



ADONAI[®]

PRAISE PRECISION
IND.CO.,LTD.

滾花刀系列(車花、壓花)
KNURLING TOOLS
迴轉沖削刀具系列
ROTARY BROACHING TOOLS



走心式自動車床刀具系列
TOOLS FOR SLIDING HEAD AUTO LATHES
切槽刀具系列
GROOVING TOOLS



專利
PATENT



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CUTTING TOOLS



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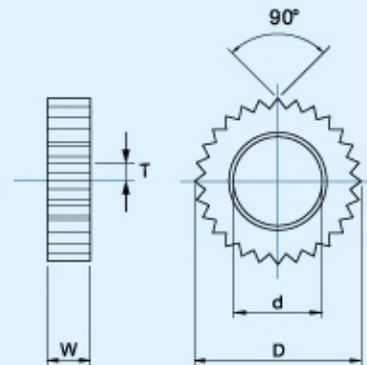
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車花輪 / Rolls For Knurling By Cutting

樣式：RFAA
 旋角 β ：0°
 Type : RFAA
 Spiral angle $\beta=0^\circ$



產品規格 Model No.	齒距 Pitch T (m/m)	尺寸 Dimensions			適用刀架 Adaptable Holders
		外徑 D	厚度 W	孔徑 d	
RFAA-110306-0003	0.3	11	3	6	PRKDR1636 or PRKDR1236
RFAA-110306-0004	0.4				
RFAA-110306-0005	0.5				
RFAA-110306-0006	0.6				
RFAA-110306-0007	0.7				
RFAA-110306-0008	0.8				
RFAA-110306-0010	1.0				
RFAA-110306-0012	1.2				
RFAA-110306-0015	1.5				
RFAA-200511-0005	0.5	20	5	11	PRKDR20511
RFAA-200511-0006	0.6				
RFAA-200511-0008	0.8				
RFAA-200511-0010	1.0				
RFAA-200511-0012	1.2				
RFAA-200511-0015	1.5				
RFAA-200511-00175	1.75				
RFAA-200511-0020	2.0				
RFAA-250511-0005	0.5	25	5	11	PRKDR25511
RFAA-250511-0006	0.6				
RFAA-250511-0008	0.8				
RFAA-250511-0010	1.0				
RFAA-250511-0012	1.2				
RFAA-250511-0015	1.5				
RFAA-250511-00175	1.75				
RFAA-250511-0020	2.0				

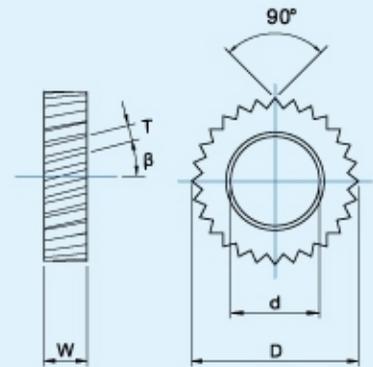
材質:HSS Material:HSS

車花輪 / Rolls For Knurling By Cutting

樣式：RFBL
旋角 β ：15°
Type：RFBL
Spiral angle $\beta=15^\circ$



樣式：RFBR
旋角 β ：15°
Type：RFBR
Spiral angle $\beta=15^\circ$



產品規格 Model No.		齒距 Pitch T (m/m)	尺寸 Dimensions			適用刀架 Adaptable Holders
			外徑 D	厚底 W	孔徑 d	
RFBL-110306-1503	RFBR-110306-1503	0.3	11	3	6	PRKDR1236 or PRKDR1636
RFBL-110306-1504	RFBR-110306-1504	0.4				
RFBL-110306-1505	RFBR-110306-1505	0.5				
RFBL-110306-1506	RFBR-110306-1506	0.6				
RFBL-110306-1507	RFBR-110306-1507	0.7				
RFBL-110306-1508	RFBR-110306-1508	0.8				
RFBL-110306-1510	RFBR-110306-1510	1.0				
RFBL-110306-1512	RFBR-110306-1512	1.2				
RFBL-110306-1515	RFBR-110306-1515	1.5				
RFBL-200511-1505	RFBR-200511-1505	0.5				
RFBL-200511-1506	RFBR-200511-1506	0.6				
RFBL-200511-1508	RFBR-200511-1508	0.8				
RFBL-200511-1510	RFBR-200511-1510	1.0				
RFBL-200511-1512	RFBR-200511-1512	1.2				
RFBL-200511-1515	RFBR-200511-1515	1.5				
RFBL-200511-15175	RFBR-200511-15175	1.75				
RFBL-200511-1520	RFBR-200511-1520	2.0				
RFBL-250511-1505	RFBR-250511-1505	0.5	25	5	11	PRKDR25511
RFBL-250511-1506	RFBR-250511-1506	0.6				
RFBL-250511-1508	RFBR-250511-1508	0.8				
RFBL-250511-1510	RFBR-250511-1510	1.0				
RFBL-250511-1512	RFBR-250511-1512	1.2				
RFBL-250511-1515	RFBR-250511-1515	1.5				
RFBL-250511-15175	RFBR-250511-15175	1.75				
RFBL-250511-1520	RFBR-250511-1520	2.0				

