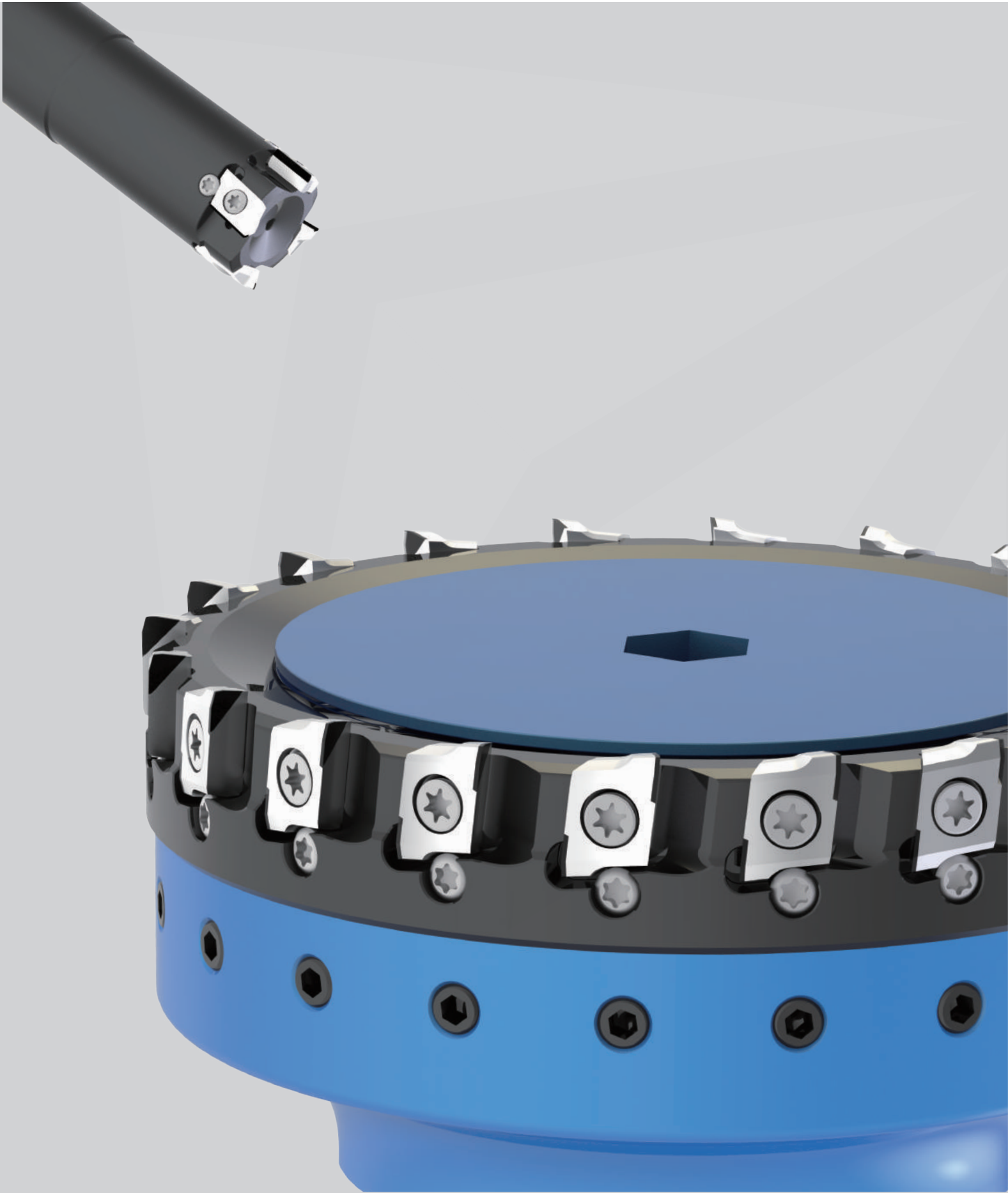




PCD Face Milling

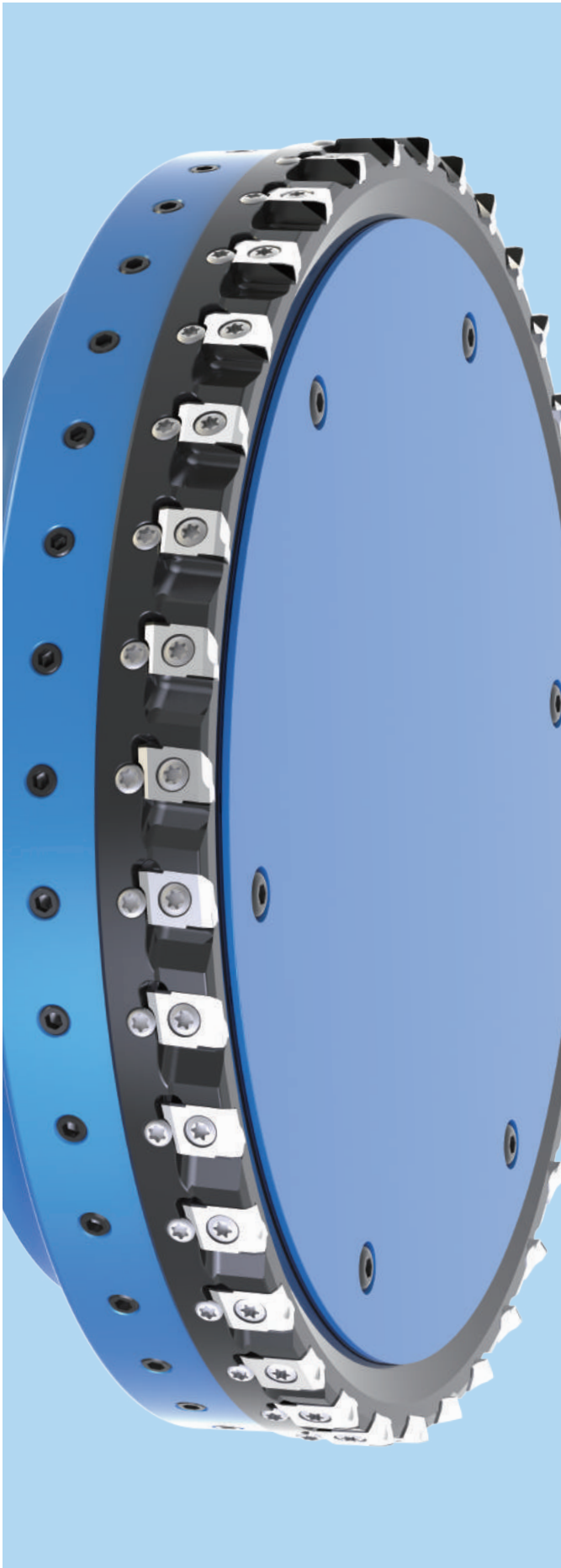
北京沃尔德金刚石工具股份有限公司
BEIJING WORLDIA DIAMOND TOOLS CO.,LTD.



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WORLDIA® PCD indexable face milling on end milling and shoulder milling

Main application:

