

Top Quality Materials For Dependable Drill Performance !

- Ultra Fine Grain Tungsten Carbide of 0.6 μ m, which are imported from GERMANY for manufacturing the products.
- Customer specification is available.



- 本公司系列產品均採用德國進口超細微粒碳化鋼素材
Co10% WC90% Ultra Fine Grain Tungsten Carbide 0.6 μ m
- 特規格歡迎訂製

HOL 歐樂

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HOL 歐樂

HOL DRILL Series
錫鋼鑽頭系列 Tungsten Carbide Drill

HOL MILL Series
錫鋼端銑刀系列 Tungsten Carbide End Mill

專業的技术，先進的設備，堅持的品質
Cutting Tools Expertise
Quality-insistant



www.hol-drill.com.tw

為什麼 選擇鶴峻 鎢鋼鑽頭？

因為鶴峻擁有

- 品質符合國際標準
- 世界先進加工設備
- 歐美進口超微粒碳化鎢
- 獨特研發能力
- 交期迅速

鶴峻 鎢鋼鑽頭， 信賴的品質、性能、精度

鶴峻實業有限公司專業設計及生產全系列鎢鋼鑽頭，以不斷創新的經營理念，達到刀具產品技術、品質與管理的新境界。我們融合理論與實務經驗，不斷致力於切削技術的鑽研。對於各種材料特性，更擁有獨特的知識背景。

多年來，我們在切削刀具研發，投入了無數的心血，也因此HOL歐樂系列刀具產品鑽頭的品質、性能、精度，已廣泛贏得國內外客戶的肯定。放眼未來，我們將以一步一腳印的步伐，強化企業體質，持續追求公司的成長茁壯。

Why you Should Choose HOLER Tungsten Carbide Drills ?

Here Are the Reasons!

- Quality reaches international standards
- Top-level advanced machining equipment
- Made with European ultra fine grain tungsten carbide material.
- Outstanding R&D team
- Short lead-time

HOLER Tungsten Carbide Drills Are Reliable in Quality, Performance, and Accuracy

HOLER Cutting Tool Co., Ltd specializes in design and manufacturing tungsten carbide drills. With the company's policy of constant breakthrough and innovation, we have dedicated ourselves to pursuing a new level of technology, quality and management. With the combination of theorem and practical experience, we always strive for research in cutting technology. In addition, we also have outstanding knowledge in material characteristics.

For years, we have spent great efforts on research and development of various cutting tools. These are some of the reasons why HOLER drills have fully satisfied all customers around the world in quality, performance, and accuracy. In the future, we will keep pursuing for progressing to improve customers' using experience with HOLER's products.

瑞士進口CNC刀具研磨機

Switzerland Imported CNC Tool Grinding Machine



全系列精密加工設備

鶴峻刀具就是精密度的保證

鶴峻公司一貫堅持採用，先進精密的加工設備，符合客戶要求生產高精度的刀具，品質達到國際水準。本公司生產線擁有許多精密設備，例如：瑞士進口CNC刀具研磨機、CNC刀具加工中心機、圓筒磨床，以及CNC螺旋磨槽機……等。此外，本公司之專業技術人員，經驗豐富，秉持最嚴謹的精神，精心生產每一支刀具。

堅持品質，嚴格檢驗

鶴峻刀具榮獲國際肯定

堅持品質是鶴峻公司經營傳統的核心價值。為了確保HOL系列刀具產品的高品質，公司品質部門擁有相關的高精密刀具檢驗儀器，並實施全面品質管理制度，確保製程中每一步驟之品質，以期發揮HOL毆樂系列刀具產品之功能，提升顧客滿意度，故創雙贏。

Comprehensive Sophisticated Machining Equipment

Guaranteed for Accurate Drills & End mills

At HOLER, we believe that utilizing sophisticated equipment enables us to produce cutting tools with the highest accuracy, and to achieve high quality over customers' demands. Our modern production facility is fully equipped with many high precision machining equipments, such as Switzerland imported CNC tool grinding machine. In addition, our highly skilled technicians have extensive professional in precision tool manufacturing and fully dedicated to produce the best HOLER cutting tools.

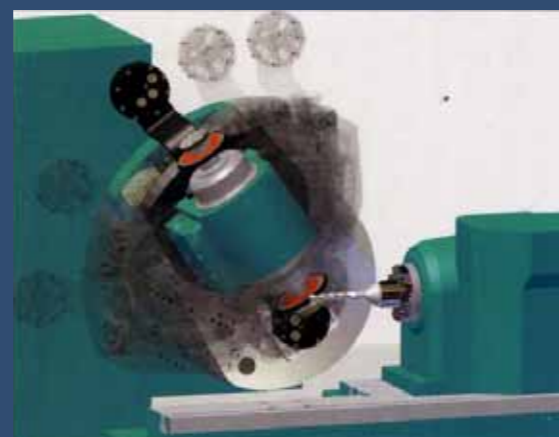
Insisting in Quality and Thoroughly Quality Inspection

HOLER Tools Are Internationally Recognized

High-quality is one of HOLER's core values. To ensure excellence, HOLER has set up total quality management for thoroughly quality control during manufacturing process. Moreover, our quality control department is equipped with many sophisticated inspection instrument for rigorous inspection for each product.

鶴峻引進世界頂級瑞士CNC刀具研磨機。具五軸控制特點。保證每一隻鶴峻刀具都擁有最精密的幾何精度。

HOLER also introduces top-level advanced CNC tool grinding machine from Switzerland, which features 5-axes control. With this machine, we can guarantee the best possible geometric accuracy and the quality for each cutting tool from HOLER.



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鎢鋼鑽頭 系列

TUNGSTEN CARBIDE DRILLS

鑽頭編號說明 DRILL MODEL NUMBER IDENTIFICATION

CCD - 5 102

鑽頭的種類

Ordering Information

CCD	全鎢鋼鑽頭 TUNGSTEN CARBIDE DRILL	
CFD	銑刀柄全鎢鋼鑽頭 TUNGSTEN CARBIDE DRILL With end mill shank size	DIN 6537
HOD	內冷式全鎢鋼鑽頭 TUNGSTEN CARBIDE DRILL With coolant through hole	
HKD	銑刀柄內冷式全鎢鋼鑽頭 TUNGSTEN CARBIDE DRILL With end mill shank size and coolant through hole	DIN 6537
TXD	焊刃式鎢鋼鑽頭 TUNGSTEN CARBIDE WELDED DRILL	
RSD	鎢鋼蝴蝶鑽頭 TUNGSTEN CARBIDE R DRILL	DIN 6537
ROD	鎢鋼內冷式蝴蝶鑽頭 TUNGSTEN CARBIDE R DRILL	DIN 6537
GSD	鎢鋼四刃點鑽頭 SOLID CARBIDE FOUR POINT CONTACT	DIN 6537
GOD	內冷式四刃點全鎢鋼鑽頭 SOLID CARBIDE FOUR POINT CONTACT DRILL With coolant through hole	DIN 6537
BBD	高硬度材加工鑽頭 TUNGSTEN CARBIDE DRILL	DIN 6537
NSP	NC定點鑽頭 SOLID CARBIDE NC POSITIONING DRILL	

刃長

Length of Flute

3	3倍 3-times
5	5倍 5-times
7	7倍 7 times
8	8倍 8 times

刃徑

Length Diameter

102=10.2 mm

鎢鋼鑽頭應用

鎢鋼鑽頭由於材料本身硬度高、耐磨耗，特別適用於高速加工，以及下列使用條件：

1. 難削材料加工者(例：高硬度材料)。
2. 不銹鋼材料加工者。
3. 量大、量產化、之生產線加工。
4. 無人化之生產線加工。

Applications for Tungsten Carbide Drill

The tungsten carbide drills feature extra high hardness and high wear resistance. They are ideal for high speed machining and following cutting conditions:

1. Difficult to cut materials(such as extra high hardness materials.)
2. Stainless steel.
3. Mass Production.
4. Unmanned production line.

焊刃式錫鋼被覆鑽頭

TUNGSTEN CARBIDE WELDED COATED DRILL



- 焊接式
- 中心內冷
- Welded End
- Internal Coolant

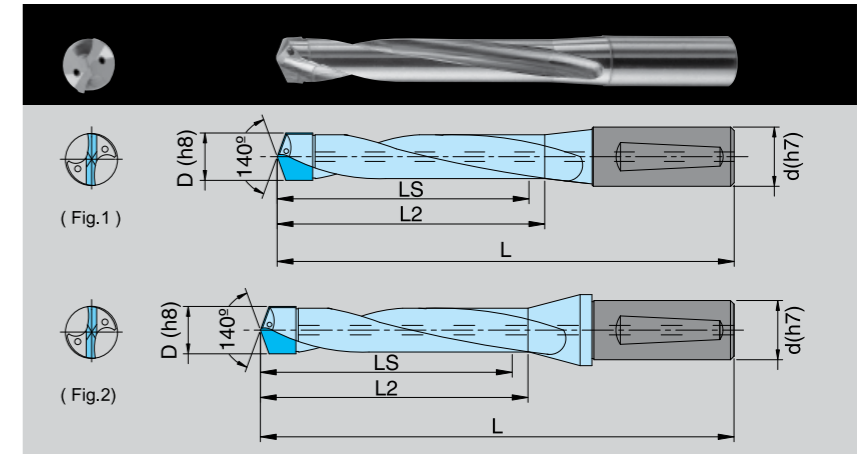
適合材質：

一般鋼料、合金鋼、模具鋼、不鏽鋼、銅、鋁、鑄鐵。

Applicable materials:

General steel, alloy steel, mold steel, stainless steel, copper, aluminum, cast iron.

- 焊接式
- 中心內冷
- Welded End
- Internal Coolant



EDP No.	庫存品	非庫存品	dø	L2	L	L4	Ls	圖示
	stock	non-stock						
TXD -3130	13	13.01~13.5	16	54	115	48	48	Fig.1
TXD -3135	13.5							
TXD -3140	14							
TXD -3145	14.5	13.51~14.5	20	65	130	50	58	Fig.1
TXD -3150	15	14.51~15.5						
TXD -3155	15.5	15.51~16.5						
TXD -3160	16	15.51~16.5	20	72	140	50	65	Fig.1
TXD -3165	16.5							
TXD -3170	17							
TXD -3175	17.5	16.51~17.5	25	82	160	56	75	Fig.1
TXD -3180	18	17.51~18.5						
TXD -3185	18.5	18.51~19.5						
TXD -3190	19	19.51~20.5	25	86	170	60	82	Fig.1
TXD -3195	19.5							
TXD -3200	20							
TXD -3205	20.5	20.51~21.5	25	90	175	60	82	Fig.1
TXD -3210	21							
TXD -3215	21.5							
TXD -3220	22	21.51~22.5	32	90	175	60	82	Fig.1
TXD -3225	22.5							
TXD -3230	23							
TXD -3235	23.5	22.51~23.5	32	90	175	60	82	Fig.1
TXD -3240	24							
TXD -3245	24.5							
TXD -3250	25	24.51~25.5	32	90	175	60	82	Fig.1
TXD -3255	25.5							
TXD -3260	26							
TXD -3265	26.5	25.51~26.5	32	90	175	60	82	Fig.1

EDP No.	庫存品	非庫存品	dø	L2	L	L4	Ls	圖示
	stock	non-stock						
TXD -3270	27	26.51~27.5	98	185	60	95	90	Fig.1
TXD -3275	27.5							
TXD -3280	28							
TXD -3285	28.5	27.51~28.5	105	195	60	95	90	Fig.1
TXD -3290	29							
TXD -3295	29.5							
TXD -3300	30	28.51~29.5	110	200	70	105	100	Fig.1
TXD -3305	30.5							
TXD -3310	31							
TXD -3315	31.5	29.51~30.5	118	225	70	105	105	Fig.2
TXD -3320	32							
TXD -3325	32.5							
TXD -3330	33	30.51~31.5	123	230	70	108	108	Fig.2
TXD -3335	33.5							
TXD -3340	34							
TXD -3345	34.5	31.51~32.5	130	240	70	115	115	Fig.2
TXD -3350	35							
TXD -3355	35.5							
TXD -3360	36	32.51~33.5	147	255	70	129	129	Fig.2
TXD -3365	36.5							
TXD -3370	37							
TXD -3375	37.5	33.51~34.5	147	255	70	129	129	Fig.2
TXD -3380	38							
TXD -3385	38.5							
TXD -3390	39	34.51~35.5	147	255	70	129	129	Fig.2
TXD -3395	39.5							
TXD -3400	40							
TXD -3405	40.5	35.51~36.5	147	255	70	129	129	Fig.2
TXD -3405	40.5							

EDP No.	庫存品	非庫存品	dø	L2	L	L4	Ls	圖示
	stock	non-stock						
TXD -5130	13	13.0~13.5	16	84	145	48	78	Fig.1
TXD -5135	13.5							
TXD -5140	14							
TXD -5145	14.5	13.51~14.5	20	95	160	50	88	Fig.1
TXD -5150	15							
TXD -5155	15.5							
TXD -5160	16	14.51~15.5	20	107	175	50	100	Fig.1
TXD -5165	16.5							
TXD -5170	17							
TXD -5175	17.5	15.51~16.5	25	127	205	56	118	Fig.1
TXD -5180	18							
TXD -5185	18.5							
TXD -5190	19	16.51~17.5	25	127	205	56	118	Fig.1
TXD -5195	19.5							
TXD -5200	20							
TXD -5205	20.5	17.51~18.5	32	145	230	60	136	Fig.1
TXD -5210	21							
TXD -5215	21.5							
TXD -5220	22	18.51~19.5	32	145	230	60	136	Fig.1
TXD -5225	22.5							
TXD -5230	23							
TXD -5235	23.5	19.51~20.5	32	145	230	60	136	Fig.1
TXD -5240	24							
TXD -5245	24.5							
TXD -5250	25	20.51~21.5	32	145	230	60	136	Fig.1
TXD -5255	25.5							
TXD -5260	26							
TXD -5265	26.5	21.51~22.5	32	145	230	60	136	Fig.1

EDP No.	庫存品	非庫存品	dø	L2	L	L4	Ls	圖示
	stock	non-stock						
TXD -5270	27	26.51~27.5	153	240	60	145	145	Fig.1
TXD -5275	27.5							
TXD -5280	28							
TXD -5285	28.5	27.51~28.5	160	250	60	150	Fig.1	
TXD -5290	29							
TXD -5295	29.5							
TXD -5300	30	28.51~29.5	175	265	70	165	Fig.1	
TXD -5305	30.5							
TXD -5310	31							
TXD -5315	31.5	29.51~30.5	182	290	70	170	Fig.2	
TXD -5320	32							
TXD -5325	32.5							
TXD -5330	33	30.51~31.5	193	300	70	180	Fig.2	
TXD -5335	33.5							
TXD -5340	34							
TXD -5345	34.5	31.51~32.5	205	315	70	190	Fig.2	
TXD -5350	35							
TXD -5355	35.5							
TXD -5360	36	32.51~33.5	217	330	70	202	Fig.2	
TXD -5365	36.5							
TXD -5370	37							
TXD -5375	37.5	33.51~34.5	217	330	70	202	Fig.2	
TXD -5380	38							
TXD -5385	38.5							
TXD -5390	39	34.51~35.5	217	330	70	202	Fig.2	
TXD -5395	39.5							
TXD -5400	40							
TXD -5405	40.5	35.51~36.5	217	330	70	202	Fig.2	

Dø/ Diameter dø/ Shank Diameter
L2/ Flute Length L/ Overall Length
L4/ Shank Length Ls/ Length of Cut

全鎢鋼NC定位鑽頭

SOLID CARBIDE NC POSITIONING DRILL



鎢鋼材質 高硬度、耐摩耗，鑽頂角90°、120°。
Tungsten Carbide material, high hardness, high wear resistance, point angle 90° or 120°

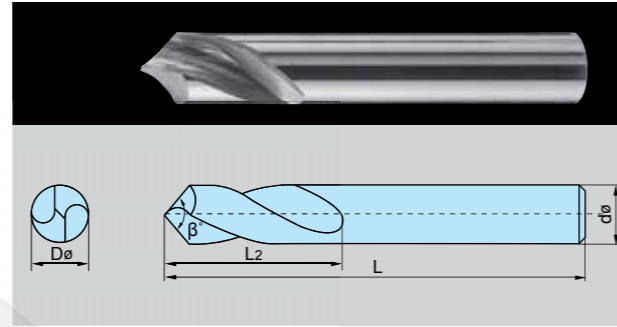
適用材質：
銅、一般鋼料、合金鋼、不鏽鋼、銅、鋁、鑄鐵。

Applicable materials:
General steel, alloy steel, stainless steel, copper, aluminum, cast iron.

全鎢鋼單頭NC 定位鑽頭

SOLID TUNGSTEN SINGLE END NC POSITIONING DRILL

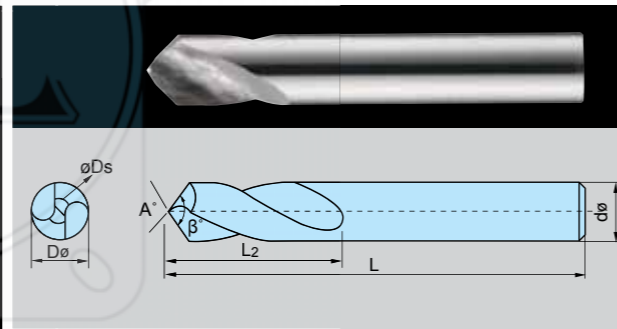
型號 EDP NO.	β°	直徑 øD	刃長 L ₂	全長 L	柄徑 ød
NSP - 9003	90°	3.0	8	38	3.0
NSP - 9004	90°	4.0	10	40	4.0
NSP - 9005	90°	5.0	15	50	5.0
NSP - 9006	90°	6.0	15	50	6.0
NSP - 9008	90°	8.0	20	60	8.0
NSP - 9010	90°	10.0	22	75	10.0
NSP - 9012	90°	12.0	20	75	12.0
NSP - 9016	90°	16.0	25	100	16.0
NSP - 9020	90°	20.0	40	100	20.0
NSP - 12003	120°	3.0	8	38	3.0
NSP - 12004	120°	4.0	10	40	4.0
NSP - 12005	120°	5.0	15	50	5.0
NSP - 12006	120°	6.0	15	50	6.0
NSP - 12008	120°	8.0	20	60	8.0
NSP - 12010	120°	10.0	22	75	10.0
NSP - 12012	120°	12.0	20	75	12.0
NSP - 12016	120°	16.0	25	100	16.0
NSP - 12020	120°	20.0	40	100	20.0



全鎢鋼單頭NC 定位鑽頭

SOLID TUNGSTEN SINGLE END NC POSITIONING DRILL

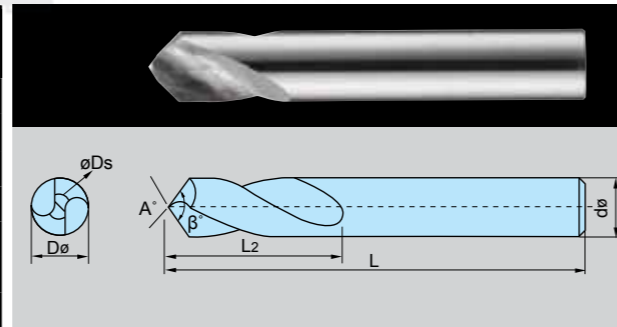
型號 EDP NO.	β°	A°	直徑 øD	刃徑 øDs	刃長 L ₂	全長 L	柄徑 ød
PNSP - 03	90°	118°	3.0	1.5	8	38	3.0
PNSP - 04	90°	118°	4.0	2.0	10	40	4.0
PNSP - 05	90°	118°	5.0	2.0	15	50	5.0
PNSP - 06	90°	118°	6.0	2.5	15	50	6.0
PNSP - 08	90°	118°	8.0	3.0	20	60	8.0
PNSP - 10	90°	118°	10.0	4.0	22	75	10.0
PNSP - 12	90°	118°	12.0	5.0	25	75	12.0
PNSP - 16	90°	118°	16.0	7.0	40	100	16.0



全鎢鋼單頭NC 定位鑽頭

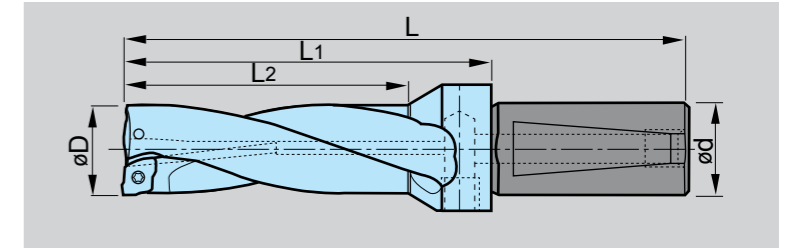
SOLID TUNGSTEN SINGLE END NC POSITIONING DRILL

型號 EDP NO.	β°	A°	直徑 øD	刃徑 øDs	刃長 L ₂	全長 L	柄徑 ød
HNSP - 03	90°	140°	3.0	1.5	8	38	3.0
HNSP - 04	90°	140°	4.0	2.0	10	40	4.0
HNSP - 05	90°	140°	5.0	2.0	15	50	5.0
HNSP - 06	90°	140°	6.0	2.5	15	50	6.0
HNSP - 08	90°	140°	8.0	3.0	20	60	8.0
HNSP - 10	90°	140°	10.0	4.0	22	75	10.0
HNSP - 12	90°	140°	12.0	5.0	25	75	12.0
HNSP - 16	90°	140°	16.0	7.0	40	100	16.0



閃電型螺旋槽快速鑽頭

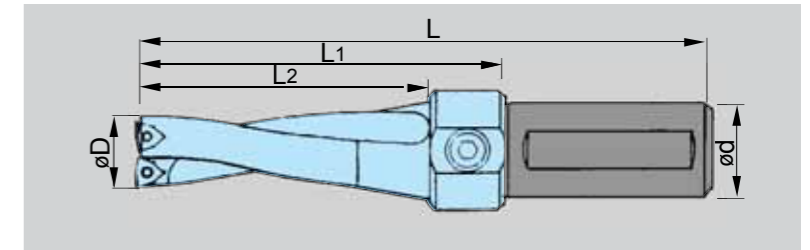
SPIRAL FLUTE HIGH SPEED DRILL



型號規格 EDP NO.	刀徑 Dia	尺寸 Dimension(mm)				適用刀片 Insert	螺絲 Screw	板手 Wrench			
		d Shank Diameter	L Overall Length	L ₁ Flute Length	L ₂ Length of Cut						
JR25-DRZ18 3D-06	18	25	136	82	54	ZCMT06T2	CS2260	T-7			
JR25-DRZ19 3D-06	19	25	139	85	57						
JR25-DRZ 20 3D-06	20	25	143	89	60						
JR25-DRZ 21 3D-06	21	25	146	89	63						
JR25-DRZ 22 3D-08	22	25	147	93	66						
JR25-DRZ 23 3D-08	23	25	150	96	69						
JR25-DRZ 24 3D-08	24	25	152	98	72	ZCMT0803	CS2565	T-8			
JR25-DRZ 25 3D-08	25	25	155	101	75						
JR25-DRZ 26 3D-08	26	25	158	104	78						
JR32-DRZ 27 3D-10	27	32	173	114	81				ZCMT10T3	CS4090	T-15
JR32-DRZ 28 3D-10	28	32	176	117	84						
JR32-DRZ 29 3D-10	29	32	179	120	87						
JR32-DRZ 30 3D-10	30	32	181	122	90						
JR32-DRZ 31 3D-10	31	32	183	124	93						
JR32-DRZ 32 3D-10	32	32	187	128	96						
JR32-DRZ 33 3D-12	33	32	193	134	99	ZCMT12T3	CS5090	T-20			
JR32-DRZ 34 3D-12	34	32	197	138	102						
JR32-DRZ 35 3D-12	35	32	199	140	105						
JR32-DRZ 36 3D-12	36	32	203	144	108						
JR32-DRZ 37 3D-12	37	32	205	146	111						
JR32-DRZ 38 3D-12	38	32	208	149	114						
JR32-DRZ 39 3D-12	39	32	211	152	117	ZCMT1504	CS5090	T-20			
JR32-DRZ 40 3D-12	40	32	212	153	120						
JR40-DRZ 41 3D-15	41	40	224	155	123						
JR40-DRZ 42 3D-15	42	40	227	158	126						
JR40-DRZ 43 3D-15	43	40	230	161	129						
JR40-DRZ 44 3D-15	44	40	233	164	132						
JR40-DRZ 45 3D-15	45	40	234	165	135						
JR40-DRZ 46 3D-15	46	40	241	172	138						
JR40-DRZ 47 3D-15	47	40	245	176	141						
JR40-DRZ 48 3D-15	48	40	248	179	144						
JR40-DRZ 49 3D-15	49	40	250	181	147						
JR40-DRZ 50 3D-15	50	40	250	182	150						

桃型捨棄式快速鑽頭

RAPID DRILLS(W) THROW-AWAY INSERT



型號規格 EDP NO.	刀徑 Dia	尺寸 Dimension(mm)				適用刀片 Insert	螺絲 Screw	板手 Wrench
		d Shank Diameter	L Overall Length	L1 Flute Length	L2 Length of Cut			
3H-14WCMX	14	25			42	WCMX030208	M2.5 x 0.45	T-8
3H-15WCMX	15	25			45			
3H-16WCMX	16	25			48			
3H-17WCMX	17	25			51			
3H-18WCMX	18	25			54			
3H-19WCMX	19	25			57			
3H-20WCMX	20	32			60			
3H-21WCMX	21	32			63			
3H-22WCMX	22	32			66	WCMX040208		
3H-23WCMX	23	32			69			
3H-24WCMX	24	32			72			
3H-25WCMX	25	32			75			
3H-26WCMX	26	32			78	WCMX050308	M3 x 0.5	T-10
3H-27WCMX	27	32			81			
3H-28WCMX	28	32			84			
3H-29WCMX	29	32			87			
3H-30WCMX	30	32			90			
3H-31WCMX	31	32			93			
3H-32WCMX	32	32			96	WCMX063T08		
3H-33WCMX	33	32			99			
3H-34WCMX	34	32			102			
3H-35WCMX	35	32			105			
3H-36WCMX	36	32			108			
3H-37WCMX	37	32			111			
3H-38WCMX	38	32			114			
3H-39WCMX	39	32			117			
3H-40WCMX	40	32			120			
3H-37WCMX	37	40			111			
3H-38WCMX	38	40			114			
3H-39WCMX	39	40			117			
3H-40WCMX	40	40			120			
3H-41WCMX	41	40			123			
3H-42WCMX	42	40			126			

型號規格 EDP NO.	刀徑 Dia	尺寸 Dimension(mm)				適用刀片 Insert	螺絲 Screw	板手 Wrench
		d Shank Diameter	L Overall Length	L1 Flute Length	L2 Length of Cut			
3H-43WCMX	43	40			129	WCMX080412	M4x 0.7	T-15
3H-44WCMX	44	40			132			
3H-45WCMX	45	40			135			
3H-46WCMX	46	40			138			
3H-47WCMX	47	40			141			
3H-48WCMX	48	40			144			
3H-49WCMX	49	40			147			
3H-50WCMX	50	40			150			
3H-51WCMX	51	40			153			
3H-52WCMX	52	40			156			
3H-53WCMX	53	40			159	WCMX06T0308	M3.5x 0.6	
3H-54WCMX	54	40			162			
3H-55WCMX	55	40			165			
3H-56WCMX	56	40			168			
3H-57WCMX	57	40			171			
3H-58WCMX	58	40			174			
3H-59WCMX	59	40			177			
3H-60WCMX	60	40			180			

切削數據參考表

CUTTING DATA CHART

型式 MODEL: HOD.CCD

被削材 WORKPIECE	硬度 HARDNESS	Ø4~Ø7		Ø7~Ø10		Ø10~Ø15		Ø15~Ø20	
		V m/min	f m/rev	V m/min	f m/rev	V m/min	f m/rev	V m/min	f m/rev
低碳鋼 LOW CARBON STEEL	~200HB	40~70	0.08~0.2	50~100	0.1~0.3	50~100	0.15~0.4	60~120	0.2~0.5
中碳鋼 MEDIUM CARBON STEEL	~300HB	40~60	0.08~0.15	50~100	0.1~0.25	50~100	0.15~0.4	50~120	0.2~0.5
模具鋼 MOLD STEEL	~300HB	30~60	0.05~0.15	30~60	0.1~0.25	40~80	0.1~0.3	40~100	0.15~0.4
不鏽鋼 STAINLESS STEEL	~200HB	20~40	0.06~0.15	30~60	0.08~0.25	30~70	0.1~0.3	30~70	0.1~0.4
高硬度材 TOUGH MATERIAL	HRC40~50	10~40	0.03~0.1	10~40	0.05~0.15	15~40	0.08~0.2	20~50	0.1~0.25
球墨鑄鐵 DUCTILE IRON	170~240HB	40~80	0.08~0.15	50~100	0.1~0.3	50~100	0.15~0.4	50~100	0.2~0.5

型式 MODEL: TXD.WHCD

被削材 WORKPIECE	硬度 HARDNESS	Ø10~Ø15		Ø15~Ø20		Ø20~Ø25		Ø25~Ø30	
		V m/min	f m/rev	V m/min	f m/rev	V m/min	f m/rev	V m/min	f m/rev
低碳鋼 LOW CARBON STEEL	~200HB	50~80	0.1~0.25	50~100	0.1~0.3	50~100	0.15~0.35	50~120	0.2~0.4
中碳鋼 MEDIUM CARBON STEEL	~300HB	50~80	0.1~0.25	50~100	0.1~0.3	50~100	0.15~0.35	50~120	0.2~0.4
模具鋼 MOLD STEEL	~300HB	40~80	0.08~0.2	40~80	0.1~0.25	40~80	0.15~0.35	40~100	0.2~0.35
不鏽鋼 STAINLESS STEEL	~200HB	30~70	0.08~0.2	30~70	0.1~0.25	30~70	0.1~0.3	30~70	0.15~0.35
高硬度材 TOUGH MATERIAL	HRC40~50	10~40	0.06~0.15	20~50	0.08~0.2	20~50	0.1~0.25	20~50	0.1~0.25
球墨鑄鐵 DUCTILE IRON	170~240HB	50~80	0.1~0.25	50~100	0.1~0.3	50~100	0.15~0.35	50~120	0.2~0.4

型式 MODEL: GSD.GOD

被削材 WORKPIECE	硬度 HARDNESS	Ø4~Ø7		Ø7~Ø10		Ø10~Ø15		Ø15~Ø20	
		V m/min	f m/rev	V m/min	f m/rev	V m/min	f m/rev	V m/min	f m/rev
鋁合金 ALUMIN ALLOY		40~100	0.08~0.2	50~120	0.1~0.25	60~140	0.1~0.4	60~160	0.2~0.5
鑄鐵 CAST IRON	FC250	40~80	0.1~0.2	50~100	0.1~0.25	50~100	0.1~0.3	60~120	0.15~0.4
球墨鑄鐵 DUCTILE IRON	FCD450	40~80	0.08~0.5	50~100	0.1~0.2	50~100	0.1~0.3	50~120	0.15~0.35

鑽頭切削實例

DRILL CUTTING TEST REPORT

鑽頭型號 DRILL	工件材質 WORKPIECE MATERIAL	切削條件 CUTTING CONDITIONS	使用機械 MACHINE	加工數量 QUANTITY
CCD-5059	S45C	回轉速R.P.M :2100 進刀量mm/Rev :0.14 鑽孔深mm :30	CNC車床 CNC LATHE	約3000 Pcs
WHCD-6135	快削S45C	回轉速R.P.M :1200 切削速度M/Min :70 進刀量mm/Rev :0.2 鑽孔深mm :35	CNC車床 42型 CNC LATHE Mod. 42	約12000 Pcs
HOD-7130	SCM435	回轉速R.P.M :1500 切削速度M/Min :60 進刀量mm/Rev :0.15 鑽孔深mm :50	CNC車床 CNC LATHE	約6000 Pcs
CCD-5048	SKD11	回轉速R.P.M :3000 進刀量mm/Rev :0.06 鑽孔深mm :10	CNC車床 CNC LATHE	約10000 Pcs
HOD-5089	SUS316	回轉速R.P.M :1800 切削速度M/Min :50 進刀量mm/Rev :0.15 鑽孔深mm :12	CNC車床 CNC LATHE	約11000 Pcs
HOD-7079	SUS304	回轉速R.P.M :2400 切削速度M/Min :60 進刀量mm/Rev :0.12 鑽孔深mm :15	CNC車床 42型 CNC LATHE Mod. 42	約6000 Pcs
CCD-5048	SK2	回轉速R.P.M :1800 進刀量mm/Rev :0.08 鑽孔深mm :10	CNC車床走心式 CNC LATHE Traveling Spindle	約2000 Pcs
CCD-5068	FC25	回轉速R.P.M :2400 切削速度M/Min :51 進刀量mm/Rev :420 鑽孔深mm :30	CNC銑床 CNC Milling Machine	約12000 Pcs
CCD-5089	SUS316	回轉速R.P.M :1800 切削速度M/Min :50 進刀量mm/Rev :0.15 鑽孔深mm :12	CNC車床 CNC LATHE	約1400 Pcs
TXD-6220	S45C	回轉速R.P.M :1200 切削速度M/Min :83 床台進給mm/Min :350 鑽孔深mm :30	CNC 銑床中心出水 CNC Milling Machine Coolant Through Spindle	約1100 Pcs

鑽頭切削實例

DRILL CUTTING TEST REPORT

鑽頭型號 DRILL	工件材質 WORKPIECE MATERIAL	切削條件 CUTTING CONDITIONS	使用機械 MACHINE	加工數量 QUANTITY
HOD-7130	CCM415	回轉速R.P.M :1500 切削速度M/Min :61 進刀量mm/Rev :0.15 鑽孔深mm :50	CNC車床 CNC LATHE	約6000 Pcs
HOD-5175	SCM21	回轉速R.P.M :1467 切削速度M/Min :80 進刀量mm/Rev :0.3 鑽孔深mm :75	CNC車床 CNC LATHE	約1250 Pcs
CCD-5127	S45C	回轉速R.P.M :2000 切削速度M/Min :80 進刀量mm/Rev :600 鑽孔深mm :30	CNC加工中心機 MACHINE CENTER	約2200 Pcs
GSD-7080	鋁合金	回轉速R.P.M :2400 切削速度M/Min :60 進刀量mm/Rev :0.15 鑽孔深mm :30	CNC車床 CNC LATHE	約3300 Pcs
GSD-7130	FC25	回轉速R.P.M :1700 切削速度M/Min :70 進刀量mm/Rev :0.2 床台進給mm/Min :340 鑽孔深mm :30	CNC銑刀 CNC Milling Machine	約1430 Pcs
CCD-5130	SS41	回轉速R.P.M :1500 切削速度M/Min :60 進刀量mm/Rev :0.16 鑽孔深mm :19	CNC車床 CNC LATHE	約6000 Pcs
CCD-5110	SCM21 HRC22	回轉速R.P.M :1800 床台進給mm/Min :140 鑽孔深mm :18	CNC車床 CNC LATHE	約900 Pcs
CCD-5097	快削鉛	回轉速R.P.M :2200 進刀量mm/Rev :0.25 鑽孔深mm :18	CNC車床 CNC LATHE	約10000 Pcs
HOD-5130	SUS303	回轉速R.P.M :1500 進刀量mm/Rev :0.15 鑽孔深mm :50	CNC車床 CNC LATHE	約11000 Pcs

HOL 歐樂

高效率鎢鋼端銑刀系列

HIGH EFFICIENCY TUNGSTEN CARBIDE END MILL



HOL 歐樂

HOL 鎢鋼端銑刀系列

HOL MILL SERIES

卓越研發能力 追求切削技術新境界

Outstanding R&D Capabilities

Always Pursuing for New Level of Cutting Technology

HOL MILL 端銑刀之所以能夠贏得全球客戶的肯定，其背後之重要因素之一是我們擁專業的有技術研發能力。無論是在刀具幾何結構，切屑排除方式，刀具材質與工件加工特性等方面，我們的研發人員都深入探討與分析，以徹底滿足客戶對於重切削，快速切削之需求。並且展現優異的加工精度，表面細度與加工效率等。

HOL MILL have being fully satisfied customers around the world, one of the most important factors is our dedication to technological research and development. No matter it's about tool geometrical structure chip removing methods or tool materials or work piece machining characteristics, the R&D team conduct deep research and analysis to meet customers' requirements in heaving cutting and high speed cutting. Furthermore, each end mill from HOLER will present the superior machining accuracy, surface, roughness, and machining efficiency.

HOL MILL 端銑刀系列以卓越的品質與切削性能深受國內外客戶的肯定與讚賞。除了採用高級超細微粒碳化鎢材質製成，更採用先進的加工設備加工，配合世界頂級瑞士CNC刀具研磨機研磨，保證每一支端銑刀都表露出最值得信賴的品質與加工精度。廣泛的產品系列，更提供客戶最多元化的選擇。

HOL MILL has being highly reputed in outstanding quality and cutting performance. Manufactured from top quality micro-grain tungsten carbide material, and using top-level Swiss CNC tool grinding machine for precision grinding are assure the best quality and machining accuracy for each end mill from HOLER. In addition, HOLER offers the most comprehensive range of end mills for customers to choose.

HOL 歐樂

端銑刀 系列

END MILL SERIES

銑刀編號說明 END MILL MODEL NUMBER IDENTIFICATION

2 E - D10.0 L75 R05 AK45

刀具刃數
Flute No.

2	2刃
3	3刃
4	4刃
6	6刃

刀徑
Flute Dia.

R	球頭刀圓半徑值 Ball end radius
D	刀具直徑值 End mill dia

刀具總長
Overall Length

75	75 mm
100	100 mm

刀具圓鼻值
Round Nose

無標識為平口刀 Omit: flat end	
R05	圓鼻角 0.5r Nose radius
C03	倒角 0.3c Chamf. angle

刀具材質
End mill material

AK 925
AK 45
PK 66

刀具系列

End Mill Series

E	平口立銑刀 Flat end
ET	波浪型立銑刀 Wave shape
EP	口袋型立銑刀 Pocket type
BE	球頭立銑刀 Ball end
EAL	平口鋁用立銑刀 Flat end for aluminum
BEAL	球頭鋁用立銑刀 Ball end for aluminum
ECR	圓鼻立銑刀 Corner radius end mills

TP	斜度立銑刀 Taper
ETAL	鋁用波浪立銑刀 Sinus edge aluminum
EH	重切削立銑刀 4-FLUTE
EIR	內R倒角立銑刀 Internal R Chamfering
EHCR	圓鼻重切削立銑刀 Round Nose
EQ	粗銑立銑刀 Roughing end mills

銑刀材質選用推薦 END MILL MATERIAL PROPERTIES

No.	WC%	CO%	TiC/Ta(Nb)c%	硬度 Hardness	平均晶粒度 Average Grain Size	被切削 Workpiece
AK 925	89.8	9	1.2	93.2	0.2 μm	~65° HRC
AK 45	86.7	12	1.3	92.1	0.5 μm	~55° HRC
PK 66	83~85	12~14	3	92.2	0.4 μm~0.7 μm	~50° HRC

鎢鋼 2刃球形立銑刀

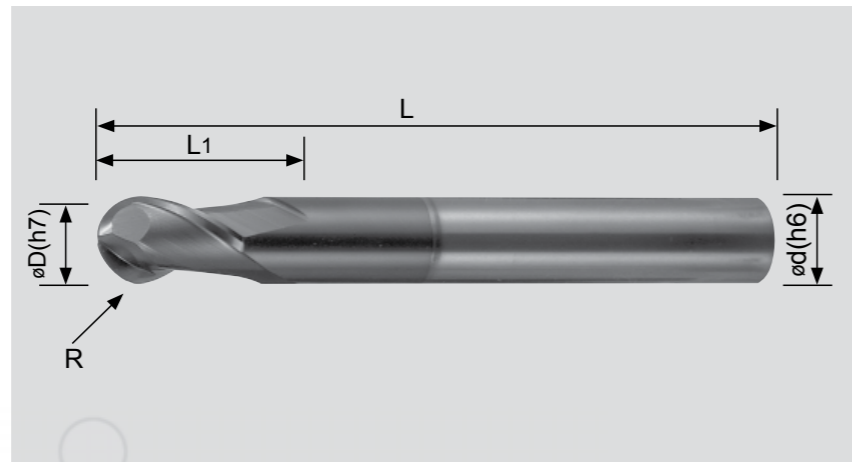
TUNGSTEN CARBIDE 2-FLUTE BALL END MILL



$3 < d \leq 6$ -0.015 ~ -0.038
 $6 < d \leq 18$ -0.020 ~ -0.047
 $18 < d$ -0.020 ~ -0.053

$R = \pm 0.02$

- 超細微粒碳化鎢材質
- Micro-Grain Tungsten Carbide



適用材質：
 鐵材、碳素鋼、鑄鐵、模具鋼、
 合金鋼、工具鋼、不鏽鋼、
 熱處理鋼、焊補鋼料。

Applicable materials:

Ferrous metal, carbon steel,
 cast iron, mold steel, alloy steel, tool steel,
 stainless steel, heat-treated steel, welded steel.

單位: Unit : mm

型號 EDP NO.	刃徑 D Flute Dia.	R徑 Radius	刃長 L1 Length of Cut	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number	AK45	AK925	PK66
2BE-R0.5L50	1.0	R 0.5	2.0	50	4.0	2	●	●	●
2BE-R0.75L50	1.5	R 0.75	3.0	50	4.0	2	●	●	●
2BE-R1.0L50	2.0	R 1.0	4.0	50	4.0	2	●	●	●
2BE-R1.25L50	2.5	R 1.25	5.0	50	4.0	2	●	●	●
2BE-R1.5L50	3.0	R 1.5	6.0	50	4.0	2	●	●	●
2BE-R2.0L50	4.0	R 2.0	8.0	50	4.0	2	●	●	●
2BE-R2.5L50	5.0	R 2.5	10.0	50	6.0	2	●	●	●
2BE-R3.0L50	6.0	R 3.0	12.0	50	6.0	2	●	●	●
2BE-R3.5L60	7.0	R 3.5	14.0	60	8.0	2	●	●	●
2BE-R4.0L60	8.0	R 4.0	16.0	60	8.0	2	●	●	●
2BE-R4.0L75	8.0	R 4.0	16.0	75	8.0	2	●	●	●
2BE-R4.5L75	9.0	R 4.5	18.0	75	10.0	2	●	●	●
2BE-R5.0L75	10.0	R 5.0	20.0	75	10.0	2	●	●	●
2BE-R6.0L75	12.0	R 6.0	20.0	75	12.0	2	●	●	●
2BE-R7.0L80	14.0	R 7.0	24.0	80	14.0	2	●	●	●
2BE-R8.0L100	16.0	R 8.0	24.0	100	16.0	2	●	●	●
2BE-R10.0L150	20.0	R 10.0	30.0	150	20.0	2	●	●	●
2BE-R12.5L150	25.0	R 12.5	35.0	150	25.0	2	●	●	●

註: 有●者表示有庫存

NOTE: ● means items in stock

切削條件表請參考第72頁

鎢鋼 3刃球形立銑刀

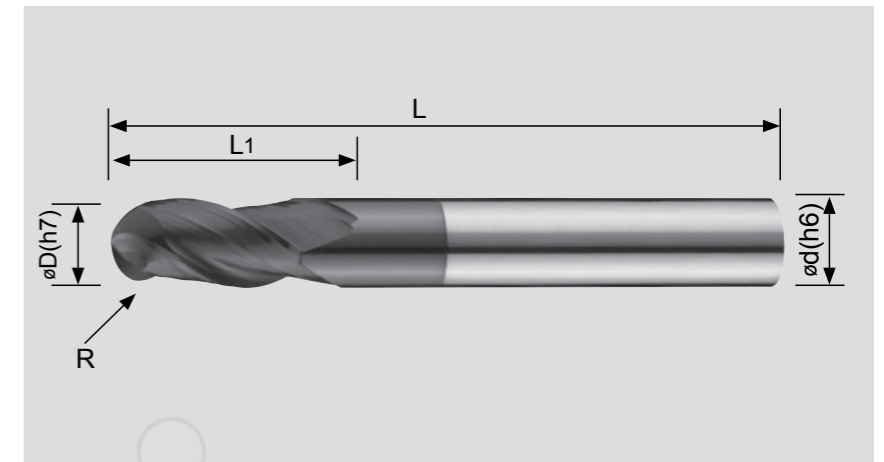
TUNGSTEN CARBIDE 3-FLUTE BALL END MILL



$3 < d \leq 6$ -0.015 ~ -0.038
 $6 < d \leq 18$ -0.020 ~ -0.047
 $18 < d$ -0.020 ~ -0.053

$R = \pm 0.02$

- 超細微粒碳化鎢材質
- Micro-Grain Tungsten Carbide



適用材質：
 碳素鋼、模具鋼、合金鋼、工具鋼、
 鑄鐵、不鏽鋼、熱處理鋼料、焊補鋼料。

Applicable material:

Carbon steel, mold steel, alloy steel, tool steel,
 alloy steel, cast iron, stainless steel,
 heat-treated steel, welded steel.

