SLOTWORX®

Square shoulder face milling and slotting cutters with highly modern cutting edge geometry for universal applications

pokolm

PREMIUMTOOLS. WE KNOW HOW.

SQUARE SHOULDER FACE MILLING CUTTERS FOR UNIVERSAL APPLICATIONS - WITH SPECIAL INSERTS FOR HIGH FEED CUTTING

SLOTWORX® from S to L offers to you a complete range of square shoulder face milling- and slotting end mills for universal applications: roughing and finishing of steel, cast iron, aluminium, graphite, plastics as well as hardened materials and for machining stainless steel, high-temperature-alloys and superalloys.

The **SLOTWORX®**-range is available with threaded shanks, plain shanks and clamping flats, shell type milling cutters and with our patent protected **DUOPLUG®**-system for highest concentricity and maximum rigidity. These threaded shank milling cutter bodies in connection with our dense-anti-vibration adapters are extremely applicable for finishing operations, in connection with Solid carbide adapters for roughing operations in deep cavities. Exceptionally precision-manufactured cutter bodies guarantee excellent milling results.

Optimum coolant supply direct to the cutting edges avoids any chip built-up on the insert's cutting face and it ensures maximum process reliability and secure chip removal, also in difficult materials.

Small, but big in capability, the **SLOTWORX®-"S"** range features itself through exceptional easy cutting.

The tools of the **SLOTWORX®-"M"** series with the widest range of rotating inserts are multifunctional for all applications. The specially developed inserts even make tools in this size ideal as high feed-rate end mills for HighFeed hard machining all materials up to 60+2 HRC. The adapted cutting face geometry of these cutting materials also guarantees extremely long service lives with quiet running characteristics at the same time.

The **SLOTWORX®-"L"** range allows for cutting depths ap up to 14 mm and enables you to generate maximum possible machining rates from your machine capability available.

There is always an appropriate tool for every possible machining process in our **SLOTWORX®**-product range.

DUOPLUG®

Threaded shanks

Plain shank

Shell type

Our state-of-the-art helical cutting edges with positive rake angles lead to a constant good edge rigidity, easy cutting and outstanding surface finish for all possible kinds of milling operations, as well as 90° shoulder- or face-milling.

Through our patent-protected incorporated insert-seats, a smaller Torx-screw can be used. This results in less balancing errors and therefore to much smoother running of our **SLOTWORX®**-range. Even in deep cavities you have a possibility to mill 90°-shoulders, accurate and virbration-free with high cutting parameters. Smooth surface finish at the cavity's bottom is possible through inserts with intigrated finishing lands. In fact, cutting depths of ap = 14 mm are realisable and lead to extended chip volumes and increased velocity of your milling process.

SLOTWORX®
INDEXABLE INSERTS FOR EVERY DEMAND

Maximum demands to precision and accuracy are secured by ground and polished indexable inserts.

These intigrated finishing lands of our inserts care for outstanding surface finish in face-milling operations.

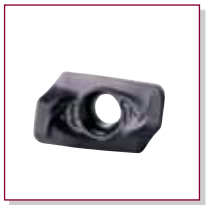
Our high-accuracy indexable inserts however, offer an optimum relation between precision and efficiency.

These inserts can also be used for fine finshing operations in minor applications.

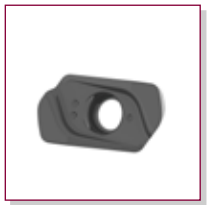
A distinct increase of tool life is achieved by new carbide substrates and coating technolgy.

Even when being used as a high feed-rate end mill with High-Feed hard machining materials up to 60+2 HRC, extremely long service lives are achieved with quiet running characteristics at the same time.

size „S“

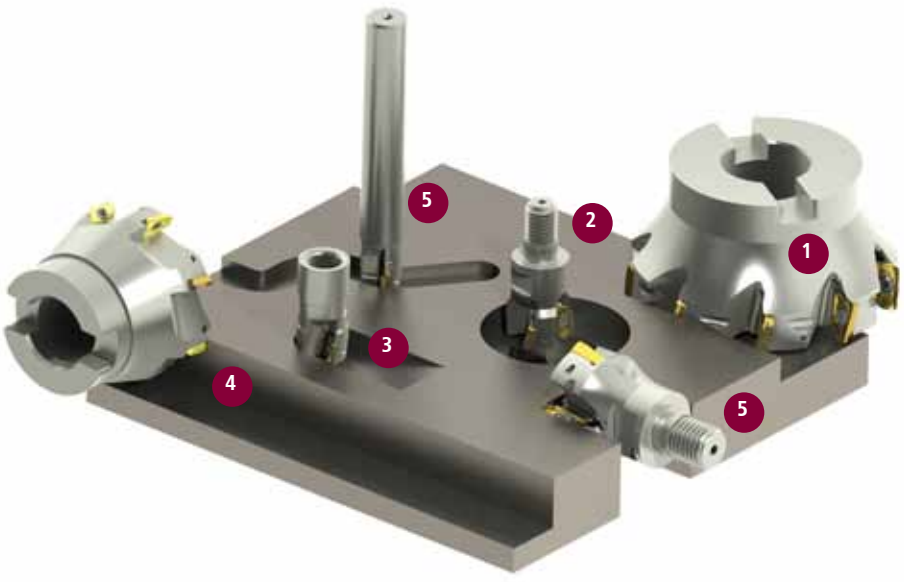


size „M“



size „M“ - HF

size „L“



1. face-milling
2. circular ramping
3. angular ramping
4. side- and shoulder milling
5. grooving

YOU PROFIT FROM THIS SUMMARY OF ADVANTAGES:

- universal applications: roughing and finishing of steel, cast iron, aluminium, graphite, plastics as well as hardened materials and for machining stainless steel, high-temperature-alloys and superalloys
- for HighFeed machining of hardened materials up to 62 HRC
- optimized coolant supply direct to the cutting edges
- special-style surface-finish of inserts for improved machining of aluminium
- one **SLOTWORX®** tool replaces up to 3 traditional tool styles: APKT, LDLX and ADEW through rigidity, accuracy, vibration-decrease and optimized geometries
- integrated finishing lands achieve outstanding surface finish

CONTENT

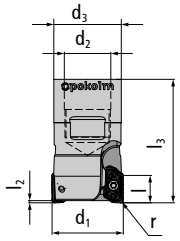
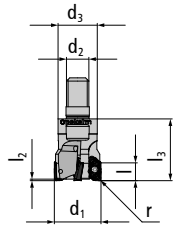
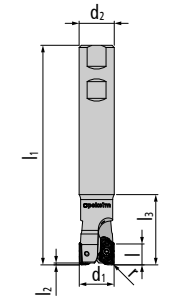
Page

SLOTWORX® - K90°

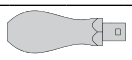
Size S - diam. 10 - 20 mm

Outstandingly capable for using on high-speed milling machines and smaller machining centres.

