Vol.3

OSG硬质合金铣刀系列

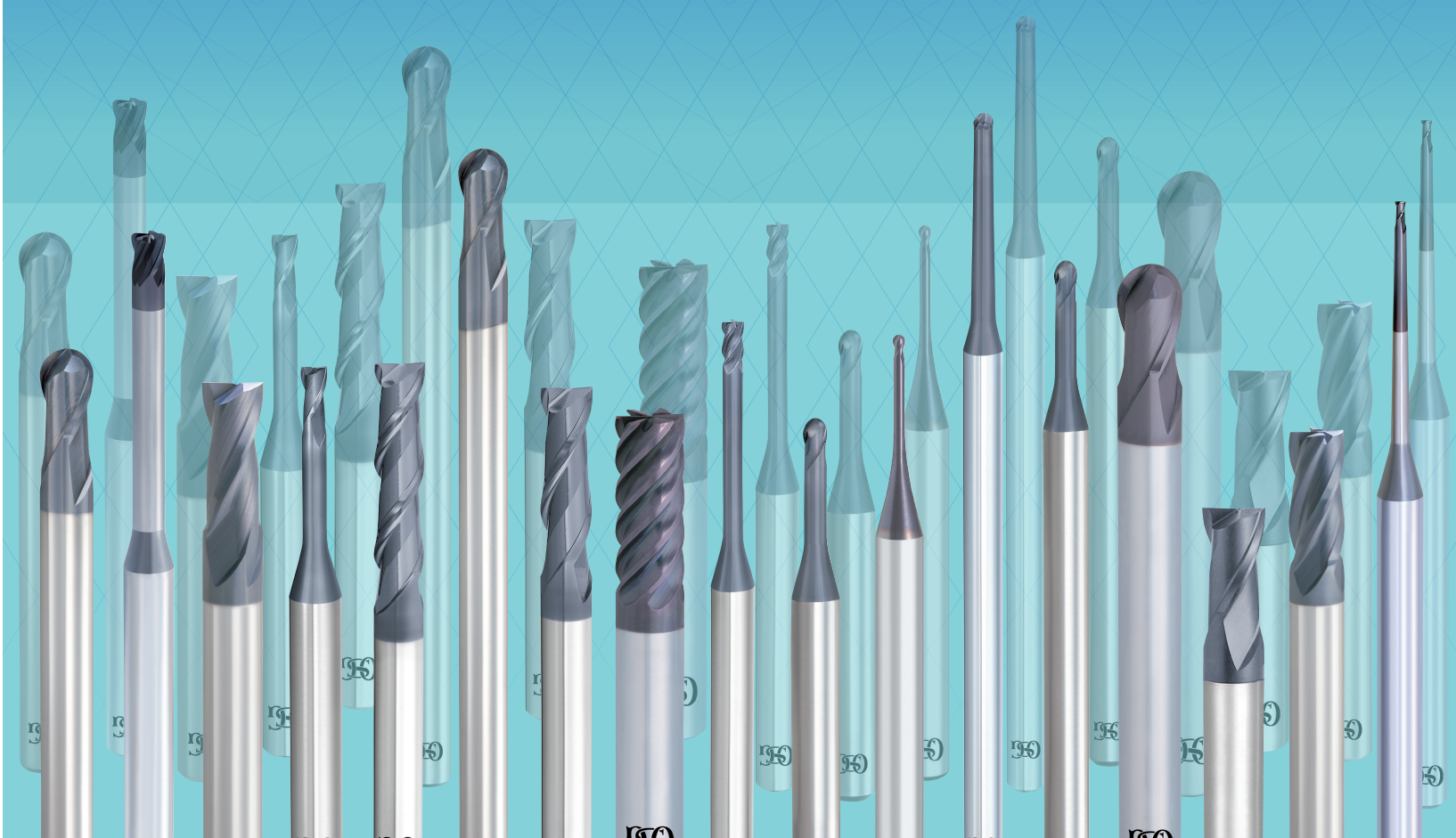
WXL/WXS

End Mill Series

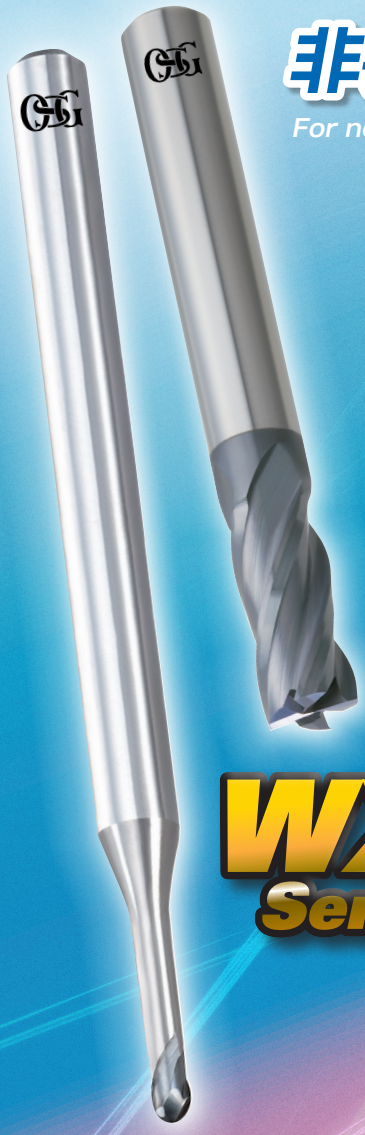
WXL铣刀系列中追加167种尺寸！

丰富的产品群对应广泛的加工！

WXL end mill expanded with 167 items!
Wide range of applications are now available with variety of sizes!



WXL和WXS可以全范围对应各种加工材料



非铁 软钢~50HRC调质钢皆可加工！！

For nonferrous materials, mild steels, and hardened steels up to 50 HRC!

WXL涂层具有优异的润滑性、耐磨损性

Excels in lubricity and wear resistance

Point 1 **对应广泛的切削材料以及广泛的切削条件领域**

Applicable in a wide range of work materials and machining conditions

该涂层切削范围广泛，从非铁合金、软钢到HRC50的调制钢，都可以提高其切削性能。无论是干式还是湿式，您不用操心冷却方式，铣刀仍可以稳定切削。其切削条件也有很大的容许范围，不论是切削力小的低速切削还是大切削力的高速切削，就算是实际切削速度极易变动的球头铣刀，该涂层也可以保证铣刀发挥较为稳定的切削性能。

This coating has been developed to improve performance in a wide range of materials including nonferrous materials, mild steels, and hardened steels up to 50 HRC. Its' stable performance remains consistent in both wet and dry applications. It is intended for a wide range of cutting conditions, from low speed / reduced cutting force applications to high speed / large cutting force applications. Therefore, it ensures stable performance with ball end mills, which are susceptible to cutting speed fluctuations.

Point 2 **丰富的产品尺寸可对应不同场合的加工**

Plentiful variety of sizes to handle a wide range of applications

增加167种尺寸！12种刃型·1299种尺寸可对应广泛的加工。

Expanded with 167 sizes! Available in 12 different designs with 1,299 sizes to fulfill the depth and breadth of our customers' various machining needs.

WXL Series

50HRC以上的材料加工！！

Excels in work materials above 50 HRC!

Nano(超微)技术诞生了超耐热、超硬质的WXS涂层

Super-heat resistance and super-hard coating born by nanotechnology.

Point 1 **高硬度材料的高速、长寿命加工的实现！**

High speed and long tool life in hardened steels!

淬火钢(~70HRC :SKD11, SKD61, SKH)预硬钢对应！

For hardened steels (~70HRC : SKD11, SKD61, SKH) and prehardened steels.

Point 2 **高速干式加工下一样保持长寿命！**

Long tool life in high speed and dry milling!

氧化开始温度1300°C的WXL涂层在高速干式加工的情况下一样可以保持长寿命。

The WXL coating has a 1,300℃ oxidation temperature to permit greater spindle speeds and longer tool life, even in high-speed dry machining.

WXS Series

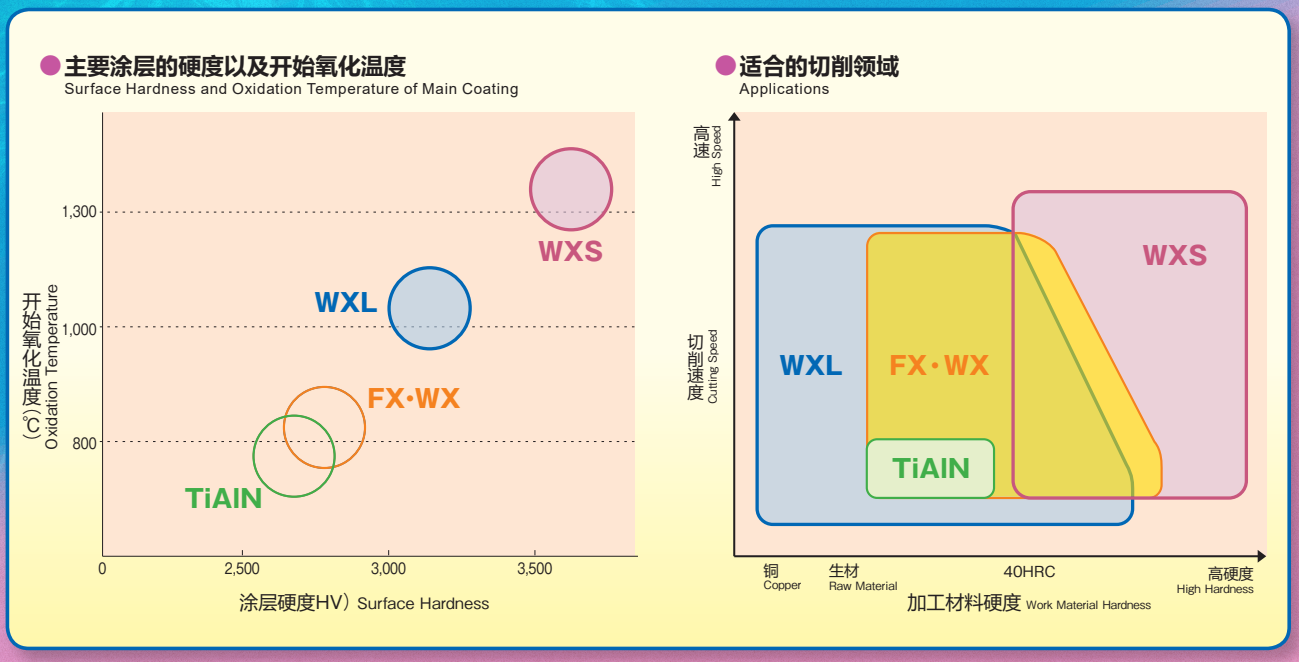
Point 3 **高品质 高精度加工的实现！**

Good performance & High precision!

即使是恶劣的加工条件下，也能实现高品质、高精度的加工。

High quality, high precision milling can be achieved even in difficult machining conditions.

The WXL and WXS coatings are designed to cover the full spectrum of work materials



	硬度 (HV) Surface Hardness	磨擦系数 Coefficient of Friction	氧化开始温度 (℃) Oxidation Temperature	耐热性 Heat Resistance	附着力 Adhesion Strength	表面粗糙度 Surface Roughness	耐磨擦性 Wear Resistance
WXL	3,100	0.25	1,100	◎	◎	○	◎
WXS	3,500	0.3	1,300	◎	◎	○	◎

■目录 Index

加工事例 Cutting Data

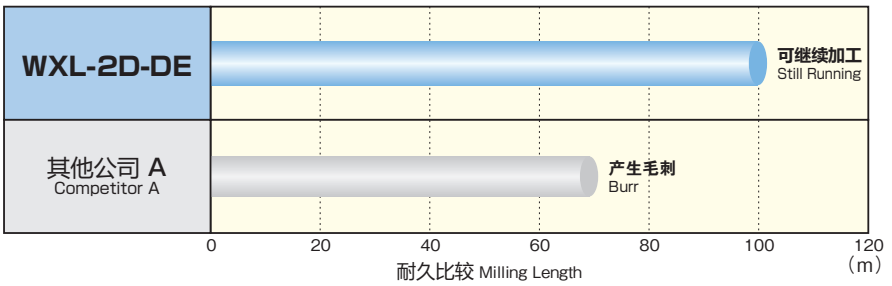
工具使用量降低1/4！即使在使用水溶性切削油剂的情况下WXL一样能保持超群的寿命。

WXL's coating is able to permit more stable milling at elevated speeds with water-soluble coolant, thereby prolonging tool life and reducing tool usage by 25 percent!

WXL-2D-DE SS400的加工

WXL-2D-DE Milling in SS400

使用工具 Tool	WXL-2D-DE φ0.5
加工材质 Work Material	SS400
切削速度 Cutting Speed	30m/min (20,000min^{-1})
进给速度 Feed	600mm/min
切削方法 Milling Method	正面切削(槽加工) Face Milling (Slotting)
切深量 Depth of Cut	a_p=0.03mm a_e=0.5mm
切削油剂 Coolant	水溶性切削油剂 Water-Soluble
使用机床 Machine	立式加工中心 Vertical Machining Center



其他公司产品在加工70m后开始出现毛刺，基本上每2小时就需要更换刀具。而WXL-2D-DE即使在加工了100m后也没有出现毛刺，还可以继续加工出于安全考虑，在加工100m后还是被换下了。但是，以前每天4支的工具使用量已经削减到了每天3支。

The competitor tool created burrs after milling 70 meters. The tool had to be replaced almost every two hours. The WXL-2D-DE, on the other hand, did not create burrs even after milling 100 meters, and was in good enough condition to continue milling. Taken safety into consideration, the tool was replaced after 100 meters. In the past, four tools were used per day. With the WXL, tool usage has been reduced to three per day.

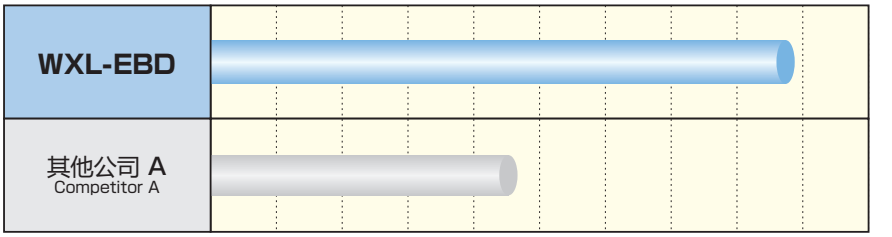
耐久时间750⇒855分钟，降低了操作者的工作负荷。

Reducing the work load of operator by increasing durability from 750 to 855 minutes!

WXL-EBD 无氧铜的加工

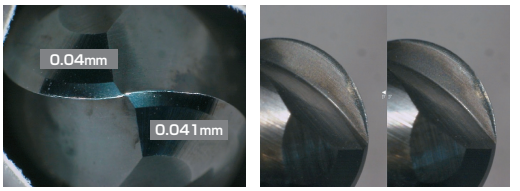
WXL-EBD Milling in Oxygen-Free Copper

使用工具 Tool	WXL-EBD R3
加工材质 Work Material	无氧铜 Oxygen-Free Copper
切削速度 Cutting Speed	180m/min (9,600min^{-1})
进给速度 Feed	3,000mm/min
切削方法 Milling Method	等高线加工 Contoured Milling
切深量 Depth of Cut	a_p = 0.5mm P_f = 1.3mm
切削油剂 Coolant	水溶性切削油剂 Water-Soluble
使用机床 Machine	立式加工中心 Vertical Machining Center



在加工855分钟后，刀具的磨损量在0.04mm~0.041mm，演绎了令人难以置信的稳定。

The amount of wear on the WXL after 855 minutes of use was in the range of 0.04 to 0.041mm, demonstrating the incredible wear resistance of the WXL coating.



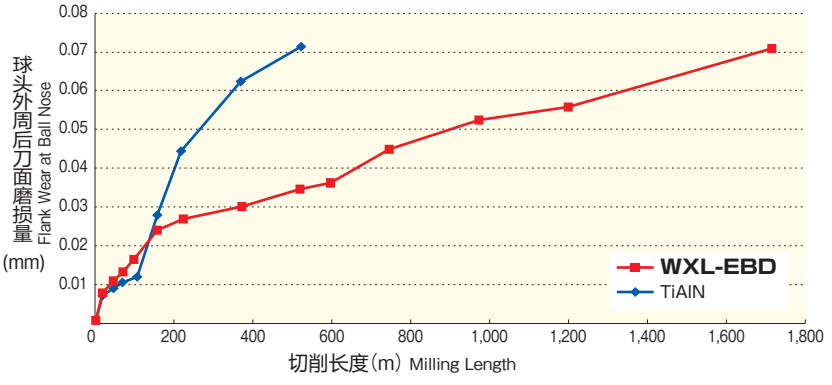
WXL系列对应了广泛的加工材料。在针对铜的加工时，WXL涂层的耐久性要比TiAIN涂层好3倍！实现了高硬度材料的稳定加工！

The WXL Series handles a wide range of materials! When working in copper, its durability level is three times greater than TiAIN coating. Also, it ensures stable milling in hard materials.

WXL-EBD C1100的加工

WXL-EBD Milling in C1100

使用工具 Tool	WXL-EBD R3×12
加工材质 Work Material	C1100
切削速度 Cutting Speed	244.92m/min (13,000min^{-1})
进给速度 Feed	3,900mm/min (0.15mm/t)
切削方法 Milling Method	端面加工 Pick Milling
切深量 Depth of Cut	a_p = 0.3mm P_f = 0.6mm
切削油剂 Coolant	水溶性切削油剂 (EZ-30) Water-Soluble
使用机床 Machine	立式加工中心 Vertical Machining Center



加工事例 Cutting Data

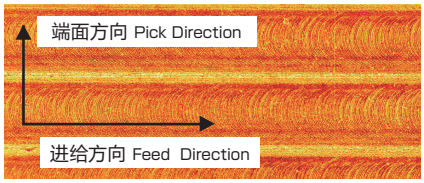
以前的TiAlN涂层刀具寿命和表面粗糙度都得到了提升！

Both tool life and surface roughness are improved over conventional TiAlN!

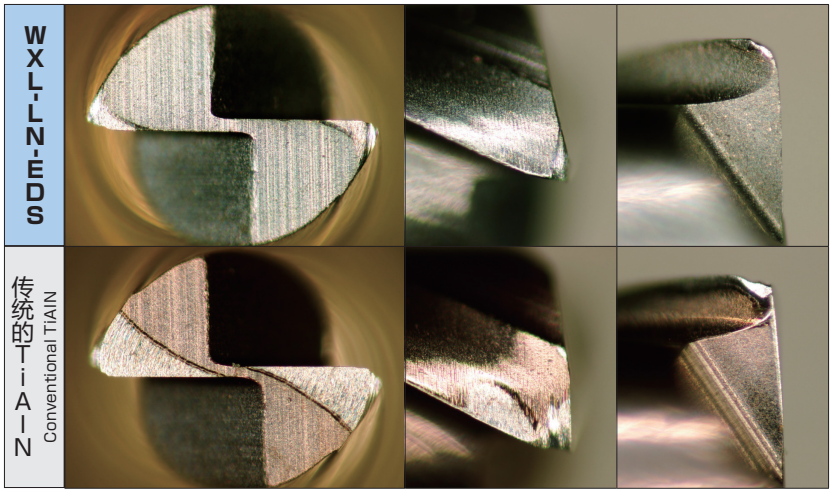
WXL-LN-EDS C1100的加工

WXL-2D-DE Milling in SS400

使用工具 Tool	WXL-LN-EDS φ1×6
加工材质 Work Material	C1100
切削速度 Cutting Speed	63m/min (20,000min^{-1})
进给速度 Feed	864mm/min (0.022mm/t)
切削方法 Milling Method	端面加工 Surface Pick Machining
切深量 Depth of Cut	a_p = 0.05mm a_e = 0.9mm
切削油剂 Coolant	水溶性切削油剂 Water-Soluble
使用机床 Machine	立式加工中心 Vertical Machining Center

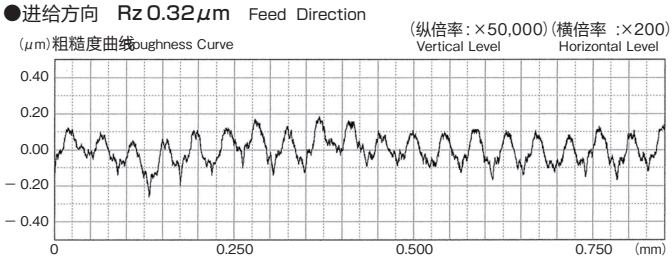


4小时加工后的磨损状况 Tool wear after milling 4 hours

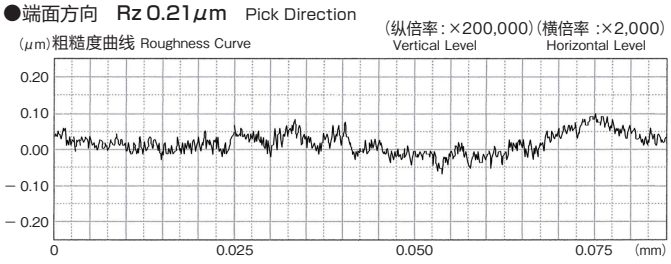


WXL-LN-EDS

●进给方向 Rz 0.32μm Feed Direction

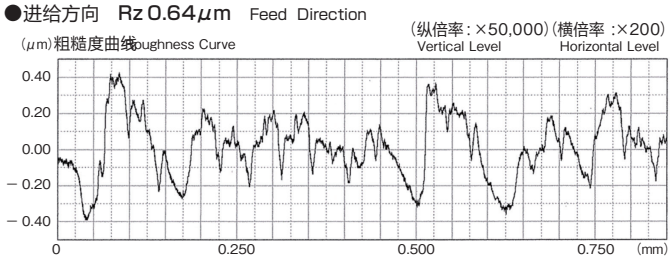


●端面方向 Rz 0.21μm Pick Direction

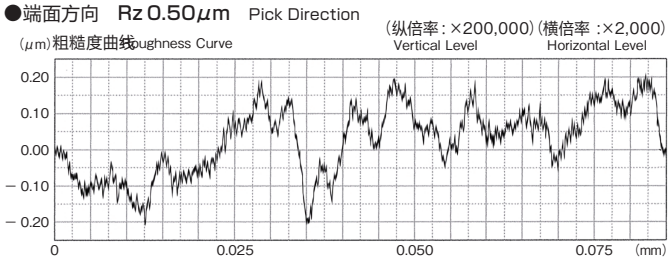


传统 TiAlN Conventional TiAlN

●进给方向 Rz 0.64μm Feed Direction



●端面方向 Rz 0.50μm Pick Direction



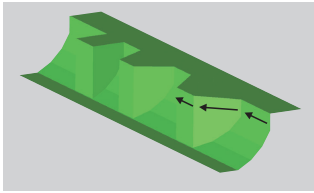
WXL涂层能有效抑制中心部的磨损！

Thanks to the WXL Coating, wear on the central portion of the tool has been reduced!

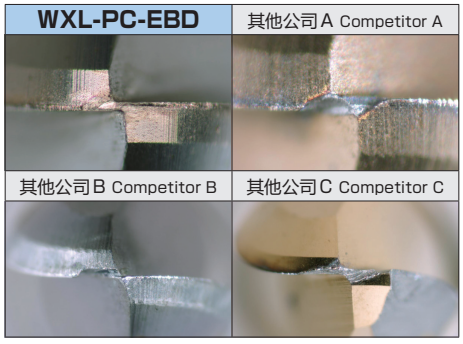
WXL-PC-EBD STAVAX (52HRC) 的加工

WXL-PC-EBD Milling in STAVAX (52HRC)

使用工具 Tool	WXL-PC-EBD R1×1°×20
加工材质 Work Material	STAVAX (52HRC)
切削速度 Cutting Speed	63m/min (10,000min^{-1})
进给速度 Feed	2,000mm/min (0.1mm/t)
切削方法 Milling Method	等高线加工 Contoured Milling
切深量 Depth of Cut	a_p = 0.05mm P_f = 0.05mm
切削油剂 Coolant	半干式 Mist
使用机床 Machine	立式加工中心 Vertical Machining Center



240m 加工后的摩损状况
Tool wear after milling 240m

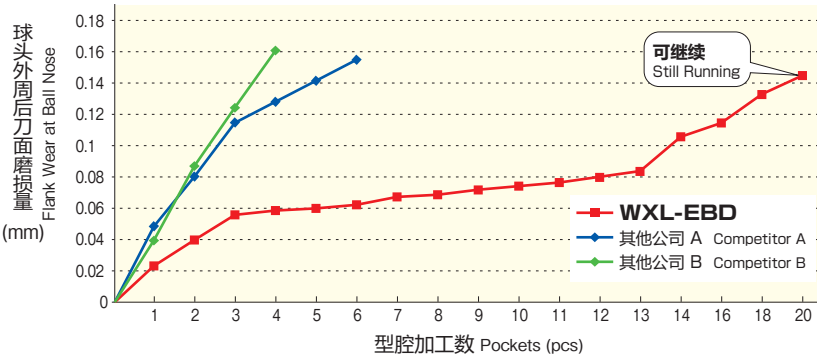


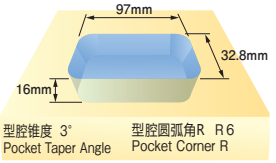
加工事例 Cutting Data

无论是湿式还是干式加工寿命提高3倍！ Offers three times the durability in both dry or wet applications!

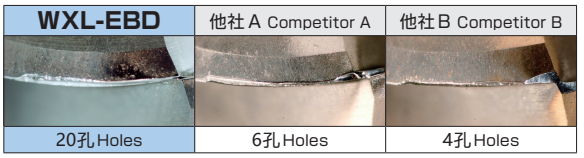
WXL-EBD 干式加工
WXL-EBD Dry Milling

使用工具 Tool	WXL-EBD R5×18
加工材质 Work Material	S50C
切削速度 Cutting Speed	200m/min (6,366min^{-1})
进给速度 Feed	1,604mm/min (0.126mm/t)
切削方法 Milling Method	型腔加工 Pocket Milling
切深量 Depth of Cut	a_p = 1mm P_f = 2mm
悬伸量 Overhang Length	4D
切削油剂 Coolant	气冷式 Air Blow
使用机械 Machine	立式加工中心 Vertical Machining Center



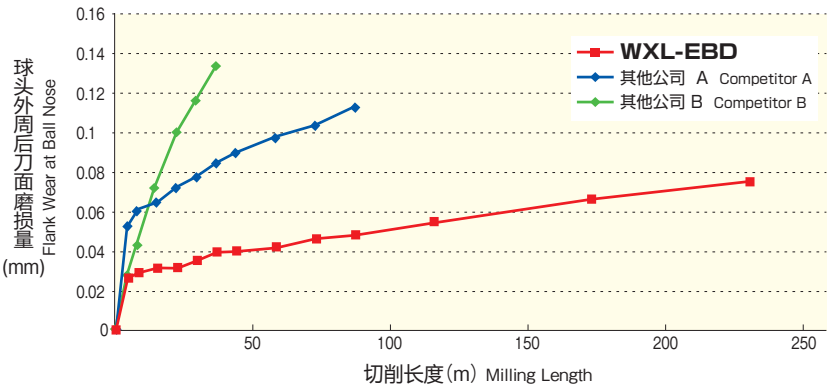


加工后的磨损状况 Tool wear after milling



WXL-EBD 湿式加工
WXL-EBD Wet Milling

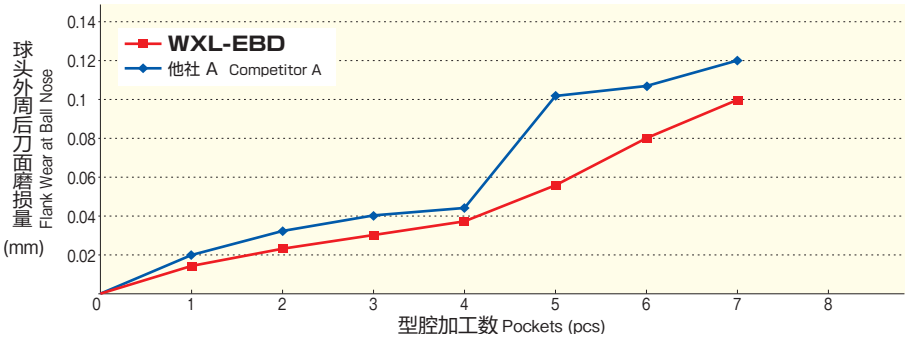
使用工具 Tool	WXL-EBD R3×12
加工材质 Work Material	S50C
切削速度 Cutting Speed	199.7m/min (10,600min^{-1})
进给速度 Feed	2,570mm/min (0.121mm/t)
切削方法 Milling Method	端面加工 Pick Milling
切深量 Depth of Cut	a_p = 0.3mm P_f = 0.6mm
切削油剂 Coolant	水溶性切削油剂 Water-Soluble
使用机械 Machine	立式加工中心 Vertical Machining Center

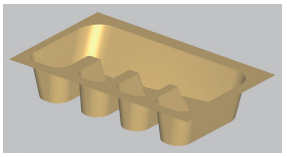


WXL系列能广泛应用于各种材料加工。 The WXL series handles a wide range of materials and applications.

WXL-EBD DH31S (48HRC)的加工
WXL-EBD Milling in DH31S(48HRC)

使用工具 Tool	WXL-EBD R5×18
加工材质 Work Material	DH31S (48HRC)
切削速度 Cutting Speed	180m/min (5,700min^{-1})
进给速度 Feed	1,350mm/min (0.118mm/t)
切削方法 Milling Method	模具加工 Model Milling
切深量 Depth of Cut	a_p = 1mm P_f = 2mm
悬伸量 Overhang Length	5D
切削油剂 Coolant	气冷式 Air Blow
使用机械 Machine	卧式加工中心 Holizontal Machining Center





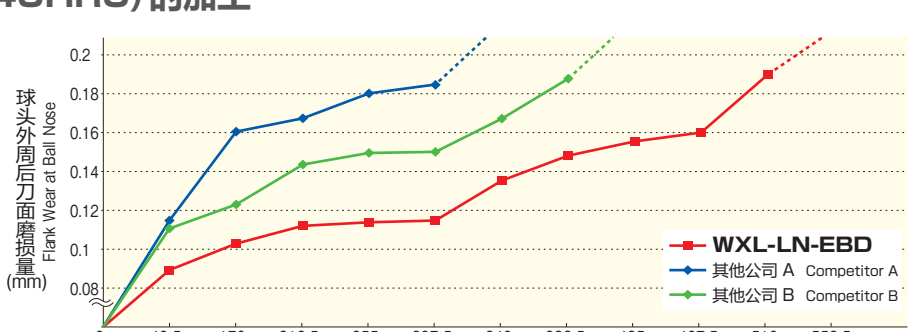
型腔锥度 Pocket Taper Angle	3°	型腔尺寸 Pocket Size	86.25×48.75mm
型腔圆弧角 Pocket Corner R	R6	型腔深度 Pocket Depth	16mm

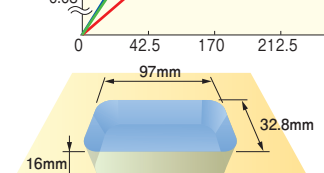
加工事例 *Cutting Data*

WXL-LN-EBD NAK80 (40HRC) 的加工

WXL-LN-EBD Milling in NAK80 (40HRC)

使用工具 Tool	WXL-LN-EBD R1×10
加工材质 Work Material	NAK80 (40HRC)
切削速度 Cutting Speed	126m/min (20,000min⁻¹)
进给速度 Feed	2,000mm/min (0.05mm/t)
切削方法 Milling Method	型腔加工 Pocket Milling
切深量 Depth of Cut	ap = 0.1mm Pf = 0.4mm
悬伸量 Overhang Length	7D
切削油剂 Coolant	气冷式 Air Blow
使用机床 Machine	立式加工中心 Vertical Machining Center (BT30)





WXL系列 铜电极加工

WXL series copper electrode milling

电极模具加工 Electrode model milling

工程 Process	使用工具 Tool		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量 Depth of Cut (mm)	精加工量 Semi-finishing (mm)	加工时间(分) Cutting Time (min)	切削油剂 Coolant
粗加工 Roughing	WX-CR-PHS	φ8 x R0.5	4,000	2,000	0.4	0.3	24	半干式 Mist
半粗加工 Semi-roughing	WXL-EDS	φ4	6,000	1,000	0.2	0.1	30	半干式 Mist
精加工 Finishing	WXL-HS-LN-EBD	R1×16×4	20,000	1,150	0.1	0	88	半干式 Mist

WXL系列 NAK80加工

WXL series NAK80 milling

压铸微型模型
Diecast miniature model

工程 Process	使用工具 Tool		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量 Depth of Cut		精加工量 Semi-finishing (mm)	加工时间(分) Cutting Time (min)	切削油剂 Coolant
					ap (mm)	Pf (mm)			
粗加工 Roughing	WXL-HS-EBD	R3 ×10	8,000	2,700	0.4	1.5	0.2	63	半干式 Mist
半粗加工 Semi-roughing	WXL-LN-EBD	R1.5×10×6	13,000	1,500	0.15	0.25	0.1	154	半干式 Mist
半精加工 Semi-finishing	WXL-LN-EBD	R1 ×10×4	15,000	1,200	0.1	0.1	0.05	130	半干式 Mist
	WXL-LN-EBD	R0.8× 8×4	20,000	1,800	0.1	0.05	0.05	26	半干式 Mist
精加工 Finishing	WXL-LN-EBD	R0.8× 8×4	20,000	1,800	0.05	0.03	0	132	半干式 Mist

1把刀具能完成所有加工！高寿命的WXL！A single tool for finishing! With the high durability of the WXL!

■标识种类 Guide for marks

1 材质 Tool Materials

CARBIDE 硬质合金 Tungsten Carbide
刃部使用硬质合金涂层

2 表面处理 Surface Treatment

WXL WXL 涂层 WXL coating
耐摩耗性、耐溶着性优异，适应广泛的加工材料。

WXS WX超级涂层 WX Super coating
实现氧化温度 1300℃的超耐热 · 超硬质涂层。

3 外径的许容差 Tolerance for milling diameter

表示铣刀外径的许容差。
Tolerance for milling diameter.

4 热缩 shrink

SHRINK FIT 推荐热膨胀刀具系列。
Suitable for the shrink holder system.

5 R 角许容差 Tolerance of Ball-End Radius

R ±0.01 表示球头型铣刀的圆弧角许容差。
Identifies the tolerance of the radius for ball-end mills.

6 螺旋角 Helix Angle

30° 表示铣刀排屑槽的螺旋角。
Displays helix angle of flute for end mills.

7 圆弧角形状 Corner Form

表示铣刀有锋利的刀尖角。
Indicates that the end mill has a sharp corner edge.

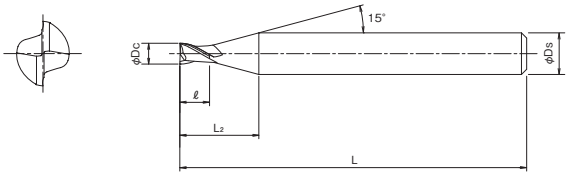
8 切削条件 Cutting Conditions

切削条件 表示切削条件基准表登载页面。
Indicates page No.for recommended drilling conditions.

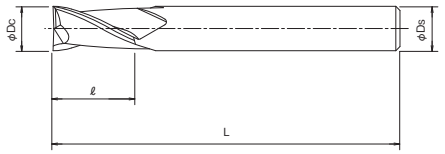
WXL 涂层2刃 1.5D 刃长型
WXL Coating Two Flute・Short 1.5D Flute Length Type

WXL-1.5D-DE NEW SIZES

Type 1



Type 2



CARBIDE WXL SHRINK FIT 30° 切削条件

0～−0.02　　P.38

単位 :mm　Unit:mm

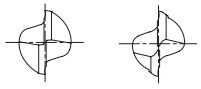
商品号 EDP No.	外径 Dc	全长 L	刃长 ℓ	L2	柄径 Ds	形 状 Type	库存 Stock
3181801	0.1	45	0.15	7	4	1	B
3181802	0.2	45	0.3	7	4	1	B
3181803	0.3	45	0.45	7	4	1	B
3181804	0.4	45	0.6	6.9	4	1	B
3181805	0.5	45	0.75	6.9	4	1	A
3181806	0.6	45	0.9	6.9	4	1	B
3181807	0.7	45	1.1	6.9	4	1	B
3181808	0.8	45	1.2	6.9	4	1	B
3181809	0.9	45	1.4	6.8	4	1	B
3181810	1	45	1.5	6.9	4	1	A
3181811	1.1	45	1.7	6.9	4	1	B
3181812	1.2	45	1.8	6.8	4	1	A
3181813	1.3	45	2	6.8	4	1	B
3181814	1.4	45	2.1	6.8	4	1	B
3181815	1.5	45	2.3	6.8	4	1	A
3181816	1.6	45	2.4	6.7	4	1	B
3181817	1.7	45	2.6	7.1	4	1	B
3181818	1.8	45	2.7	7	4	1	A
3181819	1.9	45	2.9	7	4	1	B
3181820	2	45	3	7	4	1	A
3181821	2.1	45	3.2	7.1	4	1	B
3181822	2.2	45	3.3	7	4	1	B
3181823	2.3	45	3.5	7.1	4	1	B
3181824	2.4	45	3.6	7.1	4	1	B
3181825	2.5	45	3.8	7	4	1	A
3181826	2.6	45	3.9	7.4	4	1	B
3181827	2.7	45	4.1	7.4	4	1	B
3181828	2.8	45	4.2	7.3	4	1	B
3181829	2.9	45	4.4	7.4	4	1	B
3181830	3	45	4.5	11.1	6	1	A
3181831	3.1	45	4.7	11.1	6	1	B
3181832	3.2	45	4.8	11.1	6	1	B
3181833	3.3	45	5	11.1	6	1	B
3181834	3.4	45	5.1	11	6	1	B
3181835	3.5	45	5.3	11	6	1	A
3181836	3.6	45	5.4	10.9	6	1	B
3181837	3.7	45	5.6	10.9	6	1	B
3181838	3.8	45	5.7	10.8	6	1	B
3181839	3.9	45	5.9	10.8	6	1	B
3181840	4	45	6	10.8	6	1	A
3181841	4.1	50	6.2	11.1	6	1	B
3181842	4.2	50	6.3	11	6	1	B
3181843	4.3	50	6.5	11	6	1	B
3181844	4.4	50	6.6	10.9	6	1	B
3181845	4.5	50	6.8	10.9	6	1	A
3181846	4.6	50	6.9	10.8	6	1	B
3181847	4.7	50	7.1	10.9	6	1	B
3181848	4.8	50	7.2	10.8	6	1	B
3181849	4.9	50	7.4	10.8	6	1	B
3181850	5	50	7.5	10.6	6	1	A
3181851	5.1	50	7.7	10.7	6	1	B
3181852	5.2	50	7.8	10.6	6	1	B
3181853	5.3	50	8	10.6	6	1	B
3181854	5.4	50	8.1	10.5	6	1	B
3181855	5.5	50	8.3	10.5	6	1	A
3181856	5.6	50	8.4	10.5	6	1	B
3181857	5.7	50	8.6	10.5	6	1	B
3181858	5.8	50	8.7	10.4	6	1	B
3181859	5.9	50	8.9	10.4	6	1	B
3181860	6	50	9	–	6	2	A
※ 3181880	8	60	12	–	8	2	A
※ 3181900	10	70	15	–	10	2	A
※ 3181920	12	75	18	–	12	2	A

A = 标准库存品　A = Standard stock item
B = 库存中心标准库存品　B = Inventory center stock item

■标识说明请参阅P.6。
■See p.6 for explanation of marks.
※= NEW SIZES

WXL 涂层2刃 2D刃长型
WXL Coating Two Flute・Short 2D Flute Length Type

WXL-2D-DE NEW SIZES



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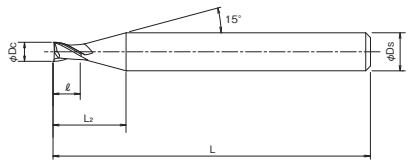

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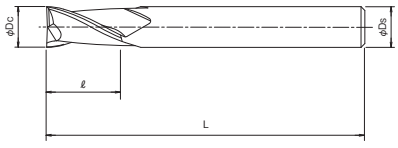

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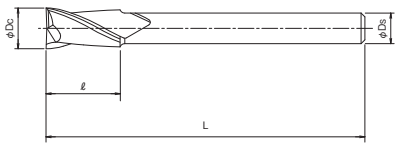

CARBIDE WXL SHRINK FIT 30° 切削条件

Dc≦12 0~−0.02
12<Dc 0~−0.03

P.39

单位 :mm Unit:mm

商品号 EDP No.	外径 Dc	全长 L	刃长 ℓ	L₂	柄径 Ds	形状 Type	库存 Stock
3182001	0.1	45	0.2	7	4	1	B
3182002	0.2	45	0.4	7.1	4	1	B
3182003	0.3	45	0.6	7.1	4	1	B
3182004	0.4	45	0.8	7.1	4	1	B
3182005	0.5	45	1	7.1	4	1	A
3182006	0.6	45	1.2	7.2	4	1	B
3182007	0.7	45	1.4	7.3	4	1	B
3182008	0.8	45	1.6	7.3	4	1	B
3182009	0.9	45	1.8	7.3	4	1	B
3182010	1	45	2	7.4	4	1	A
3182011	1.1	45	2.2	7.4	4	1	B
3182012	1.2	45	2.4	7.4	4	1	A
3182013	1.3	45	2.6	7.4	4	1	B
3182014	1.4	45	2.8	7.5	4	1	B
3182015	1.5	45	3	7.5	4	1	A
3182016	1.6	45	3.2	7.6	4	1	B
3182017	1.7	45	3.4	8	4	1	B
3182018	1.8	45	3.6	8	4	1	A
3182019	1.9	45	3.8	8	4	1	B
3182020	2	45	4	8.1	4	1	A
3182021	2.1	45	4.2	8.1	4	1	B
3182022	2.2	45	4.4	8.1	4	1	B
3182023	2.3	45	4.6	8.2	4	1	B
3182024	2.4	45	4.8	8.2	4	1	B
3182025	2.5	45	5	8.2	4	1	A
3182026	2.6	45	5.2	8.7	4	1	B
3182027	2.7	45	5.4	8.7	4	1	B
3182028	2.8	45	5.6	8.7	4	1	B
3182029	2.9	45	5.8	8.8	4	1	B
3182030	3	45	6	12.6	6	1	A
3182031	3.1	45	6.2	12.8	6	1	B
3182032	3.2	45	6.4	12.9	6	1	B
3182033	3.3	45	6.6	12.9	6	1	B
3182034	3.4	45	6.8	12.9	6	1	B
3182035	3.5	45	7	12.9	6	1	A
3182036	3.6	45	7.2	12.9	6	1	B
3182037	3.7	45	7.4	12.9	6	1	B
3182038	3.8	45	7.6	12.9	6	1	B
3182039	3.9	45	7.8	12.9	6	1	B
3182040	4	45	8	13	6	1	A
3182041	4.1	50	8.2	13.1	6	1	B
3182042	4.2	50	8.4	13.1	6	1	B
3182043	4.3	50	8.6	13.1	6	1	B
3182044	4.4	50	8.8	13.1	6	1	B
3182045	4.5	50	9	13.1	6	1	A
3182046	4.6	50	9.2	13.1	6	1	B
3182047	4.7	50	9.4	13.2	6	1	B
3182048	4.8	50	9.6	13.2	6	1	B
3182049	4.9	50	9.8	13.2	6	1	B
3182050	5	50	10	13.1	6	1	A
3182051	5.1	50	10.2	13.2	6	1	B
3182052	5.2	50	10.4	13.2	6	1	B
3182053	5.3	50	10.6	13.2	6	1	B
3182054	5.4	50	10.8	13.2	6	1	B
3182055	5.5	50	11	13.2	6	1	A
3182056	5.6	50	11.2	13.3	6	1	B
3182057	5.7	50	11.4	13.3	6	1	B
3182058	5.8	50	11.6	13.3	6	1	B
3182059	5.9	50	11.8	13.3	6	1	B
3182060	6	50	12	–	6	2	A
※ 3182061	6.1	60	12.2	18.1	8	1	D
※ 3182062	6.2	60	12.4	18.1	8	1	D

■标识说明请参阅P.6。
■See p.6 for explanation of marks.
※= NEW SIZES

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D = 库存中心标准库存品 D = Inventory center stock item

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WXL 涂层2刃 2D 刃长型

WXL Coating Two Flute・Short 2D Flute Length Type

WXL-2D-DE NEW SIZES

接一页

CARBIDE WXL SHRINK FIT 30° 切削条件

P.39

Dc≦12 0~-0.02
12<Dc 0~-0.03

单位 :mm Unit:mm

	商品号 EDP No.	外径 Dc	全长 L	刃长 ℓ	L2	柄径 Ds	形状 Type	库存 Stock
※	3182063	6.3	60	12.6	18.1	8	1	D
※	3182064	6.4	60	12.8	18.1	8	1	D
	3182065	6.5	60	13	17	8	1	B
※	3182066	6.6	60	13.2	18.1	8	1	D
※	3182067	6.7	60	13.4	18.2	8	1	D
※	3182068	6.8	60	13.6	18.2	8	1	D
※	3182069	6.9	60	13.8	18.2	8	1	D
	3182070	7	60	14	17.1	8	1	A
※	3182071	7.1	60	14.2	18.2	8	1	D
※	3182072	7.2	60	14.4	18.2	8	1	D
※	3182073	7.3	60	14.6	18.2	8	1	D
※	3182074	7.4	60	14.8	18.2	8	1	D
	3182075	7.5	60	15	17.2	8	1	B
※	3182076	7.6	60	15.2	18.3	8	1	D
※	3182077	7.7	60	15.4	18.3	8	1	D
※	3182078	7.8	60	15.6	18.3	8	1	D
※	3182079	7.9	60	15.8	18.3	8	1	D
	3182080	8	60	16	–	8	2	A
※	3182081	8.1	70	16.2	22.1	10	1	D
※	3182082	8.2	70	16.4	22.1	10	1	D
※	3182083	8.3	70	16.6	22.1	10	1	D
※	3182084	8.4	70	16.8	22.1	10	1	D
	3182085	8.5	70	17	21	10	1	B
※	3182086	8.6	70	17.2	22.1	10	1	D
※	3182087	8.7	70	17.4	22.1	10	1	D
※	3182088	8.8	70	17.6	22.2	10	1	D
※	3182089	8.9	70	17.8	22.2	10	1	D
	3182090	9	70	18	21.1	10	1	A
※	3182091	9.1	70	18.2	22.2	10	1	D
※	3182092	9.2	70	18.4	22.2	10	1	D
※	3182093	9.3	70	18.6	22.2	10	1	D
※	3182094	9.4	70	18.8	22.2	10	1	D
	3182095	9.5	70	19	21.2	10	1	B
※	3182096	9.6	70	19.2	22.3	10	1	D
※	3182097	9.7	70	19.4	22.3	10	1	D
※	3182098	9.8	70	19.6	22.3	10	1	D
※	3182099	9.9	70	19.8	22.3	10	1	D
	3182100	10	70	20	–	10	2	A
※	3182101	10.1	75	20.2	26.1	12	1	D
※	3182102	10.2	75	20.4	26.1	12	1	D
※	3182103	10.3	75	20.6	26.1	12	1	D
※	3182104	10.4	75	20.8	26.1	12	1	D
※	3182105	10.5	75	21	26.1	12	1	D
※	3182106	10.6	75	21.2	26.1	12	1	D
※	3182107	10.7	75	21.4	26.1	12	1	D
※	3182108	10.8	75	21.6	26.2	12	1	D
※	3182109	10.9	75	21.8	26.2	12	1	D
	3182110	11	75	22	25.1	12	1	A
※	3182111	11.1	75	22.2	26.2	12	1	D
※	3182112	11.2	75	22.4	26.2	12	1	D
※	3182113	11.3	75	22.6	26.2	12	1	D
※	3182114	11.4	75	22.8	26.2	12	1	D
※	3182115	11.5	75	23	26.3	12	1	D
※	3182116	11.6	75	23.2	26.3	12	1	D
※	3182117	11.7	75	23.4	26.3	12	1	D
※	3182118	11.8	75	23.6	26.3	12	1	D
※	3182119	11.9	75	23.8	26.3	12	1	D
	3182120	12	75	24	–	12	2	A
※	3182121	12.1	85	24.2	–	12	3	D
※	3182122	12.2	85	24.4	–	12	3	D
※	3182123	12.3	85	24.6	–	12	3	D
※	3182124	12.4	85	24.8	–	12	3	D

■标识说明请参阅P.6。
■See p.6 for explanation of marks.
※=NEW SIZES

A = 标准库存品 A = Standard stock item
B = 库存中心标准库存品 B = Inventory center stock item
D = 库存中心标准库存品 D = Inventory center stock item

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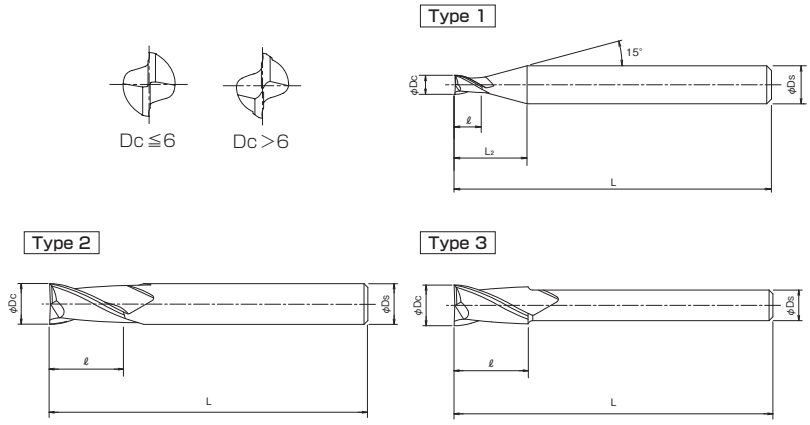


FROM
接一页

单位 :mm　Unit:mm

	商品号 EDP No.	外径 Dc	全长 L	刃长 ℓ	L₂	柄径 Ds	形 状 Type	库存 Stock
※	3182125	12.5	85	25	–	12	3	D
※	3182126	12.6	85	25.2	–	12	3	D
※	3182127	12.7	85	25.4	–	12	3	D
※	3182128	12.8	85	25.6	–	12	3	D
※	3182129	12.9	85	25.8	–	12	3	D
※	3182130	13	85	26	–	12	3	D
※	3182131	13.1	85	26.2	–	12	3	D
※	3182132	13.2	85	26.4	–	12	3	D
※	3182133	13.3	85	26.6	–	12	3	D
※	3182134	13.4	85	26.8	–	12	3	D
※	3182135	13.5	85	27	–	12	3	D
※	3182136	13.6	85	27.2	–	12	3	D
※	3182137	13.7	85	27.4	–	12	3	D
※	3182138	13.8	85	27.6	–	12	3	D
※	3182139	13.9	85	27.8	–	12	3	D
※	3182140	14	85	28	–	12	3	D
※	3182145	14.5	90	29	35.1	16	1	D

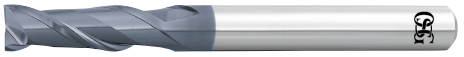
※= NEW SIZES

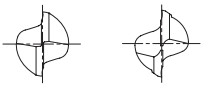
	商品号 EDP No.	外径 Dc	全长 L	刃长 ℓ	L₂	柄径 Ds	形 状 Type	库存 Stock
※	3182150	15	90	30	35.4	16	1	D
※	3182155	15.5	90	31	35.5	16	1	D
	3182160	16	90	32	–	16	2	B
※	3182165	16.5	90	33	–	16	3	D
※	3182170	17	90	34	–	16	3	D
※	3182175	17.5	90	35	–	16	3	D
	3182180	18	90	36	–	16	3	B
※	3182185	18.5	100	37	43.3	20	1	D
※	3182190	19	100	38	43.4	20	1	D
※	3182195	19.5	100	39	43.5	20	1	D
	3182200	20	100	40	–	20	2	B
※	3182210	21	105	42	–	20	3	D
※	3182220	22	105	44	–	20	3	D
※	3182230	23	120	46	53.3	25	1	D
※	3182240	24	120	48	53.4	25	1	D
※	3182250	25	125	50	–	25	2	D
※	3182300	30	140	60	67.3	32	1	D

B = 库存中心标准库存品　B = Inventory center stock item
D = 库存中心标准库存品　D = Inventory center stock item

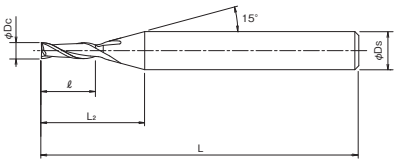
WXL 涂层2刃 3D 刃长型
WXL Coating Two Flute · Short 3D Flute Length Type

WXL-3D-DE

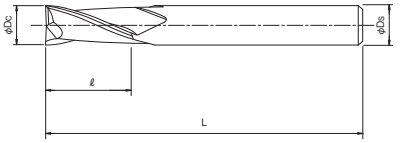




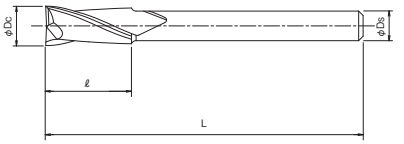
Type 1



Type 2



Type 3



CARBIDE WXL 35° 切削条件 P.42

Dc≦12 0~-0.02
12<Dc 0~-0.03
Dc≦12

单位 :mm Unit:mm

商品号 EDP No.	外径 Dc	全长 L	刃长 ℓ	L₂	柄径 Ds	形 状 Type	库存 Stock
3182401	0.1	45	0.3	7.1	4	1	B
3182402	0.2	45	0.6	7.3	4	1	B
3182403	0.3	45	0.9	7.4	4	1	B
3182404	0.4	45	1.2	7.5	4	1	B
3182405	0.5	45	1.5	7.6	4	1	A
3182406	0.6	45	1.8	7.8	4	1	B
3182407	0.7	45	2.1	8	4	1	B
3182408	0.8	45	2.4	8.1	4	1	B
3182409	0.9	45	2.7	8.2	4	1	B
3182410	1	45	3	8.4	4	1	A
3182411	1.1	45	3.3	8.7	4	1	B
3182412	1.2	45	3.6	8.7	4	1	A
3182413	1.3	45	3.9	8.9	4	1	B
3182414	1.4	45	4.2	9.1	4	1	B
3182415	1.5	45	4.5	9.1	4	1	A
3182416	1.6	45	4.8	9.3	4	1	B
3182417	1.7	45	5.1	9.8	4	1	B
3182418	1.8	45	5.4	9.8	4	1	A
3182419	1.9	45	5.7	10	4	1	B
3182420	2	45	6	10.2	4	1	A
3182421	2.1	45	6.3	10.5	4	1	B
3182422	2.2	45	6.6	10.7	4	1	B
3182423	2.3	45	6.9	10.8	4	1	B
3182424	2.4	45	7.2	10.9	4	1	B
3182425	2.5	45	7.5	11	4	1	A
3182426	2.6	45	7.8	11.5	4	1	B
3182427	2.7	45	8.1	11.6	4	1	B
3182428	2.8	45	8.4	11.7	4	1	B
3182429	2.9	45	8.7	11.9	4	1	B
3182430	3	45	9	15.9	6	1	A
3182431	3.1	45	9.3	16	6	1	B
3182432	3.2	45	9.6	16.2	6	1	B
3182433	3.3	45	9.9	16.3	6	1	B
3182434	3.4	45	10.2	16.4	6	1	B
3182435	3.5	45	10.5	16.5	6	1	A
3182436	3.6	45	10.8	16.6	6	1	B
3182437	3.7	45	11.1	16.7	6	1	B

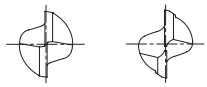
商品号 EDP No.	外径 Dc	全长 L	刃长 ℓ	L₂	柄径 Ds	形 状 Type	库存 Stock
3182438	3.8	45	11.4	16.8	6	1	B
3182439	3.9	45	11.7	16.9	6	1	B
3182440	4	50	12	17	6	1	A
3182441	4.1	50	12.3	17.2	6	1	B
3182442	4.2	50	12.6	17.3	6	1	B
3182443	4.3	50	12.9	17.4	6	1	B
3182444	4.4	50	13.2	17.5	6	1	B
3182445	4.5	50	13.5	17.6	6	1	A
3182446	4.6	55	13.8	17.7	6	1	B
3182447	4.7	55	14.1	17.9	6	1	B
3182448	4.8	55	14.4	18	6	1	B
3182449	4.9	55	14.7	18.1	6	1	B
3182450	5	55	15	18.1	6	1	A
3182451	5.1	55	15.3	18.3	6	1	B
3182452	5.2	55	15.6	18.4	6	1	B
3182453	5.3	55	15.9	18.5	6	1	B
3182454	5.4	55	16.2	18.6	6	1	B
3182455	5.5	60	16.5	18.7	6	1	A
3182456	5.6	60	16.8	18.9	6	1	B
3182457	5.7	60	17.1	19	6	1	B
3182458	5.8	60	17.4	19.1	6	1	B
3182459	5.9	60	17.7	19.2	6	1	B
3182460	6	60	18	–	6	2	A
3182465	6.5	65	19.5	23.5	8	1	B
3182470	7	65	21	24.1	8	1	A
3182475	7.5	70	22.5	24.7	8	1	B
3182480	8	70	24	–	8	2	A
3182485	8.5	70	25.5	29.5	10	1	B
3182490	9	75	27	30.1	10	1	A
3182495	9.5	75	28.5	30.7	10	1	B
3182500	10	80	30	–	10	2	A
3182510	11	80	33	36.3	12	1	A
3182520	12	90	36	–	12	2	A
3182560	16	110	48	–	16	2	B
3182580	18	130	54	–	16	3	B
3182600	20	130	60	–	20	2	B

A = 标准库存品 A = Standard stock item
B = 库存中心标准库存品 B = Inventory center stock item

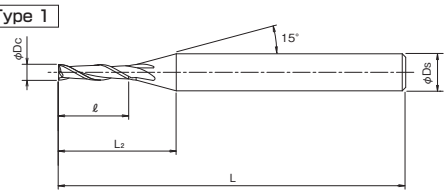
■标识说明请参阅P.6。
■See p.6 for explanation of marks.

WXL 涂层2刃 4D刃长型
WXL Coating Two Flute · Short 4D Flute Length Type

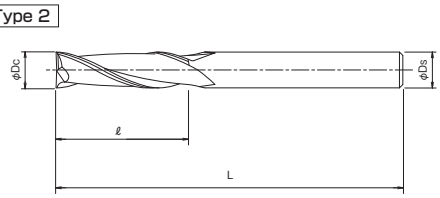
WXL-4D-DE



Type 1



Type 2



CARBIDE WXL 0～−0.02 SHRINK FIT 40° 切削条件 P.43

単位 :mm Unit:mm

商品号 EDP No.	外径 Dc	全长 L	刃长 ℓ	L₂	柄径 Ds	形 状 Type	库存 Stock
3182602	0.2	45	0.8	7.5	4	1	B
3182603	0.3	45	1.2	7.7	4	1	B
3182604	0.4	45	1.6	7.9	4	1	B
3182605	0.5	45	2	8.1	4	1	A
3182606	0.6	45	2.4	8.4	4	1	B
3182607	0.7	45	2.8	8.7	4	1	B
3182608	0.8	45	3.2	8.9	4	1	B
3182609	0.9	45	3.6	9.1	4	1	B
3182610	1	45	4	9.6	4	1	A
3182611	1.1	45	4.4	9.8	4	1	B
3182612	1.2	45	4.8	10	4	1	A
3182613	1.3	45	5.2	10.2	4	1	B
3182614	1.4	45	5.6	10.5	4	1	B
3182615	1.5	45	6	10.7	4	1	A
3182616	1.6	45	6.4	11.1	4	1	B
3182617	1.7	45	6.8	11.7	4	1	B
3182618	1.8	45	7.2	11.9	4	1	A
3182619	1.9	45	7.6	12.1	4	1	B
3182620	2	45	8	12.4	4	1	A
3182621	2.1	45	8.4	12.6	4	1	B
3182622	2.2	45	8.8	12.9	4	1	B
3182623	2.3	45	9.2	13.1	4	1	B
3182624	2.4	45	9.6	13.3	4	1	B
3182625	2.5	45	10	13.5	4	1	A
3182626	2.6	50	10.4	14.2	4	1	B
3182627	2.7	50	10.8	14.4	4	1	B
3182628	2.8	50	11.2	14.6	4	1	B
3182629	2.9	50	11.6	14.9	4	1	B
3182630	3	50	12	18.9	6	1	A
3182631	3.1	50	12.4	19.1	6	1	B
3182632	3.2	50	12.8	19.4	6	1	B
3182633	3.3	50	13.2	19.6	6	1	B
3182634	3.4	50	13.6	19.8	6	1	B
3182635	3.5	50	14	20	6	1	A
3182636	3.6	50	14.4	20.2	6	1	B
3182637	3.7	50	14.8	20.4	6	1	B
3182638	3.8	50	15.2	20.6	6	1	B
3182639	3.9	50	15.6	20.8	6	1	B
3182640	4	55	16	21.1	6	1	A
3182641	4.1	55	16.4	21.3	6	1	B
3182642	4.2	55	16.8	21.5	6	1	B
3182643	4.3	55	17.2	21.7	6	1	B
3182644	4.4	55	17.6	21.9	6	1	B
3182645	4.5	55	18	22.1	6	1	A
3182646	4.6	55	18.4	22.3	6	1	B
3182647	4.7	55	18.8	22.6	6	1	B
3182648	4.8	55	19.2	22.8	6	1	B
3182649	4.9	55	19.6	23	6	1	B
3182650	5	60	20	23.1	6	1	A
3182651	5.1	60	20.4	23.4	6	1	B
3182652	5.2	60	20.8	23.6	6	1	B
3182653	5.3	60	21.2	23.8	6	1	B
3182654	5.4	60	21.6	24	6	1	B
3182655	5.5	65	22	24.2	6	1	A
3182656	5.6	65	22.4	24.5	6	1	B
3182657	5.7	65	22.8	24.7	6	1	B
3182658	5.8	65	23.2	24.9	6	1	B
3182659	5.9	65	23.6	25.1	6	1	B
3182660	6	65	24	–	6	2	A
3182680	8	80	32	–	8	2	A
3182700	10	90	40	–	10	2	A
3182720	12	100	48	–	12	2	A

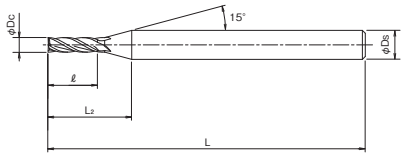
■标识说明请参阅P.6。
■See p.6 for explanation of marks.

A = 标准库存品 A = Standard stock item
B = 库存中心标准库存品 B = Inventory center stock item

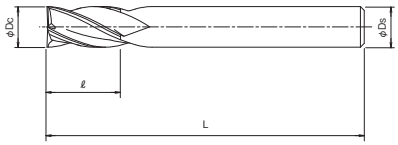
WXL涂层4刃短刃型
WXL Coating Four Flute Short

WXL-EMS NEW SIZES

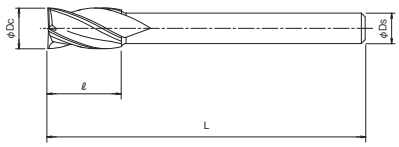
Type 1



Type 2



Type 3



CARBIDE WXL Dc≦12 12<Dc 0~-0.02 0~-0.03 SHRINK FIT Dc≦12 30° 切削条件 P.44

单位 :mm Unit:mm

商品号 EDP No.	外径 Dc	全长 L	刃长 ℓ	L₂	柄径 Ds	形状 Type	库存 Stock
3130510	1	40	2.5	7.9	4	1	D
3130515	1.5	40	4	8.5	4	1	D
3130520	2	40	6	10.1	4	1	A
3130525	2.5	40	8	11.4	4	1	A
3130530	3	45	8	15	6	1	A
3130535	3.5	45	10	16	6	1	D
3130540	4	45	11	16.1	6	1	A
3130545	4.5	45	11	15.1	6	1	D
3130550	5	50	13	16.2	6	1	A
※3130555	5.5	50	13	16.3	6	1	D
3130560	6	50	13	–	6	2	A
※3130565	6.5	60	16	21.1	8	1	D
3130570	7	60	16	19.2	8	1	A
※3130575	7.5	60	16	19.3	8	1	D
3130580	8	60	19	–	8	2	A
※3130585	8.5	70	19	24.1	10	1	D
3130590	9	70	19	22.2	10	1	A
※3130595	9.5	70	19	22.3	10	1	D
3130600	10	70	22	–	10	2	A
※3130605	10.5	75	22	27.1	12	1	D
※3130610	11	75	22	26.2	12	1	D
※3130615	11.5	75	22	25.3	12	1	D
3130620	12	75	26	–	12	2	A
※3130625	12.5	85	26	–	12	3	D
※3130630	13	85	26	–	12	3	D
3130640	14	85	26	–	12	3	D
3130650	15	90	26	30.1	16	1	D
3130660	16	100	32	–	16	2	D
※3130670	17	100	32	–	16	3	D
3130680	18	100	32	–	16	3	D
※3130690	19	100	62	37.4	20	1	D
3130700	20	105	38	–	20	2	D
※3130710	21	105	38	–	20	3	D
※3130720	22	105	38	–	20	3	D
※3130730	23	120	45	52.3	25	1	D
※3130740	24	120	45	50.4	25	1	D
3130750	25	120	45	–	25	2	D
3130800	30	125	45	50.8	32	1	D

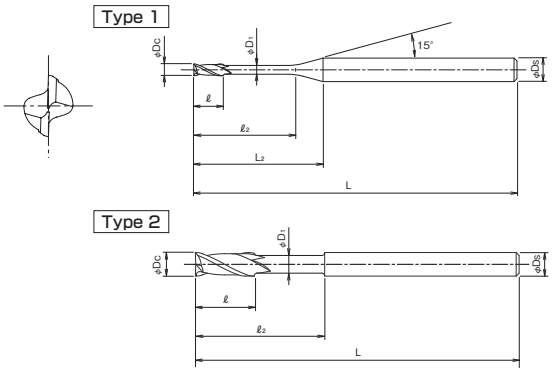
■标识说明请参阅P.6。
■See p.6 for explanation of marks.
※= NEW SIZES

A = 标准库存品 A = Standard stock item
D = 库存中心标准库存品 D = Inventory center stock item

WXL涂层2刃长颈短刃型(深细槽型)

WXL Coating Two Flute・Short・with Long Neck (for Rib processing)

WXL-LN-EDS NEW SIZES



CARBIDE WXL SHRINK FIT 30° 切削条件

0~−0.015　2<Dc　P.46

单位 :mm　Unit:mm

商品号 EDP No.	外径 × 颈长 Dc × ℓ2	全长 L	刃长 ℓ	L2	柄径 Ds	颈径 D1	干涉角度 θk	■对于工件倾斜角α的实际有效长(Le) ※1 0.5°	1°	1.5°	2°	3°	形状 Type	库存 Stock
※ 3131100	0.1 × 0.3	45	0.15	7.5	4	0.09	14.61°	0.31	0.32	0.33	0.34	0.37	1	B
※ 3131101	0.1 × 0.5	45	0.15	7.7	4	0.09	14.04°	0.53	0.56	0.58	0.61	0.66	1	B
※ 3131102	0.1 × 1	45	0.15	8.2	4	0.09	13.22°	1.05	1.1	1.14	1.18	1.28	1	B
3131201	0.2 × 0.5	45	0.3	7.5	4	0.18	14.02°	0.52	0.55	0.57	0.6	0.64	1	B
3131202	0.2 × 1	45	0.3	8	4	0.18	13.19°	1.05	1.09	1.13	1.17	1.27	1	B
3131203	0.2 × 1.5	45	0.3	8.5	4	0.18	12.45°	1.57	1.62	1.68	1.75	1.89	1	B
3131204	0.2 × 2	45	0.3	9	4	0.18	11.78°	2.09	2.16	2.24	2.32	2.51	1	B
3131205	0.2 × 2.5	45	0.3	9.5	4	0.18	11.18°	2.6	2.69	2.79	2.9	3.13	1	B
3131206	0.2 × 3	45	0.3	10	4	0.18	10.64°	3.12	3.23	3.35	3.47	3.75	1	B
3131207	0.2 × 3.5	45	0.3	10.5	4	0.18	10.15°	3.64	3.76	3.9	4.05	4.37	1	B
3131208	0.2 × 4	45	0.3	11	4	0.18	9.71°	4.15	4.3	4.45	4.62	5	1	B
3131302	0.3 × 1	45	0.45	7.8	4	0.28	13.16°	1.03	1.08	1.12	1.16	1.25	1	B
3131303	0.3 × 1.5	45	0.45	8.3	4	0.28	12.4°	1.56	1.61	1.67	1.74	1.88	1	B
3131304	0.3 × 2	45	0.45	8.8	4	0.28	11.73°	2.08	2.15	2.23	2.31	2.5	1	B
3131305	0.3 × 2.5	45	0.45	9.3	4	0.28	11.12°	2.59	2.68	2.78	2.88	3.12	1	B
3131306	0.3 × 3	45	0.45	9.8	4	0.28	10.57°	3.11	3.22	3.33	3.46	3.74	1	B
3131308	0.3 × 4	45	0.45	10.8	4	0.28	9.62°	4.14	4.29	4.44	4.61	4.98	1	B
3131310	0.3 × 5	45	0.45	11.8	4	0.28	8.83°	5.18	5.36	5.55	5.76	6.23	1	B
3131312	0.3 × 6	45	0.45	12.8	4	0.28	8.15°	6.21	6.43	6.66	6.91	7.47	1	B
3131318	0.3 × 9	45	0.45	15.8	4	0.28	6.63°	9.31	9.64	9.98	10.36	11.2	1	B
3131403	0.4 × 1.5	45	0.6	8.1	4	0.37	12.4°	1.52	1.57	1.63	1.69	1.82	1	B
3131404	0.4 × 2	45	0.6	8.6	4	0.37	11.71°	2.03	2.1	2.18	2.26	2.45	1	B
3131406	0.4 × 3	45	0.6	9.6	4	0.37	10.53°	3.07	3.17	3.29	3.41	3.69	1	B
3131408	0.4 × 4	45	0.6	10.6	4	0.37	9.56°	4.1	4.24	4.4	4.56	4.93	1	B
3131410	0.4 × 5	45	0.6	11.6	4	0.37	8.76°	5.13	5.31	5.51	5.71	6.18	1	B
3131412	0.4 × 6	45	0.6	12.6	4	0.37	8.08°	6.17	6.38	6.61	6.86	7.42	1	B
3131414	0.4 × 7	45	0.6	13.6	4	0.37	7.49°	7.2	7.45	7.72	8.01	8.66	1	B
3131416	0.4 × 8	45	0.6	14.6	4	0.37	6.99°	8.24	8.52	8.83	9.16	9.9	1	B
3131418	0.4 × 9	45	0.6	15.6	4	0.37	6.55°	9.27	9.59	9.94	10.31	11.15	1	B
3131420	0.4 × 10	45	0.6	16.6	4	0.37	6.16°	10.3	10.66	11.05	11.46	12.39	1	B
3131424	0.4 × 12	45	0.6	18.6	4	0.37	5.5°	12.37	12.8	13.26	13.76	14.88	1	B
3131501	0.5 × 1.5	45	0.7	8.1	4	0.45	12.29°	1.56	1.61	1.67	1.73	1.87	1	B
3131502	0.5 × 2	45	0.7	8.6	4	0.45	11.59°	2.07	2.14	2.22	2.31	2.49	1	B
3131503	0.5 × 3	45	0.7	9.6	4	0.45	10.4°	3.11	3.21	3.33	3.46	3.74	1	B
3131504	0.5 × 4	45	0.7	10.6	4	0.45	9.43°	4.14	4.28	4.44	4.61	4.98	1	B
3131505	0.5 × 5	45	0.7	11.6	4	0.45	8.63°	5.17	5.35	5.55	5.75	6.22	1	B
3131506	0.5 × 6	45	0.7	12.6	4	0.45	7.95°	6.21	6.42	6.66	6.9	7.47	1	B
3131507	0.5 × 7	45	0.7	13.6	4	0.45	7.37°	7.24	7.49	7.76	8.05	8.71	1	B
3131508	0.5 × 8	45	0.7	14.6	4	0.45	6.86°	8.27	8.56	8.87	9.2	9.95	1	B
3131509	0.5 × 9	45	0.7	15.6	4	0.45	6.43°	9.31	9.63	9.98	10.35	11.19	1	B

■标识说明请参阅 P.6。

■ See p.6 for explanation of marks.

※= NEW SIZES

B = 库存中心标准库存品　B = Inventory center stock item

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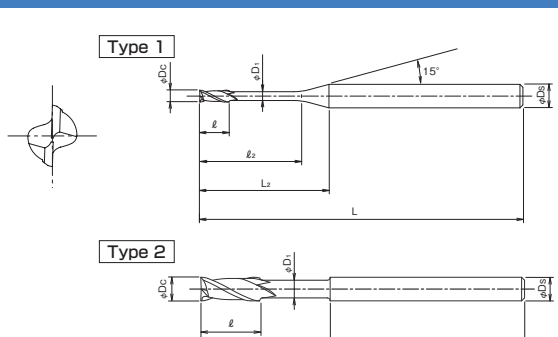
WXL涂层2刃长颈短刃形(深槽加工型)

WXL Coating Two Flute・Short・with Long Neck (for Rib processing)

WXL-LN-EDS NEW SIZES



接一页

CARBIDE WXL 0~-0.015 2<Dc SHRINK FIT 30° 切削条件 P.46

单位 :mm Unit:mm

商品号 EDP No.	外径 × 颈长 Dc × ℓ2	全长 L	刃长 ℓ	L2	柄径 Ds	颈径 D1	干涉角度 θk	■对于工件倾斜角α的实际有效长(Le) ※1 0.5°	1°	1.5°	2°	3°	形状 Type	库存 Stock
3131510	0.5 × 10	45	0.7	16.6	4	0.45	6.04°	10.34	10.7	11.09	11.5	12.44	1	B
3131512	0.5 × 12	45	0.7	18.6	4	0.45	5.39°	12.41	12.84	13.31	13.8	14.92	1	B
3131515	0.5 × 15	50	0.7	21.6	4	0.45	4.65°	15.51	16.05	16.63	17.25	18.65	1	B
3131602	0.6 × 2	45	0.9	8.4	4	0.55	11.51°	2.07	2.14	2.22	2.31	2.49	1	B
3131603	0.6 × 3	45	0.9	9.4	4	0.55	10.31°	3.11	3.21	3.33	3.46	3.74	1	B
3131604	0.6 × 4	45	0.9	10.4	4	0.55	9.33°	4.14	4.28	4.44	4.61	4.98	1	B
3131605	0.6 × 5	45	0.9	11.4	4	0.55	8.52°	5.17	5.35	5.55	5.75	6.22	1	B
3131606	0.6 × 6	45	0.9	12.4	4	0.55	7.84°	6.21	6.42	6.66	6.9	7.47	1	B
3131607	0.6 × 7	45	0.9	13.4	4	0.55	7.26°	7.24	7.49	7.76	8.05	8.71	1	B
3131608	0.6 × 8	45	0.9	14.4	4	0.55	6.76°	8.27	8.56	8.87	9.2	9.95	1	B
3131610	0.6 × 10	45	0.9	16.4	4	0.55	5.94°	10.34	10.7	11.09	11.5	12.44	1	B
3131612	0.6 × 12	45	0.9	18.4	4	0.55	5.29°	12.41	12.84	13.31	13.8	14.92	1	B
3131615	0.6 × 15	50	0.9	21.4	4	0.55	4.55°	15.51	16.05	16.63	17.25	18.65	1	B
3131618	0.6 × 18	50	0.9	24.4	4	0.55	3.99°	18.61	19.26	19.96	20.7	22.38	1	B
3131702	0.7 × 2	45	1	8.3	4	0.65	11.43°	2.07	2.14	2.22	2.31	2.49	1	B
3131704	0.7 × 4	45	1	10.3	4	0.65	9.22°	4.14	4.28	4.44	4.61	4.98	1	B
3131706	0.7 × 6	45	1	12.3	4	0.65	7.73°	6.21	6.42	6.66	6.9	7.47	1	B
3131708	0.7 × 8	45	1	14.3	4	0.65	6.65°	8.27	8.56	8.87	9.2	9.95	1	B
3131710	0.7 × 10	45	1	16.3	4	0.65	5.83°	10.34	10.7	11.09	11.5	12.44	1	B
3131804	0.8 × 4	45	1.2	10.1	4	0.75	9.11°	4.14	4.28	4.44	4.61	4.98	1	B
3131806	0.8 × 6	45	1.2	12.1	4	0.75	7.61°	6.21	6.42	6.66	6.9	7.47	1	B
3131808	0.8 × 8	45	1.2	14.1	4	0.75	6.53°	8.27	8.56	8.87	9.2	9.95	1	B
3131810	0.8 × 10	45	1.2	16.1	4	0.75	5.72°	10.34	10.7	11.09	11.5	12.44	1	B
3131812	0.8 × 12	45	1.2	18.1	4	0.75	5.09°	12.41	12.84	13.31	13.8	14.92	1	B
3131814	0.8 × 14	50	1.2	20.1	4	0.75	4.58°	14.48	14.98	15.52	16.1	17.41	1	B
3131816	0.8 × 16	50	1.2	22.1	4	0.75	4.16°	16.54	17.12	17.74	18.4	19.9	1	B
3131820	0.8 × 20	55	1.2	26.1	4	0.75	3.52°	20.68	21.4	22.17	23	24.87	1	B
3131824	0.8 × 24	60	1.2	30.1	4	0.75	3.06°	24.81	25.68	26.6	27.6	29.84	1	B
3131904	0.9 × 4	45	1.35	9.9	4	0.85	9°	4.14	4.28	4.44	4.61	4.98	1	B
3131906	0.9 × 6	45	1.35	11.9	4	0.85	7.49°	6.21	6.42	6.66	6.9	7.47	1	B
3131908	0.9 × 8	45	1.35	13.9	4	0.85	6.41°	8.27	8.56	8.87	9.2	9.95	1	B
3131910	0.9 × 10	45	1.35	15.9	4	0.85	5.61°	10.34	10.7	11.09	11.5	12.44	1	B
3131915	0.9 × 15	50	1.35	20.9	4	0.85	4.26°	15.51	16.05	16.63	17.25	18.65	1	B
3132003	1 × 3	45	1.5	8.7	4	0.95	9.89°	3.11	3.21	3.33	3.46	3.74	1	B
3132004	1 × 4	45	1.5	9.7	4	0.95	8.88°	4.14	4.28	4.44	4.61	4.98	1	B
3132005	1 × 5	45	1.5	10.7	4	0.95	8.05°	5.17	5.35	5.55	5.75	6.22	1	B
3132006	1 × 6	45	1.5	11.7	4	0.95	7.37°	6.21	6.42	6.66	6.9	7.47	1	B
3132007	1 × 7	45	1.5	12.7	4	0.95	6.79°	7.24	7.49	7.76	8.05	8.71	1	B
3132008	1 × 8	45	1.5	13.7	4	0.95	6.29°	8.27	8.56	8.87	9.2	9.95	1	B
3132009	1 × 9	45	1.5	14.7	4	0.95	5.86°	9.31	9.63	9.98	10.35	11.19	1	B

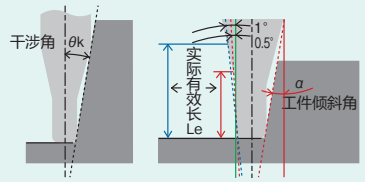
■标识说明请参阅P.6。

■See p.6 for explanation of marks.

B = 库存中心标准库存品 B = Inventory center stock item

NEXT 下一页

※1：相对于工件倾斜角α的实际有效长（Le）
Effective Neck length (Le) depending on Inclined Angle (α) of workpiece



上表中实际有效长栏里无数值时意味加工时不存在干涉。
No numerical value means no interference with workpiece.

