

QUADWORX®

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➔ **FOUR CUTTING EDGES OFFER HIGH EFFICIENCY**

➔ CONTACT

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FOUR CUTTER EDGES OFFER HIGH EFFICIENCY

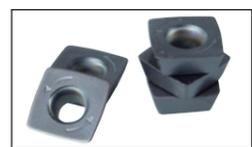
Quadworx® – this new Pokolm-development offers a high-feed milling possibility for universal applications. Huge feed-rates when roughing steel, cast iron or tempered steel care for efficient machining of your components. This results in increased machining capacity. Our range of **Quadworx®**-Milling Cutter Bodies includes Threaded Shank – as well as Shell Type Milling Cutter Bodies and also our patent protected DuoPlug® -adaptor system for highest concentricity and maximum rigidity. All tools are equipped with internal coolant supply for most possible process reliability and safe chip removal also when working in deep cavities.

Four cutting edges per insert and special geometry resulting from our combination of radius and wiper-edge provide universal multiple application possibilities in mould- and die-making. Retouched micro-geometries with polished faces help to minimize insert-temperatures and secure constant chip removal. Our 9° positive inserts seats in our Milling Cutter Bodies in connection with our new inserts without concave moulding allow reduced power consumption and maximum edge stability. Additionally, this combination

provides highest chip removal and constantly reduced cutting forces. Increased tooth rigidity through incorporated insert-seats allows for extended tool life, higher chip-volume and better productivity. Our precision-sintered inserts in grades P40 and P25 as well as our ground inserts in K10-grade are, referred to the number of cutting edges and inserts extended life, extremely efficient and help reducing costs for your cutting materials.

Our rectangular insert-seats and the second clearance face of our inserts achieve an absolutely correct positioning of inserts into milling cutter bodies and guarantee maximum process reliability, increased chip-volume and reduced tool-costs, when machining components with interrupted cuts.

These milling cutter set-up has an undefined corner radius. Therefore you have to take notice of the radius to be programmed: radius $R_p = 1.5 \text{ mm}$ for all available body diameters. Further operation data plus the nominal cutting diameter (which you need for your laser supported setting-ups) are mentioned on following pages.



03 48 842

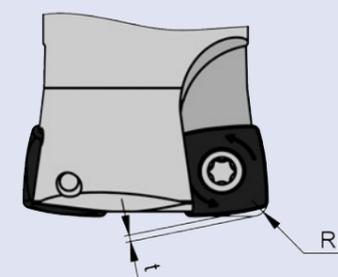
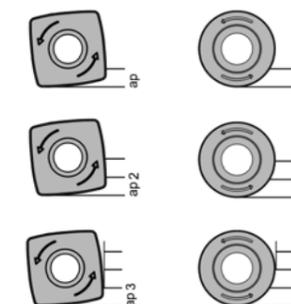


TECHNICAL INFORMATION

Due to the reduced arc of contact, when machining vertical moulds, less cutting forces influence milling cutters, inserts and machine spindle.

These following graphics explain the kind of geometry-influence to those cutting forces. One further element is the reduced power consumption of the machine, which allows more careful treatment of the machine.

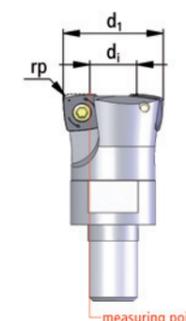
Comparing different arcs of contact for increasing cutting depths (ap up to $ap3$) illustrate the reason of better running smoothness. As soon as the ap -value has exceeded the size of our Quadworx-insert's minor cutting edge ($ap3$), the milling cutter gets a side clearance and thus it is cutting free and radial forces for milling cutter, inserts and machine spindle are decisively reduced.



Please take notice of the theoretical corner radius, which has to be programmed. The face milling cutter leaves a material stock not pre-determinable. In order to consider this fact for following tooling, we have estimated this value.

This dimension "t" is 0.65 mm.

Catalogue No.	d_1	d_i	Size of remaining stock t
2 22 248 SG	22	7,1	0,65
3 25 248 SG	25	9,8	0,65
2 22 248	22	7,1	0,65
3 25 248	25	9,8	0,65
4 30 248	30	14,7	0,65
4 35 248	35	19,6	0,65
5 35 248	35	19,8	0,65
5 42 248	42	26,5	0,65
5 42 348	42	26,5	0,65
6 52 348	52	36,5	0,65



Definition of measuring point for Laser-linear-monitoring: Please use diameter: d_i

DIMENSIONS AND OPERATION DATA

The Quadworx-Range:

MILLING CUTTER BODIES		Catalogue No.	d_1	l	r_p	d_2	d_3	l_2	l_3	z
	2 22 248 SG	22	9	1,5	M 12	18,5	1,5	35,5	2	
	3 25 248 SG	25	9	1,5	M 16	23,5	1,5	40	3	
	2 22 248	22	9	1,5	M 10	18	1,5	29	2	
	3 25 248	25	9	1,5	M 12	21	1,5	33	3	
	4 30 248	30	9	1,5	M 16	29	1,5	42	4	
	4 35 248	35	9	1,5	M 16	29	1,5	43	4	
	5 35 248	35	9	1,5	M 16	29	1,5	43	5	
	5 42 248	42	9	1,5	M 16	29	1,5	42	5	
	5 42 348	42	9	1,5	16	40	1,5	42,5	5	
	6 52 348	52	9	1,5	22	40	1,5	53	6	

Indexable Inserts: DIN-Identification: SDMX 09 T3 07 SN

INDEXABLE INSERTS	Catalogue No.	DIN-Identification	l	s	r	M	Grade	Coating
	03 48 842	SDMX 09 T3 07 SN	9	3,5	0,7	M 3,0	P40	PVTi
	03 48 852	SDMX 09 T3 07 SN	9	3,5	0,7	M 3,0	P25	PVTi
	03 48 860	SDHX 09 T3 07 SN	9	3,5	0,7	M 3,0	K10	PVTi

Application data (f_z/a_p)

MATERIAL		l	f_z/a_p	CUTTING MATERIAL AND COATING		
				K10 PVTi	P40 PVTi	P25 PVTi
Steel		9	f_z (mm) a_p (mm)		0,5 – 2,0 0,3 – 1,0	0,5 – 2,0 0,3 – 1,0
Cast Iron		9	f_z (mm) a_p (mm)	0,5 – 2,2 0,2 – 1,2		
Hardened Steel		9	f_z (mm) a_p (mm)	0,2 – 1,0 0,2 – 0,5		

Cutting Speeds V_c in m/min

MATERIAL		l	Application	CUTTING SPEEDS		
				K10 PVTi	P40 PVTi	P25 PVTi
Steel		9	roughing finishing		100 – 200	150 – 250
Cast Iron		9	roughing finishing	180 – 300		
Hardened Steel		9	roughing finishing	120 – 180		

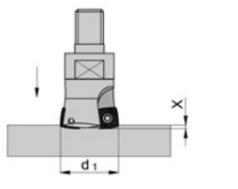
Accessories

ACCESSORIES	Catalogue No.	Description	Dimensions		
	30 500	Torx screw	M 3,0	L 7,0	T 10
	10 500	Torx screwdriver	T 10		
	TV 1–5	Torque Vario® – S screwdriver with window scale	1,0 – 5,0 Nm		
	T10 502	Torx MagicSpring interchangeable bit	T 10	L 175	max. 3,8 Nm

Starting torque for Torx® screw 30 500 M_d: 2,25 Nm

EXTENDED OPERATION DATA

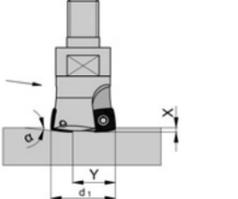
axial plunging into solid block



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

Cutter Diam. Ø d ₁ mm	x max. mm
22 – 52	1,5

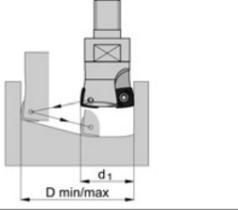
incline plunge milling



y minimum travel
x maximum plunge depth
a_p/f_z see operation data table

Cutter Diam. Ø d ₁ mm	α°	y mm
22	<13,7	6
25	<9,2	9
30	<5,8	14
35	<4,3	19
42	<3,1	26
52	<2,1	36

circular milling into solid block



a_p/f_z see operation data table

Cutter Diam. Ø d ₁ mm	D _{min} mm	D _{max} mm
22	28,5	44
25	34,5	50
30	44,5	60
35	54,5	70
42	68,5	84
52	88,5	104

D_{min} minimum bore diameter depending on cutter diameter
D_{max} maximum bore diameter depending on cutter diameter

SUMMARY OF ADVANTAGES:

- ⊕ 4 cutting edges per insert for efficient usage
- ⊕ very high material removal and extremely easy cutting
- ⊕ using 2nd clearance-angle's surface and the 90° setting angle in the cutter body for positioning, tuning of inserts is eliminated
- ⊕ maximum process reliability, specially for interrupted cutting, by absolutely safe positioning of our inserts
- ⊕ best surface finish through wiper-edge and large radii



Pokolm-Voha offers a continuous development of production technologies, latest carbide grades and coatings. Therefore, our products are matching nearly every milling

problem of our customer's wide range of applications and thus provide problem-solutions specially for mould- and die-making industries.