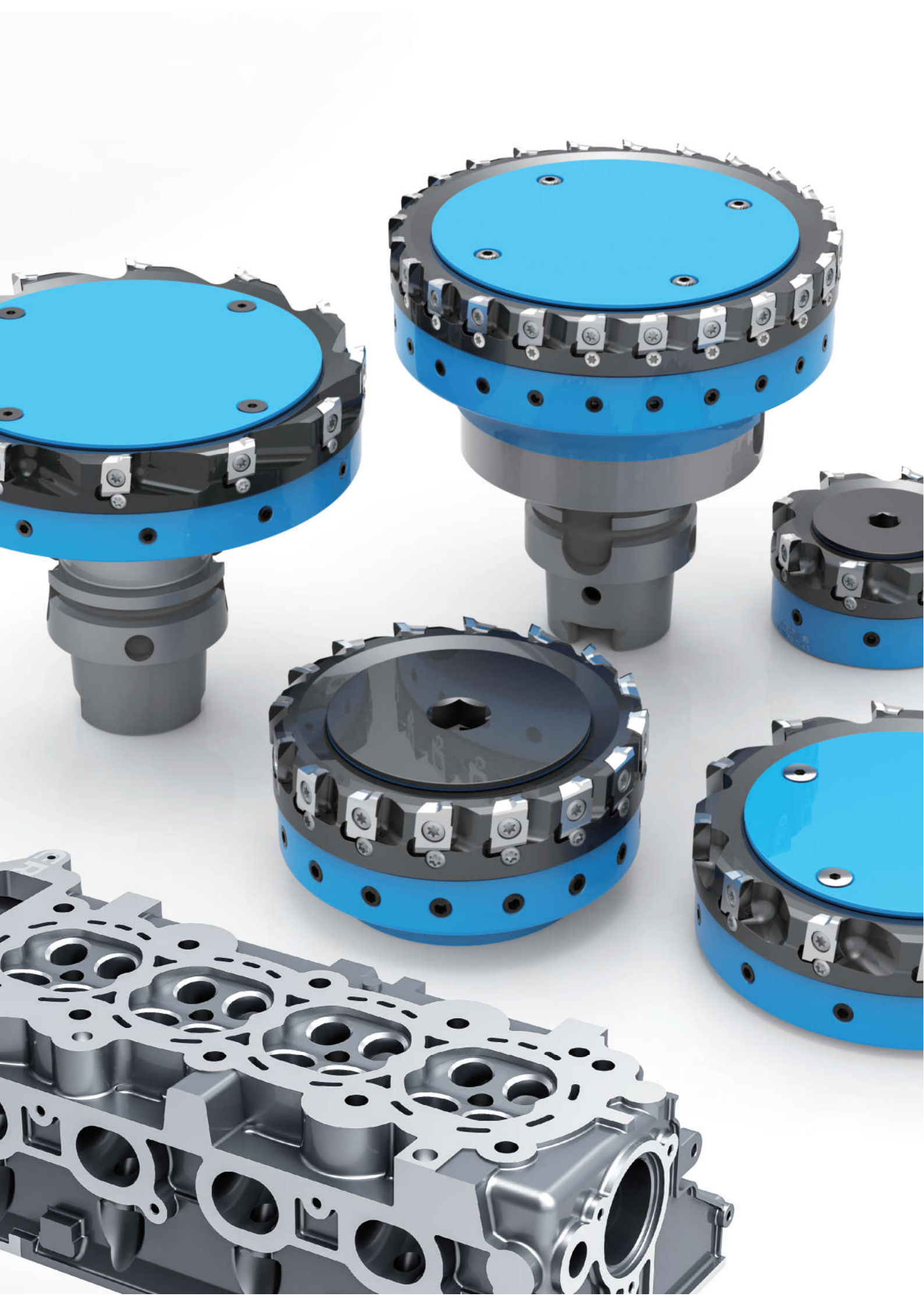


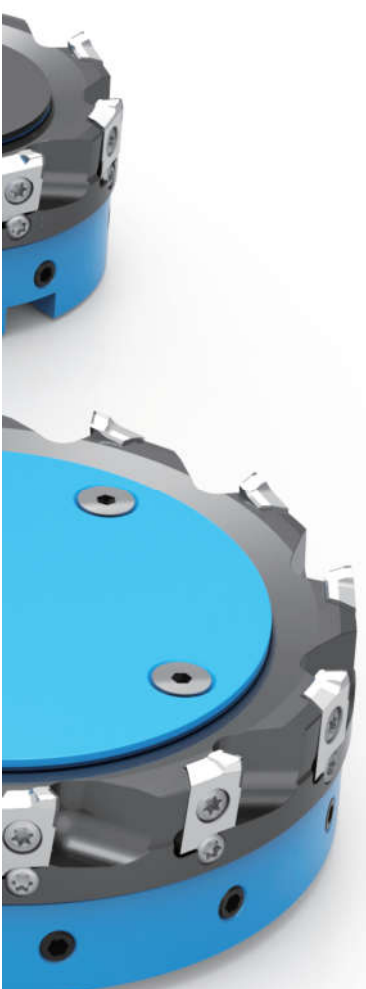
PCD Face Milling

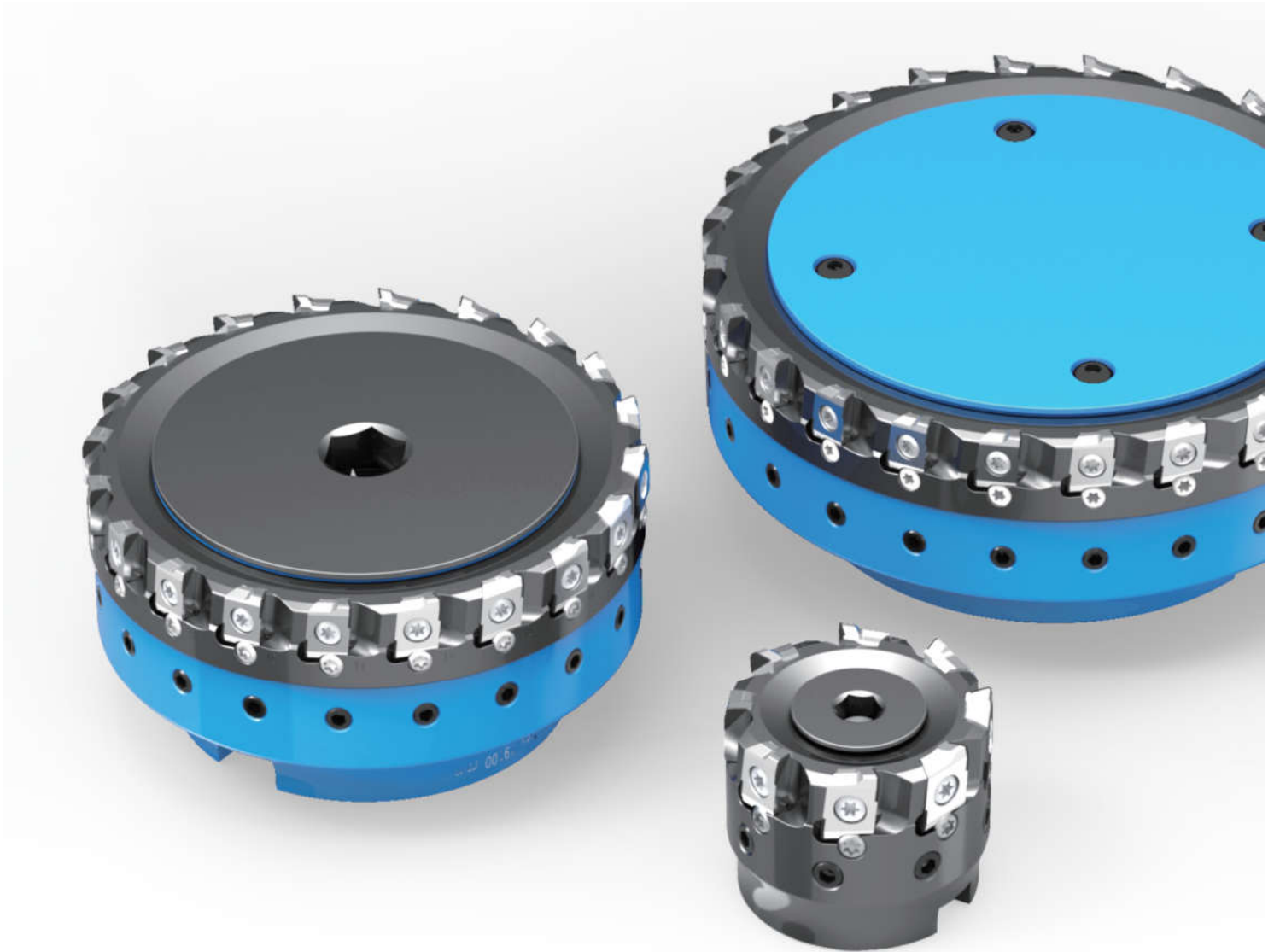
北京沃尔德金刚石工具股份有限公司
BEIJING WORLDIA DIAMOND TOOLS CO.,LTD.



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WORLDIA PCD Indexable Face Milling Cutter for stable and reliable HSC Machining

Main application:

WORLDIA® PCD indexable face milling on end milling and shoulder milling of Non-ferrous metal. Compare with the same pricing level products, this line of products has super higher flexibility, both roughing and finishing processing on one tool. Maximum reduce time for changing tools. Whether high chip removal, consistency, or flatness, WORLDIA® PCD indexable face milling always meets customers' requirements.