FROM 接一页

单位 :mm　Unit:mm

商品号 EDP No.	外径 × 颈长 Dc × ℓ2	全长 L	刃长 ℓ	L2	柄径 Ds	颈径 D1	干涉角度 θk	■对于工件倾斜角α的实际有效长(Le) ※1					形状 Type	库存 Stock
								0.5°	1°	1.5°	2°	3°		
3132010	1 × 10	45	1.5	15.7	4	0.95	5.49°	10.34	10.7	11.09	11.5	12.44	1	B
3132012	1 × 12	45	1.5	17.7	4	0.95	4.87°	12.41	12.84	13.31	13.8	14.92	1	B
3132014	1 × 14	50	1.5	19.7	4	0.95	4.38°	14.48	14.98	15.52	16.1	17.41	1	B
3132016	1 × 16	50	1.5	21.7	4	0.95	3.97°	16.54	17.12	17.74	18.4	19.9	1	B
3132018	1 × 18	55	1.5	23.7	4	0.95	3.64°	18.61	19.26	19.96	20.7	22.38	1	B
3132020	1 × 20	55	1.5	25.7	4	0.95	3.35°	20.68	21.4	22.17	23	24.87	1	B
3132022	1 × 22	60	1.5	27.7	4	0.95	3.11°	22.75	23.54	24.39	25.3	27.36	1	B
3132025	1 × 25	60	1.5	30.7	4	0.95	2.81°	25.85	26.75	27.71	28.75	—	1	B
3132030	1 × 30	70	1.5	35.7	4	0.95	2.41°	31.02	32.1	33.25	34.5	—	1	B
3132204	1.2 × 4	45	1.8	9.4	4	1.15	8.54°	4.22	4.38	4.54	4.71	5.09	1	B
3132206	1.2 × 6	45	1.8	11.4	4	1.15	7.05°	6.3	6.52	6.76	7.01	7.58	1	B
3132208	1.2 × 8	45	1.8	13.4	4	1.15	6°	8.37	8.66	8.98	9.31	10.07	1	B
3132210	1.2 × 10	45	1.8	15.4	4	1.15	5.22°	10.44	10.8	11.19	11.61	12.55	1	B
3132212	1.2 × 12	45	1.8	17.4	4	1.15	4.62°	12.51	12.94	13.41	13.91	15.04	1	B
3132214	1.2 × 14	50	1.8	19.4	4	1.15	4.14°	14.57	15.08	15.63	16.21	17.53	1	B
3132216	1.2 × 16	50	1.8	21.4	4	1.15	3.76°	16.64	17.22	17.84	18.51	20.01	1	B
3132220	1.2 × 20	55	1.8	25.4	4	1.15	3.16°	20.77	21.5	22.28	23.11	24.99	1	B
3132406	1.4 × 6	45	2.1	11.1	4	1.35	6.77°	6.3	6.52	6.76	7.01	7.58	1	B
3132408	1.4 × 8	45	2.1	13.1	4	1.35	5.73°	8.37	8.66	8.98	9.31	10.07	1	B
3132410	1.4 × 10	45	2.1	15.1	4	1.35	4.97°	10.44	10.8	11.19	11.61	12.55	1	B
3132412	1.4 × 12	45	2.1	17.1	4	1.35	4.39°	12.51	12.94	13.41	13.91	15.04	1	B
3132414	1.4 × 14	50	2.1	19.1	4	1.35	3.92°	14.57	15.08	15.63	16.21	17.53	1	B
3132416	1.4 × 16	50	2.1	21.1	4	1.35	3.55°	16.64	17.22	17.84	18.51	20.01	1	B
3132422	1.4 × 22	60	2.1	27.1	4	1.35	2.76°	22.84	23.64	24.49	25.41	—	1	B
3132504	1.5 × 4	45	2.3	8.9	4	1.45	8.12°	4.22	4.38	4.54	4.71	5.09	1	B
3132506	1.5 × 6	45	2.3	10.9	4	1.45	6.62°	6.3	6.52	6.76	7.01	7.58	1	B
3132508	1.5 × 8	45	2.3	12.9	4	1.45	5.59°	8.37	8.66	8.98	9.31	10.07	1	B
3132510	1.5 × 10	45	2.3	14.9	4	1.45	4.84°	10.44	10.8	11.19	11.61	12.55	1	B
3132512	1.5 × 12	45	2.3	16.9	4	1.45	4.26°	12.51	12.94	13.41	13.91	15.04	1	B
3132514	1.5 × 14	50	2.3	18.9	4	1.45	3.81°	14.57	15.08	15.63	16.21	17.53	1	B
3132516	1.5 × 16	50	2.3	20.9	4	1.45	3.45°	16.64	17.22	17.84	18.51	20.01	1	B
3132518	1.5 × 18	55	2.3	22.9	4	1.45	3.14°	18.71	19.36	20.06	20.81	22.5	1	B
3132520	1.5 × 20	55	2.3	24.9	4	1.45	2.89°	20.77	21.5	22.28	23.11	—	1	B
3132525	1.5 × 25	60	2.3	29.9	4	1.45	2.4°	25.94	26.85	27.82	28.86	—	1	B
3132530	1.5 × 30	70	2.3	34.9	4	1.45	2.06°	31.11	32.2	33.36	34.61	—	1	B
3132538	1.5 × 38	80	2.3	42.9	4	1.45	1.67°	39.38	40.75	42.22	—	—	1	B
3132540	1.5 × 40	80	2.3	44.9	4	1.45	1.6°	41.45	42.89	44.44	—	—	1	B
3132545	1.5 × 45	80	2.3	49.9	4	1.45	1.44°	46.62	48.24	—	—	—	1	B
3132606	1.6 × 6	45	2.4	10.7	4	1.55	6.47°	6.3	6.52	6.76	7.01	7.58	1	B
3132608	1.6 × 8	45	2.4	12.7	4	1.55	5.45°	8.37	8.66	8.98	9.31	10.07	1	B

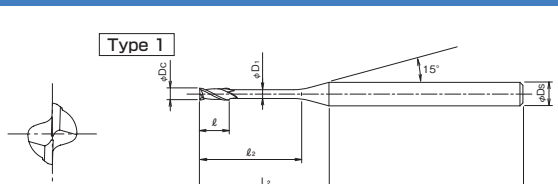
B = 库存中心标准库存品　B = Inventory center stock item

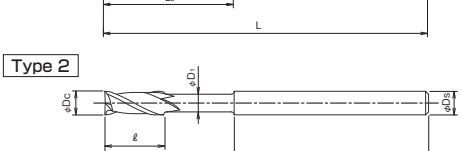
NEXT 下一页

WXL涂层2刃长颈短刃型(深细槽型)

WXL Coating Two Flute・Short・with Long Neck (for Rib processing)

WXL-LN-EDS NEW SIZES





接一页

CARBIDE WXL 0~−0.015 2<Dc SHRINK FIT 30° 切削条件

P.46

单位 :mm Unit:mm

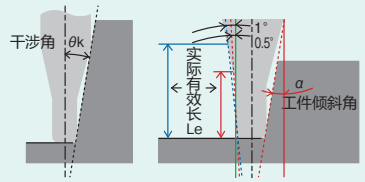
商品号 EDP No.	外径 × 颈长 Dc × ℓ2	全长 L	刃长 ℓ	L2	柄径 Ds	颈径 D1	干涉角度 θk	■对于工件倾斜角α的实际有效长(Le) ※1					形状 Type	库存 Stock
								0.5°	1°	1.5°	2°	3°		
3132610	1.6 × 10	45	2.4	14.7	4	1.55	4.71°	10.44	10.8	11.19	11.61	12.55	1	B
3132612	1.6 × 12	45	2.4	16.7	4	1.55	4.14°	12.51	12.94	13.41	13.91	15.04	1	B
3132614	1.6 × 14	50	2.4	18.7	4	1.55	3.7°	14.57	15.08	15.63	16.21	17.53	1	B
3132616	1.6 × 16	50	2.4	20.7	4	1.55	3.34°	16.64	17.22	17.84	18.51	20.01	1	B
3132618	1.6 × 18	55	2.4	22.7	4	1.55	3.04°	18.71	19.36	20.06	20.81	22.5	1	B
3132620	1.6 × 20	55	2.4	24.7	4	1.55	2.8°	20.77	21.5	22.28	23.11	—	1	B
3132806	1.8 × 6	45	2.7	10.6	4	1.75	5.96°	6.42	6.77	7.1	7.39	7.99	1	B
3132808	1.8 × 8	45	2.7	12.6	4	1.75	5.01°	8.53	8.96	9.34	9.69	10.48	1	B
3132810	1.8 × 10	45	2.7	14.6	4	1.75	4.33°	10.64	11.13	11.56	11.99	12.97	1	B
3132812	1.8 × 12	45	2.7	16.6	4	1.75	3.81°	12.74	13.29	13.78	14.29	15.45	1	B
3132814	1.8 × 14	50	2.7	18.6	4	1.75	3.4°	14.83	15.44	15.99	16.59	17.94	1	B
3132816	1.8 × 16	50	2.7	20.6	4	1.75	3.07°	16.92	17.58	18.21	18.89	20.43	1	B
3132818	1.8 × 18	55	2.7	22.6	4	1.75	2.79°	19.01	19.71	20.43	21.19	—	1	B
3132820	1.8 × 20	55	2.7	24.6	4	1.75	2.57°	21.09	21.85	22.64	23.49	—	1	B
3132825	1.8 × 25	60	2.7	29.6	4	1.75	2.13°	26.28	27.2	28.18	29.24	—	1	B
3133006	2 × 6	45	3	10.3	4	1.95	5.62°	6.42	6.77	7.1	7.39	7.99	1	B
3133008	2 × 8	45	3	12.3	4	1.95	4.7°	8.53	8.96	9.34	9.69	10.48	1	B
3133010	2 × 10	45	3	14.3	4	1.95	4.04°	10.64	11.13	11.56	11.99	12.97	1	B
3133012	2 × 12	45	3	16.3	4	1.95	3.54°	12.74	13.29	13.78	14.29	15.45	1	B
3133014	2 × 14	50	3	18.3	4	1.95	3.15°	14.83	15.44	15.99	16.59	17.94	1	B
3133016	2 × 16	50	3	20.3	4	1.95	2.84°	16.92	17.58	18.21	18.89	—	1	B
3133018	2 × 18	55	3	22.3	4	1.95	2.58°	19.01	19.71	20.43	21.19	—	1	B
3133020	2 × 20	55	3	24.3	4	1.95	2.37°	21.09	21.85	22.64	23.49	—	1	B
3133025	2 × 25	60	3	29.3	4	1.95	1.96°	26.28	27.2	28.18	—	—	1	B
3133030	2 × 30	70	3	34.3	4	1.95	1.68°	31.45	32.55	33.73	—	—	1	B
3133035	2 × 35	80	3	39.3	4	1.95	1.46°	36.62	37.9	—	—	—	1	B
3133040	2 × 40	90	3	44.3	4	1.95	1.3°	41.79	43.25	—	—	—	1	B
3133050	2 × 50	100	3	54.3	4	1.95	1.06°	52.13	53.94	—	—	—	1	B
3133060	2 × 60	110	3	64.3	4	1.95	0.89°	62.46	—	—	—	—	1	B
3133508	2.5 × 8	45	3.7	11.2	4	2.4	3.86°	8.47	8.87	9.22	9.57	10.35	1	B
3133510	2.5 × 10	45	3.7	13.2	4	2.4	3.27°	10.57	11.03	11.44	11.87	12.83	1	B
3133512	2.5 × 12	45	3.7	15.2	4	2.4	2.84°	12.66	13.18	13.66	14.17	—	1	B
3133514	2.5 × 14	50	3.7	17.2	4	2.4	2.51°	14.75	15.32	15.88	16.47	—	1	B
3133516	2.5 × 16	55	3.7	19.2	4	2.4	2.25°	16.83	17.46	18.09	18.77	—	1	B
3133518	2.5 × 18	55	3.7	21.2	4	2.4	2.03°	18.91	19.6	20.31	21.07	—	1	B
3133520	2.5 × 20	60	3.7	23.2	4	2.4	1.86°	20.99	21.74	22.52	—	—	1	B
3133525	2.5 × 25	70	3.7	28.2	4	2.4	1.53°	26.17	27.09	28.07	—	—	1	B
3133530	2.5 × 30	80	3.7	33.2	4	2.4	1.3°	31.34	32.44	—	—	—	1	B
3133540	2.5 × 40	90	3.7	43.2	4	2.4	1°	41.68	—	—	—	—	1	B
3133550	2.5 × 50	100	3.7	53.2	4	2.4	0.81°	52.02	—	—	—	—	1	B

■标识说明请参阅P.6。
■See p.6 for explanation of marks.

B = 库存中心标准库存品 B = Inventory center stock item

NEXT 下一页

※1：相对于工件倾斜角α的实际有效长（Le）
Effective Neck length (Le) depending on Inclined Angle (α) of workpiece



上表中实际有效长栏里无数值时意味加工时不存在干涉。
No numerical value means no interference with workpiece.

接一页

单位 :mm　Unit:mm

商品号 EDP No.	外径 × 颈长 Dc × ℓ2	全长 L	刃长 ℓ	L2	柄径 Ds	颈径 D1	干涉角度 θk	■对于工件倾斜角α的实际有效长(Le) ※1					形状 Type	库存 Stock
								0.5°	1°	1.5°	2°	3°		
3134008	3 × 8	45	4.5	13.9	6	2.85	6.19°	8.42	8.79	9.13	9.47	10.24	1	B
3134010	3 × 10	45	4.5	15.9	6	2.85	5.41°	10.51	10.95	11.35	11.77	12.73	1	B
3134012	3 × 12	45	4.5	17.9	6	2.85	4.81°	12.6	13.09	13.56	14.07	15.21	1	B
3134014	3 × 14	50	4.5	19.9	6	2.85	4.32°	14.68	15.23	15.78	16.37	17.7	1	B
3134016	3 × 16	55	4.5	21.9	6	2.85	3.93°	16.76	17.37	18	18.67	20.18	1	B
3134018	3 × 18	55	4.5	23.9	6	2.85	3.6°	18.84	19.51	20.21	20.97	22.67	1	B
3134020	3 × 20	60	4.5	25.9	6	2.85	3.32°	20.91	21.65	22.43	23.27	25.16	1	B
3134025	3 × 25	65	4.5	30.9	6	2.85	2.79°	26.09	27	27.97	29.02	—	1	B
3134030	3 × 30	80	4.5	35.9	6	2.85	2.4°	31.25	32.34	33.51	34.77	—	1	B
3134035	3 × 35	90	4.5	40.9	6	2.85	2.1°	36.42	37.69	39.05	40.52	—	1	B
3134040	3 × 40	90	4.5	45.9	6	2.85	1.87°	41.59	43.04	44.6	—	—	1	B
3134050	3 × 50	100	4.5	55.9	6	2.85	1.54°	51.93	53.74	55.68	—	—	1	B
3135012	4 × 12	50	6	16.1	6	3.85	3.58°	12.6	13.09	13.56	14.07	15.21	1	B
3135016	4 × 16	60	6	20.1	6	3.85	2.87°	16.76	17.37	18	18.67	—	1	B
3135020	4 × 20	60	6	24.1	6	3.85	2.39°	20.91	21.65	22.43	23.27	—	1	B
3135025	4 × 25	70	6	29.1	6	3.85	1.98°	26.09	27	27.97	—	—	1	B
3135030	4 × 30	80	6	34.1	6	3.85	1.69°	31.25	32.34	33.51	—	—	1	B
3135035	4 × 35	90	6	39.1	6	3.85	1.47°	36.42	37.69	—	—	—	1	B
3135040	4 × 40	90	6	44.1	6	3.85	1.3°	41.59	43.04	—	—	—	1	B
3135045	4 × 45	100	6	49.1	6	3.85	1.17°	46.76	48.39	—	—	—	1	B
3135050	4 × 50	100	6	54.1	6	3.85	1.06°	51.93	53.74	—	—	—	1	B
3135060	4 × 60	110	6	64.1	6	3.85	0.9°	62.26	—	—	—	—	1	B
3136016	5 × 16	60	7.5	18.2	6	4.85	1.58°	16.76	17.37	18	—	—	1	B
3136020	5 × 20	70	7.5	22.2	6	4.85	1.3°	20.91	21.65	—	—	—	1	B
3136025	5 × 25	70	7.5	27.2	6	4.85	1.06°	26.09	27	—	—	—	1	B
3136030	5 × 30	90	7.5	32.2	6	4.85	0.89°	31.25	—	—	—	—	1	B
3136035	5 × 35	90	7.5	37.2	6	4.85	0.77°	36.42	—	—	—	—	1	B
3136040	5 × 40	100	7.5	42.2	6	4.85	0.68°	41.59	—	—	—	—	1	B
3136050	5 × 50	110	7.5	52.2	6	4.85	0.55°	51.93	—	—	—	—	1	B
3136060	5 × 60	120	7.5	62.2	6	4.85	0.46°	—	—	—	—	—	1	B
※ 3137020	6 × 20	80	9	—	6	5.85	—	—	—	—	—	—	2	B
※ 3137030	6 × 30	90	9	—	6	5.85	—	—	—	—	—	—	2	B
※ 3137040	6 × 40	100	9	—	6	5.85	—	—	—	—	—	—	2	B
※ 3137050	6 × 50	110	9	—	6	5.85	—	—	—	—	—	—	2	B
※ 3137060	6 × 60	120	9	—	6	5.85	—	—	—	—	—	—	2	B
※ 3138040	8 × 40	110	12	—	8	5.85	—	—	—	—	—	—	2	B
※ 3139050	10 × 50	125	15	—	10	9.85	—	—	—	—	—	—	2	B
※ 3140060	12 × 60	140	18	—	12	11.9	—	—	—	—	—	—	2	B

※= NEW SIZES

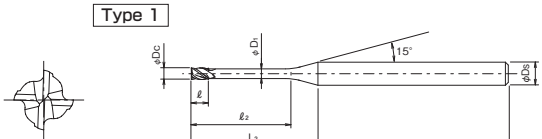
B = 库存中心标准库存品　B = Inventory center stock item

WXL涂层2刃长颈短刃型(深细槽型)

WXL Coating Four Flute・Short・with Long Neck (for Rib processing)

WXL-LN-EMS NEW SIZES

Type 1



Type 2

CARBIDE WXL SHRINK FIT 35° 切削条件

0~−0.015 P.51

单位 :mm Unit:mm

商品号 EDP No.	外径 × 颈长 Dc × ℓ2	全长 L	刃长 ℓ	L2	柄径 Ds	颈径 D1	干涉角度 θk	■相对于工件倾斜角α的实际有效长(Le) ※1 0.5°	1°	1.5°	2°	3°	形状 Type	库存 Stock
3172004	1 × 4	45	1.5	9.7	4	0.95	8.88°	4.14	4.28	4.44	4.61	4.98	1	B
3172006	1 × 6	45	1.5	11.7	4	0.95	7.37°	6.21	6.42	6.66	6.9	7.47	1	B
3172008	1 × 8	45	1.5	13.7	4	0.95	6.29°	8.27	8.56	8.87	9.2	9.95	1	B
3172010	1 × 10	45	1.5	15.7	4	0.95	5.49°	10.34	10.7	11.09	11.5	12.44	1	B
3172012	1 × 12	45	1.5	17.7	4	0.95	4.87°	12.41	12.84	13.31	13.8	14.92	1	B
3172016	1 × 16	50	1.5	21.7	4	0.95	3.97°	16.54	17.12	17.74	18.4	19.9	1	B
3172206	1.2 × 6	45	1.8	11.4	4	1.15	7.05°	6.3	6.52	6.76	7.01	7.58	1	B
3172208	1.2 × 8	45	1.8	13.4	4	1.15	6°	8.37	8.66	8.98	9.31	10.07	1	B
3172210	1.2 × 10	45	1.8	15.4	4	1.15	5.22°	10.44	10.8	11.19	11.61	12.55	1	B
3172212	1.2 × 12	45	1.8	17.4	4	1.15	4.62°	12.51	12.94	13.41	13.91	15.04	1	B
3172216	1.2 × 16	50	1.8	21.4	4	1.15	3.76°	16.64	17.22	17.84	18.51	20.01	1	B
3172406	1.4 × 6	45	2.1	11.1	4	1.35	6.77°	6.3	6.52	6.76	7.01	7.58	1	B
3172408	1.4 × 8	45	2.1	13.1	4	1.35	5.73°	8.37	8.66	8.98	9.31	10.07	1	B
3172410	1.4 × 10	45	2.1	15.1	4	1.35	4.97°	10.44	10.8	11.19	11.61	12.55	1	B
3172412	1.4 × 12	45	2.1	17.1	4	1.35	4.39°	12.51	12.94	13.41	13.91	15.04	1	B
3172414	1.4 × 14	50	2.1	19.1	4	1.35	3.92°	14.57	15.08	15.63	16.21	17.53	1	B
3172416	1.4 × 16	50	2.1	21.1	4	1.35	3.55°	16.64	17.22	17.84	18.51	20.01	1	B
3172422	1.4 × 22	60	2.1	27.1	4	1.35	2.76°	22.84	23.64	24.49	25.41	—	1	B
3172506	1.5 × 6	45	2.3	10.9	4	1.45	6.62°	6.3	6.52	6.76	7.01	7.58	1	B
3172508	1.5 × 8	45	2.3	12.9	4	1.45	5.59°	8.37	8.66	8.98	9.31	10.07	1	B
3172510	1.5 × 10	45	2.3	14.9	4	1.45	4.84°	10.44	10.8	11.19	11.61	12.55	1	B
3172512	1.5 × 12	45	2.3	16.9	4	1.45	4.26°	12.51	12.94	13.41	13.91	15.04	1	B
3172514	1.5 × 14	50	2.3	18.9	4	1.45	3.81°	14.57	15.08	15.63	16.21	17.53	1	B
3172516	1.5 × 16	50	2.3	20.9	4	1.45	3.45°	16.64	17.22	17.84	18.51	20.01	1	B
3172518	1.5 × 18	55	2.3	22.9	4	1.45	3.14°	18.71	19.36	20.06	20.81	22.5	1	B
3172520	1.5 × 20	55	2.3	24.9	4	1.45	2.89°	20.77	21.5	22.28	23.11	—	1	B
3172606	1.6 × 6	45	2.4	10.7	4	1.55	6.47°	6.3	6.52	6.76	7.01	7.58	1	B
3172608	1.6 × 8	45	2.4	12.7	4	1.55	5.45°	8.37	8.66	8.98	9.31	10.07	1	B
3172610	1.6 × 10	45	2.4	14.7	4	1.55	4.71°	10.44	10.8	11.19	11.61	12.55	1	B
3172612	1.6 × 12	45	2.4	16.7	4	1.55	4.14°	12.51	12.94	13.41	13.91	15.04	1	B
3172614	1.6 × 14	50	2.4	18.7	4	1.55	3.7°	14.57	15.08	15.63	16.21	17.53	1	B
3172616	1.6 × 16	50	2.4	20.7	4	1.55	3.34°	16.64	17.22	17.84	18.51	20.01	1	B

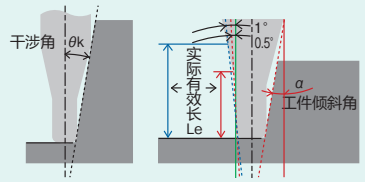
■标识说明请参阅P.6。

■See p.6 for explanation of marks.

B = 库存中心标准库存品 B = Inventory center stock item

NEXT 下一页

※1：相对于工件倾斜角α的实际有效长（Le）
Effective Neck length (Le) depending on Inclined Angle (α) of workpiece



上表中实际有效长栏里无数值时意味加工时不存在干涉。
No numerical value means no interference with workpiece.

FROM 接一页

单位 :mm　Unit:mm

商品号 EDP No.	外径 × 颈长 Dc × ℓ2	全长 L	刃长 ℓ	L2	柄径 Ds	颈径 D1	干涉角度 θk	■相对于工件倾斜角α的实际有效长(Le) ※1					形状 Type	库存 Stock
								0.5°	1°	1.5°	2°	3°		
3172618	1.6 × 18	55	2.4	22.7	4	1.55	3.04°	18.71	19.36	20.06	20.81	22.5	1	B
3172620	1.6 × 20	55	2.4	24.7	4	1.55	2.8°	20.77	21.5	22.28	23.11	—	1	B
3172625	1.6 × 25	60	2.4	29.7	4	1.55	2.32°	25.94	26.85	27.82	28.86	—	1	B
3172806	1.8 × 6	45	2.7	10.6	4	1.75	5.96°	6.42	6.77	7.1	7.39	7.99	1	B
3172808	1.8 × 8	45	2.7	12.6	4	1.75	5.01°	8.53	8.96	9.34	9.69	10.48	1	B
3172810	1.8 × 10	45	2.7	14.6	4	1.75	4.33°	10.64	11.13	11.56	11.99	12.97	1	B
3172812	1.8 × 12	45	2.7	16.6	4	1.75	3.81°	12.74	13.29	13.78	14.29	15.45	1	B
3172814	1.8 × 14	50	2.7	18.6	4	1.75	3.4°	14.83	15.44	15.99	16.59	17.94	1	B
3172816	1.8 × 16	50	2.7	20.6	4	1.75	3.07°	16.92	17.58	18.21	18.89	20.43	1	B
3172818	1.8 × 18	55	2.7	22.6	4	1.75	2.79°	19.01	19.71	20.43	21.19	—	1	B
3172820	1.8 × 20	55	2.7	24.6	4	1.75	2.57°	21.09	21.85	22.64	23.49	—	1	B
3172825	1.8 × 25	60	2.7	29.6	4	1.75	2.13°	26.28	27.2	28.18	29.24	—	1	B
3173006	2 × 6	45	3	10.3	4	1.95	5.62°	6.42	6.77	7.1	7.39	7.99	1	B
3173008	2 × 8	45	3	12.3	4	1.95	4.7°	8.53	8.96	9.34	9.69	10.48	1	B
3173010	2 × 10	45	3	14.3	4	1.95	4.04°	10.64	11.13	11.56	11.99	12.97	1	B
3173012	2 × 12	45	3	16.3	4	1.95	3.54°	12.74	13.29	13.78	14.29	15.45	1	B
3173014	2 × 14	50	3	18.3	4	1.95	3.15°	14.83	15.44	15.99	16.59	17.94	1	B
3173016	2 × 16	50	3	20.3	4	1.95	2.84°	16.92	17.58	18.21	18.89	—	1	B
3173018	2 × 18	55	3	22.3	4	1.95	2.58°	19.01	19.71	20.43	21.19	—	1	B
3173020	2 × 20	55	3	24.3	4	1.95	2.37°	21.09	21.85	22.64	23.49	—	1	B
3173025	2 × 25	60	3	29.3	4	1.95	1.96°	26.28	27.2	28.18	—	—	1	B
3173030	2 × 30	70	3	34.3	4	1.95	1.68°	31.45	32.55	33.73	—	—	1	B
3173508	2.5 × 8	45	3.7	11.2	4	2.4	3.86°	8.47	8.87	9.22	9.57	10.35	1	B
3173512	2.5 × 12	45	3.7	15.2	4	2.4	2.84°	12.66	13.18	13.66	14.17	—	1	B
3173516	2.5 × 16	55	3.7	19.2	4	2.4	2.25°	16.83	17.46	18.09	18.77	—	1	B
3173520	2.5 × 20	60	3.7	23.2	4	2.4	1.86°	20.99	21.74	22.52	—	—	1	B
3173525	2.5 × 25	70	3.7	28.2	4	2.4	1.53°	26.17	27.09	28.07	—	—	1	B
3174008	3 × 8	45	4.5	13.9	6	2.85	6.19°	8.42	8.79	9.13	9.47	10.24	1	B
3174012	3 × 12	45	4.5	17.9	6	2.85	4.81°	12.6	13.09	13.56	14.07	15.21	1	B
3174016	3 × 16	55	4.5	21.9	6	2.85	3.93°	16.76	17.37	18	18.67	20.18	1	B
3174020	3 × 20	60	4.5	25.9	6	2.85	3.32°	20.91	21.65	22.43	23.27	25.16	1	B
3174025	3 × 25	65	4.5	30.9	6	2.85	2.79°	26.09	27	27.97	29.02	—	1	B
3174030	3 × 30	80	4.5	35.9	6	2.85	2.4°	31.25	32.34	33.51	34.77	—	1	B

B = 库存中心标准库存品　B = Inventory center stock item

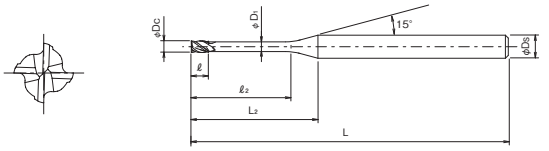
NEXT 下一页

WXL涂层4刃长颈短刃型(深细槽型)

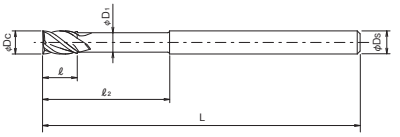
WXL Coating Four Flute・Short・with Long Neck (for Rib processing)

WXL-LN-EMS NEW SIZES

Type 1



Type 2



接一页

CARBIDE WXL SHRINK FIT 35° 切削条件

0~-0.015 P.51

单位 :mm Unit:mm

商品号 EDP No.	外径×颈长 Dc × ℓ2	全长 L	刃长 ℓ	L2	柄径 Ds	颈径 D1	干涉角度 θk	■相对于工件倾斜角α的实际有效长(Le) ※1 0.5°	1°	1.5°	2°	3°	形状 Type	库存 Stock
※ 3175012	4 × 12	50	6	16.1	6	3.85	3.58°	12.6	13.09	13.56	14.07	15.21	1	B
※ 3175016	4 × 16	60	6	20.1	6	3.85	2.86°	16.76	17.37	17.99	18.67	—	1	B
※ 3175020	4 × 20	60	6	24.1	6	3.85	2.39°	20.91	21.64	22.43	23.27	—	1	B
※ 3175025	4 × 25	70	6	29.1	6	3.85	1.97°	26.08	26.99	27.97	—	—	1	B
※ 3175030	4 × 30	80	6	34.1	6	3.85	1.68°	31.25	32.34	33.51	—	—	1	B
※ 3175035	4 × 35	90	6	39.1	6	3.85	1.47°	36.42	37.69	—	—	—	1	B
※ 3175040	4 × 40	90	6	44.1	6	3.85	1.30°	41.59	43.04	—	—	—	1	B
※ 3175045	4 × 45	100	6	49.1	6	3.85	1.17°	46.76	48.39	—	—	—	1	B
※ 3175050	4 × 50	100	6	54.1	6	3.85	1.06°	51.93	53.74	—	—	—	1	B
※ 3176016	5 × 16	60	7.5	18.2	6	4.85	1.58°	16.76	17.37	17.99	—	—	1	B
※ 3176025	5 × 25	70	7.5	27.2	6	4.85	1.06°	26.08	26.99	—	—	—	1	B
※ 3176035	5 × 35	90	7.5	37.2	6	4.85	0.77°	36.42	—	—	—	—	1	B
※ 3176050	5 × 50	110	7.5	52.2	6	4.85	0.55°	51.93	—	—	—	—	1	B
※ 3177020	6 × 20	80	9	—	6	5.85	—	—	—	—	—	—	2	B
※ 3177030	6 × 30	90	9	—	6	5.85	—	—	—	—	—	—	2	B
※ 3177040	6 × 40	100	9	—	6	5.85	—	—	—	—	—	—	2	B
※ 3177050	6 × 50	110	9	—	6	5.85	—	—	—	—	—	—	2	B
※ 3179030	8 × 30	100	12	—	8	7.85	—	—	—	—	—	—	2	B
※ 3179050	8 × 50	120	12	—	8	7.85	—	—	—	—	—	—	2	B
※ 3179060	8 × 60	130	12	—	8	7.85	—	—	—	—	—	—	2	B
※ 3181040	10 × 40	110	15	—	10	9.85	—	—	—	—	—	—	2	B
※ 3181060	10 × 60	130	15	—	10	9.85	—	—	—	—	—	—	2	B
※ 3181080	10 × 80	150	15	—	10	9.85	—	—	—	—	—	—	2	B

■标识说明请参阅P.6。

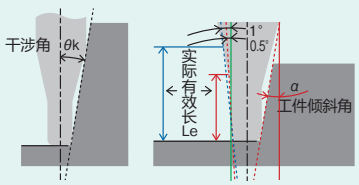
■See p.6 for explanation of marks.

※=NEW SIZES

B=库存中心标准库存品 B=Inventory center stock item

※1:相对于工件倾斜角α的实际有效长(Le)

Effective Neck length (Le) depending on Inclined Angle (α) of workpiece



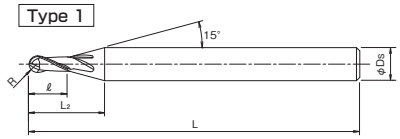
上表中实际有效长栏里无数值时意味加工时不存在干涉。

No numerical value means no interference with workpiece.

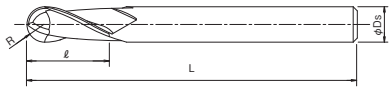
WXL涂层2刃球头型
WXL Coating Two Flute Ball Nose

WXL-EBD NEW SIZES

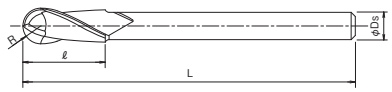
Type 1



Type 2



Type 3



CARBIDE | WXL | R ±0.005 R<3 | R 0.003~-0.007 3≦R≦6 | R ±0.01 6<R | SHRINK FIT | 30° | 切削条件 P.54

单位 :mm Unit:mm

商品号 EDP No.	球半径 × 刃长 × 柄径 R × ℓ × Ds	全长 L	刃长 ℓ	L₂	柄径 Ds	形状 Type	库存 Stock
3105010	R 0.05 × 0.2 × 4	40	0.2	6.5	4	1	A
3105020	R 0.1 × 0.4 × 4	40	0.4	6.5	4	1	A
3105030	R 0.15 × 0.6 × 4	40	0.6	6.7	4	1	A
3106030	R 0.15 × 0.6 × 6	50	0.6	10.4	6	1	D
3105040	R 0.2 × 0.8 × 4	40	0.8	7.2	4	1	A
3106040	R 0.2 × 0.8 × 6	50	0.8	10.7	6	1	D
3105050	R 0.25 × 1.1 × 4	40	1.1	7.1	4	1	A
3106050	R 0.25 × 1.1 × 6	50	1.1	10.8	6	1	D
3105060	R 0.3 × 1.1 × 4	40	1.1	6.9	4	1	A
3106060	R 0.3 × 1.1 × 6	50	1.1	10.6	6	1	D
※ 3106710	R 0.35 × 1.5 × 4	40	1.5	8.2	4	1	D
3105080	R 0.4 × 2 × 4	40	2	7.4	4	1	A
3106080	R 0.4 × 2 × 6	50	2	11.1	6	1	D
※ 3106720	R 0.45 × 2.2 × 4	50	2.2	8.5	4	1	D
3105100	R 0.5 × 1.5 × 4	50	1.5	6.7	4	1	A
3105101	R 0.5 × 2.5 × 4	50	2.5	7.7	4	1	D
3106100	R 0.5 × 2.5 × 6	60	2.5	11.5	6	1	A
※ 3106730	R 0.55 × 2.7 × 4	50	2.7	8.9	4	1	D
3105120	R 0.6 × 3 × 4	50	3	7.9	4	1	A
※ 3106740	R 0.65 × 3.2 × 4	50	3.2	9.1	4	1	D
3105140	R 0.7 × 3.5 × 4	50	3.5	8.1	4	1	D
3105150	R 0.75 × 2 × 4	50	2	6.4	4	1	D
3105151	R 0.75 × 4 × 4	50	4	8.4	4	1	A
3106150	R 0.75 × 4 × 6	50	4	12.1	6	1	D
3105160	R 0.8 × 4 × 4	50	4	8.2	4	1	D
※ 3106750	R 0.85 × 4.2 × 4	50	4.2	9.3	4	1	D
※ 3106760	R 0.9 × 4.5 × 4	50	4.5	9.4	4	1	D
※ 3106770	R 0.95 × 4.7 × 4	50	4.7	9.4	4	1	D
3105200	R 1 × 3 × 4	50	3	7.1	4	1	A
3106200	R 1 × 5 × 6	50	5	12.8	6	1	A
3105201	R 1 × 6 × 4	50	6	10.1	4	1	D
※ 3106780	R 1.05 × 4.8 × 6	50	4.8	13.5	6	1	D
※ 3106790	R 1.1 × 4.9 × 6	50	4.9	13.4	6	1	D
※ 3106800	R 1.15 × 5 × 6	50	5	13.3	6	1	D
※ 3106810	R 1.2 × 5.1 × 6	50	5.1	13.2	6	1	D
3105250	R 1.25 × 3 × 4	50	3	6.1	4	1	A
3105251	R 1.25 × 6 × 4	50	6	9.1	4	1	D
3106250	R 1.25 × 6 × 6	60	6	12.9	6	1	A
※ 3106820	R 1.3 × 5.2 × 6	50	5.2	13.5	6	1	D
※ 3106830	R 1.35 × 5.4 × 6	50	5.4	13.5	6	1	D
※ 3106840	R 1.4 × 5.6 × 6	60	5.6	13.5	6	1	D
※ 3106850	R 1.45 × 5.8 × 6	60	5.8	13.5	6	1	D
3105300	R 1.5 × 4.5 × 4	60	4.5	7.9	4	1	A
3106300	R 1.5 × 4.5 × 6	60	4.5	11.6	6	1	D
3106301	R 1.5 × 8 × 6	60	8	15.1	6	1	D

■标识说明请参阅P.6。
■See p.6 for explanation of marks.
※= NEW SIZES

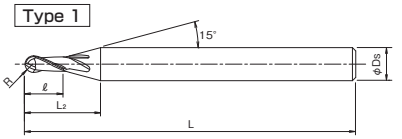
A = 标准库存品 A = Standard stock item
D = 库存中心标准库存品 D = Inventory center stock item

NEXT 下一页

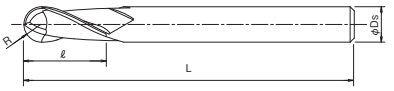
WXL涂层2刃球头型
WXL Coating Two Flute Ball Nose

WXL-EBD NEW SIZES

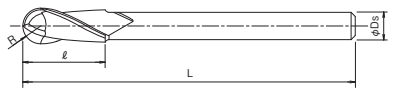
Type 1



Type 2



Type 3



接一页

CARBIDE WXL R ±0.005 R<3 | R 0.003~-0.007 3≦R≦6 | R ±0.01 6<R | SHRINK FIT | 30° | 切削条件 P.54

单位 :mm Unit:mm

商品号 EDP No.	球半径 × 刃长 × 柄径 R × ℓ × Ds	全长 L	刃长 ℓ	L₂	柄径 Ds	形状 Type	库存 Stock
3106350	R 1.75 × 8 × 6	70	8	14.2	6	1	D
3106400	R 2 × 6 × 6	70	6	11.2	6	1	A
3105400	R 2 × 8 × 4	60	8	–	4	2	D
3106401	R 2 × 8 × 6	70	8	13.2	6	1	D
※ 3106860	R 2.25 × 8 × 6	80	8	13.6	6	1	D
3106500	R 2.5 × 8	80	8	11.4	6	1	A
3106501	R 2.5 × 10	80	10	13.4	6	1	D
3106502	R 2.5 × 12	80	12	15.4	6	1	D
※ 3106870	R 2.75 × 10	80	10	13.7	6	1	D
3106600	R 3 × 10	90	10	–	6	2	D
3106601	R 3 × 12	90	12	–	6	2	A
※ 3106880	R 3.25 × 13	90	13	–	6	3	D
3106610	R 3.5 × 14	90	14	–	6	3	D
※ 3106890	R 3.75 × 14	90	14	–	6	3	D
3106620	R 4 × 12	100	12	–	8	2	D
3106621	R 4 × 14	100	14	–	8	2	A
※ 3106900	R 4.25 × 16	100	16	–	8	3	D
3106630	R 4.5 × 18	100	18	–	8	3	D
※ 3106910	R 4.75 × 18	100	18	–	8	3	D
3106640	R 5 × 15	100	15	–	10	2	D
3106641	R 5 × 18	100	18	–	10	2	A
3106650	R 5.5 × 22	100	22	–	10	3	D
3106660	R 6 × 18	110	18	–	12	2	D
3106661	R 6 × 22	110	22	–	12	2	A
※ 3106920	R 6.5 × 24	110	24	–	12	3	D
3106670	R 7 × 26	110	26	–	12	3	A
※ 3106930	R 7.5 × 28	110	28	–	12	3	D
3106680	R 8 × 30	140	30	–	16	2	A
3106690	R 9 × 34	140	34	–	16	3	D
3106700	R 10 × 38	160	38	–	20	2	A

■标识说明请参阅P.6。
■See p.6 for explanation of marks.
※= NEW SIZES

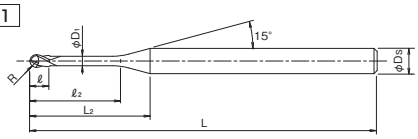
A = 标准库存品 A = Standard stock item
D = 库存中心标准库存品 D = Inventory center stock item

WXL涂层2刃长颈球头型(深细槽球头型)

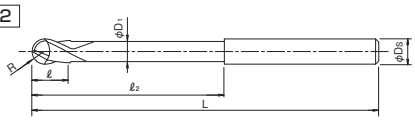
WXL Coating Two Flute Ball Nose · with Long Neck (for Rib processing)

WXL-LN-EBD

Type 1



Type 2



CARBIDE WXL R ±0.005 SHRINK FIT 30° 切削条件

P.56

单位 :mm Unit:mm

商品号 EDP No.	球半径×颈长×柄径 R × ℓ2 × Ds	全长 L	刃长 ℓ	L2	柄径 Ds	颈径 D1	干涉角度 θk	■相对于工件倾斜角α的实际有效长(Le) ※1 0.5°	1°	1.5°	2°	3°	形状 Type	库存 Stock
3110103	R0.05× 0.3 ×4	45	0.08	7.5	4	0.085	14.46°	0.34	0.35	0.36	0.37	0.4	1	A
3110105	R0.05× 0.5 ×4	45	0.08	7.7	4	0.085	14.1°	0.54	0.56	0.58	0.6	0.64	1	A
3110203	R0.1 × 0.3 ×4	45	0.16	7.3	4	0.18	14.59°	0.3	0.31	0.32	0.33	0.35	1	A
3110205	R0.1 × 0.5 ×4	45	0.16	7.5	4	0.18	14.44°	0.53	0.55	0.57	0.59	0.63	1	A
3120205	R0.1 × 0.5 ×6	50	0.16	11.3	6	0.18	14.16°	0.53	0.55	0.57	0.59	0.63	1	D
3110207	R0.1 × 0.75 ×4	45	0.16	7.8	4	0.18	13.72°	0.79	0.82	0.85	0.88	0.94	1	D
3110210	R0.1 × 1 ×4	45	0.16	8	4	0.18	13.31°	1.05	1.09	1.13	1.17	1.26	1	A
3120210	R0.1 × 1 ×6	50	0.16	11.8	6	0.18	13.85°	1.05	1.09	1.13	1.17	1.26	1	D
3110212	R0.1 × 1.25 ×4	45	0.16	8.3	4	0.18	12.92°	1.31	1.36	1.41	1.46	1.57	1	D
3110215	R0.1 × 1.5 ×4	45	0.16	8.5	4	0.18	12.56°	1.57	1.63	1.68	1.74	1.88	1	A
3120215	R0.1 × 1.5 ×6	50	0.16	12.3	6	0.18	13.3°	1.57	1.63	1.68	1.74	1.88	1	D
3110217	R0.1 × 1.75 ×4	45	0.16	8.8	4	0.18	12.21°	1.83	1.9	1.96	2.03	2.19	1	D
3110220	R0.1 × 2 ×4	45	0.16	9	4	0.18	11.88°	2.09	2.16	2.24	2.32	2.5	1	A
3120220	R0.1 × 2 ×6	50	0.16	12.8	6	0.18	12.8°	2.09	2.16	2.24	2.32	2.5	1	D
3110225	R0.1 × 2.5 ×4	45	0.16	9.5	4	0.18	11.28°	2.61	2.7	2.79	2.89	3.12	1	D
3110230	R0.1 × 3 ×4	45	0.16	10	4	0.18	10.73°	3.13	3.23	3.35	3.47	3.74	1	D
3110305	R0.15× 0.5 ×4	45	0.24	7.3	4	0.28	14.22°	0.52	0.54	0.56	0.58	0.62	1	D
3110306	R0.15× 0.6 ×4	45	0.24	7.4	4	0.28	14.03°	0.63	0.65	0.68	0.7	0.75	1	A
3110307	R0.15× 0.75 ×4	45	0.24	7.6	4	0.28	13.77°	0.79	0.82	0.85	0.87	0.93	1	D
3110310	R0.15× 1 ×4	45	0.24	7.8	4	0.28	13.34°	1.05	1.09	1.12	1.16	1.24	1	A
3120310	R0.15× 1 ×6	50	0.24	11.6	6	0.28	13.88°	1.05	1.09	1.12	1.16	1.24	1	D
3110312	R0.15× 1.25 ×4	45	0.24	8.1	4	0.28	12.94°	1.31	1.36	1.4	1.45	1.55	1	D
3110315	R0.15× 1.5 ×4	45	0.24	8.3	4	0.28	12.57°	1.57	1.63	1.68	1.74	1.87	1	A
3120315	R0.15× 1.5 ×6	50	0.24	12.1	6	0.28	13.33°	1.57	1.63	1.68	1.74	1.87	1	D
3110317	R0.15× 1.75 ×4	45	0.24	8.6	4	0.28	12.21°	1.83	1.89	1.96	2.02	2.18	1	D
3110320	R0.15× 2 ×4	45	0.24	8.8	4	0.28	11.87°	2.09	2.16	2.23	2.31	2.49	1	A
3120320	R0.15× 2 ×6	50	0.24	12.6	6	0.28	12.81°	2.09	2.16	2.23	2.31	2.49	1	D
3110322	R0.15× 2.25 ×4	45	0.24	9.1	4	0.28	11.56°	2.35	2.43	2.51	2.6	2.8	1	D
3110325	R0.15× 2.5 ×4	45	0.24	9.3	4	0.28	11.25°	2.61	2.69	2.79	2.89	3.11	1	A
3120325	R0.15× 2.5 ×6	50	0.24	13.1	6	0.28	12.34°	2.61	2.69	2.79	2.89	3.11	1	D
3110327	R0.15× 2.75 ×4	45	0.24	9.6	4	0.28	10.97°	2.87	2.96	3.06	3.17	3.42	1	D
3110330	R0.15× 3 ×4	45	0.24	9.8	4	0.28	10.69°	3.13	3.23	3.34	3.46	3.73	1	A
3120330	R0.15× 3 ×6	50	0.24	13.6	6	0.28	11.89°	3.13	3.23	3.34	3.46	3.73	1	D
3110335	R0.15× 3.5 ×4	45	0.24	10.3	4	0.28	10.19°	3.64	3.76	3.9	4.04	4.35	1	D
3110340	R0.15× 4 ×4	45	0.24	10.8	4	0.28	9.72°	4.16	4.3	4.45	4.61	4.97	1	D
3110345	R0.15× 4.5 ×4	45	0.24	11.3	4	0.28	9.3°	4.68	4.83	5	5.19	5.59	1	D
3110350	R0.15× 5 ×4	45	0.24	11.8	4	0.28	8.91°	5.19	5.37	5.56	5.76	6.22	1	A
3110405	R0.2 × 0.5 ×4	45	0.3	7.1	4	0.37	14.3°	0.52	0.53	0.55	0.56	0.6	1	A
3110407	R0.2 × 0.75 ×4	45	0.3	7.4	4	0.37	13.83°	0.78	0.8	0.83	0.85	0.91	1	D
3110410	R0.2 × 1 ×4	45	0.3	7.6	4	0.37	13.39°	1.04	1.07	1.11	1.14	1.22	1	A
3120410	R0.2 × 1 ×6	50	0.3	11.4	6	0.37	13.93°	1.04	1.07	1.11	1.14	1.22	1	D
3110415	R0.2 × 1.5 ×4	45	0.3	8.1	4	0.37	12.59°	1.56	1.61	1.66	1.72	1.84	1	A
3120415	R0.2 × 1.5 ×6	50	0.3	11.9	6	0.37	13.36°	1.56	1.61	1.66	1.72	1.84	1	D
3110420	R0.2 × 2 ×4	45	0.3	8.6	4	0.37	11.88°	2.08	2.14	2.21	2.29	2.46	1	A
3120420	R0.2 × 2 ×6	50	0.3	12.4	6	0.37	12.83°	2.08	2.14	2.21	2.29	2.46	1	D
3110425	R0.2 × 2.5 ×4	45	0.3	9.1	4	0.37	11.24°	2.6	2.68	2.77	2.87	3.08	1	A
3120425	R0.2 × 2.5 ×6	50	0.3	12.9	6	0.37	12.35°	2.6	2.68	2.77	2.87	3.08	1	D

■标识说明请参阅P.6。

■See p.6 for explanation of marks.

A = 标准库存品 A = Standard stock item

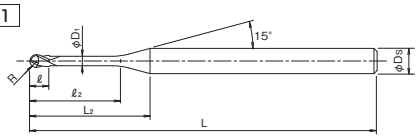
D = 库存中心标准库存品 D = Inventory center stock item

NEXT 下一页

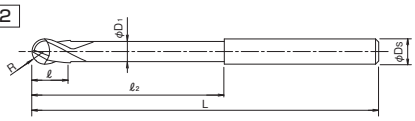
WXL涂层2刃长颈球头型（深细槽球头型）
WXL Coating Two Flute Ball Nose · with Long Neck (for Rib processing)

WXL-LN-EBD

Type 1



Type 2



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CARBIDE WXL R ±0.005 SHRINK FIT 30° 切削条件 P.56

单位 :mm Unit:mm

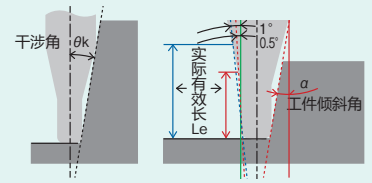
商品号 EDP No.	球半径×颈长×柄径 R × ℓ2 × Ds	全长 L	刃长 ℓ	L2	柄径 Ds	颈径 D1	干涉角度 θk	■相对于工件倾斜角α的实际有效长(Le) ※1 0.5°	1°	1.5°	2°	3°	形状 Type	库存 Stock
3110430	R0.2 × 3 ×4	45	0.3	9.6	4	0.37	10.67°	3.11	3.21	3.32	3.44	3.7	1	A
3120430	R0.2 × 3 ×6	50	0.3	13.4	6	0.37	11.9°	3.11	3.21	3.32	3.44	3.7	1	D
3110435	R0.2 × 3.5 ×4	45	0.3	10.1	4	0.37	10.15°	3.63	3.75	3.88	4.02	4.33	1	D
3110440	R0.2 × 4 ×4	45	0.3	10.6	4	0.37	9.68°	4.15	4.28	4.43	4.59	4.95	1	A
3120440	R0.2 × 4 ×6	50	0.3	14.4	6	0.37	11.09°	4.15	4.28	4.43	4.59	4.95	1	D
3110445	R0.2 × 4.5 ×4	45	0.3	11.1	4	0.37	9.25°	4.66	4.82	4.99	5.17	5.57	1	D
3110450	R0.2 × 5 ×4	45	0.3	11.6	4	0.37	8.86°	5.18	5.35	5.54	5.74	6.19	1	A
3120450	R0.2 × 5 ×6	50	0.3	15.4	6	0.37	10.38°	5.18	5.35	5.54	5.74	6.19	1	D
3110455	R0.2 × 5.5 ×4	45	0.3	12.1	4	0.37	8.5°	5.7	5.89	6.09	6.32	6.81	1	D
3110460	R0.2 × 6 ×4	45	0.3	12.6	4	0.37	8.16°	6.21	6.42	6.65	6.89	7.43	1	A
3120460	R0.2 × 6 ×6	50	0.3	16.4	6	0.37	9.76°	6.21	6.42	6.65	6.89	7.43	1	D
3110510	R0.25 × 1 ×4	45	0.4	7.6	4	0.45	13.45°	1.03	1.06	1.09	1.12	1.19	1	A
3110515	R0.25 × 1.5 ×4	45	0.4	8.1	4	0.45	12.62°	1.55	1.59	1.64	1.69	1.81	1	A
3120515	R0.25 × 1.5 ×6	50	0.4	11.9	6	0.45	13.4°	1.55	1.59	1.64	1.69	1.81	1	D
3110520	R0.25 × 2 ×4	45	0.4	8.6	4	0.45	11.89°	2.06	2.13	2.2	2.27	2.43	1	A
3120520	R0.25 × 2 ×6	50	0.4	12.4	6	0.45	12.86°	2.06	2.13	2.2	2.27	2.43	1	D
3110525	R0.25 × 2.5 ×4	45	0.4	9.1	4	0.45	11.23°	2.58	2.66	2.75	2.84	3.05	1	A
3120525	R0.25 × 2.5 ×6	50	0.4	12.9	6	0.45	12.36°	2.58	2.66	2.75	2.84	3.05	1	D
3110530	R0.25 × 3 ×4	45	0.4	9.6	4	0.45	10.65°	3.1	3.2	3.3	3.42	3.68	1	A
3120530	R0.25 × 3 ×6	50	0.4	13.4	6	0.45	11.9°	3.1	3.2	3.3	3.42	3.68	1	D
3110535	R0.25 × 3.5 ×4	45	0.4	10.1	4	0.45	10.12°	3.61	3.73	3.86	3.99	4.3	1	D
3110540	R0.25 × 4 ×4	45	0.4	10.6	4	0.45	9.64°	4.13	4.27	4.41	4.57	4.92	1	A
3120540	R0.25 × 4 ×6	50	0.4	14.4	6	0.45	11.08°	4.13	4.27	4.41	4.57	4.92	1	D
3110545	R0.25 × 4.5 ×4	45	0.4	11.1	4	0.45	9.2°	4.65	4.8	4.97	5.14	5.54	1	D
3110550	R0.25 × 5 ×4	45	0.4	11.6	4	0.45	8.8°	5.17	5.34	5.52	5.72	6.16	1	A
3120550	R0.25 × 5 ×6	50	0.4	15.4	6	0.45	10.36°	5.17	5.34	5.52	5.72	6.16	1	D
3110555	R0.25 × 5.5 ×4	45	0.4	12.1	4	0.45	8.43°	5.68	5.87	6.07	6.29	6.78	1	D
3110560	R0.25 × 6 ×4	45	0.4	12.6	4	0.45	8.1°	6.2	6.41	6.63	6.87	7.41	1	A
3120560	R0.25 × 6 ×6	50	0.4	16.4	6	0.45	9.73°	6.2	6.41	6.63	6.87	7.41	1	D
3110570	R0.25 × 7 ×4	45	0.4	13.6	4	0.45	7.49°	7.23	7.48	7.74	8.02	8.65	1	D
3110580	R0.25 × 8 ×4	45	0.4	14.6	4	0.45	6.98°	8.27	8.55	8.85	9.17	9.89	1	A
3120580	R0.25 × 8 ×6	50	0.4	18.4	6	0.45	8.67°	8.27	8.55	8.85	9.17	9.89	1	D
3110590	R0.25 × 9 ×4	45	0.4	15.6	4	0.45	6.52°	9.3	9.62	9.95	10.32	11.14	1	D
3110600	R0.25 × 10 ×4	45	0.4	16.6	4	0.45	6.13°	10.33	10.68	11.06	11.47	12.38	1	D
3110610	R0.3 × 1 ×4	45	0.5	7.4	4	0.55	13.49°	1.03	1.05	1.08	1.11	1.18	1	A
3110615	R0.3 × 1.5 ×4	45	0.5	7.9	4	0.55	12.64°	1.55	1.59	1.64	1.69	1.8	1	A
3120615	R0.3 × 1.5 ×6	50	0.5	11.7	6	0.55	13.42°	1.55	1.59	1.64	1.69	1.8	1	D
3110620	R0.3 × 2 ×4	45	0.5	8.4	4	0.55	11.88°	2.06	2.12	2.19	2.26	2.42	1	A
3120620	R0.3 × 2 ×6	50	0.5	12.2	6	0.55	12.87°	2.06	2.12	2.19	2.26	2.42	1	D
3110625	R0.3 × 2.5 ×4	45	0.5	8.9	4	0.55	11.21°	2.58	2.66	2.74	2.84	3.04	1	A
3120625	R0.3 × 2.5 ×6	50	0.5	12.7	6	0.55	12.37°	2.58	2.66	2.74	2.84	3.04	1	D
3110630	R0.3 × 3 ×4	45	0.5	9.4	4	0.55	10.61°	3.1	3.19	3.3	3.41	3.66	1	A
3120630	R0.3 × 3 ×6	50	0.5	13.2	6	0.55	11.9°	3.1	3.19	3.3	3.41	3.66	1	D
3110635	R0.3 × 3.5 ×4	45	0.5	9.9	4	0.55	10.07°	3.61	3.73	3.85	3.99	4.29	1	D
3110640	R0.3 × 4 ×4	45	0.5	10.4	4	0.55	9.58°	4.13	4.26	4.41	4.56	4.91	1	A
3120640	R0.3 × 4 ×6	50	0.5	14.2	6	0.55	11.06°	4.13	4.26	4.41	4.56	4.91	1	D
3110645	R0.3 × 4.5 ×4	45	0.5	10.9	4	0.55	9.13°	4.65	4.8	4.96	5.14	5.53	1	D

■标识说明请参阅P.6。
■See p.6 for explanation of marks.

A = 标准库存品 A = Standard stock item
D = 库存中心标准库存品 D = Inventory center stock item

NEXT 下一页

※1：相对于工件倾斜角α的实际有效长（Le）
Effective Neck length (Le) depending on Inclined Angle (α) of workpiece



上表中实际有效长栏里无数值时意味加工时不存在干涉。
No numerical value means no interference with workpiece.

FROM 接一页

单位 :mm　Unit:mm

商品号 EDP No.	球半径×颈长×柄径 R × ℓ2 × Ds	全长 L	刃长 ℓ	L2	柄径 Ds	颈径 D1	干涉角度 θk	■相对于工件倾斜角α的实际有效长(Le) ※1 0.5°	1°	1.5°	2°	3°	形状 Type	库存 Stock
3110650	R0.3 × 5 ×4	45	0.5	11.4	4	0.55	8.73°	5.16	5.33	5.51	5.71	6.15	1	A
3120650	R0.3 × 5 ×6	50	0.5	15.2	6	0.55	10.33°	5.16	5.33	5.51	5.71	6.15	1	D
3110655	R0.3 × 5.5 ×4	45	0.5	11.9	4	0.55	8.36°	5.68	5.87	6.07	6.29	6.77	1	D
3110660	R0.3 × 6 ×4	45	0.5	12.4	4	0.55	8.02°	6.2	6.4	6.62	6.86	7.39	1	A
3120660	R0.3 × 6 ×6	50	0.5	16.2	6	0.55	9.69°	6.2	6.4	6.62	6.86	7.39	1	D
3110665	R0.3 × 6.5 ×4	45	0.5	12.9	4	0.55	7.7°	6.71	6.94	7.18	7.44	8.02	1	D
3110670	R0.3 × 7 ×4	45	0.5	13.4	4	0.55	7.41°	7.23	7.47	7.73	8.01	8.64	1	D
3110675	R0.3 × 7.5 ×4	45	0.5	13.9	4	0.55	7.14°	7.75	8.01	8.29	8.59	9.26	1	D
3110680	R0.3 × 8 ×4	45	0.5	14.4	4	0.55	6.89°	8.26	8.54	8.84	9.16	9.88	1	A
3120680	R0.3 × 8 ×6	50	0.5	18.2	6	0.55	8.62°	8.26	8.54	8.84	9.16	9.88	1	D
3110685	R0.3 × 8.5 ×4	45	0.5	14.9	4	0.55	6.66°	8.78	9.08	9.39	9.74	10.5	1	D
3110690	R0.3 × 9 ×4	45	0.5	15.4	4	0.55	6.44°	9.3	9.61	9.95	10.31	11.12	1	D
3110695	R0.3 × 9.5 ×4	45	0.5	15.9	4	0.55	6.23°	9.81	10.15	10.5	10.89	11.75	1	D
3110700	R0.3 ×10 ×4	45	0.5	16.4	4	0.55	6.04°	10.33	10.68	11.06	11.46	12.37	1	A
3120700	R0.3 ×10 ×6	50	0.5	20.2	6	0.55	7.76°	10.33	10.68	11.06	11.46	12.37	1	D
3110711	R0.3 ×11 ×4	45	0.5	17.4	4	0.55	5.69°	11.37	11.75	12.16	12.61	13.61	1	D
3110712	R0.3 ×12 ×4	45	0.5	18.4	4	0.55	5.38°	12.4	12.82	13.27	13.76	14.85	1	D
3110820	R0.4 × 2 ×4	45	0.6	8.1	4	0.75	11.86°	2.06	2.12	2.18	2.25	2.4	1	A
3120820	R0.4 × 2 ×6	50	0.6	11.8	6	0.75	12.9°	2.06	2.12	2.18	2.25	2.4	1	D
3110830	R0.4 × 3 ×4	45	0.6	9.1	4	0.75	10.52°	3.09	3.19	3.29	3.4	3.64	1	A
3120830	R0.4 × 3 ×6	50	0.6	12.8	6	0.75	11.89°	3.09	3.19	3.29	3.4	3.64	1	D
3110840	R0.4 × 4 ×4	45	0.6	10.1	4	0.75	9.45°	4.13	4.26	4.4	4.55	4.88	1	A
3120840	R0.4 × 4 ×6	50	0.6	13.8	6	0.75	11.02°	4.13	4.26	4.4	4.55	4.88	1	D
3110850	R0.4 × 5 ×4	45	0.6	11.1	4	0.75	8.58°	5.16	5.33	5.5	5.7	6.13	1	A
3120850	R0.4 × 5 ×6	50	0.6	14.8	6	0.75	10.27°	5.16	5.33	5.5	5.7	6.13	1	D
3110860	R0.4 × 6 ×4	45	0.6	12.1	4	0.75	7.85°	6.19	6.4	6.61	6.85	7.37	1	A
3120860	R0.4 × 6 ×6	50	0.6	15.8	6	0.75	9.62°	6.19	6.4	6.61	6.85	7.37	1	D
3110870	R0.4 × 7 ×4	45	0.6	13.1	4	0.75	7.24°	7.23	7.47	7.72	8	8.61	1	D
3110880	R0.4 × 8 ×4	45	0.6	14.1	4	0.75	6.71°	8.26	8.54	8.83	9.15	9.86	1	A
3120880	R0.4 × 8 ×6	50	0.6	17.8	6	0.75	8.53°	8.26	8.54	8.83	9.15	9.86	1	D
3110890	R0.4 × 9 ×4	45	0.6	15.1	4	0.75	6.25°	9.29	9.6	9.94	10.3	11.1	1	D
3110900	R0.4 ×10 ×4	45	0.6	16.1	4	0.75	5.86°	10.33	10.67	11.05	11.45	12.34	1	A
3120900	R0.4 ×10 ×6	50	0.6	19.8	6	0.75	7.66°	10.33	10.67	11.05	11.45	12.34	1	D
3110912	R0.4 ×12 ×4	45	0.5	18.1	4	0.75	5.2°	12.4	12.81	13.26	13.75	14.83	1	D
3111025	R0.5 × 2.5 ×4	45	0.8	8.2	4	0.95	11.09°	2.57	2.64	2.72	2.81	3	1	A
3111030	R0.5 × 3 ×4	45	0.8	8.7	4	0.95	10.43°	3.09	3.18	3.28	3.38	3.62	1	A
3121030	R0.5 × 3 ×6	50	0.8	12.4	6	0.95	11.88°	3.09	3.18	3.28	3.38	3.62	1	D
3111040	R0.5 × 4 ×4	45	0.8	9.7	4	0.95	9.32°	4.12	4.25	4.39	4.53	4.86	1	A
3121040	R0.5 × 4 ×6	50	0.8	13.4	6	0.95	10.98°	4.12	4.25	4.39	4.53	4.86	1	D
3111050	R0.5 × 5 ×4	45	0.8	10.7	4	0.95	8.41°	5.16	5.32	5.49	5.68	6.1	1	A
3121050	R0.5 × 5 ×6	50	0.8	14.4	6	0.95	10.21°	5.16	5.32	5.49	5.68	6.1	1	D
3111060	R0.5 × 6 ×4	45	0.8	11.7	4	0.95	7.67°	6.19	6.39	6.6	6.83	7.35	1	A
3121060	R0.5 × 6 ×6	50	0.8	15.4	6	0.95	9.54°	6.19	6.39	6.6	6.83	7.35	1	D
3111070	R0.5 × 7 ×4	45	0.8	12.7	4	0.95	7.05°	7.22	7.46	7.71	7.98	8.59	1	A
3121070	R0.5 × 7 ×6	50	0.8	16.4	6	0.95	8.95°	7.22	7.46	7.71	7.98	8.59	1	D
3111080	R0.5 × 8 ×4	45	0.8	13.7	4	0.95	6.52°	8.26	8.53	8.82	9.13	9.83	1	A
3121080	R0.5 × 8 ×6	50	0.8	17.4	6	0.95	8.43°	8.26	8.53	8.82	9.13	9.83	1	D
3111090	R0.5 × 9 ×4	45	0.8	14.7	4	0.95	6.06°	9.29	9.6	9.93	10.28	11.08	1	D
3111100	R0.5 ×10 ×4	45	0.8	15.7	4	0.95	5.66°	10.33	10.67	11.04	11.43	12.32	1	A

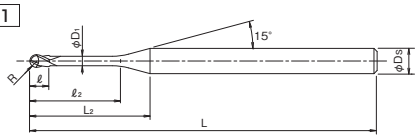
A = 标准库存品　A = Standard stock item
D = 库存中心标准库存品　D = Inventory center stock item

NEXT 下一页

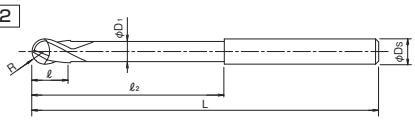
WXL涂层2刃长颈球头型（深细槽球头型）
WXL Coating Two Flute Ball Nose · with Long Neck (for Rib processing)

WXL-LN-EBD

Type 1



Type 2



FROM 接一页

CARBIDE WXL R ±0.005 SHRINK FIT 30° 切削条件 P.56

单位 :mm Unit:mm

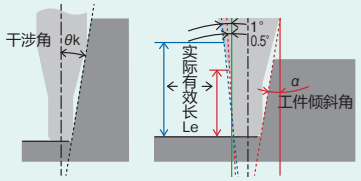
商品号 EDP No.	球半径×颈长×柄径 R × ℓ2 × Ds	全长 L	刃长 ℓ	L2	柄径 Ds	颈径 D1	干涉角度 θk	■相对于工件倾斜角α的实际有效长(Le) ※1 0.5°	1°	1.5°	2°	3°	形状 Type	库存 Stock
3121100	R0.5 ×10 ×6	50	0.8	19.4	6	0.95	7.55°	10.33	10.67	11.04	11.43	12.32	1	D
3111112	R0.5 ×12 ×4	45	0.8	17.7	4	0.95	5.01°	12.39	12.81	13.25	13.73	14.81	1	A
3121112	R0.5 ×12 ×6	50	0.8	21.4	6	0.95	6.83°	12.39	12.81	13.25	13.73	14.81	1	D
3111114	R0.5 ×14 ×4	50	0.8	19.7	4	0.95	4.49°	14.46	14.95	15.47	16.03	17.29	1	A
3121114	R0.5 ×14 ×6	60	0.8	23.4	6	0.95	6.24°	14.46	14.95	15.47	16.03	17.29	1	D
3111116	R0.5 ×16 ×4	50	0.8	21.7	4	0.95	4.06°	16.53	17.09	17.69	18.33	19.78	1	A
3121116	R0.5 ×16 ×6	60	0.8	25.4	6	0.95	5.74°	16.53	17.09	17.69	18.33	19.78	1	D
3111118	R0.5 ×18 ×4	55	0.8	23.7	4	0.95	3.71°	18.59	19.23	19.9	20.63	22.26	1	D
3111120	R0.5 ×20 ×4	55	0.8	25.7	4	0.95	4.95°	20.66	21.36	22.12	22.93	24.75	1	A
3121120	R0.5 ×20 ×6	60	0.8	29.4	6	0.95	3.42°	20.66	21.36	22.12	22.93	24.75	1	D
3121122	R0.5 ×22 ×6	60	0.8	31.4	6	0.95	4.63°	22.73	23.5	24.33	25.23	27.24	1	D
3111240	R0.6 × 4 ×4	45	1	9.4	4	1.15	9.07°	4.19	4.34	4.48	4.62	4.95	1	A
3111260	R0.6 × 6 ×4	45	1	11.4	4	1.15	7.41°	6.27	6.48	6.69	6.92	7.44	1	A
3121260	R0.6 × 6 ×6	50	1	15.2	6	1.15	9.4°	6.27	6.48	6.69	6.92	7.44	1	D
3111280	R0.6 × 8 ×4	45	1	13.4	4	1.15	6.26°	8.35	8.62	8.91	9.22	9.93	1	A
3121280	R0.6 × 8 ×6	50	1	17.1	6	1.15	8.28°	8.35	8.62	8.91	9.22	9.93	1	D
3111300	R0.6 ×10 ×4	45	1	15.4	4	1.15	5.42°	10.42	10.76	11.13	11.52	12.41	1	A
3121300	R0.6 ×10 ×6	50	1	19.2	6	1.15	7.39°	10.42	10.76	11.13	11.52	12.41	1	D
3111312	R0.6 ×12 ×4	45	1	17.4	4	1.15	4.78°	12.49	12.9	13.34	13.82	14.9	1	A
3121312	R0.6 ×12 ×6	50	1	21.2	6	1.15	6.68°	12.49	12.9	13.34	13.82	14.9	1	D
3111314	R0.6 ×14 ×4	50	1	19.4	4	1.15	4.27°	14.55	15.04	15.56	16.12	17.38	1	D
3111316	R0.6 ×16 ×4	50	1	21.4	4	1.15	3.86°	16.62	17.18	17.78	18.42	19.87	1	A
3121316	R0.6 ×16 ×6	60	1	25.2	6	1.15	5.6°	16.62	17.18	17.78	18.42	19.87	1	D
3111318	R0.6 ×18 ×4	55	1	23.4	4	1.15	3.52°	18.69	19.32	19.99	20.72	22.36	1	D
3111320	R0.6 ×20 ×4	60	1	25.4	4	1.15	3.24°	20.75	21.46	22.21	23.02	24.84	1	D
3111324	R0.6 ×24 ×4	60	1	29.4	4	1.15	2.79°	24.89	25.74	26.64	27.62	—	1	D
3111480	R0.7 × 8 ×4	45	1.1	13.1	4	1.35	6.04°	8.35	8.61	8.9	9.21	9.9	1	D
3111512	R0.7 ×12 ×4	45	1.1	17.1	4	1.35	4.57°	12.48	12.89	13.33	13.81	14.87	1	D
3111516	R0.7 ×16 ×4	50	1.1	21.1	4	1.35	3.67°	16.62	17.17	17.77	18.41	19.85	1	D
3111530	R0.75× 3 ×4	45	1.2	7.9	4	1.45	10.01°	3.13	3.25	3.35	3.45	3.67	1	D
3111540	R0.75× 4 ×4	45	1.2	8.9	4	1.45	8.8°	4.18	4.33	4.46	4.6	4.92	1	A
3111560	R0.75× 6 ×4	45	1.2	10.9	4	1.45	7.08°	6.27	6.47	6.68	6.9	7.4	1	A
3121560	R0.75× 6 ×6	50	1.2	14.6	6	1.45	9.26°	6.27	6.47	6.68	6.9	7.4	1	D
3111580	R0.75× 8 ×4	45	1.2	12.9	4	1.45	5.92°	8.34	8.61	8.9	9.2	9.89	1	A
3121580	R0.75× 8 ×6	50	1.2	16.6	6	1.45	8.11°	8.34	8.61	8.9	9.2	9.89	1	D
3111600	R0.75×10 ×4	45	1.2	14.9	4	1.45	5.09°	10.41	10.75	11.11	11.5	12.38	1	A
3121600	R0.75×10 ×6	50	1.2	18.6	6	1.45	7.21°	10.41	10.75	11.11	11.5	12.38	1	D
3111612	R0.75×12 ×4	45	1.2	16.9	4	1.45	4.46°	12.48	12.89	13.33	13.8	14.86	1	A
3121612	R0.75×12 ×6	50	1.2	20.6	6	1.45	6.49°	12.48	12.89	13.33	13.8	14.86	1	D
3111614	R0.75×14 ×4	50	1.2	18.9	4	1.45	3.96°	14.55	15.03	15.55	16.1	17.35	1	D
3111616	R0.75×16 ×4	55	1.2	20.9	4	1.45	3.57°	16.62	17.17	17.76	18.4	19.83	1	A
3121616	R0.75×16 ×6	60	1.2	24.6	6	1.45	5.4°	16.62	17.17	17.76	18.4	19.83	1	D
3111618	R0.75×18 ×4	55	1.2	22.9	4	1.45	3.25°	18.68	19.31	19.98	20.7	22.32	1	D
3111620	R0.75×20 ×4	55	1.2	24.9	4	1.45	2.98°	20.75	21.45	22.19	23	—	1	A
3121620	R0.75×20 ×6	60	1.2	28.6	6	1.45	4.63°	20.75	21.45	22.19	23	24.81	1	D
3111622	R0.75×22 ×4	55	1.2	26.9	4	1.45	2.75°	22.82	23.59	24.41	25.3	—	1	D
3111630	R0.75×30 ×4	65	1.2	34.9	4	1.45	2.1°	31.09	32.14	33.28	34.5	—	1	D

■标识说明请参阅P.6。
■See p.6 for explanation of marks.

A = 标准库存品 A = Standard stock item
D = 库存中心标准库存品 D = Inventory center stock item

NEXT 下一页

※1：相对于工件倾斜角α的实际有效长（Le）
Effective Neck length (Le) depending on Inclined Angle (α) of workpiece



上表中实际有效长栏里无数值时意味加工时不存在干涉。
No numerical value means no interference with workpiece.

FROM 接一页

单位 :mm　Unit:mm

商品号 EDP No.	球半径×颈长×柄径 R × ℓ2 × Ds	全长 L	刃长 ℓ	L2	柄径 Ds	颈径 D1	干涉角度 θk	■相对于工件倾斜角α的实际有效长(Le) ※1 0.5°	1°	1.5°	2°	3°	形状 Type	库存 Stock
3111640	R0.8 × 4 ×4	45	1.3	8.7	4	1.55	8.7°	4.18	4.33	4.46	4.59	4.91	1	D
3111680	R0.8 × 8 ×4	45	1.3	12.7	4	1.55	5.8°	8.34	8.61	8.89	9.19	9.88	1	D
3111712	R0.8 ×12 ×4	45	1.3	16.7	4	1.55	4.34°	12.48	12.89	13.32	13.79	14.85	1	D
3111716	R0.8 ×16 ×4	50	1.3	20.7	4	1.55	3.47°	16.61	17.16	17.76	18.39	19.82	1	D
3111720	R0.8 ×20 ×4	55	1.3	24.7	4	1.55	2.89°	20.75	21.44	22.19	22.99	—	1	D
3111880	R0.9 × 8 ×4	45	1.4	12.6	4	1.75	5.38°	8.48	8.88	9.23	9.56	10.27	1	D
3111912	R0.9 ×12 ×4	45	1.4	16.6	4	1.75	4.02°	12.69	13.22	13.68	14.16	15.24	1	D
3111916	R0.9 ×16 ×4	50	1.4	20.6	4	1.75	3.2°	16.88	17.51	18.11	18.76	20.21	1	D
3111920	R0.9 ×20 ×4	55	1.4	24.6	4	1.75	2.66°	21.05	21.79	22.55	23.36	—	1	D
3112030	R1 × 3 ×4	45	1.6	7.3	4	1.95	9.1°	3.16	3.31	3.47	3.64	3.96	1	A
3112040	R1 × 4 ×4	45	1.6	8.3	4	1.95	7.87°	4.23	4.44	4.66	4.86	5.26	1	A
3122040	R1 × 4 ×6	50	1.6	12	6	1.95	10.32°	4.23	4.44	4.66	4.86	5.26	1	D
3112060	R1 × 6 ×4	45	1.6	10.3	4	1.95	6.19°	6.36	6.67	6.96	7.23	7.76	1	A
3122060	R1 × 6 ×6	50	1.6	14	6	1.95	8.77°	6.36	6.67	6.96	7.23	7.76	1	D
3112080	R1 × 8 ×4	45	1.6	12.3	4	1.95	5.1°	8.48	8.87	9.22	9.55	10.24	1	A
3122080	R1 × 8 ×6	50	1.6	16	6	1.95	7.61°	8.48	8.87	9.22	9.55	10.24	1	D
3112100	R1 ×10 ×4	45	1.6	14.3	4	1.95	4.33°	10.59	11.05	11.45	11.85	12.73	1	A
3122100	R1 ×10 ×6	50	1.6	18	6	1.95	6.73°	10.59	11.05	11.45	11.85	12.73	1	D
3112112	R1 ×12 ×4	45	1.6	16.3	4	1.95	3.77°	12.69	13.21	13.67	14.15	15.22	1	A
3122112	R1 ×12 ×6	50	1.6	20	6	1.95	6.03°	12.69	13.21	13.67	14.15	15.22	1	D
3112114	R1 ×14 ×4	50	1.6	18.3	4	1.95	3.33°	14.78	15.36	15.89	16.45	17.7	1	D
3112116	R1 ×16 ×4	50	1.6	20.3	4	1.95	2.98°	16.88	17.51	18.1	18.75	—	1	A
3122116	R1 ×16 ×6	60	1.6	24	6	1.95	4.98°	16.88	17.51	18.1	18.75	20.19	1	D
3112118	R1 ×18 ×4	55	1.6	22.3	4	1.95	2.7°	18.96	19.65	20.32	21.04	—	1	D
3112120	R1 ×20 ×4	55	1.6	24.3	4	1.95	2.47°	21.05	21.78	22.54	23.34	—	1	A
3122120	R1 ×20 ×6	65	1.6	28	6	1.95	4.25°	21.05	21.78	22.54	23.34	25.16	1	D
3112122	R1 ×22 ×4	60	1.6	26.3	4	1.95	2.27°	23.13	23.92	24.75	25.64	—	1	D
3112125	R1 ×25 ×4	65	1.6	29.3	4	1.95	2.03°	26.24	27.13	28.08	29.09	—	1	A
3122125	R1 ×25 ×6	70	1.6	33	6	1.95	3.58°	26.24	27.13	28.08	29.09	31.38	1	D
3112130	R1 ×30 ×4	70	1.6	34.3	4	1.95	1.73°	31.42	32.48	33.62	—	—	1	A
3122130	R1 ×30 ×6	75	1.6	38	6	1.95	3.1°	31.42	32.48	33.62	34.84	37.59	1	D
3112135	R1 ×35 ×4	75	1.6	39.3	4	1.95	1.5°	36.59	37.83	39.16	—	—	1	A
3122135	R1 ×35 ×6	80	1.6	43	6	1.95	2.73°	36.59	37.83	39.16	40.59	—	1	D
3112140	R1 ×40 ×4	80	1.6	44.3	4	1.95	1.33°	41.76	43.18	—	—	—	1	D
3112560	R1.25× 6 ×4	45	2	9.1	4	2.35	5.46°	6.26	6.51	6.75	6.99	7.46	1	A
3112600	R1.25×10 ×4	50	2	13.1	4	2.35	3.63°	10.46	10.85	11.21	11.59	12.43	1	A
3112615	R1.25×15 ×4	55	2	18.1	4	2.35	2.55°	15.67	16.21	16.75	17.34	—	1	A
3112620	R1.25×20 ×4	60	2	23.1	4	2.35	1.97°	20.87	21.56	22.3	—	—	1	A
3112625	R1.25×25 ×4	65	2	28.1	4	2.35	1.6°	26.04	26.91	27.84	—	—	1	D
3112630	R1.25×30 ×4	70	2	33.1	4	2.35	1.35°	31.21	32.26	—	—	—	1	D
3112635	R1.25×35 ×4	70	2	38.1	4	2.35	1.17°	36.38	37.61	—	—	—	1	D
3123059	R1.5 × 6 ×3	45	2.4	—	3	2.85	—	—	—	—	—	—	2	D
3113060	R1.5 × 6 ×4	45	2.4	8.2	4	2.85	4.29°	6.25	6.49	6.72	6.95	7.4	1	A
3123060	R1.5 × 6 ×6	50	2.4	11.9	6	2.85	8.17°	6.25	6.49	6.72	6.95	7.4	1	D
3123080	R1.5 × 8 ×6	50	2.4	13.9	6	2.85	6.88°	8.35	8.67	8.97	9.25	9.88	1	A
3123100	R1.5 ×10 ×6	50	2.4	15.9	6	2.85	5.94°	10.44	10.83	11.19	11.55	12.37	1	A
3123112	R1.5 ×12 ×6	55	2.4	17.9	6	2.85	5.22°	12.53	12.98	13.4	13.85	14.86	1	A
3123114	R1.5 ×14 ×6	55	2.4	19.9	6	2.85	4.66°	14.62	15.13	15.62	16.15	17.34	1	A
3123115	R1.5 ×15 ×6	55	2.4	20.9	6	2.85	4.42°	15.66	16.2	16.73	17.3	18.59	1	A

A = 标准库存品　A = Standard stock item
D = 库存中心标准库存品　D = Inventory center stock item

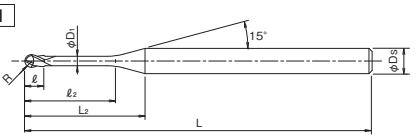
NEXT 下一页

WXL涂层2刃长颈球头型（深细槽球头型）

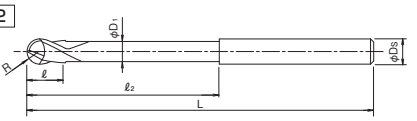
WXL Coating Two Flute Ball Nose · with Long Neck (for Rib processing)

WXL-LN-EBD

Type 1



Type 2



接一页

P.56

单位 :mm　Unit:mm

商品号 EDP No.	球径×颈长×柄径 R × ℓ2 × Ds	全长 L	刃长 ℓ	L2	柄径 Ds	颈径 D1	干涉角度 θk	■相对于工件倾斜角α的实际有效长(Le) ※1 0.5°	1°	1.5°	2°	3°	形状 Type	库存 Stock
3123116	R1.5 ×16 ×6	55	2.4	21.9	6	2.85	4.21°	16.7	17.26	17.84	18.45	19.83	1	A
3123120	R1.5 ×20 ×6	60	2.4	25.9	6	2.85	3.52°	20.86	21.54	22.27	23.05	24.8	1	D
3123125	R1.5 ×25 ×6	65	2.4	30.9	6	2.85	2.92°	26.04	26.89	27.81	28.8	—	1	D
3123130	R1.5 ×30 ×6	70	2.4	35.9	6	2.85	2.5°	31.2	32.24	33.35	34.55	—	1	D
3123135	R1.5 ×35 ×6	80	2.4	40.9	6	2.85	2.18°	36.37	37.59	38.89	40.3	—	1	D
3123140	R1.5 ×40 ×6	85	2.4	45.9	6	2.85	1.94°	41.54	42.94	44.43	—	—	1	D
3123600	R1.75×10 ×6	60	2.8	15	6	3.35	5.4°	10.43	10.81	11.16	11.51	12.31	1	D
3123615	R1.75×15 ×6	60	2.8	20	6	3.35	3.93°	15.65	16.18	16.7	17.26	18.53	1	D
3123620	R1.75×20 ×6	65	2.8	25	6	3.35	3.08°	20.85	21.53	22.24	23.01	24.74	1	D
3123625	R1.75×25 ×6	65	2.8	30	6	3.35	2.54°	26.03	26.87	27.78	28.76	—	1	D
3123630	R1.75×30 ×6	70	2.8	35	6	3.35	2.16°	31.2	32.22	33.32	34.51	—	1	D
3123635	R1.75×35 ×6	80	2.8	40	6	3.35	1.88°	36.36	37.57	38.87	—	—	1	D
3123640	R1.75×40 ×6	90	2.8	45	6	3.35	1.66°	41.53	42.92	44.41	—	—	1	D
3123645	R1.75×45 ×6	90	2.8	50	6	3.35	1.49°	46.7	48.27	—	—	—	1	D
3114080	R2 × 8 ×4	55	3.2	—	4	3.85	—	—	—	—	—	—	2	A
3124080	R2 × 8 ×6	60	3.2	12.1	6	3.85	5.67°	8.33	8.63	8.91	9.18	9.77	1	D
3124100	R2 ×10 ×6	60	3.2	14.1	6	3.85	4.74°	10.42	10.79	11.13	11.48	12.25	1	A
3124112	R2 ×12 ×6	60	3.2	16.1	6	3.85	4.07°	12.51	12.95	13.35	13.78	14.74	1	A
3124114	R2 ×14 ×6	60	3.2	18.1	6	3.85	3.57°	14.6	15.09	15.57	16.08	17.22	1	A
3124115	R2 ×15 ×6	60	3.2	19.1	6	3.85	3.36°	15.64	16.16	16.67	17.23	18.47	1	A
3124116	R2 ×16 ×6	60	3.2	20.1	6	3.85	3.18°	16.68	17.23	17.78	18.38	19.71	1	A
3124120	R2 ×20 ×6	65	3.2	24.1	6	3.85	2.6°	20.84	21.51	22.22	22.98	—	1	A
3124125	R2 ×25 ×6	70	3.2	29.1	6	3.85	2.12°	26.02	26.86	27.76	28.72	—	1	A
3124130	R2 ×30 ×6	80	3.2	34.1	6	3.85	1.79°	31.19	32.21	33.3	—	—	1	D
3124135	R2 ×35 ×6	80	3.2	39.1	6	3.85	1.55°	36.36	37.55	38.84	—	—	1	D
3124140	R2 ×40 ×6	90	3.2	44.1	6	3.85	1.36°	41.52	42.9	—	—	—	1	D
3124145	R2 ×45 ×6	90	3.2	49.1	6	3.85	1.22°	46.69	48.25	—	—	—	1	D
3124150	R2 ×50 ×6	100	3.2	54.1	6	3.85	1.1°	51.86	53.6	—	—	—	1	D
3125100	R2.5 ×10	65	5	12.2	6	4.85	2.96°	10.4	10.75	11.08	11.4	—	1	D
3125115	R2.5 ×15	70	5	17.2	6	4.85	1.96°	15.62	16.13	16.62	—	—	1	D
3125120	R2.5 ×20	70	5	22.2	6	4.85	1.46°	20.82	21.47	—	—	—	1	D
3125125	R2.5 ×25	70	5	27.2	6	4.85	1.16°	26	26.82	—	—	—	1	D
3125130	R2.5 ×30	80	5	32.2	6	4.85	0.97°	31.17	—	—	—	—	1	D
3125135	R2.5 ×35	80	5	37.2	6	4.85	0.83°	36.34	—	—	—	—	1	D
3125140	R2.5 ×40	90	5	42.2	6	4.85	0.72°	41.51	—	—	—	—	1	D
3125145	R2.5 ×45	100	5	47.2	6	4.85	0.64°	46.68	—	—	—	—	1	D
3125150	R2.5 ×50	100	5	52.2	6	4.85	0.58°	51.84	—	—	—	—	1	D
3126100	R3 ×10	60	6	—	6	5.85	—	—	—	—	—	—	2	A
3126120	R3 ×20	70	6	—	6	5.85	—	—	—	—	—	—	2	A
3126125	R3 ×25	70	6	—	6	5.85	—	—	—	—	—	—	2	A
3126130	R3 ×30	80	6	—	6	5.85	—	—	—	—	—	—	2	A
3126135	R3 ×35	80	6	—	6	5.85	—	—	—	—	—	—	2	D
3126140	R3 ×40	90	6	—	6	5.85	—	—	—	—	—	—	2	D
3126145	R3 ×45	100	6	—	6	5.85	—	—	—	—	—	—	2	D
3126150	R3 ×50	120	6	—	6	5.85	—	—	—	—	—	—	2	D

■标识说明请参阅P.6。

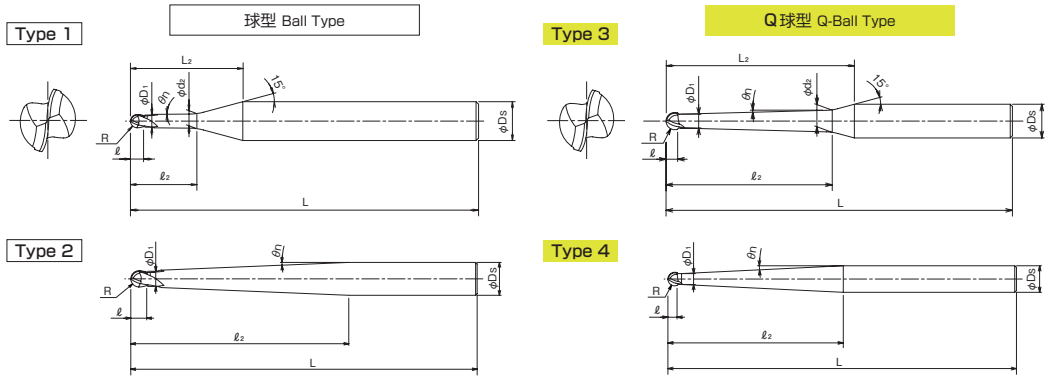
■ See p.6 for explanation of marks.

