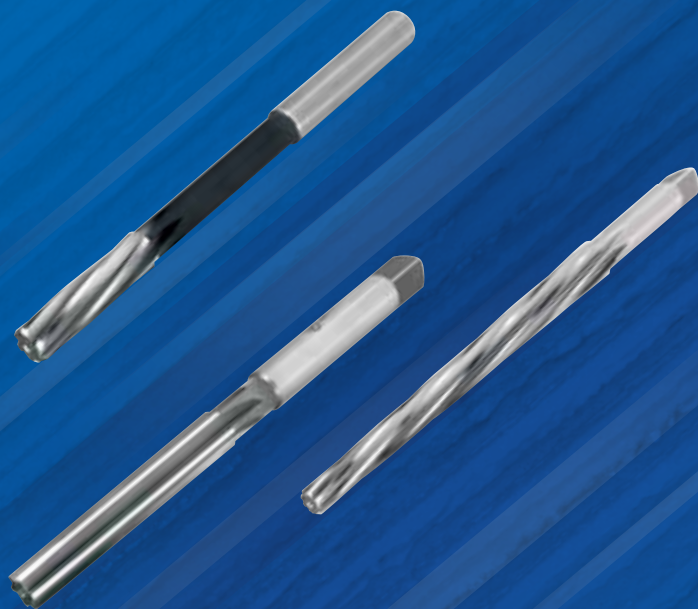




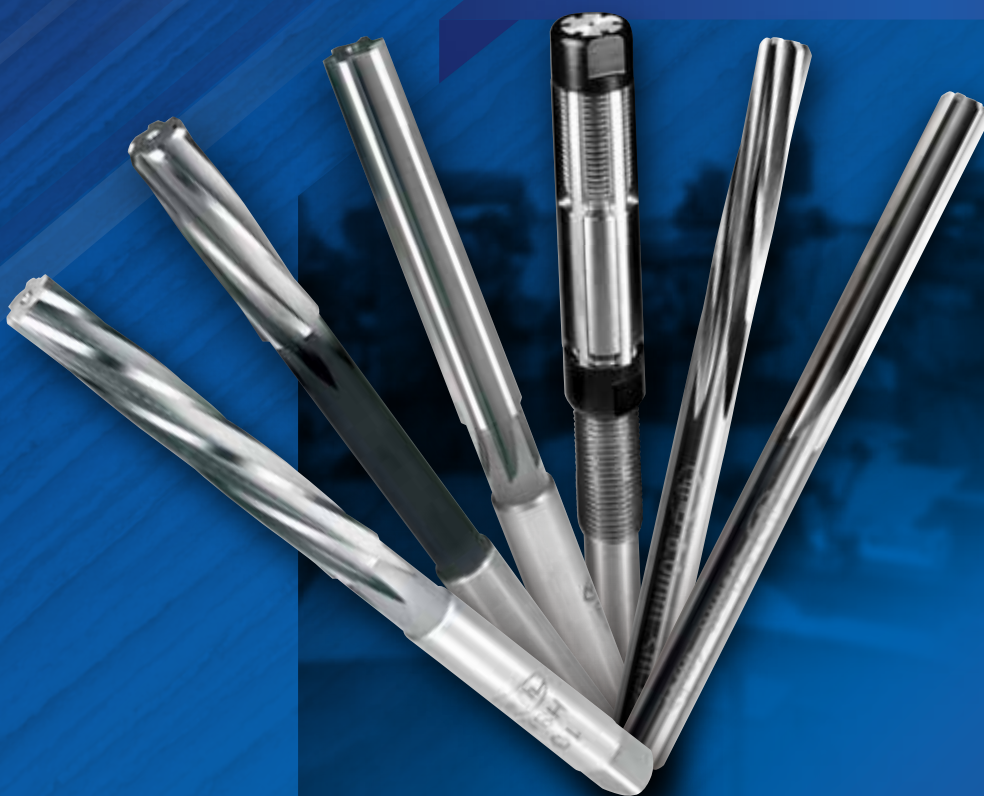
誠輝切削工具

CHENG HUI Cutting Tools



專業製造各種鉸刀

VARIOUS REAMERS PROFESSIONAL MANUFACTURER



Unique Quality At World Standard

未來展望

Outlook

未來將積極與世界各國製造廠進行OEM合作，進行技術交流，以再提升更好的產品品質來服務顧客。

In the future, active moves will be taken in carrying out OEM cooperation with our manufacturers throughout the world so as to promote technical exchange and to serve our customers much better product quality.

經營理念

Corporate Philosophy

本公司擁有優秀的經營製造研發團隊，一直以來秉持著「品質第一，顧客滿意」的經營理念，追求企業永續經營及成長，提供給客戶最好的產品品質及服務，共同創造最好的工作效率，達到成功的目標。

By now, we have established superior groups in operation and manufacturing to pursue sustainable operation and growth by sticking to the corporate philosophy of "Customer First. Service First". In this way, we may provide the best product quality and service to all our customers to jointly create the best working efficiency and accomplish the target.

OEM / ODM

本廠擁有多年與國際刀具專業製造廠OEM/ODM代工經驗，相信以本廠生產環境與製刀設備一定可以滿足客戶們的要求。未來也將積極與世界各國製造廠進行OEM/ODM合作，進行技術交流，以再提升更好的產品品質來服務顧客。

We also accept the OEM/ODM manufacturing. With these methods, we are confident that our environment and equipment will satisfy the demands of our customers. In the future, active moves will be taken in carrying out OEM/ODM cooperation with our manufacturers throughout the world so as to promote technical exchange and to serve our customers much better product quality.

