

2022

THE PROFESSIONAL ENDMILL

由超精密加工技術打造的立銑刀

立銑刀綜合目錄

End mill general catalog





WHAT'S

在半導體產業中的超精密模具製造業，TOWA 是全球領導品牌。TOWA 能有這麼出色的超精密模具製造技術，靠得是 TOWA 自家的研發製造的立銑刀。TOWA 的立銑刀精度高、耐磨、鋒利、壽命長。TOWA 本身為最大用戶”TOWA”，最了解這些優點。TOWA 同時是立銑刀的製造商也是使用者，因此可以生產出符合客人需求細節的產品。除此之外，站在使用者的角度，我們可以充分展現多年來對零部件加工製成的經驗，對需求提出可靠的建議。身為一個全方位的刀具製造商，TOWA 會持續努力以更有效率的金屬加工技術來實現更高的產品性價比。

TOWA End Mill?

Towa is a World Leader in the manufacturing of Ultra-Precision Molds for the Semiconductor Industry. It is no exaggeration to state that the manufacturing of TOWA's Ultra-Precision Molds is achieved through the use of TOWA's own "TOWA End Mill".

"TOWA End Mill" is designed for high accuracy, with excellent wear resistance, sharpness and long life. The superiority of the "TOWA End Mill" is continuously shown by its use with their Number One Customer, TOWA!

TOWA, which is both a manufacturer and a user, can deliver products that meet the needs of each customer in detail.

In addition, from the standpoint of the "user", we can fully demonstrate our many years of experience in giving recommendations regarding the part's machining process.

As a comprehensive manufacturer of cutting tools, TOWA will continue to strive for a greater cost performance ratio with efficient metal processing.

由超精密加工TOWA所創造的立銑刀

End mill created by TOWA for ultra-precision machining

CBN&超硬立銑刀系列

我們的立銑刀，源於對超精密模具加工的內部需求。

為了滿足客戶逐年嚴格的模具規格，及為最大限度地發揮我們公司的技術能力，制作更高精度和高耐用性的切削工具勢必不可缺少。

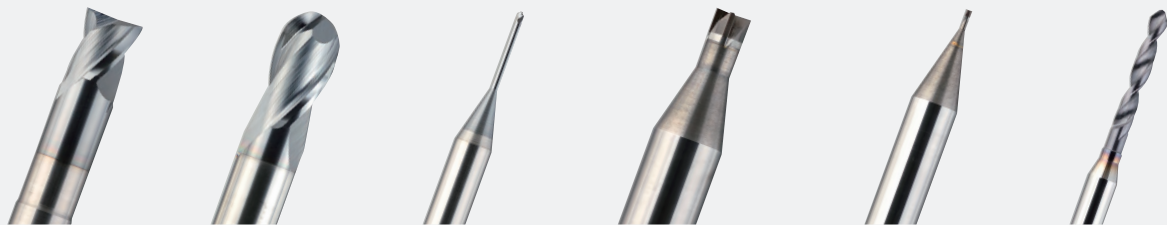
Our end mills were born out of our in-house needs for ultra-precision mold machining.

In order to meet the customer's mold specifications, which are becoming stricter each year, TOWA tapped into our company's technological capabilities to the maximum.

Proven design and developed cutting tools manufactured in-house, because tools with higher precision and durability are indispensable.

長壽命！可以降低工具購買成本！！

Longer life than conventional tooling. Reduced number of tools needed = reduced cost.



高精度 High precision

● 刀具直徑：根據所需尺寸控制公差在 $-3\mu\text{m}$ 內

Tool diameter: For required dimensions We will produce within $3\mu\text{m}$!

● R精度： $\pm 2\mu\text{m}$
R accuracy: $\pm 2\mu\text{m}$

多數刃 Multiple Flutes

● 活用3 ~ 6 的刃數，縮短了加工時間

Processing time is shortened by utilizing 3 to 6 flutes

長壽命 Long life

● 使用獨創鍍膜延長刀具壽命

Long life with original coating

再研磨 Regrinding

● CBN立銑刀最多可重新研磨8次，總成本減半！

We can regrind CBN end mills up to 8 times with overall cost reduction for the Customer up to 50%.

● 實現硬質合金立銑刀鍍膜的完全剝離！將鍍膜完全剝離，重磨後再次鍍膜，使硬質合金立銑刀再生，並以合理的價格提供！

We remove the carbide coating completely. Completely remove the coating, re-grind and then re-coat. We offer recondition carbide end mills at a reasonable cost.

短交期 Quick delivery

● 目錄產品當日/次日發貨

Catalog products can be shipped on the day of order or the next day

● 定制產品/重新研磨 7天內發貨

Custom-made products and regrinding tools will be shipped within 7 days.

CBN&超硬立銑刀

CBN&Carbide End Mill



Point 1.

用於超精密加工的高精度刀具

Our high-precision tools are capable of ultra-precision machining.

Point 2.

透過再研磨技術大幅度降低加工成本

Significant cost reduction with Re-grinding end mills.

Point 3.

提供短交貨期的客製化特殊刀具

Providing custom-made tools that meet customer requirements in a short delivery time.

**我們接受客製化特殊刀具
再研磨(再生產)，
一支也可以下單訂製**

Re-grinding (recondition) and Custom-made products can be quoted, even if one pack of tool.

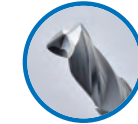
CONTENTS

立銑刀 / End Mill



CBN Series

CBN Series



Hard Star A Series

Hard Star A Series



Hard Star TI Series

Hard Star TI Series



Hard Star TT Series

Hard Star TT Series



ion Depo A Series

ion Depo A Series



ion Depo U Series

ion Depo U Series



DLC Series

DLC Series



Non-Coat Series

Non-Coat Series

鑽頭 / Drill



ion Depo R Series

ion Depo R Series

表面處理 Coating

Hard A Hard Star Type A Coating

Hard TI Hard Star Type TI Coating

Hard TT Hard Star Type TT Coating

ion A ion Depo Type A Coating

ion U ion Depo Type U Coating

ion R ion Depo Type R Coating

DLC DLC Coating

Non Non Coating

BANCERA BANCERA Coating

刀具材質 Material

CBN 立方晶氮化硼
Cubic Boron Nitride

super MG 超超微粒子超硬合金
Super Micro Grain Carbide

刃數 Number of Flutes

刃數 2 二刃刀型
2Flutes

刃數 4 四刃刀型
4Flutes

刃數 2·3 二·三刃刀型
2Flutes·3Flutes

刃數 2·4 二·四刃刀型
2Flutes·4Flutes

刃數 2~6 二·四·六刃刀型
2Flutes·3Flutes·4Flutes·6Flutes

螺旋角 Helix Angle

螺旋角 0° Angle 0°

螺旋角 30° Angle 30°

螺旋角 45° Angle 45°

螺旋角 40°/42° Angle 40/42°

仰角 Neck Taper Angle

仰角 15° Angle 15°

柄徑公差 Shank Diameter Tolerance

Shank
↑
0/-0.005

● 按「切削材料」檢索
Search from Material

P007

● 按「系列」檢索
Search from Series

P009

● 按「形狀」檢索
Search from Shape

P019

● 按「型號」檢索
Search from Model

P029

類別 Category				CBN End Mill			Carbide End Mill							Carbide Drill	
硬度 Hardness	記號 Mark	分類 Classification	切削材料 Material	CBN	CBN BANCERA	HARD STAR Type A	HARD STAR Type TI	HARD STAR Type TT	HARD STAR Type TN	ion Depo Type A	ion Depo Type U	DLC	Non-Coat	ion Depo Type R	
Hardness ~HRC50	K	鑄鐵 Cast Iron	FCD							○				○	
	P	碳鋼 Carbon Steels	S50C/SS400								○				○
		預硬鋼 Prehardened Steels	PX5/NAK80								○				○
		合金鋼 Die Steels	SKD11·SKD61								○				○
		高速鋼 High Speed Steels	HAP5R·HAP72/ASP23								○				○
	M	不銹鋼 Stainless Steels	SUS304					○		○				○	
			HPM/STAVAX							○				○	
~HRC55	不銹鋼 Stainless Steels	HPM		○	○(★)	○ 精加工 Finishing			○(★)		○粗/中Roughing ○精加工Finishing				
		STAVAX		○	○(★)	○ 精加工 Finishing			○(★)		○粗/中Roughing ○精加工Finishing				
		合金鋼 Die Steels	SKD61			○ 精加工 Finishing					○粗/中Roughing ○精加工Finishing				
		高速鋼 Die Steels	SKD11	○	○(★)	○ 精加工 Finishing					○粗/中Roughing ○精加工Finishing				
~HRC60	H	高速鋼 High Speed Steels	SKH51	○	○(★)	○ 精加工 Finishing					○粗/中Roughing ○精加工Finishing				
		ASP23		○	○(★)	○ 精加工 Finishing					○粗/中Roughing ○精加工Finishing				
HRC60 over	不銹鋼 Stainless Steels	HAP5R		○	○(★)	○ 精加工 Finishing					○粗/中Roughing ○精加工Finishing				
		HAP72		○	○(★)	○ 精加工 Finishing					○粗/中Roughing ○精加工Finishing				
		銅合金 Copper Alloy	銅 Copper	○	○(★)					○(★)	○				
非鐵系 Non-ferrous Metal	N	銅鎢 Copper Tungsten									○				
		鋁合金 Aluminum Alloy	A5000號系列 A5000 Series			○ 精加工 Finishing					○	○	○		
			A7000號系列 A7000 Series			○ 精加工 Finishing					○	○	○		
		石墨 Graphite	石墨 Graphite									○			
	S	耐熱合金 Heat Resistant Alloy	鎳鎳鐵合金 Inconel					○							
			鈷鎳合金 Kovar			○ 精加工 Finishing									
		鈦合金 Titanium Alloy								○					
馬氏體時效鋼 Maraging Steels														○粗/中Roughing ○精加工Finishing	
3D Printer	P	鐵合金 Iron Alloy	不銹鋼 Stainless Steels							○(★)					

◎:最佳 Excellent ○適合 Good ★:定制品 Ordered product

圖面 Photo	圖面 Product Name	圖面 Model	尺寸 Size	材料 Material	塗層 Coating	刃數 Number of Flutes	螺旋角 Helix Angle	適合加工形狀 Processes Shape																				適合切削材料 Work Material												圖面 Page								
								適合加工形狀 Processes Shape										適合加工形狀 Processes Shape										H				N				S					P				M			
								適合加工形狀 Processes Shape										適合加工形狀 Processes Shape										H				N				S					P				M			
								適合加工形狀 Processes Shape										適合加工形狀 Processes Shape										H				N				S					P				M			
								~HRC50										~HRC55				~HRC60				HRC60 over				非鐵系 Non-ferrous Metal								3D Printer										
								~HRC50										~HRC55				~HRC60				HRC60 over				非鐵系 Non-ferrous Metal								3D Printer										
								~HRC50										~HRC55				~HRC60				HRC60 over				非鐵系 Non-ferrous Metal								3D Printer										
								~HRC50										~HRC55				~HRC60				HRC60 over				非鐵系 Non-ferrous Metal								3D Printer										

CBN Series

圓角 Radius																											
	CBN圓角銼刀 CBN Radius End Mill	CR200	φ0.1~3.0	CBN	Non-coat/ BANCERA	2	0	○	○	○																	35
	CBN圓角銼刀 CBN Radius End Mill	CR300	φ0.6/φ0.8	CBN	Non-coat/ BANCERA	3	0	○	○	○																	41
	CBN圓角銼刀 CBN Radius End Mill	CR400	φ1.0~6.0	CBN	Non-coat/ BANCERA	4	0	○	○	○																	43
	CBN圓角銼刀 CBN Radius End Mill	CR600	φ4.0~6.0	CBN	Non-coat/ BANCERA	6	0	○	○	○																	47
球頭 Ball																											
	CBN球頭銼刀 CBN Ball End Mill	CB200	φ0.1~3.0	CBN	Non-coat/ BANCERA	2	0				○																57
長頸圓角 Long Neck Radius																											
	CBN長頸圓角銼刀 CBN Long Neck Radius End Mill	CLR200	φ0.1~3.0	CBN	Non-coat/ BANCERA	2	0	○	○	○																	49
	CBN長頸圓角銼刀 CBN Long Neck Radius End Mill	CLR400	φ1.0~5.0	CBN	Non-coat/ BANCERA	4	0	○	○	○																	53
長頸球頭 Long Neck Ball																											
	CBN長頸球頭銼刀 CBN Long Neck Ball End Mill	CLB200	φ1.0~3.0	CBN	Non-coat/ BANCERA	2	0				○																61
錐形 Taper																											
	CBN錐形銼刀 CBN Taper End Mill	CTP200	φ0.05~0.1	CBN	Non-coat/ BANCERA	2	0	○	○																		63
拋光圓角 Lapping Radius																											
	CBN拋光圓角銼刀 CBN Lapping Radius End Mill	CRL200	φ0.4~3.0	CBN	Non-coat/ BANCERA	2	0		○	○	○																65
拋光球頭 Lapping Ball																											
	CBN拋光球頭銼刀 CBN Lapping Ball End Mill	CBL200	φ0.4~3.0	CBN	Non-coat/ BANCERA	2	0				○																67

◎:最佳 Excellent ○適合 Good

立銑刀 & 鑽頭 End Mill & Drill table of contents

型錄 Category	系列 Series	頁數 Page
立銑刀 End Mill	CBN Series	• P035
	HARDSTAR Type A Series	• P069
	HARDSTAR Type TI Series	• P131
	HARDSTAR Type TT Series	• P137
	Ion Depo Type A Series	• P143
	Ion Depo Type U Series	• P251
	DLC Series	• P301
	Non-Coat Series	• P305
鑽頭 Drill	Ion Depo type R Series	• P317

CBN Series

Hard Star A Series

Hard Star TI Series

Hard Star TT Series

Ion Depo A Series

Ion Depo U Series

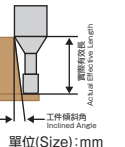
DLC Series

Non-Coat Series

Ion Depo R Series

CBN立銑刀 CBN End Mill

Non BANCERA CBN 刀刃數 2~6 螺旋角 0° 仰角 15° 柄徑公差 0/-0.005



單位(Size): mm



特長

- 敝公司的高精度和長壽命的CBN立銑刀實現了超精密加工！
- 最多可進行 8 次再研磨，大量降低製造成本！
- 還可以提供能夠提高耐磨性的BANCERA鍍膜（陶瓷型）！
- 刀刃直徑 $\phi 0.1 \sim 6.0$ 的標準產品種類齊全，提供短交期的客製化訂製產品！

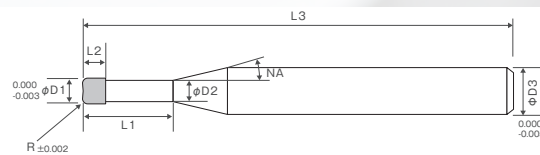
Features

- TOWA CBN end mill realizes ultra-precision machining with high accuracy and long life.
- Re-grinding is possible up to 8 times, reducing overall tooling cost.
- BANCERA coating (ceramic type) for improved wear resistance is available.
- Standard product lineup with diameters of $\phi 0.1$ to 6.0 , custom diameter/length available.

CBN圓角立銑刀 CBN Radius End Mill

型號: CR200 Model number: CR200

Non BANCERA CBN 刀刃數 2 螺旋角 0° 仰角 15° 柄徑公差 0/-0.005

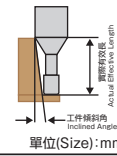


所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.

● 聯繫我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

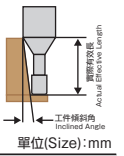
型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) [*] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30°	1°	1°30'	2°	3°
CR200-0010-0010-0020	0.1	0.01	0.2	0.07	0.08	15	4	50	32,160	0.24	0.25	0.26	0.27	0.29
CR200-0010-0020-0020		0.02	0.2	0.04	0.08	15	4	50	32,160	0.24	0.25	0.26	0.27	0.29
CR200-0010-0020-0030		0.02	0.3	0.04	0.08	15	4	50	32,640	0.35	0.36	0.37	0.38	0.41
CR200-0010-0030-0020		0.03	0.2	0.04	0.08	15	4	50	30,720	0.24	0.25	0.26	0.27	0.29
CR200-0010-0030-0030		0.03	0.3	0.04	0.08	15	4	50	31,200	0.35	0.36	0.37	0.38	0.41
CR200-0015-0020-0020	0.15	0.02	0.2	0.06	0.13	15	4	50	32,160	0.24	0.25	0.26	0.27	0.29
CR200-0015-0020-0030		0.02	0.3	0.06	0.13	15	4	50	32,640	0.35	0.36	0.37	0.38	0.41
CR200-0015-0030-0020		0.03	0.2	0.06	0.13	15	4	50	30,720	0.24	0.25	0.26	0.27	0.29
CR200-0015-0030-0030	0.03	0.3	0.06	0.13	15	4	50	31,200	0.35	0.36	0.37	0.38	0.41	
CR200-0020-0010-0050	0.2	0.01	0.5	0.3	0.17	15	4	50	24,480	0.57	0.59	0.62	0.64	0.69
CR200-0020-0020-0030		0.02	0.3	0.08	0.17	15	4	50	24,480	0.37	0.38	0.39	0.41	0.44
CR200-0020-0020-0050		0.02	0.5	0.08	0.17	15	4	50	24,480	0.57	0.59	0.61	0.64	0.69
CR200-0020-0030-0030		0.03	0.3	0.08	0.17	15	4	50	22,000	0.37	0.38	0.39	0.40	0.44
CR200-0020-0030-0050		0.03	0.5	0.3	0.17	15	4	50	22,000	0.57	0.59	0.61	0.63	0.68
CR200-0020-0050-0030	0.05	0.3	0.08	0.17	15	4	50	22,000	0.37	0.38	0.39	0.40	0.43	
CR200-0020-0050-0050	0.05	0.5	0.08	0.17	15	4	50	22,000	0.57	0.59	0.61	0.63	0.68	
CR200-0030-0020-0050	0.3	0.02	0.5	0.3	0.27	15	4	50	24,160	0.57	0.59	0.61	0.64	0.69
CR200-0030-0020-0075		0.02	0.75	0.13	0.27	15	4	50	24,320	0.83	0.86	0.89	0.92	1.00
CR200-0030-0030-0050		0.03	0.5	0.13	0.27	15	4	50	21,760	0.57	0.59	0.61	0.63	0.68
CR200-0030-0030-0075		0.03	0.75	0.13	0.27	15	4	50	21,920	0.83	0.86	0.89	0.92	0.99
CR200-0030-0050-0050		0.05	0.5	0.3	0.27	15	4	50	21,760	0.57	0.59	0.61	0.63	0.68
CR200-0030-0050-0075	0.05	0.75	0.13	0.27	15	4	50	21,920	0.83	0.86	0.89	0.92	0.99	
CR200-0040-0020-0050	0.4	0.02	0.5	0.24	0.37	15	4	50	22,960	0.57	0.59	0.61	0.64	0.69
CR200-0040-0020-0100		0.02	1	0.24	0.37	15	4	50	23,120	1.09	1.13	1.17	1.21	1.31
CR200-0040-0030-0050		0.03	0.5	0.3	0.37	15	4	50	20,640	0.57	0.59	0.61	0.63	0.68
CR200-0040-0030-0100		0.03	1	0.24	0.37	15	4	50	20,800	1.09	1.13	1.17	1.21	1.31
CR200-0040-0050-0050		0.05	0.5	0.3	0.37	15	4	50	20,640	0.57	0.59	0.61	0.63	0.68
CR200-0040-0050-0100	0.05	1	0.24	0.37	15	4	50	20,800	1.09	1.13	1.17	1.21	1.30	
CR200-0040-0100-0050	0.1	0.5	0.3	0.37	15	4	50	20,640	0.57	0.59	0.61	0.62	0.67	
CR200-0040-0100-0100	0.1	1	0.24	0.37	15	4	50	20,800	1.09	1.12	1.16	1.20	1.29	
CR200-0050-0020-0050	0.5	0.02	0.5	0.3	0.47	15	4	50	18,880	0.57	0.59	0.61	0.64	0.69
CR200-0050-0020-0100		0.02	1	0.3	0.47	15	4	50	19,040	1.09	1.13	1.17	1.21	1.31
CR200-0050-0030-0050		0.03	0.5	0.3	0.47	15	4	50	16,960	0.57	0.59	0.61	0.63	0.68
CR200-0050-0030-0100		0.03	1	0.3	0.47	15	4	50	17,120	1.09	1.13	1.17	1.21	1.31
CR200-0050-0050-0050		0.05	0.5	0.3	0.47	15	4	50	16,960	0.57	0.59	0.61	0.63	0.68
CR200-0050-0050-0100	0.05	1	0.3	0.47	15	4	50	17,120	1.09	1.13	1.17	1.21	1.30	
CR200-0050-0100-0050	0.1	0.5	0.3	0.47	15	4	50	16,960	0.57	0.59	0.61	0.62	0.67	
CR200-0050-0100-0100	0.1	1	0.3	0.47	15	4	50	17,120	1.09	1.12	1.16	1.20	1.29	
CR200-0060-0020-0050	0.6	0.02	0.5	0.3	0.57	15	4	50	18,880	0.57	0.59	0.61	0.64	0.69
CR200-0060-0020-0100		0.02	1	0.3	0.57	15	4	50	19,040	1.09	1.13	1.17	1.21	1.31
CR200-0060-0020-0150		0.02	1.5	0.3	0.57	15	4	50	19,200	1.61	1.66	1.72	1.79	1.93
CR200-0060-0030-0050		0.03	0.5	0.3	0.57	15	4	50	16,960	0.57	0.59	0.61	0.63	0.68
CR200-0060-0030-0100		0.03	1	0.3	0.57	15	4	50	17,120	1.09	1.13	1.17	1.21	1.31
CR200-0060-0030-0150	0.03	1.5	0.3	0.57	15	4	50	17,280	1.61	1.66	1.72	1.78	1.93	
CR200-0060-0030-0170	0.03	1.7	0.7	0.57	15	4	50	17,280	1.81	1.88	1.94	2.01	2.18	

CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
Ion Depo A Series
Ion Depo U Series
DLC Series
Non-Coat Series
Ion Depo R Series



● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.					
										30'	1°	1°30'	2°	3°	
CR200-0060-0050-0050	0.6	0.05	0.5	0.3	0.57	15	4	50	16,960	0.57	0.59	0.61	0.63	0.68	
CR200-0060-0050-0100		0.05	1	0.3	0.57	15	4	50	17,120	1.09	1.13	1.17	1.21	1.30	
CR200-0060-0050-0150		0.05	1.5	0.3	0.57	15	4	50	17,280	1.61	1.66	1.72	1.78	1.92	
CR200-0060-0050-0170		0.05	1.7	0.7	0.57	15	4	50	17,280	1.81	1.87	1.94	2.01	2.17	
CR200-0060-0100-0050		0.1	0.5	0.3	0.57	15	4	50	16,960	0.57	0.59	0.61	0.62	0.67	
CR200-0060-0100-0100		0.1	1	0.3	0.57	15	4	50	17,120	1.09	1.12	1.16	1.20	1.29	
CR200-0060-0100-0150		0.1	1.5	0.3	0.57	15	4	50	17,280	1.61	1.66	1.71	1.77	1.91	
CR200-0060-0100-0170		0.1	1.7	0.7	0.57	15	4	50	17,280	1.81	1.87	1.94	2.00	2.16	
CR200-0060-0200-0170		0.2	1.7	0.7	0.57	15	4	50	17,280	1.81	1.86	1.92	1.99	2.14	
CR200-0080-0020-0150		0.8	0.02	1.5	0.56	0.77	15	4	50	19,200	1.61	1.66	1.72	1.79	1.93
CR200-0080-0030-0150	0.03		1.5	0.56	0.77	15	4	50	17,280	1.61	1.66	1.72	1.78	1.93	
CR200-0080-0050-0150	0.05		1.5	0.56	0.77	15	4	50	17,280	1.61	1.66	1.72	1.78	1.92	
CR200-0080-0100-0150	0.1		1.5	0.56	0.77	15	4	50	17,280	1.61	1.66	1.71	1.77	1.91	
CR200-0100-0020-0100	1	0.02	1	0.7	0.96	15	4	50	17,600	1.11	1.15	1.19	1.23	1.33	
CR200-0100-0020-0200		0.02	2	0.7	0.96	15	4	50	17,600	2.14	2.22	2.30	2.38	2.57	
CR200-0100-0030-0100		0.03	1	0.7	0.96	15	4	50	15,840	1.11	1.15	1.19	1.23	1.33	
CR200-0100-0030-0200		0.03	2	0.7	0.96	15	4	50	15,840	2.14	2.22	2.30	2.38	2.57	
CR200-0100-0050-0100		0.05	1	0.7	0.96	15	4	50	15,840	1.11	1.15	1.19	1.23	1.32	
CR200-0100-0050-0200		0.05	2	0.7	0.96	15	4	50	15,840	2.14	2.22	2.29	2.38	2.57	
CR200-0100-0050-0220		0.05	2.2	1.2	0.96	15	4	50	15,840	2.35	2.43	2.52	2.61	2.82	
CR200-0100-0100-0100		0.1	1	0.7	0.96	15	4	50	15,840	1.11	1.14	1.18	1.22	1.31	
CR200-0100-0100-0200		0.1	2	0.7	0.96	15	4	50	15,840	2.14	2.21	2.29	2.37	2.56	
CR200-0100-0100-0220		0.1	2.2	1.2	0.96	15	4	50	15,840	2.35	2.43	2.51	2.60	2.80	
CR200-0100-0200-0100		0.2	1	0.7	0.96	15	4	50	15,840	1.10	1.14	1.17	1.21	1.29	
CR200-0100-0200-0200		0.2	2	0.7	0.96	15	4	50	15,840	2.14	2.21	2.28	2.36	2.53	
CR200-0100-0200-0220		0.2	2.2	1.2	0.96	15	4	50	15,840	2.34	2.42	2.50	2.59	2.78	
CR200-0100-0300-0220		0.3	2.2	1.2	0.96	15	4	50	15,840	2.34	2.41	2.49	2.57	2.76	
CR200-0150-0020-0200		1.5	0.02	2	1	1.44	15	4	50	20,720	2.18	2.26	2.34	2.43	2.62
CR200-0150-0020-0300			0.02	3	1	1.44	15	4	50	20,720	3.22	3.33	3.45	3.58	3.86
CR200-0150-0030-0200	0.03		2	1	1.44	15	4	50	18,640	2.18	2.26	2.34	2.42	2.62	
CR200-0150-0030-0300	0.03		3	1	1.44	15	4	50	18,640	3.22	3.33	3.45	3.57	3.86	
CR200-0150-0050-0200	0.05		2	1	1.44	15	4	50	18,640	2.18	2.26	2.34	2.42	2.61	
CR200-0150-0050-0300	0.05		3	1.5	1.44	15	4	50	18,640	3.22	3.33	3.44	3.57	3.86	
CR200-0150-0100-0200	0.1		2	1	1.44	15	4	50	18,640	2.18	2.25	2.33	2.41	2.60	
CR200-0150-0100-0300	0.1		3	1.5	1.44	15	4	50	18,640	3.21	3.32	3.44	3.56	3.85	
CR200-0150-0200-0200	0.2		2	1	1.44	15	4	50	18,640	2.18	2.25	2.32	2.40	2.58	
CR200-0150-0200-0300	0.2		3	1.5	1.44	15	4	50	18,640	3.21	3.31	3.43	3.55	3.82	
CR200-0150-0300-0200	0.3		2	1	1.44	15	4	50	18,640	2.17	2.24	2.31	2.38	2.56	
CR200-0150-0300-0300	0.3		3	1.5	1.44	15	4	50	18,640	3.21	3.31	3.42	3.53	3.80	
CR200-0200-0020-0300	2	0.02	3	1.2	1.96	15	4	50	21,360	3.18	3.29	3.41	3.53	3.82	
CR200-0200-0020-0400		0.02	4	1.2	1.96	15	4	50	21,360	4.21	4.36	4.51	4.68	5.06	
CR200-0200-0030-0300		0.03	3	1.2	1.96	15	4	50	19,200	3.18	3.29	3.40	3.53	3.82	
CR200-0200-0030-0400		0.03	4	1.2	1.96	15	4	50	19,200	4.21	4.36	4.51	4.68	5.06	
CR200-0200-0050-0300		0.05	3	1.2	1.96	15	4	50	19,200	3.18	3.29	3.40	3.53	3.81	
CR200-0200-0050-0400		0.05	4	1.2	1.96	15	4	50	19,200	4.21	4.36	4.51	4.68	5.05	



● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.					
										30'	1°	1°30'	2°	3°	
CR200-0200-0050-0500	2	0.05	5	2	1.96	15	4	50	19,200	5.24	5.42	5.62	5.83	6.30	
CR200-0200-0100-0300		0.1	3	1.2	1.96	15	4	50	19,200	3.17	3.28	3.40	3.52	3.80	
CR200-0200-0100-0400		0.1	4	1.2	1.96	15	4	50	19,200	4.21	4.35	4.51	4.67	5.04	
CR200-0200-0100-0500		0.1	5	2	1.96	15	4	50	19,200	5.24	5.42	5.61	5.82	6.29	
CR200-0200-0200-0300		0.2	3	1.2	1.96	15	4	50	19,200	3.17	3.28	3.39	3.51	3.78	
CR200-0200-0200-0400		0.2	4	1.2	1.96	15	4	50	19,200	4.21	4.34	4.49	4.66	5.02	
CR200-0200-0200-0500		0.2	5	2	1.96	15	4	50	19,200	5.24	5.41	5.60	5.81	6.26	
CR200-0200-0300-0300		0.3	3	1.2	1.96	15	4	50	19,200	3.17	3.27	3.38	3.49	3.75	
CR200-0200-0300-0400		0.3	4	1.2	1.96	15	4	50	19,200	4.20	4.34	4.48	4.64	5.00	
CR200-0200-0300-0500		0.3	5	2	1.96	15	4	50	19,200	5.24	5.41	5.59	5.79	6.24	
CR200-0200-0500-0300		0.5	3	1.2	1.96	15	4	50	19,200	3.16	3.25	3.35	3.46	3.71	
CR200-0200-0500-0400		0.5	4	1.2	1.96	15	4	50	19,200	4.20	4.32	4.46	4.61	4.95	
CR200-0300-0050-0500		3	0.05	5	2	2.92	15	6	50	21,120	5.32	5.50	5.70	5.91	6.39
CR200-0300-0100-0500			0.1	5	2	2.92	15	6	50	21,120	5.32	5.50	5.70	5.91	6.38
CR200-0300-0200-0500			0.2	5	2	2.92	15	6	50	21,120	5.32	5.49	5.69	5.89	6.35
CR200-0300-0300-0500			0.3	5	2	2.92	15	6	50	21,120	5.31	5.49	5.67	5.88	6.33

CBN 切削條件參考表 Recommended Milling Conditions

■ 型號: CR200
Model number: CR200

圓角立銼刀 Radius End Mill

切削材料 Work Material		銅 Copper				淬火鋼 Hardened Steels STAVAX/HPM (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)				
刃數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹
2	0.1	0.2	0.002	0.015	200	50,000	0.002	0.015	200	50,000	0.002	0.01	150	50,000	0.001	0.01	100	50,000
		0.3	0.002	0.015	150	50,000	0.002	0.015	150	50,000	0.001	0.01	100	50,000	0.001	0.01	50	50,000
	0.15	0.2	0.003	0.02	200	50,000	0.003	0.02	200	50,000	0.003	0.02	150	50,000	0.002	0.015	100	50,000
		0.3	0.003	0.02	200	50,000	0.003	0.02	200	50,000	0.003	0.02	150	50,000	0.002	0.015	100	50,000
	0.2	0.3	0.003	0.03	300	50,000	0.003	0.03	300	50,000	0.003	0.03	300	50,000	0.002	0.02	200	50,000
		0.5	0.003	0.03	300	50,000	0.003	0.03	300	50,000	0.003	0.03	300	50,000	0.002	0.02	200	50,000
	0.3	0.5	0.003	0.05	500	50,000	0.003	0.05	500	50,000	0.003	0.05	400	50,000	0.002	0.03	300	50,000
		0.75	0.003	0.05	500	50,000	0.003	0.05	500	50,000	0.003	0.05	400	50,000	0.002	0.03	300	50,000
	0.4	0.5	0.005	0.1	700	50,000	0.005	0.1	700	50,000	0.005	0.1	600	50,000	0.003	0.03	400	50,000
		1	0.005	0.1	700	50,000	0.005	0.1	700	50,000	0.005	0.1	600	50,000	0.003	0.03	400	50,000
	0.5	0.5	0.01	0.2	800	50,000	0.01	0.2	800	50,000	0.01	0.2	800	50,000	0.01	0.1	700	50,000
		1	0.01	0.2	800	50,000	0.01	0.2	800	50,000	0.01	0.2	800	50,000	0.01	0.1	700	50,000
	0.6	0.5	0.01	0.2	600	50,000	0.01	0.2	600	50,000	0.01	0.2	600	50,000	0.005	0.2	500	50,000
		1	0.01	0.2	600	50,000	0.01	0.2	600	50,000	0.01	0.2	600	50,000	0.005	0.2	500	50,000
		1.5	0.01	0.2	600	50,000	0.01	0.2	600	50,000	0.01	0.2	600	50,000	0.005	0.2	500	50,000
		1.7	0.01	0.2	600	50,000	0.01	0.2	600	50,000	0.01	0.2	600	50,000	0.005	0.2	500	50,000
	0.8	1.5	0.02	0.3	1,400	50,000	0.02	0.3	1,400	50,000	0.02	0.2	1,200	50,000	0.01	0.1	1,000	40,000
	1	1	0.02	0.4	1,500	48,000	0.02	0.4	1,500	48,000	0.02	0.3	1,200	48,000	0.01	0.2	1,000	32,000
		2	0.02	0.4	1,500	48,000	0.02	0.4	1,500	48,000	0.02	0.3	1,200	48,000	0.01	0.2	1,000	32,000
		2.2	0.02	0.4	1,500	48,000	0.02	0.4	1,500	48,000	0.02	0.3	1,200	48,000	0.01	0.2	1,000	32,000
	1.5	2	0.03	0.5	1,000	32,000	0.03	0.5	1,000	32,000	0.03	0.4	1,000	32,000	0.01	0.2	800	20,000
		3	0.02	0.5	2,000	32,000	0.02	0.5	2,000	32,000	0.02	0.4	1,500	32,000	0.01	0.2	1,200	20,000
	2	3	0.03	0.8	2,000	24,000	0.03	0.8	2,000	24,000	0.03	0.7	1,500	24,000	0.01	0.5	1,100	16,000
		4	0.03	0.8	2,000	24,000	0.03	0.8	2,000	24,000	0.03	0.7	1,500	24,000	0.01	0.5	1,100	16,000
5		0.03	0.8	2,000	24,000	0.03	0.8	2,000	24,000	0.03	0.7	1,500	24,000	0.01	0.5	1,200	16,000	
3	5	0.03	0.6	2,000	24,000	0.03	0.6	2,000	24,000	0.03	0.5	1,500	24,000	0.01	0.3	1,200	16,000	

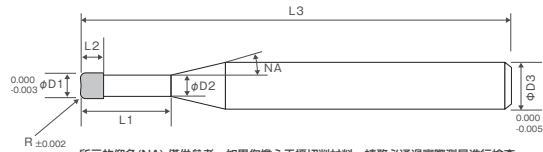
●請將刀具確實地固定於夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或含非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●ap=軸向切深, ae=徑向切深。 ap=Axial Depth of Cut ae=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

CBN Series
 Radius
 Hard Star A Series
 Hard Star Ti Series
 Hard Star TT Series
 Ion Depo A Series
 Ion Depo U Series
 DLC Series
 Non-Coat Series
 Ion Depo R Series

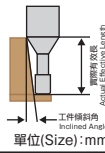
CBN圓角立銼刀 CBN Radius End Mill

型號: CR300 Model number: CR300

Non
BANCERA
CBN
刀刃數 3
螺旋角 0°
仰角 15°
柄徑公差 ±0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value. If concerned about interference with the work material, please check by actual measurement.



● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) ^o Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.					
										30'	1°	1°30'	2°	3°	
CR300-0060-0020-0050	0.6	0.02	0.5	0.3	0.57	15	4	50	22,720	0.57	0.59	0.61	0.64	0.69	
CR300-0060-0020-0100		0.02	1	0.3	0.57	15	4	50	22,880	1.09	1.13	1.17	1.21	1.31	
CR300-0060-0020-0150		0.02	1.5	0.3	0.57	15	4	50	23,040	1.61	1.66	1.72	1.79	1.93	
CR300-0060-0020-0200		0.02	2	0.3	0.57	15	4	50	24,960	2.12	2.20	2.28	2.36	2.55	
CR300-0060-0020-0250		0.02	2.5	0.3	0.57	15	4	50	25,200	2.64	2.73	2.83	2.94	3.17	
CR300-0060-0030-0170		0.03	1.7	0.7	0.57	15	4	50	20,800	1.81	1.88	1.94	2.01	2.18	
CR300-0060-0050-0050		0.05	0.5	0.3	0.57	15	4	50	20,400	0.57	0.59	0.61	0.63	0.68	
CR300-0060-0050-0100		0.05	1	0.3	0.57	15	4	50	20,560	1.09	1.13	1.17	1.21	1.30	
CR300-0060-0050-0150		0.05	1.5	0.3	0.57	15	4	50	20,800	1.61	1.66	1.72	1.78	1.92	
CR300-0060-0050-0170		0.05	1.7	0.7	0.57	15	4	50	20,800	1.81	1.87	1.94	2.01	2.17	
CR300-0060-0050-0200		0.05	2	0.3	0.57	15	4	50	21,600	2.12	2.20	2.27	2.36	2.54	
CR300-0060-0050-0250		0.05	2.5	0.3	0.57	15	4	50	22,720	2.64	2.73	2.83	2.93	3.17	
CR300-0060-0100-0050		0.1	0.5	0.3	0.57	15	4	50	20,400	0.57	0.59	0.61	0.62	0.67	
CR300-0060-0100-0100		0.1	1	0.3	0.57	15	4	50	20,560	1.09	1.12	1.16	1.20	1.29	
CR300-0060-0100-0150		0.1	1.5	0.3	0.57	15	4	50	20,800	1.61	1.66	1.71	1.77	1.91	
CR300-0060-0100-0170		0.1	1.7	0.7	0.57	15	4	50	20,800	1.81	1.87	1.94	2.00	2.16	
CR300-0060-0100-0200		0.1	2	0.3	0.57	15	4	50	21,600	2.12	2.19	2.27	2.35	2.53	
CR300-0060-0100-0250		0.1	2.5	0.3	0.57	15	4	50	22,720	2.64	2.73	2.82	2.92	3.15	
CR300-0060-0200-0170		0.2	1.7	0.7	0.57	15	4	50	20,800	1.81	1.86	1.92	1.99	2.14	
CR300-0080-0020-0150		0.8	0.02	1.5	0.56	0.77	15	4	50	23,040	1.61	1.66	1.72	1.79	1.93
CR300-0080-0020-0250			0.02	2.5	0.56	0.77	15	4	50	25,280	2.64	2.73	2.83	2.94	3.17
CR300-0080-0020-0500			0.02	5	0.56	0.77	15	4	50	26,160	5.23	5.41	5.60	5.81	6.28
CR300-0080-0050-0150			0.05	1.5	0.56	0.77	15	4	50	20,800	1.61	1.66	1.72	1.78	1.92
CR300-0080-0050-0250			0.05	2.5	0.56	0.77	15	4	50	22,720	2.64	2.73	2.83	2.93	3.17
CR300-0080-0050-0500	0.05		5	0.56	0.77	15	4	50	23,440	5.22	5.40	5.60	5.81	6.27	
CR300-0080-0100-0150	0.1		1.5	0.56	0.77	15	4	50	20,800	1.61	1.66	1.71	1.77	1.91	
CR300-0080-0100-0250	0.1		2.5	0.56	0.77	15	4	50	22,720	2.64	2.73	2.82	2.92	3.15	
CR300-0080-0100-0500	0.1		5	0.56	0.77	15	4	50	23,440	5.22	5.40	5.59	5.80	6.26	

CBN 切削條件參考表 Recommended Milling Conditions

型號: CR300
Model number: CR300

圓角立銼刀 Radius End Mill

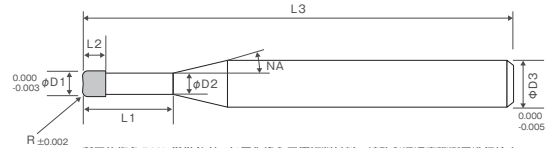
切削材料 Work Material	刀刃直徑 Dia.	有效長度 Effective Length	銅 Copper			淬火鋼 Hardened Steels STAVAX/HPM (~55HRC)			淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)			淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)						
			切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed				
			∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹				
3	0.6	0.5	0.008	0.2	1,500	50,000	0.008	0.2	1,500	50,000	0.005	0.15	800	50,000	0.003	0.1	600	50,000
		1	0.008	0.2	1,500	50,000	0.008	0.2	1,500	50,000	0.005	0.15	800	50,000	0.003	0.1	600	50,000
		1.5	0.008	0.2	1,500	50,000	0.008	0.2	1,500	50,000	0.005	0.15	800	50,000	0.003	0.1	600	50,000
		1.7	0.006	0.15	1,000	40,000	0.006	0.15	1,000	40,000	0.005	0.1	500	40,000	0.003	0.05	300	40,000
		2	0.006	0.15	1,000	40,000	0.006	0.15	1,000	40,000	0.005	0.1	500	40,000	0.003	0.05	300	40,000
	0.8	1.5	0.012	0.4	2,000	40,000	0.012	0.4	2,000	40,000	0.007	0.25	1,000	40,000	0.006	0.15	800	35,000
		2.5	0.012	0.4	2,000	40,000	0.012	0.4	2,000	40,000	0.007	0.25	1,000	40,000	0.006	0.15	800	35,000
		5	0.008	0.3	1,500	30,000	0.008	0.3	1,500	30,000	0.005	0.15	800	30,000	0.004	0.1	400	25,000

● 請將刀與確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder.
● 切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing.
● ∂p=軸向切削深度，∂e=徑向切削深度。 ∂p=Axial Depth of Cut. ∂e=Radial Depth of Cut.
● 建議使用油霧或者非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
● 工具突出長度越短越好。 Length of tool overhang must be as short as possible.
● 請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

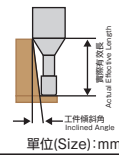
CBN圓角立銑刀 CBN Radius End Mill

型號: CR400 Model number: CR400

Non
BANCERA
CBN
刀刀數 4
螺旋角 0°
仰角 15°
柄徑公差 0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.

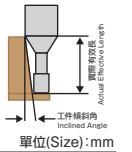


● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.					
										30'	1°	1°30'	2°	3°	
CR400-0100-0020-0100	1	0.02	1	0.7	0.96	15	4	50	21,120	1.11	1.15	1.19	1.23	1.33	
CR400-0100-0020-0200		0.02	2	0.7	0.96	15	4	50	21,120	2.14	2.22	2.30	2.38	2.57	
CR400-0100-0050-0100		0.05	1	0.7	0.96	15	4	50	19,040	1.11	1.15	1.19	1.23	1.32	
CR400-0100-0050-0200		0.05	2	0.7	0.96	15	4	50	19,040	2.14	2.22	2.29	2.38	2.57	
CR400-0100-0050-0220		0.05	2.2	1.2	0.96	15	4	50	19,040	2.35	2.43	2.52	2.61	2.82	
CR400-0100-0100-0100		0.1	1	0.7	0.96	15	4	50	19,040	1.11	1.14	1.18	1.22	1.31	
CR400-0100-0100-0200		0.1	2	0.7	0.96	15	4	50	19,040	2.14	2.21	2.29	2.37	2.56	
CR400-0100-0100-0220		0.1	2.2	1.2	0.96	15	4	50	19,040	2.35	2.43	2.51	2.60	2.80	
CR400-0100-0200-0100		0.2	1	0.7	0.96	15	4	50	19,040	1.10	1.14	1.17	1.21	1.29	
CR400-0100-0200-0200		0.2	2	0.7	0.96	15	4	50	19,040	2.14	2.21	2.28	2.36	2.53	
CR400-0100-0200-0220		0.2	2.2	1.2	0.96	15	4	50	19,040	2.34	2.42	2.50	2.59	2.78	
CR400-0100-0300-0220		0.3	2.2	1.2	0.96	15	4	50	19,040	2.34	2.41	2.49	2.57	2.76	
CR400-0150-0020-0200		1.5	0.02	2	1	1.44	15	4	50	24,880	2.18	2.26	2.34	2.43	2.62
CR400-0150-0020-0300			0.02	3	1	1.44	15	4	50	24,880	3.22	3.33	3.45	3.58	3.86
CR400-0150-0050-0200	0.05		2	1	1.44	15	4	50	22,400	2.18	2.26	2.34	2.42	2.61	
CR400-0150-0050-0300	0.05		3	1.5	1.44	15	4	50	22,400	3.22	3.33	3.44	3.57	3.86	
CR400-0150-0100-0200	0.1		2	1	1.44	15	4	50	22,400	2.18	2.25	2.33	2.41	2.60	
CR400-0150-0100-0300	0.1		3	1.5	1.44	15	4	50	22,400	3.21	3.32	3.44	3.56	3.85	
CR400-0150-0200-0200	0.2		2	1	1.44	15	4	50	22,400	2.18	2.25	2.32	2.40	2.58	
CR400-0150-0200-0300	0.2		3	1.5	1.44	15	4	50	22,400	3.21	3.31	3.43	3.55	3.82	
CR400-0150-0300-0300	0.3		3	1.5	1.44	15	4	50	22,400	3.21	3.31	3.42	3.53	3.80	
CR400-0200-0020-0300	2		0.02	3	1.2	1.96	15	4	50	25,680	3.18	3.29	3.41	3.53	3.82
CR400-0200-0020-0400		0.02	4	1.2	1.96	15	4	50	25,680	4.21	4.36	4.51	4.68	5.06	
CR400-0200-0050-0300		0.05	3	1.2	1.96	15	4	50	23,040	3.18	3.29	3.40	3.53	3.81	
CR400-0200-0050-0400		0.05	4	1.2	1.96	15	4	50	23,040	4.21	4.36	4.51	4.68	5.05	
CR400-0200-0050-0500		0.05	5	2	1.96	15	4	50	23,040	5.24	5.42	5.62	5.83	6.30	
CR400-0200-0100-0300		0.1	3	1.2	1.96	15	4	50	23,040	3.17	3.28	3.40	3.52	3.80	
CR400-0200-0100-0400		0.1	4	1.2	1.96	15	4	50	23,040	4.21	4.35	4.51	4.67	5.04	
CR400-0200-0100-0500		0.1	5	2	1.96	15	4	50	23,040	5.24	5.42	5.61	5.82	6.29	
CR400-0200-0200-0300		0.2	3	1.2	1.96	15	4	50	23,040	3.17	3.28	3.39	3.51	3.78	

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.					
										30'	1°	1°30'	2°	3°	
CR400-0200-0200-0400	2	0.2	4	1.2	1.96	15	4	50	23,040	4.21	4.34	4.49	4.66	5.02	
CR400-0200-0200-0500		0.2	5	2	1.96	15	4	50	23,040	5.24	5.41	5.60	5.81	6.26	
CR400-0200-0300-0500		0.3	5	2	1.96	15	4	50	23,040	5.24	5.41	5.59	5.79	6.24	
CR400-0300-0050-0500	3	0.05	5	2	2.92	15	6	50	29,760	5.32	5.50	5.70	5.91	6.39	
CR400-0300-0100-0500		0.1	5	2	2.92	15	6	50	29,760	5.32	5.50	5.70	5.91	6.38	
CR400-0300-0200-0500		0.2	5	2	2.92	15	6	50	29,760	5.32	5.49	5.69	5.89	6.35	
CR400-0300-0300-0500	3	0.3	5	2	2.92	15	6	50	29,760	5.31	5.49	5.67	5.88	6.33	
CR400-0400-0100-1000		4	0.1	10	2	3.92	15	6	50	36,480	10.49	10.85	11.24	11.66	12.59
CR400-0400-0300-1000			0.3	10	2	3.92	15	6	50	36,480	10.48	10.84	11.22	11.63	12.55
CR400-0600-0050-1500	6	0.05	15	2	5.92	15	6	50	52,590	FREE	FREE	FREE	FREE	FREE	
CR400-0600-0100-1000		0.1	10	2	5.92	15	6	50	50,460	FREE	FREE	FREE	FREE	FREE	
CR400-0600-0100-1500		0.1	15	2	5.92	15	6	50	52,590	FREE	FREE	FREE	FREE	FREE	
CR400-0600-0300-1000		0.3	10	2	5.92	15	6	50	50,460	FREE	FREE	FREE	FREE	FREE	
CR400-0600-0300-1500		0.3	15	2	5.92	15	6	50	52,590	FREE	FREE	FREE	FREE	FREE	
CR400-0600-0500-1500	0.5	15	2	5.92	15	6	50	52,590	FREE	FREE	FREE	FREE	FREE		



CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
ion Depo A Series
ion Depo U Series
DLC Series
Non-Coat Series
ion Depo R Series

CBN 切削條件參考表 Recommended Milling Conditions

■ 型號: CR400
Model number: CR400

圓角立銼刀 Radius End Mill

切削材料 Work Material			銅 Copper				淬火鋼 Hardened Steels STAVAX/HPM (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)			
刃數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹
4	1	1	0.02	0.4	2,200	40,000	0.02	0.4	2,200	40,000	0.02	0.3	2,000	40,000	0.01	0.2	1,500	36,000
		2	0.02	0.4	2,200	40,000	0.02	0.4	2,200	40,000	0.02	0.3	2,000	40,000	0.01	0.2	1,500	36,000
		2.2	0.02	0.3	2,200	40,000	0.02	0.3	2,200	40,000	0.02	0.2	2,000	40,000	0.01	0.1	1,500	36,000
	1.5	2	0.04	0.6	4,000	36,000	0.04	0.6	4,000	36,000	0.03	0.5	3,200	30,000	0.015	0.3	2,000	24,000
		3	0.04	0.6	3,500	36,000	0.04	0.6	3,500	36,000	0.03	0.5	2,800	30,000	0.015	0.3	1,800	24,000
	2	3	0.05	0.8	4,000	30,000	0.05	0.8	4,000	30,000	0.04	0.7	3,200	24,000	0.02	0.4	1,500	16,000
		4	0.05	0.8	3,500	30,000	0.05	0.8	3,500	30,000	0.04	0.7	2,800	24,000	0.02	0.3	1,500	16,000
		5	0.05	0.8	3,500	30,000	0.05	0.8	3,500	30,000	0.04	0.7	2,800	24,000	0.02	0.3	1,500	16,000
	3	5	0.05	1	3,500	24,000	0.05	1	3,500	24,000	0.04	0.85	3,200	20,000	0.02	0.6	1,500	12,000
	4	10	0.05	1.5	3,500	22,000	0.05	1.5	3,500	22,000	0.04	1	2,800	18,000	0.02	0.7	1,500	10,000
	6	10	0.07	2.5	3,000	18,000	0.07	2.5	3,000	18,000	0.06	2	2,800	16,000	0.05	1.5	1,400	9,000
		15	0.07	2	2,700	18,000	0.07	2	2,700	18,000	0.06	1.5	2,500	16,000	0.05	1	1,200	9,000

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut. ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

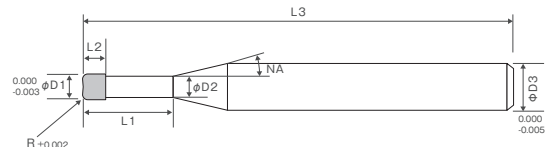
CBN Series
 Radius
 Hard Star A Series
 Hard Star TT Series
 Hard Star TT Series
 Ion Depo A Series
 Ion Depo U Series
 DLC Series
 Non-Coat Series
 Ion Depo R Series

CBN圓角立銑刀 CBN Radius End Mill

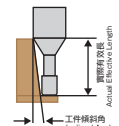
■型號: CR600 Model number: CR600



Non BANCERA CBN 刀刃數 6 螺旋角 0° 仰角 15° 柄徑公差 ±0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
 The neck angle (NA) shown is a reference value.
 If concerned about interference with the work material, please check by actual measurement.



單位(Size): mm

●請系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) ^o Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
CR600-0400-0050-1500	4	0.05	15	2	3.92	15	6	50	45,620	15.66	16.20	16.78	17.41	18.82
CR600-0400-0100-1500		0.1	15	2	3.92	15	6	50	45,620	15.66	16.20	16.78	17.40	18.81
CR600-0400-0300-1500		0.3	15	2	3.92	15	6	50	45,620	15.65	16.18	16.76	17.38	18.76
CR600-0400-0500-1500		0.5	15	2	3.92	15	6	50	45,620	15.64	16.17	16.74	17.35	18.72
CR600-0500-0050-1500	5	0.05	15	2	4.92	15	6	50	53,180	15.66	16.20	16.78	FREE	FREE
CR600-0500-0100-1500		0.1	15	2	4.92	15	6	50	53,180	15.66	16.20	16.78	FREE	FREE
CR600-0500-0300-1500		0.3	15	2	4.92	15	6	50	53,180	15.65	16.18	16.76	FREE	FREE
CR600-0500-0500-1500		0.5	15	2	4.92	15	6	50	53,180	15.64	16.17	16.74	FREE	FREE
CR600-0600-0050-1500	6	0.05	15	2	5.92	15	6	50	63,120	FREE	FREE	FREE	FREE	FREE
CR600-0600-0100-1500		0.1	15	2	5.92	15	6	50	63,120	FREE	FREE	FREE	FREE	FREE
CR600-0600-0300-1500		0.3	15	2	5.92	15	6	50	63,120	FREE	FREE	FREE	FREE	FREE
CR600-0600-0500-1500		0.5	15	2	5.92	15	6	50	63,120	FREE	FREE	FREE	FREE	FREE

CBN 切削條件參考表 Recommended Milling Conditions

■型號: CR600
Model number: CR600

圓角立銑刀 Radius End Mill

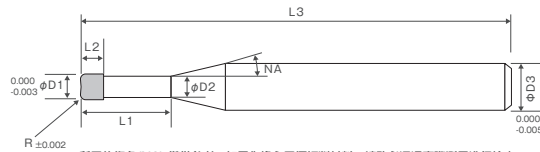
切削材料 Work Material	銅 Copper						淬火鋼 Hardened Steels STAVAX/HPM (~55HRC)			淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)			淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)					
	刃數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed			
				∂p mm	∂e mm			∂p mm	∂e mm			∂p mm	∂e mm					
6	4	15	0.06	1.5	3,200	18,000	0.06	1.5	3,200	18,000	0.05	1	3,000	16,000	0.04	0.7	1,600	8,000
	5	15	0.06	2	3,200	18,000	0.06	2	3,200	18,000	0.05	1.5	3,000	16,000	0.04	1	1,600	8,000
	6	15	0.07	2	2,900	16,000	0.07	2	2,900	16,000	0.06	1.5	2,700	14,000	0.05	1	1,400	7,000

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∂p=軸向切深, ∂e=徑向切深。 ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

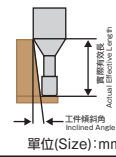
CBN長頸圓角立銼刀 CBN Long Neck Radius End Mill

型號: CLR200 Model number: CLR200

Non
BANCERA
CBN
刀刃數 2
螺旋角 0°
仰角 15°
柄徑公差 0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value. If concerned about interference with the work material, please check by actual measurement.

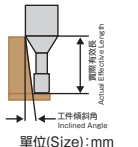


● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

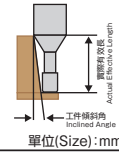
型號 Code No.	刀柄直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
CLR200-0010-0020-0050	0.1	0.02	0.5	0.04	0.08	15	4	50	33,600	0.55	0.57	0.59	0.61	0.66
CLR200-0010-0030-0050		0.03	0.5	0.04	0.08	15	4	50	32,160	0.55	0.57	0.59	0.61	0.66
CLR200-0015-0020-0050	0.15	0.02	0.5	0.06	0.13	15	4	50	33,600	0.55	0.57	0.59	0.61	0.66
CLR200-0015-0030-0050		0.03	0.5	0.06	0.13	15	4	50	32,160	0.55	0.57	0.59	0.61	0.66
CLR200-0020-0020-0100	0.2	0.02	1	0.08	0.17	15	4	50	25,200	1.09	1.13	1.17	1.21	1.31
CLR200-0020-0030-0100		0.03	1	0.08	0.17	15	4	50	22,640	1.09	1.13	1.17	1.21	1.31
CLR200-0020-0050-0100	0.2	0.05	1	0.08	0.17	15	4	50	22,640	1.09	1.13	1.17	1.21	1.30
CLR200-0030-0020-0100		0.02	1	0.3	0.27	15	4	50	24,480	1.09	1.13	1.17	1.21	1.31
CLR200-0030-0020-0150	0.3	0.02	1.5	0.13	0.27	15	4	50	24,800	1.61	1.66	1.72	1.79	1.93
CLR200-0030-0020-0200		0.02	2	0.13	0.27	15	4	50	25,200	2.12	2.20	2.28	2.36	2.55
CLR200-0030-0030-0100	0.3	0.03	1	0.13	0.27	15	4	50	22,000	1.09	1.13	1.17	1.21	1.31
CLR200-0030-0030-0150		0.03	1.5	0.13	0.27	15	4	50	22,320	1.61	1.66	1.72	1.78	1.93
CLR200-0030-0030-0200	0.3	0.03	2	0.13	0.27	15	4	50	22,640	2.12	2.20	2.28	2.36	2.55
CLR200-0030-0050-0100		0.05	1	0.3	0.27	15	4	50	22,000	1.09	1.13	1.17	1.21	1.30
CLR200-0030-0050-0150	0.3	0.05	1.5	0.13	0.27	15	4	50	22,320	1.61	1.66	1.72	1.78	1.92
CLR200-0030-0050-0200		0.05	2	0.13	0.27	15	4	50	22,640	2.12	2.20	2.27	2.36	2.54
CLR200-0040-0020-0150	0.4	0.02	1.5	0.24	0.37	15	4	50	23,360	1.61	1.66	1.72	1.79	1.93
CLR200-0040-0020-0200		0.02	2	0.24	0.37	15	4	50	23,680	2.12	2.20	2.28	2.36	2.55
CLR200-0040-0030-0135	0.4	0.03	1.35	0.4	0.37	15	4	50	20,960	1.45	1.50	1.56	1.61	1.74
CLR200-0040-0030-0150		0.03	1.5	0.24	0.37	15	4	50	20,960	1.61	1.66	1.72	1.78	1.93
CLR200-0040-0030-0200	0.4	0.03	2	0.24	0.37	15	4	50	21,280	2.12	2.20	2.28	2.36	2.55
CLR200-0040-0050-0135		0.05	1.35	0.4	0.37	15	4	50	20,800	1.45	1.50	1.55	1.61	1.74
CLR200-0040-0050-0150	0.4	0.05	1.5	0.24	0.37	15	4	50	20,800	1.61	1.66	1.72	1.78	1.92
CLR200-0040-0050-0200		0.05	2	0.24	0.37	15	4	50	21,280	2.12	2.20	2.27	2.36	2.54
CLR200-0040-0100-0135	0.4	0.1	1.35	0.4	0.37	15	4	50	20,800	1.45	1.50	1.55	1.60	1.72
CLR200-0040-0100-0150		0.1	1.5	0.24	0.37	15	4	50	20,800	1.61	1.66	1.71	1.77	1.91
CLR200-0040-0100-0200	0.4	0.1	2	0.24	0.37	15	4	50	20,800	2.12	2.19	2.27	2.35	2.53
CLR200-0050-0020-0150		0.02	1.5	0.5	0.47	15	4	50	19,200	1.61	1.66	1.72	1.79	1.93
CLR200-0050-0020-0250	0.5	0.02	2.5	0.3	0.47	15	4	50	21,040	2.64	2.73	2.83	2.94	3.17
CLR200-0050-0030-0150		0.03	1.5	0.3	0.47	15	4	50	17,280	1.61	1.66	1.72	1.78	1.93

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀柄直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.					
										30'	1°	1°30'	2°	3°	
CLR200-0050-0030-0250	0.5	0.03	2.5	0.3	0.47	15	4	50	18,880	2.64	2.73	2.83	2.93	3.17	
CLR200-0050-0050-0150		0.05	1.5	0.5	0.47	15	4	50	17,280	1.61	1.66	1.72	1.78	1.92	
CLR200-0050-0050-0250		0.05	2.5	0.3	0.47	15	4	50	18,880	2.64	2.73	2.83	2.93	3.17	
CLR200-0050-0100-0150		0.1	1.5	0.5	0.47	15	4	50	17,280	1.61	1.66	1.71	1.77	1.91	
CLR200-0050-0100-0250		0.1	2.5	0.3	0.47	15	4	50	18,880	2.64	2.73	2.82	2.92	3.15	
CLR200-0060-0020-0250	0.6	0.02	2.5	0.3	0.57	15	4	50	21,040	2.64	2.73	2.83	2.94	3.17	
CLR200-0060-0030-0250		0.03	2.5	0.3	0.57	15	4	50	18,880	2.64	2.73	2.83	2.93	3.17	
CLR200-0060-0050-0250		0.05	2.5	0.3	0.57	15	4	50	18,880	2.64	2.73	2.83	2.93	3.17	
CLR200-0060-0100-0250	0.6	0.1	2.5	0.3	0.57	15	4	50	18,880	2.64	2.73	2.82	2.92	3.15	
CLR200-0080-0020-0250		0.02	2.5	0.56	0.77	15	4	50	18,880	2.64	2.73	2.83	2.94	3.17	
CLR200-0080-0020-0500		0.02	5	0.56	0.77	15	4	50	21,760	5.23	5.41	5.60	5.81	6.28	
CLR200-0080-0030-0250	0.8	0.03	2.5	0.56	0.77	15	4	50	18,880	2.64	2.73	2.83	2.93	3.17	
CLR200-0080-0030-0500		0.03	5	0.56	0.77	15	4	50	19,520	5.23	5.41	5.60	5.81	6.28	
CLR200-0080-0050-0250		0.05	2.5	0.56	0.77	15	4	50	18,880	2.64	2.73	2.83	2.93	3.17	
CLR200-0080-0050-0500	0.8	0.05	5	0.56	0.77	15	4	50	19,520	5.22	5.40	5.60	5.81	6.27	
CLR200-0080-0100-0250		0.1	2.5	0.56	0.77	15	4	50	18,880	2.64	2.73	2.82	2.92	3.15	
CLR200-0080-0100-0500		0.1	5	0.56	0.77	15	4	50	19,520	5.22	5.40	5.59	5.80	6.26	
CLR200-0100-0020-0300	1	0.02	3	0.7	0.96	15	4	50	17,600	3.18	3.29	3.41	3.53	3.82	
CLR200-0100-0020-0500		0.02	5	0.7	0.96	15	4	50	19,920	5.24	5.43	5.62	5.83	6.30	
CLR200-0100-0030-0300		0.03	3	0.7	0.96	15	4	50	15,840	3.18	3.29	3.40	3.53	3.82	
CLR200-0100-0030-0500		0.03	5	0.7	0.96	15	4	50	17,920	5.24	5.43	5.62	5.83	6.30	
CLR200-0100-0050-0300		0.05	3	1.2	0.96	15	4	50	15,840	3.18	3.29	3.40	3.53	3.81	
CLR200-0100-0050-0500		0.05	5	1.2	0.96	15	4	50	17,920	5.24	5.42	5.62	5.83	6.30	
CLR200-0100-0050-1000		0.05	10	1.2	0.96	15	4	50	20,000	10.41	10.77	11.16	11.58	12.51	
CLR200-0100-0100-0300		0.1	3	1.2	0.96	15	4	50	15,840	3.17	3.28	3.40	3.52	3.80	
CLR200-0100-0100-0500		0.1	5	1.2	0.96	15	4	50	17,920	5.24	5.42	5.61	5.82	6.29	
CLR200-0100-0100-1000		0.1	10	1.2	0.96	15	4	50	20,000	10.41	10.77	11.16	11.57	12.50	
CLR200-0100-0200-0300		0.2	3	0.7	0.96	15	4	50	15,840	3.17	3.28	3.39	3.51	3.78	
CLR200-0100-0200-0500		0.2	5	0.7	0.96	15	4	50	17,920	5.24	5.41	5.60	5.81	6.26	
CLR200-0150-0020-0450		1.5	0.02	4.5	1	1.44	15	4	50	20,720	4.77	4.93	5.11	5.30	5.73
CLR200-0150-0020-0750			0.02	7.5	1	1.44	15	4	50	23,520	7.87	8.14	8.43	8.75	9.46
CLR200-0150-0030-0450			0.03	4.5	1	1.44	15	4	50	18,640	4.77	4.93	5.11	5.30	5.73
CLR200-0150-0030-0750	0.03		7.5	1	1.44	15	4	50	21,120	7.87	8.14	8.43	8.75	9.46	
CLR200-0150-0050-0450	0.05		4.5	1	1.44	15	4	50	18,640	4.77	4.93	5.11	5.30	5.72	
CLR200-0150-0050-0500	0.05		5	1.5	1.44	15	4	50	18,640	5.28	5.46	5.66	5.87	6.34	
CLR200-0150-0050-0750	0.05		7.5	1	1.44	15	4	50	21,120	7.87	8.14	8.43	8.75	9.45	
CLR200-0150-0050-1000	0.05		10	1.5	1.44	15	4	50	21,120	10.45	10.81	11.20	11.62	12.56	
CLR200-0150-0100-0450	0.1		4.5	1	1.44	15	4	50	18,640	4.76	4.93	5.10	5.29	5.71	
CLR200-0150-0100-0500	0.1		5	1.5	1.44	15	4	50	18,640	5.28	5.46	5.65	5.86	6.33	
CLR200-0150-0100-0750	0.1		7.5	1	1.44	15	4	50	21,120	7.86	8.14	8.43	8.74	9.44	
CLR200-0150-0100-1000	0.1		10	1.5	1.44	15	4	50	21,120	10.45	10.81	11.20	11.61	12.55	
CLR200-0150-0200-0450	0.2		4.5	1	1.44	15	4	50	18,640	4.76	4.92	5.09	5.27	5.69	
CLR200-0150-0200-0750	0.2		7.5	1	1.44	15	4	50	21,120	7.86	8.13	8.42	8.72	9.42	
CLR200-0150-0300-0450	0.3		4.5	1	1.44	15	4	50	18,640	4.76	4.91	5.08	5.26	5.66	
CLR200-0150-0300-0750	0.3	7.5	1	1.44	15	4	50	21,120	7.86	8.12	8.40	8.71	9.39		



單位(Size): mm



● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) ^o Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.					
										30'	1°	1°30'	2°	3°	
CLR200-0200-0020-0600	2	0.02	6	1.2	1.96	15	4	50	21,360	6.28	6.50	6.73	6.98	7.55	
CLR200-0200-0020-1000		0.02	10	1.2	1.96	15	4	50	23,840	10.41	10.78	11.16	11.58	12.52	
CLR200-0200-0030-0600		0.03	6	1.2	1.96	15	4	50	19,200	6.28	6.50	6.73	6.98	7.54	
CLR200-0200-0030-1000		0.03	10	1.2	1.96	15	4	50	21,440	10.41	10.77	11.16	11.58	12.52	
CLR200-0200-0050-0600		0.05	6	1.2	1.96	15	4	50	19,200	6.28	6.49	6.73	6.98	7.54	
CLR200-0200-0050-1000		0.05	10	2	1.96	15	4	50	21,440	10.41	10.77	11.16	11.58	12.51	
CLR200-0200-0050-1500		0.05	15	2	1.96	15	4	50	23,520	15.58	16.12	16.70	17.33	18.73	
CLR200-0200-0100-0600		0.1	6	1.2	1.96	15	4	50	19,200	6.28	6.49	6.72	6.97	7.53	
CLR200-0200-0100-1000		0.1	10	2	1.96	15	4	50	21,440	10.41	10.77	11.16	11.57	12.50	
CLR200-0200-0100-1500		0.1	15	2	1.96	15	4	50	23,520	15.58	16.12	16.70	17.32	18.72	
CLR200-0200-0200-0600		0.2	6	1.2	1.96	15	4	50	19,200	6.27	6.48	6.71	6.96	7.51	
CLR200-0200-0300-0600		0.3	6	1.2	1.96	15	4	50	19,200	6.27	6.48	6.70	6.94	7.48	
CLR200-0200-0300-1000		0.3	10	1.2	1.96	15	4	50	21,360	10.40	10.76	11.13	11.54	12.45	
CLR200-0200-0500-0600		0.5	6	1.2	1.96	15	4	50	19,200	6.26	6.46	6.68	6.91	7.44	
CLR200-0200-0500-1000		0.5	10	1.2	1.96	15	4	50	21,360	10.40	10.74	11.11	11.51	12.41	
CLR200-0300-0050-1000		3	0.05	10	2	2.92	15	6	50	25,336	10.49	10.85	11.24	11.66	12.61
CLR200-0300-0050-1500			0.05	15	2	2.92	15	6	50	26,400	15.66	16.20	16.78	17.41	18.82
CLR200-0300-0100-1000			0.1	10	2	2.92	15	6	50	25,336	10.49	10.85	11.24	11.66	12.59
CLR200-0300-0100-1500			0.1	15	2	2.92	15	6	50	26,400	15.66	16.20	16.78	17.40	18.81

單位(Size): mm

CBN 切削條件參考表 Recommended Milling Conditions

■ 型號: CLR200
Model number: CLR200

長頸圓角立銼刀 Long Neck Radius End Mill

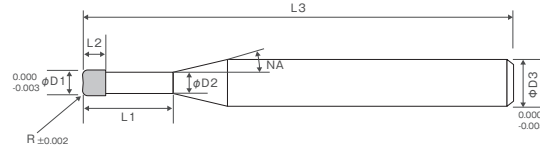
切削材料 Work Material	銅 Copper						淬火鋼 Hardened Steels STAVAX/HPM (~55HRC)			淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)			淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)																																																																												
	刃數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed																																																																										
				∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹																																																																										
2	0.1	0.5	0.002	0.01	150	50,000	0.002	0.01	150	50,000	0.001	0.01	100	50,000	0.001	0.01	50	50,000																																																																							
																			0.15	0.5	0.002	0.02	200	50,000	0.002	0.02	200	50,000	0.002	0.02	150	50,000	0.001	0.015	100	50,000																																																					
																																					0.2	1	0.003	0.02	200	50,000	0.003	0.02	200	50,000	0.003	0.02	200	50,000	0.002	0.01	100	50,000																																			
																																																							0.3	1	0.003	0.05	500	50,000	0.003	0.05	500	50,000	0.003	0.05	400	50,000	0.002	0.03	300	50,000																	
																																																																									1.5	0.003	0.03	400	50,000	0.003	0.03	400	50,000	0.003	0.03	300	50,000	0.002	0.02	200	50,000
	0.4	1.35	0.005	0.05	500	50,000	0.005	0.05	500	50,000	0.005	0.05	400	50,000	0.003	0.02	300	50,000																																																																							
																			1.5	0.005	0.05	500	50,000	0.005	0.05	500	50,000	0.005	0.05	400	50,000	0.003	0.02	300	50,000																																																						
																																				2	0.005	0.05	500	50,000	0.005	0.05	500	50,000	0.005	0.05	400	50,000	0.003	0.02	300	50,000																																					
	0.5	1.5	0.01	0.2	800	50,000	0.01	0.2	800	50,000	0.01	0.2	800	50,000	0.01	0.1	700	50,000																																																																							
																			2.5	0.005	0.1	600	50,000	0.005	0.1	600	50,000	0.005	0.1	600	50,000	0.003	0.05	500	50,000																																																						
																																				0.6	2.5	0.005	0.1	600	50,000	0.005	0.1	600	50,000	0.005	0.1	600	50,000	0.003	0.05	500	50,000																																				
	2.5	0.005	0.2	800	50,000	0.005	0.2	800	50,000	0.005	0.2	800	50,000	0.003	0.1	600	40,000																																																																								
																		5	0.01	0.2	1,400	50,000	0.01	0.2	1,400	50,000	0.01	0.1	1,200	50,000	0.01	0.05	1,000	40,000																																																							
	1	3	0.02	0.4	1,500	48,000	0.02	0.4	1,500	48,000	0.02	0.3	1,200	48,000	0.01	0.2	1,000																		32,000																																																						
																		5	0.02	0.4	1,400	48,000	0.02	0.4	1,400	48,000	0.02	0.3	1,100	48,000	0.01	0.2	1,000	32,000																																																							
																																				10	0.02	0.4	1,300	48,000	0.02	0.4	1,300	48,000	0.02	0.3	1,000	48,000	0.01	0.2	1,000	32,000																																					
	1.5	4.5	0.02	0.5	2,000	32,000	0.02	0.5	2,000	32,000	0.02	0.4	1,500	32,000	0.01	0.2	1,200	20,000																																																																							
																			5	0.02	0.5	1,800	32,000	0.02	0.5	1,800	32,000	0.02	0.4	1,300	32,000	0.01	0.2	1,000	20,000																																																						
																																				7.5	0.02	0.5	1,700	32,000	0.02	0.5	1,700	32,000	0.02	0.4	1,200	32,000	0.01	0.2	900	20,000																																					
	10	0.02	0.5	1,500	32,000	0.02	0.5	1,500	32,000	0.02	0.4	1,100	32,000	0.01	0.2	800	20,000																																																																								
																		2	6	0.03	0.8	1,800	24,000	0.03	0.8	1,800	24,000	0.03	0.7	1,400	24,000	0.01	0.5	1,000	16,000																																																						
	10	0.03	0.8	1,600	24,000	0.03	0.8	1,600	24,000	0.03	0.7	1,200	24,000	0.01	0.5	900	16,000																																																																								
																																				15	0.03	0.8	1,400	24,000	0.03	0.8	1,400	24,000	0.03	0.7	1,000	24,000	0.01	0.5	800	16,000																																					
3	10	0.03	0.6	2,000	24,000	0.03	0.6	2,000	24,000	0.03	0.5	1,500	24,000	0.01	0.3	1,200	16,000																																																																								
																		15	0.03	0.6	1,800	22,000	0.03	0.6	1,800	22,000	0.03	0.5	1,300	22,000	0.01	0.3	1,000	16,000																																																							

● 請將刀具確實地固定夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ● 建議使用油霧或含非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ● 切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ● 工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ● ∅p=軸向切削深度，∅e=徑向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ● 請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

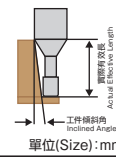
CBN長頸圓角立銼刀 CBN Long Neck Radius End Mill

● 型號: CLR400 Model number: CLR400

Non
BANCERA
CBN
刀刃數 4
螺旋角 0°
仰角 15°
柄徑公差 0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.

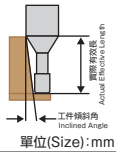


● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) ^a Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
CLR400-0100-0020-0300	1	0.02	3	0.7	0.96	15	4	50	21,120	3.18	3.29	3.41	3.53	3.82
CLR400-0100-0020-0500		0.02	5	0.7	0.96	15	4	50	23,920	5.24	5.43	5.62	5.83	6.30
CLR400-0100-0050-0300		0.05	3	1.2	0.96	15	4	50	19,040	3.18	3.29	3.40	3.53	3.81
CLR400-0100-0050-0500		0.05	5	1.2	0.96	15	4	50	21,520	5.24	5.42	5.62	5.83	6.30
CLR400-0100-0050-1000		0.05	10	1.2	0.96	15	4	50	24,000	10.41	10.77	11.16	11.58	12.51
CLR400-0100-0100-0300		0.1	3	1.2	0.96	15	4	50	19,040	3.17	3.28	3.40	3.52	3.80
CLR400-0100-0100-0400		0.1	4	1.2	0.96	15	4	50	20,280	4.21	4.35	4.51	4.67	5.04
CLR400-0100-0100-0500		0.1	5	1.2	0.96	15	4	50	21,520	5.24	5.42	5.61	5.82	6.29
CLR400-0100-0100-1000		0.1	10	1.2	0.96	15	4	50	24,000	10.41	10.77	11.16	11.57	12.50
CLR400-0100-0200-0300		0.2	3	0.7	0.96	15	4	50	19,040	3.17	3.28	3.39	3.51	3.78
CLR400-0100-0200-0500		0.2	5	0.7	0.96	15	4	50	21,520	5.24	5.41	5.60	5.81	6.26
CLR400-0150-0020-0450		1.5	0.02	4.5	1	1.44	15	4	50	24,880	4.77	4.93	5.11	5.30
CLR400-0150-0020-0750	0.02		7.5	1	1.44	15	4	50	28,240	7.87	8.14	8.43	8.75	9.46
CLR400-0150-0050-0450	0.05		4.5	1	1.44	15	4	50	22,400	4.77	4.93	5.11	5.30	5.72
CLR400-0150-0050-0500	0.05		5	1.5	1.44	15	4	50	22,400	5.28	5.46	5.66	5.87	6.34
CLR400-0150-0050-0750	0.05		7.5	1	1.44	15	4	50	25,360	7.87	8.14	8.43	8.75	9.45
CLR400-0150-0050-1000	0.05		10	1.5	1.44	15	4	50	25,360	10.45	10.81	11.20	11.62	12.56
CLR400-0150-0100-0450	0.1		4.5	1	1.44	15	4	50	22,400	4.76	4.93	5.10	5.29	5.71
CLR400-0150-0100-0500	0.1		5	1.5	1.44	15	4	50	22,400	5.28	5.46	5.65	5.86	6.33
CLR400-0150-0100-0750	0.1		7.5	1	1.44	15	4	50	25,360	7.86	8.14	8.43	8.74	9.44
CLR400-0150-0100-1000	0.1		10	1.5	1.44	15	4	50	25,360	10.45	10.81	11.20	11.61	12.55
CLR400-0150-0200-0450	0.2		4.5	1	1.44	15	4	50	22,400	4.76	4.92	5.09	5.27	5.69
CLR400-0150-0200-0750	0.2		7.5	1	1.44	15	4	50	25,360	7.86	8.13	8.42	8.72	9.42
CLR400-0200-0020-0600	2	0.02	6	1.2	1.96	15	4	50	25,680	6.28	6.50	6.73	6.98	7.55
CLR400-0200-0050-0600		0.05	6	1.2	1.96	15	4	50	23,040	6.28	6.49	6.73	6.98	7.54
CLR400-0200-0050-1000-00120		0.05	10	1.2	1.96	15	4	50	25,760	10.41	10.77	11.16	11.58	12.51
CLR400-0200-0050-1000-00200		0.05	10	2	1.96	15	4	50	25,760	10.41	10.77	11.16	11.58	12.51
CLR400-0200-0050-1500		0.05	15	2	1.96	15	4	50	28,220	15.58	16.12	16.70	17.33	18.73
CLR400-0200-0100-0600		0.1	6	1.2	1.96	15	4	50	23,040	6.28	6.49	6.72	6.97	7.53
CLR400-0200-0100-1000		0.1	10	2	1.96	15	4	50	25,760	10.41	10.77	11.16	11.57	12.50

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) ^a Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.					
										30'	1°	1°30'	2°	3°	
CLR400-0200-0100-1500	2	0.1	15	2	1.96	15	4	50	28,220	15.58	16.12	16.70	17.32	18.72	
CLR400-0200-0200-0600		0.2	6	1.2	1.96	15	4	50	23,040	6.27	6.48	6.71	6.96	7.51	
CLR400-0200-0200-1000		0.2	10	1.2	1.96	15	4	50	25,680	10.41	10.76	11.14	11.55	12.48	
CLR400-0200-0300-0500		0.3	5	2	1.96	15	4	50	23,040	5.24	5.41	5.59	5.79	6.24	
CLR400-0200-0300-1000		0.3	10	2	1.96	15	4	50	25,680	10.40	10.76	11.13	11.54	12.45	
CLR400-0300-0050-0600	3	0.05	6	1.8	2.92	15	6	50	29,760	6.35	6.57	6.81	7.06	7.63	
CLR400-0300-0050-0900		0.05	9	1.8	2.92	15	6	50	30,400	9.46	9.78	10.13	10.51	11.36	
CLR400-0300-0050-1000		0.05	10	2	2.92	15	6	50	30,400	10.49	10.85	11.24	11.66	12.61	
CLR400-0300-0050-1200		0.05	12	1.8	2.92	15	6	50	31,040	12.56	12.99	13.46	13.96	15.09	
CLR400-0300-0050-1500-00180		0.05	15	1.8	2.92	15	6	50	31,680	15.66	16.20	16.78	17.41	18.82	
CLR400-0300-0050-1500-00200		0.05	15	2	2.92	15	6	50	31,680	15.66	16.20	16.78	17.41	18.82	
CLR400-0300-0100-0600		0.1	6	1.8	2.92	15	6	50	29,760	6.35	6.57	6.80	7.06	7.62	
CLR400-0300-0100-0900		0.1	9	1.8	2.92	15	6	50	30,400	9.45	9.78	10.13	10.51	11.35	
CLR400-0300-0100-1000		0.1	10	2	2.92	15	6	50	30,400	10.49	10.85	11.24	11.66	12.59	
CLR400-0300-0100-1200		0.1	12	1.8	2.92	15	6	50	31,040	12.55	12.99	13.45	13.96	15.08	
CLR400-0300-0100-1500-00180		0.1	15	1.8	2.92	15	6	50	31,680	15.66	16.20	16.78	17.40	18.81	
CLR400-0300-0100-1500-00200		0.1	15	2	2.92	15	6	50	31,680	15.66	16.20	16.78	17.40	18.81	
CLR400-0300-0200-0600	4	0.2	6	1.8	2.92	15	6	50	29,760	6.35	6.56	6.79	7.04	7.60	
CLR400-0300-0200-0900		0.2	9	1.8	2.92	15	6	50	30,400	9.45	9.77	10.12	10.49	11.33	
CLR400-0300-0200-1200		0.2	12	1.8	2.92	15	6	50	31,040	12.55	12.98	13.44	13.94	15.06	
CLR400-0300-0200-1500		0.2	15	1.8	2.92	15	6	50	31,680	15.65	16.19	16.77	17.39	18.79	
CLR400-0300-0300-1000		0.3	10	2	2.92	15	6	50	30,400	10.48	10.84	11.22	11.63	12.55	
CLR400-0400-0050-1500		5	0.05	15	2	3.92	15	6	50	38,020	15.66	16.20	16.78	17.41	18.82
CLR400-0400-0100-1500			0.1	15	2	3.92	15	6	50	38,020	15.66	16.20	16.78	17.40	18.81
CLR400-0400-0300-1500			0.3	15	2	3.92	15	6	50	38,020	15.65	16.18	16.76	17.38	18.76
CLR400-0400-0500-1500		5	0.5	15	2	3.92	15	6	50	38,020	15.64	16.17	16.74	17.35	18.72
CLR400-0500-0050-1500			0.05	15	2	4.92	15	6	50	44,320	15.66	16.20	16.78	FREE	FREE
CLR400-0500-0100-1500			0.1	15	2	4.92	15	6	50	44,320	15.66	16.20	16.78	FREE	FREE
CLR400-0500-0300-1500			0.3	15	2	4.92	15	6	50	44,320	15.65	16.18	16.76	FREE	FREE
CLR400-0500-0500-1500	0.5		15	2	4.92	15	6	50	44,320	15.64	16.17	16.74	FREE	FREE	



單位(Size): mm

CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
Ion Depo A Series
Ion Depo U Series
DLC Series
Non-Coat Series
Ion Depo R Series

CBN 切削條件參考表 Recommended Milling Conditions

■型號: CLR400
Model number: CLR400

長頸圓角立銼刀 Long Neck Radius End Mill

切削材料 Work Material		銅 Copper				淬火鋼 Hardened Steels STAVAX/HPM (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)				
刃數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹
4	1	3	0.03	0.4	2,500	40,000	0.03	0.4	2,500	40,000	0.03	0.3	2,000	40,000	0.01	0.2	1,500	36,000
		4	0.02	0.3	2,500	40,000	0.02	0.3	2,500	40,000	0.02	0.2	2,000	40,000	0.01	0.1	1,500	36,000
		5	0.02	0.3	2,500	40,000	0.02	0.3	2,500	40,000	0.02	0.2	2,000	40,000	0.007	0.1	1,500	36,000
		10	0.02	0.3	2,500	40,000	0.02	0.3	2,500	40,000	0.02	0.2	2,000	40,000	0.007	0.1	1,500	36,000
	1.5	4.5	0.04	0.6	3,500	36,000	0.04	0.6	3,500	36,000	0.03	0.5	2,800	30,000	0.015	0.3	1,800	24,000
		5	0.04	0.6	3,500	36,000	0.04	0.6	3,500	36,000	0.03	0.5	2,800	30,000	0.01	0.3	1,800	24,000
		7.5	0.03	0.5	3,000	36,000	0.03	0.5	3,000	36,000	0.02	0.4	2,500	30,000	0.01	0.2	1,600	24,000
	2	10	0.03	0.5	3,000	36,000	0.03	0.5	3,000	36,000	0.02	0.4	2,500	30,000	0.01	0.2	1,600	24,000
		5	0.04	0.8	3,500	30,000	0.04	0.8	3,500	30,000	0.03	0.7	2,800	24,000	0.02	0.3	1,500	16,000
		6	0.04	0.8	3,500	30,000	0.04	0.8	3,500	30,000	0.03	0.7	2,800	24,000	0.02	0.3	1,500	16,000
		10	0.03	0.6	3,000	30,000	0.03	0.6	3,000	30,000	0.02	0.5	2,400	24,000	0.01	0.3	1,300	16,000
	3	15	0.03	0.6	3,000	30,000	0.03	0.6	3,000	30,000	0.02	0.5	2,400	24,000	0.01	0.3	1,300	16,000
		6	0.05	1	4,000	24,000	0.05	1	4,000	24,000	0.04	0.85	3,200	20,000	0.02	0.6	1,500	12,000
		9	0.05	1	3,500	24,000	0.05	1	3,500	24,000	0.04	0.85	2,800	20,000	0.02	0.6	1,500	12,000
		10	0.05	1	3,500	24,000	0.05	1	3,500	24,000	0.04	0.85	2,800	20,000	0.02	0.6	1,500	12,000
4	12	0.04	0.85	3,500	24,000	0.04	0.85	3,500	24,000	0.04	0.7	2,800	20,000	0.02	0.5	1,500	12,000	
	15	0.03	0.85	3,000	24,000	0.03	0.85	3,000	24,000	0.03	0.7	2,400	20,000	0.015	0.5	1,300	12,000	
	15	0.03	1	3,000	22,000	0.03	1	3,000	22,000	0.03	0.8	2,400	18,000	0.015	0.6	1,300	10,000	
5	15	0.03	2	2,300	20,000	0.03	2	2,300	20,000	0.03	1	1,800	20,000	0.03	0.75	1,000	20,000	

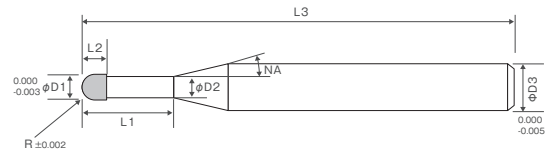
●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或含非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向切深, ∅e=徑向切深。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

CBN Series
 圓角半徑
 Hard Star A Series
 Hard Star Ti Series
 Hard Star TT Series
 Ion Depo A Series
 Ion Depo U Series
 DLC Series
 Non-Coat Series
 Ion Depo R Series

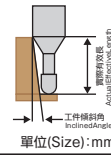
CBN球頭立銑刀 CBN Ball End Mill

●型號: CB200 Model number: CB200

Non
BANCERA
CBN
刀刀數 2
螺旋角 0°
仰角 15°
柄徑公差 0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value. If concerned about interference with the work material, please check by actual measurement.

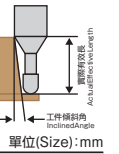


●聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	球頭R (R)	有效長度 (L1)	刃長 (L2)	刀刃直徑 (D1)	刀頭底部柄徑 (D2)	仰角 (NA) [°]	刀柄直徑 (D3)	全長 (L3)	標準價格 (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
CB200-0010-0050-0020	0.05	0.2	0.07	0.1	0.08	15	4	50	21,600	0.24	0.25	0.26	0.27	0.28
CB200-0010-0050-0030		0.3	0.08	0.1	0.08	15	4	50	30,560	0.35	0.36	0.37	0.38	0.41
CB200-0010-0050-0050		0.5	0.08	0.1	0.08	15	4	50	30,560	0.55	0.57	0.59	0.61	0.66
CB200-0015-0075-0045	0.075	0.45	0.12	0.15	0.13	15	4	50	30,560	0.50	0.52	0.53	0.55	0.59
CB200-0015-0075-0075		0.75	0.12	0.15	0.13	15	4	50	31,840	0.81	0.84	0.86	0.89	0.96
CB200-0020-0100-0030	0.1	0.3	0.15	0.2	0.17	15	4	50	24,400	0.36	0.37	0.38	0.39	0.42
CB200-0020-0100-0050		0.5	0.3	0.2	0.17	15	4	50	20,800	0.57	0.59	0.61	0.62	0.67
CB200-0020-0100-0060		0.6	0.15	0.2	0.17	15	4	50	25,200	0.67	0.69	0.72	0.74	0.79
CB200-0020-0100-0100		1	0.15	0.2	0.17	15	4	50	24,000	1.09	1.12	1.16	1.20	1.29
CB200-0030-0150-0030	0.15	0.3	0.23	0.3	0.27	15	4	50	24,000	0.36	0.37	0.38	0.39	0.41
CB200-0030-0150-0050-00023		0.5	0.23	0.3	0.27	15	4	50	24,400	0.57	0.58	0.60	0.62	0.66
CB200-0030-0150-0050-00030		0.5	0.3	0.3	0.27	15	4	50	24,400	0.57	0.58	0.60	0.62	0.66
CB200-0030-0150-0075		0.75	0.23	0.3	0.27	15	4	50	24,800	0.83	0.85	0.88	0.90	0.97
CB200-0040-0200-0050	0.2	0.5	0.3	0.4	0.37	15	4	50	20,000	0.57	0.58	0.59	0.61	0.64
CB200-0040-0200-0075		0.75	0.3	0.4	0.37	15	4	50	22,080	0.83	0.85	0.87	0.90	0.96
CB200-0040-0200-0100		1	0.3	0.4	0.37	15	4	50	22,480	1.08	1.12	1.15	1.18	1.27
CB200-0040-0200-0120		1.2	0.3	0.4	0.37	15	4	50	22,880	1.29	1.33	1.37	1.41	1.52
CB200-0040-0200-0135		1.35	0.4	0.4	0.37	15	4	50	20,400	1.45	1.49	1.54	1.59	1.70
CB200-0040-0200-0200		2	0.3	0.4	0.37	15	4	50	24,000	2.12	2.19	2.26	2.33	2.51
CB200-0040-0200-0300	3	0.3	0.4	0.37	15	4	50	24,000	3.15	3.26	3.37	3.48	3.75	
CB200-0050-0250-0100	0.25	1	0.38	0.5	0.47	15	4	50	22,480	1.08	1.11	1.14	1.18	1.26
CB200-0050-0250-0150		1.5	0.38	0.5	0.47	15	4	50	23,200	1.60	1.65	1.70	1.75	1.88
CB200-0050-0250-0250		2.5	0.38	0.5	0.47	15	4	50	23,200	2.63	2.72	2.81	2.90	3.12
CB200-0050-0250-0350		3.5	0.38	0.5	0.47	15	4	50	23,200	3.67	3.79	3.91	4.05	4.36
CB200-0060-0300-0120	0.3	1.2	0.5	0.6	0.57	15	4	50	20,720	1.29	1.32	1.36	1.40	1.49
CB200-0060-0300-0150		1.5	0.5	0.6	0.57	15	4	50	21,120	1.60	1.64	1.69	1.74	1.87
CB200-0060-0300-0170		1.7	0.7	0.6	0.57	15	4	50	19,200	1.81	1.86	1.91	1.97	2.11
CB200-0060-0300-0300		3	0.5	0.6	0.57	15	4	50	22,400	3.15	3.25	3.35	3.47	3.73
CB200-0060-0300-0400		4	0.5	0.6	0.57	15	4	50	22,400	4.18	4.32	4.46	4.62	4.97
CB200-0060-0300-0500	5	0.5	0.6	0.57	15	4	50	22,800	5.22	5.39	5.57	5.77	6.22	

●聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	球頭R (R)	有效長度 (L1)	刃長 (L2)	刀刃直徑 (D1)	刀頭底部柄徑 (D2)	仰角 (NA) [°]	刀柄直徑 (D3)	全長 (L3)	標準價格 (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
CB200-0060-0300-0600	0.3	6	0.5	0.6	0.57	15	4	50	22,800	6.25	6.46	6.68	6.92	7.46
CB200-0080-0400-0160	0.4	1.6	0.6	0.8	0.77	15	4	50	20,720	1.70	1.74	1.79	1.85	1.97
CB200-0080-0400-0200		2	0.6	0.8	0.77	15	4	50	21,120	2.11	2.17	2.24	2.31	2.46
CB200-0080-0400-0400		4	0.6	0.8	0.77	15	4	50	22,400	4.18	4.31	4.45	4.60	4.95
CB200-0080-0400-0600		6	0.6	0.8	0.77	15	4	50	22,400	6.25	6.45	6.67	6.90	7.44
CB200-0100-0500-0200	0.5	2	0.7	1	0.96	15	4	50	20,720	2.13	2.18	2.25	2.31	2.46
CB200-0100-0500-0220		2.2	1.2	1	0.96	15	4	50	19,200	2.33	2.40	2.47	2.54	2.71
CB200-0100-0500-0250		2.5	0.7	1	0.96	15	4	50	21,120	2.64	2.72	2.80	2.89	3.09
CB200-0120-0600-0240	0.6	2.4	0.8	1.2	1.16	15	4	50	21,600	2.54	2.61	2.68	2.76	2.94
CB200-0120-0600-0300		3	0.8	1.2	1.16	15	4	50	22,000	3.16	3.25	3.34	3.45	3.68
CB200-0120-0600-0600		6	0.8	1.2	1.16	15	4	50	23,200	6.26	6.46	6.67	6.90	7.41
CB200-0150-0750-0300	0.75	3	1.5	1.5	1.44	15	4	50	20,000	3.19	3.28	3.37	3.47	3.70
CB200-0200-1000-0500	1	5	2	2	1.96	15	4	50	20,000	5.21	5.36	5.52	5.69	6.08
CB200-0300-1500-0500	1.5	5	2	3	2.92	15	6	50	23,200	5.27	5.40	5.55	5.70	6.06



CBN 切削條件參考表 Recommended Milling Conditions

■ 型號:CB200
Model number:CB200

球頭立銼刀 Ball End Mill

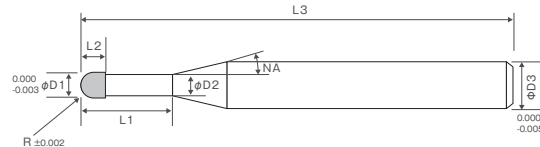
切削材料 Work Material		銅 Copper					淬火鋼 Hardened Steels STAVAX/HPM (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)			
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			Øp mm	Øe mm	mm/min	min ⁻¹	Øp mm	Øe mm	mm/min	min ⁻¹	Øp mm	Øe mm	mm/min	min ⁻¹	Øp mm	Øe mm	mm/min	min ⁻¹
2	0.1	0.2	0.005	0.005	600	40,000	0.005	0.005	600	40,000	0.005	0.005	450	40,000	0.003	0.003	300	40,000
		0.3	0.005	0.005	600	40,000	0.005	0.005	600	40,000	0.005	0.005	450	40,000	0.003	0.003	300	40,000
		0.5	0.005	0.005	500	40,000	0.005	0.005	500	40,000	0.005	0.005	350	40,000	0.003	0.003	250	40,000
	0.15	0.45	0.005	0.005	750	40,000	0.005	0.005	750	40,000	0.005	0.005	550	40,000	0.003	0.003	400	40,000
		0.75	0.005	0.005	700	40,000	0.005	0.005	700	40,000	0.005	0.005	500	40,000	0.003	0.003	400	40,000
	0.2	0.3	0.005	0.01	1,200	40,000	0.005	0.01	1,200	40,000	0.005	0.01	900	40,000	0.005	0.005	600	40,000
		0.5	0.005	0.01	1,200	40,000	0.005	0.01	1,200	40,000	0.005	0.01	900	40,000	0.005	0.005	600	40,000
		0.6	0.005	0.01	1,100	40,000	0.005	0.01	1,100	40,000	0.005	0.01	850	40,000	0.005	0.005	550	40,000
	0.3	1	0.005	0.01	1,000	40,000	0.005	0.01	1,000	40,000	0.005	0.01	800	40,000	0.005	0.005	500	40,000
		0.3	0.01	0.02	1,800	40,000	0.01	0.02	1,800	40,000	0.01	0.02	1,500	40,000	0.005	0.01	1,000	40,000
		0.5	0.01	0.02	1,800	40,000	0.01	0.02	1,800	40,000	0.01	0.02	1,500	40,000	0.005	0.01	1,000	40,000
	0.4	0.75	0.01	0.02	1,800	40,000	0.01	0.02	1,800	40,000	0.01	0.02	1,500	40,000	0.005	0.01	1,000	40,000
		1	0.01	0.02	1,800	40,000	0.01	0.02	1,800	40,000	0.01	0.02	1,500	40,000	0.005	0.01	1,000	40,000
		1.2	0.01	0.02	1,500	40,000	0.01	0.02	1,500	40,000	0.01	0.02	1,200	40,000	0.005	0.01	800	40,000
	0.5	1.35	0.01	0.02	1,500	40,000	0.01	0.02	1,500	40,000	0.01	0.02	1,200	40,000	0.005	0.01	800	40,000
		2	0.01	0.02	1,500	40,000	0.01	0.02	1,500	40,000	0.01	0.02	1,200	40,000	0.005	0.01	800	40,000
		3	0.01	0.02	1,500	40,000	0.01	0.02	1,500	40,000	0.01	0.02	1,200	40,000	0.005	0.01	800	40,000
	0.6	1	0.02	0.04	2,500	40,000	0.02	0.04	2,500	40,000	0.02	0.03	1,800	40,000	0.01	0.02	1,200	40,000
		1.5	0.02	0.04	2,500	40,000	0.02	0.04	2,500	40,000	0.02	0.03	1,800	40,000	0.01	0.02	1,200	40,000
		2.5	0.02	0.04	2,000	40,000	0.02	0.04	2,000	40,000	0.02	0.03	1,500	40,000	0.01	0.02	1,000	40,000
	0.8	3.5	0.02	0.04	2,000	40,000	0.02	0.04	2,000	40,000	0.02	0.03	1,500	40,000	0.01	0.02	1,000	40,000
		1.2	0.02	0.04	2,500	40,000	0.02	0.04	2,500	40,000	0.02	0.03	2,000	40,000	0.01	0.02	1,500	40,000
		1.5	0.02	0.04	2,500	40,000	0.02	0.04	2,500	40,000	0.02	0.03	2,000	40,000	0.01	0.02	1,500	40,000
		1.7	0.02	0.04	2,500	40,000	0.02	0.04	2,500	40,000	0.02	0.03	2,000	40,000	0.01	0.02	1,500	40,000
3		0.02	0.04	2,500	40,000	0.02	0.04	2,500	40,000	0.02	0.03	2,000	40,000	0.01	0.02	1,500	40,000	
4		0.02	0.04	2,500	40,000	0.02	0.04	2,500	40,000	0.02	0.03	2,000	40,000	0.01	0.02	1,500	40,000	
1	5	0.02	0.04	2,500	40,000	0.02	0.04	2,500	40,000	0.02	0.03	2,000	40,000	0.01	0.02	1,500	40,000	
	6	0.02	0.04	2,500	40,000	0.02	0.04	2,500	40,000	0.02	0.03	2,000	40,000	0.01	0.02	1,500	40,000	
	6	0.02	0.04	2,500	40,000	0.02	0.04	2,500	40,000	0.02	0.03	2,000	40,000	0.01	0.02	1,500	40,000	
1.2	1.6	0.03	0.05	3,000	40,000	0.03	0.05	3,000	40,000	0.03	0.05	3,000	40,000	0.02	0.03	2,000	30,000	
	2	0.03	0.05	3,000	40,000	0.03	0.05	3,000	40,000	0.03	0.05	3,000	40,000	0.02	0.03	2,000	30,000	
	4	0.03	0.05	3,000	40,000	0.03	0.05	3,000	40,000	0.03	0.05	3,000	40,000	0.02	0.03	2,000	30,000	
1.5	6	0.03	0.05	3,000	40,000	0.03	0.05	3,000	40,000	0.03	0.05	3,000	40,000	0.02	0.03	2,000	30,000	
	2	0.05	0.1	3,000	30,000	0.05	0.1	3,000	30,000	0.03	0.05	3,000	30,000	0.03	0.03	2,000	25,000	
	2.2	0.05	0.1	3,000	30,000	0.05	0.1	3,000	30,000	0.03	0.05	3,000	30,000	0.03	0.03	2,000	25,000	
2	2.5	0.05	0.1	3,000	30,000	0.05	0.1	3,000	30,000	0.03	0.05	3,000	30,000	0.03	0.03	2,000	25,000	
	2.4	0.08	0.15	2,300	20,000	0.08	0.15	2,300	20,000	0.05	0.075	2,100	20,000	0.04	0.06	1,300	15,000	
	3	0.08	0.15	2,300	20,000	0.08	0.15	2,300	20,000	0.05	0.075	2,100	20,000	0.04	0.06	1,300	15,000	
3	6	0.04	0.12	2,200	20,000	0.04	0.12	2,200	20,000	0.03	0.06	2,000	20,000	0.03	0.05	1,200	15,000	
	1.5	0.08	0.15	2,300	20,000	0.08	0.15	2,300	20,000	0.05	0.075	2,100	20,000	0.04	0.06	1,300	15,000	
	5	0.08	0.15	2,000	17,000	0.08	0.15	2,000	17,000	0.05	0.08	1,700	15,000	0.04	0.06	1,200	12,000	
3	5	0.11	0.21	1,700	10,000	0.11	0.21	1,700	10,000	0.08	0.12	1,400	10,000	0.07	0.1	1,000	10,000	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●Øp=軸向切深, Øe=徑向切深。 Øp=Axial Depth of Cut, Øe=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

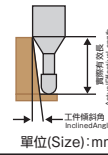
CBN長頸球頭立銼刀 CBN Long Neck Ball End Mill

■型號:CLB200 Model number:CLB200

Non
BANCERA
CBN
刀刃數 2
螺旋角 0°
仰角 15°
柄徑公差 ±0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value. If concerned about interference with the work material, please check by actual measurement.



●請系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 CodeNo.	球頭R (R) Ball R	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀刃直徑 (D1) Tool Diameter	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
										單位(Size):mm				
CLB200-0100-0500-0300	0.5	3	1.2	1	0.96	15	4	50	20,480	3.16	3.25	3.35	3.46	3.71
CLB200-0100-0500-0400		4	0.7	1	0.96	15	4	50	22,400	4.20	4.32	4.46	4.61	4.95
CLB200-0100-0500-0500		5	1.2	1	0.96	15	4	50	20,480	5.23	5.39	5.57	5.76	6.19
CLB200-0100-0500-0600		6	0.7	1	0.96	15	4	50	22,400	6.26	6.46	6.68	6.91	7.44
CLB200-0100-0500-0800		8	0.7	1	0.96	15	4	50	22,800	8.33	8.60	8.90	9.21	9.92
CLB200-0100-0500-1000		10	1.2	1	0.96	15	4	50	21,280	10.40	10.74	11.11	11.51	12.41
CLB200-0150-0750-0380	0.75	3.8	1	1.5	1.44	15	4	50	22,000	4.02	4.13	4.26	4.39	4.69
CLB200-0150-0750-0500		5	1.5	1.5	1.44	15	4	50	22,080	5.26	5.42	5.59	5.77	6.18
CLB200-0150-0750-0750		7.5	1	1.5	1.44	15	4	50	23,200	7.84	8.09	8.36	8.64	9.29
CLB200-0150-0750-1000		10	1.5	1.5	1.44	15	4	50	22,080	10.43	10.76	11.13	11.52	12.40
CLB200-0150-0750-1500		15	1	1.5	1.44	15	4	50	23,200	15.60	16.11	16.67	17.27	18.61
CLB200-0200-1000-0400		1	4	1.2	2	1.96	15	4	50	22,000	4.18	4.29	4.41	4.54
CLB200-0200-1000-0500	5		2	2	1.96	15	4	50	20,000	5.21	5.36	5.52	5.69	6.08
CLB200-0200-1000-0600	6		1.2	2	1.96	15	4	50	23,200	6.25	6.43	6.63	6.84	7.32
CLB200-0200-1000-0800	8		1.2	2	1.96	15	4	50	23,200	8.31	8.57	8.84	9.14	9.81
CLB200-0200-1000-1000	10		2	2	1.96	15	4	50	22,080	10.38	10.71	11.06	11.44	12.29
CLB200-0200-1000-1400	14		1.2	2	1.96	15	4	50	23,600	14.51	14.99	15.49	16.04	17.27
CLB200-0200-1000-1500	15		2	2	1.96	15	4	50	22,080	15.55	16.06	16.60	17.19	18.51
CLB200-0200-1000-2000	20		1.2	2	1.96	15	4	50	23,600	20.72	21.40	22.14	22.94	FREE
CLB200-0300-1500-0600	1.5	6	1.8	3	2.92	15	6	50	23,200	6.31	6.47	6.65	6.85	7.30
CLB200-0300-1500-0900		9	1.8	3	2.92	15	6	50	24,000	9.41	9.68	9.98	10.30	11.03
CLB200-0300-1500-1000		10	2	3	2.92	15	6	50	24,000	10.44	10.75	11.09	11.45	12.27
CLB200-0300-1500-1500		15	2	3	2.92	15	6	50	24,800	15.61	16.10	16.63	17.20	18.49

CBN 切削條件參考表 Recommended Milling Conditions

■型號:CLB200
Model number:CLB200

長頸球頭立銼刀 Long Neck Ball End Mill

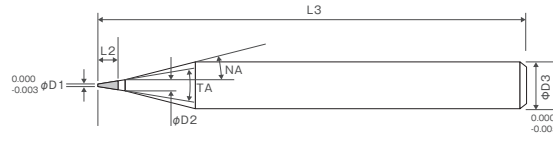
切削材料 Work Material	刀刃直徑 Dia.	有效長度 Effective Length	銅 Copper			淬火鋼 Hardened Steels STAVAX/HPM (~55HRC)			淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)			淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)						
			切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed		切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed		切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed		
			φpmm	φemmm	mm/min	min ⁻¹	φpmm	φemmm	mm/min	min ⁻¹	φpmm	φemmm	mm/min	min ⁻¹	φpmm	φemmm	mm/min	min ⁻¹
1	3	0.05	0.1	3,000	30,000	0.05	0.1	3,000	30,000	0.03	0.05	3,000	30,000	0.03	0.03	2,000	25,000	
			0.1	3,000	30,000	0.05	0.1	3,000	30,000	0.03	0.05	3,000	30,000	0.03	0.03	2,000	25,000	
			0.1	3,000	30,000	0.05	0.1	3,000	30,000	0.03	0.05	3,000	30,000	0.03	0.03	2,000	25,000	
			0.1	3,000	30,000	0.05	0.1	3,000	30,000	0.03	0.05	3,000	30,000	0.03	0.03	2,000	25,000	
			0.1	3,000	30,000	0.05	0.1	3,000	30,000	0.03	0.05	3,000	30,000	0.03	0.03	2,000	25,000	
	1.5	3.8	0.08	0.15	2,300	20,000	0.08	0.15	2,300	20,000	0.05	0.075	2,100	20,000	0.04	0.06	1,300	16,000
				0.15	2,300	20,000	0.08	0.15	2,300	20,000	0.05	0.075	2,100	20,000	0.04	0.06	1,300	16,000
				0.12	2,100	20,000	0.07	0.12	2,100	20,000	0.04	0.065	2,000	20,000	0.03	0.05	1,200	16,000
				0.12	2,100	20,000	0.07	0.12	2,100	20,000	0.04	0.065	2,000	20,000	0.03	0.05	1,200	16,000
				0.1	2,000	18,000	0.06	0.1	2,000	18,000	0.03	0.06	1,900	18,000	0.02	0.04	1,100	15,000
2	4	0.08	0.15	2,000	17,000	0.08	0.15	2,000	17,000	0.05	0.08	1,700	17,000	0.04	0.06	1,200	12,000	
			0.15	2,000	17,000	0.08	0.15	2,000	17,000	0.05	0.08	1,700	17,000	0.04	0.06	1,200	12,000	
			0.15	2,000	17,000	0.08	0.15	2,000	17,000	0.05	0.08	1,700	17,000	0.04	0.06	1,200	12,000	
			0.13	1,800	17,000	0.07	0.13	1,800	17,000	0.04	0.06	1,500	17,000	0.03	0.04	1,100	12,000	
			0.12	1,800	16,000	0.07	0.12	1,800	16,000	0.03	0.05	1,500	16,000	0.03	0.04	1,100	11,000	
	2	14	0.06	0.12	1,700	16,000	0.06	0.12	1,700	16,000	0.03	0.05	1,400	16,000	0.02	0.04	1,000	11,000
				0.12	1,700	16,000	0.06	0.12	1,700	16,000	0.03	0.05	1,400	16,000	0.01	0.03	900	11,000
				0.1	1,600	16,000	0.04	0.1	1,600	16,000	0.02	0.04	1,300	16,000	0.01	0.02	800	11,000
				0.1	1,600	16,000	0.04	0.1	1,600	16,000	0.02	0.04	1,300	16,000	0.01	0.02	800	11,000
				0.1	1,600	16,000	0.04	0.1	1,600	16,000	0.02	0.04	1,300	16,000	0.01	0.02	800	11,000
3	6	0.1	0.2	1,700	10,000	0.1	0.2	1,700	10,000	0.08	0.12	1,400	10,000	0.07	0.1	1,000	10,000	
			0.2	1,700	10,000	0.1	0.2	1,700	10,000	0.08	0.12	1,400	10,000	0.07	0.1	1,000	10,000	
			0.18	1,500	10,000	0.08	0.18	1,500	10,000	0.07	0.1	1,300	10,000	0.06	0.08	800	10,000	
			0.18	1,500	10,000	0.08	0.18	1,500	10,000	0.07	0.1	1,300	10,000	0.06	0.08	800	10,000	
			0.16	1,500	10,000	0.07	0.16	1,500	10,000	0.05	0.09	1,300	10,000	0.04	0.07	800	10,000	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油類或是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●φp=軸向方向切削深度，φe=徑向方向切削深度。 φp=Axial Depth of Cut φe=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

CBN錐形立銼刀(刻印用) CBN Taper End Mill (for Engraving)

■型號:CTP200 Model number:CTP200

Non
BANCERA
CBN
刀刃數 2
螺旋角 0°
仰角 15°
柄徑公差 ±0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.

●請系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size):mm

型號 Code No.	刀刃直徑 (D1) Tool Diameter	角度 (TA) [°] Taper Angle	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (円) Retail Price (JPY)
CTP200-0005	0.05	40	0.7	0.6	15	4	50	36,000
CTP200-0010	0.1	40	0.68	0.6	15	4	50	27,200

CBN 切削條件參考表 Recommended Milling Conditions

■型號:CTP200
Model number:CTP200

錐形立銼刀 Taper End Mill

切削材料 Work Material	銅 Copper						淬火鋼 Hardened Steels STAVAX/HPM (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)				
	刃數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
				∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹
2	0.05	0.7	0.003	0.03	300	50,000	0.003	0.03	300	50,000	0.003	0.03	300	50,000	0.002	0.02	250	50,000	
	0.1	0.68	0.003	0.03	400	50,000	0.003	0.03	400	50,000	0.003	0.03	350	50,000	0.002	0.02	300	50,000	

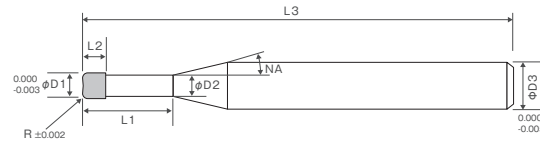
●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing.
●∂p=軸向切深，∂e=徑向切深。 ∂p=Axial Depth of Cut. ∂e=Radial Depth of Cut.
●建議使用油霧或是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

CBN Series
 Hard Star A Series
 Hard Star TT Series
 Hard Star TT Series
 Ion Depo A Series
 Ion Depo U Series
 DLC Series
 Non-Coat Series
 Ion Depo R Series

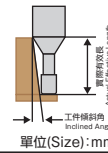
CBN拋光圓角立銼刀 CBN Lapping Radius End Mill

■型號: CRL200 Model number: CRL200

Non
BANCERA
CBN
刀刀數 2
螺旋角 0°
仰角 15°
柄徑公差
±0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.



●請系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
										單位(Size): mm				
CRL200-0040-0100-0135	0.4	0.1	1.35	0.4	0.37	15	4	50	22,880	1.45	1.50	1.55	1.60	1.72
CRL200-0050-0100-0150	0.5	0.1	1.5	0.5	0.47	15	4	50	19,010	1.61	1.66	1.71	1.77	1.91
CRL200-0060-0100-0170	0.6	0.1	1.7	0.7	0.57	15	4	50	19,010	1.81	1.87	1.94	2.00	2.16
CRL200-0060-0200-0170		0.2	1.7	0.7	0.57	15	4	50	19,010	1.81	1.86	1.92	1.99	2.14
CRL200-0100-0100-0220	1	0.1	2.2	1.2	0.96	15	4	50	17,420	2.35	2.43	2.51	2.60	2.80
CRL200-0100-0200-0220		0.2	2.2	1.2	0.96	15	4	50	17,420	2.34	2.42	2.50	2.59	2.78
CRL200-0100-0300-0220		0.3	2.2	1.2	0.96	15	4	50	17,420	2.34	2.41	2.49	2.57	2.76
CRL200-0150-0100-0300	1.5	0.1	3	1.5	1.44	15	4	50	20,500	3.21	3.32	3.44	3.56	3.85
CRL200-0150-0200-0300		0.2	3	1.5	1.44	15	4	50	20,500	3.21	3.31	3.43	3.55	3.82
CRL200-0150-0300-0300		0.3	3	1.5	1.44	15	4	50	20,500	3.21	3.31	3.42	3.53	3.80
CRL200-0200-0100-0500	2	0.1	5	2	1.96	15	4	50	21,120	5.24	5.42	5.61	5.82	6.29
CRL200-0200-0200-0500		0.2	5	2	1.96	15	4	50	21,120	5.24	5.41	5.60	5.81	6.26
CRL200-0200-0300-0500		0.3	5	2	1.96	15	4	50	21,120	5.24	5.41	5.59	5.79	6.24
CRL200-0300-0100-0500	3	0.1	5	2	2.92	15	6	50	23,230	5.32	5.50	5.70	5.91	6.38
CRL200-0300-0200-0500		0.2	5	2	2.92	15	6	50	23,230	5.32	5.49	5.69	5.89	6.35
CRL200-0300-0300-0500		0.3	5	2	2.92	15	6	50	23,230	5.31	5.49	5.67	5.88	6.33

CBN 切削條件參考表 Recommended Milling Conditions

■型號: CRL200
Model number: CRL200

拋光圓角立銼刀 Radius End Mill (for Lap)

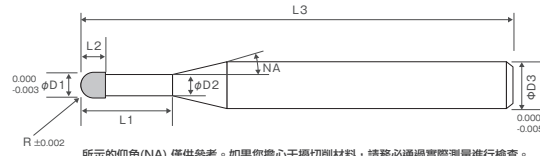
切削材料 Work Material	銅 Copper						淬火鋼 Hardened Steels STAVAX/HPM (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)						
	刃數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed		轉數 Spindle Speed		切削深度 Depth of Cut		進刀速度 Feed		轉數 Spindle Speed		切削深度 Depth of Cut		進刀速度 Feed		轉數 Spindle Speed	
				∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹		
2	0.4	1.35	0.005	0.01	900	30,000	0.005	0.05	800	30,000	0.005	0.05	700	30,000	0.005	0.05	600	30,000			
	0.5	1.5	0.005	0.01	900	30,000	0.005	0.05	800	30,000	0.005	0.05	700	30,000	0.005	0.05	600	30,000			
	0.6	1.7	0.005	0.01	900	30,000	0.005	0.1	800	30,000	0.005	0.1	700	30,000	0.005	0.1	600	30,000			
	1	2.2	0.01	0.015	1,100	30,000	0.01	0.2	1,000	30,000	0.01	0.2	900	30,000	0.01	0.2	800	30,000			
	1.5	3	0.01	0.02	1,100	20,000	0.01	0.5	1,000	20,000	0.01	0.5	900	20,000	0.01	0.5	800	20,000			
	2	5	0.01	0.03	1,100	20,000	0.01	0.7	1,000	20,000	0.01	0.7	900	20,000	0.01	0.7	800	20,000			
3	5	0.01	0.04	1,100	20,000	0.01	1	1,000	20,000	0.01	1	900	20,000	0.01	1	800	20,000				

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing.
●∂p=軸向切削深度，∂e=徑向切削深度。 ∂p=Axial Depth of Cut. ∂e=Radial Depth of Cut.
●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

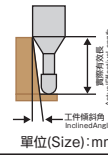
CBN拋光球頭立銑刀 CBN Lapping Ball End Mill

型號: CBL200 Model number: CBL200

Non
BANCERA
CBN
刀刃數 2
螺旋角 0°
仰角 15°
柄徑公差 ±0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value. If concerned about interference with the work material, please check by actual measurement.



● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	球頭R (R) Ball R	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀刃直徑 (D1) Tool Diameter	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30°	1°	1°30'	2°	3°
CBL200-0040-0200-0135	0.2	1.35	0.4	0.4	0.37	15	4	50	22,880	1.45	1.49	1.54	1.59	1.70
CBL200-0060-0300-0170	0.3	1.7	0.7	0.6	0.57	15	4	50	21,120	1.81	1.86	1.91	1.97	2.11
CBL200-0100-0500-0220	0.5	2.2	1.2	1	0.96	15	4	50	20,720	2.33	2.40	2.47	2.54	2.71
CBL200-0150-0750-0300	0.75	3	1.5	1.5	1.44	15	4	50	21,600	3.19	3.28	3.37	3.47	3.70
CBL200-0150-0750-0500		5	1.5	1.5	1.44	15	4	50	23,200	5.26	5.42	5.59	5.77	6.18
CBL200-0150-0750-1000		10	1.5	1.5	1.44	15	4	50	23,200	10.43	10.76	11.13	11.52	12.40
CBL200-0200-1000-0500	1	5	2	2	1.96	15	4	50	22,000	5.21	5.36	5.52	5.69	6.08
CBL200-0200-1000-1000		10	2	2	1.96	15	4	50	23,600	10.38	10.71	11.06	11.44	12.29
CBL200-0200-1000-1500		15	2	2	1.96	15	4	50	23,600	15.55	16.06	16.60	17.19	18.51
CBL200-0300-1500-0500	1.5	5	2	3	2.92	15	6	50	23,200	5.27	5.40	5.55	5.70	6.06
CBL200-0300-1500-1000		10	2	3	2.92	15	6	50	24,000	10.44	10.75	11.09	11.45	12.27
CBL200-0300-1500-1500		15	2	3	2.92	15	6	50	24,800	15.61	16.10	16.63	17.20	18.49

CBN 切削條件參考表 Recommended Milling Conditions

型號: CBL200
Model number: CBL200

拋光球頭立銑刀 Ball End Mill (for Lap)

切削材料 Work Material	刀數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	銅 Copper			淬火鋼 Hardened Steels STAVAX/HPM (~55HRC)			淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)			淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)					
				切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed			
				∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹			
2	0.4	1.35	0.005	0.01	900	30,000	0.005	0.01	800	30,000	0.005	0.01	700	30,000	0.005	0.01	600	30,000
				0.01	900	30,000	0.005	0.01	800	30,000	0.005	0.01	700	30,000	0.005	0.01	600	30,000
				0.015	1,100	30,000	0.01	0.015	1,000	30,000	0.01	0.015	900	30,000	0.01	0.015	800	30,000
	0.6	1.7	0.005	0.01	900	30,000	0.005	0.01	800	30,000	0.005	0.01	700	30,000	0.005	0.01	600	30,000
				0.01	900	30,000	0.005	0.01	800	30,000	0.005	0.01	700	30,000	0.005	0.01	600	30,000
				0.015	1,100	30,000	0.01	0.015	1,000	30,000	0.01	0.015	900	30,000	0.01	0.015	800	30,000
	1	2.2	0.01	0.02	1,100	30,000	0.01	0.02	1,000	30,000	0.01	0.02	900	30,000	0.01	0.02	800	30,000
				0.02	1,100	30,000	0.01	0.02	1,000	30,000	0.01	0.02	900	30,000	0.01	0.02	800	30,000
				0.015	1,100	30,000	0.01	0.015	1,000	30,000	0.01	0.015	900	30,000	0.01	0.015	800	30,000
	1.5	3	0.01	0.02	1,100	30,000	0.01	0.02	1,000	30,000	0.01	0.02	900	30,000	0.01	0.02	800	30,000
				0.02	1,100	30,000	0.01	0.02	1,000	30,000	0.01	0.02	900	30,000	0.01	0.02	800	30,000
				0.015	1,100	30,000	0.01	0.015	1,000	30,000	0.01	0.015	900	30,000	0.01	0.015	800	30,000
2	5	0.01	0.03	1,100	20,000	0.01	0.03	1,000	20,000	0.01	0.03	900	20,000	0.01	0.03	800	20,000	
			0.03	1,100	20,000	0.01	0.03	1,000	20,000	0.01	0.03	900	20,000	0.01	0.03	800	20,000	
			0.025	1,100	20,000	0.01	0.025	1,000	20,000	0.01	0.025	900	20,000	0.01	0.025	800	20,000	
3	5	0.01	0.04	1,100	20,000	0.01	0.04	1,000	20,000	0.01	0.04	900	20,000	0.01	0.04	800	20,000	
			0.04	1,100	20,000	0.01	0.04	1,000	20,000	0.01	0.04	900	20,000	0.01	0.04	800	20,000	
			0.035	1,100	20,000	0.01	0.035	1,000	20,000	0.01	0.035	900	20,000	0.01	0.035	800	20,000	

● 請將刀具確實地固定於夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ● 建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
● 切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ● 工具突出長度越短越好。 Length of tool overhang must be as short as possible.
● ∂p=軸向切削深度 ∂e=徑向切削深度 ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut. ● 請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

超硬立銑刀 Carbide End Mill

Hard A
super MG
刀刃數 2~6
螺旋角 30°
仰角 15°
柄徑公差 0/-0.005

特長

- 使用本公司獨創的濺射法鍍膜技術，進行Hard Star Type A鍍膜，非常適合各種工件材料的精密加工！
- 光滑的鍍膜使磨損過程均勻，展現出色的長壽命！
- 我們獨創的再研磨和再鍍膜技術可抑制性能劣化，並有助於進一步降低成本！
- 可在短時間內提供訂製產品！

Features

- Hard Star Type A coating with our original Sputtering Method Coating Technology is ideal for finishing a wide range of work materials.
- Smooth surface of the coating creates uniform wear achieving greater tool life.
- TOWA re-polishing and re-coating technology enhances cutting tool life and reduces overall tooling cost.
- Non-standard custom-made products available.

超硬平角立銑刀 Carbide Square End Mill

型號: HAS230 Model number: HAS230

Hard A
super MG
刀刃數 2
螺旋角 30°
仰角 15°
柄徑公差 0/-0.005

所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size): mm

型號 Code No.	刀刃直徑 (D1) Tool Diameter	刃長 (L2) Length of Cut	仰角 (NA) Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (円) Retail Price (JPY)
HAS230-0010-00020	0.1	0.2	15	4	50	5,760
HAS230-0020-00040	0.2	0.4	15	4	50	3,680
HAS230-0030-00060	0.3	0.6	15	4	50	2,880
HAS230-0040-00080	0.4	0.8	15	4	50	3,360
HAS230-0050-00100	0.5	1	15	4	50	2,000
HAS230-0060-00120	0.6	1.2	15	4	50	2,800
HAS230-0070-00140	0.7	1.4	15	4	50	3,040
HAS230-0080-00160	0.8	1.6	15	4	50	2,000
HAS230-0090-00180	0.9	1.8	15	4	50	3,040
HAS230-0100-00200	1	2	15	4	50	1,760
HAS230-0110-00220	1.1	2.2	15	4	50	3,120
HAS230-0120-00240	1.2	2.4	15	4	50	2,000
HAS230-0130-00260	1.3	2.6	15	4	50	3,120
HAS230-0140-00280	1.4	2.8	15	4	50	3,120
HAS230-0150-00300	1.5	3	15	4	50	1,840
HAS230-0160-00320	1.6	3.2	15	4	50	3,120
HAS230-0170-00340	1.7	3.4	15	4	50	3,120
HAS230-0180-00360	1.8	3.6	15	4	50	2,000
HAS230-0190-00380	1.9	3.8	15	4	50	3,120
HAS230-0200-00400	2	4	15	4	50	1,840
HAS230-0210-00420	2.1	4.2	15	4	50	3,120
HAS230-0220-00440	2.2	4.4	15	4	50	3,120
HAS230-0230-00460	2.3	4.6	15	4	50	3,120
HAS230-0240-00480	2.4	4.8	15	4	50	3,120
HAS230-0250-00500	2.5	5	15	4	50	1,840
HAS230-0260-00520	2.6	5.2	15	4	50	4,000
HAS230-0270-00540	2.7	5.4	15	4	50	4,000
HAS230-0280-00560	2.8	5.6	15	4	50	4,000
HAS230-0290-00580	2.9	5.8	15	4	50	4,000
HAS230-0300-00600	3	6	15	4	50	2,320
HAS230-0350-00700	3.5	7	15	6	50	3,520
HAS230-0400-00800	4	8	15	6	50	2,560
HAS230-0450-00900	4.5	9	15	6	50	4,000
HAS230-0500-01000	5	10	15	6	50	2,720
HAS230-0550-01100	5.5	11	15	6	50	4,000
HAS230-0600-01200	6	12	—	6	50	2,960

CBN Series
 Hard Star A Series
 Hard Star TT Series
 Hard Star TT Series
 Ion Depo A Series
 Ion Depo U Series
 DLC Series
 Non-Coat Series
 Ion Depo R Series

HARD STAR type A 切削條件參考表 Recommended Milling Conditions

■型號: HAS230
Model number: HAS230

平角立銼刀 Square End Mill

切削材料 Work Material	刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of Cut	淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)			淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)					
				切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
				∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹
2	0.1	0.2	0.1	0.002	130	40,000	0.1	0.002	100	40,000	0.1	0.002	70	40,000	
	0.2	0.4	0.2	0.004	200	30,000	0.2	0.004	160	30,000	0.2	0.004	120	30,000	
	0.3	0.6	0.3	0.006	300	30,000	0.3	0.006	250	30,000	0.3	0.006	200	30,000	
	0.4	0.8	0.4	0.008	370	30,000	0.4	0.008	340	30,000	0.4	0.008	260	25,000	
	0.5	1	0.5	0.01	450	25,000	0.5	0.01	400	23,000	0.5	0.01	360	20,000	
	0.6	1.2	0.6	0.012	530	25,000	0.6	0.012	430	23,000	0.6	0.012	380	20,000	
	0.7	1.4	0.7	0.014	650	25,000	0.7	0.014	500	23,000	0.7	0.014	450	20,000	
	0.8	1.6	0.8	0.016	780	25,000	0.8	0.016	650	23,000	0.8	0.016	550	20,000	
	0.9	1.8	0.9	0.018	800	25,000	0.9	0.018	700	23,000	0.9	0.018	600	20,000	
	1	2	1	0.02	1,000	23,000	1	0.02	900	18,000	1	0.02	600	14,000	
	1.1	2.2	1.1	0.022	1,000	23,000	1.1	0.022	900	18,000	1.1	0.022	600	14,000	
	1.2	2.4	1.2	0.024	1,000	23,000	1.2	0.024	900	18,000	1.2	0.024	600	14,000	
	1.3	2.6	1.3	0.026	1,000	23,000	1.3	0.026	900	18,000	1.3	0.026	600	14,000	
	1.4	2.8	1.4	0.028	1,000	23,000	1.4	0.028	900	18,000	1.4	0.028	600	14,000	
	1.5	3	1.5	0.03	900	20,000	1.5	0.03	800	18,000	1.5	0.03	600	14,000	
	1.6	3.2	1.6	0.032	900	20,000	1.6	0.032	800	18,000	1.6	0.032	600	14,000	
	1.7	3.4	1.7	0.034	900	20,000	1.7	0.034	800	18,000	1.7	0.034	600	14,000	
	1.8	3.6	1.8	0.036	900	20,000	1.8	0.036	800	18,000	1.8	0.036	600	14,000	
	1.9	3.8	1.9	0.038	900	20,000	1.9	0.038	800	18,000	1.9	0.038	600	14,000	
	2	4	2	0.04	900	18,000	2	0.04	750	15,000	2	0.04	550	12,000	
	2.1	4.2	2.1	0.042	900	18,000	2.1	0.042	750	15,000	2.1	0.042	550	12,000	
	2.2	4.4	2.2	0.044	900	18,000	2.2	0.044	750	15,000	2.2	0.044	550	12,000	
	2.3	4.6	2.3	0.046	900	18,000	2.3	0.046	750	15,000	2.3	0.046	550	12,000	
	2.4	4.8	2.4	0.048	900	18,000	2.4	0.048	750	15,000	2.4	0.048	550	12,000	
2.5	5	2.5	0.05	800	14,000	2.5	0.05	700	10,000	2.5	0.05	500	8,000		
2.6	5.2	2.6	0.052	800	14,000	2.6	0.052	700	10,000	2.6	0.052	500	8,000		
2.7	5.4	2.7	0.054	800	14,000	2.7	0.054	700	10,000	2.7	0.054	500	8,000		
2.8	5.6	2.8	0.056	800	14,000	2.8	0.056	700	10,000	2.8	0.056	500	8,000		
2.9	5.8	2.9	0.058	800	14,000	2.9	0.058	700	10,000	2.9	0.058	500	8,000		
3	6	3	0.06	850	14,000	3	0.06	750	10,000	3	0.06	550	8,000		
3.5	7	3.5	0.07	850	14,000	3.5	0.07	750	10,000	3.5	0.07	550	8,000		
4	8	4	0.08	850	10,000	4	0.08	750	9,000	4	0.08	650	9,000		
4.5	9	4.5	0.09	850	10,000	4.5	0.09	750	9,000	4.5	0.09	650	9,000		
5	10	5	0.1	800	6,000	5	0.1	700	5,000	5	0.1	600	4,500		
5.5	11	5.5	0.11	800	6,000	5.5	0.11	700	5,000	5.5	0.11	600	4,500		
6	12	6	0.12	800	5,000	6	0.12	700	4,000	6	0.12	700	3,500		

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid. ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding. ●∅p=軸向切削深度，∅e=徑向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut.

