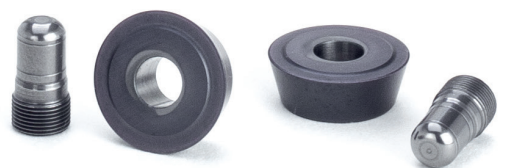




## SPINWORX®

Time-saving tooling system for reduced manning operation with self-rotating inserts

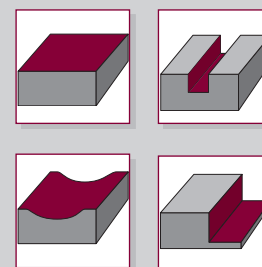


 **pokolm**  
PREMIUMTOOLS. WE KNOW HOW.

# THE UNIQUE TIME-SAVING TOOLING SYSTEM FOR REDUCED MANNING OPERATION WITH SELF-ROTATING INSERTS

**S**PINWORX® – the innovative tooling system puts into question what has been an effective operation for decades: the insert has to be „rigidly“ coupled to the cutter body – if it were „loose“ in its insert seat it would break sooner or later! This is not the case with SPINWORX® – the insert rotates, thus making manual re-positioning superfluous. At the same time 100% utilization of the entire cutting edge is achieved without loss. SPINWORX® sets new standards – you reduce your downtimes and non-productive times to zero, leaving competitors behind. By using our SPINWORX® system, you can machine your components more efficiently

and optimise your machine availability at the same time. SPINWORX® tools are ideal for roughing and residual material machining during the face milling, slot, peripheral and pocket milling of materials such as steel, cast iron, stainless steel and high-temperature alloys.

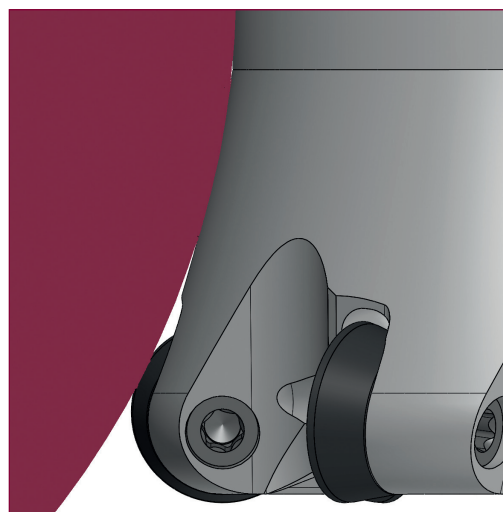


## Perfect outer contour

The geometry of the SPINWORX® tools permits optimum chip removal, particularly during the machining of pockets and slots. In addition, the rounded outer contour effectively prevents chips sticking to the tool.

## The material - the decisive basic factor

Exceptionally long tool lives lead to extremely high loads acting on the SPINWORX® tool seat. To meet these requirements and to be able to guarantee the long useful life typical for Pokolm products, the tools are made of the extremely high-quality material that Pokolm is renowned for.



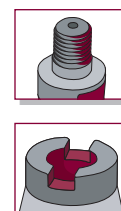
Shell type



Screw-on type

## Types of connection

- SPINWORX® tools are available as
- ➔ screw-on type and
- ➔ shell type milling cutter bodies.



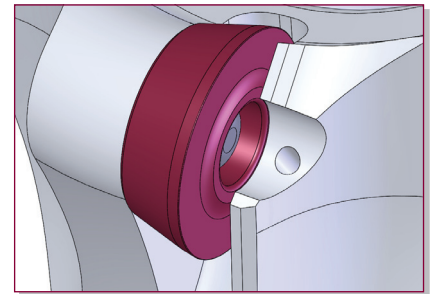
- ➔ 100% use of the total insert periphery
- ➔ Minimised set-up times since no manual re-locating of the inserts is necessary
- ➔ Multiple increase in tool life\*
- ➔ Chip volume is much higher without interruption in the production process\*

\* depending on milling conditions

- ➔ Can be used in steel, cast iron, stainless steel and high-temperature alloys
- ➔ Ideal for roughing and residual material machining during face milling, slot, peripheral and pocket milling
- ➔ Reduced chip compression leads to lower power consumption, which also protects your machine spindle

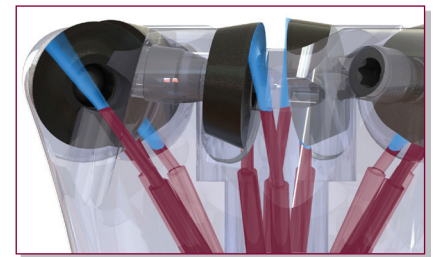
#### Insert seat:

The large transition radius of the seats in the **SPINWORX**® tools excludes an increased notching effect from the insert. A further advantage is that the base of the tooth cannot break off due to overload. The embedding design is such that holes of the inserts are not covered and soiling can escape.



#### Targeted - the double internal coolant supply\*:

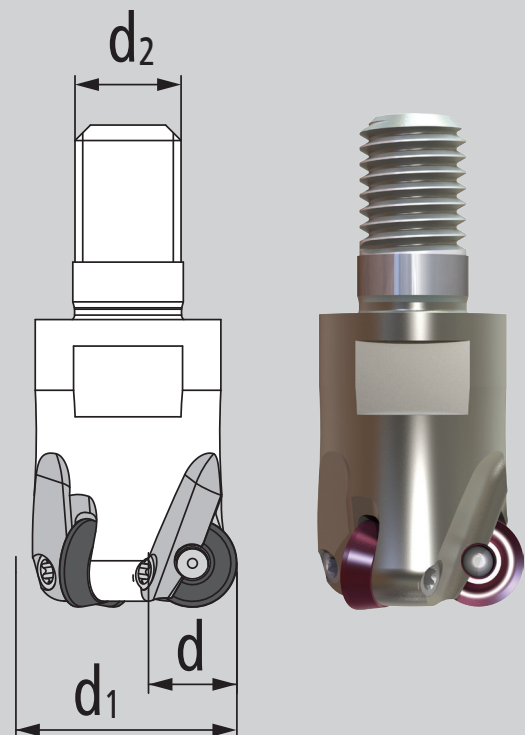
The exactly aligned coolant supply constitutes a further design innovation. One bore is usually used to clean the chip chamber, the second guarantees the permanent direct cooling of the insert even under maximum thermal loads. At the same time, these are important pre-requisites for the unparalleled tool lives – a feature unique to **SPINWORX**®.



#### Order number key:

Example: **DR10-025-E12-03**

- ➔ Tool type **DR - SPINWORX**®
- ➔ Tool type diam. mm [d]
- ➔ Nominal diameter mm [ $d_1$ ]
- ➔ Type of connection  
E - Threaded shank end mill body  
A - Shell-type milling cutter body
- ➔ Connection size diam. mm [ $d_2$ ]
- ➔ No. of teeth

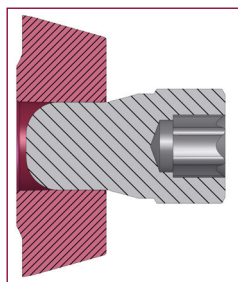


\*except of system size DR07 and cutter bodies  $d_1 > 80$  mm

# GOES ON AND ON AND ON ... THE SELF-ROTATING INSERT

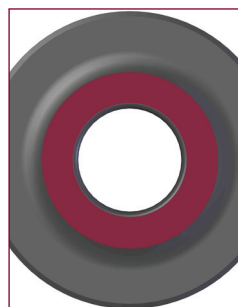


A crucial component in the SPINWORX® tooling system are the self-rotating inserts, which have been optimally matched to the milling cutter seats of course. And it's the special design features which make safe and long-term function possible here, too. There are cutting materials with and without chip groove and different cutting edge geometries available. Every single insert is delivered with an exactly matching pin.



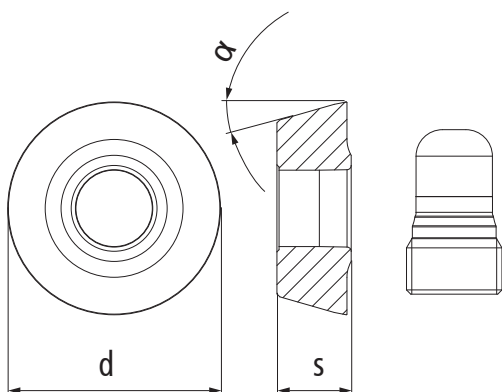
### The pin/insert combination

Every insert is delivered with a perfectly matching pin. The cylindrical contact surface of the insert has an exactly defined percentage contact area. The cylindrical part of the pin, which provides additional support in the seat of the tool, is exactly matched to this.



### The race

All SPINWORX® inserts are always equipped with a race. This protects from non-constant rotation by forming built-up edges and supports the characteristics of the embedded insert seat.



