PLANWORX®

HIGH-EFFICIENT FACE-MILLING CUTTER WITH AN EXTREME SMOOTHNESS

pokolm

PREMIUMTOOLS. WE KNOW HOW.

... ACCURATELY PLANNED ... FOR CERTAIN

PLANWORX®, the face-milling cutter for medium and rough machining of steel, cast material and RSH material. Available in sizes from diam. 40 to 250 mm face diameter. Resonance vibrations are eliminated by using adapted uneven partitions. Extremely well suited to working conditions lacking stability with maximum chipping depths of up to 6.5 mm and for chamfer cutting angles up to approximately 45°. Feed holes for the internal supply of coolant are provided in all tools up to and including diam. 125 mm. The new tool has been designed for high-efficiency cutting with large cutting depths and an extreme smoothness. The coated and hardened base body offers longevity and a maximum of tooth stability even under extreme loads.

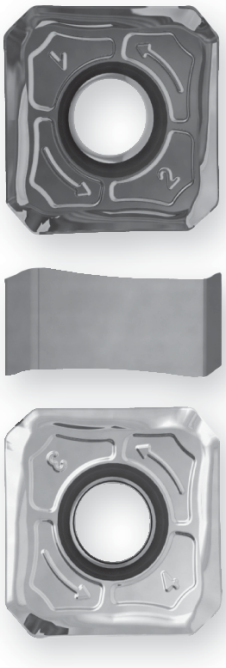
EIGHT cutting edges to each cutting insert, of 13 mm incircle and a special macro-geometry with face cutters of 2.4 mm length make the tool suitable for universal use in all areas. 5.4 mm effective plate thickness increases the enormously high process reliability and protects the support. Matching micro-geometries with polished chipping areas help keep temperatures in the cutting material at a minimum and ensure uniform disposal of chips.

Precision-made cutting inserts in grades: K10, P40 and M40 with adapted chip breakers and improved coatings provide extremely low-cost solutions in terms of the number of cutting edges and the service life.

The benefits at a glance:

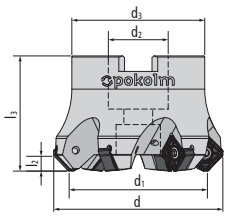
- negative, and therefore extremely stable basic shape
- all eight cutting edges can be used reliably
- easy cutting with highly positive cutting plate geometry
- uneven partition for lower vibration levels
- coolant holes for media up to 125 mm diameter
- low power consumption
- outstandingly smooth running

Each cutting edge is marked for ease of orientation and enables a high speed of installation. Exactly manufactured insert mounts in combination with fastening screw with Torx Plus drive hold the insert exactly in its mounted position.

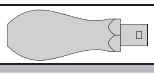


DIMENSIONS AND OPERATION DATA

The PLANWORX® „M“-Serie

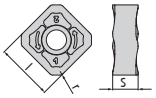
MILLING CUTTER BODIES	Catalogue no.	d_1	l_2	l	l_3	d_2	d_3	z	Price in EUR
Shell type milling cutter bodies									
	4 40 331	40	6.7	13	42	22	40	4	
	5 50 331	50	6.7	13	52	27	48	5	
	6 63 331	63	6.7	13	52	27	60	6	
	8 80 331	80	6.7	13	52	32	70	8	
	10 100 331	100	6.7	13	52	40	90	10	
	12 125 331	125	6.7	13	52	40	90	12	
	14 160 331	160	6.7	13	52	40	120	14	
	16 200 331	200	6.7	13	52	60	160	16	
	20 250 331	250	6.7	13	52	60	160	20	

Accessories

	Catalogue no.	Description	Dimensions			Price in EUR
	40 505 P	Torx screw M 4.0	M 4.0	L 7.5	T 15P	
	15 500 P	Torx screwdriver T 15 P	T 15P			
	T 15 500 P	Torx interchangeable	T 15P	L 175	max. 5.5 Nm	
	T 15 502 P	Torx MagicSpring compatible bit f. Torque Vario®	T 15P	L 175	max. 5.5 Nm	
	TV 2-8	Screwdriver torque Vario®-S with window scale from Nm	from 2.0 Nm	up to 8.0 Nm	with scale	