平角立銼刀 Square End Mill

切削材料 Work Material	刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of Cut	鋁合金 Aluminum Alloy A5000號			鋁合金 Aluminum Alloy A7000號			耐熱合金 Heat Resistant Alloy 鈷鎳合金(Kovar)					
				切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
				∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹
2	0.1	0.2	0.1	0.02	60	50,000	0.1	0.02	60	50,000	0.1	0.003	60	50,000	
	0.2	0.4	0.2	0.04	90	50,000	0.2	0.04	90	50,000	0.2	0.006	90	50,000	
	0.3	0.6	0.3	0.06	150	50,000	0.3	0.06	150	50,000	0.3	0.009	150	50,000	
	0.4	0.8	0.4	0.08	200	50,000	0.4	0.08	200	50,000	0.4	0.012	200	50,000	
	0.5	1	0.5	0.1	250	50,000	0.5	0.1	250	50,000	0.5	0.015	250	50,000	
	0.6	1.2	0.6	0.12	250	50,000	0.6	0.12	250	50,000	0.6	0.018	250	50,000	
	0.7	1.4	0.7	0.14	250	50,000	0.7	0.14	250	50,000	0.7	0.021	250	50,000	
	0.8	1.6	0.8	0.16	450	50,000	0.8	0.16	450	50,000	0.8	0.024	450	50,000	
	0.9	1.8	0.9	0.18	450	50,000	0.9	0.18	450	50,000	0.9	0.027	450	50,000	
	1	2	1	0.2	550	48,000	1	0.2	550	48,000	1	0.03	550	48,000	
	1.1	2.2	1.1	0.22	550	48,000	1.1	0.22	550	48,000	1.1	0.033	550	48,000	
	1.2	2.4	1.2	0.24	550	48,000	1.2	0.24	550	48,000	1.2	0.036	550	48,000	
	1.3	2.6	1.3	0.26	550	48,000	1.3	0.26	550	48,000	1.3	0.039	550	48,000	
	1.4	2.8	1.4	0.28	550	48,000	1.4	0.28	550	48,000	1.4	0.042	550	48,000	
	1.5	3	1.5	0.3	640	32,000	1	0.2	640	32,000	1	0.045	640	32,000	
	1.6	3.2	1.6	0.32	640	32,000	1.6	0.32	640	32,000	1.6	0.048	640	32,000	
	1.7	3.4	1.7	0.34	640	32,000	1.7	0.34	640	32,000	1.7	0.051	640	32,000	
	1.8	3.6	1.8	0.36	640	32,000	1.8	0.36	640	32,000	1.8	0.054	640	32,000	
	1.9	3.8	1.9	0.38	640	32,000	1.9	0.38	640	32,000	1.9	0.057	640	32,000	
	2	4	2	0.4	720	24,000	2	0.4	720	24,000	2	0.06	720	24,000	
	2.1	4.2	2.1	0.42	720	24,000	2.1	0.42	720	24,000	2.1	0.063	720	24,000	
	2.2	4.4	2.2	0.44	720	24,000	2.2	0.44	720	24,000	2.2	0.066	720	24,000	
	2.3	4.6	2.3	0.46	720	24,000	2.3	0.46	720	24,000	2.3	0.069	720	24,000	
	2.4	4.8	2.4	0.48	720	24,000	2.4	0.48	720	24,000	2.4	0.072	720	24,000	
2.5	5	2.5	0.5	760	20,000	2.5	0.5	760	20,000	2.5	0.075	760	20,000		
2.6	5.2	2.6	0.52	760	20,000	2.6	0.52	760	20,000	2.6	0.078	760	20,000		
2.7	5.4	2.7	0.54	760	20,000	2.7	0.54	760	20,000	2.7	0.081	760	20,000		
2.8	5.6	2.8	0.56	760	20,000	2.8	0.56	760	20,000	2.8	0.084	760	20,000		
2.9	5.8	2.9	0.58	760	20,000	2.9	0.58	760	20,000	2.9	0.087	760	20,000		
3	6	3	0.6	800	16,000	3	0.6	800	16,000	3	0.09	800	16,000		
3.5	7	3.5	0.7	800	16,000	3.5	0.7	800	16,000	3.5	0.105	800	16,000		
4	8	4	0.8	830	12,000	4	0.8	830	12,000	4	0.12	830	12,000		
4.5	9	4.5	0.9	830	12,000	4.5	0.9	830	12,000	4.5	0.135	830	12,000		
5	10	5	1	830	9,500	5	1	830	9,500	5	0.15	830	9,500		
5.5	11	5.5	1.1	860	9,500	5.5	1.1	860	9,500	5.5	0.165	860	9,500		
6	12	6	1.2	850	8,000	6	1.2	850	8,000	6	0.18	850	8,000		

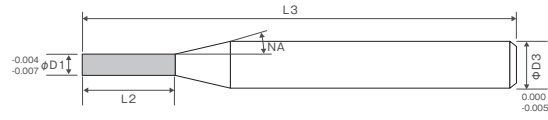
●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid. ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding. ●∅p=軸向切削深度，∅e=徑向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut.

HARD STAR Type A Series

超硬平角立銑刀 Carbide Square End Mill

■型號: HAS430 Model number: HAS430

Hard A
super MG
刀刃數 4
螺旋角 30°
仰角 15°
柄徑公差 ±0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value. If concerned about interference with the work material, please check by actual measurement.

●請系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size): mm

型號 Code No.	刀刃直徑 (D1) Tool Diameter	刃長 (L2) Length of Cut	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (円) Retail Price (JPY)
HAS430-0100-00200	1	2	15	4	50	5,040
HAS430-0150-00300	1.5	3	15	4	50	5,040
HAS430-0200-00400	2	4	15	4	50	5,040
HAS430-0300-00600	3	6	15	4	50	5,840
HAS430-0400-00800	4	8	15	6	50	6,320
HAS430-0600-01200	6	12	—	6	60	6,640
HAS430-0600-01800		18	—	6	60	7,120
HAS430-0800-01600	8	16	—	8	70	11,520
HAS430-0800-02400		24	—	8	70	12,000
HAS430-1000-02000		10	20	—	10	80
HAS430-1000-03000	30		—	10	80	16,000
HAS430-1200-02400	12		24	—	12	110
HAS430-1200-03600		36	—	12	110	20,320

HARD STAR Type A Series

HARD STAR type A 切削條件參考表 Recommended Milling Conditions

■型號: HAS430
Model number: HAS430

平角立銑刀 Square End Mill

切削材料 Work Material	刀刃直徑 Dia.	刃長 Length of Cut	淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)			
			切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹
4	1	2	1	0.02	280	6,400	1	0.015	240	5,400	1	0.01	200	4,800
		1.5	3	1.5	0.03	300	4,200	1.5	0.02	230	3,600	1.5	0.01	180
	2	4	2	0.04	320	3,200	2	0.03	230	2,700	2	0.02	180	2,400
		3	6	3	0.06	520	3,700	3	0.05	380	3,200	3	0.05	260
	4	8	4	0.08	450	2,800	4	0.07	380	2,400	4	0.06	260	2,000
		6	12	6	0.12	500	2,300	6	0.1	400	2,000	6	0.08	300
	18		9	0.06	480	2,300	9	0.05	380	2,000	9	0.04	280	1,900
		8	16	8	0.16	300	1,800	8	0.13	250	1,700	8	0.1	200
	24		12	0.08	280	1,800	12	0.05	230	1,700	12	0.04	180	1,600
		10	20	10	0.2	250	1,600	10	0.17	200	1,500	10	0.13	200
	30		15	0.2	230	1,600	15	0.17	180	1,500	15	0.13	180	1,400
		12	24	12	0.24	240	1,500	12	0.2	200	1,400	12	0.15	200
36	18		0.12	220	1,500	18	0.09	180	1,400	18	0.06	180	1,300	

平角立銑刀 Square End Mill

切削材料 Work Material	刀刃直徑 Dia.	刃長 Length of Cut	鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈷鎳合金(Kovar)			
			切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹
4	1	2	1	0.2	840	6,400	1	0.2	840	6,400	1	0.02	280	6,400
		1.5	3	1.5	0.3	900	4,200	1.5	0.3	900	4,200	1.5	0.03	300
	2	4	2	0.4	960	3,200	2	0.4	960	3,200	2	0.04	320	3,200
		3	6	3	0.6	1,560	3,700	3	0.6	1,560	3,700	3	0.06	520
	4	8	4	0.8	1,350	2,800	4	0.8	1,350	2,800	4	0.08	450	2,800
		6	12	6	1.2	1,500	2,500	6	1.2	1,500	2,500	6	0.12	400
	18		9	1.2	1,440	2,500	9	1.2	1,440	2,500	9	0.06	350	2,300
		8	16	8	1.6	900	1,800	8	1.6	900	1,800	8	0.16	300
	24		12	1.6	840	1,800	12	1.6	840	1,800	12	0.08	280	1,800
		10	20	10	2	750	1,600	10	2	750	1,600	10	0.2	250
	30		15	2	690	1,600	15	2	690	1,600	15	0.2	230	1,600
		12	24	12	2.4	720	1,500	12	2.4	720	1,500	12	0.24	240
	36		18	2.4	660	1,500	18	2.4	660	1,500	18	0.12	220	1,500

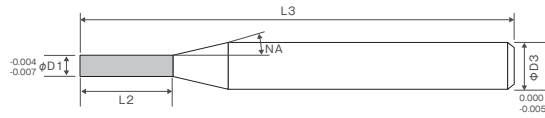
●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●∅p=軸向方向切削深度 ∅e=徑向方向切削深度 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

HARD STAR Type A Series

超硬平角立銑刀 Carbide Square End Mill

■型號: HAS630 Model number: HAS630

Hard A
super MG
刀刃數 6
螺旋角 30°
仰角 15°
柄徑公差 0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value. If concerned about interference with the work material, please check by actual measurement.

●請系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size): mm

型號 Code No.	刀刃直徑 (D1) Tool Diameter	刃長 (L2) Length of Cut	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (円) Retail Price (JPY)
HAS630-0500-01000	5	10	15	6	50	6,720
HAS630-0500-01500		15	15	6	60	7,440
HAS630-0600-01200	6	12	—	6	60	7,280
HAS630-0600-01800		18	—	6	60	8,080
HAS630-0800-01600	8	16	—	8	70	9,920
HAS630-0800-02400		24	—	8	80	11,040
HAS630-1000-02000	10	20	—	10	80	13,200
HAS630-1000-03000		30	—	10	90	14,720
HAS630-1200-02400	12	24	—	12	110	16,880
HAS630-1200-03600		36	—	12	110	18,720

HARD STAR Type A Series

HARD STAR type A 切削條件參考表 Recommended Milling Conditions

■型號: HAS630
Model number: HAS630

平角立銑刀 Square End Mill

切削材料 Work Material	刀數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of Cut	淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)			淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)					
				切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
				∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹
	6	5	10	5	0.1	1,200	5,100	5	0.1	1,000	4,500	5	0.05	800	3,800
			15	7.5	0.08	1,200	5,100	7.5	0.08	1,000	4,500	7.5	0.04	800	3,800
		6	12	6	0.12	1,300	4,200	6	0.12	1,100	3,700	6	0.06	680	3,200
			18	9	0.1	1,300	4,200	9	0.1	1,100	3,700	9	0.05	680	3,200
		8	16	8	0.16	1,500	3,200	8	0.16	1,300	2,800	8	0.08	750	2,400
			24	12	0.15	1,500	3,200	12	0.15	1,300	2,800	12	0.07	750	2,400
	10	20	10	0.2	1,500	2,600	10	0.2	1,300	2,200	10	0.1	900	1,900	
		30	15	0.17	1,500	2,600	15	0.17	1,300	2,200	15	0.08	900	1,900	
	12	24	12	0.24	1,300	2,100	12	0.24	1,100	1,900	12	0.12	960	1,600	
		36	18	0.2	1,300	2,100	18	0.2	1,100	1,900	18	0.1	960	1,600	

平角立銑刀 Square End Mill

切削材料 Work Material	刀數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of Cut	鋁合金 Aluminum Alloy A5000號			鋁合金 Aluminum Alloy A7000號			耐熱合金 Heat Resistant Alloy 鈷鎳合金(Kovar)					
				切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
				∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹
	6	5	10	5	0.1	1,000	5,100	5	0.1	1,000	5,100	5	0.1	1,200	5,100
			15	7.5	0.08	1,100	5,100	7.5	0.08	1,100	5,100	7.5	0.08	1,200	5,100
		6	12	6	0.12	1,200	4,200	6	0.12	1,200	4,200	6	0.12	1,300	4,200
			18	9	0.1	1,800	4,200	9	0.1	1,800	4,200	9	0.1	1,300	4,200
		8	16	8	0.16	1,600	3,200	8	0.16	1,600	3,200	8	0.16	1,500	3,200
			24	12	0.15	1,100	3,200	12	0.15	1,100	3,200	12	0.15	1,500	3,200
	10	20	10	0.2	1,000	2,600	10	0.2	1,000	2,600	10	0.2	1,500	2,600	
		30	15	0.17	900	2,600	15	0.17	900	2,600	15	0.17	1,500	2,600	
	12	24	12	0.24	800	2,100	12	0.24	800	2,100	12	0.24	1,300	2,100	
		36	18	0.2	850	2,100	18	0.2	850	2,100	18	0.2	1,300	2,100	

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

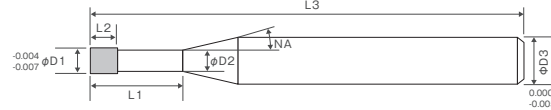
HARD STAR Type A Series

HARD STAR Type A Series

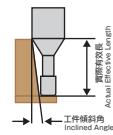
超硬長頸平角立銼刀 Carbide Long Neck Square End Mill

■ 型號: HALS230 Model number: HALS230

Hard A
super MG
刀刃數 2
螺旋角 30°
仰角 15°
柄徑公差 0/-0.005



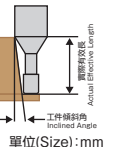
所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.



單位(Size):mm

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) ^o Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
									30'	1°	1°30'	2°	3°
HALS230-0010-0030	0.1	0.3	0.08	0.08	15	4	50	8,400	0.35	0.36	0.37	0.39	0.42
HALS230-0010-0050		0.5	0.08	0.08	15	4	50	9,120	0.56	0.57	0.60	0.62	0.67
HALS230-0015-0030	0.15	0.3	0.12	0.13	15	4	50	11,200	0.35	0.36	0.37	0.39	0.42
HALS230-0015-0050		0.5	0.12	0.13	15	4	50	8,400	0.56	0.57	0.60	0.62	0.67
HALS230-0020-0050	0.2	0.5	0.15	0.18	15	4	50	10,000	0.56	0.57	0.60	0.62	0.67
HALS230-0020-0075		0.75	0.15	0.18	15	4	50	5,760	0.81	0.84	0.87	0.91	0.98
HALS230-0020-0100	0.3	1	0.15	0.18	15	4	50	5,920	1.07	1.11	1.15	1.19	1.29
HALS230-0030-0100		1	0.25	0.27	15	4	50	8,800	1.09	1.13	1.17	1.21	1.31
HALS230-0030-0150	0.3	1.5	0.25	0.27	15	4	50	5,040	1.61	1.66	1.72	1.79	1.93
HALS230-0030-0200		2	0.25	0.27	15	4	50	5,040	2.13	2.20	2.28	2.36	2.56
HALS230-0030-0250	0.4	2.5	0.25	0.27	15	4	50	6,240	2.64	2.73	2.83	2.94	3.18
HALS230-0030-0300		3	0.25	0.27	15	4	50	6,480	3.16	3.27	3.39	3.51	3.80
HALS230-0040-0100	0.4	1	0.3	0.37	15	4	50	6,480	1.09	1.13	1.17	1.21	1.31
HALS230-0040-0150		1.5	0.3	0.37	15	4	50	3,680	1.61	1.66	1.72	1.79	1.93
HALS230-0040-0200	0.4	2	0.3	0.37	15	4	50	3,680	2.13	2.20	2.28	2.36	2.56
HALS230-0040-0250		2.5	0.3	0.37	15	4	50	3,680	2.64	2.73	2.83	2.94	3.18
HALS230-0040-0300	0.5	3	0.3	0.37	15	4	50	3,680	3.16	3.27	3.39	3.51	3.80
HALS230-0050-0100		1	0.4	0.47	15	4	50	2,640	1.09	1.13	1.17	1.21	1.31
HALS230-0050-0150	0.5	1.5	0.4	0.47	15	4	50	2,640	1.61	1.66	1.72	1.79	1.93
HALS230-0050-0200		2	0.4	0.47	15	4	50	2,640	2.13	2.20	2.28	2.36	2.56
HALS230-0050-0250	0.5	2.5	0.4	0.47	15	4	50	2,640	2.64	2.73	2.83	2.94	3.18
HALS230-0050-0300		3	0.4	0.47	15	4	50	2,640	3.16	3.27	3.39	3.51	3.80
HALS230-0050-0350	0.6	3.5	0.4	0.47	15	4	50	2,640	3.68	3.80	3.94	4.09	4.42
HALS230-0050-0400		4	0.4	0.47	15	4	50	2,640	4.19	4.34	4.50	4.66	5.04
HALS230-0060-0150	0.6	1.5	0.5	0.57	15	4	50	2,800	1.61	1.66	1.72	1.79	1.93
HALS230-0060-0200		2	0.5	0.57	15	4	50	2,800	2.13	2.20	2.28	2.36	2.56
HALS230-0060-0300	0.6	3	0.5	0.57	15	4	50	2,800	3.16	3.27	3.39	3.51	3.80
HALS230-0060-0400		4	0.5	0.57	15	4	50	2,800	4.19	4.34	4.50	4.66	5.04
HALS230-0060-0500	0.6	5	0.5	0.57	15	4	50	2,800	5.23	5.41	5.60	5.81	6.29
HALS230-0060-0600		6	0.5	0.57	15	4	50	2,800	6.26	6.48	6.71	6.96	7.53

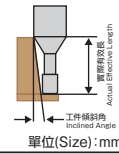


單位(Size):mm

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) ^o Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.					
									30'	1°	1°30'	2°	3°	
HALS230-0070-0200	0.7	2	0.55	0.67	15	4	50	3,200	2.13	2.20	2.28	2.36	2.56	
HALS230-0070-0400		4	0.55	0.67	15	4	50	3,200	4.19	4.34	4.50	4.66	5.04	
HALS230-0070-0600		6	0.55	0.67	15	4	50	3,200	6.26	6.48	6.71	6.96	7.53	
HALS230-0080-0300	0.8	3	0.65	0.77	15	4	50	3,120	3.16	3.27	3.39	3.51	3.80	
HALS230-0080-0400		4	0.65	0.77	15	4	50	3,120	4.19	4.34	4.50	4.66	5.04	
HALS230-0080-0500		5	0.65	0.77	15	4	50	3,120	5.23	5.41	5.60	5.81	6.29	
HALS230-0080-0600	0.8	6	0.65	0.77	15	4	50	3,120	6.26	6.48	6.71	6.96	7.53	
HALS230-0080-0800		8	0.65	0.77	15	4	50	3,120	8.33	8.62	8.93	9.26	10.01	
HALS230-0100-0200		1	2	0.8	0.95	15	4	50	2,800	2.16	2.24	2.32	2.41	2.60
HALS230-0100-0300	3		0.8	0.95	15	4	50	2,800	3.20	3.31	3.43	3.56	3.85	
HALS230-0100-0400	4		0.8	0.95	15	4	50	2,800	4.23	4.38	4.54	4.71	5.09	
HALS230-0100-0500	1	5	0.8	0.95	15	4	50	2,800	5.26	5.45	5.64	5.86	6.33	
HALS230-0100-0600		6	0.8	0.95	15	4	50	2,800	6.30	6.52	6.75	7.01	7.57	
HALS230-0100-0700		7	0.8	0.95	15	4	50	2,800	7.33	7.59	7.86	8.16	8.82	
HALS230-0100-0800	1.2	8	0.8	0.95	15	4	50	2,800	8.37	8.66	8.97	9.31	10.06	
HALS230-0100-0900		9	0.8	0.95	15	4	50	2,800	9.40	9.73	10.08	10.46	11.30	
HALS230-0100-1000		10	0.8	0.95	15	4	50	2,800	10.43	10.80	11.19	11.61	12.55	
HALS230-0100-1200	1.2	12	0.8	0.95	15	4	50	2,800	12.50	12.94	13.40	13.91	15.03	
HALS230-0120-0600		1.2	6	1	1.15	15	4	50	2,960	6.30	6.52	6.75	7.01	7.57
HALS230-0120-0800			8	1	1.15	15	4	50	2,960	8.37	8.66	8.97	9.31	10.06
HALS230-0120-1000	10		1	1.15	15	4	50	2,960	10.43	10.80	11.19	11.61	12.55	
HALS230-0120-1200	1.4	12	1	1.15	15	4	50	2,960	12.50	12.94	13.40	13.91	15.03	
HALS230-0120-1600		1.4	16	1	1.15	15	4	50	4,720	16.64	17.21	17.84	18.50	20.01
HALS230-0140-0600			1.4	6	1.1	1.35	15	4	50	3,040	6.30	6.52	6.75	7.01
HALS230-0140-1200	12			1.1	1.35	15	4	50	3,040	12.50	12.94	13.40	13.91	15.03
HALS230-0150-0400	1.5	4	1.2	1.45	15	4	50	2,960	4.23	4.38	4.54	4.71	5.09	
HALS230-0150-0600		1.5	6	1.2	1.45	15	4	50	2,960	6.30	6.52	6.75	7.01	7.57
HALS230-0150-0800			8	1.2	1.45	15	4	50	2,960	8.37	8.66	8.97	9.31	10.06
HALS230-0150-1000	1.5		10	1.2	1.45	15	4	50	2,960	10.43	10.80	11.19	11.61	12.55
HALS230-0150-1200		12	1.2	1.45	15	4	50	2,960	12.50	12.94	13.40	13.91	15.03	
HALS230-0150-1400		1.6	14	1.2	1.45	15	4	50	3,040	14.57	15.08	15.62	16.21	17.52
HALS230-0150-1600	1.6		16	1.2	1.45	15	4	50	3,040	16.64	17.21	17.84	18.50	20.01
HALS230-0160-0600			1.6	6	1.3	1.55	15	4	50	3,040	6.30	6.52	6.75	7.01
HALS230-0160-0800		1.8		8	1.3	1.55	15	4	50	3,040	8.37	8.66	8.97	9.31
HALS230-0180-0600	1.8			6	1.4	1.75	15	4	50	3,040	6.30	6.52	6.75	7.01
HALS230-0180-0800			1.8	8	1.4	1.75	15	4	50	3,040	8.37	8.66	8.97	9.31
HALS230-0180-1000		1.8		10	1.4	1.75	15	4	50	3,040	10.43	10.80	11.19	11.61
HALS230-0180-1200	1.8			12	1.4	1.75	15	4	50	3,040	12.50	12.94	13.40	13.91
HALS230-0180-1400			2	14	1.4	1.75	15	4	50	3,040	14.57	15.08	15.62	16.21
HALS230-0180-1600		2		16	1.4	1.75	15	4	50	3,040	16.64	17.21	17.84	18.50
HALS230-0200-0400	2			4	1.6	1.94	15	4	50	2,960	4.25	4.40	4.56	4.73
HALS230-0200-0600			2	6	1.6	1.94	15	4	50	2,960	6.32	6.54	6.77	7.03
HALS230-0200-0800		2		8	1.6	1.94	15	4	50	2,960	8.39	8.68	8.99	9.33
HALS230-0200-1000	2			10	1.6	1.94	15	4	50	2,960	10.45	10.82	11.21	11.63
HALS230-0200-1200			12	1.6	1.94	15	4	50	2,960	12.52	12.96	13.42	13.93	15.06

CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
Ion Depo A Series
Ion Depo U Series
DLC Series
Non-Coat Series
Ion Depo R Series



●請我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長度之對應 Actual effective length by inclined angle of workpiece.				
									30'	1°	1°30'	2°	3°
HALS230-0200-1400	2	14	1.6	1.94	15	4	50	2,960	14.59	15.10	15.64	16.23	17.54
HALS230-0200-1600		16	1.6	1.94	15	4	50	2,960	16.65	17.23	17.86	18.53	FREE
HALS230-0200-1800		18	1.6	1.94	15	4	50	2,960	18.72	19.37	20.07	20.83	FREE
HALS230-0200-2000		20	1.6	1.94	15	4	50	2,960	20.79	21.51	22.29	23.13	FREE
HALS230-0250-0800	2.5	8	2	2.44	15	4	50	3,120	8.39	8.68	8.99	9.33	10.08
HALS230-0250-1200		12	2	2.44	15	4	50	3,120	12.52	12.96	13.42	13.93	FREE
HALS230-0250-1600		16	2	2.44	15	4	50	3,120	16.65	17.23	17.86	18.53	FREE
HALS230-0250-2000	20	2	2.44	15	4	50	3,120	20.79	21.51	22.29	23.13	FREE	
HALS230-0300-0800	3	8	4.5	2.85	15	4	50	4,000	8.56	8.86	9.18	9.52	FREE
HALS230-0300-1200		12	4.5	2.85	15	4	50	4,000	12.69	13.14	13.61	14.12	FREE
HALS230-0300-1600		16	4.5	2.85	15	4	50	4,000	16.83	17.41	18.04	FREE	FREE
HALS230-0300-2000		20	4.5	2.85	15	4	50	4,000	20.96	21.69	FREE	FREE	FREE
HALS230-0300-2500	25	4.5	2.85	15	4	60	4,000	26.13	27.04	FREE	FREE	FREE	
HALS230-0300-3000	30	4.5	2.85	15	4	60	4,800	31.30	FREE	FREE	FREE	FREE	
HALS230-0400-1000	4	10	3	3.8	15	6	50	4,180	10.72	11.10	11.50	11.93	12.89
HALS230-0400-1500		15	3	3.8	15	6	50	4,180	15.89	16.44	17.04	17.68	FREE
HALS230-0400-2000	20	3	3.8	15	6	50	4,180	21.06	21.79	22.58	23.43	FREE	
HALS230-0500-1500	5	15	3.5	4.8	15	6	50	5,260	15.89	16.44	17.04	FREE	FREE
HALS230-0500-2000		20	3.5	4.8	15	6	50	5,490	21.06	21.79	FREE	FREE	FREE
HALS230-0600-1500	6	15	6	5.8	15	6	50	5,260	FREE	FREE	FREE	FREE	FREE
HALS230-0600-2000		20	6	5.8	15	6	50	5,260	FREE	FREE	FREE	FREE	FREE
HALS230-0600-3000		30	6	5.8	15	6	60	5,490	FREE	FREE	FREE	FREE	FREE

單位(Size): mm

HARD STAR type A 切削條件參考表 Recommended Milling Conditions

■型號: HALS230
Model number: HALS230

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material	刀數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	淬火鋼 Hardened Steels STAVAX/HPM (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)			
				切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
				φp mm	φe mm	mm/min	min ⁻¹	φp mm	φe mm	mm/min	min ⁻¹	φp mm	φe mm	mm/min	min ⁻¹
2	0.1	0.3	0.003	0.05	120	40,000	0.002	0.04	100	40,000	0.002	0.03	70	40,000	
				0.05	80	40,000	0.002	0.04	60	40,000	0.002	0.03	50	40,000	
	0.15	0.3	0.003	0.07	150	40,000	0.002	0.06	120	40,000	0.002	0.04	100	40,000	
				0.07	120	40,000	0.002	0.06	100	40,000	0.002	0.04	80	40,000	
	0.2	0.5	0.003	0.1	200	30,000	0.003	0.08	160	30,000	0.003	0.06	120	30,000	
				0.1	180	30,000	0.003	0.08	140	30,000	0.003	0.06	100	30,000	
	0.3	1	0.003	0.1	150	30,000	0.003	0.08	120	30,000	0.003	0.06	80	30,000	
				0.15	200	30,000	0.003	0.12	250	30,000	0.003	0.09	200	30,000	
				0.15	200	30,000	0.003	0.12	160	30,000	0.003	0.09	120	30,000	
	0.4	2	0.003	0.15	150	30,000	0.003	0.12	120	30,000	0.003	0.09	100	25,000	
				0.15	100	25,000	0.002	0.12	80	25,000	0.002	0.09	60	20,000	
				0.15	50	25,000	0.002	0.12	40	25,000	0.002	0.09	30	20,000	
	0.5	1	0.005	0.2	400	30,000	0.005	0.16	350	30,000	0.005	0.12	300	25,000	
				0.2	360	30,000	0.005	0.16	330	30,000	0.005	0.12	250	25,000	
				0.2	320	30,000	0.005	0.16	280	25,000	0.005	0.12	220	25,000	
	0.6	2.5	0.005	0.2	280	25,000	0.004	0.16	250	25,000	0.004	0.12	200	20,000	
				0.2	260	25,000	0.003	0.16	220	20,000	0.003	0.12	180	18,000	
				0.2	250	25,000	0.007	0.2	450	23,000	0.005	0.15	400	20,000	
	0.7	1.5	0.01	0.25	450	25,000	0.007	0.2	400	23,000	0.005	0.15	360	20,000	
				0.25	420	25,000	0.007	0.2	380	23,000	0.005	0.15	320	20,000	
				0.25	400	25,000	0.006	0.2	360	23,000	0.004	0.15	300	20,000	
	0.8	3	0.007	0.25	350	25,000	0.005	0.2	320	23,000	0.003	0.15	280	20,000	
				0.25	320	25,000	0.003	0.2	280	23,000	0.003	0.15	240	20,000	
				0.25	280	25,000	0.003	0.2	240	23,000	0.002	0.15	200	20,000	
	0.9	4	0.005	0.25	280	25,000	0.003	0.2	240	23,000	0.002	0.15	200	20,000	
				0.3	550	25,000	0.007	0.25	450	23,000	0.005	0.18	400	20,000	
				0.3	500	25,000	0.007	0.25	400	23,000	0.005	0.18	350	20,000	
	1.0	3	0.007	0.3	450	25,000	0.005	0.25	350	23,000	0.003	0.18	300	20,000	
				0.3	400	25,000	0.003	0.25	300	23,000	0.002	0.18	250	20,000	
				0.3	350	20,000	0.003	0.25	250	18,000	0.002	0.18	200	16,000	
	1.1	4	0.002	0.3	300	20,000	0.002	0.25	200	18,000	0.001	0.18	150	16,000	
				0.35	600	25,000	0.02	0.28	450	23,000	0.012	0.21	400	20,000	
				0.35	560	25,000	0.015	0.28	400	23,000	0.007	0.21	320	20,000	
	1.2	6	0.015	0.35	410	20,000	0.012	0.28	300	18,000	0.007	0.21	240	16,000	
				0.4	780	25,000	0.02	0.32	650	23,000	0.012	0.24	550	20,000	
				0.4	700	25,000	0.015	0.32	600	23,000	0.007	0.24	500	20,000	
	1.3	5	0.02	0.4	630	23,000	0.012	0.32	530	20,000	0.006	0.24	450	18,000	
				0.4	550	20,000	0.01	0.32	450	18,000	0.005	0.24	350	16,000	
				0.4	400	16,000	0.005	0.32	300	14,000	0.003	0.24	200	12,000	
	1.4	2	0.06	0.5	1,000	23,000	0.05	0.4	900	18,000	0.035	0.3	600	14,000	
				0.5	1,000	23,000	0.04	0.4	900	18,000	0.03	0.3	600	14,000	
				0.5	900	23,000	0.03	0.4	800	18,000	0.02	0.3	500	14,000	
	1.5	4	0.03	0.5	800	20,000	0.02	0.4	700	16,000	0.012	0.3	450	12,000	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●φp=軸向切削深度，φe=徑向切削深度。 φp=Axial Depth of Cut φe=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			淬火鋼 Hardened Steels STAVAX/HPM (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)			
刃數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm		
2	1	6	0.02	0.5	700	18,000	0.01	0.4	600	14,000	0.007	0.3	400	10,000
		7	0.02	0.5	650	18,000	0.01	0.4	550	14,000	0.006	0.3	370	10,000
		8	0.02	0.5	600	16,000	0.01	0.4	500	12,000	0.005	0.3	340	8,000
		9	0.015	0.5	550	16,000	0.007	0.4	450	12,000	0.005	0.3	300	8,000
		10	0.01	0.5	500	14,000	0.007	0.4	400	10,000	0.005	0.3	250	6,000
		12	0.01	0.5	400	13,000	0.005	0.4	300	10,000	0.004	0.3	180	6,000
	1.2	6	0.03	0.6	700	18,000	0.02	0.5	600	14,000	0.01	0.4	400	10,000
		8	0.02	0.6	600	16,000	0.01	0.5	500	12,000	0.007	0.4	340	8,000
		10	0.02	0.6	500	12,000	0.01	0.5	430	10,000	0.005	0.4	300	8,000
		12	0.01	0.6	500	10,000	0.007	0.5	400	9,000	0.005	0.4	250	7,000
		16	0.01	0.6	300	9,000	0.005	0.5	260	8,000	0.003	0.4	180	6,000
	1.4	6	0.04	0.7	800	20,000	0.03	0.56	700	18,000	0.02	0.42	450	12,000
		12	0.01	0.7	500	13,000	0.007	0.56	400	11,000	0.005	0.42	280	8,000
	1.5	4	0.05	0.75	900	20,000	0.04	0.6	800	18,000	0.03	0.45	600	14,000
		6	0.04	0.75	800	20,000	0.03	0.6	700	18,000	0.02	0.45	500	14,000
		8	0.03	0.75	600	18,000	0.03	0.6	600	14,000	0.01	0.45	380	10,000
		10	0.03	0.75	500	16,000	0.02	0.6	500	14,000	0.01	0.45	350	10,000
		12	0.02	0.75	500	14,000	0.02	0.6	430	12,000	0.007	0.45	310	8,000
		14	0.02	0.75	400	12,000	0.01	0.6	380	10,000	0.007	0.45	250	7,500
	1.6	6	0.04	0.8	850	19,000	0.03	0.64	750	17,000	0.025	0.48	600	13,000
		8	0.03	0.8	750	17,000	0.03	0.64	600	14,000	0.015	0.48	430	10,000
		10	0.03	0.8	600	16,000	0.03	0.7	600	12,000	0.02	0.5	500	9,500
		12	0.03	0.8	500	14,000	0.02	0.7	500	10,000	0.01	0.5	400	8,200
	1.8	4	0.05	0.9	900	18,000	0.04	0.7	750	15,000	0.03	0.5	600	12,000
6		0.04	0.9	800	16,000	0.03	0.7	600	12,000	0.02	0.5	500	9,500	
8		0.04	0.9	700	14,000	0.03	0.7	500	12,000	0.02	0.5	450	9,500	
10		0.03	0.9	600	12,000	0.02	0.7	500	10,000	0.01	0.5	400	8,200	
12		0.03	0.9	600	12,000	0.02	0.7	500	10,000	0.01	0.5	400	8,200	
14		0.03	0.9	600	12,000	0.02	0.7	430	10,000	0.01	0.5	360	8,200	
2	4	0.08	1	1,000	18,000	0.06	0.8	800	15,000	0.04	0.6	600	12,000	
	6	0.06	1	900	18,000	0.05	0.8	750	15,000	0.03	0.6	600	12,000	
	8	0.05	1	800	16,000	0.04	0.8	600	12,000	0.02	0.6	500	9,500	
	10	0.05	1	700	14,000	0.04	0.8	500	12,000	0.02	0.6	450	9,500	
	12	0.04	1	600	12,000	0.03	0.8	500	10,000	0.01	0.6	400	8,200	
	14	0.03	1	600	12,000	0.02	0.8	430	10,000	0.007	0.6	360	8,200	
2.5	8	0.07	1.25	800	14,000	0.05	1	700	10,000	0.03	0.75	500	8,000	
	12	0.06	1.25	700	12,000	0.04	1	600	9,600	0.02	0.75	480	7,500	
	16	0.05	1.25	600	10,000	0.02	1	500	8,500	0.01	0.75	400	7,000	
	20	0.05	1.25	500	8,200	0.02	1	500	7,500	0.01	0.75	400	5,000	

●請將刀具確實地固定在夾具上，以防止刀具震動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			淬火鋼 Hardened Steels STAVAX/HPM (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)				
刃數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm			
2	3	8	0.1	1.5	900	14,000	0.07	1.2	800	10,000	0.05	0.9	600	8,000	
		12	0.08	1.5	800	12,000	0.06	1.2	700	9,200	0.04	0.9	500	7,200	
		16	0.07	1.5	700	10,000	0.05	1.2	600	8,500	0.03	0.9	400	6,500	
		20	0.07	1.5	700	9,000	0.04	1.2	600	7,800	0.02	0.9	400	5,800	
		25	0.06	1.5	600	8,200	0.03	1.2	500	7,000	0.01	0.9	360	5,000	
		30	0.03	1.5	600	7,000	0.02	1.2	500	6,500	0.007	0.9	330	4,500	
	4	10	0.1	2	900	10,000	0.07	1.8	800	9,000	0.05	1.5	700	9,000	
		15	0.07	2	800	8,000	0.05	1.8	700	7,000	0.04	1.5	600	6,500	
		20	0.06	2	750	7,000	0.04	1.8	650	6,000	0.03	1.5	550	5,500	
		25	0.06	2	750	7,000	0.04	1.8	650	6,000	0.03	1.5	550	5,500	
	5	15	0.1	2.5	850	6,000	0.07	2.3	750	5,000	0.06	2	650	4,500	
		20	0.08	2.5	800	5,000	0.06	2.3	700	4,000	0.05	2	600	3,500	
	6	15	0.12	3	850	5,000	0.09	2.8	750	4,000	0.08	2.5	650	3,500	
		20	0.1	3	800	4,000	0.07	2.8	700	3,000	0.06	2.5	600	2,500	
			30	0.08	3	700	3,000	0.06	2.8	600	2,000	0.05	2.5	500	1,500

●請將刀具確實地固定在夾具上，以防止刀具震動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material		鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈷鎳合金(Kovar)					
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	
			φp mm	φe mm			φp mm	φe mm			φp mm	φe mm			
2	0.1	0.3	0.012	0.05	120	40,000	0.012	0.05	120	40,000	0.003	0.05	120	40,000	
		0.5	0.012	0.05	80	40,000	0.012	0.05	80	40,000	0.003	0.05	80	40,000	
		0.15	0.3	0.012	0.07	150	40,000	0.012	0.07	150	40,000	0.003	0.07	150	40,000
			0.5	0.012	0.07	120	40,000	0.012	0.07	120	40,000	0.003	0.07	120	40,000
		0.2	0.5	0.012	0.1	200	30,000	0.012	0.1	200	30,000	0.003	0.1	200	30,000
			0.75	0.012	0.1	180	30,000	0.012	0.1	180	30,000	0.003	0.1	180	30,000
	0.3	1	0.012	0.1	150	30,000	0.012	0.1	150	30,000	0.003	0.1	150	30,000	
		1	0.012	0.15	300	30,000	0.012	0.15	300	30,000	0.003	0.15	300	30,000	
		1.5	0.012	0.15	200	30,000	0.012	0.15	200	30,000	0.003	0.15	200	30,000	
		2	0.012	0.15	150	30,000	0.012	0.15	150	30,000	0.003	0.15	150	30,000	
		2.5	0.008	0.15	100	25,000	0.008	0.15	100	25,000	0.002	0.15	100	25,000	
		3	0.008	0.15	50	25,000	0.008	0.15	50	25,000	0.002	0.15	50	25,000	
	0.4	1	0.02	0.2	400	30,000	0.02	0.2	400	30,000	0.005	0.2	400	30,000	
		1.5	0.02	0.2	360	30,000	0.02	0.2	360	30,000	0.005	0.2	360	30,000	
		2	0.02	0.2	320	30,000	0.02	0.2	320	30,000	0.005	0.2	320	30,000	
		2.5	0.02	0.2	280	25,000	0.02	0.2	280	25,000	0.005	0.2	280	25,000	
		3	0.016	0.2	260	25,000	0.016	0.2	260	25,000	0.004	0.2	260	25,000	
		0.5	1	0.04	0.25	500	25,000	0.04	0.25	500	25,000	0.01	0.25	500	25,000
	1.5		0.04	0.25	450	25,000	0.04	0.25	450	25,000	0.01	0.25	450	25,000	
	2		0.04	0.25	420	25,000	0.04	0.25	420	25,000	0.01	0.25	420	25,000	
	2.5		0.032	0.25	400	25,000	0.032	0.25	400	25,000	0.008	0.25	400	25,000	
	3		0.028	0.25	350	25,000	0.028	0.25	350	25,000	0.007	0.25	350	25,000	
	3.5		0.024	0.25	320	25,000	0.024	0.25	320	25,000	0.006	0.25	320	25,000	
	0.6	4	0.02	0.25	280	25,000	0.02	0.25	280	25,000	0.005	0.25	280	25,000	
1.5		0.04	0.3	550	25,000	0.04	0.3	550	25,000	0.01	0.3	550	25,000		
2		0.04	0.3	500	25,000	0.04	0.3	500	25,000	0.01	0.3	500	25,000		
3		0.028	0.3	450	25,000	0.028	0.3	450	25,000	0.007	0.3	450	25,000		
4		0.02	0.3	400	25,000	0.02	0.3	400	25,000	0.005	0.3	400	25,000		
5		0.012	0.3	350	20,000	0.012	0.3	350	20,000	0.003	0.3	350	20,000		
0.7	6	0.008	0.3	300	20,000	0.008	0.3	300	20,000	0.002	0.3	300	20,000		
	2	0.12	0.35	600	25,000	0.12	0.35	600	25,000	0.03	0.35	600	25,000		
	4	0.08	0.35	560	25,000	0.08	0.35	560	25,000	0.02	0.35	560	25,000		
	6	0.06	0.35	410	20,000	0.06	0.35	410	20,000	0.015	0.35	410	20,000		
	3	0.12	0.4	780	25,000	0.12	0.4	780	25,000	0.03	0.4	780	25,000		
	4	0.1	0.4	700	25,000	0.1	0.4	700	25,000	0.025	0.4	700	25,000		
0.8	5	0.08	0.4	630	23,000	0.08	0.4	630	23,000	0.02	0.4	630	23,000		
	6	0.08	0.4	550	20,000	0.08	0.4	550	20,000	0.02	0.4	550	20,000		
	8	0.028	0.4	400	16,000	0.028	0.4	400	16,000	0.007	0.4	400	16,000		
	2	0.24	0.5	1,000	23,000	0.24	0.5	1,000	23,000	0.06	0.5	1,000	23,000		
	3	0.2	0.5	1,000	23,000	0.2	0.5	1,000	23,000	0.05	0.5	1,000	23,000		
	4	0.16	0.5	900	23,000	0.16	0.5	900	23,000	0.04	0.5	900	23,000		
1	5	0.12	0.5	800	20,000	0.12	0.5	800	20,000	0.03	0.5	800	20,000		

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid. ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible. ●φp=軸向方向切削深度。 φe=徑向方向切削深度。 φp=Axial Depth of Cut φe=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material		鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈷鎳合金(Kovar)					
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	
			φp mm	φe mm			φp mm	φe mm			φp mm	φe mm			
2	1	6	0.08	0.5	700	18,000	0.08	0.5	700	18,000	0.02	0.5	700	18,000	
		7	0.08	0.5	650	18,000	0.08	0.5	650	18,000	0.02	0.5	650	18,000	
		8	0.08	0.5	600	16,000	0.08	0.5	600	16,000	0.02	0.5	600	16,000	
		9	0.06	0.5	550	16,000	0.06	0.5	550	16,000	0.015	0.5	550	16,000	
		10	0.04	0.5	500	14,000	0.04	0.5	500	14,000	0.01	0.5	500	14,000	
		12	0.04	0.5	400	13,000	0.04	0.5	400	13,000	0.01	0.5	400	13,000	
		1.2	6	0.12	0.6	700	18,000	0.12	0.6	700	18,000	0.03	0.6	700	18,000
			8	0.08	0.6	600	16,000	0.08	0.6	600	16,000	0.02	0.6	600	16,000
			10	0.08	0.6	500	12,000	0.08	0.6	500	12,000	0.02	0.6	500	12,000
			12	0.04	0.6	500	10,000	0.04	0.6	500	10,000	0.01	0.6	500	10,000
		1.4	6	0.16	0.7	800	20,000	0.16	0.7	800	20,000	0.04	0.7	800	20,000
			12	0.04	0.7	500	13,000	0.04	0.7	500	13,000	0.01	0.7	500	13,000
	1.5	4	0.2	0.75	900	20,000	0.2	0.75	900	20,000	0.05	0.75	900	20,000	
		6	0.16	0.75	800	20,000	0.16	0.75	800	20,000	0.04	0.75	800	20,000	
		8	0.12	0.75	600	18,000	0.12	0.75	600	18,000	0.03	0.75	600	18,000	
		10	0.12	0.75	500	16,000	0.12	0.75	500	16,000	0.03	0.75	500	16,000	
		12	0.08	0.75	500	14,000	0.08	0.75	500	14,000	0.02	0.75	500	14,000	
		14	0.08	0.75	400	12,000	0.08	0.75	400	12,000	0.02	0.75	400	12,000	
		16	0.04	0.75	360	10,000	0.04	0.75	360	10,000	0.01	0.75	360	10,000	
		1.6	6	0.16	0.8	850	19,000	0.16	0.8	850	19,000	0.04	0.8	850	19,000
	8		0.12	0.8	750	17,000	0.12	0.8	750	17,000	0.03	0.8	750	17,000	
	1.8	6	0.2	0.9	900	18,000	0.2	0.9	900	18,000	0.05	0.9	900	18,000	
		8	0.16	0.9	800	16,000	0.16	0.9	800	16,000	0.04	0.9	800	16,000	
		10	0.16	0.9	700	14,000	0.16	0.9	700	14,000	0.04	0.9	700	14,000	
12		0.12	0.9	600	12,000	0.12	0.9	600	12,000	0.03	0.9	600	12,000		
14		0.12	0.9	600	12,000	0.12	0.9	600	12,000	0.03	0.9	600	12,000		
16		0.08	0.9	500	10,000	0.08	0.9	500	10,000	0.02	0.9	500	10,000		
2	4	0.32	1	1,000	18,000	0.32	1	1,000	18,000	0.08	1	1,000	18,000		
	6	0.24	1	900	18,000	0.24	1	900	18,000	0.06	1	900	18,000		
	8	0.2	1	800	16,000	0.2	1	800	16,000	0.05	1	800	16,000		
	10	0.2	1	700	14,000	0.2	1	700	14,000	0.05	1	700	14,000		
	12	0.16	1	600	12,000	0.16	1	600	12,000	0.04	1	600	12,000		
	14	0.12	1	600	12,000	0.12	1	600	12,000	0.03	1	600	12,000		
	16	0.12	1	500	10,000	0.12	1	500	10,000	0.03	1	500	10,000		
	18	0.08	1	410	9,200	0.08	1	410	9,200	0.02	1	410	9,200		
	20	0.08	1	380	9,200	0.08	1	380	9,200	0.02	1	380	9,200		
	2.5	8	0.28	1.25	800	14,000	0.28	1.25	800	14,000	0.07	1.25	800	14,000	
12		0.24	1.25	700	12,000	0.24	1.25	700	12,000	0.06	1.25	700	12,000		
16		0.2	1.25	600	10,000	0.2	1.25	600	10,000	0.05	1.25	600	10,000		
20		0.2	1.25	500	8,200	0.2	1.25	500	8,200	0.05	1.25	500	8,200		

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid. ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible. ●φp=軸向方向切削深度。 φe=徑向方向切削深度。 φp=Axial Depth of Cut φe=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈷鎳合金(Kovar)			
刃數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹
2	3	8	0.4	1.5	900	14,000	0.4	1.5	900	14,000	0.1	1.5	900	14,000
		12	0.32	1.5	800	12,000	0.32	1.5	800	12,000	0.08	1.5	800	12,000
		16	0.28	1.5	700	10,000	0.28	1.5	700	10,000	0.07	1.5	700	10,000
		20	0.28	1.5	700	9,000	0.28	1.5	700	9,000	0.07	1.5	700	9,000
		25	0.24	1.5	600	8,200	0.24	1.5	600	8,200	0.06	1.5	600	8,200
		30	0.12	1.5	600	7,000	0.12	1.5	600	7,000	0.03	1.5	600	7,000
	4	10	0.4	2	900	10,000	0.4	2	900	10,000	0.1	2	900	10,000
		15	0.28	2	800	8,000	0.28	2	800	8,000	0.07	2	800	8,000
		20	0.24	2	750	7,000	0.24	2	750	7,000	0.06	2	750	7,000
	5	15	0.4	2.5	850	6,000	0.4	2.5	850	6,000	0.1	2.5	850	6,000
		20	0.32	2.5	800	5,000	0.32	2.5	800	5,000	0.08	2.5	800	5,000
	6	15	0.48	3	850	5,000	0.48	3	850	5,000	0.12	3	850	5,000
		20	0.4	3	800	4,000	0.4	3	800	4,000	0.1	3	800	4,000
		30	0.32	3	700	3,000	0.32	3	700	3,000	0.08	3	700	3,000

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing.
 ●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut.
 ●建議使用油霧或油基非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

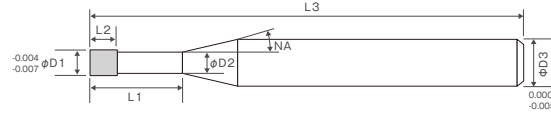
HARD STAR Type A Series

HARD STAR Type A Series

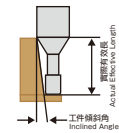
超硬長頸平角立銼刀 Carbide Long Neck Square End Mill

■ 型號: HALS430 Model number: HALS430

Hard A
super MG
刀刀數 4
螺旋角 30°
仰角 15°
柄徑公差 0/-0.005



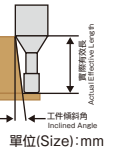
所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.



單位(Size):mm

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
									30'	1°	1°30'	2°	3°
HALS430-0100-0400	1	4	0.8	0.95	15	4	50	3,960	4.23	4.38	4.54	4.71	5.09
HALS430-0100-0600		6	0.8	0.95	15	4	50	3,960	6.30	6.52	6.75	7.01	7.57
HALS430-0100-0800		8	0.8	0.95	15	4	50	3,960	8.37	8.66	8.97	9.31	10.06
HALS430-0100-1000		10	0.8	0.95	15	4	50	3,960	10.43	10.80	11.19	11.61	12.55
HALS430-0120-0600	1.2	6	1	1.15	15	4	50	3,960	6.30	6.52	6.75	7.01	7.57
HALS430-0120-0800		8	1	1.15	15	4	50	3,960	8.37	8.66	8.97	9.31	10.06
HALS430-0120-1000		10	1	1.15	15	4	50	3,960	10.43	10.80	11.19	11.61	12.55
HALS430-0120-1200	1.5	12	1	1.15	15	4	50	3,960	12.50	12.94	13.40	13.91	15.03
HALS430-0150-0800		8	1.2	1.45	15	4	50	3,960	8.37	8.66	8.97	9.31	10.06
HALS430-0150-1000		10	1.2	1.45	15	4	50	3,960	10.43	10.80	11.19	11.61	12.55
HALS430-0150-1200		12	1.2	1.45	15	4	50	3,960	12.50	12.94	13.40	13.91	15.03
HALS430-0150-1400	1.8	14	1.2	1.45	15	4	50	3,960	14.57	15.08	15.62	16.21	17.52
HALS430-0150-1600		16	1.2	1.45	15	4	50	3,960	16.64	17.21	17.84	18.50	20.01
HALS430-0180-0600		6	1.4	1.75	15	4	50	3,960	6.30	6.52	6.75	7.01	7.57
HALS430-0180-0800		8	1.4	1.75	15	4	50	3,960	8.37	8.66	8.97	9.31	10.06
HALS430-0180-1000	2	10	1.4	1.75	15	4	50	3,960	10.43	10.80	11.19	11.61	12.55
HALS430-0180-1200		12	1.4	1.75	15	4	50	3,960	12.50	12.94	13.40	13.91	15.03
HALS430-0180-1400		14	1.4	1.75	15	4	50	3,960	14.57	15.08	15.62	16.21	17.52
HALS430-0180-1600		16	1.4	1.75	15	4	50	3,960	16.64	17.21	17.84	18.50	20.01
HALS430-0200-0600	2.5	6	1.6	1.94	15	4	50	3,960	6.32	6.54	6.77	7.03	7.60
HALS430-0200-0800		8	1.6	1.94	15	4	50	3,960	8.39	8.68	8.99	9.33	10.08
HALS430-0200-1000		10	1.6	1.94	15	4	50	3,960	10.45	10.82	11.21	11.63	12.57
HALS430-0200-1200		12	1.6	1.94	15	4	50	3,960	12.52	12.96	13.42	13.93	15.06
HALS430-0200-1400		14	1.6	1.94	15	4	50	3,960	14.59	15.10	15.64	16.23	17.54
HALS430-0200-1600		16	1.6	1.94	15	4	50	3,960	16.65	17.23	17.86	18.53	FREE
HALS430-0200-1800	2.5	18	1.6	1.94	15	4	50	3,960	18.72	19.37	20.07	20.83	FREE
HALS430-0200-2000		20	1.6	1.94	15	4	50	3,960	20.79	21.51	22.29	23.13	FREE
HALS430-0250-0800		8	2	2.44	15	4	50	3,960	8.39	8.68	8.99	9.33	10.08
HALS430-0250-1200		12	2	2.44	15	4	50	3,960	12.52	12.96	13.42	13.93	FREE
HALS430-0250-1600	16	2	2.44	15	4	50	3,960	16.65	17.23	17.86	18.53	FREE	



單位(Size):mm

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
									30'	1°	1°30'	2°	3°
HALS430-0250-2000	2.5	20	2	2.44	15	4	50	3,960	20.79	21.51	22.29	FREE	FREE
HALS430-0300-0800	3	8	4.5	2.85	15	4	50	5,600	8.56	8.86	9.18	9.52	FREE
HALS430-0300-1200		12	4.5	2.85	15	4	50	5,600	12.69	13.14	13.61	14.12	FREE
HALS430-0300-1600		16	4.5	2.85	15	4	50	5,600	16.83	17.41	18.04	FREE	FREE
HALS430-0300-2000		20	4.5	2.85	15	4	50	5,600	20.96	21.69	FREE	FREE	FREE
HALS430-0300-2500		25	4.5	2.85	15	4	60	5,920	26.13	27.04	FREE	FREE	FREE
HALS430-0300-3000		30	4.5	2.85	15	4	60	6,400	31.30	FREE	FREE	FREE	FREE
HALS430-0400-1200	4	12	6	3.8	15	6	50	5,840	12.79	13.24	13.71	14.23	15.38
HALS430-0400-1600		16	6	3.8	15	6	50	5,840	16.92	17.51	18.15	18.83	FREE
HALS430-0400-2000		20	6	3.8	15	6	50	5,840	21.06	21.79	22.58	23.43	FREE
HALS430-0400-2500		25	6	3.8	15	6	60	6,160	26.23	27.14	28.12	FREE	FREE
HALS430-0400-3000		30	6	3.8	15	6	60	6,800	31.40	32.49	33.66	FREE	FREE
HALS430-0400-3500		35	6	3.8	15	6	70	7,360	36.56	37.84	FREE	FREE	FREE
HALS430-0500-1600	5	16	7.5	4.8	15	6	50	7,360	16.92	17.51	18.15	FREE	FREE
HALS430-0500-2500		25	7.5	4.8	15	6	60	7,680	26.23	27.14	FREE	FREE	FREE
HALS430-0500-3500	6	35	7.5	4.8	15	6	70	8,000	36.56	FREE	FREE	FREE	FREE
HALS430-0600-2000		20	9	5.8	15	6	50	7,360	FREE	FREE	FREE	FREE	FREE
HALS430-0600-3000		30	9	5.8	15	6	60	7,680	FREE	FREE	FREE	FREE	FREE
HALS430-0600-4000		40	9	5.8	15	6	70	8,000	FREE	FREE	FREE	FREE	FREE
HALS430-0600-5000	50	9	5.8	15	6	80	11,200	FREE	FREE	FREE	FREE	FREE	

CBN Series
 Hard Star A Series
 Hard Star TT Series
 Hard Star TT Series
 Ion Depo A Series
 Ion Depo U Series
 DLC Series
 Non-Coat Series
 Ion Depo R Series

HARD STAR type A 切削條件參考表 Recommended Milling Conditions

■型號:HALS430
Model number:HALS430

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			淬火鋼 Hardened Steels STAVAX/HPM (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)			
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm		
4	1	4	0.04	0.5	1,800	23,000	0.03	0.4	1,600	18,000	0.02	0.3	1,000	14,000
			0.02	0.5	1,400	18,000	0.01	0.4	1,200	14,000	0.007	0.3	800	10,000
			0.02	0.5	1,200	16,000	0.01	0.4	1,000	12,000	0.005	0.3	680	8,000
			0.01	0.5	1,000	14,000	0.007	0.4	800	10,000	0.005	0.3	500	6,000
	1.2	6	0.03	0.6	1,400	18,000	0.02	0.5	1,200	14,000	0.01	0.4	800	10,000
			0.02	0.6	1,200	16,000	0.01	0.5	1,000	12,000	0.007	0.4	680	8,000
			0.02	0.6	1,000	12,000	0.01	0.5	850	10,000	0.005	0.4	600	8,000
			0.01	0.6	1,000	10,000	0.007	0.5	800	9,000	0.005	0.4	500	7,000
	1.5	8	0.03	0.75	1,200	18,000	0.03	0.6	1,200	14,000	0.01	0.45	750	10,000
			0.03	0.75	1,000	16,000	0.02	0.6	1,000	14,000	0.01	0.45	700	10,000
			0.02	0.75	1,000	14,000	0.02	0.6	850	12,000	0.007	0.45	620	8,000
			0.02	0.75	800	12,000	0.01	0.6	750	10,000	0.007	0.45	500	7,500
	1.8	10	0.01	0.75	720	10,000	0.007	0.6	600	9,000	0.005	0.45	400	6,800
			0.05	0.9	1,800	18,000	0.04	0.7	1,500	15,000	0.03	0.5	1,200	12,000
			0.04	0.9	1,600	16,000	0.03	0.7	1,200	12,000	0.02	0.5	1,000	9,500
			0.04	0.9	1,400	14,000	0.03	0.7	1,000	12,000	0.02	0.5	900	9,500
	2	12	0.03	0.9	1,200	12,000	0.02	0.7	1,000	10,000	0.01	0.5	800	8,200
			0.03	0.9	1,200	12,000	0.02	0.7	860	10,000	0.01	0.5	720	8,200
			0.02	0.9	1,000	10,000	0.01	0.7	800	9,200	0.007	0.5	680	7,500
			0.06	1	1,800	18,000	0.05	0.8	1,500	15,000	0.03	0.6	1,200	12,000
	2.5	14	0.05	1	1,600	16,000	0.04	0.8	1,200	12,000	0.02	0.6	1,000	9,500
			0.05	1	1,400	14,000	0.04	0.8	1,000	12,000	0.02	0.6	900	9,500
			0.04	1	1,200	12,000	0.03	0.8	1,000	10,000	0.01	0.6	800	8,200
			0.03	1	1,200	12,000	0.02	0.8	860	10,000	0.007	0.6	720	8,200
	3	16	0.03	1	1,000	10,000	0.02	0.8	800	9,200	0.007	0.6	680	7,500
			0.02	1	820	9,200	0.01	0.8	740	8,500	0.005	0.6	640	6,000
			0.02	1	760	9,200	0.01	0.8	680	8,500	0.005	0.6	520	6,000
			0.07	1.25	1,600	14,000	0.05	1	1,400	10,000	0.03	0.75	1,000	8,000
4	18	0.06	1.25	1,400	12,000	0.04	1	1,200	9,600	0.02	0.75	960	7,500	
		0.05	1.25	1,200	10,000	0.02	1	1,000	8,500	0.01	0.75	800	7,000	
		0.05	1.25	1,000	8,200	0.02	1	1,000	7,500	0.01	0.75	800	5,000	
		0.1	1.5	1,800	14,000	0.07	1.2	1,600	10,000	0.05	0.9	1,200	8,000	
4	20	0.08	1.5	1,600	12,000	0.06	1.2	1,400	9,200	0.04	0.9	1,000	7,200	
		0.07	1.5	1,400	10,000	0.05	1.2	1,200	8,500	0.03	0.9	800	6,500	
		0.07	1.5	1,400	9,000	0.04	1.2	1,200	7,800	0.02	0.9	800	5,800	
		0.06	1.5	1,200	8,200	0.03	1.2	1,000	7,000	0.01	0.9	720	5,000	
4	25	0.03	1.5	1,200	7,000	0.02	1.2	1,000	6,500	0.007	0.9	650	4,500	
		0.15	2	2,000	9,500	0.08	1.6	1,600	8,000	0.06	1.2	1,000	7,000	
		0.1	2	1,800	8,000	0.06	1.6	1,400	7,000	0.05	1.2	1,200	6,000	
		0.08	2	1,600	7,000	0.05	1.6	1,200	6,500	0.04	1.2	1,000	5,500	
4	25	0.07	2	1,400	6,000	0.04	1.6	1,200	5,200	0.03	1.2	1,000	4,500	

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向切削深度，∅e=徑向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			淬火鋼 Hardened Steels STAVAX/HPM (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)			
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm		
4	5	30	0.05	2	1,000	4,800	0.03	1.6	850	4,200	0.02	1.2	620	3,500
			0.04	2	880	4,200	0.02	1.6	720	3,800	0.01	1.2	550	3,000
			0.12	2.5	1,800	7,000	0.08	2	1,600	5,500	0.06	1.5	1,000	4,500
			0.07	2.5	1,400	5,800	0.05	2	1,200	4,200	0.03	1.5	800	3,000
	6	25	0.05	2.5	900	4,200	0.03	2	800	3,500	0.02	1.5	600	2,500
			0.18	3	1,600	6,500	0.08	2.4	1,400	4,500	0.06	1.8	920	3,500
			0.12	3	1,200	4,500	0.06	2.4	1,000	3,500	0.04	1.8	660	2,500
			0.08	3	1,000	3,000	0.03	2.4	800	2,500	0.02	1.8	550	2,000
	6	20	0.05	3	700	2,500	0.02	2.4	500	2,000	0.01	1.8	380	1,500

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向切削深度，∅e=徑向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

HARD STAR Type A Series

HARD STAR Type A Series

HARD STAR type A 切削條件參考表 Recommended Milling Conditions

■型號:HALS430
Model number:HALS430

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈷鎳合金(Kovar)						
刃數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹			
			φp mm	φe mm			φp mm	φe mm			φp mm	φe mm					
4	1	4	0.16	0.5	1,800	23,000	0.16	0.5	1,800	23,000	0.04	0.5	1,800	23,000			
			6	0.08	0.5	1,400	18,000	0.08	0.5	1,400	18,000	0.02	0.5	1,400	18,000		
			8	0.08	0.5	1,200	16,000	0.08	0.5	1,200	16,000	0.02	0.5	1,200	16,000		
			10	0.04	0.5	1,000	14,000	0.04	0.5	1,000	14,000	0.01	0.5	1,000	14,000		
	1.2	6	0.12	0.6	1,400	18,000	0.12	0.6	1,400	18,000	0.03	0.6	1,400	18,000			
				8	0.08	0.6	1,200	16,000	0.08	0.6	1,200	16,000	0.02	0.6	1,200	16,000	
				10	0.08	0.6	1,000	12,000	0.08	0.6	1,000	12,000	0.02	0.6	1,000	12,000	
				12	0.04	0.6	1,000	10,000	0.04	0.6	1,000	10,000	0.01	0.6	1,000	10,000	
	1.5	8	0.12	0.75	1,200	18,000	0.12	0.75	1,200	18,000	0.03	0.75	1,200	18,000			
				10	0.12	0.75	1,000	16,000	0.12	0.75	1,000	16,000	0.03	0.75	1,000	16,000	
				12	0.08	0.75	1,000	14,000	0.08	0.75	1,000	14,000	0.02	0.75	1,000	14,000	
				14	0.08	0.75	800	12,000	0.08	0.75	800	12,000	0.02	0.75	800	12,000	
	1.8	16	0.04	0.75	720	10,000	0.04	0.75	720	10,000	0.01	0.75	720	10,000			
				6	0.2	0.9	1,800	18,000	0.2	0.9	1,800	18,000	0.05	0.9	1,800	18,000	
				8	0.16	0.9	1,600	16,000	0.16	0.9	1,600	16,000	0.04	0.9	1,600	16,000	
				10	0.16	0.9	1,400	14,000	0.16	0.9	1,400	14,000	0.04	0.9	1,400	14,000	
	2	12	0.12	0.9	1,200	12,000	0.12	0.9	1,200	12,000	0.03	0.9	1,200	12,000			
				14	0.12	0.9	1,200	12,000	0.12	0.9	1,200	12,000	0.03	0.9	1,200	12,000	
				16	0.08	0.9	1,000	10,000	0.08	0.9	1,000	10,000	0.02	0.9	1,000	10,000	
				18	0.08	0.9	1,000	10,000	0.08	0.9	1,000	10,000	0.02	0.9	1,000	10,000	
		6	0.24	1	1,800	18,000	0.24	1	1,800	18,000	0.06	1	1,800	18,000			
					8	0.2	1	1,600	16,000	0.2	1	1,600	16,000	0.05	1	1,600	16,000
					10	0.2	1	1,400	14,000	0.2	1	1,400	14,000	0.05	1	1,400	14,000
					12	0.16	1	1,200	12,000	0.16	1	1,200	12,000	0.04	1	1,200	12,000
	2.5	14	0.12	1	1,200	12,000	0.12	1	1,200	12,000	0.03	1	1,200	12,000			
				16	0.12	1	1,000	10,000	0.12	1	1,000	10,000	0.03	1	1,000	10,000	
				18	0.08	1	820	9,200	0.08	1	820	9,200	0.02	1	820	9,200	
				20	0.08	1	760	9,200	0.08	1	760	9,200	0.02	1	760	9,200	
	3	8	0.4	1.5	1,800	14,000	0.4	1.5	1,800	14,000	0.1	1.5	1,800	14,000			
				12	0.32	1.5	1,600	12,000	0.32	1.5	1,600	12,000	0.08	1.5	1,600	12,000	
				16	0.28	1.5	1,400	10,000	0.28	1.5	1,400	10,000	0.07	1.5	1,400	10,000	
		20	0.28	1.5	1,400	9,000	0.28	1.5	1,400	9,000	0.07	1.5	1,400	9,000			
					1,200	8,200	0.24	1.5	1,200	8,200	0.06	1.5	1,200	8,200			
					1,200	7,000	0.12	1.5	1,200	7,000	0.03	1.5	1,200	7,000			
	4	12	0.6	2	2,000	9,500	0.6	2	2,000	9,500	0.15	2	2,000	9,500			
				16	0.4	2	1,800	8,000	0.4	2	1,800	8,000	0.1	2	1,800	8,000	
		20	0.32	2	1,600	7,000	0.32	2	1,600	7,000	0.08	2	1,600	7,000			
					1,400	6,000	0.28	2	1,400	6,000	0.07	2	1,400	6,000			

●請將刀與確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或高壓非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●φp=軸向切削深度，φe=徑向切削深度。 φp=Axial Depth of Cut φe=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈷鎳合金(Kovar)			
刃數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
			φp mm	φe mm			φp mm	φe mm			φp mm	φe mm		
4	4	30	0.2	2	1,000	4,800	0.2	2	1,000	4,800	0.05	2	1,000	4,800
			35	0.16	2	880	4,200	0.16	2	880	4,200	0.04	2	880
	5	16	0.48	2.5	1,800	7,000	0.48	2.5	1,800	7,000	0.12	2.5	1,800	7,000
			25	0.28	2.5	1,400	5,800	0.28	2.5	1,400	5,800	0.07	2.5	1,400
	6	35	0.2	2.5	900	4,200	0.2	2.5	900	4,200	0.05	2.5	900	4,200
				20	0.72	3	1,600	6,500	0.72	3	1,600	6,500	0.18	3
		30	0.48	3	1,200	4,500	0.48	3	1,200	4,500	0.12	3	1,200	4,500
					40	0.32	3	1,000	3,000	0.32	3	1,000	3,000	0.08
	50	0.2	3	700	2,500	0.2	3	700	2,500	0.05	3	700	2,500	

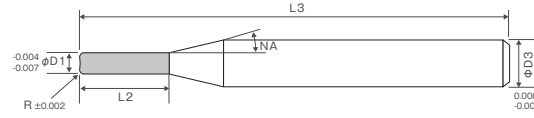
●請將刀與確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或高壓非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●φp=軸向切削深度，φe=徑向切削深度。 φp=Axial Depth of Cut φe=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

HARD STAR Type A Series

超硬圓角立銼刀 Carbide Radius End Mill

■型號: HAR430 Model number: HAR430

Hard A
super MG
刀刃數 4
螺旋角 30°
仰角 15°
柄徑公差 ±0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切屑材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.

●請系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size): mm

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	刃長 (L2) Length of Cut	仰角 (NA) ^o Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price
HAR430-0300-0200-00600	3	0.2	6	15	4	50	10,000
HAR430-0300-0300-00600		0.3	6	15	4	50	10,000
HAR430-0300-0500-00600		0.5	6	15	4	50	10,000
HAR430-0400-0200-00800	4	0.2	8	15	6	50	10,800
HAR430-0400-0300-00800		0.3	8	15	6	50	10,800
HAR430-0400-0500-00800		0.5	8	15	6	50	10,800
HAR430-0600-0200-01200	6	0.2	12	—	6	60	12,400
HAR430-0600-0300-01200		0.3	12	—	6	60	12,400
HAR430-0600-0500-01200		0.5	12	—	6	60	12,400
HAR430-0600-1000-01200	8	1	12	—	6	60	12,400
HAR430-0800-0300-01600		0.3	16	—	8	70	13,360
HAR430-0800-0500-01600		0.5	16	—	8	70	13,360
HAR430-0800-1000-01600	10	1	16	—	8	70	13,360
HAR430-1000-0300-02000		0.3	20	—	10	80	17,600
HAR430-1000-0500-02000		0.5	20	—	10	80	17,600
HAR430-1000-1000-02000	12	1	20	—	10	80	17,600
HAR430-1200-0500-02400		0.5	24	—	12	110	22,160
HAR430-1200-1000-02400		1	24	—	12	110	22,160
HAR430-1200-2000-02400	2	24	—	12	110	22,160	

HARD STAR Type A Series

HARD STAR type A 切削條件參考表 Recommended Milling Conditions

■型號: HAR430
Model number: HAR430

圓角立銼刀 Radius End Mill

切削材料 Work Material	淬火鋼 Hardened Steels STAVAX/HPM (~55HRC)						淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)						淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)					
	刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of Cut	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed			
				∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm					
4	3	6	4.5	0.09	1,000	10,000	4.5	0.06	700	8,000	4.5	0.06	560	7,000				
	4	8	6	0.12	1,200	8,500	6	0.08	800	7,000	6	0.08	600	6,000				
	6	12	9	0.18	1,200	5,600	9	0.12	800	4,700	9	0.12	600	4,000				
	8	16	12	0.23	1,400	4,800	12	0.16	800	4,000	12	0.16	500	3,400				
	10	20	15	0.3	1,500	3,800	15	0.2	900	3,200	15	0.2	600	2,600				
12	24	18	0.35	1,600	3,200	18	0.24	1,000	2,600	18	0.24	700	2,200					

圓角立銼刀 Radius End Mill

切削材料 Work Material	鋁合金 Aluminum Alloy A5000號						鋁合金 Aluminum Alloy A7000號						耐熱合金 Heat Resistant Alloy 結縷合金(Kovar)					
	刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of Cut	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed			
				∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm					
4	3	6	4.5	0.25	1,000	10,000	4.5	0.25	1,000	10,000	4.5	0.08	1,000	10,000				
	4	8	6	0.35	1,200	8,500	6	0.35	1,200	8,500	6	0.12	1,200	8,500				
	6	12	9	0.55	1,200	5,600	9	0.55	1,200	5,600	9	0.18	1,200	5,600				
	8	16	12	0.69	1,400	4,800	12	0.69	1,400	4,800	12	0.23	1,400	4,800				
	10	20	15	0.9	1,500	3,800	15	0.9	1,500	3,800	15	0.3	1,500	3,800				
	12	24	18	1.05	1,600	3,200	18	1.05	1,600	3,200	18	0.35	1,600	3,200				

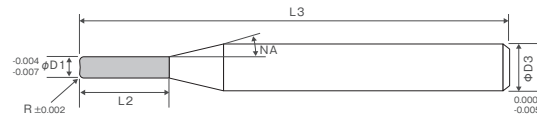
●請將刀具確實地固定於夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油類或是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut. ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

HARD STAR Type A Series

超硬圓角立銑刀 Carbide Radius End Mill

■型號: HAR630 Model number: HAR630

Hard A
super MG
刀刃數 6
螺旋角 30°
仰角 15°
柄徑公差 ±0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value. If concerned about interference with the work material, please check by actual measurement.

●請系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size): mm

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	刃長 (L2) Length of Cut	仰角 (NA) Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)
HAR630-0500-0200-01000	5	0.2	10	15	6	50	11,600
HAR630-0500-0300-01000		0.3	10	15	6	50	11,600
HAR630-0500-0500-01000		0.5	10	15	6	50	11,600
HAR630-0500-1000-01000		1	10	15	6	50	11,600
HAR630-0600-0200-01200	6	0.2	12	—	6	60	12,400
HAR630-0600-0300-01200		0.3	12	—	6	60	12,400
HAR630-0600-0500-01200		0.5	12	—	6	60	12,400
HAR630-0600-1000-01200		1	12	—	6	60	12,400
HAR630-0800-0300-01600	8	0.3	16	—	8	70	17,200
HAR630-0800-0500-01600		0.5	16	—	8	70	17,200
HAR630-0800-1000-01600		1	16	—	8	70	17,200
HAR630-0800-1500-01600		1.5	16	—	8	70	17,200
HAR630-1000-0300-02000	10	0.3	20	—	10	80	17,200
HAR630-1000-0500-02000		0.5	20	—	10	80	23,360
HAR630-1000-1000-02000		1	20	—	10	80	23,360
HAR630-1000-1500-02000		1.5	20	—	10	80	23,360
HAR630-1000-2000-02000	12	2	20	—	10	80	23,360
HAR630-1200-0500-02400		0.5	24	—	12	110	28,160
HAR630-1200-1000-02400		1	24	—	12	110	28,160
HAR630-1200-1500-02400		1.5	24	—	12	110	28,160
HAR630-1200-2000-02400	2	24	—	12	110	28,160	

HARD STAR Type A Series

HARD STAR type A 切削條件參考表

Recommended Milling Conditions

■型號: HAR630

Model number: HAR630

圓角立銑刀 Radius End Mill

切削材料 Work Material	刀數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of Cut	淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)			淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)					
				切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
				∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹
6	5	10	7.5	0.15	1,600	7,600	7.5	0.1	1,200	6,200	7.5	0.1	800	5,300	
	6	12	9	0.18	1,800	6,400	9	0.12	1,200	5,300	9	0.12	800	4,600	
	8	16	12	0.23	2,000	4,800	12	0.16	1,400	4,000	12	0.16	1,000	3,400	
	10	20	15	0.3	2,000	3,800	15	0.2	1,600	3,200	15	0.2	1,000	2,600	
	12	24	18	0.35	2,000	3,200	18	0.24	1,600	2,600	18	0.24	1,000	2,200	

圓角立銑刀 Radius End Mill

切削材料 Work Material	刀數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of Cut	鋁合金 Aluminum Alloy A5000號			鋁合金 Aluminum Alloy A7000號			耐熱合金 Heat Resistant Alloy 鈷鎳合金(Kovar)					
				切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
				∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹
6	5	10	7.5	0.45	1,600	7,600	7.5	0.45	1,600	7,600	7.5	0.15	1,600	7,600	
	6	12	9	0.54	1,800	6,400	9	0.54	1,800	6,400	9	0.18	1,800	6,400	
	8	16	12	0.69	2,000	4,800	12	0.69	2,000	4,800	12	0.23	2,000	4,800	
	10	20	15	0.9	2,000	3,800	15	0.9	2,000	3,800	15	0.3	2,000	3,800	
	12	24	18	1.05	2,000	3,200	18	1.05	2,000	3,200	18	0.35	2,000	3,200	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或油基非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●∅p=軸向切深，∅e=徑向切深。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

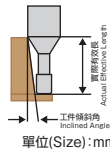
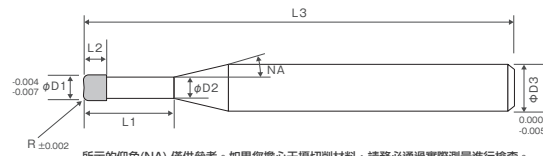
HARD STAR Type A Series

HARD STAR Type A Series

超硬長頸圓角立銼刀 Carbide Long Neck Radius End Mill

型號: HALR230 Model number: HALR230

Hard A
super MG
刀刃數 2
螺旋角 30°
仰角 15°
柄徑公差
±0.005

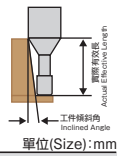


● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) ^o Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.					
										30'	1°	1°30'	2°	3°	
HALR230-0020-0020-0050	0.2	0.02	0.5	0.15	0.18	15	4	50	8,080	0.55	0.57	0.59	0.61	0.66	
HALR230-0020-0020-0100		0.02	1	0.15	0.18	15	4	50	8,080	1.07	1.11	1.15	1.19	1.28	
HALR230-0020-0050-0050		0.05	0.5	0.15	0.18	15	4	50	8,080	0.55	0.57	0.59	0.61	0.66	
HALR230-0020-0050-0100		0.05	1	0.15	0.18	15	4	50	8,080	1.07	1.11	1.14	1.19	1.28	
HALR230-0030-0020-0100	0.3	0.02	1	0.25	0.27	15	4	50	7,840	1.09	1.13	1.17	1.21	1.31	
HALR230-0030-0020-0150		0.02	1.5	0.25	0.27	15	4	50	7,840	1.61	1.66	1.72	1.79	1.93	
HALR230-0030-0020-0200		0.02	2	0.25	0.27	15	4	50	7,840	2.12	2.20	2.28	2.36	2.55	
HALR230-0030-0020-0250		0.02	2.5	0.25	0.27	15	4	50	9,840	2.64	2.73	2.83	2.94	3.17	
HALR230-0030-0020-0300		0.02	3	0.25	0.27	15	4	50	9,840	3.16	3.27	3.38	3.51	3.79	
HALR230-0030-0050-0100		0.05	1	0.25	0.27	15	4	50	7,840	1.09	1.13	1.17	1.21	1.30	
HALR230-0030-0050-0150		0.05	1.5	0.25	0.27	15	4	50	7,840	1.61	1.66	1.72	1.78	1.92	
HALR230-0030-0050-0200		0.05	2	0.25	0.27	15	4	50	7,840	2.12	2.20	2.27	2.36	2.54	
HALR230-0030-0050-0250		0.05	2.5	0.25	0.27	15	4	50	9,840	2.64	2.73	2.83	2.93	3.17	
HALR230-0030-0050-0300		0.05	3	0.25	0.27	15	4	50	9,840	3.16	3.27	3.38	3.51	3.79	
HALR230-0040-0020-0100		0.4	0.02	1	0.3	0.37	15	4	50	5,200	1.09	1.13	1.17	1.21	1.31
HALR230-0040-0020-0150			0.02	1.5	0.3	0.37	15	4	50	5,200	1.61	1.66	1.72	1.79	1.93
HALR230-0040-0020-0200	0.02		2	0.3	0.37	15	4	50	5,200	2.12	2.20	2.28	2.36	2.55	
HALR230-0040-0020-0250	0.02		2.5	0.3	0.37	15	4	50	5,200	2.64	2.73	2.83	2.94	3.17	
HALR230-0040-0020-0300	0.02		3	0.3	0.37	15	4	50	5,200	3.16	3.27	3.38	3.51	3.79	
HALR230-0040-0050-0100	0.05		1	0.3	0.37	15	4	50	5,200	1.09	1.13	1.17	1.21	1.30	
HALR230-0040-0050-0150	0.05		1.5	0.3	0.37	15	4	50	5,200	1.61	1.66	1.72	1.78	1.92	
HALR230-0040-0050-0200	0.05		2	0.3	0.37	15	4	50	5,200	2.12	2.20	2.27	2.36	2.54	
HALR230-0040-0050-0250	0.05		2.5	0.3	0.37	15	4	50	5,200	2.64	2.73	2.83	2.93	3.17	
HALR230-0040-0050-0300	0.05		3	0.3	0.37	15	4	50	5,200	3.16	3.27	3.38	3.51	3.79	
HALR230-0040-0100-0100	0.1		1	0.3	0.37	15	4	50	5,200	1.09	1.12	1.16	1.20	1.29	
HALR230-0040-0100-0200	0.1		2	0.3	0.37	15	4	50	5,200	2.12	2.19	2.27	2.35	2.53	
HALR230-0040-0100-0300	0.1		3	0.3	0.37	15	4	50	5,200	3.16	3.26	3.38	3.50	3.78	
HALR230-0050-0020-0100	0.5		0.02	1	0.4	0.47	15	4	50	4,240	1.09	1.13	1.17	1.21	1.31
HALR230-0050-0020-0200			0.02	2	0.4	0.47	15	4	50	4,240	2.12	2.20	2.28	2.36	2.55
HALR230-0050-0020-0300			0.02	3	0.4	0.47	15	4	50	4,240	3.16	3.27	3.38	3.51	3.79

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) ^o Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
HALR230-0050-0020-0400	0.5	0.02	4	0.4	0.47	15	4	50	4,240	4.19	4.34	4.49	4.66	5.04
HALR230-0050-0050-0100		0.05	1	0.4	0.47	15	4	50	4,240	1.09	1.13	1.17	1.21	1.30
HALR230-0050-0050-0200		0.05	2	0.4	0.47	15	4	50	4,240	2.12	2.20	2.27	2.36	2.54
HALR230-0050-0050-0300		0.05	3	0.4	0.47	15	4	50	4,240	3.16	3.27	3.38	3.51	3.79
HALR230-0050-0050-0400		0.05	4	0.4	0.47	15	4	50	4,240	4.19	4.34	4.49	4.66	5.03
HALR230-0050-0100-0100		0.1	1	0.4	0.47	15	4	50	4,240	1.09	1.12	1.16	1.20	1.29
HALR230-0050-0100-0200		0.1	2	0.4	0.47	15	4	50	4,240	2.12	2.19	2.27	2.35	2.53
HALR230-0050-0100-0300		0.1	3	0.4	0.47	15	4	50	4,240	3.16	3.26	3.38	3.50	3.78
HALR230-0050-0100-0400		0.1	4	0.4	0.47	15	4	50	4,240	4.19	4.33	4.48	4.65	5.02
HALR230-0060-0020-0200		0.6	0.02	2	0.5	0.57	15	4	50	4,560	2.12	2.20	2.28	2.36
HALR230-0060-0020-0400	0.02		4	0.5	0.57	15	4	50	4,560	4.19	4.34	4.49	4.66	5.04
HALR230-0060-0020-0600	0.02		6	0.5	0.57	15	4	50	4,560	6.26	6.48	6.71	6.96	7.52
HALR230-0060-0050-0200	0.05		2	0.5	0.57	15	4	50	4,560	2.12	2.20	2.27	2.36	2.54
HALR230-0060-0050-0400	0.05		4	0.5	0.57	15	4	50	4,560	4.19	4.34	4.49	4.66	5.03
HALR230-0060-0050-0600	0.05		6	0.5	0.57	15	4	50	4,560	6.26	6.47	6.71	6.96	7.52
HALR230-0060-0100-0200	0.1		2	0.5	0.57	15	4	50	4,240	2.12	2.19	2.27	2.35	2.53
HALR230-0060-0100-0400	0.1		4	0.5	0.57	15	4	50	4,240	4.19	4.33	4.48	4.65	5.02
HALR230-0060-0100-0600	0.1		6	0.5	0.57	15	4	50	4,240	6.26	6.47	6.70	6.95	7.51
HALR230-0070-0020-0200	0.7		0.02	2	0.55	0.67	15	4	50	4,800	2.12	2.20	2.28	2.36
HALR230-0070-0020-0400		0.02	4	0.55	0.67	15	4	50	4,800	4.19	4.34	4.49	4.66	5.04
HALR230-0070-0020-0600		0.02	6	0.55	0.67	15	4	50	4,800	6.26	6.48	6.71	6.96	7.52
HALR230-0070-0050-0200		0.05	2	0.55	0.67	15	4	50	4,800	2.12	2.20	2.27	2.36	2.54
HALR230-0070-0050-0400		0.05	4	0.55	0.67	15	4	50	4,800	4.19	4.34	4.49	4.66	5.03
HALR230-0070-0050-0600		0.05	6	0.55	0.67	15	4	50	4,800	6.26	6.47	6.71	6.96	7.52
HALR230-0070-0100-0200		0.1	2	0.55	0.67	15	4	50	4,800	2.12	2.19	2.27	2.35	2.53
HALR230-0070-0100-0400		0.1	4	0.55	0.67	15	4	50	4,800	4.19	4.33	4.48	4.65	5.02
HALR230-0070-0100-0600		0.1	6	0.55	0.67	15	4	50	4,800	6.26	6.47	6.70	6.95	7.51
HALR230-0080-0020-0200		0.8	0.02	2	0.65	0.77	15	4	50	4,800	2.12	2.20	2.28	2.36
HALR230-0080-0020-0400	0.02		4	0.65	0.77	15	4	50	4,800	4.19	4.34	4.49	4.66	5.04
HALR230-0080-0020-0600	0.02		6	0.65	0.77	15	4	50	4,800	6.26	6.48	6.71	6.96	7.52
HALR230-0080-0020-0800	0.02		8	0.65	0.77	15	4	50	4,960	8.33	8.62	8.93	9.26	10.01
HALR230-0080-0050-0200	0.05		2	0.65	0.77	15	4	50	4,800	2.12	2.20	2.27	2.36	2.54
HALR230-0080-0050-0400	0.05		4	0.65	0.77	15	4	50	4,800	4.19	4.34	4.49	4.66	5.03
HALR230-0080-0050-0600	0.05		6	0.65	0.77	15	4	50	4,800	6.26	6.47	6.71	6.96	7.52
HALR230-0080-0050-0800	0.05		8	0.65	0.77	15	4	50	4,960	8.33	8.61	8.92	9.26	10.00
HALR230-0080-0100-0200	0.1		2	0.65	0.77	15	4	50	4,800	2.12	2.19	2.27	2.35	2.53
HALR230-0080-0100-0400	0.1		4	0.65	0.77	15	4	50	4,800	4.19	4.33	4.48	4.65	5.02
HALR230-0080-0100-0600	0.1	6	0.65	0.77	15	4	50	4,800	6.26	6.47	6.70	6.95	7.51	
HALR230-0080-0100-0800	0.1	8	0.65	0.77	15	4	50	4,960	8.32	8.61	8.92	9.25	9.99	
HALR230-0080-0200-0200	0.9	0.2	2	0.65	0.77	15	4	50	4,800	2.12	2.19	2.26	2.33	2.51
HALR230-0080-0200-0400		0.2	4	0.65	0.77	15	4	50	4,800	4.19	4.32	4.47	4.63	5.00
HALR230-0080-0200-0600		0.2	6	0.65	0.77	15	4	50	4,800	6.25	6.46	6.69	6.93	7.48
HALR230-0080-0200-0800		0.2	8	0.65	0.77	15	4	50	4,960	8.32	8.60	8.91	9.23	9.97
HALR230-0090-0100-0400		0.1	4	0.7	0.87	15	4	50	5,440	4.19	4.33	4.48	4.65	5.02
HALR230-0090-0100-0800		0.1	8	0.7	0.87	15	4	50	5,440	8.32	8.61	8.92	9.25	9.99



CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
Ion Depo A Series
Ion Depo U Series
DLC Series
Non-Coat Series
Ion Depo R Series

HARD STAR Type A Series

HARD STAR type A 切削條件參考表
Recommended Milling Conditions

■型號: HALR230
Model number: HALR230

長頸圓角立銼刀 Long Neck Radius End Mill

切削材料 Work Material			淬火鋼 Hardened Steels STAVAX/HPM (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)			
刃數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm		
2	0.2	0.5	0.003	0.04	200	30,000	0.003	0.02	160	30,000	0.003	0.01	120	30,000
		1	0.003	0.04	150	30,000	0.002	0.02	120	30,000	0.002	0.01	80	30,000
	0.3	1	0.003	0.08	300	30,000	0.003	0.04	250	30,000	0.003	0.03	200	30,000
		1.5	0.003	0.08	200	30,000	0.003	0.04	160	30,000	0.003	0.03	120	30,000
		2	0.003	0.08	150	30,000	0.003	0.04	120	30,000	0.003	0.03	100	25,000
		2.5	0.002	0.08	100	25,000	0.002	0.04	80	25,000	0.002	0.03	60	20,000
		3	0.002	0.08	50	25,000	0.002	0.04	40	25,000	0.002	0.03	30	20,000
	0.4	1	0.005	0.1	400	30,000	0.005	0.05	350	28,000	0.004	0.04	300	25,000
		1.5	0.005	0.1	350	30,000	0.005	0.05	300	28,000	0.004	0.04	260	25,000
		2	0.005	0.1	300	30,000	0.005	0.05	250	25,000	0.003	0.04	220	25,000
		2.5	0.004	0.1	280	28,000	0.004	0.05	240	25,000	0.003	0.04	180	20,000
	0.5	1	0.008	0.15	500	25,000	0.006	0.1	450	23,000	0.004	0.08	400	20,000
		2	0.007	0.15	420	25,000	0.005	0.1	360	23,000	0.003	0.08	300	20,000
		3	0.006	0.15	350	25,000	0.004	0.1	320	23,000	0.003	0.08	280	20,000
		4	0.004	0.15	300	25,000	0.002	0.1	240	23,000	0.002	0.08	180	20,000
	0.6	2	0.012	0.2	500	25,000	0.006	0.15	400	23,000	0.004	0.1	320	20,000
		4	0.007	0.2	400	23,000	0.004	0.15	300	20,000	0.003	0.1	200	18,000
		6	0.005	0.2	200	20,000	0.003	0.15	150	18,000	0.002	0.1	100	12,000
	0.7	2	0.012	0.25	700	25,000	0.006	0.15	600	23,000	0.003	0.12	450	20,000
		4	0.008	0.25	600	25,000	0.005	0.15	500	23,000	0.002	0.12	350	20,000
		6	0.005	0.25	350	20,000	0.003	0.15	250	18,000	0.002	0.12	200	16,000
	0.8	2	0.014	0.25	800	25,000	0.006	0.16	700	23,000	0.005	0.14	500	20,000
		4	0.008	0.25	700	25,000	0.005	0.16	600	23,000	0.003	0.14	400	20,000
		6	0.006	0.25	550	20,000	0.004	0.16	450	18,000	0.002	0.14	320	16,000
8		0.003	0.25	400	16,000	0.002	0.16	300	14,000	0.002	0.14	200	12,000	
0.9	4	0.03	0.3	850	25,000	0.02	0.2	700	20,000	0.01	0.15	600	18,000	
	8	0.01	0.3	400	16,000	0.008	0.2	350	14,000	0.005	0.15	250	10,000	

●請將刀具確實地固定在夾具上，以防止刀具震動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut, ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

HARD STAR Type A Series

長頸圓角立銼刀 Long Neck Radius End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈷鎳合金(Kovar)			
刃數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm		
2	0.2	0.5	0.012	0.05	250	30,000	0.012	0.05	250	30,000	0.003	0.04	150	30,000
		1	0.008	0.05	200	30,000	0.008	0.05	200	30,000	0.003	0.04	100	30,000
	0.3	1	0.024	0.1	300	30,000	0.024	0.1	300	30,000	0.003	0.08	180	30,000
		1.5	0.018	0.1	260	30,000	0.018	0.1	260	30,000	0.003	0.08	130	30,000
		2	0.012	0.1	250	30,000	0.012	0.1	250	30,000	0.003	0.08	100	30,000
		2.5	0.008	0.1	240	30,000	0.008	0.1	240	30,000	0.002	0.08	80	25,000
		3	0.006	0.1	220	30,000	0.006	0.1	220	30,000	0.002	0.08	50	25,000
	0.4	1	0.03	0.12	450	30,000	0.03	0.12	450	30,000	0.005	0.1	300	30,000
		1.5	0.027	0.12	400	30,000	0.027	0.12	400	30,000	0.005	0.1	270	30,000
		2	0.024	0.12	360	30,000	0.024	0.12	360	30,000	0.005	0.1	180	25,000
		2.5	0.024	0.12	360	30,000	0.024	0.12	360	30,000	0.005	0.1	180	25,000
	0.5	1	0.036	0.14	650	30,000	0.036	0.14	650	30,000	0.01	0.12	400	25,000
		2	0.03	0.14	600	30,000	0.03	0.14	600	30,000	0.01	0.12	300	25,000
		3	0.024	0.14	480	30,000	0.024	0.14	480	30,000	0.008	0.12	250	25,000
		4	0.018	0.14	430	30,000	0.018	0.14	430	30,000	0.005	0.12	180	20,000
	0.6	2	0.04	0.16	800	30,000	0.04	0.16	800	30,000	0.02	0.13	400	25,000
		4	0.03	0.16	650	30,000	0.03	0.16	650	30,000	0.015	0.13	250	20,000
		6	0.018	0.16	400	25,000	0.018	0.16	400	25,000	0.008	0.13	150	16,000
	0.7	2	0.04	0.2	1,000	30,000	0.04	0.2	1,000	30,000	0.02	0.16	400	20,000
		4	0.04	0.2	1,000	30,000	0.04	0.2	1,000	30,000	0.02	0.16	400	20,000
		6	0.025	0.2	700	25,000	0.025	0.2	700	25,000	0.01	0.16	250	16,000
	0.8	2	0.055	0.25	1,400	30,000	0.055	0.25	1,400	30,000	0.025	0.2	600	20,000
		4	0.055	0.25	1,400	30,000	0.055	0.25	1,400	30,000	0.025	0.2	600	20,000
		6	0.04	0.25	1,000	25,000	0.04	0.25	1,000	25,000	0.02	0.2	400	16,000
8		0.025	0.25	600	22,000	0.025	0.25	600	22,000	0.01	0.2	250	14,000	
0.9	4	0.06	0.3	1,500	30,000	0.06	0.3	1,500	30,000	0.03	0.24	700	20,000	
	8	0.04	0.3	800	22,000	0.04	0.3	800	22,000	0.01	0.24	350	14,000	

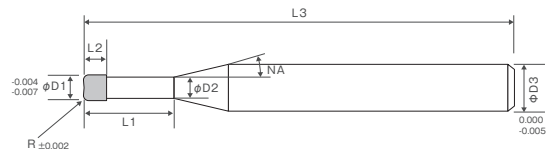
●請將刀具確實地固定在夾具上，以防止刀具震動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut, ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

HARD STAR Type A Series

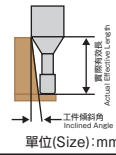
超硬長頸圓角立銼刀 Carbide Long Neck Radius End Mill

型號: HALR330 Model number: HALR330

Hard A
super MG
刀刃數 3
螺旋角 30°
仰角 15°
柄徑公差 0/-0.005



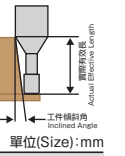
所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value. If concerned about interference with the work material, please check by actual measurement.



● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) ^a Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
HALR330-0060-0020-0200	0.6	0.02	2	0.5	0.57	15	4	50	6,160	2.12	2.20	2.28	2.36	2.55
HALR330-0060-0020-0400		0.02	4	0.5	0.57	15	4	50	6,160	4.19	4.34	4.49	4.66	5.04
HALR330-0060-0020-0600		0.02	6	0.5	0.57	15	4	50	6,160	6.26	6.48	6.71	6.96	7.52
HALR330-0060-0050-0200		0.05	2	0.5	0.57	15	4	50	6,160	2.12	2.20	2.27	2.36	2.54
HALR330-0060-0050-0400		0.05	4	0.5	0.57	15	4	50	6,160	4.19	4.34	4.49	4.66	5.03
HALR330-0060-0050-0600		0.05	6	0.5	0.57	15	4	50	6,160	6.26	6.47	6.71	6.96	7.52
HALR330-0060-0100-0200		0.1	2	0.5	0.57	15	4	50	5,760	2.12	2.19	2.27	2.35	2.53
HALR330-0060-0100-0400		0.1	4	0.5	0.57	15	4	50	5,760	4.19	4.33	4.48	4.65	5.02
HALR330-0060-0100-0600		0.1	6	0.5	0.57	15	4	50	5,760	6.26	6.47	6.70	6.95	7.51
HALR330-0070-0020-0200	0.7	0.02	2	0.55	0.67	15	4	50	6,480	2.12	2.20	2.28	2.36	2.55
HALR330-0070-0020-0400		0.02	4	0.55	0.67	15	4	50	6,480	4.19	4.34	4.49	4.66	5.04
HALR330-0070-0020-0600		0.02	6	0.55	0.67	15	4	50	6,480	6.26	6.48	6.71	6.96	7.52
HALR330-0070-0050-0200		0.05	2	0.55	0.67	15	4	50	6,480	2.12	2.20	2.27	2.36	2.54
HALR330-0070-0050-0400		0.05	4	0.55	0.67	15	4	50	6,480	4.19	4.34	4.49	4.66	5.03
HALR330-0070-0050-0600		0.05	6	0.55	0.67	15	4	50	6,480	6.26	6.47	6.71	6.96	7.52
HALR330-0070-0100-0200		0.1	2	0.55	0.67	15	4	50	6,480	2.12	2.19	2.27	2.35	2.53
HALR330-0070-0100-0400		0.1	4	0.55	0.67	15	4	50	6,480	4.19	4.33	4.48	4.65	5.02
HALR330-0070-0100-0600		0.1	6	0.55	0.67	15	4	50	6,480	6.26	6.47	6.70	6.95	7.51
HALR330-0080-0020-0200	0.8	0.02	2	0.65	0.77	15	4	50	6,480	2.12	2.20	2.28	2.36	2.55
HALR330-0080-0020-0400		0.02	4	0.65	0.77	15	4	50	6,480	4.19	4.34	4.49	4.66	5.04
HALR330-0080-0020-0600		0.02	6	0.65	0.77	15	4	50	6,480	6.26	6.48	6.71	6.96	7.52
HALR330-0080-0020-0800		0.02	8	0.65	0.77	15	4	50	6,720	8.33	8.62	8.93	9.26	10.01
HALR330-0080-0050-0200		0.05	2	0.65	0.77	15	4	50	6,480	2.12	2.20	2.27	2.36	2.54
HALR330-0080-0050-0400		0.05	4	0.65	0.77	15	4	50	6,480	4.19	4.34	4.49	4.66	5.03
HALR330-0080-0050-0600		0.05	6	0.65	0.77	15	4	50	6,480	6.26	6.47	6.71	6.96	7.52
HALR330-0080-0050-0800		0.05	8	0.65	0.77	15	4	50	6,720	8.33	8.61	8.92	9.26	10.00
HALR330-0080-0100-0200		0.1	2	0.65	0.77	15	4	50	6,480	2.12	2.19	2.27	2.35	2.53
HALR330-0080-0100-0400		0.1	4	0.65	0.77	15	4	50	6,480	4.19	4.33	4.48	4.65	5.02
HALR330-0080-0100-0600		0.1	6	0.65	0.77	15	4	50	6,480	6.26	6.47	6.70	6.95	7.51
HALR330-0080-0100-0800		0.1	8	0.65	0.77	15	4	50	6,720	8.32	8.61	8.92	9.25	9.99

HARD STAR Type A Series



● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) ^a Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
HALR330-0080-0200-0200	0.8	0.2	2	0.65	0.77	15	4	50	6,480	2.12	2.19	2.26	2.33	2.51
HALR330-0080-0200-0400		0.2	4	0.65	0.77	15	4	50	6,480	4.19	4.32	4.47	4.63	5.00
HALR330-0080-0200-0600		0.2	6	0.65	0.77	15	4	50	6,480	6.25	6.46	6.69	6.93	7.48
HALR330-0080-0200-0800		0.2	8	0.65	0.77	15	4	50	6,720	8.32	8.60	8.91	9.23	9.97

CBN Series
 Hard Star A Series
 Hard Star TT Series
 Hard Star TT Series
 Ion Depo A Series
 Ion Depo U Series
 DLC Series
 Non-Coat Series
 Ion Depo R Series

HARD STAR type A 切削條件參考表 Recommended Milling Conditions

■型號: HALR330
Model number: HALR330

長頸圓角立銼刀 Long Neck Radius End Mill

切削材料 Work Material			淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)			
刃數 Number of Flutes	刀徑直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm		
3	0.6	2	0.012	0.2	750	25,000	0.006	0.15	600	23,000	0.004	0.1	480	20,000
		4	0.007	0.2	600	23,000	0.004	0.15	450	20,000	0.003	0.1	300	18,000
		6	0.005	0.2	300	20,000	0.003	0.15	225	18,000	0.002	0.1	150	12,000
	0.7	2	0.012	0.25	1,050	25,000	0.006	0.15	900	23,000	0.003	0.12	675	20,000
		4	0.008	0.25	900	25,000	0.005	0.15	750	23,000	0.002	0.12	525	20,000
		6	0.005	0.25	525	20,000	0.003	0.15	375	18,000	0.002	0.12	300	16,000
	0.8	2	0.014	0.25	1,200	25,000	0.006	0.16	1,050	23,000	0.005	0.14	750	20,000
		4	0.008	0.25	1,050	25,000	0.005	0.16	900	23,000	0.003	0.14	600	20,000
		6	0.006	0.25	825	20,000	0.004	0.16	675	18,000	0.002	0.14	480	16,000
		8	0.003	0.25	600	16,000	0.002	0.16	450	14,000	0.002	0.14	300	12,000

長頸圓角立銼刀 Long Neck Radius End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鉻鎳合金(Kovar)			
刃數 Number of Flutes	刀徑直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm		
3	0.6	2	0.04	0.16	1,200	30,000	0.04	0.16	1,200	30,000	0.02	0.13	600	25,000
		4	0.03	0.16	975	30,000	0.03	0.16	975	30,000	0.015	0.13	375	20,000
		6	0.018	0.16	600	25,000	0.018	0.16	600	25,000	0.008	0.13	225	16,000
	0.7	2	0.04	0.2	1,500	30,000	0.04	0.2	1,500	30,000	0.02	0.16	600	20,000
		4	0.04	0.2	1,500	30,000	0.04	0.2	1,500	30,000	0.02	0.16	600	20,000
		6	0.025	0.2	1,050	25,000	0.025	0.2	1,050	25,000	0.01	0.16	375	16,000
	0.8	2	0.055	0.25	2,100	30,000	0.055	0.25	2,100	30,000	0.025	0.2	900	20,000
		4	0.04	0.25	1,500	25,000	0.04	0.25	1,500	25,000	0.02	0.2	600	16,000
		6	0.04	0.25	1,500	25,000	0.04	0.25	1,500	25,000	0.02	0.2	600	16,000
		8	0.025	0.25	900	22,000	0.025	0.25	900	22,000	0.01	0.2	375	14,000

●請將刀具確實地固定於夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向切削深度，∅e=徑向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

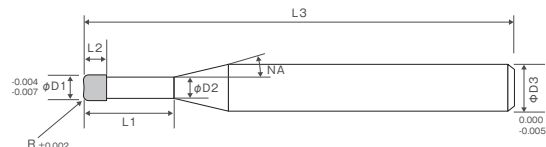
CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
Ion Depo A Series
Ion Depo U Series
DLC Series
Non-Coat Series
Ion Depo R Series

HARD STAR Type A Series

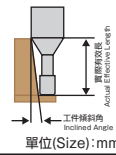
超硬長頸圓角立銼刀 Carbide Long Neck Radius End Mill

型號: HALR430 Model number: HALR430

Hard A
super MG
刀刀數 4
螺旋角 30°
仰角 15°
柄徑公差 0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value. If concerned about interference with the work material, please check by actual measurement.

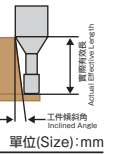


單位(Size):mm

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30°	1°	1°30'	2°	3°
HALR430-0090-0100-0400	0.9	0.1	4	0.7	0.87	15	4	50	7,360	4.19	4.33	4.48	4.65	5.02
HALR430-0090-0100-0800		0.1	8	0.7	0.87	15	4	50	7,360	8.32	8.61	8.92	9.25	9.99
HALR430-0100-0020-0200		0.02	2	0.8	0.95	15	4	50	4,960	2.16	2.24	2.32	2.40	2.60
HALR430-0100-0020-0300		0.02	3	0.8	0.95	15	4	50	4,960	3.20	3.31	3.43	3.55	3.84
HALR430-0100-0020-0400		0.02	4	0.8	0.95	15	4	50	4,960	4.23	4.38	4.53	4.70	5.08
HALR430-0100-0020-0500		0.02	5	0.8	0.95	15	4	50	4,960	5.26	5.45	5.64	5.85	6.33
HALR430-0100-0020-0600		0.02	6	0.8	0.95	15	4	50	5,440	6.30	6.52	6.75	7.00	7.57
HALR430-0100-0020-0800		0.02	8	0.8	0.95	15	4	50	5,440	8.37	8.66	8.97	9.30	10.06
HALR430-0100-0020-1000		0.02	10	0.8	0.95	15	4	50	5,440	10.43	10.80	11.18	11.60	12.54
HALR430-0100-0050-0200		0.05	2	0.8	0.95	15	4	50	4,960	2.16	2.24	2.31	2.40	2.59
HALR430-0100-0050-0300		0.05	3	0.8	0.95	15	4	50	4,960	3.20	3.31	3.42	3.55	3.83
HALR430-0100-0050-0400		0.05	4	0.8	0.95	15	4	50	4,960	4.23	4.38	4.53	4.70	5.08
HALR430-0100-0050-0500		0.05	5	0.8	0.95	15	4	50	4,960	5.26	5.44	5.64	5.85	6.32
HALR430-0100-0050-0600		0.05	6	0.8	0.95	15	4	50	5,440	6.30	6.51	6.75	7.00	7.56
HALR430-0100-0050-0800		0.05	8	0.8	0.95	15	4	50	5,440	8.36	8.65	8.96	9.30	10.05
HALR430-0100-0050-1000		0.05	10	0.8	0.95	15	4	50	5,440	10.43	10.79	11.18	11.60	12.54
HALR430-0100-0100-0200		0.1	2	0.8	0.95	15	4	50	4,960	2.16	2.23	2.31	2.39	2.58
HALR430-0100-0100-0300		0.1	3	0.8	0.95	15	4	50	4,960	3.19	3.30	3.42	3.54	3.82
HALR430-0100-0100-0400		0.1	4	0.8	0.95	15	4	50	4,960	4.23	4.37	4.53	4.69	5.07
HALR430-0100-0100-0500		0.1	5	0.8	0.95	15	4	50	4,960	5.26	5.44	5.63	5.84	6.31
HALR430-0100-0100-0600	0.1	6	0.8	0.95	15	4	50	5,440	6.30	6.51	6.74	6.99	7.55	
HALR430-0100-0100-0800	0.1	8	0.8	0.95	15	4	50	5,440	8.36	8.65	8.96	9.29	10.04	
HALR430-0100-0100-1000	0.1	10	0.8	0.95	15	4	50	4,960	10.43	10.79	11.18	11.59	12.52	
HALR430-0100-0200-0200	0.2	2	0.8	0.95	15	4	50	4,960	2.16	2.23	2.30	2.38	2.56	
HALR430-0100-0200-0300	0.2	3	0.8	0.95	15	4	50	4,960	3.19	3.30	3.41	3.53	3.80	
HALR430-0100-0200-0400	0.2	4	0.8	0.95	15	4	50	4,960	4.22	4.36	4.52	4.68	5.04	
HALR430-0100-0200-0500	0.2	5	0.8	0.95	15	4	50	4,960	5.26	5.43	5.62	5.83	6.29	
HALR430-0100-0200-0600	0.2	6	0.8	0.95	15	4	50	5,440	6.29	6.50	6.73	6.98	7.53	
HALR430-0100-0200-0800	0.2	8	0.8	0.95	15	4	50	5,440	8.36	8.64	8.95	9.28	10.01	
HALR430-0100-0200-1000	0.2	10	0.8	0.95	15	4	50	5,440	10.43	10.78	11.17	11.58	12.50	

HARD STAR Type A Series



單位(Size):mm

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30°	1°	1°30'	2°	3°
HALR430-0100-0300-0200	1	0.3	2	0.8	0.95	15	4	50	4,960	2.15	2.22	2.29	2.36	2.53
HALR430-0100-0300-0300		0.3	3	0.8	0.95	15	4	50	4,960	3.19	3.29	3.40	3.51	3.78
HALR430-0100-0300-0400		0.3	4	0.8	0.95	15	4	50	4,960	4.22	4.36	4.50	4.66	5.02
HALR430-0100-0300-0500		0.3	5	0.8	0.95	15	4	50	4,960	5.25	5.43	5.61	5.81	6.26
HALR430-0100-0300-0600		0.3	6	0.8	0.95	15	4	50	5,440	6.29	6.50	6.72	6.96	7.51
HALR430-0100-0300-0800		0.3	8	0.8	0.95	15	4	50	5,440	8.36	8.64	8.94	9.26	9.99
HALR430-0100-0300-1000		0.3	10	0.8	0.95	15	4	50	5,440	10.42	10.78	11.15	11.56	12.48
HALR430-0120-0100-0500	1.2	0.1	5	1	1.15	15	4	50	5,600	5.26	5.44	5.63	5.84	6.31
HALR430-0120-0100-1000		0.1	10	1	1.15	15	4	50	5,600	10.43	10.79	11.18	11.59	12.52
HALR430-0120-0200-0500		0.2	5	1	1.15	15	4	50	5,600	5.26	5.43	5.62	5.83	6.29
HALR430-0120-0200-1000		0.2	10	1	1.15	15	4	50	5,600	10.43	10.78	11.17	11.58	12.50
HALR430-0120-0300-0500		0.3	5	1	1.15	15	4	50	5,600	5.25	5.43	5.61	5.81	6.26
HALR430-0120-0300-1000		0.3	10	1	1.15	15	4	50	5,600	10.42	10.78	11.15	11.56	12.48
HALR430-0150-0020-0300		1.5	0.02	3	1.2	1.45	15	4	50	5,280	3.20	3.31	3.43	3.55
HALR430-0150-0020-0400	0.02		4	1.2	1.45	15	4	50	5,280	4.23	4.38	4.53	4.70	5.08
HALR430-0150-0020-0600	0.02		6	1.2	1.45	15	4	50	5,280	6.30	6.52	6.75	7.00	7.57
HALR430-0150-0020-0800	0.02		8	1.2	1.45	15	4	50	5,600	8.37	8.66	8.97	9.30	10.06
HALR430-0150-0020-1200	0.02		12	1.2	1.45	15	4	50	5,600	12.50	12.93	13.40	13.90	15.03
HALR430-0150-0020-1500	0.02		15	1.2	1.45	15	4	50	5,600	15.60	16.14	16.73	17.35	18.76
HALR430-0150-0050-0300	0.05		3	1.2	1.45	15	4	50	5,280	3.20	3.31	3.42	3.55	3.83
HALR430-0150-0050-0400	0.05		4	1.2	1.45	15	4	50	5,280	4.23	4.38	4.53	4.70	5.08
HALR430-0150-0050-0600	0.05		6	1.2	1.45	15	4	50	5,280	6.30	6.51	6.75	7.00	7.56
HALR430-0150-0050-0800	0.05		8	1.2	1.45	15	4	50	5,600	8.36	8.65	8.96	9.30	10.05
HALR430-0150-0050-1200	0.05		12	1.2	1.45	15	4	50	5,600	12.50	12.93	13.40	13.90	15.02
HALR430-0150-0050-1500	0.05		15	1.2	1.45	15	4	50	5,600	15.60	16.14	16.72	17.35	18.75
HALR430-0150-0100-0300	0.1		3	1.2	1.45	15	4	50	5,280	3.19	3.30	3.42	3.54	3.82
HALR430-0150-0100-0400	0.1		4	1.2	1.45	15	4	50	5,280	4.23	4.37	4.53	4.69	5.07
HALR430-0150-0100-0600	0.1		6	1.2	1.45	15	4	50	5,280	6.30	6.51	6.74	6.99	7.55
HALR430-0150-0100-0800	0.1		8	1.2	1.45	15	4	50	5,600	8.36	8.65	8.96	9.29	10.04
HALR430-0150-0100-1200	0.1		12	1.2	1.45	15	4	50	5,600	12.50	12.93	13.39	13.89	15.01
HALR430-0150-0100-1500	0.1		15	1.2	1.45	15	4	50	5,600	15.60	16.14	16.72	17.34	18.74
HALR430-0150-0200-0300	0.2		3	1.2	1.45	15	4	50	5,280	3.19	3.30	3.41	3.53	3.80
HALR430-0150-0200-0400	0.2		4	1.2	1.45	15	4	50	5,280	4.22	4.36	4.52	4.68	5.04
HALR430-0150-0200-0600	0.2	6	1.2	1.45	15	4	50	5,280	6.29	6.50	6.73	6.98	7.53	
HALR430-0150-0200-0800	0.2	8	1.2	1.45	15	4	50	5,600	8.36	8.64	8.95	9.28	10.01	
HALR430-0150-0200-1200	0.2	12	1.2	1.45	15	4	50	5,600	12.49	12.92	13.38	13.88	14.99	
HALR430-0150-0200-1500	0.2	15	1.2	1.45	15	4	50	5,600	15.59	16.13	16.71	17.33	18.72	
HALR430-0150-0300-0300	0.3	3	1.2	1.45	15	4	50	5,280	3.19	3.29	3.40	3.51	3.78	
HALR430-0150-0300-0400	0.3	4	1.2	1.45	15	4	50	5,280	4.22	4.36	4.50	4.66	5.02	
HALR430-0150-0300-0600	0.3	6	1.2	1.45	15	4	50	5,280	6.29	6.50	6.72	6.96	7.51	
HALR430-0150-0300-0800	0.3	8	1.2	1.45	15	4	50	5,600	8.36	8.64	8.94	9.26	9.99	
HALR430-0150-0300-1200	0.3	12	1.2	1.45	15	4	50	5,600	12.49	12.92	13.37	13.86	14.96	
HALR430-0150-0300-1500	0.3	15	1.2	1.45	15	4	50	5,600	15.59	16.12	16.70	17.31	18.69	
HALR430-0150-0500-0300	0.5	3	1.2	1.45	15	4	50	5,280	3.18	3.27	3.37	3.48	3.73	
HALR430-0150-0500-0400	0.5	4	1.2	1.45	15	4	50	5,280	4.21	4.34	4.48	4.63	4.97	

CBN Series

Hard Star A Series

Hard Star TT Series

Hard Star TT Series

Ion Depo A Series

Ion Depo U Series

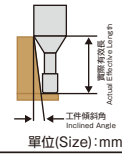
DLC Series

Non-Coat Series

Ion Depo R Series

Ion Depo R Series

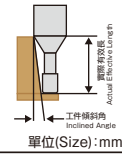
HARD STAR Type A Series



● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀具直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.							
										30'	1°	1°30'	2°	3°			
HALR430-0150-0500-0600	1.5	0.5	6	1.2	1.45	15	4	50	5,280	6.28	6.48	6.70	6.93	7.46			
HALR430-0150-0500-0800		0.5	8	1.2	1.45	15	4	50	5,600	8.35	8.62	8.92	9.23	9.95			
HALR430-0150-0500-1200		0.5	12	1.2	1.45	15	4	50	5,600	12.48	12.90	13.35	13.83	14.92			
HALR430-0150-0500-1500		0.5	15	1.2	1.45	15	4	50	5,600	15.58	16.11	16.67	17.28	18.65			
HALR430-0200-0020-0400		0.02	4	1.6	1.94	15	4	50	5,280	4.25	4.40	4.56	4.73	5.11			
HALR430-0200-0020-0600		0.02	6	1.6	1.94	15	4	50	5,280	6.32	6.54	6.77	7.02	7.59			
HALR430-0200-0020-0800		0.02	8	1.6	1.94	15	4	50	5,600	8.38	8.68	8.99	9.32	10.08			
HALR430-0200-0020-1200		0.02	12	1.6	1.94	15	4	50	5,600	12.52	12.95	13.42	13.92	15.05			
HALR430-0200-0020-1600		0.02	16	1.6	1.94	15	4	50	5,600	16.65	17.23	17.85	18.52	FREE			
HALR430-0200-0020-2000		0.02	20	1.6	1.94	15	4	50	5,600	20.79	21.51	22.29	23.12	FREE			
HALR430-0200-0050-0400		0.05	4	1.6	1.94	15	4	50	5,280	4.25	4.40	4.55	4.72	5.10			
HALR430-0200-0050-0600		0.05	6	1.6	1.94	15	4	50	5,280	6.32	6.53	6.77	7.02	7.59			
HALR430-0200-0050-0800		0.05	8	1.6	1.94	15	4	50	5,600	8.38	8.67	8.99	9.32	10.07			
HALR430-0200-0050-1200		0.05	12	1.6	1.94	15	4	50	5,600	12.52	12.95	13.42	13.92	15.05			
HALR430-0200-0050-1600		0.05	16	1.6	1.94	15	4	50	5,600	16.65	17.23	17.85	18.52	FREE			
HALR430-0200-0050-2000		0.05	20	1.6	1.94	15	4	50	5,600	20.79	21.51	22.28	23.12	FREE			
HALR430-0200-0100-0400	2	0.1	4	1.6	1.94	15	4	50	5,280	4.25	4.39	4.55	4.71	5.09			
HALR430-0200-0100-0600		0.1	6	1.6	1.94	15	4	50	5,280	6.31	6.53	6.76	7.01	7.57			
HALR430-0200-0100-0800		0.1	8	1.6	1.94	15	4	50	5,600	8.38	8.67	8.98	9.31	10.06			
HALR430-0200-0100-1200		0.1	12	1.6	1.94	15	4	50	5,600	12.52	12.95	13.41	13.91	15.03			
HALR430-0200-0100-1600		0.1	16	1.6	1.94	15	4	50	5,600	16.65	17.23	17.85	18.51	FREE			
HALR430-0200-0100-2000		0.1	20	1.6	1.94	15	4	50	5,600	20.79	21.51	22.28	23.11	FREE			
HALR430-0200-0200-0400		0.2	4	1.6	1.94	15	4	50	5,280	4.24	4.38	4.54	4.70	5.07			
HALR430-0200-0200-0600		0.2	6	1.6	1.94	15	4	50	5,280	6.31	6.52	6.75	7.00	7.55			
HALR430-0200-0200-0800		0.2	8	1.6	1.94	15	4	50	5,600	8.38	8.66	8.97	9.30	10.04			
HALR430-0200-0200-1200		0.2	12	1.6	1.94	15	4	50	5,600	12.51	12.94	13.40	13.90	15.01			
HALR430-0200-0200-1600		0.2	16	1.6	1.94	15	4	50	5,600	16.65	17.22	17.84	18.50	FREE			
HALR430-0200-0200-2000		0.2	20	1.6	1.94	15	4	50	5,600	20.78	21.50	22.27	23.10	FREE			
HALR430-0200-0300-0400		3	0.3	4	1.6	1.94	15	4	50	5,280	4.24	4.38	4.53	4.68	5.04		
HALR430-0200-0300-0600			0.3	6	1.6	1.94	15	4	50	5,280	6.31	6.52	6.74	6.98	7.53		
HALR430-0200-0300-0800			0.3	8	1.6	1.94	15	4	50	5,600	8.37	8.66	8.96	9.28	10.02		
HALR430-0200-0300-1200			0.3	12	1.6	1.94	15	4	50	5,600	12.51	12.94	13.39	13.88	14.99		
HALR430-0200-0300-1600			0.3	16	1.6	1.94	15	4	50	5,600	16.64	17.21	17.83	18.48	FREE		
HALR430-0200-0300-2000			0.3	20	1.6	1.94	15	4	50	5,600	20.78	21.49	22.26	23.08	FREE		
HALR430-0200-0500-0400			0.5	4	1.6	1.94	15	4	50	5,280	4.23	4.36	4.50	4.65	5.00		
HALR430-0200-0500-0600			0.5	6	1.6	1.94	15	4	50	5,280	6.30	6.50	6.72	6.95	7.48		
HALR430-0200-0500-0800			0.5	8	1.6	1.94	15	4	50	5,600	8.37	8.64	8.94	9.25	9.97		
HALR430-0200-0500-1200			0.5	12	1.6	1.94	15	4	50	5,600	12.50	12.92	13.37	13.85	14.94		
HALR430-0200-0500-1600			0.5	16	1.6	1.94	15	4	50	5,600	16.64	17.20	17.80	18.45	FREE		
HALR430-0200-0500-2000			0.5	20	1.6	1.94	15	4	50	5,600	20.77	21.48	22.24	23.05	FREE		
HALR430-0250-0100-1000			2.5	0.1	10	2	2.44	15	4	50	5,760	10.45	10.81	11.20	11.61	12.55	
HALR430-0250-0100-2000				0.1	20	2	2.44	15	4	50	6,000	20.79	21.51	22.28	FREE	FREE	
HALR430-0250-0200-1000				0.2	10	2	2.44	15	4	50	5,760	10.45	10.80	11.19	11.60	12.52	
HALR430-0250-0200-2000				0.2	20	2	2.44	15	4	50	6,000	20.78	21.50	22.27	FREE	FREE	
HALR430-0250-0300-1000				0.3	10	2	2.44	15	4	50	5,760	10.44	10.80	11.18	11.58	12.50	
HALR430-0250-0300-2000				0.3	20	2	2.44	15	4	50	6,000	20.78	21.50	22.27	FREE	FREE	
HALR430-0300-0100-1000				2.5	1	8	2.5	2.85	15	4	50	4,800	8.53	8.79	9.07	9.37	10.06
HALR430-0300-0100-1200					1	12	2.5	2.85	15	4	50	5,760	12.66	13.07	13.50	13.97	FREE
HALR430-0300-0100-1600	1		16		2.5	2.85	15	4	50	7,200	16.79	17.35	17.94	FREE	FREE		
HALR430-0300-0100-2000	1		20		2.5	2.85	15	4	50	7,200	20.93	21.62	FREE	FREE	FREE		
HALR430-0250-0300-2000	2.5		0.3		20	2	2.44	15	4	50	6,000	20.78	21.51	22.28	FREE	FREE	
HALR430-0250-0500-1000			0.5		10	2	2.44	15	4	50	5,760	10.45	10.81	11.20	11.61	12.55	
HALR430-0250-0500-2000		0.5	20		2	2.44	15	4	50	6,000	20.79	21.51	22.28	FREE	FREE		
HALR430-0300-0050-0400		0.05	4		2.5	2.85	15	4	50	4,800	4.42	4.57	4.74	4.91	5.31		
HALR430-0300-0050-0600		0.05	6		2.5	2.85	15	4	50	4,800	6.49	6.71	6.95	7.21	7.79		
HALR430-0300-0050-0800		0.05	8		2.5	2.85	15	4	50	4,800	8.56	8.85	9.17	9.51	FREE		
HALR430-0300-0050-1200		0.05	12		2.5	2.85	15	4	50	5,760	12.69	13.13	13.60	14.11	FREE		
HALR430-0300-0050-1600		0.05	16		2.5	2.85	15	4	50	7,200	16.83	17.41	18.04	FREE	FREE		
HALR430-0300-0050-2000		0.05	20		2.5	2.85	15	4	50	7,200	20.96	21.69	FREE	FREE	FREE		
HALR430-0300-0100-0400		0.1	4		2.5	2.85	15	4	50	4,800	4.42	4.57	4.73	4.91	5.30		
HALR430-0300-0100-0600		0.1	6		2.5	2.85	15	4	50	4,800	6.49	6.71	6.95	7.21	7.78		
HALR430-0300-0100-0800		0.1	8		2.5	2.85	15	4	50	4,800	8.56	8.85	9.17	9.51	FREE		
HALR430-0300-0100-1200		0.1	12		2.5	2.85	15	4	50	5,760	12.69	13.13	13.60	14.11	FREE		
HALR430-0300-0100-1600		0.1	16		2.5	2.85	15	4	50	7,200	16.82	17.41	18.03	FREE	FREE		
HALR430-0300-0100-2000		0.1	20		2.5	2.85	15	4	50	7,200	20.96	21.69	FREE	FREE	FREE		
HALR430-0300-0100-2500		0.1	25		2.5	2.85	15	4	60	7,200	26.13	27.03	FREE	FREE	FREE		
HALR430-0300-0100-3000		0.1	30	2.5	2.85	15	4	60	8,080	31.30	FREE	FREE	FREE	FREE			
HALR430-0300-0200-0400		0.2	4	2.5	2.85	15	4	50	4,800	4.42	4.56	4.72	4.89	5.27			
HALR430-0300-0200-0600		0.2	6	2.5	2.85	15	4	50	4,800	6.48	6.70	6.94	7.19	7.76			
HALR430-0300-0200-0800	0.2	8	2.5	2.85	15	4	50	4,800	8.55	8.84	9.16	9.49	FREE				
HALR430-0300-0200-1200	0.2	12	2.5	2.85	15	4	50	5,760	12.69	13.12	13.59	14.09	FREE				
HALR430-0300-0200-1600	0.2	16	2.5	2.85	15	4	50	7,200	16.82	17.40	18.02	FREE	FREE				
HALR430-0300-0200-2000	0.2	20	2.5	2.85	15	4	50	7,200	20.96	21.68	FREE	FREE	FREE				
HALR430-0300-0200-2500	0.2	25	2.5	2.85	15	4	60	7,200	26.12	27.03	FREE	FREE	FREE				
HALR430-0300-0200-3000	0.2	30	2.5	2.85	15	4	60	8,080	31.29	FREE	FREE	FREE	FREE				
HALR430-0300-0300-0400	0.3	4	2.5	2.85	15	4	50	4,800	4.41	4.56	4.71	4.88	5.25				
HALR430-0300-0300-0600	0.3	6	2.5	2.85	15	4	50	4,800	6.48	6.70	6.93	7.18	7.74				
HALR430-0300-0300-0800	0.3	8	2.5	2.85	15	4	50	4,800	8.55	8.84	9.14	9.48	FREE				
HALR430-0300-0300-1200	0.3	12	2.5	2.85	15	4	50	5,760	12.68	13.11	13.58	14.08	FREE				
HALR430-0300-0300-1600	0.3	16	2.5	2.85	15	4	50	7,200	16.82	17.39	18.01	FREE	FREE				
HALR430-0300-0300-2000	0.3	20	2.5	2.85	15	4	50	7,200	20.95	21.67	FREE	FREE	FREE				
HALR430-0300-0300-2500	0.3	25	2.5	2.85	15	4	60	7,200	26.12	27.02	FREE	FREE	FREE				
HALR430-0300-0300-3000	0.3	30	2.5	2.85	15	4	60	8,080	31.29	FREE	FREE	FREE	FREE				
HALR430-0300-0500-0400	0.5	4	2.5	2.85	15	4	50	4,800	4.41	4.54	4.69	4.85	5.20				
HALR430-0300-0500-0600	0.5	6	2.5	2.85	15	4	50	4,800	6.47	6.68	6.91	7.15	7.69				
HALR430-0300-0500-0800	0.5	8	2.5	2.85	15	4	50	4,800	8.54	8.82	9.12	9.45	FREE				
HALR430-0300-0500-1200	0.5	12	2.5	2.85	15</												

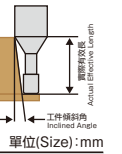
HARD STAR Type A Series



● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀具直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.					
										30'	1°	1°30'	2°	3°	
HALR430-0300-1000-2500	3	1	25	2.5	2.85	15	4	60	7,200	26.10	26.97	FREE	FREE	FREE	
HALR430-0300-1000-3000		1	30	2.5	2.85	15	4	60	8,080	31.27	FREE	FREE	FREE	FREE	
HALR430-0400-0100-0800		0.1	8	3.2	3.8	15	6	50	7,200	8.65	8.95	9.27	9.61	10.39	
HALR430-0400-0100-1200	0.1	12	3.2	3.8	15	6	50	7,200	12.79	13.23	13.70	14.21	15.36		
HALR430-0400-0100-1600	0.1	16	3.2	3.8	15	6	50	7,200	16.92	17.51	18.14	18.81	FREE		
HALR430-0400-0100-2400	0.1	24	3.2	3.8	15	6	60	8,000	25.19	26.06	27.00	28.01	FREE		
HALR430-0400-0100-3200	0.1	32	3.2	3.8	15	6	70	8,000	33.46	34.62	35.87	FREE	FREE		
HALR430-0400-0200-0800	0.2	8	3.2	3.8	15	6	50	7,200	8.65	8.94	9.26	9.60	10.36		
HALR430-0400-0200-1200	0.2	12	3.2	3.8	15	6	50	7,200	12.78	13.22	13.69	14.20	15.33		
HALR430-0400-0200-1600	0.2	16	3.2	3.8	15	6	50	7,200	16.92	17.50	18.13	18.80	FREE		
HALR430-0400-0200-2400	0.2	24	3.2	3.8	15	6	60	8,000	25.19	26.06	26.99	28.00	FREE		
HALR430-0400-0200-3200	0.2	32	3.2	3.8	15	6	70	8,000	33.46	34.62	35.86	FREE	FREE		
HALR430-0400-0300-0800	0.3	8	3.2	3.8	15	6	50	7,200	8.65	8.94	9.25	9.58	10.34		
HALR430-0400-0300-1200	0.3	12	3.2	3.8	15	6	50	7,200	12.78	13.21	13.68	14.18	15.31		
HALR430-0400-0300-1600	0.3	16	3.2	3.8	15	6	50	7,200	16.91	17.49	18.11	18.78	FREE		
HALR430-0400-0300-2400	0.3	24	3.2	3.8	15	6	60	8,000	25.18	26.05	26.98	27.98	FREE		
HALR430-0400-0300-3200	0.3	32	3.2	3.8	15	6	70	8,000	33.45	34.61	35.85	FREE	FREE		
HALR430-0400-0500-0800	0.5	8	3.2	3.8	15	6	50	7,200	8.64	8.92	9.23	9.55	10.29		
HALR430-0400-0500-1200	0.5	12	3.2	3.8	15	6	50	7,200	12.77	13.20	13.66	14.15	15.27		
HALR430-0400-0500-1600	0.5	16	3.2	3.8	15	6	50	7,200	16.91	17.48	18.09	18.75	FREE		
HALR430-0400-0500-2400	0.5	24	3.2	3.8	15	6	60	8,000	25.18	26.04	26.96	27.95	FREE		
HALR430-0400-0500-3200	0.5	32	3.2	3.8	15	6	70	8,000	33.45	34.59	35.83	FREE	FREE		
HALR430-0400-1000-0800	1	8	3.2	3.8	15	6	50	7,200	8.62	8.89	9.17	9.48	10.18		
HALR430-0400-1000-1200	1	12	3.2	3.8	15	6	50	7,200	12.76	13.17	13.61	14.08	15.15		
HALR430-0400-1000-1600	1	16	3.2	3.8	15	6	50	7,200	16.89	17.45	18.04	18.68	FREE		
HALR430-0400-1000-2400	1	24	3.2	3.8	15	6	60	8,000	25.16	26.00	26.91	27.88	FREE		
HALR430-0400-1000-3200	1	32	3.2	3.8	15	6	70	8,000	33.43	34.56	35.77	FREE	FREE		
HALR430-0500-0100-1500	5	0.1	15	4	4.8	15	6	50	10,240	15.89	16.44	17.03	FREE	FREE	
HALR430-0500-0100-2000		0.1	20	4	4.8	15	6	50	10,240	21.06	21.79	FREE	FREE	FREE	
HALR430-0500-0100-4000		0.1	40	4	4.8	15	6	70	12,800	41.73	FREE	FREE	FREE	FREE	
HALR430-0500-0200-1500		0.2	15	4	4.8	15	6	50	10,240	15.88	16.43	17.02	FREE	FREE	
HALR430-0500-0200-2000		0.2	20	4	4.8	15	6	50	10,240	21.05	21.78	FREE	FREE	FREE	
HALR430-0500-0200-4000		0.2	40	4	4.8	15	6	70	12,800	41.73	FREE	FREE	FREE	FREE	
HALR430-0500-0300-1500		0.3	15	4	4.8	15	6	50	10,240	15.88	16.42	17.01	FREE	FREE	
HALR430-0500-0300-2000		0.3	20	4	4.8	15	6	50	10,240	21.05	21.77	FREE	FREE	FREE	
HALR430-0500-0300-4000		0.3	40	4	4.8	15	6	70	12,800	41.72	FREE	FREE	FREE	FREE	
HALR430-0500-0500-1500		0.5	15	4	4.8	15	6	50	10,240	15.87	16.41	16.98	FREE	FREE	
HALR430-0500-0500-2000		0.5	20	4	4.8	15	6	50	10,240	21.04	21.76	FREE	FREE	FREE	
HALR430-0500-0500-4000		0.5	40	4	4.8	15	6	70	12,800	41.72	FREE	FREE	FREE	FREE	
HALR430-0500-1000-1500		1	15	4	4.8	15	6	50	10,240	15.86	16.38	16.93	FREE	FREE	
HALR430-0500-1000-2000		1	20	4	4.8	15	6	50	10,240	21.03	21.72	FREE	FREE	FREE	
HALR430-0500-1000-4000		1	40	4	4.8	15	6	70	12,800	41.70	FREE	FREE	FREE	FREE	
HALR430-0600-0100-1200		6	0.1	12	5	5.8	15	6	50	10,400	FREE	FREE	FREE	FREE	FREE
HALR430-0600-0100-1800			0.1	18	5	5.8	15	6	50	13,200	FREE	FREE	FREE	FREE	FREE
HALR430-0600-0100-2400			0.1	24	5	5.8	15	6	60	13,200	FREE	FREE	FREE	FREE	FREE

HARD STAR Type A Series



● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀具直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
HALR430-0600-0100-4800	6	0.1	48	5	5.8	15	6	80	16,080	FREE	FREE	FREE	FREE	FREE
HALR430-0600-0200-1200		0.2	12	5	5.8	15	6	50	10,400	FREE	FREE	FREE	FREE	FREE
HALR430-0600-0200-1800		0.2	18	5	5.8	15	6	50	13,200	FREE	FREE	FREE	FREE	FREE
HALR430-0600-0200-2400		0.2	24	5	5.8	15	6	60	13,200	FREE	FREE	FREE	FREE	FREE
HALR430-0600-0200-4800		0.2	48	5	5.8	15	6	80	16,080	FREE	FREE	FREE	FREE	FREE
HALR430-0600-0300-1200		0.3	12	5	5.8	15	6	50	10,400	FREE	FREE	FREE	FREE	FREE
HALR430-0600-0300-1800		0.3	18	5	5.8	15	6	50	13,200	FREE	FREE	FREE	FREE	FREE
HALR430-0600-0300-2400		0.3	24	5	5.8	15	6	60	13,200	FREE	FREE	FREE	FREE	FREE
HALR430-0600-0300-4800		0.3	48	5	5.8	15	6	80	16,080	FREE	FREE	FREE	FREE	FREE
HALR430-0600-0500-1200		0.5	12	5	5.8	15	6	50	10,400	FREE	FREE	FREE	FREE	FREE
HALR430-0600-0500-1800		0.5	18	5	5.8	15	6	50	13,200	FREE	FREE	FREE	FREE	FREE
HALR430-0600-0500-2400		0.5	24	5	5.8	15	6	60	13,200	FREE	FREE	FREE	FREE	FREE
HALR430-0600-0500-4800		0.5	48	5	5.8	15	6	80	16,080	FREE	FREE	FREE	FREE	FREE
HALR430-0600-1000-1200		1	12	5	5.8	15	6	50	10,400	FREE	FREE	FREE	FREE	FREE
HALR430-0600-1000-1800		1	18	5	5.8	15	6	50	13,200	FREE	FREE	FREE	FREE	FREE
HALR430-0600-1000-2400		1	24	5	5.8	15	6	60	13,200	FREE	FREE	FREE	FREE	FREE
HALR430-0600-1000-4800		1	48	5	5.8	15	6	80	16,080	FREE	FREE	FREE	FREE	FREE

HARD STAR type A 切削條件參考表 Recommended Milling Conditions

■型號: HALR430
Model number: HALR430

長頸圓角立銼刀 Long Neck Radius End Mill

切削材料 Work Material			淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)			
刃數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm		
4	0.9	4	0.03	0.3	1,700	25,000	0.02	0.2	1,400	20,000	0.01	0.15	1,200	18,000
			8	0.01	0.3	800	16,000	0.008	0.2	700	14,000	0.005	0.15	500
	1.0	2	0.012	0.3	2,300	25,000	0.01	0.25	2,000	21,000	0.008	0.2	1,400	17,000
			3	0.012	0.3	2,100	23,000	0.01	0.25	1,800	20,000	0.008	0.2	1,300
		4	0.01	0.3	1,800	21,000	0.008	0.25	1,500	18,000	0.005	0.2	1,100	14,000
			5	0.008	0.3	1,600	19,000	0.005	0.25	1,400	16,000	0.003	0.2	1,000
		6	0.008	0.3	1,400	16,000	0.005	0.25	1,200	14,000	0.003	0.2	850	11,000
			8	0.006	0.3	1,100	15,000	0.005	0.25	900	13,000	0.002	0.2	650
	10	0.004	0.3	800	13,000	0.003	0.25	700	11,000	0.002	0.2	500	9,000	
		1.2	5	0.045	0.4	1,800	20,000	0.03	0.3	1,500	17,000	0.02	0.2	1,100
	10			0.03	0.4	1,100	13,000	0.01	0.3	950	11,000	0.005	0.2	700
	1.5	3	0.012	0.5	2,300	23,000	0.01	0.4	2,000	20,000	0.008	0.3	1,400	16,000
			4	0.012	0.5	2,000	21,000	0.01	0.4	1,700	18,000	0.008	0.3	1,200
		6	0.01	0.5	1,800	19,000	0.008	0.4	1,500	16,000	0.005	0.3	1,100	13,000
			8	0.01	0.5	1,500	16,000	0.008	0.4	1,300	14,000	0.003	0.3	900
		12	0.008	0.5	1,100	13,000	0.005	0.4	950	11,000	0.002	0.3	650	9,000
			15	0.005	0.5	800	11,000	0.003	0.4	700	9,000	0.002	0.3	500
	2	4	0.015	0.6	2,300	20,000	0.012	0.5	2,000	17,000	0.008	0.35	1,400	14,000
			6	0.015	0.6	2,100	18,000	0.012	0.5	1,800	15,000	0.008	0.35	1,300
		8	0.012	0.6	1,800	16,000	0.01	0.5	1,500	14,000	0.005	0.35	1,100	11,000
			12	0.01	0.6	1,400	13,000	0.008	0.5	1,200	11,000	0.003	0.35	850
		16	0.008	0.6	1,100	11,000	0.005	0.5	950	9,500	0.002	0.35	650	7,500
			20	0.005	0.6	650	8,000	0.003	0.5	550	7,000	0.002	0.35	400
	2.5	10	0.07	0.7	1,800	13,000	0.05	0.5	1,500	11,000	0.03	0.5	1,100	9,000
			20	0.04	0.7	1,100	9,000	0.02	0.5	950	7,500	0.01	0.5	650
	3	4	0.1	0.8	2,300	15,000	0.07	0.7	550	13,000	0.05	0.6	1,400	10,000
			6	0.1	0.8	2,100	13,000	0.07	0.7	2,000	11,000	0.05	0.6	1,300
		8	0.1	0.8	1,800	11,000	0.07	0.7	1,800	9,500	0.05	0.6	1,100	7,500
12			0.08	0.8	1,600	11,000	0.06	0.7	1,400	9,500	0.04	0.6	1,000	7,500
16		0.07	0.8	1,500	10,000	0.05	0.7	1,200	8,500	0.03	0.6	900	7,000	
		20	0.05	0.8	1,100	8,000	0.04	0.7	950	7,000	0.02	0.6	700	5,500
25		0.04	0.8	1,000	7,500	0.02	0.7	850	6,500	0.01	0.6	600	5,000	
		30	0.03	0.8	650	6,500	0.02	0.7	550	5,500	0.007	0.6	400	4,500
4	8	0.15	1.2	2,100	10,000	0.08	1	1,800	8,500	0.06	0.8	1,300	7,000	
		12	0.15	1.2	2,100	10,000	0.08	1	1,800	8,500	0.06	0.8	1,300	7,000
	16	0.1	1.2	1,800	8,000	0.06	1	1,500	7,000	0.05	0.8	1,100	5,500	
		24	0.08	1.2	1,300	6,500	0.05	1	1,100	5,500	0.03	0.8	750	4,500
5	15	0.15	2	2,000	8,000	0.08	1.6	1,700	7,000	0.06	1.2	1,200	5,500	
		20	0.1	2	1,600	6,500	0.07	1.6	1,400	5,500	0.05	1.2	1,000	4,500
	40	0.05	2	1,000	4,000	0.02	1.6	850	3,500	0.01	1.2	600	3,000	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向切削深度，∅e=徑向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸圓角立銼刀 Long Neck Radius End Mill

切削材料 Work Material			淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)				
刃數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm			
4	6	12	0.18	2.5	2,100	6,500	0.08	2	1,800	5,500	0.06	1.5	1,300	4,500	
			18	0.18	2.5	1,800	5,500	0.08	2	1,500	4,500	0.06	1.5	1,100	3,500
			24	0.15	2.5	1,500	5,000	0.07	2	1,300	4,000	0.05	1.5	900	3,000
			48	0.05	2.5	750	2,500	0.03	2	650	2,000	0.02	1.5	450	2,000

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向切削深度，∅e=徑向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

HARD STAR type A 切削條件參考表 Recommended Milling Conditions

■型號: HALR430
Model number: HALR430

長頸圓角立銼刀 Long Neck Radius End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈷鎳合金(Kovar)			
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm		
4	0.9	4	0.18	0.2	1,000	17,000	0.18	0.2	1,000	17,000	0.18	0.2	800	13,000
			0.15	0.2	1,000	17,000	0.15	0.2	1,000	17,000	0.15	0.2	700	13,000
	1.0	2	0.2	0.23	1,800	16,000	0.2	0.23	1,800	16,000	0.045	0.3	1,260	12,800
			0.15	0.23	1,500	16,000	0.15	0.23	1,500	16,000	0.04	0.3	1,050	12,800
			0.13	0.23	1,410	16,000	0.13	0.23	1,410	16,000	0.035	0.25	990	12,800
			0.12	0.2	1,200	14,500	0.12	0.2	1,200	14,500	0.03	0.25	840	11,600
			0.09	0.2	870	14,500	0.09	0.2	870	14,500	0.02	0.2	620	11,600
			0.075	0.15	660	11,100	0.075	0.15	660	11,100	0.015	0.1	470	8,900
	1.2	10	0.06	0.15	300	11,100	0.06	0.15	300	11,100	0.01	0.08	210	8,900
			0.18	0.28	1,740	15,500	0.18	0.28	1,740	15,500	0.045	0.35	1,220	12,400
	1.5	3	0.12	0.28	1,290	12,000	0.12	0.28	1,290	12,000	0.03	0.25	900	9,600
			0.24	0.35	1,910	14,000	0.24	0.35	1,910	14,000	0.05	0.4	1,340	11,200
			0.24	0.35	1,910	14,000	0.24	0.35	1,910	14,000	0.05	0.4	1,340	11,200
			0.24	0.35	1,910	14,000	0.24	0.35	1,910	14,000	0.05	0.4	1,340	11,200
			0.18	0.3	1,250	11,500	0.18	0.3	1,250	11,500	0.04	0.3	870	9,000
			0.18	0.3	1,250	11,500	0.18	0.3	1,250	11,500	0.04	0.3	870	9,000
	2	15	0.08	0.25	560	8,500	0.08	0.25	560	8,500	0.01	0.15	390	6,800
			0.24	0.45	2,150	11,100	0.24	0.45	2,150	11,100	0.05	0.5	1,500	8,800
			0.24	0.45	2,150	11,100	0.24	0.45	2,150	11,100	0.05	0.5	1,500	8,800
			0.24	0.45	2,150	11,100	0.24	0.45	2,150	11,100	0.05	0.5	1,500	8,800
			0.2	0.43	1,800	11,100	0.2	0.43	1,800	11,100	0.045	0.5	1,260	8,800
			0.15	0.39	1,500	9,600	0.15	0.39	1,500	9,600	0.04	0.35	1,050	7,700
	2.5	20	0.12	0.35	900	9,600	0.12	0.35	900	9,600	0.015	0.25	630	7,700
			0.3	0.5	2,280	9,200	0.3	0.5	2,280	9,200	0.07	0.7	1,590	7,400
	3	4	0.24	0.43	1,580	8,300	0.24	0.43	1,580	8,300	0.05	0.4	1,110	6,600
			0.38	0.55	2,400	8,000	0.38	0.55	2,400	8,000	0.1	0.8	1,680	6,400
			0.37	0.55	2,400	8,000	0.37	0.55	2,400	8,000	0.09	0.8	1,680	6,400
			0.36	0.55	2,400	8,000	0.36	0.55	2,400	8,000	0.08	0.8	1,680	6,400
0.36			0.55	2,400	8,000	0.36	0.55	2,400	8,000	0.08	0.8	1,680	6,400	
0.3			0.5	1,850	7,700	0.3	0.5	1,850	7,700	0.06	0.6	1,250	6,200	
0.3			0.5	1,850	7,700	0.3	0.5	1,850	7,700	0.06	0.6	1,250	6,200	
0.3			0.45	1,620	7,500	0.3	0.45	1,620	7,500	0.06	0.5	1,140	6,000	
4	30	0.15	0.4	1,050	6,000	0.15	0.4	1,050	6,000	0.03	0.4	740	4,800	
		0.45	0.75	2,520	6,000	0.45	0.75	2,520	6,000	0.1	1	1,770	4,800	
		0.45	0.75	2,520	6,000	0.45	0.75	2,520	6,000	0.1	1	1,770	4,800	
		0.45	0.75	2,520	6,000	0.45	0.75	2,520	6,000	0.1	1	1,770	4,800	
5	32	0.39	0.7	2,030	5,400	0.39	0.7	2,030	5,400	0.085	0.8	1,430	4,300	
		0.25	0.6	1,350	4,800	0.25	0.6	1,350	4,800	0.04	0.7	950	3,800	
		0.52	1	2,300	5,100	0.52	1	2,300	5,100	0.12	1.2	1,610	4,100	
		0.52	1	2,300	5,100	0.52	1	2,300	5,100	0.12	1.2	1,610	4,100	
5	40	0.25	0.8	1,020	3,200	0.25	0.8	1,020	3,200	0.05	0.9	720	2,600	
		0.25	0.8	1,020	3,200	0.25	0.8	1,020	3,200	0.05	0.9	720	2,600	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸圓角立銼刀 Long Neck Radius End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈷鎳合金(Kovar)			
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm		
4	6	12	0.65	1.2	2,100	3,700	0.65	1.2	2,100	3,700	0.15	1.5	1,470	3,000
			0.62	1.2	2,100	3,700	0.62	1.2	2,100	3,700	0.13	1.5	1,470	3,000
			0.32	0.9	950	2,600	0.32	0.9	950	2,600	0.05	1.2	660	2,100
			0.32	0.9	950	2,600	0.32	0.9	950	2,600	0.05	1.2	660	2,100

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

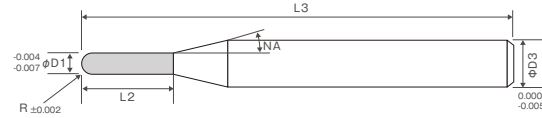
HARD STAR Type A Series

HARD STAR Type A Series

超硬球頭立銑刀 Carbide Ball End Mill

■型號:HAB230 Model number:HAB230

Hard A
super MG
刃數 2
ねじれ角 30°
首角 15°
Shank 0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.