### Order number key: SPINWORX® Inserts

Example: **DR 10 - 8 C 7 - P**

- ➔ Tool type DR - SPINWORX®
- ➔ Insert size [diam. mm]
- ➔ Identification feature
- ➔ Carbide Coating code | Carbide | Material

<b>B</b>	M35	stainless steel / high-temperature alloys
<b>C</b>	K10	steel / cast iron / hardened steel < 60 HRC
<b>D</b>	M40	stainless steel / high-temperature alloys
<b>E</b>	P25	steel / cast iron
<b>F</b>	P40	steel / cast iron
<b>T</b>	P25	steel / cast iron / hardened steel < 48 HRC

$\alpha$ 11°	$\alpha$ 15°	Clearance angle / Design
0	4	sintered without chip-breaker groove
1	5	sintered with chip-breaker groove
2	6	grinded without chip-breaker groove
3	7	grinded with chip-breaker groove

- ➔ P - polished rake face for machining of Non-ferrous materials

## Simple assignment of tool and insert

Example:

**Tool:**

**Insert:**

**DR 10 - 025-E12-03**

**DR 10 - 8C7 - P**

Prefixing group key for the fast assignment of tool type and insert

Insert size can be recognised directly, straightforward assignment

## Practical Video

**SPINWORX®** in 1.2738:

Tool life 13 hours,

P20 / 40CrMnNiMo8-6-4



## Simple fitting of the inserts in the tool

### Step 1:

Place the inserts (1) into the seat provided. Apply the paste included (4) to the thread of the pin (2) and make sure no paste (catalogue number „Z 00043“) gets onto the contact surface. Remove any surplus before using the tool.

### Step 2:

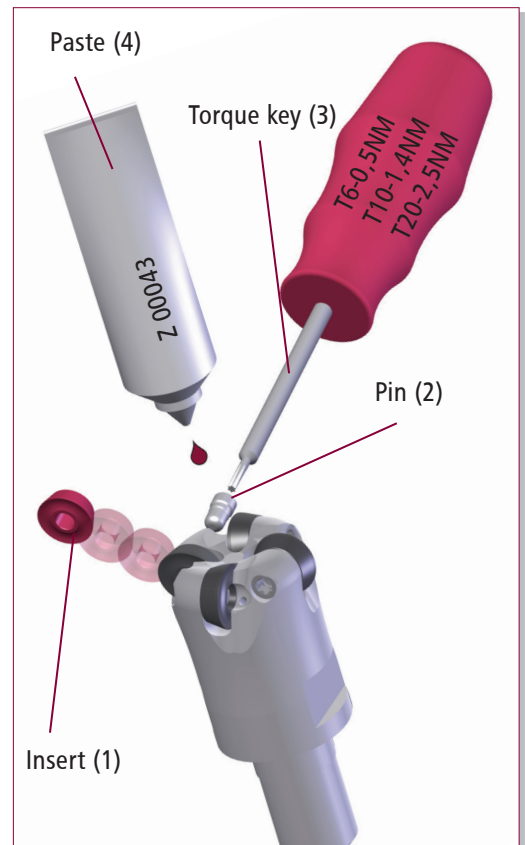
Insert the pin (2) into the screw attachment from behind and use the torque key (3) to tighten according to the specified tightening torque.

## Tightening torques

Insert	Torx size	Tightening torque
DR07-8...	T6	0.5 Nm
DR10-8... DR12-8...	T10	1.4 Nm
DR16-8...	T20	2.5 Nm

## Simple handling thanks to convenient tool

We recommend our torque keys with pre-set tightening torque as a convenient and safe alternative to conventional Torx or torque keys.



### CAUTION! PLEASE NOTE!

For optimum results with the **SPINWORX®**-tooling system we recommend using internal coolant supply air, emulsion or MQL for chip removal in the tool!



## SPINWORX®

r3.5 - diam. 16 - 35 mm, 7° positive rake angle

The SPINWORX system in its smallest version

- effective use of cutting edge and machining of smaller workpieces
- wide range of use for almost all areas of application
- effective use of the cutting edge
- with specially adapted coolant supply
- low power consumption, high chip removal rate

### CAUTION - PLEASE NOTE!

For optimum results with the SPINWORX®-tooling system we recommend using internal coolant supply air, emulsion or MQL for chip removal from the tool! Wet machining up to max speed Vc of 140 m/min!

### Milling cutter bodies

Catalogue no.											Accessories	Features
	d <sub>1</sub>	d	r	l <sub>3</sub>	l <sub>2</sub>	l <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	z			

### Threaded shank end mill bodies

	DR07-016-E08-02	16	7	3.5	28.5	1.2	-	M 8	13.8	2	A, B, C, D	
	DR07-020-E10-05	20	7	3.5	28.5	1.2	-	M 10	18	5	A, B, C, D	
	DR07-025-E12-06	25	7	3.5	28.5	1.2	-	M 12	21	6	A, B, C, D	
	DR07-030-E12-07	30	7	3.5	28.5	1.2	-	M 12	21	7	A, B, C, D	
	DR07-035-E16-08	35	7	3.5	28.5	1.2	-	M 16	29	8	A, B, C, D	

### Accessories

<p>T6-0,5NM Torque Fix® - S torque screwdriver A &gt; Page 25</p>	<p>T6 500 Torx interchangeable bit for Torque Vario® B &gt; Page 25</p>	<p>T6 502 Torx MagicSpring compatible bit f. Torque Vario® C &gt; Page 25</p>	<p>Z 00043 HTC ceramic paste WS 600 005 D &gt; Page 25</p>		
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Indexable inserts	Catalogue no.	DIN Specification	Carbide Grade	Coating	d	s	r	M
	DR07-8C0	RORA 0727 M0SN	C0		7	2.7	3.5	
	DR07-8E0	RORA 0727 M0SN	E0		7	2.7	3.5	
	DR07-8E1	RORM 0727 M0EN	E1		7	2.7	3.5	
	DR07-8B3	RORM 0727 M0EN	B3		7	2.7	3.5	
	DR07-8D1	RORM 0727 M0EN	D1		7	2.7	3.5	
	DR07-8D3	RORM 0727 M0EN	D3		7	2.7	3.5	
	DR07-8C4	RDRA 0727 M0SN	C4		7	2.7	3.5	
	DR07-8C6	RDRA 0727 M0SN	C6		7	2.7	3.5	
	DR07-8E4	RDRA 0727 M0SN	E4		7	2.7	3.5	
	DR07-8F4	RDRA 0727 M0SN	F4		7	2.7	3.5	
	DR07-8E6	RDRA 0727 M0SN	E6		7	2.7	3.5	
	DR07-8F6	RDRA 0727 M0SN	F6		7	2.7	3.5	
	DR07-8B7	RDRM 0727 M0EN	B7		7	2.7	3.5	
	DR07-8C7-P	RDRM 0727 M0EN	C7-P		7	2.7	3.5	

### Feed per tooth (fz) | d.o.c. (ap)

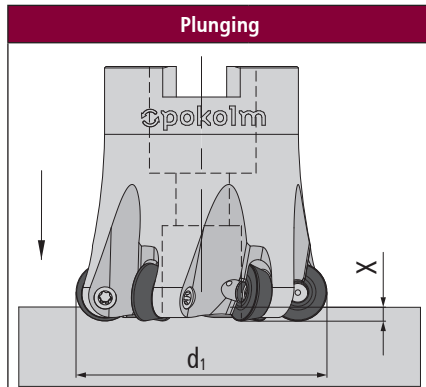
Material		Material					
Quality Coating	Feed per tooth   d.o.c.	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
C0	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,1-0,4 0,1-0,5	-	0,1-0,3 0,1-0,7	-	-	0,1-0,15 0,1-0,2
E0	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,1-0,4 0,1-0,5	-	0,1-0,3 0,1-0,4	-	-	-
E1	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,1-0,3 0,05-0,4	0,1-0,5 0,1-0,75	-	-	0,1-0,4 0,1-1	-
B3	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	-	0,1-0,5 0,1-0,75	-	-	0,1-0,4 0,1-1	-
D1	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	-	0,1-0,5 0,1-0,75	-	-	0,1-0,4 0,1-1	-
D3	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	-	0,1-0,5 0,1-0,75	-	0,1-0,3 0,2-1	0,1-0,4 0,1-1	-
C4	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,1-0,4 0,1-0,5	-	0,1-0,3 0,1-0,7	-	-	0,1-0,15 0,1-0,2
C6	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,1-0,4 0,1-0,5	-	0,1-0,3 0,1-0,7	-	-	0,1-0,15 0,1-0,2
E4	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,1-0,4 0,1-0,5	-	0,1-0,3 0,1-0,4	-	-	-
F4	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,1-0,5 0,1-0,8	-	0,1-0,3 0,1-0,7	-	-	-
E6	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,1-0,4 0,1-0,5	-	0,1-0,2 0,1-0,4	-	-	-
F6	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,1-0,5 0,1-0,8	-	0,1-0,3 0,1-0,7	-	-	-
B7	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	-	0,1-0,5 0,1-0,75	-	-	0,1-0,4 0,1-1	-
C7-P	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	-	-	-	0,1-0,3 0,2-1	-	-