A = 标准库存品　A = Standard stock item

D = 库存中心标准库存品　D = Inventory center stock item

WXL涂层2刃锥颈球头型
WXL Coating Two Flute・Short・with Pencil Neck

WXL-PC-EBD NEW SIZES



CARBIDE WXL ±0.005 SHRINK FIT 30° 切削条件

P.68

单位 :mm Unit:mm

商品号 EDP No.	球半径×颈部锥半角×颈长 R × θn × ℓ2	全长 L	刃长 ℓ	颈径 D1	颈口径 d2	L2	柄径 Ds	形状 Type	库存 Stock
3170011	R 0.1 × 0.5° × 1	45	0.16	0.19	0.2	8.3	4	1	A
3170012	R 0.1 × 0.5° × 1.5	45	0.16	0.19	0.21	8.8	4	1	A
3170013	R 0.1 × 0.5° × 2	45	0.16	0.19	0.22	9.2	4	1	A
3170014	R 0.1 × 0.5° × 2.5	45	0.16	0.19	0.23	9.7	4	1	A
3170015	R 0.1 × 0.5° × 3	45	0.16	0.19	0.24	10.2	4	1	A
3170021	R 0.1 × 1° × 2	45	0.16	0.19	0.25	9.2	4	1	A
3170022	R 0.1 × 1° × 2.5	45	0.16	0.19	0.27	9.6	4	1	A
3170023	R 0.1 × 1° × 3	45	0.16	0.19	0.28	10.1	4	1	A
3170031	R 0.15 × 0.5° × 2	45	0.24	0.29	0.31	9.1	4	1	A
3170032	R 0.15 × 0.5° × 3	45	0.24	0.29	0.33	10	4	1	A
3170041	R 0.15 × 1° × 3	45	0.24	0.29	0.38	9.9	4	1	A
3170042	R 0.15 × 1° × 4	45	0.24	0.29	0.41	10.9	4	1	A
3170051	R 0.2 × 0.5° × 2	45	0.3	0.38	0.41	9	4	1	A
3170052	R 0.2 × 0.5° × 3	45	0.3	0.38	0.43	9.9	4	1	A
3170053	R 0.2 × 0.5° × 4	45	0.3	0.38	0.44	10.9	4	1	A
3170054	R 0.2 × 0.5° × 5	45	0.3	0.38	0.46	11.9	4	1	A
3170055	R 0.2 × 0.5° × 6	45	0.3	0.38	0.47	12.8	4	1	A
3170061	R 0.2 × 1° × 4	45	0.3	0.38	0.5	10.8	4	1	A
3170062	R 0.2 × 1° × 5	45	0.3	0.38	0.53	11.7	4	1	A
3170063	R 0.2 × 1° × 6	45	0.3	0.38	0.57	12.7	4	1	A
3170071	R 0.25 × 0.5° × 4	45	0.4	0.48	0.54	10.7	4	1	A
3170072	R 0.25 × 0.5° × 6	45	0.4	0.48	0.57	12.7	4	1	A
3170073	R 0.25 × 0.5° × 8	45	0.4	0.48	0.61	14.6	4	1	A
3170074	R 0.25 × 0.5° × 10	45	0.4	0.48	0.64	16.5	4	1	A
3170081	R 0.25 × 1° × 4	45	0.4	0.48	0.59	10.6	4	1	A
3170082	R 0.25 × 1° × 6	45	0.4	0.48	0.66	12.5	4	1	A
3170083	R 0.25 × 1° × 8	45	0.4	0.48	0.73	14.3	4	1	A
3170084	R 0.25 × 1° × 10	45	0.4	0.48	0.8	16.2	4	1	A
3170085	R 0.25 × 1° × 12	50	0.4	0.48	0.87	18.1	4	1	A
3170091	R 0.3 × 0.5° × 2	45	0.5	0.58	0.61	9	4	1	A
3170092	R 0.3 × 0.5° × 4	45	0.5	0.58	0.64	10.9	4	1	A
3170093	R 0.3 × 0.5° × 6	45	0.5	0.58	0.67	12.8	4	1	A

■标识说明请参阅P.6
■See p.6 for explanation of marks.

A = 标准库存品 A = Standard stock item

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WXL涂层2刃锥颈球头形
WXL Coating Two Flute・Short・with Pencil Neck

WXL-PC-EBD NEW SIZES

接一页

P.68

单位 :mm Unit:mm

商品号 EDP No.	球半径×颈部锥半角×颈长 R × θn × ℓ2	全长 L	刃长 ℓ	颈径 D1	颈口径 d2	L2	柄径 Ds	形状 Type	库存 Stock
3170094	R 0.3 × 0.5° × 8	45	0.5	0.58	0.7	14.8	4	1	A
3170095	R 0.3 × 0.5° × 10	45	0.5	0.58	0.74	16.7	4	1	A
3170096	R 0.3 × 0.5° × 12	45	0.5	0.58	0.77	18.7	4	1	A
3170097	R 0.3 × 0.5° × 16	50	0.5	0.58	0.84	22.5	4	1	A
3170101	R 0.3 × 1° × 4	45	0.5	0.58	0.69	10.8	4	1	A
3170102	R 0.3 × 1° × 6	45	0.5	0.58	0.76	12.6	4	1	A
3170103	R 0.3 × 1° × 8	45	0.5	0.58	0.83	14.5	4	1	A
3170104	R 0.3 × 1° × 10	45	0.5	0.58	0.9	16.4	4	1	A
3170105	R 0.3 × 1° × 12	45	0.5	0.58	0.97	18.2	4	1	A
3170106	R 0.3 × 1° × 16	50	0.5	0.58	1.11	22	4	1	A
3170111	R 0.4 × 0.5° × 4	45	0.6	0.78	0.84	10.5	4	1	A
3170112	R 0.4 × 0.5° × 6	45	0.6	0.78	0.87	12.5	4	1	A
3170113	R 0.4 × 0.5° × 8	45	0.6	0.78	0.9	14.4	4	1	A
3170114	R 0.4 × 0.5° × 12	45	0.6	0.78	0.97	18.3	4	1	A
3170121	R 0.4 × 1° × 8	45	0.6	0.78	1.02	14.1	4	1	A
3170122	R 0.4 × 1° × 12	45	0.6	0.78	1.16	17.9	4	1	A
3170123	R 0.4 × 1° × 16	50	0.6	0.78	1.3	21.6	4	1	A
3170131	R 0.5 × 0.5° × 6	45	0.63	0.95	1.03	12.2	4	3	A
3170132	R 0.5 × 0.5° × 8	45	0.63	0.95	1.07	14.1	4	3	A
3170133	R 0.5 × 0.5° × 10	45	0.63	0.95	1.1	16	4	3	A
3170134	R 0.5 × 0.5° × 12	45	0.63	0.95	1.14	18	4	3	A
3170135	R 0.5 × 0.5° × 16	50	0.63	0.95	1.21	21.8	4	3	A
3170136	R 0.5 × 0.5° × 18	55	0.63	0.95	1.24	23.8	4	3	A
3170137	R 0.5 × 0.5° × 20	55	0.63	0.95	1.28	25.7	4	3	A
3170138	R 0.5 × 0.5° × 25	60	0.63	0.95	1.37	30.5	4	3	A
3170139	R 0.5 × 0.5° × 30	65	0.63	0.95	1.45	35.4	4	3	A
3170140	R 0.5 × 0.5° × 35	70	0.63	0.95	1.54	40.2	4	3	A
3170141	R 0.5 × 1° × 10	45	0.63	0.95	1.26	15.7	4	3	A
3170142	R 0.5 × 1° × 16	50	0.63	0.95	1.47	21.3	4	3	A
3170143	R 0.5 × 1° × 20	55	0.63	0.95	1.61	25	4	3	A
3170144	R 0.5 × 1° × 25	60	0.63	0.95	1.78	29.7	4	3	A
3170145	R 0.5 × 1° × 30	65	0.63	0.95	1.96	34.4	4	3	A
3170146	R 0.5 × 1° × 35	70	0.63	0.95	2.13	39.1	4	3	A
3170147	R 0.5 × 1° × 40	80	0.63	0.95	2.31	43.7	4	3	A
3170148	R 0.5 × 1° × 50	90	0.63	0.95	2.66	53.1	4	3	A
3170149	R 0.5 × 1° × 60	100	0.63	0.95	3	62.4	4	3	A
3170150	R 0.5 × 1° × 70	110	0.63	0.95	3.35	71.8	4	3	A
3170151	R 0.5 × 1.5° × 8	45	0.63	0.95	1.31	13.5	4	3	A
3170152	R 0.5 × 1.5° × 10	45	0.63	0.95	1.41	15.4	4	3	A
3170153	R 0.5 × 1.5° × 12	45	0.63	0.95	1.52	17.2	4	3	A

■标识说明请参阅P.6
■See p.6 for explanation of marks.

A = 标准库存品 A = Standard stock item

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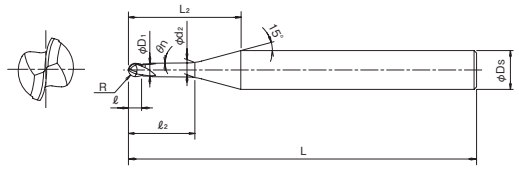
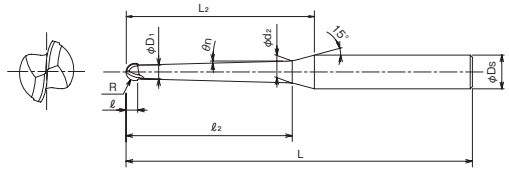
Type 1 — 球形 Ball Type



Type 3 — Q球形 Q-Ball Type



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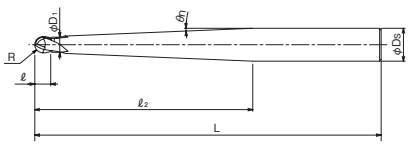
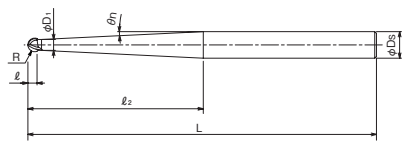


Type 4



FROM
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单位 :mm　Unit:mm

商品号 EDP No.	球半径×颈部锥半角×颈长 R × θn × ℓ2	全长 L	刃长 ℓ	颈径 D1	颈口径 d2	L2	柄径 Ds	形状 Type	库存 Stock
3170154	R 0.5 × 1.5° × 16	50	0.63	0.95	1.73	20.8	4	3	A
3170155	R 0.5 × 1.5° × 20	55	0.63	0.95	1.94	24.4	4	3	A
3170156	R 0.5 × 1.5° × 25	60	0.63	0.95	2.2	28.9	4	3	A
3170157	R 0.5 × 1.5° × 30	65	0.63	0.95	2.46	33.4	4	3	A
3170158	R 0.5 × 1.5° × 35	70	0.63	0.95	2.72	37.9	4	3	A
3170161	R 0.5 × 2° × 45	80	0.63	0.95	–	–	4	4	A
3170171	R 0.6 × 0.5° × 12	45	0.76	1.15	1.34	17.6	4	3	A
3170172	R 0.6 × 0.5° × 25	60	0.76	1.15	1.56	30.2	4	3	A
3170181	R 0.6 × 1° × 12	45	0.76	1.15	1.52	17.2	4	3	A
3170182	R 0.6 × 1° × 25	60	0.76	1.15	1.98	29.4	4	3	A
3170191	R 0.6 × 1.5° × 12	45	0.76	1.15	1.71	16.8	4	3	A
3170192	R 0.6 × 1.5° × 25	60	0.76	1.15	2.39	28.5	4	3	A
3170211	R 0.75 × 0.5° × 8	45	0.95	1.42	1.53	13.2	4	3	A
3170212	R 0.75 × 0.5° × 10	45	0.95	1.42	1.57	15.2	4	3	A
3170213	R 0.75 × 0.5° × 12	45	0.95	1.42	1.6	17.1	4	3	A
3170214	R 0.75 × 0.5° × 16	55	0.95	1.42	1.67	21	4	3	A
3170215	R 0.75 × 0.5° × 20	55	0.95	1.42	1.74	24.8	4	3	A
3170216	R 0.75 × 0.5° × 25	60	0.95	1.42	1.83	29.7	4	3	A
3170217	R 0.75 × 0.5° × 30	65	0.95	1.42	1.92	34.5	4	3	A
3170218	R 0.75 × 0.5° × 35	70	0.95	1.42	2	39.4	4	3	A
3170221	R 0.75 × 1° × 10	45	0.95	1.42	1.71	14.8	4	3	A
3170222	R 0.75 × 1° × 12	45	0.95	1.42	1.79	16.7	4	3	A
3170223	R 0.75 × 1° × 16	55	0.95	1.42	1.93	20.4	4	3	A
3170224	R 0.75 × 1° × 20	55	0.95	1.42	2.07	24.2	4	3	A
3170225	R 0.75 × 1° × 25	60	0.95	1.42	2.24	28.9	4	3	A
3170226	R 0.75 × 1° × 30	65	0.95	1.42	2.41	33.5	4	3	A
3170227	R 0.75 × 1° × 35	70	0.95	1.42	2.59	38.2	4	3	A
3170230	R 0.75 × 1.5° × 10	45	0.95	1.42	1.87	14.5	4	3	A
3170231	R 0.75 × 1.5° × 12	45	0.95	1.42	1.97	16.3	4	3	A
3170232	R 0.75 × 1.5° × 16	55	0.95	1.42	2.18	19.9	4	3	A
3170233	R 0.75 × 1.5° × 20	55	0.95	1.42	2.39	23.5	4	3	A
3170234	R 0.75 × 1.5° × 25	60	0.95	1.42	2.65	28	4	3	A
3170235	R 0.75 × 1.5° × 30	65	0.95	1.42	2.91	32.6	4	3	A
3170236	R 0.75 × 1.5° × 35	70	0.95	1.42	3.17	37.1	4	3	A
3170241	R 0.75 × 2° × 38.6	70	0.95	1.42	–	–	4	4	A
3170271	R 1 × 0.5° × 8	45	1.26	1.93	2.04	12.3	4	3	A
3170272	R 1 × 0.5° × 10	45	1.26	1.93	2.07	14.2	4	3	A
3170273	R 1 × 0.5° × 12	45	1.26	1.93	2.11	16.2	4	3	A
3170274	R 1 × 0.5° × 16	50	1.26	1.93	2.18	20	4	3	A
3170275	R 1 × 0.5° × 20	55	1.26	1.93	2.25	23.9	4	3	A

A = 标准库存品　A = Standard stock item

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WXL涂层2刃锥颈球头型
WXL Coating Two Flute・Short・with Pencil Neck

WXL-PC-EBD NEW SIZES

FROM CARBIDE WXL ±0.005 SHRINK FIT 30° 切削条件

接一页

P.68

单位 :mm Unit:mm

商品号 EDP No.	球半径×颈部锥半角×颈长 R × θn × ℓ2	全长 L	刃长 ℓ	颈径 D1	颈口径 d2	L2	柄径 Ds	形状 Type	库存 Stock
3170276	R 1 × 0.5° × 25	65	1.26	1.93	2.33	28.7	4	3	A
3170277	R 1 × 0.5° × 30	70	1.26	1.93	2.42	33.6	4	3	A
3170278	R 1 × 0.5° × 35	75	1.26	1.93	2.51	38.4	4	3	A
3170279	R 1 × 0.5° × 40	80	1.26	1.93	2.6	43.2	4	3	A
3170281	R 1 × 1° × 16	50	1.26	1.93	2.43	19.5	4	3	A
3170282	R 1 × 1° × 20	55	1.26	1.93	2.57	23.3	4	3	A
3170283	R 1 × 1° × 25	65	1.26	1.93	2.74	27.9	4	3	A
3170284	R 1 × 1° × 30	70	1.26	1.93	2.91	32.6	4	3	A
3170285	R 1 × 1° × 35	75	1.26	1.93	3.09	37.3	4	3	A
3170286	R 1 × 1° × 40	80	1.26	1.93	3.26	41.9	4	3	A
3170287	R 1 × 1° × 50	90	1.26	1.93	3.61	55	6	3	A
3170288	R 1 × 1° × 60	100	1.26	1.93	3.96	64.4	6	3	A
3170289	R 1 × 1° × 70	110	1.26	1.93	4.31	73.7	6	3	A
3170291	R 1 × 1.5° × 16	50	1.26	1.93	2.67	19	4	3	A
3170292	R 1 × 1.5° × 20	55	1.26	1.93	2.88	22.6	4	3	A
3170293	R 1 × 1.5° × 25	65	1.26	1.93	3.15	27.1	4	3	A
3170294	R 1 × 1.5° × 30	70	1.26	1.93	3.41	31.6	4	3	A
3170295	R 1 × 1.5° × 35	75	1.26	1.93	3.67	36.1	4	3	A
3170296	R 1 × 1.5° × 41.4	80	1.26	1.93	–	–	4	4	A
3170301	R 1 × 2° × 31.5	70	1.26	1.93	–	–	4	4	A
3170321	R 1.5 × 0.5° × 8	50	2.4	2.95	3.05	14.1	6	1	A
3170322	R 1.5 × 0.5° × 10	50	2.4	2.95	3.08	16.1	6	1	A
3170323	R 1.5 × 0.5° × 12	55	2.4	2.95	3.12	18	6	1	A
3170324	R 1.5 × 0.5° × 16	55	2.4	2.95	3.18	21.9	6	1	A
3170325	R 1.5 × 0.5° × 20	60	2.4	2.95	3.25	25.8	6	1	A
3170326	R 1.5 × 0.5° × 25	65	2.4	2.95	3.34	30.6	6	1	A
3170327	R 1.5 × 0.5° × 30	70	2.4	2.95	3.42	35.4	6	1	A
3170328	R 1.5 × 0.5° × 35	80	2.4	2.95	3.51	40.3	6	1	A
3170329	R 1.5 × 0.5° × 40	85	2.4	2.95	3.6	45.1	6	1	A
3170330	R 1.5 × 0.5° × 50	90	2.4	2.95	3.77	54.8	6	1	A
3170331	R 1.5 × 1° × 20	60	2.4	2.95	3.55	25.1	6	1	A
3170332	R 1.5 × 1° × 25	65	2.4	2.95	3.73	29.8	6	1	A
3170333	R 1.5 × 1° × 30	70	2.4	2.95	3.9	34.5	6	1	A
3170334	R 1.5 × 1° × 35	80	2.4	2.95	4.07	39.2	6	1	A
3170335	R 1.5 × 1° × 40	85	2.4	2.95	4.25	43.8	6	1	A
3170336	R 1.5 × 1° × 50	90	2.4	2.95	4.6	53.2	6	1	A
3170337	R 1.5 × 1° × 60	100	2.4	2.95	4.95	62.5	6	1	A
3170338	R 1.5 × 1° × 70	110	2.4	2.95	5.3	71.9	6	1	A
3170341	R 1.5 × 1.5° × 20	60	2.4	2.95	3.85	24.5	6	1	A
3170342	R 1.5 × 1.5° × 25	65	2.4	2.95	4.11	29	6	1	A

■标识说明请参阅P.6
■See p.6 for explanation of marks.

A = 标准库存品 A = Standard stock item

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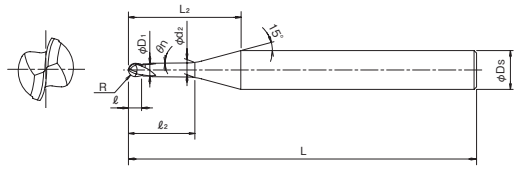
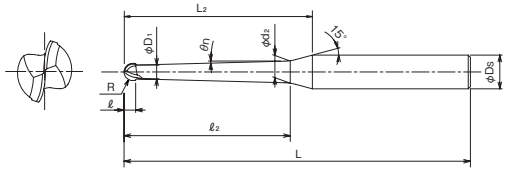
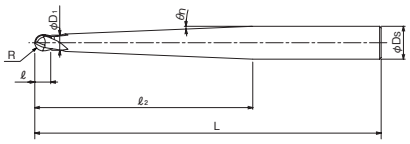
Type 1 — 球形 Ball Type



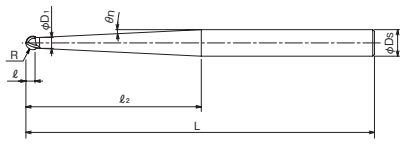
Type 3 — Q球形 Q-Ball Type



Type 2



Type 4



FROM
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单位 :mm　Unit:mm

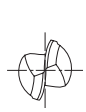
商品号 EDP No.	球半径×颈部锥半角×颈长 R × θn × ℓ2	全长 L	刃长 ℓ	颈径 D1	颈口径 d2	L2	柄径 Ds	形 状 Type	库存 Stock
3170343	R 1.5 × 1.5° × 30	70	2.4	2.95	4.37	33.6	6	1	A
3170344	R 1.5 × 1.5° × 35	80	2.4	2.95	4.64	38.1	6	1	A
3170345	R 1.5 × 1.5° × 40	85	2.4	2.95	4.9	42.6	6	1	A
3170346	R 1.5 × 1.5° × 50	90	2.4	2.95	5.42	51.6	6	1	A
3170347	R 1.5 × 1.5° × 62.5	100	2.4	2.95	–	–	6	2	A
3170351	R 1.5 × 2° × 47.5	100	2.4	2.95	–	–	6	2	A
3170371	R 2 × 1° × 20	65	3.2	3.93	4.5	23.4	6	1	A
3170372	R 2 × 1° × 30	80	3.2	3.93	4.85	32.7	6	1	A
3170373	R 2 × 1° × 40	90	3.2	3.93	5.2	42.1	6	1	A
3170374	R 2 × 1° × 50	100	3.2	3.93	5.55	55.1	8	1	A
3170375	R 2 × 1° × 60	110	3.2	3.93	5.9	64.5	8	1	A
3170381	R 2 × 1.5° × 44.2	80	3.2	3.93	–	–	6	2	A
3170391	R 2 × 2° × 34	80	3.2	3.93	–	–	6	2	A
3170401	R 2.5 × 1° × 30	100	5	4.95	5.81	34.7	8	1	A
3170402	R 2.5 × 1° × 40	100	5	4.95	6.16	44	8	1	A
3170403	R 2.5 × 1° × 60	130	5	4.95	6.86	62.7	8	1	A
3170411	R 2.5 × 1.5° × 26.9	100	5	4.95	–	–	6	2	A
3170412	R 2.5 × 1.5° × 65.1	130	5	4.95	–	–	8	2	A
3170421	R 2.5 × 2° × 50.1	130	5	4.95	–	–	8	2	A
3170431	R 3 × 1° × 30	100	6	5.95	6.77	32.9	8	1	A
3170432	R 3 × 1° × 40	100	6	5.95	7.12	42.2	8	1	A
3170433	R 3 × 1° × 50	100	6	5.95	7.47	51.6	8	1	A
3170434	R 3 × 1° × 60	110	6	5.95	7.82	64.6	10	1	A
3170435	R 3 × 1° × 70	120	6	5.95	8.17	74	10	1	A
3170436	R 3 × 1° × 80	130	6	5.95	8.52	87.1	12	1	A
3170441	R 3 × 1.5° × 49	100	6	5.95	–	–	8	2	A
3170451	R 3 × 2° × 36	100	6	5.95	–	–	8	2	A
※ 3170576	R 4 × 1.5° × 54.5	120	8	7.95	–	–	10	2	A
※ 3170574	R 4 × 3° × 35.5	100	8	7.95	–	–	10	2	A
※ 3170587	R 5 × 1.5° × 58.5	130	10	9.95	–	–	12	2	A
※ 3170585	R 5 × 3° × 39.5	110	10	9.95	–	–	12	2	A
※ 3170599	R 6 × 1.5° × 80	160	12	11.9	14.8	82.2	16	1	A
※ 3170598	R 6 × 3° × 60	140	12	11.9	15.6	60.7	16	1	A

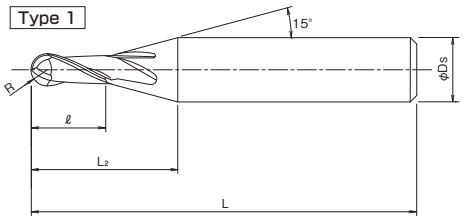
※＝NEW SIZES

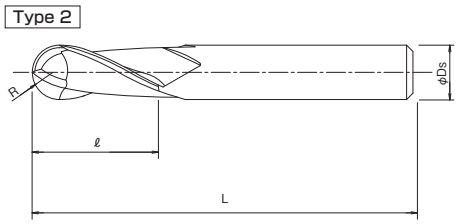
A＝标准库存品　A＝Standard stock item

WXL涂层2刃球头型(强力型)
WXL Coating Two Flute Ball Nose (HSK type)

WXL-HS-EBD







CARBIDE WXL R ±0.005 (R<3) R 0.003~-0.007 (3≤R≤6) SHRINK FIT 30° 切削条件 P.78

单位 :mm Unit:mm

商品号 EDP No.	球半径 × 刃长 × 柄径 R × ℓ × Ds	全长 L	刃长 ℓ	L₂	柄径 Ds	形状 Type	库存 Stock
3107020	R0.1 × 0.4 × 4	35	0.4	6.5	4	1	D
3107040	R0.2 × 0.8 × 4	35	0.8	6.9	4	1	D
3107060	R0.3 × 1.1 × 4	35	1.1	6.9	4	1	D
3107080	R0.4 × 2 × 4	35	2	7.4	4	1	D
3107100	R0.5 × 1.5 × 4	40	1.5	6.7	4	1	D
3107120	R0.6 × 3 × 4	40	3	7.9	4	1	D
3107150	R0.75 × 2 × 4	40	2	6.4	4	1	D
3107200	R1 × 3 × 4	40	3	7.1	4	1	D
3107300	R1.5 × 4.5 × 4	40	4.5	7.9	4	1	D
3107400	R2 × 6 × 6	40	6	11.2	6	1	D
3108500	R2.5 × 8	40	8	11.6	6	1	D
3108600	R3 × 10	45	10	–	6	2	D
3108620	R4 × 12	55	12	–	8	2	D
3108640	R5 × 15	65	15	–	10	2	D
3108660	R6 × 18	70	18	–	12	2	D

■标识说明请参阅P.6
■See p.6 for explanation of marks.

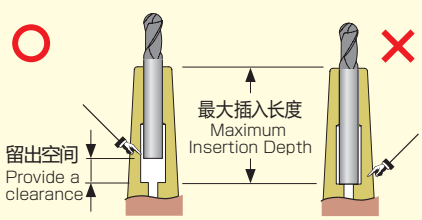
D = 库存中心标准库存品 D = Inventory center stock item

使用注意 Precautions for Use

最大插入长度 Maximum Insertion Depth

刀具插入时，若刀具底端紧贴刀柄底部，容易造成精度不良。所以请务必遵守最大插入长度的规定。

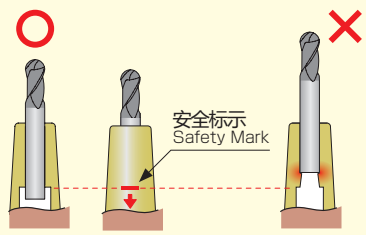
If the cutting tool is inserted until its end bottoms out, it can result in poor precision. Make sure to adhere to the maximum insertion depth.



安全标示 Safety Mark

刀具插入时，若插入长度过短会造成刀柄破损。所以请一定将刀具插入至安全标示以下。

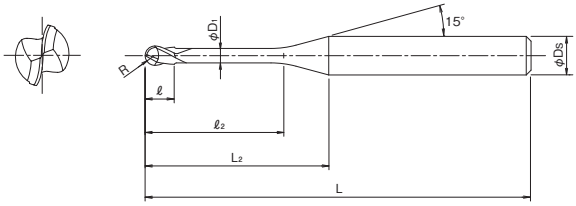
If the insertion depth of the cutting tool is too short, it can damage the holder. Make sure the cutting tool is inserted deeper than the safety mark.



WXL涂层2刃长颈球头型(深细槽球头型·强力型)

WXL Coating Two Flute Ball Nose · with Long Neck (for Rib processing · HSK type)

WXL-HS-LN-EBD



CARBIDE WXL R ±0.005 SHRINK FIT 30° 切削条件

P.79

单位 :mm Unit:mm

商品号 EDP No.	球半径x颈长x柄径 R× ℓ2× Ds	全长 L	刃长 ℓ	L2	柄径 Ds	颈径 D1	干涉角度 θK	■相对于工件倾斜角α的实际有效长(Le) ※1					库存 Stock
								0.5°	1°	1.5°	2°	3°	
3140205	R0.1 × 0.5 × 4	35	0.16	7.5	4	0.18	14.16°	0.53	0.55	0.57	0.59	0.63	D
3140207	R0.1 × 0.75 × 4	35	0.16	7.8	4	0.18	13.72°	0.79	0.82	0.85	0.88	0.94	D
3140210	R0.1 × 1 × 4	35	0.16	8	4	0.18	13.31°	1.05	1.09	1.13	1.17	1.26	D
3140212	R0.1 × 1.25 × 4	35	0.16	8.3	4	0.18	12.92°	1.31	1.36	1.41	1.46	1.57	D
3140305	R0.15 × 0.5 × 4	35	0.24	7.3	4	0.28	14.22°	0.52	0.54	0.56	0.58	0.62	D
3140306	R0.15 × 0.6 × 4	35	0.24	7.4	4	0.28	14.03°	0.63	0.65	0.68	0.7	0.75	D
3140307	R0.15 × 0.75 × 4	35	0.24	7.6	4	0.28	13.77°	0.79	0.82	0.85	0.87	0.93	D
3140310	R0.15 × 1 × 4	35	0.24	7.8	4	0.28	13.34°	1.05	1.09	1.12	1.16	1.24	D
3140312	R0.15 × 1.25 × 4	35	0.24	8.1	4	0.28	12.94°	1.31	1.36	1.4	1.45	1.55	D
3140315	R0.15 × 1.5 × 4	35	0.24	8.3	4	0.28	12.57°	1.57	1.63	1.68	1.74	1.87	D
3140317	R0.15 × 1.75 × 4	35	0.24	8.6	4	0.28	12.21°	1.83	1.89	1.96	2.02	2.18	D
3140407	R0.2 × 0.75 × 4	35	0.3	7.4	4	0.37	13.83°	0.78	0.8	0.83	0.85	0.91	D
3140410	R0.2 × 1 × 4	35	0.3	7.6	4	0.37	13.39°	1.04	1.07	1.11	1.14	1.22	D
3140415	R0.2 × 1.5 × 4	35	0.3	8.1	4	0.37	12.59°	1.56	1.61	1.66	1.72	1.84	D
3140420	R0.2 × 2 × 4	35	0.3	8.6	4	0.37	11.88°	2.08	2.14	2.21	2.29	2.46	D
3140425	R0.2 × 2.5 × 4	35	0.3	9.1	4	0.37	11.24°	2.6	2.68	2.77	2.87	3.08	D
3140510	R0.25 × 1 × 4	35	0.4	7.6	4	0.45	13.45°	1.03	1.06	1.09	1.12	1.19	D
3140515	R0.25 × 1.5 × 4	35	0.4	8.1	4	0.45	12.62°	1.55	1.59	1.64	1.69	1.81	D
3140520	R0.25 × 2 × 4	35	0.4	8.6	4	0.45	11.89°	2.06	2.13	2.2	2.27	2.43	D
3140525	R0.25 × 2.5 × 4	35	0.4	9.1	4	0.45	11.23°	2.58	2.66	2.75	2.84	3.05	D
3140530	R0.25 × 3 × 4	35	0.4	9.6	4	0.45	10.65°	3.1	3.2	3.3	3.42	3.68	D
3140615	R0.3 × 1.5 × 4	35	0.5	7.9	4	0.55	12.64°	1.55	1.59	1.64	1.69	1.8	D
3140620	R0.3 × 2 × 4	35	0.5	8.4	4	0.55	11.88°	2.06	2.12	2.19	2.26	2.42	D
3140625	R0.3 × 2.5 × 4	35	0.5	8.9	4	0.55	11.21°	2.58	2.66	2.74	2.84	3.04	D
3140630	R0.3 × 3 × 4	35	0.5	9.4	4	0.55	10.61°	3.1	3.19	3.3	3.41	3.66	D
3140635	R0.3 × 3.5 × 4	35	0.5	9.9	4	0.55	10.07°	3.61	3.73	3.85	3.99	4.29	D
3140640	R0.3 × 4 × 4	40	0.5	10.4	4	0.55	9.58°	4.13	4.26	4.41	4.56	4.91	D
3140645	R0.3 × 4.5 × 4	40	0.5	10.9	4	0.55	9.13°	4.65	4.8	4.96	5.14	5.53	D
3140650	R0.3 × 5 × 4	40	0.5	11.4	4	0.55	8.73°	5.16	5.33	5.51	5.71	6.15	D
3140655	R0.3 × 5.5 × 4	40	0.5	11.9	4	0.55	8.36°	5.68	5.87	6.07	6.29	6.77	D
3140660	R0.3 × 6 × 4	40	0.5	12.4	4	0.55	8.02°	6.2	6.4	6.62	6.86	7.39	D
3140820	R0.4 × 2 × 4	35	0.6	8.1	4	0.75	11.86°	2.06	2.12	2.18	2.25	2.4	D
3140830	R0.4 × 3 × 4	35	0.6	9.1	4	0.75	10.52°	3.09	3.19	3.29	3.4	3.64	D
3140840	R0.4 × 4 × 4	40	0.6	10.1	4	0.75	9.45°	4.13	4.26	4.4	4.55	4.88	D
3140850	R0.4 × 5 × 4	40	0.6	11.1	4	0.75	8.58°	5.16	5.33	5.5	5.7	6.13	D
3141030	R0.5 × 3 × 4	35	0.8	8.7	4	0.95	10.43°	3.09	3.18	3.28	3.38	3.62	D
3141040	R0.5 × 4 × 4	35	0.8	9.7	4	0.95	9.32°	4.12	4.25	4.39	4.53	4.86	D
3141050	R0.5 × 5 × 4	40	0.8	10.7	4	0.95	8.41°	5.16	5.32	5.49	5.68	6.1	D

■标识说明请参阅P.6
■See p.6 for explanation of marks.

D = 库存中心标准库存品 D = Inventory center stock item

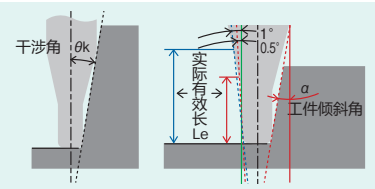
NEXT 下一页

WXL涂层2刃长颈球头型(深细槽球头型·强力型)

WXL Coating Two Flute Ball Nose · with Long Neck (for Rib processing· HSK type)

WXL-HS-LN-EBD

※1:相对于工件倾斜角α的实际有效长(Le)
Effective Neck length (Le) depending on Inclined Angle (α) of workpiece



上表中实际有效长栏里无数值时意味加工时不存在干涉。
No numerical value means no interference with workpiece.

接一页

P.79

单位 :mm Unit:mm

商品号 EDP No.	球半径x颈长x柄径 R × ℓ2× Ds	全长 L	刃长 ℓ	L2	柄径 Ds	颈径 D1	干涉角度 θk	■相对于工件倾斜角α的实际有效长(Le) ※1 0.5°	1°	1.5°	2°	3°	库存 Stock
3141060	R0.5 × 6 × 4	40	0.8	11.7	4	0.95	7.67°	6.19	6.39	6.6	6.83	7.35	D
3141080	R0.5 × 8 × 4	40	0.8	13.7	4	0.95	6.52°	8.26	8.53	8.82	9.13	9.83	D
3141100	R0.5 × 10 × 4	40	0.8	15.7	4	0.95	5.66°	10.33	10.67	11.04	11.43	12.32	D
3141530	R0.75 × 3 × 4	35	1.2	7.9	4	1.45	10.01°	3.13	3.25	3.35	3.45	3.67	D
3141540	R0.75 × 4 × 4	35	1.2	8.9	4	1.45	8.8°	4.18	4.33	4.46	4.6	4.92	D
3141560	R0.75 × 6 × 4	40	1.2	10.9	4	1.45	7.08°	6.27	6.47	6.68	6.9	7.4	D
3141580	R0.75 × 8 × 4	40	1.2	12.9	4	1.45	5.92°	8.34	8.61	8.9	9.2	9.89	D
3141600	R0.75 × 10 × 4	40	1.2	14.9	4	1.45	5.09°	10.41	10.75	11.11	11.5	12.38	D
3142030	R1 × 3 × 4	35	1.6	7.3	4	1.95	9.1°	3.16	3.31	3.47	3.64	3.96	D
3142040	R1 × 4 × 4	35	1.6	8.3	4	1.95	7.87°	4.23	4.44	4.66	4.86	5.26	D
3142060	R1 × 6 × 4	35	1.6	10.3	4	1.95	6.19°	6.36	6.67	6.96	7.23	7.76	D
3142080	R1 × 8 × 4	40	1.6	12.3	4	1.95	5.1°	8.48	8.87	9.22	9.55	10.24	D
3142100	R1 × 10 × 4	40	1.6	14.3	4	1.95	4.33°	10.59	11.05	11.45	11.85	12.73	D
3142112	R1 × 12 × 4	40	1.6	16.3	4	1.95	3.77°	12.69	13.21	13.67	14.15	15.22	D
3142114	R1 × 14 × 4	45	1.6	18.3	4	1.95	3.33°	14.78	15.36	15.89	16.45	17.7	D
3142116	R1 × 16 × 4	45	1.6	20.3	4	1.95	2.98°	16.88	17.51	18.1	18.75	—	D
3142118	R1 × 18 × 4	50	1.6	22.3	4	1.95	2.7°	18.96	19.65	20.32	21.04	—	D
3142120	R1 × 20 × 4	50	1.6	24.3	4	1.95	2.47°	21.05	21.78	22.54	23.34	—	D
3143060	R1.5 × 6 × 4	40	2.4	8.2	4	2.85	4.29°	6.25	6.49	6.72	6.95	7.4	D
3143080	R1.5 × 8 × 4	40	2.4	10.2	4	2.85	3.33°	8.35	8.67	8.97	9.25	9.88	D
3143100	R1.5 × 10 × 4	40	2.4	12.2	4	2.85	2.7°	10.44	10.83	11.19	11.55	12.37	D
3143112	R1.5 × 12 × 4	40	2.4	14.2	4	2.85	2.27°	12.53	12.98	13.4	13.85	14.86	D

■标识说明请参阅P.6
■See p.6 for explanation of marks.

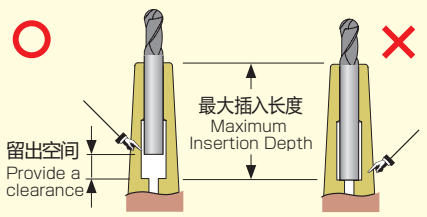
D = 库存中心标准库存品 D = Inventory center stock item

使用注意 Precautions for Use

最大插入长度 Maximum Insertion Depth

刀具插入时，若刀具底端紧贴刀柄底部，容易造成精度不良。所以请务必遵守最大插入长度的规定。

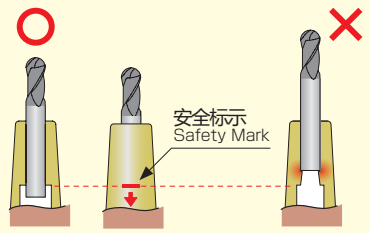
If the cutting tool is inserted until its end bottoms out, it can result in poor precision. Make sure to adhere to the maximum insertion depth.



安全标示 Safety Mark

刀具插入时，若插入长度过短会造成刀柄破损。所以请一定将刀具插入至安全标示以下。

If the insertion depth of the cutting tool is too short, it can damage the holder. Make sure the cutting tool is inserted deeper than the safety mark.



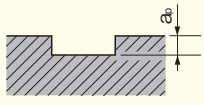
切削条件基准表 Cutting Conditions

WXL-1.5D-DE 槽切削 Slotting

加工材料 Work Material	铜・铜合金 Copper・Copper Alloy		普通结构用钢・炭素钢 Mild Steel・Carbon Steel FC250・SS400・S55C ～32HRC		调质钢・预硬钢・不锈钢 Hardened Steel・Prehardened Steel・Stainless Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊・SUS304 33～41HRC		42～50HRC	
外径 Mill Dia. (mm)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)
0.1	50,000	120	40,000	80	40,000	75	40,000	38
0.2	50,000	170	40,000	110	40,000	90	40,000	45
0.3	50,000	210	40,000	140	40,000	100	40,000	70
0.4	50,000	230	40,000	150	40,000	110	34,500	75
0.5	50,000	250	38,500	150	31,000	110	27,500	75
0.6	50,000	280	33,500	150	24,500	110	21,000	75
0.7	50,000	310	30,000	150	21,500	110	18,500	75
0.8	50,000	360	27,000	150	19,500	110	17,000	80
0.9	50,000	400	23,500	150	17,000	110	15,000	80
1	50,000	430	22,000	150	15,500	110	13,500	80
1.1	50,000	420	20,000	150	14,000	110	12,500	80
1.2	50,000	420	18,500	150	13,500	110	11,500	80
1.3	47,000	410	17,500	150	12,500	110	11,000	80
1.4	44,000	410	16,000	150	11,500	110	10,000	80
1.5	40,000	400	15,500	150	11,000	110	9,900	80
1.6	39,000	400	15,000	150	10,500	110	9,400	80
1.7	36,500	400	14,000	150	9,900	110	8,800	80
1.8	34,500	400	13,500	160	9,400	110	8,500	80
1.9	32,500	400	12,500	160	8,800	110	7,900	85
2	30,000	380	12,000	160	8,700	110	7,900	90
2.1	29,000	410	11,500	170	8,300	110	7,400	90
2.2	28,000	410	11,000	170	8,200	110	7,200	90
2.3	27,500	410	11,000	180	8,000	110	7,000	90
2.4	26,000	430	10,500	180	7,900	110	6,900	90
2.5	24,500	430	10,500	200	7,600	110	6,600	90
2.6	23,500	470	9,800	200	7,400	125	6,300	90
2.7	23,000	470	9,500	200	7,100	125	6,100	90
2.8	22,000	470	9,100	210	6,900	125	5,800	95
2.9	21,500	470	8,800	210	6,700	125	5,700	95
3	21,000	540	8,900	230	6,800	130	5,700	100
3.1	20,000	550	8,700	240	6,700	130	5,600	100
3.2	19,500	560	8,400	240	6,500	145	5,400	105
3.3	19,000	560	8,100	250	6,300	145	5,200	105
3.4	18,000	560	7,900	250	6,100	145	5,100	105
3.5	18,000	560	7,800	250	6,000	155	5,000	105
3.6	17,500	580	7,600	270	5,900	155	4,900	110
3.7	16,500	580	7,400	270	5,700	155	4,700	110
3.8	16,000	590	7,300	280	5,700	155	4,600	110
3.9	15,500	590	7,100	280	5,500	160	4,500	110
4	15,500	600	7,000	280	5,500	160	4,500	115
4.1	15,500	640	6,900	290	5,400	160	4,400	115
4.2	15,000	640	6,800	290	5,300	160	4,400	115
4.3	14,000	640	6,700	310	5,200	160	4,300	115
4.4	14,000	670	6,600	320	5,100	170	4,200	125
4.5	14,000	670	6,600	320	5,100	170	4,200	125
4.6	13,500	700	6,500	330	4,900	170	4,100	125
4.7	13,500	700	6,500	350	4,900	170	4,100	125
4.8	13,500	710	6,400	350	4,800	170	4,100	125
4.9	13,500	710	6,300	360	4,700	170	4,000	125
5	12,500	720	6,200	370	4,600	170	3,900	130
5.1	12,500	720	6,100	370	4,500	170	3,900	130
5.2	12,000	720	6,000	370	4,400	170	3,800	130
5.3	12,000	720	5,900	370	4,400	170	3,800	130
5.4	11,500	720	5,800	370	4,300	170	3,600	130
5.5	11,500	720	5,700	370	4,200	170	3,500	130
5.6	11,500	720	5,600	370	4,100	170	3,500	130
5.7	11,000	720	5,500	370	4,000	170	3,400	130
5.8	11,000	710	5,400	370	3,900	170	3,300	130
5.9	10,500	710	5,300	370	3,800	170	3,300	130
6	10,000	710	5,200	370	3,800	170	3,200	130
8	7,200	580	4,000	320	2,800	230	2,400	140
10	5,700	580	3,200	320	2,200	230	1,900	140
12	4,800	580	2,700	320	1,900	230	1,600	140

切深量 Depth of Cut

0.1D	Dc＜1
0.3D	1≦Dc＜3
0.5D	3≦Dc



1. 请使用刚性较高的机床和刀柄。
2. 当发生振动时请同比下降转速和进给速度。
3. 请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 上表仅做参考。实际加工时，请根据实际情况参照上表制定切削条件。

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed at the same ratio.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. Refer to the table above to set the milling conditions in accordance with the actual situation.

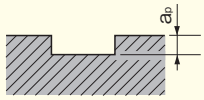
切削条件基准表

WXL-2D-DE 槽切削 Slotting

加工材料 Work Material	铜・铜合金 Copper・Copper Alloy		普通结构用钢・炭素钢 Mild Steel・Carbon Steel FC250・SS400・S55C ～32HRC		调质钢・预硬钢・不锈钢 Hardened Steel・Prehardened Steel・Stainless Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊・SUS304 33～41HRC		42～50HRC	
外径 Mill Dia. (mm)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)
0.1	50,000	100	32,000	70	32,000	60	32,000	30
0.2	50,000	140	32,000	90	32,000	75	32,000	35
0.3	50,000	170	32,000	110	32,000	80	32,000	55
0.4	50,000	190	32,000	120	32,000	90	27,500	60
0.5	50,000	200	31,000	120	25,000	90	22,000	60
0.6	50,000	230	27,000	120	19,500	90	17,000	60
0.7	50,000	250	24,000	120	17,000	90	15,000	60
0.8	50,000	290	21,500	120	15,500	90	13,500	65
0.9	49,000	320	19,000	120	13,500	90	12,000	65
1	47,500	350	17,500	120	12,500	90	11,000	65
1.1	43,000	340	16,000	120	11,500	90	9,900	65
1.2	40,500	340	15,000	120	10,500	90	9,300	65
1.3	38,000	330	14,000	120	9,900	90	8,700	65
1.4	35,000	330	13,000	120	9,200	90	8,100	65
1.5	32,000	320	12,500	120	8,900	90	7,900	65
1.6	31,000	320	12,000	120	8,500	90	7,500	65
1.7	29,000	320	11,000	120	7,900	90	7,000	65
1.8	28,000	320	10,500	130	7,500	90	6,800	68
1.9	26,000	320	10,000	130	7,100	90	6,300	68
2	24,000	310	9,700	130	7,000	90	6,300	70
2.1	23,000	330	9,300	140	6,600	90	5,900	70
2.2	22,500	330	9,000	140	6,500	90	5,700	70
2.3	22,000	330	8,800	150	6,400	90	5,600	70
2.4	20,500	350	8,600	150	6,300	90	5,500	70
2.5	20,000	350	8,200	160	6,100	90	5,300	70

切深量 Depth of Cut

0.1D	Dc＜1
0.3D	1≦Dc＜3
0.5D	3≦Dc



1. 请使用刚性较高的机床和刀柄。
2. 当发生振动时请同比下降转速和进给速度。
3. 请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 上表仅做参考。实际加工时，请根据实际情况参照上表制定切削条件。

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed at the same ratio.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. Refer to the table above to set the milling conditions in accordance with the actual situation.

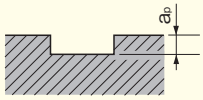
NEXT 下一页

FROM
接一页

加工材料 Work Material	铜·铜合金 Copper · Copper Alloy		普通结构用钢·炭素钢 Mild Steel · Carbon Steel FC250 · SS400 · S55C ～32HRC		调质钢·预硬钢·不锈钢 Hardened Steel · Prehardened Steel · Stainless Steel SKT · SKD61 · NAK55 · NAK80 · HPM1 · DH＊＊ · SUS304			
					33～41HRC		42～50HRC	
外径 Mill Dia. (mm)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)
2.6	19,000	380	7,900	160	5,900	100	5,000	70
2.7	18,000	380	7,600	160	5,700	100	4,900	70
2.8	17,500	380	7,300	170	5,500	100	4,700	75
2.9	17,000	380	7,100	170	5,300	100	4,500	75
3	16,000	400	6,900	170	5,300	100	4,400	75
3.1	15,500	410	6,700	180	5,100	100	4,300	75
3.2	15,000	420	6,500	180	5,000	110	4,200	80
3.3	14,500	420	6,300	190	4,800	110	4,000	80
3.4	14,000	420	6,100	190	4,600	110	3,900	80
3.5	14,000	420	6,000	190	4,600	120	3,800	80
3.6	13,500	430	5,900	200	4,500	120	3,700	85
3.7	12,500	430	5,700	200	4,400	120	3,600	85
3.8	12,500	440	5,600	210	4,400	120	3,600	85
3.9	12,000	440	5,500	210	4,200	125	3,500	85
4	12,000	450	5,400	210	4,200	125	3,500	90
4.1	11,500	480	5,300	220	4,100	125	3,400	90
4.2	11,500	480	5,300	220	4,100	125	3,300	90
4.3	11,000	480	5,200	230	4,000	125	3,300	90
4.4	11,000	500	5,100	240	3,900	130	3,200	95
4.5	10,500	500	5,100	240	3,900	130	3,200	95
4.6	10,500	520	5,000	250	3,800	130	3,200	95
4.7	10,500	520	5,000	260	3,800	130	3,100	95
4.8	10,500	530	4,900	260	3,700	130	3,100	95
4.9	10,000	530	4,900	270	3,600	130	3,100	95
5	9,500	540	4,800	270	3,500	130	3,000	100

切深量 Depth of Cut

0.1D	Dc＜1
0.3D	1≦Dc＜3
0.5D	3≦Dc



1. 请使用刚性较高的机床和刀柄。
2. 当发生振动时请同比下降转速和进给速度。
3. 请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 上表仅做参考。实际加工时，请根据实际情况参照上表制定切削条件。

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed at the same ratio.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. Refer to the table above to set the milling conditions in accordance with the actual situation.

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切削条件基准表

Cutting Conditions

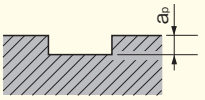
WXL-2D-DE 槽切削 Slotting

FROM
接一页

加工材料 Work Material	铜・铜合金 Copper・Copper Alloy		普通结构用钢・炭素钢 Mild Steel・Carbon Steel FC250・SS400・S55C ～32HRC		调质钢・预硬钢・不锈钢 Hardened Steel・Prehardened Steel・Stainless Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊・SUS304 33～41HRC		42～50HRC	
外径 Mill Dia. (mm)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)
5.1	9,500	540	4,700	270	3,500	130	3,000	100
5.2	9,300	540	4,600	270	3,400	130	2,900	100
5.3	9,200	540	4,600	270	3,400	130	2,900	100
5.4	9,000	540	4,500	270	3,300	130	2,800	100
5.5	8,800	540	4,400	270	3,200	130	2,700	100
5.6	8,700	540	4,300	270	3,100	130	2,600	100
5.7	8,500	540	4,200	270	3,100	130	2,600	100
5.8	8,400	530	4,200	270	3,000	130	2,600	100
5.9	8,200	530	4,100	270	2,900	130	2,500	100
6	7,900	530	4,000	270	2,900	130	2,500	100
6.5	7,500	530	3,700	270	2,700	130	2,300	100
7	6,900	530	3,400	270	2,500	130	2,100	100
7.5	6,400	530	3,200	270	2,300	130	2,000	100
8	5,900	520	3,000	260	2,200	125	1,900	100
8.5	5,600	520	2,800	260	2,000	125	1,700	100
9	5,300	510	2,600	260	1,900	125	1,500	100
9.5	5,100	510	2,500	260	1,800	125	1,400	95
10	4,700	500	2,400	250	1,700	125	1,500	95
11	4,400	500	2,200	250	1,600	125	1,100	95
12	4,000	510	2,000	250	1,400	125	1,200	95
16	3,000	400	1,500	200	1,100	115	800	80
18	2,700	360	1,300	180	900	100	700	70
20	2,400	300	1,200	150	800	90	600	60
25	1,900	270	960	150	640	65	500	50
30	1,600	230	800	130	530	50	420	45

切深量 Depth of Cut

0.1D	Dc＜1
0.3D	1≦Dc＜3
0.5D	3≦Dc



1. 请使用刚性较高的机床和刀柄。
2. 当发生振动时请同比下降转速和进给速度。
3. 请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 上表仅做参考。实际加工时，请根据实际情况参照上表制定切削条件。

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed at the same ratio.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. Refer to the table above to set the milling conditions in accordance with the actual situation.

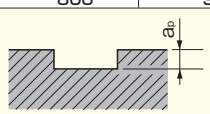
切削条件基准表

WXL-3D-DE 槽切削 Slotting

加工材料 Work Material	铜・铜合金 Copper・Copper Alloy		普通结构用钢・炭素钢 Mild Steel・Carbon Steel FC250・SS400・S55C ～32HRC		调质钢・预硬钢・不锈钢 Hardened Steel・Prehardened Steel・Stainless Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊・SUS304 33～41HRC		42～50HRC	
外径 Mill Dia. (mm)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)
0.1	50,000	100	32,000	70	32,000	60	32,000	30
0.2	50,000	140	32,000	90	32,000	75	32,000	35
0.3	50,000	170	32,000	110	32,000	80	32,000	55
0.4	50,000	190	32,000	120	32,000	90	27,500	60
0.5	50,000	200	31,000	120	25,000	90	22,000	60
0.6	50,000	230	27,000	120	19,500	90	17,000	60
0.7	50,000	250	24,000	120	17,000	90	15,000	60
0.8	50,000	290	21,500	120	15,500	90	13,500	65
0.9	49,000	320	19,000	120	13,500	90	12,000	65
1	47,500	350	17,500	120	12,500	90	11,000	65
1.1	43,000	340	16,000	120	11,500	90	9,900	65
1.2	40,500	340	15,000	120	10,500	90	9,300	65
1.3	38,000	330	14,000	120	9,900	90	8,700	65
1.4	35,000	330	13,000	120	9,200	90	8,100	65
1.5	32,000	320	12,500	120	8,900	90	7,900	65
1.6	31,000	320	12,000	120	8,500	90	7,500	65
1.7	29,000	320	11,000	120	7,900	90	7,000	65
1.8	28,000	320	10,500	130	7,500	90	6,800	68
1.9	26,000	320	10,000	130	7,100	90	6,300	68
2	24,000	310	9,700	130	7,000	90	6,300	70
2.1	23,000	330	9,300	140	6,600	90	5,900	70
2.2	22,500	330	9,000	140	6,500	90	5,700	70
2.3	22,000	330	8,800	150	6,400	90	5,600	70
2.4	20,500	350	8,600	150	6,300	90	5,500	70
2.5	20,000	350	8,200	160	6,100	90	5,300	70
2.6	19,000	380	7,900	160	5,900	100	5,000	70
2.7	18,000	380	7,600	160	5,700	100	4,900	70
2.8	17,500	380	7,300	170	5,500	100	4,700	75
2.9	17,000	380	7,100	170	5,300	100	4,500	75
3	16,000	400	6,900	170	5,300	100	4,400	75
3.1	15,500	410	6,700	180	5,100	100	4,300	75
3.2	15,000	420	6,500	180	5,000	110	4,200	80
3.3	14,500	420	6,300	190	4,800	110	4,000	80
3.4	14,000	420	6,100	190	4,600	110	3,900	80
3.5	14,000	420	6,000	190	4,600	120	3,800	80
3.6	13,500	430	5,900	200	4,500	120	3,700	85
3.7	12,500	430	5,700	200	4,400	120	3,600	85
3.8	12,500	440	5,600	210	4,400	120	3,600	85
3.9	12,000	440	5,500	210	4,200	125	3,500	85
4	12,000	450	5,400	210	4,200	125	3,500	90
4.1	11,500	480	5,300	220	4,100	125	3,400	90
4.2	11,500	480	5,300	220	4,100	125	3,300	90
4.3	11,000	480	5,200	230	4,000	125	3,300	90
4.4	11,000	500	5,100	240	3,900	130	3,200	95
4.5	10,500	500	5,100	240	3,900	130	3,200	95
4.6	10,500	520	5,000	250	3,800	130	3,200	95
4.7	10,500	520	5,000	260	3,800	130	3,100	95
4.8	10,500	530	4,900	260	3,700	130	3,100	95
4.9	10,000	530	4,900	270	3,600	130	3,100	95
5	9,500	540	4,800	270	3,500	130	3,000	100
5.1	9,500	540	4,700	270	3,500	130	3,000	100
5.2	9,300	540	4,600	270	3,400	130	2,900	100
5.3	9,200	540	4,600	270	3,400	130	2,900	100
5.4	9,000	540	4,500	270	3,300	130	2,800	100
5.5	8,800	540	4,400	270	3,200	130	2,700	100
5.6	8,700	540	4,300	270	3,100	130	2,600	100
5.7	8,500	540	4,200	270	3,100	130	2,600	100
5.8	8,400	530	4,200	270	3,000	130	2,600	100
5.9	8,200	530	4,100	270	2,900	130	2,500	100
6	7,900	530	4,000	270	2,900	130	2,500	100
6.5	7,500	530	3,700	270	2,700	130	2,300	100
7	6,900	530	3,400	270	2,500	130	2,100	100
7.5	6,400	530	3,200	270	2,300	130	2,000	100
8	5,900	520	3,000	260	2,200	125	1,900	100
8.5	5,600	520	2,800	260	2,000	125	1,700	100
9	5,300	510	2,600	260	1,900	125	1,500	100
9.5	5,100	510	2,500	260	1,800	125	1,400	95
10	4,700	500	2,400	250	1,700	125	1,500	95
11	4,400	500	2,200	250	1,600	125	1,100	95
12	4,000	510	2,000	250	1,400	125	1,200	95
16	3,000	400	1,500	200	1,100	115	800	80
18	2,700	360	1,300	180	900	100	700	70
20	2,400	300	1,200	150	800	90	600	60

切深量 Depth of Cut

0.1D	Dc＜1
0.3D	1≦Dc＜3
0.5D	3≦Dc

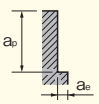


1. 请使用刚性较高的机床和刀柄。
2. 当发生振动时请同比下降转速和进给速度。
3. 请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 上表仅做参考。实际加工时，请根据实际情况参照上表制定切削条件。

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed at the same ratio.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. Refer to the table above to set the milling conditions in accordance with the actual situation.

切削条件基准表

WXL-4D-DE 侧面切削 Side Milling

加工材料 Work Material	铜・铜合金 Copper・Copper Alloy		普通结构用钢・炭素钢 Mild Steel・Carbon Steel FC250・SS400・S55C ～32HRC		调质钢・预硬钢・不锈钢 Hardened Steel・Prehardened Steel・Stainless Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊・SUS304 33～41HRC		42～50HRC	
外径 Mill Dia. (mm)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)
0.2	32,000	90	22,500	30	19,000	30	—	—
0.3	32,000	110	22,500	40	19,000	35	—	—
0.4	25,000	110	16,000	45	14,500	35	—	—
0.5	20,000	120	13,000	45	13,000	40	—	—
0.6	16,000	120	11,000	45	10,000	40	—	—
0.7	16,000	120	9,400	45	6,800	40	—	—
0.8	12,000	120	8,400	45	6,000	40	—	—
0.9	12,000	120	7,500	45	5,400	40	—	—
1	9,800	120	5,700	45	5,400	40	—	—
1.1	9,500	140	5,200	45	5,000	40	—	—
1.2	8,600	130	4,800	45	4,500	40	—	—
1.3	8,100	130	4,500	45	4,200	40	—	—
1.4	7,500	130	4,200	45	3,900	40	—	—
1.5	7,000	130	3,900	45	3,600	40	—	—
1.6	6,400	120	3,700	45	3,500	40	—	—
1.7	6,200	120	3,600	45	3,400	40	—	—
1.8	5,800	120	3,300	45	3,100	40	—	—
1.9	5,500	120	3,200	45	3,000	40	—	—
2	5,200	120	3,000	45	2,800	40	—	—
2.1	4,800	120	2,900	45	2,800	40	—	—
2.2	4,600	130	2,700	50	2,600	40	—	—
2.3	4,500	130	2,700	50	2,600	40	—	—
2.4	4,400	130	2,600	55	2,500	40	—	—
2.5	4,100	140	2,500	55	2,500	40	—	—
2.6	3,900	140	2,400	55	2,400	40	—	—
2.7	3,700	150	2,300	55	2,300	45	—	—
2.8	3,600	150	2,200	55	2,200	45	—	—
2.9	3,500	150	2,100	60	2,100	45	—	—
3	3,400	150	2,100	60	2,100	50	1,900	30
3.1	3,200	160	2,000	60	2,000	50	1,800	30
3.2	3,000	160	2,000	65	2,000	50	1,800	30
3.3	2,900	160	1,900	65	1,900	55	1,700	30
3.4	2,800	160	1,800	70	1,800	55	1,700	30
3.5	2,800	160	1,800	70	1,800	55	1,600	30
3.6	2,700	160	1,800	70	1,800	60	1,600	30
3.7	2,700	170	1,700	70	1,700	60	1,500	35
3.8	2,500	170	1,700	70	1,700	60	1,500	35
3.9	2,400	170	1,600	75	1,600	60	1,500	35
4	2,400	170	1,600	75	1,600	65	1,400	35
4.1	2,400	180	1,600	75	1,600	65	1,400	35
4.2	2,300	190	1,600	80	1,600	65	1,400	35
4.3	2,300	190	1,500	80	1,500	65	1,400	35
4.4	2,100	190	1,500	80	1,500	65	1,400	35
4.5	2,100	200	1,500	85	1,500	65	1,300	40
4.6	2,100	200	1,500	85	1,500	65	1,300	40
4.7	2,100	200	1,500	90	1,500	65	1,300	40
4.8	2,100	200	1,500	90	1,500	65	1,300	40
4.9	2,000	210	1,400	90	1,400	65	1,300	40
5	2,000	210	1,400	95	1,400	65	1,300	40
5.1	1,900	210	1,400	95	1,400	65	1,200	40
5.2	1,900	210	1,400	95	1,400	65	1,200	40
5.3	1,800	210	1,300	95	1,300	65	1,200	40
5.4	1,800	210	1,300	95	1,300	65	1,200	40
5.5	1,800	210	1,300	95	1,300	65	1,100	40
5.6	1,700	210	1,300	95	1,300	65	1,100	40
5.7	1,700	210	1,300	95	1,300	65	1,100	40
5.8	1,700	210	1,200	95	1,200	65	1,100	40
5.9	1,600	210	1,200	95	1,200	65	1,000	40
6	1,600	210	1,200	95	1,200	65	1,000	40
8	1,100	200	900	95	900	65	800	40
10	900	200	700	90	700	65	630	40
12	800	200	600	90	600	65	525	40
切深量 Depth of Cut	 a_p=4D a_e=0.05D Dc>1 a_e=0.1D 1≦Dc				 a_p=4D a_e=0.015D Dc<0.3 a_e=0.03D 0.3≦Dc<1 a_e=0.05D 1≦Dc<3 a_e=0.1D 3≦Dc			

1. 请使用刚性较高的机床和刀柄。
2. 当发生振动时请同比下降转速和进给速度。
3. 请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 上表仅做参考。实际加工时，请根据实际情况参照上表制定切削条件。

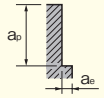
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed at the same ratio.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. Refer to the table above to set the milling conditions in accordance with the actual situation.

切削条件基准表

WXL-EMS 侧面切削 Side Milling

加工材料 Work Material	铜・铜合金 Copper・Copper Alloy		普通结构用钢・炭素钢 Mild Steel・Carbon Steel FC250・SS400・S55C ～32HRC		调质钢・预硬钢・不锈钢 Hardened Steel・Prehardened Steel・Stainless Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊・SUS304 33～41HRC		42～50HRC	
外径 Mill Dia. (mm)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)
1	50,000	440	24,000	210	14,000	78	12,500	70
1.5	50,000	975	16,000	310	9,250	115	8,400	105
2	47,500	1,100	12,000	295	7,000	110	6,350	100
2.5	38,000	1,900	9,600	480	6,200	140	5,550	125
3	32,000	1,600	8,150	430	5,300	125	4,750	110
4	24,000	1,700	6,050	450	4,250	135	3,700	115
5	19,000	2,000	4,900	520	3,550	140	3,150	125
6	16,000	2,000	4,100	520	2,950	145	2,650	130
8	12,000	1,900	3,050	505	2,200	145	1,950	130
10	9,500	1,900	2,450	505	1,750	145	1,550	130
12	7,900	1,900	2,050	505	1,450	145	1,300	130
14	6,800	1,900	1,750	495	1,250	145	1,100	125
15	6,300	1,900	1,600	490	1,150	135	1,050	120
16	5,900	1,800	1,500	480	1,100	130	995	115
18	5,300	1,800	1,350	470	990	115	880	105
20	4,700	1,700	1,200	445	890	105	795	95
25	3,800	1,400	970	360	710	85	635	75
30	3,100	1,100	815	300	590	70	530	60
切深量 Depth of Cut								

a_p	a_e	
1.5D	0.05D	Dc＜3
1.5D	0.1D	3≦Dc



a_p	a_e
1D	0.02D

1. 请使用刚性较高的机床和刀柄。
2. 当发生振动时请同比下降转速和进给速度。
3. 请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 上表仅做参考。实际加工时，请根据实际情况参照上表制定切削条件。

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed at the same ratio.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. Refer to the table above to set the milling conditions in accordance with the actual situation.

NEXT 下一页

切削条件基准表 Cutting Conditions

WXL-EMS 高速侧面切削 High-Speed Side Milling

FROM 接一页

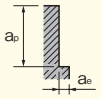
加工時产生的火花以及破损造成的发热现象有导致火灾的危险。
请做好防火措施。

Caution: Sparks generated during operation or heat caused by tool breakage can cause fire. Be sure to use all proper fire-prevention measures.

加工材料 Work Material	铜・铜合金 Copper・Copper Alloy		普通结构用钢・炭素钢 Mild Steel・Carbon Steel FC250・SS400・S55C ～32HRC		调质钢・预硬钢 Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊ 33～41HRC		42～50HRC	
外径 Mill Dia. (mm)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)
6	26,000	2,900	20,000	2,300	13,000	1,500	7,950	795
8	19,500	3,000	14,500	2,300	9,900	1,450	5,950	795
10	15,500	2,900	12,000	2,300	7,950	1,450	4,750	795
12	13,000	3,000	9,900	2,300	6,600	1,450	3,950	790
14	11,000	2,800	8,500	2,200	5,650	1,350	3,400	740
15	10,500	2,800	7,950	2,150	5,250	1,350	3,150	730
16	9,700	2,700	7,450	2,100	4,950	1,350	2,950	715
18	8,600	2,700	6,600	2,100	4,400	1,300	2,650	705
20	7,800	2,600	5,950	2,000	3,950	1,300	2,350	665
25	6,200	2,000	4,750	1,600	3,150	1,050	1,900	560
30	5,200	1,700	3,950	1,350	2,650	890	1,550	455

切深量 Depth of Cut

a_p	a_e	
1.5D	0.01D	Dc＜8
1.5D	0.02D	8≦Dc



a_p	a_e	
1D	0.01D	Dc＜8
1D	0.02D	8≦Dc

1. 此基准条件表适用于使用高精度的数控加工中心进行轻切削
2. 刀具磨损后易在加工中产生火花，因此请不要使用易燃切削油剂。
3. 请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 上表仅做参考。实际加工时，请根据实际情况参照上表制定切削条件。

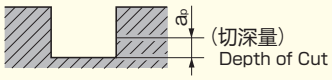
1. The indicated speeds and feeds are for high speed light milling with high speed/high precision machining centers.
2. Tools can cause sparks. Do not use flammable fluids.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. Refer to the table above to set the milling conditions in accordance with the actual situation.

切削条件基准表

WXL-LN-EDS 槽切削 Slotting

加工材料 Work Material		铜・铜合金 Copper・Copper Alloy			普通结构用钢・炭素钢 Mild Steel・Carbon Steel FC250・SS400・S55C ～32HRC			调质钢・预硬钢・不锈钢 Hardened Steel・Prehardened Steel・Stainless Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊・SUS304 33～41HRC			42～50HRC		
外径 Dc	颈长 ℓ2	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap
0.1	0.3	38,500	150	0.006	32,000	120	0.005	32,000	70	0.004	32,000	45	0.002
	0.5	38,500	110	0.005	32,000	100	0.004	32,000	60	0.003	32,000	35	0.002
	1	38,500	70	0.003	32,000	60	0.002	32,000	30	0.002	32,000	20	0.002
0.2	0.5	35,200	490	0.022	32,000	450	0.018	32,000	450	0.015	29,000	250	0.012
	1	35,200	380	0.016	32,000	350	0.013	32,000	350	0.011	29,000	200	0.009
	1.5	31,000	270	0.01	28,000	250	0.008	28,000	250	0.007	25,000	150	0.005
	2	24,000	220	0.006	22,000	200	0.005	22,000	200	0.004	20,000	120	0.003
	2.5	22,000	190	0.005	20,000	180	0.004	20,000	170	0.004	20,000	100	0.003
	3	22,000	180	0.004	20,000	170	0.003	20,000	160	0.003	20,000	90	0.002
	3.5	22,000	150	0.004	20,000	140	0.003	20,000	130	0.003	20,000	80	0.002
	4	22,000	40	0.002	20,000	40	0.002	20,000	35	0.002	20,000	30	0.002
0.3	1	38,500	480	0.032	32,000	400	0.027	32,000	350	0.023	29,000	300	0.018
	1.5	38,500	430	0.028	32,000	360	0.023	32,000	300	0.02	29,000	250	0.015
	2	33,500	360	0.024	28,000	300	0.02	28,000	250	0.017	25,000	200	0.013
	2.5	33,500	330	0.017	28,000	280	0.014	28,000	230	0.012	25,000	190	0.008
	3	26,500	300	0.011	22,000	250	0.009	22,000	160	0.007	20,000	150	0.005
	4	24,000	220	0.008	20,000	190	0.007	20,000	150	0.005	20,000	130	0.003
	5	24,000	190	0.006	20,000	160	0.005	20,000	140	0.003	18,000	120	0.002
	6	24,000	100	0.002	20,000	90	0.002	20,000	80	0.002	16,000	60	0.002
	9	19,000	30	0.002	16,000	30	0.002	16,000	30	0.002	13,000	20	0.002
0.4	1.5	38,500	520	0.032	32,000	440	0.027	32,000	380	0.023	29,000	330	0.018
	2	38,500	480	0.031	32,000	400	0.026	32,000	350	0.022	29,000	300	0.018
	3	33,500	360	0.02	28,000	300	0.017	28,000	250	0.014	25,000	200	0.011
	4	26,500	300	0.014	22,000	250	0.012	22,000	200	0.01	20,000	150	0.008
	5	24,000	240	0.007	20,000	200	0.006	20,000	160	0.005	20,000	130	0.003
	6	24,000	210	0.006	20,000	180	0.005	20,000	140	0.004	20,000	120	0.002
	7	24,000	160	0.005	20,000	140	0.004	20,000	120	0.003	20,000	110	0.002
	8	24,000	150	0.002	20,000	130	0.002	20,000	110	0.002	20,000	100	0.002
	9	24,000	140	0.002	20,000	120	0.002	20,000	100	0.002	20,000	80	0.002
	10	24,000	130	0.002	20,000	110	0.002	20,000	85	0.002	18,000	70	0.002
	12	24,000	100	0.002	20,000	90	0.002	20,000	80	0.002	16,000	60	0.002
0.5	1.5	38,500	660	0.054	32,000	550	0.045	32,000	420	0.038	29,000	330	0.03
	2	38,500	600	0.054	32,000	500	0.045	32,000	400	0.038	29,000	300	0.03
	3	36,000	540	0.036	30,000	450	0.03	30,000	360	0.028	27,000	280	0.022
	4	33,500	480	0.025	28,000	400	0.021	28,000	320	0.018	25,000	250	0.014
	5	33,500	450	0.017	28,000	380	0.014	25,000	300	0.01	22,000	230	0.008
	6	26,500	420	0.007	22,000	350	0.006	22,000	220	0.005	20,000	180	0.004
	7	24,000	380	0.006	20,000	320	0.005	20,000	200	0.004	20,000	170	0.003
	8	24,000	320	0.006	20,000	270	0.005	20,000	180	0.003	20,000	150	0.003
	9	24,000	300	0.002	20,000	250	0.002	18,000	160	0.002	18,000	140	0.002

切深量 Depth of Cut



1. 请使用刚性较高的机床和刀柄。
2. 推荐使用MQL(油雾冷却)或气冷加工炭素钢淬火钢。
3. 请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 上表为等高线加工等负荷较少可稳定加工状态下的标准。实际加工时，请根据实际情况参照上表制定切削条件。
5. 根据加工精度、加工形状、加工刀路适当调整加工条件。
6. φ0.5以下或L/D大于10时、微小的负荷增大也会导致折损、根据切削状况适当调节切削条件。
7. 转速不足时请根据上表同比下降转速和进给速度。

NEXT 下一页

1. Use a rigid and precise machine and holder.
2. When machining carbon steels or hardened steels, using MQL (Minimum Quantity Lubrication / oil mist coolant) or air blow is recommended.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. The above cutting conditions are for contouring operation with low-load and stable condition. Refer to the table above to set the milling conditions in accordance with the actual situation.
5. Please adjust conditions based on machining accuracy, machining shape and machining path.
6. When using a tool with a diameter of φ 0.5 or less, or L/D (aspect ratio) is greater than 10, high loads can cause tool breakage. Therefore, adjust the cutting conditions based on the machining situation.
7. When RPM are insufficient, please reduce the RPM and feed rates at same ratio as listed above.

