KOVIT

台灣精品 2018
TAIWAN EXCELLENCE

CHAIN HEADWAY

HCM 鋁合金密齒型銑刀頭

HCM Aluminum alloy face-milling cutter

KOVIT

KOVIT

ECO
Friendly

免研磨 達鏡面 重環保 愛地球

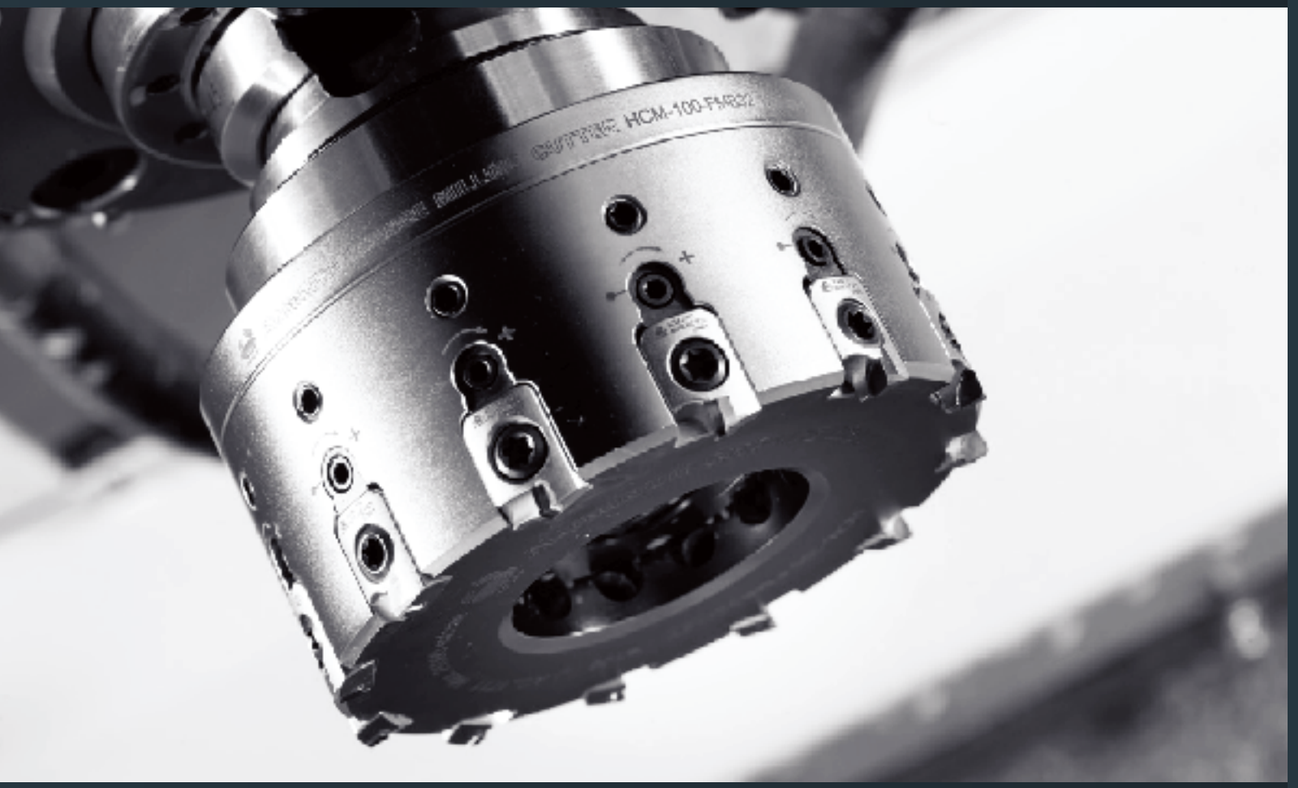
Grind free Reach mirror Environmental & earth protection