### Cutting speed (Vc in m/min)

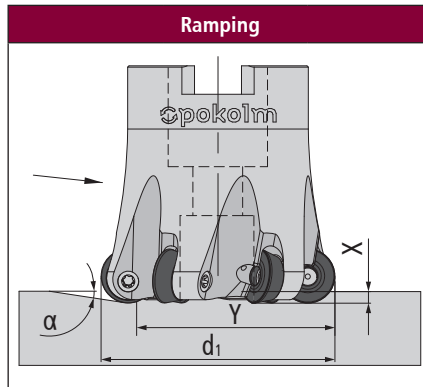
Material								
Quality Coating	Application	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel	
C0	roughing	▽90 150 210		▽150 195 240			-	
	pre finishing	▽110 165 220	-	▽140 205 270	-	-	▽35 108 180	
E0	roughing	▽100 175 250					-	
	pre finishing	▽100 200 300	-	▽130 165 200	-	-	-	
E1	roughing	▽80 155 230	▽70 110 150			▽20 45 70	-	
	pre finishing	▽75 163 250	▽80 130 180	-	-	▽20 50 80	-	
B3	roughing		▽110 155 200			▽30 65 100	-	
	pre finishing	-	▽120 175 230	-	-	▽40 75 110	-	
D1	roughing		▽80 130 180			▽30 55 80	-	
	pre finishing	-	▽100 155 210	-	-	▽40 65 90	-	
D3	roughing		▽80 130 180		▽100 250 400	▽30 55 80	-	
	pre finishing	-	▽100 155 210	-	▽200 400 600	▽40 65 90	-	
C4	roughing	▽90 150 210		▽150 195 240			-	
	pre finishing	▽110 165 220	-	▽140 205 270	-	-	▽35 108 180	
C6	roughing	▽90 150 210		▽150 195 240			-	
	pre finishing	▽110 165 220	-	▽140 205 270	-	-	▽35 108 180	
E4	roughing	▽100 175 250					-	
	pre finishing	▽100 200 300	-	▽130 165 200	-	-	-	
F4	roughing	▽100 175 250		▽110 130 150			-	
	pre finishing	▽100 200 300	-	▽140 180 220	-	-	-	
E6	roughing	▽100 175 250					-	
	pre finishing	▽100 200 300	-	▽130 165 200	-	-	-	
F6	roughing	▽100 175 250		▽110 130 150			-	
	pre finishing	▽100 200 300	-	▽140 180 220	-	-	-	
B7	roughing		▽110 155 200			▽30 65 100	-	
	pre finishing	-	▽120 175 230	-	-	▽40 75 110	-	
C7-P	roughing				▽100 350 600		-	
	pre finishing	-	-	-	▽200 500 800	-	-	



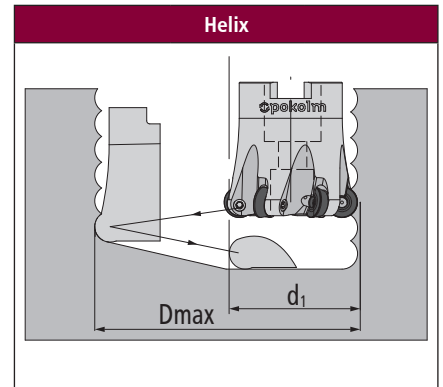
## Extended operation data



Cutter diam. d1	X <sub>max</sub>
16-35	1.2



Cutter diam. d1	$\alpha^\circ$	y
16	<16,0	4
20	<8,5	8
25	<5,0	13
30	<3,5	18
35	<3,0	23



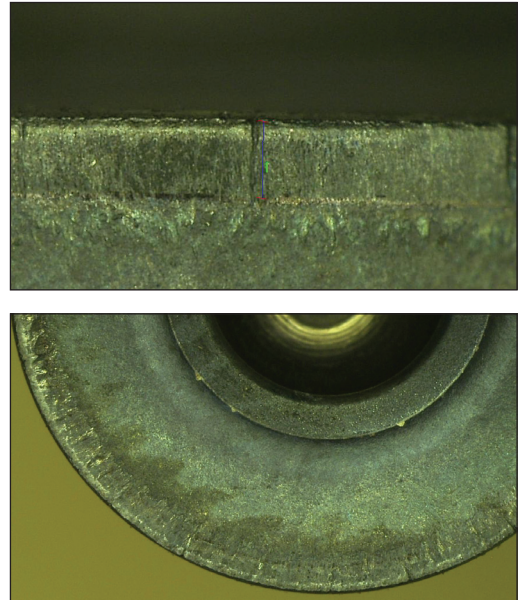
Cutter diam. d1	D <sub>min</sub>	D <sub>max</sub>
16	20	30
20	28	38
25	38	48
30	48	58
35	58	68

# SPINWORX® IN PRACTICAL TESTS – CONVINCING RESULTS

## Material to be machined: 1.2312

Tool	DR07-025-E12-06
Arbor	50 12 710
Overhang [mm]	90 mm
Cooling	air
Insert	DR07-8E4
Coating	E
$V_c$ speed [m/min]	200
$V_f$ feed rate [mm/min]	9150
$n(s)$ [ $\text{min}^{-1}$ ]	2545
$D_c$ [mm]	25
$f_z$ feed per tooth [mm]	0.6
$a_p$ depth of cut [mm]	0.6
$a_e$ width of cut [mm]	15.5
Tool life [min]	579
Life length [m]	5298
Stock removal rate [ $\text{cm}^3/\text{min}$ ]	85

Wear patterns on insert DR07-8E4

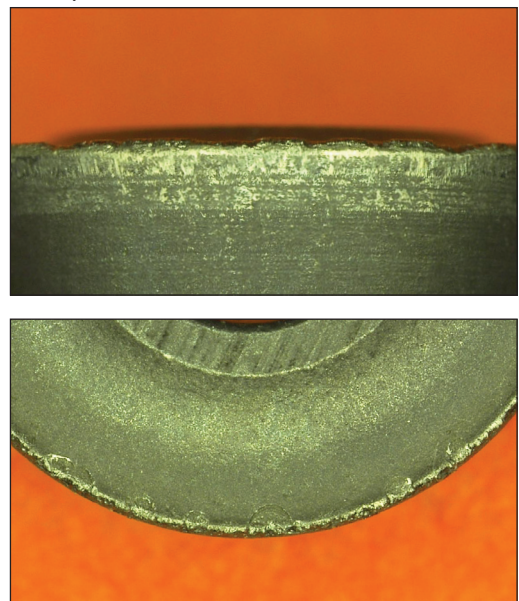


Uninterrupted machine running time of 579 minutes - and the inserts wear limit was not yet reached. This process reliability without any cutting edge break-out speaks for itself and for SPINWORX®.

## Material to be machined: TiAl6V4

Tool	DR07-025-E12-06
Arbor	50 12 710
Overhang [mm]	80
Cooling	emulsion
Insert	DR07-8D3
Coating	D
$V_c$ speed [m/min]	70
$V_f$ feed rate [mm/min]	810
$n(s)$ [ $\text{min}^{-1}$ ]	900
$D_c$ [mm]	25
$f_z$ feed per tooth [mm]	0.15
$a_p$ depth of cut [mm]	1.0
$a_e$ width of cut [mm]	7.5
Tool life [min]	440
Life length [m]	356
Stock removal rate [ $\text{cm}^3/\text{min}$ ]	12

Wear patterns on insert DR07-8D3



Process-reliable machining of titanium alloy for the aerospace industry. Compared to a competitors product and thanks to SPINWORX® it was possible to manufacture a more than three times higher quantity with only one set of inserts. And the inserts wear limit was not yet reached.

# SPINWORX®

r5 - diam. 20 - 52 mm, 7° positive rake angle



The all-rounders in the SPINWORX series.

- wide range of use for almost all areas of application
- effective use of the cutting edge
- with specially adapted primary and secondary coolant supply
- low power consumption, high chip removal rate

### CAUTION! PLEASE NOTE!

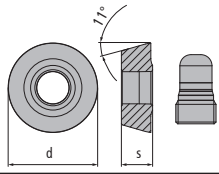
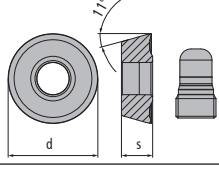
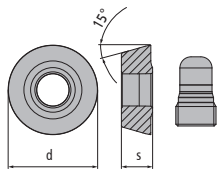
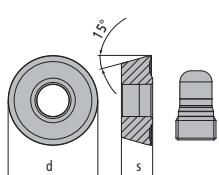
For optimum results with the SPINWORX®-tooling system we recommend using internal coolant supply air, emulsion or MQL for chip removal in the tool! Wet machining up to max speed Vc of 140 m/min!

