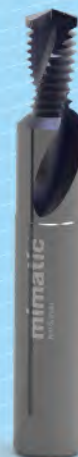
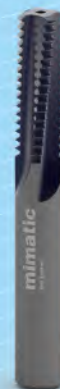
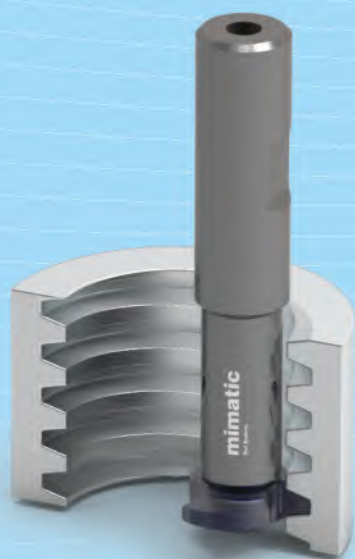


Your Partner For Clever Tooling

## Cutting Tools

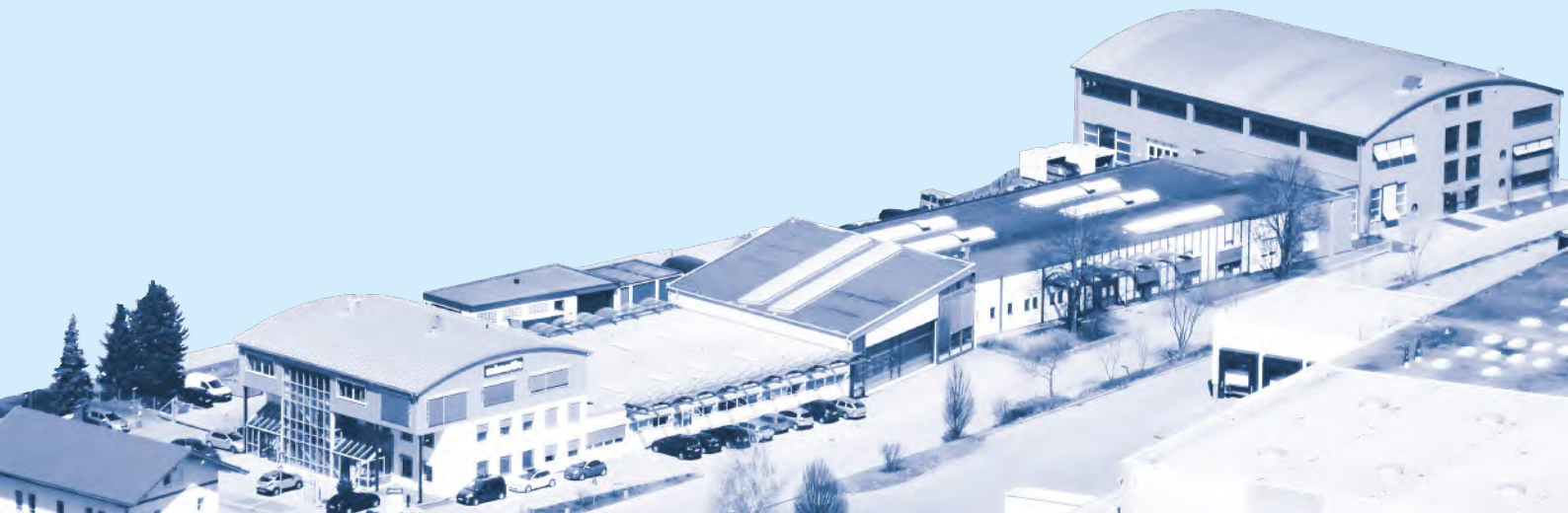
- Thread milling
- Groove milling
- Gear milling
- Contour and radius milling
- Dovetail milling
- Sawing, cutting, slitting
- etc.



**mimatic® GmbH**  
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 **info@mimatic.de**  
 **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 Milling

 Extended program

82-109

5

Contour and Radius Milling  
Chamfering, Deburring,  
undercut, dovetail

 Extended program

110-125

6

Sawing, Slitting

Sawing, Cutting, Slitting

 Extended program

126-143

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



## Tool Systems for Highest Demands

Allgäu

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.





## Locations

### Headquarter

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www.mimatic.de

Research & Development  
Production  
Sales  
Service



### Subsidiaries

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Service



**mimatic Tool Systems (Shanghai) Co.Ltd.**  
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Minhang District  
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China  
Tel.: +86 21 62213668

Sales  
Service



## Certificates



**DIN EN ISO 9001 : 2015**



**AEO F**  
Authorized Economic Operator



## Products

**Cutting Tools**



**Multi Spindle Units**



**Clamping Technology**



**Live Tools for Turning Machines**



**Special Solutions**

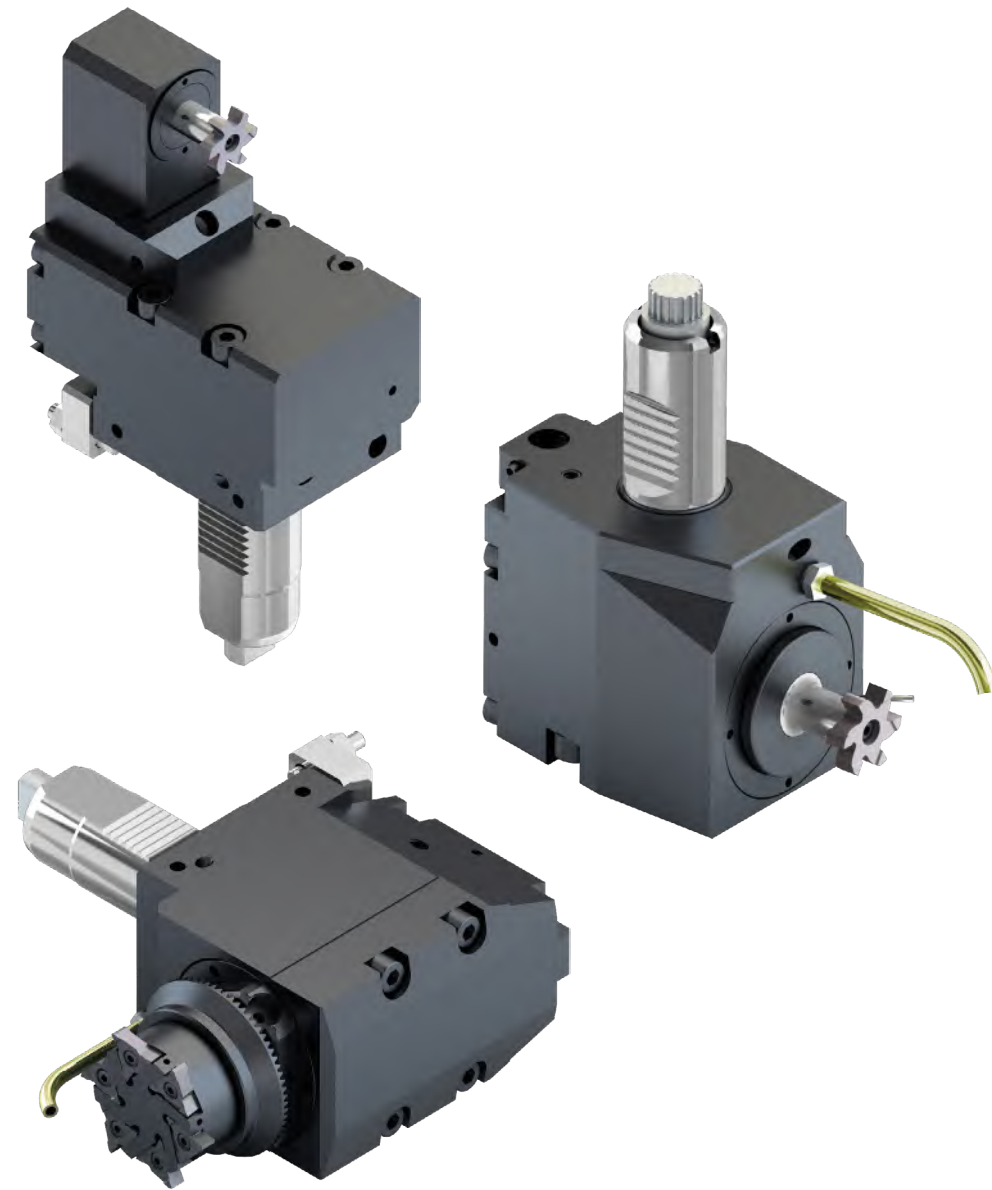


**Angle Heads for Milling Machines**





## 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

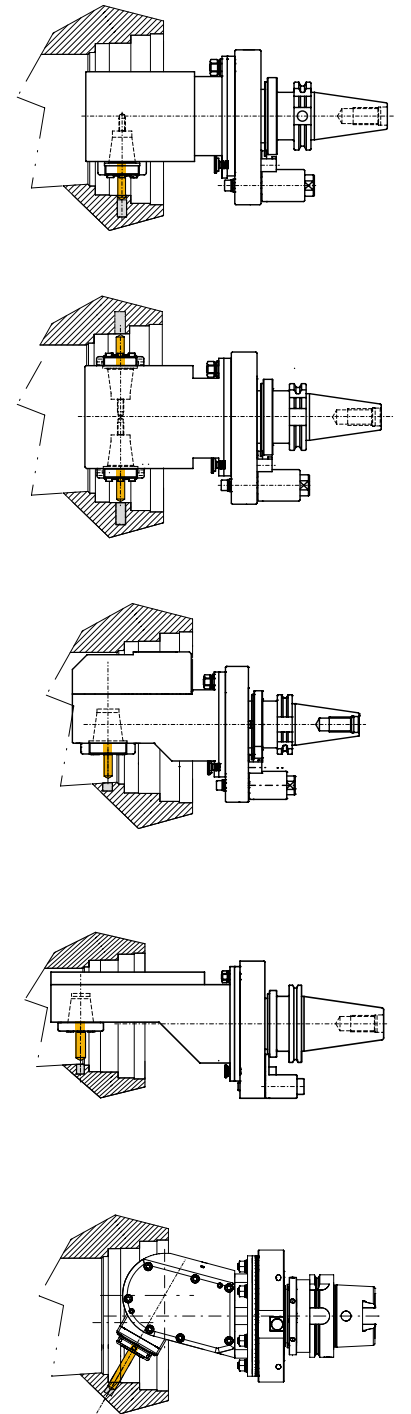
mimatic® has been a reliable partner in project planning and the supply of precision tools worldwide for many years in the field of chip removing production.

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

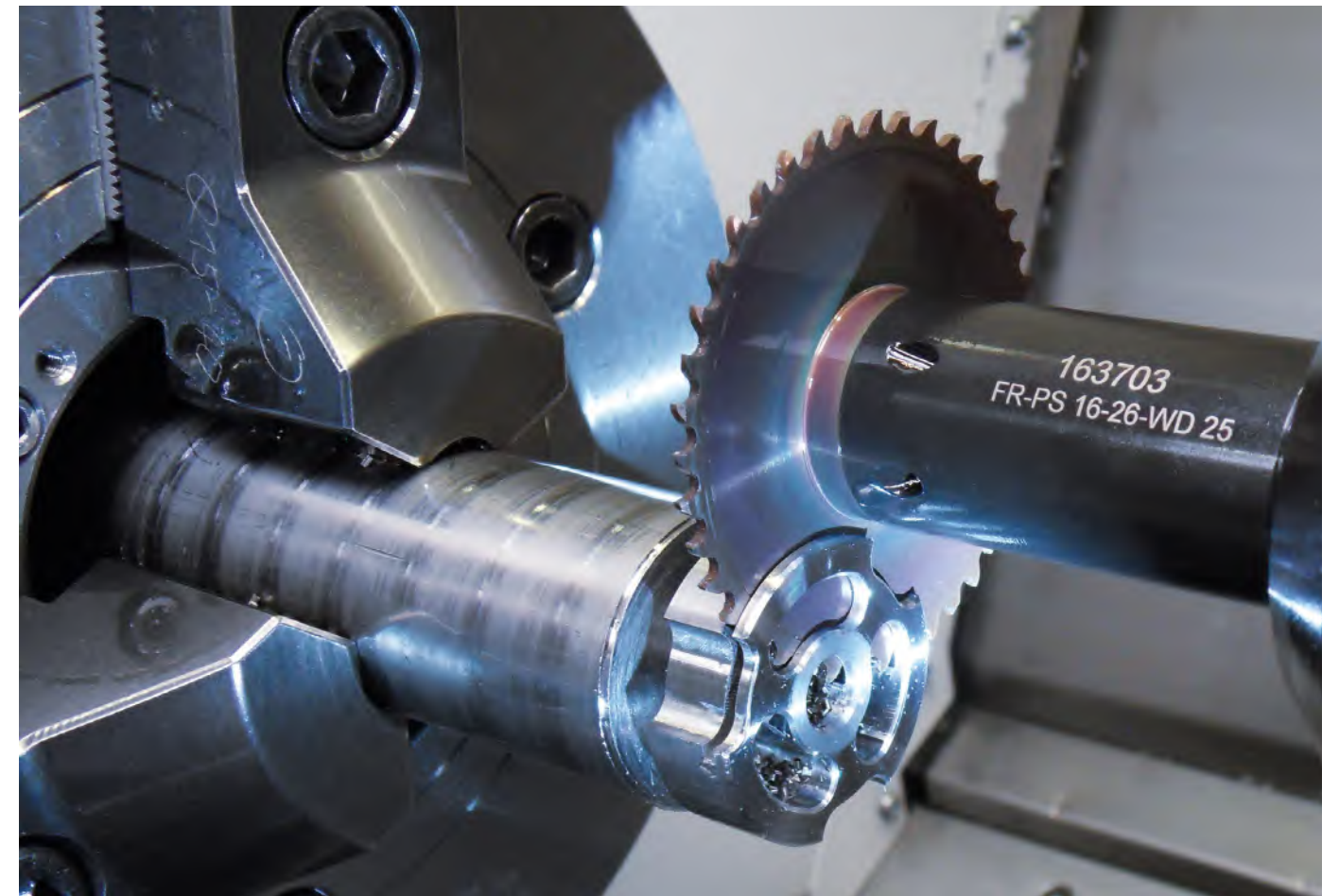


Wireless data transfer\*  
directly via eltimon Reader or eltimon smart gateway to the eltimon® service portal and/or to the machine.

[www.eltimon.de](http://www.eltimon.de)

## 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

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Chamfering, Deburring,  
undercut, dovetail



Extended  
program

110-  
125

6

## Sawing, Slitting

Sawing, Cutting, Slitting



Extended  
program

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## Bore Machining

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## Axial Grooving

Axial Grooving, adjustable

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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<br>for left hand thread modify your NC-program! |
|    | Solid carbide shaft without clamping surface     |   | for right- and left hand external thread<br>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 <sub>P</sub>  | Insert height                                          |
| A <sub>1</sub>  | Basic width in the Groove                      | H <sub>S</sub>  | Slider height (Axial grooving tool)                    |
| B <sub>f6</sub> | Insert holder width of axial grooving tool     | L               | Length of milling tool                                 |
| B <sub>H7</sub> | Groove width of axial grooving tool            | L <sub>1</sub>  | Clamping length of milling tool                        |
| B <sub>w</sub>  | Tool width of axial grooving tool              | L <sub>2</sub>  | Length of step milling head                            |
| C               | Chamfer width                                  | L <sub>G</sub>  | Usable thread length at the multi-tooth thread milling |
| D               | Cutting diameter                               | L <sub>HA</sub> | Holder length                                          |
| d <sub>1</sub>  | Milling body diameter (front)                  | L <sub>P1</sub> | Insert height of milling body – edge                   |
| d <sub>2</sub>  | Large diameter of milling body                 | L <sub>P2</sub> | Insert height of edge – interfering contour            |
| d <sub>g6</sub> | Fitting face diameter of threaded milling tool | L <sub>PF</sub> | Length of fitting face                                 |
| D <sub>h6</sub> | Shaft diameter of milling body (Arbor)         | L <sub>S</sub>  | Shaft length – clamping length (Depth)                 |
| D <sub>P</sub>  | Flight circle of insert                        | M               | Thread size                                            |
| D <sub>R</sub>  | Nominal diameter of concave radius insert      | P               | Pitch                                                  |
| E               | Width blank insert                             | R               | Radius (general/common)                                |

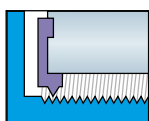
## Formula for Tool Lengths

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



## Table of Contents

### PolyMILL



UNEF thread



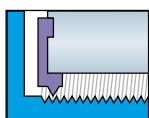
#### Thread Inserts

|                                 |       |
|---------------------------------|-------|
| M, MF, UN, NPT, NPSM            | 20    |
| G, BSW, BSF, UNC, UNF, UNEF, Rp | 21-24 |
| Tr, ACME, Rd                    | 25-26 |

#### Tool Holders

|                        |    |
|------------------------|----|
| with cylindrical shank | 27 |
| for driven toolholders | 28 |
| with tightening shank  | 29 |

### TriMILL

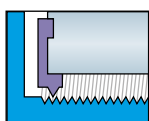


#### Thread Inserts

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

#### Tool Holders

|                        |    |
|------------------------|----|
| with cylindrical shank | 32 |
| with tightening shank  | 32 |



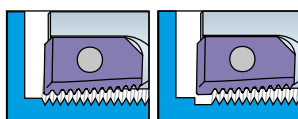
#### Thread Inserts

|               |    |
|---------------|----|
| M, MF         | 33 |
| UN, NPT, NPSM | 33 |
| G, BSW, BSF   | 34 |

#### Tool Holders

|          |       |
|----------|-------|
| Type 023 | 35-35 |
| Type 013 | 36    |

### TrioCUT

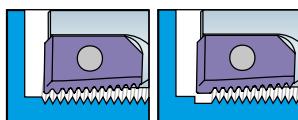


#### Thread Inserts

|             |       |
|-------------|-------|
| M           | 37-38 |
| G, BSW, BSF | 37-39 |
| PG          | 37-39 |

#### Tool Holders

|         |    |
|---------|----|
| Type 12 | 37 |
| Type 17 | 38 |



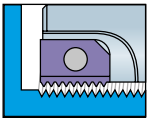
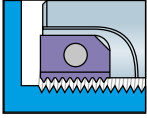
#### Thread Inserts

|             |       |
|-------------|-------|
| M           | 40-43 |
| G, BSW, BSF | 40-42 |

#### Tool Holders

|           |    |
|-----------|----|
| Type 20   | 40 |
| Type 25   | 41 |
| Typ 50/80 | 43 |

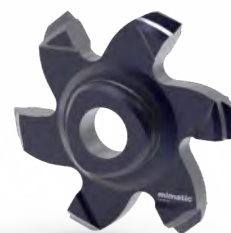
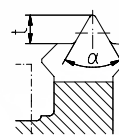
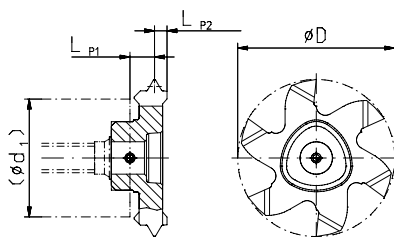
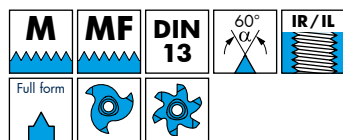
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|                                                                                                                                                                                                 |                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>14,5 15 21 26</b></p>   | <p>Thread Inserts<br/> M 45-49<br/> G, BSW, BSF 45-49<br/> UNC, UNF 45-48<br/> PG 45</p> <p>Tool Holders<br/> Type 14,5 44<br/> Type 15 46<br/> Type 21 47<br/> Type 26 49</p> |
| <p><b>14,5 15 21</b></p>      | <p>Thread Inserts<br/> M 45-48<br/> G, BSW, BSF 45-48<br/> UNC, UNF 45-48<br/> PG 45</p> <p>Tool Holders<br/> Type 14,5 44<br/> Type 15 46<br/> Type 21 47</p>                 |
| <p><b>SolidCUT</b></p>                                                                                        | <p>Solid Carbide Thread Milling Cutter</p> <p>M 51<br/> 52-53<br/> MF 53-54<br/> G 55<br/> BSW 55<br/> BSF 56<br/> UNC 57<br/> UNF 58<br/> NPT, NPTF 60</p>                    |
| <p><b>mimaticSTC</b></p>                                                                                     | <p>STC Thread Milling System</p> <p>Pitch 1 to 8</p> <p>Also for MF, UN, UNC, NPSM 62</p>                                                                                      |
| <p><b>Technical Data</b></p>                                                                                                                                                                    | <p>Notes to the circular thread milling 178<br/> Programming example TrioCUT 81<br/> Cutting data values 166-169<br/> Carbide grades 181</p>                                   |



## Thread Milling

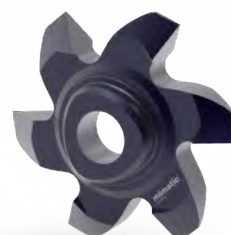
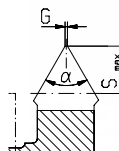
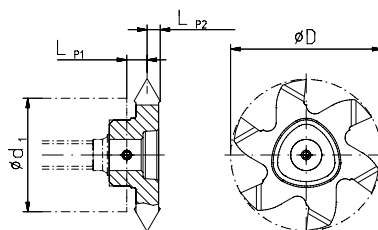
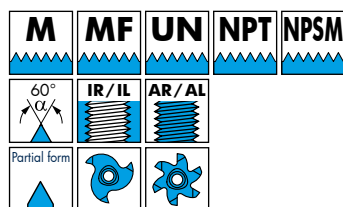
- Insert holder see page 27-29
- Cutting data see page 166



| Type | Pitch<br>mm | D<br>mm | LP1<br>mm | LP2<br>mm | t<br>mm | Thread | Number<br>of teeth | Order No.<br>TINAMATIC |                        |
|------|-------------|---------|-----------|-----------|---------|--------|--------------------|------------------------|------------------------|
| P12  | P1210 *     | 1,00    | 9,6       | 2,65      | 0,80    | 0,572  | ≥ M12x1            | 3                      | <a href="#">171875</a> |
|      | P1210 *     | 1,50    | 9,6       | 2,50      | 0,95    | 0,875  | ≥ M14x1,5          | 3                      | <a href="#">171876</a> |
|      | P1210 *     | 1,75    | 9,6       | 2,25      | 1,20    | 1,010  | only M12           | 3                      | <a href="#">175479</a> |
|      | P1211 *     | 2,00    | 10,5      | 2,25      | 1,20    | 1,127  | only M14, M16      | 3                      | <a href="#">160857</a> |
|      | P1211 *     | 2,00    | 10,5      | 2,25      | 1,20    | 1,157  | ≥ M18x2            | 3                      | <a href="#">171877</a> |
| P16  | P1616       | 1,00    | 16,0      | 2,80      | 1,03    | 0,572  | ≥ M18x1            | 6                      | <a href="#">107240</a> |
|      | P1616       | 1,50    | 16,0      | 2,55      | 1,28    | 0,864  | ≥ M20x1,5          | 6                      | <a href="#">142569</a> |
|      | P1616       | 2,00    | 16,0      | 2,55      | 1,28    | 1,157  | ≥ M22x2            | 6                      | <a href="#">142570</a> |
|      | P1616       | 2,50    | 16,0      | 2,05      | 1,78    | 1,400  | only M20, M22      | 6                      | <a href="#">142534</a> |
|      | P1616       | 2,50    | 16,0      | 2,05      | 1,78    | 1,444  | ≥ M24 x2,5         | 6                      | <a href="#">142543</a> |
| P20  | P1616       | 3,00    | 16,0      | 3,05      | 1,78    | 1,702  | ≥ M24              | 6                      | <a href="#">142575</a> |
|      | P2020       | 1,50    | 20,0      | 2,55      | 1,28    | 0,875  | ≥ M24x1,5          | 6                      | <a href="#">168683</a> |
|      | P2020       | 2,00    | 20,0      | 2,55      | 1,28    | 1,157  | ≥ M27x2            | 6                      | <a href="#">168684</a> |
|      | P2020       | 3,00    | 20,0      | 2,15      | 1,68    | 1,745  | only M24, M27      | 6                      | <a href="#">168685</a> |
|      | P2526       | 1,50    | 26,0      | 2,15      | 1,28    | 0,875  | ≥ M30x1,5          | 6                      | <a href="#">142617</a> |
| P25  | P2526       | 2,00    | 26,0      | 2,55      | 1,28    | 1,159  | ≥ M33x2            | 6                      | <a href="#">142644</a> |
|      | P2526       | 3,00    | 26,0      | 2,95      | 1,88    | 1,702  | ≥ M39x3            | 6                      | <a href="#">142599</a> |
|      | P2524       | 3,50    | 24,0      | 2,75      | 2,08    | 1,960  | only M30, M33      | 6                      | <a href="#">142671</a> |
|      | P2526       | 3,50    | 26,0      | 2,90      | 1,93    | 1,980  | ≥ M42x3,5          | 6                      | <a href="#">142623</a> |
|      | P2526       | 4,00    | 26,0      | 2,65      | 2,18    | 2,262  | M36 - M45 x 4      | 6                      | <a href="#">169675</a> |
|      | P2526       | 4,00    | 26,0      | 2,90      | 1,93    | 2,262  | ≥ M48x4            | 6                      | <a href="#">142624</a> |
|      | P2526       | 4,50    | 26,0      | 2,65      | 2,18    | 2,602  | ≥ M42              | 6                      | <a href="#">142638</a> |
|      | P2526       | 5,00    | 26,0      | 3,85      | 3,48    | 2,836  | ≥ M48              | 6                      | <a href="#">107275</a> |
|      | P2526       | 5,50    | 26,0      | 3,85      | 3,48    | 3,182  | ≥ M56              | 6                      | <a href="#">161786</a> |
|      | P2526       | 6,00    | 26,0      | 3,85      | 3,48    | 3,467  | ≥ M64              | 6                      | <a href="#">175645</a> |

CLICK ME!

**i** External thread according to DIN 13 on request



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

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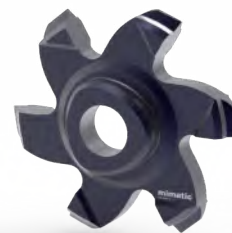
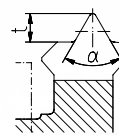
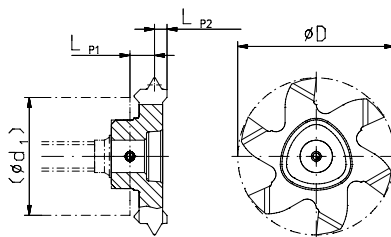
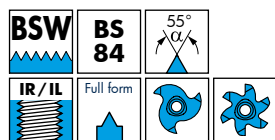
\* Not suited for cutter 177676

\*\* Not suited for pitch suitable 3,5 mm with the cutters 123588 and 123590

**PolyMILL**

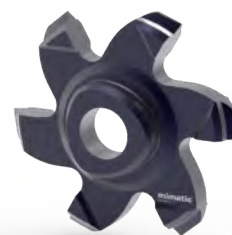
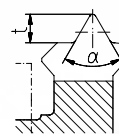
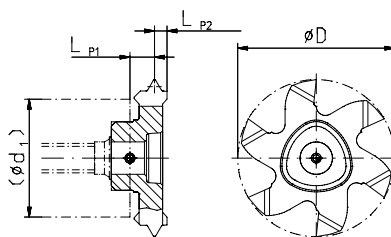
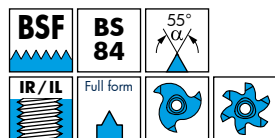
## Thread Milling

- 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 *   | 2,117    | 12   | 10     | 2,25   | 1,1   | 1,371 BSW 5/16        | 3               | <a href="#">162119</a> |
|      | P1210 *   | 2,309    | 11   | 10,4   | 2,15   | 1,5   | 1,494 BSW 5/8 + 1/16  | 3               | <a href="#">160998</a> |
|      | P1212 *   | 2,540    | 10   | 11,7   | 2,2    | 1,4   | 1,455 BSW 3/4 + 1/16  | 3               | <a href="#">160663</a> |
| P16  | P1616     | 2,822    | 9    | 16     | 2,15   | 1,675 | 1,622 BSW 7/8 + 1/16  | 6               | <a href="#">160940</a> |
|      | P1616     | 3,175    | 8    | 16     | 2,65   | 1,84  | 1,83 BSW 1            | 6               | <a href="#">161053</a> |
|      | P1616 **  | 3,629    | 7    | 16     | 2,65   | 2,05  | 2,098 BSW 1 1/8 + 1/4 | 6               | <a href="#">161166</a> |
|      | P1616 **  | 4,233    | 6    | 16     | 3,175  | 2,2   | 2,455 BSW 1 1/2 + 1/2 | 6               | <a href="#">162371</a> |
| P20  | P2020     | 3,629    | 7    | 20     | 2,7    | 2,225 | 2,098 BSW 1 1/8 + 1/4 | 6               | <a href="#">160959</a> |
|      | P2020 *** | 4,233    | 6    | 20     | 3,15   | 2,675 | 2,455 BSW 1 3/8 + 1/2 | 6               | <a href="#">161270</a> |
| P25  | P2524     | 4,233    | 6    | 24     | 4,4    | 2,675 | 2,455 BSW 1 3/8       | 6               | <a href="#">161466</a> |
|      | P2524     | 4,233    | 6    | 24     | 4,4    | 2,675 | 2,455 BSW 1 1/2       | 6               | <a href="#">162615</a> |
|      | P2524     | 5,080    | 5    | 24     | 3,9    | 2,875 | 2,955 BSW 1 5/8 + 3/4 | 6               | <a href="#">161100</a> |

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| 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               | <a href="#">160930</a> |
|      | P1210 *   | 2,117    | 12   | 10     | 2,25   | 1,1   | 1,371 BSF 3/4 + 1/16    | 3               | <a href="#">161623</a> |
|      | P1210 *   | 2,309    | 11   | 10,4   | 2,15   | 1,5   | 1,494 BSF 7/8           | 3               | <a href="#">160951</a> |
| P16  | P1616     | 2,822    | 9    | 16     | 2,15   | 1,675 | 1,622 BSF 1 1/8 + 1/4   | 6               | <a href="#">160989</a> |
|      | P1616     | 3,175    | 8    | 16     | 2,15   | 1,675 | 1,83 BSF 1 1/8 - 1/8    | 6               | <a href="#">162077</a> |
|      | P1616 **  | 3,629    | 7    | 16     | 2,65   | 2,05  | 2,098 BSF 1 3/4 + 2     | 6               | <a href="#">160960</a> |
|      | P1616 **  | 4,233    | 6    | 16     | 3,175  | 2,2   | 2,455 BSF 2 1/4 - 2 3/4 | 6               | <a href="#">162305</a> |
| P20  | P2020     | 3,175    | 8    | 20     | 2,15   | 1,675 | 1,83 BSF 1 1/8 - 1/8    | 6               | <a href="#">161089</a> |
|      | P2020     | 3,629    | 7    | 20     | 2,7    | 2,225 | 2,098 BSF 1 3/4 + 2     | 6               | <a href="#">161341</a> |
|      | P2020 *** | 4,233    | 6    | 20     | 3,15   | 2,675 | 2,455 BSF 2 1/4 - 2 3/4 | 6               | <a href="#">160942</a> |
| P25  | P2524     | 3,175    | 8    | 24     | 2,1    | 1,675 | 1,83 BSF 1 1/8 - 1/8    | 6               | <a href="#">162051</a> |
|      | P2524     | 3,629    | 7    | 24     | 2,65   | 2,175 | 2,098 BSF 1 3/4 + 2     | 6               | <a href="#">161436</a> |
|      | P2524     | 4,233    | 6    | 24     | 4,4    | 2,675 | 2,455 BSF 2 1/4 - 2 3/4 | 6               | <a href="#">161887</a> |
|      | P2524     | 5,080    | 5    | 24     | 3,9    | 2,875 | 2,955 BSF 3 - 3 1/4     | 6               | <a href="#">161250</a> |

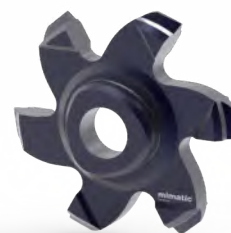
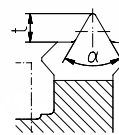
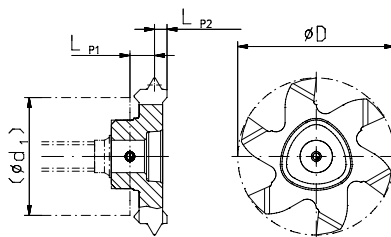
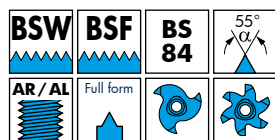
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**i** External thread BSW / BSF see next page

\* Not suited for cutter 177676  
 \*\* Not suited for cutters 123588 and 123590  
 \*\*\* Not suited for cutter 174314

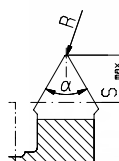
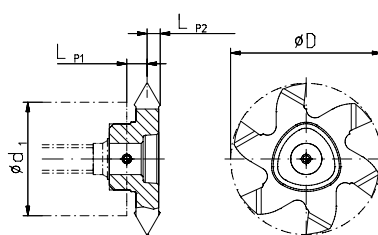
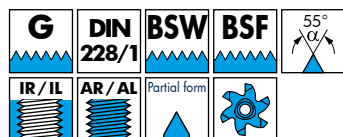
## Thread Milling

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



| Type | Pitch<br>mm | Pitch / " | D<br>mm | LP1<br>mm | LP2<br>mm | t<br>mm | Thread | Number<br>of teeth | Order No.<br>TINAMATIC |                        |
|------|-------------|-----------|---------|-----------|-----------|---------|--------|--------------------|------------------------|------------------------|
| P12  | P1212 *     | 1,814     | 14      | 11,7      | 2,30      | 1,3     | 1,178  | BSW / BSF - 14 Gg  | 3                      | <a href="#">160943</a> |
|      | P1212 *     | 2,117     | 12      | 11,7      | 2,25      | 1,4     | 1,374  | BSW / BSF - 12 Gg  | 3                      | <a href="#">160967</a> |
|      | P1212 *     | 2,309     | 11      | 11,7      | 2,25      | 1,4     | 1,498  | BSW / BSF - 11 Gg  | 3                      | <a href="#">161112</a> |
|      | P1212 *     | 2,540     | 10      | 11,7      | 2,25      | 1,4     | 1,646  | BSW / BSF - 10 Gg  | 3                      | <a href="#">161184</a> |
| P16  | P1616       | 1,814     | 14      | 16        | 2,15      | 1,675   | 1,178  | BSW / BSF - 14 Gg  | 6                      | <a href="#">142576</a> |
|      | P1616       | 2,117     | 12      | 16        | 2,15      | 1,675   | 1,374  | BSW / BSF - 12 Gg  | 6                      | <a href="#">160947</a> |
|      | P1616       | 2,309     | 11      | 16        | 2,75      | 2,075   | 1,498  | BSW / BSF - 11 Gg  | 6                      | <a href="#">142549</a> |
|      | P1616       | 2,540     | 10      | 16        | 2,15      | 1,675   | 1,646  | BSW / BSF - 10 Gg  | 6                      | <a href="#">167014</a> |
|      | P1616       | 2,822     | 9       | 16        | 2,15      | 1,675   | 1,829  | BSW / BSF - 9 Gg   | 6                      | <a href="#">160977</a> |
|      | P1616 **    | 3,175     | 8       | 16        | 2,65      | 1,820   | 2,056  | BSW / BSF - 8 Gg   | 6                      | <a href="#">161744</a> |
|      | P1616 **    | 3,629     | 7       | 16        | 3,15      | 2,225   | 2,348  | BSW / BSF - 7 Gg   | 6                      | <a href="#">162097</a> |
|      | P1616 **    | 4,233     | 6       | 16        | 3,15      | 2,225   | 2,737  | BSW / BSF - 6 Gg   | 6                      | <a href="#">162650</a> |
| P20  | P2020       | 1,814     | 14      | 20        | 2,05      | 1,725   | 1,178  | BSW / BSF - 14 Gg  | 6                      | <a href="#">168688</a> |
|      | P2020       | 2,117     | 12      | 20        | 2,15      | 1,725   | 1,374  | BSW / BSF - 12 Gg  | 6                      | <a href="#">160963</a> |
|      | P2020       | 2,309     | 11      | 20        | 2,05      | 1,725   | 1,498  | BSW / BSF - 11 Gg  | 6                      | <a href="#">168687</a> |
|      | P2020       | 2,540     | 10      | 20        | 2,15      | 1,725   | 1,646  | BSW / BSF - 10 Gg  | 6                      | <a href="#">160984</a> |
|      | P2020       | 2,822     | 9       | 20        | 2,15      | 1,725   | 1,829  | BSW / BSF - 9 Gg   | 6                      | <a href="#">160997</a> |
|      | P2020 ***   | 3,175     | 8       | 20        | 2,65      | 2,175   | 2,056  | BSW / BSF - 8 Gg   | 6                      | <a href="#">161113</a> |
|      | P2020 ***   | 3,629     | 7       | 20        | 2,65      | 2,175   | 2,348  | BSW / BSF - 7 Gg   | 6                      | <a href="#">161259</a> |
|      | P2020 ***   | 4,233     | 6       | 20        | 3,15      | 2,675   | 2,737  | BSW / BSF - 6 Gg   | 6                      | <a href="#">161325</a> |
| P25  | P2526       | 2,309     | 11      | 26        | 2,75      | 2,075   | 1,478  | BSW / BSF - 11 Gg  | 6                      | <a href="#">142600</a> |
|      | P2526       | 3,175     | 8       | 26        | 2,60      | 2,175   | 2,056  | BSW / BSF - 8 Gg   | 6                      | <a href="#">160949</a> |
|      | P2526       | 3,629     | 7       | 26        | 2,60      | 2,175   | 2,348  | BSW / BSF - 7 Gg   | 6                      | <a href="#">160950</a> |
|      | P2524       | 4,233     | 6       | 24        | 4,40      | 2,675   | 2,737  | BSW / BSF - 6 Gg   | 6                      | <a href="#">161130</a> |
|      | P2524       | 5,080     | 5       | 24        | 4,40      | 2,675   | 3,281  | BSW / BSF - 5 Gg   | 6                      | <a href="#">161400</a> |

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| Type |       | Pitch<br>mm | Pitch / " | D<br>mm | LP1<br>mm | LP2<br>mm | r<br>mm | S max.<br>mm | Number<br>of teeth | Order No.              |
|------|-------|-------------|-----------|---------|-----------|-----------|---------|--------------|--------------------|------------------------|
|      |       |             |           |         |           |           |         |              |                    | TINAMATIC              |
| P16  | P1616 | 2,54-3,175  | 14-8      | 16      | 2,75      | 1,625     | 0,35    | 2,5          | 6                  | <a href="#">173906</a> |
|      | P1616 | 1,814-2,309 | 14-11     | 16      | 2,15      | 1,35      | 0,2     | 1,5          | 6                  | <a href="#">162585</a> |
| P25  | P2526 | 4,233-6,35  | 6-4       | 26      | 2,65      | 2,175     | 0,6     | 2,8          | 6                  | <a href="#">177427</a> |

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

\* Not suited for cutter 177676

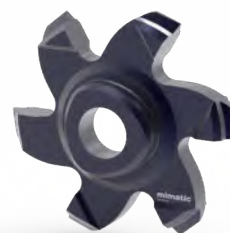
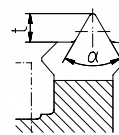
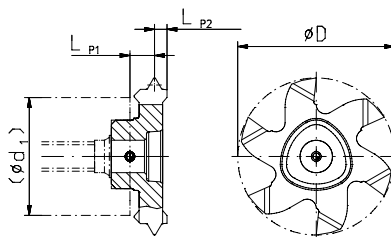
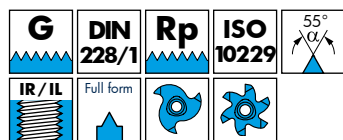
\*\* Not suited for cutters 123588 and 123590

\*\*\* Not suited for cutter 174314



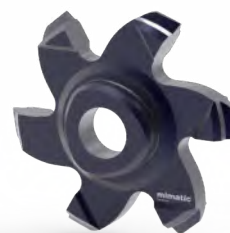
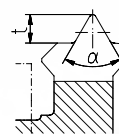
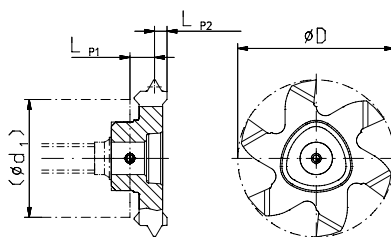
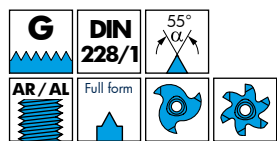
## Thread Milling

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



| Type | Pitch<br>mm | Pitch / " | D<br>mm | LP1<br>mm | LP2<br>mm | t<br>mm | Thread      | Number<br>of teeth | Order No.<br>TINAMATIC |
|------|-------------|-----------|---------|-----------|-----------|---------|-------------|--------------------|------------------------|
| P12  | P1210 *     | 1,337     | 19      | 9,6       | 2,25      | 1,2     | G ¼         | 3                  | <a href="#">160952</a> |
|      | P1210 *     | 1,337     | 19      | 9,6       | 2,25      | 1,2     | G ¾         | 3                  | <a href="#">171912</a> |
|      | P1212 *     | 1,814     | 14      | 11,7      | 2,25      | 1,2     | G ½ - G ¾   | 3                  | <a href="#">160970</a> |
|      | P1212 *     | 2,309     | 11      | 11,7      | 2,15      | 1,5     | G 1 - G 6   | 3                  | <a href="#">160996</a> |
| P16  | P1616       | 1,814     | 14      | 16        | 2,15      | 1,675   | G ½ - G ¾   | 6                  | <a href="#">160620</a> |
|      | P1616       | 1,814     | 14      | 16        | 2,15      | 1,675   | G ¾ - G ¾   | 6                  | <a href="#">142576</a> |
|      | P1616       | 2,309     | 11      | 16        | 2,75      | 2,075   | G 1 - G 6   | 6                  | <a href="#">142549</a> |
| P20  | P2020       | 1,814     | 14      | 20        | 2,05      | 1,725   | G ¾ - G ¾   | 6                  | <a href="#">168688</a> |
|      | P2020       | 2,309     | 11      | 20        | 2,05      | 1,725   | G 1 - G 6   | 6                  | <a href="#">168687</a> |
| P25  | P2526       | 2,309     | 11      | 26        | 2,15      | 1,675   | G 1 - G 1 ¼ | 6                  | <a href="#">160980</a> |
|      | P2526       | 2,309     | 11      | 26        | 2,75      | 2,075   | G 1 ½ - G 6 | 6                  | <a href="#">142600</a> |

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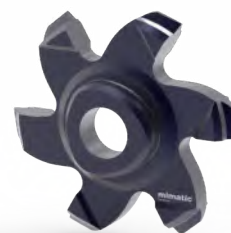
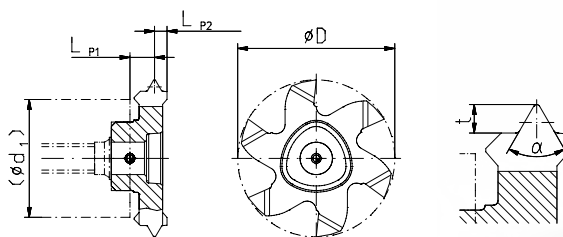
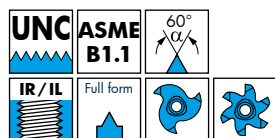
| Type | Pitch<br>mm | Pitch / " | D<br>mm | LP1<br>mm | LP2<br>mm | t<br>mm | Thread    | Number<br>of teeth | Order No.<br>TINAMATIC |
|------|-------------|-----------|---------|-----------|-----------|---------|-----------|--------------------|------------------------|
| P12  | P1210 *     | 1,337     | 19      | 9,6       | 2,25      | 1,2     | G ¼ - G ¾ | 3                  | <a href="#">171912</a> |
|      | P1212 *     | 1,814     | 14      | 11,7      | 2,3       | 1,1     | G ½ - G ¾ | 3                  | <a href="#">160943</a> |
|      | P1212 *     | 2,309     | 11      | 11,7      | 2,25      | 1,4     | G 1 - G 6 | 3                  | <a href="#">161112</a> |
| P16  | P1616       | 1,814     | 14      | 16        | 2,15      | 1,675   | G ½ - G ¾ | 6                  | <a href="#">142576</a> |
|      | P1616       | 2,309     | 11      | 16        | 2,75      | 2,075   | G 1 - G 6 | 6                  | <a href="#">142549</a> |
|      | P1618       | 1,814     | 14      | 17,7      | 3,15      | 0,95    | G ½ - G ¾ | 6                  | <a href="#">171949</a> |
| P20  | P2020       | 1,814     | 14      | 20        | 2,5       | 1,725   | G ¾ - G ¾ | 6                  | <a href="#">168688</a> |
|      | P2020       | 2,309     | 11      | 20        | 2,5       | 1,725   | G 1 - G 6 | 6                  | <a href="#">168687</a> |
| P25  | P2526       | 2,309     | 11      | 26        | 2,75      | 2,075   | G 1 - G 6 | 6                  | <a href="#">142600</a> |

CLICK ME!

**i** Taper pipe thread R according to ISO 10226 on request

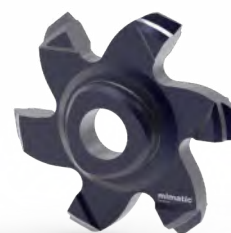
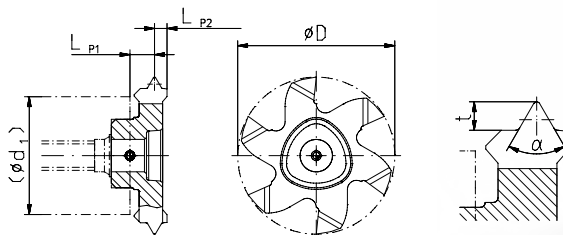
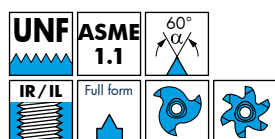
## Thread Milling

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



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

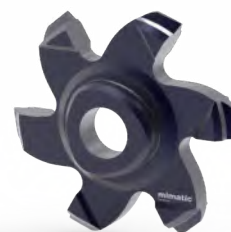
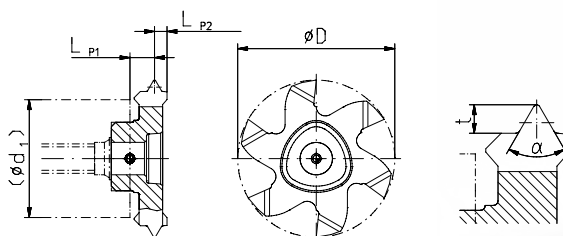
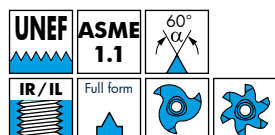
CLICK ME!



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

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### Article conditioned on stock



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

CLICK ME!

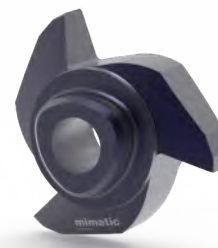
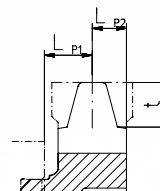
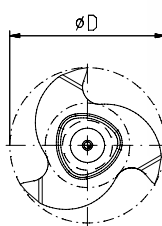
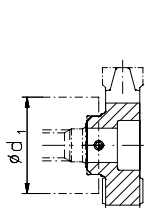
\* Not suited for cutter 177676

\*\* Not suited for cutter 174314

\*\*\* Not suited for cutter 123613 and 161205

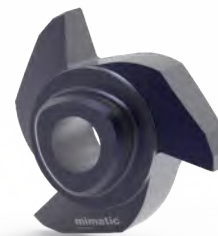
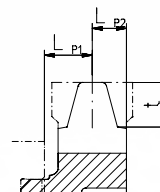
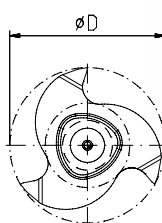
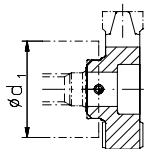
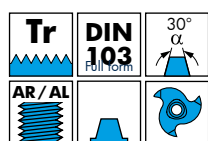
## Thread Milling

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



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

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| Type | Pitch<br>mm | D<br>mm | LP1<br>mm | LP2<br>mm | t<br>mm | Chip<br>angle | Number<br>of teeth | Order No.<br>TINAMATIC |                                   |
|------|-------------|---------|-----------|-----------|---------|---------------|--------------------|------------------------|-----------------------------------|
| P12  | P1210 *     | 1,5     | 9,6       | 2,775     | 0,575   | 0,90          | 6°                 | 3                      | <a href="#">161243</a>            |
|      | P1212 *     | 2,0     | 11,7      |           |         | 1,25          | 6°                 | 3                      | <a href="#">200635</a> <b>NEW</b> |
|      | P1212 *     | 3,0     | 11,7      |           |         | 1,75          | 6°                 | 3                      | On request                        |
|      | P1212 *     | 4,0     | 11,7      |           |         | 2,25          | 6°                 | 3                      | <a href="#">198739</a> <b>NEW</b> |
| P16  | P1616       | 3,0     | 16,0      |           |         | 1,75          | 8°                 | 3                      | <a href="#">198335</a> <b>NEW</b> |
|      | P1616 **    | 4,0     | 16,0      | 2,4       | 1,63    | 2,25          | 8°                 | 3                      | <a href="#">161588</a>            |
|      | 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                      | <a href="#">195655</a> <b>NEW</b> |
|      | P2526 ***   | 5,0     | 26        |           |         | 2,75          | 6°                 | 6                      | <a href="#">160270</a> <b>NEW</b> |
|      | P2526 ****  | 6,0     | 26        |           |         | 3,5           | 6°                 | 6                      | <a href="#">203633</a> <b>NEW</b> |
|      | P2525 ***   | 7,0     | 25        |           |         | 4,0           | 8°                 | 3                      | <a href="#">206245</a> <b>NEW</b> |
|      | P2525 ***   | 8,0     | 26        |           |         | 4,25          | 6°                 | 6                      | <a href="#">174605</a> <b>NEW</b> |
|      | P2525 ***   | 9,0     | 26        |           |         | 5,0           | 8°                 | 6                      | <a href="#">194539</a> <b>NEW</b> |
|      | P2525 ***   | 10,0    | 25 / 26   |           |         | 5,5           | 8° / 6°            | 3 / 6                  | On request                        |

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- \* Not suited for cutter 177676
- \*\* Not suited for cutters 123588 and 123590
- \*\*\* Not suited for cutters 123613, 123609, 123611 and 161205
- \*\*\*\* Not suited for cutters 161205 and 123613

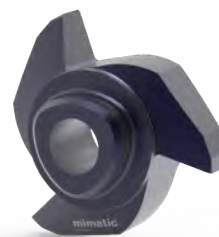
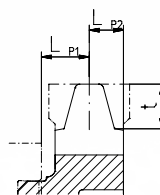
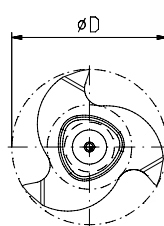
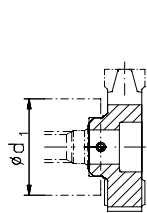
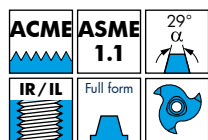


Only single-start thread!



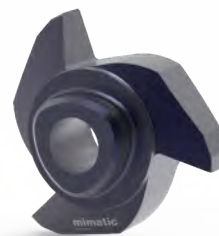
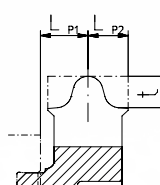
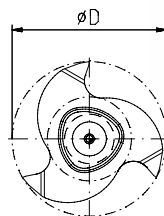
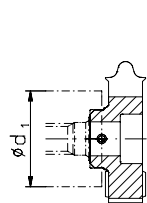
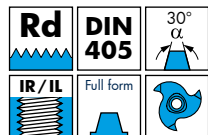
## Thread Milling

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



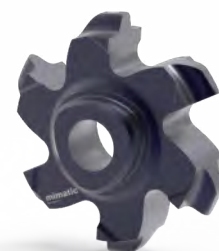
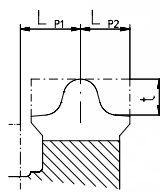
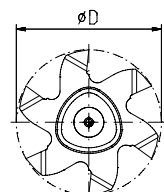
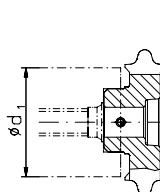
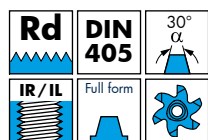
| Type |         | Pitch<br>mm | Pitch / " | D<br>mm | LP1<br>mm | LP2<br>mm | t<br>mm | Thread            | Chip<br>angle | Number<br>of teeth | Order No.<br>TINAMATIC |
|------|---------|-------------|-----------|---------|-----------|-----------|---------|-------------------|---------------|--------------------|------------------------|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

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

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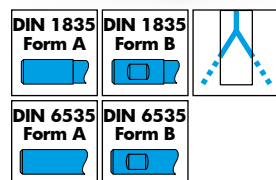
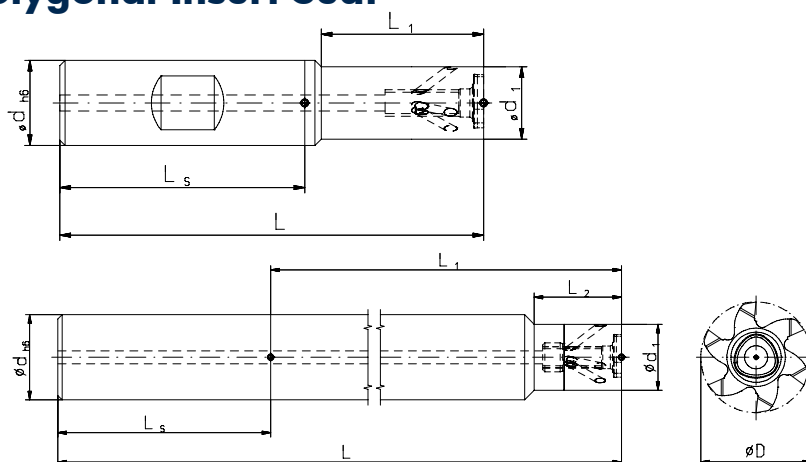
| Type |       | Pitch<br>mm | Pitch / " | D<br>mm | LP1<br>mm | LP2<br>mm | t<br>mm | Thread                  | Chip<br>angle | Number<br>of teeth | Order No.              |
|------|-------|-------------|-----------|---------|-----------|-----------|---------|-------------------------|---------------|--------------------|------------------------|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

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**i** Knuckle thread acc. to DIN 20400 on request

## 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<br>mm | d1<br>mm | S <sub>max.</sub><br>(D-d1)/2<br>mm | L<br>mm | L1<br>mm | L2<br>mm | Shaft   | Screw-driver *                   | Screw *                           |
| P12  | <a href="#">177170</a>            | A    | 10         | 7,0      | 3,5                                 | 54      | 8        | -        | Steel   | T8 IP<br><a href="#">111656</a>  | M2,5x7<br><a href="#">107596</a>  |
|      | <a href="#">123619</a>            | B    | 12         | 7,0      | 3,5                                 | 67,5    | 20       | -        | Steel   |                                  |                                   |
|      | <a href="#">100228</a>            | B    | 12         | 7,0      | 3,5                                 | 67,5    | 20       | -        | Carbide |                                  |                                   |
|      | <a href="#">171778</a>            | A    | 12         | 7,0      | 3,5                                 | 67,5    | 20       | -        | Carbide |                                  |                                   |
|      | <a href="#">171780</a>            | B    | 12         | 7,0      | 3,5                                 | 80      | 30       | -        | Carbide |                                  |                                   |
|      | <a href="#">171781</a>            | A    | 12         | 7,0      | 3,5                                 | 80      | 30       | -        | Carbide |                                  |                                   |
|      | <a href="#">171783</a>            | B    | 12         | 7,0      | 3,5                                 | 100     | 40       | -        | Carbide |                                  |                                   |
|      | <a href="#">171784</a>            | A    | 12         | 7,0      | 3,5                                 | 100     | 40       | -        | Carbide |                                  |                                   |
| P16  | <a href="#">177174</a>            | A    | 10         | 9,0      | 6,5                                 | 60      | 11       | -        | Steel   | T8 IP<br><a href="#">111656</a>  | M3x12<br><a href="#">143158</a>   |
|      | <a href="#">123573</a>            | B    | 12         | 9,0      | 6,5                                 | 67,4    | 21       | -        | Steel   |                                  |                                   |
|      | <a href="#">123577</a>            | B    | 12         | 9,0      | 6,5                                 | 67,4    | 21       | -        | Carbide |                                  |                                   |
|      | <a href="#">171787</a>            | A    | 12         | 9,0      | 6,5                                 | 67,4    | 21       | -        | Carbide |                                  |                                   |
|      | <a href="#">123580</a>            | B    | 12         | 9,0      | 6,5                                 | 82,4    | 36       | -        | Carbide |                                  |                                   |
|      | <a href="#">171789</a>            | A    | 12         | 9,0      | 6,5                                 | 82,4    | 36       | -        | Carbide |                                  |                                   |
|      | <a href="#">123584</a>            | A    | 12         | 9,0      | 6,5                                 | 100     | 30       | -        | Carbide |                                  |                                   |
|      | <a href="#">123588</a>            | A    | 12         | 11,5     | 5,25                                | 82,4    | 37,4     | 13       | Carbide |                                  |                                   |
| P20  | <a href="#">123590</a>            | A    | 12         | 12,0     | 5,0                                 | 122,5   | 77,5     | -        | Carbide | T15 IP<br><a href="#">111671</a> | M4x13<br><a href="#">107597</a>   |
|      | <a href="#">177178</a>            | A    | 12         | 11,5     | 10,25                               | 62,4    | 14,4     | -        | Steel   |                                  |                                   |
|      | <a href="#">123615</a>            | B    | 16         | 11,5     | 10,25                               | 80      | 30       | -        | Steel   |                                  |                                   |
|      | <a href="#">123616</a>            | B    | 16         | 11,5     | 10,25                               | 80      | 30       | -        | Carbide |                                  |                                   |
|      | <a href="#">171794</a>            | A    | 16         | 11,5     | 10,25                               | 80      | 30       | -        | Carbide |                                  |                                   |
|      | <a href="#">123617</a>            | B    | 16         | 11,5     | 10,25                               | 100     | 50       | -        | Carbide |                                  |                                   |
|      | <a href="#">171796</a>            | A    | 16         | 11,5     | 10,25                               | 100     | 50       | -        | Carbide |                                  |                                   |
|      | <a href="#">174314</a>            | A    | 16         | 15,5     | 8,25                                | 105,5   | 57,5     | 20       | Carbide |                                  |                                   |
| P25  | <a href="#">177182</a>            | A    | 16         | 13,6     | 11,7                                | 69,6    | 20,4     | -        | Steel   | T20 IP<br><a href="#">111594</a> | M5x13,5<br><a href="#">107529</a> |
|      | <a href="#">123592</a>            | B    | 16         | 13,6     | 11,7                                | 79,6    | 30,5     | -        | Steel   |                                  |                                   |
|      | <a href="#">123598</a>            | B    | 16         | 13,6     | 11,7                                | 79,6    | 30,5     | -        | Carbide |                                  |                                   |
|      | <a href="#">171855</a>            | A    | 16         | 13,6     | 11,7                                | 79,6    | 30,5     | -        | Carbide |                                  |                                   |
|      | <a href="#">123600</a>            | B    | 16         | 13,6     | 11,7                                | 94,6    | 45,5     | -        | Carbide |                                  |                                   |
|      | <a href="#">171857</a>            | A    | 16         | 13,6     | 11,7                                | 94,6    | 45,5     | -        | Carbide |                                  |                                   |
|      | <a href="#">123603</a>            | B    | 16         | 13,6     | 11,7                                | 109,6   | 60,5     | -        | Carbide |                                  |                                   |
|      | <a href="#">171859</a>            | A    | 16         | 13,6     | 11,7                                | 109,6   | 60,5     | -        | Carbide |                                  |                                   |
|      | <a href="#">123609</a>            | A    | 16         | 15,5     | 10,75                               | 105     | 57       | 21,5     | Carbide |                                  |                                   |
|      | <a href="#">123611</a>            | A    | 16         | 15,5     | 10,75                               | 149,5   | 101,5    | 21,5     | Carbide |                                  |                                   |
|      | <a href="#">161205</a> <b>NEW</b> | A    | 20         | 15,5     | 10,75                               | 100     | 52       | 21,5     | Carbide |                                  |                                   |
|      | <a href="#">123613</a>            | A    | 20         | 15,5     | 10,75                               | 174,45  | 128,5    | 21,5     | Carbide |                                  |                                   |

\* Screwdriver and clamping screw included in delivery

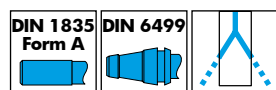
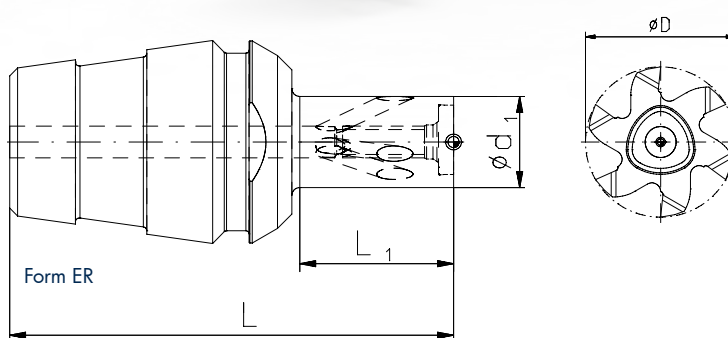
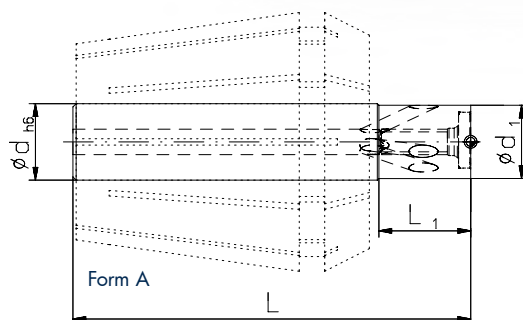
Screw torques max.

|                        |        |        |
|------------------------|--------|--------|
| <a href="#">107596</a> | T08 IP | 1,0 Nm |
| <a href="#">143158</a> | T08 IP | 1,1 Nm |
| <a href="#">107597</a> | T15 IP | 3,8 Nm |
| <a href="#">107529</a> | T20 IP | 5,5 Nm |

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## Circular Milling Tools for Driven Toolholders

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



| Type | Order No.              | Form  | dh6<br>mm | d1<br>mm | S <sub>max.</sub><br>(D-d1)/2<br>mm | L<br>mm | L1<br>mm | Shaft | Spare part No.                   |                                   |
|------|------------------------|-------|-----------|----------|-------------------------------------|---------|----------|-------|----------------------------------|-----------------------------------|
|      |                        |       |           |          |                                     |         |          |       | Screw-driver *                   | Screw *                           |
| P12  | <a href="#">177170</a> | A     | 10        | 7,0      | 3,5                                 | 54      | 8        | Steel | T8 IP<br><a href="#">111656</a>  | M2,5x7<br><a href="#">107596</a>  |
|      | <a href="#">177172</a> | ER 16 |           | 7,0      | 3,5                                 | 37,5    | 8        | Steel |                                  |                                   |
|      | <a href="#">177173</a> | ER 20 |           | 7,0      | 3,5                                 | 47      | 13       | Steel |                                  |                                   |
| P16  | <a href="#">177174</a> | A     | 10        | 9,0      | 6,5                                 | 60      | 11       | Steel | T8 IP<br><a href="#">111656</a>  | M3x12<br><a href="#">143158</a>   |
|      | <a href="#">177176</a> | ER 16 |           | 9,0      | 6,5                                 | 41,4    | 11       | Steel |                                  |                                   |
|      | <a href="#">177177</a> | ER 20 |           | 9,0      | 6,5                                 | 51      | 16       | Steel |                                  |                                   |
| P20  | <a href="#">177178</a> | A     | 12        | 11,5     | 10,25                               | 62,4    | 14,4     | Steel | T15 IP<br><a href="#">111671</a> | M4x13<br><a href="#">107597</a>   |
|      | <a href="#">177180</a> | ER 20 |           | 11,5     | 10,25                               | 49,5    | 14,5     | Steel |                                  |                                   |
|      | <a href="#">177181</a> | ER 25 |           | 11,5     | 10,2                                | 56      | 19,4     | Steel |                                  |                                   |
| P25  | <a href="#">177182</a> | A     | 16        | 13,6     | 11,7                                | 69,6    | 20,4     | Steel | T20 IP<br><a href="#">111594</a> | M5x13,5<br><a href="#">107529</a> |
|      | <a href="#">177184</a> | ER 25 |           | 13,6     | 11,7                                | 56      | 19,4     | Steel |                                  |                                   |
|      | <a href="#">177185</a> | ER 32 |           | 13,6     | 11,7                                | 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

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## 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.