WORLDIA Light-Weight PCD Indexable Face Milling Cutter for HSC of machine Small-sized machine

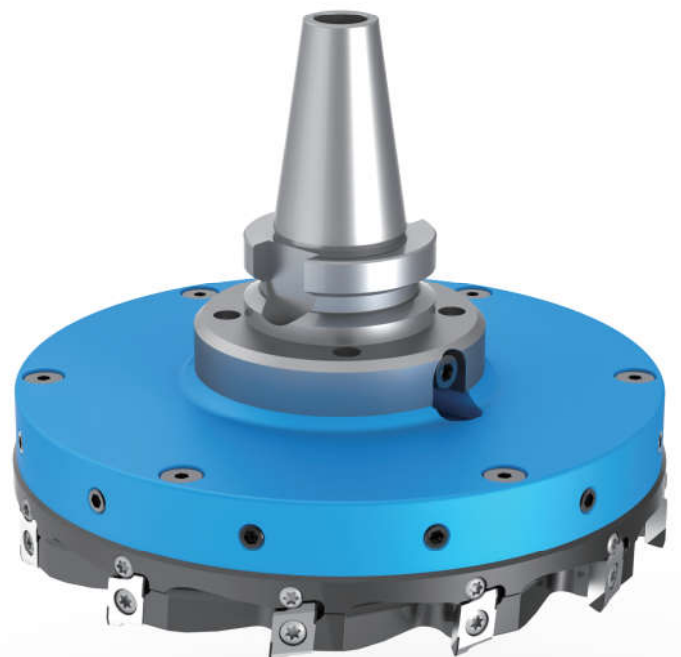
Main Applications:

In different industries, many small-sized machine tools are used to work aluminum cabinet. These machines have extremely precise spindles that can be worked at extremely high speed. They are not designed for high torque and normally the maximum tool weight that can be used is only 3 kg.

WORLDIA developed lightweight milling tools that precisely matched these requirements.

Innovative double metal design, perfect combination of light weight and high strength, all face milling cutters with diameters from 80mm to 160mm can be mounted on the same milling holder.

