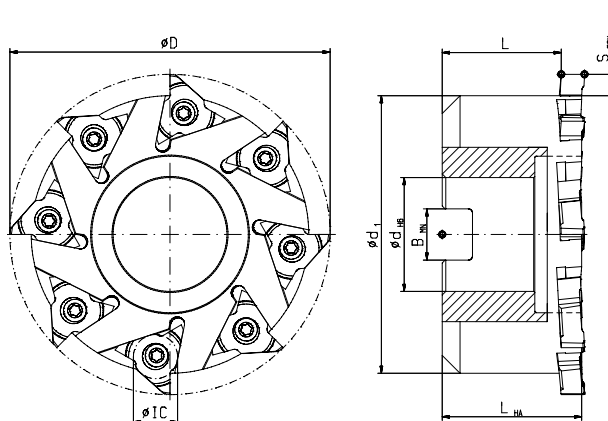
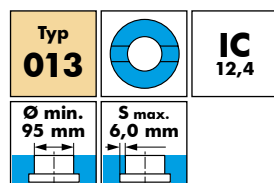
Screw *

111594 107551

Screw torque 5,5 Nm

Cutter clamping screw internal hexagon

Order No. 114695



Order No.	D mm	dH6 mm	d1 mm	S max. mm	LHA mm	L mm	B MN mm	Inserts
123436	90	32	78	6	39,2	33,5	14,4	8

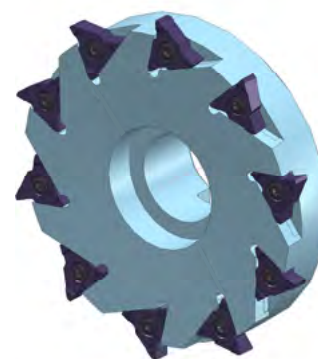
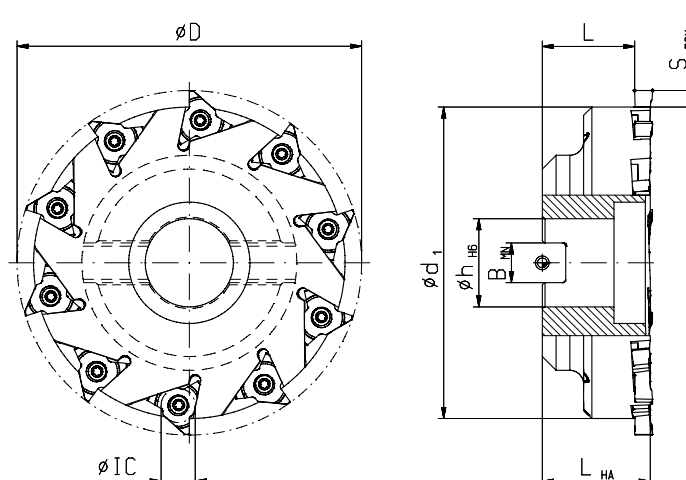
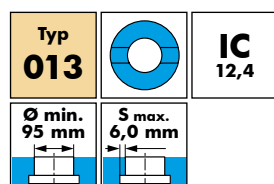
Spare part No.

T20 IP
Screw-
driver *

Screw *

111594 107551

Screw torque 5,5 Nm



Order No.	D mm	dH6 mm	d1 mm	S max. mm	LHA mm	L mm	B MN mm	Inserts
134561	125	32	113	6,0	39,2	33,5	14,4	10

Spare part No.

T20 IP
Screw-
driver *

Screw *

111594 107551

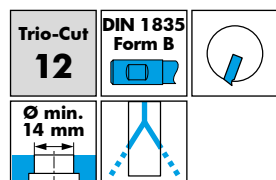
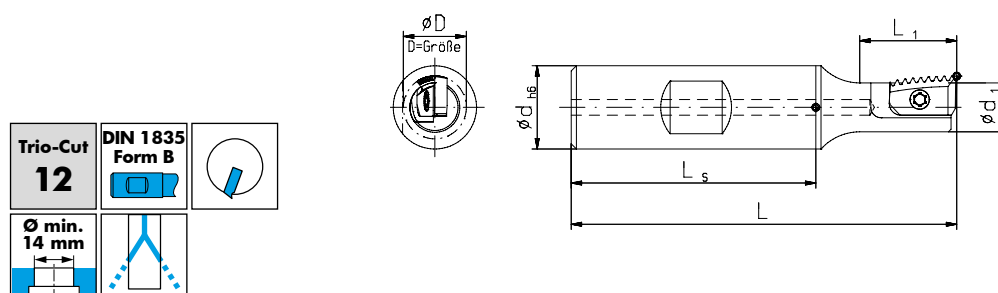
Screw torque 5,5 Nm

* Screwdriver and clamping screw included in delivery

TrioCUT

Circular Milling Tools

- Inserts see below
- Cutting data see page 166



Order No.	D mm	d h6 mm	d1 mm	L mm	L1 mm	Shaft	Spare part No.	
							T8 IP Screw- driver *	Screw *
123620	12	16	9,4	74	18	Steel	111656	115567

Screw torque max. 1,1 Nm

Circular Milling Inserts

Note:
Type 12 milling tools can only be used with type 12 milling inserts!

Trio-Cut
12



M	DIN 13	IR/IL	Full form	Pitch mm	HP mm	LG * mm	Teeth	LP2 * mm	Order No.
									TINAMATIC
				1,0	7,5	11,0	12	0,5	142594
				1,5	7,5	10,5	8	0,75	142694
G	DIN 228/1	BSW	BSF	Pitch mm	Pitch /"	HP mm	LG * mm	Teeth	LP2 * mm
				1,337	19	7,5	9,07	9	0,65
				1,814	14	7,5	9,07	6	0,9
PG	DIN 40430	IR/IL	AR/AL	Pitch mm	Pitch /"	HP mm	LG * mm	Teeth	LP2 * mm
				1,411	18	7,5	11,28	9	0,7
				1,588	16	7,5	11,11	8	0,8

Thread: 9-16, 21-48

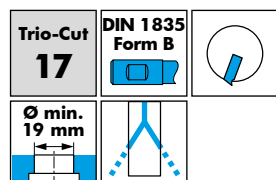
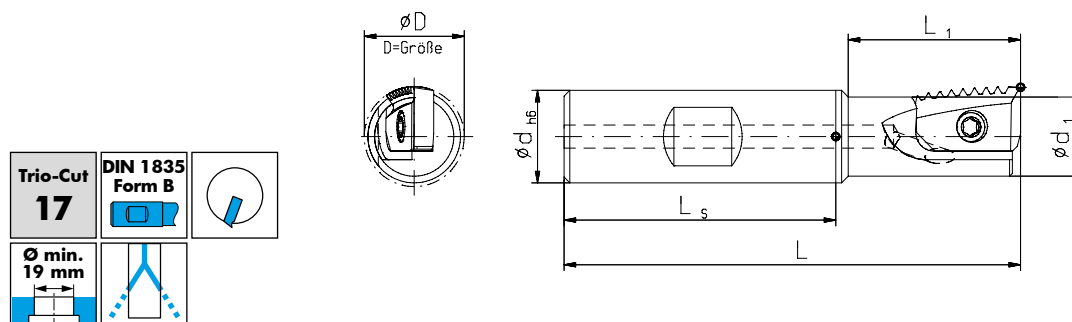
* Screwdriver and clamping screw included in delivery

** The length "LG" and "LP2" of the Thread Milling Insert are measured when the insert is clamped in the holder.

TrioCUT

Circular Milling Tools

- Inserts see page 38-39
- Cutting data see page 166



Order No.	D mm	d _{h6} mm	d ₁ mm	L mm	L ₁ mm	Shaft	Spare part No.	
							T15 IP Screw-driver *	Screw *
123631	17	16	13,7	79	30	Steel	111671	115628
123633	17	20	13,7	92	30	Steel	111671	115628

Screw torque max. 3,8 Nm

Circular Milling Inserts

Trio-Cut
17



Note:
Type 17 milling tools can only be used with type 17 milling inserts!

M Full form	DIN 13	IR/IL		Pitch mm	HP mm	LG ** mm	Teeth	LP2 ** mm	Order No. TINAMATIC
				1,0	11	16,0	17	0,55	142731
				1,5	11	16,5	12	0,75	142720
				2,0	11	16,0	9	1,0	142651

M Full form	DIN 13	AR/AL		Pitch mm	HP mm	LG ** mm	Teeth	LP2 ** mm	Order No. TINAMATIC
				1,5	11	16,5	12	0,75	142721

M Full form	DIN 13	IR/IL		Pitch mm	HP mm	LG ** mm	Teeth	LP2 ** mm	R mm	Order No. TINAMATIC
				1,0	11	14,0	15	3,6	0,4	142668
				1,5	11	13,5	10	4,1	0,4	142650
				2,0	11	12,0	7	3,6	0,4	142672

G Full form	DIN 228/1	BSW	IR/IL	AR/AL	BSF		Pitch mm	Pitch /"	HP mm	LG ** mm	Teeth	LP2 ** mm	Thread	Order No. TINAMATIC
							2,309	11	11	16,16	8	1,16	all	142685
							1,814	14	11	16,33	10	0,95	5/8-3/4-7/8"	142732

* Screwdriver and clamping screw included in delivery

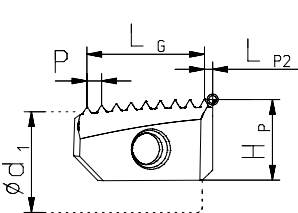
** The length "LG" and "LP2" of the Thread Milling Insert are measured when the insert is clamped in the holder.

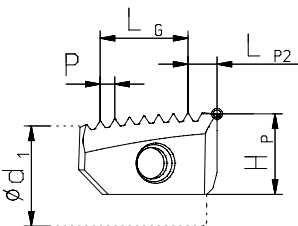
TrioCUT

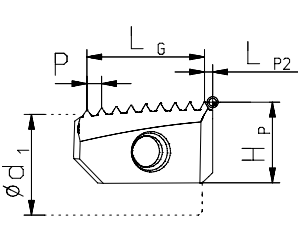
Circular Milling Inserts

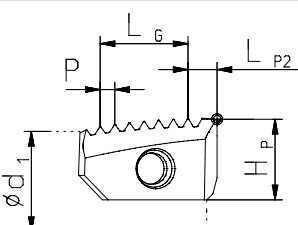


Trio-Cut
17

 G	 DIN 228/1	 BSW		Pitch mm	Pitch/ "	HP mm	LG** mm	Teeth	LP2** mm	Thread	Order No. TINAMATIC
 IR/IL	 Full form	 BSF		1,814	14	11	16,33	10	0,95	G ½"	142652
 55° α											

 G	 DIN 228/1	 BSW		Pitch mm	Pitch/ "	HP mm	LG** mm	Teeth	LP2** mm	R mm	Thread	Order No. TINAMATIC
 IR/IL	 AR/AL	 BSF		2,309	11	11	11,54	6	4,6	0,4	all	142725
 Full form	 55° α			1,814	14	11	12,69	8	3,5	0,4	5/8-3/4-7/8"	142717
				1,814	14	11	12,69	8	3,5	0,4	only ½"	142669

 PG	 DIN 40430			Pitch mm	Pitch/ "	HP mm	LG** mm	Teeth	LP2** mm	Thread	Order No. TINAMATIC
 IR/IL	 AR/AL			1,411	18	11	16,92	12	0,7	11-16	142674
 Full form	 80° α			1,588	16	11	15,88	11	0,8	21-48	142675

 PG	 DIN 40430			Pitch mm	Pitch/ "	HP mm	LG** mm	Teeth	LP2** mm	R mm	Thread	Order No. TINAMATIC
 IR/IL	 AR/AL			1,411	18	11	14,1	11	3,9	0,4	11-16	142684
 Full form	 80° α			1,588	16	11	12,7	9	3,7	0,4	21-48	142714

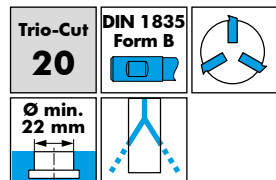
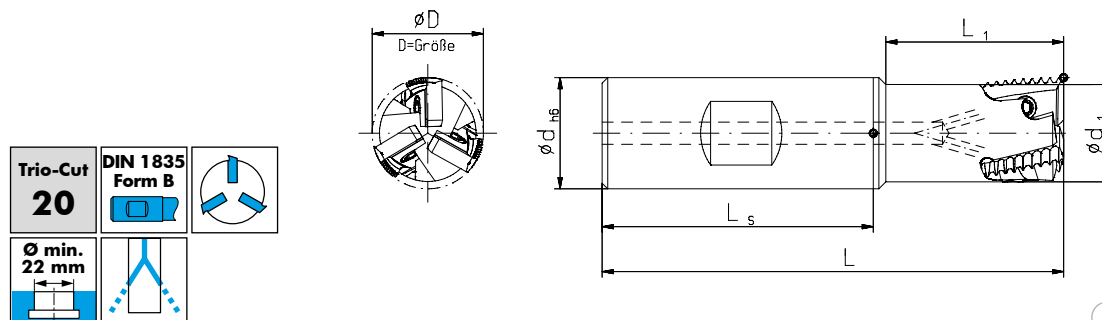
* Internal thread only

** The length "LG" and "LP2" of the Thread Milling Insert are measured when the insert is clamped in the holder.

TrioCUT

Circular Milling Tools

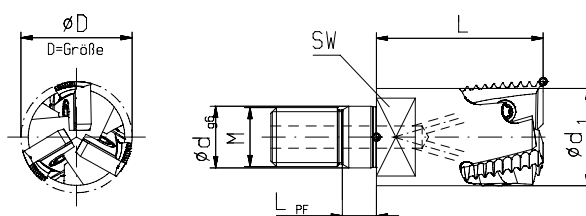
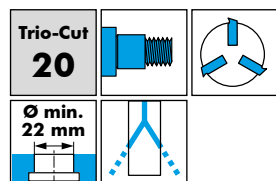
- Inserts see below
- Cutting data see page 166



Order No.	D mm	d _{h6} mm	d ₁ mm	L mm	L ₁ mm	Shaft	Spare part No.	
123622	20	20	17,5	83	32	Steel	T8 IP Screw-driver *	Screw *
							111656	115567

Screw torque max. 1,1 Nm

- Tightening torques see page 29



Order No.	D mm	d _{g6} mm	M	L _{PF} mm	d ₁ mm	L mm	Shaft	Spare part No.	
123623	20	10,5	10	5	17,5	21	Steel	T8 IP Screw-driver *	Screw *
								111656	115567

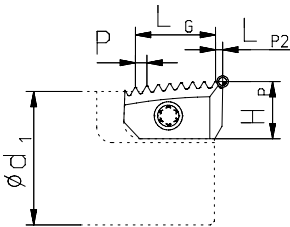
Screw torque max. 1,1 Nm

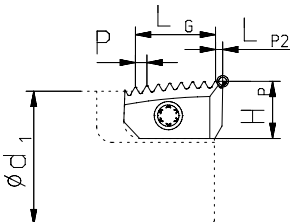
Circular Milling Inserts

Trio-Cut 20



Note:
Type 20 milling tools can only be used with type 20 milling inserts!

 M	 DIN 13		Pitch mm	HP mm	LG** mm	Teeth	LP2** mm	Order No.
 IR/IL	 Full form		1,0	7,5	12,0	13	0,5	142690
 60°			1,5	7,5	10,5	8	0,75	142633

 G	 DIN 228/1	 BSW		Pitch mm	Pitch/°	HP mm	LG** mm	Teeth	LP2** mm	Thread	Order No.
 IR/IL	 AR/AL	 BSF		1,814	14	7,5	9,07	6	0,9		142707
 Full form	 55°			1,814	14**	7,5	9,07	6	0,9	G ¾"	142666

** for internal threads only

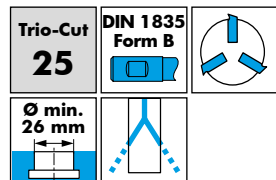
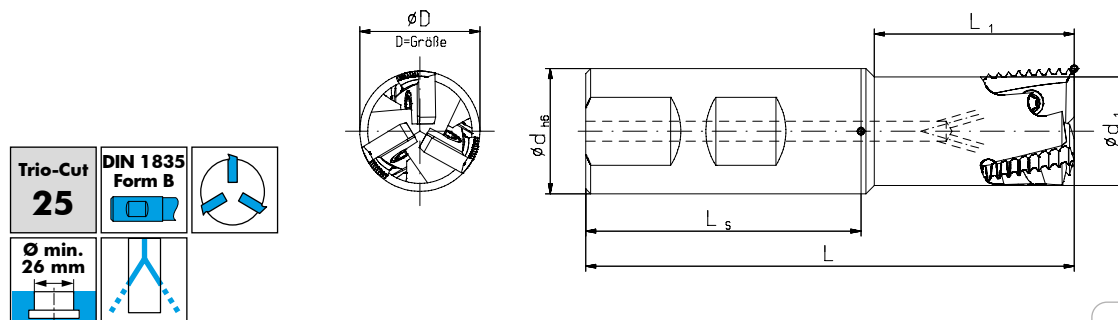
* Screwdriver and clamping screw included in delivery

** The length "LG" and "LP2" of the Thread Milling Insert are measured when the insert is clamped in the holder.

TrioCUT

Circular Milling Tools

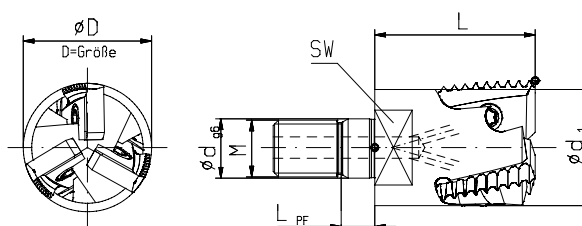
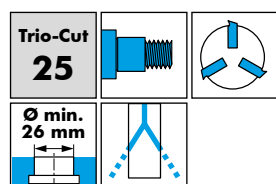
- Inserts see page 42
- Cutting data see page 166



Order No.	D mm	d _{h6} mm	d ₁ mm	L mm	L ₁ mm	Shaft	Spare part No.	
							T15 IP Screw-driver *	Screw *
123638	25	25	21,7	107,6	50	Steel	111671	115628
123639	25	25	21,7	142,6	85	Heavy metal	111671	115628

Screw torque max. 3,8 Nm

- Tightening torques see page 29



Order No.	D mm	d _{g6} mm	M	L _{PF} mm	d ₁ mm	L mm	Shaft	Spare part No.	
								T15 IP Screw-driver *	Screw *
166204	25	10,5	10	5	21,7	30	Steel	111671	115628

Screw torque max. 3,8 Nm

i TrioCUT 25 inserts see next page

* Screwdriver and clamping screw included in delivery

** The length "L_G" and "L_{P2}" of the Thread Milling Insert are measured when the insert is clamped in the holder.

TrioCUT

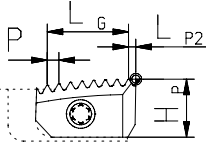
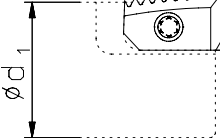
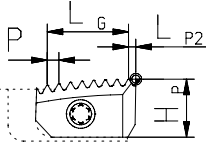
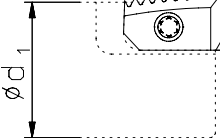
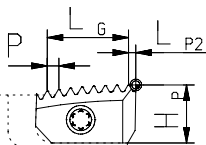
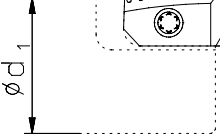
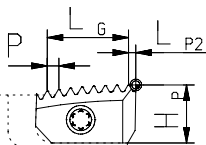
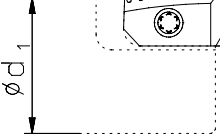
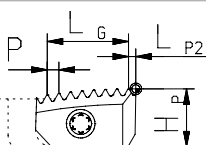
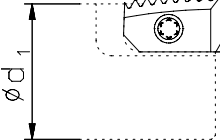
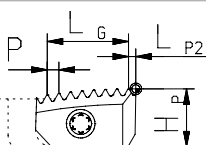
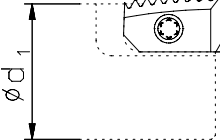
Circular Milling Inserts

Trio-Cut
25



Note:

Type 25 milling tools can only be used with type 25 milling inserts!

M IR/IL 60° α DIN 13 Full form  <td>  Ød₁  </td> <td><table><tr><th>Pitch mm</th><th>HP mm</th><th>LG** mm</th><th>Teeth</th><th>LP2** mm</th><th>Order No. TINAMATIC</th></tr><tr><td>1,0</td><td>11</td><td>16,0</td><td>17</td><td>0,5</td><td>142754</td></tr><tr><td>1,5</td><td>11</td><td>16,5</td><td>12</td><td>0,75</td><td>142722</td></tr><tr><td>2,0</td><td>11</td><td>16,0</td><td>9</td><td>1,11</td><td>142723</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table></td>	 Ød₁ 	<table><tr><th>Pitch mm</th><th>HP mm</th><th>LG** mm</th><th>Teeth</th><th>LP2** mm</th><th>Order No. TINAMATIC</th></tr><tr><td>1,0</td><td>11</td><td>16,0</td><td>17</td><td>0,5</td><td>142754</td></tr><tr><td>1,5</td><td>11</td><td>16,5</td><td>12</td><td>0,75</td><td>142722</td></tr><tr><td>2,0</td><td>11</td><td>16,0</td><td>9</td><td>1,11</td><td>142723</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>	Pitch mm	HP mm	LG** mm	Teeth	LP2** mm	Order No. TINAMATIC	1,0	11	16,0	17	0,5	142754	1,5	11	16,5	12	0,75	142722	2,0	11	16,0	9	1,11	142723											
Pitch mm	HP mm	LG** mm	Teeth	LP2** mm	Order No. TINAMATIC																																
1,0	11	16,0	17	0,5	142754																																
1,5	11	16,5	12	0,75	142722																																
2,0	11	16,0	9	1,11	142723																																
M AR/AL 60° α DIN 13 Full form  <td>  Ød₁  </td> <td><table><tr><th>Pitch mm</th><th>HP mm</th><th>LG** mm</th><th>Teeth</th><th>LP2** mm</th><th>Order No. TINAMATIC</th></tr><tr><td>1,5</td><td>11</td><td>16,5</td><td>12</td><td>0,75</td><td>142772</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table></td>	 Ød₁ 	<table><tr><th>Pitch mm</th><th>HP mm</th><th>LG** mm</th><th>Teeth</th><th>LP2** mm</th><th>Order No. TINAMATIC</th></tr><tr><td>1,5</td><td>11</td><td>16,5</td><td>12</td><td>0,75</td><td>142772</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>	Pitch mm	HP mm	LG** mm	Teeth	LP2** mm	Order No. TINAMATIC	1,5	11	16,5	12	0,75	142772																							
Pitch mm	HP mm	LG** mm	Teeth	LP2** mm	Order No. TINAMATIC																																
1,5	11	16,5	12	0,75	142772																																
G IR/IL 55° α DIN 228/1 Full form  BSW BSF <td>  Ød₁  </td> <td><table><tr><th>Pitch mm</th><th>Pitch /"</th><th>HP mm</th><th>LG** mm</th><th>Teeth</th><th>LP2** mm</th><th>Order No. TINAMATIC</th></tr><tr><td>2,309</td><td>11</td><td>11</td><td>16,16</td><td>8</td><td>1,16</td><td>142743</td></tr><tr><td>1,814</td><td>14</td><td>11</td><td>16,33</td><td>10</td><td>0,95</td><td>142798</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table></td>	 Ød₁ 	<table><tr><th>Pitch mm</th><th>Pitch /"</th><th>HP mm</th><th>LG** mm</th><th>Teeth</th><th>LP2** mm</th><th>Order No. TINAMATIC</th></tr><tr><td>2,309</td><td>11</td><td>11</td><td>16,16</td><td>8</td><td>1,16</td><td>142743</td></tr><tr><td>1,814</td><td>14</td><td>11</td><td>16,33</td><td>10</td><td>0,95</td><td>142798</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>	Pitch mm	Pitch /"	HP mm	LG** mm	Teeth	LP2** mm	Order No. TINAMATIC	2,309	11	11	16,16	8	1,16	142743	1,814	14	11	16,33	10	0,95	142798														
Pitch mm	Pitch /"	HP mm	LG** mm	Teeth	LP2** mm	Order No. TINAMATIC																															
2,309	11	11	16,16	8	1,16	142743																															
1,814	14	11	16,33	10	0,95	142798																															

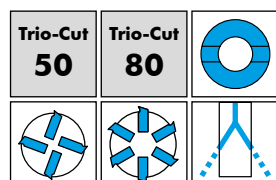
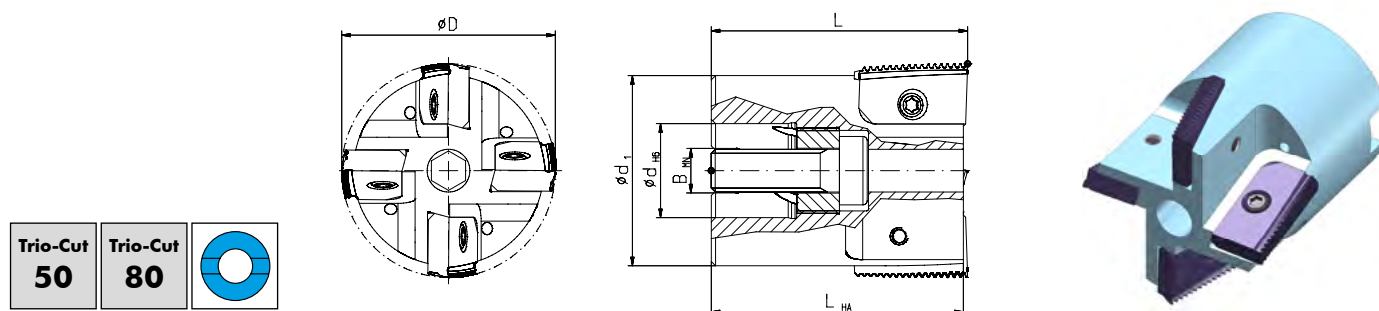


** The length "LG" and "LP2" of the Thread Milling Insert are measured when the insert is clamped in the holder.

TrioCUT

Circular Milling Tools

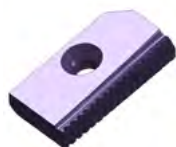
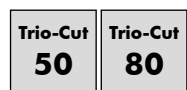
- Inserts see below
- Cutting data see page 166
- Assembly instruction see page 176



Order No.	Size	D mm	d _{h6} mm	B _{MN} mm	d ₁ mm	L mm	L _{HA} mm	Inserts	Spare part No.	
									T15 IP Screw- driver*	Screw *
135203	50	50	22	10,4	44,5	60	59	4	111671	107559
172159	80	80	32	14,4	75	60	59	6	111671	107559

Screw torque max. 3,8 Nm

Circular Milling Inserts



Hinweis:

Type 50 milling tools can only be used with type 50 milling inserts!

Type 80 milling tools can only be used with type 80 milling inserts!

M DIN 13 IR/IL Full form 60° α	Pitch mm	Size	HP mm	LG ** mm	Teeth	LP2 ** mm	Order No.
							TINAMATIC
	1,5	50	18,4	22,5	16	0,75	150114
	1,5	80	18,4	22,5	16	0,75	148871
	2,0	80	18,4	22,0	12	1,0	171636

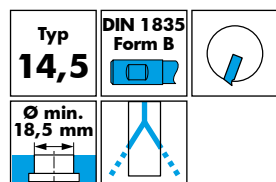
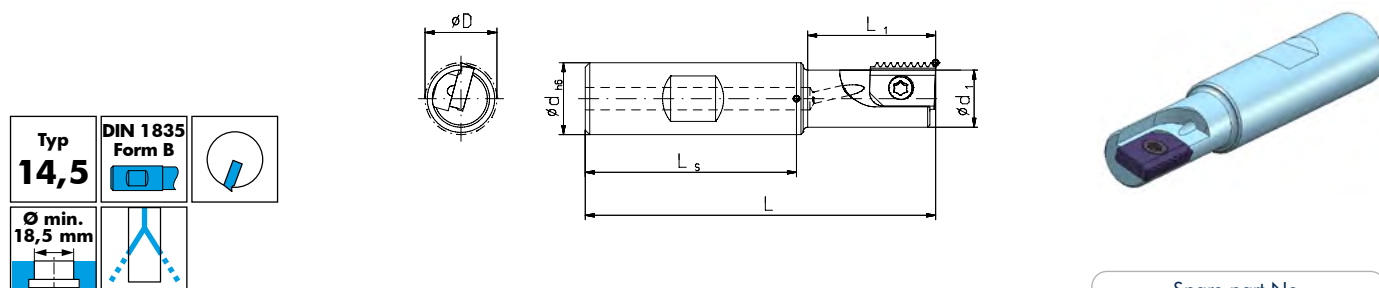
* Screwdriver and clamping screw included in delivery

** The length "LG" and "LP2" of the Thread Milling Insert are measured when the insert is clamped in the holder.

14,5

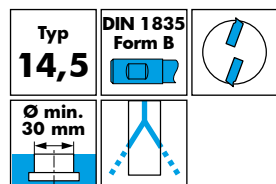
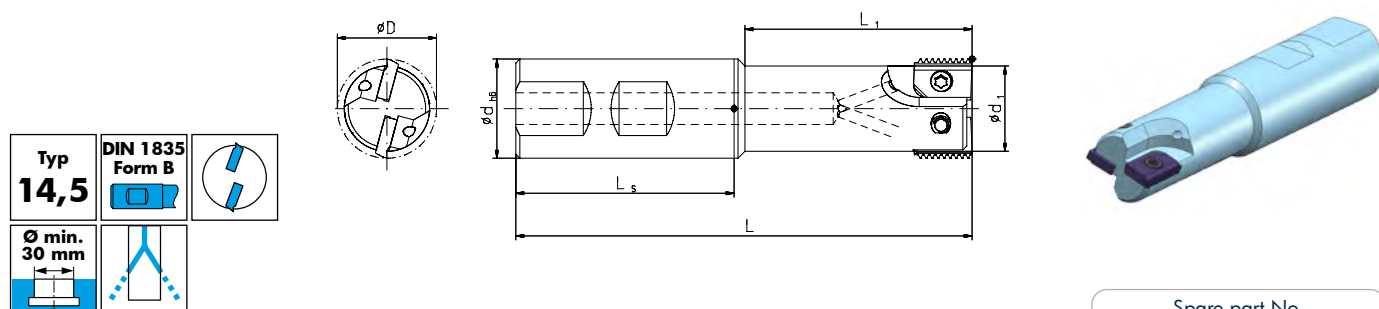
Circular Thread Milling Tools

- Inserts see page 45
- Cutting data see page 166



Order No.	D mm	dh6 mm	d1 mm	L mm	L1 mm	Type	Shaft	Spare part No.	
								T15 IP Screw- driver *	Screw *
123540	16	16	12,7	78	29	short	Steel	111671	107571
123541	16	16	12,7	98	50	long	Heavy metal	111671	107571
123542	20	20	16,8	110	60	long	Steel	111671	115628

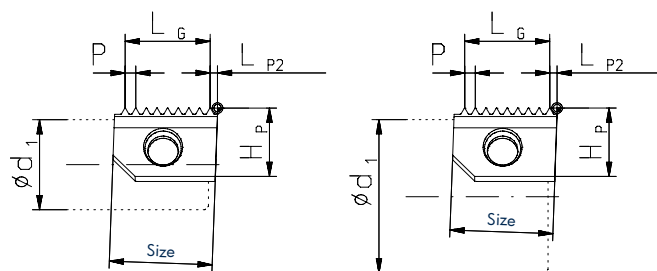
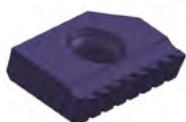
Screw torques max.
 107571 T15 IP 3,8 Nm
 107628 T15 IP 3,8 Nm



Order No.	D mm	dh6 mm	d1 mm	L mm	L1 mm	Type	Shaft	Spare part No.	
								T15 IP Screw- driver *	Screw *
123546	25	25	21,5	106	48,2	short	Steel	111671	107552
123547	25	25	21,5	150	92,2	long	Heavy metal	111671	107552

Screw torque max. 3,8 Nm

Circular Thread Milling Inserts



M DIN 13 IR/IL				Pitch mm	HP mm	LG mm	LP2 mm	Thread	Teeth	Order No. TINAMATIC
Full form 60°				0,5	10	13,50	0,62		28	142117
				0,75	10	13,50	0,62		19	142048
				1,0	10	13,00	0,95		14	142037
				1,25	10	12,50	0,95		11	142067
				1,5	10	12,00	1,05		9	142053
				1,75	10	12,25	1,05		8	142080
				2,0	10	12,00	1,05		7	142136
				2,5	10	10,00	1,75		5	142129
				2,5	10	10,00	1,75	M20x2,5	5	142069

M DIN 13 AR/AL				Pitch mm	HP mm	LG mm	LP2 mm		Teeth	Order No. TINAMATIC
Full form 60°				1,0	10	13	0,71		14	142177
				1,5	10	12	0,78		9	142186
				2,0	10	12	1,22		7	142167

G DIN 228/1 BSW BSF				Pitch mm	Pitch/°	HP mm	LG mm	LP2 mm		Teeth	Order No. TINAMATIC
IR/IL AR/AL Full form 55°				1,058	24	10	12,70	1,02		13	142218
				1,270	20	10	12,70	1,02		11	142213
				1,337	19	10	12,03	1,02		10	142234
				1,411	18	10	11,28	1,63		9	142145
				1,588	16	10	11,11	1,6		8	142152
				1,814	14	10	12,70	1,05		8	142203
				2,117	12	10	10,58	1,31		6	142181
				2,309	11	10	11,54	1,35		6	142159

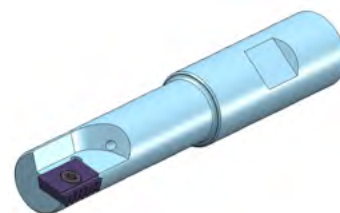
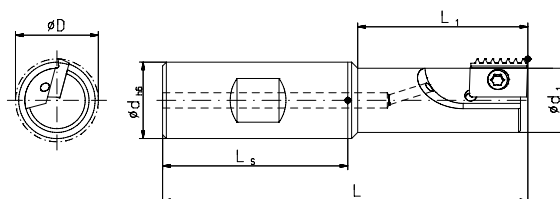
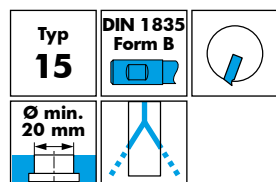
UNC UNF ASME B 1.1 IR/IL				Pitch mm	Pitch/°	HP mm	LG mm	LP2 mm		Teeth	Order No. TINAMATIC
Full form 60°				0,635	40	10	13,33	0,74		22	142124
				0,794	32	10	12,70	0,91		17	142286
				0,907	28	10	12,70	0,99		15	142223
				1,058	24	10	12,70	0,83		13	142273
				1,270	20	10	12,70	0,95		11	142285
				1,411	18	10	12,69	0,93		10	142216
				1,588	16	10	12,70	1,03		9	142147
				1,814	14	10	10,88	1,47		7	142221
				2,117	12	10	10,58	1,32		6	142243
				2,309	11	10	11,55	1,24		6	142237

PG DIN 40430 IR/IL AR/AL				Pitch mm	Pitch/°	HP mm	LG mm	LP2 mm	Thread	Teeth	Order No. TINAMATIC
Full form 80°				1,411	18	10	12,69	3,18	PG 11-16	10	142263
				1,588	16	10	11,16	3,18	PG 21-48	8	142257

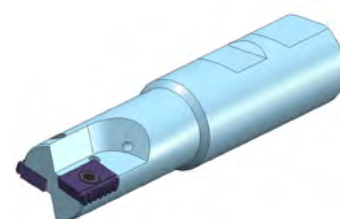
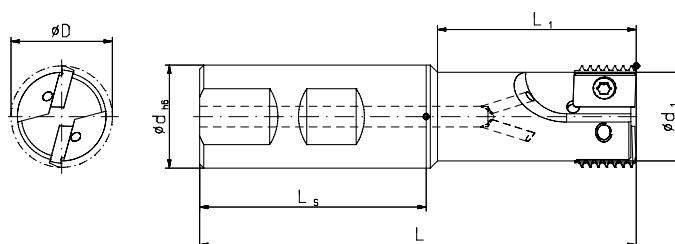
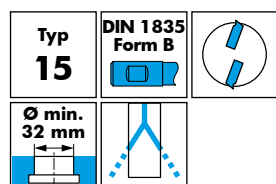
15

Circular Thread Milling Tools

- Inserts see below
- Cutting data see page 166

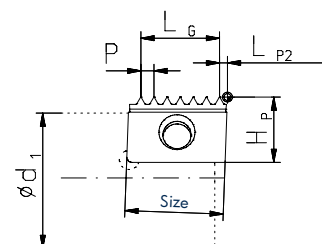
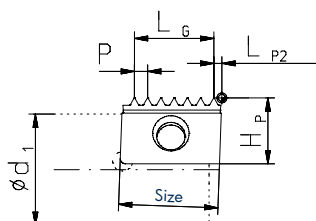


Order No.	D mm	d h6 mm	d1 mm	L mm	L1 mm	Type	Shaft	Spare part No.	
123550	18	16	12,7	79	30	short	Steel	T15 IP Screw-driver *	Screw *
123551	22	20	16,8	110	60	long	Steel	111671	107571
								Screw torque max. 3,8 Nm	



Order No.	D mm	d h6 mm	d1 mm	L mm	L1 mm	Type	Shaft	Spare part No.	
123555	25	25	21,5	106	48,2	short	Steel	T15 IP Screw-driver *	Screw *
								Screw torque max. 3,8 Nm	

Circular Thread Milling Inserts

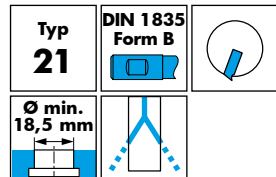
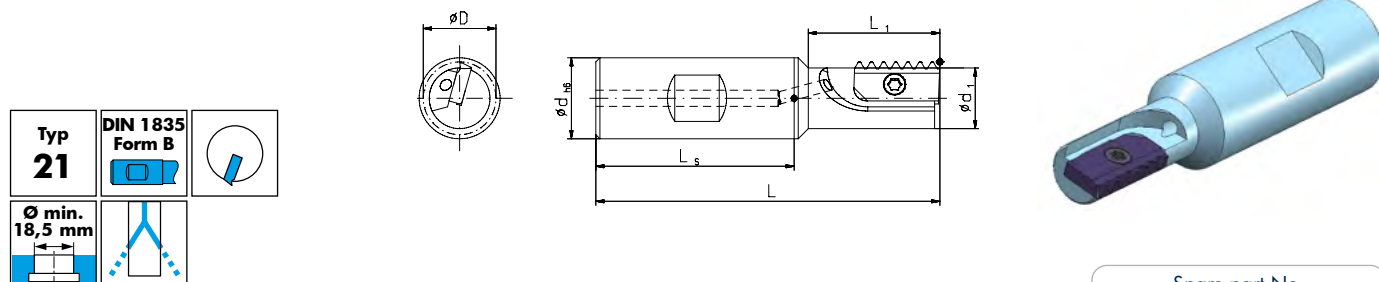


M	DIN 13	IR/IL	Pitch mm	HP mm	LG mm	LP2 mm	Teeth	Order No.
Full form	60°		3,0	10,5	12,0	1,52	5	142269
			3,5	10,5	10,5	1,74	4	142231

* Screwdriver and clamping screw included in delivery

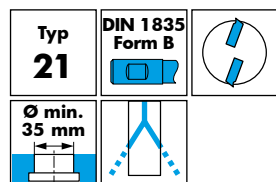
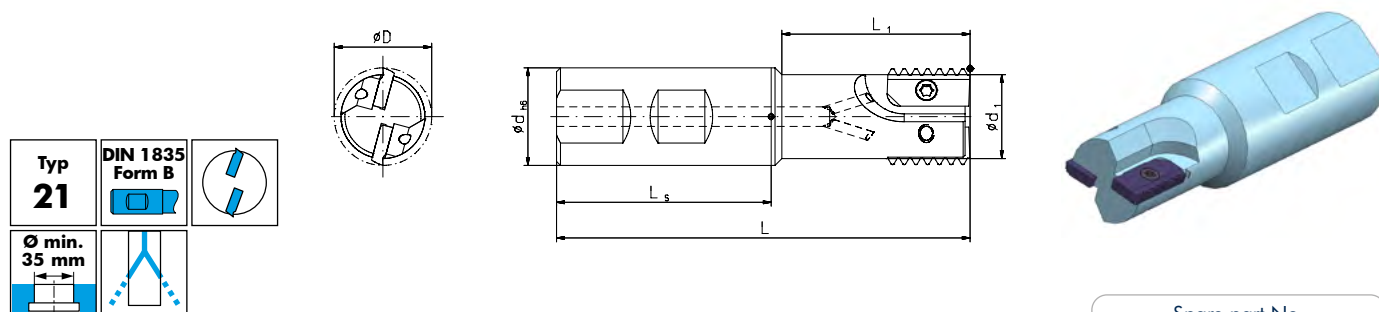
Circular Thread Milling Tools

- Inserts see page 48
- Cutting data see page 166



Order No.	D mm	d _{h6} mm	d ₁ mm	L mm	L ₁ mm	Type	Shaft	Spare part No.	
								T15 IP Screw-driver *	Screw *
123557	16	20	12,7	85	31,3	short	Steel	111671	107571
123560	18	20	15,0	85	31,3	short	Steel	111671	107571
123558	22	25	18,7	92	32,8	short	Steel	111671	107571
123559	22	25	18,7	122	62,8	long	Heavy metal	111671	107552

Screw torque max. 3,8 Nm

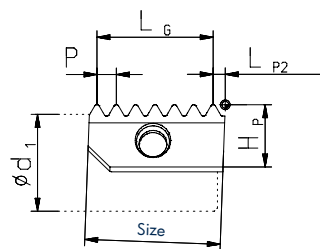
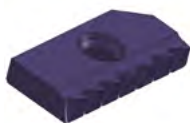


Order No.	D mm	d _{h6} mm	d ₁ mm	L mm	L ₁ mm	Type	Shaft	Spare part No.	
								T15 IP Screw-driver *	Screw *
123564	28	32	24,7	102	38,3	short	Steel	111671	107552
123566	28	32	24,5	142	78,3	long	Heavy metal	111671	107552

Screw torque max. 3,8 Nm

i Type 21 inserts see next page

Circular Thread Milling Inserts



M DIN 13 IR/IL		Pitch mm	HP mm	LG mm	LP2 mm	Teeth	Order No. TINAMATIC
Full form 60°		1,0	10	19,0	0,83	20	142334
		1,5	10	19,5	0,83	14	142366
		2,0	10	18,0	1,07	10	142341

M DIN 13 AR/AL		Pitch mm	HP mm	LG mm	LP2 mm	Teeth	Order No. TINAMATIC
Full form 60°		1,5	10	18	0,98	13	142325

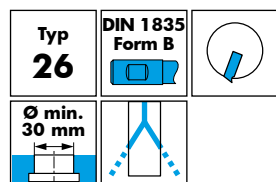
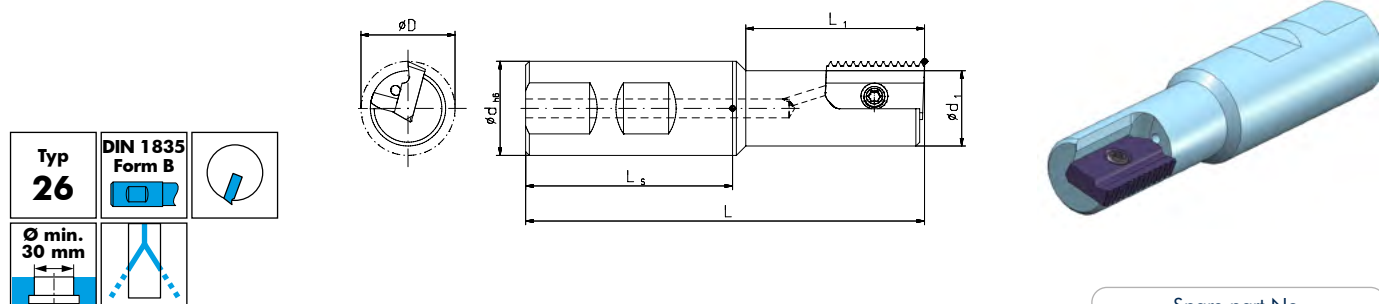
G DIN 228/1 BSW BSF		Pitch mm	Pitch / "	HP mm	LG mm	LP2 mm	Teeth	Order No. TINAMATIC
IR/IL AR/AL Full form 55°		2,309	11	10	18,47	1,28	9	142398
		1,814	14	10	18,14	1,07	11	142376

UNC UNF ASME B 1.1 IR/IL		Pitch mm	Pitch / "	HP mm	LG mm	LP2 mm	Teeth	Order No. TINAMATIC
Full form 60°		1,588	16	10	19,05	0,83	13	142402
		1,814	14	10	18,14	1,07	11	142446
		2,117	12	10	18,04	1,07	10	142416



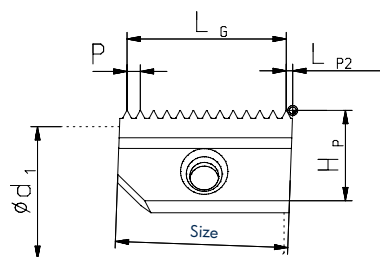
Circular Thread Milling Tools

- Inserts see below
- Cutting data see page 166



Order No.	D mm	dh6 mm	d1 mm	L mm	L1 mm	Type	Shaft	Spare part No.	
123569	25	25	20	107	48,5	short	Steel	T15 IP Screw-driver *	Screw *
								111671	107559
								Screw torque max. 3,8 Nm	

Circular Thread Milling Inserts



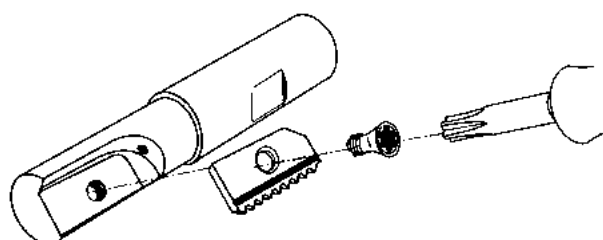
M	DIN 13	IR/IL	Pitch mm	HP mm	LG mm	LP2 mm	Teeth	Order No. TINAMATIC
Full form	60°		1,5	15	24	1,03	17	142417
			2,0	15	24	1,03	13	142452
			3,0	15	21	1,88	8	142489
			3,5	15	20	2,41	7	142445
			4,0	15	20	2,91	6	142449

G	DIN 228/1	BSW	BSF	Pitch mm	Pitch / °	HP mm	LG mm	LP2 mm	Teeth	Order No. TINAMATIC
IR/IL	AR/AL	Full form	55°	2,309	11	15	23,09	1,46	11	142450

Assembling Instructions

Changing Thread Milling Inserts

Put in the insert firmly into insert pocket. Hold the insert in position while clamping.



* Screwdriver and clamping screw included in delivery

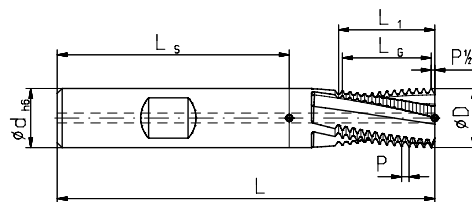
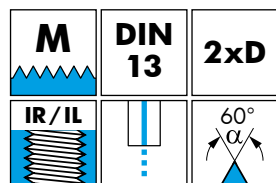
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 Full form 	Thread milling cutter		
	Fixed dimension	M3 - M20	51
	with chamfer	M3 - M20	51
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Metric Internal Fine Thread			
 Full form 	Thread milling cutter		
	Fixed dimension	M5 - M20	52
	Universal	from M10 & P=0,5	52
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Whitworth Pipe Thread			
 Full form 	Thread milling cutter		
	Fixed dimension	1/16" - 1/2"	53
	Universal	1/4" - >1"	54
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British Standard Whitworth Thread			
 Full form 	Thread milling cutter		
	Fixed dimension	5/16" - 5/8"	55
British Standard Fine Thread			
 Full form 	Thread milling cutter		
	Fixed dimension	5/16" - 5/8"	55
Unified National Coarse Thread			
 Full form 	Thread milling cutter		
	Fixed dimension	1/4" - 1/2"	56
	with chamfer	1/4" - 3/4"	56
Unified National Fine Thread			
 Full form 	Thread milling cutter		
	Fixed dimension	1/4" - 1/2"	57
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SolidCUT Solid Carbide Circular Thread Milling Cutter

1

- Fixed dimension type
- Cutting Data see page 166



Thread	P mm	D $\pm 0,02$ mm	L mm	L1 mm	L6 mm	Number of teeth	dh6 mm	Number of edges	Internal coolant	Order No.		
										TINAMATIC		
M3	0,5	2,4	42	7,0	6,5	14	4	2		168192		
M4	0,7	3,15	55	9,8	9,1	14	6	3		168195	168196	168197
M5	0,8	4,0	55	12,0	11,2	15	6	3		168198	168199	168200
M6	1,0	4,8	55	14,0	13	14	6	3		168201	168202	168203
M8	1,25	5,95	60	18,75	17,5	15	6	3	✓	168204	168205	168206
M10	1,5	7,95	70	22,5	21	15	8	3	✓	168207	168208	168209
M12	1,75	9,9	75	28,0	26,25	16	10	4	✓	168210	168211	168212
M14	2,0	11,6	85	32,0	30	16	12	4	✓	168213	168214	168215
M16	2,0	11,95	85	36,0	34	18	12	4	✓	168216	168217	168218
M18	2,5	13,95	90	42,5	40	17	14	4	✓	168219	168220	168221
M20	2,5	15,95	90	42,5	40	17	16	4	✓	168222	168223	168224

- Chamfer type
- Cutting Data see page 166

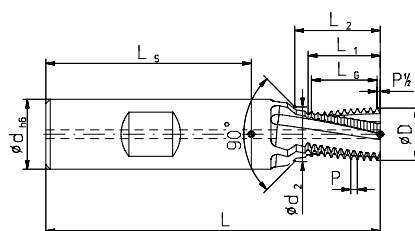


Figure 1:
Chamfer on the shank

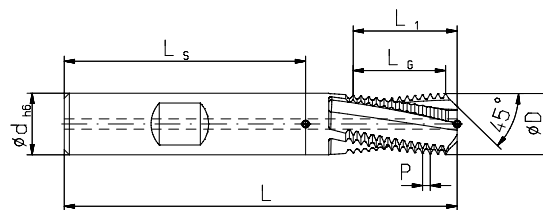
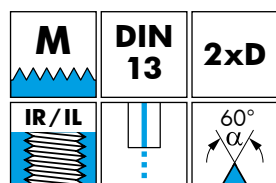
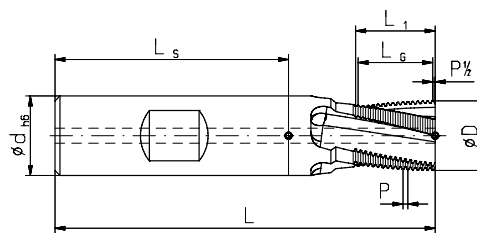
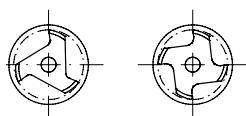
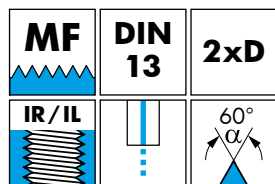


Figure 2:
Chamfer on the face

Thread	P mm	D $\pm 0,02$ mm	L mm	L1 mm	L2 mm	L6 mm	Number of teeth	dh6 mm	d2 mm	Number of edges	Internal coolant	Fig.	Order No.	
													TINAMATIC	
M3	0,5	2,4	42	7,0	7,6	6,5	14	4	3,3	2		1	190812 NEW	-
M4	0,7	3,15	55	9,80	11,03	9,1	14	6	4,3	3		1	186833	186834
M5	0,8	4,00	62	12,70	13,35	11,2	15	8	5,3	3		1	171556	171565
M6	1,0	4,80	62	14,00	15,55	13	14	8	6,3	3		1	171557	171566
M8	1,25	6,50	74	18,75	20,60	17,5	15	10	8,3	3	✓	1	171558	171567
M10	1,5	7,95	80	22,50	24,80	21	15	12	10,3	3	✓	1	171559	171568
M12	1,75	9,90	90	28,00	30,60	26,25	16	14	12,3	4	✓	1	171560	171569
M14	2,0	11,60	100	32,00	34,85	30	16	16	14,3	4	✓	1	171561	171570
M16	2,0	11,95	90	37,60		34	18	12		4	✓	2	171562	171571
M18	2,5	13,95	110	37,50	41,40	40	17	20	18,3	4	✓	1	171563	171572
M20	2,5	15,95	100	44,00		40	17	16		4	✓	2	171564	171573

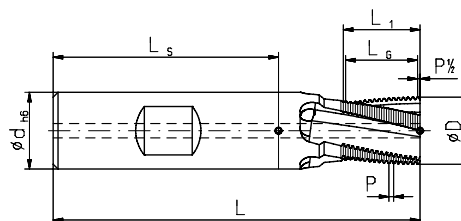
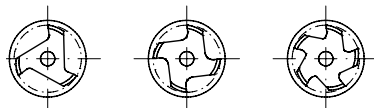
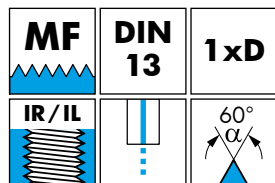
SolidCUT Solid Carbide Circular Thread Milling Cutter

- Fixed dimension type
- Cutting Data see page 166



Thread	P mm	D $\pm 0,02$ mm	L mm	L1 mm	Lg mm	Number of teeth	dh6 mm	Number of edges	Internal coolant	Order No.		
										TINAMATIC		
										DIN 6535 Form HA	DIN 6535 Form HB	DIN 6535 Form HE
M5x0,5	0,5	4,0	55	11,5	11	23	6	3		168225	168226	168227
M6x0,75	0,75	4,8	55	14,25	13,5	19	6	3		168228	168229	168230
M8x1	1,0	5,95	60	19,0	18	19	6	3	✓	168231	168232	168233
M10x1	1,0	7,95	70	21,0	20	21	8	3	✓	193058	on request NEW	on request NEW
M10x1,25	1,25	7,95	70	21,5	20	17	8	3	✓	168234	168235	168236
M12x1	1,0	9,9	75	27,0	26	27	10	4	✓	168237	168238	168239
M12x1,25	1,25	9,9	75	27,5	26,25	22	10	4	✓	168240	168241	168242
M12x1,5	1,5	9,9	75	27,0	25,5	18	10	4	✓	168243	168244	168245
M14x1	1,0	11,6	85	31,0	30	31	12	4	✓	168246	168247	168248
M14x1,25	1,25	11,6	85	31,25	30	25	12	4	✓	200257 NEW	200258 NEW	200259 NEW
M14x1,5	1,5	11,6	85	31,5	30	21	12	4	✓	168249	168250	168251
M16x1,5	1,5	11,95	85	34,5	33	23	12	4	✓	168252	168253	168254
M18x1,5	1,5	13,95	90	42,0	40,5	28	14	4	✓	168255	168256	168257
M20x1,5	1,5	15,95	90	42,0	40,5	28	16	4	✓	168258	168259	168260

- Universal type
- Cutting Data see page 166



Thread from	P mm	D $\pm 0,02$ mm	L mm	L1 mm	Lg mm	Number of teeth	dh6 mm	Number of edges	Internal coolant	Order No.		
										TINAMATIC		
										DIN 6535 Form HA	DIN 6535 Form HB	DIN 6535 Form HE
M10	0,5	7,95	70	12	11,5	24	8	3	✓	170779	170780	170781
M11	0,75	7,95	70	12	11,25	16	8	3	✓	170782	170783	170784
M12	1,0	9,95	75	16	15	16	10	4	✓	170785	170786	170787
M14	1,0	11,95	85	20	19	20	12	4	✓	170791	170792	170793
M18	1,0	15,95	90	25	24	25	16	5	✓	170800	170801	170802
M22	1,0	19,95	110	32	31	32	20	5	✓	170812	170813	170814
M14	1,5	9,95	75	16	15	11	10	4	✓	170788	170789	170790
M16	1,5	11,95	85	20	19,5	14	12	4	✓	170794	170795	170796
M20	1,5	15,95	90	25	24	17	16	5	✓	170803	170804	170805
M24	1,5	19,95	110	32	31,5	22	20	5	✓	170815	170816	170817
M16	2,0	11,95	85	20	18	10	12	4	✓	170797	170798	170799
M20	2,0	15,95	90	25	24	13	16	5	✓	170806	170807	170808
M24	2,0	19,95	110	32	30	16	20	5	✓	170818	170819	170820
M24	3,0	15,95	90	27	24	9	16	5	✓	170809	170810	170811
M27	3,0	19,95	110	32	30	11	20	5	✓	170821	170822	170823

SolidCUT Solid Carbide Circular Thread Milling Cutter

1

- Fixed dimension type
- Cutting Data see page 166

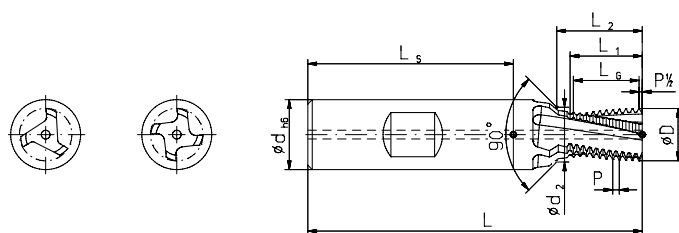
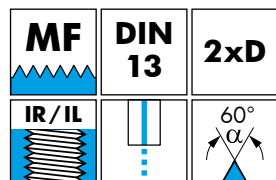