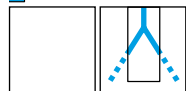
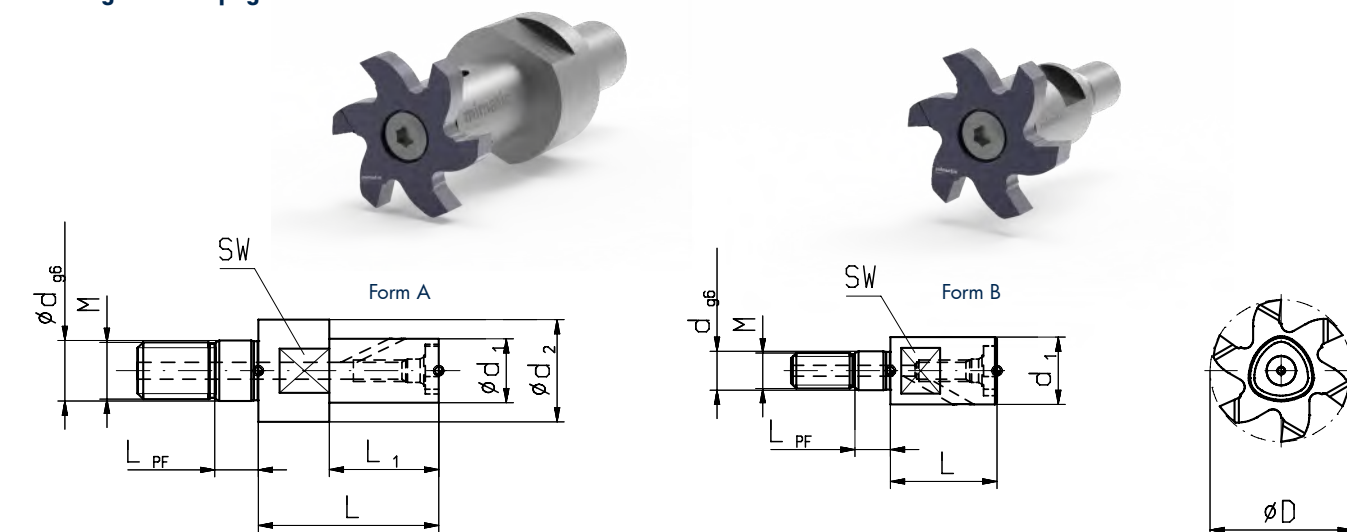


\* Screwdriver and clamping screw included in delivery



## 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<br>mm | d2<br>mm | S max.<br>(D-d1)/2<br>mm | L<br>mm | L1<br>mm | M   | dg6<br>mm | L <sub>PF</sub><br>mm | Spare part No.         |                        |
|--------|------------------------|------|----------|----------|--------------------------|---------|----------|-----|-----------|-----------------------|------------------------|------------------------|
|        |                        |      |          |          |                          |         |          |     |           |                       | Screw-<br>driver *     | Screw *                |
| P12*** | <a href="#">177676</a> | B    | 9,5      | –        | 2,25                     | 10,0    | –        | M5  | 5,5       | 5,0                   | <a href="#">111656</a> | <a href="#">107596</a> |
| P16    | <a href="#">123586</a> | A    | 9,0      | 14,4     | 6,5 / 3,8                | 25,4    | 15,4     | M8  | 8,5       | 5,5                   | <a href="#">111656</a> | <a href="#">143158</a> |
| P16**  | <a href="#">177683</a> | B    | 9,5      | –        | 6,25                     | 15,0    | –        | M5  | 5,5       | 5,0                   | <a href="#">111656</a> | <a href="#">143158</a> |
| P16*** | <a href="#">177698</a> | B    | 11,0     | –        | 5,5                      | 15,0    | –        | M6  | 6,5       | 5,0                   | <a href="#">111656</a> | <a href="#">143158</a> |
| P20    | <a href="#">123618</a> | A    | 11,5     | 18,0     | 10,25 / 7                | 29,4    | 19,4     | M10 | 10,5      | 5,5                   | <a href="#">111671</a> | <a href="#">107597</a> |
| P20**  | <a href="#">177734</a> | B    | 11,5     | –        | 10,25                    | 15,0    | –        | M6  | 6,5       | 5,0                   | <a href="#">111671</a> | <a href="#">107597</a> |
| P20*** | <a href="#">177735</a> | B    | 13,5     | –        | 9,25                     | 15,0    | –        | M8  | 8,5       | 5,5                   | <a href="#">111671</a> | <a href="#">107597</a> |
| P25    | <a href="#">123605</a> | A    | 13,6     | 22,5     | 11,7 / 7,25              | 37,9    | 24,9     | M12 | 12,5      | 5,5                   | <a href="#">111594</a> | <a href="#">107529</a> |
| P25**  | <a href="#">177747</a> | B    | 13,6     | –        | 11,7                     | 18,0    | –        | M8  | 8,5       | 5,5                   | <a href="#">111594</a> | <a href="#">107529</a> |
| P25*** | <a href="#">177767</a> | B    | 18,0     | –        | 9,5                      | 18,0    | –        | M10 | 10,5      | 5,5                   | <a href="#">111594</a> | <a href="#">107529</a> |

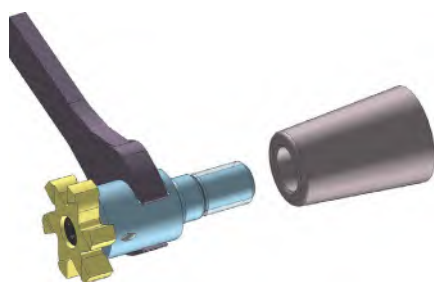
- \* Screwdriver and clamping screw included in delivery
- \*\* Slim design for thread milling
- \*\*\* Reinforced design

| Screw torques max.     |        |        |
|------------------------|--------|--------|
| <a href="#">107596</a> | T8 IP  | 1,0 Nm |
| <a href="#">143158</a> | T8 IP  | 1,1 Nm |
| <a href="#">107597</a> | T15 IP | 3,8 Nm |
| <a href="#">107529</a> | T20 IP | 5,5 Nm |

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## Assembling Instructions

- Recommended tightening torque for screw-in circular milling body
- End-wrench see page 153

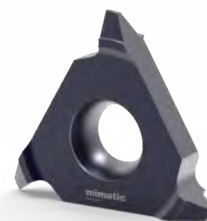
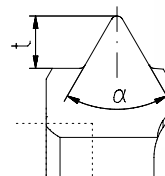
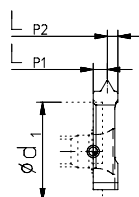
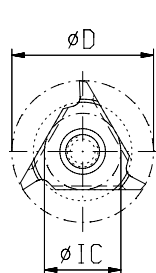
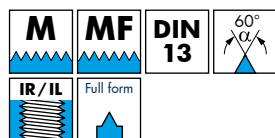


| Thread size<br>(M) | Wrench size<br>mm | Tightening torque<br>Nm |
|--------------------|-------------------|-------------------------|
| M5                 | 7                 | 8                       |
| M6                 | 9                 | 10                      |
| M8                 | 11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

**TriMILL**

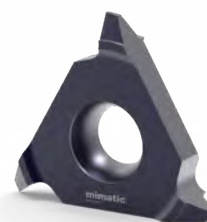
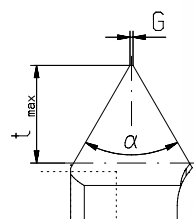
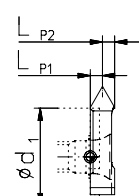
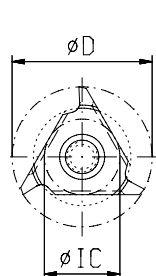
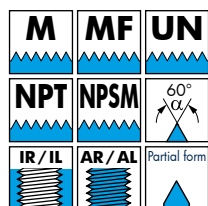
## Thread Milling

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



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

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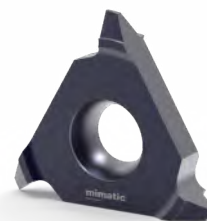
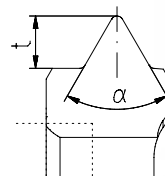
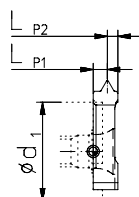
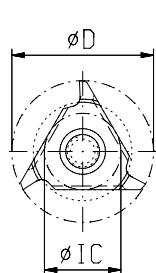
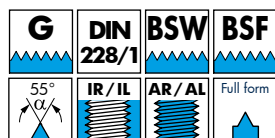


| Type | Pitch<br>mm | Thread<br>Nominal Ø | D<br>mm | IC<br>mm | LP1<br>mm | LP2<br>mm | G<br>mm | t max.<br>mm | Order No.<br>TINAMATIC |
|------|-------------|---------------------|---------|----------|-----------|-----------|---------|--------------|------------------------|
| 03   | 1-2,0       | ≥ 14                | 10,6    | 5,5      | 1,5       | 1,5       | 0,1     | 1,6          | <a href="#">141677</a> |
| 02   | 1-3,5       | ≥ 22                | 17,5    | 9,2      | 1,59      | 1,91      | 0,1     | 2,15         | <a href="#">141528</a> |
| 01   | 1-4,0       | ≥ 27                | 23,0    | 12,4     | 1,85      | 2,15      | 0,1     | 2,45         | <a href="#">141366</a> |

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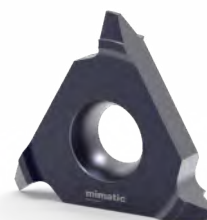
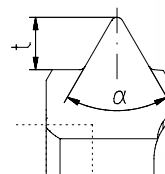
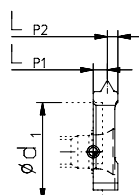
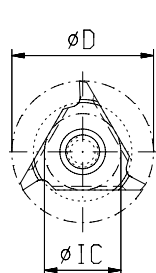
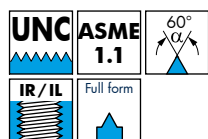
## Thread Milling

- 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"              | <a href="#">141652</a> |
|      | 1,337    | 19        | 10,6 | 5,5   | 1,25   | 1,09   | 0,871 | G 3/8"              | <a href="#">141682</a> |
| 02   | 1,814 *  | 14        | 16,0 | 9,2   | 1,75   | 1,75   | 1,162 | G 1/2"              | <a href="#">141508</a> |
|      | 1,814    | 14        | 17,5 | 9,2   | 2,2    | 1,3    | 1,162 | G 3/4"              | <a href="#">141488</a> |
|      | 2,309    | 11        | 17,5 | 9,2   | 1,9    | 1,6    | 1,494 | ≥ G 1"              | <a href="#">141522</a> |
|      | 3,175    | 8         | 17,5 | 9,2   | 1,75   | 1,75   | 1,830 | BSW 1"              | <a href="#">160665</a> |
|      | 3,175    | 8         | 17,5 | 9,2   | 1,75   | 1,75   | 1,830 | BSW 1 1/8" - 1 1/2" | <a href="#">161718</a> |
| 01   | 2,309    | 11        | 23,0 | 12,4  | 2,4    | 1,6    | 1,494 | ≥ G 1"              | <a href="#">141381</a> |

CLICK ME!



| 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 | <a href="#">149460</a> |
|      | 2,309 ** | 11        | 10,6 | 5,5   | 1,17   | 1,17   | 1,349 | UNC 5/8" - 11 | <a href="#">149204</a> |
|      | 2,540 ** | 10        | 10,6 | 5,5   | 1,17   | 1,17   | 1,470 | UNC 3/4" - 10 | <a href="#">149732</a> |

CLICK ME!

## 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](mailto:info@mimatic.de)

**Request form:**  
[www.mimatic.de/Gew\\_EN.pdf](http://www.mimatic.de/Gew_EN.pdf)

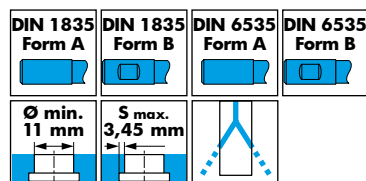
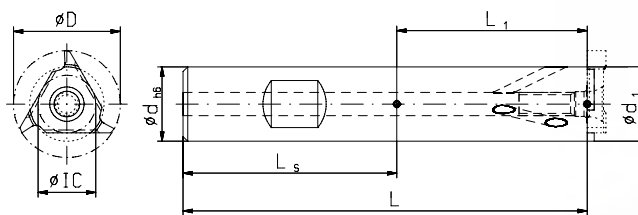


\* Only for external threads  
\*\* Not suited for cutters 123489



## Circular Milling Tools

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



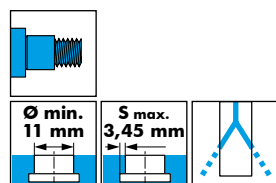
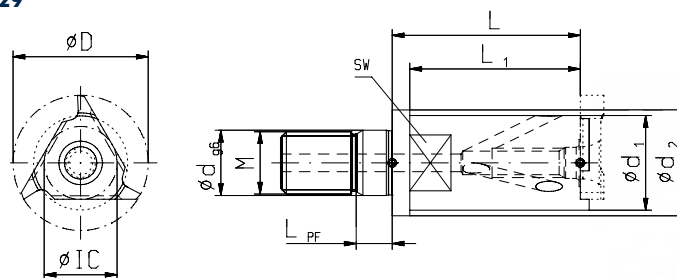
|      |                            |      |      |       |        |       |           |       |       |         | Spare part No.                   |                        |
|------|----------------------------|------|------|-------|--------|-------|-----------|-------|-------|---------|----------------------------------|------------------------|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

|                        |        |        |
|------------------------|--------|--------|
| <a href="#">107530</a> | T6 IP  | 0,9 Nm |
| <a href="#">107547</a> | T15 IP | 3,8 Nm |
| <a href="#">107551</a> | T20 IP | 5,5 Nm |

- Tightening torques see page 29



Please adapt cutting data to overhangs length



Limited max. cutting depth Smax



|      |                        |      |       |        |       |       |           |       |       |   | 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   | <a href="#">123481</a> | 10,6 | 5,5   | 6,5    | 7,4   | 10,0  | 1,60      | 22,66 | 13,66 |   | <a href="#">111705</a> | <a href="#">107530</a> |
| 02   | <a href="#">123450</a> | 17,5 | 9,2   | 8,5    | 12,2  | 15,4  | 2,60      | 27,5  | 18,5  |   | <a href="#">111671</a> | <a href="#">107547</a> |
| 01   | <a href="#">123419</a> | 23,0 | 12,4  | 10,5   | 16,1  | 18,0  | 3,45      | 32,0  | 29,0  |   | <a href="#">111594</a> | <a href="#">107551</a> |

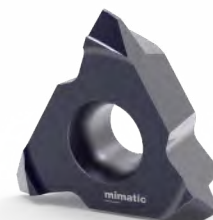
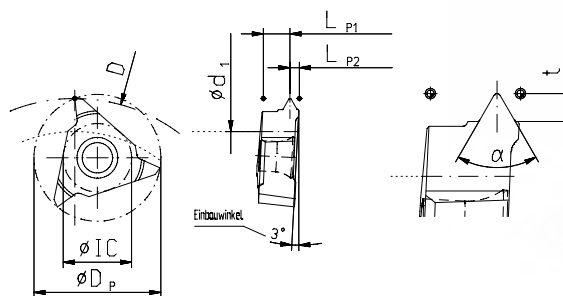
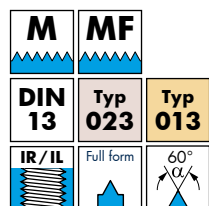
Screw torques max.

|                        |        |        |
|------------------------|--------|--------|
| <a href="#">107530</a> | T6 IP  | 0,9 Nm |
| <a href="#">107547</a> | T15 IP | 3,8 Nm |
| <a href="#">107551</a> | T20 IP | 5,5 Nm |

\* Screwdriver and clamping screw included in delivery

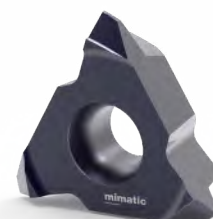
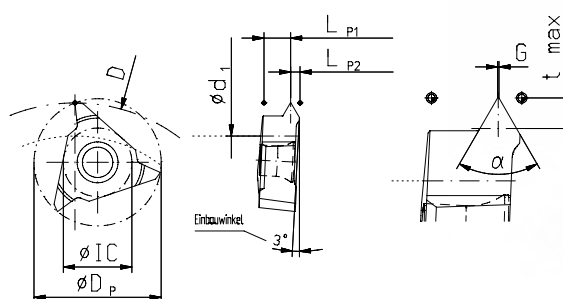
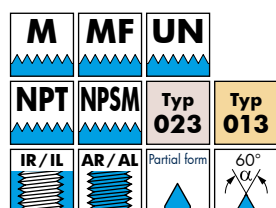
## Thread Milling

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



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

CLICK ME!



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

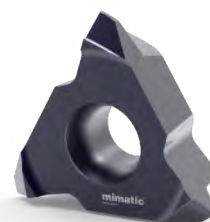
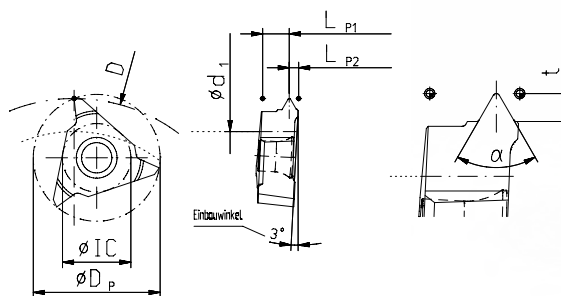
CLICK ME!

**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.<br>TINAMATIC |
|------|----------|-----------|-------|-------|--------|--------|-------|------------------------|
| 023  | 2,309    | 11        | 17,5  | 9,2   | 3,33   | 1,7    | 1,494 | <a href="#">142022</a> |
| 013  | 2,309    | 11        | 23,0  | 12,4  | 4,14   | 2,39   | 1,494 | <a href="#">141941</a> |

CLICK ME!

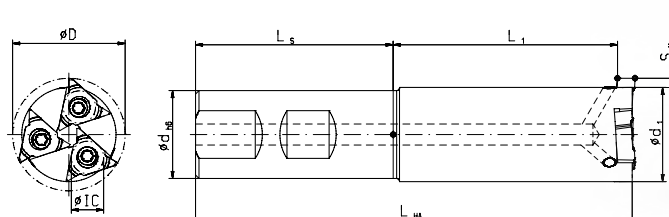


**TriMILL 023**

## 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.                          |                        |
|------------------------|------|---------|-------|-----------|--------|--------|-------|---------|-------|-----------------------------------------|------------------------|
| <a href="#">123462</a> | 32   | 25      | 26,8  | 2,6       | 124,2  | 119,97 | 61,97 | 3       | Steel | <a href="#">T15 IP</a><br>Screw-driver* | Screw *                |
|                        |      |         |       |           |        |        |       |         |       | <a href="#">111671</a>                  | <a href="#">107547</a> |

Screw torque max. 3,8 Nm

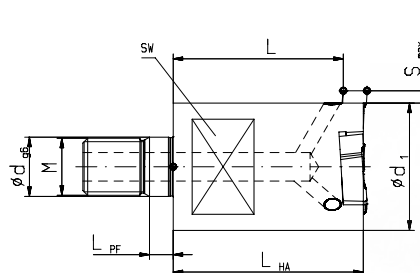
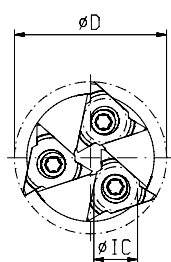
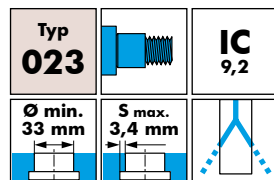
CLICK ME!

## 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



Spare part No.

T15 IP  
Screw-  
driver \*

Screw \*

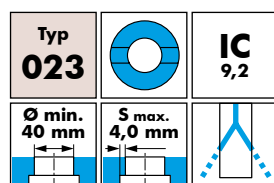
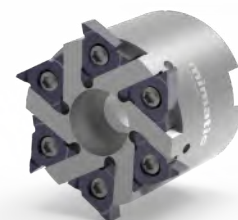
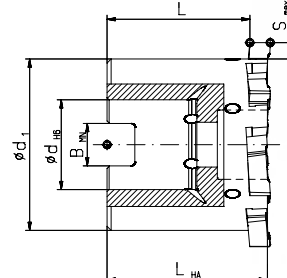
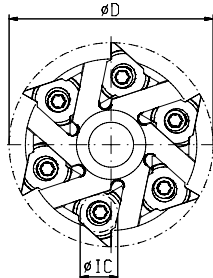
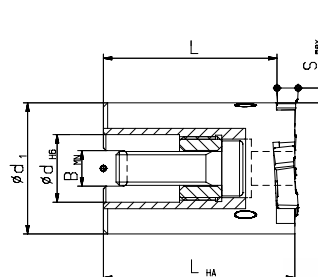
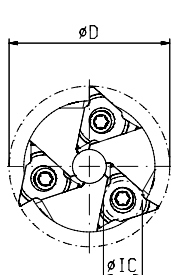
111671

107547

Screw torque max. 3,8 Nm

CLICK  
ME!

- Assembly instruction see page 178



Accessories

Spare part No.

| Order No. | D<br>mm | dH6<br>mm | d1<br>mm | S max.<br>mm | LHA<br>mm | L<br>mm | BMN<br>mm | Cutting<br>edge |
|-----------|---------|-----------|----------|--------------|-----------|---------|-----------|-----------------|
| 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               |



Key

Cutter  
fastening  
screw

T15 IP  
Screw-  
driver

Screw

114476\*

111671\*

107547\*

114684\*

111671\*

107547\*

114684\*

111671\*

107547\*

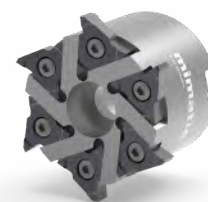
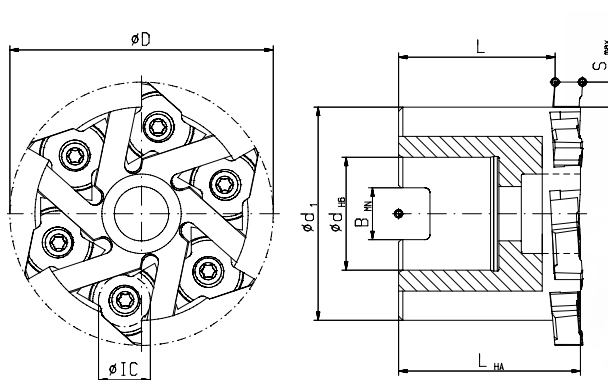
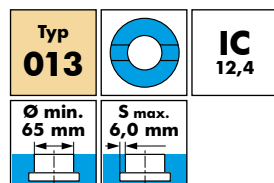
Screw torque max. 3,8 Nm

CLICK  
ME!



## Circular Milling Tools

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



| Order No.              | D<br>mm | dH6<br>mm | d1<br>mm | S max.<br>mm | LHA<br>mm | L<br>mm | B MN<br>mm | Inserts |
|------------------------|---------|-----------|----------|--------------|-----------|---------|------------|---------|
| <a href="#">123435</a> | 63      | 27        | 51       | 6            | 43,18     | 37,5    | 12,4       | 6       |

Spare part No.

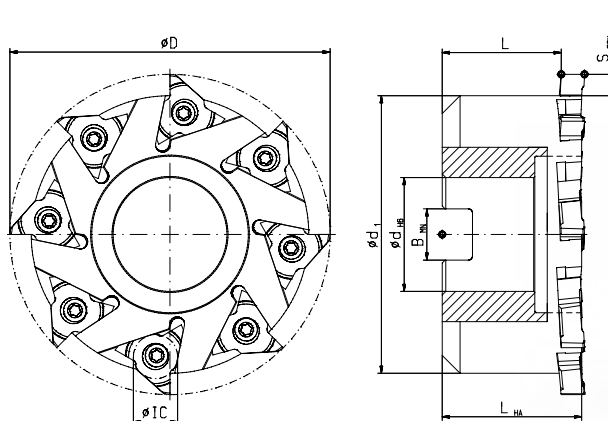
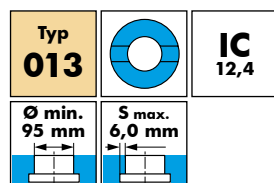
|                                 |                        |
|---------------------------------|------------------------|
| <b>T20 IP</b><br>Screw-driver * | Screw *                |
| <a href="#">111594</a>          | <a href="#">107551</a> |

Screw torque 5,5 Nm

Cutter clamping screw internal hexagon

Order No. [114695](#)

CLICK  
ME!



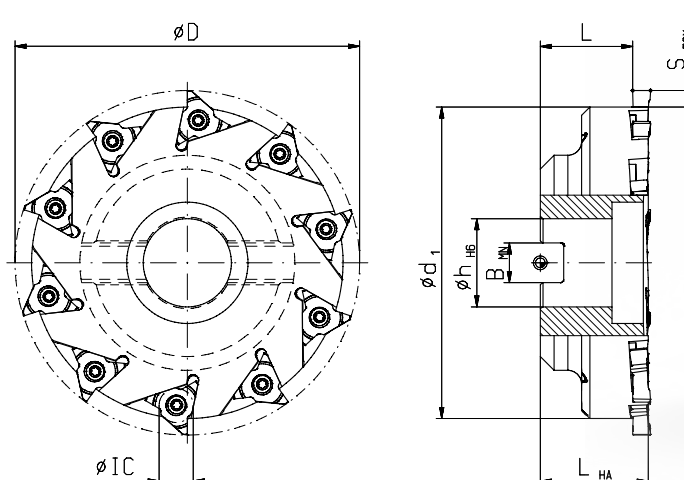
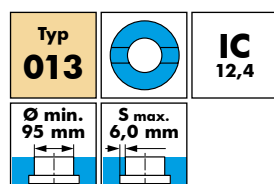
| Order No.              | D<br>mm | dH6<br>mm | d1<br>mm | S max.<br>mm | LHA<br>mm | L<br>mm | B MN<br>mm | Inserts |
|------------------------|---------|-----------|----------|--------------|-----------|---------|------------|---------|
| <a href="#">123436</a> | 90      | 32        | 78       | 6            | 39,2      | 33,5    | 14,4       | 8       |

Spare part No.

|                                 |                        |
|---------------------------------|------------------------|
| <b>T20 IP</b><br>Screw-driver * | Screw *                |
| <a href="#">111594</a>          | <a href="#">107551</a> |

Screw torque 5,5 Nm

CLICK  
ME!



| Order No.              | D<br>mm | dH6<br>mm | d1<br>mm | S max.<br>mm | LHA<br>mm | L<br>mm | B MN<br>mm | Inserts |
|------------------------|---------|-----------|----------|--------------|-----------|---------|------------|---------|
| <a href="#">134561</a> | 125     | 32        | 113      | 6,0          | 39,2      | 33,5    | 14,4       | 10      |

Spare part No.

|                                 |                        |
|---------------------------------|------------------------|
| <b>T20 IP</b><br>Screw-driver * | Screw *                |
| <a href="#">111594</a>          | <a href="#">107551</a> |

Screw torque 5,5 Nm

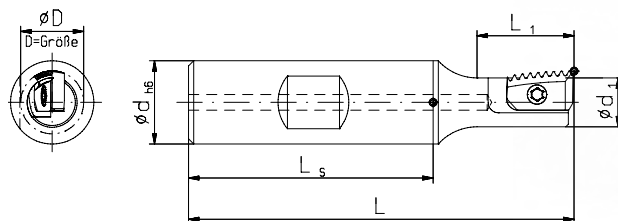
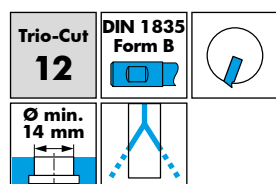
CLICK  
ME!

\* Screwdriver and clamping screw included in delivery

# TrioCUT

## Circular Milling Tools

- Inserts see below
- Cutting data see page 166



| Order No.                | D<br>mm | d <sub>h6</sub><br>mm | d <sub>1</sub><br>mm | L<br>mm | L <sub>1</sub><br>mm | Shaft | Spare part No.          |         |
|--------------------------|---------|-----------------------|----------------------|---------|----------------------|-------|-------------------------|---------|
| 123620                   | 12      | 16                    | 9,4                  | 74      | 18                   | Steel | T8 IP<br>Screw-driver * | Screw * |
|                          |         |                       |                      |         |                      |       | 111656                  | 115567  |
| Screw torque max. 1,1 Nm |         |                       |                      |         |                      |       |                         |         |

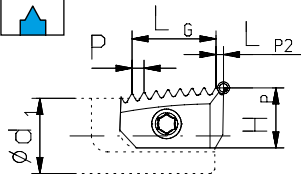
CLICK ME!

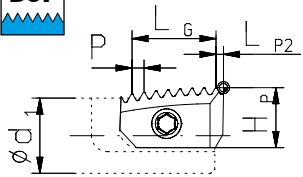
## Circular Milling Inserts

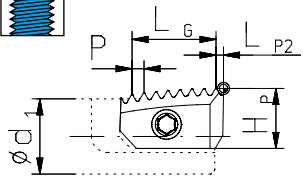
Trio-Cut  
12



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

|                                                                                                 |                                                                                                      |                                                                                                     |                                                                                                  |                                                                                     |             |          |            |       |             |                        |
|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------|----------|------------|-------|-------------|------------------------|
| <br><b>M</b> | <br><b>DIN 13</b> | <br><b>IR/IL</b> | <br>Full form |  | Pitch<br>mm | HP<br>mm | LG**<br>mm | Teeth | LP2**<br>mm | Order No.<br>TINAMATIC |
|                                                                                                 |                                                                                                      |                                                                                                     |                                                                                                  |                                                                                     | 1,0         | 7,5      | 11,0       | 12    | 0,5         | <a href="#">142594</a> |
|                                                                                                 |                                                                                                      |                                                                                                     |                                                                                                  |                                                                                     | 1,5         | 7,5      | 10,5       | 8     | 0,75        | <a href="#">142694</a> |
|                                                                                                 |                                                                                                      |                                                                                                     |                                                                                                  |                                                                                     |             |          |            |       |             |                        |
|                                                                                                 |                                                                                                      |                                                                                                     |                                                                                                  |                                                                                     |             |          |            |       |             |                        |

|                                                                                                 |                                                                                                         |                                                                                                   |                                                                                                   |                                                                                     |             |         |          |            |       |             |                        |
|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------|---------|----------|------------|-------|-------------|------------------------|
| <br><b>G</b> | <br><b>DIN 228/1</b> | <br><b>BSW</b> | <br><b>BSF</b> |  | Pitch<br>mm | Pitch/" | HP<br>mm | LG**<br>mm | Teeth | LP2**<br>mm | Order No.<br>TINAMATIC |
|                                                                                                 |                                                                                                         |                                                                                                   |                                                                                                   |                                                                                     | 1,337       | 19      | 7,5      | 9,07       | 9     | 0,65        | <a href="#">142688</a> |
|                                                                                                 |                                                                                                         |                                                                                                   |                                                                                                   |                                                                                     | 1,814       | 14      | 7,5      | 9,07       | 6     | 0,9         | <a href="#">142632</a> |
|                                                                                                 |                                                                                                         |                                                                                                   |                                                                                                   |                                                                                     |             |         |          |            |       |             |                        |
|                                                                                                 |                                                                                                         |                                                                                                   |                                                                                                   |                                                                                     |             |         |          |            |       |             |                        |

|                                                                                                  |                                                                                                         |                                                                                                     |                                                                                                     |                                                                                     |             |         |          |            |       |             |         |                        |
|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------|---------|----------|------------|-------|-------------|---------|------------------------|
| <br><b>PG</b> | <br><b>DIN 40430</b> | <br><b>IR/IL</b> | <br><b>AR/AL</b> |  | Pitch<br>mm | Pitch/" | HP<br>mm | LG**<br>mm | Teeth | LP2**<br>mm | Thread  | Order No.<br>TINAMATIC |
|                                                                                                  |                                                                                                         |                                                                                                     |                                                                                                     |                                                                                     | 1,411       | 18      | 7,5      | 11,28      | 9     | 0,7         | PG 9-16 | <a href="#">142679</a> |
|                                                                                                  |                                                                                                         |                                                                                                     |                                                                                                     |                                                                                     | 1,588       | 16      | 7,5      | 11,11      | 8     | 0,8         | PG21-48 | <a href="#">142664</a> |
|                                                                                                  |                                                                                                         |                                                                                                     |                                                                                                     |                                                                                     |             |         |          |            |       |             |         |                        |
|                                                                                                  |                                                                                                         |                                                                                                     |                                                                                                     |                                                                                     |             |         |          |            |       |             |         |                        |

CLICK ME!

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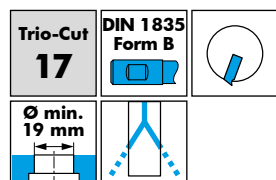
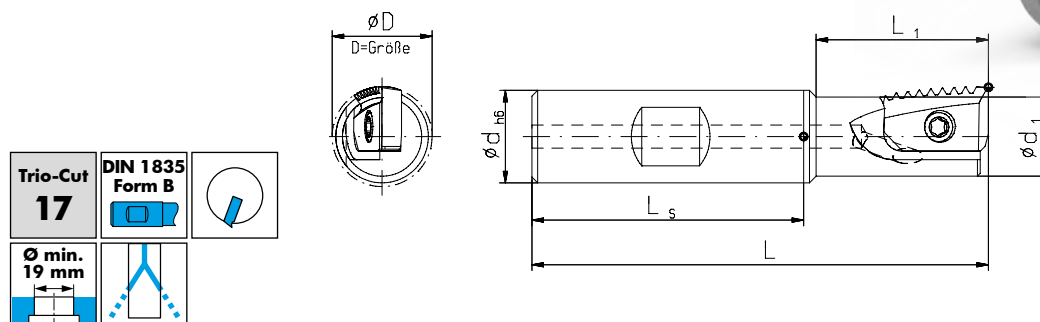
CLICK ME!

\* 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 | d1 mm | L mm | L1 mm | Shaft | Spare part No.                           |                          |
|------------------------|------|---------|-------|------|-------|-------|------------------------------------------|--------------------------|
| <a href="#">123631</a> | 17   | 16      | 13,7  | 79   | 30    | Steel | <a href="#">T15 IP</a><br>Screw-driver * | Screw *                  |
| <a href="#">123633</a> | 17   | 20      | 13,7  | 92   | 30    | Steel | <a href="#">111671</a>                   | <a href="#">115628</a>   |
|                        |      |         |       |      |       |       |                                          | Screw torque max. 3,8 Nm |

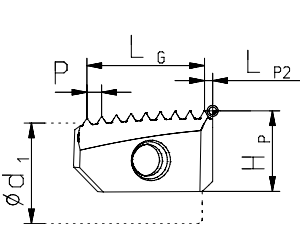
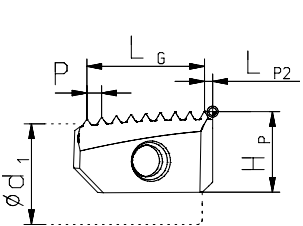
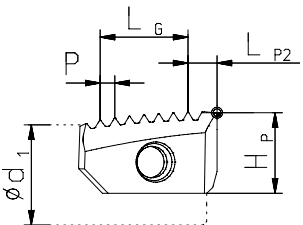
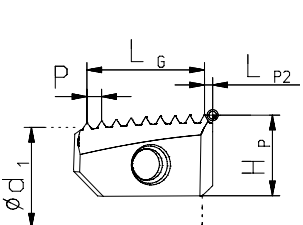
CLICK ME!

## Circular Milling Inserts

Trio-Cut  
17



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

|  <b>M</b> |  <b>DIN 13</b>    |  <b>IR/IL</b> |  |             |                        |                        |                        | <table><tr><th>Pitch<br/>mm</th><th>HP<br/>mm</th><th>LG**<br/>mm</th><th>Teeth</th><th>LP2**<br/>mm</th><th>Order No.<br/>TINAMATIC</th></tr><tr><td>1,0</td><td>11</td><td>16,0</td><td>17</td><td>0,55</td><td><a href="#">142731</a></td></tr><tr><td>1,5</td><td>11</td><td>16,5</td><td>12</td><td>0,75</td><td><a href="#">142720</a></td></tr><tr><td>2,0</td><td>11</td><td>16,0</td><td>9</td><td>1,0</td><td><a href="#">142651</a></td></tr></table>                                                    | Pitch<br>mm | HP<br>mm | LG**<br>mm | Teeth      | LP2**<br>mm | Order No.<br>TINAMATIC | 1,0                    | 11                     | 16,0  | 17   | 0,55 | <a href="#">142731</a> | 1,5 | 11                     | 16,5 | 12                     | 0,75  | <a href="#">142720</a> | 2,0 | 11    | 16,0                   | 9    | 1,0          | <a href="#">142651</a> |   |     |     |                        |
|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------|------------------------|------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------|------------|------------|-------------|------------------------|------------------------|------------------------|-------|------|------|------------------------|-----|------------------------|------|------------------------|-------|------------------------|-----|-------|------------------------|------|--------------|------------------------|---|-----|-----|------------------------|
| Pitch<br>mm                                                                                  | HP<br>mm                                                                                             | LG**<br>mm                                                                                       | Teeth                                                                               | LP2**<br>mm | Order No.<br>TINAMATIC |                        |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |             |          |            |            |             |                        |                        |                        |       |      |      |                        |     |                        |      |                        |       |                        |     |       |                        |      |              |                        |   |     |     |                        |
| 1,0                                                                                          | 11                                                                                                   | 16,0                                                                                             | 17                                                                                  | 0,55        | <a href="#">142731</a> |                        |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |             |          |            |            |             |                        |                        |                        |       |      |      |                        |     |                        |      |                        |       |                        |     |       |                        |      |              |                        |   |     |     |                        |
| 1,5                                                                                          | 11                                                                                                   | 16,5                                                                                             | 12                                                                                  | 0,75        | <a href="#">142720</a> |                        |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |             |          |            |            |             |                        |                        |                        |       |      |      |                        |     |                        |      |                        |       |                        |     |       |                        |      |              |                        |   |     |     |                        |
| 2,0                                                                                          | 11                                                                                                   | 16,0                                                                                             | 9                                                                                   | 1,0         | <a href="#">142651</a> |                        |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |             |          |            |            |             |                        |                        |                        |       |      |      |                        |     |                        |      |                        |       |                        |     |       |                        |      |              |                        |   |     |     |                        |
|  <b>M</b> |  <b>DIN 13</b>    |  <b>AR/AL</b> |  |             |                        |                        |                        | <table><tr><th>Pitch<br/>mm</th><th>HP<br/>mm</th><th>LG**<br/>mm</th><th>Teeth</th><th>LP2**<br/>mm</th><th>Order No.<br/>TINAMATIC</th></tr><tr><td>1,5</td><td>11</td><td>16,5</td><td>12</td><td>0,75</td><td><a href="#">142721</a></td></tr></table>                                                                                                                                                                                                                                                          | Pitch<br>mm | HP<br>mm | LG**<br>mm | Teeth      | LP2**<br>mm | Order No.<br>TINAMATIC | 1,5                    | 11                     | 16,5  | 12   | 0,75 | <a href="#">142721</a> |     |                        |      |                        |       |                        |     |       |                        |      |              |                        |   |     |     |                        |
| Pitch<br>mm                                                                                  | HP<br>mm                                                                                             | LG**<br>mm                                                                                       | Teeth                                                                               | LP2**<br>mm | Order No.<br>TINAMATIC |                        |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |             |          |            |            |             |                        |                        |                        |       |      |      |                        |     |                        |      |                        |       |                        |     |       |                        |      |              |                        |   |     |     |                        |
| 1,5                                                                                          | 11                                                                                                   | 16,5                                                                                             | 12                                                                                  | 0,75        | <a href="#">142721</a> |                        |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |             |          |            |            |             |                        |                        |                        |       |      |      |                        |     |                        |      |                        |       |                        |     |       |                        |      |              |                        |   |     |     |                        |
|  <b>M</b> |  <b>DIN 13</b>    |  <b>IR/IL</b> |  |             |                        |                        |                        | <table><tr><th>Pitch<br/>mm</th><th>HP<br/>mm</th><th>LG**<br/>mm</th><th>Teeth</th><th>LP2**<br/>mm</th><th>R<br/>mm</th><th>Order No.<br/>TINAMATIC</th></tr><tr><td>1,0</td><td>11</td><td>14,0</td><td>15</td><td>3,6</td><td>0,4</td><td><a href="#">142668</a></td></tr><tr><td>1,5</td><td>11</td><td>13,5</td><td>10</td><td>4,1</td><td>0,4</td><td><a href="#">142650</a></td></tr><tr><td>2,0</td><td>11</td><td>12,0</td><td>7</td><td>3,6</td><td>0,4</td><td><a href="#">142672</a></td></tr></table> | Pitch<br>mm | HP<br>mm | LG**<br>mm | Teeth      | LP2**<br>mm | R<br>mm                | Order No.<br>TINAMATIC | 1,0                    | 11    | 14,0 | 15   | 3,6                    | 0,4 | <a href="#">142668</a> | 1,5  | 11                     | 13,5  | 10                     | 4,1 | 0,4   | <a href="#">142650</a> | 2,0  | 11           | 12,0                   | 7 | 3,6 | 0,4 | <a href="#">142672</a> |
| Pitch<br>mm                                                                                  | HP<br>mm                                                                                             | LG**<br>mm                                                                                       | Teeth                                                                               | LP2**<br>mm | R<br>mm                | Order No.<br>TINAMATIC |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |             |          |            |            |             |                        |                        |                        |       |      |      |                        |     |                        |      |                        |       |                        |     |       |                        |      |              |                        |   |     |     |                        |
| 1,0                                                                                          | 11                                                                                                   | 14,0                                                                                             | 15                                                                                  | 3,6         | 0,4                    | <a href="#">142668</a> |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |             |          |            |            |             |                        |                        |                        |       |      |      |                        |     |                        |      |                        |       |                        |     |       |                        |      |              |                        |   |     |     |                        |
| 1,5                                                                                          | 11                                                                                                   | 13,5                                                                                             | 10                                                                                  | 4,1         | 0,4                    | <a href="#">142650</a> |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |             |          |            |            |             |                        |                        |                        |       |      |      |                        |     |                        |      |                        |       |                        |     |       |                        |      |              |                        |   |     |     |                        |
| 2,0                                                                                          | 11                                                                                                   | 12,0                                                                                             | 7                                                                                   | 3,6         | 0,4                    | <a href="#">142672</a> |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |             |          |            |            |             |                        |                        |                        |       |      |      |                        |     |                        |      |                        |       |                        |     |       |                        |      |              |                        |   |     |     |                        |
|  <b>G</b> |  <b>DIN 228/1</b> |  <b>BSW</b>   |  |             |                        |                        |                        | <table><tr><th>Pitch<br/>mm</th><th>Pitch/°</th><th>HP<br/>mm</th><th>LG**<br/>mm</th><th>Teeth</th><th>LP2**<br/>mm</th><th>Thread</th><th>Order No.<br/>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>all</td><td><a href="#">142685</a></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>5/8-3/4-7/8"</td><td><a href="#">142732</a></td></tr></table>                                                           | Pitch<br>mm | Pitch/°  | HP<br>mm   | LG**<br>mm | Teeth       | LP2**<br>mm            | Thread                 | Order No.<br>TINAMATIC | 2,309 | 11   | 11   | 16,16                  | 8   | 1,16                   | all  | <a href="#">142685</a> | 1,814 | 14                     | 11  | 16,33 | 10                     | 0,95 | 5/8-3/4-7/8" | <a href="#">142732</a> |   |     |     |                        |
| Pitch<br>mm                                                                                  | Pitch/°                                                                                              | HP<br>mm                                                                                         | LG**<br>mm                                                                          | Teeth       | LP2**<br>mm            | Thread                 | Order No.<br>TINAMATIC |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |             |          |            |            |             |                        |                        |                        |       |      |      |                        |     |                        |      |                        |       |                        |     |       |                        |      |              |                        |   |     |     |                        |
| 2,309                                                                                        | 11                                                                                                   | 11                                                                                               | 16,16                                                                               | 8           | 1,16                   | all                    | <a href="#">142685</a> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |             |          |            |            |             |                        |                        |                        |       |      |      |                        |     |                        |      |                        |       |                        |     |       |                        |      |              |                        |   |     |     |                        |
| 1,814                                                                                        | 14                                                                                                   | 11                                                                                               | 16,33                                                                               | 10          | 0,95                   | 5/8-3/4-7/8"           | <a href="#">142732</a> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |             |          |            |            |             |                        |                        |                        |       |      |      |                        |     |                        |      |                        |       |                        |     |       |                        |      |              |                        |   |     |     |                        |

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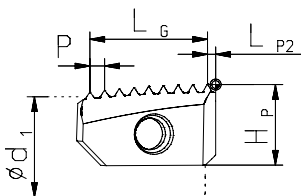
\* Screwdriver and clamping screw included in delivery

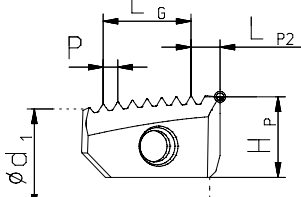
\*\* The length "LG" and "LP2" of the Thread Milling Insert are measured when the insert is clamped in the holder.

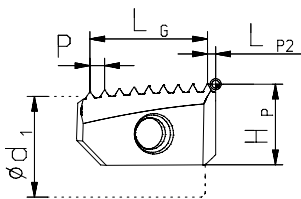
# Circular Milling Inserts

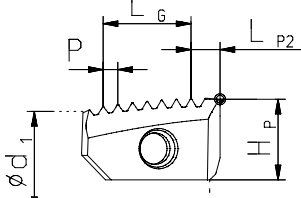
**Trio-Cut**  
**17**



|                                                                                                   |                                                                                                |                                                                                                 |                                                                                   |             |             |          |            |       |             |        |                        |
|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------|-------------|----------|------------|-------|-------------|--------|------------------------|
|  <b>G</b>        | <b>DIN</b><br>228/1                                                                            | <b>BSW</b><br> |  | Pitch<br>mm | Pitch/<br>" | HP<br>mm | LG**<br>mm | Teeth | LP2**<br>mm | Thread | Order No.<br>TINAMATIC |
|  <b>IR/IL</b>    | Full form<br> | <b>BSF</b><br> |                                                                                   | 1,814       | 14          | 11       | 16,33      | 10    | 0,95        | G½"    | <a href="#">142652</a> |
|  <b>55°</b><br>α |                                                                                                |                                                                                                 |                                                                                   |             |             |          |            |       |             |        |                        |
|                                                                                                   |                                                                                                |                                                                                                 |                                                                                   |             |             |          |            |       |             |        |                        |

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

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

|                                                                                                  |                                                                                                     |                                                                                     |             |             |          |            |       |             |         |         |                        |
|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------|-------------|----------|------------|-------|-------------|---------|---------|------------------------|
|  <b>PG</b>    | <b>DIN</b><br>40430                                                                                 |  | Pitch<br>mm | Pitch/<br>" | HP<br>mm | LG**<br>mm | Teeth | LP2**<br>mm | R<br>mm | Thread  | Order No.<br>TINAMATIC |
|  <b>IR/IL</b> | <b>AR/AL</b><br> |                                                                                     | 1,411       | 18          | 11       | 14,1       | 11    | 3,9         | 0,4     | PG11-16 | <a href="#">142684</a> |
| Full form<br> |  <b>80°</b><br>α |                                                                                     | 1,588       | 16          | 11       | 12,7       | 9     | 3,7         | 0,4     | PG21-48 | <a href="#">142714</a> |
|                                                                                                  |                                                                                                     |                                                                                     |             |             |          |            |       |             |         |         |                        |

CLICK ME!

CLICK ME!

CLICK ME!

CLICK ME!

\* Internal thread only

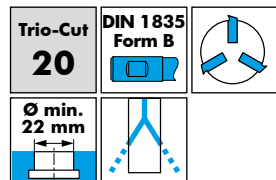
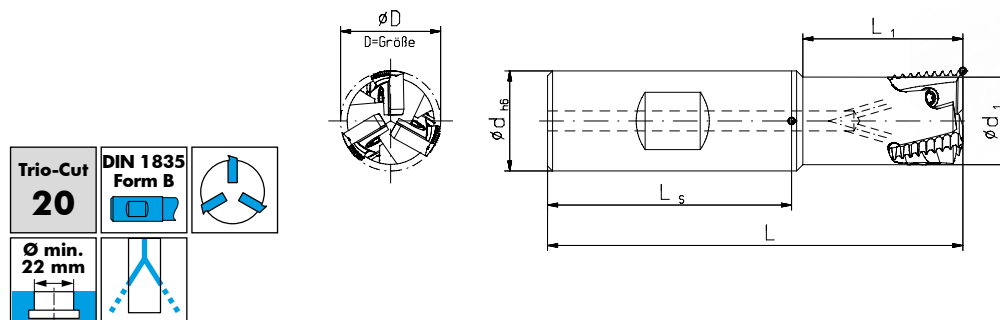
\*\* The length "LG" and "LP2" of the Thread Milling Insert are measured when the insert is clamped in the holder.



## TrioCUT

### Circular Milling Tools

- Inserts see below
- Cutting data see page 166

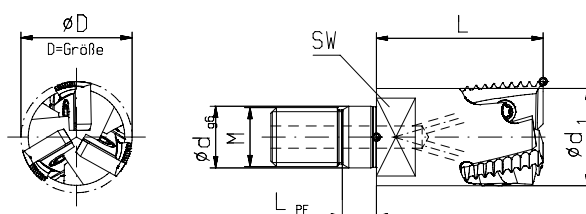
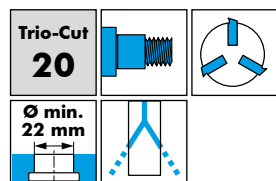


| Order No.              | D<br>mm | d <sub>h6</sub><br>mm | d <sub>1</sub><br>mm | L<br>mm | L <sub>1</sub><br>mm | Shaft | Spare part No.                          |                        |
|------------------------|---------|-----------------------|----------------------|---------|----------------------|-------|-----------------------------------------|------------------------|
| <a href="#">123622</a> | 20      | 20                    | 17,5                 | 83      | 32                   | Steel | <a href="#">T8 IP</a><br>Screw-driver * | Screw *                |
|                        |         |                       |                      |         |                      |       | <a href="#">111656</a>                  | <a href="#">115567</a> |

Screw torque max. 1,1 Nm

CLICK ME!

- Tightening torques see page 29



| Order No.              | D<br>mm | d <sub>g6</sub><br>mm | M  | L PF<br>mm | d <sub>1</sub><br>mm | L<br>mm | Shaft | Spare part No.                          |                        |
|------------------------|---------|-----------------------|----|------------|----------------------|---------|-------|-----------------------------------------|------------------------|
| <a href="#">123623</a> | 20      | 10,5                  | 10 | 5          | 17,5                 | 21      | Steel | <a href="#">T8 IP</a><br>Screw-driver * | Screw *                |
|                        |         |                       |    |            |                      |         |       | <a href="#">111656</a>                  | <a href="#">115567</a> |

Screw torque max. 1,1 Nm

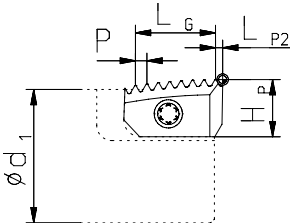
CLICK ME!

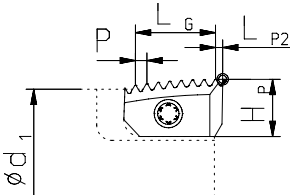
### Circular Milling Inserts

Trio-Cut  
**20**



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

|                                                                                     |                                                                                     |                                                                                     |  |             |          |            |       |             |                        |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|-------------|----------|------------|-------|-------------|------------------------|
|  |  |  |  | Pitch<br>mm | HP<br>mm | LG**<br>mm | Teeth | LP2**<br>mm | Order No.<br>TINAMATIC |
|  |  |                                                                                     |  | 1,0         | 7,5      | 12,0       | 13    | 0,5         | <a href="#">142690</a> |
|  |                                                                                     |                                                                                     |  | 1,5         | 7,5      | 10,5       | 8     | 0,75        | <a href="#">142633</a> |
|                                                                                     |                                                                                     |                                                                                     |  |             |          |            |       |             |                        |
|                                                                                     |                                                                                     |                                                                                     |  |             |          |            |       |             |                        |

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |             |          |          |            |       |             |        |                        |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|-------------|----------|----------|------------|-------|-------------|--------|------------------------|
|  |  |  |  |  | Pitch<br>mm | Pitch /" | HP<br>mm | LG**<br>mm | Teeth | LP2**<br>mm | Thread | Order No.<br>TINAMATIC |
|  |  |  |                                                                                     |  | 1,814       | 14       | 7,5      | 9,07       | 6     | 0,9         |        | <a href="#">142707</a> |
|  |  |                                                                                     |                                                                                     |  | 1,814       | 14**     | 7,5      | 9,07       | 6     | 0,9         | G ¾"   | <a href="#">142666</a> |
|                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |             |          |          |            |       |             |        |                        |
|                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |             |          |          |            |       |             |        |                        |

\*\* 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.

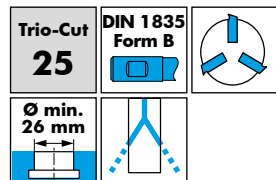
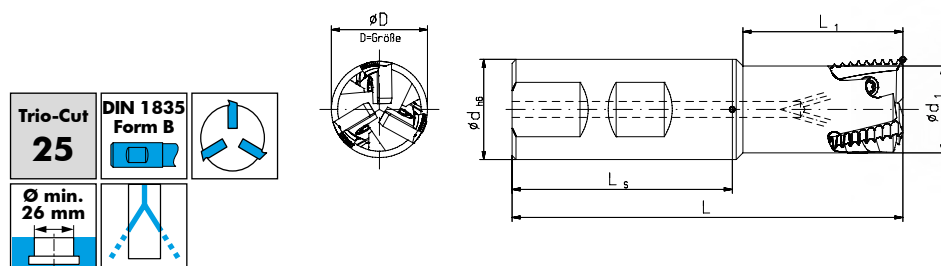
CLICK ME!

CLICK ME!

# TrioCUT

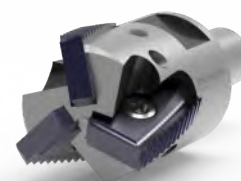
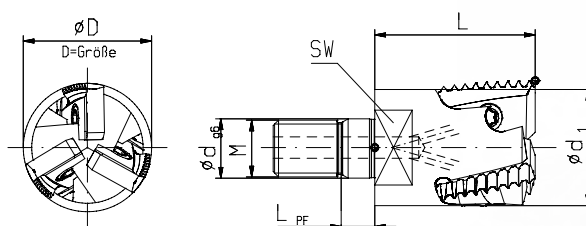
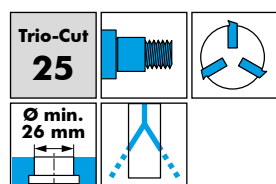
## Circular Milling Tools

- Inserts see page 42
- Cutting data see page 166



| Order No.              | D<br>mm | d <sub>h6</sub><br>mm | d <sub>1</sub><br>mm | L<br>mm | L <sub>1</sub><br>mm | Shaft       | Spare part No.               |                        |
|------------------------|---------|-----------------------|----------------------|---------|----------------------|-------------|------------------------------|------------------------|
|                        |         |                       |                      |         |                      |             | T15 IP<br>Screw-<br>driver * | Screw *                |
| <a href="#">123638</a> | 25      | 25                    | 21,7                 | 107,6   | 50                   | Steel       | <a href="#">111671</a>       | <a href="#">115628</a> |
| <a href="#">123639</a> | 25      | 25                    | 21,7                 | 142,6   | 85                   | Heavy metal | <a href="#">111671</a>       | <a href="#">115628</a> |
|                        |         |                       |                      |         |                      |             | Screw torque max. 3,8 Nm     |                        |

- Tightening torques see page 29



|  |  |                       |    |                       |                      |         |       | Spare part No.                            |                        |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------|----|-----------------------|----------------------|---------|-------|-------------------------------------------|------------------------|
| Order No.                                                                           | D<br>mm                                                                             | d <sub>g6</sub><br>mm | M  | L <sub>PF</sub><br>mm | d <sub>1</sub><br>mm | L<br>mm | Shaft | <div>T15 IP<br/>Screw-<br/>driver *</div> | Screw *                |
| <a href="#">166204</a>                                                              | 25                                                                                  | 10,5                  | 10 | 5                     | 21,7                 | 30      | Steel | <a href="#">111671</a>                    | <a href="#">115628</a> |
|                                                                                     |                                                                                     |                       |    |                       |                      |         |       | Screw torque max. 3,8 Nm                  |                        |

**i** TrioCUT 25 inserts see next page

\* Screwdriver and clamping screw included in delivery

\*\* The length "L<sub>G</sub>" and "L<sub>P2</sub>" of the Thread Milling Insert are measured when the insert is clamped in the holder.

# TrioCUT

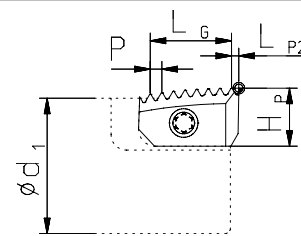
## Circular Milling Inserts

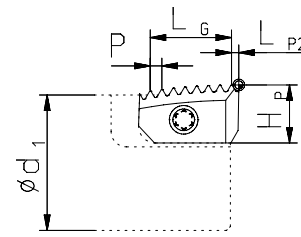
**Trio-Cut**  
**25**

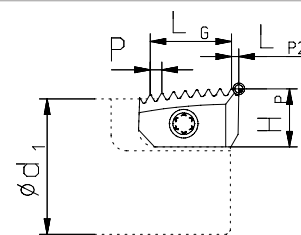


**Note:**

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

|                                                                                                |                                                                                                 |                                                                                   |             |          |            |       |             |                        |
|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------|----------|------------|-------|-------------|------------------------|
|  <b>M</b>     |  <b>DIN 13</b> |  | Pitch<br>mm | HP<br>mm | LG**<br>mm | Teeth | LP2**<br>mm | Order No.<br>TINAMATIC |
|  <b>IR/IL</b> |  Full form     |                                                                                   | 1,0         | 11       | 16,0       | 17    | 0,5         | <a href="#">142754</a> |
|  60°<br>α     |                                                                                                 |                                                                                   | 1,5         | 11       | 16,5       | 12    | 0,75        | <a href="#">142722</a> |
|                                                                                                |                                                                                                 |                                                                                   | 2,0         | 11       | 16,0       | 9     | 1,11        | <a href="#">142723</a> |

|                                                                                                |                                                                                                 |                                                                                   |             |          |            |       |             |                        |
|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------|----------|------------|-------|-------------|------------------------|
|  <b>M</b>     |  <b>DIN 13</b> |  | Pitch<br>mm | HP<br>mm | LG**<br>mm | Teeth | LP2**<br>mm | Order No.<br>TINAMATIC |
|  <b>AR/AL</b> |  Full form     |                                                                                   | 1,5         | 11       | 16,5       | 12    | 0,75        | <a href="#">142772</a> |
|  60°<br>α     |                                                                                                 |                                                                                   |             |          |            |       |             |                        |
|                                                                                                |                                                                                                 |                                                                                   |             |          |            |       |             |                        |

|                                                                                                 |                                                                                                    |                                                                                               |                                                                                    |             |         |          |            |       |             |                        |
|-------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------|---------|----------|------------|-------|-------------|------------------------|
|  <b>G</b>      |  <b>DIN 228/1</b> |  <b>BSW</b>  |  | Pitch<br>mm | Pitch/" | HP<br>mm | LG**<br>mm | Teeth | LP2**<br>mm | Order No.<br>TINAMATIC |
|  <b>IR/IL</b> |  <b>AR/AL</b>    |  <b>BSF</b> |                                                                                    | 2,309       | 11      | 11       | 16,16      | 8     | 1,16        | <a href="#">142743</a> |
|  Full form   |  55°<br>α       |                                                                                               |                                                                                    | 1,814       | 14      | 11       | 16,33      | 10    | 0,95        | <a href="#">142798</a> |
|                                                                                                 |                                                                                                    |                                                                                               |                                                                                    |             |         |          |            |       |             |                        |

CLICK ME!

CLICK ME!

CLICK ME!