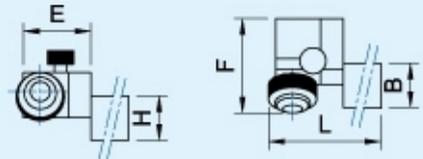
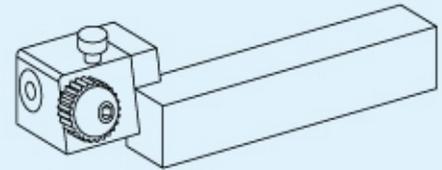
材質:HSS Material:HSS

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車花刀架 / Knurling Roll Holders For Knurling By Cutting



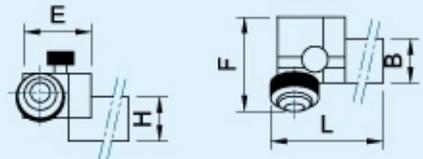
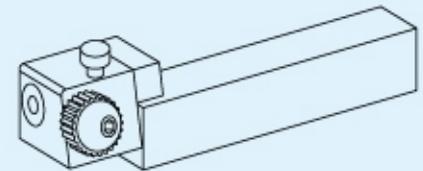
PRZSR-K 後縮型
PRZSR-K Offset Type



PRZSR-K 右手系
PRZSR-K Right-hand series



PRZSR 標準型
PRZSR Standard Type



PRZSR 右手系
PRZSR Right-hand series



直花
 採用 RFBR-15°
 Straight knurl
 Use RFBR-15°

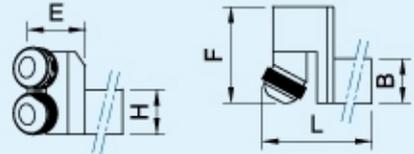
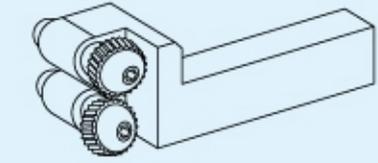
產品規格 Model No.	尺寸 Dimensions				加工範圍 Range of processing	車花輪規格 Rolls spec.		
	HXB	L	F	E				
PRZSR-1236-K	12X12	110	24	19	3-40	11	3	6
PRZSR-1636-K	16X16	110	24	19	4-60	11	3	6
PRZSR-20511	20X20	130	36	30	6-100	20	5	11
PRZSR-25511	25X25	150	41	35	6-250	25	5	11

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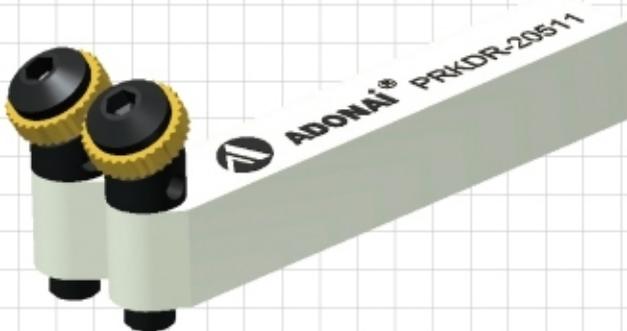
車花刀架 / Knurling Roll Holders For Knurling By Cutting



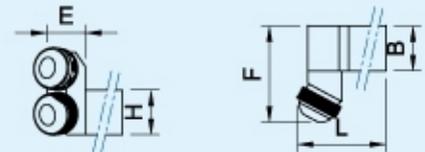
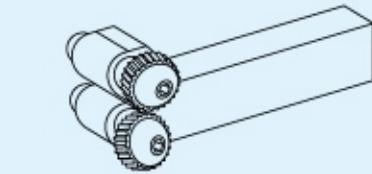
PRKDR-K 後縮型
PRKDR-K Offset Type



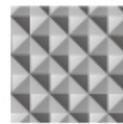
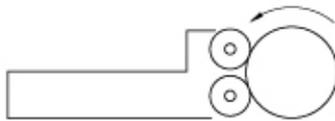
PRKDR-K 右手系
PRKDR-K Right-hand series



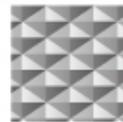
PRKDR 標準型
PRKDR Standard Type



PRKDR 右手系
PRKDR Right-hand series



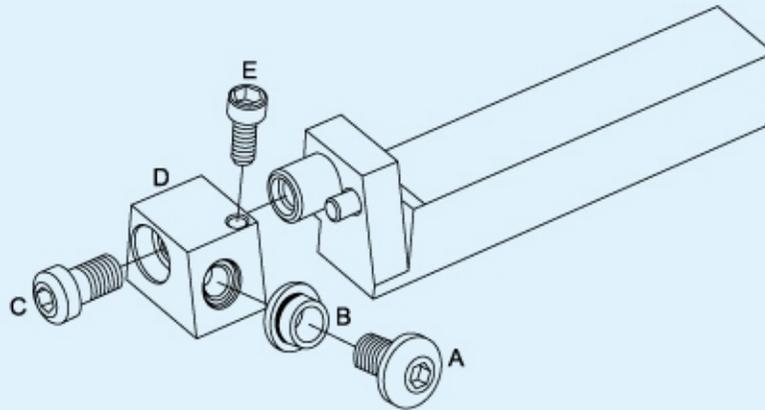
交叉花45°
採用 RFBR-15° RFBL-15°各1個
Cross45° knurl
Use RFBR-15° RFBL-15° 1each