單位: Unit : mm

型號 EDP NO.	刃徑 D Flute Dia.	R徑 Radius	刃長 L1 Length of Cut	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number	AK45	AK925	PK66
3BE-R3.0L50	6.0	R 3.0	12.0	50	6.0	3	●	●	●
3BE-R3.0L75	6.0	R 3.0	12.0	75	6.0	3	●	●	●
3BE-R4.0L60	8.0	R 4.0	16.0	60	8.0	3	●	●	●
3BE-R4.0L100	8.0	R 4.0	16.0	100	8.0	3	●	●	●
3BE-R5.0L75	10.0	R 5.0	20.0	75	8.0	3	●	●	●
3BE-R5.0L100	10.0	R 5.0	20.0	100	10.0	3	●	●	●
3BE-R6.0L75	12.0	R 6.0	20.0	75	12.0	3	●	●	●
3BE-R7.0L100	14.0	R 7.0	24.0	100	14.0	3	●	●	●
3BE-R8.0L100	16.0	R 8.0	24.0	100	16.0	3	●	●	●
3BE-R10.0L150	20.0	R 10.0	30.0	150	20.0	3	●	●	●
3BE-R12.5L150	25.0	R 12.5	35.0	150	25.0	3	●	●	●

註: 有●者表示有庫存

NOTE: ● means items in stock

切削條件表請參考第73頁

鎢鋼 4刃球形立銑刀

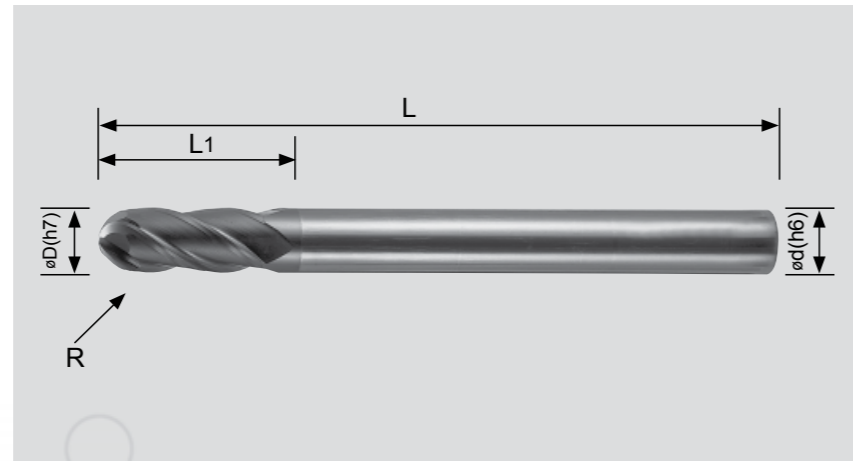
TUNGSTEN CARBIDE 4-FLUTE BALL END MILL



$3 < d \leq 6$ -0.015 ~ -0.038
 $6 < d \leq 18$ -0.020 ~ -0.047
 $18 < d$ -0.020 ~ -0.053

$R = \pm 0.02$

- 超細微粒碳化鎢材質
- Micro-Grain Tungsten Carbide



適合材質：
 碳素鋼、模具鋼、合金鋼、工具鋼、
 鑄鐵、不鏽鋼、
 熱處理鋼、焊補鋼料。

Applicable material:
 Carbon steel, mold steel, tool steel,
 alloy steel, cast iron, stainless steel,
 heat-treated steel, welded steel.

單位: Unit : mm

型號 EDP NO.	刃徑 D Flute Dia.	R徑 Radius	刃長 L1 Length of Cut	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number	AK45	AK925	PK66
4BE-R3.0L50	6.0	R 3.0	12.0	50	6.0	4	●	●	●
4BE-R3.0L75	6.0	R 3.0	12.0	75	6.0	4	●	●	●
4BE-R4.0L60	8.0	R 4.0	16.0	60	8.0	4	●	●	●
4BE-R4.0L100	8.0	R 4.0	16.0	100	8.0	4	●	●	●
4BE-R5.0L75	8.0	R 4.0	20.0	75	8.0	4	●	●	●
4BE-R5.0L100	10.0	R 5.0	20.0	100	10.0	4	●	●	●
4BE-R6.0L75	12.0	R 6.0	20.0	75	12.0	4	●	●	●
4BE-R7.0L100	14.0	R 7.0	24.0	100	14.0	4	●	●	●
4BE-R8.0L100	16.0	R 8.0	24.0	100	16.0	4	●	●	●
4BE-R10.0L150	20.0	R 10.0	30.0	150	20.0	4	●	●	●
4BE-R12.5L150	25.0	R 12.5	35.0	150	25.0	4	●	●	●

註: 有●者表示有庫存

NOTE: ● means items in stock

切削條件表請參考第74頁

鎢鋼 2刃立銑刀

TUNGSTEN CARBIDE 2-FLUTE END MILL

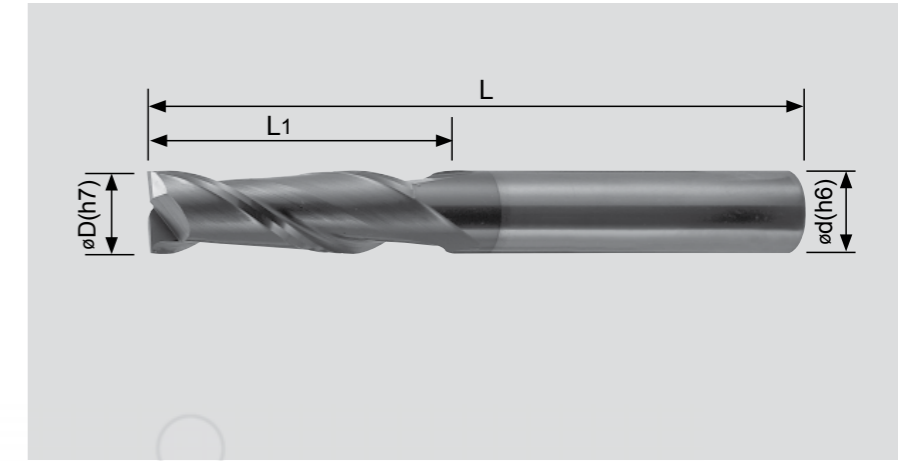


$d \leq 3$ -0.005 ~ -0.028
 $3 < d \leq 6$ -0.015 ~ -0.038
 $6 < d \leq 18$ -0.020 ~ -0.047
 $18 < d$ -0.020 ~ -0.053

- 超細微粒碳化鎢材質
- Micro-Grain Tungsten Carbide

適用材質：
 碳素鋼、模具鋼、合金鋼、
 工具鋼、鑄鐵、不鏽鋼、熱處理鋼、焊補鋼料。

Applicable materials:
 Carbon steel, mold steel,
 alloy steel, tool steel, stainless steel,
 heat-treated steel, welded steel, cast iron.



單位: Unit : mm

型號 EDP NO.	刃徑 D Flute Dia.	刃長 L1 Length of Cut	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number	AK45	AK925	PK66
2E-D1.0L50	1.0	3.0	50	4.0	2	●	●	●
2E-D1.5L50	1.5	4.0	50	4.0	2	●	●	●
2E-D2.0L50	2.0	6.0	50	4.0	2	●	●	●
2E-D2.5L50	2.5	7.0	50	4.0	2	●	●	●
2E-D3.0L50	3.0	8.0	50	4.0	2	●	●	●
2E-D3.5L50	3.5	10.0	50	4.0	2	●	●	●
2E-D4.0L50	4.0	10.0	50	4.0	2	●	●	●
2E-D4.5L50	4.5	13.0	50	6.0	2	●	●	●
2E-D5.0L50	5.0	13.0	50	6.0	2	●	●	●
2E-D5.5L50	5.5	15.0	50	6.0	2	●	●	●
2E-D6.0L50	6.0	15.0	50	6.0	2	●	●	●
2E-D6.5L60	6.5	20.0	60	8.0	2	●	●	●
2E-D7.0L60	7.0	20.0	60	8.0	2	●	●	●
2E-D7.5L60	7.5	22.0	60	8.0	2	●	●	●
2E-D8.0L60	8.0	22.0	60	8.0	2	●	●	●
2E-D8.5L75	8.5	25.0	75	10.0	2	●	●	●
2E-D9.0L75	9.0	25.0	75	10.0	2	●	●	●
2E-D9.5L75	9.5	25.0	75	10.0	2	●	●	●
2E-D10.0L75	10.0	25.0	75	10.0	2	●	●	●
2E-D10.5L75	10.5	30.0	75	12.0	2	●	●	●
2E-D11.0L75	11.0	30.0	75	12.0	2	●	●	●
2E-D11.5L75	11.5	30.0	75	12.0	2	●	●	●
2E-D12.0L75	12.0	30.0	75	12.0	2	●	●	●
2E-D12.5L80	12.5	30.0	80	14.0	2	●	●	●
2E-D13.0L80	13.0	32.0	80	14.0	2	●	●	●
2E-D14.0L80	14.0	35.0	80	14.0	2	●	●	●
2E-D15.0L80	15.0	35.0	80	16.0	2	●	●	●
2E-D16.0L80	16.0	45.0	80	16.0	2	●	●	●
2E-D17.0L100	17.0	45.0	100	18.0	2	●	●	●
2E-D18.0L100	18.0	45.0	100	18.0	2	●	●	●
2E-D19.0L100	19.0	45.0	100	20.0	2	●	●	●
2E-D20.0L100	20.0	45.0	100	20.0	2	●	●	●

註: 有●者表示有庫存

NOTE: ● means items in stock

切削條件表請參考第75頁

錫鋼 3刃立銑刀

TUNGSTEN CARBIDE 3-FLUTE SQUARE END MILL



$d \leq 3$ -0.005 ~ -0.028
 $3 < d \leq 6$ -0.015 ~ -0.038
 $6 < d \leq 18$ -0.020 ~ -0.047
 $18 < d$ -0.020 ~ -0.053

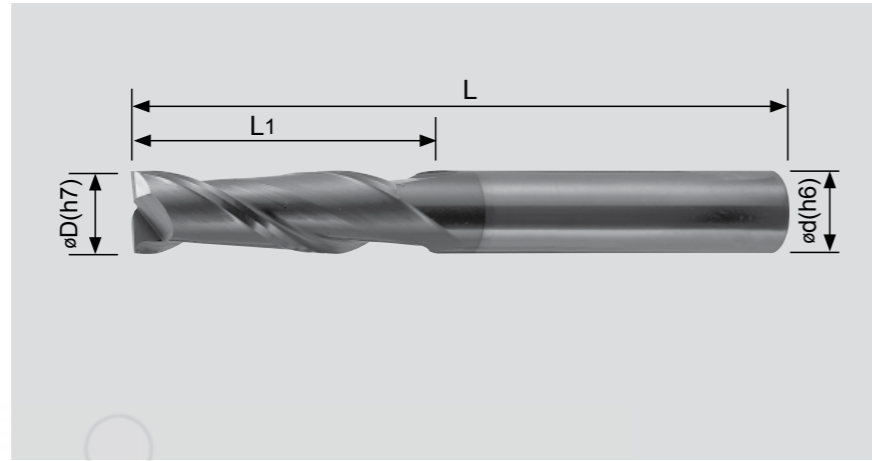
- 超細微粒碳化錫材質
- Micro-Grain Tungsten Carbide

適用材質：

碳素鋼、模具鋼、合金鋼、
工具鋼、鑄鐵、不鏽鋼、
熱處理鋼、焊補鋼料。

Applicable materials:

Carbon steel, mold steel,
alloy steel, tool steel, cast iron, stainless steel,
heat-treated steel, welded steel.



單位: Unit : mm

型號 EDP NO.	刃徑 D Flute Dia.	刃長 L1 Length of Cut	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number	AK45	AK925	PK66
3E-D3.0L50	3.0	8.0	50	4.0	3	●	●	●
3E-D4.0L50	4.0	10.0	50	4.0	3	●	●	●
3E-D3.0L50-6	3.0	8.0	50	6.0	3	●	●	●
3E-D4.0L50-6	4.0	10.0	50	6.0	3	●	●	●
3E-D5.0L50	5.0	13.0	50	6.0	3	●	●	●
3E-D6.0L50	6.0	15.0	50	6.0	3	●	●	●
3E-D7.0L60	7.0	20.0	60	8.0	3	●	●	●
3E-D8.0L60	8.0	20.0	60	8.0	3	●	●	●
3E-D10.0L75	10.0	25.0	75	10.0	3	●	●	●
3E-D12.0L75	12.0	30.0	75	12.0	3	●	●	●
3E-D14.0L75	14.0	35.0	75	14.0	3	●	●	●
3E-D16.0L100	16.0	45.0	100	16.0	3	●	●	●

註: 有●者表示有庫存

NOTE: ● means items in stock

切削條件表請參考第76頁

錫鋼 2刃點數型立銑刀

TUNGSTEN CARBIDE 2-FLUTE DECIMAL END MILL



$d \leq 3$ -0.005 ~ -0.028
 $3 < d \leq 6$ -0.015 ~ -0.038
 $6 < d \leq 18$ -0.020 ~ -0.047
 $18 < d$ -0.020 ~ -0.053

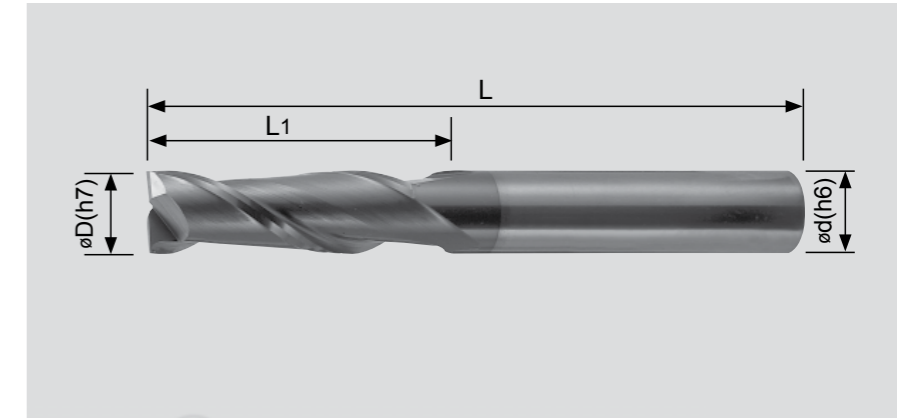
- 超細微粒碳化錫材質
- Micro-Grain Tungsten Carbide

適用材質：

碳素鋼、模具鋼、合金鋼、工具鋼、不鏽鋼、
鑄鐵、熱處理鋼料、焊補鋼料。

Applicable materials:

Carbon steel, mold steel, alloy steel, tool steel, cast iron,
stainless steel, heat-treated steel, welded steel.



單位: Unit : mm

型號 EDP NO.	刃徑 D Flute Dia.	刃長 L1 Length of Cut	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number	AK45
2E-D1.1L50	1.1	3	50	4.0	2	●
2E-D1.2L50	1.2	3	50	4.0	2	●
2E-D1.3L50	1.3	3	50	4.0	2	●
2E-D1.4L50	1.4	3	50	4.0	2	●
2E-D1.6L50	1.6	5	50	4.0	2	●
2E-D1.7L50	1.7	5	50	4.0	2	●
2E-D1.8L50	1.8	5	50	4.0	2	●
2E-D1.9L50	1.9	5	50	4.0	2	●
2E-D2.1L50	2.1	6	50	4.0	2	●
2E-D2.2L50	2.2	6	50	4.0	2	●
2E-D2.3L50	2.3	6	50	4.0	2	●
2E-D2.4L50	2.4	6	50	4.0	2	●
2E-D2.6L50	2.6	8	50	4.0	2	●
2E-D2.7L50	2.7	8	50	4.0	2	●
2E-D2.8L50	2.8	8	50	4.0	2	●
2E-D2.9L50	2.9	8	50	4.0	2	●
2E-D3.1L50	3.1	9	50	4.0	2	●
2E-D3.2L50	3.2	9	50	4.0	2	●
2E-D3.3L50	3.3	9	50	4.0	2	●
2E-D3.4L50	3.4	9	50	4.0	2	●
2E-D3.6L50	3.6	10	50	4.0	2	●
2E-D3.7L50	3.7	10	50	4.0	2	●
2E-D3.8L50	3.8	10	50	4.0	2	●
2E-D3.9L50	3.9	10	50	4.0	2	●
2E-D4.1L50	4.1	12	50	6.0	2	●
2E-D4.2L50	4.2	12	50	6.0	2	●
2E-D4.3L50	4.3	12	50	6.0	2	●
2E-D4.4L50	4.4	12	50	6.0	2	●
2E-D4.6L50	4.6	13	50	6.0	2	●
2E-D4.7L50	4.7	13	50	6.0	2	●
2E-D4.8L50	4.8	13	50	6.0	2	●
2E-D4.9L50	4.9	13	50	6.0	2	●
2E-D5.1L50	5.1	14	50	6.0	2	●
2E-D5.2L50	5.2	14	50	6.0	2	●
2E-D5.3L50	5.3	14	50	6.0	2	●
2E-D5.4L50	5.4	14	50	6.0	2	●
2E-D5.6L50	5.6	15	50	6.0	2	●
2E-D5.7L50	5.7	15	50	6.0	2	●
2E-D5.8L50	5.8	15	50	6.0	2	●
2E-D5.9L50	5.9	15	50	6.0	2	●
2E-D6.1L60	6.1	18	60	8.0	2	●
2E-D6.2L60	6.2	18	60	8.0	2	●
2E-D6.3L60	6.3	18	60	8.0	2	●
2E-D6.4L60	6.4	18	60	8.0	2	●

註: 有●者表示有庫存

NOTE: ● means items in stock

型號 EDP NO.	刃徑 D Flute Dia.	刃長 L1 Length of Cut	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number	AK45
2E-D6.6L60	6.6	18	60	8.0	2	●
2E-D6.7L60	6.7	18	60	8.0	2	●
2E-D6.8L60	6.8	18	60	8.0	2	●
2E-D6.9L60	6.9	18	60	8.0	2	●
2E-D7.1L60	7.1	20	60	8.0	2	●
2E-D7.2L60	7.2	20	60	8.0	2	●
2E-D7.3L60	7.3	20	60	8.0	2	●
2E-D7.4L60	7.4	20	60	8.0	2	●
2E-D7.6L60	7.6	22	60	8.0	2	●
2E-D7.7L60	7.7	22	60	8.0	2	●
2E-D7.8L60	7.8	22	60	8.0	2	●
2E-D7.9L60	7.9	22	60	8.0	2	●
2E-D8.1L75	8.1	22	75	10.0	2	●
2E-D8.2L75	8.2	22	75	10.0	2	●
2E-D8.3L75	8.3	22	75	10.0	2	●
2E-D8.4L75	8.4	22	75	10.0	2	●
2E-D8.6L75	8.6	25	75	10.0	2	●
2E-D8.7L75	8.7	25	75	10.0	2	●
2E-D8.8L75	8.8	25	75	10.0	2	●
2E-D8.9L75	8.9	25	75	10.0	2	●
2E-D9.1L75	9.1	25	75	10.0	2	●
2E-D9.2L75	9.2	25	75	10.0	2	●
2E-D9.3L75	9.3	25	75	10.0	2	●
2E-D9.4L75	9.4	25	75	10.0	2	●
2E-D9.6L75	9.6	25	75	10.0	2	●
2E-D9.7L75	9.7	25	75	10.0	2	●
2E-D9.8L75	9.8	25	75	10.0	2	●
2E-D9.9L75	9.9	25	75	10.0	2	●
2E-D10.1L75	10.1	30	75	12.0	2	●
2E-D10.2L75	10.2	30	75	12.0	2	●
2E-D10.3L75	10.3	30	75	12.0	2	●
2E-D10.4L75	10.4	30	75	12.0	2	●
2E-D10.6L75	10.6	30	75	12.0	2	●
2E-D10.7L75	10.7	30	75	12.0	2	●
2E-D10.8L75	10.8	30	75	12.0	2	●
2E-D10.9L75	10.9	30	75	12.0	2	●
2E-D11.1L75	11.1	30	75	12.0	2	●
2E-D11.2L75	11.2	30	75	12.0	2	●
2E-D11.3L75	11.3	30	75	12.0	2	●
2E-D11.4L75	11.4	30	75	12.0	2	●
2E-D11.6L75	11.6	30	75	12.0	2	●
2E-D11.7L75	11.7	30	75	12.0	2	●
2E-D11.8L75	11.8	30	75	12.0	2	●
2E-D11.9L75	11.9	30	75	12.0	2	●

切削條件表請參考第75頁

錫鋼 2刃斜度立銑刀

TUNGSTEN CARBIDE TAPER 2-FLUTE END MILL



$d \leq 3$ -0.005 ~ -0.028
 $3 < d \leq 6$ -0.015 ~ -0.038
 $6 < d \leq 18$ -0.020 ~ -0.047
 $18 < d$ -0.020 ~ -0.053

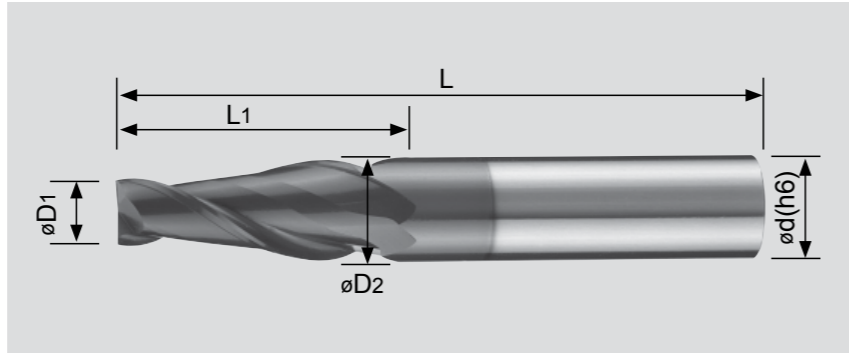
- 超細微粒碳化錫材質
- Micro-Grain Tungsten Carbide

適用材質：

碳素鋼、模具鋼、合金鋼、工具鋼、不鏽鋼、鑄鐵、熱處理鋼。

Applicable materials:

Carbon steel, mold steel, tool steel, alloy steel, cast iron, stainless steel, heat-treated steel.



單位: Unit : mm

型號 EDP NO.	刀先徑 D1 Front Flute Dia.	單斜角 Flute Taper	刃長 L1 Length of Cut	大端徑 D2 Rea Flute Dia.	全長 L Overall Length	柄徑 d Shank Diameter	2刃數 Flute Number	AK45
2TP-D1.0T05L50	1.0	0.5°	4.0	1.07	50	4.0	2	●
2TP-D1.0T10L50	1.0	1.0°	4.0	1.14	50	4.0	2	●
2TP-D1.0T15L50	1.0	1.5°	4.0	1.21	50	4.0	2	●
2TP-D1.0T20L50	1.0	2.0°	4.0	1.28	50	4.0	2	●
2TP-D1.0T25L50	1.0	2.5°	4.0	1.35	50	4.0	2	●
2TP-D1.0T30L50	1.0	3.0°	4.0	1.42	50	4.0	2	●
2TP-D1.0T50L50	1.0	5.0°	4.0	1.70	50	4.0	2	●
2TP-D1.5T05L50	1.5	0.5°	5.0	1.59	50	4.0	2	●
2TP-D1.5T10L50	1.5	1.0°	5.0	1.68	50	4.0	2	●
2TP-D1.5T15L50	1.5	1.5°	5.0	1.76	50	4.0	2	●
2TP-D1.5T20L50	1.5	2.0°	5.0	1.85	50	4.0	2	●
2TP-D1.5T25L50	1.5	2.5°	5.0	1.93	50	4.0	2	●
2TP-D1.5T30L50	1.5	3.0°	5.0	2.02	50	4.0	2	●
2TP-D1.5T50L50	1.5	5.0°	5.0	2.37	50	4.0	2	●
2TP-D2.0T05L50	2.0	0.5°	6.0	2.10	50	4.0	2	●
2TP-D2.0T10L50	2.0	1.0°	6.0	2.21	50	4.0	2	●
2TP-D2.0T15L50	2.0	1.5°	6.0	2.31	50	4.0	2	●
2TP-D2.0T20L50	2.0	2.0°	6.0	2.41	50	4.0	2	●
2TP-D2.0T25L50	2.0	2.5°	6.0	2.52	50	4.0	2	●
2TP-D2.0T30L50	2.0	3.0°	6.0	2.62	50	4.0	2	●
2TP-D2.0T50L50	2.0	5.0°	6.0	3.05	50	4.0	2	●
2TP-D2.5T05L50	2.5	0.5°	8.0	2.64	50	4.0	2	●
2TP-D2.5T10L50	2.5	1.0°	8.0	2.78	50	4.0	2	●
2TP-D2.5T15L50	2.5	1.5°	8.0	2.91	50	4.0	2	●
2TP-D2.5T20L50	2.5	2.0°	8.0	3.05	50	4.0	2	●
2TP-D2.5T25L50	2.5	2.5°	8.0	3.20	50	4.0	2	●
2TP-D2.5T30L50	2.5	3.0°	8.0	3.33	50	4.0	2	●
2TP-D2.5T50L50	2.5	5.0°	8.0	3.90	50	4.0	2	●
2TP-D3.0T05L50	3.0	0.5°	10.0	3.17	50	6.0	2	●
2TP-D3.0T10L50	3.0	1.0°	10.0	3.35	50	6.0	2	●
2TP-D3.0T15L50	3.0	1.5°	10.0	3.52	50	6.0	2	●
2TP-D3.0T20L50	3.0	2.0°	10.0	3.69	50	6.0	2	●
2TP-D3.0T25L50	3.0	2.5°	10.0	3.87	50	6.0	2	●
2TP-D3.0T30L50	3.0	3.0°	10.0	4.05	50	6.0	2	●
2TP-D3.0T50L50	3.0	5.0°	10.0	4.75	50	6.0	2	●
2TP-D3.0T70L50	3.0	7.0°	10.0	6.00	50	6.0	2	●
2TP-D3.0T100L60	3.0	10.0°	10.0	6.52	60	8.0	2	●

註: 有●者表示有庫存
NOTE: ● means items in stock

切削條件表請參考第77頁

錫鋼 4刃斜度立銑刀

TUNGSTEN CARBIDE TAPER 4-FLUTE END MILL



$d \leq 3$ -0.005 ~ -0.028
 $3 < d \leq 6$ -0.015 ~ -0.038
 $6 < d \leq 18$ -0.020 ~ -0.047
 $18 < d$ -0.020 ~ -0.053

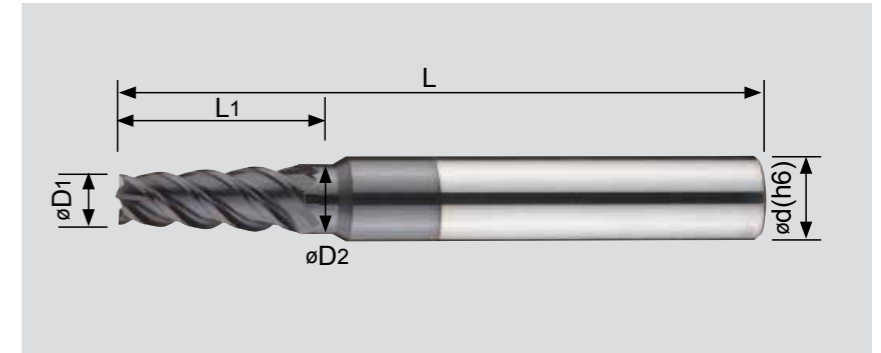
- 超細微粒碳化錫材質
- Micro-Grain Tungsten Carbide

適用材質：

碳素鋼、模具鋼、合金鋼、工具鋼、不鏽鋼、鑄鐵、熱處理鋼。

Applicable material:

Carbon steel, mold steel, alloy steel, tool steel, stainless steel, cast iron, heat-treated steel.



單位: Unit : mm

型號 EDP NO.	刀先徑 D1 Front Flute Dia.	單斜角 Flute Taper	刃長 L1 Length of Cut	大端徑 D2 Rea Flute Dia.	全長 L Overall Length	柄徑 d Shank Diameter	2刃數 Flute Number	AK45
4TP-D4.0T05L60	4.0	0.5°	15.0	4.26	60	6.0	4	●
4TP-D4.0T10L60	4.0	1.0°	15.0	4.52	60	6.0	4	●
4TP-D4.0T15L60	4.0	1.5°	15.0	4.79	60	6.0	4	●
4TP-D4.0T20L60	4.0	2.0°	15.0	5.04	60	6.0	4	●
4TP-D4.0T25L60	4.0	2.5°	15.0	5.31	60	6.0	4	●
4TP-D4.0T30L60	4.0	3.0°	15.0	5.57	60	6.0	4	●
4TP-D4.0T50L75	4.0	5.0°	15.0	6.62	75	8.0	4	●
4TP-D4.0T70L75	4.0	7.0°	16.0	8.00	75	8.0	4	●
4TP-D4.0T100L75	4.0	10.0°	17.0	10.00	75	10.0	4	●
4TP-D5.0T05L60	5.0	0.5°	20.0	5.34	60	6.0	4	●
4TP-D5.0T10L60	5.0	1.0°	20.0	5.70	60	6.0	4	●
4TP-D5.0T15L60	5.0	1.5°	19.6	6.00	60	6.0	4	●
4TP-D5.0T20L75	5.0	2.0°	20.0	6.39	75	8.0	4	●
4TP-D5.0T25L75	5.0	2.5°	20.0	6.74	75	8.0	4	●
4TP-D5.0T30L75	5.0	3.0°	20.0	7.10	75	8.0	4	●
4TP-D5.0T50L75	5.0	5.0°	20.0	8.50	75	10.0	4	●
4TP-D5.0T70L75	5.0	7.0°	20.0	10.00	75	10.0	4	●
4TP-D5.0T100L75	5.0	10.0°	20.0	12.00	75	12.0	4	●
4TP-D6.0T05L75	6.0	0.5°	20.0	6.35	75	8.0	4	●
4TP-D6.0T10L75	6.0	1.0°	20.0	6.70	75	8.0	4	●
4TP-D6.0T15L75	6.0	1.5°	20.0	7.05	75	8.0	4	●
4TP-D6.0T20L75	6.0	2.0°	20.0	7.40	75	8.0	4	●
4TP-D6.0T25L75	6.0	2.5°	20.0	7.75	75	8.0	4	●
4TP-D6.0T30L75	6.0	3.0°	20.0	8.10	75	10.0	4	●
4TP-D6.0T50L75	6.0	5.0°	24.0	9.50	75	10.0	4	●
4TP-D6.0T70L80	6.0	7.0°	22.0	12.00	80	12.0	4	●
4TP-D6.0T100L80	6.0	10.0°	25.0	14.00	80	16.0	4	●
4TP-D8.0T05L75	8.0	0.5°	25.0	8.44	75	10.0	4	●
4TP-D8.0T10L75	8.0	1.0°	25.0	8.87	75	10.0	4	●
4TP-D8.0T15L75	8.0	1.5°	25.0	9.31	75	10.0	4	●
4TP-D8.0T20L75	8.0	2.0°	25.0	9.75	75	10.0	4	●
4TP-D8.0T30L75	8.0	3.0°	25.0	10.62	75	12.0	4	●
4TP-D8.0T50L80	8.0	5.0°	25.0	12.37	80	16.0	4	●
4TP-D8.0T70L100	8.0	7.0°	32.0	16.00	100	16.0	4	●
4TP-D8.0T100L100	8.0	10.0°	28.0	18.00	100	18.0	4	●
4TP-D10.0T05L100	10.0	0.5°	35.0	10.61	100	12.0	4	●
4TP-D10.0T10L100	10.0	1.0°	35.0	11.22	100	12.0	4	●
4TP-D10.0T15L100	10.0	1.5°	35.0	11.83	100	12.0	4	●
4TP-D10.0T20L100	10.0	2.0°	35.0	13.06	100	16.0	4	●
4TP-D10.0T30L100	10.0	3.0°	35.0	13.67	100	16.0	4	●
4TP-D10.0T50L100	10.0	5.0°	34.0	16.00	100	16.0	4	●

註: 有●者表示有庫存 NOTE: ● means items in stock

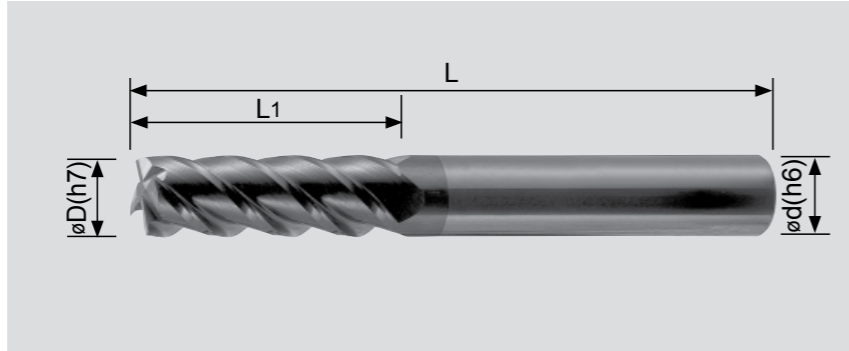
切削條件表請參考第77頁

錫鋼 4刃立銑刀

TUNGSTEN CARBIDE 4-FLUTE END MILL



$d \leq 3$	-0.005 ~ -0.028
$3 < d \leq 6$	-0.015 ~ -0.038
$6 < d \leq 18$	-0.020 ~ -0.047
$18 < d$	-0.020 ~ -0.053



- 超細微粒碳化錫材質
- Micro-Grain Tungsten Carbide

適用材質：

碳素鋼、模具鋼、合金鋼、工具鋼、不鏽鋼、鑄鐵、熱處理鋼料、焊補鋼料。

Applicable material:

Carbon steel, mold steel, alloy steel, tool steel, stainless steel, cast iron, heat-treated steel, welded steel.

單位: Unit : mm

型號 EDP NO.	刃徑 D Flute Dia.	刃長 L1 Length of Cut	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number	AK45	AK925	PK66
4E-D3.0L50	3.0	8.0	50	4.0	4	●	●	●
4E-D3.0L50-6	3.0	8.0	50	6.0	4	●	●	●
4E-D3.5L50	3.5	10.0	50	4.0	4	●	●	●
4E-D4.0L50	4.0	10.0	50	4.0	4	●	●	●
4E-D4.0L50-6	4.0	10.0	50	6.0	4	●	●	●
4E-D4.5L50	4.5	13.0	50	6.0	4	●	●	●
4E-D5.0L50	5.0	13.0	50	6.0	4	●	●	●
4E-D5.5L50	5.5	15.0	50	6.0	4	●	●	●
4E-D6.0L50	6.0	15.0	50	6.0	4	●	●	●
4E-D6.5L60	6.5	20.0	60	8.0	4	●	●	●
4E-D7.0L60	7.0	20.0	60	8.0	4	●	●	●
4E-D7.5L60	7.5	22.0	60	8.0	4	●	●	●
4E-D8.0L60	8.0	22.0	60	8.0	4	●	●	●
4E-D8.5L75	8.5	25.0	75	10.0	4	●	●	●
4E-D9.0L75	9.0	25.0	75	10.0	4	●	●	●
4E-D9.5L75	9.5	25.0	75	10.0	4	●	●	●
4E-D10.0L75	10.0	25.0	75	10.0	4	●	●	●
4E-D10.5L75	10.5	30.0	75	12.0	4	●	●	●
4E-D11.0L75	11.0	30.0	75	12.0	4	●	●	●
4E-D11.5L75	11.5	30.0	75	12.0	4	●	●	●
4E-D12.0L75	12.0	30.0	75	12.0	4	●	●	●
4E-D14.0L80	14.0	35.0	80	14.0	4	●	●	●
4E-D16.0L100	16.0	45.0	100	16.0	4	●	●	●
4E-D18.0L100	18.0	45.0	100	18.0	4	●	●	●
4E-D20.0L100	20.0	45.0	100	20.0	4	●	●	●
4E-D25.0L100	25.0	45.0	100	25.0	4	●	●	●

註: 有●者表示有庫存

NOTE: ● means items in stock

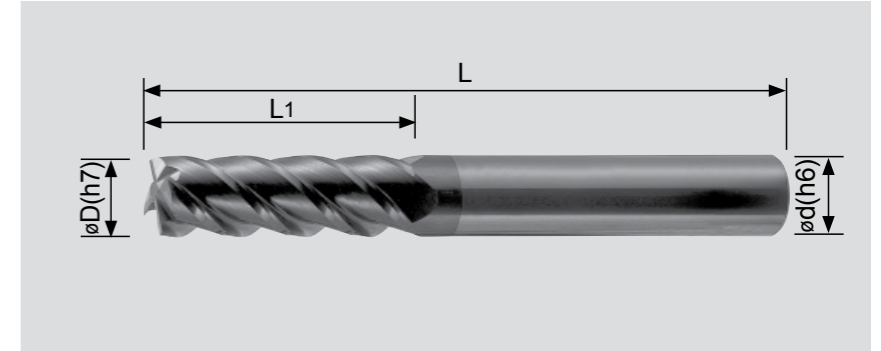
切削條件表請參考第78頁

錫鋼 4刃點數型立銑刀

TUNGSTEN CARBIDE 4-FLUTE DECIMAL END MILL



$d \leq 3$	-0.005 ~ -0.028
$3 < d \leq 6$	-0.015 ~ -0.038
$6 < d \leq 18$	-0.020 ~ -0.047
$18 < d$	-0.020 ~ -0.053



- 超細微粒碳化錫材質
- Micro-Grain Tungsten Carbide

適用材質：

碳素鋼、模具鋼、合金鋼、工具鋼、鑄鐵、不鏽鋼、熱處理鋼料、焊補鋼料。

Applicable material:

Carbon steel, mold steel, alloy steel, stainless steel, tool steel, cast iron, heat-treated steel, welded steel.

單位: Unit : mm

型號 EDP NO.	刃徑 D Flute Dia.	刃長 L1 Length of Cut	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number	AK45
4E-D3.1L50	3.1	9	50	4.0	4	●
4E-D3.2L50	3.2	9	50	4.0	4	●
4E-D3.3L50	3.3	9	50	4.0	4	●
4E-D3.4L50	3.4	9	50	4.0	4	●
4E-D3.6L50	3.6	10	50	4.0	4	●
4E-D3.7L50	3.7	10	50	4.0	4	●
4E-D3.8L50	3.8	10	50	4.0	4	●
4E-D3.9L50	3.9	10	50	4.0	4	●
4E-D4.1L50	4.1	12	50	6.0	4	●
4E-D4.2L50	4.2	12	50	6.0	4	●
4E-D4.3L50	4.3	12	50	6.0	4	●
4E-D4.4L50	4.4	12	50	6.0	4	●
4E-D4.6L50	4.6	13	50	6.0	4	●
4E-D4.7L50	4.7	13	50	6.0	4	●
4E-D4.8L50	4.8	13	50	6.0	4	●
4E-D4.9L50	4.9	13	50	6.0	4	●
4E-D5.1L50	5.1	14	50	6.0	4	●
4E-D5.2L50	5.2	14	50	6.0	4	●
4E-D5.3L50	5.3	14	50	6.0	4	●
4E-D5.4L50	5.4	14	50	6.0	4	●
4E-D5.6L50	5.6	15	50	6.0	4	●
4E-D5.7L50	5.7	15	50	6.0	4	●
4E-D5.8L50	5.8	15	50	6.0	4	●
4E-D5.9L50	5.9	15	50	6.0	4	●
4E-D6.1L60	6.1	20	60	8.0	4	●
4E-D6.2L60	6.2	20	60	8.0	4	●
4E-D6.3L60	6.3	20	60	8.0	4	●
4E-D6.4L60	6.4	20	60	8.0	4	●
4E-D6.6L60	6.6	20	60	8.0	4	●
4E-D6.7L60	6.7	20	60	8.0	4	●
4E-D6.8L60	6.8	20	60	8.0	4	●
4E-D6.9L60	6.9	20	60	8.0	4	●
4E-D7.1L60	7.1	22	60	8.0	4	●
4E-D7.2L60	7.2	22	60	8.0	4	●
4E-D7.3L60	7.3	22	60	8.0	4	●
4E-D7.4L60	7.4	22	60	8.0	4	●

註: 有●者表示有庫存

NOTE: ● means items in stock

型號 EDP NO.	刃徑 D Flute Dia.	刃長 L1 Length of Cut	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number	AK45
4E-D7.6L60	7.6	22	60	8.0	4	●
4E-D7.7L60	7.7	22	60	8.0	4	●
4E-D7.8L60	7.8	22	60	8.0	4	●
4E-D7.9L60	7.9	22	60	8.0	4	●
4E-D8.1L75	8.1	25	75	10.0	4	●
4E-D8.2L75	8.2	25	75	10.0	4	●
4E-D8.3L75	8.3	25	75	10.0	4	●
4E-D8.4L75	8.4	25	75	10.0	4	●
4E-D8.6L75	8.6	25	75	10.0	4	●
4E-D8.7L75	8.7	25	75	10.0	4	●
4E-D8.8L75	8.8	25	75	10.0	4	●
4E-D8.9L75	8.9	25	75	10.0	4	●
4E-D9.1L75	9.1	25	75	10.0	4	●
4E-D9.2L75	9.2	25	75	10.0	4	●
4E-D9.3L75	9.3	25	75	10.0	4	●
4E-D9.4L75	9.4	25	75	10.0	4	●
4E-D9.6L75	9.6	25	75	10.0	4	●
4E-D9.7L75	9.7	25	75	10.0	4	●
4E-D9.8L75	9.8	25	75	10.0	4	●
4E-D9.9L75	9.9	25	75	10.0	4	●
4E-D10.1L75	10.1	30	75	12.0	4	●
4E-D10.2L75	10.2	30	75	12.0	4	●
4E-D10.3L75	10.3	30	75	12.0	4	●
4E-D10.4L75	10.4	30	75	12.0	4	●
4E-D10.6L75	10.6	30	75	12.0	4	●
4E-D10.7L75	10.7	30	75	12.0	4	●
4E-D10.8L75	10.8	30	75	12.0	4	●
4E-D10.9L75	10.9	30	75	12.0	4	●
4E-D11.1L75	11.1	30	75	12.0	4	●
4E-D11.2L75	11.2	30	75	12.0	4	●
4E-D11.3L75	11.3	30	75	12.0	4	●
4E-D11.4L75	11.4	30	75	12.0	4	●
4E-D11.6L75	11.6	30	75	12.0	4	●
4E-D11.7L75	11.7	30	75	12.0	4	●
4E-D11.8L75	11.8	30	75	12.0	4	●
4E-D11.9L75	11.9	30	75	12.0	4	●

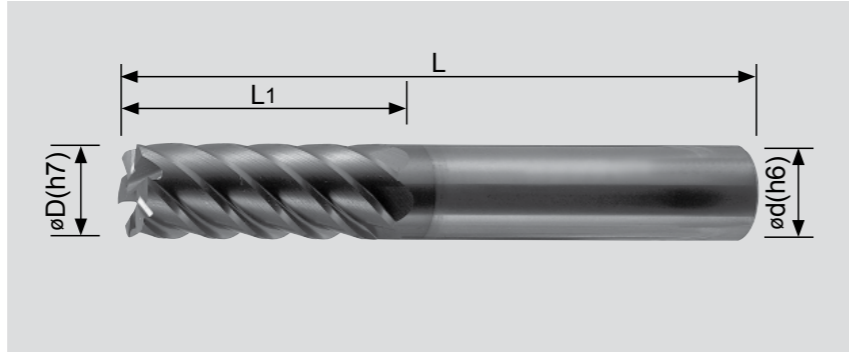
切削條件表請參考第78頁

鎢鋼 6,8刃立銑刀

TUNGSTEN CARBIDE 6,8-FLUTE END MILL



$d \leq 3$	-0.005 ~ -0.028
$3 < d \leq 6$	-0.015 ~ -0.038
$6 < d \leq 18$	-0.020 ~ -0.047
$18 < d$	-0.020 ~ -0.053



- 超細微粒碳化鎢材質
- Micro-Grain Tungsten Carbide

適合材質：
碳素鋼、模具鋼、合金鋼、工具鋼、
不鏽鋼、鑄鐵、熱處理鋼料、焊補鋼料。

Applicable material:
Carbon steel, mold steel, alloy steel,
tool steel, cast iron, stainless steel,
heat-treated steel, welded steel.