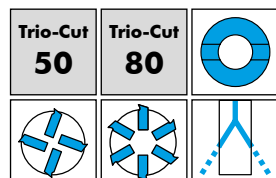
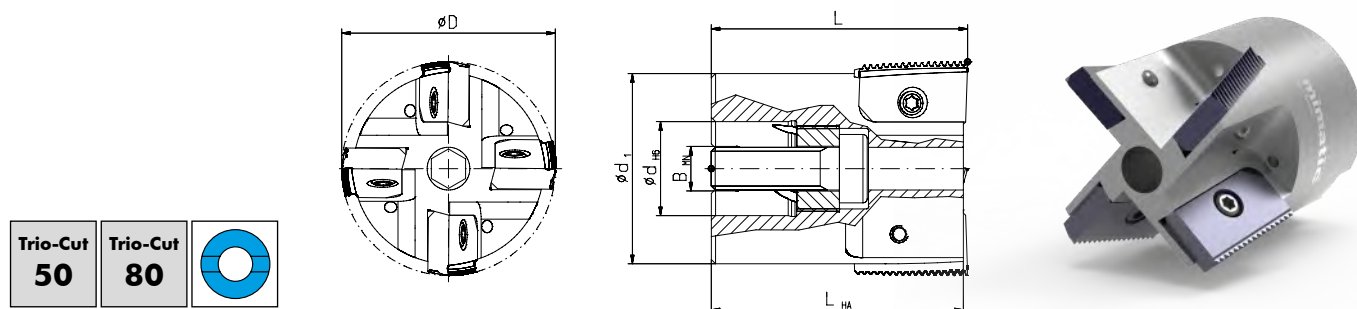


\*\* The length "LG" and "LP2" of the Thread Milling Insert are measured when the insert is clamped in the holder.

# TrioCUT

## Circular Milling Tools

- Inserts see below
- Cutting data see page 166
- Assembly instruction see page 178

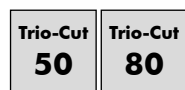


| Order No. | Size | D<br>mm | dH6<br>mm | BMN<br>mm | d1<br>mm | L<br>mm | LHA<br>mm | Inserts | Spare part No.              |                        |
|-----------|------|---------|-----------|-----------|----------|---------|-----------|---------|-----------------------------|------------------------|
|           |      |         |           |           |          |         |           |         | T15 IP<br>Screw-<br>driver* | Screw *                |
| 135203    | 50   | 50      | 22        | 10,4      | 44,5     | 60      | 59        | 4       | <a href="#">111671</a>      | <a href="#">107559</a> |
| 172159    | 80   | 80      | 32        | 14,4      | 75       | 60      | 59        | 6       | <a href="#">111671</a>      | <a href="#">107559</a> |

Screw torque max. 3,8 Nm

CLICK ME!

## 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<br>DIN<br>13<br>IR/IL<br>Full form<br>60°<br>α | Pitch<br>mm | Size | HP<br>mm | LG **<br>mm | Teeth | LP2 **<br>mm | Thread | Order No.              |
|--------------------------------------------------|-------------|------|----------|-------------|-------|--------------|--------|------------------------|
|                                                  |             |      |          |             |       |              |        | TINAMATIC              |
|                                                  | 1,5         | 50   | 18,4     | 22,5        | 16    | 0,75         | >M60   | <a href="#">150114</a> |
|                                                  | 1,5         | 80   | 18,4     | 22,5        | 16    | 0,75         | >M85   | <a href="#">148871</a> |
|                                                  | 2,0         | 80   | 18,4     | 22,0        | 12    | 1,0          | >M85   | <a href="#">171636</a> |

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\* Screwdriver and clamping screw included in delivery

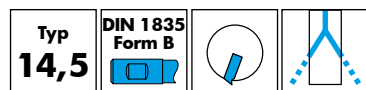
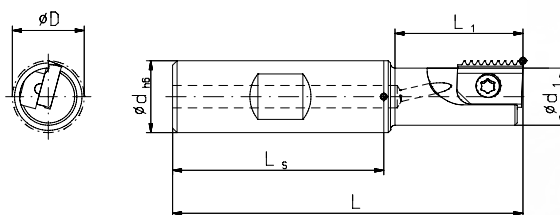
\*\* The length "LG" and "LP2" of the Thread Milling Insert are measured when the insert is clamped in the holder.



**14,5**

## Circular Thread Milling Tools

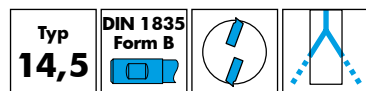
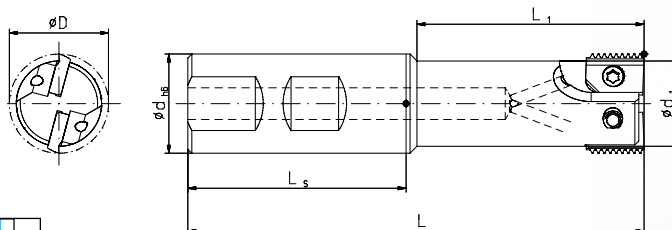
- Inserts see page 45
- Cutting data see page 166



|                        |      |        |       |      |       |                    |       |             | Spare part No.         |                        |
|------------------------|------|--------|-------|------|-------|--------------------|-------|-------------|------------------------|------------------------|
| Order No.              | D mm | dh6 mm | d1 mm | L mm | L1 mm | min. Bore diameter | Type  | Shaft       | T15 IP Screw-driver*   | Screw *                |
| <a href="#">123540</a> | 16   | 16     | 12,7  | 78   | 29    | 17                 | short | Steel       | <a href="#">111671</a> | <a href="#">107571</a> |
| <a href="#">123541</a> | 16   | 16     | 12,7  | 98   | 50    | 17                 | long  | Heavy metal | <a href="#">111671</a> | <a href="#">107571</a> |
| <a href="#">123542</a> | 20   | 20     | 16,8  | 110  | 60    | 21                 | long  | Steel       | <a href="#">111671</a> | <a href="#">115628</a> |

Screw torques max.  
[107571](#) T15 IP 3,8 Nm  
[107628](#) T15 IP 3,8 Nm

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|                        |      |        |       |      |       |                    |       |             | Spare part No.         |                        |
|------------------------|------|--------|-------|------|-------|--------------------|-------|-------------|------------------------|------------------------|
| Order No.              | D mm | dh6 mm | d1 mm | L mm | L1 mm | min. Bore diameter | Type  | Shaft       | T15 IP Screw-driver*   | Screw *                |
| <a href="#">123546</a> | 25   | 25     | 21,5  | 106  | 48,2  | 26                 | short | Steel       | <a href="#">111671</a> | <a href="#">107552</a> |
| <a href="#">123547</a> | 25   | 25     | 21,5  | 150  | 92,2  | 26                 | long  | Heavy metal | <a href="#">111671</a> | <a href="#">107552</a> |

Screw torque max. 3,8 Nm

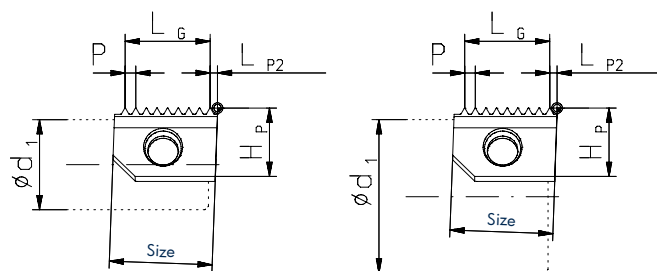
CLICK ME!

\* Screwdriver and clamping screw included in delivery

14,5

1

## Circular Thread Milling Inserts



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

|                                                          |  |  |  |             |          |          |           |  |       |                        |
|----------------------------------------------------------|--|--|--|-------------|----------|----------|-----------|--|-------|------------------------|
| <div><div>M</div><div>DIN 13</div><div>AR/AL</div></div> |  |  |  | Pitch<br>mm | HP<br>mm | LG<br>mm | LP2<br>mm |  | Teeth | Order No.<br>TINAMATIC |
| <div><div>Full form</div><div>60°</div></div>            |  |  |  | 1,0         | 10       | 13       | 0,71      |  | 14    | <a href="#">142177</a> |
|                                                          |  |  |  | 1,5         | 10       | 12       | 0,78      |  | 9     | <a href="#">142186</a> |
|                                                          |  |  |  | 2,0         | 10       | 12       | 1,22      |  | 7     | <a href="#">142167</a> |
|                                                          |  |  |  |             |          |          |           |  |       |                        |

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

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

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

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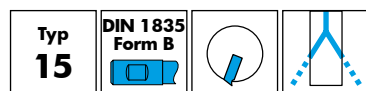
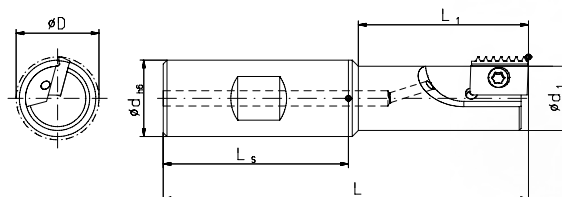
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15

## Circular Thread Milling Tools

- Inserts see below
- Cutting data see page 166

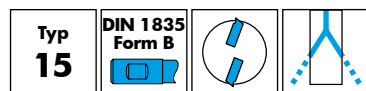
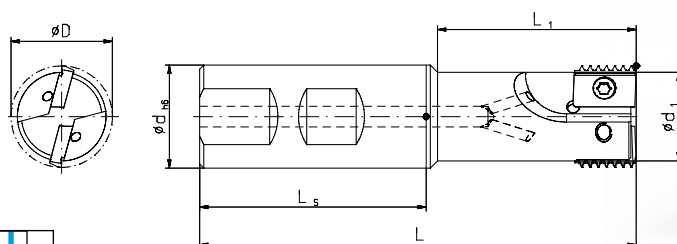


Spare part No.

| Order No.              | D<br>mm | dh6<br>mm | d1<br>mm | L<br>mm | L1<br>mm | min.<br>Bore<br>diameter | Type  | Shaft | T15 IP<br>Screw-<br>driver * | Screw *                |
|------------------------|---------|-----------|----------|---------|----------|--------------------------|-------|-------|------------------------------|------------------------|
| <a href="#">123550</a> | 18      | 16        | 12,7     | 79      | 30       | 19                       | short | Steel | <a href="#">111671</a>       | <a href="#">107571</a> |
| <a href="#">123551</a> | 22      | 20        | 16,8     | 110     | 60       | 23                       | long  | Steel | <a href="#">111671</a>       | <a href="#">107571</a> |

Screw torque max. 3,8 Nm

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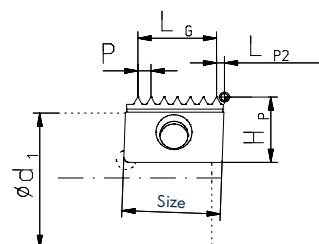
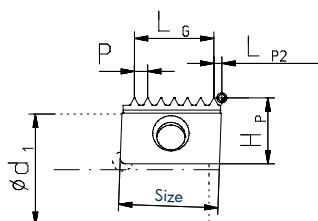
Spare part No.

| Order No.              | D<br>mm | dh6<br>mm | d1<br>mm | L<br>mm | L1<br>mm | min.<br>Bore<br>diameter | Type  | Shaft | T15 IP<br>Screw-<br>driver * | Screw *                |
|------------------------|---------|-----------|----------|---------|----------|--------------------------|-------|-------|------------------------------|------------------------|
| <a href="#">123555</a> | 25      | 25        | 21,5     | 106     | 48,2     | 26                       | short | Steel | <a href="#">111671</a>       | <a href="#">107552</a> |

Screw torque max. 3,8 Nm

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## Circular Thread Milling Inserts



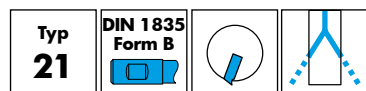
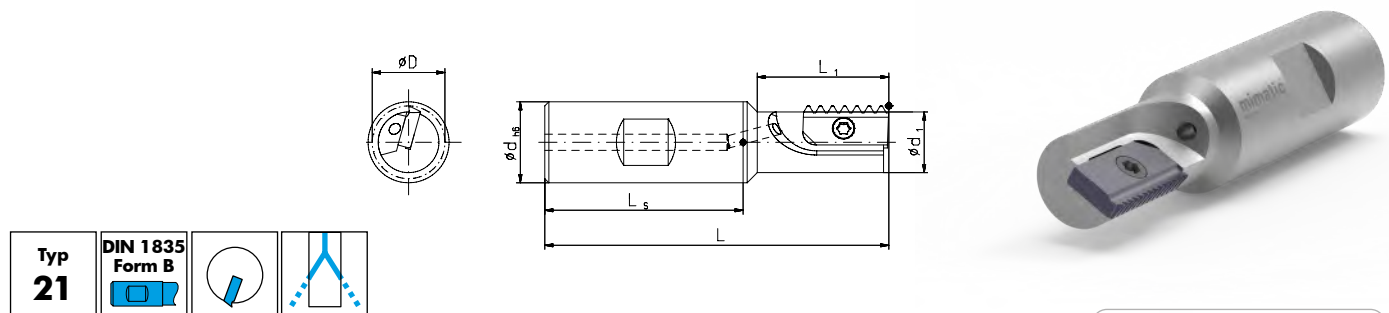
| M         | DIN 13 | IR/IL | Pitch<br>mm | HP<br>mm | LG<br>mm | LP2<br>mm | Teeth | Order No.<br>TINAMATIC |
|-----------|--------|-------|-------------|----------|----------|-----------|-------|------------------------|
| Full form | 60°    |       | 3,0         | 10,5     | 12,0     | 1,52      | 5     | <a href="#">142269</a> |
|           |        |       | 3,5         | 10,5     | 10,5     | 1,74      | 4     | <a href="#">142231</a> |

\* Screwdriver and clamping screw included in delivery

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## Circular Thread Milling Tools

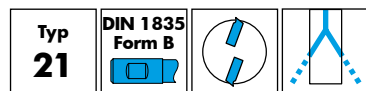
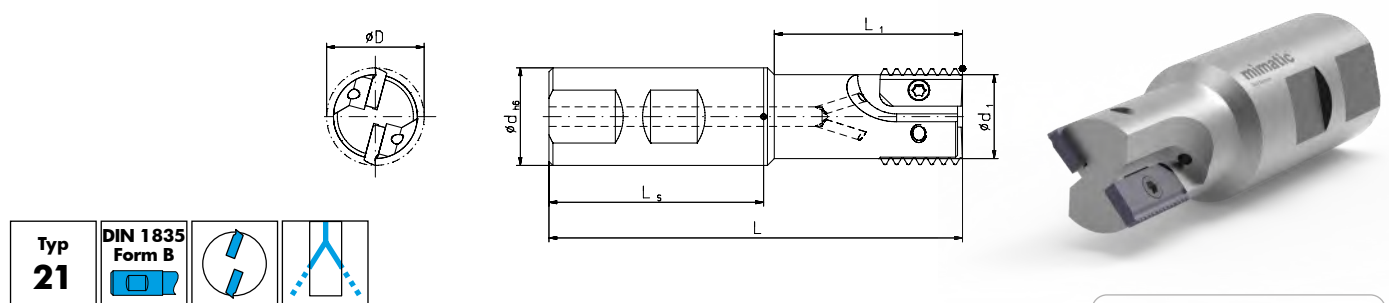
- Inserts see page 48
- Cutting data see page 166



| Order No.              | D<br>mm | dh6<br>mm | d1<br>mm | L<br>mm | L1<br>mm | min.<br>Bore<br>diameter | Type  | Shaft       | Spare part No.               |                        |
|------------------------|---------|-----------|----------|---------|----------|--------------------------|-------|-------------|------------------------------|------------------------|
|                        |         |           |          |         |          |                          |       |             | T15 IP<br>Screw-<br>driver * | Screw *                |
| <a href="#">123557</a> | 16      | 20        | 12,7     | 85      | 31,3     | 17                       | short | Steel       | <a href="#">111671</a>       | <a href="#">107571</a> |
| <a href="#">123560</a> | 18      | 20        | 15,0     | 85      | 31,3     | 29                       | short | Steel       | <a href="#">111671</a>       | <a href="#">107571</a> |
| <a href="#">123558</a> | 22      | 25        | 18,7     | 92      | 32,8     | 23                       | short | Steel       | <a href="#">111671</a>       | <a href="#">107571</a> |
| <a href="#">123559</a> | 22      | 25        | 18,7     | 122     | 62,8     | 23                       | long  | Heavy metal | <a href="#">111671</a>       | 107552                 |

Screw torque max. 3,8 Nm

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| Order No.              | D<br>mm | dh6<br>mm | d1<br>mm | L<br>mm | L1<br>mm | min.<br>Bore<br>diameter | Type  | Shaft       | Spare part No.               |                        |
|------------------------|---------|-----------|----------|---------|----------|--------------------------|-------|-------------|------------------------------|------------------------|
|                        |         |           |          |         |          |                          |       |             | T15 IP<br>Screw-<br>driver * | Screw *                |
| <a href="#">123564</a> | 28      | 32        | 24,7     | 102     | 38,3     | 29                       | short | Steel       | <a href="#">111671</a>       | <a href="#">107552</a> |
| <a href="#">123566</a> | 28      | 32        | 24,5     | 142     | 78,3     | 29                       | long  | Heavy metal | <a href="#">111671</a>       | <a href="#">107552</a> |

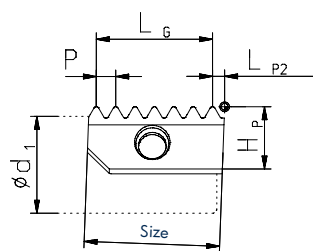
Screw torque max. 3,8 Nm

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**i** Type 21 inserts see next page



## Circular Thread Milling Inserts



|                                                          |  |             |          |          |           |       |                        |
|----------------------------------------------------------|--|-------------|----------|----------|-----------|-------|------------------------|
| <div><div>M</div><div>DIN 13</div><div>IR/IL</div></div> |  | Pitch<br>mm | HP<br>mm | LG<br>mm | LP2<br>mm | Teeth | Order No.<br>TINAMATIC |
| <div><div>Full form</div><div>60°</div></div>            |  | 1,0         | 10       | 19,0     | 0,83      | 20    | <a href="#">142334</a> |
|                                                          |  | 1,5         | 10       | 19,5     | 0,83      | 14    | <a href="#">142366</a> |
|                                                          |  | 2,0         | 10       | 18,0     | 1,07      | 10    | <a href="#">142341</a> |

|                                                          |  |             |          |          |           |       |                        |
|----------------------------------------------------------|--|-------------|----------|----------|-----------|-------|------------------------|
| <div><div>M</div><div>DIN 13</div><div>AR/AL</div></div> |  | Pitch<br>mm | HP<br>mm | LG<br>mm | LP2<br>mm | Teeth | Order No.<br>TINAMATIC |
| <div><div>Full form</div><div>60°</div></div>            |  | 1,5         | 10       | 18       | 0,98      | 13    | <a href="#">142325</a> |
|                                                          |  |             |          |          |           |       |                        |

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

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

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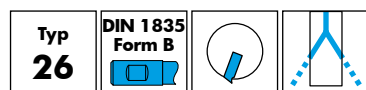
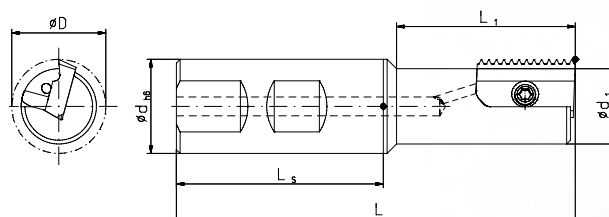
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## Circular Thread Milling Tools

- Inserts see below
- Cutting data see page 166

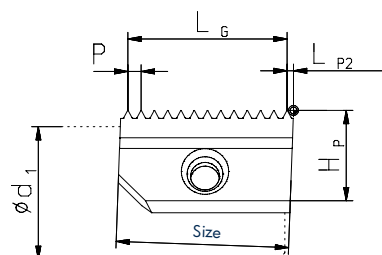


| Order No. | D mm | dh6 mm | d1 mm | L mm | L1 mm | min. Bore diameter | Type  | Shaft | Spare part No.        |         |
|-----------|------|--------|-------|------|-------|--------------------|-------|-------|-----------------------|---------|
| 123569    | 25   | 25     | 20    | 107  | 48,5  | 26                 | short | Steel | T15 IP Screw-driver * | Screw * |
|           |      |        |       |      |       |                    |       |       | 111671                | 107559  |

Screw torque max. 3,8 Nm

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## 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              |

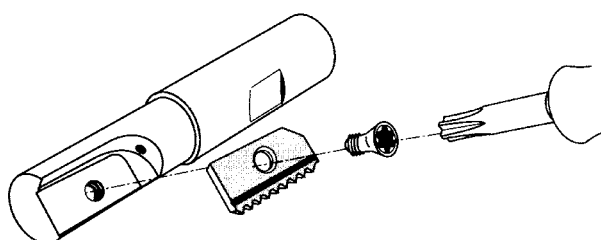
| G     | DIN 228/1 | BSW       | BSF | Pitch mm | Pitch /" | HP mm | LG mm | LP2 mm | Teeth | Order No. TINAMATIC |
|-------|-----------|-----------|-----|----------|----------|-------|-------|--------|-------|---------------------|
| IR/IL | AR/AL     | Full form | 55° | 2,309    | 11       | 15  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

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## 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

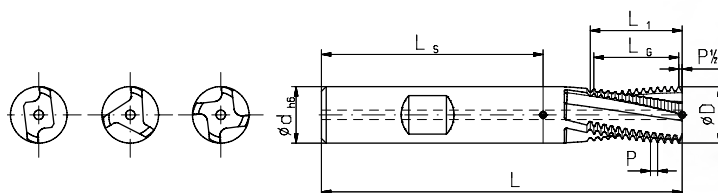
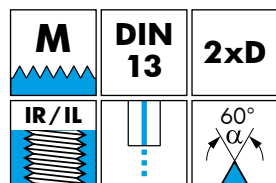
## Table of Content

|                                                                                                                                                                                             | Type                                                                                                | Thread range                               | Page           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|--------------------------------------------|----------------|
| <b>Metric Internal Thread</b>                                                                                                                                                               |                                                                                                     |                                            |                |
|  Full form                | Thread milling cutter<br>Fixed dimension<br>with chamfer                                            | M3 - M20<br>M3 - M20                       | 51<br>51       |
|                                                                                                                                                                                             | Solid Carbide Thread<br>Milling Cutter                                                              | M3 - M12                                   | 60             |
| <b>Metric Internal Fine Thread</b>                                                                                                                                                          |                                                                                                     |                                            |                |
|  Full form                | Thread milling cutter<br>Fixed dimension<br>Universal<br>with chamfer                               | M5 - M20<br>from M10 & P=0,5<br>M8 - M20   | 52<br>52<br>53 |
| <b>Whitworth Pipe Thread</b>                                                                                                                                                                |                                                                                                     |                                            |                |
|  Full form                | Thread milling cutter<br>Fixed dimension<br>Universal<br>with chamfer                               | 1/16" - 1/2"<br>1/4" - >1"<br>1/16" - 5/8" | 53<br>54<br>54 |
| <b>British Standard Whitworth Thread</b>                                                                                                                                                    |                                                                                                     |                                            |                |
|  Full form                | Thread milling cutter<br>Fixed dimension                                                            | 5/16" - 5/8"                               | 55             |
| <b>British Standard Fine Thread</b>                                                                                                                                                         |                                                                                                     |                                            |                |
|  Full form            | Thread milling cutter<br>Fixed dimension                                                            | 5/16" - 5/8"                               | 55             |
| <b>Unified National Coarse Thread</b>                                                                                                                                                       |                                                                                                     |                                            |                |
|  Full form            | Thread milling cutter<br>Fixed dimension<br>with chamfer                                            | 1/4" - 1/2"<br>1/4" - 3/4"                 | 56<br>56       |
| <b>Unified National Fine Thread</b>                                                                                                                                                         |                                                                                                     |                                            |                |
|  Full form            | Thread milling cutter<br>Fixed dimension<br>with chamfer                                            | 1/4" - 1/2"<br>1/4" - 3/4"                 | 57<br>57       |
| <b>NPT Thread</b>                                                                                                                                                                           |                                                                                                     |                                            |                |
|  Full form  Cone 1:16 | Thread milling cutter<br>Fixed dimension<br>with chamfer                                            | 1/16" - 3/4"<br>1/16" - 3/4"               | 58<br>58       |
| <b>Technical Data</b>                                                                                                                                                                       |                                                                                                     |                                            |                |
|                                                                                                                                                                                             | Thread milling cutter<br>Information about circular thread milling<br>Cutting data reference values |                                            | 59<br>168      |

# SolidCUT

## Solid Carbide Circular Thread Milling Cutter

- Fixed dimension type
- Cutting Data see page 168



| Thread | P<br>mm | D $\pm 0,02$<br>mm | L<br>mm | L1<br>mm | Lg<br>mm | Number<br>of teeth | dh6<br>mm | Number<br>of edges | Internal<br>coolant | Order No.              |                        |                        |
|--------|---------|--------------------|---------|----------|----------|--------------------|-----------|--------------------|---------------------|------------------------|------------------------|------------------------|
|        |         |                    |         |          |          |                    |           |                    |                     | TINAMATIC              | DIN 6535<br>Form HA    | DIN 6535<br>Form HB    |
| M3     | 0,5     | 2,4                | 42      | 7,0      | 6,5      | 14                 | 4         | 2                  |                     | <a href="#">168192</a> |                        |                        |
| M4     | 0,7     | 3,15               | 55      | 9,8      | 9,1      | 14                 | 6         | 3                  |                     | <a href="#">168195</a> | <a href="#">168196</a> | <a href="#">168197</a> |
| M5     | 0,8     | 4,0                | 55      | 12,0     | 11,2     | 15                 | 6         | 3                  |                     | <a href="#">168198</a> | <a href="#">168199</a> | <a href="#">168200</a> |
| M6     | 1,0     | 4,8                | 55      | 14,0     | 13       | 14                 | 6         | 3                  |                     | <a href="#">168201</a> | <a href="#">168202</a> | <a href="#">168203</a> |
| M8     | 1,25    | 5,95               | 60      | 18,75    | 17,5     | 15                 | 6         | 3                  | ✓                   | <a href="#">168204</a> | <a href="#">168205</a> | <a href="#">168206</a> |
| M10    | 1,5     | 7,95               | 70      | 22,5     | 21       | 15                 | 8         | 3                  | ✓                   | <a href="#">168207</a> | <a href="#">168208</a> | <a href="#">168209</a> |
| M12    | 1,75    | 9,9                | 75      | 28,0     | 26,25    | 16                 | 10        | 4                  | ✓                   | <a href="#">168210</a> | <a href="#">168211</a> | <a href="#">168212</a> |
| M14    | 2,0     | 11,6               | 85      | 32,0     | 30       | 16                 | 12        | 4                  | ✓                   | <a href="#">168213</a> | <a href="#">168214</a> | <a href="#">168215</a> |
| M16    | 2,0     | 11,95              | 85      | 36,0     | 34       | 18                 | 12        | 4                  | ✓                   | <a href="#">168216</a> | <a href="#">168217</a> | <a href="#">168218</a> |
| M18    | 2,5     | 13,95              | 90      | 42,5     | 40       | 17                 | 14        | 4                  | ✓                   | <a href="#">168219</a> | <a href="#">168220</a> | <a href="#">168221</a> |
| M20    | 2,5     | 15,95              | 90      | 42,5     | 40       | 17                 | 16        | 4                  | ✓                   | <a href="#">168222</a> | <a href="#">168223</a> | <a href="#">168224</a> |

- Chamfer type
- Cutting Data see page 168

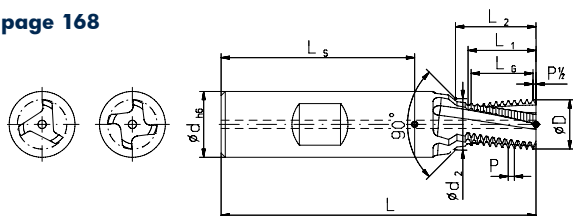


Figure 1:  
Chamfer on the shank

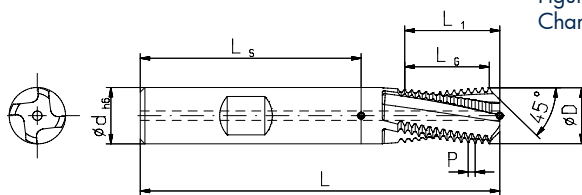
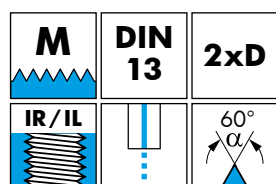


Figure 2:  
Chamfer on the face



| Thread | P<br>mm | D $\pm 0,02$<br>mm | L<br>mm | L1<br>mm | L2<br>mm | Lg<br>mm | Number<br>of teeth | dh6<br>mm | d2<br>mm | Number<br>of edges | Internal<br>coolant | Fig. | Order No.                         |                        |
|--------|---------|--------------------|---------|----------|----------|----------|--------------------|-----------|----------|--------------------|---------------------|------|-----------------------------------|------------------------|
|        |         |                    |         |          |          |          |                    |           |          |                    |                     |      | TINAMATIC                         | DIN 6535<br>Form HA    |
| M3     | 0,5     | 2,4                | 42      | 7,0      | 7,6      | 6,5      | 14                 | 4         | 3,3      | 2                  |                     | 1    | <a href="#">190812</a> <b>NEW</b> | -                      |
| M4     | 0,7     | 3,15               | 55      | 9,80     | 11,03    | 9,1      | 14                 | 6         | 4,3      | 3                  |                     | 1    | <a href="#">186833</a>            | <a href="#">186834</a> |
| M5     | 0,8     | 4,00               | 62      | 12,70    | 13,35    | 11,2     | 15                 | 8         | 5,3      | 3                  |                     | 1    | <a href="#">171556</a>            | <a href="#">171565</a> |
| M6     | 1,0     | 4,80               | 62      | 14,00    | 15,55    | 13       | 14                 | 8         | 6,3      | 3                  |                     | 1    | <a href="#">171557</a>            | <a href="#">171566</a> |
| M8     | 1,25    | 6,50               | 74      | 18,75    | 20,60    | 17,5     | 15                 | 10        | 8,3      | 3                  | ✓                   | 1    | <a href="#">171558</a>            | <a href="#">171567</a> |
| M10    | 1,5     | 7,95               | 80      | 22,50    | 24,80    | 21       | 15                 | 12        | 10,3     | 3                  | ✓                   | 1    | <a href="#">171559</a>            | <a href="#">171568</a> |
| M12    | 1,75    | 9,90               | 90      | 28,00    | 30,60    | 26,25    | 16                 | 14        | 12,3     | 4                  | ✓                   | 1    | <a href="#">171560</a>            | <a href="#">171569</a> |
| M14    | 2,0     | 11,60              | 100     | 32,00    | 34,85    | 30       | 16                 | 16        | 14,3     | 4                  | ✓                   | 1    | <a href="#">171561</a>            | <a href="#">171570</a> |
| M16    | 2,0     | 11,95              | 90      | 37,60    |          | 34       | 18                 | 12        |          | 4                  | ✓                   | 2    | <a href="#">171562</a>            | <a href="#">171571</a> |
| M18    | 2,5     | 13,95              | 110     | 37,50    | 41,40    | 40       | 17                 | 20        | 18,3     | 4                  | ✓                   | 1    | <a href="#">171563</a>            | <a href="#">171572</a> |
| M20    | 2,5     | 15,95              | 100     | 44,00    |          | 40       | 17                 | 16        |          | 4                  | ✓                   | 2    | <a href="#">171564</a>            | <a href="#">171573</a> |

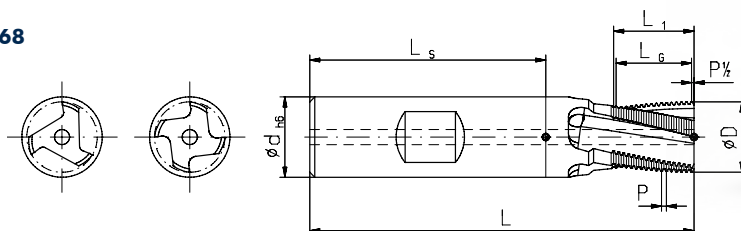
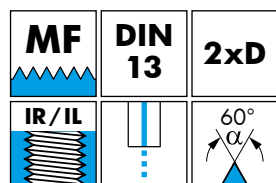
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# SolidCUT

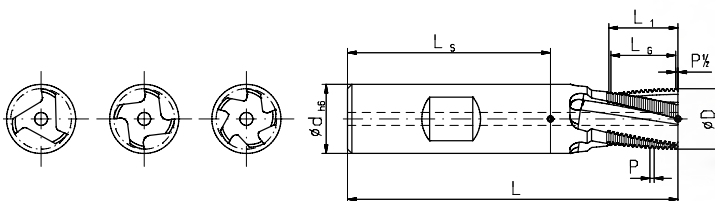
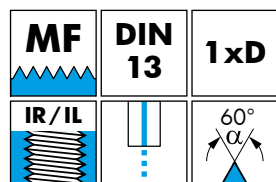
## Solid Carbide Circular Thread Milling Cutter

- Fixed dimension type
- Cutting Data see page 168



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

- Universal type
- Cutting Data see page 168



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

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# Solid Carbide Circular Thread Milling Cutter

- Fixed size version with Chamfer type
- Cutting Data see page 168

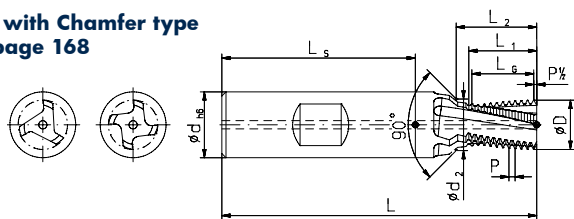
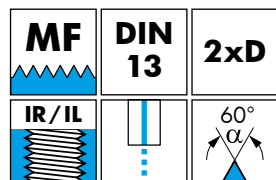
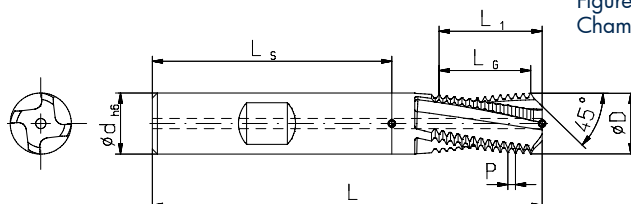


Figure 1:  
Chamfer on the shank

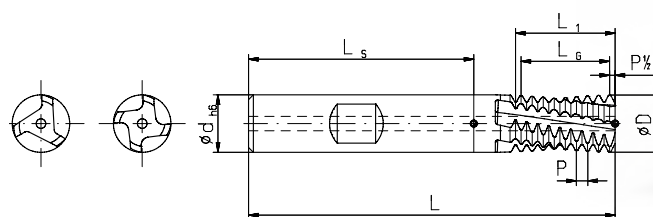
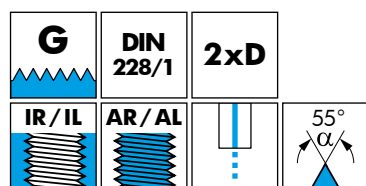


Figure 2:  
Chamfer on the face



| Thread   | P<br>mm | D $\pm 0,02$<br>mm | L<br>mm | L1<br>mm | L2<br>mm | Lg<br>mm | Number<br>of teeth | dh6<br>mm | d2<br>mm | Number Internal<br>of edges coolant | Fig. | Order No. |        |
|----------|---------|--------------------|---------|----------|----------|----------|--------------------|-----------|----------|-------------------------------------|------|-----------|--------|
|          |         |                    |         |          |          |          |                    |           |          |                                     |      | TINAMATIC |        |
| M8x1     | 1,0     | 5,95               | 74      | 19       | 21       | 18       | 19                 | 10        | 8,3      | 3                                   | ✓ 1  | 171574    | 172376 |
| M10x1    | 1,0     | 8,0                | 80      | 22       | 23,95    | 21       | 22                 | 12        | 10,3     | 3                                   | ✓ 1  | 171575    | 172377 |
| M10x1,25 | 1,25    | 7,95               | 80      | 22,5     | 24,6     | 21,25    | 18                 | 12        | 10,3     | 3                                   | ✓ 1  | 171576    | 172378 |
| M12x1    | 1,0     | 9,9                | 90      | 27       | 29       | 26       | 27                 | 14        | 12,3     | 4                                   | ✓ 1  | 171577    | 172379 |
| M12x1,25 | 1,25    | 9,9                | 90      | 27,5     | 29,6     | 26,25    | 22                 | 14        | 12,3     | 4                                   | ✓ 1  | 171578    | 172380 |
| M12x1,5  | 1,5     | 9,9                | 90      | 27       | 29,25    | 25,5     | 18                 | 14        | 12,3     | 4                                   | ✓ 1  | 171579    | 172381 |
| M14x1    | 1,0     | 11,6               | 100     | 31       | 33,15    | 30       | 31                 | 16        | 14,3     | 4                                   | ✓ 1  | 171580    | 172382 |
| M14x1,5  | 1,5     | 11,6               | 100     | 31,5     | 33,9     | 30       | 21                 | 16        | 14,3     | 4                                   | ✓ 1  | 171581    | 172383 |
| M16x1,5  | 1,5     | 11,95              | 90      | 36,05    |          | 33       | 23                 | 12        |          | 4                                   | ✓ 2  | 171582    | 172384 |
| M18x1,5  | 1,5     | 14,0               | 110     | 39       | 42,2     | 37,5     | 26                 | 20        | 18,3     | 4                                   | ✓ 1  | 171583    | 172385 |
| M20x1,5  | 1,5     | 15,95              | 100     | 45,05    |          | 42       | 29                 | 16        |          | 4                                   | ✓ 2  | 171584    | 172386 |

- Fixed dimension type
- Cutting Data see page 168



| Thread  | P<br>mm | Pitch/" | D <sup>+0,02</sup><br>mm | L<br>mm | L1<br>mm | LG<br>mm | Number<br>of teeth | dh6<br>mm | Number Internal<br>of edges coolant | Order No.                                                                             |                                                                                       |                                                                                       |                        |  |
|---------|---------|---------|--------------------------|---------|----------|----------|--------------------|-----------|-------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------|--|
|         |         |         |                          |         |          |          |                    |           |                                     | TINAMATIC                                                                             |                                                                                       |                                                                                       |                        |  |
|         |         |         |                          |         |          |          |                    |           |                                     |  |  |  |                        |  |
| G 1/16" | 0,907   | 28      | 5,95                     | 60      | 16,33    | 15,42    | 18                 | 6         | 3                                   | ✓                                                                                     | <a href="#">196157</a> <b>NEW</b>                                                     | on request <b>NEW</b>                                                                 | on request <b>NEW</b>  |  |
| G 1/8"  | 0,907   | 28      | 7,95                     | 70      | 20,8     | 20,86    | 24                 | 8         | 3                                   | ✓                                                                                     | <a href="#">168371</a>                                                                | <a href="#">168372</a>                                                                | <a href="#">168373</a> |  |
| G 1/4"  | 1,337   | 19      | 9,9                      | 75      | 28,0     | 26,74    | 21                 | 10        | 4                                   | ✓                                                                                     | <a href="#">168374</a>                                                                | <a href="#">168375</a>                                                                | <a href="#">168376</a> |  |
| G 3/8"  | 1,337   | 19      | 13,95                    | 90      | 36,1     | 34,762   | 27                 | 14        | 4                                   | ✓                                                                                     | <a href="#">168377</a>                                                                | <a href="#">168378</a>                                                                | <a href="#">168379</a> |  |
| G 1/2"  | 1,814   | 14      | 15,95                    | 90      | 43,5     | 41,72    | 24                 | 16        | 4                                   | ✓                                                                                     | <a href="#">168380</a>                                                                | <a href="#">168381</a>                                                                | <a href="#">168382</a> |  |

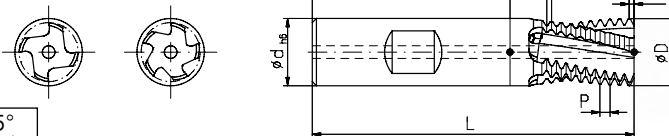
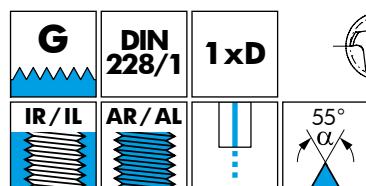
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# SolidCUT

## Solid Carbide Circular Thread Milling Cutter

- Universal type
- Cutting Data see page 168



| Thread from  | 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              |                        |
|              |       |         |                 |      |       |       |                 |        |                 |                  |                        |                        |
| G 1/4 - 3/8" | 1,337 | 19      | 9,95            | 75   | 16,0  | 14,71 | 12              | 10     | 4               | ✓                | <a href="#">186224</a> | <a href="#">187865</a> |
| G 1/2 - 7/8" | 1,814 | 14      | 15,95           | 90   | 25,4  | 23,58 | 14              | 16     | 5               | ✓                | <a href="#">186225</a> | <a href="#">187866</a> |
| >= G 1"      | 2,309 | 11      | 19,95           | 110  | 32,3  | 30,02 | 14              | 20     | 5               | ✓                | <a href="#">183759</a> | <a href="#">177967</a> |

- Fixed size version with Chamfer type
- Cutting Data see page 168

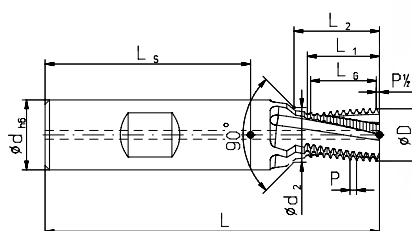
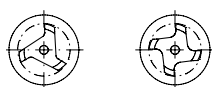


Figure 1:  
Chamfer on the shank

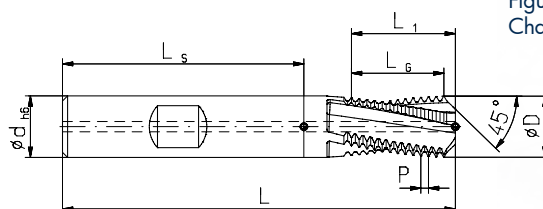
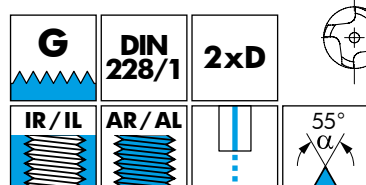


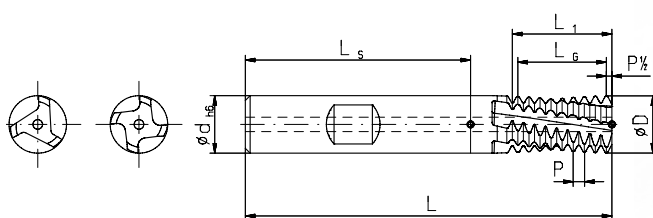
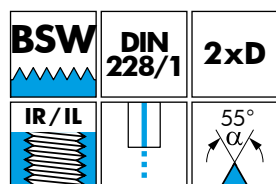
Figure 2:  
Chamfer on the face



| Thread  | P mm  | Pitch/" | D $\pm 0,02$ mm | L mm | L1 mm | L2 mm | LG mm | Number of teeth | dh6 mm | d2 mm | Number of edges | Internal coolant | Fig. | Order No.              |                        |
|---------|-------|---------|-----------------|------|-------|-------|-------|-----------------|--------|-------|-----------------|------------------|------|------------------------|------------------------|
|         |       |         |                 |      |       |       |       |                 |        |       |                 |                  |      | TINAMATIC              |                        |
|         |       |         |                 |      |       |       |       |                 |        |       |                 |                  |      |                        |                        |
| G 1/16" | 0,907 | 28      | 6               | 74   | 16,3  | 18,1  | 15,42 | 18              | 10     | 8,0   | 3               | ✓                | 1    | <a href="#">171585</a> | <a href="#">172387</a> |
| G 1/8"  | 0,907 | 28      | 7,95            | 80   | 21,8  | 23,5  | 20,86 | 24              | 12     | 10,0  | 3               | ✓                | 1    | <a href="#">171586</a> | <a href="#">172388</a> |
| G 1/4"  | 1,337 | 19      | 9,9             | 100  | 28,0  | 30,8  | 26,74 | 21              | 16     | 13,5  | 4               | ✓                | 1    | <a href="#">171587</a> | <a href="#">172389</a> |
| G 3/8"  | 1,337 | 19      | 13,95           | 90   | 37,5  |       | 34,76 | 27              | 14     |       | 4               | ✓                | 2    | <a href="#">171588</a> | <a href="#">172390</a> |
| G 1/2"  | 1,814 | 14      | 15,95           | 100  | 46,75 |       | 43,54 | 25              | 16     |       | 5               | ✓                | 2    | <a href="#">171589</a> | <a href="#">172391</a> |
| G 5/8"  | 1,814 | 14      | 17,95           | 110  | 51,0  |       | 47,16 | 27              | 18     |       | 5               | ✓                | 2    | <a href="#">171590</a> | <a href="#">172392</a> |

# Solid Carbide Circular Thread Milling Cutter

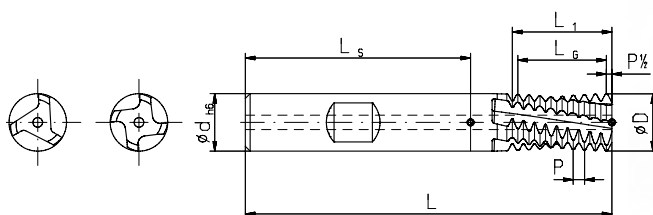
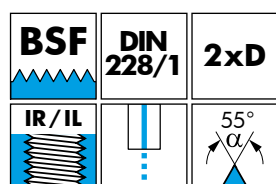
- Fixed dimension type
- Cutting Data see page 168



| Thread | P<br>mm | Pitch/" | D <sup>+0,02</sup><br>mm | L<br>mm | L1<br>mm | LG<br>mm | Number<br>of teeth | dh6<br>mm | Number<br>of edges | Internal<br>coolant | Order No.                                                                           |                                                                                     |                                                                                     |
|--------|---------|---------|--------------------------|---------|----------|----------|--------------------|-----------|--------------------|---------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|        |         |         |                          |         |          |          |                    |           |                    |                     |  |  |  |
| 5/16"  | 1,411   | 18      | 6,0                      | 60      | 19,75    | 18,34    | 14                 | 6         | 3                  | ✓                   | <a href="#">168383</a>                                                              | <a href="#">168384</a>                                                              | <a href="#">168385</a>                                                              |
| 3/8"   | 1,588   | 16      | 5,95                     | 60      | 20,60    | 19,06    | 13                 | 6         | 3                  | ✓                   | <a href="#">168386</a>                                                              | <a href="#">168387</a>                                                              | <a href="#">168388</a>                                                              |
| 7/16"  | 1,814   | 14      | 7,95                     | 70      | 23,60    | 21,77    | 13                 | 8         | 3                  | ✓                   | <a href="#">168389</a>                                                              | <a href="#">168390</a>                                                              | <a href="#">168391</a>                                                              |
| 1/2"   | 2,117   | 12      | 7,95                     | 70      | 23,30    | 21,17    | 11                 | 8         | 3                  | ✓                   | <a href="#">168392</a>                                                              | <a href="#">168393</a>                                                              | <a href="#">168394</a>                                                              |
| 5/8"   | 2,309   | 11      | 9,90                     | 75      | 30,00    | 27,71    | 13                 | 10        | 4                  | ✓                   | <a href="#">168395</a>                                                              | <a href="#">168396</a>                                                              | <a href="#">168397</a>                                                              |

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- Fixed dimension type
- Cutting Data see page 168



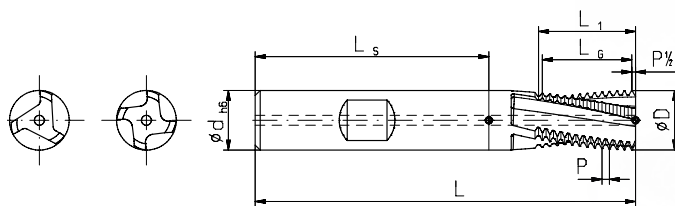
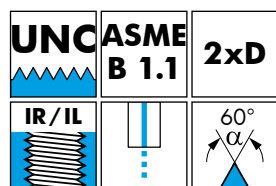
| Thread | P<br>mm | Pitch/" | D <sup>+0,02</sup><br>mm | L<br>mm | L1<br>mm | LG<br>mm | Number<br>of teeth | d h6<br>mm | Number<br>of edges | Internal<br>coolant | Order No.                                                                             |                                              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

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# SolidCUT

## Solid Carbide Circular Thread Milling Cutter

- Fixed dimension type
- Cutting Data see page 168



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

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- Fixed size version with Chamfer type
- Cutting Data see page 168

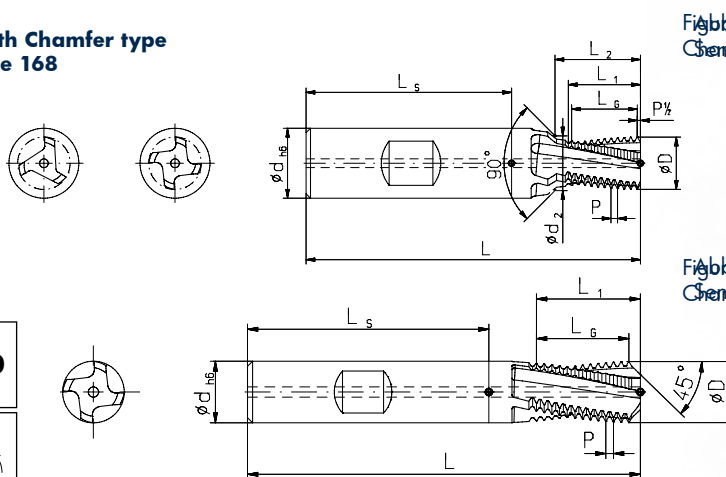
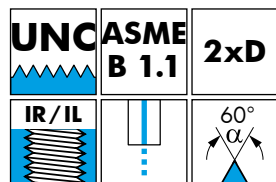


Figure 1:  
Chamfer on the shank

Figure 2:  
Chamfer on the edge



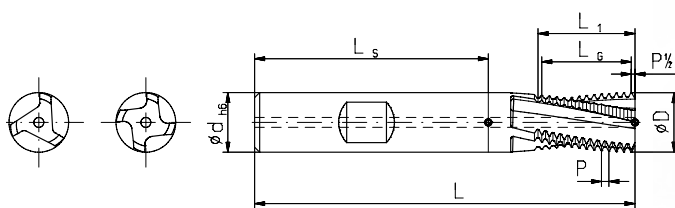
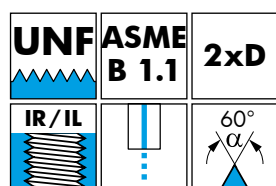
| Thread   | P<br>mm | Pitch/° | D±0,02<br>mm | L<br>mm | L1<br>mm | L2<br>mm | LG<br>mm | Number<br>of teeth | dh6<br>mm | d2<br>mm | Number of<br>edges | Internal<br>coolant | Fig. | Order No.                                                                             |                            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

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# SolidCUT

## Solid Carbide Circular Thread Milling Cutter

- Fixed dimension type
- Cutting Data see page 168



| Thread   | P<br>mm | Pitch/" | D <sup>+0,02</sup><br>mm | L<br>mm | L1<br>mm | LG<br>mm | Number<br>of teeth | dh6<br>mm | Number Internal<br>of edges coolant | Order No.                                                                           |                                                                                     |                                                                                     |                        |
|----------|---------|---------|--------------------------|---------|----------|----------|--------------------|-----------|-------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------|
|          |         |         |                          |         |          |          |                    |           |                                     | TINAMATIC                                                                           |                                                                                     |                                                                                     |                        |
|          |         |         |                          |         |          |          |                    |           |                                     |  |  |  |                        |
| 1/4"-28  | 0,907   | 28      | 4,8                      | 55      | 14,5     | 13,61    | 16                 | 6         | 3                                   |                                                                                     | <a href="#">168428</a>                                                              | <a href="#">168429</a>                                                              | <a href="#">168430</a> |
| 5/16"-24 | 1,058   | 24      | 5,95                     | 60      | 19,0     | 17,99    | 18                 | 6         | 3                                   | ✓                                                                                   | <a href="#">168431</a>                                                              | <a href="#">168432</a>                                                              | <a href="#">168433</a> |
| 3/8"-24  | 1,058   | 24      | 7,95                     | 70      | 22,2     | 21,16    | 21                 | 8         | 3                                   | ✓                                                                                   | <a href="#">168434</a>                                                              | <a href="#">168435</a>                                                              | <a href="#">168436</a> |
| 7/16"-20 | 1,270   | 20      | 7,95                     | 70      | 22,8     | 21,59    | 18                 | 8         | 3                                   | ✓                                                                                   | <a href="#">168437</a>                                                              | <a href="#">168438</a>                                                              | <a href="#">168439</a> |
| 1/2"-20  | 1,270   | 20      | 9,9                      | 75      | 27,9     | 26,67    | 22                 | 10        | 4                                   | ✓                                                                                   | <a href="#">168440</a>                                                              | <a href="#">168441</a>                                                              | <a href="#">168442</a> |

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- Fixed size version with Chamfer type
- Cutting Data see page 168

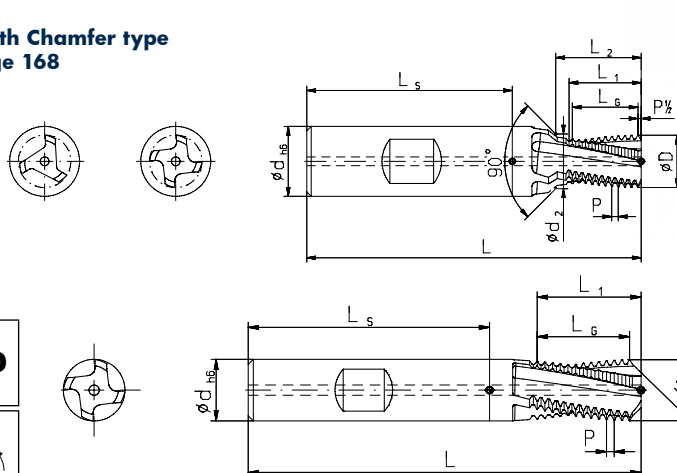
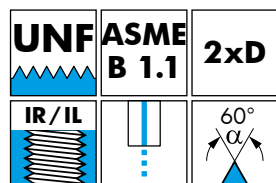


Figure 1:  
Chamfer on the shank



Figure 2:  
Chamfer on the edge



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

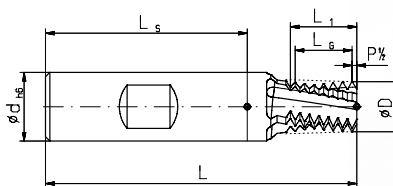
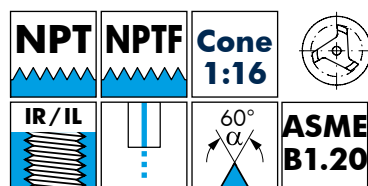
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# SolidCUT

## Solid Carbide Circular Thread Milling Cutter

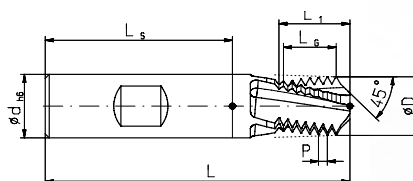
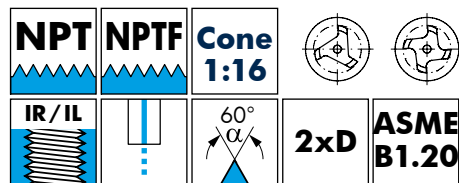
- Fixed dimension type
- Cutting Data see page 168
- Designed for aluminum and cast iron materials



| Thread | P<br>mm | Pitch/" | D $\pm 0,02$<br>mm | L<br>mm | L1<br>mm | LG<br>mm | Number<br>of teeth | dh6<br>mm | Number<br>of edges | Internal<br>coolant | Order No.              |                        |                        |
|--------|---------|---------|--------------------|---------|----------|----------|--------------------|-----------|--------------------|---------------------|------------------------|------------------------|------------------------|
|        |         |         |                    |         |          |          |                    |           |                    |                     | TINAMATIC              |                        |                        |
|        |         |         |                    |         |          |          |                    |           |                    |                     | DIN 6535<br>Form HA    | DIN 6535<br>Form HB    | DIN 6535<br>Form HE    |
| 1/16"  | 0,941   | 27      | 5,8                | 70      | 11,3     | 10,35    | 12                 | 8         | 3                  | ✓                   | <a href="#">170752</a> | <a href="#">170753</a> | <a href="#">170754</a> |
| 1/8"   | 0,941   | 27      | 7,6                | 75      | 11,3     | 10,35    | 12                 | 10        | 3                  | ✓                   | <a href="#">170755</a> | <a href="#">170756</a> | <a href="#">170757</a> |
| 1/4"   | 1,411   | 18      | 10,1               | 90      | 15,5     | 14,11    | 11                 | 14        | 3                  | ✓                   | <a href="#">170758</a> | <a href="#">170759</a> | <a href="#">170760</a> |
| 3/8"   | 1,411   | 18      | 12,8               | 90      | 16,7     | 14,11    | 11                 | 16        | 4                  | ✓                   | <a href="#">170761</a> | <a href="#">170762</a> | <a href="#">170763</a> |
| 1/2"   | 1,814   | 14      | 16,0               | 110     | 21,35    | 18,14    | 11                 | 20        | 5                  | ✓                   | <a href="#">170764</a> | <a href="#">170765</a> | <a href="#">170766</a> |
| 3/4"   | 1,814   | 14      | 18,5               | 110     | 19,95    | 18,14    | 11                 | 20        | 5                  | ✓                   | <a href="#">170767</a> | <a href="#">170768</a> | <a href="#">170769</a> |

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- Chamfer type
- Cutting Data see page 168

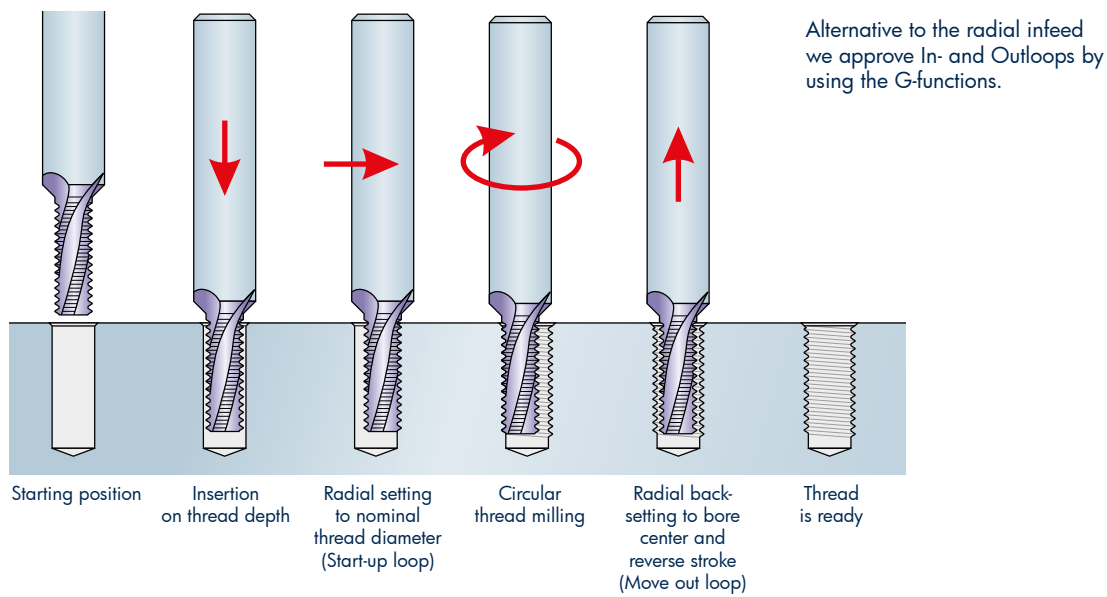


| Thread | P<br>mm | Pitch/" | D $\pm 0,02$<br>mm | L<br>mm | L1<br>mm | LG<br>mm | Number<br>of teeth | dh6<br>mm | Number<br>of edges | Internal<br>coolant | Order No.              |                        |
|--------|---------|---------|--------------------|---------|----------|----------|--------------------|-----------|--------------------|-----------------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

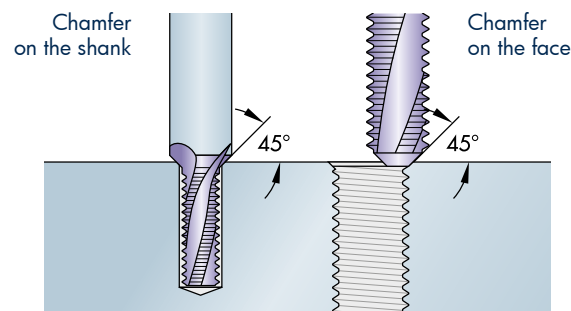
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**i** NPS and NPSM on request!