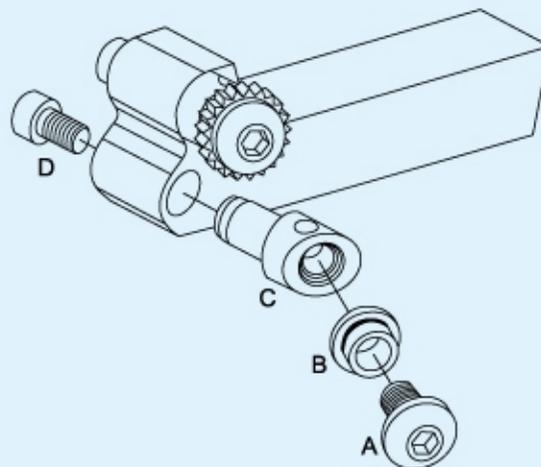
鑽石花30°
採用 RFAA-00° 2個
Cross30° knurl
Use RFAA-00° 2pcs

產品規格 Model No.	尺寸 Dimensions				加工範圍 Range of processing	車花輪規格 Rolls spec.		
	HXB	L	F	E				
PRKDR-1236-K	12X12	110	24	20	3-40	11	3	6
PRKDR-1636-K	16X16	110	24	20	4-60	11	3	6
PRKDR-20511	20X20	130	49	23	6-100	20	5	11
PRKDR-25511	25X25	150	62	35	6-250	25	5	11

備用零件 / Spare Parts

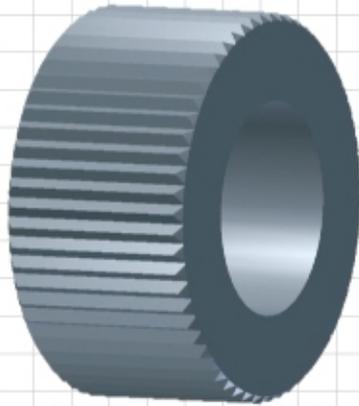


產品規格 Model No.	備用零件 Spare Parts				
	A	B	C	D	E
PRZSR-1236-K	PRZSR-123605	PRZSR-123604	PRZSR-123603	PRZSR-123602	PRZSR-123608
PRZSR-1636-K	PRZSR-123605	PRZSR-123604	PRZSR-123603	PRZSR-123602	PRZSR-123608
PRZSR-20511	PRZSR-2051105	PRZSR-2051104	PRZSR-2051103	PRZSR-2051102	PRZSR-2051108
PRZSR-25511	PRZSR-2551105	PRZSR-2551104	PRZSR-2551103	PRZSR-2551102	PRZSR-2551108



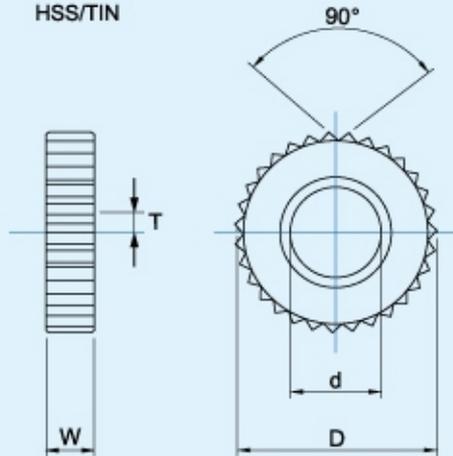
產品規格 Model No.	備用零件 Spare Parts			
	A	B	C	D
PRKDR-1236-K	PRKDR-123605	PRKDR-123604	PRKDR-123602	PRKDR-123603
PRKDR-1636-K	PRKDR-123605	PRKDR-123604	PRKDR-123602	PRKDR-123603
PRKDR-20511	PRKDR-2051105	PRKDR-2051104	PRKDR-2051102	PRKDR-2051103
PRKDR-25511	PRKDR-2551105	PRKDR-2551104	PRKDR-2551102	PRKDR-2551103