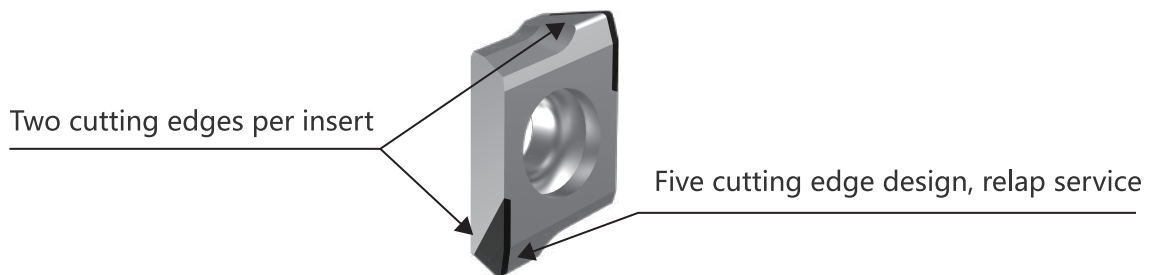
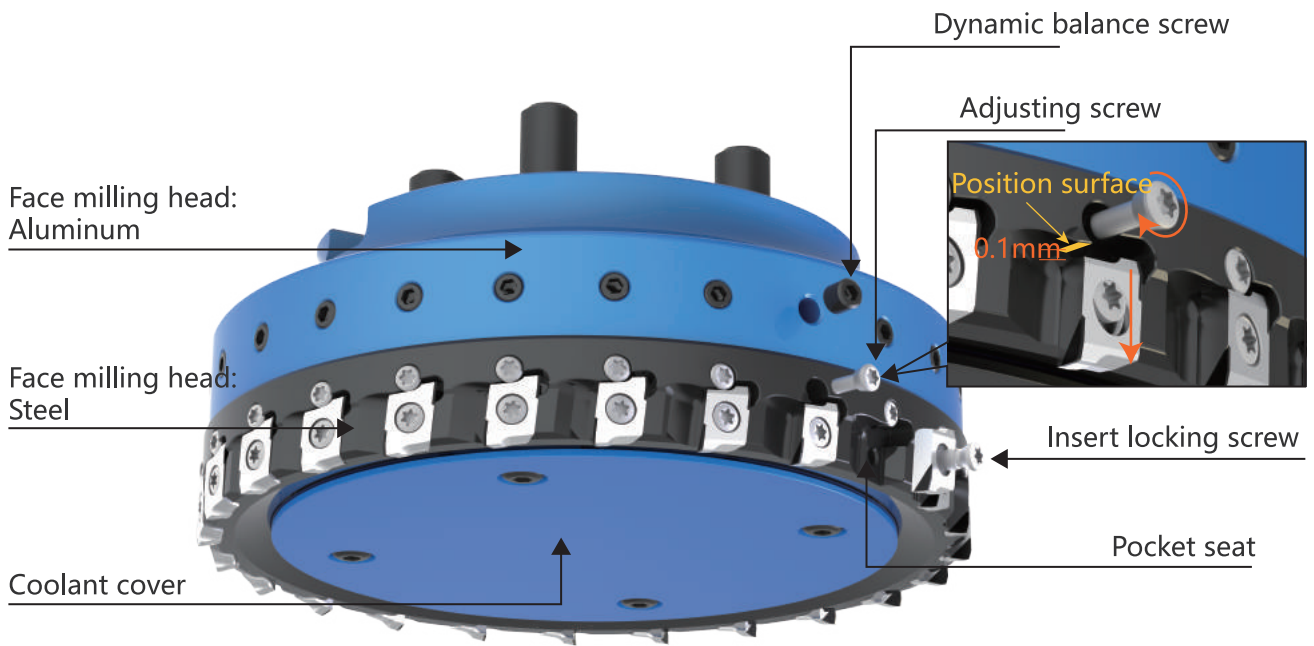
WORLDIA® PCD indexable face milling on end milling and shoulder milling of Non-ferrous metal. Compare with the same pricing level products, this line of products has super higher flexibility, both roughing and finishing processing on one tool. Maximum reduce time for changing tools. Whether high chip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

WORLDIA® PCD indexable face milling features as follows:

- "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 0.002mm 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