●聯系我們了解更多關於可再磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size):mm

型號 Code No.	球頭R (R)	刃長 (L2)	刀刃直徑 (D1)	仰角 (NA) [°]	刀柄直徑 (D3)	全長 (L3)	標準價格 (JPY)
HAB230-0010-0050-00010	0.05	0.1	0.1	15	4	50	8,640
HAB230-0015-0075-00015	0.075	0.15	0.15	15	4	50	8,400
HAB230-0020-0100-00020	0.1	0.2	0.2	15	4	50	6,880
HAB230-0030-0150-00030	0.15	0.3	0.3	15	4	50	4,960
HAB230-0040-0200-00060	0.2	0.6	0.4	15	4	50	3,360
HAB230-0050-0250-00080	0.25	0.8	0.5	15	4	50	3,120
HAB230-0060-0300-00090	0.3	0.9	0.6	15	4	50	3,040
HAB230-0080-0400-00120	0.4	1.2	0.8	15	4	50	3,040
HAB230-0100-0500-00150	0.5	1.5	1	15	4	50	2,800
HAB230-0150-0750-00230	0.75	2.3	1.5	15	4	50	3,360
HAB230-0200-1000-00300	1	3	2	15	4	50	2,480
HAB230-0250-1250-00380	1.25	3.8	2.5	15	4	50	4,240
HAB230-0300-1500-00500	1.5	5	3	15	4	50	3,040
HAB230-0400-2000-00600	2	6	4	15	6	50	3,440
HAB230-0500-2500-00800	2.5	8	5	15	6	50	4,160
HAB230-0600-3000-01000	3	10	6	—	6	50	4,320
HAB230-0800-4000-01200	4	12	8	—	8	70	10,960
HAB230-1000-5000-01500	5	15	10	—	10	80	14,080
HAB230-1200-6000-02000	6	20	12	—	12	110	20,240

HARD STAR type A 切削條件參考表 Recommended Milling Conditions

■型號:HAB230
Model number:HAB230

球頭立銑刀 Ball End Mill

切削材料 Work Material	淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)						淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)				
	刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
				φp mm	φe mm			φp mm	φe mm			φp mm	φe mm		
2	0.1	0.1	0.003	0.005	120	40,000	0.002	0.005	100	40,000	0.002	0.003	70	40,000	
	0.15	0.15	0.003	0.005	180	40,000	0.002	0.005	150	40,000	0.002	0.003	100	40,000	
	0.2	0.2	0.005	0.005	350	40,000	0.003	0.0025	300	40,000	0.0015	0.0015	200	40,000	
	0.3	0.3	0.005	0.0075	350	40,000	0.0035	0.005	300	40,000	0.0015	0.0025	280	40,000	
	0.4	0.6	0.015	0.025	800	40,000	0.015	0.015	720	40,000	0.0045	0.01	580	40,000	
	0.5	0.8	0.015	0.025	1,000	40,000	0.01	0.015	860	40,000	0.005	0.01	650	40,000	
	0.6	0.9	0.025	0.05	1,400	40,000	0.015	0.03	1,000	40,000	0.01	0.025	720	30,000	
	0.8	1.2	0.05	0.075	2,000	40,000	0.035	0.05	1,600	40,000	0.025	0.05	1,200	30,000	
	1	1.5	0.05	0.15	2,500	40,000	0.05	0.1	2,000	30,000	0.04	0.05	1,400	25,000	
	1.5	2.3	0.075	0.15	3,000	30,000	0.05	0.15	2,500	30,000	0.05	0.1	2,000	25,000	
	2	3	0.1	0.25	3,000	25,000	0.1	0.25	2,500	25,000	0.075	0.15	2,000	20,000	
	2.5	3.8	0.15	0.2	2,800	20,000	0.1	0.25	2,300	20,000	0.075	0.2	2,000	18,000	
3	5	0.1	0.4	3,000	20,000	0.1	0.3	2,500	18,000	0.1	0.25	2,000	14,000		
4	6	0.15	0.75	3,000	20,000	0.1	0.4	2,500	16,000	0.1	0.3	2,000	12,000		
5	8	0.15	0.75	3,000	18,000	0.1	0.6	2,500	12,000	0.1	0.35	2,000	9,200		
6	10	0.15	1	3,000	16,000	0.15	0.6	2,500	8,000	0.1	0.5	2,000	7,000		
8	12	0.2	1.2	450	3,600	0.175	0.9	400	2,600	0.175	0.9	350	2,600		
10	15	0.25	1	450	2,900	0.225	0.75	400	1,900	0.225	0.75	350	1,900		
12	20	0.3	1.5	450	2,400	0.275	1	400	1,400	0.275	1	350	1,400		

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●φp=軸向方向切削深度，φe=徑向方向切削深度。 φp=Axial Depth of Cut φe=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

HARD STAR type A 切削條件參考表 Recommended Milling Conditions

■ 型號: HAB230
Model number: HAB230

球頭立銼刀 Ball End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈷鎳合金(Kovar)			
刃數 Number of Flutes	刀直徑 Dia.	刃長 Length of Cut	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm		
2	0.1	0.1	0.008	0.0012	500	50,000	0.008	0.0012	500	50,000	0.003	0.005	120	40,000
	0.15	0.15	0.012	0.0018	500	50,000	0.012	0.0018	500	50,000	0.003	0.005	180	40,000
	0.2	0.2	0.016	0.0024	600	50,000	0.016	0.0024	600	50,000	0.005	0.005	350	40,000
	0.3	0.3	0.024	0.0036	600	50,000	0.024	0.0036	600	50,000	0.005	0.0075	350	40,000
	0.4	0.6	0.032	0.0048	600	50,000	0.032	0.0048	600	50,000	0.015	0.025	800	40,000
	0.5	0.8	0.04	0.006	600	50,000	0.04	0.006	600	50,000	0.015	0.025	1,000	40,000
	0.6	0.9	0.048	0.0144	750	50,000	0.048	0.0144	750	50,000	0.025	0.05	1,400	40,000
	0.8	1.2	0.064	0.0192	1,000	50,000	0.064	0.0192	1,000	50,000	0.05	0.075	2,000	40,000
	1	1.5	0.08	0.024	1,250	50,000	0.08	0.024	1,250	50,000	0.05	0.15	2,500	40,000
	1.5	2.3	0.12	0.036	1,250	50,000	0.12	0.036	1,250	50,000	0.075	0.15	3,000	30,000
	2	3	0.16	0.048	2,400	48,000	0.16	0.048	2,400	48,000	0.1	0.25	3,000	25,000
	2.5	3.8	0.2	0.06	2,400	48,000	0.2	0.06	2,400	48,000	0.15	0.2	2,800	20,000
	3	5	0.375	0.1125	2,400	32,000	0.375	0.1125	2,400	32,000	0.1	0.4	3,000	20,000
	4	6	0.6	0.18	2,400	24,000	0.6	0.18	2,400	24,000	0.15	0.75	3,000	20,000
	5	8	0.75	0.225	2,400	19,000	0.75	0.225	2,400	19,000	0.15	0.75	3,000	18,000
6	10	0.9	0.27	2,400	16,000	0.9	0.27	2,400	16,000	0.15	1	3,000	16,000	
8	12	1.2	0.36	2,400	12,000	1.2	0.36	2,400	12,000	0.2	1.2	450	3,600	
10	15	1.5	0.45	2,300	9,600	1.5	0.45	2,300	9,600	0.25	1	450	2,900	
12	20	1.8	0.54	2,100	8,000	1.8	0.54	2,100	8,000	0.3	1.5	450	2,400	

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

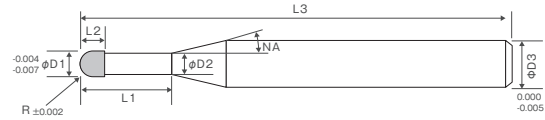
CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
Ion Depo A Series
Ion Depo U Series
DLC Series
Non-Coat Series
Ion Depo R Series

HARD STAR Type A Series

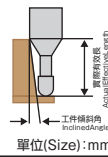
超硬長頸球頭立銑刀 Carbide Long Neck Ball End Mill

■型號: HALB230 Model number: HALB230

Hard A
super MG
刀刃數 2
螺旋角 30°
仰角 15°
柄徑公差 ±0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.

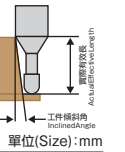


單位(Size): mm

●聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	球頭R (R)	有效長度 (L1)	刃長 (L2)	刀刃直徑 (D1)	刀頭底部直徑 (D2)	仰角 (NA)°	刀柄直徑 (D3)	全長 (L3)	標準價格 (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
HALB230-0010-0050-0020	0.05	0.2	0.07	0.1	0.08	15	4	50	9,360	0.24	0.25	0.26	0.27	0.28
HALB230-0010-0050-0030		0.3	0.07	0.1	0.08	15	4	50	8,240	0.35	0.36	0.37	0.38	0.41
HALB230-0010-0050-0050		0.5	0.07	0.1	0.08	15	4	50	8,960	0.55	0.57	0.59	0.61	0.66
HALB230-0015-0075-0030	0.075	0.3	0.1	0.15	0.13	15	4	50	9,600	0.35	0.36	0.37	0.38	0.40
HALB230-0015-0075-0050		0.5	0.1	0.15	0.13	15	4	50	10,160	0.55	0.57	0.59	0.61	0.65
HALB230-0020-0100-0030	0.1	0.3	0.15	0.2	0.18	15	4	50	5,760	0.35	0.35	0.36	0.37	0.40
HALB230-0020-0100-0050		0.5	0.15	0.2	0.18	15	4	50	5,760	0.55	0.57	0.58	0.60	0.64
HALB230-0020-0100-0075		0.75	0.15	0.2	0.18	15	4	50	5,760	0.81	0.84	0.86	0.89	0.96
HALB230-0020-0100-0100		1	0.15	0.2	0.18	15	4	50	5,760	1.07	1.10	1.14	1.18	1.27
HALB230-0030-0150-0050	0.15	0.5	0.2	0.3	0.27	15	4	50	5,680	0.57	0.58	0.60	0.62	0.66
HALB230-0030-0150-0060		0.6	0.2	0.3	0.27	15	4	50	5,680	0.67	0.69	0.71	0.73	0.78
HALB230-0030-0150-0075		0.75	0.2	0.3	0.27	15	4	50	5,680	0.83	0.85	0.88	0.90	0.97
HALB230-0030-0150-0100		1	0.2	0.3	0.27	15	4	50	5,680	1.09	1.12	1.15	1.19	1.28
HALB230-0030-0150-0125		1.25	0.2	0.3	0.27	15	4	50	6,080	1.34	1.39	1.43	1.48	1.59
HALB230-0030-0150-0150		1.5	0.2	0.3	0.27	15	4	50	6,080	1.60	1.65	1.71	1.77	1.90
HALB230-0030-0150-0175		1.75	0.2	0.3	0.27	15	4	50	6,080	1.86	1.92	1.99	2.05	2.21
HALB230-0030-0150-0200		2	0.2	0.3	0.27	15	4	50	6,080	2.12	2.19	2.26	2.34	2.52
HALB230-0030-0150-0225		2.25	0.2	0.3	0.27	15	4	50	6,240	2.38	2.46	2.54	2.63	2.83
HALB230-0030-0150-0250		2.5	0.2	0.3	0.27	15	4	50	6,240	2.64	2.72	2.82	2.92	3.14
HALB230-0030-0150-0300	3	0.2	0.3	0.27	15	4	50	6,240	3.15	3.26	3.37	3.49	3.76	
HALB230-0040-0200-0050	0.2	0.5	0.3	0.4	0.37	15	4	50	3,920	0.57	0.58	0.59	0.61	0.64
HALB230-0040-0200-0080		0.8	0.3	0.4	0.37	15	4	50	3,920	0.88	0.90	0.93	0.95	1.02
HALB230-0040-0200-0100		1	0.3	0.4	0.37	15	4	50	3,920	1.08	1.12	1.15	1.18	1.27
HALB230-0040-0200-0150		1.5	0.3	0.4	0.37	15	4	50	4,000	1.60	1.65	1.70	1.76	1.89
HALB230-0040-0200-0200		2	0.3	0.4	0.37	15	4	50	4,080	2.12	2.19	2.26	2.33	2.51
HALB230-0040-0200-0250		2.5	0.3	0.4	0.37	15	4	50	4,240	2.64	2.72	2.81	2.91	3.13
HALB230-0040-0200-0300		3	0.3	0.4	0.37	15	4	50	4,480	3.15	3.26	3.37	3.48	3.75
HALB230-0050-0250-0100		0.25	1	0.35	0.5	0.47	15	4	50	3,920	1.08	1.11	1.14	1.18
HALB230-0050-0250-0150	1.5		0.35	0.5	0.47	15	4	50	3,920	1.60	1.65	1.70	1.75	1.88
HALB230-0050-0250-0200	2		0.35	0.5	0.47	15	4	50	3,920	2.12	2.18	2.25	2.33	2.50

HARD STAR Type A Series



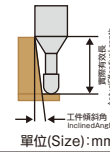
單位(Size): mm

●聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	球頭R (R)	有效長度 (L1)	刃長 (L2)	刀刃直徑 (D1)	刀頭底部直徑 (D2)	仰角 (NA)°	刀柄直徑 (D3)	全長 (L3)	標準價格 (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.					
										30'	1°	1°30'	2°	3°	
HALB230-0050-0250-0250	0.25	2.5	0.35	0.5	0.47	15	4	50	3,920	2.63	2.72	2.81	2.90	3.12	
HALB230-0050-0250-0300		3	0.35	0.5	0.47	15	4	50	3,920	3.15	3.25	3.36	3.48	3.74	
HALB230-0050-0250-0350		3.5	0.35	0.5	0.47	15	4	50	3,920	3.67	3.79	3.91	4.05	4.36	
HALB230-0050-0250-0400		4	0.35	0.5	0.47	15	4	50	3,920	4.18	4.32	4.47	4.63	4.98	
HALB230-0060-0300-0100	0.3	1	0.45	0.6	0.57	15	4	50	3,360	1.08	1.11	1.14	1.17	1.24	
HALB230-0060-0300-0150		1.5	0.45	0.6	0.57	15	4	50	3,040	1.60	1.64	1.69	1.74	1.87	
HALB230-0060-0300-0200		2	0.45	0.6	0.57	15	4	50	3,040	2.12	2.18	2.25	2.32	2.49	
HALB230-0060-0300-0250		2.5	0.45	0.6	0.57	15	4	50	3,120	2.63	2.71	2.80	2.89	3.11	
HALB230-0060-0300-0300		3	0.45	0.6	0.57	15	4	50	3,120	3.15	3.25	3.35	3.47	3.73	
HALB230-0060-0300-0350		3.5	0.45	0.6	0.57	15	4	50	3,200	3.67	3.78	3.91	4.04	4.35	
HALB230-0060-0300-0400		4	0.45	0.6	0.57	15	4	50	3,200	4.18	4.32	4.46	4.62	4.97	
HALB230-0060-0300-0450		4.5	0.45	0.6	0.57	15	4	50	3,200	4.70	4.85	5.02	5.19	5.59	
HALB230-0060-0300-0500		5	0.45	0.6	0.57	15	4	50	3,200	5.22	5.39	5.57	5.77	6.22	
HALB230-0060-0300-0550		5.5	0.45	0.6	0.57	15	4	50	3,200	5.73	5.92	6.13	6.34	6.84	
HALB230-0060-0300-0600	6	0.45	0.6	0.57	15	4	50	3,200	6.25	6.46	6.68	6.92	7.46		
HALB230-0070-0350-0200	0.35	2	0.5	0.7	0.67	15	4	50	3,440	2.11	2.18	2.24	2.31	2.48	
HALB230-0070-0350-0400		4	0.5	0.7	0.67	15	4	50	3,680	4.18	4.31	4.46	4.61	4.96	
HALB230-0070-0350-0600		6	0.5	0.7	0.67	15	4	50	3,680	6.25	6.45	6.67	6.91	7.45	
HALB230-0080-0400-0200		2	0.6	0.8	0.77	15	4	50	3,040	2.11	2.17	2.24	2.31	2.46	
HALB230-0080-0400-0300	0.4	3	0.6	0.8	0.77	15	4	50	3,200	3.15	3.24	3.34	3.46	3.71	
HALB230-0080-0400-0400		4	0.6	0.8	0.77	15	4	50	3,200	4.18	4.31	4.45	4.60	4.95	
HALB230-0080-0400-0500		5	0.6	0.8	0.77	15	4	50	3,200	5.21	5.38	5.56	5.75	6.19	
HALB230-0080-0400-0600		6	0.6	0.8	0.77	15	4	50	3,200	6.25	6.45	6.67	6.90	7.44	
HALB230-0080-0400-0700		7	0.6	0.8	0.77	15	4	50	3,200	7.28	7.52	7.78	8.05	8.68	
HALB230-0080-0400-0800		8	0.6	0.8	0.77	15	4	50	3,200	8.31	8.59	8.89	9.20	9.92	
HALB230-0090-0450-0200		0.45	2	0.65	0.9	0.87	15	4	50	3,440	2.11	2.17	2.23	2.30	2.45
HALB230-0090-0450-0400			4	0.65	0.9	0.87	15	4	50	3,680	4.18	4.31	4.45	4.60	4.94
HALB230-0090-0450-0600	6		0.65	0.9	0.87	15	4	50	3,680	6.24	6.45	6.66	6.90	7.42	
HALB230-0090-0450-0800	8		0.65	0.9	0.87	15	4	50	3,680	8.31	8.59	8.88	9.20	9.91	
HALB230-0100-0500-0200	0.5	2	0.75	1	0.95	15	4	50	2,560	2.15	2.20	2.27	2.33	2.49	
HALB230-0100-0500-0250		2.5	0.75	1	0.95	15	4	50	2,560	2.66	2.74	2.82	2.91	3.11	
HALB230-0100-0500-0300		3	0.75	1	0.95	15	4	50	2,560	3.18	3.27	3.37	3.48	3.73	
HALB230-0100-0500-0400		4	0.75	1	0.95	15	4	50	2,880	4.21	4.34	4.48	4.63	4.97	
HALB230-0100-0500-0500		5	0.75	1	0.95	15	4	50	2,880	5.25	5.41	5.59	5.78	6.22	
HALB230-0100-0500-0600		6	0.75	1	0.95	15	4	50	3,120	6.28	6.48	6.70	6.93	7.46	
HALB230-0100-0500-0700		7	0.75	1	0.95	15	4	50	3,120	7.32	7.55	7.81	8.08	8.70	
HALB230-0100-0500-0800		8	0.75	1	0.95	15	4	50	3,120	8.35	8.62	8.92	9.23	9.95	
HALB230-0100-0500-0900		9	0.75	1	0.95	15	4	50	3,120	9.38	9.69	10.02	10.38	11.19	
HALB230-0100-0500-1000		10	0.75	1	0.95	15	4	50	3,120	10.42	10.76	11.13	11.53	12.43	
HALB230-0100-0500-1200		12	0.75	1	0.95	15	4	50	3,120	12.48	12.90	13.35	13.83	14.92	
HALB230-0120-0600-0240		0.6	2.4	0.9	1.2	1.15	15	4	50	3,840	2.56	2.63	2.70	2.78	2.96
HALB230-0120-0600-0400	4		0.9	1.2	1.15	15	4	50	3,840	4.21	4.34	4.47	4.62	4.95	
HALB230-0120-0600-0600	6		0.9	1.2	1.15	15	4	50	4,160	6.28	6.48	6.69	6.92	7.44	
HALB230-0120-0600-0800	8		0.9	1.2	1.15	15	4	50	4,160	8.35	8.62	8.91	9.22	9.92	
HALB230-0120-0600-1000	10	0.9	1.2	1.15	15	4	50	4,160	10.41	10.76	11.12	11.52	12.41		

CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
Ion Depo A Series
Ion Depo U Series
DLC Series
Non-Coat Series
Ion Depo R Series

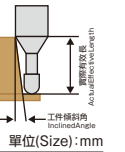
HARD STAR Type A Series



● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	球頭R Ball R	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭直徑 (D1) Tool Diameter	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
										HALB230-0120-0600-1200	0.6	12	0.9	1.2
HALB230-0140-0700-0800	0.7	8	1	1.4	1.35	15	4	50	3,600	8.34	8.61	8.90	9.20	9.90
HALB230-0140-0700-1200		12	1	1.4	1.35	15	4	50	3,600	12.48	12.89	13.33	13.80	14.87
HALB230-0140-0700-1600		16	1	1.4	1.35	15	4	50	3,600	16.61	17.17	17.76	18.40	19.84
HALB230-0150-0750-0300	0.75	3	1.1	1.5	1.45	15	4	50	2,960	3.17	3.26	3.35	3.45	3.67
HALB230-0150-0750-0400		4	1.1	1.5	1.45	15	4	50	2,960	4.21	4.33	4.46	4.60	4.92
HALB230-0150-0750-0600		6	1.1	1.5	1.45	15	4	50	2,960	6.27	6.47	6.67	6.90	7.40
HALB230-0150-0750-0800		8	1.1	1.5	1.45	15	4	50	3,120	8.34	8.61	8.89	9.20	9.89
HALB230-0150-0750-1000		10	1.1	1.5	1.45	15	4	50	3,360	10.41	10.74	11.11	11.50	12.37
HALB230-0150-0750-1200		12	1.1	1.5	1.45	15	4	50	3,600	12.48	12.88	13.32	13.80	14.86
HALB230-0150-0750-1400		14	1.1	1.5	1.45	15	4	50	3,600	14.54	15.02	15.54	16.09	17.35
HALB230-0150-0750-1600	16	1.1	1.5	1.45	15	4	50	3,600	16.61	17.16	17.76	18.39	19.83	
HALB230-0160-0800-0800	0.8	8	1.2	1.6	1.55	15	4	50	4,160	8.34	8.60	8.88	9.19	9.88
HALB230-0160-0800-1200		12	1.2	1.6	1.55	15	4	50	4,160	12.47	12.88	13.32	13.79	14.85
HALB230-0160-0800-1600		16	1.2	1.6	1.55	15	4	50	4,160	16.61	17.16	17.75	18.39	19.82
HALB230-0200-1000-0300	1	3	1.5	2	1.94	15	4	50	2,560	3.18	3.26	3.34	3.43	3.64
HALB230-0200-1000-0400		4	1.5	2	1.94	15	4	50	2,560	4.22	4.33	4.45	4.58	4.88
HALB230-0200-1000-0600		6	1.5	2	1.94	15	4	50	2,880	6.28	6.47	6.67	6.88	7.37
HALB230-0200-1000-0800		8	1.5	2	1.94	15	4	50	3,120	8.35	8.61	8.88	9.18	9.85
HALB230-0200-1000-1000		10	1.5	2	1.94	15	4	50	3,120	10.42	10.75	11.10	11.48	12.34
HALB230-0200-1000-1200		12	1.5	2	1.94	15	4	50	3,120	12.49	12.89	13.32	13.78	14.83
HALB230-0200-1000-1300		13	1.5	2	1.94	15	4	50	3,120	13.52	13.96	14.43	14.93	16.07
HALB230-0200-1000-1400		14	1.5	2	1.94	15	4	50	3,120	14.55	15.03	15.53	16.08	17.31
HALB230-0200-1000-1600		16	1.5	2	1.94	15	4	50	3,120	16.62	17.17	17.75	18.38	19.80
HALB230-0200-1000-1800		18	1.5	2	1.94	15	4	50	3,120	18.69	19.30	19.97	20.68	FREE
HALB230-0200-1000-2000	20	1.5	2	1.94	15	4	50	3,120	20.76	21.44	22.18	22.98	FREE	
HALB230-0250-1250-0600	1.25	6	2.3	2.5	2.44	15	4	50	3,840	6.28	6.45	6.64	6.84	7.31
HALB230-0250-1250-0800		8	2.3	2.5	2.44	15	4	50	3,360	8.34	8.59	8.86	9.14	9.80
HALB230-0250-1250-1000		10	2.3	2.5	2.44	15	4	50	4,080	10.41	10.73	11.07	11.44	12.28
HALB230-0250-1250-1500		15	2.3	2.5	2.44	15	4	50	4,160	15.58	16.08	16.62	17.19	FREE
HALB230-0250-1250-2000		20	2.3	2.5	2.44	15	4	50	4,880	20.75	21.43	22.16	FREE	FREE
HALB230-0300-1500-0600	1.5	6	2.5	3	2.85	15	4	50	3,120	6.44	6.61	6.80	7.00	7.46
HALB230-0300-1500-0800		8	2.5	3	2.85	15	4	50	3,120	8.51	8.75	9.02	9.30	9.95
HALB230-0300-1500-1000		10	2.5	3	2.85	15	4	50	3,600	10.58	10.89	11.23	11.60	FREE
HALB230-0300-1500-1200		12	2.5	3	2.85	15	4	50	3,760	12.64	13.03	13.45	13.90	FREE
HALB230-0300-1500-1400		14	2.5	3	2.85	15	4	50	4,160	14.71	15.17	15.67	FREE	FREE
HALB230-0300-1500-1600		16	2.5	3	2.85	15	4	50	4,160	16.78	17.31	17.88	FREE	FREE
HALB230-0300-1500-2000		20	2.5	3	2.85	15	4	50	4,000	20.91	21.59	FREE	FREE	FREE
HALB230-0300-1500-2500		25	2.5	3	2.85	15	4	60	4,000	26.08	26.94	FREE	FREE	FREE
HALB230-0300-1500-3000		30	2.5	3	2.85	15	4	60	4,560	31.25	FREE	FREE	FREE	FREE
HALB230-0350-1750-1500		1.75	15	2.8	3.5	3.35	15	6	50	5,280	15.74	16.22	16.75	17.31
HALB230-0350-1750-2000	20		2.8	3.5	3.35	15	6	50	5,280	20.90	21.57	22.29	23.06	24.81
HALB230-0350-1750-2500	25		2.8	3.5	3.35	15	6	60	5,600	26.07	26.92	27.83	28.81	FREE
HALB230-0350-1750-3000	30		2.8	3.5	3.35	15	6	60	5,600	31.24	32.27	33.37	34.56	FREE
HALB230-0350-1750-3500	35		2.8	3.5	3.35	15	6	70	7,200	36.41	37.62	38.91	FREE	FREE

HARD STAR Type A Series



● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	球頭R Ball R	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭直徑 (D1) Tool Diameter	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
										HALB230-0400-2000-0800	2	8	3	4
HALB230-0400-2000-1000	10	3	4	3.8	15	6	50	3,200	10.66	10.96		11.28	11.63	12.43
HALB230-0400-2000-1200	12	3	4	3.8	15	6	50	4,160	12.72	13.10		13.50	13.93	14.92
HALB230-0400-2000-1400	14	3	4	3.8	15	6	50	4,160	14.79	15.24		15.72	16.23	17.41
HALB230-0400-2000-1500	15	3	4	3.8	15	6	50	4,160	15.82	16.31		16.82	17.38	18.65
HALB230-0400-2000-2000	20	3	4	3.8	15	6	50	4,160	20.99	21.65		22.37	23.13	FREE
HALB230-0400-2000-2500	25	3	4	3.8	15	6	60	4,160	26.16	27.00		27.91	28.88	FREE
HALB230-0400-2000-3000	30	3	4	3.8	15	6	60	4,160	31.33	32.35		33.45	FREE	FREE
HALB230-0400-2000-3500	35	3	4	3.8	15	6	70	4,800	36.50	37.70		38.99	FREE	FREE
HALB230-0500-2500-1500	2.5	15	3.5	5	4.8	15	6	50	6,880	15.81		16.27	16.77	FREE
HALB230-0500-2500-2000		20	3.5	5	4.8	15	6	50	6,960	20.98	21.62	FREE	FREE	FREE
HALB230-0500-2500-2500		25	3.5	5	4.8	15	6	60	6,960	26.14	26.97	FREE	FREE	FREE
HALB230-0500-2500-3000		30	3.5	5	4.8	15	6	60	7,440	31.31	FREE	FREE	FREE	FREE
HALB230-0500-2500-4000		40	3.5	5	4.8	15	6	90	9,280	41.65	FREE	FREE	FREE	FREE
HALB230-0600-3000-1000		3	10	6	6	5.8	15	6	50	5,200	FREE	FREE	FREE	FREE
HALB230-0600-3000-1500	15		6	6	5.8	15	6	50	5,200	FREE	FREE	FREE	FREE	FREE
HALB230-0600-3000-2000	20		6	6	5.8	15	6	50	5,200	FREE	FREE	FREE	FREE	FREE
HALB230-0600-3000-2500	25		6	6	5.8	15	6	60	5,200	FREE	FREE	FREE	FREE	FREE
HALB230-0600-3000-3000	30		6	6	5.8	15	6	60	5,360	FREE	FREE	FREE	FREE	FREE
HALB230-0600-3000-3500	35		6	6	5.8	15	6	70	5,360	FREE	FREE	FREE	FREE	FREE
HALB230-0600-3000-4000	40		6	6	5.8	15	6	90	5,840	FREE	FREE	FREE	FREE	FREE
HALB230-0600-3000-5000	50		6	6	5.8	15	6	120	6,320	FREE	FREE	FREE	FREE	FREE
HALB230-0600-3000-6000	60		6	6	5.8	15	6	120	6,800	FREE	FREE	FREE	FREE	FREE

HARD STAR type A 切削條件參考表 Recommended Milling Conditions

■型號: HALB230
Model number: HALB230

長頸球頭立銼刀 Long Neck Ball End Mill

刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)			
			切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			φp mm	φe mm	mm/min	min ⁻¹	φp mm	φe mm	mm/min	min ⁻¹	φp mm	φe mm	mm/min	min ⁻¹
2	0.1	0.2	0.003	0.005	120	40,000	0.002	0.005	100	40,000	0.002	0.003	70	40,000
		0.3	0.003	0.005	100	40,000	0.002	0.005	70	40,000	0.002	0.003	50	40,000
		0.5	0.002	0.003	70	40,000	0.001	0.003	50	40,000	0.001	0.002	30	40,000
	0.15	0.3	0.003	0.005	180	40,000	0.002	0.005	150	40,000	0.002	0.003	100	40,000
		0.5	0.003	0.005	150	40,000	0.002	0.005	120	40,000	0.002	0.003	70	40,000
	0.2	0.3	0.01	0.01	350	40,000	0.006	0.005	300	40,000	0.003	0.003	200	40,000
		0.5	0.008	0.01	320	40,000	0.005	0.005	280	40,000	0.003	0.003	180	40,000
		0.75	0.005	0.01	280	40,000	0.003	0.005	200	40,000	0.002	0.003	150	40,000
	0.3	1	0.003	0.005	250	40,000	0.002	0.003	160	40,000	0.001	0.002	120	40,000
		0.5	0.01	0.015	350	40,000	0.007	0.01	300	40,000	0.003	0.005	280	40,000
		0.6	0.007	0.01	350	40,000	0.005	0.007	300	40,000	0.003	0.005	250	40,000
		0.75	0.007	0.01	330	40,000	0.005	0.007	280	40,000	0.003	0.005	230	40,000
		1	0.007	0.01	320	40,000	0.005	0.007	250	40,000	0.003	0.005	200	40,000
		1.25	0.005	0.007	280	40,000	0.003	0.005	200	40,000	0.002	0.003	160	40,000
		1.5	0.005	0.007	230	40,000	0.003	0.005	180	40,000	0.002	0.003	120	40,000
		1.75	0.003	0.005	180	40,000	0.002	0.003	150	40,000	0.002	0.002	100	40,000
		2	0.003	0.005	150	40,000	0.002	0.003	120	40,000	0.002	0.002	90	40,000
		2.25	0.002	0.003	120	40,000	0.001	0.002	100	40,000	0.001	0.001	80	40,000
	0.4	2.5	0.002	0.003	100	40,000	0.001	0.002	80	40,000	0.001	0.001	70	40,000
		3	0.001	0.003	80	40,000	0.001	0.002	70	40,000	0.001	0.001	60	40,000
		0.5	0.03	0.05	800	40,000	0.03	0.03	720	40,000	0.009	0.02	580	40,000
		0.8	0.02	0.05	800	40,000	0.02	0.03	720	40,000	0.008	0.02	580	40,000
		1	0.02	0.05	800	40,000	0.02	0.03	720	40,000	0.008	0.02	580	40,000
		1.5	0.01	0.03	620	40,000	0.01	0.02	500	40,000	0.005	0.01	400	40,000
2		0.01	0.02	500	40,000	0.01	0.01	380	40,000	0.005	0.007	300	40,000	
2.5		0.007	0.01	420	40,000	0.005	0.007	300	40,000	0.003	0.005	260	40,000	
3		0.007	0.01	300	40,000	0.005	0.007	240	40,000	0.003	0.005	200	40,000	
0.5		1	0.03	0.05	1,000	40,000	0.02	0.03	860	40,000	0.01	0.02	650	40,000
	1.5	0.02	0.05	850	40,000	0.01	0.03	720	40,000	0.007	0.02	520	40,000	
	2	0.02	0.03	720	40,000	0.01	0.02	650	40,000	0.007	0.01	400	40,000	
	2.5	0.01	0.02	600	40,000	0.007	0.01	530	40,000	0.005	0.007	360	40,000	
	3	0.01	0.02	500	40,000	0.007	0.01	420	40,000	0.005	0.007	320	40,000	
	3.5	0.007	0.01	420	40,000	0.005	0.007	360	40,000	0.003	0.005	280	40,000	
0.6	4	0.007	0.01	350	40,000	0.005	0.007	300	40,000	0.003	0.005	260	40,000	
	1	0.05	0.1	1,400	40,000	0.03	0.06	1,000	40,000	0.02	0.05	720	30,000	
	1.5	0.05	0.1	1,400	40,000	0.03	0.06	1,000	40,000	0.02	0.05	720	30,000	
	2	0.05	0.1	1,400	40,000	0.03	0.06	1,000	40,000	0.02	0.05	720	30,000	
	2.5	0.03	0.05	1,200	40,000	0.02	0.04	840	40,000	0.02	0.03	640	30,000	
	3	0.03	0.05	1,200	40,000	0.02	0.04	840	40,000	0.02	0.03	640	30,000	
	3.5	0.02	0.03	1,000	40,000	0.01	0.03	620	40,000	0.01	0.02	480	30,000	
	4	0.02	0.03	1,000	40,000	0.01	0.03	620	40,000	0.01	0.02	480	30,000	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid. ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸球頭立銼刀 Long Neck Ball End Mill

刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)				
			切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	
			φp mm	φe mm	mm/min	min ⁻¹	φp mm	φe mm	mm/min	min ⁻¹	φp mm	φe mm	mm/min	min ⁻¹	
2	0.6	4.5	0.02	0.03	900	35,000	0.01	0.02	580	35,000	0.008	0.015	430	30,000	
		5	0.01	0.02	720	30,000	0.007	0.015	500	30,000	0.007	0.01	400	30,000	
		5.5	0.01	0.015	700	30,000	0.007	0.01	450	30,000	0.005	0.008	360	30,000	
		6	0.007	0.01	500	30,000	0.005	0.007	380	30,000	0.004	0.006	320	30,000	
		0.7	2	0.07	0.1	1,600	40,000	0.05	0.08	1,300	40,000	0.03	0.07	1,000	30,000
			4	0.04	0.06	1,300	40,000	0.03	0.04	820	40,000	0.015	0.02	600	30,000
	6		0.01	0.03	800	30,000	0.01	0.015	500	30,000	0.006	0.01	420	25,000	
	0.8	2	0.1	0.15	2,000	40,000	0.07	0.1	1,600	40,000	0.05	0.1	1,200	30,000	
		3	0.1	0.15	2,000	40,000	0.07	0.1	1,600	40,000	0.05	0.05	1,200	30,000	
		4	0.05	0.1	1,600	40,000	0.05	0.05	1,200	40,000	0.03	0.05	860	30,000	
		5	0.05	0.05	1,600	40,000	0.03	0.05	1,000	40,000	0.02	0.03	620	30,000	
		6	0.03	0.05	1,200	30,000	0.02	0.03	760	30,000	0.01	0.02	560	25,000	
		7	0.02	0.03	1,000	30,000	0.01	0.02	680	30,000	0.007	0.01	520	25,000	
	0.9	8	0.01	0.02	820	30,000	0.007	0.01	600	30,000	0.005	0.01	480	25,000	
		2	0.1	0.2	2,200	40,000	0.08	0.15	1,800	30,000	0.06	0.1	1,300	30,000	
		4	0.05	0.12	1,800	40,000	0.04	0.08	1,400	30,000	0.03	0.05	900	25,000	
		6	0.035	0.05	1,200	30,000	0.025	0.035	800	25,000	0.015	0.025	600	20,000	
		8	0.025	0.04	1,000	30,000	0.015	0.025	700	23,000	0.008	0.015	500	20,000	
		1	2	0.1	0.3	2,500	40,000	0.1	0.2	2,000	30,000	0.08	0.1	1,400	25,000
	2.5		0.1	0.3	2,500	40,000	0.1	0.2	2,000	30,000	0.08	0.1	1,400	25,000	
	3		0.1	0.3	2,500	40,000	0.1	0.2	2,000	30,000	0.08	0.1	1,400	25,000	
	4		0.1	0.2	2,500	40,000	0.05	0.15	1,800	30,000	0.05	0.1	1,200	25,000	
	5		0.05	0.15	2,000	30,000	0.04	0.1	1,600	25,000	0.03	0.05	920	20,000	
	6		0.05	0.1	1,800	30,000	0.04	0.05	1,200	25,000	0.02	0.05	740	20,000	
	7		0.04	0.06	1,200	30,000	0.03	0.04	950	25,000	0.02	0.03	680	20,000	
	8		0.04	0.06	1,000	30,000	0.03	0.04	860	25,000	0.02	0.03	560	20,000	
	9		0.03	0.05	820	25,000	0.02	0.03	750	20,000	0.01	0.02	500	18,000	
	10		0.03	0.05	750	25,000	0.02	0.03	620	20,000	0.01	0.02	450	18,000	
	12		0.01	0.03	600	20,000	0.007	0.02	520	18,000	0.005	0.01	400	16,000	
	1.2		2.4	0.1	0.3	2,500	30,000	0.1	0.2	2,000	30,000	0.05	0.1	1,600	25,000
4		0.1	0.2	2,500	30,000	0.07	0.2	2,000	30,000	0.05	0.1	1,600	25,000		
6		0.07	0.1	2,000	30,000	0.05	0.1	1,600	25,000	0.03	0.07	1,200	20,000		
8		0.05	0.1	1,600	30,000	0.03	0.07	1,200	25,000	0.02	0.05	920	20,000		
10		0.03	0.07	1,200	20,000	0.02	0.05	860	20,000	0.01	0.03	680	18,000		
12		0.02	0.05	860	20,000	0.01	0.03	620	20,000	0.007	0.02	480	18,000		
1.4	8	0.12	0.2	2,500	30,000	0.08	0.15								

HARD STAR type A 切削條件參考表 Recommended Milling Conditions

■型號: HALB230
Model number: HALB230

長頸球頭立銼刀 Long Neck Ball End Mill

切削材料 Work Material			淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)				
刃數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm			
2	1.5	8	0.1	0.2	2,500	25,000	0.05	0.2	1,600	25,000	0.05	0.1	1,200	20,000	
		10	0.1	0.1	2,500	25,000	0.05	0.1	1,200	25,000	0.05	0.05	860	20,000	
		12	0.05	0.1	1,800	20,000	0.03	0.1	920	20,000	0.02	0.05	780	18,000	
		14	0.05	0.07	1,200	20,000	0.03	0.05	820	20,000	0.02	0.03	650	18,000	
		16	0.03	0.05	720	18,000	0.02	0.03	650	18,000	0.01	0.02	580	16,000	
	1.6	8	0.1	0.2	2,500	25,000	0.07	0.15	2,000	20,000	0.05	0.1	1,600	18,000	
		12	0.07	0.1	1,800	20,000	0.05	0.07	1,500	16,000	0.03	0.05	1,200	14,000	
		16	0.03	0.05	720	16,000	0.02	0.03	600	14,000	0.015	0.02	480	12,000	
		3	0.2	0.5	3,000	25,000	0.2	0.5	2,500	25,000	0.15	0.3	2,000	20,000	
	2	4	0.2	0.5	3,000	25,000	0.2	0.5	2,500	25,000	0.15	0.3	2,000	20,000	
			6	0.2	0.5	2,500	25,000	0.2	0.3	2,000	25,000	0.15	0.3	1,600	20,000
		8	0.2	0.3	2,000	20,000	0.1	0.2	1,600	18,000	0.1	0.2	1,200	16,000	
			10	0.1	0.3	2,000	18,000	0.1	0.2	1,600	16,000	0.1	0.1	1,200	14,000
			12	0.1	0.2	1,600	16,000	0.1	0.1	1,200	14,000	0.05	0.1	940	12,000
			13	0.08	0.2	1,600	16,000	0.06	0.1	1,200	14,000	0.04	0.08	940	12,000
			14	0.07	0.15	1,600	16,000	0.05	0.08	1,200	14,000	0.03	0.07	940	12,000
			16	0.07	0.15	1,600	16,000	0.05	0.08	1,200	14,000	0.03	0.07	940	12,000
		20	0.05	0.1	1,400	14,000	0.03	0.05	1,000	12,000	0.02	0.03	850	10,000	
			0.05	0.1	1,000	14,000	0.03	0.05	820	12,000	0.02	0.03	720	10,000	
	6		0.3	0.4	2,800	20,000	0.2	0.5	2,300	20,000	0.15	0.4	2,000	18,000	
8	0.25		0.3	2,600	20,000	0.15	0.3	2,100	20,000	0.12	0.25	1,800	18,000		
2.5	10	0.2	0.3	2,500	20,000	0.15	0.2	2,000	20,000	0.1	0.15	1,600	18,000		
	15	0.1	0.2	2,000	18,000	0.07	0.15	1,600	16,000	0.05	0.1	1,200	14,000		
	20	0.07	0.15	1,500	16,000	0.05	0.1	1,200	14,000	0.03	0.05	1,000	10,000		
	6	0.2	0.8	3,000	20,000	0.2	0.6	2,500	18,000	0.2	0.5	2,000	14,000		
	8	0.2	0.8	3,000	20,000	0.2	0.6	2,500	18,000	0.2	0.5	2,000	14,000		
3	10	0.2	0.6	2,500	20,000	0.2	0.4	2,000	18,000	0.1	0.3	1,500	14,000		
	12	0.2	0.6	2,500	20,000	0.2	0.4	2,000	18,000	0.1	0.3	1,500	14,000		
	14	0.1	0.4	2,000	18,000	0.1	0.3	1,600	16,000	0.1	0.2	1,200	12,000		
	16	0.1	0.4	2,000	18,000	0.1	0.3	1,600	16,000	0.1	0.2	1,200	12,000		
	20	0.1	0.3	1,600	18,000	0.1	0.2	1,200	16,000	0.1	0.1	960	12,000		
	25	0.1	0.2	1,200	16,000	0.07	0.15	920	14,000	0.05	0.07	800	10,000		
	30	0.07	0.1	750	14,000	0.05	0.07	640	12,000	0.03	0.05	600	8,600		
	15	0.25	1	3,000	20,000	0.15	0.5	2,300	16,000	0.13	0.4	1,500	14,000		
3.5	20	0.18	0.6	2,500	18,000	0.1	0.3	1,800	15,000	0.1	0.2	1,200	12,000		
	25	0.12	0.35	1,800	16,000	0.1	0.2	1,600	14,000	0.06	0.12	1,000	10,000		
	30	0.1	0.25	1,500	14,000	0.07	0.15	950	11,000	0.05	0.08	800	9,000		
	35	0.08	0.2	1,200	13,000	0.07	0.12	800	10,000	0.03	0.06	650	7,500		
4	8	0.3	1.5	3,000	20,000	0.2	0.8	2,500	16,000	0.2	0.6	2,000	12,000		
	10	0.3	1.5	3,000	20,000	0.2	0.8	2,500	16,000	0.2	0.6	2,000	12,000		
	12	0.3	1.5	3,000	20,000	0.2	0.8	2,500	16,000	0.2	0.6	2,000	12,000		

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向切深，∅e=徑向切深。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸球頭立銼刀 Long Neck Ball End Mill

切削材料 Work Material			淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)			
刃數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm		
2	4	14	0.3	1.5	3,000	20,000	0.2	0.8	2,000	16,000	0.2	0.6	1,600	12,000
		15	0.3	1.5	3,000	20,000	0.2	0.8	2,000	16,000	0.2	0.6	1,600	12,000
		20	0.2	1	2,400	16,000	0.1	0.6	1,800	14,000	0.1	0.4	1,400	10,000
		25	0.2	0.8	1,600	16,000	0.1	0.4	1,200	14,000	0.1	0.2	1,000	10,000
		30	0.1	0.3	1,600	14,000	0.07	0.2	1,200	10,000	0.05	0.15	1,000	8,200
		35	0.1	0.2	1,200	14,000	0.07	0.15	1,000	10,000	0.05	0.1	820	8,200
	5	15	0.3	1.5	3,000	18,000	0.2	1.2	2,500	12,000	0.2	0.7	2,000	9,200
		20	0.3	1.5	3,000	18,000	0.2	1.2	2,500	12,000	0.2	0.7	2,000	9,200
		25	0.3	1.2	3,000	15,000	0.2	1	2,000	10,000	0.15	0.5	1,600	8,000
		30	0.2	1	2,500	15,000	0.15	0.8	1,800	8,600	0.1	0.3	1,200	7,200
	6	40	0.2	0.8	2,000	12,000	0.15	0.5	1,500	7,600	0.1	0.2	860	6,400
		10	0.3	2	3,000	16,000	0.3	1.2	2,500	8,000	0.2	1	2,000	7,000
		15	0.3	2	3,000	16,000	0.3	1.2	2,500	8,000	0.2	1	2,000	7,000
		20	0.3	2	3,000	16,000	0.3	1.2	2,500	8,000	0.2	1	2,000	7,000
		25	0.3	1.5	3,000	16,000	0.2	1	2,000	8,000	0.15	0.7	1,500	7,000
		30	0.2	1.5	3,000	14,000	0.2	1	2,000	7,200	0.15	0.7	1,500	6,500
		35	0.2	1.2	2,400	13,000	0.17	0.8	1,600	6,800	0.12	0.5	1,200	5,800
		40	0.2	1	1,800	12,000	0.15	0.6	1,200	6,400	0.1	0.4	1,000	5,200
		50	0.1	0.6	1,200	8,200	0.1	0.3	860	4,800	0.05	0.2	620	4,000
		60	0.07	0.3	600	6,000	0.05	0.15	450	3,200	0.03	0.07	300	2,500

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向切深，∅e=徑向切深。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

HARD STAR type A 切削條件參考表 Recommended Milling Conditions

■型號: HALB230
Model number: HALB230

長頸球頭立銼刀 Long Neck Ball End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈷鎳合金(Kovar)			
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			φp mm	φe mm			φp mm	φe mm			φp mm	φe mm		
2	0.1	0.2	0.005	0.005	80	50,000	0.005	0.005	80	50,000	0.003	0.005	120	40,000
		0.3	0.005	0.005	80	50,000	0.005	0.005	80	50,000	0.003	0.005	100	40,000
		0.5	0.005	0.005	70	50,000	0.005	0.005	70	50,000	0.002	0.003	70	40,000
	0.15	0.3	0.008	0.01	150	50,000	0.008	0.01	150	50,000	0.003	0.005	180	40,000
		0.5	0.007	0.008	150	50,000	0.007	0.008	150	50,000	0.003	0.005	150	40,000
	0.2	0.3	0.01	0.02	250	50,000	0.01	0.02	250	50,000	0.01	0.01	350	40,000
		0.5	0.01	0.02	250	50,000	0.01	0.02	250	50,000	0.008	0.01	320	40,000
		0.75	0.01	0.015	250	50,000	0.01	0.015	250	50,000	0.005	0.01	280	40,000
	0.3	1	0.008	0.015	250	50,000	0.008	0.015	250	50,000	0.003	0.005	250	40,000
		0.5	0.012	0.025	250	50,000	0.012	0.025	250	50,000	0.01	0.015	350	40,000
		0.6	0.012	0.025	250	50,000	0.012	0.025	250	50,000	0.007	0.01	350	40,000
		0.75	0.01	0.02	250	50,000	0.01	0.02	250	50,000	0.007	0.01	330	40,000
		1	0.01	0.02	250	50,000	0.01	0.02	250	50,000	0.007	0.01	320	40,000
		1.25	0.008	0.015	250	50,000	0.008	0.015	250	50,000	0.005	0.007	280	40,000
		1.5	0.008	0.015	200	50,000	0.008	0.015	200	50,000	0.005	0.007	230	40,000
		1.75	0.008	0.015	200	50,000	0.008	0.015	200	50,000	0.003	0.005	180	40,000
		2	0.005	0.012	150	50,000	0.005	0.012	150	50,000	0.003	0.005	150	40,000
		2.25	0.005	0.012	150	50,000	0.005	0.012	150	50,000	0.002	0.003	120	40,000
	2.5	0.005	0.01	150	50,000	0.005	0.01	150	50,000	0.002	0.003	100	40,000	
	3	0.005	0.007	150	50,000	0.005	0.007	150	50,000	0.001	0.003	80	40,000	
	0.4	0.5	0.03	0.07	800	50,000	0.03	0.07	800	50,000	0.03	0.05	800	40,000
		0.8	0.03	0.07	800	50,000	0.03	0.07	800	50,000	0.02	0.05	800	40,000
		1	0.03	0.07	800	50,000	0.03	0.07	800	50,000	0.02	0.05	800	40,000
		1.5	0.03	0.05	700	50,000	0.03	0.05	700	50,000	0.01	0.03	620	40,000
2		0.02	0.03	600	50,000	0.02	0.03	600	50,000	0.01	0.02	500	40,000	
2.5		0.02	0.03	450	50,000	0.02	0.03	450	50,000	0.007	0.01	420	40,000	
3		0.015	0.03	400	50,000	0.015	0.03	400	50,000	0.007	0.01	300	40,000	
0.5	1	0.045	0.07	800	50,000	0.045	0.07	800	50,000	0.03	0.05	1,000	40,000	
	1.5	0.04	0.07	700	50,000	0.04	0.07	700	50,000	0.02	0.05	850	40,000	
	2	0.03	0.06	600	50,000	0.03	0.06	600	50,000	0.02	0.03	720	40,000	
	2.5	0.02	0.06	600	50,000	0.02	0.06	600	50,000	0.01	0.02	600	40,000	
	3	0.02	0.05	500	50,000	0.02	0.05	500	50,000	0.01	0.02	500	40,000	
	3.5	0.02	0.045	400	50,000	0.02	0.045	400	50,000	0.007	0.01	420	40,000	
0.6	4	0.018	0.03	400	50,000	0.018	0.03	400	50,000	0.007	0.01	350	40,000	
	1	0.07	0.12	1,200	50,000	0.07	0.12	1,200	50,000	0.05	0.1	1,400	40,000	
	1.5	0.07	0.12	1,200	50,000	0.07	0.12	1,200	50,000	0.05	0.1	1,400	40,000	
	2	0.07	0.12	1,200	50,000	0.07	0.12	1,200	50,000	0.05	0.1	1,400	40,000	
	2.5	0.05	0.12	1,200	50,000	0.05	0.12	1,200	50,000	0.03	0.05	1,200	40,000	
	3	0.04	0.1	1,000	50,000	0.04	0.1	1,000	50,000	0.03	0.05	1,200	40,000	
	3.5	0.04	0.1	1,000	50,000	0.04	0.1	1,000	50,000	0.02	0.03	1,000	40,000	
	4	0.035	0.08	800	50,000	0.035	0.08	800	50,000	0.02	0.03	1,000	40,000	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid. ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding. ●φp=軸向方向切削深度，φe=徑向方向切削深度。 φp=Axial Depth of Cut φe=Radial Depth of Cut.

長頸球頭立銼刀 Long Neck Ball End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈷鎳合金(Kovar)				
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	
			φp mm	φe mm			φp mm	φe mm			φp mm	φe mm			
2	0.6	4.5	0.035	0.08	750	50,000	0.035	0.08	750	50,000	0.02	0.03	900	35,000	
		5	0.03	0.06	500	30,000	0.03	0.06	500	30,000	0.01	0.02	720	30,000	
		5.5	0.02	0.03	500	30,000	0.02	0.03	500	30,000	0.01	0.015	700	30,000	
		6	0.015	0.03	450	30,000	0.015	0.03	450	30,000	0.007	0.01	500	30,000	
		0.7	2	0.1	0.15	1,500	30,000	0.1	0.15	1,500	30,000	0.07	0.1	1,600	40,000
			4	0.06	0.12	1,200	30,000	0.06	0.12	1,200	30,000	0.04	0.06	1,300	40,000
	6		0.04	0.07	600	30,000	0.04	0.07	600	30,000	0.01	0.03	800	30,000	
	0.8	2	0.15	0.2	2,000	50,000	0.15	0.2	2,000	50,000	0.1	0.15	2,000	40,000	
		3	0.12	0.2	1,800	50,000	0.12	0.2	1,800	50,000	0.1	0.15	2,000	40,000	
		4	0.1	0.2	1,500	50,000	0.1	0.2	1,500	50,000	0.05	0.1	1,600	40,000	
		5	0.08	0.15	1,200	50,000	0.08	0.15	1,200	50,000	0.05	0.05	1,600	40,000	
		6	0.07	0.12	900	30,000	0.07	0.12	900	30,000	0.03	0.05	1,200	30,000	
		7	0.05	0.08	700	30,000	0.05	0.08	700	30,000	0.02	0.03	1,000	30,000	
	0.9	8	0.02	0.05	500	24,000	0.02	0.05	500	24,000	0.01	0.02	820	30,000	
		2	0.2	0.3	2,800	50,000	0.2	0.3	2,800	50,000	0.1	0.2	2,200	40,000	
		4	0.15	0.25	2,000	50,000	0.15	0.25	2,000	50,000	0.05	0.12	1,800	40,000	
		6	0.1	0.2	1,300	30,000	0.1	0.2	1,300	30,000	0.035	0.05	1,200	30,000	
		8	0.055	0.08	800	24,000	0.055	0.08	800	24,000	0.025	0.04	1,000	30,000	
		2	0.25	0.4	3,500	50,000	0.25	0.4	3,500	50,000	0.1	0.3	2,500	40,000	
	1	2.5	0.25	0.4	3,200	50,000	0.25	0.4	3,200	50,000	0.1	0.3	2,500	40,000	
		3	0.25	0.4	3,000	50,000	0.25	0.4	3,000	50,000	0.1	0.3	2,500	40,000	
		4	0.2	0.4	2,500	50,000	0.2	0.4	2,500	50,000	0.1	0.2	2,500	40,000	
		5	0.15	0.35	2,000	50,000	0.15	0.35	2,000	50,000	0.05	0.15	2,000	30,000	
		6	0.15	0.3	1,500	50,000	0.15	0.3	1,500	50,000	0.05	0.1	1,800	30,000	
		7	0.12	0.3	1,300	30,000	0.12	0.3	1,300	30,000	0.04	0.06	1,200	30,000	
		8	0.08	0.15	1,200	30,000	0.08	0.15	1,200	30,000	0.04	0.06	1,000	30,000	
		9	0.06	0.1	1,000	30,000	0.06	0.1	1,000	30,000	0.03	0.05	820	25,000	
		10	0.05	0.08	800	30,000	0.05	0.08	800	30,000	0.03	0.05	750	25,000	
		12	0.02	0.04	600	20,000	0.02	0.04	600	20,000	0.01	0.03	600	20,000	
		1.2	2.4	0.3	0.45	3,400	30,000	0.3	0.45	3,400	30,000	0.1	0.3	2,500	30,000
			4	0.28	0.45	3,000	30,000	0.28	0.45	3,000	30,000	0.1	0.2	2,500	30,000
	6		0.15	0.4	2,000	30,000	0.15	0.4	2,000	30,000	0.07	0.1	2,000	30,000	
	8		0.12	0.3	1,300	30,000	0.12	0.3	1,300	30,000	0.05	0.1	1,600	30,000	
	10		0.08	0.15	1,200	20,000	0.08	0.15	1,200	20,000	0.03	0.07	1,200	20,000	
	12		0.05	0.08	800	20,000	0.05	0.08	800	20,000	0.02	0.05	860	20,000	
	1.4	8	0.15	0.45	2,500	30,000	0.15	0.45	2,500	30,000	0.12	0.2	2,500	30,000	
12		0.1	0.18	1,200	20,000	0.1	0.18	1,200	20,000	0.07	0.12	1,400	20,000		
16		0.05	0.08	600	20,000	0.05	0.08	600	20,000	0.02	0.05	700	17,000		
3		0.3	0.5	4,000	30,000	0.3	0.5	4,000	30,000	0.15	0.3	3,000	30,000		
1.5	4	0.3	0.45	4,000	30,000	0.3	0.45	4,000	30,000	0.15	0.3	3,000	30,000		
	6	0.2	0.45	3,000	30,000	0.2	0.45	3,000	30,000	0.15	0.2	3,000	30,000		

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid. ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding. ●φp=軸向方向切削深度，φe=徑向方向切削深度。 φp=Axial Depth of Cut φe=Radial Depth of Cut.

HARD STAR type A 切削條件參考表 Recommended Milling Conditions

■型號: HALB230
Model number: HALB230

長頸球頭立銼刀 Long Neck Ball End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈷鎳合金(Kovar)			
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm		
2	1.5	8	0.15	0.4	2,400	30,000	0.15	0.4	2,400	30,000	0.1	0.2	2,500	25,000
		10	0.12	0.3	1,800	30,000	0.12	0.3	1,800	30,000	0.1	0.1	2,500	25,000
		12	0.1	0.2	1,200	24,000	0.1	0.2	1,200	24,000	0.05	0.1	1,800	20,000
		14	0.1	0.15	1,200	24,000	0.1	0.15	1,200	24,000	0.05	0.07	1,200	20,000
		16	0.07	0.12	800	18,000	0.07	0.12	800	18,000	0.03	0.05	720	18,000
	1.6	8	0.15	0.45	3,000	24,000	0.15	0.45	3,000	24,000	0.1	0.2	2,500	25,000
		12	0.1	0.25	1,800	24,000	0.1	0.25	1,800	24,000	0.07	0.1	1,800	20,000
		16	0.08	0.15	650	18,000	0.08	0.15	650	18,000	0.03	0.05	720	16,000
		20	0.05	0.1	400	12,000	0.05	0.1	400	12,000	0.02	0.03	400	12,000
	2	3	0.45	0.7	4,000	30,000	0.45	0.7	4,000	30,000	0.2	0.5	3,000	25,000
			4	0.45	0.7	4,000	30,000	0.45	0.7	4,000	30,000	0.2	0.5	3,000
		6	0.38	0.7	3,000	30,000	0.38	0.7	3,000	30,000	0.2	0.5	2,500	25,000
			8	0.3	0.45	2,500	20,000	0.3	0.45	2,500	20,000	0.2	0.3	2,000
		10	0.23	0.45	2,500	20,000	0.23	0.45	2,500	20,000	0.1	0.3	2,000	18,000
			12	0.2	0.3	1,800	16,000	0.2	0.3	1,800	16,000	0.1	0.2	1,600
		13	0.2	0.3	1,800	16,000	0.2	0.3	1,800	16,000	0.08	0.2	1,600	16,000
			14	0.15	0.3	1,800	16,000	0.15	0.3	1,800	16,000	0.07	0.15	1,600
		16	0.15	0.25	1,600	14,000	0.15	0.25	1,600	14,000	0.07	0.15	1,600	16,000
			18	0.1	0.2	1,600	14,000	0.1	0.2	1,600	14,000	0.05	0.1	1,400
	20	0.1	0.15	1,000	12,000	0.1	0.15	1,000	12,000	0.05	0.1	1,000	14,000	
6		0.5	0.8	4,000	20,000	0.5	0.8	4,000	20,000	0.3	0.4	2,800	20,000	
2.5	8	0.3	0.8	3,000	20,000	0.3	0.8	3,000	20,000	0.25	0.3	2,600	20,000	
	10	0.3	0.8	3,000	20,000	0.3	0.8	3,000	20,000	0.2	0.3	2,500	20,000	
	15	0.25	0.45	2,500	20,000	0.25	0.45	2,500	20,000	0.1	0.2	2,000	18,000	
	20	0.15	0.3	1,800	16,000	0.15	0.3	1,800	16,000	0.07	0.15	1,500	16,000	
	6	0.5	1	4,000	20,000	0.5	1	4,000	20,000	0.2	0.8	3,000	20,000	
3	8	0.45	0.8	4,000	20,000	0.45	0.8	4,000	20,000	0.2	0.8	3,000	20,000	
	10	0.45	0.8	4,000	20,000	0.45	0.8	4,000	20,000	0.2	0.6	2,500	20,000	
	12	0.3	0.6	3,000	20,000	0.3	0.6	3,000	20,000	0.2	0.6	2,500	20,000	
	14	0.3	0.6	3,000	20,000	0.3	0.6	3,000	20,000	0.1	0.4	2,000	18,000	
	16	0.23	0.5	3,000	20,000	0.23	0.5	3,000	20,000	0.1	0.4	2,000	18,000	
	20	0.23	0.45	1,800	16,000	0.23	0.45	1,800	16,000	0.1	0.3	1,600	18,000	
	25	0.2	0.4	1,200	16,000	0.2	0.4	1,200	16,000	0.1	0.2	1,200	16,000	
	30	0.15	0.3	800	12,000	0.15	0.3	800	12,000	0.07	0.1	750	14,000	
3.5	15	0.45	0.6	4,000	20,000	0.45	0.6	4,000	20,000	0.25	1	3,000	20,000	
	20	0.3	0.45	2,400	18,000	0.3	0.45	2,400	18,000	0.18	0.6	2,500	18,000	
	25	0.25	0.42	2,000	18,000	0.25	0.42	2,000	18,000	0.12	0.35	1,800	16,000	
	30	0.23	0.4	1,600	12,000	0.23	0.4	1,600	12,000	0.1	0.25	1,500	14,000	
4	35	0.15	0.3	1,200	12,000	0.15	0.3	1,200	12,000	0.08	0.2	1,200	13,000	
	8	0.55	1.2	4,000	20,000	0.55	1.2	4,000	20,000	0.3	1.5	3,000	20,000	
	10	0.55	1.2	4,000	20,000	0.55	1.2	4,000	20,000	0.3	1.5	3,000	20,000	
12	0.53	1	4,000	20,000	0.53	1	4,000	20,000	0.3	1.5	3,000	20,000		

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向切深，∅e=徑向切深。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸球頭立銼刀 Long Neck Ball End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈷鎳合金(Kovar)			
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm		
2	4	14	0.45	1	4,000	20,000	0.45	1	4,000	20,000	0.3	1.5	3,000	20,000
		15	0.38	0.8	3,500	20,000	0.38	0.8	3,500	20,000	0.3	1.5	3,000	20,000
		20	0.3	0.5	3,300	20,000	0.3	0.5	3,300	20,000	0.2	1	2,400	16,000
		25	0.23	0.45	2,600	16,000	0.23	0.45	2,600	16,000	0.2	0.8	1,600	16,000
		30	0.2	0.4	2,600	16,000	0.2	0.4	2,600	16,000	0.1	0.3	1,600	14,000
		35	0.18	0.3	1,800	14,000	0.18	0.3	1,800	14,000	0.1	0.2	1,200	14,000
	5	15	0.55	1.5	4,000	20,000	0.55	1.5	4,000	20,000	0.3	1.5	3,000	18,000
		20	0.45	1	4,000	20,000	0.45	1	4,000	20,000	0.3	1.5	3,000	18,000
		25	0.38	0.9	3,000	16,000	0.38	0.9	3,000	16,000	0.3	1.2	3,000	15,000
		30	0.3	0.8	2,400	16,000	0.3	0.8	2,400	16,000	0.2	1	2,500	15,000
	40	0.23	0.45	1,200	12,000	0.23	0.45	1,200	12,000	0.2	0.8	2,000	12,000	
		10	0.75	2.3	4,000	18,000	0.75	2.3	4,000	18,000	0.3	2	3,000	16,000
	6	15	0.75	2	4,000	18,000	0.75	2	4,000	18,000	0.3	2	3,000	16,000
		20	0.75	1.8	4,000	18,000	0.75	1.8	4,000	18,000	0.3	2	3,000	16,000
		25	0.6	1.5	4,000	12,000	0.6	1.5	4,000	12,000	0.3	1.5	3,000	16,000
		30	0.53	1	3,000	12,000	0.53	1	3,000	12,000	0.2	1.5	3,000	14,000
		35	0.53	0.8	2,500	12,000	0.53	0.8	2,500	12,000	0.2	1.2	2,400	13,000
		40	0.38	0.6	1,500	8,000	0.38	0.6	1,500	8,000	0.2	1	1,800	12,000
		50	0.3	0.6	1,500	8,000	0.3	0.6	1,500	8,000	0.1	0.6	1,200	8,200
		60	0.3	0.6	1,500	8,000	0.3	0.6	1,500	8,000	0.07	0.3	600	6,000

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向切深，∅e=徑向切深。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

超硬立銑刀 Carbide End Mill



特長

- 使用本公司獨創的濺射法鍍膜技術，進行Hard Star Type TI 鍍膜！
- 納米級超光滑鍍膜可抑制溶著，延長使用壽命！
- 它具有優異的耐腐蝕性和耐熱性，非常適合加工包括鉻鎳鐵合金在內的各種難切削材料！
- 可在短時間內提供訂製產品！

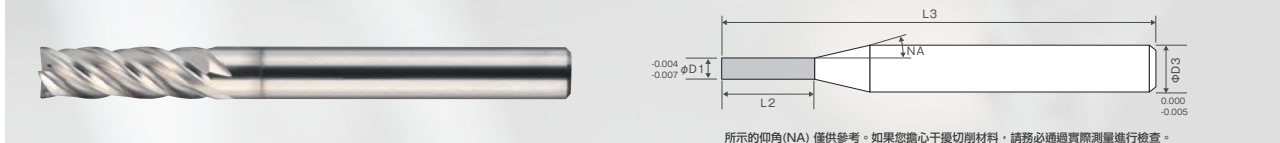
Features

- Hard Star Type TI has original sputtering coating technology.
- Nano-level ultra-smooth coating suppresses welding and achieves a long life.
- Excellent corrosion resistance and heat resistance, ideal for processing a wide range of difficult-to-cut materials including Inconel.
- Non-standard custom-made products available.

超硬平角立銑刀 Carbide Square End Mill



型號: HTIS499 Model number: HTIS499



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size): mm

型號 Code No.	刀刃直徑 (D1) Tool Diameter	刃長 (L2) Length of Cut	仰角 (NA) Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)
HTIS499-0100-00200	1	2	15	4	50	4,000
HTIS499-0100-00300		3				4,160
HTIS499-0150-00300	1.5	3	15	4	50	4,800
HTIS499-0150-00450		4.5				5,120
HTIS499-0200-00400	2	4	15	4	50	5,040
HTIS499-0200-00600		6				5,360
HTIS499-0250-00500	2.5	5	15	4	50	5,040
HTIS499-0250-00750		7.5				5,440
HTIS499-0300-00600	3	6	15	4	50	5,040
HTIS499-0300-00900		9				5,360
HTIS499-0400-00800	4	8	15	6	50	5,280
HTIS499-0400-01200		12				5,600
HTIS499-0500-01000	5	10	15	6	50	5,600
HTIS499-0500-01500		15				6,000
HTIS499-0600-01200	6	12	—	6	50	5,840
HTIS499-0600-01800		18				6,080

CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
Hard Star TT Series
ion Depo A Series
ion Depo U Series
DLC Series
Non-Coat Series
ion Depo R Series

HARD STAR type TI 切削條件參考表 Recommended Milling Conditions

■型號: HTIS499
Model number: HTIS499

平角立銼刀 Square End Mill

切削材料 Work Material			耐熱合金 Heat resistant alloy 鎳鎢合金 Inconel			
刃數 Number of Flutes	刀徑直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
			∅p mm	∅e mm		
4	1	2	1	0.05	150	12,000
		3	1	0.025	100	11,000
	1.5	3	1.5	0.07	200	9,000
		4.5	1.5	0.035	150	8,000
	2	4	2	0.1	200	6,500
		6	2	0.05	150	6,000
	2.5	5	2.5	0.12	250	5,500
		7.5	2.5	0.6	200	5,000
	3	6	3	0.15	250	3,400
		9	3	0.075	200	3,200
	4	8	4	0.2	250	3,000
		12	4	0.1	200	2,700
	5	10	5	0.25	300	2,500
		15	5	0.12	250	2,200
	6	12	6	0.3	300	2,000
		18	6	0.15	250	1,800

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
Hard Star TT Series
Ion Depo A Series
Ion Depo U Series
DLC Series
Non-Coat Series
Ion Depo R Series

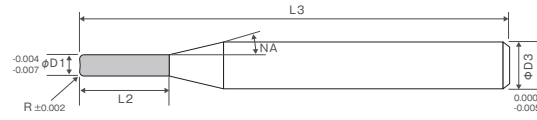
HARD STAR Type TI Series

超硬圓角立銑刀 Carbide Radius End Mill

■型號: HTIR499 Model number: HTIR499



Hard TI
super MG
刀刃數 4
螺旋角 40°/42°
仰角 15°
柄徑公差 ±0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.

●聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size): mm

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	刃長 (L2) Length of Cut	仰角 (NA) ^o Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)
HTIR499-0300-0300-00800	3	0.3	8	15	4	50	5,520
HTIR499-0300-0500-00800		0.5	8	15	4	50	5,520
HTIR499-0400-0300-01100	4	0.3	11	15	6	50	6,000
HTIR499-0400-0500-01100		0.5	11	15	6	50	6,000
HTIR499-0400-1000-01100		1	11	15	6	50	6,000
HTIR499-0500-0300-01300	5	0.3	13	15	6	50	6,240
HTIR499-0500-0500-01300		0.5	13	15	6	50	6,240
HTIR499-0500-1000-01300		1	13	15	6	50	6,480
HTIR499-0600-0500-01300	6	0.5	13	—	6	50	6,240
HTIR499-0600-1000-01300		1	13	—	6	50	6,480
HTIR499-0800-0500-01900	8	0.5	19	—	8	70	10,800
HTIR499-0800-1000-01900		1	19	—	8	70	10,800
HTIR499-1000-0500-02200	10	0.5	22	—	10	80	12,560
HTIR499-1000-1000-02200		1	22	—	10	80	12,560
HTIR499-1000-2000-02200		2	22	—	10	80	12,560
HTIR499-1000-3000-02200		3	22	—	10	80	12,560
HTIR499-1200-0500-02600	12	0.5	26	—	12	110	16,560
HTIR499-1200-1000-02600		1	26	—	12	110	16,560
HTIR499-1200-2000-02600		2	26	—	12	110	16,560

HARD STAR Type TI Series

HARD STAR type TI 切削條件參考表 Recommended Milling Conditions

■型號: HTIR499
Model number: HTIR499

圓角立銑刀 Radius End Mill

刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	耐熱合金 Heat resistant alloy 鎢鈹合金 Inconel			
			切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
			ap mm	ae mm		
4	3	8	4.5	0.15	250	3,600
	4	11	6	0.2	250	3,100
	5	13	7.5	0.25	300	2,600
	6	13	9	0.3	300	2,100
	8	19	12	0.4	300	1,700
	10	22	15	0.5	250	1,300
12	26	18	0.6	200	900	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度應精加工到最大。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●ap=軸向方向切削深度，ae=徑向方向切削深度。 ap=Axial Depth of Cut. ae=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

超硬立銑刀 Carbide End Mill

Hard TT
super MG
刀刃數 4
螺旋角 40°/42°
仰角 15°
柄徑公差 ±0/-0.005



特長

- 使用獨創的濺射法鍍膜技術，進行Hard Star Type TT鍍膜！
- 納米級超光滑鍍膜可抑制溶著，延長使用壽命！
- 它具有優異的耐腐蝕性和耐熱性，非常適合加工包括鉻鎳鐵合金在內的各種難切削材料！
- 可在短時間內提供訂製產品！

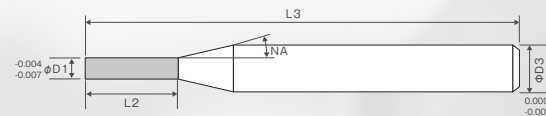
Features

- Hard Star Type TT has original sputtering coating technology.
- Nano-level ultra-smooth coating suppresses welding and achieves a long life.
- Excellent corrosion resistance and heat resistance, ideal for processing a wide range of difficult-to-cut materials including Titanium alloy.
- Non-standard custom-made products available.

超硬平角立銑刀 Carbide Square End Mill

Hard TT
super MG
刀刃數 4
螺旋角 40°/42°
仰角 15°
柄徑公差 ±0/-0.005

型號:HTTS499 Model number:HTTS499



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size):mm

型號 Code No.	刀刃直徑 (D1) Tool Diameter	刃長 (L2) Length of Cut	仰角 (NA) Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (円) Retail Price (JPY)
HTTS499-0100-0000-00200	1	2	15	4	50	4,000
HTTS499-0100-0000-00300		3				4,160
HTTS499-0150-0000-00300	1.5	3	15	4	50	4,800
HTTS499-0150-0000-00450		4.5				5,120
HTTS499-0200-0000-00400	2	4	15	4	50	5,040
HTTS499-0200-0000-00600		6				5,360
HTTS499-0250-0000-00500	2.5	5	15	4	50	5,040
HTTS499-0250-0000-00750		7.5				5,440
HTTS499-0300-0000-00600	3	6	15	4	50	5,040
HTTS499-0300-0000-00900		9				5,360
HTTS499-0400-0000-00800	4	8	15	6	50	5,280
HTTS499-0400-0000-01200		12				5,600
HTTS499-0500-0000-01000	5	10	15	6	50	5,600
HTTS499-0500-0000-01500		15				6,000
HTTS499-0600-0000-01200	6	12	—	6	50	5,840
HTTS499-0600-0000-01800		18				6,080

HARD STAR type TT 切削條件參考表 Recommended Milling Conditions

■型號: HTTS499
Model number: HTTS499

平角立銼刀 Square End Mill

切削材料 Work Material			不銹鋼 Stainless Steel SUS304				鈦合金 Titanium alloy			
刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
			∅p mm	∅e mm			∅p mm	∅e mm		
4	1	2	1	0.2	600	18,000	1	0.2	600	16,800
		3	1	0.1	500	16,000	1	0.1	500	14,900
	1.5	3	1.5	0.3	700	12,500	1.5	0.3	700	11,700
		4.5	1.5	0.15	550	11,000	1.5	0.15	550	10,300
	2	4	2	0.4	850	10,000	2	0.4	850	9,300
		6	2	0.2	650	8,500	2	0.2	650	7,900
	2.5	5	2.5	5	1,000	8,200	2.5	5	1,000	7,600
		7.5	2.5	0.25	750	7,100	2.5	0.25	750	6,600
	3	6	3	0.6	1,100	7,200	3	0.6	1,100	6,700
		9	3	0.3	800	6,000	3	0.3	800	5,600
	4	8	4	0.8	1,200	6,400	4	0.8	1,200	6,000
		12	4	0.4	920	5,400	4	0.4	920	5,000
	5	10	5	1	1,200	5,600	5	1	1,200	5,200
		15	5	0.5	1,000	5,000	5	0.5	1,000	4,700
	6	12	6	1.2	1,200	5,000	6	1.2	1,200	4,600
		18	6	0.6	1,000	4,500	6	0.6	1,000	4,200

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

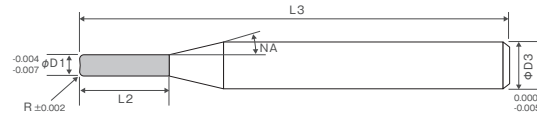
HARD STAR Type TT Series

超硬圓角立銑刀 Carbide Radius End Mill

■型號:HTTR499 Model number:HTTR499



Hard TT
super MG
刀刃數 4
螺旋角 40°/42°
仰角 15°
柄徑公差 ±0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切屑材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.

●請系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size):mm

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	刃長 (L2) Length of Cut	仰角 (NA) ^o Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)
HTTR499-0300-0300-00800	3	0.3	8	15	4	50	5,520
HTTR499-0300-0500-00800		0.5	8	15	4	50	5,520
HTTR499-0400-0300-01100	4	0.3	11	15	6	50	6,000
HTTR499-0400-0500-01100		0.5	11	15	6	50	6,000
HTTR499-0400-1000-01100		1	11	15	6	50	6,000
HTTR499-0500-0300-01300	5	0.3	13	15	6	50	6,240
HTTR499-0500-0500-01300		0.5	13	15	6	50	6,240
HTTR499-0500-1000-01300		1	13	15	6	50	6,240
HTTR499-0600-0500-01300	6	0.5	13	—	6	50	6,480
HTTR499-0600-1000-01300		1	13	—	6	50	6,480
HTTR499-0800-0500-01900	8	0.5	19	—	8	70	10,800
HTTR499-0800-1000-01900		1	19	—	8	70	10,800
HTTR499-1000-0500-02200	10	0.5	22	—	10	80	12,560
HTTR499-1000-1000-02200		1	22	—	10	80	12,560
HTTR499-1000-2000-02200		2	22	—	10	80	12,560
HTTR499-1000-3000-02200		3	22	—	10	80	12,560
HTTR499-1200-0500-02600	12	0.5	26	—	12	110	16,560
HTTR499-1200-1000-02600		1	26	—	12	110	16,560
HTTR499-1200-2000-02600		2	26	—	12	110	16,560

HARD STAR Type TT Series

HARD STAR type TT 切削條件參考表 Recommended Milling Conditions

■型號:HTTR499
Model number:HTTR499

圓角立銑刀 Radius End Mill

切削材料 Work Material	不銹鋼 Stainless Steel SUS304						鈦合金 Titanium alloy				
	刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
				∅p mm	∅e mm			∅p mm	∅e mm		
4	3	8	4.5	0.6	750	6,000	4.5	0.6	750	5,600	
	4	11	6	0.8	800	5,200	6	0.8	800	4,800	
	5	13	7.5	1	900	4,600	7.5	1	900	4,200	
	6	13	9	1.2	1000	4,200	9	1.2	1000	3,800	
	8	19	12	1.6	850	3,600	12	1.6	850	3,200	
	10	22	15	2	600	3,000	15	2	600	2,600	
	12	26	18	2.4	500	2,500	18	2.4	500	2,100	

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing.
●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut.
●建議使用油霧或油基非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

超硬立銑刀 Carbide End Mill







特長

- 由離子電鍍法鍍膜的Ion Depo Type A可用於合金鋼、碳鋼、銅材料等各種工件材料！
- 通過具有優異耐磨性的獨創鍍膜實現長壽命！
- 我們獨創的再研磨和再鍍膜技術可抑制性能下降，並有助於進一步降低成本！
- 可在短時間內提供訂製產品！

Features

- Ion Depo Type A coating for various work materials, heat-treated steel, carbon steel, and copper.
- Achieves long life with excellent wear resistance.
- TOWA re-polishing and re-coating technology enhances cutting tool life and reduces overall tooling cost.
- Non-standard custom-made products available.

超硬平角立銑刀 Carbide Square End Mill

■ 型號: IAS230 Model number: IAS230





所示的仰角 (NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size): mm

型號 Code No.	刀刃直徑 (D1) Tool Diameter	刃長 (L2) Length of Cut	仰角 (NA) Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (円) Retail Price (JPY)
IAS230-0010-00015	0.1	0.15	15	4	50	5,760
IAS230-0015-00020	0.15	0.2	15	4	50	6,000
IAS230-0020-00040	0.2	0.4	15	4	50	3,600
IAS230-0025-00050	0.25	0.5	15	4	50	8,480
IAS230-0030-00030	0.3	0.3	15	4	50	3,120
IAS230-0030-00060		0.6	15	4	50	3,120
IAS230-0035-00070	0.35	0.7	15	4	50	7,360
IAS230-0040-00060	0.4	0.6	15	4	50	3,440
IAS230-0040-00080		0.8	15	4	50	3,440
IAS230-0045-00090	0.45	0.9	15	4	50	7,360
IAS230-0050-00080	0.5	0.8	15	4	50	1,760
IAS230-0050-00125		1.25	15	4	50	1,760
IAS230-0050-00200		2	15	4	50	3,840
IAS230-0055-00130	0.55	1.3	15	4	50	5,760
IAS230-0060-00100	0.6	1	15	4	50	2,720
IAS230-0060-00150		1.5	15	4	50	2,720
IAS230-0060-00240		2.4	15	4	50	3,840
IAS230-0065-00150	0.65	1.5	15	4	50	5,760
IAS230-0070-00180	0.7	1.8	15	4	50	2,960
IAS230-0075-00180	0.75	1.8	15	4	50	5,760
IAS230-0080-00120	0.8	1.2	15	4	50	1,760
IAS230-0080-00200		2	15	4	50	1,760
IAS230-0080-00320		3.2	15	4	50	3,840
IAS230-0085-00200	0.85	2	15	4	50	5,760
IAS230-0090-00200	0.9	2	15	4	50	2,960
IAS230-0095-00200	0.95	2	15	4	50	5,760
IAS230-0100-00150	1	1.5	15	4	50	1,520
IAS230-0100-00250		2.5	15	4	50	1,520
IAS230-0100-00400		4	15	4	50	3,440
IAS230-0105-00250	1.05	2.5	15	4	50	5,760
IAS230-0110-00250	1.1	2.5	15	4	50	4,800
IAS230-0115-00250	1.15	2.5	15	4	50	5,760
IAS230-0120-00300	1.2	3	15	4	50	1,760
IAS230-0125-00300	1.25	3	15	4	50	5,760
IAS230-0130-00300	1.3	3	15	4	50	4,800
IAS230-0135-00300	1.35	3	15	4	50	5,760
IAS230-0140-00350	1.4	3.5	15	4	50	4,800
IAS230-0145-00350	1.45	3.5	15	4	50	5,760
IAS230-0150-00200	1.5	2	15	4	50	1,520
IAS230-0150-00400		4	15	4	50	1,520
IAS230-0150-00600		6	15	4	50	3,440
IAS230-0155-00400	1.55	4	15	4	50	5,760
IAS230-0160-00400	1.6	4	15	4	50	4,800
IAS230-0165-00400	1.65	4	15	4	50	5,760
IAS230-0170-00450	1.7	4.5	15	4	50	4,800

● 請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ● 建議使用油霧或將非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ● 切深應為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ● 工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ● β =軸向切深, θ =徑向切深。 β =Axial Depth of Cut, θ =Radial Depth of Cut. ● 請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

ion Depo Type A Series

●聯繫我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size):mm

型號 Code No.	刀刃直徑 (D1) Tool Diameter	刃長 (L2) Length of Cut	仰角 (NA) Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (円) Retail Price (JPY)
IAS230-0175-00450	1.75	4.5	15	4	50	5,760
IAS230-0180-00450	1.8	4.5	15	4	50	1,760
IAS230-0185-00450	1.85	4.5	15	4	50	5,760
IAS230-0190-00500	1.9	5	15	4	50	4,800
IAS230-0195-00500	1.95	5	15	4	50	5,760
IAS230-0200-00300	2	3	15	4	50	1,520
IAS230-0200-00500		5	15	4	50	1,520
IAS230-0200-00800		8	15	4	50	3,440
IAS230-0205-00500	2.05	5	15	4	50	5,760
IAS230-0210-00550	2.1	5.5	15	4	50	4,800
IAS230-0215-00550	2.15	5.5	15	4	50	5,760
IAS230-0220-00550	2.2	5.5	15	4	50	4,800
IAS230-0225-00550	2.25	5.5	15	4	50	5,760
IAS230-0230-00600	2.3	6	15	4	50	4,800
IAS230-0235-00600	2.35	6	15	4	50	5,760
IAS230-0240-00600	2.4	6	15	4	50	4,800
IAS230-0245-00600	2.45	6	15	4	50	5,760
IAS230-0250-00700	2.5	7	15	4	50	1,520
IAS230-0250-01000		10	15	4	50	3,440
IAS230-0255-00700	2.55	7	15	4	50	5,760
IAS230-0260-00700	2.6	7	15	4	50	4,800
IAS230-0265-00700	2.65	7	15	4	50	5,760
IAS230-0270-00700	2.7	7	15	4	50	4,800
IAS230-0275-00700	2.75	7	15	4	50	5,760
IAS230-0280-00700	2.8	7	15	4	50	4,800
IAS230-0285-00800	2.85	8	15	4	50	5,760
IAS230-0290-00800	2.9	8	15	4	50	4,800
IAS230-0295-00800	2.95	8	15	4	50	5,760
IAS230-0300-00500	3	5	15	4	50	2,000
IAS230-0300-00800		8	15	4	50	2,000
IAS230-0300-01200		12	15	4	50	4,400
IAS230-0310-00800	3.1	8	15	6	50	5,600
IAS230-0320-00800	3.2	8	15	6	50	5,600
IAS230-0330-00900	3.3	9	15	6	50	5,600
IAS230-0340-00900	3.4	9	15	6	50	5,600
IAS230-0350-00900	3.5	9	15	6	50	3,600
IAS230-0360-00900	3.6	9	15	6	50	5,600
IAS230-0370-01000	3.7	10	15	6	50	5,600
IAS230-0380-01000	3.8	10	15	6	50	5,600
IAS230-0390-01000	3.9	10	15	6	50	5,600
IAS230-0400-00600	4	6	15	6	50	2,240
IAS230-0400-01000		10	15	6	50	2,240
IAS230-0400-01600		16	15	6	50	4,720
IAS230-0410-01100	4.1	11	15	6	50	6,000
IAS230-0420-01100	4.2	11	15	6	50	6,000

●聯繫我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size):mm

型號 Code No.	刀刃直徑 (D1) Tool Diameter	刃長 (L2) Length of Cut	仰角 (NA) Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (円) Retail Price (JPY)
IAS230-0430-01100	4.3	11	15	6	50	6,000
IAS230-0440-01100	4.4	11	15	6	50	6,000
IAS230-0450-01200	4.5	12	15	6	50	4,160
IAS230-0460-01200	4.6	12	15	6	50	6,000
IAS230-0470-01200	4.7	12	15	6	50	6,000
IAS230-0480-01200	4.8	12	15	6	50	6,000
IAS230-0490-01300	4.9	13	15	6	50	6,000
IAS230-0500-00800	5	8	15	6	50	2,400
IAS230-0500-01300		13	15	6	50	2,400
IAS230-0500-02000		20	15	6	60	5,360
IAS230-0510-01300	5.1	13	15	6	50	6,400
IAS230-0520-01300	5.2	13	15	6	50	6,400
IAS230-0530-01400	5.3	14	15	6	50	6,400
IAS230-0540-01400	5.4	14	15	6	50	6,400
IAS230-0550-01400	5.5	14	15	6	50	4,160
IAS230-0560-01400	5.6	14	15	6	50	6,400
IAS230-0570-01500	5.7	15	15	6	50	6,400
IAS230-0580-01500	5.8	15	15	6	50	6,400
IAS230-0590-01500	5.9	15	15	6	50	6,400
IAS230-0600-01000	6	10	—	6	50	2,640
IAS230-0600-01500		15	—	6	50	2,640
IAS230-0600-02400		24	—	6	60	5,440
IAS230-0650-01700	6.5	17	15	8	70	9,200
IAS230-0650-02000		20	15	8	70	9,200
IAS230-0700-01800	7	18	15	8	70	8,560
IAS230-0750-02000	7.5	20	15	8	70	10,240
IAS230-0800-02000	8	20	—	8	70	5,600
IAS230-0800-03200		32	—	8	80	10,800
IAS230-0850-02300	8.5	23	15	10	80	12,320
IAS230-0900-02300	9	23	15	10	80	11,280
IAS230-0950-02500	9.5	25	15	10	80	13,440
IAS230-1000-02500	10	25	—	10	80	6,560
IAS230-1000-04000		40	—	10	90	12,240
IAS230-1050-02800	10.5	28	15	12	110	17,120
IAS230-1100-02800	11	28	15	12	110	17,120
IAS230-1150-03000	11.5	30	15	12	110	10,800
IAS230-1200-03000	12	30	—	12	110	10,800
IAS230-1200-04800		48	—	12	120	20,480
IAS230-1400-02800	14	28	—	14	110	20,560
IAS230-1600-04800	16	48	—	16	140	22,640
IAS230-1800-05400	18	54	—	18	140	35,600
IAS230-2000-06000	20	60	—	20	150	38,560

ion Depo Type A Series

ion Depo Type A Series

ion Depo type A 切削條件參考表 Recommended Milling Conditions

■型號:IAS230
Model number:IAS230

平角立銼刀 Square End Mill

切削材料 Work Material			鑄鐵 Cast Irons FCD				碳鋼 Carbon Steels S50C/SS400				預硬鋼 Prehardened Steels PX5/NAK80				合金鋼 Die Steels SKD11/SKD61				
刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	
			ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	
2	0.1	0.15	0.005	0.005	25	50,000	0.005	0.005	25	50,000	0.005	0.005	20	50,000	0.005	0.005	15	50,000	
	0.15	0.2	0.01	0.01	25	50,000	0.008	0.008	25	50,000	0.008	0.008	20	50,000	0.008	0.008	15	50,000	
	0.2	0.4	0.01	0.01	40	50,000	0.01	0.01	40	50,000	0.01	0.01	30	50,000	0.01	0.01	25	50,000	
	0.25	0.5	0.01	0.01	40	50,000	0.01	0.01	40	50,000	0.01	0.01	30	50,000	0.01	0.01	25	50,000	
	0.3	0.3	0.15	0.02	0.02	100	50,000	0.15	0.02	100	50,000	0.15	0.02	85	50,000	0.15	0.02	90	50,000
		0.6	0.15	0.02	0.02	100	50,000	0.15	0.02	100	50,000	0.15	0.02	85	50,000	0.15	0.02	90	50,000
	0.35	0.7	0.18	0.02	150	50,000	0.18	0.02	150	50,000	0.18	0.02	85	50,000	0.18	0.02	90	50,000	
	0.4	0.6	0.20	0.02	0.02	150	50,000	0.20	0.02	150	50,000	0.20	0.02	110	40,000	0.20	0.02	130	48,000
		0.8	0.20	0.02	0.02	150	50,000	0.20	0.02	150	50,000	0.20	0.02	110	40,000	0.20	0.02	130	48,000
	0.45	0.9	0.23	0.02	150	50,000	0.23	0.02	150	50,000	0.23	0.02	110	40,000	0.23	0.02	130	48,000	
	0.5	0.8	0.25	0.03	0.03	170	42,000	0.25	0.03	170	42,000	0.25	0.03	110	32,000	0.25	0.03	130	39,000
		1.25	0.50	0.03	0.03	170	42,000	0.50	0.03	170	42,000	0.50	0.03	110	32,000	0.50	0.03	130	39,000
		2	0.50	0.03	0.03	170	42,000	0.50	0.03	170	42,000	0.50	0.03	110	32,000	0.50	0.03	130	39,000
	0.55	1.3	0.55	0.03	180	42,000	0.55	0.03	180	42,000	0.55	0.03	110	32,000	0.55	0.03	130	39,000	
	0.6	1	0.60	0.03	0.03	180	42,000	0.60	0.03	180	42,000	0.60	0.03	110	32,000	0.60	0.03	130	39,000
		1.5	0.60	0.03	0.03	180	42,000	0.60	0.03	180	42,000	0.60	0.03	110	32,000	0.60	0.03	130	39,000
	0.65	1.5	0.65	0.03	180	42,000	0.65	0.03	180	42,000	0.65	0.03	110	32,000	0.65	0.03	130	39,000	
	0.7	1.8	0.70	0.04	180	42,000	0.70	0.04	180	42,000	0.70	0.04	110	32,000	0.70	0.04	130	39,000	
	0.75	1.8	0.75	0.04	180	42,000	0.75	0.04	180	42,000	0.75	0.04	110	32,000	0.75	0.04	130	39,000	
	0.8	1.2	0.80	0.04	0.04	210	26,000	0.80	0.04	210	26,000	0.80	0.04	130	20,000	0.80	0.04	150	24,000
2		0.80	0.04	0.04	210	26,000	0.80	0.04	210	26,000	0.80	0.04	130	20,000	0.80	0.04	150	24,000	
3.2		0.80	0.04	0.04	210	26,000	0.80	0.04	210	26,000	0.80	0.04	130	20,000	0.80	0.04	150	24,000	
0.85	2	0.85	0.04	210	26,000	0.85	0.04	210	26,000	0.85	0.04	130	20,000	0.85	0.04	150	24,000		
0.9	2	0.90	0.05	210	26,000	0.90	0.05	210	26,000	0.90	0.05	130	20,000	0.90	0.05	150	24,000		
0.95	2	0.95	0.05	210	26,000	0.95	0.05	210	26,000	0.95	0.05	130	20,000	0.95	0.05	150	24,000		
1	1.5	1.00	0.07	0.07	210	26,000	1.00	0.07	210	26,000	1.00	0.07	130	16,000	1.00	0.07	150	20,000	
	2.5	1.00	0.07	0.07	210	26,000	1.00	0.07	210	26,000	1.00	0.07	130	16,000	1.00	0.07	150	20,000	
	4	1.00	0.07	0.07	210	26,000	1.00	0.07	210	26,000	1.00	0.07	130	16,000	1.00	0.07	150	20,000	
1.05	2.5	1.05	0.07	210	26,000	1.05	0.07	210	26,000	1.05	0.07	130	16,000	1.05	0.07	150	20,000		
1.1	2.5	1.10	0.08	210	26,000	1.10	0.08	210	26,000	1.10	0.08	130	16,000	1.10	0.08	150	20,000		
1.15	2.5	1.15	0.08	210	26,000	1.15	0.08	210	26,000	1.15	0.08	130	16,000	1.15	0.08	150	20,000		
1.2	3	1.20	0.08	210	26,000	1.20	0.08	210	26,000	1.20	0.08	130	16,000	1.20	0.08	150	20,000		
1.25	3	1.25	0.09	210	26,000	1.25	0.09	210	26,000	1.25	0.09	130	16,000	1.25	0.09	150	20,000		
1.3	3	1.30	0.09	210	26,000	1.30	0.09	210	26,000	1.30	0.09	130	16,000	1.30	0.09	150	20,000		
1.35	3	1.35	0.09	210	26,000	1.35	0.09	210	26,000	1.35	0.09	130	16,000	1.35	0.09	150	20,000		
1.4	3.5	1.40	0.10	210	26,000	1.40	0.10	210	26,000	1.40	0.10	130	16,000	1.40	0.10	150	20,000		
1.45	3.5	1.45	0.10	210	26,000	1.45	0.10	210	26,000	1.45	0.10	130	16,000	1.45	0.10	150	20,000		
1.5	2	1.50	0.11	210	14,000	1.50	0.11	210	14,000	1.50	0.11	130	11,000	1.50	0.11	150	13,000		
	4	1.50	0.11	210	14,000	1.50	0.11	210	14,000	1.50	0.11	130	11,000	1.50	0.11	150	13,000		
	6	1.50	0.11	210	14,000	1.50	0.11	210	14,000	1.50	0.11	130	11,000	1.50	0.11	150	13,000		
1.55	4	1.55	0.11	210	14,000	1.55	0.11	210	14,000	1.55	0.11	130	11,000	1.55	0.11	150	13,000		

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid. ●切屑深度為精加工之最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

平角立銼刀 Square End Mill

切削材料 Work Material			鑄鐵 Cast Irons FCD				碳鋼 Carbon Steels S50C/SS400				預硬鋼 Prehardened Steels PX5/NAK80				合金鋼 Die Steels SKD11/SKD61			
刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹
2	1.6	4	1.60	0.11	210	14,000	1.60	0.11	210	14,000	1.60	0.11	130	11,000	1.60	0.11	150	13,000
	1.65	4	1.65	0.12	210	14,000	1.65	0.12	210	14,000	1.65	0.12	130	11,000	1.65	0.12	150	13,000
	1.7	4.5	1.70	0.12	210	14,000	1.70	0.12	210	14,000	1.70	0.12	130	11,000	1.70	0.12	150	13,000
	1.75	4.5	1.75	0.12	210	14,000	1.75	0.12	210	14,000	1.75	0.12	130	11,000	1.75	0.12	150	13,000
	1.8	4.5	1.80	0.13	210	14,000	1.80	0.13	210	14,000	1.80	0.13	130	11,000	1.80	0.13	150	13,000
	1.85	4.5	1.85	0.13	210	14,000	1.85	0.13	210	14,000	1.85	0.13	130	11,000	1.85	0.13	150	13,000
	1.9	5	1.90	0.13	210	14,000	1.90	0.13	210	14,000	1.90	0.13	130	11,000	1.90	0.13	150	13,000
	1.95	5	1.95	0.14	210	14,000	1.95	0.14	210	14,000	1.95	0.14	130	11,000	1.95	0.14	150	13,000
	2	3	2.00	0.14	210	11,000	2.00	0.14	210	11,000	2.00	0.14	150	8,000	2.00	0.14	170	9,500
		5	2.00	0.14	210	11,000	2.00	0.14	210	11,000	2.00	0.14	150	8,000	2.00	0.14	170	9,500
		8	2.00	0.14	210	11,000	2.00	0.14	210	11,000	2.00	0.14	150	8,000	2.00	0.14	170	9,500
	2.05	5	2.05	0.14	210	11,000	2.05	0.14	210	11,000	2.05	0.14	150	8,000	2.05	0.14	170	9,500
	2.1	5.5	2.10	0.15	210	11,000	2.10	0.15	210	11,000	2.10	0.15	150	8,000	2.10	0.15	170	9,500
	2.15	5.5	2.15	0.15	210	11,000	2.15	0.15	210	11,000	2.15	0.15	150	8,000	2.15	0.15	170	9,500
	2.2	5.5	2.20	0.15	210	11,000	2.20	0.15	210	11,000	2.20	0.15	150	8,000	2.20	0.15	170	9,500
	2.25	5.5	2.25	0.16	210	11,000	2.25	0.16	210	11,000	2.25	0.16	150	8,000	2.25	0.16	170	9,500
	2.3	6	2.30	0.16	210	11,000	2.30	0.16	210	11,000	2.30	0.16	150	8,000	2.30	0.16	170	9,500
	2.35	6	2.35	0.16	210	11,000	2.35	0.16	210	11,000	2.35	0.16	150	8,000	2.35	0.16	170	9,500
	2.4	6	2.40	0.17	210	11,000	2.40	0.17	210	11,000	2.40	0.17	150	8,000	2.40	0.17	170	9,500
	2.45	6	2.45	0.17	210	11,000	2.45	0.17	210	11,000	2.45	0.17	150	8,000	2.45	0.17	170	9,500
2.5	7	2.50	0.18	250	8,300	2.50	0.18	250	8,300	2.50	0.18	160	6,500	2.50	0.18	180	7,600	
	10	2.50	0.18	250	8,300	2.50	0.18	250	8,300	2.50	0.18	160	6,500	2.50	0.18	180	7,600	
2.55	7	2.55	0.18	250	8,300	2.55	0.18	250	8,300	2.55	0.18	160	6,500	2.55	0.18	180	7,600	
2.6	7	2.																

ion Depo type A 切削條件參考表 Recommended Milling Conditions

■型號: IAS230
Model number: IAS230

平角立銼刀 Square End Mill

切削材料 Work Material			鑄鐵 Cast Irons FCD				碳鋼 Carbon Steels S50C/SS400				預硬鋼 Prehardened Steels PX5/NAK80				合金鋼 Die Steels SKD11/SKD61				
刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	
			∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	
2	3.9	10	3.90	0.39	280	7,000	3.90	0.39	280	7,000	3.90	0.39	170	5,300	3.90	0.39	190	6,500	
			6	4.00	0.40	310	5,200	4.00	0.40	310	5,200	4.00	0.40	170	5,300	4.00	0.40	190	6,500
	4	10	4.00	0.40	310	5,200	4.00	0.40	310	5,200	4.00	0.40	170	5,300	4.00	0.40	190	6,500	
			16	4.00	0.40	310	5,200	4.00	0.40	310	5,200	4.00	0.40	170	5,300	4.00	0.40	190	6,500
			4.1	11	4.10	0.41	310	5,200	4.10	0.41	310	5,200	4.10	0.41	170	5,300	4.10	0.41	190
	4.2	11	4.20	0.42	310	5,200	4.20	0.42	310	5,200	4.20	0.42	170	5,300	4.20	0.42	190	6,500	
	4.3	11	4.30	0.43	310	5,200	4.30	0.43	310	5,200	4.30	0.43	170	5,300	4.30	0.43	190	6,500	
	4.4	11	4.40	0.44	310	5,200	4.40	0.44	310	5,200	4.40	0.44	170	5,300	4.40	0.44	190	6,500	
	4.5	12	4.50	0.45	310	5,200	4.50	0.45	310	5,200	4.50	0.45	170	5,300	4.50	0.45	190	6,500	
	4.6	12	4.60	0.46	310	5,200	4.60	0.46	310	5,200	4.60	0.46	170	5,300	4.60	0.46	190	6,500	
	4.7	12	4.70	0.47	310	5,200	4.70	0.47	310	5,200	4.70	0.47	170	5,300	4.70	0.47	190	6,500	
	4.8	12	4.80	0.48	310	5,200	4.80	0.48	310	5,200	4.80	0.48	170	5,300	4.80	0.48	190	6,500	
	4.9	13	4.90	0.49	310	5,200	4.90	0.49	310	5,200	4.90	0.49	170	5,300	4.90	0.49	190	6,500	
	5	13	8	5.00	0.50	330	4,100	5.00	0.50	330	4,100	5.00	0.50	210	3,200	5.00	0.50	230	3,800
			13	5.00	0.50	330	4,100	5.00	0.50	330	4,100	5.00	0.50	210	3,200	5.00	0.50	230	3,800
			20	5.00	0.50	330	4,100	5.00	0.50	330	4,100	5.00	0.50	210	3,200	5.00	0.50	230	3,800
	5.1	13	5.10	0.51	330	4,100	5.10	0.51	330	4,100	5.10	0.51	210	3,200	5.10	0.51	230	3,800	
	5.2	13	5.20	0.52	330	4,100	5.20	0.52	330	4,100	5.20	0.52	210	3,200	5.20	0.52	230	3,800	
	5.3	14	5.30	0.53	330	4,100	5.30	0.53	330	4,100	5.30	0.53	210	3,200	5.30	0.53	230	3,800	
	5.4	14	5.40	0.54	330	4,100	5.40	0.54	330	4,100	5.40	0.54	210	3,200	5.40	0.54	230	3,800	
	5.5	14	5.50	0.55	330	4,100	5.50	0.55	330	4,100	5.50	0.55	210	3,200	5.50	0.55	230	3,800	
	5.6	14	5.60	0.56	330	4,100	5.60	0.56	330	4,100	5.60	0.56	210	3,200	5.60	0.56	230	3,800	
	5.7	15	5.70	0.57	330	4,100	5.70	0.57	330	4,100	5.70	0.57	210	3,200	5.70	0.57	230	3,800	
	5.8	15	5.80	0.58	330	4,100	5.80	0.58	330	4,100	5.80	0.58	210	3,200	5.80	0.58	230	3,800	
5.9	15	5.90	0.59	330	4,100	5.90	0.59	330	4,100	5.90	0.59	210	3,200	5.90	0.59	230	3,800		
6	10	6.00	0.60	340	3,400	6.00	0.60	340	3,400	6.00	0.60	240	2,700	6.00	0.60	260	3,200		
		15	6.00	0.60	340	3,400	6.00	0.60	340	3,400	6.00	0.60	240	2,700	6.00	0.60	260	3,200	
		24	6.00	0.60	300	3,400	6.00	0.60	300	3,400	6.00	0.60	240	2,700	6.00	0.60	260	3,200	
6.5	17	6.50	0.98	340	3,400	6.50	0.98	340	3,400	6.50	0.98	240	2,700	6.50	0.98	260	3,200		
		17	6.50	0.98	340	3,400	6.50	0.98	340	3,400	6.50	0.98	240	2,700	6.50	0.98	260	3,200	
7	18	7.00	1.05	340	3,400	7.00	1.05	340	3,400	7.00	1.05	240	2,700	7.00	1.05	260	3,200		
7.5	20	7.50	1.13	340	3,400	7.50	1.13	340	3,400	7.50	1.13	240	2,700	7.50	1.13	260	3,200		
8	20	8.00	1.20	310	2,600	8.00	1.20	310	2,600	8.00	1.20	220	2,000	8.00	1.20	240	2,400		
		32	8.00	1.20	300	2,600	8.00	1.20	300	2,600	8.00	1.20	220	2,000	8.00	1.20	240	2,400	
8.5	23	8.50	1.28	310	2,600	8.50	1.28	310	2,600	8.50	1.28	220	2,000	8.50	1.28	240	2,400		
9	23	9.00	1.35	310	2,600	9.00	1.35	310	2,600	9.00	1.35	220	2,000	9.00	1.35	240	2,400		
9.5	25	9.50	1.43	310	2,600	9.50	1.43	310	2,600	9.50	1.43	220	2,000	9.50	1.43	240	2,400		
10	25	10.00	1.50	290	2,100	10.00	1.50	290	2,100	10.00	1.50	210	1,600	10.00	1.50	230	1,900		
		40	10.00	1.50	250	1,900	10.00	1.50	250	1,900	10.00	1.50	200	1,400	10.00	1.50	200	1,700	
10.5	28	10.50	1.58	290	2,100	10.50	1.58	290	2,100	10.50	1.58	210	1,600	10.50	1.58	230	1,900		
11	28	16.50	1.65	290	2,100	16.50	1.65	290	2,100	16.50	1.65	210	1,600	16.50	1.65	230	1,900		
11.5	30	17.25	1.73	290	2,100	17.25	1.73	290	2,100	17.25	1.73	210	1,600	17.25	1.73	230	1,900		

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

平角立銼刀 Square End Mill

切削材料 Work Material			鑄鐵 Cast Irons FCD				碳鋼 Carbon Steels S50C/SS400				預硬鋼 Prehardened Steels PX5/NAK80				合金鋼 Die Steels SKD11/SKD61			
刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹
2	12	30	18.00	1.80	270	1,700	18.00	1.80	270	1,700	18.00	1.80	200	1,300	18.00	1.80	250	1,600
		48	18.00	1.80	230	1,600	18.00	1.80	230	1,600	18.00	1.80	180	1,200	18.00	1.80	200	1,400
	14	28	21.00	2.10	270	1,500	21.00	2.10	270	1,500	21.00	2.10	220	1,300	21.00	2.10	250	1,400
	16	48	24.00	2.40	230	1,300	24.00	2.40	230	1,300	24.00	2.40	180	1,100	24.00	2.40	200	1,200
	18	54	27.00	2.70	250	1,200	27.00	2.70	250	1,200	27.00	2.70	200	1,000	27.00	2.70	200	1,100
	20	60	30.00	3.00	200	1,000	30.00	3.00	200	1,000	30.00	3.00	150	800	30.00	3.00	180	900

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

ion Depo Type A Series

ion Depo type A 切削條件參考表 Recommended Milling Conditions

■型號:IAS230
Model number:IAS230

平角立銼刀 Square End Mill

刃數 Number of Flutes	刀直徑 Dia.		高速鋼 High Speed Steels HAP5R/HAP72/ASP23				不銹鋼 Stainless Steels SUS304				不銹鋼 Stainless Steels HPM/STAVAX				銅合金 Copper Alloy 銅タングステン(Copper Tungsten)			
	刃長 Length of cut	切削深度 Depth of Cut	進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut	進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut	進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut	進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut	進刀速度 Feed	轉數 Spindle Speed		
																	φp mm	φe mm
2	0.1	0.15	0.005	0.005	15	50,000	0.005	0.005	15	50,000	0.005	0.005	15	50,000	0.1	0.02	60	50,000
	0.15	0.2	0.008	0.008	15	50,000	0.008	0.008	15	50,000	0.008	0.008	15	50,000	0.15	0.03	60	50,000
	0.2	0.4	0.01	0.01	20	48,000	0.01	0.01	25	50,000	0.01	0.01	30	50,000	0.2	0.04	90	50,000
	0.25	0.5	0.01	0.01	20	48,000	0.01	0.01	25	50,000	0.01	0.01	30	50,000	0.25	0.05	90	50,000
	0.3	0.3	0.02	0.02	20	32,000	0.15	0.02	90	50,000	0.15	0.02	85	50,000	0.3	0.06	150	50,000
		0.6	0.02	0.02	20	32,000	0.15	0.02	90	50,000	0.15	0.02	85	50,000	0.3	0.06	150	50,000
	0.35	0.7	0.02	0.02	20	32,000	0.18	0.02	90	50,000	0.18	0.02	85	50,000	0.35	0.07	150	50,000
	0.4	0.6	0.40	0.01	50	24,000	0.20	0.02	130	48,000	0.20	0.02	110	40,000	0.4	0.08	200	50,000
		0.8	0.40	0.01	50	24,000	0.20	0.02	130	48,000	0.20	0.02	110	40,000	0.4	0.08	200	50,000
	0.45	0.9	0.45	0.01	50	24,000	0.23	0.02	130	48,000	0.23	0.02	110	40,000	0.45	0.09	200	50,000
	0.5	0.8	0.50	0.01	60	20,000	0.25	0.03	130	39,000	0.25	0.03	110	32,000	0.5	0.1	220	45,000
		1.25	0.50	0.01	60	20,000	0.50	0.03	130	39,000	0.50	0.03	110	32,000	0.5	0.1	220	45,000
	0.55	2	0.50	0.01	60	20,000	0.50	0.03	130	39,000	0.50	0.03	110	32,000	0.5	0.1	220	45,000
		1.3	0.55	0.01	60	20,000	0.55	0.03	130	39,000	0.55	0.03	110	32,000	0.55	0.11	220	45,000
	0.6	1	0.60	0.01	60	20,000	0.60	0.03	130	39,000	0.60	0.03	110	32,000	0.6	0.12	220	45,000
		1.5	0.60	0.01	60	20,000	0.60	0.03	130	39,000	0.60	0.03	110	32,000	0.6	0.12	220	45,000
	0.65	2.4	0.60	0.01	60	20,000	0.60	0.03	130	39,000	0.60	0.03	110	32,000	0.6	0.12	220	45,000
		1.5	0.65	0.01	60	20,000	0.65	0.03	130	39,000	0.65	0.03	110	32,000	0.65	0.13	220	45,000
	0.7	1.8	0.70	0.01	60	20,000	0.70	0.04	130	39,000	0.70	0.04	110	32,000	0.7	0.14	220	45,000
	0.75	1.8	0.75	0.02	60	20,000	0.75	0.04	130	39,000	0.75	0.04	110	32,000	0.75	0.15	220	45,000
	0.8	1.2	0.80	0.02	70	12,000	0.80	0.04	150	24,000	0.80	0.04	130	20,000	0.8	0.16	250	28,000
		2	0.80	0.02	70	12,000	0.80	0.04	150	24,000	0.80	0.04	130	20,000	0.8	0.16	250	28,000
		3.2	0.80	0.02	70	12,000	0.80	0.04	150	24,000	0.80	0.04	130	20,000	0.8	0.16	250	28,000
	0.85	2	0.85	0.02	70	12,000	0.85	0.04	150	24,000	0.85	0.04	130	20,000	0.85	0.17	250	28,000
	0.9	2	0.90	0.02	70	12,000	0.90	0.05	150	24,000	0.90	0.05	130	20,000	0.9	0.18	250	28,000
0.95	2	0.95	0.02	70	12,000	0.95	0.05	150	24,000	0.95	0.05	130	20,000	0.95	0.19	250	28,000	
1	1.5	1.00	0.02	75	9,500	1.00	0.07	150	20,000	1.00	0.07	130	16,000	1	0.2	270	23,000	
	2.5	1.00	0.02	75	9,500	1.00	0.07	150	20,000	1.00	0.07	130	16,000	1	0.2	270	23,000	
	4	1.00	0.02	75	9,500	1.00	0.07	150	20,000	1.00	0.07	130	16,000	1	0.2	270	23,000	
1.05	2.5	1.05	0.02	75	9,500	1.05	0.07	150	20,000	1.05	0.07	130	16,000	1.05	0.21	270	23,000	
1.1	2.5	1.10	0.02	75	9,500	1.10	0.08	150	20,000	1.10	0.08	130	16,000	1.1	0.22	270	23,000	
1.15	2.5	1.15	0.02	75	9,500	1.15	0.08	150	20,000	1.15	0.08	130	16,000	1.15	0.23	270	23,000	
1.2	3	1.20	0.02	75	9,500	1.20	0.08	150	20,000	1.20	0.08	130	16,000	1.2	0.24	270	23,000	
1.25	3	1.25	0.03	75	9,500	1.25	0.09	150	20,000	1.25	0.09	130	16,000	1.25	0.25	270	23,000	
1.3	3	1.30	0.03	75	9,500	1.30	0.09	150	20,000	1.30	0.09	130	16,000	1.3	0.26	270	23,000	
1.35	3	1.35	0.03	75	9,500	1.35	0.09	150	20,000	1.35	0.09	130	16,000	1.35	0.27	270	23,000	
1.4	3.5	1.40	0.03	75	9,500	1.40	0.10	150	20,000	1.40	0.10	130	16,000	1.4	0.28	270	23,000	
1.45	3.5	1.45	0.03	75	9,500	1.45	0.10	150	20,000	1.45	0.10	130	16,000	1.45	0.29	270	23,000	
1.5	2	1.50	0.03	75	6,400	1.50	0.11	150	13,000	1.50	0.11	130	11,000	1.5	0.3	300	23,000	
	4	1.50	0.03	75	6,400	1.50	0.11	150	13,000	1.50	0.11	130	11,000	1.5	0.3	300	23,000	
	6	1.50	0.03	75	6,400	1.50	0.11	150	13,000	1.50	0.11	130	11,000	1.5	0.3	300	23,000	
1.55	4	1.55	0.03	75	6,400	1.55	0.11	150	13,000	1.55	0.11	130	11,000	1.55	0.31	300	23,000	

