

BOLLER TECHNOLOGY



BOLLER

VOL.21-1

C2 SERIES

銅電極加工用

For Copper Electrode Milling



高级无尘车间

恒温: $22 \pm 2^{\circ}\text{C}$

恒湿: $60 \pm 2\%$



BOLLER TECHNOLOGY致力於高精密切削技術，以開放式的經營理念與客戶共同研發、分享、設計最佳的切削解決方案。我們的刀具產品應用於精密制造高速銑削、雕刻等加工領域，適用加工高硬度難切削金屬材料及非金屬材料。

為滿足高端用戶需求，引進全線世界頂尖瑞士ROLLOMATIC 系列的高精度刀具自動化磨削生產線，投入德國專業級刀具檢測裝備，設立BOLLER&ROEDERS高速切削研發測試中心。

研發產銷一體化，為精密制造提供值得信賴的整體解決方案。

-滿足用戶的需求就是我們的責任-

生产设备



品牌: Rollomatic
型号: GrindSmart 630XW
产地: Switzerland



品牌: Rollomatic
Name: GrindSmart 630XS
产地: Switzerland



品牌: Rollomatic
型号: GrindSmart 629XW
产地: Switzerland



品牌: Rollomatic
Name: GrindSmart 629XS
产地: Switzerland



品牌: Rollomatic
Name: GrindSmart 830XW
产地: Switzerland



品牌: Rollomatic
Name: GrindSmart Nano6
产地: Switzerland



品牌: Rollomatic
Name: ShapeSmartNP5
产地: Switzerland



品牌: ANCA
Name: MX7 LINEAR
产地: Australia

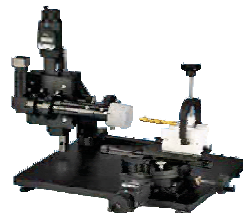
检测设备



品牌: ROEDERS
Name: RXP 500
Origin: Germany



品牌: ZOLLER
Name: G3M
产地: Germany



品牌: KITOTEC
Name: CT-6000-D
产地: Germany



品牌: PARLEC
Name: 1550
产地: U.S.A

恒温：22±2℃
恒湿：60±2%

為保證精度，減少設備產生共振，
設計2M深獨立地臺

ISO9001:2015

高級無塵車間
指數PM2.5<35

Germany歐海全合成
磨削油食用安全級別

專業的刀具研發生產
團隊平均從業經驗
8年以上

全線瑞士ROLLOMATIC精密磨床
10軸6聯動自動化生產線
集成刀庫、6位砂輪庫，無人自動化生產
採用光柵尺重複定位：
分辨率0.00001mm、0.00001度



美國TRANSOR
油霧分離器，
油霧分離達到
99.9%
實現零排放

採用瑞士進口
ASA砂輪
磨削穩定性好
刀具表面光潔
度優

磨削油採用中
央循環冷卻系
統，保證油溫
、油質、環保

质量控制

BOLLER于2015年通過ISO9001:2015 質量體系認證，這源于BOLLER人對產品質量的高度責任感，每一道生產工序都嚴格遵循我們的質量標準。

為滿足高端用戶需求。投入德国专业级刀具检测装备，配備高度專業的品檢團隊及高精度的檢測設備，確保刀具生產的每個環節得到把控，保證交付給客戶的每一支刀都經過嚴格的品質把關。



德國高端訂制；
微徑刀具專用測量設備；
檢測倍數700倍；
檢測精度0.001mm；

德國高端訂制；
微徑刀具專用測量設備；
檢測倍數1100倍；
檢測精度0.001mm；

100%
QUALITY CONTROL

Zoller G3M from Germany
測量放大倍數為 500 倍；
測量精度達 1um；



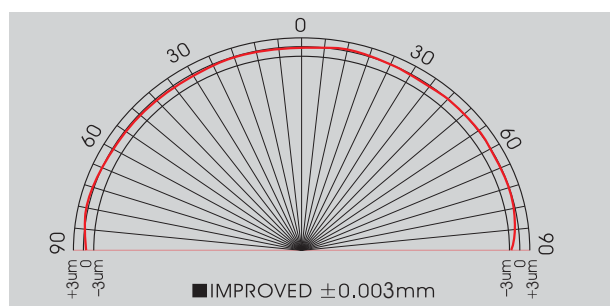
röders TEC RXP-500 CNC

實踐是檢驗真理的唯壹標準，只有通過驗證才能制造出完美的品質，特別是決定產品精度的最終精加工工序。BOLLER引以為傲的品質，始於我們對產品測試的執著。

BOLLER於2020年4月引進德國ROEDERS RXP500 高速CNC銑床，所生產的每款刀具都會通過此設備進行各項功能測試：工件光潔度、工件精度、刀具使用壽命、不同加工參數下刀具的磨損值。以確保每支刀具符合高精密加工需求！

我们的实力

BOLLER技术的优势在于在自动化生产线中生产小型硬质合金立铣刀。我们将继续向微加工领域开发具有先进技术的高精度产品。我们产品的优势：高精度，高稳定性和强耐磨性。



R轮廓公差 **± 0.002 mm**

從 0° 到180°測量,並以實際刃徑的1/2為基準。



偏摆精度 **0.5 µm以内**

柄径公差 **0.002 mm**

Tolerance range

為高精度銑削設計，每支刀都有實際刃徑標識

BOLLER采用歐洲原装进口納米級棒材,粒度介於 $0.2\mu\text{m}$ - $0.5\mu\text{m}$ 之間的極細微晶粒材質,適用於加工超高硬度材料($\leq 70\text{HRC}$)。

切削范围：钢、铜、铝、钛、不锈钢等金属，石墨、碳纤等非金属，另外也特別適合加工耐磨材料。

原装进口

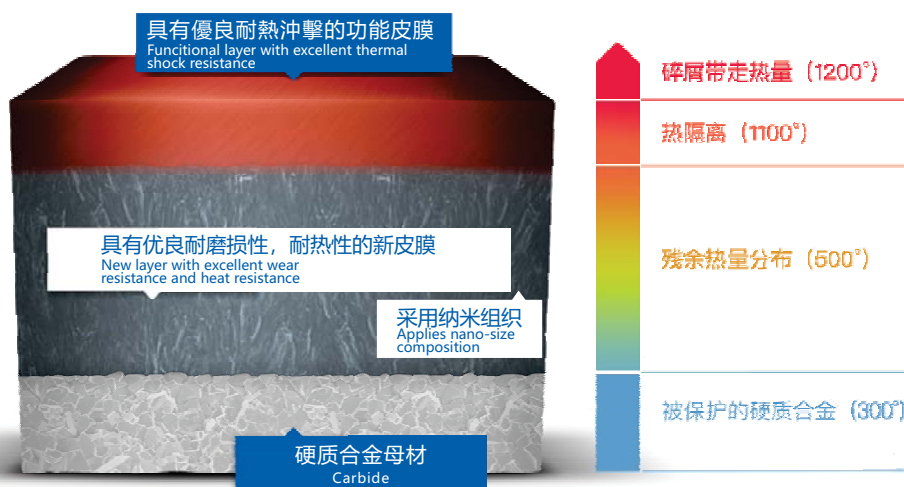


高级塗層

BOLLER高耐磨性 瑞士⁺高级塗層

具有高抗氧化性和耐磨性的新型塗層

NEW



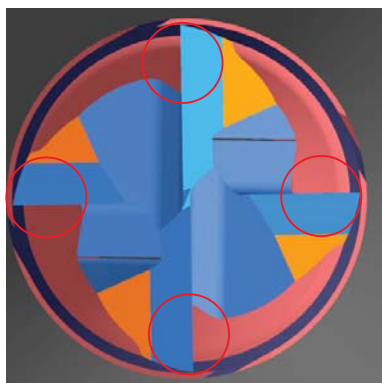
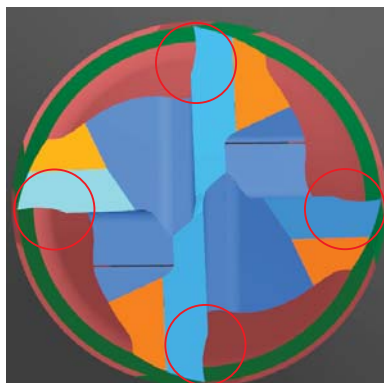
特點和性能