單位: Unit : mm

型號 EDP NO.	刃徑 D Flute Dia.	刃長 L1 Length of Cut	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number	AK45	AK925
6E-D6.0L50	6.0	15.0	50	6.0	6	●	●
6E-D8.0L75	8.0	25.0	75	8.0	6	●	●
6E-D10.0L75	10.0	25.0	75	10.0	6	●	●
6E-D12.0L75	12.0	30.0	75	12.0	6	●	●
6E-D16.0L100	16.0	45.0	100	16.0	6	●	●
8E-D20.0L100	20.0	45.0	100	20.0	8	●	●
8E-D25.0L100	25.0	45.0	100	25.0	8	●	●

註: 有●者表示有庫存
NOTE: ● means items in stock

切削條件表請參考第81頁

鎢鋼 鋁用 2刃球形立銑刀

TUNGSTEN CARBIDE 2-FLUTE BALL END MILL



$3 < d \leq 6$	-0.015 ~ -0.038
$6 < d \leq 18$	-0.020 ~ -0.047
$18 < d$	-0.020 ~ -0.053



- 超細微粒碳化鎢材質
- Micro-Grain Tungsten Carbide

適用材質：
鋁合金、銅合金、鎂合金、各種軟質材質。

Applicable materials:
Aluminum alloy, copper alloy, magnesium alloy,
and various soft materials.

主要特性：
切刃口銳利配合較寬大之排屑溝槽設計，適合軟質材料
之切削，可在高速M/C上進行高速切削

Features:
The sharp edge combined with oversized flute
makes it ideal for cutting soft materials, excellent
for high speed cutting on a high speed machining
center.

單位: Unit : mm

型號 EDP NO.	刃徑 D Flute Dia.	R 徑 Radius	刃長 L1 Length of Cut	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number	AK45	PK66
2BEAL-R1.0L50	2.0	R 1.0	4.0	50	4.0	2	●	●
2BEAL-R1.5L50	3.0	R 1.5	6.0	50	4.0	2	●	●
2BEAL-R2.0L50	4.0	R 2.0	8.0	50	4.0	2	●	●
2BEAL-R1.5-6L50	3.0	R 1.5	6.0	50	6.0	2	●	●
2BEAL-R2.0-6L50	4.0	R 2.0	8.0	50	6.0	2	●	●
2BEAL-R2.5L50	5.0	R 2.5	10.0	50	6.0	2	●	●
2BEAL-R3.0L50	6.0	R 3.0	12.0	50	6.0	2	●	●
2BEAL-R3.0L75	6.0	R 3.0	12.0	75	6.0	2	●	●
2BEAL-R4.0L60	8.0	R 4.0	16.0	60	8.0	2	●	●
2BEAL-R4.0L100	8.0	R 4.0	16.0	100	8.0	2	●	●
2BEAL-R5.0L75	10.0	R 5.0	20.0	75	10.0	2	●	●
2BEAL-R5.0L100	10.0	R 5.0	20.0	100	10.0	2	●	●
2BEAL-R6.0L100	12.0	R 6.0	20.0	100	12.0	2	●	●

註: 有●者表示有庫存
NOTE: ● means items in stock

切削條件表請參考第82頁

錫鋼 鋁用立銑刀

TUNGSTEN CARBIDE END MILL



$d \leq 3$	-0.005 ~ -0.028
$3 < d \leq 6$	-0.015 ~ -0.038
$6 < d \leq 18$	-0.020 ~ -0.047
$18 < d$	-0.020 ~ -0.053

- 超細微粒碳化錫材質
- 鋁合金加工專用
- Micro-Grain Tungsten Carbide
- Ideal for Aluminum Alloy Machining

適合材質：

鐵鋁合金、銅合金、鎂合金、各種軟質材料。

Applicable materials:

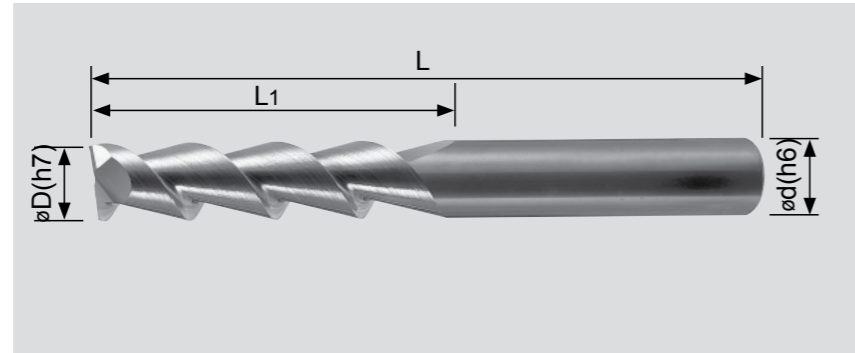
Iron aluminum alloy, copper alloy, magnesium alloy, and various soft materials,

主要特性：

排屑槽較寬大之設計，適合軟質材料之切削，切刃口銳利較不易黏屑，精銑時可得到極佳之表面光滑度可在高速M/C上進行高速切削

Features:

The end mill features oversized flute, and it's ideal for cutting soft materials. The sharp edge avoids chip adhering and provides extremely fine surface effect. Ideal for use on a high speed machining center.



單位: Unit : mm

型號 EDP NO.	刃徑 D Flute Dia.	刃長 L ₁ Length of Cut	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number	AK45	AK925
2EAL-D3.0L50	3.0	9.0	50	6.0	2	●	●
2EAL-D4.0L50	4.0	12.0	50	6.0	2	●	●
2EAL-D5.0L50	5.0	15.0	50	6.0	2	●	●
2EAL-D6.0L50	6.0	18.0	50	6.0	2	●	●
2EAL-D8.0L60	8.0	20.0	60	8.0	2	●	●
2EAL-D10.0L75	10.0	30.0	75	10.0	2	●	●
2EAL-D12.0L75	12.0	32.0	75	12.0	2	●	●
2EAL-D16.0L100	16.0	45.0	100	16.0	3	●	●
2EAL-D20.0L100	20.0	45.0	100	20.0	3	●	●

型號 EDP NO.	刃徑 D Flute Dia.	刃長 L ₁ Length of Cut	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number	AK45	AK925
3EAL-D6.0L50	6.0	18.0	50	6.0	3	●	●
3EAL-D8.0L60	8.0	20.0	60	8.0	3	●	●
3EAL-D10.0L75	10.0	30.0	75	10.0	3	●	●
3EAL-D12.0L75	12.0	32.0	75	12.0	3	●	●
4EAL-D16.0L100	16.0	45.0	100	16.0	4	●	●
4EAL-D20.0L100	20.0	45.0	100	20.0	4	●	●

註: 有●者表示有庫存

NOTE: ● means items in stock

切削條件表請參考第83頁

錫鋼 3刃波浪 粗銑立銑刀

TUNGSTEN CARBIDE 3-FLUTE SINUS EDGE ROUGHING END MILL



$6 < d \leq 18$	-0.020 ~ -0.047
$18 < d$	-0.020 ~ -0.053

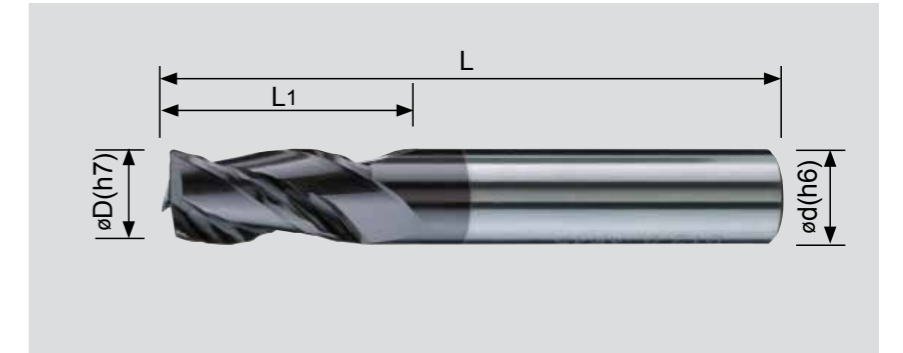
- 超細微粒碳化錫材質
- Micro-Grain Tungsten Carbide

適用材質：

碳素鋼、模具鋼、合金鋼、工具鋼、不鏽鋼、鑄鐵、熱處理鋼料、焊補鋼料。

Applicable material:

Carbon steel, mold steel, alloy steel, tool steel, stainless steel, cast iron, heat-treated steel, welded steel.



單位: Unit : mm

型號 EDP NO.	刃徑 D Flute Dia.	R 徑 Radius	刃長 L ₁ Length of Cut	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number	AK45	AK925
3ET-D6.0L50	6.0	R 0.3	15	50	6.0	3	●	●
3ET-D8.0L60	8.0	R 0.4	19	60	8.0	3	●	●
3ET-D10.0L75	10.0	R 0.5	22	75	10.0	3	●	●
3ET-D12.0L75	12.0	R 0.6	26	75	12.0	3	●	●
3ET-D14.0L80	14.0	R 0.7	30	80	14.0	3	●	●
4ET-D16.0L80	16.0	R 0.8	32	80	16.0	4	●	●
4ET-D18.0L100	18.0	R 0.9	40	100	18.0	4	●	●
4ET-D20.0L100	20.0	R 1.0	40	100	20.0	4	●	●

註: 有●者表示有庫存

NOTE: ● means items in stock

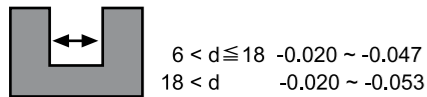
切削條件表請參考第84頁

請採用剛性較強之側固式立銑刀架夾持本刀具。

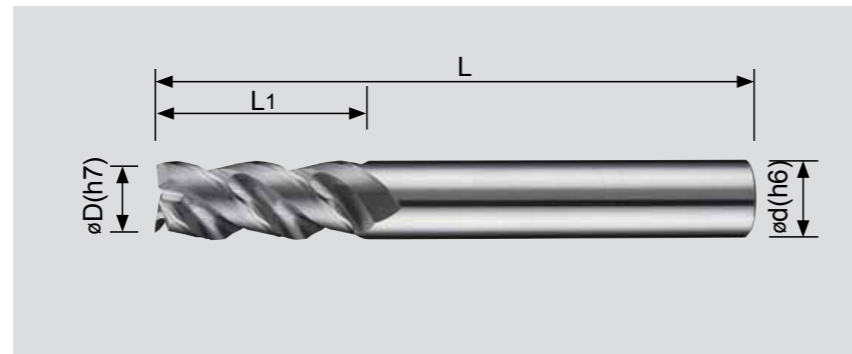
Suggested to use high rigidity side clamping tool holder

鎢鋼 3刃波浪 鋁用立銑刀

TUNGSTEN CARBIDE 3-FLUTE SINUS EDGE ALUMINUM ROUGHING END MILL



- 超細微粒碳化鎢材質
- Micro-Grain Tungsten Carbide



適用材質：
鐵鋁合金、銅合金、鎂合金、
各種軟質材料。

Applicable materials:
Iron aluminum alloy, copper alloy,
magnesium alloy,
and various soft materials,

單位: Unit : mm

型號 EDP NO.	刃徑 D Flute Dia.	刃長 L ₁ Length of Cut	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number	AK45	AK925
3ETAL-D6.0L50	6.0	18.0	50	6.0	3	●	●
3ETAL-D8.0L60	8.0	20.0	60	8.0	3	●	●
3ETAL-D10.0L75	10.0	30.0	75	10.0	3	●	●
3ETAL-D12.0L75	12.0	32.0	75	12.0	3	●	●
4ETAL-D16.0L100	16.0	45.0	100	16.0	4	●	●
4ETAL-D20.0L100	20.0	50.0	100	20.0	4	●	●
4ETAL-D25.0L150	25.0	70.0	150	25.0	4	●	●

註: 有●者表示有庫存

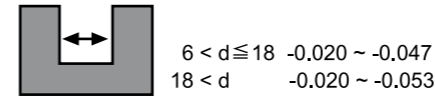
NOTE: ● means items in stock

請採用剛性較強之側固式立銑刀架夾持本刀具。
Suggested to use high rigidity side clamping tool holder

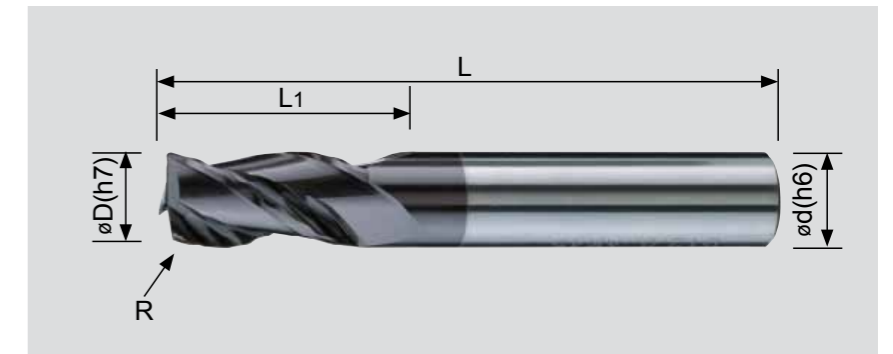
切削條件表請參考第86頁

鎢鋼 3刃波浪 長刃型 粗銑立銑刀

TUNGSTEN CARBIDE 3-FLUTE SINUS EDGE LONG FLUTE ROUGHING END MILL



- 超細微粒碳化鎢材質
- Micro-Grain Tungsten Carbide



適用材質：
碳素鋼、模具鋼、合金鋼、工具鋼、
不鏽鋼、鑄鐵、熱處理鋼料、焊補鋼料。

Applicable materials:
Carbon steel, mold steel, alloy steel,
tool steel, stainless steel, cast iron,
heat-treated steel, welded steel.

單位: Unit : mm

型號 EDP NO.	刃徑 D Flute Dia.	R 徑 Radius	刃長 L ₁ Length of Cut	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number	AK45	AK925
3ETL-D6.0L75	6.0	R 0.3	20.0	75	6.0	3	●	●
3ETL-D8.0L75	8.0	R 0.4	25.0	75	8.0	3	●	●
3ETL-D10.0L80	10.0	R 0.5	30.0	80	10.0	3	●	●
3ETL-D12.0L100	12.0	R 0.6	36.0	100	12.0	3	●	●
3ETL-D14.0L100	14.0	R 0.7	40.0	100	14.0	3	●	●
4ETL-D16.0L100	16.0	R 0.8	45.0	100	16.0	4	●	●
4ETL-D18.0L150	18.0	R 0.9	60.0	150	18.0	4	●	●
4ETL-D20.0L150	20.0	R 1.0	60.0	150	20.0	4	●	●

註: 有●者表示有庫存

NOTE: ● means items in stock

請採用剛性較強之側固式立銑刀架夾持本刀具。
Suggested to use high rigidity side clamping tool holder

切削條件表請參考第85頁

錫鋼 2刃 圓鼻 立銑刀

TUNGSTEN CARBIDE 2-FLUTE CORNER RADIUS END MILL



$d \leq 3$ -0.005 ~ -0.028
 $3 < d \leq 6$ -0.015 ~ -0.038
 $6 < d \leq 18$ -0.020 ~ -0.047
 $18 < d$ -0.020 ~ -0.053

- 超細微粒碳化錫材質
- Micro-Grain Tungsten Carbide

適用材質：

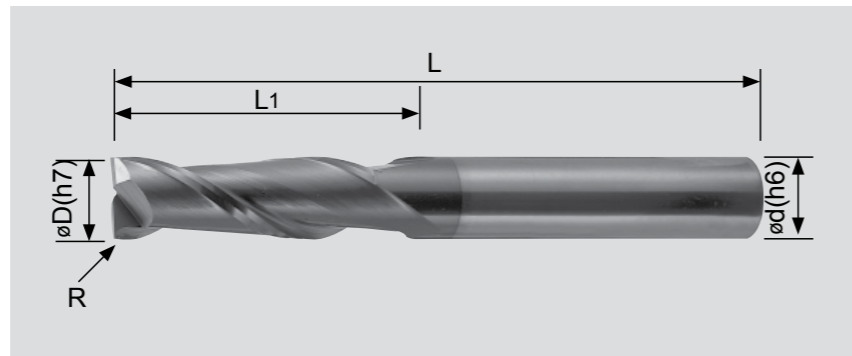
碳素鋼、模具鋼、合金鋼、工具鋼、
不鏽鋼、鑄鐵、熱處理鋼料、焊補鋼料。

Applicable material:

Carbon steel, mold steel, alloy steel, welded steel,
tool steel, stainless steel, cast iron, heat-treated steel.

R角結構適合切削高硬度材，刀尖不易崩裂，
並可替代小徑球型銑刀，可作清角和曲面銑削

The R corner configuration is excellent for cutting
high hardness materials without edge collapse.
Also, it's replacable for small radius ball end mill, and
permitting for corner cleaning and curving surface milling.



單位: Unit : mm

訂購編號 EDP NO.	刃徑 D Flute Dia.	刃長 L1 Length of Cut	R 徑 Radius	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number	AK45	AK925
2ECR-D1.0L50-R02	1.0	2.0	0.2	50	4.0	2	●	●
2ECR-D1.5L50-R02	1.5	3.0	0.2	50	4.0	2	●	●
2ECR-D2.0L50-R02	2.0	5.0	0.2	50	4.0	2	●	●
2ECR-D2.0L50-R05	2.0	5.0	0.5	50	4.0	2	●	●
2ECR-D3.0L50-R02	3.0	6.0	0.2	50	4.0	2	●	●
2ECR-D3.0L50-R05	3.0	6.0	0.5	50	4.0	2	●	●
2ECR-D4.0L50-R02	4.0	8.0	0.2	50	4.0	2	●	●
2ECR-D4.0L50-R05	4.0	8.0	0.5	50	4.0	2	●	●
2ECR-D4.0L50-R10	4.0	8.0	1.0	50	4.0	2	●	●
2ECR-D5.0L50-R02	5.0	12.0	0.2	50	6.0	2	●	●
2ECR-D5.0L50-R05	5.0	12.0	0.5	50	6.0	2	●	●
2ECR-D5.0L50-R10	5.0	12.0	1.0	50	6.0	2	●	●
2ECR-D6.0L50-R02	6.0	20.0	0.2	50	6.0	2	●	●
2ECR-D6.0L50-R05	6.0	20.0	0.5	50	6.0	2	●	●
2ECR-D6.0L50-R10	6.0	20.0	1.0	50	6.0	2	●	●
2ECR-D6.0L50-R20	6.0	20.0	2.0	50	6.0	2	●	●
2ECR-D8.0L60-R02	8.0	25.0	0.2	60	8.0	2	●	●
2ECR-D8.0L60-R05	8.0	25.0	0.5	60	8.0	2	●	●
2ECR-D8.0L60-R10	8.0	25.0	1.0	60	8.0	2	●	●
2ECR-D8.0L60-R20	8.0	25.0	2.0	60	8.0	2	●	●
2ECR-D10.0L75-R05	10.0	30.0	0.5	75	10.0	2	●	●
2ECR-D10.0L75-R10	10.0	30.0	1.0	75	10.0	2	●	●
2ECR-D10.0L75-R15	10.0	30.0	1.5	75	10.0	2	●	●
2ECR-D10.0L75-R20	10.0	30.0	2.0	75	10.0	2	●	●
2ECR-D10.0L75-R30	10.0	30.0	3.0	75	10.0	2	●	●
2ECR-D12.0L75-R05	12.0	30.0	0.5	75	12.0	2	●	●
2ECR-D12.0L75-R10	12.0	30.0	1.0	75	12.0	2	●	●
2ECR-D12.0L75-R15	12.0	30.0	1.5	75	12.0	2	●	●
2ECR-D12.0L75-R20	12.0	30.0	2.0	75	12.0	2	●	●
2ECR-D12.0L75-R30	12.0	30.0	3.0	75	12.0	2	●	●

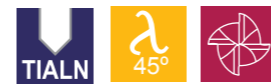
註: 有●者表示有庫存

NOTE: ● means items in stock

切削條件表請參考第87頁

錫鋼 4刃 圓鼻 立銑刀

TUNGSTEN CARBIDE 4-FLUTE CORNER RADIUS END MILL



$d \leq 3$ -0.005 ~ -0.028
 $3 < d \leq 6$ -0.015 ~ -0.038
 $6 < d \leq 18$ -0.020 ~ -0.047
 $18 < d$ -0.020 ~ -0.053

- 超細微粒碳化錫材質
- Micro-Grain Tungsten Carbide

適用材質：

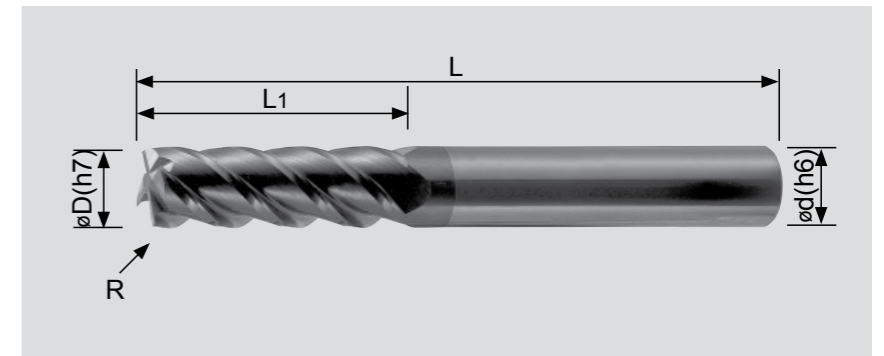
碳素鋼、模具鋼、合金鋼、工具鋼、
不鏽鋼、鑄鐵、熱處理鋼料。

Applicable materials:

Carbon steel, mold steel, alloy steel,
tool steel, stainless steel, cast iron, heat-treated steel.

R角結構適合切削高硬度材，刀尖不易崩裂，
並可替代小徑球型銑刀，可作清角和曲面銑削

The R corner configuration is excellent for cutting
high hardness materials without edge collapse.
Also, it's replacable for small radius ball end mill, and
permitting for corner cleaning and curving surface milling.



單位: Unit : mm

訂購編號 EDP NO.	刃徑 D Flute Dia.	R 徑 Radius	刃長 L1 Length of Cut	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number	AK45	AK925
4ECR-D3.0L50-R02	3.0	0.2	7.5	50	4.0	4	●	●
4ECR-D3.0L50-R05	3.0	0.5	7.5	50	4.0	4	●	●
4ECR-D4.0L50-R02	4.0	0.2	10.0	50	4.0	4	●	●
4ECR-D4.0L50-R05	4.0	0.5	10.0	50	4.0	4	●	●
4ECR-D4.0L50-R10	4.0	1.0	10.0	50	4.0	4	●	●
4ECR-D5.0L50-R02	5.0	0.2	12.0	50	6.0	4	●	●
4ECR-D5.0L50-R05	5.0	0.5	12.0	50	6.0	4	●	●
4ECR-D5.0L50-R10	5.0	1.0	12.0	50	6.0	4	●	●
4ECR-D6.0L50-R02	6.0	0.2	20.0	50	6.0	4	●	●
4ECR-D6.0L50-R05	6.0	0.5	20.0	50	6.0	4	●	●
4ECR-D6.0L50-R10	6.0	1.0	20.0	50	6.0	4	●	●
4ECR-D8.0L60-R02	8.0	0.2	25.0	60	8.0	4	●	●
4ECR-D8.0L60-R05	8.0	0.5	25.0	60	8.0	4	●	●
4ECR-D8.0L60-R10	8.0	1.0	25.0	60	8.0	4	●	●
4ECR-D10.0L75-R02	10.0	0.2	30.0	75	10.0	4	●	●
4ECR-D10.0L75-R05	10.0	0.5	30.0	75	10.0	4	●	●
4ECR-D10.0L75-R10	10.0	1.0	30.0	75	10.0	4	●	●
4ECR-D10.0L75-R20	10.0	2.0	30.0	75	10.0	4	●	●
4ECR-D12.0L75-R02	12.0	0.2	30.0	75	12.0	4	●	●
4ECR-D12.0L75-R05	12.0	0.5	30.0	75	12.0	4	●	●
4ECR-D12.0L75-R10	12.0	1.0	30.0	75	12.0	4	●	●
4ECR-D12.0L75-R20	12.0	2.0	30.0	75	12.0	4	●	●
4ECR-D16.0L100-R10	16.0	1.0	45.0	100	16.0	4	●	●
4ECR-D16.0L100-R20	16.0	2.0	45.0	100	16.0	4	●	●

註: 有●者表示有庫存

NOTE: ● means items in stock

切削條件表請參考第88頁

錫鋼 4刃 口袋型立銑刀

TUNGSTEN CARBIDE 4-FLUTE POCKET TYPE END MILL



$d \leq 3$ -0.005 ~ -0.028
 $3 < d \leq 6$ -0.015 ~ -0.038
 $6 < d \leq 18$ -0.020 ~ -0.047
 $18 < d$ -0.020 ~ -0.053

- 超細微粒碳化錫材質
- Micro-Grain Tungsten Carbide

適合材質：

碳素鋼、模具鋼、合金鋼、工具鋼、
不鏽鋼、鑄鐵、熱處理鋼料、焊補鋼料。

Applicable materials:

Carbon steel, mold steel, alloy steel, tool steel,
stainless steel, cast iron, heat-treated steel, welded steel.

強力推薦使用于不鏽鋼加工

Especially ideal for cutting stainless steel.

單位: Unit : mm

型號 EDP NO.	刃徑 D Flute Dia.	刃長 L ₁ Length of Cut	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number	AK45	AK925
4EP-D3.0L50	3.0	8	50	4.0	4	●	●
4EP-D4.0L50	4.0	11	50	4.0	4	●	●
4EP-D3.0L50-6	3.0	11	50	6.0	4		
4EP-D4.0L50-6	4.0	11	50	6.0	4		
4EP-D5.0L50	5.0	13	50	6.0	4	●	●
4EP-D6.0L50	6.0	15	50	6.0	4	●	●
4EP-D8.0L60	8.0	19	60	8.0	4	●	●
4EP-D10.0L75	10.0	22	75	10.0	4	●	●
4EP-D12.0L75	12.0	26	75	12.0	4	●	●
4EP-D14.0L80	14.0	30	80	14.0	4	●	●
4EP-D16.0L80	16.0	32	80	16.0	4	●	●
4EP-D18.0L100	18.0	40	100	18.0	4	●	●
4EP-D20.0L100	20.0	40	100	20.0	4	●	●

型號 EDP NO.	刃徑 D Flute Dia.	刃長 L ₁ Length of Cut	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number	AK45	AK925
4EPL-D3.0L50	3.0	12	50	4.0	4	●	●
4EPL-D4.0L50	4.0	16	50	4.0	4	●	●
4EPL-D3.0L50-6	3.0	12	50	6.0	4		
4EPL-D4.0L50-6	4.0	12	50	6.0	4		
4EPL-D5.0L60	5.0	18	60	6.0	4	●	●
4EPL-D6.0L60	6.0	20	60	6.0	4	●	●
4EPL-D8.0L75	8.0	25	75	8.0	4	●	●
4EPL-D10.0L80	10.0	30	80	10.0	4	●	●
4EPL-D12.0L100	12.0	36	100	12.0	4	●	●
4EPL-D14.0L100	14.0	40	100	14.0	4	●	●
4EPL-D16.0L100	16.0	45	100	16.0	4	●	●
4EPL-D18.0L150	18.0	60	150	18.0	4	●	●
4EPL-D20.0L150	20.0	60	150	20.0	4	●	●

註: 有●者表示有庫存 NOTE: ● means items in stock

切削條件表請參考第89頁

錫鋼 4刃內R 倒角立銑刀

TUNGSTEN CARBIDE 4-FLUTE INTERNAL R CHAMFERING END MILL



$d \leq 3$ -0.005 ~ -0.028
 $3 < d \leq 6$ -0.015 ~ -0.038
 $6 < d \leq 18$ -0.020 ~ -0.047
 $18 < d$ -0.020 ~ -0.053

- 超細微粒碳化錫材質
- Micro-Grain Tungsten Carbide

適合材質：

碳素鋼、模具鋼、合金鋼、工具鋼、
不鏽鋼、鑄鐵、熱處理鋼料、焊補鋼料。

Applicable material:

Carbon steel, mold steel, alloy steel, tool steel,
stainless steel, cast iron, heat-treated steel, welded steel.

單位: Unit : mm

型號 EDP NO.	刃徑 D Flute Dia.	R 徑 Radius	刃長 L ₁ Length of Cut	全長 L Overall Length	柄徑 d Shank Diameter	Ds 徑 Flute Dia	刃數 Flute Number	AK45	AK925
4EIR-D6.0L50-R10	6.0	R 1.0	9	50	6.0	4.0	4	●	●
4EIR-D6.0L50-R15	6.0	R 1.5	9	50	6.0	3.0	4	●	●
4EIR-D8.0L60-R20	8.0	R 2.0	12	60	8.0	4.0	4	●	●
4EIR-D10.0L75-R25	10.0	R 2.5	15	75	10.0	5.0	4	●	●
4EIR-D10.0L75-R30	10.0	R 3.0	15	75	10.0	4.0	4	●	●
4EIR-D12.0L75-R40	12.0	R 4.0	24	75	16.0	4.0	4	●	●
4EIR-D16.0L100-R50	16.0	R 5.0	24	100	16.0	6.0	4	●	●
4EIR-D20.0L100-R60	20.0	R 6.0	30	100	20.0	8.0	4	●	●

註: 有●者表示有庫存

NOTE: ● means items in stock

切削條件表請參考第90頁

鎢鋼 4刃 重切削立銑刀

TUNGSTEN CARBIDE 4-FLUTE HEAVY DUTY END MILL



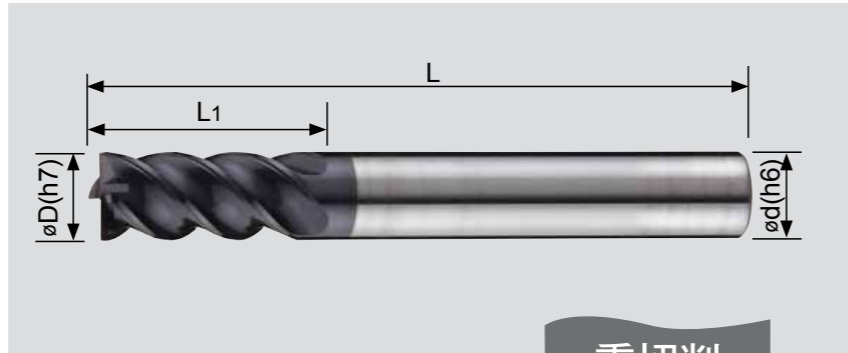
$d \leq 3$	-0.005 ~ -0.028
$3 < d \leq 6$	-0.015 ~ -0.038
$6 < d \leq 18$	-0.020 ~ -0.047
$18 < d$	-0.020 ~ -0.053

- 超細微粒碳化鎢材質
- Micro-Grain Tungsten Carbide

AK-45

Tungsten Carbide 0.5 μ m

Co12% WC86.7% TC/Ta(Nb)C 1.3%



重切削
Heavy duty

單位: Unit : mm

型號 EDP NO.	刃徑 D Flute Dia.	刃長 L1 Length of Cut	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number	AK45
4EHS-D3.0L50	3.0	4.5	50	6.0	4	
4EHS-D4.0L50	4.0	6.0	50	6.0	4	
4EHS-D5.0L50	5.0	7.5	50	6.0	4	
4EHS-D6.0L50	6.0	9.0	50	6.0	4	
4EHS-D8.0L60	8.0	12.0	60	8.0	4	
4EHS-D10.0L75	10.0	15.0	75	10.0	4	
4EHS-D12.0L75	12.0	18.0	75	12.0	4	
4EHS-D16.0L100	16.0	24.0	100	16.0	4	
4EHS-D20.0L100	20.0	30.0	100	20.0	4	
4EH-D3.0L50	3.0	8.0	50	6.0	4	●
4EH-D4.0L50	4.0	11.0	50	6.0	4	●
4EH-D5.0L50	5.0	13.0	50	6.0	4	●
4EH-D6.0L50	6.0	13.0	50	6.0	4	●
4EH-D8.0L60	8.0	19.0	60	8.0	4	●
4EH-D10.0L75	10.0	22.0	75	10.0	4	●
4EH-D12.0L75	12.0	26.0	75	12.0	4	●
4EH-D16.0L100	16.0	35.0	100	16.0	4	●
4EH-D20.0L100	20.0	40.0	100	20.0	4	●
4EHM-D3.0L60	3.0	12.0	60	6.0	4	●
4EHM-D4.0L60	4.0	16.0	60	6.0	4	●
4EHM-D5.0L60	5.0	18.0	60	6.0	4	●
4EHM-D6.0L60	6.0	20.0	60	6.0	4	●
4EHM-D8.0L60	8.0	25.0	75	8.0	4	●
4EHM-D10.0L75	10.0	30.0	75	10.0	4	●
4EHM-D12.0L75	12.0	35.0	100	12.0	4	●
4EHM-D16.0L100	16.0	45.0	110	16.0	4	●
4EHM-D20.0L100	20.0	50.0	125	20.0	4	●
4EHL-D3.0L60	3.0	15.0	60	6.0	4	●
4EHL-D4.0L60	4.0	20.0	60	6.0	4	●
4EHL-D5.0L60	5.0	22.0	60	6.0	4	●
4EHL-D6.0L75	6.0	25.0	75	6.0	4	●
4EHL-D8.0L75	8.0	30.0	75	8.0	4	●
4EHL-D10.0L80	10.0	35.0	80	10.0	4	●
4EHL-D12.0L100	12.0	40.0	100	12.0	4	●
4EHL-D16.0L110	16.0	55.0	110	16.0	4	●
4EHL-D20.0L125	20.0	60.0	125	20.0	4	●

請採用剛性較強之側固定式立銑刀架夾持本刀具。
註: 有●者表示有庫存 NOTE: ● means items in stock

切削條件表請參考第79頁

鎢鋼 4刃圓鼻 重切削立銑刀

TUNGSTEN CARBIDE 4-FLUTE CORNER RADIUS HEAVY DUTY END MILL



$d \leq 3$	-0.005 ~ -0.028
$3 < d \leq 6$	-0.015 ~ -0.038
$6 < d \leq 18$	-0.020 ~ -0.047
$18 < d$	-0.020 ~ -0.053

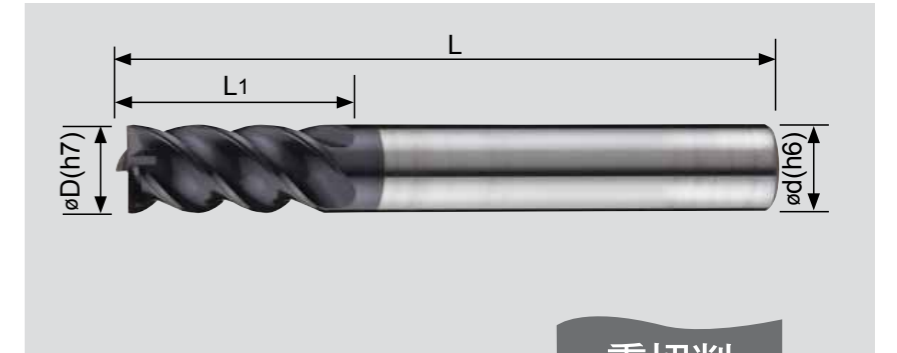
- 超細微粒碳化鎢材質
- Micro-Grain Tungsten Carbide

主要特性:

R角結構適合切削高硬度材質，刀尖不易崩裂，並可替代小徑球形銑刀，可作清角和曲面銑削。

Feature:

The R corner configuration is excellent for cutting high hardness materials without edge collapse. Also, it's replacable for small radius ball end mill, and permitting for corner cleaning and curving surface milling.



重切削
Heavy duty

單位: Unit : mm

型號 EDP NO.	刃徑 D Flute Dia.	刃長 L1 Length of Cut	圓角 R Nose R	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number	AK45
4EHCR-D3.0L50R02	3.0	8.0	0.2	50	6.0	4	●
4EHCR-D3.0L50R05	3.0	8.0	0.5	50	6.0	4	●
4EHCR-D4.0L50R02	4.0	8.0	0.2	50	6.0	4	●
4EHCR-D4.0L50R05	4.0	11.0	0.5	50	6.0	4	●
4EHCR-D4.0L50R10	4.0	11.0	1.0	50	6.0	4	●
4EHCR-D5.0L50R02	5.0	13.0	0.2	50	6.0	4	●
4EHCR-D5.0L50R05	5.0	13.0	0.5	50	6.0	4	●
4EHCR-D5.0L50R10	5.0	13.0	1.0	50	6.0	4	●
4EHCR-D6.0L50R03	6.0	13.0	0.3	50	6.0	4	●
4EHCR-D6.0L50R05	6.0	13.0	0.5	50	6.0	4	●
4EHCR-D6.0L50R10	6.0	13.0	1.0	50	6.0	4	●
4EHCR-D8.0L60R03	8.0	19.0	0.3	60	8.0	4	●
4EHCR-D8.0L60R05	8.0	19.0	0.5	60	8.0	4	●
4EHCR-D8.0L60R10	8.0	19.0	1.0	60	8.0	4	●
4EHCR-D8.0L60R15	8.0	19.0	1.5	60	8.0	4	●
4EHCR-D8.0L60R20	8.0	19.0	2.0	60	8.0	4	●
4EHCR-D10.0L75R03	10.0	22.0	0.3	60	10.0	4	●
4EHCR-D10.0L75R05	10.0	22.0	0.5	75	10.0	4	●
4EHCR-D10.0L75R10	10.0	22.0	1.0	75	10.0	4	●
4EHCR-D10.0L75R15	10.0	22.0	1.5	75	10.0	4	●
4EHCR-D10.0L75R20	10.0	22.0	2.0	75	10.0	4	●
4EHCR-D10.0L75R30	10.0	22.0	3.0	75	10.0	4	●
4EHCR-D12.0L75R05	12.0	26.0	0.5	75	12.0	4	●
4EHCR-D12.0L75R10	12.0	26.0	1.0	75	12.0	4	●
4EHCR-D12.0L75R15	12.0	26.0	1.5	75	12.0	4	●
4EHCR-D12.0L75R20	12.0	26.0	2.0	75	12.0	4	●
4EHCR-D12.0L75R30	12.0	26.0	3.0	75	12.0	4	●
4EHCR-D16.0L80R10	16.0	35.0	1.0	80	16.0	4	●
4EHCR-D16.0L80R15	16.0	35.0	1.5	80	16.0	4	●
4EHCR-D16.0L80R20	16.0	35.0	2.0	80	16.0	4	●
4EHCR-D16.0L80R30	16.0	35.0	3.0	80	16.0	4	●
4EHCR-D20.0L100R10	20.0	40.0	1.0	100	20.0	4	●
4EHCR-D20.0L100R15	20.0	40.0	1.5	100	20.0	4	●
4EHCR-D20.0L100R20	20.0	40.0	2.0	100	20.0	4	●
4EHCR-D20.0L100R30	20.0	40.0	3.0	100	20.0	4	●

請採用剛性較強之側固定式立銑刀架夾持本刀具。
註: 有●者表示有庫存 NOTE: ● means items in stock

切削條件表請參考第79頁

鎢鋼 4刃粗銑立銑刀

TUNGSTEN CARBIDE 4-FLUTE ROUGHING END MILL

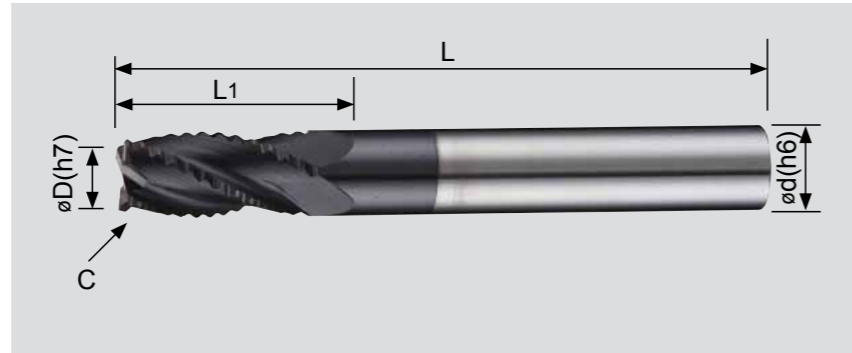


$d \leq 3$	-0.005 ~ -0.028
$3 < d \leq 6$	-0.015 ~ -0.038
$6 < d \leq 18$	-0.020 ~ -0.047
$18 < d$	-0.020 ~ -0.053

- 超細微粒碳化鎢材質
- Micro-Grain Tungsten Carbide

適合材質：
碳素鋼、模具鋼、合金鋼、工具鋼、
不鏽鋼、鑄鐵、熱處理鋼料、焊補鋼料。

Applicable material:
Carbon steel, mold steel, alloy steel, cast iron, tool steel,
stainless steel, heat-treated steel, welded steel.



單位: Unit : mm

型號 EDP NO.	刃徑 D Flute Dia.	刃長 L1 Length of Cut	刀尖倒角 C	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number	AK45
4EQ-D6.0L50	6.0	13.0	0.5	50	6.0	4	●
4EQ-D8.0L60	8.0	20.0	0.5	60	8.0	4	●
4EQ-D10.0L75	10.0	23.0	0.5	75	10.0	4	●
4EQ-D12.0L75	12.0	26.0	0.5	75	12.0	4	●
4EQ-D14.0L80	14.0	28.0	0.5	80	14.0	4	●
4EQ-D16.0L80	16.0	32.0	0.6	80	16.0	4	●
4EQ-D18.0L100	18.0	35.0	0.6	100	18.0	4	●
4EQ-D20.0L105	20.0	40.0	0.6	105	20.0	4	●
4EQ-D22.0L105	22.0	45.0	0.6	105	22.0	4	●
4EQ-D25.0L120	25.0	50.0	0.6	120	25.0	4	●

註: 有●者表示有庫存

NOTE: ● means items in stock

切削條件表請參考第80頁

全鎢鋼鉋刀

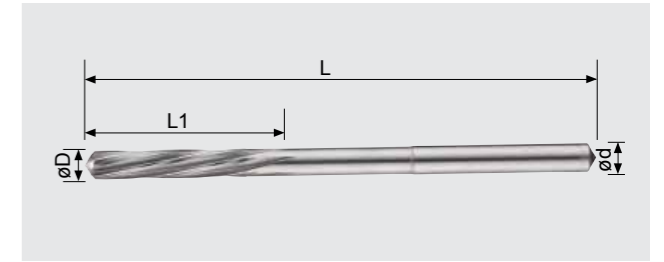
TUNGSTEN CARBIDE REAMERS

適合材質：

一般鋼料、合金鋼、模具鋼、不鏽鋼、銅、鋁、鑄鐵。

Applicable material:

General steel, alloy steel, mold steel, stainless steel,
copper, aluminum, cast iron.



單位: Unit: mm 公差 H7

型號 EDP NO.	直徑 DØ Diameter	刃長 L1 Length of Cut	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number
SRM478-D2.00	2.00	11	50	2.0	4
SRM478-D2.10	2.10	15	60	3.0	4
SRM478-D2.20	2.20	15	60	3.0	4
SRM478-D2.30	2.30	15	60	3.0	4
SRM478-D2.40	2.40	15	60	3.0	4
SRM478-D2.50	2.50	15	60	3.0	4
SRM478-D2.60	2.60	15	60	3.0	4
SRM478-D2.70	2.70	15	60	3.0	4
SRM478-D2.80	2.80	15	60	3.0	4
SRM478-D2.90	2.90	15	60	3.0	4
SRM478-D3.00	3.00	15	60	3.0	4
SRM478-D3.10	3.10	16	65	4.0	4
SRM478-D3.20	3.20	16	65	4.0	4
SRM478-D3.30	3.30	16	65	4.0	4
SRM478-D3.40	3.40	18	70	4.0	4
SRM478-D3.50	3.50	18	70	4.0	4
SRM478-D3.60	3.60	18	70	4.0	4
SRM478-D3.70	3.70	18	70	4.0	4
SRM478-D3.80	3.80	20	75	4.0	4
SRM478-D3.90	3.90	20	75	4.0	4
SRM478-D4.00	4.00	20	75	4.0	4
SRM478-D4.10	4.10	20	75	6.0	4
SRM478-D4.20	4.20	20	75	6.0	4
SRM478-D4.30	4.30	20	75	6.0	4
SRM478-D4.40	4.40	20	75	6.0	4
SRM478-D4.50	4.50	20	75	6.0	4
SRM478-D4.60	4.60	20	75	6.0	4
SRM478-D4.70	4.70	20	75	6.0	4
SRM478-D4.80	4.80	23	86	6.0	4
SRM478-D4.90	4.90	23	86	6.0	4
SRM678-D5.00	5.00	23	86	6.0	6
SRM678-D5.10	5.10	23	86	6.0	6
SRM678-D5.20	5.20	23	86	6.0	6
SRM678-D5.30	5.30	23	86	6.0	6

註: 有●者表示有庫存 NOTE: ● means items in stock

全錫鋼鉸刀

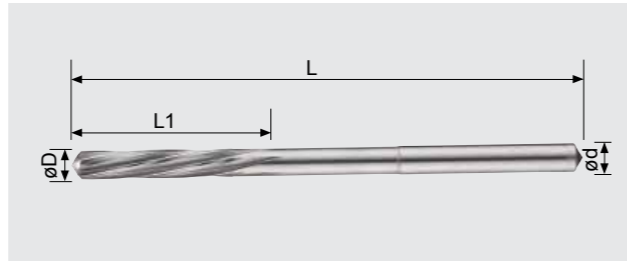
TUNGSTEN CARBIDE REAMERS

適合材質：

一般鋼料、合金鋼、模具鋼、不鏽鋼、銅、鋁、鑄鐵。

Applicable material:

General steel, alloy steel, mold steel, stainless steel, copper, aluminum, cast iron.



