



FINWORX®

TOOLING SYSTEMS

PROCESS OPTIMIZATION

CONSULTING IN MILLING STRATEGIES



 **pokolm**
PREMIUMTOOLS. WE KNOW HOW.

DOUBLE SIDED INSERT WITH FOUR CUTTING EDGES – DOUBLE EFFICIENT

FINWORX® – is the new economic miracle in the range of Pokolm rhombic square sh. face milling cutter bodies. The reason is that although it has the same number of teeth, it has twice the number of cutting edges and thus quite simply slashes your cutting materials costs by a huge 50 %. In addition, the new tool

system covers a broad range of finishing applications. The carefully thought out FINWORX® geometry ensures low cutting forces and excellent chip control. Together with the precision-ground, highly accurate cutter bodies, it is particularly well-suited for vibration-free finishing, even at large depths.



Straight shank



Skrew-on type



DuoPlug®

Connections

The FINWORX®-range is available with straight shanks, threaded shanks and with our stand alone and patented DuoPlug®-system for highest concentricity and maximum rigidity.

All cutters are manufactured with internal coolant supply for best process reliability.

FINWORX® FEATURES AT A GLANCE

- ⊕ Finishing tool with a wide application range
- ⊕ Suitable in steel, hardened steel, cast iron and RSH
- ⊕ CBN & PKD tipped inserts for machining modern materials
- ⊕ Outside- and Copy-milling
- ⊕ Circular- and incline plunging

Indexable inserts – Pocket seat – Contact area:

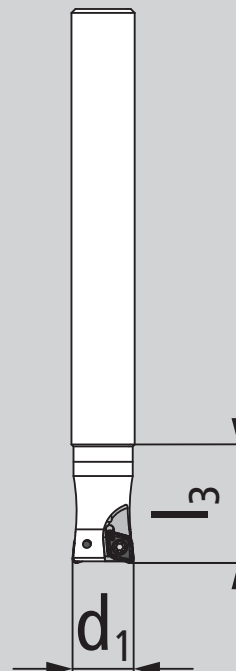
- ⊕ Calotte (circle / triangle) for orientation
- ⊕ Contact flats bigger than cutting edge
- ⊕ Curved cutting edge for optimal chip control and evacuation
- ⊕ Cutting edge has no contact to cutter body
- ⊕ Easy to handle and fixing insert



Description Tool Order Number Key

Sample: **2 32 16 185 G**

- ⊕ No. of flutes ————
- ⊕ Working depth [l_3] ————
- ⊕ Nominal diameter [d_1] ————
- ⊕ Connection ————
 - 1 - Straight shank
 - 2 - Screw-on type
 - 3 - shell type
 - 0750 - Monoblock SK40
- ⊕ System key ————
 - 85 - FINWORX® M
- ⊕ Straight shank according to DIN ————
 - G - DIN 1835 A
 - - DIN 1835 B





FINWORX®

Size „M“

- Universal milling cutters for finishing and profile milling with small radii.
- particularly smooth operating in corners and pockets
- extreme economic due to four effective cutting edges
- low energy consumption

Milling cutter bodies

Catalogue no.

d_1 l r l_3 l_2 l_1 d_2 d_3 z

Accessories

Features

DuoPlug®

	2 16 285 SG	16	6.5	1	31	0.7	-	M 10	15	2	A, B, C, D, E	
	3 20 285 SG	20	6.5	1	32.5	1.0	-	M 12	18.6	3	A, B, C, D, E	
	4 25 285 SG	25	6.5	1	37.5	1.0	-	M 16	23.5	4	A, B, C, D, E	
	 25 505 A > Page 5	 POKOLM 08 500P B > Page 5	 TV 1-5 C > Page 5	 T8 500P D > Page 5	 T8 502P E > Page 5							

Screw-on type

	2 16 285	16	6.5	1	29	0.5	-	M 8	13.8	2	A, B, C, D, E	
	3 20 285	20	6.5	1	29	0.5	-	M 10	18	3	A, B, C, D, E	
	4 25 285	25	6.5	1	33	0.5	-	M 12	21	4	A, B, C, D, E	
	4 30 285	30	6.5	1	32.5	1.0	-	M 16	29	4	A, B, C, D, E	
	5 32 285	32	6.5	1	32.5	1.0	-	M 16	21	5	A, B, C, D, E	
	5 35 285	35	6.5	1	42.5	1.0	-	M 16	29	5	A, B, C, D, E	
	6 42 285	42	6.5	1	43	0.5	-	M 16	29	6	A, B, C, D, E	
 25 505 A > Page 5	 POKOLM 08 500P B > Page 5	 TV 1-5 C > Page 5	 T8 500P D > Page 5	 T8 502P E > Page 5								