沿革

Background

創立於西元1970年，原名為順榮機械廠，以組裝機械母機、萬用磨刀機為主。

西元1975年更名為源金鳴機械工具有限公司並開始生產製造調整鉸刀(Adjustable Reamer)、手鉸刀(Hand Reamer)、斜度鉸刀(Taper Pin Reamer)、中心鑽頭(Center Drill)...，經營內外銷，銷售區域遍佈全台及世界各國。

西元2005年一月，遷廠至現址並改名為誠輝機械工具廠，目前為台灣唯一調整鉸刀及各種鉸刀專業製造廠商。

Incorporated in 1970, the original name of the company was Shung Ruon Machinery Plant and specialized in the assembly of working machines and Universal Grinders. In 1975, the company was renamed Yuan Jing Ming Machinery Ltd. and started to manufacture Adjustable Reamers, Hand Reamers, Taper Pin Reamers and Center Drills, etc., with products distributed to domestic and overseas markets throughout Taiwan and major countries throughout the world. In January 2005, we relocated to the current address and renamed the company Cheng Hui Machinery Co., Ltd. To date, we are the only professional firm in Taiwan engaging in the manufacturing of Adjustable Reamers and other kinds of reamers.

調整式鉸刀

Adjustable Reamers



產品特點 Features of the Adjustable Reamers

- 於可調整範圍內使用同一支鉸刀，免去購買多規格鉸刀費用，為最經濟與最有效率的鉸刀。
Because of you can get diameter adjust, one Adjustable reamers function possible as dozens of solid reamers.



規格 Adjustable Reamers specification tables

規格 Size	調整範圍 mm/ (Inch) Range of Adjustment	全長 (mm) Overall Length	刃長 (mm) Blade Length	柄部 Shank (mm)		刃數 No. of Blades	重量 (g) Weight
				四方尺寸 Square	柄徑 Shank Dia.		
9A	5.95 – 6.35 / (15/64 – 1/4)	91	32	2.5	3.3	4	12
8A	6.35 – 7.15 / (1/4 – 9/32)	83	35	2.8	3.6	4	12
7A	7.15 – 7.95 / (9/32 – 5/16)	91	35	3.2	4.0	4	16
6A	7.95 – 8.70 / (5/16 – 11/32)	107	38	4.0	5.0	4	26
5A	8.70 – 9.50 / (11/32 – 3/8)	112	38	4.0	5.0	4	28
4A	9.50 – 10.25 / (3/8 – 13/32)	121	38	4.0	5.4	6	36
3A	10.25 – 11.00 / (13/32 – 7/16)	127	38	4.5	6.0	6	44
2A	11.00 – 12.00 / (7/16 – 15/32)	134	42	5.5	6.9	6	58
A	12.00 – 13.50 / (15/32 – 17/32)	141	42	5.5	7.3	6	70
B	13.50 – 15.0 / (17/32 – 19/32)	146	45	6.5	8.2	6	88
C	15.00 – 16.75 / (19/32 – 21/32)	166	53	7.0	9.0	6	124
D	16.75 – 18.25 / (21/32 – 23/32)	172	56	8.0	10.5	6	170
E	18.25 – 19.75 / (23/32 – 25/32)	178	64	9.0	11.8	6	224
F	19.75 – 21.50 / (25/32 – 27/32)	188	67	10.0	13.3	6	292
G	21.50 – 23.75 / (27/32 – 15/16)	204	76	12.0	14.8	6	384
H	23.75 – 27.00 / (15/16 – 1 · 1/16)	230	83	13.0	16.4	6	518
I	27.00 – 30.25 / (1 · 1/16 – 1 · 3/16)	254	86	15.0	19.0	6	746
J	30.25 – 34.25 / (1 · 3/16 – 1 · 11/32)	280	98	15.0	19.0	6	884
K	34.25 – 38.00 / (1 · 11/32 – 1 · 1/2)	305	109	17.0	22.0	6	1302
L	38.00 – 46.00 / (1 · 1/2 – 1 · 13/16)	356	113	21.0	27.0	6	2044
M	46.00 – 56.00 / (1 · 13/16 – 2 · 7/32)	407	128	26.0	34.0	6	3480
N	56.00 – 70.00 / (2 · 7/32 – 2 · 3/4)	457	124	32.0	42.0	6	6060
O	70.00 – 85.00 / (2 · 3/4 – 3 · 11/32)	509	135	38.0	51.0	6	9762

● 接受客製化訂做 / Special order any kind size

● 若產品尺寸規格有異動不另行通知 / If the product size has changed, we will not separate to inform.

