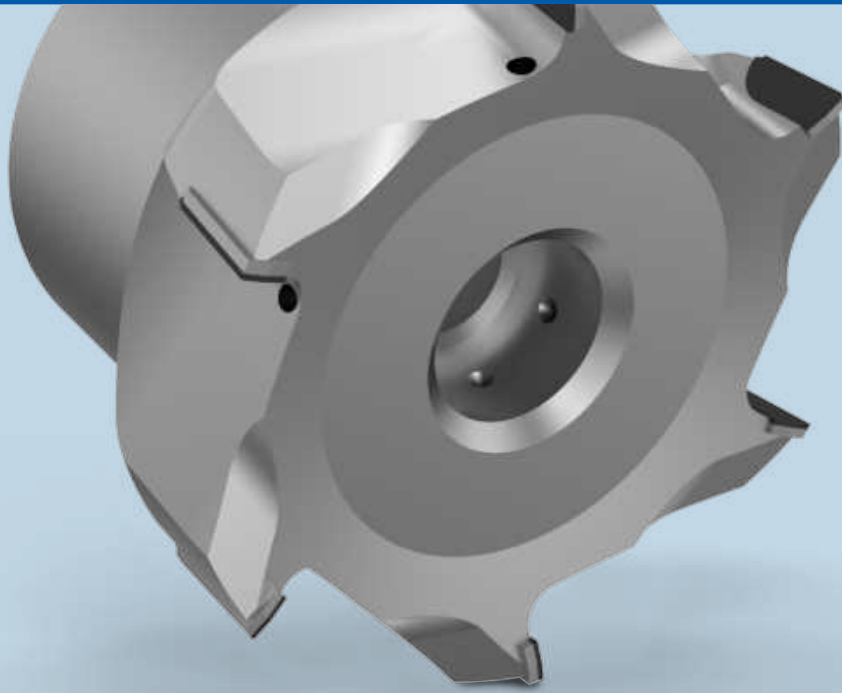




Your technology partner for cost-effective machining

FaceMill-Diamond-ES

FaceMill-Diamond-ES

The versatile PCD face milling cutter for small quantities

The new FaceMill-Diamond-ES is a versatile entry-level addition to the PCD face milling cutters in MAPAL's FaceMill-Diamond family. The milling cutters have fewer blades than the established FaceMill-Diamond tools, making them a more cost-effective and "economical solution.

1 Universal lead $0.1 \times 45^\circ$

- Suitable for many different machining operations with very good surface finishes

2 Generous chip space

- Safe removal of chips even under peak loads

3 Cooling directly at the cutting edge

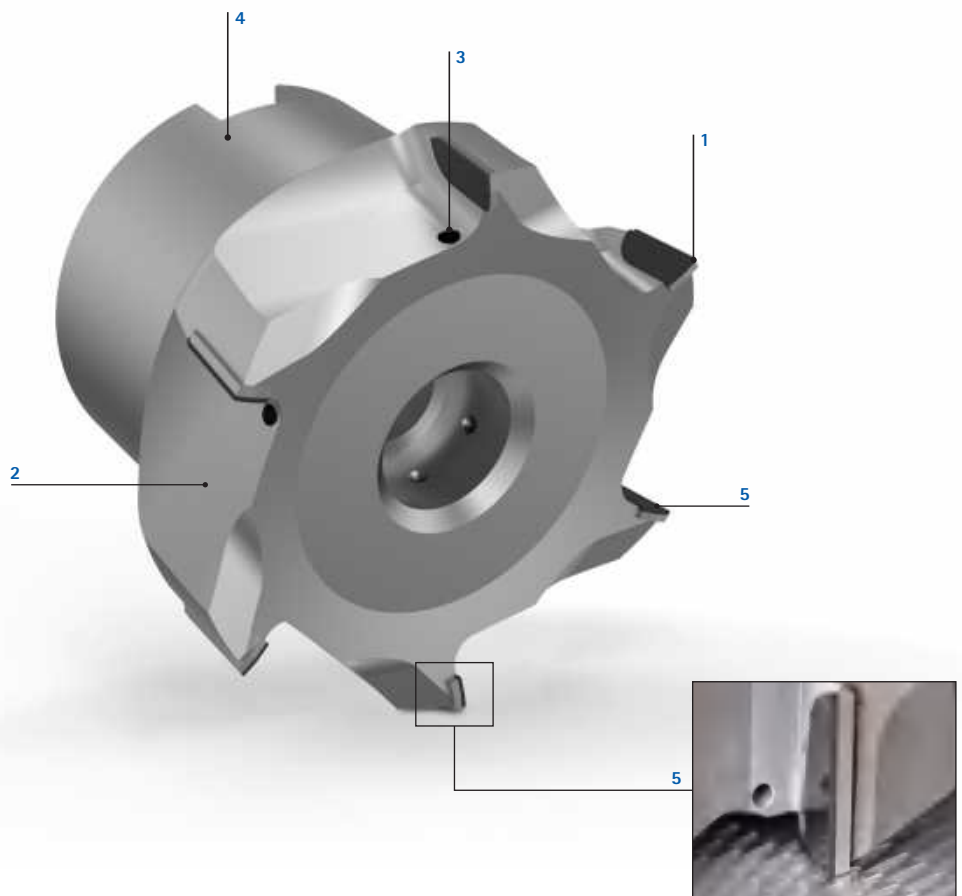
- Avoids overheating and abrasion on the tool body