Figure 1:
Chamfer on the shank

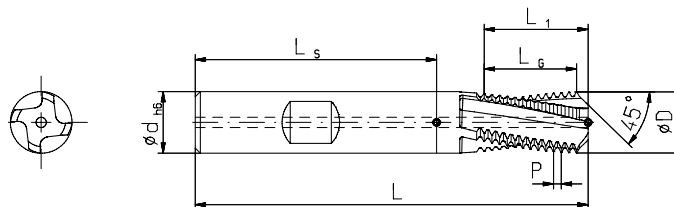
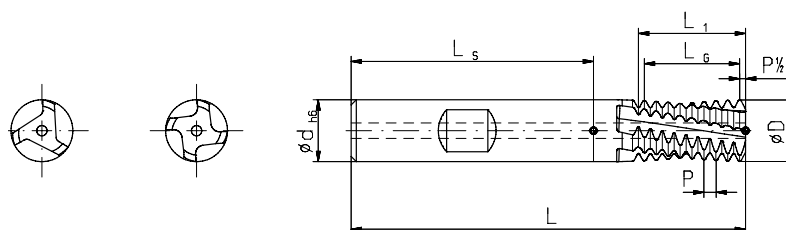
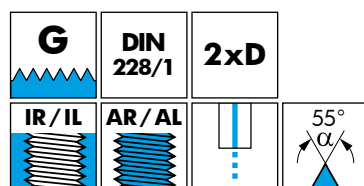


Figure 2:
Chamfer on the face

Thread	P mm	D ^{+0,02} mm	L mm	L1 mm	L2 mm	Lg mm	Number of teeth	d _{h6} mm	d2 mm	Number Internal of edges coolant	Fig.	Order No.	
												TINAMATIC	
M8x1	1,0	5,95	74	19	21	18	19	10	8,3	3	✓ 1	DIN 6535 Form HA	DIN 6535 Form HB
M10x1	1,0	8,0	80	22	23,95	21	22	12	10,3	3	✓ 1	171574	172376
M10x1,25	1,25	7,95	80	22,5	24,6	21,25	18	12	10,3	3	✓ 1	171575	172377
M12x1	1,0	9,9	90	27	29	26	27	14	12,3	4	✓ 1	171576	172378
M12x1,25	1,25	9,9	90	27,5	29,6	26,25	22	14	12,3	4	✓ 1	171577	172379
M12x1,5	1,5	9,9	90	27	29,25	25,5	18	14	12,3	4	✓ 1	171578	172380
M14x1	1,0	11,6	100	31	33,15	30	31	16	14,3	4	✓ 1	171579	172381
M14x1,5	1,5	11,6	100	31,5	33,9	30	21	16	14,3	4	✓ 1	171580	172382
M16x1,5	1,5	11,95	90	36,05		33	23	12		4	✓ 2	171581	172383
M18x1,5	1,5	14,0	110	39	42,2	37,5	26	20	18,3	4	✓ 1	171582	172384
M20x1,5	1,5	15,95	100	45,05		42	29	16		4	✓ 2	171583	172385
												171584	172386

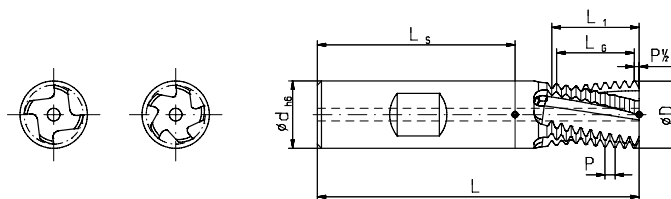
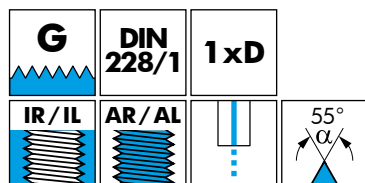
- Fixed dimension type
- Cutting Data see page 166



Thread	P mm	Pitch/"	D ^{±0,02} mm	L mm	L1 mm	LG mm	Number of teeth	d _{h6} mm	Number of edges	Internal coolant	Order No.			
											TINAMATIC			
														
G 1/16"	0,907	28	5,95	60	16,33	15,42	18	6	3	✓	196157 	on request 	on request 	
G 1/8"	0,907	28	7,95	70	20,8	20,86	24	8	3	✓	168371	168372	168373	
G 1/4"	1,337	19	9,9	75	28,0	26,74	21	10	4	✓	168374	168375	168376	
G 3/8"	1,337	19	13,95	90	41,45	40,11	31	14	4	✓	168377	168378	168379	
G 1/2"	1,814	14	15,95	90	43,5	41,72	24	16	4	✓	168380	168381	168382	

SolidCUT Solid Carbide Circular Thread Milling Cutter

- **Universal type**
- **Cutting Data see page 166**



Thread from	P mm	Pitch/°	D $\pm 0,02$ mm	L mm	L1 mm	LG mm	Number of teeth	d h6 mm	Number of edges	Internal coolant	Order No.	
											TINAMATIC	
												
G 1/4 - 3/8"	1,337	19	9,95	75	16,0	14,71	12	10	4	✓	186224	187865
G 1/2 - 7/8"	1,814	14	15,95	90	25,4	23,58	14	16	5	✓	186225	187866
> G 1"	2,309	11	19,95	110	32,3	30,02	14	20	5	✓	183759	177967

- Chamfer type
- Cutting Data see page 166

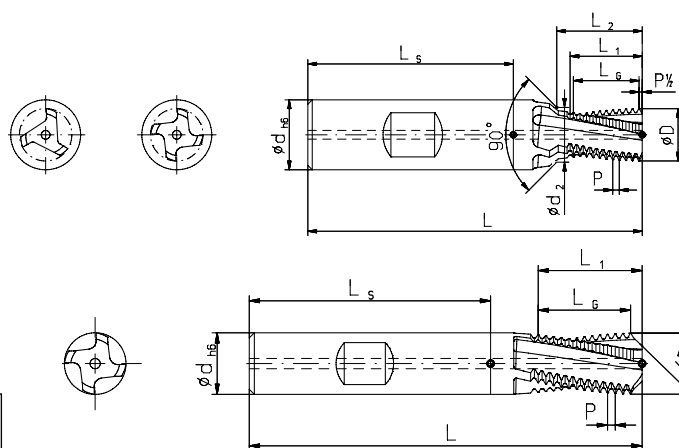


Figure 1:
Chamfer on the shank

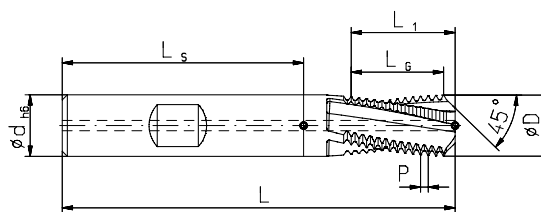
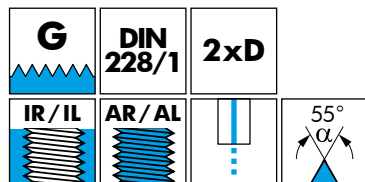


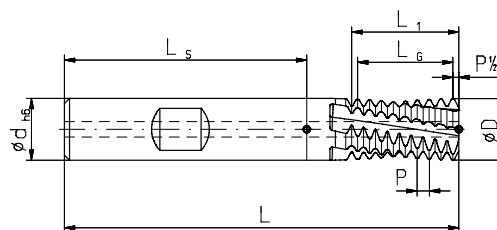
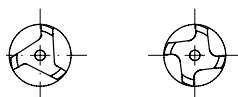
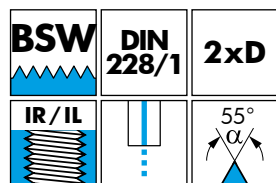
Figure 2:
Chamfer on the face

Thread	P mm	Pitch/"	D ^{=0,02} mm	L mm	L1 mm	L2 mm	LG mm	Number of teeth	d _{h6} mm	d2 mm	Number of edges	Fig.	Order No.	
													TINAMATIC	
														
G 1/16"	0,907	28	6	74	16,3	18,1	15,42	18	10	8,0	3	1	171585	172387
G 1/8"	0,907	28	7,95	80	21,8	23,5	20,86	24	12	10,0	3	1	171586	172388
G 1/4"	1,337	19	9,9	100	28,0	30,8	26,74	21	16	13,5	4	1	171587	172389
G 3/8"	1,337	19	13,95	90	37,5		34,76	27	14		4	2	171588	172390
G 1/2"	1,814	14	15,95	100	46,75		43,54	25	16		5	2	171589	172391
G 5/8"	1,814	14	17,95	110	51,0		47,16	27	18		5	2	171590	172392

SolidCUT Solid Carbide Circular Thread Milling Cutter

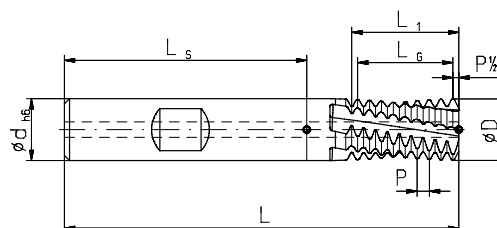
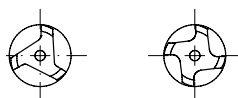
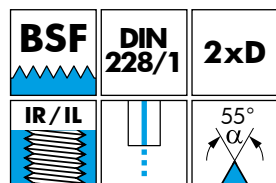
1

- Fixed dimension type
- Cutting Data see page 166



Thread	P mm	Pitch/"	D ^{+0,02} mm	L mm	L1 mm	LG mm	Number of teeth	d h6 mm	Number Internal of edges coolant	Order No.			
										TINAMATIC			
													
5/16"	1,411	18	6,0	60	19,75	18,34	14	6	3	✓	168383	168384	168385
3/8"	1,588	16	5,95	60	20,60	19,06	13	6	3	✓	168386	168387	168388
7/16"	1,814	14	7,95	70	23,60	21,77	13	8	3	✓	168389	168390	168391
1/2"	2,117	12	7,95	70	23,30	21,17	11	8	3	✓	168392	168393	168394
5/8"	2,309	11	9,90	75	30,00	27,71	13	10	4	✓	168395	168396	168397

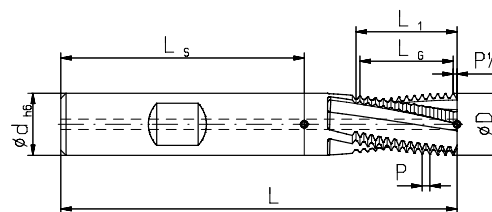
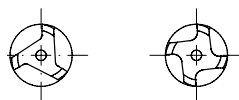
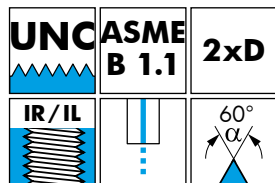
- Fixed dimension type
- Cutting Data see page 166



Thread	P mm	Pitch/"	D ^{+0,02} mm	L mm	L1 mm	LG mm	Number of teeth	d h6 mm	Number Internal of edges coolant	Order No.			
										TINAMATIC			
													
5/16"	1,155	22	5,95	60	19,6	18,48	17	6	3	✓	168398	168399	168400
3/8"	1,270	20	5,95	60	19,0	17,78	15	6	3	✓	168401	168402	168403
7/16"	1,411	18	7,95	70	22,6	21,17	16	8	3	✓	168404	168405	168406
1/2"	1,588	16	7,95	70	23,8	22,23	15	8	3	✓	168407	168408	168409
5/8"	1,814	14	9,90	75	29,0	27,21	16	10	4	✓	168410	168411	168412

SolidCUT Solid Carbide Circular Thread Milling Cutter

- Fixed dimension type
- Cutting Data see page 166



Thread	P mm	Pitch/"	D $\pm 0,02$ mm	L mm	L1 mm	L6 mm	Number of teeth	dh6 mm	Number Internal of edges coolant	Order No.		
										TINAMATIC		
1/4"-20	1,270	20	4,8	55	14	12,7	11	6	3	168413	168414	168415
5/16"-18	1,411	18	5,95	60	19,7	18,34	14	6	3	168416	168417	168418
3/8"-16	1,588	16	7,6	70	23,8	22,23	15	8	3	168419	168420	168421
7/16"-14	1,814	14	7,95	70	23,6	21,77	13	8	3	168422	168423	168424
1/2"-13	1,954	13	9,9	75	29,3	27,36	15	10	4	168425	168426	168427

- Chamfer type
- Cutting Data see page 166

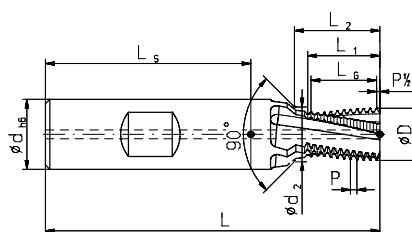


Figure 1:
Chamfer on the shank

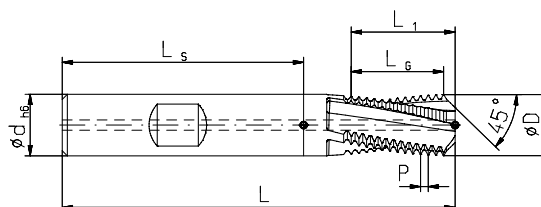
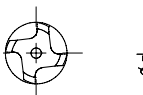
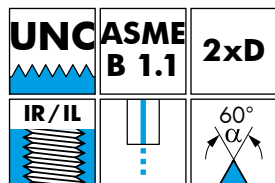


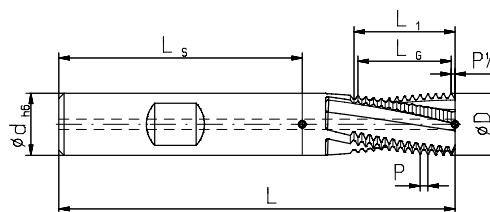
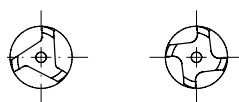
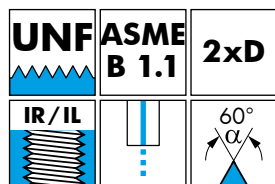
Figure 2:
Chamfer on the face

Thread	P mm	Pitch/"	D $\pm 0,02$ mm	L mm	L1 mm	L2 mm	L6 mm	Number of teeth	dh6 mm	d2 mm	Number of edges	Internal coolant	Fig.	Order No.	
														TINAMATIC	
1/4"-20	1,270	20	4,8	62	14,0	15,73	12,7	11	8	6,65	3		1	171591	172393
5/16"-18	1,411	18	5,95	74	19,7	21,9	18,34	14	10	8,25	3	✓	1	171592	172394
3/8"-16	1,588	16	7,95	80	23,8	25,85	22,23	15	12	9,83	3	✓	1	171593	172395
7/16"-14	1,814	14	7,95	90	23,6	26,5	21,77	13	14	11,43	3	✓	1	171594	172396
1/2"-13	1,954	13	9,9	90	29,3	32,1	27,36	15	14	13	4	✓	1	171595	172397
9/16"-12	2,117	12	11,8	100	33,9	36,6	31,76	16	16	14,61	4	✓	1	171596	172398
5/8"-11	2,309	11	12,7	90	38,4		34,63	16	14		4	✓	2	171597	172399
3/4"-10	2,540	10	15,2	110	40,6	44,3	38,1	16	20	19,35	5	✓	1	171598	172400

SolidCUT Solid Carbide Circular Thread Milling Cutter

1

- Fixed dimension type
- Cutting Data see page 166



Thread	P mm	Pitch/"	D ^{±0,02} mm	L mm	L1 mm	L6 mm	Number of teeth	dh6 mm	Number Internal of edges coolant	Order No.		
										TINAMATIC		
										DIN 6535 Form HA	DIN 6535 Form HB	DIN 6535 Form HE
1/4"-28	0,907	28	4,8	55	14,5	13,61	16	6	3	168428	168429	168430
5/16"-24	1,058	24	5,95	60	19,0	17,99	18	6	3	168431	168432	168433
3/8"-24	1,058	24	7,95	70	22,2	21,16	21	8	3	168434	168435	168436
7/16"-20	1,270	20	7,95	70	22,8	21,59	18	8	3	168437	168438	168439
1/2"-20	1,270	20	9,9	75	27,9	26,67	22	10	4	168440	168441	168442

- Chamfer type
- Cutting Data see page 166

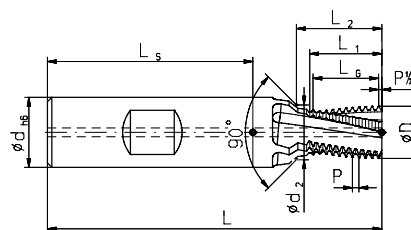


Figure 1:
Chamfer on the shank

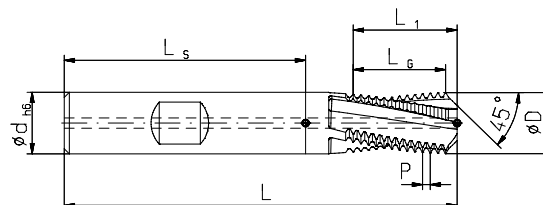
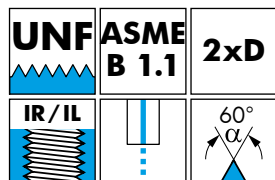
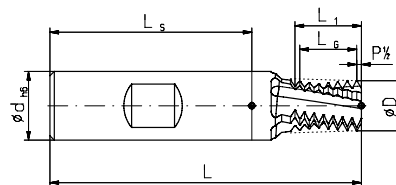
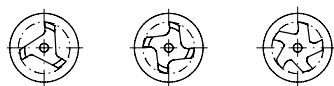
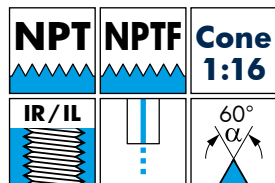


Figure 2:
Chamfer on the face

Thread	P mm	Pitch/"	D ^{±0,02} mm	L mm	L1 mm	L2 mm	L6 mm	Number of teeth	dh6 mm	d2 mm	Number of edges	Internal coolant	Fig.	Order No.	
														TINAMATIC	
														DIN 6535 Form HA	DIN 6535 Form HB
1/4"-28	0,907	28	4,8	62	14,5	16,2	13,61	16	8	6,65	3		1	171599	172401
5/16"-24	1,058	24	5,95	74	19,0	21	17,99	18	10	8,25	3	✓	1	171600	172402
3/8"-24	1,058	24	7,6	80	22,2	23	21,16	21	12	9,83	3	✓	1	171601	172403
7/16"-20	1,270	20	7,95	90	22,8	25,5	21,59	18	14	11,4	3	✓	1	171602	172404
1/2"-20	1,270	20	9,9	90	27,9	30,43	26,67	22	14	13	4	✓	1	171603	172405
9/16"-18	1,411	18	12	100	31,0	33,35	29,63	22	16	14,61	4	✓	1	171604	172406
5/8"-18	1,411	18	13,5	90	36,8		33,86	25	14		4	✓	2	171605	172407
3/4"-16	1,588	16	17	110	39,7	42	38,11	25	20	19,35	5	✓	1	171606	172408

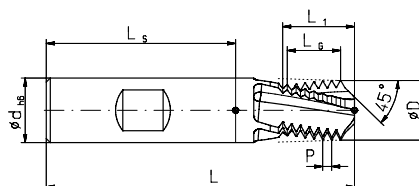
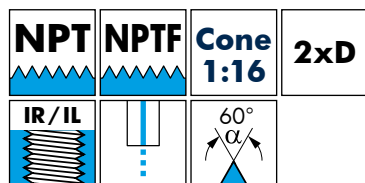
SolidCUT Solid Carbide Circular Thread Milling Cutter

- Fixed dimension type
- Cutting Data see page 166



Thread	P mm	Pitch/"	D ^{+0,02} mm	L mm	L1 mm	LG mm	Number of teeth	d _{h6} mm	Number Internal of edges	coolant	Order No.		
											TINAMATIC		
													
1/16"	0,941	27	5,8	70	11,3	10,35	12	8	3	✓	170752	170753	170754
1/8"	0,941	27	7,6	75	11,3	10,35	12	10	3	✓	170755	170756	170757
1/4"	1,411	18	10,1	90	15,5	14,11	11	14	3	✓	170758	170759	170760
3/8"	1,411	18	12,8	90	16,7	14,11	11	16	4	✓	170761	170762	170763
1/2"	1,814	14	16,0	110	21,35	18,14	11	20	5	✓	170764	170765	170766
3/4"	1,814	14	18,5	110	19,95	18,14	11	20	5	✓	170767	170768	170769

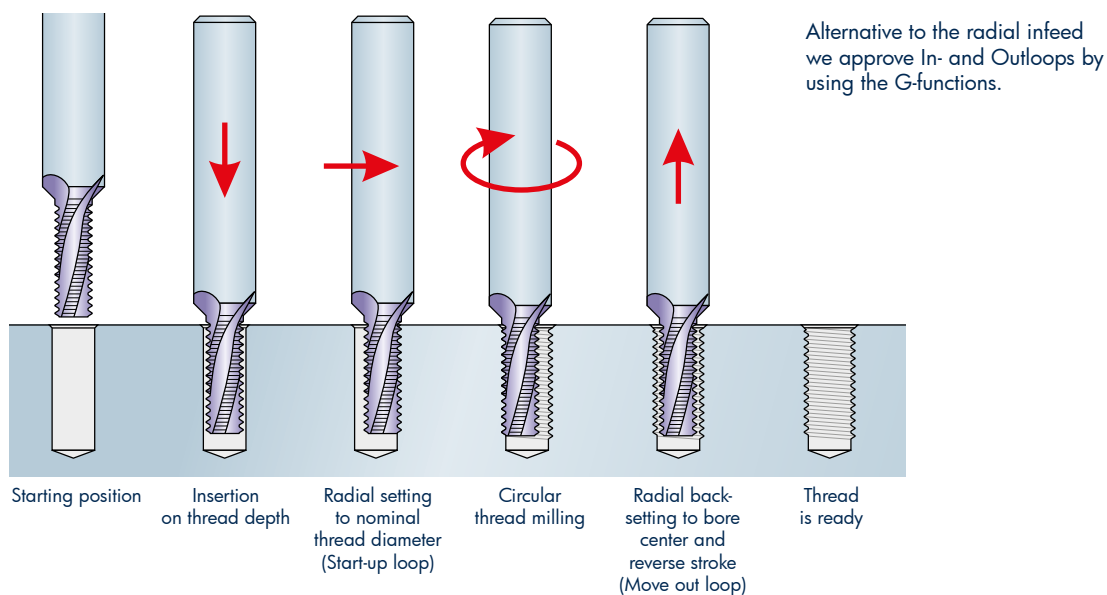
- Chamfer type
- Cutting Data see page 166



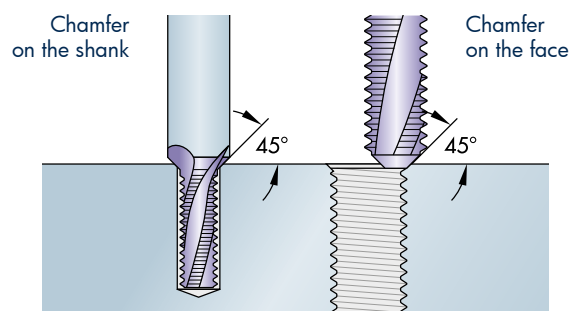
Thread	P mm	Pitch/"	D $\pm 0,02$ mm	L mm	L1 mm	LG mm	Number of teeth	dh6 mm	Number of edges	Internal coolant	Order No.	
											TINAMATIC	
											DIN 6535 Form HA	DIN 6535 Form HB
1/4"	1,411	18	10,1	90	18,2	14,11	11	14	3	✓	171609	172411
3/8"	1,411	18	12,8	90	18,2	14,11	11	16	4	✓	171610	172412
1/2"	1,814	14	16,0	110	22,8	18,14	11	20	5	✓	171611	172413
3/4"	1,814	14	18,5	110	23,0	18,14	11	20	5	✓	171612	172414

i NPS and NPSM on request !

Machining Sequence



Types with chamfer

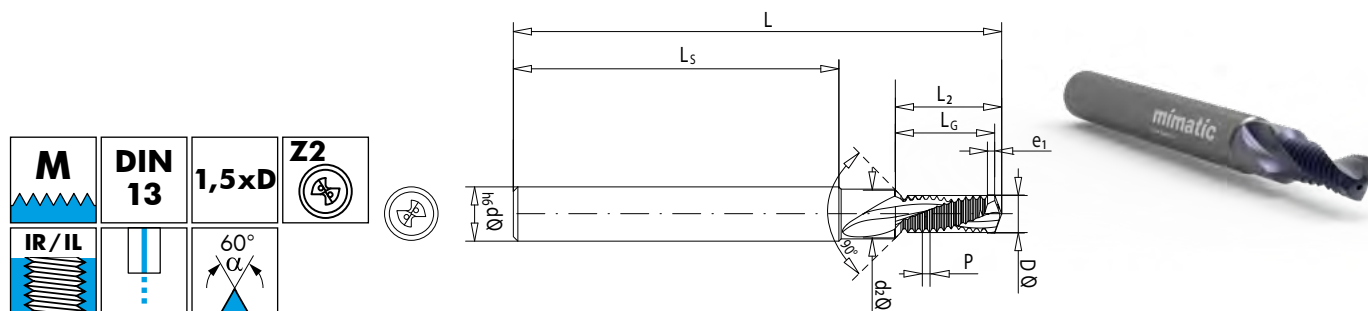


i More information to circular thread milling see page 175

SolidCUT

Solid Carbide Thread Milling Cutter

■ Cutting Data see page 61

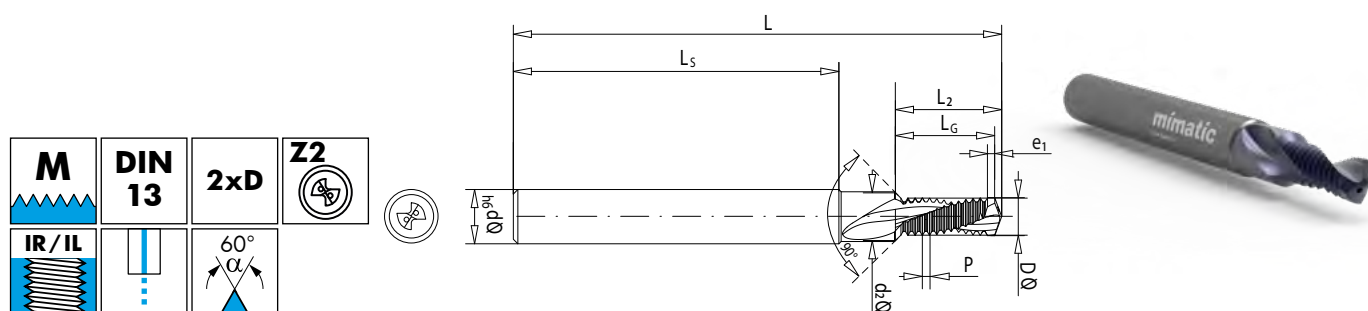


Thread	P mm	D $\pm 0,02$ mm	Lg mm	Ls mm	L mm	dh6 mm	max. Senk-Ø d2 mm	Programming value for lowering L2 mm	Grooving width e1 mm	Internal coolant	Order No.	
											TINAMATIC	
M3	0,5	2,45	4,91	36	54	6	3,3	5,36	0,5		197862	NEW
M4	0,7	3,24	6,81	36	54	6	4,3	7,41	0,7	✓	197863	NEW
M5	0,8	4,1	8,58	36	54	6	5,3	9,35	0,8	✓	197864	NEW
M6	1	4,85	10,7	36	62	8	6,3	11,6	1	✓	197865	NEW
M8	1,25	6,45	13,56	40	74	10	8,3	14,8	1,25	✓	197866	NEW
M10	1,5	8,08	17,64	45	80	12	10,3	19,18	1,5	✓	197867	NEW
M12	1,75	9,74	20,39	45	90	14	12,3	22,26	1,75	✓	197868	NEW

SolidCUT

Solid Carbide Thread Milling Cutter

■ Cutting Data see page 61

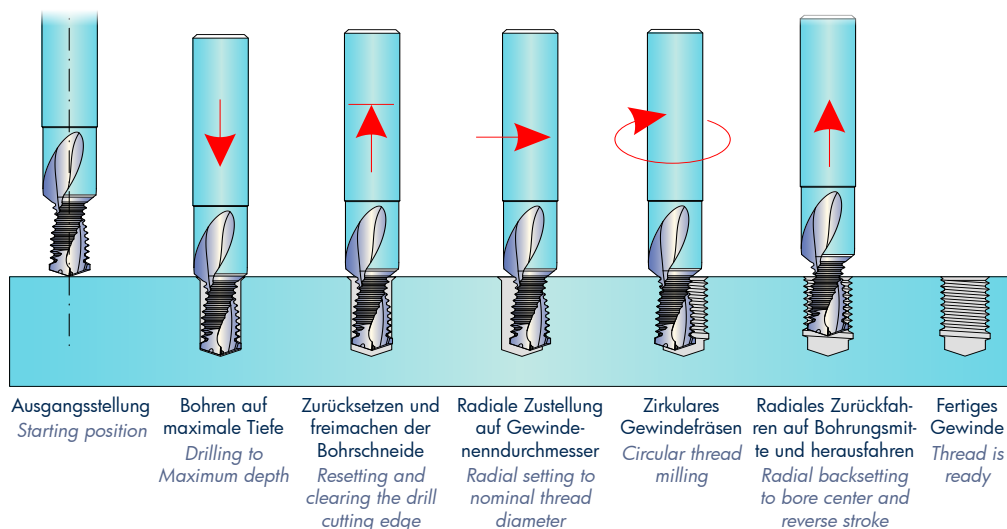


Thread	P mm	D $\pm 0,02$ mm	Lg mm	Ls mm	L mm	dh6 mm	max. Senk-Ø d2 mm	Programming value for lowering L2 mm	Grooving width e1 mm	Internal coolant	Order No.	
											TINAMATIC	
M3	0,5	2,45	6,91	36	54	6	3,3	7,36	0,5		197869	NEW
M4	0,7	3,24	8,9	36	54	6	4,3	9,5	0,7	✓	197870	NEW
M5	0,8	4,1	10,37	36	54	6	5,3	11,14	0,8	✓	197871	NEW
M6	1	4,85	13,7	36	62	8	6,3	14,6	1	✓	197872	NEW
M8	1,25	6,45	17,26	40	74	10	8,3	18,5	1,25	✓	197873	NEW
M10	1,5	8,08	22,14	45	80	12	10,3	23,68	1,5	✓	197874	NEW
M12	1,75	9,74	25,59	45	90	14	12,3	27,46	1,75	✓	197875	NEW

Machining Sequence

Machining Sequence

Alternative to the radial infeed we suggest In- and Outloops by using the G-functions.



	Stahl Guss Cast iron			Aluminium Aluminum		
	Ø 2,4 - 3,9	Ø 4 - 5	Ø 5,1 - 10	Ø 2,4 - 3,9	Ø 4 - 5	Ø 5,1 - 10
Vc m/min	120	120	120	220	220	220
fn mm/U	0,1 - 0,15	0,15 - 0,2	0,25 - 0,3	0,1 - 0,15	0,15 - 0,2	0,25 - 0,3
fz mm	0,03 - 0,04	0,04 - 0,05	0,065 - 0,08	0,03 - 0,04	0,04 - 0,05	0,065 - 0,08

Benötigen Sie Hilfe bei der Programmierung?

Do you need help with programming?

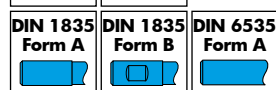
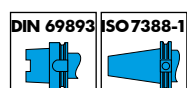
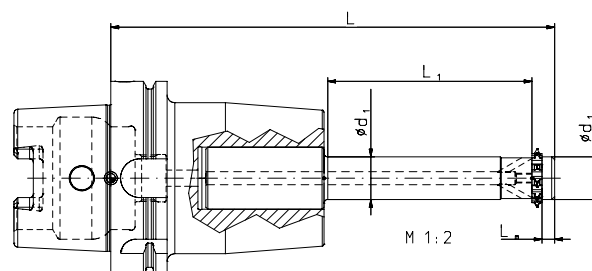
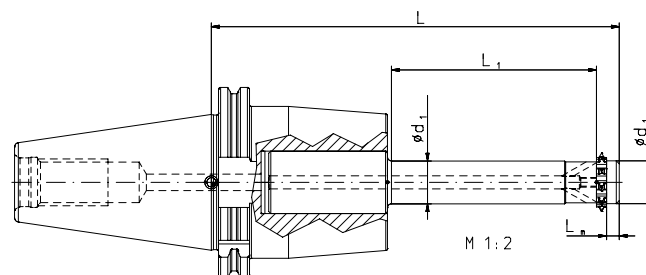
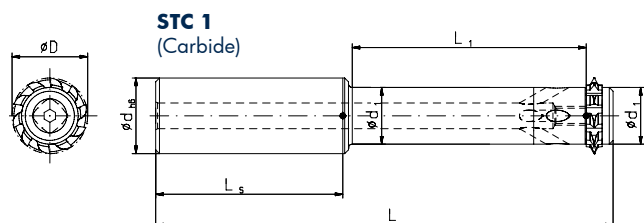


i Further information on circular thread milling can be found from page 175

Milling System for Threads from Drill Hole Ø 20,5 mm (≥ M 24)

■ Cutting data see page 166

■ Recommendation plunging movements see page 178



Spare Parts

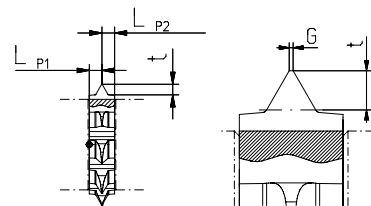
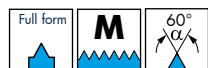
Holder	④ Clamping disc	② Clamping screw	Screw-driver	Screw torques
182043	159784	163852	178296	SW3 6,0 Nm
182042	159785	163852	178296	SW3 6,0 Nm
160178	159786	114402	178640	SW6 24,5 Nm
156489				
156490				
160179	159787	114523	178640	SW6 24,5 Nm
156487				
156488				
160180	159788	114523	178640	SW6 24,5 Nm
156486				
156485				
182044	182775	114523	178640	SW6 24,5 Nm
182715				
182716				

Complete holder without Inserts

Type	Shank	① Order No.	dh6 mm	L mm	L1 mm	Ls mm	LM mm	D mm	d1 mm	③ Thread inserts required
9	DIN 6535 A	182043	20	121	62,9	50	2,9	20	15	1
13	DIN 6535 A	182042	20	141	82,9	50	2,9	24	19	1
16	DIN 6535 A	160178	32	180,1	107,4	60	6,5	30	22	1
	HSK 100	156489	–	229,1	107,4	110	6,5	30	22	1
	SK 50	156490	–	209,1	107,4	90	6,5	30	22	1
	DIN 6535 A	160179	32	200,9	127,15	60	7,0	36	30	1
	HSK 100	156487	–	249,4	127,15	110	7,0	36	30	1
	SK 50	156488	–	229,8	127,15	90	7,0	36	30	1
19	DIN 6535 A	160180	32	221,1	147,9	60	7,0	40	32	1
	HSK 100	156486	–	270	146,9	110	7,0	40	32	1
	SK 50	156485	–	250	146,9	90	7,0	40	32	1
25	DIN 6535 A	182044	40	299	196,4	88	7,4	50	39	1
	HSK 100	182715	–	351	196,4	140	7,4	50	39	1
	SK 50	182716	–	311	196,4	100	7,4	50	39	1

Milling Inserts

Cutting Data see page 166



Type	Pitch mm	Thread	Number of teeth	D mm	t mm	LP1=LP2 mm	Order No TINAMATIC
9	3	M 24 / M 27	10	20	1,702	2,1	159757
13	3,5	M 30	10	24	1,982	2,1	159758
16	4	M 36	10	30	2,263	2,6	159759
	4,5	M 42	10	36	2,553	2,85	159760
19	5	M 48	10	40	2,836	3,1	159761
	5,5	M 56	10	40	3,106	3,1	159762
	6	M 64	10	40	3,415	3,1	159763



Type	Pitch mm	Pitch G / "	Number of teeth	D mm	t mm	G mm	LP1=LP2 mm	Order No TINAMATIC
9	1-3	24-9	10	20	2,25	0,10	2,10	181817
	2,5-5	10-5	10	20	3,20	0,25	2,10	181818
13	1-3	24-9	10	24	2,25	0,10	2,10	181726
	3-4	9-6	10	24	3,20	0,25	2,10	181730
16	1-3	24-9	10	30	2,25	0,10	2,60	181732
	3-4	9-6	10	30	3,80	0,25	2,60	181733
	1-3	24-9	10	36	2,25	0,10	2,85	182040
	3-4	9-6	10	36	3,80	0,25	2,85	182041
19	1-3	24-9	10	40	2,25	0,10	3,10	159836
	3-4	9-6	10	40	3,80	0,25	3,10	180440
	1-3	24-9	10	40	2,25	0,10	3,10	159836
	3-4	9-6	10	40	3,80	0,25	2,10	180440
	1-3	24-9	10	40	2,25	0,10	3,10	159836
	3-4	9-6	10	40	3,80	0,25	3,10	180440
25	1-3	24-9	12	50	2,25	0,10	3,60	181735
	3-6	9-4	12	50	3,80	0,25	3,60	181736
	5-8	6-3	12	50	5,30	0,40	3,60	181737

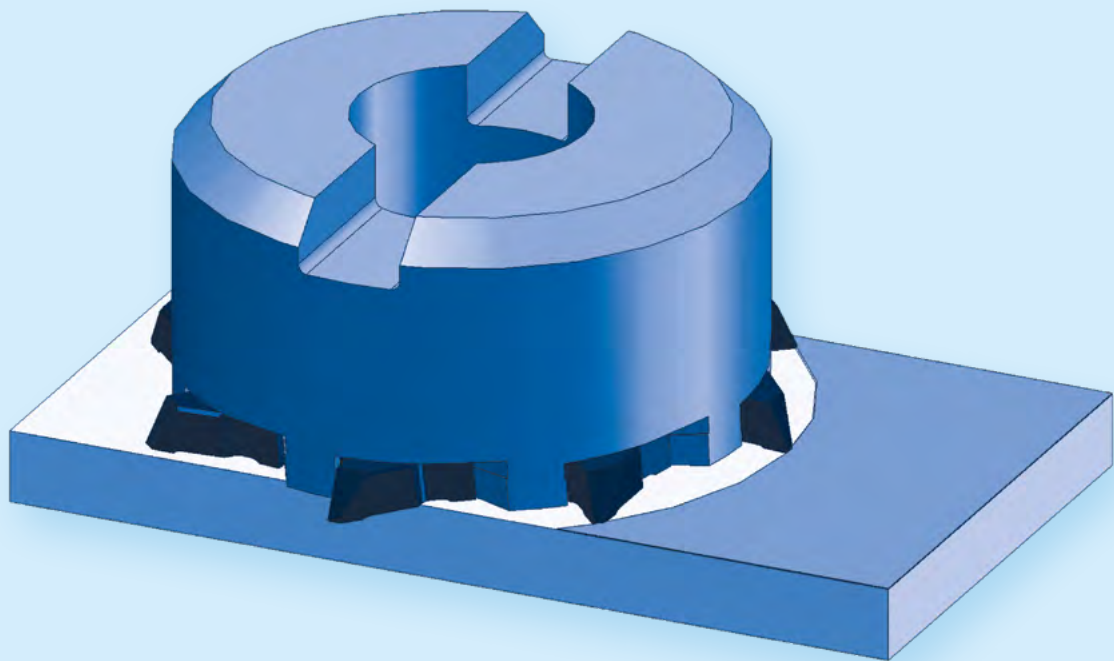


Type	Pitch G / "	Number of teeth	D mm	t mm	LP1=LP2 mm	Thread	Order No TINAMATIC
9	8	10	20	1,809	2,1	1"	180331
	7	10	20	2,043	2,1		156760
	8	10	20	1,809	2,1	>1"	186515
16	6	10	28	2,454	2,6		156761
	5	10	36	2,979	2,85		156762



i STC 2 & STC 3 on request

Face Finish Milling



Milling

Thread Milling

Extended
program

14-63

1

Face Finish Milling

64-69

2

Notch Impact Test

70-75

3

Gear Milling

76-81

4

Slot Milling
Keyway MillingExtended
program82-
109

5

Contour and Radius Milling
Chamfering, Deburring,
undercut, dovetailExtended
program110-
125

6

Sawing, Slitting

Sawing, Cutting, Slitting

Extended
program126-
143

7

Bore Machining

Reaming

144-
151

8

Axial Grooving

Axial Grooving, adjustable

152-
157

9

Special Tools

Special- and Combination Tools

158-
163

10

Cutting Data and Technical Information

164-
179

11

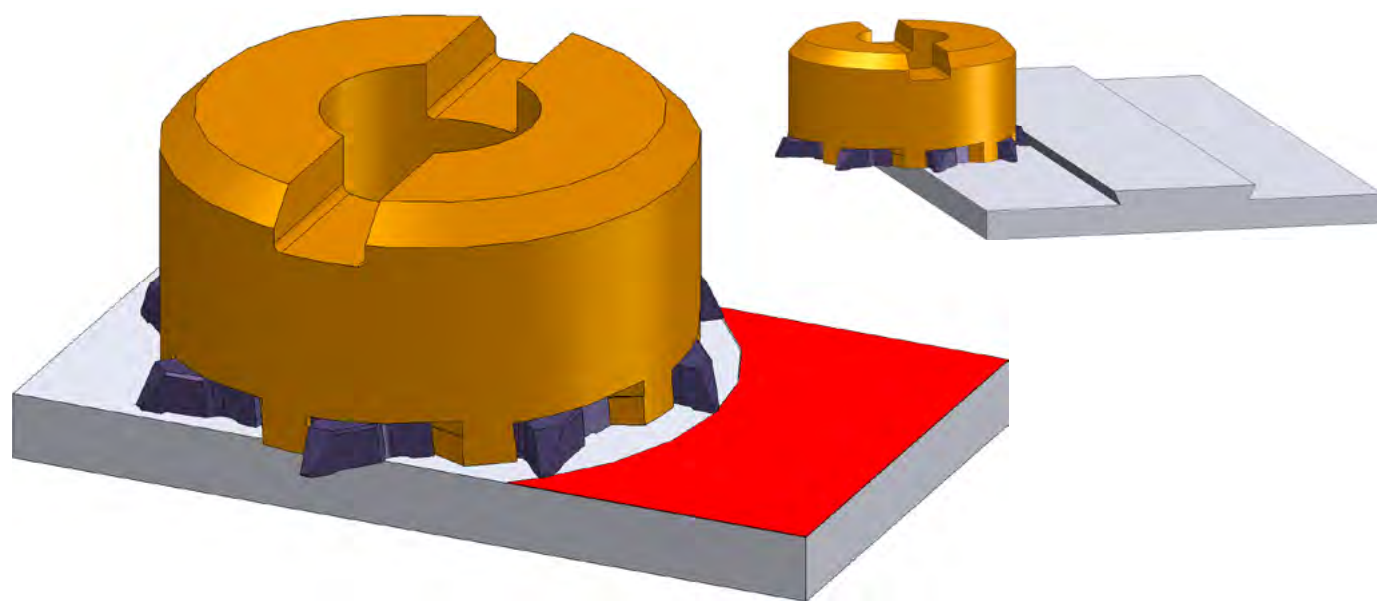
TriMILL

with Trailing Chamfer Edge for Very Good Surfaces wto Finish Milling

Advantages of indexable inserts with integrated trailing chamfer

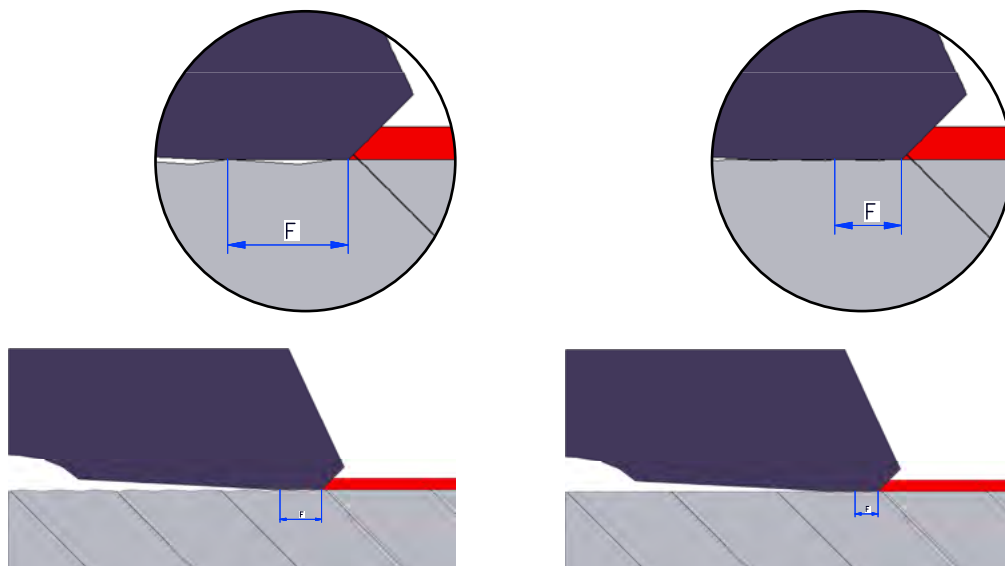
compared to standard indexable inserts with
normal corner radius at same depth of cut:

- **2-3 fold better surface quality**
with the same feed rate
- **2-3 fold higher feed rates**
with the same surface quality



For high performance cutting in all areas, we have developed a variety of cutting geometries for internal and external milling operations. This trailing chamfer has the function of secondary cutting edge with mini-

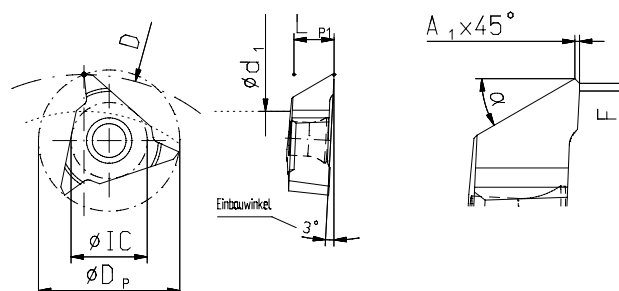
mal rear position and thus minimizes the secondary cutting edge angle to 0° . Thus the surface automatically improves to 2-3 times compared with the calculated values.



Slot Milling

- Insert holder see page 67-68
- Cutting data see page 166

2

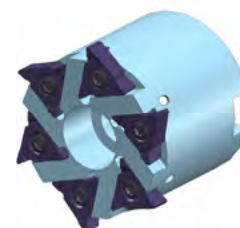
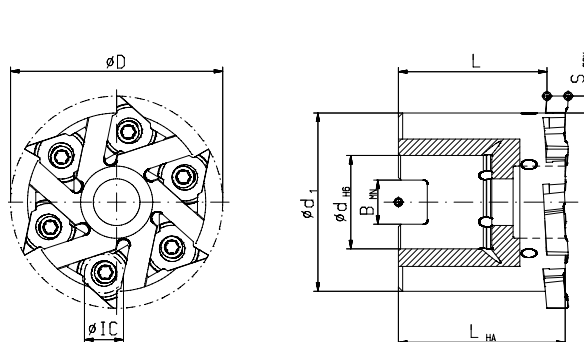


Typ	Typ
023	013

Type	DP mm	IC mm	LP1 mm	A1 x 45° mm	F mm	α	Order No. TINAMATIC
023	17,5	9,2	5	0,3	0,5	25°	149516
013	23	12,4	6,5	0,3	0,5	28°	149472

Circular Milling Tools

- Inserts see page 67
- Cutting data see page 166

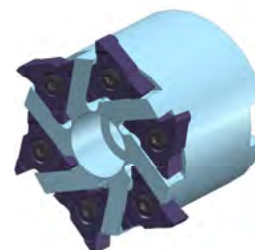
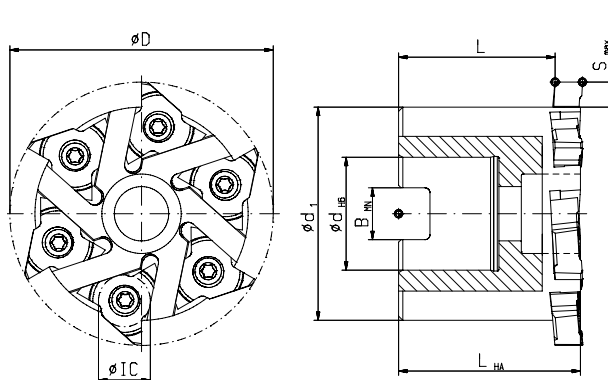
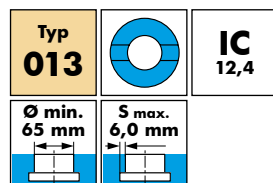


Typ	IC
023	9,2
$\varnothing$ min. 40 mm	S max. 4,0 mm

Order No.	D mm	dH6 mm	d1 mm	S _{max.} mm	LHA mm	L mm	BMN mm	Inserts	T15 IP Screw- driver*	Screw *
123461	50	22	42	3,9	39,3	34,97	10,4	6	111671	107547
161485	63	27	55	4,0	39,3	34,97	12,4	8	111671	107547
									Screw torque max. 3,8 Nm	
									Cutter clamping screw internal hexagon	
									Order No.	114684

Circular Milling Tools

- Inserts see page 67
- Cutting data see page 166



Spare part No.

T20 IP

Screw-driver *

Screw *

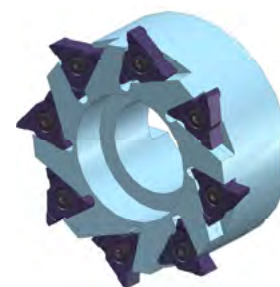
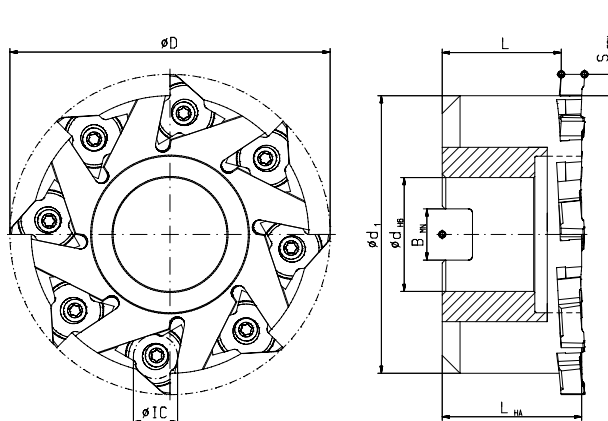
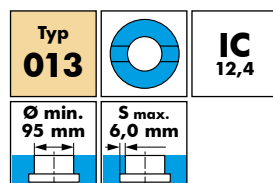
111594

107551

Screw torque 5,5 Nm

Cutter clamping screw internal hexagon

Order No. 114695



Spare part No.

T20 IP

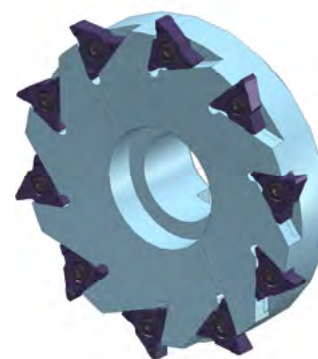
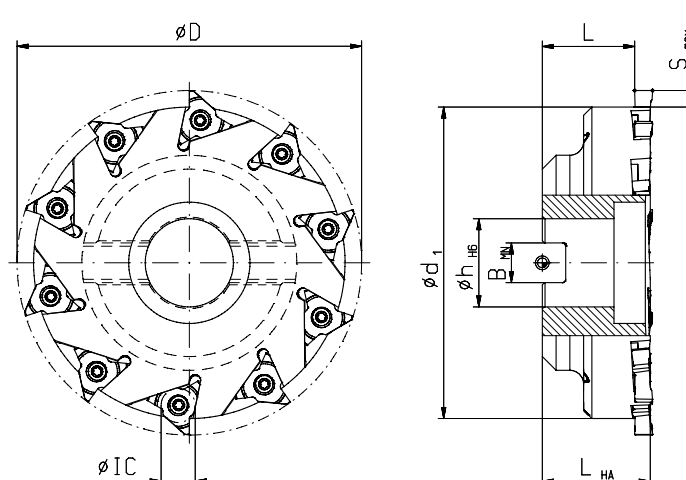
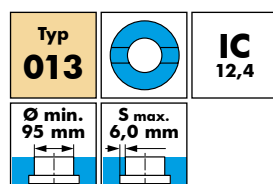
Screw-driver *

Screw *

111594

107551

Screw torque 5,5 Nm



Spare part No.

T20 IP

Screw-driver *

Screw *

111594

107551

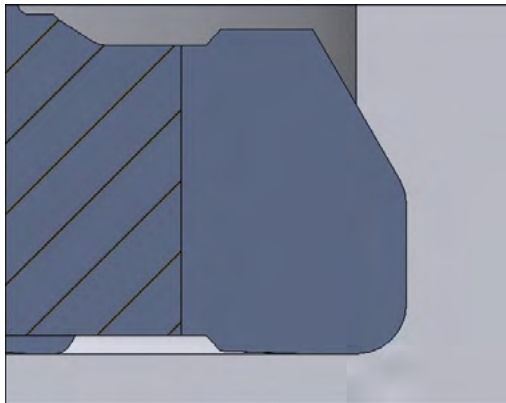
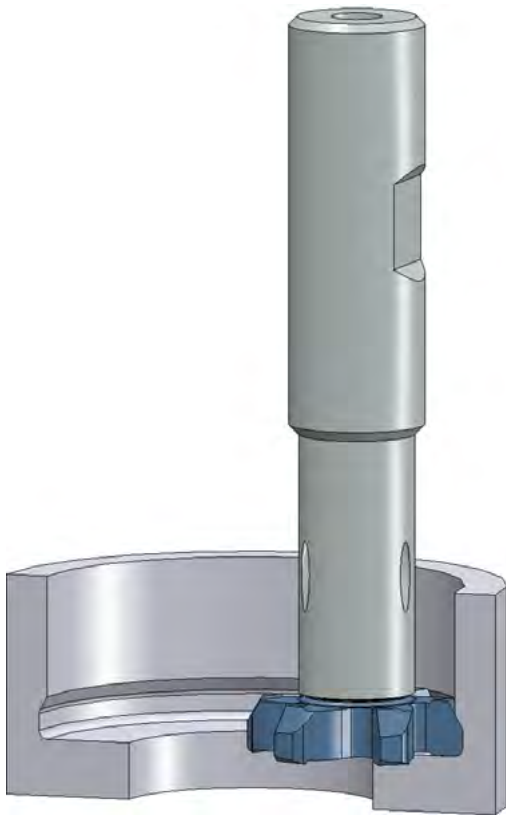
Screw torque 5,5 Nm

* Screwdriver and clamping screw included in delivery

PolyMILL

Face Finish Milling with PolyMILL on Request

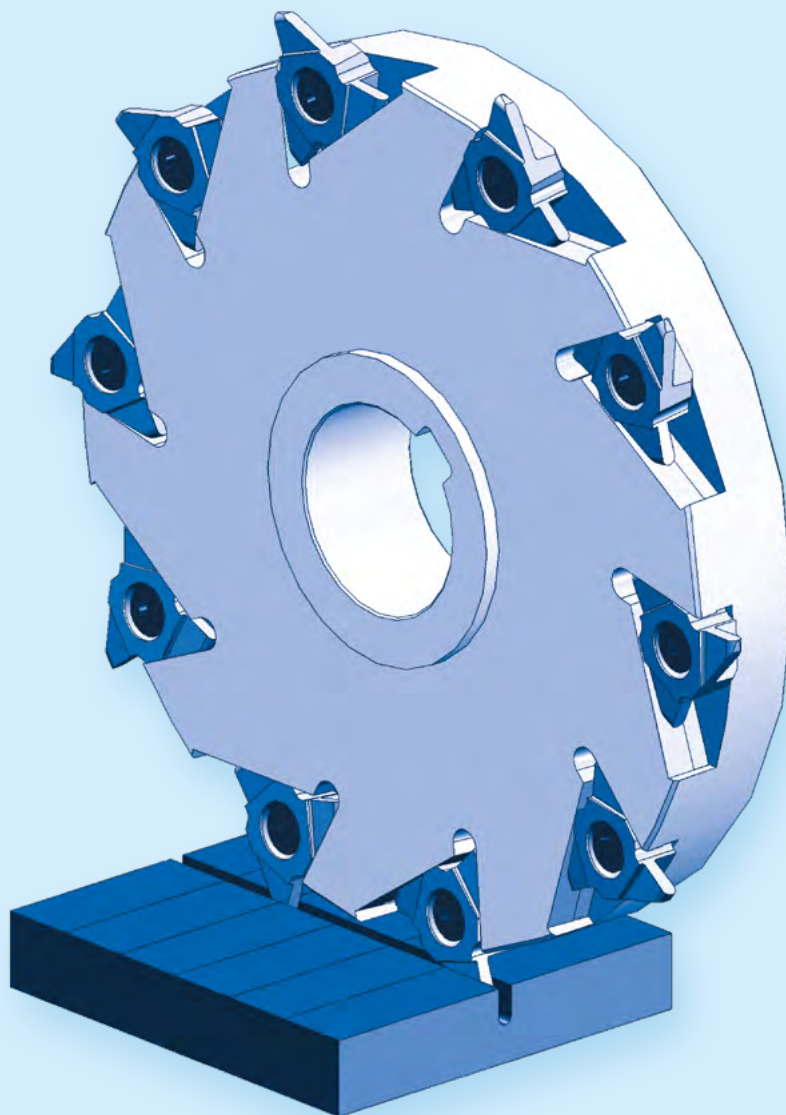
2



Application example:

Milling valve seat

Notch Impact Test



Milling

Thread Milling

Extended
program

14-63

1

Face Finish Milling

64-69

2

Notch Impact Test

70-75

3

Gear Milling

76-81

4

Slot Milling
Keyway MillingExtended
program82-
109

5

Contour and Radius Milling
Chamfering, Deburring,
undercut, dovetailExtended
program110-
125

6

Sawing, Slitting

Sawing, Cutting, Slitting

Extended
program126-
143

7

Bore Machining

Reaming

144-
151

8

Axial Grooving

Axial Grooving, adjustable

152-
157

9

Special Tools

Special- and Combination Tools

158-
163

10

Cutting Data and Technical Information

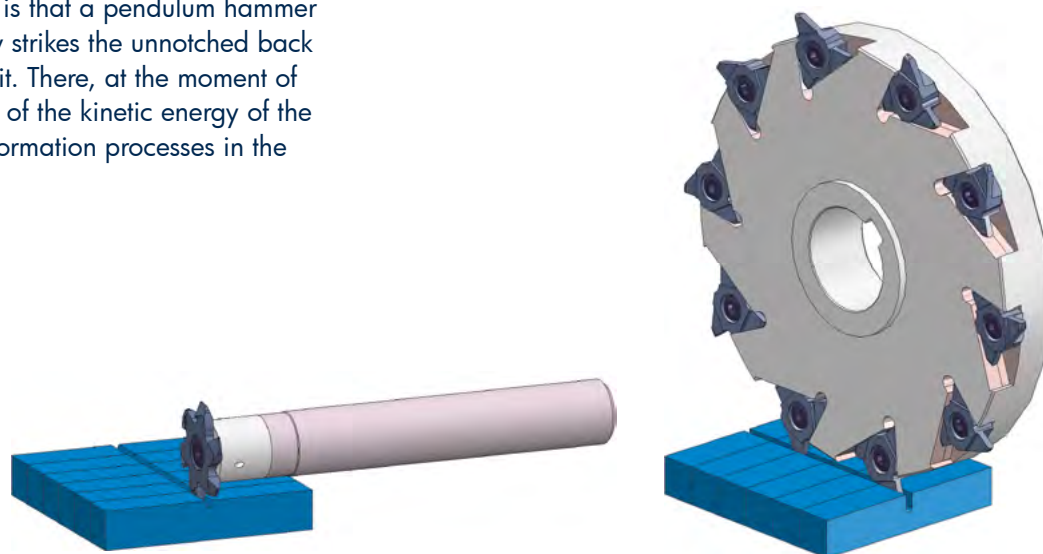
164-
179

11

Notch Impact Test

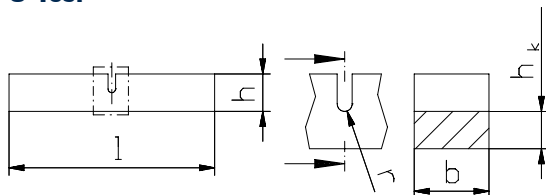
The impact test is a material testing method by Augustin Georges Albert Charpy established in 1905, according to DIN EN ISO 179-1 (for metallic materials) and DIN EN ISO 148-1 (for plastics) to determine relatively quickly and simple toughness properties of materials. There the behavior of an elongated cuboid, the notched side (usually V-notch, rarely U-notch) and the tempered state (cooled or heated) is investigated at high strain rate (impact stress). The experiment is that a pendulum hammer with a certain kinetic energy strikes the unnotched back of the sample and smashes it. There, at the moment of breaking the sample, a part of the kinetic energy of the hammer is absorbed by deformation processes in the sample.