注意事項

Instructions

- 使用鉸刀加工時，進、退刀皆必須順時針旋轉，請注意逆時針旋轉必導致刀刃損壞。
Clockwise revolution must be observed on post-cutting as well as cutting.
- 調整刀刃外徑時，務必使用量測工具協助，切勿使用目測或任何不正確方式使用。
Please use the measuring tools to adjust the diameter.
- 本產品僅適用於明孔 / (通孔)，不適用於盲孔加工。
This product only use on through-hole .
- 拴緊兩端螺帽力道為 1 : 9 / (上方) : (下方)，力道不必過大以免螺帽斷裂。
Tighten the adjusting nuts properly. Basically the ratio tightening is 1 (Forehead side) : 9 (Shank side)
- 調整刀刃大小時，請先確認刀刃底部與溝槽裡是否清潔，以獲得其外徑準確度。
When moving the blades to desired position for replacing with spare blades, clean carefully the blades slots bottom to obtain its accuracy.
- 鉸孔加工時，使用合適切削油，可幫助提高加工孔的精準度。
In order to ensure good results, use cutting-oil for the workpieces expect cast iron.
- 鉸孔預留量為 0.05mm 至 0.15mm 為其較適合的預留量，以達到加工孔的精準度。
The less finishing allowance is the better finish but normal removal amount is from 0.05mm to 0.15mm.
- 當刀刃磨損時，請更換全新刀刃組，切勿將其退出後繼續使用，這將會影響加工孔的精準度。
When only one sheet of blade was damaged, replace all the blades with new ones or the reamer will lost the balance due to the damaged blade.
- 夾持於機台使用時，請降低旋轉速度，適量添加切削油，並確認機台與刀具偏擺問題。
In a temporary use by machine, decrease speed and use cutting-oil in plenty to prevent from expansion of finish hole. But do not use cutting-oil for the cast iron.

導桿型調整鉸刀

Adjustable Pilot Reamer



This is an Adjustable Reamer with a Pilot Guide furnished with more function than Expansion Reamer, and is the useful reamer for motocar's maintenance.

Operation Easy and exact adjustment.

Function To be widely adjustable and have the function of several Fixed Reamer. It's economical.

Beside The samely excellent Reamer as Adjustable Reamer, about sizes, adjustable ranges, precision.

- Clockwise Revolution must be observed on post-cutting as well as cutting.

DPG No.	全長 L (mm) Overall Length
A	101
B	101
C	101
D	101
E	127
F	127
G	127
H	127
I	127
J	152
K	152
L	165
M	180

木盒組

Adjustable reamers sets (Wooden Case)



▼ 6A-J 15PCS

▼ A-K 11PCS



木盒組規格 Wooden case tables

規格 Item No.	尺寸 Size / 調整範圍 mm / Inch	Expansion Range	包裝重量 Packing weight (Kgs)
6A-F 11PCS	7.95 - 21.50	5/16" - 27/32"	1.73
6A-J 15PCS	7.95 - 34.25	5/16" - 1 · 11/32"	5.06
6A-L 17PCS	7.95 - 46.00	5/16" - 1 · 13/16"	8.40
2A-E 6PCS	11.00 - 19.75	7/16" - 25/32"	1.35
A-F 6PCS	12.00 - 21.50	15/32" - 27/32"	1.58
A-H 8PCS	12.00 - 27.00	15/32" - 1 · 1/16"	2.52
A-K 11PCS	12.00 - 38.00	15/32" - 1 · 1/2"	6.1
4A-K 14PCS	9.50 - 38.00	3/8" - 1 · 1/2"	6.83
4A-M 16PCS	9.50 - 56.00	3/8" - 2 · 7/32"	12.36

鎢鋼超硬鉸刀系列

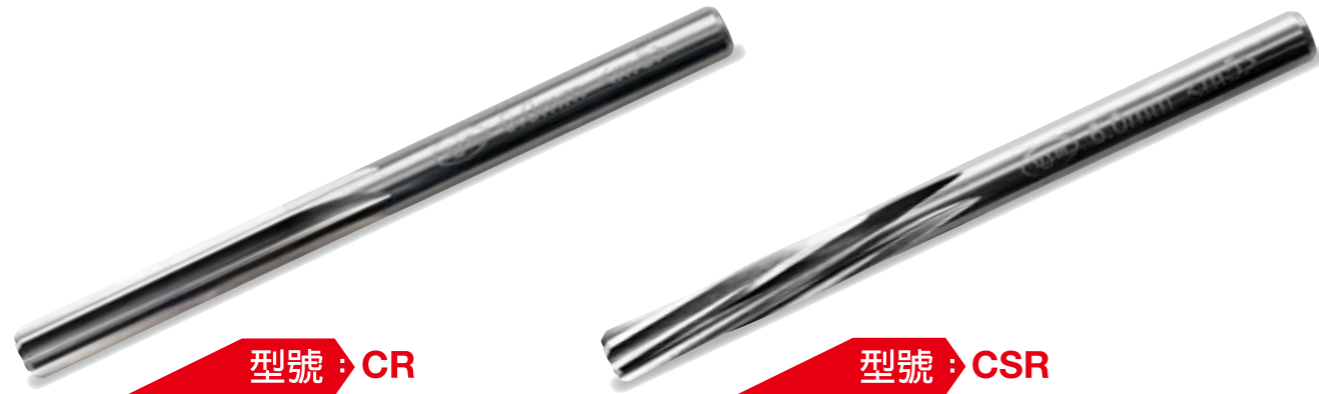
CARBIDE REAMERS SERIES



鎢鋼超硬鉸刀系列

Carbide Reamers

Solid Carbide Short Reamers-短刃型



型號：CR

型號：CSR

產品特點 Features of the Carbide Reamers

- 為最普遍推薦的超硬鉸刀。
Most generally recommended reamer among other carbide reamers.
- 與傳統高速鋼鉸刀(HSS-Reamer)產品比較，精確度可維持較久並且耐用性更提升5至10倍。
Product durability is enhanced by 5 to 10 times greater than that of conventional HSS Reamers with lasting precision.
- 鉸孔精準度比高速鋼鉸刀(HSS-Reamer)好，並且可提高進刀速度與鉸孔量。
Precise reaming achieved than that of conventional HSS Reamers as well as allowing faster speeds and feeds.
- 適用於鑄鐵至鋼鐵類之工作物件加工。
All around type corresponding to the work that is wide from cast iron to steel.