- 具有優良的耐磨損性，耐熱性的高硬度皮膜
- 具有優秀的耐沖擊性，抑制突發缺損
- 加工銅及銅合金具有長壽命

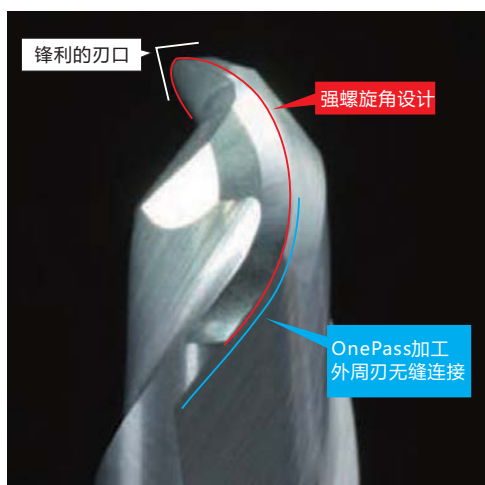
刀具几何结构

C2 SERIES

传统铣刀



- 1、刀尖滞後結構
- 2、刃口鋒利，加工工件表面光潔度好。
- 3、加工輕快，阻力小，壽命高



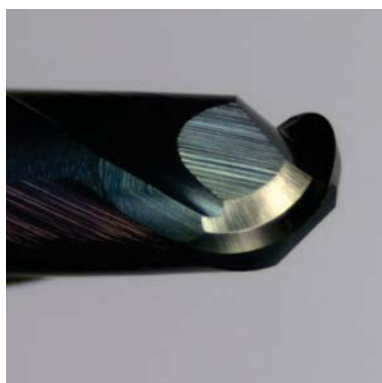
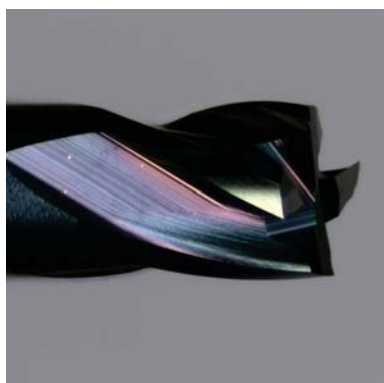
鋒利的刃口

強螺旋角設計

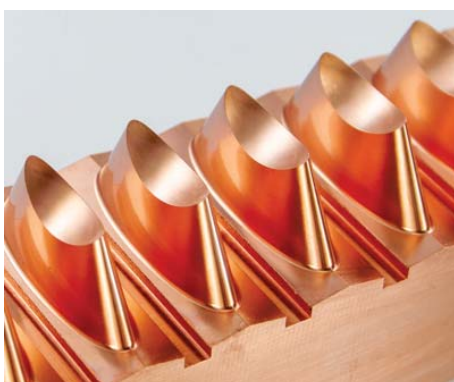
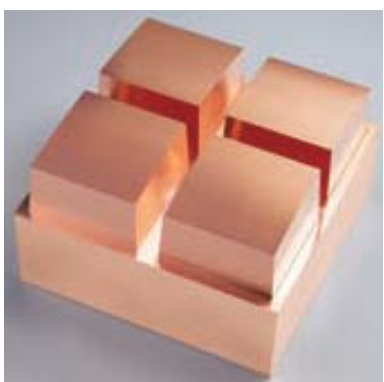
外周刃無縫連接

- 1.同时具备切削性能与高精度的刃口设计
- 2.针对铜电极加工，采用锋利的刃口形状可实现「抑制毛刺」与「高精密加工」的效果！
- 3.采用OnePass连磨，R角刃与外周刃的无缝连结设计实现高精度加工！

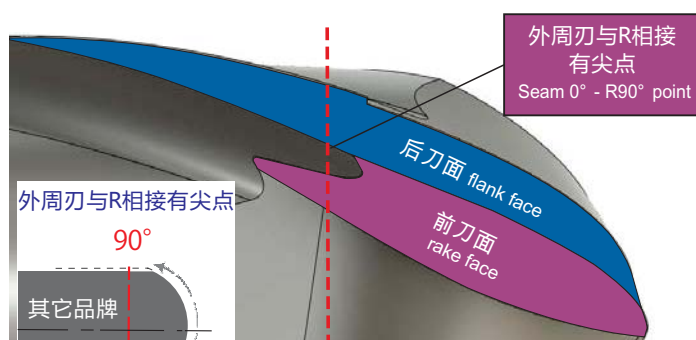
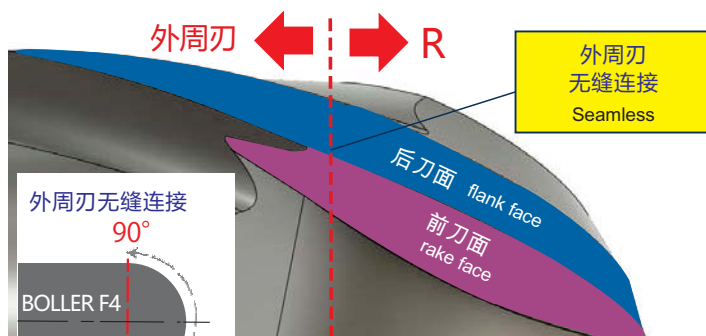
刀具外觀



精磨容屑槽及排屑槽，降低摩擦系数，防止产生积屑瘤、粘屑，延长刀具使用寿命。



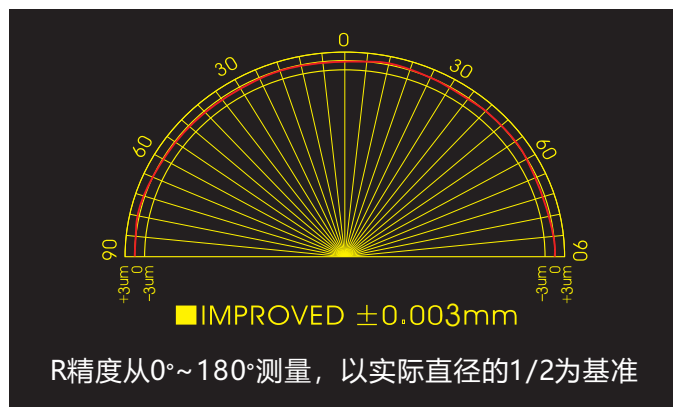
刀具精度



SAMPLE

实际刃径 0.597

R0.2球刀 实际测量刃径0.597mm
C2系列每支刀的标签上标有实际测量的刃径。高精加工时请参考。



偏摆精度 **0.5** μm 以内

柄径公差 **0.002** mm

* 适用最高等级的热缩刀柄



标签刻在底部而非柄部 保持完美同心度

！最佳螺旋角

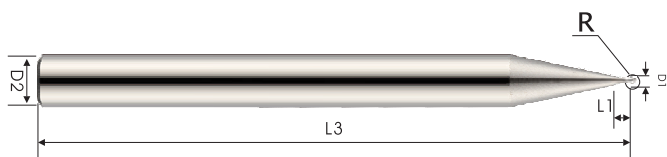
37.5°螺旋角实现了高质量的工件表面

螺旋角	37.5°	30°	45° (强螺旋角)
加工时 铣削接触点			
加工深度: 2D			
刀具与工件接触点 ○	1	1	2
振动	优	优	正常
毛刺和偏斜	优	正常	优

强大的螺旋角提高了切削能力！
太大的螺旋角可能对切削表面造成不良影响并增加切削阻力。

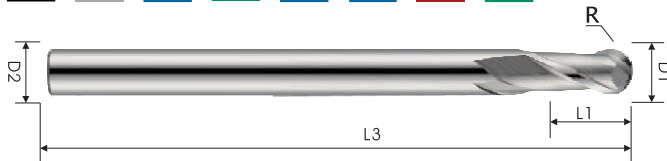
37.5°是获得切削能力和精细切削表面的最佳螺旋角！

C2B01 2刃 微小徑 球頭刀 C2B01 2-FLUTE MINIATURE BALL



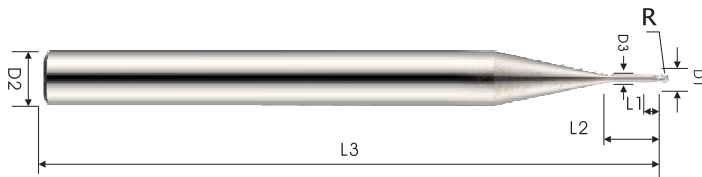
產品型號 ITEM CODE	半徑 RADIUS R	刃徑 OUTSIDE DIAMETER D1	刃長 FLUTE LENGTH L1	有效長 EFFECTIVE LENGTH L2	頸徑 Neck Diameter D3	柄徑 SHANK DIAMETER D2	全長 OVERALL LENGTH L3
C2B01001	R0.05	0.1	0.1	-	-	4	45
C2B010015	R0.075	0.15	0.15				
C2B01002	R0.1	0.2	0.2				
C2B01003	R0.15	0.3	0.3				
C2B01004	R0.2	0.4	0.6				
C2B01005	R0.25	0.5	0.8				
C2B01006	R0.3	0.6	0.9				
C2B01008	R0.4	0.8	1.2				