## Machining Sequence



## Types with chamfer

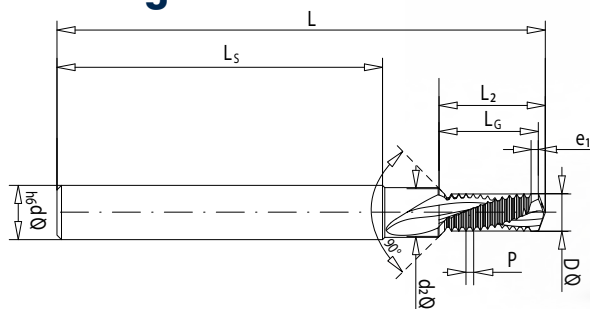
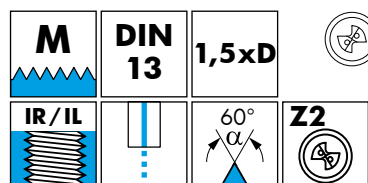


**i** More information to circular thread milling see page 177

# SolidCUT

## Solid Carbide Thread Milling Cutter

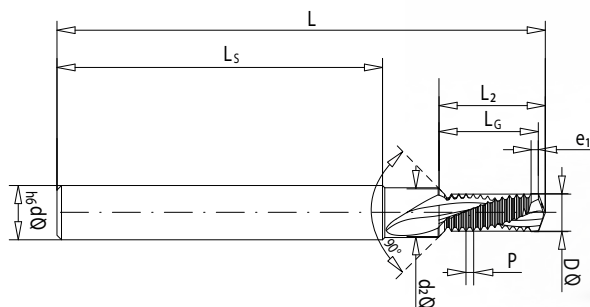
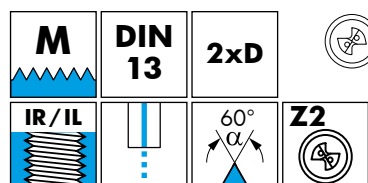
- Cutting Data see page 61
- Designed for aluminum and cast iron materials



| Thread | P<br>mm | D $\pm 0,02$<br>mm | Lg<br>mm | Ls<br>mm | L<br>mm | dh<br>mm | max. Senk-Ø<br>d2<br>mm | Programming value for lowering<br>L2<br>mm | Grooving width<br>e1<br>mm | Internal coolant | Order No.                        |
|--------|---------|--------------------|----------|----------|---------|----------|-------------------------|--------------------------------------------|----------------------------|------------------|----------------------------------|
|        |         |                    |          |          |         |          |                         |                                            |                            |                  | TINAMATIC<br>DIN 6535<br>Form HA |
| 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                       |

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- Cutting Data see page 61



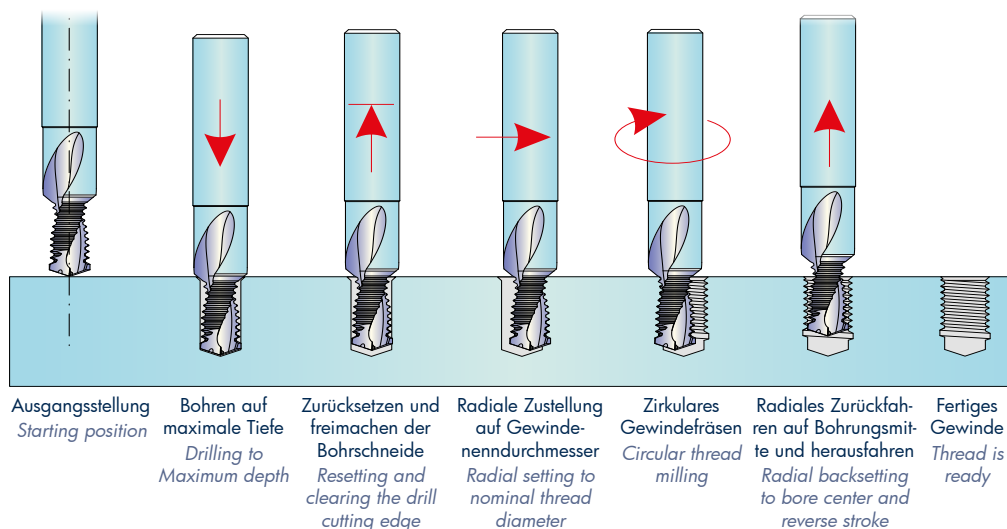
| Thread | P<br>mm | D $\pm 0,02$<br>mm | Lg<br>mm | Ls<br>mm | L<br>mm | dh<br>mm | max. Senk-Ø<br>d2<br>mm | Programming value for lowering<br>L2<br>mm | Grooving width<br>e1<br>mm | Internal coolant | Order No.                        |
|--------|---------|--------------------|----------|----------|---------|----------|-------------------------|--------------------------------------------|----------------------------|------------------|----------------------------------|
|        |         |                    |          |          |         |          |                         |                                            |                            |                  | TINAMATIC<br>DIN 6535<br>Form HA |
| 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                       |

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## Machining Sequence

### Machining Sequence

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



|                 | Stahl Guss<br>Cast iron |             |              | Aluminium<br>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   |
| <b>Vc m/min</b> | 120                     | 120         | 120          | 220                   | 220         | 220          |
| <b>fn mm/U</b>  | 0,1 - 0,15              | 0,15 - 0,2  | 0,25 - 0,3   | 0,1 - 0,15            | 0,15 - 0,2  | 0,25 - 0,3   |
| <b>fz mm</b>    | 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?

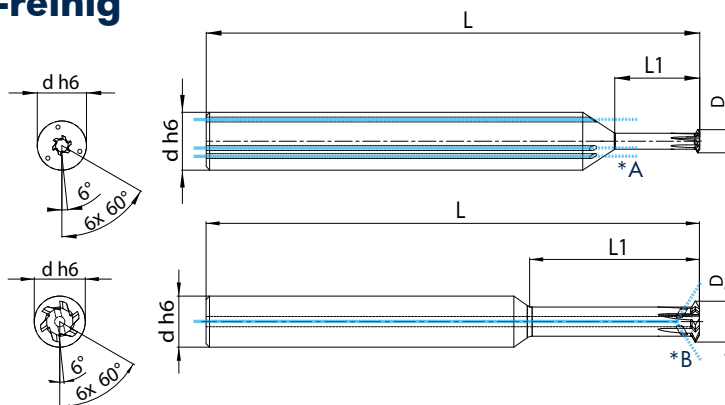
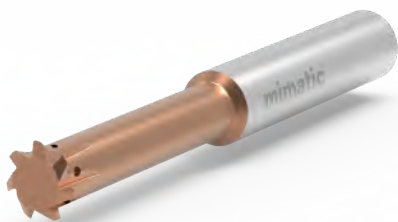
Do you need help with programming?



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

**SolidCUT**

## VHM-Zirkular-Gewindefräser ein-reihig

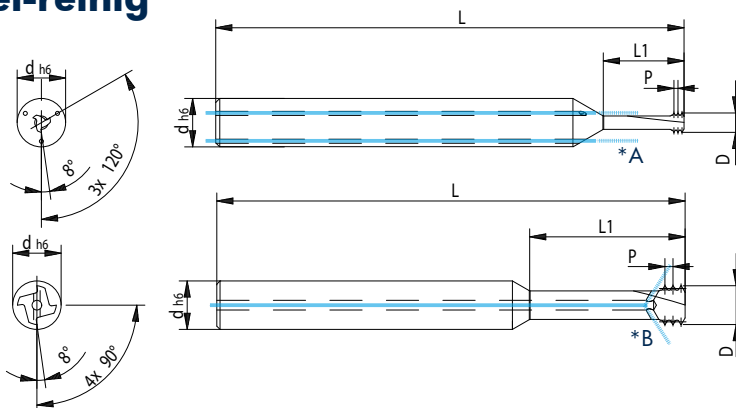
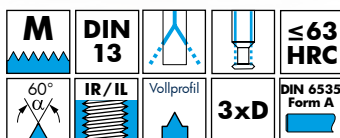


| Thread | P<br>mm | D<br>mm | L<br>mm | L1<br>mm | d h6<br>mm | Number of<br>Teeth | Internal coolant supply | Order No.                         |
|--------|---------|---------|---------|----------|------------|--------------------|-------------------------|-----------------------------------|
|        |         |         |         |          |            |                    |                         | TINAMATIC                         |
| ≥ M1,0 | 0,25    | 0,72    | 40      | 4,1      | 4          | 4                  | Peripherie*A            | <a href="#">204497</a> <b>NEU</b> |
| ≥ M1,4 | 0,3     | 1,05    | 40      | 4,8      | 4          | 4                  | Peripherie*A            | <a href="#">204498</a> <b>NEU</b> |
| ≥ M1,6 | 0,35    | 1,2     | 40      | 6,1      | 4          | 4                  | Peripherie*A            | <a href="#">204499</a> <b>NEU</b> |
| ≥ M2   | 0,4     | 1,52    | 40      | 6,8      | 4          | 5                  | Peripherie*A            | <a href="#">204500</a> <b>NEU</b> |
| ≥ M2,5 | 0,45    | 1,95    | 40      | 8,4      | 4          | 5                  | Peripherie*A            | <a href="#">204501</a> <b>NEU</b> |
| ≥ M3   | 0,5     | 2,4     | 58      | 10,0     | 6          | 5                  | Peripherie*A            | <a href="#">204502</a> <b>NEU</b> |
| ≥ M3,5 | 0,6     | 2,7     | 58      | 11,7     | 6          | 6                  | Peripherie*A            | <a href="#">204503</a> <b>NEU</b> |
| ≥ M4   | 0,7     | 3,2     | 58      | 13,4     | 6          | 6                  | Peripherie*A            | <a href="#">204504</a> <b>NEU</b> |
| ≥ M5   | 0,8     | 4,05    | 58      | 16,6     | 6          | 6                  | Peripherie*A            | <a href="#">204505</a> <b>NEU</b> |
| ≥ M6   | 1       | 4,8     | 58      | 20,0     | 6          | 6                  | seitlich / sideways*B   | <a href="#">204506</a> <b>NEU</b> |
| ≥ M8   | 1,25    | 6,55    | 64      | 26,5     | 8          | 6                  | seitlich / sideways*B   | <a href="#">204507</a> <b>NEU</b> |
| ≥ M10  | 1,5     | 8,3     | 83      | 33,0     | 10         | 6                  | seitlich / sideways*B   | <a href="#">204508</a> <b>NEU</b> |
| ≥ M12  | 1,75    | 9,95    | 83      | 39,5     | 10         | 7                  | seitlich / sideways*B   | <a href="#">204509</a> <b>NEU</b> |
| ≥ M14  | 2       | 11,7    | 101     | 52,0     | 12         | 8                  | seitlich / sideways*B   | <a href="#">204510</a> <b>NEU</b> |

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**SolidCUT**

## VHM-Zirkular-Gewindefräser drei-reihig



| Thread  | P<br>mm | D<br>mm | L<br>mm | L1<br>mm | d h6<br>mm | Number of<br>Teeth | Internal coolant supply | Order No.                         |
|---------|---------|---------|---------|----------|------------|--------------------|-------------------------|-----------------------------------|
|         |         |         |         |          |            |                    |                         | TINAMATIC                         |
| M3      | 0,5     | 2,4     | 58      | 10,0     | 6          | 3                  | Peripherie*A            | <a href="#">204416</a> <b>NEU</b> |
| M4      | 0,7     | 3,15    | 58      | 13,4     | 6          | 3                  | Peripherie*A            | <a href="#">204480</a> <b>NEU</b> |
| M5      | 0,8     | 4       | 58      | 16,6     | 6          | 3                  | Peripherie*A            | <a href="#">204481</a> <b>NEU</b> |
| M6      | 1       | 4,8     | 58      | 20,0     | 6          | 4                  | seitlich / sideways*B   | <a href="#">204417</a> <b>NEU</b> |
| M8      | 1,25    | 5,95    | 64      | 26,5     | 8          | 4                  | seitlich / sideways*B   | <a href="#">204482</a> <b>NEU</b> |
| M10     | 1,5     | 7,95    | 83      | 33,0     | 10         | 5                  | seitlich / sideways*B   | <a href="#">204483</a> <b>NEU</b> |
| M12     | 1,75    | 9,9     | 83      | 39,5     | 10         | 5                  | seitlich / sideways*B   | <a href="#">204419</a> <b>NEU</b> |
| M14/M16 | 2       | 11,6    | 101     | 52,0     | 12         | 6                  | seitlich / sideways*B   | <a href="#">204484</a> <b>NEU</b> |

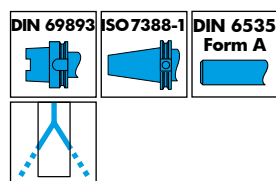
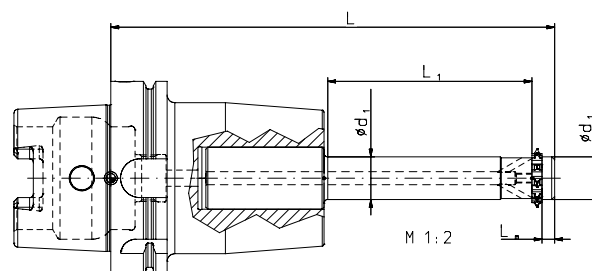
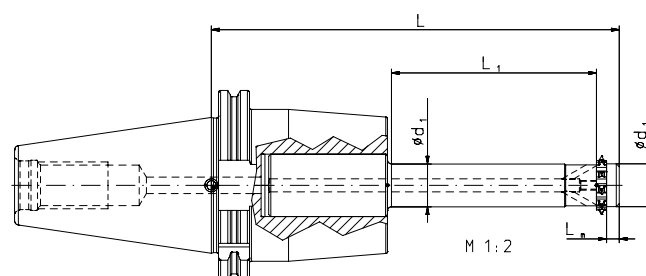
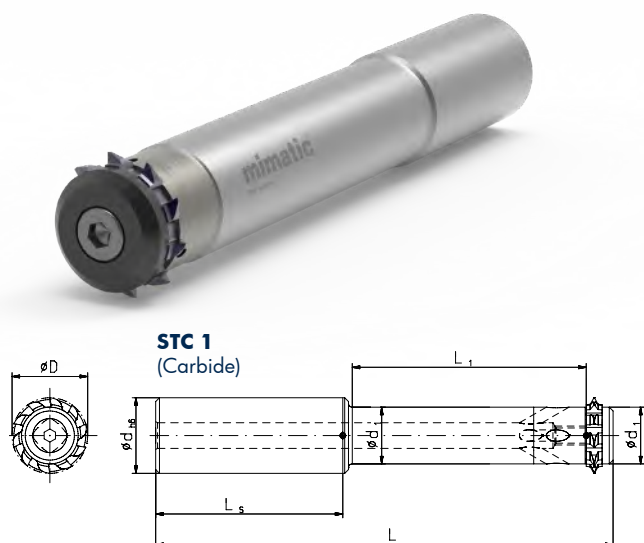
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# Milling System for Threads from Drill Hole Ø 20,5 mm (≥ M 24)

- Cutting data see page 166
- Recommendation plunging movements see page 180



CLICK ME!

## Spare Parts

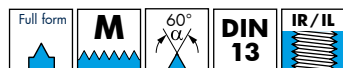
| Holder                 | ④ Clamping disc        | ② Clamping screw       | Screw-driver           | Screw torques |
|------------------------|------------------------|------------------------|------------------------|---------------|
| <a href="#">182043</a> | <a href="#">159784</a> | <a href="#">163852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

## Complete holder without Inserts

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

## Milling Inserts

■ Cutting Data see page 166



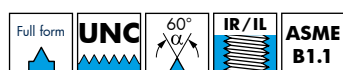
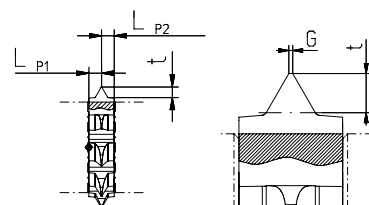
| Type | Pitch<br>mm | Thread      | Number<br>of teeth | D<br>mm | t<br>mm | LP1=LP2<br>mm | Order No<br>TINAMATIC  |
|------|-------------|-------------|--------------------|---------|---------|---------------|------------------------|
| 9    | 3           | M 24 / M 27 | 10                 | 20  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

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

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

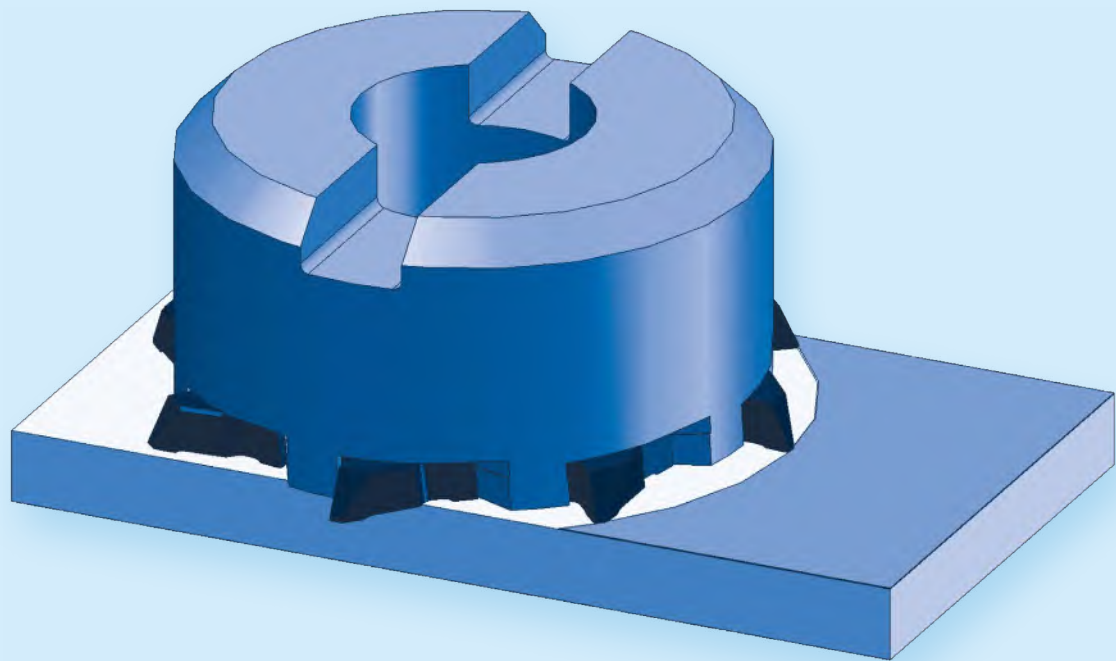
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**i** Ask about our regrinding service!

**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 Milling



Extended  
program

82-  
109

5

Contour and Radius Milling  
Chamfering, Deburring,  
undercut, dovetail



Extended  
program

110-  
125

6

## Sawing, Slitting

Sawing, Cutting, Slitting



Extended  
program

126-  
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



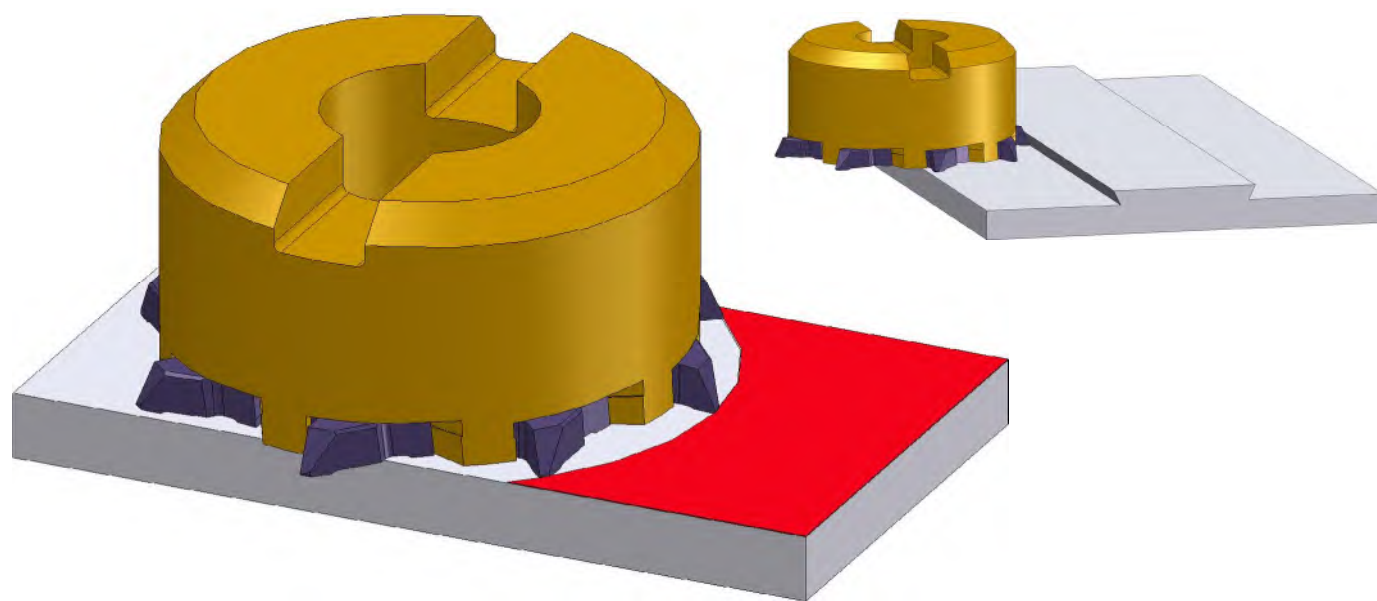
## TriMILL

### with Trailing Chamfer Edge for Very Good Surfaces wto Finish Milling

#### Advantages of indexable inserts with integrated trailing chamfer

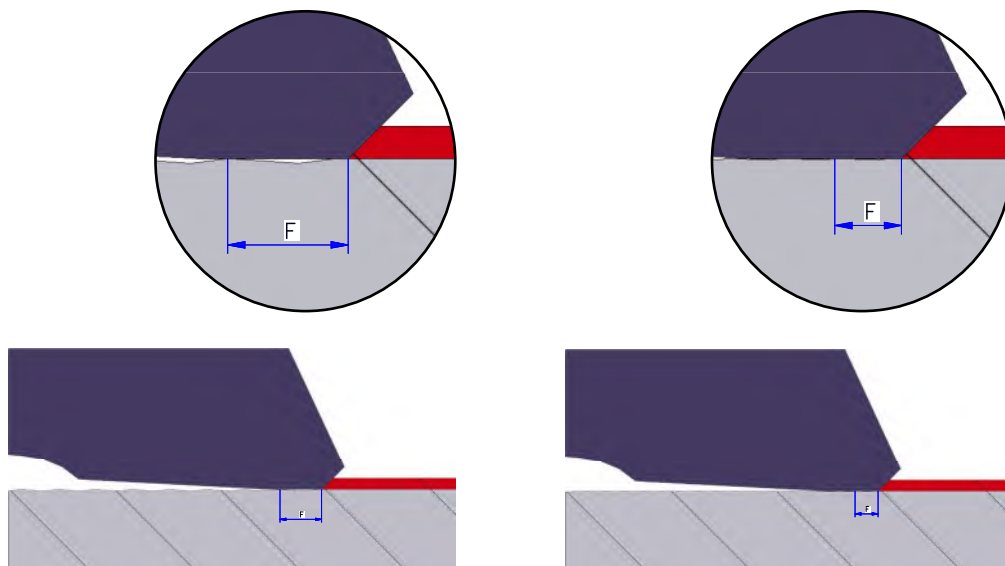
compared to standard indexable inserts with  
normal corner radius at same depth of cut:

- **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-

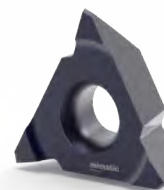
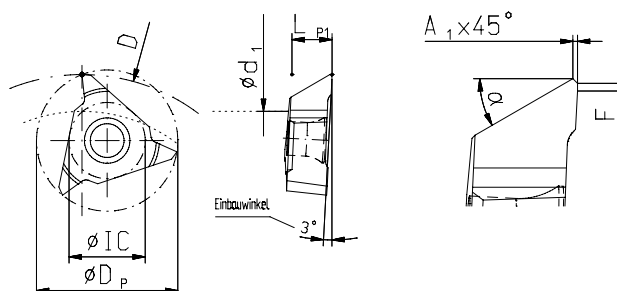
mal rear position and thus minimizes the secondary cutting edge angle to  $0^\circ$ . Thus the surface automatically improves to 2-3 times compared with the calculated values.



## Slot Milling

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

2



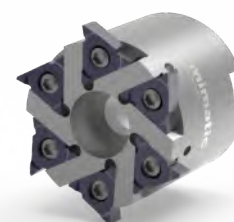
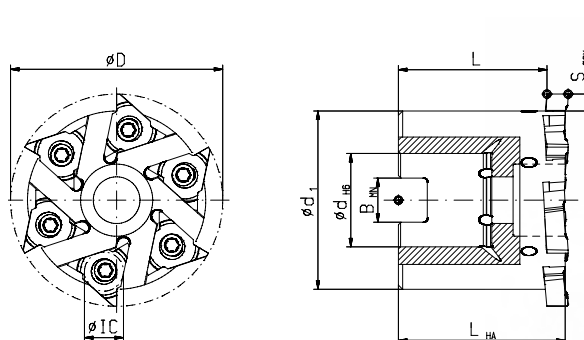
| Typ | Typ |
|-----|-----|
| 023 | 013 |

| Type | DP<br>mm | IC<br>mm | LP1<br>mm | A1 x 45°<br>mm | F<br>mm | $\alpha$ | Order No.<br>TINAMATIC |
|------|----------|----------|-----------|----------------|---------|----------|------------------------|
| 023  | 17,5     | 9,2      | 5         | 0,3            | 0,65    | 25°      | <a href="#">149516</a> |
| 013  | 23       | 12,4     | 6,5       | 0,3            | 0,5     | 28°      | <a href="#">149472</a> |

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## Circular Milling Tools

- Inserts see page 69
- Cutting data see page 166



| Typ                         |  | IC  |
|-----------------------------|--|-----|
| 023                         |  | 9,2 |
| $\varnothing$ min.<br>40 mm |  |     |
| S max.<br>4,0 mm            |  |     |

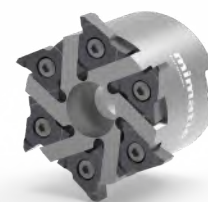
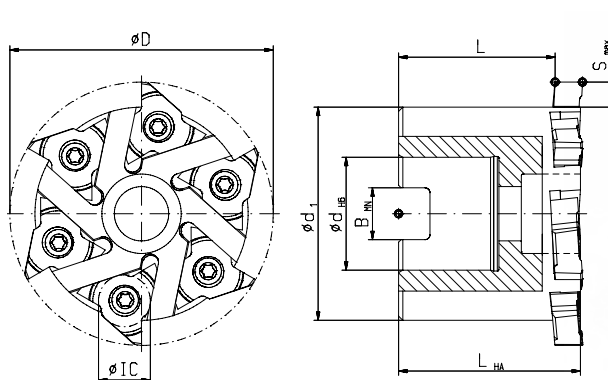
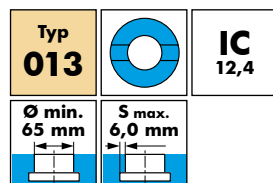
|                        |         |           |          |              |           |         |           |                 | Accessories            | Spare part No.               |                            |                         |
|------------------------|---------|-----------|----------|--------------|-----------|---------|-----------|-----------------|------------------------|------------------------------|----------------------------|-------------------------|
| Order No.              | D<br>mm | dH6<br>mm | d1<br>mm | S max.<br>mm | LHA<br>mm | L<br>mm | BMN<br>mm | Cutting<br>edge | Key                    | Cutter<br>fastening<br>screw | T15 IP<br>Screw-<br>driver | Screw                   |
| <a href="#">123464</a> | 38      | 16        | 31       | 3,4          | 45,3      | 40,97   | 8,4       | 3               | <a href="#">134984</a> | <a href="#">114476*</a>      | <a href="#">111671*</a>    | <a href="#">107547*</a> |
| <a href="#">123461</a> | 50      | 22        | 42       | 3,9          | 39,3      | 34,97   | 10,4      | 6               |                        | <a href="#">114684*</a>      | <a href="#">111671*</a>    | <a href="#">107547*</a> |
| <a href="#">161485</a> | 63      | 27        | 55       | 4,0          | 39,3      | 34,97   | 12,4      | 8               |                        | <a href="#">114684*</a>      | <a href="#">111671*</a>    | <a href="#">107547*</a> |
|                        |         |           |          |              |           |         |           |                 |                        | Screw torque max. 3,8 Nm     |                            |                         |

CLICK ME!

**TriMILL**

## Circular Milling Tools

- Inserts see page 69
- Cutting data see page 166



Spare part No.

|                          |         |
|--------------------------|---------|
| T20 IP<br>Screw-driver * | Screw * |
|--------------------------|---------|

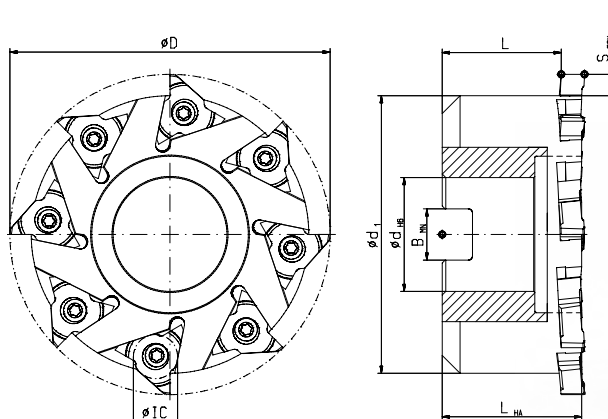
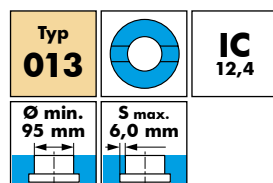
[111594](#) [107551](#)

Screw torque 5,5 Nm

Cutter clamping screw internal hexagon

Order No. [114695](#)

CLICK  
ME!



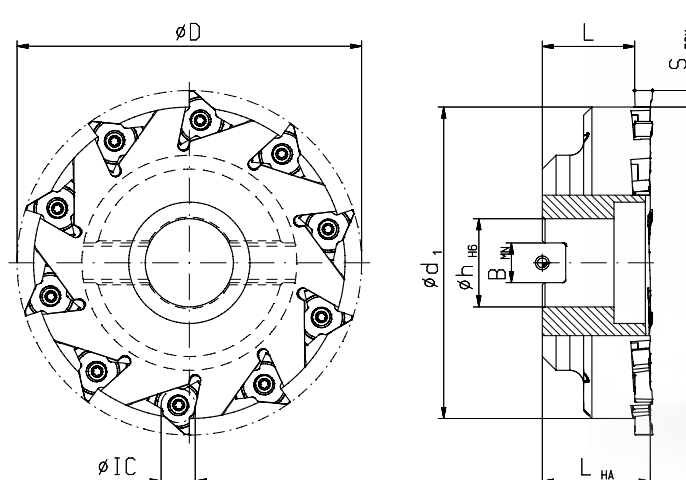
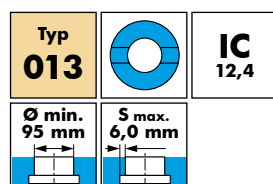
Spare part No.

|                          |         |
|--------------------------|---------|
| T20 IP<br>Screw-driver * | Screw * |
|--------------------------|---------|

[111594](#) [107551](#)

Screw torque 5,5 Nm

CLICK  
ME!



Spare part No.

|                          |         |
|--------------------------|---------|
| T20 IP<br>Screw-driver * | Screw * |
|--------------------------|---------|

[111594](#) [107551](#)

Screw torque 5,5 Nm

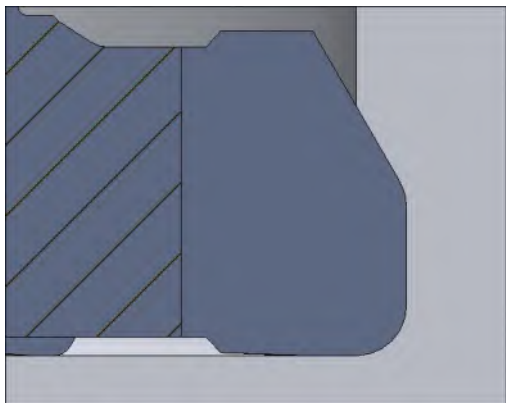
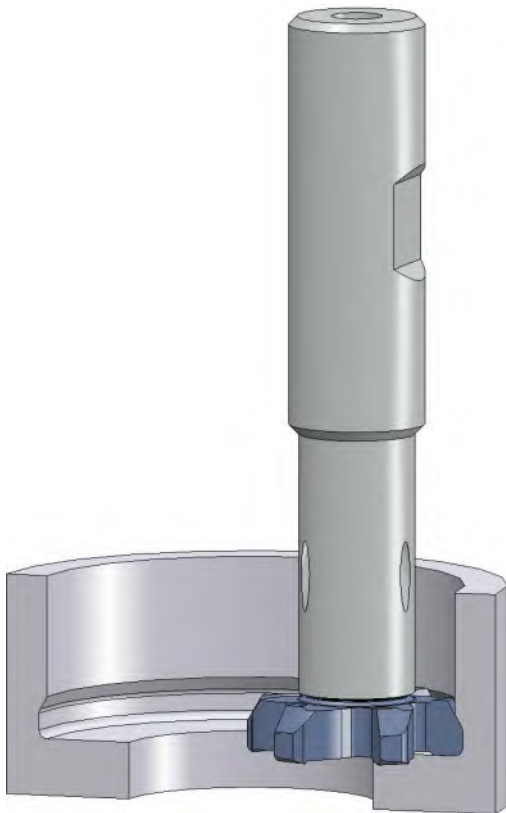
CLICK  
ME!

\* Screwdriver and clamping screw included in delivery

## PolyMILL

### Face Finish Milling with PolyMILL on Request

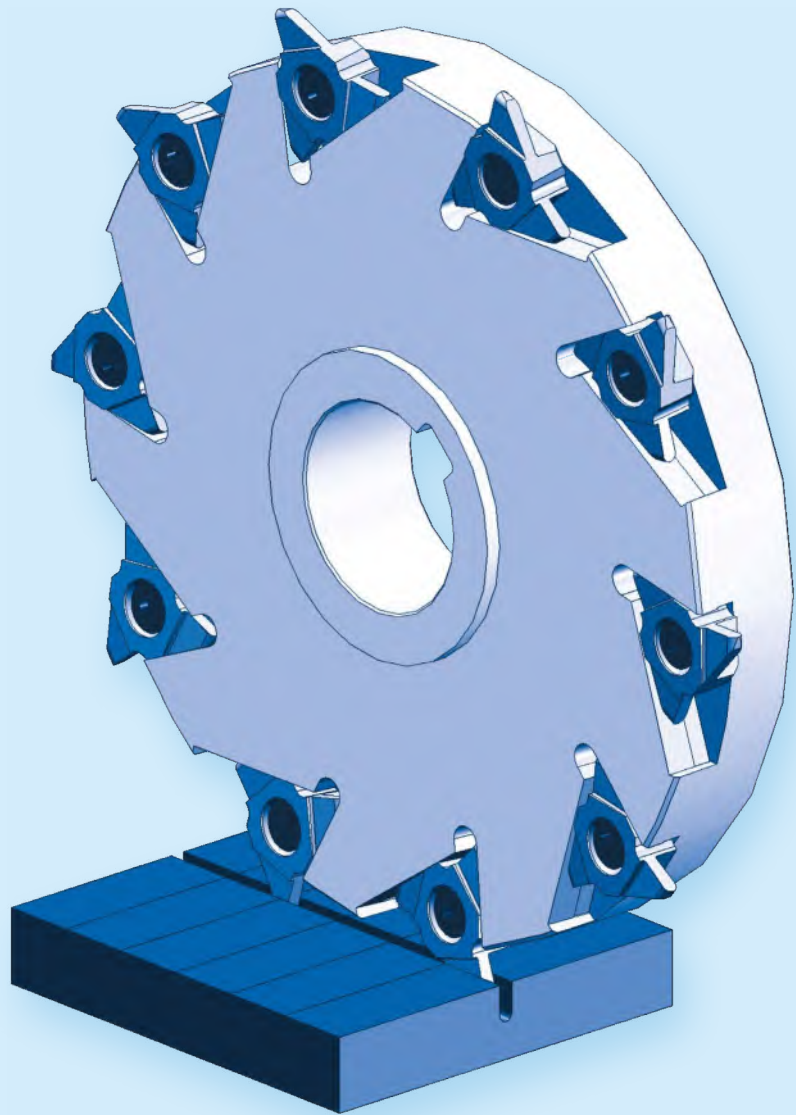
2



#### **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 Milling



Extended  
program

82-  
109

5

Contour and Radius Milling  
Chamfering, Deburring,  
undercut, dovetail



Extended  
program

110-  
125

6

## Sawing, Slitting

Sawing, Cutting, Slitting



Extended  
program

126-  
143

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## Bore Machining

Reaming

144-  
151

8

## Axial Grooving

Axial Grooving, adjustable

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157

9

## Special Tools

Special- and Combination Tools

158-  
163

10

Cutting Data and Technical Information

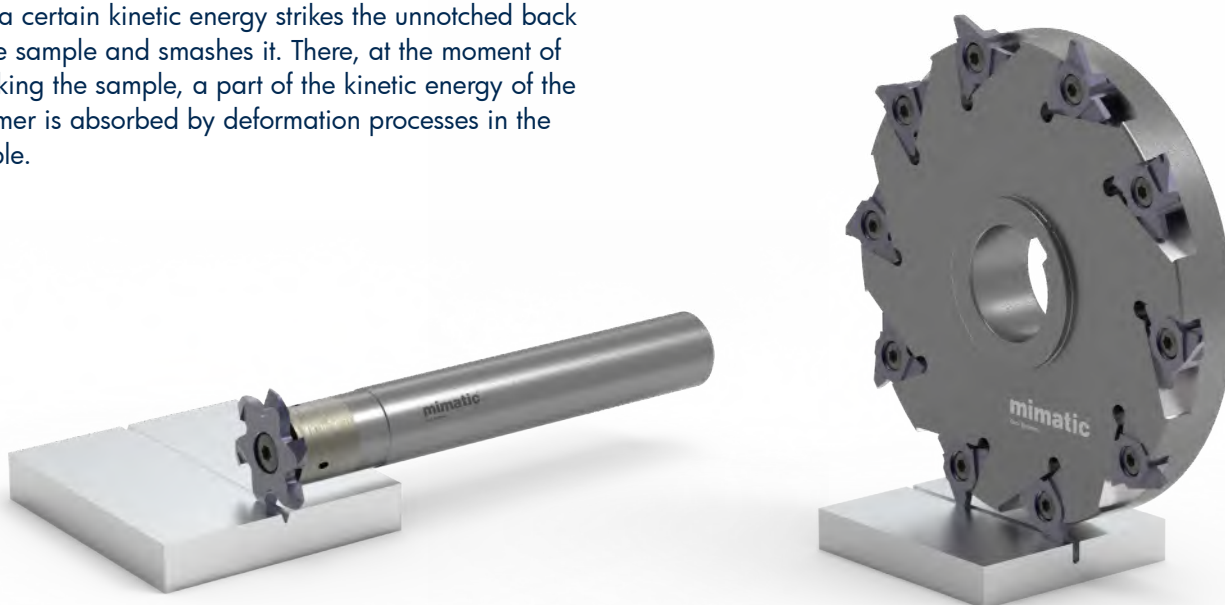
164-  
179

11

## Notch Impact Test

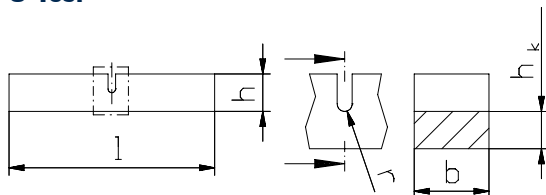
The impact test is a material testing method by Augustin Georges Albert Charpy established in 1905, according to DIN EN ISO 179-1 (for metallic materials) and DIN EN ISO 148-1 (for plastics) to determine relatively quickly and simple toughness properties of materials. There the behavior of an elongated 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.

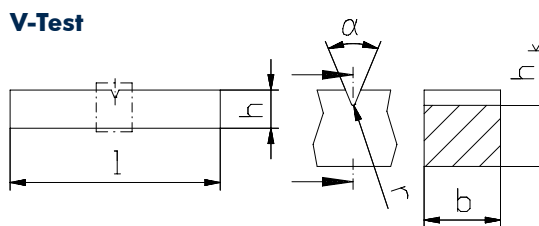


## Notch Impact Test according to Charpy DIN EN ISO 148-1; 2011-01

**U-Test**



**V-Test**



| Description    | Notch form | l<br>mm | l <sub>w</sub><br>mm | h<br>mm | b<br>mm | h <sub>k</sub><br>mm | r<br>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

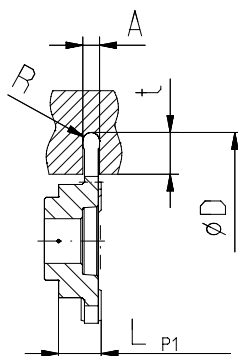
\*\* KLST-test for plastics acc. to DIN EN ISO 179-1:2000

## PolyMILL

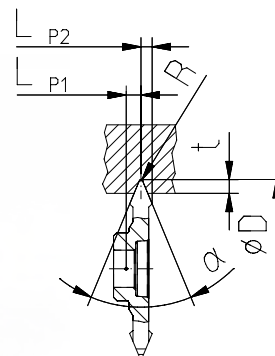
### Notch Impact Test

- 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               | <a href="#">171975</a> |
|      | P2022 U-DVM  | 2,0  | 1,0  | –   | 3,0  | 4,9    | 0      | 6               | <a href="#">171975</a> |
|      | P2022 U-DVMK | 1,5  | 0,75 | –   | 2,0  | 4,9    | 0      | 6               | <a href="#">175889</a> |
|      | P2020 V      | –    | 0,25 | 45° | 2,0  | 2,15   | 1,675  | 6               | <a href="#">182208</a> |
|      | P2020 V-KLST | –    | 0,1  | 60° | 1,0  | 2,15   | 1,675  | 6               | <a href="#">160808</a> |
| P25  | P2526 U      | 2,0  | 1,0  | –   | 5,0  | 4,9    | 0      | 6               | <a href="#">160909</a> |
|      | P2526 U-DVM  | 2,0  | 1,0  | –   | 3,0  | 4,9    | 0      | 6               | <a href="#">160909</a> |
|      | P2526 U-DVMK | 1,5  | 0,75 | –   | 2,0  | 4,9    | 0      | 6               | <a href="#">162057</a> |
|      | P2526 V      | –    | 0,25 | 45° | 2,0  | 2,1    | 1,7    | 6               | <a href="#">180815</a> |
|      | P2526 V-KLST | –    | 0,15 | 60° | 1,0  | 2,7    | 1,8    | 6               | <a href="#">184126</a> |

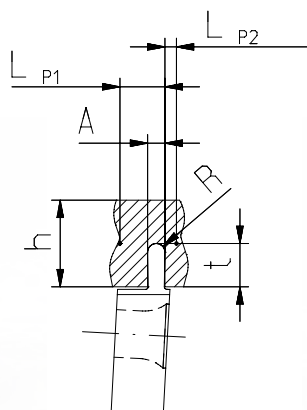
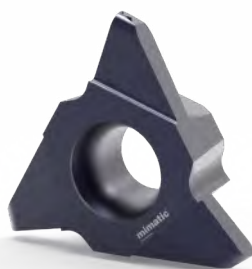
CLICK ME!

## TriMILL

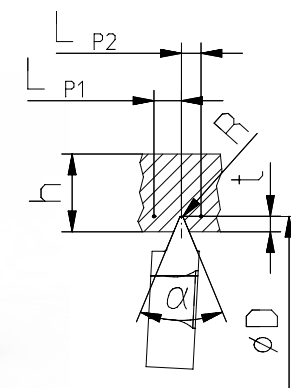
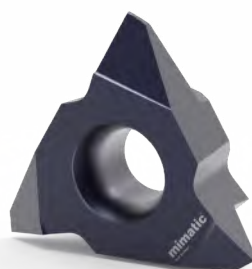
### Notch Impact Test

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

**U-Test**



**V-Test**

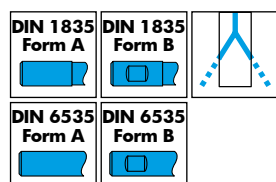
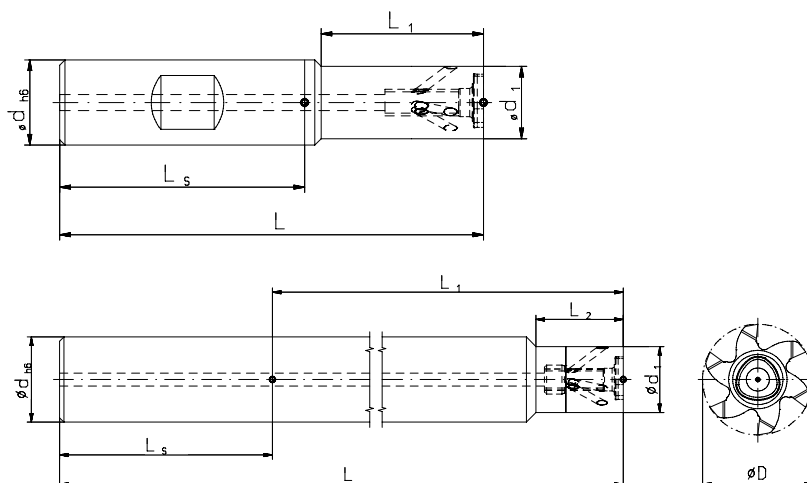


| Type | Notch form | A mm | R mm | α   | t mm | LP1 mm | LP2 mm | Number of teeth | Order No. TINAMATIC    |
|------|------------|------|------|-----|------|--------|--------|-----------------|------------------------|
| 013  | 013 U      | 2,0  | 1,0  | –   | 5,0  | 5,2    | 1,33   | 3            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

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## Circular Milling Tools with Polygonal Insert Seat

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

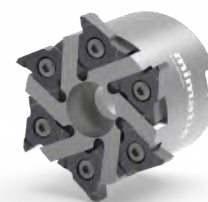
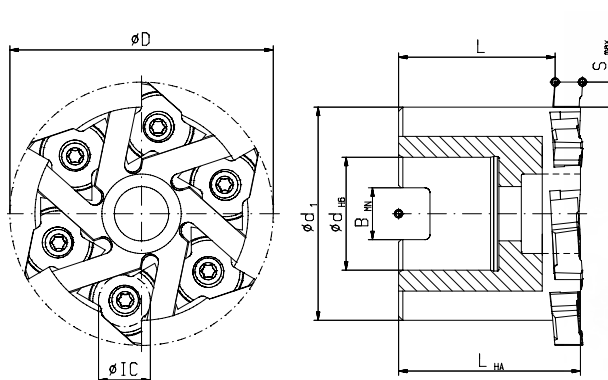
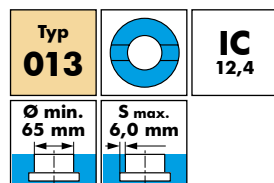


|      |                                   |      |           |          |                         |                                     |         |          |          |         | Spare part No.                   |                                   |
|------|-----------------------------------|------|-----------|----------|-------------------------|------------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

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## Circular Milling Tools

- Inserts see page 73
- Cutting data see page 166



3

| Order No.              | D<br>mm | dH6<br>mm | d1<br>mm | S max.<br>mm | LHA<br>mm | L<br>mm | B MN<br>mm | Inserts |
|------------------------|---------|-----------|----------|--------------|-----------|---------|------------|---------|
| <a href="#">123435</a> | 63      | 27        | 51       | 6            | 43,5      | 37,5    | 12,4       | 6       |

Spare part No.

**T20 IP**  
Screw-  
driver \*

Screw \*

[111594](#)

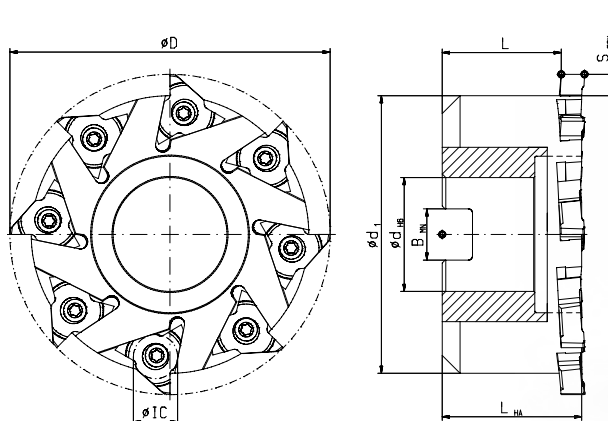
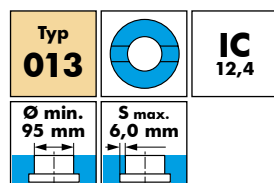
[107551](#)

Screw torque 5,5 Nm

Cutter clamping screw internal hexagon

Order No. [114695](#)

CLICK  
ME!



| Order No.              | D<br>mm | dH6<br>mm | d1<br>mm | S max.<br>mm | LHA<br>mm | L<br>mm | B MN<br>mm | Inserts |
|------------------------|---------|-----------|----------|--------------|-----------|---------|------------|---------|
| <a href="#">123436</a> | 90      | 32        | 78       | 6            | 39,2      | 33,5    | 14,4       | 8       |

Spare part No.

**T20 IP**  
Screw-  
driver \*

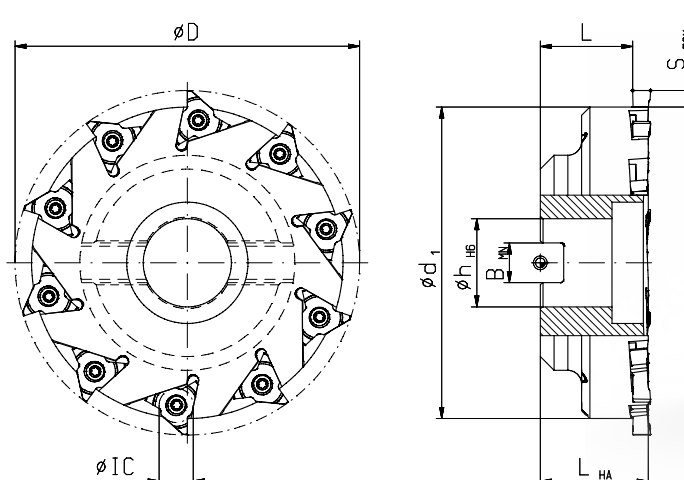
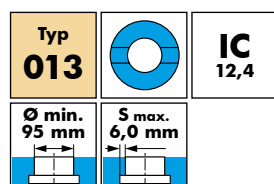
Screw \*

[111594](#)

[107551](#)

Screw torque 5,5 Nm

CLICK  
ME!



| Order No.              | D<br>mm | dH6<br>mm | d1<br>mm | S max.<br>mm | LHA<br>mm | L<br>mm | B MN<br>mm | Inserts |
|------------------------|---------|-----------|----------|--------------|-----------|---------|------------|---------|
| <a href="#">134561</a> | 125     | 32        | 113      | 6,0          | 39,2      | 33,5    | 14,4       | 10      |

Spare part No.

**T20 IP**  
Screw-  
driver \*

Screw \*

[111594](#)

[107551](#)

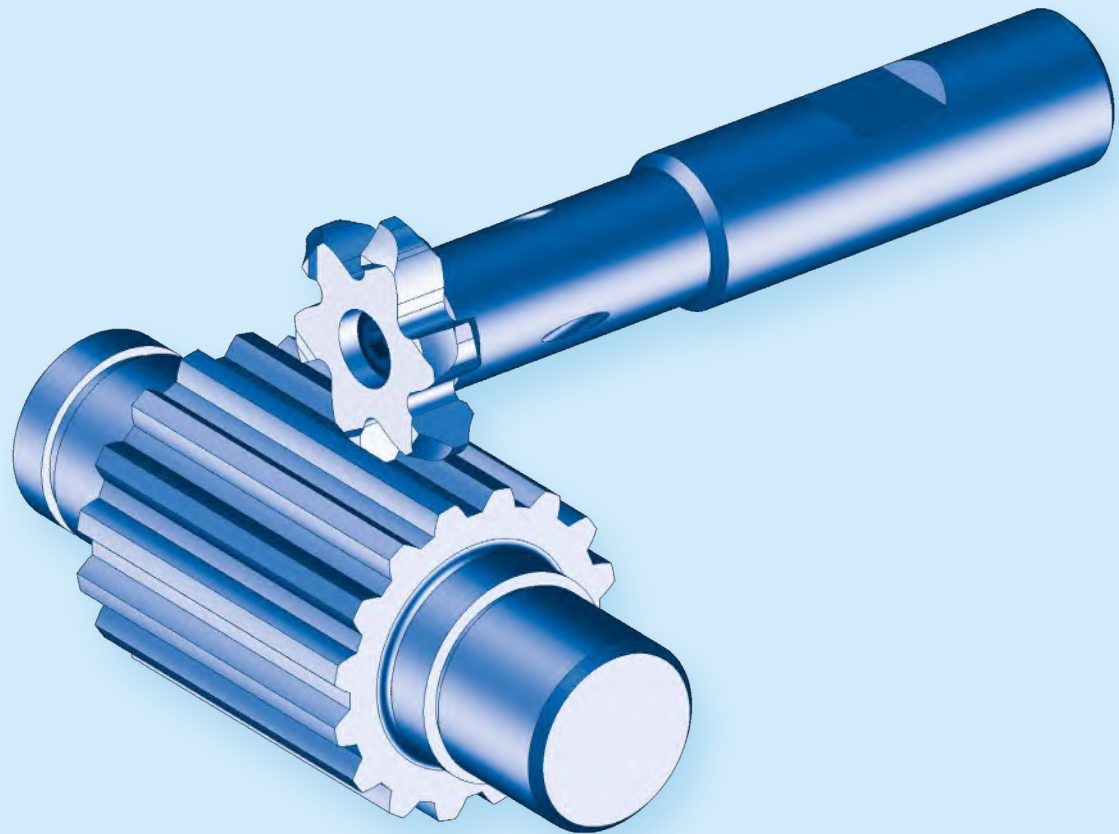
Screw torque 5,5 Nm

CLICK  
ME!

\* 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 Milling



Extended  
program

82-  
109

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Contour and Radius Milling  
Chamfering, Deburring,  
undercut, dovetail



Extended  
program

110-  
125

6

Sawing, Slitting

Sawing, Cutting, Slitting



Extended  
program

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Bore Machining

Reaming

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Axial Grooving

Axial Grooving, adjustable

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Special Tools

Special- and Combination Tools

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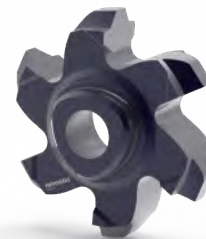
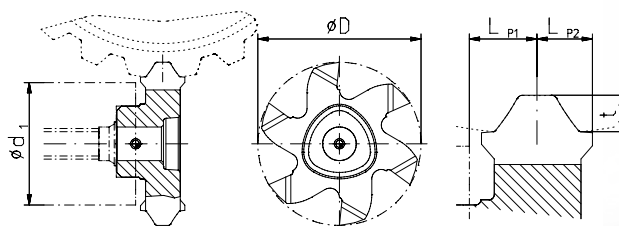
Cutting Data and Technical Information

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## Gear Milling Inserts

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



### Splined Shaft Connection



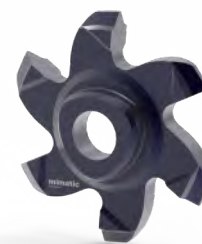
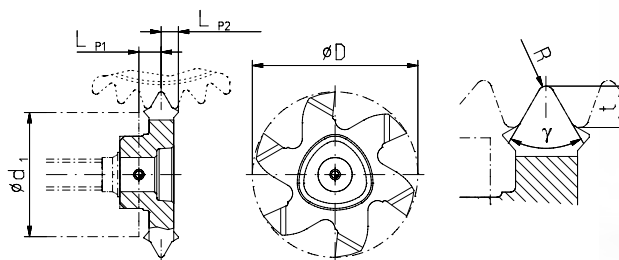
| Type  | Arbor | Module | Angle of N. of teeth<br>action Arbor | D±0,05<br>mm | Chip<br>angle | LP1<br>mm | LP2<br>mm | t<br>mm | N. of teeth<br>Insert | Order No.<br>TINAMATIC |        |        |     |
|-------|-------|--------|--------------------------------------|--------------|---------------|-----------|-----------|---------|-----------------------|------------------------|--------|--------|-----|
| 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    |     |

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## Gear Milling Inserts

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

### Spline

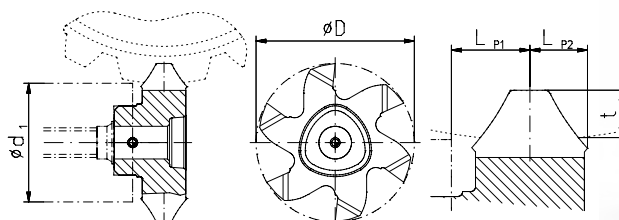


| Type | Arbor                | R<br>mm | Grp<br>angle γ | N. of teeth<br>Arbor | D <sup>±0,05</sup><br>mm | Chip<br>angle | LP1<br>mm | LP2<br>mm | t<br>mm | N. of teeth<br>Insert | Order No.<br>TINAMATIC            |
|------|----------------------|---------|----------------|----------------------|--------------------------|---------------|-----------|-----------|---------|-----------------------|-----------------------------------|
| P16  | P1616 <b>12 x 14</b> | 0,09    | 60°            | 31                   | 16                       | 6°            | 2,15      | 1,675     | 0,892   | 6                     | <a href="#">191837</a> <b>NEW</b> |
| P25  | P2526 <b>26 x 30</b> | 0,3     | 60°            | 35                   | 26                       | 6°            | 2,15      | 1,675     | 1,638   | 6                     | <a href="#">171358</a>            |
|      | P2526 <b>40 x 44</b> | 0,4     | 60°            | 38                   | 26                       | 6°            | 2,15      | 1,675     | 1,94    | 6                     | <a href="#">171359</a>            |

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4

### Splined Shaft Profile



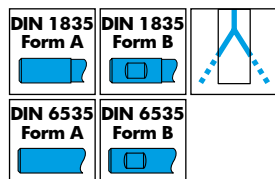
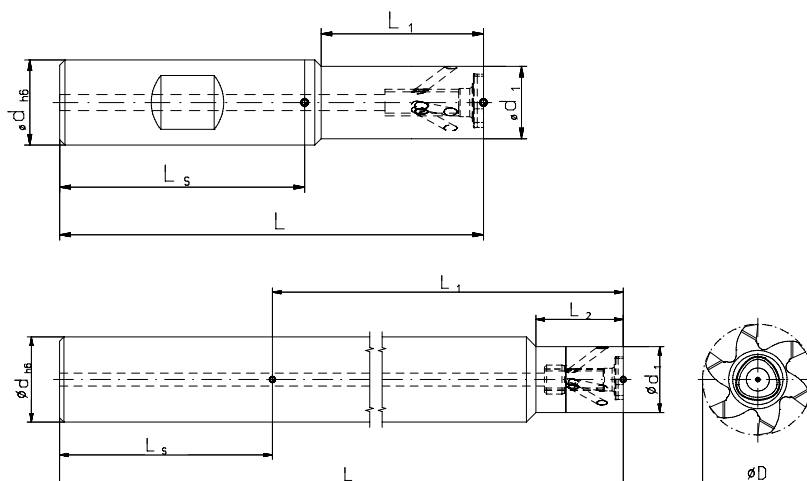
| Type | Nominal<br>profile width | Module | Angle of<br>action | N. of teeth<br>Arbor | D <sup>±0,05</sup><br>mm | Chip<br>angle | LP1<br>mm | LP2<br>mm | t<br>mm | N. of teeth<br>Insert | Order No.<br>TINAMATIC            |
|------|--------------------------|--------|--------------------|----------------------|--------------------------|---------------|-------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

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**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



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



## PolyMILL

### Milling of Special Contours with PolyMILL Inserts

4



Milling an undercut according to DIN 509 Form E

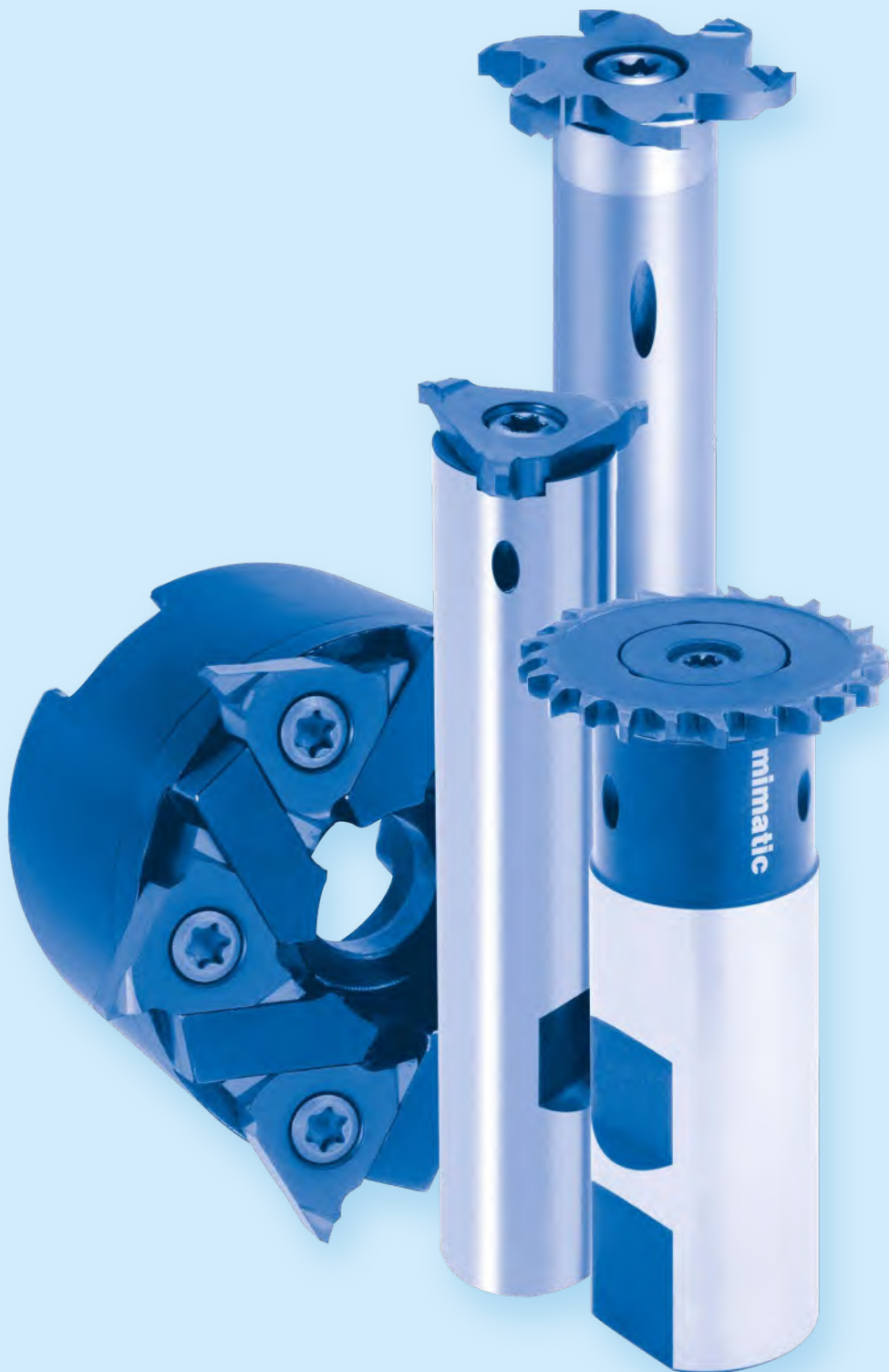


Milling a thread undercut according to DIN 76



Milling a spindle with splines according to DIN 5480

## Slot Milling



## Milling

Thread Milling



Extended  
program

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 Milling



Extended  
program

82-  
109

5

Contour and Radius Milling  
Chamfering, Deburring,  
undercut, dovetail



Extended  
program

110-  
125

6

## Sawing, Slitting

Sawing, Cutting, Slitting



Extended  
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### PolyMILL



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#### Toolholders

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| for driven toolholders | 103 |
| with tightening shank  | 104 |

### TriMILL



#### Inserts

|                                |         |
|--------------------------------|---------|
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#### Toolholders

|                        |         |
|------------------------|---------|
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### DeepMILL



#### Toolholders and Discs

|         |     |
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| Ø 40 mm | 115 |
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### Keyway Slot Milling Cutter



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## Symbols

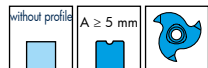
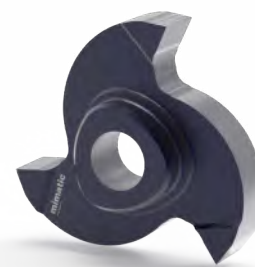
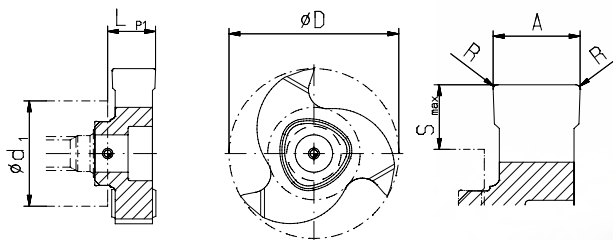
|                                                                                     |                                                  |                                                                                     |                                                              |
|---------------------------------------------------------------------------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