4 Standard milling cutter arbor

- Highest flexibility due to modularity

5 Brazed PCD cutting edges

- Cutting edges made of PCD for long tool lives
- High cutting depth of up to 10 mm



Features

Dimensions:

- Number of blades: 4 - 7
- Modular PCD milling cutter

Preferred series in stock:

- Diameter of milling cutter: 32 - 80 mm
- Lead: $0.1 \text{ mm} \times 45^\circ$

Other geometries

available at short notice:

- Chamfer size: $0.1 - 1 \text{ mm} \times 45^\circ$
- Radius size: $0.1 - 1.5 \text{ mm}$

Recommended use | Benefit

	FaceMill-Diamond	FaceMill-Diamond-ES
Application area		
Allrounder for high component variance		
Daily production volume		
Contact time on the component	 Contact time: Long, straight travels	 Contact time: Many, short travels

FaceMill-Diamond-ES

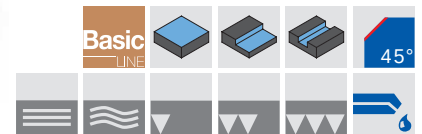
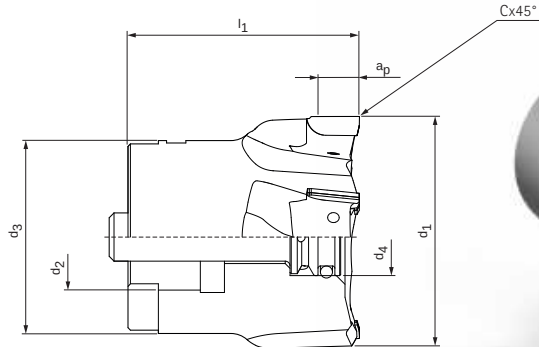
PCD face milling cutter, with internal cooling
SHM581

Design:

Diameter of milling cutter: 32.00 – 80.00 mm
Cutting material: PU611
Number of cutting edges: 4 – 7
Helix angle: 6° positive
Surface quality: $R_z \leq 10$
Special features: direct cutting edge cooling

Application:

Plug & Mill. universal milling cutter for roughing, finishing and full groove milling up to max. 10 mm cutting depth. Plunge angle max. 1°.



Preferred series in stock

Dimensions						Z_{eff}	a_p max.	Ramp angle	Weight [kg]	Max. oper- ating speed [min ⁻¹]	Specification	Order number
d_1	d_2	d_3	d_4	l_1	Cx45°							
32	16	34	13	40	0,1	4	10	1°	0,5	31.000	SHM581-032BZ04R-F0010CA-PU611	31312566
40	16	34	13	40	0,1	4	10	1°	0,5	31.000	SHM581-040BZ04R-F0010CA-PU611	31312567
50	22	40	16	48	0,1	5	10	1°	0,5	31.000	SHM581-050BZ05R-F0010CA-PU611	31312568
63	22	40	16	48	0,1	6	10	1°	0,6	31.000	SHM581-063BZ06R-F0010CA-PU611	31312569
80	27	52,5	34	50	0,1	7	10	1°	1,0	30.000	SHM581-080BZ07R-F0010CA-PU611	31312581

