



FACE MILLING CUTTERS WITH PCD MILLING CARTRIDGES

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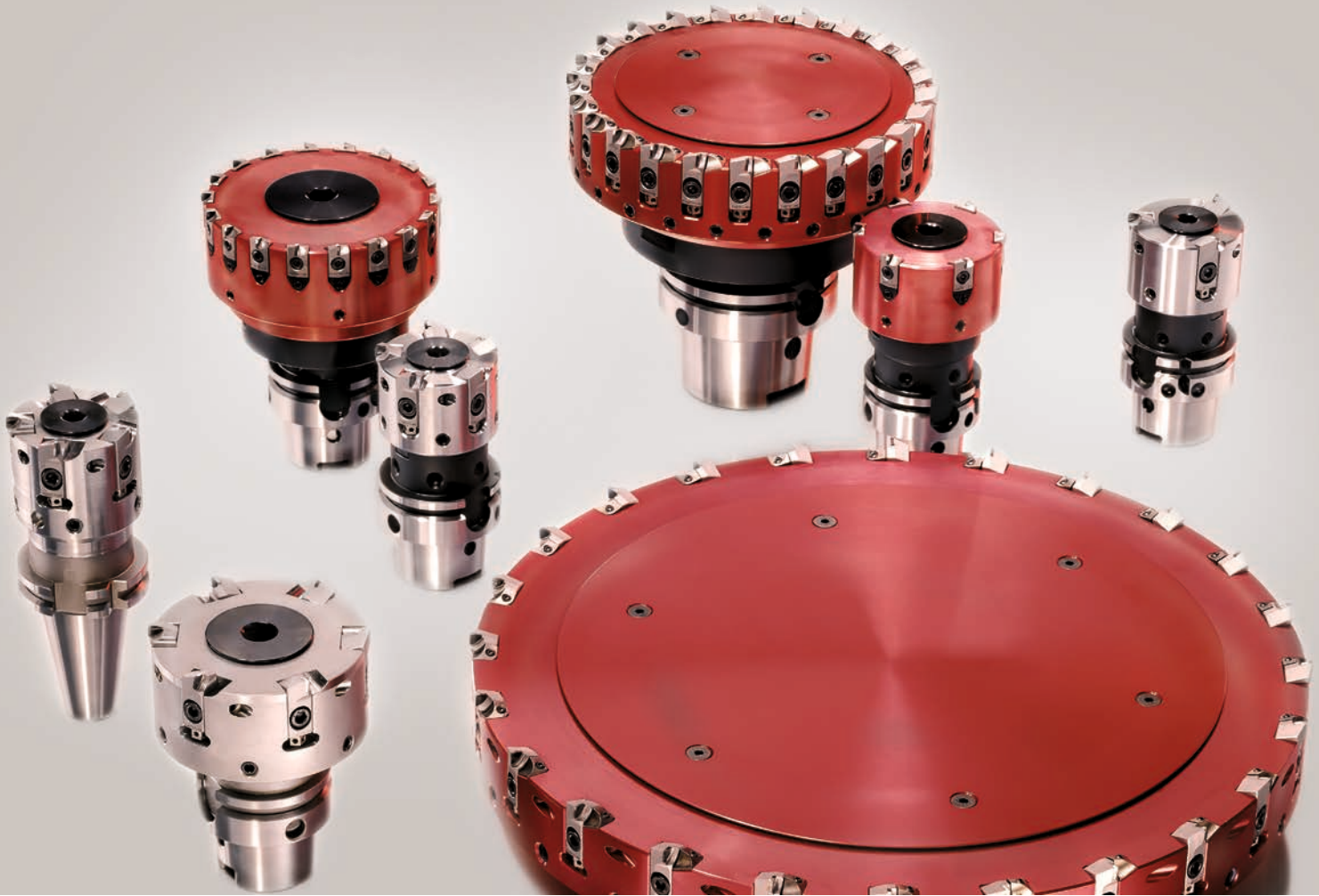
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EcoMill and PowerMill series

Proven in practice

HSC machining to the highest perfection

High removal rates, defined surface roughnesses or special requirements on the flatness of the part – irrespective of which requirements are placed on the tool during face milling, the EcoMill and PowerMill series provide the solution. Different numbers of teeth make possible the optimal selection of the tool with the goal of achieving the highest cost-effectiveness for the milling process. Disposable milling cartridges for the series EcoMill or economical 24-hour re-grinding service for the PowerMill design – both variants are available.

EcoMill

This series includes many innovations. Due to the usage of disposable milling cartridges, the logistics effort is reduced. During handling the simple positioning of the milling insert in the aluminium body impresses. The centrifugal forces that occur during machining are compensated by an exact dovetail guide. Integrated chip deflectors significantly increase the service life of the milling cutter body. Perfect surface finishes are achieved with this milling cutter by the sensitive, effective wedge adjustment of the inserts in the Z direction. The milling head primarily designed for finishing operations impresses due to the very smooth running that is achieved without problems despite the high feed rates.

PowerMill

The parts reduced to a sensible minimum in conjunction with the simple, but robust construction are a guarantor for the uncomplicated and extremely fast adjustment of the tool. The significant difference to the EcoMill series is in the milling cartridge. On the PowerMill series the milling cartridges are designed with larger PCD-tipping. Along with the greater cutting depth of up to max. 5 mm; this feature also makes regrinding possible. The highly accurate milling cartridge guarantees a perfect insert diameter due to the accurate manufacture in the aluminium body.

Tool features in detail

EcoMill | PowerMill

1 Special cutting edge geometry

- Face milling insert
- Corner milling insert
- Wide finishing milling insert
- PT milling insert for defined surface roughnesses

2 Replaceable PCD milling cartridges

- Inserts made of PCD ensures very high tool lives
- Special chip guiding geometry for removal of the chips in a controlled manner

3 Dovetail guide

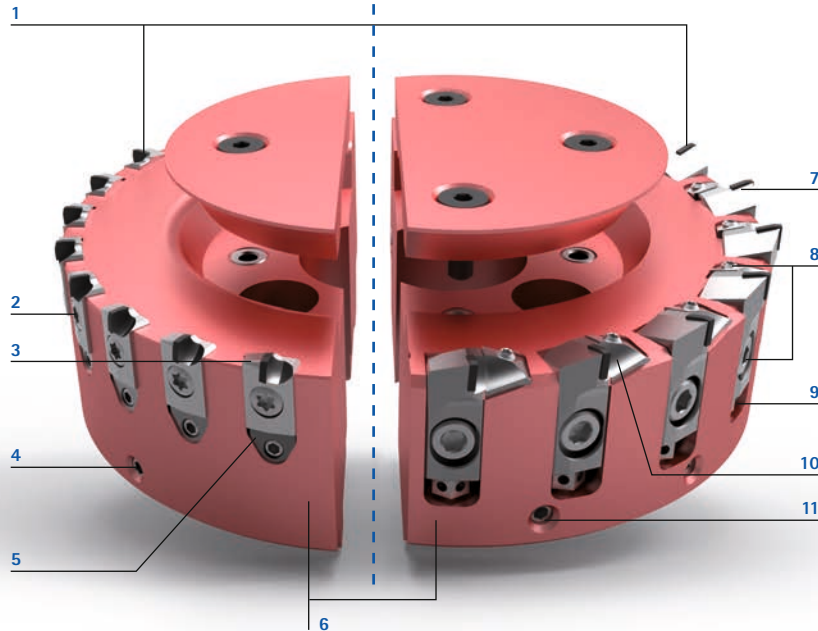
- Exact positioning of the inserts over the whole tool life

4 Balancing screws

- Perfect radial run-out due to balanced milling body

5 High-accuracy wedge adjustment

- Simple handling
- Setting of the axial run-out to the μ



6 Body material made of high-strength aluminium

- Wear-resistant
- Lightweight design makes it possible to use very high spindle speeds

7 PCD milling cartridges

- Robust and can be re-ground

8 Safety screws

- Perfect seating of the milling cartridge in the body material

9 Adjusting screw

- Exact, reliable adjustment of the axial run-out even in extreme conditions
- Simple handling

10 Replaceable chip deflector

- Significant increase in the service life of the aluminium body

11 Balancing screws

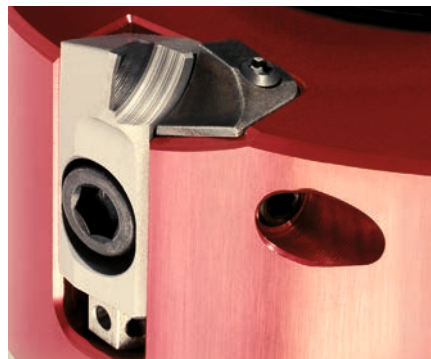
- Perfect radial run-out due to balanced milling body

EcoMill



- Light aluminium body
- Particularly sensitive adjustment for finishing operations
- Economical disposable inserts with smaller PCD cutting edges than on the PowerMill series

PowerMill



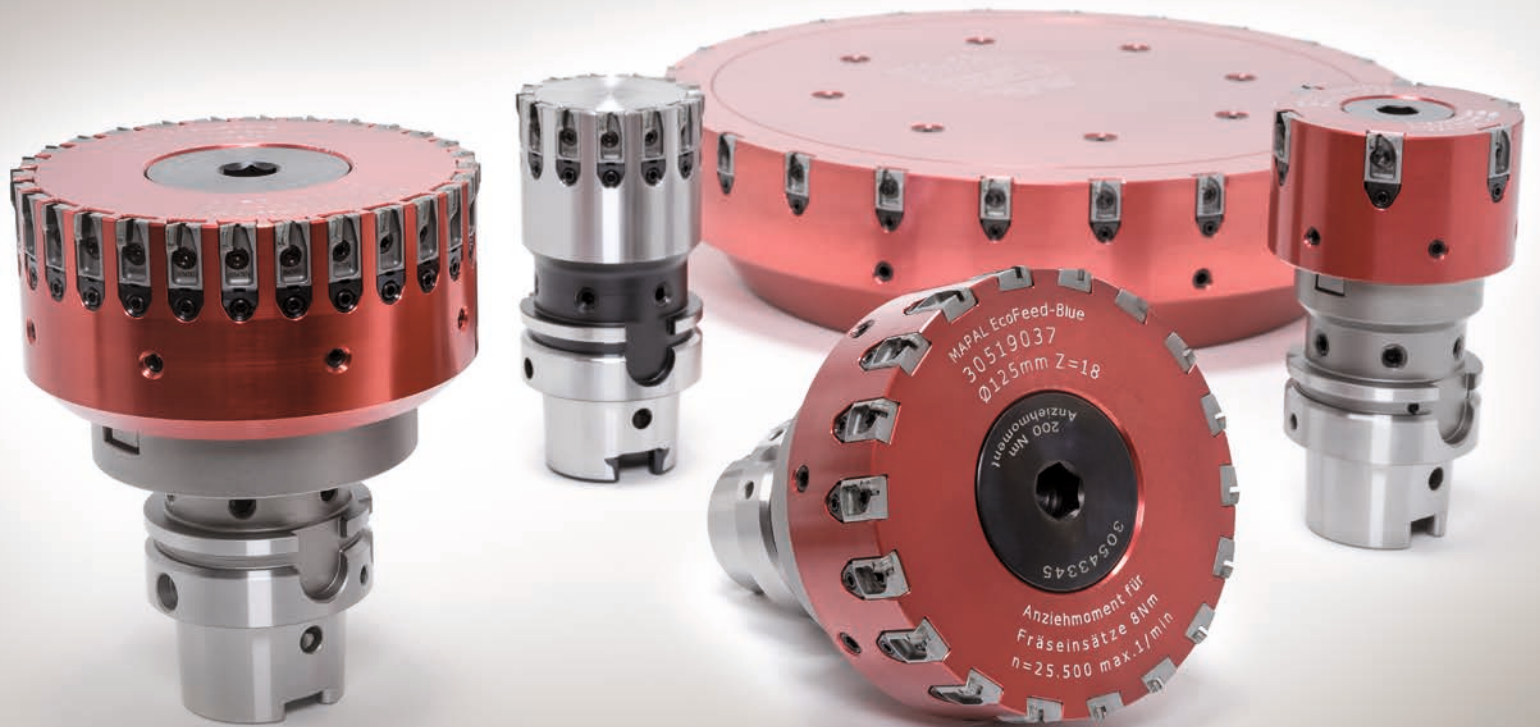
- Simple, robust construction
- Replaceable chip deflectors for extremely long life of the milling body
- Milling cartridges that can be re-ground for high cost-effectiveness
- Basis for customer-specific custom solutions

Custom solutions



- Disc milling cutters for complete machining operations during which face surfaces and spacings are to be produced in one pass
- Beam milling cutters - for machining centres with restricted tool diameter or machining operations that require a large diameter
- Along with the milling heads with custom dimensions, milling cartridges can be adapted to the specific machining task

Comprehensive standard programme for all requirements.