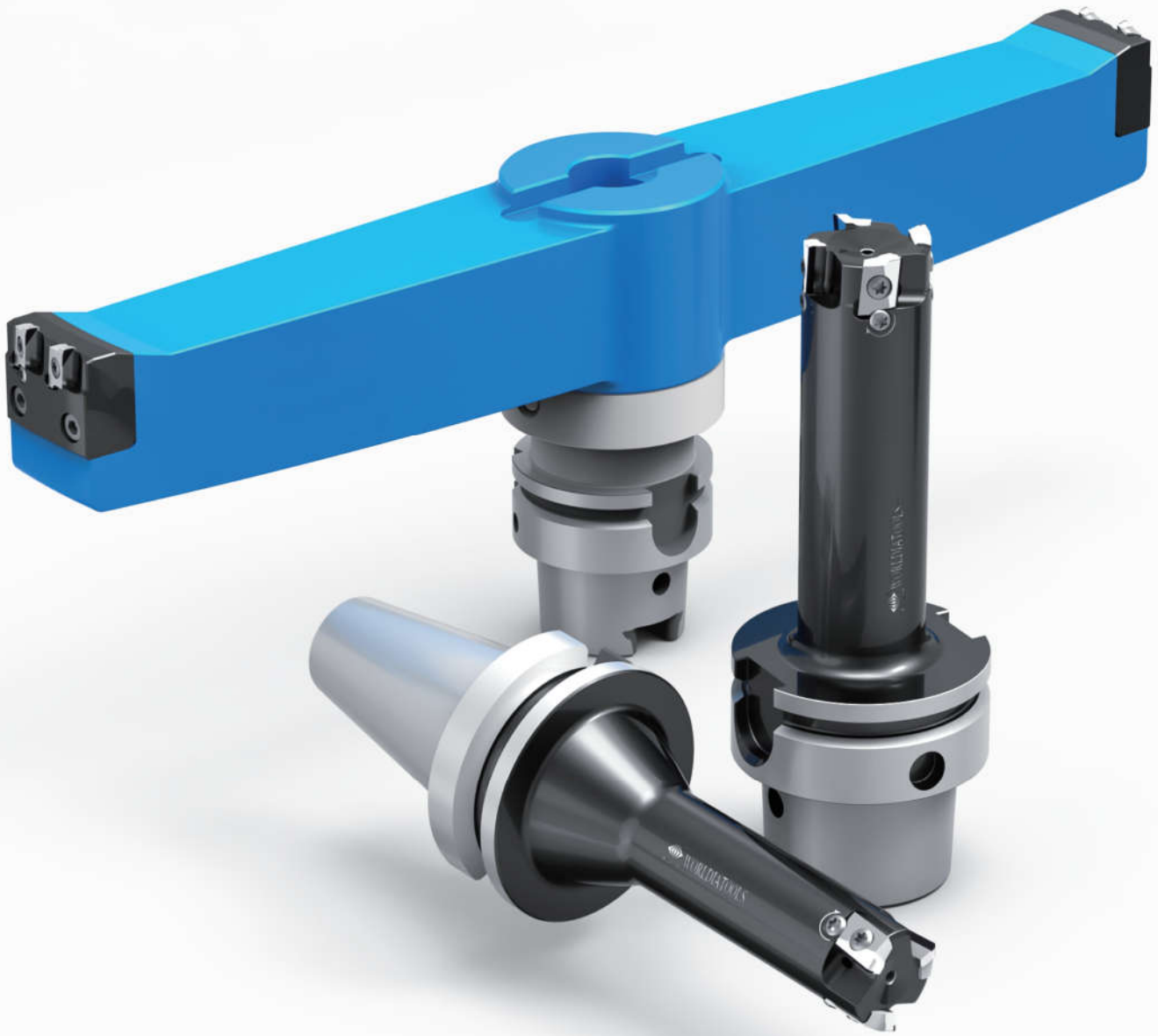
Even total weight of the BT30 milling holder with the 160mm face milling cutter does not exceed 3kg.



Customize Design WORLDIA PCD Indexable Face Milling Cutter

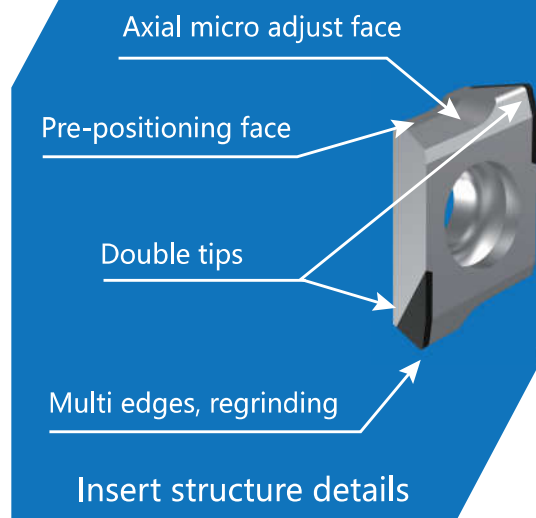
Main Applications:

For applications where the structure is complex and special requirements for tool diameter, length or rigidity, it can flexibly perform machining for cavity, shoulder and end face.