Cutting edges with other geometries

Cutting edges with other geometries available at short notice.
Freely selectable in increments of 0.1 mm:



Radius: 0.1 – 1.5 mm



Chamfer size: 0.1 – 1.0 mm
Other angles on request

Custom tools made to order

Customised special designs
are available on request:

- Individual dimensions
- Different numbers of teeth
- Insert position
- Different cutting materials
- Anticlockwise design

Accessories

		Attachment cutter arbor see end of chapter	
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Spare parts*

	d_1	Fastening screw with coolant delivery	Order no.
	32	SW6 - 15 Nm	31318525
	40	SW6 - 15 Nm	31318525
	50	SW8 - 20 Nm	30984018
	63	SW10 - 50 Nm	30984019
	80	SW12 - 80 Nm	30984030

Dimensions in mm.

* Included in scope of delivery.

The maximum operating speeds refer only to the cutting edge system.

Cutting data recommendation for face milling cutters with PCD

Feed and cutting speed

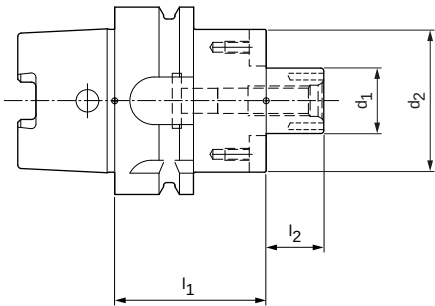


FaceMill-Diamond-ES

MMG*			Workpiece material	Strength/ hardness [N/mm ² - HRC]	FaceMill-Diamond-ES		
					v _c [m/min]	f _z [mm]	
						Cutting depth a _p max. 5 mm	
N	N1	N1.1	Aluminium, non-alloy and alloy < 3 % Si		max. 6,000	up to 0.3	up to 0.2
		N1.2	Aluminium, alloy ≤ 7 % Si		max. 6,000		
		N1.3	Aluminium, alloy > 7-12 % Si		max. 6,000		
		N1.4	Aluminium, alloy > 12 % Si		max. 2,000		
	N2	N2.1	Copper, non-alloy and low-alloy	< 300	max. 6,000		
		N2.2	Copper, alloy	> 300	max. 2,000		
		N2.3	Brass, bronze, gunmetal	< 1,200	max. 2,000		
	N3	N3.1	Graphite, > 8 µm		max. 2,000		
	N4	N4.1	Plastic, thermoplastics		max. 2,000		
		N4.2	Plastic, thermosets		max. 2,000		

Milling cutter arbor

Mechanical tool clamping
 With enlarged face connection diameter according to DIN 69882-3
 HSK-A (hollow shank taper form A) shank according to DIN 69893-1



HSK-A (hollow shank taper form A) shank with decentralised coolant delivery

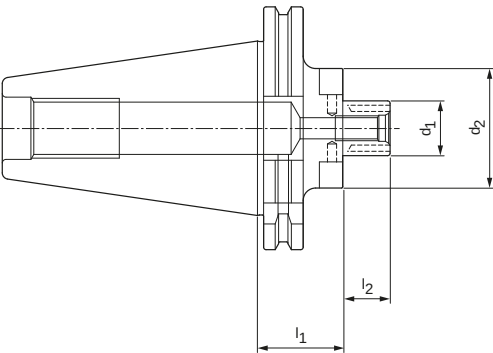
HSK-A	Dimensions				G	Specification	Order no.
	d_1	d_2	l_1	l_2			
63	16	38	50	17	M8	MCA-HSK-A063-16-050-1-0-W	31312171
63	16	38	100	17	M8	MCA-HSK-A063-16-100-1-0-W	31312176
63	16	38	160	17	M8	MCA-HSK-A063-16-160-1-0-W	31312191
63	22	48	50	19	M10	MCA-HSK-A063-22-050-1-0-W	31312172
63	22	48	100	19	M10	MCA-HSK-A063-22-100-1-0-W	31312177
63	22	48	160	19	M10	MCA-HSK-A063-22-160-1-0-W	31312192
63	27	60	60	21	M12	MCA-HSK-A063-27-060-1-0-W	31312173
63	27	60	100	21	M12	MCA-HSK-A063-27-100-1-0-W	31312178
63	27	60	160	21	M12	MCA-HSK-A063-27-160-1-0-W	31312193

Dimensions in mm.
 Additional dimensions available upon request.
 Scope of delivery: With screwed-on key blocks and milling cutter clamping screw according to DIN 6367. Without coolant tube.