- the increased no. of teeth allows for very large feed-rates

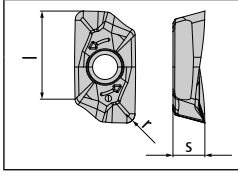
Milling cutter bodies	Catalogue no.	d_1	l	r	l_3	l_2	l_1	d_2	d_3	z	Accessories	Features
DuoPlug®												
	4 16 256 SG	16	6.9	0.8	34.4	1.3	-	M 10	15	4	A, B, C, D, E	
	5 20 256 SG	20	6.9	0.8	32.4	1.3	-	M 12	18.5	5	A, B, C, D, E	
Threaded shank end mill bodies												
	2 10 256 M6	10	6.9	0.8	22.5	0.7	-	M 6	9.75	2	A, B, C, D, E	
	3 12 256 M6	12	6.9	0.8	27.5	0.7	-	M 6	11.5	3	A, B, C, D, E	
	4 16 256	16	6.9	0.8	27.5	1.3	-	M 8	13.8	4	A, B, C, D, E	
	5 20 256	20	6.9	0.8	27.5	1.3	-	M 10	18	5	A, B, C, D, E	
End mill bodies with plain shanks and flats												
	15 10 156	10	6.9	0.8	16.7	0.7	55.6	diam. 10	-	2	A, B, C, D, E	
	15 12 156	12	6.9	0.8	17.5	0.7	60.5	diam. 12	-	3	A, B, C, D, E	
	40 16 156	16	6.9	0.8	42.5	1.3	90.5	diam. 16	-	4	A, B, C, D, E	

Accessories

 18 500 Torx screw A > Page 23	 06 500 Torx-screwdriver B > Page 23	 TV 04-1 Screwdriver torque Vario®-S with window scale, C > Page 23	T6 500 Torx interchangeable bit for Torque Vario® D > Page 23	T6 502 Torx MagicSpring compatible bit f. Torque Vario®, E > Page 23	

internal coolant supply — DuoPlug® — incorporated inserts — clamping flat

NEW latest items ! — available as long as stock lasts — on request — stock item, subject to confirmation

Indexable inserts	Catalogue no.	DIN Specification	Carbide Grade	Coating	l	s	r	M
	02 71 840 R08	XOMX 060208	P40	PVML	6.9	2.45	0.8	M 1.8

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

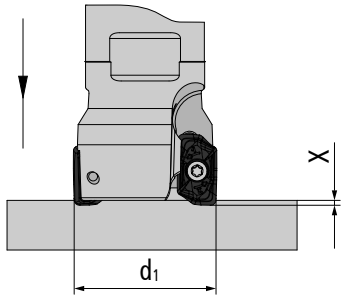
Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Quality Coating	Feed per tooth | d.o.c.						
P40 PVML	f_z (mm) a_p (mm)	0,05-0,17 0,2-3	0,02-0,17 0,1-2,5	0,05-0,17 0,2-2	-	-	-

Cutting speed (Vc in m/min)

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Quality Coating	Application	▼▽	▼▽	▼▽			
P40 PVML	roughing finishing	100 **200** 300 -	*80* ***130*** *180* -	*140* ***170*** *200* *160* ***190*** *220*	-	-	-

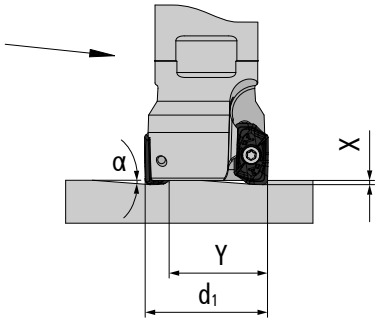
Extended operation data

Plunging



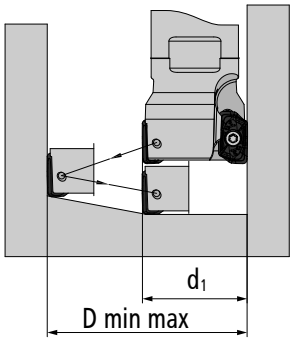
Cutter diam. d1	X_{max}
10-12	0.7
16-20	1.3

Ramping



Cutter diam. d1	α°	y
10	<10	3
12	<6,5	5
16	<4	9
20	<2,5	13

Helix



Cutter diam. d1	D_{min}	D_{max}
10	13	20
12	17	24
16	25	32
20	33	40

▼ *major application* ▽ *minor application* ▼▽ roughing ▼▽ pre-finishing ▼▽ finishing

pokolm PREMIUMTOOLS. WE KNOW HOW.

FROM PRACTICE TO PRACTICE

JOB DESCRIPTION:

The company PFT – Präzisions-Fertigungstechnik GmbH from Erwitte/Germany manufactures high precision components according to designs and requirements of their customers for more than 10 years; on request from material-purchase, complete operation-cycle up to final assembly. During those operation-cycles, target-settings of tolerance-ranges are checked, measured and recorded on the basis of prooved process-capabilities. This fulfils several requests of their customers. PFT is a supplier for aircraft- and space-as well as automotive-industries. Up to the time of introducing our SLOTWORX®-S-tooling, supplementary flats like spanner flats, clearance-flats on devices etc. were machined with solid carbide end mills. These tools often had too long cutting lengths, the customer needed to stock increased quantities in order to recognize regrinding time and he had problems with a reduced product reliability due to very unstable components. For these exceptional obstinate operations, causing intense vibrations, combined with quick chipping of cutting edges due to brittle solid carbide end mills, we have tried our new SLOTWORX®-tools. Our new task was: machining joining flats for fastening elements, retaining rings and spanner flats on structural parts. Everywhere, when it was impossible to avoid vibrations through less optimum set-up and/or component's prevailing conditions, tools from our new SLOTWORX®-S-range can take advantages of its superiority.

The milling cutter body 4 16 256 (16 mm diam., r=0.8) could be compared easily with a solid carbide end mill, due to the same no. of teeth and equal cutting parameters.

MACHINE	MATERIAL	PROGRAMMING SYSTEM
Hermle C 800 U	1.7225	manual

Clamping flats on a rotationally symetrical component with a nominal width of 32 mm and a required depth of 16 mm have been machined in one cut. The component was clamped on the machine table of the Hermle milling machine, very unstably. Difficulties occurred not through the material itself, but the job title was, to machine this component process-reliable, with no cutting-edge chipping in sufficient surface accuracy, despite of vibrations, activated by inefficient clamping possibilities. The smallest milling cutter body from our SLOTWORX®-S-range could realize our expectations. Refurbishing was replaced through simple turning or changing of inserts.