壓花輪 / Rolls For Knurling By Deformation



樣式：RDAA
 旋角 β ：0°
 Type：RDAA
 Spiral angle $\beta=0^\circ$

HSS/TIN

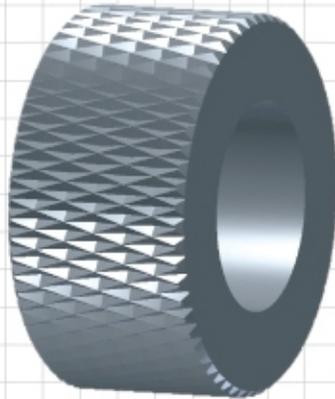


直花
 Straight knurl

產品規格 Model No.	齒距 Pitch T (m/m)	尺寸 Dimensions			適用刀架 Adaptable Holders				
		外徑D	厚底W	孔徑d					
RDAA-150404-0004	0.4	15	4	4	PRCSR-1244 or PRCSR-1644				
RDAA-150404-0005	0.5								
RDAA-150404-0006	0.6								
RDAA-150404-0007	0.7								
RDAA-150404-0008	0.8								
RDAA-150404-0010	1.0								
RDAA-150404-0012	1.2								
RDAA-150404-0015	1.5								
RDAA-200806-0004	0.4					20	8	6	PRCSR-2086 or PRCSR-2586
RDAA-200806-0005	0.5								
RDAA-200806-0006	0.6								
RDAA-200806-0007	0.7								
RDAA-200806-0008	0.8								
RDAA-200806-0010	1.0								
RDAA-200806-0012	1.2								
RDAA-200806-0015	1.5								
RDAA-200806-00175	1.75								
RDAA-200806-0020	2.0								

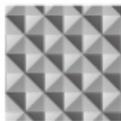
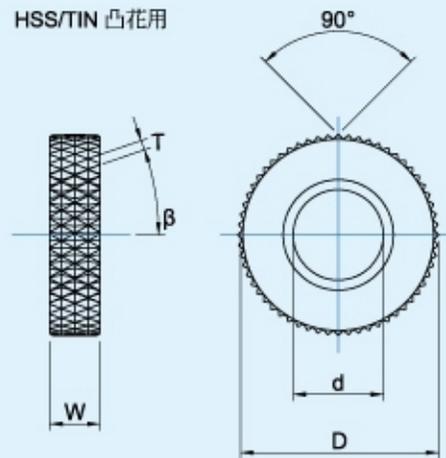
材質:HSS Material:HSS

壓花輪 / Rolls For Knurling By Deformation

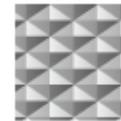


樣式：RDGV
 旋角 β ：30°/45°
 Type：RDGV
 Spiral angle $\beta=30^\circ/45^\circ$

HSS/TIN 凸花用



交叉花45°
 cross 45° knurl



鑽石花30°
 Cross 30° knurl

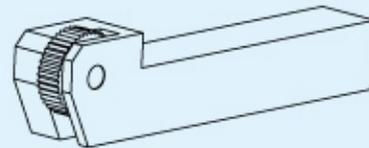
產品規格 Model No.		齒距 Pitch T (m/m)	尺寸 Dimensions			適用刀架 Adaptable Holders				
旋角 spiral angle 30°	旋角 spiral angle 45°		外徑 D	厚度 W	孔徑 d					
RDGV-150404-3004	RDGV-150404-4504	0.4	15	4	4	PRCSR-1244 or PRCSR-1644				
RDGV-150404-3005	RDGV-150404-4505	0.5								
RDGV-150404-3006	RDGV-150404-4506	0.6								
RDGV-150404-3007	RDGV-150404-4507	0.7								
RDGV-150404-3008	RDGV-150404-4508	0.8								
RDGV-150404-3010	RDGV-150404-4510	1.0								
RDGV-150404-3012	RDGV-150404-4512	1.2								
RDGV-150404-3015	RDGV-150404-4515	1.5								
RDGV-200806-3003	RDGV-200806-4503	0.3					20	8	6	PRCSR-2086 or PRCSR-2586
RDGV-200806-3004	RDGV-200806-4504	0.4								
RDGV-200806-3005	RDGV-200806-4505	0.5								
RDGV-200806-3006	RDGV-200806-4506	0.6								
RDGV-200806-3007	RDGV-200806-4507	0.7								
RDGV-200806-3008	RDGV-200806-4508	0.8								
RDGV-200806-3010	RDGV-200806-4510	1.0								
RDGV-200806-3012	RDGV-200806-4512	1.2								
RDGV-200806-3015	RDGV-200806-4515	1.5								
RDGV-200806-30175	RDGV-200806-45175	1.75								
RDGV-200806-3020	RDGV-200806-4520	2.0								