EcoMill-Blue and RapidMill-Blue

New generation of PCD face milling cutters

A clean solution for high-speed aluminium machining

Part cleaning represents a significant cost element in series production. This is where the new generation of PCD face milling cutters comes into its own. To come as close as possible to the goal of a finished part free of residual soiling, an innovative PCD milling cartridge has been developed. The special chip guiding geometry keeps the chips away from the workpiece surface in a controlled manner.

Thanks to the new milling cartridges, a significantly improved visual surface finish is achieved with ductile and long-chipping materials and the risk of score formation has been greatly reduced. This has advantages particularly during dry machining and with minimum quantity lubrication.

The integrated coolant outlets in the milling cartridges ensure optimum cooling and lubrication of the PCD inserts, particularly with minimum quantity lubrication. The significantly reduced effort for the subsequent cleaning of the parts is particularly important for machining processes without the use of cooling lubricants.

The construction is similar to that of the proven EcoMill principle. The cutting edges are implemented in the form of milling cartridges and are securely fixed by a highly precise dovetail guide. Changing the milling cartridges is quite straightforward. Adjustment is user-friendly with radially accessible, wedge-shaped adjusting elements.

With same basic set-up and even more cutting edges ($z=28$ with tool diameter 125 mm) the new RapidMill-Blue series achieves the highest possible productivity during face milling.

As a special service, MAPAL offers milling head management as well as reconditioning in original quality.

Tool features in detail

1 Minimum cutting edge overhang

- Low noise
- Very smooth running

2 Special cutting edge geometry

- Face milling insert
- Corner milling insert
- Wide finishing milling insert
- PT milling insert for defined surface roughnesses

3 Body material made of high-strength aluminium

- Wear-resistant
- Lightweight design makes it possible to use very high spindle speeds

4 High-accuracy wedge adjustment

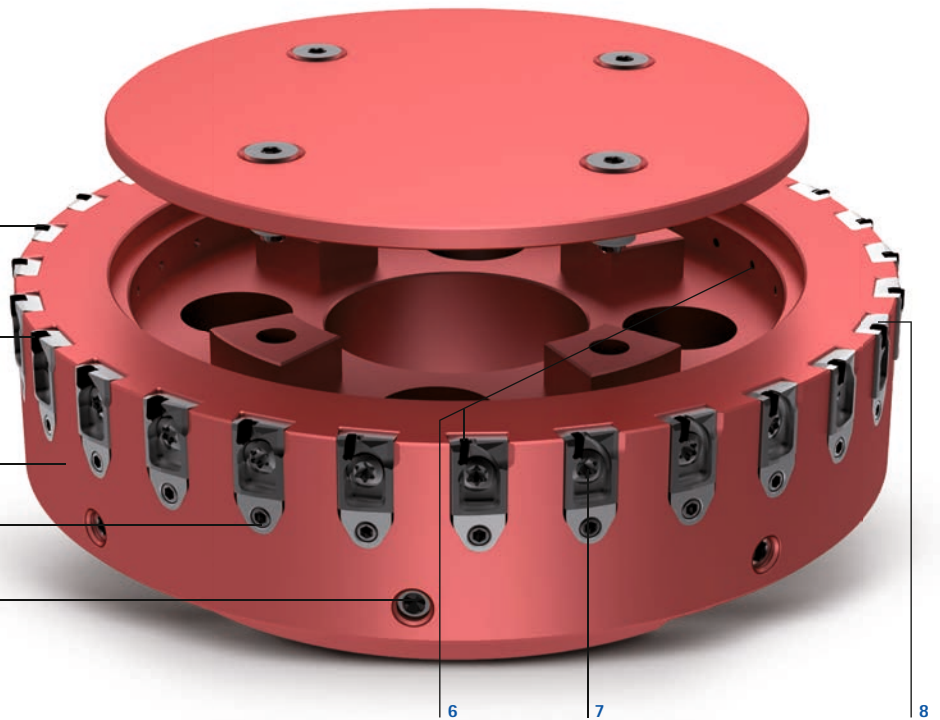
- Simple handling
- Setting of the axial run-out to the μ

5 Balancing screws

- Perfect radial run-out due to balanced milling body

6 Integrated coolant outlets

- Direct cooling and lubrication of the cutting edges
- Suitable for dry machining and MQL applications



7 Replaceable PCD milling cartridges

- Inserts made of PCD for long tool lives
- Special chip guiding geometry for removal of the chips in a controlled manner

8 Dovetail guide

- Exact positioning of the inserts over the whole tool life

Innovative chip guiding geometry



- Significantly better surface finish
- No transport scoring on the part surface as the chips are discharged to the outside
- High process reliability with fewer chips and less residual soiling in the part
- No abrasion of the milling cutter body through the chip discharge

Optimised for MQL machining



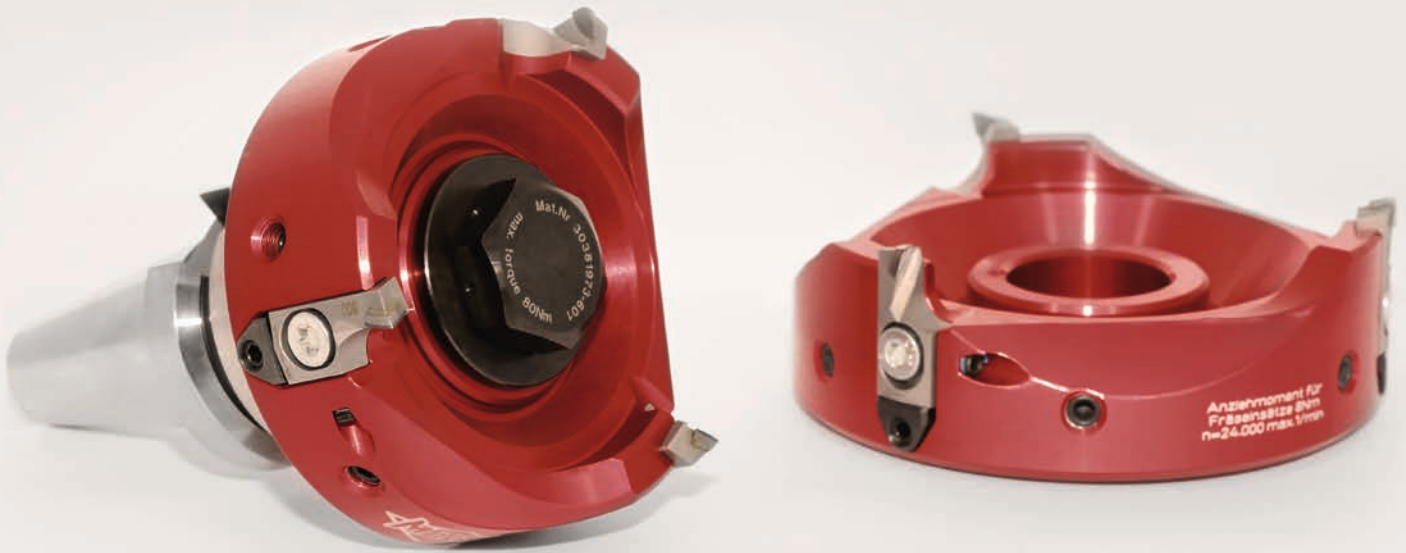
- Direct cooling and lubrication of the cutting edges
- Very suitable for dry machining and MQL applications
- Reduced noise level due to minimisation of the cutting edge overhang (0.5 mm)

Economical basic design



- Cutting edges formed as replaceable milling cartridges
- Stable guiding due to highly precise dovetail guide
- High productivity due to maximum number of teeth
- Monoblock variant for increased rigidity

Controlled chip removal for more quality, productivity, process reliability and tool life.



FlyCutter

Lightweight HSC milling cutter for surfaces as smooth as glass

The tool weight plays a decisive role

In a very wide range of sectors, small machines are used to manufacture aluminium housings. These machines have very precise spindles that permit very high spindle speeds. They are not designed for high torques and often have a maximum tool weight of 3 kilograms. Nevertheless the requirements for machines and tools are high. Surfaces as smooth as glass with roughness figures smaller than R_a 0.2 μm and flatnesses with maximum 0.4 mm must be manufactured reliably.

With the FlyCutter, MAPAL has developed a milling tool that is precisely matched to these requirements. The innovative design and the usage of aluminium ensure the milling head

has a particularly low weight. Nevertheless, the system has excellent strength values even at large diameters. All different milling head diameters from 63 to 160 mm can be mounted on the same milling cutter arbor. This aspect also contributes to the low weight of the overall system. With a diameter of 140 millimetres, together with a milling cutter arbor BT 30, the FlyCutter weighs only 1.5 kilograms.

Milling head and milling cutter arbor are finely balanced. The milling head has an additional balance plane to balance the complete system precisely. The milling cutter clamping screw is designed for internal coolant supply.

As a result it is ensured that chips are flushed radially outwards and away from the surface produced, among other things.

The sensitive wedge adjustment makes it possible to adjust the milling cartridges to the μ . The dovetail guide and an additional worm screw ensure perfect seating and accuracy of repetition on the assembly of the milling cartridges. Due to the special, highly positive cutting edge geometry, there are only low forces acting on the part, in this way stress and deformation are avoided.

Tool features in detail

1 High-accuracy wedge adjustment

- Simple handling
- Setting of the axial run-out to the μ

2 Replaceable PCD milling cartridges

- Inserts made of PCD ensures very high tool lives
- Easy handling

3 Balancing screws

- Perfect radial run-out due to balanced milling body
- Additional balance plane to balance the complete system

4 Special cutting edge geometry

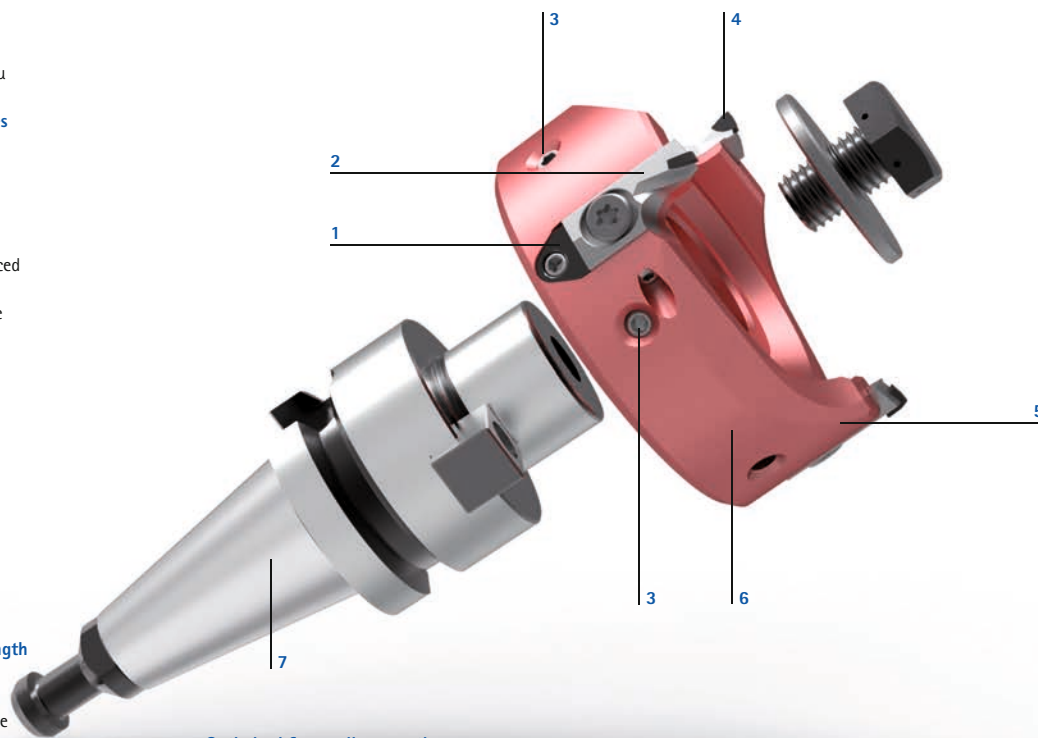
- Face milling insert
- Corner milling insert
- Wide finishing milling insert
- PT milling insert for defined surface roughnesses

5 Dovetail guide

- Exact positioning of the inserts throughout the entire tool life

6 Body material made of high-strength aluminium

- Wear-resistant
- Lightweight design makes it possible to use very high spindle speeds



7 Optimised for small connections

- BT 30
- BBT 30
- BT 40
- BBT 40
- HSK-A 63

Perfect surface finishes



- The selection of the PCD milling cartridges is dependent on the part or on the surface to be produced
- Setting of the PCD milling cartridge to the μ
- Additional balance plane to balance the complete system exactly

For small machines



- Stress-free machining of the part due to highly positive cutting edge geometry
- Specially developed for very soft, long-chipping aluminium
- Suitable for machining of vacuum-clamped, thin-walled parts

Modular construction



- Simple, robust construction
- All milling head diameters from 63 to 160 mm can be mounted on the same milling cutter arbor
- Milling cutter clamping screw designed for internal coolant supply

Optimal for usage in BT 30 spindles.