EXAMPLE FROM PRACTICE:

component:	spanner flats
material:	1.7225
arbor:	50 08 750 (M8, SK 40)
cutter body:	4 16 256 (16 mm diam., r = 0,8)
insert:	02 71 840 r = 08 (P40)
coating:	PVML
overhang:	78,5 mm
v_c (speed):	180 m/min
v_f (feed rate):	1.432 mm/min
S (revolutions):	3.580 1/min
f_z (feed per tooth):	0,1 mm
a_p (depth of cut):	2,0 mm
a_e (width of cut):	16,0 mm
chip volume:	45,8 cm^3/min = 2,18 cu.in./min

RESULT:

These spanner flats could be produced with increased process reliability and without interruptions. Vibrations, occuring during milling process have not caused any damage to the cutting edges. Due to the modular threaded shank-interface, this tool can be used also for other operations and machining opportunities. Costs for refurbishing of solid end mills and for increased availablility were avoided.

internal coolant supply | DuoPlug® | incorporated inserts | clamping flat

NEW latest items ! | available as long as stock lasts | ? on request | stock item, subject to confirmation

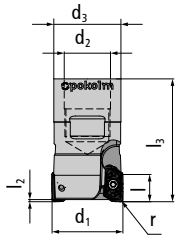
SLOTWORX® - K90°

Size M - diam. 16 - 52 mm

This range is the all-purpose solution for square shoulder face milling and slotting. Can be used with indexable inserts of the Slotworx®-M range up to a corner radius of 2 mm. Modified standard bodies for the use of indexable inserts with a corner radius >= 3 mm have additional R+ marking.

Milling cutter bodies

DuoPlug®

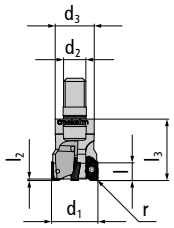


Catalogue no.	d_1	l	r	l_3	l_2	l_1	d_2	d_3	z	Accessories	Features
2 16 267 SG	16	10	0.8-2	38	2.5	-	M 10	15	2	A, C, D, E, F	
2 16 267 SG R+	16	10	3|4	38	2.5	-	M 10	15	2	A, C, D, E, F	
2 20 267 SG	20	10	0.8-2	40	2.5	-	M 12	18.6	2	A, C, D, E, F	
2 20 267 SG R+	20	10	3|4	40	2.5	-	M 12	18.6	2	A, C, D, E, F	
3 25 267 SG	25	10	0.8-2	43	2.5	-	M 16	23.5	3	A, C, D, E, F	
3 25 267 SG R+	25	10	3|4	43	2.5	-	M 16	23.5	3	A, C, D, E, F	

major application *minor application* roughing pre-finishing finishing

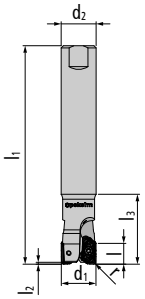
pokolm PREMIUMTOOLS. WE KNOW HOW.

Threaded shank end mill bodies



Milling cutter bodies Catalogue no.	d_1	l	r	l_3	l_2	l_1	d_2	d_3	z	Accessories	Features
2 16 267	16	10	0.8-2	29	2.5	-	M 8	13.8	2	A, C, D, E, F	
2 16 267 R+	16	10	3 | 4	29	2.5	-	M 8	13.8	2	A, C, D, E, F	
2 20 267	20	10	0.8-2	29	2.5	-	M 10	18	2	A, C, D, E, F	
2 20 267 R+	20	10	3 | 4	29	2.5	-	M 10	18	2	A, C, D, E, F	
3 20 267	20	10	0.8-2	29	2.5	-	M 10	18	3	A, C, D, E, F	
3 20 267 R+	20	10	3 | 4	29	2.5	-	M 10	18	3	A, C, D, E, F	
3 25 267	25	10	0.8-2	33	2.5	-	M 12	21	3	A, C, D, E, F	
3 25 267 R+	25	10	3 | 4	33	2.5	-	M 12	21	3	A, C, D, E, F	
4 25 267	25	10	0.8-2	33	2.5	-	M 12	21	4	A, C, D, E, F	
4 25 267 R+	25	10	3 | 4	33	2.5	-	M 12	21	4	A, C, D, E, F	
4 32 267	32	10	0.8-2	43	2.5	-	M 16	29	4	B, C, D, E, F	
4 32 267 R+	32	10	3 | 4	43	2.5	-	M 16	29	4	B, C, D, E, F	
5 32 267	32	10	0.8-2	43	2.5	-	M 16	29	5	B, C, D, E, F	
5 32 267 R+	32	10	3 | 4	43	2.5	-	M 16	29	5	B, C, D, E, F	
5 42 267	42	10	0.8-2	43	2.5	-	M 16	29	5	B, C, D, E, F	
5 42 267 R+	42	10	3 | 4	43	2.5	-	M 16	29	5	B, C, D, E, F	

Plain shank end mill bodies

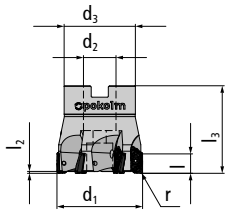


Milling cutter bodies Catalogue no.	d_1	l	r	l_3	l_2	l_1	d_2	d_3	z	Accessories	Features
2 32 16 167 G	16	10	0.8-2	32	2.5	165	diam. 16	-	2	A, C, D, E, F	
2 32 16 167 G R+	16	10	3 | 4	32	2.5	165	diam. 16	-	2	A, C, D, E, F	
3 40 20 167 G	20	10	0.8-2	40	2.5	165	diam. 20	-	3	A, C, D, E, F	
3 40 20 167 G R+	20	10	3 | 4	40	2.5	165	diam. 20	-	3	A, C, D, E, F	
3 50 25 167 G	25	10	0.8-2	50	2.5	225	diam. 25	-	3	A, C, D, E, F	
3 50 25 167 G R+	25	10	3 | 4	50	2.5	225	diam. 25	-	3	A, C, D, E, F	
4 50 25 167 G	25	10	0.8-2	50	2.5	225	diam. 25	-	4	A, C, D, E, F	
4 50 25 167 G R+	25	10	3 | 4	50	2.5	225	diam. 25	-	4	A, C, D, E, F	

internal coolant supply
DuoPlug®
incorporated inserts
clamping flat
NEW latest items !
available as long as stock lasts
? on request
stock item, subject to confirmation