C2B03 2刃 球頭刀 C2B03 2-FLUTE BALL



產品型號 ITEM CODE	半徑 RADIUS R	刃徑 OUTSIDE DIAMETER D1	刃長 FLUTE LENGTH L1	有效長 EFFECTIVE LENGTH L2	柄徑 SHANK DIAMETER D2	全長 OVERALL LENGTH L3
C2B03010	R0.5	1	1.5	-	4	50
C2B03015	R0.75	1.5	2.3			
C2B03020	R1	2	3			
C2B03025	R1.25	2.5	3.8			
C2B03030	R1.5	3	4.5			
C2B03040	R2	4	6			
C2B03060	R3	6	9		6	60
C2B03080	R4	8	12		8	
C2B03100	R5	10	15		10	
C2B03120	R6	12	18		12	

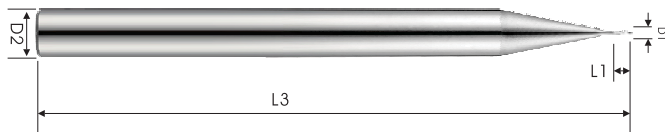
C2B02 2刃 長頸 球頭刀 C2B02 2-FLUTE LONG NECK BALL



產品型號 ITEM CODE	半徑 RADIUS R	刃徑 OUTSIDE DIAMETER D1	刃長 FLUTE LENGTH L1	有效長 EFFECTIVE LENGTH L2	頸徑 Neck Diameter D3	柄徑 SHANK DIAMETER D2	全長 OVERALL LENGTH L3
C2B02001003	R0.05	0.1	0.07	0.3	0.085	4	45
C2B02001005				0.5			
C2B02002005	R0.1	0.2	0.15	0.5	0.18		
C2B0200201				1			
C2B02002015				1.5			
C2B0200301	R0.15	0.3	0.2	1	0.28		
C2B02003015				1.5			
C2B0200302				2			
C2B02003025				2.5			
C2B0200303				3			
C2B0200401	R0.2	0.4	0.3	1	0.37		
C2B0200402				2			
C2B0200403				3			
C2B0200404				4			
C2B0200405				5			
C2B0200502	R0.25	0.5	0.35	2	0.46		
C2B0200503				3			
C2B0200504				4			
C2B0200505				5			
C2B0200602	R0.3	0.6	0.45	2	0.56		
C2B0200603				3			
C2B0200604				4			
C2B0200605				5			
C2B0200606				6			
C2B0200608				8			
C2B0200610				10			
C2B0200802	R0.4	0.8	0.6	2	0.76		
C2B0200804				4			
C2B0200806				6			
C2B0200808				8			
C2B0200810				10			
C2B0201002	R0.5	1	0.75	2	0.95		
C2B0201004				4			
C2B0201006				6			
C2B0201008				8			
C2B0201010				10			
C2B0201012				12			
C2B0201014				14			
C2B0201016				16			
C2B0201020				20			
							50
							55

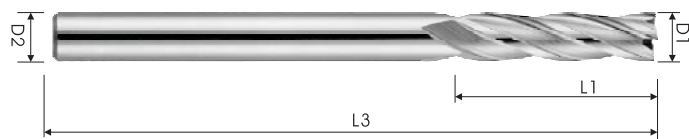
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C2B0201206	R0.6	1.2	0.9	6	1.15	4	50	
C2B0201208				8				
C2B0201210				10				
C2B0201212				12				
C2B0201506	R0.75	1.5	1.1	6	1.45			
C2B0201508				8				
C2B0201510				10				
C2B0201512				12				
C2B0201516				16				
C2B0201520				20				
C2B0202006	R1	2	1.5	4	1.94			60
C2B0202006				6				
C2B0202008				8				
C2B0202010				10				
C2B0202012				12				
C2B0202016				16				
C2B0202020				20				
C2B0202025				25				
C2B0203010	R1.5	3	2.5	10	2.85	70		
C2B0203015				15				
C2B0203020				20				
C2B0203025				25				
C2B0203030				30				
C2B0204010	R2	4	3	10	3.8	6		
C2B0204015				15				
C2B0204020				20				
C2B0204025				25				
C2B0204030				30				
C2B0206020				R3			6	6
C2B0206030	30	80						

C2S01 2刃 微小徑 平底刀 C2S01 2-FLUTE MINIATURE END MILLS



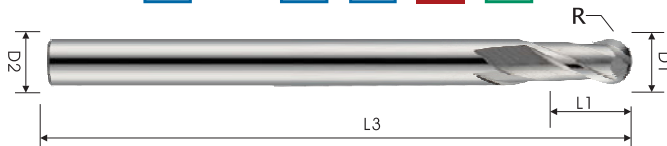
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C2S01002	0.2	0.6	-	-	4	45
C2S01003	0.3	0.9				
C2S01004	0.4	1.2				
C2S01005	0.5	1.5				
C2S01006	0.6	1.8				
C2S01007	0.7	2.1				
C2S01008	0.8	2.4				
C2S01009	0.9	2.7				

C2S04 4刃 平底刀 C2S04 4-FLUTE END MILLS



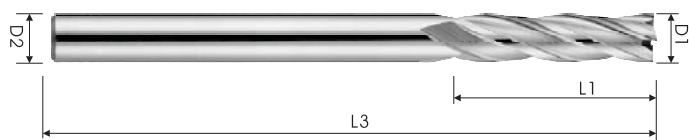
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C2S04010	1	3	-	-	4	50
C2S04015	1.5	4.5				
C2S04020	2	6				
C2S04025	2.5	7.5				
C2S04030	3	9				
C2SL04030	3	12				
C2S04040	4	12			6	60
C2SL04040	4	16				
C2S04050	5	15				
C2S04060	6	18				
C2SL04060	6	24				
C2S04080	8	24				
C2S04100	10	30			10	75
C2S04120	12	36			12	75

C2B05 2刃 加長型 球頭刀 C2B05 2-FLUTE LONG SHANK BALL



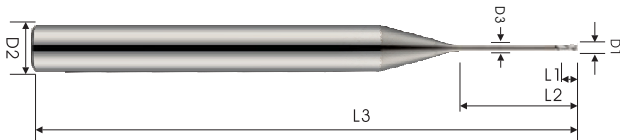
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C2B0504075	R2	4	6	-	4	75
C2B0504100						100
C2B0506075	R3	6	9		6	75
C2B0506100						100
C2B0506150						150
C2B0508075	R4	8	12		8	75
C2B0508100						100
C2B0508150						150
C2B0510100	R5	10	15		10	100
C2B0510150						150
C2B0512100	R6	12	18		12	100
C2B0512150						150

C2S04 4刃 加長型 平底刀 C2S04 4-FLUTE LONG SHANK END MILLS



產品型號 ITEM CODE	刃徑 OUTSIDE DIAMETER D1	刃長 FLUTE LENGTH L1	有效長 EFFECTIVE LENGTH L2	頸徑 Neck Diameter D3	柄徑 SHANK DIAMETER D2	全長 OVERALL LENGTH L3
C2S0604075	4	12	-	-	4	75
C2S0604100						100
C2S0606075	6	18			6	75
C2S0606100						100
C2S0606150						150
C2S0608075	8	24			8	75
C2S0608100						100
C2S0608150						150
C2S0610100	10	30			10	100
C2S0610150						150
C2S0612100	12	36			12	100
C2S0612150						150