單位: Unit: mm 公差 H7

型號 EDP NO.	直徑 DØ Diameter	刃長 L1 Length of Cut	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number
SRM678-D5.40	5.40	26	95	6.0	6
SRM478-D5.50	5.50	26	95	6.0	6
SRM678-D5.60	5.60	26	95	6.0	6
SRM478-D5.70	5.70	26	95	6.0	6
SRM678-D5.80	5.80	26	95	6.0	6
SRM678-D5.90	5.90	26	95	6.0	6
SRM678-D6.00	6.00	26	95	6.0	6
SRM678-D6.10	6.10	28	100	8.0	6
SRM678-D6.20	6.20	28	100	8.0	6
SRM678-D6.30	6.30	28	100	8.0	6
SRM678-D6.40	6.40	28	100	8.0	6
SRM678-D6.50	6.50	28	100	8.0	6
SRM678-D6.60	6.60	28	100	8.0	6
SRM678-D6.70	6.70	28	100	8.0	6
SRM678-D6.80	6.80	31	110	8.0	6
SRM678-D6.90	6.90	31	110	8.0	6
SRM678-D7.00	7.00	31	110	8.0	6
SRM678-D7.10	7.10	31	110	8.0	6
SRM678-D7.20	7.20	31	110	8.0	6
SRM678-D7.30	7.30	31	110	8.0	6
SRM678-D7.40	7.40	31	110	8.0	6
SRM678-D7.50	7.50	31	110	8.0	6
SRM678-D7.60	7.60	31	110	8.0	6
SRM678-D7.70	7.70	31	110	8.0	6
SRM678-D7.80	7.80	31	110	8.0	6
SRM678-D7.90	7.90	31	110	8.0	6
SRM678-D8.00	8.00	31	110	8.0	6
SRM678-D8.10	8.10	33	117	10.0	6
SRM678-D8.20	8.20	33	117	10.0	6
SRM678-D8.30	8.30	33	117	10.0	6
SRM678-D8.40	8.40	33	117	10.0	6
SRM678-D8.50	8.50	33	117	10.0	6
SRM678-D8.60	8.60	36	125	10.0	6
SRM678-D8.70	8.70	36	125	10.0	6

註: 有●者表示有庫存 NOTE: ● means items in stock

全錫鋼鉸刀

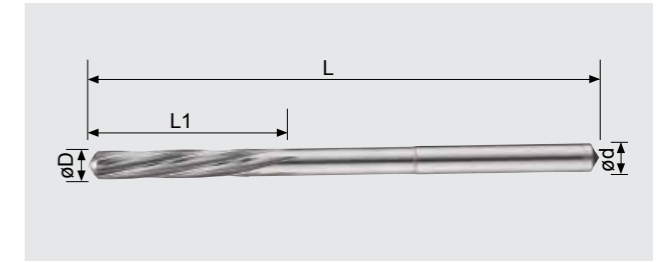
TUNGSTEN CARBIDE REAMERS

適合材質：

一般鋼料、合金鋼、模具鋼、不鏽鋼、銅、鋁、鑄鐵。

Applicable material:

General steel, alloy steel, mold steel, stainless steel, copper, aluminum, cast iron.



單位: Unit: mm 公差 H7

型號 EDP NO.	直徑 DØ Diameter	刃長 L1 Length of Cut	全長 L Overall Length	柄徑 d Shank Diameter	刃數 Flute Number
SRM678-D8.80	8.80	36	125	10.0	6
SRM678-D8.90	8.90	36	125	10.0	6
SRM678-D9.00	9.00	36	125	10.0	6
SRM678-D9.10	9.10	36	125	10.0	6
SRM678-D9.20	9.20	36	125	10.0	6
SRM678-D9.30	9.30	36	125	10.0	6
SRM678-D9.40	9.40	36	125	10.0	6
SRM678-D9.50	9.50	36	125	10.0	6
SRM678-D9.60	9.60	38	130	10.0	6
SRM678-D9.70	9.70	38	130	10.0	6
SRM678-D9.80	9.80	38	130	10.0	6
SRM678-D9.90	9.90	38	130	10.0	6
SRM678-D10.00	10.00	38	130	10.0	6
SRM678-D10.10	10.10	38	130	12.0	6
SRM678-D10.20	10.20	38	130	12.0	6
SRM678-D10.30	10.30	38	130	12.0	6
SRM678-D10.40	10.40	38	130	12.0	6
SRM678-D10.50	10.50	38	130	12.0	6
SRM678-D10.60	10.60	38	130	12.0	6
SRM678-D10.70	10.70	42	142	12.0	6
SRM678-D10.80	10.80	42	142	12.0	6
SRM678-D10.90	10.90	42	142	12.0	6
SRM678-D11.00	11.00	42	142	12.0	6
SRM678-D11.10	11.10	42	142	12.0	6
SRM678-D11.20	11.20	42	142	12.0	6
SRM678-D11.30	11.30	42	142	12.0	6
SRM678-D11.40	11.40	42	142	12.0	6
SRM678-D11.50	11.50	42	142	12.0	6
SRM678-D11.60	11.60	42	142	12.0	6
SRM678-D11.70	11.70	42	142	12.0	6
SRM678-D11.80	11.80	42	142	12.0	6
SRM678-D11.90	11.90	45	151	12.0	6
SRM678-D12.00	12.00	45	151	12.0	6

註: 有●者表示有庫存 NOTE: ● means items in stock

2BE

鎢鋼 2刃球型立銑刀

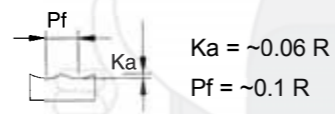
TUNGSTEN CARBIDE 2-FLUTE BALL END MILL

●超細微粒碳化鎢材質(一般M/C使用)

●Micro-Grain Tungsten carbide(For General Machining Center)

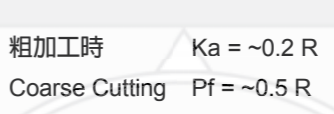
被切削材 WORKPIECE	鐵材、碳素鋼、鑄鐵、 合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、模具鋼、不鏽鋼 SCM SKD NAK101 SUS304		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		熱處理鋼、耐熱合金、鎳基合金 HARDENED STEELS	
	~ 300 HB		30 ~ 45 HRC		45 ~55 HRC		55 ~65 HRC	
立銑刀 R徑 mm END MILL "radius" mm	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
R0.5	28000~50000	600~1100	24000~42000	350~700	10000~20000	100~250	8000~11000	80~220
R1.0	14000~25000	600~1100	12000~21000	350~700	5000~11000	100~250	4000~5500	80~220
R1.5	10000~17000	600~1100	8000~13500	350~700	3500~6000	100~250	3000~4000	80~220
R2.0	7000~12500	600~1100	5600~10000	350~800	2600~5000	100~270	2500~2800	80~250
R2.5	6000~10000	600~1100	4200~8000	350~800	2200~3500	100~270	2000~2500	80~250
R3.0	5000~8500	600~1200	3800~7000	350~900	2000~3000	100~270	1500~2200	80~250
R4.0	3500~6500	600~1200	2600~5000	450~900	1800~2500	100~270	1200~2000	80~250
R5.0	2800~5000	600~1350	2200~4200	450~900	1500~2000	100~270	900~1500	80~250
R6.0	2500~4500	600~1350	1800~3300	400~900	1000~1500	100~270	700~1200	80~250
R7.0	2200~3600	600~1300	1800~2800	400~900	900~1500	100~270	600~1000	80~250
R8.0	1800~3200	500~1100	1300~2600	400~900	800~1100	100~270	500~900	80~250
R10.0	1500~2600	500~1000	1200~2200	400~850	600~900	80~220	400~700	60~180
R12.5	1300~2200	400~900	850~1600	300~660	450~800	80~220	350~500	60~180

最大切削量
Max. Cutting

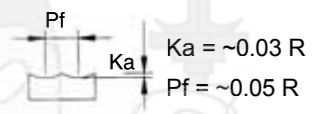


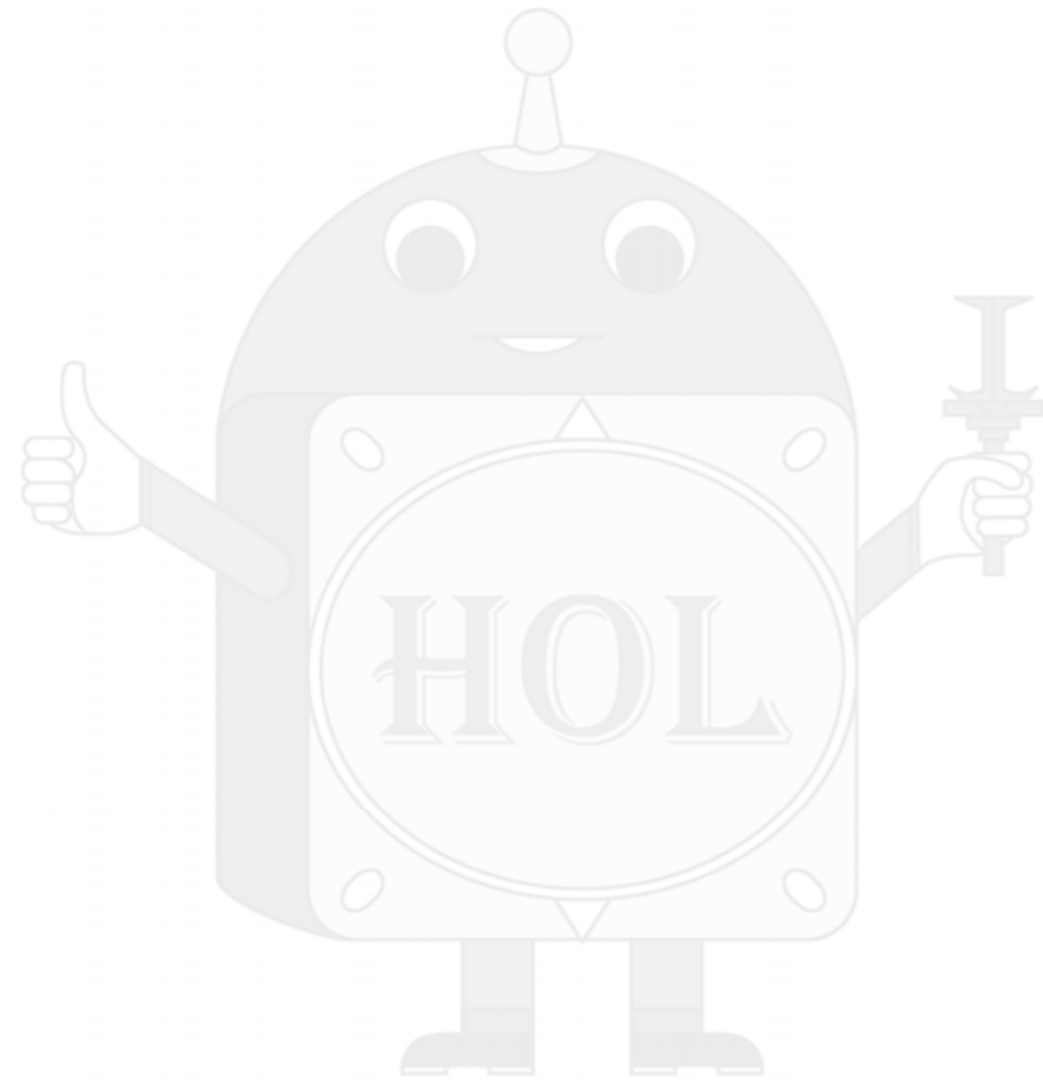
細加工時
Fine Cutting

粗加工時
Coarse Cutting



最大切削量
Max. Cutting





鎢鋼 2刃球型立銑刀

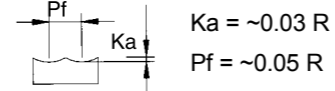
TUNGSTEN CARBIDE 2-FLUTE BALL END MILL

●超細微粒碳化鎢材質(一般M/C使用)

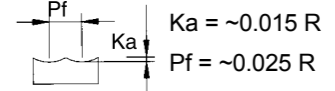
●Micro-Grain Tungsten carbide(For High Speed Machining Center)

被切削材 WORKPIECE	鐵材、碳素鋼、鑄鐵、 合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、模具鋼、不鏽鋼 SCM SKD NAK101 SUS304		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		熱處理鋼、耐熱合金、鎳基合金 HARDENED STEELS	
	~ 300 HB		30 ~ 45 HRC		45 ~55 HRC		55 ~65 HRC	
立銑刀 R徑 mm END MILL "radius" mm	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
R0.5	32000~55000	1300~2800	32000~55000	1200~2450	20000~35000	700~1350	10000~20000	100~250
R1.0	16000~27500	1300~2800	16000~27000	1200~2450	10000~19000	700~1450	5000~10000	100~250
R1.5	10000~18000	1300~2800	10000~18000	1200~2450	7000~13000	700~1450	3500~6000	100~250
R2.0	9000~17000	1700~3200	9000~17000	1300~2700	7000~12000	950~1900	2800~5500	120~280
R2.5	9000~17000	2000~3800	9000~16000	1400~2800	6000~11000	1000~2000	2000~4000	120~280
R3.0	8500~15000	2200~4100	7000~13000	1300~2700	6000~11000	1100~2300	1500~3000	120~280
R4.0	6000~11000	1800~3100	5500~10000	1000~2100	4500~8000	900~1700	1200~2500	100~250
R5.0	5000~9000	1200~2700	4500~8000	900~1700	3500~6500	700~1350	900~2000	100~250
R6.0	4200~8000	1000~2100	3500~7000	700~1450	2800~5500	500~1150	700~1500	100~250
R7.0	4000~7000	1100~1900	3500~6000	600~1200	2500~4500	500~1150	600~1100	100~250
R8.0	3200~6000	800~1700	2800~5500	500~1050	2200~4200	450~1050	500~1100	100~250
R10.0	2500~5000	600~1300	2200~4200	400~900	1700~3500	320~750	400~900	100~250
R12.5	2000~4000	500~1100	1800~3500	300~750	1200~2500	250~500	350~700	100~250

最大切削量
Max. Cutting



最大切削量
Max. Cutting



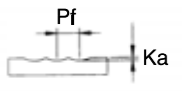
3BE

鎢鋼 3刃球型立銑刀

TUNGSTEN CARBIDE 3-FLUTE BALL END MILL

●超細微粒碳化鎢材質(一般M/C使用)

●Micro-Grain Tungsten carbide(For General Machining Center)

被切削材 WORKPIECE	鐵材、碳素鋼、鑄鐵、 合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、模具鋼、不鏽鋼 SCM SKD NAK101 SUS304		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		熱處理鋼、耐熱合金、鎳基合金 HARDENED STEELS	
	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
硬度 HARDNESS	~ 300 HB		30 ~ 45 HRC		45 ~55 HRC		55 ~65 HRC	
立銑刀 R徑 mm END MILL "radius" mm								
R3.0	5000~8500	600~2400	3800~7000	350~1800	2000~3000	100~540	1500~2200	80~500
R4.0	3500~6500	600~2400	2600~5000	450~1800	1800~2500	100~540	1200~2000	80~500
R5.0	2800~5000	600~2700	2200~4200	450~1800	1500~2000	100~540	900~1500	80~500
R6.0	2500~4500	600~2700	1800~3300	400~1800	1000~1500	100~540	700~1200	80~500
R7.0	2200~3600	600~2700	1800~2800	400~1800	900~1500	100~540	600~1000	80~500
R8.0	1800~3200	600~2200	1300~2600	400~1800	800~1100	100~540	500~900	80~500
R10.0	1500~2600	600~2000	1200~2200	400~1700	600~900	80~440	400~700	60~360
R12.0	1300~2200	600~1800	850~1600	300~1320	450~800	80~440	350~500	60~360
最大切削量 Max. Cutting	 Ka = ~0.1 R Pf = ~0.3 R		粗加工時 Coarse Cutting Ka = ~0.3 R Pf = ~0.2 R		Ka = ~0.05 R Pf = ~0.15 R		Ka = ~0.15 R Pf = ~0.05 R	


4BE

鎢鋼 4刃球型立銑刀

TUNGSTEN CARBIDE 4-FLUTE BALL END MILL

●超細微粒碳化鎢材質(一般M/C使用)

●Micro-Grain Tungsten carbide(For General Machining Center)


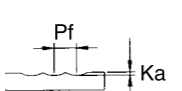
被切削材 WORKPIECE	鐵材、碳素鋼、鑄鐵、 合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、模具鋼、不鏽鋼 SCM SKD NAK101 SUS304		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		熱處理鋼、耐熱合金、鎳基合金 HARDENED STEELS	
	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
硬度 HARDNESS	~ 300 HB		30 ~ 45 HRC		45 ~55 HRC		55 ~65 HRC	
立銑刀 R徑 mm END MILL "radius" mm								
R3.0	5000~8500	600~2400	3800~7000	350~1800	2000~3000	100~540	1500~2200	80~500
R4.0	3500~6500	600~2400	2600~5000	450~1800	1800~2500	100~540	1200~2000	80~500
R5.0	2800~5000	600~2700	2200~4200	450~1800	1500~2000	100~540	900~1500	80~500
R6.0	2500~4500	600~2700	1800~3300	400~1800	1000~1500	100~540	700~1200	80~500
R7.0	2200~3600	600~2700	1800~2800	400~1800	900~1500	100~540	600~1000	80~500
R8.0	1800~3200	550~2200	1300~2600	400~1800	800~1100	100~540	500~900	80~500
R10.0	1500~2600	500~2000	1200~2200	400~1700	600~900	80~440	400~700	60~360
R12.5	1300~2200	400~1800	850~1600	300~1320	450~800	80~440	350~500	60~360
最大切削量 Max. Cutting	 Ka = ~0.1 R Pf = ~0.3 R		粗加工時 Coarse Cutting Ka = ~0.3 R Pf = ~0.2 R		Ka = ~0.05 R Pf = ~0.15 R		Ka = ~0.15 R Pf = ~0.05 R	

鎢鋼 3刃球型立銑刀

TUNGSTEN CARBIDE 3-FLUTE BALL END MILL

●超細微粒碳化鎢材質(一般M/C使用)

●Micro-Grain Tungsten carbide(For High Speed Machining Center)

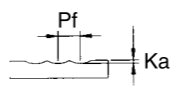
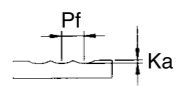
被切削材 WORKPIECE	鐵材、碳素鋼、鑄鐵、 合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、模具鋼、不鏽鋼 SCM SKD NAK101 SUS304		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		熱處理鋼、耐熱合金、鎳基合金 HARDENED STEELS	
	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
硬度 HARDNESS	~ 300 HB		30 ~ 45 HRC		45 ~55 HRC		55 ~65 HRC	
立銑刀 R徑 mm END MILL "radius" mm								
R3.0	8500~15000	2200~8200	7000~13000	1300~5400	6000~11000	1100~4600	1500~3000	120~560
R4.0	6000~11000	1800~6200	5500~10000	1000~4200	4500~8000	900~3400	1200~2500	100~500
R5.0	5000~9000	1200~5400	4500~8000	900~3400	3500~6500	700~2700	900~2000	100~500
R6.0	4200~8000	1000~4200	3800~7000	700~2900	2800~5500	500~2300	700~1500	100~500
R7.0	4000~7000	1100~3800	3500~6000	600~2400	2500~4500	500~2300	600~1100	100~500
R8.0	3200~6000	800~3400	2800~5500	500~2100	2200~4200	450~2100	500~1100	100~500
R10.0	2500~5000	600~2600	2200~4200	400~1800	1700~3500	320~1500	400~900	100~500
R12.5	2000~4000	500~2200	1800~3500	300~1500	1200~2500	250~1000	350~700	100~500
最大切削量 Max. Cutting	 Ka = ~0.03 R Pf = ~0.05 R				 Ka = ~0.015 R Pf = ~0.025 R			

鎢鋼 4刃球型立銑刀

TUNGSTEN CARBIDE 4-FLUTE BALL END MILL

●超細微粒碳化鎢材質(一般M/C使用)

●Micro-Grain Tungsten carbide(For High Speed Machining Center)

被切削材 WORKPIECE	鐵材、碳素鋼、鑄鐵、 合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、模具鋼、不鏽鋼 SCM SKD NAK101 SUS304		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		熱處理鋼、耐熱合金、鎳基合金 HARDENED STEELS	
	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
硬度 HARDNESS	~ 300 HB		30 ~ 45 HRC		45 ~55 HRC		55 ~65 HRC	
立銑刀 R徑 mm END MILL "radius" mm								
R3.0	8500~15000	2200~8200	7000~13000	1300~5400	6000~11000	1100~4600	1500~3000	120~560
R4.0	6000~11000	1800~6200	5500~10000	1000~4200	4500~8000	900~3400	1200~2500	100~500
R5.0	5000~9000	1200~5400	4500~8000	900~3400	3500~6500	700~2700	900~2000	100~500
R6.0	4200~8000	1000~4200	3800~7000	700~2900	2800~5500	500~2300	700~1500	100~500
R7.0	4000~7000	1100~3800	3500~6000	600~2400	2500~4500	500~2300	600~1100	100~500
R8.0	3200~6000	800~3400	2800~5500	500~2100	2200~4200	450~2100	500~1100	100~500
R10.0	2500~5000	600~2600	2200~4200	400~1800	1700~3500	320~1500	400~900	100~500
R12.5	2000~4000	500~2200	1800~3500	300~1500	1200~2500	250~1000	350~700	100~500
最大切削量 Max. Cutting	 Ka = ~0.03 R Pf = ~0.05 R				 Ka = ~0.015 R Pf = ~0.025 R			

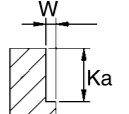
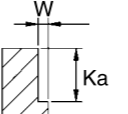
鎢鋼 2刃立銑刀

●超細微粒碳化鎢材質

被切削材 WORKPIECE	鐵材、碳素鋼、鑄鐵、 合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、模具鋼、不鏽鋼 SCM SKD NAK101 SUS304		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		熱處理鋼、耐熱合金、鎳基合金 HARDENED STEELS	
	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
硬度 HARDNESS	~ 300 HB		30 ~ 45 HRC		45 ~55 HRC		55 ~65 HRC	
立銑刀 R徑 mm END MILL "radius" mm								
D1.0	14000~19500	55~90	7000~11000	35~65	4000~7000	25~45	3000~4000	10~35
D2.0	8500~11000	75~120	4000~6350	40~80	3000~4000	25~45	1500~2200	15~40
D3.0	6000~9000	130~180	3000~5000	50~100	2000~2800	30~60	1000~1700	20~50
D4.0	5000~7500	160~240	2700~4500	70~140	1500~2200	30~60	900~1500	25~60
D5.0	4500~7000	150~300	2200~4000	80~160	1200~1900	30~60	600~1200	30~70
D6.0	4000~6500	150~420	2000~3600	100~210	1000~1600	30~60	500~1100	40~80
D8.0	2800~5000	150~420	1400~3000	100~210	800~1200	25~60	350~850	40~80
D10.0	2200~4000	150~420	1000~2200	100~210	600~980	25~60	300~700	40~80
D12.0	1800~3000	120~380	900~1900	100~210	500~800	25~60	280~600	40~80
D16.0	1800~2500	160~300	800~1400	80~180	350~600	20~65	250~450	30~70
D18.0	1400~2200	150~260	700~1200	60~150	250~550	20~65	200~400	25~60
D20.0	1200~2000	120~240	600~1100	50~140	200~500	20~50	180~350	20~50
D25.0	1000~1800	100~190	500~900	50~120	150~400	15~50	130~280	15~50
最大切削量 Max. Cutting	 $D = \sim 3 \text{ mm}$ $Ka = \sim 0.3 D$ $D = 3 \text{ mm} \sim Ka = \sim 0.5 D$		 $D = \sim 3 \text{ mm}$ $Ka = \sim 0.02 D$ $D = 3 \text{ mm} \sim Ka = \sim 0.05 D$					

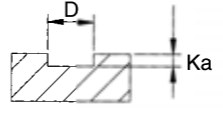
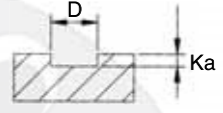
鎢鋼 2刃立銑刀

●超細微粒碳化鎢材質

被切削材 WORKPIECE	鐵材、碳素鋼、鑄鐵、 合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、模具鋼、不鏽鋼 SCM SKD NAK101 SUS304		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		熱處理鋼、耐熱合金、鎳基合金 HARDENED STEELS	
	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
硬度 HARDNESS	~ 300 HB		30 ~ 45 HRC		45 ~55 HRC		55 ~65 HRC	
立銑刀 R徑 mm END MILL "radius" mm								
D1.0	14000~19500	80~110	8000~11000	35~80	4000~7000	25~60	3000~4000	10~35
D2.0	8500~11000	90~150	4000~6350	50~100	3000~4000	25~70	1500~2200	15~40
D3.0	6500~9000	130~250	3000~5000	60~140	2000~2800	30~90	1000~1700	30~60
D4.0	5500~7500	160~320	2700~4500	80~180	1500~2200	30~90	900~1500	30~60
D5.0	5000~7000	200~450	2500~4000	100~240	1200~1900	40~120	600~1200	30~70
D6.0	4500~5500	250~450	2200~3600	120~300	1000~1600	40~120	500~1100	30~70
D8.0	3200~4500	250~450	1600~3000	120~300	800~1200	40~120	350~850	30~70
D10.0	2800~3600	250~420	1200~2500	120~300	600~980	40~120	300~700	30~70
D12.0	2200~3000	250~320	1100~1900	120~270	500~800	30~90	280~600	25~60
D16.0	1800~2500	200~300	800~1500	100~240	350~600	30~90	250~450	25~60
D18.0	1500~2200	180~300	700~1300	80~216	250~550	30~90	200~400	25~60
D20.0	1200~1800	150~250	600~1200	70~150	200~500	20~90	180~350	15~60
D25.0	1000~1430	120~220	500~900	60~130	150~400	20~90	130~280	15~60
最大切削量 Max. Cutting	 $Ka = \sim 2.5 D$ $W = \sim 0.05 D$		 $Ka = \sim 2.5 D$ $W = \sim 0.025 D$					

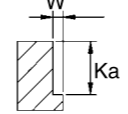
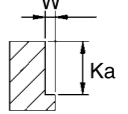
鎢鋼 3刃立銑刀

●超細微粒碳化鎢材質

被切削材 WORKPIECE	鐵材、碳素鋼、鑄鐵、 合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、模具鋼、不鏽鋼 SCM SKD NAK101 SUS304		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		熱處理鋼、耐熱合金、鎳基合金 HARDENED STEELS	
	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
硬度 HARDNESS	~ 300 HB		30 ~ 45 HRC		45 ~55 HRC		55 ~65 HRC	
立銑刀 R徑 mm END MILL "radius" mm								
D3.0	6000~9000	130~270	3000~5000	50~150	2000~2800	30~90	1000~1700	20~75
D4.0	5000~7500	160~360	2700~4500	70~210	1500~2200	30~90	900~1500	25~90
D5.0	4500~7000	150~450	2200~4000	80~240	1200~1900	30~90	600~1200	30~105
D6.0	4000~6500	150~630	2000~3600	100~310	1000~1600	30~90	500~1100	40~120
D8.0	2800~5000	150~630	1400~3000	100~310	800~1200	25~90	350~850	40~120
D10.0	2200~4000	150~630	1000~2200	100~310	600~9800	25~90	300~700	40~120
D12.0	1800~3000	120~630	900~1900	100~310	500~8000	25~90	280~600	40~120
D16.0	1800~2500	160~570	800~1400	80~270	350~600	20~95	250~450	30~105
最大切削量 Max. Cutting	 $D = \sim 3 \text{ mm}$ $Ka = \sim 0.3 D$ $D = 3 \text{ mm} \sim Ka = \sim 0.5 D$		 $D = \sim 3 \text{ mm}$ $Ka = \sim 0.02 D$ $D = 3 \text{ mm} \sim Ka = \sim 0.05 D$					

鎢鋼 3刃立銑刀

●超細微粒碳化鎢材質

被切削材 WORKPIECE	鐵材、碳素鋼、鑄鐵、 合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、模具鋼、不鏽鋼 SCM SKD NAK101 SUS304		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		熱處理鋼、耐熱合金、鎳基合金 HARDENED STEELS	
	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
硬度 HARDNESS	~ 300 HB		30 ~ 45 HRC		45 ~55 HRC		55 ~65 HRC	
立銑刀 R徑 mm END MILL "radius" mm								
D3.0	6500~9000	130~370	3000~5000	60~210	2000~2800	30~130	1000~1700	30~90
D4.0	5500~7500	160~480	2700~4500	80~270	1500~2200	30~130	900~1500	30~90
D5.0	5000~7000	200~670	2500~4000	100~360	1200~1900	40~180	600~1200	30~105
D6.0	4500~5500	250~670	2200~3600	120~450	1000~1600	40~180	500~1100	30~105
D8.0	3200~4500	250~670	1600~3000	120~450	800~1200	40~180	350~850	30~105
D10.0	2800~3600	250~630	1200~2500	120~450	600~980	40~180	300~700	30~105
D12.0	2200~3000	250~480	1100~1900	120~450	500~800	30~130	280~600	25~90
D16.0	1800~2500	200~450	800~1500	100~360	350~600	30~130	250~450	25~90
最大切削量 Max. Cutting	 $Ka = \sim 2.5 D$ $W = \sim 0.05 D$		 $Ka = \sim 2.5 D$ $W = \sim 0.025 D$					

2TP

鎢鋼 2刃斜度立銑刀

●超細微粒碳化鎢2刃斜度立銑刀

被切削材 WORKPIECE	鐵材、碳素鋼、鑄鐵、 合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、模具鋼、不鏽鋼 SCM SKD NAK101 SUS304		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		熱處理鋼、耐熱合金、鎳基合金 HARDENED STEELS	
	~ 300 HB		30 ~ 45 HRC		45 ~55 HRC		55 ~65 HRC	
立銑刀 R徑 mm END MILL "radius" mm	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
D1.0	14000~18000	70~100	8000~11000	40~70	7000~8500	30~50	3000~3500	12~23
D2.0	10000~14000	75~125	6000~8500	50~85	5000~6500	40~60	2300~2800	18~28
D3.0	8000~11000	80~145	4500~6500	50~90	4000~5500	50~70	1800~2500	20~35
D4.0	7000~10000	70~145	4000~7000	65~120	3200~4500	50~80	1600~2200	22~40
D5.0	3500~4000	70~125	1800~2500	45~80	1600~2000	35~65	700~900	15~25
D6.0	3000~3500	70~150	1700~2200	45~80	1400~1700	35~65	600~700	15~25
D8.0	2600~3200	70~150	1400~2000	45~80	1200~1500	35~65	500~600	15~25

最大切削量 Max. Cutting	 $Ka = \sim 2.5 D$ $W = \sim 0.02 D$				 $Ka = \sim 2.5 D$ $W = \sim 0.01 D$			
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TUNGSTEN CARBIDE 2-FLUTE END MILL

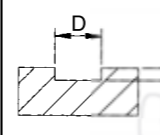
●Micro-Grain Tungsten carbide

4E

鎢鋼 4刃立銑刀

●超細微粒碳化鎢材質

被切削材 WORKPIECE	鐵材、碳素鋼、鑄鐵、 合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、模具鋼、不鏽鋼 SCM SKD NAK101 SUS304		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		熱處理鋼、耐熱合金、鎳基合金 HARDENED STEELS	
	~ 300 HB		30 ~ 45 HRC		45 ~55 HRC		55 ~65 HRC	
立銑刀 R徑 mm END MILL "radius" mm	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
D3.0	6000~9000	150~360	3000~5000	80~200	2000~1800	35~120	1300~1800	30~100
D4.0	5000~7500	200~480	2700~4500	100~280	1500~1500	40~120	1100~1500	40~120
D5.0	4500~7000	250~600	2200~4000	120~320	1200~1300	50~120	1000~1300	50~140
D6.0	4000~6500	300~840	2000~3600	150~420	1000~1200	60~120	950~1200	60~160
D8.0	2800~5000	300~840	1400~3000	150~420	800~1000	60~120	700~900	60~160
D10.0	2200~4000	300~840	1000~2200	150~420	600~900	60~120	550~800	60~160
D12.0	2200~3000	300~570	900~1900	150~420	500~700	60~120	450~600	60~160
D16.0	1800~2500	250~520	850~1400	130~360	350~500	50~130	300~500	50~140
D18.0	1400~2200	220~520	700~1200	100~360	250~450	40~130	280~400	35~120
D20.0	1200~2000	200~480	600~1100	100~280	200~360	40~100	250~380	30~100
D25.0	1000~1800	150~380	500~800	80~240	150~300	30~100	200~300	25~100

最大切削量 Max. Cutting	 $Ka = \sim 0.25 D$				 $Ka = \sim 0.05 D$			
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TUNGSTEN CARBIDE 4-FLUTE END MILL

●Micro-Grain Tungsten carbide

4TP

鎢鋼 4刃斜度立銑刀

●超細微粒碳化鎢4刃斜度立銑刀

被切削材 WORKPIECE	鐵材、碳素鋼、鑄鐵、 合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、模具鋼、不鏽鋼 SCM SKD NAK101 SUS304		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		熱處理鋼、耐熱合金、鎳基合金 HARDENED STEELS	
	~ 300 HB		30 ~ 45 HRC		45 ~55 HRC		55 ~65 HRC	
立銑刀 R徑 mm END MILL "radius" mm	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
D4.0	3000~3500	120~200	1700~2200	50~85	1400~1700	50~80	600~700	20~35
D5.0	2600~3200	120~200	1400~2000	70~125	1200~1500	60~100	500~600	25~40
D6.0	3500~4000	70~125	1800~2500	45~80	1600~2000	35~65	700~900	15~25
D8.0	3000~3500	120~200	1700~2200	50~55	1400~1700	50~80	600~700	20~35
D10.0	2600~3200	120~200	1400~2000	70~110	1200~1500	60~100	500~600	25~40

最大切削量 Max. Cutting	 $Ka = \sim 2.5 D$ $W = \sim 0.02 D$				 $Ka = \sim 2.5 D$ $W = \sim 0.01 D$			
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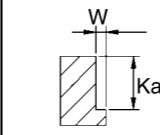
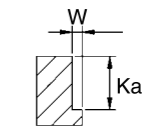
TUNGSTEN CARBIDE 4-FLUTE FLUTE END MILL

●Micro-Grain Tungsten carbide

鎢鋼 4刃立銑刀

●超細微粒碳化鎢材質

被切削材 WORKPIECE	鐵材、碳素鋼、鑄鐵、 合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、模具鋼、不鏽鋼 SCM SKD NAK101 SUS304		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		熱處理鋼、耐熱合金、鎳基合金 HARDENED STEELS	
	~ 300 HB		30 ~ 45 HRC		45 ~55 HRC		55 ~65 HRC	
立銑刀 R徑 mm END MILL "radius" mm	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
D3.0	6500~9000	200~500	3000~5000	100~280	2000~2800	40~180	1000~1700	30~120
D4.0	5500~7500	300~640	2700~4500	160~360	1500~2200	50~180	900~1500	40~120
D5.0	5000~7000	300~900	2500~4000	160~480	1200~1900	60~240	600~1200	50~140
D6.0	4500~5500	400~900	2200~3600	200~600	1000~1600	80~240	500~1100	70~140
D8.0	3200~4500	400~900	1600~3000	200~600	800~1200	80~240	350~850	70~140
D10.0	2800~3600	400~840	1200~2500	200~600	600~980	80~240	300~700	70~140
D12.0	2200~3000	400~640	1100~1900	200~540	500~800	80~180	280~600	70~120
D16.0	1800~2500	300~600	800~1500	150~480	350~600	60~180	250~450	50~120
D18.0	1500~2200	280~600	700~1300	130~430	250~550	60~180	200~400	40~120
D20.0	1200~1800	250~500	600~1200	120~300	200~500	50~180	180~350	40~120
D25.0	1000~1430	220~440	500~900	100~260	150~400	40~180	130~280	30~120

最大切削量 Max. Cutting	 $Ka = \sim 1.5 D$ $W = \sim 0.05 D$				 $Ka = \sim 1.0 D$ $W = \sim 0.02 D$			
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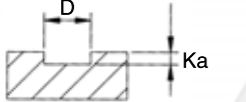
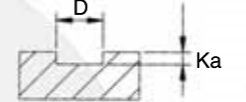
TUNGSTEN CARBIDE 4-FLUTE END MILL

●Micro-Grain Tungsten carbide

4EH, 4EHCR

極細微粒碳化鋼 4刃立銑刀

●超細微粒碳化鎢材質(一般M/C使用)

被切削材 WORKPIECE	鐵材、碳素鋼、鑄鐵、 合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、模具鋼、不鏽鋼 SCM SKD NAK101 SUS304		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		熱處理鋼、耐熱合金、鎳基合金 HARDENED STEELS		
	~ 300 HB		30 ~ 45 HRC		45 ~ 55 HRC		55 ~ 65 HRC		
立銑刀 R徑 mm END MILL "radius" mm	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	
	D3.0	6300~9000	550~730	5200~6000	380~470	3700~4600	280~350	1850~2300	95~120
D4.0	4700~6500	550~730	4000~4500	420~470	2800~3500	320~400	1450~1800	100~135	
D5.0	3700~5200	630~750	3000~3600	450~500	2250~2800	320~400	1200~1500	100~150	
D6.0	3100~4500	630~750	2500~3000	500~570	2000~2500	350~430	1050~1300	120~150	
D8.0	2300~3400	600~700	1800~2300	450~550	1525~1900	360~450	720~900	120~150	
D10.0	1800~2700	500~650	1500~1800	450~550	1200~1500	320~400	560~700	100~125	
D12.0	1500~2300	500~650	1200~1500	400~470	1050~1300	300~380	520~650	100~125	
D16.0	1000~1800	450~650	1000~1200	350~400	800~1000	265~330	440~550	75~95	
D20.0	900~1400	350~550	800~900	300~370	680~850	240~300	360~450	75~95	
最大切削量 Max. Cutting	 <p>$Ka \approx 0.5 D$</p>				 <p>$Ka \approx 0.05 D$</p>				

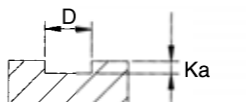

TUNGSTEN CARBIDE 4-FLUTE END MILL

●Micro-Grain Tungsten carbide(For General Machining Center)

4EQ

極細微粒碳化鋼 4刃立銑刀

●超細微粒碳化鎢材質(一般M/C使用)

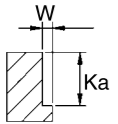
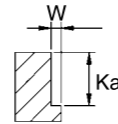
被切削材 WORKPIECE	鑄鐵 FC250 FCD		鐵材、碳素鋼、 合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS		合金鋼、工具鋼、模具鋼 SCM SKD NAK55 NAK101		合金鋼、工具鋼、模具鋼 SUS316 SKD SUS304		鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS	
	~ 300 HB		~ 300 HB		30 ~ 40 HRC		38 ~ 45 HRC		45 ~ 55 HRC	
立銑刀 R徑 mm END MILL "radius" mm	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
	D6.0	5000~5900	600~710	3500~4600	270~550	2600~3200	200~260	2100~2700	170~220	1300~1700
D8.0	3800~4500	600~710	2500~3500	310~550	2000~2500	240~290	1500~2000	200~250	1000~1300	120~150
D10.0	3000~3600	600~710	2000~2800	330~550	1500~2000	550~310	1300~1600	210~260	850~1100	130~170
D12.0	2500~3000	600~710	1600~2400	350~550	1200~1600	260~320	1000~1350	220~270	700~900	140~180
D14.0	2000~2500	550~700	1500~2100	360~580	1000~1400	270~330	800~1100	220~270	600~800	150~190
D16.0	1800~2250	600~710	1200~1850	380~550	900~1350	280~350	700~1000	230~280	500~700	150~190
D18.0	1500~2000	550~700	1100~1700	390~550	850~1100	270~320	600~900	220~270	450~600	140~180
D20.0	1400~1800	600~710	900~1500	380~530	750~1000	270~320	550~800	210~260	400~550	120~170
D22.0	1200~1600	600~710	850~1400	360~520	700~900	270~320	550~800	200~250	380~490	120~170
D25.0	1100~1500	550~700	700~1350	350~490	600~800	260~300	500~700	200~250	350~440	130~160
最大切削量 Max. Cutting	 <p>$Ka \approx 0.75 D$</p>					 <p>$Ka \approx 0.5 D$</p>				

TUNGSTEN CARBIDE 4-FLUTE END MILL

●Micro-Grain Tungsten carbide(For General Machining Center)

極細微粒碳化鋼 4刃立銑刀

●超細微粒碳化鎢材質(一般M/C使用)

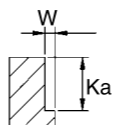
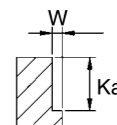
被切削材 WORKPIECE	鐵材、碳素鋼、鑄鐵、 合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、模具鋼、不鏽鋼 SCM SKD NAK101 SUS304		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		熱處理鋼、耐熱合金、鎳基合金 HARDENED STEELS		
	~ 300 HB		30 ~ 45 HRC		45 ~ 55 HRC		55 ~ 65 HRC		
立銑刀 R徑 mm END MILL "radius" mm	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	
	D3.0	8200~11000	700~1000	6500~7200	500~600	5400~6500	400~500	2800~3500	180~220
D4.0	6000~8800	800~1200	4800~5400	550~620	4000~5000	425~530	2100~2600	180~220	
D5.0	4800~7000	800~1200	3800~4500	550~620	3200~4000	440~550	1800~2200	180~220	
D6.0	4000~5500	850~1500	3200~3700	600~750	2800~3500	440~550	1520~1900	180~220	
D8.0	3000~4200	850~1500	2300~2800	580~700	2250~2800	460~570	1200~1500	160~200	
D10.0	2400~3400	800~1250	1800~2350	550~650	1750~2200	440~550	960~1200	150~185	
D12.0	2000~2800	800~1250	1500~2000	500~600	1600~2000	400~500	720~900	150~185	
D16.0	1400~2300	700~1000	1000~1500	400~550	1200~1500	350~430	600~750	150~185	
D20.0	1000~1800	500~800	800~1250	350~500	960~1200	310~380	520~650	150~185	
最大切削量 Max. Cutting	 <p>$Ka \approx 1.5 D$ $W \approx 0.02 D$</p>				 <p>$Ka \approx 1.0 D$ $W \approx 0.05 D$</p>				

TUNGSTEN CARBIDE 4-FLUTE FLUTE END MILL

●Micro-Grain Tungsten carbide(For General Machining Center)

極細微粒碳化鋼 4刃立銑刀

●超細微粒碳化鎢材質(一般M/C使用)

被切削材 WORKPIECE	鑄鐵 FC250 FCD		鐵材、碳素鋼、 合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS		合金鋼、工具鋼、模具鋼 SCM SKD NAK55 NAK101		合金鋼、工具鋼、模具鋼 SUS316 SKD SUS304		鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS	
	~ 300 HB		~ 300 HB		30 ~ 40 HRC		38 ~ 45 HRC		45 ~ 55 HRC	
立銑刀 R徑 mm END MILL "radius" mm	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
	D6.0	5700~6500	690~840	3500~4600	350~650	3100~3800	250~310	2400~3000	190~230	1600~2000
D8.0	4200~5000	690~840	2500~3500	390~650	2300~2900	280~340	1800~2200	220~265	1200~1500	150~180
D10.0	3500~4200	690~840	2000~2800	400~650	1800~2300	300~360	1500~1800	240~290	1000~1250	150~180
D12.0	3000~3500	700~850	1600~2300	430~650	1500~1900	300~360	1200~1500	250~300	820~1050	160~200
D14.0	2500~3000	700~850	1450~2000	450~660	1350~1700	330~400	1000~1300	255~310	700~900	170~210
D16.0	2200~2700	700~850	2250~1850	470~650	1200~1500	330~400	900~1100	255~310	600~800	170~210
D18.0	1900~2300	690~840	1100~1700	470~640	1000~1300	320~390	800~1000	250~300	550~700	170~210
D20.0	1700~2100	690~840	1000~1500	450~620	950~1200	320~390	700~900	240~290	500~620	160~200
D22.0	1600~1900	700~850	900~1300	450~600	900~1100	300~360	680~850	240~290	450~570	150~180
D25.0	1400~1700	670~820	800~1200	420~580	770~950	300~360	600~730	220~265	400~500	150~180
最大切削量 Max. Cutting	 <p>$Ka \approx 1.5 D$ $W \approx 0.4 D$</p>					 <p>$Ka \approx 1.5 D$ $W \approx 0.3 D$</p>				