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

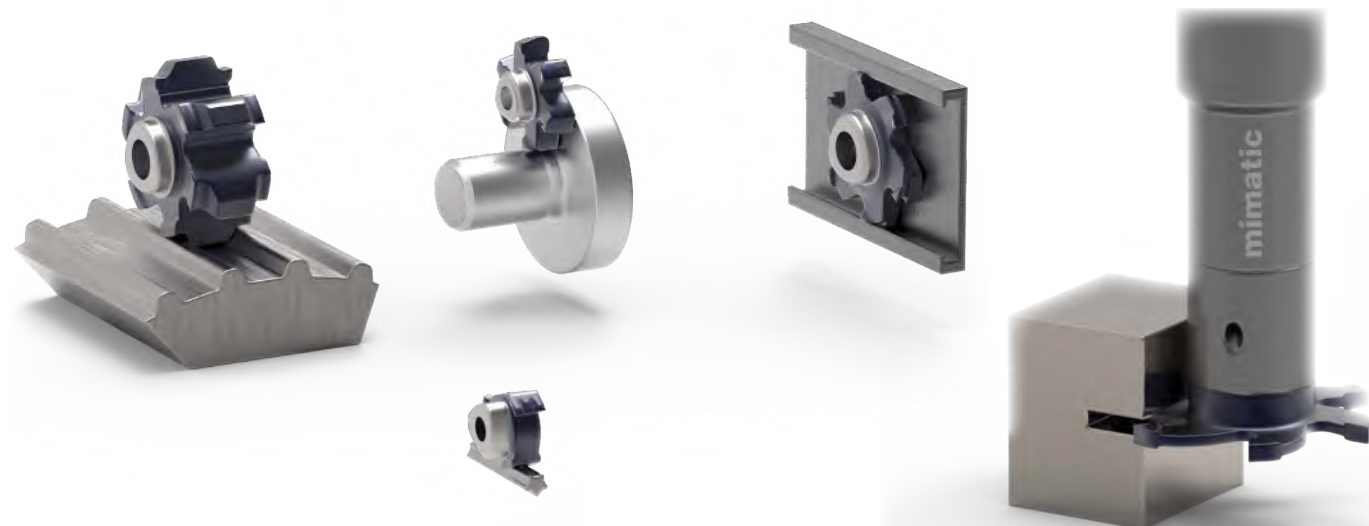
## Slot Milling

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



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

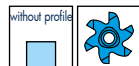
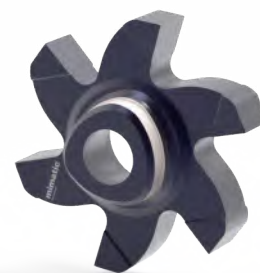
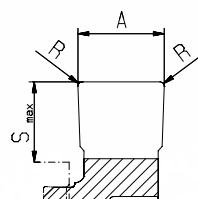
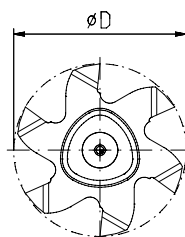
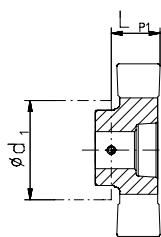
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## Slot Milling, Straight Toothed

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

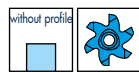
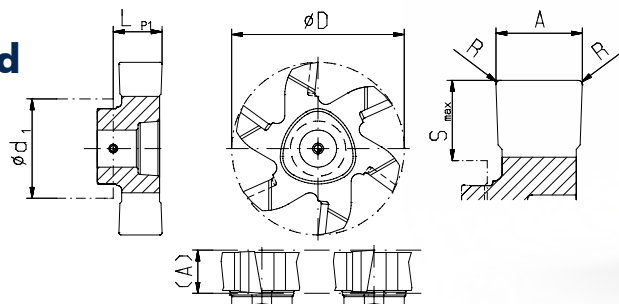


| Type |       | A<br>mm | A<br>inch | D<br>mm | Rake<br>Angle | R<br>mm | LP1<br>mm | S <sub>max.</sub><br>mm | Number<br>of teeth | Order No.<br>TINAMATIC            |
|------|-------|---------|-----------|---------|---------------|---------|-----------|-------------------------|--------------------|-----------------------------------|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

# PolyMILL

## Slot Milling, Cross Toothed

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

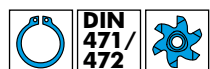
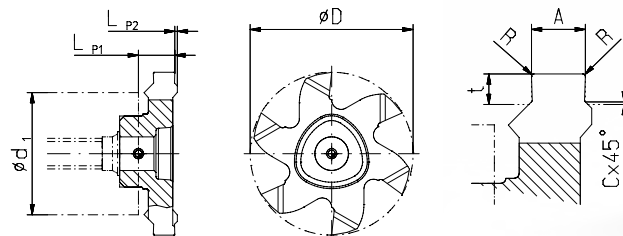


| Type |       | A<br>mm | A<br>inch | D<br>mm | Rake<br>Angle | R<br>mm | LP1<br>mm | S <sub>max.</sub><br>mm | Number<br>of teeth | Order No.<br>TINAMATIC                  |
|------|-------|---------|-----------|---------|---------------|---------|-----------|-------------------------|--------------------|-----------------------------------------|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

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## Circlip Grooves

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

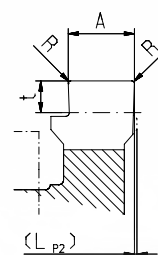
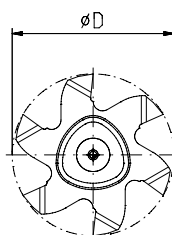
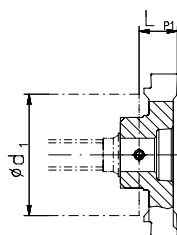


| Type |       | DIN<br>width <sup>H13</sup> | D<br>mm | A <sub>0,03</sub><br>mm | t<br>mm | C×45°<br>mm | R<br>mm | LP1<br>mm | LP2<br>mm | Number<br>of teeth | Order No<br>TINAMATIC  |
|------|-------|-----------------------------|---------|-------------------------|---------|-------------|---------|-----------|-----------|--------------------|----------------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

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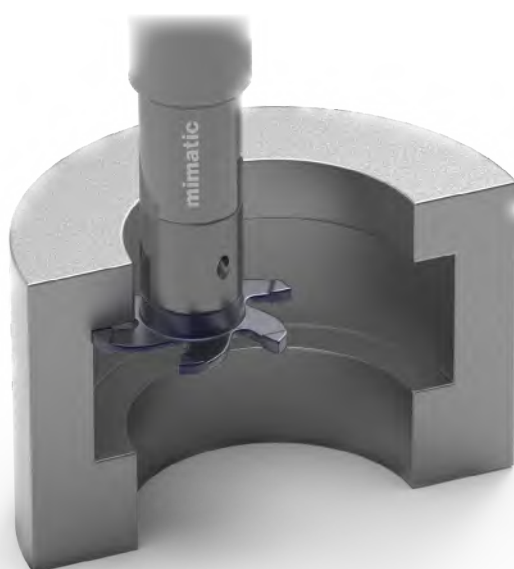
## Circlip Grooves

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



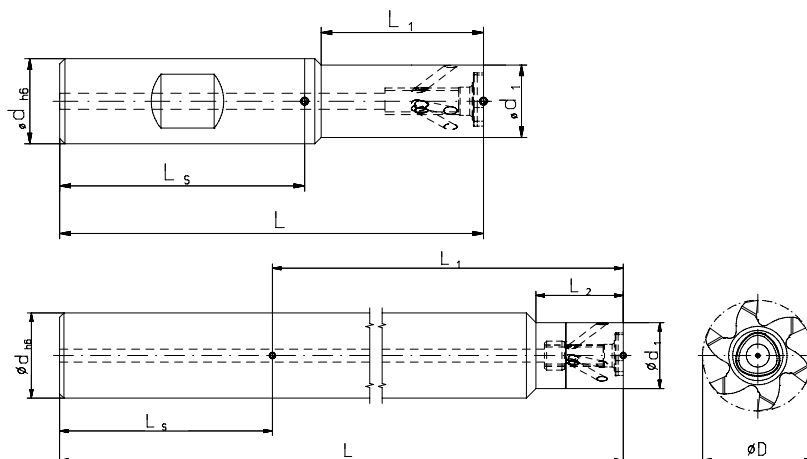
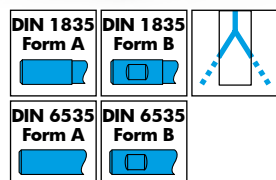
| Type |         | DIN<br>width <sup>H13</sup> | D<br>mm | A <sub>0,03</sub><br>mm | t<br>mm | R<br>mm | LP1<br>mm | LP2<br>mm | Number<br>of teeth | Order No<br>TINAMATIC  |
|------|---------|-----------------------------|---------|-------------------------|---------|---------|-----------|-----------|--------------------|------------------------|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

\* Not suited for cutter 177676



## Circular Milling Tools with Polygonal Insert Seat

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



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

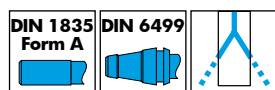
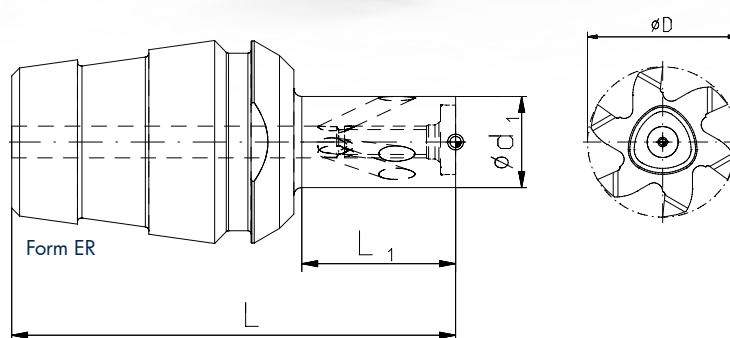
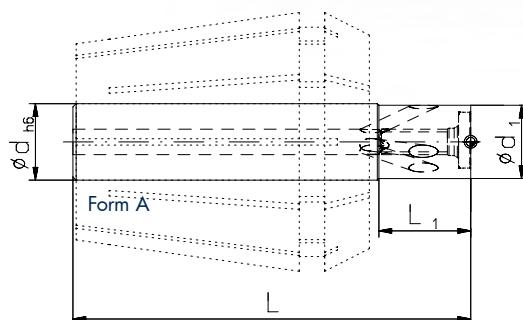
Screw torques max.

|                        |        |        |
|------------------------|--------|--------|
| <a href="#">107596</a> | T08 IP | 1,0 Nm |
| <a href="#">143158</a> | T08 IP | 1,1 Nm |
| <a href="#">107597</a> | T15 IP | 3,8 Nm |
| <a href="#">107529</a> | T20 IP | 5,5 Nm |

\* Screwdriver and clamping screw included in delivery

## Circular Milling Tools for Driven Toolholders

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



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| Type | Order No.              | Form  | d h6<br>mm | d1<br>mm | D max.<br>mm | S max.<br>(D-d1)/2<br>mm | L<br>mm | L1<br>mm | Shaft | Spare part No.                   |                                   |
|------|------------------------|-------|------------|----------|--------------|--------------------------|---------|----------|-------|----------------------------------|-----------------------------------|
|      |                        |       |            |          |              |                          |         |          |       | Screw-driver *                   | Screw *                           |
| P12  | <a href="#">177170</a> | A     | 10         | 7,0      | 11,7         | 2,35                     | 54      | 8        | Steel | T8 IP<br><a href="#">111656</a>  | M2,5x7<br><a href="#">107596</a>  |
|      | <a href="#">177172</a> | ER 16 |            | 7,0      | 11,7         | 2,35                     | 37,5    | 8        | Steel |                                  |                                   |
|      | <a href="#">177173</a> | ER 20 |            | 7,0      | 11,7         | 2,35                     | 47      | 13       | Steel |                                  |                                   |
| P16  | <a href="#">177174</a> | A     | 10         | 9,0      | 17,7         | 4,35                     | 60      | 11       | Steel | T8 IP<br><a href="#">111656</a>  | M3x12<br><a href="#">143158</a>   |
|      | <a href="#">177176</a> | ER 16 |            | 9,0      | 17,7         | 4,35                     | 41,4    | 11       | Steel |                                  |                                   |
|      | <a href="#">177177</a> | ER 20 |            | 9,0      | 17,7         | 4,35                     | 51      | 16       | Steel |                                  |                                   |
| P20  | <a href="#">177178</a> | A     | 12         | 11,5     | 21,7         | 5,1                      | 62,4    | 14,4     | Steel | T15 IP<br><a href="#">111671</a> | M4x13<br><a href="#">107597</a>   |
|      | <a href="#">177180</a> | ER 20 |            | 11,5     | 21,7         | 5,1                      | 49,5    | 14,5     | Steel |                                  |                                   |
|      | <a href="#">177181</a> | ER 25 |            | 11,5     | 21,7         | 5,1                      | 56      | 19,4     | Steel |                                  |                                   |
| P25  | <a href="#">177182</a> | A     | 16         | 13,6     | 27,7         | 7,05                     | 69,6    | 20,4     | Steel | T20 IP<br><a href="#">111594</a> | M5x13,5<br><a href="#">107529</a> |
|      | <a href="#">177184</a> | ER 25 |            | 13,6     | 27,7         | 7,05                     | 56      | 19,4     | Steel |                                  |                                   |
|      | <a href="#">177185</a> | ER 32 |            | 13,6     | 27,7         | 7,05                     | 73      | 30,4     | Steel |                                  |                                   |

Screw torques max.

|                        |        |        |
|------------------------|--------|--------|
| <a href="#">107596</a> | T8 IP  | 1,0 Nm |
| <a href="#">143158</a> | T8 IP  | 1,1 Nm |
| <a href="#">107597</a> | T15 IP | 3,8 Nm |
| <a href="#">107529</a> | T20 IP | 5,5 Nm |

## Changing Inserts

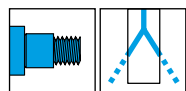
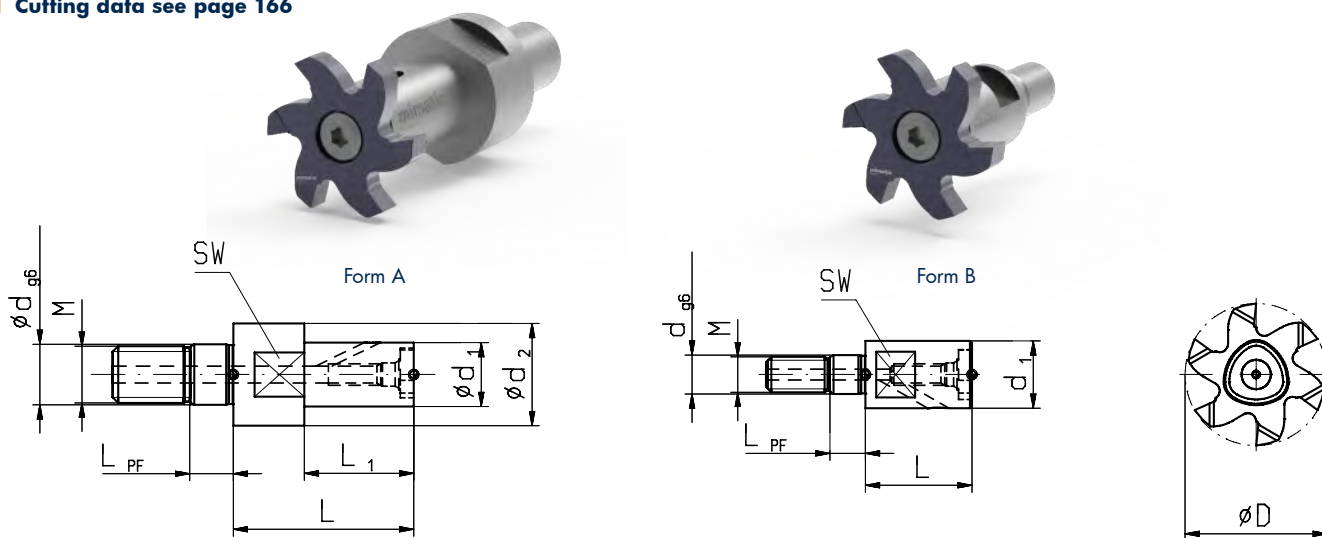
Clamp cutter before changing insert. Loosen insert screw. Remove used insert and clean the insert pocket before clamping new insert. Please use the appropriate TIP hex key for the tightening of the inserts and consider the screw tightening torques in the tables.



\* 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

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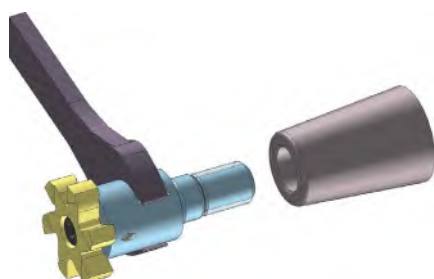
| Type   | Order No.              | Form | d1 mm | d2 mm | Dmax. mm | Smax. (D-d1)/2 mm | L mm | L1 mm | M   | dg6 mm | LPF mm | Spare part No.         |                        |
|--------|------------------------|------|-------|-------|----------|-------------------|------|-------|-----|--------|--------|------------------------|------------------------|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

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

| Screw torques max.     |        |        |
|------------------------|--------|--------|
| <a href="#">107596</a> | T8 IP  | 1,0 Nm |
| <a href="#">143158</a> | T8 IP  | 1,1 Nm |
| <a href="#">107597</a> | T15 IP | 3,8 Nm |
| <a href="#">107529</a> | T20 IP | 5,5 Nm |

## Assembling Instructions

- Recommended tightening torque for screw-in circular milling body
- End-wrench see page 163

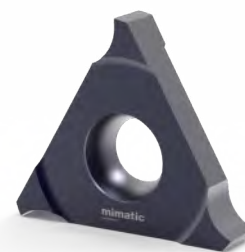
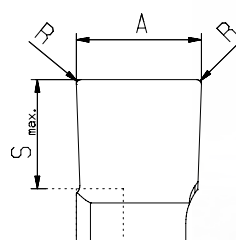
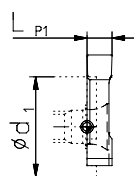
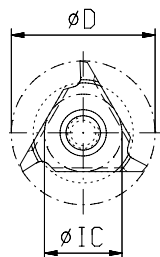


| Thread size (M) | Wrench size mm | Tightening torque Nm |
|-----------------|----------------|----------------------|
| M5              | 7              | 8                    |
| M6              | 9              | 10                   |
| M8              | 11             | 25                   |
|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



## Slot Milling

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



| Type | A<br>mm | D<br>mm | IC<br>mm | LP1<br>mm | S <sub>max.</sub><br>mm | R<br>mm | Order No.<br>TINAMATIC |
|------|---------|---------|----------|-----------|-------------------------|---------|------------------------|
| 04   | 2,0     | 7,9     | 5,5      | 2,34      | 0,35                    | 0,1     | <a href="#">141719</a> |
| 03   | 2,34    | 10,6    | 5,5      | 2,36      | 1,6                     | 0,15    | <a href="#">141642</a> |
|      | 3,0     | 10,6    | 5,5      | 3,02      | 1,6                     | 0,15    | <a href="#">141669</a> |
|      | 3,5     | 17,5    | 9,2      | 3,52      | 2,6                     | 0,15    | <a href="#">141533</a> |
| 02   | 5,0     | 17,5    | 9,2      | 5,03      | 2,6                     | 0,15    | <a href="#">141535</a> |
|      | 6,0     | 17,5    | 9,2      | 6,02      | 2,6                     | 0,15    | <a href="#">141544</a> |
|      | 4,0     | 23,0    | 12,4     | 4,03      | 3,45                    | 0,15    | <a href="#">141361</a> |
| 01   | 6,5     | 23,0    | 12,4     | 6,53      | 3,45                    | 0,15    | <a href="#">141396</a> |

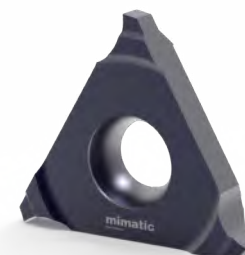
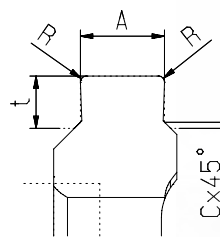
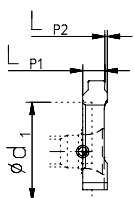
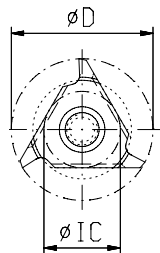
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## Circlip Grooves

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



**DIN  
471/  
472**



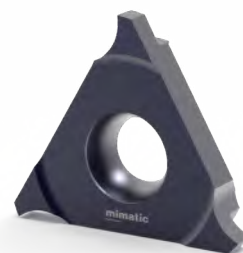
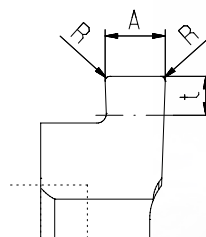
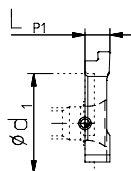
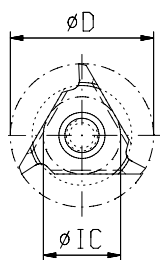
5

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

CLICK ME!

## Circlip Grooves

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

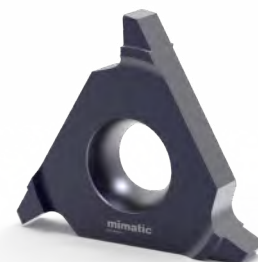
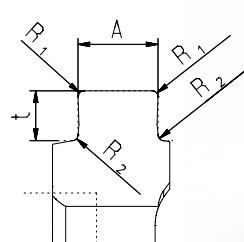
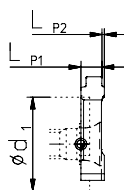
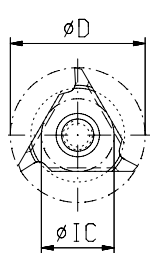


CLICK ME!

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

## O-Ring Grooves

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

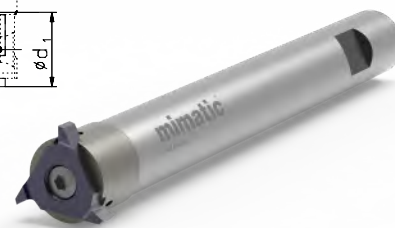
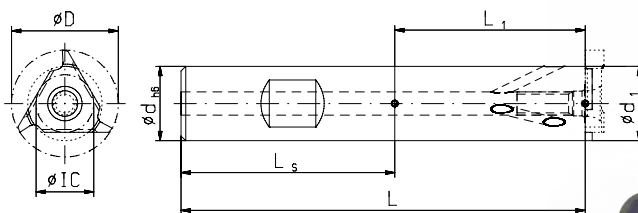
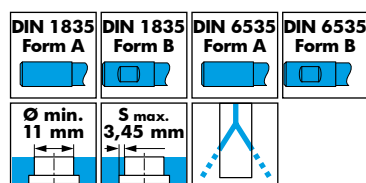


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| Type | G-Ring<br>width | D<br>mm | IC<br>mm | LP1<br>mm | LP2<br>mm | A <sub>0,03</sub><br>mm | t<br>mm | R1<br>mm | R2<br>mm | Order No.<br>TINAMATIC |
|------|-----------------|---------|----------|-----------|-----------|-------------------------|---------|----------|----------|------------------------|
| 03   | 1,8             | 10,6    | 5,5      | 2,6       | 0,4       | 2,28                    | 1,45    | 0,2      | 0,2      | <a href="#">141654</a> |
| 02   | 1,8             | 17,5    | 9,2      | 3,0       | 0,5       | 2,28                    | 1,45    | 0,2      | 0,2      | <a href="#">141510</a> |
|      | 2,65            | 17,5    | 9,2      | 4,5       | 0,5       | 3,08                    | 2,3     | 0,3      | 0,2      | <a href="#">141470</a> |
| 01   | 1,8             | 23,0    | 12,4     | 3,5       | 0,5       | 2,28                    | 1,45    | 0,2      | 0,2      | <a href="#">141236</a> |
|      | 2,65            | 23,0    | 12,4     | 3,5       | 0,5       | 3,08                    | 2,3     | 0,3      | 0,2      | <a href="#">141277</a> |
|      | 3,55            | 23,0    | 12,4     | 5,5       | 1,0       | 4,08                    | 3,1     | 0,4      | 0,2      | <a href="#">141306</a> |

## Circular Milling Tools

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



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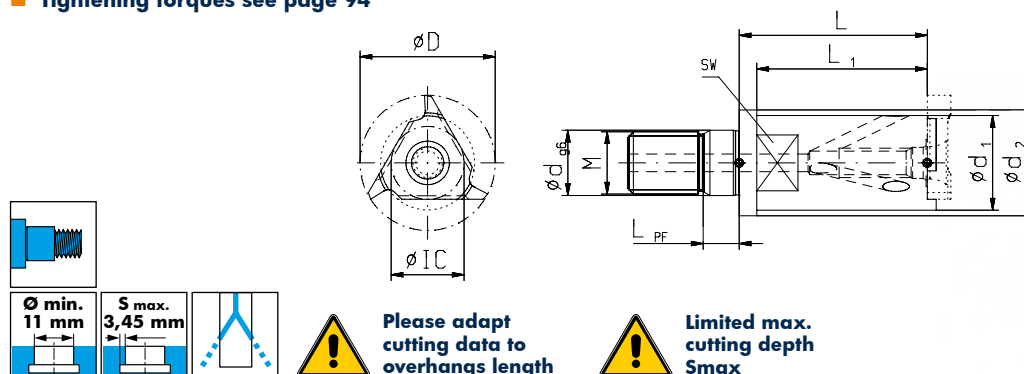
|      |                            |      |      |       |        |       |           |       |       |         | Spare part No.                   |                        |
|------|----------------------------|------|------|-------|--------|-------|-----------|-------|-------|---------|----------------------------------|------------------------|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

|                        |        |        |
|------------------------|--------|--------|
| <a href="#">107530</a> | T6 IP  | 0,9 Nm |
| <a href="#">107547</a> | T15 IP | 3,8 Nm |
| <a href="#">107551</a> | T20 IP | 5,5 Nm |

- Tightening torques see page 94



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|      |                        |      |       |        |       |       |           |       |       |   | 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   | <a href="#">123481</a> | 10,6 | 5,5   | 6,5    | 7,4   | 10,0  | 1,60      | 22,66 | 13,66 |   | <a href="#">111705</a> | <a href="#">107530</a> |
| 02   | <a href="#">123450</a> | 17,5 | 9,2   | 8,5    | 12,2  | 15,4  | 2,60      | 27,5  | 18,5  |   | <a href="#">111671</a> | <a href="#">107547</a> |
| 01   | <a href="#">123419</a> | 23,0 | 12,4  | 10,5   | 16,1  | 18,0  | 3,45      | 32,0  | 29,0  |   | <a href="#">111594</a> | <a href="#">107551</a> |

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

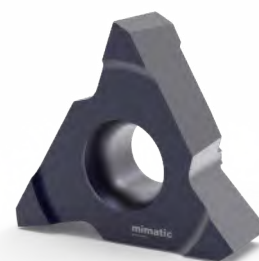
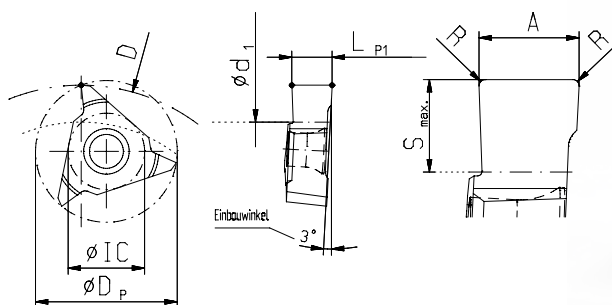
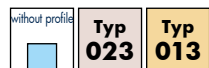
Screw torques max.

|                        |        |        |
|------------------------|--------|--------|
| <a href="#">107530</a> | T6 IP  | 0,9 Nm |
| <a href="#">107547</a> | T15 IP | 3,8 Nm |
| <a href="#">107551</a> | T20 IP | 5,5 Nm |

**TriMILL**

## Slot Milling

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

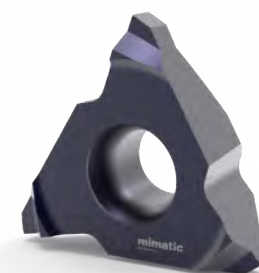
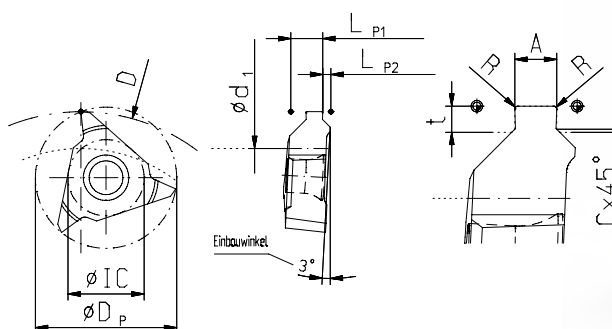
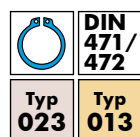


| Type | A<br>mm | DP<br>mm | IC<br>mm | LP1<br>mm | Smax.<br>mm | R<br>mm | Order No.<br>TINAMATIC |
|------|---------|----------|----------|-----------|-------------|---------|------------------------|
| 023* | 5,0     | 17,5     | 9,2      | 5,03      | 4           | 0,15    | <a href="#">142060</a> |
| 013  | 6,5     | 23       | 12,4     | 6,53      | 6           | 0,15    | <a href="#">141972</a> |

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## Circlip Grooves

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



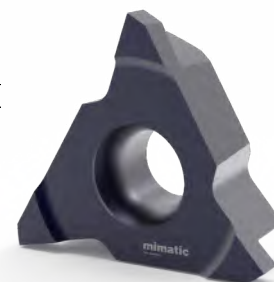
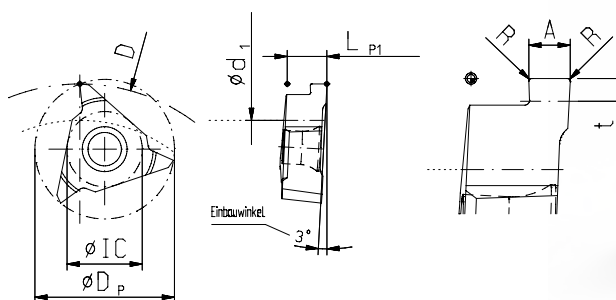
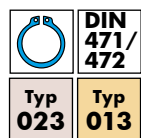
| Type | G-Ring <sup>H13</sup><br>width | DP<br>mm | IC<br>mm | LP1<br>mm | LP2<br>mm | A <sub>0,03</sub><br>mm | t<br>mm | Cx45°<br>mm | R<br>mm | Order No.<br>TINAMATIC |
|------|--------------------------------|----------|----------|-----------|-----------|-------------------------|---------|-------------|---------|------------------------|
| 023  | 1,85                           | 17,5     | 9,2      | 3,73      | 1,3       | 1,93                    | 1,25    | 0,2         | 0,1     | <a href="#">141946</a> |
|      | 2,15                           | 17,5     | 9,2      | 3,73      | 1,3       | 2,23                    | 1,5     | 0,2         | 0,1     | <a href="#">141949</a> |
|      | 2,65                           | 17,5     | 9,2      | 3,73      | 1,3       | 2,73                    | 1,5     | 0,2         | 0,2     | <a href="#">141997</a> |
|      | 2,65                           | 17,5     | 9,2      | 3,73      | 1,3       | 2,73                    | 1,75    | 0,2         | 0,2     | <a href="#">141970</a> |
|      | 3,15                           | 17,5     | 9,2      | 4,23      | 0,8       | 3,23                    | 1,75    | 0,2         | 0,2     | <a href="#">141993</a> |
|      | 4,15                           | 17,5     | 9,2      | 5,03      | 1,0       | 4,23                    | 2,5     | 0,2         | 0,2     | <a href="#">141973</a> |
| 013  | 1,85                           | 23,0     | 12,4     | 5,2       | 1,33      | 1,93                    | 1,25    | 0,2         | 0,1     | <a href="#">141914</a> |
|      | 2,15                           | 23,0     | 12,4     | 5,2       | 1,33      | 2,23                    | 1,5     | 0,2         | 0,1     | <a href="#">141892</a> |
|      | 2,65                           | 23,0     | 12,4     | 5,2       | 1,33      | 2,73                    | 1,5     | 0,2         | 0,2     | <a href="#">141915</a> |
|      | 2,65                           | 23,0     | 12,4     | 5,2       | 1,33      | 2,73                    | 1,75    | 0,2         | 0,2     | <a href="#">141907</a> |
|      | 3,15                           | 23,0     | 12,4     | 5,2       | 1,33      | 3,23                    | 1,75    | 0,2         | 0,2     | <a href="#">141924</a> |
|      | 4,15                           | 23,0     | 12,4     | 5,2       | 1,33      | 4,23                    | 2,0     | 0,2         | 0,2     | <a href="#">141905</a> |
|      | 4,15                           | 23,0     | 12,4     | 5,2       | 1,33      | 4,23                    | 2,5     | 0,2         | 0,2     | <a href="#">141927</a> |

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\* 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

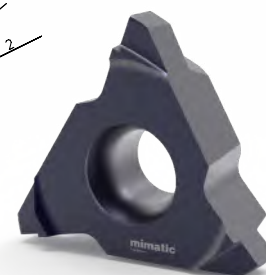
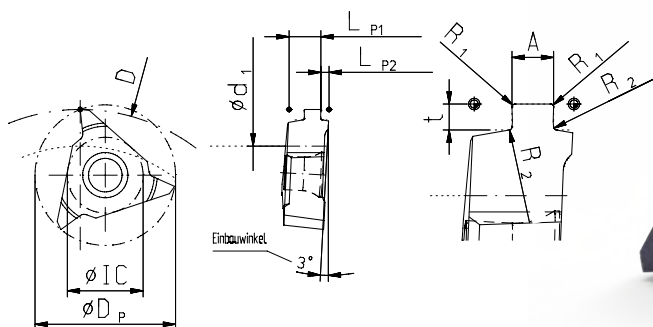


| Type | G-Ring <sup>H13</sup><br>width | DP<br>mm | IC<br>mm | LP1<br>mm | A <sub>0,03</sub><br>mm | t<br>mm | R<br>mm | Order No.<br>TINAMATIC |
|------|--------------------------------|----------|----------|-----------|-------------------------|---------|---------|------------------------|
| 023  | 1,85                           | 17,5     | 9,2      | 5,03      | 1,93                    | 1,25    | 0,1     | <a href="#">141994</a> |
|      | 2,15                           | 17,5     | 9,2      | 5,03      | 2,23                    | 1,75    | 0,1     | <a href="#">141980</a> |
|      | 2,65                           | 17,5     | 9,2      | 5,03      | 2,73                    | 1,75    | 0,2     | <a href="#">141968</a> |
|      | 3,15                           | 17,5     | 9,2      | 5,03      | 3,23                    | 2,2     | 0,2     | <a href="#">142014</a> |
| 013  | 2,15                           | 23       | 12,4     | 6,53      | 2,23                    | 1,75    | 0,1     | <a href="#">141937</a> |
|      | 2,65                           | 23       | 12,4     | 6,53      | 2,73                    | 1,75    | 0,2     | <a href="#">141925</a> |
|      | 3,15                           | 23       | 12,4     | 6,53      | 3,23                    | 2,2     | 0,2     | <a href="#">141930</a> |
|      | 4,15                           | 23       | 12,4     | 6,53      | 4,23                    | 2,5     | 0,2     | <a href="#">141934</a> |
|      | 5,15                           | 23       | 12,4     | 6,53      | 5,26                    | 4,0     | 0,2     | <a href="#">141932</a> |

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## O-Ring Grooves

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

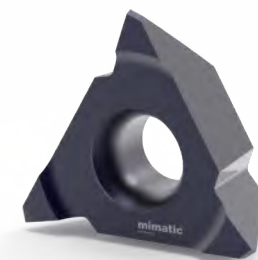
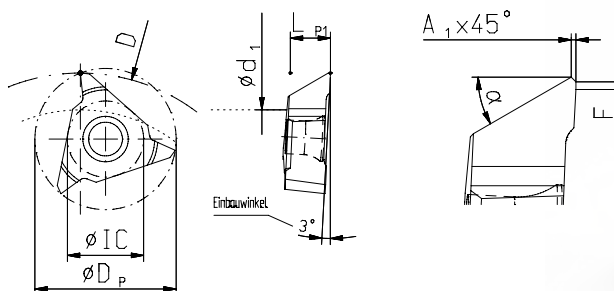
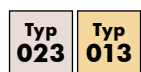


| Type | G-Ring<br>width | DP<br>mm | IC<br>mm | LP1<br>mm | LP2<br>mm | A <sub>0,03</sub><br>mm | t<br>mm | R1<br>mm | R2<br>mm | Order No.<br>TINAMATIC |
|------|-----------------|----------|----------|-----------|-----------|-------------------------|---------|----------|----------|------------------------|
| 023  | 1,8             | 17,5     | 9,2      | 4,03      | 1,0       | 2,28                    | 1,45    | 0,3      | 0,2      | <a href="#">142012</a> |
|      | 2,65            | 17,5     | 9,2      | 4,03      | 1,0       | 3,08                    | 2,3     | 0,3      | 0,2      | <a href="#">142019</a> |
| 013  | 2,65            | 23       | 12,4     | 5,5       | 1,03      | 3,08                    | 2,3     | 0,3      | 0,2      | <a href="#">141919</a> |
|      | 3,55            | 23       | 12,4     | 5,5       | 1,03      | 4,08                    | 3,1     | 0,3      | 0,2      | <a href="#">141916</a> |

CLICK ME!

## Slot Milling

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



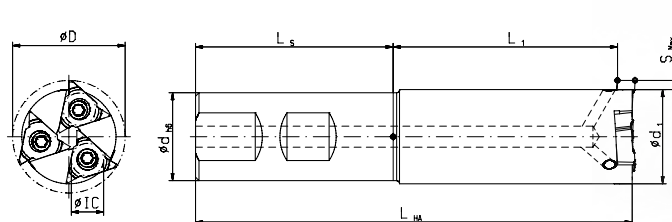
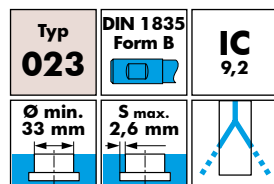
| Type | DP<br>mm | IC<br>mm | LP1<br>mm | A1 x 45°<br>mm | F<br>mm | α   | Order No.<br>TINAMATIC |
|------|----------|----------|-----------|----------------|---------|-----|------------------------|
| 023* | 17,5     | 9,2      | 5         | 0,3            | 0,5     | 25° | <a href="#">149516</a> |
| 013  | 23       | 12,4     | 6,5       | 0,3            | 0,5     | 28° | <a href="#">149472</a> |

CLICK ME!

**TriMILL 023**

# Circular Milling Tools

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

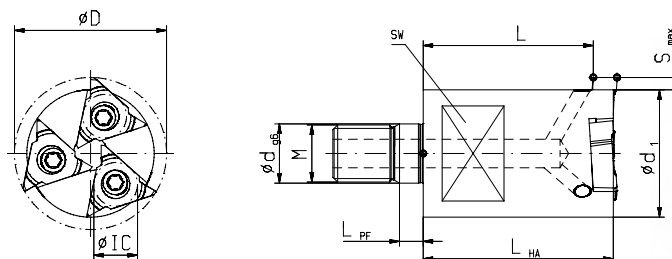
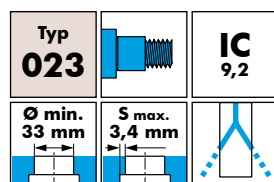


Spare part No.

| T15 IP<br>Screw-driver * | Screw *                |
|--------------------------|------------------------|
| <a href="#">111671</a>   | <a href="#">107547</a> |

Screw torque max. 3,8 Nm

- Tightening torques see page 94

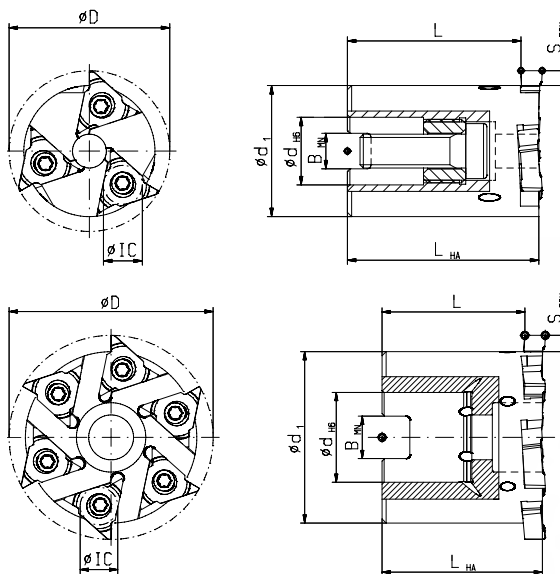
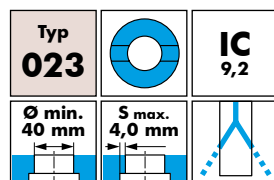


Spare part No.

| T15 IP<br>Screw-driver * | Screw *                |
|--------------------------|------------------------|
| <a href="#">111671</a>   | <a href="#">107547</a> |

Screw torque max. 3,8 Nm

- Assembly instruction see page 178



Accessories

Spare part No.

| Order No.              | D mm | dH6 mm | d1 mm | S max. mm | LHA mm | L mm  | B MN mm | Cutting edge | Key                    | Cutter fastening screw  | T15 IP<br>Screw-driver  | Screw                   |
|------------------------|------|--------|-------|-----------|--------|-------|---------|--------------|------------------------|-------------------------|-------------------------|-------------------------|
| <a href="#">123464</a> | 38   | 16     | 31    | 3,4       | 45,3   | 40,97 | 8,4     | 3            | <a href="#">134984</a> | <a href="#">114476*</a> | <a href="#">111671*</a> | <a href="#">107547*</a> |
| <a href="#">123461</a> | 50   | 22     | 42    | 3,9       | 39,3   | 34,97 | 10,4    | 6            |                        | <a href="#">114684*</a> | <a href="#">111671*</a> | <a href="#">107547*</a> |
| <a href="#">161485</a> | 63   | 27     | 55    | 4,0       | 39,3   | 34,97 | 12,4    | 8            |                        | <a href="#">114684*</a> | <a href="#">111671*</a> | <a href="#">107547*</a> |

Screw torque max. 3,8 Nm

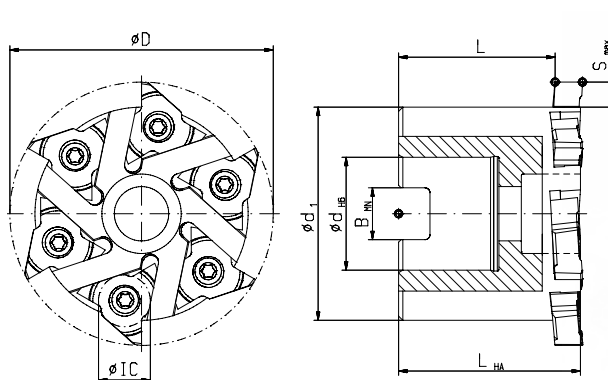
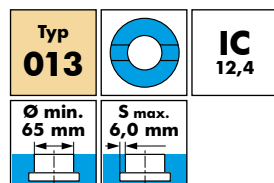
\* Screwdriver and clamping screw included in delivery



**TriMILL 013**

# Circular Milling Tools

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



Spare part No.

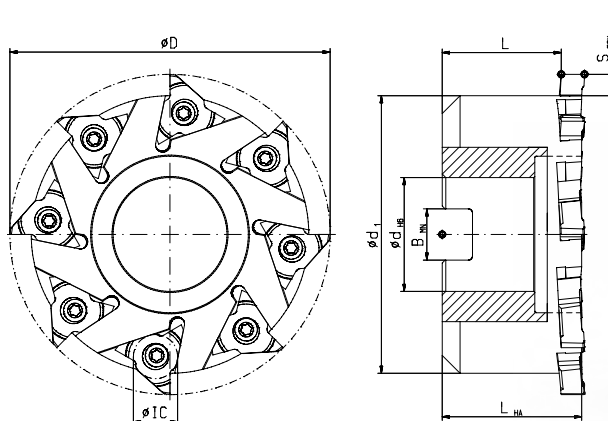
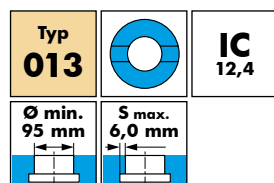
| T20 IP<br>Screw-driver * | Screw *                |
|--------------------------|------------------------|
| <a href="#">111594</a>   | <a href="#">107551</a> |

Screw torque 5,5 Nm

Cutter clamping screw internal hexagon

Order No. [114695](#)

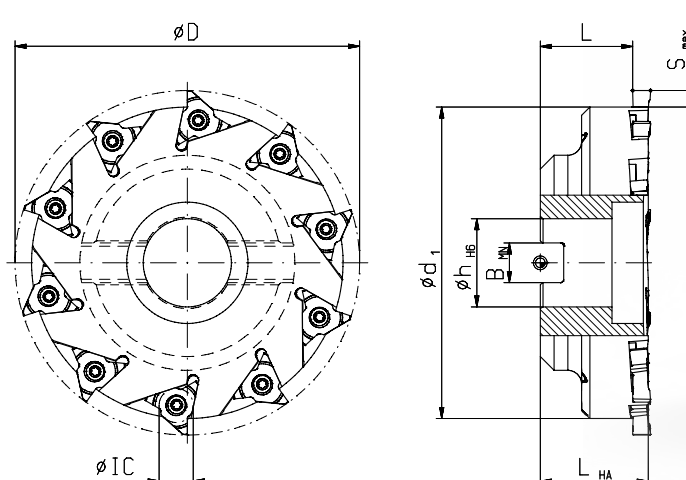
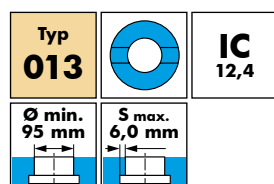
5



Spare part No.

| T20 IP<br>Screw-driver * | Screw *                |
|--------------------------|------------------------|
| <a href="#">111594</a>   | <a href="#">107551</a> |

Screw torque 5,5 Nm



Spare part No.

| T20 IP<br>Screw-driver * | Screw *                |
|--------------------------|------------------------|
| <a href="#">111594</a>   | <a href="#">107551</a> |

Screw torque 5,5 Nm

\* Screwdriver and clamping screw included in delivery

# DeepMILL

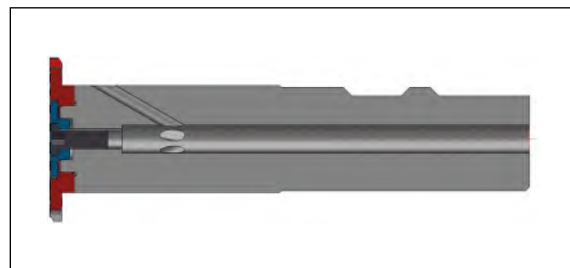
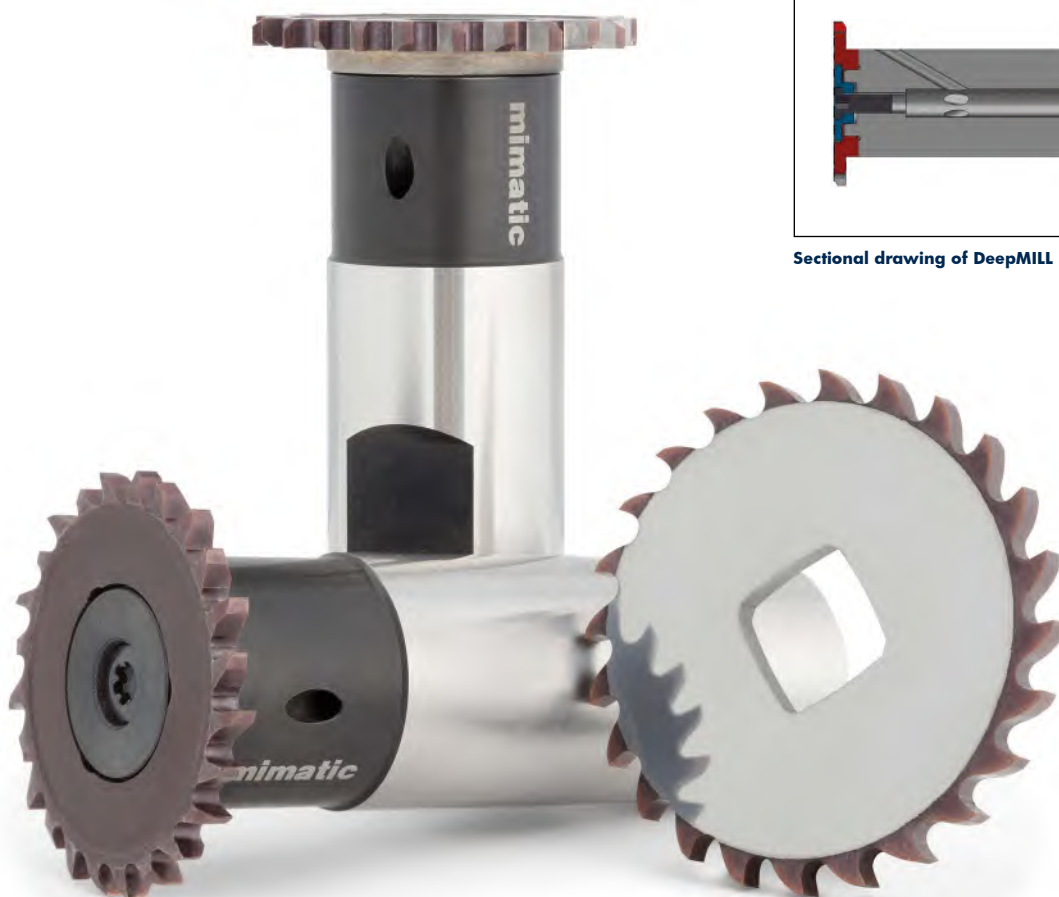
## Slot Milling, Grooving, Milling of Cooling Fins

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

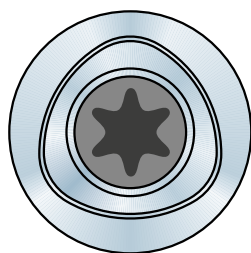
## Milling Tools in New Dimensions of Performance



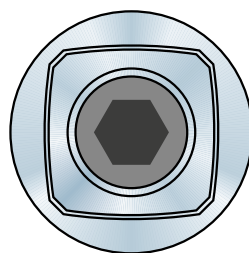
- n With DeepMILL can be milled up to shoulders
- n Cutting edges on the face can be used for special machining operations
- n On request: Increased cutting depths (S) achievable with reductions in speed/feed
- + **Re-sharpen-Service 2x**
- + Minimum distance for operations to shoulders: 0,001 mm

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

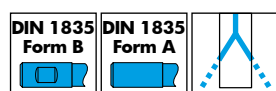
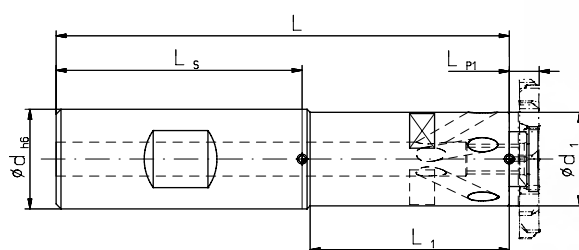
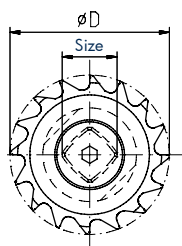
has evolved as well. Under the brand name mimatic Quadrogon, the interface has been optimized specifically for the needs of this new mimatic high-performance tool.

\* patent-protected.

# DeepMILL Ø 32

## Basic Holders

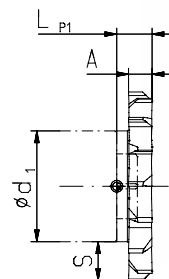
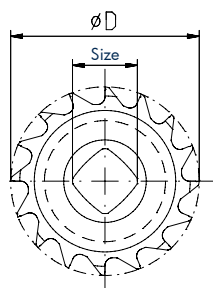
■ Cutting data see page 166



|      |      |        |        |      |       |       | 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  | <a href="#">163701</a>                                                 | <a href="#">178296</a> | SW 3 |
|      | 11   | 20     | 1835 A | 91   | 40    | 18,8  | <a href="#">160050</a>                                                 | <a href="#">178296</a> | SW 3 |
|      | 13   | 25     | 1835 B | 105  | 45    | 21,6  | <a href="#">163702</a>                                                 | <a href="#">178297</a> | SW 4 |
|      | 13   | 25     | 1835 A | 105  | 45    | 21,6  | <a href="#">160051</a>                                                 | <a href="#">178297</a> | SW 4 |
|      |      |        |        |      |       |       | Screw torques max.<br>Type 11 = max. 10,5 Nm<br>Type 13 = max. 24,5 Nm |                        |      |

CLICK ME!

## Milling Discs



**i** Ask about our regrinding service!

| 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              | <a href="#">164440</a> | on request  |
|      | 11   | 2       | 6,6       | 32   | 6      | 16              | <a href="#">164402</a> | on stock    |
|      | 13   | 3       | 5,2       | 32   | 6      | 16              | <a href="#">164441</a> | on request  |
|      | 11   | 3       | 6,6       | 32   | 6      | 16              | <a href="#">164403</a> | on stock    |
|      | 13   | 4       | 5,2       | 32   | 6      | 16              | <a href="#">164404</a> | on stock    |
|      | 11   | 4       | 6,6       | 32   | 6      | 16              | <a href="#">164442</a> | on request  |
|      | 13   | 5       | 5,2       | 32   | 6      | 16              | <a href="#">164405</a> | on stock    |
|      | 11   | 5       | 6,6       | 32   | 6      | 16              | <a href="#">164443</a> | on request  |

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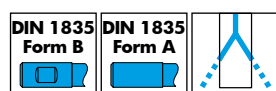
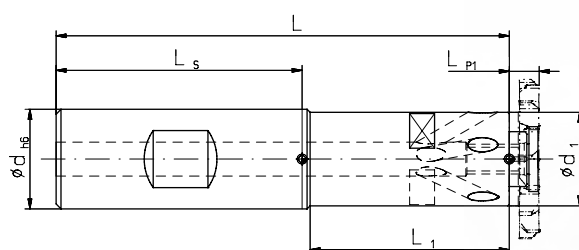
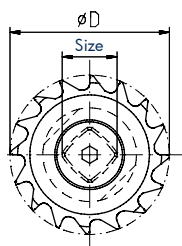
**i** Milling discs with cutting widths of 1 and 1.5 mm see chapter "Sawing & Slotting"

\* 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

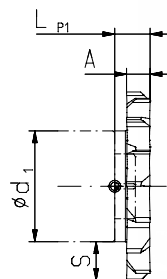
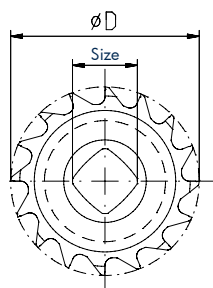
■ Cutting data see page 166



|      |      |        |        |      |       |       | 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  | <a href="#">163702</a> | <a href="#">178297</a> | SW 4 |
|      | 13   | 25     | 1835 A | 105  | 45    | 21,6  | <a href="#">160051</a> | <a href="#">178297</a> | SW 4 |
|      | 16   | 25     | 1835 B | 110  | 50    | 26    | <a href="#">163703</a> | <a href="#">178296</a> | SW 3 |
|      | 16   | 25     | 1835 A | 110  | 50    | 26    | <a href="#">160052</a> | <a href="#">178296</a> | SW 3 |

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

## Milling Discs



**i** Ask about our regrinding service!

| Size | Type | A ** mm | S max. mm | D mm | LP1 mm | Number of teeth | Order No.<br>TINAMATIC | Deliverable |
|------|------|---------|-----------|------|--------|-----------------|------------------------|-------------|
| Ø 40 | 16   | 2       | 7,0       | 40   | 6      | 18              | <a href="#">164444</a> | on request  |
|      | 13   | 2       | 9,2       | 40   | 6      | 18              | <a href="#">164408</a> | on stock    |
|      | 16   | 3       | 7,0       | 40   | 6      | 18              | <a href="#">164445</a> | on request  |
|      | 13   | 3       | 9,2       | 40   | 6      | 18              | <a href="#">164409</a> | on stock    |
|      | 16   | 4       | 7,0       | 40   | 6      | 18              | <a href="#">164410</a> | on stock    |
|      | 13   | 4       | 9,2       | 40   | 6      | 18              | <a href="#">164446</a> | on request  |
|      | 16   | 5       | 7,0       | 40   | 6      | 18              | <a href="#">164411</a> | on stock    |
|      | 13   | 5       | 9,2       | 40   | 6      | 18              | <a href="#">164447</a> | on request  |

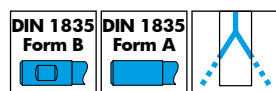
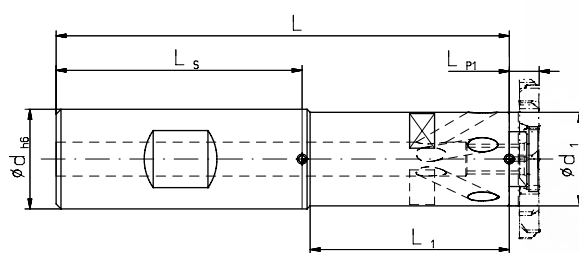
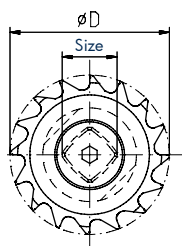
**i** Milling discs with cutting widths of 1 and 1.5 mm see chapter "Sawing & Slotting"

\* 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

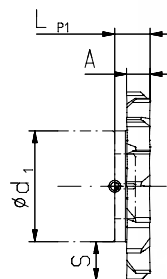
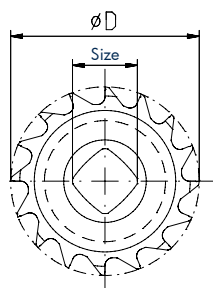


|      |      |        |        |      |       |       | Complete holder        | Spare Parts ***        |      |
|------|------|--------|--------|------|-------|-------|------------------------|------------------------|------|
| Size | Type | dh6 mm | DIN    | L mm | L1 mm | d1 mm | Order No.              | Screwdriver *          | Size |
| Ø 50 | 16   | 25     | 1835 B | 110  | 50    | 26    | <a href="#">163703</a> | <a href="#">178296</a> | SW 3 |
|      | 16   | 25     | 1835 A | 110  | 50    | 26    | <a href="#">160052</a> | <a href="#">178296</a> | SW 3 |
|      | 19   | 32     | 1835 B | 122  | 55    | 30    | <a href="#">163704</a> | <a href="#">178296</a> | SW 3 |
|      | 19   | 32     | 1835 A | 122  | 55    | 30    | <a href="#">160053</a> | <a href="#">178296</a> | SW 3 |

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

CLICK ME!

## Milling Discs



**i** Ask about our regrounding service!

| Size | Type | A ** mm | S max. mm | D mm | LP1 mm | Number of teeth | Order No.<br>TINAMATIC | Deliverable |
|------|------|---------|-----------|------|--------|-----------------|------------------------|-------------|
| Ø 50 | 19   | 2       | 10        | 50   | 6      | 24              | <a href="#">164448</a> | on request  |
|      | 16   | 2       | 12        | 50   | 6      | 24              | <a href="#">164414</a> | on stock    |
|      | 19   | 3       | 10        | 50   | 6      | 24              | <a href="#">164449</a> | on request  |
|      | 16   | 3       | 12        | 50   | 6      | 24              | <a href="#">164415</a> | on stock    |
|      | 19   | 4       | 10        | 50   | 6      | 24              | <a href="#">164416</a> | on stock    |
|      | 16   | 4       | 12        | 50   | 6      | 24              | <a href="#">164450</a> | on request  |
|      | 19   | 5       | 10        | 50   | 6      | 24              | <a href="#">164417</a> | on stock    |
|      | 16   | 5       | 12        | 50   | 6      | 24              | <a href="#">164451</a> | on request  |

CLICK ME!