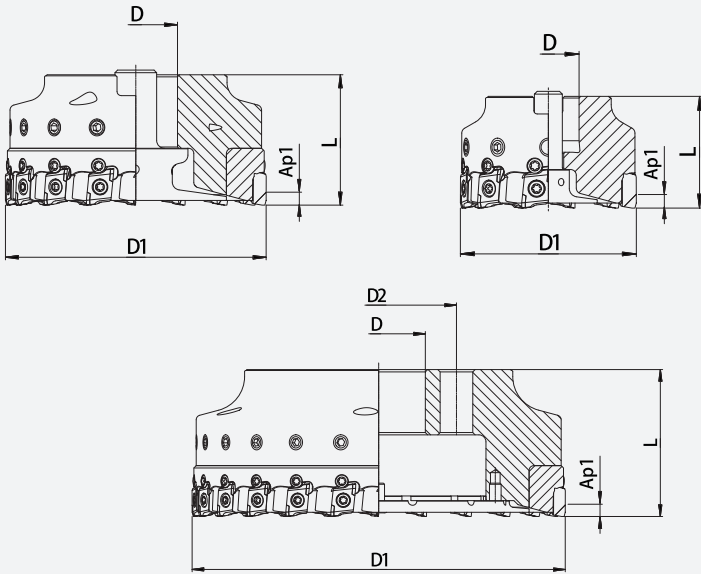


Face milling cutter and specifications



Main application:

Worldia PCD indexable face milling for end and shoulder milling of Non-ferrous metal.



Specification

Specification	System code	D1	D	D2	L	Ap1 max	Z	Kg	max RPM
FMP050SA22-BE12-08	040401060005	50	22	—	40	11	8	0.55	35100
FMP063SA22-BE12-10	040401060006	63	22	—	40	11	10	0.75	30200
FMP080SA27-BE12-12	040401060007	80	27	—	50	11	12	0.96	27500
FMP100SB32-BE12-16	040401060008	100	32	—	50	4	16	1.45	23800
FMP125SB40-BE12-20	040401060009	125	40	—	63	4	20	2.40	19100
FMP160SC40-BE12-24	040401060010	160	40	66.7	63	4	24	3.00	14900
FMP200SC60-BE12-30	040401060011	200	60	101.6	63	4	30	4.25	11900
FMP250SC60-BE12-36	040401060012	250	60	101.6	63	4	36	6.50	9550

Spare Parts

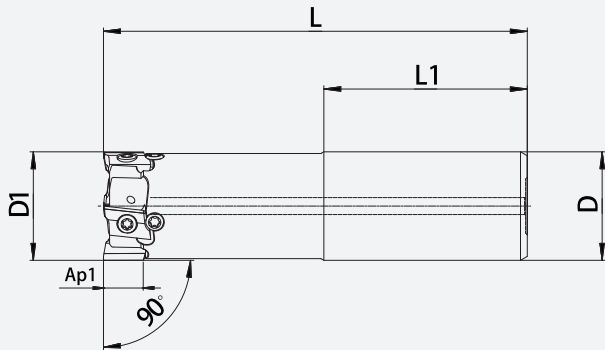
D1	Wrench	Insert screw	Adjusting screw	Dynamic balance screw	Coolant lock screw	Coolant lock screw	Coolant shower plate
50	T15	ILD4011-B	ILD3011	M6*0.75	FMP050SA22-BE12-8.02	—	—
63	T15	ILD4011-B	ILD3011	M6*0.75	FMP063SA22-BE12-10.02	—	—
80	T15	ILD4011-B	ILD3011	M6*0.75	FMP080SA27-BE12-12.03	—	—
100	T15	ILD4011-B	ILD3011	M6*0.75	—	FMP100SB32-BE12-16.03	—
125	T15	ILD4011-B	ILD3011	M6*0.75	—	FMP125SB40-BE12-20.03	—
160	T15	ILD4011-B	ILD3011	M6*0.75	—	—	FMP160SC40-BE12-24.03
200	T15	ILD4011-B	ILD3011	M6*0.75	—	—	FMP200SC60-BE12-30.03
250	T15	ILD4011-B	ILD3011	M6*0.75	—	—	FMP250SC60-BE12-36.03

End milling cutter and specification



Main application:

Worldia PCD End milling cutter for end and shoulder milling of Non-ferrous metal



Specification

Specification	System code	D1	D	D2	L	L1	Ap1 max	Z	Kg	max RPM
FMP032CS32-BE12-04	040401070005	32	32	—	125	60	11	4	0.77	25000
FMP040CS32-BE12-06	040401070006	40	32	—	130	60	11	6	1.00	25000

Spare Parts



D1

Wrench

Insert screw

Adjusting
Screw

32

T15

ILD4011-B

ILD3011

40

T15

ILD4011-B








ILD3011

Identification code for milling inserts








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 (40°—60°)	Without	
T	With Bore		Single	
B	With Bore	Cylindrical Bore + Single Side (70°—90°)	Without	
N	Without		Without	
R	Without	—	Single	
X	—	—	—	Special

Identification code for milling inserts


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

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

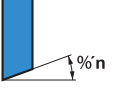
⑤

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

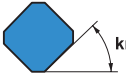
⑥

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






⑧

Clearance angle of wiper	
	γ_n
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

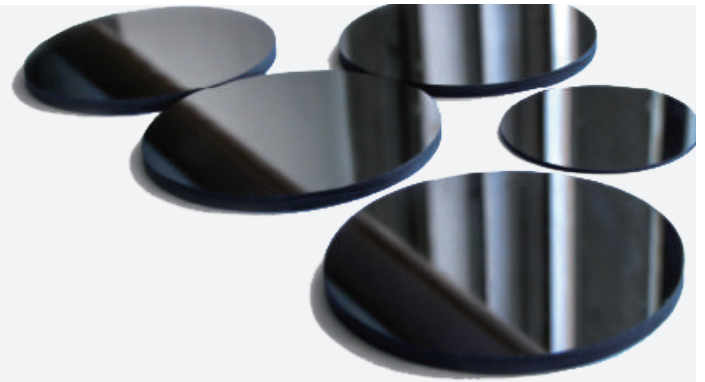
⑪

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

⑫

Cutting edge design		
WG	UW	PT
Wiper	Universal Wiper	PT edge

PCD material characteristics



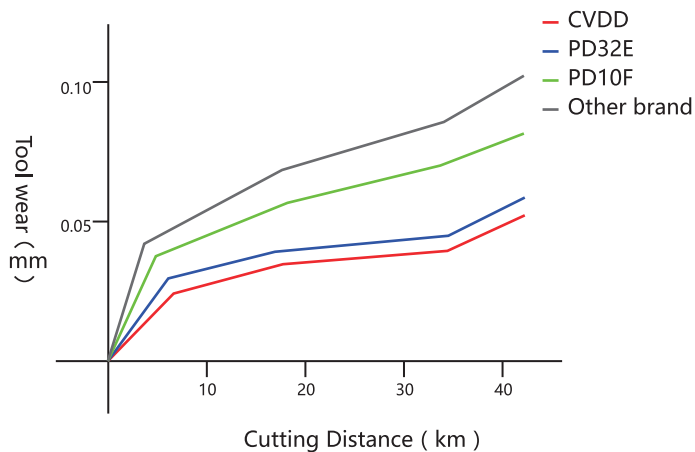
Introduction

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

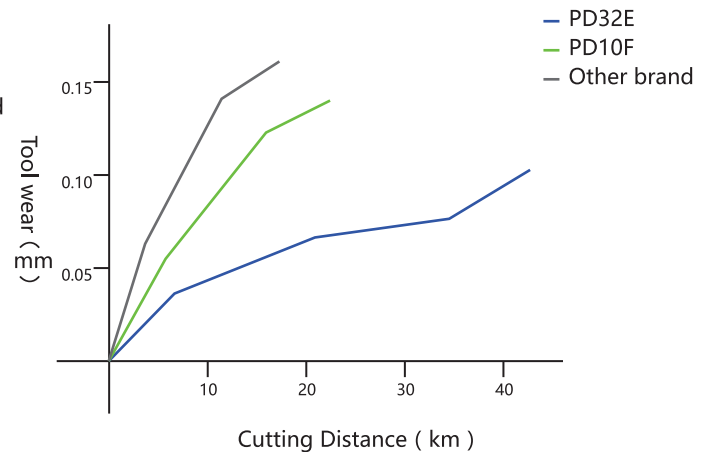
Continue cutting AL-25%Si

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



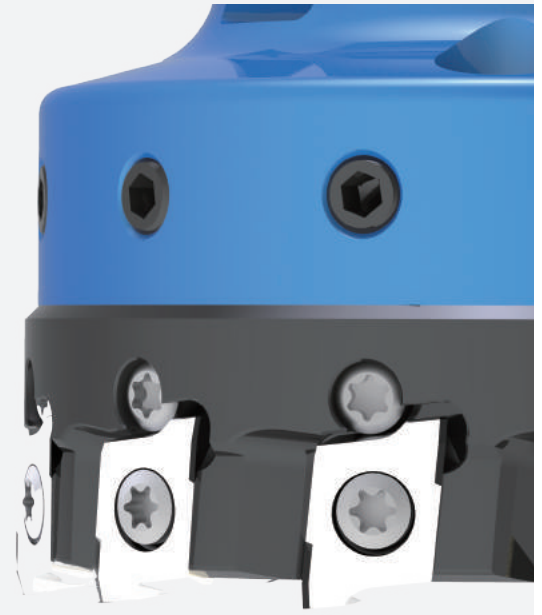
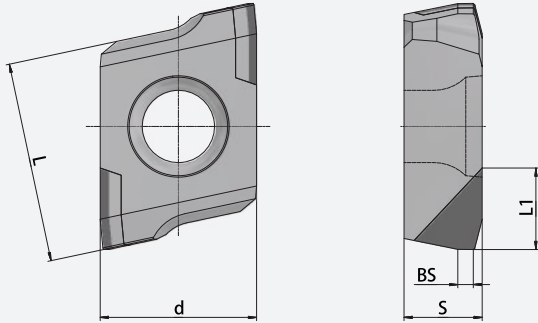
Continue cutting Al-20%SiC

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



Milling blades and specifications

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

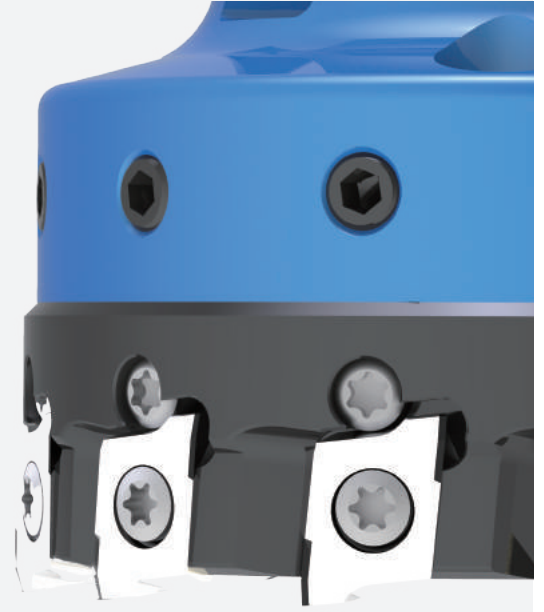
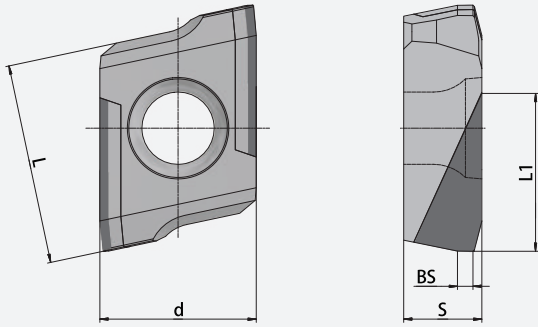