Tightening torque torx screw 40 505 M_d: 5 Nm

PLANWORX®-Inserts Size "M", DIN-Identification: SNMX 135408 ER

INDEXABLE INSERTS	Catalogue No.	DIN-Identification	Carbide Grade	Coating	l	s	r	M	Price in EUR
	05 31 842	SNMX 135408 ER	P40	PVSR	13	5.4	0.8	4.0	
	05 31 862	SNMX 135408 ER	K10	PVTi	13	5.4	0.8	4.0	
	05 31 896	SNMX 135408 ER	M40	PVST	13	5.4	0.8	4.0	

Cutting Speeds V_c in m/min

MATERIAL		l	Kind of machining	P40 PVSR	K10 PVTi	M40 PVST		
Steel		13	Roughing Finishing	100 – 250 150 – 300				
Cast iron		13	Roughing Finishing		120 – 220 150 – 250			
Stainless Steel		13	Roughing Finishing			80 – 180 110 – 250		
High-temperature alloys		13	Roughing Finishing			40 – 180 60 – 120		

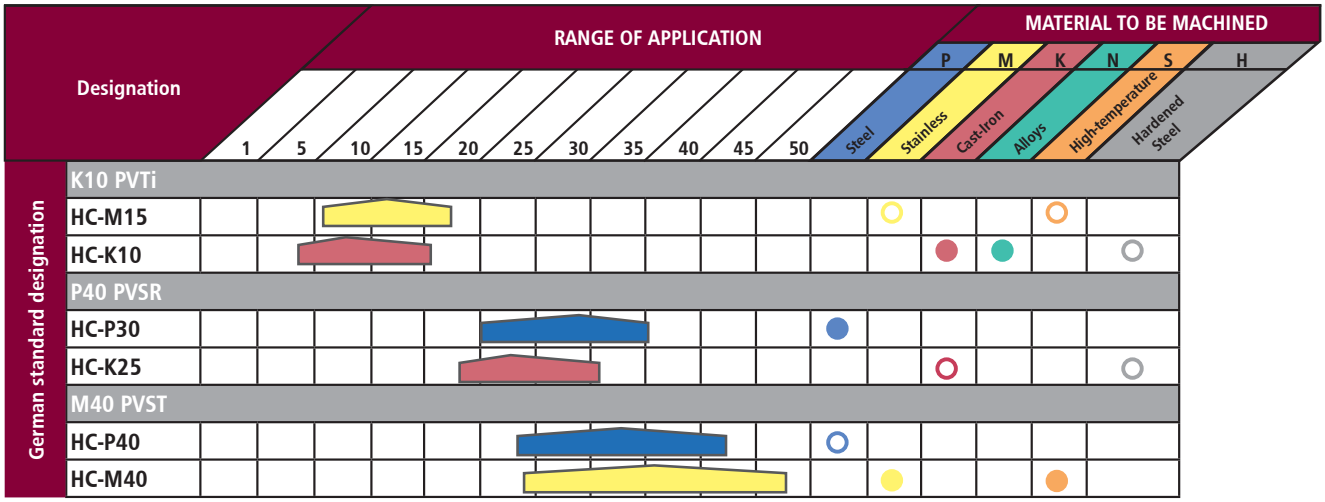
Application data (f_z/a_p)

MATERIAL		l	f_z/a_p	P40 PVSR	K10 PVTi	M40 PVST		
Steel		13	f_z (mm) a_p (mm)	0.08 – 0.55 0.1 – 6				
Cast iron		13	f_z (mm) a_p (mm)		0.1 – 0.55 0.1 – 6			
Stainless Steel		13	f_z (mm) a_p (mm)			0.08 – 0.3 0.1 – 4		
High-temperature alloys		13	f_z (mm) a_p (mm)			0.08 – 0.2 0.1 – 3		

EXTENDED OPERATION DATA

Classification of carbide material

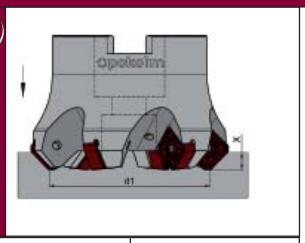
Designation of main groups of chip removal and groups of application according to ISO 513



● Major application ○ Minor application

Full colour circle symbols represent: Major applications for materials to be machined. Hollow colour cirlcle symbols represent: Minor applications for materials to be machined.
The upper point of the pentagon-symbol indicates major applications. Sloping sides to the right or left indicate minor applications.