Milling cutter bodies

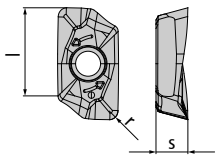
Shell type milling cutter bodies

Catalogue no.	d_1	l	r	l_3	l_2	l_1	d_2	d_3	z	Accessories	Features
											
5 42 367	42	10	0.8-2	43	2.5	-	diam. 16	35	5	B, C, D, E, F	
5 42 367 R+	42	10	3|4	43	2.5	-	diam. 16	35	5	B, C, D, E, F	
6 52 367	52	10	0.8-2	53	2.5	-	diam. 22	40	6	B, C, D, E, F	
6 52 367 R+	52	10	3|4	53	2.5	-	diam. 22	40	6	B, C, D, E, F	

Accessories

					
25 505 KP Torx screw A > Page 23	25 505 P Torx screw for Slotworx M B > Page 23	08 500 P Torx-screwdriver (Torx-Plus) C > Page 23	TV 08-2 Screwdriver torque Vario®-S with window scale, D > Page 23	T8 500 P Torx interchangeable bit for Torque Vario® E > Page 23	T8 502 P, Torx MagicSpring compatible bit f. Torque Vario®, F > Page 23

Indexable inserts

Catalogue no.	DIN Specification	Carbide Grade	Coating	l	s	r	M
							
04 67 837 R08	XDMT 10T308 ER	HSC 05	PVFN	10	3.58	0.8	M 2.5
04 67 848 R08	XDMT 10T308 ER	P40	PVGO	10	3.58	0.8	M 2.5
04 67 820	XDHT 10T310 ER	K10	polished	10	3.58	1	M 2.5
04 67 837	XDMT 10T310 ER	HSC 05	PVFN	10	3.58	1	M 2.5
04 67 844	XDHT 10T310 ER	P40	PVGO	10	3.58	1	M 2.5
04 67 848	XDMT 10T310 ER	P40	PVGO	10	3.58	1	M 2.5
04 67 860	XDHT 10T310 ER	K10	PVTi	10	3.58	1	M 2.5
04 67 860 D	XDHT 10T310 ER	K10	PVDiaN	10	3.58	1	M 2.5
04 67 894	XDHT 10T310 ER	PCD	uncoated	10	3.58	1	M 2.5
04 67 896	XDMT 10T310 ER	M40	PVST	10	3.58	1	M 2.5
04 67 820 R20	XDHT 10T320 FR	K10	polished	10	3.58	2	M 2.5
04 67 896 R20	XDMT 10T320 ER	M40	PVST	10	3.58	2	M 2.5
04 67 820 R30	XDHT 10T330 FR	K10	polished	10	3.58	3	M 2.5
04 67 896 R30	XDMT 10T330 ER	M40	PVST	10	3.58	3	M 2.5
04 67 820 R40	XDHT 10T340 FR	K10	polished	10	3.58	4	M 2.5
04 67 896 R40	XDMT 10T340 ER	M40	PVST	10	3.58	4	M 2.5

major application *minor application* roughing pre-finishing finishing

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.						
HSC 05 PVFN	f_z (mm) a_p (mm)	0,05-0,25 0,1-5	-	0,05-0,25 0,1-4	-	-	0,08-0,25 0,1-5
P40 PVGO	f_z (mm) a_p (mm)	0,05-0,25 0,1-6	0,05-0,25 0,1-3	0,05-0,25 0,1-6	-	0,05-0,25 0,1-3	-
K10 polished	f_z (mm) a_p (mm)	-	-	-	0,08-0,35 0,1-9	-	-
K10 PVTi	f_z (mm) a_p (mm)	-	-	-	0,08-0,35 0,1-9	0,08-0,12 0,1-3	0,08-0,15 0,1-1
K10 PVDiaN	f_z (mm) a_p (mm)	-	-	-	0,08-0,35 0,1-9	-	-
PCD uncoated	f_z (mm) a_p (mm)	-	-	-	0,08-0,2 0,1-4	-	-
M40 PVST	f_z (mm) a_p (mm)	0,05-0,25 0,1-6	0,08-0,35 0,1-9	-	-	0,08-0,25 0,1-9	-

Cutting speed (Vc in m/min)

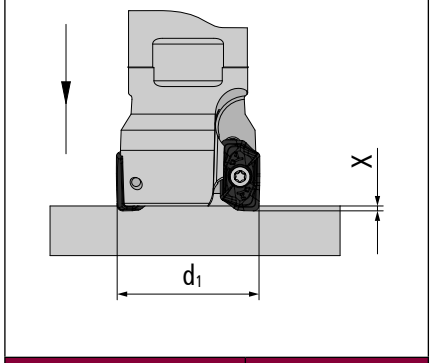
Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Quality Coating	Application						
HSC 05 PVFN	roughing finishing	120 **160** 200 -	-	100 **150** 200 -	-	-	40 **130** 220 40 **130** 220
P40 PVGO	roughing finishing	100 **150** 200 160 **205** 250	90 **110** 130 110 **135** 160	110 **130** 150 120 **150** 180	-	60 **80** 100 80 **100** 120	-
K10 polished	roughing finishing	-	-	-	100 **450** 800 100 **450** 800	-	-
K10 PVTi	roughing finishing	-	-	-	100 **450** 800 100 **450** 800	- 35 **68** 100	- 35 **143** 250
K10 PVDiaN	roughing finishing	-	-	-	100 **450** 800 100 **450** 800	-	-
PCD uncoated	roughing finishing	-	-	-	200 **500** 800 600 **800** 1000	-	-
M40 PVST	roughing finishing	80 **140** 200 -	80 **145** 210 120 **185** 250	-	-	30 **60** 90 60 **90** 120	-

internal coolant supply | DuoPlug® | incorporated inserts | clamping flat

NEW latest items ! | available as long as stock lasts | on request | stock item, subject to confirmation

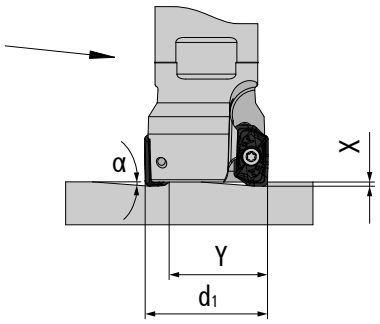
Extended operation data

Plunging



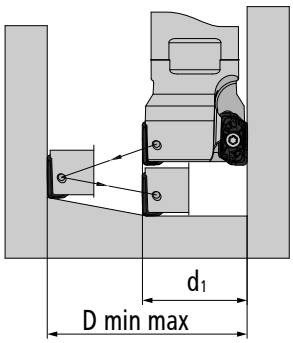
Cutter diam. d1	X_{max}
16-52	2.5

Ramping



Cutter diam. d1	α°	y
16	<24,5	5.3
20	<14,5	9.3
25	<8	14.3
32	<5	21.3
42	<3	31.3
52	<2,5	41.3

Helix



Cutter diam. d1	D_{min}	D_{max}
16	21.3	32
20	29.3	40
25	39.3	50
32	53.3	64
42	73.3	84
52	93.3	104

major application *minor application* roughing pre-finishing finishing

pokolm PREMIUMTOOLS. WE KNOW HOW.