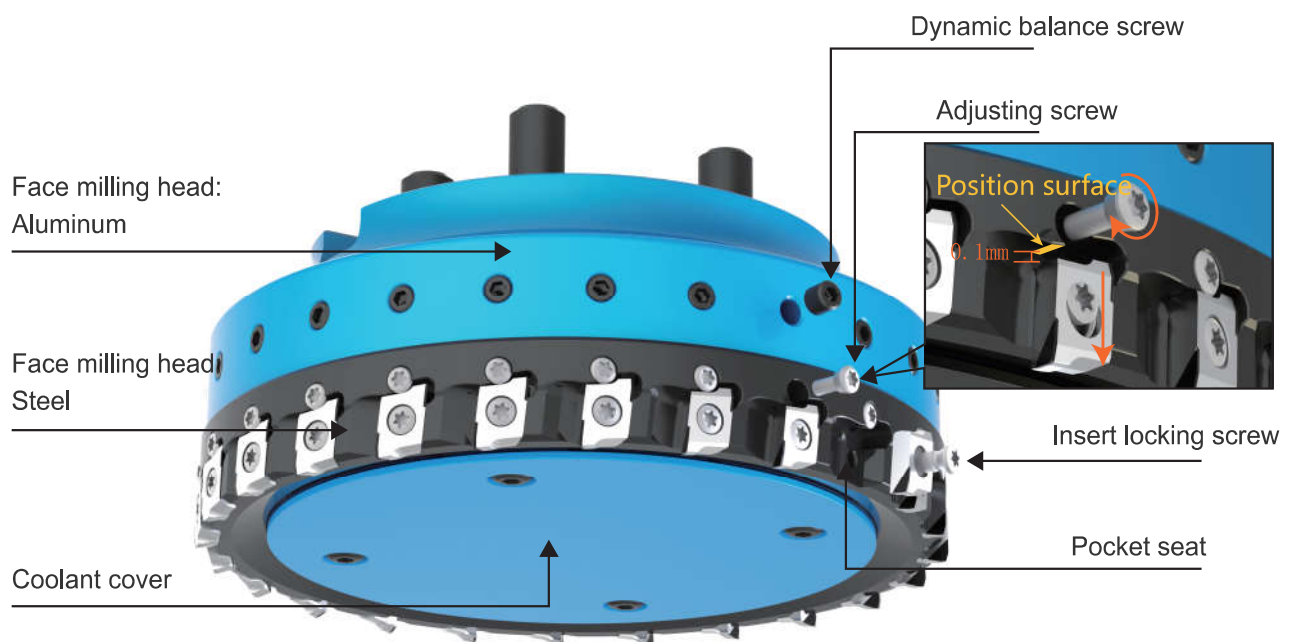


WORLDIA® PCD Indexable Face Milling Features

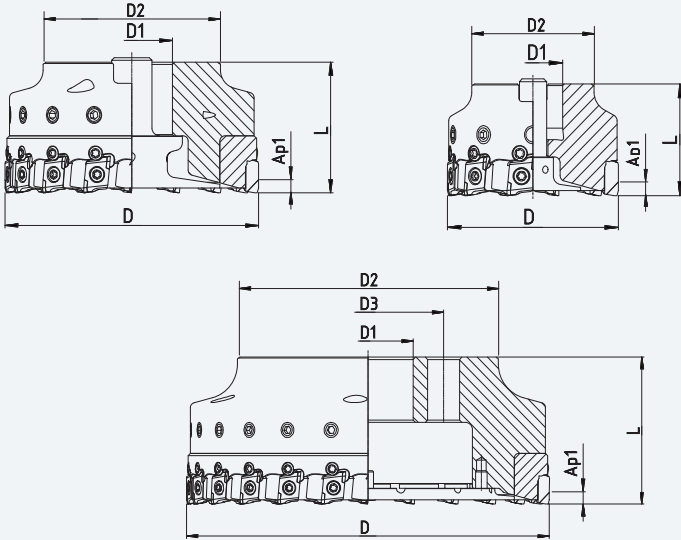
- "Aluminum Alloy-Steel" double metal design, the aluminum center reduces the weight, while the hardened steel outer ring increases the rigidity speed and feeds.
- The double metal design makes the tooling lifetime several times longer than other aluminum face milling cutter.
- High-precision pocket seat keeps 0.02mm axial runout without insert adjustment.
- It can be easily adjusted to 2 μ m axial run out within 0.1mm range.
- Inserts are designed by variety of Kr, could meet different application of end milling and shoulder milling.
- The positioning surface and Flank face separated design, keep the positioning surface effectiveness when we do relap or retip.
- Two cutting edges design and retip service which could help our customers reduce their cost.
- Rough and finish in one tool.



WORLDIA® PCD Indexable Face Milling Structure Detail



Face Milling Cutter and Specifications



Specification

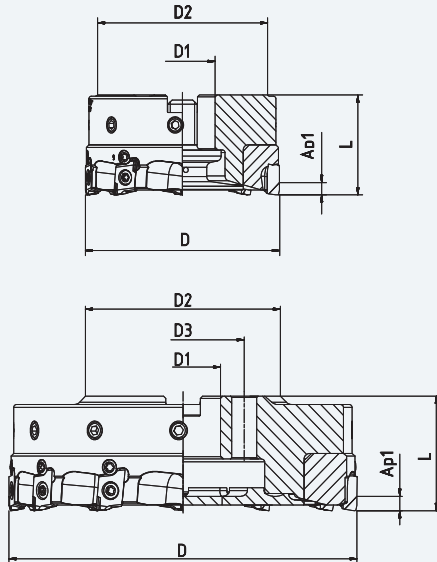
Specification	System code	D	D1	D2	D3	L	Ap1 max	Z	Kg	max RPM	Material
FMP040SA16-BE12-06	040401060013	40	16	36	—	40	11	6	0.36	40000	Steel
FMP050SA22-BE12-08	040401060005	50	22	45	—	40	11	8	0.55	35100	Steel
FMP063SA22-BE12-10	040401060006	63	22	45	—	40	11	10	0.75	30200	Steel
FMP080SA27-BE12-12	040401060007	80	27	50	—	50	11	12	0.96	27500	Steel+aluminium
FMP100SB32-BE12-16	040401060008	100	32	70	—	50	11	16	1.45	23800	Steel+aluminium
FMP125SB40-BE12-20	040401060009	125	40	90	—	63	11	20	2.40	19100	Steel+aluminium
FMP160SC40-BE12-24	040401060010	160	40	115	66.7	63	11	24	3.00	14900	Steel+aluminium
FMP200SC60-BE12-30	040401060011	200	60	150	101.6	63	11	30	4.25	11900	Steel+aluminium
FMP250SC60-BE12-36	040401060012	250	60	200	101.6	63	11	36	6.50	9550	Steel+aluminium