MAPAL Maintenance Services – reconditioning for face milling heads

Significant cost savings through reliable, quick and precise reconditioning

During machining, customers must be able to rely on their tools over the entire process, particularly after reconditioning. Cleanliness, care and precision are for MAPAL the essential factors in the foreground during the reconditioning of the milling heads. With reconditioning in original quality and milling head management, MAPAL offers two

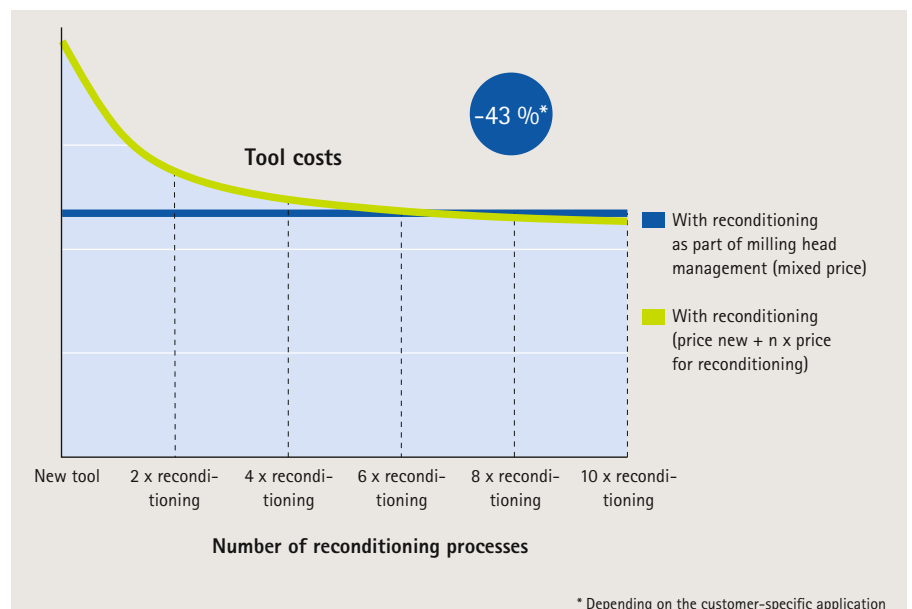
reconditioning systems for face milling heads that guarantee precise, reliable tools with full performance. With each reconditioning the service life of the tools is significantly increased and costs for new tools saved. The customer receives tools that can be used immediately for the trouble-free achievement of the already familiar tool lives. The tools are

collected from and delivered to the customer by courier. The standardised process ensures straightforward, fast processing within a few days.

ADVANTAGES

- Increase in the tool life
- Reduction of the tool costs
- Tools in original quality ready for use
- Punctual collection and delivery
- Increase in the process reliability
- Reduction of capital tied-up*

* In conjunction with milling head management





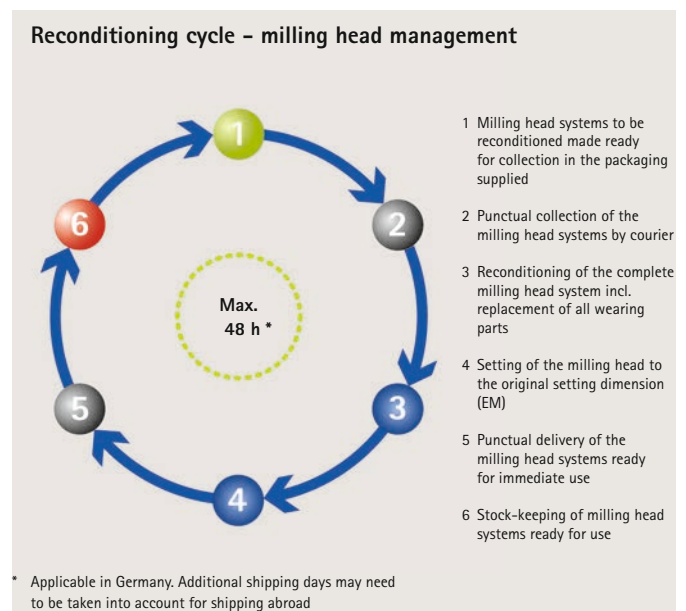
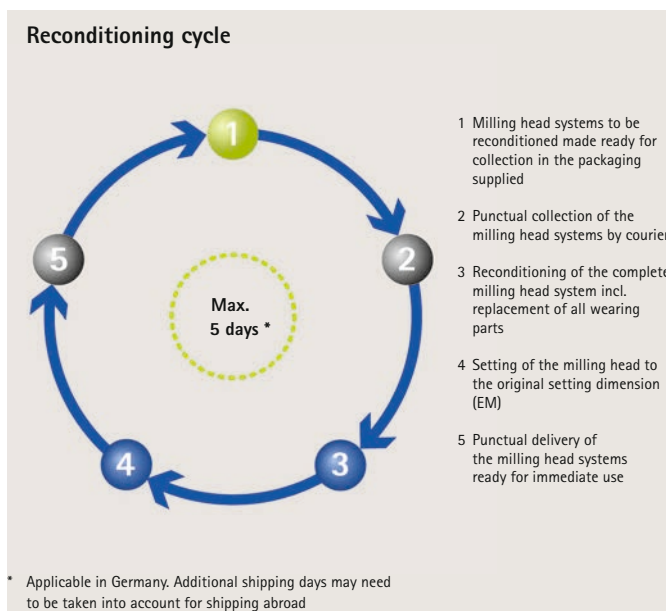
Reconditioning in original quality

At MAPAL, after disassembly, the tools are thoroughly cleaned, wearing parts replaced and the system re-assembled from the ground up. Worn milling cartridges are submitted to a repair cycle. The tool is equipped with new, reconditioned inserts from stock. After assembly with the related milling cutter holder, the milling cartridges are set to the original setting dimension. Within five days, the customer receives tools that can be used immediately for the trouble-free achievement of the already familiar tool lives.

Milling head management

The milling head management includes, along with reconditioning in original quality, also stock-keeping. Customer profit from 24-hour tool availability at the place of use as well as less capital tied-up. Charging is at a calculated mixed price on withdrawal. The customer has full control of the costs. Expensive procurement costs for new tools are not incurred. Bottlenecks due to tool availability are a thing of the past. By means of a customer agreement, a fixed procedure is defined that makes possible delivery times of maximum 48 hours.

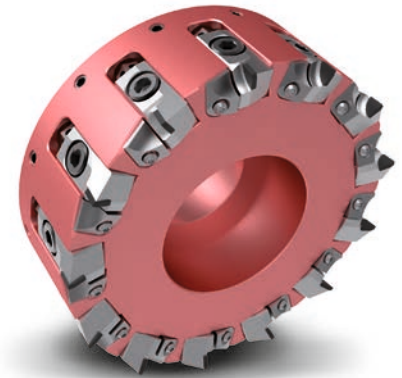
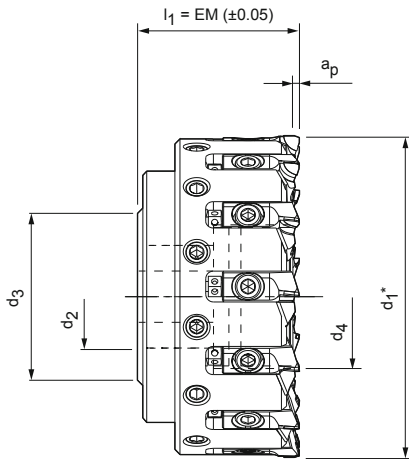
PCD face
milling cutters



Note: As a technology partner, MAPAL provides support on the selection of the optimal reconditioning process for the specific application.

PowerFeed

PCD face milling head, close spacing
PowerMill



Tool body made of steel

Dimensions					Z_{eff}	a_p max.	Weight incl. milling cartridge [kg]	Max. spindle speed [min ⁻¹]	Specification	Order No.
d_1^*	d_2	d_3	d_4	l_1						
63	22	43	28	48	8	5	0,80	25.000	CFM901-063-CA22-Z08R-PMC-S	30696548

Tool body made of aluminium

80	27	49	36	50	8	5	0,75	20.000	CFM901-080-CA27-Z08R-PMC-A	30696550
100	32	59	45	50	10	5	1,20	18.000	CFM901-100-CA32-Z10R-PMC-A	30696552
125	40	71	56	63	12	5	2,25	18.550	CFM901-125-CA40-Z12R-PMC-A	30696671
125	40	71	56	63	13	5	2,20	16.000	CFM901-125-CA40-Z13R-PMC-A	30696554
160	40	98	-	63	18	5	2,15	13.000	CFM901-160-CA40-Z18R-PMC-A	30696556
180	40	104	-	63	20	5	2,60	11.500	CFM901-180-CA40-Z20R-PMC-A	30696558
200	60	138	-	63	24	5	4,40	10.000	CFM901-200-CA60-Z24R-PMC-A	30696560
250	60	138	-	63	30	5	7,00	8.000	CFM901-250-CA60-Z30R-PMC-A	30696562
315	60	236	-	80	38	5	14,10	7.000	CFM901-315-CA60-Z38R-PMC-A	30696564
400	60	236	-	80	50	5	22,10	6.100	CFM901-400-CA60-Z50R-PMC-A	30696565

Accessories

	PMC...	Milling cartridge	Page 239
		See MAPAL catalogue "CLAMPING"	
	d_1	Fastening screw for milling cutter arbor	Order No.
	160 - 180 200 - 400	ISO 4762 - M12x45-12.9 ISO 4762 - M16x50-12.9	10006594 10007775

Spare parts**

		Clamping screws for milling cartridge M6x13	Order No. 30696520
		Adjusting screw M5x8	Order No. 30696523
		Chip deflector Chip deflector for clockwise Chip deflector for counter-clockwise	Order No. 30696535 30696536
		Clamping screw for chip deflector M3x7.3	Order No. 30696537
	d_1 63 - 125	Coolant screw	Page 275
	d_1 160 - 400	Coolant cover and fastening screw M6x20	Page 275

Dimensions in mm.

Counter-clockwise design on request.

Special design with increased number of teeth on request.

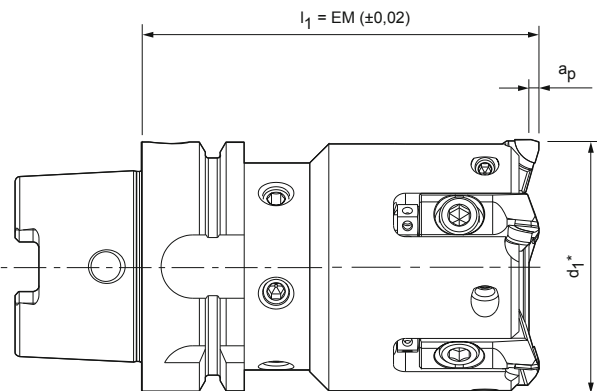
* d_1 Depending on the milling cartridge type, see page 239.

** Included.

Cutting Data recommendation see page 310.

PowerFix

PCD face milling cutter, monoblock design
PowerMill



Body material with HSK-A connection

Dimensions			z_{eff}	a_p max.	Weight incl. milling cartridge [kg]	Max. spindle speed [min^{-1}]	Specification	Order No.
d_1^*	Nominal size HSK-A	l_1						
50	63	100	4	5	1,55	25.000	CFM901-050-A063-Z04R-PMC-S	30696673
63	63	100	5	5	2,00	24.360	CFM901-063-A063-Z05R-PMC-S	30696724
80	63	100	5	5	2,65	22.000	CFM901-080-A063-Z05R-PMC-S	30696726
100	63	100	6	5	3,70	19.000	CFM901-100-A063-Z06R-PMC-S	30696931






Body with SK connection

Dimensions			z_{eff}	a_p max.	Weight incl. milling cartridge [kg]	Max. spindle speed [min^{-1}]	Specification	Order No.
d_1^*	Nominal size SK	l_1						
50	40	100	4	5	1,75	25.000	CFM901-050-S040-Z04R-PMC-S	30696675
63	40	100	5	5	2,20	24.360	CFM901-063-S040-Z05R-PMC-S	30696730

Accessories

	PMC...	Milling cartridge	Page 239
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Spare parts**

	d_1 50 63 - 100	Clamping screw for milling cartridge M6x12 (flat head) M6x13	Order No. 30696522 30696520
		Adjusting screw M5x8	Order No. 30696523
		Locking screw M6x12	Order No. 30696529
		Coolant screw	Page 275
	Connection HSK	Coolant tube HSK-A63	Order No. 30326006

Dimensions in mm.

Counter-clockwise design on request.

Special design with increased number of teeth on request.