材質:HSS Material:HSS

壓花刀架 / Knurling Roll Holder For Knurling By Deformation



樣式：PRCSR
 採用RDAA、RDGV 壓花輪
 Type：PRCSR
 Use RDAA、RDGV Knurling Roll



PRCSR 右手系
 PRCSR Right-hand series



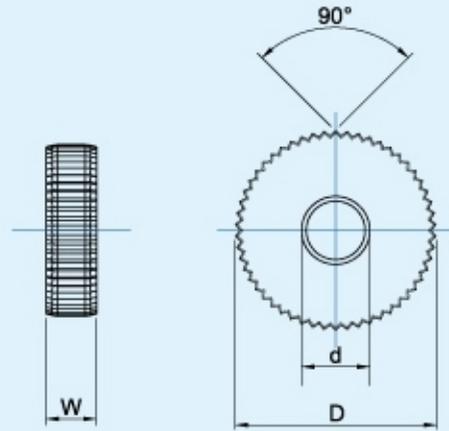
產品規格 Model No.	尺寸 Dimensions						壓花輪規格 Rolls spec.		
	HXB	L	C	E	G	K			
PRCSR-1044	10X10	100	10	15	2	4	15	4	4
PRCSR-1244	12X12	120	12	15	2	4	15	4	4
PRCSR-1644	16X16	120	16	15	2	4	15	4	4
PRCSR-2066	20X20	100	20	22	3	5	20	6	6
PRCSR-2566	25X25	130	25	25	3	5	20	6	6
PRCSR-2086	20X20	120	20	20	2	5	20	8	6
PRCSR-2586	25X25	130	25	23	2	5	20	8	6

壓花輪 (凸面系列) /Rolls For Knurling By Deformation (Convex Series)

- 凸面系列可用於軸向進給
Convex Series For Axial Feeding



樣式：MRSV
旋角 β ：0°
Type：MRSV
Spiral angle $\beta=0^\circ$



產品規格 Model No.	齒距 Pitch T (m/m)	尺寸 Dimensions			適用刀架 Adaptable Holders
		外徑D	厚底W	孔徑d	
MRSV-200606-0004	0.4	20	6	6	PSHMR-2066 or PSHMR-2566
MRSV-200606-0005	0.5				
MRSV-200606-0006	0.6				
MRSV-200606-0008	0.8				
MRSV-200606-0010	1.0				
MRSV-200606-0012	1.2				
MRSV-200606-0015	1.5				
MRSV-200606-0016	1.6				
MRSV-200606-0020	2.0				

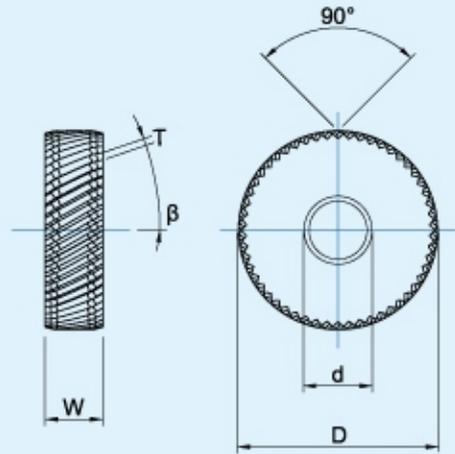
壓花輪 (凸面系列) /Rolls For Knurling By Deformation (Convex Series)

■凸面系列可用於軸向進給
Convex Series For Axial Feeding

樣式：MRLV
旋角 β : 30°
Type : MRLV
Spiral angle $\beta=30^\circ$



樣式：MRRV
旋角 β : 30°
Type : MRRV
Spiral angle $\beta=30^\circ$

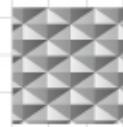


產品規格 Model No.		齒距 Pitch T (m/m)	尺寸 Dimensions			適用刀架 Adaptable Holders
			外徑D	厚底W	孔徑d	
MRLV-200606-3004	MRRV-200606-3004	0.4	20	6	6	PSHMR-2066 or PSHMR-2566
MRLV-200606-3005	MRRV-200606-3005	0.5				
MRLV-200606-3006	MRRV-200606-3006	0.6				
MRLV-200606-3008	MRRV-200606-3008	0.8				
MRLV-200606-3010	MRRV-200606-3010	1.0				
MRLV-200606-3012	MRRV-200606-3012	1.2				
MRLV-200606-3015	MRRV-200606-3015	1.5				
MRLV-200606-3016	MRRV-200606-3016	1.6				
MRLV-200606-3020	MRRV-200606-3020	2.0				

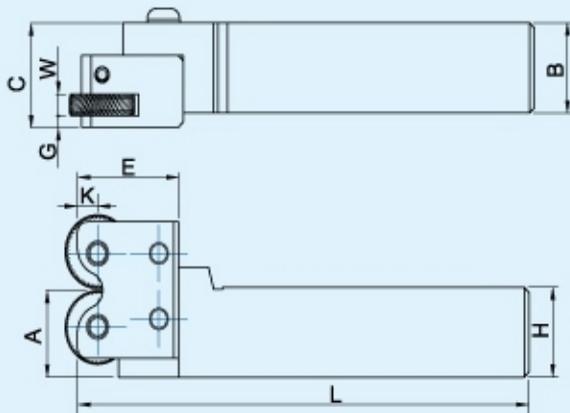
壓花刀架 (可調整式刀架)

Knurling Roll Holder For Knurling By Deformation (Holders Are Adjustable)

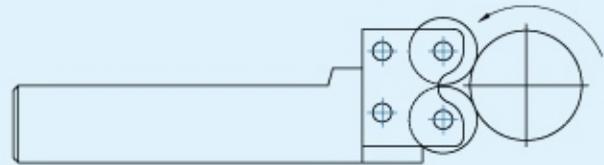
■ 雙輪壓花組合形式 Two Knurling Rolls Set Up Shown