C2S02 2刃 長頸 平底銑刀 C2S02 2-FLUTE LONG NECK END MILL

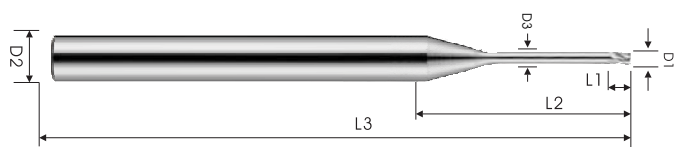


產品型號 ITEM CODE	刃徑 OUTSIDE DIAMETER D1	刃長 FLUTE LENGTH L1	有效長 EFFECTIVE LENGTH L2	頸徑 Neck Diameter D3	柄徑 SHANK DIAMETER D2	全長 OVERALL LENGTH L3
C2S02001003	0.1	0.2	0.3	0.085	4	45
C2S02001005			0.5			
C2S02002005	0.2	0.4	0.5	0.18		
C2S0200201			1			
C2S02002015			1.5			
C2S0200301	0.3	0.6	1	0.28		
C2S02003015			1.5			
C2S0200302			2			
C2S0200401	0.4	0.8	1	0.38		
C2S0200402			2			
C2S0200403			3			
C2S0200404			4			
C2S02005015	0.5	1.0	1.5	0.48		
C2S0200502			2			
C2S0200503			3			
C2S0200504			4			
C2S0200506			6			

產品型號 ITEM CODE	刃徑 OUTSIDE DIAMETER D1	刃長 FLUTE LENGTH L1	有效長 EFFECTIVE LENGTH L2	頸徑 Neck Diameter D3	柄徑 SHANK DIAMETER D2	全長 OVERALL LENGTH L3
C2S0200602	0.6	1.2	2	0.58	4	45
C2S0200603			3			
C2S0200604			4			
C2S0200606			6			
C2S0200803	0.8	1.6	3	0.77		
C2S0200804			4			
C2S0200806			6			
C2S0200808			8			
C2S0201003	1	2	3	0.97		50
C2S0201004			4			
C2S0201005			5			
C2S0201006			6			
C2S0201008			8			
C2S0201010			10			
C2S0201012			12			
C2S0201506	1.5	3	6	1.45		50
C2S0201508			8			50
C2S0201510			12			50
C2S0201516			16			60
C2S0202006	2	4	6	1.94		50
C2S0202008			8			50
C2S0202010			10			50
C2S0202012			12			50
C2S0202014			14			50
C2S0202016			16			60
C2S0202020			20			60
C2S0203010	3	6	10	2.85		50
C2S0203015			15			60
C2S0203020			20			60
C2S0203025			25			70
C2S0204015	4	8	15	3.8		60
C2S0204020			20			60
C2S0204025			25			70
C2S0204030			30			70
C2S0206020	6	12	20	5.7	6	60
C2S0206030			30			70
C2S0206050			50			90

C2S04 4刃 長頸 平底銑刀

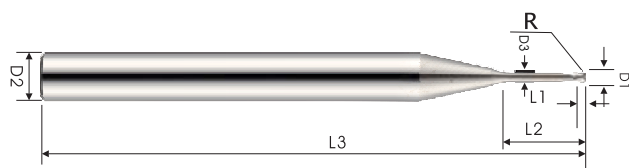
C2S04 4-FLUTE LONG NECK END MILL



產品型號 ITEM CODE	刃徑 OUTSIDE DIAMETER D1	刃長 FLUTE LENGTH L1	有效長 EFFECTIVE LENGTH L2	頸徑 Neck Diameter D3	柄徑 SHANK DIAMETER D2	全長 OVERALL LENGTH L3
C2S0401004	1	2	4	0.95	4	50
C2S0401006			6			50
C2S0401008			8			50
C2S0401010			10			50
C2S0401506	1.5	3	6	1.45		50
C2S0401508			8			50
C2S0401510			10			50
C2S0401512			12			50
C2S0401514			14			60
C2S0401516			16			60
C2S0402006	2	4	6	1.94		50
C2S0402008			8			50
C2S0402010			10			50
C2S0402012			12			50
C2S0402014			14			60
C2S0402016			16			60
C2S0402018			18			60
C2S0402020			20			60
C2S0402508	2.5	5	8	2.4		50
C2S0402512			12			50
C2S0402516			16			60
C2S0402520			20			60
C2S0402525			25			70
C2S0403008	3	6	8	2.85		50
C2S0403012			12			50
C2S0403016			16			60
C2S0403020			20			60
C2S0403025			25			70
C2S0403030			30			70
C2S0404012	4	8	12	3.8		50
C2S0404016			16			60
C2S0404020			20			60
C2S0404030			30			70
C2S0404040			40			90
C2S0405016	5	10	16	4.75	6	60
C2S0405025			25			70
C2S0405035			35			80
C2S0406020	6	12	20	5.7		80
C2S0406030			30			90
C2S0406040			40			100

C2R02 2刃 長頸 圓鼻刀

C2R02 2-FLUTE LONG NECK CORNER RADIUS



產品型號 ITEM CODE	刃徑 OUTSIDE DIAMETER D1	R徑 RADIUS R	有效長 EFFECTIVE LENGTH L2	刃長 FLUTE LENGTH L1	頸徑 Neck Diameter D3	柄徑 SHANK DIAMETER D2	全長 OVERALL LENGTH L3
C2R02002005005	0.2	R0.05	0.5	0.4	0.18		45
C2R0200200501			1				
C2R02002005015			1.5				
C2R0200200502			2				
C2R0200300501	0.3	R0.05	1	0.6	0.28		
C2R02003005015			1.5				
C2R0200300502			2				
C2R02003005025			2.5				
C2R0200300503			3				
C2R0200400501	0.4	R0.05	1	0.8	0.37		
C2R0200400502			2				
C2R0200400503			3				
C2R0200400504			4				
C2R020040101		R0.1	1				
C2R020040102			2				
C2R020040103			3				
C2R020040104			4				
C2R0200500501	0.5	R0.05	1	1	0.46	4	
C2R0200500502			2				
C2R0200500503			3				
C2R0200500504			4				
C2R0200500505			5				
C2R020050101		R0.1	1				
C2R020050102			2				
C2R020050103			3				
C2R020050104			4				
C2R020050105			5				
C2R0200600502	0.6	R0.05	2	1.2	0.56		
C2R0200600504			4				
C2R0200600506			6				
C2R020060102		R0.1	2				
C2R020060104			4				
C2R020060106			6				
C2R0200800504	0.8	R0.05	4	1.6	0.76		
C2R0200800506			6				
C2R0200800508			8				
C2R020080104		R0.1	4				
C2R020080106			6				
C2R020080108			8				
C2R020080204		R0.2	4				
C2R020080206			6				
C2R020080208			8				

C2R04 4刃 長頸 圓鼻刀
C2R04 4-FLUTE LONG NECK CORNER RADIUS

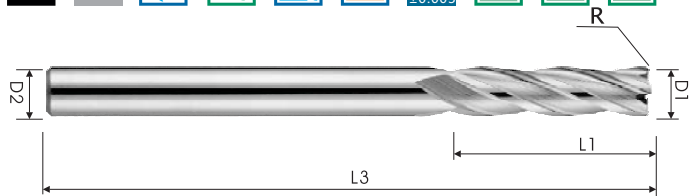


產品型號 ITEM CODE	刀徑 OUTSIDE DIAMETER D1	R徑 RADIUS R	有效長 EFFECTIVE LENGTH L2	刃長 FLUTE LENGTH L1	頸徑 Neck Diameter D3	柄徑 SHANK DIAMETER D2	全長 OVERALL LENGTH L3
C2R0401000502	1	R0.05	2	2	0.95	4	50
C2R0401000503			3				
C2R0401000504			4				
C2R0401000505			5				
C2R0401000506			6				
C2R0401000508			8				
C2R0401000510			10				
C2R040100102		R0.1	2				
C2R040100103			3				
C2R040100104			4				
C2R040100105			5				
C2R040100106			6				
C2R040100108			8				
C2R040100110			10				
C2R040100202		R0.2	2				
C2R040100203			3				
C2R040100204			4				
C2R040100205			5				
C2R040100206			6				
C2R040100208			8				
C2R040100210			10				
C2R040100302		R0.3	2				
C2R040100303			3				
C2R040100304			4				
C2R040100305			5				
C2R040100306			6				
C2R040100308			8				
C2R040100310			10				
C2R040120105	1.2	R0.1	5	2.4	1.14		
C2R040120110			10				
C2R040120205		R0.2	5				
C2R040120210			10				
C2R040120305		R0.3	5				
C2R040120310			10				