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid. ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度應越短越好。 Length of tool overhang must be as short as possible. ●φp=軸向切削深度，φe=徑向切削深度。 φp=Axial Depth of Cut φe=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

平角立銼刀 Square End Mill

刃數 Number of Flutes	刀直徑 Dia.		高速鋼 High Speed Steels HAP5R/HAP72/ASP23				不銹鋼 Stainless Steels SUS304				不銹鋼 Stainless Steels HPM/STAVAX				銅合金 Copper Alloy 銅タングステン(Copper Tungsten)			
	刃長 Length of cut	切削深度 Depth of Cut	進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut	進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut	進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut	進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut	進刀速度 Feed	轉數 Spindle Speed		
																	φp mm	φe mm
2	1.6	4	1.60	0.03	75	6,400	1.60	0.11	150	13,000	1.60	0.11	130	11,000	1.6	0.32	300	23,000
	1.65	4	1.65	0.03	75	6,400	1.65	0.12	150	13,000	1.65	0.12	130	11,000	1.65	0.33	300	23,000
	1.7	4.5	1.70	0.03	75	6,400	1.70	0.12	150	13,000	1.70	0.12	130	11,000	1.7	0.34	300	23,000
	1.75	4.5	1.75	0.04	75	6,400	1.75	0.12	150	13,000	1.75	0.12	130	11,000	1.75	0.35	300	23,000
	1.8	4.5	1.80	0.04	75	6,400	1.80	0.13	150	13,000	1.80	0.13	130	11,000	1.8	0.36	300	23,000
	1.85	4.5	1.85	0.04	75	6,400	1.85	0.13	150	13,000	1.85	0.13	130	11,000	1.85	0.37	300	23,000
	1.9	5	1.90	0.04	75	6,400	1.90	0.13	150	13,000	1.90	0.13	130	11,000	1.9	0.38	300	23,000
	1.95	5	1.95	0.04	75	6,400	1.95	0.14	150	13,000	1.95	0.14	130	11,000	1.95	0.39	300	23,000
	2	3	2.00	0.04	75	4,800	2.00	0.14	170	9,500	2.00	0.14	150	8,000	2	0.4	330	12,000
		5	2.00	0.04	75	4,800	2.00	0.14	170	9,500	2.00	0.14	150	8,000	2	0.4	330	12,000
		8	2.00	0.04	75	4,800	2.00	0.14	170	9,500	2.00	0.14	150	8,000	2	0.4	330	12,000
	2.05	5	2.05	0.04	75	4,800	2.05	0.14	170	9,500	2.05	0.14	150	8,000	2.05	0.41	330	12,000
	2.1	5.5	2.10	0.04	75	4,800	2.10	0.15	170	9,500	2.10	0.15	150	8,000	2.1	0.42	330	12,000
	2.15	5.5	2.15	0.04	75	4,800	2.15	0.15	170	9,500	2.15	0.15	150	8,000	2.15	0.43	330	12,000
	2.2	5.5	2.20	0.04	75	4,800	2.20	0.15	170	9,500	2.20	0.15	150	8,000	2.2	0.44	330	12,000
	2.25	5.5	2.25	0.05	75	4,800	2.25	0.16	170	9,500	2.25	0.16	150	8,000	2.25	0.45	330	12,000
	2.3	6	2.30	0.05	75	4,800	2.30	0.16	170	9,500	2.30	0.16	150	8,000	2.3	0.46	330	12,000
	2.35	6	2.35	0.05	75	4,800	2.35	0.16	170	9,500	2.35	0.16	150	8,000	2.35	0.47	330	12,000
	2.4	6	2.40	0.05	75	4,800	2.40	0.17	170	9,500	2.40	0.17	150	8,000	2.4	0.48	330	12,000
	2.45	6	2.45	0.05	75	4,800	2.45	0.17	170	9,500	2.45	0.17	150	8,000	2.45	0.49	330	12,000
	2.5	7	2.50	0.05	75	3,800	2.50	0.18	180	7,600	2.50	0.18	160	6,500	2.5	0.5	360	8,900
		10	2.50	0.05	75	3,800	2.50	0.18	180	7,600	2.50	0.18	160	6,500	2.5	0.5	360	8,900
	2.55	7	2.55	0.05	75	3,800	2.55	0.18	180	7,600	2.55	0.18	160	6,500	2			

ion Depo type A 切削條件參考表 Recommended Milling Conditions

■型號: IAS230
Model number: IAS230

平角立銼刀 Square End Mill

切削材料 Work Material	高速鋼 High Speed Steels HAP5R/HAP72/ASP23						不銹鋼 Stainless Steels SUS304				不銹鋼 Stainless Steels HPM/STAVAX				銅合金 Copper Alloy 銅タングステン(Copper Tungsten)							
	刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed		轉數 Spindle Speed		切削深度 Depth of Cut		進刀速度 Feed		轉數 Spindle Speed		切削深度 Depth of Cut		進刀速度 Feed		轉數 Spindle Speed		
				∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min
2	3.9	10	3.90	0.08	80	3,200	3.90	0.39	190	6,500	3.90	0.39	170	5,300	3.9	0.78	370	7,500				
			4.00	0.08	95	2,400	4.00	0.40	190	4,900	4.00	0.40	170	4,000	4	0.8	390	5,600				
	4	10	4.00	0.08	95	2,400	4.00	0.40	190	4,900	4.00	0.40	170	4,000	4	0.8	390	5,600				
			4.00	0.08	95	2,400	4.00	0.40	190	4,900	4.00	0.40	170	4,000	4	0.8	390	5,600				
			4.00	0.08	95	2,400	4.00	0.40	190	4,900	4.00	0.40	170	4,000	4	0.8	390	5,600				
	4.1	11	4.10	0.08	95	2,400	4.10	0.41	190	4,900	4.10	0.41	170	4,000	4.1	0.82	390	5,600				
	4.2	11	4.20	0.08	95	2,400	4.20	0.42	190	4,900	4.20	0.42	170	4,000	4.2	0.84	390	5,600				
	4.3	11	4.30	0.09	95	2,400	4.30	0.43	190	4,900	4.30	0.43	170	4,000	4.3	0.86	390	5,600				
	4.4	11	4.40	0.09	95	2,400	4.40	0.44	190	4,900	4.40	0.44	170	4,000	4.4	0.88	390	5,600				
	4.5	12	4.50	0.09	95	2,400	4.50	0.45	190	4,900	4.50	0.45	170	4,000	4.5	0.9	390	5,600				
	4.6	12	4.60	0.09	95	2,400	4.60	0.46	190	4,900	4.60	0.46	170	4,000	4.6	0.92	390	5,600				
	4.7	12	4.70	0.09	95	2,400	4.70	0.47	190	4,900	4.70	0.47	170	4,000	4.7	0.94	390	5,600				
	4.8	12	4.80	0.10	95	2,400	4.80	0.48	190	4,900	4.80	0.48	170	4,000	4.8	0.96	390	5,600				
	4.9	13	4.90	0.10	95	2,400	4.90	0.49	190	4,900	4.90	0.49	170	4,000	4.9	0.98	390	5,600				
	5	10	5.00	0.10	95	1,900	5.00	0.50	230	3,800	5.00	0.50	210	3,200	5	1	410	4,500				
			5.00	0.10	95	1,900	5.00	0.50	230	3,800	5.00	0.50	210	3,200	5	1	410	4,500				
			5.00	0.10	95	1,900	5.00	0.50	230	3,800	5.00	0.50	210	3,200	5	1	410	4,500				
	5.1	13	5.10	0.10	95	1,900	5.10	0.51	230	3,800	5.10	0.51	210	3,200	5.1	1.02	410	4,500				
	5.2	13	5.20	0.10	95	1,900	5.20	0.52	230	3,800	5.20	0.52	210	3,200	5.2	1.04	410	4,500				
	5.3	14	5.30	0.11	95	1,900	5.30	0.53	230	3,800	5.30	0.53	210	3,200	5.3	1.06	410	4,500				
	5.4	14	5.40	0.11	95	1,900	5.40	0.54	230	3,800	5.40	0.54	210	3,200	5.4	1.08	410	4,500				
	5.5	14	5.50	0.11	95	1,900	5.50	0.55	230	3,800	5.50	0.55	210	3,200	5.5	1.1	410	4,500				
	5.6	14	5.60	0.11	95	1,900	5.60	0.56	230	3,800	5.60	0.56	210	3,200	5.6	1.12	410	4,500				
	5.7	15	5.70	0.11	95	1,900	5.70	0.57	230	3,800	5.70	0.57	210	3,200	5.7	1.14	410	4,500				
	5.8	15	5.80	0.12	95	1,900	5.80	0.58	230	3,800	5.80	0.58	210	3,200	5.8	1.16	410	4,500				
	5.9	15	5.90	0.12	95	1,900	5.90	0.59	230	3,800	5.90	0.59	210	3,200	5.9	1.18	410	4,500				
	6	10	6.00	0.12	100	1,600	6.00	0.60	260	3,200	6.00	0.60	240	2,700	6	1.2	410	3,700				
			6.00	0.12	100	1,600	6.00	0.60	260	3,200	6.00	0.60	240	2,700	6	1.2	410	3,700				
6.00			0.12	100	1,600	6.00	0.60	260	3,200	6.00	0.60	240	2,700	6	1.2	410	3,700					
6.5	10	6.50	0.13	100	1,600	6.50	0.98	260	3,200	6.50	0.98	240	2,700	6.5	1.3	410	3,700					
		6.50	0.13	100	1,600	6.50	0.98	260	3,200	6.50	0.98	240	2,700	6.5	1.3	410	3,700					
7	18	7.00	0.14	100	1,600	7.00	1.05	260	3,200	7.00	1.05	240	2,700	7	1.4	410	3,700					
7.5	20	7.50	0.15	100	1,600	7.50	1.13	260	3,200	7.50	1.13	240	2,700	7.5	1.5	410	3,700					
		8.00	0.16	100	1,200	8.00	1.20	240	2,400	8.00	1.20	220	2,000	12	1.6	360	2,800					
8	32	8.00	0.16	100	1,200	8.00	1.20	240	2,400	8.00	1.20	220	2,000	12	1.6	360	2,800					
		8.00	0.16	100	1,200	8.00	1.20	240	2,400	8.00	1.20	220	2,000	12	1.6	360	2,800					
8.5	23	8.50	0.17	100	1,200	8.50	1.28	240	2,400	8.50	1.28	220	2,000	12.75	1.7	360	2,800					
9	23	9.00	0.18	100	1,200	9.00	1.35	240	2,400	9.00	1.35	220	2,000	13.5	1.8	360	2,800					
9.5	25	9.50	0.19	100	1,200	9.50	1.43	240	2,400	9.50	1.43	220	2,000	14.25	1.9	360	2,800					
		10.00	0.20	100	1,000	10.00	1.50	230	1,900	10.00	1.50	210	1,600	15	2	330	2,200					
10	40	10.00	0.20	100	1,000	10.00	1.50	200	1,700	10.00	1.50	200	1,400	15	2	300	2,000					
		10.50	0.21	100	1,000	10.50	1.58	230	1,700	10.50	1.58	210	1,600	15.75	2.1	330	2,200					
11	28	11.00	0.22	100	1,000	11.00	1.65	230	1,700	11.00	1.65	210	1,600	16.5	2.2	330	2,200					
		11.50	0.23	100	1,000	11.50	1.73	230	1,700	11.50	1.73	210	1,600	17.25	2.3	330	2,200					

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向切削深度 ∅e=徑向切削深度 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

平角立銼刀 Square End Mill

切削材料 Work Material	高速鋼 High Speed Steels HAP5R/HAP72/ASP23						不銹鋼 Stainless Steels SUS304				不銹鋼 Stainless Steels HPM/STAVAX				銅合金 Copper Alloy 銅タングステン(Copper Tungsten)							
	刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed		轉數 Spindle Speed		切削深度 Depth of Cut		進刀速度 Feed		轉數 Spindle Speed		切削深度 Depth of Cut		進刀速度 Feed		轉數 Spindle Speed		
				∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min
2	12	30	12.00	0.24	100	800	18.00	1.80	250	1,600	18.00	1.80	200	1,400	18.00	1.80	180	1,200	18	2.4	320	1,900
			48	12.00	0.24	100	800	18.00	1.80	200	1,400	18.00	1.80	180	1,200	18	2.4	300	1,700			
	14	28	14.00	0.28	100	700	21.00	2.10	250	1,400	21.00	2.10	220	1,300	21	2.8	300	1,800				
			48	16.00	0.32	100	600	24.00	2.40	200	1,200	24.00	2.40	180	1,100	24	3.2	300	1,700			
	18	54	18.00	0.36	100	500	27.00	2.70	200	1,100	27.00	2.70	200	1,000	27	3.6	250	1,600				
			60	20.00	0.40	100	400	30.00	3.00	180	900	30.00	3.00	150	800	30	4	250	1,500			

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向切削深度 ∅e=徑向切削深度 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo type A 切削條件參考表 Recommended Milling Conditions

■型號:IAS230
Model number:IAS230

平角立銼刀 Square End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈦合金(Titanium Alloy)			
刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm		
2	0.1	0.15	0.1	0.02	60	50,000	0.1	0.02	60	50,000	0.005	0.005	15	50,000
	0.15	0.2	0.15	0.03	60	50,000	0.15	0.03	60	50,000	0.008	0.008	15	50,000
	0.2	0.4	0.2	0.04	90	50,000	0.2	0.04	90	50,000	0.01	0.01	20	48,000
	0.25	0.5	0.25	0.05	90	50,000	0.25	0.05	90	50,000	0.01	0.01	20	48,000
	0.3	0.3	0.3	0.06	150	50,000	0.3	0.06	150	50,000	0.02	0.02	20	32,000
		0.6	0.3	0.06	150	50,000	0.3	0.06	150	50,000	0.02	0.02	20	32,000
	0.35	0.7	0.35	0.07	150	50,000	0.35	0.07	150	50,000	0.02	0.02	20	32,000
	0.4	0.6	0.4	0.08	200	50,000	0.4	0.08	200	50,000	0.04	0.01	50	24,000
		0.8	0.4	0.08	200	50,000	0.4	0.08	200	50,000	0.04	0.01	50	24,000
	0.45	0.9	0.45	0.09	200	50,000	0.45	0.09	200	50,000	0.04	0.01	50	24,000
	0.5	0.8	0.5	0.1	220	45,000	0.5	0.1	220	45,000	0.50	0.01	60	20,000
		1.25	0.5	0.1	220	45,000	0.5	0.1	220	45,000	0.50	0.01	60	20,000
		2	0.5	0.1	220	45,000	0.5	0.1	220	45,000	0.50	0.01	60	20,000
	0.55	1.3	0.55	0.11	220	45,000	0.55	0.11	220	45,000	0.55	0.01	60	20,000
	0.6	1	0.6	0.12	220	45,000	0.6	0.12	220	45,000	0.60	0.01	60	20,000
		1.5	0.6	0.12	220	45,000	0.6	0.12	220	45,000	0.60	0.01	60	20,000
		2.4	0.6	0.12	220	45,000	0.6	0.12	220	45,000	0.60	0.01	60	20,000
	0.65	1.5	0.65	0.13	220	45,000	0.65	0.13	220	45,000	0.65	0.01	60	20,000
	0.7	1.8	0.7	0.14	220	45,000	0.7	0.14	220	45,000	0.70	0.01	60	20,000
	0.75	1.8	0.75	0.15	220	45,000	0.75	0.15	220	45,000	0.75	0.02	60	20,000
	0.8	1.2	0.8	0.16	250	28,000	0.8	0.16	250	28,000	0.80	0.02	70	12,000
		2	0.8	0.16	250	28,000	0.8	0.16	250	28,000	0.80	0.02	70	12,000
		3.2	0.8	0.16	250	28,000	0.8	0.16	250	28,000	0.80	0.02	70	12,000
	0.85	2	0.85	0.17	250	28,000	0.85	0.17	250	28,000	0.85	0.02	70	12,000
	0.9	2	0.9	0.18	250	28,000	0.9	0.18	250	28,000	0.90	0.02	70	12,000
0.95	2	0.95	0.19	250	28,000	0.95	0.19	250	28,000	0.95	0.02	70	12,000	
1	1.5	1	0.2	270	23,000	1	0.2	270	23,000	1.00	0.02	60	8,500	
	2.5	1	0.2	270	23,000	1	0.2	270	23,000	1.00	0.02	60	8,500	
	4	1	0.2	270	23,000	1	0.2	270	23,000	1.00	0.02	60	8,500	
1.05	2.5	1.05	0.21	270	23,000	1.05	0.21	270	23,000	1.05	0.02	60	8,500	
1.1	2.5	1.1	0.22	270	23,000	1.1	0.22	270	23,000	1.10	0.02	60	8,500	
1.15	2.5	1.15	0.23	270	23,000	1.15	0.23	270	23,000	1.15	0.02	60	8,500	
1.2	3	1.2	0.24	270	23,000	1.2	0.24	270	23,000	1.20	0.02	60	8,500	
1.25	3	1.25	0.25	270	23,000	1.25	0.25	270	23,000	1.25	0.03	60	8,500	
1.3	3	1.3	0.26	270	23,000	1.3	0.26	270	23,000	1.30	0.03	60	8,500	
1.35	3	1.35	0.27	270	23,000	1.35	0.27	270	23,000	1.35	0.03	60	8,500	
1.4	3.5	1.4	0.28	270	23,000	1.4	0.28	270	23,000	1.40	0.03	60	8,500	
1.45	3.5	1.45	0.29	270	23,000	1.45	0.29	270	23,000	1.45	0.03	60	8,500	
1.5	2	1.5	0.3	300	23,000	1.5	0.3	300	23,000	1.50	0.03	60	6,000	
	4	1.5	0.3	300	23,000	1.5	0.3	300	23,000	1.50	0.03	60	6,000	
	6	1.5	0.3	300	23,000	1.5	0.3	300	23,000	1.50	0.03	60	6,000	
1.55	4	1.55	0.31	300	23,000	1.55	0.31	300	23,000	1.55	0.03	60	6,000	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid. ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

平角立銼刀 Square End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈦合金(Titanium Alloy)			
刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm		
2	1.6	4	1.6	0.32	300	23,000	1.6	0.32	300	23,000	1.60	0.03	60	6,000
	1.65	4	1.65	0.33	300	23,000	1.65	0.33	300	23,000	1.65	0.03	60	6,000
	1.7	4.5	1.7	0.34	300	23,000	1.7	0.34	300	23,000	1.70	0.03	60	6,000
	1.75	4.5	1.75	0.35	300	23,000	1.75	0.35	300	23,000	1.75	0.04	60	6,000
	1.8	4.5	1.8	0.36	300	23,000	1.8	0.36	300	23,000	1.80	0.04	60	6,000
	1.85	4.5	1.85	0.37	300	23,000	1.85	0.37	300	23,000	1.85	0.04	60	6,000
	1.9	5	1.9	0.38	300	23,000	1.9	0.38	300	23,000	1.90	0.04	60	6,000
	1.95	5	1.95	0.39	300	23,000	1.95	0.39	300	23,000	1.95	0.04	60	6,000
	2	3	2	0.4	330	12,000	2	0.4	330	12,000	2.00	0.04	60	3,200
		5	2	0.4	330	12,000	2	0.4	330	12,000	2.00	0.04	60	3,200
		8	2	0.4	330	12,000	2	0.4	330	12,000	2.00	0.04	60	3,200
	2.05	5	2.05	0.41	330	12,000	2.05	0.41	330	12,000	2.05	0.04	60	3,200
	2.1	5.5	2.1	0.42	330	12,000	2.1	0.42	330	12,000	2.10	0.04	60	3,200
	2.15	5.5	2.15	0.43	330	12,000	2.15	0.43	330	12,000	2.15	0.04	60	3,200
	2.2	5.5	2.2	0.44	330	12,000	2.2	0.44	330	12,000	2.20	0.04	60	3,200
	2.25	5.5	2.25	0.45	330	12,000	2.25	0.45	330	12,000	2.25	0.05	60	3,200
	2.3	6	2.3	0.46	330	12,000	2.3	0.46	330	12,000	2.30	0.05	60	3,200
	2.35	6	2.35	0.47	330	12,000	2.35	0.47	330	12,000	2.35	0.05	60	3,200
	2.4	6	2.4	0.48	330	12,000	2.4	0.48	330	12,000	2.40	0.05	60	3,200
	2.45	6	2.45	0.49	330	12,000	2.45	0.49	330	12,000	2.45	0.05	60	3,200
	2.5	7	2.5	0.5	360	8,900	2.5	0.5	360	8,900	2.50	0.05	60	2,500
		10	2.5	0.5	360	8,900	2.5	0.5	360	8,900	2.50	0.05	60	2,500
	2.55	7	2.55	0.51	360	8,900	2.55	0.51	360	8,900	2.55	0.05	60	2,500
	2.6	7	2.6	0.52	360	8,900	2.6	0.52	360	8,900	2.60	0.05	60	2,500
	2.65	7	2.65	0.53	360	8,900	2.65	0.53	360	8,900	2.65	0.05	60	2,500
	2.7	7	2.7	0.54	360	8,900	2.7	0.54	360	8,900	2.70	0.05	60	2,500
	2.75	7	2.75	0.55	360	8,900	2.75	0.55	360	8,900	2.75	0.06	60	2,500
	2.8	7	2.8	0.56	360	8,900	2.8	0.56	360	8,900	2.80	0.06	60	2,500
	2.85	8	2.85	0.57	360	8,900	2.85	0.57	360	8,900	2.85	0.06	60	2,500
	2.9	8	2.9	0.58	360	8,900	2.9	0.58	360	8,900	2.90	0.06	60	2,500
2.95	8	2.95	0.59	360	8,900	2.95	0.59	360	8,900	2.95	0.06	60	2,500	
3	5	3	0.6	370	7,500	3	0.6	370	7,500	3.00	0.06	70	2,200	
	8	3	0.6	370	7,500	3	0.6	370	7,500	3.00	0.06	70	2,200	
	12	3	0.6	370	7,500	3	0.6	370	7,500	3.00	0.06	70	2,200	
3.1	8	3.1	0.62	370	7,500	3.1	0.62	370	7,500	3.10	0.06	70	2,200	
3.2	8	3.2	0.64	370	7,500	3.2	0.64	370	7,500	3.20	0.06	70	2,200	
3.3	9	3.3	0.66	370	7,500	3.3	0.66	370	7,500	3.30	0.07	70	2,200	
3.4	9	3.4	0.68	370	7,500	3.4	0.68	370	7,500	3.40	0.07	70	2,200	
3.5	9	3.5	0.7	370	7,500	3.5	0.7	370	7,500	3.50	0.07	70	2,200	
3.6	9	3.6	0.72	370	7,500	3.6	0.72	370	7,500	3.60	0.07	70	2,200	
3.7	10	3.7	0.74	370	7,500	3.7	0.74	370	7,500	3.70	0.07	70	2,200	
3.8	10	3.8	0.76	370	7,500	3.8	0.76	370	7,500	3.80	0.08	70	2,200	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid. ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo type A 切削條件參考表 Recommended Milling Conditions

■型號:IAS230
Model number:IAS230

平角立銼刀 Square End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈦合金(Titanium Alloy)			
刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm		
2	3.9	10	3.9	0.78	370	7,500	3.9	0.78	370	7,500	3.90	0.08	70	2,200
		6	4	0.8	390	5,600	4	0.8	390	5,600	4.00	0.08	80	1,600
	4	10	4	0.8	390	5,600	4	0.8	390	5,600	4.00	0.08	80	1,600
		16	4	0.8	390	5,600	4	0.8	390	5,600	4.00	0.08	80	1,600
	4.1	11	4.1	0.82	390	5,600	4.1	0.82	390	5,600	4.10	0.08	80	1,600
	4.2	11	4.2	0.84	390	5,600	4.2	0.84	390	5,600	4.20	0.08	80	1,600
	4.3	11	4.3	0.86	390	5,600	4.3	0.86	390	5,600	4.30	0.09	80	1,600
	4.4	11	4.4	0.88	390	5,600	4.4	0.88	390	5,600	4.40	0.09	80	1,600
	4.5	12	4.5	0.9	390	5,600	4.5	0.9	390	5,600	4.50	0.09	80	1,600
	4.6	12	4.6	0.92	390	5,600	4.6	0.92	390	5,600	4.60	0.09	80	1,600
	4.7	12	4.7	0.94	390	5,600	4.7	0.94	390	5,600	4.70	0.09	80	1,600
	4.8	12	4.8	0.96	390	5,600	4.8	0.96	390	5,600	4.80	0.10	80	1,600
	4.9	13	4.9	0.98	390	5,600	4.9	0.98	390	5,600	4.90	0.10	80	1,600
	5	8	5	1	410	4,500	5	1	410	4,500	5.00	0.10	80	1,300
		13	5	1	410	4,500	5	1	410	4,500	5.00	0.10	80	1,300
		20	5	1	410	4,500	5	1	410	4,500	5.00	0.10	80	1,300
	5.1	13	5.1	1.02	410	4,500	5.1	1.02	410	4,500	5.10	0.10	80	1,300
	5.2	13	5.2	1.04	410	4,500	5.2	1.04	410	4,500	5.20	0.10	80	1,300
	5.3	14	5.3	1.06	410	4,500	5.3	1.06	410	4,500	5.30	0.11	80	1,300
	5.4	14	5.4	1.08	410	4,500	5.4	1.08	410	4,500	5.40	0.11	80	1,300
	5.5	14	5.5	1.1	410	4,500	5.5	1.1	410	4,500	5.50	0.11	80	1,300
	5.6	14	5.6	1.12	410	4,500	5.6	1.12	410	4,500	5.60	0.11	80	1,300
5.7	15	5.7	1.14	410	4,500	5.7	1.14	410	4,500	5.70	0.11	80	1,300	
5.8	15	5.8	1.16	410	4,500	5.8	1.16	410	4,500	5.80	0.12	80	1,300	
5.9	15	5.9	1.18	410	4,500	5.9	1.18	410	4,500	5.90	0.12	80	1,200	
6	10	6	1.2	410	3,700	6	1.2	410	3,700	6.00	0.12	80	1,200	
	15	6	1.2	410	3,700	6	1.2	410	3,700	6.00	0.12	80	1,200	
	24	6	1.2	410	3,700	6	1.2	410	3,700	6.00	0.12	80	1,200	
6.5	20	6.5	1.3	410	3,700	6.5	1.3	410	3,700	6.50	0.13	80	1,200	
	17	6.5	1.3	410	3,700	6.5	1.3	410	3,700	6.50	0.13	80	1,200	
7	18	7	1.4	410	3,700	7	1.4	410	3,700	7.00	0.14	80	1,200	
7.5	20	7.5	1.5	410	3,700	7.5	1.5	410	3,700	7.50	0.15	80	1,200	
8	20	12	1.6	360	2,800	12	1.6	360	2,800	8.00	0.16	80	1,000	
	32	12	1.6	360	2,800	12	1.6	360	2,800	8.00	0.16	80	1,000	
8.5	23	12.75	1.7	360	2,800	12.75	1.7	360	2,800	8.50	0.17	80	1,000	
9	23	13.5	1.8	360	2,800	13.5	1.8	360	2,800	9.00	0.18	80	1,000	
9.5	25	14.25	1.9	360	2,800	14.25	1.9	360	2,800	9.50	0.19	80	1,000	
10	25	15	2	330	2,200	15	2	330	2,200	10.00	0.20	80	900	
	40	15	2	300	2,000	15	2	300	2,000	10.00	0.20	80	900	
10.5	28	15.75	2.1	330	2,200	15.75	2.1	330	2,200	10.50	0.21	80	900	
11	28	16.5	2.2	330	2,200	16.5	2.2	330	2,200	11.00	0.22	80	900	
11.5	30	17.25	2.3	330	2,200	17.25	2.3	330	2,200	11.50	0.23	80	900	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

平角立銼刀 Square End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈦合金(Titanium Alloy)			
刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm		
2	12	30	18	2.4	320	1,900	18	2.4	320	1,900	12.00	0.24	80	800
		48	18	2.4	300	1,700	18	2.4	300	1,700	12.00	0.24	80	800
	14	28	21	2.8	300	1,800	21	2.8	300	1,800	14.00	0.28	100	700
	16	48	24	3.2	300	1,700	24	3.2	300	1,700	16.00	0.32	100	600
	18	54	27	3.6	250	1,600	27	3.6	250	1,600	18.00	0.36	100	500
	20	60	30	4	250	1,500	30	4	250	1,500	20.00	0.40	100	400

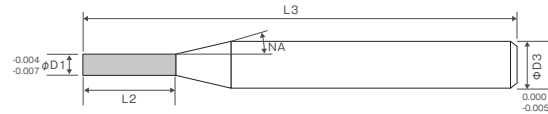
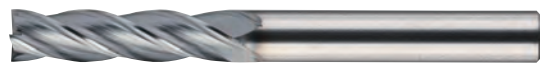
●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
ion Depo A Series
ion Depo U Series
DLC Series
Non-Coat Series
ion Depo R Series

超硬平角立銑刀 Carbide Square End Mill

■ 型號: IAS430 Model number: IAS430

ion A super MG 4 30° 15° 柄徑公差 0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size): mm

型號 Code No.	刀刃直徑 (D1) Tool Diameter	刃長 (L2) Length of Cut	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (円) Retail Price (JPY)
IAS430-0100-00250	1	2.5	15	4	50	3,920
IAS430-0100-00400		4	15	4	50	6,800
IAS430-0150-00400	1.5	4	15	4	50	3,920
IAS430-0150-00600		6	15	4	50	6,800
IAS430-0200-00500	2	5	15	4	50	2,400
IAS430-0200-00800		8	15	4	50	4,800
IAS430-0250-00700	2.5	7	15	4	50	2,400
IAS430-0250-01000		10	15	4	50	4,800
IAS430-0300-00800	3	8	15	4	50	2,480
IAS430-0300-01200		12	15	4	50	5,040
IAS430-0350-00900	3.5	9	15	6	50	5,200
IAS430-0400-01000	4	10	15	6	50	2,800
IAS430-0400-01600		16	15	6	50	5,360
IAS430-0450-01200	4.5	12	15	6	50	5,600
IAS430-0500-01300	5	13	15	6	50	2,880
IAS430-0500-02000		20	15	6	60	5,520
IAS430-0550-01400	5.5	14	15	6	50	6,000
IAS430-0600-01500	6	15	—	6	50	3,040
IAS430-0600-02400		24	—	6	60	5,840
IAS430-0650-01700	6.5	17	15	8	70	10,240
IAS430-0700-01800	7	18	15	8	70	8,560
IAS430-0750-01900	7.5	19	15	8	70	10,800
IAS430-0800-02000	8	20	—	8	70	6,160
IAS430-0800-03200		32	—	8	80	11,920
IAS430-0850-02200	8.5	22	15	10	80	13,440
IAS430-0900-02300	9	23	15	10	80	13,440
IAS430-0950-02400	9.5	24	15	10	80	15,520
IAS430-1000-02500	10	25	—	10	80	8,240
IAS430-1000-04000		40	—	10	90	14,640
IAS430-1200-03000	12	30	—	12	110	11,280

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size): mm

型號 Code No.	刀刃直徑 (D1) Tool Diameter	刃長 (L2) Length of Cut	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (円) Retail Price (JPY)
IAS430-1200-04800	12	48	—	12	120	22,000
IAS430-1400-02600	14	26	—	14	110	11,760
IAS430-1600-03200	16	32	—	16	120	18,080
IAS430-1800-03200	18	32	—	18	120	21,040
IAS430-2000-03800	20	38	—	20	130	26,400

ion Depo Type A Series

ion Depo Type A Series

ion Depo type A 切削條件參考表 Recommended Milling Conditions

■型號: IAS430
Model number: IAS430

平角立銼刀 Square End Mill

切削材料 Work Material	鑄鐵 Cast Irons FCD						碳鋼 Carbon Steels S50C/SS400						預硬鋼 Prehardened Steels PX5/NAK80						合金鋼 Die Steels SKD11/SKD61											
	刃數 Number of Flutes	刀直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed		轉數 Spindle Speed		切削深度 Depth of Cut		進刀速度 Feed		轉數 Spindle Speed		切削深度 Depth of Cut		進刀速度 Feed		轉數 Spindle Speed										
				ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹											
4	1	2.5	1.50	0.05	330	21,000	1.50	0.05	330	21,000	1.50	0.05	330	21,000	1.50	0.05	210	19,500	1.50	0.05	330	21,000	1.50	0.05	330	21,000	1.50	0.05	330	21,000
				0.05	300	21,000	1.50	0.05	300	21,000	1.50	0.05	300	21,000	1.50	0.05	300	21,000		1.50	0.05	210	19,500							
	1.5	4	2.25	0.08	330	21,000	2.25	0.08	330	21,000	2.25	0.08	330	21,000	2.25	0.08	210	19,500	2.25	0.08	330	21,000	2.25	0.08	330	21,000	2.25	0.08	210	19,500
				0.08	300	21,000	2.25	0.08	300	21,000	2.25	0.08	300	21,000	2.25	0.08	300	21,000		2.25	0.08	210	19,500							
	2	5	3.00	0.10	330	11,000	3.00	0.10	330	11,000	3.00	0.10	330	11,000	3.00	0.10	270	9,600	3.00	0.10	330	11,000	3.00	0.10	330	11,000	3.00	0.10	270	9,600
				0.10	300	11,000	3.00	0.10	300	11,000	3.00	0.10	300	11,000	3.00	0.10	300	11,000		3.00	0.10	270	9,600							
	2.5	7	3.75	0.13	330	11,000	3.75	0.13	330	11,000	3.75	0.13	330	11,000	3.75	0.13	270	9,600	3.75	0.13	330	11,000	3.75	0.13	330	11,000	3.75	0.13	270	9,600
				0.13	300	11,000	3.75	0.13	300	11,000	3.75	0.13	300	11,000	3.75	0.13	300	11,000		3.75	0.13	270	9,600							
	3	8	4.50	0.30	450	7,000	4.50	0.30	450	7,000	4.50	0.30	450	7,000	4.50	0.30	320	6,500	4.50	0.30	450	7,000	4.50	0.30	450	7,000	4.50	0.30	320	6,500
				0.30	400	7,000	4.50	0.30	400	7,000	4.50	0.30	400	7,000	4.50	0.30	400	7,000		4.50	0.30	320	6,500							
	3.5	9	5.25	0.35	450	7,000	5.25	0.35	450	7,000	5.25	0.35	450	7,000	5.25	0.35	320	6,500	5.25	0.35	450	7,000	5.25	0.35	450	7,000	5.25	0.35	320	6,500
				0.35	400	7,000	5.25	0.35	400	7,000	5.25	0.35	400	7,000	5.25	0.35	400	7,000		5.25	0.35	320	6,500							
	4	10	6.00	0.40	500	5,200	6.00	0.40	500	5,200	6.00	0.40	500	5,200	6.00	0.40	380	5,000	6.00	0.40	500	5,200	6.00	0.40	500	5,200	6.00	0.40	380	5,000
				0.40	500	5,200	6.00	0.40	500	5,200	6.00	0.40	500	5,200	6.00	0.40	500	5,200		6.00	0.40	380	5,000							
	4.5	12	6.75	0.45	500	5,200	6.75	0.45	500	5,200	6.75	0.45	500	5,200	6.75	0.45	380	5,000	6.75	0.45	500	5,200	6.75	0.45	500	5,200	6.75	0.45	380	5,000
				0.45	500	5,200	6.75	0.45	500	5,200	6.75	0.45	500	5,200	6.75	0.45	500	5,200		6.75	0.45	380	5,000							
	5	13	7.50	0.50	520	4,200	7.50	0.50	520	4,200	7.50	0.50	520	4,200	7.50	0.50	380	4,000	7.50	0.50	520	4,200	7.50	0.50	520	4,200	7.50	0.50	380	4,000
				0.50	520	4,200	7.50	0.50	520	4,200	7.50	0.50	520	4,200	7.50	0.50	520	4,200		7.50	0.50	380	4,000							
	5.5	14	8.25	0.55	520	4,200	8.25	0.55	520	4,200	8.25	0.55	520	4,200	8.25	0.55	380	4,000	8.25	0.55	520	4,200	8.25	0.55	520	4,200	8.25	0.55	380	4,000
				0.55	520	4,200	8.25	0.55	520	4,200	8.25	0.55	520	4,200	8.25	0.55	520	4,200		8.25	0.55	380	4,000							
	6	15	9.00	0.60	540	3,500	9.00	0.60	540	3,500	9.00	0.60	540	3,500	9.00	0.60	380	3,200	9.00	0.60	540	3,500	9.00	0.60	540	3,500	9.00	0.60	380	3,200
				0.60	540	3,500	9.00	0.60	540	3,500	9.00	0.60	540	3,500	9.00	0.60	540	3,500		9.00	0.60	380	3,200							
	6.5	17	9.75	0.65	540	3,500	9.75	0.65	540	3,500	9.75	0.65	540	3,500	9.75	0.65	380	3,200	9.75	0.65	540	3,500	9.75	0.65	540	3,500	9.75	0.65	380	3,200
				0.65	540	3,500	9.75	0.65	540	3,500	9.75	0.65	540	3,500	9.75	0.65	540	3,500		9.75	0.65	380	3,200							
7	18	10.50	1.05	530	3,000	10.50	1.05	530	3,000	10.50	1.05	530	3,000	10.50	1.05	380	2,700	10.50	1.05	530	3,000	10.50	1.05	530	3,000	10.50	1.05	380	2,700	
			1.05	530	3,000	10.50	1.05	530	3,000	10.50	1.05	530	3,000	10.50	1.05	530	3,000		10.50	1.05	380	2,700								
7.5	19	11.25	1.13	530	3,000	11.25	1.13	530	3,000	11.25	1.13	530	3,000	11.25	1.13	380	2,700	11.25	1.13	530	3,000	11.25	1.13	530	3,000	11.25	1.13	380	2,700	
			1.13	530	3,000	11.25	1.13	530	3,000	11.25	1.13	530	3,000	11.25	1.13	530	3,000		11.25	1.13	380	2,700								
8	20	12.00	1.20	520	2,700	12.00	1.20	520	2,700	12.00	1.20	520	2,700	12.00	1.20	380	2,400	12.00	1.20	520	2,700	12.00	1.20	520	2,700	12.00	1.20	380	2,400	
			1.20	520	2,700	12.00	1.20	520	2,700	12.00	1.20	520	2,700	12.00	1.20	520	2,700		12.00	1.20	380	2,400								
8.5	22	12.75	1.28	520	2,700	12.75	1.28	520	2,700	12.75	1.28	520	2,700	12.75	1.28	380	2,400	12.75	1.28	520	2,700	12.75	1.28	520	2,700	12.75	1.28	380	2,400	
			1.28	520	2,700	12.75	1.28	520	2,700	12.75	1.28	520	2,700	12.75	1.28	520	2,700		12.75	1.28	380	2,400								
9	23	13.50	1.35	480	2,300	13.50	1.35	480	2,300	13.50	1.35	480	2,300	13.50	1.35	380	2,100	13.50	1.35	480	2,300	13.50	1.35	480	2,300	13.50	1.35	380	2,100	
			1.35	480	2,300	13.50	1.35	480	2,300	13.50	1.35	480	2,300	13.50	1.35	480	2,300		13.50	1.35	380	2,100								
9.5	24	14.25	1.43	480	2,300	14.25	1.43	480	2,300	14.25	1.43	480	2,300	14.25	1.43	380	2,100	14.25	1.43	480	2,300	14.25	1.43	480	2,300	14.25	1.43	380	2,100	
			1.43	480	2,300	14.25	1.43	480	2,300	14.25	1.43	480	2,300	14.25	1.43	480	2,300		14.25	1.43	380	2,100								
10	25	15.00	1.50	470	2,100	15.00	1.50	470	2,100	15.00	1.50	470	2,100	15.00	1.50	380	1,900	15.00	1.50	470	2,100	15.00	1.50	470	2,100	15.00	1.50	380	1,900	
			1.50	470	2,100	15.00	1.50	470	2,100	15.00	1.50	470	2,100	15.00	1.50	470	2,100		15.00	1.50	380	1,900								
10	40	15.00	1.50	470	2,000	15.00	1.50	470	2,000	15.00	1.50	470	2,000	15.00	1.50	380	1,800	15.00	1.50	470	2,000	15.00	1.50	470	2,000	15.00	1.50	380	1,800	
			1.50	470	2,000	15.00	1.50	470	2,000	15.00	1.50	470	2,000	15.00	1.50	470	2,000		15.00	1.50	380	1,800								
12	30	18.00	1.80	440	1,700	18.00	1.80	440	1,700	18.00	1.80	440	1,700	18.00	1.80	380	1,600	18.00	1.80	440	1,700	18.00	1.80	440	1,700	18.00	1.80	380	1,600	
			1.80	440	1,700	18.00	1.80	440	1,700	18.00	1.80	440	1,700	18.00	1.80	440	1,700		18.00	1.80	380	1,600								
12	48	18.00	1.80	400	1,600	18.00	1.80	400	1,600	18.00	1.80	400	1,600	18.00	1.80	380	1,500	18.00	1.80	400	1,600	18.00	1.80	400	1,600	18.00	1.80	380	1,500	
			1.80	400	1,600	18.00	1.80	400	1,600	18.00	1.80	400	1,600	18.00	1.80	400	1,600		18.00	1.80	380	1,500								
14	26	21.00	2.10	430	1,500	21.00	2.10	430	1,500	21.00	2.10	430	1,500	21.00	2.10	380	1,400													

ion Depo type A 切削條件參考表 Recommended Milling Conditions

■型號:IAS430
Model number:IAS430

平角立銼刀 Square End Mill

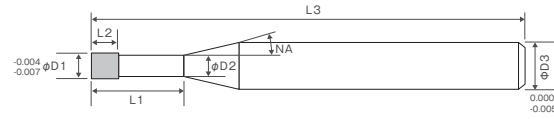
切削材料 Work Material		鋁合金 Aluminum Alloy A5000號					鋁合金 Aluminum Alloy A7000號					耐熱合金 Heat Resistant Alloy 鈦合金(Titanium Alloy)				
刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹		
			φp mm	φe mm			φp mm	φe mm			φp mm	φe mm				
4	1	2.5	1.50	0.05	410	22,500	1.50	0.05	410	22,500	1.00	0.05	100	6,500		
		4	1.50	0.05	410	22,500	1.50	0.05	410	22,500	1.00	0.05	100	6,500		
	1.5	4	2.25	0.08	450	15,000	2.25	0.08	450	15,000	1.50	0.08	100	6,500		
		6	2.25	0.08	450	15,000	2.25	0.08	450	15,000	1.50	0.08	100	6,500		
	2	5	3.00	0.10	500	12,000	3.00	0.10	500	12,000	2.00	0.10	100	3,200		
		8	3.00	0.10	500	12,000	3.00	0.10	500	12,000	2.00	0.10	100	3,200		
	2.5	7	3.75	0.13	540	9,000	3.75	0.13	540	9,000	3.75	0.13	100	2,500		
		10	3.75	0.13	540	9,000	3.75	0.13	540	9,000	3.75	0.13	100	2,500		
	3	8	4.50	0.30	550	7,500	4.50	0.30	550	7,500	4.50	0.30	130	2,100		
		12	4.50	0.30	550	7,500	4.50	0.30	550	7,500	4.50	0.30	130	2,100		
	3.5	9	5.25	0.35	570	6,500	5.25	0.35	570	6,500	5.25	0.35	130	2,100		
	4	10	6.00	0.40	650	6,500	6.00	0.40	650	6,500	6.00	0.40	130	1,600		
		16	6.00	0.40	650	5,600	6.00	0.40	650	5,600	6.00	0.40	130	1,600		
	4.5	12	6.75	0.45	680	5,600	6.75	0.45	680	5,600	6.75	0.45	130	1,600		
	5	13	7.50	0.50	700	5,000	7.50	0.50	700	5,000	7.50	0.50	150	1,300		
		20	7.50	0.50	700	5,000	7.50	0.50	700	5,000	7.50	0.50	150	1,300		
	5.5	14	8.25	0.55	700	4,500	8.25	0.55	700	4,500	8.25	0.55	150	1,300		
	6	15	9.00	0.60	700	4,100	9.00	0.60	700	4,100	9.00	0.60	150	1,100		
		24	9.00	0.60	700	4,100	9.00	0.60	700	4,100	9.00	0.60	150	1,100		
	6.5	17	9.75	0.65	700	4,100	9.75	0.65	700	4,100	9.75	0.65	150	1,100		
7	18	10.50	1.05	700	4,100	10.50	1.05	700	4,100	10.50	1.05	150	1,100			
7.5	19	11.25	1.13	700	3,700	11.25	1.13	700	3,700	11.25	1.13	150	1,100			
8	20	12.00	1.20	700	2,800	12.00	1.20	700	2,800	12.00	1.20	150	800			
	32	12.00	1.20	700	2,800	12.00	1.20	700	2,800	12.00	1.20	150	800			
8.5	22	12.75	1.28	700	2,800	12.75	1.28	700	2,800	12.75	1.28	150	800			
9	23	13.50	1.35	700	2,800	13.50	1.35	700	2,800	13.50	1.35	150	800			
9.5	24	14.25	1.43	700	2,800	14.25	1.43	700	2,800	14.25	1.43	150	800			
10	25	15.00	1.50	620	2,200	15.00	1.50	620	2,200	15.00	1.50	150	600			
	40	15.00	1.50	550	2,000	15.00	1.50	550	2,000	15.00	1.50	120	500			
12	30	18.00	1.80	540	1,900	18.00	1.80	540	1,900	18.00	1.80	150	500			
	48	18.00	1.80	500	1,800	18.00	1.80	500	1,800	18.00	1.80	120	400			
14	26	21.00	2.10	400	1,800	21.00	2.10	400	1,800	21.00	2.10	130	500			
16	32	24.00	2.40	350	1,600	24.00	2.40	350	1,600	24.00	2.40	130	400			
18	32	27.00	2.70	350	1,400	27.00	2.70	350	1,400	27.00	2.70	130	400			
20	38	30.00	3.00	300	1,200	30.00	3.00	300	1,200	30.00	3.00	120	300			

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●φp=軸向方向切削深度，φe=徑向方向切削深度。 φp=Axial Depth of Cut φe=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

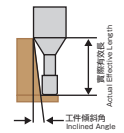
超硬長頸平角立銑刀 Carbide Long Neck Square End Mill

■型號: IALS230 Model number: IALS230

ion A super MG 2 刀刃數 螺旋角 30° 仰角 15° 柄徑公差 0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干涉切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value. If concerned about interference with the work material, please check by actual measurement.



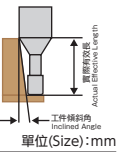
單位(Size):mm

●聯繫我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
									30'	1°	1°30'	2°	3°
IALS230-0010-0030	0.1	0.3	0.15	0.08	15	4	50	7,440	0.35	0.36	0.37	0.39	0.42
IALS230-0010-0050		0.5	0.15	0.08	15	4	50	8,160	0.56	0.57	0.60	0.62	0.67
IALS230-0010-0100		1	0.15	0.08	15	4	50	10,160	1.07	1.11	1.15	1.19	1.29
IALS230-0015-0030	0.15	0.3	0.2	0.13	15	4	50	6,960	0.35	0.36	0.37	0.39	0.42
IALS230-0015-0050		0.5	0.2	0.13	15	4	50	7,600	0.56	0.57	0.60	0.62	0.67
IALS230-0020-0050	0.2	0.5	0.3	0.18	15	4	50	4,880	0.56	0.57	0.60	0.62	0.67
IALS230-0020-0075		0.75	0.3	0.18	15	4	50	4,880	0.81	0.84	0.87	0.91	0.98
IALS230-0020-0100		1	0.3	0.18	15	4	50	5,280	1.07	1.11	1.15	1.19	1.29
IALS230-0030-0080	0.3	0.8	0.3	0.27	15	4	50	4,320	0.88	0.92	0.95	0.98	1.06
IALS230-0030-0100		1	0.4	0.27	15	4	50	4,320	1.09	1.13	1.17	1.21	1.31
IALS230-0030-0150-00030		1.5	0.3	0.27	15	4	50	4,320	1.61	1.66	1.72	1.79	1.93
IALS230-0030-0150-00040	0.3	1.5	0.4	0.27	15	4	50	4,320	1.61	1.66	1.72	1.79	1.93
IALS230-0030-0200		2	0.4	0.27	15	4	50	5,280	2.13	2.20	2.28	2.36	2.56
IALS230-0030-0250		2.5	0.4	0.27	15	4	50	5,520	2.64	2.73	2.83	2.94	3.18
IALS230-0030-0300	3	0.4	0.27	15	4	50	5,520	3.16	3.27	3.39	3.51	3.80	
IALS230-0040-0100	0.4	1	0.6	0.37	15	4	50	3,120	1.09	1.13	1.17	1.21	1.31
IALS230-0040-0120		1.2	0.4	0.37	15	4	50	3,120	1.30	1.34	1.39	1.44	1.56
IALS230-0040-0150		1.5	0.6	0.37	15	4	50	3,120	1.61	1.66	1.72	1.79	1.93
IALS230-0040-0200	0.4	2	0.6	0.37	15	4	50	3,120	2.13	2.20	2.28	2.36	2.56
IALS230-0040-0250-00040		2.5	0.4	0.37	15	4	50	3,120	2.64	2.73	2.83	2.94	3.18
IALS230-0040-0250-00060		2.5	0.6	0.37	15	4	50	3,120	2.64	2.73	2.83	2.94	3.18
IALS230-0040-0300	3	0.6	0.37	15	4	50	3,120	3.16	3.27	3.39	3.51	3.80	
IALS230-0050-0100	0.5	1	0.7	0.47	15	4	50	2,240	1.09	1.13	1.17	1.21	1.31
IALS230-0050-0150-00050		1.5	0.5	0.47	15	4	50	2,240	1.61	1.66	1.72	1.79	1.93
IALS230-0050-0150-00070		1.5	0.7	0.47	15	4	50	2,240	1.61	1.66	1.72	1.79	1.93
IALS230-0050-0200	0.5	2	0.7	0.47	15	4	50	2,240	2.13	2.20	2.28	2.36	2.56
IALS230-0050-0250		2.5	0.7	0.47	15	4	50	2,240	2.64	2.73	2.83	2.94	3.18
IALS230-0050-0300-00050		3	0.5	0.47	15	4	50	2,240	3.16	3.27	3.39	3.51	3.80
IALS230-0050-0300-00070	3	0.7	0.47	15	4	50	2,240	3.16	3.27	3.39	3.51	3.80	
IALS230-0050-0350	3.5	0.7	0.47	15	4	50	2,240	3.68	3.80	3.94	4.09	4.42	

●聯繫我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

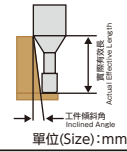
型號 Code No.	刀刃直徑 (D1) Tool Diameter	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
									30'	1°	1°30'	2°	3°
IALS230-0050-0400	0.5	4	0.7	0.47	15	4	50	2,240	4.19	4.34	4.50	4.66	5.04
IALS230-0060-0150	0.6	1.5	0.9	0.57	15	4	50	2,400	1.61	1.66	1.72	1.79	1.93
IALS230-0060-0180		1.8	0.6	0.57	15	4	50	2,400	1.92	1.99	2.06	2.13	2.31
IALS230-0060-0200		2	0.9	0.57	15	4	50	2,400	2.13	2.20	2.28	2.36	2.56
IALS230-0060-0300		3	0.9	0.57	15	4	50	2,400	3.16	3.27	3.39	3.51	3.80
IALS230-0060-0400		4	0.9	0.57	15	4	50	2,400	4.19	4.34	4.50	4.66	5.04
IALS230-0060-0500		5	0.6	0.57	15	4	50	2,400	5.23	5.41	5.60	5.81	6.29
IALS230-0060-0600		6	0.9	0.57	15	4	50	2,400	6.26	6.48	6.71	6.96	7.53
IALS230-0070-0200	0.7	2	1	0.67	15	4	50	2,720	2.13	2.20	2.28	2.36	2.56
IALS230-0070-0400		4	1	0.67	15	4	50	2,720	4.19	4.34	4.50	4.66	5.04
IALS230-0070-0600		6	1	0.67	15	4	50	2,720	6.26	6.48	6.71	6.96	7.53
IALS230-0080-0220	0.8	2.2	0.8	0.77	15	4	50	2,640	2.33	2.41	2.50	2.59	2.80
IALS230-0080-0300		3	1.2	0.77	15	4	50	2,640	3.16	3.27	3.39	3.51	3.80
IALS230-0080-0400		4	1.2	0.77	15	4	50	2,640	4.19	4.34	4.50	4.66	5.04
IALS230-0080-0500	0.9	5	0.8	0.77	15	4	50	2,640	5.23	5.41	5.60	5.81	6.29
IALS230-0080-0600		6	1.2	0.77	15	4	50	2,640	6.26	6.48	6.71	6.96	7.53
IALS230-0080-0800		8	1.2	0.77	15	4	50	2,640	8.33	8.62	8.93	9.26	10.01
IALS230-0090-0400	1	4	1.4	0.87	15	4	50	3,040	4.19	4.34	4.50	4.66	5.04
IALS230-0090-0600		6	1.4	0.87	15	4	50	3,040	6.26	6.48	6.71	6.96	7.53
IALS230-0090-0800		8	1.4	0.87	15	4	50	3,040	8.33	8.62	8.93	9.26	10.01
IALS230-0100-0200	1.2	2	1.5	0.95	15	4	50	2,400	2.16	2.24	2.32	2.41	2.60
IALS230-0100-0300		3	0.8	0.95	15	4	50	2,400	3.20	3.31	3.43	3.56	3.85
IALS230-0100-0400		4	1.5	0.95	15	4	50	2,400	4.23	4.38	4.54	4.71	5.09
IALS230-0100-0600	1.4	6	0.8	0.95	15	4	50	2,400	6.30	6.52	6.75	7.01	7.57
IALS230-0100-0700		7	1.5	0.95	15	4	50	2,400	7.33	7.59	7.86	8.16	8.82
IALS230-0100-0800		8	1.5	0.95	15	4	50	2,400	8.37	8.66	8.97	9.31	10.06
IALS230-0100-0900	1.5	9	1.5	0.95	15	4	50	2,400	9.40	9.73	10.08	10.46	11.30
IALS230-0100-1000		10	0.8	0.95	15	4	50	2,400	10.43	10.80	11.19	11.61	12.55
IALS230-0100-1200		12	1.5	0.95	15	4	50	2,400	12.50	12.94	13.40	13.91	15.03
IALS230-0120-0400	1.2	4	1.8	1.15	15	4	50	2,560	4.23	4.38	4.54	4.71	5.09
IALS230-0120-0600		6	1.8	1.15	15	4	50	2,560	6.30	6.52	6.75	7.01	7.57
IALS230-0120-0800		8	1.8	1.15	15	4	50	2,560	8.37	8.66	8.97	9.31	10.06
IALS230-0120-1000	1.4	10	1.8	1.15	15	4	50	2,560	10.43	10.80	11.19	11.61	12.55
IALS230-0120-1200		12	1.8	1.15	15	4	50	2,560	12.50	12.94	13.40	13.91	15.03
IALS230-0140-0600		1.4	6	2.1	1.35	15	4	50	2,640	6.30	6.52	6.75	7.01
IALS230-0140-0800	8		2.1	1.35	15	4	50	2,640	8.37	8.66	8.97	9.31	10.06
IALS230-0140-1000	10		2.1	1.35	15	4	50	2,640	10.43	10.80	11.19	11.61	12.55
IALS230-0140-1200	1.5	12	2.1	1.35	15	4	50	2,640	12.50	12.94	13.40	13.91	15.03
IALS230-0140-1400		14	2.1	1.35	15	4	50	2,640	14.57	15.08	15.62	16.21	17.52
IALS230-0140-1600		16	2.1	1.35	15	4	50	3,040	16.64	17.21	17.84	18.50	20.01
IALS230-0150-0300	1.5	3	1.1	1.45	15	4	50	2,560	3.20	3.31	3.43	3.56	3.85
IALS230-0150-0400		4	2.3	1.45	15	4	50	2,560	4.23	4.38	4.54	4.71	5.09
IALS230-0150-0600		6	1.1	1.45	15	4	50	2,560	6.30	6.52	6.75	7.01	7.57
IALS230-0150-0800	1.5	8	2.3	1.45	15	4	50	2,560	8.37	8.66	8.97	9.31	10.06
IALS230-0150-1000		10	1.1	1.45	15	4	50	2,560	10.43	10.80	11.19	11.61	12.55



單位(Size):mm

CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
ion Depo A Series
ion Depo U Series
DLC Series
Non-Coat Series
ion Depo R Series

ion Depo Type A Series



單位(Size):mm

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
									30'	1°	1°30'	2°	3°
IALS230-0150-1200	1.5	12	2.3	1.45	15	4	50	2,560	12.50	12.94	13.40	13.91	15.03
IALS230-0150-1400		14	2.3	1.45	15	4	50	2,640	14.57	15.08	15.62	16.21	17.52
IALS230-0150-1600		16	2.3	1.45	15	4	50	2,640	16.64	17.21	17.84	18.50	20.01
IALS230-0160-0600	1.6	6	2.4	1.55	15	4	50	2,640	6.30	6.52	6.75	7.01	7.57
IALS230-0160-0800		8	2.4	1.55	15	4	50	2,640	8.37	8.66	8.97	9.31	10.06
IALS230-0160-1000		10	2.4	1.55	15	4	50	2,640	10.43	10.80	11.19	11.61	12.55
IALS230-0160-1200		12	2.4	1.55	15	4	50	2,640	12.50	12.94	13.40	13.91	15.03
IALS230-0160-1400	1.8	14	2.4	1.55	15	4	50	2,640	14.57	15.08	15.62	16.21	17.52
IALS230-0160-1600		16	2.4	1.55	15	4	50	2,640	16.64	17.21	17.84	18.50	20.01
IALS230-0180-0600		6	2.7	1.75	15	4	50	2,640	6.30	6.52	6.75	7.01	7.57
IALS230-0180-0800		8	2.7	1.75	15	4	50	2,640	8.37	8.66	8.97	9.31	10.06
IALS230-0180-1000	2	10	2.7	1.75	15	4	50	2,640	10.43	10.80	11.19	11.61	12.55
IALS230-0180-1200		12	2.7	1.75	15	4	50	2,640	12.50	12.94	13.40	13.91	15.03
IALS230-0180-1400		14	2.7	1.75	15	4	50	2,640	14.57	15.08	15.62	16.21	17.52
IALS230-0180-1600		16	2.7	1.75	15	4	50	2,640	16.64	17.21	17.84	18.50	20.01
IALS230-0200-0400	2.5	4	3	1.94	15	4	50	2,560	4.25	4.40	4.56	4.73	5.11
IALS230-0200-0600		6	1.5	1.94	15	4	50	2,560	6.32	6.54	6.77	7.03	7.60
IALS230-0200-0800		8	3	1.94	15	4	50	2,560	8.39	8.68	8.99	9.33	10.08
IALS230-0200-1000		10	1.5	1.94	15	4	50	2,560	10.45	10.82	11.21	11.63	12.57
IALS230-0200-1200		12	3	1.94	15	4	50	2,560	12.52	12.96	13.42	13.93	15.06
IALS230-0200-1400		14	3	1.94	15	4	50	2,560	14.59	15.10	15.64	16.23	17.54
IALS230-0200-1500		15	1.5	1.94	15	4	50	2,560	15.62	16.17	16.75	17.38	18.79
IALS230-0200-1600		16	3	1.94	15	4	50	2,560	16.65	17.23	17.86	18.53	FREE
IALS230-0200-1800		18	3	1.94	15	4	50	2,560	18.72	19.37	20.07	20.83	FREE
IALS230-0200-2000		20	1.5	1.94	15	4	50	2,560	20.79	21.51	22.29	23.13	FREE
IALS230-0250-0800	3	8	3.7	2.44	15	4	50	2,640	8.39	8.68	8.99	9.33	10.08
IALS230-0250-1000		10	3.7	2.44	15	4	50	2,640	10.45	10.82	11.21	11.63	12.57
IALS230-0250-1200		12	3.7	2.44	15	4	50	2,640	12.52	12.96	13.42	13.93	FREE
IALS230-0250-1400		14	3.7	2.44	15	4	50	2,640	14.59	15.10	15.64	16.23	FREE
IALS230-0250-1600		16	3.7	2.44	15	4	50	2,640	16.65	17.23	17.86	18.53	FREE
IALS230-0250-1800	4	18	3.7	2.44	15	4	50	2,640	18.72	19.37	20.07	20.83	FREE
IALS230-0250-2000		20	3.7	2.44	15	4	50	2,640	20.79	21.51	22.29	FREE	FREE
IALS230-0300-0800		8	4.5	2.85	15	4	50	3,440	8.56	8.86	9.18	9.52	FREE
IALS230-0300-1000		10	2.5	2.85	15	4	50	3,440	10.63	11.00	11.39	11.82	FREE
IALS230-0300-1200		12	4.5	2.85	15	4	50	3,440	12.69	13.14	13.61	14.12	FREE
IALS230-0300-1400	4	14	4.5	2.85	15	4	50	3,440	14.76	15.27	15.83	FREE	FREE
IALS230-0300-1500		15	2.5	2.85	15	4	50	3,440	15.79	16.34	16.93	FREE	FREE
IALS230-0300-1600		16	4.5	2.85	15	4	50	3,440	16.83	17.41	18.04	FREE	FREE
IALS230-0300-1800		18	4.5	2.85	15	4	50	3,440	18.90	19.55	FREE	FREE	FREE
IALS230-0300-2000		20	2.5	2.85	15	4	50	3,440	20.96	21.69	FREE	FREE	FREE
IALS230-0300-2500	4	25	4.5	2.85	15	4	60	3,440	26.13	27.04	FREE	FREE	FREE
IALS230-0300-3000		30	4.5	2.85	15	4	60	4,080	31.30	FREE	FREE	FREE	FREE
IALS230-0400-1000		10	3	3.8	15	6	50	3,920	10.72	11.10	11.50	11.93	12.89
IALS230-0400-1200	4	12	6	3.8	15	6	50	3,920	12.79	13.24	13.71	14.23	15.38
IALS230-0400-1500		15	3	3.8	15	6	50	3,920	15.89	16.44	17.04	17.68	FREE

ion Depo Type A Series



單位(Size):mm

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
									30'	1°	1°30'	2°	3°
IALS230-0400-1600	4	16	6	3.8	15	6	50	3,920	16.92	17.51	18.15	18.83	FREE
IALS230-0400-2000		20	3	3.8	15	6	50	3,920	21.06	21.79	22.58	23.43	FREE
IALS230-0400-2500		25	6	3.8	15	6	60	3,920	26.23	27.14	28.12	FREE	FREE
IALS230-0400-3000		30	6	3.8	15	6	60	3,920	31.40	32.49	33.66	FREE	FREE
IALS230-0400-3500		35	6	3.8	15	6	70	3,920	36.56	37.84	FREE	FREE	FREE
IALS230-0500-1500	5	15	3.5	4.8	15	6	50	4,960	15.89	16.44	17.04	FREE	FREE
IALS230-0500-1600		16	7.5	4.8	15	6	50	4,960	16.92	17.51	18.15	FREE	FREE
IALS230-0500-2000		20	3.5	4.8	15	6	50	4,960	21.06	21.79	FREE	FREE	FREE
IALS230-0500-2500		25	7.5	4.8	15	6	60	4,960	26.23	27.14	FREE	FREE	FREE
IALS230-0500-3000		30	7.5	4.8	15	6	60	4,960	31.40	FREE	FREE	FREE	FREE
IALS230-0500-3500	6	35	7.5	4.8	15	6	70	4,960	36.56	FREE	FREE	FREE	FREE
IALS230-0500-4000		40	7.5	4.8	15	6	70	4,960	41.73	FREE	FREE	FREE	FREE
IALS230-0600-1500		15	6	5.8	15	6	50	2,640	FREE	FREE	FREE	FREE	FREE
IALS230-0600-2000		20	6	5.8	15	6	50	2,640	FREE	FREE	FREE	FREE	FREE
IALS230-0600-3000		30	6	5.8	15	6	60	2,640	FREE	FREE	FREE	FREE	FREE
IALS230-0600-4000	6	40	9	5.8	15	6	70	6,160	FREE	FREE	FREE	FREE	FREE
IALS230-0600-5000		50	9	5.8	15	6	80	7,840	FREE	FREE	FREE	FREE	FREE
IALS230-0600-6000		60	9	5.8	15	6	90	10,000	FREE	FREE	FREE	FREE	FREE

CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
ion Depo A Series
ion Depo U Series
DLC Series
Non-Coat Series
ion Depo R Series

ion Depo Type A Series

ion Depo Type A Series

ion Depo Type A 切削條件參考表 Recommended Milling Conditions

■型號: IALS230
Model number: IALS230

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			鑄鐵 Cast Irons FCD				碳鋼 Carbon Steels S50C/SS400				預硬鋼 Prehardened Steels PX5/NAK80				合金鋼 Die Steels SKD11/SKD61					
刃數 Number of Flutes	刀徑直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed		
			∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹		
2	1.8	14	0.06	1.08	650	13,000	0.06	1.08	650	13,000	0.05	1.08	420	11,000	0.06	1.08	650	13,000		
			0.05	1.08	550	12,000	0.05	1.08	550	12,000	0.04	1.08	350	10,000	0.05	1.08	550	12,000		
	2	4	0.13	1.2	1,500	16,000	0.13	1.2	1,500	16,000	0.12	1.2	900	13,000	0.13	1.2	1,500	16,000		
			0.12	1.2	1,400	16,000	0.12	1.2	1,400	16,000	0.1	1.2	850	13,000	0.12	1.2	1,400	16,000		
			0.11	1.2	1,300	16,000	0.11	1.2	1,300	16,000	0.09	1.2	800	13,000	0.11	1.2	1,300	16,000		
			0.1	1.2	1,200	16,000	0.1	1.2	1,200	16,000	0.08	1.2	750	13,000	0.1	1.2	1,200	16,000		
			0.09	1.2	1,000	14,000	0.09	1.2	1,000	14,000	0.07	1.2	650	12,000	0.09	1.2	1,000	14,000		
			0.08	1.2	900	13,000	0.08	1.2	900	13,000	0.06	1.2	570	11,000	0.08	1.2	900	13,000		
			0.07	1.2	800	12,000	0.07	1.2	800	12,000	0.06	1.2	570	11,000	0.07	1.2	800	12,000		
			0.07	1.2	800	12,000	0.07	1.2	800	12,000	0.05	1.2	500	10,000	0.07	1.2	800	12,000		
			0.06	1.2	700	11,000	0.06	1.2	700	11,000	0.04	1.2	430	9,000	0.06	1.2	700	11,000		
			0.05	1.2	600	10,000	0.05	1.2	600	10,000	0.035	1.2	360	8,000	0.05	1.2	600	10,000		
	2.5	8	0.15	1.5	1,400	13,000	0.15	1.5	1,400	13,000	0.12	1.5	900	11,000	0.15	1.5	1,400	13,000		
			0.14	1.5	1,300	13,000	0.14	1.5	1,300	13,000	0.11	1.5	800	11,000	0.14	1.5	1,300	13,000		
			0.13	1.5	1,200	13,000	0.13	1.5	1,200	13,000	0.1	1.5	750	11,000	0.13	1.5	1,200	13,000		
			0.12	1.5	1,000	12,000	0.12	1.5	1,000	12,000	0.09	1.5	650	10,000	0.12	1.5	1,000	12,000		
			0.1	1.5	900	11,000	0.1	1.5	900	11,000	0.07	1.5	550	9,000	0.1	1.5	900	11,000		
			0.09	1.5	800	10,000	0.09	1.5	800	10,000	0.06	1.5	480	8,000	0.09	1.5	800	10,000		
			0.08	1.5	700	9,000	0.08	1.5	700	9,000	0.05	1.5	400	7,000	0.08	1.5	700	9,000		
			0.08	1.5	700	9,000	0.08	1.5	700	9,000	0.05	1.5	400	7,000	0.08	1.5	700	9,000		
3	8	0.2	1.8	1,500	11,000	0.2	1.8	1,500	11,000	0.16	1.8	1,000	9,000	0.2	1.8	1,500	11,000			
		0.18	1.8	1,400	11,000	0.18	1.8	1,400	11,000	0.14	1.8	900	9,000	0.18	1.8	1,400	11,000			
		0.16	1.8	1,300	11,000	0.16	1.8	1,300	11,000	0.12	1.8	800	9,000	0.16	1.8	1,300	11,000			
		0.14	1.8	1,200	11,000	0.14	1.8	1,200	11,000	0.1	1.8	700	9,000	0.14	1.8	1,200	11,000			
		0.12	1.8	1,000	10,000	0.12	1.8	1,000	10,000	0.1	1.8	700	9,000	0.12	1.8	1,000	10,000			
		0.12	1.8	1,000	10,000	0.12	1.8	1,000	10,000	0.09	1.8	600	8,000	0.12	1.8	1,000	10,000			
		0.11	1.8	900	10,000	0.11	1.8	900	10,000	0.08	1.8	550	8,000	0.11	1.8	900	10,000			
		0.1	1.8	800	9,000	0.1	1.8	800	9,000	0.07	1.8	450	7,000	0.1	1.8	800	9,000			
		0.08	1.8	700	8,000	0.08	1.8	700	8,000	0.06	1.8	380	6,000	0.08	1.8	700	8,000			
		0.06	1.8	600	7,000	0.06	1.8	600	7,000	0.045	1.8	300	5,000	0.06	1.8	600	7,000			
4	10	0.3	2.4	1,500	8,000	0.3	2.4	1,500	8,000	0.25	2.4	850	6,000	0.3	2.4	1,500	8,000			
		0.3	2.4	1,500	8,000	0.3	2.4	1,500	8,000	0.25	2.4	850	6,000	0.3	2.4	1,500	8,000			
		0.25	2.4	1,400	8,000	0.25	2.4	1,400	8,000	0.2	2.4	800	6,000	0.25	2.4	1,400	8,000			
		0.25	2.4	1,400	8,000	0.25	2.4	1,400	8,000	0.2	2.4	800	6,000	0.25	2.4	1,400	8,000			
		0.2	2.4	1,300	8,000	0.2	2.4	1,300	8,000	0.15	2.4	730	6,000	0.2	2.4	1,300	8,000			
		0.15	2.4	1,100	7,000	0.15	2.4	1,100	7,000	0.1	2.4	600	5,000	0.15	2.4	1,100	7,000			
		0.12	2.4	1,000	7,000	0.12	2.4	1,000	7,000	0.08	2.4	540	5,000	0.12	2.4	1,000	7,000			
		0.1	2.4	800	6,000	0.1	2.4	800	6,000	0.07	2.4	450	4,500	0.1	2.4	800	6,000			
5	15	0.35	3	1,400	6,000	0.35	3	1,400	6,000	0.3	3	800	4,500	0.35	3	1,400	6,000			
		0.35	3	1,400	6,000	0.35	3	1,400	6,000	0.3	3	800	4,500	0.35	3	1,400	6,000			
		0.3	3	1,300	6,000	0.3	3	1,300	6,000	0.25	3	730	4,500	0.3	3	1,300	6,000			
		0.25	3	1,200	6,000	0.25	3	1,200	6,000	0.2	3	680	4,500	0.25	3	1,200	6,000			
		0.2	3	900	5,000	0.2	3	900	5,000	0.15	3	540	4,000	0.2	3	900	5,000			

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			鑄鐵 Cast Irons FCD				碳鋼 Carbon Steels S50C/SS400				預硬鋼 Prehardened Steels PX5/NAK80				合金鋼 Die Steels SKD11/SKD61			
刃數 Number of Flutes	刀徑直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹
2	5	35	0.15	3	800	5,000	0.15	3	800	5,000	0.1	3	420	3,500	0.15	3	800	5,000
			0.1	3	600	4,000	0.1	3	340	3,000	0.1	3	600	4,000				
	6	15	0.45	3.6	1,500	5,500	0.45	3.6	1,500	5,500	0.38	3.6	700	3,800	0.45	3.6	1,500	5,500
			0.4	3.6	1,200	5,000	0.4	3.6	1,200	5,000	0.35	3.6	630	3,500	0.4	3.6	1,200	5,000
			0.35	3.6	900	4,000	0.35	3.6	900	4,000	0.3	3.6	500	3,000	0.35	3.6	900	4,000
			0.25	3.6	650	3,500	0.25	3.6	650	3,500	0.2	3.6	380	2,700	0.25	3.6	650	3,500
			0.15	3.6	500	3,000	0.15	3.6	500	3,000	0.1	3.6	280	2,200	0.15	3.6	500	3,000
			0.05	3.6	400	2,700	0.05	3.6	400	2,700	0.04	3.6	220	2,000	0.05	3.6	400	2,700

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

ion Depo Type A Series

ion Depo Type A 切削條件參考表
Recommended Milling Conditions

■型號: IALS230
Model number: IALS230

長頸平角立銼刀 Long Neck Square End Mill

刃數 Number of Flutes	刀徑直徑 Dia.	有效長度 Effective Length	高速鋼 High Speed Steels HAP5R/HAP72/ASP23				不銹鋼 Stainless Steels SUS304				不銹鋼 Stainless Steels HPM/STAVAX				銅合金 Copper Alloy 銅鎢(Copper Tungsten)			
			切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹
2	0.1	0.3	0.004	0.06	70	40,000	0.005	0.06	150	40,000	0.004	0.06	120	40,000	0.006	0.06	150	40,000
		0.5	0.003	0.06	25	40,000	0.004	0.06	100	40,000	0.003	0.06	75	40,000	0.005	0.06	100	40,000
		1	0.002	0.06	20	40,000	0.002	0.06	40	40,000	0.002	0.06	30	40,000	0.002	0.06	40	40,000
	0.15	0.3	0.004	0.09	100	40,000	0.005	0.09	200	40,000	0.004	0.09	150	40,000	0.008	0.09	200	40,000
		0.5	0.004	0.09	70	40,000	0.005	0.09	150	40,000	0.004	0.09	120	40,000	0.008	0.09	150	40,000
	0.2	0.5	0.007	0.12	200	40,000	0.01	0.12	330	40,000	0.007	0.12	250	40,000	0.012	0.12	330	40,000
		0.75	0.006	0.12	170	40,000	0.008	0.12	280	40,000	0.006	0.12	220	40,000	0.01	0.12	280	40,000
		1	0.005	0.12	130	40,000	0.007	0.12	250	40,000	0.005	0.12	180	40,000	0.008	0.12	250	40,000
	0.3	0.8	0.015	0.18	210	35,000	0.02	0.18	400	40,000	0.015	0.18	260	35,000	0.024	0.18	400	40,000
		1	0.015	0.18	210	35,000	0.02	0.18	400	40,000	0.015	0.18	260	35,000	0.024	0.18	400	40,000
		1.5	0.01	0.18	180	35,000	0.015	0.18	350	40,000	0.01	0.18	230	35,000	0.018	0.18	350	40,000
		2	0.007	0.18	130	30,000	0.01	0.18	300	35,000	0.007	0.18	180	30,000	0.012	0.18	320	40,000
		2.5	0.005	0.18	110	25,000	0.007	0.18	250	30,000	0.005	0.18	160	25,000	0.008	0.18	280	35,000
		3	0.004	0.18	80	25,000	0.005	0.18	200	30,000	0.004	0.18	130	25,000	0.006	0.18	250	35,000
	0.4	1	0.018	0.24	280	30,000	0.025	0.24	500	35,000	0.018	0.24	330	30,000	0.03	0.24	600	40,000
		1.2	0.014	0.24	230	30,000	0.02	0.24	450	35,000	0.014	0.24	280	30,000	0.026	0.24	500	40,000
		1.5	0.014	0.24	230	30,000	0.02	0.24	450	35,000	0.014	0.24	280	30,000	0.026	0.24	500	40,000
		2	0.014	0.24	210	30,000	0.02	0.24	400	35,000	0.014	0.24	260	30,000	0.024	0.24	450	40,000
		2.5	0.01	0.24	180	25,000	0.015	0.24	350	30,000	0.01	0.24	230	25,000	0.02	0.24	400	40,000
		3	0.01	0.24	140	25,000	0.015	0.24	300	30,000	0.01	0.24	190	25,000	0.018	0.24	350	35,000
	0.5	1	0.022	0.3	300	25,000	0.03	0.3	550	30,000	0.022	0.3	350	25,000	0.036	0.3	650	35,000
		1.5	0.02	0.3	280	25,000	0.028	0.3	520	30,000	0.02	0.3	330	25,000	0.033	0.3	630	35,000
		2	0.018	0.3	270	25,000	0.025	0.3	500	30,000	0.018	0.3	320	25,000	0.03	0.3	600	35,000
		2.5	0.016	0.3	240	25,000	0.023	0.3	470	30,000	0.016	0.3	290	25,000	0.027	0.3	580	35,000
3		0.014	0.3	230	25,000	0.02	0.3	450	30,000	0.014	0.3	280	25,000	0.024	0.3	550	35,000	
3.5		0.012	0.3	200	22,000	0.018	0.3	420	30,000	0.012	0.3	250	22,000	0.021	0.3	500	30,000	
0.6	4	0.01	0.3	180	22,000	0.015	0.3	350	25,000	0.01	0.3	230	22,000	0.018	0.3	420	30,000	
	1.5	0.025	0.36	350	25,000	0.035	0.36	600	30,000	0.025	0.36	400	25,000	0.04	0.36	700	35,000	
	1.8	0.025	0.36	330	25,000	0.035	0.36	600	30,000	0.025	0.36	380	25,000	0.04	0.36	700	35,000	
	2	0.025	0.36	330	25,000	0.035	0.36	600	30,000	0.025	0.36	380	25,000	0.04	0.36	700	35,000	
	3	0.02	0.36	300	25,000	0.03	0.36	550	30,000	0.02	0.36	350	25,000	0.035	0.36	650	35,000	
	4	0.018	0.36	250	22,000	0.025	0.36	450	25,000	0.018	0.36	300	22,000	0.03	0.36	550	30,000	
0.7	5	0.014	0.36	190	20,000	0.02	0.36	400	25,000	0.014	0.36	240	20,000	0.024	0.36	480	30,000	
	6	0.01	0.36	150	18,000	0.015	0.36	300	20,000	0.01	0.36	200	18,000	0.018	0.36	380	25,000	
	2	0.03	0.42	350	25,000	0.04	0.42	650	30,000	0.03	0.42	400	25,000	0.05	0.42	750	35,000	
	4	0.02	0.42	280	22,000	0.03	0.42	500	25,000	0.02	0.42	330	22,000	0.04	0.42	600	30,000	
	6	0.015	0.42	190	18,000	0.02	0.42	350	20,000	0.015	0.42	240	18,000	0.03	0.42	450	25,000	
	0.8	2.2	0.03	0.48	450	22,000	0.05	0.48	700	25,000	0.03	0.48	500	22,000	0.06	0.48	850	35,000
3		0.03	0.48	450	22,000	0.05	0.48	700	25,000	0.03	0.48	500	22,000	0.06	0.48	850	35,000	
4		0.03	0.48	350	22,000	0.045	0.48	600	25,000	0.03	0.48	400	22,000	0.055	0.48	720	30,000	
5		0.025	0.48	300	20,000	0.035	0.48	500	22,000	0.025	0.48	350	20,000	0.05	0.48	650	30,000	
6		0.02	0.48	250	18,000	0.03	0.48	450	20,000	0.02	0.48	300	18,000	0.04	0.48	560	25,000	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油類或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid. ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible. ●ap=軸向方向切削深度，ae=徑向方向切削深度。 ap=Axial Depth of Cut, ae=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸平角立銼刀 Long Neck Square End Mill

刃數 Number of Flutes	刀徑直徑 Dia.	有效長度 Effective Length	高速鋼 High Speed Steels HAP5R/HAP72/ASP23				不銹鋼 Stainless Steels SUS304				不銹鋼 Stainless Steels HPM/STAVAX				銅合金 Copper Alloy 銅鎢(Copper Tungsten)			
			切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹
2	0.8	8	0.015	0.48	190	15,000	0.02	0.48	350	18,000	0.015	0.48	240	15,000	0.025	0.48	430	22,000
		4	0.035	0.54	550	22,000	0.05	0.54	900	25,000	0.035	0.54	600	22,000	0.06	0.54	1,000	30,000
	0.9	6	0.03	0.54	350	18,000	0.04	0.54	600	20,000	0.03	0.54	400	18,000	0.05	0.54	750	25,000
		8	0.02	0.54	280	16,000	0.03	0.54	500	18,000	0.02	0.54	330	16,000	0.04	0.54	620	22,000
	1	2	0.06	0.6	950	22,000	0.07	0.6	1,500	25,000	0.06	0.6	1,000	22,000	0.08	0.6	1,800	30,000
		3	0.05	0.6	750	22,000	0.06	0.6	1,200	25,000	0.05	0.6	800	22,000	0.07	0.6	1,500	30,000
		4	0.045	0.6	650	22,000	0.055	0.6	1,100	25,000	0.045	0.6	700	22,000	0.065	0.6	1,300	30,000
		6	0.035	0.6	450	18,000	0.045	0.6	800	20,000	0.035	0.6	500	18,000	0.055	0.6	1,000	25,000
		7	0.03	0.6	450	18,000	0.04	0.6	800	20,000	0.03	0.6	500	18,000	0.05	0.6	1,000	25,000
		8	0.025	0.6	350	15,000	0.035	0.6	700	18,000	0.025	0.6	400	15,000	0.045	0.6	850	22,000
	1.2	9	0.02	0.6	350	15,000	0.03	0.6	700	18,000	0.02	0.6	400	15,000	0.04	0.6	850	22,000
		10	0.018	0.6	300	14,000	0.025	0.6	600	16,000	0.018	0.6	350	14,000	0.03	0.6	750	20,000
		12	0.014	0.6	250	12,000	0.02	0.6	500	14,000	0.014	0.6	300	12,000	0.025	0.6	650	18,000
		4	0.05	0.72	750	20,000	0.06	0.72	1,200	23,000	0.05	0.72	800	20,000	0.07	0.72	1,400	27,000
		6	0.04	0.72	550	18,000	0.05	0.72	900	20,000	0.04	0.72	600	18,000	0.06	0.72	1,200	25,000
		8	0.03	0.72	450	15,000	0.04	0.72	800	18,000	0.03	0.72	500	15,000	0.05	0.72	1,000	22,000
	1.4	10	0.02	0.72	400	14,000	0.03	0.72	700	16,000	0.02	0.72	450	14,000	0.04	0.72	850	20,000</

ion Depo Type A 切削條件參考表 Recommended Milling Conditions

■型號:IALS230
Model number:IALS230

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			高速鋼 High Speed Steels HAP5R/HAP72/ASP23				不銹鋼 Stainless Steels SUS304				不銹鋼 Stainless Steels HPM/STAVAX				銅合金 Copper Alloy 銅鎳(Copper Tungsten)					
刃數 Number of Flutes	刀徑直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed		
			∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹		
2	1.8	14	0.05	1.08	370	11,000	0.06	1.08	650	13,000	0.05	1.08	420	11,000	0.07	1.08	800	16,000		
		16	0.04	1.08	300	10,000	0.05	1.08	550	12,000	0.04	1.08	350	10,000	0.06	1.08	700	15,000		
	2	2	4	0.12	1.2	850	13,000	0.13	1.2	1,500	16,000	0.12	1.2	900	13,000	0.15	1.2	1,850	20,000	
			6	0.1	1.2	800	13,000	0.12	1.2	1,400	16,000	0.1	1.2	850	13,000	0.14	1.2	1,750	20,000	
			8	0.09	1.2	750	13,000	0.11	1.2	1,300	16,000	0.09	1.2	800	13,000	0.13	1.2	1,650	20,000	
			10	0.08	1.2	700	13,000	0.1	1.2	1,200	16,000	0.08	1.2	750	13,000	0.12	1.2	1,500	20,000	
			12	0.07	1.2	600	12,000	0.09	1.2	1,000	14,000	0.07	1.2	650	12,000	0.11	1.2	1,200	17,000	
			14	0.06	1.2	520	11,000	0.08	1.2	900	13,000	0.06	1.2	570	11,000	0.1	1.2	1,100	16,000	
			15	0.06	1.2	520	11,000	0.07	1.2	800	12,000	0.06	1.2	570	11,000	0.085	1.2	1,000	15,000	
			16	0.05	1.2	450	10,000	0.07	1.2	800	12,000	0.05	1.2	500	10,000	0.085	1.2	1,000	15,000	
			18	0.04	1.2	380	9,000	0.06	1.2	700	11,000	0.04	1.2	430	9,000	0.07	1.2	800	13,000	
			20	0.035	1.2	310	8,000	0.05	1.2	600	10,000	0.035	1.2	360	8,000	0.06	1.2	720	12,000	
	2.5	2.5	8	0.12	1.5	850	11,000	0.15	1.5	1,400	13,000	0.12	1.5	900	11,000	0.18	1.5	1,700	16,000	
			10	0.11	1.5	750	11,000	0.14	1.5	1,300	13,000	0.11	1.5	800	11,000	0.17	1.5	1,600	16,000	
			12	0.1	1.5	700	11,000	0.13	1.5	1,200	13,000	0.1	1.5	750	11,000	0.16	1.5	1,500	16,000	
			14	0.09	1.5	600	10,000	0.12	1.5	1,000	12,000	0.09	1.5	650	10,000	0.15	1.5	1,200	14,000	
			16	0.07	1.5	500	9,000	0.1	1.5	900	11,000	0.07	1.5	550	9,000	0.12	1.5	1,100	13,000	
			18	0.06	1.5	430	8,000	0.09	1.5	800	10,000	0.06	1.5	480	8,000	0.11	1.5	950	12,000	
			20	0.05	1.5	350	7,000	0.08	1.5	700	9,000	0.05	1.5	400	7,000	0.1	1.5	850	11,000	
			3	3	8	0.16	1.8	950	9,000	0.2	1.8	1,500	11,000	0.16	1.8	1,000	9,000	0.24	1.8	1,800
10					0.14	1.8	850	9,000	0.18	1.8	1,400	11,000	0.14	1.8	900	9,000	0.22	1.8	1,700	13,000
12					0.12	1.8	750	9,000	0.16	1.8	1,300	11,000	0.12	1.8	800	9,000	0.2	1.8	1,600	13,000
14	0.1	1.8			650	9,000	0.14	1.8	1,200	11,000	0.1	1.8	700	9,000	0.17	1.8	1,400	13,000		
15	0.1	1.8			650	9,000	0.12	1.8	1,000	10,000	0.1	1.8	700	9,000	0.15	1.8	1,200	12,000		
16	0.09	1.8			550	8,000	0.12	1.8	1,000	10,000	0.09	1.8	600	8,000	0.15	1.8	1,200	12,000		
18	0.08	1.8			500	8,000	0.11	1.8	900	10,000	0.08	1.8	550	8,000	0.13	1.8	1,100	12,000		
20	0.07	1.8			400	7,000	0.1	1.8	800	9,000	0.07	1.8	450	7,000	0.12	1.8	1,000	11,000		
25	0.06	1.8			330	6,000	0.08	1.8	700	8,000	0.06	1.8	380	6,000	0.1	1.8	900	10,000		
30	0.045	1.8			250	5,000	0.06	1.8	600	7,000	0.045	1.8	300	5,000	0.07	1.8	730	8,500		
4	4	10	0.25	2.4	800	6,000	0.3	2.4	1,500	8,000	0.25	2.4	850	6,000	0.36	2.4	1,900	10,000		
		12	0.25	2.4	800	6,000	0.3	2.4	1,500	8,000	0.25	2.4	850	6,000	0.36	2.4	1,900	10,000		
		15	0.2	2.4	750	6,000	0.25	2.4	1,400	8,000	0.2	2.4	800	6,000	0.3	2.4	1,800	10,000		
		16	0.2	2.4	750	6,000	0.25	2.4	1,400	8,000	0.2	2.4	800	6,000	0.3	2.4	1,800	10,000		
		20	0.15	2.4	680	6,000	0.2	2.4	1,300	8,000	0.15	2.4	730	6,000	0.24	2.4	1,600	10,000		
		25	0.1	2.4	550	5,000	0.15	2.4	1,100	7,000	0.1	2.4	600	5,000	0.18	2.4	1,300	8,500		
		30	0.08	2.4	490	5,000	0.12	2.4	1,000	7,000	0.08	2.4	540	5,000	0.15	2.4	1,200	8,500		
		35	0.07	2.4	400	4,500	0.1	2.4	800	6,000	0.07	2.4	450	4,500	0.12	2.4	1,000	7,200		
		5	5	15	0.3	3	750	4,500	0.35	3	1,400	6,000	0.3	3	800	4,500	0.42	3	1,700	7,200
				16	0.3	3	750	4,500	0.35	3	1,400	6,000	0.3	3	800	4,500	0.42	3	1,700	7,200
20	0.25			3	680	4,500	0.3	3	1,300	6,000	0.25	3	730	4,500	0.36	3	1,600	7,200		
25	0.2			3	630	4,500	0.25	3	1,200	6,000	0.2	3	680	4,500	0.3	3	1,500	7,200		
30	0.15			3	490	4,000	0.2	3	900	5,000	0.15	3	540	4,000	0.24	3	1,100	6,000		

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ● ∂p =軸向切削深度， ∂e =徑向切削深度。 ∂p =Axial Depth of Cut ∂e =Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			高速鋼 High Speed Steels HAP5R/HAP72/ASP23				不銹鋼 Stainless Steels SUS304				不銹鋼 Stainless Steels HPM/STAVAX				銅合金 Copper Alloy 銅鎳(Copper Tungsten)			
刃數 Number of Flutes	刀徑直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹
2	5	35	0.1	3	370	3,500	0.15	3	800	5,000	0.1	3	600	4,000	0.07	3	340	3,000
		40	0.07	3	290	3,000	0.1	3	600	4,000	0.07	3	340	3,000	0.12	3	720	4,800
	6	15	0.38	3.6	650	3,800	0.45	3.6	1,500	5,500	0.38	3.6	700	3,800	0.5	3.6	1,700	6,500
		20	0.35	3.6	580	3,500	0.4	3.6	1,200	5,000	0.35	3.6	630	3,500	0.48	3.6	1,500	6,000
		30	0.3	3.6	450	3,000	0.35	3.6	900	4,000	0.3	3.6	500	3,000	0.42	3.6	1,100	4,800
		40	0.2	3.6	330	2,700	0.25	3.6	650	3,500	0.2	3.6	380	2,700	0.3	3.6	780	4,200
		50	0.1	3.6	230	2,200	0.15	3.6	500	3,000	0.1	3.6	280	2,200	0.18	3.6	600	3,600
		60	0.04	3.6	170	2,000	0.05	3.6	400	2,700	0.04	3.6	220	2,000	0.06	3.6	480	3,200

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ● ∂p =軸向切削深度， ∂e =徑向切削深度。 ∂p =Axial Depth of Cut ∂e =Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

ion Depo Type A 切削條件參考表
Recommended Milling Conditions

型號: IALS230
Model number: IALS230

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈦合金 (Titanium Alloy)			
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			ϕp mm	ϕe mm			ϕp mm	ϕe mm			ϕp mm	ϕe mm		
2	0.1	0.3	0.006	0.06	150	40,000	0.006	0.06	150	40,000	0.004	0.06	70	40,000
		0.5	0.005	0.06	100	40,000	0.005	0.06	100	40,000	0.003	0.06	25	40,000
		1	0.002	0.06	40	40,000	0.002	0.06	40	40,000	0.002	0.06	20	40,000
	0.15	0.3	0.008	0.09	200	40,000	0.008	0.09	200	40,000	0.004	0.09	100	40,000
		0.5	0.008	0.09	150	40,000	0.008	0.09	150	40,000	0.004	0.09	70	40,000
	0.2	0.5	0.012	0.12	330	40,000	0.012	0.12	330	40,000	0.007	0.12	200	40,000
		0.75	0.01	0.12	280	40,000	0.01	0.12	280	40,000	0.006	0.12	170	40,000
		1	0.008	0.12	250	40,000	0.008	0.12	250	40,000	0.005	0.12	130	40,000
	0.3	0.8	0.024	0.18	400	40,000	0.024	0.18	400	40,000	0.015	0.18	210	35,000
		1	0.024	0.18	400	40,000	0.024	0.18	400	40,000	0.015	0.18	210	35,000
		1.5	0.018	0.18	350	40,000	0.018	0.18	350	40,000	0.01	0.18	180	35,000
		2	0.012	0.18	320	40,000	0.012	0.18	320	40,000	0.007	0.18	130	30,000
		2.5	0.008	0.18	280	35,000	0.008	0.18	280	35,000	0.005	0.18	110	25,000
		3	0.006	0.18	250	35,000	0.006	0.18	250	35,000	0.004	0.18	80	25,000
	0.4	1	0.03	0.24	600	40,000	0.03	0.24	600	40,000	0.018	0.24	280	30,000
		1.2	0.026	0.24	500	40,000	0.026	0.24	500	40,000	0.014	0.24	230	30,000
		1.5	0.026	0.24	500	40,000	0.026	0.24	500	40,000	0.014	0.24	230	30,000
		2	0.024	0.24	450	40,000	0.024	0.24	450	40,000	0.014	0.24	210	30,000
		2.5	0.02	0.24	400	40,000	0.02	0.24	400	40,000	0.01	0.24	180	25,000
		3	0.018	0.24	350	35,000	0.018	0.24	350	35,000	0.01	0.24	140	25,000
	0.5	1	0.036	0.3	650	35,000	0.036	0.3	650	35,000	0.022	0.3	300	25,000
		1.5	0.033	0.3	630	35,000	0.033	0.3	630	35,000	0.02	0.3	280	25,000
		2	0.03	0.3	600	35,000	0.03	0.3	600	35,000	0.018	0.3	270	25,000
		2.5	0.027	0.3	580	35,000	0.027	0.3	580	35,000	0.016	0.3	240	25,000
3		0.024	0.3	550	35,000	0.024	0.3	550	35,000	0.014	0.3	230	25,000	
3.5		0.021	0.3	500	30,000	0.021	0.3	500	30,000	0.012	0.3	200	22,000	
0.6	4	0.018	0.3	420	30,000	0.018	0.3	420	30,000	0.01	0.3	180	22,000	
	1.5	0.04	0.36	700	35,000	0.04	0.36	700	35,000	0.025	0.36	350	25,000	
	1.8	0.04	0.36	700	35,000	0.04	0.36	700	35,000	0.025	0.36	330	25,000	
	2	0.04	0.36	700	35,000	0.04	0.36	700	35,000	0.025	0.36	330	25,000	
	3	0.035	0.36	650	35,000	0.035	0.36	650	35,000	0.02	0.36	300	25,000	
	4	0.03	0.36	550	30,000	0.03	0.36	550	30,000	0.018	0.36	250	22,000	
0.7	5	0.024	0.36	480	30,000	0.024	0.36	480	30,000	0.014	0.36	190	20,000	
	6	0.018	0.36	380	25,000	0.018	0.36	380	25,000	0.01	0.36	150	18,000	
	2	0.05	0.42	750	35,000	0.05	0.42	750	35,000	0.03	0.42	350	25,000	
	4	0.04	0.42	600	30,000	0.04	0.42	600	30,000	0.02	0.42	280	22,000	
	6	0.03	0.42	450	25,000	0.03	0.42	450	25,000	0.015	0.42	190	18,000	
	0.8	2.2	0.06	0.48	850	35,000	0.06	0.48	850	35,000	0.03	0.48	450	22,000
3		0.06	0.48	850	35,000	0.06	0.48	850	35,000	0.03	0.48	450	22,000	
4		0.055	0.48	720	30,000	0.055	0.48	720	30,000	0.03	0.48	350	22,000	
5		0.05	0.48	650	30,000	0.05	0.48	650	30,000	0.025	0.48	300	20,000	
6		0.04	0.48	560	25,000	0.04	0.48	560	25,000	0.02	0.48	250	18,000	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid. ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度應越短越好。 Length of tool overhang must be as short as possible. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding. ● ϕp =軸向方向切削深度， ϕe =徑向方向切削深度。 ϕp =Axial Depth of Cut ϕe =Radial Depth of Cut.

ion Depo Type A Series

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈦合金 (Titanium Alloy)			
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			ϕp mm	ϕe mm			ϕp mm	ϕe mm			ϕp mm	ϕe mm		
2	0.8	8	0.025	0.48	430	22,000	0.025	0.48	430	22,000	0.015	0.48	190	15,000
		4	0.06	0.54	1,000	30,000	0.06	0.54	1,000	30,000	0.035	0.54	550	22,000
	0.9	6	0.05	0.54	750	25,000	0.05	0.54	750	25,000	0.03	0.54	350	18,000
		8	0.04	0.54	620	22,000	0.04	0.54	620	22,000	0.02	0.54	280	16,000
	1	2	0.08	0.6	1,800	30,000	0.08	0.6	1,800	30,000	0.06	0.6	950	22,000
		3	0.07	0.6	1,500	30,000	0.07	0.6	1,500	30,000	0.05	0.6	750	22,000
		4	0.065	0.6	1,300	30,000	0.065	0.6	1,300	30,000	0.045	0.6	650	22,000
		6	0.055	0.6	1,000	25,000	0.055	0.6	1,000	25,000	0.035	0.6	450	18,000
		7	0.05	0.6	1,000	25,000	0.05	0.6	1,000	25,000	0.03	0.6	450	18,000
		8	0.045	0.6	850	22,000	0.045	0.6	850	22,000	0.025	0.6	350	15,000
	1.2	9	0.04	0.6	850	22,000	0.04	0.6	850	22,000	0.02	0.6	350	15,000
		10	0.03	0.6	750	20,000	0.03	0.6	750	20,000	0.018	0.6	300	14,000
		12	0.025	0.6	650	18,000	0.025	0.6	650	18,000	0.014	0.6	250	12,000
		4	0.07	0.72	1,400	27,000	0.07	0.72	1,400	27,000	0.05	0.72	750	20,000
		6	0.06	0.72	1,200	25,000	0.06	0.72	1,200	25,000	0.04	0.72	550	18,000
		8	0.05	0.72	1,000	22,000	0.05	0.72	1,000	22,000	0.03	0.72	450	15,000
	1.4	10	0.04	0.72	850	20,000	0.04	0.72	850	20,000	0.02	0.72	400	14,000
		12	0.03	0.72	700	17,000	0.03	0.72	700	17,000	0.018	0.72	300	12,000
		6	0.08	0.84	1,500	24,000	0.08	0.84	1,500	24,000	0.06	0.84	670	16,000
		8	0.07	0.84	1,300	22,000	0.07	0.84	1,300	22,000	0.05	0.84	530	14,000
		10	0.06	0.84	1,100	20,000	0.06	0.84	1,100	20,000	0.04	0.84	470	13,000
		12	0.05	0.84	850	17,000	0.05	0.84	850	17,000	0.03	0.84	400	12,000
	1.5	14	0.04	0.84	700	15,000	0.04	0.84	700	15,000	0.025	0.84	300	11,000
		16	0.03	0.84	550	13,000	0.03	0.84	550	13,000	0.018	0.84	250	10,000
3		0.1	0.9	1,700	26,000	0.1	0.9	1,700	26,000	0.08	0.9	810	18,000	
4		0.1	0.9	1,700	26,000	0.1	0.9	1,700	26,000	0.08	0.9	810	18,000	
6		0.09	0.9	1,500	24,000	0.09	0.9	1,500	24,000	0.07	0.9	670	16,000	
8		0.08	0.9	1,300	22,000	0.08	0.9	1,300	22,000	0.06	0.9	530	14,000	
1.6	10	0.07	0.9	1,100	20,000	0.07	0.9	1,100	20,000	0.05	0.9	470	13,000	
	12	0.06	0.9	850	17,000	0.06	0.9	850	17,000	0.04	0.9	400	12,000	
	14	0.05	0.9	750	16,000	0.05	0.9	750	16,000	0.03	0.9	330	11,000	
	16	0.04	0.9	650	15,000	0.04	0.9	650	15,000	0.025	0.9	270	10,000	
	6	0.1	0.96	1,500	24,000	0.1	0.96	1,500	24,000	0.08	0.96	670	16,000	
	8	0.09	0.96	1,300	22,000	0.09	0.96	1,300	22,000	0.07	0.96	530	14,000	
1.8	10	0.08	0.96	1,100	20,000	0.08	0.96	1,100	20,000	0.06	0.96	470	13,000	
	12	0.07	0.96	900	18,000	0.07	0.96	900	18,000	0.05	0.96	400	12,000	
	14	0.06	0.96	750	16,000	0.06	0.96	750	16,000	0.04	0.96	330	11,000	
	16	0.05	0.96	620	14,000	0.05	0.96	620	14,000	0.03	0.96	270	10,000	
	6	0.12	1.08	1,600	22,000	0.12	1.08	1,600	22,000	0.09	1.08	710	14,000	
	8	0.11	1.08	1,400	22,000	0.11	1.08	1,400	22,000	0.08	1.08	590	14,000	
1.8	10	0.1	1.08	1,200	20,000	0.1	1.08	1,200	20,000	0.07	1.08	500	13,000	
	12	0.085	1.08	900	17,000	0.085	1.08	900	17,000	0.06	1.08	430	12,000	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid. ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度應越短越好。 Length of tool overhang must be as short as possible. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding. ● ϕp =軸向方向切削深度， ϕe =徑向方向切削深度。 ϕp =Axial Depth of Cut ϕe =Radial Depth of Cut.

ion Depo Type A 切削條件參考表 Recommended Milling Conditions

■型號: IALS230
Model number: IALS230

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈦合金 (Titanium Alloy)			
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm		
2	1.8	14	0.07	1.08	800	16,000	0.07	1.08	800	16,000	0.05	1.08	370	11,000
		16	0.06	1.08	700	15,000	0.06	1.08	700	15,000	0.04	1.08	300	10,000
	2	4	0.15	1.2	1,850	20,000	0.15	1.2	1,850	20,000	0.12	1.2	850	13,000
		6	0.14	1.2	1,750	20,000	0.14	1.2	1,750	20,000	0.1	1.2	800	13,000
		8	0.13	1.2	1,650	20,000	0.13	1.2	1,650	20,000	0.09	1.2	750	13,000
		10	0.12	1.2	1,500	20,000	0.12	1.2	1,500	20,000	0.08	1.2	700	13,000
		12	0.11	1.2	1,200	17,000	0.11	1.2	1,200	17,000	0.07	1.2	600	12,000
		14	0.1	1.2	1,100	16,000	0.1	1.2	1,100	16,000	0.06	1.2	520	11,000
		15	0.085	1.2	1,000	15,000	0.085	1.2	1,000	15,000	0.06	1.2	520	11,000
		16	0.085	1.2	1,000	15,000	0.085	1.2	1,000	15,000	0.05	1.2	450	10,000
	2.5	8	0.07	1.2	800	13,000	0.07	1.2	800	13,000	0.04	1.2	380	9,000
		20	0.06	1.2	720	12,000	0.06	1.2	720	12,000	0.035	1.2	310	8,000
		8	0.18	1.5	1,700	16,000	0.18	1.5	1,700	16,000	0.12	1.5	850	11,000
		10	0.17	1.5	1,600	16,000	0.17	1.5	1,600	16,000	0.11	1.5	750	11,000
		12	0.16	1.5	1,500	16,000	0.16	1.5	1,500	16,000	0.1	1.5	700	11,000
		14	0.15	1.5	1,200	14,000	0.15	1.5	1,200	14,000	0.09	1.5	600	10,000
		16	0.12	1.5	1,100	13,000	0.12	1.5	1,100	13,000	0.07	1.5	500	9,000
		18	0.11	1.5	950	12,000	0.11	1.5	950	12,000	0.06	1.5	430	8,000
	3	20	0.1	1.5	850	11,000	0.1	1.5	850	11,000	0.05	1.5	350	7,000
		8	0.24	1.8	1,800	13,000	0.24	1.8	1,800	13,000	0.16	1.8	950	9,000
10		0.22	1.8	1,700	13,000	0.22	1.8	1,700	13,000	0.14	1.8	850	9,000	
12		0.2	1.8	1,600	13,000	0.2	1.8	1,600	13,000	0.12	1.8	750	9,000	
14		0.17	1.8	1,400	13,000	0.17	1.8	1,400	13,000	0.1	1.8	650	9,000	
15		0.15	1.8	1,200	12,000	0.15	1.8	1,200	12,000	0.1	1.8	650	9,000	
16		0.15	1.8	1,200	12,000	0.15	1.8	1,200	12,000	0.09	1.8	550	8,000	
18		0.13	1.8	1,100	12,000	0.13	1.8	1,100	12,000	0.08	1.8	500	8,000	
20		0.12	1.8	1,000	11,000	0.12	1.8	1,000	11,000	0.07	1.8	400	7,000	
25		0.1	1.8	900	10,000	0.1	1.8	900	10,000	0.06	1.8	330	6,000	
4	30	0.07	1.8	730	8,500	0.07	1.8	730	8,500	0.045	1.8	250	5,000	
	10	0.36	2.4	1,900	10,000	0.36	2.4	1,900	10,000	0.25	2.4	800	6,000	
	12	0.36	2.4	1,900	10,000	0.36	2.4	1,900	10,000	0.25	2.4	800	6,000	
	15	0.3	2.4	1,800	10,000	0.3	2.4	1,800	10,000	0.2	2.4	750	6,000	
	16	0.3	2.4	1,800	10,000	0.3	2.4	1,800	10,000	0.2	2.4	750	6,000	
	20	0.24	2.4	1,600	10,000	0.24	2.4	1,600	10,000	0.15	2.4	680	6,000	
	25	0.18	2.4	1,300	8,500	0.18	2.4	1,300	8,500	0.1	2.4	550	5,000	
	30	0.15	2.4	1,200	8,500	0.15	2.4	1,200	8,500	0.08	2.4	490	5,000	
5	35	0.12	2.4	1,000	7,200	0.12	2.4	1,000	7,200	0.07	2.4	400	4,500	
	15	0.42	3	1,700	7,200	0.42	3	1,700	7,200	0.3	3	750	4,500	
	16	0.42	3	1,700	7,200	0.42	3	1,700	7,200	0.3	3	750	4,500	
	20	0.36	3	1,600	7,200	0.36	3	1,600	7,200	0.25	3	680	4,500	
	25	0.3	3	1,500	7,200	0.3	3	1,500	7,200	0.2	3	630	4,500	
	30	0.24	3	1,100	6,000	0.24	3	1,100	6,000	0.15	3	490	4,000	

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈦合金 (Titanium Alloy)			
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm		
2	5	35	0.18	3	1,000	6,000	0.18	3	1,000	6,000	0.1	3	370	3,500
		40	0.12	3	720	4,800	0.12	3	720	4,800	0.07	3	290	3,000
	6	15	0.5	3.6	1,700	6,500	0.5	3.6	1,700	6,500	0.38	3.6	650	3,800
		20	0.48	3.6	1,500	6,000	0.48	3.6	1,500	6,000	0.35	3.6	580	3,500
		30	0.42	3.6	1,100	4,800	0.42	3.6	1,100	4,800	0.3	3.6	450	3,000
		40	0.3	3.6	780	4,200	0.3	3.6	780	4,200	0.2	3.6	330	2,700
		50	0.18	3.6	600	3,600	0.18	3.6	600	3,600	0.1	3.6	230	2,200
		60	0.06	3.6	480	3,200	0.06	3.6	480	3,200	0.04	3.6	170	2,000

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

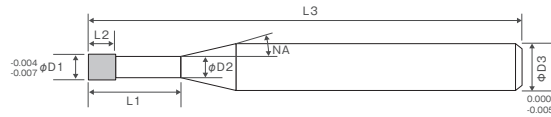
ion Depo Type A Series

ion Depo Type A Series

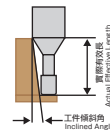
超硬長頸平角立銼刀
Carbide Long Neck Square End Mill

■型號:IALS430 Model number:IALS430

ion A super MG 4 刀刃數 螺旋角 30° 仰角 15° 柄徑公差 0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value. If concerned about interference with the work material, please check by actual measurement.



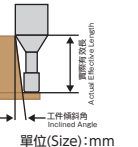
單位(Size):mm

●聯繫我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.					
									30'	1°	1°30'	2°	3°	
IALS430-0100-0400	1	4	1.5	0.95	15	4	50	3,200	4.23	4.38	4.54	4.71	5.09	
IALS430-0100-0600		6	0.8	0.95	15	4	50	3,200	6.30	6.52	6.75	7.01	7.57	
IALS430-0100-0800		8	1.5	0.95	15	4	50	3,200	8.37	8.66	8.97	9.31	10.06	
IALS430-0100-1000		10	0.8	0.95	15	4	50	3,200	10.43	10.80	11.19	11.61	12.55	
IALS430-0100-1200		12	1.5	0.95	15	4	50	3,200	12.50	12.94	13.40	13.91	15.03	
IALS430-0110-0600		1.1	6	1.7	1.05	15	4	50	5,600	6.30	6.52	6.75	7.01	7.57
IALS430-0110-1000	10		1.7	1.05	15	4	50	5,600	10.43	10.80	11.19	11.61	12.55	
IALS430-0120-0600	1.2	6	1.8	1.15	15	4	50	3,200	6.30	6.52	6.75	7.01	7.57	
IALS430-0120-0800		8	1.8	1.15	15	4	50	3,200	8.37	8.66	8.97	9.31	10.06	
IALS430-0120-1000		10	1.8	1.15	15	4	50	3,200	10.43	10.80	11.19	11.61	12.55	
IALS430-0120-1200		12	1.8	1.15	15	4	50	3,200	12.50	12.94	13.40	13.91	15.03	
IALS430-0130-0600	1.3	6	1.9	1.25	15	4	50	5,600	6.30	6.52	6.75	7.01	7.57	
IALS430-0130-1200		12	1.9	1.25	15	4	50	5,600	12.50	12.94	13.40	13.91	15.03	
IALS430-0140-0600	1.4	6	2.1	1.35	15	4	50	3,200	6.30	6.52	6.75	7.01	7.57	
IALS430-0140-0800		8	2.1	1.35	15	4	50	3,200	8.37	8.66	8.97	9.31	10.06	
IALS430-0140-1000		10	2.1	1.35	15	4	50	3,200	10.43	10.80	11.19	11.61	12.55	
IALS430-0140-1200		12	2.1	1.35	15	4	50	3,200	12.50	12.94	13.40	13.91	15.03	
IALS430-0140-1400		14	2.1	1.35	15	4	50	3,200	14.57	15.08	15.62	16.21	17.52	
IALS430-0140-1600		16	2.1	1.35	15	4	50	4,480	16.64	17.21	17.84	18.50	20.01	
IALS430-0150-0300	1.5	3	1.1	1.45	15	4	50	3,200	3.20	3.31	3.43	3.56	3.85	
IALS430-0150-0600		6	1.1	1.45	15	4	50	3,200	6.30	6.52	6.75	7.01	7.57	
IALS430-0150-0800		8	2.3	1.45	15	4	50	3,200	8.37	8.66	8.97	9.31	10.06	
IALS430-0150-1000		10	1.1	1.45	15	4	50	3,200	10.43	10.80	11.19	11.61	12.55	
IALS430-0150-1200		12	2.3	1.45	15	4	50	3,200	12.50	12.94	13.40	13.91	15.03	
IALS430-0150-1400		14	2.3	1.45	15	4	50	3,200	14.57	15.08	15.62	16.21	17.52	
IALS430-0150-1600		16	2.3	1.45	15	4	50	3,200	16.64	17.21	17.84	18.50	20.01	
IALS430-0160-0600		1.6	6	2.4	1.55	15	4	50	3,200	6.30	6.52	6.75	7.01	7.57
IALS430-0160-0800			8	2.4	1.55	15	4	50	3,200	8.37	8.66	8.97	9.31	10.06
IALS430-0160-1000			10	2.4	1.55	15	4	50	3,200	10.43	10.80	11.19	11.61	12.55
IALS430-0160-1200			12	2.4	1.55	15	4	50	3,200	12.50	12.94	13.40	13.91	15.03

●聯繫我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.					
									30'	1°	1°30'	2°	3°	
IALS430-0160-1400	1.6	14	2.4	1.55	15	4	50	3,200	14.57	15.08	15.62	16.21	17.52	
IALS430-0160-1600		16	2.4	1.55	15	4	50	3,200	16.64	17.21	17.84	18.50	20.01	
IALS430-0170-0600	1.7	6	2.5	1.65	15	4	50	4,000	6.30	6.52	6.75	7.01	7.57	
IALS430-0170-1400		14	2.5	1.65	15	4	50	4,000	14.57	15.08	15.62	16.21	17.52	
IALS430-0180-0600	1.8	6	2.7	1.75	15	4	50	3,200	6.30	6.52	6.75	7.01	7.57	
IALS430-0180-0800		8	2.7	1.75	15	4	50	3,200	8.37	8.66	8.97	9.31	10.06	
IALS430-0180-1000		10	2.7	1.75	15	4	50	3,200	10.43	10.80	11.19	11.61	12.55	
IALS430-0180-1200		12	2.7	1.75	15	4	50	3,200	12.50	12.94	13.40	13.91	15.03	
IALS430-0180-1400		14	2.7	1.75	15	4	50	3,200	14.57	15.08	15.62	16.21	17.52	
IALS430-0180-1600		16	2.7	1.75	15	4	50	3,200	16.64	17.21	17.84	18.50	20.01	
IALS430-0190-0600	1.9	6	2.8	1.85	15	4	50	5,600	6.30	6.52	6.75	7.01	7.57	
IALS430-0190-1600		16	2.8	1.85	15	4	50	5,600	16.64	17.21	17.84	18.50	20.01	
IALS430-0200-0600	2	6	1.5	1.94	15	4	50	3,200	6.32	6.54	6.77	7.03	7.60	
IALS430-0200-0800		8	3	1.94	15	4	50	3,200	8.39	8.68	8.99	9.33	10.08	
IALS430-0200-1000		10	1.5	1.94	15	4	50	3,200	10.45	10.82	11.21	11.63	12.57	
IALS430-0200-1200		12	3	1.94	15	4	50	3,200	12.52	12.96	13.42	13.93	15.06	
IALS430-0200-1400		14	3	1.94	15	4	50	3,200	14.59	15.10	15.64	16.23	17.54	
IALS430-0200-1500		15	1.5	1.94	15	4	50	3,200	15.62	16.17	16.75	17.38	18.79	
IALS430-0200-1600		16	3	1.94	15	4	50	3,200	16.65	17.23	17.86	18.53	FREE	
IALS430-0200-1800		18	3	1.94	15	4	50	3,200	18.72	19.37	20.07	20.83	FREE	
IALS430-0200-2000		20	1.5	1.94	15	4	50	3,200	20.79	21.51	22.29	23.13	FREE	
IALS430-0250-0800		2.5	8	3.7	2.44	15	4	50	3,200	8.39	8.68	8.99	9.33	10.08
IALS430-0250-1200	12		3.7	2.44	15	4	50	3,200	12.52	12.96	13.42	13.93	FREE	
IALS430-0250-1600	16		3.7	2.44	15	4	50	3,200	16.65	17.23	17.86	18.53	FREE	
IALS430-0250-2000	20		3.7	2.44	15	4	50	3,200	20.79	21.51	22.29	FREE	FREE	
IALS430-0300-0800	3	8	4.5	2.85	15	4	50	4,480	8.56	8.86	9.18	9.52	FREE	
IALS430-0300-1000		10	2.5	2.85	15	4	50	4,480	10.63	11.00	11.39	11.82	FREE	
IALS430-0300-1200		12	4.5	2.85	15	4	50	4,480	12.69	13.14	13.61	14.12	FREE	
IALS430-0300-1500		15	2.5	2.85	15	4	50	4,480	15.79	16.34	16.93	FREE	FREE	
IALS430-0300-1600		16	4.5	2.85	15	4	50	4,480	16.83	17.41	18.04	FREE	FREE	
IALS430-0300-2000		20	2.5	2.85	15	4	50	4,480	20.96	21.69	FREE	FREE	FREE	
IALS430-0300-2500	3.5	25	4.5	2.85	15	4	60	4,480	26.13	27.04	FREE	FREE	FREE	
IALS430-0300-3000		30	4.5	2.85	15	4	60	5,760	31.30	FREE	FREE	FREE	FREE	
IALS430-0350-1500		15	5.5	3.35	15	6	50	5,040	15.79	16.34	16.93	17.57	18.99	
IALS430-0350-2500	4	25	5.5	3.35	15	6	60	5,040	26.13	27.04	28.02	29.07	FREE	
IALS430-0350-3500		35	5.5	3.35	15	6	70	6,400	36.47	37.74	39.10	FREE	FREE	
IALS430-0400-1000	4	10	3	3.8	15	6	50	5,040	10.72	11.10	11.50	11.93	12.89	
IALS430-0400-1200		12	6	3.8	15	6	50	5,040	12.79	13.24	13.71	14.23	15.38	
IALS430-0400-1500		15	3	3.8	15	6	50	5,040	15.89	16.44	17.04	17.68	FREE	
IALS430-0400-1600		16	6	3.8	15	6	50	5,040	16.92	17.51	18.15	18.83	FREE	
IALS430-0400-2000		20	3	3.8	15	6	50	5,040	21.06	21.79	22.58	23.43	FREE	
IALS430-0400-2500		25	6	3.8	15	6	60	5,040	26.23	27.14	28.12	FREE	FREE	
IALS430-0400-3000		30	6	3.8	15	6	60	5,040	31.40	32.49	33.66	FREE	FREE	
IALS430-0400-3500		35	6	3.8	15	6	70	5,040	36.56	37.84	FREE	FREE	FREE	
IALS430-0500-1500		5	15	3.5	4.8	15	6	50	6,400	15.89	16.44	17.04	FREE	FREE

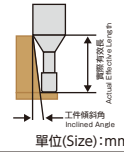


單位(Size):mm

CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
ion Depo A Series 平角 Square
ion Depo U Series
DLC Series
Non-Coat Series
ion Depo R Series

ion Depo Type A Series

ion Depo Type A Series



● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刀直徑 (D1) Tool Diameter	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
									30'	1°	1°30'	2°	3°
IALS430-0500-1600	5	16	7.5	4.8	15	6	50	6,400	16.92	17.51	18.15	FREE	FREE
IALS430-0500-2000		20	3.5	4.8	15	6	50	6,400	21.06	21.79	FREE	FREE	FREE
IALS430-0500-2500		25	7.5	4.8	15	6	60	6,400	26.23	27.14	FREE	FREE	FREE
IALS430-0500-3500		35	7.5	4.8	15	6	70	6,400	36.56	FREE	FREE	FREE	FREE
IALS430-0600-2000	6	20	6	5.8	15	6	50	6,400	FREE	FREE	FREE	FREE	FREE
IALS430-0600-3000		30	6	5.8	15	6	60	6,400	FREE	FREE	FREE	FREE	FREE
IALS430-0600-4000		40	9	5.8	15	6	70	7,680	FREE	FREE	FREE	FREE	FREE
IALS430-0600-5000		50	9	5.8	15	6	80	9,680	FREE	FREE	FREE	FREE	FREE
IALS430-0800-3000	8	30	12	7.8	15	8	70	11,200	FREE	FREE	FREE	FREE	FREE
IALS430-0800-5000		50	12	7.8	15	8	90	13,920	FREE	FREE	FREE	FREE	FREE
IALS430-0800-6000		60	12	7.8	15	8	100	14,880	FREE	FREE	FREE	FREE	FREE
IALS430-1000-4000	10	40	15	9.8	15	10	90	12,080	FREE	FREE	FREE	FREE	FREE
IALS430-1000-6000		60	15	9.8	15	10	110	16,720	FREE	FREE	FREE	FREE	FREE
IALS430-1000-8000		80	15	9.8	15	10	130	18,640	FREE	FREE	FREE	FREE	FREE

ion Depo Type A 切削條件參考表 Recommended Milling Conditions

■ 型號: IALS430
Model number: IALS430

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material		鑄鐵 Cast Irons FCD				碳鋼 Carbon Steels S50C/SS400				預硬鋼 Prehardened Steels PX5/NAK80				合金鋼 Die Steels SKD11/SKD61						
		切削深度 Depth of Cut	進刀速度 Feed	轉數 Spindle Speed	轉數 Spindle Speed	切削深度 Depth of Cut	進刀速度 Feed	轉數 Spindle Speed	轉數 Spindle Speed	切削深度 Depth of Cut	進刀速度 Feed	轉數 Spindle Speed	轉數 Spindle Speed	切削深度 Depth of Cut	進刀速度 Feed	轉數 Spindle Speed	轉數 Spindle Speed			
刀數 Number of Flutes	刀刀直徑 Dia.	有效長度 Effective Length	切削深度		轉數	切削深度		轉數	切削深度		轉數	切削深度		轉數	切削深度		轉數			
			ap mm	ae mm		ap mm	ae mm		ap mm	ae mm		ap mm	ae mm		ap mm	ae mm				
4	1	4	0.055	0.6	1,700	25,000	0.055	0.6	1,700	25,000	0.045	0.6	1,100	22,000	0.055	0.6	1,700	25,000		
			6	0.045	0.6	1,200	20,000	0.045	0.6	1,200	20,000	0.035	0.6	750	18,000	0.045	0.6	1,200	20,000	
			8	0.035	0.6	1,050	18,000	0.035	0.6	1,050	18,000	0.025	0.6	600	15,000	0.035	0.6	1,050	18,000	
			10	0.025	0.6	900	16,000	0.025	0.6	900	16,000	0.018	0.6	520	14,000	0.025	0.6	900	16,000	
	1.1	6	0.05	0.66	1,300	20,000	0.05	0.66	1,300	20,000	0.04	0.66	820	18,000	0.05	0.66	1,300	20,000		
				10	0.03	0.66	1,000	16,000	0.03	0.66	1,000	16,000	0.02	0.66	600	14,000	0.03	0.66	1,000	16,000
				6	0.05	0.72	1,400	20,000	0.05	0.72	1,400	20,000	0.04	0.72	900	18,000	0.05	0.72	1,400	20,000
				8	0.04	0.72	1,200	18,000	0.04	0.72	1,200	18,000	0.03	0.72	750	15,000	0.04	0.72	1,200	18,000
	1.2	10	0.03	0.72	1,050	16,000	0.03	0.72	1,050	16,000	0.02	0.72	670	14,000	0.03	0.72	1,050	16,000		
				12	0.025	0.72	900	14,000	0.025	0.72	900	14,000	0.018	0.72	530	12,000	0.025	0.72	900	14,000
				6	0.06	0.78	1,500	20,000	0.06	0.78	1,500	20,000	0.05	0.78	1,000	17,000	0.06	0.78	1,500	20,000
				12	0.03	0.78	1,000	14,000	0.03	0.78	1,000	14,000	0.025	0.78	600	12,000	0.03	0.78	1,000	14,000
	1.4	6	0.07	0.84	1,800	20,000	0.07	0.84	1,800	20,000	0.06	0.84	1,100	16,000	0.07	0.84	1,800	20,000		
				8	0.06	0.84	1,500	18,000	0.06	0.84	1,500	18,000	0.05	0.84	900	14,000	0.06	0.84	1,500	18,000
				10	0.05	0.84	1,300	16,000	0.05	0.84	1,300	16,000	0.04	0.84	780	13,000	0.05	0.84	1,300	16,000
				12	0.04	0.84	1,050	14,000	0.04	0.84	1,050	14,000	0.03	0.84	670	12,000	0.04	0.84	1,050	14,000
				14	0.035	0.84	900	13,000	0.035	0.84	900	13,000	0.025	0.84	530	11,000	0.035	0.84	900	13,000
				16	0.025	0.84	750	12,000	0.025	0.84	750	12,000	0.018	0.84	450	10,000	0.025	0.84	750	12,000
	1.5	6	0.08	0.9	1,800	20,000	0.08	0.9	1,800	20,000	0.07	0.9	1,100	16,000	0.08	0.9	1,800	20,000		
				8	0.08	0.9	1,800	20,000	0.08	0.9	1,800	20,000	0.07	0.9	1,100	16,000	0.08	0.9	1,800	20,000
8				0.07	0.9	1,500	18,000	0.07	0.9	1,500	18,000	0.06	0.9	900	14,000	0.07	0.9	1,500	18,000	
10				0.06	0.9	1,300	16,000	0.06	0.9	1,300	16,000	0.05	0.9	780	13,000	0.06	0.9	1,300	16,000	
12				0.05	0.9	1,050	14,000	0.05	0.9	1,050	14,000	0.04	0.9	670	12,000	0.05	0.9	1,050	14,000	
14				0.04	0.9	900	13,000	0.04	0.9	900	13,000	0.03	0.9	570	11,000	0.04	0.9	900	13,000	
1.6	6	0.035	0.9	750	12,000	0.035	0.9	750	12,000	0.025	0.9	480	10,000	0.035	0.9	750	12,000			
			6	0.09	0.96	1,800	20,000	0.09	0.96	1,800	20,000	0.08	0.96	1,100	16,000	0.09	0.96	1,800	20,000	
			8	0.08	0.96	1,500	18,000	0.08	0.96	1,500	18,000	0.07	0.96	900	14,000	0.08	0.96	1,500	18,000	
			10	0.07	0.96	1,300	16,000	0.07	0.96	1,300	16,000	0.06	0.96	780	13,000	0.07	0.96	1,300	16,000	
			12	0.06	0.96	1,050	14,000	0.06	0.96	1,050	14,000	0.05	0.96	670	12,000	0.06	0.96	1,050	14,000	
			14	0.05	0.96	900	13,000	0.05	0.96	900	13,000	0.04	0.96	570	11,000	0.05	0.96	900	13,000	
1.7	6	0.04	0.96	750	12,000	0.04	0.96	750	12,000	0.03	0.96	480	10,000	0.04	0.96	750	12,000			
			6	0.095	1.02	1,900	19,000	0.095	1.02	1,900	19,000	0.085	1.02	1,150	15,000	0.095	1.02	1,900	19,000	
			14	0.055	1.02	950	13,000	0.055	1.02	950	13,000	0.045	1.02	630	11,000	0.055	1.02	950	13,000	
			6	0.1	1.08	2,000	18,000	0.1	1.08	2,000	18,000	0.09	1.08	1,200	14,000	0.1	1.08	2,000	18,000	
1.8	8	0.09	1.08	1,700	18,000	0.09	1.08	1,700	18,000	0.08	1.08	1,000	14,000	0.09	1.08	1,700	18,000			
			10	0.08	1.08	1,400	16,000	0.08	1.08	1,400	16,000	0.07	1.08	850	13,000	0.08	1.08	1,400	16,000	
			12	0.07	1.08	1,100	14,000	0.07	1.08	1,100	14,000	0.06	1.08	720	12,000	0.07	1.08	1,100	14,000	
			14	0.06	1.08	1,000	13,000	0.06	1.08	1,000	13,000	0.05	1.08	630	11,000	0.06	1.08	1,000	13,000	
			16	0.05	1.08	850	12,000	0.05	1.08	850	12,000	0.04	1.08	530	10,000	0.05	1.08	850	12,000	
			6	0.11	1.14	2,100	17,000	0.11	1.14	2,100	17,000	0.095	1.14	1,250	14,000	0.11	1.14	2,100	17,000	
1.9	16	0.06	1.14	1,000	12,000	0.06	1.14	1,000	12,000	0.045	1.14	630	10,000	0.06	1.14	1,000	12,000			

● 請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ● 建議使用油霧或是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ● 切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ● 工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ● ap=軸向切削深度，ae=徑向切削深度。 ap=Axial Depth of Cut, ae=Radial Depth of Cut. ● 請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

ion Depo Type A 切削條件參考表 Recommended Milling Conditions

■型號:IALS430
Model number:IALS430

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			鑄鐵 Cast Irons FCD				碳鋼 Carbon Steels S50C/SS400				預硬鋼 Prehardened Steels PX5/NAK80				合金鋼 Die Steels SKD11/SKD61					
刃數 Number of Flutes	刀徑直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed		
			ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹		
4	2	6	0.12	1.2	2,100	16,000	0.12	1.2	2,100	16,000	0.1	1.2	1,300	13,000	0.12	1.2	2,100	16,000		
			0.11	1.2	2,000	16,000	0.11	1.2	2,000	16,000	0.09	1.2	1,200	13,000	0.11	1.2	2,000	16,000		
			0.1	1.2	1,800	16,000	0.1	1.2	1,800	16,000	0.08	1.2	1,100	13,000	0.1	1.2	1,800	16,000		
			0.09	1.2	1,500	14,000	0.09	1.2	1,500	14,000	0.07	1.2	1,000	12,000	0.09	1.2	1,500	14,000		
			0.08	1.2	1,350	13,000	0.08	1.2	1,350	13,000	0.06	1.2	850	11,000	0.08	1.2	1,350	13,000		
			0.07	1.2	1,200	12,000	0.07	1.2	1,200	12,000	0.05	1.2	750	10,000	0.07	1.2	1,200	12,000		
			0.07	1.2	1,200	12,000	0.07	1.2	1,200	12,000	0.05	1.2	750	10,000	0.07	1.2	1,200	12,000		
			0.06	1.2	1,000	11,000	0.06	1.2	1,000	11,000	0.04	1.2	650	9,000	0.06	1.2	1,000	11,000		
			0.05	1.2	900	10,000	0.05	1.2	900	10,000	0.04	1.2	550	8,000	0.05	1.2	900	10,000		
			2.5	8	0.15	1.5	2,100	13,000	0.15	1.5	2,100	13,000	0.12	1.5	1,400	11,000	0.15	1.5	2,100	13,000
					0.13	1.5	1,800	13,000	0.13	1.5	1,800	13,000	0.1	1.5	1,100	11,000	0.13	1.5	1,800	13,000
					0.1	1.5	1,400	11,000	0.1	1.5	1,400	11,000	0.07	1.5	850	9,000	0.1	1.5	1,400	11,000
	0.08	1.5			1,100	9,000	0.08	1.5	1,100	9,000	0.05	1.5	600	7,000	0.08	1.5	1,100	9,000		
	3	8			0.2	1.8	2,300	11,000	0.2	1.8	2,300	11,000	0.16	1.8	1,500	9,000	0.2	1.8	2,300	11,000
					0.16	1.8	2,000	11,000	0.16	1.8	2,000	11,000	0.12	1.8	1,200	9,000	0.16	1.8	2,000	11,000
			0.16	1.8	2,000	11,000	0.16	1.8	2,000	11,000	0.12	1.8	1,200	9,000	0.16	1.8	2,000	11,000		
			0.12	1.8	1,500	10,000	0.12	1.8	1,500	10,000	0.09	1.8	900	8,000	0.12	1.8	1,500	10,000		
	4	10	0.12	1.8	1,500	10,000	0.12	1.8	1,500	10,000	0.09	1.8	900	8,000	0.12	1.8	1,500	10,000		
			0.12	1.8	1,500	10,000	0.12	1.8	1,500	10,000	0.09	1.8	900	8,000	0.12	1.8	1,500	10,000		
			0.1	1.8	1,200	9,000	0.1	1.8	1,200	9,000	0.07	1.8	680	7,000	0.1	1.8	1,200	9,000		
			0.08	1.8	1,050	8,000	0.08	1.8	1,050	8,000	0.06	1.8	570	6,000	0.08	1.8	1,050	8,000		
			0.06	1.8	900	7,000	0.06	1.8	900	7,000	0.05	1.8	450	5,000	0.06	1.8	900	7,000		
			3.5	15	0.18	2.1	2,000	9,000	0.18	2.1	2,000	9,000	0.15	2.1	1,200	7,000	0.18	2.1	2,000	9,000
	0.12	2.1			1,500	7,500	0.12	2.1	1,500	7,500	0.08	2.1	850	6,000	0.12	2.1	1,500	7,500		
	0.07	2.1			1,000	6,000	0.07	2.1	1,000	6,000	0.05	2.1	520	4,500	0.07	2.1	1,000	6,000		
	4	10			0.3	2.4	2,200	8,000	0.3	2.4	2,200	8,000	0.25	2.4	1,300	6,000	0.3	2.4	2,200	8,000
					0.3	2.4	2,200	8,000	0.3	2.4	2,200	8,000	0.25	2.4	1,300	6,000	0.3	2.4	2,200	8,000
					0.25	2.4	2,100	8,000	0.25	2.4	2,100	8,000	0.2	2.4	1,200	6,000	0.25	2.4	2,100	8,000
			0.25	2.4	2,100	8,000	0.25	2.4	2,100	8,000	0.2	2.4	1,200	6,000	0.25	2.4	2,100	8,000		
			0.2	2.4	2,000	8,000	0.2	2.4	2,000	8,000	0.15	2.4	1,100	6,000	0.2	2.4	2,000	8,000		
			0.15	2.4	1,700	7,000	0.15	2.4	1,700	7,000	0.1	2.4	900	5,000	0.15	2.4	1,700	7,000		
	5	15	0.12	2.4	1,500	7,000	0.12	2.4	1,500	7,000	0.08	2.4	800	5,000	0.12	2.4	1,500	7,000		
			0.1	2.4	1,200	6,000	0.1	2.4	1,200	6,000	0.07	2.4	670	4,500	0.1	2.4	1,200	6,000		
			0.35	3	2,100	6,000	0.35	3	2,100	6,000	0.3	3	1,200	4,500	0.35	3	2,100	6,000		
			0.35	3	2,100	6,000	0.35	3	2,100	6,000	0.3	3	1,200	4,500	0.35	3	2,100	6,000		
			0.25	3	1,800	6,000	0.25	3	1,800	6,000	0.2	3	1,000	4,500	0.25	3	1,800	6,000		
			0.25	3	1,800	6,000	0.25	3	1,800	6,000	0.2	3	1,000	4,500	0.25	3	1,800	6,000		
	6	20	0.15	3	1,200	5,000	0.15	3	1,200	5,000	0.1	3	630	3,500	0.15	3	1,200	5,000		
			0.4	3.6	1,800	5,000	0.4	3.6	1,800	5,000	0.35	3.6	1,000	3,500	0.4	3.6	1,800	5,000		
			0.35	3.6	1,400	4,000	0.35	3.6	1,400	4,000	0.3	3.6	750	3,000	0.35	3.6	1,400	4,000		
			0.25	3.6	1,000	3,500	0.25	3.6	1,000	3,500	0.2	3.6	570	2,700	0.25	3.6	1,000	3,500		
	8	30	0.15	3.6	750	3,000	0.15	3.6	750	3,000	0.1	3.6	420	2,200	0.15	3.6	750	3,000		
			0.6	4.8	1,400	3,800	0.6	4.8	1,400	3,800	0.45	4.8	900	2,800	0.6	4.8	1,400	3,800		

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●ap=軸向切削深度，ae=徑向切削深度。 ap=Axial Depth of Cut, ae=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			鑄鐵 Cast Irons FCD				碳鋼 Carbon Steels S50C/SS400				預硬鋼 Prehardened Steels PX5/NAK80				合金鋼 Die Steels SKD11/SKD61			
刃數 Number of Flutes	刀徑直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹
4	8	50	0.4	4.8	820	2,800	0.4	4.8	820	2,800	0.3	4.8	600	2,100	0.4	4.8	820	2,800
		60	0.3	4.8	680	2,400	0.3	4.8	680	2,400	0.2	4.8	450	1,800	0.3	4.8	680	2,400
	10	40	0.8	6	1,200	3,000	0.8	6	1,200	3,000	0.55	6	750	2,200	0.8	6	1,200	3,000
		60	0.6	6	750	2,200	0.6	6	750	2,200	0.45	6	520	1,600	0.6	6	750	2,200
		80	0.4	6	520	1,800	0.4	6	520	1,800	0.3	6	360	1,300	0.4	6	520	1,800

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●ap=軸向切削深度，ae=徑向切削深度。 ap=Axial Depth of Cut, ae=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

ion Depo Type A Series

ion Depo Type A 切削條件參考表 Recommended Milling Conditions

■型號: IALS430
Model number: IALS430

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			高速鋼 High Speed Steels HAP5R/HAP72/ASP23				不銹鋼 Stainless Steels SUS304				不銹鋼 Stainless Steels HPM/STAVAX				銅合金 Copper Alloy 銅鎢(Copper Tungsten)			
刃數 Number of Flutes	刀徑直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹
4	1	4	0.045	0.6	950	22,000	0.055	0.6	1,700	25,000	0.045	0.6	1,100	22,000	0.055	0.6	1,700	25,000
		6	0.035	0.6	600	18,000	0.045	0.6	1,200	20,000	0.035	0.6	750	18,000	0.045	0.6	1,200	20,000
		8	0.025	0.6	450	15,000	0.035	0.6	1,050	18,000	0.025	0.6	600	15,000	0.035	0.6	1,050	18,000
		10	0.018	0.6	370	14,000	0.025	0.6	900	16,000	0.018	0.6	520	14,000	0.025	0.6	900	16,000
		12	0.014	0.6	300	12,000	0.02	0.6	750	14,000	0.014	0.6	450	12,000	0.02	0.6	750	14,000
	1.1	6	0.04	0.66	670	18,000	0.05	0.66	1,300	20,000	0.04	0.66	820	18,000	0.05	0.66	1,300	20,000
		10	0.02	0.66	450	14,000	0.03	0.66	1,000	16,000	0.02	0.66	600	14,000	0.03	0.66	1,000	16,000
	1.2	6	0.04	0.72	750	18,000	0.05	0.72	1,400	20,000	0.04	0.72	900	18,000	0.05	0.72	1,400	20,000
		8	0.03	0.72	600	15,000	0.04	0.72	1,200	18,000	0.03	0.72	750	15,000	0.04	0.72	1,200	18,000
		10	0.02	0.72	520	14,000	0.03	0.72	1,050	16,000	0.02	0.72	670	14,000	0.03	0.72	1,050	16,000
	1.3	6	0.05	0.78	850	17,000	0.06	0.78	1,500	20,000	0.05	0.78	1,000	17,000	0.06	0.78	1,500	20,000
		12	0.025	0.78	450	12,000	0.03	0.78	1,000	14,000	0.025	0.78	600	12,000	0.03	0.78	1,000	14,000
		6	0.06	0.84	950	16,000	0.07	0.84	1,800	20,000	0.06	0.84	1,100	16,000	0.07	0.84	1,800	20,000
	1.4	8	0.05	0.84	750	14,000	0.06	0.84	1,500	18,000	0.05	0.84	900	14,000	0.06	0.84	1,500	18,000
		10	0.04	0.84	630	13,000	0.05	0.84	1,300	16,000	0.04	0.84	780	13,000	0.05	0.84	1,300	16,000
		12	0.03	0.84	520	12,000	0.04	0.84	1,050	14,000	0.03	0.84	670	12,000	0.04	0.84	1,050	14,000
		14	0.025	0.84	380	11,000	0.035	0.84	900	13,000	0.025	0.84	530	11,000	0.035	0.84	900	13,000
		16	0.018	0.84	300	10,000	0.025	0.84	750	12,000	0.018	0.84	450	10,000	0.025	0.84	750	12,000
	1.5	3	0.07	0.9	950	16,000	0.08	0.9	1,800	20,000	0.07	0.9	1,100	16,000	0.08	0.9	1,800	20,000
		6	0.07	0.9	950	16,000	0.08	0.9	1,800	20,000	0.07	0.9	1,100	16,000	0.08	0.9	1,800	20,000
		8	0.06	0.9	750	14,000	0.07	0.9	1,500	18,000	0.06	0.9	900	14,000	0.07	0.9	1,500	18,000
		10	0.05	0.9	630	13,000	0.06	0.9	1,300	16,000	0.05	0.9	780	13,000	0.06	0.9	1,300	16,000
		12	0.04	0.9	520	12,000	0.05	0.9	1,050	14,000	0.04	0.9	670	12,000	0.05	0.9	1,050	14,000
		14	0.03	0.9	420	11,000	0.04	0.9	900	13,000	0.03	0.9	570	11,000	0.04	0.9	900	13,000
		16	0.025	0.9	330	10,000	0.035	0.9	750	12,000	0.025	0.9	480	10,000	0.035	0.9	750	12,000
	1.6	6	0.08	0.96	950	16,000	0.09	0.96	1,800	20,000	0.08	0.96	1,100	16,000	0.09	0.96	1,800	20,000
		8	0.07	0.96	750	14,000	0.08	0.96	1,500	18,000	0.07	0.96	900	14,000	0.08	0.96	1,500	18,000
		10	0.06	0.96	630	13,000	0.07	0.96	1,300	16,000	0.06	0.96	780	13,000	0.07	0.96	1,300	16,000
		12	0.05	0.96	520	12,000	0.06	0.96	1,050	14,000	0.05	0.96	670	12,000	0.06	0.96	1,050	14,000
		14	0.04	0.96	420	11,000	0.05	0.96	900	13,000	0.04	0.96	570	11,000	0.05	0.96	900	13,000
		16	0.03	0.96	330	10,000	0.04	0.96	750	12,000	0.03	0.96	480	10,000	0.04	0.96	750	12,000
	1.7	6	0.085	1.02	1,000	15,000	0.095	1.02	1,900	19,000	0.085	1.02	1,150	15,000	0.095	1.02	1,900	19,000
		14	0.045	1.02	480	11,000	0.055	1.02	950	13,000	0.045	1.02	630	11,000	0.055	1.02	950	13,000
	1.8	6	0.09	1.08	1,050	14,000	0.1	1.08	2,000	18,000	0.09	1.08	1,200	14,000	0.1	1.08	2,000	18,000
		8	0.08	1.08	850	14,000	0.09	1.08	1,700	18,000	0.08	1.08	1,000	14,000	0.09	1.08	1,700	18,000
		10	0.07	1.08	700	13,000	0.08	1.08	1,400	16,000	0.07	1.08	850	13,000	0.08	1.08	1,400	16,000
12		0.06	1.08	570	12,000	0.07	1.08	1,100	14,000	0.06	1.08	720	12,000	0.07	1.08	1,100	14,000	
14		0.05	1.08	480	11,000	0.06	1.08	1,000	13,000	0.05	1.08	630	11,000	0.06	1.08	1,000	13,000	
16		0.04	1.08	380	10,000	0.05	1.08	850	12,000	0.04	1.08	530	10,000	0.05	1.08	850	12,000	
1.9	6	0.095	1.14	1,100	14,000	0.1	1.14	2,100	17,000	0.095	1.14	1,250	14,000	0.11	1.14	2,100	17,000	
	16	0.045	1.14	480	10,000	0.06	1.14	1,000	12,000	0.045	1.14	630	10,000	0.06	1.14	1,000	12,000	

●請將刀具體實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing.
●ap=軸向切削深度，ae=徑向切削深度。 ap=Axial Depth of Cut ae=Radial Depth of Cut.