Spare Parts



D1	Wrench	Insert screw	Adjusting screw	Dynamic balance screw	Coolant lock screw	Coolant lock screw	Coolant shower plate
40	15IP	S40120J	S30110G	M6*0.75	FMP040SA16-BE12-06.02	—	—
50	15IP	S40120J	S30110G	M6*0.75	FMP050SA22-BE12-08.02	—	—
63	15IP	S40120J	S30110G	M6*0.75	FMP063SA22-BE12-10.02	—	—
80	15IP	S40120J	S30110G	M6*0.75	FMP080SA27-BE12-12.03	—	—
100	15IP	S40120J	S30110G	M6*0.75	—	FMP100SB32-BE12-16.03	—
125	15IP	S40120J	S30110G	M6*0.75	—	FMP125SB40-BE12-20.03	—
160	15IP	S40120J	S30110G	M6*0.75	—	—	FMP160SC40-BE12-24.03
200	15IP	S40120J	S30110G	M6*0.75	—	—	FMP200SC60-BE12-30.03
250	15IP	S40120J	S30110G	M6*0.75	—	—	FMP250SC60-BE12-36.03

Light-Weight Face Milling Cutter Specifications



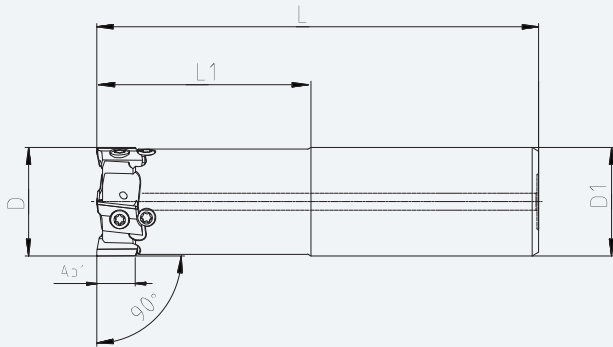
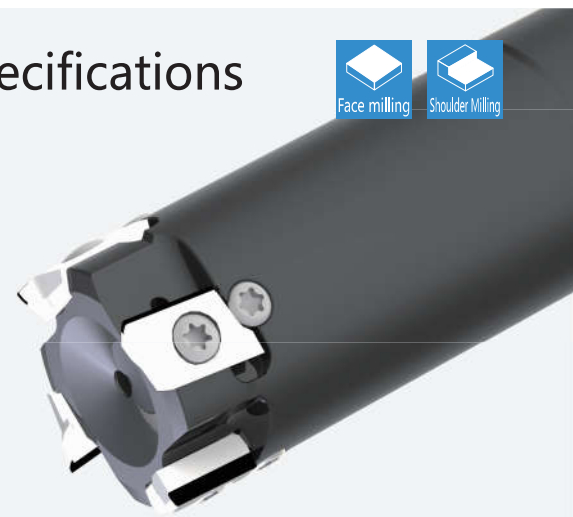
Specification

Specification	System code	D	D1	D2	D3	L	Ap1 max	Z	Kg	max RPM	Material
FMP080SB27-BE12-08	040401060029	80	27	70	—	40	11	8	0.78	27500	Steel+aluminium
FMP100SB27-BE12-08	040401060028	100	27	70	—	40	11	8	1.12	23800	Steel+aluminium
FMP125SC27-BE12-12	040401060027	125	27	70	—	40	11	12	1.43	19100	Steel+aluminium
FMP160SC27-BE12-12	040401060026	160	27	70	—	40	11	12	2.00	14900	Steel+aluminium

Spare Parts

D1	Wrench	Insert screw	Adjusting screw	Dynamic balance screw	Coolant lock screw	Coolant lock screw	Coolant shower plate
80	15IP	S40120J	S30110G	M6*0.75	—	FMP080SB27-BE12-08.03	—
100	15IP	S40120J	S30110G	M6*0.75	—	FMP100SB27-BE12-08.03	—
125	15IP	S40120J	S30110G	M6*0.75	—	—	FMP125SC27-BE12-12.03
160	15IP	S40120J	S30110G	M6*0.75	—	—	FMP160SC27-BE12-12.03

Straight-Shank Face Milling Cutter Specifications



Specification

Specification	System code	D	D1	D2	D3	L	Ap1 max	Z	Kg	max RPM	Material
FMP025CS25-BE12-03	040401060015	25	25	—	130	50	11	3	0.50	25000	Steel
FMP032CS32-BE12-04	040401070005	32	32	—	130	50	11	4	0.80	25000	Steel

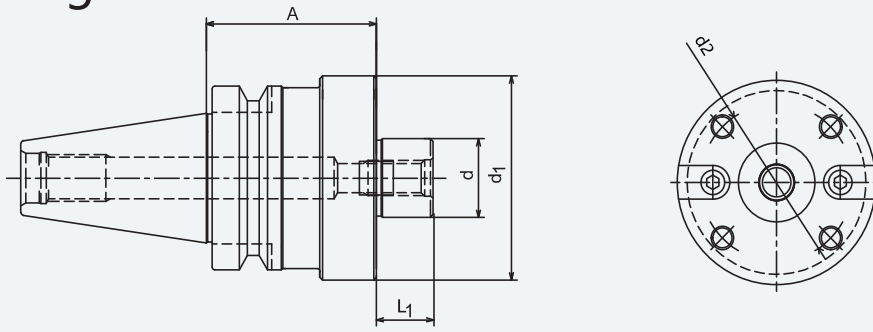
Spare Parts



D	Wrench	Insert screw	Adjusting screw
25	15IP	S40090J	S30110G
32	15IP	S40090J	S30110G