Straight shank

	2 32 16 185 G	16	6.5	1	32	0,5	-	10	-	2	A, B, C, D, E	
	3 40 20 185 G	20	6.5	1	40	0,5	-	12	-	3	A, B, C, D, E	
	 25 505 A > Page 5	 POKOLM 08 500P B > Page 5	 TV 1-5 C > Page 5	 T8 500P D > Page 5	 T8 502P E > Page 5							

internal coolant supply

DuoPlug®

incorporated inserts

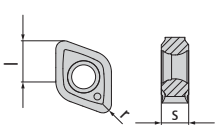
clamping flat

latest items!

available as long as stock last



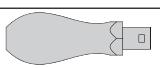


on request

stock item, subject to confirmation

Indexable insert	Catalogue no.	ISO Standard	Carbide Grade	Coating	Dimensions			
					l	s	r	M
	03 85 835	XNHU 063010 EN	HSC 05	PVTi	6.5	3	1	M 2.5
	03 85 836	XNHU 063010 EN	HSC 05	PVTiH	6.5	3	1	M 2.5
	03 85 835 D	XNHU 063010 EN	HSC 05	PVDiaN	6.5	3	1	M 2.5
	03 85 892*	XNHU 063010 EN	CBN for steel		6.5	3	1	M 2.5
	03 85 894	XNHU 063010 EN	PKD		6.5	3	1	M 2.5

* 2 cutting edges

FINWORX® „M“ – Accessories

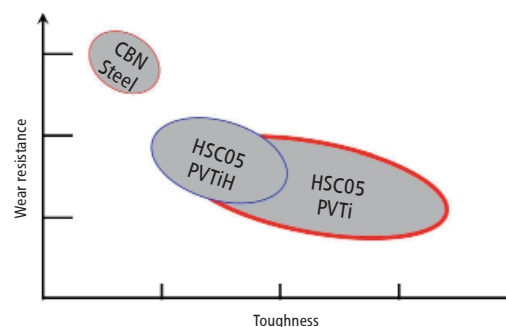
Accessories	Catalogue no.	Description	Dimensions			
	25 505	Torxscrew M 2,5	M 2,5	L 6,36	T 8 plus	
	08 500P	Torx Screwdriver (Torx-Plus)	T 8 IP			
	TV 1-5	Torque Screwdriver Vario® S with scale	from 1.0 Nm	up to 5.0 Nm	with scale	
	T8 500P	Torx interchangeable bit for Torque Vario®	T 8 IP	L 175	max. 1.3 Nm	
	T8 502P	Torx MagicSpring compatible bit for Torque Vario®	T 8 IP	L 175	max. 1.3 Nm	

Starting torque for Torxscrews: M_0 1.28 Nm

Application field

Carbide Grade Coating	Description	Application area
HSC 05 PVTi / PVTiH	835 / 836	Dry machining with high feed rates in all conditions
HSC 05 PVDiaN	835 D	Machining of highly abrasive plastics, graphite and non-ferrous materials
CBN	892	Finishing with highest cutting speeds and with a constant oversize

PVTiH coated inserts have best performance in silicon alloyed materials, eg. 1.2714, or dry machining of RSH materials (RSH - stainless, acid and heat resistant materials)



Cutting speed V_c in m/min

Material	Application	Insert radius	l	Machining rates	HSC05 PVTi	HSC05 PVTiH	HSC05 PVDian	CBN	PKD
Steel		1	6.5	roughing	120 - 200	120 - 200			
				finishing	200 - 350	200 - 350			
Cast irons		1	6.5	roughing	100 - 200	100 - 200			
				finishing	200 - 350	200 - 350			
Hardened steel		1	6.5	roughing	35 - 150	35 - 150			
				finishing	150 - 250	150 - 250		500 - 1000	
Non ferrous materials		1	6.5	roughing			100 - 400		200 - 600
				finishing			180 - 600		400 - 800
Stainless steel		1	6.5	roughing					
				finishing	100 - 200	150 - 250			

Major application

roughing

pre-finishing

finishing

Minor application

roughing

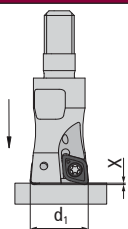
pre-finishing

finishing

feed per tooth (f_z) | d.o.c. (a_p)