Design: Permissible run-out variation on the taper in relation to the arbor diameter $d_1 = 6\text{ }\mu\text{m}$.
 Note: Milling cutter clamping screw supplied without internal cooling. Coolant tubes and assembly tool, see "CLAMPING" catalogue.
 Balancing quality: G 2.5 with 25,000 rpm in delivery status.

Milling cutter arbor

Mechanical tool clamping
With enlarged face connection diameter according to DIN 69882-3
SK shank according to ISO 7388-1 Form AD/AF



SK shank with decentralised coolant delivery

Steep taper	Dimensions				G	Specification	Order no.
	d ₁	d ₂	l ₁	l ₂			
40	16	38	35	17	M8	MCA-SK040-16-035-3-0-W	31369046
40	22	48	35	19	M10	MCA-SK040-22-035-3-0-W	31369047
40	27	50	35	21	M12	MCA-SK040-27-035-3-0-W	31369048
50	22	48	35	19	M10	MCA-SK050-22-035-3-0-W	31312229
50	22	48	100	19	M10	MCA-SK050-22-100-3-0-W	31312233
50	22	48	160	19	M10	MCA-SK050-22-160-3-0-W	31312237
50	27	60	35	21	M12	MCA-SK050-27-035-3-0-W	31312230
50	27	60	100	21	M12	MCA-SK050-27-100-3-0-W	31312234
50	27	60	160	21	M12	MCA-SK050-27-160-3-0-W	31312238

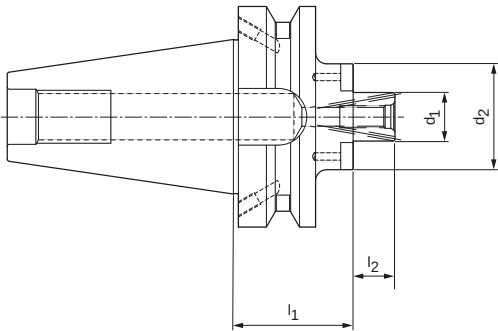
Dimensions in mm.
Additional dimensions available upon request.
Scope of delivery: With screwed-on key blocks and milling cutter clamping screw according to DIN 6367. Without pull stud.
Design: Permissible run-out variation on the taper in relation to the arbor diameter d1 = 6

µm. Basic setting Form AD, if Form AF is required, please specify this when placing your order.
Note: Milling cutter clamping screw supplied without internal cooling. Coolant tubes and assembly tool, see "CLAMPING" catalogue.
Balancing quality: G 2.5 with 25,000 rpm in delivery status.



Milling cutter arbor

Mechanical tool clamping
With enlarged face connection diameter according to DIN 69882-3
Shank BT according to ISO 7388-2 Form JD/JF (JIS B 6339)



BT (steep taper) shank with decentralised coolant delivery

BT	Dimensions				G	Specification	Order no.
	d ₁	d ₂	l ₁	l ₂			
50	22	48	55	19	M8	MCA-BT050-22-055-3-0-W	31312241
50	22	48	100	19	M8	MCA-BT050-22-100-3-0-W	31312245
50	27	60	55	21	M10	MCA-BT050-27-055-3-0-W	31312242
50	27	60	100	21	M10	MCA-BT050-27-100-3-0-W	31312246

Dimensions in mm.
Additional dimensions available upon request.
Scope of delivery: With screwed-on key blocks and milling cutter clamping screw according to DIN 6367. Without pull stud.
Design: Permissible run-out variation on the taper in relation to the arbor diameter d1 = 6

µm. Basic setting Form JD; if Form JF is required, please state with the order.
Note: Milling cutter clamping screw supplied without internal cooling. Coolant tubes and assembly tool, see "CLAMPING" catalogue.
Balancing quality: G 2.5 with 25,000 rpm in delivery status.



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