TUNGSTEN CARBIDE 4-FLUTE END MILL

●Micro-Grain Tungsten carbide(For General Machining Center)

6E, 8E

鎢鋼 6刃&8刃立銑刀

●超細微粒碳化鎢材質(一般M/C使用)

被切削材 WORKPIECE	鐵材、碳素鋼、鑄鐵、 合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、模具鋼、不鏽鋼 SCM SKD NAK101 SUS304		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		熱處理鋼、耐熱合金、鎳基合金 HARDENED STEELS	
	~ 300 HB		30 ~ 45 HRC		45 ~55 HRC		55 ~65 HRC	
立銑刀 R徑 mm END MILL "radius" mm	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
D6.0	4000~5500	300~740	3000~4500	300~660	1200~2500	150~330	1000~1400	100~270
D8.0	3000~4500	300~740	2200~3300	300~660	900~1800	150~330	750~1100	100~270
D10.0	2200~3500	300~740	1800~2500	300~660	800~1600	150~330	600~900	100~270
D12.0	2000~3000	300~740	1500~2200	300~660	700~800	150~330	500~600	80~200
D16.0	1500~2300	250~610	1100~1600	200~540	500~900	120~270	350~550	60~160
D20.0	1100~1800	240~640	900~1300	240~640	450~800	120~240	280~450	60~150
D25.0	900~1500	180~500	700~1100	240~640	350~600	120~240	220~350	40~110
最大切削量 Max. Cutting	$Ka = \sim 0.10 D$				$Ka = \sim 0.025 D$			

TUNGSTEN CARBIDE 6-FLUTE END MILL

●Micro-Grain Tungsten carbide(For General Machining Center)

2BEAL

鎢鋼 2刃球型立銑刀

●超細微粒碳化鎢材質(一般M/C使用)

被切削材 WORKPIECE	純鋁 Aluminum		鋁合金 Aluminum Alloy		鋁合金 Aluminum Alloy		銅合金 Copper Alloy	
	1070		4032		6061		C1100	
立銑刀 R徑 mm END MILL "radius" mm	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
R1.0	23000~25000	1600~2300	1800~2200	130~200	5000~18000	800~1300	23000~25000	1100~1700
R2.0	11000~13000	1600~2300	900~1100	130~200	7000~10000	500~1100	11000~13000	1100~1700
R2.5	9000~11000	1600~2300	700~900	130~200	6000~7000	400~900	9000~11000	1100~1700
R3.0	7500~8500	1400~2000	600~800	130~180	5000~6000	400~900	7500~8500	1200~1800
R4.0	5500~6500	1400~2000	450~600	130~180	3500~4500	400~900	5500~6500	1100~1700
R5.0	4500~6000	1200~1850	350~450	100~160	2800~3500	300~680	4500~6000	1100~1500
R6.0	3500~4500	1000~1600	300~400	100~160	2200~2800	300~680	3500~4500	1100~1400
最大切削量 Max. Cutting	$Ka = \sim 0.2 D$ $Pf = \sim 0.4 R$							

TUNGSTEN CARBIDE 2-FLUTE BALL END MILL

●Micro-Grain Tungsten carbide(For General Machining Center)

鎢鋼 6刃&8刃立銑刀

●超細微粒碳化鎢材質(一般M/C使用)

被切削材 WORKPIECE	鐵材、碳素鋼、鑄鐵、 合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、模具鋼、不鏽鋼 SCM SKD NAK101 SUS304		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		熱處理鋼、耐熱合金、鎳基合金 HARDENED STEELS	
	~ 300 HB		30 ~ 45 HRC		45 ~55 HRC		55 ~65 HRC	
立銑刀 R徑 mm END MILL "radius" mm	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
D6.0	4000~5500	700~1100	3000~4500	500~1000	1200~2500	180~330	1000~1400	100~250
D8.0	3000~4500	700~1100	2200~3300	500~1000	900~1800	180~330	750~1100	100~250
D10.0	2200~3500	700~1100	1800~2500	500~1000	800~1600	180~330	600~900	100~250
D12.0	2000~3000	500~1000	1500~2200	400~800	700~800	180~330	500~600	90~200
D16.0	1500~2300	400~800	1100~1600	350~550	500~900	150~280	350~550	70~170
D20.0	1100~1800	420~820	900~1300	300~600	450~800	144~270	280~450	70~165
D25.0	900~1500	300~660	700~1100	240~600	350~600	120~200	220~350	45~110
最大切削量 Max. Cutting	$Ka = \sim 1.0 D$ $W = \sim 0.025 D$				$Ka = \sim 1.0 D$ $W = \sim 0.01 D$			

TUNGSTEN CARBIDE 6-FLUTE END MILL

●Micro-Grain Tungsten carbide(For General Machining Center)

鎢鋼 2刃球型立銑刀

●超細微粒碳化鎢材質(高速M/C使用)

被切削材 WORKPIECE	純鋁 Aluminum		鋁合金 Aluminum Alloy		鋁合金 Aluminum Alloy		銅合金 Copper Alloy	
	1070		4032		6061		C1100	
立銑刀 R徑 mm END MILL "radius" mm	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
R1.0	46000~50000	3200~4500	3200~4800	280~410	30000~36000	1600~2400	46000~50000	2200~3400
R2.0	22000~26000	3200~4500	1800~2400	280~410	14000~20000	1000~2000	22000~26000	2200~3400
R2.5	18000~22000	3600~5000	1400~1800	280~410	12000~14000	800~1600	18000~22000	2200~3400
R3.0	15000~17000	2800~4100	1200~1600	280~410	10000~12000	800~1600	15000~17000	2400~3700
R4.0	11000~13000	2800~4100	900~1200	280~410	7000~9000	800~1600	11000~13000	2400~3500
R5.0	9000~12000	2400~3600	700~900	200~320	5600~700	600~1200	9000~12000	2200~3000
R6.0	7000~9000	2000~3200	600~800	200~320	4400~5000	600~1200	7000~9000	2200~2800
最大切削量 Max. Cutting	$Ka = \sim 0.1 D$ $W = \sim 0.2 R$							

TUNGSTEN CARBIDE 2-FLUTE BALL END MILL

●Micro-Grain Tungsten carbide(For High Speed Machining Center)

2EAL


極細微粒碳化鎢 2刃立銑刀

- 超細微粒碳化鎢材質
- 鋁合金加工專用

TUNGSTEN CARBIDE 2-FLUTE END MILL

- Micro-Grain Tungsten carbide
- Ideal for Aluminum Alloy Machining

被切削材 WORKPIECE	鑄鐵 FC250 FCD		鐵材、碳素鋼、 合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS		合金鋼、工具鋼、模具鋼 SCM SKD NAK55 NAK101		合金鋼、工具鋼、模具鋼 SUS316 SKD SUS304		鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS	
	1070		Si系(4032)		Mg系(5052)		Zn-Mg系(7075)		C1100	
立銑刀 R徑 mm END MILL "radius" mm	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
D3.0	28000~35000	700~1100	2500~3000	120~200	12000~15000	360~570	25000~29000	600~900	12000~15000	400~1000
D4.0	22000~26000	800~1300	1800~2200	120~200	9000~12000	350~680	18000~22000	700~1000	9000~12000	500~1000
D5.0	17000~21000	800~1300	1500~1800	120~200	7000~9500	350~680	15000~17500	700~1000	7000~95000	500~1000
D6.0	15000~17500	1000~1600	1200~1600	160~280	6000~8000	350~680	12500~15000	700~1000	6000~8000	500~1100
D8.0	11000~13000	1000~1600	900~1200	160~280	4000~6000	300~680	9000~11000	700~1000	4000~6000	500~1100
D10.0	9000~11000	1000~1600	700~1000	150~250	3500~5000	300~680	7000~9000	700~1000	3500~5000	500~1100
D12.0	7000~9000	1000~1600	600~800	120~230	3000~4500	300~680	6000~7000	700~1000	3000~4500	500~1000
D16.0	5000~7000	800~1400	450~600	90~170	2200~3500	350~680	4000~6000	700~1000	2200~3500	500~1000
D20.0	4000~5500	800~1400	350~500	90~170	1800~2200	350~680	3200~4500	700~1000	1800~2200	500~1000



最大切削量
Max. Cutting

$Ka = \sim 1.0 D$

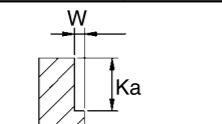
鎢鋼 2刃立銑刀

- 超細微粒碳化鎢材質
- 鋁合金加工專用

TUNGSTEN CARBIDE 2-FLUTE END MILL

- Micro-Grain Tungsten carbide
- Ideal for Aluminum Alloy Machining

被切削材 WORKPIECE	鑄鐵 FC250 FCD		鐵材、碳素鋼、 合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS		合金鋼、工具鋼、模具鋼 SCM SKD NAK55 NAK101		合金鋼、工具鋼、模具鋼 SUS316 SKD SUS304		鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS	
	1070		Si系(4032)		Mg系(5052)		Zn-Mg系(7075)		C1100	
立銑刀 R徑 mm END MILL "radius" mm	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
D3.0	28000~35000	1700~2200	2500~3000	120~220	12000~15000	600~1000	25000~29000	1000~1350	12000~15000	400~1350
D4.0	22000~26000	1700~2200	1800~2200	120~220	9000~12000	400~1000	18000~22000	800~1100	9000~12000	500~1100
D5.0	17000~21000	1500~2200	1500~1800	120~220	7000~9500	400~1000	15000~17500	800~1100	7000~95000	500~1100
D6.0	15000~17500	1900~2700	1200~1600	160~320	6000~8000	500~1100	12500~15000	800~1100	6000~8000	700~1350
D8.0	11000~13000	1900~2700	900~1200	160~320	4000~6000	400~1000	9000~11000	800~1100	4000~6000	700~1350
D10.0	9000~11000	1900~2700	700~1000	150~270	3500~5000	400~1000	7000~9000	800~1100	3500~5000	600~1350
D12.0	7000~9000	1600~2200	600~800	120~250	3000~4500	400~1000	6000~7000	800~1100	3000~4500	600~1100
D16.0	5000~7000	1600~2200	450~600	100~200	2200~3500	400~1000	4000~6000	700~1350	2200~3500	600~1100
D20.0	4000~5500	1600~2200	350~500	100~200	1800~2200	400~1000	3200~4500	700~1350	1800~2200	600~1100



最大切削量
Max. Cutting

$Ka = \sim 1.5 D$
 $W = \sim 0.1 D$

3ET

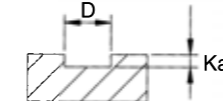
極細微粒鎢鋼 3刃波浪粗銑立銑刀

- 超細微粒碳化鎢3刃波浪粗銑立銑刀

MICRO GRAIN TUNGSTEN CARBIDE 3-FLUTE SINUS EDGE COARSE END MILLS

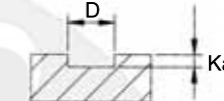
- Micro-Grain Tungsten carbide

被切削材 WORKPIECE	鐵材、碳素鋼、 鑄鐵、合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、 模具鋼、不鏽鋼 SCM SKD NAK55 NAK 101 SUS304		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		熱處理鋼、耐熱合金、鎳基合金 HARDENED STEELS	
	~ 300 HB		30 ~45 HRC		30 ~45 HRC		55 ~65 HRC	
立銑刀 R徑 mm END MILL "radius" mm	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
D6.0	3500~5500	400~700	2200~3200	200~450	1400~2500	150~350	600~1400	40~170
D8.0	2500~4000	400~700	2000~2400	200~400	1000~2000	100~320	450~1000	40~135
D10.0	2200~3000	400~700	1600~2100	200~350	800~1600	100~320	320~800	35~135
D12.0	1800~2600	300~600	1300~1800	200~350	700~1300	100~280	280~700	35~115
D14.0	1500~2400	300~600	1100~1500	200~350	600~1100	90~270	200~600	25~115
D16.0	1400~2000	300~600	1000~1300	200~350	550~1000	90~270	180~550	25~115
D18.0	1200~1700	300~680	900~1200	180~350	450~850	90~270	160~400	25~115
D20.0	1100~1500	300~680	800~1100	180~350	450~750	90~270	130~350	25~115



最大切削量
Max. Cutting

$Ka = \sim 0.7 D$



$Ka = \sim 0.3 D$

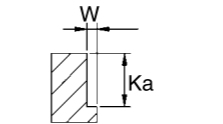
極細微粒鎢鋼 3刃波浪粗銑立銑刀

- 超細微粒碳化鎢3刃波浪粗銑立銑刀

MICRO GRAIN TUNGSTEN CARBIDE 3-FLUTE SINUS EDGE COARSE END MILLS

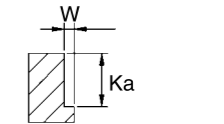
- Micro-Grain Tungsten carbide

被切削材 WORKPIECE	鐵材、碳素鋼、 鑄鐵、合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、 模具鋼、不鏽鋼 SCM SKD NAK55 NAK 101 SUS304		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		熱處理鋼、耐熱合金、鎳基合金 HARDENED STEELS	
	~ 300 HB		30 ~45 HRC		30 ~45 HRC		55 ~65 HRC	
立銑刀 R徑 mm END MILL "radius" mm	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
D6.0	3800~6000	400~1000	2200~3200	160~500	1500~2600	160~400	600~1400	50~230
D8.0	2700~4200	400~1000	2000~2400	160~430	1100~2000	120~350	450~1000	50~200
D10.0	2200~3500	400~1000	1600~2100	160~400	900~1600	120~350	320~800	45~170
D12.0	1800~3000	300~1000	1300~1800	160~400	800~1300	120~320	280~700	45~170
D14.0	1500~2700	300~1100	1100~1500	160~400	700~1100	100~280	200~600	30~135
D16.0	1400~2200	300~980	1000~1300	160~400	600~1000	100~280	180~550	30~135
D18.0	1200~1900	300~980	900~1200	160~400	500~850	100~280	160~400	30~135
D20.0	1100~1700	300~980	800~1100	160~400	450~750	100~280	130~350	30~135



最大切削量
Max. Cutting

$Ka = \sim 1.5 D$
 $W = \sim 0.3 D$



$Ka = \sim 1.5 D$
 $W = \sim 0.15 D$

3ETL

極細微粒鎢鋼 3刃波浪長刃型粗銑立銑刀

●超細微粒碳化鎢3刃波浪長刃型粗銑立銑刀

被切削材 WORKPIECE	鐵材、碳素鋼、 鑄鐵、合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、 模具鋼、不鏽鋼 SCM SKD NAK55 NAK 101 SUS304		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		熱處理鋼、耐熱合金、鎳基合金 HARDENED STEELS	
	~ 300 HB		30 ~45 HRC		30 ~45 HRC		55 ~65 HRC	
立銑刀 R徑 mm END MILL "radius" mm	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
D6.0	3500~5000	300~570	2200~3000	150~430	1400~2200	150~280	600~950	40~100
D8.0	2500~3600	220~570	1900~2200	120~360	1000~1700	100~230	450~700	40~80
D10.0	2000~2800	180~570	1500~2000	120~340	800~1400	100~230	320~550	35~75
D12.0	1600~2300	150~570	1200~1700	120~340	700~1100	100~230	280~480	35~75
D14.0	1300~2000	150~570	1000~1400	100~300	600~1000	90~200	200~400	25~75
D16.0	1200~1800	150~630	900~1200	100~300	550~850	90~200	180~350	25~75
D18.0	1000~1500	150~630	800~1100	100~300	450~800	90~200	160~320	25~75
D20.0	900~1400	150~630	700~1000	100~300	400~650	90~200	130~280	25~75

Ka = ~0.5 D

Ka = ~0.2 D

3ETAL

極細微粒碳化鎢 3刃波浪鋁用立銑刀

MICRO GRAIN TUNGSTEN CARBIDE 3-FLUTE SINUS EDGE ALUMINUM COARSE END MILLS

被切削材 WORKPIECE	純鋁		鋁合金		鋁合金		鋁合金		銅合金	
	1070		Si系(4032)		Mg系(5052)		Z系(7075)		C1100	
立銑刀 R徑 mm END MILL "radius" mm	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
D3.0	28000~35000	700~1300	2500~3000	120~240	12000~15000	360~680	25000~29000	600~1100	12000~15000	400~1200
D4.0	22000~26000	800~1600	1800~2200	120~240	9000~12000	350~840	18000~22000	700~1200	9000~12000	500~1200
D5.0	17000~21000	800~1600	1500~1800	120~240	7000~9500	350~840	15000~17500	700~1200	7000~9500	500~1300
D6.0	15000~17500	1000~1900	1200~1600	160~320	6000~8000	350~840	12500~15000	700~1200	6000~8000	500~1300
D8.0	11000~13000	1000~1900	900~1200	160~320	4000~6000	300~840	9000~11000	700~1200	4000~6000	500~1300
D10.0	9000~11000	1000~1900	700~1000	150~300	3500~5000	300~840	7000~9000	700~1200	3500~5000	500~1200
D12.0	7000~9000	1000~1900	600~800	120~280	3000~4500	300~840	6000~7000	700~1200	3000~4500	500~1200
D16.0	5000~7000	800~1650	450~600	90~200	2200~3500	350~1100	4000~6000	700~1200	2200~3500	500~1200
D20.0	4000~5500	800~1650	350~500	90~200	1800~2200	350~1100	3200~4500	700~1200	1800~2200	500~1200

Ka = ~1.0 D

極細微粒鎢鋼 3刃波浪長刃型粗銑立銑刀

●超細微粒碳化鎢3刃波浪長刃型粗銑立銑刀

被切削材 WORKPIECE	鐵材、碳素鋼、 鑄鐵、合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、 模具鋼、不鏽鋼 SCM SKD NAK55 NAK 101 SUS304		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		熱處理鋼、耐熱合金、鎳基合金 HARDENED STEELS	
	~ 300 HB		30 ~45 HRC		30 ~45 HRC		55 ~65 HRC	
立銑刀 R徑 mm END MILL "radius" mm	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
D6.0	3800~5000	360~800	2200~3000	200~450	1500~2200	150~340	600~950	60~135
D8.0	2700~3600	280~800	1900~2200	200~400	1100~1700	120~280	500~700	50~100
D10.0	2200~2800	220~690	1500~2000	200~360	900~1400	120~280	380~550	50~100
D12.0	1800~2300	220~690	1200~1700	180~360	700~1100	120~250	300~480	45~100
D14.0	1500~2000	200~690	1000~1400	180~360	600~1000	100~250	270~400	45~100
D16.0	1300~1800	200~800	900~1200	180~360	550~850	100~250	250~350	45~100
D18.0	1100~1500	200~750	800~1100	180~320	500~800	100~250	220~320	45~100
D20.0	1000~1400	200~690	700~1000	180~320	450~650	100~250	190~280	45~100

Ka = ~1.5 D
W = ~0.25 D

Ka = ~1.5 D
W = ~0.1 D

極細微粒碳化鎢 3刃波浪鋁用立銑刀

MICRO GRAIN TUNGSTEN CARBIDE 3-FLUTE SINUS EDGE ALUMINUM COARSE END MILLS

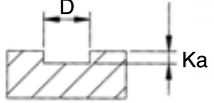
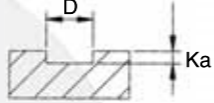
被切削材 WORKPIECE	純鋁		鋁合金		鋁合金		鋁合金		銅合金	
	1070		Si系(4032)		Mg系(5052)		Z系(7075)		C1100	
立銑刀 R徑 mm END MILL "radius" mm	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
D3.0	28000~35000	1700~2650	2500~3000	120~260	12000~15000	600~1200	25000~29000	1000~1650	12000~15000	400~1650
D4.0	22000~26000	1700~2650	1800~2200	120~260	9000~12000	400~1200	18000~22000	800~1350	9000~12000	500~1350
D5.0	17000~21000	1500~2650	1500~1800	120~260	7000~9500	400~1200	15000~17500	800~1350	7000~9500	500~1350
D6.0	15000~17500	1900~3200	1200~1600	160~380	6000~8000	500~1350	12500~15000	800~1350	6000~8000	700~1650
D8.0	11000~13000	1900~3200	900~1200	160~380	4000~6000	400~1200	9000~11000	800~1350	4000~6000	700~1650
D10.0	9000~11000	1900~3200	700~1000	150~320	3500~5000	400~1200	7000~9000	800~1350	3500~5000	600~1650
D12.0	7000~9000	1600~2650	600~800	120~300	3000~4500	400~1200	6000~7000	800~1350	3000~4500	600~1350
D16.0	5000~7000	1600~2650	450~600	100~240	2200~3500	400~1200	4000~6000	700~1650	2200~3500	600~1350
D20.0	4000~5500	1600~2650	350~500	100~240	1800~2200	400~1200	3200~4500	700~1650	1800~2200	600~1350

Ka = ~1.5 D
W = ~0.15 D

2ECR

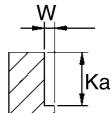
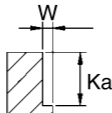
鎢鋼 圓鼻 2刃立銑刀

●超細微粒碳化鎢材質

被切削材 WORKPIECE	鐵材、碳素鋼、鑄鐵、 合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、模具鋼、不鏽鋼 SCM SKD NAK101 SUS304		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		熱處理鋼、耐熱合金、鎳基合金 HARDENED STEELS	
	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
硬度 HARDNESS	~ 300 HB		30 ~ 45 HRC		45 ~55 HRC		55 ~65 HRC	
立銑刀 R徑 mm END MILL "radius" mm								
D1.0	14000~19500	80~140	7000~11000	35~75	4000~7000	25~45	2700~4000	10~35
D2.0	8500~11000	75~145	4000~6350	40~80	3000~4000	25~45	1200~2200	15~40
D3.0	6000~9000	130~290	3000~4500	50~85	2000~2800	30~55	1000~1700	15~40
D4.0	5000~7500	160~350	2700~3600	60~110	1500~2200	30~55	900~1500	15~40
D5.0	4500~7000	150~480	2200~2900	70~150	1200~1900	30~60	600~1200	15~40
D6.0	4000~5500	150~480	2000~2700	70~150	1000~1600	30~60	500~1100	15~40
D8.0	2800~4500	150~510	1400~1800	70~150	800~1200	25~55	350~850	15~40
D10.0	2200~3600	150~400	1000~1450	70~150	600~980	25~55	300~700	15~40
D12.0	1800~3000	120~360	900~1350	70~150	500~800	25~55	280~600	15~40
最大切削量 Max. Cutting	 D = ~3mm Ka = ~0.3D D = 3mm ~Ka = ~0.5 D		 D = ~3mm Ka = ~0.02 D					

鎢鋼 圓鼻 2刃立銑刀

●超細微粒碳化鎢材質

被切削材 WORKPIECE	鐵材、碳素鋼、鑄鐵、 合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、模具鋼、不鏽鋼 SCM SKD NAK101 SUS304		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		熱處理鋼、耐熱合金、鎳基合金 HARDENED STEELS	
	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
硬度 HARDNESS	~ 300 HB		30 ~ 45 HRC		45 ~55 HRC		55 ~65 HRC	
立銑刀 R徑 mm END MILL "radius" mm								
D1.0	14000~19000	80~210	7000~11000	35~90	4000~7000	25~55	2700~4000	10~35
D2.0	8500~11000	90~210	4000~6350	50~100	3000~4000	25~70	1200~2200	15~45
D3.0	6000~9000	120~220	3000~4500	60~145	2000~2800	30~85	1000~1700	15~45
D4.0	5000~7500	160~220	2700~3600	80~175	1500~2200	30~85	900~1500	15~45
D5.0	4500~7000	160~220	2200~2900	60~140	1200~1900	30~85	600~1200	15~45
D6.0	4000~5500	160~220	2000~2700	60~140	1000~1600	30~85	500~1100	15~45
D8.0	2800~4500	160~220	1400~1800	60~140	800~1200	25~70	350~850	15~45
D10.0	2200~3600	160~220	1000~1450	60~140	600~980	25~70	300~700	15~45
D12.0	1800~3900	130~210	900~1350	60~140	500~800	25~70	280~600	15~45
最大切削量 Max. Cutting	 Ka = ~2.5 D W = ~0.05 D		 Ka = ~2.5 D W = ~0.025 D					

4ECR

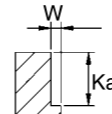
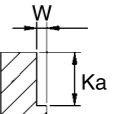
鎢鋼 圓鼻 4刃立銑刀

●超細微粒碳化鎢材質

被切削材 WORKPIECE	鐵材、碳素鋼、鑄鐵、 合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、模具鋼 SCM SKD NAK55 NAK101		熱處理鋼、鈦合金、不鏽鋼 SUS304 SUS316 Ti-6Al-4V		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS	
	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
硬度 HARDNESS	~ 300 HB		30 ~ 35 HRC		35 ~45HRC		45 ~ 50 HRC		45 ~55 HRC	
立銑刀 R徑 mm END MILL "radius" mm										
D3.0	7500~9000	600~850	5000~6000	350~550	4800~5500	300~450	3800~4500	250~360	1500~2100	75~125
D4.0	5500~6500	600~850	3800~4600	350~550	3500~4200	300~500	2800~3500	250~400	1200~1600	75~135
D5.0	4500~5500	600~850	3000~3700	350~550	2800~3300	300~550	2200~2700	250~450	1000~1300	70~145
D6.0	3500~4500	600~850	2500~3000	300~550	2200~2800	300~550	1900~2300	250~450	800~1100	60~145
D8.0	3000~3500	500~800	1800~2400	300~670	1700~2100	250~550	1400~1700	250~450	600~800	60~145
D10.0	2300~2800	450~750	1500~1900	250~550	1400~1750	250~550	1100~1400	250~450	500~650	50~135
D12.0	1900~2300	450~750	1200~1600	250~550	110~1400	250~500	900~1200	200~400	400~550	50~135
D16.0	1400~1800	400~750	900~1200	200~450	800~1100	200~450	700~900	180~350	300~400	40~115
最大切削量 Max. Cutting	 Ka = ~0.25 D					 Ka = ~0.1 D				

鎢鋼 圓鼻 4刃立銑刀

●超細微粒碳化鎢材質

被切削材 WORKPIECE	鐵材、碳素鋼、鑄鐵、 合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、模具鋼 SCM SKD NAK55 NAK101		熱處理鋼、鈦合金、不鏽鋼 SUS304 SUS316 Ti-6Al-4V		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS			
	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)		
硬度 HARDNESS	~ 300 HB		30 ~ 35 HRC		35 ~45HRC		45 ~ 50 HRC		45 ~55 HRC			
立銑刀 R徑 mm END MILL "radius" mm												
D3.0	8500~11000	700~1100	5500~7200	400~670	5000~6600	350~630	4500~6500	300~630	2200~3300	100~220		
D4.0	6300~8200	600~1260	4000~5400	400~670	3800~5000	350~670	3500~4800	250~630	1800~2500	100~220		
D5.0	5000~6500	600~1260	3200~4400	400~670	3000~4000	350~670	2700~3800	250~630	1400~2000	100~220		
D6.0	4000~5500	600~1500	2700~3600	400~800	2500~3400	350~750	2200~3200	250~630	1200~1650	100~220		
D8.0	3000~4200	600~1500	1900~2800	300~800	1800~2500	300~750	1500~2500	250~630	900~1250	80~200		
D10.0	2400~3500	500~1400	1600~2200	300~800	1500~2000	300~670	1200~2000	250~630	700~1000	80~200		
D12.0	2000~2900	500~1400	1300~1900	300~670	1200~1700	300~630	1000~1650	150~560	600~800	80~180		
D16.0	1500~2200	400~1100	1000~1400	250~570	960~1300	200~520	700~1250	120~450	420~600	80~180		
最大切削量 Max. Cutting	 Ka = ~1.5 D W = ~0.2 D				Ka = ~1.5 D W = ~0.1 D				 Ka = ~1.0 D W = ~0.05 D			

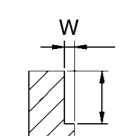
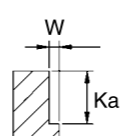
鎢鋼 4刃口袋型立銑刀

●超細微粒碳化鎢材質

被切削材 WORKPIECE	鐵材、碳素鋼、鑄鐵、合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、模具鋼 SCM SKD NAK55 NAK101		熱處理鋼、鈦合金、不鏽鋼 SUS304 SUS316 Ti-6Al-4V		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS			
	~ 300 HB		30 ~ 35 HRC		35 ~45HRC		45 ~ 50 HRC		45 ~55 HRC			
立銑刀 R徑 mm END MILL "radius" mm	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)		
D3.0	7500~9000	600~850	5000~6000	350~550	4800~5500	300~450	3800~4500	250~360	1500~2100	75~120		
D4.0	5500~6500	600~850	3800~4600	350~550	3500~4200	300~500	2800~3500	250~400	1200~1600	75~135		
D5.0	4500~5500	600~850	3000~3700	350~500	2800~3300	300~570	2200~2700	250~460	1000~1300	70~140		
D6.0	3500~4500	600~850	2500~3000	300~500	2200~2800	300~570	1900~2300	250~460	800~1100	60~140		
D8.0	3000~3500	500~800	1800~2400	300~700	1700~2100	250~570	1400~1700	250~460	600~800	60~140		
D10.0	2300~2800	450~750	1500~1900	250~570	1400~1700	250~570	1100~1400	250~460	500~650	50~135		
D12.0	1900~2300	450~750	1200~1600	250~570	1100~1400	250~500	900~1200	200~400	400~550	50~135		
D14.0	1600~2000	450~750	1000~1400	200~460	900~1200	200~450	800~1000	200~350	350~460	40~120		
D16.0	1400~1800	400~750	900~1200	200~460	800~1100	200~450	700~900	180~350	300~400	40~120		
D18.0	1200~1700	300~630	800~1100	180~460	750~1000	150~400	550~750	150~320	270~360	40~120		
D20.0	1100~1500	300~630	700~900	180~400	700~850	150~400	500~700	150~320	240~320	40~120		
最大切削量 Max. Cutting	 $Ka = \sim 0.5 D$				 $Ka = \sim 0.1 D$							

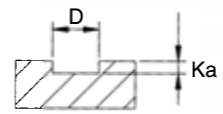
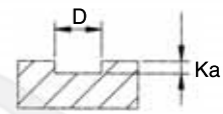
鎢鋼 4刃口袋型立銑刀

●超細微粒碳化鎢材質

被切削材 WORKPIECE	鐵材、碳素鋼、鑄鐵、合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、模具鋼 SCM SKD NAK55 NAK101		熱處理鋼、鈦合金、不鏽鋼 SUS304 SUS316 Ti-6Al-4V		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS		鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS			
	~ 300 HB		30 ~ 35 HRC		35 ~45HRC		45 ~ 50 HRC		45 ~55 HRC			
立銑刀 R徑 mm END MILL "radius" mm	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)		
D3.0	8500~11000	700~1100	5500~7200	400~670	5000~6600	350~620	4500~6500	300~630	2200~3300	100~220		
D4.0	6300~8200	600~1250	4000~5400	400~670	3800~5000	350~680	3500~4800	250~630	1800~2500	100~220		
D5.0	5000~6500	600~1250	3200~4400	400~670	3000~4000	350~680	2700~3800	250~630	1400~2000	100~220		
D6.0	4000~5500	600~1500	2700~3600	400~800	2500~3400	350~750	2200~3200	250~630	1200~1650	100~220		
D8.0	3000~4200	500~1500	1900~2800	300~800	1800~2500	300~750	1500~2500	200~630	900~1250	80~200		
D10.0	2400~3500	500~1400	1600~2200	300~800	1500~2000	300~680	1200~2000	200~630	700~1000	80~200		
D12.0	2000~2900	500~1400	1300~1900	300~690	1200~1700	300~630	1000~1650	150~570	600~800	80~180		
D14.0	1700~2400	400~1100	1100~1700	300~690	1000~1450	250~570	800~1400	150~570	520~700	80~180		
D16.0	1500~2200	400~1100	1000~1400	250~570	960~1300	200~500	700~1250	120~450	420~600	60~180		
D18.0	1300~1900	300~900	900~1300	200~570	850~1100	160~450	600~1100	120~450	380~550	60~180		
D20.0	1200~1700	300~630	800~1100	200~500	750~1000	160~450	500~1000	100~400	320~500	60~180		
最大切削量 Max. Cutting	 $Ka = \sim 1.5 D$ $W = \sim 0.2 D$				$Ka = \sim 1.5 D$ $W = \sim 0.1 D$				 $Ka = \sim 1.0 D$ $W = \sim 0.05 D$			

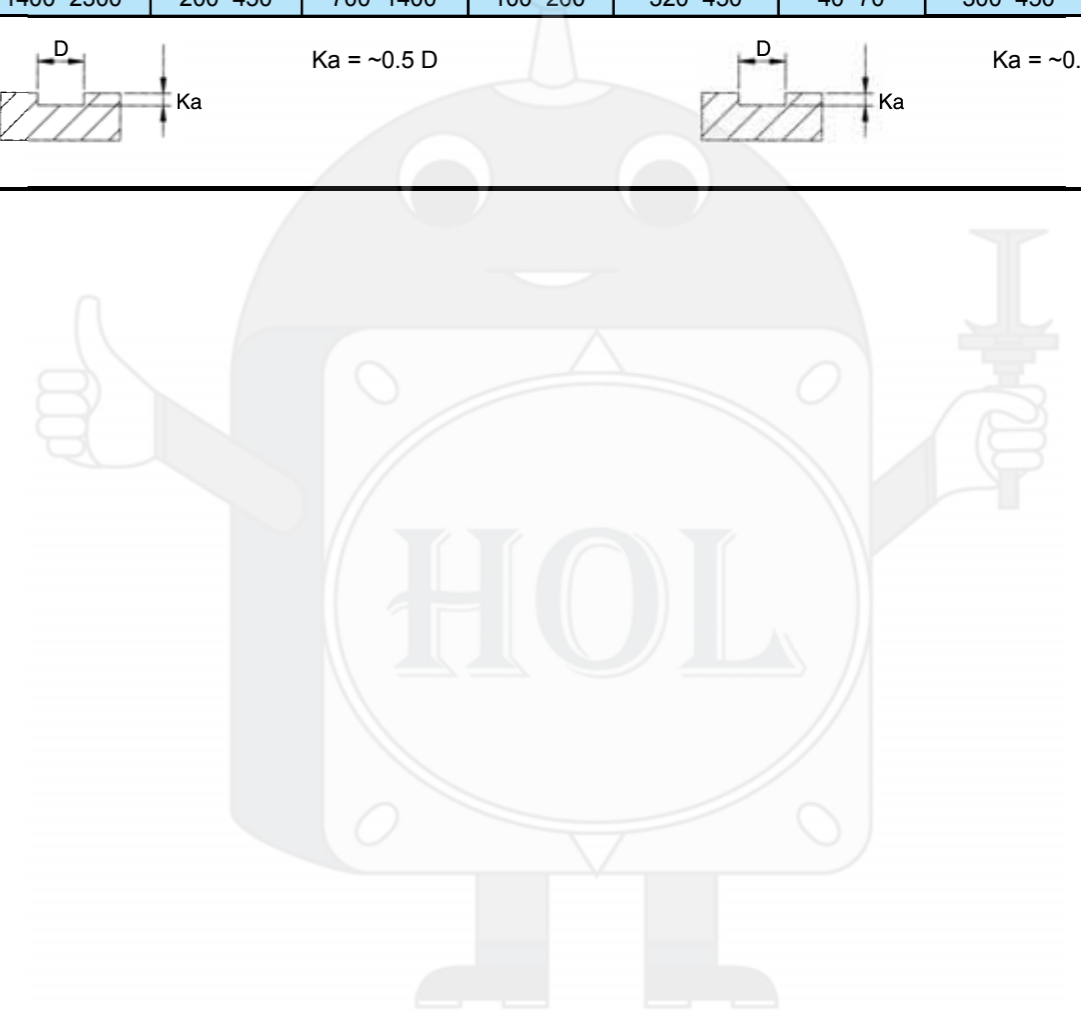
全鎢鋼 4刃內R 倒角立銑刀

●超細微粒碳化鎢材質

被切削材 WORKPIECE	鐵材、碳素鋼、鑄鐵、合金鋼、工具鋼 SS41 S45C S50C SCM SNCM SK SKS FC250 FCD		合金鋼、工具鋼、模具鋼 SCM SKD NAK55 NAK101		熱處理鋼、鈦合金、不鏽鋼 SUS304 SUS316 Ti-6Al-4V		熱處理鋼、鈦合金 HEAT RESISTANT ALLOY STEELS TITANIUM ALLOYS	
	~ 300 HB		30 ~ 35 HRC		35 ~45HRC		45 ~ 50 HRC	
立銑刀 R徑 mm END MILL "radius" mm	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)	rpm(min-1)	F(mm/min)
D6.0	5000~7000	300~620	2800~4000	150~350	1100~1500	60~110	1000~1400	60~100
D8.0	3700~5500	300~620	2600~3800	150~350	800~1300	60~110	800~1100	60~100
D10.0	3200~4500	300~620	2000~3000	150~350	700~1100	60~110	600~1000	60~100
D12.0	2600~3500	300~570	1400~2200	150~350	600~900	60~110	550~800	60~100
D16.0	2200~2800	250~520	1000~1800	130~250	450~700	50~90	350~600	50~80
D20.0	1400~2300	200~450	700~1400	100~200	320~450	40~70	300~450	30~55
最大切削量 Max. Cutting	 $Ka = \sim 0.5 D$				 $Ka = \sim 0.1 D$			

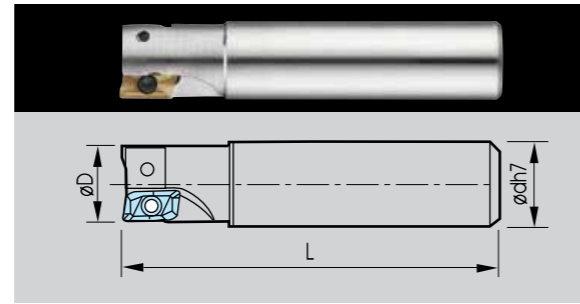
TUNGSTEN CARBIDE 4-FLUTE CORNER ROUNDING END MILL

●Micro-Grain Tungsten carbide



捨棄式立銑刀

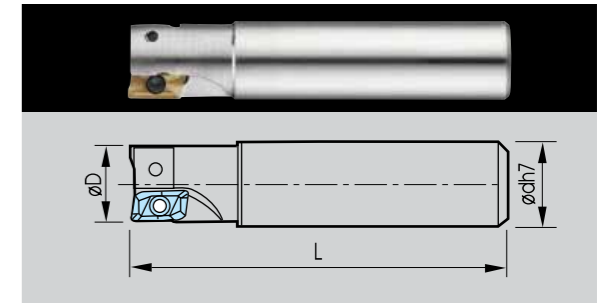
THROW-AWAY TYPE END MILL



型號規格 EDP NO.	刃徑 Dia	尺寸 DIMENSION(mm)		刃數 No. of teeth	適用刀片 Insert	螺絲 Screw	板手 Wrench
JRWEM1012-1T10	10	12	80	1	APMT 1035 	CS2565	T-8
JRWEM1212-1T10	12	12	80	1			
JRWEM1416-1T10	14	16	80	1			
JRWEM1616-2T10	16	16	90	2			
JRWEM1816-2T10	18	16	90	2			
JRWEM2020-4T10	20	20	110	4			
JRWEM2525-4T10	25	25	120	4			
JRWEM2525-4T16	25	25	120	2			
JRWEM3232-3T16	32	32	120	3	APMT 1605 	CS4010	T-15
JRWEM4032-4T16	40	32	125	4			
JRWEM5032-5T16	50	32	125	5			
長柄型 (Long shak type)							
JRWEM2525-2T16-160	25	25	160	2	APMT 1605 	CS4010	T-15
JRWEM3232-3T16-180	32	32	180	3			
JRWEM4032-4T16-200	40	32	200	4			

90° 端銑刀

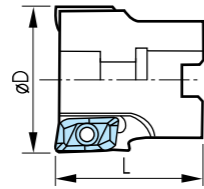
END MILLING CUTTERS (90°)



型號規格 EDP NO.	刃徑 Dia	尺寸 Dimension(mm)			適用刀片 Insert	螺絲 Screw	板手 Wrench
		d	L1	L2			
JMC16-2T11	16	16	120	30	BDMT11T3 BDGT11T3	M2.5x0.45	T8
JMC18-2T11	18	16	120	30			
JMC20-2T11	20	20	120	30			
JMC20-3T11	20	20	120	30			
JMC21-3T11	21	20	120	30			
JMC22-3T11	22	20	120	30			
JMC24-3T11	24	20	120	30			
JMC25-3T11	25	25	120	40			
JMC25-3T11	25	25	150	40			
JMC26-3T11	26	25	120	40			
JMC30-4T11	30	25	130	40			
JMC32-4T11	32	32	130	40			
JMC34-5T11	34	32	130	40			
JMC40-5T11	40	32	150	50			
JMC25-2T17	25	25	120	40	BDMT1704 BDGT1704	M4x0.7	T15
JMC27-2T17	27	25	120	32			
JMC32-3T17	32	32	130	40			
JMC40-4T17	40	32	150	50			

捨棄式立銑刀

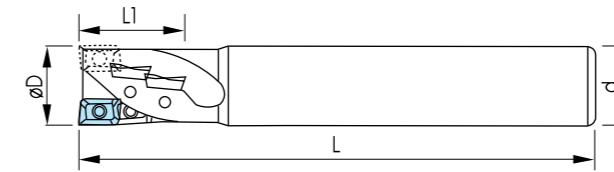
THROW-AWAY TYPE END MILL



型號規格 EDP NO.	刃徑 Dia	尺寸 DIMENSION(mm)		刃數 No. of teeth	適用刀片 Insert	螺絲 Screw	板手 Wrench
JRWEM50F-5T16	50	25.4	40	5	APMT 1605	CS4010	T-15
JRWEM63F-6T16	63	25.4	40	6			

捨棄式粗銑立銑刀

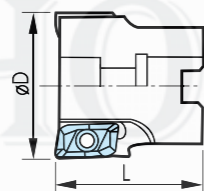
THROW-AWAY TYPE COARSE CUTTING END MILL



型號規格 EDP NO.	刃徑 Dia	尺寸 DIMENSION(mm)			刃數 No. of teeth	適用刀片 Insert	螺絲 Screw	板手 Wrench
		D Shank Diameter	L1 Flute Length	L Overall Length				
EM90AP10-D20	20	20	25	120	6	APMT 1035	CS2565	T-8
EM90AP10-D25	25	25	35	130	8			
EM90AP10-D32	32	32	44	140	15			
EM90AP10-D40	40	32	53	150	21			
EM90AP16-D40	40	42	49	150	8	APMT 1605	CS3590	T-15
EM90AP16-D50	50	42	61	165	10			

90° 殼形平面銑刀

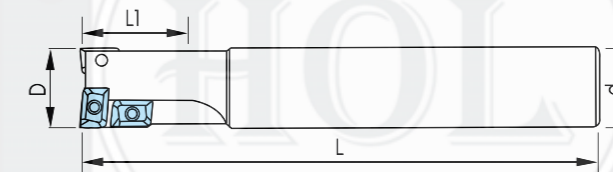
END MILLING CUTTERS (90°)



型號規格 EDP NO.	刃徑 Dia	尺寸 Dimension(mm)			適用刀片 Insert	螺絲 Screw	板手 Wrench
		d	H	S			
JMC50-5T11	50	22	40	10	BDMT11T3 BDGT11T3	M2.5x0.45	T8
JMC50-6T11	50	25.4	50				
JMC63-7T11	63	25.4	50				
JMC80-7T11	80	25.4	50				
JMC100-9T11	100	31.75	50				
JMC50-5T17	50	22	40	15.7	BDMT1704 BDGT1704	M4x0.7	T15
JMC50-5T17	50	25.4	50				
JMC63-6T17	63	25.4	50				
JMC80-7T17	80	25.4	50				
JMC100-8T17	100	31.75	50				

捨棄式鑽立銑刀

THROW-AWAY TYPE DRILLING END MILL



型號規格 EDP NO.	刃徑 Dia	尺寸 DIMENSION(mm)			刃數 No. of teeth	適用刀片 Insert	螺絲 Screw	板手 Wrench
		D Shank Diameter	L1 Flute Length	L Overall Length				
DM90AP10-D20	20	20	16	130	3	APMT 1035	CS2565	T-8
DM90AP10-D21	21	20	16	130	3			
DM90AP10-D25	25	25	25	140	4			
DM90AP10-D26	26	25	25	140	4			
DM90AP10-D20L	20	20	16	185	3		CS2565	T-8
DM90AP10-D21L	21	20	16	185	3			
DM90AP10-D25L	25	25	25	220	4			
DM90AP16-D32	32	32	26	150	3			
DM90AP16-D33	33	32	26	150	3			
DM90AP16-D40	40	32	38	160	4			
DM90AP16-D32L	32	32	26	230	3		CS3590	T-15
DM90AP16-D33L	33	32	26	230	3			
DM90AP16-D40L	40	32	38	240	4			

PVD 各種硬質薄膜特性

PVD Hard Coating Properties

薄膜名稱	薄膜性質	薄膜顏色 Symbol color	薄膜硬度 Nanohard- ness[GPa]	薄膜厚度 Thickness [μm]	摩擦係數 Friction coefficient	最高 應用溫度 Max usage Temp[°C]	製程溫度 Coating Temp[°C]
標準薄膜 Standard coating	氮化鈦 TiN	黃金色 Gold	24	1-7	0.55	500	250-400
	氮碳化鈦 TiCN	灰色 Grey	32	1-4	0.3	400	400
	氮化鉻 CrN	銀灰色 Metal-silver	18	1-7	0.4	700	200-400
	類鑽膜 DLC	黑色 Black	20	1-3	0.15	400	150-250
	TiAlxN S-Fire	酒紅色 Burgundy -violet	30	1-4	0.4	800	450 ↑
	AlTiN	黑色 Black	38	1-4	0.6	900	450 ↑
	奈米複合薄膜 Nanocomposite coating	Super TiN	黃金色 Gold	28	1-3	0.4	500
TiX		黃金色 Gold	45	1-5	0.45	800	450 ↑
Nano Cerkor m		銀白色 Silver	22	1-3	0.3	800	450 ↑
μAlTiN		黑色 Black	38	1-4	0.3	900	450 ↑
nACo		紫色-藍色 Violet-Blue	45	1-4	0.45	1200	400 ↑
nACRo		灰色 Grey	42	1-7	0.35	1100	400 ↑
nACV1c (Hard DLC)		灰色-黑色 Grey-Black	42	1-7	0.2	1100	350 ↑

鎢鋼材質表

TUNGSTEN CARBIDE MATERIAL PROPERTIES

Konrad Carbide

鎢鋼等級 Tungsten Grade	WC%	Co%	TiC/ Ta(Nb)C % or Cr ₃ C ₂ +VC	密度 Density, ISO 3369 [g/cm ³]	硬度 Hardness		磁飽和 Manetic saturation 4πσ [μTm ³ / kg]	矯頑磁場 強度 Coercive field strength HC, ISO 3326 [kA/m]	橫向斷裂 強度 Transverse rupture strength ISO 3327 [N/mm ²]	多孔性 Porosity ISO 4505			平均晶 粒度 Average Grain Size	ISO等級 Classification ISO 513
					HRA, ISO 3738	HV,30 ISO 3738				A	B	C		
KF K 20 F	90,5	8	1,5	14,6	92,2	1710	15	23	3200	≤02	00	00	0.7 μm	K10-K30
KF K 40 UF	89,5	10	0,5	14,5	91,7	1610	16	21	3600	≤02	00	00	0.65 μm	K30-K40
KF K 44 UF	86,7	12	1,3	14,1	92,1	1680	19	26	3800	≤02	00	00	0.5 μm	K40-K50
KF K 55 SF	89,8	9	1,2	14,3	93,2	2000	14	39	4000	≤02	00	00	0.2 μm	-
KF G 20	87	11,5	1,5	14,2	89,1	1300	21	12	2500	≤02	00	00	3 μm	-
WF 25	88	12~1	1,5	14,2	92,2	1300	21	12	2500	≤02	00	00	0.6 μm 0.4 μm 0.7 μm	-

尺寸公差表

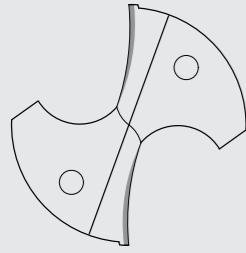
DIMENSIONAL TOLERANCE

單位 : μm

Tolerance 公差	H5	H7	H8	H10	m5	m7	h5	h6	h7	h8	h10	e8
3以下	+4 0	+10 0	+14 0	+40 0	+06 +2	+12 +2	0 -4	0 -6	0 -10	0 -14	0 -40	-14 -28
3~6	+5 0	+12 0	+18 0	+48 0	+09 +4	+16 +4	0 -5	0 -8	0 -12	0 -18	0 -48	-20 -38
6~10	+6 0	+15 0	+22 0	+58 0	+12 +6	+21 +6	0 -6	0 -9	0 -15	0 -22	0 -58	-25 -47
10~18	+8 0	+18 0	+27 0	+70 0	+15 +7	+25 +7	0 -8	0 -11	0 -18	0 -27	0 -70	-32 -59
18~30	+9 0	+21 0	+33 0	+84 0	+17 +8	+29 +8	0 -9	0 -13	0 -21	0 -33	0 -84	-40 -73
30~50	+11 0	+25 0	+39 0	+100 0	+20 +9	+34 +9	0 -11	0 -16	0 -25	0 -39	0 -100	-50 -89
50~80	+13 0	+30 0	+46 0	+120 0	+24 +11	+41 +11	0 -13	0 -19	0 -30	0 -46	0 -120	-60 -106
80~100	+15 0	+35 0	+54 0	+140 0	+28 +13	+48 +13	0 -15	0 -22	0 -35	0 -54	0 -140	-72 -126

鎢鋼鑽頭之故障排除

TROUBLE SHOOTING FOR SOLID CARBIDE DRILL



問題

切刃口快速磨損

對策動作

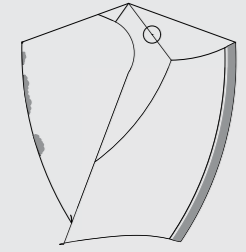
- 檢查機器主軸、夾具及工件夾持穩固度
- 增加冷卻劑的濃度、潤滑度
- 降低切削速度
- 增加進給量

PROBLEM

Fast wear on cutting edge

CORRECTION

- Check machine spindle, chuck and workpiece clamping stability.
- Increase coolant viscosity and lubrication effect.
- Reduce cutting speed.
- Increase feed rate.