專利號 Patent

TW PAT. NO:I573644CeramicsCutter

特點

Features



輕量化鋁合金本體

Lightweight aluminum body

刀座V槽定位設計，讓加工更穩定

V- groove positioning for superior stability

可進行μ級調整

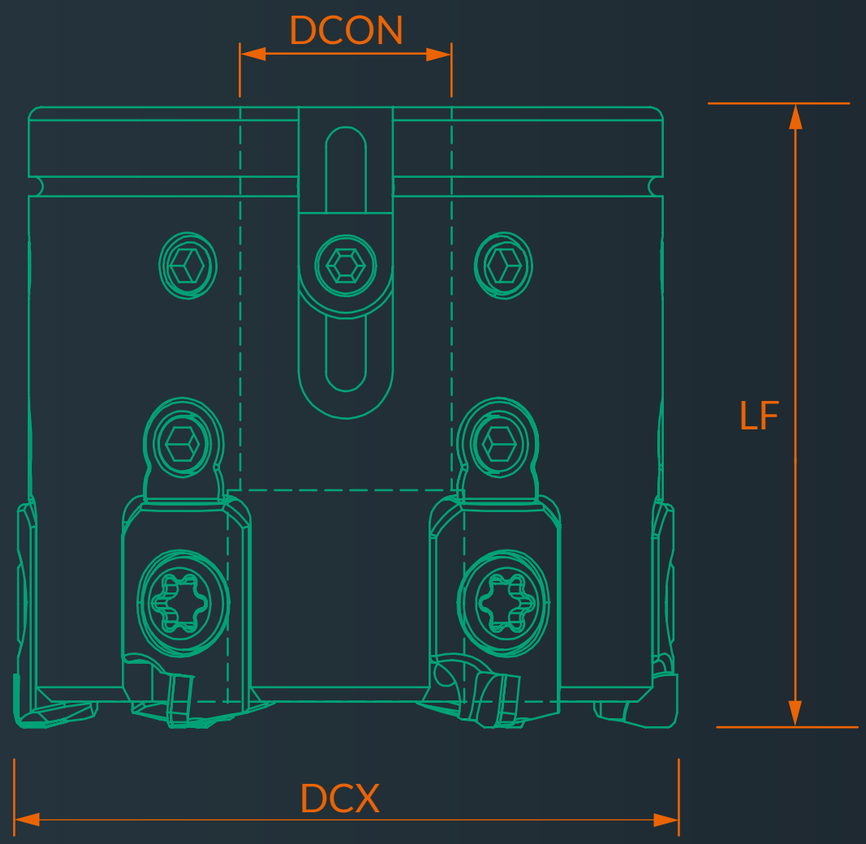
Adjustable to the micrometer

軸向動平衡及出水結構設計

Axial dynamic balance and through-tool coolant system

規格

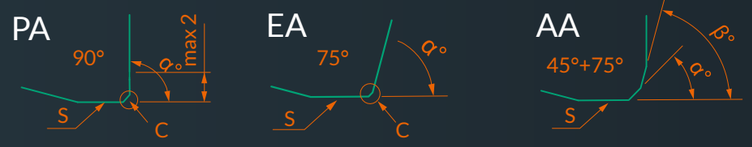
Specs



規格 Spec.	DCX	LF	DCON	刃數 T	建議最高轉速 Spindle speed n max	淨重 (KGS) Weight	重量 (KGS) Weight
HCM-50-FMB16-6T-AB-C	50	48	16	6	max. 33000rpm	0.26	1.26
HCM-63-FMB22-8T-AB-C	63		22	8		0.40	1.40
HCM-80-FMB27-10T-AB-C	80	50	27	10		0.60	1.60
HCM-100-FMB32-14T-AB-C	100		32	14	max. 29500rpm	0.98	2.02
HCM-125-FMB40-18T-AB-C	125	63	40	18	max. 25500rpm	1.88	3.68

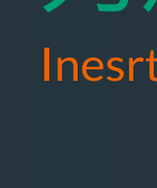
刀片規格

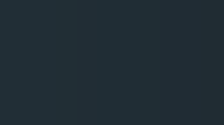
Inesrt Specs



規格 Spec.	聚晶鑽石 Polycrystalline Diamond					尺寸 (mm)						最大切深 Cutting Max.	Fig.
	DP					Size						mm	
	PCD					L	D	α°	β°	S	C	Ap	
ACMQ1711PAFR	●					17	11	90°	-	1.2	0.15	2	1
ACMQ1711EAFR	●					17	11	75°	-	1.2	0.15	2	2
ACMQ1711AAFR	●					17	11	45°	75°	1.2	-	1.13	3

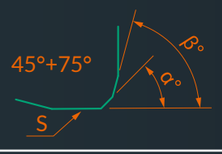
修光刃刀片
Wiper Inserts





規格 Spec.	聚晶鑽石 Polycrystalline Diamond					尺寸 (mm)						最大切深 Cutting Max.
	DP					Size						mm
	PCD					L	D	α°	β°	r	C	Ap
ACMQ1711AAFR-R300	●					17	11	45°	75°	300	-	2
ACMQ1711AAFR-R500	●					17	11	45°	75°	500	-	1.13