Milling cutter bodies											
Catalogue no.	d <sub>1</sub>	d	r	l <sub>3</sub>	l <sub>2</sub>	l <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Accessories	Features

Threaded shank end mill bodies												
	DR10-020-E10-02	20	10	5	29	2.5	-	M 10	18	2	A, B, C, D	
	DR10-025-E12-03	25	10	5	32.5	1.5	-	M 12	21	3	A, B, C, D	
	DR10-025-E12-04	25	10	5	32.5	1.5	-	M 12	21	4	A, B, C, D	
	DR10-030-E12-04	30	10	5	33	2.5	-	M 12	21	4	A, B, C, D	
	DR10-030-E16-04	30	10	5	43	2.5	-	M 16	29	4	A, B, C, D	
	DR10-032-E16-04	32	10	5	43	2.5	-	M 16	29	4	A, B, C, D	
	DR10-032-E16-05	32	10	5	43	2.5	-	M 16	29	5	A, B, C, D	
	DR10-035-E16-05	35	10	5	43	2.5	-	M 16	29	5	A, B, C, D	
	DR10-042-E16-06	42	10	5	43	2.5	-	M 16	29	6	A, B, C, D	

Shell-type milling cutter bodies												
	DR10-040-A16-05	40	10	5	43	2.5	-	diam. 16	35	5	A, B, C, D	
	DR10-042-A16-05	42	10	5	43	2.5	-	diam. 16	35	5	A, B, C, D	
	DR10-042-A16-06	42	10	5	43	2	-	diam. 16	35	6	A, B, C, D	
	DR10-052-A22-07	52	10	5	52	2.5	-	diam. 22	40	7	A, B, C, D	

Accessories					
<p>T10-1,4NM Torque Fix® - S torque screwdriver A &gt; Page 25</p>	<p>T10 500 Torx interchangeable bit for Torque Vario® B &gt; Page 25</p>	<p>T10 502 Torx MagicSpring compa- tible bit f. Torque Vario® C &gt; Page 25</p>	<p>Z 00043 HTC ceramic paste WS 600 005 D &gt; Page 25</p>		

Indexable inserts	Catalogue no.	DIN Specification	Carbide Grade	Coating	d	s	r	M
	DR10-8C0	RORA 1035 M0SN	C0		10	3.5	5	
	DR10-8E0	RORA 1035 M0SN	E0		10	3.5	5	
	DR10-8B3	RORM 1035 M0EN	B3		10	3.5	5	
	DR10-8D1	RORM 1035 M0EN	D1		10	3.5	5	
	DR10-8D3	RORM 1035 M0EN	D3		10	3.5	5	
	DR10-8C4	RDRA 1035 M0SN	C4		10	3.5	5	
	DR10-8C6	RDRA 1035 M0SN	C6		10	3.5	5	
	DR10-8E4	RDRA 1035 M0SN	E4		10	3.5	5	
	DR10-8F4	RDRA 1035 M0SN	F4		10	3.5	5	
	DR10-8E6	RDRA 1035 M0SN	E6		10	3.5	5	
	DR10-8F6	RDRA 1035 M0SN	F6		10	3.5	5	
	DR10-8B7	RDRM 1035 M0EN	B7		10	3.5	5	
	DR10-8C7-P	RDRM 1035 M0EN	C7-P		10	3.5	5	

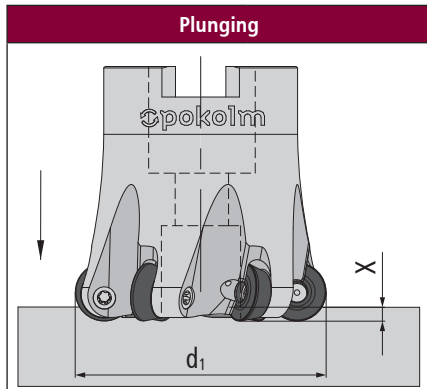
Feed per tooth (fz) | d.o.c. (ap)

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Quality Coating	Feed per tooth   d.o.c.						
C0	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,1-0,45 0,2-1	-	0,15-0,35 0,1-1	-	-	0,1-0,15 0,1-0,3
E0	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,1-0,45 0,2-1	-	0,15-0,25 0,1-0,55	-	-	-
B3	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	-	0,15-0,6 0,2-2	-	-	0,1-0,4 0,15-2	-
D1	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	-	0,15-0,6 0,2-2	-	-	0,1-0,4 0,15-2	-
D3	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	-	0,15-0,6 0,2-2	-	0,2-0,3 0,2-1,7	0,1-0,4 0,15-2	-
C4	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,1-0,45 0,2-1	-	0,15-0,35 0,1-1	-	-	0,1-0,15 0,1-0,3
C6	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,1-0,45 0,2-1	-	0,15-0,35 0,1-1	-	-	0,1-0,15 0,1-0,3
E4	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,1-0,45 0,2-1	-	0,15-0,25 0,1-0,55	-	-	-
F4	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,1-0,5 0,2-1,5	-	0,15-0,35 0,1-1	-	-	-
E6	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,1-0,45 0,2-1	-	0,15-0,25 0,1-0,55	-	-	-
F6	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,1-0,5 0,2-1,5	-	0,15-0,35 0,1-1	-	-	-
B7	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	-	0,15-0,6 0,2-2	-	-	0,1-0,4 0,15-2	-
C7-P	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	-	-	-	0,2-0,3 0,2-1,7	-	-

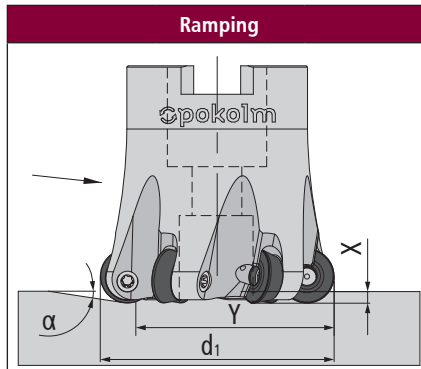
## Cutting speed (Vc in m/min)

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Quality Coating	Application						
C0	roughing	▽90 150 210		▽150 195 240			-
	pre finishing	▽110 165 220	-	▽140 205 270	-	-	▽35 108 180
	finishing	-		-			-
E0	roughing	▽100 175 250		-			-
	pre finishing	▽100 200 300	-	▽130 165 200	-	-	-
	finishing	-		-			-
B3	roughing	-	▽110 155 200			▽30 65 100	-
	pre finishing	-	▽120 175 230	-	-	▽40 75 110	-
	finishing	-	-			-	-
D1	roughing	-	▽80 130 180			▽30 55 80	-
	pre finishing	-	▽100 155 210	-	-	▽40 65 90	-
	finishing	-	-			-	-
D3	roughing	-	▽80 130 180		▽100 250 400	▽30 55 80	-
	pre finishing	-	▽100 155 210	-	▽200 400 600	▽40 65 90	-
	finishing	-	-		-	-	-
C4	roughing	▽90 150 210		▽150 195 240			-
	pre finishing	▽110 165 220	-	▽140 205 270	-	-	▽35 108 180
	finishing	-		-			-
C6	roughing	▽90 150 210		▽150 195 240			-
	pre finishing	▽110 165 220	-	▽140 205 270	-	-	▽35 108 180
	finishing	-		-			-
E4	roughing	▽100 175 250		-			-
	pre finishing	▽100 200 300	-	▽130 165 200	-	-	-
	finishing	-		-			-
F4	roughing	▽100 175 250		▽110 130 150			-
	pre finishing	▽100 200 300	-	▽140 180 220	-	-	-
	finishing	-		-			-
E6	roughing	▽100 175 250		-			-
	pre finishing	▽100 200 300	-	▽130 165 200	-	-	-
	finishing	-		-			-
F6	roughing	▽100 175 250		▽110 130 150			-
	pre finishing	▽100 200 300	-	▽140 180 220	-	-	-
	finishing	-		-			-
B7	roughing	-	▽110 155 200			▽30 65 100	-
	pre finishing	-	▽120 175 230	-	-	▽40 75 110	-
	finishing	-	-			-	-
C7-P	roughing	-			▽100 350 600		-
	pre finishing	-			▽200 500 800	-	-
	finishing	-			-		-

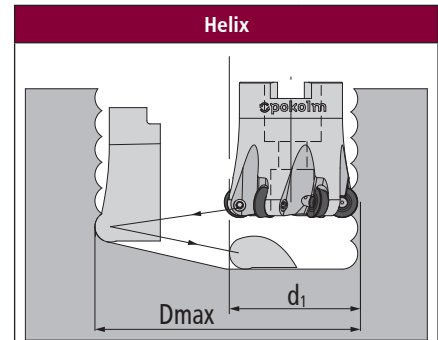
## Extended operation data



Cutter diam. d1	X <sub>max</sub>
20-52	2.5



Cutter diam. d1	α°	y
20	<17,0	2
25	<19,5	7
30	<11,5	12
32	<10,0	14
35	<8,0	17
40	<6,0	22
42	<5,5	24
52	<4,0	34