FROM PRACTICE TO PRACTICE

JOB DESCRIPTION:

Producing absolutely accurate 90°-walls on holding blocks of injection moulding dies for plastics processing has always been a goal of the company Wonde from the town of Heiligkreuz-Steinach. Only a perfectly prepared holding block guarantees highest possible accuracy and durability for following production processes of all injection moulding dies. On this job, special attention was required for precision and economic efficiency regarding tool costs. Till now, the customer was using a 25 mm diam. multiple flute solid carbide end mill for this job. He was limited through given dimensions for reach and overall length of this end mill.

For this particular and for many other applications, our new **SLOTWORX®**-range is the ideal compliment, where a solid carbide end mill reaches its limitation. This is a golden opportunity for our **SLOTWORX®**-style of end mills. Our new range, with precision-ground inserts, is ready to face these challenges –and, it has passed its examination in masterly manner and velocity.

MACHINE	MATERIAL	PROGRAMMING SYSTEM
Deckel Maho DMU 100 P	1.2312	Euklid

This holding block, which had to be machined, had a remaining stock of 1 mm all over, after roughing. This part had been programmed in a z-constant circular-pocket cycle with constant depth setting increments in radial and axial direction. We found a rigid set-up on that DMU 100P milling machine, a high-speed and dynamic 5-axis machining centre with vertical HSK-63A taper connection. All these conditions are ideal qualifications for using POKOLM-**SLOTWORX®**-milling cutters.

EXAMPLE FROM PRACTICE:

component:	holding block
material:	1.2312
arbor:	60 25 A63 S
	(25 mm diam., HSK 63)
extension:	75 16 603
cutter body:	3 25 267 SG
	(25 mm diam., r = 1)
insert:	04 67 844, P40
coating:	PVGO
overhang:	178 mm
vc (speed):	314 m/min
vf (feed rate):	2.000 mm/min
S (revolutions):	4.000 1/min
fz (feed per tooth):	0,25 mm
ap (depth of cut):	3,0 mm
ae (width of cut):	0,1 mm

RESULT:

Expected and requested accuracy has been reached immediately to customer's satisfaction. Now, the customer is able to produce his holding blocks with those exceptionally required tool-overhangs of > 100 mm process-reliable and efficient in very short time. This kind of tooling is also available now for machining aluminium, and it is the right way for further success of POKOLM-tooling.

internal coolant supply | DuoPlug® | incorporated inserts | clamping flat

NEW latest items ! | available as long as stock lasts | on request | stock item, subject to confirmation

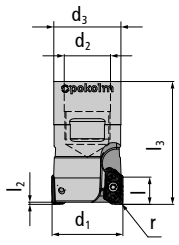
SLOTWORX® - K15°

HF | Size M - diam. 16 - 52 mm

- exceptionally suitable for High Feed Machining of hardened materials up to 60+2HRC.
- PVTiH Coating well suited for milling of die steels, f.e. 1.2714.
- extremely long life time and high running smoothness because of the adapted cutting surface geometry.

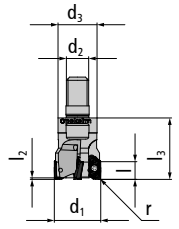
Milling cutter bodies

DuoPlug®



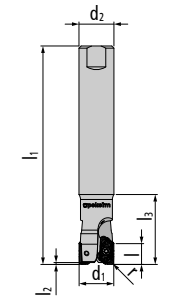
Catalogue no.	d_1	l	r	l_3	l_2	l_1	d_2	d_3	z	Accessories	Features
2 16 267 SG	16	10	1.4	38	2.5	-	M 10	15	2	A, C, D, E, F	
2 20 267 SG	20	10	1.4	40	2.5	-	M 12	18.6	2	A, C, D, E, F	
3 25 267 SG	25	10	1.4	43	2.5	-	M 16	23.5	3	A, C, D, E, F	

Threaded shank end mill bodies



Catalogue no.	d_1	l	r	l_3	l_2	l_1	d_2	d_3	z	Accessories	Features
2 16 267	16	10	1.4	29	2.5	-	M 8	13.8	2	A, C, D, E, F	
2 20 267	20	10	1.4	29	2.5	-	M 10	18	2	A, C, D, E, F	
3 20 267	20	10	1.4	29	2.5	-	M 10	18	3	A, C, D, E, F	
3 25 267	25	10	1.4	33	2.5	-	M 12	21	3	A, C, D, E, F	
4 25 267	25	10	1.4	33	2.5	-	M 12	21	4	A, C, D, E, F	
4 32 267	32	10	1.4	43	2.5	-	M 16	29	4	B, C, D, E, F	
5 32 267	32	10	1.4	43	2.5	-	M 16	29	5	B, C, D, E, F	
5 42 267	42	10	1.4	43	2.5	-	M 16	29	5	B, C, D, E, F	

Plain shank end mill bodies

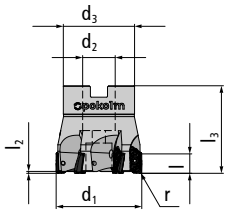


Catalogue no.	d_1	l	r	l_3	l_2	l_1	d_2	d_3	z	Accessories	Features
2 32 16 167 G	16	10	1.4	32	2.5	165	diam. 16	-	2	A, C, D, E, F	
3 40 20 167 G	20	10	1.4	40	2.5	165	diam. 20	-	3	A, C, D, E, F	
3 50 25 167 G	25	10	1.4	50	2.5	225	diam. 25	-	3	A, C, D, E, F	
4 50 25 167 G	25	10	1.4	50	2.5	225	diam. 25	-	4	A, C, D, E, F	

major application *minor application* roughing pre-finishing finishing

Milling cutter bodies

Shell type milling cutter bodies



Catalogue no.	d_1	l	r	l_3	l_2	l_1	d_2	d_3	z	Accessories	Features
5 42 367	42	10	1.4	43	2.5	-	diam. 16	35	5	B, C, D, E, F	
6 52 367	52	10	1.4	53	2.5	-	diam. 22	40	6	B, C, D, E, F	