可做成鑽石花30°
採用 MRRV-30° MRLV-30° 各1個
Cross30° knurl
Use MRRV-30° MRLV-30° 1each

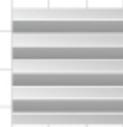


右手系 Right-hand shown

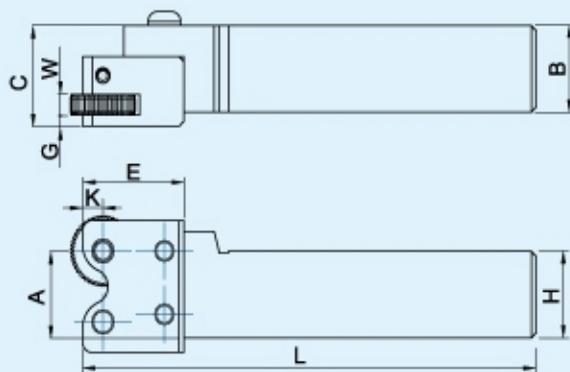


使用雙輪刀片螺絲鎖緊的位置
Locking Screw Position For Two Knurling Rolls

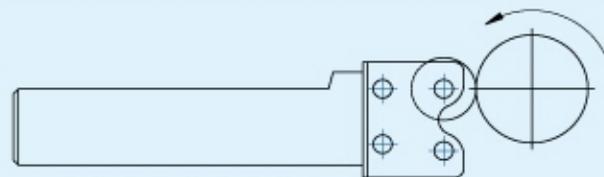
■ 單輪壓花組合形式 Single Knurling Roll Set Up Shown



可做成直花00°
採用 MRSV-00° 1個
Straight Knurl (00°)
Use MRSV-00° 1pc



右手系 Right-hand shown



使用單輪刀片螺絲鎖緊的位置
Locking Screw Position For Single Knurling Roll

產品規格 Model No.	尺寸 Dimensions						壓花輪規格 Rolls spec.		
	HXB	G	C	L	E	K			
PSHMR-2066	20X20	3.3	29	125	32	6.5	20	6	6
PSHMR-2566	25X25	3.3	32	140	32	6.5	20	6	6

車花轉速與進給率 RPM & Feed Rate For Knurling By Cutting

工件材質 Material of Workpiece	花輪直徑 ∅ of knurling roll	工件直徑 ∅ 2-12 ∅ of workpiece		工件直徑 ∅ 12-40 ∅ of workpiece		工件直徑 ∅ 40-250 ∅ of workpiece		工件直徑 ∅ 250+ ∅ of workpiece	
		V	F	V	F	V	F	V	F
易削鋼 Steel up to 600 N/mm	8.9 -11	30	0.05-0.08						
	14.5 -15	40	0.07-0.09	40	0.07-0.09				
	20 -21.5	60	0.07-0.14	60	0.07-0.15	55	0.07-0.15		
	25			100	0.10-0.20	100	0.10-0.20	50	0.10-0.20
中碳鋼 Steel up to 900 N/mm	8.9 -11	25	0.04-0.07						
	14.5 -15	35	0.06-0.08	30	0.06-0.08				
	20 -21.5	45	0.07-0.14	45	0.06-0.12	40	0.06-0.12		
	25			60	0.08-0.16	55	0.08-0.16	50	0.08-0.16
不鏽鋼 Stainless steel	8.9 -11	20	0.04-0.06						
	14.5 -15	30	0.06-0.08	28	0.06-0.08				
	20 -21.5	40	0.06-0.12	35	0.06-0.12	32	0.06-0.12		
	25			45	0.08-0.17	42	0.08-0.17	40	0.08-0.17
鑄鐵 Grey cast iron	8.9 -11	22	0.04-0.06						
	14.5 -15	30	0.06-0.08	28	0.06-0.08				
	20 -21.5	40	0.06-0.12	35	0.06-0.12	32	0.06-0.12		
	25			45	0.08-0.17	42	0.08-0.17	40	0.08-0.17
鑄鋼 Cast steel	8.9 -11	25	0.04-0.07						
	14.5 -15	35	0.05-0.08	30	0.05-0.08				
	20 -21.5	45	0.06-0.12	45	0.06-0.12	40	0.06-0.12		
	25			90	0.08-0.15	65	0.08-0.15	60	0.08-0.15
銅 MS58 Brass 58	8.9 -11	60	0.06-0.10						
	14.5 -15	70	0.08-0.12	60	0.08-0.12				
	20 -21.5	100	0.08-0.20	100	0.08-0.20	90	0.08-0.20		
	25			140	0.10-0.20	130	0.10-0.20	115	0.10-0.20
銅 MS60 Brass 60	8.9 -11	50	0.05-0.08						
	14.5 -15	60	0.08-0.10	60	0.06-0.10				
	20 -21.5	90	0.07-0.15	90	0.07-0.15	80	0.07-0.15		
	25			125	0.08-0.20	120	0.08-0.20	105	0.08-0.20
鋁 Copper Aluminium	8.9 -11	70	0.06-0.13						
	14.5 -15	80	0.08-0.18	70	0.08-0.18				
	20 -21.5	120	0.10-0.25	110	0.10-0.25	100	0.10-0.25		
	25			150	0.10-0.35	135	0.10-0.35	125	0.10-0.35
鋅 Bronze	8.9 -11	35	0.05-0.08						
	14.5 -15	45	0.07-0.09	40	0.07-0.09				
	20 -21.5	60	0.07-0.14	60	0.07-0.14	56	0.07-0.14		
	25			80	0.10-0.18	86	0.10-0.18	80	0.10-0.18