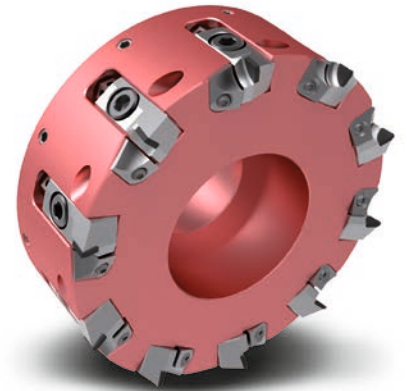
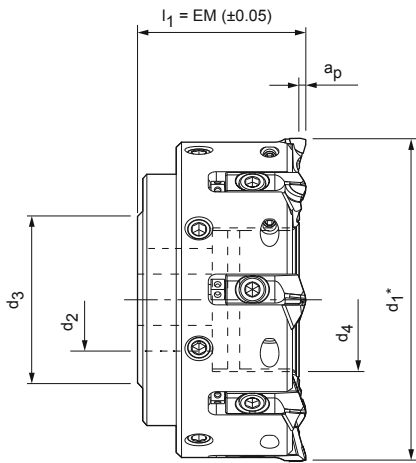
* d_1 Depending on the milling cartridge type, see page 239.

* Included.

Cutting Data recommendation see page 310.

PowerSpeed

PCD face milling head, wide pitch
PowerMill



Tool body made of steel

Dimensions					Z _{eff}	a _p max.	Weight incl. milling cartridge [kg]	Max. spindle speed [min ⁻¹]	Specification	Order No.
d ₁ *	d ₂	d ₃	d ₄	l ₁						
63	22	43	28	48	3	5	0,85	25.000	CFM901-063-CA22-Z03R-PMC-S	30696422
63	22	43	28	48	5	5	0,80	25.000	CFM901-063-CA22-Z05R-PMC-S	30696661

Tool body made of aluminium

80	27	49	36	50	5	5	0,75	25.000	CFM901-080-CA27-Z05R-PMC-A	30696424
80	27	49	36	50	6	5	0,75	25.000	CFM901-080-CA27-Z06R-PMC-A	30696659
80	27	49	36	50	7	5	0,8	25.000	CFM901-080-CA27-Z07R-PMC-A	30696663
100	32	59	45	50	6	5	1,08	21.650	CFM901-100-CA32-Z06R-PMC-A	30696426
100	32	59	45	50	8	5	1,20	21.650	CFM901-100-CA32-Z08R-PMC-A	30696665
125	40	71	56	63	8	5	2,20	18.550	CFM901-125-CA40-Z08R-PMC-A	30696428
125	40	71	56	63	10	5	2,20	18.550	CFM901-125-CA40-Z10R-PMC-A	30696667
140	40	100	56	63	10	5	2,40	18.550	CFM901-140-CA40-Z10R-PMC-A	30696430
160	40	104	-	63	10	5	2,75	14.990	CFM901-160-CA40-Z10R-PMC-A	30696432
160	40	98	-	63	12	5	2,80	14.990	CFM901-160-CA40-Z12R-PMC-A	30696669
180	40	104	-	63	10	5	3,40	13.500	CFM901-180-CA40-Z10R-PMC-A	30696434
200	60	138	-	63	12	5	4,15	12.200	CFM901-200-CA60-Z12R-PMC-A	30696436
250	60	138	-	63	15	5	6,70	9.760	CFM901-250-CA60-Z15R-PMC-A	30696438
315	60	236	-	80	18	5	13,35	7.750	CFM901-315-CA60-Z18R-PMC-A	30696440
400	60	236	-	80	24	5	21,40	6.100	CFM901-400-CA60-Z24R-PMC-A	30696442
500	60	236	-	80	30	5	34,50	4.880	CFM901-500-CA60-Z30R-PMC-A	30696444

Dimensions in mm.




Counter-clockwise design on request.

* d₁ Depending on the milling cartridge type, see page 239.

** Included.

Cutting Data recommendation see page 310.

Accessories

	PMC...	Milling cartridge	Page 239
		See MAPAL catalogue "CLAMPING"	
	d ₁	Fastening screw for milling cutter arbor	Order No.
	160 - 180 200 - 500	ISO 4762 - M12x45-12.9 ISO 4762 - M16x50-12.9	10006594 10007775

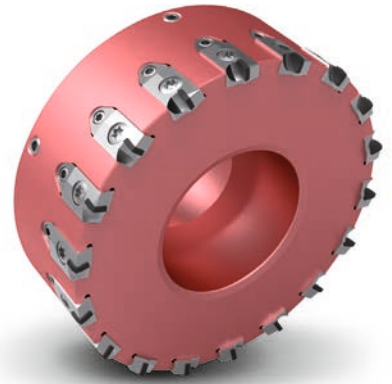
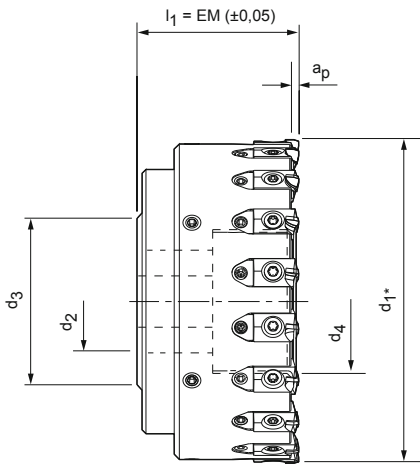
Spare parts**

		Clamping screws for milling cartridge M6x13	Order No. 30696520
		Adjusting screw M5x8	Order No. 30696523
		Chip deflector Chip deflector for clockwise Chip deflector for counter- clockwise	Order No. 30696535 30696536
		Clamping screw for chip deflector M3x7.3	Order No. 30696537
		Locking screw M6x12	Order No. 30696529
	d ₁ 50 - 140	Coolant screw	Page 275
	d ₁ 160 - 500	Coolant cover and fastening screw M6x20	Page 275

EcoFeed

PCD face milling head, close spacing

EcoMill



Tool body made of aluminium

Dimensions					Z _{eff}	a _p max.	Weight incl. milling cartridge [kg]	Max. spindle speed [min ⁻¹]	Specification	Order No.
d ₁ *	d ₂	d ₃	d ₄	l ₁						
63	22	49	28	48	8	3	0,42	33.000	CFM901-063-CA22-Z08R-EMC-A	30696576
80	27	49	36	50	10	3	0,75	33.000	CFM901-080-CA27-Z10R-EMC-A	30696577
100	32	59	45	50	14	3	1,20	29.500	CFM901-100-CA32-Z14R-EMC-A	30696578
125	40	67	56	63	18	3	2,20	25.500	CFM901-125-CA40-Z18R-EMC-A	30696579
160	40	96	-	63	24	3	2,80	22.200	CFM901-160-CA40-Z24R-EMC-A	30696580
200	60	136	-	63	28	3	4,30	18.100	CFM901-200-CA60-Z28R-EMC-A	30696581
250	60	136	-	63	36	3	6,80	14.500	CFM901-250-CA60-Z36R-EMC-A	30696582
315	60	232	-	80	46	3	13,00	11.500	CFM901-315-CA60-Z46R-EMC-A	30696583
400	60	236	-	80	58	3	21,60	9.000	CFM901-400-CA60-Z58R-EMC-A	30696584

Accessories

	EMC...	Milling cartridge	Page 240
		See MAPAL catalogue "CLAMPING"	
	d ₁ 160 200 - 400	Fastening screw for milling cutter arbor ISO 4762 - M12x45-12.9 ISO 4762 - M16x50-12.9	Order No. 10006594 10007775

Spare parts**

		Clamping screws for milling cartridge M5x11	Order No. 30696524
		Threaded spindle M5x0.5LH/RHx17	Order No. 30696525
		Adjusting wedge M5x0.5	Order No. 30696526
	d ₁ 63 - 125	Coolant screw	Page 277
	d ₁ 160 - 400	Coolant cover and fastening screw M6x20	Page 277

Dimensions in mm.

Special design with increased number of teeth on request.

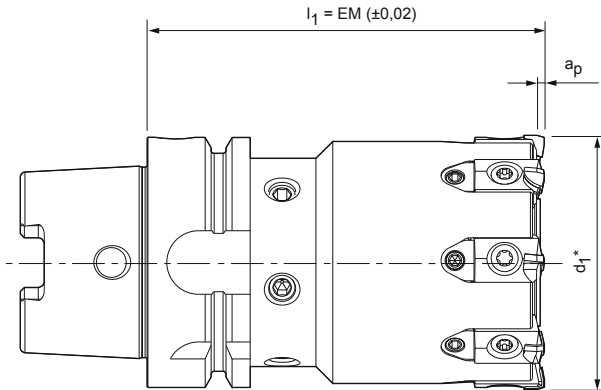
* d₁ Depending on the milling cartridge type, see page 240.

** Included.

Cutting Data recommendation see page 310.

EcoFix

PCD face milling cutter, monoblock design
EcoMill




Body material with HSK-A connection

Dimensions			z_{eff}	a_p max.	Weight incl. milling cartridge [kg]	Max. spindle speed [min^{-1}]	Specification	Order No.
d_1^*	Nominal size HSK-A	l_1						
50	63	100	6	3	1,50	27.000	CFM901-050-A063-Z06R-EMC-S	30696632
63	63	100	8	3	1,85	27.000	CFM901-063-A063-Z08R-EMC-S	30696634
80	63	100	10	3	2,50	25.000	CFM901-080-A063-Z10R-EMC-S	30696636
100	63	100	14	3	3,55	20.000	CFM901-100-A063-Z14R-EMC-S	30696637

Body with SK connection

Dimensions			z_{eff}	a_p max.	Weight incl. milling cartridge [kg]	Max. spindle speed [min^{-1}]	Specification	Order No.
d_1^*	Nominal size SK	l_1						
50	40	100	6	3	1,65	27.000	CFM901-050-S040-Z06R-EMC-S	30696633
63	40	100	8	3	2,05	27.000	CFM901-063-S040-Z08R-EMC-S	30696635

Accessories

	EMC...	Milling cartridge	Page 240
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Spare parts**

	Clamping screws for milling cartridge M5x11	Order No.	30696524
	Threaded spindle M5x0.5LH/RHx17	Order No.	30696525
	Adjusting wedge M5x0.5	Order No.	30696526
	Coolant screw	Page	277
	Connection HSK Coolant tube HSK-A63	Order No.	30326006

Dimensions in mm.

Special design with increased number of teeth on request.

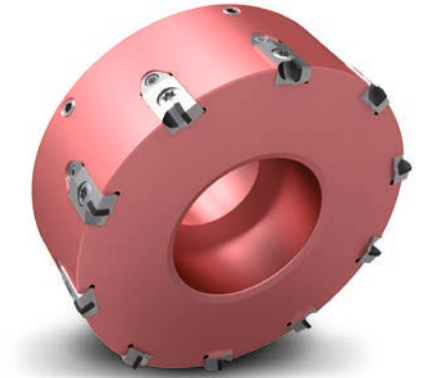
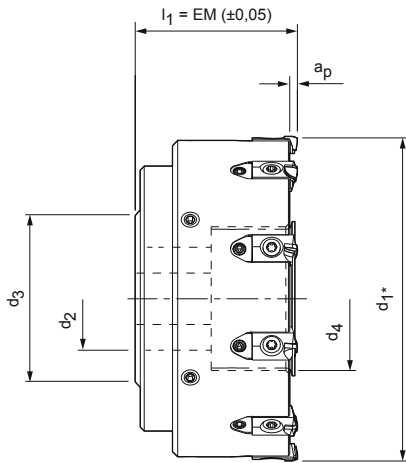
* d_1 Depending on the milling cartridge type, see page 240.

** Included.

Cutting Data recommendation see page 310.

EcoSpeed

PCD face milling head, wide pitch
EcoMill



Tool body made of aluminium

Dimensions					Z _{eff}	a _p max.	Weight incl. milling cartridge [kg]	Max. spindle speed [min ⁻¹]	Specification	Order No.
d ₁ *	d ₂	d ₃	d ₄	l ₁						
63	22	49	28	48	5	3	0,40	33.000	CFM901-063-CA22-Z05R-EMC-A	30696567
80	27	49	36	50	6	3	0,70	33.000	CFM901-080-CA27-Z06R-EMC-A	30696568
100	32	59	45	50	8	3	1,10	29.500	CFM901-100-CA32-Z08R-EMC-A	30696569
125	40	67	56	63	10	3	2,20	25.500	CFM901-125-CA40-Z10R-EMC-A	30696570
160	40	96	-	63	12	3	2,80	22.200	CFM901-160-CA40-Z12R-EMC-A	30696571
200	60	136	-	63	16	3	4,20	18.100	CFM901-200-CA60-Z16R-EMC-A	30696572
250	60	136	-	63	20	3	6,70	14.500	CFM901-250-CA60-Z20R-EMC-A	30696573
315	60	232	-	80	24	3	12,90	11.500	CFM901-315-CA60-Z24R-EMC-A	30696574
400	60	236	-	80	28	3	21,30	9.000	CFM901-400-CA60-Z28R-EMC-A	30696575

Accessories

	EMC...	Milling cartridge	Page 240
		See MAPAL catalogue "CLAMPING"	
	d ₁	Fastening screw for milling cutter arbor	Order No.
	160 200 - 400	ISO 4762 - M12x45-12.9 ISO 4762 - M16x50-12.9	10006594 10007775

Spare parts**

		Clamping screws for milling cartridge M5x11	Order No.
			30696524
		Threaded spindle M5x0.5LH/RHx17	Order No.
			30696525
		Adjusting wedge M5x0.5	Order No.
			30696526
	d ₁ 63 - 125	Coolant screw	Page 277
	d ₁ 160 - 400	Coolant cover and fastening screw M6x20	Page 277

Dimensions in mm.