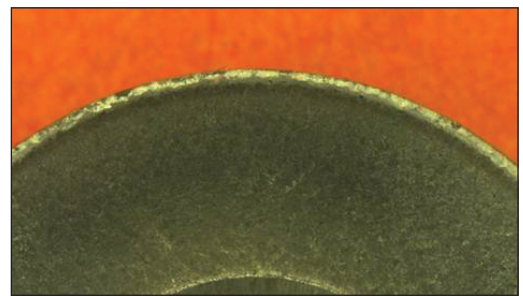
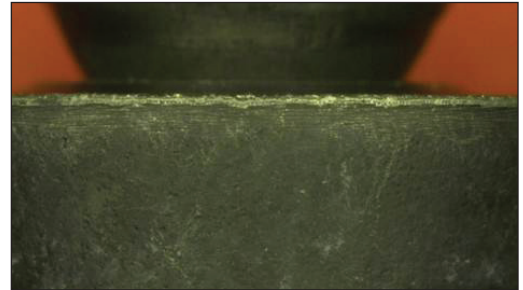
Cutter diam. d1	D <sub>min</sub>	D <sub>max</sub>
20	22	38
25	32	48
30	42	58
32	46	62
35	52	68
40	62	78
42	66	82
52	86	102

# SPINWORX® IN PRACTICAL TESTS – CONVINCING RESULTS

Material to be machined: TiAl6V4

Tool	DR10-025-E12-03
Arbor	50 12 A63
Overhang [mm]	83 mm
Cooling	air emulsion
Insert	DR10-8D3
Coating	D
$V_c$ speed [m/min]	80
$V_f$ feed rate [mm/min]	610
$n(s)$ [min <sup>-1</sup> ]	1018
$D_c$ [mm]	25
$f_z$ feed per tooth [mm]	0.2
$a_p$ depth of cut [mm]	1
$a_c$ width of cut [mm]	15
Tool life [min]	105
Life length [m]	64.05

Wear patterns on insert DR10-8D3



Uninterrupted machine running time of 105 minutes with unstable component clamping. This process reliability without any cutting edge break-out speaks for itself and for SPINWORX®.



# SPINWORX®

r6 - diam. 32 - 66 mm, 7° positive rake angle

Highly efficient SPINWORX systems also available in intermediate sizes.

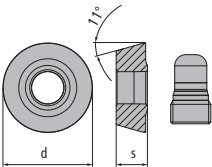
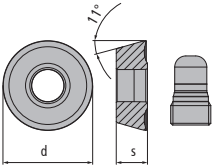
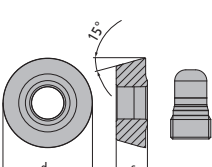
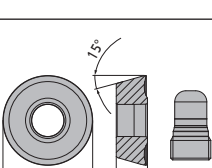
- wide range of use for almost all areas of application
- effective use of the cutting edge
- with specially adapted primary and secondary coolant supply
- unrivalled in terms of machining volume and tool life

**CAUTION! PLEASE NOTE!**

For optimum results with the SPINWORX®-tooling system we recommend using internal coolant supply air, emulsion or MQL for chip removal in the tool! Wet machining up to max speed Vc of 140 m/min!

Milling cutter bodies		Catalogue no.										Accessories		Features
		d <sub>1</sub>	d	r	l <sub>3</sub>	l <sub>2</sub>	l <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	z				
<b>Threaded shank end mill bodies</b>														
	DR12-032-E16-04	32	12	6	42.5	2.8	-	M 16	29	4	B, C, D, E		<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 7°	
	DR12-035-E16-03	35	12	6	42.5	2.8	-	M 16	29	3	B, C, D, E		<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 7°	
	DR12-035-E16-04	35	12	6	42.5	2.8	-	M 16	29	4	B, C, D, E		<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 7°	
	DR12-035-E16-05	35	12	6	42.5	2.8	-	M 16	29	5	B, C, D, E		<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 7°	
<b>Shell-type milling cutter bodies</b>														
	DR12-040-A16-05	40	12	6	42.5	2.8	-	diam. 16	35	5	A, B, C, D, E		<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 7°	
	DR12-042-A16-05	42	12	6	42.5	2.8	-	diam. 16	35	5	A, B, C, D, E		<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 7°	
	DR12-050-A22-06	50	12	6	52.5	2.8	-	diam. 22	40	6	B, C, D, E		<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 7°	
	DR12-052-A22-06	52	12	6	52.5	2.8	-	diam. 22	40	6	B, C, D, E		<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 7°	
	DR12-063-A27-06	63	12	6	52.5	2.8	-	diam. 27	48	6	B, C, D, E		<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 7°	
	DR12-066-A27-07	66	12	6	52.5	2.8	-	diam. 27	48	7	B, C, D, E		<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 7°	
<b>Accessories</b>														
<p>GWSTPS815K hexagon socket set screw A &gt; Page 25</p>	<p>T10-1,4NM Torque Fix® - S torque screwdriver B &gt; Page 25</p>	<p>T10 500 Torx interchangeable bit for Torque Vario® C &gt; Page 25</p>	<p>T10 502 Torx MagicSpring compatible bit f. Torque Vario® D &gt; Page 25</p>	<p>Z 00043 HTC ceramic paste WS 600 005 E &gt; Page 25</p>										



Indexable inserts	Catalogue no.	DIN Specification	Carbide Grade	Coating	d	s	r	M
	DR12-8C0	RORA 1245 M0SN	C0		12	4.5	6	
	DR12-8E0	RORA 1245 M0SN	E0		12	4.5	6	
	DR12-8B3	RORM 1245 M0EN	B3		12	4.5	6	
	DR12-8D1	RORM 1245 M0EN	D1		12	4.5	6	
	DR12-8D3	RORM 1245 M0EN	D3		12	4.5	6	
	DR12-8C4	RDRA 1245 M0SN	C4		12	4.5	6	
	DR12-8C6	RDRA 1245 M0SN	C6		12	4.5	6	
	DR12-8E4	RDRA 1245 M0SN	E4		12	4.5	6	
	DR12-8F4	RDRA 1245 M0SN	F4		12	4.5	6	
	DR12-8E6	RDRA 1245 M0SN	E6		12	4.5	6	
	DR12-8F6	RDRA 1245 M0SN	F6		12	4.5	6	
	DR12-8B7	RDRM 1245 M0EN	B7		12	4.5	6	

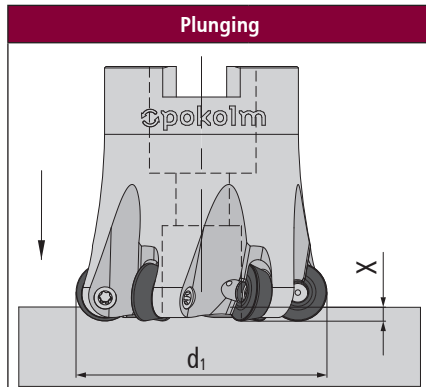
### Feed per tooth (fz) | d.o.c. (ap)

Material		Material					
Quality Coating	Feed per tooth   d.o.c.	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
C0	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,1-0,5 0,2-1,5	-	0,15-0,4 0,1-1,5	-	-	0,1-0,18 0,1-0,4
E0	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,1-0,5 0,2-1,5	-	0,15-0,3 0,1-0,8	-	-	-
B3	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	-	0,2-0,65 0,3-2,5	-	-	0,1-0,5 0,2-2,5	-
D1	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	-	0,2-0,65 0,3-2,5	-	-	0,1-0,5 0,2-2,5	-
D3	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	-	0,2-0,65 0,3-2,5	-	0,25-0,4 0,3-2	0,1-0,5 0,2-2,5	-
C4	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,1-0,5 0,2-1,5	-	0,15-0,4 0,1-1,5	-	-	0,1-0,18 0,1-0,4
C6	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,1-0,5 0,2-1,5	-	0,15-0,4 0,1-1,5	-	-	0,1-0,18 0,1-0,4
E4	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,1-0,5 0,2-1,5	-	0,15-0,3 0,1-0,8	-	-	-
F4	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,1-0,6 0,2-2	-	0,15-0,4 0,1-1,5	-	-	-
E6	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,1-0,5 0,2-1,5	-	0,15-0,3 0,1-0,8	-	-	-
F6	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,1-0,6 0,2-2	-	0,15-0,4 0,1-1,5	-	-	-
B7	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	-	0,2-0,65 0,3-2,5	-	-	0,1-0,5 0,2-2,5	-