Accessories

25 505 KP
Torx screw
A > Page 23

25 505 P
Torx screw for Slotworx M
B > Page 23

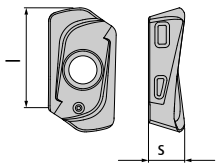
08 500 P
Torx-screwdriver (Torx-Plus)
C > Page 23

TV 08-2
Screwdriver torque Vario®-S with window scale, D > Page 23

T8 500 P
Torx interchangeable bit for Torque Vario®
E > Page 23

T8 502 P, Torx MagicSpring compatible bit f. Torque Vario®
F > Page 23

Indexable inserts



Catalogue no.	DIN Specification	Carbide Grade	Coating	l	s	r	M
04 67 835 HF	XDEW 10T3 SR	HSC 05	PVTi	10	3.58	1.4	M 2.5
04 67 836 HF	XDEW 10T3 SR	HSC 05	PVTiH	10	3.58	1.4	M 2.5
04 67 848 HF	XDMT 10 T3 TR	P40	PVGO	10	3.58	1.4	M 2.5
04 67 862 HF	XDMT 10 T3 TR	K10	PVGP	10	3.58	1.4	M 2.5

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

Material Quality Coating	Feed per tooth | d.o.c.	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
HSC 05 PVTi	f_z (mm) a_p (mm)	0,5-1,6 0,15-0,7	-	0,4-1,8 0,15-0,7	-	-	0,3-1 0,1-0,5
HSC 05 PVTiH	f_z (mm) a_p (mm)	0,5-1,6 0,15-0,7	-	0,4-1,8 0,15-0,7	-	-	0,3-1 0,1-0,5
P40 PVGO	f_z (mm) a_p (mm)	0,3-1,5 0,5-1,6	-	-	-	-	-
K10 PVGP	f_z (mm) a_p (mm)	-	-	0,3-1,2 0,2-1,5	-	-	0,15-1 0,2-1

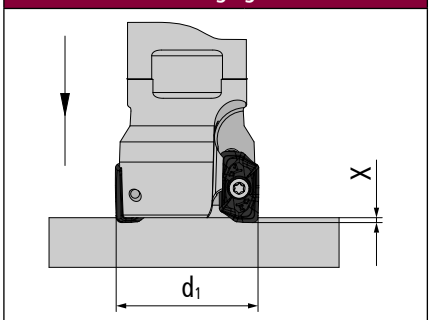
internal coolant supply
DuoPlug®
incorporated inserts
clamping flat
NEW latest items !
available as long as stock lasts
? on request
stock item, subject to confirmation

Cutting speed (Vc in m/min)

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Quality Coating	**Application**						
HSC 05 PVTi	roughing finishing	120 **260** 400 -	-	100 **200** 300 -	-	-	35 **143** 250 -
HSC 05 PVTiH	roughing finishing	120 **260** 400 -	-	100 **200** 300 -	-	-	35 **143** 250 -
P40 PVGO	roughing finishing	100 **150** 200 -	-	-	-	-	-
K10 PVGP	roughing finishing	-	-	150 **185** 220 -	-	-	80 **140** 200 -

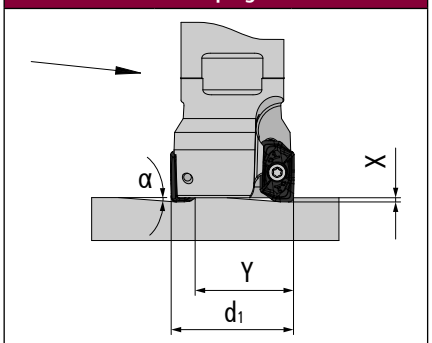
Extended operation data

Plunging



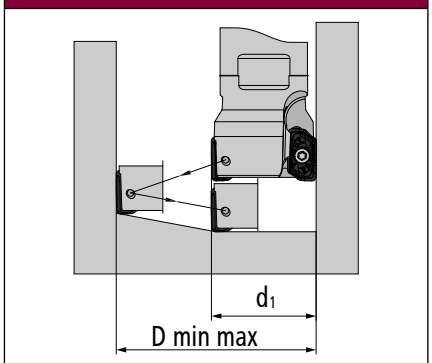
Cutter diam. d1	X_{max}
16-52	2.5

Ramping



Cutter diam. d1	α°	y
16	<24,5	5.3
20	<14,5	9.3
25	<8	14.3
32	<5	21.3
42	<3	31.3
52	<2,5	41.3

Helix



Cutter diam. d1	D_{min}	D_{max}
16	21.3	32
20	29.3	40
25	39.3	50
32	53.3	64
42	73.3	84
52	93.3	104

major application *minor application* roughing pre-finishing finishing

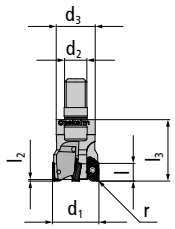
pokolm PREMIUMTOOLS. WE KNOW HOW.

SLOTWORX® - K90°

Size L - diam. 25 - 100 mm

Universally applicable for maximum cutting depths. These tools stand out due to low energy consumption and maximum rigidity. Usable with indexable inserts of the Slotworx®-L-range with a corner radius of up to 3.0 mm. Modified standard bodies for the use of indexable inserts with a corner radius >= 4 mm have additional R+ marking.

Threaded shank end mill bodies

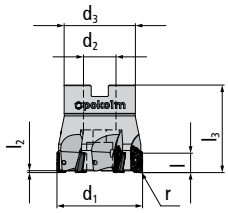


Milling cutter bodies Catalogue no.	d_1	l	r	l_3	l_2	l_1	d_2	d_3	z	Accessories	Features
2 25 268	25	15	1-3	35	3	-	M 12	21	2	A, B, C, D, E	☑ ▮▮ ◎
2 25 268 R+	25	15	4 | 5	35	3	-	M 12	21	2	A, B, C, D, E	☑ ▮▮ ◎
3 32 268	32	15	1-3	43	3	-	M 16	29	3	A, B, C, D, E	☑ ▮▮ ◎
3 32 268 R+	32	15	4 | 5	43	3	-	M 16	29	3	A, B, C, D, E	☑ ▮▮ ◎
4 40 268	40	15	1-3	43	3	-	M 16	29	4	A, B, C, D, E	☑ ▮▮ ◎
4 40 268 R+	40	15	4 | 5	43	3	-	M 16	29	4	A, B, C, D, E	☑ ▮▮ ◎
4 42 268	42	15	1-3	43	3	-	M 16	29	4	A, B, C, D, E	☑ ▮▮ ◎
4 42 268 R+	42	15	4 | 5	43	3	-	M 16	29	4	A, B, C, D, E	☑ ▮▮ ◎