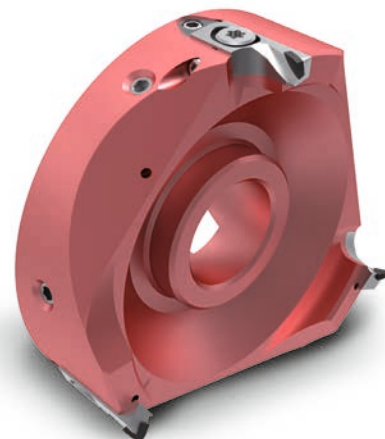
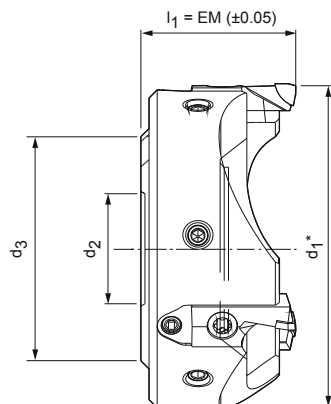
* d₁ Depending on the milling cartridge type, see page 240.

**Included.

Cutting Data recommendation see page 310.

FlyCutter



PCD face milling head, weight-reduced design
EcoMill



Tool body made of aluminium

Dimensions				Z_{eff}	a_p max.	Weight incl. milling cartridge [kg]	Max. spindle speed [min^{-1}]	Specification	Order No.
d_1^*	d_2	d_3	l_1						
63	27	55	42	3	3	0,22	33.000	CFM901-063-CA27-Z03R-FMC-A	30772751
80	27	59	38	3	3	0,299	33.000	CFM901-080-CA27-Z03R-FMC-A	30388951-200
100	27	59	38	3	3	0,418	30.000	CFM901-100-CA27-Z03R-FMC-A	30381973-200
125	27	59	38	3	3	0,627	25.000	CFM901-125-CA27-Z03R-FMC-A	30388952-200
140	27	59	38	4	3	0,800	23.000	CFM901-140-CA27-Z04R-FMC-A	30466716-200
160	27	59	50	4	3	1,469	21.000	CFM901-160-CA27-Z04R-FMC-A	30508209

Accessories

	FMC...	Milling cartridge	Page 241
		See MAPAL catalogue "CLAMPING"	

Spare parts**

		Clamping screws for milling cartridge ISO 14580-M5x8-8.8-KL	Order No. 30499981
		Threaded spindle M5x0.5LH/RHx17	Order No. 30696525
		Adjusting wedge M5x0.5	Order No. 30696526
		Locking screw ISO 4028-M4x6-45H-KL	Order No. 30367364
	d_1 80 - 160	Coolant screw and washer	Page 277

Dimensions in mm.

* d_1 Depending on the milling cartridge type, see page 241.

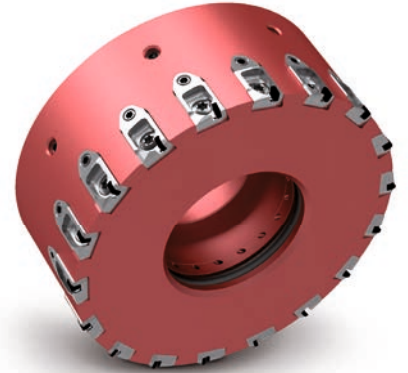
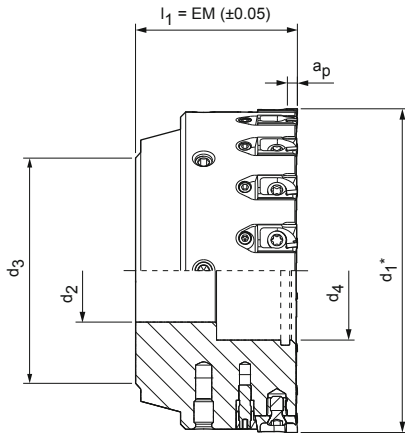
** Included.

Cutting Data recommendation see page 310.

EcoFeed-Blue

PCD face milling cutters, close spacing

EcoMill-Blue



Tool body made of aluminium

Dimensions					Z_{eff}	a_p max.	Weight [kg]	Max. spindle speed [min ⁻¹]	Specification	Order No.
d_1^*	d_2	d_3	d_4	l_1						
50	22	45	16	48	6	2	0,28	35.000	CFM901-050-CA22-Z06R-EBC-A	30545045
63	22	48	26	48	8	2	0,45	33.000	CFM901-063-CA22-Z08R-EBC-A	30545046
80	27	60	34	50	10	2	0,73	33.000	CFM901-080-CA27-Z10R-EBC-A	30545047
100	32	78	43	50	14	2	1,17	29.500	CFM901-100-CA32-Z14R-EBC-A	30545048
125	40	89	54	63	18	2	2,14	25.500	CFM901-125-CA40-Z18R-EBC-A	30519037
160	40	96	116,5	63	24	2	2,60	22.200	CFM901-160-CA40-Z24R-EBC-A	30545049
200	60	134	156,5	63	28	2	3,88	14.500	CFM901-200-CA60-Z28R-EBC-A	30545050
250	60	134	206,5	63	36	2	6,22	14.500	CFM901-250-CA60-Z36R-EBC-A	30545051
315	60	232	271,5	80	46	2	12,29	11.500	CFM901-315-CA60-Z46R-EBC-A	30545043
400	60	232	356,5	80	58	2	19,21	9.000	CFM901-400-CA60-Z58R-EBC-A	30545053

Tool body made of steel

50	22	45	16	48	6	2	0,59	35.000	CFM901-050-CA22-Z06R-EBC-S	30569919
63	22	48	26	48	8	2	0,95	33.000	CFM901-063-CA22-Z08R-EBC-S	30569920
80	27	60	34	50	10	2	1,61	33.000	CFM901-080-CA27-Z10R-EBC-S	30569921
100	32	78	43	50	14	2	2,59	29.500	CFM901-100-CA32-Z14R-EBC-S	30569922
125	40	89	54	63	18	2	4,81	25.500	CFM901-125-CA40-Z18R-EBC-S	30569923
160	40	96	116,5	63	24	2	6,54	22.000	CFM901-160-CA40-Z24R-EBC-S	30569924

Accessories

	EBC...	Milling cartridge	Page 242
		See MAPAL catalogue "CLAMPING"	
	d_1	Fastening screw for milling cutter arbor	Order No.
	160 200 - 400	ISO 4762 - M12x45-12.9 ISO 4762 - M16x50-12.9	10006594 10007775

Spare parts**

		Clamping screws for milling cartridge TORX® M5x11 TX25	Order No. 30696524
		Threaded spindle M5x0.5LH/RHx17	Order No. 30696526
		Adjusting wedge M5x0.5	Order No. 30696525
	d_1 50 - 125	Coolant screw	Page 277
	d_1 180 - 400	Coolant cover and fastening screw M6x20	Page 277

Dimensions in mm.

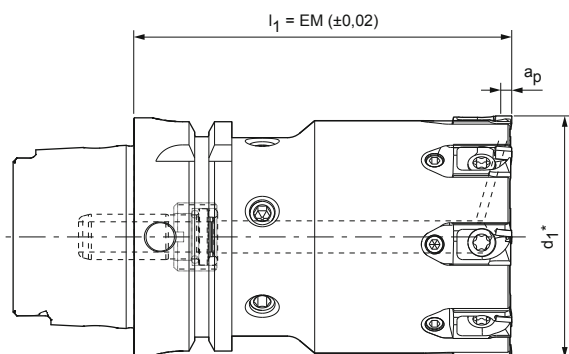
* d_1 Depending on the milling cartridge type, see page 242.

**Included.

Cutting data recommendation see page 310.

EcoFix-Blue

PCD face milling cutters, monoblock variant
EcoMill-Blue



Body material with HSK-A connection

Dimensions			Z _{eff}	a _p max.	Weight [kg]	Max. spindle speed [min ⁻¹]	Specification	Order No.
d ₁ *	Nominal size HSK-A	l ₁						
32	63	100	4	2	0,51	27.000	CFM901-032-A063-Z04R-EBC-S	30545054
40	63	100	6	2	0,57	27.000	CFM901-040-A063-Z06R-EBC-S	30545055
50	63	100	6	2	0,67	27.000	CFM901-050-A063-Z06R-EBC-S	30545056
63	63	100	8	2	0,89	27.000	CFM901-063-A063-Z08R-EBC-S	30545057
80	63	100	10	2	1,16	25.000	CFM901-080-A063-Z10R-EBC-S	30545058
100	63	100	14	2	1,51	20.000	CFM901-100-A063-Z14R-EBC-S	30545059





Body with SK connection

Dimensions			Z _{eff}	a _p max.	Weight [kg]	Max. spindle speed [min ⁻¹]	Specification	Order No.
d ₁ *	Nominal size SK	l ₁						
32	40	100	4	2	0,54	27.000	CFM901-032-S040-Z04R-EBC-S	30545060
40	40	100	6	2	0,62	27.000	CFM901-040-S040-Z06R-EBC-S	30545061
50	40	100	6	2	0,73	27.000	CFM901-050-S040-Z06R-EBC-S	30545062
63	40	100	8	2	0,90	27.000	CFM901-063-S040-Z08R-EBC-S	30545063
80	40	100	10	2	1,16	25.000	CFM901-080-S040-Z10R-EBC-S	30545064
100	40	100	14	2	1,47	20.000	CFM901-100-S040-Z14R-EBC-S	30545065

Accessories

	EBC...	Milling cartridge	Page 242
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Spare parts**

		Clamping screws for milling cartridge TORX® M5x11 TX25	Order No. 30696524
	d ₁ 32 - 40 50 - 100	Threaded spindle M5x0.5LH/RHx15 M5x0.5LH/RHx17	Order No. 30696527 30696526
	d ₁ 32 - 40 50 - 100	Adjusting wedge M5x0.5 M5x0.5	Order No. 30696528 30696525
	Connection HSK	Coolant tube HSK63	Order No. 30326006

Dimensions in mm.

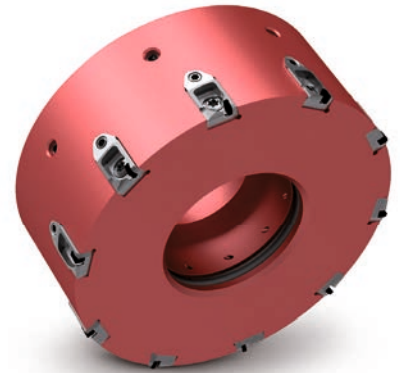
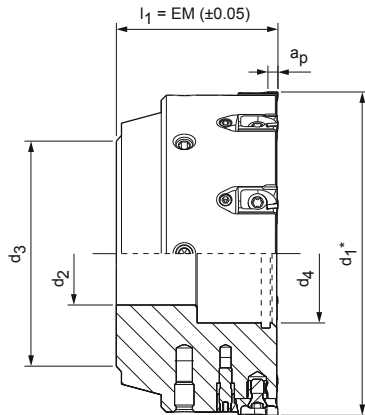
* d₁ Depending on the milling cartridge type, see page 242.

** Included.

Cutting data recommendation see page 310.