規格 Reamers specification tables

刃徑 (m5) Diameter	刃 長 Flute Length	全 長 Overall Length	柄 徑 (h6) Shank Diameter	倒 角 長 Chamfer Length	刃 數 Number of Flutes
3.00	27	60	3.0	0.5	4
4.00	27	60	4.0	0.5	4
5.00	30	70	5.0	0.5	6
6.00	30	80	6.0	0.8	6
7.00	35	80	7.0	0.8	6
8.00	35	80	8.0	0.8	6
9.00	40	90	9.0	1.0	6
10.00	40	90	10.0	1.0	6
11.00	40	90	11.0	1.0	6
12.00	45	90	12.0	1.0	6

● 本產品經由中心孔再研磨刀刃外徑，真圓度高。

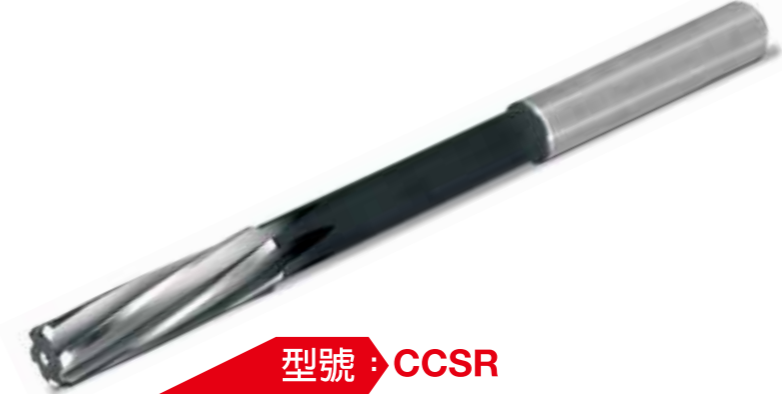
● 接受客製化訂做 / Special order any kind size / Straight Flute ; Spiral flute

● 若產品尺寸規格有異動不另行通知 / If the product size has changed, we will not separate to inform.

鎢鋼超硬鉸刀系列

Carbide Reamers

Standard Type-標準型



型號：CCSR

鎢鋼超硬直柄機械鉸刀

Carbide Chucking Reamers with Straight Shank

規 格 Reamers specification tables

刃徑 (m5) Diameter	刃 長 Flute Length	全 長 Overall Length	柄 長 Shank Length	柄 徑 (h6) Shank Diameter
2.0	11	49	20	2.0
2.5	14	59	25	2.5
3.0	15	61	30	3.0
3.5	15	61	30	3.5
4.0	19	75	32	4.0
4.5	21	80	35	4.0
5.0	23	86	35	5.0
5.5	26	93	40	5.0
6.0	26	93	40	6.0
6.5	26	93	40	6.0
7.0	31	109	45	7.0
7.5	31	109	45	7.0
8.0	33	117	50	8.0
8.5	33	117	50	8.0
9.0	36	125	50	9.0
9.5	36	125	50	9.0
10.0	38	133	55	10.0
10.5	38	133	55	10.0
11.0	41	142	60	10.0
11.5	41	142	60	10.0
12.0	44	151	60	10.0

● 本產品經由中心孔再研磨刀刃外徑，真圓度高。

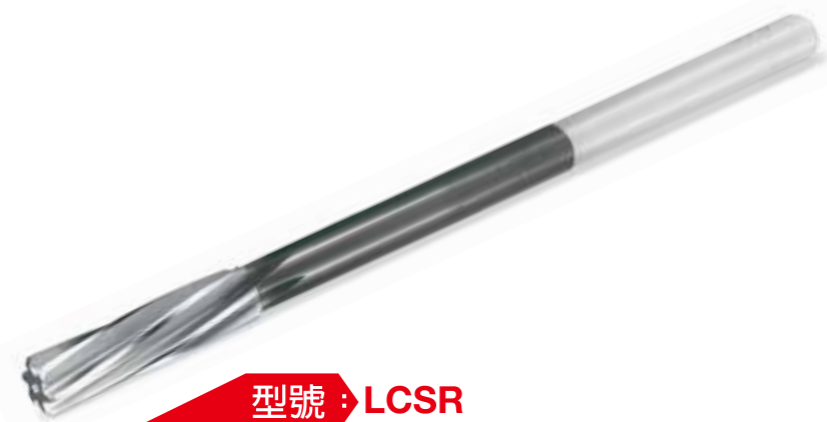
● 接受客製化訂做 / Special order any kind size / Straight Flute ; Spiral flute

● 若產品尺寸規格有異動不另行通知 / If the product size has changed, we will not separate to inform.

鎢鋼超硬鉸刀系列

Carbide Reamers

Long Type-深孔加工型



型號：LCSR

鎢鋼超硬長型直柄機械鉸刀

Long type Carbide Chucking Reamers with Straight Shank

規格 Reamers specification tables

外徑 (m5) Diameter	刃長 Flute Length	有效長 Effective Length	全長 Overall Length	柄徑 (h6) Shank Diameter
3.0	26	50	80	3.0
4.0	26	50	80	4.0
5.0	26	50	80	5.0
6.0	26	65	100	6.0
7.0	26	70	110	7.0
8.0	26	85	125	8.0
9.0	26	90	135	9.0
10.0	31	100	150	10.0
11.0	31	105	160	10.0
12.0	31	105	160	10.0