Material	Insert	Insert radius	l	feed per tooth (f_z) d.o.c. (a_p)	HSC05 PVTi	HSC05 PVTiH	HSC05 PVDian	CBN	PKD
Steel		1	6.5	f_z (mm)	0.05 - 0.5	0.05 - 0.5	0.05 - 0.5		
				a_p (mm)	0.1 - 1.0	0.1 - 1.0	0.1 - 1.0		
Cast irons		1	6.5	f_z (mm)	0.05 - 0.5				
				a_p (mm)	0.1 - 1.0				
Hardened steel		1	6.5	f_z (mm)	0.05 - 0.35	0.05 - 0.35		0.05 - 0.2	
				a_p (mm)	0.1 - 0.5	0.1 - 0.5		0.1 - 0.2	
Non ferrous materials		1	6.5	f_z (mm)			0.05 - 0.5		0.05 - 0.2
				a_p (mm)			0.1 - 1.0		0.1 - 1.0
Stainless steel		1	6.5	f_z (mm)	0.05 - 0.3	0.05 - 0.3			
				a_p (mm)	0.1 - 0.25	0.1 - 0.25			

Plunging



Cutter diam.
 d_1 mm

x max.
mm

16

0,7

20

1

25

1

30

1

32

1

35

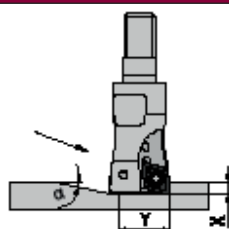
1

42

1

x maximum plunge depth
 f_z see operation data table, but reduce value to 30%

Ramping



α°

y mm

< 2,8

14

< 3,2

18

< 2,5

23

< 2

28

< 1,9

30

< 1,7

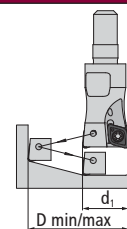
33

< 1,4

40

y minimum travel in [mm]
x maximum plunge depth
 a_p , f_z see operation data table

Helix



D_{min}
mm

D_{max}
mm

30

32

38

40

48

50

58

60

62

64

68

70

82

84

D_{min} minimum bore diameter depending on
cutter diameter in [mm]
 D_{max} maximum bore diameter depending on
cutter diameter in [mm]
 a_p , f_z see operation data table

FROM PRACTICE TO PRACTICE

JOB TITLE:

Finishing the cylindrical and conical surfaces of the injection moulding tool. Smooth transitions between individual surfaces keep retouching work to a minimum and speed up polishing. The shortest possible processing cycles, yet the best surface quality and low cutting material costs.

The new **FINWORX®** tool is predestined for such applications. The maximum number of effectively usable cutting edges for the lowest cutting material costs. The highly positive, precision peripheral ground and yet sturdy cutting edge of the indexable inserts provides an excellent processing result.

MACHINE

Quaser MV154P

MATERIAL

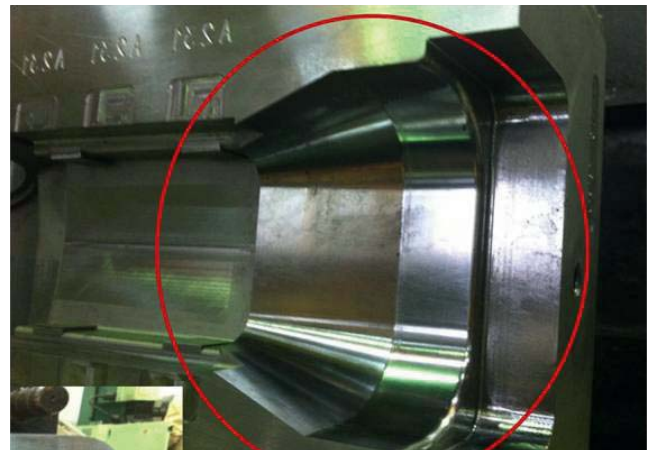
1.2344 52HRC

PROGRAMMING SYSTEM

Heidenhain

EXAMPLE FROM PRACTICE:

component:	Injection moulding tool
material:	1.2344 52 HRC
arbor:	40 08 601
cutter body:	FINWORX® 2 16 285
insert:	03 85 835
coating:	PVTi
V_c (speed):	226 m/min
V_f (feed rate):	2,000 mm/min
S (revolutions):	4,500 1/min
d1 (nominal diameter) :	16 mm
f_z (feed per tooth):	0.22 mm
a_p (depth of cut):	0.1 mm
a_e (width of cut):	0.1 mm
tool life:	> 120 min
life length:	> 240 m