單晶刀片
Single Crystal Diamond

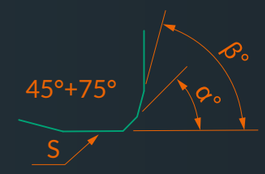


規格 Spec.	單晶鑽石 Single Crystal Diamond					尺寸 (mm)						最大切深 Cutting Max.
	MD					Size						mm
	MD100					L	D	α°	β°	S	C	Ap
ACMQ1711ACFR	●					17	11	45°	75°	1.2	-	1.13

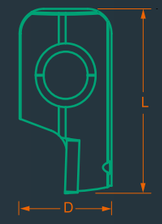
刀片規格

Inesrt Specs

鎢鋼刀片
Tungsten Steel Insert



規格 Spec.	L	D	α°	β°	S	重量 (KGS) Weight
ACMQ1711AAFR-WC	17	11	45°	75°	1.2	0.02



捨棄式刀片
Supplemental Insert

規格 Spec.	L	D	刀片 Insert	螺絲 Screw	扳手 Wrench	扭力值 (N.m) Torque	重量 (KGS) Weight
ACMQ1711-TB06	22.13	11	TB..0601	M2-5.0-2.7-60	T6	0.6	0.02

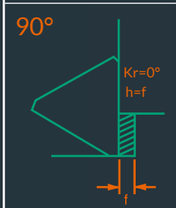
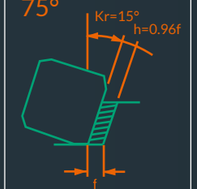
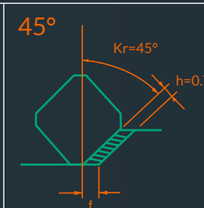
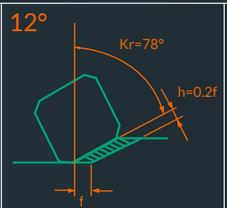
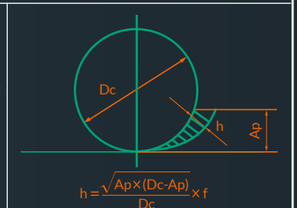
可自行搭配刀片材質
Works with all grades

刀片基座
Insert Base

規格 Spec.	L	D	重量 (KGS) Weight
ACMQ1711-AS	17	11	0.02

可用於刀片配重或自行焊接各項材質
Can be used foe balance or self welding inserts

選擇刀片座種類
Insert Seat Angle

形式 Form				
90° 	75° 	45° 	12° 	
- 加工璧薄件 - 加工夾持剛性差工件 - 大切削 -Cuts thin workpiece -Clamped workpieces -Large workpieces	- 加工粗胚 - 中大切削工件 -Rough cutting -Large workpieces	- 加工深腔體工件 - 中切深 -Cuts deep cavities -Cuts into pockets	- 加工大量粗切削 - 小切深、大進給 -Multiple rough cuts -Low depth, high feed	EX: Dc=100 f=0.05 Ap=0.2 $h=\frac{\sqrt{0.2\times(100-0.2)}}{100}\times 0.05$ $=2.23$

說明 Description
外周切削刃角 (主偏角的餘角) 越大，則切屑厚度越大，切削阻力增加，刃口強度降低；反之則切屑厚度越薄，切削阻力減少，加工餘量受限。一般加工選用切削力、切屑厚度適中的 45°角。 The higher the angle is, the greater the chip thickness is, therefore increasing resistance . More resistance leads to less durability. The most equal ratio between angle and crip thickness is 45 °.

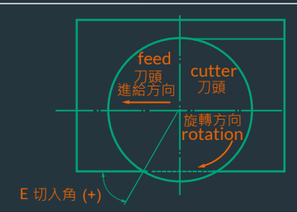
如有特殊角度需求，請與我司聯繫 Contact us for custom angles