The amount of energy varies depending on the material and temperature. According to the energy that is absorbed during the battering of the sample, the pendulum hammer swings less high on the other hand. Would it follow through without an inserted sample, it would reach almost the same height as the starting point.

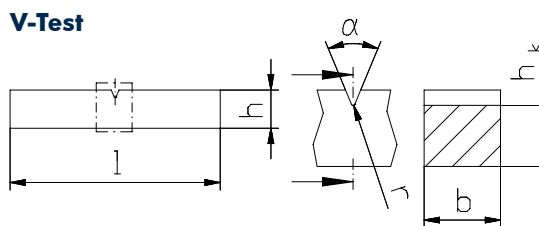


Notch Impact Test according to Charpy DIN EN ISO 148-1; 2011-01

U-Test



V-Test



Description	Notch form	l mm	l _w mm	h mm	b mm	h _k mm	r mm	α
Normal test	U	55	40	10	10	5	1,00	–
DVM test *	U	55	40	10	10	7	1,00	–
DVMK test *	U	44	30	6	6	4	0,75	–
Normal test	V	55	40	10	10	8	0,25	45°
Undersize test	V	55	40	10	7,5	8	0,25	45°
Undersize test	V	55	40	10	5	8	0,25	45°
KLST test **	V	27	22	4	3	3	0,10	60°

* DVM - Deutscher Verband für Materialprüfung

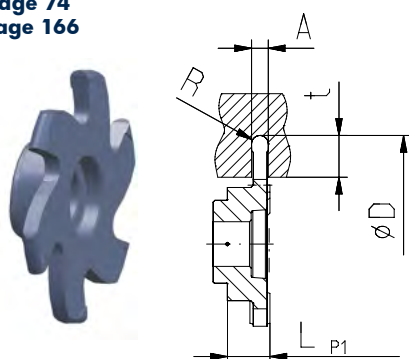
** KLST-test for plastics acc. to DIN EN ISO 179-1:2000

PolyMILL

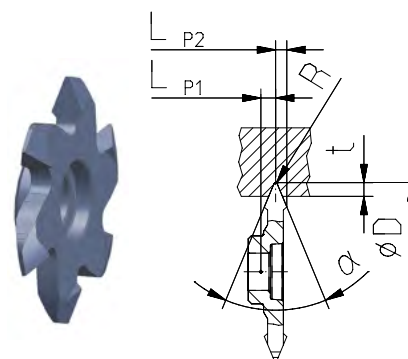
Notch Impact Test

- Insert holder see page 74
- Cutting data see page 166

U-Test



V-Test



3

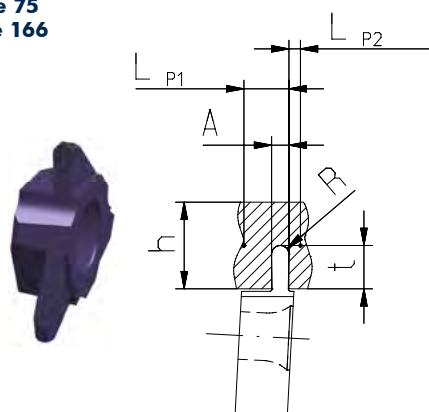
Type	Notch form	A mm	R mm	α	t mm	LP1 mm	LP2 mm	Number of teeth	Order No. TINAMATIC
P20	P2022 * U	2,0	1,0	–	5,0	4,9	0	6	171975
	P2022 U-DVM	2,0	1,0	–	3,0	4,9	0	6	171975
	P2022 U-DVMK	1,5	0,75	–	2,0	4,9	0	6	175889
	P2020 V	–	0,25	45°	2,0	2,15	1,675	6	182208
	P2020 V-KLST	–	0,1	60°	1,0	2,15	1,675	6	160808
P25	P2526 U	2,0	1,0	–	5,0	4,9	0	6	160909
	P2526 U-DVM	2,0	1,0	–	3,0	4,9	0	6	160909
	P2526 U-DVMK	1,5	0,75	–	2,0	4,9	0	6	162057
	P2526 V	–	0,25	45°	2,0	2,1	1,7	6	180815
	P2526 V-KLST	–	0,15	60°	1,0	2,7	1,8	6	184126

TriMILL

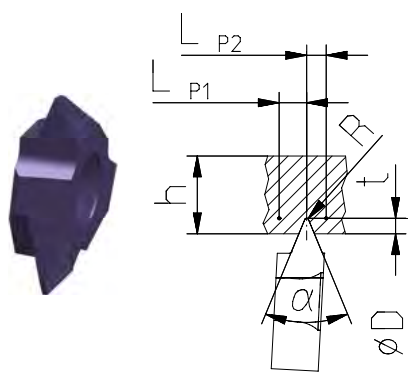
Notch Impact Test

- Insert holder see page 75
- Cutting data see page 166

U-Test



V-Test

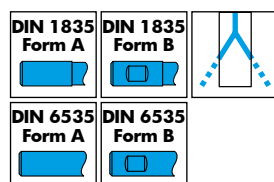
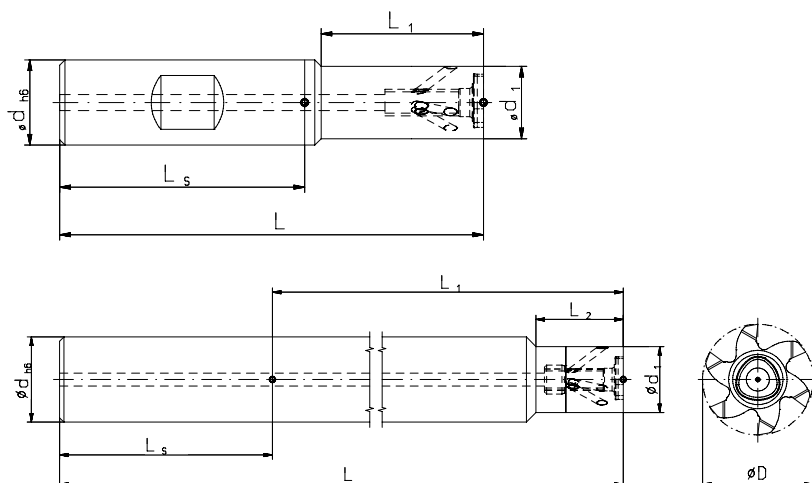


Type	Notch form	A mm	R mm	α	t mm	LP1 mm	LP2 mm	Number of teeth	Order No. TINAMATIC
013	013 U	2,0	1,0	–	5,0	5,2	1,33	3	160730
	013 U-DVM	2,0	1,0	–	3,0	6,53	0	3	185159
	013 U-DVMK	1,5	0,75	–	2,0	6,53	0	3	162406
	013 V	–	0,25	45°	2,0	3,53	3	3	184439
	013 V-KLST	–	0,1	60°	1,0	2,73	3,8	3	161407

* Not suited for cutter 174314

Circular Milling Tools with Polygonal Insert Seat

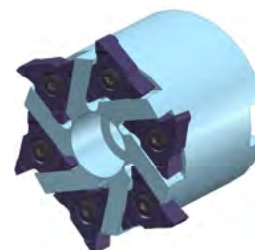
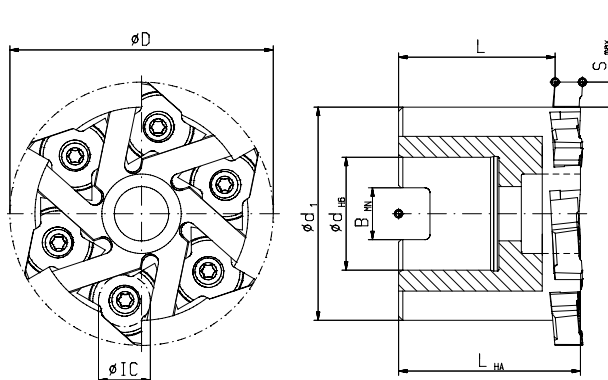
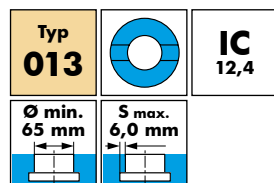
- Inserts see page 73
- Cutting data see page 166
- More cutters see page 28-29



											Spare part No.		
Type	Order No.	Form	dh6 mm	d1 mm	D _{max.} mm	S _{max.} (D-d1)/2 mm	L mm	L1 mm	L2 mm	Shaft	Screw- driver *	Screw *	
P20	177178	A	12	11,5	21,7	5,1	62,4	14,4	-	Steel	T15 IP 111671	M4x13 107597	
	123615	B	16	11,5	21,7	5,1	80	30	-	Steel			
	123616	B	16	11,5	21,7	5,1	80	30	-	Carbide			
	171794	A	16	11,5	21,7	5,1	80	30	-	Carbide			
	123617	B	16	11,5	21,7	5,1	100	50	-	Carbide			
	171796	A	16	11,5	21,7	5,1	100	50	-	Carbide			
	174314	A	16	15,5	21,7	3,1	105,5	57,5	20	Carbide			
P25	177182	A	16	13,6	27,7	7,05	69,6	20,4	-	Steel	T20 IP 111594	M5x13,5 107529	
	123592	B	16	13,6	27,7	7,05	79,6	30,5	-	Steel			
	123598	B	16	13,6	27,7	7,05	79,6	30,5	-	Carbide			
	171855	A	16	13,6	27,7	7,05	79,6	30,5	-	Carbide			
	123600	B	16	13,6	27,7	7,05	94,6	45,5	-	Carbide			
	171857	A	16	13,6	27,7	7,05	94,6	45,5	-	Carbide			
	123603	B	16	13,6	27,7	7,05	109,6	60,5	-	Carbide			
	171859	A	16	13,6	27,7	7,05	109,6	60,5	-	Carbide			
	123609	A	16	15,5	27,7	6,1	105	57	21,5	Carbide			
	123611	A	16	15,5	27,7	6,1	149,5	101,5	21,5	Carbide			
	161205	NEW	A	20	15,5	27,7	6,1	100	52	21,5			Carbide
	123613	A	20	15,5	27,7	6,1	174,45	128,5	21,5	Carbide			
											Screw torques max.		
											107597	T15 IP 3,8 Nm	
											107529	T20 IP 5,5 Nm	

Circular Milling Tools

- Inserts see page 73
- Cutting data see page 166



3

Order No.	D mm	dH6 mm	d1 mm	S max. mm	LHA mm	L mm	B MN mm	Inserts
123435	63	27	51	6	43,5	37,5	12,4	6

Spare part No.

T20 IP
Screw-driver *

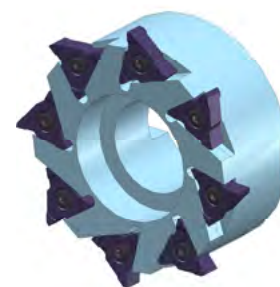
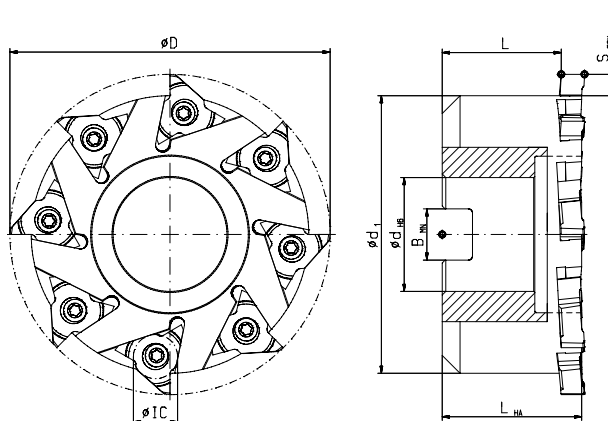
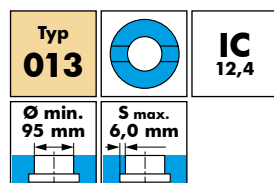
Screw *

111594 107551

Screw torque 5,5 Nm

Cutter clamping screw internal hexagon

Order No. 114695



Order No.	D mm	dH6 mm	d1 mm	S max. mm	LHA mm	L mm	B MN mm	Inserts
123436	90	32	78	6	39,2	33,5	14,4	8

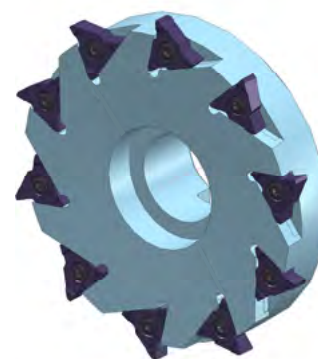
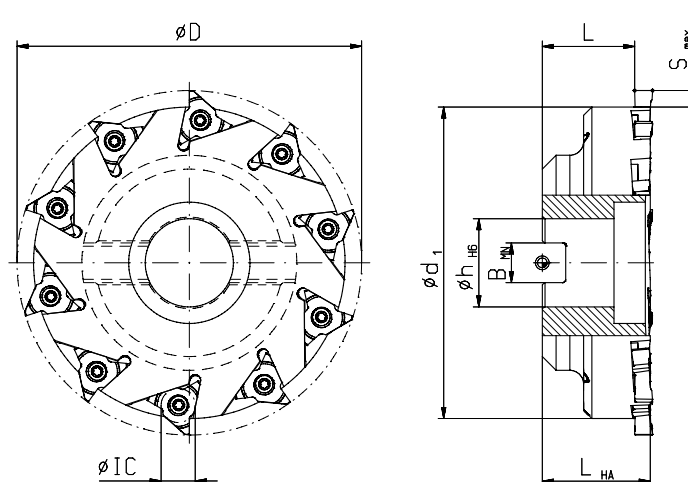
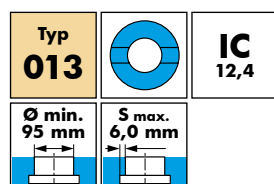
Spare part No.

T20 IP
Screw-driver *

Screw *

111594 107551

Screw torque 5,5 Nm



Order No.	D mm	dH6 mm	d1 mm	S max. mm	LHA mm	L mm	B MN mm	Inserts
134561	125	32	113	6,0	39,2	33,5	14,4	10

Spare part No.

T20 IP
Screw-driver *

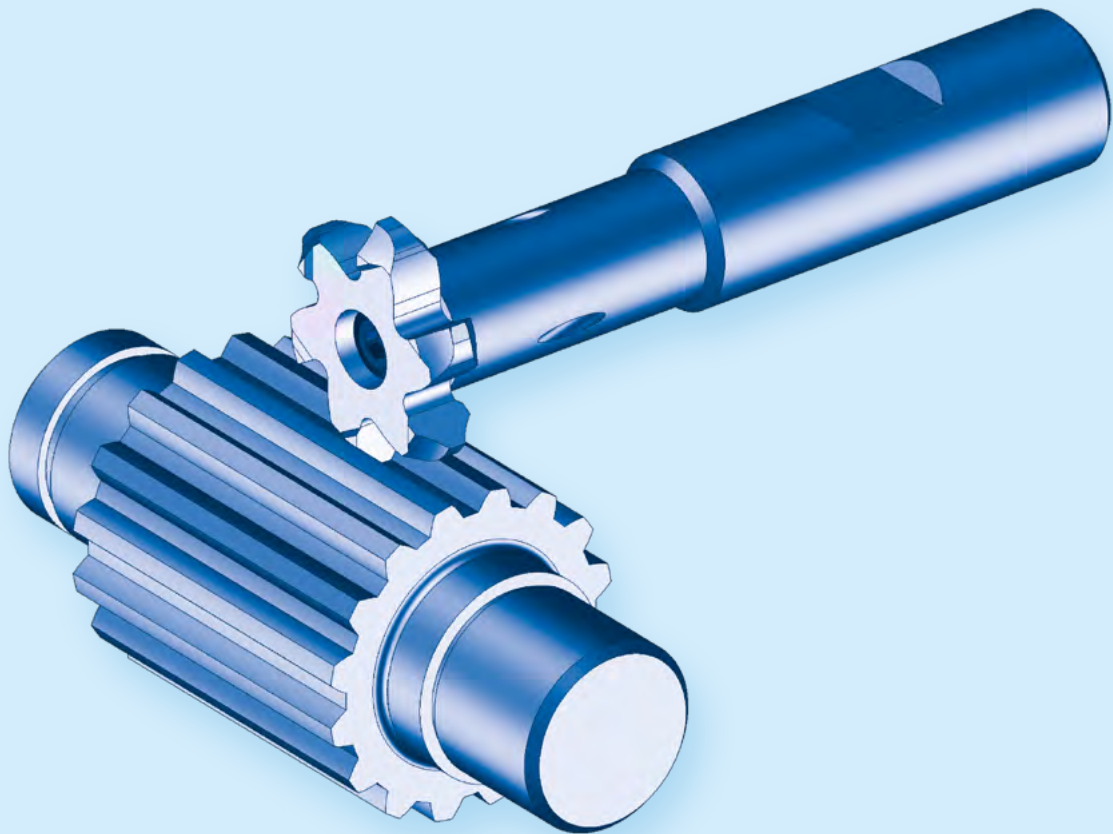
Screw *

111594 107551

Screw torque 5,5 Nm

* Screwdriver and clamping screw included in delivery

Gear Milling



Milling

Thread Milling

Extended
program

14-63

1

Face Finish Milling

64-69

2

Notch Impact Test

70-75

3

Gear Milling

76-81

4

Slot Milling
Keyway MillingExtended
program82-
109

5

Contour and Radius Milling
Chamfering, Deburring,
undercut, dovetailExtended
program110-
125

6

Sawing, Slitting

Sawing, Cutting, Slitting

Extended
program126-
143

7

Bore Machining

Reaming

144-
151

8

Axial Grooving

Axial Grooving, adjustable

152-
157

9

Special Tools

Special- and Combination Tools

158-
163

10

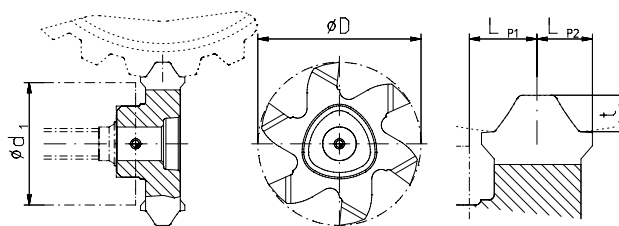
Cutting Data and Technical Information

164-
179

11

Gear Milling Inserts

- Insert holder see page 94
- Cutting data see page 166



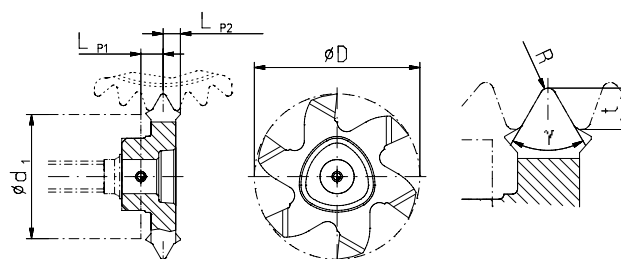
Splined Shaft Connection



Type	Arbor	Module	Angle of N. of teeth	D $\pm 0,05$	Chip	LP1	LP2	t	N. of teeth	Order No.			
			action	Arbor	mm	angle	mm	mm	Insert	TINAMATIC			
P16	P1616	W8	x 0,75	x 30°	x 9	16	6°	2,15	1,675	0,63	6	193023	NEW
	P1616	W9	x 0,8	x 30°	x 10	15,85	6°	2,05	1,775	0,71	6	184142	
	P1616	W11	x 0,8	x 30°	x 12	15,85	6°	2,05	1,775	0,8	6	174569	
	P1616	W14	x 0,8	x 30°	x 16	16	6°	2,05	1,775	0,8	6	169336	
	P1616	W16	x 0,8	x 30°	x 18	16	6°	2,05	1,775	0,8	6	169090	
	P1616	W18	x 1,0	x 30°	x 16	16	6°	2,15	1,675	0,93	6	192612	NEW
	P1616	W19	x 0,8	x 30°	x 22	16	6°	2,15	1,675	0,75	6	192691	NEW
	P1616	W20	x 0,8	x 30°	x 24	16	6°	2,05	1,775	0,8	6	168668	
	P1616	W20	x 1,25	x 30°	x 14	16	6°	2,65	2,175	1,45	6	182361	
	P1616	W20	x 1,5	x 30°	x 12	16	6°	2,65	2,175	1,36	6	190601	NEW
	P1616	W21	x 1,5	x 30°	x 12	16	6°	2,65	2,175	1,33	6	192610	NEW
	P1616	W22	x 0,8	x 30°	x 26	16	6°	2,15	1,675	0,77	6	191365	NEW
	P1616	W24	x 1,25	x 30°	x 18	16	6°	2,55	2,275	1,25	6	169340	
	P1616	W25	x 1,0	x 30°	x 24	16	6°	2,15	1,675	0,95	6	185309	
	P1616	W25	x 2,0	x 30°	x 11	16	8°	4,15	3,30	2,0	3	149415	
	P1616	W28	x 1,25	x 30°	x 21	16	6°	2,15	1,675	1,18	6	192905	NEW
	P1616	W30	x 1,25	x 30°	x 22	16	6°	2,55	2,275	1,25	6	176246	
	P1616	W31	x 0,8	x 30°	x 37	16	6°	2,15	1,675	0,78	6	189534	NEW
	P1616	W32	x 1,25	x 30°	x 24	16	6°	2,65	2,175	1,19	6	185305	
	P1616	W35	x 0,8	x 30°	x 42	16	6°	2,15	1,675	0,78	6	188287	
	P1616	W35	x 1,5	x 30°	x 22	16	6°	2,65	2,175	1,43	6	186028	
	P1616	W35	x 2,0	x 30°	x 16	16	6°	3,05	2,775	2,0	6	179140	
	P1616	W40	x 1,0	x 30°	x 38	16	6°	2,08	1,75	0,96	6	187909	
	P1616	W42	x 1,25	x 30°	x 32	16	6°	2,55	2,275	1,25	6	179651	
	P1616	W45	x 1,25	x 30°	x 34	16	6°	2,65	2,175	1,21	6	160731	NEW
	P1616	W50	x 1,0	x 30°	x 48	16	6°	2,65	2,175	0,88	6	160993	NEW
	P1616	W50	x 2,0	x 30°	x 24	16	6°	3,05	2,775	2,0	6	169687	
	P1616	W52	x 1,25	x 30°	x 40	16	6°	2,65	2,175	1,21	6	185304	
	P1616	W55	x 1,0	x 30°	x 54	16	6°	2,08	1,75	0,97	6	187910	
P25	P2526	W18	x 1,0	x 30°	x 16	26	6°	2,15	1,675	0,93	6	161670	NEW
	P2526	W21	x 1,5	x 30°	x 12	26	6°	2,65	2,175	1,33	6	161669	NEW
	P2526	W22	x 2,0	x 30°	x 9	26	6°	3,90	3,425	1,69	6	190309	NEW
	P2526	W25	x 1,25	x 30°	x 18	26	6°	2,65	2,175	1,28	6	189691	NEW
	P2526	W30	x 2,0	x 30°	x 13	26	6°	3,90	3,425	1,76	6	187574	
	P2526	W32	x 2,0	x 30°	x 14	26	6°	3,90	3,425	1,8	6	192784	NEW
	P2526	W38	x 2,0	x 30°	x 18	26	6°	3,90	3,425	2,21	6	189692	NEW
	P2526	W40	x 2,0	x 30°	x 18	26	6°	3,90	3,425	1,86	6	187575	
	P2526	W45	x 2,0	x 30°	x 21	26	6°	3,90	3,425	1,9	6	187576	
	P2526	W50	x 2,0	x 30°	x 24	26	6°	3,85	3,475	2,0	6	169786	
	P2526	W55	x 2,0	x 30°	x 26	26	6°	4,40	2,675	1,92	6	189521	NEW
	P2526	W65	x 2,0	x 30°	x 31	26	6°	4,40	2,675	1,93	6	193313	NEW
	P2526	W70	x 1,5	x 30°	x 45	26	6°	2,65	2,175	1,46	6	191807	NEW
	P2526	W70	x 2,5	x 30°	x 26	26	6°	3,90	3,425	2,39	6	192220	NEW
	P2526	W72	x 2,0	x 30°	x 34	26	6°	3,85	3,475	1,92	6	160321	
	P2526	W80	x 2,5	x 30°	x 30	26	6°	3,85	3,475	2,39	6	160323	
	P2526	W90	x 2,0	x 30°	x 44	26	6°	3,85	3,475	1,94	6	160322	
	P2526	W90	x 2,5	x 30°	x 34	26	6°	3,90	3,425	2,42	6	191806	NEW
	P2525	W90	x 3,0	x 30°	x 28	25	8°	4,60	4,10	2,89	3	189851	NEW
	P2525	W95	x 3,0	x 30°	x 30	25	8°	4,60	4,10	2,90	3	189852	NEW
P2526	W100	x 3,0	x 30°	x 32	26	6°	3,90	3,425	2,91	6	192039	NEW	
P2526	W130	x 3,0	x 30°	x 42	26	6°	3,90	3,425	2,93	6	188629	NEW	

Gear Milling Inserts

- Insert holder see page 94
- Cutting data see page 166

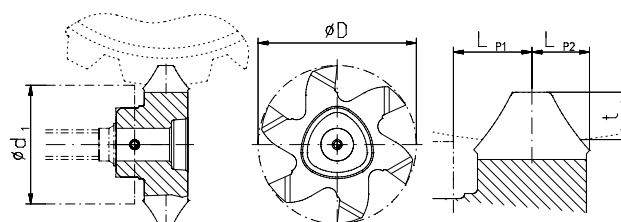


Spline



Type	Arbor	R mm	Grp angle γ	N. of teeth Arbor	D ^{±0,05} mm	Chip angle	LP1 mm	LP2 mm	t mm	N. of teeth Insert	Order No. TINAMATIC
P16	P1616 12 x 14	0,09	60°	31	16	6°	2,15	1,675	0,892	6	191837 NEW
P25	P2526 26 x 30	0,3	60°	35	26	6°	2,15	1,675	1,638	6	171358
	P2526 40 x 44	0,4	60°	38	26	6°	2,15	1,675	1,94	6	171359

4



Splined Shaft Profile

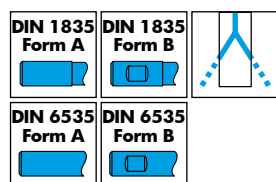
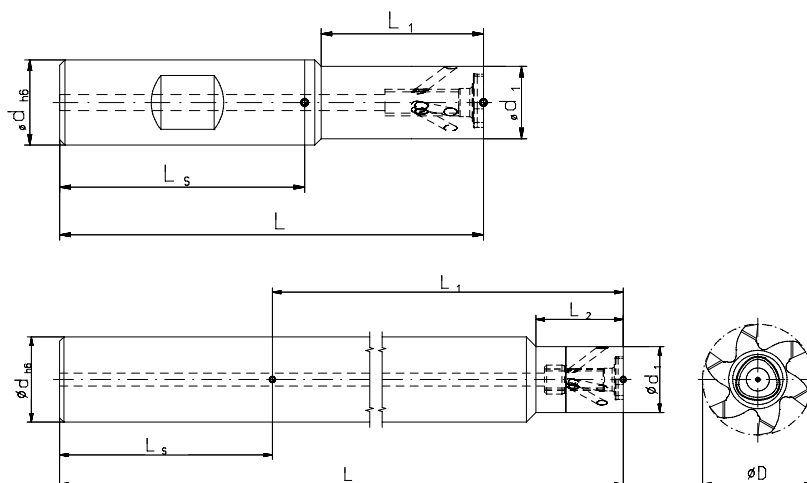


Type	Nominal profile width	Module	Angle of action	N. of teeth Arbor	D ^{±0,05} mm	Chip angle	LP1 mm	LP2 mm	t mm	N. of teeth Insert	Order No. TINAMATIC
P16	P1616 B15 x 12	1,6	30°	8	16	6°	3,15	2,675	1,32	6	169337
	P1616 B17 x 14	1,6	30°	9	16	6°	3,15	2,675	1,33	6	169111
	P1616 B20 x 17	1,6	30°	12	16	6°	3,15	2,50	1,42	6	169101
	P1616 B25 x 22	1,6	30°	14	16	6°	3,15	2,53	1,54	6	169107
	P1616 B40 x 36	1,9	30°	20	16	6°	3,175	2,65	1,91	6	186842
P25	P2526 B35 x 31	1,75	30°	18	26	6°	3,85	3,475	2,0	6	178172
	P2526 B38 x 34	1,9	30°	19	26	6°	4,4	2,675	1,91	6	186398
	P2526 B45 x 41	2,0	30°	22	26	6°	3,85	3,475	1,91	6	179212
	P2526 B50 x 45	2,0	30°	24	26	6°	3,90	3,425	2,35	6	192242 NEW
	P2526 B55 x 50	2,0	30°	26	26	6°	3,85	3,475	2,75	6	173903
	P2526 B58 x 53	2,0	30°	27	26	6°	3,90	3,425	2,64	6	189652 NEW
	P2526 B68 x 62	2,1	30°	31	26	6°	4,40	2,675	2,81	6	192093 NEW
	P2526 B70 x 64	2,1	30°	32	26	6°	3,90	3,425	2,81	6	189848 NEW
	P2526 B80 x 74	2,1	30°	36	26	6°	3,90	3,425	2,82	6	189005 NEW

i Further gear standards on request

Circular Milling Tools with Polygonal Insert Seat

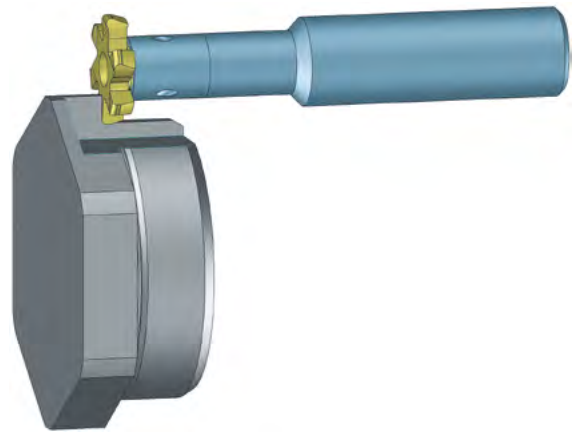
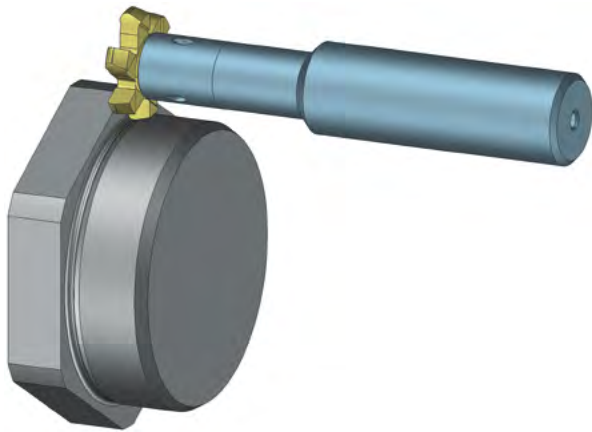
- Inserts see page 78-79
- Cutting data see page 166
- More cutters see page 28-29



											Spare part No.		
Type	Order No.	Form	d _{h6} mm	d ₁ mm	D _{max.} mm	S _{max.} (D-d ₁)/2 mm	L mm	L ₁ mm	L ₂ mm	Shaft	Screw- driver *	Screw *	
P20	177178	A	12	11,5	21,7	5,1	62,4	14,4	-	Steel	T15 IP 111671	M4x13 107597	
	123615	B	16	11,5	21,7	5,1	80	30	-	Steel			
	123616	B	16	11,5	21,7	5,1	80	30	-	Carbide			
	171794	A	16	11,5	21,7	5,1	80	30	-	Carbide			
	123617	B	16	11,5	21,7	5,1	100	50	-	Carbide			
	171796	A	16	11,5	21,7	5,1	100	50	-	Carbide			
	174314	A	16	15,5	21,7	3,1	105,5	57,5	20	Carbide			
P25	177182	A	16	13,6	27,7	7,05	69,6	20,4	-	Steel	T20 IP 111594	M5x13,5 107529	
	123592	B	16	13,6	27,7	7,05	79,6	30,5	-	Steel			
	123598	B	16	13,6	27,7	7,05	79,6	30,5	-	Carbide			
	171855	A	16	13,6	27,7	7,05	79,6	30,5	-	Carbide			
	123600	B	16	13,6	27,7	7,05	94,6	45,5	-	Carbide			
	171857	A	16	13,6	27,7	7,05	94,6	45,5	-	Carbide			
	123603	B	16	13,6	27,7	7,05	109,6	60,5	-	Carbide			
	171859	A	16	13,6	27,7	7,05	109,6	60,5	-	Carbide			
	123609	A	16	15,5	27,7	6,1	105	57	21,5	Carbide			
	123611	A	16	15,5	27,7	6,1	149,5	101,5	21,5	Carbide			
	161205	NEW	A	20	15,5	27,7	6,1	100	52	21,5			Carbide
	123613	A	20	15,5	27,7	6,1	174,45	128,5	21,5	Carbide			
											Screw torques max.		
											107597	T15 IP 3,8 Nm	
											107529	T20 IP 5,5 Nm	

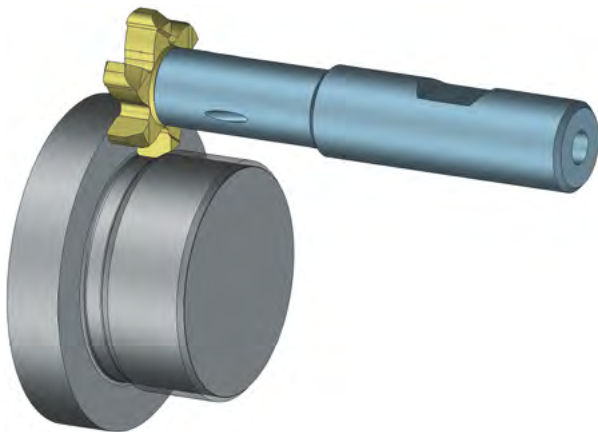
PolyMILL

Milling of Special Contours with PolyMILL Inserts

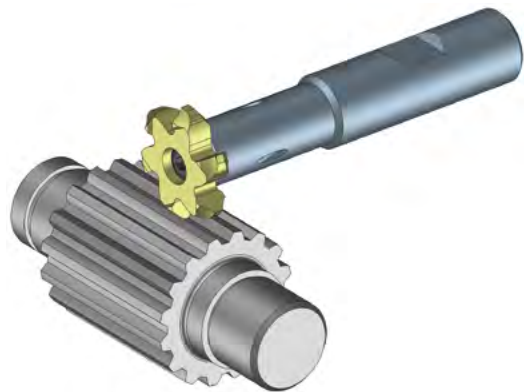


4

Milling an undercut according to DIN 509 Form E

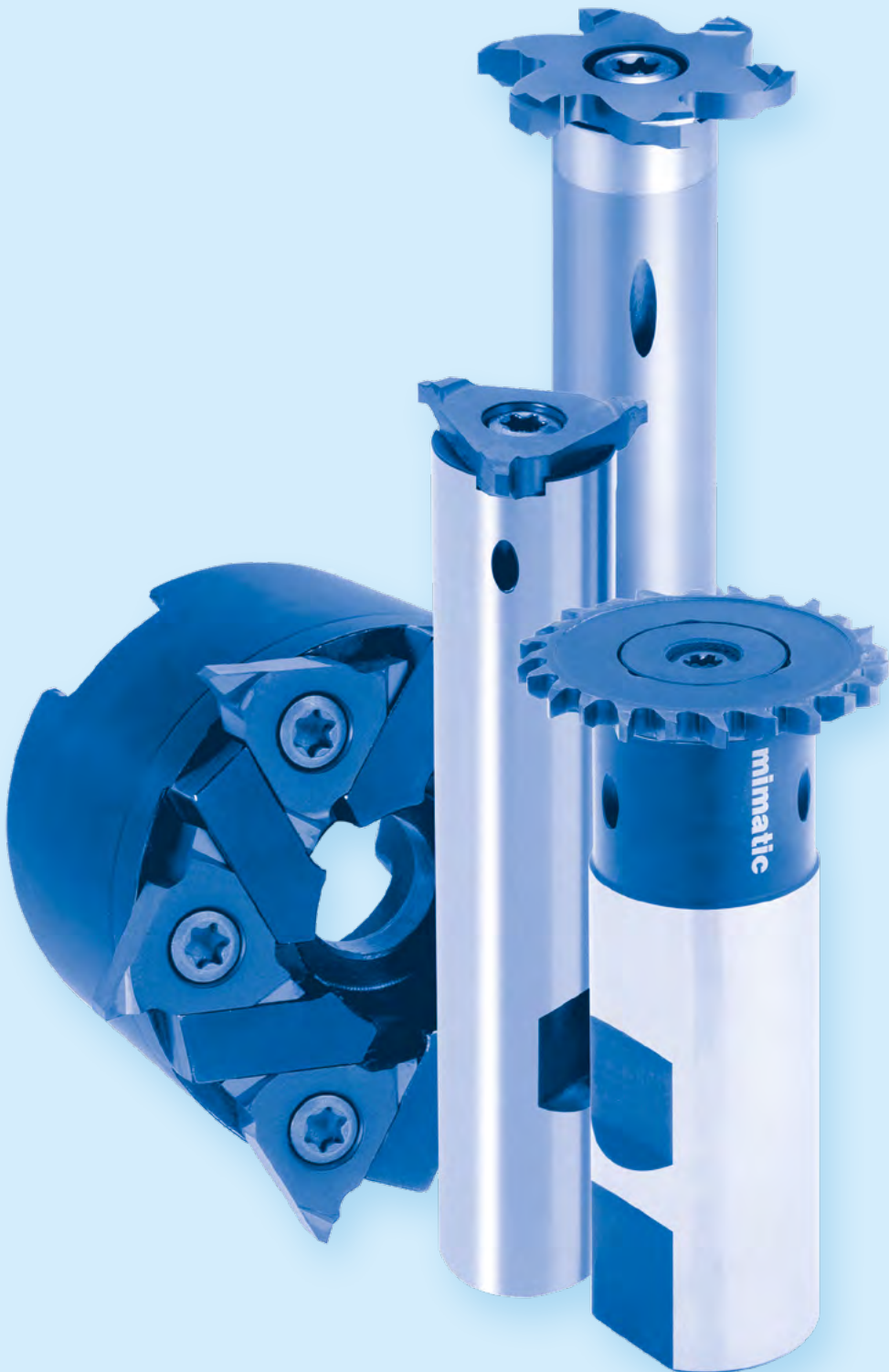


Milling a thread undercut according to DIN 76



Milling a spindle with splines according to DIN 5480

Slot Milling



Milling

Thread Milling

Extended
program

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Face Finish Milling

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2

Notch Impact Test

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3

Gear Milling

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4

Slot Milling
Keyway MillingExtended
program82-
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5

Contour and Radius Milling
Chamfering, Deburring,
undercut, dovetailExtended
program110-
125

6

Sawing, Slitting

Sawing, Cutting, Slitting

Extended
program126-
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TriMILL



Inserts

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DeepMILL



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Symbols

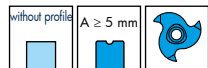
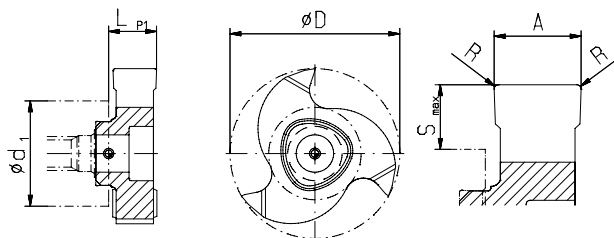
	Type designation		Blank inserts must be equipped with a clearance angle!
	Tool shank without clamping surface		Inserts without profile, ready for use with clearance angle.
	Tool shank with Weldon clamping surface		Inserts for guard ring slots
	Solid carbide shaft without clamping surface		Inserts for O-ring slots
	Solid carbide shaft with Weldon clamping surface		DIN standard
	Tool with Conical tool shank		Inserts with chamfered edges
	Tool with tightening thread		Inserts with chipbreakers from 5 mm cutting width
	Cutter with cross groove		For chamfering and deburring
	Smallest necessary bore-diameter		Number of inserts (Polygon Cutter)
	Maximum cutting depth		Number of inserts (Polygon Cutter)
	Internal coolant supply		Thread depth max.
			Edge radius
			Full radius
			Milling inserts for cutting off

Formula for Tool Lengths

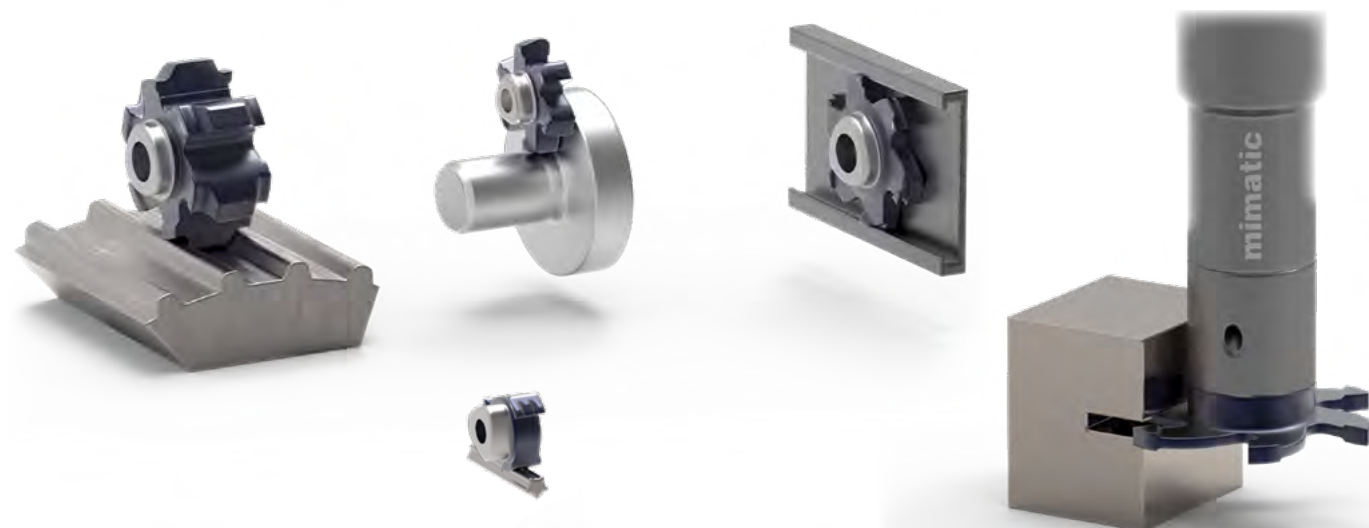
$$L_{WKZ} = L_{GK} + L_1 + L_{P1} (+L_{P2})$$

Slot Milling

- Insert holder see page 90-92
- Cutting data see page 166

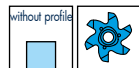
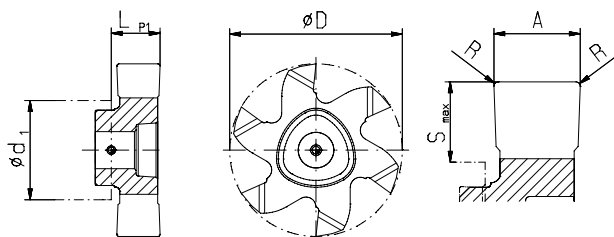


Type		A mm	A inch	D mm	Rake Angle	R mm	LP1 mm	LP2 mm	S _{max} mm	Number of teeth	Order No. TINAMATIC
P12	P1210	0,74	.029	9,6	6°	0,1	3,25	0,1	1,2	3	171915
	P1210	0,84	.033	9,6	6°	0,1	3,25	0,1	1,2	3	171916
	P1210	1	.039	9,6	6°	0,1	3,25	0,1	1,2	3	171917
	P1210	1,2	.047	9,6	6°	0,1	3,25	0,1	1,2	3	171918
	P1210	1,4	.055	9,6	6°	0,1	3,25	0,1	1,2	3	171919
	P1210	1,5	.059	9,6	6°	0,1	3,25	0,1	1,2	3	171920
	P1210	1,575	.062	9,6	6°	0,1	3,25	0,1	1,2	3	173937
	P1210	1,7	.067	9,6	6°	0,1	3,25	0,1	1,2	3	171921
	P1210	2	.079	9,6	6°	0,1	3,75	–	1,2	3	171922
	P1210	2,5	.098	9,6	6°	0,1	3,75	–	1,2	3	171923
	P1212	1,5	.059	11,7	6°	0,1	3,4	–	2,25	3	171862
	P1212	2	.079	11,7	6°	0,15	3,4	–	2,25	3	171863
	P1212	2,5	.098	11,7	6°	0,15	3,4	–	2,25	3	171865
	P1212	3	.118	11,7	6°	0,15	3,55	–	2,25	3	171866
	P1212	3,175	.125	11,7	6°	0,15	3,75	–	2,25	3	173938
P16	P1616	3,5	.138	16	0°	0,15	4,15	–	3,5	3	142531
	P1616	3,5	.138	16	8°	0,15	4,15	–	3,5	3	142486
	P1616	3,5	.138	16	12°	0,15	4,15	–	3,5	3	142526
	P1616	5	.197	16	0°	0,15	5,65	–	3,5	3	142511
	P1616	5	.197	16	8°	0,15	5,65	–	3,5	3	142541
	P1616	5	.197	16	12°	0,15	5,65	–	3,5	3	142457
P25	P2525	4	.157	25	0°	0,15	4,65	–	5,7	3	142556
	P2525	4	.157	25	8°	0,15	4,65	–	5,7	3	142546
	P2525	4	.157	25	12°	0,15	4,65	–	5,7	3	142579
	P2525	5	.197	25	8°	0,15	5,75	–	5,7	3	142538
	P2525	6	.236	25	8°	0,15	6,90	–	5,7	3	160907
	P2525	6,35	.250	25	8°	0,15	7,15	–	5,7	3	173939
	P2525	6,5	.256	25	0°	0,15	7,15	–	5,7	3	142582
	P2525	6,5	.256	25	8°	0,15	7,15	–	5,7	3	142610
	P2525	6,5	.256	25	12°	0,15	7,15	–	5,7	3	142574
	P2525	8	.315	25	0°	0,15	8,65	–	5,7	3	142558
	P2525	8	.315	25	8°	0,15	8,65	–	5,7	3	142578
	P2525	8	.315	25	12°	0,15	8,65	–	5,7	3	142588



Slot Milling, Straight Toothed

- Insert holder see page 90-92
- Cutting data see page 166

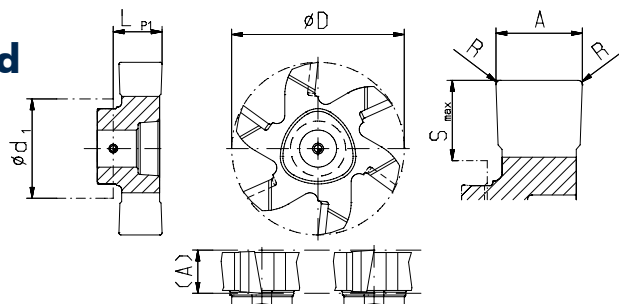


Type		A mm	A inch	D mm	Rake Angle	R mm	LP1 mm	S _{max.} mm	Number of teeth	Order No. TINAMATIC
P16	P1616	3,0	.118	16,0	6°	0,15	3,53	3,5	6	142494
	P1616	3,175	.125	16,0	6°	0,10	3,74	3,5	6	173929
	P1616	4,0	.157	16,0	6°	0,15	4,65	3,5	6	142565
	P1616	5,0	.197	16,0	6°	0,15	5,65	3,5	6	142586
	P1618	1,2	.047	17,7	6°	0,1	4,0	4,0	6	171937
	P1618	1,4	.055	17,7	6°	0,1	4,0	4,0	6	171938
	P1618	1,5	.059	17,7	6°	0,1	3,9	4,0	6	171939
	P1618	1,57	.062	17,7	6°	0,1	3,9	4,0	6	173928
	P1618	1,7	.067	17,7	6°	0,1	4,0	4,0	6	171940
	P1618	2,0	.079	17,7	6°	0,1	3,9	4,0	6	171941
	P1618	2,39	.094	17,7	6°	0,15	4,0	4,0	6	171942
	P1618	2,5	.098	17,7	6°	0,15	3,9	4,0	6	171943
P20	P2020	3,0	.118	20,0	6°	0,15	3,65	4,2	6	168673
	P2020	4,0	.157	20,0	6°	0,15	4,65	4,2	6	168674
	P2020	5,0	.197	20,0	6°	0,15	5,65	4,2	6	142655
	P2022	1,4	.055	21,7	6°	0,1	5,0	5,0	6	171956
	P2022	1,5	.059	21,7	6°	0,1	5,0	5,0	6	171957
	P2022	1,57	.062	21,7	6°	0,1	5,0	5,0	6	173930
	P2022	1,7	.067	21,7	6°	0,1	5,0	5,0	6	171958
	P2022	2,0	.079	21,7	6°	0,1	5,0	5,0	6	171959
	P2022	2,39	.094	21,7	6°	0,15	5,0	5,0	6	171960
	P2022	2,5	.098	21,7	6°	0,15	5,0	5,0	6	171961
	P2022	3,0	.118	21,7	6°	0,15	5,0	5,0	6	171962
	P2022	3,175	.125	21,7	6°	0,15	5,0	5,0	6	171963
P25	P2022	4,0	.157	21,7	6°	0,15	5,0	5,0	6	182370
	P2022	5,0	.197	21,7	6°	0,15	6,0	5,0	6	187947
	P2526	3,0	.118	26,0	6°	0,15	3,65	6,2	6	142601
	P2526	3,175	.125	26,0	6°	0,15	3,7	6,2	6	173932
	P2526	4,0	.157	26,0	6°	0,15	4,65	6,2	6	142677
	P2526	5,0	.197	26,0	6°	0,15	6,9	6,2	6	142589
	P2526	6,0	.236	26,0	6°	0,15	7,15	6,2	6	162646
	P2526	6,35	.250	26,0	6°	0,15	6,95	6,2	6	173931
	P2526	6,5	.256	26,0	6°	0,15	7,15	6,2	6	142618
	P2528	1,5	.059	27,7	6°	0,1	4,9	6,8	6	171981
	P2528	2,0	.079	27,7	6°	0,1	4,9	6,8	6	171982
	P2528	2,39	.094	27,7	6°	0,15	4,9	6,8	6	171983
	P2528	2,5	.098	27,7	6°	0,15	4,9	6,8	6	171984
	P2528	3,0	.118	27,7	6°	0,15	4,9	6,8	6	171985
	P2528	3,175	.125	27,7	6°	0,15	5,0	6,8	6	171986
	P2537	1,0	.039	37,0	6°	0,15	4,9	11,5	6	195886 NEW
	P2537	1,5	.059	37,0	6°	0,15	4,9	11,5	6	195900 NEW
	P2537	2,0	.079	37,0	6°	0,15	4,9	11,5	6	195903 NEW
	P2537	2,5	.098	37,0	6°	0,15	4,9	11,5	6	195904 NEW
	P2537	3,0	.118	37,0	6°	0,15	4,9	11,5	6	195905 NEW

PolyMILL

Slot Milling, Cross Toothed

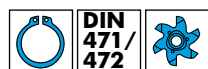
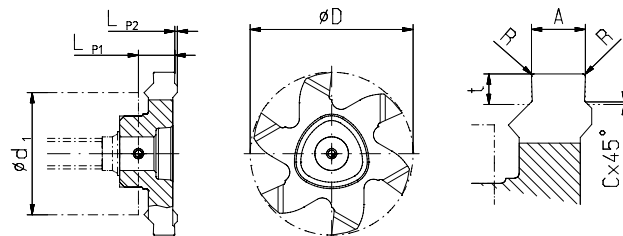
- Insert holder see page 90-92
- Cutting data see page 166



Type		A mm	A inch	D mm	Rake Angle	R mm	LP1 mm	S _{max.} mm	Number of teeth	Order No. TINAMATIC
P16	P1616	5,0	.197	16,0	6°	0,15	5,65	3,5	6	171699
P20	P2020	5,0	.197	20,0	6°	0,15	5,65	4,2	6	171700
	P2022	4,0	.157	21,7	6°	0,15	5,0	5,0	6	163659
P25	P2022	5,0	.197	21,7	6°	0,15	6,0	5,0	6	187948
	P2526	5,0	.197	26,0	6°	0,15	6,9	6,2	6	171701
	P2526	6,5	.256	26,0	6°	0,15	7,15	6,2	6	171702
	P2528	4,0	.157	27,7	6°	0,15	5,9	6,8	6	177186
	P2528	5,0	.197	27,7	6°	0,15	5,9	6,8	6	177187
	P2537	1,0	.039	37,0	6°	0,15	4,9	11,5	6	195906 
	P2537	1,5	.059	37,0	6°	0,15	4,9	11,5	6	195907 
	P2537	2,0	.079	37,0	6°	0,15	4,9	11,5	6	195909 
	P2537	2,5	.098	37,0	6°	0,15	4,9	11,5	6	195910 
	P2537	3,0	.118	37,0	6°	0,15	4,9	11,5	6	195911 
	P2538	1,5	.059	27,7	6°	0,1	4,9	6,8	6	201415 
	P2538	2,0	.079	27,7	6°	0,1	4,9	6,8	6	201416 
	P2538	2,39	.094	27,7	6°	0,15	4,9	6,8	6	201417 
	P2538	2,5	.098	27,7	6°	0,15	4,9	6,8	6	201418 
	P2538	3,0	.118	27,7	6°	0,15	4,9	6,8	6	201419 
	P2538	3,175	.125	27,7	6°	0,15	5,0	6,8	6	201420 

Circlip Grooves

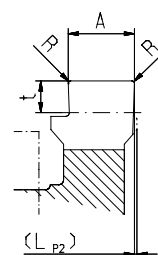
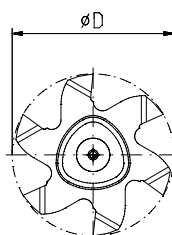
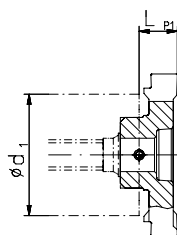
- With chamfered edge
- Insert holder see page 90-92
- Cutting data see page 166