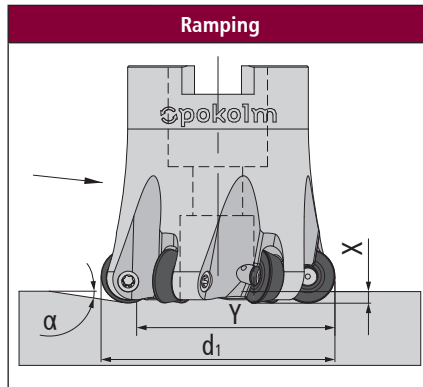
## Cutting speed (Vc in m/min)

Material		steel		stainless steel		cast iron		non-ferrous materials		high-temperature alloys		hardened steel	
Quality Coating	Application												
C0	roughing	▽90	150 210	-	-	▽150	195 240	-	-	-	-	-	-
	pre finishing	▽110	165 220	-	-	▽140	205 270	-	-	-	-	▽35	108 180
	finishing	-	-	-	-	-	-	-	-	-	-	-	-
E0	roughing	▽100	175 250	-	-	▽130	165 200	-	-	-	-	-	-
	pre finishing	▽100	200 300	-	-	-	-	-	-	-	-	-	-
	finishing	-	-	-	-	-	-	-	-	-	-	-	-
B3	roughing	-	-	▽110	155 200	-	-	-	-	▽30	65 100	-	-
	pre finishing	-	-	▽120	175 230	-	-	-	-	▽40	75 110	-	-
	finishing	-	-	-	-	-	-	-	-	-	-	-	-
D1	roughing	-	-	▽80	130 180	-	-	-	-	▽30	55 80	-	-
	pre finishing	-	-	▽100	155 210	-	-	-	-	▽40	65 90	-	-
	finishing	-	-	-	-	-	-	-	-	-	-	-	-
D3	roughing	-	-	▽80	130 180	-	-	▽100	250 400	▽30	55 80	-	-
	pre finishing	-	-	▽100	155 210	-	-	▽200	400 600	▽40	65 90	-	-
	finishing	-	-	-	-	-	-	-	-	-	-	-	-
C4	roughing	▽150	180 210	-	-	▽150	195 240	-	-	-	-	-	-
	pre finishing	▽110	165 220	-	-	▽140	205 270	-	-	-	-	▽35	108 180
	finishing	-	-	-	-	-	-	-	-	-	-	-	-
C6	roughing	▽90	150 210	-	-	▽150	195 240	-	-	-	-	-	-
	pre finishing	▽110	165 220	-	-	▽140	205 270	-	-	-	-	▽35	108 180
	finishing	-	-	-	-	-	-	-	-	-	-	-	-
E4	roughing	▽100	175 250	-	-	▽130	165 200	-	-	-	-	-	-
	pre finishing	▽100	200 300	-	-	-	-	-	-	-	-	-	-
	finishing	-	-	-	-	-	-	-	-	-	-	-	-
F4	roughing	▽100	175 250	-	-	▽110	130 150	-	-	-	-	-	-
	pre finishing	▽100	200 300	-	-	▽140	180 220	-	-	-	-	-	-
	finishing	-	-	-	-	-	-	-	-	-	-	-	-
E6	roughing	▽100	175 250	-	-	▽130	165 200	-	-	-	-	-	-
	pre finishing	▽100	200 300	-	-	-	-	-	-	-	-	-	-
	finishing	-	-	-	-	-	-	-	-	-	-	-	-
F6	roughing	▽100	175 250	-	-	▽110	130 150	-	-	-	-	-	-
	pre finishing	▽100	200 300	-	-	▽140	180 220	-	-	-	-	-	-
	finishing	-	-	-	-	-	-	-	-	-	-	-	-
B7	roughing	-	-	▽110	155 200	-	-	-	-	▽30	65 100	-	-
	pre finishing	-	-	▽120	175 230	-	-	-	-	▽40	75 110	-	-
	finishing	-	-	-	-	-	-	-	-	-	-	-	-

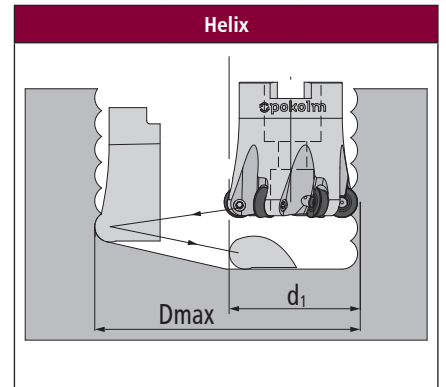
## Extended operation data



Cutter diam. d1	X <sub>max</sub>
32-66	2.8



Cutter diam. d1	$\alpha^\circ$	y
32	<15,5	10
35	<12,0	13
40	<8,5	18
42	<7,5	20
50	<5,5	28
52	<5,0	30
63	<3,5	41
66	<3,5	44



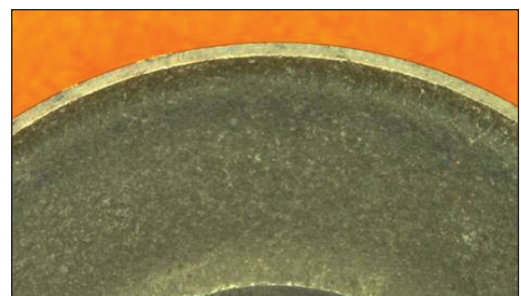
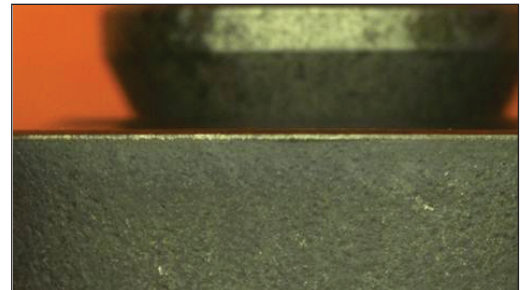
Cutter diam. d1	D <sub>min</sub>	D <sub>max</sub>
32	42	62
35	48	68
40	58	78
42	62	82
50	78	98
52	82	102
63	104	124
66	110	130

# SPINWORX® IN PRACTICAL TESTS – CONVINCING RESULTS

Material to be machined: 1.0570 / S355J2G3

Tool	DR12-052-A22-06
Arbor	50 22 710
Overhang [mm]	102 mm
Cooling	Air ICS
Insert	DR12-8E4
Coating	E
$V_c$ speed [m/min]	250
$V_f$ feed rate [mm/min]	4500
$n(s)$ [min <sup>-1</sup> ]	1500
$D_c$ [mm]	52
$f_z$ feed per tooth [mm]	0.5
$a_p$ depth of cut [mm]	0.5
$a_e$ width of cut [mm]	26
Tool life [min]	470
Life length [m]	2115
Stock removal rate [cm <sup>3</sup> /min]	58.5

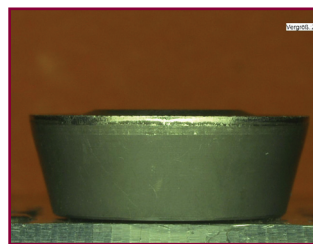
Wear patterns on insert DR12-8E4



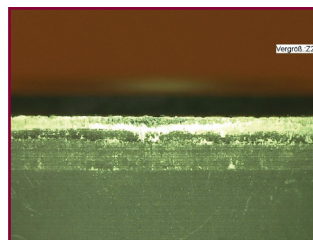
The focus was on unmanned multi-machine support during these practical tests - SPINWORX® fulfilled all expectations.

## Machining material Inconel 718

Inserts	Competitors insert	SPINWORX® DR12-8B3
Milling cutter body	High Feed Cutter	DR12-052-A22-06
Arbor	HSK 63	HSK 63
Cooling	Emulsion	Emulsion
Insert	Competition, 4 blades	DR12-8B3
Carbide grade / Coating	n.a.	CVD
$v_c$ [m/min]	30	44
$v_f$ [mm/min]	300	243
$n(s)$ [min <sup>-1</sup> ]	150	269
$d_c$ [mm]	63	52
$f_z$ [mm]	0.4	0.15
$a_p$ [mm]	0.5	1.5
$a_e$ [mm]	40   66%	32   62%
Tool life [min]	60 per blade	180 - 300
Stock removal rate [cm <sup>3</sup> /min]	6	12



DR12-8B3 after 195 minutes



Wear limit not reached yet



Inconel machining with the new SPINWORX® DR12-8B3 insert



Up to 5 hours operating life possible

Clear winner when machining aircraft components made of Inconel 718: The entire roughening and finishing time with the DR12-8B3 cutting insert from the SPINWORX® system is a mere 37 hours compared to 74 hours with a conventional tool. Moreover, with SPINWORX® only 7 machine stops are needed to replace the cutting insert compared to 74 stops with standard tools. Under ideal conditions, up to 5 hours can be achieved with the new DR12-8B3 insert!