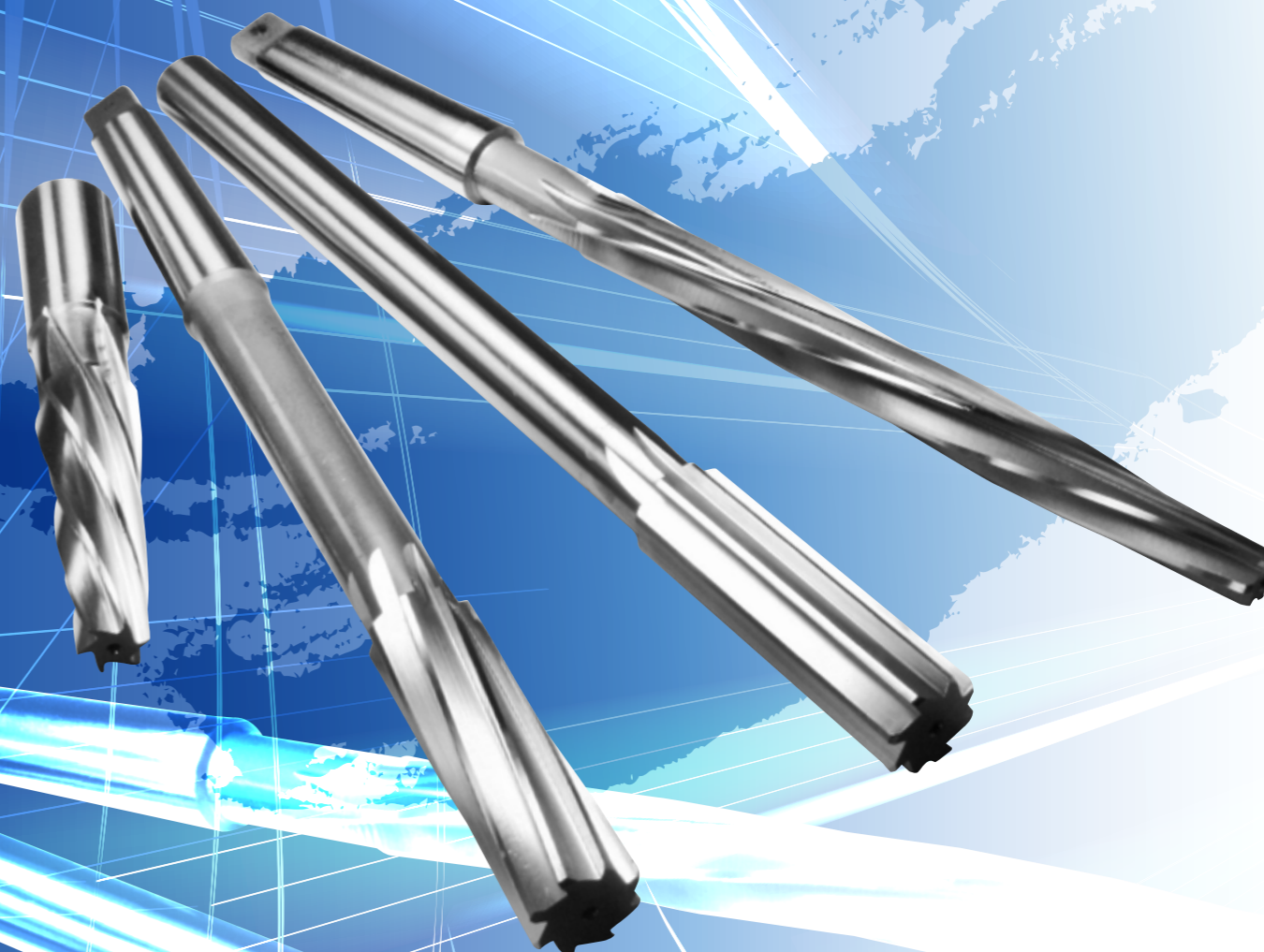
● 本產品經由中心孔再研磨刀刃外徑，真圓度高。

● 接受客製化訂做 / Special order any kind size / Straight Flute ; Spiral flute

● 若產品尺寸規格有異動不另行通知 / If the product size has changed, we will not separate to inform.

H.S.S 高速鋼鉸刀系列

HIGH SPEED STEEL REAMERS SERIES



手鉸刀

Hand Reamers



規格 Reamers specification tables

(m/m)

刃徑 (m5) Diameter	刃長 (mm) Flute Length	全長 (mm) Overall Length	刃數 Number of Flute	刃徑 (m5) Diameter	刃長 (mm) Flute Length	全長 (mm) Overall Length	柄長 (mm) Shank Length	咬入長 Chamfer of length
3.0	40	72	6	1 / 8"	40	72	23	8
3.5	40	72	6	3 / 16"	45	90	35	9
4.0	40	80	6	1 / 4"	50	100	38	10
4.5	45	85	6	5 / 16"	60	115	42	12
5.0	45	90	6	3 / 8"	70	130	45	13
5.5	45	95	6	7 / 16"	75	140	50	15
6.0	50	100	6	1 / 2"	80	160	62	16
6.5	50	100	6	9 / 16"	90	170	62	18
7.0	55	105	6	5 / 8"	95	185	70	19
7.5	55	110	6	11 / 16"	105	200	75	21
8.0	60	115	6	3 / 4"	105	210	85	21
8.5	60	120	6	13 / 16"	120	230	88	22
9.0	65	125	6	7 / 8"	130	250	95	22
9.5	65	125	6	15 / 16"	130	255	100	22
10.0	70	130	6	1"	140	270	102	23
11.0	75	140	6					
12.0	75	150	6					
13.0	80	160	8					
14.0	85	165	8					
15.0	90	175	8					
16.0	95	185	8					
17.0	100	190	8					
18.0	105	200	8					
19.0	105	210	8					
20.0	110	220	8					
21.0	120	230	8					
22.0	120	235	8					
23.0	130	250	8					
24.0	130	255	8					
25.0	130	260	8					
26.0	140	270	10					

- 接受客製化訂做 / Special order any kind size / Straight Flute ; Spiral flute
- 若產品尺寸規格有異動不另行通知 / If the product size has changed, we will not separate to inform.