Type		DIN width ^{H13}	D mm	A _{0,03} mm	t mm	C x 45° mm	R mm	LP1 mm	LP2 mm	Number of teeth	Order No TINAMATIC
P16	P1616	1,10	16	1,18	0,50	0,10	0,05	3,15	0,675	6	142423
	P1616	1,30	16	1,38	0,85	0,15	0,05	3,15	0,675	6	142528
	P1616	1,60	16	1,68	1,00	0,15	0,1	3,15	0,675	6	142561
	P1616	1,85	16	1,93	1,25	0,20	0,1	3,15	0,675	6	142562
P20	P2020	1,10	20	1,18	0,50	0,10	0,05	3,15	0,675	6	168675
	P2020	1,30	20	1,38	0,85	0,15	0,05	3,15	0,675	6	168676
	P2020	1,60	20	1,68	1,00	0,15	0,1	3,15	0,675	6	168677
	P2020	1,85	20	1,93	1,25	0,20	0,1	3,15	0,675	6	168678
	P2022	1,60	21,7	1,68	0,85	0,15	0,1	4,7	0,45	6	171968
	P2022	1,85	21,7	1,93	1,25	0,20	0,1	4,7	0,45	6	171969
	P2022	2,15	21,7	2,23	1,50	0,20	0,1	4,7	0,45	6	171970
	P2022	2,65	21,7	2,73	1,50	0,20	0,2	4,8	0,35	6	171971
P25	P2526	1,30	26	1,38	0,85	0,15	0,05	3,4	0,425	6	142646
	P2526	1,60	26	1,68	1,00	0,15	0,1	3,4	0,425	6	142660
	P2526	1,85	26	1,93	1,25	0,20	0,1	3,4	0,425	6	142607
	P2526	2,15	26	2,23	1,50	0,20	0,1	3,4	0,425	6	142591
	P2526	2,65	26	2,73	1,75	0,20	0,2	4,25	0,575	6	142597
	P2526	3,15	26	3,23	1,75	0,20	0,2	4,25	0,575	6	142661
	P2526	4,15	26	4,23	2,00	0,20	0,2	6,415	0,560	6	142622
	P2526	4,15	26	4,23	2,50	0,20	0,2	6,415	0,560	6	160893

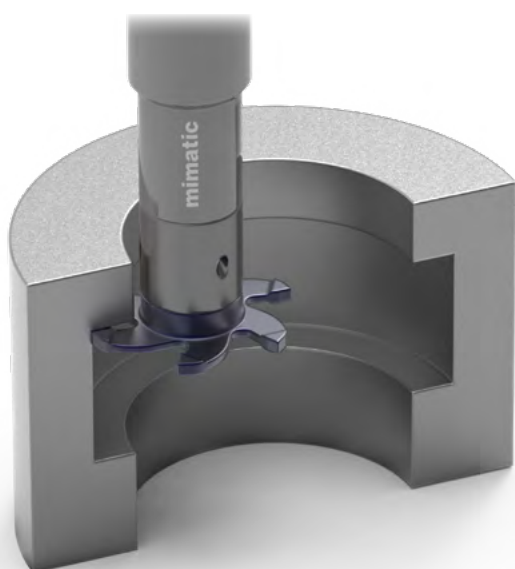
Circlip Grooves

- Without chamfered edge
- Insert holder see page 90-92
- Cutting data see page 166



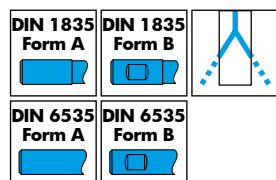
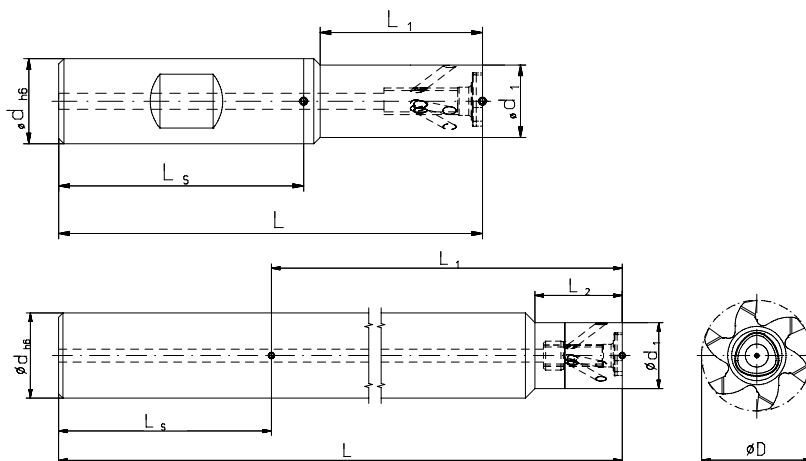
Type		DIN width ^{H13}	D mm	A _{0,03} mm	t mm	R mm	LP1 mm	LP2 mm	Number of teeth	Order No TINAMATIC
P12	P1210 *	0,90	9,6	0,98	1,20	0,05	3,25	0,1	3	172125
	P1212	1,10	11,7	1,18	0,90	0,05	3,55	–	3	171868
	P1212	1,30	11,7	1,38	1,10	0,05	3,55	–	3	171869
	P1212	1,60	11,7	1,68	1,00	0,1	3,55	–	3	171870
P16	P1616	1,10	16,0	1,18	0,90	0,05	3,45	–	6	142548
	P1616	1,30	16,0	1,38	1,10	0,05	3,45	–	6	142509
	P1616	1,60	16,0	1,68	1,25	0,1	3,45	–	6	142533
	P1616	1,85	16,0	1,93	1,25	0,1	3,45	–	6	142536
	P1618	1,10	17,7	1,18	0,90	0,05	4,0	–	6	171945
	P1618	1,30	17,7	1,38	1,10	0,05	4,0	–	6	171946
	P1618	1,60	17,7	1,68	1,25	0,1	3,9	–	6	171947
	P1618	1,85	17,7	1,93	1,25	0,1	4,0	–	6	171948
P20	P2020	1,10	20,0	1,18	0,90	0,05	3,65	–	6	168679
	P2020	1,30	20,0	1,38	1,10	0,05	3,65	–	6	168680
	P2020	1,60	20,0	1,68	1,25	0,1	3,65	–	6	168681
	P2020	1,85	20,0	1,93	1,25	0,1	3,65	–	6	168682
	P2022	1,60	21,7	1,68	1,25	0,1	5,0	–	6	171964
	P2022	1,85	21,7	1,93	1,25	0,1	5,0	–	6	171965
	P2022	2,15	21,7	2,23	1,75	0,1	5,0	–	6	171966
	P2022	2,65	21,7	2,73	1,75	0,2	5,0	–	6	171967
P25	P2526	1,30	26,0	1,38	1,10	0,05	3,65	–	6	142598
	P2526	1,60	26,0	1,68	1,25	0,1	3,65	–	6	142653
	P2526	1,85	26,0	1,93	1,25	0,1	3,65	–	6	142616
	P2526	2,15	26,0	2,23	1,75	0,1	3,65	–	6	142637
	P2526	2,65	26,0	2,73	1,75	0,2	3,65	–	6	142662
	P2526	3,15	26,0	3,23	2,20	0,2	4,55	–	6	142643
	P2526	4,15	26,0	4,23	2,50	0,2	6,80	–	6	160906

* Not suited for cutter 177676



Circular Milling Tools with Polygonal Insert Seat

- Inserts see page 86-89
- Cutting data see page 166



											Spare part No.		
Type	Order No.	Form	dh6 mm	d1 mm	Dmax. mm	Smax. (D-d1)/2 mm	L mm	L1 mm	L2 mm	Shaft	Screw- driver *	Screw *	
P12	177170	A	10	7,0	11,7	2,35	54	8	-	Steel	T8 IP 111656	M2,5x7 107596	
	123619	B	12	7,0	11,7	2,35	67,5	20	-	Steel			
	100228	B	12	7,0	11,7	2,35	67,5	20	-	Carbide			
	171778	A	12	7,0	11,7	2,35	67,5	20	-	Carbide			
	171780	B	12	7,0	11,7	2,35	80	30	-	Carbide			
	171781	A	12	7,0	11,7	2,35	80	30	-	Carbide			
	171783	B	12	7,0	11,7	2,35	100	40	-	Carbide			
	171784	A	12	7,0	11,7	2,35	100	40	-	Carbide			
P16	177174	A	10	9,0	17,7	4,35	60	11	-	Steel	T8 IP 111656	M3x12 143158	
	123573	B	12	9,0	17,7	4,35	67,4	21	-	Steel			
	123577	B	12	9,0	17,7	4,35	67,4	21	-	Carbide			
	171787	A	12	9,0	17,7	4,35	67,4	21	-	Carbide			
	123580	B	12	9,0	17,7	4,35	82,4	36	-	Carbide			
	171789	A	12	9,0	17,7	4,35	82,4	36	-	Carbide			
	123584	A	12	9,0	17,7	4,35	100	30	-	Carbide			
	123588	A	12	11,5	17,7	2,85	82,4	37,4	13	Carbide			
P20	123590	A	12	12,0	17,7	2,85	122,5	77,5	-	Carbide	T15 IP 111671	M4x13 107597	
	177178	A	12	11,5	21,7	5,1	62,4	14,4	-	Steel			
	123615	B	16	11,5	21,7	5,1	80	30	-	Steel			
	123616	B	16	11,5	21,7	5,1	80	30	-	Carbide			
	171794	A	16	11,5	21,7	5,1	80	30	-	Carbide			
	123617	B	16	11,5	21,7	5,1	100	50	-	Carbide			
	171796	A	16	11,5	21,7	5,1	100	50	-	Carbide			
	174314	A	16	15,5	21,7	3,1	105,5	57,5	20	Carbide			
P25	177182	A	16	13,6	27,7	7,05	69,6	20,4	-	Steel	T20 IP 111594	M5x13,5 107529	
	123592	B	16	13,6	27,7	7,05	79,6	30,5	-	Steel			
	123598	B	16	13,6	27,7	7,05	79,6	30,5	-	Carbide			
	171855	A	16	13,6	27,7	7,05	79,6	30,5	-	Carbide			
	123600	B	16	13,6	27,7	7,05	94,6	45,5	-	Carbide			
	171857	A	16	13,6	27,7	7,05	94,6	45,5	-	Carbide			
	123603	B	16	13,6	27,7	7,05	109,6	60,5	-	Carbide			
	171859	A	16	13,6	27,7	7,05	109,6	60,5	-	Carbide			
	123609	A	16	15,5	27,7	6,1	105	57	21,5	Carbide			
	123611	A	16	15,5	27,7	6,1	149,5	101,5	21,5	Carbide			
	161205	NEW	A	20	15,5	27,7	6,1	100	52	21,5			Carbide
	123613	A	20	15,5	27,7	6,1	174,45	128,5	21,5	Carbide			

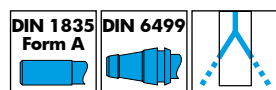
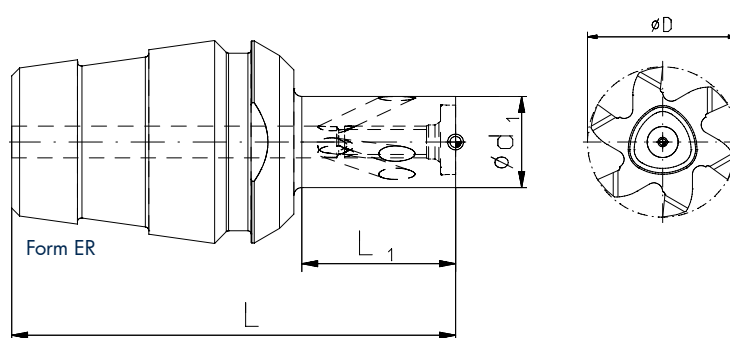
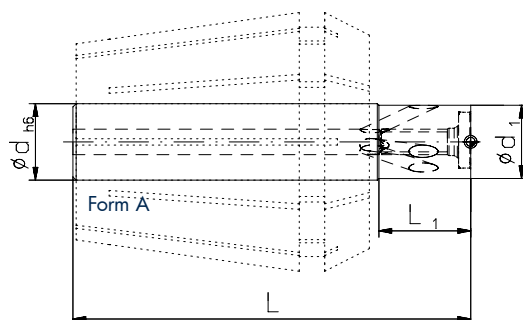
* Screwdriver and clamping screw included in delivery

Screw torques max.

107596	T08 IP	1,0 Nm
143158	T08 IP	1,1 Nm
107597	T15 IP	3,8 Nm
107529	T20 IP	5,5 Nm

Circular Milling Tools for Driven Toolholders

- Inserts see page 86-89
- Cutting data see page 166



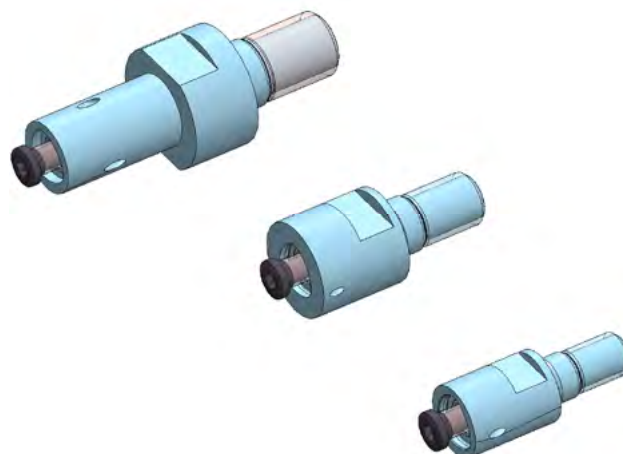
Type	Order No.	Form	d_{h6} mm	d_1 mm	$D_{max.}$ mm	$S_{max.}$ ($D-d_1$)/2 mm	L mm	L_1 mm	Shaft	Spare part No.	
										Screw-driver *	Screw *
P12	177170	A	10	7,0	11,7	2,35	54	8	Steel	T8 IP 111656	M2,5x7 107596
	177172	ER 16		7,0	11,7	2,35	37,5	8	Steel		
	177173	ER 20		7,0	11,7	2,35	47	13	Steel		
P16	177174	A	10	9,0	17,7	4,35	60	11	Steel	T8 IP 111656	M3x12 143158
	177176	ER 16		9,0	17,7	4,35	41,4	11	Steel		
	177177	ER 20		9,0	17,7	4,35	51	16	Steel		
P20	177178	A	12	11,5	21,7	5,1	62,4	14,4	Steel	T15 IP 111671	M4x13 107597
	177180	ER 20		11,5	21,7	5,1	49,5	14,5	Steel		
	177181	ER 25		11,5	21,7	5,1	56	19,4	Steel		
P25	177182	A	16	13,6	27,7	7,05	69,6	20,4	Steel	T20 IP 111594	M5x13,5 107529
	177184	ER 25		13,6	27,7	7,05	56	19,4	Steel		
	177185	ER 32		13,6	27,7	7,05	73	30,4	Steel		

Screw torques max.

107596	T8 IP	1,0 Nm
143158	T8 IP	1,1 Nm
107597	T15 IP	3,8 Nm
107529	T20 IP	5,5 Nm

Changing Inserts

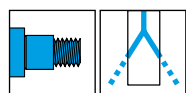
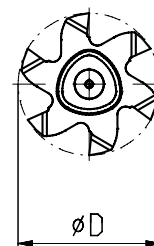
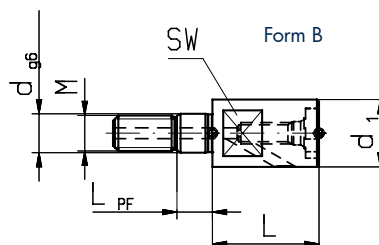
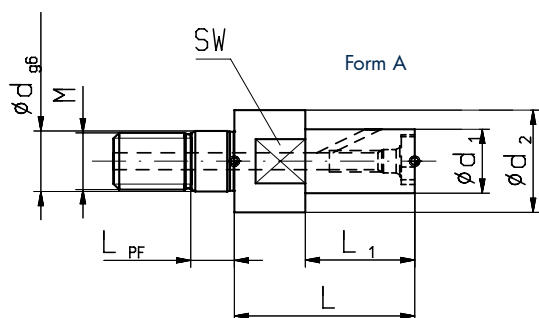
Clamp cutter before changing insert. Loosen insert screw. Remove used insert and clean the insert pocket before clamping new insert. Please use the appropriate TIP hex key for the tightening of the inserts and consider the screw tightening torques in the tables.



* Screwdriver and clamping screw included in delivery

Circular Milling Tools with Polygonal Insert Seat

- Inserts see page 86-89
- Cutting data see page 166



Please adapt cutting data to overhangs length

Type	Order No.	Form	d1 mm	d2 mm	Dmax. mm	Smax. (D-d1)/2 mm	L mm	L1 mm	M	dg6 mm	L PF mm	Spare part No.	
												Screw-driver *	Screw *
P12***	177676	B	9,5	–	11,7	1,1	13,5	–	M5	5,5	5,0	111656	107596
P16	123586	A	9,0	14,4	17,7	4,35	29,5	19,5	M8	8,5	5,5	111656	143158
P16**	177683	B	9,5	–	17,7	4,1	18,5	–	M5	5,5	5,0	111656	143158
P16***	177698	B	11,0	–	17,7	3,35	18,5	–	M6	6,5	5,0	111656	143158
P20	123618	A	11,5	18,0	21,7	5,1	35,0	25,0	M10	10,5	5,5	111671	107597
P20**	177734	B	11,5	–	21,7	5,1	20,5	–	M6	6,5	5,0	111671	107597
P20***	177735	B	13,5	–	21,7	4,1	20,5	–	M8	8,5	5,5	111671	107597
P25	123605	A	13,6	22,5	27,7	7,05	42,5	29,5	M12	12,5	5,5	111594	107529
P25**	177747	B	13,6	–	27,7	7,05	22,6	–	M8	8,5	5,5	111594	107529
P25***	177767	B	18,0	–	27,7	4,85	22,6	–	M10	10,5	5,5	111594	107529

* Screwdriver and clamping screw included in delivery

** Slim design for thread milling

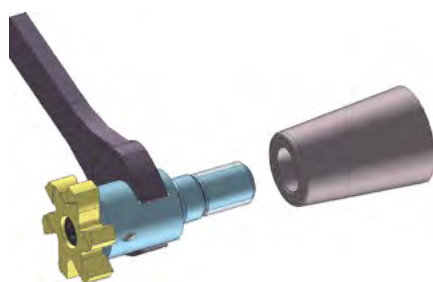
*** Reinforced design

Screw torques max.

107596	T8 IP	1,0 Nm
143158	T8 IP	1,1 Nm
107597	T15 IP	3,8 Nm
107529	T20 IP	5,5 Nm

Assembling Instructions

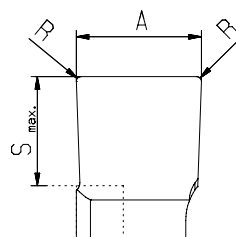
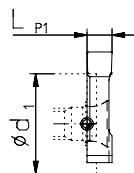
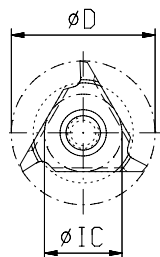
- Recommended tightening torque for screw-in circular milling body
- End-wrench see page 151



Thread size (M)	Wrench size mm	Tightening torque Nm
M5	7	8
M6	9	10
M8	11	25
M10	15	40
M12	19	60
M16	24	80

Slot Milling

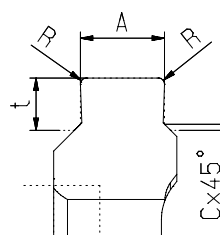
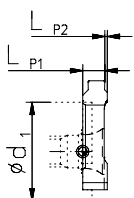
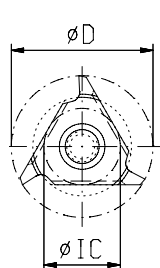
- Insert holder see page 95
- Cutting data see page 166



Type	A mm	D mm	IC mm	LP1 mm	S _{max.} mm	R mm	Order No. TINAMATIC
04	2,0	7,9	5,5	2,34	0,35	0,1	141719
03	2,34	10,6	5,5	2,36	1,6	0,15	141642
	3,0	10,6	5,5	3,02	1,6	0,15	141669
	3,5	17,5	9,2	3,52	2,6	0,15	141533
02	5,0	17,5	9,2	5,03	2,6	0,15	141535
	6,0	17,5	9,2	6,02	2,6	0,15	141544
01	4,0	23,0	12,4	4,03	3,45	0,15	141361
	6,5	23,0	12,4	6,53	3,45	0,15	141396

Circlip Grooves

- With chamfered edge
- Insert holder see page 95
- Cutting data see page 166

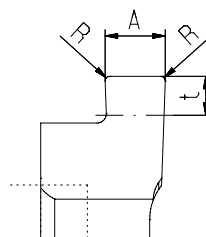
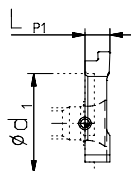
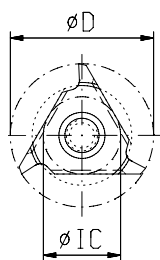


5

Type	G-Ring ^{H13} width	D mm	IC mm	LP1 mm	LP2 mm	A _{0,03} mm	t mm	Cx45° mm	R mm	Order No. TINAMATIC
03	1,10	10,6	5,5	2,13	0,21	1,18	0,5	0,1	0,05	141556
	1,10	17,5	9,2	3,1	0,4	1,18	0,5	0,1	0,05	141427
	1,30	17,5	9,2	3,1	0,4	1,38	0,85	0,15	0,05	141387
02	1,60	17,5	9,2	3,1	0,4	1,68	1,0	0,15	0,1	141399
	1,85	17,5	9,2	3,1	0,4	1,93	1,25	0,2	0,1	141409
	2,15	17,5	9,2	3,1	0,4	2,23	1,5	0,2	0,1	141333
	2,65	17,5	9,2	3,1	0,4	2,73	1,5	0,2	0,2	141388
	1,10	23	12,4	3,6	0,4	1,18	0,5	0,1	0,05	141161
	1,30	23	12,4	3,6	0,4	1,38	0,7	0,15	0,05	141209
	1,30	23	12,4	3,6	0,4	1,38	0,85	0,15	0,1	141199
	1,60	23	12,4	3,6	0,4	1,68	0,85	0,15	0,1	141237
	1,60	23	12,4	3,6	0,4	1,68	1,0	0,15	0,1	141180
01	1,85	23	12,4	3,6	0,4	1,93	1,25	0,2	0,1	141193
	2,15	23	12,4	3,6	0,4	2,23	1,5	0,2	0,1	141215
	2,65	23	12,4	3,6	0,4	2,73	1,5	0,2	0,2	141222
	2,65	23	12,4	3,6	0,4	2,73	1,75	0,2	0,2	141048
	3,15	23	12,4	3,6	0,4	3,23	1,75	0,2	0,2	141186
	4,15	23	12,4	5,5	1	4,23	2,0	0,2	0,2	141212

Circlip Grooves

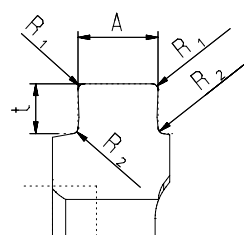
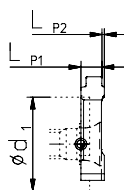
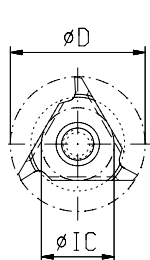
- Without chamfered edge
- Insert holder see page 95
- Cutting data see page 166



Type	G-Ring ^{H13} width	D mm	IC mm	LP1 mm	A _{0,03} mm	t mm	R mm	Order No. TINAMATIC
04	0,9	7,9	5,5	2,34	0,98	0,3	0,05	141726
03	0,9	10,6	5,5	2,34	0,98	0,7	0,05	141611
	1,1	10,6	5,5	2,34	1,18	0,9	0,05	141567
	1,3	10,6	5,5	2,34	1,38	1,1	0,05	141609
	1,6	10,6	5,5	2,34	1,68	1,25	0,1	141630
	1,85	10,6	5,5	2,34	1,93	1,25	0,1	141574
02	0,9	17,5	9,2	3,5	0,98	0,7	0,05	141416
	1,1	17,5	9,2	3,5	1,18	0,9	0,05	141435
	1,3	17,5	9,2	3,5	1,38	1,1	0,05	141431
	1,6	17,5	9,2	3,5	1,68	1,25	0,1	141454
	1,85	17,5	9,2	3,5	1,93	1,25	0,1	141436
	2,15	17,5	9,2	3,5	2,23	1,75	0,1	141437
	2,65	17,5	9,2	3,5	2,73	1,75	0,2	141477
	3,15	17,5	9,2	3,5	3,23	2,2	0,2	141440
01	0,9	23,0	12,4	4,0	0,98	0,7	0,05	141254
	1,1	23,0	12,4	4,0	1,18	0,9	0,05	141245
	1,3	23,0	12,4	4,0	1,38	1,1	0,05	141261
	1,6	23,0	12,4	4,0	1,68	1,25	0,1	141255
	1,85	23,0	12,4	4,0	1,93	1,25	0,1	141269
	2,15	23,0	12,4	4,0	2,23	1,75	0,1	141258
	2,65	23,0	12,4	4,0	2,73	1,75	0,2	141264
	3,15	23,0	12,4	4,0	3,23	2,2	0,2	141293
	4,15	23,0	12,4	6,5	4,23	2,5	0,2	141305

O-Ring Grooves

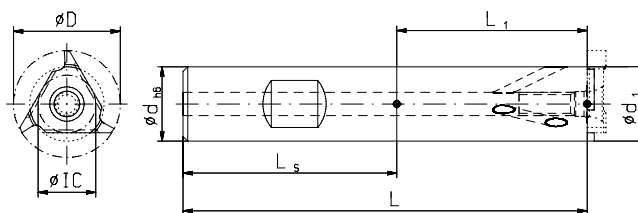
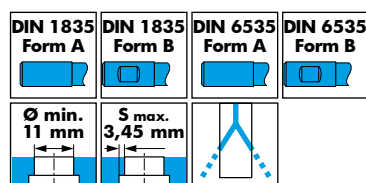
- Insert holder see page 95
- Cutting data see page 166



Type	G-Ring width	D mm	IC mm	LP1 mm	LP2 mm	A _{0,03} mm	t mm	R1 mm	R2 mm	Order No. TINAMATIC
03	1,8	10,6	5,5	2,6	0,4	2,28	1,45	0,2	0,2	141654
02	1,8	17,5	9,2	3,0	0,5	2,28	1,45	0,2	0,2	141510
	2,65	17,5	9,2	4,5	0,5	3,08	2,3	0,3	0,2	141470
01	1,8	23,0	12,4	3,5	0,5	2,28	1,45	0,2	0,2	141236
	2,65	23,0	12,4	3,5	0,5	3,08	2,3	0,3	0,2	141277
	3,55	23,0	12,4	5,5	1,0	4,08	3,1	0,4	0,2	141306

Circular Milling Tools

- Inserts see page 93-94
- Cutting data see page 166



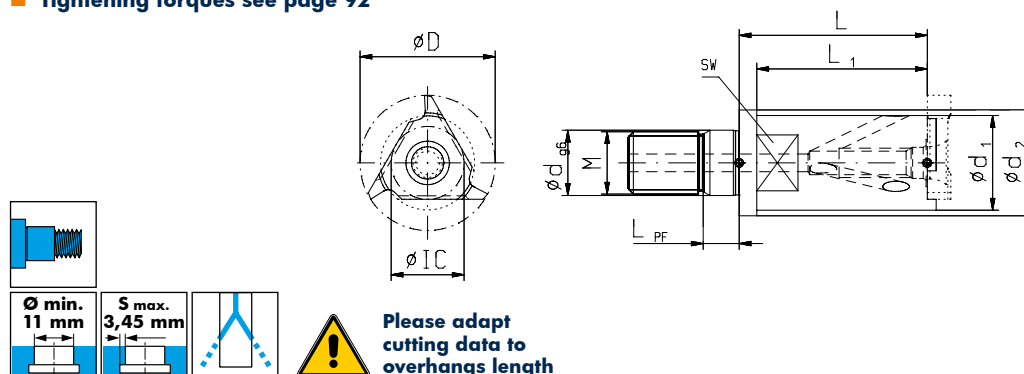
											Spare part No.	
Type	Order No.	Form	D mm	IC mm	dh6 mm	d1 mm	S max. mm	L mm	L1 mm	Shaft	Screw-driver *	Screw *
04	123491 **	B	7,9	5,5	10	7,2	0,35	57,2	17,2	Steel	T6 IP 111705	107530
03	123477 **	B	10,6	5,5	10	7,4	1,6	57,2	17,2	Steel		
	123478 **	B	10,6	5,5	12	7,4	1,6	64,66	17,2	Steel		
	123479 **	A	10,6	5,5	12	7,4	1,6	64,66	17,2	Steel		
	123480	B	10,6	5,5	10	7,4	1,6	74,2	34,2	Carbide		
	123489	A	10,6	5,5	8	8	1,25	77,66	41,0	Carbide		
02	123445	B	17,5	9,2	12	12	2,6	74,05	28,7	Steel	T15 IP 111671	107547
	123446	B	17,5	9,2	16	12	2,6	78,6	28,7	Steel		
	123447	A	17,5	9,2	16	12	2,6	78,6	28,7	Steel		
	123448	B	17,5	9,2	12	12	2,6	108,7	63,7	Carbide		
	123470	A	17,5	9,2	12	12	2,6	79,3	34,3	Carbide		
	123471	A	17,5	9,2	12	12	2,6	96,5	51,5	Carbide		
01	123474	A	17,5	9,2	12	12	2,6	121,5	76,5	Carbide	T20 IP 111594	107551
	123412	B	23,0	12,4	16	16	3,45	87,0	38,5	Steel		
	123414	B	23,0	12,4	16	16	3,45	116,0	67,5	Steel		
	123415 ***	A	23,0	12,4	20	17	3,0	93,0	41,0	Steel		
	170320	A	23,0	12,4	16	17	3,0	137,0	88,5	Carbide		
	123416	B	23,0	12,4	16	17	3,0	137,0	88,5	Carbide		
	123440	A	23,0	12,4	16	16	3,45	111,0	63	Carbide		
	123441	A	23,0	12,4	16	16	3,45	148,5	100	Carbide		

* Without internal coolant supply ** Also suitable as basic body for a tandem cutter.

Screw torques max.

107530	T6 IP	0,9 Nm
107547	T15 IP	3,8 Nm
107551	T20 IP	5,5 Nm

- Tightening torques see page 92



											Spare part No.	
Type	Order No.	D mm	IC mm	dg6 mm	d1 mm	d2 mm	S max. mm	L mm	L1 mm	M	Screw-driver *	Screw *
03	123481	10,6	5,5	6,5	7,4	10,0	1,60	22,66	13,66	M6	111705	107530
02	123450	17,5	9,2	8,5	12,2	15,4	2,60	27,5	18,5	M8	111671	107547
01	123419	23,0	12,4	10,5	16,1	18,0	3,45	32,0	29,0	M10	111594	107551

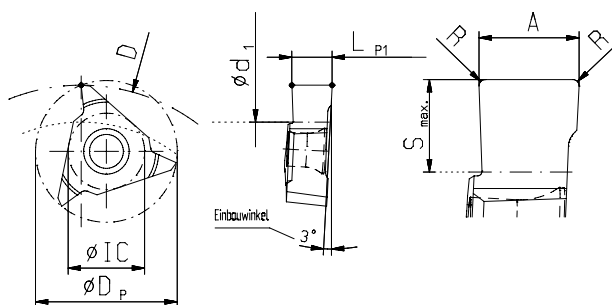
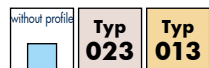
Screw torques max.

107530	T6 IP	0,9 Nm
107547	T15 IP	3,8 Nm
107551	T20 IP	5,5 Nm

- * Screwdriver and clamping screw included in delivery
- ** Without internal coolant supply
- *** Also suitable as basic body for a tandem cutter

Slot Milling

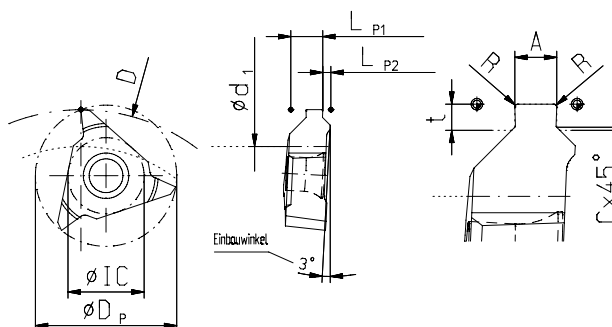
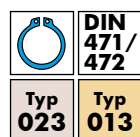
- Insert holder see page 98-99
- Cutting data see page 166



Type	A mm	DP mm	IC mm	LP1 mm	S _{max.} mm	R mm	Order No. TINAMATIC
023*	5,0	17,5	9,2	5,03	4	0,15	142060
013	6,5	23	12,4	6,53	6	0,15	141972

Circlip Grooves

- With chamfered edge
- Insert holder see page 98-99
- Cutting data see page 166

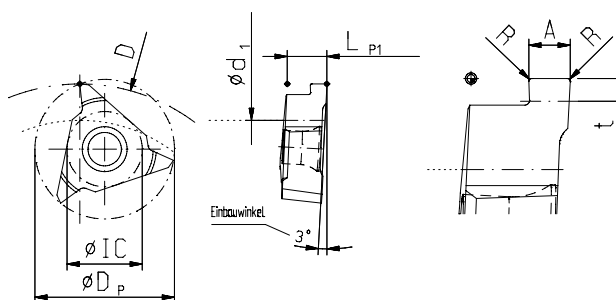
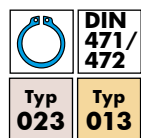


Type	G-Ring ^{H13} width	DP mm	E mm	LP1 mm	LP2 mm	A _{0,03} mm	t mm	C x 45° mm	R mm	Order No. TINAMATIC
023	1,85	17,5	9,2	3,73	1,3	1,93	1,25	0,2	0,1	141946
	2,15	17,5	9,2	3,73	1,3	2,23	1,5	0,2	0,1	141949
	2,65	17,5	9,2	3,73	1,3	2,73	1,5	0,2	0,2	141997
	2,65	17,5	9,2	3,73	1,3	2,73	1,75	0,2	0,2	141970
	3,15	17,5	9,2	4,23	0,8	3,23	1,75	0,2	0,2	141993
	4,15	17,5	9,2	5,03	1,0	4,23	2,5	0,2	0,2	141973
013	1,85	23,0	12,4	5,2	1,33	1,93	1,25	0,2	0,1	141914
	2,15	23,0	12,4	5,2	1,33	2,23	1,5	0,2	0,1	141892
	2,65	23,0	12,4	5,2	1,33	2,73	1,5	0,2	0,2	141915
	2,65	23,0	12,4	5,2	1,33	2,73	1,75	0,2	0,2	141907
	3,15	23,0	12,4	5,2	1,33	3,23	1,75	0,2	0,2	141924
	4,15	23,0	12,4	5,2	1,33	4,23	2,0	0,2	0,2	141905
	4,15	23,0	12,4	5,2	1,33	4,23	2,5	0,2	0,2	141927

* Please note the max. cutting depth (S) for insert holders type 023

Circlip Grooves

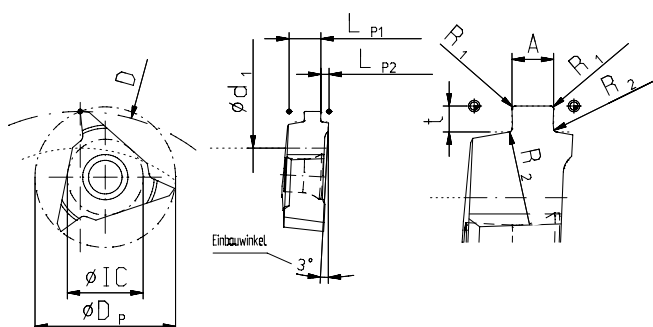
- Without chamfered edge
- Insert holder see page 98-99
- Cutting data see page 166



Type	G-Ring ^{H13} width	DP mm	IC mm	LP1 mm	A _{0,03} mm	t mm	R mm	Order No. TINAMATIC
023	1,85	17,5	9,2	5,03	1,93	1,25	0,1	141994
	2,15	17,5	9,2	5,03	2,23	1,75	0,1	141980
	2,65	17,5	9,2	5,03	2,73	1,75	0,2	141968
	3,15	17,5	9,2	5,03	3,23	2,2	0,2	142014
013	2,15	23	12,4	6,53	2,23	1,75	0,1	141937
	2,65	23	12,4	6,53	2,73	1,75	0,2	141925
	3,15	23	12,4	6,53	3,23	2,2	0,2	141930
	4,15	23	12,4	6,53	4,23	2,5	0,2	141934
	5,15	23	12,4	6,53	5,26	4,0	0,2	141932

O-Ring Grooves

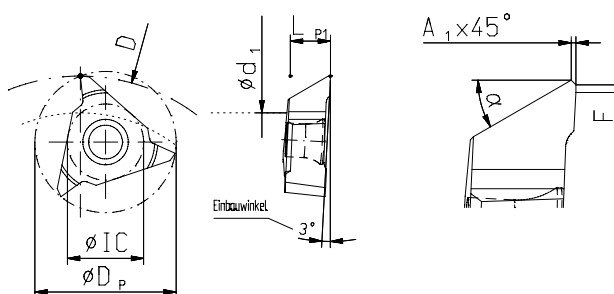
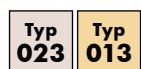
- Insert holder see page 98-99
- Cutting data see page 166



Type	G-Ring width	DP mm	IC mm	LP1 mm	LP2 mm	A _{0,03} mm	t mm	R1 mm	R2 mm	Order No. TINAMATIC
023	1,8	17,5	9,2	4,03	1,0	2,28	1,45	0,3	0,2	142012
	2,65	17,5	9,2	4,03	1,0	3,08	2,3	0,3	0,2	142019
013	2,65	23	12,4	5,5	1,03	3,08	2,3	0,3	0,2	141919
	3,55	23	12,4	5,5	1,03	4,08	3,1	0,3	0,2	141916

Slot Milling

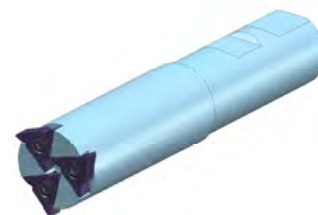
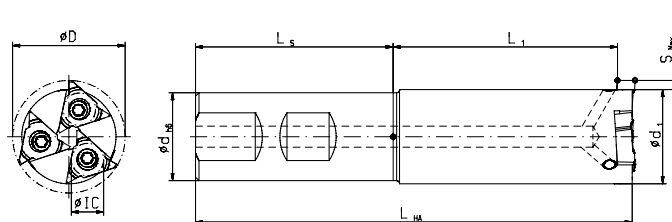
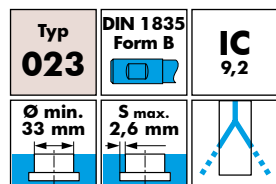
- Insert holder see page 98-99
- Cutting data see page 166



Type	DP mm	IC mm	LP1 mm	A ₁ x 45° mm	F mm	α	Order No. TINAMATIC
023*	17,5	9,2	5	0,3	0,5	25°	149516
013	23	12,4	6,5	0,3	0,5	28°	149472

Circular Milling Tools

- Inserts see page 96-97
- Cutting data see page 166



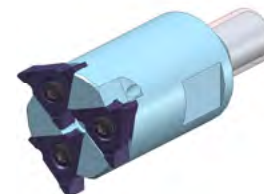
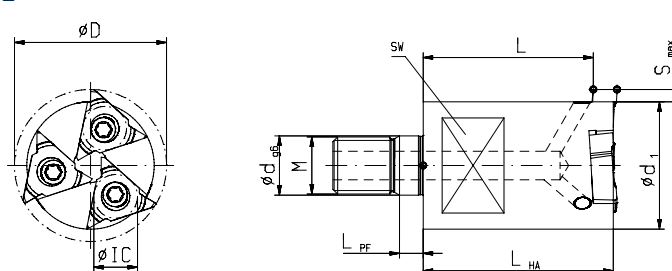
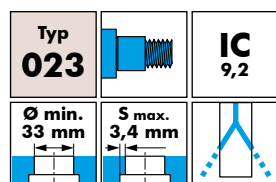
Order No.	D mm	d h6 mm	d1 mm	S max. mm	LHA mm	L mm	L1 mm	Inserts	Shaft
123462	32	25	26,8	2,6	124,2	119,97	61,97	3	Steel

Spare part No.

T15 IP Screw-driver *	Screw *
111671	107547

Screw torque max. 3,8 Nm

- Tightening torques see page 92



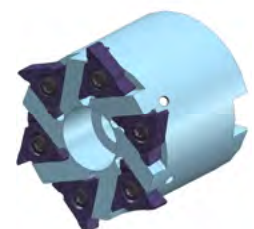
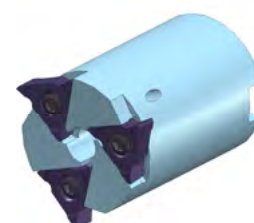
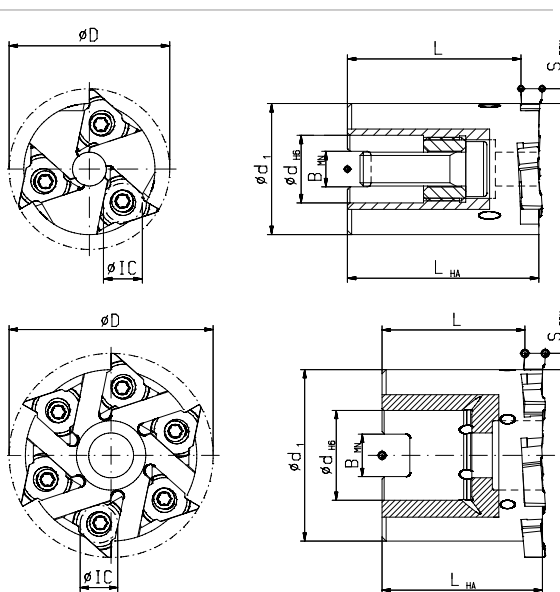
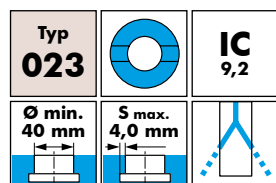
Order No.	D mm	dg6 mm	d1 mm	S max. mm	LHA mm	L mm	Inserts	M
123465	32	12,5	24,3	3,8	40	34,97	3	M12

Spare part No.

T15 IP Screw-driver *	Screw *
111671	107547

Screw torque max. 3,8 Nm

- Assembly instruction see page 176



Order No.	D mm	dH6 mm	d1 mm	S max. mm	LHA mm	L mm	BMN mm	Inserts
123464	38	16	31	3,4	45,3	40,97	8,4	3
123461*	50	22	42	3,9	39,3	34,97	10,4	6
161485*	63	27	55	4,0	39,3	34,97	12,4	8

Accessories



Spare part No.

T15 IP Screw-driver *	Screw *
111671	107547
111671	107547
111671	107547

Screw torque max. 3,8 Nm

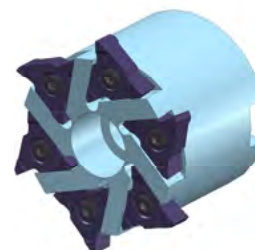
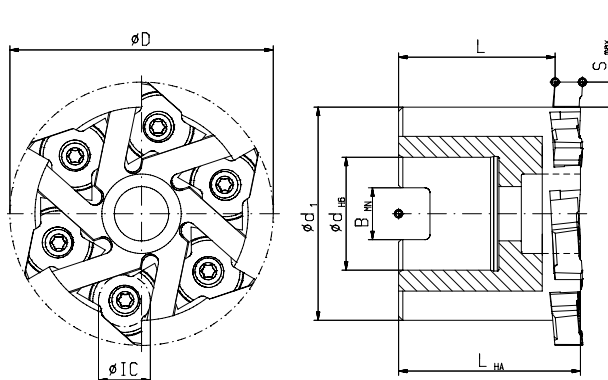
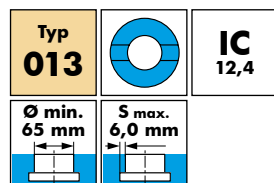
* Cutter clamping screw internal hexagon

Order No. 114684

* Screwdriver and clamping screw included in delivery

Circular Milling Tools

- Inserts see page 96-97
- Cutting data see page 166



Order No.	D mm	dH6 mm	d1 mm	S max. mm	LHA mm	L mm	B MN mm	Inserts
123435	63	27	51	6	43,5	37,5	12,4	6

Spare part No.

T20 IP

Screw-driver *

Screw *

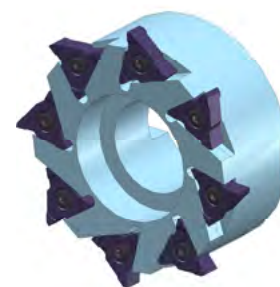
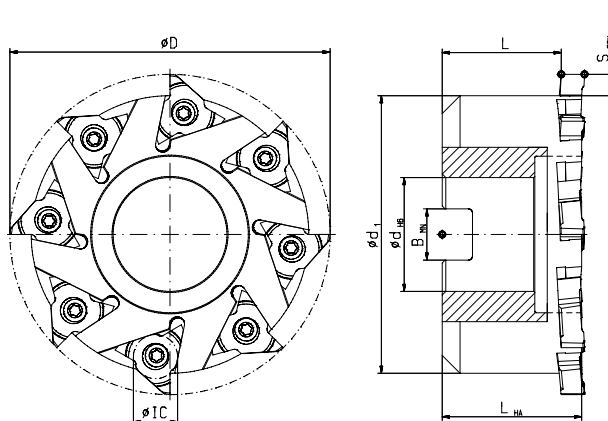
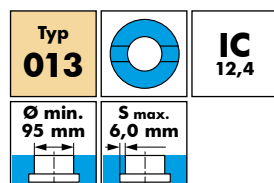
111594

107551

Screw torque 5,5 Nm

Cutter clamping screw internal hexagon

Order No. 114695



Order No.	D mm	dH6 mm	d1 mm	S max. mm	LHA mm	L mm	B MN mm	Inserts
123436	90	32	78	6	39,2	33,5	14,4	8

Spare part No.

T20 IP

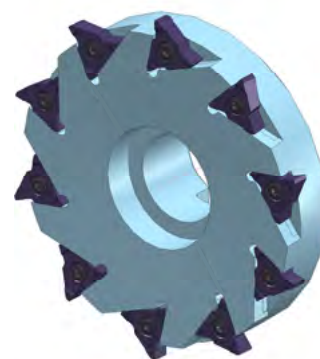
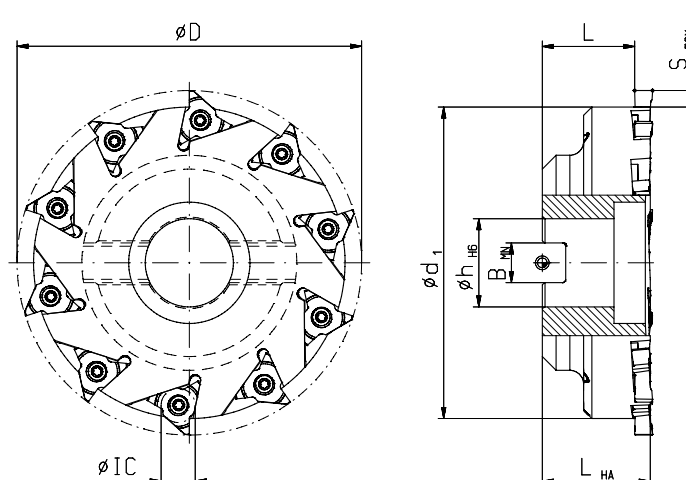
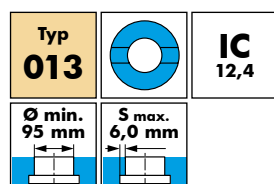
Screw-driver *

Screw *

111594

107551

Screw torque 5,5 Nm



Order No.	D mm	dH6 mm	d1 mm	S max. mm	LHA mm	L mm	B MN mm	Inserts
134561	125	32	113	6,0	39,2	33,5	14,4	10

Spare part No.

T20 IP

Screw-driver *

Screw *

111594

107551

Screw torque 5,5 Nm

* Screwdriver and clamping screw included in delivery

DeepMILL

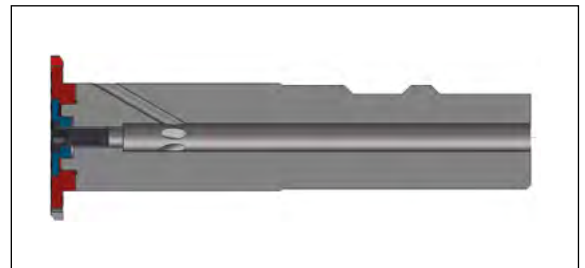
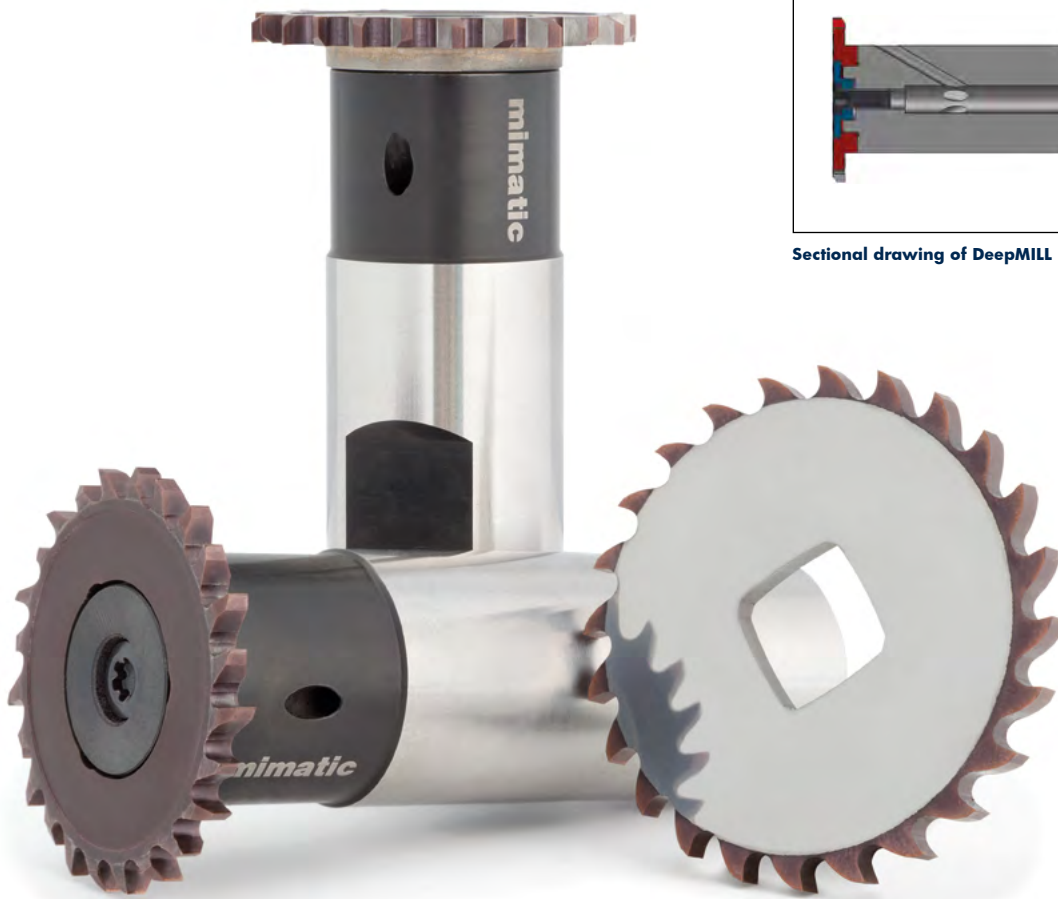
Slot Milling, Grooving, Milling of Cooling Fins

With PolyMILL and TriMILL solid carbide inserts, mimatic sets the bar for grooving and profile milling applications. With more than a decades worth of applications involving industry leading customers Mimatic is an established brand at the forefront of these applications.

mimatic meets the permanent demand for higher power and larger cutting depths with new innovations. With the latest product development DeepMILL, the limit of the impossible has been exceeded again by mimatic - and this time by a quantum leap.

- Larger range of applications
- Defined tooth and cutting edge geometry
- mimatic core competence: Polygon interface → Quadragon interface
- High performance coatings
- Internal coolant direct to the edges
- Clamping with only one center screw
- Special chip space geometry

**The Result of mimatic Development:
DeepMILL with a Up to Tenfold Cutting Performance.**



Sectional drawing of DeepMILL

DeepMILL

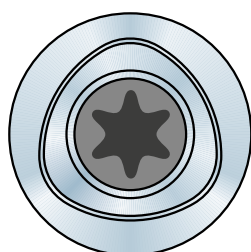
Milling Tools in New Dimensions of Performance



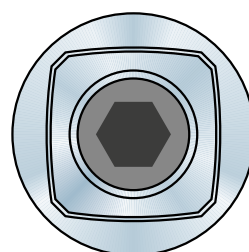
- With DeepMILL can be milled up to shoulders
- Cutting edges on the face can be used for special machining operations
- On request: Increased cutting depths (S) achievable with reductions in speed/feed
- + **Re-sharpen-Service 2x**
- + Minimum distance for operations to shoulders: 0,001 mm

5

The mimatic Polygon Interface – A Success Story with Continuous Evolution: Quadrogon



mimatic
Polygon Interface



mimatic
Quadrogon* Interface

Since their development and launch in 1994, the mimatic polygon interface is the guarantee for high cutting performance with maximum precision and repeatability in the circular milling.

In the tool systems PolyMILL and PolyREAM, the polygon interface enables the reliable circular thread milling and

reaming as well as T-slot milling and grooving. In many practical applications, the interface has established itself as a key factor for successful milling operations under difficult conditions.

With the development of the new tool systems DeepMILL and PolySAW, the development of the polygon interface

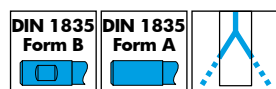
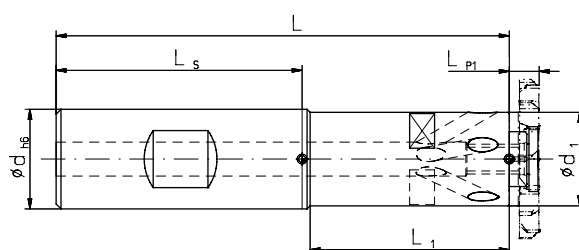
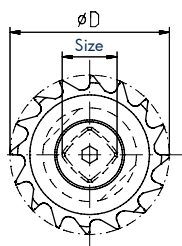
has evolved as well. Under the brand name mimatic Quadrogon, the interface has been optimized specifically for the needs of this new mimatic high-performance tool.

* patent-protected.