Specification

Figure	Specification	Z	L	d	S	BS	L1	R	N			
									PD01F	PD10F	PD32E	CVDD
Standard	BEHW1204EZFR1	1	12.23	9.525	4.76	1	4	—	●	●	●	●
	BEHW1204EZFR2	2							●	●	●	●
Wiper	BEHW1204EZFR1-WG	1	12.23	9.525	4.76	4	4	—	●	●	●	●
	BEHW1204EZFR2-WG	2							●	●	●	●
Popular wiper	BEHW1204EZFR1-UW	1	12.23	9.525	4.76	1	4	—	●	●	●	●
	BEHW1204EZFR2-UW	2							●	●	●	●
Corner edge	BEHW1204EZFR1-PT	1	12.23	9.525	4.76	—	4	0.4	●	●	●	●
	BEHW1204EZFR2-PT	2							●	●	●	●
straight edge	BEHW1204PZFR-1	1	12.23	9.525	4.76	1	11	—	●	●	●	●

Milling insert (Heavy cutting) Specification

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

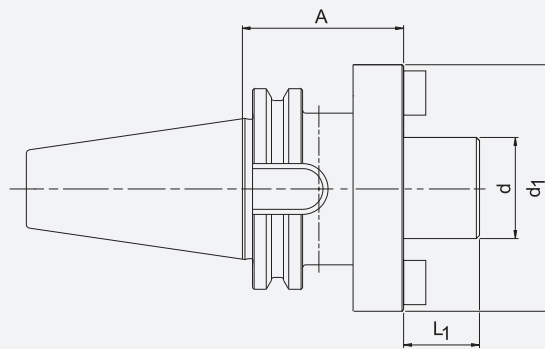
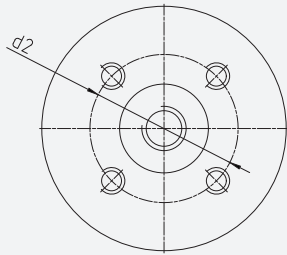


Specification

Figure	Specification	Z	L	d	S	BS	L1	Re	N			
									PD01F	PD10E	PD32E	CVDD
 Standard	BEHW1204EZTR1	1	12.23	9.525	4.76	1	8	0.4	●	●	●	●
	BEHW1204EZTR2	2							●	●	●	●
 Wiper	BEHW1204EZTR1-WG	1	12.23	9.525	4.76	4	8	—	●	●	●	●
	BEHW1204EZTR2-WG	2							●	●	●	●
 Sharp corner	BEHW1204EZTR1-PT	1	12.23	9.525	4.76	—	8	0.4	●	●	●	●
	BEHW1204EZTR2-PT	2							●	●	●	●
 Right-angle	BEHW1204PZTR1	1	12.23	9.525	4.76	1	11	0.4	●	●	●	●

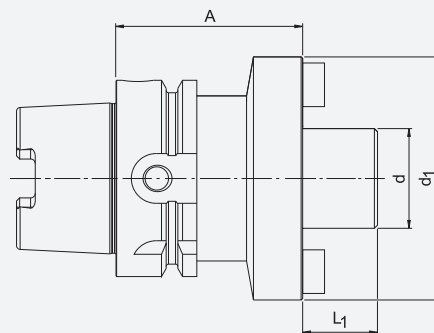
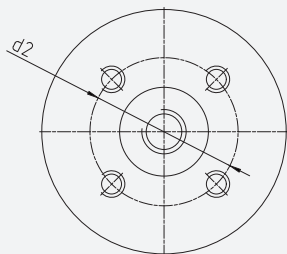
Indexable face milling Holders