# SPINWORX®

r8 - diam. 40 - 100 mm, 7° positive rake angle



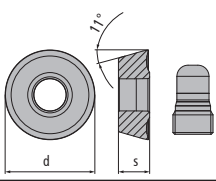
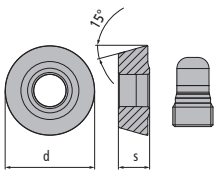
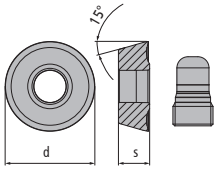
Highly efficient SPINWORX systems also available in intermediate sizes.

- wide range of use for almost all areas of application
- effective use of the cutting edge
- with specially adapted primary and secondary coolant supply
- unrivalled in terms of machining volume and tool life

## CAUTION! PLEASE NOTE!

For optimum results with the SPINWORX®-tooling system we recommend using internal coolant supply air, emulsion or MQL for chip removal in the tool! Wet machining up to max speed Vc of 140 m/min!

Milling cutter bodies		Catalogue no.										Accessories		Features
		d <sub>1</sub>	d	r	l <sub>3</sub>	l <sub>2</sub>	l <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	z				
<b>Threaded shank end mill bodies</b>														
	DR16-040-E16-04	40	16	8	43.5	2.5	-	M 16	29	4	C, D, E, F			
<b>Shell-type milling cutter bodies</b>														
	DR16-052-A22-05	52	16	8	53	2.5	-	diam. 22	40	5	B, C, D, E, F			
	DR16-063-A27-07	63	16	8	53	2.5	-	diam. 27	48	7	C, D, E, F			
	DR16-066-A27-06	66	16	8	53	2.5	-	diam. 27	48	6	C, D, E, F			
	DR16-080-A27-07	80	16	8	53	2.5	-	diam. 27	60	7	C, D, E, F			
	DR16-100-A32-08	100	16	8	53	2.5	-	diam. 32	70	8	A, C, D, E, F			
<b>Accessories</b>														
<p>M16X35 cylinder screw, hexagon socket, short head A &gt; Page 25</p>	<p>GWSTPS10ISK hexagon socket set screw B &gt; Page 25</p>	<p>T20-2,5NM Torque Fix® - S torque screwdriver C &gt; Page 25</p>	<p>T20 500 Torx interchangeable bit for Torque Vario® D &gt; Page 25</p>	<p>T20 502 Torx MagicSpring compati- ble bit f. Torque Vario® E &gt; Page 25</p>	<p>Z 00043 HTC ceramic paste WS 600 005 F &gt; Page 25</p>									

Indexable inserts	Catalogue no.	DIN Specification	Carbide Grade	Coating	d	s	r	M
	DR16-8D3	RORM 1655 MOEN	D3		16	5.5	8	
	DR16-8B3	RORM 1655 MOEN	B3		16	5.5	8	
	DR16-8C4	RDRA 1655 MOSN	C4		16	5.5	8	
	DR16-8C6	RDRA 1655 MOSN	C6		16	5.5	8	
	DR16-8E4	RDRA 1655 MOSN	E4		16	5.5	8	
	DR16-8T4	RDRA 1655 MOSN	T4		16	5.5	8	
	DR16-8T6	RDRA 1655 MOSN	T6		16	5.5	8	
	DR16-8F4	RDRA 1655 MOSN	F4		16	5.5	8	
	DR16-8E6	RDRA 1655 MOSN	E6		16	5.5	8	
	DR16-8B7	RDRM 1655 MOEN	B7		16	5.5	8	

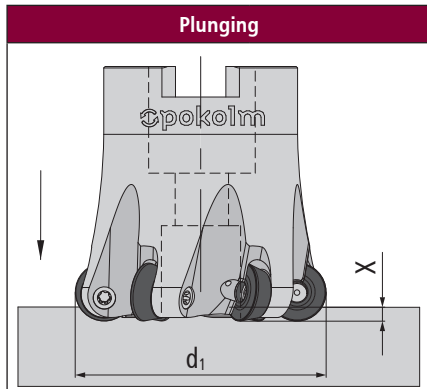
### Feed per tooth (fz) | d.o.c. (ap)

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Quality Coating	Feed per tooth   d.o.c.						
D3	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	-	0,2-0,7 0,5-3	-	0,25-0,4 0,3-2,5	0,1-0,5 0,2-3	-
B3	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	-	0,2-0,7 0,5-3	-	-	0,15-0,5 0,2-3	-
C4	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,2-0,7 0,2-2,5	-	0,2-0,5 0,2-3	-	-	0,15-0,22 0,2-0,55
C6	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,2-0,7 0,2-2,5	-	0,2-0,5 0,2-3	-	-	0,15-0,22 0,2-0,55
E4	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,2-0,7 0,2-2,5	-	0,2-0,35 0,2-1,6	-	-	-
T4	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,2-0,8 0,2-3	-	0,2-0,5 0,2-3	-	-	0,1-0,2 0,2-0,45
T6	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,2-0,8 0,2-3	-	0,2-0,5 0,2-3	-	-	0,1-0,2 0,2-0,45
F4	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,2-0,8 0,2-3	-	0,2-0,5 0,2-3	-	-	-
E6	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,2-0,7 0,2-2,5	-	0,2-0,35 0,2-1,6	-	-	-
F6	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	0,2-0,8 0,2-3	-	0,2-0,5 0,2-3	-	-	-
B7	f <sub>z</sub> (mm) a <sub>p</sub> (mm)	-	0,2-0,7 0,5-3	-	-	0,15-0,5 0,2-3	-

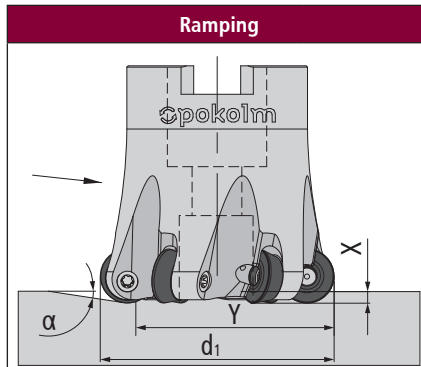
## Cutting speed (Vc in m/min)

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Quality Coating	Application						
D3	roughing pre finishing finishing	-	▽ 80 130 180 ▽ 100 155 210 -	-	▽ 100 250 400 ▽ 200 400 600 -	▽ 30 55 80 ▽ 40 65 90 -	-
B3	roughing pre finishing finishing	-	▽ 110 155 200 ▽ 120 175 230 -	-	-	▽ 30 65 100 ▽ 40 75 110 -	-
C4	roughing pre finishing finishing	▽ 90 150 210 ▽ 110 165 220 -	-	▽ 150 195 240 ▽ 140 205 270 -	-	-	▽ 35 108 180 -
C6	roughing pre finishing finishing	▽ 90 150 210 ▽ 110 165 220 -	-	▽ 150 195 240 ▽ 140 205 270 -	-	-	▽ 35 108 180 -
E4	roughing pre finishing finishing	▽ 100 175 250 ▽ 100 200 300 -	-	▽ 130 165 200 -	-	-	-
T4	roughing pre finishing finishing	▽ 100 165 230 ▽ 100 190 280 -	-	▽ 140 180 220 ▽ 160 205 250 -	-	-	▽ 70 110 150 -
T6	roughing pre finishing finishing	▽ 100 165 230 ▽ 100 190 280 -	-	▽ 140 180 220 ▽ 160 205 250 -	-	-	▽ 70 110 150 -
F4	roughing pre finishing finishing	▽ 100 175 250 ▽ 100 200 300 -	-	▽ 110 130 150 ▽ 140 180 220 -	-	-	-
E6	roughing pre finishing finishing	▽ 100 175 250 ▽ 100 200 300 -	-	▽ 130 165 200 -	-	-	-
F6	roughing pre finishing finishing	▽ 100 175 250 ▽ 100 200 300 -	-	▽ 110 130 150 ▽ 140 180 220 -	-	-	-
B7	roughing pre finishing finishing	-	▽ 110 155 200 ▽ 120 175 230 -	-	-	▽ 30 65 100 ▽ 40 75 110 -	-

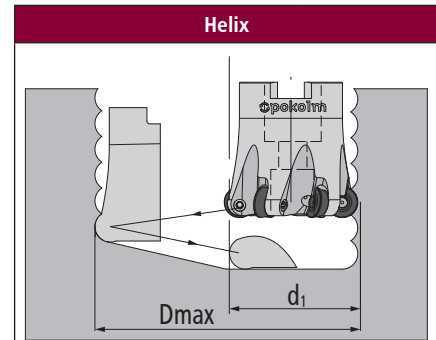
## Extended operation data



Cutter diam. d1	X <sub>max</sub>
40-100	2.5



Cutter diam. d1	α°	y
40	<14,0	10
52	<6,0	22
63	<4,0	33
66	<3,5	36
80	<2,5	50
100	<2,0	70