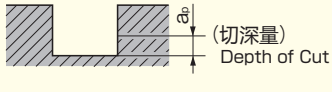
切削条件基准表

WXL-LN-EDS 槽切削 Slotting

FROM 接一页

加工材料 Work Material		铜・铜合金 Copper・Copper Alloy			普通结构用钢・炭素钢 Mild Steel・Carbon Steel FC250・SS400・S55C ～32HRC			调质钢・预硬钢・不锈钢 Hardened Steel・Prehardened Steel・Stainless Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊・SUS304					
								33～41HRC			42～50HRC		
外径 Dc	颈长 ℓ2	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap
0.5	10	24,000	240	0.002	20,000	200	0.002	18,000	150	0.002	18,000	130	0.002
	12	24,000	190	0.002	20,000	160	0.002	18,000	120	0.002	18,000	100	0.002
	15	21,500	100	0.002	18,000	90	0.002	16,000	80	0.002	16,000	70	0.002
0.6	2	38,500	720	0.065	32,000	600	0.054	32,000	400	0.045	27,000	300	0.036
	3	38,500	660	0.06	32,000	550	0.05	32,000	360	0.04	27,000	280	0.03
	4	33,500	540	0.048	28,000	450	0.04	28,000	300	0.033	25,000	200	0.026
	5	33,500	480	0.036	28,000	400	0.03	25,000	220	0.02	22,000	180	0.02
	6	26,500	300	0.022	22,000	250	0.018	22,000	200	0.015	20,000	150	0.012
	7	26,500	300	0.012	22,000	250	0.01	22,000	200	0.008	20,000	150	0.007
	8	26,500	300	0.008	22,000	250	0.007	22,000	200	0.006	20,000	150	0.005
	10	24,000	240	0.006	20,000	200	0.005	18,000	150	0.004	18,000	130	0.003
	12	21,500	220	0.002	18,000	190	0.002	18,000	150	0.002	18,000	120	0.002
	15	21,500	150	0.002	18,000	130	0.002	16,000	110	0.002	16,000	100	0.002
	18	18,000	90	0.002	15,000	80	0.002	14,000	70	0.002	14,000	60	0.002
0.7	2	38,500	720	0.076	32,000	600	0.063	32,000	500	0.053	26,000	400	0.042
	4	33,500	540	0.055	28,000	450	0.046	28,000	300	0.039	22,000	300	0.031
	6	33,500	540	0.035	28,000	450	0.029	28,000	200	0.025	22,000	200	0.02
	8	26,500	300	0.02	22,000	250	0.017	22,000	200	0.014	20,000	150	0.011
	10	26,500	300	0.01	22,000	250	0.008	22,000	200	0.007	20,000	150	0.006
0.8	4	38,500	720	0.064	32,000	600	0.053	32,000	600	0.044	25,000	400	0.035
	6	31,000	540	0.041	26,000	450	0.034	26,000	400	0.028	21,000	300	0.022
	8	26,500	420	0.029	22,000	350	0.024	22,000	300	0.02	18,000	250	0.016
	10	26,500	420	0.012	22,000	350	0.01	22,000	300	0.008	18,000	240	0.006
	12	20,500	360	0.008	17,000	300	0.007	17,000	300	0.006	15,000	200	0.004
	14	20,500	320	0.004	17,000	270	0.003	17,000	250	0.003	13,000	170	0.002
	16	19,000	270	0.002	16,000	230	0.002	16,000	220	0.002	12,000	150	0.002
	20	17,000	200	0.002	14,000	170	0.002	14,000	160	0.002	12,000	130	0.002
	24	14,500	100	0.002	12,000	90	0.002	12,000	80	0.002	10,000	70	0.002
0.9	4	38,500	1,450	0.072	32,000	1,200	0.06	30,000	860	0.06	23,000	650	0.04
	6	36,000	1,200	0.071	30,000	1,000	0.059	28,000	780	0.05	22,000	600	0.04
	8	31,000	960	0.046	26,000	800	0.038	25,000	600	0.032	19,000	400	0.025
	10	24,000	720	0.032	20,000	600	0.027	20,000	500	0.023	16,000	300	0.018
	15	20,500	360	0.01	17,000	300	0.008	17,000	300	0.006	16,000	300	0.005
1	3	36,000	1,450	0.108	30,000	1,200	0.09	30,000	1,100	0.08	22,000	800	0.06
	4	36,000	1,400	0.096	30,000	1,150	0.08	30,000	1,100	0.07	22,000	650	0.05
	5	36,000	1,300	0.096	30,000	1,100	0.08	28,000	950	0.07	20,000	600	0.045
	6	32,500	1,200	0.084	27,000	1,000	0.07	26,000	900	0.06	20,000	600	0.04
	7	30,000	1,200	0.06	25,000	1,000	0.05	24,000	800	0.05	20,000	500	0.03
	8	27,500	960	0.048	23,000	800	0.04	22,000	700	0.04	18,000	400	0.03
	9	24,000	840	0.036	20,000	700	0.03	19,000	600	0.03	18,000	400	0.025
	10	23,000	720	0.036	19,000	600	0.03	18,000	500	0.028	15,000	300	0.02
	12	23,000	720	0.024	19,000	600	0.02	18,000	500	0.019	15,000	300	0.01
	14	18,000	480	0.012	15,000	400	0.01	15,000	400	0.009	12,000	200	0.008
	16	18,000	360	0.01	15,000	300	0.008	15,000	300	0.007	12,000	200	0.006
	18	15,500	270	0.007	13,000	230	0.006	13,000	220	0.005	11,000	180	0.004
	20	14,500	220	0.005	12,000	190	0.004	11,000	180	0.004	10,000	130	0.003
	22	13,000	190	0.004	11,000	160	0.003	10,000	150	0.003	9,000	100	0.003
	25	11,000	100	0.004	9,000	90	0.003	9,000	85	0.003	8,500	80	0.003
	30	9,600	40	0.002	8,000	40	0.002	8,000	35	0.002	8,000	30	0.002

切深量 Depth of Cut



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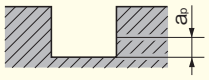
加工材料 Work Material		铜・铜合金 Copper・Copper Alloy			普通结构用钢・炭素钢 Mild Steel・Carbon Steel FC250・SS400・S55C ～32HRC			调质钢・预硬钢・不锈钢 Hardened Steel・Prehardened Steel・Stainless Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊・SUS304					
								33～41HRC			42～50HRC		
外径 Dc	颈长 ℓ2	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap
1.2	4	29,000	1,300	0.108	24,000	1,100	0.09	23,000	1,000	0.08	18,000	700	0.06
	6	27,500	1,200	0.096	23,000	1,000	0.08	22,000	900	0.07	17,000	600	0.05
	8	24,000	840	0.084	20,000	700	0.07	19,000	700	0.05	14,000	400	0.04
	10	24,000	840	0.06	20,000	700	0.05	19,000	700	0.04	14,000	400	0.03
	12	20,500	720	0.048	17,000	600	0.04	16,000	500	0.03	11,000	300	0.02
	14	18,000	540	0.018	15,000	450	0.015	13,000	380	0.013	11,000	250	0.011
	16	14,500	360	0.01	12,000	300	0.008	11,000	250	0.007	10,000	220	0.006
	20	12,000	240	0.006	10,000	200	0.005	10,000	190	0.005	9,000	180	0.004
1.4	6	24,000	1,200	0.156	20,000	1,000	0.13	19,000	900	0.11	15,000	600	0.09
	8	21,500	960	0.108	18,000	800	0.09	17,000	700	0.08	13,000	400	0.06
	10	21,500	960	0.072	18,000	800	0.06	17,000	700	0.05	13,000	400	0.04
	12	21,500	960	0.06	18,000	800	0.05	17,000	700	0.04	13,000	400	0.03
	14	18,000	720	0.048	15,000	600	0.04	14,000	500	0.035	11,000	300	0.03
	16	18,000	720	0.036	15,000	600	0.03	14,000	500	0.02	11,000	300	0.02
	22	12,000	300	0.006	10,000	250	0.005	9,000	210	0.005	8,000	180	0.004
1.5	4	21,500	1,200	0.168	18,000	1,000	0.14	18,000	900	0.11	14,000	600	0.09
	6	21,500	1,200	0.168	18,000	1,000	0.14	18,000	900	0.11	14,000	600	0.09
	8	19,000	960	0.12	16,000	800	0.1	15,000	700	0.08	12,000	400	0.07
	10	19,000	960	0.096	16,000	800	0.08	15,000	700	0.07	12,000	400	0.05
	12	19,000	960	0.072	16,000	800	0.06	15,000	700	0.05	12,000	400	0.04
	14	19,000	960	0.06	16,000	800	0.05	15,000	700	0.045	12,000	400	0.035
	16	17,000	720	0.06	14,000	600	0.05	13,000	500	0.04	10,000	300	0.03
	18	17,000	720	0.036	14,000	600	0.03	13,000	500	0.02	10,000	300	0.02
	20	14,500	500	0.024	12,000	420	0.02	11,000	380	0.015	10,000	300	0.01
	25	12,000	340	0.01	10,000	290	0.008	9,000	230	0.007	8,000	210	0.006
	30	9,000	200	0.006	7,500	170	0.005	7,400	150	0.004	7,000	130	0.003
	38	8,150	100	0.005	6,800	90	0.004	6,700	85	0.003	6,000	75	0.003
	40	7,200	90	0.004	6,000	75	0.003	5,900	70	0.002	5,600	60	0.002
	45	6,600	50	0.004	5,500	45	0.003	5,400	40	0.002	5,400	40	0.001
1.6	6	20,500	1,200	0.18	17,000	1,000	0.15	17,000	900	0.13	13,000	600	0.1
	8	18,000	960	0.168	15,000	800	0.14	15,000	700	0.12	11,000	400	0.1
	10	18,000	960	0.132	15,000	800	0.11	15,000	700	0.09	11,000	400	0.07
	12	18,000	960	0.084	15,000	800	0.07	15,000	700	0.06	11,000	400	0.05
	14	18,000	960	0.072	15,000	800	0.06	15,000	700	0.05	11,000	400	0.04
	16	15,500	720	0.06	13,000	600	0.05	13,000	500	0.04	9,000	300	0.035
	18	15,500	720	0.048	13,000	600	0.04	13,000	500	0.03	9,000	300	0.03
	20	15,500	720	0.024	13,000	600	0.02	13,000	500	0.02	9,000	300	0.01

切深量 Depth of Cut



1. 请使用刚性较高的机床和刀柄。
2. 推荐使用 MQL(油雾冷却)或气冷加工炭素钢淬火钢。
3. .请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 上表为等高线加工等负荷较少可稳定加工状态下的标准。实际加工时，请根据实际情况参照上表制定切削条件。
5. 根据加工精度、加工形状、加工刀路适当调整加工条件。
6. φ0. 5以下或 L/D 大于 10 时、微小的负荷增大也会导致折损、根据切削状况适当调节切削条件。
7. 转速不足时请根据上表同比下降转速和进给速度。

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1. Use a rigid and precise machine and holder.
2. When machining carbon steels or hardened steels, using MQL (Minimum Quantity Lubrication / oil mist coolant) or air blow is recommended.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. The above cutting conditions are for contouring operation with low-load and stable condition. Refer to the table above to set the milling conditions in accordance with the actual situation.
5. Please adjust conditions based on machining accuracy, machining shape and machining path.
6. When using a tool with a diameter of φ 0.5 or less, or L/D (aspect ratio) is greater than 10, high loads can cause tool breakage. Therefore, adjust the cutting conditions based on the machining situation.
7. When RPM are insufficient, please reduce the RPM and feed rates at same ratio as listed above.

切削条件基准表

WXL-LN-EDS 槽切削 Slotting

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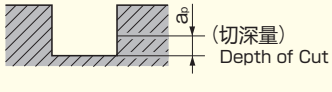
加工材料 Work Material		铜·铜合金 Copper · Copper Alloy			普通结构用钢·炭素钢 Mild Steel · Carbon Steel FC250 · SS400 · S55C ～32HRC			调质钢·预硬钢·不锈钢 Hardened Steel · Prehardened Steel · Stainless Steel SKT · SKD61 · NAK55 · NAK80 · HPM1 · DH＊＊ · SUS304					
								33～41HRC			42～50HRC		
外径 Dc	颈长 ℓ2	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap
1.8	6	19,000	1,300	0.264	16,000	1,100	0.22	15,000	1,000	0.18	12,000	700	0.14
	8	19,000	1,300	0.252	16,000	1,100	0.21	15,000	1,000	0.17	12,000	700	0.13
	10	17,000	960	0.144	14,000	800	0.12	14,000	700	0.1	10,000	500	0.08
	12	17,000	960	0.12	14,000	800	0.1	14,000	700	0.08	10,000	500	0.07
	14	17,000	960	0.096	14,000	800	0.08	14,000	700	0.06	10,000	500	0.05
	16	17,000	960	0.084	14,000	800	0.07	14,000	700	0.05	10,000	500	0.04
	18	14,500	720	0.06	12,000	600	0.05	12,000	500	0.045	8,000	400	0.035
	20	14,500	720	0.048	12,000	600	0.04	12,000	500	0.04	8,000	400	0.03
	25	9,600	360	0.011	8,000	300	0.009	7,000	250	0.008	6,000	200	0.007
2	6	18,000	1,300	0.372	15,000	1,100	0.31	14,000	1,000	0.26	11,000	700	0.21
	8	18,000	1,300	0.312	15,000	1,100	0.26	14,000	1,000	0.22	11,000	700	0.18
	10	15,500	960	0.288	13,000	800	0.24	12,000	700	0.2	9,000	500	0.16
	12	15,500	960	0.156	13,000	800	0.13	12,000	700	0.11	9,000	500	0.09
	14	15,500	960	0.132	13,000	800	0.11	12,000	700	0.09	9,000	500	0.07
	16	15,500	960	0.096	13,000	800	0.08	12,000	700	0.07	9,000	500	0.06
	18	15,500	960	0.084	13,000	800	0.07	12,000	700	0.06	9,000	500	0.05
	20	13,000	720	0.06	11,000	600	0.05	10,000	500	0.05	7,000	400	0.04
	25	13,000	720	0.036	11,000	600	0.03	10,000	500	0.02	7,000	400	0.02
	30	13,000	720	0.024	11,000	600	0.02	10,000	500	0.01	7,000	400	0.01
	35	11,000	460	0.011	9,000	390	0.009	8,000	380	0.008	6,000	270	0.007
	40	7,800	240	0.006	6,500	200	0.005	6,000	180	0.004	6,000	140	0.003
	50	6,950	120	0.002	5,800	100	0.002	5,700	95	0.002	5,000	80	0.002
	60	6,000	60	0.001	5,000	50	0.001	5,000	45	0.001	5,000	40	0.001
2.5	8	14,500	1,300	0.468	12,000	1,100	0.39	11,000	1,000	0.33	9,000	700	0.26
	10	14,500	1,300	0.396	12,000	1,100	0.33	11,000	1,000	0.28	9,000	700	0.22
	12	14,500	1,300	0.276	12,000	1,100	0.23	11,000	1,000	0.19	9,000	700	0.15
	14	12,000	960	0.204	10,000	800	0.17	9,000	700	0.14	7,000	500	0.11
	16	12,000	960	0.144	10,000	800	0.12	9,000	700	0.1	7,000	500	0.08
	18	12,000	960	0.132	10,000	800	0.11	9,000	700	0.09	7,000	500	0.07
	20	12,000	960	0.108	10,000	800	0.09	9,000	700	0.08	7,000	500	0.06
	25	9,600	720	0.096	8,000	600	0.08	8,000	500	0.06	6,000	400	0.05
	30	9,600	720	0.036	8,000	600	0.03	8,000	500	0.03	6,000	400	0.02
	40	7,800	330	0.008	6,500	280	0.007	6,000	270	0.005	6,000	240	0.005
	50	6,950	200	0.002	5,800	170	0.002	5,700	160	0.002	5,000	130	0.002
3	8	12,000	1,300	0.432	10,000	1,100	0.36	10,000	1,000	0.3	8,000	700	0.24
	10	12,000	1,300	0.348	10,000	1,100	0.29	10,000	1,000	0.24	8,000	700	0.19
	12	12,000	1,300	0.324	10,000	1,100	0.27	10,000	1,000	0.23	8,000	700	0.18
	14	12,000	1,300	0.3	10,000	1,100	0.25	10,000	1,000	0.21	8,000	700	0.17
	16	12,000	960	0.24	10,000	800	0.2	9,000	700	0.17	6,000	500	0.13
	18	12,000	960	0.168	10,000	800	0.14	9,000	700	0.12	6,000	500	0.1
	20	12,000	960	0.156	10,000	800	0.13	9,000	700	0.11	6,000	500	0.08
	25	12,000	960	0.132	10,000	800	0.11	9,000	700	0.09	6,000	500	0.07
	30	9,600	720	0.108	8,000	600	0.09	7,000	500	0.08	5,000	400	0.06
	35	9,600	720	0.084	8,000	600	0.07	7,000	500	0.06	5,000	400	0.05
	40	9,600	720	0.048	8,000	600	0.04	7,000	500	0.03	5,000	400	0.02
	50	6,950	320	0.011	5,800	270	0.009	5,700	240	0.005	5,000	200	0.004
4	12	8,550	1,350	0.456	7,000	1,100	0.38	7,000	1,000	0.32	6,000	700	0.26
	16	8,550	1,350	0.432	7,000	1,100	0.36	7,000	1,000	0.3	6,000	700	0.24
	20	8,550	970	0.408	7,000	800	0.34	6,000	700	0.28	5,000	500	0.22

切深量 Depth of Cut



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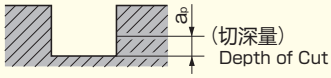
加工材料 Work Material		铜・铜合金 Copper・Copper Alloy			普通结构用钢・炭素钢 Mild Steel・Carbon Steel FC250・SS400・S55C ～32HRC			调质钢・预硬钢・不锈钢 Hardened Steel・Prehardened Steel・Stainless Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊・SUS304					
								33～41HRC			42～50HRC		
外径 Dc	颈长 ℓ2	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap
4	25	8,550	970	0.312	7,000	800	0.26	6,000	700	0.22	5,000	500	0.18
	30	8,550	970	0.228	7,000	800	0.19	6,000	700	0.16	5,000	500	0.13
	35	8,550	970	0.204	7,000	800	0.17	6,000	700	0.14	5,000	500	0.11
	40	7,300	730	0.168	6,000	600	0.14	5,000	600	0.12	4,000	400	0.1
	45	7,300	730	0.144	6,000	600	0.12	5,000	600	0.1	4,000	400	0.08
	50	7,300	730	0.06	6,000	600	0.05	5,000	600	0.04	4,000	400	0.03
	60	6,100	340	0.024	5,000	280	0.02	5,000	270	0.02	4,000	250	0.01
5	16	7,300	1,350	0.54	6,000	1,100	0.45	5,000	900	0.38	5,000	600	0.3
	20	7,300	1,150	0.516	6,000	950	0.43	5,000	780	0.36	5,000	600	0.29
	25	6,100	970	0.504	5,000	800	0.42	5,000	700	0.35	5,000	600	0.28
	30	6,100	970	0.456	5,000	800	0.38	5,000	700	0.3	5,000	600	0.25
	35	6,100	970	0.396	5,000	800	0.33	5,000	700	0.28	5,000	600	0.22
	40	6,100	730	0.34	5,000	600	0.28	4,000	580	0.2	4,000	500	0.18
	50	4,900	610	0.18	4,000	500	0.15	3,000	400	0.13	3,000	400	0.1
	60	4,900	420	0.072	4,000	350	0.06	3,000	330	0.06	3,000	300	0.04
6	20	5300	850	0.6	5000	1000	0.5	4200	780	0.4	4200	600	0.3
	30	5300	750	0.52	5000	800	0.43	4200	700	0.35	4200	600	0.26
	40	5300	640	0.38	5000	600	0.32	4200	580	0.25	4200	500	0.2
	50	4800	580	0.22	4000	500	0.18	4000	400	0.15	4000	400	0.11
	60	4200	460	0.05	3600	400	0.04	3200	330	0.03	3200	300	0.02
8	40	2950	260	0.8	3800	450	0.68	3200	540	0.54	3200	450	0.43
10	50	2350	245	1	3000	360	0.85	2500	400	0.68	2500	350	0.54
12	60	1950	250	1.2	2500	300	1.02	2100	340	0.81	2100	300	0.64

切深量 Depth of Cut



1. 请使用刚性较高的机床和刀柄。
2. 推荐使用MQL(油雾冷却)或气冷加工炭素钢淬火钢。
3. .请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 上表为等高线加工等负荷较少可稳定加工状态下的标准。实际加工时，请根据实际情况参照上表制定切削条件。
5. 根据加工精度、加工形状、加工刀路适当调整加工条件。
6. φ0. 5以下或L/D大于10时、微小的负荷增大也会导致折损、根据切削状况适当调节切削条件。
7. 转速不足时请根据上表同比下降转速和进给速度。

1. Use a rigid and precise machine and holder.
2. When machining carbon steels or hardened steels, using MQL (Minimum Quantity Lubrication / oil mist coolant) or air blow is recommended.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. The above cutting conditions are for contouring operation with low-load and stable condition. Refer to the table above to set the milling conditions in accordance with the actual situation.
5. Please adjust conditions based on machining accuracy, machining shape and machining path.
6. When using a tool with a diameter of φ 0.5 or less, or L/D (aspect ratio) is greater than 10, high loads can cause tool breakage. Therefore, adjust the cutting conditions based on the machining situation.
7. When RPM are insufficient, please reduce the RPM and feed rates at same ratio as listed above.

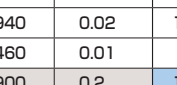
切削条件基准表

Cutting Conditions

WXL-LN-EMS 槽切削 Slotting

加工材料 Work Material		铜・铜合金 Copper・Copper Alloy			普通结构用钢・炭素钢 Mild Steel・Carbon Steel FC250・SS400・S55C ～32HRC			调质钢・预硬钢・不锈钢 Hardened Steel・Prehardened Steel・Stainless Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊・SUS304					
								33～41HRC			42～50HRC		
外径 Dc	颈长 ℓ2	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap
1	4	36,000	2,300	0.08	30,000	1,900	0.07	30,000	1,650	0.07	22,000	980	0.05
	6	32,500	1,900	0.08	27,000	1,600	0.07	26,000	1,350	0.06	20,000	900	0.04
	8	27,500	1,450	0.05	23,000	1,200	0.04	22,000	1,050	0.04	18,000	600	0.03
	10	23,000	1,100	0.04	19,000	940	0.03	18,000	750	0.028	15,000	450	0.02
	12	23,000	1,100	0.02	19,000	940	0.02	18,000	750	0.019	15,000	450	0.01
	16	18,000	480	0.01	15,000	400	0.008	15,000	450	0.007	12,000	300	0.006
1.2	6	27,500	1,900	0.1	23,000	1,600	0.08	22,000	1,350	0.07	17,000	900	0.05
	8	24,000	1,450	0.08	20,000	1,200	0.07	19,000	1,050	0.05	14,000	600	0.04
	10	24,000	1,100	0.06	20,000	940	0.05	19,000	1,050	0.04	14,000	600	0.03
	12	20,500	1,100	0.05	17,000	940	0.04	16,000	750	0.03	11,000	450	0.02
	16	14,500	600	0.01	12,000	500	0.008	11,000	370	0.007	10,000	330	0.006
1.4	6	24,000	1,950	0.14	20,000	1,600	0.12	19,000	1,350	0.11	15,000	900	0.09
	8	21,500	1,450	0.11	18,000	1,200	0.09	17,000	1,050	0.08	13,000	600	0.06
	10	21,500	1,450	0.07	18,000	1,200	0.06	17,000	1,050	0.05	13,000	600	0.04
	12	21,500	1,450	0.06	18,000	1,200	0.05	17,000	1,050	0.04	13,000	600	0.03
	14	18,000	1,100	0.05	15,000	940	0.04	14,000	750	0.035	11,000	450	0.03
	16	18,000	1,100	0.04	15,000	940	0.03	14,000	750	0.02	11,000	450	0.02
	22	12,000	510	0.01	10,000	430	0.005	9,000	310	0.005	8,000	270	0.004
1.5	6	21,500	2,050	0.14	18,000	1,700	0.12	18,000	1,350	0.11	14,000	900	0.09
	8	19,000	1,450	0.12	16,000	1,200	0.1	15,000	1,050	0.08	12,000	600	0.07
	10	19,000	1,450	0.1	16,000	1,200	0.08	15,000	1,050	0.07	12,000	600	0.05
	12	19,000	1,450	0.07	16,000	1,200	0.06	15,000	1,050	0.05	12,000	600	0.04
	14	19,000	1,450	0.06	16,000	1,200	0.05	15,000	1,050	0.045	12,000	600	0.035
	16	17,000	1,100	0.06	14,000	940	0.05	13,000	750	0.04	10,000	450	0.03
	18	17,000	1,100	0.04	14,000	940	0.03	13,000	750	0.02	10,000	450	0.02
	20	14,500	800	0.02	12,000	670	0.02	11,000	570	0.015	10,000	450	0.01
1.6	6	20,500	2,050	0.17	17,000	1,700	0.14	17,000	1,350	0.13	13,000	900	0.1
	8	18,000	1,550	0.16	15,000	1,300	0.13	15,000	1,050	0.12	11,000	600	0.1
	10	18,000	1,450	0.13	15,000	1,200	0.11	15,000	1,050	0.09	11,000	600	0.07
	12	18,000	1,450	0.08	15,000	1,200	0.07	15,000	1,050	0.06	11,000	600	0.05
	14	18,000	1,450	0.07	15,000	1,200	0.06	15,000	1,050	0.05	11,000	600	0.04
	16	15,500	1,100	0.06	13,000	940	0.05	13,000	750	0.04	9,000	450	0.035
	18	15,500	1,100	0.05	13,000	940	0.04	13,000	750	0.03	9,000	450	0.03
	20	15,500	1,100	0.02	13,000	940	0.02	13,000	750	0.02	9,000	450	0.01
	25	10,500	550	0.01	8,900	460	0.01	8,900	360	0.01	6,100	220	0.008
1.8	6	19,000	2,250	0.24	16,000	1,900	0.2	15,000	1,500	0.18	12,000	1,050	0.14
	8	19,000	2,550	0.23	16,000	1,900	0.19	15,000	1,500	0.17	12,000	1,050	0.13
	10	17,000	1,450	0.14	14,000	1,200	0.12	14,000	1,050	0.1	10,000	750	0.08

切深量 Depth of Cut



ap（切深量）Depth of Cut

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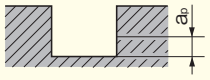
加工材料 Work Material		铜·铜合金 Copper · Copper Alloy			普通结构用钢·炭素钢 Mild Steel · Carbon Steel FC250 · SS400 · S55C ～32HRC			调质钢·预硬钢·不锈钢 Hardened Steel · Prehardened Steel · Stainless Steel SKT · SKD61 · NAK55 · NAK80 · HPM1 · DH＊＊ · SUS304					
								33～41HRC			42～50HRC		
外径 Dc	颈长 ℓ2	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap
1.8	12	17,000	1,450	0.12	14,000	1,200	0.1	14,000	1,050	0.08	10,000	750	0.07
	14	17,000	1,450	0.1	14,000	1,200	0.08	14,000	1,050	0.06	10,000	750	0.05
	16	17,000	1,450	0.08	14,000	1,200	0.07	14,000	1,050	0.05	10,000	750	0.04
	18	14,500	1,100	0.06	12,000	940	0.05	12,000	750	0.045	8,000	600	0.035
	20	14,500	1,100	0.05	12,000	940	0.04	12,000	750	0.04	8,000	600	0.03
	25	9,600	570	0.01	8,000	480	0.009	7,000	370	0.008	6,000	300	0.007
2	6	18,000	2,350	0.34	15,000	1,900	0.28	14,000	1,500	0.26	11,000	1,050	0.21
	8	18,000	2,350	0.31	15,000	1,900	0.26	14,000	1,500	0.22	11,000	1,050	0.18
	10	15,500	1,610	0.29	13,000	1,300	0.24	12,000	1,050	0.2	9,000	750	0.16
	12	15,500	1,500	0.16	13,000	1,200	0.13	12,000	1,050	0.11	9,000	750	0.09
	14	15,500	1,500	0.13	13,000	1,200	0.11	12,000	1,050	0.09	9,000	750	0.07
	16	15,500	1,500	0.1	13,000	1,200	0.08	12,000	1,050	0.07	9,000	750	0.06
	18	15,500	1,500	0.08	13,000	1,200	0.07	12,000	1,050	0.06	9,000	750	0.05
	20	13,000	1,150	0.06	11,000	940	0.05	10,000	750	0.05	7,000	600	0.04
	25	13,000	1,150	0.04	11,000	940	0.03	10,000	750	0.02	7,000	600	0.02
	30	13,000	1,150	0.02	11,000	940	0.02	10,000	750	0.01	7,000	600	0.01
2.5	8	14,500	2,350	0.42	12,000	1,900	0.35	11,000	1,500	0.33	9,000	1,050	0.26
	12	14,500	2,350	0.28	12,000	1,900	0.23	11,000	1,500	0.19	9,000	1,050	0.15
	16	12,000	1,500	0.14	10,000	1,200	0.12	9,000	1,050	0.1	7,000	750	0.08
	20	12,000	1,500	0.11	10,000	1,200	0.09	9,000	1,050	0.08	7,000	750	0.06
	25	9,600	1,150	0.1	8,000	940	0.08	8,000	750	0.06	6,000	600	0.05
3	8	12,000	2,350	0.38	10,000	1,900	0.32	10,000	1,500	0.3	8,000	1,050	0.24
	12	12,000	2,150	0.32	10,000	1,750	0.27	10,000	1,500	0.23	8,000	1,050	0.18
	16	12,000	1,500	0.24	10,000	1,200	0.2	9,000	1,050	0.17	6,000	750	0.13
	20	12,000	1,500	0.16	10,000	1,200	0.13	9,000	1,050	0.11	6,000	750	0.08
	25	12,000	1,500	0.13	10,000	1,200	0.11	9,000	1,050	0.09	6,000	750	0.07
	30	9,600	1,150	0.11	8,000	940	0.09	7,000	750	0.08	5,000	600	0.06
切深量 Depth of Cut		 ap（切深量） Depth of Cut											

1. 请使用刚性较高的机床和刀柄。
2. 推荐使用MQL(油雾冷却)或气冷加工炭素钢淬火钢。
3. .请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 上表为等高线加工等负荷较少可稳定加工状态下的标准。实际加工时，请根据实际情况参照上表制定切削条件。
5. 根据加工精度、加工形状、加工刀路适当调整加工条件。
6. φ0. 5以下或L/D大于10时、微小的负荷增大也会导致折损、根据切削状况适当调节切削条件。
7. 转速不足时请根据上表同比下降转速和进给速度。

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1. Use a rigid and precise machine and holder.
2. When machining carbon steels or hardened steels, using MQL (Minimum Quantity Lubrication / oil mist coolant) or air blow is recommended.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. The above cutting conditions are for contouring operation with low-load and stable condition. Refer to the table above to set the milling conditions in accordance with the actual situation.
5. Please adjust conditions based on machining accuracy, machining shape and machining path.
6. When using a tool with L/D (aspect ratio) is greater than 10, high loads can cause tool breakage. Therefore, adjust the cutting conditions based on the machining situation.
7. When RPM are insufficient, please reduce the RPM and feed rates at same ratio as listed above.

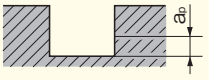
切削条件基准表 Cutting Conditions

WXL-LN-EMS 槽切削 Slotting

FROM 接一页

加工材料 Work Material		铜・铜合金 Copper・Copper Alloy			普通结构用钢・炭素钢 Mild Steel・Carbon Steel FC250・SS400・S55C ～32HRC			调质钢・预硬钢・不锈钢 Hardened Steel・Prehardened Steel・Stainless Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊・SUS304 33～41HRC			42～50HRC		
外径 Dc	颈长 ℓ2	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap
4	12	8,400	2,400	0.408	7,000	1,900	0.34	7,000	1,500	0.32	6,000	1,050	0.26
	16	8,400	2,400	0.384	7,000	1,900	0.32	7,000	1,500	0.3	6,000	1,050	0.24
	20	8,400	1,600	0.36	7,000	1,300	0.3	6,000	1,050	0.28	5,000	750	0.22
	25	8,400	1,500	0.312	7,000	1,200	0.26	6,000	1,050	0.22	5,000	750	0.18
	30	8,400	1,500	0.228	7,000	1,200	0.19	6,000	1,050	0.16	5,000	750	0.13
	35	7,200	1,150	0.204	6,000	940	0.17	6,000	1,050	0.14	5,000	750	0.11
	40	7,200	1,050	0.168	6,000	860	0.14	5,000	900	0.12	4,000	600	0.1
	45	7,200	1,050	0.144	6,000	860	0.12	5,000	820	0.1	4,000	500	0.08
	50	7,200	1,050	0.06	6,000	860	0.05	5,000	820	0.04	4,000	500	0.03
5	16	7,200	2,150	0.48	6,000	1,720	0.4	5,000	1,350	0.38	5,000	900	0.3
	25	6,000	1,400	0.456	5,000	1,150	0.38	5,000	1,050	0.35	5,000	900	0.28
	35	6,000	1,300	0.36	5,000	1,070	0.3	5,000	1,050	0.28	5,000	900	0.22
	50	4,800	840	0.18	4,000	670	0.15	3,000	600	0.13	3,000	600	0.1
6	20	6,000	1,650	0.54	5,000	1,340	0.45	4,200	1,170	0.4	4,200	900	0.3
	30	6,000	1,450	0.456	5,000	1,150	0.38	4,200	1,050	0.35	4,200	900	0.26
	40	6,000	1,150	0.348	5,000	910	0.29	4,200	870	0.25	4,200	750	0.2
	50	4,800	900	0.216	4,000	720	0.18	3,800	600	0.15	3,800	600	0.11
8	30	4,600	1,300	0.78	3,800	1,050	0.65	3,600	900	0.56	3,400	820	0.45
	50	3,800	900	0.72	3,200	720	0.6	3,000	630	0.48	2,900	580	0.38
	60	3,400	700	0.48	2,800	570	0.4	2,700	530	0.32	2,600	490	0.25
10	40	3,600	1,300	0.96	3,000	1,050	0.8	2,900	800	0.64	2,700	710	0.51
	60	3,400	950	0.84	2,800	760	0.7	2,600	620	0.56	2,500	560	0.44
	80	2,400	580	0.48	2,000	460	0.4	1,800	400	0.32	1,600	340	0.25

切深量 Depth of Cut

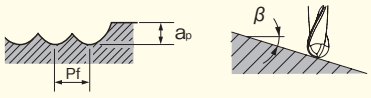


1. 请使用刚性较高的机床和刀柄。
2. 推荐使用MQL(油雾冷却)或气冷加工炭素钢淬火钢。
3. .请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 上表为等高线加工等负荷较少可稳定加工状态下的标准。实际加工时，请根据实际情况参照上表制定切削条件。
5. 根据加工精度、加工形状、加工刀路适当调整加工条件。
6. φ0. 5以下或L/D大于10时、微小的负荷增大也会导致折损、根据切削状况适当调节切削条件。
7. 转速不足时请根据上表同比下降转速和进给速度。

1. Use a rigid and precise machine and holder.
2. When machining carbon steels or hardened steels, using MQL (Minimum Quantity Lubrication / oil mist coolant) or air blow is recommended.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. The above cutting conditions are for contouring operation with low-load and stable condition. Refer to the table above to set the milling conditions in accordance with the actual situation.
5. Please adjust conditions based on machining accuracy, machining shape and machining path.
6. When using a tool with L/D (aspect ratio) is greater than 10, high loads can cause tool breakage. Therefore, adjust the cutting conditions based on the machining situation.
7. When RPM are insufficient, please reduce the RPM and feed rates at same ratio as listed above.

切削条件基准表

WXL-EBD 标准切削 Regular Milling

加工材料 Work Material	铜・铜合金 Copper・Copper Alloy				普通结构用钢・炭素钢 Mild Steel・Carbon Steel FC250・SS400・S55C ～32HRC				调质钢・预硬钢・不锈钢 Hardened Steel・Prehardened Steel・Stainless Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊・SUS304 33～41HRC				42～50HRC			
R	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量 (mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量 (mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量 (mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量 (mm) Depth of Cut	
			a_p	Pf			a_p	Pf			a_p	Pf			a_p	Pf
0.05	40,000	150	0.003	0.005	32,000	75	0.005	0.005	32,000	50	0.005	0.005	32,000	35	0.005	0.005
0.1	40,000	300	0.01	0.02	32,000	200	0.01	0.01	32,000	200	0.01	0.01	32,000	200	0.005	0.005
0.2	40,000	490	0.02	0.08	32,000	410	0.02	0.08	32,000	330	0.02	0.08	32,000	205	0.02	0.04
0.3	40,000	580	0.03	0.12	32,000	490	0.03	0.12	32,000	420	0.03	0.12	32,000	265	0.03	0.06
0.4	40,000	660	0.04	0.16	32,000	550	0.04	0.16	31,500	420	0.04	0.16	27,500	290	0.04	0.08
0.5	32,000	750	0.05	0.2	31,500	620	0.05	0.2	25,000	400	0.05	0.2	22,000	285	0.05	0.1
1	19,000	750	0.2	0.4	15,500	620	0.2	0.4	12,500	400	0.2	0.4	11,000	290	0.1	0.2
1.5	12,500	760	0.3	0.6	10,500	630	0.3	0.6	8,450	405	0.3	0.6	7,400	290	0.15	0.3
2	9,500	760	0.4	0.8	7,950	630	0.4	0.8	6,350	445	0.4	0.8	5,550	370	0.2	0.4
3	6,300	800	0.6	1.2	5,300	670	0.6	1.2	4,200	465	0.6	1.2	3,700	390	0.3	0.6
4	4,750	950	0.8	1.6	3,950	790	0.8	1.6	3,150	555	0.8	1.6	2,750	455	0.4	0.8
5	3,800	890	1	2	3,150	745	1	2	2,500	525	1	2	2,200	430	0.5	1
6	3,170	840	1.2	2.4	2,650	700	1.2	2.4	2,100	490	1.2	2.4	1,850	430	0.6	1.2
8	2,400	630	1.6	3.2	1,990	525	1.6	3.2	1,580	370	1.6	3.2	1,390	325	0.8	1.6
10	1,900	500	2	4	1,590	420	2	4	1,260	290	2	4	1,110	260	1	2
切深量 Depth of Cut																

1. 请使用刚性较高的机床和刀柄。
2. 请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
3. 上表仅做参考。实际加工时，请根据实际情况参照上表制定切削条件。

※刀具悬伸长度大的情况下，请下降转速和进给速度。

※※倾斜角β低于15°时可将上表的转速和进给速度提高1.5~2倍。

1. Use a rigid and precise machine and holder.
2. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
3. Refer to the table above to set the milling conditions in accordance with the actual situation.

※When the length of tool extension from the machine is long, reduce the speed and feed.

※※When β is less than 15°, speed and feed in the above table can be increased 1.5～2 times.

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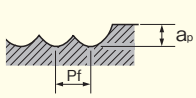
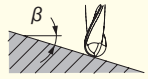
切削条件基准表 Cutting Conditions

WXL-EBD 高速切削 High-Speed Milling

FROM
接一页

加工時产生的火花以及破损造成的发热现象有导致火灾的危险。
请做好防火措施。

Caution: Sparks generated during operation or heat caused by tool breakage can cause fire. Be sure to use all proper fire-prevention measures.

加工材料 Work Material	铜・铜合金 Copper・Copper Alloy				普通结构用钢・炭素钢 Mild Steel・Carbon Steel FC250・SS400・S55C ～32HRC				调质钢・预硬钢 Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊ 33～41HRC				42～50HRC			
R	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量 (mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量 (mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量 (mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量 (mm) Depth of Cut	
			a_p	Pf			a_p	Pf			a_p	Pf			a_p	Pf
0.5	50,000	3,350	0.02	0.05	50,000	2,800	0.02	0.05	50,000	2,500	0.02	0.05	47,500	2,250	0.02	0.05
1	31,500	3,350	0.04	0.1	25,000	2,800	0.04	0.1	24,500	2,500	0.04	0.1	23,500	2,250	0.04	0.1
1.5	21,000	3,350	0.06	0.15	16,500	2,800	0.06	0.15	16,000	2,500	0.06	0.15	15,500	2,250	0.06	0.15
2	15,500	4,080	0.08	0.2	15,500	3,400	0.08	0.2	15,000	2,750	0.08	0.2	13,500	2,450	0.08	0.2
3	10,500	5,160	0.12	0.3	13,500	4,300	0.3	0.6	11,500	2,750	0.3	0.6	9,500	2,250	0.12	0.3
4	7,900	3,840	0.16	0.4	10,000	3,200	0.4	0.8	8,950	2,100	0.4	0.8	7,150	1,700	0.16	0.4
5	6,300	3,120	0.2	0.5	8,250	2,600	0.5	1	7,150	1,700	0.5	1	5,700	1,350	0.2	0.5
6	5,250	2,580	0.24	0.6	6,850	2,150	0.5	2.4	5,950	1,400	0.5	2.4	4,750	1,100	0.24	0.6
8	4,950	1,550	0.32	0.8	4,110	1,290	0.5	3.2	4,460	1,050	0.5	3.2	3,560	820	0.32	0.8
10	3,950	1,240	0.4	1	3,290	1,030	0.5	4	3,570	840	0.5	4	2,850	660	0.32	1
切深量 Depth of Cut	 															

1.此基准条件表适用于使用高精度的数控加工中心进行轻切削。
2.刀具磨损后易在加工中产生火花，因此请不要使用易燃切削油剂。
3.请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4.上表仅做参考。实际加工时，请根据实际情况参照上表制定切削条件。
※ 倾斜角β低于15°时可将上表的转速和进给速度提高1.2～1.5倍。

1. The indicated speeds and feeds are for high speed light milling with high speed/high precision machining centers.
2. Because tools can cause sparks, do not use flammable fluids.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. Refer to the table above to set the milling conditions in accordance with the actual situation.

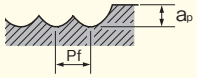
※ When β is less than 15°, speed and feed in the above table can be increased 1.2～1.5 times.

切削条件基准表

WXL-LN-EBD 标准切削 Regular Milling

加工材料 Work Material		铜・铜合金 Copper・Copper Alloy				普通结构用钢・炭素钢 Mild Steel・Carbon Steel FC250・SS400・S55C ～32HRC				调质钢・预硬钢 Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH** 33～41HRC				42～50HRC			
R	颈长 ℓ2 (mm)	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf
0.05	0.3	32,000	150	0.005	0.005	32,000	75	0.005	0.005	32,000	50	0.005	0.005	32,000	35	0.005	0.005
	0.5	32,000	120	0.005	0.005	32,000	60	0.005	0.005	32,000	40	0.005	0.005	32,000	25	0.005	0.005
0.1	0.3	32,000	300	0.02	0.02	32,000	200	0.01	0.01	32,000	200	0.01	0.01	32,000	200	0.005	0.005
	0.5	32,000	300	0.02	0.02	32,000	200	0.01	0.01	32,000	200	0.01	0.01	32,000	200	0.005	0.005
	0.75	32,000	300	0.02	0.02	32,000	200	0.01	0.01	32,000	200	0.01	0.01	32,000	100	0.005	0.005
	1	32,000	150	0.02	0.02	32,000	100	0.01	0.01	32,000	100	0.01	0.01	32,000	80	0.005	0.005
	1.25	32,000	150	0.02	0.02	32,000	100	0.01	0.01	32,000	100	0.01	0.01	32,000	80	0.005	0.005
	1.5	32,000	150	0.02	0.02	32,000	100	0.01	0.01	32,000	100	0.01	0.01	32,000	80	0.005	0.005
	1.75	32,000	150	0.02	0.02	32,000	100	0.01	0.01	32,000	100	0.01	0.01	32,000	80	0.005	0.005
	2	32,000	150	0.01	0.01	32,000	100	0.005	0.005	32,000	100	0.005	0.005	32,000	80	0.005	0.005
	2.5	32,000	75	0.01	0.01	32,000	50	0.005	0.005	32,000	50	0.005	0.005	32,000	40	0.003	0.005
	3	32,000	75	0.01	0.01	32,000	50	0.005	0.005	32,000	50	0.005	0.005	32,000	40	0.003	0.005
0.15	0.5	32,000	600	0.02	0.03	32,000	400	0.01	0.015	32,000	300	0.01	0.015	32,000	300	0.005	0.005
	0.6	32,000	600	0.02	0.03	32,000	400	0.01	0.015	32,000	300	0.01	0.015	32,000	300	0.005	0.005
	0.75	32,000	600	0.02	0.03	32,000	400	0.01	0.015	32,000	300	0.01	0.015	32,000	300	0.005	0.005
	1	32,000	450	0.02	0.03	32,000	300	0.01	0.015	32,000	200	0.01	0.015	32,000	200	0.005	0.005
	1.25	32,000	450	0.02	0.03	32,000	300	0.01	0.015	32,000	200	0.01	0.015	32,000	200	0.005	0.005
	1.5	32,000	450	0.02	0.03	32,000	300	0.01	0.015	32,000	200	0.01	0.015	32,000	200	0.005	0.005
	1.75	32,000	450	0.02	0.03	32,000	300	0.01	0.015	32,000	200	0.01	0.015	32,000	200	0.005	0.005
	2	32,000	450	0.02	0.03	32,000	300	0.01	0.015	32,000	200	0.01	0.015	32,000	200	0.005	0.005
	2.25	32,000	450	0.02	0.02	32,000	300	0.01	0.01	32,000	200	0.01	0.01	32,000	200	0.01	0.01
	2.5	32,000	450	0.02	0.02	32,000	300	0.01	0.01	32,000	200	0.01	0.01	32,000	200	0.01	0.01
	2.75	32,000	450	0.02	0.02	32,000	300	0.01	0.01	32,000	200	0.01	0.01	32,000	200	0.01	0.01
	3	32,000	450	0.02	0.02	32,000	300	0.01	0.01	32,000	200	0.01	0.01	32,000	200	0.005	0.01
	3.5	32,000	270	0.02	0.02	32,000	180	0.01	0.01	32,000	120	0.01	0.01	32,000	120	0.005	0.01
	4	32,000	270	0.02	0.02	32,000	180	0.01	0.01	32,000	120	0.01	0.01	32,000	120	0.005	0.005
	4.5	32,000	270	0.02	0.02	32,000	180	0.01	0.01	32,000	120	0.01	0.01	32,000	120	0.003	0.005
	5	32,000	150	0.01	0.02	32,000	100	0.005	0.01	32,000	70	0.005	0.01	32,000	70	0.003	0.005
0.2	0.5	32,000	750	0.025	0.05	32,000	500	0.015	0.025	32,000	400	0.015	0.02	32,000	400	0.01	0.01
	0.75	32,000	750	0.025	0.05	32,000	500	0.015	0.025	32,000	400	0.015	0.02	32,000	400	0.01	0.01
	1	32,000	600	0.025	0.05	32,000	400	0.015	0.025	32,000	300	0.015	0.02	32,000	300	0.01	0.01
	1.5	32,000	600	0.025	0.05	32,000	400	0.015	0.025	32,000	300	0.015	0.02	32,000	300	0.01	0.01

切深量 Depth of Cut



1. 请使用刚性较高的机床和刀柄。
2. 推荐使用 MQL(油雾冷却)或气冷加工炭素钢淬火钢。
3. .请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 上表为等高线加工等负荷较少可稳定加工状态下的标准。实际加工时，请根据实际情况参照上表制定切削条件。
5. 根据加工精度、加工形状、加工刀路适当调整加工条件。
6. φ0.5以下或 L/D 大于10时、微小的负荷增大也会导致折损、根据切削状况适当调节切削条件。
7. 转速不足时请根据上表同比下降转速和进给速度。

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1. Use a rigid and precise machine and holder.
2. When machining carbon steels or hardened steels, using MQL (Minimum Quantity Lubrication / oil mist coolant) or air blow is recommended.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. The above cutting conditions are for contouring operation with low-load and stable condition. Refer to the table above to set the milling conditions in accordance with the actual situation.
5. Please adjust conditions based on machining accuracy, machining shape and machining path.
6. When using a tool with a diameter of φ 0.5 (R0.25) or less, or L/D (aspect ratio) is greater than 10, high loads can cause tool breakage. Therefore, adjust the cutting conditions based on the machining situation.
7. When RPM are insufficient, please reduce the RPM and feed rates at same ratio as listed above.

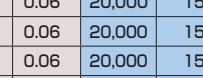
切削条件基准表

WXL-LN-EBD 标准切削 Regular Milling

FROM 接一页

加工材料 Work Material		铜·铜合金 Copper·Copper Alloy				普通结构用钢·炭素钢 Mild Steel·Carbon Steel FC250·SS400·S55C ～32HRC				调质钢·预硬钢 Hardened Steel·Prehardened Steel SKT·SKD61·NAK55·NAK80·HPM1·DH＊＊ 33～41HRC				42～50HRC			
R	颈长 ℓ_2 (mm)	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut	
				a_p	Pf			a_p	Pf			a_p	Pf			a_p	Pf
0.2	2	27,000	450	0.025	0.05	27,000	300	0.015	0.025	27,000	200	0.015	0.02	27,000	200	0.01	0.01
	2.5	27,000	450	0.025	0.05	27,000	300	0.015	0.025	27,000	200	0.015	0.02	27,000	200	0.01	0.01
	3	27,000	450	0.025	0.05	27,000	300	0.015	0.025	27,000	200	0.015	0.02	27,000	200	0.01	0.01
	3.5	27,000	450	0.025	0.05	27,000	300	0.015	0.025	27,000	200	0.015	0.02	27,000	200	0.01	0.01
	4	27,000	450	0.01	0.03	27,000	300	0.005	0.015	27,000	200	0.005	0.012	27,000	200	0.005	0.01
	4.5	24,000	300	0.01	0.03	27,000	200	0.005	0.015	27,000	100	0.005	0.012	27,000	100	0.005	0.01
	5	24,000	300	0.01	0.03	27,000	200	0.005	0.015	27,000	100	0.005	0.012	27,000	100	0.005	0.01
	5.5	21,000	300	0.01	0.02	27,000	200	0.005	0.01	27,000	100	0.005	0.008	27,000	100	0.005	0.005
	6	21,000	150	0.01	0.015	27,000	100	0.005	0.008	27,000	80	0.005	0.006	27,000	80	0.003	0.005
0.25	1	32,000	750	0.04	0.05	32,000	500	0.02	0.025	32,000	400	0.02	0.02	32,000	400	0.01	0.01
	1.5	32,000	750	0.04	0.05	32,000	500	0.02	0.025	32,000	400	0.02	0.02	32,000	400	0.01	0.01
	2	32,000	600	0.04	0.05	32,000	400	0.02	0.025	32,000	300	0.02	0.02	32,000	300	0.01	0.01
	2.5	27,000	450	0.04	0.05	27,000	300	0.02	0.025	27,000	200	0.02	0.02	27,000	200	0.01	0.01
	3	27,000	450	0.04	0.05	27,000	300	0.02	0.025	27,000	200	0.02	0.02	27,000	200	0.01	0.01
	3.5	27,000	450	0.04	0.05	27,000	300	0.02	0.025	27,000	200	0.02	0.02	27,000	200	0.01	0.01
	4	27,000	450	0.04	0.05	27,000	300	0.02	0.025	27,000	200	0.02	0.02	27,000	200	0.01	0.01
	4.5	21,000	300	0.04	0.05	20,000	200	0.02	0.025	20,000	200	0.02	0.02	20,000	200	0.01	0.01
	5	21,000	300	0.04	0.05	20,000	200	0.02	0.025	20,000	150	0.02	0.02	20,000	150	0.01	0.01
	5.5	21,000	300	0.02	0.03	20,000	200	0.01	0.015	20,000	150	0.01	0.01	20,000	150	0.01	0.01
	6	21,000	300	0.02	0.03	20,000	200	0.01	0.015	20,000	150	0.01	0.01	20,000	150	0.01	0.01
	7	21,000	300	0.02	0.03	20,000	200	0.01	0.015	20,000	150	0.01	0.01	20,000	150	0.01	0.01
	8	21,000	300	0.02	0.03	15,000	200	0.01	0.015	15,000	150	0.01	0.01	15,000	150	0.005	0.01
	9	18,000	150	0.02	0.02	15,000	100	0.01	0.01	15,000	80	0.005	0.01	15,000	80	0.005	0.005
	10	18,000	150	0.01	0.01	15,000	100	0.005	0.005	15,000	80	0.005	0.005	15,000	80	0.003	0.005
0.3	1	32,000	900	0.045	0.12	32,000	600	0.03	0.06	32,000	500	0.03	0.05	32,000	500	0.03	0.03
	1.5	32,000	900	0.045	0.12	32,000	600	0.03	0.06	32,000	500	0.03	0.05	32,000	500	0.03	0.03
	2	32,000	675	0.045	0.12	32,000	450	0.03	0.06	32,000	300	0.03	0.05	32,000	300	0.03	0.03
	2.5	30,000	675	0.045	0.12	32,000	450	0.03	0.06	32,000	300	0.03	0.05	32,000	300	0.03	0.03
	3	30,000	375	0.045	0.12	25,000	250	0.03	0.06	24,000	200	0.03	0.05	24,000	200	0.03	0.03
	3.5	30,000	375	0.045	0.12	25,000	250	0.03	0.06	24,000	200	0.03	0.04	24,000	200	0.03	0.03
	4	30,000	375	0.045	0.12	25,000	250	0.03	0.06	24,000	200	0.03	0.04	24,000	200	0.03	0.03
	4.5	30,000	375	0.045	0.12	25,000	250	0.03	0.06	24,000	200	0.03	0.04	24,000	200	0.03	0.03
	5	30,000	375	0.045	0.12	25,000	250	0.03	0.06	24,000	200	0.03	0.04	24,000	200	0.02	0.02
	5.5	25,000	300	0.045	0.12	20,000	200	0.03	0.06	20,000	200	0.03	0.04	20,000	200	0.02	0.02
	6	25,000	225	0.045	0.12	20,000	150	0.03	0.06	20,000	150	0.03	0.04	20,000	150	0.02	0.02
	6.5	25,000	225	0.045	0.12	20,000	150	0.03	0.06	20,000	150	0.03	0.04	20,000	150	0.02	0.02
	7	25,000	225	0.045	0.12	20,000	150	0.03	0.06	20,000	150	0.03	0.04	20,000	150	0.02	0.02
	7.5	25,000	225	0.045	0.12	20,000	150	0.03	0.06	20,000	150	0.03	0.04	20,000	150	0.02	0.02
	8	25,000	225	0.045	0.12	20,000	150	0.03	0.06	20,000	150	0.03	0.04	20,000	150	0.02	0.02
	8.5	22,000	225	0.045	0.12	20,000	150	0.03	0.06	20,000	150	0.02	0.04	20,000	150	0.01	0.01
	9	22,000	225	0.03	0.1	20,000	150	0.02	0.05	20,000	150	0.02	0.04	20,000	150	0.01	0.01
	9.5	22,000	225	0.03	0.1	17,000	150	0.02	0.05	17,000	150	0.02	0.04	17,000	150	0.01	0.01
	10	20,000	150	0.025	0.05	17,000	100	0.015	0.025	17,000	100	0.015	0.02	17,000	100	0.005	0.005

切深量 Depth of Cut



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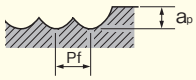
加工材料 Work Material		铜·铜合金 Copper · Copper Alloy				普通结构用钢·炭素钢 Mild Steel · Carbon Steel FC250 · SS400 · S55C ～32HRC				调质钢·预硬钢 Hardened Steel · Prehardened Steel SKT·SKD61·NAK55·NAK80·HPM1·DH** 33～41HRC				调质钢·预硬钢 Hardened Steel · Prehardened Steel SKT·SKD61·NAK55·NAK80·HPM1·DH** 42～50HRC			
R	颈长 ℓ2 (mm)	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf
0.3	11	20,000	150	0.025	0.05	17,000	100	0.015	0.025	17,000	100	0.01	0.02	17,000	100	0.005	0.005
	12	20,000	120	0.025	0.05	17,000	80	0.015	0.025	17,000	80	0.01	0.012	17,000	80	0.005	0.005
0.4	2	27,000	675	0.06	0.16	23,000	450	0.04	0.08	21,000	300	0.04	0.06	21,000	300	0.04	0.04
	3	27,000	675	0.06	0.16	23,000	450	0.04	0.08	21,000	300	0.04	0.06	21,000	300	0.04	0.04
	4	27,000	675	0.06	0.16	23,000	450	0.04	0.08	21,000	300	0.04	0.06	21,000	300	0.04	0.04
	5	24,000	375	0.06	0.12	21,000	250	0.04	0.06	19,000	200	0.04	0.05	19,000	200	0.02	0.025
	6	24,000	375	0.06	0.12	21,000	250	0.04	0.06	19,000	200	0.04	0.05	19,000	200	0.02	0.025
	7	24,000	375	0.06	0.12	21,000	250	0.04	0.06	19,000	200	0.04	0.05	19,000	200	0.02	0.025
	8	22,000	225	0.06	0.12	19,000	150	0.04	0.06	17,000	150	0.04	0.05	17,000	150	0.02	0.025
	9	22,000	225	0.06	0.12	19,000	150	0.04	0.06	17,000	150	0.04	0.05	17,000	150	0.02	0.025
	10	22,000	225	0.06	0.12	19,000	150	0.04	0.06	17,000	150	0.04	0.05	17,000	150	0.02	0.025
	12	20,000	225	0.06	0.12	19,000	150	0.04	0.06	17,000	150	0.04	0.05	17,000	150	0.02	0.025
0.5	2.5	28,000	900	0.075	0.2	25,000	600	0.05	0.1	21,000	400	0.05	0.08	21,000	400	0.05	0.05
	3	28,000	750	0.075	0.2	25,000	500	0.05	0.1	21,000	300	0.05	0.08	21,000	300	0.05	0.05
	4	28,000	750	0.075	0.2	25,000	500	0.05	0.1	21,000	300	0.05	0.08	21,000	300	0.05	0.05
	5	21,000	450	0.075	0.2	19,000	300	0.05	0.1	16,000	200	0.05	0.08	16,000	200	0.05	0.05
	6	21,000	450	0.075	0.2	19,000	300	0.05	0.1	16,000	200	0.05	0.08	16,000	200	0.05	0.05
	7	21,000	450	0.075	0.15	19,000	300	0.05	0.075	16,000	200	0.05	0.06	16,000	200	0.03	0.03
	8	21,000	450	0.075	0.15	19,000	300	0.05	0.075	16,000	200	0.05	0.06	16,000	200	0.03	0.03
	9	21,000	450	0.075	0.15	19,000	300	0.05	0.075	16,000	200	0.05	0.06	16,000	200	0.03	0.03
	10	18,000	300	0.06	0.12	17,000	200	0.03	0.05	14,000	150	0.03	0.04	14,000	150	0.01	0.015
	12	18,000	300	0.06	0.12	17,000	200	0.03	0.05	14,000	150	0.03	0.04	14,000	150	0.01	0.015
	14	18,000	300	0.06	0.12	17,000	200	0.03	0.05	14,000	150	0.03	0.04	14,000	150	0.01	0.015
	16	16,000	300	0.06	0.12	13,000	200	0.03	0.05	10,000	150	0.03	0.04	10,000	150	0.01	0.015
	18	16,000	300	0.06	0.12	13,000	200	0.03	0.05	10,000	150	0.03	0.04	10,000	150	0.01	0.015
	20	16,000	300	0.06	0.12	13,000	200	0.03	0.05	10,000	150	0.03	0.04	10,000	150	0.01	0.015
	22	16,000	225	0.05	0.05	13,000	150	0.02	0.025	10,000	100	0.02	0.02	10,000	100	0.005	0.005
0.6	4	20,000	750	0.09	0.24	17,000	500	0.06	0.12	14,000	300	0.06	0.1	14,000	300	0.06	0.06
	6	20,000	450	0.09	0.24	17,000	300	0.06	0.12	14,000	200	0.06	0.1	14,000	200	0.06	0.06
	8	20,000	450	0.09	0.24	17,000	300	0.06	0.12	14,000	200	0.06	0.1	14,000	200	0.06	0.06
	10	20,000	450	0.09	0.18	17,000	300	0.06	0.09	14,000	200	0.06	0.07	14,000	200	0.03	0.03
	12	16,000	300	0.09	0.18	14,000	200	0.06	0.09	11,000	150	0.06	0.07	11,000	150	0.03	0.03
切深量 Depth of Cut																	

1. 请使用刚性较高的机床和刀柄。
2. 推荐使用 MQL(油雾冷却)或气冷加工炭素钢淬火钢。
3. .请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 上表为等高线加工等负荷较少可稳定加工状态下的标准。实际加工时，请根据实际情况参照上表制定切削条件。
5. 根据加工精度、加工形状、加工刀路适当调整加工条件。
6. φ0.5以下或 L/D 大于10时、微小的负荷增大也会导致折损、根据切削状况适当调节切削条件。
7. 转速不足时请根据上表同比下降转速和进给速度。

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1. Use a rigid and precise machine and holder.
2. When machining carbon steels or hardened steels, using MQL (Minimum Quantity Lubrication / oil mist coolant) or air blow is recommended.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. The above cutting conditions are for contouring operation with low-load and stable condition. Refer to the table above to set the milling conditions in accordance with the actual situation.
5. Please adjust conditions based on machining accuracy, machining shape and machining path.
6. When using a tool with a diameter of φ 0.5 (R0.25) or less, or L/D (aspect ratio) is greater than 10, high loads can cause tool breakage. Therefore, adjust the cutting conditions based on the machining situation.
7. When RPM are insufficient, please reduce the RPM and feed rates at same ratio as listed above.

切削条件基准表

WXL-LN-EBD 标准切削 Regular Milling

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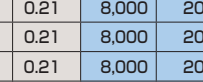
加工材料 Work Material		铜·铜合金 Copper·Copper Alloy				普通结构用钢·炭素钢 Mild Steel·Carbon Steel FC250·SS400·S55C ～32HRC				调质钢·预硬钢 Hardened Steel·Prehardened Steel SKT·SKD61·NAK55·NAK80·HPM1·DH＊＊ 33～41HRC				42～50HRC			
R	颈长 ℓ_2 (mm)	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut	
				a_p	Pf			a_p	Pf			a_p	Pf			a_p	Pf
0.6	14	16,000	300	0.09	0.18	14,000	200	0.06	0.09	11,000	150	0.06	0.07	11,000	150	0.01	0.03
	16	16,000	300	0.09	0.18	14,000	200	0.06	0.09	11,000	150	0.06	0.07	11,000	150	0.01	0.03
	18	16,000	300	0.09	0.18	14,000	200	0.06	0.09	11,000	150	0.06	0.07	11,000	150	0.01	0.03
	20	16,000	300	0.09	0.18	14,000	200	0.06	0.09	11,000	150	0.06	0.07	11,000	150	0.01	0.03
	24	16,000	300	0.09	0.18	14,000	200	0.06	0.09	11,000	150	0.06	0.07	11,000	150	0.01	0.03
0.7	8	18,000	450	0.1	0.28	15,500	300	0.07	0.14	12,000	250	0.07	0.1	12,000	250	0.07	0.07
	12	18,000	450	0.1	0.2	15,500	300	0.07	0.1	12,000	250	0.07	0.08	12,000	250	0.07	0.07
	16	13,000	300	0.09	0.18	12,000	200	0.06	0.09	9,000	150	0.04	0.07	9,000	150	0.01	0.03
0.75	3	20,000	900	0.12	0.3	15,000	600	0.08	0.15	12,000	500	0.08	0.12	12,000	300	0.08	0.1
	4	20,000	900	0.12	0.3	15,000	600	0.08	0.15	12,000	500	0.08	0.12	12,000	300	0.08	0.1
	6	18,000	750	0.12	0.3	15,000	500	0.08	0.15	12,000	350	0.08	0.12	12,000	300	0.08	0.1
	8	17,000	450	0.12	0.3	15,000	300	0.08	0.15	12,000	250	0.08	0.12	12,000	250	0.08	0.1
	10	17,000	450	0.12	0.3	15,000	300	0.08	0.15	12,000	250	0.08	0.12	12,000	250	0.08	0.1
	12	17,000	450	0.12	0.24	15,000	300	0.08	0.12	12,000	250	0.08	0.09	12,000	250	0.05	0.06
	14	17,000	450	0.12	0.24	15,000	300	0.08	0.12	12,000	250	0.08	0.09	12,000	250	0.05	0.06
	16	13,000	300	0.09	0.18	12,000	200	0.06	0.1	9,500	150	0.06	0.07	9,500	150	0.01	0.03
	18	13,000	300	0.09	0.18	12,000	200	0.06	0.1	9,500	150	0.06	0.07	9,500	150	0.01	0.03
	20	13,000	300	0.09	0.18	12,000	200	0.06	0.1	9,500	150	0.06	0.07	9,500	150	0.01	0.03
	22	13,000	300	0.09	0.18	12,000	200	0.06	0.1	9,500	150	0.06	0.07	9,500	150	0.01	0.03
	30	13,000	300	0.09	0.18	12,000	200	0.06	0.1	9,500	150	0.06	0.07	9,500	150	0.01	0.03
0.8	4	20,000	900	0.12	0.32	14,000	600	0.08	0.16	11,000	500	0.08	0.13	11,000	350	0.08	0.1
	8	16,500	450	0.12	0.32	14,000	300	0.08	0.16	11,000	250	0.08	0.13	11,000	250	0.08	0.1
	12	16,500	450	0.12	0.24	14,000	300	0.08	0.12	11,000	250	0.08	0.08	11,000	250	0.05	0.05
	16	11,500	300	0.12	0.24	11,000	200	0.08	0.12	9,000	150	0.08	0.08	9,000	150	0.05	0.05
	20	11,500	300	0.09	0.2	11,000	200	0.06	0.12	9,000	150	0.06	0.075	9,000	150	0.015	0.03
0.9	8	16,500	600	0.13	0.36	14,000	400	0.09	0.18	11,000	300	0.09	0.16	11,000	300	0.09	0.12
	12	16,500	600	0.13	0.36	14,000	400	0.09	0.18	11,000	300	0.09	0.16	11,000	300	0.09	0.12
	16	16,500	600	0.13	0.27	14,000	400	0.09	0.14	11,000	300	0.09	0.12	11,000	300	0.05	0.06
	20	11,000	300	0.1	0.22	11,000	200	0.06	0.13	8,000	200	0.06	0.08	8,000	200	0.02	0.03
1	3	16,500	1,350	0.15	0.56	16,500	900	0.1	0.28	13,500	800	0.1	0.28	13,500	700	0.1	0.2
	4	16,500	1,050	0.15	0.56	16,500	700	0.1	0.28	13,500	500	0.1	0.28	13,500	500	0.1	0.2
	6	16,500	1,050	0.15	0.56	16,500	700	0.1	0.28	13,500	500	0.1	0.28	13,500	500	0.1	0.2
	8	16,500	1,050	0.15	0.56	16,500	700	0.1	0.28	13,500	500	0.1	0.28	13,500	500	0.1	0.2
	10	14,000	750	0.15	0.56	13,000	500	0.1	0.28	10,000	300	0.1	0.28	10,000	300	0.1	0.2
	12	14,000	750	0.15	0.56	13,000	500	0.1	0.28	10,000	300	0.1	0.28	10,000	300	0.1	0.2
	14	14,000	750	0.15	0.56	13,000	500	0.1	0.28	10,000	300	0.1	0.28	10,000	300	0.1	0.2
	16	14,000	750	0.15	0.42	13,000	500	0.1	0.21	10,000	300	0.1	0.18	10,000	300	0.06	0.1
	18	14,000	750	0.15	0.42	13,000	500	0.1	0.21	10,000	300	0.1	0.18	10,000	300	0.06	0.1
	20	11,000	375	0.15	0.42	10,000	250	0.1	0.21	8,000	200	0.1	0.18	8,000	200	0.06	0.1
	22	11,000	375	0.15	0.42	10,000	250	0.1	0.21	8,000	200	0.1	0.18	8,000	200	0.06	0.1
	25	11,000	375	0.15	0.42	10,000	250	0.1	0.21	8,000	200	0.1	0.18	8,000	200	0.06	0.1
	30	11,000	375	0.15	0.42	10,000	250	0.1	0.21	8,000	200	0.1	0.18	8,000	200	0.06	0.1
	35	10,000	375	0.15	0.42	10,000	250	0.1	0.21	8,000	200	0.1	0.18	8,000	200	0.06	0.1
	40	10,000	300	0.15	0.42	10,000	200	0.1	0.21	8,000	160	0.1	0.18	8,000	160	0.06	0.1

切深量 Depth of Cut



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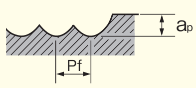
加工材料 Work Material		铜・铜合金 Copper・Copper Alloy				普通结构用钢・炭素钢 Mild Steel・Carbon Steel FC250・SS400・S55C				调质钢・预硬钢 Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH**							
						～32HRC				33～41HRC				42～50HRC			
R	颈长 ℓ2 (mm)	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf
1.25	6	16,000	1,050	0.18	0.7	12,000	700	0.12	0.35	10,000	600	0.12	0.3	10,000	600	0.1	0.25
	10	14,000	1,050	0.18	0.7	12,000	700	0.12	0.35	10,000	600	0.12	0.3	10,000	600	0.1	0.25
	15	14,000	600	0.18	0.7	10,000	400	0.12	0.35	8,500	300	0.12	0.3	8,500	300	0.1	0.25
	20	12,000	600	0.18	0.56	10,000	400	0.12	0.28	8,500	300	0.12	0.2	8,500	300	0.08	0.15
	25	12,000	450	0.18	0.56	8,000	300	0.12	0.28	6,500	250	0.12	0.2	6,500	250	0.08	0.15
	30	12,000	375	0.18	0.56	8,000	250	0.12	0.28	6,500	200	0.12	0.2	6,500	200	0.08	0.15
	35	12,000	375	0.18	0.56	8,000	250	0.12	0.28	6,500	200	0.12	0.2	6,500	200	0.08	0.15
1.5	6	15,000	1,200	0.2	0.84	9,500	800	0.15	0.42	7,500	600	0.15	0.42	7,500	600	0.15	0.3
	8	12,000	900	0.2	0.84	9,500	600	0.15	0.42	7,500	400	0.15	0.36	7,500	400	0.15	0.3
	10	12,000	900	0.2	0.84	9,500	600	0.15	0.42	7,500	400	0.15	0.36	7,500	400	0.15	0.3
	12	10,000	900	0.2	0.84	9,500	600	0.15	0.42	7,500	400	0.15	0.36	7,500	400	0.15	0.3
	14	10,000	900	0.2	0.84	9,500	600	0.15	0.42	7,500	400	0.15	0.36	7,500	400	0.15	0.3
	15	10,000	600	0.2	0.84	8,500	400	0.15	0.42	6,500	250	0.15	0.36	6,500	250	0.15	0.3
	16	10,000	450	0.2	0.84	8,500	300	0.15	0.42	6,500	250	0.15	0.36	6,500	250	0.15	0.3
	20	10,000	450	0.2	0.84	8,500	300	0.15	0.42	6,500	250	0.15	0.36	6,500	250	0.15	0.3
	25	10,000	450	0.2	0.84	8,500	300	0.15	0.42	6,500	250	0.15	0.3	6,500	250	0.09	0.15
	30	9,000	375	0.2	0.84	7,500	250	0.15	0.42	6,000	200	0.15	0.3	6,000	200	0.09	0.15
	35	9,000	375	0.2	0.84	7,500	250	0.15	0.42	6,000	200	0.15	0.3	6,000	200	0.09	0.15
	40	9,000	375	0.2	0.84	7,500	250	0.15	0.42	6,000	200	0.15	0.3	6,000	200	0.09	0.15
1.75	10	10,000	1,050	0.4	0.98	8,500	700	0.15	0.49	6,500	500	0.15	0.42	6,500	500	0.15	0.35
	15	10,000	900	0.4	0.98	8,500	600	0.15	0.49	6,500	400	0.15	0.42	6,500	400	0.15	0.35
	20	8,000	750	0.4	0.98	7,500	500	0.15	0.49	5,500	300	0.15	0.42	5,500	300	0.15	0.35
	25	8,000	600	0.4	0.98	7,500	400	0.15	0.49	5,500	275	0.15	0.42	5,500	275	0.15	0.35
	30	8,000	450	0.4	0.98	7,500	300	0.15	0.49	5,500	250	0.15	0.35	5,500	250	0.1	0.2
	35	8,000	375	0.4	0.98	6,000	250	0.15	0.49	5,000	200	0.15	0.35	5,000	200	0.1	0.2
	40	6,000	375	0.3	0.98	6,000	250	0.15	0.49	5,000	200	0.15	0.35	5,000	200	0.1	0.2
	45	6,000	375	0.3	0.98	6,000	250	0.15	0.49	5,000	200	0.15	0.35	5,000	200	0.1	0.2
2	8	11,000	1,200	0.5	1.28	7,500	800	0.2	0.64	6,000	700	0.2	0.6	6,000	700	0.2	0.4
	10	9,000	900	0.5	1.28	7,500	600	0.2	0.64	6,000	400	0.2	0.6	6,000	400	0.2	0.4
	12	9,000	900	0.5	1.28	7,500	600	0.2	0.64	6,000	400	0.2	0.6	6,000	400	0.2	0.4
	14	9,000	900	0.5	1.28	7,500	600	0.2	0.64	6,000	400	0.2	0.6	6,000	400	0.2	0.4

切深量
Depth of Cut



1. 请使用刚性较高的机床和刀柄。
2. 推荐使用MQL(油雾冷却)或气冷加工炭素钢淬火钢。
3. 请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 上表为等高线加工等负荷较少可稳定加工状态下的标准。实际加工时，请根据实际情况参照上表制定切削条件。
5. 根据加工精度、加工形状、加工刀路适当调整加工条件。
6. φ0.5以下或L/D大于10时、微小的负荷增大也会导致折损、根据切削状况适当调节切削条件。
7. 转速不足时请根据上表同比下降转速和进给速度。

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1. Use a rigid and precise machine and holder.
2. When machining carbon steels or hardened steels, using MQL (Minimum Quantity Lubrication / oil mist coolant) or air blow is recommended.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. The above cutting conditions are for contouring operation with low-load and stable condition. Refer to the table above to set the milling conditions in accordance with the actual situation.
5. Please adjust conditions based on machining accuracy, machining shape and machining path.
6. When using a tool with a diameter of φ 0.5 (R0.25) or less, or L/D (aspect ratio) is greater than 10, high loads can cause tool breakage. Therefore, adjust the cutting conditions based on the machining situation.
7. When RPM are insufficient, please reduce the RPM and feed rates at same ratio as listed above.

切削条件基准表 Cutting Conditions

WXL-LN-EBD 标准切削 Regular Milling

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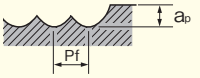
加工材料 Work Material		铜·铜合金 Copper·Copper Alloy				普通结构用钢·炭素钢 Mild Steel·Carbon Steel FC250·SS400·S55C ～32HRC				调质钢·预硬钢 Hardened Steel·Prehardened Steel SKT·SKD61·NAK55·NAK80·HPM1·DH＊＊ 33～41HRC				42～50HRC			
R	颈长 ℓ_2 (mm)	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut	
				a_p	Pf			a_p	Pf			a_p	Pf			a_p	Pf
2	15	9,000	900	0.5	1.28	7,500	600	0.2	0.64	6,000	400	0.2	0.6	6,000	400	0.2	0.4
	16	9,000	900	0.5	1.28	7,500	600	0.2	0.64	6,000	400	0.2	0.6	6,000	400	0.2	0.4
	20	7,000	600	0.5	1.28	6,000	400	0.2	0.64	5,000	250	0.2	0.6	5,000	250	0.2	0.4
	25	7,000	600	0.5	1.28	6,000	400	0.2	0.64	5,000	250	0.2	0.6	5,000	250	0.2	0.4
	30	7,000	600	0.4	1.28	6,000	400	0.2	0.64	5,000	250	0.2	0.56	5,000	250	0.12	0.2
	35	7,000	600	0.4	1.28	6,000	400	0.2	0.64	5,000	250	0.2	0.56	5,000	250	0.12	0.2
	40	5,000	375	0.35	1.28	5,000	250	0.2	0.64	4,000	200	0.2	0.56	4,000	200	0.12	0.2
	45	5,000	375	0.35	1.28	5,000	250	0.2	0.64	4,000	200	0.2	0.56	4,000	200	0.12	0.2
	50	5,000	375	0.35	1.28	5,000	250	0.2	0.64	4,000	200	0.2	0.56	4,000	200	0.12	0.2
2.5	10	9,000	1,350	0.6	1.8	6,500	900	0.25	0.9	5,000	750	0.25	0.7	5,000	750	0.25	0.5
	15	9,000	1,350	0.6	1.8	6,500	900	0.25	0.9	5,000	750	0.25	0.7	5,000	750	0.25	0.5
	20	7,000	750	0.6	1.8	6,500	500	0.25	0.9	5,000	400	0.25	0.7	5,000	400	0.25	0.5
	25	6,000	750	0.6	1.8	5,000	500	0.25	0.9	4,000	250	0.25	0.7	4,000	250	0.25	0.5
	30	6,000	750	0.6	1.8	5,000	500	0.25	0.9	4,000	250	0.25	0.7	4,000	250	0.25	0.5
	35	6,000	750	0.6	1.8	5,000	500	0.25	0.9	4,000	250	0.25	0.7	4,000	250	0.25	0.5
	40	5,000	600	0.4	1.8	4,000	400	0.25	0.9	4,000	200	0.25	0.6	4,000	200	0.2	0.25
	45	5,000	600	0.4	1.8	4,000	400	0.25	0.9	4,000	200	0.25	0.6	4,000	200	0.2	0.25
	50	5,000	450	0.4	1.8	4,000	300	0.25	0.9	4,000	200	0.25	0.6	4,000	200	0.2	0.25
3	10	7,000	1,500	0.75	2.4	5,500	1,000	0.3	1.2	4,500	800	0.3	0.96	4,500	800	0.3	0.6
	20	7,000	1,200	0.75	2.4	5,500	800	0.3	1.2	4,500	600	0.3	0.96	4,500	600	0.3	0.6
	25	6,000	900	0.75	2.4	5,500	600	0.3	1.2	4,500	400	0.3	0.96	4,500	400	0.3	0.6
	30	5,000	600	0.75	2.4	4,000	400	0.3	1.2	4,000	300	0.3	0.96	4,000	300	0.3	0.6
	35	5,000	600	0.75	2.4	4,000	400	0.3	1.2	4,000	300	0.3	0.96	4,000	300	0.3	0.6
	40	5,000	600	0.6	2.4	4,000	400	0.3	1.2	4,000	300	0.3	0.96	4,000	300	0.3	0.6
	45	5,000	600	0.6	2.4	4,000	400	0.3	1.2	4,000	300	0.3	0.96	4,000	300	0.3	0.6
	50	5,000	600	0.6	2.4	4,000	400	0.3	1.2	4,000	300	0.3	0.96	4,000	300	0.3	0.3

切深量 Depth of Cut



1. 请使用刚性较高的机床和刀柄。
2. 推荐使用MQL(油雾冷却)或气冷加工炭素钢淬火钢。
3. .请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 上表为等高线加工等负荷较少可稳定加工状态下的标准。实际加工时，请根据实际情况参照上表制定切削条件。
5. 根据加工精度、加工形状、加工刀路适当调整加工条件。
6. φ0.5以下或L/D大于10时、微小的负荷增大也会导致折损、根据切削状况适当调节切削条件。
7. 转速不足时请根据上表同比下降转速和进给速度。

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1. Use a rigid and precise machine and holder.
2. When machining carbon steels or hardened steels, using MQL (Minimum Quantity Lubrication / oil mist coolant) or air blow is recommended.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. The above cutting conditions are for contouring operation with low-load and stable condition. Refer to the table above to set the milling conditions in accordance with the actual situation.
5. Please adjust conditions based on machining accuracy, machining shape and machining path.
6. When using a tool with a diameter of φ 0.5 (R0.25) or less, or L/D (aspect ratio) is greater than 10, high loads can cause tool breakage. Therefore, adjust the cutting conditions based on the machining situation.
7. When RPM are insufficient, please reduce the RPM and feed rates at same ratio as listed above.

切削条件基准表

WXL-LN-EBD 高速切削 High-Speed Milling

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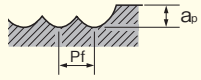
加工材料 Work Material		铜·铜合金 Copper·Copper Alloy				普通结构用钢·炭素钢 Mild Steel·Carbon Steel FC250·SS400·S55C ～32HRC				调质钢·预硬钢 Hardened Steel·Prehardened Steel SKT·SKD61·NAK55·NAK80·HPM1·DH** 33～41HRC				42～50HRC			
R	颈长 ℓ_2 (mm)	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut	
				a_p	Pf			a_p	Pf			a_p	Pf			a_p	Pf
0.05	0.3	50,000	280	0.003	0.005	50,000	150	0.003	0.003	50,000	100	0.003	0.003	50,000	70	0.003	0.003
	0.5	50,000	220	0.003	0.005	50,000	120	0.003	0.003	50,000	80	0.003	0.003	50,000	50	0.003	0.003
0.1	0.3	50,000	490	0.0075	0.01	50,000	400	0.005	0.005	50,000	380	0.005	0.005	50,000	380	0.005	0.005
	0.5	50,000	490	0.0075	0.01	50,000	400	0.005	0.005	50,000	380	0.005	0.005	50,000	380	0.005	0.005
	0.75	50,000	440	0.0075	0.01	50,000	360	0.005	0.005	50,000	340	0.005	0.005	50,000	340	0.005	0.005
	1	50,000	440	0.0075	0.01	50,000	360	0.005	0.005	50,000	340	0.005	0.005	50,000	340	0.005	0.005
	1.25	50,000	390	0.0075	0.01	47,000	320	0.005	0.005	47,000	300	0.005	0.005	47,000	300	0.005	0.005
	1.5	50,000	360	0.0075	0.01	45,000	300	0.005	0.005	45,000	280	0.005	0.005	45,000	280	0.005	0.005
	1.75	50,000	350	0.0075	0.01	42,000	260	0.005	0.005	42,000	240	0.005	0.005	42,000	240	0.005	0.005
	2	50,000	320	0.0075	0.01	38,000	230	0.005	0.005	38,000	210	0.005	0.005	37,000	200	0.005	0.005
	2.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
0.15	0.5	50,000	750	0.0075	0.02	50,000	620	0.005	0.01	50,000	600	0.005	0.01	50,000	600	0.005	0.01
	0.6	50,000	730	0.0075	0.02	50,000	600	0.005	0.01	50,000	570	0.005	0.01	50,000	570	0.005	0.01
	0.75	50,000	730	0.0075	0.02	50,000	600	0.005	0.01	50,000	570	0.005	0.01	50,000	570	0.005	0.01
	1	50,000	730	0.0075	0.02	50,000	600	0.005	0.01	50,000	570	0.005	0.01	50,000	570	0.005	0.01
	1.25	50,000	730	0.0075	0.02	50,000	600	0.005	0.01	50,000	570	0.005	0.01	50,000	570	0.005	0.01
	1.5	50,000	730	0.0075	0.02	50,000	600	0.005	0.01	50,000	570	0.005	0.01	50,000	570	0.005	0.01
	1.75	50,000	610	0.0075	0.02	47,000	510	0.005	0.01	47,000	480	0.005	0.01	47,000	480	0.005	0.01
	2	50,000	580	0.0075	0.01	45,000	480	0.005	0.005	45,000	450	0.005	0.005	45,000	450	0.005	0.005
	2.25	50,000	490	0.0075	0.01	45,000	400	0.005	0.005	45,000	380	0.005	0.005	45,000	380	0.005	0.005
	2.5	50,000	360	0.0075	0.01	40,000	300	0.005	0.005	40,000	280	0.005	0.005	40,000	280	0.005	0.005
	2.75	50,000	320	0.0075	0.01	38,000	250	0.005	0.005	38,000	230	0.005	0.005	38,000	230	0.005	0.005
	3	50,000	290	0.0075	0.01	38,000	250	0.005	0.005	38,000	230	0.005	0.005	37,000	230	0.005	0.005
	3.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
0.2	0.5	50,000	1,100	0.015	0.04	50,000	920	0.01	0.02	50,000	870	0.01	0.02	50,000	870	0.01	0.02
	0.75	50,000	1,090	0.015	0.04	50,000	900	0.01	0.02	50,000	850	0.01	0.02	50,000	850	0.01	0.02
	1	50,000	1,090	0.015	0.04	50,000	900	0.01	0.02	50,000	850	0.01	0.02	50,000	850	0.01	0.02
	1.5	50,000	970	0.015	0.04	50,000	800	0.01	0.02	50,000	760	0.01	0.02	50,000	760	0.01	0.02

切深量 Depth of Cut



1. 请使用刚性较高的机床和刀柄。
2. 推荐使用MQL(油雾冷却)或气冷加工炭素钢淬火钢。
3. .请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 上表为等高线加工等负荷较少可稳定加工状态下的标准。实际加工时，请根据实际情况参照上表制定切削条件。
5. 根据加工精度、加工形状、加工刀路适当调整加工条件。
6. φ0.5以下或L/D大于10时、微小的负荷增大也会导致折损、根据切削状况适当调节切削条件。
7. 转速不足时请根据上表同比下降转速和进给速度。

NEXT 下一页

1. Use a rigid and precise machine and holder.
2. When machining carbon steels or hardened steels, using MQL (Minimum Quantity Lubrication / oil mist coolant) or air blow is recommended.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. The above cutting conditions are for contouring operation with low-load and stable condition. Refer to the table above to set the milling conditions in accordance with the actual situation.
5. Please adjust conditions based on machining accuracy, machining shape and machining path.
6. When using a tool with a diameter of φ 0.5 (R0.25) or less, or L/D (aspect ratio) is greater than 10, high loads can cause tool breakage. Therefore, adjust the cutting conditions based on the machining situation.
7. When RPM are insufficient, please reduce the RPM and feed rates at same ratio as listed above.