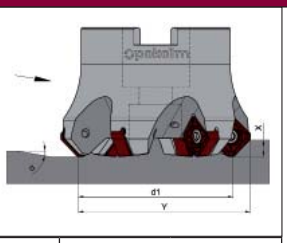
axial plunging into solid block



Cutter diam. d_1 mm	x max. mm
40	4
50	4
63	4
80	4
100	4
125	4

x maximum plunge depth
f_z see operation data table but reduce value to 30 %
Vertical dipping of tools with a bigger diameter than 125 mm is not recommended

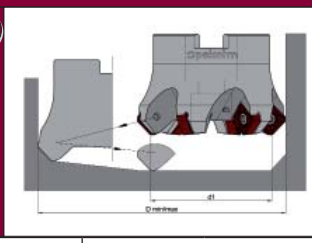
ramping



Cutter diam. d_{1a} mm	a°	y mm
53.5	<11	29.5
63.5	<8	39.5
76.5	<6.5	52.5
93.5	<4	69.5
113.5	<3.5	89.5
138.5	<2.5	114.5

y minimum travel
x maximum travel
a_p/f_z see operation data table
d_{1a} outer diameter

circular milling into solid block



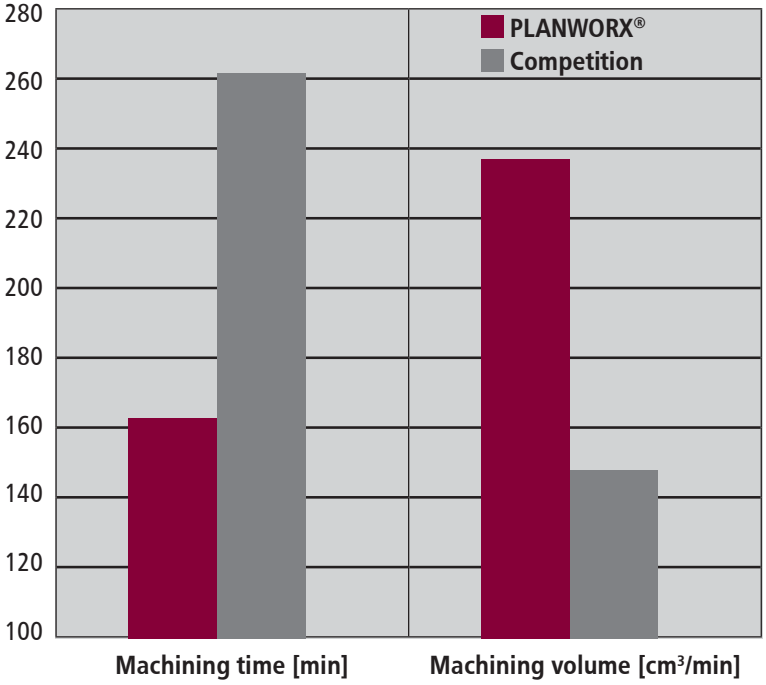
Cutter diam. d_{1a} mm	D_{min} mm	D_{max} mm
53.5	89.5	93.5
63.5	109.5	113.5
76.5	135.5	139.5
93.5	169.5	173.5
113.5	209.5	213.5
138.5	259.5	263.5

a_p/f_z see operation data table
D_{min} minimum bore diameter depending on cutter diameter
D_{max} maximum bore diameter depending on cutter diameter
d_{1a} outer diameter

FROM PRACTICE TO PRACTICE

MASCHINE	MATERIAL	CONTROL
OKUMA Gantry	**GG30**	**OKUMA - FANUC**

PRACRICAL EXAMPLE	COMPETITION	PLANWORX®
Part	**Clamping plate**	
Material	**GG 30**	
Holder	**BT 50**	
Tool	diam. 63 z6	6 63 331 (diam. 63, z6)
Part clamping system	SNMX 1206	05 31 862
Coating	unknown	PVTi
Overhang	200 mm	200 mm
v_c (cutting speed)	220 m/min	261 m/min
v_f (total feed)	1.199 mm/min	1.920 mm/min
S (speed)	1.111 1/min	1.600 1/min
f_z (feed per tooth)	0,18 mm	0,2 mm
a_p (cutting depth)	3,25 mm	3,25 mm
a_e (cutting width)	37,8 mm	37,8 mm
Machinig volume	147,29 cm³/min	235,87 cm³/min
Machining time	264 min	165 min
Time saved	**99 min**	



Result:

The machining time of the whole part was reduced by 99 min. The complete clamping plate was machined without changing the insert holder. That means customers are able to save 37 % of the machining time, which can be used for other tasks.

A clear plus for the continued use of tools produced by Pokolm Frästechnik GmbH & Co. KG of Harsewinkel. The future course is clearly set with Pokolm premium tools.

FL-233 EN 112012

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

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