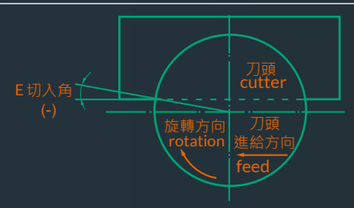
技術資料

Technical information

依工件寬度搭配面銑刀具直徑
Workpiece Width VS. Cutter Diameter

形式 Form



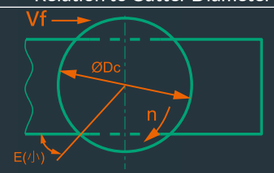
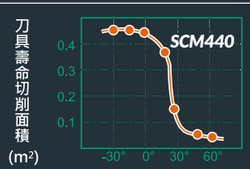
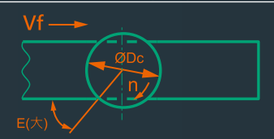
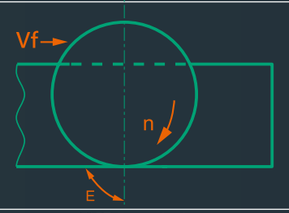
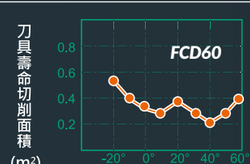


說明 Description

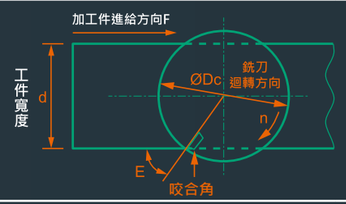
	刀具直徑 Cutter Diameter		選擇適當刃數 Choosing the right teeth	
	E建議的切入角 E = recommended contact angle	建議刀具直徑與工件寬度比 Recommended tool diameter to workpiece width ratio	按直徑 (mm) 計算 Calculated by diameter (mm)	結果 result
鋁合金 Aluminum	+40°以上	5:3	$\left(\frac{4}{100} \sim \frac{6}{100}\right) \times ØD$	多則易變形；少則易起毛邊 More easily deformed and prone to imprefections

咬合角和刀具壽命
Contact Angle VS. Tool Life

形式 Form

咬合角與銑刀尺寸的關係 Relation to Cutter Diameter	咬合角與銑刀位置的關係 Relation to Cutter Position	與刀具壽命的關係 Relation to Tool Life
 銑刀直徑（大）		 咬合角角度 contact angle
 銑刀直徑（小）		 咬合角角度 contact angle

說明 Description



咬合角是銑刀中心與刀刃切進點的連線與進給方向所成的夾角。E 越大刀具壽命越短，改變 E 的方法有：1. 加大銑刀直徑 2. 錯開位置
The Contact Angle is the angle by which the cutting edge comes in contact with the work material, with reference to the feed direction.The larger the angle of E is, the shorter the tool life.To change the value of E:1. increase the cutter size. 2. shift the position of the cutter.

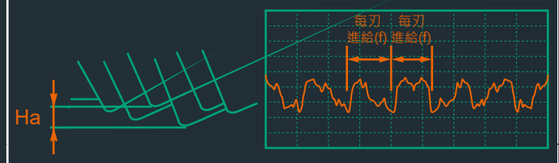
技術資料

Technical information

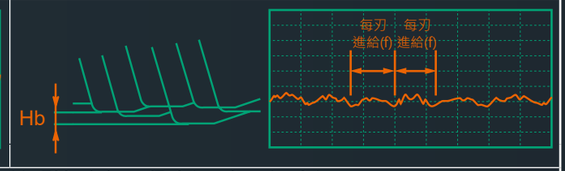
如何正確搭配刀片座類型
Cutting with Wiper Inserts

形式 Form

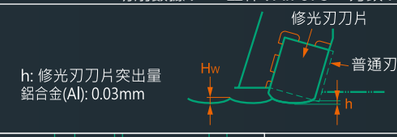
Ha : 不使用修光刃刀片的粗糙度 Ha: Without Wiper Inserts



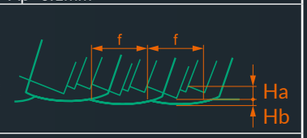
Hb : 使用修光刃刀片的粗糙度 Hb: With Wiper Inserts



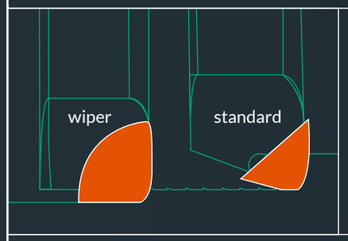
切削數據： ◆工件 : Al7075 ◆刀頭 HCM-63 ◆ Vc=700m/min ◆ fZ=0.1mm/t ◆ Ap=0.1mm