●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			高速鋼 High Speed Steels HAP5R/HAP72/ASP23				不銹鋼 Stainless Steels SUS304				不銹鋼 Stainless Steels HPM/STAVAX				銅合金 Copper Alloy 銅鎢(Copper Tungsten)			
刃數 Number of Flutes	刀徑直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹
4	2	6	0.1	1.2	1,150	13,000	0.12	1.2	2,100	16,000	0.1	1.2	1,300	13,000	0.12	1.2	2,100	16,000
		8	0.09	1.2	1,050	13,000	0.11	1.2	2,000	16,000	0.09	1.2	1,200	13,000	0.11	1.2	2,000	16,000
		10	0.08	1.2	950	13,000	0.1	1.2	1,800	16,000	0.08	1.2	1,100	13,000	0.1	1.2	1,800	16,000
		12	0.07	1.2	850	12,000	0.09	1.2	1,500	14,000	0.07	1.2	1,000	12,000	0.09	1.2	1,500	14,000
		14	0.06	1.2	700	11,000	0.08	1.2	1,350	13,000	0.06	1.2	850	11,000	0.08	1.2	1,350	13,000
	2.5	15	0.05	1.2	600	10,000	0.07	1.2	1,200	12,000	0.05	1.2	750	10,000	0.07	1.2	1,200	12,000
		16	0.05	1.2	600	10,000	0.07	1.2	1,200	12,000	0.05	1.2	750	10,000	0.07	1.2	1,200	12,000
		18	0.04	1.2	500	9,000	0.06	1.2	1,000	11,000	0.04	1.2	650	9,000	0.06	1.2	1,000	11,000
		20	0.035	1.2	400	8,000	0.05	1.2	900	10,000	0.035	1.2	550	8,000	0.05	1.2	900	10,000
	3	8	0.12	1.5	1,250	11,000	0.15	1.5	2,100	13,000	0.12	1.5	1,400	11,000	0.15	1.5	2,100	13,000
		12	0.1	1.5	950	11,000	0.13	1.5	1,800	13,000	0.1	1.5	1,100	11,000	0.13	1.5	1,800	13,000
		16	0.07	1.5	700	9,000	0.1	1.5	1,400	11,000	0.07	1.5	850	9,000	0.1	1.5	1,400	11,000
		20	0.05	1.5	450	7,000	0.08	1.5	1,100	9,000	0.05	1.5	600	7,000	0.08	1.5	1,100	9,000
	3.5	8	0.16	1.8	1,350	9,000	0.2	1.8	2,300	11,000	0.16	1.8	1,500	9,000	0.2	1.8	2,300	11,000
		10	0.12	1.8	1,050	9,000	0.16	1.8	2,000	11,000	0.12	1.8	1,200	9,000	0.16	1.8	2,000	11,000
		12	0.12	1.8	1,050	9,000	0.16	1.8	2,000	11,000	0.12	1.8	1,200	9,000	0.16	1.8	2,000	11,000
		15	0.09	1.8	750	8,000	0.12	1.8	1,500	10,000	0.09	1.8	900	8,000	0.12	1.8	1,500	10,000
		16	0.09	1.8	750	8,000	0.12	1.8	1,500	10,000	0.09	1.8	900	8,000	0.12	1.8	1,500	10,000
		20	0.07	1.8	530	7,000	0.1	1.8	1,200	9,000	0.07	1.8	680	7,000	0.1	1.8	1,200	9,000
		25	0.06	1.8	420	6,000	0.08	1.8	1,050	8,000	0.06	1.8	570	6,000	0.08	1.8	1,050	8,000
	4	30	0.045	1.8	300	5,000	0.06	1.8	900	7,000	0.045	1.8	450	5,000	0.06	1.8	900	7,000
		15	0.15	2.1	1,050	7,000	0.18	2.1	2,000	9,000	0.15	2.1	1,200	7,000	0.18	2.1	2,000	9,000
		25	0.08	2.1	700	6,000	0.12	2.1	1,500	7,500	0.08	2.1	850	6,000	0.12	2.1	1,500	7,500
	5	35	0.05	2.1	370	4,500	0.07	2.1	1,000	6,000	0.05	2.1	520	4,500	0.07	2.1	1,000	6,000
		10	0.25	2.4	1,150	6,000												

ion Depo Type A Series

ion Depo Type A Series

ion Depo Type A 切削條件參考表 Recommended Milling Conditions

■型號: IALS430
Model number: IALS430

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			高速鋼 High Speed Steels HAP5R/HAP72/ASP23				不銹鋼 Stainless Steels SUS304				不銹鋼 Stainless Steels HPM/STAVAX				銅合金 Copper Alloy 銅鎢(Copper Tungsten)			
刃數 Number of Flutes	刀徑直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹
4	8	50	0.3	4.8	450	2100	0.4	4.8	820	2800	0.3	4.8	600	2100	0.4	4.8	820	2800
		60	0.2	4.8	300	1800	0.3	4.8	680	2400	0.2	4.8	450	1800	0.3	4.8	680	2400
	10	40	0.55	6	600	2200	0.8	6	1,200	3,000	0.55	6	750	2,200	0.8	6	1,200	3,000
		60	0.45	6	370	1,600	0.6	6	750	2,200	0.45	6	520	1,600	0.6	6	750	2,200
		80	0.3	6	210	1,300	0.4	6	520	1,800	0.3	6	360	1,300	0.4	6	520	1,800
		100	0.2	6	150	1,000	0.3	6	360	1,300	0.2	6	240	1,000	0.3	6	360	1,300

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●∅p=軸向切削深度，∅e=徑向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈦合金(Titanium Alloy)					
刃數 Number of Flutes	刀徑直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed		
			∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹		
4	1	4	0.055	0.6	1,700	25,000	0.055	0.6	1,700	25,000	0.045	0.6	950	22,000		
		6	0.045	0.6	1,200	20,000	0.045	0.6	1,200	20,000	0.035	0.6	600	18,000		
		8	0.035	0.6	1,050	18,000	0.035	0.6	1,050	18,000	0.025	0.6	450	15,000		
		10	0.025	0.6	900	16,000	0.025	0.6	900	16,000	0.018	0.6	370	14,000		
		12	0.02	0.6	750	14,000	0.02	0.6	750	14,000	0.014	0.6	300	12,000		
		1.1	6	0.05	0.66	1,300	20,000	0.05	0.66	1,300	20,000	0.04	0.66	670	18,000	
			10	0.03	0.66	1,000	16,000	0.03	0.66	1,000	16,000	0.02	0.66	450	14,000	
			1.2	6	0.05	0.72	1,400	20,000	0.05	0.72	1,400	20,000	0.04	0.72	750	18,000
				8	0.04	0.72	1,200	18,000	0.04	0.72	1,200	18,000	0.03	0.72	600	15,000
		1.3	10	0.03	0.72	1,050	16,000	0.03	0.72	1,050	16,000	0.02	0.72	520	14,000	
			12	0.025	0.72	900	14,000	0.025	0.72	900	14,000	0.018	0.72	380	12,000	
		1.4	6	0.06	0.78	1,500	20,000	0.06	0.78	1,500	20,000	0.05	0.78	850	17,000	
	12		0.03	0.78	1,000	14,000	0.03	0.78	1,000	14,000	0.025	0.78	450	12,000		
	6		0.07	0.84	1,800	20,000	0.07	0.84	1,800	20,000	0.06	0.84	950	16,000		
	8		0.06	0.84	1,500	18,000	0.06	0.84	1,500	18,000	0.05	0.84	750	14,000		
	10		0.05	0.84	1,300	16,000	0.05	0.84	1,300	16,000	0.04	0.84	630	13,000		
	12		0.04	0.84	1,050	14,000	0.04	0.84	1,050	14,000	0.03	0.84	520	12,000		
	1.5	14	0.035	0.84	900	13,000	0.035	0.84	900	13,000	0.025	0.84	380	11,000		
		16	0.025	0.84	750	12,000	0.025	0.84	750	12,000	0.018	0.84	300	10,000		
		3	0.08	0.9	1,800	20,000	0.08	0.9	1,800	20,000	0.07	0.9	950	16,000		
		6	0.08	0.9	1,800	20,000	0.08	0.9	1,800	20,000	0.07	0.9	950	16,000		
		8	0.07	0.9	1,500	18,000	0.07	0.9	1,500	18,000	0.06	0.9	750	14,000		
		10	0.06	0.9	1,300	16,000	0.06	0.9	1,300	16,000	0.05	0.9	630	13,000		
	1.6	12	0.05	0.9	1,050	14,000	0.05	0.9	1,050	14,000	0.04	0.9	520	12,000		
		14	0.04	0.9	900	13,000	0.04	0.9	900	13,000	0.03	0.9	420	11,000		
		16	0.035	0.9	750	12,000	0.035	0.9	750	12,000	0.025	0.9	330	10,000		
		6	0.09	0.96	1,800	20,000	0.09	0.96	1,800	20,000	0.08	0.96	950	16,000		
	1.7	8	0.08	0.96	1,500	18,000	0.08	0.96	1,500	18,000	0.07	0.96	750	14,000		
		10	0.07	0.96	1,300	16,000	0.07	0.96	1,300	16,000	0.06	0.96	630	13,000		
		12	0.06	0.96	1,050	14,000	0.06	0.96	1,050	14,000	0.05	0.96	520	12,000		
		14	0.05	0.96	900	13,000	0.05	0.96	900	13,000	0.04	0.96	420	11,000		
	1.8	16	0.04	0.96	750	12,000	0.04	0.96	750	12,000	0.03	0.96	330	10,000		
		6	0.095	1.02	1,900	19,000	0.095	1.02	1,900	19,000	0.085	1.02	1,000	15,000		
		14	0.055	1.02	950	13,000	0.055	1.02	950	13,000	0.045	1.02	480	11,000		
		6	0.1	1.08	2,000	18,000	0.1	1.08	2,000	18,000	0.09	1.08	1,050	14,000		
	1.9	8	0.09	1.08	1,700	18,000	0.09	1.08	1,700	18,000	0.08	1.08	850	14,000		
		10	0.08	1.08	1,400	16,000	0.08	1.08	1,400	16,000	0.07	1.08	700	13,000		
		12	0.07	1.08	1,100	14,000	0.07	1.08	1,100	14,000	0.06	1.08	570	12,000		
		14	0.06	1.08	1,000	13,000	0.06	1.08	1,000	13,000	0.05	1.08	480	11,000		
	1.9	16	0.05	1.08	850	12,000	0.05	1.08	850	12,000	0.04	1.08	380	10,000		
		6	0.11	1.14	2,100	17,000	0.11	1.14	2,100	17,000	0.095	1.14	1,100	14,000		
	16	0.06	1.14	1,000	12,000	0.06	1.14	1,000	12,000	0.045	1.14	480	10,000			

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●∅p=軸向切削深度，∅e=徑向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A 切削條件參考表 Recommended Milling Conditions

■型號: IALS430
Model number: IALS430

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈦合金 (Titanium Alloy)					
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹		
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm				
4	2	6	0.12	1.2	2,100	16,000	0.12	1.2	2,100	16,000	0.1	1.2	1,150	13,000		
			0.11	1.2	2,000	16,000	0.11	1.2	2,000	16,000	0.09	1.2	1,050	13,000		
			0.1	1.2	1,800	16,000	0.1	1.2	1,800	16,000	0.08	1.2	950	13,000		
			0.09	1.2	1,500	14,000	0.09	1.2	1,500	14,000	0.07	1.2	850	12,000		
			0.08	1.2	1,350	13,000	0.08	1.2	1,350	13,000	0.06	1.2	700	11,000		
			0.07	1.2	1,200	12,000	0.07	1.2	1,200	12,000	0.05	1.2	600	10,000		
			0.07	1.2	1,200	12,000	0.07	1.2	1,200	12,000	0.05	1.2	600	10,000		
			0.06	1.2	1,000	11,000	0.06	1.2	1,000	11,000	0.04	1.2	500	9,000		
			0.05	1.2	900	10,000	0.05	1.2	900	10,000	0.035	1.2	400	8,000		
			2.5	8	0.15	1.5	2,100	13,000	0.15	1.5	2,100	13,000	0.12	1.5	1,250	11,000
				12	0.13	1.5	1,800	13,000	0.13	1.5	1,800	13,000	0.1	1.5	950	11,000
				16	0.1	1.5	1,400	11,000	0.1	1.5	1,400	11,000	0.07	1.5	700	9,000
	20	0.08		1.5	1,100	9,000	0.08	1.5	1,100	9,000	0.05	1.5	450	7,000		
	3	8	0.2	1.8	2,300	11,000	0.2	1.8	2,300	11,000	0.16	1.8	1,350	9,000		
		10	0.16	1.8	2,000	11,000	0.16	1.8	2,000	11,000	0.12	1.8	1,050	9,000		
		12	0.16	1.8	2,000	11,000	0.16	1.8	2,000	11,000	0.12	1.8	1,050	9,000		
		15	0.12	1.8	1,500	10,000	0.12	1.8	1,500	10,000	0.09	1.8	750	8,000		
		16	0.12	1.8	1,500	10,000	0.12	1.8	1,500	10,000	0.09	1.8	750	8,000		
		20	0.1	1.8	1,200	9,000	0.1	1.8	1,200	9,000	0.07	1.8	530	7,000		
		25	0.08	1.8	1,050	8,000	0.08	1.8	1,050	8,000	0.06	1.8	420	6,000		
		30	0.06	1.8	900	7,000	0.06	1.8	900	7,000	0.045	1.8	300	5,000		
	3.5	15	0.18	2.1	2,000	9,000	0.18	2.1	2,000	9,000	0.15	2.1	1,050	7,000		
		25	0.12	2.1	1,500	7,500	0.12	2.1	1,500	7,500	0.08	2.1	700	6,000		
		35	0.07	2.1	1,000	6,000	0.07	2.1	1,000	6,000	0.05	2.1	370	4,500		
	4	10	0.3	2.4	2,200	8,000	0.3	2.4	2,200	8,000	0.25	2.4	1,150	6,000		
		12	0.3	2.4	2,200	8,000	0.3	2.4	2,200	8,000	0.25	2.4	1,150	6,000		
		15	0.25	2.4	2,100	8,000	0.25	2.4	2,100	8,000	0.2	2.4	1,050	6,000		
		16	0.25	2.4	2,100	8,000	0.25	2.4	2,100	8,000	0.2	2.4	1,050	6,000		
		20	0.2	2.4	2,000	8,000	0.2	2.4	2,000	8,000	0.15	2.4	950	6,000		
		25	0.15	2.4	1,700	7,000	0.15	2.4	1,700	7,000	0.1	2.4	750	5,000		
		30	0.12	2.4	1,500	7,000	0.12	2.4	1,500	7,000	0.08	2.4	650	5,000		
		35	0.1	2.4	1,200	6,000	0.1	2.4	1,200	6,000	0.07	2.4	520	4,500		
	5	15	0.35	3	2,100	6,000	0.35	3	2,100	6,000	0.3	3	1,050	4,500		
		16	0.35	3	2,100	6,000	0.35	3	2,100	6,000	0.3	3	1,050	4,500		
		20	0.25	3	1,800	6,000	0.25	3	1,800	6,000	0.2	3	850	4,500		
		25	0.25	3	1,800	6,000	0.25	3	1,800	6,000	0.2	3	850	4,500		
		35	0.15	3	1,200	5,000	0.15	3	1,200	5,000	0.1	3	480	3,500		
	6	20	0.4	3.6	1,800	5,000	0.4	3.6	1,800	5,000	0.35	3.6	850	3,500		
		30	0.35	3.6	1,400	4,000	0.35	3.6	1,400	4,000	0.3	3.6	600	3,000		
		40	0.25	3.6	1,000	3,500	0.25	3.6	1,000	3,500	0.2	3.6	420	2,700		
		50	0.15	3.6	750	3,000	0.15	3.6	750	3,000	0.1	3.6	270	2,200		
	8	30	0.6	4.8	1,400	3,800	0.6	4.8	1,400	3,800	0.45	4.8	750	2,800		

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈦合金 (Titanium Alloy)			
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm		
4	8	50	0.4	4.8	820	2,800	0.4	4.8	820	2,800	0.3	4.8	450	2,100
			60	0.3	4.8	680	2,400	0.3	4.8	680	2,400	0.2	4.8	300
	10	40	0.8	6	1,200	3,000	0.8	6	1,200	3,000	0.55	6	600	2,200
		60	0.6	6	750	2,200	0.6	6	750	2,200	0.45	6	370	1,600
		80	0.4	6	520	1,800	0.4	6	520	1,800	0.3	6	210	1,300

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

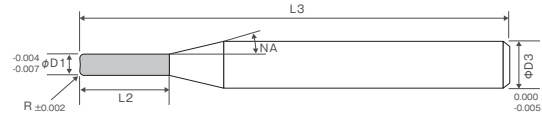
ion Depo Type A Series

ion Depo Type A Series

超硬圓角立銑刀 Carbide Radius End Mill

■ 型號: IAR230 Model number: IAR230

ion A super MG 2 螺絲角 30° 仰角 15° 柄徑公差 0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size) :mm

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	刃長 (L2) Length of Cut	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)
IAR230-0100-0100-00200	1	0.1	2	15	4	50	5,600
IAR230-0100-0200-00200		0.2	2	15	4	50	5,600
IAR230-0100-0300-00200		0.3	2	15	4	50	5,600
IAR230-0150-0100-00300	1.5	0.1	3	15	4	50	5,600
IAR230-0150-0200-00300		0.2	3	15	4	50	5,600
IAR230-0150-0300-00300		0.3	3	15	4	50	5,600
IAR230-0200-0100-00400	2	0.1	4	15	4	50	5,600
IAR230-0200-0200-00400		0.2	4	15	4	50	5,600
IAR230-0200-0300-00400		0.3	4	15	4	50	5,600
IAR230-0200-0500-00400		0.5	4	15	4	50	5,600
IAR230-0250-0100-00500	2.5	0.1	5	15	4	50	5,600
IAR230-0250-0200-00500		0.2	5	15	4	50	5,600
IAR230-0250-0300-00500		0.3	5	15	4	50	6,160
IAR230-0250-0500-00500		0.5	5	15	4	50	6,160
IAR230-0300-0100-00600	3	0.1	6	15	4	50	6,880
IAR230-0300-0200-00600		0.2	6	15	4	50	6,880
IAR230-0300-0300-00600		0.3	6	15	4	50	6,880
IAR230-0300-0500-00600		0.5	6	15	4	50	6,880
IAR230-0300-1000-00600	4	1	6	15	4	50	7,520
IAR230-0400-0100-00800		0.1	8	15	6	50	6,960
IAR230-0400-0200-00800		0.2	8	15	6	50	6,960
IAR230-0400-0300-00800		0.3	8	15	6	50	6,960
IAR230-0400-0500-00800	5	0.5	8	15	6	50	6,960
IAR230-0400-1000-00800		1	8	15	6	50	7,600
IAR230-0500-0100-01000		0.1	10	15	6	50	7,040
IAR230-0500-0200-01000		0.2	10	15	6	50	7,040
IAR230-0500-0300-01000	5	0.3	10	15	6	50	7,040
IAR230-0500-0500-01000		0.5	10	15	6	50	7,040
IAR230-0500-1000-01000		1	10	15	6	50	7,680
IAR230-0500-1500-01000		1.5	10	15	6	50	8,000

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size) :mm

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	刃長 (L2) Length of Cut	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)
IAR230-0600-0100-01200	6	0.1	12	—	6	50	13,920
IAR230-0600-0200-01200		0.2	12	—	6	50	13,920
IAR230-0600-0300-01200		0.3	12	—	6	50	13,920
IAR230-0600-0500-01200		0.5	12	—	6	50	13,920
IAR230-0600-1000-01200		1	12	—	6	50	14,880
IAR230-0600-1500-01200		1.5	12	—	6	50	14,880
IAR230-0600-2000-01200		2	12	—	6	50	14,880

ion Depo Type A 切削條件參考表 Recommended Milling Conditions

■型號: IAR230
Model number: IAR230

圓角立銼刀 Radius End Mill

切削材料 Work Material			鑄鐵 Cast Irons FCD				碳鋼 Carbon Steels S50C/SS400				預硬鋼 Prehardened Steels PX5/NAK80				合金鋼 Die Steels SKD11/SKD61			
刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹
2	1	2	1.5	0.1	200	25,500	1.5	0.1	200	25,500	1.5	0.1	80	12,800	1.5	0.1	200	25,500
	1.5	3	2.25	0.15	340	17,100	2.25	0.15	340	17,100	2.25	0.15	90	8,500	2.25	0.15	340	17,100
	2	4	3	0.2	400	12,800	3	0.2	400	12,800	3	0.2	110	6,400	3	0.2	400	12,800
	2.5	5	3.75	0.25	400	10,200	3.75	0.25	400	10,200	3.75	0.25	110	5,100	3.75	0.25	400	10,200
	3	6	4.5	0.3	450	8,500	4.5	0.3	450	8,500	4.5	0.3	120	4,300	4.5	0.3	450	8,500
	4	8	6	0.4	450	6,400	6	0.4	450	6,400	6	0.4	120	3,200	6	0.4	450	6,400
	5	10	7.5	0.5	600	5,100	7.5	0.5	600	5,100	7.5	0.5	150	2,600	7.5	0.5	600	5,100
6	12	9	0.6	600	4,300	9	0.6	600	4,300	9	0.6	150	2,200	9	0.6	600	4,300	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing.
●∂p=軸向方向切削深度，∂e=徑向方向切削深度。 ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

圓角立銼刀 Radius End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈦合金(Titanium Alloy)			
刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹
2	1	2	1.5	0.1	200	25,500	1.5	0.1	200	25,500	1	0.02	60	6,400
	1.5	3	2.25	0.15	340	17,100	2.25	0.15	340	17,100	1.5	0.03	70	4,200
	2	4	3	0.2	400	12,800	3	0.2	400	12,800	2	0.04	80	3,200
	2.5	5	3.75	0.25	400	10,200	3.75	0.25	400	10,200	2.5	0.05	80	2,500
	3	6	4.5	0.3	450	8,500	4.5	0.3	450	8,500	3	0.06	100	2,100
	4	8	6	0.4	450	6,400	6	0.4	450	6,400	4	0.08	100	1,600
	5	10	7.5	0.5	600	5,100	7.5	0.5	600	5,100	5	0.1	120	1,300
6	12	9	0.6	600	4,300	9	0.6	600	4,300	6	0.12	130	1,100	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing.
●∂p=軸向方向切削深度，∂e=徑向方向切削深度。 ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

圓角立銼刀 Radius End Mill

切削材料 Work Material			高速鋼 High Speed Steels HAP5R/HAP72/ASP23				不銹鋼 Stainless Steels SUS304				不銹鋼 Stainless Steels HPM/STAVAX				銅合金 Copper Alloy 銅鎢(Copper Tungsten)			
刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹
2	1	2	1	0.02	60	6,400	1.5	0.1	200	25,500	1.5	0.1	80	12,800	1.5	0.1	200	25,500
	1.5	3	1.5	0.03	70	4,200	2.25	0.15	340	17,100	2.25	0.15	90	8,500	2.25	0.15	340	17,100
	2	4	2	0.04	80	3,200	3	0.2	400	12,800	3	0.2	110	6,400	3	0.2	400	12,800
	2.5	5	2.5	0.05	80	2,500	3.75	0.25	400	10,200	3.75	0.25	110	5,100	3.75	0.25	400	10,200
	3	6	3	0.06	100	2,100	4.5	0.3	450	8,500	4.5	0.3	120	4,300	4.5	0.3	450	8,500
	4	8	4	0.08	100	1,600	6	0.4	450	6,400	6	0.4	120	3,200	6	0.4	450	6,400
	5	10	5	0.1	120	1,300	7.5	0.5	600	5,100	7.5	0.5	150	2,600	7.5	0.5	600	5,100
6	12	6	0.12	130	1,100	9	0.6	600	4,300	9	0.6	150	2,200	9	0.6	600	4,300	

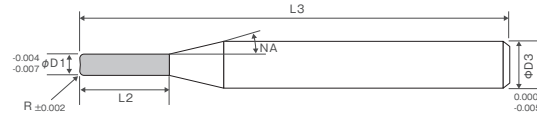
●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing.
●∂p=軸向方向切削深度，∂e=徑向方向切削深度。 ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

超硬圓角立銑刀 Carbide Radius End Mill

■ 型號: IAR430 Model number: IAR430

ion A super MG 4 螺旋角 30° 仰角 15° 柄徑公差 0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value. If concerned about interference with the work material, please check by actual measurement.

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size) :mm

型號 Code No.	刀具直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	刃長 (L2) Length of Cut	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	
IAR430-0100-0100-00200	1	0.1	2	15	4	50	9,520	
IAR430-0100-0200-00200		0.2	2	15	4	50	9,520	
IAR430-0100-0300-00200		0.3	2	15	4	50	9,520	
IAR430-0150-0100-00300	1.5	0.1	3	15	4	50	9,520	
IAR430-0150-0200-00300		0.2	3	15	4	50	9,520	
IAR430-0150-0300-00300		0.3	3	15	4	50	9,520	
IAR430-0150-0500-00300	1.5	0.5	3	15	4	50	9,520	
IAR430-0200-0100-00400		2	0.1	4	15	4	50	9,520
IAR430-0200-0200-00400			0.2	4	15	4	50	9,520
IAR430-0200-0300-00400	0.3		4	15	4	50	9,520	
IAR430-0200-0500-00400	2	0.5	4	15	4	50	9,520	
IAR430-0300-0100-00600		3	0.1	6	15	4	50	11,760
IAR430-0300-0200-00600			0.2	6	15	4	50	11,760
IAR430-0300-0300-00600	0.3		6	15	4	50	11,760	
IAR430-0300-0500-00600	3	0.5	6	15	4	50	11,760	
IAR430-0300-1000-00600		1	6	15	4	50	12,800	
IAR430-0400-0100-00800		4	0.1	8	15	6	50	11,840
IAR430-0400-0200-00800	0.2		8	15	6	50	11,840	
IAR430-0400-0300-00800	0.3		8	15	6	50	11,840	
IAR430-0400-0500-00800	4	0.5	8	15	6	50	11,840	
IAR430-0400-1000-00800		1	8	15	6	50	12,960	
IAR430-0500-0100-01000		5	0.1	10	15	6	50	12,000
IAR430-0500-0200-01000	0.2		10	15	6	50	12,000	
IAR430-0500-0300-01000	0.3		10	15	6	50	12,000	
IAR430-0500-0500-01000	5	0.5	10	15	6	50	12,000	
IAR430-0500-1000-01000		1	10	15	6	50	13,120	
IAR430-0500-1500-01000		1.5	10	15	6	50	13,600	
IAR430-0600-0100-01200	6	0.1	12	—	6	50	11,600	
IAR430-0600-0200-01200		0.2	12	—	6	50	11,600	
IAR430-0600-0300-01200		0.3	12	—	6	50	11,600	

ion Depo Type A Series

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size) :mm

型號 Code No.	刀具直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	刃長 (L2) Length of Cut	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)
IAR430-0600-0500-01200	6	0.5	12	—	6	50	11,600
IAR430-0600-1000-01200		1	12	—	6	50	12,400
IAR430-0600-1500-01200		1.5	12	—	6	50	12,400
IAR430-0800-0100-01600	8	0.1	16	—	8	70	16,720
IAR430-0800-0200-01600		0.2	16	—	8	70	16,720
IAR430-0800-0500-01600		0.5	16	—	8	70	16,720
IAR430-0800-1000-01600		1	16	—	8	70	16,720
IAR430-0800-1500-01600		1.5	16	—	8	70	17,600
IAR430-0800-2000-01600		2	16	—	8	70	17,600
IAR430-0800-2500-01600		2.5	16	—	8	70	18,640
IAR430-0800-3000-01600	3	16	—	8	70	18,640	
IAR430-1000-0100-02000	10	0.1	20	—	10	80	17,600
IAR430-1000-0200-02000		0.2	20	—	10	80	17,600
IAR430-1000-0300-02000		0.3	20	—	10	80	17,600
IAR430-1000-0500-02000		0.5	20	—	10	80	17,600
IAR430-1000-1000-02000		1	20	—	10	80	17,600
IAR430-1000-1500-02000		1.5	20	—	10	80	18,640
IAR430-1000-2000-02000		2	20	—	10	80	18,640
IAR430-1000-2500-02000	2.5	20	—	10	80	20,480	
IAR430-1000-3000-02000	3	20	—	10	80	20,480	
IAR430-1200-0100-02400	12	0.1	24	—	12	110	27,840
IAR430-1200-0200-02400		0.2	24	—	12	110	27,840
IAR430-1200-0300-02400		0.3	24	—	12	110	27,840
IAR430-1200-0500-02400		0.5	24	—	12	110	27,840
IAR430-1200-1000-02400		1	24	—	12	110	27,840
IAR430-1200-1500-02400		1.5	24	—	12	110	28,800
IAR430-1200-2000-02400		2	24	—	12	110	28,800
IAR430-1200-2500-02400	2.5	24	—	12	110	29,680	
IAR430-1200-3000-02400	3	24	—	12	110	29,680	
IAR430-1600-1000-04000	16	1	40	—	16	130	32,160
IAR430-1600-2000-04000		2	40	—	16	130	32,160
IAR430-1600-3000-04000		3	40	—	16	130	32,160
IAR430-2000-1000-05000	20	1	50	—	20	140	45,920
IAR430-2000-2000-05000		2	50	—	20	140	45,920
IAR430-2000-3000-05000		3	50	—	20	140	45,920

CBN Series
Hard Star A Series
Hard Star T1 Series
Hard Star TT Series
ion Depo A Series
ion Depo U Series
DLC Series
Non-Coat Series
ion Depo R Series

ion Depo Type A Series

ion Depo Type A Series

ion Depo Type A 切削條件參考表 Recommended Milling Conditions

■型號: IAR430
Model number: IAR430

圓角立銼刀 Radius End Mill

切削材料 Work Material			鑄鐵 Cast Irons FCD				碳鋼 Carbon Steels S50C/SS400				預硬鋼 Prehardened Steels PX5/NAK80				合金鋼 Die Steels SKD11/SKD61			
刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹
4	1	2	1.5	0.1	300	25,500	1.5	0.1	300	25,500	1.5	0.1	120	12,800	1.5	0.1	220	19,100
	1.5	3	2.25	0.15	510	17,100	2.25	0.15	510	17,100	2.25	0.15	130	8,500	2.25	0.15	370	12,700
	2	4	3	0.2	600	12,800	3	0.2	600	12,800	3	0.2	160	6,400	3	0.2	430	9,500
	3	6	4.5	0.3	670	8,500	4.5	0.3	670	8,500	4.5	0.3	180	4,300	4.5	0.3	500	6,400
	4	8	6	0.4	760	6,400	6	0.4	760	6,400	6	0.4	200	3,200	6	0.4	570	4,800
	5	10	7.5	0.5	760	5,100	7.5	0.5	760	5,100	7.5	0.5	260	2,600	7.5	0.5	570	3,800
	6	12	9	0.6	760	4,200	9	0.6	760	4,200	9	0.6	260	2,200	9	0.6	570	3,200
	8	16	12	0.8	780	3,200	12	0.8	780	3,200	12	0.8	380	1,600	12	0.8	580	2,400
	10	20	15	1	780	2,600	15	1	780	2,600	15	1	380	1,300	15	1	580	1,900
	12	24	18	1.2	780	2,100	18	1.2	780	2,100	18	1.2	380	1,100	18	1.2	580	1,600
	16	40	24	1.6	600	1,500	24	1.6	600	1,500	24	1.6	300	800	24	1.6	450	1,200
	20	50	30	1.5	500	1,000	30	1.5	500	1,000	30	1.5	300	400	30	1.5	400	700

●請將刀具確實地固定在夾具上，以防止刀具震動。 Reduce tool deflection by mounting the tool securely into the holder.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing.
 ●∅p=軸向切深，∅e=徑向切深。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut.
 ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

圓角立銼刀 Radius End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈦合金(Titanium Alloy)			
刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹
4	1	2	1.5	0.1	300	25,500	1.5	0.1	300	25,500	1	0.05	60	6,400
	1.5	3	2.25	0.15	510	17,100	2.25	0.15	510	17,100	1.5	0.075	65	4,300
	2	4	3	0.2	600	12,800	3	0.2	600	12,800	2	0.1	80	3,200
	3	6	4.5	0.3	670	8,500	4.5	0.3	670	8,500	3	0.15	90	2,200
	4	8	6	0.4	760	6,400	6	0.4	760	6,400	4	0.2	90	1,600
	5	10	7.5	0.5	760	5,100	7.5	0.5	760	5,100	5	0.25	120	1,300
	6	12	9	0.6	760	4,200	9	0.6	760	4,200	6	0.3	120	1,200
	8	16	12	0.8	780	3,200	12	0.8	780	3,200	8	0.4	160	800
	10	20	15	1	780	2,600	15	1	780	2,600	10	0.5	160	650
	12	24	18	1.2	780	2,100	18	1.2	780	2,100	12	0.6	160	530
	16	40	24	1.6	600	1,500	24	1.6	600	1,500	16	0.8	150	450
	20	50	30	1.5	500	1,000	30	1.5	500	1,000	20	0.5	150	350

●請將刀具確實地固定在夾具上，以防止刀具震動。 Reduce tool deflection by mounting the tool securely into the holder.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing.
 ●∅p=軸向切深，∅e=徑向切深。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut.
 ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

圓角立銼刀 Radius End Mill

切削材料 Work Material			高速鋼 High Speed Steels HAP5R/HAP72/ASP23				不銹鋼 Stainless Steels SUS304				不銹鋼 Stainless Steels HPM/STAVAX				銅合金 Copper Alloy 銅鎢(Copper Tungsten)			
刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹
4	1	2	1	0.05	60	6,400	1.5	0.1	220	19,100	1.5	0.1	120	12,800	1.5	0.1	300	25,500
	1.5	3	1.5	0.075	65	4,300	2.25	0.15	370	12,700	2.25	0.15	130	8,500	2.25	0.15	510	17,100
	2	4	2	0.1	80	3,200	3	0.2	430	9,500	3	0.2	160	6,400	3	0.2	600	12,800
	3	6	3	0.15	90	2,200	4.5	0.3	500	6,400	4.5	0.3	180	4,300	4.5	0.3	670	8,500
	4	8	4	0.2	90	1,600	6	0.4	570	4,800	6	0.4	200	3,200	6	0.4	760	6,400
	5	10	5	0.25	120	1,300	7.5	0.5	570	3,800	7.5	0.5	260	2,600	7.5	0.5	760	5,100
	6	12	6	0.3	120	1,200	9	0.6	570	3,200	9	0.6	260	2,200	9	0.6	760	4,200
	8	16	8	0.4	160	800	12	0.8	580	2,400	12	0.8	380	1,600	12	0.8	780	3,200
	10	20	10	0.5	160	650	15	1	580	1,900	15	1	380	1,300	15	1	780	2,600
	12	24	12	0.6	160	530	18	1.2	580	1,600	18	1.2	380	1,100	18	1.2	780	2,100
	16	40	16	0.8	150	450	24	1.6	450	1,200	24	1.6	300	800	24	1.6	600	1,500
	20	50	20	0.5	150	350	30	1.5	400	700	30	1.5	300	400	30	1.5	500	1,000

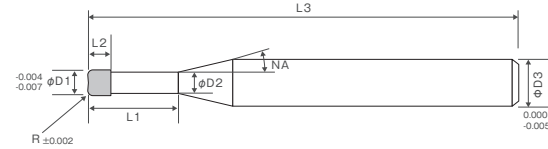
●請將刀具確實地固定在夾具上，以防止刀具震動。 Reduce tool deflection by mounting the tool securely into the holder.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing.
 ●∅p=軸向切深，∅e=徑向切深。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut.
 ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

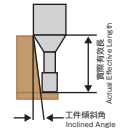
超硬長頸圓角立銼刀 Carbide Long Neck Radius End Mill

■型號:IALR230 Model number:IALR230

ion A super MG 2 刀刀數 螺旋角 30° 仰角 15° 柄徑公差 0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

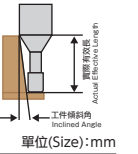


單位(Size):mm

●聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) ^a Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
IALR230-0020-0050-0050	0.2	0.05	0.5	0.15	0.18	15	4	50	7,200	0.55	0.57	0.59	0.61	0.66
IALR230-0020-0050-0100		0.05	1	0.15	0.18	15	4	50	7,200	1.07	1.11	1.14	1.19	1.28
IALR230-0020-0050-0200		0.05	2	0.15	0.18	15	4	50	7,200	2.10	2.18	2.25	2.34	2.52
IALR230-0030-0050-0080	0.3	0.05	0.8	0.3	0.27	15	4	50	6,960	0.88	0.91	0.94	0.98	1.05
IALR230-0030-0050-0100		0.05	1	0.25	0.27	15	4	50	6,960	1.09	1.13	1.17	1.21	1.30
IALR230-0030-0050-0150-00025		0.05	1.5	0.25	0.27	15	4	50	6,960	1.61	1.66	1.72	1.78	1.92
IALR230-0030-0050-0150-00030	0.3	0.05	1.5	0.3	0.27	15	4	50	6,960	1.61	1.66	1.72	1.78	1.92
IALR230-0030-0050-0200		0.05	2	0.25	0.27	15	4	50	6,960	2.12	2.20	2.27	2.36	2.54
IALR230-0030-0050-0250		0.05	2.5	0.25	0.27	15	4	50	7,680	2.64	2.73	2.83	2.93	3.17
IALR230-0030-0050-0300	0.4	0.05	3	0.25	0.27	15	4	50	7,680	3.16	3.27	3.38	3.51	3.79
IALR230-0040-0050-0100		0.05	1	0.3	0.37	15	4	50	4,640	1.09	1.13	1.17	1.21	1.30
IALR230-0040-0050-0120		0.05	1.2	0.4	0.37	15	4	50	4,640	1.30	1.34	1.39	1.44	1.55
IALR230-0040-0050-0150	0.4	0.05	1.5	0.3	0.37	15	4	50	4,640	1.61	1.66	1.72	1.78	1.92
IALR230-0040-0050-0200		0.05	2	0.3	0.37	15	4	50	4,640	2.12	2.20	2.27	2.36	2.54
IALR230-0040-0050-0250		0.05	2.5	0.4	0.37	15	4	50	4,640	2.64	2.73	2.83	2.93	3.17
IALR230-0040-0050-0300	0.4	0.05	3	0.3	0.37	15	4	50	4,640	3.16	3.27	3.38	3.51	3.79
IALR230-0040-0100-0100		0.1	1	0.3	0.37	15	4	50	4,640	1.09	1.12	1.16	1.20	1.29
IALR230-0040-0100-0120		0.1	1.2	0.4	0.37	15	4	50	4,640	1.29	1.34	1.38	1.43	1.54
IALR230-0040-0100-0150	0.4	0.1	1.5	0.3	0.37	15	4	50	4,640	1.61	1.66	1.71	1.77	1.91
IALR230-0040-0100-0200		0.1	2	0.3	0.37	15	4	50	4,640	2.12	2.19	2.27	2.35	2.53
IALR230-0040-0100-0250		0.1	2.5	0.4	0.37	15	4	50	4,640	2.64	2.73	2.82	2.92	3.15
IALR230-0040-0100-0300	0.4	0.1	3	0.3	0.37	15	4	50	4,640	3.16	3.26	3.38	3.50	3.78
IALR230-0050-0050-0100		0.05	1	0.4	0.47	15	4	50	3,760	1.09	1.13	1.17	1.21	1.30
IALR230-0050-0050-0150		0.05	1.5	0.5	0.47	15	4	50	3,760	1.61	1.66	1.72	1.78	1.92
IALR230-0050-0050-0200	0.5	0.05	2	0.4	0.47	15	4	50	3,760	2.12	2.20	2.27	2.36	2.54
IALR230-0050-0050-0300-00040		0.05	3	0.4	0.47	15	4	50	3,760	3.16	3.27	3.38	3.51	3.79
IALR230-0050-0050-0300-00050		0.05	3	0.5	0.47	15	4	50	3,760	3.16	3.27	3.38	3.51	3.79
IALR230-0050-0050-0400	0.5	0.05	4	0.4	0.47	15	4	50	3,760	4.19	4.34	4.49	4.66	5.03
IALR230-0050-0100-0100		0.1	1	0.4	0.47	15	4	50	3,760	1.09	1.12	1.16	1.20	1.29
IALR230-0050-0100-0150		0.1	1.5	0.5	0.47	15	4	50	3,760	1.61	1.66	1.71	1.77	1.91

ion Depo Type A Series



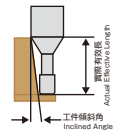
單位(Size):mm

●聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) ^a Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
IALR230-0050-0100-0200	0.5	0.1	2	0.4	0.47	15	4	50	3,760	2.12	2.19	2.27	2.35	2.53
IALR230-0050-0100-0300-00040		0.1	3	0.4	0.47	15	4	50	3,760	3.16	3.26	3.38	3.50	3.78
IALR230-0050-0100-0300-00050		0.1	3	0.5	0.47	15	4	50	3,760	3.16	3.26	3.38	3.50	3.78
IALR230-0050-0100-0400	0.5	0.1	4	0.4	0.47	15	4	50	3,760	4.19	4.33	4.48	4.65	5.02
IALR230-0060-0050-0180		0.05	1.8	0.6	0.57	15	4	50	3,760	1.92	1.98	2.05	2.13	2.30
IALR230-0060-0050-0200		0.05	2	0.5	0.57	15	4	50	3,760	2.12	2.20	2.27	2.36	2.54
IALR230-0060-0050-0300	0.6	0.05	3	0.5	0.57	15	4	50	3,760	3.16	3.27	3.38	3.51	3.79
IALR230-0060-0050-0400		0.05	4	0.5	0.57	15	4	50	3,760	4.19	4.34	4.49	4.66	5.03
IALR230-0060-0050-0500		0.05	5	0.6	0.57	15	4	50	3,760	5.22	5.40	5.60	5.81	6.27
IALR230-0060-0050-0600	0.6	0.05	6	0.5	0.57	15	4	50	3,760	6.26	6.47	6.71	6.96	7.52
IALR230-0060-0100-0180		0.1	1.8	0.6	0.57	15	4	50	3,760	1.92	1.98	2.05	2.12	2.28
IALR230-0060-0100-0200		0.1	2	0.5	0.57	15	4	50	3,760	2.12	2.19	2.27	2.35	2.53
IALR230-0060-0100-0300	0.6	0.1	3	0.5	0.57	15	4	50	3,760	3.16	3.26	3.38	3.50	3.78
IALR230-0060-0100-0400		0.1	4	0.5	0.57	15	4	50	3,760	4.19	4.33	4.48	4.65	5.02
IALR230-0060-0100-0500		0.1	5	0.6	0.57	15	4	50	3,760	5.22	5.40	5.59	5.80	6.26
IALR230-0060-0100-0600	0.6	0.1	6	0.5	0.57	15	4	50	3,760	6.26	6.47	6.70	6.95	7.51
IALR230-0060-0200-0200		0.2	2	0.5	0.57	15	4	50	3,760	2.12	2.19	2.26	2.33	2.51
IALR230-0060-0200-0300		0.2	3	0.5	0.57	15	4	50	3,760	3.15	3.26	3.37	3.48	3.75
IALR230-0060-0200-0400	0.7	0.2	4	0.5	0.57	15	4	50	3,760	4.19	4.32	4.47	4.63	5.00
IALR230-0060-0200-0600		0.2	6	0.5	0.57	15	4	50	3,760	6.25	6.46	6.69	6.93	7.48
IALR230-0070-0050-0400		0.05	4	0.55	0.67	15	4	50	4,000	4.19	4.34	4.49	4.66	5.03
IALR230-0070-0050-0600	0.7	0.05	6	0.55	0.67	15	4	50	4,000	6.26	6.47	6.71	6.96	7.52
IALR230-0070-0100-0400		0.1	4	0.55	0.67	15	4	50	4,000	4.19	4.33	4.48	4.65	5.02
IALR230-0070-0100-0600		0.1	6	0.55	0.67	15	4	50	4,000	6.26	6.47	6.70	6.95	7.51
IALR230-0080-0050-0220	0.8	0.05	2.2	0.8	0.77	15	4	50	4,320	2.33	2.41	2.49	2.59	2.79
IALR230-0080-0050-0400		0.05	4	0.65	0.77	15	4	50	4,320	4.19	4.34	4.49	4.66	5.03
IALR230-0080-0050-0500		0.05	5	0.8	0.77	15	4	50	4,320	5.22	5.40	5.60	5.81	6.27
IALR230-0080-0050-0600	0.8	0.05	6	0.65	0.77	15	4	50	4,320	6.26	6.47	6.71	6.96	7.52
IALR230-0080-0050-0800		0.05	8	0.65	0.77	15	4	50	4,320	8.33	8.61	8.92	9.26	10.00
IALR230-0080-0100-0220		0.1	2.2	0.8	0.77	15	4	50	4,320	2.33	2.41	2.49	2.58	2.78
IALR230-0080-0100-0400	0.8	0.1	4	0.65	0.77	15	4	50	4,320	4.19	4.33	4.48	4.65	5.02
IALR230-0080-0100-0500		0.1	5	0.8	0.77	15	4	50	4,320	5.22	5.40	5.59	5.80	6.26
IALR230-0080-0100-0600		0.1	6	0.65	0.77	15	4	50	4,320	6.26	6.47	6.70	6.95	7.51
IALR230-0080-0100-0800	0.8	0.1	8	0.65	0.77	15	4	50	4,320	8.32	8.61	8.92	9.25	9.99
IALR230-0080-0200-0220		0.2	2.2	0.8	0.77	15	4	50	4,320	2.33	2.40	2.48	2.56	2.76
IALR230-0080-0200-0400		0.2	4	0.65	0.77	15	4	50	4,320	4.19	4.32	4.47	4.63	5.00
IALR230-0080-0200-0500	0.9	0.2	5	0.8	0.77	15	4	50	4,320	5.22	5.39	5.58	5.78	6.24
IALR230-0080-0200-0600		0.2	6	0.65	0.77	15	4	50	4,320	6.25	6.46	6.69	6.93	7.48
IALR230-0080-0200-0800		0.2	8	0.65	0.77	15	4	50	4,320	8.32	8.60	8.91	9.23	9.97
IALR230-0090-0100-0400	0.9	0.1	4	0.7	0.87	15	4	50	4,800	4.19	4.33	4.48	4.65	5.02
IALR230-0090-0100-0800		0.1	8	0.7	0.87	15	4	50	4,800	8.32	8.61	8.92	9.25	9.99
IALR230-0100-0050-0200		0.05	2	0.8	0.95	15	4	50	3,680	2.16	2.24	2.31	2.40	2.59
IALR230-0100-0050-0300	1	0.05	3	0.8	0.95	15	4	50	3,680	3.20	3.31	3.42	3.55	3.83
IALR230-0100-0050-0400		0.05	4	0.8	0.95	15	4	50	3,680	4.23	4.38	4.53	4.70	5.08
IALR230-0100-0050-0500		0.05	5	0.8	0.95	15	4	50	3,680	5.26	5.44	5.64	5.85	6.32

CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
ion Depo A Series
ion Depo U Series
DLC Series
Non-Coat Series
ion Depo R Series

ion Depo Type A Series

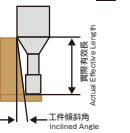


單位(Size):mm

● 請我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刀長 (L2) Length of Cut	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.					
										30'	1°	1°30'	2°	3°	
										IALR230-0100-0050-0600	1	0.05	6	0.8	0.95
IALR230-0100-0050-0800	0.05	8	0.8	0.95	15	4	50	4,000	8.36	8.65		8.96	9.30	10.05	
IALR230-0100-0050-1000	0.05	10	0.8	0.95	15	4	50	4,000	10.43	10.79		11.18	11.60	12.54	
IALR230-0100-0050-1200	0.05	12	0.8	0.95	15	4	50	4,000	12.50	12.93		13.40	13.90	15.02	
IALR230-0100-0100-0200	0.1	2	0.8	0.95	15	4	50	3,680	2.16	2.23		2.31	2.39	2.58	
IALR230-0100-0100-0300	0.1	3	0.8	0.95	15	4	50	3,680	3.19	3.30		3.42	3.54	3.82	
IALR230-0100-0100-0400	0.1	4	0.8	0.95	15	4	50	3,680	4.23	4.37		4.53	4.69	5.07	
IALR230-0100-0100-0500	0.1	5	0.8	0.95	15	4	50	3,680	5.26	5.44		5.63	5.84	6.31	
IALR230-0100-0100-0600	0.1	6	0.8	0.95	15	4	50	4,000	6.30	6.51		6.74	6.99	7.55	
IALR230-0100-0100-0800	0.1	8	0.8	0.95	15	4	50	4,000	8.36	8.65		8.96	9.29	10.04	
IALR230-0100-0100-1000	0.1	10	0.8	0.95	15	4	50	4,000	10.43	10.79		11.18	11.59	12.52	
IALR230-0100-0100-1200	0.1	12	0.8	0.95	15	4	50	4,000	12.50	12.93		13.39	13.89	15.01	
IALR230-0100-0200-0200	0.2	2	0.8	0.95	15	4	50	3,680	2.16	2.23		2.30	2.38	2.56	
IALR230-0100-0200-0300	0.2	3	0.8	0.95	15	4	50	3,680	3.19	3.30		3.41	3.53	3.80	
IALR230-0100-0200-0400	0.2	4	0.8	0.95	15	4	50	3,680	4.22	4.36		4.52	4.68	5.04	
IALR230-0100-0200-0500	0.2	5	0.8	0.95	15	4	50	3,680	5.26	5.43		5.62	5.83	6.29	
IALR230-0100-0200-0600	0.2	6	0.8	0.95	15	4	50	4,000	6.29	6.50		6.73	6.98	7.53	
IALR230-0100-0200-0800	0.2	8	0.8	0.95	15	4	50	4,000	8.36	8.64		8.95	9.28	10.01	
IALR230-0100-0200-1000	0.2	10	0.8	0.95	15	4	50	4,000	10.43	10.78		11.17	11.58	12.50	
IALR230-0100-0200-1200	0.2	12	0.8	0.95	15	4	50	4,000	12.49	12.92		13.38	13.88	14.99	
IALR230-0100-0300-0200	0.3	2	0.8	0.95	15	4	50	3,680	2.15	2.22		2.29	2.36	2.53	
IALR230-0100-0300-0300	0.3	3	0.8	0.95	15	4	50	3,680	3.19	3.29		3.40	3.51	3.78	
IALR230-0100-0300-0400	0.3	4	0.8	0.95	15	4	50	3,680	4.22	4.36		4.50	4.66	5.02	
IALR230-0100-0300-0500	0.3	5	0.8	0.95	15	4	50	3,680	5.25	5.43		5.61	5.81	6.26	
IALR230-0100-0300-0600	0.3	6	0.8	0.95	15	4	50	4,000	6.29	6.50		6.72	6.96	7.51	
IALR230-0100-0300-0800	0.3	8	0.8	0.95	15	4	50	4,000	8.36	8.64		8.94	9.26	9.99	
IALR230-0100-0300-1000	0.3	10	0.8	0.95	15	4	50	4,000	10.42	10.78		11.15	11.56	12.48	
IALR230-0100-0300-1200	0.3	12	0.8	0.95	15	4	50	4,000	12.49	12.92		13.37	13.86	14.96	
IALR230-0120-0100-0500	1.2	0.1	5	1	1.15	15	4	50	4,960	5.26		5.44	5.63	5.84	6.31
IALR230-0120-0100-0600		0.1	6	1	1.15	15	4	50	4,080	6.30		6.51	6.74	6.99	7.55
IALR230-0120-0100-0800		0.1	8	1	1.15	15	4	50	4,080	8.36		8.65	8.96	9.29	10.04
IALR230-0120-0100-1000		0.1	10	1	1.15	15	4	50	4,080	10.43		10.79	11.18	11.59	12.52
IALR230-0120-0100-1200		0.1	12	1	1.15	15	4	50	4,080	12.50		12.93	13.39	13.89	15.01
IALR230-0120-0200-0500		0.2	5	1	1.15	15	4	50	4,960	5.26	5.43	5.62	5.83	6.29	
IALR230-0120-0200-0600		0.2	6	1	1.15	15	4	50	4,080	6.29	6.50	6.73	6.98	7.53	
IALR230-0120-0200-0800		0.2	8	1	1.15	15	4	50	4,080	8.36	8.64	8.95	9.28	10.01	
IALR230-0120-0200-1000		0.2	10	1	1.15	15	4	50	4,080	10.43	10.78	11.17	11.58	12.50	
IALR230-0120-0200-1200		0.2	12	1	1.15	15	4	50	4,080	12.49	12.92	13.38	13.88	14.99	
IALR230-0120-0300-0500		0.3	5	1	1.15	15	4	50	4,960	5.25	5.43	5.61	5.81	6.26	
IALR230-0120-0300-0600		0.3	6	1	1.15	15	4	50	4,080	6.29	6.50	6.72	6.96	7.51	
IALR230-0120-0300-0800		0.3	8	1	1.15	15	4	50	4,080	8.36	8.64	8.94	9.26	9.99	
IALR230-0120-0300-1000		0.3	10	1	1.15	15	4	50	4,080	10.42	10.78	11.15	11.56	12.48	
IALR230-0120-0300-1200		0.3	12	1	1.15	15	4	50	4,080	12.49	12.92	13.37	13.86	14.96	
IALR230-0150-0100-0400		1.5	0.1	4	1.2	1.45	15	4	50	3,920	4.23	4.37	4.53	4.69	5.07
IALR230-0150-0100-0600			0.1	6	1.2	1.45	15	4	50	3,920	6.30	6.51	6.74	6.99	7.55

ion Depo Type A Series

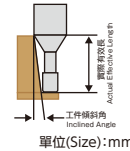


單位(Size):mm

● 請我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刀長 (L2) Length of Cut	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.					
										30'	1°	1°30'	2°	3°	
										IALR230-0150-0100-0800	1.5	0.1	8	1.2	1.45
IALR230-0150-0100-1000	0.1	10	1.2	1.45	15	4	50	4,080	10.43	10.79		11.18	11.59	12.52	
IALR230-0150-0100-1200	0.1	12	1.2	1.45	15	4	50	4,080	12.50	12.93		13.39	13.89	15.01	
IALR230-0150-0100-1600	0.1	16	1.2	1.45	15	4	50	4,080	16.63	17.21		17.83	18.49	19.98	
IALR230-0150-0200-0400	0.2	4	1.2	1.45	15	4	50	3,920	4.22	4.36		4.52	4.68	5.04	
IALR230-0150-0200-0600	0.2	6	1.2	1.45	15	4	50	3,920	6.29	6.50		6.73	6.98	7.53	
IALR230-0150-0200-0800	0.2	8	1.2	1.45	15	4	50	4,080	8.36	8.64		8.95	9.28	10.01	
IALR230-0150-0200-1000	0.2	10	1.2	1.45	15	4	50	4,080	10.43	10.78		11.17	11.58	12.50	
IALR230-0150-0200-1200	0.2	12	1.2	1.45	15	4	50	4,080	12.49	12.92		13.38	13.88	14.99	
IALR230-0150-0200-1600	0.2	16	1.2	1.45	15	4	50	4,080	16.63	17.20		17.82	18.48	19.96	
IALR230-0150-0300-0400	0.3	4	1.2	1.45	15	4	50	3,920	4.22	4.36		4.50	4.66	5.02	
IALR230-0150-0300-0600	0.3	6	1.2	1.45	15	4	50	3,920	6.29	6.50		6.72	6.96	7.51	
IALR230-0150-0300-0800	0.3	8	1.2	1.45	15	4	50	4,080	8.36	8.64		8.94	9.26	9.99	
IALR230-0150-0300-1000	0.3	10	1.2	1.45	15	4	50	4,080	10.42	10.78		11.15	11.56	12.48	
IALR230-0150-0300-1200	0.3	12	1.2	1.45	15	4	50	4,080	12.49	12.92		13.37	13.86	14.96	
IALR230-0150-0300-1600	0.3	16	1.2	1.45	15	4	50	4,080	16.63	17.19		17.80	18.46	19.94	
IALR230-0150-0500-0400	0.5	4	1.2	1.45	15	4	50	3,920	4.21	4.34		4.48	4.63	4.97	
IALR230-0150-0500-0600	0.5	6	1.2	1.45	15	4	50	3,920	6.28	6.48		6.70	6.93	7.46	
IALR230-0150-0500-0800	0.5	8	1.2	1.45	15	4	50	4,080	8.35	8.62		8.92	9.23	9.95	
IALR230-0150-0500-1000	0.5	10	1.2	1.45	15	4	50	4,080	10.42	10.76		11.13	11.53	12.43	
IALR230-0150-0500-1200	0.5	12	1.2	1.45	15	4	50	4,080	12.48	12.90		13.35	13.83	14.92	
IALR230-0150-0500-1600	0.5	16	1.2	1.45	15	4	50	4,080	16.62	17.18		17.78	18.43	19.89	
IALR230-0200-0100-0400	2	0.1	4	1.6	1.94	15	4	50	3,920	4.25		4.39	4.55	4.71	5.09
IALR230-0200-0100-0600		0.1	6	1.6	1.94	15	4	50	4,080	6.31		6.53	6.76	7.01	7.57
IALR230-0200-0100-0800		0.1	8	1.6	1.94	15	4	50	4,080	8.38		8.67	8.98	9.31	10.06
IALR230-0200-0100-1000		0.1	10	1.6	1.94	15	4	50	4,080	10.45		10.81	11.20	11.61	12.55
IALR230-0200-0100-1200		0.1	12	1.6	1.94	15	4	50	4,080	12.52		12.95	13.41	13.91	15.03
IALR230-0200-0100-1600		0.1	16	1.6	1.94	15	4	50	4,080	16.65		17.23	17.85	18.51	FREE
IALR230-0200-0100-2000		0.1	20	1.6	1.94	15	4	50	4,080	20.79		21.51	22.28	23.11	FREE
IALR230-0200-0200-0400		0.2	4	1.6	1.94	15	4	50	3,920	4.24		4.38	4.54	4.70	5.07
IALR230-0200-0200-0600		0.2	6	1.6	1.94	15	4	50	4,080	6.31		6.52	6.75	7.00	7.55
IALR230-0200-0200-0800		0.2	8	1.6	1.94	15	4	50	4,080	8.38		8.66	8.97	9.30	10.04
IALR230-0200-0200-1000		0.2	10	1.6	1.94	15	4	50	4,080	10.45		10.80	11.19	11.60	12.52
IALR230-0200-0200-1200		0.2	12	1.6	1.94	15	4	50	4,080	12.51	12.94	13.40	13.90	15.01	
IALR230-0200-0200-1600		0.2	16	1.6	1.94	15	4	50	4,080	16.65	17.22	17.84	18.50	FREE	
IALR230-0200-0200-2000		0.2	20	1.6											

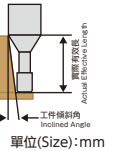
ion Depo Type A Series



● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
IALR230-0200-0500-0800	2	0.5	8	1.6	1.94	15	4	50	4,080	8.37	8.64	8.94	9.25	9.97
IALR230-0200-0500-1000		0.5	10	1.6	1.94	15	4	50	4,080	10.44	10.78	11.15	11.55	12.46
IALR230-0200-0500-1200		0.5	12	1.6	1.94	15	4	50	4,080	12.50	12.92	13.37	13.85	14.94
IALR230-0200-0500-1600		0.5	16	1.6	1.94	15	4	50	4,080	16.64	17.20	17.80	18.45	FREE
IALR230-0200-0500-2000		0.5	20	1.6	1.94	15	4	50	4,080	20.77	21.48	22.24	23.05	FREE
IALR230-0250-0100-1000	2.5	0.1	10	2	2.44	15	4	50	4,320	10.45	10.81	11.20	11.61	12.55
IALR230-0250-0100-2000		0.1	20	2	2.44	15	4	50	4,400	20.79	21.51	22.28	FREE	FREE
IALR230-0250-0200-1000		0.2	10	2	2.44	15	4	50	4,320	10.45	10.80	11.19	11.60	12.52
IALR230-0250-0200-2000		0.2	20	2	2.44	15	4	50	4,400	20.78	21.50	22.27	FREE	FREE
IALR230-0250-0300-1000		0.3	10	2	2.44	15	4	50	4,320	10.44	10.80	11.18	11.58	12.50
IALR230-0250-0300-2000		0.3	20	2	2.44	15	4	50	4,400	20.78	21.49	22.26	FREE	FREE
IALR230-0250-0500-1000		0.5	10	2	2.44	15	4	50	4,320	10.44	10.78	11.15	11.55	12.46
IALR230-0250-0500-2000		0.5	20	2	2.44	15	4	50	4,400	20.77	21.48	22.24	FREE	FREE
IALR230-0300-0100-1200		3	0.1	12	4.5	2.85	15	4	50	6,880	12.69	13.13	13.60	14.11
IALR230-0300-0100-1800	0.1		18	4.5	2.85	15	4	50	7,040	18.89	19.55	FREE	FREE	FREE
IALR230-0300-0100-2400	0.1		24	4.5	2.85	15	4	60	7,280	25.09	25.96	FREE	FREE	FREE
IALR230-0300-0100-3000	0.1		30	4.5	2.85	15	4	60	7,600	31.30	FREE	FREE	FREE	FREE
IALR230-0300-0200-1200	0.2		12	4.5	2.85	15	4	50	6,880	12.69	13.12	13.59	14.09	FREE
IALR230-0300-0200-1800	0.2		18	4.5	2.85	15	4	50	7,040	18.89	19.54	FREE	FREE	FREE
IALR230-0300-0200-2400	0.2		24	4.5	2.85	15	4	60	7,280	25.09	25.96	FREE	FREE	FREE
IALR230-0300-0200-3000	0.2		30	4.5	2.85	15	4	60	7,600	31.29	FREE	FREE	FREE	FREE
IALR230-0300-0300-1200	0.3		12	4.5	2.85	15	4	50	6,880	12.68	13.11	13.58	14.08	FREE
IALR230-0300-0300-1800	0.3		18	4.5	2.85	15	4	50	7,040	18.89	19.53	FREE	FREE	FREE
IALR230-0300-0300-2400	0.3		24	4.5	2.85	15	4	60	7,280	25.09	25.95	FREE	FREE	FREE
IALR230-0300-0300-3000	0.3		30	4.5	2.85	15	4	60	7,600	31.29	FREE	FREE	FREE	FREE
IALR230-0300-0500-1200	0.5		12	4.5	2.85	15	4	50	6,880	12.68	13.10	13.56	14.05	FREE
IALR230-0300-0500-1800	0.5		18	4.5	2.85	15	4	50	7,040	18.88	19.52	FREE	FREE	FREE
IALR230-0300-0500-2400	0.5		24	4.5	2.85	15	4	60	7,280	25.08	25.94	FREE	FREE	FREE
IALR230-0300-0500-3000	0.5	30	4.5	2.85	15	4	60	7,600	31.28	FREE	FREE	FREE	FREE	
IALR230-0300-1000-1200	1	12	4.5	2.85	15	4	50	6,880	12.66	13.07	13.50	13.97	FREE	
IALR230-0300-1000-1800	1	18	4.5	2.85	15	4	50	7,040	18.86	19.48	FREE	FREE	FREE	
IALR230-0300-1000-2400	1	24	4.5	2.85	15	4	60	7,280	25.06	25.90	FREE	FREE	FREE	
IALR230-0300-1000-3000	1	30	4.5	2.85	15	4	60	7,600	31.27	FREE	FREE	FREE	FREE	
IALR230-0400-0100-1600	4	0.1	16	6	3.8	15	6	50	6,880	16.92	17.51	18.14	18.81	FREE
IALR230-0400-0100-2400		0.1	24	6	3.8	15	6	60	6,880	25.19	26.06	27.00	28.01	FREE
IALR230-0400-0100-3200		0.1	32	6	3.8	15	6	70	6,880	33.46	34.62	35.87	FREE	FREE
IALR230-0400-0200-1600		0.2	16	6	3.8	15	6	50	6,880	16.92	17.50	18.13	18.80	FREE
IALR230-0400-0200-2400		0.2	24	6	3.8	15	6	60	6,880	25.19	26.06	26.99	28.00	FREE
IALR230-0400-0200-3200		0.2	32	6	3.8	15	6	70	6,880	33.46	34.62	35.86	FREE	FREE
IALR230-0400-0300-1600		0.3	16	6	3.8	15	6	50	6,880	16.91	17.49	18.11	18.78	FREE
IALR230-0400-0300-2400		0.3	24	6	3.8	15	6	60	6,880	25.18	26.05	26.98	27.98	FREE
IALR230-0400-0300-3200		0.3	32	6	3.8	15	6	70	6,880	33.45	34.61	35.85	FREE	FREE
IALR230-0400-0500-1600		0.5	16	6	3.8	15	6	50	6,880	16.91	17.48	18.09	18.75	FREE
IALR230-0400-0500-2400		0.5	24	6	3.8	15	6	60	6,880	25.18	26.04	26.96	27.95	FREE
IALR230-0400-0500-3200		0.5	32	6	3.8	15	6	70	6,880	33.45	34.59	35.83	FREE	FREE

ion Depo Type A Series



● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
IALR230-0400-1000-1600	4	1	16	6	3.8	15	6	50	6,880	16.89	17.45	18.04	18.68	FREE
IALR230-0400-1000-2400		1	24	6	3.8	15	6	60	6,880	25.16	26.00	26.91	27.88	FREE
IALR230-0400-1000-3200		1	32	6	3.8	15	6	70	6,880	33.43	34.56	35.77	FREE	FREE
IALR230-0500-0100-2000	5	0.1	20	7.5	4.8	15	6	50	8,720	21.06	21.79	FREE	FREE	FREE
IALR230-0500-0100-4000		0.1	40	7.5	4.8	15	6	70	10,960	41.73	FREE	FREE	FREE	FREE
IALR230-0500-0200-1500		0.2	15	3.5	4.8	15	6	50	8,720	15.88	16.43	17.02	FREE	FREE
IALR230-0500-0200-2000-00350		0.2	20	3.5	4.8	15	6	50	8,720	21.05	21.78	FREE	FREE	FREE
IALR230-0500-0200-2000-00750		0.2	20	7.5	4.8	15	6	50	8,720	21.05	21.78	FREE	FREE	FREE
IALR230-0500-0200-4000		0.2	40	7.5	4.8	15	6	70	10,960	41.73	FREE	FREE	FREE	FREE
IALR230-0500-0300-1500		0.3	15	3.5	4.8	15	6	50	8,720	15.88	16.42	17.01	FREE	FREE
IALR230-0500-0300-2000-00350		0.3	20	3.5	4.8	15	6	50	8,720	21.05	21.77	FREE	FREE	FREE
IALR230-0500-0300-2000-00750		0.3	20	7.5	4.8	15	6	50	8,720	21.05	21.77	FREE	FREE	FREE
IALR230-0500-0300-4000		0.3	40	7.5	4.8	15	6	70	10,960	41.72	FREE	FREE	FREE	FREE
IALR230-0500-0500-2000		0.5	20	7.5	4.8	15	6	50	8,720	21.04	21.76	FREE	FREE	FREE
IALR230-0500-0500-4000		0.5	40	7.5	4.8	15	6	70	10,960	41.72	FREE	FREE	FREE	FREE
IALR230-0500-1000-2000		1	20	7.5	4.8	15	6	50	8,720	21.03	21.72	FREE	FREE	FREE
IALR230-0500-1000-4000		1	40	7.5	4.8	15	6	70	10,960	41.70	FREE	FREE	FREE	FREE
IALR230-0600-0100-2400		6	0.1	24	9	5.8	15	6	60	8,720	FREE	FREE	FREE	FREE
IALR230-0600-0100-4800	0.1		48	9	5.8	15	6	80	13,680	FREE	FREE	FREE	FREE	FREE
IALR230-0600-0200-2400	0.2		24	9	5.8	15	6	60	8,720	FREE	FREE	FREE	FREE	FREE
IALR230-0600-0200-4800	0.2		48	9	5.8	15	6	80	13,680	FREE	FREE	FREE	FREE	FREE
IALR230-0600-0300-2400	0.3		24	9	5.8	15	6	60	8,720	FREE	FREE	FREE	FREE	FREE
IALR230-0600-0300-4800	0.3		48	9	5.8	15	6	80	13,680	FREE	FREE	FREE	FREE	FREE
IALR230-0600-0500-2400	0.5		24	9	5.8	15	6	60	8,720	FREE	FREE	FREE	FREE	FREE
IALR230-0600-0500-4800	0.5		48	9	5.8	15	6	80	13,680	FREE	FREE	FREE	FREE	FREE
IALR230-0600-1000-2400	1		24	9	5.8	15	6	60	8,720	FREE	FREE	FREE	FREE	FREE
IALR230-0600-1000-4800	1		48	9	5.8	15	6	80	13,680	FREE	FREE	FREE	FREE	FREE

ion Depo Type A Series

ion Depo Type A Series

ion Depo Type A 切削條件參考表 Recommended Milling Conditions

■型號:IALR230
Model number:IALR230

長頸圓角立銼刀 Long Neck Radius End Mill

切削材料 Work Material			鑄鐵 Cast Irons FCD				碳鋼 Carbon Steels S50C/SS400				預硬鋼 Prehardened Steels PX5/NAK80				合金鋼 Die Steels SKD11/SKD61			
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹
2	0.2	0.5	0.01	0.05	200	30,000	0.01	0.05	200	30,000	0.01	0.05	200	30,000	0.003	0.04	150	30,000
		1	0.007	0.05	150	30,000	0.007	0.05	150	30,000	0.007	0.05	150	30,000	0.003	0.04	100	30,000
		2	0.005	0.05	100	30,000	0.005	0.05	100	30,000	0.005	0.05	100	30,000	0.002	0.04	80	30,000
	0.3	0.8	0.02	0.1	200	30,000	0.02	0.1	200	30,000	0.02	0.1	200	30,000	0.003	0.08	180	30,000
		1	0.02	0.1	200	30,000	0.02	0.1	200	30,000	0.02	0.1	200	30,000	0.003	0.08	180	30,000
		1.5	0.015	0.1	180	30,000	0.015	0.1	180	30,000	0.015	0.1	180	30,000	0.003	0.08	130	30,000
		2	0.01	0.1	150	30,000	0.01	0.1	150	30,000	0.01	0.1	150	30,000	0.003	0.08	100	30,000
		2.5	0.007	0.1	120	30,000	0.007	0.1	120	30,000	0.007	0.1	120	30,000	0.002	0.08	80	25,000
	0.4	1	0.025	0.12	350	30,000	0.025	0.12	350	30,000	0.025	0.12	350	30,000	0.005	0.1	300	30,000
		1.2	0.025	0.12	350	30,000	0.025	0.12	350	30,000	0.025	0.12	350	30,000	0.005	0.1	300	30,000
		1.5	0.022	0.12	300	30,000	0.022	0.12	300	30,000	0.022	0.12	300	30,000	0.005	0.1	270	30,000
		2	0.02	0.12	250	30,000	0.02	0.12	250	30,000	0.02	0.12	250	30,000	0.005	0.1	180	25,000
		2.5	0.02	0.12	250	30,000	0.02	0.12	250	30,000	0.02	0.12	250	30,000	0.005	0.1	180	25,000
	0.5	1	0.03	0.14	500	30,000	0.03	0.14	500	30,000	0.03	0.14	500	30,000	0.01	0.12	400	25,000
		1.5	0.03	0.14	500	30,000	0.03	0.14	500	30,000	0.03	0.14	500	30,000	0.01	0.12	400	25,000
		2	0.025	0.14	400	30,000	0.025	0.14	400	30,000	0.025	0.14	400	30,000	0.01	0.12	300	25,000
		3	0.02	0.14	340	30,000	0.02	0.14	340	30,000	0.02	0.14	340	30,000	0.008	0.12	250	25,000
	0.6	4	0.015	0.14	280	25,000	0.015	0.14	280	25,000	0.015	0.14	280	25,000	0.005	0.12	180	20,000
		1.8	0.035	0.16	600	30,000	0.035	0.16	600	30,000	0.035	0.16	600	30,000	0.02	0.13	400	25,000
		2	0.035	0.16	600	30,000	0.035	0.16	600	30,000	0.035	0.16	600	30,000	0.02	0.13	400	25,000
		3	0.03	0.16	500	30,000	0.03	0.16	500	30,000	0.03	0.16	500	30,000	0.015	0.13	350	25,000
		4	0.025	0.16	400	25,000	0.025	0.16	400	25,000	0.025	0.16	400	25,000	0.015	0.13	250	20,000
		5	0.015	0.16	250	20,000	0.015	0.16	250	20,000	0.015	0.16	250	20,000	0.008	0.13	150	16,000
		6	0.015	0.16	250	20,000	0.015	0.16	250	20,000	0.015	0.16	250	20,000	0.008	0.13	150	16,000
6		0.015	0.16	250	20,000	0.015	0.16	250	20,000	0.015	0.16	250	20,000	0.008	0.13	150	16,000	
0.7	4	0.03	0.2	600	25,000	0.03	0.2	600	25,000	0.03	0.2	600	25,000	0.02	0.16	400	20,000	
	6	0.02	0.2	450	20,000	0.02	0.2	450	20,000	0.02	0.2	450	20,000	0.01	0.16	250	16,000	
0.8	2.2	0.045	0.25	1,000	25,000	0.045	0.25	1,000	25,000	0.045	0.25	1,000	25,000	0.025	0.2	600	20,000	
	4	0.045	0.25	1,000	25,000	0.045	0.25	1,000	25,000	0.045	0.25	1,000	25,000	0.025	0.2	600	20,000	
	5	0.03	0.25	700	20,000	0.03	0.25	700	20,000	0.03	0.25	700	20,000	0.02	0.2	400	16,000	
	6	0.03	0.25	700	20,000	0.03	0.25	700	20,000	0.03	0.25	700	20,000	0.02	0.2	400	16,000	
0.9	8	0.02	0.25	400	18,000	0.02	0.25	400	18,000	0.02	0.25	400	18,000	0.01	0.2	250	14,000	
	4	0.05	0.3	1,100	25,000	0.05	0.3	1,100	25,000	0.05	0.3	1,100	25,000	0.03	0.24	700	20,000	
1	8	0.03	0.3	500	18,000	0.03	0.3	500	18,000	0.03	0.3	500	18,000	0.01	0.24	350	14,000	
	2	0.065	0.35	1,600	25,000	0.065	0.35	1,600	25,000	0.065	0.35	1,600	25,000	0.05	0.28	900	20,000	
	3	0.06	0.35	1,500	25,000	0.06	0.35	1,500	25,000	0.06	0.35	1,500	25,000	0.05	0.28	850	20,000	
	4	0.055	0.35	1,400	25,000	0.055	0.35	1,400	25,000	0.055	0.35	1,400	25,000	0.04	0.28	800	20,000	
	5	0.05	0.35	1,200	22,000	0.05	0.35	1,200	22,000	0.05	0.35	1,200	22,000	0.03	0.28	700	18,000	
	6	0.045	0.35	1,000	20,000	0.045	0.35	1,000	20,000	0.045	0.35	1,000	20,000	0.02	0.28	600	16,000	
	8	0.035	0.35	700	18,000	0.035	0.35	700	18,000	0.035	0.35	700	18,000	0.02	0.28	450	14,000	
	10	0.025	0.35	600	16,000	0.025	0.35	600	16,000	0.025	0.35	600	16,000	0.01	0.28	350	13,000	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing.
 ●ap=軸向切削深度，ae=徑向切削深度。 ap=Axial Depth of Cut ae=Radial Depth of Cut.
 ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸圓角立銼刀 Long Neck Radius End Mill

切削材料 Work Material			鑄鐵 Cast Irons FCD				碳鋼 Carbon Steels S50C/SS400				預硬鋼 Prehardened Steels PX5/NAK80				合金鋼 Die Steels SKD11/SKD61			
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹
2	1	12	0.02	0.35	350	14,000	0.02	0.35	350	14,000	0.02	0.35	350	14,000	0.008	0.28	250	12,000
		5	0.055	0.4	1,500	22,000	0.055	0.4	1,500	22,000	0.055	0.4	1,500	22,000	0.03	0.32	850	18,000
		6	0.05	0.4	1,300	20,000	0.05	0.4	1,300	20,000	0.05	0.4	1,300	20,000	0.03	0.32	750	17,000
	1.2	8	0.04	0.4	1,100	18,000	0.04	0.4	1,100	18,000	0.04	0.4	1,100	18,000	0.025	0.32	600	15,000
		10	0.03	0.4	900	16,000	0.03	0.4	900	16,000	0.03	0.4	900	16,000	0.02	0.32	500	13,000
		12	0.025	0.4	700	14,000	0.025	0.4	700	14,000	0.025	0.4	700	14,000	0.015	0.32	400	11,000
		4	0.09	0.45	1,600	22,000	0.09	0.45	1,600	22,000	0.09	0.45	1,600	22,000	0.05	0.36	1,000	18,000
	1.5	6	0.08	0.45	1,400	20,000	0.08	0.45	1,400	20,000	0.08	0.45	1,400	20,000	0.045	0.36	850	16,000
		8	0.07	0.45	1,200	18,000	0.07	0.45	1,200	18,000	0.07	0.45	1,200	18,000	0.04	0.36	700	15,000
		10	0.06	0.45	1,000	16,000	0.06	0.45	1,000	16,000	0.06	0.45	1,000	16,000	0.035	0.36	550	13,000
		12	0.05	0.45	800	14,000	0.05	0.45	800	14,000	0.05	0.45	800	14,000	0.03	0.36	450	11,000
	2	16	0.035	0.45	600	12,000	0.035	0.45	600	12,000	0.035	0.45	600	12,000	0.018	0.36	350	10,000
		4	0.13	0.5	2,200	16,000	0.13	0.5	2,200	16,000	0.13	0.5	2,200	16,000	0.06	0.4	1,000	14,000
		6	0.12	0.5	2,100	16,000	0.12	0.5	2,100	16,000	0.12	0.5	2,100	16,000	0.055	0.4	900	14,000
		8	0.11	0.5	2,000	16,000	0.11	0.5	2,000	16,000	0.11	0.5	2,000	16,000	0.05	0.4	800	13,000
	2.5	10	0.1	0.5	1,800	16,000	0.1	0.5	1,800	16,000	0.1	0.5	1,800	16,000	0.045	0.4	750	13,000
		12	0.09	0.5	1,500	14,000	0.09	0.5	1,500	14,000	0.09	0.5	1,500	14,000	0.04	0.4	600	11,000
		16	0.07	0.5	1,200	12,000	0.07	0.5	1,200</									

ion Depo Type A 切削條件參考表 Recommended Milling Conditions

■型號:IALR230
Model number:IALR230

長頸圓角立銼刀 Long Neck Radius End Mill

刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	高速鋼 High Speed Steels HAP5R/HAP72/ASP23				不銹鋼 Stainless Steels SUS304				不銹鋼 Stainless Steels HPM/STAVAX				銅合金 Copper Alloy 銅鎢(Copper Tungsten)			
			切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹
2	0.2	0.5	0.003	0.04	150	30,000	0.003	0.04	150	30,000	0.003	0.04	150	30,000	0.012	0.05	250	30,000
		1	0.003	0.04	100	30,000	0.003	0.04	100	30,000	0.003	0.04	100	30,000	0.008	0.05	200	30,000
		2	0.002	0.04	80	30,000	0.002	0.04	80	30,000	0.002	0.04	80	30,000	0.006	0.05	135	30,000
	0.3	0.8	0.003	0.08	180	30,000	0.003	0.08	180	30,000	0.003	0.08	180	30,000	0.024	0.1	300	30,000
		1	0.003	0.08	180	30,000	0.003	0.08	180	30,000	0.003	0.08	180	30,000	0.024	0.1	300	30,000
		1.5	0.003	0.08	130	30,000	0.003	0.08	130	30,000	0.003	0.08	130	30,000	0.018	0.1	260	30,000
		2	0.003	0.08	100	30,000	0.003	0.08	100	30,000	0.003	0.08	100	30,000	0.012	0.1	250	30,000
		2.5	0.002	0.08	80	25,000	0.002	0.08	80	25,000	0.002	0.08	80	25,000	0.008	0.1	240	30,000
	0.4	3	0.002	0.08	50	25,000	0.002	0.08	50	25,000	0.002	0.08	50	25,000	0.006	0.1	220	30,000
		1	0.005	0.1	300	30,000	0.005	0.1	300	30,000	0.005	0.1	300	30,000	0.03	0.12	450	30,000
		1.2	0.005	0.1	300	30,000	0.005	0.1	300	30,000	0.005	0.1	300	30,000	0.03	0.12	450	30,000
		1.5	0.005	0.1	270	30,000	0.005	0.1	270	30,000	0.005	0.1	270	30,000	0.027	0.12	400	30,000
		2	0.005	0.1	180	25,000	0.005	0.1	180	25,000	0.005	0.1	180	25,000	0.024	0.12	360	30,000
	0.5	2.5	0.005	0.1	180	25,000	0.005	0.1	180	25,000	0.005	0.1	180	25,000	0.024	0.12	360	30,000
		3	0.004	0.1	150	25,000	0.004	0.1	150	25,000	0.004	0.1	150	25,000	0.018	0.12	300	30,000
		1	0.01	0.12	400	25,000	0.01	0.12	400	25,000	0.01	0.12	400	25,000	0.036	0.14	650	30,000
		1.5	0.01	0.12	400	25,000	0.01	0.12	400	25,000	0.01	0.12	400	25,000	0.036	0.14	650	30,000
	0.6	2	0.01	0.12	300	25,000	0.01	0.12	300	25,000	0.01	0.12	300	25,000	0.03	0.14	600	30,000
		3	0.008	0.12	250	25,000	0.008	0.12	250	25,000	0.008	0.12	250	25,000	0.024	0.14	480	30,000
		4	0.005	0.12	180	20,000	0.005	0.12	180	20,000	0.005	0.12	180	20,000	0.018	0.14	430	30,000
		1.8	0.02	0.13	400	25,000	0.02	0.13	400	25,000	0.02	0.13	400	25,000	0.04	0.16	800	30,000
		2	0.02	0.13	400	25,000	0.02	0.13	400	25,000	0.02	0.13	400	25,000	0.04	0.16	800	30,000
		3	0.015	0.13	350	25,000	0.015	0.13	350	25,000	0.015	0.13	350	25,000	0.035	0.16	750	30,000
		4	0.015	0.13	250	20,000	0.015	0.13	250	20,000	0.015	0.13	250	20,000	0.03	0.16	650	30,000
5		0.008	0.13	150	16,000	0.008	0.13	150	16,000	0.008	0.13	150	16,000	0.018	0.16	400	25,000	
0.7	6	0.008	0.13	150	16,000	0.008	0.13	150	16,000	0.008	0.13	150	16,000	0.018	0.16	400	25,000	
	4	0.02	0.16	400	20,000	0.02	0.16	400	20,000	0.02	0.16	400	20,000	0.04	0.2	1,000	30,000	
	6	0.01	0.16	250	16,000	0.01	0.16	250	16,000	0.01	0.16	250	16,000	0.025	0.2	700	25,000	
0.8	2.2	0.025	0.2	600	20,000	0.025	0.2	600	20,000	0.025	0.2	600	20,000	0.055	0.25	1,400	30,000	
	4	0.025	0.2	600	20,000	0.025	0.2	600	20,000	0.025	0.2	600	20,000	0.055	0.25	1,400	30,000	
	5	0.02	0.2	400	16,000	0.02	0.2	400	16,000	0.02	0.2	400	16,000	0.04	0.25	1,000	25,000	
	6	0.02	0.2	400	16,000	0.02	0.2	400	16,000	0.02	0.2	400	16,000	0.04	0.25	1,000	25,000	
0.9	8	0.01	0.2	250	14,000	0.01	0.2	250	14,000	0.01	0.2	250	14,000	0.025	0.25	600	22,000	
	4	0.03	0.24	700	20,000	0.03	0.24	700	20,000	0.03	0.24	700	20,000	0.06	0.3	1,500	30,000	
	8	0.01	0.24	350	14,000	0.01	0.24	350	14,000	0.01	0.24	350	14,000	0.04	0.3	800	22,000	
	2	0.05	0.28	900	20,000	0.05	0.28	900	20,000	0.05	0.28	900	20,000	0.08	0.35	2,200	30,000	
1	3	0.05	0.28	850	20,000	0.05	0.28	850	20,000	0.05	0.28	850	20,000	0.07	0.35	2,100	30,000	
	4	0.04	0.28	800	20,000	0.04	0.28	800	20,000	0.04	0.28	800	20,000	0.065	0.35	2,000	30,000	
	5	0.03	0.28	700	18,000	0.03	0.28	700	18,000	0.03	0.28	700	18,000	0.06	0.35	1,700	27,000	
	6	0.02	0.28	600	16,000	0.02	0.28	600	16,000	0.02	0.28	600	16,000	0.055	0.35	1,500	25,000	
	8	0.02	0.28	450	14,000	0.02	0.28	450	14,000	0.02	0.28	450	14,000	0.045	0.35	1,000	22,000	
	10	0.01	0.28	350	13,000	0.01	0.28	350	13,000	0.01	0.28	350	13,000	0.03	0.35	800	20,000	

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●ap=軸向切削深度，ae=徑向切削深度。 ap=Axial Depth of Cut ae=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸圓角立銼刀 Long Neck Radius End Mill

刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	高速鋼 High Speed Steels HAP5R/HAP72/ASP23				不銹鋼 Stainless Steels SUS304				不銹鋼 Stainless Steels HPM/STAVAX				銅合金 Copper Alloy 銅鎢(Copper Tungsten)			
			切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹
2	1	12	0.008	0.28	250	12,000	0.008	0.28	250	12,000	0.008	0.28	250	12,000	0.008	0.28	250	12,000
		5	0.03	0.32	850	18,000	0.03	0.32	850	18,000	0.03	0.32	850	18,000	0.03	0.32	850	18,000
		6	0.03	0.32	750	17,000	0.03	0.32	750	17,000	0.03	0.32	750	17,000	0.03	0.32	750	17,000
	1.2	8	0.025	0.32	600	15,000	0.025	0.32	600	15,000	0.025	0.32	600	15,000	0.025	0.32	600	15,000
		10	0.02	0.32	500	13,000	0.02	0.32	500	13,000	0.02	0.32	500	13,000	0.02	0.32	500	13,000
		12	0.015	0.32	400	11,000	0.015	0.32	400	11,000	0.015	0.32	400	11,000	0.015	0.32	400	11,000
		4	0.05	0.36	1,000	18,000	0.05	0.36	1,000	18,000	0.05	0.36	1,000	18,000	0.05	0.36	1,000	18,000
	1.5	6	0.045	0.36	850	16,000	0.045	0.36	850	16,000	0.045	0.36	850	16,000	0.045	0.36	850	16,000
		8	0.04	0.36	700	15,000	0.04	0.36	700	15,000	0.04	0.36	700	15,000	0.04	0.36	700	15,000
		10	0.035	0.36	550	13,000	0.035	0.36	550	13,000	0.035	0.36	550	13,000	0.035	0.36	550	13,000
		12	0.03	0.36	450	11,000	0.03	0.36	450	11,000	0.03	0.36	450	11,000	0.03	0.36	450	11,000
	2	16	0.018	0.36	350	10,000	0.018	0.36	350	10,000	0.018	0.36	350	10,000	0.018	0.36	350	10,000
		4	0.06	0.4	1,000	14,000	0.06	0.4	1,000	14,000	0.06	0.4	1,000	14,000	0.06	0.4	1,000	14,000
		6	0.055	0.4	900	14,000	0.055	0.4	900	14,000	0.055	0.4	900	14,000	0.055	0.4	900	14,000
		8	0.05	0.4	800	13,000	0.05	0.4	800	13,000	0.05	0.4	800	13,000	0.05	0.4	800	13,000
	2.5	10	0.045	0.4	750	13,000	0.045	0.4	750	13,000	0.045	0.4	750	13,000	0.045	0.4	750	13,000
		12	0.04	0.4	600	11,000	0.04	0.4	600	11,000	0.04	0.4	600	11,000	0.04	0.4	600	11

ion Depo Type A 切削條件參考表 Recommended Milling Conditions

■型號:IALR230
Model number:IALR230

長頸圓角立銼刀 Long Neck Radius End Mill

切削材料 Work Material	刃數 Number of Flutes	刀徑直徑 Dia.	有效長度 Effective Length	鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈦合金(Titanium Alloy)			
				切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
				ϕp mm	ϕe mm	mm/min	min ⁻¹	ϕp mm	ϕe mm	mm/min	min ⁻¹	ϕp mm	ϕe mm	mm/min	min ⁻¹
2	0.2	0.5	0.012	0.05	250	30,000	0.012	0.05	250	30,000	0.003	0.04	150	30,000	
		1	0.008	0.05	200	30,000	0.008	0.05	200	30,000	0.003	0.04	100	30,000	
		2	0.006	0.05	135	30,000	0.006	0.05	135	30,000	0.002	0.04	80	30,000	
	0.3	0.8	0.024	0.1	300	30,000	0.024	0.1	300	30,000	0.003	0.08	180	30,000	
		1	0.024	0.1	300	30,000	0.024	0.1	300	30,000	0.003	0.08	180	30,000	
		1.5	0.018	0.1	260	30,000	0.018	0.1	260	30,000	0.003	0.08	130	30,000	
		2	0.012	0.1	250	30,000	0.012	0.1	250	30,000	0.003	0.08	100	30,000	
		2.5	0.008	0.1	240	30,000	0.008	0.1	240	30,000	0.002	0.08	80	25,000	
	0.4	3	0.006	0.1	220	30,000	0.006	0.1	220	30,000	0.002	0.08	50	25,000	
		1	0.03	0.12	450	30,000	0.03	0.12	450	30,000	0.005	0.1	300	30,000	
		1.2	0.03	0.12	450	30,000	0.03	0.12	450	30,000	0.005	0.1	300	30,000	
		1.5	0.027	0.12	400	30,000	0.027	0.12	400	30,000	0.005	0.1	270	30,000	
	0.5	2	0.024	0.12	360	30,000	0.024	0.12	360	30,000	0.005	0.1	180	25,000	
		2.5	0.024	0.12	360	30,000	0.024	0.12	360	30,000	0.005	0.1	180	25,000	
		3	0.018	0.12	300	30,000	0.018	0.12	300	30,000	0.004	0.1	150	25,000	
		1	0.036	0.14	650	30,000	0.036	0.14	650	30,000	0.01	0.12	400	25,000	
	0.6	1.5	0.036	0.14	650	30,000	0.036	0.14	650	30,000	0.01	0.12	400	25,000	
		2	0.03	0.14	600	30,000	0.03	0.14	600	30,000	0.01	0.12	300	25,000	
		3	0.024	0.14	480	30,000	0.024	0.14	480	30,000	0.008	0.12	250	25,000	
		4	0.018	0.14	430	30,000	0.018	0.14	430	30,000	0.005	0.12	180	20,000	
	0.7	1.8	0.04	0.16	800	30,000	0.04	0.16	800	30,000	0.02	0.13	400	25,000	
		2	0.04	0.16	800	30,000	0.04	0.16	800	30,000	0.02	0.13	400	25,000	
		3	0.035	0.16	750	30,000	0.035	0.16	750	30,000	0.015	0.13	350	25,000	
		4	0.03	0.16	650	30,000	0.03	0.16	650	30,000	0.015	0.13	250	20,000	
		5	0.018	0.16	400	25,000	0.018	0.16	400	25,000	0.008	0.13	150	16,000	
		6	0.018	0.16	400	25,000	0.018	0.16	400	25,000	0.008	0.13	150	16,000	
	0.8	4	0.04	0.2	1,000	30,000	0.04	0.2	1,000	30,000	0.02	0.16	400	20,000	
		6	0.025	0.2	700	25,000	0.025	0.2	700	25,000	0.01	0.16	250	16,000	
		2.2	0.055	0.25	1,400	30,000	0.055	0.25	1,400	30,000	0.025	0.2	600	20,000	
	0.9	4	0.055	0.25	1,400	30,000	0.055	0.25	1,400	30,000	0.025	0.2	600	20,000	
		5	0.04	0.25	1,000	25,000	0.04	0.25	1,000	25,000	0.02	0.2	400	16,000	
		6	0.04	0.25	1,000	25,000	0.04	0.25	1,000	25,000	0.02	0.2	400	16,000	
		8	0.025	0.25	600	22,000	0.025	0.25	600	22,000	0.01	0.2	250	14,000	
	1	4	0.06	0.3	1,500	30,000	0.06	0.3	1,500	30,000	0.03	0.24	700	20,000	
		8	0.04	0.3	800	22,000	0.04	0.3	800	22,000	0.01	0.24	350	14,000	
		2	0.08	0.35	2,200	30,000	0.08	0.35	2,200	30,000	0.05	0.28	900	20,000	
		3	0.07	0.35	2,100	30,000	0.07	0.35	2,100	30,000	0.05	0.28	850	20,000	
		4	0.065	0.35	2,000	30,000	0.065	0.35	2,000	30,000	0.04	0.28	800	20,000	
		5	0.06	0.35	1,700	27,000	0.06	0.35	1,700	27,000	0.03	0.28	700	18,000	
		6	0.055	0.35	1,500	25,000	0.055	0.35	1,500	25,000	0.02	0.28	600	16,000	
		8	0.045	0.35	1,000	22,000	0.045	0.35	1,000	22,000	0.02	0.28	450	14,000	
	2	10	0.03	0.35	800	20,000	0.03	0.35	800	20,000	0.01	0.28	350	13,000	

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ● ϕp =軸向切削深度， ϕe =徑向切削深度。 ϕp =Axial Depth of Cut ϕe =Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸圓角立銼刀 Long Neck Radius End Mill

切削材料 Work Material	刃數 Number of Flutes	刀徑直徑 Dia.	有效長度 Effective Length	鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈦合金(Titanium Alloy)			
				切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
				ϕp mm	ϕe mm	mm/min	min ⁻¹	ϕp mm	ϕe mm	mm/min	min ⁻¹	ϕp mm	ϕe mm	mm/min	min ⁻¹
2	1	12	0.025	0.35	600	18,000	0.025	0.35	600	18,000	0.008	0.28	250	12,000	
		5	0.065	0.4	2,200	26,000	0.065	0.4	2,200	26,000	0.03	0.32	850	18,000	
		6	0.06	0.4	2,000	25,000	0.06	0.4	2,000	25,000	0.03	0.32	750	17,000	
	1.2	8	0.05	0.4	1,600	22,000	0.05	0.4	1,600	22,000	0.025	0.32	600	15,000	
		10	0.04	0.4	1,400	20,000	0.04	0.4	1,400	20,000	0.02	0.32	500	13,000	
		12	0.03	0.4	1,000	17,000	0.03	0.4	1,000	17,000	0.015	0.32	400	11,000	
		4	0.1	0.45	2,300	26,000	0.1	0.45	2,300	26,000	0.05	0.36	1,000	18,000	
	1.5	6	0.09	0.45	2,000	24,000	0.09	0.45	2,000	24,000	0.045	0.36	850	16,000	
		8	0.08	0.45	1,800	22,000	0.08	0.45	1,800	22,000	0.04	0.36	700	15,000	
		10	0.07	0.45	1,500	20,000	0.07	0.45	1,500	20,000	0.035	0.36	550	13,000	
		12	0.06	0.45	1,200	17,000	0.06	0.45	1,200	17,000	0.03	0.36	450	11,000	
	2	16	0.04	0.45	900	15,000	0.04	0.45	900	15,000	0.018	0.36	350	10,000	
		4	0.15	0.5	3,000	20,000	0.15	0.5	3,000	20,000	0.06	0.4	1,000	14,000	
		6	0.14	0.5	2,800	20,000	0.14	0.5	2,800	20,000	0.055	0.4	900	14,000	
		8	0.13	0.5	2,600	20,000	0.13	0.5	2,600	20,000	0.05	0.4	800	13,000	
		10	0.12	0.5	2,300	20,000	0.12	0.5	2,300	20,000	0.045	0.4	750	13,000	
	2.5	12	0.11	0.5	1,900	17,000	0.11	0.5	1,900	17,000	0.04	0.4	600	11,000	
		16	0.085	0.5	1,600	15,000	0.085	0.5	1,600	15,000	0.03	0.4	500	10,000	
		20	0.085	0.5	1,400	15,000	0.085	0.5	1,400	15,000	0.03	0.4	450	10,000	
		10	0.17	0.8	3,000	16,000	0.17	0.8	3,000	16,000	0.07	0.65	900	11,000	
		20	0.1	0.8	1,600	11,000	0.1	0.8	1,600	11,000	0.05	0.65	450	7,000	
	3	12	0.2	0.9	3,000	13,000	0.2	0.9	3,000	13,000	0.08	0.75	900	9,000	
		18	0.14	0.9	2,400	12,000	0.14	0.9	2,400	12,000	0.07	0.75	700	8,000	
		24	0.1	0.9	1,800	10,000	0.1	0.9	1,800	10,000	0.05	0.75	500	6,400	
		30	0.07	0.9	1,300	8,500	0.07	0.9	1,300	8,500	0.03	0.75	400	5,600	
	4	16	0.3	1.2	3,200	10,000	0.3	1.2	3,200	10,000	0.1	1	850	6,400	
		24	0.18	1.2	2,400	8,500	0.18	1.2	2,400	8,500	0.08	1	700	5,600	
		32	0.14	1.2	1,800	8,000	0.14	1.2	1,800	8,000	0.04	1	500	4,800	
	5	15	0.36	1.6	3,000	7,200	0.36	1.6	3,000	7,200	0.1	1.3	800	4,800	
		20	0.36	1.6	3,000	7,200	0.36	1.6	3,000	7,200	0.1	1.3	800	4,800	
		40	0.16	1.6	1,300	4,800	0.16	1.6	1,300	4,800	0.05	1.3	400	3,200	
	6	24	0.48	2.1	2,600	5,400	0.48	2.1	2,600	5,400	0.15	1.7	700	3,600	
		48	0.18	2.1	1,000	3,600	0.18	2.1	1,000	3,600	0.05	1.7	350	2,400	

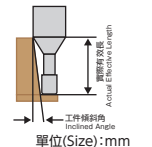
●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ● ϕp =軸向切削深度， ϕe =徑向切削深度。 ϕp =Axial Depth of Cut ϕe =Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

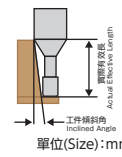
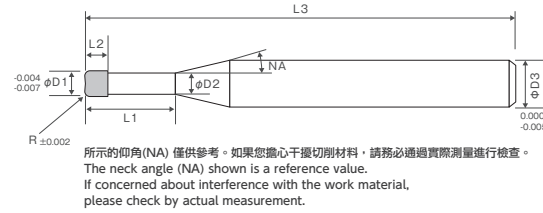
ion Depo Type A Series

超硬長頸圓角立銑刀 Carbide Long Neck Radius End Mill

ion A super MG 4 螺旋角 30° 仰角 15° 柄徑公差 0/-0.005



■型號:IALR430 Model number:IALR430



●聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

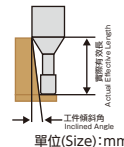
型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) ^o Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.					
										30'	1°	1°30'	2°	3°	
IALR430-0100-0050-0300	1	0.05	3	0.8	0.95	15	4	50	5,760	3.20	3.31	3.42	3.55	3.83	
IALR430-0100-0050-0400		0.05	4	0.8	0.95	15	4	50	5,760	4.23	4.38	4.53	4.70	5.08	
IALR430-0100-0050-0500		0.05	5	0.8	0.95	15	4	50	5,760	5.26	5.44	5.64	5.85	6.32	
IALR430-0100-0050-0600		0.05	6	0.8	0.95	15	4	50	5,760	6.30	6.51	6.75	7.00	7.56	
IALR430-0100-0050-0800		0.05	8	0.8	0.95	15	4	50	5,760	8.36	8.65	8.96	9.30	10.05	
IALR430-0100-0050-1000		0.05	10	0.8	0.95	15	4	50	5,760	10.43	10.79	11.18	11.60	12.54	
IALR430-0100-0050-1200		0.05	12	0.8	0.95	15	4	50	5,760	12.50	12.93	13.40	13.90	15.02	
IALR430-0100-0100-0300		0.1	3	0.8	0.95	15	4	50	5,760	3.19	3.30	3.42	3.54	3.82	
IALR430-0100-0100-0400		0.1	4	0.8	0.95	15	4	50	5,760	4.23	4.37	4.53	4.69	5.07	
IALR430-0100-0100-0500		0.1	5	0.8	0.95	15	4	50	5,760	5.26	5.44	5.63	5.84	6.31	
IALR430-0100-0100-0600		0.1	6	0.8	0.95	15	4	50	5,760	6.30	6.51	6.74	6.99	7.55	
IALR430-0100-0100-0800		0.1	8	0.8	0.95	15	4	50	5,760	8.36	8.65	8.96	9.29	10.04	
IALR430-0100-0100-1000		0.1	10	0.8	0.95	15	4	50	5,760	10.43	10.79	11.18	11.59	12.52	
IALR430-0100-0100-1200		0.1	12	0.8	0.95	15	4	50	5,760	12.50	12.93	13.39	13.89	15.01	
IALR430-0100-0200-0300		0.2	3	0.8	0.95	15	4	50	5,760	3.19	3.30	3.41	3.53	3.80	
IALR430-0100-0200-0400		0.2	4	0.8	0.95	15	4	50	5,760	4.22	4.36	4.52	4.68	5.04	
IALR430-0100-0200-0500		0.2	5	0.8	0.95	15	4	50	5,760	5.26	5.43	5.62	5.83	6.29	
IALR430-0100-0200-0600		0.2	6	0.8	0.95	15	4	50	5,760	6.29	6.50	6.73	6.98	7.53	
IALR430-0100-0200-0800		0.2	8	0.8	0.95	15	4	50	5,760	8.36	8.64	8.95	9.28	10.01	
IALR430-0100-0200-1000		0.2	10	0.8	0.95	15	4	50	5,760	10.43	10.78	11.17	11.58	12.50	
IALR430-0100-0200-1200		0.2	12	0.8	0.95	15	4	50	5,760	12.49	12.92	13.38	13.88	14.99	
IALR430-0100-0300-0300		0.3	3	0.8	0.95	15	4	50	5,760	3.19	3.29	3.40	3.51	3.78	
IALR430-0100-0300-0400		0.3	4	0.8	0.95	15	4	50	5,760	4.22	4.36	4.50	4.66	5.02	
IALR430-0100-0300-0500		0.3	5	0.8	0.95	15	4	50	5,760	5.25	5.43	5.61	5.81	6.26	
IALR430-0100-0300-0600		0.3	6	0.8	0.95	15	4	50	5,760	6.29	6.50	6.72	6.96	7.51	
IALR430-0100-0300-0800		0.3	8	0.8	0.95	15	4	50	5,760	8.36	8.64	8.94	9.26	9.99	
IALR430-0100-0300-1000		0.3	10	0.8	0.95	15	4	50	5,760	10.42	10.78	11.15	11.56	12.48	
IALR430-0100-0300-1200		0.3	12	0.8	0.95	15	4	50	5,760	12.49	12.92	13.37	13.86	14.96	
IALR430-0120-0100-0500		1.2	0.1	5	1	1.15	15	4	50	6,080	5.26	5.44	5.63	5.84	6.31
IALR430-0120-0100-1000			0.1	10	1	1.15	15	4	50	6,080	10.43	10.79	11.18	11.59	12.52

●聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) ^o Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.					
										30'	1°	1°30'	2°	3°	
IALR430-0120-0100-1500	1.2	0.1	15	1	1.15	15	4	50	9,120	15.60	16.14	16.72	17.34	18.74	
IALR430-0120-0200-0500		0.2	5	1	1.15	15	4	50	6,080	5.26	5.43	5.62	5.83	6.29	
IALR430-0120-0200-1000		0.2	10	1	1.15	15	4	50	6,080	10.43	10.78	11.17	11.58	12.50	
IALR430-0120-0200-1500		0.2	15	1	1.15	15	4	50	9,120	15.59	16.13	16.71	17.33	18.72	
IALR430-0120-0300-0500		0.3	5	1	1.15	15	4	50	6,080	5.25	5.43	5.61	5.81	6.26	
IALR430-0120-0300-1000		0.3	10	1	1.15	15	4	50	6,080	10.42	10.78	11.15	11.56	12.48	
IALR430-0120-0300-1500		0.3	15	1	1.15	15	4	50	9,120	15.59	16.12	16.70	17.31	18.69	
IALR430-0150-0100-0300		1.5	0.1	3	1.1	1.45	15	4	50	6,080	3.19	3.30	3.42	3.54	3.82
IALR430-0150-0100-0600			0.1	6	1.1	1.45	15	4	50	6,080	6.30	6.51	6.74	6.99	7.55
IALR430-0150-0100-1000			0.1	10	1.1	1.45	15	4	50	6,080	10.43	10.79	11.18	11.59	12.52
IALR430-0150-0100-1200	0.1		12	1.2	1.45	15	4	50	6,080	12.50	12.93	13.39	13.89	15.01	
IALR430-0150-0100-1800	0.1		18	1.2	1.45	15	4	50	6,080	18.70	19.35	20.04	20.79	22.47	
IALR430-0150-0200-0300	0.2		3	1.1	1.45	15	4	50	6,080	3.19	3.30	3.41	3.53	3.80	
IALR430-0150-0200-0600	0.2		6	1.1	1.45	15	4	50	6,080	6.29	6.50	6.73	6.98	7.53	
IALR430-0150-0200-1000	0.2		10	1.1	1.45	15	4	50	6,080	10.43	10.78	11.17	11.58	12.50	
IALR430-0150-0200-1200	0.2		12	1.2	1.45	15	4	50	6,080	12.49	12.92	13.38	13.88	14.99	
IALR430-0150-0200-1800	0.2		18	1.2	1.45	15	4	50	6,080	18.70	19.34	20.03	20.78	22.45	
IALR430-0150-0300-0300	0.3		3	1.1	1.45	15	4	50	6,080	3.19	3.29	3.40	3.51	3.78	
IALR430-0150-0300-0600	0.3		6	1.1	1.45	15	4	50	6,080	6.29	6.50	6.72	6.96	7.51	
IALR430-0150-0300-1000	0.3		10	1.1	1.45	15	4	50	6,080	10.42	10.78	11.15	11.56	12.48	
IALR430-0150-0300-1200	0.3		12	1.2	1.45	15	4	50	6,080	12.49	12.92	13.37	13.86	14.96	
IALR430-0150-0300-1800	0.3		18	1.2	1.45	15	4	50	6,080	18.69	19.33	20.02	20.76	22.42	
IALR430-0150-0500-0600	0.5		6	1.2	1.45	15	4	50	6,080	6.28	6.48	6.70	6.93	7.46	
IALR430-0150-0500-1200	0.5		12	1.2	1.45	15	4	50	6,080	12.48	12.90	13.35	13.83	14.92	
IALR430-0150-0500-1800	0.5		18	1.2	1.45	15	4	50	6,080	18.69	19.32	20.00	20.73	22.38	
IALR430-0200-0100-0600	2	0.1	6	1.5	1.94	15	4	50	6,080	6.31	6.53	6.76	7.01	7.57	
IALR430-0200-0100-0800		0.1	8	1.6	1.94	15	4	50	6,080	8.38	8.67	8.98	9.31	10.06	
IALR430-0200-0100-1000		0.1	10	1.5	1.94	15	4	50	6,080	10.45	10.81	11.20	11.61	12.55	
IALR430-0200-0100-1200		0.1	12	1.6	1.94	15	4	50	6,080	12.52	12.95	13.41	13.91	15.03	
IALR430-0200-0100-1500		0.1	15	1.5	1.94	15	4	50	6,080	15.62	16.16	16.74	17.36	18.76	
IALR430-0200-0100-1600		0.1	16	1.6	1.94	15	4	50	6,080	16.65	17.23	17.85	18.51	FREE	
IALR430-0200-0100-2000		0.1	20	1.5	1.94	15	4	50	6,080	20.79	21.51	22.28	23.11	FREE	
IALR430-0200-0100-2400		0.1	24	1.6	1.94	15	4	60	6,080	24.92	25.79	26.71	27.71	FREE	
IALR430-0200-0200-0600		0.2	6	1.5	1.94	15	4	50	6,080	6.31	6.52	6.75	7.00	7.55	
IALR430-0200-0200-0800		0.2	8	1.6	1.94	15	4	50	6,080	8.38	8.66	8.97	9.30	10.04	
IALR430-0200-0200-1000		0.2	10	1.5	1.94	15	4	50	6,080	10.45	10.80	11.19	11.60	12.52	
IALR430-0200-0200-1200		0.2	12	1.6	1.94	15	4	50	6,080	12.51	12.94	13.40	13.90	15.01	
IALR430-0200-0200-1500		0.2	15	1.5	1.94	15	4	50	6,080	15.61	16.15	16.73	17.35	18.74	
IALR430-0200-0200-1600		0.2	16	1.6	1.94	15	4	50	6,080	16.65	17.22	17.84	18.50	FREE	
IALR430-0200-0200-2000		0.2	20	1.5	1.94	15	4	50	6,080	20.78	21.50	22.27	23.10	FREE	
IALR430-0200-0200-2400		0.2	24	1.6	1.94	15	4	60	6,080	24.92	25.78	26.70	27.70	FREE	
IALR430-0200-0300-0600		0.3	6	1.5	1.94	15	4	50	6,080	6.31	6.52	6.74	6.98	7.53	
IALR430-0200-0300-0800		0.3	8	1.6	1.94	15	4	50	6,080	8.37	8.66	8.96	9.28	10.02	
IALR430-0200-0300-1000		0.3	10	1.5	1.94	15	4	50	6,080	10.44	10.80	11.18	11.58	12.50	
IALR430-0200-0300-1200		0.3	12	1.6	1.94	15	4	50	6,080	12.51	12.94	13.39	13.88	14.99	

CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
ion Depo A Series
ion Depo U Series
DLC Series
Non-Coat Series
ion Depo R Series