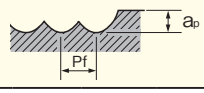
切削条件基准表 Cutting Conditions

WXL-LN-EBD 高速切削 High-Speed Milling

FROM 接一页

加工材料 Work Material		铜·铜合金 Copper·Copper Alloy				普通结构用钢·炭素钢 Mild Steel·Carbon Steel FC250·SS400·S55C ～32HRC				调质钢·预硬钢 Hardened Steel·Prehardened Steel SKT·SKD61·NAK55·NAK80·HPM1·DH＊＊ 33～41HRC				42～50HRC			
R	颈长 ℓ2 (mm)	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut	
				ap	Pf			ap	Pf			ap	Pf			ap	Pf
0.2	2	50,000	850	0.015	0.04	50,000	700	0.01	0.02	50,000	660	0.01	0.02	50,000	660	0.01	0.02
	2.5	50,000	670	0.012	0.03	45,000	550	0.008	0.015	45,000	520	0.008	0.015	45,000	520	0.008	0.015
	3	48,000	540	0.0075	0.02	43,000	500	0.005	0.01	43,000	470	0.005	0.01	43,000	470	0.005	0.01
	3.5	45,000	460	0.0075	0.02	40,000	420	0.005	0.01	40,000	400	0.005	0.01	40,000	400	0.005	0.01
	4	40,000	400	0.0075	0.01	36,000	370	0.005	0.005	36,000	350	0.005	0.005	35,000	340	0.005	0.005
	4.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	5.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
0.25	1	50,000	1,420	0.0225	0.045	50,000	1,100	0.015	0.03	50,000	1,050	0.015	0.03	50,000	1,050	0.015	0.03
	1.5	50,000	1,420	0.0225	0.045	50,000	1,100	0.015	0.03	50,000	1,050	0.015	0.03	50,000	1,050	0.015	0.03
	2	50,000	1,400	0.0225	0.045	50,000	1,000	0.015	0.03	50,000	950	0.015	0.03	50,000	950	0.015	0.03
	2.5	50,000	1,380	0.0225	0.045	50,000	1,000	0.015	0.03	50,000	950	0.015	0.03	50,000	950	0.015	0.03
	3	50,000	1,190	0.015	0.04	48,000	900	0.01	0.02	48,000	850	0.01	0.02	48,000	850	0.01	0.02
	3.5	50,000	1,140	0.015	0.04	45,000	700	0.01	0.02	45,000	650	0.01	0.02	45,000	650	0.01	0.02
	4	45,000	1,000	0.015	0.02	43,000	600	0.01	0.01	43,000	570	0.01	0.01	43,000	570	0.01	0.01
	4.5	38,000	940	0.015	0.02	38,000	500	0.01	0.01	38,000	470	0.01	0.01	38,000	470	0.01	0.01
	5	30,000	760	0.0075	0.02	30,000	400	0.005	0.01	30,000	380	0.005	0.01	29,000	360	0.005	0.01
	5.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
0.3	1	50,000	1,660	0.045	0.1	50,000	1,400	0.03	0.05	50,000	1,300	0.03	0.05	50,000	1,300	0.03	0.05
	1.5	50,000	1,600	0.045	0.1	50,000	1,300	0.03	0.05	50,000	1,200	0.03	0.05	50,000	1,200	0.03	0.05
	2	50,000	1,600	0.045	0.1	50,000	1,300	0.03	0.05	50,000	1,200	0.03	0.05	50,000	1,200	0.03	0.05
	2.5	50,000	1,550	0.045	0.1	50,000	1,200	0.03	0.05	50,000	1,100	0.03	0.05	50,000	1,100	0.03	0.05
	3	50,000	1,550	0.03	0.06	50,000	1,200	0.02	0.03	50,000	1,100	0.02	0.03	50,000	1,100	0.02	0.03
	3.5	50,000	1,340	0.03	0.06	45,000	1,000	0.02	0.03	45,000	950	0.02	0.03	45,000	950	0.02	0.03
	4	50,000	1,200	0.015	0.04	40,000	900	0.01	0.02	40,000	850	0.01	0.02	40,000	850	0.01	0.02
	4.5	45,000	1,040	0.015	0.04	34,000	780	0.01	0.02	34,000	740	0.01	0.02	34,000	740	0.01	0.02
	5	30,000	960	0.015	0.04	30,000	680	0.01	0.02	30,000	640	0.01	0.02	30,000	640	0.01	0.02
	5.5	30,000	820	0.015	0.04	28,000	650	0.01	0.02	28,000	610	0.01	0.02	28,000	610	0.01	0.02
	6	30,000	720	0.015	0.04	26,000	600	0.01	0.02	26,000	570	0.01	0.02	25,000	540	0.01	0.02
	6.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	7.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	8.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	9.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	11	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

切深量 Depth of Cut



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FROM
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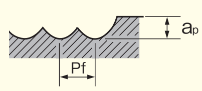
加工材料 Work Material		铜・铜合金 Copper · Copper Alloy				普通结构用钢・炭素钢 Mild Steel · Carbon Steel FC250 · SS400 · S55C				调质钢・预硬钢 Hardened Steel · Prehardened Steel SKT · SKD61 · NAK55 · NAK80 · HPM1 · DH＊＊							
						～32HRC				33～41HRC				42～50HRC			
R	颈长 ℓ2 (mm)	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf
0.4	2	50,000	2,200	0.06	0.16	50,000	2,000	0.04	0.08	50,000	1,900	0.04	0.08	50,000	1,900	0.04	0.08
	3	50,000	1,740	0.06	0.16	48,000	1,600	0.04	0.08	48,000	1,500	0.04	0.08	48,000	1,500	0.04	0.08
	4	50,000	1,680	0.06	0.16	40,000	1,200	0.04	0.08	40,000	1,100	0.04	0.08	40,000	1,100	0.04	0.08
	5	43,000	1,600	0.045	0.1	34,000	950	0.03	0.05	34,000	900	0.03	0.05	34,000	900	0.03	0.05
	6	32,000	1,260	0.045	0.1	30,000	800	0.03	0.05	30,000	760	0.03	0.05	30,000	760	0.03	0.05
	7	30,000	1,000	0.02	0.08	25,000	600	0.01	0.02	25,000	570	0.01	0.02	25,000	570	0.01	0.02
	8	24,000	720	0.01	0.04	23,000	450	0.005	0.01	23,000	420	0.005	0.01	23,000	420	0.005	0.01
	9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0.5	2.5	50,000	3,270	0.075	0.2	50,000	3,400	0.05	0.1	50,000	3,200	0.05	0.1	50,000	3,200	0.05	0.1
	3	50,000	3,060	0.075	0.2	45,000	3,200	0.05	0.1	45,000	3,000	0.05	0.1	45,000	3,000	0.05	0.1
	4	50,000	3,000	0.075	0.2	40,000	3,000	0.05	0.1	40,000	2,850	0.05	0.1	40,000	2,850	0.05	0.1
	5	47,000	2,870	0.075	0.2	36,000	2,300	0.05	0.1	36,000	2,100	0.05	0.1	36,000	2,100	0.05	0.1
	6	43,000	2,600	0.075	0.2	30,000	2,000	0.05	0.1	30,000	1,900	0.05	0.1	30,000	1,900	0.05	0.1
	7	30,000	2,350	0.075	0.15	27,000	1,700	0.05	0.1	27,000	1,600	0.05	0.1	27,000	1,600	0.05	0.1
	8	27,000	2,000	0.075	0.15	26,000	1,600	0.05	0.1	26,000	1,500	0.05	0.1	26,000	1,500	0.05	0.1
	9	26,000	1,540	0.045	0.075	24,000	1,200	0.03	0.05	24,000	1,100	0.03	0.05	24,000	1,100	0.03	0.05
	10	24,000	1,400	0.015	0.04	22,000	1,100	0.01	0.02	22,000	1,000	0.01	0.02	21,000	950	0.01	0.02
	12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	22	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0.6	4	40,000	3,000	0.12	0.21	40,000	3,000	0.06	0.12	40,000	2,850	0.06	0.12	40,000	2,850	0.06	0.12
	6	35,000	2,600	0.09	0.21	32,000	2,100	0.06	0.12	32,000	2,000	0.06	0.12	32,000	2,000	0.06	0.12
	8	30,000	2,000	0.09	0.21	25,000	1,700	0.06	0.12	25,000	1,600	0.06	0.12	25,000	1,600	0.06	0.12
	10	21,000	1,400	0.075	0.12	20,000	1,200	0.05	0.1	20,000	1,100	0.05	0.1	18,000	990	0.05	0.1
	12	20,000	1,000	0.045	0.1	19,000	900	0.03	0.05	17,000	850	0.03	0.05	16,000	800	0.03	0.05

切深量
Depth of Cut



1. 请使用刚性较高的机床和刀柄。
2. 推荐使用MQL(油雾冷却)或气冷加工炭素钢淬火钢。
3. 请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 上表为等高线加工等负荷较少可稳定加工状态下的标准。实际加工时，请根据实际情况参照上表制定切削条件。
5. 根据加工精度、加工形状、加工刀路适当调整加工条件。
6. φ0.5以下或L/D大于10时、微小的负荷增大也会导致折损、根据切削状况适当调节切削条件。
7. 转速不足时请根据上表同比下降转速和进给速度。

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1. Use a rigid and precise machine and holder.
2. When machining carbon steels or hardened steels, using MQL (Minimum Quantity Lubrication / oil mist coolant) or air blow is recommended.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. The above cutting conditions are for contouring operation with low-load and stable condition. Refer to the table above to set the milling conditions in accordance with the actual situation.
5. Please adjust conditions based on machining accuracy, machining shape and machining path.
6. When using a tool with a diameter of φ 0.5 (R0.25) or less, or L/D (aspect ratio) is greater than 10, high loads can cause tool breakage. Therefore, adjust the cutting conditions based on the machining situation.
7. When RPM are insufficient, please reduce the RPM and feed rates at same ratio as listed above.

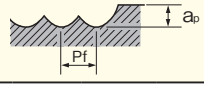
切削条件基准表 Cutting Conditions

WXL-LN-EBD 高速切削 High-Speed Milling

FROM 接一页

加工材料 Work Material		铜·铜合金 Copper·Copper Alloy				普通结构用钢·炭素钢 Mild Steel·Carbon Steel FC250·SS400·S55C ～32HRC				调质钢·预硬钢 Hardened Steel·Prehardened Steel SKT·SKD61·NAK55·NAK80·HPM1·DH＊＊ 33～41HRC				42～50HRC			
R	颈长 ℓ_2 (mm)	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut	
				a_p	Pf			a_p	Pf			a_p	Pf			a_p	Pf
0.6	14	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	24	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
0.7	8	30,000	2,100	0.14	0.245	25,000	1,700	0.07	0.14	25,000	1,600	0.07	0.14	25,000	1,600	0.07	0.14
	12	22,000	1,210	0.06	0.14	19,000	1,000	0.03	0.07	19,000	950	0.03	0.07	19,000	950	0.03	0.07
	16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
0.75	3	50,000	5,330	0.15	0.3	50,000	4,800	0.075	0.15	50,000	4,800	0.075	0.15	50,000	4,800	0.075	0.15
	4	42,000	4,110	0.15	0.3	40,000	3,900	0.075	0.15	40,000	3,700	0.075	0.15	40,000	3,700	0.075	0.15
	6	32,000	3,000	0.15	0.3	30,000	2,900	0.075	0.15	30,000	2,700	0.075	0.15	30,000	2,700	0.075	0.15
	8	30,000	2,650	0.15	0.3	24,000	2,300	0.075	0.15	24,000	2,100	0.075	0.15	24,000	2,100	0.075	0.15
	10	30,000	2,400	0.15	0.3	24,000	2,000	0.075	0.15	24,000	1,900	0.075	0.15	24,000	1,900	0.075	0.15
	12	24,000	1,400	0.15	0.2	21,000	1,400	0.075	0.1	21,000	1,300	0.075	0.1	21,000	1,300	0.075	0.1
	14	22,000	1,400	0.1	0.2	18,000	1,200	0.05	0.1	18,000	1,100	0.05	0.1	17,000	1,100	0.05	0.1
	16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	22	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	30	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
0.8	4	40,000	4,500	0.16	0.32	38,000	4,000	0.08	0.16	38,000	3,800	0.08	0.16	38,000	3,600	0.08	0.16
	8	26,000	3,000	0.16	0.32	24,000	3,000	0.08	0.16	24,000	2,800	0.08	0.16	23,000	2,600	0.08	0.16
	12	24,000	2,400	0.12	0.2	21,000	1,800	0.05	0.1	21,000	1,700	0.05	0.1	20,000	1,600	0.05	0.1
	16	18,000	1,600	0.1	0.2	16,000	800	0.05	0.1	16,000	760	0.05	0.1	15,000	700	0.05	0.1
	20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
0.9	8	25,000	3,200	0.18	0.54	24,000	3,000	0.09	0.27	24,000	2,800	0.09	0.27	23,000	2,600	0.09	0.27
	12	22,000	2,500	0.18	0.36	18,000	1,800	0.09	0.18	15,800	1,500	0.09	0.18	14,700	1,350	0.09	0.18
	16	16,000	1,200	0.1	0.24	16,000	980	0.05	0.12	14,000	850	0.05	0.12	13,000	780	0.05	0.12
	20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	3	50,000	5,800	0.2	0.4	50,000	5,600	0.1	0.2	50,000	5,600	0.1	0.2	47,000	5,300	0.1	0.2
	4	50,000	5,800	0.2	0.4	50,000	5,600	0.1	0.2	50,000	5,600	0.1	0.2	47,000	5,300	0.1	0.2
	6	38,000	4,000	0.2	0.4	36,000	3,000	0.1	0.2	36,000	2,800	0.1	0.2	34,000	2,600	0.1	0.2
	8	27,000	3,360	0.2	0.4	25,000	2,600	0.1	0.2	25,000	2,400	0.1	0.2	23,000	2,200	0.1	0.2
	10	22,000	3,050	0.2	0.4	20,000	2,400	0.1	0.2	20,000	2,200	0.1	0.2	19,000	2,000	0.1	0.2
	12	16,000	2,580	0.2	0.4	16,000	2,000	0.1	0.2	16,000	1,900	0.1	0.2	15,000	1,700	0.1	0.2
	14	15,000	2,400	0.2	0.3	15,000	1,800	0.1	0.2	15,000	1,700	0.1	0.2	14,000	1,500	0.1	0.2
	16	14,000	2,200	0.2	0.2	14,000	1,700	0.1	0.1	14,000	1,600	0.1	0.1	13,000	1,400	0.1	0.1
	18	13,000	2,000	0.2	0.2	13,000	1,600	0.1	0.1	13,000	1,500	0.1	0.1	12,000	1,300	0.1	0.1
	20	12,000	1,200	0.1	0.2	12,000	1,200	0.05	0.1	11,000	1,100	0.05	0.1	10,000	1,000	0.05	0.1
	22	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	25	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	30	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	35	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	40	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

切深量 Depth of Cut



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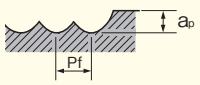
加工材料 Work Material		铜·铜合金 Copper·Copper Alloy				普通结构用钢·炭素钢 Mild Steel·Carbon Steel FC250·SS400·S55C ～32HRC				调质钢·预硬钢 Hardened Steel·Prehardened Steel SKT·SKD61·NAK55·NAK80·HPM1·DH** 33～41HRC				42～50HRC			
R	颈长 ℓ_2 (mm)	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut	
				a_p	Pf			a_p	Pf			a_p	Pf			a_p	Pf
1.25	6	32,000	5,550	0.25	0.4	28,000	4,600	0.1	0.2	28,000	4,300	0.1	0.2	25,000	3,700	0.1	0.2
	10	21,000	4,000	0.25	0.4	20,000	3,300	0.1	0.2	20,000	3,100	0.1	0.2	18,000	2,700	0.1	0.2
	15	17,000	3,000	0.25	0.4	17,000	2,800	0.1	0.2	17,000	2,600	0.1	0.2	16,000	2,400	0.1	0.2
	20	15,000	1,800	0.25	0.4	15,000	1,800	0.1	0.2	15,000	1,700	0.1	0.2	14,000	1,500	0.1	0.2
	25	12,000	1,010	0.06	0.1	12,000	1,000	0.03	0.05	12,000	950	0.03	0.05	10,000	860	0.03	0.05
	30	10,000	800	0.06	0.1	–	–	–	–	–	–	–	–	–	–	–	–
	35	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1.5	6	42,000	6,800	0.3	0.6	41,500	6,200	0.15	0.3	41,500	6,200	0.15	0.3	32,000	4,800	0.15	0.3
	8	32,000	4,600	0.3	0.6	30,000	4,500	0.15	0.3	30,000	4,200	0.15	0.3	25,000	3,500	0.15	0.3
	10	28,000	4,000	0.3	0.6	25,000	3,800	0.15	0.3	25,000	3,600	0.15	0.3	20,000	2,800	0.15	0.3
	12	24,000	3,100	0.3	0.6	20,000	3,000	0.15	0.3	20,000	2,800	0.15	0.3	18,000	2,500	0.15	0.3
	14	22,000	2,900	0.3	0.6	18,000	2,700	0.15	0.3	18,000	2,500	0.15	0.3	15,000	2,000	0.15	0.3
	15	20,000	2,800	0.25	0.6	16,000	2,400	0.1	0.3	16,000	2,200	0.1	0.3	13,000	1,700	0.1	0.3
	16	20,000	2,600	0.25	0.4	16,000	2,000	0.1	0.2	16,000	1,900	0.1	0.2	13,000	1,500	0.1	0.2
	20	16,000	2,200	0.25	0.4	14,000	1,800	0.1	0.2	14,000	1,700	0.1	0.2	11,000	1,300	0.1	0.2
	25	16,000	1,800	0.125	0.2	12,000	1,200	0.05	0.1	12,000	1,100	0.05	0.1	9,000	820	0.05	0.1
	30	12,000	1,000	0.075	0.1	10,000	800	0.03	0.05	9,000	760	0.03	0.05	7,800	590	0.03	0.05
	35	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	40	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1.75	10	26,000	5,400	0.375	0.6	25,000	3,750	0.15	0.3	25,000	3,500	0.15	0.3	19,500	2,660	0.15	0.3
	15	20,000	4,000	0.3	0.6	18,000	3,000	0.1	0.3	18,000	2,800	0.1	0.3	14,000	2,180	0.1	0.3
	20	18,000	3,000	0.3	0.4	16,000	2,700	0.1	0.2	16,000	2,500	0.1	0.2	12,000	1,850	0.1	0.2
	25	14,000	2,800	0.2	0.2	12,000	2,000	0.1	0.1	12,000	1,900	0.1	0.1	9,000	1,400	0.1	0.1
	30	10,000	2,200	0.125	0.2	10,000	1,600	0.05	0.1	10,000	1,500	0.05	0.1	8,000	1,200	0.05	0.1
	35	10,000	1,200	0.1	0.1	10,000	1,000	0.05	0.05	10,000	950	0.05	0.05	7,000	670	0.05	0.05
	40	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	45	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
2	8	31,000	5,700	0.4	1	31,000	5,700	0.2	0.5	31,000	5,700	0.2	0.5	24,000	4,400	0.2	0.5
	10	25,000	4,500	0.4	1	25,000	4,500	0.2	0.5	25,000	4,200	0.2	0.5	20,000	3,300	0.2	0.5
	12	20,000	4,000	0.4	1	20,000	3,600	0.2	0.5	20,000	3,400	0.2	0.5	16,000	2,700	0.2	0.5
	14	20,000	4,000	0.4	1	20,000	3,600	0.2	0.5	20,000	3,400	0.2	0.5	16,000	2,700	0.2	0.5
切深量 Depth of Cut																	

1. 请使用刚性较高的机床和刀柄。
2. 推荐使用MQL(油雾冷却)或气冷加工炭素钢淬火钢。
3. 请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 上表为等高线加工等负荷较少可稳定加工状态下的标准。实际加工时，请根据实际情况参照上表制定切削条件。
5. 根据加工精度、加工形状、加工刀路适当调整加工条件。
6. φ0.5以下或L/D大于10时、微小的负荷增大也会导致折损、根据切削状况适当调节切削条件。
7. 转速不足时请根据上表同比下降转速和进给速度。

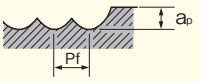
NEXT 下一页

1. Use a rigid and precise machine and holder.
2. When machining carbon steels or hardened steels, using MQL (Minimum Quantity Lubrication / oil mist coolant) or air blow is recommended.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. The above cutting conditions are for contouring operation with low-load and stable condition. Refer to the table above to set the milling conditions in accordance with the actual situation.
5. Please adjust conditions based on machining accuracy, machining shape and machining path.
6. When using a tool with a diameter of φ 0.5 (R0.25) or less, or L/D (aspect ratio) is greater than 10, high loads can cause tool breakage. Therefore, adjust the cutting conditions based on the machining situation.
7. When RPM are insufficient, please reduce the RPM and feed rates at same ratio as listed above.

切削条件基准表 Cutting Conditions

WXL-LN-EBD 高速切削 High-Speed Milling

FROM 接一页

加工材料 Work Material		铜·铜合金 Copper · Copper Alloy				普通结构用钢·炭素钢 Mild Steel · Carbon Steel FC250 · SS400 · S55C ～32HRC				调质钢·预硬钢 Hardened Steel · Prehardened Steel SKT · SKD61 · NAK55 · NAK80 · HPM1 · DH＊＊ 33～41HRC				42～50HRC			
R	颈长 ℓ_2 (mm)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut	
				a_p	Pf			a_p	Pf			a_p	Pf			a_p	Pf
2	15	20,000	4,000	0.4	1	20,000	3,600	0.2	0.5	20,000	3,400	0.2	0.5	16,000	2,700	0.2	0.5
	16	20,000	3,460	0.4	0.6	18,000	3,200	0.2	0.5	18,000	3,000	0.2	0.5	14,000	2,300	0.2	0.5
	20	18,000	3,000	0.4	0.5	16,000	2,800	0.2	0.4	16,000	2,600	0.2	0.4	12,000	1,900	0.2	0.4
	25	18,000	3,000	0.25	0.6	16,000	2,800	0.1	0.3	16,000	2,600	0.1	0.3	12,000	1,900	0.1	0.3
	30	16,000	2,850	0.25	0.4	14,000	2,400	0.1	0.2	14,000	2,200	0.1	0.2	11,000	1,700	0.1	0.2
	35	14,000	2,200	0.25	0.4	12,000	1,800	0.1	0.2	12,000	1,700	0.1	0.2	9,000	1,700	0.1	0.2
	40	12,000	1,600	0.125	0.2	10,000	1,300	0.05	0.1	10,000	1,200	0.05	0.1	7,000	840	0.05	0.1
	45	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2.5	10	25,000	5,600	0.5	1.25	25,000	5,400	0.25	0.5	25,000	5,400	0.25	0.5	19,000	4,000	0.25	0.5
	15	20,000	4,400	0.5	1.25	20,000	4,200	0.25	0.5	20,000	3,900	0.25	0.5	16,000	3,100	0.25	0.5
	20	18,000	3,800	0.5	1.25	16,000	3,500	0.25	0.5	16,000	3,300	0.25	0.5	12,000	2,400	0.25	0.5
	25	20,000	3,400	0.4	0.75	15,000	3,200	0.2	0.3	15,000	3,000	0.2	0.3	12,000	2,400	0.2	0.3
	30	16,000	2,900	0.25	0.75	14,000	2,500	0.1	0.3	14,000	2,300	0.1	0.3	11,000	1,800	0.1	0.3
	35	14,000	2,200	0.25	0.75	12,000	1,600	0.1	0.3	12,000	1,500	0.1	0.3	9,000	1,100	0.1	0.3
	40	12,000	1,800	0.25	0.5	10,000	1,200	0.1	0.2	10,000	1,100	0.1	0.2	8,000	880	0.1	0.2
	45	9,000	1,200	0.2	0.25	9,000	900	0.1	0.1	9,000	850	0.1	0.1	7,000	660	0.1	0.1
	50	8,000	1,100	0.2	0.25	8,000	800	0.1	0.1	8,000	760	0.1	0.1	6,000	570	0.1	0.1
3	10	22,000	5,900	0.75	1.25	20,000	5,400	0.3	0.5	20,000	5,000	0.3	0.5	15,000	3,750	0.3	0.5
	20	18,000	4,400	0.75	1.25	16,000	4,200	0.3	0.5	16,000	3,900	0.3	0.5	12,000	2,900	0.3	0.5
	25	14,000	4,000	0.6	1.25	12,000	3,200	0.3	0.5	12,000	3,000	0.3	0.5	9,000	2,250	0.3	0.5
	30	10,000	3,200	0.6	1.25	10,000	2,600	0.3	0.5	10,000	2,400	0.3	0.5	8,000	1,900	0.3	0.5
	35	9,000	3,000	0.4	1	9,000	2,300	0.2	0.4	9,000	2,100	0.2	0.4	7,000	1,600	0.2	0.4
	40	9,000	2,800	0.4	0.75	9,000	2,000	0.2	0.3	9,000	1,900	0.2	0.3	7,000	1,400	0.2	0.3
	45	8,000	2,500	0.4	0.75	8,000	1,800	0.2	0.3	8,000	1,700	0.2	0.3	6,500	1,300	0.2	0.3
	50	7,000	2,300	0.4	0.75	7,000	1,600	0.2	0.3	7,000	1,500	0.2	0.3	5,500	1,100	0.2	0.3
切深量 Depth of Cut																	

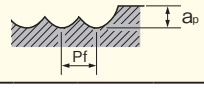
1. 请使用刚性较高的机床和刀柄。
2. 推荐使用MQL(油雾冷却)或气冷加工炭素钢淬火钢。
3. 请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 上表为等高线加工等负荷较少可稳定加工状态下的标准。实际加工时，请根据实际情况参照上表制定切削条件。
5. 根据加工精度、加工形状、加工刀路适当调整加工条件。
6. φ0.5以下或L/D大于10时、微小的负荷增大也会导致折损、根据切削状况适当调节切削条件。
7. 转速不足时请根据上表同比下降转速和进给速度。

1. Use a rigid and precise machine and holder.
2. When machining carbon steels or hardened steels, using MQL (Minimum Quantity Lubrication / oil mist coolant) or air blow is recommended.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. The above cutting conditions are for contouring operation with low-load and stable condition. Refer to the table above to set the milling conditions in accordance with the actual situation.
5. Please adjust conditions based on machining accuracy, machining shape and machining path.
6. When using a tool with a diameter of ϕ 0.5 (R0.25) or less, or L/D (aspect ratio) is greater than 10, high loads can cause tool breakage. Therefore, adjust the cutting conditions based on the machining situation.
7. When RPM are insufficient, please reduce the RPM and feed rates at same ratio as listed above.

WXL-PC-EBD 标准切削 Regular Milling

加工材料 Work Material				铜・铜合金 Copper・Copper Alloy				普通结构用钢・炭素钢 Mild Steel・Carbon Steel FC250・SS400・S55C・NAK55 ～32HRC				调质钢・预硬钢 Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH** 33～41HRC				调质钢・预硬钢 Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH** 42～50HRC			
R	颈部半角 θn	颈长 ℓ2	推荐倾斜切入角度 Recommended Cutting Angle	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf
0.1	0.5°	1	0.3°	32,000	200	0.02	0.02	32,000	150	0.01	0.01	32,000	150	0.01	0.01	32,000	100	0.005	0.005
		1.5		32,000	200	0.02	0.02	32,000	150	0.01	0.01	32,000	150	0.01	0.01	32,000	100	0.005	0.005
		2		32,000	150	0.02	0.02	32,000	100	0.01	0.01	32,000	100	0.01	0.01	32,000	80	0.005	0.005
		2.5		32,000	150	0.01	0.01	32,000	100	0.005	0.005	32,000	100	0.005	0.005	32,000	80	0.005	0.005
		3		32,000	100	0.01	0.01	32,000	80	0.005	0.005	32,000	80	0.005	0.005	32,000	60	0.003	0.005
	1°	2		32,000	150	0.02	0.02	32,000	100	0.01	0.01	32,000	100	0.01	0.01	32,000	80	0.005	0.005
		2.5		32,000	150	0.02	0.02	32,000	100	0.01	0.01	32,000	100	0.01	0.01	32,000	80	0.005	0.005
		3		32,000	150	0.01	0.01	32,000	100	0.005	0.005	32,000	100	0.005	0.005	32,000	80	0.005	0.005
0.15	0.5°	2	0.3°	32,000	600	0.02	0.03	32,000	300	0.01	0.015	32,000	200	0.01	0.015	32,000	200	0.005	0.005
		3		32,000	450	0.02	0.02	32,000	300	0.01	0.01	32,000	200	0.01	0.01	32,000	200	0.01	0.01
	1°	3		32,000	450	0.02	0.02	32,000	300	0.01	0.015	32,000	200	0.01	0.015	32,000	200	0.005	0.005
		4		32,000	450	0.02	0.02	32,000	300	0.01	0.01	32,000	200	0.01	0.01	32,000	200	0.01	0.01
0.2	0.5°	2	0.3°	27,000	450	0.03	0.05	32,000	400	0.015	0.025	32,000	300	0.015	0.02	32,000	300	0.01	0.01
		3		27,000	450	0.025	0.05	27,000	300	0.015	0.025	27,000	200	0.015	0.02	27,000	200	0.01	0.01
		4		27,000	450	0.02	0.05	27,000	300	0.015	0.025	27,000	200	0.015	0.02	27,000	200	0.01	0.01
		5		27,000	400	0.015	0.05	27,000	300	0.005	0.015	27,000	200	0.005	0.012	27,000	200	0.005	0.01
		6		27,000	300	0.01	0.03	27,000	300	0.005	0.015	27,000	200	0.005	0.012	27,000	200	0.005	0.01
	1°	4		27,000	450	0.025	0.05	27,000	300	0.015	0.025	27,000	200	0.015	0.02	27,000	200	0.01	0.01
		5		27,000	450	0.02	0.05	27,000	300	0.015	0.025	27,000	200	0.015	0.02	27,000	200	0.01	0.01
		6		27,000	400	0.015	0.05	27,000	300	0.005	0.015	27,000	200	0.005	0.012	27,000	200	0.005	0.01
0.25	0.5°	4	0.3°	32,000	600	0.04	0.05	32,000	400	0.02	0.025	32,000	300	0.02	0.02	32,000	300	0.01	0.015
		6		27,000	450	0.04	0.05	20,000	200	0.02	0.025	20,000	150	0.02	0.02	20,000	150	0.01	0.01
		8		21,000	300	0.02	0.03	20,000	200	0.01	0.015	20,000	150	0.01	0.01	20,000	150	0.01	0.01
		10		21,000	300	0.02	0.03	20,000	200	0.01	0.015	20,000	150	0.01	0.01	20,000	150	0.005	0.01
	1°	4		32,000	600	0.04	0.05	32,000	400	0.02	0.025	32,000	300	0.02	0.02	32,000	300	0.01	0.01
		6		27,000	450	0.04	0.05	32,000	400	0.02	0.025	32,000	300	0.02	0.02	32,000	300	0.01	0.01
		8		27,000	450	0.04	0.05	20,000	200	0.02	0.025	20,000	150	0.02	0.02	20,000	150	0.01	0.01
		10		21,000	300	0.02	0.03	20,000	200	0.02	0.025	20,000	150	0.02	0.02	20,000	150	0.01	0.01
		12		21,000	300	0.02	0.03	20,000	200	0.01	0.015	20,000	150	0.01	0.01	20,000	150	0.01	0.01
0.3	0.5°	2	0.3°	32,000	675	0.045	0.12	32,000	450	0.03	0.06	32,000	300	0.03	0.05	32,000	300	0.03	0.03
		4		30,000	375	0.045	0.12	25,000	250	0.03	0.06	24,000	200	0.03	0.05	24,000	200	0.03	0.03
		6		30,000	375	0.045	0.12	25,000	250	0.03	0.06	24,000	200	0.03	0.04	24,000	200	0.02	0.02
		8		25,000	225	0.045	0.12	20,000	150	0.03	0.06	20,000	150	0.03	0.04	20,000	150	0.02	0.02
		10		25,000	225	0.045	0.12	20,000	150	0.03	0.06	20,000	150	0.03	0.04	20,000	150	0.02	0.02
		12		25,000	225	0.045	0.12	20,000	150	0.03	0.06	20,000	150	0.02	0.04	20,000	150	0.01	0.01
		16		20,000	150	0.025	0.05	20,000	150	0.03	0.06	20,000	150	0.01	0.04	20,000	150	0.01	0.01

切深量 Depth of Cut



1.请使用刚性较高的机床和刀柄，刚性较差时下调切削条件。
2.最大限度控制工具的跳动精度。
3.请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4.圆弧角部切削或去残加工时请将切深和进给速度下降至70%左右。
5.通过CAM或者机床设定中的R插入或减速可实现更稳定的高进给加工。
6.切削负荷变动较大或加工精度要求较高时请适当降低转速。
7.倾斜切入角度超过推荐值以上时请降低进给速度。
8.切削负荷变动较大或加工精度要求较高时请适当降低加工条件。
9.转速无法达到要求时，配合机床的转速同比降低进给速度。
10.上述条件表仅为参考。请根据实际加工条件调节。
11.切削条件适用于粗加工后的半精加工。
12.包含平坦部的粗加工较多时容易产生振刀。
13.切深较小时请提高转速使其达到合适的切削速度抑制振刀。

1. Highly rigid machines and tool holders should be used. If not, machining should be kept below above-mentioned conditions.
2. Tool vibrations should be kept at a minimum level for maximum accuracy.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. For the milling of corners or removal of residue, reduce the cutting depth and feed to 70%.
5. More stable high-feed machining in corners can be attained by setting an R insertion or deceleration on the CAM or machine side.
6. When cutting load fluctuates (in the corners, etc.) or when high precision is required, be sure to control the rotational speed.
7. When cutting at greater than the recommended cutting angle, reduce the feed.
8. When cutting load is fluctuating, or when higher milling accuracy is required, keep machining conditions below the above-mentioned values.
9. When the rotational speed does not meet the recommended conditions, reduce the feed in proportion to the RPM that is suitable for your machine.
10. The chart above is intended as general guidelines for reference only. The given values should be adjusted individually based on actual machining conditions.
11. The cutting conditions are intended for intermediate machining after roughing.
12. When the work includes extensive roughing including flat areas, chattering is more likely to occur.
13. If the cutting depth is shallow, increase the cutting speed appropriately to minimize chattering.

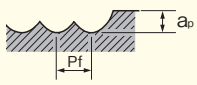
NEXT 下一页

WXL-PC-EBD 标准切削 Regular Milling

FROM 接一页

加工材料 Work Material				铜・铜合金 Copper・Copper Alloy				普通结构用钢・炭素钢 Mild Steel・Carbon Steel FC250・SS400・S55C・NAK55 ～32HRC				调质钢・预硬钢 Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH** 33～41HRC				调质钢・预硬钢 Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH** 42～50HRC			
R	颈部半角 θn	颈长 ℓ2	推荐倾斜切入角度 Recommended Cutting Angle	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf
0.3	1°	4	0.3°	30,000	375	0.045	0.12	25,000	250	0.03	0.06	24,000	200	0.03	0.05	24,000	200	0.03	0.03
		6		30,000	375	0.045	0.12	25,000	250	0.03	0.06	24,000	200	0.03	0.04	24,000	200	0.02	0.02
		8		30,000	375	0.045	0.12	25,000	250	0.03	0.06	24,000	200	0.03	0.04	24,000	200	0.02	0.02
		10		25,000	225	0.045	0.12	20,000	150	0.03	0.06	20,000	150	0.03	0.04	20,000	150	0.02	0.02
		12		25,000	225	0.045	0.12	20,000	150	0.03	0.06	20,000	150	0.03	0.04	20,000	150	0.02	0.02
		16		25,000	225	0.045	0.12	20,000	150	0.03	0.06	20,000	150	0.03	0.04	20,000	150	0.02	0.02
0.4	0.5°	4	0.3°	27,000	675	0.06	0.16	23,000	450	0.04	0.08	21,000	300	0.04	0.06	21,000	300	0.04	0.08
		6		24,000	375	0.06	0.12	21,000	250	0.04	0.06	19,000	200	0.04	0.05	19,000	200	0.03	0.05
		8		24,000	375	0.06	0.12	21,000	250	0.04	0.06	19,000	200	0.04	0.05	19,000	200	0.03	0.05
		12		22,000	225	0.06	0.12	19,000	150	0.04	0.06	17,000	150	0.04	0.05	17,000	150	0.02	0.05
	1°	8		24,000	375	0.06	0.12	21,000	250	0.04	0.06	19,000	200	0.04	0.05	19,000	200	0.03	0.05
		12		24,000	375	0.06	0.12	21,000	250	0.04	0.06	19,000	200	0.04	0.05	19,000	200	0.02	0.05
		16		22,000	225	0.06	0.12	19,000	150	0.04	0.06	17,000	150	0.04	0.05	17,000	150	0.02	0.02
0.5	0.5°	6	0.3°	28,000	750	0.075	0.2	25,000	500	0.05	0.1	21,000	300	0.05	0.08	21,000	300	0.05	0.05
		8		28,000	750	0.075	0.2	25,000	500	0.05	0.1	21,000	300	0.05	0.08	21,000	300	0.05	0.05
		10		21,000	450	0.075	0.15	19,000	300	0.05	0.1	16,000	200	0.05	0.08	16,000	200	0.05	0.05
		12		21,000	450	0.075	0.15	19,000	300	0.05	0.1	16,000	200	0.05	0.08	16,000	200	0.05	0.05
		16		18,000	300	0.06	0.12	17,000	200	0.03	0.05	14,000	150	0.03	0.04	14,000	150	0.01	0.025
		18		18,000	300	0.06	0.12	17,000	200	0.03	0.05	14,000	150	0.03	0.04	14,000	150	0.01	0.025
		20		18,000	300	0.06	0.12	17,000	200	0.03	0.05	14,000	150	0.03	0.04	14,000	150	0.01	0.025
		25		16,000	300	0.06	0.12	13,000	200	0.03	0.05	10,000	150	0.03	0.04	10,000	150	0.01	0.015
		30		16,000	300	0.06	0.12	13,000	200	0.03	0.05	10,000	150	0.03	0.04	10,000	150	0.01	0.015
		35		13,000	300	0.04	0.12	13,000	200	0.01	0.05	10,000	150	0.01	0.04	10,000	150	0.005	0.015
	1°	10		28,000	750	0.075	0.2	25,000	500	0.05	0.1	21,000	300	0.05	0.08	21,000	300	0.05	0.05
		16		21,000	450	0.075	0.15	19,000	300	0.05	0.1	16,000	200	0.05	0.08	16,000	200	0.05	0.05
		20		21,000	450	0.075	0.15	17,000	200	0.03	0.05	14,000	150	0.03	0.04	14,000	150	0.01	0.02
		25		18,000	300	0.06	0.12	17,000	200	0.03	0.05	14,000	150	0.03	0.04	14,000	150	0.01	0.02
		30		18,000	300	0.06	0.12	17,000	200	0.03	0.05	14,000	150	0.03	0.04	14,000	150	0.01	0.015
		35		18,000	300	0.06	0.12	17,000	200	0.03	0.05	14,000	150	0.03	0.04	14,000	150	0.01	0.015
		40		18,000	300	0.06	0.12	17,000	200	0.03	0.05	14,000	150	0.03	0.04	14,000	150	0.01	0.015
		50		16,000	300	0.06	0.12	13,000	200	0.03	0.05	10,000	150	0.03	0.04	10,000	150	0.01	0.015
		60		16,000	300	0.06	0.12	13,000	200	0.03	0.05	10,000	150	0.03	0.04	10,000	150	0.01	0.015
		70		12,000	300	0.06	0.12	13,000	200	0.02	0.05	10,000	150	0.02	0.04	10,000	150	0.01	0.015
	1.5°	8		28,000	750	0.075	0.2	25,000	500	0.05	0.1	21,000	300	0.05	0.08	21,000	300	0.05	0.05
		10		28,000	750	0.075	0.2	25,000	500	0.05	0.1	21,000	300	0.05	0.08	21,000	300	0.05	0.05
		12		28,000	750	0.075	0.2	25,000	500	0.05	0.1	21,000	300	0.05	0.08	21,000	300	0.05	0.05
		16		21,000	450	0.075	0.15	19,000	300	0.05	0.1	16,000	200	0.05	0.08	16,000	200	0.05	0.05
		20		21,000	450	0.075	0.15	19,000	300	0.05	0.1	16,000	200	0.05	0.08	16,000	200	0.05	0.05
		25		21,000	450	0.075	0.15	19,000	300	0.05	0.1	16,000	200	0.05	0.08	16,000	200	0.05	0.05
		30		21,000	450	0.075	0.15	19,000	300	0.05	0.1	16,000	200	0.05	0.08	16,000	200	0.05	0.05
		35		21,000	450	0.075	0.15	17,000	200	0.03	0.05	14,000	150	0.03	0.04	14,000	150	0.01	0.02
	2°	45		21,000	450	0.075	0.15	19,000	300	0.05	0.1	16,000	200	0.05	0.08	16,000	200	0.05	0.05
0.6	0.5°	12	0.3°	20,000	450	0.09	0.24	17,000	300	0.06	0.12	14,000	200	0.06	0.1	14,000	200	0.06	0.06
		25		16,000	300	0.09	0.18	14,000	200	0.06	0.09	11,000	150	0.06	0.07	11,000	150	0.02	0.03

切深量 Depth of Cut



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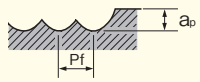
加工材料 Work Material				铜·铜合金 Copper·Copper Alloy				普通结构用钢·炭素钢 Mild Steel·Carbon Steel FC250·SS400·S55C·NAK55 ～32HRC				调质钢·预硬钢 Hardened Steel·Prehardened Steel SKT·SKD61·NAK55·NAK80·HPM1·DH** 33～41HRC				42～50HRC			
R	颈部半角 θn	颈长 ℓ2	推荐倾斜切入角度 Recommended Cutting Angle	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf
0.6	1°	12	0.3°	20,000	450	0.09	0.24	17,000	300	0.06	0.12	14,000	200	0.06	0.1	14,000	200	0.06	0.06
		25		16,000	300	0.09	0.24	14,000	200	0.06	0.09	11,000	150	0.06	0.07	11,000	150	0.02	0.03
	1.5°	12		20,000	600	0.09	0.24	17,000	450	0.06	0.12	14,000	300	0.06	0.1	14,000	300	0.06	0.06
		25		20,000	450	0.09	0.24	17,000	300	0.06	0.12	14,000	200	0.06	0.1	14,000	200	0.06	0.06
0.75	0.5°	8	0.3°	18,000	750	0.14	0.3	15,000	500	0.08	0.15	12,000	350	0.08	0.15	12,000	300	0.08	0.15
		10		17,000	450	0.14	0.3	15,000	300	0.08	0.15	12,000	250	0.08	0.15	12,000	250	0.08	0.15
		12		17,000	450	0.12	0.3	15,000	300	0.08	0.15	12,000	250	0.08	0.15	12,000	250	0.08	0.15
		16		17,000	450	0.12	0.24	15,000	300	0.08	0.12	12,000	250	0.08	0.1	12,000	250	0.075	0.1
		20		13,000	300	0.12	0.2	12,000	200	0.06	0.1	9,500	150	0.06	0.1	9,500	150	0.05	0.1
		25		13,000	300	0.12	0.2	12,000	200	0.06	0.1	9,500	150	0.06	0.1	9,500	150	0.05	0.1
		30		13,000	300	0.12	0.2	12,000	200	0.06	0.1	9,500	150	0.06	0.1	9,500	150	0.035	0.1
		35		13,000	300	0.09	0.2	12,000	200	0.06	0.1	9,500	150	0.06	0.1	9,500	150	0.03	0.1
	1°	10		18,000	750	0.14	0.3	15,000	500	0.08	0.15	12,000	350	0.08	0.15	12,000	300	0.08	0.15
		12		17,000	450	0.14	0.3	15,000	300	0.08	0.15	12,000	250	0.08	0.15	12,000	250	0.08	0.15
		16		17,000	450	0.12	0.3	15,000	300	0.08	0.15	12,000	250	0.08	0.15	12,000	250	0.08	0.15
		20		17,000	450	0.12	0.24	15,000	300	0.08	0.12	12,000	250	0.08	0.1	12,000	250	0.075	0.1
		25		17,000	450	0.12	0.24	15,000	300	0.08	0.12	12,000	250	0.08	0.1	12,000	250	0.05	0.1
		30		13,000	300	0.09	0.2	12,000	200	0.06	0.1	9,500	150	0.06	0.1	9,500	150	0.03	0.1
		35		13,000	300	0.09	0.2	12,000	200	0.06	0.1	9,500	150	0.06	0.1	9,500	150	0.02	0.1
	1.5°	10	0.3°	18,000	750	0.12	0.3	15,000	500	0.08	0.15	12,000	350	0.08	0.15	12,000	300	0.08	0.15
		12		17,000	450	0.12	0.3	15,000	300	0.08	0.15	12,000	250	0.08	0.15	12,000	250	0.08	0.15
		16		17,000	450	0.12	0.3	15,000	300	0.08	0.15	12,000	250	0.08	0.15	12,000	250	0.08	0.15
		20		17,000	450	0.12	0.3	15,000	300	0.08	0.15	12,000	250	0.08	0.15	12,000	250	0.08	0.15
		25		17,000	450	0.12	0.24	15,000	300	0.08	0.12	12,000	250	0.08	0.1	12,000	250	0.075	0.1
		30		17,000	450	0.12	0.24	15,000	300	0.08	0.12	12,000	250	0.08	0.1	12,000	250	0.075	0.1
		35		13,000	300	0.075	0.2	12,000	200	0.06	0.1	9,500	150	0.06	0.1	9,500	150	0.05	0.1
	2°	38.6		17,000	450	0.12	0.24	15,000	300	0.08	0.12	12,000	250	0.08	0.1	12,000	250	0.075	0.1
1	0.5°	8	0.3°	16,500	1,050	0.2	0.56	16,500	700	0.1	0.28	13,500	500	0.1	0.28	13,500	500	0.1	0.2
		10		16,500	1,050	0.2	0.56	16,500	700	0.1	0.28	13,500	500	0.1	0.28	13,500	500	0.1	0.2
		12		16,500	1,050	0.2	0.56	16,500	700	0.1	0.28	13,500	500	0.1	0.28	13,500	500	0.1	0.2
		16		14,000	750	0.15	0.56	13,000	500	0.1	0.28	10,000	300	0.1	0.28	10,000	300	0.1	0.2
		20		14,000	750	0.15	0.56	13,000	500	0.1	0.28	10,000	300	0.1	0.28	10,000	300	0.1	0.2
		25		11,000	375	0.15	0.42	10,000	250	0.1	0.21	8,000	200	0.1	0.18	8,000	200	0.06	0.1
		30		11,000	375	0.15	0.42	10,000	250	0.1	0.21	8,000	200	0.1	0.18	8,000	200	0.06	0.1
		35		11,000	375	0.15	0.42	10,000	250	0.1	0.21	8,000	200	0.1	0.18	8,000	200	0.06	0.1
		40		11,000	375	0.15	0.42	10,000	250	0.1	0.21	8,000	200	0.1	0.18	8,000	200	0.06	0.1

切深量 Depth of Cut



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1.请使用刚性较高的机床和刀柄，刚性较差时下调切削条件。
2.最大限度控制工具的跳动精度。
3.请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4.圆弧角部切削或去残加工时请将切深和进给速度下降至70%左右。
5.通过CAM或者机床设定中的R插入或减速可实现更稳定的高进给加工。
6.切削负荷变动较大或加工精度要求较高时请适当降低转速。
7.倾斜切入角度超过推荐值以上时请降低进给速度。
8.切削负荷变动较大或加工精度要求较高时请适当降低加工条件。
9.转速无法达到要求时，配合机床的转速同比降低进给速度。
10.上述条件表仅为参考。请根据实际加工条件调节。
11.切削条件适用于粗加工后的半精加工。
12.包含平坦部的粗加工较多时容易产生振刀。
13.切深较小时请提高转速使其达到合适的切削速度抑制振刀。

1. Highly rigid machines and tool holders should be used. If not, machining should be kept below above-mentioned conditions.
2. Tool vibrations should be kept at a minimum level for maximum accuracy.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. For the milling of corners or removal of residue, reduce the cutting depth and feed to 70%.
5. More stable high-feed machining in corners can be attained by setting an R insertion or deceleration on the CAM or machine side.
6. When cutting load fluctuates (in the corners, etc.) or when high precision is required, be sure to control the rotational speed.
7. When cutting at greater than the recommended cutting angle, reduce the feed.
8. When cutting load is fluctuating, or when higher milling accuracy is required, keep machining conditions below the above-mentioned values.
9. When the rotational speed does not meet the recommended conditions, reduce the feed in proportion to the RPM that is suitable for your machine.
10. The chart above is intended as general guidelines for reference only. The given values should be adjusted individually based on actual machining conditions.
11. The cutting conditions are intended for intermediate machining after roughing.
12. When the work includes extensive roughing including flat areas, chattering is more likely to occur.
13. If the cutting depth is shallow, increase the cutting speed appropriately to minimize chattering.

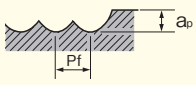
切削条件表 Cutting Conditions

WXL-PC-EBD 标准切削 Regular Milling

FROM 接一页

加工材料 Work Material				铜・铜合金 Copper・Copper Alloy				普通结构用钢・炭素钢 Mild Steel・Carbon Steel FC250・SS400・S55C・NAK55 ～32HRC				调质钢・预硬钢 Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH** 33～41HRC				调质钢・预硬钢 Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH** 42～50HRC			
R	颈部半角 θn	颈长 ℓ2	推荐倾斜切入角度 Recommended Cutting Angle	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf
1	1°	16	0.3°	16,500	1,050	0.2	0.56	16,500	700	0.1	0.28	13,500	500	0.1	0.28	13,500	500	0.1	0.2
		20		14,000	750	0.2	0.56	13,000	500	0.1	0.28	10,000	300	0.1	0.28	10,000	300	0.1	0.2
		25		14,000	750	0.15	0.56	13,000	500	0.1	0.28	10,000	300	0.1	0.28	10,000	300	0.1	0.2
		30		11,000	375	0.15	0.42	10,000	250	0.1	0.21	8,000	200	0.1	0.18	8,000	200	0.08	0.1
		35		11,000	375	0.15	0.42	10,000	250	0.1	0.21	8,000	200	0.1	0.18	8,000	200	0.08	0.1
		40		11,000	375	0.15	0.42	10,000	250	0.1	0.21	8,000	200	0.1	0.18	8,000	200	0.06	0.1
		50		11,000	375	0.15	0.42	10,000	250	0.1	0.21	8,000	200	0.1	0.18	8,000	200	0.06	0.1
		60		11,000	375	0.15	0.42	10,000	250	0.1	0.21	8,000	200	0.1	0.18	8,000	200	0.06	0.1
		70		11,000	375	0.15	0.42	10,000	250	0.1	0.21	8,000	200	0.1	0.18	8,000	200	0.06	0.1
	1.5°	16		16,500	1,050	0.2	0.56	16,500	700	0.1	0.28	13,500	500	0.1	0.28	13,500	500	0.1	0.2
		20		16,500	1,050	0.2	0.56	16,500	700	0.1	0.28	13,500	500	0.1	0.28	13,500	500	0.1	0.2
		25		14,000	750	0.15	0.56	13,000	500	0.1	0.28	10,000	300	0.1	0.28	10,000	300	0.1	0.2
		30		14,000	750	0.15	0.56	13,000	500	0.1	0.28	10,000	300	0.1	0.28	10,000	300	0.1	0.2
		35		14,000	750	0.15	0.56	13,000	500	0.1	0.28	10,000	300	0.1	0.28	10,000	300	0.1	0.2
		41.5		11,000	375	0.15	0.42	10,000	250	0.1	0.21	8,000	200	0.1	0.18	8,000	200	0.06	0.1
	2°	31.5		14,000	750	0.15	0.56	13,000	500	0.1	0.28	10,000	300	0.1	0.28	10,000	300	0.1	0.2
1.5	0.5°	8	0.3°	15,000	1,200	0.2	0.84	9,500	800	0.15	0.42	7,500	600	0.15	0.42	7,500	600	0.15	0.3
		10		15,000	1,200	0.2	0.84	9,500	800	0.15	0.42	7,500	600	0.15	0.42	7,500	600	0.15	0.3
		12		12,000	900	0.2	0.84	9,500	600	0.15	0.42	7,500	400	0.15	0.36	7,500	400	0.15	0.3
		16		10,000	900	0.2	0.84	9,500	600	0.15	0.42	7,500	400	0.15	0.36	7,500	400	0.15	0.3
		20		10,000	450	0.2	0.84	8,500	300	0.15	0.42	6,500	250	0.15	0.36	6,500	250	0.15	0.3
		25		10,000	450	0.2	0.84	8,500	300	0.15	0.42	6,500	250	0.15	0.36	6,500	250	0.15	0.3
		30		10,000	450	0.2	0.84	8,500	300	0.15	0.42	6,500	250	0.15	0.3	6,500	250	0.09	0.15
		35		10,000	450	0.2	0.84	8,500	300	0.15	0.42	6,500	250	0.15	0.3	6,500	250	0.09	0.15
		40		9,000	375	0.2	0.84	7,500	250	0.15	0.42	6,000	200	0.15	0.3	6,000	200	0.09	0.15
		50		9,000	375	0.2	0.84	7,500	250	0.15	0.42	6,000	200	0.15	0.3	6,000	200	0.09	0.15
	1°	20		10,000	900	0.2	0.84	9,500	600	0.15	0.42	7,500	400	0.15	0.36	7,500	400	0.15	0.3
		25		10,000	450	0.2	0.84	8,500	300	0.15	0.42	6,500	250	0.15	0.36	6,500	250	0.15	0.3
		30		10,000	450	0.2	0.84	8,500	300	0.15	0.42	6,500	250	0.15	0.36	6,500	250	0.15	0.3
		35		10,000	450	0.2	0.84	8,500	300	0.15	0.42	6,500	250	0.15	0.3	6,500	250	0.09	0.15
		40		10,000	450	0.2	0.84	8,500	300	0.15	0.42	6,500	250	0.15	0.3	6,500	250	0.09	0.15
		50		9,000	375	0.2	0.84	7,500	250	0.15	0.42	6,000	200	0.15	0.3	6,000	200	0.09	0.15
		60		9,000	375	0.2	0.84	7,500	250	0.15	0.42	6,000	200	0.15	0.3	6,000	200	0.09	0.15
		70		9,000	375	0.2	0.84	7,500	250	0.15	0.42	6,000	200	0.15	0.3	6,000	200	0.09	0.15
	1.5°	20		10,000	900	0.3	0.84	9,500	600	0.15	0.42	7,500	400	0.15	0.36	7,500	400	0.15	0.3
		25		10,000	450	0.25	0.84	8,500	300	0.15	0.42	6,500	250	0.15	0.36	6,500	250	0.15	0.3
		30		10,000	450	0.25	0.84	8,500	300	0.15	0.42	6,500	250	0.15	0.36	6,500	250	0.15	0.3
		35		10,000	450	0.25	0.84	8,500	300	0.15	0.42	6,500	250	0.15	0.36	6,500	250	0.15	0.3
		40		10,000	450	0.25	0.84	8,500	300	0.15	0.42	6,500	250	0.15	0.36	6,500	250	0.15	0.3
		50		10,000	450	0.2	0.84	8,500	300	0.15	0.42	6,500	250	0.15	0.3	6,500	250	0.09	0.15
		62.5		10,000	450	0.2	0.84	8,500	300	0.15	0.42	6,500	250	0.15	0.3	6,500	250	0.09	0.15
		47.5		10,000	450	0.25	0.84	8,500	300	0.15	0.42	6,500	250	0.15	0.36	6,500	250	0.15	0.3

切深量 Depth of Cut



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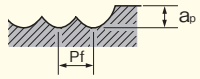
加工材料 Work Material				铜·铜合金 Copper·Copper Alloy				普通结构用钢·炭素钢 Mild Steel·Carbon Steel FC250·SS400·S55C·NAK55 ～32HRC				调质钢·预硬钢 Hardened Steel·Prehardened Steel SKT·SKD61·NAK55·NAK80·HPM1·DH** 33～41HRC				42～50HRC			
R	颈部半角 θn	颈长 ℓ2	推荐倾斜切入角度 Recommended Cutting Angle	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf
2	1°	20	0.5°	9,000	900	0.5	1.28	7,500	600	0.2	0.64	6,000	400	0.2	0.6	6,000	400	0.2	0.4
		30		7,000	600	0.5	1.28	6,000	400	0.2	0.64	5,000	250	0.2	0.6	5,000	250	0.2	0.4
		40		7,000	600	0.4	1.28	6,000	400	0.2	0.64	5,000	250	0.2	0.56	5,000	250	0.12	0.3
		50		7,000	600	0.4	1.28	6,000	400	0.2	0.64	5,000	250	0.2	0.56	5,000	250	0.12	0.2
		60		5,000	375	0.35	1.28	5,000	250	0.2	0.64	4,000	200	0.2	0.56	4,000	200	0.12	0.2
	1.5°	44.2		7,000	600	0.5	1.28	6,000	400	0.2	0.64	5,000	250	0.2	0.6	5,000	250	0.2	0.4
	2°	34		7,000	600	0.5	1.28	6,000	400	0.2	0.64	5,000	250	0.2	0.6	5,000	250	0.2	0.5
2.5	1°	30	0.5°	7,000	750	0.6	1.8	6,500	500	0.25	0.9	5,000	400	0.25	0.7	5,000	400	0.25	0.5
		40		6,000	750	0.6	1.8	5,000	500	0.25	0.9	4,000	250	0.25	0.7	4,000	250	0.25	0.5
		60		5,000	600	0.4	1.8	4,000	400	0.25	0.9	4,000	200	0.25	0.6	4,000	200	0.2	0.25
	1.5°	26.9		9,000	1,350	0.6	1.8	6,500	900	0.25	0.9	5,000	750	0.25	0.7	5,000	750	0.25	0.5
		65.1		6,000	750	0.6	1.8	5,000	500	0.25	0.9	4,000	250	0.25	0.7	4,000	250	0.25	0.5
	2°	50.1		6,000	750	0.6	1.8	5,000	500	0.25	0.9	4,000	250	0.25	0.7	4,000	250	0.25	0.5
3	1°	30	0.5°	7,000	1,200	0.75	2.4	5,500	800	0.3	1.2	4,500	600	0.3	0.96	4,500	600	0.3	0.6
		40		5,000	600	0.75	2.4	4,000	400	0.3	1.2	4,000	300	0.3	0.96	4,000	300	0.3	0.6
		50		5,000	600	0.6	2.4	4,000	400	0.3	1.2	4,000	300	0.3	0.96	4,000	300	0.3	0.6
		60		5,000	600	0.6	2.4	4,000	400	0.3	1.2	4,000	300	0.3	0.96	4,000	300	0.3	0.6
		70		5,000	600	0.6	2.4	4,000	400	0.3	1.2	4,000	300	0.3	0.96	4,000	300	0.3	0.3
		80		5,000	600	0.45	2.4	4,000	400	0.2	1.2	4,000	300	0.2	0.96	4,000	300	0.2	0.3
	1.5°	49		5,000	600	0.6	2.4	4,000	400	0.3	1.2	4,000	300	0.3	0.96	4,000	300	0.3	0.6
	2°	36		7,000	1,200	0.75	2.4	5,500	800	0.3	1.2	4,500	600	0.3	0.96	4,500	600	0.3	0.6
4	3°	35.5	0.5°	4,800	670	0.8	3.2	4,000	480	0.4	1.6	3,600	360	0.4	1.28	3,600	290	0.4	0.85
	1.5°	54.5		4,000	560	0.8	3.2	3,200	380	0.4	1.6	3,200	320	0.4	1.28	3,200	260	0.4	0.85
5	3°	39.5	0.5°	3,800	610	1	4	3,200	450	0.5	2	2,800	340	0.5	1.6	2,800	280	0.5	1.07
	1.5°	58.5		3,200	510	1	4	2,500	350	0.5	2	2,500	300	0.5	1.6	2,500	250	0.5	1.07
6	3°	60	0.5°	3,200	580	1.2	4.8	2,600	420	0.6	2.4	2,400	340	0.6	1.92	2,400	290	0.6	1.28
	1.5°	80		2,700	480	1.2	4.8	2,100	340	0.6	2.4	2,100	300	0.6	1.92	2,100	250	0.6	1.28

切深量 Depth of Cut



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1. 请使用刚性较高的机床和刀柄，刚性较差时下调切削条件。
2. 最大限度控制工具的跳动精度。
3. 请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 圆弧角部切削或去残加工时请将切深和进给速度下降至70%左右。
5. 通过CAM或者机床设定中的R插入或减速可实现更稳定的高进给加工。
6. 切削负荷变动较大或加工精度要求较高时请适当降低转速。
7. 倾斜切入角度超过推荐值以上时请降低进给速度。
8. 切削负荷变动较大或加工精度要求较高时请适当降低加工条件。
9. 转速无法达到要求时，配合机床的转速同比降低进给速度。
10. 上述条件表仅为参考。请根据实际加工条件调节。
11. 切削条件适用于粗加工后的半精加工。
12. 包含平坦部的粗加工较多时容易产生振刀。
13. 切深较小时请提高转速使其达到合适的切削速度抑制振刀。

1. Highly rigid machines and tool holders should be used. If not, machining should be kept below above-mentioned conditions.
2. Tool vibrations should be kept at a minimum level for maximum accuracy.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. For the milling of corners or removal of residue, reduce the cutting depth and feed to 70%.
5. More stable high-feed machining in corners can be attained by setting an R insertion or deceleration on the CAM or machine side.
6. When cutting load fluctuates (in the corners, etc.) or when high precision is required, be sure to control the rotational speed.
7. When cutting at greater than the recommended cutting angle, reduce the feed.
8. When cutting load is fluctuating, or when higher milling accuracy is required, keep machining conditions below the above-mentioned values.
9. When the rotational speed does not meet the recommended conditions, reduce the feed in proportion to the RPM that is suitable for your machine.
10. The chart above is intended as general guidelines for reference only. The given values should be adjusted individually based on actual machining conditions.
11. The cutting conditions are intended for intermediate machining after roughing.
12. When the work includes extensive roughing including flat areas, chattering is more likely to occur.
13. If the cutting depth is shallow, increase the cutting speed appropriately to minimize chattering.

切削条件表 Cutting Conditions

WXL-PC-EBD 高速切削 High-Speed Milling

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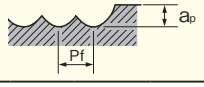
加工材料 Work Material				铜・铜合金 Copper・Copper Alloy				普通结构用钢・炭素钢 Mild Steel・Carbon Steel FC250・SS400・S55C・NAK55 ～32HRC				调质钢・预硬钢 Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH** 33～41HRC				调质钢・预硬钢 Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH** 42～50HRC			
R	颈部半角 θn	颈长 ℓ2	推荐倾斜切入角度 Recommended Cutting Angle	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf
0.1	0.5°	1	0.3°	50,000	440	0.007	0.01	50,000	360	0.005	0.005	50,000	340	0.005	0.005	50,000	340	0.005	0.005
		1.5		50,000	440	0.007	0.01	50,000	360	0.005	0.005	50,000	340	0.005	0.005	50,000	340	0.005	0.005
		2		50,000	360	0.007	0.01	45,000	300	0.005	0.005	45,000	280	0.005	0.005	45,000	280	0.005	0.005
		2.5		50,000	320	0.007	0.01	38,000	230	0.005	0.005	38,000	210	0.005	0.005	37,000	200	0.005	0.005
		3		50,000	250	0.007	0.01	38,000	200	0.005	0.005	38,000	180	0.005	0.005	37,000	150	0.003	0.005
	1°	2		50,000	440	0.007	0.01	50,000	360	0.005	0.005	50,000	340	0.005	0.005	50,000	340	0.005	0.005
		2.5		50,000	360	0.007	0.01	45,000	300	0.005	0.005	45,000	280	0.005	0.005	45,000	280	0.005	0.005
		3		50,000	320	0.007	0.01	38,000	230	0.005	0.005	38,000	210	0.005	0.005	37,000	200	0.005	0.005
0.15	0.5°	2	0.3°	50,000	730	0.007	0.02	50,000	600	0.005	0.01	50,000	570	0.005	0.01	50,000	570	0.005	0.005
		3		50,000	580	0.007	0.01	45,000	480	0.005	0.005	45,000	450	0.005	0.005	45,000	450	0.005	0.005
	1°	3		50,000	610	0.007	0.02	47,000	510	0.005	0.01	47,000	480	0.005	0.01	47,000	480	0.005	0.005
		4		50,000	580	0.007	0.01	45,000	480	0.005	0.005	45,000	450	0.005	0.005	45,000	450	0.005	0.005
0.2	0.5°	2	0.3°	50,000	970	0.015	0.04	50,000	800	0.01	0.02	50,000	760	0.01	0.02	50,000	760	0.01	0.01
		3		50,000	670	0.012	0.03	45,000	550	0.008	0.015	45,000	520	0.008	0.015	45,000	520	0.008	0.01
		4		48,000	540	0.007	0.02	43,000	500	0.005	0.01	43,000	470	0.005	0.01	43,000	470	0.005	0.01
		5		45,000	480	0.007	0.02	40,000	420	0.005	0.01	40,000	400	0.005	0.01	40,000	400	0.005	0.01
		6		40,000	400	0.007	0.01	36,000	370	0.005	0.005	36,000	350	0.005	0.005	35,000	340	0.005	0.005
	1°	4		50,000	670	0.012	0.03	45,000	550	0.008	0.015	45,000	520	0.008	0.015	45,000	520	0.008	0.01
		5		48,000	540	0.007	0.02	43,000	500	0.005	0.01	43,000	470	0.005	0.01	43,000	470	0.005	0.01
		6		45,000	480	0.007	0.02	40,000	420	0.005	0.01	40,000	400	0.005	0.01	40,000	400	0.005	0.01
0.25	0.5°	4	0.3°	50,000	1,200	0.015	0.04	48,000	900	0.01	0.02	48,000	850	0.01	0.02	48,000	850	0.01	0.015
		6		38,000	940	0.015	0.02	38,000	500	0.01	0.01	38,000	470	0.01	0.01	38,000	470	0.01	0.01
		8		30,000	760	0.007	0.02	30,000	400	0.005	0.01	30,000	380	0.005	0.01	29,000	360	0.005	0.01
		10		30,000	500	0.005	0.02	30,000	400	0.005	0.01	30,000	300	0.005	0.01	29,000	250	0.005	0.01
	1°	4		50,000	1,200	0.015	0.04	48,000	900	0.01	0.02	48,000	850	0.01	0.02	48,000	850	0.01	0.01
		6		50,000	1,200	0.015	0.04	48,000	900	0.01	0.02	48,000	850	0.01	0.02	48,000	850	0.01	0.01
		8		50,000	1,200	0.015	0.04	48,000	900	0.01	0.02	48,000	850	0.01	0.02	48,000	850	0.01	0.01
		10		30,000	760	0.007	0.02	30,000	400	0.005	0.01	30,000	380	0.005	0.01	29,000	360	0.005	0.01
		12		30,000	760	0.007	0.02	30,000	400	0.005	0.01	30,000	380	0.005	0.01	29,000	360	0.005	0.01
0.3	0.5°	2	0.3°	50,000	1,550	0.03	0.06	50,000	1,200	0.02	0.03	50,000	1,100	0.02	0.03	50,000	1,100	0.02	0.03
		4		50,000	1,350	0.03	0.06	45,000	1,000	0.02	0.03	45,000	950	0.02	0.03	45,000	950	0.02	0.03
		6		35,000	960	0.015	0.04	30,000	680	0.01	0.02	30,000	640	0.01	0.02	30,000	640	0.01	0.02
		8		30,000	720	0.015	0.04	26,000	600	0.01	0.02	26,000	570	0.01	0.02	25,000	540	0.01	0.02
		10		30,000	500	0.015	0.04	26,000	480	0.01	0.02	26,000	450	0.01	0.02	25,000	380	0.01	0.02
		12		30,000	500	0.01	0.04	26,000	480	0.007	0.02	26,000	450	0.007	0.02	25,000	380	0.007	0.01
		16		30,000	400	0.007	0.04	26,000	380	0.005	0.02	26,000	360	0.005	0.02	25,000	300	0.005	0.01
	1°	4		50,000	1,350	0.03	0.06	45,000	1,000	0.02	0.03	45,000	950	0.02	0.03	45,000	950	0.02	0.03
		6		35,000	960	0.015	0.04	30,000	680	0.01	0.02	30,000	640	0.01	0.02	30,000	640	0.01	0.02
		8		35,000	960	0.015	0.04	30,000	680	0.01	0.02	30,000	640	0.01	0.02	30,000	640	0.01	0.02
		10		30,000	720	0.015	0.04	26,000	600	0.01	0.02	26,000	570	0.01	0.02	25,000	540	0.01	0.02
		12		30,000	720	0.015	0.04	26,000	600	0.01	0.02	26,000	570	0.01	0.02	25,000	540	0.01	0.02
		16		30,000	500	0.015	0.04	26,000	480	0.01	0.02	26,000	450	0.01	0.02	25,000	380	0.01	0.02
0.4	0.5°	4	0.3°	50,000	1,750	0.06	0.16	48,000	1,600	0.04	0.08	48,000	1,500	0.04	0.06	48,000	1,500	0.04	0.04
		6		43,000	1,600	0.045	0.1	34,000	950	0.03	0.05	34,000	900	0.03	0.05	34,000	900	0.02	0.025
		8		32,000	1,250	0.045	0.1	30,000	800	0.03	0.05	30,000	760	0.03	0.05	30,000	760	0.02	0.025
		12		24,000	720	0.01	0.04	23,000	450	0.005	0.01	23,000	420	0.005	0.01	23,000	420	0.005	0.025
	1°	8		43,000	1,600	0.045	0.1	34,000	950	0.03	0.05	34,000	900	0.03	0.05	34,000	900	0.02	0.025
		12		32,000	1,250	0.045	0.1	30,000	800	0.03	0.05	30,000	760	0.03	0.05	30,000	760	0.02	0.025
		16		24,000	720	0.01	0.04	23,000	450	0.005	0.01	23,000	420	0.005	0.01	23,000	420	0.005	0.015

切深量 Depth of Cut



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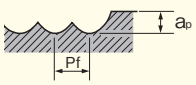
加工材料 Work Material				铜·铜合金 Copper·Copper Alloy				普通结构用钢·炭素钢 Mild Steel·Carbon Steel FC250·SS400·S55C·NAK55 ～32HRC				调质钢·预硬钢 Hardened Steel·Prehardened Steel SKT·SKD61·NAK55·NAK80·HPM1·DH** 33～41HRC				调质钢·预硬钢 Hardened Steel·Prehardened Steel SKT·SKD61·NAK55·NAK80·HPM1·DH** 42～50HRC			
R	颈部半角 θn	颈长 ℓ2	推荐倾斜切入角度 Recommended Cutting Angle	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf
0.5	0.5°	6	0.3°	47,000	2,850	0.075	0.2	36,000	2,300	0.05	0.1	36,000	2,100	0.05	0.08	36,000	2,100	0.05	0.05
		8		30,000	2,350	0.075	0.15	27,000	1,700	0.05	0.1	27,000	1,600	0.05	0.08	27,000	1,600	0.05	0.05
		10		27,000	2,000	0.075	0.15	26,000	1,600	0.05	0.1	26,000	1,500	0.05	0.08	26,000	1,500	0.05	0.05
		12		24,000	1,400	0.015	0.04	22,000	1,100	0.01	0.02	22,000	1,000	0.01	0.05	21,000	950	0.01	0.02
		16		24,000	1,000	0.015	0.04	22,000	770	0.01	0.02	22,000	700	0.01	0.02	21,000	680	0.01	0.02
		18		24,000	1,000	0.01	0.04	22,000	770	0.007	0.02	22,000	700	0.007	0.02	21,000	680	0.007	0.02
		20		24,000	1,000	0.01	0.03	22,000	770	0.007	0.015	22,000	700	0.007	0.015	21,000	680	0.007	0.015
		25		20,000	800	0.01	0.03	18,000	600	0.007	0.015	18,000	480	0.007	0.015	17,000	550	0.007	0.015
		30		20,000	800	0.007	0.03	18,000	600	0.005	0.015	18,000	480	0.005	0.015	17,000	550	0.005	0.015
		35		15,000	550	0.005	0.03	14,000	450	0.005	0.01	12,000	400	0.005	0.01	11,000	350	0.005	0.01
	1°	10		30,000	2,350	0.075	0.15	27,000	1,700	0.05	0.1	27,000	1,600	0.05	0.05	27,000	1,600	0.05	0.05
		16		24,000	1,400	0.015	0.04	22,000	1,100	0.01	0.02	22,000	1,000	0.01	0.02	21,000	950	0.01	0.02
		20		24,000	1,000	0.015	0.04	22,000	770	0.01	0.02	22,000	700	0.01	0.02	21,000	680	0.01	0.015
		25		24,000	1,000	0.015	0.04	22,000	770	0.01	0.02	22,000	700	0.01	0.02	21,000	680	0.01	0.015
		30		24,000	1,000	0.01	0.04	22,000	770	0.007	0.02	22,000	700	0.007	0.02	21,000	680	0.007	0.015
		35		24,000	1,000	0.01	0.03	22,000	770	0.007	0.015	22,000	700	0.007	0.015	21,000	680	0.007	0.015
		40		22,000	1,000	0.01	0.03	20,000	770	0.007	0.015	20,000	700	0.007	0.015	19,000	680	0.007	0.015
		50		20,000	800	0.01	0.03	18,000	600	0.007	0.015	18,000	480	0.007	0.015	17,000	550	0.007	0.01
		60		18,000	800	0.007	0.03	16,000	600	0.005	0.015	16,000	480	0.005	0.015	15,000	550	0.005	0.015
		70		15,000	600	0.005	0.03	14,000	480	0.005	0.015	13,000	380	0.005	0.015	12,000	450	0.005	0.015
	1.5°	8		47,000	2,850	0.075	0.2	36,000	2,300	0.05	0.1	36,000	2,100	0.05	0.08	36,000	2,100	0.05	0.05
		10		30,000	2,350	0.075	0.15	27,000	1,700	0.05	0.1	27,000	1,600	0.05	0.08	27,000	1,600	0.05	0.05
		12		30,000	2,350	0.075	0.15	27,000	1,700	0.05	0.1	27,000	1,600	0.05	0.08	27,000	1,600	0.05	0.05
		16		24,000	1,400	0.015	0.04	22,000	1,100	0.01	0.02	22,000	1,000	0.01	0.02	21,000	950	0.01	0.02
		20		24,000	1,400	0.015	0.04	22,000	1,100	0.01	0.02	22,000	1,000	0.01	0.02	21,000	950	0.01	0.02
		25		24,000	1,400	0.015	0.04	22,000	1,100	0.01	0.02	22,000	1,000	0.01	0.02	21,000	950	0.01	0.02
		30		24,000	1,000	0.015	0.04	22,000	770	0.01	0.02	22,000	700	0.01	0.02	21,000	680	0.01	0.02
		35		24,000	1,000	0.015	0.04	22,000	770	0.01	0.02	22,000	700	0.01	0.02	21,000	680	0.01	0.02
	2°	45		24,000	1,400	0.015	0.04	22,000	1,100	0.01	0.02	22,000	1,000	0.01	0.02	21,000	950	0.01	0.02
0.6	0.5°	12	0.3°	30,000	2,000	0.09	0.21	25,000	1,700	0.06	0.12	25,000	1,600	0.06	0.1	25,000	1,600	0.06	0.06
		25		24,000	1,000	0.02	0.04	22,000	770	0.015	0.02	22,000	700	0.015	0.02	21,000	680	0.015	0.03
	1°	12		30,000	2,200	0.09	0.21	25,000	2,000	0.06	0.12	25,000	2,000	0.06	0.1	25,000	1,900	0.06	0.06
		25		30,000	2,000	0.04	0.21	25,000	1,700	0.06	0.09	25,000	1,600	0.06	0.05	25,000	1,600	0.02	0.03
	1.5°	12		30,000	2,200	0.09	0.21	25,000	2,000	0.06	0.12	25,000	2,000	0.06	0.1	25,000	1,900	0.06	0.06
		25		30,000	2,000	0.05	0.21	25,000	1,700	0.06	0.12	25,000	1,600	0.06	0.1	25,000	1,600	0.05	0.06

切深量 Depth of Cut



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1. 请使用刚性较高的机床和刀柄，刚性较差时下调切削条件。
2. 最大限度控制工具的跳动精度。
3. 请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 圆弧角部切削或去残加工时请将切深和进给速度下降至70%左右。
5. 通过CAM或者机床设定中的R插入或减速可实现更稳定的高进给加工。
6. 切削负荷变动较大或加工精度要求较高时请适当降低转速。
7. 倾斜切入角度超过推荐值以上时请降低进给速度。
8. 切削负荷变动较大或加工精度要求较高时请适当降低加工条件。
9. 转速无法达到要求时，配合机床的转速同比降低进给速度。
10. 上述条件表仅为参考。请根据实际加工条件调节。
11. 切削条件适用于粗加工后的半精加工。
12. 包含平坦部的粗加工较多时容易产生振刀。
13. 切深较小时请提高转速使其达到合适的切削速度抑制振刀。

1. Highly rigid machines and tool holders should be used. If not, machining should be kept below above-mentioned conditions.
2. Tool vibrations should be kept at a minimum level for maximum accuracy.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. For the milling of corners or removal of residue, reduce the cutting depth and feed to 70%.
5. More stable high-feed machining in corners can be attained by setting an R insertion or deceleration on the CAM or machine side.
6. When cutting load fluctuates (in the corners, etc.) or when high precision is required, be sure to control the rotational speed.
7. When cutting at greater than the recommended cutting angle, reduce the feed.
8. When cutting load is fluctuating, or when higher milling accuracy is required, keep machining conditions below the above-mentioned values.
9. When the rotational speed does not meet the recommended conditions, reduce the feed in proportion to the RPM that is suitable for your machine.
10. The chart above is intended as general guidelines for reference only. The given values should be adjusted individually based on actual machining conditions.
11. The cutting conditions are intended for intermediate machining after roughing.
12. When the work includes extensive roughing including flat areas, chattering is more likely to occur.
13. If the cutting depth is shallow, increase the cutting speed appropriately to minimize chattering.