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

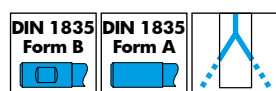
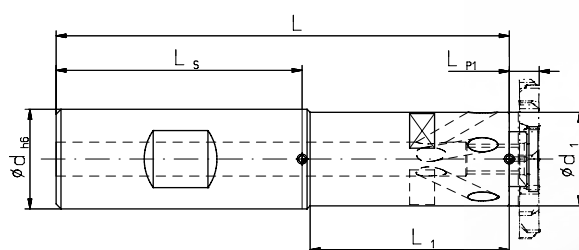
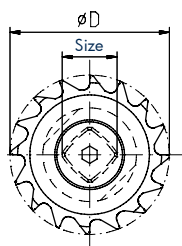
\* Screwdriver and clamping screw included in delivery  
\*\* Narrower widths, see PolySAW see page 134  
\*\*\* More spare parts see page 108



# DeepMILL Ø 63

## Basic Holders

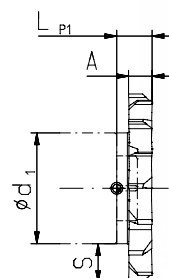
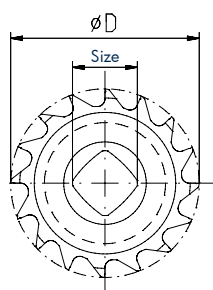
■ Cutting data see page 166



|      |      |        |        |      |       |       | 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    | <a href="#">163704</a> | <a href="#">178296</a> | SW 3 |
|      | 19   | 32     | 1835 A | 122  | 55    | 30    | <a href="#">160053</a> | <a href="#">178296</a> | SW 3 |
|      | 25   | 32     | 1835 B | 127  | 60    | 38    | <a href="#">163705</a> | <a href="#">178297</a> | SW 4 |
|      | 25   | 32     | 1835 A | 127  | 60    | 38    | <a href="#">160054</a> | <a href="#">178297</a> | SW 4 |

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

## Milling Discs



**i** Ask about our regrounding service!

| Size | Type | A ** mm | S max. mm | D mm | LP1 mm | Number of teeth | Order No.<br>TINAMATIC | Deliverable |
|------|------|---------|-----------|------|--------|-----------------|------------------------|-------------|
| Ø 63 | 25   | 2       | 12,4      | 63   | 6      | 24              | <a href="#">164452</a> | on request  |
|      | 19   | 2       | 16,5      | 63   | 6      | 24              | <a href="#">164420</a> | on stock    |
|      | 25   | 3       | 12,4      | 63   | 6      | 24              | <a href="#">164453</a> | on request  |
|      | 19   | 3       | 16,5      | 63   | 6      | 24              | <a href="#">164421</a> | on stock    |
|      | 25   | 4       | 12,4      | 63   | 6      | 24              | <a href="#">164422</a> | on stock    |
|      | 19   | 4       | 16,5      | 63   | 6      | 24              | <a href="#">164454</a> | on request  |
|      | 25   | 5       | 12,4      | 63   | 6      | 24              | <a href="#">164423</a> | on stock    |
|      | 19   | 5       | 16,5      | 63   | 6      | 24              | <a href="#">164455</a> | on request  |

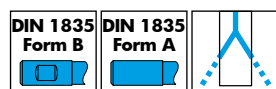
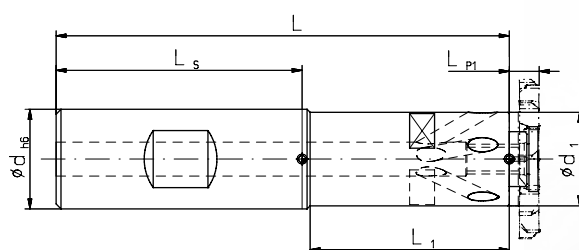
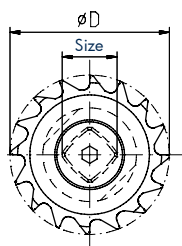
**i** Milling discs with cutting widths of 1 and 1.5 mm see chapter "Sawing & Slotting"

\* 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

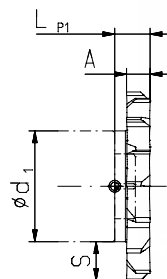
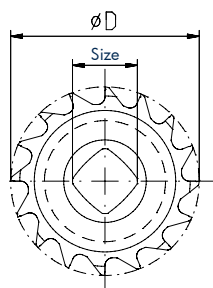


|      |      |        |        |      |       |       | Complete holder        | Spare Parts ***        |      |
|------|------|--------|--------|------|-------|-------|------------------------|------------------------|------|
| Size | Type | dh6 mm | DIN    | L mm | L1 mm | d1 mm | Order No.      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

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

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## Milling Discs



**i** Ask about our regrounding service!

| Size | Type | A ** mm | S max. mm | D mm | LP1 mm | Number of teeth | Order No.<br>TINAMATIC | Deliverable |
|------|------|---------|-----------|------|--------|-----------------|------------------------|-------------|
| Ø 80 | 35   | 2       | 15,5      | 80   | 6      | 24              | <a href="#">164456</a> | on request  |
|      | 25   | 2       | 20,9      | 80   | 6      | 24              | <a href="#">164426</a> | on stock    |
|      | 35   | 3       | 15,5      | 80   | 6      | 24              | <a href="#">164457</a> | on request  |
|      | 25   | 3       | 20,9      | 80   | 6      | 24              | <a href="#">164427</a> | on stock    |
|      | 35   | 4       | 15,5      | 80   | 6      | 24              | <a href="#">164428</a> | on stock    |
|      | 25   | 4       | 20,9      | 80   | 6      | 24              | <a href="#">164458</a> | on request  |
|      | 35   | 5       | 15,5      | 80   | 6      | 24              | <a href="#">164429</a> | on stock    |
|      | 25   | 5       | 20,9      | 80   | 6      | 24              | <a href="#">164459</a> | on request  |

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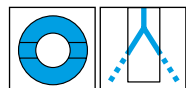
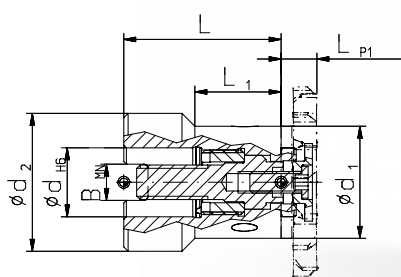
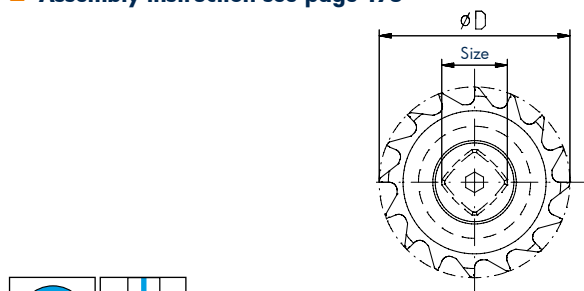
**i** Milling discs with cutting widths of 1 and 1.5 mm see chapter "Sawing & Slotting"

\* 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 178

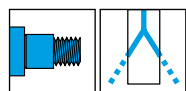
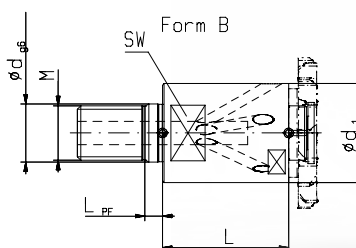
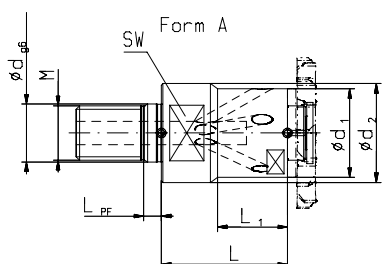
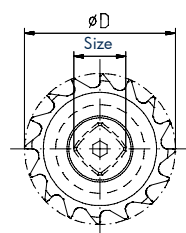


| Type | dH6<br>mm | BMN<br>mm | L<br>mm | L1<br>mm | d1<br>mm | d2<br>mm | Complete holder<br>Order No.      | Accessories<br>Key     | Spare Parts ***<br>Screwdriver * Size |
|------|-----------|-----------|---------|----------|----------|----------|-----------------------------------|------------------------|---------------------------------------|
| 16   | 16        | 8,4       | 36,5    | 20       | 26       | 32       | <a href="#">179727</a>            | <a href="#">134984</a> | <a href="#">178296</a> SW 3           |
| 19   | 16        | 8,4       | 36,5    | 20       | 30       | 32       | <a href="#">179728</a>            | <a href="#">134984</a> | <a href="#">178296</a> SW 3           |
| 25   | 16        | 8,4       | 36,5    | 20       | 29       | 32       | <a href="#">156493</a>            |                        | <a href="#">178297</a> SW 4           |
| 25   | 22        | 10,4      | 50      | 20       | 38,2     | 40       | <a href="#">179817</a> <b>NEW</b> |                        | <a href="#">178297</a> 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

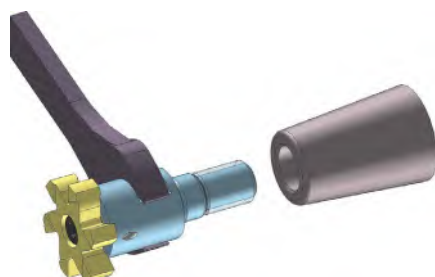


Please adapt cutting data to overhangs length

| Type | Order No.                         | Form | d1<br>mm | d2<br>mm | L<br>mm | L1<br>mm | M   | dg6 | L PF | Spare part No.<br>Screw-driver * Size |
|------|-----------------------------------|------|----------|----------|---------|----------|-----|-----|------|---------------------------------------|
| 16   | <a href="#">191777</a> <b>NEW</b> | A    | 26       | 29       | 36,5    | 20       | M16 | 17  | 5,5  | <a href="#">178296</a> SW3            |
| 19   | <a href="#">191778</a> <b>NEW</b> | B    | 30       | -        | 36,5    | -        | M16 | 17  | 5,5  | <a href="#">178296</a> SW3            |
| 25   | <a href="#">206004</a> <b>NEW</b> | B    | 30       | -        | 36,5    | -        | M16 | 17  | -    | <a href="#">178297</a> SW3            |

Screw torque max. 3,8 Nm

- Recommended tightening torque for screw-in circular milling body
- End-wrench see page 163



| 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

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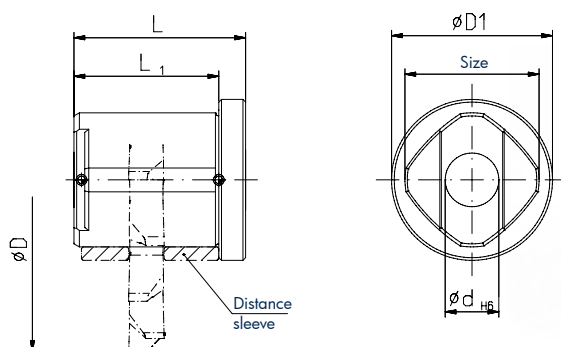
5

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## DeepMILL

### Saw Blade Arbors for mimatic Saw Blade Holders

■ Cutting data see page 166

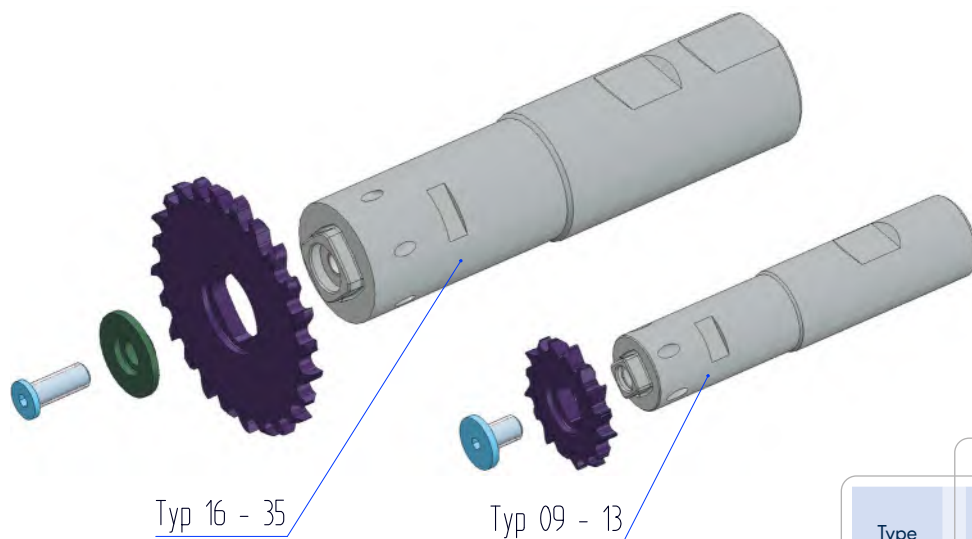


When using PolySaw ECO, as well as DeepMILL ECO, the cutting depth is reduced by 6 or 7 mm

|        |     |            |         |          |          | Complete holder        |
|--------|-----|------------|---------|----------|----------|------------------------|
| System | Typ | d H6<br>mm | L<br>mm | L1<br>mm | D1<br>mm | Order No.              |
| ECO    | 25  | 10         | 32      | 27       | 30       | <a href="#">179252</a> |
|        | 35  | 10         | 32      | 27       | 30       | <a href="#">180316</a> |

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### 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          | <a href="#">163842</a> | —                      |
| 11          | <a href="#">163843</a> | —                      |
| 13          | <a href="#">163844</a> | —                      |
| 16          | <a href="#">163850</a> | <a href="#">175027</a> |
| 19          | <a href="#">163848</a> | <a href="#">163845</a> |
| 25          | <a href="#">163849</a> | <a href="#">163846</a> |
| 35          | <a href="#">163849</a> | <a href="#">163847</a> |

Screw torques max.

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

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**Contour and Radius Milling  
Chamfering and Deburring**





## 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 Milling



Extended  
program

82-  
109

5

Contour and Radius Milling  
Chamfering, Deburring,  
undercut, dovetail



Extended  
program

110-  
125

6

## Sawing, Slitting

Sawing, Cutting, Slitting



Extended  
program

126-  
143

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151

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Special- and Combination Tools

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**NEW** Radius milling  
extended program



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|                                         |     |
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| Radius milling, convex shapes           | 114 |
| Thread undercut according to DIN 76     | 117 |
| Chamfering and deburring                | 115 |
| Dovetail milling, with trailing chamfer | 116 |

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

### TriMILL

**NEW** Radius milling



#### Inserts

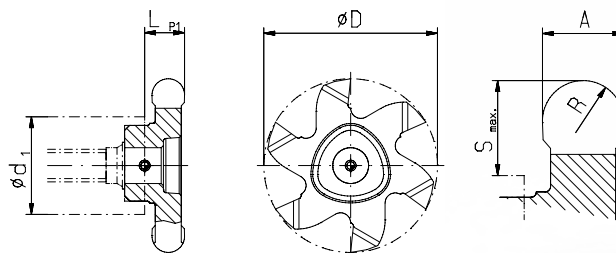
|                               |         |
|-------------------------------|---------|
| Radius milling, convex shapes | 133+125 |
| Chamfering and deburring      | 133+135 |

#### Tool Holders

|                        |         |
|------------------------|---------|
| with cylindrical shank | 134+136 |
| with tightening shank  | 134+136 |
| Face milling cutter    | 136-137 |

## Radius Milling, Convex Shapes

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



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

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6

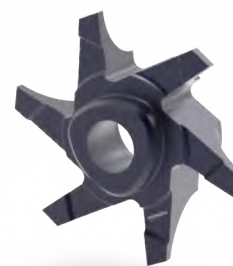
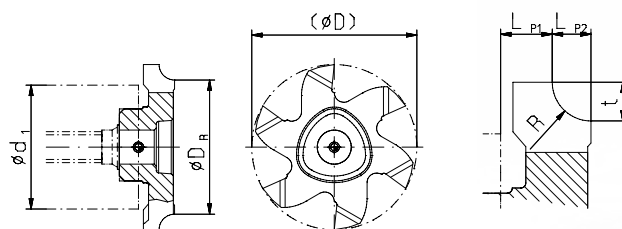
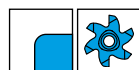
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**i** Further radius widths on request

## PolyMILL

### Radius Milling, Concave Shapes

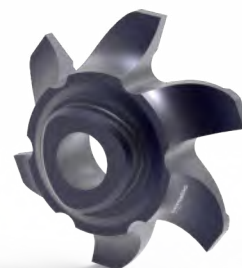
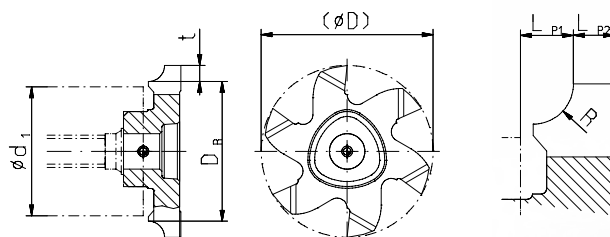
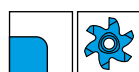
- Insert holder see page 117-119
- Cutting data see page 166



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

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### Radius Milling, Concave Shapes, Reverse

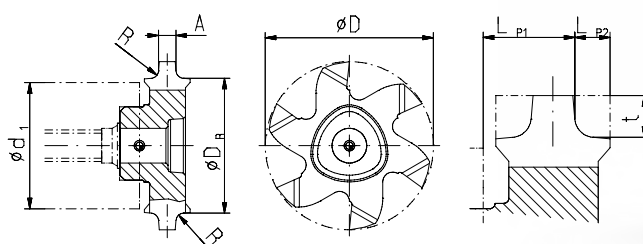
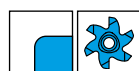


| Type |       | R<br>mm | (D)<br>mm | DR<br>mm | LP1<br>mm | LP2<br>mm | t<br>mm | Number<br>of teeth | Order No.<br>TINAMATIC            |
|------|-------|---------|-----------|----------|-----------|-----------|---------|--------------------|-----------------------------------|
| P25  | P2526 | 0,5     | 26        | 24,3     | 1,15      | 2,5       | 0,5     | 6                  | <a href="#">174009</a>            |
|      | P2526 | 1,0     | 26        | 23,3     | 1,65      | 2,0       | 1,0     | 6                  | <a href="#">174011</a>            |
|      | P2526 | 1,5     | 26        | 22,3     | 2,15      | 1,5       | 1,5     | 6                  | <a href="#">174012</a>            |
|      | P2526 | 2,0     | 26        | 21,3     | 2,65      | 1,0       | 2,0     | 6                  | <a href="#">174013</a>            |
|      | P2526 | 2,5     | 26        | 20,3     | 3,15      | 1,5       | 2,5     | 6                  | <a href="#">174014</a>            |
|      | P2526 | 3,0     | 26        | 19,3     | 5,4       | 1,5       | 3,0     | 6                  | <a href="#">174015</a>            |
|      | P2526 | 4,0     | 26        | 17,3     | 5,15      | 2,0       | 4,0     | 6                  | <a href="#">189160</a>            |
|      | P2526 | 5,0     | 26        | 15,7     | 6,15      | 1,0       | 5,0     | 6                  | <a href="#">182721</a>            |
|      | P2526 | 6,0     | 26        | 13,7     | 7,25      | 1,4       | 6,15    | 6                  | <a href="#">199552</a> <b>NEW</b> |

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### Radius Milling, Concave Shapes, Double-sided

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



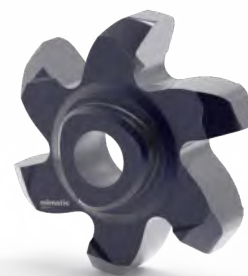
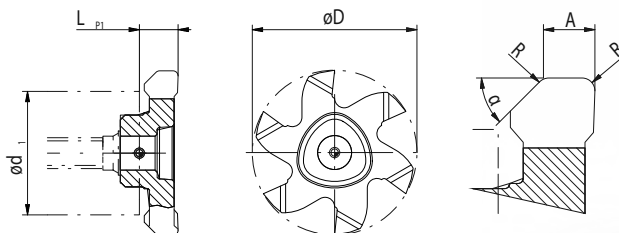
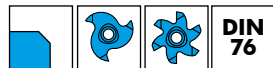
| Type |       | R<br>mm | (D)<br>mm | DR<br>mm | LP1<br>mm | LP2<br>mm | A<br>mm | t<br>mm | Number<br>of teeth | Order No.<br>TINAMATIC            |
|------|-------|---------|-----------|----------|-----------|-----------|---------|---------|--------------------|-----------------------------------|
| P25  | P2526 | 0,5     | 26        | 25       | 3,15      | 0,5       | 2,0     | 0,5     | 6                  | <a href="#">199386</a> <b>NEW</b> |
|      | P2526 | 1,0     | 26        | 24       | 2,65      | 1,0       | 1,0     | 1,0     | 6                  | <a href="#">160471</a>            |
|      | P2526 | 1,5     | 26        | 23       | 3,10      | 1,5       | 1,0     | 1,5     | 6                  | <a href="#">184889</a>            |
|      | P2526 | 2,0     | 26        | 22       | 4,90      | 2,0       | 1,0     | 2,0     | 6                  | <a href="#">162189</a> <b>NEW</b> |
|      | P2526 | 2,5     | 26        | 21       | 4,65      | 2,5       | 1,5     | 2,5     | 6                  | <a href="#">194311</a> <b>NEW</b> |

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## PolyMILL

### Thread undercut according to DIN 76

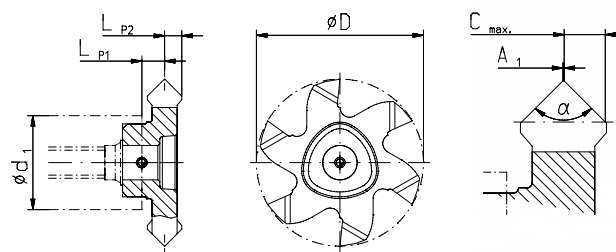
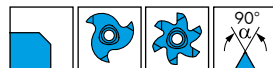
- Insert holder see page 117-119
- Cutting data see page 166



| Type |       | D<br>mm | P<br>mm    | A<br>mm | α   | LP1<br>mm | R<br>mm | Number<br>of teeth | Order No.<br>TINAMATIC                                                                                     |
|------|-------|---------|------------|---------|-----|-----------|---------|--------------------|------------------------------------------------------------------------------------------------------------|
| P12  | P1212 | 11,7    | 1,0-1,5    | 2,0     | 45° | 3,8       | 0,7     | 3                  | <a href="#">194197</a>  |
| P16  | P1616 | 16,0    | 1,0-1,5    | 2,5     | 45° | 4,65      | 0,7     | 6                  | <a href="#">194199</a>  |
|      | P1616 | 16,0    | 1,75-2,2,5 | 3,35    | 45° | 5,65      | 1,1     | 6                  | <a href="#">194200</a>  |
| P25  | P2526 | 26,0    | 3,0-3,5    | 4,25    | 45° | 7,15      | 1,6     | 6                  | <a href="#">194201</a>  |

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### Chamfering and Deburring

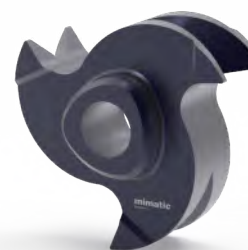
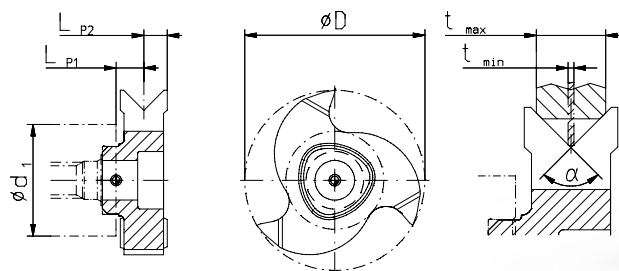


| Type |       | D<br>mm | C <sub>max.</sub> x 45°<br>mm | A1<br>mm | α    | LP1<br>mm | LP2<br>mm | Number<br>of teeth | Order No.<br>TINAMATIC |
|------|-------|---------|-------------------------------|----------|------|-----------|-----------|--------------------|------------------------|
| P12  | P1210 | 9,6     | 1,2                           | 0,05     | 90°  | 2,125     | 1,525     | 3                  | <a href="#">171914</a> |
|      | P1212 | 11,7    | 1,35                          | 0,05     | 90°  | 2,125     | 1,525     | 3                  | <a href="#">171913</a> |
| P16  | P1616 | 16,0    | 1,9                           | 0,05     | 90°  | 2,65      | 1,95      | 6                  | <a href="#">142521</a> |
|      | P1616 | 16,0    | 1,43                          | 0,05     | 120° | 3,18      | 2,68      | 6                  | <a href="#">166997</a> |
|      | P1616 | 16,0    |                               | 0,05     | 150° | 3,18      | 2,68      | 6                  | <a href="#">206467</a> |
|      | P1618 | 17,7    | 1,3                           | 0,05     | 90°  | 2,65      | 1,45      | 6                  | <a href="#">171955</a> |
| P20  | P2020 | 20,0    | 1,9                           | 0,05     | 90°  | 3,15      | 2,675     | 6                  | <a href="#">168689</a> |
|      | P2022 | 21,7    | 1,95                          | 0,05     | 90°  | 2,95      | 2,15      | 6                  | <a href="#">171979</a> |
| P25  | P2526 | 26,0    | 2,1                           | 0,05     | 90°  | 2,75      | 2,075     | 6                  | <a href="#">142676</a> |
|      | P2526 | 26,0    | 3,4                           | 0,05     | 90°  | 4,65      | 3,62      | 6                  | <a href="#">201771</a> |
|      | P2526 | 26,0    | 2,3                           | 0,05     | 120° | 4,65      | 4,175     | 6                  | <a href="#">203344</a> |
|      | P2526 | 26,0    | 1,0                           | 0,05     | 150° | 4,65      | 4,174     | 6                  | <a href="#">206406</a> |

6

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### Chamfering of Sheet Metal

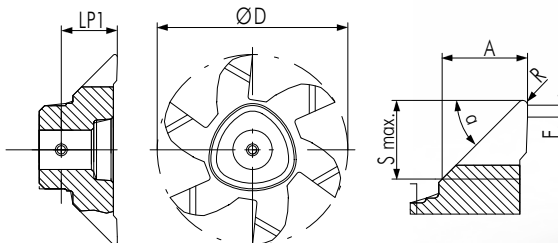
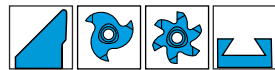


| Type |       | D<br>mm | $\alpha$ | t max.<br>mm | t min.<br>mm | LP1<br>mm | LP2<br>mm | Number<br>of teeth | Order No.<br>TINAMATIC |
|------|-------|---------|----------|--------------|--------------|-----------|-----------|--------------------|------------------------|
| P25  | P2525 | 25,0    | 90°      | 6,0          | 0,5          | 4,55      | 4,0       | 3                  | 161083                 |

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## Radius Milling, Convex Shapes

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



| Type |       | D<br>mm | $\alpha$ | LP1<br>mm | A<br>mm | S <sub>max.</sub><br>mm | R<br>mm | F<br>mm | Number<br>of teeth | Order No.<br>TINAMATIC |
|------|-------|---------|----------|-----------|---------|-------------------------|---------|---------|--------------------|------------------------|
| P12  | P1210 | 11,7    | 15°      | 3,75      | 3,20    | 0,80                    | 0,20    | 0,50    | 3                  | <a href="#">199352</a> |
|      | P1210 | 11,7    | 30°      | 3,75      | 2,80    | 1,45                    | 0,20    | 0,50    | 3                  | <a href="#">199354</a> |
|      | P1212 | 11,7    | 45°      | 3,75      | 2,50    | 2,20                    | 0,20    | 0,50    | 3                  | <a href="#">199361</a> |
| P16  | P1616 | 16      | 15°      | 5,70      | 5,00    | 1,30                    | 0,20    | 0,50    | 6                  | <a href="#">199366</a> |
|      | P1616 | 16      | 30°      | 5,70      | 4,50    | 2,45                    | 0,20    | 0,50    | 6                  | <a href="#">199367</a> |
|      | P1616 | 16      | 45°      | 4,70      | 3,60    | 3,30                    | 0,20    | 0,50    | 6                  | <a href="#">199369</a> |
| P20  | P2020 | 20      | 15°      | 5,65      | 5,00    | 1,30                    | 0,20    | 0,50    | 6                  | <a href="#">199372</a> |
|      | P2020 | 20      | 30°      | 5,65      | 5,00    | 2,75                    | 0,20    | 0,50    | 6                  | <a href="#">199373</a> |
|      | P2020 | 20      | 45°      | 5,65      | 4,50    | 4,20                    | 0,20    | 0,50    | 6                  | <a href="#">199374</a> |
| P25  | P2526 | 26      | 15°      | 7,10      | 6,40    | 1,65                    | 0,20    | 0,50    | 6                  | <a href="#">199375</a> |
|      | P2526 | 26      | 30°      | 7,10      | 6,10    | 3,40                    | 0,20    | 0,50    | 6                  | <a href="#">199376</a> |
|      | P2526 | 26      | 45°      | 7,10      | 5,90    | 5,60                    | 0,20    | 0,50    | 6                  | <a href="#">199377</a> |

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**i** Other dimensions on request

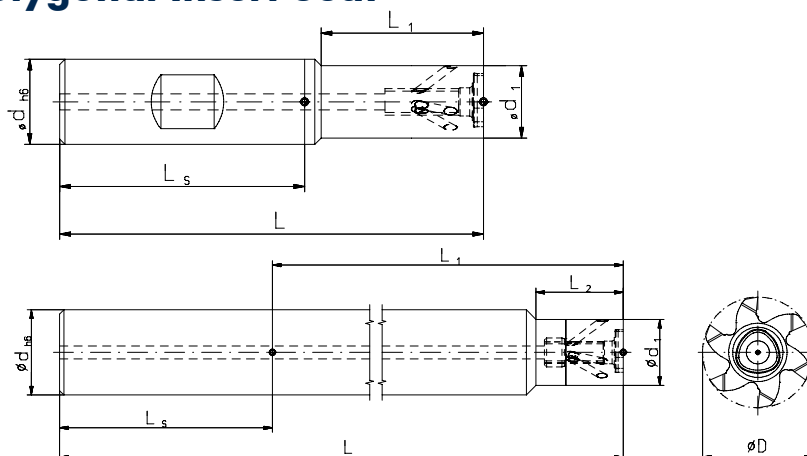
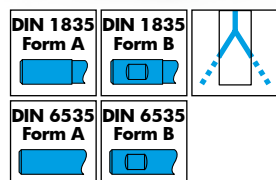
The following machining operations can be performed with these inserts:





## 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<br>mm | d1<br>mm | S <sub>max.</sub><br>(D-d1)/2<br>mm | L<br>mm | L1<br>mm | L2<br>mm | Shaft   | Screw-driver *                   | Screw *                           |
| P12  | <a href="#">177170</a>            | A    | 10         | 7,0      | 3,5                                 | 54      | 8        | -        | Steel   | T8 IP<br><a href="#">111656</a>  | M2,5x7<br><a href="#">107596</a>  |
|      | <a href="#">123619</a>            | B    | 12         | 7,0      | 3,5                                 | 67,5    | 20       | -        | Steel   |                                  |                                   |
|      | <a href="#">100228</a>            | B    | 12         | 7,0      | 3,5                                 | 67,5    | 20       | -        | Carbide |                                  |                                   |
|      | <a href="#">171778</a>            | A    | 12         | 7,0      | 3,5                                 | 67,5    | 20       | -        | Carbide |                                  |                                   |
|      | <a href="#">171780</a>            | B    | 12         | 7,0      | 3,5                                 | 80      | 30       | -        | Carbide |                                  |                                   |
|      | <a href="#">171781</a>            | A    | 12         | 7,0      | 3,5                                 | 80      | 30       | -        | Carbide |                                  |                                   |
|      | <a href="#">171783</a>            | B    | 12         | 7,0      | 3,5                                 | 100     | 40       | -        | Carbide |                                  |                                   |
|      | <a href="#">171784</a>            | A    | 12         | 7,0      | 3,5                                 | 100     | 40       | -        | Carbide |                                  |                                   |
| P16  | <a href="#">177174</a>            | A    | 10         | 9,0      | 6,5                                 | 60      | 11       | -        | Steel   | T8 IP<br><a href="#">111656</a>  | M3x12<br><a href="#">143158</a>   |
|      | <a href="#">123573</a>            | B    | 12         | 9,0      | 6,5                                 | 67,4    | 21       | -        | Steel   |                                  |                                   |
|      | <a href="#">123577</a>            | B    | 12         | 9,0      | 6,5                                 | 67,4    | 21       | -        | Carbide |                                  |                                   |
|      | <a href="#">171787</a>            | A    | 12         | 9,0      | 6,5                                 | 67,4    | 21       | -        | Carbide |                                  |                                   |
|      | <a href="#">123580</a>            | B    | 12         | 9,0      | 6,5                                 | 82,4    | 36       | -        | Carbide |                                  |                                   |
|      | <a href="#">171789</a>            | A    | 12         | 9,0      | 6,5                                 | 82,4    | 36       | -        | Carbide |                                  |                                   |
|      | <a href="#">123584</a>            | A    | 12         | 9,0      | 6,5                                 | 100     | 30       | -        | Carbide |                                  |                                   |
|      | <a href="#">123588</a>            | A    | 12         | 11,5     | 5,25                                | 82,4    | 37,4     | 13       | Carbide |                                  |                                   |
| P20  | <a href="#">123590</a>            | A    | 12         | 12,0     | 5,0                                 | 122,5   | 77,5     | -        | Carbide | T15 IP<br><a href="#">111671</a> | M4x13<br><a href="#">107597</a>   |
|      | <a href="#">177178</a>            | A    | 12         | 11,5     | 10,25                               | 62,4    | 14,4     | -        | Steel   |                                  |                                   |
|      | <a href="#">123615</a>            | B    | 16         | 11,5     | 10,25                               | 80      | 30       | -        | Steel   |                                  |                                   |
|      | <a href="#">123616</a>            | B    | 16         | 11,5     | 10,25                               | 80      | 30       | -        | Carbide |                                  |                                   |
|      | <a href="#">171794</a>            | A    | 16         | 11,5     | 10,25                               | 80      | 30       | -        | Carbide |                                  |                                   |
|      | <a href="#">123617</a>            | B    | 16         | 11,5     | 10,25                               | 100     | 50       | -        | Carbide |                                  |                                   |
|      | <a href="#">171796</a>            | A    | 16         | 11,5     | 10,25                               | 100     | 50       | -        | Carbide |                                  |                                   |
|      | <a href="#">174314</a>            | A    | 16         | 15,5     | 8,25                                | 105,5   | 57,5     | 20       | Carbide |                                  |                                   |
| P25  | <a href="#">177182</a>            | A    | 16         | 13,6     | 11,7                                | 69,6    | 20,4     | -        | Steel   | T20 IP<br><a href="#">111594</a> | M5x13,5<br><a href="#">107529</a> |
|      | <a href="#">123592</a>            | B    | 16         | 13,6     | 11,7                                | 79,6    | 30,5     | -        | Steel   |                                  |                                   |
|      | <a href="#">123598</a>            | B    | 16         | 13,6     | 11,7                                | 79,6    | 30,5     | -        | Carbide |                                  |                                   |
|      | <a href="#">171855</a>            | A    | 16         | 13,6     | 11,7                                | 79,6    | 30,5     | -        | Carbide |                                  |                                   |
|      | <a href="#">123600</a>            | B    | 16         | 13,6     | 11,7                                | 94,6    | 45,5     | -        | Carbide |                                  |                                   |
|      | <a href="#">171857</a>            | A    | 16         | 13,6     | 11,7                                | 94,6    | 45,5     | -        | Carbide |                                  |                                   |
|      | <a href="#">123603</a>            | B    | 16         | 13,6     | 11,7                                | 109,6   | 60,5     | -        | Carbide |                                  |                                   |
|      | <a href="#">171859</a>            | A    | 16         | 13,6     | 11,7                                | 109,6   | 60,5     | -        | Carbide |                                  |                                   |
|      | <a href="#">123609</a>            | A    | 16         | 15,5     | 10,75                               | 105     | 57       | 21,5     | Carbide |                                  |                                   |
|      | <a href="#">123611</a>            | A    | 16         | 15,5     | 10,75                               | 149,5   | 101,5    | 21,5     | Carbide |                                  |                                   |
|      | <a href="#">161205</a> <b>NEW</b> | A    | 20         | 15,5     | 10,75                               | 100     | 52       | 21,5     | Carbide |                                  |                                   |
|      | <a href="#">123613</a>            | A    | 20         | 15,5     | 10,75                               | 174,45  | 128,5    | 21,5     | Carbide |                                  |                                   |

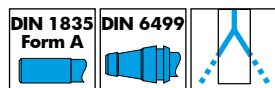
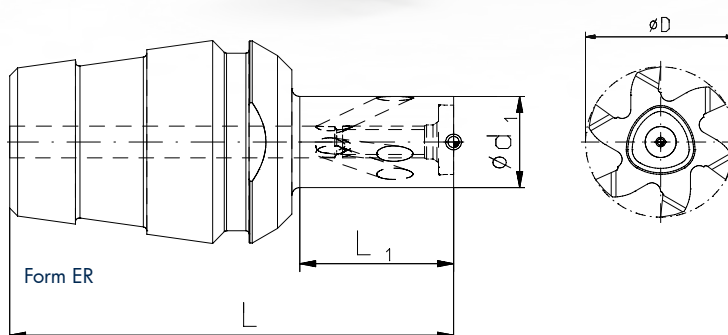
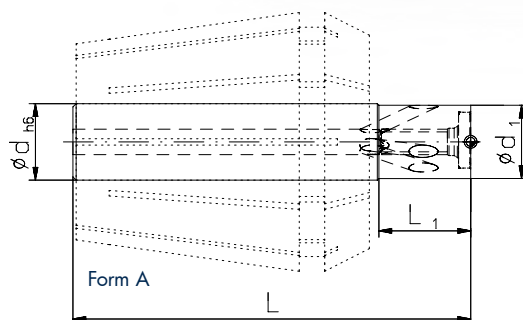
\* Screwdriver and clamping screw included in delivery

Screw torques max.

|                        |        |        |
|------------------------|--------|--------|
| <a href="#">107596</a> | T08 IP | 1,0 Nm |
| <a href="#">143158</a> | T08 IP | 1,1 Nm |
| <a href="#">107597</a> | T15 IP | 3,8 Nm |
| <a href="#">107529</a> | T20 IP | 5,5 Nm |

## Circular Milling Tools for Driven Toolholders

■ Cutting data see page 166



| Type | Order No.              | Form  | dh6<br>mm | d1<br>mm | S <sub>max.</sub><br>(D-d1)/2<br>mm | L<br>mm | L1<br>mm | Shaft | Spare part No.                   |                                   |
|------|------------------------|-------|-----------|----------|-------------------------------------|---------|----------|-------|----------------------------------|-----------------------------------|
|      |                        |       |           |          |                                     |         |          |       | Screw-driver *                   | Screw *                           |
| P12  | <a href="#">177170</a> | A     | 10        | 7,0      | 3,5                                 | 54      | 8        | Steel | T8 IP<br><a href="#">111656</a>  | M2,5x7<br><a href="#">107596</a>  |
|      | <a href="#">177172</a> | ER 16 |           | 7,0      | 3,5                                 | 37,5    | 8        | Steel |                                  |                                   |
|      | <a href="#">177173</a> | ER 20 |           | 7,0      | 3,5                                 | 47      | 13       | Steel |                                  |                                   |
| P16  | <a href="#">177174</a> | A     | 10        | 9,0      | 6,5                                 | 60      | 11       | Steel | T8 IP<br><a href="#">111656</a>  | M3x12<br><a href="#">143158</a>   |
|      | <a href="#">177176</a> | ER 16 |           | 9,0      | 6,5                                 | 41,4    | 11       | Steel |                                  |                                   |
|      | <a href="#">177177</a> | ER 20 |           | 9,0      | 6,5                                 | 51      | 16       | Steel |                                  |                                   |
| P20  | <a href="#">177178</a> | A     | 12        | 11,5     | 10,25                               | 62,4    | 14,4     | Steel | T15 IP<br><a href="#">111671</a> | M4x13<br><a href="#">107597</a>   |
|      | <a href="#">177180</a> | ER 20 |           | 11,5     | 10,25                               | 49,5    | 14,5     | Steel |                                  |                                   |
|      | <a href="#">177181</a> | ER 25 |           | 11,5     | 10,2                                | 56      | 19,4     | Steel |                                  |                                   |
| P25  | <a href="#">177182</a> | A     | 16        | 13,6     | 11,7                                | 69,6    | 20,4     | Steel | T20 IP<br><a href="#">111594</a> | M5x13,5<br><a href="#">107529</a> |
|      | <a href="#">177184</a> | ER 25 |           | 13,6     | 11,7                                | 56      | 19,4     | Steel |                                  |                                   |
|      | <a href="#">177185</a> | ER 32 |           | 13,6     | 11,7                                | 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

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## Changing Inserts

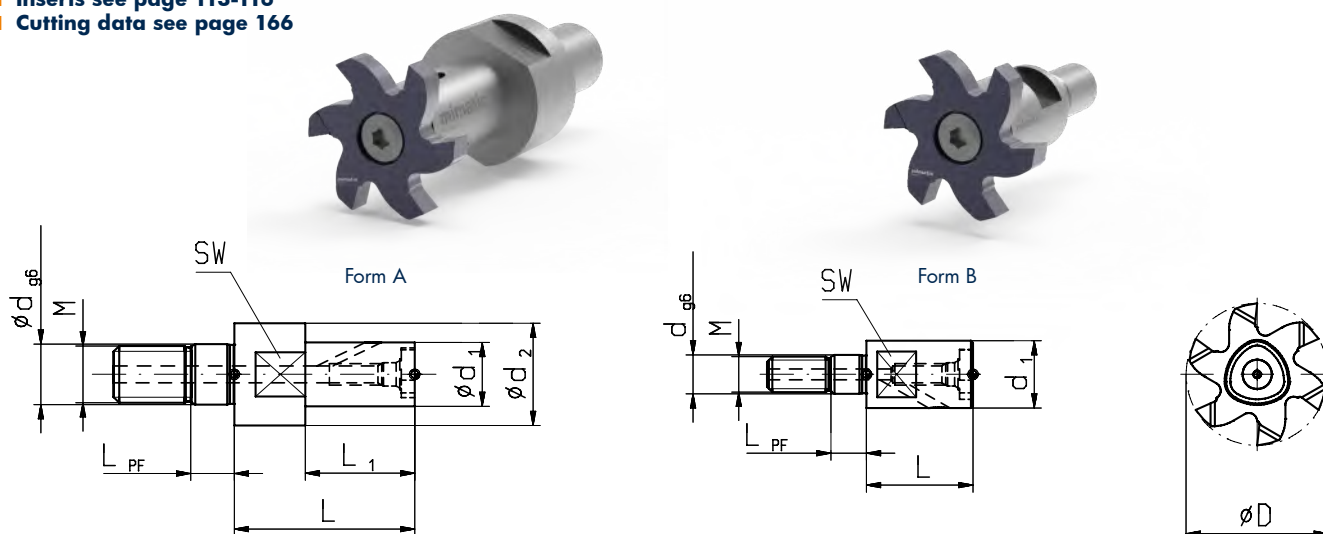
Clamp cutter before changing insert. Loosen insert screw. Remove used insert and clean the insert pocket before clamping new insert. Please use the appropriate TIP hex key for the tightening of the inserts and consider the screw tightening torques in the tables.



\* 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<br>mm | d2<br>mm | S <sub>max.</sub><br>(D-d1)/2<br>mm | L<br>mm | L1<br>mm | M   | dg6<br>mm | L PF<br>mm | Spare part No.         |                        |
|--------|------------------------|------|----------|----------|-------------------------------------|---------|----------|-----|-----------|------------|------------------------|------------------------|
|        |                        |      |          |          |                                     |         |          |     |           |            | Screw-<br>driver *     | Screw *                |
| P12*** | <a href="#">177676</a> | B    | 9,5      | –        | 2,25                                | 10,0    | –        | M5  | 5,5       | 5,0        | <a href="#">111656</a> | <a href="#">107596</a> |
| P16    | <a href="#">123586</a> | A    | 9,0      | 14,4     | 6,5 / 3,8                           | 25,4    | 15,4     | M8  | 8,5       | 5,5        | <a href="#">111656</a> | <a href="#">143158</a> |
| P16**  | <a href="#">177683</a> | B    | 9,5      | –        | 6,25                                | 15,0    | –        | M5  | 5,5       | 5,0        | <a href="#">111656</a> | <a href="#">143158</a> |
| P16*** | <a href="#">177698</a> | B    | 11,0     | –        | 5,5                                 | 15,0    | –        | M6  | 6,5       | 5,0        | <a href="#">111656</a> | <a href="#">143158</a> |
| P20    | <a href="#">123618</a> | A    | 11,5     | 18,0     | 10,25 / 7                           | 29,4    | 19,4     | M10 | 10,5      | 5,5        | <a href="#">111671</a> | <a href="#">107597</a> |
| P20**  | <a href="#">177734</a> | B    | 11,5     | –        | 10,25                               | 15,0    | –        | M6  | 6,5       | 5,0        | <a href="#">111671</a> | <a href="#">107597</a> |
| P20*** | <a href="#">177735</a> | B    | 13,5     | –        | 9,25                                | 15,0    | –        | M8  | 8,5       | 5,5        | <a href="#">111671</a> | <a href="#">107597</a> |
| P25    | <a href="#">123605</a> | A    | 13,6     | 22,5     | 11,7 / 7,25                         | 37,9    | 24,9     | M12 | 12,5      | 5,5        | <a href="#">111594</a> | <a href="#">107529</a> |
| P25**  | <a href="#">177747</a> | B    | 13,6     | –        | 11,7                                | 18,0    | –        | M8  | 8,5       | 5,5        | <a href="#">111594</a> | <a href="#">107529</a> |
| P25*** | <a href="#">177767</a> | B    | 18,0     | –        | 9,5                                 | 18,0    | –        | M10 | 10,5      | 5,5        | <a href="#">111594</a> | <a href="#">107529</a> |

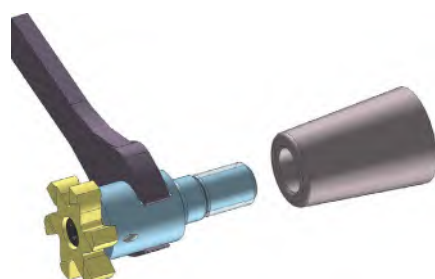
- \* Screwdriver and clamping screw included in delivery
- \*\* Slim design for thread milling
- \*\*\* Reinforced design

Screw torques max.

|                        |        |        |
|------------------------|--------|--------|
| <a href="#">107596</a> | T8 IP  | 1,0 Nm |
| <a href="#">143158</a> | T8 IP  | 1,1 Nm |
| <a href="#">107597</a> | T15 IP | 3,8 Nm |
| <a href="#">107529</a> | T20 IP | 5,5 Nm |

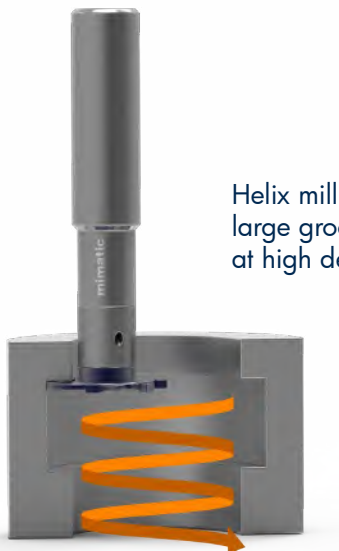
## Assembling Instructions

- Recommended tightening torque for screw-in circular milling body
- End-wrench see page 163



| Thread size<br>(M) | Wrench size<br>mm | Tightening torque<br>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)

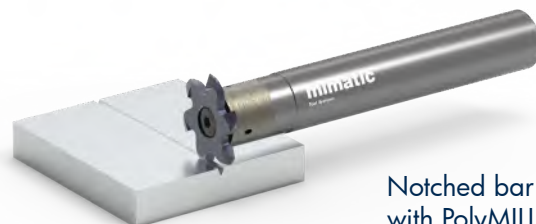


Milling of tooth hub profiles with angle head and  
carbide tooth form cutter

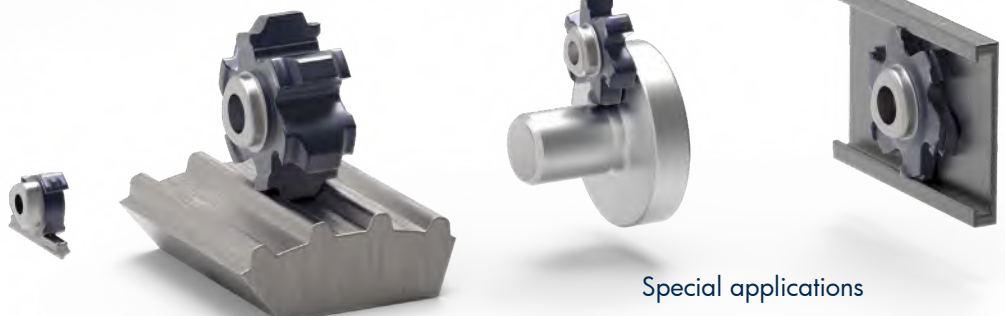
Milling of gears with  
PolyMILL (DIN5480 /  
DIN5481 / DIN5482 /  
ANSI / BS / JS / ...)



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



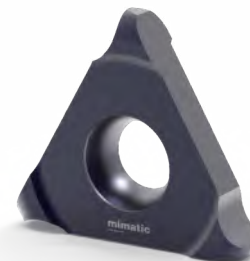
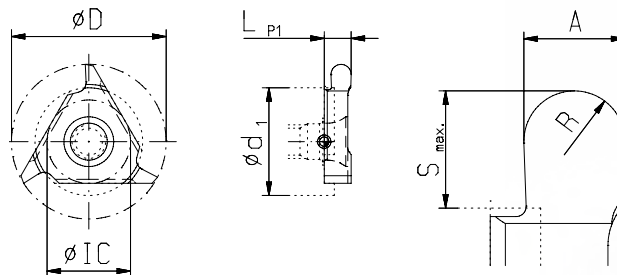
Notched bar impact tests  
with PolyMILL



Special applications

## Radius Milling, Convex Shapes

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



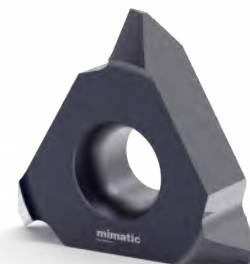
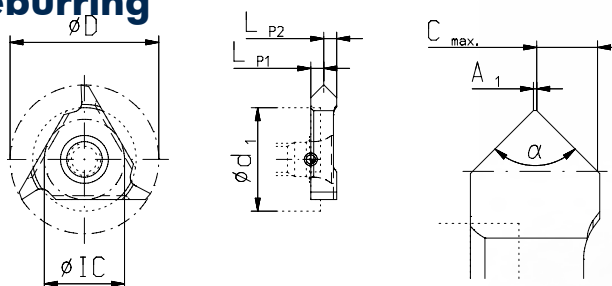
| Type | A<br>mm | A<br>inch | R<br>mm | D<br>mm | IC<br>mm | LP1<br>mm | S <sub>max.</sub><br>mm | Order No.<br>TINAMATIC            |
|------|---------|-----------|---------|---------|----------|-----------|-------------------------|-----------------------------------|
| 03   | 1,0     | .039      | 0,50    | 10,6    | 5,5      | 2,34      | 1,6                     | <a href="#">160866</a>            |
|      | 1,5     | .059      | 0,75    | 10,6    | 5,5      | 2,34      | 1,6                     | <a href="#">146583</a>            |
|      | 2,0     | .079      | 1,00    | 10,6    | 5,5      | 2,34      | 1,6                     | <a href="#">161574</a>            |
|      | 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                     | <a href="#">151643</a>            |
| 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                     | <a href="#">149560</a>            |
|      | 2,0     | .079      | 1,00    | 17,5    | 9,2      | 3,5       | 2,6                     | <a href="#">150641</a>            |
|      | 2,5     | .098      | 1,25    | 17,5    | 9,2      | 3,5       | 2,6                     | <a href="#">190190</a>            |
|      | 3,0     | .118      | 1,50    | 17,5    | 9,2      | 3,5       | 2,6                     | <a href="#">150011</a>            |
|      | 3,5     | .138      | 1,75    | 17,5    | 9,2      | 3,52      | 2,6                     | <a href="#">182015</a>            |
|      | 4,0     | .157      | 2,00    | 17,5    | 9,2      | 5,0       | 2,6                     | <a href="#">190192</a>            |
|      | 5,0     | .197      | 2,50    | 17,5    | 9,2      | 5,02      | 2,6                     | <a href="#">150798</a>            |
| 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                    | <a href="#">171373</a>            |
|      | 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                    | <a href="#">169226</a>            |
|      | 3,5     | .138      | 1,75    | 23,0    | 12,4     | 4,0       | 3,45                    | <a href="#">190191</a>            |
|      | 4,0     | .157      | 2,00    | 23,0    | 12,4     | 4,02      | 3,45                    | <a href="#">150617</a>            |
|      | 5,0     | .197      | 2,50    | 23,0    | 12,4     | 5,2       | 3,45                    | <a href="#">150006</a>            |
|      | 6,0     | .236      | 3,00    | 23,0    | 12,4     | 6,5       | 3,45                    | <a href="#">146243</a> <b>NEW</b> |

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6

## Chamfering and Deburring

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



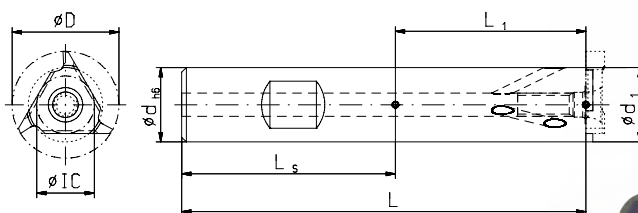
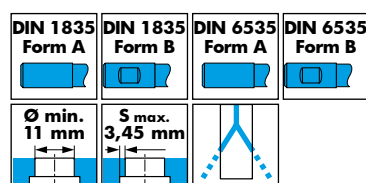
| Type | D<br>mm | IC<br>mm | C <sub>max.</sub> x 45°<br>mm | A <sub>1</sub><br>mm | LP1<br>mm | LP2<br>mm | Order No.<br>TINAMATIC |
|------|---------|----------|-------------------------------|----------------------|-----------|-----------|------------------------|
| 04   | 7,9     | 5,5      | 0,3                           | 0,05                 | 1,05      | 1,29      | <a href="#">141690</a> |
| 03   | 10,6    | 5,5      | 1,5                           | 0,05                 | 1,5       | 1,5       | <a href="#">141694</a> |
| 02   | 17,5    | 9,2      | 2,2                           | 0,05                 | 2,5       | 2,5       | <a href="#">141495</a> |
| 01   | 23,0    | 12,4     | 3,1                           | 0,05                 | 3,2       | 3,3       | <a href="#">141382</a> |

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**TriMILL**

## Circular Milling Tools

- Inserts see page 95-96
- Cutting data see page 166



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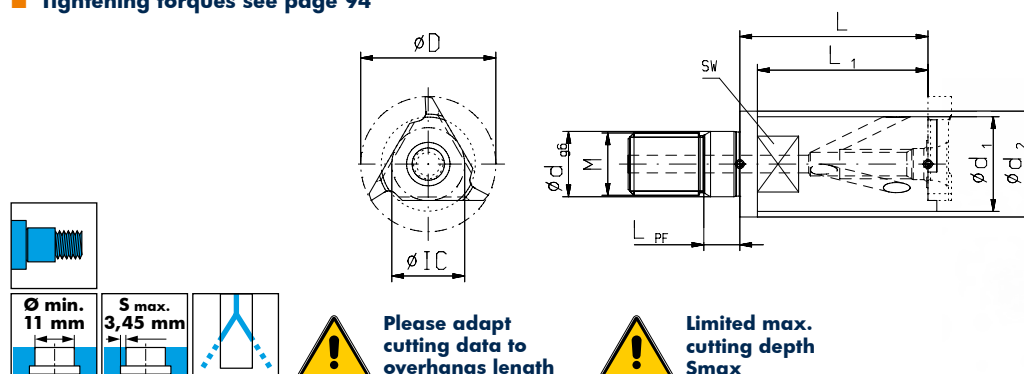
|      |                            |      |      |       |        |       |           |       |       |         | Spare part No.                |                        |
|------|----------------------------|------|------|-------|--------|-------|-----------|-------|-------|---------|-------------------------------|------------------------|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

|                        |        |        |
|------------------------|--------|--------|
| <a href="#">107530</a> | T6 IP  | 0,9 Nm |
| <a href="#">107547</a> | T15 IP | 3,8 Nm |
| <a href="#">107551</a> | T20 IP | 5,5 Nm |

- Tightening torques see page 94



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|      |                        |      |       |        |       |       |           |       |       |   | 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   | <a href="#">123481</a> | 10,6 | 5,5   | 6,5    | 7,4   | 10,0  | 1,60      | 22,66 | 13,66 |   | <a href="#">111705</a> | <a href="#">107530</a> |
| 02   | <a href="#">123450</a> | 17,5 | 9,2   | 8,5    | 12,2  | 15,4  | 2,60      | 27,5  | 18,5  |   | <a href="#">111671</a> | <a href="#">107547</a> |
| 01   | <a href="#">123419</a> | 23,0 | 12,4  | 10,5   | 16,1  | 18,0  | 3,45      | 32,0  | 29,0  |   | <a href="#">111594</a> | <a href="#">107551</a> |

Screw torques max.

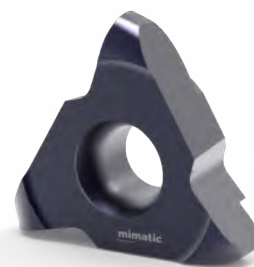
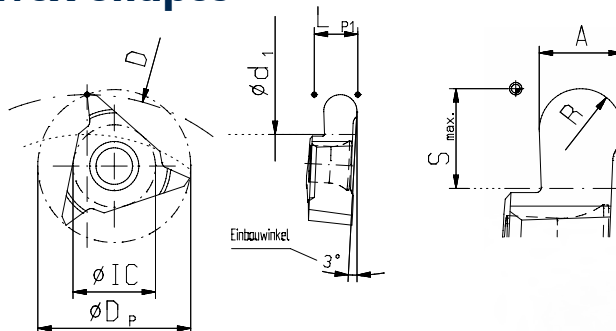
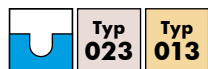
|                        |        |        |
|------------------------|--------|--------|
| <a href="#">107530</a> | T6 IP  | 0,9 Nm |
| <a href="#">107547</a> | T15 IP | 3,8 Nm |
| <a href="#">107551</a> | T20 IP | 5,5 Nm |

\* 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

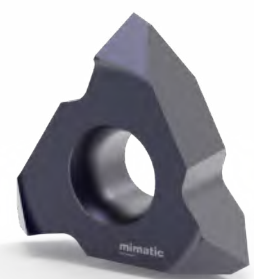
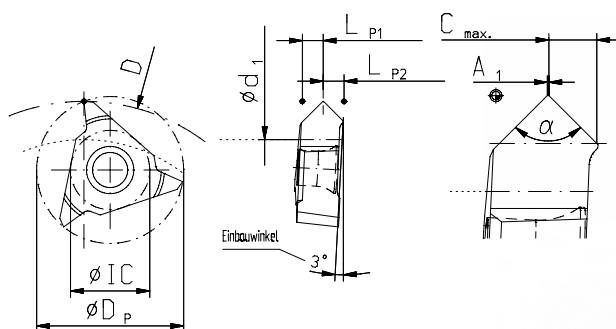
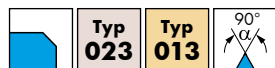


| Type | A<br>mm | A<br>inch | R<br>mm | DP<br>mm | IC<br>mm | LP1<br>mm | LP2*<br>mm | S max.<br>mm | Order No.<br>TINAMATIC            |
|------|---------|-----------|---------|----------|----------|-----------|------------|--------------|-----------------------------------|
| 023  | 1,0     | .039      | 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          | <a href="#">176709</a>            |
|      | 2,5     | .098      | 1,25    | 17,5     | 9,2      | 5,0       | –          | 3,0          | <a href="#">159832</a>            |
|      | 3,0     | .118      | 1,50    | 17,5     | 9,2      | 5,0       | –          | 2,0          | <a href="#">149845</a>            |
|      | 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          | <a href="#">201053</a> <b>NEW</b> |
|      | 5,0     | .197      | 2,50    | 17,5     | 9,2      | 5,43      | –          | 3,0          | <a href="#">149780</a>            |
|      | 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          | <a href="#">162406</a>            |
|      | 2,0     | .079      | 1,00    | 23,0     | 12,4     | 5,20      | 1,33       | 5,00         | <a href="#">160730</a>            |
|      | 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         | <a href="#">160956</a>            |
|      | 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         | <a href="#">186708</a>            |
|      | 5,0     | .197      | 2,50    | 23,0     | 12,4     | 6,08      | –          | 3,00         | <a href="#">149838</a>            |
|      | 6,0     | .236      | 3,00    | 23,0     | 12,4     | 5,88      | –          | 6,00         | <a href="#">149926</a>            |

\* not face cutting

## Chamfering and Deburring

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



| Type | D<br>mm | IC<br>mm | C max. x 45°<br>mm | A1<br>mm | LP1<br>mm | LP2<br>mm | Order No.<br>TINAMATIC |
|------|---------|----------|--------------------|----------|-----------|-----------|------------------------|
| 023  | 17,5    | 9,2      | 2,3                | 0,05     | 2,52      | 2,51      | <a href="#">142033</a> |
| 013  | 23,0    | 12,4     | 3,0                | 0,05     | 3,25      | 3,28      | <a href="#">177222</a> |

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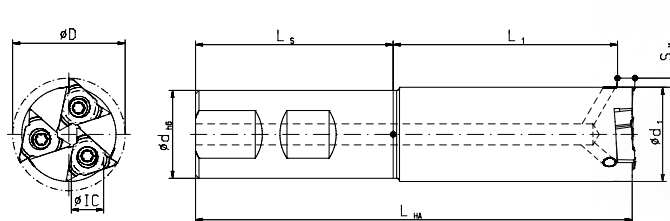
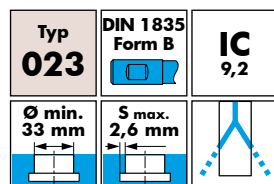
6

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**TriMILL 023**

## Circular Milling Tools

- Inserts see page 98-99
- Cutting data see page 166

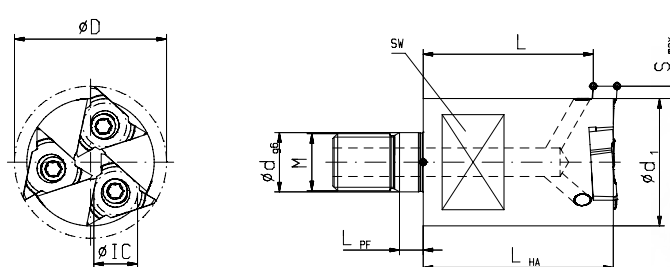
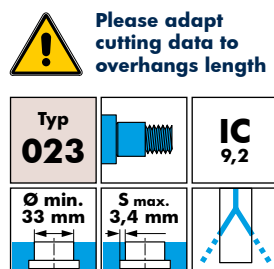


Spare part No.

| T15 IP<br>Screw-driver* | Screw *                |
|-------------------------|------------------------|
| <a href="#">111671</a>  | <a href="#">107547</a> |

Screw torque max. 3,8 Nm

- Tightening torques see page 94

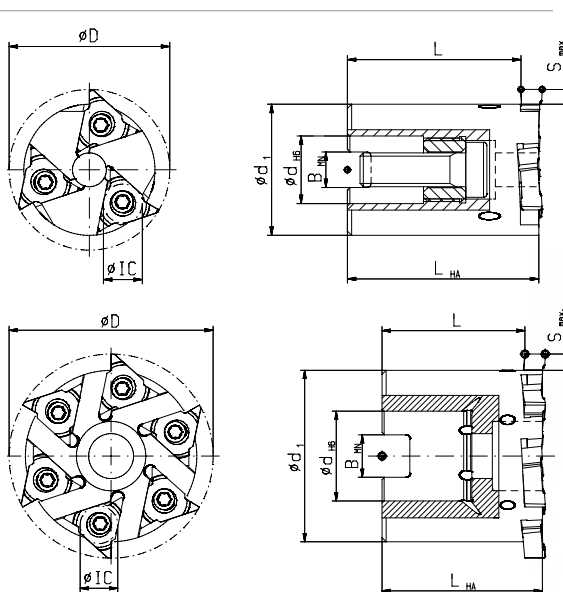
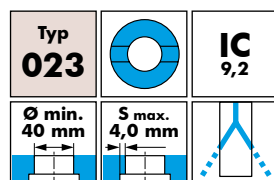


Spare part No.

| T15 IP<br>Screw-driver* | Screw *                |
|-------------------------|------------------------|
| <a href="#">111671</a>  | <a href="#">107547</a> |

Screw torque max. 3,8 Nm

- Assembly instruction see page 178



Accessories

Spare part No.

| Order No.              | D mm | d H6 mm | d1 mm | S max. mm | LHA mm | L mm  | BMN mm | Cutting edge | Key                    | Cutter fastening screw  | T15 IP<br>Screw-driver  | Screw                   |
|------------------------|------|---------|-------|-----------|--------|-------|--------|--------------|------------------------|-------------------------|-------------------------|-------------------------|
| <a href="#">123464</a> | 38   | 16      | 31    | 3,4       | 45,3   | 40,97 | 8,4    | 3            | <a href="#">134984</a> | <a href="#">114476*</a> | <a href="#">111671*</a> | <a href="#">107547*</a> |
| <a href="#">123461</a> | 50   | 22      | 42    | 3,9       | 39,3   | 34,97 | 10,4   | 6            |                        | <a href="#">114684*</a> | <a href="#">111671*</a> | <a href="#">107547*</a> |
| <a href="#">161485</a> | 63   | 27      | 55    | 4,0       | 39,3   | 34,97 | 12,4   | 8            |                        | <a href="#">114684*</a> | <a href="#">111671*</a> | <a href="#">107547*</a> |

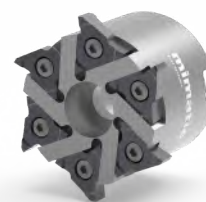
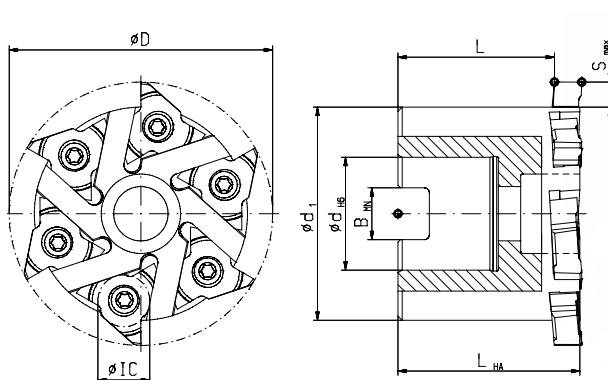
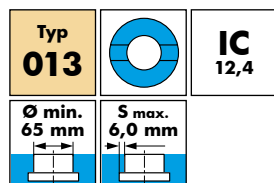
Screw torque max. 3,8 Nm

\* Screwdriver and clamping screw included in delivery

**TriMILL 013**

## Circular Milling Tools

- Inserts see page 98-99
- Cutting data see page 166



Spare part No.