直柄螺旋刃機械鉸刀

Spiral Chucking Reamers with Straight Shank



規格 Reamers specification tables

HSS-Co

(m/m)

外徑 (m5) Diameter	全長 Overall Length	刃長 Flute Length	柄徑 (h6) Shank Diameter	外徑 (m5) Diameter	全長 Overall Length	刃長 Flute Length	柄徑 (h6) Shank Diameter
3.0	61	15	3.0	8.0	117	33	8.0
3.5	70	18	3.5	8.5	117	33	8.0
4.0	75	19	4.0	9.0	125	36	9.0
4.5	80	21	4.0	9.5	125	36	9.0
5.0	86	23	5.0	10.0	133	38	10.0
5.5	93	26	5.0	10.5	133	38	10.0
6.0	93	26	6.0	11.0	142	41	11.0
6.5	101	28	6.0	11.5	142	41	11.0
7.0	109	31	7.0	12.0	151	44	12.0
7.5	109	31	7.0				

長型直柄螺旋刃機械鉸刀

Long type Chucking Reamers with Straight Shank



規格 Reamers specification tables

HSS-Co

(m/m)

外徑 (m5) Diameter	全長 Overall Length	刃長 Flute Length	柄徑 (h6) Shank Diameter	外徑 (m5) Diameter	全長 Overall Length	刃長 Flute Length	柄徑 (h6) Shank Diameter
3.0	90	20	3.0	7.5	150	40	7.0
3.5	100	20	3.0	8.0	150	40	8.0
4.0	100	25	4.0	8.5	150	40	8.0
4.5	115	30	4.0	9.0	160	45	9.0
5.0	115	30	5.0	9.5	160	45	9.0
5.5	130	30	5.0	10.0	175	45	10.0
6.0	130	30	6.0	10.5	175	45	10.0
6.5	150	31	6.0	11.0	175	45	11.0
7.0	150	31	7.0	12.0	175	45	12.0

- 接受客製化訂做 / Special order any kind size / Straight Flute ; Spiral flute
- 若產品尺寸規格有異動不另行通知 / If the product size has changed, we will not separate to inform.

推拔刃鉸刀

Taper Pin Reamers

(1/48)



規格 Reamers specification tables

產品編號 Code No.	小端直徑 Diameter of Small End	大端直徑 Diameter of Large End	刃長 l (mm) Flute Length	全長 L (mm) Overall Length	柄徑 d (mm) Shank Diameter
#4/0	2.23	2.90	32	58	4
#3/0	2.56	3.29	35	62	4
#2/0	2.89	3.68	38	70	4
#0	3.22	4.10	42	70	4
#1	3.70	4.64	45	75	5
#2	4.11	5.19	52	82	5
#3	4.64	5.85	58	90	5
#4	5.28	6.63	65	105	6
#5	6.09	7.72	78	115	7
#6	7.08	9.00	92	130	8
#7	8.40	10.80	115	155	9
#8	10.11	12.92	135	175	11
#9	12.24	15.47	155	205	13
#10	14.75	18.50	180	230	16
#11	17.93	22.31	210	285	19
#12	21.38	26.69	255	340	23

(m/m)

- 接受客製化訂做 / Special order any kind size / Straight Flute ; Spiral flute
- 若產品尺寸規格有異動不另行通知 / If the product size has changed, we will not separate to inform.

推拔刃鉸刀

Taper Pin Reamers

(1/50)



規格 Reamers specification tables

規格 Size	小端直徑 Diameter of Small End	大端直徑 Diameter of Large End	刃長 l (mm) Flute Length	全長 L (mm) Overall Length	刃數 Nos.of Blades	柄徑 Shank Diameter
3.0	2.90	4.16	63	95	6	4
● 4.0	3.90	5.42	76	107	6	5 6
5.0	4.90	6.56	83	115	6	6
6.0	5.90	8.00	105	140	6	8
7.0	6.90	9.24	117	155	6	8
8.0	7.90	10.80	145	185	6	10
9.0	8.90	12.00	155	195	6	12
10.0	9.90	13.40	175	220	8	12
11.0	10.80	14.30	175	220	8	12
12.0	11.80	15.60	190	235	8	14
13.0	12.80	17.00	210	255	8	14
14.0	13.80	18.00	210	260	8	16
15.0	14.80	19.20	220	270	8	18
16.0	15.80	20.40	230	280	8	18
17.0	16.80	21.50	235	290	8	20
18.0	17.80	22.60	240	300	8	20
19.0	18.80	23.80	250	310	8	22
20.0	19.80	24.80	250	310	8	22

(m/m)

- 4.0mm另有柄徑6mm規格品 / 4.0mm Also have Shank Dia. 6mm standard.

- 接受客製化訂做 / Special order any kind size / Straight Flute ; Spiral flute
- 若產品尺寸規格有異動不另行通知 / If the product size has changed, we will not separate to inform.