DeepMILL Ø 32

Basic Holders

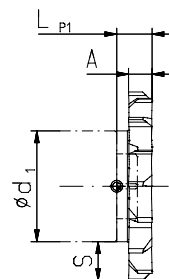
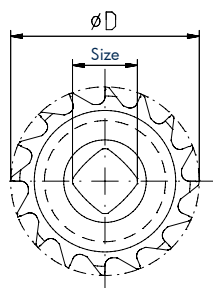
■ Cutting data see page 166



							Complete holder	Spare Parts ***	
Size	Type	dh6 mm	DIN	L mm	L1 mm	d1 mm	Order No.	Screwdriver *	Size
Ø 32	11	20	1835 B	91	40	18,8	163701	178296	SW 3
	11	20	1835 A	91	40	18,8	160050	178296	SW 3
	13	25	1835 B	105	45	21,6	163702	178297	SW 4
	13	25	1835 A	105	45	21,6	160051	178297	SW 4

Screw torques max.
Type 11 = max. 10,5 Nm
Type 13 = max. 24,5 Nm

Milling Discs



Size	Type	A ** mm	S max. mm	D mm	LP1 mm	Number of teeth	Order No. TINAMATIC	Deliverable
Ø 32	13	2	5,2	32	6	16	164440	on request
	11	2	6,6	32	6	16	164402	on stock
	13	3	5,2	32	6	16	164441	on request
	11	3	6,6	32	6	16	164403	on stock
	13	4	5,2	32	6	16	164404	on stock
	11	4	6,6	32	6	16	164442	on request
	13	5	5,2	32	6	16	164405	on stock
	11	5	6,6	32	6	16	164443	on request



Milling discs with cutting widths of 1 and 1.5 mm see chapter "Sawing & Slotting"

* Screwdriver and clamping screw included in delivery

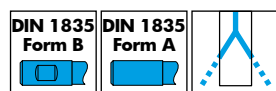
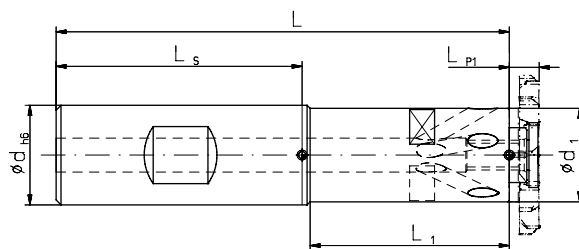
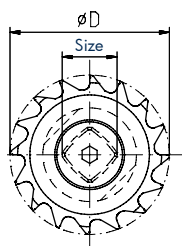
** Narrower widths, see PolySAW see page 134

*** More spare parts see page 108

DeepMILL Ø 40

Basic Holders

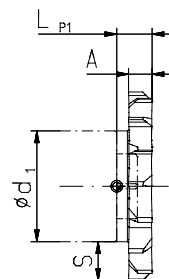
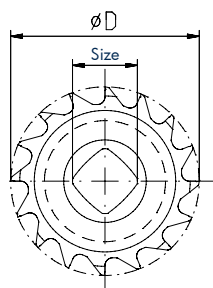
■ Cutting data see page 166



							Complete holder	Spare Parts ***	
Size	Type	dh6 mm	DIN	L mm	L1 mm	d1 mm	Order No.	Screwdriver *	Size
Ø 40	13	25	1835 B	105	45	21,6	163702	178297	SW 4
	13	25	1835 A	105	45	21,6	160051	178297	SW 4
	16	25	1835 B	110	50	26	163703	178296	SW 3
	16	25	1835 A	110	50	26	160052	178296	SW 3

Screw torques max.
Type 13 = max. 24,5 Nm
Type 16 = max. 6 Nm

Milling Discs



Size	Type	A ** mm	S max. mm	D mm	LP1 mm	Number of teeth	Order No. TINAMATIC	Deliverable
Ø 40	16	2	7,0	40	6	18	164444	on request
	13	2	9,2	40	6	18	164408	on stock
	16	3	7,0	40	6	18	164445	on request
	13	3	9,2	40	6	18	164409	on stock
	16	4	7,0	40	6	18	164410	on stock
	13	4	9,2	40	6	18	164446	on request
	16	5	7,0	40	6	18	164411	on stock
	13	5	9,2	40	6	18	164447	on request



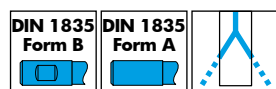
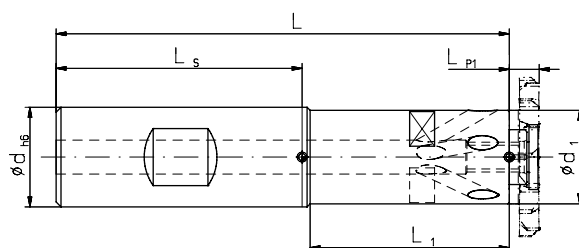
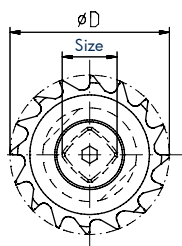
Milling discs with cutting widths of 1 and 1.5 mm see chapter "Sawing & Slotting"

* Screwdriver and clamping screw included in delivery
** Narrower widths, see PolySAW see page 134
*** More spare parts see page 108

DeepMILL Ø 50

Basic Holders

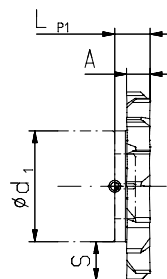
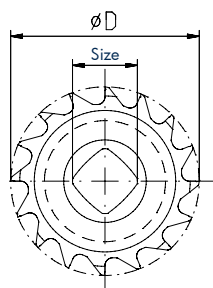
■ Cutting data see page 166



							Complete holder	Spare Parts ***	
Size	Type	dh6 mm	DIN	L mm	L1 mm	d1 mm	Order No.	Screwdriver *	Size
Ø 50	16	25	1835 B	110	50	26	163703	178296	SW 3
	16	25	1835 A	110	50	26	160052	178296	SW 3
	19	32	1835 B	122	55	30	163704	178296	SW 3
	19	32	1835 A	122	55	30	160053	178296	SW 3

Screw torques max.
Type 16 = max. 6 Nm
Type 19 = max. 10,5 Nm

Milling Discs



Size	Type	A ** mm	S max. mm	D mm	LP1 mm	Number of teeth	Order No. TINAMATIC	Deliverable
Ø 50	19	2	10	50	6	24	164448	on request
	16	2	12	50	6	24	164414	on stock
	19	3	10	50	6	24	164449	on request
	16	3	12	50	6	24	164415	on stock
	19	4	10	50	6	24	164416	on stock
	16	4	12	50	6	24	164450	on request
	19	5	10	50	6	24	164417	on stock
	16	5	12	50	6	24	164451	on request



Milling discs with cutting widths of 1 and 1.5 mm see chapter "Sawing & Slotting"

* Screwdriver and clamping screw included in delivery

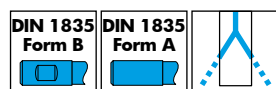
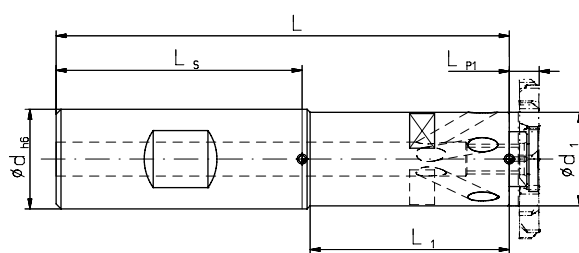
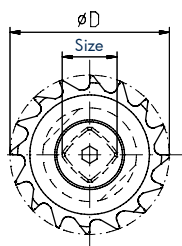
** Narrower widths, see PolySAW see page 134

*** More spare parts see page 108

DeepMILL Ø 63

Basic Holders

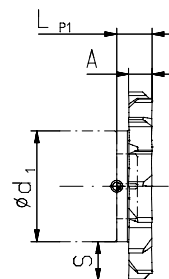
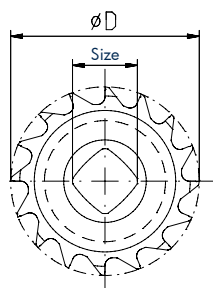
■ Cutting data see page 166



							Complete holder	Spare Parts ***	
Size	Type	dh6 mm	DIN	L mm	L1 mm	d1 mm	Order No.	Screwdriver *	Size
Ø 63	19	32	1835 B	122	55	30	163704	178296	SW 3
	19	32	1835 A	122	55	30	160053	178296	SW 3
	25	32	1835 B	127	60	38	163705	178297	SW 4
	25	32	1835 A	127	60	38	160054	178297	SW 4

Screw torques max.
Type 19 = max. 10,5 Nm
Type 25 = max. 24,5 Nm

Milling Discs



Size	Type	A ** mm	S max. mm	D mm	LP1 mm	Number of teeth	Order No. TINAMATIC	Deliverable
Ø 63	25	2	12,4	63	6	24	164452	on request
	19	2	16,5	63	6	24	164420	on stock
	25	3	12,4	63	6	24	164453	on request
	19	3	16,5	63	6	24	164421	on stock
	25	4	12,4	63	6	24	164422	on stock
	19	4	16,5	63	6	24	164454	on request
	25	5	12,4	63	6	24	164423	on stock
	19	5	16,5	63	6	24	164455	on request



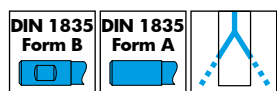
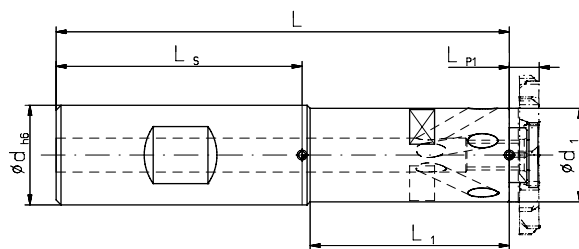
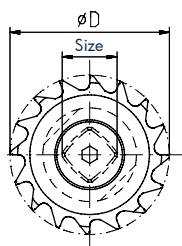
Milling discs with cutting widths of 1 and 1.5 mm see chapter "Sawing & Slotting"

* Screwdriver and clamping screw included in delivery
** Narrower widths, see PolySAW see page 134
*** More spare parts see page 108

DeepMILL Ø 80

Basic Holders

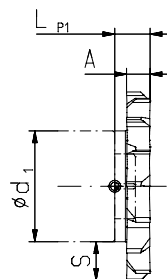
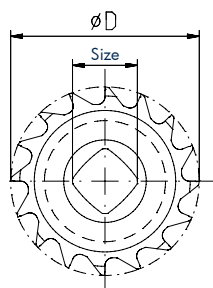
■ Cutting data see page 166



							Complete holder	Spare Parts ***	
Size	Type	dh6 mm	DIN	L mm	L1 mm	d1 mm	Order No.	Screwdriver *	Size
Ø 80	35	32	1835 B	132	65	49	163706	178297	SW 4
	35	32	1835 A	132	65	49	160055	178297	SW 4
	25	32	1835 B	127	60	38,2	163705	178297	SW 4
	25	32	1835 A	127	60	38,2	160054	178297	SW 4

Screw torques max.
Type 35 = max. 24,5 Nm
Type 25 = max. 24,5 Nm

Milling Discs



Size	Type	A ** mm	S max. mm	D mm	LP1 mm	Number of teeth	Order No. TINAMATIC	Deliverable
Ø 80	35	2	15,5	80	6	24	164456	on request
	25	2	20,9	80	6	24	164426	on stock
	35	3	15,5	80	6	24	164457	on request
	25	3	20,9	80	6	24	164427	on stock
	35	4	15,5	80	6	24	164428	on stock
	25	4	20,9	80	6	24	164458	on request
	35	5	15,5	80	6	24	164429	on stock
	25	5	20,9	80	6	24	164459	on request



Milling discs with cutting widths of 1 and 1.5 mm see chapter "Sawing & Slotting"

* Screwdriver and clamping screw included in delivery

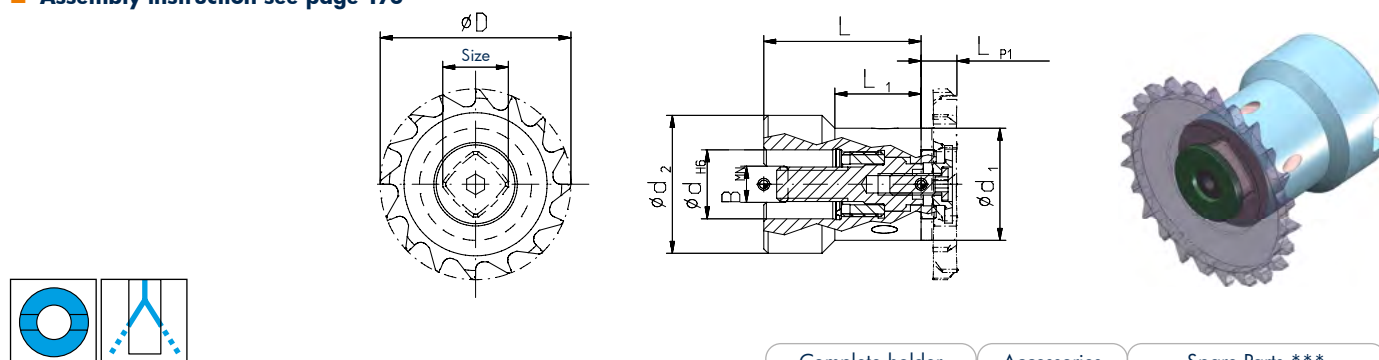
** Narrower widths, see PolySAW see page 134

*** More spare parts see page 108

DeepMILL

Basic Holders with Location Bore

- Cutting data see page 166
- Assembly instruction see page 176

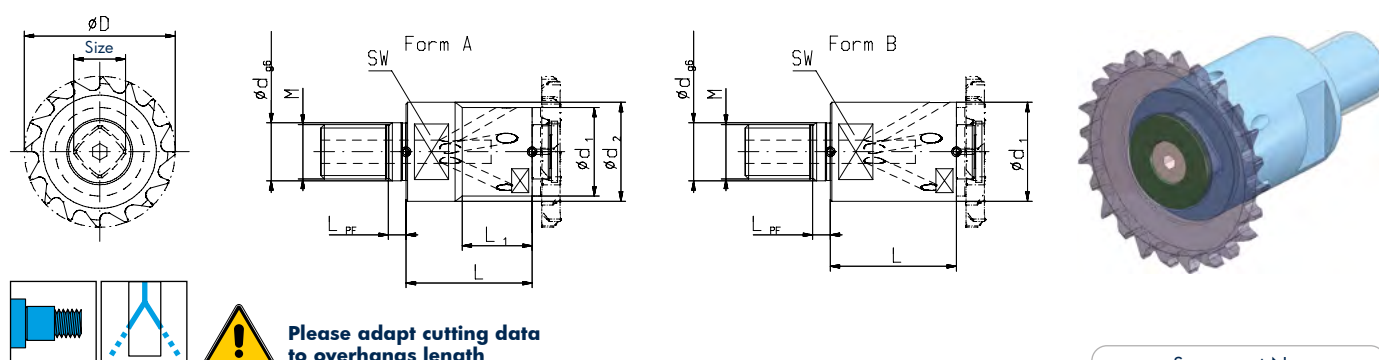


Type	dH6 mm	BMN mm	L mm	L1 mm	d1 mm	d2 mm	Complete holder Order No.	Accessories Key	Spare Parts *** Screwdriver * Size
16	16	8,4	36,5	20	26	32	179727	134984	178296 SW 3
19	16	8,4	36,5	20	30	32	179728	134984	178296 SW 3
25	16	8,4	36,5	20	29	32	156493		178297 SW 4
25	22	10,4	50	20	38,2	40	179817 NEW		178297 SW4

Screw torques max.
Type 16 = max. 6 Nm
Type 19 = max. 10,5 Nm
Type 25 = max. 24,5 Nm

Basic Holders with Screw-in Thread

- Cutting data see page 166

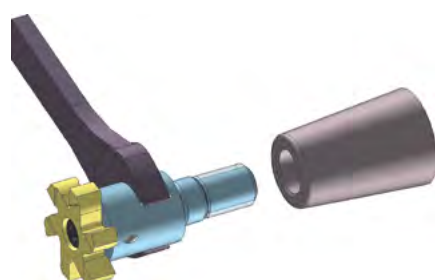


Please adapt cutting data to overhangs length

Type	Order No.	Form	d1 mm	d2 mm	L mm	L1 mm	M	dg6	L PF	Spare part No. Screw-driver * Size
16	191777 NEW	A	26	29	36,5	20	M16	17	5,5	178296 SW3
19	191778 NEW	B	30	-	36,5	-	M16	17	5,5	178296 SW3

Screw torque max. 3,8 Nm

- Recommended tightening torque for screw-in circular milling body
- End-wrench see page 151



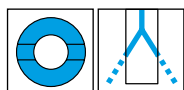
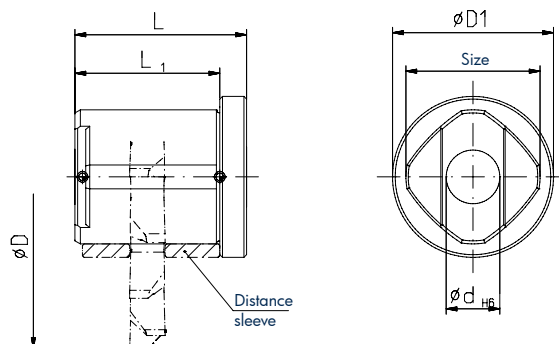
Thread size (M)	Wrench size mm	Tightening torque Nm
M5	7	8
M6	9	10
M8	11	25
M10	15	40
M12	19	60
M16	24	80

* Screwdriver and clamping screw included in delivery
** Narrower widths, see PolySAW see page 134
*** More spare parts see page 108

DeepMILL

Saw Blade Arbors for mimatic Saw Blade Holders

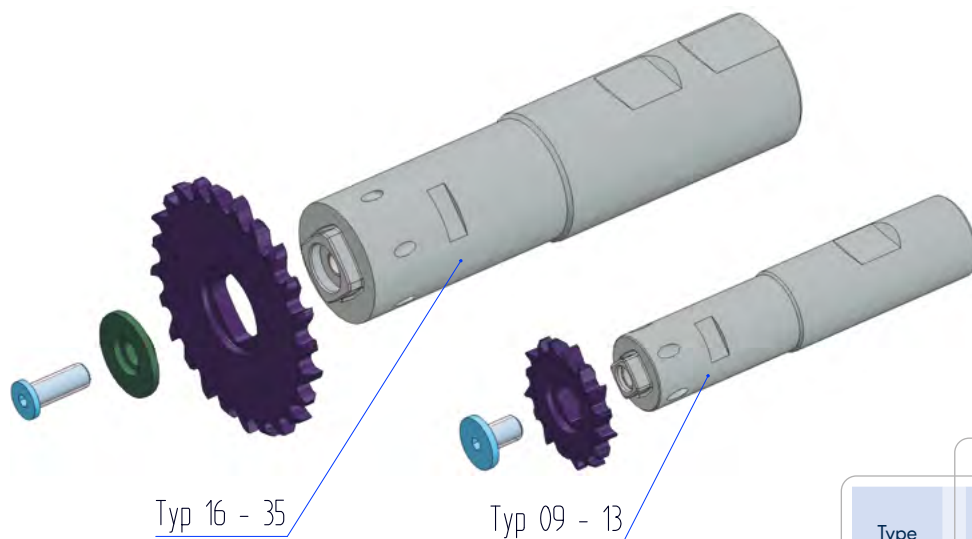
■ Cutting data see page 166



When using PolySaw ECO, as well as DeepMill ECO, the cutting depth is reduced by 6 or 7 mm

						Complete holder
System	Typ	d H6 mm	L mm	L1 mm	D1 mm	Order No.
ECO	25	10	32	27	30	179252
	35	10	32	27	30	180316

Assembly and Spare Parts



Assembly notes

Please tighten the clamping screw with the specified torque.
In the selection of the DeepMILL basic holder and machine tool holder should be chosen the shortest possible setup.

Service

Please don't hesitate to take the advantage of the mimatic service.
Mimatic engineers will offer machining recommendations to optimize your specific applications.

Spare Parts

Type	Screw	Clamping disc
09	163842	—
11	163843	—
13	163844	—
16	163850	175027
19	163848	163845
25	163849	163846
35	163849	163847

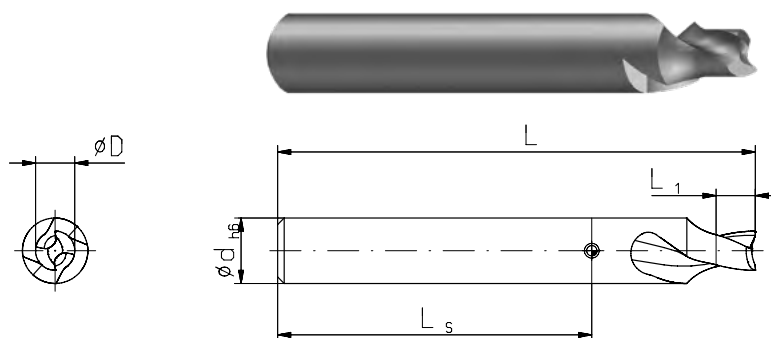
Screw torques max.

163842 Type 09 M4 3,8 Nm
163843 Type 11 M6 10,5 Nm
163844 Type 13 M8 24,5 Nm
163850 Type 16 M5 6,0 Nm
163848 Type 19 M6 10,5 Nm
163849 Type 24 M8 24,5 Nm
163849 Type 35 M8 24,5 Nm

Keyway Slot Milling Cutters

- **CNC-Turning Machines with Y-Axis**
Increased stiffness, higher precision
- **CNC-Turning Machines without Y-Axis**
Optimized straight run-out
- **Short Process Times**

Type: right-hand cutting
Tool design: double-edged
spiral fluted
15° helix angle
without coolant



Nominal Slot Size D_{p9} mm	L_1 mm	d_{h6} mm	L mm	Order No.	
				TINAMATIC	
					
2	4	8	64,0	164341	164349
3	5	8	64,0	164342	164350
4	6	10	73,0	164343	164351
5	7	10	73,0	164344	164352
6	8	12	74,2	175538	164353
8	9	12	74,2	164345	164354
10	10	12	74,2	164346	164355
12	11	12	74,2	164347	164356
14	12	16	77,0	164348	164357

**Contour and Radius Milling
Chamfering and Deburring**



Milling

Thread Milling

Extended
program

14-63

1

Face Finish Milling

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2

Notch Impact Test

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3

Gear Milling

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4

Slot Milling
Keyway MillingExtended
program82-
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5

Contour and Radius Milling
Chamfering, Deburring,
undercut, dovetailExtended
program110-
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6

Sawing, Slitting

Sawing, Cutting, Slitting

Extended
program126-
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7

Bore Machining

Reaming

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8

Axial Grooving

Axial Grooving, adjustable

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157

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Special Tools

Special- and Combination Tools

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Cutting Data and Technical Information

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PolyMILL

NEW Radius milling
extended program



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Thread undercut according to DIN 76	115
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Dovetail milling, with trailing chamfer	116

Tool Holders

with cylindrical shank	117
for driven toolholders	118
with tightening shank	119

TriMILL

NEW Radius milling



Inserts

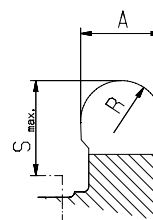
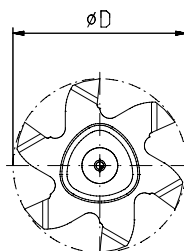
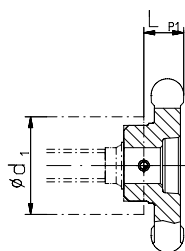
Radius milling, convex shapes	121+123
Chamfering and deburring	121+123

Tool Holders

with cylindrical shank	122+124
with tightening shank	122+124
Face milling cutter	124-125

Radius Milling, Convex Shapes

- Insert holder see page 117-119
- Cutting data see page 166



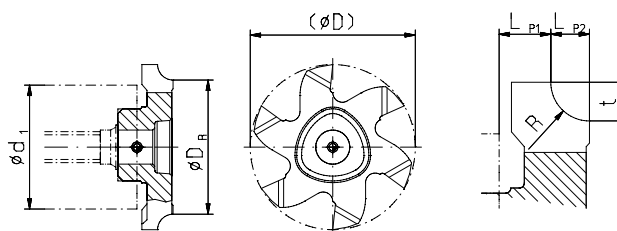
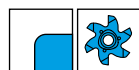
Type		A mm	A inch	R mm	D mm	LP1 mm	LP2 mm	Smax. mm	Number of teeth	Order No. TINAMATIC	
P12	P1210	1,0	.039	0,5	9,6	3,25	0,1	1,2	3	160770	
	P1210	2,2	.087	1,1	9,6	3,3	0,05	1,2	3	171924	
	P1212	2,0	.079	1,0	11,7	3,45	–	2,25	3	160445	
	P1212	2,2	.087	1,1	11,7	3,55	–	2,25	3	171874	
P16	P1616	1,0	.039	0,5	16	3,55	–	1,5	6	160768	
	P1616	2,0	.079	1,0	16	3,55	–	2,0	6	160431	
	P1616	3,0	.118	1,5	16	3,55	–	3,5	6	160436	
	P1616	4,0	.157	2,0	16	4,65	–	3,5	6	170360	
	P1616	5,0	.197	2,5	16	5,65	–	3,5	6	178162	
	P1618	1,0	.039	0,5	17,7	3,95	–	2,5	6	185358	
	P1618	1,57	.062	0,785	17,7	3,9	–	4,2	6	171952 NEW	
	P1618	2,2	.087	1,1	17,7	4,0	–	4,2	6	171953	
	P20	P2020	3,0	.118	1,5	20,0	3,65	–	4,2	6	161050
		P2020	4,0	.157	2,0	20,0	4,65	–	4,2	6	161694
P2020		5,0	.197	2,5	20,0	5,65	–	4,2	6	162112	
P2022		1,0	.039	0,5	21,7	4,675	0,15	2,0	6	175988	
P2022		1,5	.059	0,75	21,7	4,9	–	5,0	6	175889	
P2022		1,57	.062	0,785	21,7	4,95	–	5,0	6	171974	
P2022		2,0	.079	1,0	21,7	4,9	–	5,0	6	171975	
P2022		2,4	.094	1,2	21,7	4,85	–	5,0	6	171976	
P2022		2,6	.102	1,3	21,7	4,95	–	5,0	6	175888	
P2022		2,8	.110	1,4	21,7	5,05	–	5,0	6	171977	
P2022		3,0	.118	1,5	21,7	4,9	–	5,0	6	171978	
P2022		4,0	.157	2,0	21,7	4,95	–	5,0	6	182543	
P25		P2526	1,5	.059	0,75	26	4,9	–	6,0	6	162057
		P2526	1,6	.063	0,8	26	3,45	–	2,0	6	176862
	P2526	2,0	.079	1,0	26	4,9	–	5,0	6	160909	
	P2526	3,0	.118	1,5	26	3,7	–	6,2	6	178289	
	P2526	3,2	.126	1,6	26	3,75	–	6,2	6	160144	
	P2526	3,4	.134	1,7	26	4,6	–	6,2	6	160442	
	P2526	3,5	.138	1,75	26	4,375	–	6,2	6	161742	
	P2526	3,8	.150	1,9	26	4,6	–	6,2	6	160443	
	P2526	4,0	.157	2,0	26	4,65	–	6,2	6	160444	
	P2526	4,6	.181	2,3	26	6,7	–	6,2	6	161795	
	P2526	5,0	.197	2,5	26	6,9	–	6,2	6	175075	
	P2526	5,74	.226	2,87	26	7,1	–	6,2	6	160894	
	P2526	6,0	.236	3,0	26	6,9	–	6,2	6	150085	
	P2528	1,65	.065	0,825	27,7	5,0	–	6,8	6	160424	
	P2528	4,0	.157	2,0	27,7	5,9	–	7,05	6	160449	

i Further radius widths on request

PolyMILL

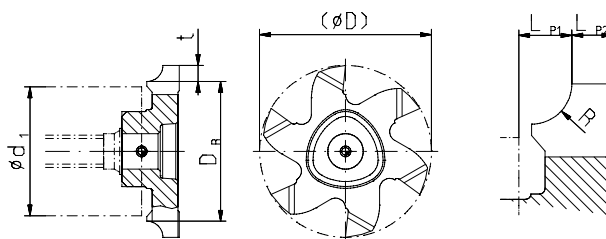
Radius Milling, Concave Shapes

- Insert holder see page 117-119
- Cutting data see page 166



Type	R mm	(D) mm	DR mm	LP1 mm	LP2 mm	t mm	Number of teeth	Order No. TINAMATIC
P25	P2526	0,5	26	25	3,15	0,5	6	179425
	P2526	1,0	26	24	2,65	1,0	6	179426
	P2526	1,5	26	23	3,15	1,5	6	179427
	P2526	2,0	26	22	2,65	2,0	6	177120
	P2526	2,5	26	21	2,15	2,5	6	179428
	P2526	3,0	26	20	1,65	3,0	6	177119
	P2526	4,0	26	18	2,55	4,0	6	179690
	P2526	5,0	26	16	1,55	5,0	6	179429
	P2526	6,0	26	13,7	2,05	6,15	3	199560 NEW

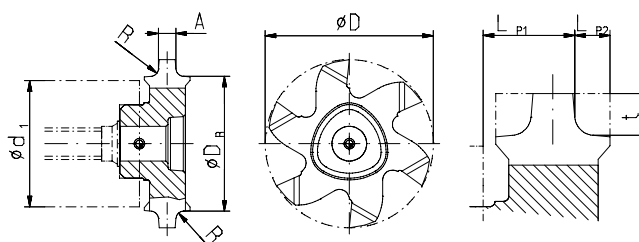
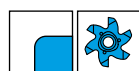
Radius Milling, Concave Shapes, Reverse



Type		R mm	(D) mm	DR mm	LP1 mm	LP2 mm	t mm	Number of teeth	Order No. TINAMATIC
P25	P2526	0,5	26	24,3	1,15	2,5	0,5	6	174009
	P2526	1,0	26	23,3	1,65	2,0	1,0	6	174011
	P2526	1,5	26	22,3	2,15	1,5	1,5	6	174012
	P2526	2,0	26	21,3	2,65	1,0	2,0	6	174013
	P2526	2,5	26	20,3	3,15	1,5	2,5	6	174014
	P2526	3,0	26	19,3	5,4	1,5	3,0	6	174015
	P2526	4,0	26	17,3	5,15	2,0	4,0	6	189160
	P2526	5,0	26	15,7	6,15	1,0	5,0	6	182721
	P2526	6,0	26	13,7	7,25	1,4	6,15	6	199552 

Radius Milling, Concave Shapes, Double-sided

- Insert holder see page 117-119
- Cutting data see page 166

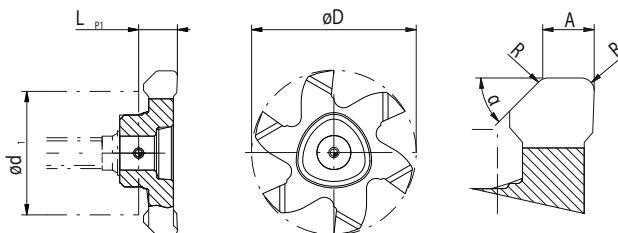
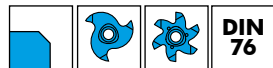


Type		R mm	(D) mm	DR mm	LP1 mm	LP2 mm	A mm	t mm	Number of teeth	Order No. TINAMATIC
P25	P2526	0,5	26	25	3,15	0,5	2,0	0,5	6	199386 
	P2526	1,0	26	24	2,65	1,0	1,0	1,0	6	160471
	P2526	1,5	26	23	3,10	1,5	1,0	1,5	6	184889
	P2526	2,0	26	22	4,90	2,0	1,0	2,0	6	162189 
	P2526	2,5	26	21	4,65	2,5	1,5	2,5	6	194311 

PolyMILL

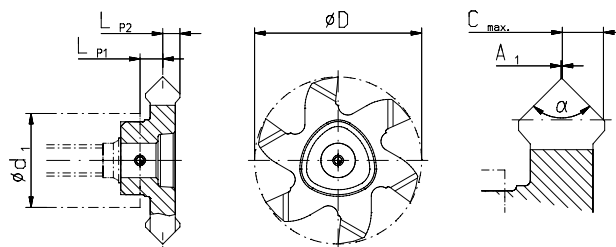
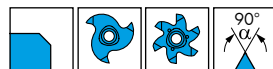
Thread undercut according to DIN 76

- Insert holder see page 117-119
- Cutting data see page 166



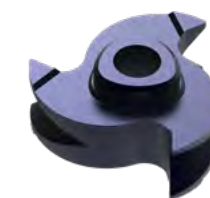
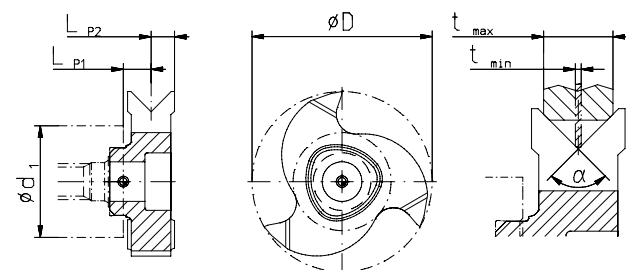
Type		D mm	P= mm	A mm	α	LP1 mm	R mm	Number of teeth	Order No. TINAMATIC	
P12	P1212	11,7	0,5	2,0	45°	3,8	0,7	3	194197	NEW
P16	P1616	16,0	0,6	2,5	45°	4,65	0,7	6	194199	NEW
	P1618	16,0	0,75	3,35	45°	5,65	1,1	6	194200	NEW
P25	P2526	26,0	0,8	4,25	45°	7,15	1,6	6	194201	NEW

Chamfering and Deburring



Type		D mm	C _{max.} x 45° mm	A1 mm	α	LP1 mm	LP2 mm	Number of teeth	Order No. TINAMATIC
P12	P1210	9,6	1,2	0,05	90°	2,125	1,525	3	171914
	P1212	11,7	1,35	0,05	90°	2,125	1,525	3	171913
P16	P1616	16,0	1,9	0,05	90°	2,65	1,95	6	142521
	P1618	17,7	1,3	0,05	90°	2,65	1,45	6	171955
P20	P2020	20,0	1,9	0,05	90°	3,15	2,675	6	168689
	P2022	21,7	1,95	0,05	90°	2,95	2,15	6	171979
P25	P2526	26,0	2,1	0,05	90°	2,75	2,075	6	142676

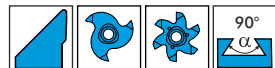
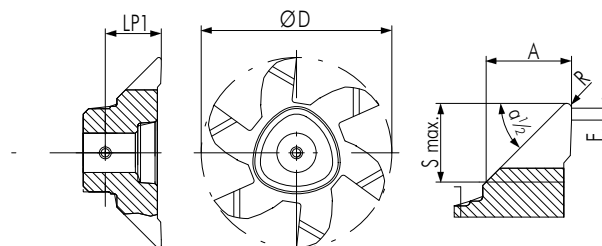
Chamfering of Sheet Metal



Type		D mm	α	t max. mm	t min. mm	LP1 mm	LP2 mm	Number of teeth	Order No. TINAMATIC
P25	P2525	25,0	90°	6,0	0,5	4,55	4,0	3	161083

Radius Milling, Convex Shapes

- Insert holder see page 117-119
- Cutting data see page 166



Type		D mm	α	LP1 mm	A mm	S _{max.} mm	R mm	F mm	Number of teeth	Order No. TINAMATIC
P12	P1210	11,7	15°	3,75	3,20	0,80	0,20	0,50	3	199352
	P1210	11,7	30°	3,75	2,80	1,45	0,20	0,50	3	199354
	P1212	11,7	45°	3,75	2,50	2,20	0,20	0,50	3	199361
P16	P1616	16	15°	5,70	5,00	1,30	0,20	0,50	6	199366
	P1616	16	30°	5,70	4,50	2,45	0,20	0,50	6	199367
	P1616	16	45°	4,70	3,60	3,30	0,20	0,50	6	199369
P20	P2020	20	15°	5,65	5,00	1,30	0,20	0,50	6	199372
	P2020	20	30°	5,65	5,00	2,75	0,20	0,50	6	199373
	P2020	20	45°	5,65	4,50	4,20	0,20	0,50	6	199374
P25	P2526	26	15°	7,10	6,40	1,65	0,20	0,50	6	199375
	P2526	26	30°	7,10	6,10	3,40	0,20	0,50	6	199376
	P2526	26	45°	7,10	5,90	5,60	0,20	0,50	6	199377

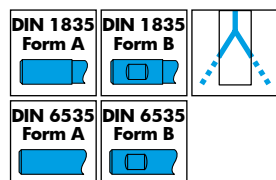
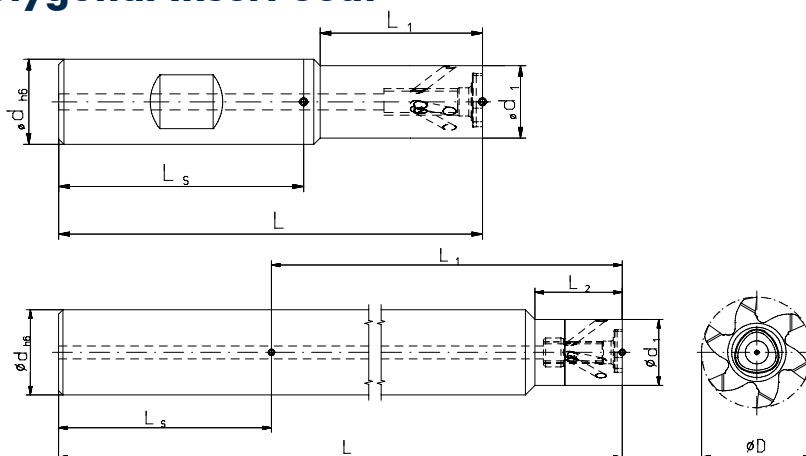
i Other dimensions on request

The following machining operations can be performed with these inserts:



Circular Milling Tools with Polygonal Insert Seat

- Inserts see page 113-116
- Cutting data see page 166



											Spare part No.		
Type	Order No.	Form	d h6 mm	d1 mm	D max. mm	S max. (D-d1)/2 mm	L mm	L1 mm	L2 mm	Shaft	Screw- driver *	Screw *	
P12	177170	A	10	7,0	11,7	2,35	54	8	-	Steel	T8 IP 111656	M2,5x7 107596	
	123619	B	12	7,0	11,7	2,35	67,5	20	-	Steel			
	100228	B	12	7,0	11,7	2,35	67,5	20	-	Carbide			
	171778	A	12	7,0	11,7	2,35	67,5	20	-	Carbide			
	171780	B	12	7,0	11,7	2,35	80	30	-	Carbide			
	171781	A	12	7,0	11,7	2,35	80	30	-	Carbide			
	171783	B	12	7,0	11,7	2,35	100	40	-	Carbide			
	171784	A	12	7,0	11,7	2,35	100	40	-	Carbide			
P16	177174	A	10	9,0	17,7	4,35	60	11	-	Steel	T8 IP 111656	M3x12 143158	
	123573	B	12	9,0	17,7	4,35	67,4	21	-	Steel			
	123577	B	12	9,0	17,7	4,35	67,4	21	-	Carbide			
	171787	A	12	9,0	17,7	4,35	67,4	21	-	Carbide			
	123580	B	12	9,0	17,7	4,35	82,4	36	-	Carbide			
	171789	A	12	9,0	17,7	4,35	82,4	36	-	Carbide			
	123584	A	12	9,0	17,7	4,35	100	30	-	Carbide			
	123588	A	12	11,5	17,7	2,85	82,4	37,4	13	Carbide			
123590	A	12	12,0	17,7	2,85	122,5	77,5	-	Carbide				
P20	177178	A	12	11,5	21,7	5,1	62,4	14,4	-	Steel	T15 IP 111671	M4x13 107597	
	123615	B	16	11,5	21,7	5,1	80	30	-	Steel			
	123616	B	16	11,5	21,7	5,1	80	30	-	Carbide			
	171794	A	16	11,5	21,7	5,1	80	30	-	Carbide			
	123617	B	16	11,5	21,7	5,1	100	50	-	Carbide			
	171796	A	16	11,5	21,7	5,1	100	50	-	Carbide			
	174314	A	16	15,5	21,7	3,1	105,5	57,5	20	Carbide			
P25	177182	A	16	13,6	27,7	7,05	69,6	20,4	-	Steel	T20 IP 111594	M5x13,5 107529	
	123592	B	16	13,6	27,7	7,05	79,6	30,5	-	Steel			
	123598	B	16	13,6	27,7	7,05	79,6	30,5	-	Carbide			
	171855	A	16	13,6	27,7	7,05	79,6	30,5	-	Carbide			
	123600	B	16	13,6	27,7	7,05	94,6	45,5	-	Carbide			
	171857	A	16	13,6	27,7	7,05	94,6	45,5	-	Carbide			
	123603	B	16	13,6	27,7	7,05	109,6	60,5	-	Carbide			
	171859	A	16	13,6	27,7	7,05	109,6	60,5	-	Carbide			
	123609	A	16	15,5	27,7	6,1	105	57	21,5	Carbide			
	123611	A	16	15,5	27,7	6,1	149,5	101,5	21,5	Carbide			
	161205	NEW	A	20	15,5	27,7	6,1	100	52	21,5			Carbide
	123613	A	20	15,5	27,7	6,1	174,45	128,5	21,5	Carbide			

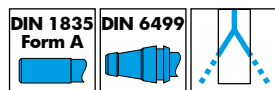
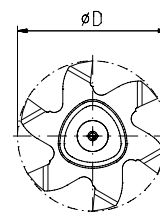
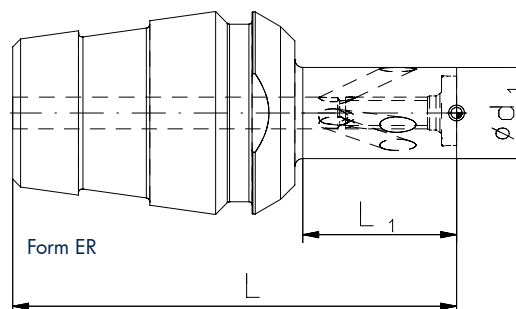
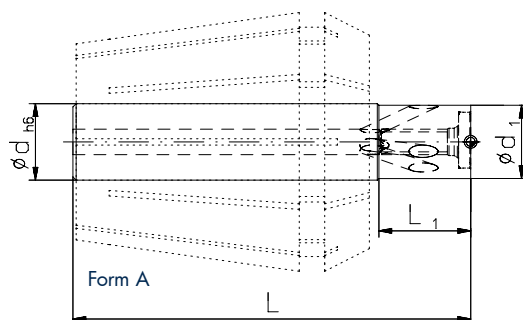
* Screwdriver and clamping screw included in delivery

Screw torques max.

107596	T08 IP	1,0 Nm
143158	T08 IP	1,1 Nm
107597	T15 IP	3,8 Nm
107529	T20 IP	5,5 Nm

Circular Milling Tools for Driven Toolholders

■ Cutting data see page 166



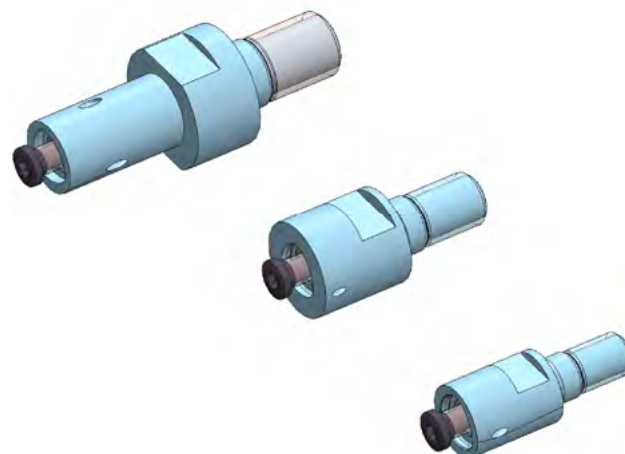
Type	Order No.	Form	d_{h6} mm	d_1 mm	$D_{max.}$ mm	$S_{max.}$ ($D-d_1$)/2 mm	L mm	L ₁ mm	Shaft	Spare part No.	
										Screw-driver *	Screw *
P12	177170	A	10	7,0	11,7	2,35	54	8	Steel	T8 IP 111656	M2,5x7 107596
	177172	ER 16		7,0	11,7	2,35	37,5	8	Steel		
	177173	ER 20		7,0	11,7	2,35	47	13	Steel		
P16	177174	A	10	9,0	17,7	4,35	60	11	Steel	T8 IP 111656	M3x12 143158
	177176	ER 16		9,0	17,7	4,35	41,4	11	Steel		
	177177	ER 20		9,0	17,7	4,35	51	16	Steel		
P20	177178	A	12	11,5	21,7	5,1	62,4	14,4	Steel	T15 IP 111671	M4x13 107597
	177180	ER 20		11,5	21,7	5,1	49,5	14,5	Steel		
	177181	ER 25		11,5	21,7	5,1	56	19,4	Steel		
P25	177182	A	16	13,6	27,7	7,05	69,6	20,4	Steel	T20 IP 111594	M5x13,5 107529
	177184	ER 25		13,6	27,7	7,05	56	19,4	Steel		
	177185	ER 32		13,6	27,7	7,05	73	30,4	Steel		

Screw torques max.

107596	T8 IP	1,0 Nm
143158	T8 IP	1,1 Nm
107597	T15 IP	3,8 Nm
107529	T20 IP	5,5 Nm

Changing Inserts

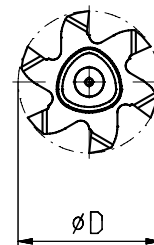
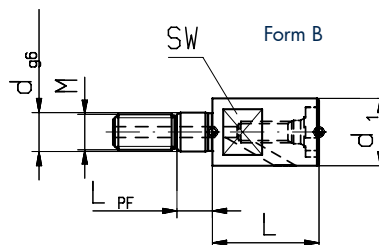
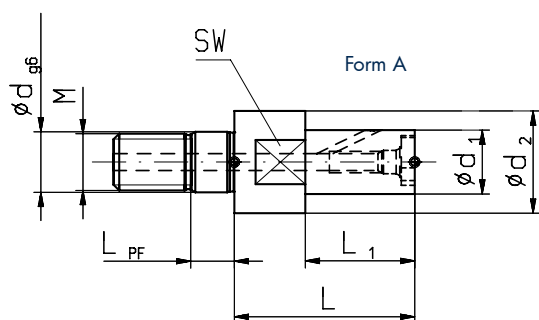
Clamp cutter before changing insert. Loosen insert screw. Remove used insert and clean the insert pocket before clamping new insert. Please use the appropriate TIP hex key for the tightening of the inserts and consider the screw tightening torques in the tables.



* Screwdriver and clamping screw included in delivery

Circular Milling Tools with Polygonal Insert Seat

- Inserts see page 113-116
- Cutting data see page 166



Please adapt cutting data to overhangs length

Type	Order No.	Form	d1 mm	d2 mm	D _{max.} mm	S _{max.} (D-d1)/2 mm	L mm	L1 mm	M	dg6 mm	L _{PF} mm	Spare part No.	
												Screw-driver *	Screw *
P12***	177676	B	9,5	–	11,7	1,1	13,5	–	M5	5,5	5,0	111656	107596
P16	123586	A	9,0	14,4	17,7	4,35	29,5	19,5	M8	8,5	5,5	111656	143158
P16**	177683	B	9,5	–	17,7	4,1	18,5	–	M5	5,5	5,0	111656	143158
P16***	177698	B	11,0	–	17,7	3,35	18,5	–	M6	6,5	5,0	111656	143158
P20	123618	A	11,5	18,0	21,7	5,1	35,0	25,0	M10	10,5	5,5	111671	107597
P20**	177734	B	11,5	–	21,7	5,1	20,5	–	M6	6,5	5,0	111671	107597
P20***	177735	B	13,5	–	21,7	4,1	20,5	–	M8	8,5	5,5	111671	107597
P25	123605	A	13,6	22,5	27,7	7,05	42,5	29,5	M12	12,5	5,5	111594	107529
P25**	177747	B	13,6	–	27,7	7,05	22,6	–	M8	8,5	5,5	111594	107529
P25***	177767	B	18,0	–	27,7	4,85	22,6	–	M10	10,5	5,5	111594	107529

* Screwdriver and clamping screw included in delivery

** Slim design for thread milling

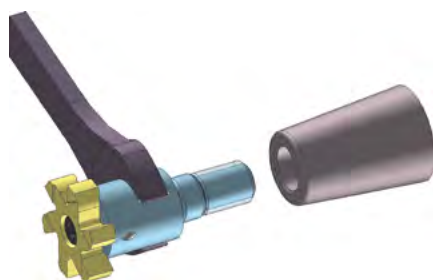
*** Reinforced design

Screw torques max.

107596	T8 IP	1,0 Nm
143158	T8 IP	1,1 Nm
107597	T15 IP	3,8 Nm
107529	T20 IP	5,5 Nm

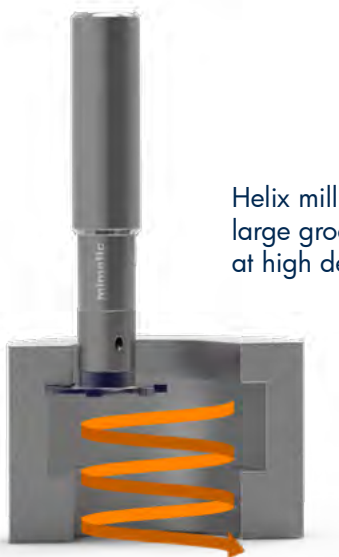
Assembling Instructions

- Recommended tightening torque for screw-in circular milling body
- End-wrench see page 151



Thread size (M)	Wrench size mm	Tightening torque Nm
M5	7	8
M6	9	10
M8	11	25
M10	15	40
M12	19	60
M16	24	80

Examples of applications:



Helix milling -
large groove widths
at high depths

Application with sheet
metal bevel plate -
Application of chamfers
on both sides



Axial recesses - 2-bladed Poly-
MILL plate (inner diameter min.
5 mm - outer diameter max.
28.5 mm)



Milling of tooth hub profiles with angle head and
carbide tooth form cutter

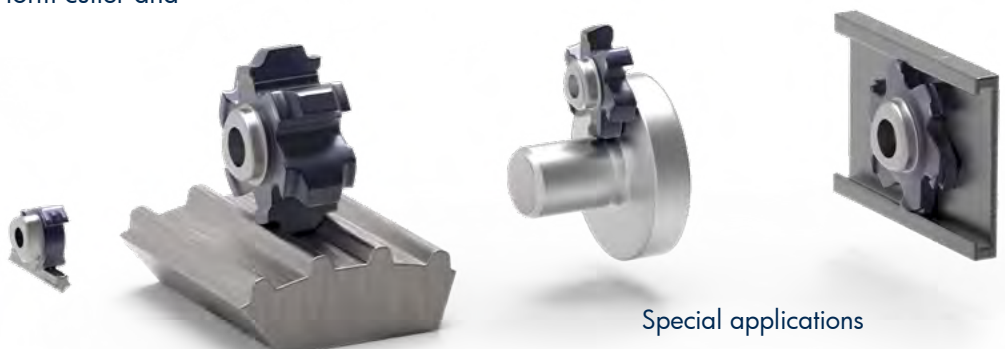
Milling of gears with
PolyMILL (DIN5480 /
DIN5481 / DIN5482 /
ANSI / BS / JS / ...)



Milling of an external toothing
with carbide tooth form cutter and
3-jaw chuck



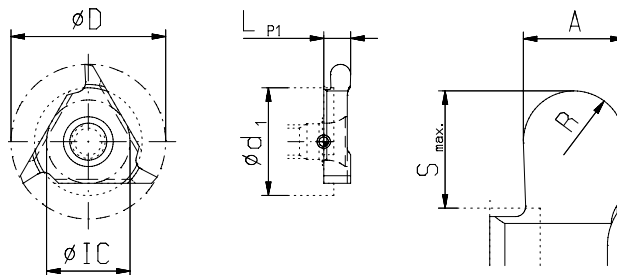
Notched bar impact tests
with PolyMILL



Special applications

Radius Milling, Convex Shapes

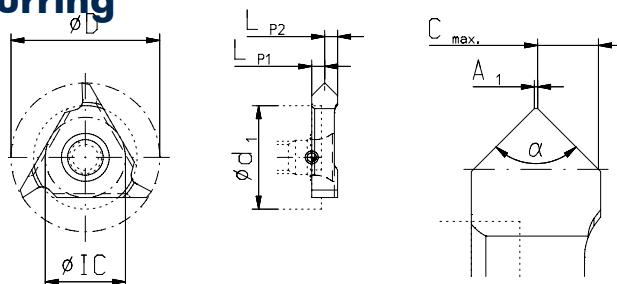
- Insert holder see page 122
- Cutting data see page 166
- Other sizes on request



Type	A mm	A inch	R mm	D mm	IC mm	LP1 mm	Smax. mm	Order No. TINAMATIC
03	1,0	.039	0,50	10,6	5,5	2,34	1,6	160866
	1,5	.059	0,75	10,6	5,5	2,34	1,6	146583
	2,0	.079	1,00	10,6	5,5	2,34	1,6	161574
	2,5	.098	1,25	10,6	5,5	3,0	1,6	On request
	3,0	.118	1,50	10,6	5,5	3,02	1,6	151643
02	1,0	.039	0,50	17,5	9,2	3,5	1,0	On request
	1,5	.059	0,75	17,5	9,2	3,5	1,0	149560
	2,0	.079	1,00	17,5	9,2	3,5	2,6	150641
	2,5	.098	1,25	17,5	9,2	3,5	2,6	190190
	3,0	.118	1,50	17,5	9,2	3,5	2,6	150011
	3,5	.138	1,75	17,5	9,2	3,52	2,6	182015
	4,0	.157	2,00	17,5	9,2	5,0	2,6	190192
	5,0	.197	2,50	17,5	9,2	5,02	2,6	150798
01	1,0	.039	0,50	23,0	12,4	4,0	2,0	On request
	1,5	.059	0,75	23,0	12,4	4,0	2,0	On request
	2,0	.079	1,00	23,0	12,4	4,0	3,45	171373
	2,5	.098	1,25	23,0	12,4	4,0	3,45	On request
	3,0	.118	1,50	23,0	12,4	4,0	3,45	169226
	3,5	.138	1,75	23,0	12,4	4,0	3,45	190191
	4,0	.157	2,00	23,0	12,4	4,02	3,45	150617
	5,0	.197	2,50	23,0	12,4	5,2	3,45	150006
	6,0	.236	3,00	23,0	12,4	6,5	3,45	146243 NEW

Chamfering and Deburring

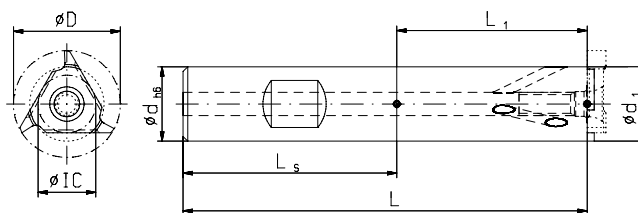
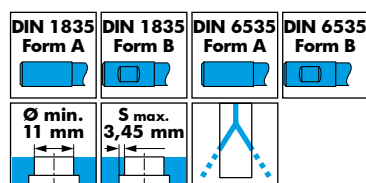
- Insert holder see page 122
- Cutting data see page 166



Type	D mm	IC mm	Cmax. x 45° mm	A1 mm	LP1 mm	LP2 mm	Order No. TINAMATIC
04	7,9	5,5	0,3	0,05	1,05	1,29	141690
03	10,6	5,5	1,5	0,05	1,5	1,5	141694
02	17,5	9,2	2,2	0,05	2,5	2,5	141495
01	23,0	12,4	3,1	0,05	3,2	3,3	141382

Circular Milling Tools

- Inserts see page 121
■ Cutting data see page 166

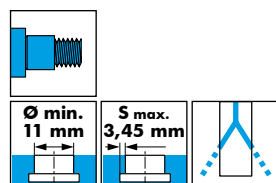
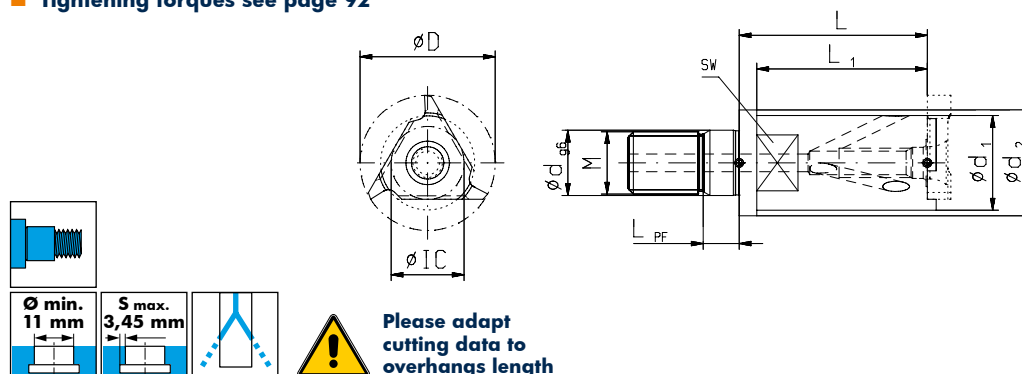


											Spare part No.	
Type	Order No.	Form	D mm	IC mm	dh6 mm	d1 mm	S max. mm	L mm	L1 mm	Shaft	Screw-driver *	Screw *
04	123491 **	B	7,9	5,5	10	7,2	0,35	57,2	17,2	Steel	T6 IP 111705	107530
03	123477 **	B	10,6	5,5	10	7,4	1,6	57,2	17,2	Steel		
	123478 **	B	10,6	5,5	12	7,4	1,6	64,66	17,2	Steel		
	123479 **	A	10,6	5,5	12	7,4	1,6	64,66	17,2	Steel		
	123480	B	10,6	5,5	10	7,4	1,6	74,2	34,2	Carbide		
	123489	A	10,6	5,5	8	8	1,25	77,66	–	Carbide		
02	123445	B	17,5	9,2	12	12	2,6	74,05	28,7	Steel	T15 IP 111671	107547
	123446	B	17,5	9,2	16	12	2,6	78,6	28,7	Steel		
	123447	A	17,5	9,2	16	12	2,6	78,6	28,7	Steel		
	123448	B	17,5	9,2	12	12	2,6	108,7	63,7	Carbide		
	123470	A	17,5	9,2	12	12	2,6	79,3	–	Carbide		
	123471	A	17,5	9,2	12	12	2,6	96,5	–	Carbide		
01	123474	A	17,5	9,2	12	12	2,6	121,5	–	Carbide		
	123412	B	23,0	12,4	16	16	3,45	87,0	38,5	Steel	T20 IP 111594	107551
	123414	B	23,0	12,4	16	16	3,45	116,0	67,5	Steel		
	123415 ***	A	23,0	12,4	20	17	3,0	93,0	41,0	Steel		
	170320	A	23,0	12,4	16	17	3,0	137,0	88,5	Carbide		
	123416	B	23,0	12,4	16	17	3,0	137,0	88,5	Carbide		
	123440	A	23,0	12,4	16	16	3,45	111,0	–	Carbide		
	123441	A	23,0	12,4	16	16	3,45	148,5	–	Carbide		

Screw torques max.

107530	T6 IP	0,9 Nm
107547	T15 IP	3,8 Nm
107551	T20 IP	5,5 Nm

- Tightening torques see page 92



											Spare part No.	
Type	Order No.	D mm	IC mm	dg6 mm	d1 mm	d2 mm	S max. mm	L mm	L1 mm	M	Screw-driver *	Screw *
03	123481	10,6	5,5	6,5	7,4	10,0	1,60	22,66	13,66		111705	107530
02	123450	17,5	9,2	8,5	12,2	15,4	2,60	27,5	18,5		111671	107547
01	123419	23,0	12,4	10,5	16,1	18,0	3,45	32,0	29,0		111594	107551

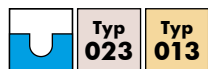
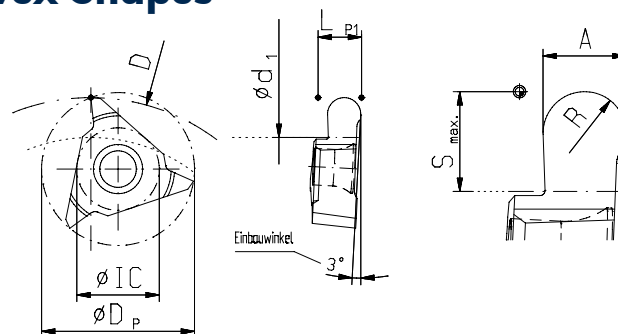
Screw torques max.