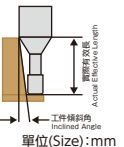
ion Depo Type A Series



● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

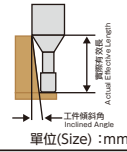
型號 Code No.	刀刀直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) ^o Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.					
										30'	1°	1°30'	2°	3°	
										IALR430-0200-0300-1500	2	0.3	15	1.5	1.94
IALR430-0200-0300-1600	0.3	16	1.6	1.94	15	4	50	6,080	16.64	17.21		17.83	18.48	FREE	
IALR430-0200-0300-2000	0.3	20	1.5	1.94	15	4	50	6,080	20.78	21.49		22.26	23.08	FREE	
IALR430-0200-0300-2400	0.3	24	1.6	1.94	15	4	60	6,080	24.91	25.77		26.69	27.68	FREE	
IALR430-0200-0500-0800	0.5	8	1.6	1.94	15	4	50	6,080	8.37	8.64		8.94	9.25	9.97	
IALR430-0200-0500-1200	0.5	12	1.6	1.94	15	4	50	6,080	12.50	12.92		13.37	13.85	14.94	
IALR430-0200-0500-1600	0.5	16	1.6	1.94	15	4	50	6,080	16.64	17.20		17.80	18.45	FREE	
IALR430-0200-0500-2400	0.5	24	1.6	1.94	15	4	60	6,080	24.91	25.76		26.67	27.65	FREE	
IALR430-0250-0100-1000	2.5	0.1	10	2	2.44	15	4	50	6,400	10.45	10.81	11.20	11.61	12.55	
IALR430-0250-0100-2000		0.1	20	2	2.44	15	4	50	6,400	20.79	21.51	22.28	FREE	FREE	
IALR430-0250-0200-1000		0.2	10	2	2.44	15	4	50	6,400	10.45	10.80	11.19	11.60	12.52	
IALR430-0250-0200-2000		0.2	20	2	2.44	15	4	50	6,400	20.78	21.50	22.27	FREE	FREE	
IALR430-0250-0300-1000		0.3	10	2	2.44	15	4	50	6,400	10.44	10.80	11.18	11.58	12.50	
IALR430-0250-0300-2000		0.3	20	2	2.44	15	4	50	6,400	20.78	21.49	22.26	FREE	FREE	
IALR430-0250-0500-1000		0.5	10	2	2.44	15	4	50	6,400	10.44	10.78	11.15	11.55	12.46	
IALR430-0250-0500-2000		0.5	20	2	2.44	15	4	50	6,400	20.77	21.48	22.24	FREE	FREE	
IALR430-0300-0100-1000		3	0.1	10	2.5	2.85	15	4	50	8,320	10.62	10.99	11.38	11.81	FREE
IALR430-0300-0100-1200			0.1	12	2.5	2.85	15	4	50	8,320	12.69	13.13	13.60	14.11	FREE
IALR430-0300-0100-1500			0.1	15	2.5	2.85	15	4	50	8,320	15.79	16.34	16.92	FREE	FREE
IALR430-0300-0100-1800			0.1	18	2.5	2.85	15	4	50	8,320	18.89	19.55	FREE	FREE	FREE
IALR430-0300-0100-2000	0.1		20	2.5	2.85	15	4	50	8,320	20.96	21.69	FREE	FREE	FREE	
IALR430-0300-0100-2400	0.1		24	2.5	2.85	15	4	60	8,800	25.09	25.96	FREE	FREE	FREE	
IALR430-0300-0100-3000	0.1		30	2.5	2.85	15	4	60	8,800	31.30	FREE	FREE	FREE	FREE	
IALR430-0300-0200-1000	0.2		10	2.5	2.85	15	4	50	8,320	10.62	10.98	11.37	11.79	FREE	
IALR430-0300-0200-1200	0.2		12	2.5	2.85	15	4	50	8,320	12.69	13.12	13.59	14.09	FREE	
IALR430-0300-0200-1500	0.2		15	2.5	2.85	15	4	50	8,320	15.79	16.33	16.91	FREE	FREE	
IALR430-0300-0200-1800	0.2		18	2.5	2.85	15	4	50	8,320	18.89	19.54	FREE	FREE	FREE	
IALR430-0300-0200-2000	0.2		20	2.5	2.85	15	4	50	8,320	20.96	21.68	FREE	FREE	FREE	
IALR430-0300-0200-2400	0.2		24	2.5	2.85	15	4	60	8,800	25.09	25.96	FREE	FREE	FREE	
IALR430-0300-0200-3000	0.2		30	2.5	2.85	15	4	60	8,800	31.29	FREE	FREE	FREE	FREE	
IALR430-0300-0300-1000	0.3		10	2.5	2.85	15	4	50	8,320	10.62	10.98	11.36	11.78	FREE	
IALR430-0300-0300-1200	0.3		12	2.5	2.85	15	4	50	8,320	12.68	13.11	13.58	14.08	FREE	
IALR430-0300-0300-1500	0.3		15	2.5	2.85	15	4	50	8,320	15.78	16.32	16.90	FREE	FREE	
IALR430-0300-0300-1800	0.3		18	2.5	2.85	15	4	50	8,320	18.89	19.53	FREE	FREE	FREE	
IALR430-0300-0300-2000	0.3	20	2.5	2.85	15	4	50	8,320	20.95	21.67	FREE	FREE	FREE		
IALR430-0300-0300-2400	0.3	24	2.5	2.85	15	4	60	8,800	25.09	25.95	FREE	FREE	FREE		
IALR430-0300-0300-3000	0.3	30	2.5	2.85	15	4	60	8,800	31.29	FREE	FREE	FREE	FREE		
IALR430-0300-0500-1200	0.5	12	2.5	2.85	15	4	50	8,320	12.68	13.10	13.56	14.05	FREE		
IALR430-0300-0500-1800	0.5	18	2.5	2.85	15	4	50	8,320	18.88	19.52	FREE	FREE	FREE		
IALR430-0300-0500-2400	0.5	24	2.5	2.85	15	4	60	8,800	25.08	25.94	FREE	FREE	FREE		
IALR430-0300-0500-3000	0.5	30	2.5	2.85	15	4	60	8,800	31.28	FREE	FREE	FREE	FREE		
IALR430-0300-1000-1200	1	12	2.5	2.85	15	4	50	8,320	12.66	13.07	13.50	13.97	FREE		
IALR430-0300-1000-1800	1	18	2.5	2.85	15	4	50	8,320	18.86	19.48	FREE	FREE	FREE		
IALR430-0300-1000-2400	1	24	2.5	2.85	15	4	60	8,800	25.06	25.90	FREE	FREE	FREE		
IALR430-0300-1000-3000	1	30	2.5	2.85	15	4	60	8,800	31.27	FREE	FREE	FREE	FREE		

ion Depo Type A Series



● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刀直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) ^o Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.					
										30'	1°	1°30'	2°	3°	
										IALR430-0400-0100-1000	4	0.1	10	3	3.8
IALR430-0400-0100-1500	0.1	15	3	3.8	15	6	50	8,320	15.89	16.44		17.03	17.66	19.09	
IALR430-0400-0100-1600	0.1	16	3.2	3.8	15	6	50	8,320	16.92	17.51		18.14	18.81	FREE	
IALR430-0400-0100-2000	0.1	20	3	3.8	15	6	50	8,320	21.06	21.79		22.57	23.41	FREE	
IALR430-0400-0100-2400	0.1	24	3.2	3.8	15	6	60	8,320	25.19	26.06		27.00	28.01	FREE	
IALR430-0400-0100-3200	0.1	32	3.2	3.8	15	6	70	8,320	33.46	34.62		35.87	FREE	FREE	
IALR430-0400-0200-1000	0.2	10	3	3.8	15	6	50	8,320	10.72	11.08		11.48	11.90	12.85	
IALR430-0400-0200-1500	0.2	15	3	3.8	15	6	50	8,320	15.88	16.43		17.02	17.65	19.06	
IALR430-0400-0200-1600	0.2	16	3.2	3.8	15	6	50	8,320	16.92	17.50		18.13	18.80	FREE	
IALR430-0400-0200-2000	0.2	20	3	3.8	15	6	50	8,320	21.05	21.78		22.56	23.40	FREE	
IALR430-0400-0200-2400	0.2	24	3.2	3.8	15	6	60	8,320	25.19	26.06		26.99	28.00	FREE	
IALR430-0400-0200-3200	0.2	32	3.2	3.8	15	6	70	8,320	33.46	34.62		35.86	FREE	FREE	
IALR430-0400-0300-1000	0.3	10	3	3.8	15	6	50	8,320	10.71	11.08		11.46	11.88	12.83	
IALR430-0400-0300-1500	0.3	15	3	3.8	15	6	50	8,320	15.88	16.42		17.01	17.63	19.04	
IALR430-0400-0300-1600	0.3	16	3.2	3.8	15	6	50	8,320	16.91	17.49		18.11	18.78	FREE	
IALR430-0400-0300-2000	0.3	20	3	3.8	15	6	50	8,320	21.05	21.77		22.55	23.38	FREE	
IALR430-0400-0300-2400	0.3	24	3.2	3.8	15	6	60	8,320	25.18	26.05		26.98	27.98	FREE	
IALR430-0400-0300-3200	0.3	32	3.2	3.8	15	6	70	8,320	33.45	34.61		35.85	FREE	FREE	
IALR430-0400-0500-1600	0.5	16	3.2	3.8	15	6	50	8,320	16.91	17.48		18.09	18.75	FREE	
IALR430-0400-0500-2400	0.5	24	3.2	3.8	15	6	60	8,320	25.18	26.04		26.96	27.95	FREE	
IALR430-0400-0500-3200	0.5	32	3.2	3.8	15	6	70	8,320	33.45	34.59		35.83	FREE	FREE	
IALR430-0400-1000-1600	1	16	3.2	3.8	15	6	50	8,320	16.89	17.45		18.04	18.68	FREE	
IALR430-0400-1000-2400	1	24	3.2	3.8	15	6	60	8,320	25.16	26.00		26.91	27.88	FREE	
IALR430-0400-1000-3200	1	32	3.2	3.8	15	6	70	8,320	33.43	34.56		35.77	FREE	FREE	
IALR430-0500-0100-1500	5	0.1	15	3.5	4.8	15	6	50	10,400	15.89		16.44	17.03	FREE	FREE
IALR430-0500-0100-2000-00350		0.1	20	3.5	4.8	15	6	50	10,400	21.06		21.79	FREE	FREE	FREE
IALR430-0500-0100-2000-00400		0.1	20	4	4.8	15	6	50	10,400	21.06		21.79	FREE	FREE	FREE
IALR430-0500-0100-4000		0.1	40	4	4.8	15	6	70	13,280	41.73		FREE	FREE	FREE	FREE
IALR430-0500-0200-2000		0.2	20	4	4.8	15	6	50	10,400	21.05		21.78	FREE	FREE	FREE
IALR430-0500-0200-4000		0.2	40	4	4.8	15	6	70	13,280	41.73		FREE	FREE	FREE	FREE
IALR430-0500-0300-2000		0.3	20	4	4.8	15	6	50	10,400	21.05		21.77	FREE	FREE	FREE
IALR430-0500-0300-4000		0.3	40	4	4.8	15	6	70	13,280	41.72		FREE	FREE	FREE	FREE
IALR430-0500-0500-2000		0.5	20	4	4.8	15	6	50	10,400	21.04	21.76	FREE	FREE	FREE	
IALR430-0500-0500-4000		0.5	40	4	4.8	15	6	70	13,280	41.72	FREE	FREE	FREE	FREE	
IALR430-0500-1000-2000		1	20	4	4.8	15	6	50	10,400	21.03	21.72	FREE	FREE	FREE	
IALR430-0500-1000-4000		1	40	4	4.8	15	6	70	13,280	41.70	FREE	FREE	FREE	FREE	
IALR430-0600-0100-1500		6	0.1	15	6	5.8	15	6	50	10,400	FREE	FREE	FREE	FREE	FREE
IALR430-0600-0100-2000			0.1	20	6	5.8	15	6	50	10,400	FREE	FREE	FREE	FREE	FREE
IALR430-0600-0100-2400			0.1	24	5	5.8	15	6	60	10,400	FREE	FREE	FREE	FREE	FREE
IALR430-0600-0100-3000			0.1	30	6	5.8									



●請系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
IALR430-0600-0200-4800	6	0.2	48	5	5.8	15	6	80	16,480	FREE	FREE	FREE	FREE	FREE
IALR430-0600-0300-1500		0.3	15	6	5.8	15	6	50	10,400	FREE	FREE	FREE	FREE	FREE
IALR430-0600-0300-2000		0.3	20	6	5.8	15	6	50	10,400	FREE	FREE	FREE	FREE	FREE
IALR430-0600-0300-2400		0.3	24	5	5.8	15	6	60	10,400	FREE	FREE	FREE	FREE	FREE
IALR430-0600-0300-3000		0.3	30	6	5.8	15	6	60	10,400	FREE	FREE	FREE	FREE	FREE
IALR430-0600-0300-4800		0.3	48	5	5.8	15	6	80	16,480	FREE	FREE	FREE	FREE	FREE
IALR430-0600-0500-1500		0.5	15	6	5.8	15	6	50	10,400	FREE	FREE	FREE	FREE	FREE
IALR430-0600-0500-2000		0.5	20	6	5.8	15	6	50	10,400	FREE	FREE	FREE	FREE	FREE
IALR430-0600-0500-2400		0.5	24	5	5.8	15	6	60	10,400	FREE	FREE	FREE	FREE	FREE
IALR430-0600-0500-3000		0.5	30	6	5.8	15	6	60	10,400	FREE	FREE	FREE	FREE	FREE
IALR430-0600-0500-4800		0.5	48	5	5.8	15	6	80	16,480	FREE	FREE	FREE	FREE	FREE
IALR430-0600-1000-2400		1	24	5	5.8	15	6	60	10,400	FREE	FREE	FREE	FREE	FREE
IALR430-0600-1000-4800		1	48	5	5.8	15	6	80	16,480	FREE	FREE	FREE	FREE	FREE

ion Depo Type A 切削條件參考表 Recommended Milling Conditions

■型號: IALR430
Model number: IALR430

長頸圓角立銼刀 Long Neck Radius End Mill

切削材料 Work Material	刀數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	鑄鐵 Cast Irons FCD			碳鋼 Carbon Steels S50C/SS400			預硬鋼 Prehardened Steels PX5/NAK80			合金鋼 Die Steels SKD11/SKD61							
				切削深度 Depth of Cut	進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut	進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut	進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut	進刀速度 Feed	轉數 Spindle Speed					
				ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	
4	1.0	6	3	0.06	0.35	1,800	16,000	0.06	0.35	1,800	16,000	0.06	0.35	1,800	16,000	0.045	0.3	1,260	12,800	
			4	0.05	0.35	1,500	16,000	0.05	0.35	1,500	16,000	0.05	0.35	1,500	16,000	0.04	0.3	1,050	12,800	
			5	0.045	0.35	1,410	16,000	0.045	0.35	1,410	16,000	0.045	0.35	1,410	16,000	0.035	0.25	990	12,800	
			6	0.04	0.25	1,200	14,500	0.04	0.25	1,200	14,500	0.04	0.25	1,200	14,500	0.03	0.25	840	11,600	
			8	0.03	0.25	870	14,500	0.03	0.25	870	14,500	0.03	0.25	870	14,500	0.02	0.2	620	11,600	
			10	0.025	0.25	660	11,100	0.025	0.25	660	11,100	0.025	0.25	660	11,100	0.015	0.1	470	8,900	
			12	0.02	0.2	300	11,100	0.02	0.2	300	11,100	0.02	0.2	300	11,100	0.01	0.08	210	8,900	
			1.2	5	0.06	0.4	1,740	15,500	0.06	0.4	1,740	15,500	0.06	0.4	1,740	15,500	0.045	0.35	1,220	12,400
				10	0.04	0.35	1,290	12,000	0.04	0.35	1,290	12,000	0.04	0.35	1,290	12,000	0.03	0.25	900	9,600
				15	0.02	0.25	480	10,600	0.02	0.25	480	10,600	0.02	0.25	480	10,600	0.01	0.1	330	8,500
			1.5	3	0.08	0.53	1,910	14,000	0.08	0.53	1,910	14,000	0.08	0.53	1,910	14,000	0.05	0.4	1,340	11,200
				6	0.08	0.53	1,910	14,000	0.08	0.53	1,910	14,000	0.08	0.53	1,910	14,000	0.05	0.4	1,340	11,200
	10	0.06		0.42	1,250	11,500	0.06	0.42	1,250	11,500	0.06	0.42	1,250	11,500	0.04	0.3	870	9,000		
	12	0.06		0.42	1,250	11,500	0.06	0.42	1,250	11,500	0.06	0.42	1,250	11,500	0.04	0.3	870	9,000		
	2	18	0.02	0.3	560	8,500	0.02	0.3	560	8,500	0.02	0.3	560	8,500	0.01	0.15	390	6,800		
		6	0.08	0.6	2,150	11,100	0.08	0.6	2,150	11,100	0.08	0.6	2,150	11,100	0.05	0.5	1,500	8,800		
		8	0.08	0.6	2,150	11,100	0.08	0.6	2,150	11,100	0.08	0.6	2,150	11,100	0.05	0.5	1,500	8,800		
		10	0.065	0.6	1,800	11,100	0.065	0.6	1,800	11,100	0.065	0.6	1,800	11,100	0.045	0.5	1,260	8,800		
		12	0.065	0.6	1,800	11,100	0.065	0.6	1,800	11,100	0.065	0.6	1,800	11,100	0.045	0.5	1,260	8,800		
		15	0.05	0.5	1,500	9,600	0.05	0.5	1,500	9,600	0.05	0.5	1,500	9,600	0.04	0.35	1,050	7,700		
	2.5	16	0.05	0.5	1,500	9,600	0.05	0.5	1,500	9,600	0.05	0.5	1,500	9,600	0.04	0.35	1,050	7,700		
		20	0.03	0.45	900	9,600	0.03	0.45	900	9,600	0.03	0.45	900	9,600	0.015	0.25	630	7,700		
		24	0.02	0.4	740	6,400	0.02	0.4	740	6,400	0.02	0.4	740	6,400	0.01	0.2	510	5,100		
		10	0.1	0.85	2,280	9,200	0.1	0.85	2,280	9,200	0.1	0.85	2,280	9,200	0.07	0.7	1,590	7,400		
20		0.08	0.6	1,580	8,300	0.08	0.6	1,580	8,300	0.08	0.6	1,580	8,300	0.05	0.4	1,110	6,600			
10		0.12	0.9	2,400	8,000	0.12	0.9	2,400	8,000	0.12	0.9	2,400	8,000	0.08	0.8	1,680	6,400			
3	12	0.12	0.9	2,400	8,000	0.12	0.9	2,400	8,000	0.12	0.9	2,400	8,000	0.08	0.8	1,680	6,400			
	15	0.11	0.8	2,000	7,800	0.11	0.8	2,000	7,800	0.11	0.8	2,000	7,800	0.07	0.7	1,410	6,200			
	18	0.11	0.8	2,000	7,800	0.11	0.8	2,000	7,800	0.11	0.8	2,000	7,800	0.07	0.7	1,410	6,200			
	20	0.1	0.8	1,850	7,700	0.1	0.8	1,850	7,700	0.1	0.8	1,850	7,700	0.06	0.6	1,250	6,200			
	24	0.1	0.7	1,620	7,500	0.1	0.7	1,620	7,500	0.1	0.7	1,620	7,500	0.06	0.5	1,140	6,000			
	30	0.05	0.6	1,050	6,000	0.05	0.6	1,050	6,000	0.05	0.6	1,050	6,000	0.03	0.4	740	4,800			
4	10	0.15	1.2	2,520	6,000	0.15	1.2	2,520	6,000	0.15	1.2	2,520	6,000	0.1	1	1,770	4,800			
	15	0.15	1.2	2,520	6,000	0.15	1.2	2,520	6,000	0.15	1.2	2,520	6,000	0.1	1	1,770	4,800			
	16	0.15	1.2	2,520	6,000	0.15	1.2	2,520	6,000	0.15	1.2	2,520	6,000	0.1	1	1,770	4,800			
	20	0.12	1	2,030	5,400	0.12	1	2,030	5,400	0.12	1	2,030	5,400	0.085	0.8	1,430	4,300			
	24	0.12	1	2,030	5,400	0.12	1	2,030	5,400	0.12	1	2,030	5,400	0.085	0.8	1,430	4,300			
	32	0.08	0.9	1,350	4,800	0.08	0.9	1,350	4,800	0.08	0.9	1,350	4,800	0.04	0.7	950	3,800			
5	15	0.17	1.6	2,300	5,100	0.17	1.6	2,300	5,100	0.17	1.6	2,300	5,100	0.12	1.2	1,610	4,100			
	20	0.17	1.6	2,300	5,100	0.17	1.6	2,300	5,100	0.17	1.6	2,300	5,100	0.12	1.2	1,610	4,100			
	40	0.07	1.2	1,020	3,200	0.07	1.2	1,020	3,200	0.07	1.2	1,020	3,200	0.05	0.9	720	2,600			
6	15	0.23	2.1	2,100	3,700	0.23	2.1	2,100	3,700	0.23	2.1	2,100	3,700	0.15	1.5	1,470	3,000			

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid. ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible. ●ap=軸向切削深度・ae=徑向切削深度。 ap=Axial Depth of Cut・ae=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

ion Depo Type A Series

ion Depo Type A 切削條件參考表 Recommended Milling Conditions

■型號:IALR430
Model number:IALR430

長頸圓角立銼刀 Long Neck Radius End Mill

切削材料 Work Material			鑄鐵 Cast Irons FCD				碳鋼 Carbon Steels S50C/SS400				預硬鋼 Prehardened Steels PX5/NAK80				合金鋼 Die Steels SKD11/SKD61			
刃數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹
4	6	20	0.22	2.1	2,100	3,700	0.22	2.1	2,100	3,700	0.22	2.1	2,100	3,700	0.13	1.5	1,470	3,000
		24	0.2	2.1	2,100	3,700	0.2	2.1	2,100	3,700	0.2	2.1	2,100	3,700	0.12	1.5	1,470	3,000
		30	0.09	1.5	950	2,600	0.09	1.5	950	2,600	0.09	1.5	950	2,600	0.05	1.2	660	2,100
		48	0.09	1.5	950	2,600	0.09	1.5	950	2,600	0.09	1.5	950	2,600	0.05	1.2	660	2,100

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing.
●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut.
●建議使用油霧或者非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸圓角立銼刀 Long Neck Radius End Mill

切削材料 Work Material			高速鋼 High Speed Steels HAP5R/HAP72/ASP23				不銹鋼 Stainless Steels SUS304				不銹鋼 Stainless Steels HPM/STAVAX				銅合金 Copper Alloy 銅鎢(Copper Tungsten)			
刃數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹
4	1.0	3	0.045	0.3	1,260	12,800	0.045	0.3	1,260	12,800	0.045	0.3	1,260	12,800	0.2	0.23	1,800	16,000
		4	0.04	0.3	1,050	12,800	0.04	0.3	1,050	12,800	0.04	0.3	1,050	12,800	0.15	0.23	1,500	16,000
		5	0.035	0.25	990	12,800	0.035	0.25	990	12,800	0.035	0.25	990	12,800	0.13	0.23	1,410	16,000
		6	0.03	0.25	840	11,600	0.03	0.25	840	11,600	0.03	0.25	840	11,600	0.12	0.2	1,200	14,500
		8	0.02	0.2	620	11,600	0.02	0.2	620	11,600	0.02	0.2	620	11,600	0.09	0.2	870	14,500
		10	0.015	0.1	470	8,900	0.015	0.1	470	8,900	0.015	0.1	470	8,900	0.075	0.15	660	11,100
		12	0.01	0.08	210	8,900	0.01	0.08	210	8,900	0.01	0.08	210	8,900	0.06	0.15	300	11,100
		5	0.045	0.35	1,220	12,400	0.045	0.35	1,220	12,400	0.045	0.35	1,220	12,400	0.18	0.28	1,740	15,500
		10	0.03	0.25	900	9,600	0.03	0.25	900	9,600	0.03	0.25	900	9,600	0.12	0.28	1,290	12,000
		15	0.01	0.1	330	8,500	0.01	0.1	330	8,500	0.01	0.1	330	8,500	0.07	0.23	480	10,600
		3	0.05	0.4	1,340	11,200	0.05	0.4	1,340	11,200	0.05	0.4	1,340	11,200	0.24	0.35	1,910	14,000
		6	0.05	0.4	1,340	11,200	0.05	0.4	1,340	11,200	0.05	0.4	1,340	11,200	0.24	0.35	1,910	14,000
	10	0.04	0.3	870	9,000	0.04	0.3	870	9,000	0.04	0.3	870	9,000	0.18	0.3	1,250	11,500	
	12	0.04	0.3	870	9,000	0.04	0.3	870	9,000	0.04	0.3	870	9,000	0.18	0.3	1,250	11,500	
	18	0.01	0.15	390	6,800	0.01	0.15	390	6,800	0.01	0.15	390	6,800	0.08	0.25	560	8,500	
	6	0.05	0.5	1,500	8,800	0.05	0.5	1,500	8,800	0.05	0.5	1,500	8,800	0.24	0.45	2,150	11,100	
	8	0.05	0.5	1,500	8,800	0.05	0.5	1,500	8,800	0.05	0.5	1,500	8,800	0.24	0.45	2,150	11,100	
	10	0.045	0.5	1,260	8,800	0.045	0.5	1,260	8,800	0.045	0.5	1,260	8,800	0.2	0.43	1,800	11,100	
	12	0.045	0.5	1,260	8,800	0.045	0.5	1,260	8,800	0.045	0.5	1,260	8,800	0.2	0.43	1,800	11,100	
	15	0.04	0.35	1,050	7,700	0.04	0.35	1,050	7,700	0.04	0.35	1,050	7,700	0.15	0.39	1,500	9,600	
	16	0.04	0.35	1,050	7,700	0.04	0.35	1,050	7,700	0.04	0.35	1,050	7,700	0.15	0.39	1,500	9,600	
	20	0.015	0.25	630	7,700	0.015	0.25	630	7,700	0.015	0.25	630	7,700	0.12	0.35	900	9,600	
	24	0.01	0.2	510	5,100	0.01	0.2	510	5,100	0.01	0.2	510	5,100	0.1	0.3	740	6,400	
	10	0.07	0.7	1,590	7,400	0.07	0.7	1,590	7,400	0.07	0.7	1,590	7,400	0.3	0.5	2,280	9,200	
	20	0.05	0.4	1,110	6,600	0.05	0.4	1,110	6,600	0.05	0.4	1,110	6,600	0.24	0.43	1,580	8,300	
	10	0.08	0.8	1,680	6,400	0.08	0.8	1,680	6,400	0.08	0.8	1,680	6,400	0.36	0.55	2,400	8,000	
	12	0.08	0.8	1,680	6,400	0.08	0.8	1,680	6,400	0.08	0.8	1,680	6,400	0.36	0.55	2,400	8,000	
	15	0.07	0.7	1,410	6,200	0.07	0.7	1,410	6,200	0.07	0.7	1,410	6,200	0.33	0.5	2,010	7,800	
	18	0.07	0.7	1,410	6,200	0.07	0.7	1,410	6,200	0.07	0.7	1,410	6,200	0.33	0.5	2,010	7,800	
	20	0.06	0.6	1,250	6,200	0.06	0.6	1,250	6,200	0.06	0.6	1,250	6,200	0.3	0.5	1,850	7,700	
	24	0.06	0.5	1,140	6,000	0.06	0.5	1,140	6,000	0.06	0.5	1,140	6,000	0.3	0.45	1,620	7,500	
	30	0.03	0.4	740	4,800	0.03	0.4	740	4,800	0.03	0.4	740	4,800	0.15	0.4	1,050	6,000	
	10	0.1	1	1,770	4,800	0.1	1	1,770	4,800	0.1	1	1,770	4,800	0.45	0.75	2,520	6,000	
	15	0.1	1	1,770	4,800	0.1	1	1,770	4,800	0.1	1	1,770	4,800	0.45	0.75	2,520	6,000	
	16	0.1	1	1,770	4,800	0.1	1	1,770	4,800	0.1	1	1,770	4,800	0.45	0.75	2,520	6,000	
	20	0.085	0.8	1,430	4,300	0.085	0.8	1,430	4,300	0.085	0.8	1,430	4,300	0.39	0.7	2,030	5,400	
	24	0.085	0.8	1,430	4,300	0.085	0.8	1,430	4,300	0.085	0.8	1,430	4,300	0.39	0.7	2,030	5,400	
	32	0.04	0.7	950	3,800	0.04	0.7	950	3,800	0.04	0.7	950	3,800	0.25	0.6	1,350	4,800	
	15	0.12	1.2	1,610	4,100	0.12	1.2	1,610	4,100	0.12	1.2	1,610	4,100	0.52	1	2,300	5,100	
	20	0.12	1.2	1,610	4,100	0.12	1.2	1,610	4,100	0.12	1.2	1,610	4,100	0.52	1	2,300	5,100	
	40	0.05	0.9	720	2,600	0.05	0.9	720	2,600	0.05	0.9	720	2,600	0.25	0.8	1,020	3,200	
	6	15	0.15	1.5	1,470	3,000	0.15	1.5	1,470	3,000	0.15	1.5	1,470	3,000	0.65	1.2	2,100	3,700

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing.
●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut.
●建議使用油霧或者非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A 切削條件參考表 Recommended Milling Conditions

■型號:IALR430
Model number:IALR430

長頸圓角立銼刀 Long Neck Radius End Mill

切削材料 Work Material			高速鋼 High Speed Steels HAP5R/HAP72/ASP23				不銹鋼 Stainless Steels SUS304				不銹鋼 Stainless Steels HPM/STAVAX				銅合金 Copper Alloy 銅鎢(Copper Tungsten)			
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹
4	6	20	0.13	1.5	1,470	3,000	0.13	1.5	1,470	3,000	0.13	1.5	1,470	3,000	0.62	1.2	2,100	3,700
		24	0.12	1.5	1,470	3,000	0.12	1.5	1,470	3,000	0.12	1.5	1,470	3,000	0.6	1.2	2,100	3,700
		30	0.05	1.2	660	2,100	0.05	1.2	660	2,100	0.05	1.2	660	2,100	0.32	0.9	950	2,600
		48	0.05	1.2	660	2,100	0.05	1.2	660	2,100	0.05	1.2	660	2,100	0.32	0.9	950	2,600

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向切削深度，∅e=徑向切削深度。 ∅p=Axial Depth of Cut. ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸圓角立銼刀 Long Neck Radius End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈦合金(Titanium Alloy)				
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	
			∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	
4	1.0	3	0.2	0.23	1,800	16,000	0.2	0.23	1,800	16,000	0.045	0.3	1,260	12,800	
		4	0.15	0.23	1,500	16,000	0.15	0.23	1,500	16,000	0.04	0.3	1,050	12,800	
		5	0.13	0.23	1,410	16,000	0.13	0.23	1,410	16,000	0.035	0.25	990	12,800	
		6	0.12	0.2	1,200	14,500	0.12	0.2	1,200	14,500	0.03	0.25	840	11,600	
		8	0.09	0.2	870	14,500	0.09	0.2	870	14,500	0.02	0.2	620	11,600	
		10	0.075	0.15	660	11,100	0.075	0.15	660	11,100	0.015	0.1	470	8,900	
		12	0.06	0.15	300	11,100	0.06	0.15	300	11,100	0.01	0.08	210	8,900	
		1.2	5	0.18	0.28	1,740	15,500	0.18	0.28	1,740	15,500	0.045	0.35	1,220	12,400
		10	0.12	0.28	1,290	12,000	0.12	0.28	1,290	12,000	0.03	0.25	900	9,600	
		15	0.07	0.23	480	10,600	0.07	0.23	480	10,600	0.01	0.1	330	8,500	
		1.5	3	0.24	0.35	1,910	14,000	0.24	0.35	1,910	14,000	0.05	0.4	1,340	11,200
		6	0.24	0.35	1,910	14,000	0.24	0.35	1,910	14,000	0.05	0.4	1,340	11,200	
	10	0.18	0.3	1,250	11,500	0.18	0.3	1,250	11,500	0.04	0.3	870	9,000		
	12	0.18	0.3	1,250	11,500	0.18	0.3	1,250	11,500	0.04	0.3	870	9,000		
	18	0.08	0.25	560	8,500	0.08	0.25	560	8,500	0.01	0.15	390	6,800		
	2	6	0.24	0.45	2,150	11,100	0.24	0.45	2,150	11,100	0.05	0.5	1,500	8,800	
	8	0.24	0.45	2,150	11,100	0.24	0.45	2,150	11,100	0.05	0.5	1,500	8,800		
	10	0.2	0.43	1,800	11,100	0.2	0.43	1,800	11,100	0.045	0.5	1,260	8,800		
	12	0.2	0.43	1,800	11,100	0.2	0.43	1,800	11,100	0.045	0.5	1,260	8,800		
	15	0.15	0.39	1,500	9,600	0.15	0.39	1,500	9,600	0.04	0.35	1,050	7,700		
	16	0.15	0.39	1,500	9,600	0.15	0.39	1,500	9,600	0.04	0.35	1,050	7,700		
	20	0.12	0.35	900	9,600	0.12	0.35	900	9,600	0.015	0.25	630	7,700		
	24	0.1	0.3	740	6,400	0.1	0.3	740	6,400	0.01	0.2	510	5,100		
	2.5	10	0.3	0.5	2,280	9,200	0.3	0.5	2,280	9,200	0.07	0.7	1,590	7,400	
20	0.24	0.43	1,580	8,300	0.24	0.43	1,580	8,300	0.05	0.4	1,110	6,600			
3	10	0.36	0.55	2,400	8,000	0.36	0.55	2,400	8,000	0.08	0.8	1,680	6,400		
12	0.36	0.55	2,400	8,000	0.36	0.55	2,400	8,000	0.08	0.8	1,680	6,400			
15	0.33	0.5	2,010	7,800	0.33	0.5	2,010	7,800	0.07	0.7	1,410	6,200			
18	0.33	0.5	2,010	7,800	0.33	0.5	2,010	7,800	0.07	0.7	1,410	6,200			
20	0.3	0.5	1,850	7,700	0.3	0.5	1,850	7,700	0.06	0.6	1,250	6,200			
24	0.3	0.45	1,620	7,500	0.3	0.45	1,620	7,500	0.06	0.5	1,140	6,000			
30	0.15	0.4	1,050	6,000	0.15	0.4	1,050	6,000	0.03	0.4	740	4,800			
4	10	0.45	0.75	2,520	6,000	0.45	0.75	2,520	6,000	0.1	1	1,770	4,800		
15	0.45	0.75	2,520	6,000	0.45	0.75	2,520	6,000	0.1	1	1,770	4,800			
16	0.45	0.75	2,520	6,000	0.45	0.75	2,520	6,000	0.1	1	1,770	4,800			
20	0.39	0.7	2,030	5,400	0.39	0.7	2,030	5,400	0.085	0.8	1,430	4,300			
24	0.39	0.7	2,030	5,400	0.39	0.7	2,030	5,400	0.085	0.8	1,430	4,300			
32	0.25	0.6	1,350	4,800	0.25	0.6	1,350	4,800	0.04	0.7	950	3,800			
5	15	0.52	1	2,300	5,100	0.52	1	2,300	5,100	0.12	1.2	1,610	4,100		
20	0.52	1	2,300	5,100	0.52	1	2,300	5,100	0.12	1.2	1,610	4,100			
40	0.25	0.8	1,020	3,200	0.25	0.8	1,020	3,200	0.05	0.9	720	2,600			
6	15	0.65	1.2	2,100	3,700	0.65	1.2	2,100	3,700	0.15	1.5	1,470	3,000		

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向切削深度，∅e=徑向切削深度。 ∅p=Axial Depth of Cut. ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A 切削條件參考表 Recommended Milling Conditions

■型號:IALR430
Model number:IALR430

長頸圓角立銼刀 Long Neck Radius End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈦合金(Titanium Alloy)			
刃數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm		
4	6	20	0.62	1.2	2,100	3,700	0.62	1.2	2,100	3,700	0.13	1.5	1,470	3,000
		24	0.6	1.2	2,100	3,700	0.6	1.2	2,100	3,700	0.12	1.5	1,470	3,000
		30	0.32	0.9	950	2,600	0.32	0.9	950	2,600	0.05	1.2	660	2,100
		48	0.32	0.9	950	2,600	0.32	0.9	950	2,600	0.05	1.2	660	2,100

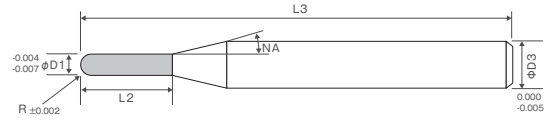
●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或高壓水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

超硬球頭立銑刀 Carbide Ball End Mill

■ 型號: IAB230 Model number: IAB230

ion A super MG 2 刀刃數 螺旋角 30° 仰角 15° 柄徑公差 0/-0.005



所示的仰角(NA) 僅供參考 如果您擔心干擾切削材料 請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	球頭R (R) Ball R	刃長 (L2) Length of Cut	刀刃直徑 (D1) Outside Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)
IAB230-0010-0050-00010	0.05	0.1	0.1	15	4	50	8,080
IAB230-0015-0075-00015	0.075	0.15	0.15	15	4	50	7,520
IAB230-0020-0100-00020	0.1	0.2	0.2	15	4	50	5,680
IAB230-0030-0150-00030	0.15	0.3	0.3	15	4	50	4,640
IAB230-0040-0200-00060	0.2	0.6	0.4	15	4	50	3,120
IAB230-0050-0250-00080	0.25	0.8	0.5	15	4	50	2,880
IAB230-0060-0300-00090	0.3	0.9	0.6	15	4	50	2,800
IAB230-0060-0300-00100		1	0.6	15	4	50	2,800
IAB230-0070-0350-00110	0.35	1.1	0.7	15	4	50	6,240
IAB230-0080-0400-00120	0.4	1.2	0.8	15	4	50	2,800
IAB230-0090-0450-00140	0.45	1.4	0.9	15	4	50	6,240
IAB230-0100-0500-00150	0.5	1.5	1	15	4	50	2,560
IAB230-0110-0550-00170	0.55	1.7	1.1	15	4	50	6,240
IAB230-0120-0600-00180	0.6	1.8	1.2	15	4	50	3,600
IAB230-0130-0650-00200	0.65	2	1.3	15	4	50	6,240
IAB230-0140-0700-00210	0.7	2.1	1.4	15	4	50	3,600
IAB230-0150-0750-00200	0.75	2	1.5	15	4	50	3,120
IAB230-0150-0750-00230		2.3	1.5	15	4	50	3,120
IAB230-0160-0800-00240	0.8	2.4	1.6	15	4	50	3,600
IAB230-0170-0850-00260	0.85	2.6	1.7	15	4	50	6,240
IAB230-0180-0900-00270	0.9	2.7	1.8	15	4	50	6,240
IAB230-0190-0950-00290	0.95	2.9	1.9	15	4	50	6,240
IAB230-0200-1000-00300	1	3	2	15	4	50	2,320
IAB230-0210-1050-00320	1.05	3.2	2.1	15	4	50	6,240
IAB230-0220-1100-00330	1.1	3.3	2.2	15	4	50	6,240
IAB230-0230-1150-00350	1.15	3.5	2.3	15	4	50	6,240
IAB230-0240-1200-00360	1.2	3.6	2.4	15	4	50	6,240
IAB230-0250-1250-00380	1.25	3.8	2.5	15	4	50	4,000
IAB230-0260-1300-00390	1.3	3.9	2.6	15	4	50	6,240
IAB230-0270-1350-00410	1.35	4.1	2.7	15	4	50	6,240

ion Depo Type A Series

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	球頭R (R) Ball R	刃長 (L2) Length of Cut	刀刃直徑 (D1) Outside Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)
IAB230-0280-1400-00420	1.4	4.2	2.8	15	4	50	6,240
IAB230-0290-1450-00440	1.45	4.4	2.9	15	4	50	6,240
IAB230-0300-1500-00500	1.5	5	3	15	4	50	2,800
IAB230-0310-1550-00500	1.55	5	3.1	15	6	50	6,560
IAB230-0320-1600-00500	1.6	5	3.2	15	6	50	6,560
IAB230-0330-1650-00500	1.65	5	3.3	15	6	50	6,560
IAB230-0340-1700-00510	1.7	5.1	3.4	15	6	50	6,560
IAB230-0350-1750-00530	1.75	5.3	3.5	15	6	50	5,200
IAB230-0360-1800-00360	1.8	3.6	3.6	15	6	50	6,560
IAB230-0370-1850-00370	1.85	3.7	3.7	15	6	50	6,560
IAB230-0380-1900-00380	1.9	3.8	3.8	15	6	50	6,560
IAB230-0390-1950-00390	1.95	3.9	3.9	15	6	50	6,560
IAB230-0400-2000-00400	2	4	4	15	6	50	3,200
IAB230-0400-2000-00600		6	4	15	6	50	3,200
IAB230-0410-2050-00410	2.05	4.1	4.1	15	6	50	8,000
IAB230-0420-2100-00420	2.1	4.2	4.2	15	6	50	8,000
IAB230-0430-2150-00430	2.15	4.3	4.3	15	6	50	8,000
IAB230-0440-2200-00440	2.2	4.4	4.4	15	6	50	8,000
IAB230-0450-2250-00450	2.25	4.5	4.5	15	6	50	8,000
IAB230-0460-2300-00460	2.3	4.6	4.6	15	6	50	8,000
IAB230-0470-2350-00470	2.35	4.7	4.7	15	6	50	8,000
IAB230-0480-2400-00480	2.4	4.8	4.8	15	6	50	8,000
IAB230-0490-2450-00490	2.45	4.9	4.9	15	6	50	8,000
IAB230-0500-2500-00500	2.5	5	5	15	6	50	3,840
IAB230-0500-2500-00800		8	5	15	6	50	3,840
IAB230-0510-2550-00510	2.55	5.1	5.1	15	6	50	8,000
IAB230-0520-2600-00520	2.6	5.2	5.2	15	6	50	8,000
IAB230-0530-2650-00530	2.65	5.3	5.3	15	6	50	8,000
IAB230-0540-2700-00540	2.7	5.4	5.4	15	6	50	8,000
IAB230-0550-2750-00550	2.75	5.5	5.5	15	6	50	8,000
IAB230-0560-2800-00560	2.8	5.6	5.6	15	6	50	8,000
IAB230-0570-2850-00570	2.85	5.7	5.7	15	6	50	8,000
IAB230-0580-2900-00580	2.9	5.8	5.8	15	6	50	8,000
IAB230-0590-2950-00590	2.95	5.9	5.9	15	6	50	8,000
IAB230-0600-3000-00600	3	6	6	—	6	50	4,000
IAB230-0600-3000-01000		10	6	—	6	50	4,000
IAB230-0700-3500-00700	3.5	7	7	15	8	70	8,560
IAB230-0800-4000-01200	4	12	8	—	8	70	7,760
IAB230-0800-4000-01600		16	8	—	8	70	7,760
IAB230-0900-4500-01350	4.5	13.5	9	15	10	80	11,920
IAB230-1000-5000-01500	5	15	10	—	10	80	10,160
IAB230-1000-5000-02000		20	10	—	10	80	10,160
IAB230-1100-5500-01650	5.5	16.5	11	15	12	110	19,840
IAB230-1200-6000-02000	6	20	12	—	12	110	17,120
IAB230-1200-6000-02400		24	12	—	12	110	17,120

ion Depo Type A 切削條件參考表 Recommended Milling Conditions

■型號: IAB230
Model number: IAB230

●請系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size): mm

型號 Code No.	球頭R (R) Ball R	刃長 (L2) Length of Cut	刀刃直徑 (D1) Outside Diameter	仰角 (NA) [*] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (円) Retail Price (JPY)
IAB230-1400-7000-03000	7	30	14	—	14	110	36,160
IAB230-1600-8000-03000	8	30	16	—	16	140	42,720
IAB230-1800-9000-03400	9	34	18	—	18	140	64,400
IAB230-2000-10000-03800	10	38	20	—	20	160	66,320

球頭立銼刀 Ball End Mill

切削材料 Work Material		鑄鐵 Cast Irons FCD				碳鋼 Carbon Steels S50C/SS400				預硬鋼 Prehardened Steels PX5/NAK80				合金鋼 Die Steels SKD11/SKD61				
刃數 Number of Flutes	刀刃直徑 Dia. Length of cut	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	
		∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹	
2	0.1	0.1	0.005	0.008	200	50,000	0.005	0.008	200	50,000	0.005	0.008	200	50,000	0.005	0.008	200	50,000
	0.15	0.15	0.008	0.015	200	50,000	0.008	0.015	200	50,000	0.008	0.015	200	50,000	0.008	0.015	200	50,000
	0.2	0.2	0.010	0.020	400	50,000	0.010	0.020	400	50,000	0.010	0.020	400	50,000	0.010	0.020	400	50,000
	0.3	0.3	0.015	0.030	400	50,000	0.015	0.030	400	50,000	0.015	0.030	400	50,000	0.015	0.030	400	50,000
	0.4	0.6	0.020	0.040	400	50,000	0.020	0.040	400	50,000	0.020	0.040	400	50,000	0.020	0.040	400	50,000
	0.5	0.8	0.025	0.050	400	50,000	0.025	0.050	400	50,000	0.025	0.050	400	50,000	0.025	0.050	400	50,000
	0.6	0.9	0.030	0.060	630	50,000	0.030	0.060	630	50,000	0.030	0.060	630	50,000	0.030	0.060	630	50,000
		1	0.030	0.060	630	50,000	0.030	0.060	630	50,000	0.030	0.060	630	50,000	0.030	0.060	630	50,000
	0.7	1.1	0.035	0.070	630	50,000	0.035	0.070	630	50,000	0.035	0.070	630	50,000	0.035	0.070	630	50,000
	0.8	1.2	0.040	0.080	1200	50,000	0.040	0.080	1200	50,000	0.040	0.080	1200	50,000	0.040	0.080	1200	50,000
	0.9	1.4	0.045	0.090	1200	50,000	0.045	0.090	1200	50,000	0.045	0.090	1200	50,000	0.045	0.090	1200	50,000
	1	1.5	0.050	0.100	1400	48,000	0.050	0.100	1400	48,000	0.050	0.100	1400	48,000	0.050	0.100	1400	48,000
	1.1	1.7	0.055	0.165	1400	48,000	0.055	0.165	1400	48,000	0.055	0.165	1400	48,000	0.055	0.165	1400	48,000
	1.2	1.8	0.060	0.180	1400	40,000	0.060	0.180	1400	40,000	0.060	0.180	1400	40,000	0.060	0.180	1400	40,000
	1.3	2	0.065	0.195	1400	40,000	0.065	0.195	1400	40,000	0.065	0.195	1400	40,000	0.065	0.195	1400	40,000
	1.4	2.1	0.070	0.210	1400	40,000	0.070	0.210	1400	40,000	0.070	0.210	1400	40,000	0.070	0.210	1400	40,000
	1.5	2	0.075	0.225	1400	40,000	0.075	0.225	1400	40,000	0.075	0.225	1400	40,000	0.075	0.225	1400	40,000
		2.3	0.075	0.225	1400	40,000	0.075	0.225	1400	40,000	0.075	0.225	1400	40,000	0.075	0.225	1400	40,000
	1.6	2.4	0.080	0.240	1200	30,000	0.080	0.240	1200	30,000	0.080	0.240	1200	30,000	0.080	0.240	1200	30,000
	1.7	2.6	0.085	0.255	1200	30,000	0.085	0.255	1200	30,000	0.085	0.255	1200	30,000	0.085	0.255	1200	30,000
	1.8	2.7	0.090	0.270	1200	30,000	0.090	0.270	1200	30,000	0.090	0.270	1200	30,000	0.090	0.270	1200	30,000
	1.9	2.9	0.095	0.285	1200	30,000	0.095	0.285	1200	30,000	0.095	0.285	1200	30,000	0.095	0.285	1200	30,000
	2	3	0.100	0.300	1100	24,000	0.100	0.300	1100	24,000	0.100	0.300	1100	24,000	0.100	0.300	1100	24,000
	2.1	3.2	0.105	0.315	1100	24,000	0.105	0.315	1100	24,000	0.105	0.315	1100	24,000	0.105	0.315	1100	24,000
	2.2	3.3	0.110	0.330	1100	24,000	0.110	0.330	1100	24,000	0.110	0.330	1100	24,000	0.110	0.330	1100	24,000
	2.3	3.5	0.115	0.345	1100	24,000	0.115	0.345	1100	24,000	0.115	0.345	1100	24,000	0.115	0.345	1100	24,000
	2.4	3.6	0.120	0.360	1100	24,000	0.120	0.360	1100	24,000	0.120	0.360	1100	24,000	0.120	0.360	1100	24,000
	2.5	3.8	0.125	0.375	1100	24,000	0.125	0.375	1100	24,000	0.125	0.375	1100	24,000	0.125	0.375	1100	24,000
	2.6	3.9	0.130	0.390	1100	24,000	0.130	0.390	1100	24,000	0.130	0.390	1100	24,000	0.130	0.390	1100	24,000
	2.7	4.1	0.135	0.405	1100	24,000	0.135	0.405	1100	24,000	0.135	0.405	1100	24,000	0.135	0.405	1100	24,000
	2.8	4.2	0.140	0.420	1100	24,000	0.140	0.420	1100	24,000	0.140	0.420	1100	24,000	0.140	0.420	1100	24,000
	2.9	4.4	0.145	0.435	1100	24,000	0.145	0.435	1100	24,000	0.145	0.435	1100	24,000	0.145	0.435	1100	24,000
	3	5	0.150	0.450	930	16,000	0.150	0.450	930	16,000	0.150	0.450	930	16,000	0.150	0.450	930	16,000
	3.1	5	0.155	0.465	930	16,000	0.155	0.465	930	16,000	0.155	0.465	930	16,000	0.155	0.465	930	16,000
	3.2	5	0.160	0.480	930	16,000	0.160	0.480	930	16,000	0.160	0.480	930	16,000	0.160	0.480	930	16,000
	3.3	5	0.165	0.495	930	16,000	0.165	0.495	930	16,000	0.165	0.495	930	16,000	0.165	0.495	930	16,000
3.4	5.1	0.170	0.510	930	16,000	0.170	0.510	930	16,000	0.170	0.510	930	16,000	0.170	0.510	930	16,000	
3.5	5.3	0.175	0.525	930	16,000	0.175	0.525	930	16,000	0.175	0.525	930	16,000	0.175	0.525	930	16,000	
3.6	3.6	0.180	0.540	930	16,000	0.180	0.540	930	16,000	0.180	0.540	930	16,000	0.180	0.540	930	16,000	
3.7	3.7	0.185	0.555	930	16,000	0.185	0.555	930	16,000	0.185	0.555	930	16,000	0.185	0.555	930	16,000	
3.8	3.8	0.190	0.570	930	16,000	0.190	0.570	930	16,000	0.190	0.570	930	16,000	0.190	0.570	930	16,000	
3.9	3.9	0.195	0.585	930	16,000	0.195	0.585	930	16,000	0.195	0.585	930	16,000	0.195	0.585	930	16,000	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●∂p=軸向切削深度・∂e=徑向切削深度。 ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

ion Depo Type A Series

ion Depo Type A 切削條件參考表
Recommended Milling Conditions

■型號: IAB230
Model number: IAB230

球頭立銼刀 Ball End Mill

切削材料 Work Material	鑄鐵 Cast Irons FCD					碳鋼 Carbon Steels S50C/SS400					預硬鋼 Prehardened Steels PX5/NAK80					合金鋼 Die Steels SKD11/SKD61				
	刃數 Number of Flutes	刀直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	
				ap mm	ae mm			ap mm	ae mm			ap mm	ae mm			ap mm	ae mm			
2	4	4	0.200	0.600	930	12,000	0.200	0.600	930	12,000	0.200	0.600	930	12,000	0.200	0.600	930	12,000	0.200	0.600
		6	0.200	0.600	930	12,000	0.200	0.600	930	12,000	0.200	0.600	930	12,000	0.200	0.600	930	12,000	0.200	0.600
	4.1	4.1	0.205	0.615	930	12,000	0.205	0.615	930	12,000	0.205	0.615	930	12,000	0.205	0.615	930	12,000	0.205	0.615
	4.2	4.2	0.210	0.630	930	12,000	0.210	0.630	930	12,000	0.210	0.630	930	12,000	0.210	0.630	930	12,000	0.210	0.630
	4.3	4.3	0.215	0.645	930	12,000	0.215	0.645	930	12,000	0.215	0.645	930	12,000	0.215	0.645	930	12,000	0.215	0.645
	4.4	4.4	0.220	0.660	930	12,000	0.220	0.660	930	12,000	0.220	0.660	930	12,000	0.220	0.660	930	12,000	0.220	0.660
	4.5	4.5	0.225	0.675	930	12,000	0.225	0.675	930	12,000	0.225	0.675	930	12,000	0.225	0.675	930	12,000	0.225	0.675
	4.6	4.6	0.230	0.690	930	12,000	0.230	0.690	930	12,000	0.230	0.690	930	12,000	0.230	0.690	930	12,000	0.230	0.690
	4.7	4.7	0.235	0.705	930	12,000	0.235	0.705	930	12,000	0.235	0.705	930	12,000	0.235	0.705	930	12,000	0.235	0.705
	4.8	4.8	0.240	0.720	930	12,000	0.240	0.720	930	12,000	0.240	0.720	930	12,000	0.240	0.720	930	12,000	0.240	0.720
	4.9	4.9	0.245	0.735	930	12,000	0.245	0.735	930	12,000	0.245	0.735	930	12,000	0.245	0.735	930	12,000	0.245	0.735
	5	5	0.250	0.750	930	9,600	0.250	0.750	930	9,600	0.250	0.750	930	9,600	0.250	0.750	930	9,600	0.250	0.750
		8	0.250	0.750	930	9,600	0.250	0.750	930	9,600	0.250	0.750	930	9,600	0.250	0.750	930	9,600	0.250	0.750
	5.1	5.1	0.255	0.765	930	9,600	0.255	0.765	930	9,600	0.255	0.765	930	9,600	0.255	0.765	930	9,600	0.255	0.765
	5.2	5.2	0.260	0.780	930	9,600	0.260	0.780	930	9,600	0.260	0.780	930	9,600	0.260	0.780	930	9,600	0.260	0.780
	5.3	5.3	0.265	0.795	930	9,600	0.265	0.795	930	9,600	0.265	0.795	930	9,600	0.265	0.795	930	9,600	0.265	0.795
	5.4	5.4	0.270	0.810	930	9,600	0.270	0.810	930	9,600	0.270	0.810	930	9,600	0.270	0.810	930	9,600	0.270	0.810
	5.5	5.5	0.275	0.825	930	9,600	0.275	0.825	930	9,600	0.275	0.825	930	9,600	0.275	0.825	930	9,600	0.275	0.825
	5.6	5.6	0.280	0.840	930	9,600	0.280	0.840	930	9,600	0.280	0.840	930	9,600	0.280	0.840	930	9,600	0.280	0.840
	5.7	5.7	0.285	0.855	930	9,600	0.285	0.855	930	9,600	0.285	0.855	930	9,600	0.285	0.855	930	9,600	0.285	0.855
	5.8	5.8	0.290	0.870	930	9,600	0.290	0.870	930	9,600	0.290	0.870	930	9,600	0.290	0.870	930	9,600	0.290	0.870
	5.9	5.9	0.295	0.885	930	9,600	0.295	0.885	930	9,600	0.295	0.885	930	9,600	0.295	0.885	930	9,600	0.295	0.885
	6	6	0.300	0.900	930	8,000	0.300	0.900	930	8,000	0.300	0.900	930	8,000	0.300	0.900	930	8,000	0.300	0.900
		10	0.300	0.900	930	8,000	0.300	0.900	930	8,000	0.300	0.900	930	8,000	0.300	0.900	930	8,000	0.300	0.900
7	7	0.350	1.050	930	8,000	0.350	1.050	930	8,000	0.350	1.050	930	8,000	0.350	1.050	930	8,000	0.350	1.050	
8	12	0.400	1.200	900	6,000	0.400	1.200	900	6,000	0.400	1.200	900	6,000	0.400	1.200	900	6,000	0.400	1.200	
	16	0.400	1.200	900	6,000	0.400	1.200	900	6,000	0.400	1.200	900	6,000	0.400	1.200	900	6,000	0.400	1.200	
9	13.5	0.450	1.350	900	6,000	0.450	1.350	900	6,000	0.450	1.350	900	6,000	0.450	1.350	900	6,000	0.450	1.350	
10	15	0.500	1.500	900	4,800	0.500	1.500	900	4,800	0.500	1.500	900	4,800	0.500	1.500	900	4,800	0.500	1.500	
	20	0.500	1.500	900	4,800	0.500	1.500	900	4,800	0.500	1.500	900	4,800	0.500	1.500	900	4,800	0.500	1.500	
11	16.5	0.550	1.650	900	4,800	0.550	1.650	900	4,800	0.550	1.650	900	4,800	0.550	1.650	900	4,800	0.550	1.650	
12	20	0.600	1.800	900	4,000	0.600	1.800	900	4,000	0.600	1.800	900	4,000	0.600	1.800	900	4,000	0.600	1.800	
	24	0.600	1.800	900	4,000	0.600	1.800	900	4,000	0.600	1.800	900	4,000	0.600	1.800	900	4,000	0.600	1.800	
14	30	0.700	2.100	900	3,400	0.700	2.100	900	3,400	0.700	2.100	900	3,400	0.700	2.100	900	3,400	0.700	2.100	
16	30	0.800	2.400	900	3,000	0.800	2.400	900	3,000	0.800	2.400	900	3,000	0.800	2.400	900	3,000	0.800	2.400	
18	34	0.900	2.700	900	2,650	0.900	2.700	900	2,650	0.900	2.700	900	2,650	0.900	2.700	900	2,650	0.900	2.700	
20	38	1.000	3.000	900	2,400	1.000	3.000	900	2,400	1.000	3.000	900	2,400	1.000	3.000	900	2,400	1.000	3.000	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid. ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

球頭立銼刀 Ball End Mill

切削材料 Work Material	高速鋼 High Speed Steels HAP5R/HAP72/ASP23					不銹鋼 Stainless Steels SUS304					不銹鋼 Stainless Steels HPM/STAVAX					銅合金 Copper Alloy 銅鎢(Copper Tungsten)				
	刃數 Number of Flutes	刀直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	
				ap mm	ae mm			ap mm	ae mm			ap mm	ae mm			ap mm	ae mm			
2	0.1	0.1	0.003	0.008	100	50,000	0.005	0.008	200	50,000	0.005	0.008	200	50,000	0.005	0.008	250	50,000	0.005	0.008
		0.15	0.15	0.004	0.015	100	50,000	0.008	0.015	200	50,000	0.008	0.015	200	50,000	0.0075	0.015	250	50,000	
	0.2	0.2	0.005	0.020	200	50,000	0.010	0.020	400	50,000	0.010	0.020	400	50,000	0.01	0.020	600	50,000		
	0.3	0.3	0.008	0.030	200	50,000	0.015	0.030	400	50,000	0.015	0.030	400	50,000	0.015	0.030	600	50,000		
	0.4	0.6	0.010	0.040	500	50,000	0.020	0.040	400	50,000	0.020	0.040	400	50,000	0.02	0.040	600	50,000		
	0.5	0.8	0.013	0.050	500	50,000	0.025	0.050	400	50,000	0.025	0.050	400	50,000	0.025	0.050	600	50,000		
	0.6	0.9	0.015	0.060	800	48,000	0.030	0.060	630	50,000	0.030	0.060	630	50,000	0.03	0.060	750	50,000		
		1	0.015	0.060	800	48,000	0.030	0.060	630	50,000	0.030	0.060	630	50,000	0.03	0.060	750	50,000		
	0.7	1.1	0.018	0.070	800	48,000	0.035	0.070	630	50,000	0.035	0.070	630	50,000	0.035	0.070	750	50,000		
	0.8	1.2	0.020	0.080	800	36,000	0.040	0.080	1200	50,000	0.040	0.080	1200	50,000	0.04	0.080	1,000	50,000		
	0.9	1.4	0.023	0.090	800	36,000	0.045	0.090	1200	50,000	0.045	0.090	1200	50,000	0.045	0.090	1,000	48,000		
	1	1.5	0.025	0.100	800	30,000	0.050	0.100	1400	48,000	0.050	0.100	1400	48,000	0.05	0.100	1,000	48,000		
	1.1	1.7	0.028	0.165	800	30,000	0.055	0.165	1400	48,000	0.055	0.165	1400	48,000	0.055	0.165	1,000	48,000		
	1.2	1.8	0.030	0.180	700	25,000	0.060	0.180	1400	40,000	0.060	0.180	1400	40,000	0.06	0.180	1,100	40,000		
	1.3	2	0.033	0.195	700	25,000	0.065	0.195	1400	40,000	0.065	0.195	1400	40,000	0.065	0.195	1,100	40,000		
	1.4																			

ion Depo Type A Series

ion Depo Type A Series

ion Depo Type A 切削條件參考表 Recommended Milling Conditions

■型號: IAB230
Model number: IAB230

球頭立銼刀 Ball End Mill

切削材料 Work Material		高速鋼 High Speed Steels HAP5R/HAP72/ASP23					不銹鋼 Stainless Steels SUS304					不銹鋼 Stainless Steels HPM/STAVAX					銅合金 Copper Alloy 銅鎢(Copper Tungsten)				
刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed			
			ap mm	ae mm			ap mm	ae mm			ap mm	ae mm			ap mm	ae mm					
2	4	4	0.100	0.600	450	7,200	0.200	0.600	930	12,000	0.200	0.600	930	12,000	0.2	0.600	1,200	12,000			
		6	0.100	0.600	450	7,200	0.200	0.600	930	12,000	0.200	0.600	930	12,000	0.2	0.600	1,200	12,000			
	4.1	4.1	0.103	0.615	450	7,200	0.205	0.615	930	12,000	0.205	0.615	930	12,000	0.205	0.615	1,200	12,000			
	4.2	4.2	0.105	0.630	450	7,200	0.210	0.630	930	12,000	0.210	0.630	930	12,000	0.21	0.630	1,200	12,000			
	4.3	4.3	0.108	0.645	450	7,200	0.215	0.645	930	12,000	0.215	0.645	930	12,000	0.215	0.645	1,200	12,000			
	4.4	4.4	0.110	0.660	450	7,200	0.220	0.660	930	12,000	0.220	0.660	930	12,000	0.22	0.660	1,200	12,000			
	4.5	4.5	0.113	0.675	450	7,200	0.225	0.675	930	12,000	0.225	0.675	930	12,000	0.225	0.675	1,200	12,000			
	4.6	4.6	0.115	0.690	450	7,200	0.230	0.690	930	12,000	0.230	0.690	930	12,000	0.23	0.690	1,200	12,000			
	4.7	4.7	0.118	0.705	450	7,200	0.235	0.705	930	12,000	0.235	0.705	930	12,000	0.235	0.705	1,200	12,000			
	4.8	4.8	0.120	0.720	450	7,200	0.240	0.720	930	12,000	0.240	0.720	930	12,000	0.24	0.720	1,200	12,000			
	4.9	4.9	0.123	0.735	450	7,200	0.245	0.735	930	12,000	0.245	0.735	930	12,000	0.245	0.735	1,200	12,000			
	5	5	0.125	0.750	450	5,700	0.250	0.750	930	9,600	0.250	0.750	930	9,600	0.25	0.750	1,150	9,600			
		8	0.125	0.750	450	5,700	0.250	0.750	930	9,600	0.250	0.750	930	9,600	0.25	0.750	1,150	9,600			
	5.1	5.1	0.128	0.765	450	5,700	0.255	0.765	930	9,600	0.255	0.765	930	9,600	0.255	0.765	1,150	9,600			
	5.2	5.2	0.130	0.780	450	5,700	0.260	0.780	930	9,600	0.260	0.780	930	9,600	0.26	0.780	1,150	9,600			
	5.3	5.3	0.133	0.795	450	5,700	0.265	0.795	930	9,600	0.265	0.795	930	9,600	0.265	0.795	1,150	9,600			
	5.4	5.4	0.135	0.810	450	5,700	0.270	0.810	930	9,600	0.270	0.810	930	9,600	0.27	0.810	1,150	9,600			
	5.5	5.5	0.138	0.825	450	5,700	0.275	0.825	930	9,600	0.275	0.825	930	9,600	0.275	0.825	1,150	9,600			
	5.6	5.6	0.140	0.840	450	5,700	0.280	0.840	930	9,600	0.280	0.840	930	9,600	0.28	0.840	1,150	9,600			
	5.7	5.7	0.143	0.855	450	5,700	0.285	0.855	930	9,600	0.285	0.855	930	9,600	0.285	0.855	1,150	9,600			
5.8	5.8	0.145	0.870	450	5,700	0.290	0.870	930	9,600	0.290	0.870	930	9,600	0.29	0.870	1,150	9,600				
5.9	5.9	0.148	0.885	450	5,700	0.295	0.885	930	9,600	0.295	0.885	930	9,600	0.295	0.885	1,150	9,600				
6	6	0.150	0.900	450	4,800	0.300	0.900	930	8,000	0.300	0.900	930	8,000	0.3	0.900	1,050	8,000				
	10	0.150	0.900	450	4,800	0.300	0.900	930	8,000	0.300	0.900	930	8,000	0.3	0.900	1,050	8,000				
7	7	0.175	1.050	450	4,800	0.350	1.050	930	8,000	0.350	1.050	930	8,000	0.35	1.050	1,000	8,000				
8	12	0.200	1.200	450	3,600	0.400	1.200	900	6,000	0.400	1.200	900	6,000	0.4	1.200	1,000	6,000				
	16	0.200	1.200	450	3,600	0.400	1.200	900	6,000	0.400	1.200	900	6,000	0.4	1.200	1,000	6,000				
9	13.5	0.225	1.350	450	3,600	0.450	1.350	900	6,000	0.450	1.350	900	6,000	0.45	1.350	1,000	6,000				
10	15	0.250	1.500	450	2,900	0.500	1.500	900	4,800	0.500	1.500	900	4,800	0.5	1.500	1,000	4,800				
	20	0.250	1.500	450	2,900	0.500	1.500	900	4,800	0.500	1.500	900	4,800	0.5	1.500	1,000	4,800				
11	16.5	0.275	1.650	450	2,900	0.550	1.650	900	4,800	0.550	1.650	900	4,800	0.55	1.650	1,000	4,800				
12	20	0.300	1.800	450	2,400	0.600	1.800	900	4,000	0.600	1.800	900	4,000	0.6	1.800	1,000	4,000				
	24	0.300	1.800	450	2,400	0.600	1.800	900	4,000	0.600	1.800	900	4,000	0.6	1.800	1,000	4,000				
14	30	0.350	2.100	450	2,000	0.700	2.100	900	3,400	0.700	2.100	900	3,400	0.7	2.100	1,000	3,400				
16	30	0.400	2.400	450	1,800	0.800	2.400	900	3,000	0.800	2.400	900	3,000	0.8	2.400	1,000	3,000				
18	34	0.450	2.700	450	1,600	0.900	2.700	900	2,650	0.900	2.700	900	2,650	0.9	2.700	1,000	2,650				
20	38	0.500	3.000	450	1,450	1.000	3.000	900	2,400	1.000	3.000	900	2,400	1	3.000	1,000	2,400				

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid. ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

球頭立銼刀 Ball End Mill

切削材料 Work Material		鋁合金 Aluminum Alloy A5000號					鋁合金 Aluminum Alloy A7000號					耐熱合金 Heat Resistant Alloy 鈦合金(Titanium Alloy)				
刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed		
			ap mm	ae mm			ap mm	ae mm			ap mm	ae mm				
2	0.1	0.1	0.005	0.008	250	50,000	0.005	0.008	250	50,000	0.003	0.008	100	50,000		
		0.15	0.15	0.008	0.015	250	50,000	0.008	0.015	250	50,000	0.004	0.015	100	50,000	
	0.2	0.2	0.010	0.020	500	50,000	0.010	0.020	500	50,000	0.005	0.020	200	50,000		
	0.3	0.3	0.015	0.030	500	50,000	0.015	0.030	500	50,000	0.008	0.030	200	50,000		
	0.4	0.6	0.020	0.040	600	50,000	0.020	0.040	600	50,000	0.010	0.040	500	50,000		
	0.5	0.8	0.025	0.050	600	50,000	0.025	0.050	600	50,000	0.013	0.050	500	50,000		
		0.6	0.9	0.030	0.060	750	50,000	0.030	0.060	750	50,000	0.015	0.060	800	48,000	
	0.7	1	0.030	0.060	750	50,000	0.030	0.060	750	50,000	0.015	0.060	800	48,000		
		1.1	0.035	0.070	750	50,000	0.035	0.070	750	50,000	0.018	0.070	800	48,000		
	0.8	1.2	0.040	0.080	1,000	50,000	0.040	0.080	1,000	50,000	0.020	0.080	800	36,000		
	0.9	1.4	0.045	0.090	1,000	50,000	0.045	0.090	1,000	50,000	0.023	0.090	800	36,000		
	1	1.5	0.050	0.100	1,250	50,000	0.050	0.100	1,250	50,000	0.025	0.100	800	30,000		
	1.1	1.7	0.055	0.165	1,250	50,000	0.055	0.165	1,250	50,000	0.028	0.165	800	30,000		
	1.2	1.8	0.060	0.180	1,480	50,000	0.060	0.180	1,480	50,000	0.030	0.180	700	25,000		
	1.3	2	0.065	0.195	1,480	50,000	0.065	0.195	1,480	50,000	0.033	0.195	700	25,000		
	1.4	2.1	0.070	0.210	1,480	50,000	0.070	0.210	1,480	50,000	0.035	0.210	700	25,000		
		2	0.075	0.225	1,480	50,000	0.075	0.225	1,480	50,000	0.038	0.225	700	25,000		
	1.5	2.3	0.075	0.225	1,480	50,000	0.075	0.225	1,480	50,000	0.038	0.225	700	25,000		
		2.4	0.080	0.240	1,900	50,000	0.080	0.240	1,900	50,000	0.040	0.240	600	18,000		
	1.7	2.6	0.085	0.255	1,900	50,000	0.085	0.255	1,900	50,000	0.043	0.255	600	18,000		
	1.8	2.7	0.090	0.270	1,900	50,000	0.090	0.270	1,900	50,000	0.045	0.270	600	18,000		
	1.9	2.9	0.095	0.285	1,900	50,000	0.095	0.285	1,900	50,000	0.048	0.285	600	18,000		
	2	3	0.100	0.300	2,400	48,000	0.100	0.300	2,400	48,000	0.050	0.300	500	14,500		
	2.1	3.2	0.105	0.315	2,400	48,000	0.105	0.315	2,400	48,000	0.053	0.315	500	14,500		
	2.2	3.3	0.110	0.330	2,400	48,000	0.110	0.330	2,400	48,000	0.055	0.330				

ion Depo Type A 切削條件參考表 Recommended Milling Conditions

■型號: IAB230
Model number: IAB230

球頭立銼刀 Ball End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈦合金 (Titanium Alloy)			
刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm		
2	4	4	0.200	0.600	2,400	24,000	0.200	0.600	2,400	24,000	0.100	0.600	450	7,200
		6	0.200	0.600	2,400	24,000	0.200	0.600	2,400	24,000	0.100	0.600	450	7,200
	4.1	4.1	0.205	0.615	2,400	24,000	0.205	0.615	2,400	24,000	0.103	0.615	450	7,200
	4.2	4.2	0.210	0.630	2,400	24,000	0.210	0.630	2,400	24,000	0.105	0.630	450	7,200
	4.3	4.3	0.215	0.645	2,400	24,000	0.215	0.645	2,400	24,000	0.108	0.645	450	7,200
	4.4	4.4	0.220	0.660	2,400	24,000	0.220	0.660	2,400	24,000	0.110	0.660	450	7,200
	4.5	4.5	0.225	0.675	2,400	24,000	0.225	0.675	2,400	24,000	0.113	0.675	450	7,200
	4.6	4.6	0.230	0.690	2,400	24,000	0.230	0.690	2,400	24,000	0.115	0.690	450	7,200
	4.7	4.7	0.235	0.705	2,400	24,000	0.235	0.705	2,400	24,000	0.118	0.705	450	7,200
	4.8	4.8	0.240	0.720	2,400	24,000	0.240	0.720	2,400	24,000	0.120	0.720	450	7,200
	4.9	4.9	0.245	0.735	2,400	24,000	0.245	0.735	2,400	24,000	0.123	0.735	450	7,200
	5	5	0.250	0.750	2,400	19,000	0.250	0.750	2,400	19,000	0.125	0.750	450	5,700
		8	0.250	0.750	2,400	19,000	0.250	0.750	2,400	19,000	0.125	0.750	450	5,700
	5.1	5.1	0.255	0.765	2,400	19,000	0.255	0.765	2,400	19,000	0.128	0.765	450	5,700
	5.2	5.2	0.260	0.780	2,400	19,000	0.260	0.780	2,400	19,000	0.130	0.780	450	5,700
	5.3	5.3	0.265	0.795	2,400	19,000	0.265	0.795	2,400	19,000	0.133	0.795	450	5,700
	5.4	5.4	0.270	0.810	2,400	19,000	0.270	0.810	2,400	19,000	0.135	0.810	450	5,700
	5.5	5.5	0.275	0.825	2,400	19,000	0.275	0.825	2,400	19,000	0.138	0.825	450	5,700
	5.6	5.6	0.280	0.840	2,400	19,000	0.280	0.840	2,400	19,000	0.140	0.840	450	5,700
	5.7	5.7	0.285	0.855	2,400	19,000	0.285	0.855	2,400	19,000	0.143	0.855	450	5,700
5.8	5.8	0.290	0.870	2,400	19,000	0.290	0.870	2,400	19,000	0.145	0.870	450	5,700	
5.9	5.9	0.295	0.885	2,400	19,000	0.295	0.885	2,400	19,000	0.148	0.885	450	5,700	
6	6	0.300	0.900	2,400	16,000	0.300	0.900	2,400	16,000	0.150	0.900	450	4,800	
	10	0.300	0.900	2,400	16,000	0.300	0.900	2,400	16,000	0.150	0.900	450	4,800	
7	7	0.350	1.050	2,400	16,000	0.350	1.050	2,400	16,000	0.175	1.050	450	4,800	
8	12	0.400	1.200	2,400	12,000	0.400	1.200	2,400	12,000	0.200	1.200	450	3,600	
	16	0.400	1.200	2,400	12,000	0.400	1.200	2,400	12,000	0.200	1.200	450	3,600	
9	13.5	0.450	1.350	2,400	12,000	0.450	1.350	2,400	12,000	0.225	1.350	450	3,600	
10	15	0.500	1.500	2,300	9,600	0.500	1.500	2,300	9,600	0.250	1.500	450	2,900	
	20	0.500	1.500	2,300	9,600	0.500	1.500	2,300	9,600	0.250	1.500	450	2,900	
11	16.5	0.550	1.650	2,300	9,600	0.550	1.650	2,300	9,600	0.275	1.650	450	2,900	
12	20	0.600	1.800	2,100	8,000	0.600	1.800	2,100	8,000	0.300	1.800	450	2,400	
	24	0.600	1.800	2,100	8,000	0.600	1.800	2,100	8,000	0.300	1.800	450	2,400	
14	30	0.700	2.100	2,000	6,800	0.700	2.100	2,000	6,800	0.350	2.100	450	2,000	
16	30	0.800	2.400	2,000	6,000	0.800	2.400	2,000	6,000	0.400	2.400	450	1,800	
18	34	0.900	2.700	2,000	5,300	0.900	2.700	2,000	5,300	0.450	2.700	450	1,600	
20	38	1.000	3.000	2,000	4,800	1.000	3.000	2,000	4,800	0.500	3.000	450	1,450	

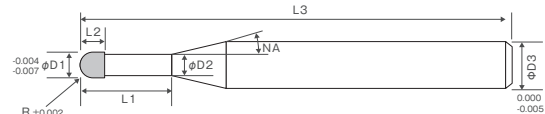
●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

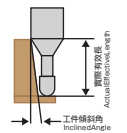
超硬長頸球頭立銑刀 Carbide Long Neck Ball End Mill

■型號:IALB230 Model number:IALB230

ion U super MG 2 螺絲角 30° 仰角 15° 柄徑公差 0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干涉切剛材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If you are concerned about interference with the work material,
be sure to check by actual measurement.

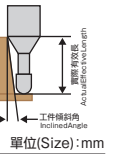


單位(Size):mm

●聯繫我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	球頭R Ball R	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭直徑 (D1) Outside Diameter	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) [*] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
IALB230-0010-0050-0030	0.05	0.3	0.07	0.1	0.08	15	4	50	8,160	0.35	0.36	0.37	0.38	0.41
IALB230-0010-0050-0050		0.5	0.07	0.1	0.08	15	4	50	8,800	0.55	0.57	0.59	0.61	0.66
IALB230-0015-0075-0030		0.075	0.3	0.1	0.15	0.13	15	4	50	9,440	0.35	0.36	0.37	0.38
IALB230-0015-0075-0050	0.5		0.1	0.15	0.13	15	4	50	10,000	0.55	0.57	0.59	0.61	0.65
IALB230-0015-0075-0100	0.1	1	0.1	0.15	0.13	15	4	50	10,400	1.07	1.10	1.14	1.18	1.27
IALB230-0020-0100-0050		0.5	0.15	0.2	0.18	15	4	50	5,680	0.55	0.57	0.58	0.60	0.64
IALB230-0020-0100-0075		0.75	0.15	0.2	0.18	15	4	50	5,680	0.81	0.84	0.86	0.89	0.96
IALB230-0020-0100-0100	0.15	1	0.15	0.2	0.18	15	4	50	5,680	1.07	1.10	1.14	1.18	1.27
IALB230-0030-0150-0050		0.5	0.2	0.3	0.27	15	4	50	5,600	0.57	0.58	0.60	0.62	0.66
IALB230-0030-0150-0060		0.6	0.2	0.3	0.27	15	4	50	5,600	0.67	0.69	0.71	0.73	0.78
IALB230-0030-0150-0075	0.2	0.75	0.2	0.3	0.27	15	4	50	5,600	0.83	0.85	0.88	0.90	0.97
IALB230-0030-0150-0080		0.8	0.3	0.3	0.27	15	4	50	5,600	0.88	0.91	0.93	0.96	1.03
IALB230-0030-0150-0100		1	0.2	0.3	0.27	15	4	50	5,600	1.09	1.12	1.15	1.19	1.28
IALB230-0030-0150-0125	0.25	1.25	0.2	0.3	0.27	15	4	50	6,000	1.34	1.39	1.43	1.48	1.59
IALB230-0030-0150-0150-00020		1.5	0.2	0.3	0.27	15	4	50	6,000	1.60	1.65	1.71	1.77	1.90
IALB230-0030-0150-0150-00030		1.5	0.3	0.3	0.27	15	4	50	6,000	1.60	1.65	1.71	1.77	1.90
IALB230-0030-0150-0175	0.3	1.75	0.2	0.3	0.27	15	4	50	6,000	1.86	1.92	1.99	2.05	2.21
IALB230-0030-0150-0200		2	0.2	0.3	0.27	15	4	50	6,000	2.12	2.19	2.26	2.34	2.52
IALB230-0030-0150-0225		2.25	0.2	0.3	0.27	15	4	50	6,160	2.38	2.46	2.54	2.63	2.83
IALB230-0030-0150-0250	0.35	2.5	0.2	0.3	0.27	15	4	50	6,160	2.64	2.72	2.82	2.92	3.14
IALB230-0030-0150-0275		2.75	0.2	0.3	0.27	15	4	50	6,160	2.90	2.99	3.09	3.20	3.45
IALB230-0030-0150-0300		3	0.2	0.3	0.27	15	4	50	6,160	3.15	3.26	3.37	3.49	3.76
IALB230-0040-0200-0050	0.4	0.5	0.3	0.4	0.37	15	4	50	3,840	0.57	0.58	0.59	0.61	0.64
IALB230-0040-0200-0075		0.75	0.3	0.4	0.37	15	4	50	3,840	0.83	0.85	0.87	0.90	0.96
IALB230-0040-0200-0100		1	0.3	0.4	0.37	15	4	50	3,840	1.08	1.12	1.15	1.18	1.27
IALB230-0040-0200-0120	0.45	1.2	0.4	0.4	0.37	15	4	50	3,840	1.29	1.33	1.37	1.41	1.52
IALB230-0040-0200-0150		1.5	0.3	0.4	0.37	15	4	50	3,920	1.60	1.65	1.70	1.76	1.89
IALB230-0040-0200-0200		2	0.3	0.4	0.37	15	4	50	4,000	2.12	2.19	2.26	2.33	2.51
IALB230-0040-0200-0250	0.5	2.5	0.4	0.4	0.37	15	4	50	4,160	2.64	2.72	2.81	2.91	3.13
IALB230-0040-0200-0300		3	0.3	0.4	0.37	15	4	50	4,400	3.15	3.26	3.37	3.48	3.75

ion Depo Type A Series



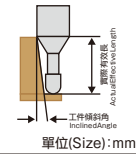
單位(Size):mm

●聯繫我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	球頭R Ball R	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭直徑 (D1) Outside Diameter	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) [*] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
IALB230-0050-0250-0100	0.25	1	0.35	0.5	0.47	15	4	50	3,840	1.08	1.11	1.14	1.18	1.26
IALB230-0050-0250-0150		1.5	0.5	0.5	0.47	15	4	50	3,840	1.60	1.65	1.70	1.75	1.88
IALB230-0050-0250-0200		2	0.35	0.5	0.47	15	4	50	3,840	2.12	2.18	2.25	2.33	2.50
IALB230-0050-0250-0250		2.5	0.35	0.5	0.47	15	4	50	3,840	2.63	2.72	2.81	2.90	3.12
IALB230-0050-0250-0300		3	0.5	0.5	0.47	15	4	50	3,840	3.15	3.25	3.36	3.48	3.74
IALB230-0050-0250-0350		3.5	0.35	0.5	0.47	15	4	50	3,840	3.67	3.79	3.91	4.05	4.36
IALB230-0050-0250-0400	0.3	4	0.35	0.5	0.47	15	4	50	3,840	4.18	4.32	4.47	4.63	4.98
IALB230-0060-0300-0100		1	0.6	0.6	0.57	15	4	50	3,280	1.08	1.11	1.14	1.17	1.24
IALB230-0060-0300-0150		1.5	0.6	0.6	0.57	15	4	50	2,960	1.60	1.64	1.69	1.74	1.87
IALB230-0060-0300-0200		2	0.6	0.6	0.57	15	4	50	2,960	2.12	2.18	2.25	2.32	2.49
IALB230-0060-0300-0220		2.2	0.8	0.6	0.57	15	4	50	3,040	2.32	2.39	2.47	2.55	2.74
IALB230-0060-0300-0250		2.5	0.6	0.6	0.57	15	4	50	3,040	2.63	2.71	2.80	2.89	3.11
IALB230-0060-0300-0300	0.35	3	0.6	0.6	0.57	15	4	50	3,040	3.15	3.25	3.35	3.47	3.73
IALB230-0060-0300-0350		3.5	0.6	0.6	0.57	15	4	50	3,120	3.67	3.78	3.91	4.04	4.35
IALB230-0060-0300-0400		4	0.6	0.6	0.57	15	4	50	3,120	4.18	4.32	4.46	4.62	4.97
IALB230-0060-0300-0450	0.4	4.5	0.6	0.6	0.57	15	4	50	3,120	4.70	4.85	5.02	5.19	5.59
IALB230-0060-0300-0500		5	0.6	0.6	0.57	15	4	50	3,120	5.22	5.39	5.57	5.77	6.22
IALB230-0060-0300-0550		5.5	0.6	0.6	0.57	15	4	50	3,120	5.73	5.92	6.13	6.34	6.84
IALB230-0060-0300-0600	0.45	6	0.6	0.6	0.57	15	4	50	3,120	6.25	6.46	6.68	6.92	7.46
IALB230-0070-0350-0200		2	0.7	0.7	0.67	15	4	50	2,960	2.11	2.18	2.24	2.31	2.48
IALB230-0070-0350-0400		4	0.7	0.7	0.67	15	4	50	3,120	4.18	4.31	4.46	4.61	4.96
IALB230-0070-0350-0600	0.5	6	0.7	0.7	0.67	15	4	50	3,120	6.25	6.45	6.67	6.91	7.45
IALB230-0080-0400-0200		2	0.6	0.8	0.77	15	4	50	2,960	2.11	2.17	2.24	2.31	2.46
IALB230-0080-0400-0220		2.2	0.8	0.8	0.77	15	4	50	2,960	2.32	2.39	2.46	2.54	2.71
IALB230-0080-0400-0300	0.55	3	0.8	0.8	0.77	15	4	50	3,120	3.15	3.24	3.34	3.46	3.71
IALB230-0080-0400-0400		4	0.6	0.8	0.77	15	4	50	3,120	4.18	4.31	4.45	4.60	4.95
IALB230-0080-0400-0500		5	0.8	0.8	0.77	15	4	50	3,120	5.21	5.38	5.56	5.75	6.19
IALB230-0080-0400-0600	0.6	6	0.6	0.8	0.77	15	4	50	3,120	6.25	6.45	6.67	6.90	7.44
IALB230-0080-0400-0700		7	0.6	0.8	0.77	15	4	50	3,120	7.28	7.52	7.78	8.05	8.68
IALB230-0080-0400-0800		8	0.6	0.8	0.77	15	4	50	3,120	8.31	8.59	8.89	9.20	9.92
IALB230-0090-0450-0200	0.65	2	0.65	0.9	0.87	15	4	50	2,960	2.11	2.17	2.23	2.30	2.45
IALB230-0090-0450-0400		4	0.65	0.9	0.87	15	4	50	3,120	4.18	4.31	4.45	4.60	4.94
IALB230-0090-0450-0600		6	0.65	0.9	0.87	15	4	50	3,120	6.24	6.45	6.66	6.90	7.42
IALB230-0090-0450-0800	0.7	8	0.65	0.9	0.87	15	4	50	3,120	8.31	8.59	8.88	9.20	9.91
IALB230-0100-0500-0200		2	0.75	1	0.95	15	4	50	2,480	2.15	2.20	2.27	2.33	2.49
IALB230-0100-0500-0250		2.5	0.75	1	0.95	15	4	50	2,480	2.66	2.74	2.82	2.91	3.11
IALB230-0100-0500-0300	0.75	3	0.8	1	0.95	15	4	50	2,480	3.18	3.27	3.37	3.48	3.73
IALB230-0100-0500-0400		4	0.75	1	0.95	15	4	50	2,800	4.21	4.34	4.48	4.63	4.97
IALB230-0100-0500-0600		6	0.8	1	0.95	15	4	50	3,040	6.28	6.48	6.70	6.93	7.46
IALB230-0100-0500-0700	0.8	7	0.75	1	0.95	15	4	50	3,040	7.32	7.55	7.81	8.08	8.70
IALB230-0100-0500-0800		8	0.75	1	0.95	15	4	50	3,040	8.35	8.62	8.92	9.23	9.95
IALB230-0100-0500-0900		9	0.75	1	0.95	15	4	50	3,040	9.38	9.69	10.02	10.38	11.19
IALB230-0100-0500-1000	0.85	10	0.8	1	0.95	15	4	50	3,040	10.42	10.76	11.13	11.53	12.43
IALB230-0100-0500-1200		12	0.75	1	0.95	15	4	50	3,040	12.48	12.90	13.35	13.83	14.92
IALB230-0120-0600-0240		0.6	2.4	0.9	1.2	1.15	15	4	50	3,760	2.56	2.63	2.70	2.78

CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
ion Depo A Series
ion Depo U Series
DLC Series
Non-Coat Series
ion Depo R Series

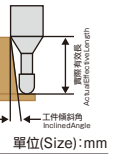
ion Depo Type A Series



● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	球頭R Ball R	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀身直徑 (D1) Outside Diameter	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
IALB230-0120-0600-0400	0.6	4	0.9	1.2	1.15	15	4	50	3,760	4.21	4.34	4.47	4.62	4.95
IALB230-0120-0600-0600		6	0.9	1.2	1.15	15	4	50	4,080	6.28	6.48	6.69	6.92	7.44
IALB230-0120-0600-0800		8	0.9	1.2	1.15	15	4	50	4,080	8.35	8.62	8.91	9.22	9.92
IALB230-0120-0600-1000		10	0.9	1.2	1.15	15	4	50	4,080	10.41	10.76	11.12	11.52	12.41
IALB230-0120-0600-1200		12	0.9	1.2	1.15	15	4	50	4,080	12.48	12.89	13.34	13.82	14.90
IALB230-0140-0700-0800	0.7	8	1	1.4	1.35	15	4	50	3,520	8.34	8.61	8.90	9.20	9.90
IALB230-0140-0700-1200		12	1	1.4	1.35	15	4	50	3,520	12.48	12.89	13.33	13.80	14.87
IALB230-0140-0700-1600		16	1	1.4	1.35	15	4	50	3,520	16.61	17.17	17.76	18.40	19.84
IALB230-0150-0750-0300	0.75	3	1.1	1.5	1.45	15	4	50	2,880	3.17	3.26	3.35	3.45	3.67
IALB230-0150-0750-0400		4	1.1	1.5	1.45	15	4	50	2,880	4.21	4.33	4.46	4.60	4.92
IALB230-0150-0750-0600		6	1.1	1.5	1.45	15	4	50	2,880	6.27	6.47	6.67	6.90	7.40
IALB230-0150-0750-0800		8	1.1	1.5	1.45	15	4	50	3,040	8.34	8.61	8.89	9.20	9.89
IALB230-0150-0750-1000		10	1.1	1.5	1.45	15	4	50	3,280	10.41	10.74	11.11	11.50	12.37
IALB230-0150-0750-1200	12	1.1	1.5	1.45	15	4	50	3,520	12.48	12.88	13.32	13.80	14.86	
IALB230-0150-0750-1400	14	1.1	1.5	1.45	15	4	50	3,520	14.54	15.02	15.54	16.09	17.35	
IALB230-0150-0750-1600	16	1.1	1.5	1.45	15	4	50	3,520	16.61	17.16	17.76	18.39	19.83	
IALB230-0160-0800-0400	0.8	4	1.2	1.6	1.55	15	4	50	4,000	4.20	4.32	4.45	4.59	4.90
IALB230-0160-0800-0800		8	1.2	1.6	1.55	15	4	50	4,080	8.34	8.60	8.88	9.19	9.88
IALB230-0160-0800-1200		12	1.2	1.6	1.55	15	4	50	4,080	12.47	12.88	13.32	13.79	14.85
IALB230-0160-0800-1600		16	1.2	1.6	1.55	15	4	50	4,080	16.61	17.16	17.75	18.39	19.82
IALB230-0180-0900-0800	0.9	8	1.3	1.8	1.75	15	4	50	3,520	8.34	8.60	8.87	9.17	9.85
IALB230-0180-0900-1200		12	1.3	1.8	1.75	15	4	50	3,520	12.47	12.87	13.31	13.77	14.83
IALB230-0180-0900-1600		16	1.3	1.8	1.75	15	4	50	3,520	16.60	17.15	17.74	18.37	19.80
IALB230-0200-1000-0300	1	3	1.5	2	1.94	15	4	50	2,480	3.18	3.26	3.34	3.43	3.64
IALB230-0200-1000-0400		4	1.5	2	1.94	15	4	50	2,480	4.22	4.33	4.45	4.58	4.88
IALB230-0200-1000-0600		6	1.5	2	1.94	15	4	50	2,800	6.28	6.47	6.67	6.88	7.37
IALB230-0200-1000-0800		8	1.5	2	1.94	15	4	50	3,040	8.35	8.61	8.88	9.18	9.85
IALB230-0200-1000-1000		10	1.5	2	1.94	15	4	50	3,040	10.42	10.75	11.10	11.48	12.34
IALB230-0200-1000-1200		12	1.5	2	1.94	15	4	50	3,040	12.49	12.89	13.32	13.78	14.83
IALB230-0200-1000-1300		13	1.5	2	1.94	15	4	50	3,040	13.52	13.96	14.43	14.93	16.07
IALB230-0200-1000-1400		14	1.5	2	1.94	15	4	50	3,040	14.55	15.03	15.53	16.08	17.31
IALB230-0200-1000-1500		15	1.5	2	1.94	15	4	50	3,040	15.59	16.10	16.64	17.23	18.56
IALB230-0200-1000-1600		16	1.5	2	1.94	15	4	50	3,040	16.62	17.17	17.75	18.38	19.80
IALB230-0200-1000-1800		18	1.5	2	1.94	15	4	50	3,040	18.69	19.30	19.97	20.68	FREE
IALB230-0200-1000-2000		20	1.5	2	1.94	15	4	50	3,040	20.76	21.44	22.18	22.98	FREE
IALB230-0250-1250-0600	1.25	6	2.3	2.5	2.44	15	4	50	3,280	6.28	6.45	6.64	6.84	7.31
IALB230-0250-1250-0800		8	2.3	2.5	2.44	15	4	50	3,360	8.34	8.59	8.86	9.14	9.80
IALB230-0250-1250-1000		10	2.3	2.5	2.44	15	4	50	3,440	10.41	10.73	11.07	11.44	12.28
IALB230-0250-1250-1500		15	2.3	2.5	2.44	15	4	50	4,080	15.58	16.08	16.62	17.19	FREE
IALB230-0250-1250-2000	20	2.3	2.5	2.44	15	4	50	4,800	20.75	21.43	22.16	FREE	FREE	
IALB230-0300-1500-0600	1.5	6	2.5	3	2.85	15	4	50	2,800	6.44	6.61	6.80	7.00	7.46
IALB230-0300-1500-0800		8	2.5	3	2.85	15	4	50	3,040	8.51	8.75	9.02	9.30	9.95
IALB230-0300-1500-1000		10	2.5	3	2.85	15	4	50	3,520	10.58	10.89	11.23	11.60	FREE
IALB230-0300-1500-1200		12	2.5	3	2.85	15	4	50	3,680	12.64	13.03	13.45	13.90	FREE
IALB230-0300-1500-1400		14	2.5	3	2.85	15	4	50	4,080	14.71	15.17	15.67	FREE	FREE

ion Depo Type A Series



● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	球頭R Ball R	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀身直徑 (D1) Outside Diameter	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.					
										30'	1°	1°30'	2°	3°	
IALB230-0300-1500-1500	1.5	15	2.5	3	2.85	15	4	50	4,000	15.74	16.24	16.77	FREE	FREE	
IALB230-0300-1500-1600		16	2.5	3	2.85	15	4	50	4,080	16.78	17.31	17.88	FREE	FREE	
IALB230-0300-1500-2000		20	2.5	3	2.85	15	4	50	3,920	20.91	21.59	FREE	FREE	FREE	
IALB230-0300-1500-2500		25	2.5	3	2.85	15	4	60	3,920	26.08	26.94	FREE	FREE	FREE	
IALB230-0300-1500-3000		30	2.5	3	2.85	15	4	60	4,480	31.25	FREE	FREE	FREE	FREE	
IALB230-0350-1750-1000	1.75	10	2.8	3.5	3.35	15	6	50	4,480	10.57	10.88	11.21	11.56	12.38	
IALB230-0350-1750-1500		15	2.8	3.5	3.35	15	6	50	4,480	15.74	16.22	16.75	17.31	18.59	
IALB230-0350-1750-2000		20	2.8	3.5	3.35	15	6	50	4,800	20.90	21.57	22.29	23.06	24.81	
IALB230-0350-1750-2500		25	2.8	3.5	3.35	15	6	60	4,800	26.07	26.92	27.83	28.81	FREE	
IALB230-0350-1750-3000		30	2.8	3.5	3.35	15	6	60	5,120	31.24	32.27	33.37	34.56	FREE	
IALB230-0350-1750-3500	35	2.8	3.5	3.35	15	6	70	6,160	36.41	37.62	38.91	FREE	FREE		
IALB230-0400-2000-1000	2	10	3	4	3.8	15	6	50	3,120	10.66	10.96	11.28	11.63	12.43	
IALB230-0400-2000-1200		12	3	4	3.8	15	6	50	4,080	12.72	13.10	13.50	13.93	14.92	
IALB230-0400-2000-1400		14	3	4	3.8	15	6	50	4,080	14.79	15.24	15.72	16.23	17.41	
IALB230-0400-2000-1500		15	3	4	3.8	15	6	50	4,080	15.82	16.31	16.82	17.38	18.65	
IALB230-0400-2000-1600		16	3	4	3.8	15	6	50	4,080	16.86	17.38	17.93	18.53	19.89	
IALB230-0400-2000-2000		20	3	4	3.8	15	6	50	4,080	20.99	21.65	22.37	23.13	FREE	
IALB230-0400-2000-2500		25	3	4	3.8	15	6	60	4,080	26.16	27.00	27.91	28.88	FREE	
IALB230-0400-2000-3000		30	3	4	3.8	15	6	60	4,080	31.33	32.35	33.45	FREE	FREE	
IALB230-0400-2000-3500		35	3	4	3.8	15	6	70	4,720	36.50	37.70	38.99	FREE	FREE	
IALB230-0500-2500-1000		2.5	10	3.5	5	4.8	15	6	50	4,800	10.64	10.92	11.23	11.56	FREE
IALB230-0500-2500-1500	15		3.5	5	4.8	15	6	50	6,800	15.81	16.27	16.77	FREE	FREE	
IALB230-0500-2500-2000	20		3.5	5	4.8	15	6	50	6,800	20.98	21.62	FREE	FREE	FREE	
IALB230-0500-2500-2500	25		3.5	5	4.8	15	6	60	6,800	26.14	26.97	FREE	FREE	FREE	
IALB230-0500-2500-3000	30		3.5	5	4.8	15	6	60	7,280	31.31	FREE	FREE	FREE	FREE	
IALB230-0500-2500-3500	35		3.5	5	4.8	15	6	70	7,280	36.48	FREE	FREE	FREE	FREE	
IALB230-0500-2500-4000	40		3.5	5	4.8	15	6	70	9,200	41.65	FREE	FREE	FREE	FREE	
IALB230-0600-3000-1000	3		10	6	6	5.8	15	6	50	5,120	FREE	FREE	FREE	FREE	FREE
IALB230-0600-3000-1500			15	6	6	5.8	15	6	50	5,120	FREE	FREE	FREE	FREE	FREE
IALB230-0600-3000-2000			20	6	6	5.8	15	6	50	5,120	FREE	FREE	FREE	FREE	FREE
IALB230-0600-3000-2500		25	6	6	5.8	15	6	60	5,120	FREE	FREE	FREE	FREE	FREE	
IALB230-0600-3000-3000		30	6	6	5.8	15	6	60	5,280	FREE	FREE	FREE	FREE	FREE	
IALB230-0600-3000-3500		35	6	6	5.8	15	6	70	5,440	FREE	FREE	FREE	FREE	FREE	
IALB230-0600-3000-4000		40	6	6	5.8	15	6	70	5,760	FREE	FREE	FREE	FREE	FREE	
IALB230-0600-3000-4500		45	6	6	5.8	15	6	80	6,160	FREE	FREE	FREE	FREE	FREE	
IALB230-0600-3000-5000		50	6	6	5.8	15	6	80	6,240	FREE	FREE	FREE	FREE	FREE	

ion Depo Type A Series

ion Depo Type A Series

ion Depo Type A 切削條件參考表 Recommended Milling Conditions

型號:IALB230
Model number:IALB230

長頸球頭立銼刀 Long Neck Ball End Mill

切削材料 Work Material		鑄鐵 Cast Irons FCD					碳鋼 Carbon Steels S50C/SS400					預硬鋼 Prehardened Steels PX5/NAK80					合金鋼 Die Steels SKD11/SKD61				
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed			
			ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹			
2	0.1	0.3	0.005	0.005	80	50,000	0.005	0.005	80	50,000	0.005	0.005	80	50,000	0.003	0.003	60	50,000			
			0.5	0.003	0.003	70	50,000	0.003	0.003	70	50,000	0.003	0.003	70	50,000	0.003	0.003	40	50,000		
		0.15	0.3	0.005	0.015	150	50,000	0.005	0.015	150	50,000	0.005	0.015	150	50,000	0.003	0.005	120	50,000		
			0.5	0.004	0.007	150	50,000	0.004	0.007	150	50,000	0.004	0.007	150	50,000	0.003	0.005	120	50,000		
	0.2	0.5	0.01	0.02	250	50,000	0.01	0.02	250	50,000	0.01	0.02	250	50,000	0.01	0.01	210	50,000			
			0.75	0.007	0.01	250	50,000	0.007	0.01	250	50,000	0.007	0.01	250	50,000	0.005	0.01	210	50,000		
		1	0.007	0.01	250	50,000	0.007	0.01	250	50,000	0.007	0.01	250	50,000	0.005	0.01	210	50,000			
			0.5	0.01	0.02	250	50,000	0.01	0.02	250	50,000	0.01	0.02	250	50,000	0.01	0.015	210	50,000		
	0.3	0.5	0.01	0.02	250	50,000	0.01	0.02	250	50,000	0.01	0.02	250	50,000	0.01	0.015	210	50,000			
			0.6	0.01	0.02	250	50,000	0.01	0.02	250	50,000	0.01	0.02	250	50,000	0.01	0.015	210	50,000		
		0.75	0.008	0.015	250	50,000	0.008	0.015	250	50,000	0.008	0.015	250	50,000	0.007	0.01	210	50,000			
			0.8	0.008	0.015	250	50,000	0.008	0.015	250	50,000	0.008	0.015	250	50,000	0.007	0.01	210	50,000		
		1	0.007	0.01	250	50,000	0.007	0.01	250	50,000	0.007	0.01	250	50,000	0.005	0.01	210	50,000			
			1.25	0.005	0.01	250	50,000	0.005	0.01	250	50,000	0.005	0.01	250	50,000	0.005	0.005	210	50,000		
		0.4	1.5	0.005	0.01	200	50,000	0.005	0.01	200	50,000	0.005	0.01	200	50,000	0.005	0.005	170	50,000		
				1.75	0.005	0.01	200	50,000	0.005	0.01	200	50,000	0.005	0.01	200	50,000	0.005	0.005	170	50,000	
			2	0.003	0.01	150	50,000	0.003	0.01	150	50,000	0.003	0.01	150	50,000	0.003	0.005	120	50,000		
				2.25	0.003	0.01	150	50,000	0.003	0.01	150	50,000	0.003	0.01	150	50,000	0.003	0.005	120	50,000	
			2.5	0.003	0.007	150	50,000	0.003	0.007	150	50,000	0.003	0.007	150	50,000	0.003	0.003	120	50,000		
				2.75	0.003	0.007	150	50,000	0.003	0.007	150	50,000	0.003	0.007	150	50,000	0.003	0.003	120	50,000	
	0.5	3	0.003	0.005	150	50,000	0.003	0.005	150	50,000	0.003	0.005	150	50,000	0.003	0.003	120	50,000			
			0.5	0.02	0.05	800	50,000	0.02	0.05	800	50,000	0.02	0.05	800	50,000	0.02	0.03	650	50,000		
		0.75	0.02	0.05	800	50,000	0.02	0.05	800	50,000	0.02	0.05	800	50,000	0.02	0.03	650	50,000			
			1	0.02	0.05	800	50,000	0.02	0.05	800	50,000	0.02	0.05	800	50,000	0.02	0.03	650	50,000		
		1.2	0.02	0.05	800	50,000	0.02	0.05	800	50,000	0.02	0.05	800	50,000	0.02	0.03	650	50,000			
			1.5	0.02	0.03	700	50,000	0.02	0.03	700	50,000	0.02	0.03	700	50,000	0.01	0.02	600	50,000		
		2	0.015	0.02	600	50,000	0.015	0.02	600	50,000	0.015	0.02	600	50,000	0.01	0.015	500	50,000			
			2.5	0.015	0.02	450	50,000	0.015	0.02	450	50,000	0.015	0.02	450	50,000	0.01	0.015	380	50,000		
		0.6	3	0.01	0.02	400	30,000	0.01	0.02	400	30,000	0.01	0.02	400	30,000	0.01	0.01	340	30,000		
				1	0.03	0.05	800	50,000	0.03	0.05	800	50,000	0.03	0.05	800	50,000	0.02	0.05	680	50,000	
			1.5	0.03	0.05	700	50,000	0.03	0.05	700	50,000	0.03	0.05	700	50,000	0.02	0.04	600	50,000		
				2.0	0.02	0.04	600	50,000	0.02	0.04	600	50,000	0.02	0.04	600	50,000	0.02	0.03	510	50,000	
	0.7	2.5	0.015	0.04	600	50,000	0.015	0.04	600	50,000	0.015	0.04	600	50,000	0.01	0.03	510	50,000			
			3	0.015	0.035	500	50,000	0.015	0.035	500	50,000	0.015	0.035	500	50,000	0.01	0.025	420	50,000		
		3.5	0.015	0.03	400	50,000	0.015	0.03	400	50,000	0.015	0.03	400	50,000	0.01	0.02	340	50,000			
			4	0.012	0.02	400	50,000	0.012	0.02	400	50,000	0.012	0.02	400	50,000	0.005	0.01	340	50,000		
	0.8	1.0	0.05	0.1	1,200	50,000	0.05	0.1	1,200	50,000	0.05	0.1	1,200	50,000	0.05	0.07	1,000	50,000			
			1.5	0.05	0.1	1,200	50,000	0.05	0.1	1,200	50,000	0.05	0.1	1,200	50,000	0.05	0.07	1,000	50,000		
		2	0.05	0.1	1,200	50,000	0.05	0.1	1,200	50,000	0.05	0.1	1,200	50,000	0.04	0.07	1,000	50,000			
			2.2	0.05	0.1	1,200	50,000	0.05	0.1	1,200	50,000	0.05	0.1	1,200	50,000	0.04	0.07	1,000	50,000		
		2.5	0.035	0.1	1,200	50,000	0.035	0.1	1,200	50,000	0.035	0.1	1,200	50,000	0.03	0.06	1,000	50,000			
			3	0.025	0.1	1,000	50,000	0.025	0.1	1,000	50,000	0.025	0.1	1,000	50,000	0.03	0.05	850	50,000		

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid. ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible. ●ap=軸向方向切削深度，ae=徑向方向切削深度。 ap=Axial Depth of Cut ae=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸球頭立銼刀 Long Neck Ball End Mill

切削材料 Work Material		鑄鐵 Cast Irons FCD					碳鋼 Carbon Steels S50C/SS400					預硬鋼 Prehardened Steels PX5/NAK80					合金鋼 Die Steels SKD11/SKD61				
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed			
			ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹			
2	0.6	3.5	0.025	0.08	1,000	50,000	0.025	0.08	1,000	50,000	0.025	0.08	1,000	50,000	0.025	0.08	1,000	50,000			
			4.0	0.025	0.05	800	50,000	0.025	0.05	800	50,000	0.025	0.05	800	50,000	0.02	0.04	680	50,000		
		4.5	0.025	0.05	750	50,000	0.025	0.05	750	50,000	0.025	0.05	750	50,000	0.01	0.03	630	50,000			
			5	0.02	0.04	500	30,000	0.02	0.04	500	30,000	0.02	0.04	500	30,000	0.01	0.02	420	30,000		
	0.7	5.5	0.013	0.02	500	30,000	0.013	0.02	500	30,000	0.013	0.02	500	30,000	0.01	0.01	420	30,000			
			6	0.01	0.02	450	30,000	0.01	0.02	450	30,000	0.01	0.02	450	30,000	0.005	0.01	380	30,000		
		2	0.08	0.12	1,800	50,000	0.08	0.12	1,800	50,000	0.08	0.12	1,800	50,000	0.07	0.08	1,300	50,000			
			4	0.05	0.11	1,300	50,000	0.05	0.11	1,300	50,000	0.05	0.11	1,300	50,000	0.03	0.06	1,100	50,000		
	0.8	6	0.03	0.05	700	30,000	0.03	0.05	700	30,000	0.03	0.05	700	30,000	0.01	0.02	600	30,000			
			2.0	0.1	0.15	2,000	50,000	0.1	0.15	2,000	50,000	0.1	0.15	2,000	50,000	0.1	0.12	1,700	50,000		
		2.2	0.1	0.15	2,000	50,000	0.1	0.15	2,000	50,000	0.1	0.15	2,000	50,000	0.1	0.12	1,700	50,000			
			3.0	0.07	0.15	1,800	50,000	0.07	0.15	1,800	50,000	0.07	0.15	1,800	50,000	0.07	0.1	1,500	50,000		
	0.9	4	0.05	0.12	1,500	50,000	0.05	0.12	1,500	50,000	0.05	0.12	1,500	50,000	0.05	0.08	1,300	50,000			
			5	0.05	0.1	1,200	50,000	0.05	0.1	1,200	50,000	0.05	0.1	1,200	50,000	0.04	0.07	1,000	50,000		
		6	0.05	0.08	900	30,000	0.05	0.08	900	30,000	0.05	0.08	900	30,000	0.03	0.05	750	30,000			
			7	0.03	0.05	700	30,000	0.03	0.05	700	30,000	0.03	0.05	700	30,000	0.02	0.03	600	30,000		
	1	8	0.015	0.03	500	24,000	0.015	0.03	500	24,000	0.015	0.03	500	24,000	0.01	0.01	420	24,000			
			2	0.15	0.2	2,500	50,000	0.15	0.2	2,500	50,000	0.15	0.2	2,500	50,000	0.1	0.2	2,000	50,000		
		4	0.1	0.2	2,000	50,000	0.1	0.2	2,000	50,000	0.1	0.2	2,000	50,000	0.05	0.12	1,500	50,000			
			6	0.07	0.15	1,300	30,000	0.07	0.15	1,300	30,000	0.07	0.15	1,300	30,000	0.035	0.05	1,000	30,000		
	1.2	8	0.035	0.05	800	30,000	0.035	0.05	800	30,000	0.035	0.05	800	30,000	0.025	0.04	700	30,000			
			2	0.25	0.35	3,200	50,000	0.25	0.35	3,200	50,000	0.25	0.35	3,200	50,000	0.12	0.3	2,500	50,000		

ion Depo Type A Series

ion Depo Type A Series

ion Depo Type A 切削條件參考表 Recommended Milling Conditions

■型號:IALB230
Model number:IALB230

長頸球頭立銼刀 Long Neck Ball End Mill

切削材料 Work Material			鑄鐵 Cast Irons FCD				碳鋼 Carbon Steels S50C/SS400				預硬鋼 Prehardened Steels PX5/NAK80				合金鋼 Die Steels SKD11/SKD61			
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹
2	1.5	6	0.15	0.3	3,000	30,000	0.15	0.3	3,000	30,000	0.15	0.3	3,000	30,000	0.12	0.2	2,500	30,000
		8.0	0.1	0.25	2,400	30,000	0.1	0.25	2,400	30,000	0.1	0.25	2,400	30,000	0.08	0.18	2,000	30,000
		10.0	0.08	0.2	1,800	30,000	0.08	0.2	1,800	30,000	0.08	0.2	1,800	30,000	0.06	0.12	1,500	30,000
		12	0.07	0.13	1,200	24,000	0.07	0.13	1,200	24,000	0.07	0.13	1,200	24,000	0.05	0.09	1,000	24,000
		14	0.06	0.1	1,200	24,000	0.06	0.1	1,200	24,000	0.06	0.1	1,200	24,000	0.04	0.07	1,000	24,000
		16	0.05	0.08	800	18,000	0.05	0.08	800	18,000	0.05	0.08	800	18,000	0.035	0.06	680	18,000
	1.6	4	0.2	0.3	4,000	24,000	0.2	0.3	4,000	24,000	0.2	0.3	4,000	24,000	0.17	0.25	3,400	24,000
		8	0.1	0.3	3,000	24,000	0.1	0.3	3,000	24,000	0.1	0.3	3,000	24,000	0.09	0.2	2,500	24,000
		12	0.07	0.15	1,800	24,000	0.07	0.15	1,800	24,000	0.07	0.15	1,800	24,000	0.06	0.12	1,500	24,000
		16	0.05	0.1	650	18,000	0.05	0.1	650	18,000	0.05	0.1	650	18,000	0.035	0.07	550	18,000
	1.8	8	0.15	0.3	2,500	20,000	0.15	0.3	2,500	20,000	0.15	0.3	2,500	20,000	0.12	0.2	2,100	20,000
		12.0	0.1	0.2	1,800	16,000	0.1	0.2	1,800	16,000	0.1	0.2	1,800	16,000	0.07	0.15	1,500	16,000
		16	0.08	0.13	1,600	14,000	0.08	0.13	1,600	14,000	0.08	0.13	1,600	14,000	0.06	0.1	1,400	14,000
		20	0.06	0.1	1,000	12,000	0.06	0.1	1,000	12,000	0.06	0.1	1,000	12,000	0.05	0.07	850	12,000
	2	3.0	0.3	0.5	4,000	30,000	0.3	0.5	4,000	30,000	0.3	0.5	4,000	30,000	0.2	0.5	3,400	30,000
		4	0.3	0.5	4,000	30,000	0.3	0.5	4,000	30,000	0.3	0.5	4,000	30,000	0.2	0.45	3,400	30,000
		6.0	0.25	0.5	3,000	30,000	0.25	0.5	3,000	30,000	0.25	0.5	3,000	30,000	0.2	0.4	2,500	30,000
		8	0.2	0.3	2,500	20,000	0.2	0.3	2,500	20,000	0.2	0.3	2,500	20,000	0.15	0.3	2,100	20,000
		10	0.15	0.3	2,500	20,000	0.15	0.3	2,500	20,000	0.15	0.3	2,500	20,000	0.1	0.2	2,100	20,000
		12.0	0.13	0.2	1,800	16,000	0.13	0.2	1,800	16,000	0.13	0.2	1,800	16,000	0.1	0.15	1,500	16,000
		13	0.12	0.2	1,800	16,000	0.12	0.2	1,800	16,000	0.12	0.2	1,800	16,000	0.08	0.13	1,500	16,000
		14	0.1	0.2	1,800	16,000	0.1	0.2	1,800	16,000	0.1	0.2	1,800	16,000	0.07	0.13	1,500	16,000
		15	0.1	0.2	1,800	16,000	0.1	0.2	1,800	16,000	0.1	0.2	1,800	16,000	0.07	0.13	1,500	16,000
		16	0.1	0.15	1,600	14,000	0.1	0.15	1,600	14,000	0.1	0.15	1,600	14,000	0.06	0.11	1,400	14,000
2.5	6	0.25	0.5	3,000	20,000	0.25	0.5	3,000	20,000	0.25	0.5	3,000	20,000	0.3	0.35	2,500	20,000	
	8	0.2	0.5	3,000	20,000	0.2	0.5	3,000	20,000	0.2	0.5	3,000	20,000	0.25	0.35	2,500	20,000	
	10	0.2	0.5	3,000	20,000	0.2	0.5	3,000	20,000	0.2	0.5	3,000	20,000	0.25	0.35	2,500	20,000	
	15	0.15	0.3	2,500	20,000	0.15	0.3	2,500	20,000	0.15	0.3	2,500	20,000	0.1	0.2	2,100	20,000	
	20	0.1	0.2	1,800	16,000	0.1	0.2	1,800	16,000	0.1	0.2	1,800	16,000	0.08	0.15	1,500	16,000	
	25	0.06	0.1	1,000	12,000	0.06	0.1	1,000	12,000	0.06	0.1	1,000	12,000	0.05	0.07	850	12,000	
3	6	0.35	0.6	4,000	20,000	0.35	0.6	4,000	20,000	0.35	0.6	4,000	20,000	0.25	0.5	3,400	20,000	
	8	0.3	0.5	4,000	20,000	0.3	0.5	4,000	20,000	0.3	0.5	4,000	20,000	0.2	0.5	3,400	20,000	
	10.0	0.3	0.5	4,000	20,000	0.3	0.5	4,000	20,000	0.3	0.5	4,000	20,000	0.2	0.45	3,400	20,000	
	12	0.2	0.4	3,000	20,000	0.2	0.4	3,000	20,000	0.2	0.4	3,000	20,000	0.2	0.4	2,500	20,000	
	14	0.2	0.4	3,000	20,000	0.2	0.4	3,000	20,000	0.2	0.4	3,000	20,000	0.15	0.35	2,500	20,000	
	15	0.15	0.4	3,000	20,000	0.15	0.4	3,000	20,000	0.15	0.4	3,000	20,000	0.13	0.35	2,500	20,000	
	16	0.15	0.35	3,000	20,000	0.15	0.35	3,000	20,000	0.15	0.35	3,000	20,000	0.13	0.35	2,500	20,000	
	20.0	0.15	0.3	1,800	16,000	0.15	0.3	1,800	16,000	0.15	0.3	1,800	16,000	0.1	0.2	1,500	16,000	
	25	0.13	0.27	1,200	16,000	0.13	0.27	1,200	16,000	0.13	0.27	1,200	16,000	0.1	0.16	1,000	16,000	
	30	0.1	0.2	800	12,000	0.1	0.2	800	12,000	0.1	0.2	800	12,000	0.07	0.12	680	12,000	
3.5	10	0.3	0.6	4,000	20,000	0.3	0.6	4,000	20,000	0.3	0.6	4,000	20,000	0.2	0.6	3,600	20,000	
	15	0.2	0.5	3,000	20,000	0.2	0.5	3,000	20,000	0.2	0.5	3,000	20,000	0.15	0.5	2,400	20,000	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid. ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible. ● ∂p =軸向切深， ∂e =徑向切深。 ∂p =Axial Depth of Cut, ∂e =Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸球頭立銼刀 Long Neck Ball End Mill

切削材料 Work Material			鑄鐵 Cast Irons FCD				碳鋼 Carbon Steels S50C/SS400				預硬鋼 Prehardened Steels PX5/NAK80				合金鋼 Die Steels SKD11/SKD61			
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹	∂p mm	∂e mm	mm/min	min ⁻¹
2	3.5	20	0.2	0.35	3,000	16,000	0.2	0.35	3,000	16,000	0.2	0.35	3,000	16,000	0.1	0.35	2,400	16,000
		25	0.15	0.3	3,000	16,000	0.15	0.3	3,000	16,000	0.15	0.3	3,000	16,000	0.1	0.3	2,400	16,000
		30	0.12	0.25	2,600	12,000	0.12	0.25	2,600	12,000	0.12	0.25	2,600	12,000	0.08	0.25	2,000	12,000
		35	0.12	0.2	1,800	12,000	0.12	0.2	1,800	12,000	0.12	0.2	1,800	12,000	0.05	0.2	1,500	12,000
	4	10	0.35	0.8	4,000	20,000	0.35	0.8	4,000	20,000	0.35	0.8	4,000	20,000	0.25	0.7	3,400	20,000
		12	0.35	0.7	4,000	20,000	0.35	0.7	4,000	20,000	0.35	0.7	4,000	20,000	0.25	0.7	3,400	20,000
		14	0.3	0.6	4,000	20,000	0.3	0.6	4,000	20,000	0.3	0.6	4,000	20,000	0.2	0.5	3,400	20,000
		15	0.25	0.55	3,500	20,000	0.25	0.55	3,500	20,000	0.25	0.55	3,500	20,000	0.2	0.4	3,000	20,000
		16	0.2	0.5	3,500	20,000	0.2	0.5	3,500	20,000	0.2	0.5	3,500	20,000	0.2	0.3	3,000	20,000
		20	0.2	0.35	3,300	20,000	0.2	0.35	3,300	20,000	0.2	0.35	3,300	20,000	0.15	0.3	2,800	20,000
	5	10	0.4	1.2	4,000	20,000	0.4	1.2	4,000	20,000	0.4	1.2	4,000	20,000	0.3	1	3,400	20,000
		15	0.35	1	4,000	20,000	0.35	1	4,000	20,000	0.35	1	4,000	20,000	0.3	0.9	3,400	20,000
		20	0.3	0.7	4,000	20,000	0.3	0.7	4,000	20,000	0.3	0.7	4,000	20,000	0.25	0.7	3,400	20,000
		25	0.25	0.6	3,000	16,000	0.25	0.6	3,000	16,000	0.25	0.6	3,000	16,000	0.2	0.5	2,500	16,000
		30	0.2	0.5	2,400	16,000	0.2	0.5	2,400	16,000	0.2	0.5	2,400	16,000	0.15	0.4	2,000	16,000
		35	0.15	0.4	1,600	14,000	0.15	0.4	1,600	14,000	0.15	0.4	1,600	14,000	0.15	0.3	1,400	14

ion Depo Type A Series

ion Depo Type A 切削條件參考表
Recommended Milling Conditions

■型號:IALB230
Model number:IALB230

長頸球頭立銼刀 Long Neck Ball End Mill

切削材料 Work Material			高速鋼 High Speed Steels HAP5R/HAP72/ASP23				不銹鋼 Stainless Steels SUS304				不銹鋼 Stainless Steels HPM/STAVAX				銅合金 Copper Alloy 銅鎳(Copper Tungsten)				
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	
			ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	
2	0.1	0.3	0.003	0.003	60	50,000	0.003	0.003	60	50,000	0.003	0.003	60	50,000	0.005	0.005	80	50,000	
		0.5	0.003	0.003	40	50,000	0.003	0.003	40	50,000	0.003	0.003	40	50,000	0.005	0.005	70	50,000	
	0.15	0.3	0.003	0.005	120	50,000	0.003	0.005	120	50,000	0.003	0.005	120	50,000	0.008	0.01	150	50,000	
		0.5	0.003	0.005	120	50,000	0.003	0.005	120	50,000	0.003	0.005	120	50,000	0.007	0.008	150	50,000	
		1	0.002	0.003	70	50,000	0.002	0.003	70	50,000	0.002	0.003	70	50,000	0.005	0.007	100	50,000	
	0.2	0.5	0.01	0.01	210	50,000	0.01	0.01	210	50,000	0.01	0.01	210	50,000	0.01	0.02	250	50,000	
		0.75	0.005	0.01	210	50,000	0.005	0.01	210	50,000	0.005	0.01	210	50,000	0.01	0.015	250	50,000	
	0.3	0.5	0.01	0.015	210	50,000	0.01	0.015	210	50,000	0.01	0.015	210	50,000	0.012	0.025	250	50,000	
			0.6	0.01	0.015	210	50,000	0.01	0.015	210	50,000	0.01	0.015	210	50,000	0.012	0.025	250	50,000
		0.75	0.007	0.01	210	50,000	0.007	0.01	210	50,000	0.007	0.01	210	50,000	0.01	0.02	250	50,000	
			0.8	0.007	0.01	210	50,000	0.007	0.01	210	50,000	0.007	0.01	210	50,000	0.01	0.02	250	50,000
		1	0.005	0.01	210	50,000	0.005	0.01	210	50,000	0.005	0.01	210	50,000	0.01	0.02	250	50,000	
			1.25	0.005	0.005	210	50,000	0.005	0.005	210	50,000	0.005	0.005	210	50,000	0.008	0.015	250	50,000
			1.5	0.005	0.005	170	50,000	0.005	0.005	170	50,000	0.005	0.005	170	50,000	0.008	0.015	200	50,000
			1.75	0.005	0.005	170	50,000	0.005	0.005	170	50,000	0.005	0.005	170	50,000	0.008	0.015	200	50,000
			2	0.003	0.005	120	50,000	0.003	0.005	120	50,000	0.003	0.005	120	50,000	0.005	0.012	150	50,000
			2.25	0.003	0.005	120	50,000	0.003	0.005	120	50,000	0.003	0.005	120	50,000	0.005	0.012	150	50,000
	0.4	2.5	0.003	0.003	120	50,000	0.003	0.003	120	50,000	0.003	0.003	120	50,000	0.005	0.01	150	50,000	
			2.75	0.003	0.003	120	50,000	0.003	0.003	120	50,000	0.003	0.003	120	50,000	0.005	0.01	150	50,000
		3	0.003	0.003	120	50,000	0.003	0.003	120	50,000	0.003	0.003	120	50,000	0.005	0.007	150	50,000	
			0.5	0.02	0.03	650	50,000	0.02	0.03	650	50,000	0.02	0.03	650	50,000	0.03	0.07	800	50,000
		0.5	0.75	0.02	0.03	650	50,000	0.02	0.03	650	50,000	0.02	0.03	650	50,000	0.03	0.07	800	50,000
				1	0.02	0.03	650	50,000	0.02	0.03	650	50,000	0.02	0.03	650	50,000	0.03	0.07	800
			1.2	0.02	0.03	650	50,000	0.02	0.03	650	50,000	0.02	0.03	650	50,000	0.03	0.07	800	50,000
				1.5	0.01	0.02	600	50,000	0.01	0.02	600	50,000	0.01	0.02	600	50,000	0.03	0.05	700
			2	0.01	0.015	500	50,000	0.01	0.015	500	50,000	0.01	0.015	500	50,000	0.02	0.03	600	50,000
				2.5	0.01	0.015	380	50,000	0.01	0.015	380	50,000	0.01	0.015	380	50,000	0.02	0.03	450
	3			0.01	0.01	340	30,000	0.01	0.01	340	30,000	0.01	0.01	340	30,000	0.015	0.03	400	30,000
	3.5			0.01	0.01	340	30,000	0.01	0.01	340	30,000	0.01	0.01	340	30,000	0.015	0.03	400	30,000
	0.6	1	0.02	0.05	680	50,000	0.02	0.05	680	50,000	0.02	0.05	680	50,000	0.045	0.07	800	50,000	
			1.5	0.02	0.04	600	50,000	0.02	0.04	600	50,000	0.02	0.04	600	50,000	0.04	0.07	700	50,000
		2	0.02	0.03	510	50,000	0.02	0.03	510	50,000	0.02	0.03	510	50,000	0.03	0.06	600	50,000	
			2.5	0.01	0.025	420	50,000	0.01	0.025	420	50,000	0.01	0.025	420	50,000	0.02	0.05	500	50,000
		3	0.01	0.02	340	50,000	0.01	0.02	340	50,000	0.01	0.02	340	50,000	0.02	0.045	400	50,000	
			4	0.005	0.01	340	50,000	0.005	0.01	340	50,000	0.005	0.01	340	50,000	0.018	0.03	400	50,000
	0.6	1.0	0.05	0.07	1,000	50,000	0.05	0.07	1,000	50,000	0.05	0.07	1,000	50,000	0.07	0.12	1,200	50,000	
1.5			0.05	0.07	1,000	50,000	0.05	0.07	1,000	50,000	0.05	0.07	1,000	50,000	0.07	0.12	1,200	50,000	
2		0.04	0.07	1,000	50,000	0.04	0.07	1,000	50,000	0.04	0.07	1,000	50,000	0.07	0.12	1,200	50,000		
		2.2	0.04	0.07	1,000	50,000	0.04	0.07	1,000	50,000	0.04	0.07	1,000	50,000	0.07	0.12	1,200	50,000	
2.5		0.03	0.06	1,000	50,000	0.03	0.06	1,000	50,000	0.03	0.06	1,000	50,000	0.05	0.12	1,200	50,000		
		3	0.03	0.05	850	50,000	0.03	0.05	850	50,000	0.03	0.05	850	50,000	0.04	0.1	1,000	50,000	

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid. ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

長頸球頭立銼刀 Long Neck Ball End Mill

切削材料 Work Material			高速鋼 High Speed Steels HAP5R/HAP72/ASP23				不銹鋼 Stainless Steels SUS304				不銹鋼 Stainless Steels HPM/STAVAX				銅合金 Copper Alloy 銅鎳(Copper Tungsten)			
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹
2	0.6	3.5	0.02	0.05	850	50,000	0.02	0.05	850	50,000	0.02	0.05	850	50,000	0.04	0.1	1,000	50,000
		4.0	0.02	0.04	680	50,000	0.02	0.04	680	50,000	0.02	0.04	680	50,000	0.035	0.08	800	50,000
		4.5	0.01	0.03	630	50,000	0.01	0.03	630	50,000	0.01	0.03	630	50,000	0.035	0.08	750	50,000
		5	0.01	0.02	420	30,000	0.01	0.02	420	30,000	0.01	0.02	420	30,000	0.03	0.06	500	30,000
		5.5	0.01	0.01	420	30,000	0.01	0.01	420	30,000	0.01	0.01	420	30,000	0.02	0.03	500	30,000
		6	0.005	0.01	380	30,000	0.005	0.01	380	30,000	0.005	0.01	380	30,000	0.015	0.03	450	30,000
	0.7	2	0.07	0.08	1,300	50,000	0.07	0.08	1,300	50,000	0.07	0.08	1,300	50,000	0.1	0.15	1,500	50,000
		4	0.03	0.06	1,100	50,000	0.03	0.06	1,100	50,000	0.03	0.06	1,100	50,000	0.06	0.12	1,200	50,000
		6	0.01	0.02	600	30,000	0.01	0.02	600	30,000	0.01	0.02	600	30,000	0.04	0.07	600	30,000
		8	0.01	0.02	600	30,000	0.01	0.02	600	30,000	0.01	0.02	600	30,000	0.04	0.07	600	30,000
	0.8	2.0	0.1	0.12	1,700	50,000	0.1	0.12	1,700	50,000	0.1	0.12	1,700	50,000	0.15	0.2	2,000	50,000
		2.2	0.1	0.12	1,700	50,000	0.1	0.12	1,700	50,000	0.1	0.12	1,700	50,000	0.15	0.2	2,000	50,000
		3.0	0.07	0.1	1,500	50,000	0.07	0.1	1,500	50,000	0.07	0.1	1,500	50,000	0.12	0.2	1,800	50,000
		4	0.05	0.08	1,300	50,000	0.05	0.08	1,300	50,000	0.05	0.08	1,300	50,000	0.1	0.2	1,500	50,000
		5	0.04	0.07	1,000	50,000	0.04	0.07	1,000	50,000	0.04	0.07	1,000	50,000	0.08	0.15	1,200	50,000
		6	0.03	0.05	750	30,000	0.03	0.05	750	30,000	0.03	0.05	750	30,000	0.07	0.12	900	30,000
		7	0.02	0.03	600	30,000	0.02	0.03	600	30,000	0.02	0.03	600	30,000	0.05	0.08	700	30,

ion Depo Type A 切削條件參考表 Recommended Milling Conditions

■型號:IALB230
Model number:IALB230

長頸球頭立銼刀 Long Neck Ball End Mill

切削材料 Work Material			高速鋼 High Speed Steels HAP5R/HAP72/ASP23				不銹鋼 Stainless Steels SUS304				不銹鋼 Stainless Steels HPM/STAVAX				銅合金 Copper Alloy 銅鎳(Copper Tungsten)				
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	
			ap mm	ae mm			ap mm	ae mm			ap mm	ae mm			ap mm	ae mm			
2	1.5	6	0.12	0.2	2,500	30,000	0.12	0.2	2,500	30,000	0.12	0.2	2,500	30,000	0.2	0.45	3,000	30,000	
		8.0	0.08	0.18	2,000	30,000	0.08	0.18	2,000	30,000	0.08	0.18	2,000	30,000	0.15	0.4	2,400	30,000	
		10.0	0.06	0.12	1,500	30,000	0.06	0.12	1,500	30,000	0.06	0.12	1,500	30,000	0.12	0.3	1,800	30,000	
		12	0.05	0.09	1,000	24,000	0.05	0.09	1,000	24,000	0.05	0.09	1,000	24,000	0.1	0.2	1,200	24,000	
		14	0.04	0.07	1,000	24,000	0.04	0.07	1,000	24,000	0.04	0.07	1,000	24,000	0.1	0.15	1,200	24,000	
		16	0.035	0.06	680	18,000	0.035	0.06	680	18,000	0.035	0.06	680	18,000	0.07	0.12	800	18,000	
	1.6	4	0.17	0.25	3,400	24,000	0.17	0.25	3,400	24,000	0.17	0.25	3,400	24,000	0.3	0.45	4,000	24,000	
		8	0.09	0.2	2,500	24,000	0.09	0.2	2,500	24,000	0.09	0.2	2,500	24,000	0.15	0.45	3,000	24,000	
		12	0.06	0.12	1,500	24,000	0.06	0.12	1,500	24,000	0.06	0.12	1,500	24,000	0.1	0.25	1,800	24,000	
		16	0.035	0.07	550	18,000	0.035	0.07	550	18,000	0.035	0.07	550	18,000	0.08	0.15	650	18,000	
	1.8	8	0.12	0.2	2,100	20,000	0.12	0.2	2,100	20,000	0.12	0.2	2,100	20,000	0.2	0.45	2,500	20,000	
		12.0	0.07	0.15	1,500	16,000	0.07	0.15	1,500	16,000	0.07	0.15	1,500	16,000	0.15	0.3	1,800	16,000	
	2	2	6	0.06	0.1	1,400	14,000	0.06	0.1	1,400	14,000	0.06	0.1	1,400	14,000	0.12	0.2	1,600	14,000
			3.0	0.2	0.5	3,400	30,000	0.2	0.5	3,400	30,000	0.2	0.5	3,400	30,000	0.45	0.7	4,000	30,000
		4	0.2	0.45	3,400	30,000	0.2	0.45	3,400	30,000	0.2	0.45	3,400	30,000	0.45	0.7	4,000	30,000	
		6.0	0.2	0.4	2,500	30,000	0.2	0.4	2,500	30,000	0.2	0.4	2,500	30,000	0.38	0.7	3,000	30,000	
		8	0.15	0.3	2,100	20,000	0.15	0.3	2,100	20,000	0.15	0.3	2,100	20,000	0.3	0.45	2,500	20,000	
		10	0.1	0.2	2,100	20,000	0.1	0.2	2,100	20,000	0.1	0.2	2,100	20,000	0.23	0.45	2,500	20,000	
		12.0	0.1	0.15	1,500	16,000	0.1	0.15	1,500	16,000	0.1	0.15	1,500	16,000	0.2	0.3	1,800	16,000	
		13	0.08	0.13	1,500	16,000	0.08	0.13	1,500	16,000	0.08	0.13	1,500	16,000	0.2	0.3	1,800	16,000	
14		0.07	0.13	1,500	16,000	0.07	0.13	1,500	16,000	0.07	0.13	1,500	16,000	0.15	0.3	1,800	16,000		
15		0.07	0.13	1,500	16,000	0.07	0.13	1,500	16,000	0.07	0.13	1,500	16,000	0.15	0.3	1,800	16,000		
16		0.06	0.11	1,400	14,000	0.06	0.11	1,400	14,000	0.06	0.11	1,400	14,000	0.15	0.25	1,600	14,000		
18		0.05	0.1	1,400	14,000	0.05	0.1	1,400	14,000	0.05	0.1	1,400	14,000	0.1	0.2	1,600	14,000		
20		0.05	0.07	850	12,000	0.05	0.07	850	12,000	0.05	0.07	850	12,000	0.1	0.15	1,000	12,000		
2.5		6	0.27	0.35	2,500	20,000	0.27	0.35	2,500	20,000	0.27	0.35	2,500	20,000	0.35	0.8	3,000	20,000	
	8	0.25	0.35	2,500	20,000	0.25	0.35	2,500	20,000	0.25	0.35	2,500	20,000	0.3	0.8	3,000	20,000		
	10	0.25	0.35	2,500	20,000	0.25	0.35	2,500	20,000	0.25	0.35	2,500	20,000	0.3	0.8	3,000	20,000		
	15	0.1	0.2	2,100	20,000	0.1	0.2	2,100	20,000	0.1	0.2	2,100	20,000	0.25	0.45	2,500	20,000		
	20	0.08	0.15	1,500	16,000	0.08	0.15	1,500	16,000	0.08	0.15	1,500	16,000	0.15	0.3	1,800	16,000		
3	6	0.25	0.5	3,400	20,000	0.25	0.5	3,400	20,000	0.25	0.5	3,400	20,000	0.5	1	4,000	20,000		
	8	0.2	0.5	3,400	20,000	0.2	0.5	3,400	20,000	0.2	0.5	3,400	20,000	0.45	0.8	4,000	20,000		
	10.0	0.2	0.45	3,400	20,000	0.2	0.45	3,400	20,000	0.2	0.45	3,400	20,000	0.45	0.8	4,000	20,000		
	12	0.2	0.4	2,500	20,000	0.2	0.4	2,500	20,000	0.2	0.4	2,500	20,000	0.3	0.6	3,000	20,000		
	14	0.15	0.35	2,500	20,000	0.15	0.35	2,500	20,000	0.15	0.35	2,500	20,000	0.3	0.6	3,000	20,000		
	15	0.13	0.35	2,500	20,000	0.13	0.35	2,500	20,000	0.13	0.35	2,500	20,000	0.23	0.6	3,000	20,000		
	16	0.13	0.35	2,500	20,000	0.13	0.35	2,500	20,000	0.13	0.35	2,500	20,000	0.23	0.5	3,000	20,000		
	20.0	0.1	0.2	1,500	16,000	0.1	0.2	1,500	16,000	0.1	0.2	1,500	16,000	0.23	0.45	1,800	16,000		
	25	0.1	0.16	1,000	16,000	0.1	0.16	1,000	16,000	0.1	0.16	1,000	16,000	0.2	0.4	1,200	16,000		
	30	0.07	0.12	680	12,000	0.07	0.12	680	12,000	0.07	0.12	680	12,000	0.15	0.3	800	12,000		
3.5	10	0.2	0.6	3,600	20,000	0.2	0.6	3,600	20,000	0.2	0.6	3,600	20,000	0.45	0.8	4,000	20,000		
	15	0.15	0.5	2,400	20,000	0.15	0.5	2,400	20,000	0.15	0.5	2,400	20,000	0.23	0.6	4,000	20,000		