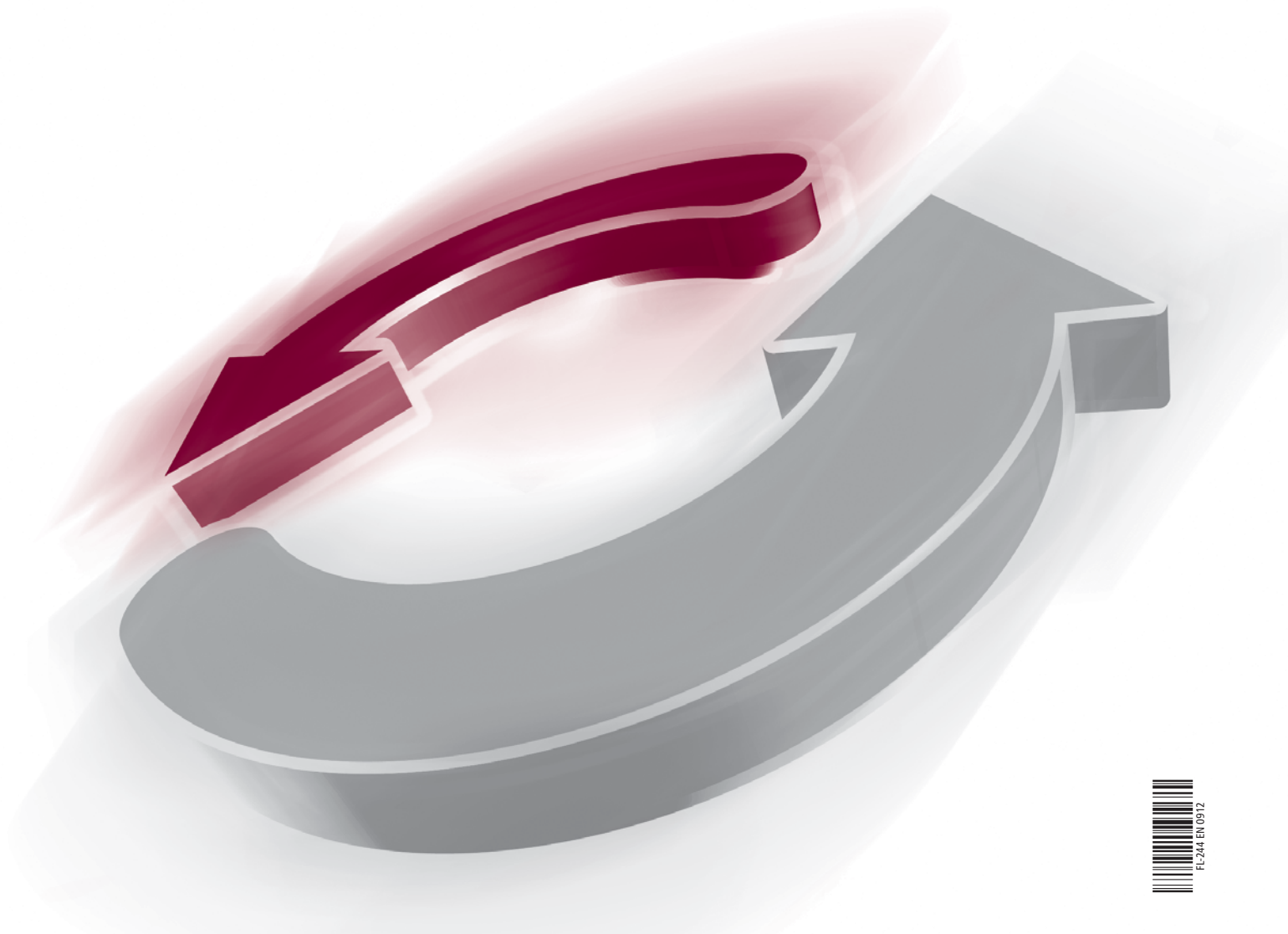


RESULT:

Excellent surface quality with longer tool life at the same time. The 4 usable cutting edges on each indexable insert deliver great potential with regard to economy.

Obvious reasons for using tooling systems from Pokolm Frästechnik GmbH & Co. KG.

Everything points towards the future with Pokolm premium tools.



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