關於鉸刀加工

About the reamer processing

鉸刀是對於事先以鑽頭或沖床開孔後加以擴孔，完成精度優良之孔穴細加工用之工具，在鉸孔加工時，必需事先確認下列幾點：

The reamer is a tool for surfacing the hole made by the drill or the press, and it gets the good hole of the precision. In the reamer processing, it is necessary to confirm the following matter beforehand.

- ① 被要求之最後孔徑(公差)與面粗度
 - ▶ A necessary finish hold diameter and the surface roughness
- ② 被削材種及其硬度
 - ▶ Work material and the hardness
- ③ 要加工之孔形狀與深度
 - ▶ Shape and the depth of the hold
- ④ 加工所需使用之機械設備、保持工具、切削液及加工限制等
 - ▶ Machine plant, maintenance tool, cutting fluid, and processing restriction

考慮上述各項後再選定適合加工之鉸刀工具以及決定其切削條件為要。但是，使用鉸刀而極欲獲得最重要之上述①之加工精度時，由於②③④作業時，導致環境所影響而常有精度變動之情況發生。

After having considered the matter mentioned above, the reamer tool and the cutting condition that are appropriate for the processing should be decided. However, ②③④ greatly effect to obtain most important above-mentioned ①. A general idea concerning the feature and the hold accuracy of the reamer tool is described as follows. Please use it to select an appropriate reamer tool and the cutting condition depending on each working environment.

鎢鋼超硬鉸刀 推薦切削條件

Recommended Cutting Condition for Carbide Reamers

被削材 Work Material	一般構造用鋼 Structural Steels SS400	炭素鋼 Carbon Steels S45C,S50C	鑄鐵·合金鋼 Cast Iron, Alloy Steels FC, FCD, SCM, SKD	調質鋼 Hardened Steels		不鏽鋼 Stainless Steels SUS304	鋁合金 Aluminum Alloys A2024, A7075
				(30~40HRC)	(~50HRC)		
切削速度 Cutting Speed	8~20 m/min	9~15m/min	8~15m/min	5~12m/min	5~10m/min	5~10m/min	15~22m/min
刃徑 Dia. (mm)	預留量 Removal Amount (mm/Dia)	進給量 Feed (mm/rev)	進給量 Feed (mm/rev)	進給量 Feed (mm/rev)	進給量 Feed (mm/rev)	進給量 Feed (mm/rev)	進給量 Feed (mm/rev)
2	0.1~0.2	0.05~0.1	0.05~0.1	0.02~0.05	0.02~0.05	0.02~0.05	0.1~0.3
4	0.1~0.2	0.05~0.1	0.08~0.15	0.05~0.1	0.05~0.1	0.05~0.1	0.1~0.3
6	0.2~0.3	0.08~0.15	0.1~0.2	0.08~0.15	0.08~0.15	0.05~0.1	0.1~0.3
8	0.2~0.3	0.1~0.2	0.1~0.3	0.1~0.2	0.08~0.15	0.8~0.15	0.2~0.4
10	0.2~0.3	0.1~0.3	0.1~0.3	0.1~0.3	0.1~0.2	0.1~0.2	0.2~0.4
12	0.2~0.3	0.15~0.35	0.2~0.4	0.1~0.3	0.1~0.25	0.1~0.3	0.3~0.5
14	0.2~0.3	0.15~0.35	0.2~0.4	0.1~0.3	0.1~0.25	0.1~0.3	0.3~0.5
16	0.3~0.5	0.2~0.4	0.3~0.5	0.2~0.4	0.15~0.35	0.15~0.35	0.3~0.5
18	0.3~0.5	0.2~0.4	0.3~0.5	0.2~0.4	0.1~0.35	0.15~0.35	0.3~0.5
20	0.3~0.5	0.3~0.5	0.3~0.5	0.2~0.4	0.1~0.35	0.2~0.4	0.3~0.6

註：鉸孔加工依使用機械及作業條件不同而其最佳切削條件亦隨之變動，因此加工時應做適當的調整。
Because the change of the appropriate drilling condition is remarkable because of the working condition and the machine tool used, it is necessary to adjust the reamer processing properly.

H.S.S 高速鋼鉸刀 推薦切削條件

Recommended Cutting Conditions for H.S.S Reamers

被削材 Work Material	鑄鐵 Cast Iron FCD60	炭素鋼 Carbon Steels S45C,S50C	合金鋼 Alloy Steels SCM,SKD	不鏽鋼 Stainless Steels SUS304	銅合金 Copper Alloy C2600B,BC	鋁合金 Aluminum Alloy A2024,A7075
刃徑 Dia. (mm)	削除量 Removal Amount (mm/Dia)	進給量 Feed	進給量 Feed	進給量 Feed	進給量 Feed	進給量 Feed
2.0~4.0	0.1~0.2	0.1~0.2	0.1~0.2	0.1~0.2	0.1~0.2	0.1~0.2
~20.0	0.1~0.2	0.2~0.4	0.1~0.3	0.1~0.3	0.2~0.3	0.2~0.3

註：鉸孔加工依使用機械及作業條件不同而其最佳切削條件亦隨之變動，因此加工時應做適當的調整。
Because the change of the appropriate drilling condition is remarkable because of the working condition and the machine tool used, it is necessary to adjust the reamer processing properly.

鉸刀之刀刃形狀特徵

Feature by blade shape of the reamer

鉸刀細加工時會使面粗度變好的原因在於切削後外周刃有磨光 (BURNISHING) 作用的關係。以刀刃形狀顯示其特長與效果之不同。

In reamer processing, by the burnish effect with the peripheral cutting edge that surface roughness is good. The following is the difference of the feature and the effect according to the blade shape.