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切屑液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●ap=軸向切削深度，ae=徑向切削深度。 ap=Axial Depth of Cut ae=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸球頭立銼刀 Long Neck Ball End Mill

切削材料 Work Material			高速鋼 High Speed Steels HAP5R/HAP72/ASP23				不銹鋼 Stainless Steels SUS304				不銹鋼 Stainless Steels HPM/STAVAX				銅合金 Copper Alloy 銅鎳(Copper Tungsten)			
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			ap mm	ae mm			ap mm	ae mm			ap mm	ae mm			ap mm	ae mm		
2	3.5	20	0.1	0.35	2,400	16,000	0.1	0.35	2,400	16,000	0.1	0.35	2,400	16,000	0.23	0.45	3,000	16,000
		25	0.1	0.3	2,400	16,000	0.1	0.3	2,400	16,000	0.1	0.3	2,400	16,000	0.2	0.4	3,000	16,000
		30	0.08	0.25	2,000	12,000	0.08	0.25	2,000	12,000	0.08	0.25	2,000	12,000	0.15	0.3	2,600	12,000
		35	0.05	0.2	1,500	12,000	0.05	0.2	1,500	12,000	0.05	0.2	1,500	12,000	0.15	0.3	1,800	12,000
		10	0.25	0.7	3,400	20,000	0.25	0.7	3,400	20,000	0.25	0.7	3,400	20,000	0.55	1.2	4,000	20,000
	4	12	0.25	0.7	3,400	20,000	0.25	0.7	3,400	20,000	0.25	0.7	3,400	20,000	0.53	1	4,000	20,000
		14	0.2	0.5	3,400	20,000	0.2	0.5	3,400	20,000	0.2	0.5	3,400	20,000	0.45	1	4,000	20,000
		15	0.2	0.4	3,000	20,000	0.2	0.4	3,000	20,000	0.2	0.4	3,000	20,000	0.38	0.8	3,500	20,000
		16	0.2	0.3	3,000	20,000	0.2	0.3	3,000	20,000	0.2	0.3	3,000	20,000	0.3	0.8	3,500	20,000
		20	0.15	0.3	2,800	20,000	0.15	0.3	2,800	20,000	0.15	0.3	2,800	20,000	0.3	0.5	3,300	20,000
	5	25	0.12	0.25	2,200	16,000	0.12	0.25	2,200	16,000	0.12	0.25	2,200	16,000	0.23	0.45	2,600	16,000
		30	0.1	0.2	2,200	16,000	0.1	0.2	2,200	16,000	0.1	0.2	2,200	16,000	0.2	0.4	2,600	16,000
		35	0.07	0.15	1,500	14,000	0.07	0.15	1,500	14,000	0.07	0.15	1,500	14,000	0.18	0.3	1,800	14,000
		10	0.3	1	3,400	20,000	0.3	1	3,400	20,000	0.3	1	3,400	20,000	0.6	1.8	4,000	20,000
		15	0.3	0.9	3,400	20,000	0.3	0.9	3,400	20,000	0.3	0.9	3,400	20,000	0.55	1.5	4,000	20,000
	6	20	0.25	0.7	3,400	20,000	0.25	0.7	3,400	20,000	0.25	0.7	3,400	20,000	0.45	1	4,000	20,000
		25	0.2	0.5	2,500	16,000	0.2	0.5	2,500	16,000	0.2	0.5	2,500	16,000				

ion Depo Type A Series

ion Depo Type A 切削條件參考表 Recommended Milling Conditions

■型號:IALB230
Model number:IALB230

長頸球頭立銼刀 Long Neck Ball End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈦合金(Titanium Alloy)				
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	
			ap mm	ae mm			ap mm	ae mm			ap mm	ae mm			
2	0.1	0.3	0.005	0.005	80	50,000	0.005	0.005	80	50,000	0.003	0.003	60	50,000	
			0.5	0.005	0.005	70	50,000	0.005	0.005	70	50,000	0.003	0.003	40	50,000
		0.5	0.3	0.008	0.01	150	50,000	0.008	0.01	150	50,000	0.003	0.005	120	50,000
	0.5		0.007	0.008	150	50,000	0.007	0.008	150	50,000	0.003	0.005	120	50,000	
	0.15	0.3	0.008	0.01	150	50,000	0.008	0.01	150	50,000	0.003	0.005	120	50,000	
			0.5	0.007	0.008	150	50,000	0.007	0.008	150	50,000	0.003	0.005	120	50,000
		1	0.005	0.007	100	50,000	0.005	0.007	100	50,000	0.002	0.003	70	50,000	
	0.2	0.5	0.01	0.02	250	50,000	0.01	0.02	250	50,000	0.01	0.01	210	50,000	
			0.75	0.01	0.015	250	50,000	0.01	0.015	250	50,000	0.005	0.01	210	50,000
		1	0.01	0.015	250	50,000	0.01	0.015	250	50,000	0.005	0.01	210	50,000	
	0.3	0.5	0.012	0.025	250	50,000	0.012	0.025	250	50,000	0.01	0.015	210	50,000	
			0.6	0.012	0.025	250	50,000	0.012	0.025	250	50,000	0.01	0.015	210	50,000
		0.75	0.01	0.02	250	50,000	0.01	0.02	250	50,000	0.007	0.01	210	50,000	
			0.8	0.01	0.02	250	50,000	0.01	0.02	250	50,000	0.007	0.01	210	50,000
		1	0.01	0.02	250	50,000	0.01	0.02	250	50,000	0.005	0.01	210	50,000	
			1.25	0.008	0.015	250	50,000	0.008	0.015	250	50,000	0.005	0.005	210	50,000
		0.3	1.5	0.008	0.015	200	50,000	0.008	0.015	200	50,000	0.005	0.005	170	50,000
				1.75	0.008	0.015	200	50,000	0.008	0.015	200	50,000	0.005	0.005	170
			2	0.005	0.012	150	50,000	0.005	0.012	150	50,000	0.003	0.005	120	50,000
				2.25	0.005	0.012	150	50,000	0.005	0.012	150	50,000	0.003	0.005	120
	0.4		2.5	0.005	0.01	150	50,000	0.005	0.01	150	50,000	0.003	0.003	120	50,000
				2.75	0.005	0.01	150	50,000	0.005	0.01	150	50,000	0.003	0.003	120
			3	0.005	0.007	150	50,000	0.005	0.007	150	50,000	0.003	0.003	120	50,000
	0.4	0.5	0.03	0.07	800	50,000	0.03	0.07	800	50,000	0.02	0.03	650	50,000	
			0.75	0.03	0.07	800	50,000	0.03	0.07	800	50,000	0.02	0.03	650	50,000
		1	0.03	0.07	800	50,000	0.03	0.07	800	50,000	0.02	0.03	650	50,000	
			1.2	0.03	0.07	800	50,000	0.03	0.07	800	50,000	0.02	0.03	650	50,000
		1.5	0.03	0.05	700	50,000	0.03	0.05	700	50,000	0.01	0.02	600	50,000	
			2	0.02	0.03	600	50,000	0.02	0.03	600	50,000	0.01	0.015	500	50,000
		0.5	2.5	0.02	0.03	450	50,000	0.02	0.03	450	50,000	0.01	0.015	380	50,000
3				0.015	0.03	400	30,000	0.015	0.03	400	30,000	0.01	0.01	340	30,000
1			0.045	0.07	800	50,000	0.045	0.07	800	50,000	0.02	0.05	680	50,000	
0.5		1.5	0.04	0.07	700	50,000	0.04	0.07	700	50,000	0.02	0.04	600	50,000	
	2.0		0.03	0.06	600	50,000	0.03	0.06	600	50,000	0.02	0.03	510	50,000	
	2.5	0.02	0.06	600	50,000	0.02	0.06	600	50,000	0.01	0.03	510	50,000		
		3	0.02	0.05	500	50,000	0.02	0.05	500	50,000	0.01	0.025	420	50,000	
	3.5	0.02	0.045	400	50,000	0.02	0.045	400	50,000	0.01	0.02	340	50,000		
0.6	1.0	0.07	0.12	1,200	50,000	0.07	0.12	1,200	50,000	0.05	0.07	1,000	50,000		
		1.5	0.07	0.12	1,200	50,000	0.07	0.12	1,200	50,000	0.05	0.07	1,000	50,000	
		2	0.07	0.12	1,200	50,000	0.07	0.12	1,200	50,000	0.04	0.07	1,000	50,000	
	2.2	0.07	0.12	1,200	50,000	0.07	0.12	1,200	50,000	0.04	0.07	1,000	50,000		
		2.5	0.05	0.12	1,200	50,000	0.05	0.12	1,200	50,000	0.03	0.06	1,000	50,000	
	0.6	3	0.04	0.1	1,000	50,000	0.04	0.1	1,000	50,000	0.03	0.05	850	50,000	
			3	0.04	0.1	1,000	50,000	0.04	0.1	1,000	50,000	0.03	0.05	850	50,000

●請將刀具體實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid. ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

長頸球頭立銼刀 Long Neck Ball End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈦合金(Titanium Alloy)				
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	
			ap mm	ae mm			ap mm	ae mm			ap mm	ae mm			
2	0.6	3.5	0.04	0.1	1,000	50,000	0.04	0.1	1,000	50,000	0.02	0.05	850	50,000	
			4.0	0.035	0.08	800	50,000	0.035	0.08	800	50,000	0.02	0.04	680	50,000
		4.5	0.035	0.08	750	50,000	0.035	0.08	750	50,000	0.01	0.03	630	50,000	
	5		0.03	0.06	500	30,000	0.03	0.06	500	30,000	0.01	0.02	420	30,000	
	0.6	5.5	0.02	0.03	500	30,000	0.02	0.03	500	30,000	0.01	0.01	420	30,000	
			6	0.015	0.03	450	30,000	0.015	0.03	450	30,000	0.005	0.01	380	30,000
		2	0.1	0.15	1,500	50,000	0.1	0.15	1,500	50,000	0.07	0.08	1,300	50,000	
	4		0.06	0.12	1,200	50,000	0.06	0.12	1,200	50,000	0.03	0.06	1,100	50,000	
		6	0.04	0.07	600	30,000	0.04	0.07	600	30,000	0.01	0.02	600	30,000	
	0.8		2.0	0.15	0.2	2,000	50,000	0.15	0.2	2,000	50,000	0.1	0.12	1,700	50,000
		2.2		0.15	0.2	2,000	50,000	0.15	0.2	2,000	50,000	0.1	0.12	1,700	50,000
		3.0	0.12	0.2	1,800	50,000	0.12	0.2	1,800	50,000	0.07	0.1	1,500	50,000	
			4	0.1	0.2	1,500	50,000	0.1	0.2	1,500	50,000	0.05	0.08	1,300	50,000
		0.8	5	0.08	0.15	1,200	50,000	0.08	0.15	1,200	50,000	0.04	0.07	1,000	50,000
				6	0.07	0.12	900	30,000	0.07	0.12	900	30,000	0.03	0.05	750
			7	0.05	0.08	700	30,000	0.05	0.08	700	30,000	0.02	0.03	600	30,000
	0.9	8	0.02	0.05	500	24,000	0.02	0.05	500	24,000	0.01	0.01	420	24,000	
			2	0.2	0.3	2,800	50,000	0.2	0.3	2,800	50,000	0.1	0.2	2,000	50,000
		4	0.15	0.25	2,000	50,000	0.15	0.25	2,000	50,000	0.05	0.12	1,500	50,000	
			6	0.1	0.2	1,300	30,000	0.1	0.2	1,300	30,000	0.035	0.05	1,000	30,000
		8	0.055	0.08	800	30,000	0.055	0.08	800	30,000	0.025	0.04	700	30,000	
	1	2	0.25	0.4	3,500	50,000	0.25	0.4	3,500	50,000	0.12	0.3	2,500	50,000	
			2.5	0.25	0.4	3,200	50,000	0.25	0.4	3,200	50,000	0.12	0.3	2,500	50,000
		3	0.25	0.4	3,000	50,000	0.25	0.4	3,000	50,000	0.12	0.3	2,500	50,000	
			4	0.2	0.4	2,500	50,000	0.2	0.4	2,500	50,000	0.1	0.2	2,100	50,000
		0.6	6.0	0.15	0.3	1,500	50,000	0.15	0.3	1,500	50,000	0.07	0.12	1,200	50,000
				7	0.12	0.3	1,300	30,000	0.12	0.3	1,300	30,000	0.06	0.1	1,100
			8	0.08	0.15	1,200	30,000	0.08	0.15	1,200	30,000	0.05	0.08	1,000	30,000
		1	9.0	0.06	0.1	1,000	30,000	0.06	0.1	1,000	30,000	0.05	0.05	850	30,000
				10	0.05	0.08	800	30,000	0.05	0.08	800	30,000	0.03	0.05	680
12			0.02	0.04	600	20,000	0.02	0.04	600	20,000	0.01	0.03	510	20,000	
1.2		2.4	0.3	0.45	3,400	30,000	0.3	0.45	3,400	30,000</					

ion Depo Type A 切削條件參考表 Recommended Milling Conditions

■型號:IALB230
Model number:IALB230

長頸球頭立銼刀 Long Neck Ball End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈦合金 (Titanium Alloy)				
刃數 Number of Flutes	刀徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm			
2	1.5	6	0.2	0.45	3,000	30,000	0.2	0.45	3,000	30,000	0.12	0.2	2,500	30,000	
		8.0	0.15	0.4	2,400	30,000	0.15	0.4	2,400	30,000	0.08	0.18	2,000	30,000	
		10.0	0.12	0.3	1,800	30,000	0.12	0.3	1,800	30,000	0.06	0.12	1,500	30,000	
		12	0.1	0.2	1,200	24,000	0.1	0.2	1,200	24,000	0.05	0.09	1,000	24,000	
		14	0.1	0.15	1,200	24,000	0.1	0.15	1,200	24,000	0.04	0.07	1,000	24,000	
		16	0.07	0.12	800	18,000	0.07	0.12	800	18,000	0.035	0.06	680	18,000	
	1.6	4	0.3	0.45	4,000	24,000	0.3	0.45	4,000	24,000	0.17	0.25	3,400	24,000	
		8	0.15	0.45	3,000	24,000	0.15	0.45	3,000	24,000	0.09	0.2	2,500	24,000	
		12	0.1	0.25	1,800	24,000	0.1	0.25	1,800	24,000	0.06	0.12	1,500	24,000	
		16	0.08	0.15	650	18,000	0.08	0.15	650	18,000	0.035	0.07	550	18,000	
	1.8	8	0.2	0.45	2,500	20,000	0.2	0.45	2,500	20,000	0.12	0.2	2,100	20,000	
		12.0	0.15	0.3	1,800	16,000	0.15	0.3	1,800	16,000	0.07	0.15	1,500	16,000	
	2	2	16	0.12	0.2	1,600	14,000	0.12	0.2	1,600	14,000	0.06	0.1	1,400	14,000
			3.0	0.45	0.7	4,000	30,000	0.45	0.7	4,000	30,000	0.2	0.5	3,400	30,000
			4	0.45	0.7	4,000	30,000	0.45	0.7	4,000	30,000	0.2	0.45	3,400	30,000
			6.0	0.38	0.7	3,000	30,000	0.38	0.7	3,000	30,000	0.2	0.4	2,500	30,000
			8	0.3	0.45	2,500	20,000	0.3	0.45	2,500	20,000	0.15	0.3	2,100	20,000
			10	0.23	0.45	2,500	20,000	0.23	0.45	2,500	20,000	0.1	0.2	2,100	20,000
			12.0	0.2	0.3	1,800	16,000	0.2	0.3	1,800	16,000	0.1	0.15	1,500	16,000
			13	0.2	0.3	1,800	16,000	0.2	0.3	1,800	16,000	0.08	0.13	1,500	16,000
14			0.15	0.3	1,800	16,000	0.15	0.3	1,800	16,000	0.07	0.13	1,500	16,000	
15			0.15	0.3	1,800	16,000	0.15	0.3	1,800	16,000	0.07	0.13	1,500	16,000	
2.5	2.5	16	0.15	0.25	1,600	14,000	0.15	0.25	1,600	14,000	0.06	0.11	1,400	14,000	
		18	0.1	0.2	1,600	14,000	0.1	0.2	1,600	14,000	0.05	0.1	1,400	14,000	
		20	0.1	0.15	1,000	12,000	0.1	0.15	1,000	12,000	0.05	0.07	850	12,000	
		6	0.35	0.8	3,000	20,000	0.35	0.8	3,000	20,000	0.27	0.35	2,500	20,000	
		8	0.3	0.8	3,000	20,000	0.3	0.8	3,000	20,000	0.25	0.35	2,500	20,000	
		10	0.3	0.8	3,000	20,000	0.3	0.8	3,000	20,000	0.25	0.35	2,500	20,000	
3	3	15	0.25	0.45	2,500	20,000	0.25	0.45	2,500	20,000	0.1	0.2	2,100	20,000	
		20	0.15	0.3	1,800	16,000	0.15	0.3	1,800	16,000	0.08	0.15	1,500	16,000	
		6	0.5	1	4,000	20,000	0.5	1	4,000	20,000	0.25	0.5	3,400	20,000	
		8	0.45	0.8	4,000	20,000	0.45	0.8	4,000	20,000	0.2	0.5	3,400	20,000	
		10.0	0.45	0.8	4,000	20,000	0.45	0.8	4,000	20,000	0.2	0.45	3,400	20,000	
		12	0.3	0.6	3,000	20,000	0.3	0.6	3,000	20,000	0.2	0.4	2,500	20,000	
		14	0.3	0.6	3,000	20,000	0.3	0.6	3,000	20,000	0.15	0.35	2,500	20,000	
		15	0.23	0.6	3,000	20,000	0.23	0.6	3,000	20,000	0.13	0.35	2,500	20,000	
		16	0.23	0.5	3,000	20,000	0.23	0.5	3,000	20,000	0.13	0.35	2,500	20,000	
		20.0	0.23	0.45	1,800	16,000	0.23	0.45	1,800	16,000	0.1	0.2	1,500	16,000	
3.5	3.5	25	0.2	0.4	1,200	16,000	0.2	0.4	1,200	16,000	0.1	0.16	1,000	16,000	
		30	0.15	0.3	800	12,000	0.15	0.3	800	12,000	0.07	0.12	680	12,000	
		10	0.45	0.8	4,000	20,000	0.45	0.8	4,000	20,000	0.2	0.45	3,400	20,000	
		15	0.23	0.6	4,000	20,000	0.23	0.6	4,000	20,000	0.13	0.35	2,500	20,000	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

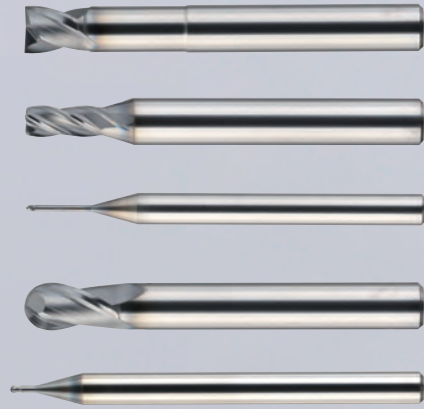
長頸球頭立銼刀 Long Neck Ball End Mill

切削材料 Work Material			鋁合金 Aluminum Alloy A5000號				鋁合金 Aluminum Alloy A7000號				耐熱合金 Heat Resistant Alloy 鈦合金 (Titanium Alloy)			
刃數 Number of Flutes	刀徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm		
2	3.5	20	0.23	0.45	3,000	16,000	0.23	0.45	3,000	16,000	0.1	0.2	2,000	16,000
		25	0.2	0.4	3,000	16,000	0.2	0.4	3,000	16,000	0.1	0.16	1,500	16,000
		30	0.15	0.3	2,600	12,000	0.15	0.3	2,600	12,000	0.07	0.15	1,200	12,000
		35	0.15	0.3	1,800	12,000	0.15	0.3	1,800	12,000	0.05	0.12	1,000	12,000
	4	10	0.55	1.2	4,000	20,000	0.55	1.2	4,000	20,000	0.25	0.7	3,400	20,000
		12	0.53	1	4,000	20,000	0.53	1	4,000	20,000	0.25	0.7	3,400	20,000
		14	0.45	1	4,000	20,000	0.45	1	4,000	20,000	0.2	0.5	3,400	20,000
		15	0.38	0.8	3,500	20,000	0.38	0.8	3,500	20,000	0.2	0.4	3,000	20,000
		16	0.3	0.8	3,500	20,000	0.3	0.8	3,500	20,000	0.2	0.3	3,000	20,000
		20	0.3	0.5	3,300	20,000	0.3	0.5	3,300	20,000	0.15	0.3	2,800	20,000
		25	0.23	0.45	2,600	16,000	0.23	0.45	2,600	16,000	0.12	0.25	2,200	16,000
		30	0.2	0.4	2,600	16,000	0.2	0.4	2,600	16,000	0.1	0.2	2,200	16,000
	5	10	0.6	1.8	4,000	20,000	0.6	1.8	4,000	20,000	0.3	1	3,400	20,000
		15	0.55	1.5	4,000	20,000	0.55	1.5	4,000	20,000	0.3	0.9	3,400	20,000
		20	0.45	1	4,000	20,000	0.45	1	4,000	20,000	0.25	0.7	3,400	20,000
		25	0.38	0.9	3,000	16,000	0.38	0.9	3,000	16,000	0.2	0.5	2,500	16,000
		30	0.3	0.8	2,400	16,000	0.3	0.8	2,400	16,000	0.15	0.4	2,000	16,000
		35	0.23	0.6	1,600	14,000	0.23	0.6	1,600	14,000	0.15	0.3	1,400	14,000
		40	0.23	0.45	1,200	12,000	0.23	0.45	1,200	12,000	0.12	0.2	1,000	12,000
		50.0	0.3	0.6	1,500	8,000	0.3	0.6	1,500	8,000	0.2	0.3	1,200	8,000
6	10.0	0.75	2.3	4,000	18,000	0.75	2.3	4,000	18,000	0.35	1.2	3,400	18,000	
	15	0.75	2	4,000	18,000	0.75	2	4,000	18,000	0.35	1.2	3,400	18,000	
	20	0.75	1.8	4,000	18,000	0.75	1.8	4,000	18,000	0.35	1.1	3,400	18,000	
	25	0.6	1.5	4,000	18,000	0.6	1.5	4,000	18,000	0.3	0.8	3,400	18,000	
	30.0	0.53	1	3,000	12,000	0.53	1	3,000	12,000	0.25	0.6	2,500	12,000	
	35	0.53	0.8	2,500	12,000	0.53	0.8	2,500	12,000	0.2	0.5	2,100	12,000	
	40	0.38	0.6	2,300	12,000	0.38	0.6	2,300	12,000	0.2	0.4	1,900	12,000	
	45.0	0.38	0.6	1,500	8,000	0.38	0.6	1,500	8,000	0.2	0.35	1,200	8,000	
	50.0	0.3	0.6	1,500	8,000	0.3	0.6	1,500	8,000	0.2	0.3	1,200	8,000	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

超硬立銑刀 Carbide End Mill

ion U super MG 2~6 螺絲角 30° 仰角 15° 柄徑公差 0/-0.005



特長

- 由離子電鍍法鍍膜的Ion Depo Type U是加工高硬度材料的理想選擇！
- 具有優異耐熱性的鍍膜，能對應從粗加工到精加工的所有加工！
- 我們獨創的再研磨和再鍍膜技術可抑制性能下降，並有助於進一步降低成本！
- 可在短時間內提供訂製產品！

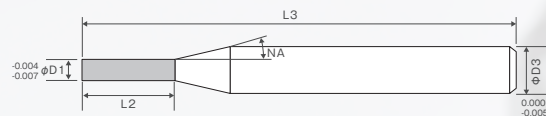
Features

- ion Depo Type U plating for high hardness materials.
- Heat resistance coating supports all processing from roughing to finishing.
- TOWA re-polishing and re-coating technology enhances cutting tool life and reduces overall tooling cost.
- Non-standard custom-made products available.

超硬平角立銑刀 Carbide Square End Mill

ion U super MG 2 螺絲角 30° 仰角 15° 柄徑公差 0/-0.005

型號: IUS230 Model number: IUS230



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size) :mm

型號 Code No.	刀刃直徑 (D1) Tool Diameter	刃長 (L2) Length of Cut	仰角 (NA) Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (円) Retail Price (JPY)
IUS230-0010-00020	0.1	0.2	15	4	50	5,760
IUS230-0020-00040	0.2	0.4	15	4	50	3,680
IUS230-0030-00060	0.3	0.6	15	4	50	2,880
IUS230-0040-00080	0.4	0.8	15	4	50	3,360
IUS230-0050-00100	0.5	1	15	4	50	2,000
IUS230-0060-00120	0.6	1.2	15	4	50	2,800
IUS230-0070-00140	0.7	1.4	15	4	50	3,040
IUS230-0080-00160	0.8	1.6	15	4	50	2,000
IUS230-0090-00180	0.9	1.8	15	4	50	3,040
IUS230-0100-00200	1	2	15	4	50	1,760
IUS230-0110-00220	1.1	2.2	15	4	50	3,120
IUS230-0120-00240	1.2	2.4	15	4	50	2,000
IUS230-0130-00260	1.3	2.6	15	4	50	3,120
IUS230-0140-00280	1.4	2.8	15	4	50	3,120
IUS230-0150-00300	1.5	3	15	4	50	1,840
IUS230-0160-00320	1.6	3.2	15	4	50	3,120
IUS230-0170-00340	1.7	3.4	15	4	50	3,120
IUS230-0180-00360	1.8	3.6	15	4	50	2,000
IUS230-0190-00380	1.9	3.8	15	4	50	3,120
IUS230-0200-00400	2	4	15	4	50	1,840
IUS230-0210-00420	2.1	4.2	15	4	50	3,120
IUS230-0220-00440	2.2	4.4	15	4	50	3,120
IUS230-0230-00460	2.3	4.6	15	4	50	3,120
IUS230-0240-00480	2.4	4.8	15	4	50	3,120
IUS230-0250-00500	2.5	5	15	4	50	1,840
IUS230-0260-00520	2.6	5.2	15	4	50	4,000
IUS230-0270-00540	2.7	5.4	15	4	50	4,000
IUS230-0280-00560	2.8	5.6	15	4	50	4,000
IUS230-0290-00580	2.9	5.8	15	4	50	4,000
IUS230-0300-00600	3	6	15	4	50	2,320
IUS230-0350-00700	3.5	7	15	6	50	3,520
IUS230-0400-00800	4	8	15	6	50	2,560
IUS230-0450-00900	4.5	9	15	6	50	4,000
IUS230-0500-01000	5	10	15	6	50	2,720
IUS230-0550-01100	5.5	11	15	6	50	4,000
IUS230-0600-01200	6	12	—	6	50	2,960

CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
ion Depo A Series
ion Depo U Series
DLC Series
Non-Coat Series
ion Depo R Series

ion Depo Type U 切削條件參考表 Recommended Milling Conditions

■型號: IUS230
Model number: IUS230

平角立銼刀 Square End Mill

切削材料 Work Material			淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)			
刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
			ap mm	ae mm			ap mm	ae mm			ap mm	ae mm		
2	0.1	0.2	0.003	0.05	130	40,000	0.002	0.04	100	40,000	0.002	0.03	70	40,000
	0.2	0.4	0.003	0.1	200	30,000	0.003	0.08	160	30,000	0.003	0.06	120	30,000
	0.3	0.6	0.003	0.15	300	30,000	0.003	0.12	250	30,000	0.003	0.09	200	30,000
	0.4	0.8	0.005	0.2	370	30,000	0.005	0.16	340	30,000	0.005	0.12	260	25,000
	0.5	1	0.01	0.25	450	25,000	0.007	0.2	400	23,000	0.005	0.15	360	20,000
	0.6	1.2	0.01	0.3	530	25,000	0.007	0.25	430	23,000	0.005	0.18	380	20,000
	0.7	1.4	0.03	0.35	650	25,000	0.02	0.28	500	23,000	0.012	0.21	450	20,000
	0.8	1.6	0.03	0.4	780	25,000	0.02	0.32	650	23,000	0.012	0.24	550	20,000
	0.9	1.8	0.03	0.4	800	25,000	0.02	0.32	700	23,000	0.012	0.24	600	20,000
	1	2	0.05	0.5	1,000	23,000	0.04	0.4	900	18,000	0.03	0.3	600	14,000
	1.1	2.2	0.05	0.5	1,000	23,000	0.04	0.4	900	18,000	0.03	0.3	600	14,000
	1.2	2.4	0.05	0.5	1,000	23,000	0.04	0.4	900	18,000	0.03	0.3	600	14,000
	1.3	2.6	0.05	0.5	1,000	23,000	0.04	0.4	900	18,000	0.03	0.3	600	14,000
	1.4	2.8	0.05	0.5	1,000	23,000	0.04	0.4	900	18,000	0.03	0.3	600	14,000
	1.5	3	0.05	0.75	900	20,000	0.04	0.6	800	18,000	0.03	0.45	600	14,000
	1.6	3.2	0.05	0.75	900	20,000	0.04	0.6	800	18,000	0.03	0.45	600	14,000
	1.7	3.4	0.05	0.75	900	20,000	0.04	0.6	800	18,000	0.03	0.45	600	14,000
	1.8	3.6	0.05	0.75	900	20,000	0.04	0.6	800	18,000	0.03	0.45	600	14,000
	1.9	3.8	0.05	0.75	900	20,000	0.04	0.6	800	18,000	0.03	0.45	600	14,000
	2	4	0.08	1	900	18,000	0.06	0.8	750	15,000	0.04	0.6	550	12,000
	2.1	4.2	0.08	1	900	18,000	0.06	0.8	750	15,000	0.04	0.6	550	12,000
	2.2	4.4	0.08	1	900	18,000	0.06	0.8	750	15,000	0.04	0.6	550	12,000
	2.3	4.6	0.08	1	900	18,000	0.06	0.8	750	15,000	0.04	0.6	550	12,000
	2.4	4.8	0.08	1	900	18,000	0.06	0.8	750	15,000	0.04	0.6	550	12,000
2.5	5	0.07	1.25	800	14,000	0.05	1	700	10,000	0.03	0.75	500	8,000	
2.6	5.2	0.07	1.25	800	14,000	0.05	1	700	10,000	0.03	0.75	500	8,000	
2.7	5.4	0.07	1.25	800	14,000	0.05	1	700	10,000	0.03	0.75	500	8,000	
2.8	5.6	0.07	1.25	800	14,000	0.05	1	700	10,000	0.03	0.75	500	8,000	
2.9	5.8	0.07	1.25	800	14,000	0.05	1	700	10,000	0.03	0.75	500	8,000	
3	6	0.1	1.5	850	14,000	0.07	1.2	750	10,000	0.05	0.9	550	8,000	
3.5	7	0.1	1.5	850	14,000	0.07	1.2	750	10,000	0.05	0.9	550	8,000	
4	8	0.1	2	850	10,000	0.07	1.8	750	9,000	0.05	1.5	650	9,000	
4.5	9	0.1	2	850	10,000	0.07	1.8	750	9,000	0.05	1.5	650	9,000	
5	10	0.1	2.5	800	6,000	0.07	2.3	700	5,000	0.06	2	600	4,500	
5.5	11	0.1	2.5	800	6,000	0.07	2.3	700	5,000	0.06	2	600	4,500	
6	12	0.12	3	800	5,000	0.09	2.8	700	4,000	0.08	2.5	700	3,500	

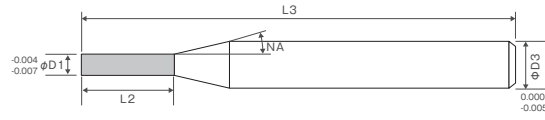
●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●ap=軸向方向切削深度，ae=徑向方向切削深度。 ap=Axial Depth of Cut ae=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type U Series

超硬平角立銑刀 Carbide Square End Mill

■型號: IUS430 Model number: IUS430

ion U super MG 4 螺絲角 30° 仰角 15° 柄徑公差 0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value. If concerned about interference with the work material, please check by actual measurement.

●請系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size) :mm

型號 Code No.	刀刃直徑 (D1) Tool Diameter	刃長 (L2) Length of Cut	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (円) Retail Price (JPY)
IUS430-0100-00200	1	2	15	4	50	5,040
IUS430-0150-00300	1.5	3	15	4	50	5,040
IUS430-0200-00400	2	4	15	4	50	5,040
IUS430-0300-00600	3	6	15	4	50	5,840
IUS430-0400-00800	4	8	15	6	50	6,320
IUS430-0600-01200	6	12	—	6	60	6,640
IUS430-0600-01800		18	—	6	60	7,120
IUS430-0800-01600	8	16	—	8	70	9,920
IUS430-0800-02400		24	—	8	70	11,040
IUS430-1000-02000	10	20	—	10	80	15,520
IUS430-1000-03000		30	—	10	80	16,000
IUS430-1200-02400	12	24	—	12	110	19,600
IUS430-1200-03600		36	—	12	110	20,320
IUS430-1400-03500	14	35	—	14	120	11,760
IUS430-1600-04000	16	40	—	16	130	18,080
IUS430-1800-04500	18	45	—	18	140	21,040
IUS430-2000-05000	20	50	—	20	140	26,400

ion Depo Type U Series

ion Depo Type U 切削條件參考表 Recommended Milling Conditions

■型號: IUS430
Model number: IUS430

平角立銑刀 Square End Mill

切削材料 Work Material	淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)						淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)				
	刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
				∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹	∅p mm	∅e mm	mm/min	min ⁻¹
4	1	2	1.5	0.03	800	30,000	1.5	0.02	500	25,000	1.5	0.02	240	20,000	
	1.5	3	2.2	0.045	860	20,000	2.2	0.03	560	16,000	2.2	0.03	330	14,000	
	2	4	3	0.06	920	15,000	3	0.04	630	12,000	3	0.04	480	10,000	
	3	6	4.5	0.09	1,000	10,000	4.5	0.06	700	8,000	4.5	0.06	560	7,000	
	4	8	6	0.12	1,200	8,500	6	0.08	800	7,000	6	0.08	600	6,000	
	6	12	9	0.18	1,200	6,400	9	0.12	1000	5,300	9	0.12	600	4,600	
		18	9	0.12	1,000	5,800	9	0.09	900	4,800	9	0.09	450	4,200	
	8	16	12	0.24	1,300	4,800	12	0.16	900	4,000	12	0.16	650	3,400	
		24	12	0.2	1,000	4,300	12	0.12	700	3,600	12	0.12	500	3,000	
	10	20	15	0.3	1,300	3,800	15	0.2	900	3,200	15	0.2	650	2,600	
		30	15	0.25	1,000	3,400	15	0.15	700	2,800	15	0.15	500	2,300	
	12	24	18	0.36	1,300	3,200	18	0.24	900	2,600	18	0.24	650	2,200	
		36	18	0.3	1,000	2,800	18	0.18	700	2,300	18	0.18	500	2,000	
	14	35	21	0.35	700	2,400	21	0.28	550	2,400	21	0.28	500	2,400	
	16	40	24	0.4	600	2,100	24	0.32	450	2,100	24	0.32	400	2,100	
	18	45	27	0.45	550	1,800	27	0.36	400	1,800	27	0.36	350	1,800	
20	50	30	0.5	500	1,600	30	0.4	350	1,600	30	0.4	300	1,600		

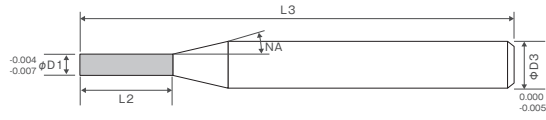
●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●∅p=軸向方向切削深度。 ∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type U Series

超硬平角立銑刀 Carbide Square End Mill

■型號: IUS630 Model number: IUS630

ion U super MG 刀刀數 6 螺旋角 30° 仰角 15° 柄徑公差 0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value. If concerned about interference with the work material, please check by actual measurement.

●請聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size) :mm

型號 Code No.	刀直徑 (D1) Tool Diameter	刃長 (L2) Length of Cut	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (円) Retail Price (JPY)
IUS630-0500-01000	5	10	15	6	50	6,720
IUS630-0500-01500		15	15	6	50	7,440
IUS630-0600-01200	6	12	—	6	50	7,280
IUS630-0600-01800		18	—	6	60	8,080
IUS630-0800-01600	8	16	—	8	70	9,920
IUS630-0800-02400		24	—	8	70	11,040
IUS630-1000-02000	10	20	—	10	80	13,200
IUS630-1000-03000		30	—	10	80	14,720
IUS630-1200-02400	12	24	—	12	110	16,880
IUS630-1200-03600		36	—	12	110	18,720
IUS630-1400-03500	14	35	—	14	120	12,800
IUS630-1600-04000	16	40	—	16	130	22,320
IUS630-1800-04500	18	45	—	18	140	25,280
IUS630-2000-05000	20	50	—	20	140	28,000

ion Depo Type U Series

ion Depo Type U 切削条件参考表 Recommended Milling Conditions

■型号: IUS630
Model number: IUS630

平角立銑刀 Square End Mill

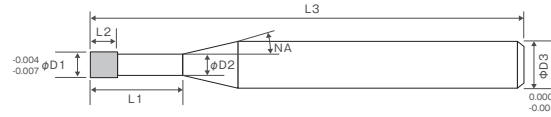
切削材料 Work Material	淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)						淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)				
	刃數 Number of Flutes	刀直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
				∂p mm	∂e mm			∂p mm	∂e mm			∂p mm	∂e mm		
6	5	10	7.5	0.15	1,600	7,600	7.5	0.1	1,200	6,200	7.5	0.1	800	5,300	
		15	7.5	0.1	1,400	6,800	7.5	0.07	1,000	5,600	7.5	0.07	600	4,800	
	6	12	9	0.18	1,800	6,400	9	0.12	1,200	5,300	9	0.12	800	4,600	
		18	9	0.12	1,600	5,800	9	0.09	1,000	4,800	9	0.09	600	4,200	
	8	16	12	0.24	2,000	4,800	12	0.16	1,400	4,000	12	0.16	1,000	3,400	
		24	12	0.2	1,800	4,300	12	0.12	1,200	3,600	12	0.12	800	3,000	
	10	20	15	0.3	2,000	3,800	15	0.2	1,600	3,200	15	0.2	1,000	2,600	
		30	15	0.25	1,800	3,400	15	0.15	1,400	2,800	15	0.15	800	2,300	
	12	24	18	0.36	2,000	3,200	18	0.24	1,600	2,600	18	0.24	1,000	2,200	
		36	18	0.3	1,800	2,800	18	0.18	1,400	2,300	18	0.18	800	2,000	
	14	35	21	0.35	1,000	2,400	21	0.28	830	2,400	21	0.28	750	2,400	
	16	40	24	0.4	900	2,100	24	0.32	670	2,100	24	0.32	600	2,100	
18	45	27	0.45	820	1,800	27	0.36	600	1,800	27	0.36	530	1,800		
20	50	30	0.5	750	1,600	30	0.4	520	1,600	30	0.4	450	1,600		

●請將刀具確實地固定於夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●∂p=軸向方向切削深度。 ∂e=徑向方向切削深度。 ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

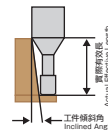
ion Depo Type U Series

超硬長頸平角立銼刀
Carbide Long Neck Square End Mill

■型號: IULS230 Model number: IULS230



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value. If concerned about interference with the work material, please check by actual measurement.

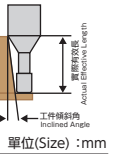


單位(Size) :mm

●聯繫我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) [※] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
									30'	1°	1°30'	2°	3°
IULS230-0010-0030	0.1	0.3	0.08	0.08	15	4	50	8,400	0.35	0.36	0.37	0.39	0.42
IULS230-0010-0050		0.5	0.08	0.08	15	4	50	9,120	0.56	0.57	0.60	0.62	0.67
IULS230-0015-0030	0.15	0.3	0.12	0.13	15	4	50	11,200	0.35	0.36	0.37	0.39	0.42
IULS230-0015-0050		0.5	0.12	0.13	15	4	50	8,400	0.56	0.57	0.60	0.62	0.67
IULS230-0020-0050	0.2	0.5	0.15	0.18	15	4	50	10,000	0.56	0.57	0.60	0.62	0.67
IULS230-0020-0075		0.75	0.15	0.18	15	4	50	5,760	0.81	0.84	0.87	0.91	0.98
IULS230-0020-0100		1	0.15	0.18	15	4	50	5,920	1.07	1.11	1.15	1.19	1.29
IULS230-0030-0100	0.3	1	0.25	0.27	15	4	50	8,800	1.09	1.13	1.17	1.21	1.31
IULS230-0030-0150		1.5	0.25	0.27	15	4	50	5,040	1.61	1.66	1.72	1.79	1.93
IULS230-0030-0200		2	0.25	0.27	15	4	50	5,040	2.13	2.20	2.28	2.36	2.56
IULS230-0030-0250	0.4	2.5	0.25	0.27	15	4	50	6,240	2.64	2.73	2.83	2.94	3.18
IULS230-0030-0300		3	0.25	0.27	15	4	50	6,480	3.16	3.27	3.39	3.51	3.80
IULS230-0040-0100		1	0.3	0.37	15	4	50	6,480	1.09	1.13	1.17	1.21	1.31
IULS230-0040-0150	0.4	1.5	0.3	0.37	15	4	50	3,680	1.61	1.66	1.72	1.79	1.93
IULS230-0040-0200		2	0.3	0.37	15	4	50	3,680	2.13	2.20	2.28	2.36	2.56
IULS230-0040-0250		2.5	0.3	0.37	15	4	50	3,680	2.64	2.73	2.83	2.94	3.18
IULS230-0040-0300	0.5	3	0.3	0.37	15	4	50	3,680	3.16	3.27	3.39	3.51	3.80
IULS230-0050-0100		1	0.4	0.47	15	4	50	2,640	1.09	1.13	1.17	1.21	1.31
IULS230-0050-0150		1.5	0.4	0.47	15	4	50	2,640	1.61	1.66	1.72	1.79	1.93
IULS230-0050-0200	0.5	2	0.4	0.47	15	4	50	2,640	2.13	2.20	2.28	2.36	2.56
IULS230-0050-0250		2.5	0.4	0.47	15	4	50	2,640	2.64	2.73	2.83	2.94	3.18
IULS230-0050-0300		3	0.4	0.47	15	4	50	2,640	3.16	3.27	3.39	3.51	3.80
IULS230-0050-0350	0.6	3.5	0.4	0.47	15	4	50	2,640	3.68	3.80	3.94	4.09	4.42
IULS230-0050-0400		4	0.4	0.47	15	4	50	2,640	4.19	4.34	4.50	4.66	5.04
IULS230-0060-0150		1.5	0.5	0.57	15	4	50	2,800	1.61	1.66	1.72	1.79	1.93
IULS230-0060-0200	0.6	2	0.5	0.57	15	4	50	2,800	2.13	2.20	2.28	2.36	2.56
IULS230-0060-0300		3	0.5	0.57	15	4	50	2,800	3.16	3.27	3.39	3.51	3.80
IULS230-0060-0400		4	0.5	0.57	15	4	50	2,800	4.19	4.34	4.50	4.66	5.04
IULS230-0060-0500	0.6	5	0.5	0.57	15	4	50	2,800	5.23	5.41	5.60	5.81	6.29
IULS230-0060-0600		6	0.5	0.57	15	4	50	2,800	6.26	6.48	6.71	6.96	7.53

ion Depo Type U Series

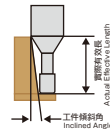


單位(Size) :mm

●聯繫我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) [※] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
									30'	1°	1°30'	2°	3°
IULS230-0070-0200	0.7	2	0.55	0.67	15	4	50	3,200	2.13	2.20	2.28	2.36	2.56
IULS230-0070-0400		4	0.55	0.67	15	4	50	3,200	4.19	4.34	4.50	4.66	5.04
IULS230-0070-0600		6	0.55	0.67	15	4	50	3,200	6.26	6.48	6.71	6.96	7.53
IULS230-0080-0300	0.8	3	0.65	0.77	15	4	50	3,120	3.16	3.27	3.39	3.51	3.80
IULS230-0080-0400		4	0.65	0.77	15	4	50	3,120	4.19	4.34	4.50	4.66	5.04
IULS230-0080-0500		5	0.65	0.77	15	4	50	3,120	5.23	5.41	5.60	5.81	6.29
IULS230-0080-0600		6	0.65	0.77	15	4	50	3,120	6.26	6.48	6.71	6.96	7.53
IULS230-0080-0800	1	8	0.65	0.77	15	4	50	3,120	8.33	8.62	8.93	9.26	10.01
IULS230-0100-0200		2	0.8	0.95	15	4	50	2,800	2.16	2.24	2.32	2.41	2.60
IULS230-0100-0300		3	0.8	0.95	15	4	50	2,800	3.20	3.31	3.43	3.56	3.85
IULS230-0100-0400		4	0.8	0.95	15	4	50	2,800	4.23	4.38	4.54	4.71	5.09
IULS230-0100-0500		5	0.8	0.95	15	4	50	2,800	5.26	5.45	5.64	5.86	6.33
IULS230-0100-0600		6	0.8	0.95	15	4	50	2,800	6.30	6.52	6.75	7.01	7.57
IULS230-0100-0700		7	0.8	0.95	15	4	50	2,800	7.33	7.59	7.86	8.16	8.82
IULS230-0100-0800	1.2	8	0.8	0.95	15	4	50	2,800	8.37	8.66	8.97	9.31	10.06
IULS230-0100-0900		9	0.8	0.95	15	4	50	2,800	9.40	9.73	10.08	10.46	11.30
IULS230-0100-1000		10	0.8	0.95	15	4	50	2,800	10.43	10.80	11.19	11.61	12.55
IULS230-0100-1200	1.4	12	0.8	0.95	15	4	50	2,800	12.50	12.94	13.40	13.91	15.03
IULS230-0120-0600		6	1	1.15	15	4	50	2,960	6.30	6.52	6.75	7.01	7.57
IULS230-0120-0800		8	1	1.15	15	4	50	2,960	8.37	8.66	8.97	9.31	10.06
IULS230-0120-1000		10	1	1.15	15	4	50	2,960	10.43	10.80	11.19	11.61	12.55
IULS230-0120-1200	1.5	12	1	1.15	15	4	50	2,960	12.50	12.94	13.40	13.91	15.03
IULS230-0120-1600		16	1	1.15	15	4	50	4,720	16.64	17.21	17.84	18.50	20.01
IULS230-0140-0600		6	1.1	1.35	15	4	50	3,040	6.30	6.52	6.75	7.01	7.57
IULS230-0140-1200	1.6	12	1.1	1.35	15	4	50	3,040	12.50	12.94	13.40	13.91	15.03
IULS230-0150-0400		4	1.2	1.45	15	4	50	2,960	4.23	4.38	4.54	4.71	5.09
IULS230-0150-0600	1.8	6	1.2	1.45	15	4	50	2,960	6.30	6.52	6.75	7.01	7.57
IULS230-0150-0800		8	1.2	1.45	15	4	50	2,960	8.37	8.66	8.97	9.31	10.06
IULS230-0150-1000		10	1.2	1.45	15	4	50	2,960	10.43	10.80	11.19	11.61	12.55
IULS230-0150-1200	2	12	1.2	1.45	15	4	50	2,960	12.50	12.94	13.40	13.91	15.03
IULS230-0150-1400		14	1.2	1.45	15	4	50	3,040	14.57	15.08	15.62	16.21	17.52
IULS230-0150-1600		16	1.2	1.45	15	4	50	3,040	16.64	17.21	17.84	18.50	20.01
IULS230-0160-0600		6	1.3	1.55	15	4	50	3,040	6.30	6.52	6.75	7.01	7.57
IULS230-0160-0800	1.8	8	1.3	1.55	15	4	50	3,040	8.37	8.66	8.97	9.31	10.06
IULS230-0180-0600		6	1.4	1.75	15	4	50	3,040	6.30	6.52	6.75	7.01	7.57
IULS230-0180-0800	2	8	1.4	1.75	15	4	50	3,040	8.37	8.66	8.97	9.31	10.06
IULS230-0180-1000		10	1.4	1.75	15	4	50	3,040	10.43	10.80	11.19	11.61	12.55
IULS230-0180-1200		12	1.4	1.75	15	4	50	3,040	12.50	12.94	13.40	13.91	15.03
IULS230-0180-1400	2	14	1.4	1.75	15	4	50	3,040	14.57	15.08	15.62	16.21	17.52
IULS230-0180-1600		16	1.4	1.75	15	4	50	3,040	16.64	17.21	17.84	18.50	20.01
IULS230-0200-0400		4	1.6	1.94	15	4	50	2,960	4.25	4.40	4.56	4.73	5.11
IULS230-0200-0600		6	1.6	1.94	15	4	50	2,960	6.32	6.54	6.77	7.03	7.60
IULS230-0200-0800	2	8	1.6	1.94	15	4	50	2,960	8.39	8.68	8.99	9.33	10.08
IULS230-0200-1000		10	1.6	1.94	15	4	50	2,960	10.45	10.82	11.21	11.63	12.57
IULS230-0200-1200		12	1.6	1.94	15	4	50	2,960	12.52	12.96	13.42	13.93	15.06

CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
ion Depo A Series
ion Depo U Series
DLC Series
Non-Coat Series
ion Depo R Series



單位(Size) : mm

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
									30'	1°	1°30'	2°	3°
IULS230-0200-1400	2	14	1.6	1.94	15	4	50	2,960	14.59	15.10	15.64	16.23	17.54
IULS230-0200-1600		16	1.6	1.94	15	4	50	2,960	16.65	17.23	17.86	18.53	FREE
IULS230-0200-1800		18	1.6	1.94	15	4	50	2,960	18.72	19.37	20.07	20.83	FREE
IULS230-0200-2000		20	1.6	1.94	15	4	50	2,960	20.79	21.51	22.29	23.13	FREE
IULS230-0250-0800	2.5	8	2	2.44	15	4	50	3,120	8.39	8.68	8.99	9.33	10.08
IULS230-0250-1200		12	2	2.44	15	4	50	3,120	12.52	12.96	13.42	13.93	FREE
IULS230-0250-1600		16	2	2.44	15	4	50	3,120	16.65	17.23	17.86	18.53	FREE
IULS230-0250-2000		20	2	2.44	15	4	50	3,120	20.79	21.51	22.29	23.13	FREE
IULS230-0300-0800	3	8	4.5	2.85	15	4	50	4,000	8.56	8.86	9.18	9.52	FREE
IULS230-0300-1200		12	4.5	2.85	15	4	50	4,000	12.69	13.14	13.61	14.12	FREE
IULS230-0300-1600		16	4.5	2.85	15	4	50	4,000	16.83	17.41	18.04	FREE	FREE
IULS230-0300-2000		20	4.5	2.85	15	4	50	4,000	20.96	21.69	FREE	FREE	FREE
IULS230-0300-2500		25	4.5	2.85	15	4	60	4,000	26.13	27.04	FREE	FREE	FREE
IULS230-0300-3000		30	4.5	2.85	15	4	60	4,800	31.30	FREE	FREE	FREE	FREE
IULS230-0400-1000	4	10	3	3.8	15	6	50	4,180	10.72	11.10	11.50	11.93	12.89
IULS230-0400-1500		15	3	3.8	15	6	50	4,180	15.89	16.44	17.04	17.68	FREE
IULS230-0400-2000		20	3	3.8	15	6	50	4,180	21.06	21.79	22.58	23.43	FREE
IULS230-0500-1500	5	15	3.5	4.8	15	6	50	5,260	15.89	16.44	17.04	FREE	FREE
IULS230-0500-2000		20	3.5	4.8	15	6	50	5,490	21.06	21.79	FREE	FREE	FREE
IULS230-0600-1500	6	15	6	5.8	15	6	50	5,260	FREE	FREE	FREE	FREE	FREE
IULS230-0600-2000		20	6	5.8	15	6	50	5,260	FREE	FREE	FREE	FREE	FREE
IULS230-0600-3000		30	6	5.8	15	6	60	5,490	FREE	FREE	FREE	FREE	FREE

ion Depo Type U 切削條件參考表 Recommended Milling Conditions

■ 型號: IULS230
Model number: IULS230

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material	刀數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)						淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)						淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)					
				切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed						
				ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹						
2	0.1	0.1	0.3	0.003	0.05	120	40,000	0.002	0.04	100	40,000	0.002	0.03	70	40,000						
			0.5	0.003	0.05	80	40,000	0.002	0.04	60	40,000	0.002	0.03	50	40,000						
	0.15	0.15	0.3	0.003	0.07	150	40,000	0.002	0.06	120	40,000	0.002	0.04	100	40,000						
			0.5	0.003	0.07	120	40,000	0.002	0.06	100	40,000	0.002	0.04	80	40,000						
	0.2	0.2	0.5	0.003	0.1	200	30,000	0.003	0.08	160	30,000	0.003	0.06	120	30,000						
			0.75	0.003	0.1	180	30,000	0.003	0.08	140	30,000	0.003	0.06	100	30,000						
	0.3	0.3	1	0.003	0.1	150	30,000	0.003	0.08	120	30,000	0.003	0.06	80	30,000						
			1.5	0.003	0.15	200	30,000	0.003	0.12	250	30,000	0.003	0.09	200	30,000						
			2	0.003	0.15	150	30,000	0.003	0.12	120	30,000	0.003	0.09	100	25,000						
	0.4	0.4	2.5	0.002	0.15	100	25,000	0.002	0.12	80	25,000	0.002	0.09	60	20,000						
			3	0.002	0.15	50	25,000	0.002	0.12	40	25,000	0.002	0.09	30	20,000						
			1	0.005	0.2	400	30,000	0.005	0.16	350	30,000	0.005	0.12	300	25,000						
	0.5	0.5	1.5	0.005	0.2	360	30,000	0.005	0.16	330	30,000	0.005	0.12	250	25,000						
			2	0.005	0.2	320	30,000	0.005	0.16	280	25,000	0.005	0.12	220	25,000						
			2.5	0.005	0.2	280	25,000	0.004	0.16	250	25,000	0.004	0.12	200	20,000						
			3	0.004	0.2	260	25,000	0.003	0.16	220	20,000	0.003	0.12	180	18,000						
	0.6	0.6	1	0.01	0.25	500	25,000	0.007	0.2	450	23,000	0.005	0.15	400	20,000						
			1.5	0.01	0.25	450	25,000	0.007	0.2	400	23,000	0.005	0.15	360	20,000						
			2	0.01	0.25	420	25,000	0.007	0.2	380	23,000	0.005	0.15	320	20,000						
			2.5	0.008	0.25	400	25,000	0.006	0.2	360	23,000	0.004	0.15	300	20,000						
			3	0.007	0.25	350	25,000	0.005	0.2	320	23,000	0.003	0.15	280	20,000						
			3.5	0.006	0.25	320	25,000	0.003	0.2	280	23,000	0.003	0.15	240	20,000						
	0.7	0.7	4	0.005	0.25	280	25,000	0.003	0.2	240	23,000	0.002	0.15	200	20,000						
			1.5	0.01	0.3	550	25,000	0.007	0.25	450	23,000	0.005	0.18	400	20,000						
			2	0.01	0.3	500	25,000	0.007	0.25	400	23,000	0.005	0.18	350	20,000						
			3	0.007	0.3	450	25,000	0.005	0.25	350	23,000	0.003	0.18	300	20,000						
			4	0.005	0.3	400	25,000	0.003	0.25	300	23,000	0.002	0.18	250	20,000						
			5	0.003	0.3	350	20,000	0.003	0.25	250	18,000	0.002	0.18	200	16,000						
	0.8	0.8	6	0.002	0.3	300	20,000	0.002	0.25	200	18,000	0.001	0.18	150	16,000						
			2	0.03	0.35	600	25,000	0.02	0.28	450	23,000	0.012	0.21	400	20,000						
			4	0.02	0.35	560	25,000	0.015	0.28	400	23,000	0.007	0.21	320	20,000						
	1	1	6	0.015	0.35	410	20,000	0.012	0.28	300	18,000	0.007	0.21	240	16,000						
			3	0.03	0.4	780	25,000	0.02	0.32	650	23,000	0.012	0.24	550	20,000						
			4	0.025	0.4	700	25,000	0.015	0.32	600	23,000	0.007	0.24	500	20,000						
			5	0.02	0.4	630	23,000	0.012	0.32	530	20,000	0.006	0.24	450	18,000						
			6	0.02	0.4	550	20,000	0.01	0.32	450	18,000	0.005	0.24	350	16,000						

● 請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ● 建議使用油霧或者非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ● 切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ● 工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ● ap=軸向方向切削深度。 ae=徑向方向切削深度。 ap=Axial Depth of Cut. ae=Radial Depth of Cut. ● 請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type U Series

ion Depo Type U 切削條件參考表 Recommended Milling Conditions

■型號: IULS230
Model number: IULS230

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)				
刃數 Number of Flutes	刀徑直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm			
2	1	6	0.02	0.5	700	18,000	0.01	0.4	600	14,000	0.007	0.3	400	10,000	
			7	0.02	0.5	650	18,000	0.01	0.4	550	14,000	0.006	0.3	370	10,000
			8	0.02	0.5	600	16,000	0.01	0.4	500	12,000	0.005	0.3	340	8,000
			9	0.015	0.5	550	16,000	0.007	0.4	450	12,000	0.005	0.3	300	8,000
			10	0.01	0.5	500	14,000	0.007	0.4	400	10,000	0.005	0.3	250	6,000
			12	0.01	0.5	400	13,000	0.005	0.4	300	10,000	0.004	0.3	180	6,000
		1.2	6	0.03	0.6	700	18,000	0.02	0.5	600	14,000	0.01	0.4	400	10,000
			8	0.02	0.6	600	16,000	0.01	0.5	500	12,000	0.007	0.4	340	8,000
			10	0.02	0.6	500	12,000	0.01	0.5	430	10,000	0.005	0.4	300	8,000
			12	0.01	0.6	500	10,000	0.007	0.5	400	9,000	0.005	0.4	250	7,000
			16	0.01	0.6	300	9,000	0.005	0.5	260	8,000	0.003	0.4	180	6,000
			1.4	6	0.04	0.7	800	20,000	0.03	0.56	700	18,000	0.02	0.42	450
	12	0.01	0.7	500	13,000	0.007	0.56	400	11,000	0.005	0.42	280	8,000		
	1.5	4	0.05	0.75	900	20,000	0.04	0.6	800	18,000	0.03	0.45	600	14,000	
		6	0.04	0.75	800	20,000	0.03	0.6	700	18,000	0.02	0.45	500	14,000	
		8	0.03	0.75	600	18,000	0.03	0.6	600	14,000	0.01	0.45	380	10,000	
		10	0.03	0.75	500	16,000	0.02	0.6	500	14,000	0.01	0.45	350	10,000	
		12	0.02	0.75	500	14,000	0.02	0.6	430	12,000	0.007	0.45	310	8,000	
		14	0.02	0.75	400	12,000	0.01	0.6	380	10,000	0.007	0.45	250	7,500	
		16	0.01	0.75	360	10,000	0.007	0.6	300	9,000	0.005	0.45	200	6,800	
		1.6	6	0.04	0.8	850	19,000	0.03	0.64	750	17,000	0.025	0.48	600	13,000
	8	0.03	0.8	750	17,000	0.03	0.64	600	14,000	0.015	0.48	430	10,000		
	1.8	6	0.05	0.9	900	18,000	0.04	0.7	750	15,000	0.03	0.5	600	12,000	
		8	0.04	0.9	800	16,000	0.03	0.7	600	12,000	0.02	0.5	500	9,500	
10		0.04	0.9	700	14,000	0.03	0.7	500	12,000	0.02	0.5	450	9,500		
12		0.03	0.9	600	12,000	0.02	0.7	500	10,000	0.01	0.5	400	8,200		
14		0.03	0.9	600	12,000	0.02	0.7	430	10,000	0.01	0.5	360	8,200		
16		0.02	0.9	500	10,000	0.01	0.7	400	9,200	0.007	0.5	340	7,500		
2	4	0.08	1	1,000	18,000	0.06	0.8	800	15,000	0.04	0.6	600	12,000		
	6	0.06	1	900	18,000	0.05	0.8	750	15,000	0.03	0.6	600	12,000		
	8	0.05	1	800	16,000	0.04	0.8	600	12,000	0.02	0.6	500	9,500		
	10	0.05	1	700	14,000	0.04	0.8	500	12,000	0.02	0.6	450	9,500		
	12	0.04	1	600	12,000	0.03	0.8	500	10,000	0.01	0.6	400	8,200		
	14	0.03	1	600	12,000	0.02	0.8	430	10,000	0.007	0.6	360	8,200		
	16	0.03	1	500	10,000	0.02	0.8	400	9,200	0.007	0.6	340	7,500		
	18	0.02	1	410	9,200	0.01	0.8	370	8,500	0.005	0.6	320	6,000		
20	0.02	1	380	9,200	0.01	0.8	340	8,500	0.005	0.6	260	6,000			
2.5	8	0.07	1.25	800	14,000	0.05	1	700	10,000	0.03	0.75	500	8,000		
	12	0.06	1.25	700	12,000	0.04	1	600	9,600	0.02	0.75	480	7,500		
	16	0.05	1.25	600	10,000	0.02	1	500	8,500	0.01	0.75	400	7,000		
	20	0.05	1.25	500	8,200	0.02	1	500	7,500	0.01	0.75	400	5,000		
3	8	0.1	1.5	900	14,000	0.07	1.2	800	10,000	0.05	0.9	600	8,000		

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●∅p=軸向切深，∅e=徑向切深。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type U Series

長頸平角立銼刀 Long Neck Square End Mill

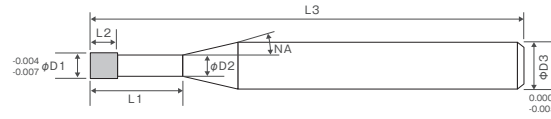
切削材料 Work Material			淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)				
刃數 Number of Flutes	刀徑直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm			
2	3	12	0.08	1.5	800	12,000	0.06	1.2	700	9,200	0.04	0.9	500	7,200	
			16	0.07	1.5	700	10,000	0.05	1.2	600	8,500	0.03	0.9	400	6,500
			20	0.07	1.5	700	9,000	0.04	1.2	600	7,800	0.02	0.9	400	5,800
			25	0.06	1.5	600	8,200	0.03	1.2	500	7,000	0.01	0.9	360	5,000
			30	0.03	1.5	600	7,000	0.02	1.2	500	6,500	0.007	0.9	330	4,500
			4	10	0.1	2	900	10,000	0.07	1.8	800	9,000	0.05	1.5	700
	15	0.07		2	800	8,000	0.05	1.8	700	7,000	0.04	1.5	600	6,500	
	20	0.06		2	750	7,000	0.04	1.8	650	6,000	0.03	1.5	550	5,500	
	5	15		0.1	2.5	850	6,000	0.07	2.3	750	5,000	0.06	2	650	4,500
		20		0.08	2.5	800	5,000	0.06	2.3	700	4,000	0.05	2	600	3,500
	6	15		0.12	3	850	5,000	0.09	2.8	750	4,000	0.08	2.5	650	3,500
		20	0.1	3	800	4,000	0.07	2.8	700	3,000	0.06	2.5	600	2,500	
	30	0.08	3	700	3,000	0.06	2.8	600	2,000	0.05	2.5	500	1,500		

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●∅p=軸向切深，∅e=徑向切深。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

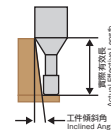
ion Depo Type U Series

超硬長頸平角立銼刀 Carbide Long Neck Square End Mill

■型號: IULS430 Model number: IULS430



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value. If concerned about interference with the work material, please check by actual measurement.

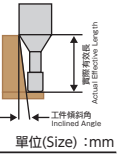


單位(Size) :mm

●聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
									30'	1°	1°30'	2°	3°
IULS430-0100-0400	1	4	0.8	0.95	15	4	50	3,960	4.23	4.38	4.54	4.71	5.09
IULS430-0100-0600		6	0.8	0.95	15	4	50	3,960	6.30	6.52	6.75	7.01	7.57
IULS430-0100-0800		8	0.8	0.95	15	4	50	3,960	8.37	8.66	8.97	9.31	10.06
IULS430-0100-1000		10	0.8	0.95	15	4	50	3,960	10.43	10.80	11.19	11.61	12.55
IULS430-0120-0600		1.2	6	1	1.15	15	4	50	3,960	6.30	6.52	6.75	7.01
IULS430-0120-0800	8		1	1.15	15	4	50	3,960	8.37	8.66	8.97	9.31	10.06
IULS430-0120-1000	10		1	1.15	15	4	50	3,960	10.43	10.80	11.19	11.61	12.55
IULS430-0120-1200	1.5	12	1	1.15	15	4	50	3,960	12.50	12.94	13.40	13.91	15.03
IULS430-0150-0600		6	1.2	1.45	15	4	50	3,960	6.30	6.52	6.75	7.01	7.57
IULS430-0150-0800		8	1.2	1.45	15	4	50	3,960	8.37	8.66	8.97	9.31	10.06
IULS430-0150-1000	1.8	10	1.2	1.45	15	4	50	3,960	10.43	10.80	11.19	11.61	12.55
IULS430-0150-1200		12	1.2	1.45	15	4	50	3,960	12.50	12.94	13.40	13.91	15.03
IULS430-0150-1400		14	1.2	1.45	15	4	50	3,960	14.57	15.08	15.62	16.21	17.52
IULS430-0150-1600	2	16	1.2	1.45	15	4	50	3,960	16.64	17.21	17.84	18.50	20.01
IULS430-0180-0600		6	1.4	1.75	15	4	50	3,960	6.30	6.52	6.75	7.01	7.57
IULS430-0180-0800		8	1.4	1.75	15	4	50	3,960	8.37	8.66	8.97	9.31	10.06
IULS430-0180-1000	2.5	10	1.4	1.75	15	4	50	3,960	10.43	10.80	11.19	11.61	12.55
IULS430-0180-1200		12	1.4	1.75	15	4	50	3,960	12.50	12.94	13.40	13.91	15.03
IULS430-0180-1400		14	1.4	1.75	15	4	50	3,960	14.57	15.08	15.62	16.21	17.52
IULS430-0180-1600	2	16	1.4	1.75	15	4	50	3,960	16.64	17.21	17.84	18.50	20.01
IULS430-0200-0600		6	1.6	1.94	15	4	50	3,960	6.32	6.54	6.77	7.03	7.60
IULS430-0200-0800		8	1.6	1.94	15	4	50	3,960	8.39	8.68	8.99	9.33	10.08
IULS430-0200-1000	2	10	1.6	1.94	15	4	50	3,960	10.45	10.82	11.21	11.63	12.57
IULS430-0200-1200		12	1.6	1.94	15	4	50	3,960	12.52	12.96	13.42	13.93	15.06
IULS430-0200-1400		14	1.6	1.94	15	4	50	3,960	14.59	15.10	15.64	16.23	17.54
IULS430-0200-1600	2.5	16	1.6	1.94	15	4	50	3,960	16.65	17.23	17.86	18.53	FREE
IULS430-0200-1800		18	1.6	1.94	15	4	50	3,960	18.72	19.37	20.07	20.83	FREE
IULS430-0200-2000		20	1.6	1.94	15	4	50	3,960	20.79	21.51	22.29	23.13	FREE
IULS430-0250-0800	2.5	8	2	2.44	15	4	50	3,960	8.39	8.68	8.99	9.33	10.08
IULS430-0250-1200		12	2	2.44	15	4	50	3,960	12.52	12.96	13.42	13.93	FREE

ion Depo Type U Series



單位(Size) :mm

●聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
									30'	1°	1°30'	2°	3°
IULS430-0250-1600	2.5	16	2	2.44	15	4	50	3,960	16.65	17.23	17.86	18.53	FREE
IULS430-0250-2000		20	2	2.44	15	4	50	3,960	20.79	21.51	22.29	FREE	FREE
IULS430-0300-0800	3	8	4.5	2.85	15	4	50	5,600	8.56	8.86	9.18	9.52	FREE
IULS430-0300-1200		12	4.5	2.85	15	4	50	5,600	12.69	13.14	13.61	14.12	FREE
IULS430-0300-1600		16	4.5	2.85	15	4	50	5,600	16.83	17.41	18.04	FREE	FREE
IULS430-0300-2000		20	4.5	2.85	15	4	50	5,600	20.96	21.69	FREE	FREE	FREE
IULS430-0300-2500		25	4.5	2.85	15	4	60	5,920	26.13	27.04	FREE	FREE	FREE
IULS430-0300-3000		30	4.5	2.85	15	4	60	6,400	31.30	FREE	FREE	FREE	FREE
IULS430-0400-1200	4	12	6	3.8	15	6	50	5,840	12.79	13.24	13.71	14.23	15.38
IULS430-0400-1600		16	6	3.8	15	6	50	5,840	16.92	17.51	18.15	18.83	FREE
IULS430-0400-2000		20	6	3.8	15	6	50	5,840	21.06	21.79	22.58	23.43	FREE
IULS430-0400-2500		25	6	3.8	15	6	60	6,160	26.23	27.14	28.12	FREE	FREE
IULS430-0400-3000		30	6	3.8	15	6	60	6,800	31.40	32.49	33.66	FREE	FREE
IULS430-0400-3500		35	6	3.8	15	6	70	7,360	36.56	37.84	FREE	FREE	FREE
IULS430-0500-1600	5	16	7.5	4.8	15	6	50	7,360	16.92	17.51	18.15	FREE	FREE
IULS430-0500-2500		25	7.5	4.8	15	6	60	7,680	26.23	27.14	FREE	FREE	FREE
IULS430-0500-3500		35	7.5	4.8	15	6	70	8,000	36.56	FREE	FREE	FREE	FREE
IULS430-0600-2000	6	20	9	5.8	15	6	50	7,360	FREE	FREE	FREE	FREE	FREE
IULS430-0600-3000		30	9	5.8	15	6	60	7,680	FREE	FREE	FREE	FREE	FREE
IULS430-0600-4000		40	9	5.8	15	6	70	8,000	FREE	FREE	FREE	FREE	FREE
IULS430-0600-5000		50	9	5.8	15	6	80	11,200	FREE	FREE	FREE	FREE	FREE

CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
ion Depo A Series
ion Depo U Series
DLC Series
Non-Coat Series
ion Depo R Series

ion Depo Type U 切削條件參考表 Recommended Milling Conditions

■型號: IULS430
Model number: IULS430

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)			
刃數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm		
4	1	4	0.04	0.5	1,800	23,000	0.03	0.4	1,600	18,000	0.02	0.3	1,000	14,000
		6	0.02	0.5	1,400	18,000	0.01	0.4	1,200	14,000	0.007	0.3	800	10,000
		8	0.02	0.5	1,200	16,000	0.01	0.4	1,000	12,000	0.005	0.3	680	8,000
		10	0.01	0.5	1,000	14,000	0.007	0.4	800	10,000	0.005	0.3	500	6,000
	1.2	6	0.03	0.6	1,400	18,000	0.02	0.5	1,200	14,000	0.01	0.4	800	10,000
		8	0.02	0.6	1,200	16,000	0.01	0.5	1,000	12,000	0.007	0.4	680	8,000
		10	0.02	0.6	1,000	12,000	0.01	0.5	850	10,000	0.005	0.4	600	8,000
		12	0.01	0.6	1,000	10,000	0.007	0.5	800	9,000	0.005	0.4	500	7,000
	1.5	6	0.04	0.75	1,600	20,000	0.03	0.6	1,400	18,000	0.02	0.45	1,000	14,000
		8	0.03	0.75	1,200	18,000	0.03	0.6	1,200	14,000	0.01	0.45	750	10,000
		10	0.03	0.75	1,000	16,000	0.02	0.6	1,000	14,000	0.01	0.45	700	10,000
		12	0.02	0.75	1,000	14,000	0.02	0.6	850	12,000	0.007	0.45	620	8,000
	1.8	14	0.02	0.75	800	12,000	0.01	0.6	750	10,000	0.007	0.45	500	7,500
		16	0.01	0.75	720	10,000	0.007	0.6	600	9,000	0.005	0.45	400	6,800
		6	0.05	0.9	1,800	18,000	0.04	0.7	1,500	15,000	0.03	0.5	1,200	12,000
		8	0.04	0.9	1,600	16,000	0.03	0.7	1,200	12,000	0.02	0.5	1,000	9,500
	2	10	0.04	0.9	1,400	14,000	0.03	0.7	1,000	12,000	0.02	0.5	900	9,500
		12	0.03	0.9	1,200	12,000	0.02	0.7	1,000	10,000	0.01	0.5	800	8,200
		14	0.03	0.9	1,200	12,000	0.02	0.7	860	10,000	0.01	0.5	720	8,200
		16	0.02	0.9	1,000	10,000	0.01	0.7	800	9,200	0.007	0.5	680	7,500
	2.5	6	0.06	1	1,800	18,000	0.05	0.8	1,500	15,000	0.03	0.6	1,200	12,000
		8	0.05	1	1,600	16,000	0.04	0.8	1,200	12,000	0.02	0.6	1,000	9,500
		10	0.05	1	1,400	14,000	0.04	0.8	1,000	12,000	0.02	0.6	900	9,500
		12	0.04	1	1,200	12,000	0.03	0.8	1,000	10,000	0.01	0.6	800	8,200
3	14	0.03	1	1,200	12,000	0.02	0.8	860	10,000	0.007	0.6	720	8,200	
	16	0.03	1	1,000	10,000	0.02	0.8	800	9,200	0.007	0.6	680	7,500	
	18	0.02	1	820	9,200	0.01	0.8	740	8,500	0.005	0.6	640	6,000	
	20	0.02	1	760	9,200	0.01	0.8	680	8,500	0.005	0.6	520	6,000	
4	8	0.07	1.25	1,600	14,000	0.05	1	1,400	10,000	0.03	0.75	1,000	8,000	
	12	0.06	1.25	1,400	12,000	0.04	1	1,200	9,600	0.02	0.75	960	7,500	
	16	0.05	1.25	1,200	10,000	0.02	1	1,000	8,500	0.01	0.75	800	7,000	
	20	0.05	1.25	1,000	8,200	0.02	1	1,000	7,500	0.01	0.75	800	5,000	
4	8	0.1	1.5	1,800	14,000	0.07	1.2	1,600	10,000	0.05	0.9	1,200	8,000	
	12	0.08	1.5	1,600	12,000	0.06	1.2	1,400	9,200	0.04	0.9	1,000	7,200	
	16	0.07	1.5	1,400	10,000	0.05	1.2	1,200	8,500	0.03	0.9	800	6,500	
	20	0.07	1.5	1,400	9,000	0.04	1.2	1,200	7,800	0.02	0.9	800	5,800	
4	25	0.06	1.5	1,200	8,200	0.03	1.2	1,000	7,000	0.01	0.9	720	5,000	
	30	0.03	1.5	1,200	7,000	0.02	1.2	1,000	6,500	0.007	0.9	650	4,500	
	12	0.15	2	2,000	9,500	0.08	1.6	1,600	8,000	0.06	1.2	1,000	7,000	
	16	0.1	2	1,800	8,000	0.06	1.6	1,400	7,000	0.05	1.2	1,200	6,000	
4	20	0.08	2	1,600	7,000	0.05	1.6	1,200	6,500	0.04	1.2	1,000	5,500	
	25	0.07	2	1,400	6,000	0.04	1.6	1,200	5,200	0.03	1.2	1,000	4,500	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●∅p=軸向切深，∅e=徑向切深。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)			
刃數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm		
4	4	30	0.05	2	1,000	4,800	0.03	1.6	850	4,200	0.02	1.2	620	3,500
		35	0.04	2	880	4,200	0.02	1.6	720	3,800	0.01	1.2	550	3,000
	5	16	0.12	2.5	1,800	7,000	0.08	2	1,600	5,500	0.06	1.5	1,000	4,500
		25	0.07	2.5	1,400	5,800	0.05	2	1,200	4,200	0.03	1.5	800	3,000
	6	35	0.05	2.5	900	4,200	0.03	2	800	3,500	0.02	1.5	600	2,500
		20	0.18	3	1,600	6,500	0.08	2.4	1,400	4,500	0.06	1.8	920	3,500
		30	0.12	3	1,200	4,500	0.06	2.4	1,000	3,500	0.04	1.8	660	2,500
		40	0.08	3	1,000	3,000	0.03	2.4	800	2,500	0.02	1.8	550	2,000
	6	50	0.05	3	700	2,500	0.02	2.4	500	2,000	0.01	1.8	380	1,500

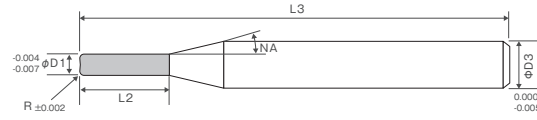
●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●∅p=軸向切深，∅e=徑向切深。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type U Series

超硬圓角立銑刀 Carbide Radius End Mill

■型號: IUR430 Model number: IUR430

ion U super MG 4 螺絲角 30° 仰角 15° 柄徑公差 0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.

●請系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size) :mm

型號 Code No.	刀徑直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	刃長 (L2) Length of Cut	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)
IUR430-0300-0200-00600	3	0.2	6	15	4	50	10,000
IUR430-0300-0300-00600		0.3	6	15	4	50	10,000
IUR430-0300-0500-00600		0.5	6	15	4	50	10,000
IUR430-0400-0200-00800	4	0.2	8	15	6	50	10,800
IUR430-0400-0300-00800		0.3	8	15	6	50	10,800
IUR430-0400-0500-00800		0.5	8	15	6	50	10,800
IUR430-0600-0200-01200	6	0.2	12	—	6	60	12,400
IUR430-0600-0300-01200		0.3	12	—	6	60	12,400
IUR430-0600-0500-01200		0.5	12	—	6	60	12,400
IUR430-0600-1000-01200	8	1	12	—	6	60	12,400
IUR430-0800-0300-01600		0.3	16	—	8	70	17,200
IUR430-0800-0500-01600		0.5	16	—	8	70	17,200
IUR430-0800-1000-01600	10	1	16	—	8	70	17,200
IUR430-1000-0300-02000		0.3	20	—	10	80	17,200
IUR430-1000-0500-02000		0.5	20	—	10	80	23,360
IUR430-1000-1000-02000	12	1	20	—	10	80	23,360
IUR430-1200-0500-02400		0.5	24	—	12	110	28,160
IUR430-1200-1000-02400		1	24	—	12	110	28,160
IUR430-1200-2000-02400	2	24	—	12	110	28,160	

ion Depo Type U Series

ion Depo Type U 切削條件參考表 Recommended Milling Conditions

■型號: IUR430
Model number: IUR430

圓角立銑刀 Radius End Mill

切削材料 Work Material	淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)						淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)				
	刃數 Number of Flutes	刀徑直徑 Dia.	刃長 Length of Cut	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
				∂p mm	∂e mm			∂p mm	∂e mm			∂p mm	∂e mm		
4	3	6	5	0.09	1,000	10,000	5	0.06	700	8,000	5	0.06	560	7,000	
	4	8	7	0.12	1,200	8,500	7	0.08	800	7,000	7	0.08	600	6,000	
	6	12	9	0.18	1,200	5,600	9	0.12	800	4,700	9	0.12	600	4,000	
	8	16	12	0.23	1,400	4,800	12	0.16	800	4,000	12	0.16	500	3,400	
	10	20	15	0.30	1,500	3,800	15	0.20	900	3,200	15	0.20	600	2,600	
	12	24	18	0.35	1,600	3,200	18	0.24	1,000	2,600	18	0.24	700	2,200	

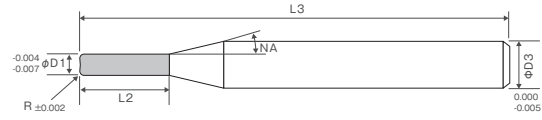
●請將刀具確實地固定於夾具上，以防止刀具震動。 Reduce tool deflection by mounting the tool securely into the holder.
●切屑深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing.
●∂p=軸向方向切削深度，∂e=徑向方向切削深度。 ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●建議使用油類或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type U Series

超硬圓角立銑刀 Carbide Radius End Mill

■型號: IUR630 Model number: IUR630

ion U super MG 刀刃數 6 螺旋角 30° 仰角 15° 柄徑公差 0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.

●請系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size) :mm

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	刃長 (L2) Length of Cut	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)
IUR630-0500-0200-01000	5	0.2	10	15	6	50	11,600
IUR630-0500-0300-01000		0.3	10	15	6	50	11,600
IUR630-0500-0500-01000		0.5	10	15	6	50	11,600
IUR630-0500-1000-01000		1	10	15	6	50	11,600
IUR630-0600-0200-01200	6	0.2	12	—	6	60	12,400
IUR630-0600-0300-01200		0.3	12	—	6	60	12,400
IUR630-0600-0500-01200		0.5	12	—	6	60	12,400
IUR630-0600-1000-01200		1	12	—	6	60	12,400
IUR630-0800-0300-01600	8	0.3	16	—	8	70	17,200
IUR630-0800-0500-01600		0.5	16	—	8	70	17,200
IUR630-0800-1000-01600		1	16	—	8	70	17,200
IUR630-0800-1500-01600		1.5	16	—	8	70	17,200
IUR630-1000-0300-02000	10	0.3	20	—	10	80	23,360
IUR630-1000-0500-02000		0.5	20	—	10	80	23,360
IUR630-1000-1000-02000		1	20	—	10	80	23,360
IUR630-1000-1500-02000		1.5	20	—	10	80	23,360
IUR630-1000-2000-02000	12	2	20	—	10	80	23,360
IUR630-1200-0500-02400		0.5	24	—	12	110	28,160
IUR630-1200-1000-02400		1	24	—	12	110	28,160
IUR630-1200-1500-02400		1.5	24	—	12	110	28,160
IUR630-1200-2000-02400	2	24	—	12	110	28,160	

ion Depo Type U Series

ion Depo Type U 切削條件參考表 Recommended Milling Conditions

■型號: IUR630
Model number: IUR630

圓角立銑刀 Radius End Mill

切削材料 Work Material	淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)						淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)						淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)					
	刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of Cut	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹			
				∂p mm	∂e mm			∂p mm	∂e mm			∂p mm	∂e mm					
6	5	10	7.5	0.15	1,600	7,600	7.5	0.1	1,200	6,200	7.5	0.1	800	5,300				
	6	12	9	0.18	1,800	6,400	9	0.12	1,200	5,300	9	0.12	800	4,600				
	8	16	12	0.23	2,000	4,800	12	0.16	1,400	4,000	12	0.16	1,000	3,400				
	10	20	15	0.3	2,000	3,800	15	0.2	1,600	3,200	15	0.2	1,000	2,600				
	12	24	18	0.35	2,000	3,200	18	0.24	1,600	2,600	18	0.24	1,000	2,200				

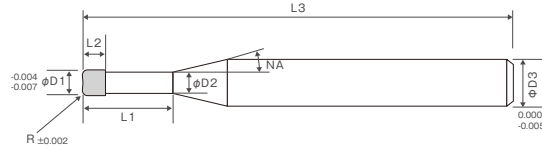
●請將刀具確實地固定於夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing.
●∂p=軸向方向切削深度，∂e=徑向方向切削深度。 ∂p=Axial Depth of Cut. ∂e=Radial Depth of Cut.
●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type U Series

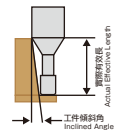
超硬長頸圓角立銼刀
Carbide Long Neck Radius End Mill

■型號: IULR230 Model number: IULR230

ion U super MG 2 螺旋角 30° 仰角 15° 柄徑公差 0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干涉切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value. If concerned about interference with the work material, please check by actual measurement.

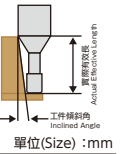


單位(Size) :mm

●聯繫我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) ^o Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.					
										30'	1°	1°30'	2°	3°	
IULR230-0020-0020-0050	0.2	0.02	0.5	0.15	0.18	15	4	50	8,080	0.55	0.57	0.59	0.61	0.66	
IULR230-0020-0020-0100		0.02	1	0.15	0.18	15	4	50	8,080	1.07	1.11	1.15	1.19	1.28	
IULR230-0020-0050-0050		0.05	0.5	0.15	0.18	15	4	50	8,080	0.55	0.57	0.59	0.61	0.66	
IULR230-0020-0050-0100		0.05	1	0.15	0.18	15	4	50	8,080	1.07	1.11	1.14	1.19	1.28	
IULR230-0030-0020-0100	0.3	0.02	1	0.25	0.27	15	4	50	7,840	1.09	1.13	1.17	1.21	1.31	
IULR230-0030-0020-0150		0.02	1.5	0.25	0.27	15	4	50	7,840	1.61	1.66	1.72	1.79	1.93	
IULR230-0030-0020-0200		0.02	2	0.25	0.27	15	4	50	7,840	2.12	2.20	2.28	2.36	2.55	
IULR230-0030-0020-0250		0.02	2.5	0.25	0.27	15	4	50	9,840	2.64	2.73	2.83	2.94	3.17	
IULR230-0030-0020-0300		0.02	3	0.25	0.27	15	4	50	9,840	3.16	3.27	3.38	3.51	3.79	
IULR230-0030-0050-0100		0.05	1	0.25	0.27	15	4	50	7,840	1.09	1.13	1.17	1.21	1.30	
IULR230-0030-0050-0150		0.05	1.5	0.25	0.27	15	4	50	7,840	1.61	1.66	1.72	1.78	1.92	
IULR230-0030-0050-0200		0.05	2	0.25	0.27	15	4	50	7,840	2.12	2.20	2.27	2.36	2.54	
IULR230-0030-0050-0250		0.05	2.5	0.25	0.27	15	4	50	9,840	2.64	2.73	2.83	2.93	3.17	
IULR230-0030-0050-0300		0.05	3	0.25	0.27	15	4	50	9,840	3.16	3.27	3.38	3.51	3.79	
IULR230-0040-0020-0100	0.4	0.02	1	0.3	0.37	15	4	50	5,200	1.09	1.13	1.17	1.21	1.31	
IULR230-0040-0020-0150		0.02	1.5	0.3	0.37	15	4	50	5,200	1.61	1.66	1.72	1.79	1.93	
IULR230-0040-0020-0200		0.02	2	0.3	0.37	15	4	50	5,200	2.12	2.20	2.28	2.36	2.55	
IULR230-0040-0020-0250		0.02	2.5	0.3	0.37	15	4	50	5,200	2.64	2.73	2.83	2.94	3.17	
IULR230-0040-0020-0300		0.02	3	0.3	0.37	15	4	50	5,200	3.16	3.27	3.38	3.51	3.79	
IULR230-0040-0050-0100		0.05	1	0.3	0.37	15	4	50	5,200	1.09	1.13	1.17	1.21	1.30	
IULR230-0040-0050-0150		0.05	1.5	0.3	0.37	15	4	50	5,200	1.61	1.66	1.72	1.78	1.92	
IULR230-0040-0050-0200		0.05	2	0.3	0.37	15	4	50	5,200	2.12	2.20	2.27	2.36	2.54	
IULR230-0040-0050-0250		0.05	2.5	0.3	0.37	15	4	50	5,200	2.64	2.73	2.83	2.93	3.17	
IULR230-0040-0050-0300		0.05	3	0.3	0.37	15	4	50	5,200	3.16	3.27	3.38	3.51	3.79	
IULR230-0040-0100-0100		0.1	1	0.3	0.37	15	4	50	5,200	1.09	1.12	1.16	1.20	1.29	
IULR230-0040-0100-0200		0.1	2	0.3	0.37	15	4	50	5,200	2.12	2.19	2.27	2.35	2.53	
IULR230-0040-0100-0300		0.1	3	0.3	0.37	15	4	50	5,200	3.16	3.26	3.38	3.50	3.78	
IULR230-0050-0020-0100		0.5	0.02	1	0.4	0.47	15	4	50	4,240	1.09	1.13	1.17	1.21	1.31
IULR230-0050-0020-0200			0.02	2	0.4	0.47	15	4	50	4,240	2.12	2.20	2.28	2.36	2.55
IULR230-0050-0020-0300			0.02	3	0.4	0.47	15	4	50	4,240	3.16	3.27	3.38	3.51	3.79

ion Depo Type U Series



單位(Size) :mm

●聯繫我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) ^o Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.					
										30'	1°	1°30'	2°	3°	
IULR230-0050-0020-0400	0.5	0.02	4	0.4	0.47	15	4	50	4,240	4.19	4.34	4.49	4.66	5.04	
IULR230-0050-0050-0100		0.05	1	0.4	0.47	15	4	50	4,240	1.09	1.13	1.17	1.21	1.30	
IULR230-0050-0050-0200		0.05	2	0.4	0.47	15	4	50	4,240	2.12	2.20	2.27	2.36	2.54	
IULR230-0050-0050-0300		0.05	3	0.4	0.47	15	4	50	4,240	3.16	3.27	3.38	3.51	3.79	
IULR230-0050-0100-0100		0.1	1	0.4	0.47	15	4	50	4,240	1.09	1.12	1.16	1.20	1.29	
IULR230-0050-0100-0200		0.1	2	0.4	0.47	15	4	50	4,240	2.12	2.19	2.27	2.35	2.53	
IULR230-0050-0100-0300		0.1	3	0.4	0.47	15	4	50	4,240	3.16	3.26	3.38	3.50	3.78	
IULR230-0050-0100-0400		0.1	4	0.4	0.47	15	4	50	4,240	4.19	4.33	4.48	4.65	5.02	
IULR230-0060-0020-0200		0.6	0.02	2	0.5	0.57	15	4	50	4,560	2.12	2.20	2.28	2.36	2.55
IULR230-0060-0020-0400			0.02	4	0.5	0.57	15	4	50	4,560	4.19	4.34	4.49	4.66	5.04
IULR230-0060-0020-0600	0.02		6	0.5	0.57	15	4	50	4,560	6.26	6.48	6.71	6.96	7.52	
IULR230-0060-0050-0200	0.05		2	0.5	0.57	15	4	50	4,560	2.12	2.20	2.27	2.36	2.54	
IULR230-0060-0050-0400	0.05		4	0.5	0.57	15	4	50	4,560	4.19	4.34	4.49	4.66	5.03	
IULR230-0060-0050-0600	0.05		6	0.5	0.57	15	4	50	4,560	6.26	6.47	6.71	6.96	7.52	
IULR230-0060-0100-0200	0.1		2	0.5	0.57	15	4	50	4,240	2.12	2.19	2.27	2.35	2.53	
IULR230-0060-0100-0400	0.1		4	0.5	0.57	15	4	50	4,240	4.19	4.33	4.48	4.65	5.02	
IULR230-0060-0100-0600	0.1		6	0.5	0.57	15	4	50	4,240	6.26	6.47	6.70	6.95	7.51	
IULR230-0070-0020-0200	0.7		0.02	2	0.55	0.67	15	4	50	4,800	2.12	2.20	2.28	2.36	2.55
IULR230-0070-0020-0400		0.02	4	0.55	0.67	15	4	50	4,800	4.19	4.34	4.49	4.66	5.04	
IULR230-0070-0020-0600		0.02	6	0.55	0.67	15	4	50	4,800	6.26	6.48	6.71	6.96	7.52	
IULR230-0070-0050-0200		0.05	2	0.55	0.67	15	4	50	4,800	2.12	2.20	2.27	2.36	2.54	
IULR230-0070-0050-0400		0.05	4	0.55	0.67	15	4	50	4,800	4.19	4.34	4.49	4.66	5.03	
IULR230-0070-0050-0600		0.05	6	0.55	0.67	15	4	50	4,800	6.26	6.47	6.71	6.96	7.52	
IULR230-0070-0100-0200		0.1	2	0.55	0.67	15	4	50	4,800	2.12	2.19	2.27	2.35	2.53	
IULR230-0070-0100-0400		0.1	4	0.55	0.67	15	4	50	4,800	4.19	4.33	4.48	4.65	5.02	
IULR230-0070-0100-0600		0.1	6	0.55	0.67	15	4	50	4,800	6.26	6.47	6.70	6.95	7.51	
IULR230-0080-0020-0200		0.8	0.02	2	0.65	0.77	15	4	50	4,800	2.12	2.20	2.28	2.36	2.55
IULR230-0080-0020-0400	0.02		4	0.65	0.77	15	4	50	4,800	4.19	4.34	4.49	4.66	5.04	
IULR230-0080-0020-0600	0.02		6	0.65	0.77	15	4	50	4,800	6.26	6.48	6.71	6.96	7.52	
IULR230-0080-0020-0800	0.02		8	0.65	0.77	15	4	50	4,960	8.33	8.62	8.93	9.26	10.01	
IULR230-0080-0050-0200	0.05		2	0.65	0.77	15	4	50	4,800	2.12	2.20	2.27	2.36	2.54	
IULR230-0080-0050-0400	0.05		4	0.65	0.77	15	4	50	4,800	4.19	4.34	4.49	4.66	5.03	
IULR230-0080-0050-0600	0.05		6	0.65	0.77	15	4	50	4,800	6.26	6.47	6.71	6.96	7.52	
IULR230-0080-0050-0800	0.05		8	0.65	0.77	15	4	50	4,960	8.33	8.61	8.92	9.26	10.00	
IULR230-0080-0100-0200	0.1		2	0.65	0.77	15	4	50	4,800	2.12	2.19	2.27	2.35	2.53	
IULR230-0080-0100-0400	0.1		4	0.65	0.77	15	4	50	4,800	4.19	4.33	4.48	4.65	5.02	
IULR230-0080-0100-0600	0.1	6	0.65	0.77	15	4	50	4,800	6.26	6.47	6.70	6.95	7.51		
IULR230-0080-0100-0800	0.1	8	0.65	0.77	15	4	50	4,960	8.32	8.61	8.92	9.25	9.99		
IULR230-0080-0200-0200	0.2	2	0.65	0.77	15	4	50	4,800	2.12	2.19	2.26	2.33	2.51		
IULR230-0080-0200-0400	0.2	4	0.65	0.77	15	4	50	4,800	4.19	4.32	4.47	4.63	5.00		
IULR230-0080-0200-0600	0.2	6	0.65	0.77	15	4	50	4,800	6.25	6.46	6.69	6.93	7.48		
IULR230-0080-0200-0800	0.2	8	0.65	0.77	15	4	50	4,960	8.32	8.60	8.91	9.23	9.97		
IULR230-0090-0100-0400	0.9	0.1	4	0.7	0.87	15	4	50	5,440	4.19	4.33	4.48	4.65	5.02	
IULR230-0090-0100-0800		0.1	8	0.7	0.87	15	4	50	5,440	8.32	8.61	8.92	9.25	9.99	

CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
Ion Depo A Series
Ion Depo U Series
DLC Series
Non-Coat Series
Ion Depo R Series

ion Depo Type U 切削條件參考表 Recommended Milling Conditions

■型號: IULR230
Model number: IULR230

長頸圓角立銼刀 Long Neck Radius End Mill

切削材料 Work Material			淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)			
刃數 Number of Flutes	刀徑直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
			φp mm	φe mm			φp mm	φe mm			φp mm	φe mm		
2	0.2	0.5	0.003	0.04	200	30,000	0.003	0.02	160	30,000	0.003	0.01	120	30,000
		1	0.003	0.04	150	30,000	0.002	0.02	120	30,000	0.002	0.01	80	30,000
	0.3	1	0.003	0.08	300	30,000	0.003	0.04	250	30,000	0.003	0.03	200	30,000
		1.5	0.003	0.08	200	30,000	0.003	0.04	160	30,000	0.003	0.03	120	30,000
		2	0.003	0.08	150	30,000	0.003	0.04	120	30,000	0.003	0.03	100	25,000
		2.5	0.002	0.08	100	25,000	0.002	0.04	80	25,000	0.002	0.03	60	20,000
		3	0.002	0.08	50	25,000	0.002	0.04	40	25,000	0.002	0.03	30	20,000
	0.4	1	0.005	0.1	400	30,000	0.005	0.05	350	28,000	0.004	0.04	300	25,000
		1.5	0.005	0.1	350	30,000	0.005	0.05	300	28,000	0.004	0.04	260	25,000
		2	0.005	0.1	300	30,000	0.005	0.05	250	25,000	0.003	0.04	220	25,000
		2.5	0.004	0.1	280	28,000	0.004	0.05	240	25,000	0.003	0.04	180	20,000
	0.5	1	0.008	0.15	500	25,000	0.006	0.1	450	23,000	0.004	0.08	400	20,000
		2	0.007	0.15	420	25,000	0.005	0.1	360	23,000	0.003	0.08	300	20,000
		3	0.006	0.15	350	25,000	0.004	0.1	320	23,000	0.003	0.08	280	20,000
		4	0.004	0.15	300	25,000	0.002	0.1	240	23,000	0.002	0.08	180	20,000
	0.6	2	0.012	0.2	500	25,000	0.006	0.15	400	23,000	0.004	0.1	320	20,000
		4	0.007	0.2	400	23,000	0.004	0.15	300	20,000	0.003	0.1	200	18,000
	0.7	6	0.005	0.2	200	20,000	0.003	0.15	150	18,000	0.002	0.1	100	12,000
		2	0.012	0.25	700	25,000	0.006	0.15	600	23,000	0.003	0.12	450	20,000
		4	0.008	0.25	600	25,000	0.005	0.15	500	23,000	0.002	0.12	350	20,000
	0.8	6	0.005	0.25	350	20,000	0.003	0.15	250	18,000	0.002	0.12	200	16,000
		2	0.014	0.25	800	25,000	0.006	0.16	700	23,000	0.005	0.14	500	20,000
		4	0.008	0.25	700	25,000	0.005	0.16	600	23,000	0.003	0.14	400	20,000
		6	0.006	0.25	550	20,000	0.004	0.16	450	18,000	0.002	0.14	320	16,000
0.9	8	0.003	0.25	400	16,000	0.002	0.16	300	14,000	0.002	0.14	200	12,000	
	4	0.03	0.3	850	25,000	0.02	0.2	700	20,000	0.01	0.15	600	18,000	
	8	0.01	0.3	400	16,000	0.008	0.2	350	14,000	0.005	0.15	250	10,000	
	4	0.03	0.3	850	25,000	0.02	0.2	700	20,000	0.01	0.15	600	18,000	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●φp=軸向方向切削深度，φe=徑向方向切削深度。 φp=Axial Depth of Cut, φe=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

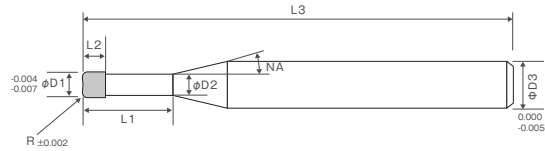
CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
ion Depo A Series
ion Depo U Series
DLC Series
Non-Coat Series
ion Depo R Series

ion Depo Type U Series

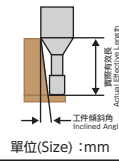
超硬長頸圓角立銼刀 Carbide Long Neck Radius End Mill

■型號: IULR330 Model number: IULR330

ion U super MG 3 30° 15° 柄徑公差 0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干涉切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

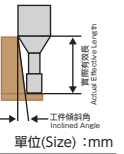


單位(Size) :mm

●聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) ^a Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
IULR330-0060-0020-0200	0.6	0.02	2	0.5	0.57	15	4	50	6,160	2.12	2.20	2.28	2.36	2.55
IULR330-0060-0020-0400		0.02	4	0.5	0.57	15	4	50	6,160	4.19	4.34	4.49	4.66	5.04
IULR330-0060-0020-0600		0.02	6	0.5	0.57	15	4	50	6,160	6.26	6.48	6.71	6.96	7.52
IULR330-0060-0050-0200		0.05	2	0.5	0.57	15	4	50	6,160	2.12	2.20	2.27	2.36	2.54
IULR330-0060-0050-0400		0.05	4	0.5	0.57	15	4	50	6,160	4.19	4.34	4.49	4.66	5.03
IULR330-0060-0050-0600		0.05	6	0.5	0.57	15	4	50	6,160	6.26	6.47	6.71	6.96	7.52
IULR330-0060-0100-0200		0.1	2	0.5	0.57	15	4	50	5,760	2.12	2.19	2.27	2.35	2.53
IULR330-0060-0100-0400		0.1	4	0.5	0.57	15	4	50	5,760	4.19	4.33	4.48	4.65	5.02
IULR330-0060-0100-0600		0.1	6	0.5	0.57	15	4	50	5,760	6.26	6.47	6.70	6.95	7.51
IULR330-0070-0020-0200	0.7	0.02	2	0.55	0.67	15	4	50	6,480	2.12	2.20	2.28	2.36	2.55
IULR330-0070-0020-0400		0.02	4	0.55	0.67	15	4	50	6,480	4.19	4.34	4.49	4.66	5.04
IULR330-0070-0020-0600		0.02	6	0.55	0.67	15	4	50	6,480	6.26	6.48	6.71	6.96	7.52
IULR330-0070-0050-0200		0.05	2	0.55	0.67	15	4	50	6,480	2.12	2.20	2.27	2.36	2.54
IULR330-0070-0050-0400		0.05	4	0.55	0.67	15	4	50	6,480	4.19	4.34	4.49	4.66	5.03
IULR330-0070-0050-0600		0.05	6	0.55	0.67	15	4	50	6,480	6.26	6.47	6.71	6.96	7.52
IULR330-0070-0100-0200		0.1	2	0.55	0.67	15	4	50	6,480	2.12	2.19	2.27	2.35	2.53
IULR330-0070-0100-0400		0.1	4	0.55	0.67	15	4	50	6,480	4.19	4.33	4.48	4.65	5.02
IULR330-0070-0100-0600		0.1	6	0.55	0.67	15	4	50	6,480	6.26	6.47	6.70	6.95	7.51
IULR330-0080-0020-0200	0.8	0.02	2	0.65	0.77	15	4	50	6,480	2.12	2.20	2.28	2.36	2.55
IULR330-0080-0020-0400		0.02	4	0.65	0.77	15	4	50	6,480	4.19	4.34	4.49	4.66	5.04
IULR330-0080-0020-0600		0.02	6	0.65	0.77	15	4	50	6,480	6.26	6.48	6.71	6.96	7.52
IULR330-0080-0020-0800		0.02	8	0.65	0.77	15	4	50	6,720	8.33	8.62	8.93	9.26	10.01
IULR330-0080-0050-0200		0.05	2	0.65	0.77	15	4	50	6,480	2.12	2.20	2.27	2.36	2.54
IULR330-0080-0050-0400		0.05	4	0.65	0.77	15	4	50	6,480	4.19	4.34	4.49	4.66	5.03
IULR330-0080-0050-0600		0.05	6	0.65	0.77	15	4	50	6,480	6.26	6.47	6.71	6.96	7.52
IULR330-0080-0050-0800		0.05	8	0.65	0.77	15	4	50	6,720	8.33	8.61	8.92	9.26	10.00
IULR330-0080-0100-0200		0.1	2	0.65	0.77	15	4	50	6,480	2.12	2.19	2.27	2.35	2.53
IULR330-0080-0100-0400		0.1	4	0.65	0.77	15	4	50	6,480	4.19	4.33	4.48	4.65	5.02
IULR330-0080-0100-0600		0.1	6	0.65	0.77	15	4	50	6,480	6.26	6.47	6.70	6.95	7.51
IULR330-0080-0100-0800		0.1	8	0.65	0.77	15	4	50	6,720	8.32	8.61	8.92	9.25	9.99

ion Depo Type U Series



單位(Size) :mm

●聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Outside Tool	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) ^a Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
IULR330-0080-0200-0200	0.8	0.2	2	0.65	0.77	15	4	50	6,480	2.12	2.19	2.26	2.33	2.51
IULR330-0080-0200-0400		0.2	4	0.65	0.77	15	4	50	6,480	4.19	4.32	4.47	4.63	5.00
IULR330-0080-0200-0600		0.2	6	0.65	0.77	15	4	50	6,480	6.25	6.46	6.69	6.93	7.48
IULR330-0080-0200-0800		0.2	8	0.65	0.77	15	4	50	6,720	8.32	8.60	8.91	9.23	9.97

CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
ion Depo A Series
ion Depo U Series
DLC Series
Non-Coat Series
ion Depo R Series

ion Depo Type U 切削條件參考表 Recommended Milling Conditions

■型號: IULR330
Model number: IULR330

長頸圓角立銼刀 Long Neck Radius End Mill

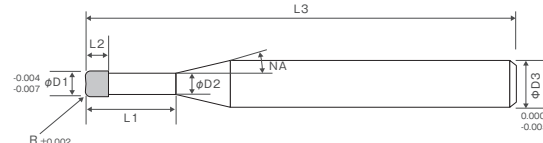
切削材料 Work Material			淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)				
刃數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm			
3	0.6	2	0.012	0.20	750	25,000	0.006	0.15	600	23,000	0.004	0.10	480	20,000	
		4	0.007	0.20	600	23,000	0.004	0.15	450	20,000	0.003	0.10	300	18,000	
		6	0.005	0.20	300	20,000	0.003	0.15	225	18,000	0.002	0.10	150	12,000	
	0.7	2	0.012	0.25	1,050	25,000	0.006	0.15	900	23,000	0.003	0.12	675	20,000	
		4	0.008	0.25	900	25,000	0.005	0.15	750	23,000	0.002	0.12	525	20,000	
		6	0.005	0.25	525	20,000	0.003	0.15	375	18,000	0.002	0.12	300	16,000	
	0.8	2	0.014	0.25	1,200	25,000	0.006	0.16	1,050	23,000	0.005	0.14	750	20,000	
		4	0.008	0.25	1,050	25,000	0.005	0.16	900	23,000	0.003	0.14	600	20,000	
		6	0.006	0.25	825	20,000	0.004	0.16	675	18,000	0.002	0.14	480	16,000	
			8	0.003	0.25	600	16,000	0.002	0.16	450	14,000	0.002	0.14	300	12,000

●請將刀具確實地固定於夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或著非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向切削深度，∅e=徑向切削深度。 ∅p=Axial Depth of Cut. ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

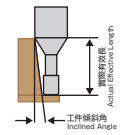
ion Depo Type U Series

超硬長頸圓角立銼刀
Carbide Long Neck Radius End Mill

■型號: IULR430 Model number: IULR430



所示的仰角(NA) 僅供參考。如果您擔心干涉切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

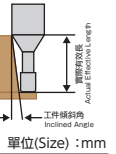


單位(Size) : mm

●聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
IULR430-0090-0100-0400	0.9	0.1	4	0.7	0.87	15	4	50	7,360	4.19	4.33	4.48	4.65	5.02
IULR430-0090-0100-0800		0.1	8	0.7	0.87	15	4	50	7,360	8.32	8.61	8.92	9.25	9.99
IULR430-0100-0020-0200		0.02	2	0.8	0.95	15	4	50	4,960	2.16	2.24	2.32	2.40	2.60
IULR430-0100-0020-0300		0.02	3	0.8	0.95	15	4	50	4,960	3.20	3.31	3.43	3.55	3.84
IULR430-0100-0020-0400		0.02	4	0.8	0.95	15	4	50	4,960	4.23	4.38	4.53	4.70	5.08
IULR430-0100-0020-0500		0.02	5	0.8	0.95	15	4	50	4,960	5.26	5.45	5.64	5.85	6.33
IULR430-0100-0020-0600		0.02	6	0.8	0.95	15	4	50	5,440	6.30	6.52	6.75	7.00	7.57
IULR430-0100-0020-0800		0.02	8	0.8	0.95	15	4	50	5,440	8.37	8.66	8.97	9.30	10.06
IULR430-0100-0020-1000		0.02	10	0.8	0.95	15	4	50	5,440	10.43	10.80	11.18	11.60	12.54
IULR430-0100-0050-0200		0.05	2	0.8	0.95	15	4	50	4,960	2.16	2.24	2.31	2.40	2.59
IULR430-0100-0050-0300	0.05	3	0.8	0.95	15	4	50	4,960	3.20	3.31	3.42	3.55	3.83	
IULR430-0100-0050-0400	0.05	4	0.8	0.95	15	4	50	4,960	4.23	4.38	4.53	4.70	5.08	
IULR430-0100-0050-0500	0.05	5	0.8	0.95	15	4	50	4,960	5.26	5.44	5.64	5.85	6.32	
IULR430-0100-0050-0600	0.05	6	0.8	0.95	15	4	50	5,440	6.30	6.51	6.75	7.00	7.56	
IULR430-0100-0050-0800	0.05	8	0.8	0.95	15	4	50	5,440	8.36	8.65	8.96	9.30	10.05	
IULR430-0100-0050-1000	0.05	10	0.8	0.95	15	4	50	5,440	10.43	10.79	11.18	11.60	12.54	
IULR430-0100-0100-0200	1	0.1	2	0.8	0.95	15	4	50	4,960	2.16	2.23	2.31	2.39	2.58
IULR430-0100-0100-0300		0.1	3	0.8	0.95	15	4	50	4,960	3.19	3.30	3.42	3.54	3.82
IULR430-0100-0100-0400		0.1	4	0.8	0.95	15	4	50	4,960	4.23	4.37	4.53	4.69	5.07
IULR430-0100-0100-0500		0.1	5	0.8	0.95	15	4	50	4,960	5.26	5.44	5.63	5.84	6.31
IULR430-0100-0100-0600		0.1	6	0.8	0.95	15	4	50	5,440	6.30	6.51	6.74	6.99	7.55
IULR430-0100-0100-0800		0.1	8	0.8	0.95	15	4	50	5,440	8.36	8.65	8.96	9.29	10.04
IULR430-0100-0100-1000		0.1	10	0.8	0.95	15	4	50	4,960	10.43	10.79	11.18	11.59	12.52
IULR430-0100-0200-0200		0.2	2	0.8	0.95	15	4	50	4,960	2.16	2.23	2.30	2.38	2.56
IULR430-0100-0200-0300		0.2	3	0.8	0.95	15	4	50	4,960	3.19	3.30	3.41	3.53	3.80
IULR430-0100-0200-0400		0.2	4	0.8	0.95	15	4	50	4,960	4.22	4.36	4.52	4.68	5.04
IULR430-0100-0200-0500	0.2	5	0.8	0.95	15	4	50	4,960	5.26	5.43	5.62	5.83	6.29	
IULR430-0100-0200-0600	0.2	6	0.8	0.95	15	4	50	5,440	6.29	6.50	6.73	6.98	7.53	
IULR430-0100-0200-0800	0.2	8	0.8	0.95	15	4	50	5,440	8.36	8.64	8.95	9.28	10.01	
IULR430-0100-0200-1000	0.2	10	0.8	0.95	15	4	50	5,440	10.43	10.78	11.17	11.58	12.50	

ion Depo Type U Series

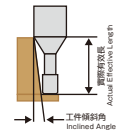


單位(Size) : mm

●聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.					
										30'	1°	1°30'	2°	3°	
IULR430-0100-0300-0200	1	0.3	2	0.8	0.95	15	4	50	4,960	2.15	2.22	2.29	2.36	2.53	
IULR430-0100-0300-0300		0.3	3	0.8	0.95	15	4	50	4,960	3.19	3.29	3.40	3.51	3.78	
IULR430-0100-0300-0400		0.3	4	0.8	0.95	15	4	50	4,960	4.22	4.36	4.50	4.66	5.02	
IULR430-0100-0300-0500		0.3	5	0.8	0.95	15	4	50	4,960	5.25	5.43	5.61	5.81	6.26	
IULR430-0100-0300-0600		0.3	6	0.8	0.95	15	4	50	5,440	6.29	6.50	6.72	6.96	7.51	
IULR430-0100-0300-0800		0.3	8	0.8	0.95	15	4	50	5,440	8.36	8.64	8.94	9.26	9.99	
IULR430-0100-0300-1000		0.3	10	0.8	0.95	15	4	50	5,440	10.42	10.78	11.15	11.56	12.48	
IULR430-0120-0100-0500		1.2	0.1	5	1	1.15	15	4	50	5,600	5.26	5.44	5.63	5.84	6.31
IULR430-0120-0100-1000			0.1	10	1	1.15	15	4	50	5,600	10.43	10.79	11.18	11.59	12.52
IULR430-0120-0200-0500			0.2	5	1	1.15	15	4	50	5,600	5.26	5.43	5.62	5.83	6.29
IULR430-0120-0200-1000	0.2		10	1	1.15	15	4	50	5,600	10.43	10.78	11.17	11.58	12.50	
IULR430-0120-0300-0500	0.3		5	1	1.15	15	4	50	5,600	5.25	5.43	5.61	5.81	6.26	
IULR430-0120-0300-1000	0.3		10	1	1.15	15	4	50	5,600	10.42	10.78	11.15	11.56	12.48	
IULR430-0150-0020-0300	1.5		0.02	3	1.2	1.45	15	4	50	5,280	3.20	3.31	3.43	3.55	3.84
IULR430-0150-0020-0400			0.02	4	1.2	1.45	15	4	50	5,280	4.23	4.38	4.53	4.70	5.08
IULR430-0150-0020-0600			0.02	6	1.2	1.45	15	4	50	5,280	6.30	6.52	6.75	7.00	7.57
IULR430-0150-0020-0800			0.02	8	1.2	1.45	15	4	50	5,600	8.37	8.66	8.97	9.30	10.06
IULR430-0150-0020-1200		0.02	12	1.2	1.45	15	4	50	5,600	12.50	12.93	13.40	13.90	15.03	
IULR430-0150-0020-1500		0.02	15	1.2	1.45	15	4	50	5,600	15.60	16.14	16.73	17.35	18.76	
IULR430-0150-0050-0300		0.05	3	1.2	1.45	15	4	50	5,280	3.20	3.31	3.42	3.55	3.83	
IULR430-0150-0050-0400		0.05	4	1.2	1.45	15	4	50	5,280	4.23	4.38	4.53	4.70	5.08	
IULR430-0150-0050-0600		0.05	6	1.2	1.45	15	4	50	5,280	6.30	6.51	6.75	7.00	7.56	
IULR430-0150-0050-0800		0.05	8	1.2	1.45	15	4	50	5,600	8.36	8.65	8.96	9.30	10.05	
IULR430-0150-0050-1200	0.05	12	1.2	1.45	15	4	50	5,600	12.50	12.93	13.40	13.90	15.02		
IULR430-0150-0050-1500	0.05	15	1.2	1.45	15	4	50	5,600	15.60	16.14	16.72	17.35	18.75		
IULR430-0150-0100-0300	1.5	0.1	3	1.2	1.45	15	4	50	5,280	3.19	3.30	3.42	3.54	3.82	
IULR430-0150-0100-0400		0.1	4	1.2	1.45	15	4	50	5,280	4.23	4.37	4.53	4.69	5.07	
IULR430-0150-0100-0600		0.1	6	1.2	1.45	15	4	50	5,280	6.30	6.51	6.74	6.99	7.55	
IULR430-0150-0100-0800		0.1	8	1.2	1.45	15	4	50	5,600	8.36	8.65	8.96	9.29	10.04	
IULR430-0150-0100-1200		0.1	12	1.2	1.45	15	4	50	5,600	12.50	12.93	13.39	13.89	15.01	
IULR430-0150-0100-1500		0.1	15	1.2	1.45	15	4	50	5,600	15.60	16.14	16.72	17.34	18.74	
IULR430-0150-0200-0300		0.2	3	1.2	1.45	15	4	50	5,280	3.19	3.30	3.41	3.53	3.80	
IULR430-0150-0200-0400		0.2	4	1.2	1.45	15	4	50	5,280	4.22	4.36	4.52	4.68	5.04	
IULR430-0150-0200-0600		0.2	6	1.2	1.45	15	4	50	5,280	6.29	6.50	6.73	6.98	7.53	
IULR430-0150-0200-0800		0.2	8	1.2	1.45	15	4	50	5,600	8.36	8.64	8.95	9.28	10.01	
IULR430-0150-0200-1200	0.2	12	1.2	1.45	15	4	50	5,600	12.49	12.92	13.38	13.88	14.99		
IULR430-0150-0200-1500	0.2	15	1.2	1.45	15	4	50	5,600	15.59	16.13	16.71	17.33	18.72		
IULR430-0150-0300-0300	1.5	0.3	3	1.2	1.45	15	4	50	5,280	3.19	3.29	3.40	3.51	3.78	
IULR430-0150-0300-0400		0.3	4	1.2	1.45	15	4	50	5,280	4.22	4.36	4.50	4.66	5.02	
IULR430-0150-0300-0600		0.3	6	1.2	1.45	15	4	50	5,280	6.29	6.50	6.72	6.96	7.51	
IULR430-0150-0300-0800		0.3	8	1.2	1.45	15	4	50	5,600	8.36	8.64	8.94	9.26	9.99	
IULR430-0150-0300-1200		0.3	12	1.2	1.45	15	4	50	5,600	12.49	12.92	13.37	13.86	14.96	
IULR430-0150-0300-1500		0.3	15	1.2	1.45	15	4	50	5,600	15.59	16.12	16.70	17.31	18.69	
IULR430-0150-0500-0300		0.5	3	1.2	1.45	15	4	50	5,280	3.18	3.27	3.37	3.48	3.73	
IULR430-0150-0500-0400		0.5	4	1.2	1.45	15	4	50	5,280	4.21	4.34	4.48	4.63	4.97	

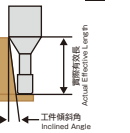
ion Depo Type U Series



● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刀直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刀長 (L2) Length of Cut	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
IULR430-0150-0500-0600	1.5	0.5	6	1.2	1.45	15	4	50	5,280	6.28	6.48	6.70	6.93	7.46
IULR430-0150-0500-0800		0.5	8	1.2	1.45	15	4	50	5,600	8.35	8.62	8.92	9.23	9.95
IULR430-0150-0500-1200		0.5	12	1.2	1.45	15	4	50	5,600	12.48	12.90	13.35	13.83	14.92
IULR430-0150-0500-1500		0.5	15	1.2	1.45	15	4	50	5,600	15.58	16.11	16.67	17.28	18.65
IULR430-0200-0020-0400	2	0.02	4	1.6	1.94	15	4	50	5,280	4.25	4.40	4.56	4.73	5.11
IULR430-0200-0020-0600		0.02	6	1.6	1.94	15	4	50	5,280	6.32	6.54	6.77	7.02	7.59
IULR430-0200-0020-0800		0.02	8	1.6	1.94	15	4	50	5,600	8.38	8.68	8.99	9.32	10.08
IULR430-0200-0020-1200		0.02	12	1.6	1.94	15	4	50	5,600	12.52	12.95	13.42	13.92	15.05
IULR430-0200-0020-1600		0.02	16	1.6	1.94	15	4	50	5,600	16.65	17.23	17.85	18.52	FREE
IULR430-0200-0020-2000		0.02	20	1.6	1.94	15	4	50	5,600	20.79	21.51	22.29	23.12	FREE
IULR430-0200-0050-0400		0.05	4	1.6	1.94	15	4	50	5,280	4.25	4.40	4.55	4.72	5.10
IULR430-0200-0050-0600		0.05	6	1.6	1.94	15	4	50	5,280	6.32	6.53	6.77	7.02	7.59
IULR430-0200-0050-0800		0.05	8	1.6	1.94	15	4	50	5,600	8.38	8.67	8.99	9.32	10.07
IULR430-0200-0050-1200		0.05	12	1.6	1.94	15	4	50	5,600	12.52	12.95	13.42	13.92	15.05
IULR430-0200-0050-1600		0.05	16	1.6	1.94	15	4	50	5,600	16.65	17.23	17.85	18.52	FREE
IULR430-0200-0050-2000		0.05	20	1.6	1.94	15	4	50	5,600	20.79	21.51	22.28	23.12	FREE
IULR430-0200-0100-0400		0.1	4	1.6	1.94	15	4	50	5,280	4.25	4.39	4.55	4.71	5.09
IULR430-0200-0100-0600		0.1	6	1.6	1.94	15	4	50	4,800	6.31	6.53	6.76	7.01	7.57
IULR430-0200-0100-0800		0.1	8	1.6	1.94	15	4	50	5,600	8.38	8.67	8.98	9.31	10.06
IULR430-0200-0100-1200		0.1	12	1.6	1.94	15	4	50	5,600	12.52	12.95	13.41	13.91	15.03
IULR430-0200-0100-1600		0.1	16	1.6	1.94	15	4	50	5,600	16.65	17.23	17.85	18.51	FREE
IULR430-0200-0100-2000		0.1	20	1.6	1.94	15	4	50	5,600	20.79	21.51	22.28	23.11	FREE
IULR430-0200-0200-0400		0.2	4	1.6	1.94	15	4	50	5,280	4.24	4.38	4.54	4.70	5.07
IULR430-0200-0200-0600		0.2	6	1.6	1.94	15	4	50	4,800	6.31	6.52	6.75	7.00	7.55
IULR430-0200-0200-0800		0.2	8	1.6	1.94	15	4	50	5,600	8.38	8.66	8.97	9.30	10.04
IULR430-0200-0200-1200		0.2	12	1.6	1.94	15	4	50	5,600	12.51	12.94	13.40	13.90	15.01
IULR430-0200-0200-1600		0.2	16	1.6	1.94	15	4	50	5,600	16.65	17.22	17.84	18.50	FREE
IULR430-0200-0200-2000		0.2	20	1.6	1.94	15	4	50	5,600	20.78	21.50	22.27	23.10	FREE
IULR430-0200-0300-0400		0.3	4	1.6	1.94	15	4	50	5,280	4.24	4.38	4.53	4.68	5.04
IULR430-0200-0300-0600		0.3	6	1.6	1.94	15	4	50	4,800	6.31	6.52	6.74	6.98	7.53
IULR430-0200-0300-0800		0.3	8	1.6	1.94	15	4	50	5,600	8.37	8.66	8.96	9.28	10.02
IULR430-0200-0300-1200		0.3	12	1.6	1.94	15	4	50	5,600	12.51	12.94	13.39	13.88	14.99
IULR430-0200-0300-1600		0.3	16	1.6	1.94	15	4	50	5,600	16.64	17.21	17.83	18.48	FREE
IULR430-0200-0300-2000		0.3	20	1.6	1.94	15	4	50	5,600	20.78	21.49	22.26	23.08	FREE
IULR430-0200-0500-0400		0.5	4	1.6	1.94	15	4	50	5,280	4.23	4.36	4.50	4.65	5.00
IULR430-0200-0500-0600		0.5	6	1.6	1.94	15	4	50	5,280	6.30	6.50	6.72	6.95	7.48
IULR430-0200-0500-0800		0.5	8	1.6	1.94	15	4	50	5,600	8.37	8.64	8.94	9.25	9.97
IULR430-0200-0500-1200		0.5	12	1.6	1.94	15	4	50	5,600	12.50	12.92	13.37	13.85	14.94
IULR430-0200-0500-1600	0.5	16	1.6	1.94	15	4	50	5,600	16.64	17.20	17.80	18.45	FREE	
IULR430-0200-0500-2000	0.5	20	1.6	1.94	15	4	50	5,600	20.77	21.48	22.24	23.05	FREE	
IULR430-0250-0100-1000	2.5	0.1	10	2	2.44	15	4	50	5,760	10.45	10.81	11.20	11.61	12.55
IULR430-0250-0100-2000		0.1	20	2	2.44	15	4	50	6,000	20.79	21.51	22.28	FREE	FREE
IULR430-0250-0200-1000		0.2	10	2	2.44	15	4	50	5,760	10.45	10.80	11.19	11.60	12.52
IULR430-0250-0200-2000		0.2	20	2	2.44	15	4	50	6,000	20.78	21.50	22.27	FREE	FREE
IULR430-0250-0300-1000		0.3	10	2	2.44	15	4	50	5,760	10.44	10.80	11.18	11.58	12.50

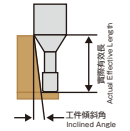
ion Depo Type U Series



● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刀直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刀長 (L2) Length of Cut	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
IULR430-0250-0300-2000	2.5	0.3	20	2	2.44	15	4	50	6,000	20.78	21.49	22.26	FREE	FREE
IULR430-0250-0500-1000		0.5	10	2	2.44	15	4	50	5,760	10.44	10.78	11.15	11.55	12.46
IULR430-0250-0500-2000		0.5	20	2	2.44	15	4	50	6,000	20.77	21.48	22.24	FREE	FREE
IULR430-0300-0050-0400		0.05	4	2.5	2.85	15	4	50	4,800	4.42	4.57	4.74	4.91	5.31
IULR430-0300-0050-0600	0.05	6	2.5	2.85	15	4	50	4,800	6.49	6.71	6.95	7.21	7.79	
IULR430-0300-0050-0800	0.05	8	2.5	2.85	15	4	50	4,800	8.56	8.85	9.17	9.51	FREE	
IULR430-0300-0050-1200	0.05	12	2.5	2.85	15	4	50	5,760	12.69	13.13	13.60	14.11	FREE	
IULR430-0300-0050-1600	0.05	16	2.5	2.85	15	4	50	7,200	16.83	17.41	18.04	FREE	FREE	
IULR430-0300-0050-2000	0.05	20	2.5	2.85	15	4	50	7,200	20.96	21.69	FREE	FREE	FREE	
IULR430-0300-0100-0400	0.1	4	2.5	2.85	15	4	50	4,800	4.42	4.57	4.73	4.91	5.30	
IULR430-0300-0100-0600	0.1	6	2.5	2.85	15	4	50	4,800	6.49	6.71	6.95	7.21	7.78	
IULR430-0300-0100-0800	0.1	8	2.5	2.85	15	4	50	4,800	8.56	8.85	9.17	9.51	FREE	
IULR430-0300-0100-1200	0.1	12	2.5	2.85	15	4	50	5,760	12.69	13.13	13.60	14.11	FREE	
IULR430-0300-0100-1600	0.1	16	2.5	2.85	15	4	50	7,200	16.82	17.41	18.03	FREE	FREE	
IULR430-0300-0100-2000	0.1	20	2.5	2.85	15	4	50	7,200	20.96	21.69	FREE	FREE	FREE	
IULR430-0300-0100-2500	0.1	25	2.5	2.85	15	4	60	7,200	26.13	27.03	FREE	FREE	FREE	
IULR430-0300-0100-3000	0.1	30	2.5	2.85	15	4	60	8,080	31.30	FREE	FREE	FREE	FREE	
IULR430-0300-0200-0400	0.2	4	2.5	2.85	15	4	50	4,800	4.42	4.56	4.72	4.89	5.27	
IULR430-0300-0200-0600	0.2	6	2.5	2.85	15	4	50	4,800	6.48	6.70	6.94	7.19	7.76	
IULR430-0300-0200-0800	0.2	8	2.5	2.85	15	4	50	4,800	8.55	8.84	9.16	9.49	FREE	
IULR430-0300-0200-1200	0.2	12	2.5	2.85	15	4	50	5,760	12.69	13.12	13.59	14.09	FREE	
IULR430-0300-0200-1600	0.2	16	2.5	2.85	15	4	50	7,200	16.82	17.40	18.02	FREE	FREE	
IULR430-0300-0200-2000	0.2	20	2.5	2.85	15	4	50	7,200	20.96	21.68	FREE	FREE	FREE	
IULR430-0300-0200-2500	0.2	25	2.5	2.85	15	4	60	7,200	26.12	27.03	FREE	FREE	FREE	
IULR430-0300-0200-3000	0.2	30	2.5	2.85	15	4	60	8,080	31.29	FREE	FREE	FREE	FREE	
IULR430-0300-0300-0400	0.3	4	2.5	2.85	15	4	50	4,800	4.41	4.56	4.71	4.88	5.25	
IULR430-0300-0300-0600	0.3	6	2.5	2.85	15	4	50	4,800	6.48	6.70	6.93	7.18	7.74	
IULR430-0300-0300-0800	0.3	8	2.5	2.85	15	4	50	4,800	8.55	8.84	9.14	9.48	FREE	
IULR430-0300-0300-1200	0.3	12	2.5	2.85	15	4	50	5,760	12.68	13.11	13.58	14.08	FREE	
IULR430-0300-0300-1600	0.3	16	2.5	2.85	15	4	50	7,200	16.82	17.39	18.01	FREE	FREE	
IULR430-0300-0300-2000	0.3	20	2.5	2.85	15	4	50	7,200	20.95	21.67	FREE	FREE	FREE	
IULR430-0300-0300-2500	0.3	25	2.5	2.85	15	4	60	7,200	26.12	27.02	FREE	FREE	FREE	
IULR430-0300-0300-3000	0.3	30	2.5	2.85	15	4	60	8,080	31.29	FREE	FREE	FREE	FREE	
IULR430-0300-0500-0400	0.5	4	2.5	2.85	15	4	50	4,800	4.41	4.54	4.69	4.85	5.20	
IULR430-0300-0500-0600	0.5	6	2.5	2.85	15	4	50	4,800	6.47	6.68	6.91	7.15	7.69	
IULR430-0300-0500-0800	0.5	8	2.5	2.85	15	4	50	4,800	8.54	8.82	9.12	9.45	FREE	
IULR430-0300-0500-1200	0.5	12	2.5	2.85	15	4	50	5,760	12.68	13.10	13.56	14.05	FREE	
IULR430-0300-0500-1600	0.5													

ion Depo Type U Series

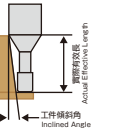


單位(Size) : mm

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.					
										30'	1°	1°30'	2°	3°	
IULR430-0300-1000-2500	3	1	25	2.5	2.85	15	4	60	7,200	26.10	26.97	FREE	FREE	FREE	
IULR430-0300-1000-3000		1	30	2.5	2.85	15	4	60	8,080	31.27	FREE	FREE	FREE	FREE	
IULR430-0400-0100-0800		0.1	8	3.2	3.8	15	6	50	7,200	8.65	8.95	9.27	9.61	10.39	
IULR430-0400-0100-1200	0.1	12	3.2	3.8	15	6	50	7,200	12.79	13.23	13.70	14.21	15.36		
IULR430-0400-0100-1600	0.1	16	3.2	3.8	15	6	50	7,200	16.92	17.51	18.14	18.81	FREE		
IULR430-0400-0100-2400	0.1	24	3.2	3.8	15	6	60	8,000	25.19	26.06	27.00	28.01	FREE		
IULR430-0400-0100-3200	0.1	32	3.2	3.8	15	6	70	8,000	33.46	34.62	35.87	FREE	FREE		
IULR430-0400-0200-0800	0.2	8	3.2	3.8	15	6	50	7,200	8.65	8.94	9.26	9.60	10.36		
IULR430-0400-0200-1200	0.2	12	3.2	3.8	15	6	50	7,200	12.78	13.22	13.69	14.20	15.33		
IULR430-0400-0200-1600	0.2	16	3.2	3.8	15	6	50	7,200	16.92	17.50	18.13	18.80	FREE		
IULR430-0400-0200-2400	0.2	24	3.2	3.8	15	6	60	8,000	25.19	26.06	26.99	28.00	FREE		
IULR430-0400-0200-3200	0.2	32	3.2	3.8	15	6	70	8,000	33.46	34.62	35.86	FREE	FREE		
IULR430-0400-0300-0800	4	0.3	8	3.2	3.8	15	6	50	7,200	8.65	8.94	9.25	9.58	10.34	
IULR430-0400-0300-1200		0.3	12	3.2	3.8	15	6	50	7,200	12.78	13.21	13.68	14.18	15.31	
IULR430-0400-0300-1600		0.3	16	3.2	3.8	15	6	50	7,200	16.91	17.49	18.11	18.78	FREE	
IULR430-0400-0300-2400		0.3	24	3.2	3.8	15	6	60	8,000	25.18	26.05	26.98	27.98	FREE	
IULR430-0400-0300-3200		0.3	32	3.2	3.8	15	6	70	8,000	33.45	34.61	35.85	FREE	FREE	
IULR430-0400-0500-0800		0.5	8	3.2	3.8	15	6	50	7,200	8.64	8.92	9.23	9.55	10.29	
IULR430-0400-0500-1200		0.5	12	3.2	3.8	15	6	50	7,200	12.77	13.20	13.66	14.15	15.27	
IULR430-0400-0500-1600		0.5	16	3.2	3.8	15	6	50	7,200	16.91	17.48	18.09	18.75	FREE	
IULR430-0400-0500-2400		0.5	24	3.2	3.8	15	6	60	8,000	25.18	26.04	26.96	27.95	FREE	
IULR430-0400-0500-3200		0.5	32	3.2	3.8	15	6	70	8,000	33.45	34.59	35.83	FREE	FREE	
IULR430-0400-1000-0800		1	8	3.2	3.8	15	6	50	7,200	8.62	8.89	9.17	9.48	10.18	
IULR430-0400-1000-1200		1	12	3.2	3.8	15	6	50	7,200	12.76	13.17	13.61	14.08	15.15	
IULR430-0400-1000-1600	1	16	3.2	3.8	15	6	50	7,200	16.89	17.45	18.04	18.68	FREE		
IULR430-0400-1000-2400	1	24	3.2	3.8	15	6	60	8,000	25.16	26.00	26.91	27.88	FREE		
IULR430-0400-1000-3200	1	32	3.2	3.8	15	6	70	8,000	33.43	34.56	35.77	FREE	FREE		
IULR430-0500-0100-1500	5	0.1	15	4	4.8	15	6	50	10,240	15.89	16.44	17.03	FREE	FREE	
IULR430-0500-0100-2000		0.1	20	4	4.8	15	6	50	10,240	21.06	21.79	FREE	FREE	FREE	
IULR430-0500-0100-4000		0.1	40	4	4.8	15	6	70	12,800	41.73	FREE	FREE	FREE	FREE	
IULR430-0500-0200-1500		0.2	15	4	4.8	15	6	50	10,240	15.88	16.43	17.02	FREE	FREE	
IULR430-0500-0200-2000		0.2	20	4	4.8	15	6	50	10,240	21.05	21.78	FREE	FREE	FREE	
IULR430-0500-0200-4000		0.2	40	4	4.8	15	6	70	12,800	41.73	FREE	FREE	FREE	FREE	
IULR430-0500-0300-1500		0.3	15	4	4.8	15	6	50	10,240	15.88	16.42	17.01	FREE	FREE	
IULR430-0500-0300-2000		0.3	20	4	4.8	15	6	50	10,240	21.05	21.77	FREE	FREE	FREE	
IULR430-0500-0300-4000		0.3	40	4	4.8	15	6	70	12,800	41.72	FREE	FREE	FREE	FREE	
IULR430-0500-0500-1500		0.5	15	4	4.8	15	6	50	10,240	15.87	16.41	16.98	FREE	FREE	
IULR430-0500-0500-2000		0.5	20	4	4.8	15	6	50	10,240	21.04	21.76	FREE	FREE	FREE	
IULR430-0500-0500-4000		0.5	40	4	4.8	15	6	70	12,800	41.72	FREE	FREE	FREE	FREE	
IULR430-0500-1000-1500		1	15	4	4.8	15	6	50	10,240	15.86	16.38	16.93	FREE	FREE	
IULR430-0500-1000-2000		1	20	4	4.8	15	6	50	10,240	21.03	21.72	FREE	FREE	FREE	
IULR430-0500-1000-4000		1	40	4	4.8	15	6	70	12,800	41.70	FREE	FREE	FREE	FREE	
IULR430-0600-0100-1200		6	0.1	12	5	5.8	15	6	50	10,400	FREE	FREE	FREE	FREE	FREE
IULR430-0600-0100-1800			0.1	18	5	5.8	15	6	50	13,200	FREE	FREE	FREE	FREE	FREE
IULR430-0600-0100-2400			0.1	24	5	5.8	15	6	60	13,200	FREE	FREE	FREE	FREE	FREE

ion Depo Type U Series



單位(Size) : mm

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	圓角R (R) Corner Radius	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
IULR430-0600-0100-4800	6	0.1	48	5	5.8	15	6	80	16,080	FREE	FREE	FREE	FREE	FREE
IULR430-0600-0200-1200		0.2	12	5	5.8	15	6	50	10,400	FREE	FREE	FREE	FREE	FREE
IULR430-0600-0200-1800		0.2	18	5	5.8	15	6	50	13,200	FREE	FREE	FREE	FREE	FREE
IULR430-0600-0200-2400		0.2	24	5	5.8	15	6	60	13,200	FREE	FREE	FREE	FREE	FREE
IULR430-0600-0200-4800		0.2	48	5	5.8	15	6	80	16,080	FREE	FREE	FREE	FREE	FREE
IULR430-0600-0300-1200		0.3	12	5	5.8	15	6	50	10,400	FREE	FREE	FREE	FREE	FREE
IULR430-0600-0300-1800		0.3	18	5	5.8	15	6	50	13,200	FREE	FREE	FREE	FREE	FREE
IULR430-0600-0300-2400		0.3	24	5	5.8	15	6	60	13,200	FREE	FREE	FREE	FREE	FREE
IULR430-0600-0300-4800		0.3	48	5	5.8	15	6	80	16,080	FREE	FREE	FREE	FREE	FREE
IULR430-0600-0500-1200		0.5	12	5	5.8	15	6	50	10,400	FREE	FREE	FREE	FREE	FREE
IULR430-0600-0500-1800		0.5	18	5	5.8	15	6	50	13,200	FREE	FREE	FREE	FREE	FREE
IULR430-0600-0500-2400		0.5	24	5	5.8	15	6	60	13,200	FREE	FREE	FREE	FREE	FREE
IULR430-0600-0500-4800		0.5	48	5	5.8	15	6	80	16,080	FREE	FREE	FREE	FREE	FREE
IULR430-0600-1000-1200		1	12	5	5.8	15	6	50	10,400	FREE	FREE	FREE	FREE	FREE
IULR430-0600-1000-1800		1	18	5	5.8	15	6	50	13,200	FREE	FREE	FREE	FREE	FREE
IULR430-0600-1000-2400		1	24	5	5.8	15	6	60	13,200	FREE	FREE	FREE	FREE	FREE
IULR430-0600-1000-4800		1	48	5	5.8	15	6	80	16,080	FREE	FREE	FREE	FREE	FREE

ion Depo Type U 切削條件參考表 Recommended Milling Conditions

■型號: IULR430
Model number: IULR430

長頸圓角立銼刀 Long Neck Radius End Mill

切削材料 Work Material			淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)				
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm			
4	0.9	4	0.03	0.3	1,700	25,000	0.02	0.2	1,400	20,000	0.01	0.15	1,200	18,000	
			8	0.01	0.3	800	16,000	0.008	0.2	700	14,000	0.005	0.15	500	10,000
		1.0	2	0.012	0.3	2,300	25,000	0.01	0.25	2,000	21,000	0.008	0.2	1,400	17,000
				3	0.012	0.3	2,100	23,000	0.01	0.25	1,800	20,000	0.008	0.2	1,300
			4	0.01	0.3	1,800	21,000	0.008	0.25	1,500	18,000	0.005	0.2	1,100	14,000
				5	0.008	0.3	1,600	19,000	0.005	0.25	1,400	16,000	0.003	0.2	1,000
	6			0.008	0.3	1,400	16,000	0.005	0.25	1,200	14,000	0.003	0.2	850	11,000
	8			0.006	0.3	1,100	15,000	0.005	0.25	900	13,000	0.002	0.2	650	10,000
	10	0.004	0.3	800	13,000	0.003	0.25	700	11,000	0.002	0.2	500	9,000		
		1.2	5	0.045	0.4	1,800	20,000	0.03	0.3	1,500	17,000	0.02	0.2	1,100	14,000
	10			0.03	0.4	1,100	13,000	0.01	0.3	950	11,000	0.005	0.2	700	9,000
	3		0.012	0.5	2,300	23,000	0.01	0.4	2,000	20,000	0.008	0.3	1,400	16,000	
			4	0.012	0.5	2,000	21,000	0.01	0.4	1,700	18,000	0.008	0.3	1,200	14,000
			6	0.01	0.5	1,800	19,000	0.008	0.4	1,500	16,000	0.005	0.3	1,100	13,000
			8	0.01	0.5	1,500	16,000	0.008	0.4	1,300	14,000	0.003	0.3	900	11,000
	12	0.008	0.5	1,100	13,000	0.005	0.4	950	11,000	0.002	0.3	650	9,000		
		15	0.005	0.5	800	11,000	0.003	0.4	700	9,000	0.002	0.3	500	7,000	
		2	4	0.015	0.6	2,300	20,000	0.012	0.5	2,000	17,000	0.008	0.35	1,400	14,000
	6			0.015	0.6	2,100	18,000	0.012	0.5	1,800	15,000	0.008	0.35	1,300	12,000
	8		0.012	0.6	1,800	16,000	0.01	0.5	1,500	14,000	0.005	0.35	1,100	11,000	
			12	0.01	0.6	1,400	13,000	0.008	0.5	1,200	11,000	0.003	0.35	850	9,000
			16	0.008	0.6	1,100	11,000	0.005	0.5	950	9,500	0.002	0.35	650	7,500
			20	0.005	0.6	650	8,000	0.003	0.5	550	7,000	0.002	0.35	400	5,500
	2.5	10	0.07	0.7	1,800	13,000	0.05	0.5	1,500	11,000	0.03	0.5	1,100	9,000	
20		0.04	0.7	1,100	9,000	0.02	0.5	950	7,500	0.01	0.5	650	6,000		
3	4	0.1	0.8	2,300	15,000	0.07	0.7	550	13,000	0.05	0.6	1,400	10,000		
		6	0.1	0.8	2,100	13,000	0.07	0.7	2,000	11,000	0.05	0.6	1,300	9,000	
		8	0.1	0.8	1,800	11,000	0.07	0.7	1,800	9,500	0.05	0.6	1,100	7,500	
	12	0.08	0.8	1,600	11,000	0.06	0.7	1,400	9,500	0.04	0.6	1,000	7,500		
		16	0.07	0.8	1,500	10,000	0.05	0.7	1,200	8,500	0.03	0.6	900	7,000	
		20	0.05	0.8	1,100	8,000	0.04	0.7	950	7,000	0.02	0.6	700	5,500	
	25	0.04	0.8	1,000	7,500	0.02	0.7	850	6,500	0.01	0.6	600	5,000		
		30	0.03	0.8	650	6,500	0.02	0.7	550	5,500	0.007	0.6	400	4,500	
		4	8	0.15	1.2	2,100	10,000	0.08	1	1,800	8,500	0.06	0.8	1,300	7,000
12	0.15			1.2	2,100	10,000	0.08	1	1,800	8,500	0.06	0.8	1,300	7,000	
16	0.1		1.2	1,800	8,000	0.06	1	1,500	7,000	0.05	0.8	1,100	5,500		
	20		0.08	1.2	1,400	7,000	0.05	1	1,200	6,000	0.03	0.8	800	5,000	
	24		0.08	1.2	1,300	6,500	0.05	1	1,100	5,500	0.03	0.8	750	4,500	
	32		0.04	1.2	1,100	5,500	0.02	1	950	4,500	0.01	0.8	650	3,500	
5	15	0.15	2	2,000	8,000	0.08	1.6	1,700	7,000	0.06	1.2	1,200	5,500		
		20	0.1	2	1,600	6,500	0.07	1.6	1,400	5,500	0.05	1.2	1,000	4,500	
	40	0.05	2	1,000	4,000	0.02	1.6	850	3,500	0.01	1.2	600	3,000		

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向切削深度，∅e=徑向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸圓角立銼刀 Long Neck Radius End Mill

切削材料 Work Material			淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)				
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	
			∅p mm	∅e mm			∅p mm	∅e mm			∅p mm	∅e mm			
4	6	12	0.18	2.5	2,100	6,500	0.08	2	1,800	5,500	0.06	1.5	1,300	4,500	
			18	0.18	2.5	1,800	5,500	0.08	2	1,500	4,500	0.06	1.5	1,100	3,500
			24	0.15	2.5	1,500	5,000	0.07	2	1,300	4,000	0.05	1.5	900	3,000
			48	0.05	2.5	750	2,500	0.03	2	650	2,000	0.02	1.5	450	2,000

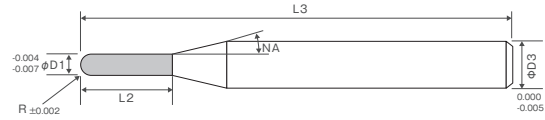
●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向切削深度，∅e=徑向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type U Series

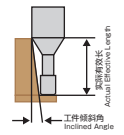
超硬球頭立銑刀 Carbide Ball End Mill

■型號: IUB230 Model number: IUB230

ion U super MG 2 30° 15° 柄徑公差 0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.