問題

切削刃帶口磨損

對策動作

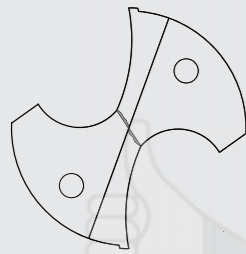
- 檢查以及確定鑽頭偏擺度在0.03mm以下
- 檢查機器主軸、夾具及工件夾持穩固度
- 增加冷卻劑的濃度、潤滑度
- 降低切削速度
- 增加進給量
- 增加冷卻液壓力或調整噴嘴方向，多方向冷卻更佳
- 降低中心鑽孔時之進給速度至0.05/rev

PROBLEM

Abnormal wear on cutting edge

CORRECTION

- Check and make sure that drill run-out accuracy is under 0.03mm.
- Check machine spindle, chuck and workpiece clamping stability.
- Increase coolant viscosity and lubrication effect.
- Reduce cutting speed.
- Increase feed rate.
- Increase coolant pressure. Adjust direction of coolant nozzle. The better is to use multi-direction cooling.
- Reduce feed rate of center drilling to 0.05/rev.



問題

中心刃崩裂

對策動作

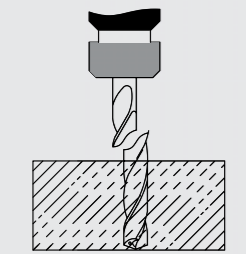
- 檢查以及確定鑽頭偏擺度在0.03mm以下
- 檢查機器主軸、夾具及工件夾持穩固度
- 降低中心鑽孔時之進給速度至0.05/rev
- 增加冷卻液壓力以及調整鑽孔之進給速度

PROBLEM

Center cutting edge break

CORRECTION

- Check and make sure that drill run-out accuracy is under 0.03mm.
- Check machine spindle, chuck and workpiece clamping stability.
- Reduce feed rate of center drilling to 0.05/rev.
- Increase coolant pressure. Adjust drilling feed rate.



問題

在鑽孔內部斷裂

對策動作

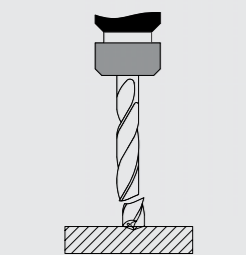
- 檢查以及確定鑽頭偏擺度在0.03mm以下
- 檢查機器主軸、夾具及工件夾持穩固度
- 依據鑽孔深度選擇適當的鑽頭
- 增加冷卻液壓力或調整噴嘴方向，多方向冷卻更佳
- 降低中心鑽孔時之進給速度至0.05mm/rev
- 檢查切削參數，可能需降低進給量
- 增加冷卻劑的濃度、潤滑度

PROBLEM

Drill break in hole

CORRECTION

- Check and make sure that drill run-out accuracy is under 0.03mm.
- Check machine spindle, chuck and workpiece clamping stability.
- Select a proper drill according to drilling depth.
- Increase coolant pressure. Adjust direction of coolant nozzle. The better is to use multi-direction cooling.
- Reduce feed rate of center drilling to 0.05/rev.
- Check cutting parameters. If necessary, reduce feed.
- Increase coolant viscosity and lubrication effect.



問題

與工件接觸時斷裂

對策動作

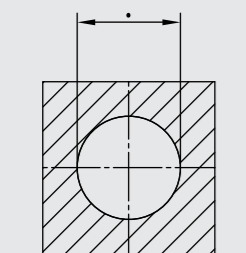
- 檢查以及確定鑽頭偏擺度在0.03mm以下
- 檢查機器主軸、夾具及工件夾持穩固度
- 降低中心鑽孔時之進給速度至0.05/rev
- 依據鑽孔深度選擇適當的鑽頭

PROBLEM

Drill break when touching workpiece

CORRECTION

- Check and make sure that drill run-out accuracy is under 0.03mm.
- Check machine spindle, chuck and workpiece clamping stability.
- Reduce feed rate of center drilling to 0.05/rev.
- Select a proper drill according to drilling depth.



問題

鑽孔公差太大

對策動作

- 檢查以及確定鑽頭偏擺度在0.03mm以下
- 檢查機器主軸、夾具及工件夾持穩固度
- 檢查刃口直徑
- 檢查刃口高度差(0.02mm)
- 降低中心鑽孔時之進給速度至0.05mm/rev
- 增加冷卻液壓力或調整噴嘴方向，多方向冷卻更佳
- 降低切削速度或增加進給量
- 再研磨鑽頭

PROBLEM

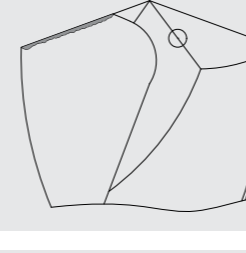
Too much hole tolerance

CORRECTION

- Check and make sure that drill run-out accuracy is under 0.03mm.
- Check machine spindle, chuck and workpiece clamping stability.
- Check cutting edge diameter.
- Check height difference between cutting edges (0.02mm).
- Reduce feed rate of center drilling to 0.05/rev.
- Increase coolant pressure. Adjust direction of coolant nozzle. The better is to use multi-direction cooling.
- Reduce cutting speed or increase feed amount.
- Resharpen drill.

鎢鋼鑽頭之故障排除

TROUBLE SHOOTING FOR SOLID CARBIDE DRILL



問題

外切刃口崩裂

對策動作

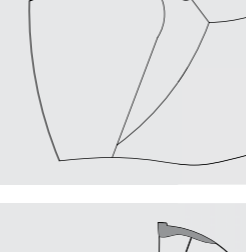
- 檢查機器主軸、夾具及工件夾持穩固度
- 增加冷卻劑的濃度、潤滑度
- 降低中心鑽孔時之進給速度至0.05/rev
- 增加切削速度或進給量

PROBLEM

Outside cutting edge break

CORRECTION

- Check machine spindle, chuck and workpiece clamping stability.
- Increase coolant viscosity and lubrication effect.
- Reduce feed rate of center drilling to 0.05/rev.
- Increase cutting speed or feed rate.



問題

刃口切屑溶著

對策動作

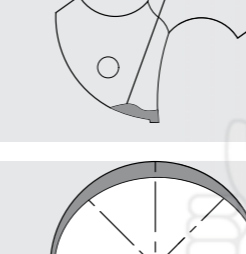
- 增加冷卻劑的濃度、潤滑度
- 提高切削速度
- 再研磨鑽頭

PROBLEM

Chips melt on cutting edge

CORRECTION

- Increase coolant viscosity and lubrication effect.
- Increase cutting speed.
- Resharpen drill.



問題

外刃口破裂

對策動作

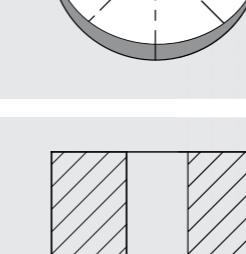
- 檢查機器主軸、夾具及工件夾持穩固度
- 增加冷卻劑的濃度、潤滑度
- 依據鑽孔深度選擇適當的鑽頭
- 增加冷卻液壓力或調整噴嘴方向，多方向冷卻更佳
- 檢查切削參數，可能需降低進給量

PROBLEM

Outside cutting edge break

CORRECTION

- Check machine spindle, chuck and workpiece clamping stability.
- Increase coolant viscosity and lubrication effect.
- Select a proper drill according to drilling depth.
- Increase coolant pressure. Adjust direction of coolant nozzle. The better is to use multi-direction cooling.
- Check cutting parameters. If necessary, reduce feed amount.



問題

真圓度有問題(同心度不準)

對策動作

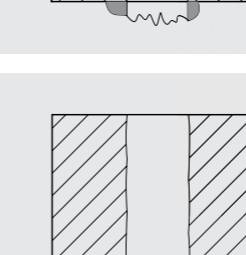
- 檢查機器主軸、夾具及工件夾持穩固度
- 檢查以及確定鑽頭偏擺度在0.03mm以下
- 降低中心鑽孔時之進給速度至0.05mm/rev
- 依據鑽孔深度選擇適當的鑽頭

PROBLEM

Poor circularity (Poor concentricity)

CORRECTION

- Check machine spindle, chuck and workpiece clamping stability.
- Check and make sure that drill run-out accuracy is under 0.03mm.
- Reduce feed rate of center drilling to 0.05/rev.
- Select a proper drill according to drilling depth.



問題

鑽削出口有大毛邊

對策動作

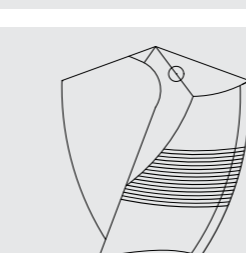
- 縮短刀具更換時機
- 降低進給量
- 減小刃口倒角

PROBLEM

Burrs exist on hole edge

CORRECTION

- Shorten drill change frequency.
- Reduce feed amount.
- Reduce cutting edge chamfering.



問題

表面粗度不良

對策動作

- 檢查以及確定鑽頭偏擺度在0.03mm以下
- 檢查機器主軸、夾具及工件夾持穩固度
- 降低進給量
- 增加冷卻液壓力以及調整鑽孔之進給速度

PROBLEM

Poor surface roughness

CORRECTION

- Check and make sure that drill run-out accuracy is under 0.03mm.
- Check machine spindle, chuck and workpiece clamping stability.
- Reduce feed amount.
- Increase coolant pressure. Adjust drilling feed rate.



問題

刀具體體磨擦

對策動作

- 檢查以及確定鑽頭偏擺度在0.03mm以下
- 檢查機器主軸、夾具及工件夾持穩固度
- 增加冷卻劑的濃度、潤滑度
- 降低進給量

PROBLEM

Friction of drill body

CORRECTION

- Check and make sure that drill run-out accuracy is under 0.03mm.
- Check machine spindle, chuck and workpiece clamping stability.
- Increase coolant viscosity and lubrication effect.
- Reduce feed amount.

- 床台進給量與每一刃的進給量
- FEED RATE PER FLUTE

$$fz = \frac{F}{Z \times N}$$

fz:每一刃的進給量[mm/刃]
 F:床台進給量[mm/min]
 Z:刀具刃數
 N:主軸迴轉數[r.p.m.]

fz:Feed rate per flute (mm/flute)
 F:Machine feed rate (mm/min)
 Z:Cutter flute numbers
 N:Spindle speed (r.p.m)

- 所需動力
- POWER REQUIRED

$$P_{KW} = \frac{Ks \times Q}{6120 \times \eta} = \frac{Ks \times W \times F \times d}{6120000 \times \eta}$$

$$= \frac{Ks \times W \times fz \times Z \times N \times d}{6120000 \times \eta}$$

$$P_{HP} = \frac{6120}{4500} \times P_{KW}$$

PKW:所需動力[KW]
 PHP:所需動力(馬力)[HP]
 W:切屑寬[mm]
 F:床台進給量[mm/min]
 fz:進給量[mm/rev]
 Z:主軸迴轉數(枚)
 d:切深[mm]
 Ks:比切削抵抗值[kgf/mm²]
 η:機械效率(0.7~0.8)

PKW:Feed rate per flute
 Power required(KW)
 PHP:Horsepower require (HP)
 F:Machine feed rate (mm/min)
 fz:Feed rate (mm/res)
 Z:Tool flute numbers
 N:Spindle speed (r.p.m)
 d:Cutting depth(mm)
 Ks:Specific cutting resistant value
 (kgf/mm²)
 η: Machine efficiency (0.7~0.8)

ks的概略值 APPROX KS VALUE	
軟鋼 Soft Steel	190
中炭素鋼 Medium Carbon Steel	210
高炭素鋼 High Carbon Steel	240
低合金鋼 Low Alloy Steel	190
高合金鋼 High Alloy Steel	245
鑄鐵 Cast Iron	93
可鍛鑄鐵 Forging Cast Iron	120
青銅黃銅 Brass . Copper	70

- 切屑排出量
- CHIP REMOVAL RATE

$$Q = V \times F \times d = V \times fz \times Z \times d$$

Q:切屑排出量[cm³/min]
 V:切屑速度[m/min]
 F:床台進給量[mm/min]
 fz:每一刃的進給量[mm/刃]
 Z:刀具數量
 d:切深[mm]

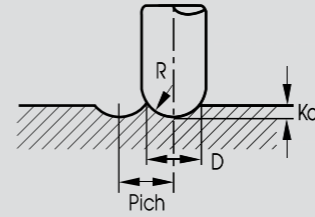
Q:Chip removal rate (cm³/min)
 V:Cutting speed (m/min)
 F:Machine feed rate (mm/min)
 fz:Feed rate per flute (mm/flute)
 Z:Tool flute numbers
 d:Cutting depth (mm)

- 球型立銑刀的切削速度與迴轉速
- BALL END MILL CUTTING SPEED AND RUNNING SPEED

$$N = \frac{500 \times Vc}{\pi \times \sqrt{ka \times (D-ka)}}$$

$$Vc = \frac{\pi \times N \times \sqrt{ka \times (D-ka)}}{500}$$

N:迴轉數[r.p.m]
 D:球頭立銑刀的外徑[mm]
 π:圓周率≈3.1416
 Vc:實際切削速度
 Ka:立銑刀的切深
 N:Speed (r.p.m)
 D:Ball end mill diameter (mm)
 π:3.1416
 Vc:Actual cutting speed
 Ka: Cutting depth



- 切削速度
- CUTTING SPEED

$$V = \frac{\pi \times D \times N}{1000}$$

V:切削速度[m/min]
 Ds:加工徑[mm]
 N:主軸迴轉數[r.p.m]

F:床台進給量[mm/min]
 fz:每一刃的進給量[mm/刃]
 Z:刀數(以刃數=1計算之)
 N:主軸迴轉數[r.p.m]

銑削加工の場合 MILLING APPLICATION

$$F = fz \times Z \times N$$

- 切削時間
- CUTTING TIME

$$T = \frac{60 \times L}{f \times N} = \frac{60 \times \pi \times D \times L}{1000 \times V \times f}$$

T:切削秒數[秒]
 L:加工長度[mm]
 f:每一回轉的進給量[mm/rev]
 N:主軸迴轉數[r.p.m]
 V:切削速度[m/min]
 Ds:加工徑[mm]
 T:Cutting time (sec.)
 L:Cutting length (mm)
 f:Feed rate per revolution (mm/rev)
 N:Spindle speed (r.p.m)
 V:Cutting speed
 Ds:Cutting diameter (mm)

切削刀具使用上注意事項

對象製品	危險性	對策
全系列切削工具	◎ 刀刃銳利，直接用手接觸十分危險	※ 特別從箱子取出或裝置機械時，請使用保護手套等護具。
	◎ 使用方法或使用條件不適當的話，會導致刀具破損或飛散而有受傷的危險。	※ 使用安全護蓋與防護眼鏡等護具。 ※ 請在推薦條件範圍內使用，請參照使用說明書與目錄。
	◎ 由於衝擊的負荷與過度的磨耗致使切削抵抗急速增加，產生刀具破損飛散的危險而導致受傷。	※ 使用安全護蓋與防護眼鏡等護具。 ※ 及早進行刀具交換。
	◎ 高溫切屑飛散或試過長的切屑排出，而有受傷與燙傷的危險。	※ 使用安全護蓋與防護眼鏡等護具。 ※ 去除切屑時，停止機械，戴上保護手套並使用鍋子、夾鉗等工具。
	◎ 切削時，刀具與被削材溫度極高，加工後直接用手接觸的話有受傷燙傷的危險。	※ 使用保護手套等護具。
	◎ 切削中發生火花與破損而引起的高熱，切屑引火、導致火災危險。	※ 請勿在有引火、爆發危險的地方使用。 ※ 使用非水溶性切削油劑的場合，請務必準備好防火對策。
	◎ 高速回轉使用之際，工作機械若不能保持平衡，由於振動的緣故，將導致刀具破損而有受傷的危險。	※ 使用安全護蓋與防護眼鏡等護具。 ※ 務必實施試運轉，並確認無任何振動等異常聲音。
	◎ 加工物的毛邊若直接用手接觸會有受傷的危險。	※ 請勿用手接觸。
捨棄式 (刀片交換式) 所有刀具	◎ 刀片與零件若未確定夾緊，在切削中會有脫落、飛散的危險發生。	※ 安裝座面與固定用零件上不得有異物附着，須清理乾淨後再安裝刀片。 ※ 安裝時，使用附屬板手，確實地將刀片與零件夾緊。又，除了規定的刀片與零件以外絕對不可以使用。
	◎ 使用管材等輔助工具過度栓緊則刀片與刀具會產生破損，脫落飛散的危險。	※ 不要使用管材輔助工具，請使用附屬板手。
	◎ 刀具在高速回轉的使用場合，由於離心力的緣故，刀片的零件會有飛出去的情形發生，十分危險，使用之際，安全方面請補充注意。	※ 請在推薦條件範圍內使用請參照使用說明書與目錄。
各種銼刀與其他回轉使用的刀具	◎ 銼刀類有銳利的切刃，直接用手接觸會受傷。	※ 請使用保護手套等護具。
	◎ 刀具在偏心回轉或平衡不良時會產生振動，發生破損，飛散而導致受傷。	※ 請使用推薦條件範圍內的回轉速度。 ※ 由於軸承受等磨耗而產生偏心回轉與振動。請定期調整回轉部的經度與平衡度。
鑽頭	◎ 利用加工物回轉，進行穴貫通加工時，切刺的部份因高速而飛出，該圓盤十分銳利非常危險。	※ 請使用安全護罩與防護眼鏡的護具。又夾頭部請安裝護罩。
	◎ 銼刀類有銳利的切刃，直接用手接觸會受傷。 ◎ 極子徑鑽頭先端尖而銳利，指尖直接接觸摸就會導致刺傷，又折斷而飛散的情形也會發生。	※ 使用時，請充分注意安全面請使用保護手套、防護眼鏡。

●最後● 本手冊之內容，乃記載有關安全上之基本項目，其他詳細事項，請參照各種刀具之使用說明書，目錄等資料，或向本公司詢問。

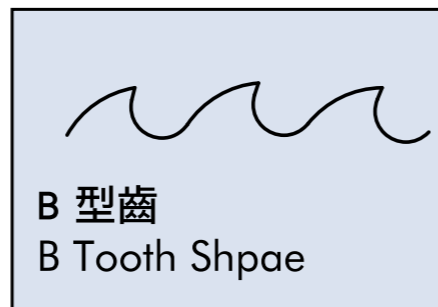
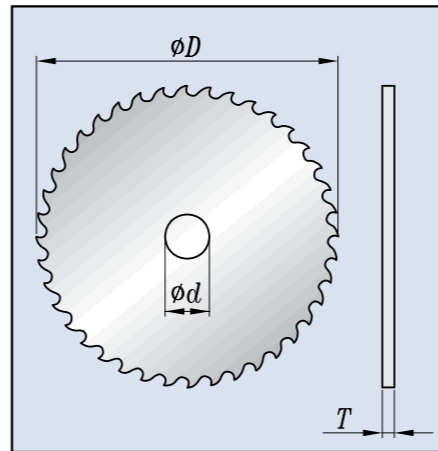
又，本公司不了解之情況下，進行改造等仕様更而發生事故，本公司不負任何責任。

對應鋼的韋氏之近似換算值

維氏硬度	勃氏硬度 10mm球 荷重3000kgf		洛氏硬度			韋氏硬度	拉抗強度 (近似值) Mpa(1)	維氏硬度	勃氏硬度 10mm球 荷重3000kgf		洛氏硬度			韋氏硬度	拉抗強度 (近似值) Mpa(1)
	標準球	碳化球	A量規 荷重60kgf 鑽石 圓錐壓子	B量規 荷重100kgf 徑1.6mm (1/16in)球	C量規 荷重150kgf 鑽石 圓錐壓子				標準球	碳化球	A量規 荷重60kgf 鑽石 圓錐壓子	B量規 荷重100kgf 徑1.6mm (1/16in)球	C量規 荷重150kgf 鑽石 圓錐壓子		
940	—	—	85.6	—	68.0	97	—	320	303	303	66.4	(107.0)	32.2	45	1005
920	—	—	85.3	—	67.5	96	—	310	294	294	65.8	—	31.0	—	980
900	—	—	85.0	—	67.0	95	—	300	284	284	65.2	(105.5)	29.8	42	950
880	—	(767)	84.7	—	66.4	93	—	295	280	280	64.8	—	29.2	—	935
860	—	(757)	84.4	—	65.9	92	—	290	275	275	64.5	(104.5)	28.5	41	915
840	—	(745)	84.1	—	65.3	91	—	285	270	270	64.2	—	27.8	—	905
820	—	(733)	83.8	—	64.7	90	—	280	265	265	63.8	(103.5)	27.1	40	890
800	—	(722)	83.4	—	64.0	88	—	275	261	261	63.5	—	26.4	—	875
780	—	(710)	83.0	—	63.3	87	—	270	256	256	63.1	(102.0)	25.6	38	855
760	—	(698)	82.6	—	62.5	86	—	265	252	252	62.7	—	24.8	—	840
740	—	(684)	82.2	—	61.8	84	—	260	247	247	62.4	(101.0)	24.0	37	825
720	—	(670)	81.8	—	61.0	83	—	255	243	243	62.0	—	23.1	—	805
700	—	(656)	81.3	—	60.1	81	—	250	238	238	61.6	99.5	22.2	36	795
690	—	(647)	81.1	—	59.7	—	—	245	233	233	61.2	—	21.3	—	780
680	—	(638)	80.8	—	59.2	80	—	240	228	228	60.7	98.1	20.3	34	765
670	—	630	80.6	—	58.8	—	—	230	219	219	—	96.7	(18.0)	33	730
660	—	620	80.3	—	58.3	79	—	220	209	209	—	95.0	(15.7)	32	695
650	—	611	80.0	—	57.8	—	—	210	200	200	—	93.4	(13.4)	30	670
640	—	601	79.8	—	57.3	77	—	200	190	190	—	91.5	(11.0)	29	635
630	—	591	79.5	—	56.8	—	—	190	181	181	—	89.5	(8.5)	28	605
620	—	582	79.2	—	56.3	75	—	180	171	171	—	87.1	(6.0)	26	580
610	—	573	78.9	—	55.7	—	—	170	162	162	—	85.0	(3.0)	25	545
600	—	564	78.6	—	55.2	74	—	160	152	152	—	81.7	(0.0)	24	515
590	—	554	78.4	—	54.7	—	2055	150	143	143	—	78.7	—	22	490
580	—	545	78.0	—	54.1	72	2020	140	133	133	—	75.0	—	21	455
570	—	535	77.8	—	53.6	—	1985	130	124	124	—	71.2	—	20	425
560	—	525	77.4	—	53.0	71	1950	120	114	114	—	66.7	—	—	390
550	505	517	77.0	—	52.3	—	1905	110	105	105	—	62.3	—	—	—
540	496	507	76.7	—	51.7	69	1860	100	95	95	—	56.2	—	—	—
530	488	497	76.4	—	51.1	—	1825	95	90	90	—	52.0	—	—	—
520	480	488	76.1	—	50.5	67	1795	90	86	86	—	48.0	—	—	—
510	473	479	75.7	—	49.8	—	1750	85	81	81	—	41.0	—	—	—
500	465	471	75.3	—	49.1	66	1705								
490	456	460	74.9	—	48.4	—	1660								
480	448	452	74.5	—	47.7	64	1620								
470	441	442	74.1	—	46.9	—	1570								
460	433	433	73.6	—	46.1	62	1530								
450	425	425	73.3	—	45.3	—	1495								
440	415	415	72.8	—	44.5	59	1460								
430	405	405	72.3	—	43.6	—	1410								
420	397	397	71.8	—	42.7	57	1370								
410	388	388	71.4	—	41.8	—	1330								
400	379	379	70.8	—	40.8	55	1290								
390	369	369	70.3	—	39.8	—	1240								
380	360	360	69.8	(110.0)	38.8	52	1205								
370	350	350	69.2	—	37.7	—	1170								
360	341	341	68.7	(109.0)	36.6	50	1130								
350	331	331	68.1	—	35.5	—	1095								
340	322	322	67.6	(108.0)	34.4	47	1070								
330	313	313	67.0	—	33.3	—	1035								

本摘錄自JIS鐵鋼手冊(SAEH417)
注 1)1MPa=1N/mm²
注 2)中 () 內的數值，包括不常用範圍的項目僅供參考。

全鎢鋼金屬圓鋸片 SOLID TUNGSTEN METAL CIRCULAR SAWBLADE



超微粒子超硬材質
Extra Fine Grain Extra
Hard Material

全鎢鋼金屬圓鋸片(適用溝槽加工)

SOLID TUNGSTEN METAL CIRCULAR SAWBLADE (Applicable for slot machining)

外徑(D)/Outside Dia (D)	20	25	35	40	45	50	60	75	85	100	125
孔徑(d)/Hole Dia (d)	6	6	8	8	12.7	12.7	12.7	25.4	25.4	25.4	25.4
厚度(T)/Thickness (T)	Z齒數 / Teeth Number (Z)										
0.30	30	30	40	40	40						
0.40	30	30	40	40	40						
0.50	30	30	40	40	40	54	64				
0.60	30	30	40	40	40	54	64	64	64	72	86
0.70	30	30	40	40	40	54	64	64	64	72	86
0.80	30	30	40	40	40	54	64	64	64	72	86
0.90	30	30	40	40	40	54	64	64	64	72	86
1.00	30	30	40	40	40	54	64	64	64	72	86
1.20	30	30	40	40	40	54	64	64	64	72	86
1.40	30	30	40	40	40	54	64	64	64	72	86
1.60	30	30	40	40	40	54	64	64	64	72	86
1.80	30	30	40	40	40	54	64	64	64	72	86
2.00	30	30	40	40	40	54	64	64	64	72	86
2.50	特殊規格外徑、孔徑、齒數、齒型、厚度可接受訂製。										
3.00	Custom outside diameter, hole diameter, teeth number,										
3.50	tooth shape, and blade thickness are available upon										
4.00	request.										

備註：孔徑英制、美制規格可接受訂購。 NOTE: Hole diameter in metric or inch size may be specified.

全鎢鋼圓鋸片(適用CNC自動車床)

SOLID TUNGSTEN CIRCULAR SAWBLADE (Applicable for CNC automatic lathe)

外徑(D)/Outside Dia (D)	20	25	35	40	45	50	60	75	85	100	125
孔徑(d)/Hole Dia (d)	6	6	8	8	12.7	12.7	12.7	25.4	25.4	25.4	25.4
厚度(T)/Thickness (T)	Z齒數 / Teeth Number (Z)										
0.30	54	54	76	76	80						
0.40	54	54	76	76	80						
0.50	54	54	76	76	80	100	120				
0.60	54	54	76	76	80	100	120	120	140	160	180
0.70	54	54	76	76	80	100	120	120	140	160	180
0.80	54	54	76	76	80	100	120	120	140	160	180
0.90	54	54	76	76	80	100	120	120	140	160	180
1.00	54	54	76	76	80	100	120	120	140	160	180
1.20	54	54	76	76	80	100	120	120	140	160	180
1.40	54	54	76	76	80	100	120	120	140	160	180
1.60	54	54	76	76	80	100	120	120	140	160	180
1.80	54	54	76	76	80	100	120	120	140	160	180
2.00	54	54	76	76	80	100	120	120	140	160	180
2.50	特殊規格外徑、孔徑、齒數、齒型、厚度可接受訂製。										
3.00	Custom outside diameter, hole diameter, teeth number,										
3.50	tooth shape, and blade thickness are available upon										
4.00	request.										

全鎢鋼鋸片溝槽型加工參考指數 / RECOMMENDED SLOT MACHINING DATA FOR SOLID TUNGSTEN SAWBLADE

工件材質 Workpiece Matl	碳鋼 / Carbon Steel		特殊鋼 / Special Steel		鋁合金 / Aluminum Alloy		銅合金 / Copper Alloy		鑄鐵 / Cast Iron	
	HRC30下 / Under HRC30		HRC30 ~ 40		2024AC8A		C2600B.BC		FC15.25	
切削速度 / Cutting Rate	60 m/min		45 m/min		150 m/min		2000 m/min		60 m/min	
外徑(D)/Outside Dia (D)	轉速 / Speed RPM	進給 / Feed mm/min	轉速 / Speed RPM	進給 / Feed mm/min	轉速 / Speed RPM	進給 / Feed mm/min	轉速 / Speed RPM	進給 / Feed mm/min	轉速 / Speed RPM	進給 / Feed mm/min
20	900	450	710	350	2300	1150	3100	1550	900	450
25	760	380	570	285	1910	955	2500	1250	760	380
35	540	360	400	266	1360	906	1800	1200	540	360
40	470	310	350	233	1190	793	1590	1060	470	310
50	380	340	280	252	950	855	1250	1125	380	340
60	310	330	230	245	795	840	1060	1130	310	330
75	250	260	190	202	630	670	840	890	250	260
85	220	230	160	170	560	597	740	780	220	230
100	190	220	140	160	470	540	630	730	190	220
125	150	210	110	150	380	540	500	710	150	210

全鎢鋼鋸片CNC自動車床型加工參考指數

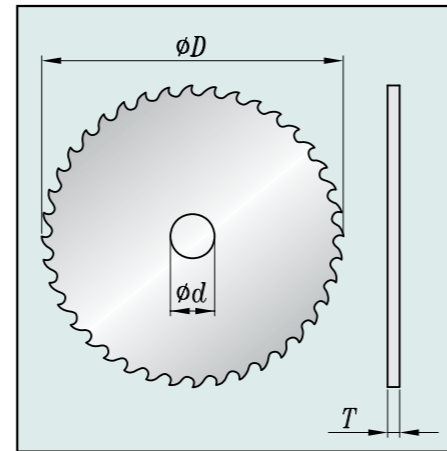
RECOMMENDED MACHINING DATA OF CNC AUTOMATIC LATHE FOR SOLID TUNGSTEN SAWBLADE

外徑(D)/Outside Dia (D)	轉速 / Speed RPM	進給 / Feed mm/min	轉速 / Speed RPM	進給 / Feed mm/min	轉速 / Speed RPM	進給 / Feed mm/min	轉速 / Speed RPM	進給 / Feed mm/min	轉速 / Speed RPM	進給 / Feed mm/min
20	900	810	710	630	2300	2050	3100	2700	900	810
25	760	680	570	510	1910	1700	2500	2250	760	680
35	540	680	400	500	1360	1700	1800	2250	540	680
40	470	620	350	460	1190	1580	1590	2100	470	620
50	380	630	280	460	950	1550	1250	2050	380	630
60	310	620	230	460	795	1590	1060	2100	310	620
75	250	625	190	475	630	1575	840	2100	250	625
85	220	580	160	420	560	1490	740	1950	220	580
100	190	570	140	420	470	1410	630	1850	190	570
125	150	500	110	360	380	1260	500	1660	150	500

• Specifications and design characteristics are subject to change without prior notice.
由於本公司不斷研究改良，上述規格及設計特性若有變更，恕不另行通知。

HSS 小徑槽鋸片

HSS SMALL DIAMETER SLOTTING CIRCULAR SAWBLADE



HSS 小徑溝槽圓鋸片

HSS SMALL DIAMETER SLOTTING CIRCULAR SAWBLADE

外徑(D)/Outside Dia (D)	45	50	75	100	125	150
孔徑(d)/Hole Dia (d)	12.7	12.7	25.4	25.4	25.4	25.4
厚度(T)/Thickness (T)	齒數(Z) / Teeth Number (Z)					
0.50	64	64	64	72		
0.70	64	64	64	72	86	
0.80	64	64	64	72	86	100
1.00	64	64	64	72	86	100
1.50			54	54	56	86
2.00			54	54	56	86
2.50	特殊規格外徑、孔徑、齒數、齒型、厚度可接受訂製。 Custom outside diameter, hole diameter, teeth number, tooth shape, and blade thickness are available upon request.					
3.00						
3.50						
4.00						

備註：孔徑英制、美制規格可接受訂購。
NOTE: Hole diameter in metric or inch size may be specified.

HSS 金屬圓鋸片

HSS METAL CIRCULAR SAWBLADE

外徑(D)	厚度(T)	孔徑(d)	外徑(D)	厚度(T)	孔徑(d)
Outside Dia (D)	Thickness (T)	Hole Dia (d)	Outside Dia (D)	Thickness (T)	Hole Dia (d)
250	x 1.0	x 32	325	x 12.0	x 32
250	x 1.2	x 32	325	x 2.5	x 32
250	x 1.5	x 32	350	x 2.0	x 32
250	x 2.0	x 32	350	x 2.5	x 32
275	x 1.2	x 32	370	x 2.0	x 32
275	x 1.6	x 32	370	x 2.5	x 32
275	x 2.0	x 32	400	x 2.5	x 32
300	x 1.6	x 32	400	x 3.0	x 32
300	x 2.0	x 32	450	x 3.0	x 32
300	x 2.2	x 32	500	x 3.0	x 32
300	x 2.5	x 32	600	x 4.0	x 32
315	x 2.0	x 32	700	x 4.0	x 32

HSS 小徑槽鋸片加工參考指數 / RECOMMENDED SLOT MACHINING DATA FOR SMALL DIAMETER HSS SAWBLADE

工件材質 Workpiece Mat'l	鑄造 碳鋼 / Casting Carbon Steel		特殊鋼 / Special Steel 工具鋼 / Tool Steel 不鏽鋼 / Stainless Steel		可鍛鑄鐵 / Forging Cast Iron 可鍛鑄銅 / Forging Cast Copper		銅合金 / Copper Alloy		鋁合金 / Aluminum Alloy	
	轉速 / Speed RPM	進給 / Feed mm/min	轉速 / Speed RPM	進給 / Feed mm/min	轉速 / Speed RPM	進給 / Feed mm/min	轉速 / Speed RPM	進給 / Feed mm/min	轉速 / Speed RPM	進給 / Feed mm/min
45	212	270 ~ 400	141	180 ~ 260	141	180 ~ 260	425	540 ~ 720	851	100 ~ 1300
50	191	244 ~ 310	127	162 ~ 180	127	162 ~ 180	382	488 ~ 560	764	977 ~ 110
75	127	162 ~ 185	85	108 ~ 125	85	108 ~ 125	255	326 ~ 460	510	652 ~ 750
100	95	136 ~ 150	63	90 ~ 110	63	90 ~ 110	191	275 ~ 350	382	550 ~ 670
125	76	130 ~ 145	51	87 ~ 105	51	87 ~ 105	153	263 ~ 310	306	526 ~ 650
150	63	126 ~ 135	42	84 ~ 96	42	84 ~ 96	127	254 ~ 290	254	508 ~ 580

• Specifications and design characteristics are subject to change without prior notice.
由於本公司不斷研究改良，上述規格及設計特性若有變更，恕不另行通知。

▶ 側銑刀系列 SIDE MILLING CUTTERS

千鳥刃側銑刀

STAGGERED SIDE MILLING CUTTER

殼型銑刀

SHELL MILLING CUTTER

片角與等角銑刀

SINGLE AND DOUBLE MILLING CUTTER



千鳥刃側銑刀
STAGGERED SIDE MILLING CUTTER

外徑 Outside diameter	75	100	125	150	175	200
	3"	4"	5"	6"	7"	8"
齒數 Teeth number	18	20	22	24	26	28
孔徑 Hole diameter	25.4		1"			
厚度 Thickness	4	6	8	10	12	13
	14	15	18	20		
	1/4"	5/16"	3/8"	7/16"	1/2"	9/16"
	5/8"	3/4"				

特殊規格可接受訂製
Special specifications are available.

- 殼型銑刀規格特殊, 依客戶需求可接受訂製, 無現品庫存。
- The shell milling cutters are special specifications. Therefore, it's out of stock and made by order.

片角與等角銑刀
SINGLE AND DOUBLE MILLING CUTTER

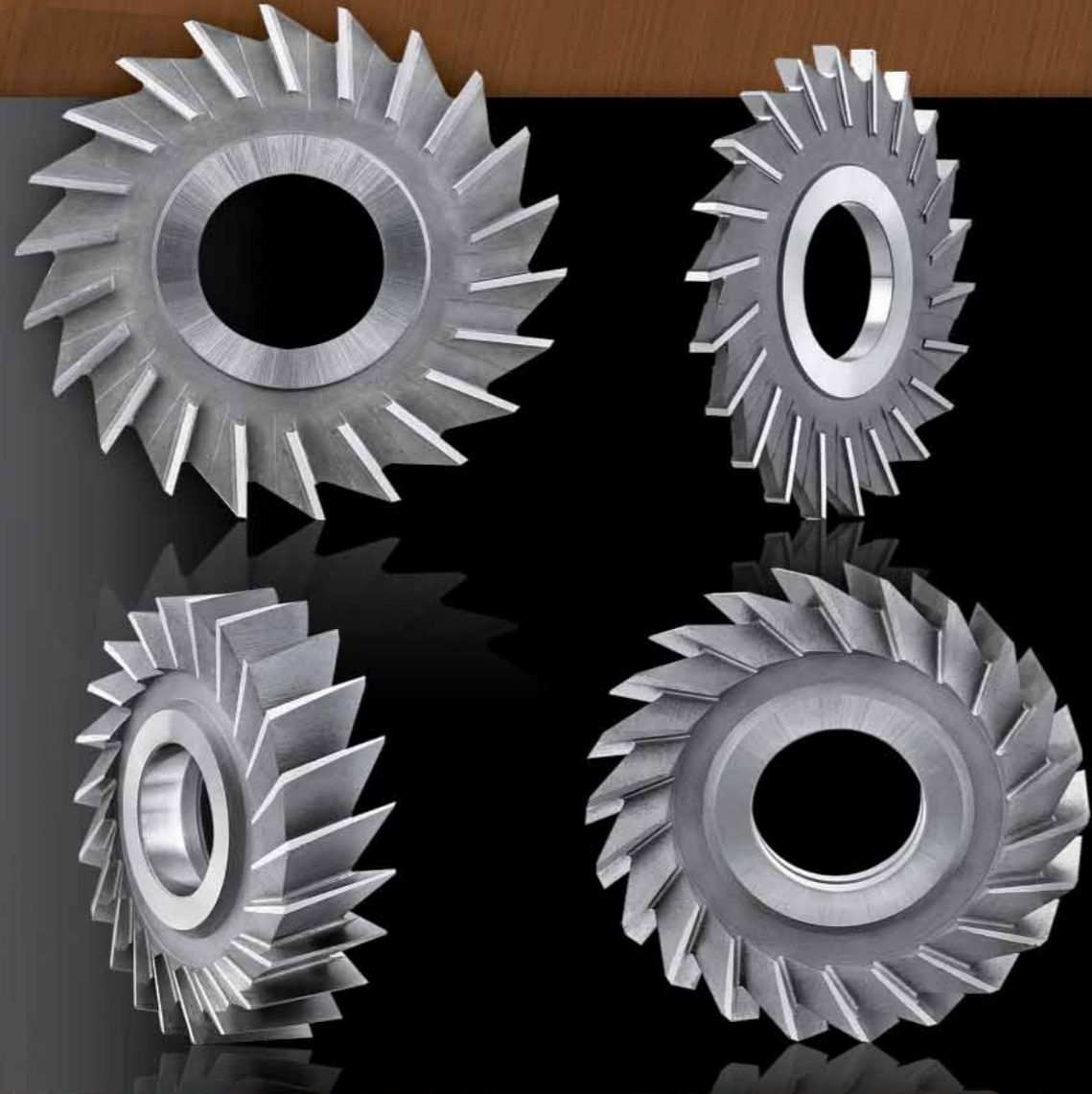
外徑 Outside diameter	75	100	125	150			
	3"	4"	5"	6"			
齒數 Teeth number	22	26	28	32			
厚度 Thickness	8	10	12	14	16	18	20
角度分列 Angle Types							
厚度 Thickness	10		12		18		
角度 Angle	30°~35°		45°~90°		45°60°90°		

特殊規格角度可接受訂製
Special angle can be specified upon request.