EcoSpeed-Blue

PCD face milling cutters, wide spacing
EcoMill-Blue



Tool body made of aluminium

Dimensions					Z_{eff}	a_p max.	Weight [kg]	Max. spindle speed [min ⁻¹]	Specification	Order No.
d_1^*	d_2	d_3	d_4	l_1						
63	22	48	26	48	5	2	0,43	33.000	CFM901-063-CA22-Z05R-EBC-A	30545037
80	27	60	34	50	6	2	0,71	33.000	CFM901-080-CA27-Z06R-EBC-A	30545038
100	32	78	43	50	8	2	1,13	29.500	CFM901-100-CA32-Z08R-EBC-A	30545039
125	40	89	54	63	10	2	2,08	25.500	CFM901-125-CA40-Z10R-EBC-A	30542646
160	40	96	116,5	63	12	2	2,52	22.200	CFM901-160-CA40-Z12R-EBC-A	30545040
200	60	134	156,5	63	16	2	3,80	18.100	CFM901-200-CA60-Z16R-EBC-A	30545041
250	60	134	206,5	63	20	2	6,11	14.500	CFM901-250-CA60-Z20R-EBC-A	30545042
315	60	232	271,5	80	24	2	12,15	11.500	CFM901-315-CA60-Z24R-EBC-A	30545052
400	60	232	356,5	80	28	2	19,00	9.000	CFM901-400-CA60-Z28R-EBC-A	30545044

Tool body made of steel

63	22	48	26	48	5	2	0,96	33.000	CFM901-063-CA22-Z05R-EBC-S	30569914
80	27	60	34	50	6	2	1,63	33.000	CFM901-080-CA27-Z06R-EBC-S	30569915
100	32	78	43	50	8	2	2,60	29.500	CFM901-100-CA32-Z08R-EBC-S	30569916
125	40	89	54	63	10	2	4,85	25.500	CFM901-125-CA40-Z10R-EBC-S	30569917
160	40	96	116,5	63	12	2	6,58	22.200	CFM901-160-CA40-Z12R-EBC-S	30569918

Accessories

	EBC...	Milling cartridge	Page 242
		See MAPAL catalogue "CLAMPING"	
	d_1	Fastening screw for milling cutter arbor	Order No.
	160 200 - 400	ISO 4762 - M12x45-12.9 ISO 4762 - M16x50-12.9	10006594 10007775

Spare parts**

		Clamping screws for milling cartridge TORX® M5x11 TX25	Order No. 30696524
		Threaded spindle M5x0.5LH/RHx17	Order No. 30696525
		Adjusting wedge M5x0.5	Order No. 30696526
	d_1 50 - 125	Coolant screw	Page 277
	d_1 180 - 400	Coolant cover and fastening screw M6x20	Page 277

Dimensions in mm.

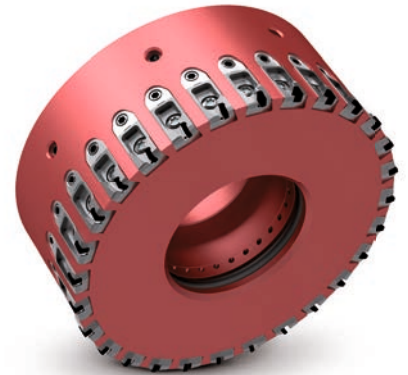
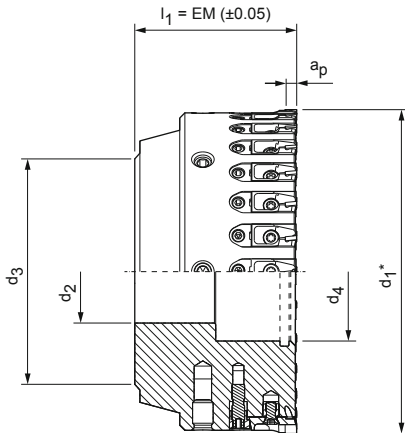
* d_1 Depending on the milling cartridge type, see page 242.

**Included.

Cutting data recommendation see page 310.

RapidFeed-Blue

PCD face milling cutters, close spacing
RapidMill-Blue



Tool body made of aluminium

Dimensions					Z_{eff}	a_p max.	Weight [kg]	Max. spindle speed [min ⁻¹]	Specification	Order No.
d_1^*	d_2	d_3	d_4	l_1						
50	22	45	16	48	10	1	0,29	35.000	CFM901-050-CA22-Z10R-RBC-A	30547876
63	22	48	26	48	13	1	0,47	33.000	CFM901-063-CA22-Z13R-RBC-A	30547877
80	27	60	34	50	16	1	0,75	33.000	CFM901-080-CA27-Z16R-RBC-A	30547878
100	32	78	43	50	22	1	1,18	29.500	CFM901-100-CA32-Z22R-RBC-A	30547879
125	40	89	54	63	28	1	2,16	25.500	CFM901-125-CA40-Z28R-RBC-A	30547880
160	40	96	116,5	63	34	1	2,61	22.200	CFM901-160-CA40-Z34R-RBC-A	30547881
200	60	134	156,5	63	44	1	3,91	18.100	CFM901-200-CA60-Z44R-RBC-A	30547882

Tool body made of steel

50	22	45	16	48	10	1	0,57	35.000	CFM901-050-CA22-Z10R-RBC-S	30547886
63	22	48	26	48	13	1	0,93	33.000	CFM901-063-CA22-Z13R-RBC-S	30547887
80	27	60	34	50	16	1	1,59	33.300	CFM901-080-CA27-Z16R-RBC-S	30547888
100	32	78	43	50	22	1	2,55	29.500	CFM901-100-CA32-Z22R-RBC-S	30547889
125	40	89	54	63	28	1	4,76	25.500	CFM901-125-CA40-Z28R-RBC-S	30547890
160	40	96	116,5	63	34	1	6,51	22.200	CFM901-160-CA40-Z34R-RBC-S	30547891

Accessories

	RBC...	Milling cartridge	Page 243
		See MAPAL catalogue "CLAMPING"	
	d_1	Fastening screw for milling cutter arbor	Order No.
	160 200 - 400	ISO 4762 - M12x45-12.9 ISO 4762 - M16x50-12.9	10006594 10007775

Spare parts**

		Clamping screws for milling cartridge TORX PLUS® M4X8.5-TX15-IP	Order No.
			30412229
	d_1 50 63 - 200	Threaded spindle M5x0.5LH/RHx15 M5x0.5LH/RHx17	Order No.
			30696528 30696525
		Adjusting wedge M5x0.5	Order No.
			30557564
	d_1 50 - 125	Coolant screw	Page 277
	d_1 160 - 400	Coolant cover and fastening screw M6x20	Page 277

Dimensions in mm.

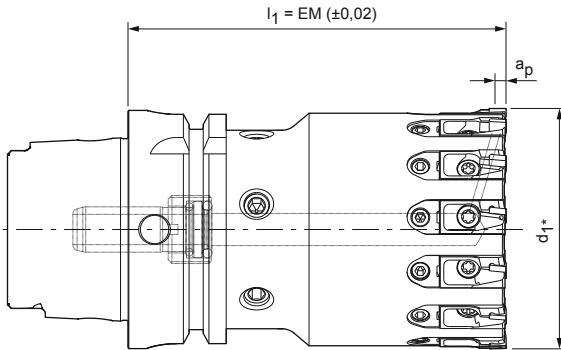
* d_1 Depending on the milling cartridge type, see page 242.

**Included.

Cutting data recommendation see page 310.

RapidFix-Blue

PCD face milling cutters, close spacing, monoblock variant
RapidMill-Blue



Body material with HSK-A connection

Dimensions			Z _{eff}	a _p max.	Weight [kg]	Max. spindle speed [min ⁻¹]	Specification	Order No.
d ₁ *	Nominal size HSK-A	l ₁						
32	63	100	4	1	1,29	27.000	CFM901-032-A063-Z04R-RBC-S	30547893
40	63	100	6	1	1,45	27.000	CFM901-040-A063-Z06R-RBC-S	30547894
50	63	100	10	1	1,72	27.000	CFM901-050-A063-Z10R-RBC-S	30547895
63	63	100	13	1	2,16	27.000	CFM901-063-A063-Z13R-RBC-S	30547896
80	63	100	16	1	2,81	25.000	CFM901-080-A063-Z16R-RBC-S	30547898
100	63	100	22	1	3,55	20.000	CFM901-100-A063-Z22R-RBC-S	30547899





Body with SK connection

Dimensions			Z _{eff}	a _p max.	Weight [kg]	Max. spindle speed [min ⁻¹]	Specification	Order No.
d ₁ *	Nominal size SK	l ₁						
32	40	100	4	1	1,47	27.000	CFM901-032-S040-Z04R-RBC-S	30547902
40	40	100	6	1	1,64	27.000	CFM901-040-S040-Z06R-RBC-S	30547903
50	40	100	10	1	1,91	27.000	CFM901-050-S040-Z10R-RBC-S	30547904
63	40	100	13	1	2,40	27.000	CFM901-063-S040-Z13R-RBC-S	30547905
80	40	100	16	1	3,10	25.000	CFM901-080-S040-Z16R-RBC-S	30547906
100	40	100	22	1	3,90	20.000	CFM901-100-S040-Z22R-RBC-S	30547907

Accessories

	RBC...	Milling cartridge	Page 243
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Spare parts**

		Clamping screws for milling cartridge TORX PLUS® M4X8.5-TX15-IP	Order No. 30412229
	d ₁ 32 - 50 63 - 100	Threaded spindle M5x0.5LH/RHx15 M5x0.5LH/RHx17	Order No. 30696528 30696525
		Adjusting wedge M5x0.5	Order No. 30557564
	Connection HSK	Coolant tube HSK63	Order No. 30326006

Dimensions in mm.

* d₁ Depending on the milling cartridge type, see page 243.

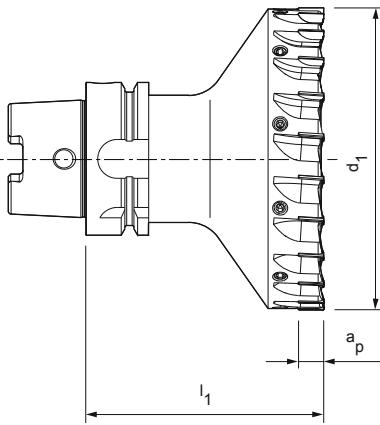
**Included.

Cutting data recommendation see page 310.



FaceMill-Diamond

PCD face milling cutters with internal cooling
SHM58/59



Design:

Milling cutter diameter: 40.00-125.00 mm
Cutting material: PU611
Number of cutting edges: 10-22
Helix angle: 4°

Application:

For face milling, especially with high stock removal. For cutting depths of up to 8 mm.

SHM58: Surface quality $R_z \leq 10 \mu\text{m}$

SHM59: Surface quality $R_z > 10 \mu\text{m}$



Body material with HSK-A connection | SHM58

Dimensions			z_{eff}	$a_p \text{ max.}$	Weight [kg]	Max. spindle speed [min^{-1}]	Specification*	Order number			
d_1	Nominal size	l_1						Chamfer	Radius		
								0.1 mm	0.2 mm	0.4 mm	0.6 mm
40	63	100	10	8	1,43	33.000	SHM581-040BZ10R-[Form]A6-PU611	30696763	30696768	30696770	30696772
50	63	100	12	8	1,71	33.000	SHM581-050BZ12R-[Form]A6-PU611	30696790	30696792	30696795	30696798
63	63	100	14	8	1,98	33.000	SHM581-063BZ14R-[Form]A6-PU611	30696816	30696818	30696820	30696823
80	63	100	16	8	2,39	31.000	SHM581-080BZ16R-[Form]A6-PU611	30696845	30696847	30696849	30696851
100	63	100	18	8	3,01	28.000	SHM581-100BZ18R-[Form]A6-PU611	30696879	30696881	30696883	30696885
125	63	100	22	8	4,21	25.000	SHM581-125BZ22R-[Form]A6-PU611	30696913	30696915	30696917	30696919
80	100	100	16	8	4,68	31.000	SHM581-080BZ16R-[Form]A1-PU611	30696853	30696855	30696857	30696859
100	100	100	18	8	5,36	28.000	SHM581-100BZ18R-[Form]A1-PU611	30696887	30696889	30696891	30696893
125	100	100	22	8	6,34	25.000	SHM581-125BZ22R-[Form]A1-PU611	30696921	30696924	30696926	30696928

Body with SK connection | SHM58

40	40	100	10	8	1,63	33.000	SHM581-040BZ10R-[Form]S4-PU611	30696746	30696749	30696751	30696753
50	40	100	12	8	1,96	33.000	SHM581-050BZ12R-[Form]S4-PU611	30696774	30696776	30696778	30696780
63	40	100	14	8	2,2	33.000	SHM581-063BZ14R-[Form]S4-PU611	30696800	30696802	30696804	30696806
80	40	100	16	8	2,6	31.000	SHM581-080BZ16R-[Form]S4-PU611	30696825	30696828	30696830	30696833
100	40	100	18	8	3,2	28.000	SHM581-100BZ18R-[Form]S4-PU611	30696861	30696863	30696865	30696867
125	40	100	22	8	4,5	25.000	SHM581-125BZ22R-[Form]S4-PU611	30696895	30696897	30696899	30696901

Body with BT connection | SHM58

40	40	100	10	8	1,6	33.000	SHM581-040BZ10R-[Form]B4-PU611	30696755	30696757	30696759	30696761
50	40	100	12	8	2	33.000	SHM581-050BZ12R-[Form]B4-PU611	30696782	30696784	30696786	30696788
63	40	100	14	8	2,2	33.000	SHM581-063BZ14R-[Form]B4-PU611	30696808	30696810	30696812	30696814
80	40	100	16	8	2,6	31.000	SHM581-080BZ16R-[Form]B4-PU611	30696835	30696837	30696839	30696843
100	40	100	18	8	3,2	28.000	SHM581-100BZ18R-[Form]B4-PU611	30696869	30696871	30696873	30696877
125	40	100	22	8	4,5	25.000	SHM581-125BZ22R-[Form]B4-PU611	30696903	30696905	30696907	30696911

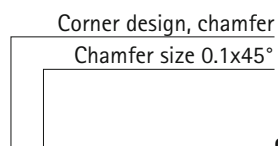
Dimensions in mm.