WXL-PC-EBD 高速切削 High-Speed Milling

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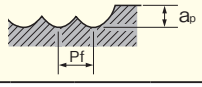
加工材料 Work Material				铜・铜合金 Copper・Copper Alloy				普通结构用钢・炭素钢 Mild Steel・Carbon Steel FC250・SS400・S55C・NAK55 ～32HRC				调质钢・预硬钢 Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH** 33～41HRC				调质钢・预硬钢 Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH** 42～50HRC			
R	颈部半角 θn	颈长 ℓ2	推荐倾斜切入角度 Recommended Cutting Angle	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf
0.75	0.5°	8	0.3°	32,000	3,000	0.12	0.3	30,000	2,900	0.075	0.15	30,000	2,700	0.075	0.12	30,000	2,700	0.075	0.1
		10		30,000	2,650	0.12	0.3	24,000	2,300	0.075	0.15	24,000	2,100	0.075	0.12	24,000	2,100	0.075	0.1
		12		30,000	2,400	0.12	0.3	24,000	2,000	0.075	0.15	24,000	1,900	0.075	0.12	24,000	1,900	0.075	0.1
		16		24,000	1,400	0.12	0.2	21,000	1,400	0.075	0.1	21,000	1,300	0.075	0.09	21,000	1,300	0.05	0.06
		20		22,000	1,400	0.1	0.2	18,000	1,200	0.05	0.1	18,000	1,100	0.05	0.07	17,000	1,100	0.03	0.03
		25		22,000	1,100	0.1	0.2	18,000	1,000	0.05	0.1	18,000	900	0.05	0.07	17,000	900	0.02	0.03
		30		22,000	1,100	0.075	0.2	18,000	1,000	0.035	0.1	18,000	900	0.035	0.07	17,000	900	0.01	0.03
		35		20,000	1,000	0.05	0.2	17,000	9,000	0.03	0.1	17,000	800	0.03	0.07	15,000	800	0.01	0.03
	1°	10		32,000	3,000	0.12	0.3	30,000	2,900	0.075	0.15	30,000	2,700	0.075	0.12	30,000	2,700	0.075	0.1
		12		30,000	2,650	0.12	0.3	24,000	2,300	0.075	0.15	24,000	2,100	0.075	0.12	24,000	2,100	0.075	0.1
		16		30,000	2,400	0.12	0.3	24,000	2,000	0.075	0.15	24,000	1,900	0.075	0.12	24,000	1,900	0.075	0.1
		20		24,000	1,400	0.12	0.2	21,000	1,400	0.075	0.1	21,000	1,300	0.075	0.09	21,000	1,300	0.05	0.06
		25		22,000	1,400	0.1	0.2	18,000	1,200	0.05	0.1	18,000	1,100	0.05	0.09	17,000	1,100	0.05	0.06
		30		22,000	1,400	0.07	0.2	18,000	1,200	0.05	0.1	18,000	1,100	0.05	0.07	17,000	1,100	0.03	0.03
		35		22,000	1,100	0.07	0.2	18,000	1,000	0.05	0.1	18,000	900	0.05	0.07	17,000	900	0.02	0.03
	1.5°	10		32,000	3,000	0.12	0.3	30,000	2,900	0.075	0.15	30,000	2,700	0.075	0.12	30,000	2,700	0.075	0.1
		12		32,000	3,000	0.12	0.3	30,000	2,900	0.075	0.15	30,000	2,700	0.075	0.12	30,000	2,700	0.075	0.1
		16		30,000	2,400	0.12	0.3	24,000	2,000	0.075	0.15	24,000	1,900	0.075	0.12	24,000	1,900	0.075	0.1
		20		30,000	2,400	0.12	0.3	24,000	2,000	0.075	0.15	24,000	1,900	0.075	0.12	24,000	1,900	0.08	0.1
		25		24,000	1,400	0.1	0.2	21,000	1,400	0.075	0.1	21,000	1,300	0.075	0.09	21,000	1,300	0.05	0.06
		30		24,000	1,400	0.1	0.2	21,000	1,400	0.075	0.1	21,000	1,300	0.075	0.09	21,000	1,300	0.05	0.06
		35		22,000	1,400	0.05	0.2	18,000	1,200	0.05	0.1	18,000	1,100	0.05	0.07	17,000	1,100	0.02	0.03
	2°	38.6		24,000	1,400	0.1	0.2	21,000	1,400	0.075	0.1	21,000	1,300	0.075	0.09	21,000	1,300	0.05	0.06
1	0.5°	8	0.3°	27,000	3,350	0.15	0.4	25,000	2,600	0.1	0.2	25,000	2,400	0.1	0.2	23,000	2,200	0.1	0.2
		10		22,000	3,050	0.15	0.4	20,000	2,400	0.1	0.2	20,000	2,200	0.1	0.2	19,000	2,000	0.1	0.2
		12		22,000	3,050	0.15	0.4	20,000	2,400	0.1	0.2	20,000	2,200	0.1	0.2	19,000	2,000	0.1	0.2
		16		15,000	2,400	0.15	0.3	15,000	1,800	0.1	0.2	15,000	1,700	0.1	0.2	14,000	1,500	0.1	0.2
		20		15,000	2,200	0.15	0.2	14,000	1,700	0.1	0.1	14,000	1,600	0.1	0.1	13,000	1,400	0.1	0.1
		25		12,000	1,200	0.1	0.2	12,000	1,200	0.05	0.1	11,000	1,100	0.05	0.1	10,000	1,000	0.05	0.1
		30		12,000	1,000	0.1	0.2	12,000	1,000	0.05	0.1	11,000	900	0.05	0.1	10,000	800	0.05	0.1
		35		12,000	1,000	0.075	0.2	12,000	1,000	0.03	0.1	11,000	900	0.03	0.1	10,000	800	0.03	0.1
		40		12,000	800	0.05	0.2	12,000	800	0.02	0.1	11,000	800	0.02	0.1	10,000	700	0.02	0.1
	1°	16		22,000	3,050	0.15	0.4	20,000	2,400	0.1	0.2	20,000	2,200	0.1	0.2	19,000	2,000	0.1	0.2
		20		15,000	2,400	0.15	0.3	15,000	1,800	0.1	0.2	15,000	1,700	0.1	0.2	14,000	1,500	0.1	0.2
		25		15,000	2,200	0.15	0.2	14,000	1,700	0.1	0.1	14,000	1,600	0.1	0.1	13,000	1,400	0.1	0.1
		30		14,000	2,200	0.15	0.2	14,000	1,700	0.1	0.1	14,000	1,600	0.1	0.1	13,000	1,400	0.07	0.1
		35		12,000	1,200	0.1	0.2	12,000	1,200	0.05	0.1	11,000	1,100	0.05	0.1	10,000	1,000	0.05	0.1
		40		12,000	1,000	0.1	0.2	12,000	1,000	0.05	0.1	11,000	900	0.05	0.1	10,000	800	0.05	0.1
		50		12,000	1,000	0.075	0.2	12,000	1,000	0.03	0.1	11,000	900	0.03	0.1	10,000	800	0.03	0.1
		60		12,000	800	0.05	0.2	12,000	800	0.02	0.1	11,000	800	0.02	0.1	10,000	700	0.02	0.1
		70		12,000	800	0.03	0.1	12,000	800	0.01	0.05	11,000	800	0.01	0.05	10,000	700	0.01	0.05
	1.5°	16		22,000	3,050	0.2	0.4	20,000	2,400	0.1	0.2	20,000	2,200	0.1	0.2	19,000	2,000	0.1	0.2
		20		22,000	3,050	0.2	0.4	20,000	2,400	0.1	0.2	20,000	2,200	0.1	0.2	19,000	2,000	0.1	0.2
		25		15,000	2,400	0.15	0.3	15,000	1,800	0.1	0.2	15,000	1,700	0.1	0.2	14,000	1,500	0.1	0.2
		30		15,000	2,200	0.15	0.2	14,000	1,700	0.1	0.1	14,000	1,600	0.1	0.1	13,000	1,400	0.1	0.1
		35		15,000	2,200	0.15	0.2	14,000	1,700	0.1	0.1	14,000	1,600	0.1	0.1	13,000	1,400	0.1	0.1
		41.5		12,000	1,200	0.1	0.2	12,000	1,200	0.05	0.1	11,000	1,100	0.05	0.1	10,000	1,000	0.05	0.1
	2°	31.5		15,000	2,400	0.15	0.3	15,000	1,800	0.1	0.2	15,000	1,700	0.1	0.2	14,000	1,500	0.1	0.2

切深量 Depth of Cut



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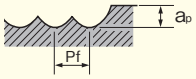
加工材料 Work Material				铜·铜合金 Copper·Copper Alloy				普通结构用钢·炭素钢 Mild Steel·Carbon Steel FC250·SS400·S55C·NAK55 ～32HRC				调质钢·预硬钢 Hardened Steel·Prehardened Steel SKT·SKD61·NAK55·NAK80·HPM1·DH** 33～41HRC				调质钢·预硬钢 Hardened Steel·Prehardened Steel SKT·SKD61·NAK55·NAK80·HPM1·DH** 42～50HRC			
R	颈部半角 θn	颈长 ℓ2	推荐倾斜切入角度 Recommended Cutting Angle	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf
1.5	0.5°	8	0.3°	32,000	4,600	0.2	0.6	30,000	4,500	0.15	0.3	30,000	4,200	0.15	0.3	25,000	3,500	0.15	0.3
		10		28,000	4,000	0.2	0.6	25,000	3,800	0.15	0.3	25,000	3,600	0.15	0.3	20,000	2,800	0.15	0.3
		12		28,000	4,000	0.2	0.6	25,000	3,800	0.15	0.3	25,000	3,600	0.15	0.3	20,000	2,800	0.15	0.3
		16		22,000	2,900	0.2	0.6	18,000	2,700	0.15	0.3	18,000	2,500	0.15	0.3	15,000	2,000	0.15	0.3
		20		20,000	2,600	0.15	0.4	16,000	2,000	0.1	0.2	16,000	1,900	0.1	0.2	13,000	1,500	0.1	0.2
		25		16,000	2,200	0.15	0.4	14,000	1,800	0.1	0.2	14,000	1,700	0.1	0.2	11,000	1,300	0.1	0.2
		30		16,000	1,800	0.125	0.2	12,000	1,200	0.05	0.1	12,000	1,100	0.05	0.1	9,000	820	0.05	0.1
		35		12,000	1,000	0.075	0.1	10,000	800	0.03	0.05	9,000	760	0.03	0.05	7,800	590	0.03	0.05
		40		12,000	800	0.075	0.1	10,000	600	0.03	0.05	9,000	600	0.03	0.05	7,800	480	0.03	0.05
		50		10,000	650	0.05	0.1	8,000	500	0.02	0.05	7,500	500	0.02	0.05	6,200	400	0.02	0.05
	1°	20		22,000	2,900	0.2	0.6	18,000	2,700	0.15	0.3	18,000	2,500	0.15	0.3	15,000	2,000	0.15	0.3
		25		20,000	2,600	0.2	0.4	16,000	2,000	0.1	0.2	16,000	1,900	0.1	0.2	13,000	1,500	0.1	0.2
		30		16,000	2,200	0.2	0.4	14,000	1,800	0.1	0.2	14,000	1,700	0.1	0.2	11,000	1,300	0.1	0.2
		35		16,000	1,800	0.125	0.2	12,000	1,200	0.05	0.1	12,000	1,100	0.05	0.1	9,000	820	0.05	0.1
		40		16,000	1,800	0.125	0.2	12,000	1,200	0.05	0.1	12,000	1,100	0.05	0.1	9,000	820	0.05	0.1
		50		12,000	1,000	0.075	0.1	10,000	800	0.03	0.05	9,000	760	0.03	0.05	7,800	590	0.03	0.05
		60		12,000	800	0.075	0.1	10,000	600	0.03	0.05	9,000	600	0.03	0.05	7,800	480	0.03	0.05
		70		10,000	650	0.05	0.1	8,000	500	0.02	0.05	7,500	500	0.02	0.05	6,200	400	0.02	0.05
	1.5°	20		22,000	2,900	0.25	0.6	18,000	2,700	0.15	0.3	18,000	2,500	0.15	0.3	15,000	2,000	0.15	0.3
		25		20,000	2,600	0.2	0.4	16,000	2,000	0.1	0.2	16,000	1,900	0.1	0.2	13,000	1,500	0.1	0.2
		30		20,000	2,600	0.2	0.4	16,000	2,000	0.1	0.2	16,000	1,900	0.1	0.2	13,000	1,500	0.1	0.2
		35		16,000	2,200	0.2	0.4	14,000	1,800	0.1	0.2	14,000	1,700	0.1	0.2	11,000	1,300	0.1	0.2
		40		16,000	2,200	0.2	0.4	14,000	1,800	0.1	0.2	14,000	1,700	0.1	0.2	11,000	1,300	0.1	0.2
		50		16,000	1,800	0.125	0.2	12,000	1,200	0.05	0.1	12,000	1,100	0.05	0.1	9,000	820	0.05	0.1
		62.5		12,000	1,000	0.075	0.1	10,000	800	0.03	0.05	9,000	760	0.03	0.05	7,800	590	0.03	0.05
		47.5		16,000	2,200	0.25	0.4	14,000	1,800	0.1	0.2	14,000	1,700	0.1	0.2	11,000	1,300	0.1	0.2
2	1°	20	0.5°	20,000	3,450	0.4	0.6	18,000	3,200	0.2	0.5	18,000	3,000	0.2	0.5	14,000	2,300	0.2	0.4
		30		18,000	3,000	0.4	0.5	16,000	2,800	0.2	0.4	16,000	2,600	0.2	0.4	12,000	1,900	0.2	0.4
		40		18,000	3,000	0.25	0.6	16,000	2,800	0.1	0.3	16,000	2,600	0.1	0.3	12,000	1,900	0.1	0.3
		50		14,000	2,200	0.25	0.4	12,000	1,800	0.1	0.2	12,000	1,700	0.1	0.2	9,000	1,700	0.1	0.2
		60		16,000	1,800	0.125	0.2	12,000	1,200	0.05	0.1	12,000	1,100	0.05	0.1	9,000	820	0.05	0.1
	1.5°	44.2		18,000	3,000	0.25	0.6	16,000	2,800	0.1	0.3	16,000	2,600	0.1	0.3	12,000	1,900	0.1	0.3
	2°	34		20,000	3,450	0.4	0.6	18,000	3,200	0.2	0.5	18,000	3,000	0.2	0.5	14,000	2,300	0.2	0.5
切深量 Depth of Cut																			

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1.请使用刚性较高的机床和刀柄，刚性较差时下调切削条件。
2.最大限度控制工具的跳动精度。
3.请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4.圆弧角部切削或去残加工时请将切深和进给速度下降至70%左右。
5.通过CAM或者机床设定中的R插入或减速可实现更稳定的高进给加工。
6.切削负荷变动较大或加工精度要求较高时请适当降低转速。
7.倾斜切入角度超过推荐值以上时请降低进给速度。
8.切削负荷变动较大或加工精度要求较高时请适当降低加工条件。
9.转速无法达到要求时，配合机床的转速同比降低进给速度。
10.上述条件表仅为参考。请根据实际加工条件调节。
11.切削条件适用于粗加工后的半精加工。
12.包含平坦部的粗加工较多时容易产生振刀。
13.切深较小时请提高转速使其达到合适的切削速度抑制振刀。

1. Highly rigid machines and tool holders should be used. If not, machining should be kept below above-mentioned conditions.
2. Tool vibrations should be kept at a minimum level for maximum accuracy.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. For the milling of corners or removal of residue, reduce the cutting depth and feed to 70%.
5. More stable high-feed machining in corners can be attained by setting an R insertion or deceleration on the CAM or machine side.
6. When cutting load fluctuates (in the corners, etc.) or when high precision is required, be sure to control the rotational speed.
7. When cutting at greater than the recommended cutting angle, reduce the feed.
8. When cutting load is fluctuating, or when higher milling accuracy is required, keep machining conditions below the above-mentioned values.
9. When the rotational speed does not meet the recommended conditions, reduce the feed in proportion to the RPM that is suitable for your machine.
10. The chart above is intended as general guidelines for reference only. The given values should be adjusted individually based on actual machining conditions.
11. The cutting conditions are intended for intermediate machining after roughing.
12. When the work includes extensive roughing including flat areas, chattering is more likely to occur.
13. If the cutting depth is shallow, increase the cutting speed appropriately to minimize chattering.

切削条件表 Cutting Conditions

WXL-PC-EBD 高速切削 High-Speed Milling

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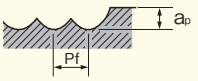
加工材料 Work Material				铜·铜合金 Copper·Copper Alloy				普通结构用钢·炭素钢 Mild Steel·Carbon Steel FC250·SS400·S55C·NAK55 ～32HRC				调质钢·预硬钢 Hardened Steel·Prehardened Steel SKT·SKD61·NAK55·NAK80·HPM1·DH** 33～41HRC				调质钢·预硬钢 Hardened Steel·Prehardened Steel SKT·SKD61·NAK55·NAK80·HPM1·DH** 42～50HRC			
R	颈部半角 θn	颈长 ℓ2	推荐倾斜切入角度 Recommended Cutting Angle	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf
2.5	1°	30	0.5°	20,000	3,400	0.4	0.75	15,000	3,200	0.2	0.3	15,000	3,000	0.2	0.3	12,000	2,400	0.2	0.3
		40		16,000	2,900	0.25	0.75	14,000	2,500	0.1	0.3	14,000	2,300	0.1	0.3	11,000	1,800	0.1	0.3
		60		12,000	1,800	0.25	0.5	10,000	1,200	0.1	0.2	10,000	1,100	0.1	0.2	8,000	880	0.1	0.2
	1.5°	26.9		18,000	3,800	0.5	1.25	16,000	3,500	0.25	0.5	16,000	3,300	0.25	0.5	12,000	2,400	0.25	0.5
		65.1		14,000	2,200	0.25	0.75	12,000	1,600	0.1	0.3	12,000	1,500	0.1	0.3	9,000	1,100	0.1	0.3
	2°	50.1		16,000	2,900	0.25	0.75	14,000	2,500	0.1	0.3	14,000	2,300	0.1	0.3	11,000	1,800	0.1	0.3
3	1°	30	0.5°	14,000	4,000	0.6	1.25	12,000	3,200	0.3	0.5	12,000	3,000	0.3	0.5	9,000	2,250	0.3	0.5
		40		10,000	3,200	0.6	1.25	10,000	2,600	0.3	0.5	10,000	2,400	0.3	0.5	8,000	1,900	0.3	0.5
		50		9,000	3,000	0.4	1	9,000	2,300	0.2	0.4	9,000	2,100	0.2	0.4	7,000	1,600	0.2	0.4
		60		9,000	2,800	0.4	0.75	9,000	2,000	0.2	0.3	9,000	1,900	0.2	0.3	7,000	1,400	0.2	0.3
		70		7,000	2,300	0.4	0.75	7,000	1,600	0.2	0.3	7,000	1,500	0.2	0.3	5,500	1,100	0.2	0.3
		80		6,000	2,000	0.3	0.75	6,000	1,300	0.15	0.3	6,000	1,200	0.15	0.3	5,000	900	0.15	0.3
	1.5°	49		10,000	3,200	0.6	1.25	10,000	2,600	0.3	0.5	10,000	2,400	0.3	0.5	8,000	1,900	0.3	0.5
	2°	36		14,000	4,000	0.6	1.25	12,000	3,200	0.3	0.5	12,000	3,000	0.3	0.5	9,000	2,250	0.3	0.5
4	3°	35.5	0.5°	9,500	3,000	0.8	1.2	8,000	2,200	0.4	0.6	8,000	2,000	0.4	0.6	7,200	1,500	0.4	0.6
	1.5°	54.5		8,000	2,500	0.8	1.2	7,200	2,000	0.4	0.6	7,200	1,800	0.4	0.6	6,400	1,400	0.4	0.6
5	3°	39.5	0.5°	7,600	2,700	1	1.5	6,400	2,000	0.5	0.8	6,400	1,800	0.5	0.8	5,700	1,400	0.5	0.8
	1.5°	58.5		6,400	2,300	1	1.5	5,700	1,800	0.5	0.8	5,700	1,600	0.5	0.8	5,100	1,300	0.5	0.8
6	3°	60	0.5°	6,400	2,500	1.2	1.8	5,300	1,900	0.6	0.96	5,300	1,700	0.6	0.96	4,800	1,300	0.6	0.96
	1.5°	80		5,300	2,100	1.2	1.8	4,700	1,700	0.6	0.96	4,700	1,500	0.6	0.96	4,200	1,200	0.6	0.96

切深量 Depth of Cut



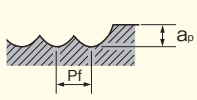
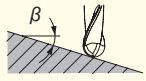
1. 请使用刚性较高的机床和刀柄，刚性较差时下调切削条件。
2. 最大限度控制工具的跳动精度。
3. 请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 圆弧角部切削或去残加工时请将切深和进给速度下降至70%左右。
5. 通过CAM或者机床设定中的R插入或减速可实现更稳定的高进给加工。
6. 切削负荷变动较大或加工精度要求较高时请适当降低转速。
7. 倾斜切入角度超过推荐值以上时请降低进给速度。
8. 切削负荷变动较大或加工精度要求较高时请适当降低加工条件。
9. 转速无法达到要求时，配合机床的转速同比降低进给速度。
10. 上述条件表仅为参考。请根据实际加工条件调节。
11. 切削条件适用于粗加工后的半精加工。
12. 包含平坦部的粗加工较多时容易产生振刀。
13. 切深较小时请提高转速使其达到合适的切削速度抑制振刀。

1. Highly rigid machines and tool holders should be used. If not, machining should be kept below above-mentioned conditions.
2. Tool vibrations should be kept at a minimum level for maximum accuracy.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. For the milling of corners or removal of residue, reduce the cutting depth and feed to 70%.
5. More stable high-feed machining in corners can be attained by setting an R insertion or deceleration on the CAM or machine side.
6. When cutting load fluctuates (in the corners, etc.) or when high precision is required, be sure to control the rotational speed.
7. When cutting at greater than the recommended cutting angle, reduce the feed.
8. When cutting load is fluctuating, or when higher milling accuracy is required, keep machining conditions below the above-mentioned values.
9. When the rotational speed does not meet the recommended conditions, reduce the feed in proportion to the RPM that is suitable for your machine.
10. The chart above is intended as general guidelines for reference only. The given values should be adjusted individually based on actual machining conditions.
11. The cutting conditions are intended for intermediate machining after roughing.
12. When the work includes extensive roughing including flat areas, chattering is more likely to occur.
13. If the cutting depth is shallow, increase the cutting speed appropriately to minimize chattering.

WXL-HS-EBD 标准切削 Regular Milling

⚠ **加工時产生的火花以及破损造成的发热现象有导致火灾的危险。请做好防火措施。**

Caution: Sparks generated during operation or heat caused by tool breakage can cause fire. Be sure to use all proper fire-prevention measures.

加工材料 Work Material	铜・铜合金 Copper・Copper Alloy				普通结构用钢・炭素钢 Mild Steel・Carbon Steel FC250・SS400・S55C ～32HRC				调质刚・预硬钢・不锈钢 Hardened Steel・Prehardened Steel・Stainless Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊・SUS304 33～41HRC				42～50HRC			
R	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量 (mm) Depth of Cut		回転速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量 (mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量 (mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量 (mm) Depth of Cut	
			ap	Pf			ap	Pf			ap	Pf			ap	Pf
0.1	50,000	540	0.01	0.02	50,000	540	0.01	0.02	50,000	540	0.01	0.02	50,000	440	0.01	0.02
0.2	50,000	880	0.02	0.04	50,000	750	0.02	0.04	50,000	750	0.02	0.04	50,000	680	0.02	0.04
0.3	50,000	1,840	0.02	0.04	50,000	910	0.02	0.04	50,000	910	0.02	0.04	50,000	840	0.02	0.04
0.4	50,000	2,210	0.02	0.05	50,000	1,850	0.02	0.05	50,000	1,850	0.02	0.05	50,000	1,250	0.02	0.05
0.5	50,000	3,350	0.02	0.05	50,000	2,800	0.02	0.05	50,000	2,500	0.02	0.05	47,500	2,250	0.02	0.05
1	31,500	3,350	0.04	0.1	25,000	2,800	0.04	0.1	24,500	2,500	0.04	0.1	23,500	2,250	0.04	0.1
1.5	21,000	3,350	0.06	0.15	16,500	2,800	0.06	0.15	16,000	2,500	0.06	0.15	15,500	2,250	0.06	0.15
2	15,500	4,080	0.08	0.2	15,500	3,400	0.08	0.2	15,000	2,750	0.08	0.2	13,500	2,450	0.08	0.2
3	10,500	5,160	0.12	0.3	13,500	4,300	0.3	0.6	11,500	2,750	0.3	0.6	9,500	2,250	0.12	0.3
4	7,900	3,840	0.16	0.4	10,000	3,200	0.4	0.8	8,950	2,100	0.4	0.8	7,150	1,700	0.16	0.4
5	6,300	3,120	0.2	0.5	8,250	2,600	0.5	1	7,150	1,700	0.5	1	5,700	1,350	0.2	0.5
6	5,250	2,580	0.24	0.6	6,850	2,150	0.5	2.4	5,950	1,400	0.5	2.4	4,750	1,100	0.24	0.6
切深量 Depth of Cut	 															

1. 此基准条件表适用于使用高精度的数控加工中心进行轻切削。
2. 刀具磨损后易在加工中产生火花，因此请不要使用易燃切削液。
3. 请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 上表仅做参考。实际加工时，请根据实际情况参照上表制定切削条件。

※倾斜角β低于15°时可将上表的转速和进给速度提高1.2～1.5倍。

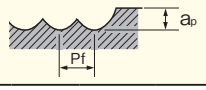
※※如您使用的机床无法达到推荐的转速，请使用最高转速。

1. The indicated speeds and feeds are for high speed light milling with high speed/high precision machining centers.
2. Because tools can cause sparks, do not use flammable fluids.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. Refer to the table above to set the milling conditions in accordance with the actual situation.

※ When β is less than 15°, speed and feed in the above table can be increased 1.2～1.5 times.

※※ If your machine does not attain the indicated speed, operate it at the highest possible speed.

WXL-HS-LN-EBD 标准切削 Regular Milling

加工材料 Work Material		铜·铜合金 Copper·Copper Alloy				普通结构用钢·炭素钢 Mild Steel·Carbon Steel FC250·SS400·S55C ～32HRC				调质钢·预硬钢 Hardened Steel·Prehardened Steel SKT·SKD61·NAK55·NAK80·HPM1·DH** 33～41HRC				42～50HRC			
R	颈长 ℓ_2 (mm)	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut	
				ap	Pf			ap	Pf			ap	Pf			ap	Pf
0.1	0.5	50,000	490	0.0075	0.01	50,000	400	0.005	0.005	50,000	380	0.005	0.005	50,000	380	0.005	0.005
	0.75	50,000	440	0.0075	0.01	50,000	360	0.005	0.005	50,000	340	0.005	0.005	50,000	340	0.005	0.005
	1	50,000	440	0.0075	0.01	50,000	360	0.005	0.005	50,000	340	0.005	0.005	50,000	340	0.005	0.005
	1.25	50,000	390	0.0075	0.01	47,000	320	0.005	0.005	47,000	300	0.005	0.005	47,000	300	0.005	0.005
0.15	0.5	50,000	750	0.0075	0.02	50,000	620	0.005	0.01	50,000	600	0.005	0.01	50,000	600	0.005	0.01
	0.6	50,000	730	0.0075	0.02	50,000	600	0.005	0.01	50,000	570	0.005	0.01	50,000	570	0.005	0.01
	0.75	50,000	730	0.0075	0.02	50,000	600	0.005	0.01	50,000	570	0.005	0.01	50,000	570	0.005	0.01
	1	50,000	730	0.0075	0.02	50,000	600	0.005	0.01	50,000	570	0.005	0.01	50,000	570	0.005	0.01
	1.25	50,000	730	0.0075	0.02	50,000	600	0.005	0.01	50,000	570	0.005	0.01	50,000	570	0.005	0.01
	1.5	50,000	730	0.0075	0.02	50,000	600	0.005	0.01	50,000	570	0.005	0.01	50,000	570	0.005	0.01
	1.75	50,000	610	0.0075	0.02	47,000	510	0.005	0.01	47,000	480	0.005	0.01	47,000	480	0.005	0.01
0.2	0.75	50,000	1,090	0.015	0.04	50,000	900	0.01	0.02	50,000	850	0.01	0.02	50,000	850	0.01	0.02
	1	50,000	1,090	0.015	0.04	50,000	900	0.01	0.02	50,000	850	0.01	0.02	50,000	850	0.01	0.02
	1.5	50,000	970	0.015	0.04	50,000	800	0.01	0.02	50,000	760	0.01	0.02	50,000	760	0.01	0.02
	2	50,000	850	0.015	0.04	50,000	700	0.01	0.02	50,000	660	0.01	0.02	50,000	660	0.01	0.02
	2.5	50,000	670	0.012	0.03	45,000	550	0.008	0.015	45,000	520	0.008	0.015	45,000	520	0.008	0.015
0.25	1	50,000	1,420	0.0225	0.045	50,000	1,100	0.015	0.03	50,000	1,050	0.015	0.03	50,000	1,050	0.015	0.03
	1.5	50,000	1,420	0.0225	0.045	50,000	1,100	0.015	0.03	50,000	1,050	0.015	0.03	50,000	1,050	0.015	0.03
	2	50,000	1,400	0.0225	0.045	50,000	1,000	0.015	0.03	50,000	950	0.015	0.03	50,000	950	0.015	0.03
	2.5	50,000	1,380	0.0225	0.045	50,000	1,000	0.015	0.03	50,000	950	0.015	0.03	50,000	950	0.015	0.03
	3	50,000	1,190	0.015	0.04	48,000	900	0.01	0.02	48,000	850	0.01	0.02	48,000	850	0.01	0.02
0.3	1.5	50,000	1,600	0.045	0.1	50,000	1,300	0.03	0.05	50,000	1,200	0.03	0.05	50,000	1,200	0.03	0.05
	2	50,000	1,600	0.045	0.1	50,000	1,300	0.03	0.05	50,000	1,200	0.03	0.05	50,000	1,200	0.03	0.05
	2.5	50,000	1,550	0.045	0.1	50,000	1,200	0.03	0.05	50,000	1,100	0.03	0.05	50,000	1,100	0.03	0.05
	3	50,000	1,550	0.03	0.06	50,000	1,200	0.02	0.03	50,000	1,100	0.02	0.03	50,000	1,100	0.02	0.03
	3.5	50,000	1,340	0.03	0.06	45,000	1,000	0.02	0.03	45,000	950	0.02	0.03	45,000	950	0.02	0.03
	4	50,000	1,200	0.015	0.04	40,000	900	0.01	0.02	40,000	850	0.01	0.02	40,000	850	0.01	0.02
	4.5	45,000	1,040	0.015	0.04	34,000	780	0.01	0.02	34,000	740	0.01	0.02	34,000	740	0.01	0.02
	5	30,000	960	0.015	0.04	30,000	680	0.01	0.02	30,000	640	0.01	0.02	30,000	640	0.01	0.02
	5.5	30,000	820	0.015	0.04	28,000	650	0.01	0.02	28,000	610	0.01	0.02	28,000	610	0.01	0.02
	6	30,000	720	0.015	0.04	26,000	600	0.01	0.02	26,000	570	0.01	0.02	25,000	540	0.01	0.02
0.4	2	50,000	2,200	0.06	0.16	50,000	2,000	0.04	0.08	50,000	1,900	0.04	0.08	50,000	1,900	0.04	0.08
	3	50,000	1,740	0.06	0.16	48,000	1,600	0.04	0.08	48,000	1,500	0.04	0.08	48,000	1,500	0.04	0.08
	4	50,000	1,680	0.06	0.16	40,000	1,200	0.04	0.08	40,000	1,100	0.04	0.08	40,000	1,100	0.04	0.08
	5	43,000	1,600	0.045	0.1	34,000	950	0.03	0.05	34,000	900	0.03	0.05	34,000	900	0.03	0.05
0.5	3	50,000	3,060	0.075	0.2	45,000	3,200	0.05	0.1	45,000	3,000	0.05	0.1	45,000	3,000	0.05	0.1
	4	50,000	3,000	0.075	0.2	40,000	3,000	0.05	0.1	40,000	2,850	0.05	0.1	40,000	2,850	0.05	0.1
	5	47,000	2,870	0.075	0.2	36,000	2,300	0.05	0.1	36,000	2,100	0.05	0.1	36,000	2,100	0.05	0.1
切深量 Depth of Cut																	

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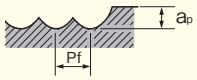
加工材料 Work Material		铜·铜合金 Copper · Copper Alloy				普通结构用钢·炭素钢 Mild Steel · Carbon Steel FC250 · SS400 · S55C ～32HRC				调质钢·预硬钢 Hardened Steel · Prehardened Steel SKT · SKD61 · NAK55 · NAK80 · HPM1 · DH＊＊ 33～41HRC				42～50HRC			
R	颈长 ℓ₂ (mm)	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	切深量(mm) Depth of Cut ap	Pf
0.5	6	43,000	2,600	0.075	0.2	30,000	2,000	0.05	0.1	30,000	1,900	0.05	0.1	30,000	1,900	0.05	0.1
	8	27,000	2,000	0.075	0.15	26,000	1,600	0.05	0.1	26,000	1,500	0.05	0.1	26,000	1,500	0.05	0.1
	10	24,000	1,400	0.015	0.04	22,000	1,100	0.01	0.02	22,000	1,000	0.01	0.02	21,000	950	0.01	0.02
0.75	3	50,000	5,330	0.15	0.3	50,000	4,800	0.075	0.15	50,000	4,800	0.075	0.15	50,000	4,800	0.075	0.15
	4	42,000	4,110	0.15	0.3	40,000	3,900	0.075	0.15	40,000	3,700	0.075	0.15	40,000	3,700	0.075	0.15
	6	32,000	3,000	0.15	0.3	30,000	2,900	0.075	0.15	30,000	2,700	0.075	0.15	30,000	2,700	0.075	0.15
	8	30,000	2,650	0.15	0.3	24,000	2,300	0.075	0.15	24,000	2,100	0.075	0.15	24,000	2,100	0.075	0.15
	10	30,000	2,400	0.15	0.3	24,000	2,000	0.075	0.15	24,000	1,900	0.075	0.15	24,000	1,900	0.075	0.15
1	3	50,000	5,800	0.2	0.4	50,000	5,600	0.1	0.2	50,000	5,600	0.1	0.2	47,000	5,300	0.1	0.2
	4	50,000	5,800	0.2	0.4	50,000	5,600	0.1	0.2	50,000	5,600	0.1	0.2	47,000	5,300	0.1	0.2
	6	38,000	4,000	0.2	0.4	36,000	3,000	0.1	0.2	36,000	2,800	0.1	0.2	34,000	2,600	0.1	0.2
	8	27,000	3,360	0.2	0.4	25,000	2,600	0.1	0.2	25,000	2,400	0.1	0.2	23,000	2,200	0.1	0.2
	10	22,000	3,050	0.2	0.4	20,000	2,400	0.1	0.2	20,000	2,200	0.1	0.2	19,000	2,000	0.1	0.2
	12	16,000	2,580	0.2	0.4	16,000	2,000	0.1	0.2	16,000	1,900	0.1	0.2	15,000	1,700	0.1	0.2
	14	15,000	2,400	0.2	0.3	15,000	1,800	0.1	0.2	15,000	1,700	0.1	0.2	14,000	1,500	0.1	0.2
	16	14,000	2,200	0.2	0.2	14,000	1,700	0.1	0.1	14,000	1,600	0.1	0.1	13,000	1,400	0.1	0.1
	18	13,000	2,000	0.2	0.2	13,000	1,600	0.1	0.1	13,000	1,500	0.1	0.1	12,000	1,300	0.1	0.1
	20	12,000	1,200	0.1	0.2	12,000	1,200	0.05	0.1	11,000	1,100	0.05	0.1	10,000	1,000	0.05	0.1
1.5	6	42,000	6,800	0.3	0.6	41,500	6,200	0.15	0.3	41,500	6,200	0.15	0.3	32,000	4,800	0.15	0.3
	8	32,000	4,600	0.3	0.6	30,000	4,500	0.15	0.3	30,000	4,200	0.15	0.3	25,000	3,500	0.15	0.3
	10	28,000	4,000	0.3	0.6	25,000	3,800	0.15	0.3	25,000	3,600	0.15	0.3	20,000	2,800	0.15	0.3
	12	24,000	3,100	0.3	0.6	20,000	3,000	0.15	0.3	20,000	2,800	0.15	0.3	18,000	2,500	0.15	0.3
切深量 Depth of Cut																	

1.请使用刚性较高的机床和刀柄。
2.推荐使用MQL(油雾冷却)或气冷加工炭素钢淬火钢。
3.请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4.上表为等高线加工等负荷较少可稳定加工状态下的标准。实际加工时，请根据实际情况参照上表制定切削条件。
5根据加工精度、加工形状、加工刀路适当调整加工条件。
6.φ0.5以下或L/D大于10时，微小的负荷增大也会导致折损，根据切削状况适当调节切削条件。
7.转速不足时请根据上表同比下降转速和进给速度。

1. Use a rigid and precise machine and holder.
2. When machining carbon steels or hardened steels, using MQL (Minimum Quantity Lubrication / oil mist coolant) or air blow is recommended.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. The above cutting conditions are for contouring operation with low-load and stable condition. Refer to the table above to set the milling conditions in accordance with the actual situation.
5. Please adjust conditions based on machining accuracy, machining shape and machining path.
6. When using a tool with a diameter of φ0.5 (R0.25) or less, or L/D (aspect ratio) is greater than 10, high loads can cause tool breakage.
   Therefore, adjust the cutting conditions based on the machining situation.
7. When the available RPM are insufficient, please reduce the RPM and feed rates in proportion.

加工事例 *Cutting Data*

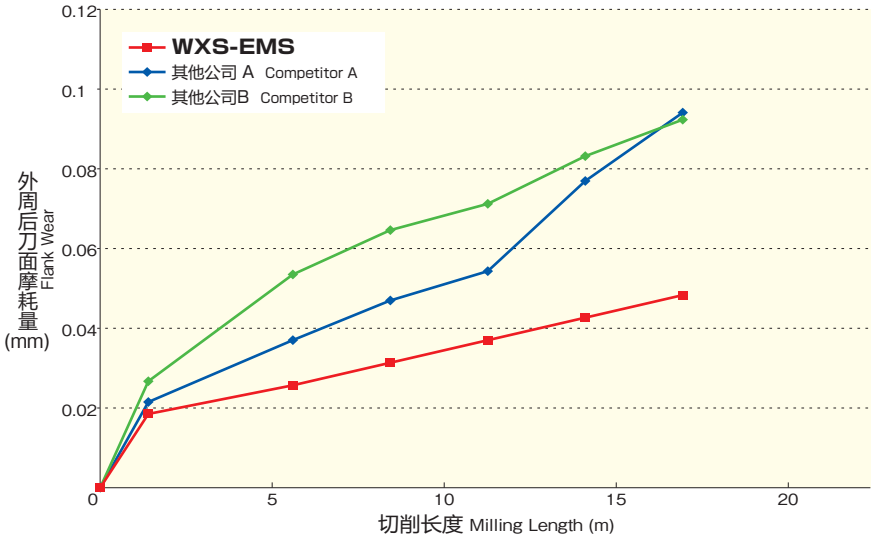
在针对发热量大的高硬度材料的高速加工时，WX超级涂层的效果会更佳。

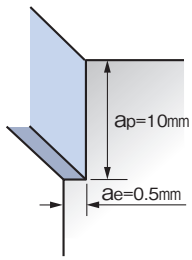
In high-speed milling of heat-generating hardened materials, the effect of the WX Super Coating was clearly demonstrated.

WXS-EMS SKD11(60HRC)的高速加工

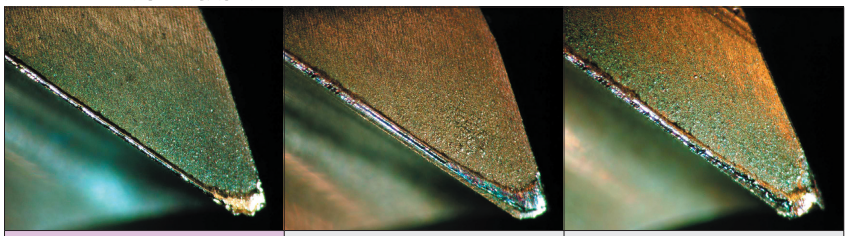
WXS-EMS High Speed Milling in SKD11(60HRC)

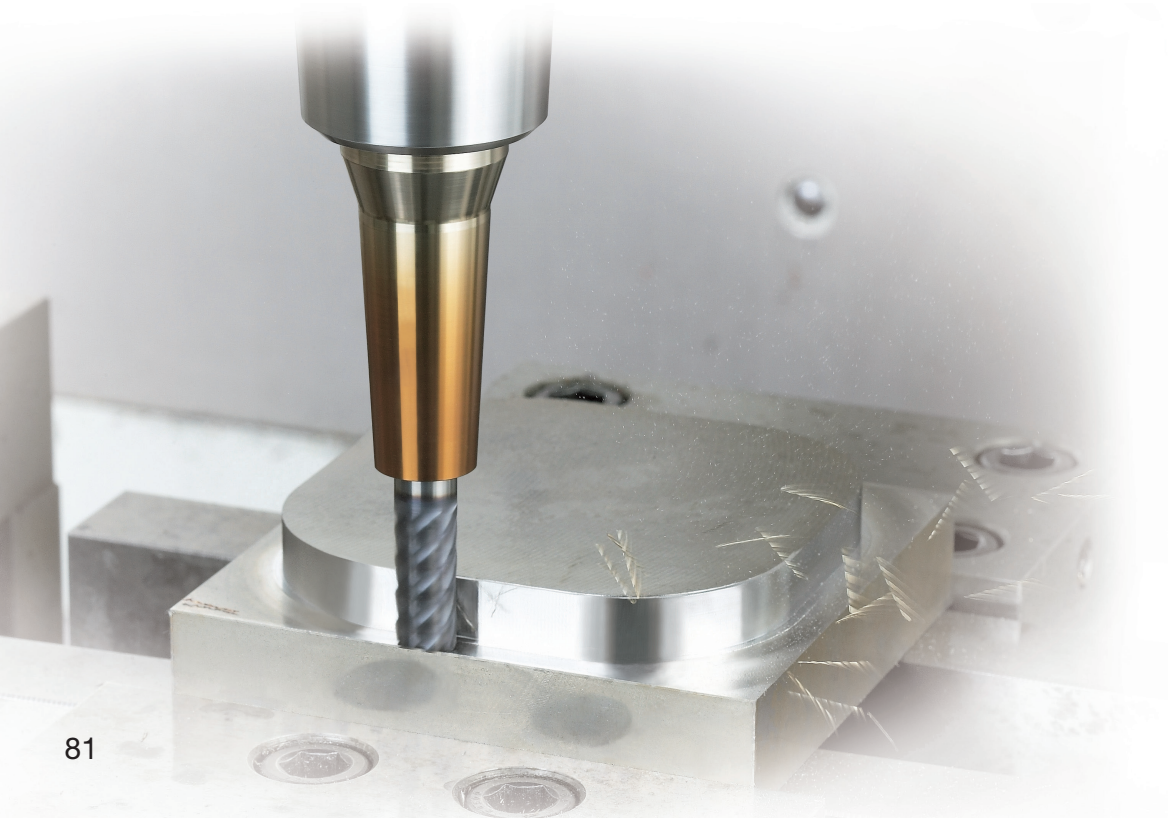
使用工具 Tool	WXS-EMS　φ10
加工材质 Work Material	SKD11(60HRC)
切削速度 Cutting Speed	150m/min (4,800min^{-1})
进给速度 Feed	860mm/min (0.03mm/t)
切削方法 Milling Method	侧面加工　顺铣 Side Milling　Down Cut
切深量 Depth of Cut	a_p = 10mm　a_e = 0.5mm
切削油剂 Coolant	气冷式 Air Blow
使用设备 Machine	立式加工中心 (BT40) Vertical Machining Center (BT40)





加工 16.8m 后的磨损情况 Tool wear after milling 16.8m





加工事例 Cutting Data

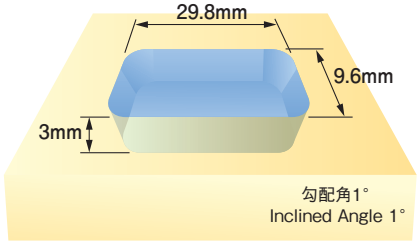
SKD11(62HRC)的加工中，新开发的WX超级涂层发挥出耐磨性的效果。

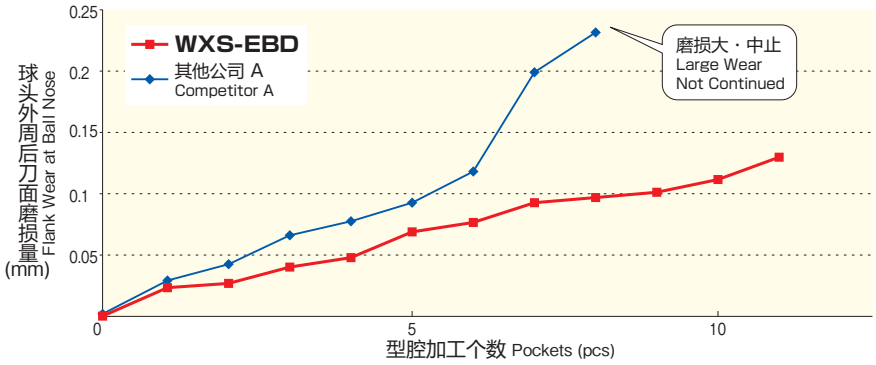
When milling in SKD11(62HRC), the wear-resistant of the WX super coating was demonstrated.

WXS-EBD SKD11(62HRC)的加工

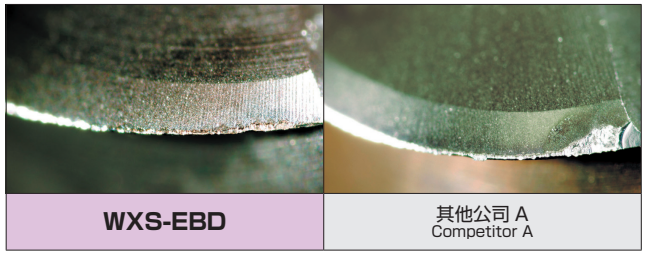
WXS-EBD Milling in SKD11(62HRC)

使用工具 Tool	WXS-EBD R3
加工材质 Work Material	SKD11(62HRC)
切削速度 Cutting Speed	207m/min (11,000min^{-1})
进给速度 Feed	2,200mm/min (0.1mm/t)
切削方法 Milling Method	型腔加工 Pocket Milling
切深量 Depth of Cut	a_p = 0.1mm P_f = 0.12mm
切削油剂 Coolant	气冷式 Air Blow
使用设备 Machine	立式加工中心 (BT40) Vertical Machining Center (BT40)





加工时的磨损状况 Tool wear after pocket milling



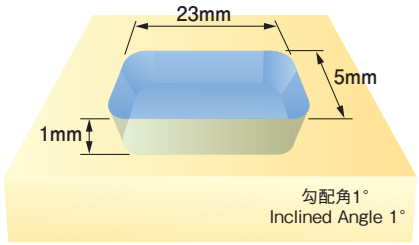
WX超级涂层加R角设计可长时间维持高精度加工。

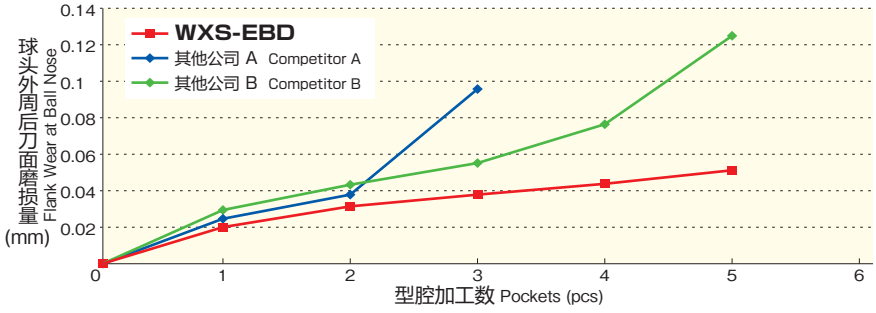
The WX Super Coating offers high precision milling by maintaining the radius shape for extended periods of time.

WXS-EBD SKD11(62HRC)的加工

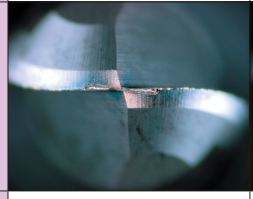
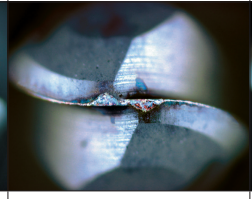
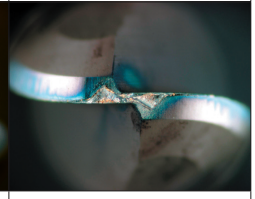
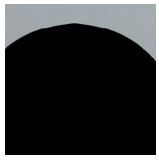
WXS-EBD Milling in SKD11(62HRC)

使用工具 Tool	WXS-EBD R1×4
加工材质 Work Material	SKD11(62HRC)
切削速度 Cutting Speed	200m/min (32,000min^{-1})
进给速度 Feed	2,800mm/min (0.038mm/t)
切削方法 Milling Method	型腔加工 Pocket Milling
切深量 Depth of Cut	a_p = 0.04mm P_f = 0.05mm
切削油剂 Coolant	气冷式 Air Blow
使用设备 Machine	立式加工中心 (HSK-E32) Vertical Machining Center (HSK-E32)





加工完成时的刃尖状态 Condition of the Cutting Edge at the End of Milling

铣刀 End Mill	WXS-EBD	其他公司 A Competitor A	其他公司 B Competitor B
加工个数 Pockets	5个 pcs	3个 pcs	5个 pcs
磨损状况 Wear Condition			
R角形状 Ball Radius Form			

加工事例 *Cutting Data*

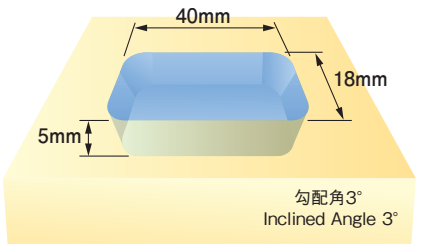
在高硬度材料(65HRC)的加工中，新开发 WX 超级涂层的效果实现了无崩刃的稳定加工。

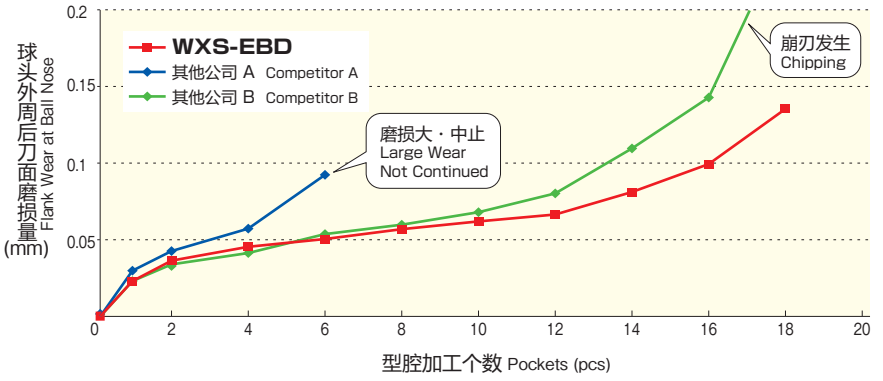
Even when working in hard, 65 HRC material, the WX Super Coating enabled the end mill to operate stably without chipping.

WXS-EBD SKH51(65HRC)的加工

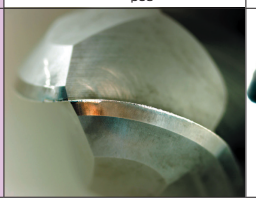
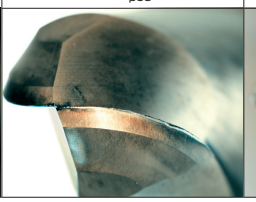
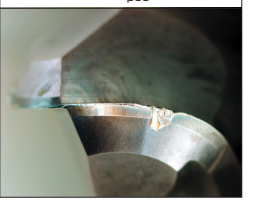
WXS-EBD Milling in SKH51(65HRC)

使用工具 Tool	WXS-EBD R5
加工材质 Work Material	SKH51(65HRC)
切削速度 Cutting Speed	179m/min (5,700min^{-1})
进给速度 Feed	1,140mm/min (0.1mm/t)
切削方法 Milling Method	型腔加工 Pocket Milling
切深量 Depth of Cut	a_p = 0.2mm P_f = 0.5mm
切削油剂 Coolant	气冷式 Air Blow
使用设备 Machine	立式加工中心 (BT40) Vertical Machining Center (BT40)





加工时的磨损状况 Tool wear after pocket milling

铣刀 End Mill	WXS-EBD	其他公司 A Competitor A	其他公司 B Competitor B
加工个数 Pockets	18个 pcs	6个 pcs	18个 pcs
刃尖状况 Cutting Edge			

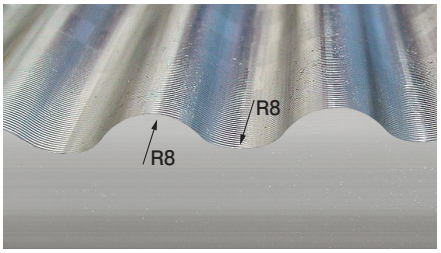
在直线和等高线的面铣削加工中，新开发的 WX 超级涂层铣刀能发挥出巨大的威力。

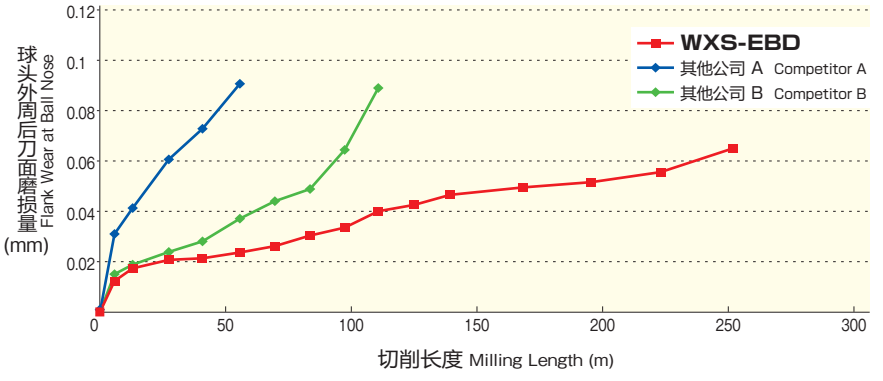
The intense ups & downs of 3D milling demonstrates the power of the WX Super Coating.

WXS-EBD HPM38(52HRC)的加工

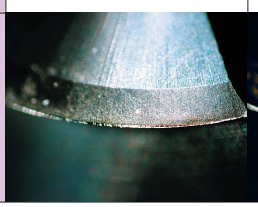
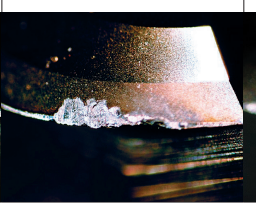
WXS-EBD Milling in HPM38(52HRC)

使用工具 Tool	WXS-EBD R3
加工材质 Work Material	HPM38(52HRC)
切削速度 Cutting Speed	245m/min (13,000min^{-1})
进给速度 Feed	3,120mm/min (0.12mm/t)
切削方法 Milling Method	走查线 3D Milling
切深量 Depth of Cut	a_p = 0.3mm P_f = 0.6mm
切削油剂 Coolant	气冷式 Air Blow
使用设备 Machine	立式加工中心 (BT40) Vertical Machining Center (BT40)





加工时的磨损状况 Tool wear after pocket milling

铣刀 End Mill	WXS-EBD	其他公司 A Competitor A	其他公司 B Competitor B
切削长度 Milling Length	128m	70m	128m
刃尖状况 Cutting Edge			

加工事例 *Cutting Data*

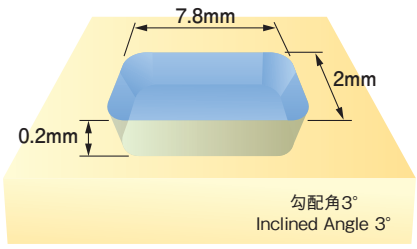
在R0.2的小径工具的微细加工时，WX超级涂层发挥超群性能

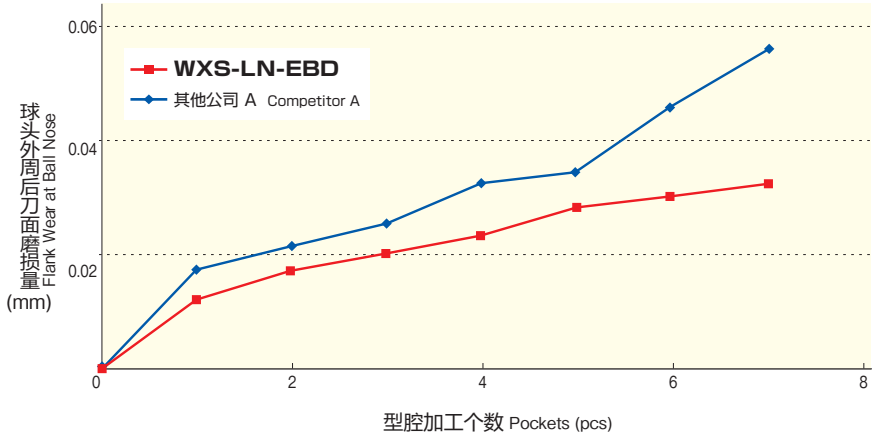
Micromachining with small R0.2 end mills demonstrates the capabilties of the WX Super Coating.

WXS-LN-EBD SKD61(50HRC)的微细加工

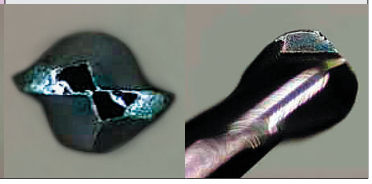
Micro-machining SKD61(50HRC) with the WXS-LN-EBD

使用工具 Tool	WXS-LN-EBD R0.2×1
加工材质 Work Material	SKD61(50HRC)
切削速度 Cutting Speed	50m/min (40,000min^{-1})
进给速度 Feed	420mm/min (0.005mm/t)
切削方法 Milling Method	型腔加工 Pocket Milling
切深量 Depth of Cut	ap = 0.006mm Pf = 0.012mm
切削油剂 Coolant	气冷式 Air Blow
使用设备 Machine	立式加工中心 (HSK-E32) Vertical Machining Center (HSK-E32)





加工时的磨损状况 Tool wear after pocket milling

铣刀 End Mill	WXS-LN-EBD	其他公司 A Competitor A
刃尖状况 Cutting Edge		

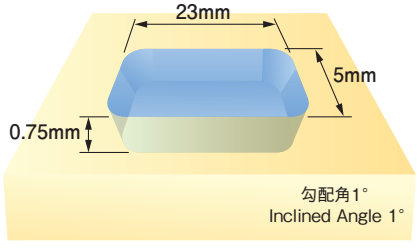
小径长颈球头铣刀(深槽型)的加工，WX超级涂层同样可以发挥优异的性能。

Even when working with a small-diameter ball nose with a long neck (for rib processing), the ultra-hard WX Super Coating exhibited superior performance.

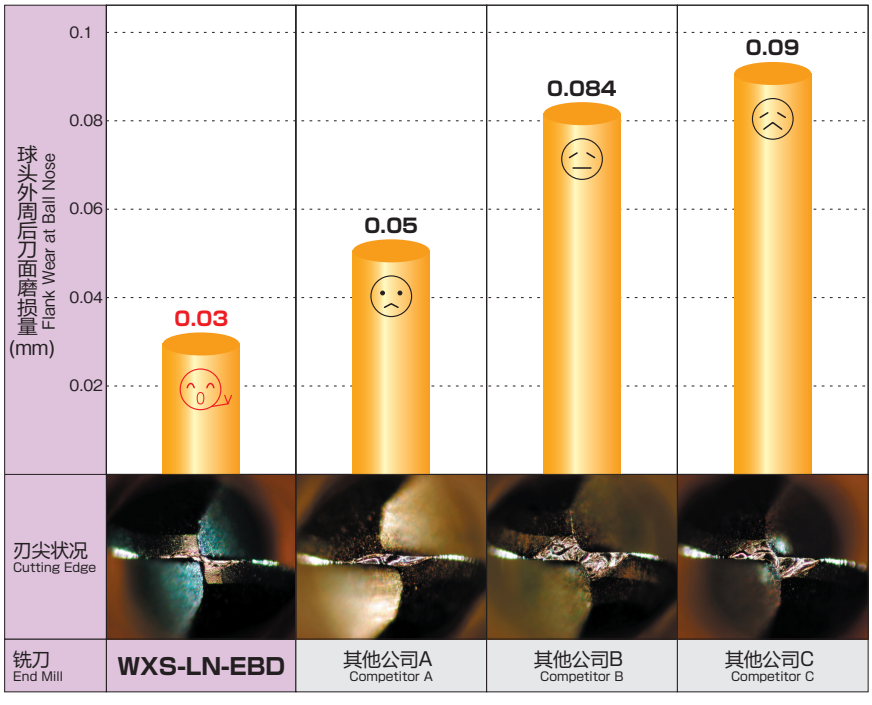
WXS-LN-EBD SKD61(50HRC)的加工

WXS-LN-EBD Milling in SKD61(50HRC)

使用工具 Tool	WXS-LN-EBD R0.5×6
加工材质 Work Material	SKD61(50HRC)
切削速度 Cutting Speed	121m/min (38,500min^{-1})
进给速度 Feed	900mm/min (0.012mm/t)
切削方法 Milling Method	型腔加工 Pocket Milling
切深量 Depth of Cut	ap = 0.015mm Pf = 0.03mm
切削油剂 Coolant	气冷式 Air Blow
使用设备 Machine	立式加工中心 (HSK-E32) Vertical Machining Center (HSK-E32)



型腔加工一个后(两小时连续加工后)的磨损状况 Wear Comparison After Milling 1 Pocket (Milling 2 hours)



加工事例 *Cutting Data*

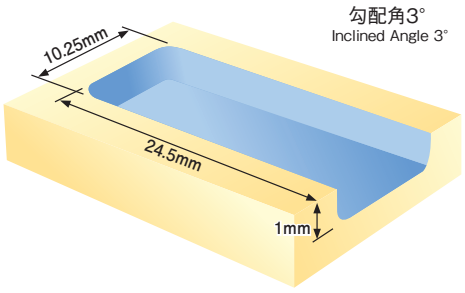
即使在悬长很长的情况下,WXS-CPR铣刀的形状误差少，仍可实现稳定、高精度的加工。

The WXS-CPR achieves stable, high-precision milling with minimal shaping errors even with an extended tool length.

WXS-CPR STAVAX（53HRC）L/D=10的加工

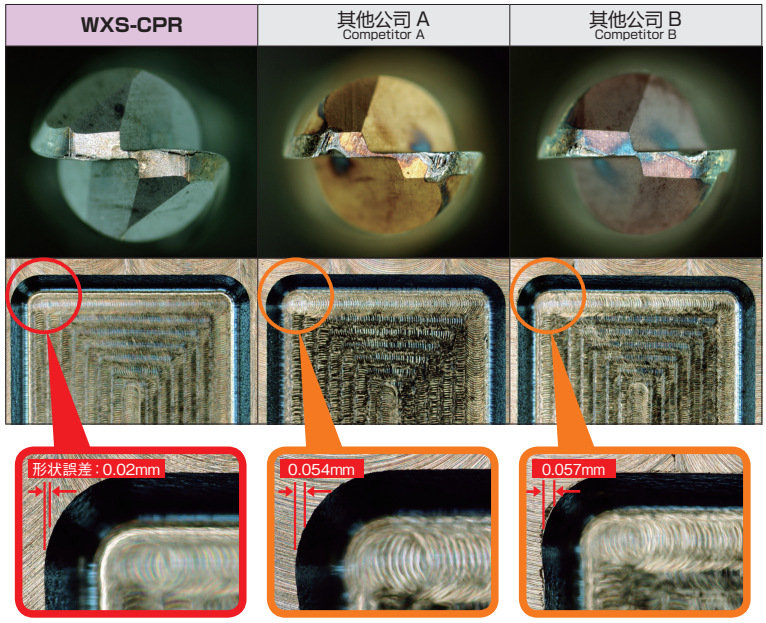
WXS-CPR Milling in STAVAX(53HRC) L/D=10

使用工具 Tool	WXS-CPR 2×R0.5×0°×20
加工材质 Work Material	STAVAX (53HRC)
切削速度 Cutting Speed	62m/min (10,000min^{-1})
进给速度 Feed	1,000mm/min (0.05mm/t)
切削方法 Milling Method	型腔加工 Pocket Milling
切深量 Depth of Cut	a_p = 0.03mm a_e = 0.6mm
切削油剂 Coolant	气冷式 Air Blow
使用设备 Machine	立式加工中心 (HSK-E32) Vertical Machining Center (HSK-E32)



在加工 8 个型腔后工具以及工件的状态

Condition of the tool and workpiece after milling 8 pockets.



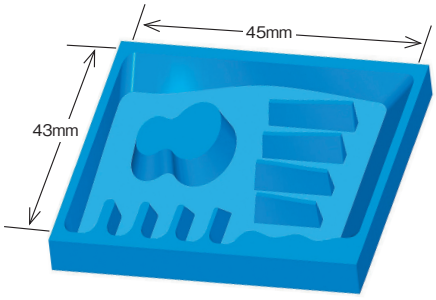
圆弧角形设计使刀具同时具有切削性能好，刃尖刚性佳的特点，并且被加工表面非常漂亮。

The radius shape has sharp and hard edges to create a beautifully milled surface.

WXS-CPR STAVAX（53HRC）精加工

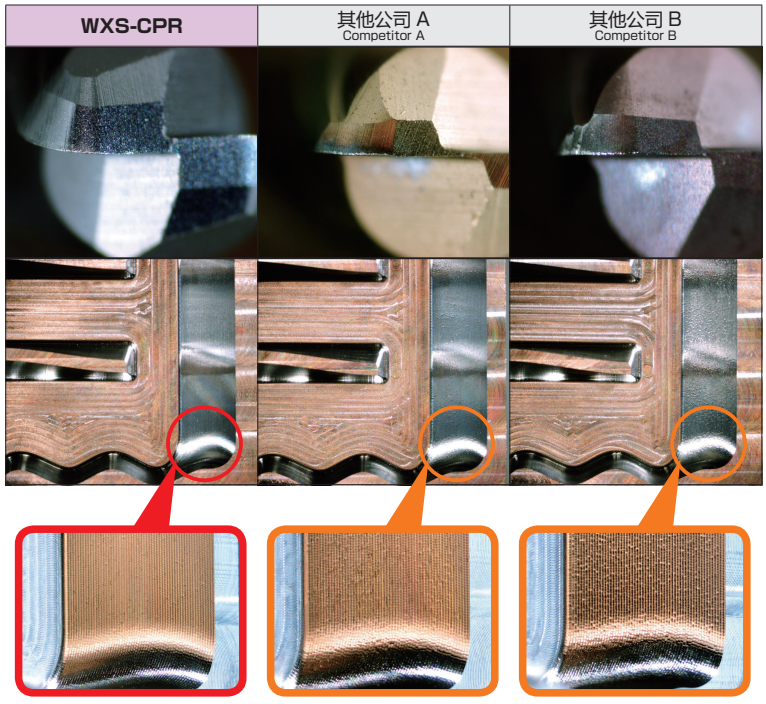
WXS-CPR Finish milling in STAVAX(53HRC)

使用工具 Tool	WXS-CPR 2×R0.5×0°×8
加工材质 Work Material	STAVAX (53HRC)
切削速度 Cutting Speed	100m/min (16,100min^{-1})
进给速度 Feed	1,620mm/min (0.05mm/t)
切削方法 Milling Method	等高线精加工 Contour line finish milling
切深量 Depth of Cut	a_p = 0.075mm a_e = 0.1mm
切削油剂 Coolant	半干式加工 Mist
使用设备 Machine	立式加工中心 (HSK-E32) Vertical Machining Center (HSK-E32)



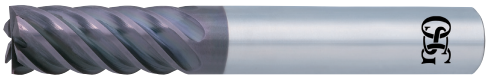
5轴加工（5小时）后工具、工件的状态

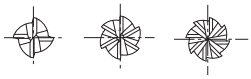
Condition of the tool and workpiece after 5-axis milling (5 hours)



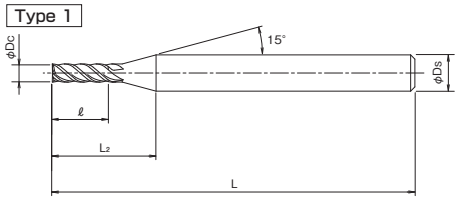
WX超级涂层多刃短刃型铣刀
WX Super Coating Multiple Flute・Short

WXS-EMS

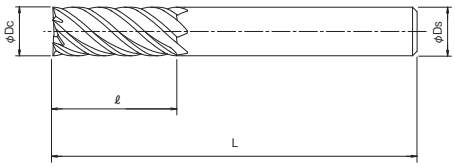




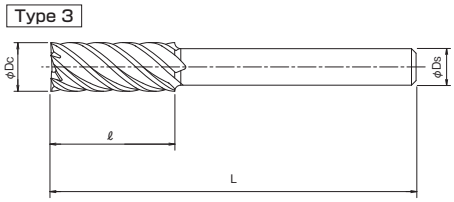
Type 1



Type 2



Type 3



CARBIDE WXS SHRINK FIT 45° 切削条件

D≦12 0~-0.02
12<D 0~-0.03

P.101

单位 :mm Unit:mm

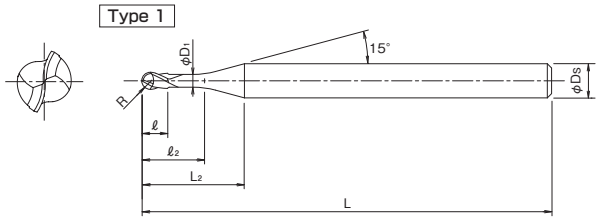
商品号 EDP No.	外径 Dc	全长 L	刃长 ℓ	L₂	柄径 Ds	刃数 Z	形状 Type	库存 Stock
3041010	1	60	2.5	11.6	6	4	1	A
3041015	1.5	60	4	12.1	6	4	1	A
3041020	2	60	6	13.8	6	4	1	A
3041025	2.5	60	8	15.1	6	4	1	A
3041030	3	60	8	14.8	6	4	1	A
3041035	3.5	60	10	15.9	6	4	1	A
3041040	4	60	11	16	6	4	1	A
3041045	4.5	60	11	15	6	4	1	A
3041050	5	60	13	16.1	6	4	1	A
3041055	5.5	60	13	15.2	6	4	1	A
3041060	6	60	13	—	6	6	2	A
3041080	8	70	19	—	8	6	2	A
3041100	10	80	22	—	10	6	2	A
3041120	12	90	26	—	12	6	2	A
3041140	14	100	26	32	16	6	1	D
3041150	15	105	26	30.1	16	6	1	D
3041160	16	105	32	—	16	6	2	D
3041180	18	110	32	—	16	6	3	D
3041200	20	110	38	—	20	6	2	D
3041250	25	125	45	—	25	8	2	D
3041300	30	140	45	50.8	32	8	1	D

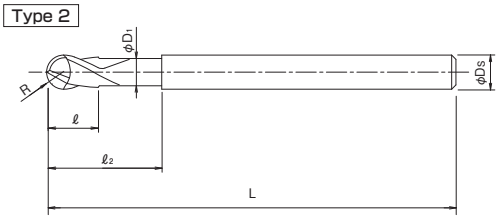
■标识说明请参阅P.6
■See p.6 for explanation of marks.

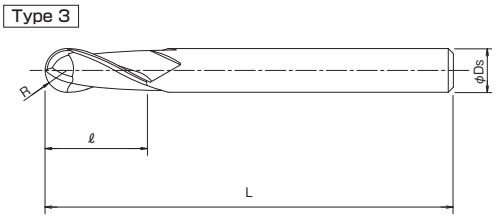
A = 标准库存品 A = Standard stock item
D = 库存中心标准库存品 D = Inventory center stock item

WX超级涂层2刃球头铣刀
WX Super Coating Two Flute Ball Nose

WXS-EBD







CARBIDE WXS R ±0.005 R≦1 R ±0.007 1<R≦6 R ±0.01 6<R SHRINK FIT 30° 切削条件 P.102

单位 :mm Unit:mm

商品号 EDP No.	球半径 × 颈长 R × ℓ2	全长 L	刃长 ℓ	L2	柄径 Ds	颈径 D1	形状 Type	库存 Stock
3041410	R 0.5 × 2	50	1	7.7	4	0.95	1	A
3041415	R 0.75 × 3	50	1.5	7.9	4	1.45	1	A
3041420	R 1 × 4	50	2	12	6	1.95	1	A
3041430	R 1.5 × 6	60	3	11.9	6	2.85	1	A
3041440	R 2 × 8	70	4	12.1	6	3.85	1	A
3041441	R 2 × 8-4	60	4	—	4	3.85	2	A
3041450	R 2.5 × 10	80	5	12.2	6	4.85	1	A
3041460	R 3	90	9	—	6	—	3	A
3041480	R 4	100	12	—	8	—	3	A
3041500	R 5	100	15	—	10	—	3	A
3041520	R 6	110	18	—	12	—	3	A
3041560	R 8	140	24	—	16	—	3	A
3041600	R 10	160	30	—	20	—	3	A
3041650	R 12.5	180	38	—	25	—	3	A

■标识说明请参阅P.6
■See p.6 for explanation of marks.

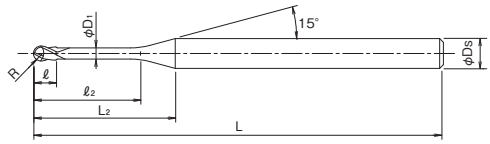
A = 标准库存品 A = Standard stock item

WX超级涂层2刃长颈球头铣刀(深细槽型)

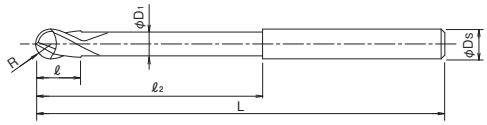
WX Super Coating Two Flute Ball Nose・with Long neck (for Rib processing)

WXS-LN-EBD

Type 1



Type 2



CARBIDE WXS R ±0.005 SHRINK FIT 30° 切削条件

P.103

单位 :mm Unit:mm

商品号 EDP No.	球半径 × 颈长 R × ℓ2	全长 L	刃长 ℓ	L2	柄径 Ds	颈径 D1	干涉角度 θk	■对应工件 α 的实际有效长(Le) ※1					形 状 Type	库存 Stock
								0.5°	1°	1.5°	2°	3°		
3050100	R0.05× 0.3	45	0.08	7.5	4	0.09	14.51°	0.31	0.32	0.33	0.34	0.36	1	A
3050101	R0.05× 0.5	45	0.08	7.7	4	0.09	14.31°	0.42	0.44	0.45	0.47	0.5	1	A
3050201	R0.1 × 0.5	45	0.16	7.5	4	0.18	14.16°	0.53	0.55	0.57	0.59	0.63	1	A
3049921	R0.1 × 0.75	45	0.16	7.8	4	0.18	13.72°	0.79	0.82	0.85	0.88	0.94	1	A
3050202	R0.1 × 1	45	0.16	8	4	0.18	13.31°	1.05	1.09	1.13	1.17	1.26	1	A
3049922	R0.1 × 1.25	45	0.16	8.3	4	0.18	12.92°	1.31	1.36	1.41	1.46	1.57	1	A
3050203	R0.1 × 1.5	45	0.16	8.5	4	0.18	12.56°	1.57	1.63	1.68	1.74	1.88	1	A
3049923	R0.1 × 1.75	45	0.16	8.8	4	0.18	12.21°	1.83	1.9	1.96	2.03	2.19	1	A
3050204	R0.1 × 2	45	0.16	9	4	0.18	11.88°	2.09	2.16	2.24	2.32	2.5	1	A
3050205	R0.1 × 2.5	45	0.16	9.5	4	0.18	11.28°	2.61	2.7	2.79	2.89	3.12	1	A
3050206	R0.1 × 3	45	0.16	10	4	0.18	10.73°	3.13	3.23	3.35	3.47	3.74	1	A
3050301	R0.15× 0.6	45	0.24	7.4	4	0.28	14.03°	0.63	0.65	0.68	0.7	0.75	1	A
3050302	R0.15× 1	45	0.24	7.8	4	0.28	13.34°	1.05	1.09	1.12	1.16	1.24	1	A
3049932	R0.15× 1.25	45	0.24	8.1	4	0.28	12.94°	1.31	1.36	1.4	1.45	1.55	1	A
3050303	R0.15× 1.5	45	0.24	8.3	4	0.28	12.57°	1.57	1.63	1.68	1.74	1.87	1	A
3049933	R0.15× 1.75	45	0.24	8.6	4	0.28	12.21°	1.83	1.89	1.96	2.02	2.18	1	A
3050304	R0.15× 2	45	0.24	8.8	4	0.28	11.87°	2.09	2.16	2.23	2.31	2.49	1	A
3049934	R0.15× 2.25	45	0.24	9.1	4	0.28	11.56°	2.35	2.43	2.51	2.6	2.8	1	A
3050305	R0.15× 2.5	45	0.24	9.3	4	0.28	11.25°	2.61	2.69	2.79	2.89	3.11	1	A
3050306	R0.15× 3	45	0.24	9.8	4	0.28	10.69°	3.13	3.23	3.34	3.46	3.73	1	A
3050307	R0.15× 3.5	45	0.24	10.3	4	0.28	10.19°	3.64	3.76	3.9	4.04	4.35	1	A
3050308	R0.15× 4	45	0.24	10.8	4	0.28	9.72°	4.16	4.3	4.45	4.61	4.97	1	A
3050309	R0.15× 4.5	45	0.24	11.3	4	0.28	9.3°	4.68	4.83	5	5.19	5.59	1	A
3050310	R0.15× 5	45	0.24	11.8	4	0.28	8.91°	5.19	5.37	5.56	5.76	6.22	1	A
3050401	R0.2 × 0.8	45	0.3	7.4	4	0.37	13.74°	0.83	0.86	0.88	0.91	0.97	1	A

■标识说明请参阅 P.6

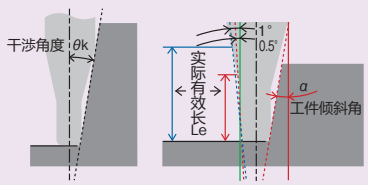
■ See p.6 for explanation of marks.

A = 标准库存品 A = Standard stock item

NEXT 下一页

※1:对应工件斜角α的实际有效长(Le)

Effective Neck length (Le) depending on Inclined Angle (α) of workpiece



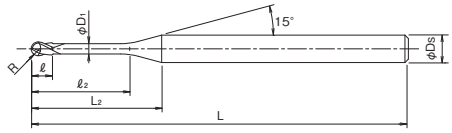
实际有效长栏内没有数值时
表示没有干涉。
No numerical value means no interference with workpiece.

WX超级涂层2刃长颈球头铣刀(深细槽型)

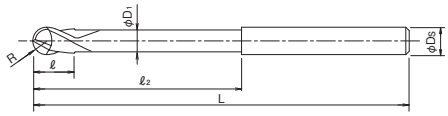
WX Super Coating Two Flute Ball Nose・with Long neck (for Rib processing)

WXS-LN-EBD

Type 1



Type 2



FROM CARBIDE WXS R ±0.005 SHRINK FIT 30° 切削条件

P.103

接一页

单位 :mm Unit:mm

商品号 EDP No.	球半径 × 颈长 R × ℓ2	全长 L	刃长 ℓ	L2	柄径 Ds	颈径 D1	干涉角度 θk	■对应工件α的实际有效长(Le) ※1 0.5°	1°	1.5°	2°	3°	形状 Type	库存 Stock
3050402	R0.2 × 1	45	0.3	7.6	4	0.37	13.39°	1.04	1.07	1.11	1.14	1.22	1	A
3050403	R0.2 × 1.5	45	0.3	8.1	4	0.37	12.59°	1.56	1.61	1.66	1.72	1.84	1	A
3050404	R0.2 × 2	45	0.3	8.6	4	0.37	11.88°	2.08	2.14	2.21	2.29	2.46	1	A
3050405	R0.2 × 2.5	45	0.3	9.1	4	0.37	11.24°	2.6	2.68	2.77	2.87	3.08	1	A
3050406	R0.2 × 3	45	0.3	9.6	4	0.37	10.67°	3.11	3.21	3.32	3.44	3.7	1	A
3050407	R0.2 × 3.5	45	0.3	10.1	4	0.37	10.15°	3.63	3.75	3.88	4.02	4.33	1	A
3050408	R0.2 × 4	45	0.3	10.6	4	0.37	9.68°	4.15	4.28	4.43	4.59	4.95	1	A
3050409	R0.2 × 4.5	45	0.3	11.1	4	0.37	9.25°	4.66	4.82	4.99	5.17	5.57	1	A
3050410	R0.2 × 5	45	0.3	11.6	4	0.37	8.86°	5.18	5.35	5.54	5.74	6.19	1	A
3050411	R0.2 × 5.5	45	0.3	12.1	4	0.37	8.5°	5.7	5.89	6.09	6.32	6.81	1	A
3050412	R0.2 × 6	45	0.3	12.6	4	0.37	8.16°	6.21	6.42	6.65	6.89	7.43	1	A
3050500	R0.25× 1	45	0.4	7.6	4	0.45	13.45°	1.03	1.06	1.09	1.12	1.19	1	A
3050501	R0.25× 1.5	45	0.4	8.1	4	0.45	12.62°	1.55	1.59	1.64	1.69	1.81	1	A
3050502	R0.25× 2	45	0.4	8.6	4	0.45	11.89°	2.06	2.13	2.2	2.27	2.43	1	A
3049952	R0.25× 2.5	45	0.4	9.1	4	0.45	11.23°	2.58	2.66	2.75	2.84	3.05	1	A
3050503	R0.25× 3	45	0.4	9.6	4	0.45	10.65°	3.1	3.2	3.3	3.42	3.68	1	A
3049953	R0.25× 3.5	45	0.4	10.1	4	0.45	10.12°	3.61	3.73	3.86	3.99	4.3	1	A
3050504	R0.25× 4	45	0.4	10.6	4	0.45	9.64°	4.13	4.27	4.41	4.57	4.92	1	A
3049954	R0.25× 4.5	45	0.4	11.1	4	0.45	9.2°	4.65	4.8	4.97	5.14	5.54	1	A
3050505	R0.25× 5	45	0.4	11.6	4	0.45	8.8°	5.17	5.34	5.52	5.72	6.16	1	A
3049955	R0.25× 5.5	45	0.4	12.1	4	0.45	8.43°	5.68	5.87	6.07	6.29	6.78	1	A
3050506	R0.25× 6	45	0.4	12.6	4	0.45	8.1°	6.2	6.41	6.63	6.87	7.41	1	A
3050507	R0.25× 7	45	0.4	13.6	4	0.45	7.49°	7.23	7.48	7.74	8.02	8.65	1	A
3050508	R0.25× 8	45	0.4	14.6	4	0.45	6.98°	8.27	8.55	8.85	9.17	9.89	1	A
3050509	R0.25× 9	45	0.4	15.6	4	0.45	6.52°	9.3	9.62	9.95	10.32	11.14	1	A
3050510	R0.25×10	45	0.4	16.6	4	0.45	6.13°	10.33	10.68	11.06	11.47	12.38	1	A
3050601	R0.3 × 1.2	45	0.5	7.6	4	0.55	13.14°	1.24	1.27	1.3	1.34	1.43	1	A
3050602	R0.3 × 2	45	0.5	8.4	4	0.55	11.88°	2.06	2.12	2.19	2.26	2.42	1	A
3049962	R0.3 × 2.5	45	0.5	8.9	4	0.55	11.21°	2.58	2.66	2.74	2.84	3.04	1	A
3050603	R0.3 × 3	45	0.5	9.4	4	0.55	10.61°	3.1	3.19	3.3	3.41	3.66	1	A
3049963	R0.3 × 3.5	45	0.5	9.9	4	0.55	10.07°	3.61	3.73	3.85	3.99	4.29	1	A
3050604	R0.3 × 4	45	0.5	10.4	4	0.55	9.58°	4.13	4.26	4.41	4.56	4.91	1	A
3049964	R0.3 × 4.5	45	0.5	10.9	4	0.55	9.13°	4.65	4.8	4.96	5.14	5.53	1	A
3050605	R0.3 × 5	45	0.5	11.4	4	0.55	8.73°	5.16	5.33	5.51	5.71	6.15	1	A
3049965	R0.3 × 5.5	45	0.5	11.9	4	0.55	8.36°	5.68	5.87	6.07	6.29	6.77	1	A
3050606	R0.3 × 6	45	0.5	12.4	4	0.55	8.02°	6.2	6.4	6.62	6.86	7.39	1	A
3049966	R0.3 × 6.5	45	0.5	12.9	4	0.55	7.7°	6.71	6.94	7.18	7.44	8.02	1	A
3050607	R0.3 × 7	45	0.5	13.4	4	0.55	7.41°	7.23	7.47	7.73	8.01	8.64	1	A
3049967	R0.3 × 7.5	45	0.5	13.9	4	0.55	7.14°	7.75	8.01	8.29	8.59	9.26	1	A
3050608	R0.3 × 8	45	0.5	14.4	4	0.55	6.89°	8.26	8.54	8.84	9.16	9.88	1	A
3049968	R0.3 × 8.5	45	0.5	14.9	4	0.55	6.66°	8.78	9.08	9.39	9.74	10.5	1	A

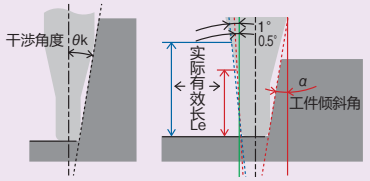
■标识说明请参阅P.6

■See p.6 for explanation of marks.