Series BT



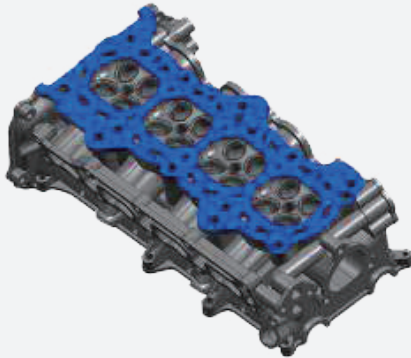
Code	System code	d	d1	d2	L1	A	Kg
BT30-FMC22-045	040401070007	22	45	—	18	45	0.70
BT30-FMC27-045	040401070008	27	70	—	20	45	1.10
BT40-FMC22-060	040401070009	22	45	—	18	60	1.50
BT40-FMC27-060	040401070010	27	70	—	20	60	2.00
BT40-FMC32-060	040401070011	32	85	—	22	60	2.40
BT40-FMB40-060	040401070002	40	85	—	26	60	2.60
BT40-XMC40-060	040401070021	40	108	66.7	26	60	3.01
BT50-FMB40F-075	040401070013	40	110	66.7	26	75	6.70
BT50-FMB60-075	040401070014	60	140	101.6	25	75	8.50

Series HSK



Code	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-FMB40-060	040401070018	40	85	—	26	60	1.80
HSK63A-XMC40-060	040401070022	40	108	66.7	26	60	2.10
HSK100A-FMB40F-075	040401070019	40	110	66.7	26	75	4.80
HSK100A-FMB60-075	040401070020	60	140	101.6	25	75	6.80

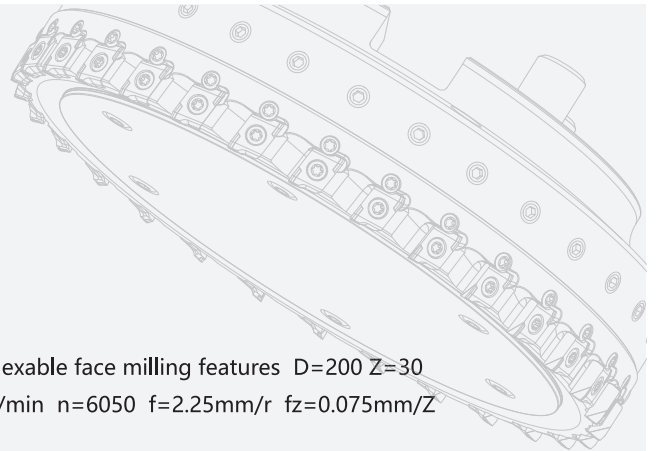
Case of study



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

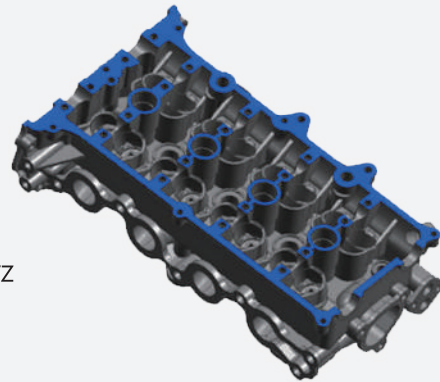


Material : AlSi7Mg

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

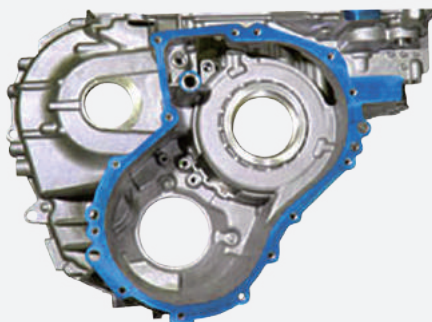


Material : AlSi17CuMg

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

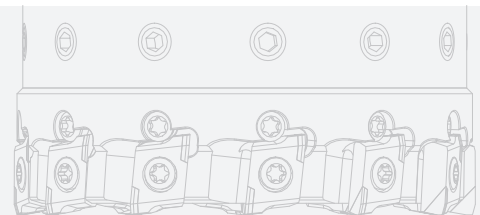


Material : ADC12

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.



WORLDIA



COMPETE FOR THE TOP CREATE GLOBAL BRAND

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