產品型號 ITEM CODE	刀徑 OUTSIDE DIAMETER D1	R徑 RADIUS R	有效長 EFFECTIVE LENGTH L2	刃長 FLUTE LENGTH L1	頸徑 Neck Diameter D3	柄徑 SHANK DIAMETER D2	全長 OVERALL LENGTH L3
C2R0401500503	1.5	R0.05	3	3	1.43	4	50
C2R0401500504			4				
C2R0401500506			6				
C2R0401500508			8				
C2R0401500510			12				
C2R0401500515			15				
C2R040150103		R0.1	3				
C2R040150104			4				
C2R040150106			6				
C2R040150108			8				
C2R040150112			12				
C2R040150115			15				
C2R040150203		R0.2	3				
C2R040150204			4				
C2R040150206			6				
C2R040150208			8				
C2R040150212			12				
C2R040150215			15				
C2R040150303		R0.3	3				
C2R040150304			4				
C2R040150306			6				
C2R040150308			8				
C2R040150312			12				
C2R040150315			15				
C2R040150503		R0.5	3				
C2R040150504			4				
C2R040150506			6				
C2R040150508			8				
C2R040150512			12				
C2R040150515			15				
C2R0402000504	2	R0.05	4	4	1.94		60
C2R0402000506			6				
C2R0402000508			8				
C2R0402000512			12				
C2R0402000516			16				
C2R0402000520			20				
C2R040200104		R0.1	4				50
C2R040200106			6				
C2R040200108			8				
C2R040200112			12				
C2R040200116			16				
C2R040200120			20				
C2R040200104		R0.2	4				50
C2R040200106							
C2R040200108			8				
C2R040200112							
C2R040200116			16				
C2R040200120							

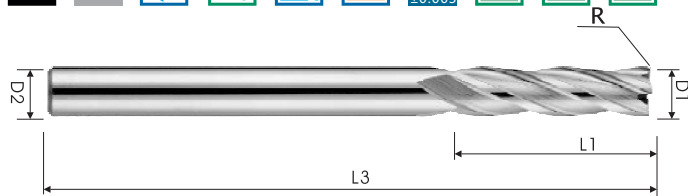
產品型號 ITEM CODE	刃徑 OUTSIDE DIAMETER D1	R徑 RADIUS R	有效長 EFFECTIVE LENGTH L2	刃長 FLUTE LENGTH L1	頸徑 Neck Diameter D3	柄徑 SHANK DIAMETER D2	全長 OVERALL LENGTH L3	產品型號 ITEM CODE	刃徑 OUTSIDE DIAMETER D1	R徑 RADIUS R	有效長 EFFECTIVE LENGTH L2	刃長 FLUTE LENGTH L1	頸徑 Neck Diameter D3	柄徑 SHANK DIAMETER D2	全長 OVERALL LENGTH L3		
C2R0403002046	3	R0.2	4	6	2.85		50	C2R040500115	5	R0.1	15	10	4.75		70		
C2R0403002066			C2R040500120					20			70						
C2R0403002086			C2R040500140					40			90						
C2R0403002126			C2R040500215					15		70							
C2R0403002166			R0.2				20	70									
C2R0403002206							40	90									
C2R0403003046		R0.3	4				50	C2R040500315		R0.3	15				70		
C2R0403003066			6					C2R040500320			20				70		
C2R0403003086			8					C2R040500340			40				90		
C2R0403003126			12					C2R040500515		15	70						
C2R0403003166			R0.5				16	C2R040500520		20	70						
C2R0403003206							20	C2R040500540		40	90						
C2R0403005046		R0.5	4				50	C2R040501015		R1	15				6	70	
C2R0403005066			6					C2R040501020			20					70	
C2R0403005086			8					C2R040501040			40					90	
C2R0403005126			12					C2R040600112		12	12					5.7	
C2R0403005166			16					C2R040600118		18							
C2R0403005206			20					C2R040600124		24							
C2R0404001086	R0.1	8	C2R040600148	48	100												
C2R0404001126		12	C2R040600212	12	70												
C2R0404001166		16	C2R040600218	18	90												
C2R0404001206		20	C2R040600224	24	90												
C2R0404001326		32	70	C2R040600248	48	100											
C2R0404002086	R0.2	8	60	C2R040600312	R0.3	12	70										
C2R0404002126		12		C2R040600318		18	90										
C2R0404002166		16		C2R040600324		24	90										
C2R0404002206		20		C2R040600348		48	100										
C2R0404002326		32		70	C2R040600512	R0.5	12	70									
C2R0404003086	R0.3	8	60	C2R040600518	18		90										
C2R0404003126		12		C2R040600524	24		90										
C2R0404003166		16		C2R040600548	48		100										
C2R0404003206		20		C2R040601012	12	70											
C2R0404003326		32	70	C2R040601018	R1	18	90										
C2R0404005086	R0.5	8	60	C2R040601024		24	90										
C2R0404005126		12		C2R040601048		48	100										
C2R0404005166		16															
C2R0404005206		20															
C2R0404005326	32	70															
C2R0404010086	R1	8	60														
C2R0404010126		12															
C2R0404010166		16															
C2R0404010206		20															
C2R0404010326		32		70													

C2R04 4刃 圓鼻銑刀 C2R04 4-FLUTE CORNER RADIUS END MILL



產品型號 ITEM CODE	刃徑 OUTSIDE DIAMETER D1	R徑 RADIUS R	刃長 FLUTE LENGTH L1	柄徑 SHANK DIAMETER D2	全長 OVERALL LENGTH L3
C2R0401001	1	R0.1	3	4	50
C2R0401002		R0.2			
C2R0401502	1.5	R0.2	4.5		
C2R0402002	2	R0.2	6		
C2R0402005		R0.5			
C2R0403002	3	R0.2	9		
C2R0403003		R0.3			
C2R0403005		R0.5			
C2R0404002	4	R0.2	12		
C2R0404005		R0.5			
C2R0404010		R1			
C2R0405005	5	R0.5	15	6	50
C2R0406002	6	R0.2	18		
C2R0406005		R0.5			
C2R0406010		R1			
C2R0408005	8	R0.5	24	8	60
C2R0408010		R1			
C2R0410005	10	R0.5	30	10	75
C2R0410010		R1			
C2R0412005	12	R0.5	36	12	75
C2R0412010		R1			

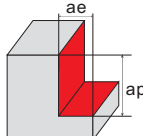
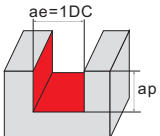
C2R04 4刃 加長型 圓鼻銑刀 C2R04 4-FLUTE LONG SHANK CORNER RADIUS END MILL



產品型號 ITEM CODE	刃徑 OUTSIDE DIAMETER D1	R徑 RADIUS R	刃長 FLUTE LENGTH L1	柄徑 SHANK DIAMETER D2	全長 OVERALL LENGTH L3
C2R060405075	4	R0. 5	12	4	75
C2R060405100					100
C2R060410075		R1			75
C2R060410100					100
C2R0604106100					100
C2R060602075	6	R0. 2	18	6	75
C2R060605075		R0. 5			75
C2R060605100					100
C2R060605150					150
C2R060610075		R1			75
C2R060610100					100
C2R060610150					150
C2R060805075	8	R0. 5	24	8	75
C2R060805100					100
C2R060805150					150
C2R060810075		R1			75
C2R060810100					100
C2R060810150					150
C2R061005100	10	R0. 5	30	10	100
C2R061005150					150
C2R061010100		R1			100
C2R061010150					150
C2R061205100	12	R0. 5	36	12	100
C2R061205150					150
C2R061210100		R1			100
C2R061210150					150

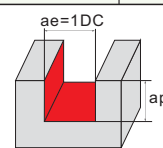
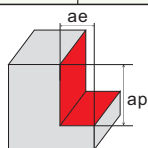