Cutter diam. d1	D <sub>min</sub>	D <sub>max</sub>
40	50	78
52	74	102
63	96	124
66	102	130
80	130	158
100	170	198

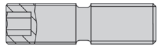


Accessories	Catalogue no.	Description				
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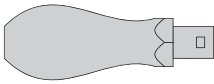
#### Cylindrical screws with hexagon socket | for shell-type and threaded shank adapters

	M16X35	cylinder screw, hexagon socket, short head M 16   L 35   DIN 7984	M 16	L 35	DIN 7984	


#### Additional screws and washers | hexagon socket set screw

	GWSTPS8ISK	hexagon socket set screw M 8x1.25   M8x0.75   hexa. size 4	M 8x1.25	M8x0.75	hexa. size 4	
	GWSTPS10ISK	hexagon socket set screw M10x1.5   M10x1   hexa. size 5	M10x1.5	M10x1	hexa. size 5	


#### Torque screwdrivers and accessories | Torque screwdrivers

	T6-0,5NM	Torque Fix® - S torque screwdriver Torque fixed at 0.5 Nm   suitable for SPINWORX® tools   System DR07   0.5 Nm			System DR07	
	T10-1,4NM	Torque Fix® - S torque screwdriver Torque fixed at 1.4 Nm   suitable for SPINWORX® tools   System DR10   System DR12   1.4 Nm			System DR10	System DR12
	T20-2,5NM	Torque Fix® - S torque screwdriver Torque fixed at 2.5 Nm   suitable for SPINWORX® tools   System DR16   System DR20   2.5 Nm			System DR16	System DR20


#### Torque screwdrivers and accessories | Torx bits, standard

	T6 500	Torx interchangeable bit for Torque Vario® T 6   L 175   max. 0.6 Nm	T 6	L 175	max. 0.6 Nm	
	T10 500	Torx interchangeable bit for Torque Vario® T 10   L 175   max. 3.8 Nm	T 10	L 175	max. 3.8 Nm	
	T20 500	Torx interchangeable bit for Torque Vario® T 20   L 175   max. 8.0 Nm	T 20	L 175	max. 8.0 Nm	

#### Torque screwdrivers and accessories | Torx bits with retaining spring

	T6 502	Torx MagicSpring compatible bit f. Torque Vario® T 6   L 175   max. 0.6 Nm	T 6	L 175	max. 0.6 Nm	
	T10 502	Torx MagicSpring compatible bit f. Torque Vario® T 10   L 175   max. 3.8 Nm	T 10	L 175	max. 3.8 Nm	
	T20 502	Torx MagicSpring compatible bit f. Torque Vario® T 20   L 175   max. 8.0 Nm	T 20	L 175	max. 8.0 Nm	

#### cleaning paste / copper paste

	Z 00043	HTC ceramic paste WS 600 005 tube 5 grams	tube 5 grams			

# ASSEMBLING INSTRUCTIONS

## Fitting of SPINWORX® inserts in the tool

In order to maintain optimum and safe use of these tools, you should pay attention to following notice:

### Step 1: placing inserts into the seat

Place the inserts (1) into the seat provided. Apply the paste included (4) to the thread of the pin (2) and make sure no paste (catalogue number „Z 00043“) gets onto the contact surface. Remove any surplus before using the tool.

### Step 2: inserting the pin

Insert the pin (2) into the screw attachment from behind and use the torque key to tighten according to the specified tightening torque. We recommend using our pre-set torque key with.

### Tightening torques

Insert	Torx´ size	Tightening torque
DR07-8	T6	0.5 Nm
DR10-8 DR12-8	T10	1.4 Nm
DR16-8	T20	2.5 Nm

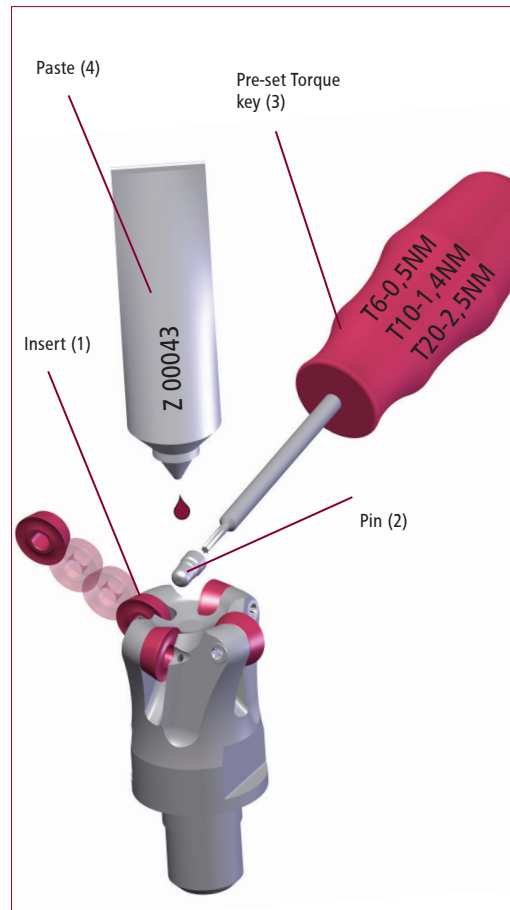
### CAUTION! Please note!

#### SIMPLE HANDLING THANKS TO CONVENIENT TOOL

We recommend our torque keys with pre-set tightening torque as a convenient and safe alternative to conventional Torx or torque keys.



For optimum results with the SPINWORX®-tooling system we recommend using internal coolant supply air, emulsion or MMS for chip removal in the tool!



# IMPORTANT QUESTIONS ABOUT SPINWORX® – AND CONVINCING ANSWERS

## ➔ What is the tool's objective?

By using our **SPINWORX®** system, you can machine your components more efficiently and optimise your machine availability at the same time. **SPINWORX®** is ideal for roughing and residual material machining during face milling, slot, peripheral and pocket milling in materials such as steel, cast iron, rust-free materials and high-temperature alloys.

## ➔ How fast does the insert rotate?

The insert rotates at different speeds depending on the material removal parameters. The decisive factors are the axial positive chip angle and particularly the axial cutting depth  $a_p$  and the tooth feed  $f_z$ . These dependencies make the insert turn by around 0.5° to 2.1° on the pin, depending on tool speed.

## ➔ Does the use of „loose“ inserts lead to disadvantages in process reliability?

No, the insert is constantly „pre-clamped“ with forces in axial direction like the stationary system. Rotation starts at the beginning of the cut and ends when the insert emerges from the material.

## ➔ Can SPINWORX® be operated without coolant?

For optimum results with the **SPINWORX®** tooling system we recommend using internal coolant supply air, emulsion or MQL for both chip removal in the tool and to keep the insert seat clean! This also increases the service life of the seat of the tool. POKOLM offers special rotary transmission leadthroughs for machines that do not have an internal coolant supply. Please contact your technical sales representative from POKOLM or your respective retailer for POKOLM products for more information.

## ➔ How high may the torque for tightening the pin be?

Depending of the insert diameter our specification for optimum torque is from 0.5 up to 2.5 Nm. We recommend the use of our convenient and pre-set torque keys. Care must be taken that the maximum permissible torque is not exceeded. Excessive tightening torque will make it more difficult to loosen the pin. The direction of rotation of the insert is counter-clockwise, which means the maximum tightening torque is achieved by the actual machining process.

## ➔ All tools have 7° positive axial angle, why not neutral 0°?

Positive axial angles allow a higher stock removal rate in relation to the machine capacity and torque. This also means that the **SPINWORX®** insert achieves a higher rotation rate and thus less wear.

## ➔ Is the product protected for Pokolm?

Yes, this product and other variants of the pivot-mounted insert have been protected exclusively for Pokolm Frästechnik GmbH & Co. KG.

## ➔ Are further inserts planned e.g. special cutting materials and geometries for machining exotic materials?

Yes, we are active in this area too and aligning our development processes to both current and anticipated market requirements. The initial priority is to overcome technical system and physical limits.

## ➔ Why should the pin be changed every time an insert is replaced?

We cannot guarantee the pin's will have a service life of more than 100 h. However, we can guarantee that the pin has a longer service life than the insert. Pin and insert are always delivered in a perfectly matching combination in terms of their respective tolerances. Safe function is only guaranteed in the combinations we have put together.

## ➔ What about the service life of the milling tools?

The service life of **SPINWORX®** tools is similar to that of conventional systems. The use of appropriate cooling media such as air, emulsion and MMS to keep the seat of the insert clean significantly extends the service life.

## ➔ Can the insert pin also be used without paste on the thread?

This is possible, but not recommended. The high process temperature can lead to extreme increases in loosening torque in some cases. For this reason, we recommend the use of the high-temperature paste included with every **SPINWORX®** tool. This can be reordered from POKOLM if lost or used up (item: Z 00043).



**Pokolm**  
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