107530	T6 IP	0,9 Nm
107547	T15 IP	3,8 Nm
107551	T20 IP	5,5 Nm

- * Screwdriver and clamping screw included in delivery
** Without internal coolant supply
*** Also suitable as basic body for a tandem cutter

Radius Milling, Convex Shapes

- Insert holder see page 124-125
- Cutting data see page 166
- Other sizes on request

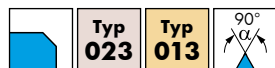
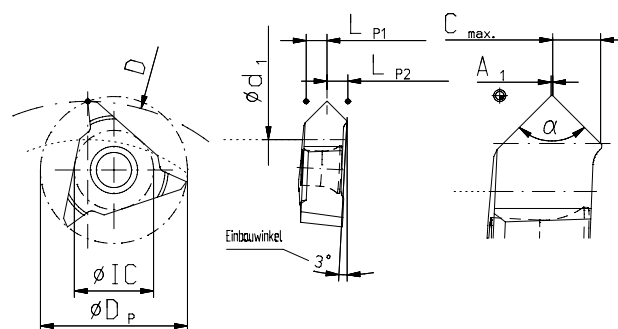


Type	A mm	A inch	R mm	D _P mm	IC mm	L _{P1} mm	L _{P2} * mm	S _{max.} mm	Order No. TINAMATIC
023	1,0	.039	0,50	17,5	9,2	4,03	1	2,0	On request
	1,5	.059	0,75	17,5	9,2	4,03	1	3,0	On request
	2,0	.079	1,00	17,5	9,2	4,7	–	4,0	176709
	2,5	.098	1,25	17,5	9,2	5,0	–	3,0	159832
	3,0	.118	1,50	17,5	9,2	5,0	–	2,0	149845
	3,5	.138	1,75	17,5	9,2	5,03	–	3,0	On request
	4,0	.157	2,00	17,5	9,2	5,03	–	3,0	201053 NEW
	5,0	.197	2,50	17,5	9,2	5,43	–	3,0	149780
	6,0	.236	3,00	17,5	9,2	–	–	4,0	On request
013	1,0	.039	0,50	23,0	12,4	6,53	–	2,0	On request
	1,5	.059	0,75	23,0	12,4	6,53	–	2,0	162406
	2,0	.079	1,00	23,0	12,4	5,20	1,33	5,00	160730
	2,5	.098	1,25	12,0	12,4	6,53	–	4,00	On request
	3,0	.118	1,50	23,0	12,4	6,53	–	4,00	160956
	3,5	.138	1,75	23,0	12,4	6,53	–	4,00	On request
	4,0	.157	2,00	23,0	12,4	6,50	–	2,00	186708
	5,0	.197	2,50	23,0	12,4	6,08	–	3,00	149838
	6,0	.236	3,00	23,0	12,4	5,88	–	6,00	149926

* not face cutting

Chamfering and Deburring

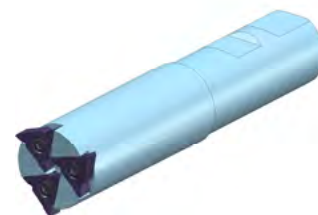
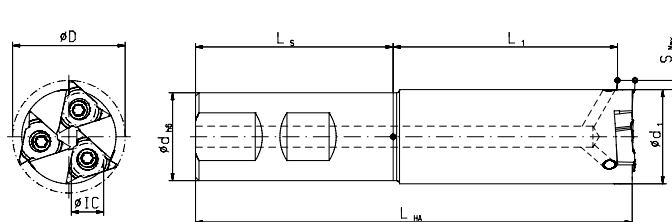
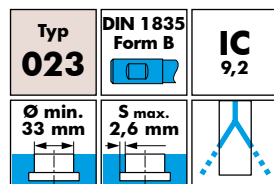
- Insert holder see page 124-125
- Cutting data see page 166



Type	D mm	IC mm	C _{max.} x 45° mm	A ₁ mm	L _{P1} mm	L _{P2} mm	Order No. TINAMATIC
023	17,5	9,2	2,3	0,05	2,52	2,51	142033
013	23,0	12,4	3,0	0,05	3,25	3,28	177222

Circular Milling Tools

- Inserts see page 123
- Cutting data see page 166



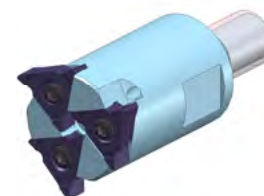
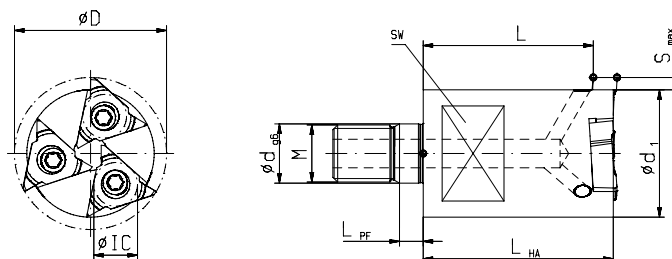
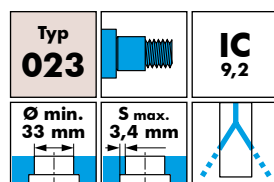
Order No.	D mm	d h6 mm	d1 mm	S max. mm	LHA mm	L mm	Li mm	Inserts	Shaft
123462	32	25	26,8	2,6	124,2	119,97	61,97	3	Steel

Spare part No.

T15 IP Screw-driver *	Screw *
111671	107547

Screw torque max. 3,8 Nm

- Tightening torques see page 92



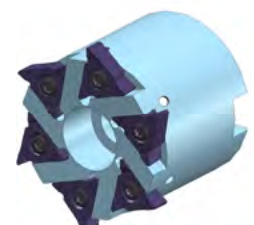
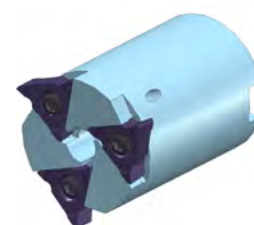
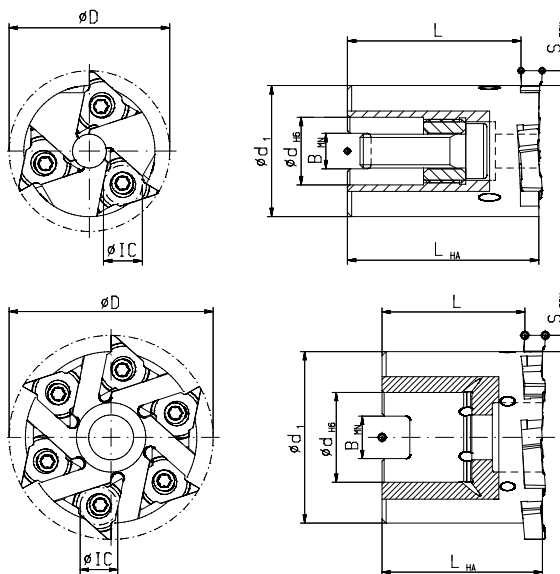
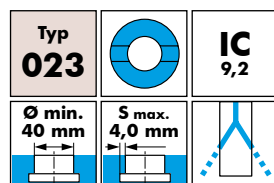
Order No.	D mm	d g6 mm	d1 mm	S max. mm	LHA mm	L mm	Inserts	M
123465	32	12,5	24,3	3,8	40	34,97	3	M12

Spare part No.

T15 IP Screw-driver *	Screw *
111671	107547

Screw torque max. 3,8 Nm

- Assembly instruction see page 176



Order No.	D mm	d H6 mm	d1 mm	S max. mm	LHA mm	L mm	BMN mm	Inserts
123464	38	16	31	3,4	45,3	40,97	8,4	3
123461 *	50	22	42	3,9	39,3	34,97	10,4	6
161485 * NEW	63	27	55	4,0	39,3	34,97	12,4	8

Accessories



Spare part No.

T15 IP Screw-driver *	Screw *
111671	107547
111671	107547
111671	107547

Screw torque max. 3,8 Nm

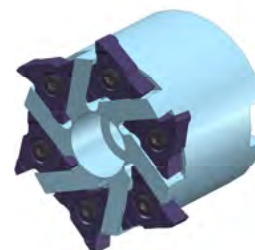
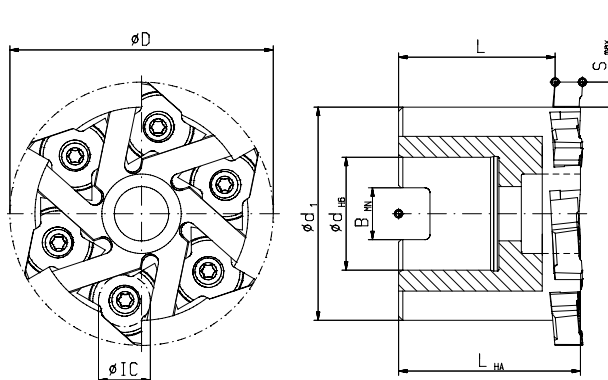
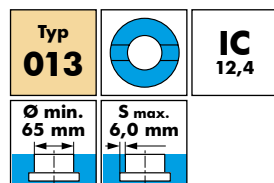
* Cutter clamping screw internal hexagon

Order No. 114684

* Screwdriver and clamping screw included in delivery

Circular Milling Tools

- Inserts see page 123
- Cutting data see page 166



Order No.	D mm	dH6 mm	d1 mm	S max. mm	LHA mm	L mm	B MN mm	Inserts
123435	63	27	51	6	43,5	37,5	12,4	6

Spare part No.

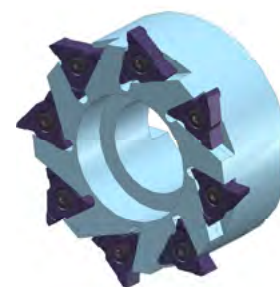
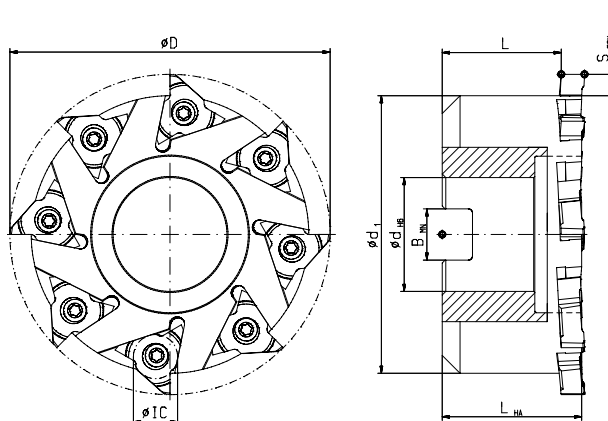
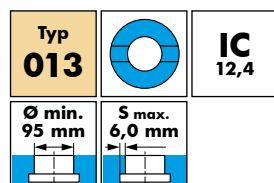
T20 IP Screw- driver *	Screw *
------------------------------	---------

111594 107551

Screw torque 5,5 Nm

Cutter clamping screw internal hexagon

Order No. 114695



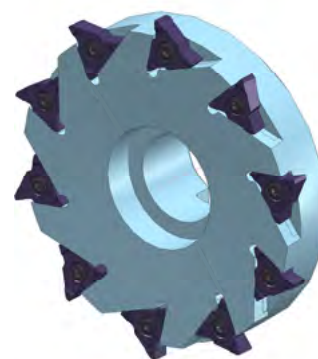
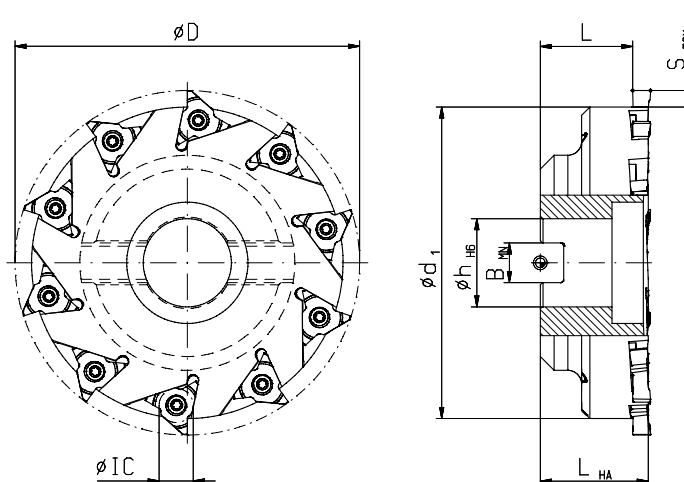
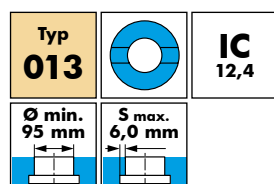
Order No.	D mm	dH6 mm	d1 mm	S max. mm	LHA mm	L mm	B MN mm	Inserts
123436	90	32	78	6	39,2	33,5	14,4	8

Spare part No.

T20 IP Screw- driver *	Screw *
------------------------------	---------

111594 107551

Screw torque 5,5 Nm



Order No.	D mm	dH6 mm	d1 mm	S max. mm	LHA mm	L mm	B MN mm	Inserts
134561	125	32	113	6,0	39,2	33,5	14,4	10

Spare part No.

T20 IP Screw- driver *	Screw *
------------------------------	---------

111594 107551

Screw torque 5,5 Nm

* Screwdriver and clamping screw included in delivery

Sawing, Cutting, Slitting



Milling

Thread Milling

Extended
program

14-63

1

Face Finish Milling

64-69

2

Notch Impact Test

70-75

3

Gear Milling

76-81

4

Slot Milling
Keyway MillingExtended
program82-
109

5

Contour and Radius Milling
Chamfering, Deburring,
undercut, dovetailExtended
program110-
125

6

Sawing, Slitting

Sawing, Cutting, Slitting

Extended
program126-
143

7

Bore Machining

Reaming

144-
151

8

Axial Grooving

Axial Grooving, adjustable

152-
157

9

Special Tools

Special- and Combination Tools

158-
163

10

Cutting Data and Technical Information

164-
179

11

PolyMILL

Cutting, Sawing, Slitting

Our best-selling system, mostly used as a circular cutter, also proves itself in linear applications such as cutting off, sawing, slitting with high precision.

The polygonal connection of insert and cutter body significantly improves the efficiency and precision of the machining process by:

- Longer tool life
- Defined tooth and cutting edge geometry
- Higher metal removal rates
- Higher feed rates
- Shorter machining times
- High stability
- High safety in case of interrupted cut



PolySAW

Cutting, Sawing, Slitting

The expectations of the performance and to the application range of cutting tools continuously evolve.

In response to the demand for small yet powerful and specifically process safe operating sawblades, mimatic has developed the tooling system PolySAW.

- Larger range of applications
- Defined tooth and cutting edge geometry
- mimatic core competence: Polygon interface → Quadragon interface
- High performance coatings
- Internal coolant direct to the edges
- Clamping with only one center screw

These technical parameters resulted in the mimatic development result PolySAW with a up to tenfold cutting performance in comparsion to conventional solid carbide circular saws.



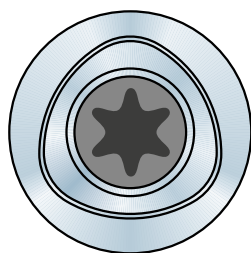
PolySAW

Sawing Tools in New Dimensions of Performance

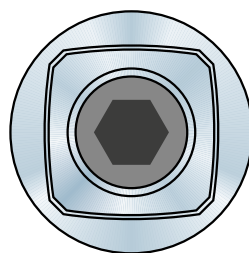


- ⁂ With PolySAW profiles can be machined up to the shoulder
- ⁂ On request: Increased sawing depths (S) achievable with reductions in speed/feed
- + **Re-sharpen-Service 2x**
- + Minimum distance for operations to shoulders: 0,001 mm

The mimatic Polygon Interface – A Success Story with Continuous Evolution: Quadrogon



mimatic
Polygon Interface



mimatic
Quadrogon* Interface

Since their development and launch in 1994, the mimatic polygon interface is the guarantee for high cutting performance with maximum precision and repeatability in the circular milling.

In the tool systems PolyMILL and Poly-REAM, the polygon interface enables the reliable circular thread milling and

reaming as well as T-slot milling and grooving. In many practical applications, the interface has established itself as a key factor for successful milling operations under difficult conditions.

With the development of the new tool systems DeepMILL and PolySAW, the development of the polygon interface

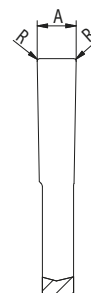
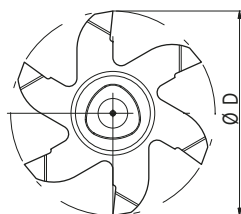
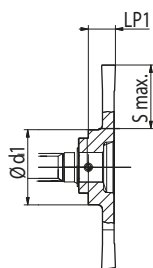
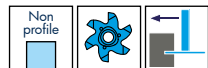
has evolved as well. Under the brand name mimatic Quadrogon, the interface has been optimized specifically for the needs of this new mimatic high-performance tool.

* patent-protected.

PolyMILL

Slitting/Splitting, straight toothed

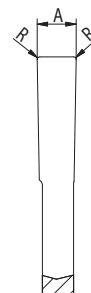
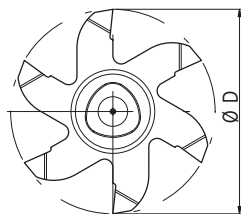
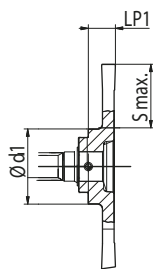
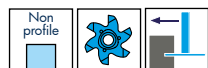
- Insert holder see page 132
- Cutting data see page 166



Type		A mm	A inch	D mm	Chip angle	R mm	LP1 mm	S _{max.} mm	Number of teeth	Order No.
										TINAMATIC
P25	P2528	1,5	.059	27,7	6°	0,1	4,9	6,8	6	171981
	P2528	2,0	.079	27,7	6°	0,1	4,9	6,8	6	171982
	P2528	2,39	.094	27,7	6°	0,15	4,9	6,8	6	171983
	P2528	2,5	.098	27,7	6°	0,15	4,9	6,8	6	171984
	P2528	3,0	.118	27,7	6°	0,15	4,9	6,8	6	171985
	P2528	3,175	.125	27,7	6°	0,15	5,0	6,8	6	171986
	P2537	1,0	.039	37,0	6°	0,15	4,9	11,5	6	195886
	P2537	1,5	.059	37,0	6°	0,15	4,9	11,5	6	195900
	P2537	2,0	.079	37,0	6°	0,15	4,9	11,5	6	195903
	P2537	2,5	.098	37,0	6°	0,15	4,9	11,5	6	195904
	P2537	3,0	.118	37,0	6°	0,15	4,9	11,5	6	195905

Slitting/separating, cross-toothed

- Insert holder see page 132
- Cutting data see page 166

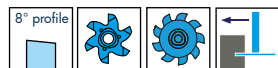
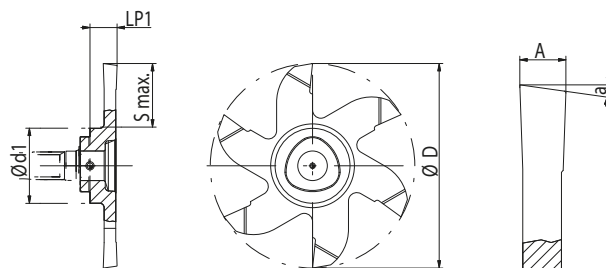


Type		A mm	A inch	D mm	Chip angle	R mm	LP1 mm	S _{max.} mm	Number of teeth	Order No. TINAMATIC
P25	P2528	1,5	.059	27,7	6°	0,1	4,9	6,8	6	on request
	P2528	2,0	.079	27,7	6°	0,1	4,9	6,8	6	on request
	P2528	2,39	.094	27,7	6°	0,15	4,9	6,8	6	on request
	P2528	2,5	.098	27,7	6°	0,15	4,9	6,8	6	on request
	P2528	3,0	.118	27,7	6°	0,15	4,9	6,8	6	on request
	P2528	3,175	.125	27,7	6°	0,15	5,0	6,8	6	on request
	P2537	1,0	.039	37,0	6°	0,15	4,9	11,5	6	195906 
	P2537	1,5	.059	37,0	6°	0,15	4,9	11,5	6	195907 
	P2537	2,0	.079	37,0	6°	0,15	4,9	11,5	6	195909 
	P2537	2,5	.098	37,0	6°	0,15	4,9	11,5	6	195910 
	P2537	3,0	.118	37,0	6°	0,15	4,9	11,5	6	195911 

PolyMILL

Slitting/Splitting, with 8° bevel for burr-free cutting

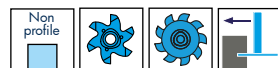
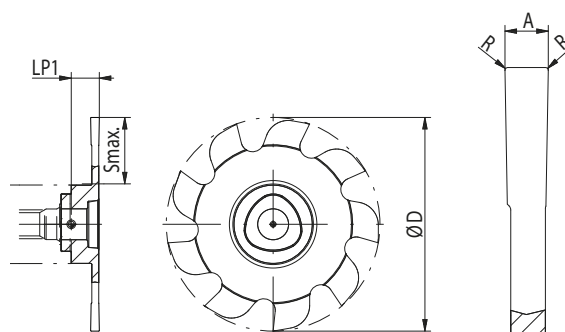
- Insert holder see page 132
- Cutting data see page 166



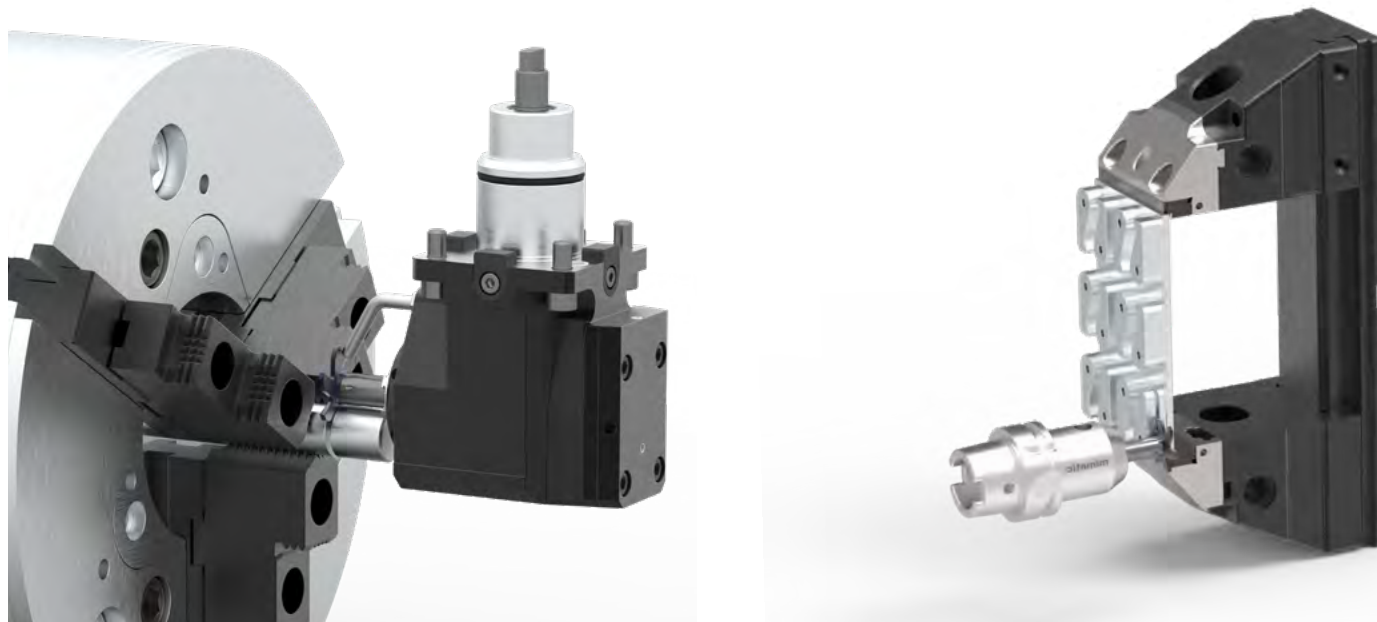
Type		A mm	D mm	a mm	Number of teeth	S max.	Order No.
							TINAMATIC
P25	P2537	1,0	37	8°	6	11,5	199222 NEW
	P2537	1,5	37	8°	9	11,5	199702 NEW
	P2537	2,0	37	8°	9	11,5	199281 NEW
	P2537	2,5	37	8°	9	11,5	199705 NEW

Slitting/Splitting, z=n for separating

- Insert holder see page 132
- Cutting data see page 166

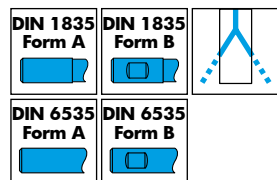
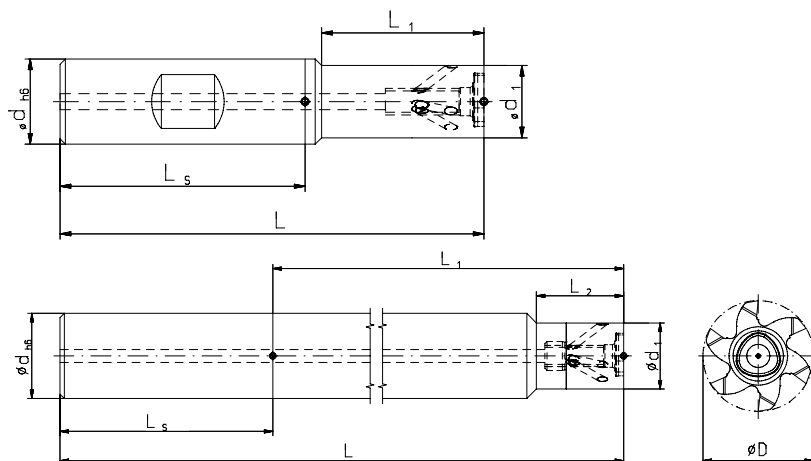


Type		D mm	LP1 mm	A mm	R mm	Number of teeth	S max.	Order No.	
								TINAMATIC	
P12	P1214	14	3,5	1,5	0,1	6	3,4	198336	NEW
P16	P1622	22	3,9	1,5	0,1	9	6,4	198337	NEW
P20	P2032	32	4,9	1,5	0,1	9	10,2	198338	NEW
P25	P2537	37	4,9	1,5	0,1	9	11,5	198339	NEW



Circular Milling Tools with Polygonal Insert Seat

■ Cutting data see page 166



											Spare part No.	
Type	Order No.	Form	d h6 mm	d1 mm	D max. mm	S max. (D-d1)/2 mm	L mm	L1 mm	L2 mm	Shaft	Screw-driver *	Screw *
P12	177170	A	10	7,0	11,7	2,35	54	8	-	Steel	T8 IP 111656	M2,5x7 107596
	123619	B	12	7,0	11,7	2,35	67,5	20	-	Steel		
	100228	B	12	7,0	11,7	2,35	67,5	20	-	Carbide		
	171778	A	12	7,0	11,7	2,35	67,5	20	-	Carbide		
	171780	B	12	7,0	11,7	2,35	80	30	-	Carbide		
	171781	A	12	7,0	11,7	2,35	80	30	-	Carbide		
	171783	B	12	7,0	11,7	2,35	100	40	-	Carbide		
	171784	A	12	7,0	11,7	2,35	100	40	-	Carbide		
P16	177174	A	10	9,0	17,7	4,35	60	11	-	Steel	T8 IP 111656	M3x12 143158
	123573	B	12	9,0	17,7	4,35	67,4	21	-	Steel		
	123577	B	12	9,0	17,7	4,35	67,4	21	-	Carbide		
	171787	A	12	9,0	17,7	4,35	67,4	21	-	Carbide		
	123580	B	12	9,0	17,7	4,35	82,4	36	-	Carbide		
	171789	A	12	9,0	17,7	4,35	82,4	36	-	Carbide		
	123584	A	12	9,0	17,7	4,35	100	30	-	Carbide		
	123588	A	12	11,5	17,7	2,85	82,4	37,4	13	Carbide		
P20	123590	A	12	12,0	17,7	2,85	122,5	77,5	-	Carbide	T15 IP 111671	M4x13 107597
	177178	A	12	11,5	21,7	5,1	62,4	14,4	-	Steel		
	123615	B	16	11,5	21,7	5,1	80	30	-	Steel		
	123616	B	16	11,5	21,7	5,1	80	30	-	Carbide		
	171794	A	16	11,5	21,7	5,1	80	30	-	Carbide		
	123617	B	16	11,5	21,7	5,1	100	50	-	Carbide		
	171796	A	16	11,5	21,7	5,1	100	50	-	Carbide		
P25	174314	A	16	15,5	21,7	3,1	105,5	57,5	20	Carbide	T20 IP 111594	M5x13,5 107529
	177182	A	16	13,6	27,7	7,05	69,6	20,4	-	Steel		
	123592	B	16	13,6	27,7	7,05	79,6	30,5	-	Steel		
	123598	B	16	13,6	27,7	7,05	79,6	30,5	-	Carbide		
	171855	A	16	13,6	27,7	7,05	79,6	30,5	-	Carbide		
	123600	B	16	13,6	27,7	7,05	94,6	45,5	-	Carbide		
	171857	A	16	13,6	27,7	7,05	94,6	45,5	-	Carbide		
	123603	B	16	13,6	27,7	7,05	109,6	60,5	-	Carbide		
	171859	A	16	13,6	27,7	7,05	109,6	60,5	-	Carbide		
	123609	A	16	15,5	27,7	6,1	105	57	21,5	Carbide		
	123611	A	16	15,5	27,7	6,1	149,5	101,5	21,5	Carbide		
	161205 NEW	A	20	15,5	27,7	6,1	100	52	21,5	Carbide		
	123613	A	20	15,5	27,7	6,1	174,45	128,5	21,5	Carbide		

* Screwdriver and clamping screw included in delivery

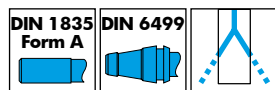
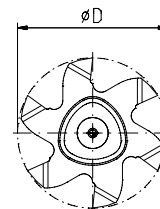
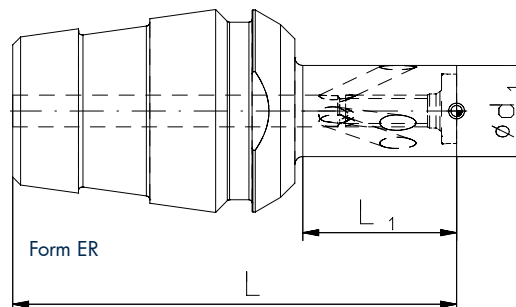
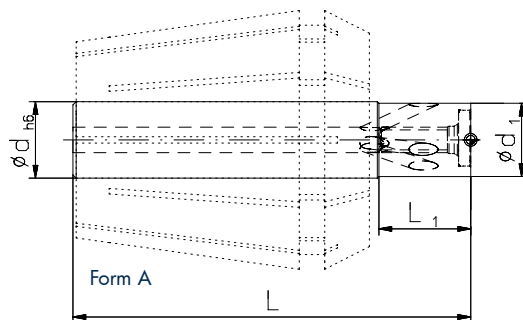
Screw torques max.

107596	T08 IP	1,0 Nm
143158	T08 IP	1,1 Nm
107597	T15 IP	3,8 Nm
107529	T20 IP	5,5 Nm

PolyMILL

Circular Milling Tools for Driven Toolholders

■ Cutting data see page 166



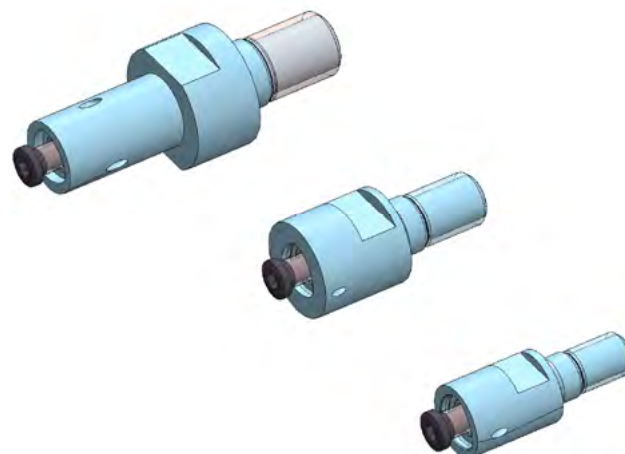
Type	Order No.	Form	d_{h6} mm	d_1 mm	$D_{max.}$ mm	$S_{max.}$ ($D-d_1$)/2 mm	L mm	L_1 mm	Shaft	Spare part No.	
										Screw-driver *	Screw *
P12	177170	A	10	7,0	11,7	2,35	54	8	Steel	T8 IP 111656	M2,5x7 107596
	177172	ER 16		7,0	11,7	2,35	37,5	8	Steel		
	177173	ER 20		7,0	11,7	2,35	47	13	Steel		
P16	177174	A	10	9,0	17,7	4,35	60	11	Steel	T8 IP 111656	M3x12 143158
	177176	ER 16		9,0	17,7	4,35	41,4	11	Steel		
	177177	ER 20		9,0	17,7	4,35	51	16	Steel		
P20	177178	A	12	11,5	21,7	5,1	62,4	14,4	Steel	T15 IP 111671	M4x13 107597
	177180	ER 20		11,5	21,7	5,1	49,5	14,5	Steel		
	177181	ER 25		11,5	21,7	5,1	56	19,4	Steel		
P25	177182	A	16	13,6	27,7	7,05	69,6	20,4	Steel	T20 IP 111594	M5x13,5 107529
	177184	ER 25		13,6	27,7	7,05	56	19,4	Steel		
	177185	ER 32		13,6	27,7	7,05	73	30,4	Steel		

Screw torques max.

107596	T8 IP	1,0 Nm
143158	T8 IP	1,1 Nm
107597	T15 IP	3,8 Nm
107529	T20 IP	5,5 Nm

Changing Inserts

Clamp cutter before changing insert. Loosen insert screw. Remove used insert and clean the insert pocket before clamping new insert. Please use the appropriate TIP hex key for the tightening of the inserts and consider the screw tightening torques in the tables.

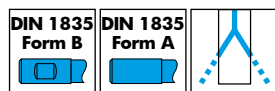
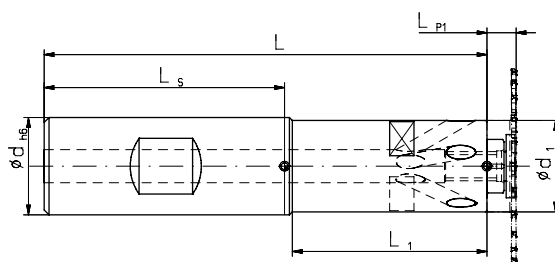
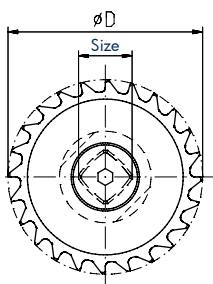


* Screwdriver and clamping screw included in delivery

PolySAW Ø 32

Basic Holders

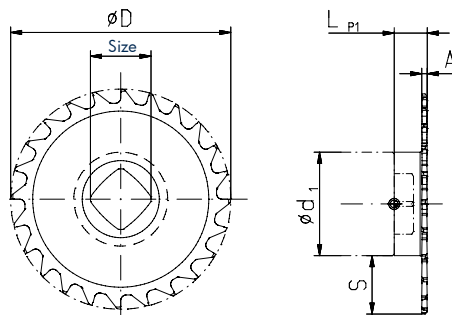
■ Cutting data see page 166



							Complete holder	Spare Parts **	
Size	Type	dh6 mm	DIN	L mm	L1 mm	d1 mm	Bestell-Nr.	Screwdriver *	Size
Ø 32	11	20	1835 B	91	40	18,8	163701	178296	SW 3
	11	20	1835 A	91	40	18,8	160050	178296	SW 3
	9	20	1835 B	86	35	16,8	163700	178297	SW 4
	9	20	1835 A	86	35	16,8	160049	178297	SW 4

Screw torques max.
Type 09 = max. 3,8 Nm
Type 11 = max. 10,5 Nm

Milling Discs



Size	Type	A mm	S max. mm	D mm	LP1 mm	Number of teeth	Order No. TINAMATIC	Deliverable
Ø 32	11	1,0	6,6	32	6	18	164430	on request
	9	1,0	7,6	32	6	18	164400	on stock
	11	1,5	6,6	32	6	18	164431	on request
	9	1,5	7,6	32	6	18	164401	on stock
Especially for aluminium processing:								
Ø 32	9	1,0	7,6	32	6	16	179693	on stock
	9	1,5	7,6	32	6	16	179698	on stock

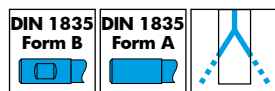
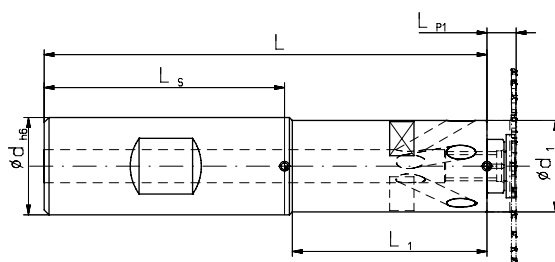
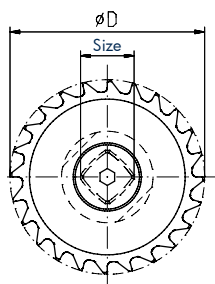


Milling discs with larger cutting widths see chapter "Groove milling".

PolySAW Ø 40

Basic Holders

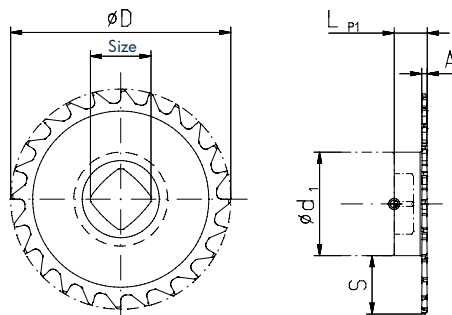
■ Cutting data see page 166



							Complete holder	Spare Parts **	
Size	Type	dh6 mm	DIN	L mm	L1 mm	d1 mm	Bestell-Nr.	Screwdriver *	Size
Ø 40	13	25	1835 B	105	45	21,6	163702	178297	SW 4
	13	25	1835 A	105	45	21,6	160051	178297	SW 4
	11	20	1835 B	91	40	18,8	163701	178296	SW 3
	11	20	1835 A	91	40	18,8	160050	178296	SW 3

Screw torques max.
Type 11 = max. 10,5 Nm
Type 13 = max. 24,5 Nm

Milling Discs



7

Size	Type	A mm	S max. mm	D mm	Lp1 mm	Number of teeth	Order No. TINAMATIC	Deliverable
Ø 40	13	1,0	9,2	40	6	24	164432	on request
	11	1,0	10,6	40	6	24	164406	on stock
	13	1,5	9,2	40	6	24	164433	on request
	11	1,5	10,5	40	6	24	164407	on stock
Especially for aluminium processing:								
Ø 40	11	1,0	10,6	40	6	20	179694	on stock
	11	1,5	10,6	40	6	20	179699	on stock



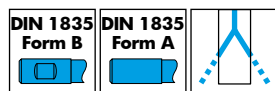
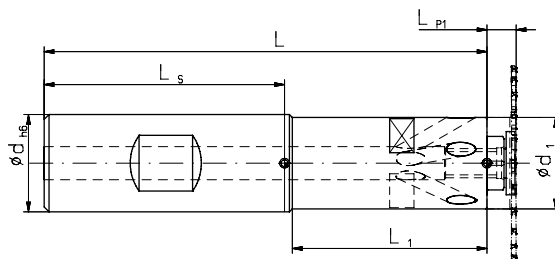
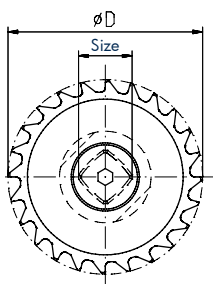
Milling discs with larger cutting widths see chapter "Groove milling".

* Screwdriver and clamping screw included in delivery
** More spare parts see page 141

PolySAW Ø 50

Basic Holders

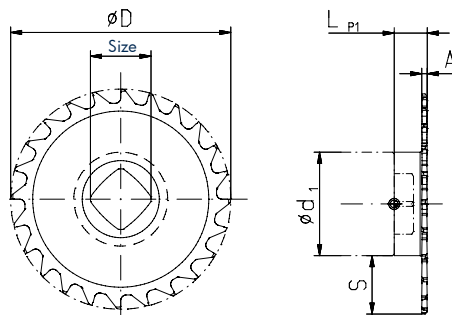
■ Cutting data see page 166



							Complete holder	Spare Parts **	
Size	Type	dh6 mm	DIN	L mm	L1 mm	d1 mm	Bestell-Nr.	Screwdriver *	Size
Ø 50	16	25	1835 B	110	50	26	163703	178296	SW 3
	16	25	1835 A	110	50	26	160052	178296	SW 3
	13	25	1835 B	105	45	21,6	163702	178297	SW 4
	13	25	1835 A	105	45	21,6	160051	178297	SW 4

Screw torques max.
Type 13 = max. 24,5 Nm
Type 16 = max. 6 Nm

Milling Discs



Size	Type	A mm	S max. mm	D mm	LP1 mm	Number of teeth	Order No. TINAMATIC	Deliverable
Ø 50	16	1,0	12,0	50	6	32	164434	on request
	13	1,0	14,2	50	6	32	164412	on stock
	16	1,5	12,0	50	6	32	164435	on request
	13	1,5	14,2	50	6	32	164413	on stock
Especially for aluminium processing:								
Ø 50	13	1,0	14,2	50	6	20	179695	on stock
	13	1,5	14,2	50	6	20	179700	on stock

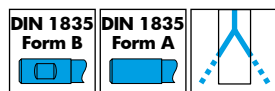
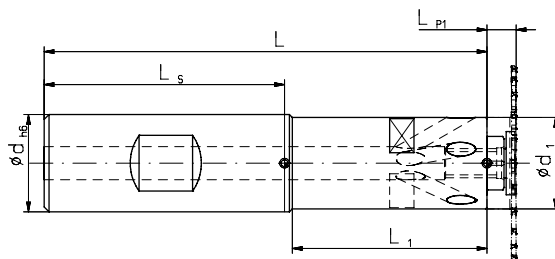
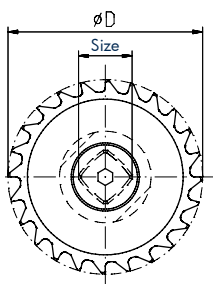


Milling discs with larger cutting widths see chapter "Groove milling".

PolySAW Ø 63

Basic Holders

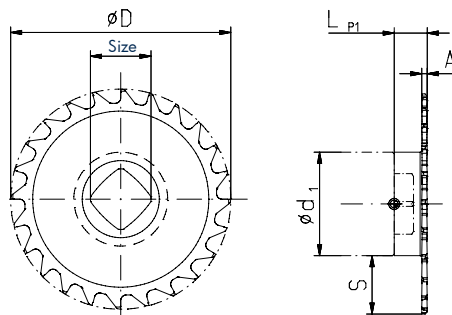
■ Cutting data see page 166



							Complete holder	Spare Parts **	
Size	Type	dh6 mm	DIN	L mm	L1 mm	d1 mm	Bestell-Nr.	Screwdriver *	Size
Ø 63	19	32	1835 B	122	55	30	163704	178296	SW 3
	19	32	1835 A	122	55	30	160053	178296	SW 3
	16	25	1835 B	110	50	26	163703	178296	SW 3
	16	25	1835 A	110	50	26	160052	178296	SW 3

Screw torques max.
Type 16 = max. 6 Nm
Type 19 = max. 10,5 Nm

Milling Discs



7

Size	Type	A mm	S max. mm	D mm	Lp1 mm	Number of teeth	Order No. TINAMATIC	Deliverable
Ø 63	19	1,0	16,5	63	6	40	164436	on request
	16	1,0	18,5	63	6	40	164418	on stock
	19	1,5	16,5	63	6	40	164437	on request
	16	1,5	18,5	63	6	40	164419	on stock
Especially for aluminium processing:								
Ø 63	16	1,0	18,5	63	6	24	179696	on stock
	16	1,5	18,5	63	6	24	179701	on stock

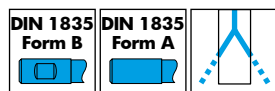
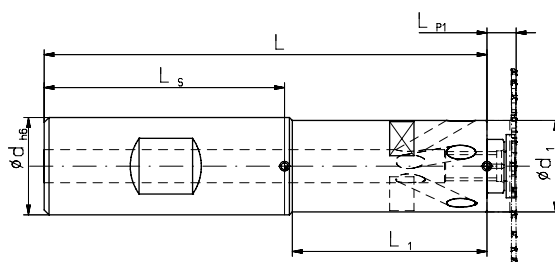
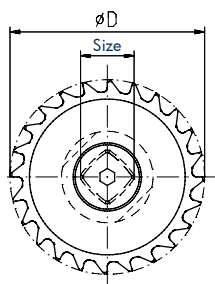


Milling discs with larger cutting widths see chapter "Groove milling".

PolySAW Ø 80

Basic Holders

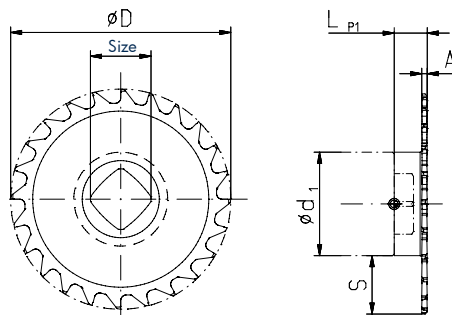
■ Cutting data see page 166



							Complete holder	Spare Parts **	
Size	Type	dh6 mm	DIN	L mm	L1 mm	d1 mm	Bestell-Nr.	Screwdriver *	Size
Ø 80	19	32	1835 B	122	55	30	163704	178296	SW 3
	19	32	1835 A	122	55	30	160053	178296	SW 3
	25	32	1835 B	127	60	38,2	163705	178297	SW 4
	25	32	1835 A	127	60	38,2	160054	178297	SW 4

Screw torques max.
Type 19 = max. 10,5 Nm
Type 25 = max. 24,5 Nm

Milling Discs



Size	Type	A mm	S max. mm	D mm	LP1 mm	Number of teeth	Order No. TINAMATIC	Deliverable
Ø 80	25	1,0	20,9	80	6	40	164438	on stock
	19	1,0	25,0	80	6	40	164424	on stock
	25	1,5	20,9	80	6	40	164439	on request
	19	1,5	25,0	80	6	40	164425	on stock
Especially for aluminium processing:								
Ø 80	19	1,0	25,0	80	6	24	179697	on stock
	19	1,5	25,0	80	6	24	179702	on stock



Milling discs with larger cutting widths see chapter "Groove milling".

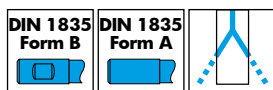
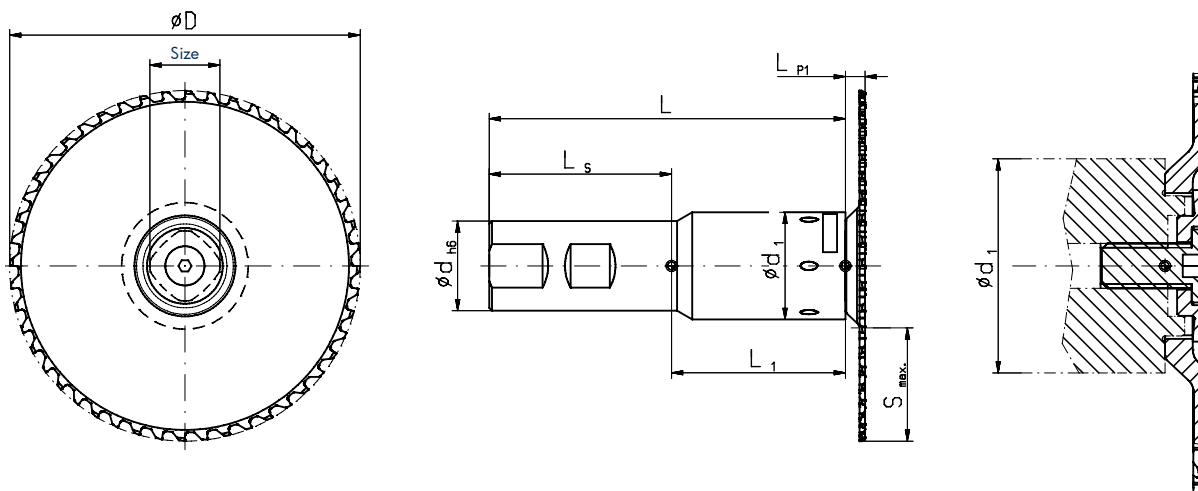
* Screwdriver and clamping screw included in delivery

** More spare parts see page 141

PolySAW Ø 100+125

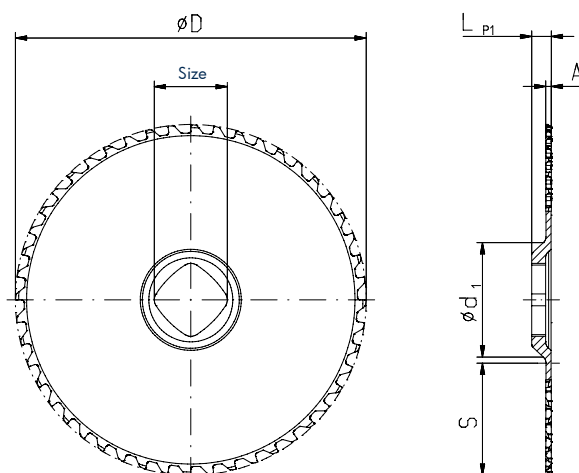
Basic Holders

■ Cutting data see page 166



							Complete holder	Spare Parts **	
Size	Typ	dh6 mm	DIN	L mm	L1 mm	d1 mm	Bestell-Nr.	Screwdriver *	Size
Ø 100+125	25	32	1835 B	127	60	38,2	160870	178297	SW 4
	25	32	1835 A	127	60	38,2	160888	178297	SW 4
							Screw torques max. Type 25 = max. 24,5 Nm		

Milling Discs



7

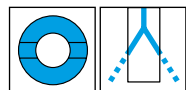
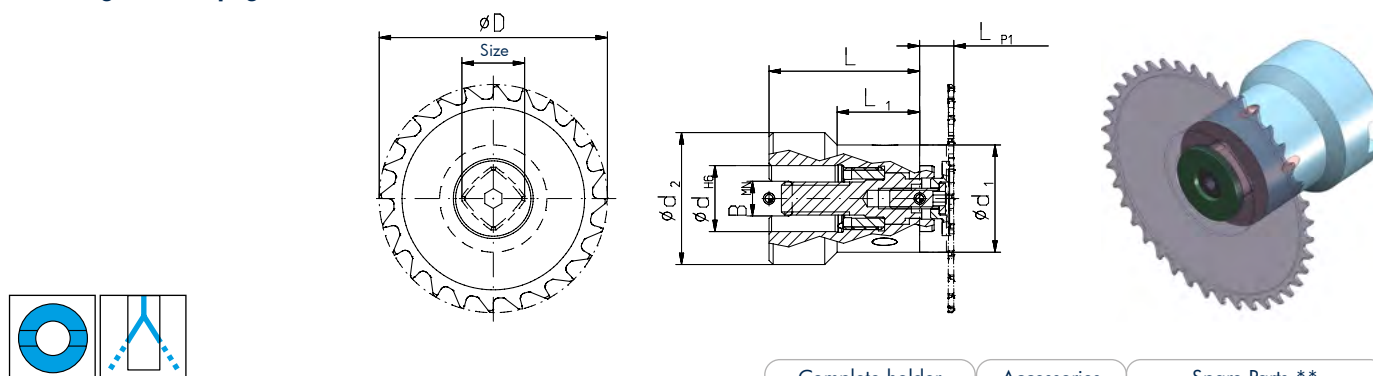
Size	Type	A mm	S max. mm	D mm	LP1 mm	Number of teeth	Order No. TINAMATIC	Deliverable
Ø 100	25	2	30	100	7	44	188390	on stock
Ø 125	25	2	40	125	7	48	187340	on stock

* Screwdriver and clamping screw included in delivery
** More spare parts see page 141

PolySAW

Basic Holders with Location Bore

■ Cutting data see page 166



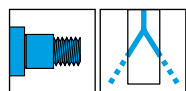
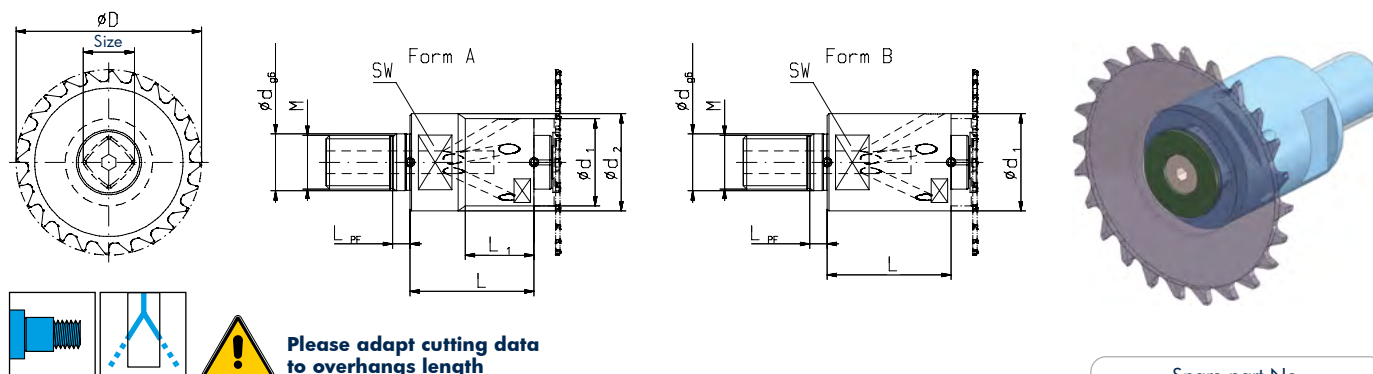
Type	dH6 mm	BMN mm	L mm	L1 mm	d1 mm	d2 mm	Complete holder Bestell-Nr.	Accessories Key	Spare Parts **	
16	16	8,4	36,5	20	26	32	179727	134984	178296	SW 3
19	16	8,4	36,5	20	30	32	179728	134984	178296	SW 3
25*	16	8,4	36,5	20	29	32	156493		178297	SW 4
25*	22	10,4	50,0	20	38,2	40	179817 NEW		178297	SW 4

* not suitable for Ø100 and Ø125

Screw torques max.
Type 16 = max. 6 Nm
Type 19 = max. 10,5 Nm
Type 25 = max. 24,5 Nm

Basic Holders with Screw-in Thread

■ Cutting data see page 166



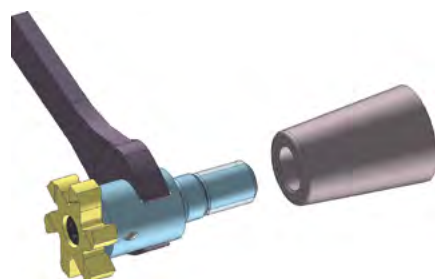
Please adapt cutting data to overhangs length

Type	Order No.	Form	d1 mm	d2 mm	L mm	L1 mm	M	d _{g6}	L _{PF}	Spare part No.	
16	191777 NEW	A	26	29	36,5	20	M16	17	5,5	178296	SW3
19	191778 NEW	B	30	-	36,5	-	M16	17	5,5	178296	SW3

Screw torque max. 3,8 Nm

■ Recommended tightening torque for screw-in circular milling body

■ End-wrench see page 151



Thread size (M)	Wrench size mm	Tightening torque Nm
M5	7	8
M6	9	10
M8	11	25
M10	15	40
M12	19	60
M16	24	80

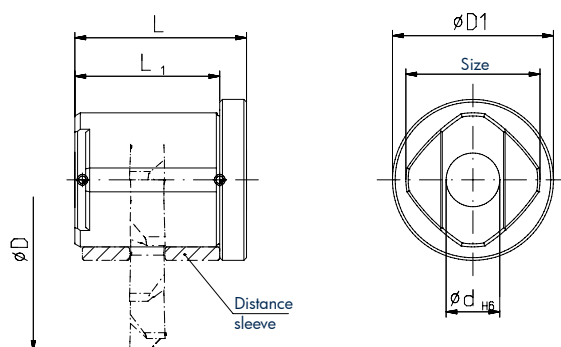
* Screwdriver and clamping screw included in delivery

** More spare parts see page 141

PolySAW

Saw Blade Arbors for mimatic Saw Blade Holders

■ Cutting data see page 166

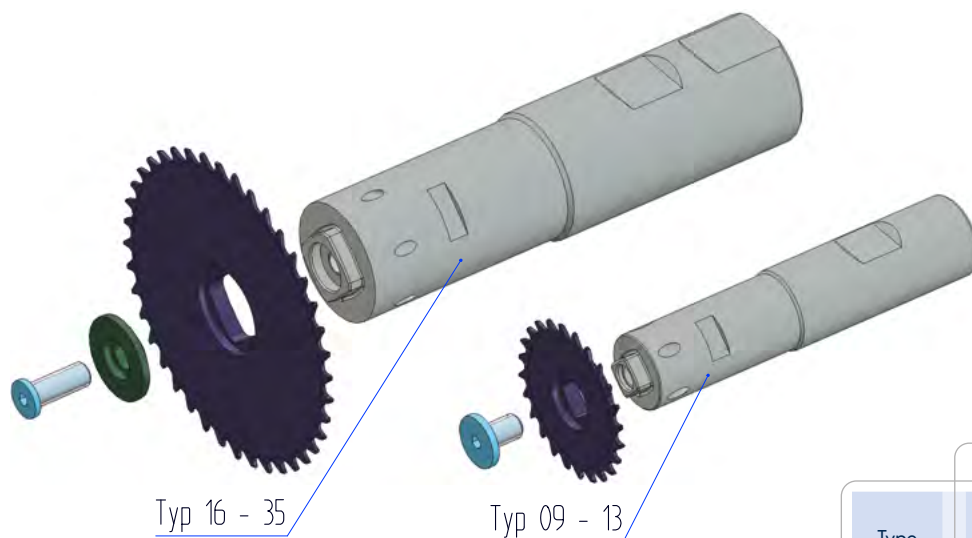


When using PolySaw ECO, as well as DeepMill ECO, the cutting depth is reduced by 6 or 7 mm

System	Typ	dH6 mm	L mm	L1 mm	D1 mm	Complete holder	Spare Parts **	
						Bestell-Nr.	Screwdriver *	Size
ECO	25	10	32	27	30	179252	178297	SW 4
	35	10	32	27	30	180316	178297	SW 4

Screw torques max.
Type 35 = max. 24,5 Nm
Type 25 = max. 24,5 Nm

Assembly and Spare Parts



Assembly notes

Please tighten the clamping screw with the specified torque.
In the selection of the DeepMILL basic holder and machine tool holder should be chosen the shortest possible setup.