切削參數參考表 Recommended Milling Conditions

加工材料 Work Material	銅合金・鋁合金 Copper・Aluminum						
	側面切削 Side Milling				沟槽切削 Slotting		
R球头半径 Radius	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut		主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut
	min ⁻¹	mm/min	ap mm	ae mm	min ⁻¹	mm/min	ap mm
0.2	40000	100	0.3	0.004	40000	85	0.01
0.3	38000	100	0.45	0.006	38000	85	0.015
0.4	35000	100	0.6	0.008	35000	85	0.02
0.5	32000	120	0.75	0.01	32000	100	0.025
0.6	29000	150	0.9	0.012	26000	120	0.03
0.8	22000	180	1.2	0.016	21000	150	0.04
1	18000	180	1.5	0.02	16000	150	0.05
1.5	17500	250	2.25	0.15	11000	150	0.15
2	17000	340	3	0.2	7500	150	0.2
2.5	16500	450	3.75	0.25	6000	150	0.25
3	16000	630	4.5	0.3	5000	170	0.3
4	12000	650	6	0.4	5000	200	0.4
5	10000	750	7.5	0.5	5000	250	0.5
6	8000	800	9	0.6	4500	250	0.6
8	6000	700	12	0.8	4000	250	0.8
10	5000	600	15	1	4000	350	1
12	4000	500	18	1.2	4000	450	1.2
							
	①建议使用切削油。 ②此切削條件表中的數值仅供参考。實際加工時，請考慮加工形狀、目的、使用機床等因素，對切削條件進行調整。 ③如果機床轉速低於列表中所列數值，則進給速度應與轉速按同一比率降低。 ④盡可能使用高速、高剛性、高精度機床(建議使用高精度刀柄及筒夾，綜合跳動控制在0.005mm以內最佳)。 ⑤发生振刀时，请以相同的比率降低主轴转速和进给速度。 ① Use cutting fluid. ② Recommend to use the milling condition as just reference.Adjust milling conditions according to machining shape and machine status. ③ If insufficient spindle speed of a machine,Adjust both spindle speed and feed at the same rate. ④ Use high-speed, high-rigidity, high-precision machine tools whenever possible (high-precision tool holders and collets are recommended, and integrated bounce control is best within 0.005mm). ⑤ Reduce both spindle speed and feed at same rate for chattering.						

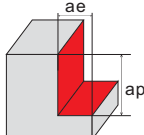
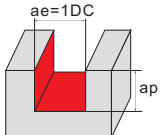
切削參數參考表 Recommended Milling Conditions

加工材料 Work Material		銅合金・鋁合金 Copper・Aluminum						
刃徑 Dia.	有效長 Effective Length	側銑 Side Milling				槽銑 Slotting		
		主軸轉速 Spindle Speed	進給速度 Feed	切深量 Depth of Cut		主軸轉速 Spindle Speed	進給速度 Feed	切深量 Depth of Cut
		L/D min ⁻¹	mm/min	ap mm	ae mm	min ⁻¹	mm/min	ap mm
0.1	0.3	40,000	180	0.1	0.006	40,000	170	0.01
	0.5	40,000	140	0.1	0.004	40,000	130	0.007
0.2	0.5	40,000	400	0.2	0.008	40,000	380	0.02
	1	40,000	350	0.2	0.006	40,000	320	0.015
	1.5	40,000	300	0.2	0.004	40,000	250	0.01
0.3	1	40,000	500	0.3	0.01	40,000	450	0.035
	1.5	40,000	450	0.3	0.008	40,000	400	0.025
	2	40,000	380	0.3	0.006	40,000	350	0.017
0.4	1	40,000	700	0.4	0.02	40,000	650	0.045
	2	40,000	600	0.4	0.015	40,000	550	0.03
	3	35,000	500	0.4	0.01	35,000	450	0.02
	4	28,000	350	0.4	0.006	28,000	300	0.015
0.5	1.5	40,000	900	0.5	0.025	40,000	800	0.07
	2	38,000	800	0.5	0.02	35,000	700	0.055
	3	35,000	700	0.5	0.015	32,000	600	0.04
	4	28,000	550	0.5	0.008	26,000	500	0.03
	6	18,000	350	0.5	0.005	18,000	300	0.015
0.6	2	38,000	1,000	0.6	0.025	35,000	850	0.1
	3	32,000	800	0.6	0.02	30,000	700	0.08
	4	28,000	700	0.6	0.015	26,000	600	0.06
	6	20,000	450	0.6	0.01	20,000	400	0.03
0.8	3	30,000	1,300	0.8	0.04	28,000	1,200	0.15
	4	26,000	1,100	0.8	0.03	24,000	1,000	0.12
	6	22,000	900	0.8	0.02	18,000	650	0.08
	8	16,000	600	0.8	0.01	16,000	500	0.05
1	3	24,000	2,200	1	0.06	24,000	2,000	0.22
	4	24,000	2,000	1	0.05	22,000	1,800	0.2
	5	22,000	1,700	1	0.04	20,000	1,500	0.16
	6	20,000	1,500	1	0.03	18,000	1,200	0.14
	8	16,000	1,200	1	0.025	15,000	1,000	0.1
	10	14,000	1,000	1	0.02	12,000	800	0.07
	12	10,000	700	1	0.01	10,000	650	0.05
1.5	6	18,000	2,200	1.5	0.08	16,000	1,800	0.3
	8	16,000	1,700	1.5	0.06	14,000	1,400	0.25
	12	12,000	1,200	1.5	0.04	11,000	1,000	0.15
	16	10,000	900	1.5	0.02	10,000	800	0.08



- ① 建议使用切削油。
- ② 此切削條件表中的數值仅供参考。實際加工時，請考慮加工形狀、目的、使用機床等因素，對切削條件進行調整。
- ③ 如果機床轉速低於列表中所列數值，則進給速度應與轉速按同一比率降低。
- ④ 盡可能使用高速、高剛性、高精度機床(建議使用高精度刀柄及筒夾，綜合跳動控制在0.005mm以內最佳)。
- ⑤ 發生振動時，請以相同的比率降低主軸轉速和進給速度。

切削參數參考表 Recommended Milling Conditions

加工材料 Work Material		銅合金・鋁合金 Copper・Aluminum						
刃徑 Dia.	有效長 Effective Length	側銑 Side Milling				槽銑 Slotting		
		主軸轉速 Spindle Speed	進給速度 Feed	切深量 Depth of Cut		主軸轉速 Spindle Speed	進給速度 Feed	切深量 Depth of Cut
		L/D min ⁻¹	mm/min	ap mm	ae mm	min ⁻¹	mm/min	ap mm
2	6	18,000	2,500	2	0.1	16,000	2,200	0.45
	8	16,000	2,200	2	0.09	14,000	1,900	0.4
	10	14,000	1,900	2	0.08	12,000	1,600	0.35
	12	12,000	1,600	2	0.07	11,000	1,400	0.28
	14	11,000	1,400	2	0.06	10,000	1,200	0.24
	16	10,000	1,200	2	0.045	9,000	1,000	0.18
	20	9,000	1,000	2	0.03	8,000	850	0.12
3	10	16,000	2,400	3	0.12	14,000	2,000	0.7
	15	14,000	2,100	3	0.1	12,000	1,600	0.6
	20	11,000	1,500	3	0.07	10,000	1,200	0.4
	25	10,000	1,300	3	0.05	9,000	1,000	0.2
4	15	12,000	2,400	4	0.2	10,000	2,000	0.9
	20	10,000	2,000	4	0.15	8,000	1,600	0.7
	25	9,000	1,700	4	0.1	8,000	1,500	0.5
	30	8,000	1,500	4	0.07	7,000	1,300	0.3
6	20	7,000	2,400	6	0.3	6,000	2,000	1.2
	30	5,000	1,600	6	0.2	4,000	1,200	1
	50	3,500	800	6	0.1	3,000	650	0.4
								
		① 建议使用切削油。 ② 此切削條件表中的數值僅供參考。實際加工時，請考慮加工形狀、目的、使用機床等因素，對切削條件進行調整。 ③ 如果機床轉速低於列表中所列數值，則進給速度應與轉速按同一比率降低。 ④ 盡可能使用高速、高剛性、高精度機床(建議使用高精度刀柄及筒夾，綜合跳動控制在0.005mm以內最佳)。 ⑤ 发生振刀时，請以相同的比率降低主軸轉速和進給速度。 ① Use cutting fluid. ② Recommend to use the milling condition as just reference. Adjust milling conditions according to machining shape and machine status. ③ If insufficient spindle speed of a machine, Adjust both spindle speed and feed at the same rate. ④ Use high-speed, high-rigidity, high-precision machine tools whenever possible (high-precision tool holders and collets are recommended, and integrated bounce control is best within 0.005mm). ⑤ Reduce both spindle speed and feed at same rate for chattering.						