直刃 Straight flute

- ▶ 一般最普遍被使用。
It is most generally used.
- ▶ 再研磨較容易，比螺旋刃便宜。
The re-grinding is easy, and it is cheaper than the spiral flute.

螺旋刃 Spiral flute

- ▶ 比直刃有較大之磨光效果，所以一般來說將提升加工面粗度。
In comparison with the straight flute, surface roughness generally improves by a burnish effect.
(但是，磨光效果太好時，反而產生磨耗及構成刃尖所造成面粗度惡化之可能。)
- ▶ 如有鍵槽類之缺溝孔更為有效。
It is effective for the hole that has the ditch such as keyway.
- ▶ 有左螺旋與右螺旋。(皆為右刃)
There is helix left and right.

(1) 左螺旋 Left helix

- ▶ 比直刃型其磨光效果較大，可提升加工面粗度。
In comparison with the straight flute, surface roughness generally improves by a burnish effect.
- ▶ 切削性稍差，孔徑之擴大消除量小。
Because cutting performance is a little inferior, it is effective in a soft work material.
- ▶ 下孔有彎曲時，較會順其曲線。
When the hole is curving, it tends to follow the curve.

(2) 右螺旋 Right helix

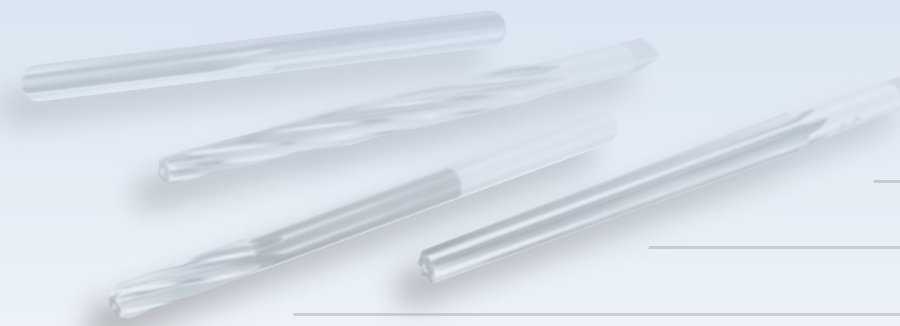
- ▶ 孔徑擴大消除量較大。
It is effective against a hard work material because it tends to cut into.
- ▶ 有助於排除切屑方向之作用，適於盲孔之加工。
Because the cutting rubbish is raked out, it is suitable for stop hold processing.
- ▶ 下孔有彎曲時，比左刃有矯正作用。
When the hold is curving, it affects to set straight as against the left-helix.

表-1. 孔徑配合尺寸容許公差與鉸刀公差 (由JIS摘錄) (單位 unit : μm)

尺寸區分 (mm) Classification of dimension (mm)		孔公差 Dimensional tolerance for holes		鉸刀公差 Reamer tolerance
以上 Above	以下 Below	H7	H8	m5
—	3	+0.010 0	+0.014 0	+0.006 +0.002
3	6	+0.012 0	+0.018 0	+0.009 +0.004
6	10	+0.015 0	+0.022 0	+0.012 +0.006
10	18	+0.018 0	+0.027 0	+0.015 +0.017
18	30	+0.021 0	+0.033 0	+0.017 +0.008
30	50	+0.025 0	+0.039 0	+0.020 +0.009
50	80	+0.030 0	+0.046 0	+0.024 +0.011
80	120	+0.035 0	+0.054 0	+0.028 +0.013

表-2. 鉸刀條件表 (孔徑 $\phi 5\sim 20$)

被削材 Work materials	孔之傾向 Tendency of holes	超硬鉸刀 Carbide Reamers			高速鋼鉸刀 High speed steels Reamers		
		切削速度 Cutting Speed (m/min)	預留消除量 Stock amount (mn)	面粗度之期待值 Expected value of Surface roughness	切削速度 Cutting Speed (m/min)	預留消除量 Stock amount (mn)	面粗度之期待值 Expected value of Surface roughness
一般構造用鋼 SS Structural steels	大 Widen	8~20	0.2~0.3	12.5S	5~12	0.2~0.3	12.5S
炭素鋼 SC Carbon steels	大 Widen	10~20	0.2~0.3	6.3S	3~10	0.2~0.3	12.5S
合金鋼 SCM,SUJ Aloy steels	大 Widen	7~15	0.2~0.3	6.3S	3~6	0.2~0.3	12.5S
工具鋼 SK,SKD Tool steels	大 Widen	5~15	0.2~0.3	6.3S	3~4	0.2~0.3	6.3S
調質鋼 Hardened steels	~28HRC 大 Widen	5~15	0.15~0.25	6.3S	—	—	—
	~40HRC 小 Narrow	5~10	0.1~0.2	6.3S	—	—	—
鑄鐵 FC,FCD Cast iron	大 Widen	7~15	0.2~0.3	6.3S	4~8	0.2~0.3	6.3S
不鏽鋼 SUS Stainless steels	小 Narrow	5~15	0.2~0.3	6.3S	3~4	0.2~0.3	6.3S
鋁 A,AC Aluminum	小 Narrow	15~30	0.2~0.3	3.2S	10~20	0.2~0.3	6.3S
銅合金 Copper Aloys	大 Widen	10~25	0.2~0.3	6.3S	8~15	0.2~0.3	6.3S





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