* Specification plus required cutting edge design (see table and example on next page)

Cutting Data recommendation see page 310.

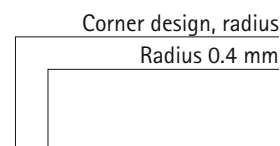
Selection of the cutting edge design

Edge design	Chamfer	Radius		
Size [mm]	0,1	0,2	0,4	0,6
Shape	F0010	R0020	R0040	R0060



Example:
SHM581-040BZ10R-F0010A6-PU611

or



Example:
SHM581-040BZ10R-R0040A6-PU611



Body material with HSK-A connection | SHM59

Dimensions			z _{eff}	a _p max.	Weight [kg]	Max. spindle speed [min ⁻¹]	Specification*	Order number			
d ₁	Nominal size	l ₁						Chamfer	Radius		
							0.1 mm	0.2 mm	0.4 mm	0.6 mm	
40	63	100	10	8	1,43	33.000	SHM591-040BZ10R-[Form]A6-PU611	30696764	30696769	30696771	30696773
50	63	100	12	8	1,71	33.000	SHM591-050BZ12R-[Form]A6-PU611	30696791	30696794	30696796	30696799
63	63	100	14	8	1,98	33.000	SHM591-063BZ14R-[Form]A6-PU611	30696817	30696819	30696821	30696824
80	63	100	16	8	2,39	31.000	SHM591-080BZ16R-[Form]A6-PU611	30696846	30696848	30696850	30696852
100	63	100	18	8	3,01	28.000	SHM591-100BZ18R-[Form]A6-PU611	30696880	30696882	30696884	30696886
125	63	100	22	8	4,21	25.000	SHM591-125BZ22R-[Form]A6-PU611	30696914	30696916	30696918	30696920
80	100	100	16	8	4,68	31.000	SHM591-080BZ16R-[Form]A1-PU611	30696854	30696856	30696858	30696860
100	100	100	18	8	5,36	28.000	SHM591-100BZ18R-[Form]A1-PU611	30696888	30696890	30696892	30696894
125	100	100	22	8	6,34	25.000	SHM591-125BZ22R-[Form]A1-PU611	30696922	30696925	30696927	30696929

Body with SK connection | SHM59

40	40	100	10	8	1,63	33.000	SHM591-040BZ10R-[Form]S4-PU611	30696747	30696750	30696752	30696754
50	40	100	12	8	1,96	33.000	SHM591-050BZ12R-[Form]S4-PU611	30696775	30696777	30696779	30696781
63	40	100	14	8	2,2	33.000	SHM591-063BZ14R-[Form]S4-PU611	30696801	30696803	30696805	30696807
80	40	100	16	8	2,6	31.000	SHM591-080BZ16R-[Form]S4-PU611	30696826	30696829	30696831	30696834
100	40	100	18	8	3,2	28.000	SHM591-100BZ18R-[Form]S4-PU611	30696862	30696864	30696866	30696868
125	40	100	22	8	4,5	25.000	SHM591-125BZ22R-[Form]S4-PU611	30696896	30696898	30696900	30696902

Body with BT connection | SHM59

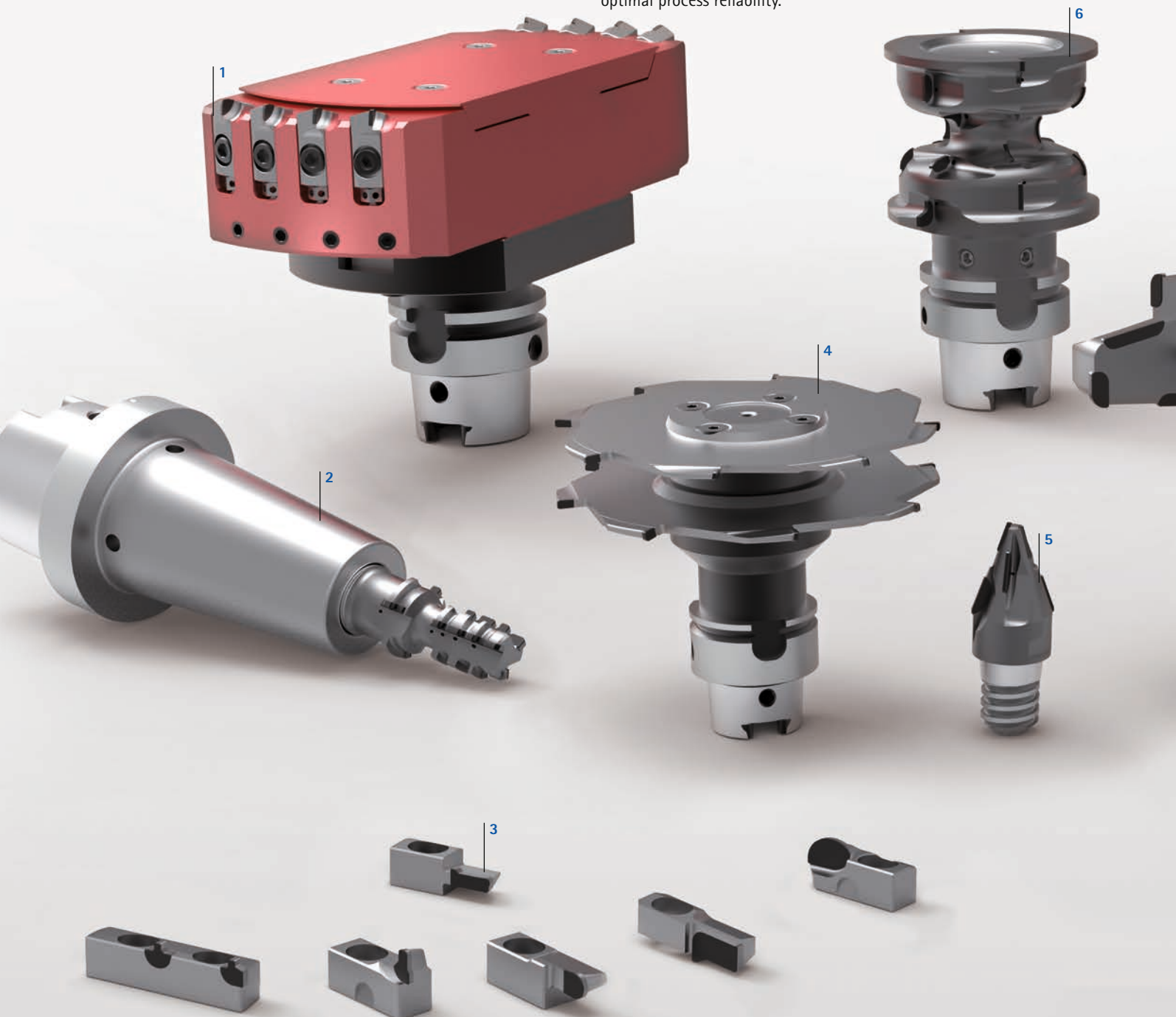
40	40	100	10	8	1,6	33.000	SHM591-040BZ10R-[Form]B4-PU611	30696756	30696758	30696760	30696762
50	40	100	12	8	2	33.000	SHM591-050BZ12R-[Form]B4-PU611	30696783	30696785	30696787	30696789
63	40	100	14	8	2,2	33.000	SHM591-063BZ14R-[Form]B4-PU611	30696809	30696811	30696813	30696815
80	40	100	16	8	2,6	31.000	SHM591-080BZ16R-[Form]B4-PU611	30696836	30696838	30696840	30696844
100	40	100	18	8	3,2	28.000	SHM591-100BZ18R-[Form]B4-PU611	30696870	30696872	30696874	30696878
125	40	100	22	8	4,5	25.000	SHM591-125BZ22R-[Form]B4-PU611	30696904	30696906	30696908	30696912

CUSTOM SOLUTIONS

PCD – custom tools for face milling and circular milling

As an addition to the standard series, custom solutions for PCD milling tools are also often produced at MAPAL for a special application. The latest manufacturing technologies, for example finish lasering, make it possible to solve highly demanding machining tasks. In this way tool solutions with complex cutting geometries and extreme rake and helix angles can be reliably and reproducibly manufactured to suit the manufacturing task.

Particularly during milling, the advantages of the cutting material diamond can be used optimally. The extreme hardness of the diamond insert in conjunction with the highly polished rake face ensure low forces on shearing off the chip and reduce the heat introduced to the workpiece during movement. These are optimal prerequisites for the highest machining qualities for dimension, surface finish and shape, with outstanding productivity and the highest tool lives, as well as optimal process reliability.





Application examples for customer milling cutters

- 1 Face milling cutter for cylinder head machining, combustion chamber side, varying radial arrangement of the PCD inserts for low-burr surface
- 2 Circular milling cutter for machining the connection side of a fuel nozzle
- 3 Along with the milling heads with custom dimensions, milling cartridges can also be adapted to the specific machining task
- 4 Disc milling cutter for face milling camshaft bearing pillars
- 5 Chamfer milling cutter with CFS connection
- 6 Circular milling cutter for machining on a stabilising frame for aircraft lifting system
- 7 Circular milling cutter for machining on a stabilising frame for aircraft lifting system
- 8 Face milling cutter for machining on a brake caliper, reverse milling at the face surface for the main bore
- 9 Combination milling cutter for machining on a gearbox housing
- 10 Face milling cutter for double-sided machining on a bearing frame in one clamping system
- 11 Milling cutter for external machining of turbocharger hose connection
- 12 Circular milling cutter for machining on a throttle flap housing



PCD MILLING CARTRIDGES

Introduction

Product overview, model key _____ 238

PCD milling cartridges

PowerMill – milling cartridges PMC _____ 239

EcoMill – milling cartridges EMC _____ 240

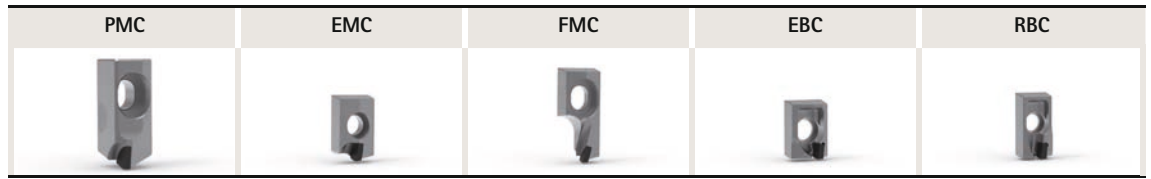
FlyCutter – milling cartridges FMC _____ 241

EcoMill-Blue – milling cartridges EBC _____ 242






RapidMill-Blue – milling cartridges RBC _____ 243



Product overview PCD milling cartridges

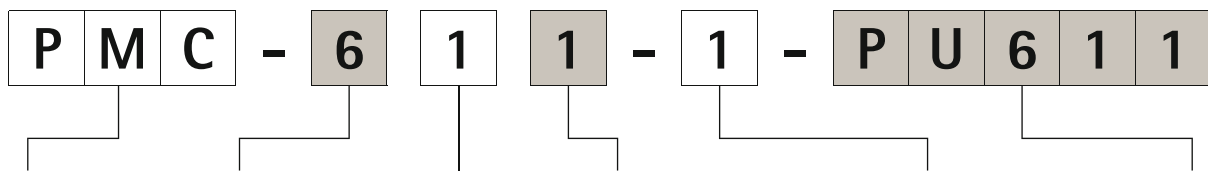


Technical design

Max. cutting depth [mm]	5	3	3	2	1
Chip removal	Replaceable chip deflector	Integrated chip deflector	Integrated chip deflector	Integrated chip guiding geometry	Integrated chip guiding geometry
Coolant supply	Central via tool body	Central via tool body	Central via tool body	Direct at the cutting edge	Direct at the cutting edge
Can be re-ground	✓				
Series	PowerMill 	EcoMill 	FlyCutter 	EcoMill-Blue 	RapidMill-Blue 

Page	239	240	241	242	243
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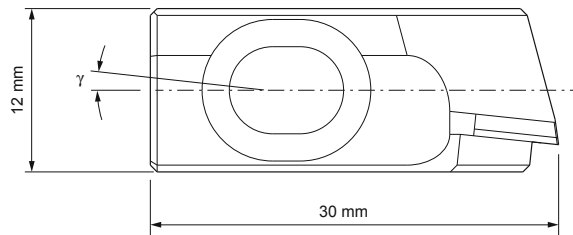
Model key milling cartridges



Series		Type	Rake angle		Cutting edge form		Running direction		Cutting material	
PMC	PowerMill	6	Corner milling insert	1	6°	1	R _z value ≤ 5 μm / radius*	0	Clockwise	PU PCD
EMC	EcoMill	7	Face milling insert	2	3°	2	R _z value ≤ 10 μm	1	Counter-clockwise	
FMC	FlyCutter	8	Wide finishing milling insert	3	0°	3	R _z value ≤ 20 μm			
EBC	EcoMill-Blue	9	PT milling insert	4	10°	4	R _z value > 20 μm			
RBC	RapidMill-Blue			5	15°					
				X	Custom					

* Only with wide finishing milling insert type.