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C2B02 2-FLUTE LONG NECK BALL



切削參數參考表 Recommended Milling Conditions

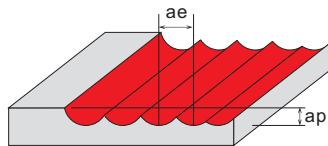
加工材料 Work Material			銅合金・鋁合金 Copper・Aluminum			
R球頭半徑 Radius	有效長 Effective Length	刃徑與有效長的比例	主軸轉速 Spindle Speed	進給速度 Feed	切深量 Depth of Cut	
			L/D min ⁻¹	mm/min	ap mm	ae mm
0.05	0.3	3	40000	200	0.01	0.01
	0.5	5	40000	150	0.007	0.007
0.1	0.5	2.5	40000	500	0.025	0.05
	1	5	40000	400	0.02	0.04
	1.5	7.5	40000	300	0.015	0.03
0.15	1	3.3	40000	700	0.03	0.07
	1.5	5	40000	500	0.025	0.05
	2	6.7	40000	400	0.015	0.03
	2.5	8.3	40000	300	0.01	0.02
	3	10	40000	250	0.008	0.01
0.2	1	2.5	40000	1000	0.05	0.1
	2	5	40000	600	0.035	0.06
	3	7.5	30000	400	0.02	0.04
	4	10	25000	250	0.008	0.015
	5	12.5	25000	250	0.006	0.01
0.25	2	4	40000	800	0.08	0.15
	3	6	35000	600	0.06	0.1
	4	8	30000	400	0.04	0.08
	5	10	25000	300	0.02	0.04
0.3	2	3.3	40000	1600	0.12	0.2
	3	5	40000	1000	0.1	0.14
	4	6.7	30000	700	0.07	0.1
	5	8.3	27000	600	0.05	0.08
	6	10	25000	500	0.04	0.06
	8	13.3	23000	400	0.03	0.04
	10	16.7	22000	300	0.01	0.02
0.4	2	2.5	40000	2000	0.15	0.3
	4	5	35000	1600	0.12	0.2
	6	7.5	30000	1000	0.08	0.15
	8	10	22000	700	0.05	0.06
	10	12.5	20000	500	0.03	0.04
0.5	2	2	40000	2800	0.25	0.4
	4	4	40000	2400	0.2	0.4
	6	6	30000	1600	0.14	0.3
	8	8	25000	1000	0.12	0.2
	10	10	20000	800	0.08	0.15
	12	12	16000	600	0.06	0.1
	14	14	16000	500	0.05	0.08
	16	16	15000	400	0.04	0.08
0.6	20	20	12000	300	0.01	0.06
	6	5	30000	1600	0.14	0.3
	8	6.7	25000	1000	0.12	0.2
	10	8.3	20000	800	0.08	0.15
	12	10	16000	600	0.06	0.1

C2B02 2-FLUTE LONG NECK BALL



切削參數參考表 Recommended Milling Conditions

加工材料 Work Material			銅合金 · 鋁合金 Copper · Aluminum			
R球頭半徑 Radius	有效長 Effective Length	刃徑與有效長的比例	主軸轉速 Spindle Speed	進給速度 Feed	切深量 Depth of Cut	
			L/D min ⁻¹	mm/min	ap mm	ae mm
0.75	6	4	30000	2400	0.3	0.6
	8	5.3	25000	1600	0.25	0.4
	10	6.7	22000	1200	0.2	0.3
	12	8	16000	1000	0.15	0.2
	16	10.7	12000	800	0.1	0.15
	20	13.3	10000	700	0.08	0.12
1	4	2	30000	4000	0.45	0.8
	6	3	27000	3000	0.45	0.8
	8	4	25000	2400	0.4	0.8
	10	5	22000	2000	0.3	0.6
	12	6	16000	1400	0.3	0.6
	16	8	12000	1000	0.25	0.5
	20	10	10000	800	0.15	0.3
	25	12.5	8000	600	0.08	0.15
1.5	10	3.3	20000	3400	0.7	1.5
	15	5	18000	3000	0.6	1
	20	6.7	16000	2400	0.5	0.8
	25	8.3	12000	1800	0.4	0.6
	30	10	8000	1200	0.2	0.4
2	10	2.5	16000	4000	1	1.6
	15	3.8	16000	3400	0.8	1.6
	20	5	14000	3000	0.8	1.6
	25	6.3	14000	3000	0.6	1.2
	30	7.5	12000	2400	0.5	1
	40	10	8000	1200	0.4	0.8
3	20	3.3	12000	3600	1	2
	30	5	10000	3000	0.8	1.6
	50	8.3	6000	1800	0.5	1



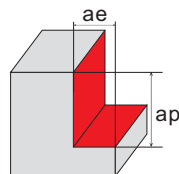
- ①盡可能使用高速、高剛性、高精度機床(建議使用高精度刀柄及筒夾綜合跳動控制在0.005mm以內最佳)。
- ②此切削條件表中的數值僅供參考。實際加工時，請考慮加工形狀、目的、使用機床等因素，對切削條件進行調整。
- ③如果機床轉速低於列表中所列數值，則進給速度應與轉速按同一比率降低。
- ④請結合工件材料、加工形狀等，使用合適的冷卻液。
- ⑤發生振刀時，請以相同的比率降低主軸轉速和進給速度。

▶ C2S04 C2R04 C2S06 C2R06 SERIE



切削參數參考表 Recommended Milling Conditions

加工材料 Work Material	銅合金 · 鋁合金 Copper · Aluminum			
	側面切削 Side Milling			
R球頭半徑 Radius	主軸轉速 Spindle Speed	進給速度 Feed	切深量 Depth of Cut	
	min ⁻¹	mm/min	ap mm	ae mm
1x3	15000	400	1.5	0.1
1.5x4.5	15000	450	2	0.15
2x6	12000	500	3	0.2
2.5x7.5	12000	550	3.5	0.25
3x9	10000	600	4.5	0.3
3x12	5000	300	7.5	0.15
4x12	8000	650	6	0.4
4x16	4000	325	10	0.2
5x15	6500	750	7.5	0.5
6x18	5500	750	9	0.6
6x24	3500	400	15	0.3
8x24	4200	700	12	0.8
10x30	3500	700	15	1
12x36	2800	700	18	1.2

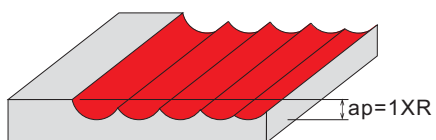




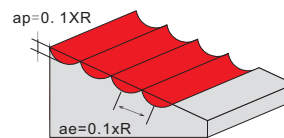
切削參數參考表 Recommended Milling Conditions

加工材料 Work Material	铜合金 Copper			铝合金 Aluminum		
切削速度 Cutting Speed	70~100 m/min			100~200 m/min		
R球头半径 Radius	主轴转速 Spindle Speed	进给速度 Feed		主轴转速 Spindle Speed	进给速度 Feed	
	min ⁻¹	mm/min		min ⁻¹	mm/min	
		粗加工 Roughing	精加工 Finishing		粗加工 Roughing	精加工 Finishing
0.5	32000	200	550	47000	320	860
0.75	21000	200	550	47000	320	860
1	16000	200	550	23800	600	860
1.5	11000	250	700	16000	750	1650
2	8000	250	700	12000	750	1650
3	5300	250	700	8000	750	1650
4	4000	250	700	6000	750	1650
5	3200	250	700	4800	750	1650
6	2700	250	700	4200	750	1650