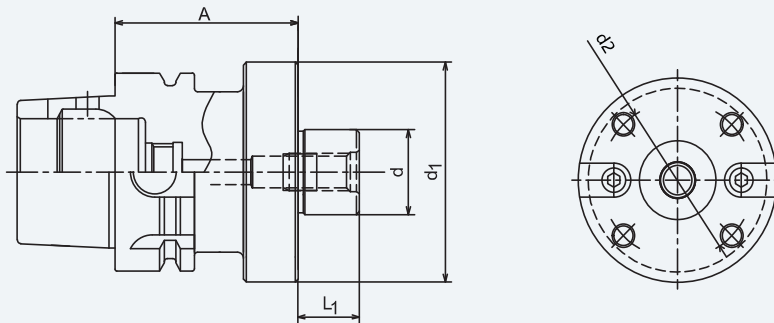
Face Milling holder

BT



Specification	System code	d	d1	d2	L1	A	Kg
BT30-FMC16-045	040401070007	16	34	—	17	45	0.60
BT30-FMC22-045	040401070007	22	45	—	18	45	0.70
BT30-FMC27-045	040401070008	27	70	—	20	45	1.10
BT40-FMC22-060	040401070009	22	45	—	18	60	1.50
BT40-FMC27-060	040401070010	27	70	—	20	60	2.00
BT40-FMC32-060	040401070011	32	85	—	22	60	2.40
BT40-FMB40F-060	040401070002	40	85	66.7	26	60	2.60
BT50-FMB40F-075	040401070013	40	110	66.7	26	75	6.70
BT50-FMB60-075	040401070014	60	140	101.6	25	75	8.50

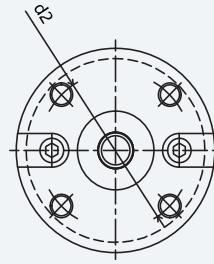
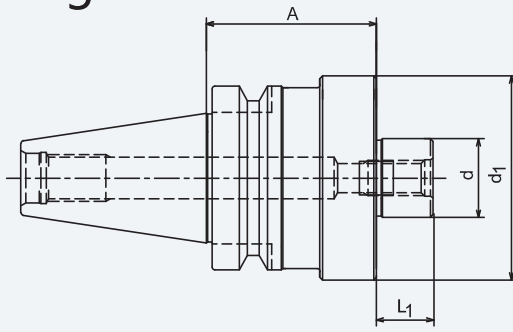
HSK



Specification	System code	d	d1	d2	L1	A	Kg
HSK63A-FMC22-060	040401070015	22	45	—	18	60	1.10
HSK63A-FMC27-060	040401070016	27	70	—	20	60	1.50
HSK63A-FMC32-060	040401070017	32	85	—	22	60	1.80
HSK63A-FMB40F-060	040401070018	40	85	66.7	26	60	1.80
HSK100A-FMB40F-075	040401070019	40	110	66.7	26	75	4.80
HSK100A-FMB60-075	040401070020	60	140	101.6	25	75	6.80

Face Milling holder

BT

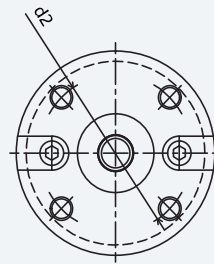
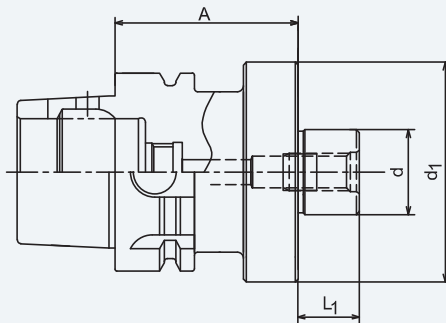


JIS B
6339



Specification	System code	d	d1	d2	L1	A	Kg
BT30-FMC27F-035	040401070040	27	70	54	20	35	0.90
BT40-FMC27F-060	040401070042	27	70	54	20	60	2.00

HSK



DIN
69893



Specification	System code	d	d1	d2	L1	A	Kg
HSK63A-FMC27F-060	040401070041	27	70	54	20	60	1.50

PCD Material Introduction



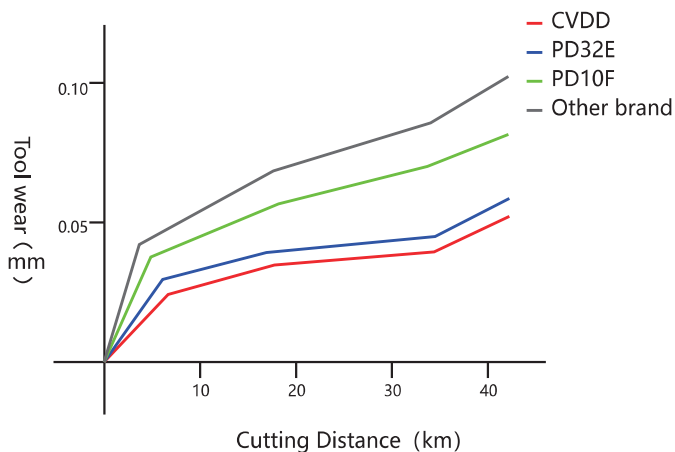
Introduction

Material	Grade size(μm)	Feature	Application
PD01E	1	PD01E fine grain size PCD material(1μm) is suitable for mirror finishing applications. Its high impact resistance and high abrasive resistance are no less than that of rough grade of PCD .	PD01E has excellent chip resistance is suitable for the roughing and interrupt cutting aluminium alloys. This grade is also commonly used for non-ferrous finishing applications. Other successful applications include machining of wood, MDF.
PD10E	10	PD10E is the universal grade in the market. It's the first choice for many applications where a good balance of toughness and wear resistance are required.	This grade is commonly used for non-ferrous finishing applications. Other successful applications include machining of wood, MDF. The machining of low-medium content silicon aluminium alloys, carbide, hard rubber, graphite and so on.
PD32E	2~30	PD32E has a unique combination of wear resistance, edge strength and edge quality. It contains a carefully selected mix of micron diamond (between 2 - 30 μm). The combination of these particle sizes and a specifically developed high pressure sintering process produces a structure with extreme abrasion resistance and good thermal stability.	Application areas include the machining of abrasive workpieces such as MMC, high silicon aluminium alloys as well as for the machining of carbide and carbide, hard rubber, graphite and other applications.
CVDD	—	CVDD is a pure carbon material without binder, which is extreme abrasion resistance and good thermal suitability. Due to its Perfect cutting edge suitable for applications where mirror finishes are required.	Application areas include the machining of abrasive workpieces such as MMC, high silicon aluminium alloys as well as for the machining of carbide, hard rubber, graphite and other applications.