單位(Size) : mm

●請系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	球頭R (R) Ball R	刃長 (L2) Length of Cut	刀刃直徑 (D1) Tool Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)
IUB230-0010-0050-00010	0.05	0.1	0.1	15	4	50	8,640
IUB230-0015-0075-00015	0.075	0.15	0.15	15	4	50	8,400
IUB230-0020-0100-00020	0.1	0.2	0.2	15	4	50	6,880
IUB230-0030-0150-00030	0.15	0.3	0.3	15	4	50	4,960
IUB230-0040-0200-00060	0.2	0.6	0.4	15	4	50	3,360
IUB230-0050-0250-00080	0.25	0.8	0.5	15	4	50	3,120
IUB230-0060-0300-00090	0.3	0.9	0.6	15	4	50	3,040
IUB230-0080-0400-00120	0.4	1.2	0.8	15	4	50	3,040
IUB230-0100-0500-00150	0.5	1.5	1	15	4	50	2,800
IUB230-0150-0750-00230	0.75	2.3	1.5	15	4	50	3,360
IUB230-0200-1000-00300	1	3	2	15	4	50	3,040
IUB230-0250-1250-00380	1.25	3.8	2.5	15	4	50	4,240
IUB230-0300-1500-00500	1.5	5	3	15	4	50	3,040
IUB230-0400-2000-00600	2	6	4	15	6	50	3,440
IUB230-0500-2500-00800	2.5	8	5	15	6	50	4,160
IUB230-0600-3000-01000	3	10	6	—	6	50	4,320
IUB230-0800-4000-01200	4	12	8	—	8	70	10,960
IUB230-1000-5000-01500	5	15	10	—	10	80	14,080
IUB230-1200-6000-02000	6	20	12	—	12	110	20,240
IUB230-1600-8000-02400	8	24	16	—	16	160	32,000
IUB230-1800-9000-02700	9	27	18	—	18	180	40,080
IUB230-2000-10000-03000	10	30	20	—	20	180	49,920

ion Depo Type U Series

ion Depo Type U 切削條件參考表 Recommended Milling Conditions

■型號: IUB230
Model number: IUB230

球頭立銑刀 Ball End Mill

切削材料 Work Material	淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)						淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)						淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)					
	刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of Cut	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹			
				φp mm	φe mm			φp mm	φe mm			φp mm	φe mm					
2	0.1	0.1	0.003	0.005	120	40,000	0.002	0.005	100	40,000	0.002	0.003	70	40,000				
	0.15	0.15	0.003	0.005	180	40,000	0.002	0.005	150	40,000	0.002	0.003	100	40,000				
	0.2	0.2	0.01	0.01	350	40,000	0.006	0.005	300	40,000	0.003	0.003	200	40,000				
	0.3	0.3	0.01	0.015	350	40,000	0.007	0.01	300	40,000	0.003	0.005	280	40,000				
	0.4	0.6	0.03	0.05	800	40,000	0.03	0.03	720	40,000	0.009	0.02	580	40,000				
	0.5	0.8	0.03	0.05	1,000	40,000	0.02	0.03	860	40,000	0.01	0.02	650	40,000				
	0.6	0.9	0.05	0.1	1,400	40,000	0.03	0.06	1,000	40,000	0.02	0.05	720	30,000				
	0.8	1.2	0.1	0.15	2,000	40,000	0.07	0.1	1,600	40,000	0.05	0.1	1,200	30,000				
	1	1.5	0.1	0.3	2,500	40,000	0.1	0.2	2,000	30,000	0.08	0.1	1,400	25,000				
	1.5	2.3	0.15	0.3	3,000	30,000	0.1	0.3	2,500	30,000	0.1	0.2	2,000	25,000				
	2	3	0.2	0.5	3,000	25,000	0.2	0.5	2,500	25,000	0.15	0.3	2,000	20,000				
	2.5	3.8	0.3	0.4	2,800	20,000	0.2	0.5	2,300	20,000	0.15	0.4	2,000	18,000				
	3	5	0.2	0.8	3,000	20,000	0.2	0.6	2,500	18,000	0.2	0.5	2,000	14,000				
	4	6	0.3	1.5	3,000	20,000	0.2	0.8	2,500	16,000	0.2	0.6	2,000	12,000				
	5	8	0.3	1.5	3,000	18,000	0.2	1.2	2,500	12,000	0.2	0.7	2,000	9,200				
	6	10	0.3	2	3,000	16,000	0.3	1.2	2,500	8,000	0.2	1	2,000	7,000				
	8	12	0.4	2.4	450	3,600	0.35	1.8	400	2,600	0.35	1.8	350	2,600				
	10	15	0.5	2	450	2,900	0.45	1.5	400	1,900	0.45	1.5	350	1,900				
	12	20	0.6	2.4	450	2,400	0.55	2	400	1,400	0.55	2	350	1,400				
	16	24	0.8	3.2	450	1,800	0.75	2	400	1,000	0.75	2	350	1,000				
18	27	0.9	3.6	450	1,600	0.85	2	400	900	0.85	2	350	900					
20	30	1	4	450	1,450	0.9	2.5	400	800	0.9	2.5	350	800					

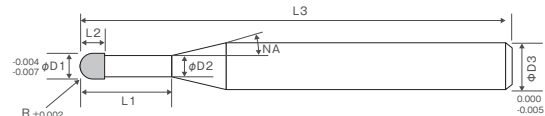
●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●φp=軸向方向切削深度，φe=徑向方向切削深度。 φp=Axial Depth of Cut φe=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type U Series

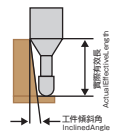
超硬長頸球頭立銼刀 Carbide Long Neck Ball End Mill

■型號: IULB230 Model number: IULB230

ion U super MG 2 螺旋角 30° 仰角 15° 柄徑公差 0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value. If concerned about interference with the work material, please check by actual measurement.

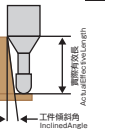


單位(Size) :mm

●聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	球頭R (R)	有效長度 (L1)	刃長 (L2)	刀刃直徑 (D1)	刀頭底部直徑 (D2)	仰角 (NA) [°]	刀柄直徑 (D3)	全長 (L3)	標準價格 (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
IULB230-0010-0050-0020	0.05	0.2	0.07	0.1	0.08	15	4	50	8,240	0.24	0.25	0.26	0.27	0.28
IULB230-0010-0050-0030		0.3	0.07	0.1	0.08	15	4	50	8,240	0.35	0.36	0.37	0.38	0.41
IULB230-0010-0050-0050		0.5	0.07	0.1	0.08	15	4	50	8,960	0.55	0.57	0.59	0.61	0.66
IULB230-0015-0075-0030	0.075	0.3	0.1	0.15	0.13	15	4	50	9,600	0.35	0.36	0.37	0.38	0.40
IULB230-0015-0075-0050		0.5	0.1	0.15	0.13	15	4	50	10,160	0.55	0.57	0.59	0.61	0.65
IULB230-0020-0100-0030	0.1	0.3	0.15	0.2	0.18	15	4	50	5,760	0.35	0.35	0.36	0.37	0.40
IULB230-0020-0100-0050		0.5	0.15	0.2	0.18	15	4	50	5,760	0.55	0.57	0.58	0.60	0.64
IULB230-0020-0100-0075		0.75	0.15	0.2	0.18	15	4	50	5,760	0.81	0.84	0.86	0.89	0.96
IULB230-0020-0100-0100	0.15	1	0.15	0.2	0.18	15	4	50	5,760	1.07	1.10	1.14	1.18	1.27
IULB230-0030-0150-0050		0.5	0.2	0.3	0.27	15	4	50	5,680	0.57	0.58	0.60	0.62	0.66
IULB230-0030-0150-0060		0.6	0.2	0.3	0.27	15	4	50	5,680	0.67	0.69	0.71	0.73	0.78
IULB230-0030-0150-0075	0.15	0.75	0.2	0.3	0.27	15	4	50	5,680	0.83	0.85	0.88	0.90	0.97
IULB230-0030-0150-0100		1	0.2	0.3	0.27	15	4	50	5,680	1.09	1.12	1.15	1.19	1.28
IULB230-0030-0150-0125		1.25	0.2	0.3	0.27	15	4	50	6,080	1.34	1.39	1.43	1.48	1.59
IULB230-0030-0150-0150	0.2	1.5	0.2	0.3	0.27	15	4	50	6,080	1.60	1.65	1.71	1.77	1.90
IULB230-0030-0150-0175		1.75	0.2	0.3	0.27	15	4	50	6,080	1.86	1.92	1.99	2.05	2.21
IULB230-0030-0150-0200		2	0.2	0.3	0.27	15	4	50	6,080	2.12	2.19	2.26	2.34	2.52
IULB230-0030-0150-0225	0.25	2.25	0.2	0.3	0.27	15	4	50	6,240	2.38	2.46	2.54	2.63	2.83
IULB230-0030-0150-0250		2.5	0.2	0.3	0.27	15	4	50	6,240	2.64	2.72	2.82	2.92	3.14
IULB230-0030-0150-0300		3	0.2	0.3	0.27	15	4	50	6,240	3.15	3.26	3.37	3.49	3.76
IULB230-0040-0200-0050	0.2	0.5	0.3	0.4	0.37	15	4	50	3,920	0.57	0.58	0.59	0.61	0.64
IULB230-0040-0200-0080		0.8	0.3	0.4	0.37	15	4	50	3,920	0.88	0.90	0.93	0.95	1.02
IULB230-0040-0200-0100		1	0.3	0.4	0.37	15	4	50	3,920	1.08	1.12	1.15	1.18	1.27
IULB230-0040-0200-0150	0.25	1.5	0.3	0.4	0.37	15	4	50	4,000	1.60	1.65	1.70	1.76	1.89
IULB230-0040-0200-0200		2	0.3	0.4	0.37	15	4	50	4,080	2.12	2.19	2.26	2.33	2.51
IULB230-0040-0200-0250		2.5	0.3	0.4	0.37	15	4	50	4,240	2.64	2.72	2.81	2.91	3.13
IULB230-0040-0200-0300	0.25	3	0.3	0.4	0.37	15	4	50	4,480	3.15	3.26	3.37	3.48	3.75
IULB230-0050-0250-0100		1	0.35	0.5	0.47	15	4	50	3,920	1.08	1.11	1.14	1.18	1.26
IULB230-0050-0250-0150		1.5	0.5	0.5	0.47	15	4	50	3,920	1.60	1.65	1.70	1.75	1.88
IULB230-0050-0250-0200	0.25	2	0.35	0.5	0.47	15	4	50	3,920	2.12	2.18	2.25	2.33	2.50

ion Depo Type U Series



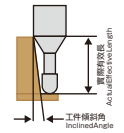
單位(Size) :mm

●聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	球頭R (R)	有效長度 (L1)	刃長 (L2)	刀刃直徑 (D1)	刀頭底部直徑 (D2)	仰角 (NA) [°]	刀柄直徑 (D3)	全長 (L3)	標準價格 (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
IULB230-0050-0250-0250	0.25	2.5	0.35	0.5	0.47	15	4	50	3,920	2.63	2.72	2.81	2.90	3.12
IULB230-0050-0250-0300		3	0.5	0.5	0.47	15	4	50	3,920	3.15	3.25	3.36	3.48	3.74
IULB230-0050-0250-0350		3.5	0.35	0.5	0.47	15	4	50	3,920	3.67	3.79	3.91	4.05	4.36
IULB230-0050-0250-0400		4	0.35	0.5	0.47	15	4	50	3,920	4.18	4.32	4.47	4.63	4.98
IULB230-0060-0300-0100	0.3	1	0.45	0.6	0.57	15	4	50	3,360	1.08	1.11	1.14	1.17	1.24
IULB230-0060-0300-0150		1.5	0.45	0.6	0.57	15	4	50	3,040	1.60	1.64	1.69	1.74	1.87
IULB230-0060-0300-0200		2	0.45	0.6	0.57	15	4	50	3,040	2.12	2.18	2.25	2.32	2.49
IULB230-0060-0300-0250		2.5	0.45	0.6	0.57	15	4	50	3,120	2.63	2.71	2.80	2.89	3.11
IULB230-0060-0300-0300	0.3	3	0.45	0.6	0.57	15	4	50	3,120	3.15	3.25	3.35	3.47	3.73
IULB230-0060-0300-0350		3.5	0.45	0.6	0.57	15	4	50	3,200	3.67	3.78	3.91	4.04	4.35
IULB230-0060-0300-0400		4	0.45	0.6	0.57	15	4	50	3,200	4.18	4.32	4.46	4.62	4.97
IULB230-0060-0300-0450		4.5	0.45	0.6	0.57	15	4	50	3,200	4.70	4.85	5.02	5.19	5.59
IULB230-0060-0300-0500	0.35	5	0.45	0.6	0.57	15	4	50	3,200	5.22	5.39	5.57	5.77	6.22
IULB230-0060-0300-0550		5.5	0.45	0.6	0.57	15	4	50	3,200	5.73	5.92	6.13	6.34	6.84
IULB230-0060-0300-0600		6	0.45	0.6	0.57	15	4	50	3,200	6.25	6.46	6.68	6.92	7.46
IULB230-0070-0350-0200		0.4	2	0.5	0.7	0.67	15	4	50	3,440	2.11	2.18	2.24	2.31
IULB230-0070-0350-0400	4		0.5	0.7	0.67	15	4	50	3,680	4.18	4.31	4.46	4.61	4.96
IULB230-0070-0350-0600	6		0.5	0.7	0.67	15	4	50	3,680	6.25	6.45	6.67	6.91	7.45
IULB230-0080-0400-0200	0.4	2	0.6	0.8	0.77	15	4	50	3,040	2.11	2.17	2.24	2.31	2.46
IULB230-0080-0400-0300		3	0.6	0.8	0.77	15	4	50	3,200	3.15	3.24	3.34	3.46	3.71
IULB230-0080-0400-0400		4	0.6	0.8	0.77	15	4	50	3,200	4.18	4.31	4.45	4.60	4.95
IULB230-0080-0400-0500		5	0.6	0.8	0.77	15	4	50	3,200	5.21	5.38	5.56	5.75	6.19
IULB230-0080-0400-0600	0.45	6	0.6	0.8	0.77	15	4	50	3,200	6.25	6.45	6.67	6.90	7.44
IULB230-0080-0400-0700		7	0.6	0.8	0.77	15	4	50	3,200	7.28	7.52	7.78	8.05	8.68
IULB230-0080-0400-0800		8	0.6	0.8	0.77	15	4	50	3,200	8.31	8.59	8.89	9.20	9.92
IULB230-0090-0450-0200		0.5	2	0.65	0.9	0.87	15	4	50	3,440	2.11	2.17	2.23	2.30
IULB230-0090-0450-0400	4		0.65	0.9	0.87	15	4	50	3,680	4.18	4.31	4.45	4.60	4.94
IULB230-0090-0450-0600	6		0.65	0.9	0.87	15	4	50	3,680	6.24	6.45	6.66	6.90	7.42
IULB230-0090-0450-0800	8		0.65	0.9	0.87	15	4	50	3,680	8.31	8.59	8.88	9.20	9.91
IULB230-0100-0500-0200	0.5	2	0.75	1	0.95	15	4	50	2,560	2.15	2.20	2.27	2.33	2.49
IULB230-0100-0500-0250		2.5	0.75	1	0.95	15	4	50	2,560	2.66	2.74	2.82	2.91	3.11
IULB230-0100-0500-0300		3	0.8	1	0.95	15	4	50	2,560	3.18	3.27	3.37	3.48	3.73
IULB230-0100-0500-0400		4	0.75	1	0.95	15	4	50	2,880	4.21	4.34	4.48	4.63	4.97
IULB230-0100-0500-0500		5	0.75	1	0.95	15	4	50	2,880	5.25	5.41	5.59	5.78	6.22
IULB230-0100-0500-0600		6	0.8	1	0.95	15	4	50	3,120	6.28	6.48	6.70	6.93	7.46
IULB230-0100-0500-0700		7	0.75	1	0.95	15	4	50	3,120	7.32	7.55	7.81	8.08	8.70
IULB230-0100-0500-0800		8	0.75	1	0.95	15	4	50	3,120	8.35	8.62	8.92	9.23	9.95
IULB230-0100-0500-0900		9	0.75	1	0.95	15	4	50	3,120	9.38	9.69	10.02	10.38	11.19
IULB230-0100-0500-1000		10	0.8	1	0.95	15	4	50	3,120	10.42	10.76	11.13	11.53	12.43
IULB230-0100-0500-1200		12	0.75	1	0.95	15	4	50	3,120	12.48	12.90	13.35	13.83	14.92
IULB230-0120-0600-0240		0.6	2.4	0.9	1.2	1.15	15	4	50	3,840	2.56	2.63	2.70	2.78
IULB230-0120-0600-0400	4		0.9	1.2	1.15	15	4	50	3,840	4.21	4.34	4.47	4.62	4.95
IULB230-0120-0600-0600	6		0.9	1.2	1.15	15	4	50	4,160	6.28	6.48	6.69	6.92	7.44
IULB230-0120-0600-0800	8		0.9	1.2	1.15	15	4	50	4,160	8.35	8.62	8.91	9.22	9.92
IULB230-0120-0600-1000	0.6	10	0.9	1.2	1.15	15	4	50	4,160	10.41	10.76	11.12	11.52	12.41

CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
ion Depo A Series
ion Depo U Series
DLC Series
Non-Coat Series
ion Depo R Series

ion Depo Type U Series

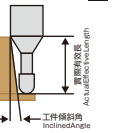


● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size) :mm

型號 Code No.	球頭R Ball R	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀柄直徑 (D1) Tool Diameter	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
IULB230-0120-0600-1200	0.6	12	0.9	1.2	1.15	15	4	50	4,160	12.48	12.89	13.34	13.82	14.90
IULB230-0140-0700-0800	0.7	8	1	1.4	1.35	15	4	50	3,600	8.34	8.61	8.90	9.20	9.90
IULB230-0140-0700-1200		12	1	1.4	1.35	15	4	50	3,600	12.48	12.89	13.33	13.80	14.87
IULB230-0140-0700-1600		16	1	1.4	1.35	15	4	50	3,600	16.61	17.17	17.76	18.40	19.84
IULB230-0150-0750-0300	0.75	3	1.1	1.5	1.45	15	4	50	2,960	3.17	3.26	3.35	3.45	3.67
IULB230-0150-0750-0400		4	1.1	1.5	1.45	15	4	50	2,960	4.21	4.33	4.46	4.60	4.92
IULB230-0150-0750-0600		6	1.1	1.5	1.45	15	4	50	2,960	6.27	6.47	6.67	6.90	7.40
IULB230-0150-0750-0800		8	1.1	1.5	1.45	15	4	50	3,120	8.34	8.61	8.89	9.20	9.89
IULB230-0150-0750-1000		10	1.1	1.5	1.45	15	4	50	3,360	10.41	10.74	11.11	11.50	12.37
IULB230-0150-0750-1200		12	1.1	1.5	1.45	15	4	50	3,600	12.48	12.88	13.32	13.80	14.86
IULB230-0150-0750-1400		14	1.1	1.5	1.45	15	4	50	3,600	14.54	15.02	15.54	16.09	17.35
IULB230-0150-0750-1600	16	1.1	1.5	1.45	15	4	50	3,600	16.61	17.16	17.76	18.39	19.83	
IULB230-0160-0800-0800	0.8	8	1.2	1.6	1.55	15	4	50	4,160	8.34	8.60	8.88	9.19	9.88
IULB230-0160-0800-1200		12	1.2	1.6	1.55	15	4	50	4,160	12.47	12.88	13.32	13.79	14.85
IULB230-0160-0800-1600		16	1.2	1.6	1.55	15	4	50	4,160	16.61	17.16	17.75	18.39	19.82
IULB230-0200-1000-0300	1	3	1.5	2	1.94	15	4	50	2,560	3.18	3.26	3.34	3.43	3.64
IULB230-0200-1000-0400		4	1.5	2	1.94	15	4	50	2,560	4.22	4.33	4.45	4.58	4.88
IULB230-0200-1000-0600		6	1.5	2	1.94	15	4	50	2,880	6.28	6.47	6.67	6.88	7.37
IULB230-0200-1000-0800		8	1.5	2	1.94	15	4	50	3,120	8.35	8.61	8.88	9.18	9.85
IULB230-0200-1000-1000		10	1.5	2	1.94	15	4	50	3,120	10.42	10.75	11.10	11.48	12.34
IULB230-0200-1000-1200		12	1.5	2	1.94	15	4	50	3,120	12.49	12.89	13.32	13.78	14.83
IULB230-0200-1000-1300		13	1.5	2	1.94	15	4	50	3,120	13.52	13.96	14.43	14.93	16.07
IULB230-0200-1000-1400		14	1.5	2	1.94	15	4	50	3,120	14.55	15.03	15.53	16.08	17.31
IULB230-0200-1000-1600		16	1.5	2	1.94	15	4	50	3,120	16.62	17.17	17.75	18.38	19.80
IULB230-0200-1000-1800		18	1.5	2	1.94	15	4	50	3,120	18.69	19.30	19.97	20.68	FREE
IULB230-0200-1000-2000	20	1.5	2	1.94	15	4	50	3,120	20.76	21.44	22.18	22.98	FREE	
IULB230-0250-1250-0600	1.25	6	2.3	2.5	2.44	15	4	50	3,840	6.28	6.45	6.64	6.84	7.31
IULB230-0250-1250-0800		8	2.3	2.5	2.44	15	4	50	3,360	8.34	8.59	8.86	9.14	9.80
IULB230-0250-1250-1000		10	2.3	2.5	2.44	15	4	50	4,080	10.41	10.73	11.07	11.44	12.28
IULB230-0250-1250-1500		15	2.3	2.5	2.44	15	4	50	4,160	15.58	16.08	16.62	17.19	FREE
IULB230-0250-1250-2000		20	2.3	2.5	2.44	15	4	50	4,880	20.75	21.43	22.16	FREE	FREE
IULB230-0300-1500-0600	1.5	6	2.5	3	2.85	15	4	50	3,120	6.44	6.61	6.80	7.00	7.46
IULB230-0300-1500-0800		8	2.5	3	2.85	15	4	50	3,120	8.51	8.75	9.02	9.30	9.95
IULB230-0300-1500-1000		10	2.5	3	2.85	15	4	50	3,600	10.58	10.89	11.23	11.60	FREE
IULB230-0300-1500-1200		12	2.5	3	2.85	15	4	50	3,760	12.64	13.03	13.45	13.90	FREE
IULB230-0300-1500-1400		14	2.5	3	2.85	15	4	50	4,160	14.71	15.17	15.67	FREE	FREE
IULB230-0300-1500-1600		16	2.5	3	2.85	15	4	50	4,160	16.78	17.31	17.88	FREE	FREE
IULB230-0300-1500-2000		20	2.5	3	2.85	15	4	50	4,000	20.91	21.59	FREE	FREE	FREE
IULB230-0300-1500-2500		25	2.5	3	2.85	15	4	60	4,000	26.08	26.94	FREE	FREE	FREE
IULB230-0300-1500-3000	30	2.5	3	2.85	15	4	60	4,560	31.25	FREE	FREE	FREE	FREE	
IULB230-0350-1750-1500	1.75	15	2.8	3.5	3.35	15	6	50	5,280	15.74	16.22	16.75	17.31	18.59
IULB230-0350-1750-2000		20	2.8	3.5	3.35	15	6	50	5,280	20.90	21.57	22.29	23.06	24.81
IULB230-0350-1750-2500		25	2.8	3.5	3.35	15	6	60	5,600	26.07	26.92	27.83	28.81	FREE
IULB230-0350-1750-3000		30	2.8	3.5	3.35	15	6	60	5,600	31.24	32.27	33.37	34.56	FREE
IULB230-0350-1750-3500		35	2.8	3.5	3.35	15	6	70	7,200	36.41	37.62	38.91	FREE	FREE

ion Depo Type U Series



● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size) :mm

型號 Code No.	球頭R Ball R	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀柄直徑 (D1) Tool Diameter	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30'	1°	1°30'	2°	3°
IULB230-0400-2000-0800	2	8	3	4	3.8	15	6	50	3,200	8.59	8.82	9.07	9.33	9.95
IULB230-0400-2000-1000		10	3	4	3.8	15	6	50	3,200	10.66	10.96	11.28	11.63	12.43
IULB230-0400-2000-1200		12	3	4	3.8	15	6	50	4,160	12.72	13.10	13.50	13.93	14.92
IULB230-0400-2000-1400		14	3	4	3.8	15	6	50	4,160	14.79	15.24	15.72	16.23	17.41
IULB230-0400-2000-1500		15	3	4	3.8	15	6	50	4,160	15.82	16.31	16.82	17.38	18.65
IULB230-0400-2000-2000		20	3	4	3.8	15	6	50	4,160	20.99	21.65	22.37	23.13	FREE
IULB230-0400-2000-2500		25	3	4	3.8	15	6	60	4,160	26.16	27.00	27.91	28.88	FREE
IULB230-0400-2000-3000		30	3	4	3.8	15	6	60	4,160	31.33	32.35	33.45	FREE	FREE
IULB230-0400-2000-3500		35	3	4	3.8	15	6	70	4,800	36.50	37.70	38.99	FREE	FREE
IULB230-0500-2500-1500		2.5	15	3.5	5	4.8	15	6	50	6,880	15.81	16.27	16.77	FREE
IULB230-0500-2500-2000	20		3.5	5	4.8	15	6	50	6,960	20.98	21.62	FREE	FREE	FREE
IULB230-0500-2500-2500	25		3.5	5	4.8	15	6	60	6,960	26.14	26.97	FREE	FREE	FREE
IULB230-0500-2500-3000	30		3.5	5	4.8	15	6	60	7,440	31.31	FREE	FREE	FREE	FREE
IULB230-0500-2500-4000	40		3.5	5	4.8	15	6	70	9,280	41.65	FREE	FREE	FREE	FREE
IULB230-0600-3000-1000	3	10	6	6	5.8	15	6	50	5,200	FREE	FREE	FREE	FREE	FREE
IULB230-0600-3000-1500		15	6	6	5.8	15	6	50	5,200	FREE	FREE	FREE	FREE	FREE
IULB230-0600-3000-2000		20	6	6	5.8	15	6	50	5,200	FREE	FREE	FREE	FREE	FREE
IULB230-0600-3000-2500		25	6	6	5.8	15	6	60	5,200	FREE	FREE	FREE	FREE	FREE
IULB230-0600-3000-3000		30	6	6	5.8	15	6	60	5,360	FREE	FREE	FREE	FREE	FREE
IULB230-0600-3000-3500		35	6	6	5.8	15	6	70	5,360	FREE	FREE	FREE	FREE	FREE
IULB230-0600-3000-4000		40	6	6	5.8	15	6	70	5,840	FREE	FREE	FREE	FREE	FREE
IULB230-0600-3000-5000		50	6	6	5.8	15	6	80	6,320	FREE	FREE	FREE	FREE	FREE
IULB230-0600-3000-6000	60	6	6	5.8	15	6	90	6,800	FREE	FREE	FREE	FREE	FREE	

CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
ion Depo A Series
ion Depo U Series
DLC Series
Non-Coat Series
ion Depo R Series

ion Depo Type U 切削條件參考表 Recommended Milling Conditions

■型號: IULB230
Model number: IULB230

長頸球頭立銼刀 Long Neck Ball End Mill

切削材料 Work Material			淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)			
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
			φp mm	φe mm			φp mm	φe mm			φp mm	φe mm		
2	0.1	0.2	0.003	0.005	120	40,000	0.002	0.005	100	40,000	0.002	0.003	70	40,000
		0.3	0.003	0.005	100	40,000	0.002	0.005	70	40,000	0.002	0.003	50	40,000
		0.5	0.002	0.003	70	40,000	0.001	0.003	50	40,000	0.001	0.002	30	40,000
	0.15	0.3	0.003	0.005	180	40,000	0.002	0.005	150	40,000	0.002	0.003	100	40,000
		0.5	0.003	0.005	150	40,000	0.002	0.005	120	40,000	0.002	0.003	70	40,000
	0.2	0.3	0.01	0.01	350	40,000	0.006	0.005	300	40,000	0.003	0.003	200	40,000
		0.5	0.008	0.01	320	40,000	0.005	0.005	280	40,000	0.003	0.003	180	40,000
		0.75	0.005	0.01	280	40,000	0.003	0.005	200	40,000	0.002	0.003	150	40,000
	0.3	1	0.003	0.005	250	40,000	0.002	0.003	160	40,000	0.001	0.002	120	40,000
		0.5	0.01	0.015	350	40,000	0.007	0.01	300	40,000	0.003	0.005	280	40,000
		0.6	0.007	0.01	350	40,000	0.005	0.007	300	40,000	0.003	0.005	250	40,000
		0.75	0.007	0.01	330	40,000	0.005	0.007	280	40,000	0.003	0.005	230	40,000
		1	0.007	0.01	320	40,000	0.005	0.007	250	40,000	0.003	0.005	200	40,000
		1.25	0.005	0.007	280	40,000	0.003	0.005	200	40,000	0.002	0.003	160	40,000
		1.5	0.005	0.007	230	40,000	0.003	0.005	180	40,000	0.002	0.003	120	40,000
		1.75	0.003	0.005	180	40,000	0.002	0.003	150	40,000	0.002	0.002	100	40,000
		2	0.003	0.005	150	40,000	0.002	0.003	120	40,000	0.002	0.002	90	40,000
		2.25	0.002	0.003	120	40,000	0.001	0.002	100	40,000	0.001	0.001	80	40,000
	2.5	0.002	0.003	100	40,000	0.001	0.002	80	40,000	0.001	0.001	70	40,000	
	3	0.001	0.003	80	40,000	0.001	0.002	70	40,000	0.001	0.001	60	40,000	
	0.4	0.5	0.03	0.05	800	40,000	0.03	0.03	720	40,000	0.009	0.02	580	40,000
		0.8	0.02	0.05	800	40,000	0.02	0.03	720	40,000	0.008	0.02	580	40,000
		1	0.02	0.05	800	40,000	0.02	0.03	720	40,000	0.008	0.02	580	40,000
		1.5	0.01	0.03	620	40,000	0.01	0.02	500	40,000	0.005	0.01	400	40,000
2		0.01	0.02	500	40,000	0.01	0.01	380	40,000	0.005	0.007	300	40,000	
2.5		0.007	0.01	420	40,000	0.005	0.007	300	40,000	0.003	0.005	260	40,000	
3		0.007	0.01	300	40,000	0.005	0.007	240	40,000	0.003	0.005	200	40,000	
0.5	1	0.03	0.05	1,000	40,000	0.02	0.03	860	40,000	0.01	0.02	650	40,000	
	1.5	0.02	0.05	850	40,000	0.01	0.03	720	40,000	0.007	0.02	520	40,000	
	2	0.02	0.03	720	40,000	0.01	0.02	650	40,000	0.007	0.01	400	40,000	
	2.5	0.01	0.02	600	40,000	0.007	0.01	530	40,000	0.005	0.007	360	40,000	
	3	0.01	0.02	500	40,000	0.007	0.01	420	40,000	0.005	0.007	320	40,000	
	3.5	0.007	0.01	420	40,000	0.005	0.007	360	40,000	0.003	0.005	280	40,000	
0.6	4	0.007	0.01	350	40,000	0.005	0.007	300	40,000	0.003	0.005	260	40,000	
	1	0.05	0.1	1,400	40,000	0.03	0.06	1,000	40,000	0.02	0.05	720	30,000	
	1.5	0.05	0.1	1,400	40,000	0.03	0.06	1,000	40,000	0.02	0.05	720	30,000	
	2	0.05	0.1	1,400	40,000	0.03	0.06	1,000	40,000	0.02	0.05	720	30,000	
	2.5	0.03	0.05	1,200	40,000	0.02	0.04	840	40,000	0.02	0.03	640	30,000	
	3	0.03	0.05	1,200	40,000	0.02	0.04	840	40,000	0.02	0.03	640	30,000	
	3.5	0.02	0.03	1,000	40,000	0.01	0.03	620	40,000	0.01	0.02	480	30,000	
	4	0.02	0.03	1,000	40,000	0.01	0.03	620	40,000	0.01	0.02	480	30,000	
2	4.5	0.02	0.03	900	35,000	0.01	0.02	580	35,000	0.008	0.015	430	30,000	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid. ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible. ●φp=軸向方向切削深度。 φe=徑向方向切削深度。 φp=Axial Depth of Cut φe=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸球頭立銼刀 Long Neck Ball End Mill

切削材料 Work Material			淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)				
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	
			φp mm	φe mm			φp mm	φe mm			φp mm	φe mm			
2	0.6	5	0.01	0.02	720	30,000	0.007	0.015	500	30,000	0.007	0.01	400	30,000	
		5.5	0.01	0.015	700	30,000	0.007	0.01	450	30,000	0.005	0.008	360	30,000	
		6	0.007	0.01	500	30,000	0.005	0.007	380	30,000	0.004	0.006	320	30,000	
	0.7	2	0.07	0.1	1,600	40,000	0.05	0.08	1,300	40,000	0.03	0.07	1,000	30,000	
		4	0.04	0.06	1,300	40,000	0.03	0.04	820	40,000	0.015	0.02	600	30,000	
		6	0.01	0.03	800	30,000	0.01	0.015	500	30,000	0.006	0.01	420	25,000	
	0.8	2	0.1	0.15	2,000	40,000	0.07	0.1	1,600	40,000	0.05	0.1	1,200	30,000	
		3	0.1	0.15	2,000	40,000	0.07	0.1	1,600	40,000	0.05	0.05	1,200	30,000	
		4	0.05	0.1	1,600	40,000	0.05	0.05	1,200	40,000	0.03	0.05	860	30,000	
		5	0.05	0.05	1,600	40,000	0.03	0.05	1,000	40,000	0.02	0.03	620	30,000	
		6	0.03	0.05	1,200	30,000	0.02	0.03	760	30,000	0.01	0.02	560	25,000	
		7	0.02	0.03	1,000	30,000	0.01	0.02	680	30,000	0.007	0.01	520	25,000	
	0.9	8	0.01	0.02	820	30,000	0.007	0.01	600	30,000	0.005	0.01	480	25,000	
		2	0.1	0.2	2,200	40,000	0.08	0.15	1,800	30,000	0.06	0.1	1,300	30,000	
		4	0.05	0.12	1,800	40,000	0.04	0.08	1,400	30,000	0.03	0.05	900	25,000	
		6	0.035	0.05	1,200	30,000	0.025	0.035	800	25,000	0.015	0.025	600	20,000	
	1	8	0.025	0.04	1,000	30,000	0.015	0.025	700	23,000	0.008	0.015	500	20,000	
		2	0.1	0.3	2,500	40,000	0.1	0.2	2,000	30,000	0.08	0.1	1,400	25,000	
		2.5	0.1	0.3	2,500	40,000	0.1	0.2	2,000	30,000	0.08	0.1	1,400	25,000	
		3	0.1	0.3	2,500	40,000	0.1	0.2	2,000	30,000	0.08	0.1	1,400	25,000	
		4	0.1	0.2	2,500	40,000	0.05	0.15	1,800	30,000	0.05	0.1	1,200	25,000	
		5	0.05	0.15	2,000	30,000	0.04	0.1	1,600	25,000	0.03	0.05	920	20,000	
		6	0.05	0.1	1,800	30,000	0.04	0.05	1,200	25,000	0.02	0.05	740	20,000	
		7	0.04	0.06	1,200	30,000	0.03	0.04	950	25,000	0.02	0.03	680	20,000	
		8	0.04	0.06	1,000	30,000	0.03	0.04	860	25,000	0.02	0.03	560	20,000	
		9	0.03	0.05	820	25,000	0.02	0.03	750	20,000	0.01	0.02	500	18,000	
	1.2	10	0.03	0.05	750	25,000	0.02	0.03	620	20,000	0.01	0.02	450	18,000	
		12	0.01	0.03	600	20,000	0.007	0.02	520	18,000	0.005	0.01	400	16,000	
		2.4	0.1	0.3	2,500	30,000	0.1	0.2	2,000	30,000	0.05	0.1	1,600	25,000	
		4	0.1	0.2	2,500	30,000	0.07	0.2	2,000	30,000	0.05	0.1	1,600	25,000	
		6	0.07	0.1	2,000	30,000	0.05	0.1	1,600	25,000	0.03	0.07	1,200	20,000	
		8	0.05	0.1	1,600	30,000	0.03	0.07	1,200	25,000	0.02	0.05	920	20,000	
		10	0.03	0.07	1,200	20,000	0.02	0.05	860	20,000	0.01	0.03	680	18,000	
		12	0.02	0.05	860	20,000	0.01	0.03	620	20,000	0.007	0.02	480	18,000	
		1.4	8	0.12	0.2	2,500	30,000	0.08	0.15	1,800	20,000	0.03	0.08	1,000	20,000
			12	0.07	0.12	1,400	20,000	0.04	0.08	1,100	18,000	0.015	0.05	700	18,000
			16	0.02	0.05	700	17,000	0.01	0.03	600	17,000	0.008	0.02	450	16,000
			1.5	3	0.15	0.3	3,000	30,000	0.1	0.3	2,500	30,000	0.1	0.2	2,000
	4	0.15		0.3	3,000	30,000	0.1	0.3	2,500	30,000	0.1	0.2	2,000	25,000	
	6	0.15		0.2	3,000	30,000	0.1	0.2	2,000	30,000	0.1	0.1	1,600	25,000	
	8	0.1		0.2	2,500	25,000	0.05	0.2	1,600	25,000	0.05	0.1	1,200	20,000	
	10	0.1		0.1	2,500	25,000	0.05	0.1	1,200	25,000	0.05	0.05	860	20,000	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid. ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible. ●φp=軸向方向切削深度。 φe=徑向方向切削深度。 φp=Axial Depth

ion Depo Type U 切削條件參考表 Recommended Milling Conditions

■型號: IULB230
Model number: IULB230

長頸球頭立銼刀 Long Neck Ball End Mill

切削材料 Work Material			淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)			
刃數 Number of Flutes	刀徑直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
			φp mm	φe mm			φp mm	φe mm			φp mm	φe mm		
2	1.5	12	0.05	0.1	1,800	20,000	0.03	0.1	920	20,000	0.02	0.05	780	18,000
		14	0.05	0.07	1,200	20,000	0.03	0.05	820	20,000	0.02	0.03	650	18,000
		16	0.03	0.05	720	18,000	0.02	0.03	650	18,000	0.01	0.02	580	16,000
	1.6	8	0.1	0.2	2,500	25,000	0.07	0.15	2,000	20,000	0.05	0.1	1,600	18,000
		12	0.07	0.1	1,800	20,000	0.05	0.07	1,500	16,000	0.03	0.05	1,200	14,000
		16	0.03	0.05	720	16,000	0.02	0.03	600	14,000	0.015	0.02	480	12,000
	2	3	0.2	0.5	3,000	25,000	0.2	0.5	2,500	25,000	0.15	0.3	2,000	20,000
		4	0.2	0.5	3,000	25,000	0.2	0.5	2,500	25,000	0.15	0.3	2,000	20,000
		6	0.2	0.5	2,500	25,000	0.2	0.3	2,000	25,000	0.15	0.3	1,600	20,000
		8	0.2	0.3	2,000	20,000	0.1	0.2	1,600	18,000	0.1	0.2	1,200	16,000
		10	0.1	0.3	2,000	18,000	0.1	0.2	1,600	16,000	0.1	0.1	1,200	14,000
		12	0.1	0.2	1,600	16,000	0.1	0.1	1,200	14,000	0.05	0.1	940	12,000
		13	0.08	0.2	1,600	16,000	0.06	0.1	1,200	14,000	0.04	0.08	940	12,000
		14	0.07	0.15	1,600	16,000	0.05	0.08	1,200	14,000	0.03	0.07	940	12,000
		16	0.07	0.15	1,600	16,000	0.05	0.08	1,200	14,000	0.03	0.07	940	12,000
		18	0.05	0.1	1,400	14,000	0.03	0.05	1,000	12,000	0.02	0.03	850	10,000
	20	0.05	0.1	1,000	14,000	0.03	0.05	820	12,000	0.02	0.03	720	10,000	
	2.5	6	0.3	0.4	2,800	20,000	0.2	0.5	2,300	20,000	0.15	0.4	2,000	18,000
		8	0.25	0.3	2,600	20,000	0.15	0.3	2,100	20,000	0.12	0.25	1,800	18,000
		10	0.2	0.3	2,500	20,000	0.15	0.2	2,000	20,000	0.1	0.15	1,600	18,000
15		0.1	0.2	2,000	18,000	0.07	0.15	1,600	16,000	0.05	0.1	1,200	14,000	
20		0.07	0.15	1,500	16,000	0.05	0.1	1,200	14,000	0.03	0.05	1,000	10,000	
3	6	0.2	0.8	3,000	20,000	0.2	0.6	2,500	18,000	0.2	0.5	2,000	14,000	
	8	0.2	0.8	3,000	20,000	0.2	0.6	2,500	18,000	0.2	0.5	2,000	14,000	
	10	0.2	0.6	2,500	20,000	0.2	0.4	2,000	18,000	0.1	0.3	1,500	14,000	
	12	0.2	0.6	2,500	20,000	0.2	0.4	2,000	18,000	0.1	0.3	1,500	14,000	
	14	0.1	0.4	2,000	18,000	0.1	0.3	1,600	16,000	0.1	0.2	1,200	12,000	
	16	0.1	0.4	2,000	18,000	0.1	0.3	1,600	16,000	0.1	0.2	1,200	12,000	
	20	0.1	0.3	1,600	18,000	0.1	0.2	1,200	16,000	0.1	0.1	960	12,000	
	25	0.1	0.2	1,200	16,000	0.07	0.15	920	14,000	0.05	0.07	800	10,000	
3.5	15	0.25	1	3,000	20,000	0.15	0.5	2,300	16,000	0.13	0.4	1,500	14,000	
	20	0.18	0.6	2,500	18,000	0.1	0.3	1,800	15,000	0.1	0.2	1,200	12,000	
	25	0.12	0.35	1,800	16,000	0.1	0.2	1,600	14,000	0.06	0.12	1,000	10,000	
	30	0.1	0.25	1,500	14,000	0.07	0.15	950	11,000	0.05	0.08	800	9,000	
4	35	0.08	0.2	1,200	13,000	0.07	0.12	800	10,000	0.03	0.06	650	7,500	
	8	0.3	1.5	3,000	20,000	0.2	0.8	2,500	16,000	0.2	0.6	2,000	12,000	
	10	0.3	1.5	3,000	20,000	0.2	0.8	2,500	16,000	0.2	0.6	2,000	12,000	
	12	0.3	1.5	3,000	20,000	0.2	0.8	2,500	16,000	0.2	0.6	2,000	12,000	
	14	0.3	1.5	3,000	20,000	0.2	0.8	2,000	16,000	0.2	0.6	1,600	12,000	
	15	0.3	1.5	3,000	20,000	0.2	0.8	2,000	16,000	0.2	0.6	1,600	12,000	
20	0.2	1	2,400	16,000	0.1	0.6	1,800	14,000	0.1	0.4	1,400	10,000		

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●φp=軸向方向切削深度，φe=徑向方向切削深度。 φp=Axial Depth of Cut φe=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸球頭立銼刀 Long Neck Ball End Mill

切削材料 Work Material			淬火鋼 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				淬火鋼 Hardened Steels SKD11/SKH51 (~60HRC)				淬火鋼 Hardened Steels ASP23/HAP5R/HAP72(60HRC~)			
刃數 Number of Flutes	刀徑直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
			φp mm	φe mm			φp mm	φe mm			φp mm	φe mm		
2	4	25	0.2	0.8	1,600	16,000	0.1	0.4	1,200	14,000	0.1	0.2	1,000	10,000
		30	0.1	0.3	1,600	14,000	0.07	0.2	1,200	10,000	0.05	0.15	1,000	8,200
		35	0.1	0.2	1,200	14,000	0.07	0.15	1,000	10,000	0.05	0.1	820	8,200
	5	15	0.3	1.5	3,000	18,000	0.2	1.2	2,500	12,000	0.2	0.7	2,000	9,200
		20	0.3	1.5	3,000	18,000	0.2	1.2	2,500	12,000	0.2	0.7	2,000	9,200
		25	0.3	1.2	3,000	15,000	0.2	1	2,000	10,000	0.15	0.5	1,600	8,000
		30	0.2	1	2,500	15,000	0.15	0.8	1,800	8,600	0.1	0.3	1,200	7,200
	6	40	0.2	0.8	2,000	12,000	0.15	0.5	1,500	7,600	0.1	0.2	860	6,400
		10	0.3	2	3,000	16,000	0.3	1.2	2,500	8,000	0.2	1	2,000	7,000
		15	0.3	2	3,000	16,000	0.3	1.2	2,500	8,000	0.2	1	2,000	7,000
		20	0.3	2	3,000	16,000	0.3	1.2	2,500	8,000	0.2	1	2,000	7,000
		25	0.3	1.5	3,000	16,000	0.2	1	2,000	8,000	0.15	0.7	1,500	7,000
		30	0.2	1.5	3,000	14,000	0.2	1	2,000	7,200	0.15	0.7	1,500	6,500
		35	0.2	1.2	2,400	13,000	0.17	0.8	1,600	6,800	0.12	0.5	1,200	5,800
		40	0.2	1	1,800	12,000	0.15	0.6	1,200	6,400	0.1	0.4	1,000	5,200
	60	50	0.1	0.6	1,200	8,200	0.1	0.3	860	4,800	0.05	0.2	620	4,000
		60	0.07	0.3	600	6,000	0.05	0.15	450	3,200	0.03	0.07	300	2,500

●請將刀具確實地固定在夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●φp=軸向方向切削深度，φe=徑向方向切削深度。 φp=Axial Depth of Cut φe=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type U Series

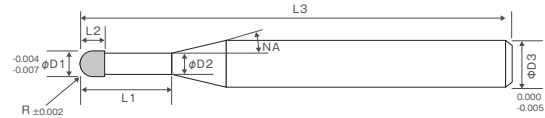
超硬長頸球頭立銼刀 Carbide Long Neck Ball End Mill

■型號: IUB3D230 Model number: IUB3D230

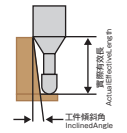
ion U super MG 2 螺旋角 30° 仰角 15° 柄徑公差 0/-0.005



- 金屬 3D 列印用特殊 (D2) 頸徑
- Special (D2) Neck Dia. for Metal 3D printer.



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.



單位(Size) :mm

●請系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	球頭R (R) Ball R	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀刃直徑 (D1) Tool Diameter	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
										30°	1°	1°30'	2°	3°
IUB3D230-0060-0300-0300	0.3	3	0.45	0.6	0.49	15	4	50	3,120	3.30	3.41	3.52	3.64	3.92
IUB3D230-0080-0400-0300	0.4	3	0.6	0.8	0.69	15	4	50	3,200	3.30	3.40	3.51	3.63	3.89
IUB3D230-0100-0500-0300	0.5	3	0.8	1	0.89	15	4	50	2,560	3.30	3.39	3.50	3.61	3.87

ion Depo Type U Series

ion Depo Type U 切削條件參考表 Recommended Milling Conditions

■型號: IUB3D230
Model number: IUB3D230

長頸球頭立銼刀 Long Neck Ball End Mill

切削材料 Work Material		馬氏體時效鋼(3D列印) Maraging Steels (Metal 3D Printer)				
刃數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			ϕp mm	ϕe mm		
2	0.6	3	0.03	0.03	800	32,000
	0.8	3	0.045	0.045	1,400	32,000
	1	3	0.05	0.05	1,500	30,000

- 請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder.
- 建議使用油霧或者非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
- 切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing.
- 工具突出長度越短越好。 Length of tool overhang must be as short as possible.
- ϕp =軸向切削深度， ϕe =徑向切削深度。 ϕp =Axial Depth of Cut. ϕe =Radial Depth of Cut.
- 請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
ion Depo A Series
ion Depo U Series
DLC Series
Non-Coat Series
ion Depo R Series

超硬立銑刀 Carbide End Mill

DLC super MG 2 45° 15° 柄徑公差 0/-0.005



特長

- 具有低摩擦係數和優異耐磨性的DLC鍍膜系列產品！
- 優良的耐溶著性，非常適合加工鋁合金等！
- 可以提供訂製產品！

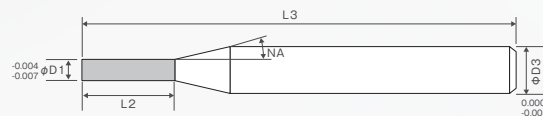
Features

- DLC coatings with a low coefficient of friction and wear resistance.
- Excellent welding resistance, ideal for processing aluminum alloys, etc.
- Non-standard custom-made products available.

超硬平角立銑刀 Carbide Square End Mill

DLC super MG 2 45° 15° 柄徑公差 0/-0.005

型號: DLCS245 Model number: DLCS245



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.

● 聯繫我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size): mm

型號 Code No.	刀刃直徑 (D1) Tool Diameter	刃長 (L2) Length of Cut	仰角 (NA) Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (円) Retail Price (JPY)
DLCS245-0100-00300	1	3	15	4	50	4,480
DLCS245-0150-00450	1.5	4.5	15	4	50	4,480
DLCS245-0200-00600	2	6	15	4	50	4,480
DLCS245-0250-00750	2.5	7.5	15	4	50	4,480
DLCS245-0300-00900	3	9	15	4	50	5,440
DLCS245-0400-01200	4	12	15	6	50	5,600
DLCS245-0500-01500	5	15	15	6	50	6,000
DLCS245-0600-01800	6	18	—	6	60	6,240
DLCS245-0700-02100	7	21	15	8	70	10,080
DLCS245-0800-02400	8	24	—	8	70	10,080
DLCS245-0900-02700	9	27	15	10	80	12,720
DLCS245-1000-03000	10	30	—	10	80	12,720
DLCS245-1100-03300	11	33	15	12	110	17,440
DLCS245-1200-03600	12	36	—	12	110	17,440

CBN Series
Hard Star A Series
Hard Star Ti Series
Hard Star TT Series
ion Depo A Series
ion Depo U Series
DLC Series
Non-Coat Series
ion Depo R Series

DLC切削條件參考表 Recommended Milling Conditions

■型號:DLCS245
Model number:DLCS245

平角立銼刀 Square End Mill

切削材料 Work Material			鋁合金 A5000號 Aluminium alloy A5000				鋁合金 A7000號 Aluminium alloy A7000				石墨 Graphite			
刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
			φp mm	φe mm			φp mm	φe mm			φp mm	φe mm		
2	1	3	1.5	0.2	700	20,000	1.5	0.2	700	20,000	0.2	0.6	2,500	30,000
	1.5	4.5	2	0.3	800	20,000	2	0.3	800	20,000	0.3	1	2,500	25,000
	2	6	3	0.4	1,000	20,000	3	0.4	1,000	20,000	0.5	1.2	3,000	20,000
	2.5	7.5	3.5	0.5	1,200	20,000	3.5	0.5	1,200	20,000	0.5	1.5	3,000	20,000
	3	9	4.5	0.6	1,400	20,000	4.5	0.6	1,500	20,000	0.5	2	3,000	20,000
	4	12	6	0.8	1,600	20,000	6	0.8	1,700	20,000	0.8	2.5	3,000	18,000
	5	15	7.5	1	1,900	20,000	7.5	1	2,000	20,000	1	3	3,000	18,000
	6	18	9	1.2	2,100	20,000	9	1.2	2,200	20,000	1	4	3,000	16,000
	7	21	10	1.4	2,200	17,500	10	1.4	2,300	17,500	1.5	5	3,000	15,000
	8	24	12	1.6	2,300	15,000	12	1.6	2,400	15,000	1.5	6	3,000	13,000
	9	27	13	1.8	2,300	13,500	13	1.8	2,400	13,500	1.5	7	3,000	12,000
	10	30	15	2	2,300	12,000	15	2	2,400	12,000	2	8	3,200	10,000
11	33	16	2.2	2,400	11,000	16	2.2	2,500	11,000	2	9	3,200	9,000	
12	36	18	2.4	2,400	10,000	18	2.4	2,500	10,000	2	10	3,200	8,000	

●請將刀具確實地固定於夾具上，以防止刀具震動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●φp=軸向切削深度，φe=徑向切削深度。 φp=Axial Depth of Cut φe=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

CBN Series
Hard Star A Series
Hard Star Ti Series
Hard Star TT Series
Ion Depo A Series
Ion Depo U Series
DLC Series
Non-Coat Series
Ion Depo R Series

平角 Square

平角 Square

Non-Coat Series

Ion Depo R Series

超硬立銑刀 Carbide End Mill

Non super MG 2.3 螺旋角 45° 仰角 15° 柄徑公差 0/-0.005



特長

- 適合鋁合金的無鍍膜工具系列產品！
- 鋁加工專用切削刃設計，實現卓越的鋒利度！
- 樹脂等材料可進行高效切割！
- 刀具材料採用超細微粒子合金，耐磨性好，壽命長！

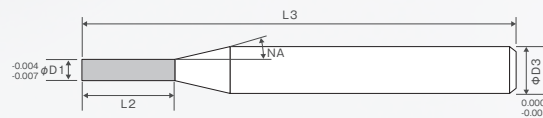
Features

- Non-coated tools for aluminum alloys.
- Cutter geometry designed for exceptional sharpness in aluminum processing.
- Efficient cutting for various materials including resin.
- Ultra-fine particle alloy technology for wear resistance and long life.

超硬平角立銑刀 Carbide Square End Mill

Non super MG 2 螺旋角 45° 仰角 15° 柄徑公差 0/-0.005

型號: ALS245 Model number: ALS245



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size): mm

型號 Code No.	刀刃直徑 (D1) Tool Diameter	刃長 (L2) Length of Cut	仰角 (NA) Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (円) Retail Price (JPY)
ALS245-0100-00300	1	3	15	4	50	3,680
ALS245-0150-00450	1.5	4.5	15	4	50	3,680
ALS245-0200-00600	2	6	15	4	50	3,680
ALS245-0250-00750	2.5	7.5	15	4	50	3,680
ALS245-0300-00900	3	9	15	4	50	4,480
ALS245-0400-01200	4	12	15	6	50	4,640
ALS245-0500-01500	5	15	15	6	50	4,960
ALS245-0600-01800	6	18	—	6	60	5,200
ALS245-0700-02100	7	21	15	8	70	8,400
ALS245-0800-02400	8	24	—	8	70	8,400
ALS245-0900-02700	9	27	15	10	80	10,560
ALS245-1000-03000	10	30	—	10	80	10,560
ALS245-1100-03300	11	33	15	12	110	14,560
ALS245-1200-03600	12	36	—	12	110	14,560

CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
ion Depo A Series
ion Depo U Series
DLC Series
Non-Coat Series
ion Depo R Series

無鍍膜 切削條件參考表 Recommended Milling Conditions

■型號: ALS245
Model number: ALS245

平角立銼刀 Square End Mill

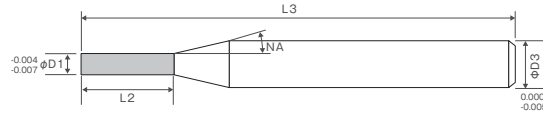
切削材料 Work Material			鋁合金 A5000號 Aluminium alloy A5000				鋁合金 A7000號 Aluminium alloy A7000			
刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
			∅p mm	∅e mm			∅p mm	∅e mm		
2	1	3	1.5	0.2	700	20,000	1.5	0.2	700	20,000
	1.5	4.5	2	0.3	800	20,000	2	0.3	800	20,000
	2	6	3	0.4	1,000	20,000	3	0.4	1,000	20,000
	2.5	7.5	3.5	0.5	1,200	20,000	3.5	0.5	1,200	20,000
	3	9	4.5	0.6	1,400	20,000	4.5	0.6	1,500	20,000
	4	12	6	0.8	1,600	20,000	6	0.8	1,700	20,000
	5	15	7.5	1	1,900	20,000	7.5	1	2,000	20,000
	6	18	9	1.2	2,100	20,000	9	1.2	2,200	20,000
	7	21	10	1.4	2,200	17,500	10	1.4	2,300	17,500
	8	24	12	1.6	2,300	15,000	12	1.6	2,400	15,000
	9	27	13	1.8	2,300	13,500	13	1.8	2,400	13,500
	10	30	15	2	2,300	12,000	15	2	2,400	12,000
11	33	16	2.2	2,400	11,000	16	2.2	2,500	11,000	
12	36	18	2.4	2,400	10,000	18	2.4	2,500	10,000	

●請將刀具確實地固定在夾具上，以防止刀具震動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ●∅p=軸向方向切削深度 ∅e=徑向方向切削深度 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

超硬平角銑刀 Carbide Square End Mill

■型號: ALS345 Model number: ALS345

Non
super MG
刀刃數 3
螺旋角 45°
仰角 15°
柄徑公差 0/-0.005



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.

●請系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size): mm

型號 Code No.	刀刃直徑 (D1) Tool Diameter	刃長 (L2) Length of Cut	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (円) Retail Price (JPY)
ALS345-0100-00300	1	3	15	4	50	5,120
ALS345-0200-00600	2	6	15	4	50	5,120
ALS345-0300-00900	3	9	15	4	50	6,160
ALS345-0400-01200	4	12	15	6	50	7,120
ALS345-0500-01500	5	15	15	6	50	7,680
ALS345-0600-00900	6	9	—	6	50	7,680
ALS345-0600-01800		18	—	6	60	8,000
ALS345-0800-01200	8	12	—	8	70	12,240
ALS345-0800-02400		24	—	8	70	12,640
ALS345-1000-01500	10	15	—	10	80	17,840
ALS345-1000-03000		30	—	10	80	17,280
ALS345-1200-01800	12	18	—	12	110	23,840
ALS345-1200-03600		36	—	12	110	20,480

無鍍膜 切削條件參考表 Recommended Milling Conditions

■型號: ALS345
Model number: ALS345

平角立銑刀 Square End Mill

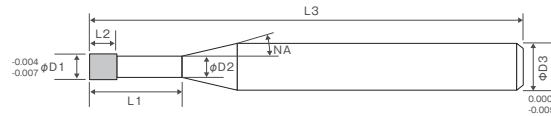
切削材料 Work Material	鋁合金 A5000號 Aluminium alloy A5000						鋁合金 A7000號 Aluminium alloy A7000				
	刃數 Number of Flutes	刀刃直徑 Dia.	刃長 Length of cut	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹	切削深度 Depth of Cut		進刀速度 Feed mm/min	轉數 Spindle Speed min ⁻¹
				∅p mm	∅e mm			∅p mm	∅e mm		
3	1	3	1	0.3	2,800	20,000	1	0.3	1,100	20,000	
	2	6	2	0.6	1,400	20,000	2	0.6	1,500	20,000	
	3	9	3	0.9	2,100	20,000	3	0.9	2,200	20,000	
	4	12	4	1.2	2,400	20,000	4	1.2	2,500	20,000	
	5	15	5	1.5	3,000	20,000	5	1.5	3,100	20,000	
	6	9	6	1.8	3,400	18,600	6	1.8	3,500	18,600	
		18	6	1.8	3,400	18,600	6	1.8	3,500	18,600	
	8	12	8	2.4	3,400	13,900	8	2.4	3,500	13,900	
		24	8	2.4	3,400	13,900	8	2.4	3,500	13,900	
	10	15	10	3	3,700	11,100	10	3	3,800	11,100	
		30	10	3	3,700	11,100	10	3	3,800	11,100	
	12	18	12	3.6	4,000	9,300	12	3.6	4,100	9,300	
36		12	3.6	4,000	9,300	12	3.6	4,100	9,300		

●請將刀具確實地固定於夾具上，以防止刀具鬆動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或油基非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具夾出長度越短越好。 Length of tool overhang must be as short as possible.
●∅p=軸向方向切削深度，∅e=徑向方向切削深度。 ∅p=Axial Depth of Cut ∅e=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

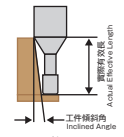
超硬長頸平角銼刀 Carbide Long Neck Square End Mill

■型號: ALLS345 Model number: ALLS345

Non super MG 刀刃數 3 螺旋角 45° 仰角 15° 柄徑公差 0/-0.005

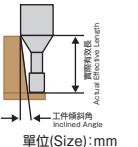


所示的仰角(NA) 僅供參考。如果您擔心干涉切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.



●聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

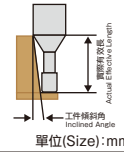
型號 Code No.	刀刃直徑 (D1) Tool Diameter	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
									30'	1°	1°30'	2°	3°
ALLS345-0100-0300	1	3	1.5	0.95	15	4	50	3,920	3.20	3.31	3.43	3.56	3.85
ALLS345-0100-0500		5	1.5	0.95	15	4	50	4,480	5.26	5.45	5.64	5.86	6.33
ALLS345-0110-0330		1.1	3.3	1.7	1.05	15	4	50	5,360	3.51	3.63	3.76	3.90
ALLS345-0120-0360	1.2	3.6	1.8	1.15	15	4	50	5,360	3.82	3.95	4.09	4.25	4.59
ALLS345-0130-0390	1.3	3.9	2	1.25	15	4	50	5,360	4.13	4.27	4.43	4.59	4.96
ALLS345-0140-0420	1.4	4.2	2.1	1.35	15	4	50	5,360	4.44	4.59	4.76	4.94	5.34
ALLS345-0150-0450	1.5	4.5	2.3	1.45	15	4	50	3,920	4.75	4.91	5.09	5.28	5.71
ALLS345-0160-0480	1.6	4.8	2.4	1.55	15	4	50	5,360	5.06	5.23	5.42	5.63	6.08
ALLS345-0170-0510	1.7	5.1	2.6	1.65	15	4	50	5,360	5.37	5.56	5.76	5.97	6.46
ALLS345-0180-0540	1.8	5.4	2.7	1.75	15	4	50	5,360	5.68	5.88	6.09	6.32	6.83
ALLS345-0190-0570	1.9	5.7	2.9	1.85	15	4	50	5,360	5.99	6.20	6.42	6.66	7.20
ALLS345-0200-0600	2	6	3	1.94	15	4	50	3,920	6.32	6.54	6.77	7.03	7.60
ALLS345-0200-1000		10	3	1.94	15	4	50	4,480	10.45	10.82	11.21	11.63	12.57
ALLS345-0210-0630		2.1	6.3	3.2	2.04	15	4	50	5,360	6.63	6.86	7.11	7.37
ALLS345-0220-0660	2.2	6.6	3.3	2.14	15	4	50	5,360	6.94	7.18	7.44	7.72	8.34
ALLS345-0230-0690	2.3	6.9	3.5	2.24	15	4	50	5,360	7.25	7.50	7.77	8.06	8.72
ALLS345-0240-0720	2.4	7.2	3.6	2.34	15	4	50	5,360	7.56	7.82	8.10	8.41	9.09
ALLS345-0250-0750	2.5	7.5	3.8	2.44	15	4	50	3,920	7.87	8.14	8.44	8.75	9.46
ALLS345-0260-0780	2.6	7.8	3.9	2.54	15	4	50	6,560	8.18	8.46	8.77	9.10	9.84
ALLS345-0270-0810	2.7	8.1	4.1	2.64	15	4	50	6,560	8.49	8.78	9.10	9.44	10.21
ALLS345-0280-0840	2.8	8.4	4.2	2.74	15	4	50	6,560	8.80	9.11	9.43	9.79	10.58
ALLS345-0290-0870	2.9	8.7	4.4	2.84	15	4	50	6,560	9.11	9.43	9.77	10.13	FREE
ALLS345-0300-0900	3	9	4.5	2.85	15	4	50	4,720	9.59	9.93	10.29	10.67	FREE
ALLS345-0300-1500		15	4.5	2.85	15	4	50	5,440	15.79	16.34	16.93	FREE	FREE
ALLS345-0310-0930		3.1	9.3	4.7	2.95	15	6	50	6,560	9.90	10.25	10.62	11.02
ALLS345-0320-0960	3.2	9.6	4.8	3.05	15	6	50	6,560	10.21	10.57	10.95	11.36	12.28
ALLS345-0330-0990	3.3	9.9	5	3.15	15	6	50	6,560	10.52	10.89	11.28	11.71	12.65
ALLS345-0340-1020	3.4	10.2	5.1	3.25	15	6	50	6,560	10.83	11.21	11.62	12.05	13.03
ALLS345-0350-1050	3.5	10.5	5.3	3.35	15	6	50	5,760	11.14	11.53	11.95	12.40	13.40
ALLS345-0360-1080	3.6	10.8	5.4	3.45	15	6	50	6,560	11.45	11.85	12.28	12.74	13.77



●聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部柄徑 (D2) Neck Diameter	仰角 (NA) [°] Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
									30'	1°	1°30'	2°	3°
ALLS345-0370-1110	3.7	11.1	5.6	3.55	15	6	50	6,560	11.76	12.17	12.61	13.09	14.15
ALLS345-0380-1140	3.8	11.4	5.7	3.65	15	6	50	6,560	12.07	12.49	12.94	13.43	14.52
ALLS345-0390-1170	3.9	11.7	5.9	3.75	15	6	50	6,560	12.38	12.81	13.28	13.78	14.89
ALLS345-0400-1200	4	12	6	3.8	15	6	50	4,880	12.79	13.24	13.71	14.23	15.38
ALLS345-0400-2000		20	6	3.8	15	6	50	6,080	21.06	21.79	22.58	23.43	FREE
ALLS345-0410-1230	4.1	12.3	6.2	3.9	15	6	50	6,880	13.10	13.56	14.05	14.57	15.75
ALLS345-0420-1260	4.2	12.6	6.3	4	15	6	50	6,880	13.41	13.88	14.38	14.92	16.13
ALLS345-0430-1290	4.3	12.9	6.5	4.1	15	6	50	6,880	13.72	14.20	14.71	15.26	FREE
ALLS345-0440-1320	4.4	13.2	6.6	4.2	15	6	50	6,880	14.03	14.52	15.04	15.61	FREE
ALLS345-0450-1350	4.5	13.5	6.8	4.3	15	6	50	6,080	14.34	14.84	15.38	15.95	FREE
ALLS345-0460-1380	4.6	13.8	6.9	4.4	15	6	50	6,880	14.65	15.16	15.71	16.30	FREE
ALLS345-0470-1410	4.7	14.1	7.1	4.5	15	6	50	6,880	14.96	15.48	16.04	16.64	FREE
ALLS345-0480-1440	4.8	14.4	7.2	4.6	15	6	50	6,880	15.27	15.80	16.37	16.99	FREE
ALLS345-0490-1470	4.9	14.7	7.4	4.7	15	6	50	6,880	15.58	16.12	16.71	FREE	FREE
ALLS345-0500-1500	5	15	7.5	4.8	15	6	50	5,280	15.89	16.44	17.04	FREE	FREE
ALLS345-0500-2500		25	7.5	4.8	15	6	60	6,720	26.23	27.14	FREE	FREE	FREE
ALLS345-0510-1530	5.1	15.3	7.7	4.9	15	6	50	7,440	16.20	16.77	FREE	FREE	FREE
ALLS345-0520-1560	5.2	15.6	7.8	5	15	6	50	7,440	16.51	17.09	FREE	FREE	FREE
ALLS345-0530-1590	5.3	15.9	8	5.1	15	6	50	7,440	16.82	17.41	FREE	FREE	FREE
ALLS345-0540-1620	5.4	16.2	8.1	5.2	15	6	50	7,440	17.13	FREE	FREE	FREE	FREE
ALLS345-0550-1650	5.5	16.5	8.3	5.3	15	6	50	6,640	17.44	FREE	FREE	FREE	FREE
ALLS345-0560-1680	5.6	16.8	8.4	5.4	15	6	50	7,440	17.75	FREE	FREE	FREE	FREE
ALLS345-0570-1710	5.7	17.1	8.6	5.5	15	6	50	7,440	FREE	FREE	FREE	FREE	FREE
ALLS345-0580-1740	5.8	17.4	8.7	5.6	15	6	50	7,440	FREE	FREE	FREE	FREE	FREE
ALLS345-0590-1770	5.9	17.7	8.9	5.7	15	6	50	7,440	FREE	FREE	FREE	FREE	FREE
ALLS345-0600-1800	6	18	9	5.8	15	6	50	5,520	FREE	FREE	FREE	FREE	FREE
ALLS345-0600-3000		30	9	5.8	15	6	60	7,040	FREE	FREE	FREE	FREE	FREE
ALLS345-0610-1830	6.1	18.3	9.2	5.9	15	8	70	11,280	19.30	19.97	20.70	21.47	FREE
ALLS345-0620-1860	6.2	18.6	9.3	6	15	8	70	11,280	19.61	20.30	21.03	21.82	FREE
ALLS345-0630-1890	6.3	18.9	9.5	6.1	15	8	70	11,280	19.92	20.62	21.36	22.16	FREE
ALLS345-0640-1920	6.4	19.2	9.6	6.2	15	8	70	11,280	20.23	20.94	21.69	22.51	FREE
ALLS345-0650-1950	6.5	19.5	9.8	6.3	15	8	70	11,280	20.54	21.26	22.03	FREE	FREE
ALLS345-0660-1980	6.6	19.8	9.9	6.4	15	8	70	11,280	20.85	21.58	22.36	FREE	FREE
ALLS345-0670-2010	6.7	20.1	10.1	6.5	15	8	70	11,280	21.16	21.90	22.69	FREE	FREE
ALLS345-0680-2040	6.8	20.4	10.2	6.6	15	8	70	11,280	21.47	22.22	FREE	FREE	FREE
ALLS345-0690-2070	6.9	20.7	10.4	6.7	15	8	70	11,280	21.78	22.54	FREE	FREE	FREE
ALLS345-0700-2100	7	21	10.5	6.8	15	8	70	8,160	22.09	22.86	FREE	FREE	FREE
ALLS345-0710-2130	7.1	21.3	10.7	6.9	15	8	70	11,280	22.40	23.18	FREE	FREE	FREE
ALLS345-0720-2160	7.2	21.6	10.8	7	15	8	70	11,280	22.71	FREE	FREE	FREE	FREE
ALLS345-0730-2190	7.3	21.9	11	7.1	15	8	70	11,280	23.02	FREE	FREE	FREE	FREE
ALLS345-0740-2220	7.4	22.2	11.1	7.2	15	8	70	11,280	23.33	FREE	FREE	FREE	FREE
ALLS345-0750-2250	7.5	22.5	11.3	7.3	15	8	70	11,280	23.64	FREE	FREE	FREE	FREE
ALLS345-0760-2280	7.6	22.8	11.4	7.4	15	8	70	11,280	FREE	FREE	FREE	FREE	FREE
ALLS345-0770-2310	7.7	23.1	11.6	7.5	15	8	70	11,280	FREE	FREE	FREE	FREE	FREE
ALLS345-0780-2340	7.8	23.4	11.7	7.6	15	8	70	11,280	FREE	FREE	FREE	FREE	FREE

CBN Series
Hard Star A Series
Hard Star Tl Series
Hard Star TT Series
Ion Depo A Series
Ion Depo U Series
DLC Series
Non-Coat Series
Ion Depo R Series



● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

型號 Code No.	刀刃直徑 (D1) Tool Diameter	有效長度 (L1) Effective Length	刃長 (L2) Length of Cut	刀頭底部直徑 (D2) Neck Diameter	仰角 (NA) Neck Taper Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (JPY) Retail Price (JPY)	傾斜角與有效長之對應 Actual effective length by inclined angle of workpiece.				
									30°	1°	1°30'	2°	3°
ALLS345-0790-2370	7.9	23.7	11.9	7.7	15	8	70	11,280	FREE	FREE	FREE	FREE	FREE
ALLS345-0800-2400	8	24	12	7.8	15	8	70	8,160	FREE	FREE	FREE	FREE	FREE
ALLS345-0800-4000		40	12	7.8	15	8	80	10,560	FREE	FREE	FREE	FREE	FREE
ALLS345-0810-2430	8.1	24.3	12.2	7.9	15	10	80	14,320	25.50	26.39	27.35	FREE	FREE
ALLS345-0820-2460	8.2	24.6	12.3	8	15	10	80	14,320	25.81	26.71	27.68	FREE	FREE
ALLS345-0830-2490	8.3	24.9	12.5	8.1	15	10	80	14,320	26.12	27.03	28.01	FREE	FREE
ALLS345-0840-2520	8.4	25.2	12.6	8.2	15	10	80	14,320	26.43	27.36	28.34	FREE	FREE
ALLS345-0850-2550	8.5	25.5	12.8	8.3	15	10	80	14,320	26.74	27.68	FREE	FREE	FREE
ALLS345-0860-2580	8.6	25.8	12.9	8.4	15	10	80	14,320	27.05	28.00	FREE	FREE	FREE
ALLS345-0870-2610	8.7	26.1	13.1	8.5	15	10	80	14,320	27.36	28.32	FREE	FREE	FREE
ALLS345-0880-2640	8.8	26.4	13.2	8.6	15	10	80	14,320	27.67	28.64	FREE	FREE	FREE
ALLS345-0890-2670	8.9	26.7	13.4	8.7	15	10	80	14,320	27.98	28.96	FREE	FREE	FREE
ALLS345-0900-2700	9	27	13.5	8.8	15	10	80	10,240	28.29	FREE	FREE	FREE	FREE
ALLS345-0910-2730	9.1	27.3	13.7	8.9	15	10	80	14,320	28.60	FREE	FREE	FREE	FREE
ALLS345-0920-2760	9.2	27.6	13.8	9	15	10	80	14,320	28.91	FREE	FREE	FREE	FREE
ALLS345-0930-2790	9.3	27.9	14	9.1	15	10	80	14,320	29.23	FREE	FREE	FREE	FREE
ALLS345-0940-2820	9.4	28.2	14.1	9.2	15	10	80	14,320	29.54	FREE	FREE	FREE	FREE
ALLS345-0950-2850	9.5	28.5	14.3	9.3	15	10	80	14,320	FREE	FREE	FREE	FREE	FREE
ALLS345-0960-2880	9.6	28.8	14.4	9.4	15	10	80	14,320	FREE	FREE	FREE	FREE	FREE
ALLS345-0970-2910	9.7	29.1	14.6	9.5	15	10	80	14,320	FREE	FREE	FREE	FREE	FREE
ALLS345-0980-2940	9.8	29.4	14.7	9.6	15	10	80	14,320	FREE	FREE	FREE	FREE	FREE
ALLS345-0990-2970	9.9	29.7	14.9	9.7	15	10	80	14,320	FREE	FREE	FREE	FREE	FREE
ALLS345-1000-3000	10	30	15	9.8	15	10	80	10,240	FREE	FREE	FREE	FREE	FREE
ALLS345-1000-5000		50	15	9.8	15	10	100	13,360	FREE	FREE	FREE	FREE	FREE
ALLS345-1010-3030	10.1	30.3	15.2	9.9	15	12	110	20,240	31.71	32.81	34.00	FREE	FREE
ALLS345-1020-3060	10.2	30.6	15.3	10	15	12	110	20,240	32.02	33.13	34.33	FREE	FREE
ALLS345-1030-3090	10.3	30.9	15.5	10.1	15	12	110	20,240	32.33	33.45	FREE	FREE	FREE
ALLS345-1040-3120	10.4	31.2	15.6	10.2	15	12	110	20,240	32.64	33.77	FREE	FREE	FREE
ALLS345-1050-3150	10.5	31.5	15.8	10.3	15	12	110	20,240	32.95	34.09	FREE	FREE	FREE
ALLS345-1060-3180	10.6	31.8	15.9	10.4	15	12	110	20,240	33.26	34.42	FREE	FREE	FREE
ALLS345-1070-3210	10.7	32.1	16.1	10.5	15	12	110	20,240	33.57	34.74	FREE	FREE	FREE
ALLS345-1080-3240	10.8	32.4	16.2	10.6	15	12	110	20,240	33.88	FREE	FREE	FREE	FREE
ALLS345-1090-3270	10.9	32.7	16.4	10.7	15	12	110	20,240	34.19	FREE	FREE	FREE	FREE
ALLS345-1100-3300	11	33	16.5	10.8	15	12	110	14,400	34.50	FREE	FREE	FREE	FREE
ALLS345-1110-3330	11.1	33.3	16.7	10.9	15	12	110	20,240	34.81	FREE	FREE	FREE	FREE
ALLS345-1120-3360	11.2	33.6	16.8	11	15	12	110	20,240	35.12	FREE	FREE	FREE	FREE
ALLS345-1130-3390	11.3	33.9	17	11.1	15	12	110	20,240	35.43	FREE	FREE	FREE	FREE
ALLS345-1140-3420	11.4	34.2	17.1	11.2	15	12	110	20,240	FREE	FREE	FREE	FREE	FREE
ALLS345-1150-3450	11.5	34.5	17.3	11.3	15	12	110	20,240	FREE	FREE	FREE	FREE	FREE
ALLS345-1160-3480	11.6	34.8	17.4	11.4	15	12	110	20,240	FREE	FREE	FREE	FREE	FREE
ALLS345-1170-3510	11.7	35.1	17.6	11.5	15	12	110	20,240	FREE	FREE	FREE	FREE	FREE
ALLS345-1180-3540	11.8	35.4	17.7	11.6	15	12	110	20,240	FREE	FREE	FREE	FREE	FREE
ALLS345-1190-3570	11.9	35.7	17.9	11.7	15	12	110	20,240	FREE	FREE	FREE	FREE	FREE
ALLS345-1200-3600	12	36	18	11.8	15	12	110	14,400	FREE	FREE	FREE	FREE	FREE
ALLS345-1200-6000		60	18	11.8	15	12	130	17,920	FREE	FREE	FREE	FREE	FREE

無鍍膜 切削條件參考表 Recommended Milling Conditions

■ 型號: ALLS345
Model number: ALLS345

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material		鋁合金 A5000號 Aluminium alloy A5000					鋁合金 A7000號 Aluminium alloy A7000				
刃數 Number of Flutes	刀刃直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	
			ap mm	ae mm			ap mm	ae mm			
3	1	3	1	0.3	1,100	20,000	1	0.3	1,200	20,000	
		5	3	0.3	900	20,000	3	0.3	1,000	20,000	
	1.1	3.3	1	0.3	1,100	20,000	1	0.3	1,200	20,000	
			1.2	3.6	1	0.3	1,100	20,000	1	0.3	1,200
	1.3	3.9	1	0.3	1,100	20,000	1	0.3	1,200	20,000	
	1.4	4.2	1	0.3	1,100	20,000	1	0.3	1,200	20,000	
	1.5	4.5	1	0.3	1,100	20,000	1	0.3	1,200	20,000	
	1.6	4.8	1	0.6	1,100	20,000	1	0.6	1,200	20,000	
	1.7	5.1	1	0.6	1,100	20,000	1	0.6	1,200	20,000	
	1.8	5.4	1	0.6	1,100	20,000	1	0.6	1,200	20,000	
	1.9	5.7	1	0.6	1,100	20,000	1	0.6	1,200	20,000	
	2	6	3	0.6	1,700	20,000	3	0.6	1,800	20,000	
			10	6	0.6	1,400	20,000	6	0.6	1,500	20,000
	2.1	6.3	3	0.6	1,700	20,000	3	0.6	1,800	20,000	
	2.2	6.6	3	0.6	1,700	20,000	3	0.6	1,800	20,000	
	2.3	6.9	3	0.6	1,700	20,000	3	0.6	1,800	20,000	
	2.4	7.2	4	0.6	1,700	20,000	4	0.6	1,800	20,000	
	2.5	7.5	4	0.6	1,700	20,000	4	0.6	1,800	20,000	
2.6	7.8	4	0.6	1,700	20,000	4	0.6	1,800	20,000		
2.7	8.1	4	0.9	1,700	20,000	4	0.9	1,800	20,000		
2.8	8.4	4	0.9	1,700	20,000	4	0.9	1,800	20,000		
2.9	8.7	4	0.9	1,700	20,000	4	0.9	1,800	20,000		
3	9	4	0.9	1,900	20,000	4	0.9	2,000	20,000		
		15	9	0.9	1,600	20,000	9	0.9	1,700	20,000	
3.1	9.3	4	0.9	1,900	20,000	4	0.9	2,000	20,000		
3.2	9.6	4	0.9	1,900	20,000	4	0.9	2,000	20,000		
3.3	9.9	4	0.9	1,900	20,000	4	0.9	2,000	20,000		
3.4	10.2	5	0.9	1,900	20,000	5	0.9	2,000	20,000		
3.5	10.5	5	0.9	1,900	20,000	5	0.9	2,000	20,000		
3.6	10.8	5	1.2	1,900	20,000	5	1.2	2,000	20,000		
3.7	11.1	5	1.2	1,900	20,000	5	1.2	2,000	20,000		
3.8	11.4	5	1.2	1,900	20,000	5	1.2	2,000	20,000		
3.9	11.7	5	1.2	1,900	20,000	5	1.2	2,000	20,000		
4	12	8	1.2	2,100	20,000	8	1.2	2,200	20,000		
		20	12	1.2	1,700	20,000	12	1.2	1,800	20,000	
4.1	12.3	8	1.2	2,100	20,000	8	1.2	2,200	20,000		
4.2	12.6	8	1.2	2,100	20,000	8	1.2	2,200	20,000		
4.3	12.9	8	1.2	2,100	20,000	8	1.2	2,200	20,000		
4.4	13.2	8	1.2	2,100	20,000	8	1.2	2,200	20,000		
4.5	13.5	9	1.2	2,100	20,000	9	1.2	2,200	20,000		
4.6	13.8	9	1.2	2,100	20,000	9	1.2	2,200	20,000		
4.7	14.1	9	1.5	2,100	20,000	9	1.5	2,200	20,000		

● 請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ● 建議使用油霧或者非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
 ● 切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ● 工具突出長度越短越好。 Length of tool overhang must be as short as possible.
 ● ap=軸向方向切削深度，ae=徑向方向切削深度。 ap=Axial Depth of Cut ae=Radial Depth of Cut. ● 請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

無鍍膜 切削條件參考表 Recommended Milling Conditions

■型號: ALLS345
Model number: ALLS345

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			鋁合金 A5000號 Aluminium alloy A5000				鋁合金 A7000號 Aluminium alloy A7000			
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			ap mm	ae mm			ap mm	ae mm		
3	4.8	14.4	9	1.5	2,100	20,000	9	1.5	2,200	20,000
	4.9	14.7	9	1.5	2,100	20,000	9	1.5	2,200	20,000
	5	15	10	1.5	2,600	20,000	10	1.5	2,700	20,000
		25	15	1.5	1,900	20,000	15	1.5	2,000	20,000
	5.1	15.3	10	1.5	2,600	20,000	10	1.5	2,700	20,000
	5.2	15.6	10	1.5	2,600	20,000	10	1.5	2,700	20,000
	5.3	15.9	10	1.5	2,600	20,000	10	1.5	2,700	20,000
	5.4	16.2	10	1.5	2,600	20,000	10	1.5	2,700	20,000
	5.5	16.5	10	1.5	2,600	20,000	10	1.5	2,700	20,000
	5.6	16.8	10	1.8	2,600	20,000	10	1.8	2,700	20,000
	5.7	17.1	11	1.8	2,600	20,000	11	1.8	2,700	20,000
	5.8	17.4	11	1.8	2,600	20,000	11	1.8	2,700	20,000
	5.9	17.7	11	1.8	2,600	20,000	11	1.8	2,700	20,000
	6	18	12	1.8	2,900	17,500	12	1.8	3,000	17,500
		30	18	1.8	2,400	17,500	18	1.8	2,500	17,500
	6.1	18.3	12	1.8	2,900	17,500	12	1.8	3,000	17,500
	6.2	18.6	12	1.8	2,900	17,500	12	1.8	3,000	17,500
	6.3	18.9	12	1.8	2,900	17,500	12	1.8	3,000	17,500
	6.4	19.2	14	1.8	2,900	17,500	14	1.8	3,000	17,500
	6.5	19.5	14	1.8	2,900	17,500	14	1.8	3,000	17,500
6.6	19.8	14	1.8	2,900	17,500	14	1.8	3,000	17,500	
6.7	20.1	14	1.8	2,900	17,500	14	1.8	3,000	17,500	
6.8	20.4	14	1.8	2,900	17,500	14	1.8	3,000	17,500	
6.9	20.7	14	1.8	2,900	17,500	14	1.8	3,000	17,500	
7	21	14	2.1	2,900	15,000	14	2.1	3,000	15,000	
7.1	21.3	14	2.1	2,900	15,000	14	2.1	3,000	15,000	
7.2	21.6	14	2.1	2,900	15,000	14	2.1	3,000	15,000	
7.3	21.9	14	2.1	2,900	15,000	14	2.1	3,000	15,000	
7.4	22.2	15	2.1	2,900	15,000	15	2.1	3,000	15,000	
7.5	22.5	14	2.1	2,900	15,000	14	2.1	3,000	15,000	
7.6	22.8	14	2.1	2,900	15,000	14	2.1	3,000	15,000	
7.7	23.1	14	2.1	2,900	15,000	14	2.1	3,000	15,000	
7.8	23.4	14	2.1	2,900	15,000	14	2.1	3,000	15,000	
7.9	23.7	14	2.1	2,900	15,000	14	2.1	3,000	15,000	
8	24	16	2.4	2,900	13,000	16	2.4	3,000	13,000	
	40	24	2.4	2,400	13,000	24	2.4	2,500	13,000	
8.1	24.3	16	2.4	2,900	13,000	16	2.4	3,000	13,000	
8.2	24.6	16	2.4	2,900	13,000	16	2.4	3,000	13,000	
8.3	24.9	16	2.4	2,900	13,000	16	2.4	3,000	13,000	
8.4	25.2	18	2.4	2,900	13,000	18	2.4	3,000	13,000	
8.5	25.5	18	2.4	2,900	13,000	18	2.4	3,000	13,000	
8.6	25.8	18	2.4	2,900	13,000	18	2.4	3,000	13,000	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●ap=軸向切深, ae=徑向切深。 ap=Axial Depth of Cut, ae=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

長頸平角立銼刀 Long Neck Square End Mill

切削材料 Work Material			鋁合金 A5000號 Aluminium alloy A5000				鋁合金 A7000號 Aluminium alloy A7000			
刃數 Number of Flutes	刀直徑 Dia.	有效長度 Effective Length	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed	切削深度 Depth of Cut		進刀速度 Feed	轉數 Spindle Speed
			ap mm	ae mm			ap mm	ae mm		
3	8.7	26.1	18	2.4	2,900	13,000	18	2.4	3,000	13,000
	8.8	26.4	18	2.4	2,900	13,000	18	2.4	3,000	13,000
	8.9	26.7	18	2.4	2,900	13,000	18	2.4	3,000	13,000
	9	27	18	2.7	2,900	12,000	18	2.7	3,000	12,000
	9.1	27.3	18	2.7	2,900	12,000	18	2.7	3,000	12,000
	9.2	27.6	18	2.7	2,900	12,000	18	2.7	3,000	12,000
	9.3	27.9	18	2.7	2,900	12,000	18	2.7	3,000	12,000
	9.4	28.2	19	2.7	2,900	12,000	19	2.7	3,000	12,000
	9.5	28.5	19	2.7	2,900	12,000	19	2.7	3,000	12,000
	9.6	28.8	19	2.7	2,900	12,000	19	2.7	3,000	12,000
	9.7	29.1	19	2.7	2,900	12,000	19	2.7	3,000	12,000
	9.8	29.4	19	2.7	2,900	12,000	19	2.7	3,000	12,000
	9.9	29.7	19	2.7	2,900	12,000	19	2.7	3,000	12,000
	10	30	19	3	3,150	10,500	19	3	3,250	10,500
		50	30	3	2,700	10,500	30	3	2,800	10,500
	10.1	30.3	20	3	3,150	10,500	20	3	3,250	10,500
	10.2	30.6	20	3	3,150	10,500	20	3	3,250	10,500
	10.3	30.9	20	3	3,150	10,500	20	3	3,250	10,500
	10.4	31.2	20	3	3,150	10,500	20	3	3,250	10,500
	10.5	31.5	20	3	3,150	10,500	20	3	3,250	10,500
10.6	31.8	20	3	3,150	10,500	20	3	3,250	10,500	
10.7	32.1	20	3	3,150	10,500	20	3	3,250	10,500	
10.8	32.4	20	3	3,150	10,500	20	3	3,250	10,500	
10.9	32.7	20	3	3,150	10,500	20	3	3,250	10,500	
11	33	22	3.3	3,250	9,500	22	3.3	3,350	9,500	
11.1	33.3	22	3.3	3,250	9,500	22	3.3	3,350	9,500	
11.2	33.6	22	3.3	3,250	9,500	22	3.3	3,350	9,500	
11.3	33.9	22	3.3	3,250	9,500	22	3.3	3,350	9,500	
11.4	34.2	22	3.3	3,250	9,500	22	3.3	3,350	9,500	
11.5	34.5	22	3.3	3,250	9,500	22	3.3	3,350	9,500	
11.6	34.8	22	3.3	3,250	9,500	22	3.3	3,350	9,500	
11.7	35.1	23	3.3	3,250	9,500	23	3.3	3,350	9,500	
11.8	35.4	23	3.3	3,250	9,500	23	3.3	3,350	9,500	
11.9	35.7	23	3.3	3,250	9,500	23	3.3	3,350	9,500	
12	36	24	3.6	3,250	9,000	24	3.6	3,350	9,000	
	60	36	3.6	2,700	7,500	36	3.6	2,800	7,500	

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●ap=軸向切深, ae=徑向切深。 ap=Axial Depth of Cut, ae=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

超硬鑽頭 Carbide Drill

ion R super MG 2 螺旋角 30° 仰角 15° 柄徑公差 0/-0.005



特長

- 鑽頭專用離子電鍍鍍膜 Ion Depo Type R 系列產品！
- 兼具剛性和鋒利性的切削刃，表現出優異的切削性，支持對各種工件材料的鑽孔！
- 提供可減少鑽孔工序的雙角鑽頭系列！
- 可在短時間內提供訂製產品！

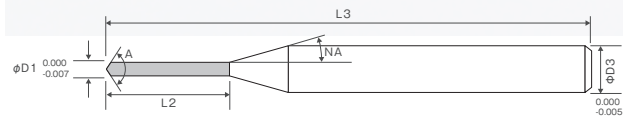
Features

- ion Depo Type R coated drills.
- Outstanding penetration rate with cutting edge design for rigidity and sharpness, supporting drilling a wide range of work materials.
- Double angle drills available for reduced drilling cycle time
- Non-standard custom-made products can be provided at a short delivery time.

超硬鑽頭 Carbide Drill

ion R super MG 2 螺旋角 30° 仰角 15° 柄徑公差 0/-0.005

型號: IRD230 Model number: IRD230



所示的仰角(NA) 僅供參考。如果您擔心干擾切削材料，請務必通過實際測量進行檢查。
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material, please check by actual measurement.

● 聯系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size): mm

型號 Code No.	刀刃直徑 (D1) Tool Diameter	溝長 (L2) Flute Length	先端角 (A) Point Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (円) Retail Price (JPY)
IRD230-0100-00800	1	8	130	4	50	1,940
IRD230-0200-01000	2	10	130	4	50	4,360
IRD230-0250-01400	2.5	14	130	4	50	4,360
IRD230-0260-01400	2.6	14	130	4	50	4,360
IRD230-0300-01400	3	14	130	4	50	4,360
IRD230-0340-01600	3.4	16	130	4	50	4,690
IRD230-0350-01600	3.5	16	130	4	50	4,690
IRD230-0400-01600	4	16	130	4	50	4,930
IRD230-0430-02000	4.3	20	130	6	60	5,290
IRD230-0450-02000	4.5	20	130	6	60	5,290
IRD230-0500-02000	5	20	130	6	60	5,660
IRD230-0510-02000	5.1	20	130	6	60	5,970
IRD230-0520-02000	5.2	20	130	6	60	5,970
IRD230-0590-02000	5.9	20	130	6	60	6,260
IRD230-0600-02000	6	20	130	6	60	6,260
IRD230-0650-03000	6.5	30	130	8	70	6,260
IRD230-0660-03000	6.6	30	130	8	70	6,660
IRD230-0680-03000	6.8	30	130	8	70	6,660
IRD230-0690-03000	6.9	30	130	8	70	6,660
IRD230-0700-03000	7	30	130	8	70	6,660
IRD230-0800-03000	8	30	130	8	70	7,420
IRD230-0850-03500	8.5	35	130	10	90	7,820
IRD230-0860-03500	8.6	35	130	10	90	8,240
IRD230-0900-03500	9	35	130	10	90	8,240
IRD230-1000-03500	10	35	130	10	90	9,040
IRD230-1050-03500	10.5	35	130	12	110	9,440
IRD230-1100-04800	11	48	130	12	120	9,760
IRD230-1150-04800	11.5	48	130	12	120	10,240
IRD230-1200-04800	12	48	130	12	120	10,560
★ IRD230-1300-06500	13	65	130	14	150	19,200
★ IRD230-1300-10400		104	130	14	190	22,480
IRD230-1400-07000	14	70	130	14	150	20,160
IRD230-1400-11200		112	130	14	190	23,920
★ IRD230-1500-07500	15	75	130	16	160	21,440
★ IRD230-1500-12000		120	130	16	210	25,280
IRD230-1600-08000	16	80	130	16	200	22,880
IRD230-1600-12800		128	130	16	210	27,040
★ IRD230-1700-08500	17	85	130	18	180	28,320
★ IRD230-1700-13600		136	130	18	230	32,720
IRD230-1800-09000	18	90	130	18	210	33,360
IRD230-1800-14400		144	130	18	230	38,720
★ IRD230-1900-09500	19	95	130	20	190	38,160
★ IRD230-1900-15200		152	130	20	250	43,840
IRD230-2000-10000	20	100	130	20	230	43,280
IRD230-2000-16000		160	130	20	250	46,160

★ 訂製品 (Ordered product)

CBN Series
Hard Star A Series
Hard Star TT Series
Hard Star TT Series
ion Depo A Series
ion Depo U Series
DLC Series
Non-Coat Series
ion Depo R Series

ion Depo Type R Series

ion Depo Type R Series

ion Depo Type R 切削條件參考表 Recommended Milling Conditions

■型號: IRD230
Model number: IRD230

超硬鑽頭 Carbide Drills

切削材料 Work Material		鑄鐵 Cast Iron FCD		碳鋼 Carbon Steels S50C/SS400		預硬鋼 Prehardened Steels PX5/NAK80		合金鋼 Die Steels SKD11/SKD61		高速鋼 High Speed Steels HAP5R/HAP72/ASP23		不銹鋼 Stainless Steels SUS304		不銹鋼 Stainless Steels HPM/STAVAX	
刀刃直徑 Drill Dia (mm)	溝長 Flute Length (mm)	轉數 Speed	分批切削深度 Feed	轉數 Speed	分批切削深度 Feed	轉數 Speed	分批切削深度 Feed	轉數 Speed	分批切削深度 Feed	轉數 Speed	分批切削深度 Feed	轉數 Speed	分批切削深度 Feed	轉數 Speed	分批切削深度 Feed
		min-1	mm/rev	min-1	mm/rev	min-1	mm/rev	min-1	mm/rev	min-1	mm/rev	min-1	mm/rev	min-1	mm/rev
1	8	13,000	0.04~0.08	13,000	0.04~0.08	7,500	0.04~0.06	7,500	0.04~0.06	7,500	0.04~0.06	10,000	0.04~0.08	7,500	0.04~0.06
2	10	12,700	0.04~0.09	12,700	0.04~0.09	7,200	0.04~0.06	7,200	0.04~0.06	7,200	0.04~0.06	9,500	0.04~0.08	7,200	0.04~0.06
2.5	14	12,700	0.04~0.09	12,700	0.04~0.09	7,200	0.04~0.06	7,200	0.04~0.06	7,200	0.04~0.06	9,500	0.04~0.08	7,200	0.04~0.06
2.6	14	12,700	0.04~0.09	12,700	0.04~0.09	7,200	0.04~0.06	7,200	0.04~0.06	7,200	0.04~0.06	9,500	0.04~0.08	7,200	0.04~0.06
3	14	11,000	0.06~0.12	11,000	0.06~0.12	4,800	0.06~0.09	4,800	0.06~0.09	4,800	0.06~0.09	8,500	0.06~0.12	4,800	0.06~0.09
3.4	16	11,000	0.06~0.12	11,000	0.06~0.12	4,800	0.06~0.09	4,800	0.06~0.09	4,800	0.06~0.09	8,500	0.06~0.12	4,800	0.06~0.09
3.5	16	11,000	0.06~0.12	11,000	0.06~0.12	4,800	0.06~0.09	4,800	0.06~0.09	4,800	0.06~0.09	8,500	0.06~0.12	4,800	0.06~0.09
4	16	8,000	0.08~0.16	8,000	0.08~0.16	3,600	0.08~0.12	3,600	0.08~0.12	3,600	0.08~0.12	6,400	0.08~0.16	3,600	0.08~0.12
3.4	20	8,000	0.08~0.16	8,000	0.08~0.16	3,600	0.08~0.12	3,600	0.08~0.12	3,600	0.08~0.12	6,400	0.08~0.16	3,600	0.08~0.12
3.5	20	8,000	0.08~0.16	8,000	0.08~0.16	3,600	0.08~0.12	3,600	0.08~0.12	3,600	0.08~0.12	6,400	0.08~0.16	3,600	0.08~0.12
5	20	6,400	0.1~0.2	6,400	0.1~0.2	2,900	0.1~0.15	2,900	0.1~0.15	2,900	0.1~0.15	5,100	0.1~0.2	2,900	0.1~0.15
5.1	20	6,400	0.1~0.2	6,400	0.1~0.2	2,900	0.1~0.15	2,900	0.1~0.15	2,900	0.1~0.15	5,100	0.1~0.2	2,900	0.1~0.15
5.2	20	6,400	0.1~0.2	6,400	0.1~0.2	2,900	0.1~0.15	2,900	0.1~0.15	2,900	0.1~0.15	5,100	0.1~0.2	2,900	0.1~0.15
5.9	20	6,400	0.1~0.2	6,400	0.1~0.2	2,900	0.1~0.15	2,900	0.1~0.15	2,900	0.1~0.15	5,100	0.1~0.2	2,900	0.1~0.15
6	20	5,300	0.12~0.24	5,300	0.12~0.24	2,400	0.12~0.18	2,400	0.12~0.18	2,400	0.12~0.18	4,200	0.12~0.24	2,400	0.12~0.18
6.5	30	5,300	0.12~0.24	5,300	0.12~0.24	2,400	0.12~0.18	2,400	0.12~0.18	2,400	0.12~0.18	4,200	0.12~0.24	2,400	0.12~0.18
6.6	30	5,300	0.12~0.24	5,300	0.12~0.24	2,400	0.12~0.18	2,400	0.12~0.18	2,400	0.12~0.18	4,200	0.12~0.24	2,400	0.12~0.18
6.8	30	5,300	0.12~0.24	5,300	0.12~0.24	2,400	0.12~0.18	2,400	0.12~0.18	2,400	0.12~0.18	4,200	0.12~0.24	2,400	0.12~0.18
6.9	30	5,300	0.12~0.24	5,300	0.12~0.24	2,400	0.12~0.18	2,400	0.12~0.18	2,400	0.12~0.18	4,200	0.12~0.24	2,400	0.12~0.18
7	30	4,500	0.14~0.26	4,500	0.14~0.26	2,000	0.14~0.21	2,000	0.14~0.21	2,000	0.14~0.21	3,600	0.14~0.26	2,000	0.14~0.21
8	30	4,000	0.16~0.28	4,000	0.16~0.28	1,800	0.16~0.24	1,800	0.16~0.24	1,800	0.16~0.24	3,200	0.16~0.28	1,800	0.16~0.24
8.5	35	4,000	0.16~0.28	4,000	0.16~0.28	1,800	0.16~0.24	1,800	0.16~0.24	1,800	0.16~0.24	3,200	0.16~0.28	1,800	0.16~0.24
8.6	35	4,000	0.16~0.28	4,000	0.16~0.28	1,800	0.16~0.24	1,800	0.16~0.24	1,800	0.16~0.24	3,200	0.16~0.28	1,800	0.16~0.24
9	35	3,500	0.18~0.3	3,500	0.18~0.3	1,600	0.18~0.27	1,600	0.18~0.27	1,600	0.18~0.27	2,800	0.18~0.3	1,600	0.18~0.27
10	35	3,200	0.2~0.3	3,200	0.2~0.3	1,400	0.2~0.3	1,400	0.2~0.3	1,400	0.2~0.3	2,500	0.2~0.3	1,400	0.2~0.3
10.5	35	3,200	0.2~0.3	3,200	0.2~0.3	1,400	0.2~0.3	1,400	0.2~0.3	1,400	0.2~0.3	2,500	0.2~0.3	1,400	0.2~0.3
11	48	2,900	0.2~0.3	2,900	0.2~0.3	1,300	0.2~0.3	1,300	0.2~0.3	1,300	0.2~0.3	2,300	0.2~0.3	1,300	0.2~0.3
11.5	48	2,900	0.2~0.3	2,900	0.2~0.3	1,300	0.2~0.3	1,300	0.2~0.3	1,300	0.2~0.3	2,300	0.2~0.3	1,300	0.2~0.3
12	48	2,700	0.21~0.3	2,700	0.21~0.3	1,200	0.21~0.3	1,200	0.21~0.3	1,200	0.21~0.3	2,100	0.21~0.3	1,200	0.21~0.3
13	65	2,700	0.21~0.3	2,700	0.21~0.3	1,200	0.21~0.3	1,200	0.21~0.3	1,200	0.21~0.3	2,100	0.21~0.3	1,200	0.21~0.3
	104	2,700	0.21~0.3	2,700	0.21~0.3	1,200	0.21~0.3	1,200	0.21~0.3	1,200	0.21~0.3	2,100	0.21~0.3	1,200	0.21~0.3
14	70	2,300	0.22~0.35	2,300	0.22~0.35	1,000	0.22~0.35	1,000	0.22~0.35	1,000	0.22~0.35	1,800	0.22~0.35	1,000	0.22~0.35
	112	2,300	0.22~0.35	2,300	0.22~0.35	1,000	0.22~0.35	1,000	0.22~0.35	1,000	0.22~0.35	1,800	0.22~0.35	1,000	0.22~0.35
15	75	2,300	0.22~0.35	2,300	0.22~0.35	1,000	0.22~0.35	1,000	0.22~0.35	1,000	0.22~0.35	1,800	0.22~0.35	1,000	0.22~0.35
	120	2,300	0.22~0.35	2,300	0.22~0.35	1,000	0.22~0.35	1,000	0.22~0.35	1,000	0.22~0.35	1,800	0.22~0.35	1,000	0.22~0.35
16	80	2,000	0.25~0.36	2,000	0.25~0.36	900	0.25~0.36	900	0.25~0.36	900	0.25~0.36	1,600	0.25~0.36	900	0.25~0.36
	128	2,000	0.25~0.36	2,000	0.25~0.36	900	0.25~0.36	900	0.25~0.36	900	0.25~0.36	1,600	0.25~0.36	900	0.25~0.36
17	85	2,000	0.25~0.36	2,000	0.25~0.36	900	0.25~0.36	900	0.25~0.36	900	0.25~0.36	1,600	0.25~0.36	900	0.25~0.36
	136	2,000	0.25~0.36	2,000	0.25~0.36	900	0.25~0.36	900	0.25~0.36	900	0.25~0.36	1,600	0.25~0.36	900	0.25~0.36
18	90	1,800	0.28~0.38	1,800	0.28~0.38	800	0.28~0.38	800	0.28~0.38	800	0.28~0.38	1,400	0.28~0.38	800	0.28~0.38
	144	1,800	0.28~0.38	1,800	0.28~0.38	800	0.28~0.38	800	0.28~0.38	800	0.28~0.38	1,400	0.28~0.38	800	0.28~0.38
19	95	1,800	0.28~0.38	1,800	0.28~0.38	800	0.28~0.38	800	0.28~0.38	800	0.28~0.38	1,400	0.28~0.38	800	0.28~0.38

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●ap=軸向方向切削深度，ae=徑向方向切削深度。 ap=Axial Depth of Cut, ae=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

超硬鑽頭 Carbide Drills

切削材料 Work Material		鑄鐵 Cast Iron FCD		碳鋼 Carbon Steels S50C/SS400		預硬鋼 Prehardened Steels PX5/NAK80		合金鋼 Die Steels SKD11/SKD61		高速鋼 High Speed Steels HAP5R/HAP72/ASP23		不銹鋼 Stainless Steels SUS304		不銹鋼 Stainless Steels HPM/STAVAX	
刀刃直徑 Drill Dia (mm)	溝長 Length of cut (mm)	轉數 Speed	分批切削深度 Feed	轉數 Speed	分批切削深度 Feed	轉數 Speed	分批切削深度 Feed	轉數 Speed	分批切削深度 Feed	轉數 Speed	分批切削深度 Feed	轉數 Speed	分批切削深度 Feed	轉數 Speed	分批切削深度 Feed
		min-1	mm/rev	min-1	mm/rev	min-1	mm/rev	min-1	mm/rev	min-1	mm/rev	min-1	mm/rev	min-1	mm/rev
19	152	1,800	0.28~0.38	1,800	0.28~0.38	800	0.28~0.38	800	0.28~0.38	800	0.28~0.38	1,400	0.28~0.38	800	0.28~0.38
20	100	1,600	0.3~0.4	1,600	0.3~0.4	700	0.3~0.4	700	0.3~0.4	700	0.3~0.4	1,300	0.3~0.4	700	0.3~0.4
	160	1,600	0.3~0.4	1,600	0.3~0.4	700	0.3~0.4	700	0.3~0.4	700	0.3~0.4	1,300	0.3~0.4	700	0.3~0.4

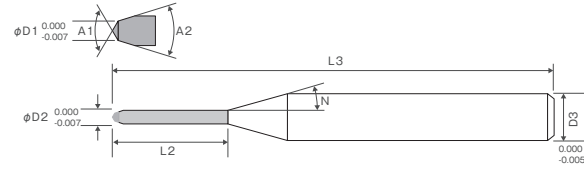
●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者是非水溶性切削液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度越短越好。 Length of tool overhang must be as short as possible.
●ap=軸向方向切削深度，ae=徑向方向切削深度。 ap=Axial Depth of Cut, ae=Radial Depth of Cut. ●請將轉數與進刀速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type R Series

超硬雙角鑽頭 Carbide Double Angle Drill

■型號: IRDAD230 Model number: IRDAD230

ion R super MG 2 30° 15° 柄徑公差 0/-0.005



所示的仰角(N) 僅供參考。如果您擔心干擾切材材料，請務必通過實際測量進行檢查。
The neck angle (N) shown is a reference value.
If you are concerned about interference with the work material, be sure to check by actual measurement.

●請系我們了解更多關於可再研磨刀具的資訊。(Regrinding is possible. Please contact us for details.)

單位(Size) :mm

型號 Code No.	第1刀直徑 (D1) First Diameter	第2刀直徑 (D2) Second Diameter	溝長 (L2) Flute Length	先端角 (A1) First Angle	2段角 (A2) Second Angle	刀柄直徑 (D3) Shank Diameter	全長 (L3) Overall Length	標準價格 (¥) Retail Price (JPY)
IRDAD230-0180-01500	0.5	1.8	15	130	60	4	50	5,230
IRDAD230-0200-01500	0.65	2	15	130	60	4	50	5,230
IRDAD230-0220-01500	1.6	2.2	15	130	60	4	50	5,230
IRDAD230-0250-01500	0.9	2.5	15	130	60	4	50	5,230
IRDAD230-0300-01500	1	3	15	130	60	4	50	5,230
IRDAD230-0340-0100-01500	1	3.4	15	130	60	4	50	5,630
IRDAD230-0340-0150-01500	1.5	3.4	15	130	60	4	50	5,630
IRDAD230-0450-01500	1.5	4.5	15	130	60	6	50	6,350

ion Depo Type R Series

ion Depo type R 切削條件參考表 Recommended Milling Conditions

■型號: IRDAD230
Model number: IRDAD230

超硬雙角鑽頭 Carbide double angle drills

切削材料 Work Material	鑄鐵 Cast Iron FCD		碳鋼 Carbon Steels S50C/SS400		預硬鋼 Prehardened Steels PX5/NAK80		合金鋼 Die Steels SKD11/SKD61		高速鋼 High Speed Steels HAP5R/HAP72/ASP23		不銹鋼 Stainless Steels SUS304		不銹鋼 Stainless Steels HPM/STAVAX	
	轉數 Speed	分批切削深度 Feed	轉數 Speed	分批切削深度 Feed	轉數 Speed	分批切削深度 Feed	轉數 Speed	分批切削深度 Feed	轉數 Speed	分批切削深度 Feed	轉數 Speed	分批切削深度 Feed	轉數 Speed	分批切削深度 Feed
刀直徑 Second Diameter	min-1	mm/rev	min-1	mm/rev	min-1	mm/rev	min-1	mm/rev	min-1	mm/rev	min-1	mm/rev	min-1	mm/rev
1.8	4,500	0.03	4,500	0.03	4,500	0.03	4,500	0.03	4,500	0.03	4,000	0.03	4,500	0.03
2	4,000	0.03	4,000	0.03	4,000	0.03	4,000	0.03	4,000	0.03	3,600	0.03	4,000	0.03
2.2	3,500	0.05	3,500	0.05	3,500	0.05	3,500	0.05	3,500	0.05	3,200	0.05	3,500	0.05
2.5	3,500	0.05	3,500	0.05	3,500	0.05	3,500	0.05	3,500	0.05	3,200	0.05	3,500	0.05
3	2,600	0.07	2,600	0.07	2,600	0.07	2,600	0.07	2,600	0.07	2,300	0.07	2,600	0.07
3.4	2,500	0.07	2,500	0.07	2,500	0.07	2,500	0.07	2,500	0.07	2,200	0.07	2,500	0.07
4.5	2,000	0.12	2,000	0.12	2,000	0.12	2,000	0.12	2,000	0.12	1,800	0.12	2,000	0.12

●請將刀具確實地固定在夾具上，以防止刀具晃動。 Reduce tool deflection by mounting the tool securely into the holder. ●建議使用油霧或者非水溶性切屑液。 We recommend using oil mist coolant or non-water soluble cutting fluid.
●切削深度為精加工的最大值。 Depth of Cut shows the maximum value for finishing. ●工具突出長度請越短越好。 Length of tool overhang must be as short as possible.
●ap=軸向切深，ae=徑向切深。 ap=Axial Depth of Cut ae=Radial Depth of Cut. ●請將轉數與進給速度調整為同一比例。 Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

CBN Series

Hard Star A Series

Hard Star Ti Series

Hard Star TT Series

ion Depo A Series

ion Depo U Series

DLC Series

Non-Coat Series

ion Depo R Series
超硬 鑽頭

322

CBN Series

Hard Star A Series

Hard Star Ti Series

Hard Star TT Series

ion Depo A Series

ion Depo U Series

DLC Series

Non-Coat Series

ion Depo R Series
超硬 鑽頭

321



安全使用注意事項

- 請勿徒手接觸切削刃。將有受傷風險。
- 從盒中取出或安裝於機械上時，請使用保護手套。
- 使用前請確保工具沒有傷痕或破損。
- 如果工具有傷痕或破損，在使用過程中有折損後飛散的風險。
- 使用前請檢查工具和工件的尺寸。
- 切削條件表中的數值僅供參考。需要根據工件和機床性能調整切削條件。
- 加工過程中，由於刀具受到衝擊性的傷害或因刀具折損，導致刀具有飛散的危險。
請使用安全面罩、護目鏡等防護用品。
- 如繼續使用磨損或已有傷痕的刀具，可能會造成刀具或工件損壞。請更換刀具。
- 如果加工過程中出現異常振動或噪音，請立即停止加工。
- 請根據應用選擇切削油。請做好防火措施。

Attention on Safety

- Do not directly touch the cutting edge. It could cause injury.
- When removing tools from their packaging, ALWAYS use safety covers.
- Make sure there are no scratches or cracks on the tool before use.
- If the tool has scratches or cracks, there is a risk of damage and scattering during use.
- Verify dimensions of tools and workpiece before starting operation.
- It is necessary to adjust cutting conditions according to part shape, and machine/ work holding rigidity.
- As tools may be scattered due to an impact or damage to the tool during machining.
ALWAYS use safety covers and eye protection.
- Continued use of worn or damaged tools may cause damage, please replace the tool.
- If abnormal vibration, sound, etc. occurs during machining, stop machine immediately.
- Select a cutting fluid appropriate to the particular usage. Ensure that you take proper fire-prevention measures.

Global Tool Sales base detail

■TOWA株式会社 本社・工廠

TEL (075)692-0250 / FAX (075)692-0270

TOWA Corporation Headquarters / Factory

5 Kamichoshi-cho, Kamitoba, Minami-ku, Kyoto-shi, Kyoto 601-8105 Japan
TEL (+81)75-692-0250 / FAX (+81)75-692-0270



■東和半導體設備(上海)有限公司

中華人民共和國上海市普陀區凱旋北路1188號環球港B座20A
Unit A, 20F, Global Harbor Tower B, No.1188 North Kaixuan Road, Putuo District, Shanghai,
200063 P.R.China
TEL (+86)21-6888-6860 / FAX (+86)21-5835-5305

■台灣東和半導體設備股份有限公司

新竹市東區公園路216巷3號2樓
2F, No.3, Lane 216, Gongyuan Road, East District, Hsinchu 300 Taiwan, R.O.C.
TEL (+886)3-573-7646 / FAX (+886)3-573-7685

■TOWA KOREA Co.,Ltd.

A-3F, Richehill Shinnonhyun Officetel, 123, Bongeunsa-ro, Gangnam-gu, Seoul 06120, Korea
TEL (+82)2-784-0256 / FAX (+82)2-784-0257

■TOWA THAI COMPANY LIMITED

No.88, Nimitikul Tower, 2nd Floor, Soi Rama IX 57/1(Wiset Suk 2), Rama IX Road,
Suan Luang Sub-district, Suan Luang District, Bangkok 10250 Thailand
TEL (+66)2-187-2204 / FAX (+66)2-187-2207

■TOWA Asia-Pacific Pte.Ltd.

1A International Business Park #05-03, Singapore 609933
TEL (+65)6562-0777 / FAX (+65)6569-1551

■TOWA USA Corporation

1430 Tully Road, Suite 416, San Jose, CA95122, U.S.A.
TEL (+1)408-779-4440 / FAX (+1)408-779-4413

■TOWA Europe GmbH

Oststrasse 54 D-40211 Duesseldorf, Germany
TEL (+49)211-740-73-180 / FAX (+49)211-740-73-107



TOWA株式会社