粗加工
Roughing



精加工
Finishing



C2R02 4-FLUTE CORNER RADIUS END MILL



切削參數參考表 Recommended Milling Conditions

加工材料 Work Material				銅合金・鋁合金 Copper・Aluminum			
刃徑 Dia.	R角 Corner Radius	有效長 Effective Length	刃徑與有效長的比例	主軸轉速 Spindle Speed	進給速度 Feed	切深量 Depth of Cut	
				L/D min ⁻¹	mm/min	ap mm	ae mm
0.2	0.05	0.5	2.5	40,000	400	0.03	0.1
		1	5	40,000	320	0.02	0.1
		1.5	7.5	30,000	180	0.01	0.1
0.3	0.05	1	3.3	40,000	480	0.03	0.15
		1.5	5	40,000	360	0.024	0.15
		2	6.7	30,000	240	0.018	0.15
0.4	0.05	1	2.5	40,000	640	0.03	0.2
		2	5	40,000	560	0.024	0.2
		3	7.5	30,000	420	0.018	0.2
		4	10	30,000	360	0.012	0.2
	0.1	1	2.5	40,000	640	0.06	0.2
		2	5	40,000	560	0.05	0.2
		3	7.5	30,000	420	0.036	0.2
		4	10	30,000	360	0.024	0.2
0.5	0.05	2	4	40,000	800	0.03	0.25
		3	6	35,000	640	0.024	0.25
		4	8	30,000	480	0.018	0.25
		5	10	25,000	400	0.012	0.25
	0.1	2	4	40,000	800	0.06	0.25
		3	6	35,000	640	0.05	0.25
		4	8	30,000	480	0.036	0.25
		5	10	25,000	400	0.024	0.25
0.6	0.05	2	3.3	30,000	1,000	0.03	0.3
		4	6.7	25,000	800	0.02	0.3
		6	10	20,000	600	0.012	0.3
	0.1	2	3.3	30,000	1,000	0.06	0.3
		4	6.7	25,000	800	0.05	0.3
		6	10	20,000	600	0.036	0.3
0.8	0.05	4	5	25,000	1,600	0.03	0.4
		6	7.5	20,000	1,200	0.024	0.4
		8	10	16,000	800	0.02	0.4
	0.1	4	5	25,000	1,600	0.06	0.4
		6	7.5	20,000	1,200	0.05	0.4
		8	10	16,000	800	0.04	0.4
		3	3	25,000	2,400	0.06	0.6
		4	4	25,000	2,200	0.055	0.6
1	0.1	5	5	22,000	2,000	0.05	0.6
		6	6	20,000	1,800	0.045	0.6
		8	8	16,000	1,400	0.04	0.6
		10	10	12,000	1,000	0.03	0.6
	0.2	3	3	25,000	2,400	0.12	0.6
		4	4	25,000	2,200	0.11	0.6
		5	5	22,000	2,000	0.1	0.6
		6	6	20,000	1,800	0.09	0.6
		8	8	16,000	1,400	0.08	0.6
		10	10	12,000	1,000	0.06	0.6

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C2R02 4-FLUTE CORNER RADIUS END MILL



切削參數參考表 Recommended Milling Conditions

加工材料 Work Material				銅合金・鋁合金 Copper・Aluminum			
刃径 Dia.	R角 Corner Radius	有效长 Effective Length	刃径与有效长的比例	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	
				L/D min ⁻¹	mm/min	ap mm	ae mm
1.5	0.5	10	6.6	16,000	1,600	0.2	0.9
		20	13.3	8,000	600	0.06	0.9
2	0.1	5	2.5	16,000	3,000	0.06	1.2
		8	4	14,000	2,600	0.06	1.2
		10	5	12,000	2,000	0.06	1.2
		15	7.5	10,000	1,600	0.05	1.2
		20	10	8,000	1,200	0.04	1.2
	0.2	5	2.5	16,000	3,000	0.18	1.2
		8	4	14,000	2,600	0.18	1.2
		10	5	12,000	2,000	0.18	1.2
		15	7.5	10,000	1,600	0.14	1.2
		20	10	8,000	1,200	0.1	1.2
3	0.2	12	4	14,000	3,000	0.12	1.8
		18	6	12,000	2,400	0.1	1.8
		24	8	10,000	1,800	0.08	1.8
	0.5	12	4	14,000	3,000	0.3	1.8
		15	5	13,000	2,600	0.3	1.8
		18	6	12,000	2,400	0.25	1.8
		24	8	10,000	1,800	0.2	1.8
		30	10	8,000	1,400	0.16	1.8
4	0.2	16	4	10,000	2,800	0.14	2.8
		24	6	8,000	2,200	0.12	2.8
		32	8	6,000	1,600	0.1	2.8
	0.5	16	4	10,000	2,800	0.3	2.4
		24	6	8,000	2,200	0.24	2.4
		32	8	6,000	1,600	0.18	2.4
	1	16	4	10,000	2,800	0.6	2
		24	6	8,000	2,200	0.48	2
		32	8	6,000	1,600	0.36	2
6	0.2	24	4	6,000	2,600	0.12	4.2
		48	8	4,000	1,600	0.06	4.2
	0.5	24	4	6,000	2,600	0.3	3.6
		30	5	5,000	2,200	0.24	3.6
	1	48	8	4,000	1,600	0.16	3.6
		24	4	6,000	2,600	0.6	3
		48	8	4,000	1,600	0.3	3



高级无尘车间

恒温: $22 \pm 2^{\circ}\text{C}$

恒湿: $60 \pm 2\%$



▶ 安全注意事项 Attentions on safely

1. 处理时的注意点

(1) 从箱(包装)内取出刀具时, 请注意不要使刀具飞出或落下。特别是在接触刀具刀部时, 请充分小心。
(2) 使用有锋利切削刃的刀具时, 请注意切勿用裸手直接角摸刃口。

2. 安装时的注意点

(1) 使用前, 请事先确认切削刀具的外观是否损伤、裂纹。然后将其牢固地安装到筒夹刀柄上。
(2) 使用过程中, 如果发生异常振动, 请立即停止机床运转, 排除造成振动的原因。

3. 使用时的注意点

(1) 使用前, 请事先确认切削刀具以及工件材料的尺寸、旋转方向。
(2) 请将标准切削条件表中的数值作为新的作业的基准值使用。当切削深度较大或所有机床刚性较小时, 请根据工件材料的特性, 对切削条件进行适当调整。
(3) 切削刀具材料为硬质材料。使用过程中若发生破损, 碎片可能会向四处飞散。另外, 铁屑也有可能飞散。这些飞散物可能会划伤、烫伤操作人员, 也可能飞溅入眼睛而导致受伤。所以, 使用刀具时请在其周围安装防护用具, 确保在安全的环境下作业。
(4) 切削中产生的火花、因破损而导致的发热、铁屑, 有引发火灾的危险。请勿在可能会造成燃烧及爆炸的场所使用。如果使用非水溶性切削液, 请务必做好防火措施。
(2) 请勿将刀具用于原定用途以外的其它目的。

4. 返修的注意事项

(1) 如果在不当的时间进行返修, 有可能损坏刀具。请更换合适的刀具, 再进行返修。
(2) 研磨刀具时会产生研磨粉尘。返修时请务必在周围安装安全罩, 佩戴防护眼镜等保护装备。
(3) 本产品含有指定的化学物质钴及其它无机化合物。在进行返修的时候, 请务必按照化学物质管理等级遵则进行处理。

1. Cautions regarding handling

(1) When removing the tool from its case (packaging), be careful that the tool does not pop out or is dropped. Be particularly careful regarding contact with the tool flutes.
(2) When handling tools with sharp cutting flutes, be careful not to touch the cutting flutes directly with your bare hands.

2. Cautions regarding mounting

(1) Before use, check the outside appearance of the tool for scratches, cracks, etc. and that it is firmly mounted in the collet chuck, etc.
(2) If abnormal chattering, etc. occurs during use, stop the machine immediately and remove the cause of the chattering.

3. Cautions during use

(1) Before use, confirm the dimensions and direction of rotation of the tool and milling work material.
(2) The numerical values in the standard cutting conditions table should be used as criteria when starting new work. The cutting conditions should be adjusted as appropriate when the cutting depth is large, the rigidity of the machine being used is low, or according to the conditions of the work material.
(3) Cutting tools are made of a hard material. During use, they may break and fly off. In addition, cutting chips may also fly off. Since there is a danger of injury to workers, fire, or eye damage from such flying pieces, a safety cover should be attached when work is performed and safety equipment such as safety goggles should be worn to create a safe environment for work.
(4) There is a risk of fire or inflammation due to sparks, heat due to breakage, and cutting chips. Do not use where there is a risk of fire or explosion. Please caution of fire while using oil base coolant, fire prevention is necessary.
(5) Do not use the tool for any purpose other than that for which it is intended.

4. Cautions regarding regrinding

(1) If regrinding is not performed at the proper time, there is a risk of the tool breaking. Replace the tool with one in good condition, or perform regrinding.
(2) Grinding dust will be created when regrinding a tool. When regrinding, be sure to attach a safety cover over the work area and wear safety clothes such as safety goggles, etc.
(3) This product contains the specified chemical substance cobalt and its inorganic compounds. When performing regrinding or similar processing, be sure to handle the processing in accordance with the local laws and regulations regarding prevention of hazards due to specified chemical substances.

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