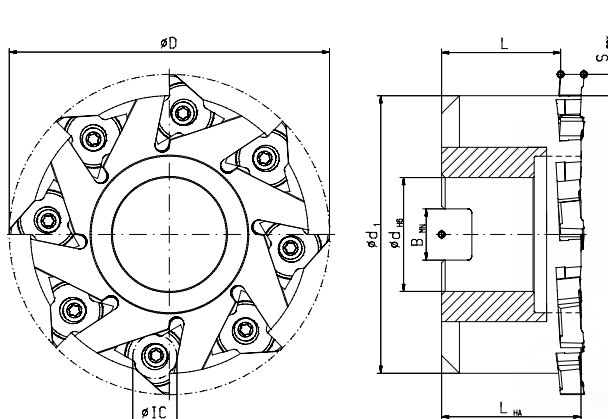
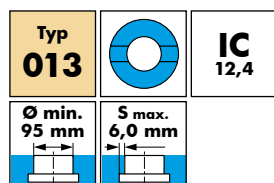
| T20 IP<br>Screw-driver * | Screw *                |
|--------------------------|------------------------|
| <a href="#">111594</a>   | <a href="#">107551</a> |

Screw torque 5,5 Nm

Cutter clamping screw internal hexagon

Order No. [114695](#)

CLICK  
ME!



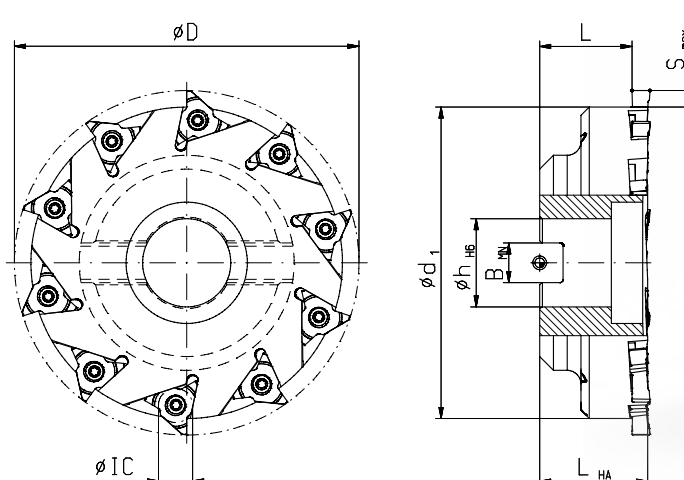
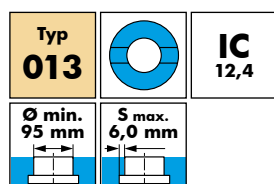
6

Spare part No.

| T20 IP<br>Screw-driver * | Screw *                |
|--------------------------|------------------------|
| <a href="#">111594</a>   | <a href="#">107551</a> |

Screw torque 5,5 Nm

CLICK  
ME!



Spare part No.

| T20 IP<br>Screw-driver * | Screw *                |
|--------------------------|------------------------|
| <a href="#">111594</a>   | <a href="#">107551</a> |

Screw torque 5,5 Nm

CLICK  
ME!

| Order No.              | D mm | d H6 mm | d1 mm | S max. mm | L HA mm | L mm | B MN mm | Inserts |
|------------------------|------|---------|-------|-----------|---------|------|---------|---------|
| <a href="#">134561</a> | 125  | 32      | 113   | 6,0       | 39,2    | 33,5 | 14,4    | 10      |

\* 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 Milling



Extended  
program

82-  
109

5

Contour and Radius Milling  
Chamfering, Deburring,  
undercut, dovetail



Extended  
program

110-  
125

6

## Sawing, Slitting

Sawing, Cutting, Slitting



Extended  
program

126-  
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 comparison to conventional solid carbide circular saws.





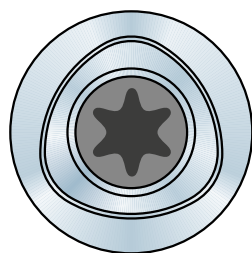
# PolySAW

## Sawing Tools in New Dimensions of Performance

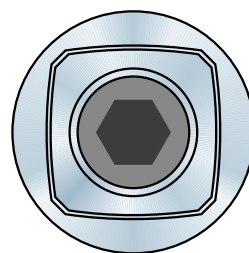


- With PolySAW profiles can be machined up to the shoulder
- On request: Increased sawing depths (S) achievable with reductions in speed/feed
- + **Re-sharpen-Service 2x**
- + Minimum distance for operations to shoulders: 0,001 mm

## 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

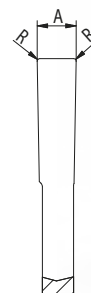
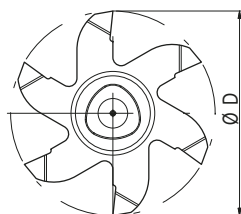
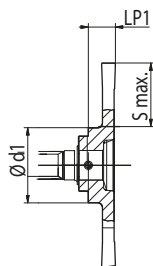
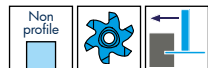
has evolved as well. Under the brand name mimatic Quadrogon, the interface has been optimized specifically for the needs of this new mimatic high-performance tool.

\* patent-protected.

## PolyMILL

### Slitting/Splitting, straight toothed

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

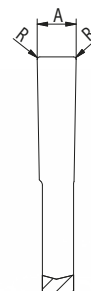
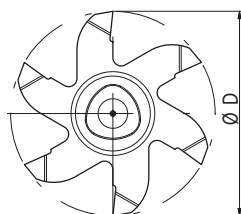
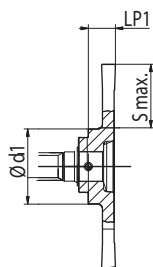
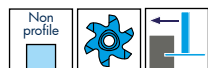


CLICK ME!

| Type |       | A<br>mm | A<br>inch | D<br>mm | Chip<br>angle | R<br>mm | LP1<br>mm | S <sub>max.</sub><br>mm | Number<br>of teeth | Order No.              |     |
|------|-------|---------|-----------|---------|---------------|---------|-----------|-------------------------|--------------------|------------------------|-----|
|      |       |         |           |         |               |         |           |                         |                    | TINAMATIC              |     |
| P25  | P2528 | 1,5     | .059      | 27,7    | 6°            | 0,1     | 4,9       | 6,8                     | 6                  | <a href="#">171981</a> |     |
|      | P2528 | 2,0     | .079      | 27,7    | 6°            | 0,1     | 4,9       | 6,8                     | 6                  | <a href="#">171982</a> |     |
|      | P2528 | 2,39    | .094      | 27,7    | 6°            | 0,15    | 4,9       | 6,8                     | 6                  | <a href="#">171983</a> |     |
|      | P2528 | 2,5     | .098      | 27,7    | 6°            | 0,15    | 4,9       | 6,8                     | 6                  | <a href="#">171984</a> |     |
|      | P2528 | 3,0     | .118      | 27,7    | 6°            | 0,15    | 4,9       | 6,8                     | 6                  | <a href="#">171985</a> |     |
|      | P2528 | 3,175   | .125      | 27,7    | 6°            | 0,15    | 5,0       | 6,8                     | 6                  | <a href="#">171986</a> |     |
|      | P2537 | 1,0     | .039      | 37,0    | 6°            | 0,15    | 4,9       | 11,5                    | 6                  | <a href="#">195886</a> | NEW |
|      | P2537 | 1,5     | .059      | 37,0    | 6°            | 0,15    | 4,9       | 11,5                    | 6                  | <a href="#">195900</a> | NEW |
|      | P2537 | 2,0     | .079      | 37,0    | 6°            | 0,15    | 4,9       | 11,5                    | 6                  | <a href="#">195903</a> | NEW |
|      | P2537 | 2,5     | .098      | 37,0    | 6°            | 0,15    | 4,9       | 11,5                    | 6                  | <a href="#">195904</a> | NEW |
|      | P2537 | 3,0     | .118      | 37,0    | 6°            | 0,15    | 4,9       | 11,5                    | 6                  | <a href="#">195905</a> | NEW |

### Slitting/separating, cross-toothed

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



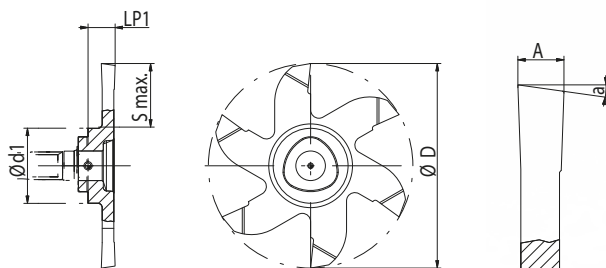
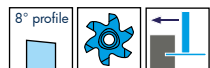
CLICK ME!

| Type |       | A<br>mm | A<br>inch | D<br>mm | Chip<br>angle | R<br>mm | LP1<br>mm | S <sub>max.</sub><br>mm | Number<br>of teeth | Order No.<br>TINAMATIC                                                                                       |
|------|-------|---------|-----------|---------|---------------|---------|-----------|-------------------------|--------------------|--------------------------------------------------------------------------------------------------------------|
| P25  | P2528 | 1,5     | .059      | 27,7    | 6°            | 0,1     | 4,9       | 6,8                     | 6                  | <a href="#">201415</a>                                                                                       |
|      | P2528 | 2,0     | .079      | 27,7    | 6°            | 0,1     | 4,9       | 6,8                     | 6                  | <a href="#">201416</a>                                                                                       |
|      | P2528 | 2,39    | .094      | 27,7    | 6°            | 0,15    | 4,9       | 6,8                     | 6                  | <a href="#">201417</a>                                                                                       |
|      | P2528 | 2,5     | .098      | 27,7    | 6°            | 0,15    | 4,9       | 6,8                     | 6                  | <a href="#">201418</a>                                                                                       |
|      | P2528 | 3,0     | .118      | 27,7    | 6°            | 0,15    | 4,9       | 6,8                     | 6                  | <a href="#">201419</a>                                                                                       |
|      | P2528 | 3,175   | .125      | 27,7    | 6°            | 0,15    | 5,0       | 6,8                     | 6                  | <a href="#">201420</a>                                                                                       |
|      | P2537 | 1,0     | .039      | 37,0    | 6°            | 0,15    | 4,9       | 11,5                    | 6                  | <a href="#">195906</a>  |
|      | P2537 | 1,5     | .059      | 37,0    | 6°            | 0,15    | 4,9       | 11,5                    | 6                  | <a href="#">195907</a>  |
|      | P2537 | 2,0     | .079      | 37,0    | 6°            | 0,15    | 4,9       | 11,5                    | 6                  | <a href="#">195909</a>  |
|      | P2537 | 2,5     | .098      | 37,0    | 6°            | 0,15    | 4,9       | 11,5                    | 6                  | <a href="#">195910</a>  |
|      | P2537 | 3,0     | .118      | 37,0    | 6°            | 0,15    | 4,9       | 11,5                    | 6                  | <a href="#">195911</a>  |

## PolyMILL

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

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

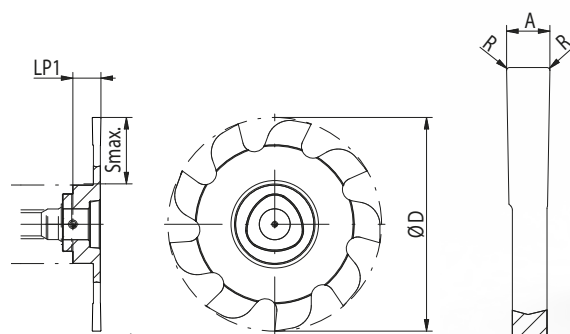
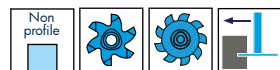


| Type |       | A<br>mm | D<br>mm | a<br>mm | Number<br>of teeth | S max. | Order No.                         |
|------|-------|---------|---------|---------|--------------------|--------|-----------------------------------|
|      |       |         |         |         |                    |        | TINAMATIC                         |
| P25  | P2537 | 1,0     | 37      | 8°      | 6                  | 11,5   | <a href="#">199222</a> <b>NEW</b> |
|      | P2537 | 1,5     | 37      | 8°      | 6                  | 11,5   | <a href="#">199702</a> <b>NEW</b> |
|      | P2537 | 2,0     | 37      | 8°      | 6                  | 11,5   | <a href="#">199281</a> <b>NEW</b> |
|      | P2537 | 2,5     | 37      | 8°      | 6                  | 11,5   | <a href="#">199705</a> <b>NEW</b> |

CLICK  
ME!

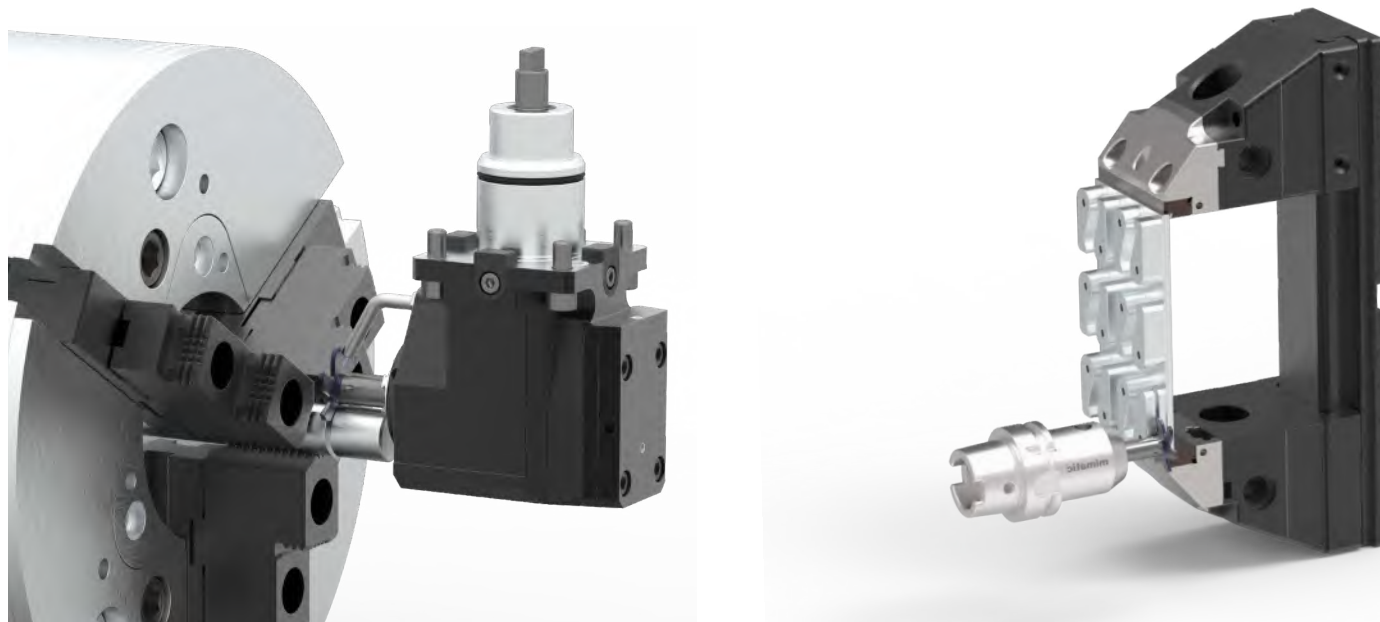
### Slitting/Splitting, z max for separating

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



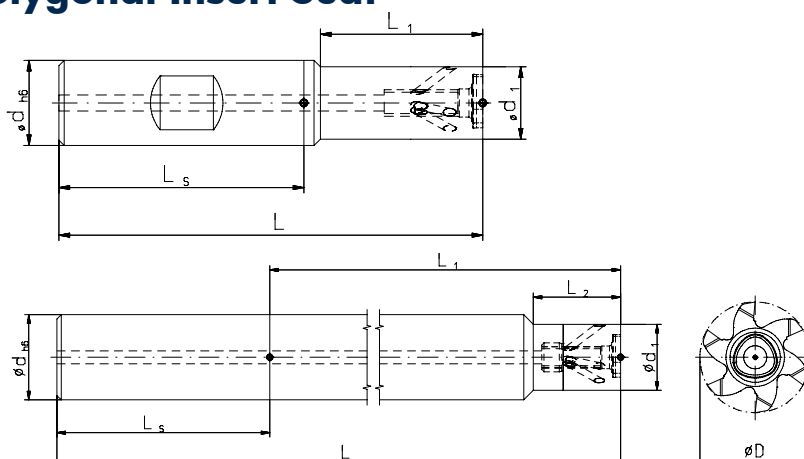
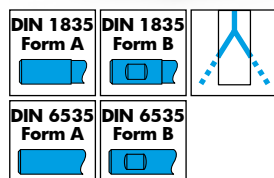
| Type |       | D<br>mm | LP1<br>mm | A<br>mm | R<br>mm | Number<br>of teeth | S max. | Order No.                                 |
|------|-------|---------|-----------|---------|---------|--------------------|--------|-------------------------------------------|
|      |       |         |           |         |         |                    |        | TINAMATIC                                 |
| P12  | P1214 | 14      | 3,5       | 1,5     | 0,1     | 6                  | 3,4    | <a href="#">198336</a> <small>NEW</small> |
| P16  | P1622 | 22      | 3,9       | 1,5     | 0,1     | 9                  | 6,4    | <a href="#">198337</a> <small>NEW</small> |
| P20  | P2032 | 32      | 4,9       | 1,5     | 0,1     | 9                  | 10,2   | <a href="#">198338</a> <small>NEW</small> |
| P25  | P2537 | 37      | 4,9       | 1,5     | 0,1     | 9                  | 11,5   | <a href="#">198339</a> <small>NEW</small> |

7  
CLICK  
ME!



## Circular Milling Tools with Polygonal Insert Seat

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



|      |                                   |      |           |          |                                     |         |          |          |         | Spare part No.                   |                                   |
|------|-----------------------------------|------|-----------|----------|-------------------------------------|---------|----------|----------|---------|----------------------------------|-----------------------------------|
| Type | Order No.                         | Form | dh6<br>mm | d1<br>mm | S <sub>max.</sub><br>(D-d1)/2<br>mm | L<br>mm | L1<br>mm | L2<br>mm | Shaft   | Screw-<br>driver *               | Screw *                           |
| P12  | <a href="#">177170</a>            | A    | 10        | 7,0      | 3,5                                 | 54      | 8        | -        | Steel   | T8 IP<br><a href="#">111656</a>  | M2,5x7<br><a href="#">107596</a>  |
|      | <a href="#">123619</a>            | B    | 12        | 7,0      | 3,5                                 | 67,5    | 20       | -        | Steel   |                                  |                                   |
|      | <a href="#">100228</a>            | B    | 12        | 7,0      | 3,5                                 | 67,5    | 20       | -        | Carbide |                                  |                                   |
|      | <a href="#">171778</a>            | A    | 12        | 7,0      | 3,5                                 | 67,5    | 20       | -        | Carbide |                                  |                                   |
|      | <a href="#">171780</a>            | B    | 12        | 7,0      | 3,5                                 | 80      | 30       | -        | Carbide |                                  |                                   |
|      | <a href="#">171781</a>            | A    | 12        | 7,0      | 3,5                                 | 80      | 30       | -        | Carbide |                                  |                                   |
|      | <a href="#">171783</a>            | B    | 12        | 7,0      | 3,5                                 | 100     | 40       | -        | Carbide |                                  |                                   |
|      | <a href="#">171784</a>            | A    | 12        | 7,0      | 3,5                                 | 100     | 40       | -        | Carbide |                                  |                                   |
| P16  | <a href="#">177174</a>            | A    | 10        | 9,0      | 6,5                                 | 60      | 11       | -        | Steel   | T8 IP<br><a href="#">111656</a>  | M3x12<br><a href="#">143158</a>   |
|      | <a href="#">123573</a>            | B    | 12        | 9,0      | 6,5                                 | 67,4    | 21       | -        | Steel   |                                  |                                   |
|      | <a href="#">123577</a>            | B    | 12        | 9,0      | 6,5                                 | 67,4    | 21       | -        | Carbide |                                  |                                   |
|      | <a href="#">171787</a>            | A    | 12        | 9,0      | 6,5                                 | 67,4    | 21       | -        | Carbide |                                  |                                   |
|      | <a href="#">123580</a>            | B    | 12        | 9,0      | 6,5                                 | 82,4    | 36       | -        | Carbide |                                  |                                   |
|      | <a href="#">171789</a>            | A    | 12        | 9,0      | 6,5                                 | 82,4    | 36       | -        | Carbide |                                  |                                   |
|      | <a href="#">123584</a>            | A    | 12        | 9,0      | 6,5                                 | 100     | 30       | -        | Carbide |                                  |                                   |
|      | <a href="#">123588</a>            | A    | 12        | 11,5     | 5,25                                | 82,4    | 37,4     | 13       | Carbide |                                  |                                   |
| P20  | <a href="#">123590</a>            | A    | 12        | 12,0     | 5,0                                 | 122,5   | 77,5     | -        | Carbide | T15 IP<br><a href="#">111671</a> | M4x13<br><a href="#">107597</a>   |
|      | <a href="#">177178</a>            | A    | 12        | 11,5     | 10,25                               | 62,4    | 14,4     | -        | Steel   |                                  |                                   |
|      | <a href="#">123615</a>            | B    | 16        | 11,5     | 10,25                               | 80      | 30       | -        | Steel   |                                  |                                   |
|      | <a href="#">123616</a>            | B    | 16        | 11,5     | 10,25                               | 80      | 30       | -        | Carbide |                                  |                                   |
|      | <a href="#">171794</a>            | A    | 16        | 11,5     | 10,25                               | 80      | 30       | -        | Carbide |                                  |                                   |
|      | <a href="#">123617</a>            | B    | 16        | 11,5     | 10,25                               | 100     | 50       | -        | Carbide |                                  |                                   |
|      | <a href="#">171796</a>            | A    | 16        | 11,5     | 10,25                               | 100     | 50       | -        | Carbide |                                  |                                   |
|      | <a href="#">174314</a>            | A    | 16        | 15,5     | 8,25                                | 105,5   | 57,5     | 20       | Carbide |                                  |                                   |
| P25  | <a href="#">177182</a>            | A    | 16        | 13,6     | 11,7                                | 69,6    | 20,4     | -        | Steel   | T20 IP<br><a href="#">111594</a> | M5x13,5<br><a href="#">107529</a> |
|      | <a href="#">123592</a>            | B    | 16        | 13,6     | 11,7                                | 79,6    | 30,5     | -        | Steel   |                                  |                                   |
|      | <a href="#">123598</a>            | B    | 16        | 13,6     | 11,7                                | 79,6    | 30,5     | -        | Carbide |                                  |                                   |
|      | <a href="#">171855</a>            | A    | 16        | 13,6     | 11,7                                | 79,6    | 30,5     | -        | Carbide |                                  |                                   |
|      | <a href="#">123600</a>            | B    | 16        | 13,6     | 11,7                                | 94,6    | 45,5     | -        | Carbide |                                  |                                   |
|      | <a href="#">171857</a>            | A    | 16        | 13,6     | 11,7                                | 94,6    | 45,5     | -        | Carbide |                                  |                                   |
|      | <a href="#">123603</a>            | B    | 16        | 13,6     | 11,7                                | 109,6   | 60,5     | -        | Carbide |                                  |                                   |
|      | <a href="#">171859</a>            | A    | 16        | 13,6     | 11,7                                | 109,6   | 60,5     | -        | Carbide |                                  |                                   |
|      | <a href="#">123609</a>            | A    | 16        | 15,5     | 10,75                               | 105     | 57       | 21,5     | Carbide |                                  |                                   |
|      | <a href="#">123611</a>            | A    | 16        | 15,5     | 10,75                               | 149,5   | 101,5    | 21,5     | Carbide |                                  |                                   |
|      | <a href="#">161205</a> <b>NEW</b> | A    | 20        | 15,5     | 10,75                               | 100     | 52       | 21,5     | Carbide |                                  |                                   |
|      | <a href="#">123613</a>            | A    | 20        | 15,5     | 10,75                               | 174,45  | 128,5    | 21,5     | Carbide |                                  |                                   |

Screw torques max.

|                        |        |        |
|------------------------|--------|--------|
| <a href="#">107596</a> | T08 IP | 1,0 Nm |
| <a href="#">143158</a> | T08 IP | 1,1 Nm |
| <a href="#">107597</a> | T15 IP | 3,8 Nm |
| <a href="#">107529</a> | T20 IP | 5,5 Nm |

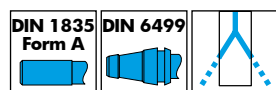
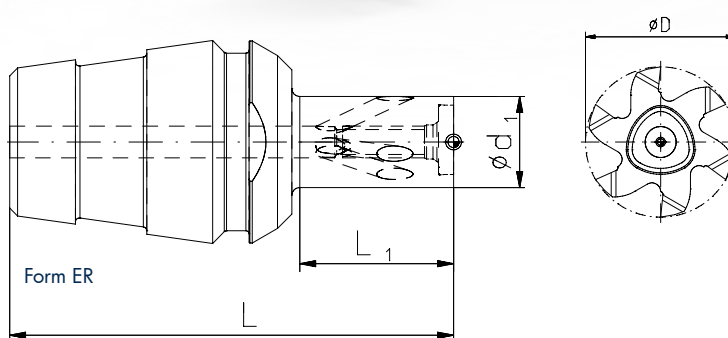
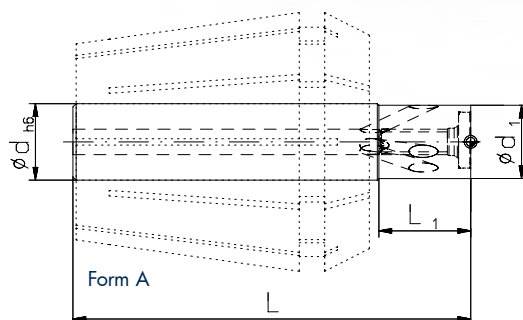
\* Screwdriver and clamping screw included in delivery

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## PolyMILL

### Circular Milling Tools for Driven Toolholders

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



| Type | Order No.              | Form  | dh6<br>mm | d1<br>mm | S <sub>max.</sub><br>(D-d1)/2<br>mm | L<br>mm | L1<br>mm | Shaft | Spare part No.                   |                                   |
|------|------------------------|-------|-----------|----------|-------------------------------------|---------|----------|-------|----------------------------------|-----------------------------------|
|      |                        |       |           |          |                                     |         |          |       | Screw-driver *                   | Screw *                           |
| P12  | <a href="#">177170</a> | A     | 10        | 7,0      | 3,5                                 | 54      | 8        | Steel | T8 IP<br><a href="#">111656</a>  | M2,5x7<br><a href="#">107596</a>  |
|      | <a href="#">177172</a> | ER 16 |           | 7,0      | 3,5                                 | 37,5    | 8        | Steel |                                  |                                   |
|      | <a href="#">177173</a> | ER 20 |           | 7,0      | 3,5                                 | 47      | 13       | Steel |                                  |                                   |
| P16  | <a href="#">177174</a> | A     | 10        | 9,0      | 6,5                                 | 60      | 11       | Steel | T8 IP<br><a href="#">111656</a>  | M3x12<br><a href="#">143158</a>   |
|      | <a href="#">177176</a> | ER 16 |           | 9,0      | 6,5                                 | 41,4    | 11       | Steel |                                  |                                   |
|      | <a href="#">177177</a> | ER 20 |           | 9,0      | 6,5                                 | 51      | 16       | Steel |                                  |                                   |
| P20  | <a href="#">177178</a> | A     | 12        | 11,5     | 10,25                               | 62,4    | 14,4     | Steel | T15 IP<br><a href="#">111671</a> | M4x13<br><a href="#">107597</a>   |
|      | <a href="#">177180</a> | ER 20 |           | 11,5     | 10,25                               | 49,5    | 14,5     | Steel |                                  |                                   |
|      | <a href="#">177181</a> | ER 25 |           | 11,5     | 10,2                                | 56      | 19,4     | Steel |                                  |                                   |
| P25  | <a href="#">177182</a> | A     | 16        | 13,6     | 11,7                                | 69,6    | 20,4     | Steel | T20 IP<br><a href="#">111594</a> | M5x13,5<br><a href="#">107529</a> |
|      | <a href="#">177184</a> | ER 25 |           | 13,6     | 11,7                                | 56      | 19,4     | Steel |                                  |                                   |
|      | <a href="#">177185</a> | ER 32 |           | 13,6     | 11,7                                | 73      | 30,4     | Steel |                                  |                                   |

Screw torques max.

|                        |        |        |
|------------------------|--------|--------|
| <a href="#">107596</a> | T8 IP  | 1,0 Nm |
| <a href="#">143158</a> | T8 IP  | 1,1 Nm |
| <a href="#">107597</a> | T15 IP | 3,8 Nm |
| <a href="#">107529</a> | 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

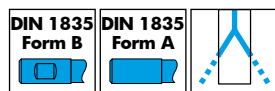
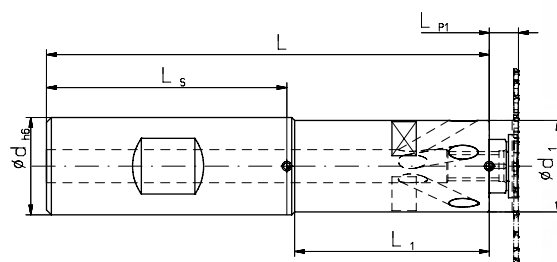
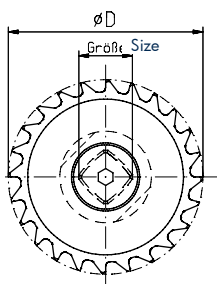
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7

## PolySAW Ø 32

### Basic Holders

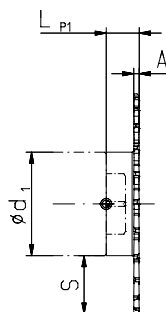
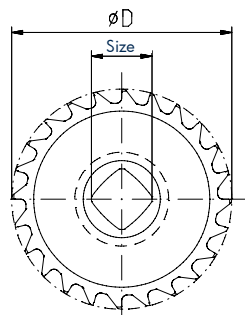
■ Cutting data see page 166



|      |     |        |        |      |       |       | Complete holder                                                           | Spare Parts **         |      |
|------|-----|--------|--------|------|-------|-------|---------------------------------------------------------------------------|------------------------|------|
| Size | Typ | dh6 mm | DIN    | L mm | L1 mm | d1 mm | Bestell-Nr.                                                               | Screwdriver *          | Size |
| Ø 32 | 11  | 20     | 1835 B | 91   | 40    | 18,8  | <a href="#">163701</a>                                                    | <a href="#">178296</a> | SW 3 |
|      | 11  | 20     | 1835 A | 91   | 40    | 18,8  | <a href="#">160050</a>                                                    | <a href="#">178296</a> | SW 3 |
|      | 9   | 20     | 1835 B | 86   | 35    | 16,8  | <a href="#">163700</a>                                                    | <a href="#">178297</a> | SW 4 |
|      | 9   | 20     | 1835 A | 86   | 35    | 16,8  | <a href="#">160049</a>                                                    | <a href="#">178297</a> | SW 4 |
|      |     |        |        |      |       |       | Screw torques max.<br>Typ 09 = M4 max. 3,8 Nm<br>Typ 11 = M6 max. 10,5 Nm |                        |      |

CLICK ME!

### Milling Discs



**i** Ask about our regrounding service!

| 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              | <a href="#">164430</a> | on request  |
|                                                 | 9    | 1,0  | 7,6       | 32   | 6      | 18              | <a href="#">164400</a> | on stock    |
|                                                 | 11   | 1,5  | 6,6       | 32   | 6      | 18              | <a href="#">164431</a> | on request  |
|                                                 | 9    | 1,5  | 7,6       | 32   | 6      | 18              | <a href="#">164401</a> | on stock    |
| Especially for aluminium processing:            |      |      |           |      |        |                 |                        |             |
| Ø 32                                            | 9    | 1,0  | 7,6       | 32   | 6      | 16              | <a href="#">179693</a> | on stock    |
|                                                 | 9    | 1,5  | 7,6       | 32   | 6      | 16              | <a href="#">179698</a> | on stock    |
| With 8° bevel for aluminium and steel machining |      |      |           |      |        |                 |                        |             |
| Ø 32                                            | 9    | 1,5  | 7,6       | 32   | 6      | 16              | <a href="#">204272</a> | on stock    |

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

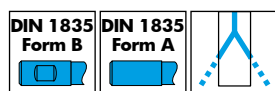
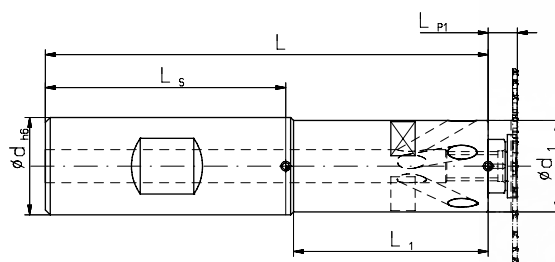
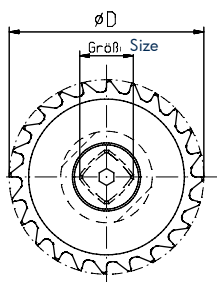
\* Screwdriver and clamping screw included in delivery  
\*\* More spare parts see page 153



## PolySAW Ø 40

### Basic Holders

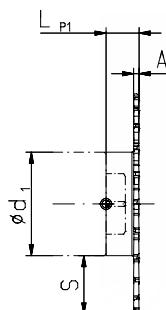
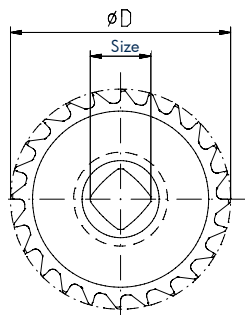
■ Cutting data see page 166



|      |     |        |        |      |       |       | Complete holder        | Spare Parts **         |      |
|------|-----|--------|--------|------|-------|-------|------------------------|------------------------|------|
| Size | Typ | dh6 mm | DIN    | L mm | L1 mm | d1 mm | Bestell-Nr.            | Screwdriver *          | Size |
| Ø 40 | 13  | 25     | 1835 B | 105  | 45    | 21,6  | <a href="#">163702</a> | <a href="#">178297</a> | SW 4 |
|      | 13  | 25     | 1835 A | 105  | 45    | 21,6  | <a href="#">160051</a> | <a href="#">178297</a> | SW 4 |
|      | 11  | 20     | 1835 B | 91   | 40    | 18,8  | <a href="#">163701</a> | <a href="#">178296</a> | SW 3 |
|      | 11  | 20     | 1835 A | 91   | 40    | 18,8  | <a href="#">160050</a> | <a href="#">178296</a> | SW 3 |

Screw torques max.  
Typ 11 = M6 max. 10,5 Nm  
Typ 13 = M8 max. 24,5 Nm

### Milling Discs



**i** Ask about our regrounding service!

| 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              | <a href="#">164432</a> | on request  |
|      | 11   | 1,0  | 10,6      | 40   | 6      | 24              | <a href="#">164406</a> | on stock    |
|      | 13   | 1,5  | 9,2       | 40   | 6      | 24              | <a href="#">164433</a> | on request  |
|      | 11   | 1,5  | 10,6      | 40   | 6      | 24              | <a href="#">164407</a> | on stock    |

Especially for aluminium processing:

|      |    |     |      |    |   |    |                        |          |
|------|----|-----|------|----|---|----|------------------------|----------|
| Ø 40 | 11 | 1,0 | 10,6 | 40 | 6 | 20 | <a href="#">179694</a> | on stock |
|      | 11 | 1,5 | 10,6 | 40 | 6 | 20 | <a href="#">179699</a> | on stock |

With 8° bevel for aluminium and steel machining

|      |    |     |      |    |   |    |                        |          |
|------|----|-----|------|----|---|----|------------------------|----------|
| Ø 40 | 11 | 1,5 | 10,6 | 40 | 6 | 20 | <a href="#">204273</a> | on stock |
|------|----|-----|------|----|---|----|------------------------|----------|

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

\* Screwdriver and clamping screw included in delivery  
\*\* More spare parts see page 153

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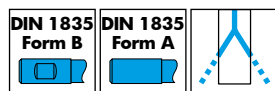
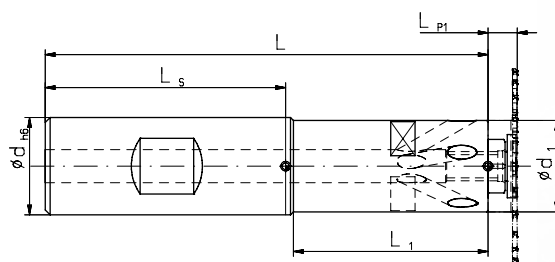
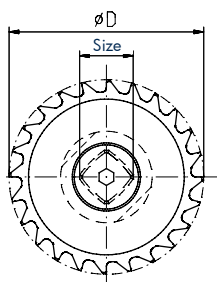
7

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## PolySAW Ø 50

### Basic Holders

■ Cutting data see page 166

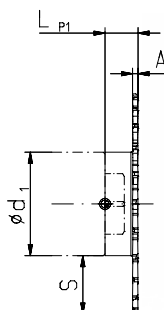
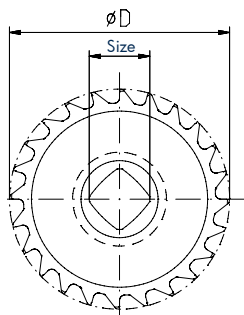


|      |      |        |        |      |       |       | Complete holder        | Spare Parts **         |      |
|------|------|--------|--------|------|-------|-------|------------------------|------------------------|------|
| Size | Type | dh6 mm | DIN    | L mm | L1 mm | d1 mm | Bestell-Nr.    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

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

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### Milling Discs



**i** Ask about our regrounding service!

| 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              | <a href="#">164434</a> | on request  |
|                                                 | 13   | 1,0  | 14,2      | 50   | 6      | 32              | <a href="#">164412</a> | on stock    |
|                                                 | 16   | 1,5  | 12,0      | 50   | 6      | 32              | <a href="#">164435</a> | on request  |
|                                                 | 13   | 1,5  | 14,2      | 50   | 6      | 32              | <a href="#">164413</a> | on stock    |
| Especially for aluminium processing:            |      |      |           |      |        |                 |                        |             |
| Ø 50                                            | 13   | 1,0  | 14,2      | 50   | 6      | 20              | <a href="#">179695</a> | on stock    |
|                                                 | 13   | 1,5  | 14,2      | 50   | 6      | 20              | <a href="#">179700</a> | on stock    |
| With 8° bevel for aluminium and steel machining |      |      |           |      |        |                 |                        |             |
| Ø 50                                            | 13   | 1,5  | 14,2      | 50   | 6      | 20              | <a href="#">204274</a> | on stock    |

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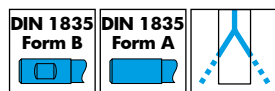
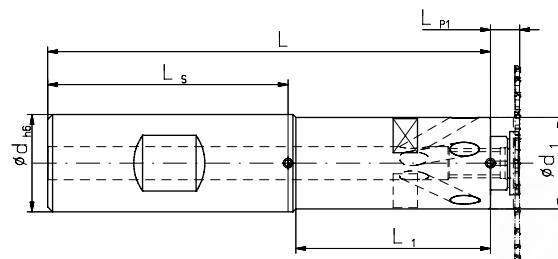
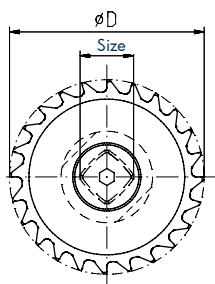
**i** Milling discs with larger cutting widths see chapter "Groove milling".

\* Screwdriver and clamping screw included in delivery  
\*\* More spare parts see page 153

## PolySAW Ø 63

### Basic Holders

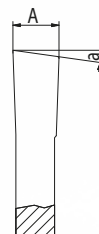
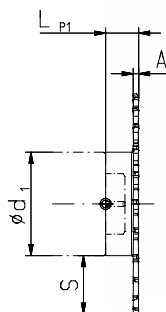
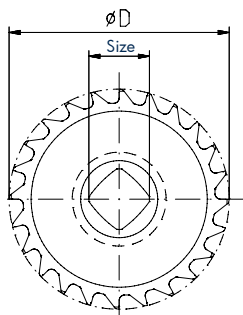
■ Cutting data see page 166



|      |      |        |        |      |       |       | 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    | <a href="#">163704</a> | <a href="#">178296</a> | SW 3 |
|      | 19   | 32     | 1835 A | 122  | 55    | 30    | <a href="#">160053</a> | <a href="#">178296</a> | SW 3 |
|      | 16   | 25     | 1835 B | 110  | 50    | 26    | <a href="#">163703</a> | <a href="#">178296</a> | SW 3 |
|      | 16   | 25     | 1835 A | 110  | 50    | 26    | <a href="#">160052</a> | <a href="#">178296</a> | SW 3 |

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

### Milling Discs



**i** Ask about our regrounding service!

| 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              | <a href="#">164436</a> | on request             |
|      | 16   | 1,0  | 18,5      | 63   | 6      | 40              | <a href="#">164418</a> | on stock               |
|      | 19   | 1,5  | 16,5      | 63   | 6      | 40              | <a href="#">164437</a> | <a href="#">164437</a> |
|      | 16   | 1,5  | 18,5      | 63   | 6      | 40              | <a href="#">164419</a> | on stock               |

Especially for aluminium processing:

|      |    |     |      |    |   |    |                        |          |
|------|----|-----|------|----|---|----|------------------------|----------|
| Ø 63 | 16 | 1,0 | 18,5 | 63 | 6 | 24 | <a href="#">179696</a> | on stock |
|      | 16 | 1,5 | 18,5 | 63 | 6 | 24 | <a href="#">179701</a> | on stock |

With 8° bevel for aluminium and steel machining

|      |    |     |      |    |   |    |                        |          |
|------|----|-----|------|----|---|----|------------------------|----------|
| Ø 63 | 16 | 1,5 | 18,5 | 63 | 6 | 24 | <a href="#">204275</a> | on stock |
|------|----|-----|------|----|---|----|------------------------|----------|

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

\* Screwdriver and clamping screw included in delivery  
\*\* More spare parts see page 153

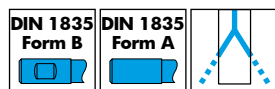
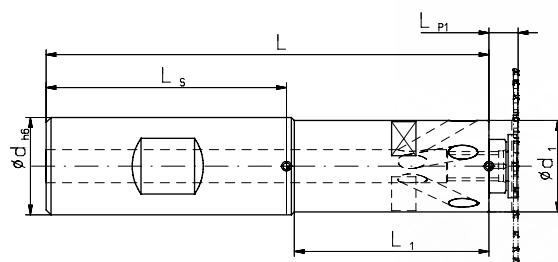
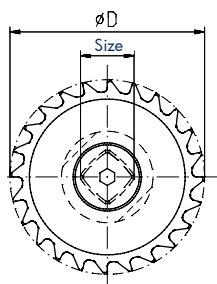
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## PolySAW Ø 80

### Basic Holders

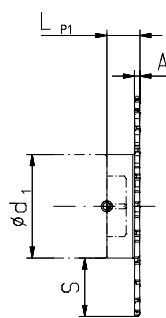
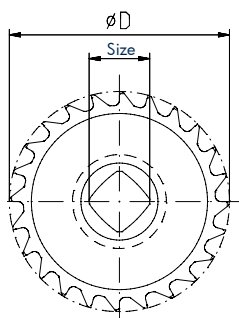
■ Cutting data see page 166



|      |      |        |        |      |       |       | 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    | <a href="#">163704</a> | <a href="#">178296</a> | SW 3 |
|      | 19   | 32     | 1835 A | 122  | 55    | 30    | <a href="#">160053</a> | <a href="#">178296</a> | SW 3 |
|      | 25   | 32     | 1835 B | 127  | 60    | 38,2  | <a href="#">163705</a> | <a href="#">178297</a> | SW 4 |
|      | 25   | 32     | 1835 A | 127  | 60    | 38,2  | <a href="#">160054</a> | <a href="#">178297</a> | SW 4 |

Screw torques max.  
Type 19 = M6 max. 10,5 Nm  
Type 25 = M8 max. 24,5 Nm

### Milling Discs



**i** Ask about our regrounding service!

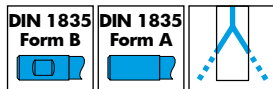
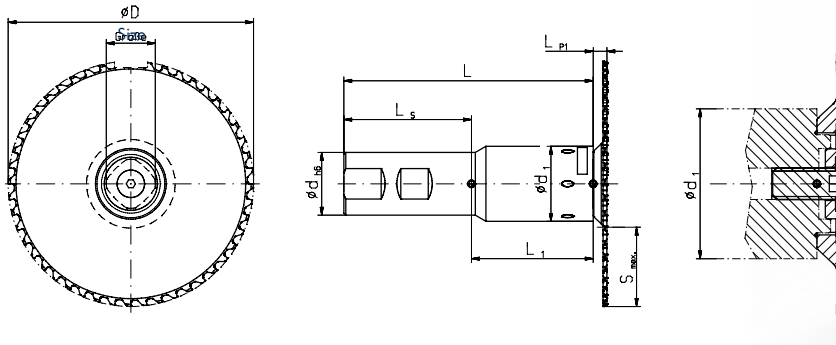
| Size                                            | Type | A mm | S max. mm | D mm | LP1 mm | Number of teeth | Order No. TINAMATIC    | Deliverable |
|-------------------------------------------------|------|------|-----------|------|--------|-----------------|------------------------|-------------|
| Ø 80                                            | 25   | 1,0  | 20,9      | 80   | 6      | 40              | <a href="#">164438</a> | on stock    |
|                                                 | 19   | 1,0  | 25,0      | 80   | 6      | 40              | <a href="#">164424</a> | on stock    |
|                                                 | 25   | 1,5  | 20,9      | 80   | 6      | 40              | <a href="#">164439</a> | on request  |
|                                                 | 19   | 1,5  | 25,0      | 80   | 6      | 40              | <a href="#">164425</a> | on stock    |
| Especially for aluminium processing:            |      |      |           |      |        |                 |                        |             |
| Ø 80                                            | 19   | 1,0  | 25,0      | 80   | 6      | 24              | <a href="#">179697</a> | on stock    |
|                                                 | 19   | 1,5  | 25,0      | 80   | 6      | 24              | <a href="#">179702</a> | on stock    |
| With 8° bevel for aluminium and steel machining |      |      |           |      |        |                 |                        |             |
| Ø 80                                            | 19   | 1,5  | 25,0      | 80   | 6      | 24              | <a href="#">204276</a> | on stock    |

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

# PolySAW Ø 100+125

## Basic Holders

■ Cutting data see page 166

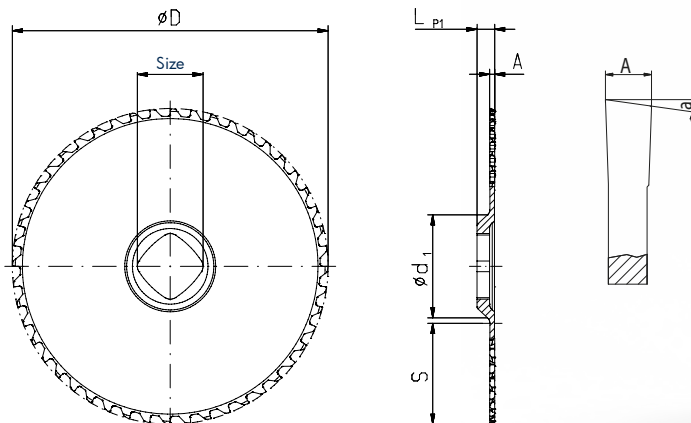


**i** Interface 25L, optimised for large diameters!

|           |      |        |        |      |       |       | Complete holder                                 | Spare Parts **         |      |
|-----------|------|--------|--------|------|-------|-------|-------------------------------------------------|------------------------|------|
| Size      | Type | dh6 mm | DIN    | L mm | L1 mm | d1 mm | Bestell-Nr.                                     | Screwdriver *          | Size |
| Ø 100+125 | 25   | 32     | 1835 B | 127  | 60    | 38,2  | <a href="#">160870</a>                          | <a href="#">178297</a> | SW 4 |
|           | 25   | 32     | 1835 A | 127  | 60    | 38,2  | <a href="#">160888</a>                          | <a href="#">178297</a> | SW 4 |
|           |      |        |        |      |       |       | Screw torques max.<br>Type 25 = M8 max. 24,5 Nm |                        |      |

CLICK ME!

## Milling Discs



7

**i** Ask about our regrounding service!

| Size  | Type | A mm | S max. mm | D mm | LP1 mm | Number of teeth | Order No. TINAMATIC    | Deliverable |
|-------|------|------|-----------|------|--------|-----------------|------------------------|-------------|
| Ø 100 | 25L  | 2    | 30        | 100  | 7      | 44              | <a href="#">188390</a> | on stock    |
| Ø 125 | 25L  | 2    | 40        | 125  | 7      | 48              | <a href="#">187340</a> | on stock    |

CLICK ME!

As above with 8° bevel for burr-free cutting

| Size  | Type | A mm | S max. mm | D mm | LP1 mm | Number of teeth | Order No. TINAMATIC    | Deliverable |
|-------|------|------|-----------|------|--------|-----------------|------------------------|-------------|
| Ø 100 | 25L  | 2    | 30        | 100  | 7      | 44              | <a href="#">205802</a> | on stock    |
| Ø 125 | 25L  | 2    | 40        | 125  | 7      | 48              | <a href="#">205803</a> | on stock    |

CLICK ME!

Specially designed for aluminium processing

| Size  | Type | A mm | S max. mm | D mm | LP1 mm | Number of teeth | Order No. TINAMATIC    | Deliverable |
|-------|------|------|-----------|------|--------|-----------------|------------------------|-------------|
| Ø 100 | 25L  | 2    | 30        | 100  | 7      | 44              | <a href="#">206822</a> | on stock    |
| Ø 125 | 25L  | 2    | 40        | 125  | 7      | 48              | <a href="#">206823</a> | on stock    |

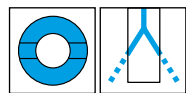
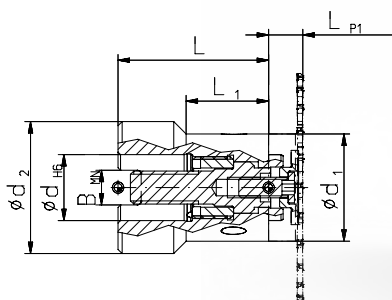
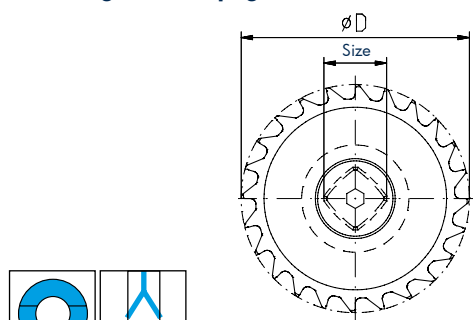
CLICK ME!

\* Screwdriver and clamping screw included in delivery  
\*\* More spare parts see page 153

## PolySAW

### Basic Holders with Location Bore

■ Cutting data see page 166

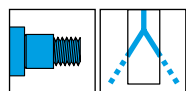
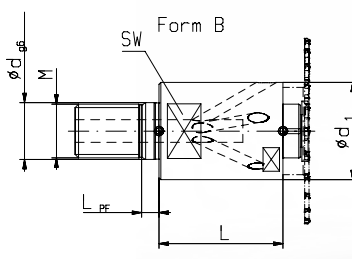
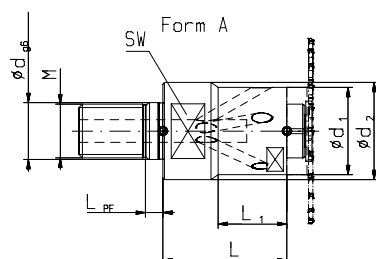


| Type | dH6<br>mm | BMN<br>mm | L<br>mm | L1<br>mm | d1<br>mm | d2<br>mm | Complete holder                   | Accessories            | Spare Parts **         |      |
|------|-----------|-----------|---------|----------|----------|----------|-----------------------------------|------------------------|------------------------|------|
|      |           |           |         |          |          |          | Bestell-Nr.                       | Key                    | Screwdriver *          | Size |
| 16   | 16        | 8,4       | 36,5    | 20       | 26       | 32       | <a href="#">179727</a>            | <a href="#">134984</a> | <a href="#">178296</a> | SW 3 |
| 19   | 16        | 8,4       | 36,5    | 20       | 30       | 32       | <a href="#">179728</a>            | <a href="#">134984</a> | <a href="#">178296</a> | SW 3 |
| 25*  | 16        | 8,4       | 36,5    | 20       | 29       | 32       | <a href="#">156493</a>            |                        | <a href="#">178297</a> | SW 4 |
| 25*  | 22        | 10,4      | 50,0    | 20       | 38,2     | 40       | <a href="#">179817</a> <b>NEW</b> |                        | <a href="#">178297</a> | SW 4 |
| 25L  | 22        | 10,4      | 50,0    | 20       | 38,2     | 40       | <a href="#">206741</a>            |                        | <a href="#">178297</a> | SW 4 |

\* not suitable for Ø100 and Ø125

### Basic Holders with Screw-in Thread

■ Cutting data see page 166

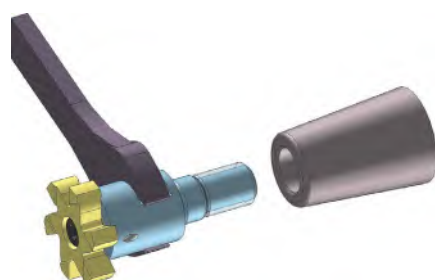


Please adapt cutting data to overhangs length

| Type | Order No.                         | Form | d1<br>mm | d2<br>mm | L<br>mm | L1<br>mm | M   | dG6 | L PF | Spare part No.         |      |
|------|-----------------------------------|------|----------|----------|---------|----------|-----|-----|------|------------------------|------|
|      |                                   |      |          |          |         |          |     |     |      | Screw-driver *         | Size |
| 16   | <a href="#">191777</a> <b>NEW</b> | A    | 26       | 29       | 36,5    | 20       | M16 | 17  | 5,5  | <a href="#">178296</a> | SW3  |
| 19   | <a href="#">191778</a> <b>NEW</b> | B    | 30       | -        | 36,5    | -        | M16 | 17  | 5,5  | <a href="#">178296</a> | SW3  |
| 25*  | <a href="#">206004</a>            | B    | 30       | -        | 36,5    | -        | M16 | 17  | -    | <a href="#">178297</a> | SW4  |
| 25L  | <a href="#">206730</a>            | B    | 30       | -        | 36,5    | -        | M16 | 17  | -    | <a href="#">178297</a> | SW4  |

\* not suitable for Ø100 and Ø125

■ Recommended tightening torque for screw-in circular milling body  
■ End-wrench see page 163



| 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                   |

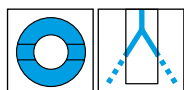
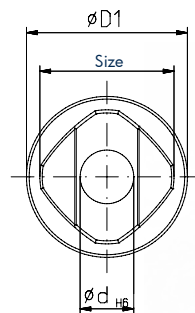
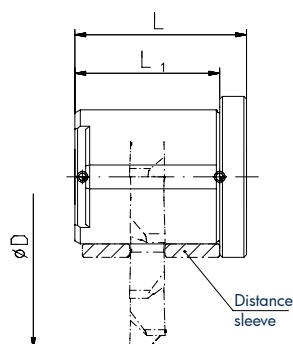
\* Screwdriver and clamping screw included in delivery  
\*\* More spare parts see page 153



## PolySAW

### Saw Blade Arbors for mimatic Saw Blade Holders

■ Cutting data see page 166



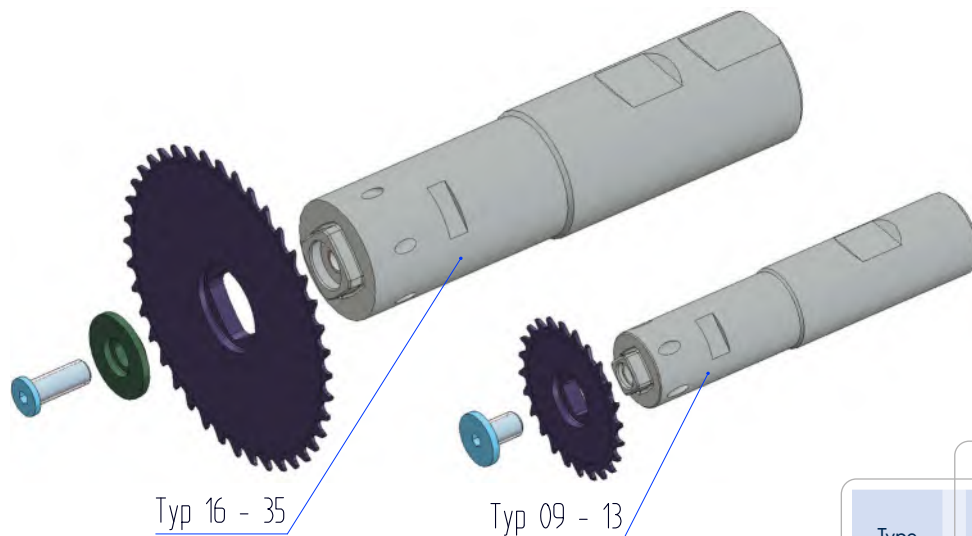
**When using PolySaw ECO, as well as DeepMill ECO, the cutting depth is reduced by 6 or 7 mm**

| System | Typ | dH6<br>mm | L<br>mm | L1<br>mm | D1<br>mm | Complete holder        | Spare Parts **         |      |
|--------|-----|-----------|---------|----------|----------|------------------------|------------------------|------|
|        |     |           |         |          |          | Bestell-Nr.            | Screwdriver *          | Size |
| ECO    | 25  | 10        | 32      | 27       | 30       | <a href="#">179252</a> | <a href="#">178297</a> | SW 4 |
|        | 35  | 10        | 32      | 27       | 30       | <a href="#">180316</a> | <a href="#">178297</a> | SW 4 |

Screw torques max.  
Type 35 = M8 max. 24,5 Nm  
Type 25 = M8 max. 24,5 Nm

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### 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          | <a href="#">163842</a> | —                      |
| 11          | <a href="#">163843</a> | —                      |
| 13          | <a href="#">163844</a> | —                      |
| 16          | <a href="#">163850</a> | <a href="#">175027</a> |
| 19          | <a href="#">163848</a> | <a href="#">163845</a> |
| 25          | <a href="#">163849</a> | <a href="#">163846</a> |
| 35          | <a href="#">163849</a> | <a href="#">163847</a> |

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

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# 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

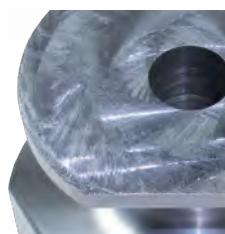
Material: steel  
 $R_z = 1,0 - 2,7$   
 $R_a = 0,17 - 0,53$   
 $f_z = 0,015 - 0,03 \text{ mm}$   
 $V_c = 120 - 200 \text{ m/min}$



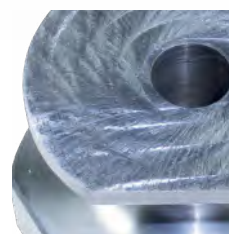
Material: aluminium  
 $R_z = 1,7 - 2,8$   
 $R_a = 0,36 - 0,6$   
 $f_z = 0,02 - 0,03 \text{ mm}$   
 $V_c = 200 - 600 \text{ m/min}$



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  
 $V_c = 300 \text{ m/min}$   
 $F_z = 0,08 \text{ mm}$



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 Milling



Extended  
program

82-  
109

5

Contour and Radius Milling  
Chamfering, Deburring,  
undercut, dovetail



Extended  
program

110-  
125

6

## Sawing, Slitting

Sawing, Cutting, Slitting



Extended  
program

126-  
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





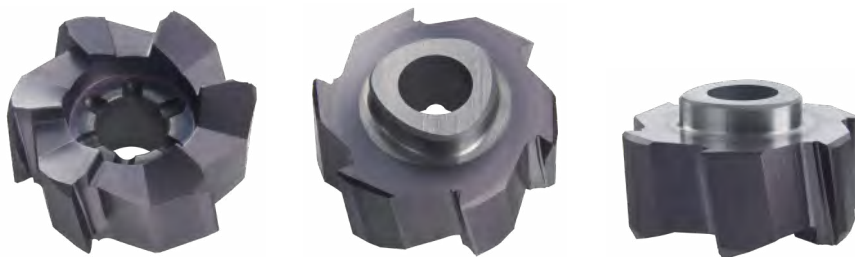
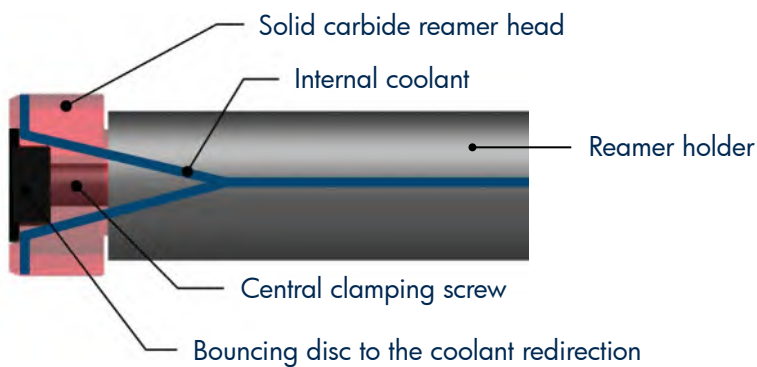
## Order-Key for Your Individual Customizing of Reamers

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.