Milling cartridges PMC



Milling cartridge face milling inserts

	Rake angle γ [°]	R_z value [μm]	a_p max.	Cutting material	Cutting direction right		Cutting direction left	
					Specification	Order No.	Specification	Order No.
	6	≤ 5	5	PU611	PMC-711-0-PU611	30696478	PMC-711-1-PU611	30696480
	6	≤ 10	5	PU611	PMC-712-0-PU611	30696482	PMC-712-1-PU611	30696484
	6	≤ 20	5	PU611	PMC-713-0-PU611	30696485	PMC-713-1-PU611	30696486
	6	> 20	5	PU611	PMC-714-0-PU611	30696488	PMC-714-1-PU611	30696489
	3	≤ 5	5	PU611	PMC-721-0-PU611	30696490	PMC-721-1-PU611	30696491
	3	≤ 10	5	PU611	PMC-722-0-PU611	30696492	PMC-722-1-PU611	30696493
	3	≤ 20	5	PU611	PMC-723-0-PU611	30696494	PMC-723-1-PU611	30696495
	3	> 20	5	PU611	PMC-724-0-PU611	30696496	PMC-724-1-PU611	30696497
	0	≤ 5	5	PU611	PMC-731-0-PU611	30696498	PMC-731-1-PU611	30696503
	0	≤ 10	5	PU611	PMC-732-0-PU611	30696504	PMC-732-1-PU611	30696505
	0	≤ 20	5	PU611	PMC-733-0-PU611	30696508	PMC-733-1-PU611	30696509
	0	> 20	5	PU611	PMC-734-0-PU611	30696511	PMC-734-1-PU611	30696512

Milling cartridge corner milling insert

	6	≤ 5	5	PU611	PMC-611-0-PU611	30696446	PMC-611-1-PU611	30696448
	6	≤ 10	5	PU611	PMC-612-0-PU611	30696450	PMC-612-1-PU611	30696451
	6	≤ 20	5	PU611	PMC-613-0-PU611	30696452	PMC-613-1-PU611	30696453
	6	> 20	5	PU611	PMC-614-0-PU611	30696455	PMC-614-1-PU611	30696456
	3	≤ 5	5	PU611	PMC-621-0-PU611	30696458	PMC-621-1-PU611	30696459
	3	≤ 10	5	PU611	PMC-622-0-PU611	30696460	PMC-622-1-PU611	30696461
	3	≤ 20	5	PU611	PMC-623-0-PU611	30696462	PMC-623-1-PU611	30696463
	3	> 20	5	PU611	PMC-624-0-PU611	30696464	PMC-624-1-PU611	30696465
	0	≤ 5	5	PU611	PMC-631-0-PU611	30696466	PMC-631-1-PU611	30696470
	0	≤ 10	5	PU611	PMC-632-0-PU611	30696472	PMC-632-1-PU611	30696473
	0	≤ 20	5	PU611	PMC-633-0-PU611	30696474	PMC-633-1-PU611	30696475
	0	> 20	5	PU611	PMC-634-0-PU611	30696476	PMC-634-1-PU611	30696477

Milling cartridge wide finishing milling insert

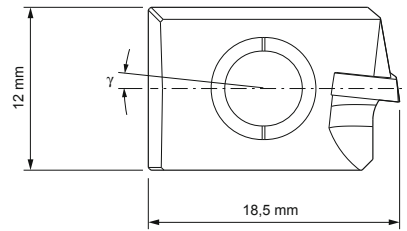
	6	< 5	5	PU611	PMC-811-0-PU611	30696513	PMC-811-1-PU611	30696515
	0	< 3	5	PU611	PMC-831-0-PU611	30696516	PMC-831-1-PU611	30696517

Milling cartridge PT milling insert

	0	≤ 5	5	PU611	PMC-931-0-PU611	30696518		
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Dimensions in mm.

Milling cartridges EMC



Milling cartridge face milling inserts

	Rake angle γ [°]	R _z value [μm]	a _p max.	Running direction	Cutting material	Specification	Order No.
	6	≤ 5	3	Right	PU611	EMC-711-0-PU611	30696600
	6	≤ 10	3	Right	PU611	EMC-712-0-PU611	30696603
	6	≤ 20	3	Right	PU611	EMC-713-0-PU611	30696606
	6	> 20	3	Right	PU611	EMC-714-0-PU611	30696608
	3	≤ 5	3	Right	PU611	EMC-721-0-PU611	30696610
	3	≤ 10	3	Right	PU611	EMC-722-0-PU611	30696611
	3	≤ 20	3	Right	PU611	EMC-723-0-PU611	30696612
	3	> 20	3	Right	PU611	EMC-724-0-PU611	30696613
	0	≤ 5	3	Right	PU611	EMC-731-0-PU611	30696614
	0	≤ 10	3	Right	PU611	EMC-732-0-PU611	30696619
	0	≤ 20	3	Right	PU611	EMC-733-0-PU611	30696621
	0	> 20	3	Right	PU611	EMC-734-0-PU611	30696623

Milling cartridge corner milling insert

	6	≤ 5	3	Right	PU611	EMC-611-0-PU611	30696585
	6	≤ 10	3	Right	PU611	EMC-612-0-PU611	30696588
	6	≤ 20	3	Right	PU611	EMC-613-0-PU611	30696589
	6	> 20	3	Right	PU611	EMC-614-0-PU611	30696590
	3	≤ 5	3	Right	PU611	EMC-621-0-PU611	30696591
	3	≤ 10	3	Right	PU611	EMC-622-0-PU611	30696592
	3	≤ 20	3	Right	PU611	EMC-623-0-PU611	30696593
	3	> 20	3	Right	PU611	EMC-624-0-PU611	30696594
	0	≤ 5	3	Right	PU611	EMC-631-0-PU611	30696595
	0	≤ 10	3	Right	PU611	EMC-632-0-PU611	30696597
	0	≤ 20	3	Right	PU611	EMC-633-0-PU611	30696598
	0	> 20	3	Right	PU611	EMC-634-0-PU611	30696599

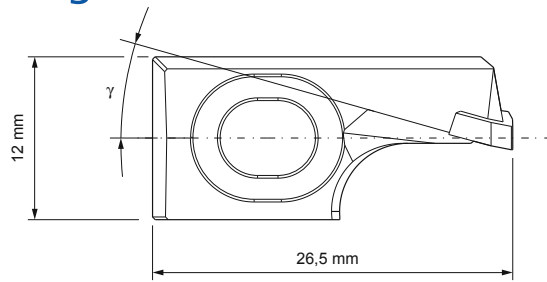
Milling cartridge wide finishing milling insert

	6	< 5	3	Right	PU611	EMC-811-0-PU611	30696625
	0	< 3	3	Right	PU611	EMC-831-0-PU611	30696627

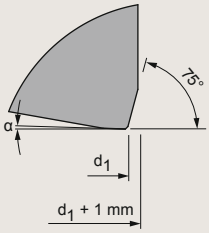
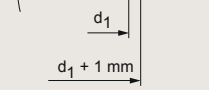
Milling cartridge PT milling insert

	0	≤ 5	3	Right	PU611	EMC-931-0-PU611	30696631
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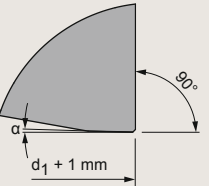
Milling cartridges FMC



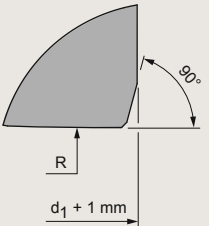
Milling cartridge face milling inserts

	Rake angle γ [°]	R_z value [μm]	a_p max.	Running direction	Cutting material	Specification	Order No.
	15	≤ 5	3	Right	PU611	FMC-751-0-PU611	30410278-300
	15	> 20	3	Right	PU611	FMC-754-0-PU611	30410278-302

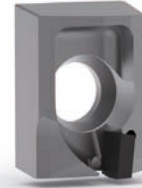
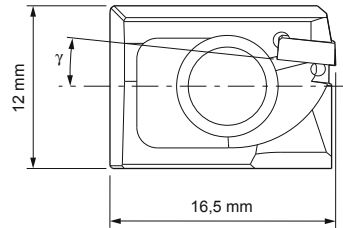
Milling cartridge corner milling insert

	15	≤ 10	3	Right	PU611	FMC-652-0-PU611	30410278-303
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Milling cartridge wide finishing milling insert

	10	≤ 5	3	Right	PU611	FMC-841-0-PU611	30410278-301
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Milling cartridges EBC



Milling cartridge face milling inserts

	Rake angle γ [°]	R_z value [μm]	a_p max.	Running direction	Cutting material	Specification	Order No.
	0	≤ 5	2	Right	PKD	EBC-731-0-PU611	30559589
	0	≤ 10	2	Right	PKD	EBC-732-0-PU611	30559591
	0	≤ 20	2	Right	PKD	EBC-733-0-PU611	30559595
	0	> 20	2	Right	PKD	EBC-734-0-PU611	30559599
	6	≤ 5	2	Right	PKD	EBC-711-0-PU611	30502818
	6	≤ 10	2	Right	PKD	EBC-712-0-PU611	30559592
	6	≤ 20	2	Right	PKD	EBC-713-0-PU611	30559596
	6	> 20	2	Right	PKD	EBC-714-0-PU611	30559600

Milling cartridge corner milling insert

	0	≤ 5	2	Right	PKD	EBC-631-0-PU611	30559590
	0	≤ 10	2	Right	PKD	EBC-632-0-PU611	30559593
	0	≤ 20	2	Right	PKD	EBC-633-0-PU611	30559597
	0	> 20	2	Right	PKD	EBC-634-0-PU611	30559601
	6	≤ 5	2	Right	PKD	EBC-611-0-PU611	30518869
	6	≤ 10	2	Right	PKD	EBC-612-0-PU611	30559594
	6	≤ 20	2	Right	PKD	EBC-613-0-PU611	30559598
	6	> 20	2	Right	PKD	EBC-614-0-PU611	30559602

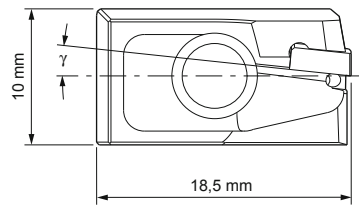
Milling cartridge wide finishing milling insert

	0	< 3	2	Right	PKD	EBC-831-0-PU611	30542645
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Milling cartridge PT milling insert

	0	≤ 5	2	Right	PKD	EBC-931-0-PU611	30559603
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Milling cartridges RBC



Milling cartridge face milling inserts

	Rake angle γ [°]	R _z value [μm]	a _p max.	Running direction	Cutting material	Specification	Order No.
	0	≤ 5	1	Right	PKD	RBC-731-0-PU611	30560072
	0	≤ 10	1	Right	PKD	RBC-732-0-PU611	30560075
	0	≤ 20	1	Right	PKD	RBC-733-0-PU611	30560079
	0	> 20	1	Right	PKD	RBC-734-0-PU611	30560083
	6	≤ 5	1	Right	PKD	RBC-711-0-PU611	30547873
	6	≤ 10	1	Right	PKD	RBC-712-0-PU611	30560076
	6	≤ 20	1	Right	PKD	RBC-713-0-PU611	30560080
	6	> 20	1	Right	PKD	RBC-714-0-PU611	30560084

Milling cartridge corner milling insert

	0	≤ 5	1	Right	PKD	RBC-631-0-PU611	30560073
	0	≤ 10	1	Right	PKD	RBC-632-0-PU611	30560077
	0	≤ 20	1	Right	PKD	RBC-633-0-PU611	30560081
	0	> 20	1	Right	PKD	RBC-634-0-PU611	30560085
	6	≤ 5	1	Right	PKD	RBC-611-0-PU611	30547874
	6	≤ 10	1	Right	PKD	RBC-612-0-PU611	30560078
	6	≤ 20	1	Right	PKD	RBC-613-0-PU611	30560082
	6	> 20	1	Right	PKD	RBC-614-0-PU611	30560086

Milling cartridge wide finishing milling insert

	0	< 3	1	Right	PKD	RBC-831-0-PU611	30560087
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Milling cartridge PT milling insert

	0	≤ 5	1	Right	PKD	RBC-931-0-PU611	30560088
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