Material performance

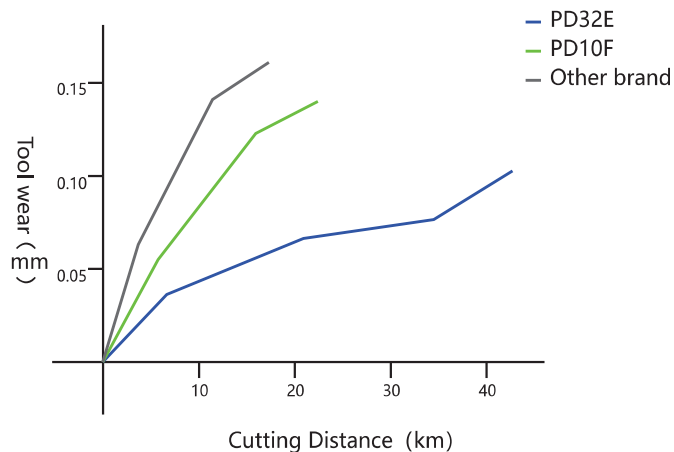
Continue cutting AL-25%Si

Vc=3927m/min f=0.1mm/r
ap=0.2mm



Continue cutting Al-20%SiC

Vc=3500m/min f=0.2mm/r
ap=0.18mm










Rule of Inserts Code








B **E** **H** **W** **12** **04** **E** **Z** **F** **R** **1** - **WG**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

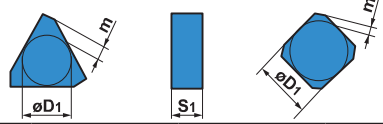
①

Shape		
Code	Shape	
O	Octagonal	
S	Square	
T	Triangle	
C	Diamond 80°	
M	Diamond 86°	
B	Diamond 82°	
R	Round	
X	Special	—
W	Wiper	—

②






Clearance angle		
Code	Clearance Angle	
C	7°	
D	15°	
E	20°	
F	25°	
G	30°	
N	0°	
P	11°	
O	Other clearance angle	
X	Other clearance angle	

③

Tolerance			
			
Code	Nose Height m (mm)	Inscribed Circle Diameter &D1(mm)	Tolerance S1(mm)
A	±0.005	±0.025	±0.025
C	±0.013	±0.025	±0.025
E	±0.025	±0.025	±0.025
H	±0.013	±0.013	±0.025
K*	±0.013	±0.05—±0.15	±0.025
M*	±0.08—±0.18	±0.05—±0.15	±0.13
N*	±0.08—±0.18	±0.05—±0.15	±0.025

*standard for no lapping on the side face.

④





Chip breaker and Fixing type				
Code	Bore	Shape of Bore	Chip Breaker	Shape
W	With Bore	Cylindrical Bore + Single Side	Without	
T	With Bore	(40°—60°)	Single	
B	With Bore	Cylindrical Bore + Single Side (70°—90°)	Without	
N	Without	—	Without	
R	Without	—	Single	
X	—	—	—	Special

Rule of Inserts Code


B **E** **H** **W** **12** **04** **E** **Z** **F** **R** **1** - **WG**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

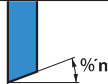
⑤

Inscribed circle Dia.				
Code				Inscribed Circle (mm)
				
	06	06	11	6.35
	08	07	13	7.94
	09	09	16	9.525
10				10.00
12				12.00
	12	12	22	12.70
	16	15	27	15.875
20				20.00

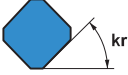
⑥

Thickness	
	ϕ
Code	Thickness (mm)
03	3.18
T3	3.97
04	4.76






⑧

Clearance angle of wiper	
	γ
Code	Clearance angle of wiper
D	15°
E	20°
F	25°
G	30°
Z	Other Angle

⑦

Tool cutting edge angle	
	kr
Code	Tool cutting edge angle
A	45°
E	75°
P	90°
Z	Other Angle

⑨

Cutting edge design	
Code	Cutting Edge Design
E	 Honed
F	 Sharp Edge
T	 Chamfered
S	 Chamfered + Honed
Z	 Chamfered

⑩

Cutting direction	
Code	Cutting Direction
L	Left Hand
N	Left & Right
R	Right Hand

⑪

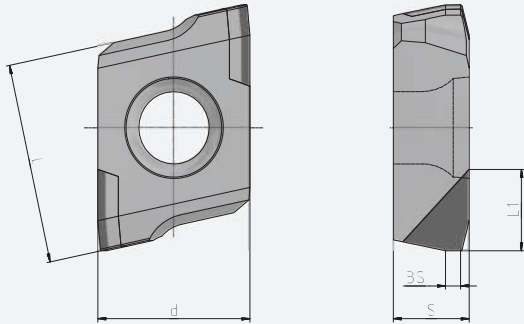
Edges	
Code	Edges
1	1 edge
2	2 edge
4	4 edge

⑫

Cutting edge design		
WG	UW	PT
Wiper	Universal Wiper	PT edge

Milling Inserts Specification

Insert are designed by variety of Kr, could meet different application of end milling and shoulder milling.