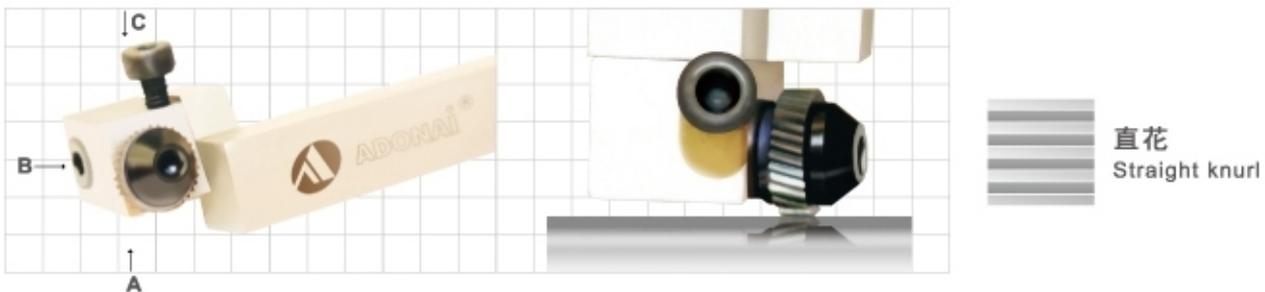
切削工件轉速: $N=(1000 \times V)/(\pi \times D)$

Turning speed of workpiece: $N=(1000 \times V)/(\pi \times D)$

PRZSR 單花輪安裝方法 Assembly Of Roll

- 1.將螺絲A鬆開。
- 2.將車花輪（BR-15°）放入，將螺絲A旋緊，旋緊後確認車花輪還可以自由轉動。
- 3.當花紋車削後若有傾斜，鬆開B螺絲，調整旋轉C螺絲可調整車花輪中心的花紋平行。
- 4.再將螺絲B旋緊，即完成安裝。

- 1.Loose screw A.
- 2.Put on roll(BR15°) and tighten screw A. ensure the roll is revolution-free after screw is tightened.
- 3.If knurling pattern is inclined please loosen screw A and adjust screw C to make the center of roll parallel to pattern.
- 4.After adjustment,re-tighten screw B.



PRKDR 雙花輪安裝方法 Assembly Of Rolls

- 1.將螺絲A、B鬆開。
- 2.將車花輪（BL）放入B位置，將B旋緊，旋緊後確認車花輪還可以自由轉動。
- 3.將車花輪（BR）放入A位置，將A旋緊，旋緊後確認車花輪還可以自由轉動。
- 4.鬆開E、F螺絲，將C、D旋至兩花輪貼合（圖2），再平均往兩側旋開（可參考第13頁車花刀架刻度調整參考表），使花輪外徑平面與工件外徑貼合（圖3）再將E、F旋緊。
- 5.使用RFBL-15°+RFBR-15°各一個可做成交叉花（夾角90°）。使用RFAA-0° 兩個可做成鑽石花（夾角60°）。

- 1.Loose screw A and B.
- 2.Put on roll(BL) in B position, then tighten screw B ; make sure the roll is revolution-free.
- 3.Put on roll(BR) in A position, then tighten screw A ; make sure the roll is revolution-free.
- 4.Loosen screws E,F, adjust 2 rolls C, D to fit each other as shown in Fig.2,then turn 2 rolls outside evenly to make sure the surface of roll outside diameter is fit to outside diameter of workpiece Fig.3, then tighten screws E,F.(Adjustment of Knurling Toolholder Graduation,see page 13)
- 5.To make cross knurl(90°) with one roll each RFBL-15°and RFBR-15°and cross knurl(60°) with 2 rolls RFAA-0°



PRKDR 車花刀架使用方法 Application and Trouble-Shooting

1. 將刀柄置入刀座，設定刀具中心高在工件中心位置。
2. 將花輪靠近工件外徑，調整兩個花輪全寬軸線完全同時貼住工件。
3. 開始車花時，以快速進入1/2的牙距深度，寬度約輪寬的1/3。
4. 當花目成型完成，才開始Z軸向進給。
5. 如果牙型有錯誤，可以修正，而藉由調整刀座軸向。
6. 使用切削水或潤滑油，排去鐵屑。
7. 切削資料另參考。
8. 適用PRZSR/L，PRKDR/L。

1. Clamp the roll holder in the tool post and set its center to center of the workpiece.
2. Approach the 2 knurling rolls close to workpiece, adjust the center of 2 rolls entirely touch the workpiece.
3. Start knurling operation firmly with rapid infeed to half pitch with knurling roll engaged to 1/3 of width.
4. When the initial pattern is cut, start Z-axis feed.
5. Errors in knurling pattern can be corrected by resetting the adjustable roll holder head.
6. Flush away the chips with cutting oil or lubricant.
7. Cutting data refer to reference information.
8. Applicable to PRZSR/L, PRKDR/L.