Service

Please don't hesitate to take the advantage of the mimatic service.
Mimatic engineers will offer machining recommendations to optimize your specific applications.

Spare Parts		
Type	Screw	Clamping disc
09	163842	—
11	163843	—
13	163844	—
16	163850	175027
19	163848	163845
25	163849	163846
35	163849	163847

Screw torques max.
163842 Type 09 M4 3,8 Nm
163843 Type 11 M6 10,5 Nm
163844 Type 13 M8 24,5 Nm
163850 Type 16 M5 6,0 Nm
163848 Type 19 M6 10,5 Nm
163849 Type 24 M8 24,5 Nm
163849 Type 35 M8 24,5 Nm

Turn Cut Milling with **PolySAW**

Turn Cut Milling instead of parting off: Faster parting off than anybody else!

The new process technology from mimatic is called Turn Cut Milling with PolySAW: Turn Cut Milling instead of parting off! This is the combined know how of live tools and cutting tools by mimatic.

PolySAW turn cut milling is enabled by the new QUADROGON interface developed by mimatic. Quadrogon safely and reliably transmits the high performance during Turn Cut Milling.

The high number of cutting-teeth of the PolySAW milling cutter also has a positive effect when machining asymmetric or thin components. Due to its continuous and uninterrupted tooth engagement and the resulting smooth machining process.

PolySAW milling cutters may look like conventional saws on first sight, however, mimatic has provided PolySAW with all the properties of high-value milling tools. The process reliability and performance of PolySAW is unmatched by conventional saws.

- Short process times
- Process reliability
- Material saving
- Surface quality
- Absence of burrs
- Short chips



PolySAW

Examples for high quality TurnCut Milling

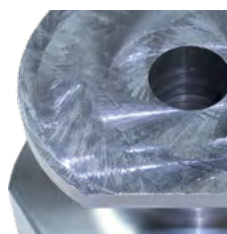
Material: steel
 $R_z = 1,0 - 2,7$
 $R_a = 0,17 - 0,53$
 $f_z = 0,015 - 0,03 \text{ mm}$
 $V_c = 120 - 200 \text{ m/min}$



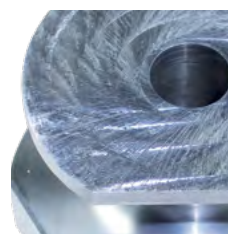
Material: aluminium
 $R_z = 1,7 - 2,8$
 $R_a = 0,36 - 0,6$
 $f_z = 0,02 - 0,03 \text{ mm}$
 $V_c = 200 - 600 \text{ m/min}$



Material: aluminium
 $R_z = 1,7 - 4,0$
 $R_a = 0,39 - 0,85$
 $f_z = 0,02 - 0,03 \text{ mm}$
 $V_c = 200 - 600 \text{ m/min}$



Material: aluminium
 $R_z = 1,6 - 3,2$
 $R_a = 0,38 - 0,62$
 $f_z = 0,02 - 0,03 \text{ mm}$
 $V_c = 200 - 600 \text{ m/min}$

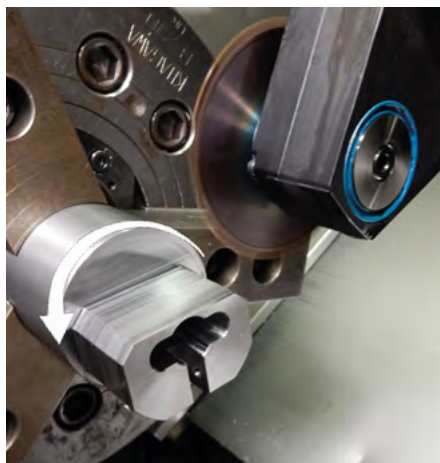


Turn Cut Milling with **PolySAW**

**Turn Cut Milling instead of parting off:
Faster parting off than anybody else!**



Cutting of VA structured components
 $V_c = 160 \text{ m/min}$
 $F_z = 0,1 \text{ mm}$



Turn Cut Milling : steel 16MnCrS5
 $V_c = 160 \text{ m/min}$
 $F_z = 0,05 \text{ mm bei } 40 \text{ Zähnen}$



Turn Cut Milling: aluminium
 $V_c = 800 \text{ m/min}$
 $\text{feed} = 7 \text{ m / min}$



Turn Cut Milling: copper ETP
 $V_c = 300 \text{ m/min}$
 $F_z = 0,08 \text{ mm}$



7

videos to be found on youtube:



Reaming



Milling

Thread Milling

Extended
program

14-63

1

Face Finish Milling

64-69

2

Notch Impact Test

70-75

3

Gear Milling

76-81

4

Slot Milling
Keyway MillingExtended
program82-
109

5

Contour and Radius Milling
Chamfering, Deburring,
undercut, dovetailExtended
program110-
125

6

Sawing, Slitting

Sawing, Cutting, Slitting

Extended
program126-
143

7

Bore Machining

Reaming

144-
151

8

Axial Grooving

Axial Grooving, adjustable

152-
157

9

Special Tools

Special- and Combination Tools

158-
163

10

Cutting Data and Technical Information

164-
179

11

PolyREAM

RPK-Reamers with Polygonal Insert Seat for High Chip Removal

A new generation of Reamers to machine blind and through holes in components with greater accuracy. The polygonal connection between the insert and the shank provides improved strength allowing greater cutting forces which in turn makes for economical machining.

Two basic types RPK 40 and RPK 42 are available, which cover a wide range of applications by their different shanks and cutting insert designs. Changing the insert is quick and easy. The front clamping screw absorbs none of the cutting forces and is merely there to hold the insert in place.

Different overall lengths are available.

Advantages

- High-tensile connection by polygonal insert seat
- Easy insert change
- Internal coolant supply directly to the cutting edge
- High concentricity
- Longer durabilities
- High precision
- Higher volume of metal removed by reaming
- Higher feeds
- Shorter processing times
- Special dimensions available

Configurations

- Shank sizes 16 / 20 mm
- Lengths design short / long
- Left-hand twist for through holes
- Straight grooves for blind bores
- Diameter sizes: 12,00 - 20,20 mm
- Any gate geometries
- Any tolerances
- Cutting materials: carbide
- Coatings: TINAMATIC



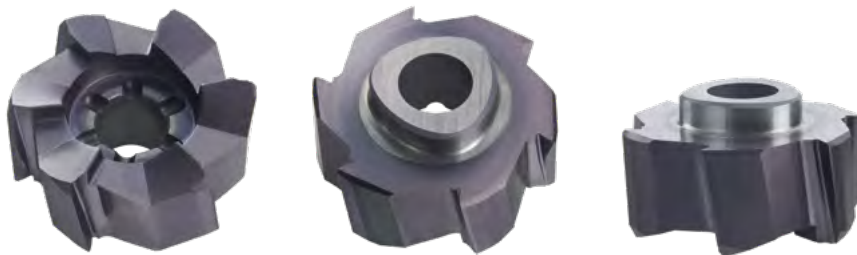
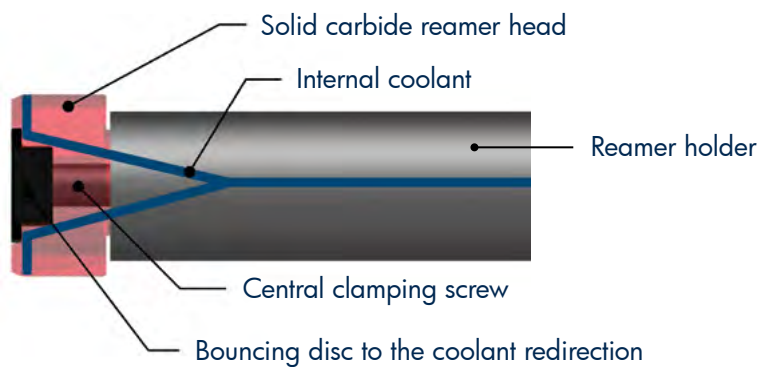
Order-Key for Your Individual Customizing of Reamers

Order numbers for reamers are predefined for common applications within the order tables. Alternatively, the user can completely individually

customize its own ream (intermediate dimension, geometry, cutting material, tolerance,...). An additional key is generated with

the following table that serves your initial order. For subsequent orders, you will receive a short order number assigned.

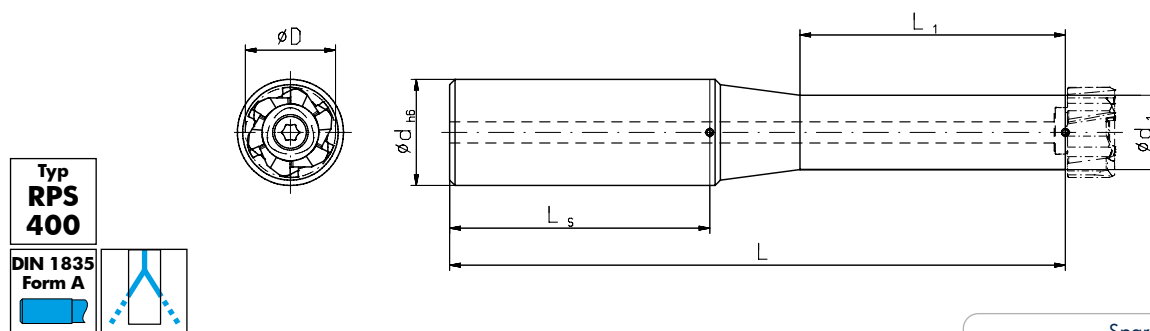
Type	Size	Diameter	Tolerance	Gate geometry	Cutting mat.	Coating
RPK 40 = Straight grooves for blind bores RPK 42 = Left-hand twist for through holes RPK 44 = Right-hand twist	J = 16 M = 20 G = 12	Specifying in mm	• +10 -10 • H7	see page 150 and in the table below	1 = Carbide	0 = without (blank) 1 = TINAMATIC (Thin layer)
Example:						
R P K 4 0	M	2 0, 1 0 0	+10 -12	L B G	1	1



PolyREAM

Reamer Holders with Polygonal Interface

- Gate Geometries Page 150
- Cutting data see page 166



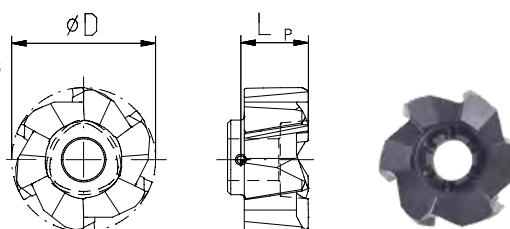
Shank size	Order No.	D min.-max.	Drilling depth	d h6 mm	d1 mm	E mm	L mm	L1 mm	Description	Shank mat.	Spare part No.		
											T15 / T20 IP Screw-driver *	Screw *	Bouncing disc
J	169208	12,00-16,20	3 x D	16	11	9	101	38	RPS400J3D6	Steel	111671	107473	107536
J	169209	12,00-16,20	5 x D	16	11	9	131	68	RPS400J5D6	Steel	111671	107473	107536
M	169210	16,21-20,20	3 x D	20	14	9	116	50	RPS400M3D6	Steel	111594	169815	169812
M	169211	16,21-20,20	5 x D	20	14	9	166	100	RPS400M5D6	Steel	111594	169815	169812

* Screwdriver and clamping screw included in delivery

Screw torques max.		
107473	T15 IP	3,8 Nm
169815	T20 IP	5,5 Nm

Reamer Heads with Polygonal Interface

- Chip grooves with left-hand twist for through holes
- For steel materials (P, M)
- Cutting data see page 166



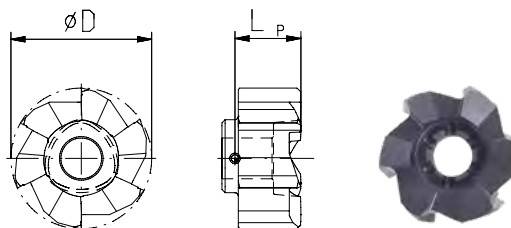
Shank size	Type	D mm	Tolerance	LP mm	Number of edges	Gate geometry	Description	Order No. TINAMATIC
J	RPK 42	12,00	H7	9,4	6	LBG	RPK42J12,00H7LBG11	169490
J	RPK 42	13,00	H7	9,4	6	LBG	RPK42J13,00H7LBG11	169492
J	RPK 42	14,00	H7	9,4	6	LBG	RPK42J14,00H7LBG11	169494
J	RPK 42	15,00	H7	9,4	6	LBG	RPK42J15,00H7LBG11	169496
J	RPK 42	16,00	H7	9,4	6	LBG	RPK42J16,00H7LBG11	169498
M	RPK 42	17,00	H7	9,4	6	LBG	RPK42M17,00H7LBG11	169500
M	RPK 42	18,00	H7	9,4	6	LBG	RPK42M18,00H7LBG11	169502
M	RPK 42	19,00	H7	9,4	6	LBG	RPK42M19,00H7LBG11	169504
M	RPK 42	20,00	H7	9,4	6	LBG	RPK42M20,00H7LBG11	169506

Please generate order-key for individual customizing and intermediate sizes (see page 147)

PolyREAM

Reamer Heads with Polygonal Interface

- Straight chip grooves for blind bores
- For steel materials (P, M)
- Cutting data see page 166

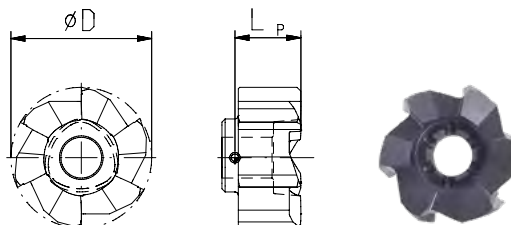


Please generate order-key for individual customizing and intermediate sizes (see page 147)



Shank size	Type	D mm	Tolerance	LP mm	Number of edges	Gate geometry	Description	Order No. TINAMATIC
J	RPK 40	12,00	H7	9,4	6	LBG	RPK40J12,00H7LBG11	169489
J	RPK 40	13,00	H7	9,4	6	LBG	RPK40J13,00H7LBG11	169491
J	RPK 40	14,00	H7	9,4	6	LBG	RPK40J14,00H7LBG11	169493
J	RPK 40	15,00	H7	9,4	6	LBG	RPK40J15,00H7LBG11	169495
J	RPK 40	16,00	H7	9,4	6	LBG	RPK40J16,00H7LBG11	169497
M	RPK 40	17,00	H7	9,4	6	LBG	RPK40M17,00H7LBG11	169499
M	RPK 40	18,00	H7	9,4	6	LBG	RPK40M18,00H7LBG11	169501
M	RPK 40	19,00	H7	9,4	6	LBG	RPK40M19,00H7LBG11	169503
M	RPK 40	20,00	H7	9,4	6	LBG	RPK40M20,00H7LBG11	169505

- Straight chip grooves for blind bores
- For cast iron materials (K)
- Cutting data see page 166

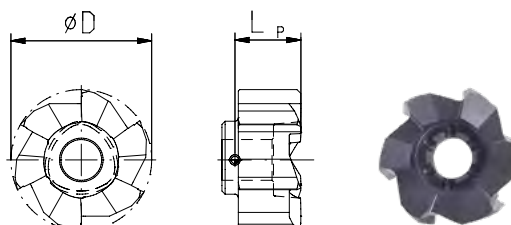


Please generate order-key for individual customizing and intermediate sizes (see page 147)



Shank size	Type	D mm	Tolerance	LP mm	Number of edges	Gate geometry	Description	Order No. TINAMATIC
J	RPK 40	12,00	H7	9,4	6	CND	RPK40J12,00H7CND11	169945
J	RPK 40	13,00	H7	9,4	6	CND	RPK40J13,00H7CND11	169947
J	RPK 40	14,00	H7	9,4	6	CND	RPK40J14,00H7CND11	169949
J	RPK 40	15,00	H7	9,4	6	CND	RPK40J15,00H7CND11	169951
J	RPK 40	16,00	H7	9,4	6	CND	RPK40J16,00H7CND11	169953
M	RPK 40	17,00	H7	9,4	6	CND	RPK40M17,00H7CND11	169955
M	RPK 40	18,00	H7	9,4	6	CND	RPK40M18,00H7CND11	169957
M	RPK 40	19,00	H7	9,4	6	CND	RPK40M19,00H7CND11	169959
M	RPK 40	20,00	H7	9,4	6	CND	RPK40M20,00H7CND11	169961

- Straight chip grooves for blind bores
- For aluminium cast alloys (N)
- Cutting data see page 166



Please generate order-key for individual customizing and intermediate sizes (see page 147)



Shank size	Type	D mm	Tolerance	LP mm	Number of edges	Gate geometry	Description	Order No. TINAMATIC
J	RPK 40	12,00	H7	9,4	6	CNG	RPK40J12,00H7CNG11	169946
J	RPK 40	13,00	H7	9,4	6	CNG	RPK40J13,00H7CNG11	169948
J	RPK 40	14,00	H7	9,4	6	CNG	RPK40J14,00H7CNG11	169950
J	RPK 40	15,00	H7	9,4	6	CNG	RPK40J15,00H7CNG11	169952
J	RPK 40	16,00	H7	9,4	6	CNG	RPK40J16,00H7CNG11	169954
M	RPK 40	17,00	H7	9,4	6	CNG	RPK40M17,00H7CNG11	169956
M	RPK 40	18,00	H7	9,4	6	CNG	RPK40M18,00H7CNG11	169958
M	RPK 40	19,00	H7	9,4	6	CNG	RPK40M19,00H7CNG11	169960
M	RPK 40	20,00	H7	9,4	6	CNG	RPK40M20,00H7CNG11	169962

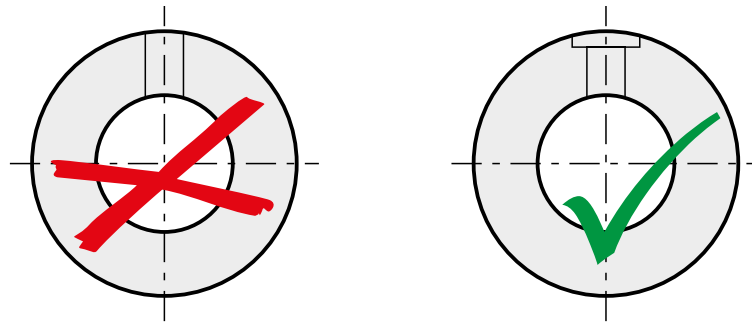
Gate geometry	Code	Chip breaker		Chip angle		Gate code
			Code		Code	
	L	YES	B	0°	D	LBD
		NO	N			LND
		YES	B	6°	G	LBG
		NO	N			LNG
		YES	B	12°	R	LBR
		NO	N			LNR
	E	YES	B	0°	D	EBD
		NO	N			END
		YES	B	6°	G	EBG
		NO	N			ENG
		YES	B	12°	R	EBR
		NO	N			ENR
	G	YES	B	0°	D	GBD
		NO	N			GND
		YES	B	6°	G	GBG
		NO	N			GNG
		YES	B	12°	R	GBR
		NO	N			GNR
	C	YES	B	0°	D	CBD
		NO	N			CND
		YES	B	6°	G	CBG
		NO	N			CNG
		YES	B	12°	R	CBR
		NO	N			CNR
	A	YES	B	0°	D	ABD
		NO	N			AND
		YES	B	6°	G	ABG
		NO	N			ANG
		YES	B	12°	R	ABR
		NO	N			ANR
	D	YES	B	0°	D	DBD
		NO	N			DND
		YES	B	6°	G	DBG
		NO	N			DNG
		YES	B	12°	R	DBR
		NO	N			DNR
	R	YES	B	0°	D	RBD
		NO	N			RND
		YES	B	6°	G	RBG
		NO	N			RNG
		YES	B	12°	R	RBR
		NO	N			RNR
	W	YES	B	0°	D	WBD
		NO	N			WND
		YES	B	6°	G	WBG
		NO	N			WNG
		YES	B	12°	R	WBR
		NO	N			WNR
SPECIAL	S					001 - 999

PolyREAM

Ream Addition

Ream diameter (mm)	Ream addition (mm to the dia.)
≤ 16,00	0,10 - 0,25
> 16,00	0,20 - 0,30

Information



Before reaming – radial on round parts –
the part must be spot-faced

Accessories: Screw Driver and Wrenches

Size	Torx PLUS® driver	Size	Torx® driver	Size	Allen wrench DIN 911	Size	Open-end wrench DIN 894
T6 IP	111705	T6	111674	SW 2	107577	SW 10	107525
T8 IP	111656	T8	111544	SW 2,5	107583	SW 13	107526
T15 IP	111671	T15	111651	SW 3	107578	SW 16	107579
T20 IP	111594	T20	111684	SW 4	107620	SW 17	107575
				SW 5	107584	SW 19	107533
				SW 6	107601	SW 22	107633
				SW 8	107556	SW 24	107627

Axial Grooving, adjustable



Milling

Thread Milling

Extended
program

14-63

1

Face Finish Milling

64-69

2

Notch Impact Test

70-75

3

Gear Milling

76-81

4

Slot Milling
Keyway MillingExtended
program82-
109

5

Contour and Radius Milling
Chamfering, Deburring,
undercut, dovetailExtended
program110-
125

6

Sawing, Slitting

Sawing, Cutting, Slitting

Extended
program126-
143

7

Bore Machining

Reaming

144-
151

8

Axial Grooving

Axial Grooving, adjustable

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Special Tools

Special- and Combination Tools

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Cutting Data and Technical Information

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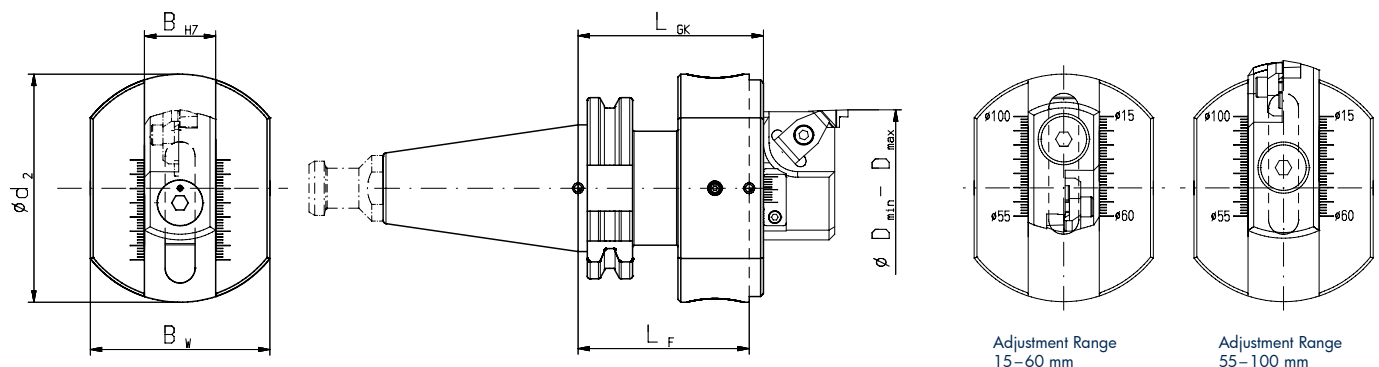
11

Axial Cutting Tools

- with scalable cutting diameter and fine-adjustment
- all Axial-Cutting Tools without Insert Holders

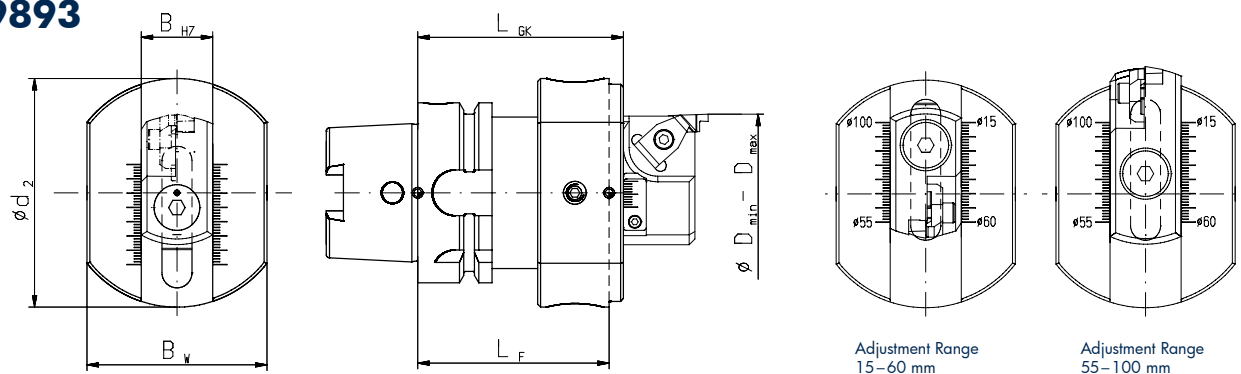
ISO 7388-1 | ISO 7388-1 (MAS-BT)

i Up to diameter Ø 28 also as PolyMILL fixed size



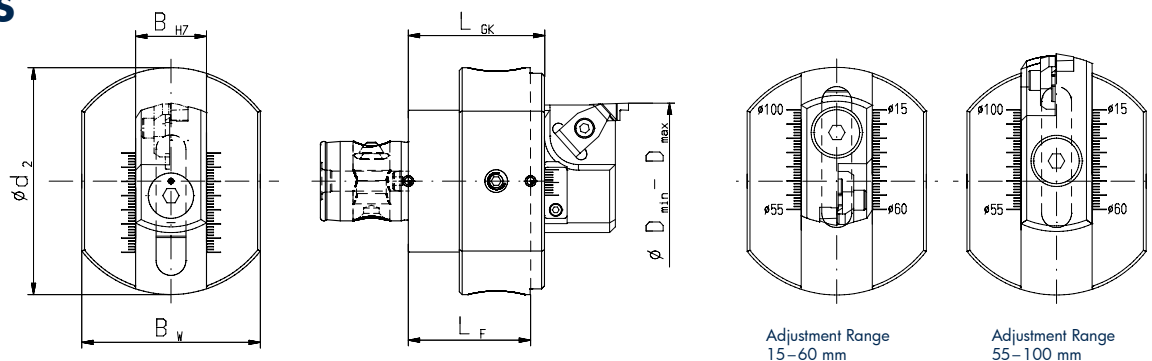
Order No.	Adjustment Range Ø mm	Shank size	L _F mm	L _{GK} mm	d ₂ mm	B _W mm	B _{H7} mm
133134	15 – 100	SK 40	60	65	80	63	25
133151	15 – 100	SK 50	60	65	80	63	25
133109	15 – 100	BT 40	60	65	80	63	25

DIN 69893



Order No.	Adjustment Range Ø mm	Shank size	L _F mm	L _{GK} mm	d ₂ mm	B _W mm	B _{H7} mm
133118	15 – 100	HSK 63	72	65	80	63	25

Komet® ABS

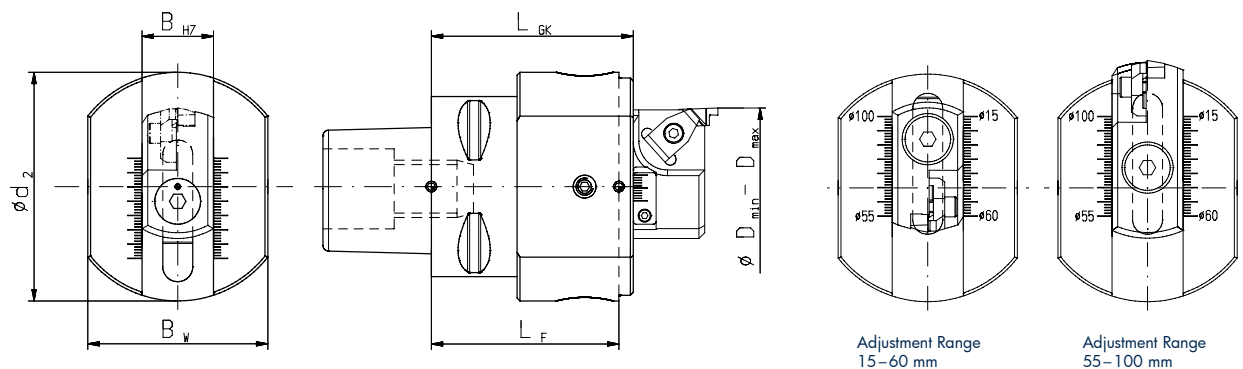


Order No.	Adjustment Range Ø mm	Shank size	L _F mm	L _{GK} mm	d ₂ mm	B _W mm	B _{H7} mm
133096	15 – 100	ABS 50	48	43	80	63	25
133135	15 – 100	ABS 63	50	45	80	63	25

Axial Cutting Tools

- with scalable cutting diameter and fine-adjustment
- all Axial-Cutting Tools without Insert Holders

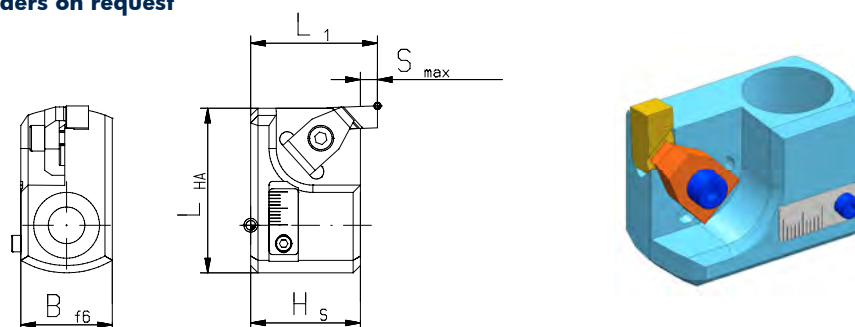
ISO 26623-1 Capto



Order No.	Adjustment Range $\varnothing$ mm	Shank size	L _F mm	L _{GK} mm	d ₂ mm	B _W mm	B _{H7} mm	Spare part No.	
								Fitting screw DIN 7379	Size
167985	15-100	C6	70,6	65,6	80	63	25	114445	10M8 x 20

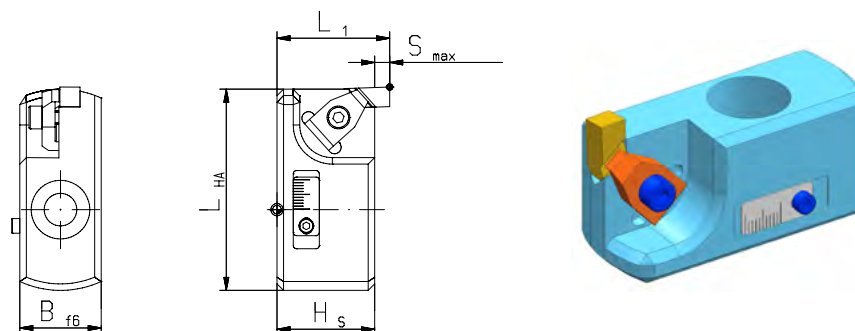
Insert Holders

- Special-Insert holders on request



Order No.	Adjustment Range $\varnothing$ mm	L _{HA} mm	B _{f6} mm	H _s mm	l ₁ mm	S _{max} mm	Spare part No.		
							Clamping claw	Screw *	Screw-driver *
133117	15 – 60	45	25	30	34	4	107540	114688	107578

Screw torque 5 Nm



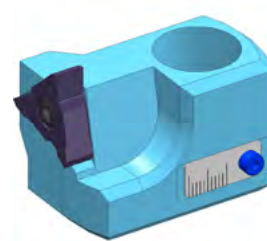
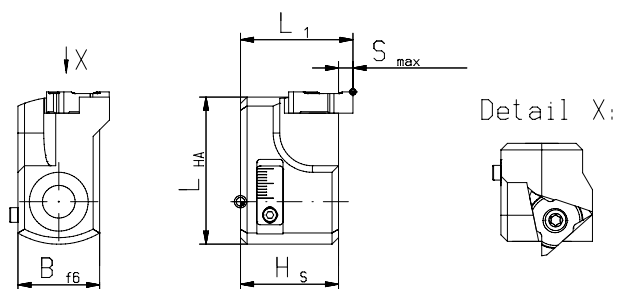
Order No.	Adjustment Range $\varnothing$ mm	L _{HA} mm	B _{f6} mm	H _s mm	l ₁ mm	S _{max} mm	Spare part No.		
							Clamping claw	Screw *	Screw-driver *
133090	55-100	62	25	30	34	4	107540	114688	107578

Screw torque 5 Nm

* Screwdriver and clamping screw included in delivery

Insert Holders

■ Special-Insert holders on request

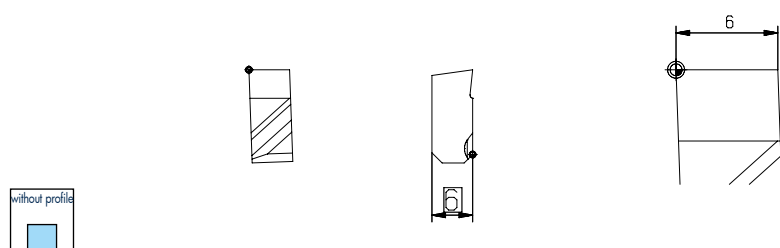


Order No.	Adjustment Range Ø mm	LHA mm	Bf6 mm	Hs mm	l1 mm	Smax. mm	Spare part No.		
							Clamping claw	Screw *	Screw-driver *
143487	15-60 / 55-100	45	25	30	34,4	4	–	107551	111594

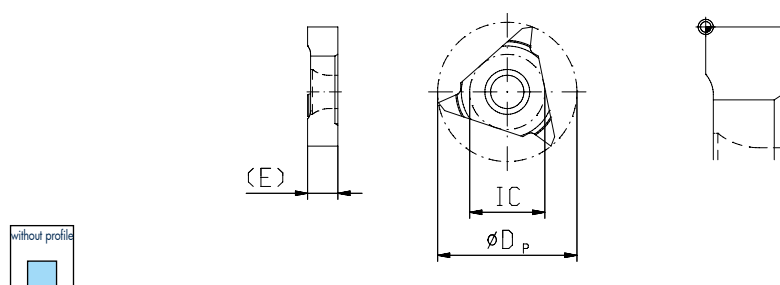
Screw torque 5,5 Nm

Unprofiled Carbide Inserts

■ Cutting data see page 169



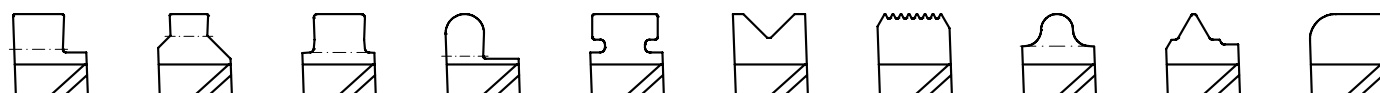
Size	Width mm	Height mm	Smax. mm	K10	P25	FKN
A 6R	6	6	4	on request	on request	142855



Size	E mm	Height mm	Smax. mm	K10	FKN
01AX LI	4	–	4	161101	162201
01AX LI	5	–	4	–	162202
01AX LI	6,5	–	4	161103	162203

* Screwdriver and clamping screw included in delivery

Various forms of insert profiles.
Other profiles according to DIN or drawing are available on request.



Function and Handling

Technical Data

Complete tool, consisting of

- Axial-Cutting-Tool
- 2 insert holders for cutting range
 - a) 15 – 60 mm
 - b) 55 – 100 mm

Advantages

This tool makes operations possible in workpieces, which cannot be clamped on turning machines.

Applications

Making grooves (DIN- or special grooves) up to a

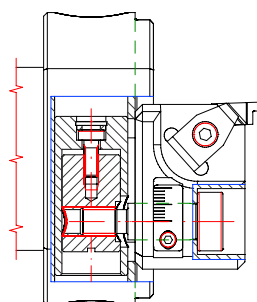
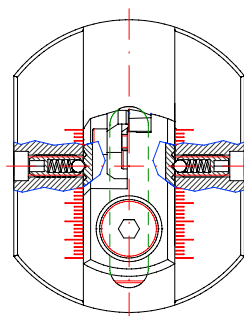
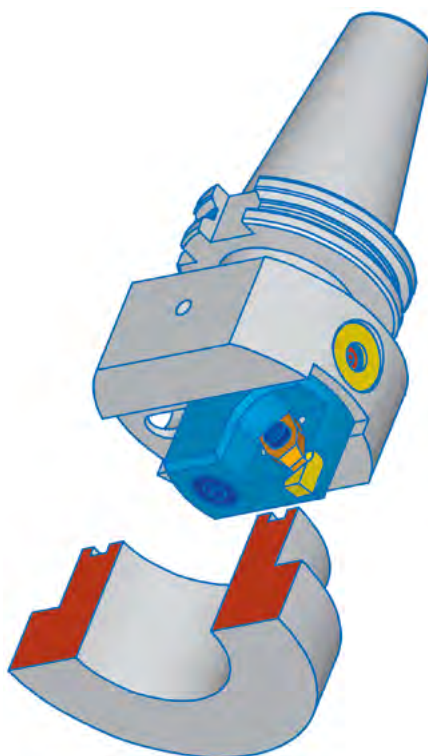
- Cutting depth of max. 4,0 mm
- Cutting width of max. 6,5 mm

Rough Adjustment

1. Removing the clamping screw
2. Rough adjustment of the insertholder over the screening system (2,5 mm)
3. Low tighten the clamping screw

Fine Adjustment

1. Fine adjustment over the fine adjustment screw
2. Tighten the clamping screw



On request:
Axial grooving with PolyMILL

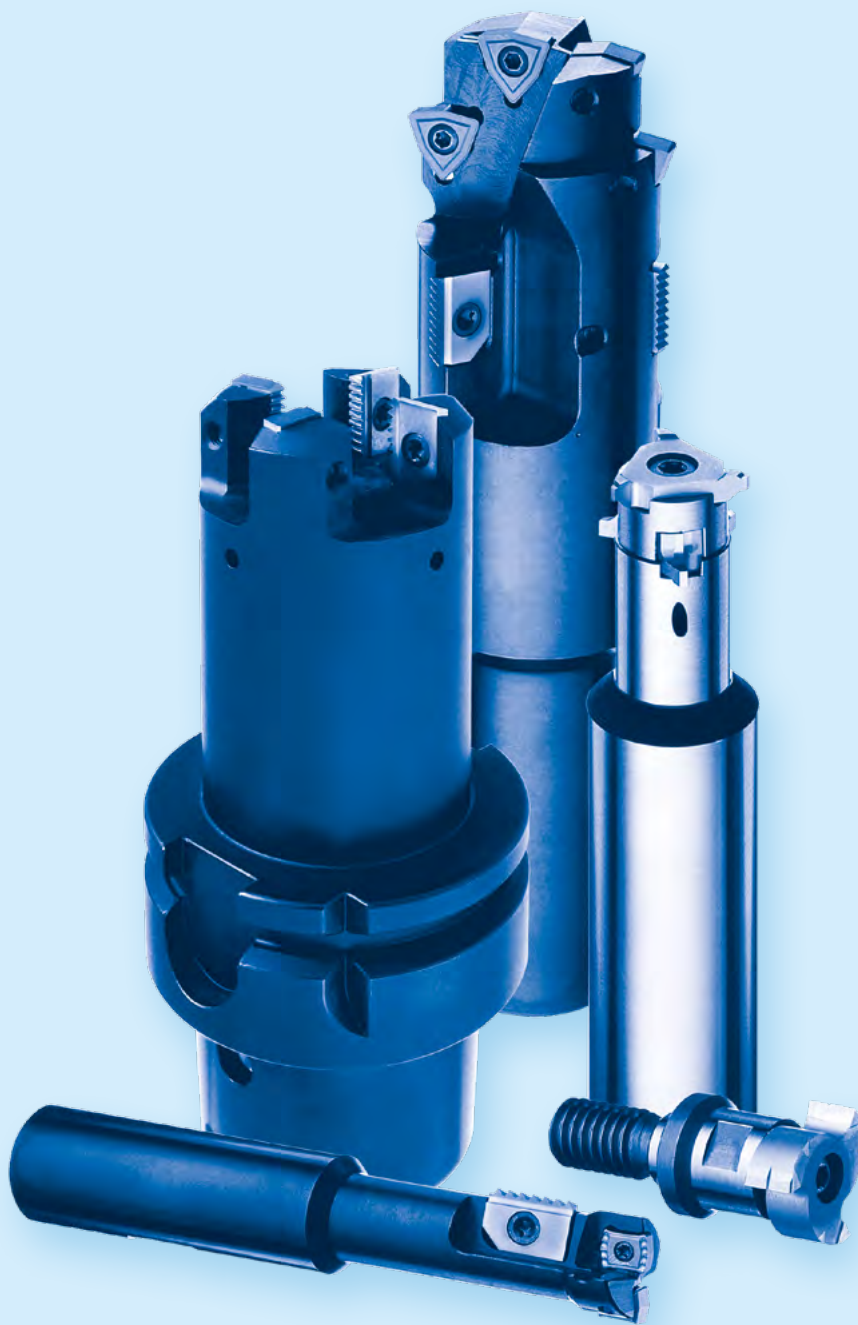
Request Form for Grooving

Please download our fillable PDF form for a detailed grooving request send us back via email: **info@mimatic.de**

Request form:
www.mimatic.de/Nut_DE.pdf



Special- and Combination Tools



Milling

Thread Milling

Extended
program

14-63

1

Face Finish Milling

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Notch Impact Test

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Gear Milling

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Slot Milling
Keyway MillingExtended
program82-
109

5

Contour and Radius Milling
Chamfering, Deburring,
undercut, dovetailExtended
program110-
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6

Sawing, Slitting

Sawing, Cutting, Slitting

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Axial Grooving, adjustable

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Special Tools

Special- and Combination Tools

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Special Solutions

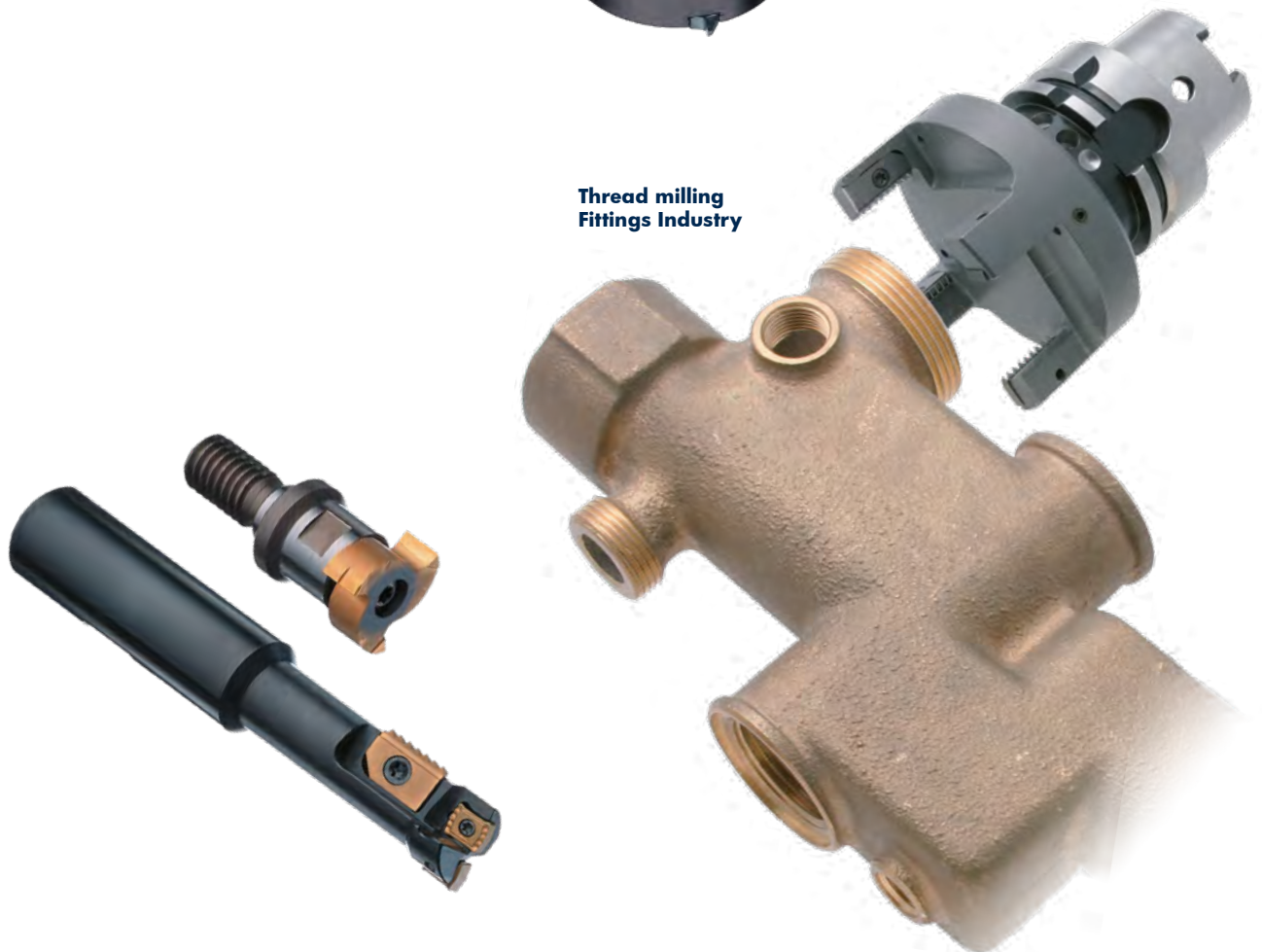
Here you see examples of our products and our expertise in the area of special cutting tools.
Do you have a special application or a production problem?

Ask us – we gladly accept the challenge and develop together with you a solution in the areas of:

- **Milling**
- **Thread Milling**
- **Slots**
- **Chamfering**
- **Facing**
- **Grooving**



**Thread milling
Fittings Industry**



Thread milling
Automotive Industry
Common Rail



**HSK or mi
Cutting Tool**

- jiggering
 - chamfering
- Materials:
1. 20MnVS6
2. X15 CrNiSi20
(DIN 1.4828)



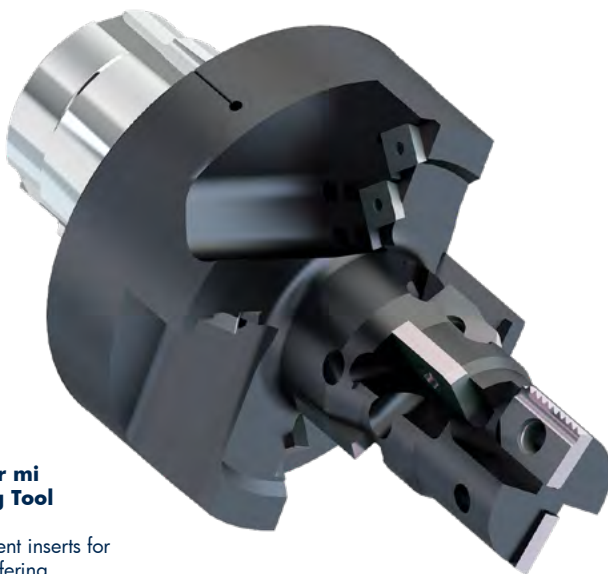
**HSK or mi
Cutting Tool**

- drilling
- face milling
- Solid carbide
twist drill
- chamfering



**HSK or mi
Milling Tool**

- 5 different inserts for
- chamfering
 - thread milling
 - face milling
 - counterboring
- Material:
AlMgSi1 (DIN 3.2315)

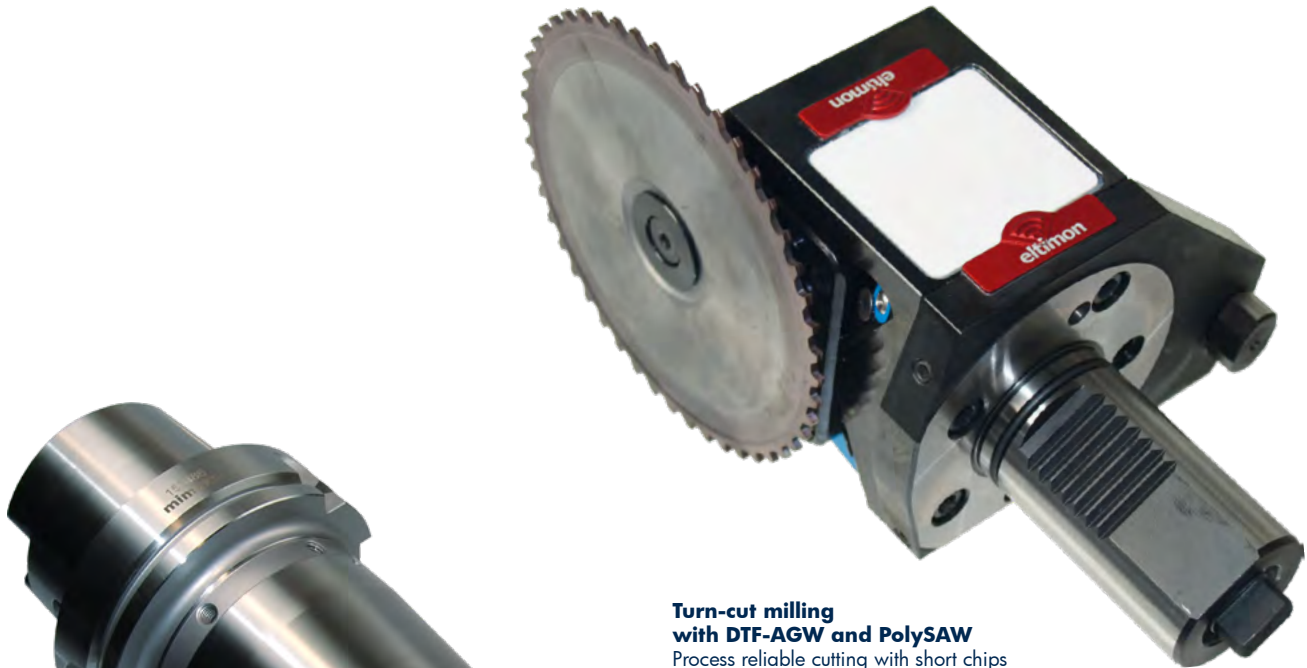


**HSK or mi
Milling Tool**

- contour milling
- Material: 16MnCrS5



Special Solutions



**Turn-cut milling
with DTF-AGW and PolySAW**
Process reliable cutting with short chips
and cycle times of almost all materials
and geometries.