▶ 側銑刀系列 SIDE MILLING CUTTERS

側銑刀與斜刃側銑刀

SIDE MILLING CUTTER AND BEVEL BLADE SIDE MILLING CUTTER



外丸銑刀

CONVE MILLING CUTTER

平面銑刀

FACE MILLING CUTTER



側銑刀與斜刃側銑刀 SIDE MILLING CUTTER AND BEVEL BLADE SIDE MILLING CUTTER

外徑 Outside diameter	50	60	75	100	125	150	175	200
	2"	2½"	3"	4"	5"	6"	7"	8"
齒數 Teeth number	18	20	22	26	28	32	34	36
孔徑 Hole diameter	25.4		1"					
厚度 Thickness	3.0	4.0	5.0	6.0	7.0	8.0	9.0	
	10	11	12	13	14	15	16	17
	18	19	20	22	24	25		
	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"

特殊規格角度可接受訂製
Special specifications are available upon request.

外丸銑刀 CONVE MILLING CUTTER

外徑 Outside diameter	75				
齒數 Teeth number	12				
孔徑 Hole diameter	25.41"				
厚度 Thickness	3	4	5	6	7
R角 R angle	1.5R	2R	2.5R	3R	3.5R
厚度 Thickness	8	9	10	11	12
R角 R angle	4R	4.5R	5R	5.5R	6R
厚度 Thickness	13	14	15	16	17
R角 R angle	6.5R	7R	7.5R	8R	8.5R
厚度 Thickness	18	19	20	21	22
R角 R angle	9R	9.5R	10R	10.5R	11R

本產品為訂製成型刀具，無現品供應訂製，
本產品需出具圖面作為依據
The series is profiled cutters without stock for immediate delivery.
when ordering, please provide drawing for manufacturing.

平面銑刀 FACE MILLING CUTTER

外徑 Outside diameter	50	60	75	100
厚度 Thickness	50	40	50	50
	60	50	60	75
		60	75	100
				125
齒數 Teeth number	12	14	14	16
孔徑 Hole diameter	25.4		1"	

- 特殊規格可接受訂製
- 有焊接鎢鋼材質
- Special specifications are available upon request.
- Welded tungsten material is available.

絲攻類

TAPS



螺旋絲攻
SPIRAL FLUTE TAPS



先端絲攻
POINTED TAPS



手絞絲攻
HAND TAPS



單位：mm 元/支

規格	SET			POT			HT(HSS) II	
	HSS	TIN	SUS	HSS	TIN	SUS	支(PCS)	組(SET)
M2.6X0.45	260			250			210	630
M3X0.5	210	278	265	205	270	255	166	498
M4X0.7	190	248	232	180	235	220	160	480
M5X0.8	194	258	240	190	248	232	163	489
M6X0.75	280		345	260		325	263	789
M6X1.0	205	270	250	200	265	240	175	525
M8X1.0	375		435	366		420	310	930
M8X1.25	285	400	346	275	370	330	246	738
M10X1.0	500		610	470		580	410	1,230
M10X1.25	395		450	380		435	325	975
M10X1.5	395	500	450	380	470	435	325	975
M12X1.0	650		775	610		725	550	1,650
M12X1.25	560		610	530		575	462	1,386
M12X1.5	560		610	530		575	462	1,386
M12X1.75	510	630	590	500	610	560	462	1,386
M14X1.5	780		900	705		810	609	1,827
M14X2.0	780	910	900	705	840	810	609	1,827
M16X1.5	980		1,030	900		1,000	780	2,340
M16X2.0	980	1,140	1,030	900	1,050	1,000	760	2,280
M18X1.5	1,340		1,440	1,200		1,380	1,060	3,180
M18X2.5	1,340		1,440	1,200		1,380	1,060	3,180
M20X1.5	1,800		2,015	1,580		1,820	1,440	4,320
M20X2.5	1,720		1,900	1,520		1,750	1,400	4,200
M22X2.5	2,330		2,555	2,050		2,360	1,950	5,850
M24X3.0	2,850		3,200	2,660		3,060	2,450	7,350
M27X3.0	3,850			3,750			3,050	9,150
M30X1.5	4,860			4,750			4,000	12,000
M30X3.5	4,860			4,750			3,950	11,850
M33X3.5	5,800			5,700			5,040	15,120
M36X4.0	6,450			6,170			5,500	16,500
M42X4.5	9,870			9,200			8,280	24,840
M45X4.5	11,080			10,300			9,270	27,810
M48X5.0	14,000			13,000			11,700	35,100

註：(1)HSS-(II)二級牙絲攻牙部以螺旋成形，具有耐磨、抗折力較佳之優點。
(2)SUS為不銹鋼用。

絲攻類

TAPS



螺旋絲攻
SPIRAL FLUTE TAPS



先端絲攻
POINTED TAPS



鑽頭絲攻
DRILL TAPS



公制牙(細牙)

規格	SET	POT
	HSS	HSS
M3.5X0.6	220	210
M4X0.5	270	260
M5X0.5	290	280
M6X0.5	315	300
M7X0.75	345	330
M7X1.0	230	220
M8X0.5	450	430
M8X0.75	430	415
M9X1.0	510	485
M10X0.75	680	635
M14X1.0	850	820
M14X1.25	830	800
M16X1.0	1,060	1,020
M18X1.0	1,900	1,835
M18X2.0	1,400	1,335
M20X1.0	2,195	2,090
M20X2.0	1,860	1,725
M22X1.0	2,940	2,720
M22X1.5	2,400	2,230
M22X2.0	2,400	2,230
M24X1.0	3,630	3,565
M24X1.5	3,010	2,890
M24X2.0	3,010	2,890
M25X1.5	3,700	3,700
M26X1.5	3,890	3,890
M27X1.5	4,150	4,150
M28X1.5	4,300	4,300
M28X2.0	4,650	4,650
M30X2.0	5,020	5,020
M30X3.0	5,020	5,020
M32X1.5	6,000	6,000
M32X2.0	6,000	6,000
M33X1.5	6,280	6,280
M33X2.0	6,280	6,280
M33X3.0	6,280	6,280
M36X1.5	6,550	6,550
M36X2.0	6,550	6,550
M36X3.0	6,550	6,550

註：無現貨者，依最低承製量，訂貨生產。

材質：HSS

單位：mm • inch 元/支

規格	鏡頭直徑	柄徑	價格
M3X05	2.5	3.0	660
M4X0.7	3.3	4.0	680
M5X0.8	4.2	5.0	700
M6X1.0	5	6.3	820
M8X1.25	6.8	8.0	1,000
M10X1.5	8.5	10.0	1,250
M12X1.75	10.3	9.0	2,100
3/16 W 24	3.6	5.0	800
1/4W20	5.1	6.0	1,020
5/16W18	6.6	7.0	1,140
3/8W16	8.0	8.0	1,300
1/2W12	10.7	9.0	2,100

鋁用螺旋絲攻



材質：HSS

單位：mm 元/支

M公制牙	SET-鋁用	
尺寸	食附	價格
M3X0.5	1.5P,2.5P	235
M4X0.7	1.5P,2.5P	208
M5X0.8	1.5P,2.5P	212
M6X1.0	1.5P,2.5P	224
M8X1.25	1.5P,2.5P	328
M10X1.5	1.5P,2.5P	420
M12X1.75	1.5P,2.5P	586

註：切刃倒牙1.5P(平頭)，2.5P(尖頭)，適用被切材為鋁、壓鑄合金、鋁鑄材等...

絲攻類

TAPS



螺旋絲攻
SPIRAL FLUTE TAPS



先端絲攻
POINTED TAPS



手絞絲攻
HAND TAPS



單位：mm 元/支

規格	SET			POT			HT(HSS) II	
	HSS	TIN	SUS	HSS	TIN	SUS	支(PCS)	組(SET)
1/8W40	230	300	270	220	290		175	525
5/32W32	230	300	270	220	290		175	525
3/16W24	226	286	266	210	280	220	170	510
1/4W20	273	340	330	252	315	280	210	630
5/16W18	357	420	420	336	410	370	280	840
3/8W16	430	530	495	410	510	450	340	1,020
7/16W14	575	660	595	490			430	1,290
1/2W12	750	880	785	680	800	740	560	1,680
9/16W12	1,100			1,050			980	2,940
5/8W11	1,170		1,300	1,010		1,165	880	2,640
3/4W10	1,770			1,520			1,320	3,960
7/8W9	2,550			2,360			2,050	6,150
1"W8	3,650			3,390			2,900	8,700
1-1/8W7	5,320						3,850	11,550
1-1/4W7	6,550						4,840	14,520
1-3/8W6	8,850						6,630	19,290
1-1/2W6	11,500						7,700	23,100

註：SUS為不銹鋼用。

單位：inch 元/支

規格	粗牙 UNC	細牙 UNF	SET			POT			HT(HSS) II	
			HSS	TIN	SUS	HSS	TIN	SUS	支(PCS)	組(SET)
NO.04	40	48	258						179	537
NO.05	40	44	244				235		174	522
NO.06	32	40	231				220	253	170	510
NO.08	32	36	226				216	250	170	510
NO.10	24	32	231		264	220		253	175	525
NO.12	24	28	247		260	237		270	185	555
1/4	20	28	239		264	228		264	180	540
5/16	18	24	314		286	300		346	236	708
3/8	16	24	380		275	364		400	286	858
7/16	14	20	550		357	520		570	410	1,230
1/2	13	20	630		735	600		680	470	1,410
9/16	12	18	940		605	900			700	2,100
5/8	11	18	980		700	940			735	2,205
3/4	10	16	1,480			1,420			1,100	3,300
7/8	9	14	2,300			2,200			1,720	5,160
1"	8	12	3,300			3,150			2,460	7,380

註：(1)UNC/UNF同牌價。

(2)SUS為不銹鋼用。

絲攻類

TAPS



N式管用絲攻
N-TYPE PIPE TAPS



N-PT

N式管用螺旋絲攻
N-TYPE SPIRAL PIPE TAPS



N-SFT

單位：mm 元/支

規格	N-PT(斜行牙)		N-PT(平行牙)		N-SFT(斜行牙)		N-PT(平行牙)			
	英制牙	美製牙	PT	NPF	PS,PF	NPS	PT	NPF	PS,PF	NPS
1/16	28	27	400	520		480				
1/8	28	27	420	540	400	500	600	680	550	620
1/4	19	18	500	570	480	550	650	740	600	670
3/8	19	18	800	850	720	770	880	1,150	820	900
1/2	14	14	1,200	1,440	1,100	1,380	1,300	1,520	1,250	1,400
3/4	14	14	1,600	1,900	1,600	1,700	1,850	2,100	1,800	2,000
1"	11	11-1/2	2,600	2,800	2,400	2,650	2,800	3,100	2,700	3,000

鍍鈦直柄鑽頭

TiN STRAIGHT SHANK DRILLS



公制直徑 Dia. (mm)	公制直徑 Dia. (mm)	英制直徑 Dia. (inch)	英制直徑 Dia. (inch)
1.0	9.5	1/16	5/16
1.1~2.0	9.6~9.9	5/64	21/64
2.1~3.0	10.0	3/32	11/32
3.1~3.5	10.1~10.4	7/64	23/64
3.6~4.0	10.5	1/8	3/8
4.1~4.5	10.6~10.9	9/64	25/64
4.6~5.0	11.0	5/32	13/32
5.1~5.5	11.1~11.4	11/64	27/64
5.6~6.0	11.5	3/16	7/16
6.1~6.5	11.6~11.9	13/64	29/64
6.6~6.5	12.0	7/32	15/32
7.1~7.5	12.1~12.4	15/64	31/64
7.6~8.0	12.5	1/4	1/2
8.1~8.5	12.6~12.9	17/64	
8.6~9.0	13.0	9/32	
9.1~9.4		19/64	

直柄鑽頭

STRAIGHT SHANK DRILLS



單位：mm

直徑 Dia	溝長 Flute Length	全長 Overall Length	直徑 Dia	溝長 Flute Length	全長 Overall Length	直徑 Dia	溝長 Flute Length	全長 Overall Length	直徑 Dia	溝長 Flute Length	全長 Overall Length
0.2	3	19	3.6	48	76	7.0	73	105	10.4	98	133
0.3	3.5	20	3.7	48	76	7.1	75	108	10.5	100	137
0.4	5.5	24	3.8	48	76	7.2	75	108	10.6	100	137
0.5	7.5	27	3.9	51	79	7.3	75	108	10.7	100	137
0.6	8.5	30	4.0	54	83	7.4	78	111	10.8	103	140
0.7	10	32	4.1	54	83	7.5	78	111	10.9	103	140
0.8	11	34	4.2	54	83	7.6	78	111	11.0	103	140
0.9	13	36	4.3	54	83	7.7	81	114	11.1	103	140
1.0	18	40	4.4	56	86	7.8	81	114	11.2	106	143
1.1	20	42	4.5	56	86	7.9	81	114	11.3	106	143
1.2	20	42	4.6	56	86	8.0	81	114	11.4	106	143
1.3	22	45	4.7	59	89	8.1	84	117	11.5	106	143
1.4	23	48	4.8	59	89	8.2	84	117	11.6	109	146
1.5	23	48	4.9	62	92	8.3	84	117	11.7	109	146
1.6	25	50	5.0	62	92	8.4	87	121	11.8	109	146
1.7	25	50	5.1	62	92	8.5	87	121	11.9	109	146
1.8	28	52	5.2	64	95	8.6	87	121	12.0	111	149
1.9	28	52	5.3	64	95	8.7	87	121	12.1	111	149
2.0	30	55	5.4	64	95	8.8	89	124	12.2	111	149
2.1	30	55	5.5	64	95	8.9	89	124	12.3	111	149
2.2	33	58	5.6	67	98	9.0	89	124	12.4	114	152
2.3	33	58	5.7	67	98	9.1	89	124	12.5	114	152
2.4	35	61	5.8	67	98	9.2	92	127	12.6	114	152
2.5	35	61	5.9	67	98	9.3	92	127	12.7	114	152
2.6	37	64	6.0	70	102	9.4	92	127	12.8	114	152
2.7	37	64	6.1	70	102	9.5	92	127	12.9	114	152
2.8	39	67	6.2	70	102	9.6	95	130	13.0	114	152
2.9	42	71	6.3	70	102	9.7	95	130	13.5	122	168
3.0	42	71	6.4	73	105	9.8	95	130	14.0	122	168
3.1	42	71	6.5	73	105	9.9	95	130	14.5	122	168
3.2	42	71	6.6	73	105	10.0	95	130	15.0	132	181
3.3	45	73	6.7	73	105	10.1	98	133	15.5	132	181
3.4	45	73	6.8	73	105	10.2	98	133	16.0	132	181
3.5	45	73	6.9	73	105	10.3	98	133	16.5	132	181

直柄長鑽頭

STRAIGHT SHANK LONG DRILLS



單位：mm

直徑 Dia	長度 Length	100L	150L	200L	250L	300L	400L
		溝長 Flute Length	溝長 Flute Length	溝長 Flute Length	溝長 Flute Length	溝長 Flute Length	溝長 Flute Length
1.0		40	60	100			
1.1~1.5		40	60	100			
1.6~1.9		40	60	100			
2.0		40	60	100			
2.1~2.4		50	60	100			
2.5		50	60	100			
2.6~2.9		50	75	100			
3.0		50	75	100	125	150	
3.1~3.4		50	75	100	125	150	
3.5		50	75	100	125	150	
3.6~3.9		50	75	100	125	150	
4.0		50	75	100	125	150	
4.1~4.4			75	100	125	150	
4.5			75	100	125	150	
4.6~4.9			75	100	125	150	
5.0			75	100	125	150	
5.1~5.4			90	100	125	150	
5.5			90	100	125	150	
5.6~5.9			90	100	125	150	
6.0			90	100	125	150	200
6.1~6.4			90	100	125	150	200
6.5			90	100	125	150	200
6.6~6.9			90	100	125	150	200
7.0			90	100	125	150	200
7.1~7.4			90	100	125	150	200
7.5			90	125	125	150	200
7.6~7.9			90	125	150	175	200
8.0			90	125	150	175	200
8.1~8.4			90	125	150	175	200
8.5			90	125	150	175	200
8.6~8.9			90	125	150	175	200
9.0			90	125	150	175	200
9.1~9.4			90	125	150	175	200
9.5			100	125	150	175	200
9.6~9.9			100	125	150	175	200
10.0			100	125	150	175	200
10.1~10.4			100	125	150	175	200
10.5			100	125	150	175	200
10.6~10.9			100	150	150	175	200
11.0			100	150	150	175	200
11.1~11.4				150	150	175	200
11.5				150	150	175	200
11.6~11.9				150	150	175	200
12.0				150	150	175	200
12.1~12.4				150	150	175	200
12.5				150	150	175	200
12.6~12.9				150	150	175	200
13.0				150	150	175	200

HOL 歐樂

轉位式車、銑刀片、刀桿系列



GLENDOWER

QUALITY TOOLING

SUPERTHREAD

PRECISION THREADING TOOLS



英國格藍道 螺紋刀片 鋁用刀片

GLENDOWER

AVAILABLE GRADES

1ST Choice **GC10F (PVD)**
Multi-purpose grade for most materials.
Sub-micron carbide with **PVD coat TiN**

2nd Choice **AC350M (PVD Plus)**
Suitable for machine materials where
GC10F wears too quickly
K-grade carbide with **PVD coating TiCN**

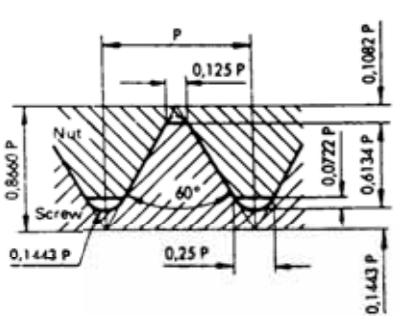
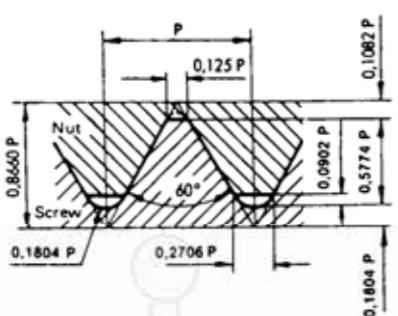
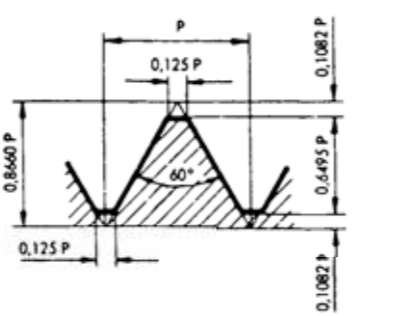
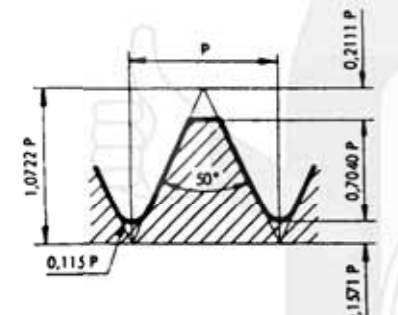
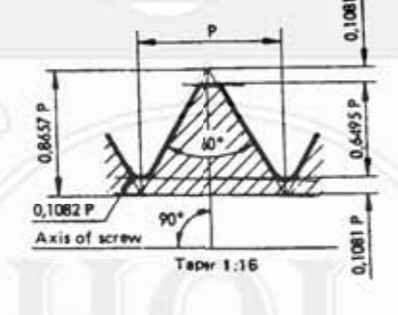
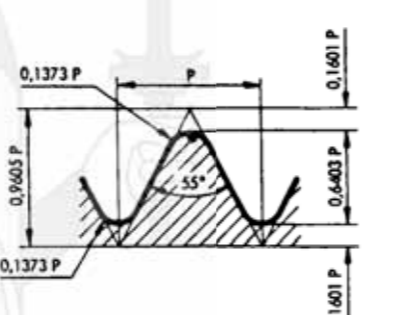
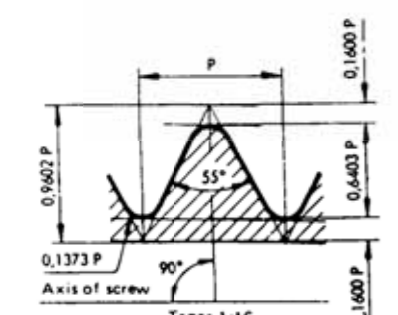
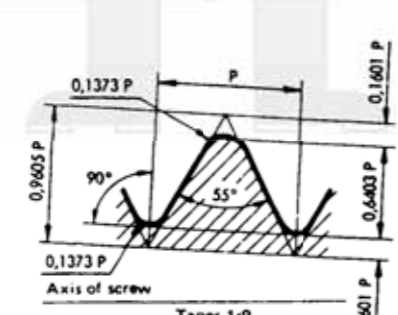
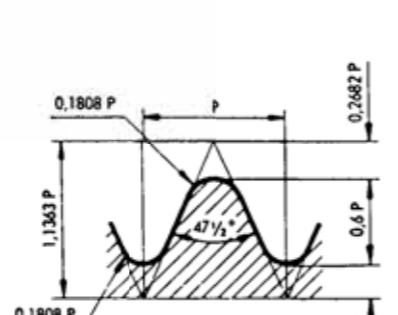
3rd Choice **AC200M (PVD Extra)**
Suitable for machining difficult Stainless Steel
and other exotic materials.
M-grade carbide with **PVD coating TiALN**

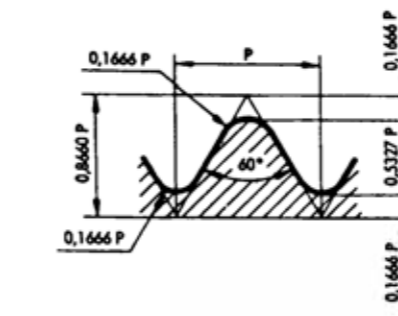
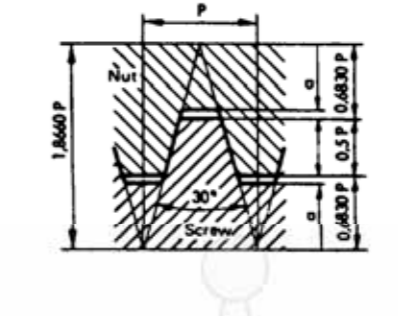
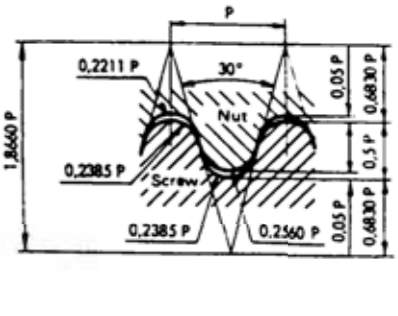
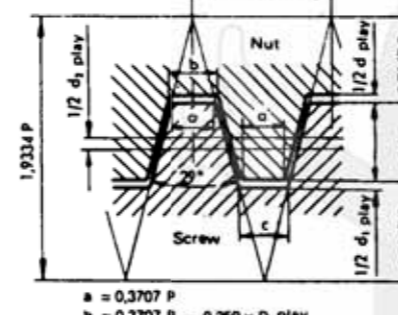
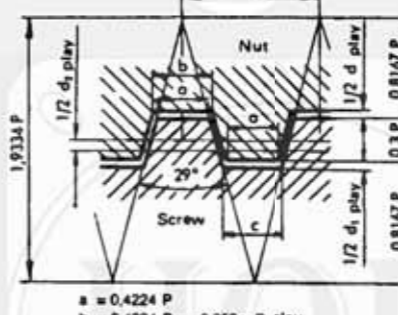
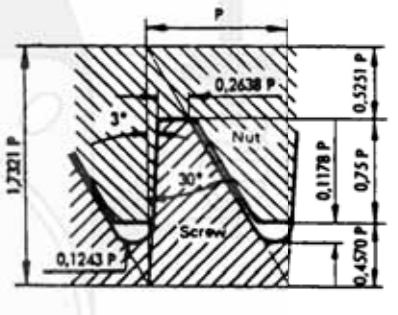
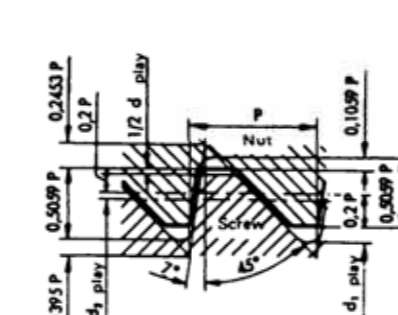
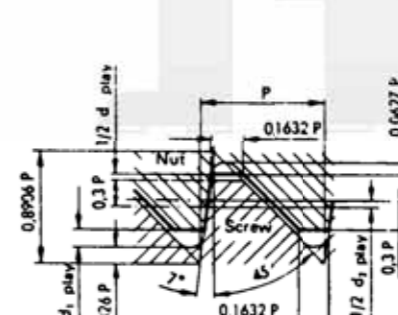
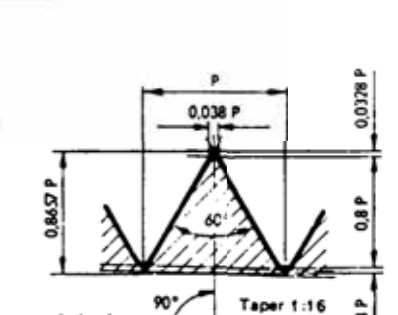
K15
Suitable for machining Cast Iron, Brass, Copper
& Aluminium.
K-grade uncoated carbide + **Polished finish**



Reg. No Q5112

Common thread profiles

 <p>ISO M and UN branches in mechanical industry</p> <p>1</p>	 <p>UNJ Use : Aircraft & Space industry</p> <p>2</p>	 <p>Original Sellers & SI Successively replaced by ISO</p> <p>3</p>
 <p>SF (Système Français) cessively replaced by ISO</p> <p>4</p>	 <p>Metric Taper Use : Grease fittings & pipe couplings</p> <p>5</p>	 <p>Whitworth Use : Fittings & pipe couplings. Used in most branches, also for gas, water and sewer. As general machine thread now successively replaced by ISO.</p> <p>6</p>
 <p>7</p>	 <p>8</p>	 <p>9</p>

 <p>BSC (CEI) Use : Bicycle industry</p> <p>10</p>	 <p>TR DIN 103 Use : Mechanical industry for motion transmission screws</p> <p>11</p>	 <p>RD DIN 405 Use : Pipe coupling fire prote industry</p> <p>2</p>
 <p>Acme Use : Acme-General is used in mechanical industry for motion transmission screws</p> <p>13</p>	 <p>Acme, truncated When normal Acme is too deep Use : Control valves and in cases when it is important to combine a large lead with a shallow thread, e.g. because of poor material thickness</p> <p>14</p>	 <p>Saw-tooth thread 3 DIN 513 Use : Mechanical industry for mo transmission screw when the loa form one direction, e.g. in presse etc.</p> <p>5</p>
 <p>10</p>	 <p>11</p>	 <p>12</p>

螺紋刀片編號說明

THREADING INSERTS CODE KEY

- Top Chipbreaker
- Secured by Coned Screw or Top Clamp
- Located Flat in Tool Holder

16 E R 10 UN

Cutting edge length mm

11	IC=6.35 mm dia
16	IC=9.52 mm dia
22	IC=12.70 mm dia
27	IC=15.87 mm dia

External / Internal

E = External
N = Internal

Hand of Tool

R = Right - hand
L = Left - hand

Pitch / Groove Width

Full-profile

mm	0.5	1.5
	0.7	1.75
	0.75	2.0
	0.8	2.5
	1.0	3.0
	1.25	3.5
TPI	24	13
	20	12
	18	11
	16	10
	14	9
		8

Partial profile





























A = 0.5 - 1.5mm
48 - 16tpi
AG = 0.5 - 3.0mm
48 - 8tpi
G = 1.75 - 3.0mm
14 - 8tpi
N = 3.5 - 5.0mm
7 - 5tpi

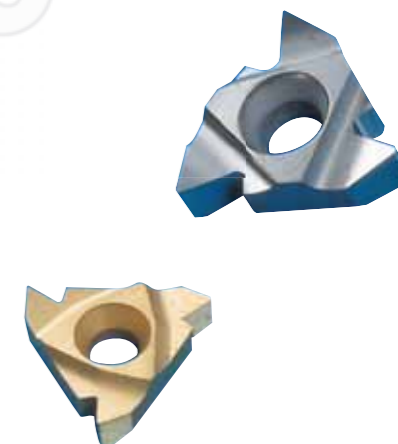
Thread / Groove Standard

ISO = ISO, Metric
W = Whitworth
BSPT = Whitworth, cone
UN = Am. Un
NPT = ISO, cone

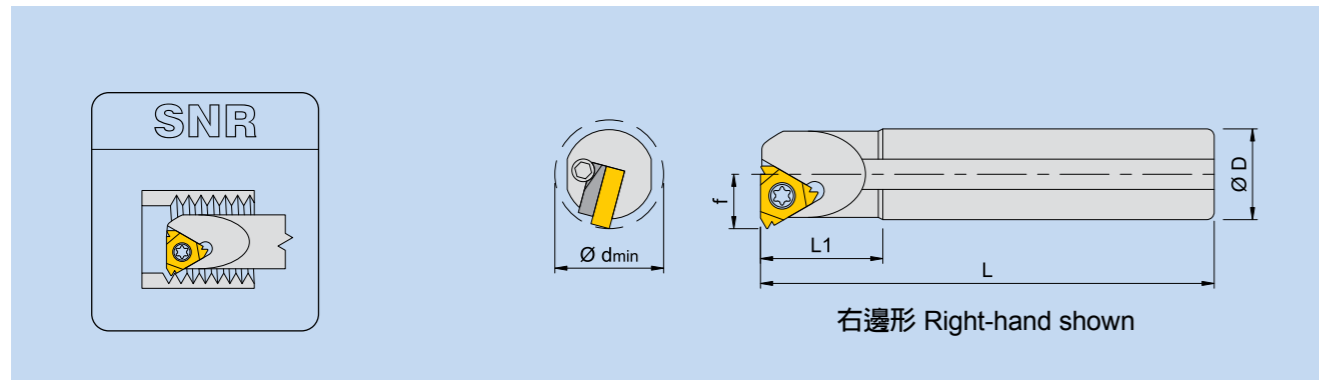
Recommended Threading Passes

Pitch	0.5	1	1.25	1.5	2	3	4	5	6	8
T.P.I	48	24	20	16	12	8	6	5	4	3
No. of Prasses	4-6	4-8	5-9	6-10	7-12	9-14	11-18	12-20	12-20	15-24

Partial Profile ISO	K15	GC10F	AC200M	Whitworth/NPT/BSPT	K15	GC10F	AC200M	Whitworth/NPT/BSPT	K15	GC10F	AC200M
16 ER A55 16 ER AG55 16 ER G55 	12.70	13.95	15.35	16 ER 28W 16 ER 26W 16 ER 20W 16 ER 19W 16 ER 18W 16 ER 16W 16 ER 14W 16 ER 12W 16 ER 11W 16 ER 10W 16 ER 9W 16 ER 8W 	12.70	13.95	15.35	16 ER 24UN 16 ER 20UN 16 ER 18UN 16 ER 16UN 16 ER 14UN 16 ER 13UN 16 ER 12UN 16 ER 11UN 16 ER 10UN 16 ER 9UN 16 ER 8UN 	12.70	13.95	15.35
22 ER N55 22 ER N55-U 	22.05	24.55	26.65	22 ER 7W 22 ER 6W 22 ER 5W 	22.05	24.55	26.65	22 ER 7UN 22 ER 6UN 22 ER 5UN 	22.05	24.55	26.65
27 ER Q55 	31.60	34.75	38.20	22 ER 4-1/2W-U 22 ER 4W-U 22 ER 3-1/2W-U 22 ER 3W-U 	31.60	34.75	38.20	27 ER 4UN 	31.60	34.75	38.20
16 NR A60 16 ER AG60 16 ER G60 	12.70	13.95	15.35	16 NR 28W 16 NR 26W 16 NR 20W 16 NR 19W 16 NR 18W 16 NR 16W 16 NR 14W 16 NR 12W 16 NR 11W 16 NR 10W 16 NR 9W 16 NR 8W 	12.70	13.95	15.35	16 NR 24UN 16 NR 20UN 16 NR 18UN 16 NR 16UN 16 NR 14UN 16 NR 13UN 16 NR 12UN 16 NR 11UN 16 NR 10UN 16 NR 9UN 16 NR 8UN 	12.70	13.95	15.35
22 NR N60 22 NR N60-U 	22.05	24.55	26.65	22 NR 4-1/2W-U 22 NR 4W-U 22 NR 3-1/2W-U 22 NR 3W-U 	22.05	24.55	26.65	22 NR 7UN 22 NR 6UN 22 NR 5UN 	22.05	24.55	26.65
27 NR Q60 	31.60	34.75	38.20	27 NR 4W 27 NR 3W 	31.60	34.75	38.20	27 NR 4UN 	31.60	34.75	38.20
16 ER 0.75 ISO 16 ER 1.0 ISO 16 ER 1.25 ISO 16 ER 1.5 ISO 16 ER 1.75 ISO 16 ER 2.0 ISO 16 ER 2.5 ISO 16 ER 3.0 ISO 	12.70	13.95	15.35	BSPT 16 ER 14 BSPT 16 ER 11 BSPT 	12.70	13.95	15.35				
22 ER 3.5 ISO 22 ER 4.05 ISO 22 ER 4.55 ISO 22 ER 5.05 ISO 	22.05	24.55	26.65	16 NR 14 BSPT 16 NR 11 BSPT 	12.70	13.95	15.35				
27 ER 5.5 ISO 27 ER 6.05 ISO 27 ER 8.0 ISO 	31.60	34.75	38.20	NPT LINE PIPE 16 ER 18 NPT 16 ER 14 NPT 16 ER 11.5 NPT 16 ER 8 NPT 	12.70	13.95	15.35				
16 NR 0.75 ISO 16 NR 1.0 ISO 16 NR 1.25 ISO 16 NR 1.5 ISO 16 NR 1.75 ISO 16 NR 2.0 ISO 16 NR 2.5 ISO 16 NR 3.0 ISO 	12.70	13.95	15.35	16 NR 18 NPT 16 NR 14 NPT 16 NR 8 NPT 	12.70	13.95	15.35				
22 NR 3.5 ISO 22 NR 4.05 ISO 22 NR 4.55 ISO 22 NR 5.05 ISO 	22.05	24.55	26.65								
27 NR 5.5 ISO 27 NR 6.05 ISO 27 NR 8.0 ISO 	31.60	34.75	38.20								

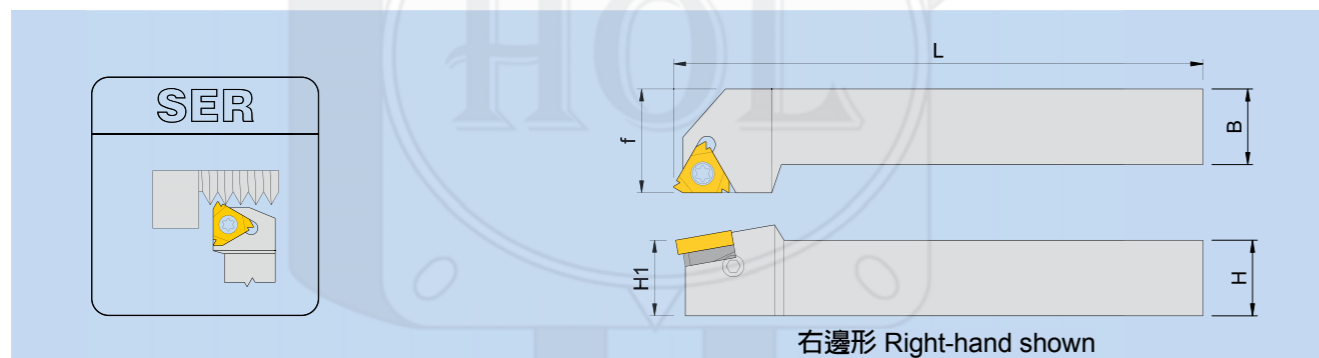


捨棄式刀刃內徑牙刀柄 Internal Threading Boring Bars(W) Throw-Away Inserts



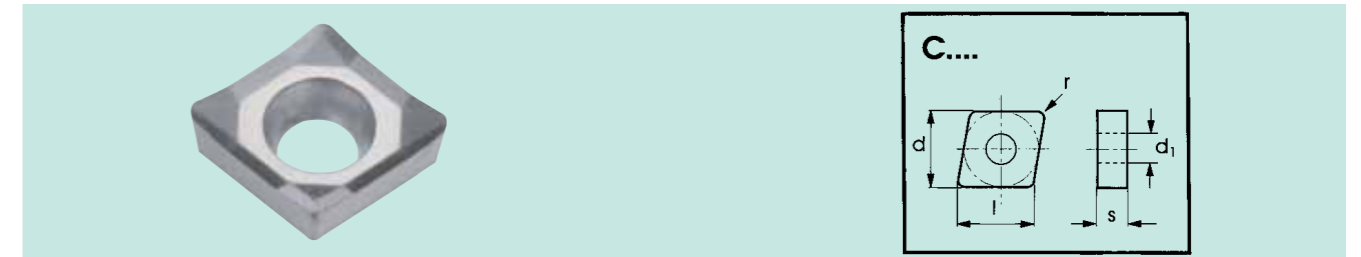
型號 EDP NO.	刀刃 Insert	尺寸 Dimensions (mm)					螺絲 Screw	扳手 Wrench	墊片 Shin	螺絲 Screw	扳手 Wrench
		D	L	L1	f	dmin					
SNR-0008K-08-S08	08NR..	8	125	20	5.5	11	MS2206A	TF7			
SNR-0010K-11-S10	11NR/L..	10	125	25	6.5	13	MS2508B	TF9	---	---	---
SNR-0012M-11-S11		12	150	32	8.0	16					
SNR/L-0016Q-16	16NR/L..	16	180	36	10	19	MS3509A	TF15			
SNR/L-0020R-16		20	200	40	12	24	MS3512A	TF15	DXN/E16	HTM3	PL25
SNR/L-0025R-16		25	200	45	14.5	29					
SNR/L-0032S-16		32	250	45	18.5	36					

捨棄式刀刃外徑牙刀柄 External Threading Boring Bars(W) Throw-Away Inserts



型號 EDP NO.	刀刃 Insert	尺寸 Dimensions (mm)					螺絲 Screw	扳手 Wrench	墊片 Shin	螺絲 Screw	扳手 Wrench
		H	B	L	H1	f					
SER/L-1212K-16	16ER/L..	12	12	120	12	12	MS3509A	TF15	---	---	---
SER/L-1216K-16		12	16	120	12	16					
SER/L-1616K-16		16	16	125	16	20	MS3512A	TF15	GXE/N16	HTM309	PL25
SER/L-2020K-16		20	20	125	20	25					
SER/L-2525K-16		25	25	150	25	32					

CCGT 鋁用車刀片(80°菱形) Insert For Aluminum (80° Diamond)



型號 EDP NO.	I	D	S	d ₁	r
CCGT 060202 - AL	6.40	6.35	2.38	2.80	0.2
CCGT 060202 - AL	6.40	6.35	2.38	2.80	0.4
CCGT 060202 - AL	9.70	9.52	3.97	4.40	0.4
CCGT 060202 - AL	9.70	9.52	3.97	4.40	0.8
CCGT 060202 - AL	12.90	12.70	4.76	5.50	0.4
CCGT 060202 - AL	12.90	12.70	4.76	5.50	0.8

TCGT 鋁用車刀片(三角形) Insert For Aluminum (Triangular)



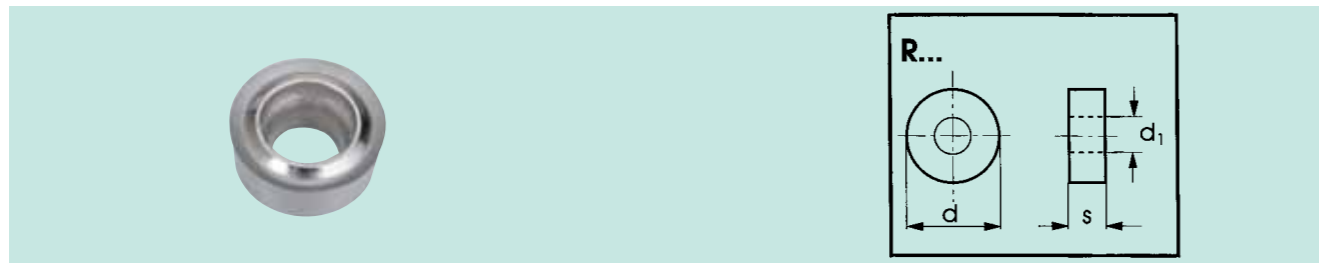
型號 EDP NO.	I	D	S	d ₁	r
TCGT 110202 - AL	11.00	6.35	2.38	2.80	0.2
TCGT 110204 - AL	11.00	6.35	2.38	2.80	0.4
TCGT 16T304 - AL	16.50	9.52	3.97	4.40	0.4
TCGT 16T308 - AL	16.50	9.52	3.97	4.40	0.8

DCGT AL 鋁用車刀片(55°菱形) Insert For Aluminum (55° Diamond)



型號 EDP NO.	I	D	S	d ₁	r
DCGT 070202 - AL	7.75	6.35	2.38	2.80	0.2
DCGT 070204 - AL	7.75	6.35	2.38	2.80	0.4
DCGT 11T302 - AL	11.60	9.52	3.97	4.40	0.2
DCGT 11T304 - AL	11.60	9.52	3.97	4.40	0.4
DCGT 11T308 - AL	11.60	9.52	3.97	4.40	0.8

RCGT AL 鋁用車刀片(圓形) Insert For Aluminum (Circular)



型號 EDP NO.	I	D	S	d ₁	r
RCGT 0602M0 - AL	-	6.00	2.38	2.80	
RCGT 0803M0 - AL	-	8.00	3.18	3.40	
RCGT 1003M0 - AL	-	10.00	3.18	4.00	

VCGT AL 鋁用車刀片(35°菱形) Insert For Aluminum (35° Diamond)



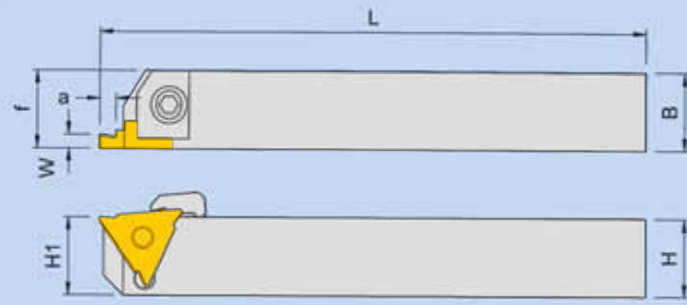
型號 EDP NO.	I	D	S	d ₁	r
VCGT 110302 - AL	11.10	6.35	3.18	2.80	0.2
VCGT 110304 - AL	11.10	6.35	3.18	2.80	0.4
VCGT 160402 - AL	16.60	9.52	4.76	4.40	0.2
VCGT 160404 - AL	16.60	9.52	4.76	4.40	0.4
VCGT 160408 - AL	16.60	9.52	4.76	4.40	0.8
VCGT 160412 - AL	16.60	9.52	4.76	4.40	1.2
VCGT 220530 - AL	22.10	12.70	5.56	5.50	3.0