▮▮ internal coolant supply
NEW latest items !
DuoPlug®
⚠ available as long as stock lasts
◎ incorporated inserts
? on request
[clamping flat
☑ stock item, subject to confirmation

Milling cutter bodies

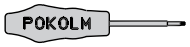
Shell type milling cutter bodies



Catalogue no.	d_1	l	r	l_3	l_2	l_1	d_2	d_3	z	Accessories	Features
4 40 368	40	15	1-3	43	3	-	diam. 16	35	4	A, B, C, D, E	
4 40 368 R+	40	15	4 | 5	43	3	-	diam. 16	35	4	A, B, C, D, E	
4 42 368	42	15	1-3	43	3	-	diam. 16	35	4	A, B, C, D, E	
4 42 368 R+	42	15	4 | 5	43	3	-	diam. 16	35	4	A, B, C, D, E	
5 50 368	50	15	1-3	53	3	-	diam. 22	40	5	A, B, C, D, E	
5 50 368 R+	50	15	4 | 5	53	3	-	diam. 22	40	5	A, B, C, D, E	
5 52 368	52	15	1-3	53	3	-	diam. 22	40	5	A, B, C, D, E	
5 52 368 R+	52	15	4 | 5	53	3	-	diam. 22	40	5	A, B, C, D, E	
6 63 368	63	15	1-3	53	3	-	diam. 27	48	6	A, B, C, D, E	
6 63 368 R+	63	15	4 | 5	53	3	-	diam. 27	48	6	A, B, C, D, E	
6 66 368	66	15	1-3	53	3	-	diam. 27	48	6	A, B, C, D, E	
6 66 368 R+	66	15	4 | 5	53	3	-	diam. 27	48	6	A, B, C, D, E	
7 80 368	80	15	1-3	53	3	-	diam. 27	60	7	A, B, C, D, E	
7 80 368 R+	80	15	4 | 5	53	3	-	diam. 27	60	7	A, B, C, D, E	
9 100 368	100	15	1-3	53	3	-	diam. 32	70	9	A, B, C, D, E	
9 100 368 R+	100	15	4 | 5	53	3	-	diam. 32	70	9	A, B, C, D, E	

Accessories

35 500
Torx screw
A > Page 23



15 500
Torx-screwdriver
B > Page 23

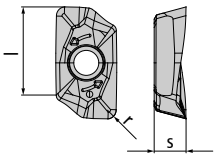
TV 2-8
Screwdriver torque Vario®-S with window scale, C > Page 23

T15 500
Torx interchangeable bit for Torque Vario®
D > Page 23

T15 502, Torx Magic Spring compatible bit f. Torque Vario®
E > Page 23

major application *minor application* roughing pre-finishing finishing

pokolm PREMIUMTOOLS. WE KNOW HOW.

Indexable inserts	Catalogue no.	DIN Specification	Carbide Grade	Coating	l	s	r	M
	05 68 820	XDHT 155210	K10	polished	15	5.2	1	M 3.5
	05 68 848	XDMT 155210 ER	P40	PVGO	15	5.2	1	M 3.5
	05 68 862	XDMT 155210 ER	K10	PVTi	15	5.2	1	M 3.5
	05 68 896	XDMT 155210 ER	M40	PVST	15	5.2	1	M 3.5
	05 68 896 R20	XDMT 155220 ER	M40	PVST	15	5.2	2	M 3.5
	05 68 820 R30	XDHT 155230 FR	K10	polished	15	5.2	3	M 3.5
	05 68 896 R30	XDMT 155230 ER	M40	PVST	15	5.2	3	M 3.5
	05 68 820 R40	XDHT 155240 FR	K10	polished	15	5.2	4	M 3.5
	05 68 896 R40	XDMT 155240 ER	M40	PVST	15	5.2	4	M 3.5
	05 68 820 R50	XDHT 155250 FR	K10	polished	15	5.2	5	M 3.5
	05 68 896 R50	XDMT 155250 ER	M40	PVST	15	5.2	5	M 3.5

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

Material / Quality Coating	Feed per tooth | d.o.c.	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
K10 polished	f_z (mm) a_p (mm)	-	-	-	0,08-0,35 0,1-14	-	-
P40 PVGO	f_z (mm) a_p (mm)	0,1-0,5 0,2-14	-	0,1-0,5 0,2-14	-	-	-
K10 PVTi	f_z (mm) a_p (mm)	-	-	-	-	-	-
M40 PVST	f_z (mm) a_p (mm)	-	0,08-0,5 0,1-14	-	-	0,08-0,25 0,1-14	-

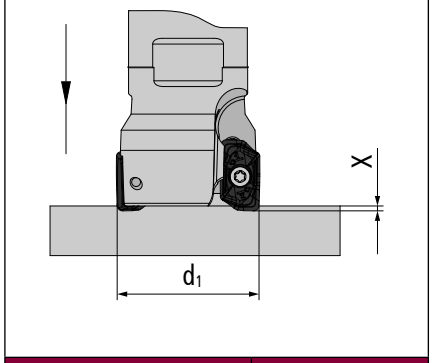
Cutting speed (Vc in m/min)

Material / Quality Coating	Application	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
K10 polished	roughing finishing	- -	-	-	100 **450** 800 100 **450** 800	-	-
P40 PVGO	roughing finishing	100 **150** 200 *160* ***205*** *250*	-	110 **130** 150 *120* ***150*** *180*	-	-	-
K10 PVTi	roughing finishing	- -	-	-	-	-	-
M40 PVST	roughing finishing	-	80 **145** 210 120 **185** 250	-	-	30 **60** 90 60 **90** 120	-

internal coolant supply
DuoPlug®
incorporated inserts
clamping flat
NEW latest items !
available as long as stock lasts
on request
stock item, subject to confirmation

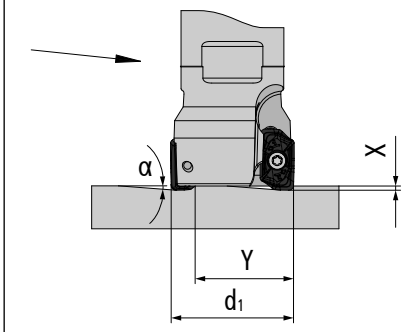
Extended operation data

Plunging



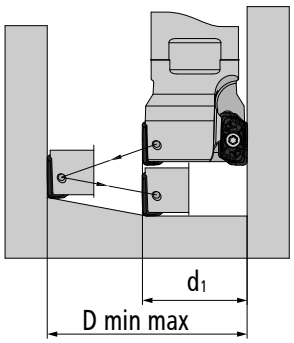
Cutter diam. d1	X_{max}
25-100	3

Ramping



Cutter diam. d1	α°	y
25	<8,3	17
32	<5,9	24
40	<4,4	32
42	<4,2	34
50	<3,3	42
52	<3,2	44
63	<2,5	55
66	<2,4	58
80	<1,9	72
100	<1,5	92

Helix



Cutter diam. d1	D_{min}	D_{max}
25	42	50
32	56	64
40	72	80
42	76	84
50	92	100
52	96	104
63	118	126
66	124	132
80	152	160
100	192	200

major application *minor application* roughing pre-finishing finishing

pokolm PREMIUMTOOLS. WE KNOW HOW.