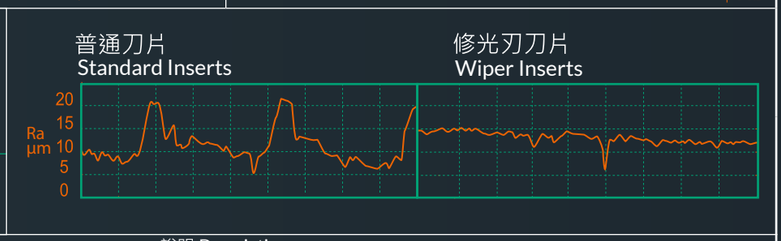


h: 修光刃刀片突出量
鋁合金(Al): 0.03mm



f: 每刃進給(mm/rev)
Ha:普通刀片的精加工粗糙度
Hb:修光刃刀片的精加工粗糙度



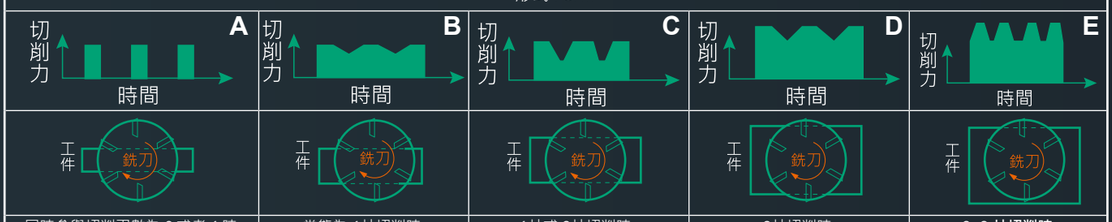


說明 Description

刀片結合一或多個修光刃加工出更好的光潔度表面。修光刃刀片會清除原刀片加工後任何不平整的表面。圓弧形修光刃及直線型修光刃可以解決您特殊的加工需求 。
Standard inserts combined with one or more wiper insert produces a superior finish. The wiper insert clears the surface of any imperfections following the standard insert. There are curved wipers and straight wipers, to suit your specific needs.

切削的刃數與切削力變動的關係
Edge Contact VS. Cutting Force

形式 Form



同時參與切削刃數為 0 或者 1 時 0 or 1 edge in contact	常態為 1片切削時 Only 1 edge in contact	1片或 2片切削時 1 or 2 edges in contact	2片切削時 2 edges in contact	2~3 片切削時 2 to 3 edges in contact

說明 **Description**

通常切削寬度如 D 的狀態，銑刀直徑在 70%~80% 較為適當，但由於受機台和工件的剛性、機台馬力的影響，無法一概而論
Normally, 70-80% of the cutter's diameter should be engaged (fig. D). However, this varies with rigidity of the machine and horsepower.

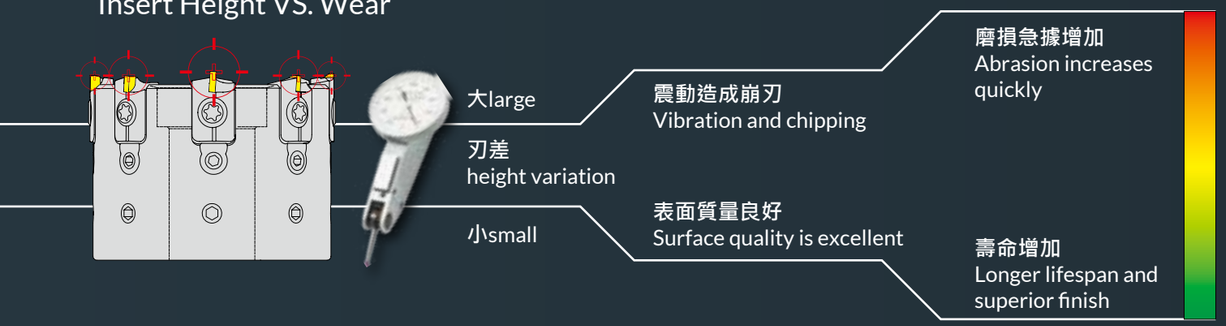
建議使用刀具尺寸規格 Suggest used the cutter spec.