A = 标准库存品 A = Standard stock item

NEXT 下一页

※1：对应工件斜角α的实际有效长（Le）
Effective Neck length (Le) depending on Inclined Angle (α) of workpiece



实际有效长栏内没有数值时
表示没有干涉。
No numerical value means no interference with workpiece.

FROM
接一页

单位 :mm　Unit:mm

商品号 EDP No.	球半径 × 颈长 R × ℓ2	全长 L	刃长 ℓ	L2	柄径 Ds	颈径 D1	干涉角度 θk	■对应工件 α 的实际有效长(Le) ※1					形 状 Type	库存 Stock
								0.5°	1°	1.5°	2°	3°		
3050609	R0.3 × 9	45	0.5	15.4	4	0.55	6.44°	9.3	9.61	9.95	10.31	11.12	1	A
3049969	R0.3 × 9.5	45	0.5	15.9	4	0.55	6.23°	9.81	10.15	10.5	10.89	11.75	1	A
3050610	R0.3 × 10	45	0.5	16.4	4	0.55	6.04°	10.33	10.68	11.06	11.46	12.37	1	A
3050611	R0.3 × 11	50	0.5	17.4	4	0.55	5.69°	11.37	11.75	12.16	12.61	13.61	1	A
3050612	R0.3 × 12	50	0.5	18.4	4	0.55	5.38°	12.4	12.82	13.27	13.76	14.85	1	A
3050802	R0.4 × 2	45	0.6	8.1	4	0.75	11.86°	2.06	2.12	2.18	2.25	2.4	1	A
3050803	R0.4 × 3	45	0.6	9.1	4	0.75	10.52°	3.09	3.19	3.29	3.4	3.64	1	A
3050804	R0.4 × 4	45	0.6	10.1	4	0.75	9.45°	4.13	4.26	4.4	4.55	4.88	1	A
3050805	R0.4 × 5	45	0.6	11.1	4	0.75	8.58°	5.16	5.33	5.5	5.7	6.13	1	A
3050806	R0.4 × 6	45	0.6	12.1	4	0.75	7.85°	6.19	6.4	6.61	6.85	7.37	1	A
3050807	R0.4 × 7	45	0.6	13.1	4	0.75	7.24°	7.23	7.47	7.72	8	8.61	1	A
3050808	R0.4 × 8	45	0.6	14.1	4	0.75	6.71°	8.26	8.54	8.83	9.15	9.86	1	A
3050810	R0.4 × 10	45	0.6	16.1	4	0.75	5.86°	10.33	10.67	11.05	11.45	12.34	1	A
3050812	R0.4 × 12	50	0.6	18.1	4	0.75	5.2°	12.4	12.81	13.26	13.75	14.83	1	A
3051002	R0.5 × 2	45	0.8	7.7	4	0.95	11.84°	2.06	2.11	2.17	2.23	2.37	1	A
3051003	R0.5 × 3	45	0.8	8.7	4	0.95	10.43°	3.09	3.18	3.28	3.38	3.62	1	A
3051004	R0.5 × 4	45	0.8	9.7	4	0.95	9.32°	4.12	4.25	4.39	4.53	4.86	1	A
3051005	R0.5 × 5	45	0.8	10.7	4	0.95	8.41°	5.16	5.32	5.49	5.68	6.1	1	A
3051006	R0.5 × 6	45	0.8	11.7	4	0.95	7.67°	6.19	6.39	6.6	6.83	7.35	1	A
3051007	R0.5 × 7	45	0.8	12.7	4	0.95	7.05°	7.22	7.46	7.71	7.98	8.59	1	A
3051008	R0.5 × 8	45	0.8	13.7	4	0.95	6.52°	8.26	8.53	8.82	9.13	9.83	1	A
3051009	R0.5 × 9	45	0.8	14.7	4	0.95	6.06°	9.29	9.6	9.93	10.28	11.08	1	A
3051010	R0.5 × 10	45	0.8	15.7	4	0.95	5.66°	10.33	10.67	11.04	11.43	12.32	1	A
3051012	R0.5 × 12	45	0.8	17.7	4	0.95	5.01°	12.39	12.81	13.25	13.73	14.81	1	A
3051014	R0.5 × 14	50	0.8	19.7	4	0.95	4.49°	14.46	14.95	15.47	16.03	17.29	1	A
3051016	R0.5 × 16	50	0.8	21.7	4	0.95	4.06°	16.53	17.09	17.69	18.33	19.78	1	A
3051018	R0.5 × 18	55	0.8	23.7	4	0.95	3.71°	18.59	19.23	19.9	20.63	22.26	1	A
3051020	R0.5 × 20	55	0.8	25.7	4	0.95	3.42°	20.66	21.36	22.12	22.93	24.75	1	A
3051022	R0.5 × 22	60	0.8	27.7	4	0.95	3.17°	22.73	23.5	24.33	25.23	27.24	1	A
3051202	R0.6 × 2.4	45	1	7.8	4	1.15	11.03°	2.51	2.61	2.7	2.78	2.96	1	A
3051204	R0.6 × 4	45	1	9.4	4	1.15	9.07°	4.19	4.34	4.48	4.62	4.95	1	A
3051206	R0.6 × 6	45	1	11.4	4	1.15	7.41°	6.27	6.48	6.69	6.92	7.44	1	A
3051208	R0.6 × 8	45	1	13.4	4	1.15	6.26°	8.35	8.62	8.91	9.22	9.93	1	A
3051210	R0.6 × 10	45	1	15.4	4	1.15	5.42°	10.42	10.76	11.13	11.52	12.41	1	A
3051212	R0.6 × 12	45	1	17.4	4	1.15	4.78°	12.49	12.9	13.34	13.82	14.9	1	A
3051214	R0.6 × 14	50	1	19.4	4	1.15	4.27°	14.55	15.04	15.56	16.12	17.38	1	A
3051216	R0.6 × 16	50	1	21.4	4	1.15	3.86°	16.62	17.18	17.78	18.42	19.87	1	A
3051218	R0.6 × 18	55	1	23.4	4	1.15	3.52°	18.69	19.32	19.99	20.72	22.36	1	A
3051220	R0.6 × 20	55	1	25.4	4	1.15	3.24°	20.75	21.46	22.21	23.02	24.84	1	A
3051503	R0.75× 3	45	1.2	7.9	4	1.45	10.01°	3.13	3.25	3.35	3.45	3.67	1	A
3051504	R0.75× 4	45	1.2	8.9	4	1.45	8.8°	4.18	4.33	4.46	4.6	4.92	1	A

A = 标准库存品　A = Standard stock item

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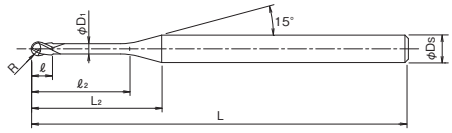
WX超级涂层2刃长颈球头铣刀(深细槽型)

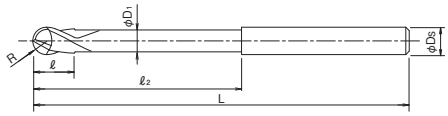
WX Super Coating Two Flute Ball Nose・with Long neck (for Rib processing)

WXS-LN-EBD

Type 1



Type 2



FROM CARBIDE WXS R ±0.005 SHRINK FIT 30° 切削条件

P.103

接一页

单位 :mm Unit:mm

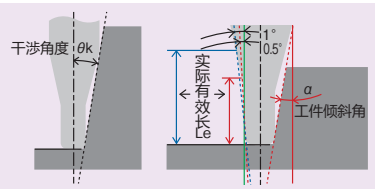
商品号 EDP No.	球半径 × 颈长 R × ℓ2	全长 L	刃长 ℓ	L2	柄径 Ds	颈径 D1	干涉角度 θk	■对应工件 α 的实际有效长(Le) ※1					形 状 Type	库存 Stock
								0.5°	1°	1.5°	2°	3°		
3051506	R0.75× 6	45	1.2	10.9	4	1.45	7.08°	6.27	6.47	6.68	6.9	7.4	1	A
3051508	R0.75× 8	45	1.2	12.9	4	1.45	5.92°	8.34	8.61	8.9	9.2	9.89	1	A
3051510	R0.75×10	45	1.2	14.9	4	1.45	5.09°	10.41	10.75	11.11	11.5	12.38	1	A
3051512	R0.75×12	45	1.2	16.9	4	1.45	4.46°	12.48	12.89	13.33	13.8	14.86	1	A
3051514	R0.75×14	50	1.2	18.9	4	1.45	3.96°	14.55	15.03	15.55	16.1	17.35	1	A
3051516	R0.75×16	50	1.2	20.9	4	1.45	3.57°	16.62	17.17	17.76	18.4	19.83	1	A
3051518	R0.75×18	55	1.2	22.9	4	1.45	3.25°	18.68	19.31	19.98	20.7	22.32	1	A
3051520	R0.75×20	55	1.2	24.9	4	1.45	2.98°	20.75	21.45	22.19	23	—	1	A
3051522	R0.75×22	60	1.2	26.9	4	1.45	2.75°	22.82	23.59	24.41	25.3	—	1	A
3051530	R0.75×30	70	1.2	34.9	4	1.45	2.1°	31.09	32.14	33.28	34.5	—	1	A
3051608	R0.8 × 8	45	1.3	12.7	4	1.55	5.8°	8.34	8.61	8.89	9.19	9.88	1	A
3051612	R0.8 × 12	45	1.3	16.7	4	1.55	4.34°	12.48	12.89	13.32	13.79	14.85	1	A
3051616	R0.8 × 16	50	1.3	20.7	4	1.55	3.47°	16.61	17.16	17.76	18.39	19.82	1	A
3051620	R0.8 × 20	55	1.3	24.7	4	1.55	2.89°	20.75	21.44	22.19	22.99	—	1	A
3052004	R1 × 4	45	1.6	8.3	4	1.95	7.87°	4.23	4.44	4.66	4.86	5.26	1	A
3052006	R1 × 6	45	1.6	10.3	4	1.95	6.19°	6.36	6.67	6.96	7.23	7.76	1	A
3052008	R1 × 8	45	1.6	12.3	4	1.95	5.1°	8.48	8.87	9.22	9.55	10.24	1	A
3052010	R1 × 10	45	1.6	14.3	4	1.95	4.33°	10.59	11.05	11.45	11.85	12.73	1	A
3052012	R1 × 12	45	1.6	16.3	4	1.95	3.77°	12.69	13.21	13.67	14.15	15.22	1	A
3052014	R1 × 14	50	1.6	18.3	4	1.95	3.33°	14.78	15.36	15.89	16.45	17.7	1	A
3052016	R1 × 16	50	1.6	20.3	4	1.95	2.98°	16.88	17.51	18.1	18.75	—	1	A
3052018	R1 × 18	55	1.6	22.3	4	1.95	2.7°	18.96	19.65	20.32	21.04	—	1	A
3052020	R1 × 20	55	1.6	24.3	4	1.95	2.47°	21.05	21.78	22.54	23.34	—	1	A
3052022	R1 × 22	60	1.6	26.3	4	1.95	2.27°	23.13	23.92	24.75	25.64	—	1	A
3052025	R1 × 25	65	1.6	29.3	4	1.95	2.03°	26.24	27.13	28.08	29.09	—	1	A
3052030	R1 × 30	70	1.6	34.3	4	1.95	1.73°	31.42	32.48	33.62	—	—	1	A
3052035	R1 × 35	70	1.6	39.3	4	1.95	1.5°	36.59	37.83	39.16	—	—	1	A
3052040	R1 × 40	80	1.6	44.3	4	1.95	1.33°	41.76	43.18	—	—	—	1	A
3052510	R1.25×10	45	2	13.1	4	2.35	3.63°	10.46	10.85	11.21	11.59	12.43	1	A
3052515	R1.25×15	50	2	18.1	4	2.35	2.55°	15.67	16.21	16.75	17.34	—	1	A
3052520	R1.25×20	55	2	23.1	4	2.35	1.97°	20.87	21.56	22.3	—	—	1	A
3052525	R1.25×25	65	2	28.1	4	2.35	1.6°	26.04	26.91	27.84	—	—	1	A
3052530	R1.25×30	70	2	33.1	4	2.35	1.35°	31.21	32.26	—	—	—	1	A
3052535	R1.25×35	70	2	38.1	4	2.35	1.17°	36.38	37.61	—	—	—	1	A
3053006	R1.5 × 6	50	2.4	11.9	6	2.85	8.17°	6.25	6.49	6.72	6.95	7.4	1	A
3053008	R1.5 × 8	50	2.4	13.9	6	2.85	6.88°	8.35	8.67	8.97	9.25	9.88	1	A
3053010	R1.5 × 10	50	2.4	15.9	6	2.85	5.94°	10.44	10.83	11.19	11.55	12.37	1	A
3053012	R1.5 × 12	55	2.4	17.9	6	2.85	5.22°	12.53	12.98	13.4	13.85	14.86	1	A
3053014	R1.5 × 14	55	2.4	19.9	6	2.85	4.66°	14.62	15.13	15.62	16.15	17.34	1	A
3053015	R1.5 × 15	55	2.4	20.9	6	2.85	4.42°	15.66	16.2	16.73	17.3	18.59	1	A
3053016	R1.5 × 16	55	2.4	21.9	6	2.85	4.21°	16.7	17.26	17.84	18.45	19.83	1	A

■标识说明请参阅P.6
■See p.6 for explanation of marks.

A = 标准库存品 A = Standard stock item

NEXT 下一页

※1：对应工件斜角α的实际有效长（Le）
Effective Neck length (Le) depending on Inclined Angle (α) of workpiece



实际有效长栏内没有数值时
表示没有干涉。
No numerical value means no interference with workpiece.

FROM
接一页

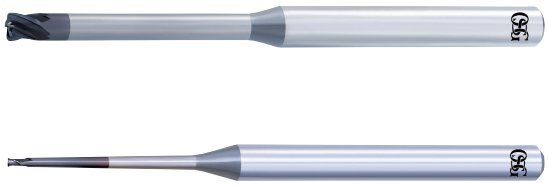
单位：mm　Unit:mm

商品号 EDP No.	球半径 × 颈长 R × ℓ2	全长 L	刃长 ℓ	L2	柄径 Ds	颈径 D1	干涉角度 θk	■对应工件 α 的实际有效长(Le) ※1					形状 Type	库存 Stock
								0.5°	1°	1.5°	2°	3°		
3053020	R1.5 × 20	60	2.4	25.9	6	2.85	3.52°	20.86	21.54	22.27	23.05	24.8	1	A
3053025	R1.5 × 25	65	2.4	30.9	6	2.85	2.92°	26.04	26.89	27.81	28.8	—	1	A
3053030	R1.5 × 30	70	2.4	35.9	6	2.85	2.5°	31.2	32.24	33.35	34.55	—	1	A
3053035	R1.5 × 35	80	2.4	40.9	6	2.85	2.18°	36.37	37.59	38.89	40.3	—	1	A
3053040	R1.5 × 40	90	2.4	45.9	6	2.85	1.94°	41.54	42.94	44.43	—	—	1	A
3053515	R1.75× 15	55	2.8	20	6	3.35	3.93°	15.65	16.18	16.7	17.26	18.53	1	A
3053520	R1.75× 20	60	2.8	25	6	3.35	3.08°	20.85	21.53	22.24	23.01	24.74	1	A
3053525	R1.75× 25	65	2.8	30	6	3.35	2.54°	26.03	26.87	27.78	28.76	—	1	A
3053530	R1.75× 30	70	2.8	35	6	3.35	2.16°	31.2	32.22	33.32	34.51	—	1	A
3053535	R1.75× 35	80	2.8	40	6	3.35	1.88°	36.36	37.57	38.87	—	—	1	A
3053540	R1.75× 40	90	2.8	45	6	3.35	1.66°	41.53	42.92	44.41	—	—	1	A
3053545	R1.75× 45	90	2.8	50	6	3.35	1.49°	46.7	48.27	—	—	—	1	A
3054008	R2 × 8	55	3.2	12.1	6	3.85	5.67°	8.33	8.63	8.91	9.18	9.77	1	A
3054010	R2 × 10	60	3.2	14.1	6	3.85	4.74°	10.42	10.79	11.13	11.48	12.25	1	A
3054012	R2 × 12	60	3.2	16.1	6	3.85	4.07°	12.51	12.95	13.35	13.78	14.74	1	A
3054015	R2 × 15	60	3.2	19.1	6	3.85	3.36°	15.64	16.16	16.67	17.23	18.47	1	A
3054016	R2 × 16	60	3.2	20.1	6	3.85	3.18°	16.68	17.23	17.78	18.38	19.71	1	A
3054020	R2 × 20	65	3.2	24.1	6	3.85	2.6°	20.84	21.51	22.22	22.98	—	1	A
3054025	R2 × 25	70	3.2	29.1	6	3.85	2.12°	26.02	26.86	27.76	28.72	—	1	A
3054030	R2 × 30	80	3.2	34.1	6	3.85	1.79°	31.19	32.21	33.3	—	—	1	A
3054035	R2 × 35	80	3.2	39.1	6	3.85	1.55°	36.36	37.55	38.84	—	—	1	A
3054040	R2 × 40	90	3.2	44.1	6	3.85	1.36°	41.52	42.9	—	—	—	1	A
3054045	R2 × 45	90	3.2	49.1	6	3.85	1.22°	46.69	48.25	—	—	—	1	A
3054050	R2 × 50	100	3.2	54.1	6	3.85	1.1°	51.86	53.6	—	—	—	1	A
3055010	R2.5 × 10	60	4	12.2	6	4.85	2.96°	10.4	10.75	11.08	11.4	—	1	A
3055015	R2.5 × 15	60	4	17.2	6	4.85	1.96°	15.62	16.13	16.62	—	—	1	A
3055020	R2.5 × 20	70	4	22.2	6	4.85	1.46°	20.82	21.47	—	—	—	1	A
3055025	R2.5 × 25	70	4	27.2	6	4.85	1.16°	26	26.82	—	—	—	1	A
3055030	R2.5 × 30	80	4	32.2	6	4.85	0.97°	31.17	—	—	—	—	1	A
3055035	R2.5 × 35	80	4	37.2	6	4.85	0.83°	36.34	—	—	—	—	1	A
3055040	R2.5 × 40	90	4	42.2	6	4.85	0.72°	41.51	—	—	—	—	1	A
3055045	R2.5 × 45	100	4	47.2	6	4.85	0.64°	46.68	—	—	—	—	1	A
3055050	R2.5 × 50	100	4	52.2	6	4.85	0.58°	51.84	—	—	—	—	1	A
3056012	R3 × 12	60	4.8	—	6	5.85	—	—	—	—	—	—	2	A
3056020	R3 × 20	70	4.8	—	6	5.85	—	—	—	—	—	—	2	A
3056025	R3 × 25	70	4.8	—	6	5.85	—	—	—	—	—	—	2	A
3056030	R3 × 30	80	4.8	—	6	5.85	—	—	—	—	—	—	2	A
3056035	R3 × 35	80	4.8	—	6	5.85	—	—	—	—	—	—	2	A
3056040	R3 × 40	90	4.8	—	6	5.85	—	—	—	—	—	—	2	A
3056045	R3 × 45	100	4.8	—	6	5.85	—	—	—	—	—	—	2	A
3056050	R3 × 50	120	4.8	—	6	5.85	—	—	—	—	—	—	2	A

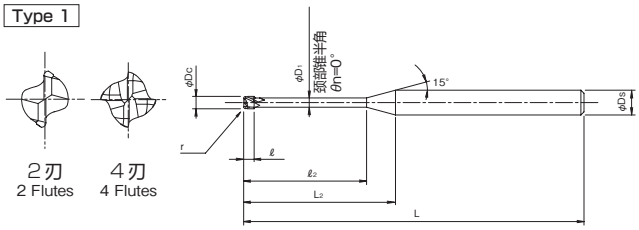
A = 标准库存品　A = Standard stock item

WX超级涂层高精度圆弧角型
WX Super Coating High-precision Bull Nose

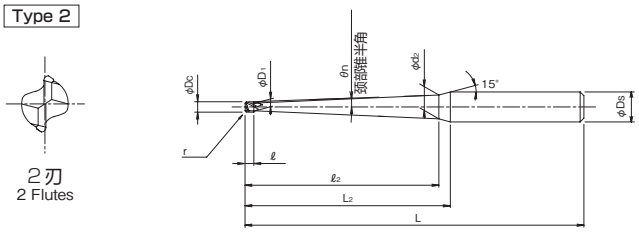
WXS-CPR



Type 1



Type 2



CARBIDE | WXS | ±0.005 (Dc<0.5 0~-0.01, 0.5≤Dc 0~-0.015) | SHRINK FIT | 30° | 切削条件 P.111

单位 :mm　Unit:mm

商品号 EDP No.	外径 X 圆弧角半径 X 颈部锥半角 X 颈长 Dc × r × θn × ℓ2	全长 L	刃长 ℓ	颈径 D1	颈口径 d2	L2	柄径 Ds	刃数 Z	形状 Type	库存 Stock
3100201	0.2 × R0.05 × 0° × 0.5	50	0.15	0.18	—	7.6	4	2	1	A
3100202	0.2 × R0.05 × 0° × 1	50	0.15	0.18	—	8.1	4	2	1	A
3100203	0.2 × R0.05 × 1° × 1	50	0.15	0.18	0.22	8.2	4	2	2	A
3100204	0.2 × R0.05 × 1° × 2	50	0.15	0.18	0.26	9.1	4	2	2	A
3100205	0.2 × R0.05 × 3° × 1	50	0.15	0.18	0.28	8	4	2	2	A
3100206	0.2 × R0.05 × 3° × 2	50	0.15	0.18	0.38	8.8	4	2	2	A
3100207	0.2 × R0.05 × 5° × 1	50	0.15	0.18	0.34	7.8	4	2	2	B
3100208	0.2 × R0.05 × 5° × 2	50	0.15	0.18	0.51	8.5	4	2	2	B
3100301	0.3 × R0.05 × 0° × 1	50	0.25	0.28	—	7.9	4	2	1	A
3100302	0.3 × R0.05 × 0° × 2	50	0.25	0.28	—	8.9	4	2	1	A
3100303	0.3 × R0.05 × 1° × 2	50	0.25	0.28	0.35	9	4	2	2	A
3100304	0.3 × R0.05 × 1° × 3	50	0.25	0.28	0.39	9.9	4	2	2	A
3100305	0.3 × R0.05 × 3° × 2	50	0.25	0.28	0.47	8.7	4	2	2	A
3100306	0.3 × R0.05 × 3° × 3	50	0.25	0.28	0.58	9.5	4	2	2	A
3100307	0.3 × R0.05 × 5° × 2	50	0.25	0.28	0.6	8.3	4	2	2	B
3100308	0.3 × R0.05 × 5° × 3	50	0.25	0.28	0.77	9	4	2	2	B
3100401	0.4 × R0.05 × 0° × 1	50	0.3	0.37	—	8.1	4	2	1	A
3100402	0.4 × R0.05 × 0° × 1.5	50	0.3	0.37	—	8.6	4	2	1	A
3100403	0.4 × R0.05 × 0° × 2	50	0.3	0.37	—	9.1	4	2	1	A
3100404	0.4 × R0.05 × 0° × 3	50	0.3	0.37	—	10.1	4	2	1	A
3100405	0.4 × R0.05 × 0° × 4	50	0.3	0.37	—	11.1	4	2	1	A
3100409	0.4 × R0.05 × 1° × 3	50	0.3	0.37	0.48	9.7	4	2	2	A
3100410	0.4 × R0.05 × 1° × 4	50	0.3	0.37	0.51	10.7	4	2	2	A
3100411	0.4 × R0.05 × 3° × 3	50	0.3	0.37	0.67	9.3	4	2	2	A
3100412	0.4 × R0.05 × 3° × 4	50	0.3	0.37	0.77	10.1	4	2	2	A
3100413	0.4 × R0.05 × 5° × 3	50	0.3	0.37	0.86	8.9	4	2	2	B
3100414	0.4 × R0.05 × 5° × 4	50	0.3	0.37	1.03	9.5	4	2	2	B
3100406	0.4 × R0.1 × 0° × 2	50	0.3	0.37	—	9.1	4	2	1	A
3100407	0.4 × R0.1 × 0° × 3	50	0.3	0.37	—	10.1	4	2	1	A
3100408	0.4 × R0.1 × 0° × 4	50	0.3	0.37	—	11.1	4	2	1	A

■标识说明请参阅P.6
■See p.6 for explanation of marks.

A = 标准库存品　A = Standard stock item
B = 库存中心标准库存品　B = Inventory center stock item

NEXT 下一页

FROM
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单位 :mm　Unit:mm

商品号 EDP No.	外径 X 圆弧角半径 X 颈部锥半角 X 颈长 Dc × r × θn × ℓ2	全长 L	刃长 ℓ	颈径 D1	颈口径 d2	L2	柄径 Ds	刃数 Z	形状 Type	库存 Stock
3100415	0.4 × R0.1 × 1° × 3	50	0.3	0.37	0.48	9.7	4	2	2	A
3100416	0.4 × R0.1 × 1° × 4	50	0.3	0.37	0.51	10.7	4	2	2	A
3100417	0.4 × R0.1 × 3° × 3	50	0.3	0.37	0.67	9.3	4	2	2	A
3100418	0.4 × R0.1 × 3° × 4	50	0.3	0.37	0.77	10.1	4	2	2	A
3100419	0.4 × R0.1 × 5° × 3	50	0.3	0.37	0.86	8.9	4	2	2	B
3100420	0.4 × R0.1 × 5° × 4	50	0.3	0.37	1.03	9.5	4	2	2	B
3100501	0.5 × R0.05 × 0° × 1	50	0.4	0.46	—	8.1	4	2	1	B
3100502	0.5 × R0.05 × 0° × 2	50	0.4	0.46	—	9.1	4	2	1	B
3100503	0.5 × R0.05 × 0° × 3	50	0.4	0.46	—	10.1	4	2	1	B
3100504	0.5 × R0.05 × 0° × 4	50	0.4	0.46	—	11.1	4	2	1	B
3100505	0.5 × R0.05 × 0° × 5	50	0.4	0.46	—	12.1	4	2	1	B
3100506	0.5 × R0.05 × 0° × 6	50	0.4	0.46	—	13.1	4	2	1	B
3100513	0.5 × R0.05 × 1° × 3	50	0.4	0.46	0.58	9.5	4	2	2	B
3100514	0.5 × R0.05 × 1° × 5	50	0.4	0.46	0.64	11.4	4	2	2	B
3100515	0.5 × R0.05 × 1° × 8	50	0.4	0.46	0.75	14.2	4	2	2	B
3100516	0.5 × R0.05 × 1° ×10	50	0.4	0.46	0.81	16.1	4	2	2	B
3100517	0.5 × R0.05 × 1° ×12	50	0.4	0.46	0.88	18	4	2	2	B
3100518	0.5 × R0.05 × 3° × 3	50	0.4	0.46	0.76	9.1	4	2	2	B
3100519	0.5 × R0.05 × 3° × 5	50	0.4	0.46	0.96	10.8	4	2	2	B
3100520	0.5 × R0.05 × 3° × 8	50	0.4	0.46	1.28	13.2	4	2	2	B
3100521	0.5 × R0.05 × 3° ×10	50	0.4	0.46	1.48	14.8	4	2	2	B
3100522	0.5 × R0.05 × 3° ×12	50	0.4	0.46	1.69	16.4	4	2	2	B
3100523	0.5 × R0.05 × 5° × 3	50	0.4	0.46	0.95	8.7	4	2	2	B
3100524	0.5 × R0.05 × 5° × 5	50	0.4	0.46	1.29	10.1	4	2	2	B
3100525	0.5 × R0.05 × 5° × 8	50	0.4	0.46	1.81	12.1	4	2	2	B
3100526	0.5 × R0.05 × 5° ×10	50	0.4	0.46	2.15	13.5	4	2	2	B
3100507	0.5 × R0.1 × 0° × 1	50	0.4	0.46	—	8.1	4	2	1	A
3100508	0.5 × R0.1 × 0° × 2	50	0.4	0.46	—	9.1	4	2	1	A
3100509	0.5 × R0.1 × 0° × 3	50	0.4	0.46	—	10.1	4	2	1	A
3100510	0.5 × R0.1 × 0° × 4	50	0.4	0.46	—	11.1	4	2	1	A
3100511	0.5 × R0.1 × 0° × 5	50	0.4	0.46	—	12.1	4	2	1	A
3100512	0.5 × R0.1 × 0° × 6	50	0.4	0.46	—	13.1	4	2	1	A
3100527	0.5 × R0.1 × 1° × 3	50	0.4	0.46	0.58	9.5	4	2	2	A
3100528	0.5 × R0.1 × 1° × 5	50	0.4	0.46	0.64	11.4	4	2	2	A
3100529	0.5 × R0.1 × 1° × 8	50	0.4	0.46	0.75	14.2	4	2	2	A
3100530	0.5 × R0.1 × 1° ×10	50	0.4	0.46	0.81	16.1	4	2	2	A
3100531	0.5 × R0.1 × 1° ×12	50	0.4	0.46	0.88	18	4	2	2	A
3100532	0.5 × R0.1 × 3° × 3	50	0.4	0.46	0.76	9.1	4	2	2	A
3100533	0.5 × R0.1 × 3° × 5	50	0.4	0.46	0.96	10.8	4	2	2	A
3100534	0.5 × R0.1 × 3° × 8	50	0.4	0.46	1.28	13.2	4	2	2	A

A = 标准库存品　A = Standard stock item
B = 库存中心标准库存品　B = Inventory center stock item

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Type 1

Type 2

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单位 :mm Unit:mm

商品号 EDP No.	外径 X 圆弧角半径 X 颈部锥半角 X 颈长 Dc × r × θn × ℓ2	全长 L	刃长 ℓ	颈径 D1	颈口径 d2	L2	柄径 Ds	刃数 Z	形状 Type	库存 Stock
3100535	0.5 × R0.1 × 3° ×10	50	0.4	0.46	1.48	14.8	4	2	2	A
3100536	0.5 × R0.1 × 3° ×12	50	0.4	0.46	1.69	16.4	4	2	2	A
3100537	0.5 × R0.1 × 5° × 3	50	0.4	0.46	0.95	8.7	4	2	2	A
3100538	0.5 × R0.1 × 5° × 5	50	0.4	0.46	1.29	10.1	4	2	2	A
3100539	0.5 × R0.1 × 5° × 8	50	0.4	0.46	1.81	12.1	4	2	2	A
3100540	0.5 × R0.1 × 5° ×10	50	0.4	0.46	2.15	13.5	4	2	2	A
3100601	0.6 × R0.1 × 0° × 2	50	0.48	0.55	—	8.9	4	2	1	B
3100602	0.6 × R0.1 × 0° × 4	50	0.48	0.55	—	10.9	4	2	1	B
3100603	0.6 × R0.1 × 0° × 6	50	0.48	0.55	—	12.9	4	2	1	B
3100806	0.8 × R0.05 × 1° × 5	50	0.65	0.75	0.93	11.2	4	2	2	B
3100807	0.8 × R0.05 × 1° × 8	50	0.65	0.75	1.04	14	4	2	2	B
3100808	0.8 × R0.05 × 3° × 5	50	0.65	0.75	1.24	10.4	4	2	2	B
3100809	0.8 × R0.05 × 3° × 8	50	0.65	0.75	1.55	12.9	4	2	2	B
3100801	0.8 × R0.1 × 0° × 4	50	0.65	0.75	—	10.5	4	2	1	A
3100802	0.8 × R0.1 × 0° × 6	50	0.65	0.75	—	12.5	4	2	1	A
3100810	0.8 × R0.1 × 1° × 5	50	0.65	0.75	0.93	11.2	4	2	2	A
3100811	0.8 × R0.1 × 1° × 8	50	0.65	0.75	1.04	14	4	2	2	A
3100812	0.8 × R0.1 × 3° × 5	50	0.65	0.75	1.24	10.4	4	2	2	A
3100813	0.8 × R0.1 × 3° × 8	50	0.65	0.75	1.55	12.9	4	2	2	A
3100803	0.8 × R0.2 × 0° × 4	50	0.65	0.75	—	10.5	4	2	1	A
3100804	0.8 × R0.2 × 0° × 6	50	0.65	0.75	—	12.5	4	2	1	A
3100805	0.8 × R0.2 × 0° × 8	50	0.65	0.75	—	14.5	4	2	1	A
3100814	0.8 × R0.2 × 1° × 5	50	0.65	0.75	0.93	11.2	4	2	2	A
3100815	0.8 × R0.2 × 1° × 8	50	0.65	0.75	1.04	14	4	2	2	A
3100816	0.8 × R0.2 × 3° × 5	50	0.65	0.75	1.24	10.4	4	2	2	A
3100817	0.8 × R0.2 × 3° × 8	50	0.65	0.75	1.55	12.9	4	2	2	A
3101001	1 × R0.05 × 0° × 4	50	0.8	0.94	—	10.1	4	2	1	B
3101002	1 × R0.05 × 0° × 6	50	0.8	0.94	—	12.1	4	2	1	B
3101003	1 × R0.05 × 0° × 8	50	0.8	0.94	—	14.1	4	2	1	B
3101004	1 × R0.05 × 0° ×10	50	0.8	0.94	—	16.1	4	2	1	B
3101005	1 × R0.05 × 0° ×12	50	0.8	0.94	—	18.1	4	2	1	B
3101023	1 × R0.05 × 1° × 6	50	0.8	0.94	1.16	11.8	4	2	2	B
3101024	1 × R0.05 × 1° ×10	60	0.8	0.94	1.29	15.5	4	2	2	B
3101025	1 × R0.05 × 1° ×15	60	0.8	0.94	1.46	20.2	4	2	2	B
3101026	1 × R0.05 × 1° ×20	60	0.8	0.94	1.61	24.9	4	2	2	B
3101027	1 × R0.05 × 1° ×25	70	0.8	0.94	1.79	29.6	4	2	2	B
3101028	1 × R0.05 × 1° ×30	80	0.8	0.94	1.96	34.3	4	2	2	B
3101029	1 × R0.05 × 1° ×35	80	0.8	0.94	2.13	39	4	2	2	B
3101030	1 × R0.05 × 3° × 6	50	0.8	0.94	1.53	10.9	4	2	2	B
3101031	1 × R0.05 × 3° ×10	60	0.8	0.94	1.93	14.2	4	2	2	B

■标识说明请参阅P.6
■See p.6 for explanation of marks.

A = 标准库存品 A = Standard stock item
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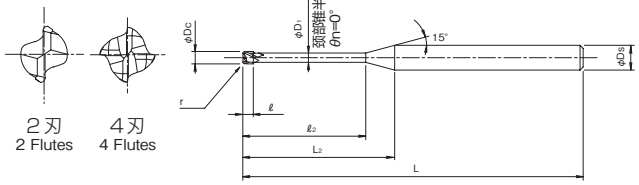
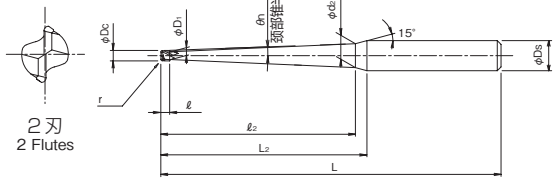
Type 1



Type 2



FROM
接一页

单位 :mm　Unit:mm

商品号 EDP No.	外径 X 圆弧角半径 X 颈部锥半角 X 颈长 Dc × r × θn × ℓ2	全长 L	刃长 ℓ	颈径 D1	颈口径 d2	L2	柄径 Ds	刃数 Z	形状 Type	库存 Stock
3101006	1 × R0.1 × 0° × 4	50	0.8	0.94	—	10.1	4	2	1	B
3101007	1 × R0.1 × 0° × 6	50	0.8	0.94	—	12.1	4	2	1	B
3101008	1 × R0.1 × 0° × 8	50	0.8	0.94	—	14.1	4	2	1	B
3101009	1 × R0.1 × 0° ×10	50	0.8	0.94	—	16.1	4	2	1	B
3101010	1 × R0.1 × 0° ×12	50	0.8	0.94	—	18.1	4	2	1	B
3101032	1 × R0.1 × 1° × 6	50	0.8	0.94	1.16	11.8	4	2	2	A
3101033	1 × R0.1 × 1° ×10	60	0.8	0.94	1.29	15.5	4	2	2	A
3101034	1 × R0.1 × 1° ×15	60	0.8	0.94	1.46	20.2	4	2	2	A
3101035	1 × R0.1 × 1° ×20	60	0.8	0.94	1.61	24.9	4	2	2	A
3101036	1 × R0.1 × 1° ×25	70	0.8	0.94	1.79	29.6	4	2	2	A
3101037	1 × R0.1 × 1° ×30	80	0.8	0.94	1.96	34.3	4	2	2	A
3101038	1 × R0.1 × 1° ×35	80	0.8	0.94	2.13	39	4	2	2	A
3101039	1 × R0.1 × 3° × 6	50	0.8	0.94	1.53	10.9	4	2	2	A
3101040	1 × R0.1 × 3° ×10	60	0.8	0.94	1.93	14.2	4	2	2	A
3101011	1 × R0.2 × 0° × 4	50	0.8	0.94	—	10.1	4	2	1	A
3101012	1 × R0.2 × 0° × 6	50	0.8	0.94	—	12.1	4	2	1	A
3101013	1 × R0.2 × 0° × 8	50	0.8	0.94	—	14.1	4	2	1	A
3101014	1 × R0.2 × 0° ×10	50	0.8	0.94	—	16.1	4	2	1	A
3101015	1 × R0.2 × 0° ×12	50	0.8	0.94	—	18.1	4	2	1	A
3101016	1 × R0.2 × 0° ×16	60	0.8	0.94	—	22.1	4	2	1	A
3101017	1 × R0.2 × 0° ×20	60	0.8	0.94	—	26.1	4	2	1	A
3101041	1 × R0.2 × 1° × 6	50	0.8	0.94	1.16	11.8	4	2	2	A
3101042	1 × R0.2 × 1° ×10	60	0.8	0.94	1.29	15.5	4	2	2	A
3101043	1 × R0.2 × 1° ×15	60	0.8	0.94	1.46	20.2	4	2	2	A
3101044	1 × R0.2 × 1° ×20	60	0.8	0.94	1.61	24.9	4	2	2	A
3101045	1 × R0.2 × 1° ×25	70	0.8	0.94	1.79	29.6	4	2	2	A
3101046	1 × R0.2 × 1° ×30	80	0.8	0.94	1.96	34.3	4	2	2	A
3101047	1 × R0.2 × 1° ×35	80	0.8	0.94	2.13	39	4	2	2	A
3101048	1 × R0.2 × 3° × 6	50	0.8	0.94	1.53	10.9	4	2	2	A
3101049	1 × R0.2 × 3° ×10	60	0.8	0.94	1.93	14.2	4	2	2	A
3101018	1 × R0.3 × 0° × 4	50	0.8	0.94	—	10.1	4	2	1	A
3101019	1 × R0.3 × 0° × 6	50	0.8	0.94	—	12.1	4	2	1	A
3101020	1 × R0.3 × 0° × 8	50	0.8	0.94	—	14.1	4	2	1	A
3101021	1 × R0.3 × 0° ×10	50	0.8	0.94	—	16.1	4	2	1	A
3101022	1 × R0.3 × 0° ×12	50	0.8	0.94	—	18.1	4	2	1	A
3101050	1 × R0.3 × 1° × 6	50	0.8	0.94	1.16	11.8	4	2	2	A
3101051	1 × R0.3 × 1° ×10	60	0.8	0.94	1.29	15.5	4	2	2	A
3101052	1 × R0.3 × 1° ×15	60	0.8	0.94	1.46	20.2	4	2	2	A
3101053	1 × R0.3 × 1° ×20	60	0.8	0.94	1.61	24.9	4	2	2	A
3101054	1 × R0.3 × 1° ×25	70	0.8	0.94	1.79	29.6	4	2	2	A

A = 标准库存品　A = Standard stock item
B = 库存中心标准库存品　B = Inventory center stock item

NEXT
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WXS-CPR

Type 1

Type 2

接一页

P.111

单位 :mm Unit:mm

商品号 EDP No.	外径 X 圆弧角半径 X 颈部锥半角 X 颈长 Dc × r × θn × ℓ2	全长 L	刃长 ℓ	颈径 D1	颈口径 d2	L2	柄径 Ds	刃数 Z	形状 Type	库存 Stock
3101055	1 × R0.3 × 1° ×30	80	0.8	0.94	1.96	34.3	4	2	2	A
3101056	1 × R0.3 × 1° ×35	80	0.8	0.94	2.13	39	4	2	2	A
3101057	1 × R0.3 × 3° × 6	50	0.8	0.94	1.53	10.9	4	2	2	A
3101058	1 × R0.3 × 3° ×10	60	0.8	0.94	1.93	14.2	4	2	2	A
3101201	1.2 × R0.2 × 0° × 6	50	1	1.14	—	11.7	4	2	1	B
3101202	1.2 × R0.2 × 0° × 8	50	1	1.14	—	13.7	4	2	1	B
3101203	1.2 × R0.2 × 0° ×10	50	1	1.14	—	15.7	4	2	1	B
3101204	1.2 × R0.3 × 0° × 6	50	1	1.14	—	11.7	4	2	1	B
3101205	1.2 × R0.3 × 0° × 8	50	1	1.14	—	13.7	4	2	1	B
3101206	1.2 × R0.3 × 0° ×10	50	1	1.14	—	15.7	4	2	1	B
3101511	1.5 × R0.1 × 1° ×10	60	1.2	1.43	1.78	14.6	4	2	2	B
3101512	1.5 × R0.1 × 1° ×15	60	1.2	1.43	1.94	19.3	4	2	2	B
3101513	1.5 × R0.1 × 1° ×20	60	1.2	1.43	2.1	24	4	2	2	B
3101514	1.5 × R0.1 × 1° ×25	70	1.2	1.43	2.27	28.7	4	2	2	B
3101515	1.5 × R0.1 × 1° ×30	80	1.2	1.43	2.45	33.4	4	2	2	B
3101516	1.5 × R0.1 × 3° ×10	60	1.2	1.43	2.39	13.3	4	2	2	B
3101517	1.5 × R0.1 × 3° ×15	60	1.2	1.43	2.91	17.3	4	2	2	B
3101501	1.5 × R0.2 × 0° × 6	50	1.2	1.43	—	11.1	4	2	1	A
3101502	1.5 × R0.2 × 0° × 8	50	1.2	1.43	—	13.1	4	2	1	A
3101503	1.5 × R0.2 × 0° ×10	50	1.2	1.43	—	15.1	4	2	1	A
3101504	1.5 × R0.2 × 0° ×12	50	1.2	1.43	—	17.1	4	2	1	A
3101505	1.5 × R0.2 × 0° ×16	50	1.2	1.43	—	21.1	4	2	1	A
3101518	1.5 × R0.2 × 1° ×10	60	1.2	1.43	1.78	14.6	4	2	2	A
3101519	1.5 × R0.2 × 1° ×15	60	1.2	1.43	1.94	19.3	4	2	2	A
3101520	1.5 × R0.2 × 1° ×20	60	1.2	1.43	2.1	24	4	2	2	A
3101521	1.5 × R0.2 × 1° ×25	70	1.2	1.43	2.27	28.7	4	2	2	A
3101522	1.5 × R0.2 × 1° ×30	80	1.2	1.43	2.45	33.4	4	2	2	A
3101523	1.5 × R0.2 × 3° ×10	60	1.2	1.43	2.39	13.3	4	2	2	A
3101524	1.5 × R0.2 × 3° ×15	60	1.2	1.43	2.91	17.3	4	2	2	A
3101506	1.5 × R0.3 × 0° × 6	50	1.2	1.43	—	11.1	4	2	1	A
3101507	1.5 × R0.3 × 0° × 8	50	1.2	1.43	—	13.1	4	2	1	A
3101508	1.5 × R0.3 × 0° ×10	50	1.2	1.43	—	15.1	4	2	1	A
3101509	1.5 × R0.3 × 0° ×12	50	1.2	1.43	—	17.1	4	2	1	A
3101510	1.5 × R0.3 × 0° ×16	50	1.2	1.43	—	21.1	4	2	1	A
3101525	1.5 × R0.3 × 1° ×10	60	1.2	1.43	1.78	14.6	4	2	2	A
3101526	1.5 × R0.3 × 1° ×15	60	1.2	1.43	1.94	19.3	4	2	2	A
3101527	1.5 × R0.3 × 1° ×20	60	1.2	1.43	2.1	24	4	2	2	A
3101528	1.5 × R0.3 × 1° ×25	70	1.2	1.43	2.27	28.7	4	2	2	A
3101529	1.5 × R0.3 × 1° ×30	80	1.2	1.43	2.45	33.4	4	2	2	A
3101530	1.5 × R0.3 × 3° ×10	60	1.2	1.43	2.39	13.3	4	2	2	A

■标识说明请参阅P.6
■See p.6 for explanation of marks.

A = 标准库存品 A = Standard stock item
B = 库存中心标准库存品 B = Inventory center stock item

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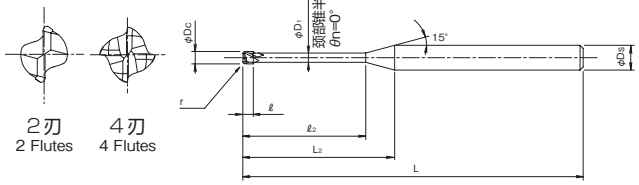
Type 1



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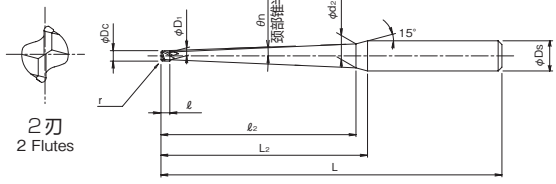

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单位 :mm　Unit:mm

商品号 EDP No.	外径 X 圆弧角半径 X 颈部锥半角 X 颈长 Dc × r × θn × ℓ2	全长 L	刃长 ℓ	颈径 D1	颈口径 d2	L2	柄径 Ds	刃数 Z	形状 Type	库存 Stock
3101531	1.5 × R0.3 × 3° ×15	60	1.2	1.43	2.91	17.3	4	2	2	A
3102001	2 × R0.1 × 0° × 8	50	1.6	1.92	—	12.2	4	2	1	B
3102002	2 × R0.1 × 0° ×10	50	1.6	1.92	—	14.2	4	2	1	B
3102003	2 × R0.1 × 0° ×12	50	1.6	1.92	—	16.2	4	2	1	B
3102004	2 × R0.1 × 0° ×16	60	1.6	1.92	—	20.2	4	2	1	B
3102005	2 × R0.1 × 0° ×20	60	1.6	1.92	—	24.2	4	2	1	B
3102006	2 × R0.1 × 0° ×25	70	1.6	1.92	—	29.2	4	2	1	B
3102025	2 × R0.1 × 1° ×15	60	1.6	1.92	2.43	18.4	4	2	2	B
3102026	2 × R0.1 × 1° ×20	60	1.6	1.92	2.58	23.1	4	2	2	B
3102027	2 × R0.1 × 1° ×25	70	1.6	1.92	2.76	27.8	4	2	2	B
3102028	2 × R0.1 × 1° ×30	80	1.6	1.92	2.93	32.5	4	2	2	B
3102029	2 × R0.1 × 1° ×40	80	1.6	1.92	3.27	41.8	4	2	2	B
3102030	2 × R0.1 × 1° ×50	100	1.6	1.92	3.62	51.1	4	2	2	B
3102031	2 × R0.1 × 3° ×15	60	1.6	1.92	3.37	16.5	4	2	2	B
3102032	2 × R0.1 × 3° ×20	60	1.6	1.92	3.87	20.4	4	2	2	B
3102007	2 × R0.2 × 0° × 8	50	1.6	1.92	—	12.2	4	2	1	A
3102008	2 × R0.2 × 0° ×10	50	1.6	1.92	—	14.2	4	2	1	A
3102009	2 × R0.2 × 0° ×12	50	1.6	1.92	—	16.2	4	2	1	A
3102010	2 × R0.2 × 0° ×16	60	1.6	1.92	—	20.2	4	2	1	A
3102011	2 × R0.2 × 0° ×20	60	1.6	1.92	—	24.2	4	2	1	A
3102012	2 × R0.2 × 0° ×25	70	1.6	1.92	—	29.2	4	2	1	A
3102033	2 × R0.2 × 1° ×15	60	1.6	1.92	2.43	18.4	4	2	2	A
3102034	2 × R0.2 × 1° ×20	60	1.6	1.92	2.58	23.1	4	2	2	A
3102035	2 × R0.2 × 1° ×25	70	1.6	1.92	2.76	27.8	4	2	2	A
3102036	2 × R0.2 × 1° ×30	80	1.6	1.92	2.93	32.5	4	2	2	A
3102037	2 × R0.2 × 1° ×40	80	1.6	1.92	3.27	41.8	4	2	2	A
3102038	2 × R0.2 × 1° ×50	100	1.6	1.92	3.62	51.1	4	2	2	A
3102039	2 × R0.2 × 3° ×15	60	1.6	1.92	3.37	16.5	4	2	2	A
3102040	2 × R0.2 × 3° ×20	60	1.6	1.92	3.87	20.4	4	2	2	A
3102013	2 × R0.3 × 0° × 8	50	1.6	1.92	—	12.2	4	2	1	A
3102014	2 × R0.3 × 0° ×10	50	1.6	1.92	—	14.2	4	2	1	A
3102015	2 × R0.3 × 0° ×12	50	1.6	1.92	—	16.2	4	2	1	A
3102016	2 × R0.3 × 0° ×16	60	1.6	1.92	—	20.2	4	2	1	A
3102017	2 × R0.3 × 0° ×20	60	1.6	1.92	—	24.2	4	2	1	A
3102018	2 × R0.3 × 0° ×25	70	1.6	1.92	—	29.2	4	2	1	A
3102041	2 × R0.3 × 1° ×15	60	1.6	1.92	2.43	18.4	4	2	2	A
3102042	2 × R0.3 × 1° ×20	60	1.6	1.92	2.58	23.1	4	2	2	A
3102043	2 × R0.3 × 1° ×25	70	1.6	1.92	2.76	27.8	4	2	2	A
3102044	2 × R0.3 × 1° ×30	80	1.6	1.92	2.93	32.5	4	2	2	A
3102045	2 × R0.3 × 1° ×40	80	1.6	1.92	3.27	41.8	4	2	2	A

A = 标准库存品　A = Standard stock item
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WXS-CPR

Type 1

Type 2

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单位 :mm Unit:mm

商品号 EDP No.	外径 X 圆弧角半径 X 颈部锥半角 X 颈长 Dc × r × θn × ℓ2	全长 L	刃长 ℓ	颈径 D1	颈口径 d2	L2	柄径 Ds	刃数 Z	形状 Type	库存 Stock
3102046	2 × R0.3 × 1° ×50	100	1.6	1.92	3.62	51.1	4	2	2	A
3102047	2 × R0.3 × 3° ×15	60	1.6	1.92	3.37	16.5	4	2	2	A
3102048	2 × R0.3 × 3° ×20	60	1.6	1.92	3.87	20.4	4	2	2	A
3102019	2 × R0.5 × 0° × 8	50	1.6	1.92	—	12.2	4	2	1	A
3102020	2 × R0.5 × 0° ×10	50	1.6	1.92	—	14.2	4	2	1	A
3102021	2 × R0.5 × 0° ×12	50	1.6	1.92	—	16.2	4	2	1	A
3102022	2 × R0.5 × 0° ×16	60	1.6	1.92	—	20.2	4	2	1	A
3102023	2 × R0.5 × 0° ×20	60	1.6	1.92	—	24.2	4	2	1	A
3102024	2 × R0.5 × 0° ×25	70	1.6	1.92	—	29.2	4	2	1	A
3102049	2 × R0.5 × 1° ×15	60	1.6	1.92	2.43	18.4	4	2	2	A
3102050	2 × R0.5 × 1° ×20	60	1.6	1.92	2.58	23.1	4	2	2	A
3102051	2 × R0.5 × 1° ×25	70	1.6	1.92	2.76	27.8	4	2	2	A
3102052	2 × R0.5 × 1° ×30	80	1.6	1.92	2.93	32.5	4	2	2	A
3102053	2 × R0.5 × 1° ×40	80	1.6	1.92	3.27	41.8	4	2	2	A
3102054	2 × R0.5 × 1° ×50	100	1.6	1.92	3.62	51.1	4	2	2	A
3102055	2 × R0.5 × 3° ×15	60	1.6	1.92	3.37	16.5	4	2	2	A
3102056	2 × R0.5 × 3° ×20	60	1.6	1.92	3.87	20.4	4	2	2	A
3102501	2.5 × R0.2 × 0° ×10	50	2.2	2.4	—	13.2	4	2	1	B
3102502	2.5 × R0.2 × 0° ×20	60	2.2	2.4	—	23.2	4	2	1	B
3102503	2.5 × R0.2 × 0° ×30	70	2.2	2.4	—	33.2	4	2	1	B
3102504	2.5 × R0.5 × 0° ×10	50	2.2	2.4	—	13.2	4	2	1	B
3102505	2.5 × R0.5 × 0° ×20	60	2.2	2.4	—	23.2	4	2	1	B
3102506	2.5 × R0.5 × 0° ×30	70	2.2	2.4	—	33.2	4	2	1	B
3103001	3 × R0.2 × 0° × 8	60	2.5	2.85	—	13.9	6	2	1	A
3103002	3 × R0.2 × 0° ×12	60	2.5	2.85	—	17.9	6	2	1	A
3103003	3 × R0.2 × 0° ×16	60	2.5	2.85	—	21.9	6	2	1	A
3103004	3 × R0.2 × 0° ×20	70	2.5	2.85	—	25.9	6	2	1	A
3103005	3 × R0.2 × 0° ×25	70	2.5	2.85	—	30.9	6	2	1	A
3103006	3 × R0.2 × 0° ×30	70	2.5	2.85	—	35.9	6	2	1	A
3103007	3 × R0.2 × 0° ×35	80	2.5	2.85	—	40.9	6	2	1	A
3103020	3 × R0.2 × 1° ×15	60	2.5	2.85	3.4	20.3	6	2	2	A
3103021	3 × R0.2 × 1° ×20	60	2.5	2.85	3.55	25	6	2	2	A
3103022	3 × R0.2 × 1° ×30	80	2.5	2.85	3.9	34.4	6	2	2	A
3103023	3 × R0.2 × 1° ×40	80	2.5	2.85	4.24	43.8	6	2	2	A
3103024	3 × R0.2 × 1° ×50	100	2.5	2.85	4.59	53.1	6	2	2	A
3103025	3 × R0.2 × 1° ×60	110	2.5	2.85	4.94	62.5	6	2	2	A
3103008	3 × R0.3 × 0° ×12	60	2.5	2.85	—	17.9	6	2	1	A
3103009	3 × R0.3 × 0° ×16	60	2.5	2.85	—	21.9	6	2	1	A
3103010	3 × R0.3 × 0° ×20	70	2.5	2.85	—	25.9	6	2	1	A
3103011	3 × R0.3 × 0° ×25	70	2.5	2.85	—	30.9	6	2	1	A

■标识说明请参阅P.6
■See p.6 for explanation of marks.

A = 标准库存品 A = Standard stock item
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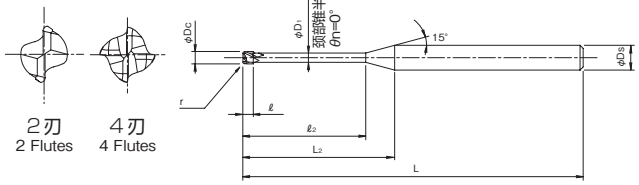
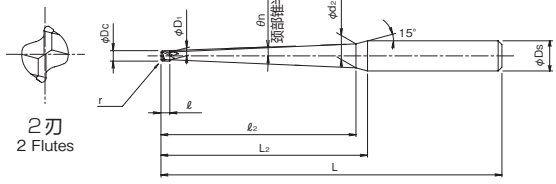
Type 1



Type 2



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单位 :mm　Unit:mm

商品号 EDP No.	外径 X 圆弧角半径 X 颈部锥半角 X 颈长 Dc × r × θn × ℓ2	全长 L	刃长 ℓ	颈径 D1	颈口径 d2	L2	柄径 Ds	刃数 Z	形状 Type	库存 Stock
3103012	3 × R0.3 × 0° ×30	70	2.5	2.85	—	35.9	6	2	1	A
3103013	3 × R0.3 × 0° ×35	80	2.5	2.85	—	40.9	6	2	1	A
3103014	3 × R0.5 × 0° ×12	60	2.5	2.85	—	17.9	6	2	1	A
3103015	3 × R0.5 × 0° ×16	60	2.5	2.85	—	21.9	6	2	1	A
3103016	3 × R0.5 × 0° ×20	70	2.5	2.85	—	25.9	6	2	1	A
3103017	3 × R0.5 × 0° ×25	70	2.5	2.85	—	30.9	6	2	1	A
3103018	3 × R0.5 × 0° ×30	70	2.5	2.85	—	35.9	6	2	1	A
3103019	3 × R0.5 × 0° ×35	80	2.5	2.85	—	40.9	6	2	1	A
3103026	3 × R0.5 × 1° ×15	60	2.5	2.85	3.4	20.3	6	2	2	A
3103027	3 × R0.5 × 1° ×20	60	2.5	2.85	3.55	25	6	2	2	A
3103028	3 × R0.5 × 1° ×30	80	2.5	2.85	3.9	34.4	6	2	2	A
3103029	3 × R0.5 × 1° ×40	80	2.5	2.85	4.24	43.8	6	2	2	A
3103030	3 × R0.5 × 1° ×50	100	2.5	2.85	4.59	53.1	6	2	2	A
3103031	3 × R0.5 × 1° ×60	110	2.5	2.85	4.94	62.5	6	2	2	A
3104001	4 × R0.2 × 0° ×16	60	4	3.84	—	20.1	6	4	1	B
3104002	4 × R0.2 × 0° ×20	60	4	3.84	—	24.1	6	4	1	B
3104003	4 × R0.2 × 0° ×25	70	4	3.84	—	29.1	6	4	1	B
3104004	4 × R0.2 × 0° ×30	70	4	3.84	—	34.1	6	4	1	B
3104005	4 × R0.2 × 0° ×40	90	4	3.84	—	44.1	6	4	1	B
3104006	4 × R0.2 × 0° ×50	100	4	3.84	—	54.1	6	4	1	B
3104007	4 × R0.3 × 0° ×16	60	4	3.84	—	20.1	6	4	1	B
3104008	4 × R0.3 × 0° ×20	60	4	3.84	—	24.1	6	4	1	B
3104009	4 × R0.3 × 0° ×25	70	4	3.84	—	29.1	6	4	1	B
3104010	4 × R0.3 × 0° ×30	70	4	3.84	—	34.1	6	4	1	B
3104011	4 × R0.3 × 0° ×40	90	4	3.84	—	44.1	6	4	1	B
3104012	4 × R0.3 × 0° ×50	100	4	3.84	—	54.1	6	4	1	B
3104013	4 × R0.5 × 0° ×16	60	4	3.84	—	20.1	6	4	1	B
3104014	4 × R0.5 × 0° ×20	60	4	3.84	—	24.1	6	4	1	B
3104015	4 × R0.5 × 0° ×25	70	4	3.84	—	29.1	6	4	1	B
3104016	4 × R0.5 × 0° ×30	70	4	3.84	—	34.1	6	4	1	B
3104017	4 × R0.5 × 0° ×40	90	4	3.84	—	44.1	6	4	1	B
3104018	4 × R0.5 × 0° ×50	100	4	3.84	—	54.1	6	4	1	B
3104019	4 × R1 × 0° ×16	60	4	3.84	—	20.1	6	4	1	B
3104020	4 × R1 × 0° ×20	60	4	3.84	—	24.1	6	4	1	B
3104021	4 × R1 × 0° ×25	70	4	3.84	—	29.1	6	4	1	B
3104022	4 × R1 × 0° ×30	70	4	3.84	—	34.1	6	4	1	B
3104023	4 × R1 × 0° ×40	90	4	3.84	—	44.1	6	4	1	B
3104024	4 × R1 × 0° ×50	100	4	3.84	—	54.1	6	4	1	B

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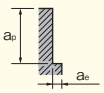
切削条件表 Cutting Conditions

WXS-EMS

侧面切削 Side Milling

加工材料 Work Material	调质钢(～40HRC)・预硬钢 Hardened Steel・Prehardened Steel NAK55、HPM1、SKT		工具钢・调质钢(40～45HRC)・预硬钢 Tool Steel・Hardened Steel・Prehardened Steel SKD11、SKD61、NAK80		调质钢 Hardened Steel							
					45～55HRC		55～60HRC		60～65HRC		65～70HRC	
外径 Mill Dia. (mm)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)
1	20,000	800	20,000	800	20,000	800	20,000	560	20,000	480	16,000	335
2	20,000	1,600	20,000	1,600	16,000	1,250	12,000	670	11,000	535	7,950	335
3	15,000	1,800	13,500	1,600	10,500	1,250	7,950	670	7,450	535	5,300	335
4	11,000	1,800	9,950	1,600	7,950	1,250	5,950	670	5,550	535	4,000	335
5	8,900	1,800	7,950	1,600	6,350	1,250	4,800	670	4,450	535	3,200	335
6	7,450	2,650	6,650	2,400	5,300	1,900	4,000	1,000	3,700	800	2,650	505
8	5,550	2,650	4,950	2,400	4,000	1,900	3,000	1,000	2,800	800	2,000	505
10	4,450	2,650	4,000	2,400	3,200	1,900	2,400	1,000	2,250	800	1,600	505
12	3,700	2,650	3,300	2,400	2,650	1,900	2,000	1,000	1,850	800	1,350	505
14	3,100	2,500	2,800	2,250	2,250	1,800	1,700	1,000	1,550	800	1,100	505
15	2,850	2,400	2,600	2,200	2,100	1,750	1,550	950	1,450	800	1,050	505
16	2,700	2,400	2,400	2,100	1,950	1,700	1,450	930	1,350	800	995	505
18	2,400	2,250	2,200	2,000	1,750	1,600	1,300	895	1,200	800	885	505
20	2,200	2,150	1,950	1,900	1,550	1,500	1,150	845	1,100	695	800	505
25	1,700	2,450	1,550	2,100	1,250	1,500	955	915	890	750	635	505
30	1,400	2,300	1,300	1,750	1,050	1,250	795	760	740	620	620	430
切深量 Depth of Cut			a_p / a_e: 1.5D / 0.02D (Dc≤1.5); 1.5D / 0.05D (1.5<Dc≤2.5); 1.5D / 0.1D (2.5<Dc) a_eMax=1mm以下		a_p 1.5D, a_e 0.05D a_eMax=1mm以下		a_p 1.5D, a_e 0.03D a_eMax=0.5mm以下		a_p 1D, a_e 0.02D a_eMax=0.5mm以下			

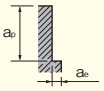
1.请使用刚性较高的机床和刀柄。
2. 当发生振动时请同比下降转速和进给速度
3.请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed at the same ratio.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.

高速侧面切削 High-Speed Side Milling

⚠ 加工时产生的火花及破损引起的发热可能会导致燃烧或火灾，请注意防火。

Caution: Sparks generated during operation or heat caused by tool breakage can cause fire. Be sure to use all proper fire-prevention measures.

加工材料 Work Material	调质钢(～40HRC)・预硬钢 Hardened Steel・Prehardened Steel NAK55、HPM1、SKT		工具钢・调质钢(40～45HRC)・预硬钢 Tool Steel・Hardened Steel・Prehardened Steel SKD11、SKD61、NAK80		调质钢 Hardened Steel							
					45～55HRC		55～60HRC		60～65HRC		65～70HRC	
尺寸 Mill Dia. (mm)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)
1	50,000	1,600	50,000	2,000	50,000	2,000	50,000	1,600	47,500	1,350	32,000	715
2	47,500	3,250	47,500	3,800	40,000	3,200	25,500	1,650	24,000	1,350	16,000	800
3	32,000	3,450	32,000	3,800	26,500	3,200	17,000	1,650	16,000	1,350	10,500	800
4	24,000	3,900	24,000	3,800	20,000	3,200	12,500	1,650	12,000	1,350	7,950	800
5	19,000	4,100	19,000	3,800	16,000	3,200	10,000	1,650	9,550	1,350	6,350	800
6	16,000	5,750	16,000	5,750	13,500	4,800	8,500	2,450	7,950	2,000	5,300	1,200
8	12,000	5,750	12,000	5,750	9,950	4,800	6,350	2,450	5,950	2,000	4,000	1,200
10	9,550	5,750	9,550	5,750	7,950	4,800	5,100	2,450	4,800	2,000	3,200	1,200
12	7,950	5,750	7,950	5,750	6,650	4,800	4,250	2,450	4,000	2,000	2,650	1,200
14	6,800	5,400	6,800	5,400	5,650	4,500	3,600	2,400	3,400	2,000	2,250	1,200
15	6,350	5,300	6,350	5,300	5,250	4,350	3,350	2,300	3,150	1,950	2,100	1,200
16	5,950	5,150	5,950	5,150	4,950	4,250	3,150	2,250	2,950	1,850	1,950	1,200
18	5,300	4,850	5,300	4,850	4,400	4,050	2,800	2,200	2,650	1,750	1,750	1,200
20	4,750	4,600	4,750	4,600	3,950	3,650	2,500	2,050	2,350	1,550	1,550	1,100
25	3,800	5,350	3,800	5,050	3,150	3,800	2,000	2,000	1,900	1,250	1,250	1,050
30	3,150	4,950	3,150	4,250	2,650	3,150	1,650	1,800	1,550	1,050	1,050	1,000
切深量 Depth of Cut			a_p 1D, a_e 0.05D a_eMax=0.5mm以下		a_p 1D, a_e 0.03D a_eMax=0.5mm以下		a_p 1D, a_e 0.02D a_eMax=0.2mm以下		a_p 1D, a_e 0.01D a_eMax=0.2mm以下			

1.请使用刚性较高的机床和刀柄。
2. 当发生振动时请同比下降转速和进给速度
3.请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。

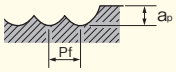
1. The indicated speeds and feeds are for high speed light milling with high speed / high precision machining centers.
2. Tools can cause sparks. Do not use flammable fluids.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.

WXS-EBD

标准切削 Standard Milling

●加工走刀路线以等高线为前提。

The machining path is on condition of contouring line operation.

加工材料 Work Material	工具钢·调质钢(～45HRC)·预硬钢 Tool Steel·Hardened Steel·Prehardened Steel SKD、NAK80、HPM50		调质钢 Hardened Steel							
	45～55HRC				55～60HRC		60～65HRC		65～70HRC	
R	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)
0.5	32,000	2,350	32,000	2,350	32,000	2,000	32,000	1,600	32,000	1,450
0.75	32,000	3,050	32,000	3,050	32,000	2,500	26,500	1,900	21,000	1,400
1	32,000	3,600	32,000	3,550	24,000	2,200	20,000	1,750	16,000	1,250
1.5	26,500	4,000	21,000	3,200	16,000	2,000	13,500	1,600	10,500	1,200
2	20,000	3,650	16,000	2,950	12,000	1,900	9,950	1,500	7,950	1,150
2.5	16,000	3,500	12,500	2,650	9,550	1,700	7,950	1,350	6,350	1,000
3	13,500	3,350	10,500	2,300	7,950	1,550	6,650	1,250	5,300	955
4	9,950	2,850	7,950	2,050	5,950	1,350	4,950	1,050	4,000	830
5	7,950	2,550	6,350	1,800	4,800	1,150	4,000	875	3,200	700
6	6,650	2,400	5,300	1,650	4,000	955	3,300	795	2,650	635
8	4,950	1,800	4,000	1,250	3,000	775	2,500	595	2,000	475
10	4,000	1,450	3,200	1,000	2,400	620	2,000	475	1,600	380
12.5	3,200	1,150	2,550	815	1,900	495	1,600	380	1,250	305
切深量 Depth of Cut			a_p 0.05D / Pf 0.1D a_pMax=0.6mm以下		a_p 0.03D / Pf 0.1D a_pMax=0.5mm以下		a_p 0.02D / Pf 0.05D a_pMax=0.3mm以下			

1. 请使用刚性较高的机床和刀柄。
2. 请使用气冷或油雾冷却方式。
3. 上表适用于负荷较小的等高线加工(侧面加工)。根据加工形状、切深量、机械刚性、工件固定等使用情况不同，可能产生异常切削噪音、振动。请调整回转速度、进给速度及切深量。
4. 切深量小时，可适当上调回转速度及进给速度。

● 铣刀的选定向导
要增加切深量请选用FX重切削强力球头铣刀(FX-HS-EBDS)，增加进给速度请选用FX多刃球头铣刀(FXS-EBT,FXS-EBM)。

1. Use a rigid and precise machine and holder.
2. Using air blow or MQL (oil mist coolant) is recommended.
3. The above condition shows an approximate standard for contouring operation (side milling) with a low machining load. If abnormal cutting sounds, vibration or chattering occur depending on the machining shape, cutting amount, rigidity of the machine or work holding condition, etc., please adjust the speed, feed and the depth of cut.
4. Cutting speed and feed rate can be increased in case of lower depth of cut.

● Guideline for selecting end mills:
To increase the depth of cut : use the FX Heavy Cutting Strong Ball Series (FX-HS-EBDS).
To increase the feed rate : use the FX Multiple Flute Ball Series (FXS-EBT, FXS-EBM).

高速切削 High-Speed Milling

⚠ 加工时产生的火花及破损引起的发热可能会导致燃烧或火灾，请注意防火。

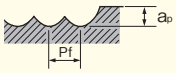
使用高速高精度加工中心的基准条件表。

●加工路径以等高线加工为前提。

Caution: Sparks generated during operation or heat caused by tool breakage can cause fire. Be sure to use all proper fire-prevention measures.

The conditions below are for high speed / high precision machining centers.

The machining path is on condition of contoure milling.

加工材料 Work Material	工具钢·调质钢(～45HRC)·预硬钢 Tool Steel·Hardened Steel·Prehardened Steel SKD、NAK80、HPM50		调质钢 Hardened Steel							
	45～55HRC				55～60HRC		60～65HRC		65～70HRC	
R	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)
0.5	50,000	3,700	50,000	3,700	50,000	3,100	50,000	2,600	47,500	2,400
0.75	50,000	4,800	50,000	4,800	50,000	3,900	42,500	3,050	32,000	2,300
1	50,000	5,600	47,500	5,350	40,000	3,650	32,000	2,800	24,000	2,100
1.5	41,500	6,200	32,000	4,800	26,500	3,350	21,000	2,550	16,000	1,900
2	31,000	5,700	24,000	4,400	20,000	3,200	16,000	2,400	12,000	1,800
2.5	25,000	5,450	19,000	4,000	16,000	2,850	13,000	2,150	9,550	1,600
3	20,500	5,200	16,000	3,450	13,500	2,550	10,500	2,050	7,950	1,550
4	15,500	4,450	12,000	3,050	9,950	2,250	7,950	1,800	5,950	1,350
5	12,500	3,950	9,550	2,650	7,950	1,900	6,350	1,550	4,800	1,150
6	10,500	3,700	7,950	2,500	6,650	1,600	5,300	1,350	4,000	995
8	7,750	2,800	5,950	1,900	4,950	1,300	4,000	1,050	3,000	775
10	6,200	2,250	4,800	1,550	4,000	1,050	3,200	830	2,400	620
12.5	4,950	1,800	3,800	1,200	3,200	830	2,550	660	1,900	495
切深量 Depth of Cut			a_p 0.02D / Pf 0.05D a_pMax=0.3mm以下		a_p 0.02D / Pf 0.05D a_pMax=0.2mm以下		a_p 0.01D / Pf 0.05D a_pMax=0.1mm以下			

1. 请使用刚性较高的机床和刀柄。
2. 请使用气冷或油雾冷却方式。
3. 上表适用于负荷较小的等高线加工(侧面加工)。根据加工形状、切深量、机械刚性、工件固定等使用情况不同，可能产生异常切削噪音、振动。请调整回转速度、进给速度及切深量。
4. 切深量小时，可适当上调回转速度及进给速度。

● 铣刀的选定向导
要增加切深量请选用FX重切削强力球头铣刀(FX-HS-EBDS)，增加进给速度请选用FX多刃球头铣刀(FXS-EBT,FXS-EBM)。

1. Use a rigid and precise machine and holder.
2. Using air blow or MQL(oil mist coolant) is recommended.
3. The above condition shows an approximate standard for contouring operation (side milling) with a low machining load. If abnormal cutting sounds, vibration or chattering occur depending on the machining shape, cutting amount, rigidity of the machine or work holding condition, etc., please adjust the speed, feed and the depth of cut.
4. Cutting speed and feed rate can be increased in case of lower depth of cut.

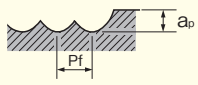
● Guideline for selecting end mills:
To increase the depth of cut : use the FX Heavy Cutting Strong Ball Series (FX-HS-EBDS).
To increase the feed rate : use the FX Multiple Flute Ball Series (FXS-EBT, FXS-EBM).

切削条件表 Cutting Conditions

WXS-LN-EBD 标准切削 Regular Milling

加工材料 Work Material		普通结构用钢・炭素钢・铸铁 Mild Steel・Carbon Steel・Cast Iron SS400、S55C、FC250 (～750N/mm²)				合金钢・工具钢 Alloy Steel・Tool Steel SCM、SKT、SKS、SKD (～30HRC)				调质钢(30～38HRC)・预硬钢 Hardened Steel・Prehardened Steel SKT、SKD、NAK55、HPM1			
R	颈长 ℓ2(mm)	回转速度 Speed(min⁻¹)	进给速度 Feed(mm/min)	ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	Pf
0.05	0.3	50,000	70	0.003	0.003	50,000	70	0.003	0.003	50,000	70	0.003	0.003
	0.5	50,000	50	0.003	0.003	50,000	50	0.003	0.003	50,000	50	0.003	0.003
0.1	0.5	50,000	400	0.005	0.005	50,000	400	0.005	0.005	50,000	380	0.005	0.005
	0.75	50,000	360	0.005	0.005	50,000	360	0.005	0.005	50,000	340	0.005	0.005
	1	50,000	360	0.005	0.005	50,000	360	0.005	0.005	50,000	340	0.005	0.005
	1.25	47,000	320	0.005	0.005	47,000	320	0.005	0.005	47,000	300	0.005	0.005
	1.5	45,000	300	0.005	0.005	45,000	300	0.005	0.005	45,000	280	0.005	0.005
	1.75	42,000	260	0.005	0.005	42,000	260	0.005	0.005	42,000	240	0.005	0.005
	2	38,000	230	0.005	0.005	38,000	230	0.005	0.005	38,000	210	0.005	0.005
	2.5	32,000	170	0.004	0.005	32,000	170	0.005	0.004	32,000	160	0.004	0.005
	3	32,000	150	0.004	0.005	32,000	150	0.005	0.004	32,000	140	0.004	0.005
0.15	0.6	50,000	600	0.005	0.01	50,000	600	0.005	0.01	50,000	570	0.005	0.01
	1	50,000	600	0.005	0.01	50,000	600	0.005	0.01	50,000	570	0.005	0.01
	1.25	50,000	600	0.005	0.01	50,000	600	0.005	0.01	50,000	570	0.005	0.01
	1.5	50,000	600	0.005	0.01	50,000	600	0.005	0.01	50,000	570	0.005	0.01
	1.75	47,000	510	0.005	0.01	47,000	510	0.005	0.01	47,000	480	0.005	0.01
	2	45,000	480	0.005	0.005	45,000	480	0.005	0.005	45,000	450	0.005	0.005
	2.25	45,000	400	0.005	0.005	45,000	400	0.005	0.005	45,000	380	0.005	0.005
	2.5	40,000	300	0.005	0.005	40,000	300	0.005	0.005	40,000	280	0.005	0.005
	3	38,000	250	0.005	0.005	38,000	250	0.005	0.005	38,000	230	0.005	0.005
	3.5	34,000	200	0.004	0.005	34,000	200	0.004	0.005	34,000	190	0.005	0.004
	4	32,000	150	0.004	0.005	32,000	150	0.004	0.005	32,000	140	0.005	0.004
	4.5	32,000	130	0.004	0.005	32,000	130	0.004	0.005	32,000	120	0.005	0.004
	5	29,000	100	0.004	0.005	29,000	100	0.004	0.005	29,000	95	0.005	0.004
0.2	0.8	50,000	900	0.01	0.02	50,000	900	0.01	0.02	50,000	850	0.01	0.02
	1	50,000	900	0.01	0.02	50,000	900	0.01	0.02	50,000	850	0.01	0.02
	1.5	50,000	800	0.01	0.02	50,000	800	0.01	0.02	50,000	760	0.01	0.02
	2	50,000	700	0.01	0.02	50,000	700	0.01	0.02	50,000	660	0.01	0.02
	2.5	45,000	550	0.008	0.015	45,000	550	0.008	0.015	45,000	520	0.008	0.015
	3	43,000	500	0.005	0.01	43,000	500	0.005	0.01	43,000	470	0.005	0.01
	3.5	40,000	420	0.005	0.01	40,000	420	0.005	0.01	40,000	400	0.005	0.01
	4	36,000	370	0.005	0.005	36,000	370	0.005	0.005	36,000	350	0.005	0.005
	4.5	32,000	290	0.004	0.005	32,000	290	0.004	0.005	32,000	270	0.004	0.005
	5	32,000	280	0.004	0.005	32,000	280	0.004	0.005	32,000	260	0.004	0.005
	5.5	30,000	230	0.004	0.005	30,000	230	0.004	0.005	30,000	210	0.004	0.005
	6	30,000	200	0.004	0.005	30,000	200	0.004	0.005	30,000	190	0.004	0.005
0.25	1	50,000	1,100	0.015	0.03	50,000	1,100	0.015	0.03	50,000	1,050	0.015	0.03
	1.5	50,000	1,100	0.015	0.03	50,000	1,100	0.015	0.03	50,000	1,050	0.015	0.03
	2	50,000	1,000	0.015	0.03	50,000	1,000	0.015	0.03	50,000	950	0.015	0.03
	2.5	50,000	1,000	0.015	0.03	50,000	1,000	0.015	0.03	50,000	950	0.015	0.03
	3	48,000	900	0.01	0.02	48,000	900	0.01	0.02	48,000	850	0.01	0.02
	3.5	45,000	700	0.01	0.02	45,000	700	0.01	0.02	45,000	650	0.01	0.02
	4	43,000	600	0.01	0.01	43,000	600	0.01	0.01	43,000	570	0.01	0.01
	4.5	38,000	500	0.01	0.01	38,000	500	0.01	0.01	38,000	470	0.01	0.01
	5	30,000	400	0.005	0.01	30,000	400	0.005	0.01	30,000	380	0.005	0.01
	5.5	28,000	300	0.004	0.005	28,000	300	0.004	0.005	28,000	280	0.004	0.005
	6	26,000	250	0.004	0.005	26,000	250	0.004	0.005	26,000	230	0.004	0.005
	7	24,000	200	0.004	0.005	24,000	200	0.004	0.005	24,000	190	0.004	0.005
	8	22,000	160	0.004	0.005	22,000	160	0.004	0.005	22,000	150	0.004	0.005
	9	20,000	120	0.004	0.005	20,000	120	0.004	0.005	20,000	110	0.004	0.005
	10	20,000	100	0.004	0.005	20,000	100	0.004	0.005	20,000	95	0.004	0.005
0.3	1.2	50,000	1,350	0.03	0.05	50,000	1,350	0.03	0.05	50,000	1,200	0.03	0.05
	2	50,000	1,300	0.03	0.05	50,000	1,300	0.03	0.05	50,000	1,200	0.03	0.05

切深量 Depth of Cut



1. 请使用刚性较高的机床和刀柄。
2. 推荐使用MQL(油雾冷却)或气冷加工炭素钢淬火钢。
3. 请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 上表为等高线加工等负荷较少可稳定加工状态下的标准。实际加工时，请根据实际情况参照上表制定切削条件。
5. 根据加工精度、加工形状、加工刀路适当调整加工条件。
6. φ0.5以下或L/D大于10时、微小的负荷增大也会导致折损、根据切削状况适当调节切削条件。
7. 转速不足时请根据上表同比下降转速和进给速度。

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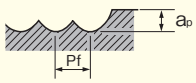
不锈钢·调质钢(38～45HRC)·预硬钢 Stainless Steel· Hardened Steel· Prehardened Steel SUS304、SKD、NAK80、HPM50				调质钢 Hardened Steel							
				45～55HRC				55～60HRC			
回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	a_p	Pf	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	a_p	Pf	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	a_p	Pf
50,000	70	0.003	0.003	50,000	60	0.003	0.003	—	—	—	—
50,000	50	0.003	0.003	50,000	40	0.003	0.003	—	—	—	—
50,000	380	0.005	0.005	50,000	260	0.005	0.005	50,000	200	0.004	0.005
50,000	340	0.005	0.005	50,000	230	0.005	0.005	50,000	180	0.004	0.005
50,000	340	0.005	0.005	50,000	230	0.005	0.005	50,000	180	0.004	0.005
47,000	300	0.005	0.005	47,000	210	0.005	0.005	43,000	150	0.004	0.005
45,000	280	0.005	0.005	45,000	190	0.005	0.005	41,000	130	0.004	0.005
42,000	240	0.005	0.005	42,000	170	0.005	0.005	38,000	120	0.004	0.005
38,000	210	0.005	0.005	37,000	140	0.005	0.005	33,000	100	0.004	0.005
32,000	160	0.004	0.005	31,000	100	0.004	0.005	31,000	80	0.004	0.005
32,000	140	0.004	0.005	31,000	90	0.004	0.005	31,000	70	0.004	0.005
50,000	570	0.005	0.01	50,000	390	0.005	0.01	50,000	300	0.005	0.01
50,000	570	0.005	0.01	50,000	390	0.005	0.01	50,000	310	0.005	0.01
50,000	570	0.005	0.01	50,000	380	0.005	0.01	50,000	300	0.005	0.01
50,000	570	0.005	0.01	50,000	370	0.005	0.01	50,000	290	0.005	0.01
47,000	480	0.005	0.01	47,000	310	0.005	0.01	43,000	220	0.005	0.01
45,000	450	0.005	0.005	45,000	290	0.005	0.005	41,000	210	0.004	0.005
45,000	380	0.005	0.005	45,000	250	0.005	0.005	41,000	180	0.004	0.005
40,000	280	0.005	0.005	40,000	190	0.005	0.005	36,000	130	0.004	0.005
38,000	230	0.005	0.005	37,000	150	0.005	0.005	33,000	100	0.004	0.005
34,000	190	0.004	0.005	33,000	120	0.004	0.005	33,000	95	0.004	0.005
32,000	140	0.004	0.005	31,000	90	0.004	0.005	31,000	70	0.004	0.005
32,000	120	0.004	0.005	31,000	80	0.004	0.005	31,000	60	0.004	0.005
29,000	95	0.004	0.005	28,000	60	0.004	0.005	28,000	50	0.004	0.005
50,000	850	0.01	0.02	50,000	590	0.01	0.02	50,000	470	0.008	0.015
50,000	850	0.01	0.02	50,000	550	0.01	0.02	50,000	440	0.008	0.015
50,000	760	0.01	0.02	50,000	520	0.01	0.02	50,000	410	0.008	0.015
50,000	660	0.01	0.02	50,000	460	0.01	0.02	45,000	330	0.008	0.015
45,000	520	0.008	0.015	45,000	360	0.008	0.015	41,000	260	0.008	0.015
43,000	470	0.005	0.01	43,000	320	0.005	0.01	38,000	220	0.005	0.01
40,000	400	0.005	0.01	40,000	280	0.005	0.01	36,000	200	0.005	0.01
36,000	350	0.005	0.005	35,000	230	0.005	0.005	31,000	160	0.005	0.005
32,000	270	0.004	0.005	31,000	180	0.004	0.005	28,000	130	0.004	0.005
32,000	260	0.004	0.005	31,000	170	0.004	0.005	28,000	120	0.004	0.005
30,000	210	0.004	0.005	29,000	140	0.004	0.005	26,000	100	0.004	0.005
30,000	190	0.004	0.005	29,000	120	0.004	0.005	26,000	100	0.004	0.005
50,000	1,050	0.015	0.03	50,000	730	0.015	0.03	50,000	580	0.01	0.02
50,000	1,050	0.015	0.03	50,000	700	0.015	0.03	50,000	560	0.01	0.02
50,000	950	0.015	0.03	50,000	650	0.015	0.03	50,000	520	0.01	0.02
50,000	950	0.015	0.03	50,000	600	0.015	0.03	45,000	430	0.01	0.02
48,000	850	0.01	0.02	48,000	550	0.01	0.02	43,000	390	0.01	0.02
45,000	650	0.01	0.02	45,000	450	0.01	0.02	40,000	320	0.01	0.02
43,000	570	0.01	0.01	43,000	390	0.01	0.01	38,000	270	0.01	0.01
38,000	470	0.01	0.01	38,000	320	0.01	0.01	34,000	220	0.01	0.01
30,000	380	0.005	0.01	29,000	250	0.005	0.01	26,000	170	0.005	0.01
28,000	280	0.004	0.005	27,000	180	0.004	0.005	24,000	120	0.004	0.005
26,000	230	0.004	0.005	25,000	150	0.004	0.005	22,000	100	0.004	0.005
24,000	190	0.004	0.005	23,000	130	0.004	0.005	20,000	100	0.004	0.005
22,000	150	0.004	0.005	21,000	110	0.004	0.005	20,000	100	0.004	0.005
20,000	110	0.004	0.005	21,000	100	0.004	0.005	20,000	90	0.004	0.005
20,000	95	0.004	0.005	21,000	100	0.004	0.005	20,000	90	0.004	0.005
50,000	1,200	0.03	0.05	50,000	840	0.03	0.05	50,000	670	0.01	0.02
50,000	1,200	0.03	0.05	50,000	820	0.03	0.05	50,000	650	0.01	0.02



1.Use a rigid and precise machine and holder.
2.When machining carbon steels or hardened steels, using MQL (Minimum Quantity Lubrication / oil mist coolant) or air blow is recommended.
3.Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4.The above cutting conditions are for contouring operation with low-load and stable condition. Refer to the table above to set the milling conditions in accordance with the actual situation.
5.Please adjust conditions based on machining accuracy, machining shape and machining path.
6.When using a tool with a diameter of ϕ 0.5 (R0.25) or less, or L/D (aspect ratio) is greater than 10, high loads can cause tool breakage.
Therefore, adjust the cutting conditions based on the machining situation.
7.When RPM are insufficient, please reduce the RPM and feed rates at same ratio as listed above.