FROM PRACTICE TO PRACTICE

JOB DESCRIPTION:

Optimizing of machining a component from Cu-HCP (CW021A) (best selected copper min.99.5 % purity), with a tensile strength of approx. 300 N/mm² only, but a breaking elongation of over 40 %. The metal removal volume for this component was 55 %, for a quantity of 48 pieces. Previously, this component with unmachined dimensions of 258 mm long, 123 mm wide and 211 mm high was machined with a Square Shoulder Face- and Slot Milling Cutter with inserts having 0.8 mm corner radius. But with this tool, maximum cutting depth of a_p = 3 mm could be realized, otherwise the component started vibrating under the enormous cutting pressure. This was a very negative influence to the roughing operation. Although the customer had rated the tool life of the inserts as satisfying, this was not our valuation at all.

The no. of components was increasing constantly , and regarding production capacity, a decision had to be made. A solution for better machining possibilities was found by our applications engineers immediately. The new milling cutter body from our **SLOTWORX®**-L range 5 52 368 (52 mm diam., r = 1) should be suitable outstandingly for this application, and it was selected together with our new indexable inserts 05 68 896, specially developed for cutting corrosion- acid- and heat-resistant materials, having sharp, but slightly radiused cutting edges and our special coating with lubrication additives. This special coating avoids chip-built-up of this best selected copper and cares together with a sufficient coolant supply for optimum chip removal.

MACHINE	MATERIAL	MACHINE CONTROL
OKUMA	Cu-HCP	Okuma CNC

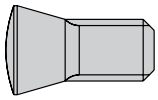
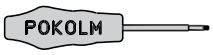
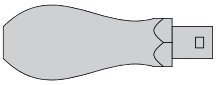
This component has been produced countour-parallel in z-constant cycle in climb milling as well as conventional milling. Regarding machining time, the feed rate and thus the chip volume has been increased by 4 times. This results in a reduction of the previous machining time from approx. 30 minutes to slightly more than 6 minutes. Through the special design of the minor cutting edge of these **SLOTWORX®**-L inserts we could achieve very good surface smoothness and minor waviness in the vertical parts of the component, even in cutting depth a_p of 5 mm.

EXAMPLE FROM PRACTICE:

component:	Nut
material:	Cu-HCP, CW021A
arbor:	50 22 710 (⌀ 22, SK 50)
cutter body:	5 52 368 (⌀ 52 / R 1)
insert:	05 68 896, M40
coating:	PVST
overhang:	103 mm
v_c (speed.):	571 m/min
v_f (feed rate):	4,000 mm/min
S (revolutions):	3,500 1/min
f_z (feed per tooth):	0.229 mm
a_p (depth of cut):	5 mm
a_e (width of cut):	32 mm
chip volume:	640 cm³/min
machining time:	06:07 min

RESULT:

Machining time of this component has been reduced from 5 to 1.5 hours. This results – for 48 components and a calculated machine hour rate of 50€/hour – in savings of approx. more than 8000 €. Plus an increased machine availablility of 168 hours, which represents working hours of a complete month anyhow. This time saving can be used for other projects.

Accessories	Catalogue no.	Description				
Torx®screws | Torx®screws						
	18 500	Torx screw M 1.8 | L 3.7 | T 6	M 1.8	L 3.7	T 6	
	25 505 KP	Torx screw M 2.5 | L 5.3 | T 8 Plus	M 2.5	L 5.3	T 8 Plus	
	25 505 P	Torx screw for Slotworx M M 2.5 | L 7.3 | T 8 Plus	M 2.5	L 7.3	T 8 Plus	
	35 500	Torx screw M 3.5 | L 7.5 | T 15	M 3.5	L 7.5	T 15	
Spanners / screwdrivers | Torx-screwdriver						
	06 500	Torx-screwdriver T 6	T 6			
	08 500 P	Torx-screwdriver (Torx-Plus) T 8 Plus	T 8 Plus			
	15 500	Torx-screwdriver T 15	T 15			
Torque screwdrivers and accessories | Torque screwdrivers						
	TV 2-8	Screwdriver torque Vario®-S with window scale from Nm 2.0 | up to 8,0 Nm | with scale, inc setter	from Nm 2.0	up to 8,0 Nm	with scale, inc setter	
	TV 04-1	Screwdriver torque Vario®-S with window scale from Nm 0.4 | up to 1,0 Nm | with scale, inc setter	from Nm 0.4	up to 1,0 Nm	with scale, inc setter	
	TV 08-2	Screwdriver torque Vario®-S with window scale from Nm 0.8 | up to 2,0 Nm | with scale, inc setter	from Nm 0.8	up to 2,0 Nm	with scale, inc setter	
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	
	T8 500 P	Torx interchangeable bit for Torque Vario® T 8 IP | L 175 | max. 1.3 Nm	T 8 IP	L 175	max. 1.3 Nm	
	T15 500	Torx interchangeable bit for Torque Vario® T 15 | L 175 | max. 5.5 Nm	T 15	L 175	max. 5.5 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	
	T8 502 P	Torx MagicSpring compatible bit f. Torque Vario® T 8 IP | L 175 | max. 1.3 Nm	T 8 IP	L 175	max. 1.3 Nm	
	T15 502	Torx MagicSpring compatible bit f. Torque Vario® T 15 | L 175 | max. 5.5 Nm	T 15	L 175	max. 5.5 Nm	

FL-287-EN 042015

Pokolm
Frästechnik GmbH & Co. KG

Adam-Opel-Straße 5
33428 Harsewinkel
Germany

Fon: +49 5247 9361-0
Fax: +49 5247 9361-99

info@pokolm.com
www.pokolm.com

www.pokolm.com