**Large thread milling
M330x6 with STC1**
Material: S355JR



**Countersinking and circular milling
of a brake body with DE inserts**
Material: GGG50



Gear milling with STC
Material: 58CrV4

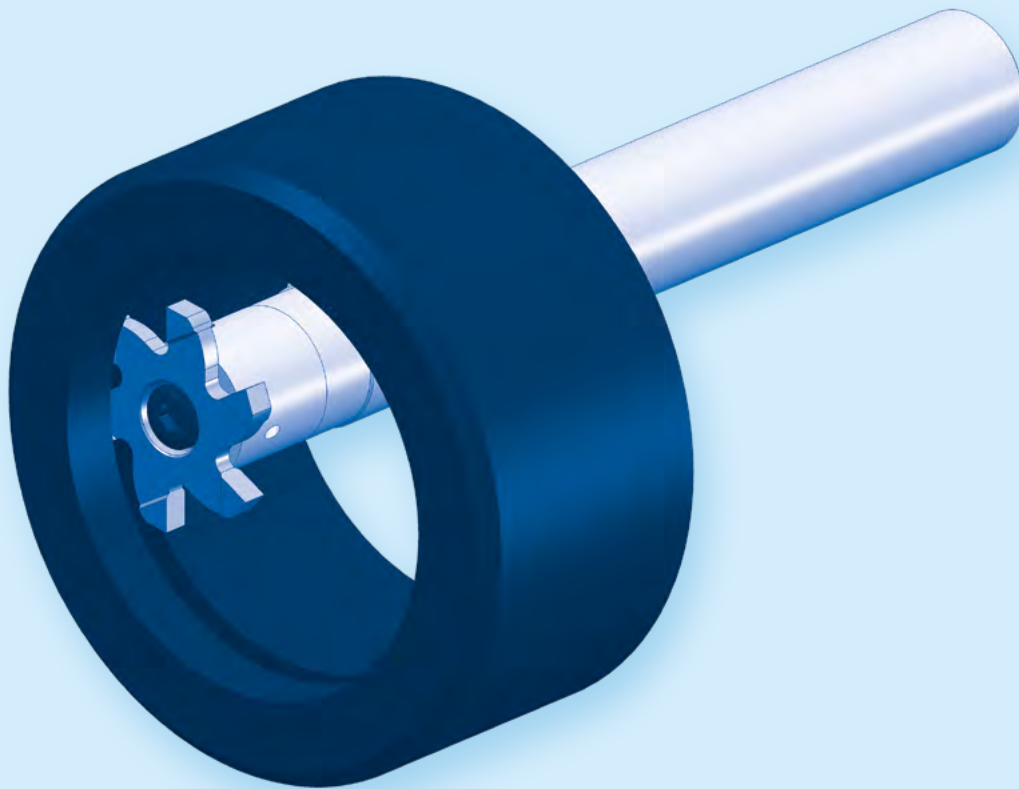


**Milling of hold grooves
in conrods with STC**



**Milling of flanges
of motor blocks with TriMILL**

**Cutting Data
and Technical Information**



Milling

Thread Milling

Extended
program

14-63

1

Face Finish Milling

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2

Notch Impact Test

70-75

3

Gear Milling

76-81

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Slot Milling
Keyway MillingExtended
program82-
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Contour and Radius Milling
Chamfering, Deburring,
undercut, dovetailExtended
program110-
125

6

Sawing, Slitting

Sawing, Cutting, Slitting

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program126-
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Bore Machining

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Axial Grooving

Axial Grooving, adjustable

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Cutting Data and Technical Information

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Cutting Data Reference Values

		Material	Strength	PolyREAM		SolidCUT			
				TINAMATIC	Measurement at Ø 0,2 mm	TINAMATIC	Ø 2,4 - 3,15	Ø 4	Ø 4,8 - 20
				Vc (m/min.)	fz mm	Vc (m/min.)	fz mm	fz mm	fz mm
A	1.1	General construction steel	< 800 N/mm²	180-200	0,20-0,25	80-250	0,03-0,04	0,03-0,06	0,05-0,15
	1.2	Free cutting steel	< 800 N/mm²	180-200	0,20-0,25	80-250	0,03-0,04	0,03-0,06	0,05-0,15
	1.3	Unalloyed cementation steel	< 800 N/mm²	180-200	0,20-0,25	80-250	0,03-0,04	0,03-0,06	0,05-0,15
	1.4	Alloyed cementation steels	< 1000 N/mm²	160-180	0,15-0,20	60-120	0,01-0,02	0,01-0,03	0,05-0,10
	1.5	Unalloyed heat-treatable steel	< 850 N/mm²	180-200	0,20-0,25	60-120	0,01-0,02	0,01-0,03	0,05-0,10
	1.6	Unalloyed heat-treatable steel	< 1000 N/mm²	160-180	0,15-0,20	60-120	0,01-0,02	0,01-0,03	0,05-0,10
	1.7	Alloyed heat-treatable steel	< 800 N/mm²	180-200	0,20-0,25	80-200	0,03-0,04	0,03-0,06	0,05-0,10
	1.8	Alloyed heat-treatable steel	< 1300 N/mm²	140-160	0,12-0,18	40-100	0,01-0,02	0,03-0,05	0,04-0,06
	1.9	Cast Steel	< 850 N/mm²	180-200	0,20-0,25	60-120	0,01-0,02	0,04-0,07	0,05-0,10
	1.10	Nitriding steel	< 1000 N/mm²	160-180	0,15-0,20	60-120	0,01-0,02	0,04-0,07	0,05-0,10
	1.11	Nitriding steel	< 1200 N/mm²	150-170	0,15-0,20	40-100	0,01-0,02	0,03-0,05	0,04-0,06
	1.12	Ball bearing steel	< 1200 N/mm²	150-170	0,15-0,20	40-100	0,01-0,02	0,03-0,05	0,04-0,06
	1.13	Spring steel	< 1200 N/mm²	150-170	0,15-0,20	40-100	0,01-0,02	0,03-0,05	0,04-0,06
	1.14	Rapid steel	< 1300 N/mm²	140-160	0,12-0,18	40-100	0,01-0,02	0,03-0,05	0,04-0,06
	1.15	Cold work tool steel	< 1300 N/mm²	140-160	0,12-0,18	40-100	0,01-0,02	0,03-0,05	0,04-0,06
	1.16	Hot work tool steel	< 1300 N/mm²	140-160	0,12-0,18	40-100	0,01-0,02	0,03-0,05	0,04-0,06
R	2.1	Stainless steel, sulphured	< 850 N/mm²	180-200	0,20-0,25	50-150	0,03-0,04	0,03-0,04	0,05-0,12
	2.2	Stainless steel, ferritic	< 750 N/mm²	180-200	0,20-0,25	50-150	0,03-0,04	0,03-0,04	0,05-0,12
	2.3	Stainless steel, martensitic	< 900 N/mm²	160-180	0,15-0,20	50-150	0,03-0,04	0,03-0,04	0,05-0,12
	2.4	Stainless steel, ferritic/martensitic	< 1100 N/mm²	150-170	0,15-0,20	50-150	0,03-0,04	0,03-0,04	0,05-0,12
	2.5	Stainless steel, austenitic/ferritic	< 850 N/mm²	180-200	0,20-0,25	50-150	0,03-0,04	0,03-0,04	0,05-0,12
	2.6	Stainless steel, austenitic	< 750 N/mm²	180-200	0,20-0,25	50-150	0,03-0,04	0,03-0,04	0,05-0,12
	2.7	Heat-resisting steel	< 1100 N/mm²	150-170	0,15-0,20	50-150	0,03-0,04	0,03-0,04	0,05-0,12
F	3.1	Flake-graphite cast iron	100-350 N/mm²	200-220	0,20-0,25	100-200	0,03-0,07	0,03-0,07	0,04-0,08
	3.2	Flake-graphite cast iron	300-1000 N/mm²	200-220	0,20-0,25	100-200	0,03-0,07	0,03-0,07	0,04-0,08
	3.3	Spheroidal graphite cast iron	300-500 N/mm²	200-220	0,20-0,25	100-200	0,03-0,07	0,03-0,07	0,04-0,08
	3.4	Spheroidal graphite cast iron	550-800 N/mm²	200-220	0,20-0,25	100-200	0,03-0,07	0,03-0,07	0,04-0,08
	3.5	Whiteheart malleable cast iron	350-450 N/mm²	200-220	0,20-0,25	100-200	0,03-0,07	0,03-0,07	0,04-0,08
	3.6	Whiteheart malleable cast iron	500-650 N/mm²	200-220	0,20-0,25	100-200	0,03-0,07	0,03-0,07	0,04-0,08
	3.7	Blackheart malleable cast iron	350-450 N/mm²	200-220	0,20-0,25	100-200	0,03-0,07	0,03-0,07	0,04-0,08
	3.8	Blackheart malleable cast iron	500-700 N/mm²	200-220	0,20-0,25	100-200	0,03-0,07	0,03-0,07	0,04-0,08
N	4.1	Aluminium (unalloyed, low alloyed)	< 350 N/mm²	350-400	0,20-0,25	250-500	0,05-0,07	0,05-0,07	0,06-0,12
	4.2	Aluminium alloys < 0,5% Si	< 500 N/mm²	300-400	0,20-0,25	250-500	0,05-0,07	0,05-0,07	0,06-0,12
	4.3	Aluminium alloys 0,5-10% Si	< 400 N/mm²			250-500	0,05-0,07	0,05-0,07	0,06-0,12
	4.4	Aluminium alloys 10-15% Si	< 400 N/mm²			250-500	0,05-0,07	0,05-0,07	0,06-0,12
	4.5	Aluminium alloys > 15% Si	< 400 N/mm²			180-250	0,05-0,07	0,05-0,07	0,06-0,12
	4.6	Cooper (unalloyed, low alloyed)	< 350 N/mm²	350-400	0,20-0,25	250-300	0,05-0,07	0,05-0,07	0,06-0,08
	4.7	Copper wrought alloys	< 700 N/mm²						
	4.8	Cooper special alloys	< 200 HB						
	4.9	Cooper special alloys	< 300 HB						
	4.10	Cooper special alloys	> 300 HB						
	4.11	Brass, short-chipping, Bronze, Red brass	< 600 N/mm²	200-300	0,20-0,25	250-300	0,05-0,07	0,05-0,07	0,06-0,08
	4.12	Brass, long-chipping	< 600 N/mm²						
	4.13	Thermoplastic				350-450	0,08-0,1	0,08-0,1	0,1-0,12
	4.14	Thermosetting plastic				300-400	0,08-0,1	0,08-0,1	0,1-0,12
	4.15	Fibre-reinforced plastics				180-200	0,02-0,04	0,02-0,04	0,03-0,04
	4.16	Magnesium and magnesium alloys	< 850 N/mm²						
	4.17	Graphite							
	4.18	Wolfram and wolfram alloys							
	4.19	Molybdenum and molybdenum alloys							
S	5.1	Pure nickel							
	5.2	Nickel alloys		180-200	0,20-0,25				
	5.3	Nickel alloys	< 850 N/mm²	180-200	0,20-0,25	60-80	0,02-0,04	0,02-0,04	0,03-0,04
	5.4	Nickel-chrome alloys							
	5.5	Nickel- and cobalt alloys	< 1300 N/mm²						
	5.6	Nickel- and cobalt alloys	< 1300 N/mm²						
	5.7	High temperature alloys	< 1300 N/mm²						
	5.8	Nickel-cobalt-(chrome-) alloys	< 1400 N/mm²						
	5.9	Pure Titanium	< 900 N/mm²						
	5.10	Titanium alloys	< 700 N/mm²	140-160	0,15-0,20				
	5.11	Titanium alloys	< 1200 N/mm²	120-140	0,12-0,18	50-80	0,01-0,03	0,01-0,03	0,01-0,03
H	6.1	Hardened steel	< 45 HRc	80-100	0,04-0,06	40-60		0,03-0,05	0,03-0,05
	6.2		46-55 HRc	70-90	0,04-0,06	40-50		0,03-0,05	0,03-0,05
	6.3		56-60 HRc	60-80	0,03-0,05	30-40		0,02-0,04	0,02-0,04
	6.4		61-65 HRc	50-70	0,03-0,05				
	6.5		65-70 HRc	40-60	0,02-0,04				

* The indicated feed values apply only with circular bringing in loop. During linear bringing in movement the feed motion amounts to max. 30%

	System 14,5-26 + TrioCUT			PolyMILL 3/6 Cutting Edges		TriMILL	
	TINAMATIC	12, 14,5, 15, 17, 20, 25	21, 26	TINAMATIC		TINAMATIC	
	Vc (m/min.)	fz mm	fz mm	Vc (m/min.)	fz mm	Vc (m/min.)	fz mm
1.1	180-260	0,1-0,3	0,05-0,3	150-200	0,05-0,25	120-180	0,05-0,12
1.2	180-260	0,1-0,3	0,05-0,3	150-200	0,05-0,25	120-180	0,05-0,12
1.3	180-260	0,1-0,3	0,05-0,3	100-150	0,05-0,25	120-180	0,05-0,12
1.4	180-220	0,1-0,3	0,05-0,3	100-150	0,05-0,25	100-120	0,05-0,12
1.5	180-260	0,1-0,3	0,05-0,3	150-200	0,05-0,25	120-180	0,05-0,12
1.6	180-220	0,1-0,3	0,05-0,3	100-150	0,05-0,25	100-120	0,05-0,12
1.7	180-260	0,1-0,3	0,05-0,3	100	0,05-0,25	120-180	0,05-0,12
1.8	100-150	0,1-0,2	0,05-0,2	100	0,05-0,25	80-100	0,05-0,12
1.9	180-260	0,1-0,3	0,05-0,3			100-120	0,05-0,12
1.10	100-150	0,1-0,2	0,05-0,2	120	0,05-0,25	100-120	0,05-0,12
1.11	100-150	0,1-0,2	0,05-0,2	100	0,05-0,25	80-100	0,05-0,12
1.12	100-150	0,1-0,2	0,05-0,2			80-100	0,05-0,12
1.13	100-150	0,1-0,2	0,05-0,2	100	0,05-0,25	80-100	0,05-0,12
1.14	100-120	0,1-0,2	0,05-0,2	100	0,05-0,25	80-100	0,05-0,12
1.15	100-150	0,1-0,2	0,05-0,2	100	0,05-0,25	80-100	0,05-0,12
1.16	100-150	0,1-0,2	0,05-0,2	100	0,05-0,25	80-100	0,05-0,12
2.1						120-150	0,05-0,12
2.2						120-150	0,05-0,12
2.3	130-180	0,1-0,3	0,05-0,3	120	0,05-0,25	100-120	0,05-0,12
2.4				120	0,05-0,25	100-120	0,05-0,12
2.5				120	0,05-0,25	120-180	0,05-0,12
2.6	80-100	0,1-0,2	0,05-0,15	180	0,05-0,25	120-180	0,05-0,12
2.7						80-100	0,05-0,12
3.1	130-200	0,1-0,3	0,05-0,3	180	0,05-0,25	120-180	0,05-0,12
3.2	130-200	0,1-0,3	0,05-0,3	120	0,05-0,25	120-180	0,05-0,12
3.3	130-200	0,1-0,3	0,05-0,3	180	0,05-0,25	120-180	0,05-0,12
3.4	130-200	0,1-0,3	0,05-0,3	180	0,05-0,25	120-150	0,05-0,12
3.5	130-200	0,1-0,3	0,05-0,3	180	0,05-0,25	120-180	0,05-0,12
3.6	130-200	0,1-0,3	0,05-0,3	120	0,05-0,25	120-180	0,05-0,12
3.7	130-200	0,1-0,3	0,05-0,3	180	0,05-0,25	120-180	0,05-0,12
3.8	130-200	0,1-0,3	0,05-0,3	120	0,05-0,25	120-180	0,05-0,12
4.1	400-600	0,1-0,3	0,05-0,3	160-400	0,05-0,12		0,05-0,25
4.2	400-600	0,1-0,3	0,05-0,3	160-400	0,05-0,12		0,05-0,25
4.3							
4.4							
4.5							
4.6				500	0,15-0,4	300-500	0,05-0,25
4.7							
4.8							
4.9							
4.10							
4.11				400	0,15-0,4	200-300	0,05-0,25
4.12							
4.13				500	0,15-0,4	300-500	0,05-0,25
4.14				500	0,15-0,4	300-500	0,05-0,25
4.15							
4.16							
4.17				500	0,15-0,4	300-500	0,05-0,25
4.18							
4.19							
5.1							
5.2				120	0,05-0,25	80-120	0,05-0,12
5.3				120	0,05-0,25	80-120	0,05-0,12
5.4							
5.5							
5.6							
5.7							
5.8							
5.9							
5.10				80	0,01-0,08	70-100	0,01-0,05
5.11				60	0,01-0,08	60-90	0,01-0,05
6.1						80-100	0,03-0,1
6.2				80	0,03-0,15	80	0,03-0,1
6.3							
6.4							
6.5							

Cutting Data Reference Values

		Material	Strength	STC		PolySAW / DeepMILL			
				TINAMAT-IC	STC-1	TINAMAT-IC	0,3 x S _{max.}	0,6 x S _{max.}	S _{max.}
				V _c (m/min.)	f _z mm	V _c (m/min.)	f _z mm	f _z mm	f _z mm
A	1.1	General construction steel	< 800 N/mm ²	120-180	0,05-0,2	120-180	0,03-0,05	0,02-0,04	0,015-0,03
	1.2	Free cutting steel	< 800 N/mm ²	120-180	0,05-0,2	120-180	0,03-0,05	0,02-0,04	0,015-0,03
	1.3	Unalloyed cementation steel	< 800 N/mm ²	120-180	0,05-0,2	120-180	0,03-0,05	0,02-0,04	0,015-0,03
	1.4	Alloyed cementation steels	< 1000 N/mm ²	100-120	0,05-0,2	100-120	0,03-0,05	0,02-0,04	0,015-0,03
	1.5	Unalloyed heat-treatable steel	< 850 N/mm ²	120-180	0,05-0,2	120-180	0,03-0,05	0,02-0,04	0,015-0,03
	1.6	Unalloyed heat-treatable steel	< 1000 N/mm ²	100-120	0,05-0,2	100-120	0,03-0,05	0,02-0,04	0,015-0,03
	1.7	Alloyed heat-treatable steel	< 800 N/mm ²	120-180	0,05-0,2	120-180	0,03-0,05	0,02-0,04	0,015-0,03
	1.8	Alloyed heat-treatable steel	< 1300 N/mm ²	80-100	0,05-0,2	80-100	0,03-0,05	0,02-0,04	0,015-0,03
	1.9	Cast Steel	< 850 N/mm ²	100-120	0,05-0,2	100-120	0,03-0,05	0,02-0,04	0,015-0,03
	1.10	Nitriding steel	< 1000 N/mm ²	100-120	0,05-0,2	100-120	0,03-0,05	0,02-0,04	0,015-0,03
	1.11	Nitriding steel	< 1200 N/mm ²	80-100	0,05-0,2	80-100	0,03-0,05	0,02-0,04	0,015-0,03
	1.12	Ball bearing steel	< 1200 N/mm ²	80-100	0,05-0,2	80-100	0,03-0,05	0,02-0,04	0,015-0,03
	1.13	Spring steel	< 1200 N/mm ²	80-100	0,05-0,2	80-100	0,03-0,05	0,02-0,04	0,015-0,03
	1.14	Rapid steel	< 1300 N/mm ²	80-100	0,05-0,2	80-100	0,03-0,05	0,02-0,04	0,015-0,03
	1.15	Cold work tool steel	< 1300 N/mm ²	80-100	0,05-0,2	80-100	0,03-0,05	0,02-0,04	0,015-0,03
	1.16	Hot work tool steel	< 1300 N/mm ²	80-100	0,05-0,2	80-100	0,03-0,05	0,02-0,04	0,015-0,03
R	2.1	Stainless steel, sulphured	< 850 N/mm ²	120-150	0,05-0,2	120-150	0,03-0,05	0,02-0,04	0,015-0,03
	2.2	Stainless steel, ferritic	< 750 N/mm ²	120-150	0,05-0,2	120-150	0,03-0,05	0,02-0,04	0,015-0,03
	2.3	Stainless steel, martensitic	< 900 N/mm ²	100-120	0,05-0,2	100-120	0,03-0,05	0,02-0,04	0,015-0,03
	2.4	Stainless steel, ferritic/martensitic	< 1100 N/mm ²	100-120	0,05-0,2	100-120	0,03-0,05	0,02-0,04	0,015-0,03
	2.5	Stainless steel, austenitic/ferritic	< 850 N/mm ²	120-180	0,05-0,2	120-180	0,03-0,05	0,02-0,04	0,015-0,03
	2.6	Stainless steel, austenitic	< 750 N/mm ²	120-180	0,05-0,2	120-180	0,03-0,05	0,02-0,04	0,015-0,03
	2.7	Heat-resisting steel	< 1100 N/mm ²	80-100	0,05-0,2	80-100	0,03-0,05	0,02-0,04	0,015-0,03
F	3.1	Flake-graphite cast iron	100-350 N/mm ²	120-180	0,05-0,2	120-180	0,03-0,05	0,02-0,04	0,015-0,03
	3.2	Flake-graphite cast iron	300-1000 N/mm ²	120-180	0,05-0,2	120-180	0,03-0,05	0,02-0,04	0,015-0,03
	3.3	Spheroidal graphite cast iron	300-500 N/mm ²	120-180	0,05-0,2	120-180	0,03-0,05	0,02-0,04	0,015-0,03
	3.4	Spheroidal graphite cast iron	550-800 N/mm ²	120-150	0,05-0,2	120-150	0,03-0,05	0,02-0,04	0,015-0,03
	3.5	Whiteheart malleable cast iron	350-450 N/mm ²	120-180	0,05-0,2	120-180	0,03-0,05	0,02-0,04	0,015-0,03
	3.6	Whiteheart malleable cast iron	500-650 N/mm ²	120-180	0,05-0,5	120-180	0,03-0,05	0,02-0,04	0,015-0,03
	3.7	Blackheart malleable cast iron	350-450 N/mm ²	120-180	0,05-0,2	120-180	0,03-0,05	0,02-0,04	0,015-0,03
	3.8	Blackheart malleable cast iron	500-700 N/mm ²	120-180	0,05-0,2	120-180	0,03-0,05	0,02-0,04	0,015-0,03
N	4.1	Aluminium (unalloyed, low alloyed)	< 350 N/mm ²	160-400	0,05-0,2	160-400	0,03-0,05	0,02-0,04	0,015-0,03
	4.2	Aluminium alloys < 0,5% Si	< 500 N/mm ²	160-400	0,05-0,2	160-400	0,03-0,05	0,02-0,04	0,015-0,03
	4.3	Aluminium alloys 0,5-10% Si	< 400 N/mm ²						
	4.4	Aluminium alloys 10-15% Si	< 400 N/mm ²						
	4.5	Aluminium alloys > 15% Si	< 400 N/mm ²						
	4.6	Cooper (unalloyed, low alloyed)	< 350 N/mm ²	300-500	0,1-0,25	300-500	0,03-0,05	0,02-0,04	0,015-0,03
	4.7	Copper wrought alloys	< 700 N/mm ²						
	4.8	Cooper special alloys	< 200 HB						
	4.9	Cooper special alloys	< 300 HB						
	4.10	Cooper special alloys	> 300 HB						
	4.11	Brass, short-chipping, Bronze, Red brass	< 600 N/mm ²	200-300	0,1-0,25	200-300	0,03-0,05	0,02-0,04	0,015-0,03
	4.12	Brass, long-chipping	< 600 N/mm ²						
	4.13	Thermoplastic		300-500	0,1-0,25	300-500	0,03-0,05	0,02-0,04	0,015-0,03
	4.14	Thermosetting plastic		300-500	0,1-0,25	300-500	0,03-0,05	0,02-0,04	0,015-0,03
	4.15	Fibre-reinforced plastics							
	4.16	Magnesium and magnesium alloys	< 850 N/mm ²						
	4.17	Graphite		300-500	0,1-0,25	300-500	0,03-0,05	0,02-0,04	0,015-0,03
	4.18	Wolfram and wolfram alloys							
	4.19	Molybdenum and molybdenum alloys							
S	5.1	Pure nickel							
	5.2	Nickel alloys		80-120	0,05-0,2	80-120	0,03-0,05	0,02-0,04	0,015-0,03
	5.3	Nickel alloys	< 850 N/mm ²	80-120	0,05-0,2	80-120	0,03-0,05	0,02-0,04	0,015-0,03
	5.4	Nickel-chrome alloys							
	5.5	Nickel- and cobalt alloys	< 1300 N/mm ²						
	5.6	Nickel- and cobalt alloys	< 1300 N/mm ²						
	5.7	High temperature alloys	< 1300 N/mm ²						
	5.8	Nickel-cobalt-(chrome-) alloys	< 1400 N/mm ²						
	5.9	Pure Titanium	< 900 N/mm ²						
	5.10	Titanium alloys	< 700 N/mm ²	70-100	0,01-0,08	70-100	0,03-0,05	0,02-0,04	0,015-0,03
	5.11	Titanium alloys	< 1200 N/mm ²	60-90	0,01-0,08	60-90	0,03-0,05	0,02-0,04	0,015-0,03
H	6.1	Hardened steel	< 45 HRc	80-100	0,03-0,1	80-100	0,03-0,05	0,02-0,04	0,015-0,03
	6.2		46-55 HRc	80-100	0,03-0,1	80-100	0,03-0,05	0,02-0,04	0,015-0,03
	6.3		56-60 HRc	40-50	0,01-0,05	40-50	0,03-0,05	0,02-0,04	0,015-0,03
	6.4		61-65 HRc	30-40	0,01-0,04	30-40	0,03-0,05	0,02-0,04	0,015-0,03
	6.5		65-70 HRc						

* The indicated feed values apply only with circular bringing in loop. During linear bringing in movement the feed motion amounts to max. 30%

	Axial Cutting			CT-Counterboring					TrioCUT Drill Milling	
	FKN	TINAMATIC		7xD Carbide shaft	6xD Steel shaft	3xD Carbide shaft	3xD Steel shaft		TINAMATIC	
	Vc (m/min.)	Vc (m/min.)	fz mm	Vc (m/min.)	Vc (m/min.)	Vc (m/min.)	Vc (m/min.)	fz mm	Vc (m/min.)	fz mm
1.1		100-140	0,05-0,12	100-140	50-60	200-300	150-250	0,1	180-260	0,2-0,4
1.2		100-140	0,05-0,12	100-140	50-60	200-300	150-250	0,1	180-260	0,2-0,4
1.3		100-140	0,05-0,12	100-140	50-60	200-300	150-250	0,1	180-260	0,2-0,4
1.4		100-140	0,05-0,12	100-140	50-60	200-300	150-250	0,1	180-220	0,2-0,4
1.5		100-140	0,05-0,12	100-140	50-60	200-300	150-250	0,1	180-260	0,2-0,4
1.6		100-140	0,05-0,12	100-140	50-60	200-300	150-250	0,1	180-220	0,2-0,4
1.7		100-140	0,05-0,12	100-140	50-60	150-250	150-250	0,1	180-260	0,2-0,4
1.8		60-110	0,05-0,12	100-140	50-60	150-250	150-250	0,1	100-150	0,15-0,3
1.9		50-90	0,05-0,12	100-140	50-60	150-250	150-250	0,1	180-260	0,2-0,4
1.10		60-110	0,05-0,12	100-140	50-60	150-250	150-250	0,1	100-150	0,15-0,3
1.11		40-80	0,05-0,12	100-140	50-60	150-250	150-250	0,1	100-150	0,15-0,3
1.12		40-80	0,05-0,12	100-140	50-60	150-250	150-250	0,1	100-150	0,15-0,3
1.13		40-80	0,05-0,12	100-140	50-60	150-250	150-250	0,1	100-150	0,15-0,3
1.14		40-80	0,05-0,12	100-140	50-60	150-250	150-250	0,1	100-120	0,15-0,3
1.15		40-80	0,05-0,12	100-140	50-60	150-250	150-250	0,1	100-150	0,15-0,3
1.16		40-80	0,05-0,12	100-140	50-60	150-250	150-250	0,1	100-150	0,15-0,3
2.1		50-90	0,05-0,12	100-140	50-60	150-250	150-250	0,1		
2.2		120-150	0,05-0,12	100-140	50-60	150-250	150-250	0,1		
2.3		50-90	0,05-0,12	100-140	50-60	150-250	150-250	0,1	130-180	0,2-0,4
2.4		50-90	0,05-0,12	100-140	50-60	150-250	150-250	0,1		
2.5		50-90	0,05-0,12	100-140	50-60	150-250	150-250	0,1		
2.6		80-100	0,05-0,12	100-140	50-60	150-250	150-250	0,1	80-100	0,15-0,3
2.7			0,05-0,12	40-90	40-60	40-90	40-90	0,1		
3.1	40-60	60-80	0,05-0,12	100-140	50-60	150-280	150-200	0,1	130-200	0,2-0,4
3.2	40-60	60-70	0,05-0,12	100-140	50-60	150-280	150-200	0,1	130-200	0,2-0,4
3.3	40-60	60-70	0,05-0,12	100-140	50-60	150-280	150-200	0,1	130-200	0,2-0,4
3.4	30-40	50-60	0,05-0,12	100-140	50-60	150-280	150-200	0,1	130-200	0,2-0,4
3.5	40-60	80-100	0,05-0,12	100-140	50-60	150-280	150-200	0,1	130-200	0,2-0,4
3.6	40-60	60-70	0,05-0,12	100-140	50-60	150-280	150-200	0,1	130-200	0,2-0,4
3.7	40-60	80-100	0,05-0,12	100-140	50-60	150-280	150-200	0,1	130-200	0,2-0,4
3.8	40-60	60-70	0,05-0,12	100-140	50-60	150-280	150-200	0,1	130-200	0,2-0,4
4.1	150-200	200-450	0,05-0,12	100-140	50-60	150-280	150-200	0,1	400-600	0,2-0,4
4.2	150-200	260-340	0,05-0,12	100-140	50-60	150-280	150-200	0,1	400-600	0,2-0,4
4.3				100-140	50-60	150-280	150-200	0,1		
4.4										
4.5										
4.6	100-140	100-140	0,05-0,12	100-140	50-60	150-280	150-200	0,1		
4.7	100-140	100-140	0,05-0,12	100-140	50-60	150-280	150-200	0,1		
4.8	100-140	100-140	0,05-0,12	100-140	50-60	150-280	150-200	0,1		
4.9										
4.10										
4.11	200-250	200-450	0,05-0,12	100-140	50-60	150-280	150-200	0,1		
4.12										
4.13										
4.14										
4.15										
4.16										
4.17										
4.18										
4.19										
5.1										
5.2										
5.3										
5.4										
5.5										
5.6										
5.7										
5.8										
5.9										
5.10				40-90	40-60	40-90	40-90	0,1		
5.11				40-90	40-60	40-90	40-90	0,1		
6.1										
6.2										
6.3										
6.4										
6.5										

Material Examples

Steel

Material subgroup	Identifier	Norm marking	DIN-Number	Tensile strength N/mm ²	Hardness HB	AISI / SAE / ASTM
Unalloyed steel ≤ 800 N/mm ²	Constructional steel	St37-3	1.0116	370 - 450	110 - 130	A 264
		St52-3	1.0570	450 - 680	140 - 210	
		St60-2	1.0060	600 - 720	180 - 210	A 572
	Carbon steel	C10	1.0301	490 - 780	150 - 230	M 1010
		C22	1.0402	470 - 650	140 - 190	1020
		C35	1.0501	550 - 780	170 - 230	1035
		C40	1.0511	600 - 800	180 - 240	1040
	Machining steel	35S 20	1.0726	510 - 880	150 - 260	1140
		9S 20	1.0711	370 - 450	110 - 130	
		9SMn 28	1.0715	390 - 580	110 - 170	1213
		9SMn 36	1.0736	390 - 800	110 - 240	1215
		9SMnPb 28	1.0718	380 - 810	110 - 240	12L13
		9SMnPb 36	1.0737	390 - 800	110 - 240	12L14
	Case hardened steel	13Cr 3	1.7012	500 - 800	160 - 240	
		16MnCr 5	1.7131	500 - 700	160 - 210	5115
	Quenched steel	C15	1.0401	600 - 900	180 - 270	1015
Unalloyed steel ≤ 1000 N/mm ²	Constructional steel	Cf53	1.1213	650 - 800	190 - 240	1050
		Ck45	1.1191	650 - 850	190 - 250	1045
		Ck55	1.1203	700 - 950	210 - 280	1055
		Ck60	1.1221	750 - 1000	220 - 300	1060
		15Cr 3	1.7015	690 - 1000	200 - 300	5015
		15CrMo 5	1.7262	500 - 850	150 - 250	
		25CrMo 4	1.7218	500 - 850	150 - 250	4130
		32CrMo 12	1.7361	500 - 850	150 - 250	
		34Cr 4	1.7033	700 - 1000	210 - 300	5132
		35CrMo 4	1.2330	700 - 1000	210 - 300	4135
		35CrNiMo 6	1.6582	800 - 1000	240 - 300	4340
		40Mn 4	1.1157	800 - 1000	240 - 300	1039
		41Cr 4	1.7035	800 - 1000	240 - 300	5140
		41CrMo 4	1.7223	800 - 1000	240 - 300	4140
		42CrMo 4	1.7225	800 - 1000	240 - 300	4140
		47CrMo 4	1.2332	800 - 1000	240 - 300	4142
		C35 E	1.1181	550 - 780	170 - 240	1035
		C45	1.0503	650 - 850	190 - 250	1045
		C55	1.0535	700 - 950	210 - 280	1055
		C60	1.0601	750 - 1000	220 - 300	1060
		Cf35	1.1183	540 - 780	160 - 230	1035
		Ck22	1.1151	470 - 650	150 - 200	1020
		Ck25	1.1158	500 - 700	150 - 210	1025
	Case hardened steel	14NiCr 14	1.5752	880 - 1000	260 - 300	3310
		16MnCr 5	1.7131	780 - 1000	230 - 300	5116
		Ck15	1.1141	590 - 880	180 - 260	1015
Unalloyed and alloyed steel ≤ 1200 N/mm ²	Case hardened steel	14NiCr 14	1.5752	1000-1280	300 - 380	3310
		16MnCr 5 V	1.7131	1000-1200	300 - 360	5117
		17CrNiMo 6	1.6587	1200-1400	320 - 410	
	Nitriding steel	31CrMnV 9	1.8519	1000-1250	300 - 370	
		35CrNiMo 6	1.6582	1000-1200	300 - 360	4340
		39CrMoV 13 9	1.8523	1000-1200	300 - 380	

Material Examples

Steel

Material subgroup	Identifier	Norm marking	DIN-Number	Tensile strength N/mm ²	Hardness HB	AISI / SAE / ASTM
Unalloyed and alloyed steel ≤ 1200 N/mm ²	Quenched steel	100Cr 6	1.3505	1000-1200	300 - 380	52100
		25CrMo 4	1.7218	1000-1100	300 - 330	4130
		30CrNiMo 8	1.6580	1000-1200	300 - 360	
		32CrMo 12	1.7361	1000-1100	300 - 330	
		34Cr 4	1.7033	1000-1100	300 - 330	5132
		40Mn 4	1.1157	1000-1100	300 - 330	1039
		41CrMo 4	1.7223	1000-1200	300 - 360	4140
		42CrMo 4	1.7225	1000-1200	300 - 380	4141
	Cold work tool steel	100Cr 6	1.2067	1000-1200	250 - 360	L3
		100MnCrW 4	1.2510	1000-1200	250 - 360	1
		100V 1	1.2833	1000-1200	250 - 360	W210
		115CrV 3	1.2210	1000-1200	250 - 360	L2
		50CrV 4	1.8159	1000-1200	250 - 360	6150
		58CrV 4	1.8161	1000-1200	250 - 360	
		60WCrV 7	1.2550	1000-1200	250 - 360	S1
		90MnCrV 8	1.2842	1000-1200	250 - 360	2
		S10-4-3-10	1.3207	1000-1200	250 - 360	
		X100 CrMoV 5 1	1.2363	1000-1200	250 - 360	A2
		X165 CrMoV 12	1.2601	1000-1200	250 - 360	
		X210 Cr12	1.2080	1000-1200	250 - 360	D3
		X210 CrW 12	1.2436	1000-1200	250 - 360	
		X50 CrMoW 9 11	1.2631	1000-1200	250 - 360	
	Hot work tool steel	35NiCrMo 16	1.2766	1000-1200	250 - 360	
		40CrMnMo 7	1.2311	1000-1200	250 - 360	
		45WCrV 7	1.2542	1000-1200	250 - 360	S1
		55NiCrMoV 6	1.2713	1000-1200	250 - 360	L6
		60NiCrMoV 12 4	1.2743	1000-1200	250 - 360	
		X30WCrV 5 3	1.2567	1000-1200	250 - 360	
		30WCrV 9 3	1.2581	1000-1200	250 - 360	H21
		X32 CrMoV 3 3	1.2365	1000-1200	250 - 360	H10
		X36CrMo 17	1.2316	1000-1200	250 - 360	
		X38CrMoV 5 1	1.2343	1000-1200	250 - 360	H11
		X40CrMoV 5 1	1.2344	1000-1200	250 - 360	H13
		X42Cr 13	1.2083	1000-1200	250 - 360	420
Unalloyed and alloyed steel ≥ 1200 N/mm ²	Heat resistant steel	35CrNiMo 6	1.6582	1200-1400	380 - 410	4340
		NiCr19 CoMo	2.4973	1200-1320	360 - 380	
		X5NiCrTi 26 15	1.4980	1100-1400	320 - 410	
	Tool steel	50CrV 4	1.8159	1200-1400	350 - 410	6145
		56NiCrMoV 7	1.2714	1200-1400	350 - 410	
		X155CrVMo 12 1	1.2379	1200-1400	350 - 410	D2
		X210CrW 12	1.2436	1200-1400	350 - 410	
Stainless steel (V2A)	standard alloyed	GX10CrNi 18-8	1.4312	450 - 1100	130 - 320	
		GX20Cr 14	1.4027	450 - 1100	130 - 320	
		GX5CrNi 19-10	1.4308	450 - 1100	130 - 320	CF-8
		GX8CrNi 13	1.4008	450 - 1100	130 - 320	
		X10Cr 13	1.4006	450 - 1100	130 - 320	410
		X10CrNiS 18-9	1.4305	400 - 850	120 - 250	303
		X105CrMo 17	1.4125	450 - 1100	130 - 320	440C
		X12CrMoS 17	1.4104	400 - 850	120 - 250	430F
		X12CrNi 17-7	1.4310	450 - 1100	130 - 320	301
		X12CrS 13	1.4005	450 - 1100	130 - 320	416

Material Examples Steel

Material subgroup	Identifier	Norm marking	DIN-Number	Tensile strength N/mm ²	Hardness HB	AISI / SAE / ASTM
Stainless steel (V2A)	standard alloyed	X15Cr 13	1.4024	450 - 1100	130 - 320	304L
		X2CrNi 18-9	1.4306	450 - 1100	130 - 320	
		X20Cr 13	1.4021	450 - 1100	130 - 320	
		X17CrNi 16-2	1.4057	450 - 1100	130 - 320	
		X22CrNi 17	1.4057	450 - 1100	130 - 320	431
		X3CrNiN 17-8	1.4319	450 - 1100	130 - 320	431
		X30Cr 13	1.4028	450 - 1100	130 - 320	302
		X39Cr 13	1.4031	450 - 1100	130 - 320	420F
		X46Cr13	1.4034	450 - 1100	130 - 320	CA6-NM
		X5CrNi 13-4	1.4313	450 - 1100	130 - 320	
		X5CrNi 18-12	1.4303	450 - 1100	130 - 320	
		X5CrNi 18 10	1.4301	450 - 1100	130 - 320	
		X6CrAl 13	1.4002	450 - 1100	130 - 320	305
		X6CrMo 17-1	1.4113	450 - 1100	130 - 320	304
		X6 Cr 13	1.4000	450 - 1100	130 - 320	405
		X6Cr 17	1.4016	450 - 1100	130 - 320	434
Stainless steel with high chrome-nickel rate (V4A)	high alloyed	GX5CrNiMo 19-11	1.4408	450 - 1100	130 - 320	CF-8M
		GX5CrNiNb 19-11	1.4552	450 - 1100	130 - 320	UNSN08904
		X1NiCrMoCuN 25-20-5	1.4539	450 - 1100	130 - 320	
		X6CrNiTi 18-10	1.4541	450 - 1100	130 - 320	
		X2CrMoTi 18-2	1.4521	450 - 1100	130 - 320	321
		X2CrNiMo 17 13 2	1.4404	450 - 1100	130 - 320	443
		X2CrNiMo 18 16 4	1.4438	450 - 1100	130 - 320	316L
		X2CrNiMoN 17 12 2	1.4406	450 - 1100	130 - 320	317L
		X2CrNiMo 17-13-2	1.4429	450 - 1100	130 - 320	316LN
		X2CrNiMoN 22-5-3	1.4462	450 - 1100	130 - 320	S31803
		X4CrNiMoN 27-5-2	1.4460	450 - 1100	130 - 320	
		X7CrNiAl 17-4	1.4542	450 - 1100	130 - 320	
		X5CrNiMo 17-12-2	1.4401	450 - 1100	130 - 320	
		X5CrNiMo 17-13-3	1.4436	450 - 1100	130 - 320	630
		X5CrNiNb 18-10	1.4546	450 - 1100	130 - 320	316
		X6CrNb 17	1.4511	450 - 1100	130 - 320	348
		X6CrNiMoTi 17-12-2	1.4571	450 - 1100	130 - 320	
		X6CrNiNb 18-10	1.4550	450 - 1100	130 - 320	
		X6CrTi 12	1.4512	450 - 1100	130 - 320	
		X6CrTi 17	1.4510	450 - 1100	130 - 320	316Ti
	High-speed steel	S12-1-4-5	1.3202			T15
		S18-0-1	1.3355			T1
		S18-1-2-10	1.3265			T5
		S18-1-2-5	1.3255			T4
		S2-10-1-8	1.3247			M42
		S2-9-1	1.3346			M1
		S2-9-2	1.3348			M7
		S2-9-2-8	1.3249			M34
		S5-5-3	1.3344			M3 Class2
		S6-5-2	1.3343			
		S6-5-2-5	1.3243			
		S7-4-2-5	1.3246			
		SC6-5-2	1.3342			M2
						M41
						M3

Material Examples

Cast Iron, Nonferrous Metals

Material subgroup	Identifier	Norm marking	DIN-Number	Tensile strength N/mm ²	Hardness HB	AISI / SAE / ASTM
Cast iron	Grey cast iron	GG10	0.6010	150 - 500	50 - 150	A48-20 B
		GG15	0.6015	150 - 500	50 - 150	A48-25 B
		GG20	0.6020	150 - 500	50 - 150	A48-30 B
		GG25	0.6025	150 - 500	50 - 150	A48-35 B
		GG30	0.6030	150 - 500	50 - 150	A48-45 B
		GG35	0.6035	150 - 500	50 - 150	A48-50 B
		GG40	0.6040	150 - 500	50 - 150	A48-55 B
	Spherulitic graphite iron	GGG40	0.7040	500 - 700	150 - 200	60-40-18
		GGG50	0.7050	500 - 700	150 - 200	80-55-06
		GGG60	0.7060	500 - 700	150 - 200	80-55-06
		GGG70	0.7070	500 - 700	150 - 200	100-70-03
	Malleable cast iron	GTW35-04	0.8035	500 - 700	150 - 200	
Material subgroup	Identifier	Norm marking	DIN-Number	Tensile strength N/mm ²	Hardness HB	AISI / SAE / ASTM
Aluminium, Cooper, Cooper alloys	Aluminium, unalloyed	Al99	3.0205	200 - 350	60 - 100	1200
		Al99.9	3.0305	200 - 350	60 - 100	1090
		E-Al	3.0257	200 - 350	60 - 100	1350A
	Cooper, unalloyed	SF-Cu	2.0090	250 - 350	80 - 100	C 12200
	Messing, long-chipping	CuZn 37	2.0321	400 - 700	120 - 200	C 27400
	Bronze, low density	G-CuSn 6 ZnNi	2.1093	400 - 700	120 - 200	C 92410
	Red bronze	G-CuSn 5 ZnPb	2.1096	400 - 700	120 - 200	C 83600
	Aluminium, alloyed	G-ALSi 12	3.2581	300 - 600	90 - 180	A413
		G-ALSi 10 MgCu	3.2383	300 - 600	90 - 180	
		G-ALSi 12 Cu	3.2583	300 - 600	90 - 180	413.1
		G-ALSi 5 Mg	3.2341	300 - 600	90 - 180	
		G-ALSi 6 Cu4	3.2151	300 - 600	90 - 180	319
		G-ALSi 7 Mg	3.2371	300 - 600	90 - 180	A356.2
		G-ALSi 8 Cu 3	3.2161	300 - 600	90 - 180	380
		G-ALSi 9 Mg	3.2373	300 - 600	90 - 180	
		G-CuAl 11 Ni	2.0975	400 - 850	120 - 250	
		CuSn & Zn 6	2.1080	400 - 700	120 - 200	
	Bronze hard					
Aluminium special alloys	Aluminium special alloys	AlCuMg1	3.1325	300 - 600	90 - 180	2017A
		AlMg 1	3.3315	300 - 600	90 - 180	5005A
		AlMg 1.5	3.3316	300 - 600	90 - 180	5050B
		AlMg 1 SiCu	3.3211	300 - 600	90 - 180	6061
		AlMg 2.5	3.3523	300 - 600	90 - 180	5052
		AlMg 3	3.3535	300 - 600	90 - 180	5754
		AlMg 5	3.3555	300 - 600	90 - 180	5056A

Material Examples Nonferrous Metals

Material subgroup	Identifier	Norm marking	DIN-Number	Tensile strength N/mm ²	Hardness HB	AISI / SAE / ASTM
Aluminium special alloys	Aluminium special alloys	AlMgSi 0.5	3.3206	300 - 600	90 - 180	6060
		AlMgSi 1	3.2315	300 - 600	90 - 180	6082
		AlMn 1 Mg 0.5	3.0525	300 - 600	90 - 180	3005
		AlMnCu	3.0517	300 - 600	90 - 180	3003
		AlZnMgCu 0.5	3.4345	300 - 600	90 - 180	7022
		AlZnMgCu 1.5	3.4365	300 - 600	90 - 180	7045
		G-ALMg 5	3.3561	300 - 600	90 - 180	514.1
		G-ALMg 5Si	3.3261	300 - 600	90 - 180	
Cooper alloys	Messing, short-chipping	CuZn39Pb 2	2.0380			
		CuZn40Mn1Pb	2.0580			
		CuZn44Pb 2	2.0410			
Nickel alloys	Nickel alloys	Hastelloy C 276	2.4819			
		Hastelloy C 4	2.4610			
		Inconel 718	2.4668			
		Nimonec 75	2.4630			
Titan alloys	Titan alloys	TiAl 5 Sn 2	3.7115			
		TiAl 6V 4	3.7165			
Cu-Al-Fe alloys	Chilled cast iron	Ampco 21				
		Ampco 22				
		Ampco 25				
		Ampco 26				
Thermoplastic	Thermoplastic	Polyamid				
		Polystyrol				
		Polyvenylchlorid				
		Ultramid				
Thermosetting plastic and fibre-reinforced plastic	Thermosetting plastic	Bakelid				
		Ferrozell				
		Pertinax				
	Fibre-reinforced plastic	CFK GFK		190 - 210	60 - 70	

Calculation Formula for the Circular Milling

$$v_c = \frac{d \cdot \pi \cdot n}{1000}$$

$$n = \frac{v_c \cdot 1000}{d \cdot \pi}$$

$$v_{f2} = f_z \cdot z \cdot n$$

**Calculating the feed rate of the cutting center path
(Outer contour)**

$$v_{f3} = \frac{v_{f2} \cdot \left[2 \cdot \left(\frac{D}{2} - a_r + \frac{d}{2} \right) \right]}{D - (2 \cdot a_r)}$$

**Calculating the feed rate of the cutting center path
(Inner contour)**

$$v_{f3} = \frac{v_{f2} \cdot \left[2 \cdot \left(\frac{D}{2} + a_r - \frac{d}{2} \right) \right]}{D + (2 \cdot a_r)}$$

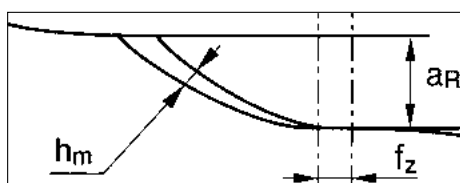
Plunge in feed „Plunge in the arc“

$$v_f = v_{f3}$$

Calculation of the middle chip thickness

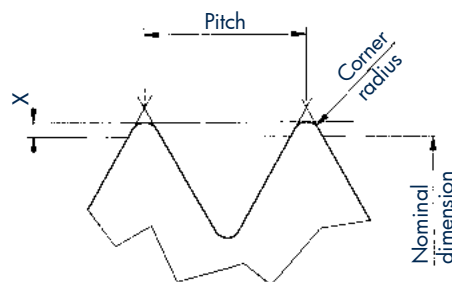
$$h_m = \frac{f_z}{\sqrt{\frac{d}{a_r}}}$$

$$f_z = h_m \cdot \sqrt{\frac{d}{a_r}}$$



Middle chip thickness
 $h_m \approx 0,05 \text{ mm/rev.}$

n (rpm)	Spindle speed
v_c (m/min)	Cutting speed
d (mm)	Cutter diameter
D (mm)	Shaft or bore diameter
v_f (mm/min)	Plunge feed
v_{f2} (mm/min)	Effective feed speed
v_{f3} (mm/min)	Programmed feed speed (Cutter center track)
f_z (mm)	Feed per insert
z —	Number of inserts
a_r (mm)	Chip depth, radial
h_m (mm)	Middle chip thickness



Note

Internal threads are programmed to the nominal dimension.
In order to achieve the exact thread size desired, there is a correction value for any given pitch. This correction value must be deducted from the radius of the cutter when programming.

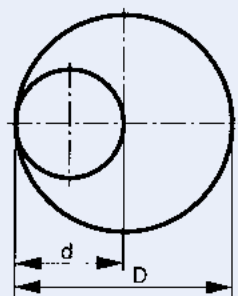


Correction Values for Internal Thread Milling

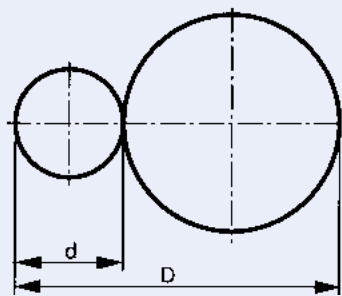
Pitch	Correction Value X
0,50	0,017
0,75	0,031
0,80	0,035
1,00	0,036
1,25	0,045
1,50	0,052
1,75	0,059
2,00	0,076
2,50	0,091
3,00	0,104
3,50	0,129
4,00	0,143
4,50	0,166
5,00	0,181
5,50	0,205
6,00	0,219

Information about Circular Milling

Internal milling



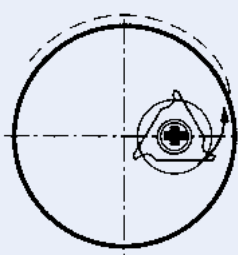
External milling



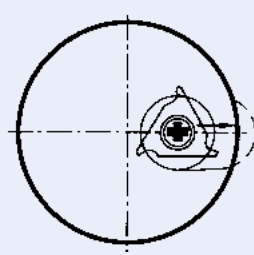
The best relation between bore diameter and cutter diameter is 2:1 due to smaller angle of contact, which results in a smooth machining.

Synchronous milling is recommended.

Plunge in with a circle

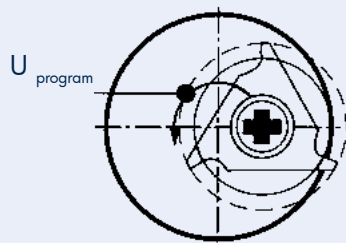


Straight plunge in

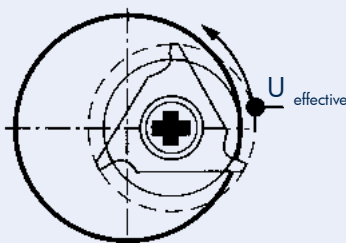


If possible, always plunge in with a circle. If plunging in straight, only use 1/3 of the feed. After having reached the plunge depth, move with full speed.

Programmed feed regarding to cutter center



Effective feed regarding to cutter O.D.

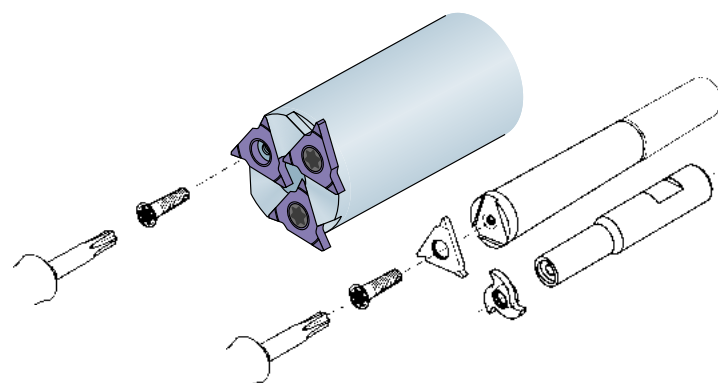


Always check the real feed speed at cutter O.D.

Assembling Instructions

Changing Inserts

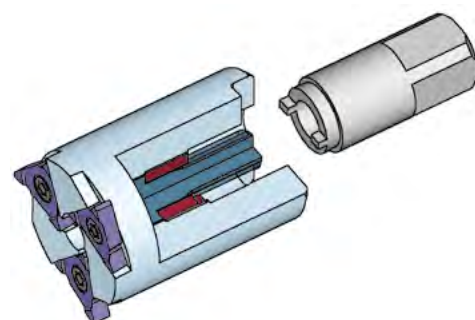
Clamp cutter before changing insert. Loosen insert screw. Remove used insert and clean the insert pocket before clamping new insert. Please use the appropriate TIP hex key for the tightening of the inserts.



Changing Clamping Screws

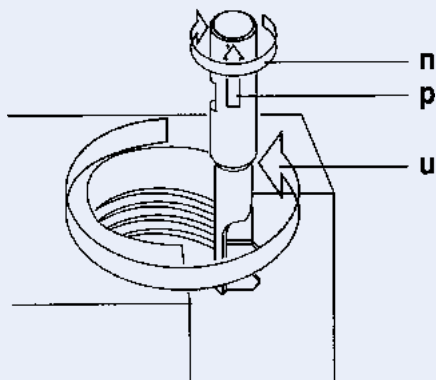
Only for circular milling cutter no.

- 123464
- 135203
- 179727
- 179728

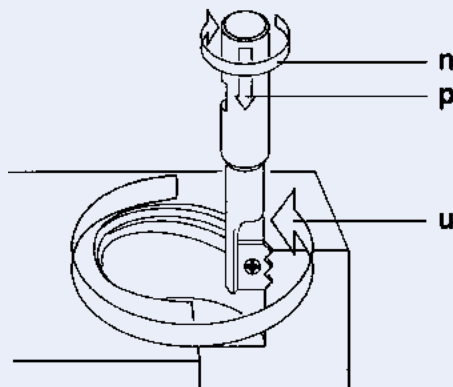


Information about Circular Thread Milling

Internal Thread

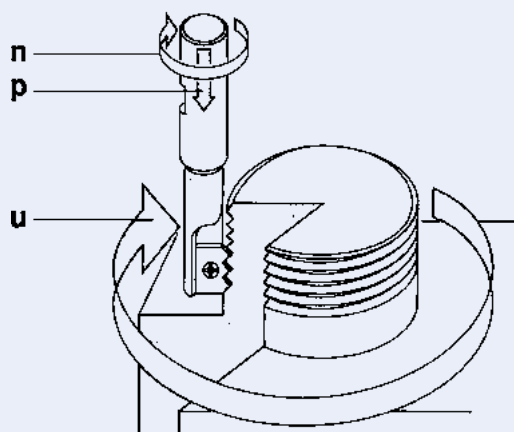


Right-hand Thread (climb milling)
Left-hand Thread (up-cut milling)

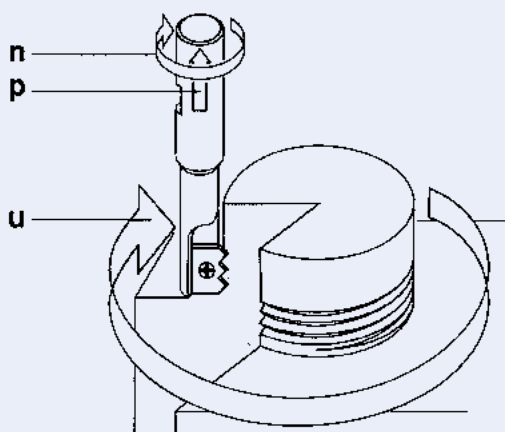


Left-hand Thread (climb milling)
Right-hand Thread (up-cut milling)

External Thread



Right-hand Thread (climb milling)
Left-hand Thread (up-cut milling)



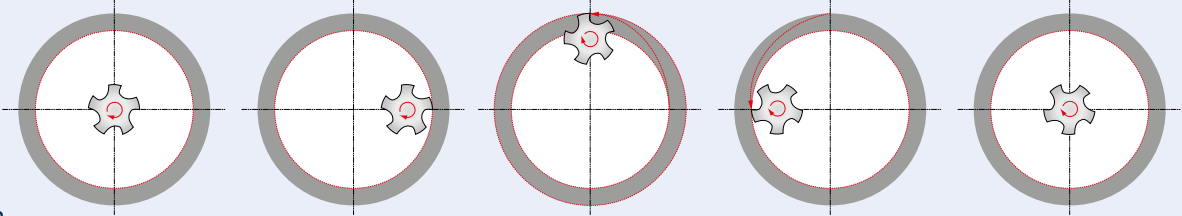
Left-hand Thread (climb milling)
Right-hand Thread (up-cut milling)

n = Rotation direction to the right
p = Feed direction axial (1 revol. per pitch)
u = Feed direction radial

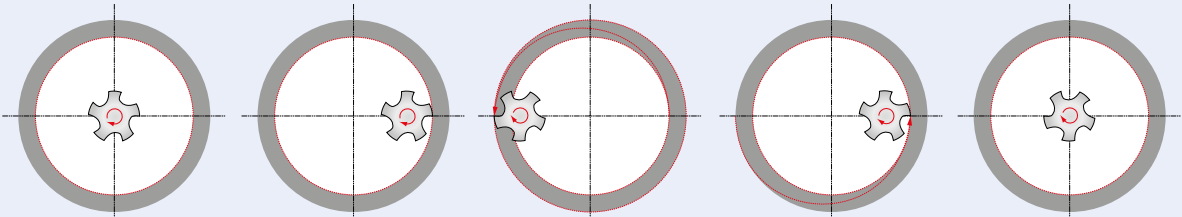
Always try to use climb milling process. If the thread is longer than insert length, cut in two steps. If you plunge in with a circle, please watch your axial feed (depending on pitch).

Plunge-in Ramps Effect of In- and Outward Movements

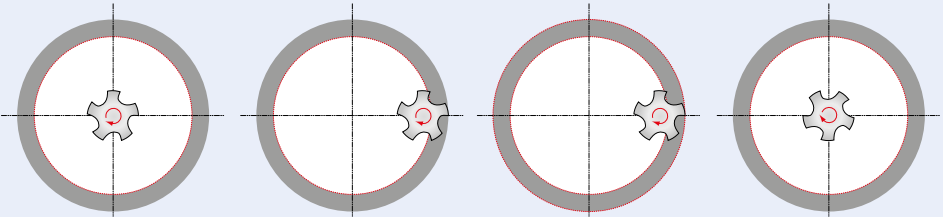
- 90° plunge-in
- 180° plunge-in
- Straight plunge-in

a	Plunge-in and -out	Processing time	Surface quality	Tool life
	90°	++	++	+
				

⚠ Always recommended whenever possible.

a	Plunge-in and -out	Processing time	Surface quality	Tool life
	180°	+	+++	+++
				

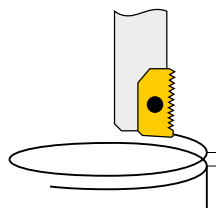
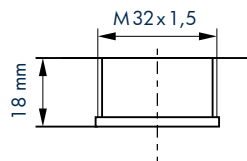
⚠ To be used for large tool diameters in relation to the core diameter, e.g. for all STC tools.

a	Plunge-in and -out	Processing time	Surface quality	Tool life
	straight	+++	---	---
				

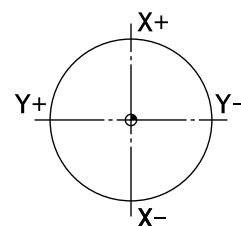
⚠ Not recommended. When straight plunge-in, use only 1/3 of feed. After reaching the depth of grooving, give full feed.

Programming Example Drill Thread Milling

Cycle time 57 sec.
Material 1045



I and J incremental from the starting point.



N1	G..								Selection of the level
N2	G..								Zero offset to the hole center
N10	S3000	T..							Technology data
N20	G0	X0	Y0	Z1	M13				1 mm over workpiece, hole center
N30	G43	X-15.15							up to the outline
N40	G41								Cutting edge radius adjustment, left of the outline
N50	G3	X-15.15	Y0	Z-1	I15.15	J0	F1500		Circular drill-milling, infeed 2 mm
N60	G3	X-15.15	Y0	Z-3	I15.15	J0			Circular drill-milling, infeed 2 mm
N70	G3	X-15.15	Y0	Z-5	I15.15	J0			Circular drill-milling, infeed 2 mm
N80	G3	X-15.15	Y0	Z-7	I15.15	J0			Circular drill-milling, infeed 2 mm
N90	G3	X-15.15	Y0	Z-9	I15.15	J0			Circular drill-milling, infeed 2 mm
N100	G3	X-15.15	Y0	Z-11	I15.15	J0			Circular drill-milling, infeed 2 mm
N110	G3	X-15.15	Y0	Z-13	I15.15	J0			Circular drill-milling, infeed 2 mm
N120	G3	X-15.15	Y0	Z-15	I15.15	J0			Circular drill-milling, infeed 2 mm
N130	G3	X-15.15	Y0	Z-17	I15.15	J0			Circular drill-milling, infeed 2 mm
N140	G3	X-15.15	Y0	Z-18	I15.15	J0			Circular drill-milling, infeed 1 mm
N150	G3	X-15.15	Y0	Z-18	I15.15	J0			Circular face milling
N160	G1	X-15.15	Y-0.85						to the starting point of the inward circular arc
N170	G3	X0	Y-16	Z-17.625	I15.15	J0	F600		Inward circular arc with pitch in Z
N180	G3	X0	Y-16	Z-16.125	I0	J16			Thread milling
N190	G3	X15.15	Y-0.85	Z-15.75	I0	J15.15			Outward circular arc
N200	G40								Deselection of the cutting edge radius adjustment
N210	G0	X0	Y0						to hole center
N220	G0	Z1							Outfeed to 1 mm over workpiece
N230	M30								End of program

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P

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