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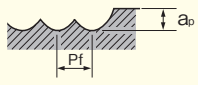
切削条件表 Cutting Conditions

WXS-LN-EBD 标准切削 Regular Milling

FROM 接一页

加工材料 Work Material		普通结构用钢・炭素钢・铸铁 Mild Steel・Carbon Steel・Cast Iron SS400、S55C、FC250 (～750N/mm²)				合金钢・工具钢 Alloy Steel・Tool Steel SCM、SKT、SKS、SKD (～30HRC)				调质钢(30～38HRC)・预硬钢 Hardened Steel・Prehardened Steel SKT、SKD、NAK55、HPM1			
R	颈长 ℓ2(mm)	回转速度 Speed(min⁻¹)	进给速度 Feed(mm/min)	ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	Pf
0.3	2.5	50,000	1,200	0.03	0.05	50,000	1,200	0.03	0.05	50,000	1,100	0.03	0.05
	3	50,000	1,200	0.02	0.03	50,000	1,200	0.02	0.03	50,000	1,100	0.02	0.03
	3.5	45,000	1,000	0.02	0.03	45,000	1,000	0.02	0.03	45,000	950	0.02	0.03
	4	40,000	900	0.01	0.02	40,000	900	0.01	0.02	40,000	850	0.01	0.02
	4.5	34,000	780	0.01	0.02	34,000	780	0.01	0.02	34,000	740	0.01	0.02
	5	30,000	680	0.01	0.02	30,000	680	0.01	0.02	30,000	640	0.01	0.02
	5.5	28,000	650	0.01	0.02	28,000	650	0.01	0.02	28,000	610	0.01	0.02
	6	26,000	600	0.01	0.02	26,000	600	0.01	0.02	26,000	570	0.01	0.02
	6.5	24,000	550	0.01	0.01	24,000	550	0.01	0.01	24,000	520	0.01	0.01
	7	23,000	450	0.01	0.01	23,000	450	0.01	0.01	23,000	420	0.01	0.01
	7.5	23,000	400	0.01	0.01	23,000	400	0.01	0.01	23,000	380	0.01	0.01
	8	20,000	320	0.005	0.01	20,000	320	0.005	0.01	20,000	300	0.005	0.01
	8.5	20,000	300	0.005	0.01	20,000	300	0.005	0.01	20,000	280	0.005	0.01
	9	20,000	280	0.005	0.01	20,000	280	0.005	0.01	20,000	260	0.005	0.01
	9.5	20,000	240	0.005	0.008	20,000	240	0.005	0.008	20,000	220	0.005	0.008
	10	20,000	200	0.005	0.008	20,000	200	0.005	0.008	20,000	190	0.005	0.008
	11	18,000	150	0.005	0.008	18,000	150	0.005	0.008	18,000	140	0.005	0.008
	12	18,000	120	0.005	0.005	18,000	120	0.005	0.005	18,000	110	0.005	0.005
0.4	2	50,000	2,000	0.04	0.08	50,000	2,000	0.04	0.08	50,000	1,900	0.04	0.08
	3	48,000	1,600	0.04	0.08	48,000	1,600	0.04	0.08	48,000	1,500	0.04	0.08
	4	40,000	1,200	0.04	0.08	40,000	1,200	0.04	0.08	40,000	1,100	0.04	0.08
	5	34,000	950	0.03	0.05	34,000	950	0.03	0.05	34,000	900	0.03	0.05
	6	30,000	800	0.03	0.05	30,000	800	0.03	0.05	30,000	760	0.03	0.05
	7	25,000	600	0.01	0.02	25,000	600	0.01	0.02	25,000	570	0.01	0.02
	8	23,000	450	0.005	0.01	23,000	450	0.005	0.01	23,000	420	0.005	0.01
	10	18,000	320	0.005	0.008	18,000	320	0.005	0.008	18,000	300	0.005	0.008
	12	17,000	250	0.005	0.005	17,000	250	0.005	0.005	17,000	230	0.005	0.005
0.5	2	50,000	3,700	0.05	0.1	50,000	3,700	0.05	0.1	50,000	3,700	0.05	0.1
	3	45,000	3,200	0.05	0.1	45,000	3,200	0.05	0.1	45,000	3,000	0.05	0.1
	4	40,000	3,000	0.05	0.1	40,000	3,000	0.05	0.1	40,000	2,850	0.05	0.1
	5	36,000	2,300	0.05	0.1	36,000	2,300	0.05	0.1	36,000	2,100	0.05	0.1
	6	30,000	2,000	0.05	0.1	30,000	2,000	0.05	0.1	30,000	1,900	0.05	0.1
	7	27,000	1,700	0.05	0.1	27,000	1,700	0.05	0.1	27,000	1,600	0.05	0.1
	8	26,000	1,600	0.05	0.1	26,000	1,600	0.05	0.1	26,000	1,500	0.05	0.1
	9	24,000	1,200	0.03	0.05	24,000	1,200	0.03	0.05	24,000	1,100	0.03	0.05
	10	22,000	1,100	0.01	0.02	22,000	1,100	0.01	0.02	22,000	1,000	0.01	0.02
	12	20,000	800	0.01	0.01	20,000	800	0.01	0.01	20,000	760	0.01	0.01
	14	18,000	600	0.005	0.01	18,000	600	0.005	0.01	18,000	570	0.005	0.01
	16	16,000	420	0.005	0.01	16,000	420	0.005	0.01	16,000	400	0.005	0.01
	18	14,000	320	0.005	0.005	14,000	320	0.005	0.005	14,000	300	0.005	0.005
	20	13,000	300	0.005	0.005	13,000	300	0.005	0.005	13,000	285	0.005	0.005
	22	12,000	200	0.005	0.005	12,000	200	0.005	0.005	12,000	190	0.005	0.005
0.6	2.4	50,000	3,800	0.06	0.12	50,000	3,800	0.06	0.12	50,000	3,600	0.06	0.12
	4	40,000	3,000	0.06	0.12	40,000	3,000	0.06	0.12	40,000	2,850	0.06	0.12
	6	32,000	2,100	0.06	0.12	32,000	2,100	0.06	0.12	32,000	2,000	0.06	0.12
	8	25,000	1,700	0.06	0.12	25,000	1,700	0.06	0.12	25,000	1,600	0.06	0.12
	10	20,000	1,200	0.05	0.1	20,000	1,200	0.05	0.1	20,000	1,100	0.05	0.1
	12	19,000	900	0.03	0.05	19,000	900	0.03	0.05	19,000	850	0.03	0.05
	14	18,000	650	0.03	0.05	18,000	650	0.03	0.05	18,000	610	0.03	0.05
	16	16,000	450	0.02	0.05	16,000	450	0.02	0.05	16,000	420	0.02	0.05
	18	16,000	350	0.005	0.005	16,000	350	0.005	0.005	16,000	330	0.005	0.005
	20	14,000	320	0.005	0.005	14,000	320	0.005	0.005	14,000	300	0.005	0.005
0.75	3	50,000	4,800	0.075	0.15	50,000	4,800	0.075	0.15	50,000	4,800	0.075	0.15

切深量 Depth of Cut



1.请使用刚性较高的机床和刀柄。
2.推荐使用MQL(油雾冷却)或气冷加工炭素钢淬火钢。
3.请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4.上表为等高线加工等负荷较少可稳定加工状态下的标准。实际加工时，请根据实际情况参照上表制定切削条件。
5.根据加工精度、加工形状、加工刀路适当调整加工条件。
6.φ0.5以下或L/D大于10时、微小的负荷增大也会导致折损、根据切削状况适当调节切削条件。
7.转速不足时请根据上表同比下降转速和进给速度。

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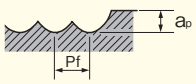
不锈钢·调质钢(38～45HRC)·预硬钢 Stainless Steel· Hardened Steel· Prehardened Steel SUS304、SKD、NAK80、HPM50				调质钢 Hardened Steel							
				45～55HRC				55～60HRC			
回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	a_p	Pf	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	a_p	Pf	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	a_p	Pf
50,000	1,100	0.03	0.05	50,000	770	0.03	0.05	50,000	610	0.01	0.02
50,000	1,100	0.02	0.03	50,000	750	0.02	0.03	45,000	540	0.01	0.02
45,000	950	0.02	0.03	45,000	660	0.02	0.03	41,000	480	0.01	0.02
40,000	850	0.01	0.02	40,000	590	0.01	0.02	36,000	420	0.01	0.02
34,000	740	0.01	0.02	34,000	510	0.01	0.02	31,000	370	0.01	0.02
30,000	640	0.01	0.02	30,000	440	0.01	0.02	27,000	310	0.01	0.02
28,000	610	0.01	0.02	28,000	420	0.01	0.02	25,000	300	0.01	0.02
26,000	570	0.01	0.02	25,000	380	0.01	0.02	22,000	260	0.01	0.02
24,000	520	0.01	0.01	23,000	340	0.01	0.01	20,000	230	0.01	0.01
23,000	420	0.01	0.01	22,000	280	0.01	0.01	19,000	190	0.01	0.01
23,000	380	0.01	0.01	22,000	250	0.01	0.01	19,000	170	0.01	0.01
20,000	300	0.005	0.01	19,000	200	0.005	0.01	17,000	140	0.005	0.01
20,000	280	0.005	0.01	19,000	180	0.005	0.01	17,000	130	0.005	0.01
20,000	260	0.005	0.01	19,000	170	0.005	0.01	17,000	120	0.005	0.01
20,000	220	0.005	0.008	19,000	140	0.005	0.008	17,000	110	0.005	0.008
20,000	190	0.005	0.008	19,000	120	0.005	0.008	17,000	100	0.005	0.008
18,000	140	0.005	0.008	17,000	90	0.005	0.008	17,000	80	0.005	0.008
18,000	110	0.005	0.005	17,000	80	0.005	0.005	17,000	70	0.004	0.005
50,000	1,900	0.04	0.08	50,000	1,600	0.04	0.08	50,000	1,200	0.015	0.03
48,000	1,500	0.04	0.08	48,000	1,100	0.04	0.08	45,000	820	0.015	0.03
40,000	1,100	0.04	0.08	40,000	1,000	0.04	0.08	38,000	760	0.015	0.03
34,000	900	0.03	0.05	34,000	800	0.03	0.05	31,000	580	0.015	0.03
30,000	760	0.03	0.05	30,000	650	0.03	0.05	27,000	460	0.015	0.03
25,000	570	0.01	0.02	25,000	450	0.01	0.02	22,000	310	0.01	0.02
23,000	420	0.005	0.01	23,000	300	0.005	0.01	20,000	200	0.005	0.01
18,000	300	0.005	0.008	17,000	200	0.005	0.008	17,000	170	0.005	0.008
17,000	230	0.005	0.005	16,000	160	0.005	0.005	16,000	110	0.005	0.005
50,000	3,700	0.05	0.1	50,000	3,700	0.05	0.1	50,000	3,000	0.02	0.05
45,000	3,000	0.05	0.1	45,000	2,400	0.05	0.1	45,000	1,900	0.02	0.05
40,000	2,850	0.05	0.1	40,000	2,200	0.05	0.1	40,000	1,700	0.02	0.05
36,000	2,100	0.05	0.1	36,000	1,600	0.05	0.1	36,000	1,200	0.02	0.05
30,000	1,900	0.05	0.1	30,000	1,500	0.05	0.1	30,000	1,200	0.02	0.05
27,000	1,600	0.05	0.1	27,000	1,300	0.05	0.1	27,000	1,000	0.02	0.05
26,000	1,500	0.05	0.1	26,000	1,200	0.05	0.1	26,000	960	0.02	0.05
24,000	1,100	0.03	0.05	24,000	880	0.03	0.05	24,000	700	0.02	0.05
22,000	1,000	0.01	0.02	21,000	760	0.01	0.02	18,000	520	0.01	0.02
20,000	760	0.01	0.01	19,000	570	0.01	0.01	17,000	400	0.01	0.01
18,000	570	0.005	0.01	17,000	430	0.005	0.01	15,000	300	0.005	0.01
16,000	400	0.005	0.01	15,000	300	0.005	0.01	13,000	200	0.005	0.01
14,000	300	0.005	0.005	13,000	220	0.005	0.005	12,000	160	0.004	0.005
13,000	285	0.005	0.005	12,000	180	0.005	0.005	12,000	140	0.004	0.005
12,000	190	0.005	0.005	12,000	110	0.005	0.005	12,000	100	0.004	0.005
50,000	3,600	0.06	0.12	50,000	3,600	0.06	0.12	50,000	3,000	0.02	0.05
40,000	2,850	0.06	0.12	40,000	2,300	0.06	0.12	38,000	1,750	0.02	0.05
32,000	2,000	0.06	0.12	32,000	1,600	0.06	0.12	30,000	1,200	0.02	0.05
25,000	1,600	0.06	0.12	25,000	1,200	0.06	0.12	25,000	960	0.02	0.05
20,000	1,100	0.05	0.1	18,000	800	0.05	0.1	16,000	560	0.02	0.05
17,000	850	0.03	0.05	16,000	640	0.03	0.05	14,000	440	0.02	0.05
16,000	610	0.03	0.05	15,000	450	0.03	0.05	13,000	310	0.02	0.05
15,000	420	0.02	0.05	14,000	300	0.02	0.05	12,000	200	0.02	0.05
15,000	330	0.005	0.005	14,000	200	0.005	0.005	12,000	130	0.004	0.005
13,000	300	0.005	0.005	12,000	180	0.005	0.005	10,000	120	0.004	0.005
50,000	4,800	0.075	0.15	50,000	4,800	0.075	0.15	50,000	3,900	0.03	0.06



1.Use a rigid and precise machine and holder.
2.When machining carbon steels or hardened steels, using MQL (Minimum Quantity Lubrication / oil mist coolant) or air blow is recommended.
3.Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4.The above cutting conditions are for contouring operation with low-load and stable condition. Refer to the table above to set the milling conditions in accordance with the actual situation.
5.Please adjust conditions based on machining accuracy, machining shape and machining path.
6.When using a tool with a diameter of ϕ 0.5 (R0.25) or less, or L/D (aspect ratio) is greater than 10, high loads can cause tool breakage.
Therefore, adjust the cutting conditions based on the machining situation.
7.When RPM are insufficient, please reduce the RPM and feed rates at same ratio as listed above.

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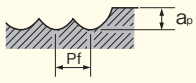
切削条件表 Cutting Conditions

WXS-LN-EBD 标准切削 Regular Milling

FROM 接一页

加工材料 Work Material		普通结构用钢・炭素钢・铸铁 Mild Steel・Carbon Steel・Cast Iron SS400、S55C、FC250 (～750N/mm²)				合金钢・工具钢 Alloy Steel・Tool Steel SCM、SKT、SKS、SKD (～30HRC)				调质钢(30～38HRC)・预硬钢 Hardened Steel・Prehardened Steel SKT、SKD、NAK55、HPM1			
R	颈长 ℓ2(mm)	回转速度 Speed(min⁻¹)	进给速度 Feed(mm/min)	ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	Pf
0.75	4	40,000	3,900	0.075	0.15	40,000	3,900	0.075	0.15	40,000	3,700	0.075	0.15
	6	30,000	2,900	0.075	0.15	30,000	2,900	0.075	0.15	30,000	2,700	0.075	0.15
	8	24,000	2,300	0.075	0.15	24,000	2,300	0.075	0.15	24,000	2,100	0.075	0.15
	10	24,000	2,000	0.075	0.15	24,000	2,000	0.075	0.15	24,000	1,900	0.075	0.15
	12	21,000	1,400	0.075	0.1	21,000	1,400	0.075	0.1	21,000	1,300	0.075	0.1
	14	18,000	1,200	0.05	0.1	18,000	1,200	0.05	0.1	18,000	1,100	0.05	0.1
	16	16,000	800	0.05	0.1	16,000	800	0.05	0.1	16,000	760	0.05	0.1
	18	14,000	500	0.03	0.05	14,000	500	0.03	0.05	14,000	470	0.03	0.05
	20	13,000	360	0.02	0.05	13,000	360	0.02	0.05	13,000	340	0.02	0.05
	22	13,000	320	0.02	0.05	13,000	320	0.02	0.05	13,000	300	0.02	0.05
	30	12,000	200	0.005	0.01	12,000	200	0.005	0.01	12,000	190	0.005	0.01
0.8	8	24,000	3,000	0.08	0.16	24,000	3,000	0.08	0.16	24,000	2,800	0.08	0.16
	12	21,000	1,800	0.05	0.1	21,000	1,800	0.05	0.1	21,000	1,700	0.05	0.1
	16	16,000	800	0.05	0.1	16,000	800	0.05	0.1	16,000	760	0.05	0.1
	20	13,000	380	0.03	0.05	13,000	380	0.03	0.05	13,000	360	0.03	0.05
1	4	50,000	5,600	0.1	0.2	50,000	5,600	0.1	0.2	50,000	5,600	0.1	0.2
	6	36,000	3,000	0.1	0.2	36,000	3,000	0.1	0.2	36,000	2,800	0.1	0.2
	8	25,000	2,600	0.1	0.2	25,000	2,600	0.1	0.2	25,000	2,400	0.1	0.2
	10	20,000	2,400	0.1	0.2	20,000	2,400	0.1	0.2	20,000	2,200	0.1	0.2
	12	16,000	2,000	0.1	0.2	16,000	2,000	0.1	0.2	16,000	1,900	0.1	0.2
	14	15,000	1,800	0.1	0.2	15,000	1,800	0.1	0.2	15,000	1,700	0.1	0.2
	16	14,000	1,700	0.1	0.1	14,000	1,700	0.1	0.1	14,000	1,600	0.1	0.1
	18	13,000	1,600	0.1	0.1	13,000	1,600	0.1	0.1	13,000	1,500	0.1	0.1
	20	12,000	1,200	0.05	0.1	12,000	1,200	0.05	0.1	12,000	1,100	0.05	0.1
	22	10,000	1,000	0.05	0.1	10,000	1,000	0.05	0.1	10,000	950	0.05	0.1
	25	10,000	800	0.03	0.05	10,000	800	0.03	0.05	10,000	760	0.03	0.05
	30	10,000	500	0.02	0.05	10,000	500	0.02	0.05	10,000	470	0.02	0.05
	35	8,000	250	0.02	0.03	8,000	250	0.02	0.03	8,000	230	0.02	0.03
	40	7,000	150	0.02	0.03	7,000	150	0.02	0.03	7,000	140	0.02	0.03
1.25	10	20,000	3,300	0.1	0.2	20,000	3,300	0.1	0.2	20,000	3,100	0.1	0.2
	15	17,000	2,800	0.1	0.2	17,000	2,800	0.1	0.2	17,000	2,600	0.1	0.2
	20	15,000	1,800	0.1	0.2	15,000	1,800	0.1	0.2	15,000	1,700	0.1	0.2
	25	12,000	1,000	0.03	0.05	12,000	1,000	0.03	0.05	12,000	950	0.03	0.05
	30	10,000	800	0.03	0.05	10,000	800	0.03	0.05	10,000	760	0.03	0.05
	35	8,000	500	0.02	0.03	8,000	500	0.02	0.03	8,000	470	0.02	0.03
1.5	6	41,500	6,200	0.15	0.3	41,500	6,200	0.15	0.3	41,500	6,200	0.15	0.3
	8	30,000	4,500	0.15	0.3	30,000	4,500	0.15	0.3	30,000	4,200	0.15	0.3
	10	25,000	3,800	0.15	0.3	25,000	3,800	0.15	0.3	25,000	3,600	0.15	0.3
	12	20,000	3,000	0.15	0.3	20,000	3,000	0.15	0.3	20,000	2,800	0.15	0.3
	14	18,000	2,700	0.15	0.3	18,000	2,700	0.15	0.3	18,000	2,500	0.15	0.3
	15	16,000	2,400	0.1	0.3	16,000	2,400	0.1	0.3	16,000	2,200	0.1	0.3
	16	16,000	2,000	0.1	0.2	16,000	2,000	0.1	0.2	16,000	1,900	0.1	0.2
	20	14,000	1,800	0.1	0.2	14,000	1,800	0.1	0.2	14,000	1,700	0.1	0.2
	25	12,000	1,200	0.05	0.1	12,000	1,200	0.05	0.1	12,000	1,100	0.05	0.1
	30	10,000	800	0.03	0.05	10,000	800	0.03	0.05	10,000	760	0.03	0.05
	35	8,000	600	0.02	0.05	8,000	600	0.02	0.05	8,000	570	0.02	0.05
	40	7,000	500	0.02	0.03	7,000	500	0.02	0.03	7,000	470	0.02	0.03
1.75	15	18,000	3,000	0.1	0.3	18,000	3,000	0.1	0.3	18,000	2,800	0.1	0.3
	20	16,000	2,700	0.1	0.2	16,000	2,700	0.1	0.2	16,000	2,500	0.1	0.2
	25	12,000	2,000	0.1	0.1	12,000	2,000	0.1	0.1	12,000	1,900	0.1	0.1
	30	10,000	1,600	0.05	0.1	10,000	1,600	0.05	0.1	10,000	1,500	0.05	0.1
	35	10,000	1,000	0.05	0.05	10,000	1,000	0.05	0.05	10,000	950	0.05	0.05
	40	8,000	800	0.05	0.05	8,000	800	0.05	0.05	8,000	760	0.05	0.05
切深量 Depth of Cut													

1. 请使用刚性较高的机床和刀柄。
2. 推荐使用MQL(油雾冷却)或气冷加工炭素钢淬火钢。
3. 请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 上表为等高线加工等负荷较少可稳定加工状态下的标准。实际加工时，请根据实际情况参照上表制定切削条件。
5. 根据加工精度、加工形状、加工刀路适当调整加工条件。
6. φ0.5以下或L/D大于10时、微小的负荷增大也会导致折损、根据切削状况适当调节切削条件。
7. 转速不足时请根据上表同比下降转速和进给速度。

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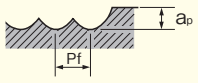
不锈钢·调质钢(38～45HRC)·预硬钢 Stainless Steel· Hardened Steel· Prehardened Steel SUS304、SKD、NAK80、HPM50				调质钢 Hardened Steel							
				45～55HRC				55～60HRC			
回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	a_p	Pf	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	a_p	Pf	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	a_p	Pf
40,000	3,700	0.075	0.15	40,000	2,900	0.075	0.15	38,000	2,200	0.03	0.06
30,000	2,700	0.075	0.15	30,000	2,200	0.075	0.15	27,000	1,500	0.03	0.06
24,000	2,100	0.075	0.15	24,000	1,700	0.075	0.15	21,000	1,100	0.03	0.06
24,000	1,900	0.075	0.15	24,000	1,500	0.075	0.15	21,000	1,000	0.03	0.06
21,000	1,300	0.075	0.1	21,000	1,000	0.075	0.1	18,000	680	0.03	0.06
17,000	1,100	0.05	0.1	17,000	900	0.05	0.1	15,000	630	0.03	0.06
14,000	760	0.05	0.1	13,000	560	0.05	0.1	10,000	340	0.03	0.05
13,000	470	0.03	0.05	12,000	350	0.03	0.05	10,000	230	0.03	0.05
12,000	340	0.02	0.05	11,000	240	0.02	0.05	9,000	150	0.02	0.05
12,000	300	0.02	0.05	11,000	220	0.02	0.05	9,000	140	0.02	0.05
11,000	190	0.005	0.01	10,000	120	0.005	0.01	9,000	90	0.005	0.01
24,000	2,800	0.08	0.16	23,000	2,100	0.08	0.16	20,000	1,400	0.03	0.08
21,000	1,700	0.05	0.1	20,000	1,380	0.05	0.1	18,000	990	0.03	0.08
14,000	760	0.05	0.1	13,000	600	0.05	0.1	11,000	400	0.03	0.08
12,000	360	0.03	0.05	11,000	280	0.03	0.05	10,000	200	0.03	0.05
50,000	5,600	0.1	0.2	47,000	5,300	0.1	0.2	40,000	3,600	0.05	0.1
36,000	2,800	0.1	0.2	35,000	2,700	0.1	0.2	30,000	1,800	0.05	0.1
25,000	2,400	0.1	0.2	24,000	2,300	0.1	0.2	20,000	1,500	0.05	0.1
20,000	2,200	0.1	0.2	19,000	2,000	0.1	0.2	17,000	1,400	0.05	0.1
16,000	1,900	0.1	0.2	15,000	1,700	0.1	0.2	13,000	1,100	0.05	0.1
15,000	1,700	0.1	0.2	14,000	1,500	0.1	0.2	12,000	1,000	0.05	0.1
14,000	1,600	0.1	0.1	13,000	1,400	0.1	0.1	11,000	950	0.05	0.1
13,000	1,500	0.1	0.1	12,000	1,200	0.1	0.1	10,000	800	0.05	0.1
11,000	1,100	0.05	0.1	10,000	890	0.05	0.1	9,000	640	0.05	0.1
9,000	950	0.05	0.1	9,000	860	0.05	0.1	7,500	570	0.05	0.1
9,000	760	0.03	0.05	9,000	680	0.03	0.05	7,500	450	0.03	0.05
9,000	470	0.02	0.05	9,000	360	0.02	0.05	7,500	240	0.02	0.05
7,500	230	0.02	0.03	7,000	130	0.02	0.03	6,000	100	0.02	0.03
6,000	140	0.02	0.03	6,000	100	0.02	0.03	6,000	90	0.02	0.03
20,000	3,100	0.1	0.2	19,000	2,900	0.1	0.2	16,000	1,900	0.05	0.1
17,000	2,600	0.1	0.2	16,000	2,400	0.1	0.2	14,000	1,600	0.05	0.1
15,000	1,700	0.1	0.2	14,000	1,600	0.1	0.2	12,000	1,000	0.05	0.1
11,000	950	0.03	0.05	10,000	830	0.03	0.05	9,000	590	0.03	0.05
9,000	760	0.03	0.05	8,000	650	0.03	0.05	7,000	450	0.03	0.05
7,500	470	0.02	0.03	7,000	430	0.02	0.03	6,000	290	0.02	0.03
41,500	6,200	0.15	0.3	32,000	4,800	0.15	0.3	26,500	3,300	0.06	0.15
30,000	4,200	0.15	0.3	25,000	3,500	0.15	0.3	22,000	2,400	0.06	0.15
25,000	3,600	0.15	0.3	20,000	2,800	0.15	0.3	18,000	2,000	0.06	0.15
20,000	2,800	0.15	0.3	18,000	2,500	0.15	0.3	16,000	1,700	0.06	0.15
18,000	2,500	0.15	0.3	15,000	2,000	0.15	0.3	13,000	1,300	0.06	0.15
16,000	2,200	0.1	0.3	13,000	1,800	0.1	0.3	11,000	1,200	0.06	0.15
16,000	1,900	0.1	0.2	13,000	1,500	0.1	0.2	11,000	1,100	0.06	0.15
14,000	1,700	0.1	0.2	11,000	1,600	0.1	0.2	10,000	1,000	0.06	0.15
12,000	1,100	0.05	0.1	9,000	820	0.05	0.1	8,000	580	0.05	0.1
9,000	760	0.03	0.05	7,000	590	0.03	0.05	6,000	400	0.03	0.05
7,500	570	0.02	0.05	6,000	460	0.02	0.05	5,000	300	0.02	0.05
6,500	470	0.02	0.03	5,000	360	0.02	0.03	4,000	230	0.02	0.03
18,000	2,800	0.1	0.3	14,000	2,000	0.1	0.3	12,000	1,300	0.07	0.15
16,000	2,500	0.1	0.2	12,000	1,800	0.1	0.2	10,000	1,200	0.07	0.15
12,000	1,900	0.1	0.1	9,000	1,300	0.1	0.1	8,000	920	0.07	0.15
10,000	1,500	0.05	0.1	8,000	1,100	0.05	0.1	7,000	770	0.05	0.1
9,000	950	0.05	0.05	7,000	700	0.05	0.05	5,000	400	0.05	0.05
7,500	760	0.05	0.05	6,000	580	0.05	0.05	4,000	300	0.05	0.05



1.Use a rigid and precise machine and holder.
2.When machining carbon steels or hardened steels, using MQL (Minimum Quantity Lubrication / oil mist coolant) or air blow is recommended.
3.Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4.The above cutting conditions are for contouring operation with low-load and stable condition. Refer to the table above to set the milling conditions in accordance with the actual situation.
5.Please adjust conditions based on machining accuracy, machining shape and machining path.
6.When using a tool with a diameter of ϕ 0.5 (R0.25) or less, or L/D (aspect ratio) is greater than 10, high loads can cause tool breakage.
Therefore, adjust the cutting conditions based on the machining situation.
7.When RPM are insufficient, please reduce the RPM and feed rates at same ratio as listed above.

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WXS-LN-EBD 标准切削 Regular Milling

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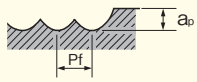
加工材料 Work Material		普通结构用钢・炭素钢・铸铁 Mild Steel・Carbon Steel・Cast Iron SS400、S55C、FC250 (～750N/mm²)				合金钢・工具钢 Alloy Steel・Tool Steel SCM、SKT、SKS、SKD (～30HRC)				调质钢(30～38HRC)・预硬钢 Hardened Steel・Prehardened Steel SKT、SKD、NAK55、HPM1			
R	颈长 ℓ2(mm)	回转速度 Speed(min⁻¹)	进给速度 Feed(mm/min)	ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	Pf	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	ap	Pf
1.75	45	7,000	600	0.03	0.03	7,000	600	0.03	0.03	7,000	570	0.03	0.03
2	8	31,000	5,700	0.2	0.5	31,000	5,700	0.2	0.5	31,000	5,700	0.2	0.5
	10	25,000	4,500	0.2	0.5	25,000	4,500	0.2	0.5	25,000	4,200	0.2	0.5
	12	20,000	3,600	0.2	0.5	20,000	3,600	0.2	0.5	20,000	3,400	0.2	0.5
	15	20,000	3,600	0.2	0.5	20,000	3,600	0.2	0.5	20,000	3,400	0.2	0.5
	16	18,000	3,200	0.2	0.5	18,000	3,200	0.2	0.5	18,000	3,000	0.2	0.5
	20	16,000	2,800	0.2	0.4	16,000	2,800	0.2	0.4	16,000	2,600	0.2	0.4
	25	16,000	2,800	0.1	0.3	16,000	2,800	0.1	0.3	16,000	2,600	0.1	0.3
	30	14,000	2,400	0.1	0.2	14,000	2,400	0.1	0.2	14,000	2,200	0.1	0.2
	35	12,000	1,800	0.1	0.2	12,000	1,800	0.1	0.2	12,000	1,700	0.1	0.2
	40	10,000	1,300	0.05	0.1	10,000	1,300	0.05	0.1	10,000	1,200	0.05	0.1
	45	8,000	1,000	0.05	0.05	8,000	1,000	0.05	0.05	8,000	950	0.05	0.05
	50	7,000	700	0.02	0.05	7,000	700	0.02	0.05	7,000	660	0.02	0.05
2.5	10	25,000	5,400	0.25	0.5	25,000	5,400	0.25	0.5	25,000	5,400	0.25	0.5
	15	20,000	4,200	0.25	0.5	20,000	4,200	0.25	0.5	20,000	3,900	0.25	0.5
	20	16,000	3,500	0.25	0.5	16,000	3,500	0.25	0.5	16,000	3,300	0.25	0.5
	25	15,000	3,200	0.2	0.3	15,000	3,200	0.2	0.3	15,000	3,000	0.2	0.3
	30	14,000	2,500	0.1	0.3	14,000	2,500	0.1	0.3	14,000	2,300	0.1	0.3
	35	12,000	1,600	0.1	0.3	12,000	1,600	0.1	0.3	12,000	1,500	0.1	0.3
	40	10,000	1,200	0.1	0.2	10,000	1,200	0.1	0.2	10,000	1,100	0.1	0.2
	45	9,000	900	0.1	0.1	9,000	900	0.1	0.1	9,000	850	0.1	0.1
	50	8,000	800	0.1	0.1	8,000	800	0.1	0.1	8,000	760	0.1	0.1
3	12	20,000	5,200	0.3	0.5	20,000	5,200	0.3	0.5	20,000	5,200	0.3	0.5
	20	16,000	4,200	0.3	0.5	16,000	4,200	0.3	0.5	16,000	3,900	0.3	0.5
	25	12,000	3,200	0.3	0.5	12,000	3,200	0.3	0.5	12,000	3,000	0.3	0.5
	30	10,000	2,600	0.3	0.5	10,000	2,600	0.3	0.5	10,000	2,400	0.3	0.5
	35	9,000	2,300	0.2	0.4	9,000	2,300	0.2	0.4	9,000	2,100	0.2	0.4
	40	9,000	2,000	0.2	0.3	9,000	2,000	0.2	0.3	9,000	1,900	0.2	0.3
	45	8,000	1,800	0.2	0.3	8,000	1,800	0.2	0.3	8,000	1,700	0.2	0.3
	50	7,000	1,600	0.2	0.3	7,000	1,600	0.2	0.3	7,000	1,500	0.2	0.3
切深量 Depth of Cut													

1. 请使用刚性较高的机床和刀柄。
2. 推荐使用MQL(油雾冷却)或气冷加工炭素钢淬火钢。
3. 请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。
4. 上表为等高线加工等负荷较少可稳定加工状态下的标准。实际加工时，请根据实际情况参照上表制定切削条件。
5. 根据加工精度、加工形状、加工刀路适当调整加工条件。
6. φ0.5以下或L/D大于10时、微小的负荷增大也会导致折损、根据切削状况适当调节切削条件。
7. 转速不足时请根据上表同比下降转速和进给速度。

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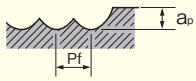
不锈钢·调质钢(38～45HRC)·预硬钢 Stainless Steel· Hardened Steel· Prehardened Steel SUS304、SKD、NAK80、HPM50				调质钢 Hardened Steel							
				45～55HRC				55～60HRC			
回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	a_p	Pf	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	a_p	Pf	回转速度 Speed (min^{-1})	进给速度 Feed (mm/min)	a_p	Pf
6,500	570	0.03	0.03	5,000	420	0.03	0.03	4,000	260	0.03	0.03
31,000	5,700	0.2	0.5	24,000	4,400	0.2	0.5	20,000	3,200	0.08	0.2
25,000	4,200	0.2	0.5	20,000	3,300	0.2	0.5	18,000	2,300	0.08	0.2
20,000	3,400	0.2	0.5	17,000	2,900	0.2	0.5	14,000	1,900	0.08	0.2
20,000	3,400	0.2	0.5	16,000	2,700	0.2	0.5	12,000	1,600	0.08	0.2
18,000	3,000	0.2	0.5	15,000	2,500	0.2	0.5	10,000	1,300	0.08	0.2
16,000	2,600	0.2	0.4	14,000	2,300	0.2	0.4	8,000	1,000	0.08	0.2
16,000	2,600	0.1	0.3	13,000	2,200	0.1	0.3	6,000	810	0.08	0.2
14,000	2,200	0.1	0.2	12,000	1,900	0.1	0.2	5,000	630	0.08	0.2
12,000	1,700	0.1	0.2	9,000	1,200	0.1	0.2	4,000	420	0.08	0.2
9,000	1,200	0.05	0.1	8,000	1,000	0.05	0.1	4,000	400	0.05	0.1
7,500	950	0.05	0.05	7,000	890	0.05	0.05	3,600	360	0.05	0.05
6,500	660	0.02	0.05	6,000	600	0.02	0.05	3,600	280	0.02	0.05
25,000	5,400	0.25	0.5	19,000	4,000	0.25	0.5	16,000	2,800	0.1	0.25
20,000	3,900	0.25	0.5	17,000	3,300	0.25	0.5	13,000	2,000	0.1	0.25
16,000	3,300	0.25	0.5	13,000	2,700	0.25	0.5	8,000	1,300	0.1	0.25
15,000	3,000	0.2	0.3	12,000	2,400	0.2	0.3	6,000	960	0.1	0.25
14,000	2,300	0.1	0.3	11,000	1,800	0.1	0.3	4,000	520	0.1	0.25
12,000	1,500	0.1	0.3	10,000	1,100	0.1	0.3	3,200	280	0.1	0.25
10,000	1,100	0.1	0.2	9,000	990	0.1	0.2	3,000	260	0.1	0.2
9,000	850	0.1	0.1	8,000	660	0.1	0.1	3,000	200	0.1	0.1
7,500	760	0.1	0.1	7,000	610	0.1	0.1	2,800	190	0.1	0.1
20,000	5,200	0.3	0.5	16,000	3,400	0.3	0.5	13,500	2,500	0.1	0.2
16,000	3,900	0.3	0.5	12,000	3,000	0.3	0.5	8,000	1,600	0.1	0.2
12,000	3,000	0.3	0.5	10,000	2,500	0.3	0.5	6,000	1,200	0.1	0.2
10,000	2,400	0.3	0.5	9,000	2,100	0.3	0.5	4,000	740	0.1	0.2
9,000	2,100	0.2	0.4	9,000	2,000	0.2	0.4	3,500	620	0.1	0.2
9,000	1,900	0.2	0.3	9,000	1,800	0.2	0.3	3,000	480	0.1	0.2
8,000	1,700	0.2	0.3	8,000	1,600	0.2	0.3	2,800	440	0.1	0.2
7,000	1,500	0.2	0.3	7,000	1,400	0.2	0.3	2,500	400	0.1	0.2



1.Use a rigid and precise machine and holder.
2.When machining carbon steels or hardened steels, using MQL (Minimum Quantity Lubrication / oil mist coolant) or air blow is recommended.
3.Use an air blow or a suitable cutting fluid with high smoke retardant properties.
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WXS-CPR 标准切削 Regular Milling

外径 Dc	有效勾配角 α°	颈长 ℓ2	切深量 Depth of Cut 轴方向 ap R0.05	R0.1	R0.2	R0.3	R0.5	R1	径方向 ae	加工材料 Work Material: 调质钢·预硬钢 (～45HRC) Hardened Steel Prehardened Steel SKD61·NAK55·NAK80·HPM1 ap=120% ae=120% 回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	调质钢·预硬钢 (45～55HRC) Hardened Steel Prehardened Steel SKD61·STAVAX·HPM38 ap=100% ae=100% 回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	调质钢 (55～65HRC) Hardened Steel ap=60% ae=80% 回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)
0.2	0°	0.5	0.005	—	—	—	—	—	0.06	40,000	560	36,000	460	31,500	380
		1	0.004	—	—	—	—	—	0.06	38,000	530	34,000	435	30,000	355
	1°	1	0.005	—	—	—	—	—	0.06	40,000	560	40,000	510	35,000	420
		2	0.004	—	—	—	—	—	0.054	40,000	505	36,000	415	31,500	340
	3°	1	0.005	—	—	—	—	—	0.06	40,000	560	40,000	510	35,000	420
		2	0.005	—	—	—	—	—	0.06	40,000	560	36,000	460	31,500	380
	5°	1	0.005	—	—	—	—	—	0.06	40,000	560	40,000	510	35,000	420
		2	0.005	—	—	—	—	—	0.06	40,000	560	36,000	460	31,500	380
0.3	0°	1	0.005	—	—	—	—	—	0.09	36,500	720	32,500	545	30,500	475
		2	0.002	—	—	—	—	—	0.061	30,000	510	27,000	385	25,500	340
	1°	2	0.005	—	—	—	—	—	0.09	38,500	720	34,500	545	32,500	480
		3	0.004	—	—	—	—	—	0.081	36,500	645	32,500	490	30,500	430
	3°	2	0.005	—	—	—	—	—	0.09	38,500	765	34,500	580	32,500	510
		3	0.005	—	—	—	—	—	0.09	36,500	720	32,500	545	30,500	475
	5°	2	0.005	—	—	—	—	—	0.09	38,500	765	32,500	580	32,500	510
		3	0.005	—	—	—	—	—	0.09	38,500	720	32,500	545	30,500	475
0.4	0°	1	0.007	—	—	—	—	—	0.12	29,500	750	26,000	580	24,500	470
		1.5	0.007	—	—	—	—	—	0.12	29,500	750	26,000	580	24,500	470
		2	0.005	0.008	—	—	—	—	0.102	27,500	675	24,500	520	23,000	420
		3	0.002	0.003	—	—	—	—	0.075	23,000	470	20,000	360	19,000	290
		4	0.001	0.002	—	—	—	—	0.036	21,000	380	18,500	290	17,500	235
	1°	3	0.006	0.009	—	—	—	—	0.12	31,000	755	27,000	580	25,500	470
		4	0.005	0.007	—	—	—	—	0.108	29,500	680	26,000	520	24,500	420
	3°	3	0.007	0.01	—	—	—	—	0.12	31,000	795	27,000	610	25,500	495
		4	0.007	0.01	—	—	—	—	0.12	29,500	750	26,000	580	24,500	470
	5°	3	0.007	0.01	—	—	—	—	0.12	31,000	795	27,000	610	25,500	495
		4	0.007	0.01	—	—	—	—	0.12	29,500	750	26,000	580	24,500	470
0.5	0°	1	0.007	0.01	—	—	—	—	0.15	29,000	820	26,000	670	26,000	620
		2	0.007	0.01	—	—	—	—	0.15	29,000	820	26,000	670	26,000	620
		3	0.003	0.005	—	—	—	—	0.105	27,500	695	24,500	570	24,500	525
		4	0.002	0.003	—	—	—	—	0.09	22,500	510	20,000	420	20,000	385
		5	0.001	0.002	—	—	—	—	0.045	21,000	415	18,500	340	18,500	315
		6	0.001	0.001	—	—	—	—	0.03	19,500	360	17,000	295	17,000	270
	1°	3	0.007	0.01	—	—	—	—	0.15	32,500	910	28,500	745	28,500	690
		5	0.005	0.007	—	—	—	—	0.15	29,000	735	26,000	605	26,000	560
		8	0.003	0.004	—	—	—	—	0.052	25,500	560	22,500	460	22,500	425
		10	0.002	0.003	—	—	—	—	0.022	22,500	475	20,000	390	20,000	360
		12	0.001	0.002	—	—	—	—	0.016	21,000	415	18,500	340	18,500	315

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外径 Dc	有效勾配角 α°	颈长 ℓ2	切深量 Depth of Cut 轴方向 ap R0.05	R0.1	R0.2	R0.3	R0.5	R1	径方向 ae	加工材料 Work Material 调质钢·预硬钢 (～45HRC) Hardened Steel Prehardened Steel SKD61·NAK55·NAK80·HPM1 ap=120% ae=120% 回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	调质钢·预硬钢 (45～55HRC) Hardened Steel Prehardened Steel SKD61·STAVAX·HPM38 ap=100% ae=100% 回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	调质钢 (55～65HRC) Hardened Steel ap=60% ae=80% 回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)
0.5	3°	3	0.007	0.01	—	—	—	—	0.15	32,500	910	28,500	745	28,500	690
		5	0.007	0.01	—	—	—	—	0.15	29,000	820	26,000	670	26,000	620
		8	0.006	0.009	—	—	—	—	0.067	25,500	710	22,500	580	22,500	535
		10	0.001	0.002	—	—	—	—	0.037	22,500	575	20,000	470	20,000	435
		12	0.001	0.002	—	—	—	—	0.031	21,000	475	18,500	390	18,500	360
	5°	3	0.007	0.01	—	—	—	—	0.15	32,500	910	28,500	745	28,500	690
		5	0.007	0.01	—	—	—	—	0.15	29,000	820	26,000	670	26,000	620
		8	0.006	0.009	—	—	—	—	0.142	25,500	710	22,500	580	22,500	535
		10	0.005	0.007	—	—	—	—	0.112	22,500	635	20,000	520	20,000	480
0.6	0°	2	—	0.012	—	—	—	—	0.18	29,000	980	26,000	805	21,500	620
		4	—	0.005	—	—	—	—	0.122	24,500	695	21,500	570	18,000	440
		6	—	0.002	—	—	—	—	0.054	21,000	495	18,500	410	15,500	315
0.8	0°	4	—	0.016	0.032	—	—	—	0.24	23,500	1,000	20,500	800	17,000	565
		6	—	0.007	0.014	—	—	—	0.24	19,500	700	16,500	555	14,000	390
		8	—	—	0.008	—	—	—	0.216	18,000	570	15,500	450	13,000	320
	1°	5	0.01	0.02	0.04	—	—	—	0.24	26,500	1,150	26,500	1,050	26,500	905
		8	0.007	0.015	0.03	—	—	—	0.24	25,000	1,000	25,000	940	25,000	795
	3°	5	0.01	0.02	0.04	—	—	—	0.24	26,500	1,200	26,500	1,100	26,500	940
		8	0.01	0.02	0.04	—	—	—	0.24	25,000	1,100	25,000	1,050	25,000	880
1	0°	4	0.01	0.02	0.04	0.05	—	—	0.3	23,000	1,300	20,000	1,050	17,000	755
		6	0.005	0.01	0.02	0.025	—	—	0.21	20,500	1,050	18,000	835	15,500	605
		8	0.003	0.006	0.012	0.015	—	—	0.18	18,000	800	15,500	650	13,500	470
		10	0.002	0.004	0.008	0.01	—	—	0.09	16,500	650	14,500	530	12,500	380
		12	0.001	0.003	0.006	0.007	—	—	0.06	15,500	565	13,500	460	11,500	335
		16	—	—	0.004	—	—	—	0.03	12,000	400	10,500	325	9,150	235
		20	—	—	0.003	—	—	—	0.024	10,000	285	8,900	230	7,650	170

1. 请使用刚性较高的机床和刀柄。
2. 请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。加工调质钢时推荐使用油雾冷却方式。
3. 此表仅限用于等高线加工(侧面加工)等负荷小的加工。根据加工形状、切深、设备刚性等情况，可适当调整转速，进给速度和切深。
4. 当发生振动或异常切削音时请适当调整转速，进给速度和切深
5. 推荐在圆弧加工、倾角加工时采用Z轴方向切入。
6. 要求高精度加工时，请调低转速、进给速度和切深。

1. Use a rigid and precise machine and holder.
2. Use an air blow or a suitable cutting fluid with high smoke retardant properties. When machining carbon steels or hardened steels, using MQL(Minimum Quantity Lubrication / oil mist coolant) is recommended.
3. The above condition shows an approximate standard for contouring operation (side milling) with a low machining load. If abnormal cutting sounds, vibration or chattering occur depending on the machining shape, cutting amount, rigidity of the machine or work holding condition, etc., please adjust the speed, feed and the depth of cut.
4. Adjust the speed, feed rate, and depth of cut if chattering, vibration or abnormal grinding sounds occur.
5. Helical or ramp milling is recommended during the approach of a Z cut.
6. Adjust the speed, feed rate, and the depth of the cut according to the shape of the work, rigidity of the machine, and how the work is held.

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WXS-CPR 标准切削 Regular Milling

FROM 接一页

外径 Dc	有效勾配角 α°	颈长 ℓ2	切深量 Depth of Cut ap / ae	加工材料 Work Material					
				调质钢·预硬钢 (～45HRC) Hardened Steel Prehardened Steel SKD61·NAK55·NAK80·HPM1		调质钢·预硬钢 (45～55HRC) Hardened Steel Prehardened Steel SKD61·STAVAX·HPM38		调质钢 (55～65HRC) Hardened Steel	
				ap=120% ae=120%		ap=100% ae=100%		ap=60% ae=80%	
			轴方向 ap R0.05 / R0.1 / R0.2 / R0.3 / R0.5 / R1；径方向 ae	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)
1	1°	6	0.01 / 0.02 / 0.04 / 0.05 / — / — / 0.3	25,500	1,250	22,500	1,150	19,000	840
		10	0.007 / 0.015 / 0.03 / 0.037 / — / — / 0.27	23,000	1,150	20,000	940	17,000	680
		15	0.005 / 0.01 / 0.02 / 0.025 / — / — / 0.12	20,500	915	18,000	740	15,500	540
		20	0.003 / 0.006 / 0.012 / 0.015 / — / — / 0.045	18,000	750	15,500	610	13,500	440
		25	0.002 / 0.002 / 0.004 / 0.005 / — / — / 0.03	16,500	650	14,500	530	12,500	380
		30	0.002 / 0.001 / 0.002 / 0.003 / — / — / 0.021	12,500	465	11,000	380	9,550	275
		35	0.002 / 0.001 / 0.002 / 0.002 / — / — / 0.015	11,500	385	10,000	315	8,600	230
	3°	6	0.01 / 0.02 / 0.04 / 0.05 / — / — / 0.3	25,500	1,450	22,500	1,150	19,000	840
		10	0.01 / 0.02 / 0.04 / 0.05 / — / — / 0.3	23,000	1,300	20,000	1,050	17,000	755
1.2	0°	6	— / — / 0.032 / 0.04 / — / — / 0.36	19,000	1,200	18,000	1,050	14,500	735
		8	— / — / 0.018 / 0.022 / — / — / 0.252	17,000	965	16,000	845	13,000	580
		10	— / — / 0.011 / 0.014 / — / — / 0.216	16,000	850	15,000	740	12,000	510
1.5	0°	6	— / — / 0.04 / 0.06 / — / — / 0.45	17,000	1,450	16,000	1,250	13,500	880
		8	— / — / 0.026 / 0.039 / — / — / 0.382	16,000	1,250	15,500	1,100	12,500	750
		10	— / — / 0.018 / 0.027 / — / — / 0.292	14,500	1,000	13,500	900	11,000	625
		12	— / — / 0.012 / 0.018 / — / — / 0.27	13,500	900	12,500	790	10,500	550
		16	— / — / 0.007 / 0.01 / — / — / 0.112	9,150	525	8,650	460	7,150	320
	1°	10	— / 0.019 / 0.039 / 0.049 / — / — / 0.45	18,500	1,500	17,500	1,300	14,500	905
		15	— / 0.015 / 0.03 / 0.037 / — / — / 0.405	17,000	1,150	16,000	1,000	13,500	705
		20	— / 0.01 / 0.02 / 0.025 / — / — / 0.27	15,500	1,100	15,000	970	12,000	675
		25	— / 0.008 / 0.008 / 0.01 / — / — / 0.135	14,500	950	13,500	835	11,500	580
		30	— / 0.003 / 0.006 / 0.007 / — / — / 0.067	13,500	840	12,500	740	10,500	515
	3°	10	— / 0.02 / 0.04 / 0.05 / — / — / 0.45	18,500	1,550	17,500	1,350	14,500	940
		15	— / 0.02 / 0.04 / 0.05 / — / — / 0.45	17,000	1,450	16,000	1,250	13,500	880
2	0°	8	— / 0.02 / 0.04 / 0.06 / 0.075 / — / 0.6	13,000	1,450	13,000	1,300	11,500	1,000
		10	— / 0.016 / 0.032 / 0.048 / 0.06 / — / 0.51	12,000	1,300	12,000	1,150	11,000	905
		12	— / 0.01 / 0.02 / 0.03 / 0.037 / — / 0.42	11,500	1,150	11,500	1,050	10,000	810
		16	— / 0.006 / 0.012 / 0.018 / 0.022 / — / 0.36	10,000	900	10,000	800	8,900	630
		20	— / 0.004 / 0.008 / 0.012 / 0.015 / — / 0.18	9,300	730	9,300	650	8,250	510
		25	— / 0.002 / 0.004 / 0.007 / 0.009 / — / 0.12	8,600	625	8,600	560	7,650	440
	1°	15	— / 0.018 / 0.036 / 0.046 / 0.064 / — / 0.6	13,500	1,450	13,500	1,300	12,000	1,000
		20	— / 0.015 / 0.03 / 0.037 / 0.052 / — / 0.54	13,000	1,300	13,000	1,150	11,500	910
		25	— / 0.012 / 0.024 / 0.03 / 0.04 / — / 0.39	12,000	1,150	12,000	1,050	11,000	810
		30	— / 0.01 / 0.02 / 0.025 / 0.03 / — / 0.24	11,500	1,050	11,500	920	10,000	720
		40	— / 0.006 / 0.012 / 0.015 / 0.02 / — / 0.09	10,000	840	10,000	750	8,900	590
		50	— / 0.005 / 0.01 / 0.01 / 0.01 / — / 0.06	9,300	730	9,300	650	8,250	510
	3°	15	— / 0.02 / 0.04 / 0.06 / 0.075 / — / 0.6	13,500	1,500	13,500	1,350	12,000	1,050
		20	— / 0.02 / 0.04 / 0.06 / 0.075 / — / 0.6	13,000	1,450	13,000	1,300	11,500	1,000

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外径 Dc	有效勾配角 α°	颈长 ℓ2	切深量 Depth of Cut 轴方向 ap R0.05	R0.1	R0.2	R0.3	R0.5	R1	径方向 ae	加工材料 Work Material 调质钢·预硬钢 (～45HRC) Hardened Steel Prehardened Steel SKD61·NAK55·NAK80·HPM1 ap=120% ae=120% 回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	调质钢·预硬钢 (45～55HRC) Hardened Steel Prehardened Steel SKD61·STAVAX·HPM38 ap=100% ae=100% 回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	调质钢 (55～65HRC) Hardened Steel ap=60% ae=80% 回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)
2.5	0°	10	—	—	0.04	—	0.075	—	0.75	11,500	1,600	10,500	1,200	9,150	1,000
		20	—	—	0.02	—	0.037	—	0.45	8,900	1,000	8,000	740	7,150	630
		30	—	—	0.006	—	0.011	—	0.15	7,650	700	6,850	520	6,100	445
3	0°	8	—	—	0.04	—	—	—	0.9	9,550	1,500	8,600	1,150	7,650	825
		12	—	—	0.04	0.06	0.075	—	0.9	9,550	1,500	8,600	1,150	7,650	825
		16	—	—	0.028	0.042	0.052	—	0.72	8,500	1,200	7,650	910	6,800	660
		20	—	—	0.018	0.027	0.033	—	0.612	7,400	985	6,700	750	5,950	545
		25	—	—	0.012	0.018	0.022	—	0.54	7,100	830	6,400	635	5,700	460
		30	—	—	0.008	0.012	0.015	—	0.27	6,900	755	6,200	575	5,500	420
		35	—	—	0.006	0.009	0.011	—	0.18	6,350	655	5,700	500	5,100	365
	1°	15	—	—	0.04	—	0.075	—	0.9	10,500	1,650	9,550	1,250	8,500	920
		20	—	—	0.039	—	0.07	—	0.9	9,950	1,500	8,950	1,150	7,950	830
		30	—	—	0.03	—	0.05	—	0.81	9,550	1,350	8,600	1,000	7,650	745
		40	—	—	0.022	—	0.04	—	0.522	8,900	1,150	8,000	890	7,150	650
		50	—	—	0.016	—	0.03	—	0.297	8,050	980	7,250	750	6,450	545
		60	—	—	0.012	—	0.02	—	0.135	7,400	870	6,700	660	5,950	480
4	0°	16	—	—	0.04	0.06	0.075	0.12	1.2	7,150	2,050	6,450	1,550	5,000	965
		20	—	—	0.032	0.048	0.06	0.2	1.02	6,750	1,950	6,100	1,450	4,750	910
		25	—	—	0.02	0.03	0.037	0.06	0.816	5,950	1,700	5,350	1,300	4,150	800
		30	—	—	0.014	0.021	0.026	0.04	0.744	5,550	1,600	5,000	1,200	3,900	750
		40	—	—	0.008	0.012	0.015	0.024	0.36	5,150	1,500	4,650	1,100	3,600	695
		50	—	—	0.004	0.007	0.009	0.014	0.216	4,550	1,300	4,100	980	3,150	610

1. 请使用刚性较高的机床和刀柄。
2. 请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。加工调质钢时推荐使用油雾冷却方式。
3. 此表仅限用于等高线加工(侧面加工)等负荷小的加工。根据加工形状、切深、设备刚性等情况，可适当调整转速，进给速度和切深。
4. 当发生振动或异常切削音时请适当调整转速，进给速度和切深
5. 推荐在圆弧加工、倾角加工时采用Z轴方向切入。
6. 要求高精度加工时，请调低转速、进给速度和切深。

1. Use a rigid and precise machine and holder.
2. Use an air blow or a suitable cutting fluid with high smoke retardant properties. When machining carbon steels or hardened steels, using MQL(Minimum Quantity Lubrication / oil mist coolant) is recommended.
3. The above condition shows an approximate standard for contouring operation (side milling) with a low machining load. If abnormal cutting sounds, vibration or chattering occur depending on the machining shape, cutting amount, rigidity of the machine or work holding condition, etc., please adjust the speed, feed and the depth of cut.
4. Adjust the speed, feed rate, and depth of cut if chattering, vibration or abnormal grinding sounds occur.
5. Helical or ramp milling is recommended during the approach of a Z cut.
6. Adjust the speed, feed rate, and the depth of the cut according to the shape of the work, rigidity of the machine, and how the work is held.

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WXS-CPR 侧面加工条件(等高线精加工) Side Milling (Contour Line Finish Milling)

FROM 接一页

外径 Dc	有效勾配角 α°	颈长 ℓ2	切深量 Depth of Cut (ae / ap)						径方向 ae	加工材料 Work Material: 调质钢·预硬钢 (～45HRC) Hardened Steel Prehardened Steel SKD61·NAK55·NAK80·HPM1 ap=120% ae=120%		调质钢·预硬钢 (45～55HRC) Hardened Steel Prehardened Steel SKD61·STAVAX·HPM38 ap=100% ae=100%		调质钢 (55～65HRC) Hardened Steel ap=60% ae=80%	
			轴方向 ap R0.05	R0.1	R0.2	R0.3	R0.5	R1		回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)
0.2	0°	0.5	0.005	—	—	—	—	—	0.006	50,000	700	43,000	550	43,000	515
		1	0.005	—	—	—	—	—	0.006	47,500	665	40,500	520	40,500	485
	1°	1	0.005	—	—	—	—	—	0.006	50,000	700	47,500	610	47,500	575
		2	0.005	—	—	—	—	—	0.005	50,000	630	43,000	495	43,000	465
	3°	1	0.005	—	—	—	—	—	0.006	50,000	700	47,500	610	47,500	575
		2	0.005	—	—	—	—	—	0.006	50,000	700	43,000	550	43,000	515
	5°	1	0.005	—	—	—	—	—	0.006	50,000	700	47,500	610	47,500	575
		2	0.005	—	—	—	—	—	0.006	50,000	700	43,000	550	43,000	515
0.3	0°	1	0.005	—	—	—	—	—	0.009	43,000	850	38,000	690	33,500	520
		2	0.004	—	—	—	—	—	0.008	36,000	605	32,000	485	28,000	370
	1°	2	0.005	—	—	—	—	—	0.009	46,000	855	40,500	690	35,500	525
		3	0.005	—	—	—	—	—	0.009	43,000	765	38,000	620	33,500	470
	3°	2	0.005	—	—	—	—	—	0.009	46,000	910	40,500	735	35,500	555
		3	0.005	—	—	—	—	—	0.009	43,000	850	38,000	690	33,500	520
	5°	2	0.005	—	—	—	—	—	0.009	46,000	910	40,500	735	35,500	555
		3	0.005	—	—	—	—	—	0.009	43,000	850	38,000	690	33,500	520
0.4	0°	1	0.006	—	—	—	—	—	0.012	39,500	1,000	32,000	775	28,500	550
		1.5	0.006	—	—	—	—	—	0.012	39,500	1,000	32,000	775	28,500	550
		2	0.006	0.01	—	—	—	—	0.012	37,000	905	30,500	695	27,000	495
		3	0.004	0.007	—	—	—	—	0.008	30,500	630	25,000	480	22,500	340
		4	0.002	0.004	—	—	—	—	0.006	28,500	510	23,500	390	20,500	280
	1°	3	0.006	0.01	—	—	—	—	0.012	41,500	1,000	34,000	775	30,000	550
		4	0.006	0.01	—	—	—	—	0.012	39,500	910	32,000	695	28,500	495
	3°	3	0.006	0.01	—	—	—	—	0.012	41,500	1,050	34,000	815	30,000	580
		4	0.006	0.01	—	—	—	—	0.012	39,500	1,000	32,000	775	28,500	550
	5°	3	0.006	0.01	—	—	—	—	0.012	41,500	1,050	34,000	815	30,000	580
		4	0.006	0.01	—	—	—	—	0.012	39,500	1,000	32,000	775	28,500	550
0.5	0°	1	0.006	0.01	—	—	—	—	0.015	34,500	965	28,500	775	24,000	580
		2	0.006	0.01	—	—	—	—	0.015	34,500	965	28,500	775	24,000	580
		3	0.006	0.01	—	—	—	—	0.013	32,500	820	27,000	660	22,500	490
		4	0.003	0.006	—	—	—	—	0.01	26,500	600	22,500	480	18,500	360
		5	0.002	0.004	—	—	—	—	0.007	25,000	490	20,500	390	17,500	290
		6	0.001	0.003	—	—	—	—	0.006	23,000	425	19,000	340	16,000	255
	1°	3	0.006	0.01	—	—	—	—	0.015	38,000	1,050	32,000	860	26,500	640
		5	0.006	0.01	—	—	—	—	0.015	34,500	865	28,500	695	24,000	520
		8	0.004	0.007	—	—	—	—	0.01	30,000	660	25,000	530	21,000	395
		10	0.003	0.005	—	—	—	—	0.009	26,500	560	22,500	450	18,500	340
		12	0.002	0.004	—	—	—	—	0.006	25,000	490	20,500	390	17,500	290
	3°	3	0.006	0.01	—	—	—	—	0.015	38,000	1,050	32,000	860	26,500	640
		5	0.006	0.01	—	—	—	—	0.015	34,500	965	28,500	775	24,000	580
		8	0.004	0.008	—	—	—	—	0.015	30,000	835	25,000	670	21,000	500
		10	0.003	0.005	—	—	—	—	0.012	26,500	675	22,500	540	18,500	400
		12	0.002	0.004	—	—	—	—	0.01	25,000	555	20,500	450	17,500	335

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外径 Dc	有效勾配角 α°	颈长 ℓ2	切深量 Depth of Cut 轴方向 ap R0.05	R0.1	R0.2	R0.3	R0.5	R1	径方向 ae	加工材料 Work Material 调质钢·预硬钢 (～45HRC) Hardened Steel Prehardened Steel SKD61·NAK55·NAK80·HPM1 ap=120% ae=120% 回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	调质钢·预硬钢 (45～55HRC) Hardened Steel Prehardened Steel SKD61·STAVAX·HPM38 ap=100% ae=100% 回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	调质钢 (55～65HRC) Hardened Steel ap=60% ae=80% 回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)
0.5	5°	3	0.006	0.01	—	—	—	—	0.015	38,000	1,050	32,000	860	26,500	640
		5	0.006	0.01	—	—	—	—	0.015	34,500	965	28,500	775	24,000	580
		8	0.006	0.01	—	—	—	—	0.015	30,000	835	25,000	670	21,000	500
		10	0.004	0.008	—	—	—	—	0.012	26,500	750	22,500	600	18,500	450
0.6	0°	2	—	0.012	—	—	—	—	0.018	31,000	1,050	26,500	850	24,000	690
		4	—	0.009	—	—	—	—	0.012	26,000	740	22,000	600	20,000	490
		6	—	0.004	—	—	—	—	0.009	22,500	530	19,000	430	17,000	350
0.8	0°	4	—	0.015	0.02	—	—	—	0.02	29,000	1,200	25,500	1,050	23,500	790
		6	—	0.012	0.016	—	—	—	0.014	23,500	850	21,000	720	19,500	550
		8	—	—	0.008	—	—	—	0.01	22,000	690	19,500	590	18,000	445
	1°	5	0.006	0.015	0.02	—	—	—	0.02	26,500	1,150	26,500	1,100	26,500	905
		8	0.006	0.015	0.02	—	—	—	0.02	25,000	1,000	25,000	975	25,000	795
	3°	5	0.006	0.015	0.02	—	—	—	0.02	26,500	1,200	26,500	1,150	26,500	940
		8	0.006	0.015	0.02	—	—	—	0.02	25,000	1,100	25,000	1,100	25,000	880
1	0°	4	0.006	0.015	0.02	0.03	—	—	0.03	27,000	1,500	24,500	1,250	22,500	995
		6	0.006	0.015	0.02	0.03	—	—	0.027	24,000	1,200	21,500	1,000	20,000	800
		8	0.003	0.009	0.012	0.018	—	—	0.021	21,000	950	19,000	790	17,500	620
		10	0.003	0.006	0.008	0.012	—	—	0.015	19,500	770	17,500	640	16,500	505
		12	0.003	0.004	0.006	0.009	—	—	0.013	18,000	670	16,000	560	15,000	440
		16	—	—	0.004	—	—	—	0.01	14,500	470	13,000	390	12,000	310
		20	—	—	0.003	—	—	—	0.009	12,000	340	11,000	280	10,000	220

1. 请使用刚性较高的机床和刀柄。
2. 请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。加工调质钢时推荐使用油雾冷却方式。
3. 此表仅限用于等高线加工(侧面加工)等负荷小的加工。根据加工形状、切深、设备刚性等情况，可适当调整转速，进给速度和切深。
4. 当发生振动或异常切削音时请适当调整转速，进给速度和切深
5. 推荐在圆弧加工、倾角加工时采用Z轴方向切入。
6. 要求高精度加工时，请调低转速、进给速度和切深。

1. Use a rigid and precise machine and holder.
2. Use an air blow or a suitable cutting fluid with high smoke retardant properties. When machining carbon steels or hardened steels, using MQL(Minimum Quantity Lubrication / oil mist coolant) is recommended.
3. The above condition shows an approximate standard for contouring operation (side milling) with a low machining load. If abnormal cutting sounds, vibration or chattering occur depending on the machining shape, cutting amount, rigidity of the machine or work holding condition, etc., please adjust the speed, feed and the depth of cut.
4. Adjust the speed, feed rate, and depth of cut if chattering, vibration or abnormal grinding sounds occur.
5. Helical or ramp milling is recommended during the approach of a Z cut.
6. Adjust the speed, feed rate, and the depth of the cut according to the shape of the work, rigidity of the machine, and how the work is held.
7. When the workpiece requires precision shaping, re-running the end mill in the identical tool path is recommended.

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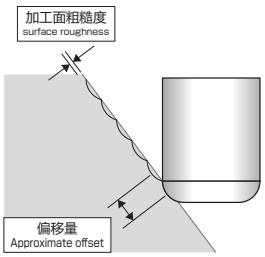
加工面精度(加工面粗糙度)设定量基准表 (mm) Approximate offset for workpiece surface precision (surface roughness)

角半径 (mm)	加工面粗糙度 (μm) Surface Roughness 0.1	0.25	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3	3.5	4	5
R0.05	0.006	0.01	0.014	0.017	0.02	0.022	0.024	0.026	0.028	–	–	–	–	–
R0.1	0.009	0.014	0.02	0.024	0.028	0.032	0.035	0.037	0.04	0.045	0.049	–	–	–
R0.2	0.012	0.02	0.028	0.035	0.04	0.045	0.049	0.053	0.057	0.063	0.07	0.075	0.08	0.9
R0.3	0.015	0.025	0.035	0.042	0.049	0.055	0.06	0.065	0.07	0.077	0.085	0.092	0.098	0.11
R0.5	0.02	0.032	0.045	0.055	0.065	0.07	0.078	0.084	0.09	0.1	0.11	0.118	0.125	0.141
R1	0.028	0.045	0.063	0.078	0.09	0.1	0.11	0.118	0.125	0.142	0.155	0.168	0.18	0.2



WXS-CPR 侧面加工条件(等高线精加工) Side Milling (Contour Line Finish Milling)

FROM 接一页

外径 Dc	有效勾配角 α°	颈长 ℓ2	切深量 Depth of Cut							加工材料 Work Material					
										调质钢·预硬钢 (～45HRC) Hardened Steel Prehardened Steel SKD61·NAK55·NAK80·HPM1		调质钢·预硬钢 (45～55HRC) Hardened Steel Prehardened Steel SKD61·STAVAX·HPM38		调质钢 (55～65HRC) Hardened Steel	
										ap=120%	ae=120%	ap=100%	ae=100%	ap=60%	ae=80%
			轴方向 ap						径方向 ae	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)
			R0.05	R0.1	R0.2	R0.3	R0.5	R1							
1	1°	6	0.006	0.015	0.02	0.03	—	—	0.03	30,000	1,700	27,000	1,400	25,000	1,100
		10	0.006	0.015	0.02	0.03	—	—	0.03	27,000	1,350	24,500	1,150	22,500	895
		15	0.004	0.01	0.014	0.021	—	—	0.021	24,000	1,100	21,500	900	20,000	710
		20	0.003	0.007	0.01	0.015	—	—	0.018	21,000	890	19,000	740	17,500	580
		25	0.002	0.006	0.008	0.012	—	—	0.012	19,500	770	17,500	640	16,500	505
		30	0.002	0.003	0.004	0.006	—	—	0.009	15,000	550	13,500	460	12,500	360
		35	0.002	0.001	0.002	0.003	—	—	0.007	13,500	460	12,000	380	11,500	300
	3°	6	0.006	0.015	0.02	0.03	—	—	0.03	30,000	1,700	27,000	1,400	25,000	1,100
		10	0.006	0.015	0.02	0.03	—	—	0.015	27,000	1,500	24,500	1,250	22,500	995
1.2	0°	6	—	—	0.016	0.024	—	—	0.036	22,500	1,450	21,000	1,250	19,000	960
		8	—	—	0.009	0.013	—	—	0.028	20,000	1,150	18,500	980	17,000	760
		10	—	—	0.005	0.008	—	—	0.021	18,500	1,000	17,500	860	16,000	670
1.5	0°	6	—	—	0.02	0.03	—	—	0.045	21,000	1,750	18,500	1,450	16,000	1,050
		8	—	—	0.02	0.03	—	—	0.045	20,000	1,500	17,500	1,250	15,500	910
		10	—	—	0.018	0.027	—	—	0.036	17,500	1,250	15,500	1,050	13,500	760
		12	—	—	0.012	0.018	—	—	0.031	16,500	1,100	14,500	910	12,500	670
		16	—	—	0.008	0.012	—	—	0.022	11,000	640	10,000	530	8,650	390
	1°	10	—	0.015	0.02	0.03	—	—	0.045	22,500	1,800	20,000	1,500	17,500	1,100
		15	—	0.015	0.02	0.03	—	—	0.045	21,000	1,400	18,500	1,150	16,000	860
		20	—	0.012	0.016	0.024	—	—	0.036	19,000	1,350	17,000	1,100	15,000	820
		25	—	0.01	0.014	0.021	—	—	0.031	17,500	1,150	16,000	960	13,500	705
		30	—	0.007	0.01	0.015	—	—	0.027	16,500	1,050	14,500	850	12,500	625
	3°	10	—	0.015	0.02	0.03	—	—	0.045	22,500	1,900	20,000	1,550	17,500	1,150
		15	—	0.015	0.02	0.03	—	—	0.045	21,000	1,750	18,500	1,450	16,000	1,050
2	0°	8	—	0.015	0.02	0.03	0.05	—	0.06	16,500	1,850	16,000	1,600	15,000	1,350
		10	—	0.015	0.02	0.03	0.05	—	0.06	15,500	1,650	15,500	1,450	14,500	1,200
		12	—	0.015	0.02	0.03	0.05	—	0.054	14,500	1,500	14,500	1,300	13,500	1,050
		16	—	0.009	0.012	0.018	0.03	—	0.042	13,000	1,150	12,500	1,000	12,000	830
		20	—	0.006	0.008	0.012	0.02	—	0.03	12,000	935	11,500	820	11,000	675
		25	—	0.004	0.006	0.009	0.015	—	0.027	11,000	800	11,000	700	10,000	580
	1°	15	—	0.015	0.02	0.03	0.05	—	0.06	17,500	1,850	17,000	1,600	16,000	1,350
		20	—	0.015	0.02	0.03	0.05	—	0.06	16,500	1,650	16,000	1,450	15,000	1,200
		25	—	0.012	0.017	0.025	0.042	—	0.054	15,500	1,500	15,500	1,300	14,500	1,050
		30	—	0.012	0.016	0.024	0.04	—	0.048	14,500	1,300	14,500	1,150	13,500	950
		40	—	0.007	0.01	0.015	0.025	—	0.036	13,000	1,100	12,500	945	12,000	780
		50	—	0.006	0.008	0.012	0.02	—	0.024	12,000	935	11,500	820	11,000	675
	3°	15	—	0.015	0.02	0.03	0.05	—	0.06	17,500	1,950	17,000	1,700	16,000	1,400
		20	—	0.015	0.02	0.03	0.05	—	0.06	16,500	1,850	16,000	1,600	15,000	1,350
2.5	0°	10	—	—	0.02	—	0.05	—	0.075	13,000	1,850	13,000	1,400	12,000	1,350
		20	—	—	0.012	—	0.03	—	0.052	10,000	1,150	10,000	885	9,450	830
		30	—	—	0.006	—	0.015	—	0.033	8,800	800	8,650	630	8,100	590

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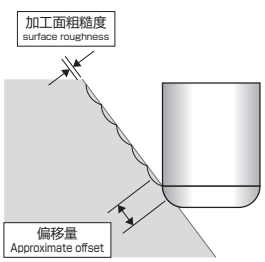
外径 Dc	有效勾配角 α°	颈长 ℓ2	切深量 Depth of Cut 轴方向 ap R0.05	R0.1	R0.2	R0.3	R0.5	R1	径方向 ae	加工材料 Work Material 调质钢·预硬钢 (～45HRC) Hardened Steel Prehardened Steel SKD61·NAK55·NAK80·HPM1 ap=120% ae=120% 回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	调质钢·预硬钢 (45～55HRC) Hardened Steel Prehardened Steel SKD61·STAVAX·HPM38 ap=100% ae=100% 回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)	调质钢 (55～65HRC) Hardened Steel ap=60% ae=80% 回转速度 Speed (min⁻¹)	进给速度 Feed (mm/min)
3	0°	8	—	—	0.02	—	—	—	0.08	12,000	2,000	11,000	1,400	10,000	1,100
		12	—	—	0.02	0.03	0.05	—	0.08	12,000	2,000	11,000	1,400	10,000	1,100
		16	—	—	0.02	0.03	0.05	—	0.08	10,500	1,600	9,600	1,150	9,000	875
		20	—	—	0.02	0.03	0.05	—	0.064	9,300	1,350	8,400	940	7,850	725
		25	—	—	0.012	0.018	0.03	—	0.048	8,900	1,100	8,050	795	7,550	610
		30	—	—	0.008	0.012	0.02	—	0.04	8,600	1,000	7,800	720	7,300	555
		35	—	—	0.006	0.009	0.015	—	0.036	7,950	880	7,200	630	6,750	480
	1°	15	—	—	0.02	—	0.05	—	0.08	13,500	2,250	12,000	1,600	11,000	1,200
		20	—	—	0.02	—	0.05	—	0.08	12,500	2,000	11,500	1,450	10,500	1,100
		30	—	—	0.02	—	0.05	—	0.08	12,000	1,800	11,000	1,300	10,000	985
		40	—	—	0.018	—	0.045	—	0.064	11,000	1,550	10,000	1,100	9,450	860
		50	—	—	0.014	—	0.035	—	0.056	10,000	1,300	9,100	940	8,550	720
		60	—	—	0.01	—	0.025	—	0.048	9,300	1,150	8,400	830	7,850	640
4	0°	16	—	—	0.02	0.03	0.05	0.08	0.08	7,900	2,500	7,150	2,050	6,450	1,450
		20	—	—	0.02	0.03	0.05	0.08	0.08	7,450	2,400	6,750	1,950	6,100	1,350
		25	—	—	0.02	0.03	0.05	0.08	0.072	6,550	2,000	5,950	1,650	5,350	1,150
		30	—	—	0.014	0.021	0.035	0.056	0.056	6,100	1,650	5,550	1,350	5,000	955
		40	—	—	0.008	0.012	0.02	0.032	0.04	5,700	1,300	5,150	1,050	4,650	730
		50	—	—	0.006	0.009	0.015	0.024	0.036	5,000	960	4,550	785	4,100	550

1. 请使用刚性较高的机床和刀柄。
2. 请根据加工材料使用气冷式冷却或是发烟性少的切削油剂。加工调质钢时推荐使用油雾冷却方式。
3. 此表仅限用于等高线加工(侧面加工)等负荷小的加工。根据加工形状、切深、设备刚性等情况，可适当调整转速，进给速度和切深。
4. 当发生振动或异常切削音时请适当调整转速，进给速度和切深
5. 推荐在圆弧加工、倾角加工时采用Z轴方向切入。
6. 要求高精度加工时，请调低转速、进给速度和切深。
7. 当对形状精度有要求的时候，推荐采用Zero-cut方式切削。

1. Use a rigid and precise machine and holder.
2. Use an air blow or a suitable cutting fluid with high smoke retardant properties. When machining carbon steels or hardened steels, using MQL(Minimum Quantity Lubrication / oil mist coolant) is recommended.
3. The above condition shows an approximate standard for contouring operation (side milling) with a low machining load. If abnormal cutting sounds, vibration or chattering occur depending on the machining shape, cutting amount, rigidity of the machine or work holding condition, etc., please adjust the speed, feed and the depth of cut.
4. Adjust the speed, feed rate, and depth of cut if chattering, vibration or abnormal grinding sounds occur.
5. Helical or ramp milling is recommended during the approach of a Z cut.
6. Adjust the speed, feed rate, and the depth of the cut according to the shape of the work, rigidity of the machine, and how the work is held.
7. When the workpiece requires precision shaping, re-running the end mill in the identical tool path is recommended.

加工面精度(加工面粗糙度)设定量基准表 （mm） Approximate offset for workpiece surface precision (surface roughness)

角半径 (mm)	加工面粗糙度（μm） Surface Roughness 0.1	0.25	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3	3.5	4	5
R0.05	0.006	0.01	0.014	0.017	0.02	0.022	0.024	0.026	0.028	–	–	–	–	–
R0.1	0.009	0.014	0.02	0.024	0.028	0.032	0.035	0.037	0.04	0.045	0.049	–	–	–
R0.2	0.012	0.02	0.028	0.035	0.04	0.045	0.049	0.053	0.057	0.063	0.07	0.075	0.08	0.9
R0.3	0.015	0.025	0.035	0.042	0.049	0.055	0.06	0.065	0.07	0.077	0.085	0.092	0.098	0.11
R0.5	0.02	0.032	0.045	0.055	0.065	0.07	0.078	0.084	0.09	0.1	0.11	0.118	0.125	0.141
R1	0.028	0.045	0.063	0.078	0.09	0.1	0.11	0.118	0.125	0.142	0.155	0.168	0.18	0.2



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