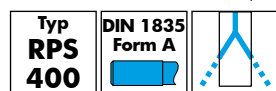
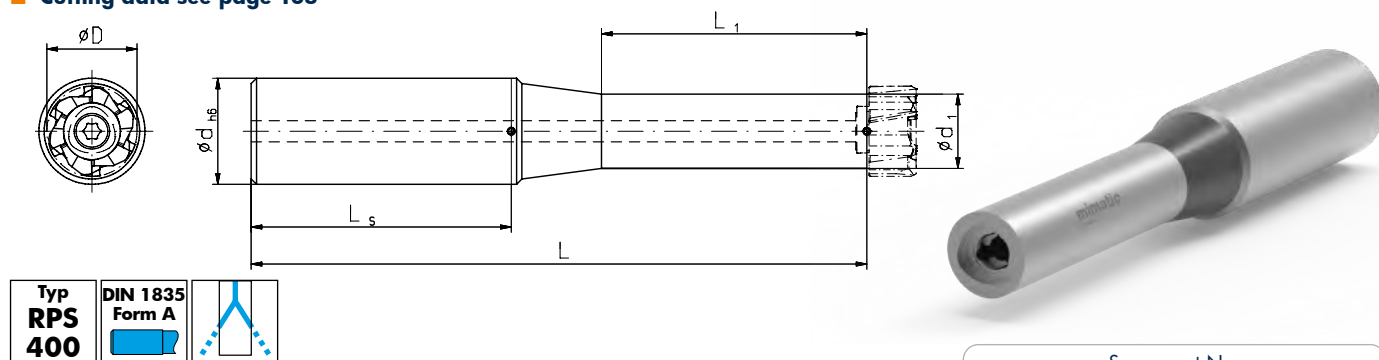
| Type                                                                                                                     | Size                                             | Diameter                            | Tolerance         | Gate geometry                       | Cutting mat. | Coating                                           |
|--------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-------------------------------------|-------------------|-------------------------------------|--------------|---------------------------------------------------|
| RPK 40 = Straight grooves for blind bores<br><br>RPK 42 = Left-hand twist for through holes<br>RPK 44 = Right-hand twist | J = 16<br>M = 20<br>G = 12 (P12)<br>N > 20 (P25) | Specifying in mm<br><br>Reamers P25 | • +10 -10<br>• H7 | see page 152 and in the table below | 1 = Carbide  | 0 = without (blank)<br>1 = TINAMATIC (Thin layer) |
| <b>Example:</b>                                                                                                          |                                                  |                                     |                   |                                     |              |                                                   |
| 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 152
- Cutting data see page 168



| 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          | <a href="#">169208</a> | 12,00-16,20 | 3 x D          | 16      | 11    | 9    | 101  | 38    | RPS400J3D6  | Steel      | <a href="#">111671</a>      | <a href="#">107473</a> | <a href="#">107536</a> |
| J          | <a href="#">169209</a> | 12,00-16,20 | 5 x D          | 16      | 11    | 9    | 131  | 68    | RPS400J5D6  | Steel      | <a href="#">111671</a>      | <a href="#">107473</a> | <a href="#">107536</a> |
| M          | <a href="#">169210</a> | 16,21-20,20 | 3 x D          | 20      | 14    | 9    | 116  | 50    | RPS400M3D6  | Steel      | <a href="#">111594</a>      | <a href="#">169815</a> | <a href="#">169812</a> |
| M          | <a href="#">169211</a> | 16,21-20,20 | 5 x D          | 20      | 14    | 9    | 166  | 100   | RPS400M5D6  | Steel      | <a href="#">111594</a>      | <a href="#">169815</a> | <a href="#">169812</a> |

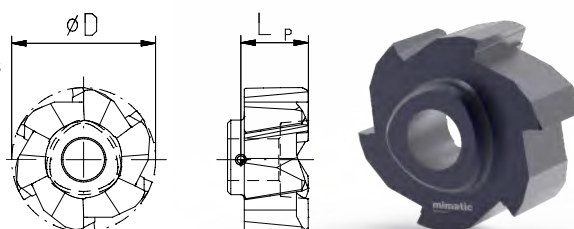
\* Screwdriver and clamping screw included in delivery

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

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## Reamer Heads with Polygonal Interface

- Chip grooves with left-hand twist for through holes
- For steel materials (P, M)
- Cutting data see page 168



| 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 | <a href="#">169490</a> |
| J          | RPK 42 | 13,00 | H7        | 9,4   | 6               | LBG           | RPK42J13,00H7LBG11 | <a href="#">169492</a> |
| J          | RPK 42 | 14,00 | H7        | 9,4   | 6               | LBG           | RPK42J14,00H7LBG11 | <a href="#">169494</a> |
| J          | RPK 42 | 15,00 | H7        | 9,4   | 6               | LBG           | RPK42J15,00H7LBG11 | <a href="#">169496</a> |
| J          | RPK 42 | 16,00 | H7        | 9,4   | 6               | LBG           | RPK42J16,00H7LBG11 | <a href="#">169498</a> |
| M          | RPK 42 | 17,00 | H7        | 9,4   | 6               | LBG           | RPK42M17,00H7LBG11 | <a href="#">169500</a> |
| M          | RPK 42 | 18,00 | H7        | 9,4   | 6               | LBG           | RPK42M18,00H7LBG11 | <a href="#">169502</a> |
| M          | RPK 42 | 19,00 | H7        | 9,4   | 6               | LBG           | RPK42M19,00H7LBG11 | <a href="#">169504</a> |
| M          | RPK 42 | 20,00 | H7        | 9,4   | 6               | LBG           | RPK42M20,00H7LBG11 | <a href="#">169506</a> |

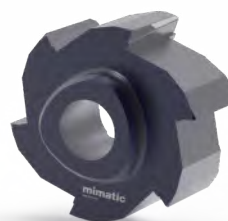
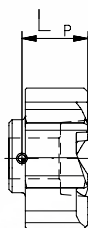
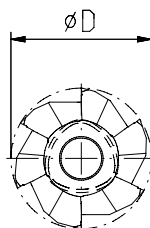
Please generate order-key for individual customizing and intermediate sizes (see page 149)

CLICK ME!

# PolyREAM

## Reamer Heads with Polygonal Interface

- Straight chip grooves for blind bores
- For steel materials (P, M)
- Cutting data see page 168



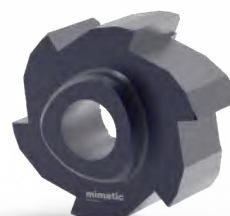
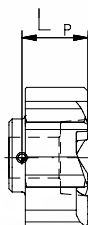
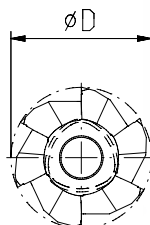
Please generate order-key for individual customizing and intermediate sizes (see page 149)



| 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 | <a href="#">169489</a> |
| J          | RPK 40 | 13,00 | H7        | 9,4   | 6               | LBG           | RPK40J13,00H7LBG11 | <a href="#">169491</a> |
| J          | RPK 40 | 14,00 | H7        | 9,4   | 6               | LBG           | RPK40J14,00H7LBG11 | <a href="#">169493</a> |
| J          | RPK 40 | 15,00 | H7        | 9,4   | 6               | LBG           | RPK40J15,00H7LBG11 | <a href="#">169495</a> |
| J          | RPK 40 | 16,00 | H7        | 9,4   | 6               | LBG           | RPK40J16,00H7LBG11 | <a href="#">169497</a> |
| M          | RPK 40 | 17,00 | H7        | 9,4   | 6               | LBG           | RPK40M17,00H7LBG11 | <a href="#">169499</a> |
| M          | RPK 40 | 18,00 | H7        | 9,4   | 6               | LBG           | RPK40M18,00H7LBG11 | <a href="#">169501</a> |
| M          | RPK 40 | 19,00 | H7        | 9,4   | 6               | LBG           | RPK40M19,00H7LBG11 | <a href="#">169503</a> |
| M          | RPK 40 | 20,00 | H7        | 9,4   | 6               | LBG           | RPK40M20,00H7LBG11 | <a href="#">169505</a> |

CLICK ME!

- Straight chip grooves for blind bores
- For cast iron materials (K)
- Cutting data see page 168



Please generate order-key for individual customizing and intermediate sizes (see page 149)

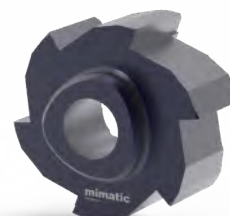
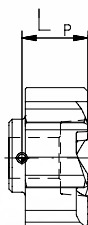
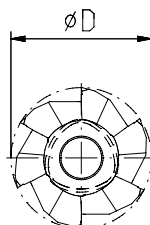


| Shank size | Type   | D mm  | Tolerance | LP mm | Number of edges | Gate geometry | Description        | Order No. TINAMATIC    |
|------------|--------|-------|-----------|-------|-----------------|---------------|--------------------|------------------------|
| J          | RPK 40 | 12,00 | H7  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

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8

- Straight chip grooves for blind bores
- For aluminium cast alloys (N)
- Cutting data see page 168

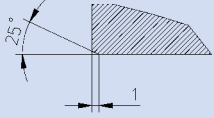
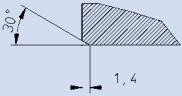
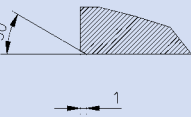
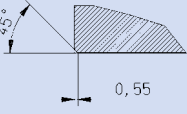
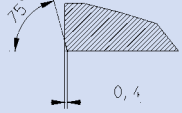
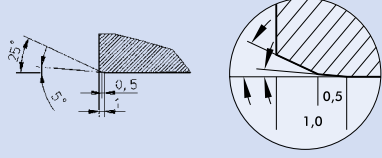
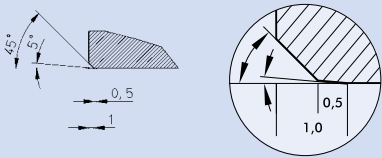
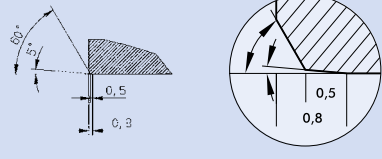


Please generate order-key for individual customizing and intermediate sizes (see page 149)



| 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 | <a href="#">169946</a> |
| J          | RPK 40 | 13,00 | H7        | 9,4   | 6               | CNG           | RPK40J13,00H7CNG11 | <a href="#">169948</a> |
| J          | RPK 40 | 14,00 | H7        | 9,4   | 6               | CNG           | RPK40J14,00H7CNG11 | <a href="#">169950</a> |
| J          | RPK 40 | 15,00 | H7        | 9,4   | 6               | CNG           | RPK40J15,00H7CNG11 | <a href="#">169952</a> |
| J          | RPK 40 | 16,00 | H7        | 9,4   | 6               | CNG           | RPK40J16,00H7CNG11 | <a href="#">169954</a> |
| M          | RPK 40 | 17,00 | H7        | 9,4   | 6               | CNG           | RPK40M17,00H7CNG11 | <a href="#">169956</a> |
| M          | RPK 40 | 18,00 | H7        | 9,4   | 6               | CNG           | RPK40M18,00H7CNG11 | <a href="#">169958</a> |
| M          | RPK 40 | 19,00 | H7        | 9,4   | 6               | CNG           | RPK40M19,00H7CNG11 | <a href="#">169960</a> |
| M          | RPK 40 | 20,00 | H7        | 9,4   | 6               | CNG           | RPK40M20,00H7CNG11 | <a href="#">169962</a> |

CLICK ME!

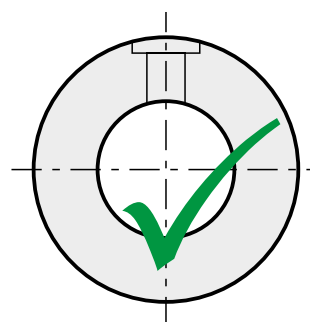
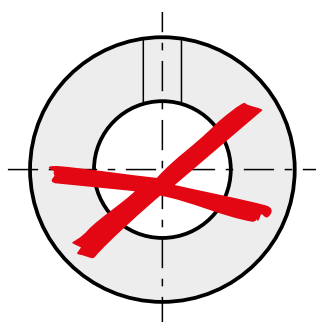
| Gate geometry                                                                       | Code     | Chip breaker |          | Chip angle |          | Gate code        |
|-------------------------------------------------------------------------------------|----------|--------------|----------|------------|----------|------------------|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

## PolyREAM

### Ream Addition

| Ream diameter<br>(mm) | Ream addition<br>(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®<br>driver   | Size | Torx®<br>driver        | Size   | Allen wrench<br>DIN 911 | Size  | Open-end<br>wrench<br>DIN 894 |
|--------|------------------------|------|------------------------|--------|-------------------------|-------|-------------------------------|
| T6 IP  | <a href="#">111705</a> | T6   | <a href="#">111674</a> | SW 2   | <a href="#">107577</a>  | SW 10 | <a href="#">107525</a>        |
| T8 IP  | <a href="#">111656</a> | T8   | <a href="#">111544</a> | SW 2,5 | <a href="#">107583</a>  | SW 13 | <a href="#">107526</a>        |
| T15 IP | <a href="#">111671</a> | T15  | <a href="#">111651</a> | SW 3   | <a href="#">107578</a>  | SW 16 | <a href="#">107579</a>        |
| T20 IP | <a href="#">111594</a> | T20  | <a href="#">111684</a> | SW 4   | <a href="#">107620</a>  | SW 17 | <a href="#">107575</a>        |
|        |                        |      |                        | SW 5   | <a href="#">107584</a>  | SW 19 | <a href="#">107533</a>        |
|        |                        |      |                        | SW 6   | <a href="#">107601</a>  | SW 22 | <a href="#">107633</a>        |
|        |                        |      |                        | SW 8   | <a href="#">107556</a>  | SW 24 | <a href="#">107627</a>        |

**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 Milling



Extended  
program

82-  
109

5

Contour and Radius Milling  
Chamfering, Deburring,  
undercut, dovetail



Extended  
program

110-  
125

6

## Sawing, Slitting

Sawing, Cutting, Slitting



Extended  
program

126-  
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

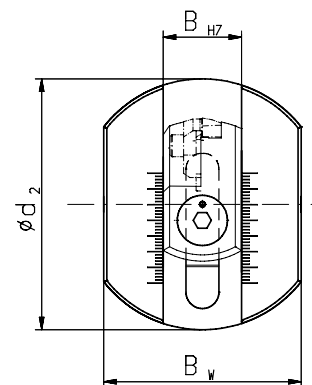
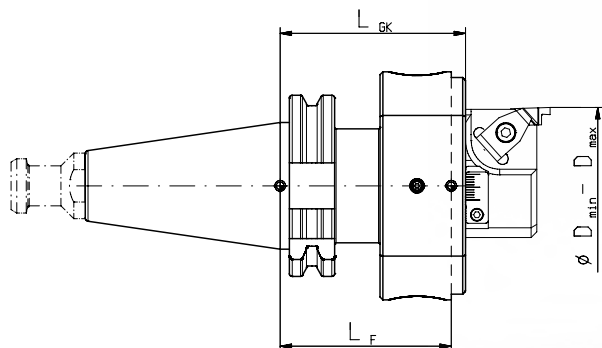
## Axial Cutting Tools

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

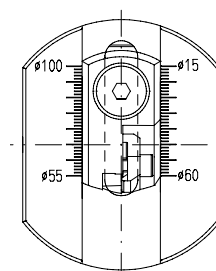
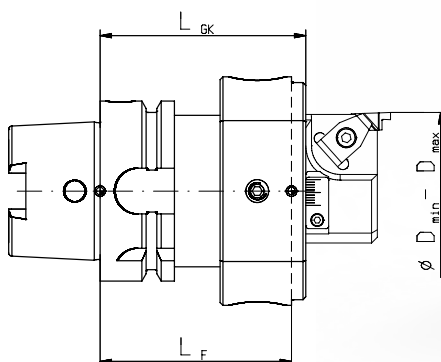


Up to diameter  $\varnothing 28$  also  
as PolyMILL fixed size

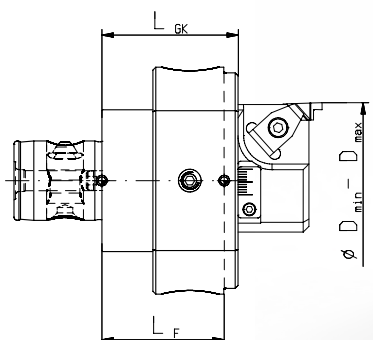
### ISO 7388-1 | ISO 7388-1 (MAS-BT)



### HSK-A DIN 69893

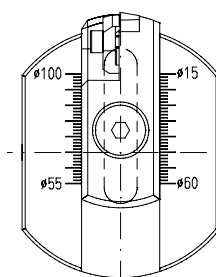
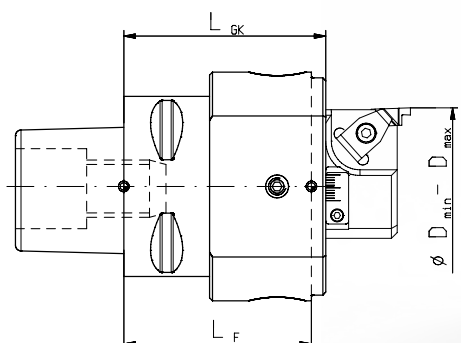


### Komet® ABS



Adjustment Range  
15–60 mm

### ISO 26623-1 Capto



Adjustment Range  
55–100 mm

## Axial Cutting Tools

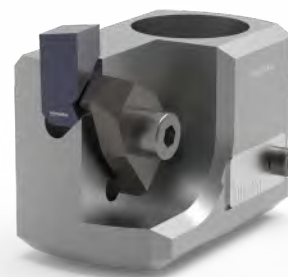
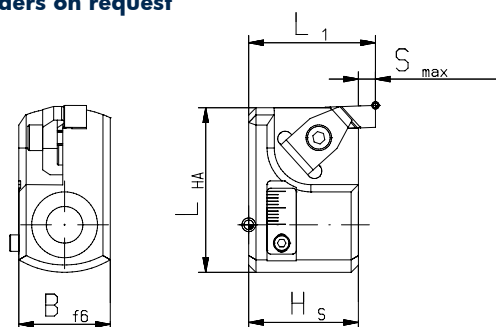
- with scalable cutting diameter and fine-adjustment
- all Axial-Cutting Tools without Insert Holders

| Order No.              | Adjustment Range Ø mm | Shank size | LF mm | LGK mm | d2 mm | BW mm | BH7 mm | Spare part No.         |         |
|------------------------|-----------------------|------------|-------|--------|-------|-------|--------|------------------------|---------|
|                        |                       |            |       |        |       |       |        | Fitting Screw DIN 7379 | Size    |
| <a href="#">133134</a> | 15 – 100              | SK 40      | 60    | 65     | 80    | 63    | 25     | <a href="#">114445</a> | 10M8x20 |
| <a href="#">133151</a> | 15 – 100              | SK 50      | 60    | 65     | 80    | 63    | 25     | <a href="#">114445</a> | 10M8x20 |
| <a href="#">133109</a> | 15 – 100              | BT 40      | 60    | 65     | 80    | 63    | 25     | <a href="#">114445</a> | 10M8x20 |
| <a href="#">133118</a> | 15 – 100              | HSK 63     | 72    | 65     | 80    | 63    | 25     | <a href="#">114445</a> | 10M8x20 |
| <a href="#">133096</a> | 15 – 100              | ABS 50     | 48    | 43     | 80    | 63    | 25     | <a href="#">114445</a> | 10M8x20 |
| <a href="#">133135</a> | 15 – 100              | ABS 63     | 50    | 45     | 80    | 63    | 25     | <a href="#">114445</a> | 10M8x20 |
| <a href="#">167985</a> | 15 – 100              | C6         | 70,6  | 65,6   | 80    | 63    | 25     | <a href="#">114445</a> | 10M8x20 |

CLICK ME!

## Insert Holders

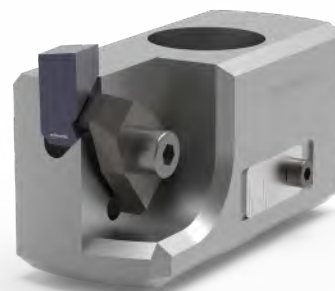
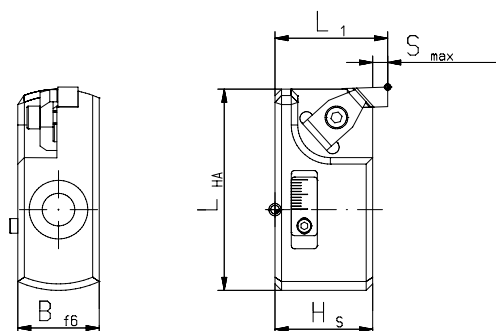
- Special-Insert holders on request



| Order No.              | Adjustment Range Ø mm | LHA mm | Bf6 mm | Hs mm | l1 mm | Smax. mm | Spare part No.         |                        |                        |
|------------------------|-----------------------|--------|--------|-------|-------|----------|------------------------|------------------------|------------------------|
|                        |                       |        |        |       |       |          | Clamping claw          | Screw *                | Screw-driver *         |
| <a href="#">133117</a> | 15 – 60               | 45     | 25     | 30    | 34    | 4        | <a href="#">107540</a> | <a href="#">114688</a> | <a href="#">178296</a> |

Screw torque 5 Nm

CLICK ME!



| Order No.              | Adjustment Range Ø mm | LHA mm | Bf6 mm | Hs mm | l1 mm | Smax. mm | Spare part No.         |                        |                        |
|------------------------|-----------------------|--------|--------|-------|-------|----------|------------------------|------------------------|------------------------|
|                        |                       |        |        |       |       |          | Clamping claw          | Screw *                | Screw-driver *         |
| <a href="#">133090</a> | 55-100                | 62     | 25     | 30    | 34    | 4        | <a href="#">107540</a> | <a href="#">114688</a> | <a href="#">178296</a> |

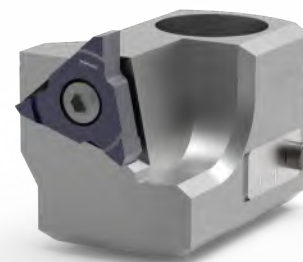
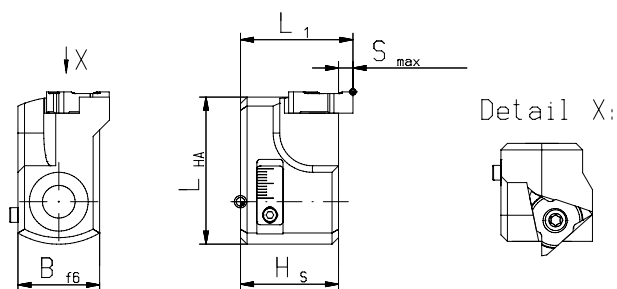
Screw torque 5 Nm

CLICK ME!

\* Screwdriver and clamping screw included in delivery

## Insert Holders

■ Special-Insert holders on request



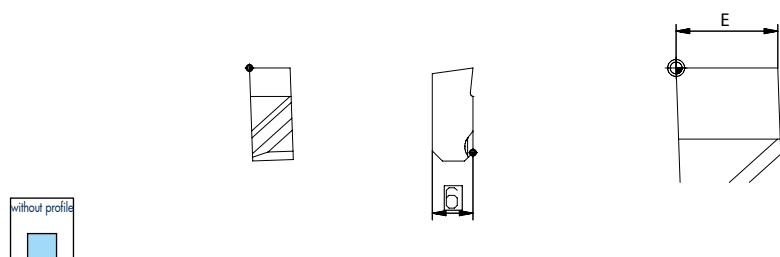
| Order No.              | Adjustment Range Ø mm | LHA mm | Bf6 mm | Hs mm | l1 mm | Smax. mm | Spare part No. |                        |                        |
|------------------------|-----------------------|--------|--------|-------|-------|----------|----------------|------------------------|------------------------|
|                        |                       |        |        |       |       |          | Clamping claw  | Screw *                | Screw-driver *         |
| <a href="#">143487</a> | 15-60 / 55-100        | 45     | 25     | 30    | 34,4  | 4        | -              | <a href="#">107551</a> | <a href="#">111594</a> |

Screw torque 5,5 Nm

CLICK ME!

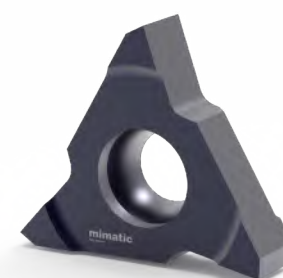
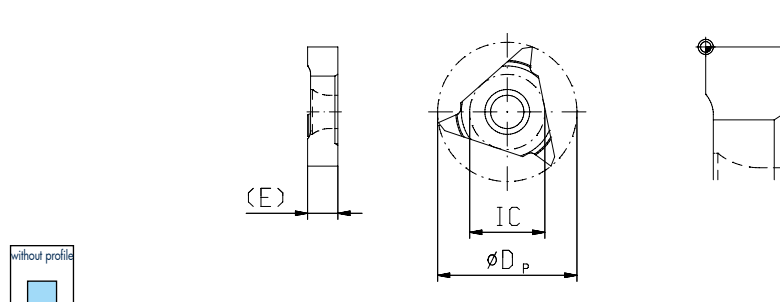
## Unprofiled Carbide Inserts

■ Cutting data see page 171



| Size | E mm | Height mm | Smax. mm | FKN                    |  |  |
|------|------|-----------|----------|------------------------|--|--|
| A 6R | 6    | 6         | 4        | <a href="#">142855</a> |  |  |

CLICK ME!

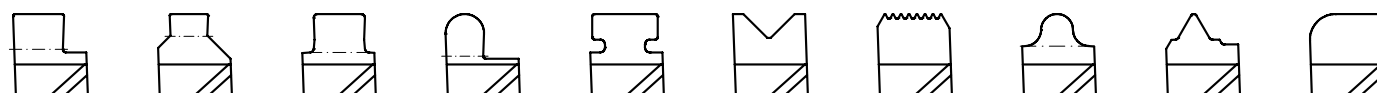


| Size    | E mm | Smax. mm | FKN                    |  |  |
|---------|------|----------|------------------------|--|--|
| 01AX LI | 4    | 4        | <a href="#">162201</a> |  |  |
| 01AX LI | 5    | 4        | <a href="#">162202</a> |  |  |
| 01AX LI | 6,5  | 4        | <a href="#">162203</a> |  |  |

CLICK ME!

\* 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

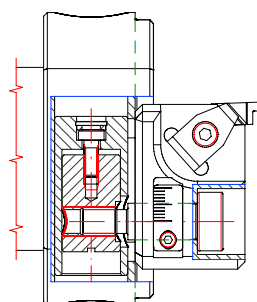
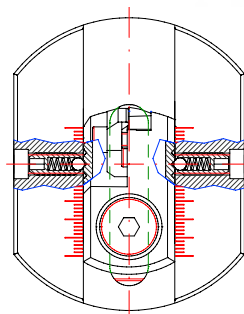
- Cutting depth of max. 4,0 mm
- Cutting width of max. 6,5 mm

### 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

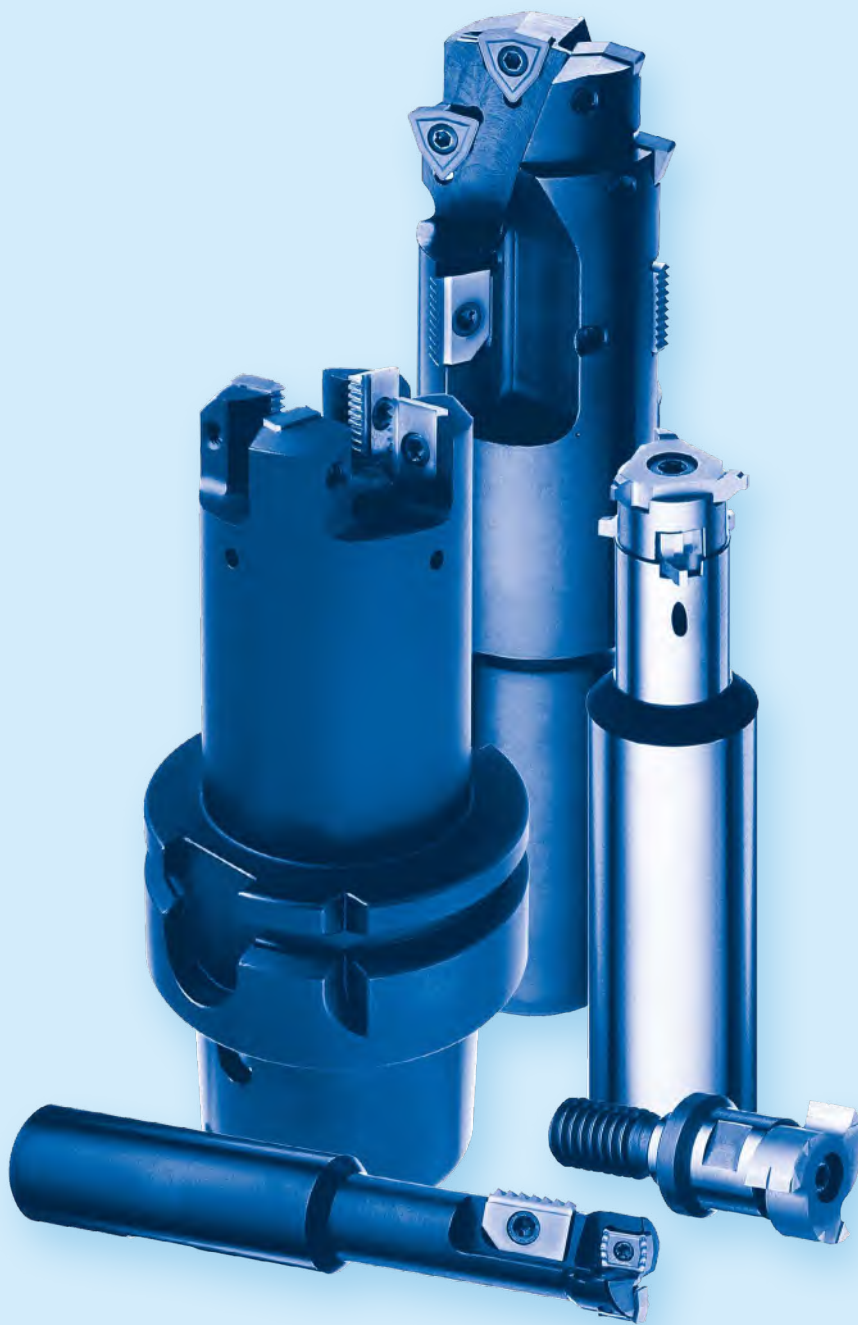
## Request Form for Grooving

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](http://www.mimatic.de/Nut_DE.pdf)**



## Special- and Combination Tools





## 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 Milling



Extended  
program

82-  
109

5

Contour and Radius Milling  
Chamfering, Deburring,  
undercut, dovetail



Extended  
program

110-  
125

6

## Sawing, Slitting

Sawing, Cutting, Slitting



Extended  
program

126-  
143

7

## Bore Machining

Reaming

144-  
151

8

## Axial Grooving

Axial Grooving, adjustable

152-  
157

9

## Special Tools

Special- and Combination Tools

158-  
163

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Cutting Data and Technical Information

164-  
179

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## Special Solutions

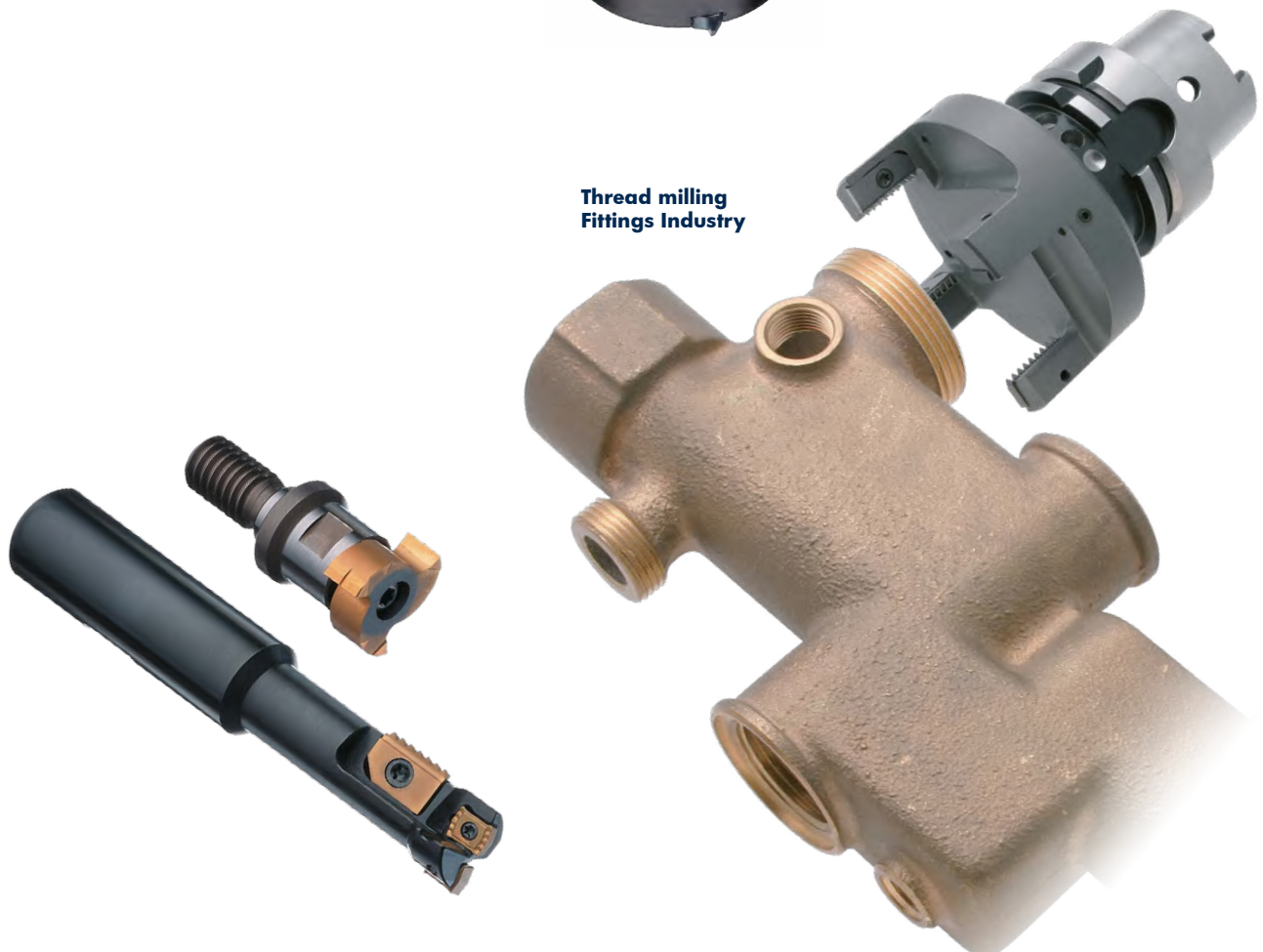
Here you see examples of our products and our expertise in the area of special cutting tools.  
Do you have a special application or a production problem?

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



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



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



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





**Gear milling with STC**  
Material: 58CrV4

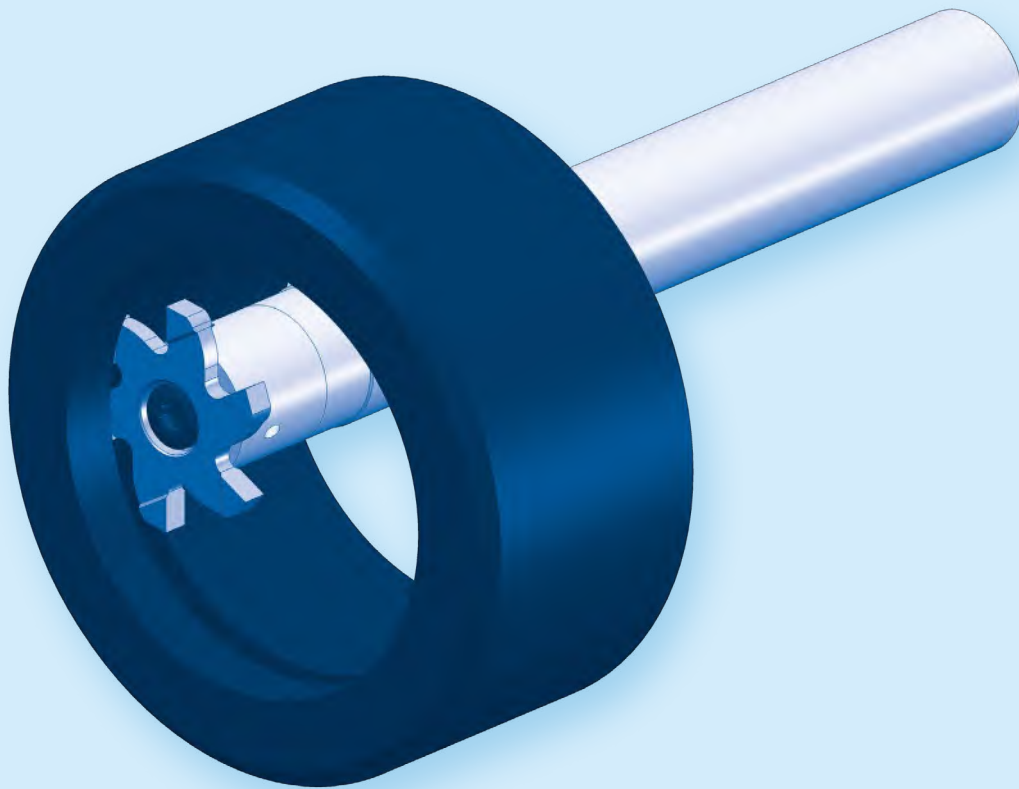


**Milling of hold grooves  
in conrods with STC**



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

**Cutting Data  
and Technical Information**





## Milling

Thread Milling



Extended  
program

14-63

1

Face Finish Milling

64-69

2

Notch Impact Test

70-75

3

Gear Milling

76-81

4

Slot Milling  
Keyway Milling



Extended  
program

82-  
109

5

Contour and Radius Milling  
Chamfering, Deburring,  
undercut, dovetail



Extended  
program

110-  
125

6

## Sawing, Slitting

Sawing, Cutting, Slitting



Extended  
program

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## Bore Machining

Reaming

144-  
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## 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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# 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      |
| <b>P</b> | 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  |
| <b>M</b> | 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  |
| <b>K</b> | 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  |
| <b>N</b> | 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         |                |             |                         |             |              |           |            |
| <b>S</b> | 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  |
| <b>H</b> | 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<br>3/6 Cutting Edges |           | TriMILL        |           |
|------|--------------------------|-----------------------------|-----------|-------------------------------|-----------|----------------|-----------|
|      | TINAMATIC                | 12, 14,5, 15, 17,<br>20, 25 | 21, 26    | TINAMATIC                     |           | TINAMATIC      |           |
|      | Vc<br>(m/min.)           | fz<br>mm                    | fz<br>mm  | Vc<br>(m/min.)                | fz<br>mm  | Vc<br>(m/min.) | fz<br>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         |                         |                         |                      |
|----------|------|------------------------------------------|----------------------------|----------------------------|----------------------|----------------------------|-------------------------|-------------------------|----------------------|
|          |      |                                          |                            | TINAMATIC                  | STC-1                | TINAMATIC                  | 0,3 x S <sub>max.</sub> | 0,6 x S <sub>max.</sub> | S <sub>max.</sub>    |
|          |      |                                          |                            | V <sub>c</sub><br>(m/min.) | f <sub>z</sub><br>mm | V <sub>c</sub><br>(m/min.) | f <sub>z</sub><br>mm    | f <sub>z</sub><br>mm    | f <sub>z</sub><br>mm |
| <b>P</b> | 1.1  | General construction steel               | < 800 N/mm <sup>2</sup>    | 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 <sup>2</sup>    | 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 <sup>2</sup>    | 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 <sup>2</sup>   | 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 <sup>2</sup>    | 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 <sup>2</sup>   | 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 <sup>2</sup>    | 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 <sup>2</sup>   | 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 <sup>2</sup>    | 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 <sup>2</sup>   | 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 <sup>2</sup>   | 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 <sup>2</sup>   | 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 <sup>2</sup>   | 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 <sup>2</sup>   | 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 <sup>2</sup>   | 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 <sup>2</sup>   | 80-100                     | 0,05-0,2             | 80-100                     | 0,03-0,05               | 0,02-0,04               | 0,015-0,03           |
| <b>M</b> | 2.1  | Stainless steel, sulphured               | < 850 N/mm <sup>2</sup>    | 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 <sup>2</sup>    | 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 <sup>2</sup>    | 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 <sup>2</sup>   | 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 <sup>2</sup>    | 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 <sup>2</sup>    | 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 <sup>2</sup>   | 80-100                     | 0,05-0,2             | 80-100                     | 0,03-0,05               | 0,02-0,04               | 0,015-0,03           |
| <b>K</b> | 3.1  | Flake-graphite cast iron                 | 100-350 N/mm <sup>2</sup>  | 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 <sup>2</sup> | 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 <sup>2</sup>  | 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 <sup>2</sup>  | 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 <sup>2</sup>  | 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 <sup>2</sup>  | 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 <sup>2</sup>  | 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 <sup>2</sup>  | 120-180                    | 0,05-0,2             | 120-180                    | 0,03-0,05               | 0,02-0,04               | 0,015-0,03           |
| <b>N</b> | 4.1  | Aluminium (unalloyed, low alloyed)       | < 350 N/mm <sup>2</sup>    | 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 <sup>2</sup>    | 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 <sup>2</sup>    |                            |                      |                            |                         |                         |                      |
|          | 4.4  | Aluminium alloys 10-15% Si               | < 400 N/mm <sup>2</sup>    |                            |                      |                            |                         |                         |                      |
|          | 4.5  | Aluminium alloys > 15% Si                | < 400 N/mm <sup>2</sup>    |                            |                      |                            |                         |                         |                      |
|          | 4.6  | Cooper (unalloyed, low alloyed)          | < 350 N/mm <sup>2</sup>    | 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 <sup>2</sup>    |                            |                      |                            |                         |                         |                      |
|          | 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 <sup>2</sup>    | 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 <sup>2</sup>    |                            |                      |                            |                         |                         |                      |
|          | 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 <sup>2</sup>    |                            |                      |                            |                         |                         |                      |
|          | 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         |                            |                            |                      |                            |                         |                         |                      |
| <b>S</b> | 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 <sup>2</sup>    | 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 <sup>2</sup>   |                            |                      |                            |                         |                         |                      |
|          | 5.6  | Nickel- and cobalt alloys                | < 1300 N/mm <sup>2</sup>   |                            |                      |                            |                         |                         |                      |
|          | 5.7  | High temperature alloys                  | < 1300 N/mm <sup>2</sup>   |                            |                      |                            |                         |                         |                      |
|          | 5.8  | Nickel-cobalt-(chrome-) alloys           | < 1400 N/mm <sup>2</sup>   |                            |                      |                            |                         |                         |                      |
|          | 5.9  | Pure Titanium                            | < 900 N/mm <sup>2</sup>    |                            |                      |                            |                         |                         |                      |
|          | 5.10 | Titanium alloys                          | < 700 N/mm <sup>2</sup>    | 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 <sup>2</sup>   | 60-90                      | 0,01-0,08            | 60-90                      | 0,03-0,05               | 0,02-0,04               | 0,015-0,03           |
| <b>H</b> | 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 (adjustable) |                            |                      | CT-Counterboring           |                            |                            |                            |                      | TrioCUT Drill Milling      |                      |
|----------------------------|----------------------------|----------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------|----------------------------|----------------------|
| FKN                        | TINAMATIC                  |                      | 7xD<br>Carbide shaft       | 6xD<br>Steel shaft         | 3xD<br>Carbide shaft       | 3xD<br>Steel shaft         |                      | TINAMATIC                  |                      |
| V <sub>c</sub><br>(m/min.) | V <sub>c</sub><br>(m/min.) | f <sub>z</sub><br>mm | V <sub>c</sub><br>(m/min.) | V <sub>c</sub><br>(m/min.) | V <sub>c</sub><br>(m/min.) | V <sub>c</sub><br>(m/min.) | f <sub>z</sub><br>mm | V <sub>c</sub><br>(m/min.) | f <sub>z</sub><br>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                | 100-140                    | 50-60                      | 150-280                    | 150-200                    | 0,1                  | 130-200                    | 0,2-0,4              |
| 3.2                        | 40-60                      | 60-70                | 100-140                    | 50-60                      | 150-280                    | 150-200                    | 0,1                  | 130-200                    | 0,2-0,4              |
| 3.3                        | 40-60                      | 60-70                | 100-140                    | 50-60                      | 150-280                    | 150-200                    | 0,1                  | 130-200                    | 0,2-0,4              |
| 3.4                        | 30-40                      | 50-60                | 100-140                    | 50-60                      | 150-280                    | 150-200                    | 0,1                  | 130-200                    | 0,2-0,4              |
| 3.5                        | 40-60                      | 80-100               | 100-140                    | 50-60                      | 150-280                    | 150-200                    | 0,1                  | 130-200                    | 0,2-0,4              |
| 3.6                        | 40-60                      | 60-70                | 100-140                    | 50-60                      | 150-280                    | 150-200                    | 0,1                  | 130-200                    | 0,2-0,4              |
| 3.7                        | 40-60                      | 80-100               | 100-140                    | 50-60                      | 150-280                    | 150-200                    | 0,1                  | 130-200                    | 0,2-0,4              |
| 3.8                        | 40-60                      | 60-70                | 100-140                    | 50-60                      | 150-280                    | 150-200                    | 0,1                  | 130-200                    | 0,2-0,4              |
| 4.1                        | 150-200                    | 200-450              | 100-140                    | 50-60                      | 150-280                    | 150-200                    | 0,1                  | 400-600                    | 0,2-0,4              |
| 4.2                        | 150-200                    | 260-340              | 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              | 100-140                    | 50-60                      | 150-280                    | 150-200                    | 0,1                  |                            |                      |
| 4.7                        | 100-140                    | 100-140              | 100-140                    | 50-60                      | 150-280                    | 150-200                    | 0,1                  |                            |                      |
| 4.8                        | 100-140                    | 100-140              | 100-140                    | 50-60                      | 150-280                    | 150-200                    | 0,1                  |                            |                      |
| 4.9                        |                            |                      |                            |                            |                            |                            |                      |                            |                      |
| 4.10                       |                            |                      |                            |                            |                            |                            |                      |                            |                      |
| 4.11                       | 200-250                    | 200-450              | 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<br>N/mm <sup>2</sup> | Hardness<br>HB | AISI /<br>SAE / ASTM |
|------------------------------------------------------------|----------------------|--------------|------------|---------------------------------------|----------------|----------------------|
| Unalloyed steel<br>≤ 800 N/mm <sup>2</sup>                 | 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<br>≤ 1000 N/mm <sup>2</sup>                | 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                 |
|                                                            | Case hardened steel  | Cf35         | 1.1183     | 540 - 780                             | 160 - 230      | 1035                 |
|                                                            |                      | Ck22         | 1.1151     | 470 - 650                             | 150 - 200      | 1020                 |
|                                                            |                      | Ck25         | 1.1158     | 500 - 700                             | 150 - 210      | 1025                 |
|                                                            |                      | 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<br>alloyed steel<br>≤ 1200 N/mm <sup>2</sup> | 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<br>N/mm <sup>2</sup> | Hardness<br>HB | AISI /<br>SAE / ASTM |
|------------------------------------------------------------|----------------------|----------------|------------|---------------------------------------|----------------|----------------------|
| Unalloyed and<br>alloyed steel<br>≤ 1200 N/mm <sup>2</sup> | 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<br>alloyed steel<br>≥ 1200 N/mm <sup>2</sup> | 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<br>(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<br>N/mm <sup>2</sup> | Hardness<br>HB | AISI /<br>SAE / ASTM |
|-------------------------------------------------------------|------------------|---------------------|------------|---------------------------------------|----------------|----------------------|
| Stainless steel<br>(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<br>high chrome-nickel<br>rate<br>(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     |                                       |                | M41                  |
|                                                             |                  |                     |            |                                       |                | M3                   |

## Material Examples

### Cast Iron, Nonferrous Metals

| Material subgroup                   | Identifier                | Norm marking   | DIN-Number | Tensile strength<br>N/mm <sup>2</sup> | Hardness<br>HB | AISI /<br>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<br>N/mm <sup>2</sup> | Hardness<br>HB | AISI /<br>SAE / ASTM |
| Aluminium, Cooper,<br>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-<br>Number | Tensile strength<br>N/mm <sup>2</sup> | Hardness<br>HB | AISI /<br>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<br>and fibre-reinforced<br>plastic | Thermosetting plastic       | Bakelid          |                |                                       |                |                      |
|                                                          |                             | Ferrozell        |                |                                       |                |                      |
|                                                          |                             | Pertinax         |                |                                       |                |                      |
|                                                          | Fibre-reinforced<br>plastic | CFK<br>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)**

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

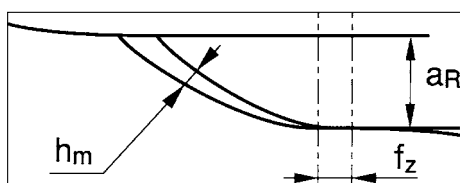
**Plunge in feed „Plunge in the arc“**

$$v_f = v_{f3}$$

**Calculation of the middle chip thickness**

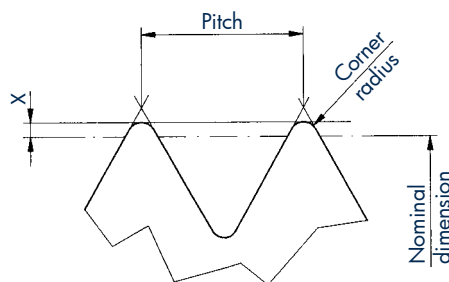
$$h_m = \frac{f_z}{\sqrt{\frac{d}{a_r}}}$$

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



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<br>(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

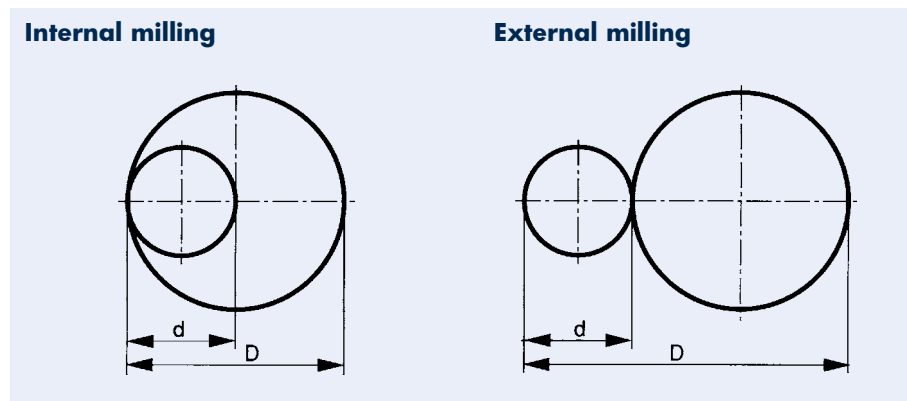
Internal threads are programmed to the nominal dimension.  
In order to achieve the exact thread size desired, there is a correction value for any given pitch. This correction value must be deducted from the radius of the cutter when programming.

## 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              |

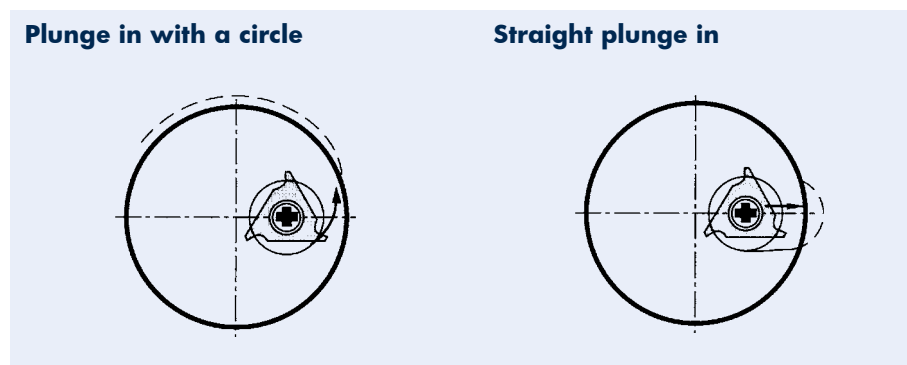


## Information about Circular Milling

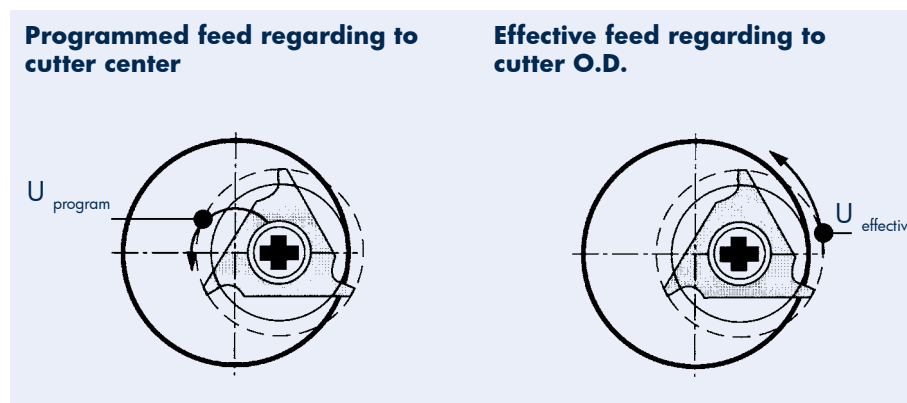


The best relation between bore diameter and cutter diameter is 2:1 due to smaller angle of contact, which results in a smooth machining.

**Synchronous milling is recommended.**



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.

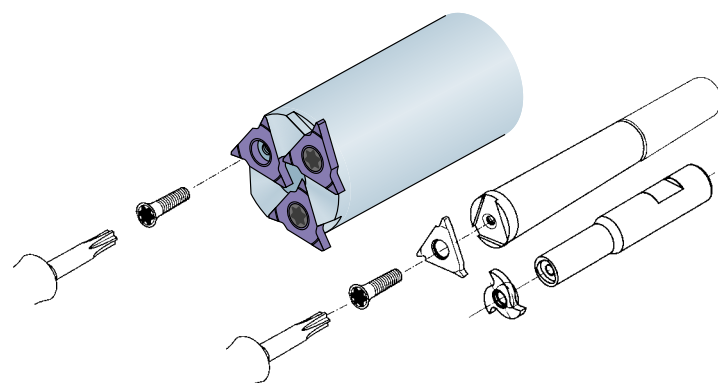


Always check the real feed speed at cutter O.D.

## Assembling Instructions

### Changing Inserts

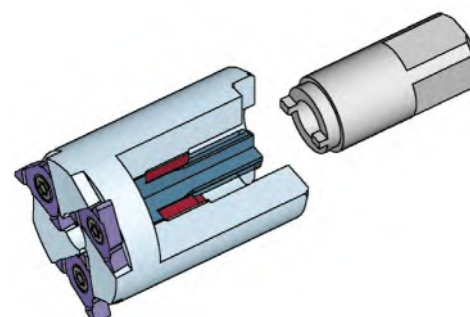
Clamp cutter before changing insert. Loosen insert screw. Remove used insert and clean the insert pocket before clamping new insert. Please use the appropriate TIP hex key for the tightening of the inserts.



### Changing Clamping Screws

Only for circular milling cutter no.

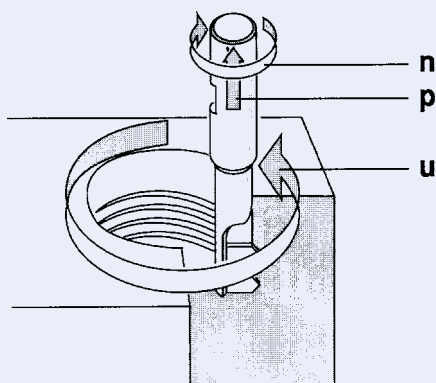
- 123464
- 135203
- 179727
- 179728



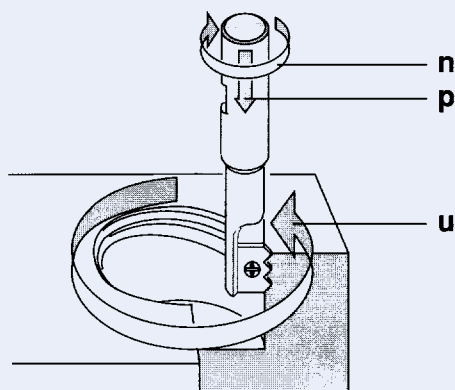


## Information about Circular Thread Milling

### Internal Thread

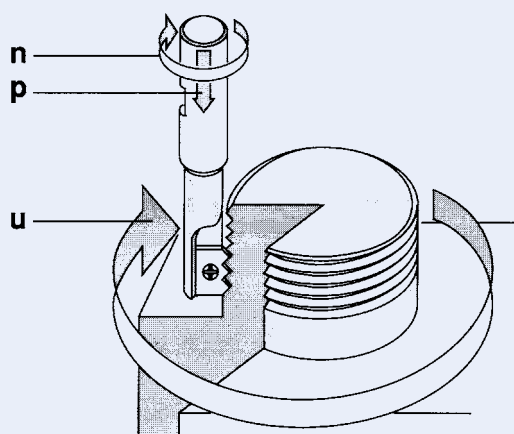


**Right-hand Thread (climb milling)**  
Left-hand Thread (up-cut milling)

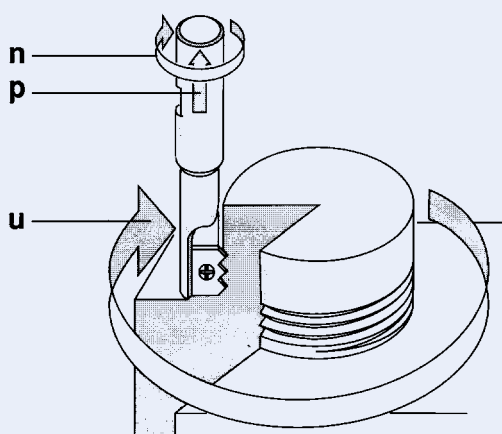


**Left-hand Thread (climb milling)**  
Right-hand Thread (up-cut milling)

### External Thread



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



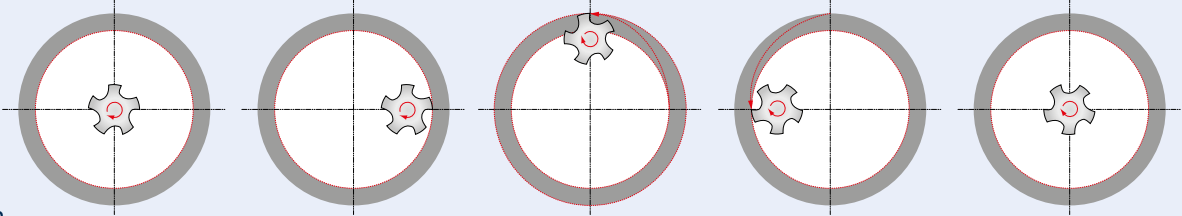
**Left-hand Thread (climb milling)**  
Right-hand Thread (up-cut milling)

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

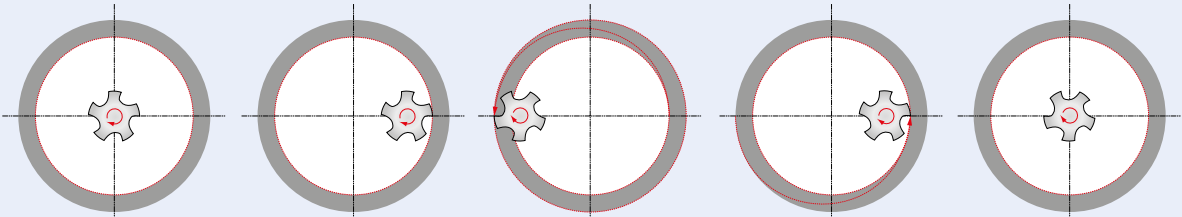
Always try to use climb milling process. If the thread is longer than insert length, cut in two steps. If you plunge in with a circle, please watch your axial feed (depending on pitch).

## Plunge-in Ramps Effect of In- and Outward Movements

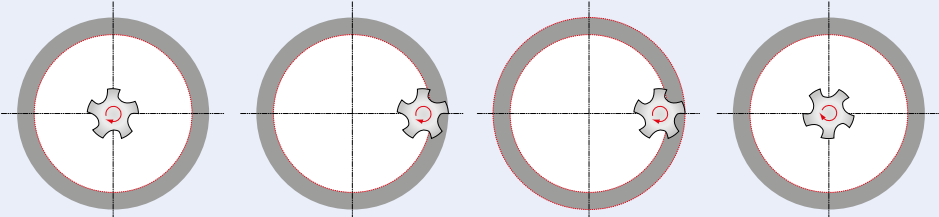
- 90° plunge-in
- 180° plunge-in
- Straight plunge-in

| 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°               | +               | +++             | +++       |
|  |                    |                 |                 |           |

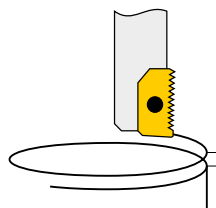
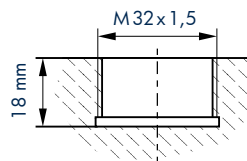
⚠ To be used for large tool diameters in relation to the core diameter, e.g. for all STC tools.

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

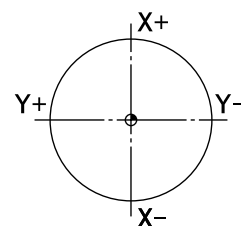
⚠ Not recommended. When straight plunge-in, use only 1/3 of feed. After reaching the depth of grooving, give full feed.

## 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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