規格 Spec.	HCM50	HCM63	HCM80	HCM100	HCM125	HCM160	HCM200	HCM250	HCM315	HCM400
工件寬度範圍 Face Width	30~40mm	37~50mm	48~64mm	60~80mm	70~95mm	96~128mm	120~160mm	150~200mm	189~252mm	240~320mm

技術資料

Technical information

調整刀刃的差異性
Insert Height VS. Wear

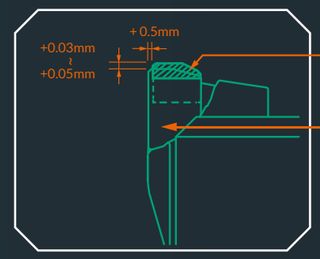


切削數據
Cutting conditions

	材料 Materials	材料編號 Materials examples	抗拉強度 Strength(N/mm²)	線速度 Vc(m/min)	每刃進給量 f(mm/rev) Ap<1mm	每刃進給量 f(mm/rev) Ap:1~2mm
N	鋁合金 (Aluminium)	鋁合金 (Al99)		max.6000	0.1~0.2mm/rev	0.05~0.1mm/rev
N	鋁合金 (Aluminium) 7 % 矽 (Si)	鑄造鋁合金 (AlSi7)				
N	鋁合金 (Aluminium) 7-12 % 矽 (Si)	鋁合金 (AlSi9) 鋁合金 (AlSi9Cu)				
N	鋁合金 (Aluminium) 12 % 矽 (Si)	鋁合金 (AlSi12) 鋁合金 (AlSi17)		max.2000		
N	銅 (Copper) 非合金鋼 (unalloyed)	銅合金 (SE-Cu)	< 300	max.6000		
N	銅 (Copper)	銅錫合金 (CuSn6)	> 300	max.2000		
N	黃銅 (Brass) 青銅 (bronze) 紅銅 (red brass)	銅錫合金 (CuZn33) 銅合金 (CuAl9Mn3)	< 1.200			
N	石墨 (Graphite)	–				
N	塑料 (Plastic) 熱可塑性樹脂 (Thermoplastics)	尼龍 (PA), 塑膠 (PE), 聚碳酸酯 (PC), 聚苯乙烯 (PS), 聚氯乙烯 (PVC), 聚丙烯 (PP), 聚四氟乙烯 (PTFE), 聚甲醛 (POM), 聚甲基丙烯酸甲酯 PMMA				
N	塑料 (Plastic) 熱固性塑膠 (Thermoset plastics)	聚氨酯 (PU), 電木粉 (PF), 環氧樹脂 (EP), 聚酯樹脂 (UP), 塑膠 (VE), 氯丁橡膠 (CR)				
C	塑料 (Plastic matrix) 碳纖維複合材料 (CFRP/GFRP)	聚酯 (IMS), 高溫合金 (HTA)		Max.100~500	0.1~0.4mm/rev	0.1~0.2mm/rev
C	塑料 (Plastic matrix) 碳纖維複合材料 (CFRP/GFRP)	玻璃纖維 (GMT-PP), 聚醚醚酮 (PEEK)				
C	碳纖維複合材料 Carbon matrix 碳纖維強化碳基材複合材料 Carbon fibre reinforced(CFC)	碳纖維 (CF222, CF225, CF226, CF227, CF260)		Max. 100~300	0.1~0.2mm/rev	0.05~0.1mm/rev

注意事項

Tips



修光刃刀片座
Wiper insert

PCD刀片座
PCD insert

⚠ **安裝修光刃刀片(R300、R500)時，應比PCD刀片高出+0.03mm~+0.05mm**
When installing wiper inserts (R300 or R500) be sure they are 0.03 ~ 0.05mm higher than the PCD insert.

⚠ **請務必使調整楔塊與刀頭外徑平行**
Make sure the wedge and the insert are parallel.

一般精度：0.01mm
精密精度：0.003mm ~ 0.005mm
General accuracy: 0.01mm
Precision accuracy: 0.003mm 0.005mm

每刃皆有一顆動平衡螺絲，可調整每刃不平衡量
Each insert seat has a dedicated dynamic balance adjustment

轉速(min⁻¹)	JIS等級 ISO 1940-1/8821 (JIS B0905)
~20,000	G16
~30,000	G6.3
30,000~	G2.5

⚠ **在高速旋轉（10,000 min⁻¹ 以上）使用時，刀具本體與刀桿的組合，請參考以下數值進行選配**
When operating at high rotation speeds (10,000 min⁻¹ or more), perform balancing of the tool body and arbor combination according to the reference values listed here.

⚠ **請不要超過建議的最高轉速加工數據，避免造成離心力影響而使刀片或零件的飛散，導致刀頭受損**
Do not use at rotation speeds exceeding the maximum rotation speed stated. Inserts and other parts may fly apart and cause bodily harm due to the high velocity of centrifugal force.

本刀具刀刃鋒利，接觸時請使用手套等保護用具
When using all cutting equipment be sure to use protective gloves and other gear

產品數位資訊

Product Digital Media

影片
Video

目錄
Catalogue