GLENDOWER

Cutting Speed recommendations : Threading

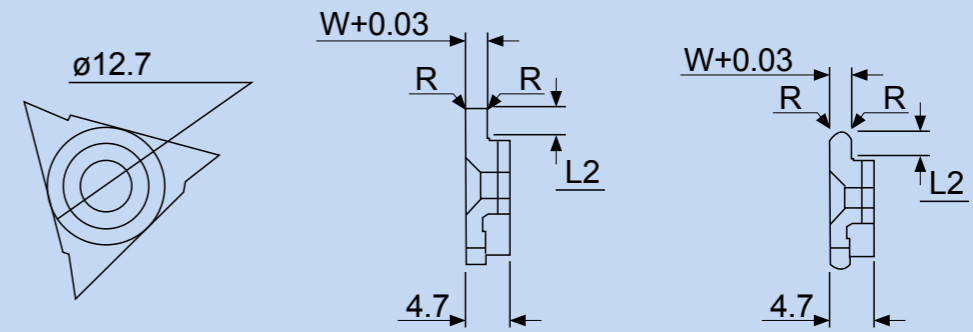
Materials		HBN	GC10F	AC350M	AC200M	K15
		Cutting Speed Vc = M/min				
Carbon Steel	c = 0.10-0.25%	125	185	220	220	
	c = 0.25-0.55%	150	155	185	185	
	c = 0.55-0.80%	170	145	175	175	
Low Alloy Steel	Non-Hardened	180	125	150	150	
	Hardened & Tempered	275	95	110	110	
	Hardened & Tempered	350	75	90	90	
High Alloy Steel	Annealed HSS	200	110	130	130	
	Hardened Tool Steel	325	80	95	95	
Steel Casting	Unalloyed	180	200	240	240	
	Low-Alloy	200	110	132	132	
	High-Alloy	225	110	132	132	
	Manganese Steel	250	35	40	40	
Stainless Steel Bars / Forged Ferritic / Martensitic	Free Machining	200	170	200	200	115
	Non - Hardened	200	130	150	150	90
	PH Hardened	330	90	110	110	65
	Hardened	330	85	100	100	65
Stainless Steel Bars / Forged Austenitic	Free Machining	200	140	170	170	
	Austenitic	180	130	155	155	
	PH Hardened	330	80	95	95	
	Super Austenitic	200	70	80	80	
Stainless Steel Bars / Forged / Austenitic Ferritic (Duplex)	Non-weldable c > 0.05%	230	95	110	110	80
	Weldable c > 0.05%	260	75	90	90	60
Stainless Steel - Cast Ferritic / Martensitic	Non Hardened	200	90	110	110	65
	Hardened	330	65	80	80	50
Stainless Steel - Cast Austenitic	Austenitic	200	85	110	100	
	PH Hardened	330	60	70	70	
Stainless Steel - Cas Austenitic / Ferritic (Duplex)	Non-weldable c > 0.05%	200	85	100	100	70
	Weldable c > 0.05%	300	65	75	75	50
Heat Resistant Alloy	Annealed Lorn Based	230	45	50	50	
	Aged	260	30	35	35	
	Annealed	250	20	20	20	20
	Aged - Nickel based	350	15	15	15	15
	Cast	320	10	10	10	10
	Cast	320	10	10	10	
Titanium Alloys	Commercially Pure 99.5% TI		140	170	110	12
	Malleable Cast Lorn	130	135	160	160	85
Grey Cast Iorn	Ferritic short chipping	230	100	20	20	70
	Ferritic long chipping					
Grey Cast Iorn	Low tensile Strength	130	130	155	155	100
	High Tensile Strength	230	110	130	130	50
Nodular SG Iorn	Ferritic	160	125	150	150	100
	Pearlitic	230	90	110	110	50
Aluminium Alloys	Cold Worked, non aging	60	1400	1400	1400	500
	Wrought, Wrought & Aged	100	490	450	450	450
Aluminium Alloys	Cast, non aging	75	455	455	455	455
	Cast or cast & aged	90	280	280	280	250
Aluminium Alloys	Cast Si 13-15%	130	245	295	295	210
	Cast Si 16-22%	130	245	295	295	210
Copper & Copper Alloys	Free Cutting > 1% Pb	110	420	500	500	370
	brass, leaded bronze < 1% Pb	90	245	245	245	210
	Bronze, non-leaded copper	150	175	175	175	150
	Electrolytic Copper					

JGB R / L



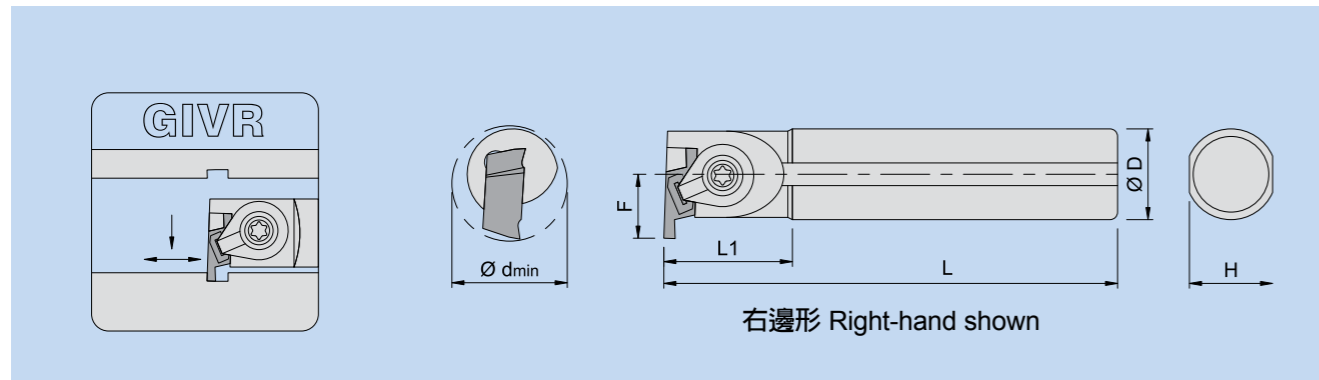
型號 EDP NO.	刀刃 Insert	尺寸 Dimensions (mm)					螺絲 Screw	墊片 Shin	扳手 Wrench	彈簧 Spring
		H=h	B	L1	L2	F				
JGBR/L1616K22-1.5	GB43R/L GBA43R/L	16	16	125	32	25	M6-23	M-03	L-04	MES3
JGBR/L1616K22-2.5		16	16	125	32	25				
JGBR/L1616K22-3.5		16	16	125	32	25				
JGBR/L1616K22-1.5		16	16	125	32	25				
JGBR/L1616K22-2.5		16	16	125	32	25				
JGBR/L1616K22-3.5		16	16	125	32	25				
JGBR/L2020K22-1.5		20	20	125	32	25				
JGBR/L2020K22-2.5		20	20	125	32	25				
JGBR/L2020K22-3.5		20	20	125	32	25				
JGBR/L2525K22-1.5		25	25	150	34	30				
JGBR/L2525K22-2.5		25	25	150	34	30				
JGBR/L2525K22-3.5		25	25	150	34	30				



三角立型槽刀片



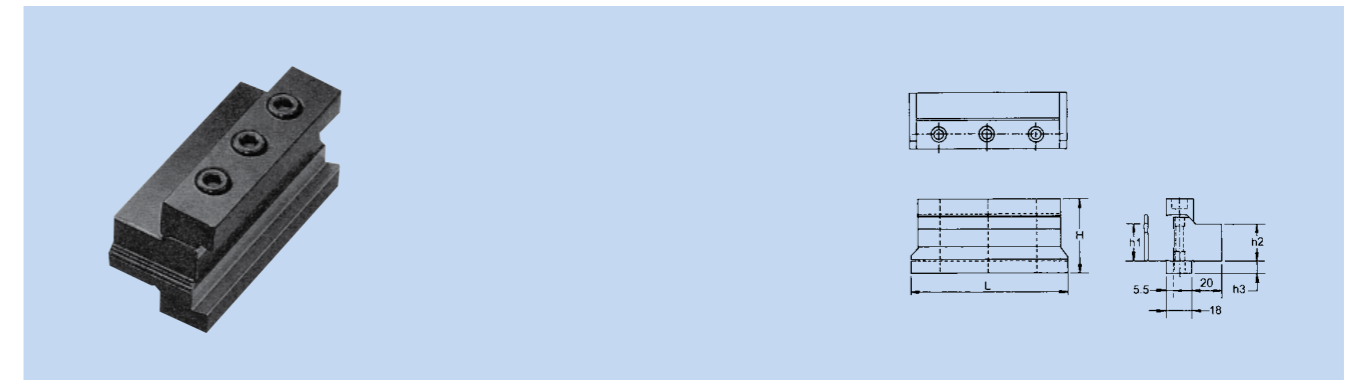
型號 EDP NO.	尺寸(mm)			材質			
	W	L2	R	BM15	BM25		
MTG43R/L 100	1.00	2.0	0.1	•			
MTG43R/L 110	1.10			•			
MTG43R/L 125	1.25			•			
MTG43R/L 145	1.45	3.5	0.2	•			
MTG43R/L 150	1.50			•			
MTG43R/L 175	1.75			•			
MTG43R/L 185	1.85			•			
MTG43R/L 200	2.00			•			
MTG43R/L 220	2.20	4.0	0.3	•			
MTG43R/L 230	2.30			•			
MTG43R/L 250	2.50			•			
MTG43R/L 280	2.80			•			
MTG43R/L 300	3.00			•			
MTG43R/L 330	3.30			•			
MTG43R/L 350	3.50			•			
MTG43R/L 400	4.00	5.0	0.4	•			
MTG43R/L 430	4.30			•			
MTG43R/L 450	4.50			•			
MTG43R/L 050R	1.00			2.0	0.50	•	
MTG43R/L 075R	1.50				0.75	•	
MTG43R/L 100R	2.00	3.5	1.00	•			
MTG43R/L 125R	1.25		4.0	1.25	•		
MTG43R/L 150R	1.50	5.0	1.50	•			
MTG43R/L 175R	1.75		1.75	•			
MTG43R/L 200R	2.00		2.00	•			



捨棄式刀刃內徑開槽刀柄 Internal Grooving Tool Holders(W) Throw-Away Inserts



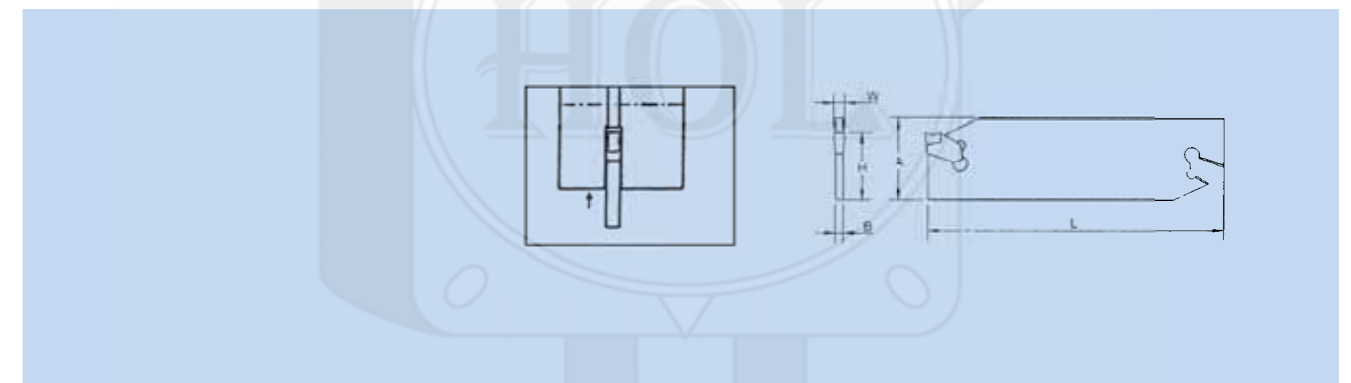
型號 EDP NO.	刀刃 Insert		尺寸 Dimensions (mm)					壓塊 Clamp 	扳手 Wrench 
			dmin	D	L	L1	F		
GIVR-1108K-1SS	GVR..SS	GVR100SS~300SS	11	8	125	20	7	CPS4V	TF15
GIVR-1310K-1S	GVR..S	GVR100S~340S	13	10	125	25	8	CPS5F	TF20
GIVR-1512M-1A	GVR..A	GVR100A~340A	15	12	150	30	9		
GIVR-2016Q-1A			20	16	180	35	11		
GIVR-2520R-1B	GVR..B	GVR145B~250B	25	20	200	40	14	CPS5V	TF20
GIVR-3225R-1C	GVR..C	GVR280C~500C	32	25	200	40	19.5	CPS6V	PL30
GIVR-4032S-1C			40	32	250	48	23		
GIVR-4032S-2C			40	32	250	48	23		

切斷刀座 Cut-Off Tool Holder



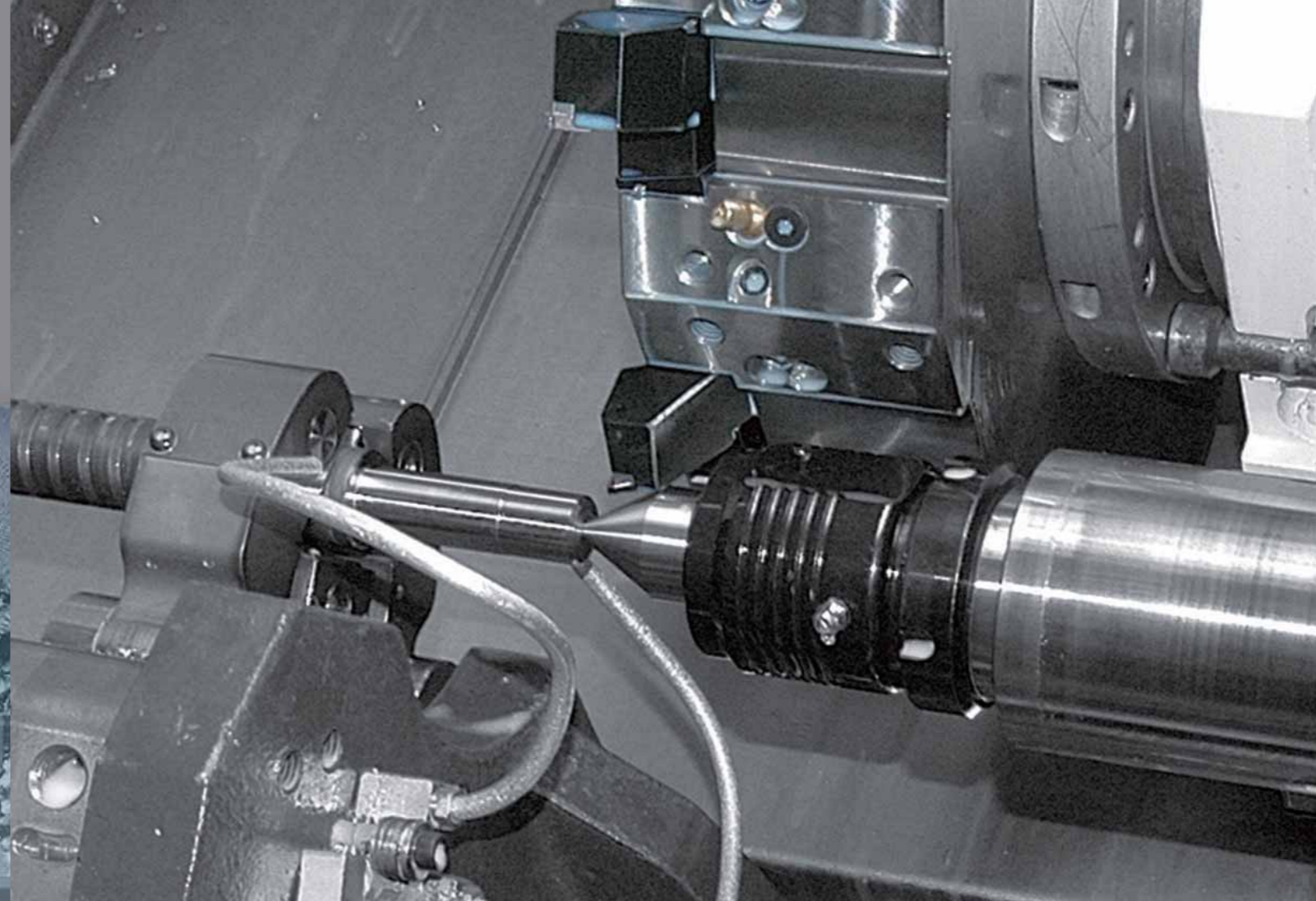
型號 EDP NO.	h1	h2	h3	H	L	壓塊 Clamp	螺絲 Screw 	扳手 Wrench 
SBU20-26	20	20	10	45	80	BCS15	BX0625	LH-050
SBU20-32	25	20	13.5	50	100	BCS20		
SBU25-32	25	25	8.5	50	110	BCS25		
SBU25-26	20	25	10	45	80	BCS15		

切斷刀板 Cut-Off Knife Plate



型號 EDP NO.	刀刃編號 Insert number 	最大直徑 MAX. DIA.	W	B	H	L	A	扳手 Wrench 
SGFH26-3	GFN3	75	3	2.4	21	110	25.4	SL-1
SGFH32-3	GFN3	100	3	2.4	25	150	31.3	
SGIH26-2	GTN2	75	3	2.4	21	110	25.4	
SGIH26-3	GTN3	100	3	2.4	25	150	31.3	
SGIH32-3	GTN3	50	3	1.6	21	110	25.4	
KTKB26-3	TKN3	75	3	2.4	21	110	25.4	
KTKB32-3	TKN3	100	3	2.4	25	150	31.3	
SV26-3	N151.2-300.4E	75	3	2.4	21	110	25.4	
SV32-3	N151.2-300.4E	100	3	2.4	25	150	31.3	

GIVING
ALL YOUR CUTTING NEEDS
 提供全方位的金鋼石切削工具



金鋼石及氮化硼車刀簡介

INTRODUCTION TO DIAMOND TURNING TOOLS

金鋼石刀具適用材料 - PCD POLYCRYSTALLINE DIAMOND



非鐵金屬材料 (Non-Ferrous)

- ▲黃銅青銅合金
- ▲矽鋁合金
- ▲銅合金
- ▲鎂合金
- ▲鋁合金
- ▲預燒結或全燒結
碳化鎢
- ▲Brass & Bronze Alloys
- ▲Silicon-Aluminum Alloys
- ▲Copper Alloys
- ▲Magnesium Alloys
- ▲Aluminum Alloys
- ▲Presintered or Sintered
Tungsten Carbide

非金屬材料 (Non-Metallic)

- ▲氧基樹脂
- ▲木材、複合木材
- ▲硬質橡膠
- ▲玻璃纖維
- ▲陶瓷
- ▲碳、石碳酸
- ▲塑膠
- ▲石墨
- ▲Epoxy Resins
- ▲Wood, Compound Wood
- ▲Hard Rubber
- ▲Fibre Glass Composites
- ▲Ceramics
- ▲Carbon-Phenolic
- ▲Plastics
- ▲Graphite

金鋼石及氮化硼刀具車削條件-

CUTTING CONDITIONS OF DIAMOND AND CBN CUTTING TOOLS

氮化硼刀具適用材料 - CBN CUBIC BORON NITRIDE

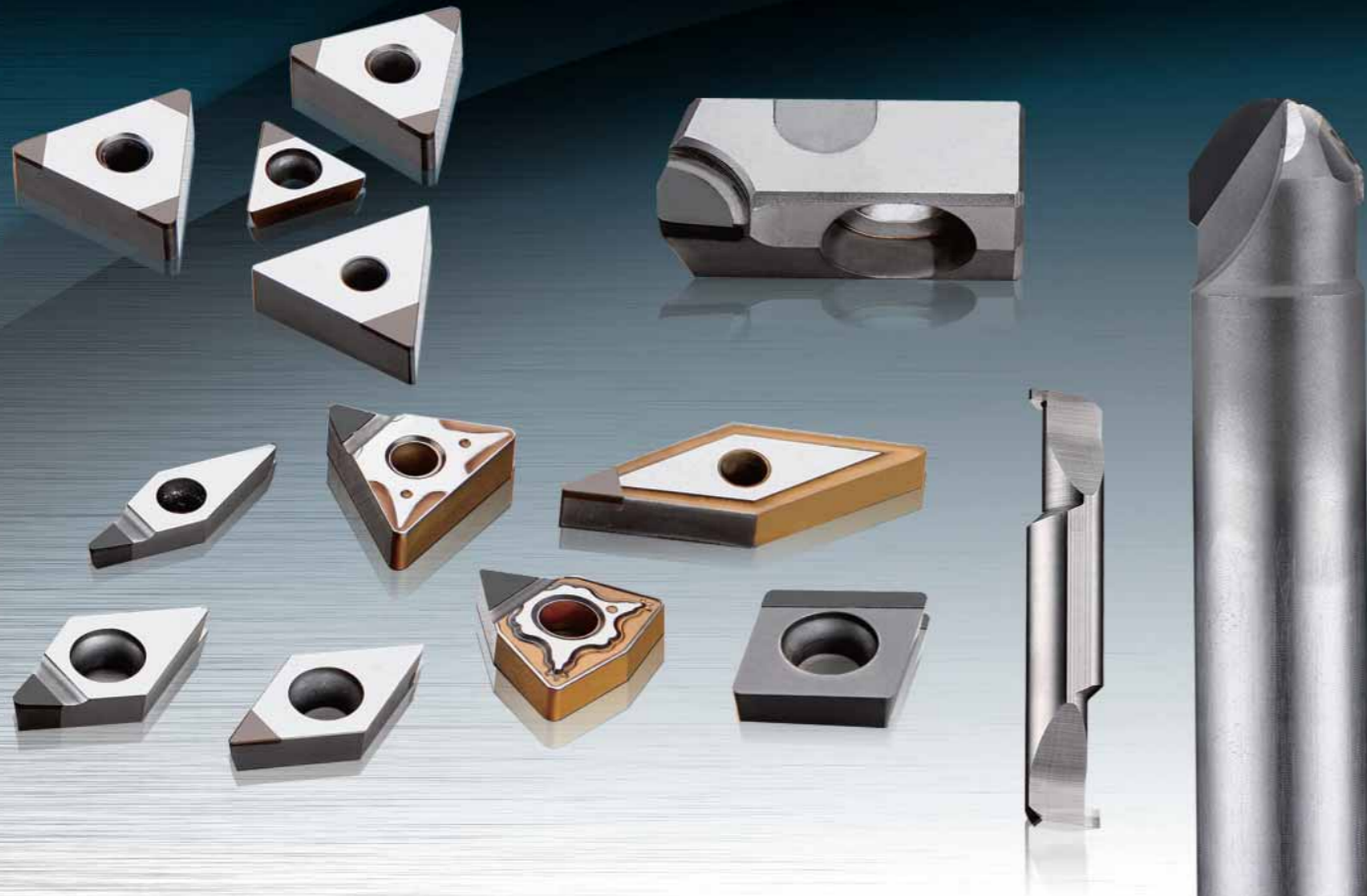


硬化鐵屬材料 (HRC 45以上)

- | | |
|--|---|
| 工具鋼 AISI / SAE :
M-2, M-42, T-15, 0-2
(JIS)
(SKH9,-,SKH10,-)
A-2, D-2, S-5
(SKD12, SKD11,-) | 合金鋼: (AISI / SAE)
1055, 4140, 4340, 8620, 52100
(JIS)
(S55C, SCM44H, SNCM439,
SNCM220, SUJ2)
鑄鐵 CAST IRON:
冷激鑄鐵, 硬鎳鑄鐵
Cold energized cast iron and
hard nickel cast iron. |
|--|---|

高溫合金 (HRC 35以上)

- 鈷基合金 :
Stellite, Colmonoy, Wallex
鎳基合金 :
High cobalt powder metallurgy



金鋼石及氮化硼刀具之優點

FEATURES OF DIAMOND AND CBN CUTTING TOOLS

A. 提高生產力

1. 長時間維持公差，即提高加工之精密度。
2. 以車削取代研磨。
3. 切削速度及工件去除率 (Stock Removal) 增加，即提高生產力。
4. 較碳化鎢或陶瓷刀具每一切刃更有更高的產量。
5. 降低高投資機器的昂貴停機時間。

B. 精確度

1. 降低金相傷害。
2. 以切削加工的方法可在硬合金工件上得到好的表面光度。
3. 切刃磨耗低，維持正確公差時間長。
4. 一個切刃維持到底，因為刀刃不受磨損，加工中不須調整或補償刀刃之磨耗量。

A. INCREASED PRODUCTIVITY

1. To maintain proper tolerance for a long time and upgrade machining accuracy.
2. With turning to replace grinding.
3. To increase cutting speed and chip removal rate for increased productivity.
4. Higher productivity than that of tungsten carbide or ceramic cutting tool.
5. To reduce down time on a highly priced machine.

B. ACCURACY

1. To reduce damage of metallurgical structure.
2. Better finish on extra hard alloy steel workpiece.
3. Low wear on cutting edge to maintain accurate tolerance for a long time.
4. Cutting edge lasts long. No need to adjust or compensate cutting edge wear during machining due to minimum wear.

硬化鐵屬材料 (HRC 45以上)

	金屬材料 METALLIC MATERIALS	非金屬材料 NON-METALLIC MATERIALS	備註 REMARK
進刀速度 Feed Speed	0.02 - 0.1mm / rev	0.2 - 0.5 mm / rev	隨加工面之粗細程度在此範圍內自行選定 Select feed speed in this range according to your desired finish of machining surface.
切削速度 Cutting Speed	80 - 120 m / min CBN	800 -1200 m / min PCD	在機械共振點之速度以外自行選擇 Select cutting speed out of machine's resonant point.
切入深度 Cutting depth	0.02 - 0.6mm	0.2 - 1.5 mm	根據材料物性不同而定 Depends on material property.
切削油劑 Cutting Oil	可用乾式；鋁合金可用輕油類 Dry machining: Use light oil for aluminum alloy	乾式切削均可 Dry machining	視加工條件而定 Depends on machining condition.

旋削用

ISO 符號	外觀	形狀	寸法 (mm)				CBN				PCD	
			d	s	r	d1	CN250	CN300	CN500	CN600	PDM010	
TNGA 160402 160404 160408 220404 220408 220412			9.525	4.76	0.2	3.81						●
			9.525	4.76	0.4	3.81	●	●	●			
			9.525	4.76	0.8	3.81	●	●	●	●		
			12.70	4.76	0.4	5.16			●	●		
			12.70	4.76	0.8	5.16	●	●	●			
CNMA 120404 120408 120412			12.70	4.76	0.4	5.16	●	●	●	●	●	
			12.70	4.76	0.8	5.16	●	●	●	●	●	
			12.70	4.76	1.2	5.16		●	●	●		
DNGA 150404 150408 150412			12.70	4.76	0.4	5.16	●	●				●
			12.70	4.76	0.8	5.16	●	●				●
			12.70	4.76	1.2	5.16		●				
SNGA 120404 120408 120412			12.70	4.76	0.4	5.16						
			12.70	4.76	0.8	5.16	●	●	●	●	●	
			12.70	4.76	1.2	5.16		●	●	●		
SNGN 090304 090308 120404 120408 120412			9.525	3.18	0.4	-						
			9.525	3.18	0.8	-						
			12.70	4.76	0.4	-						
			12.70	4.76	0.8	-	●	●	●			●
			12.70	4.76	1.2	-		●	●			
CCMW 060202 060204 09T302 09T304 09T308 120404 130408 120412			6.35	2.38	0.2	2.8						●
			6.35	2.38	0.4	2.8						●
			9.525	3.97	0.2	4.4						●
			9.525	3.97	0.4	4.4	●	●				●
			9.525	3.97	0.8	4.4	●	●				
			12.70	4.76	0.4	5.5						
			12.70	4.76	0.8	5.5	●	●				
CDMW 070202 070204 11T302 11T304 11T308			6.35	2.38	0.2	2.8						●
			6.35	2.38	0.4	2.8						●
			9.525	3.97	0.2	4.4						●
			9.525	3.97	0.4	4.4	●	●				●
			9.525	3.97	0.8	4.4		●				●
VNGA 160404 160408			9.525	4.76	0.4		●	●				●
			9.525	4.76	0.8	3.8	●	●				●

ISO 符號	外觀	形狀	寸法 (mm)				CBN				PCD
			d	s	r	d1	CN250	CN300	CN500	CN600	
TCMW 110202			6.35	2.38	0.2	2.8					●
110204			6.35	2.38	0.4	2.8					●
TPGX 080202			4.76	2.38	0.2	2.5			●	●	●
080204			4.75	2.38	0.4	2.5	●	●	●	●	●
080208			4.76	2.38	0.8	2.5					●
090202			5.56	2.38	0.2	3.0			●	●	●
090204			5.56	2.38	0.4	3.0	●	●	●	●	●
090208			5.56	2.38	0.8	3.0					●
110302			6.35	3.18	0.2	3.5					●
110304			6.35	3.18	0.4	3.5	●	●	●	●	●
110308			6.35	3.18	0.8	3.5	●	●	●	●	●
160304			9.525	3.18	0.4	4.8	●	●	●		●
160308			9.525	3.18	0.8	4.8	●	●	●		●
160404			9.525	4.76	0.4	4.8			●		
160408			9.525	4.76	0.8	4.8			●		
SPGN 090302			9.525	3.18	0.2	-					●
090304			9.525	3.18	0.4	-	●	●	●		●
090308			9.525	3.18	0.8	-	●	●	●		●
090312			9.525	3.18	1.2	-			●		
120304			12.70	3.18	0.4	-			●	●	●
120308			12.70	3.18	0.8	-	●	●	●	●	●
120312			12.70	3.18	1.2	-			●		●
120408			12.70	4.76	0.4	-					
120412			12.70	4.76	0.8	-					
SPGX 090304			9.525	3.18	0.4	4.8					●
090308			9.525	3.18	0.8	4.8					●
WCMW L30202			4.76	2.38	0.2	2.3					●
L30204			4.76	2.38	0.4	2.3					●
040202			6.35	2.38	0.2	2.8					●
040204			6.35	2.38	0.4	2.8					●
06T304			9.525	3.97	0.4	4.4					●
06T308			9.525	3.97	0.8	4.4					●
TEGX 160302			9.525	3.18	0.2	4.3					●
160304			9.525	3.18	0.4	4.3					●

說明:

- | | |
|------------------------------------|--|
| 1. CN 100 - 低硬度滾輪切削 | 1. CN 100 - Low hardness roller cutting |
| 2. CN 250 - 熱處理鋼 連續 / 斷續切削 | 2. CN 250 - Heat treatment pot, continuous / intermittent cutting |
| 3. CN 300 - 熱處理鋼 斷續切削 | 3. CN 300 - Heat treatment pot, intermittent cutting |
| 4. CNZ 10 - 熱處理鋼 高速連續切削 | 4. CNZ 10 - Heat treatment pot, High speed continuous cutting |
| 5. CN 500 - 鑄鐵 高精度切削 | 5. CN 500 - Cast iron, High accuracy cutting |
| 6. CN 600 - 高硬度滾輪切削 耐熱合金切削 一般燒結品切削 | 6. CN 600 - High hardness roller cutting. Heat - resistant alloy cutting. General sintered part cutting. |
| 7. PDM010 - 耐磨耗性高的非鐵系材料及非金屬材料 | 7. PDM010 - High wear - resistance non-iron materials and non-metallic materials. |
| 8. PDM002 - 精密加工及低矽含量之鋁合金 | 8. PDM002 - Precision machining and aluminum alloy with low silicone content. |

SC-61系列 SC-61 SERIES

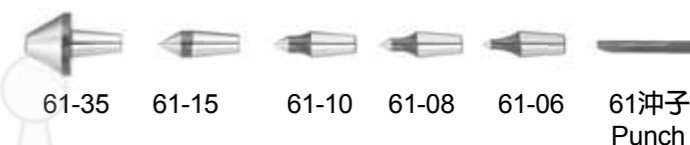
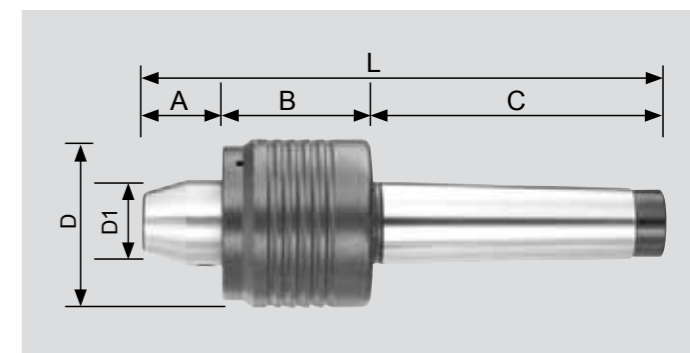
替換型高速中負荷迴轉頂針 Interchangeable High Speed Medium Duty Live Center

用途:

本頂針適合300 m/m長以內一般車削加工, 本頂針軸承, 徑向力和軸向力分開設計, 採用雙列滾珠軸承、滾珠止推軸承, 和NK型滾針軸承結構製成。

Application:

The series of live center is suitable for turning workpiece length within 300mm. The bearings in the live center provide separated radial and axial resistant force. The bearings consist of double-row ball bearing, thrust ball bearing and NK type needle bearing.



精準度: 0.008m/m內
Accuracy: within 0.008m/m

尺寸表 DIMENSIONS

型式/外表尺寸 Model / Size	MT	A	B	C	D	D1	L	軸承最高轉數 Max. Bearing Speed	軸承徑向力 Bearing Radial Force	軸承軸向力 Bearing Axial Force
SC-61-M-3	3	30	55	90.5	64	32.4	175.5	4500.rpm	1300kg	2250kg
SC-61-M-3-A	3	30	72	90.5	64	32.4	187.5	4500.rpm	1300kg	2250kg
SC-61-M-4	4	30	55	108	64	32.4	193	4500.rpm	1300kg	2250kg
SC-61-M-4A	4	30	72	108	64	32.4	205	4500.rpm	1300kg	2250kg
SC-61-M-5	5	30	55	135	64	32.4	220	4500.rpm	1300kg	2250kg
SC-61-M-5A	5	30	72	135	64	32.4	232	4500.rpm	1300kg	2250kg

單位: Unit : mm

SC-62系列 SC-62 SERIES

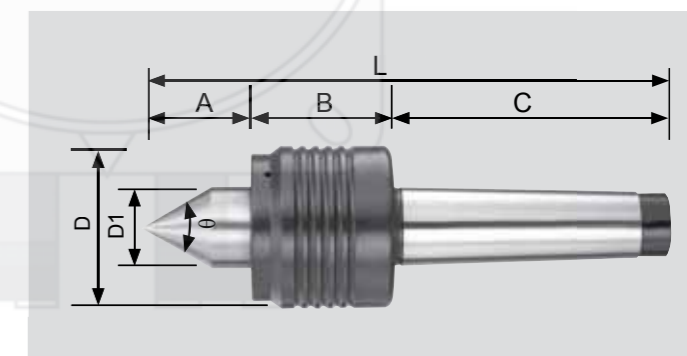
固定型重負荷迴轉頂針 Fixed Heavy Duty Live Center

用途:

本頂針適合400 m/m長以內一般車削加工。

Application:

The series of live center is suitable for turning workpiece length within 400mm.



精準度: 0.008m/m內
Accuracy: within 0.008m/m

尺寸表 DIMENSIONS

型式/外表尺寸 Model / Size	MT	A	B	C	D	D1	L	θ	軸承最高轉數 Max. Bearing Speed	軸承徑向力 Bearing Radial Force	軸承軸向力 Bearing Axial Force
SC-62-H-4	4	45	56	108	68	32.4	209	60°	4000.rpm	1420kg	2760kg
SC-62-H-4-A	4	45	73	108	68	32.4	221	60°	4000.rpm	1420kg	2760kg
SC-62-H-5	5	45	56	135	68	32.4	236	60°	4000.rpm	1420kg	2760kg
SC-62-H-5A	5	45	73	135	68	32.4	248	60°	4000.rpm	1420kg	2760kg

單位: Unit : mm

SC-63系列 SC-63 SERIES

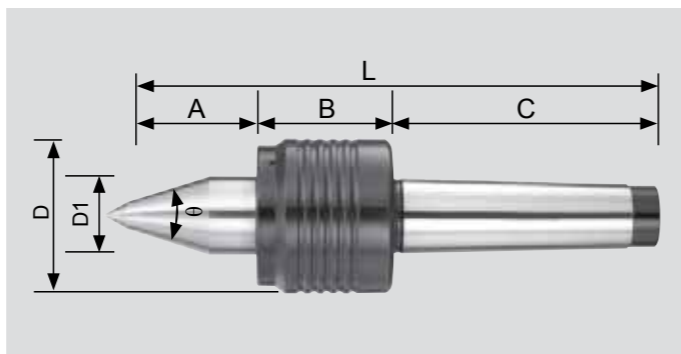
固定細長型高速中負荷迴轉頂針 Fixed Long Type High Speed Medium Duty Live Center

用途:

本頂針適合300 m/m長以內一般軸心車削加工，本頂針軸承，徑向力和軸向力分開設計，採用雙列滾珠軸承、滾珠止推軸承，和NK型滾針軸承結構製成。

Application:

The series of live center is suitable for turning workpiece length within 300mm. The bearings in the live center provide separated radial and axial resistant force. The bearings consist of double-row ball bearing, thrust ball bearing and NK type needle bearing.



精準度: 0.008m/m內
Accuracy: within 0.008m/m

尺寸表 DIMENSIONS

型式/外表尺寸 Model / Size	MT	A	B	C	D	D1	L	θ	軸承最高轉數 Max. Bearing Speed	軸承徑向力 Bearing Radial Force	軸承軸向力 Bearing Axial Force
SC-63-M-4	4	60	55	108	64	32.4	223	60°	4500.rpm	1300kg	2250kg
SC-63-M-4-A	4	60	72	108	64	32.4	240	60°	4500.rpm	1300kg	2250kg
SC-63-M-5	5	60	56	135	68	32.4	251	60°	4500.rpm	1300kg	2250kg
SC-63-M-5A	5	60	72	135	68	32.4	268	60°	4500.rpm	1300kg	2250kg

單位: Unit : mm

SC-65系列 SC-65 SERIES

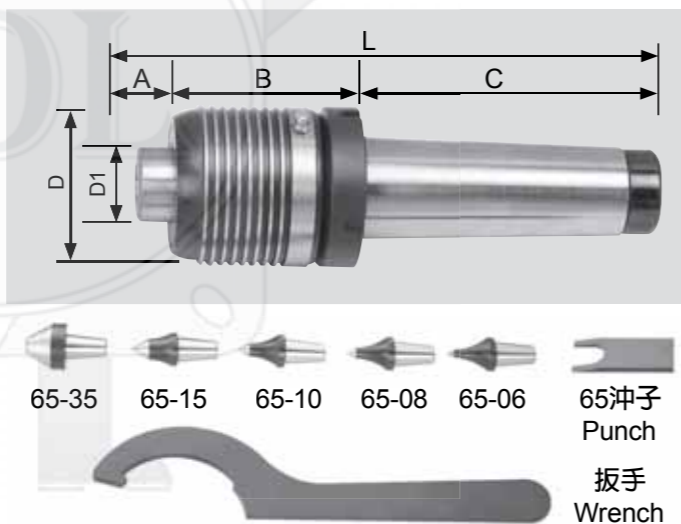
替換型重負荷迴轉頂針 Interchangeable Heavy Duty Live Center

用途:

本頂針適合400 m/m長以內一般車削加工。本頂針軸承，徑向力和軸向力分開設計，採用雙列滾珠軸承、滾珠止推軸承，和NK型滾針軸承結構製成。

Application:

The series of live center is suitable for turning workpiece length within 400mm. The bearings in the live center provide separated radial and axial resistant force. The bearings consist of double-row ball bearing, thrust ball bearing and NK type needle bearing.



精準度: 0.008m/m內
Accuracy: within 0.008m/m

尺寸表 DIMENSIONS

型式/外表尺寸 Model / Size	MT	A	B	C	D	D1	L	軸承最高轉數 Max. Bearing Speed	軸承徑向力 Bearing Radial Force	軸承軸向力 Bearing Axial Force
SC-65-H-4	4	12	56	108	63	32.4	176	4000.rpm	1420kg	2760kg
SC-65-H-4A	4	12	73	108	68	32.4	188	4000.rpm	1420kg	2760kg
SC-65-H-5	5	12	56	135	68	32.4	203	4000.rpm	1420kg	2760kg
SC-65-H-5A	5	12	73	135	68	32.4	215	4000.rpm	1420kg	2760kg

單位: Unit : mm

SC-66系列 SC-66 SERIES

端面自動調整插式傳動頂針 Automatic End Adjustment Insert Type Transmitted Center

用途:

免車削工具端面，每支傳動齒自動調整帶動平均力，精度穩定性佳，可正、逆轉車削使用適用於CNC車床、自動車削送料專用機、一般車床、其他機種使用，傳動齒有多種規格選擇使用。

Application:

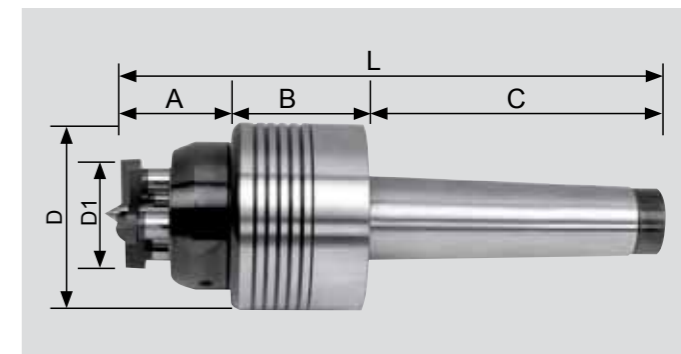
No need to turn tool end face. Each transmission-tooth can be adjusted automatically for uniform force and superior accuracy and stability. Suitable for clockwise and counter-clockwise turning. Applicable machines include CNC lathe, special purpose automatic turning and feeding lathe, general lathe and other machines. The transmission teeth provide various specifications to select.

注意使用:

本端面自動調整插式傳動頂針，靠尾座足夠推力，才可傳動車削使用。

Notice For Use:

The automatic end adjustment insert type transmitted center requires sufficient thrust force from tailstock for transmission.



尺寸表 DIMENSIONS

型式/外表尺寸 Model / Size	心軸尺寸 Arbor Size	標準附件 Standard Accessory	鉗入工件直徑 Insert Workpiece Dia
SC-66-MT4-A	MT4	SC-66-A	Ø 33mm
SC-66-MT4-B	MT4	SC-66-B	Ø 39mm
SC-66-MT4-C	MT4	SC-66-C	Ø 45mm
SC-66-Ø40A	Ø40	SC-66-A	Ø 33mm
SC-66-Ø40B	Ø40	SC-66-B	Ø 39mm
SC-66-Ø40C	Ø40	SC-66-C	Ø 45mm

型式/外表尺寸 Model / Size	中心針 Center	傳動齒 Transmission Teeth	固定鍵 Fixed Key
SC-66-A	SC-09-09	SC-10-10	SC-66-013
SC-66-B	SC-09-09	SC-10-13	SC-66-013
SC-66-C	SC-09-09	SC-10-17	SC-66-013

單位: Unit : mm

SC-80系列 SC-80 SERIES

傘型重重切削迴轉頂針 Cone Type Heavy Duty Live Center

用途：

適合大孔徑重切削。

本頂針，頭部使用合金鋼材，經熱處理，內、外研磨製成。

本頂針採用世界名牌SKF潤滑油，LEGP2，請勿使用油壓

三爪用潤滑油。

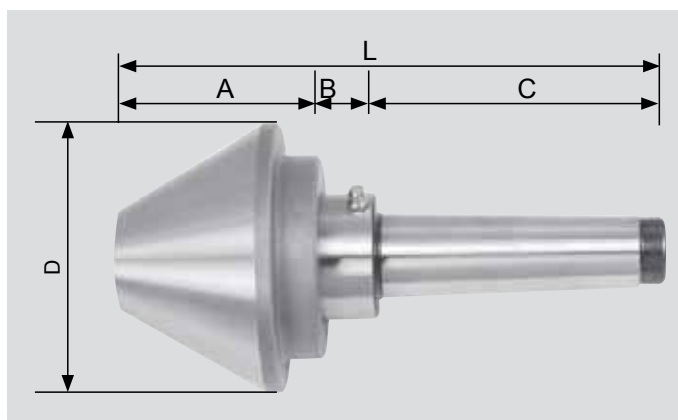
精準度：0.005 m/m內

Application:

The series of center is suitable for big hole and heavy duty machining.

The center head is manufactured from alloy steel, heat treated and precision ground. The live center uses world-famous SKF LEGP2 lubrication oil. Do not use lubrication oil for hydraulic 3-jaw chuck.

Accuracy: within 0.005mm.



尺寸表 DIMENSIONS

型式/外表尺寸 Model / Size	MT	A	B	C	D	L
SC-80-4-3	4	66	79	108	73	187
SC-80-4-4	4	75	88	108	98	196
SC-80-4-5	4	85	98	108	128	206
SC-80-4-6	4	95	108	108	148	216
SC-80-4-8	4	95	108	108	198	216
SC-80-4-10	4	95	108	108	248	216
SC-80-5-3	5	66	79	135	73	214
SC-80-5-4	5	75	88	135	98	223
SC-80-5-5	5	85	98	135	128	233
SC-80-5-6	5	95	108	135	148	243
SC-80-5-8	5	95	108	135	198	243
SC-80-5-10	5	95	108	135	248	243

單位: Unit : mm