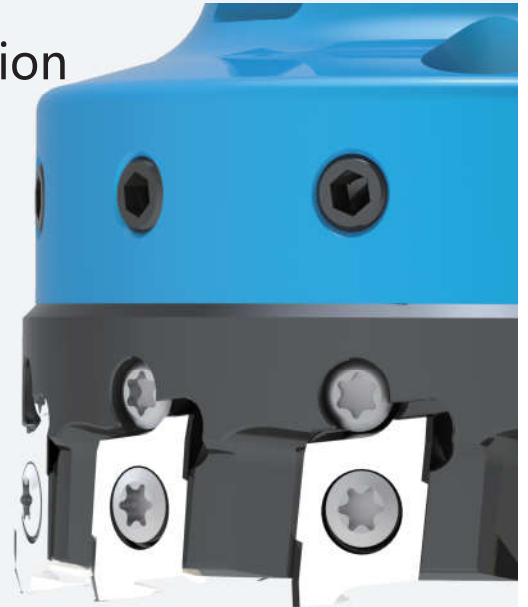
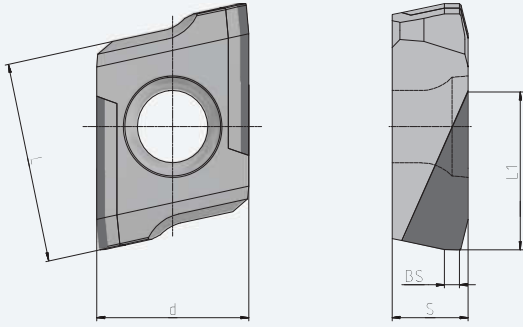
Specification

Figure	Specification	Z	L	d	S	BS	L1	R	N			
									PD01F	PD10F	PD32E	CVDD
 Standard	BEHW1204EZFR1	1	12.20	9.525	4.76	1	4	—	○	●	○	○
	BEHW1204EZFR2	2										
 Wiper	BEHW1204EZFR1-WG	1	12.20	9.525	4.76	4	4	—	○	●	○	○
	BEHW1204EZFR2-WG	2										
 Corner edge	BEHW1204EZFR1-PT	1	12.20	9.525	4.76	—	4	0.4	○	●	○	○
	BEHW1204EZFR2-PT	2										
 Popular wiper	BEHW1204PZFR1-UW	1	12.20	9.525	4.76	1.5	4	0.4	○	●	○	○
	BEHW1204PZFR2-UW	2										
 straight edge	BEHW1204PZFR1B	1	12.20	9.525	4.76	1.5	11	0.4	○	●	○	○

● In stock ○ Tailor-made

Milling insert (Heavy cutting) Specification

Inserts are designed by variety of Kr could meet different application of end milling and shoulder milling.

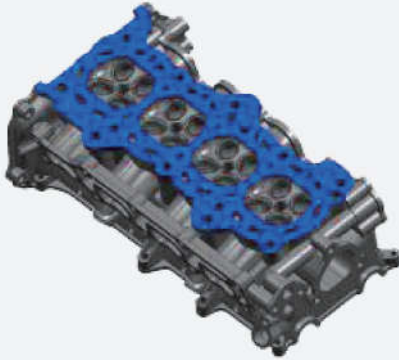


Specification

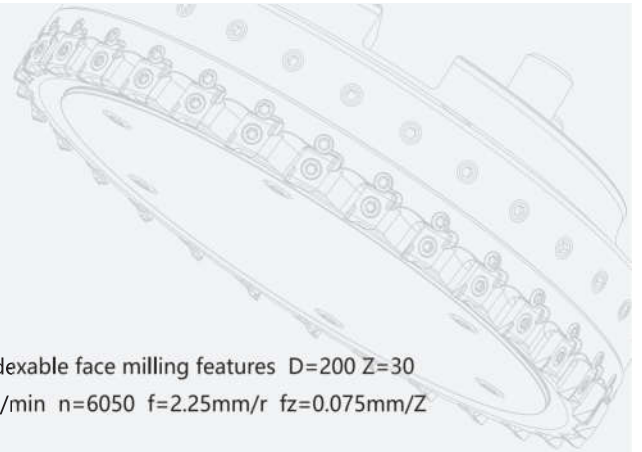
Figure	Specification	Z	L	d	S	BS	L1	R	N			
									PD01F	PD10F	PD32E	CVDD
Standard	BEHW1204EZTR1	1							○	●	○	○
	BEHW1204EZTR2	2	12.20	9.525	4.76	1	8	0.4	○	●	○	○
Wiper	BEHW1204EZTR1-WG	1							○	●	○	○
	BEHW1204EZTR2-WG	2	12.20	9.525	4.76	4	8	—	○	●	○	○
Sharp corner	BEHW1204EZTR1-PT	1							○	●	○	○
	BEHW1204EZTR2-PT	2	12.20	9.525	4.76	—	8	0.4	○	●	○	○
Right-angle	BEHW1204PZTR1B	1	12.20	9.525	4.76	1	11	0.8	○	●	○	○

● In stock ○ Tailor-made

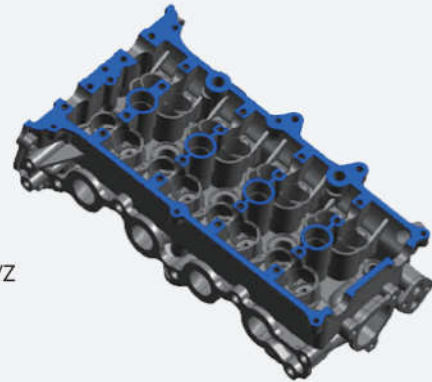
Case of study



Material: AlSi7Mg
Tool: WORLDIA® PCD indexable face milling features D=200 Z=30
Cutting Data: Vc=3800m/min n=6050 f=2.25mm/r fz=0.075mm/Z



Material: AlSi7Mg
Tool: WORLDIA® PCD indexable face milling features
D=125 Z=20
Cutting Data: Vc=3927m/min n=10000 f=2mm/r fz=0.1mm/Z



Material: AlSi17CuMg
Tool: WORLDIA® PCD indexable face milling features
D=200 Z=30
Cutting Data: Vc=3800m/min n=6050 f=2.25mm/r fz=0.075mm/Z



Material: ADC12
Tool: WORLDIA® PCD indexable face milling features
D=80 Z=12
Cutting Data: Vc=1760m/min n=7000 f=1.2mm/r fz=0.1mm/Z





Service

Current cutting condition, there are too much data we have to pay attention, even the most reasonable and scientific process and design. WORLDIA, depends on his fully experience, select a most reasonable proposal for every customer.



New products delivery

According to requirements, we can adjust the insert and setup milling cutter dynamic balance before delivery.



PCD insert service

Supply retip service which can keep the same size as the new tools.



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