PRKDR 車花刀架刻度調整參考表 Adjustment of Knurling Toolholder Graduation

(此參考數據為近似值)

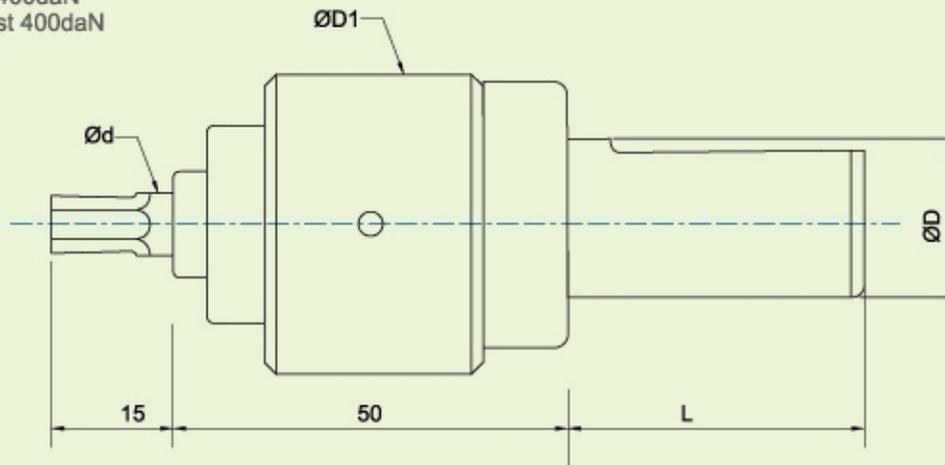
(Reference figures in table is an approximate value)

產品規格 Model No.	PRKDR-1236-K	PRKDR-1636-K	PRKDR-20511	PRKDR-25511
(最小刻度) 單位: → ← (Min. Graduation) Unit:	→ ← 0.1	→ ← 0.1	→ ← 0.2	→ ← 0.2
工件直徑 Dia. of Workpiece(mm)	參考刻度 Reference Graduation			
3	0.4			
4	0.5	0.5		
6	0.6	0.6	0.4	1.4
10	0.8	0.8	0.6	1.8
20	1	1	0.8	2.6
30	1.1	1.1	1	2.8
40	1.2	1.2	1	3
50		1.2	1	3.2
60		1.3	1.2	3.4
70			1.2	3.6
80			1.2	3.6
90			1.2	3.6
100			1.2	3.8
120~140				3.8
160~220				4
240~250				4.2

迴轉沖削刀座 /Rotary Broaching Tool Holders

■ TYPE:BCM21

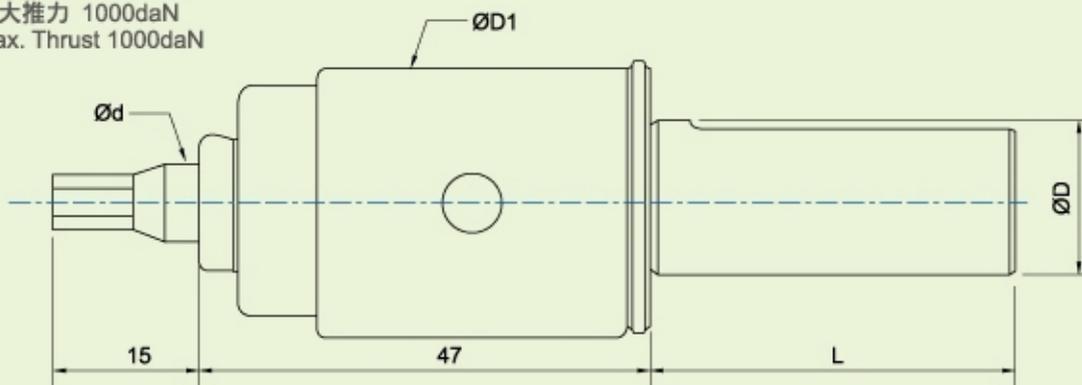
最大推力 400daN
Max. Thrust 400daN



產品規格 Model No.	尺寸 Dimensions				沖刀 Insert	應用範圍 Scope of application
	D	D1	d	L		
BCM21-ST16	16	38	8	38	BCM32-***	六角形 (Hexagonal) 星形 (Torx) 正方形 (Square) 溝槽 (Grooves) 特殊外形 (Special Profiles)
BCM21-ST20	20					

■ TYPE:BCM22

最大推力 1000daN
Max. Thrust 1000daN

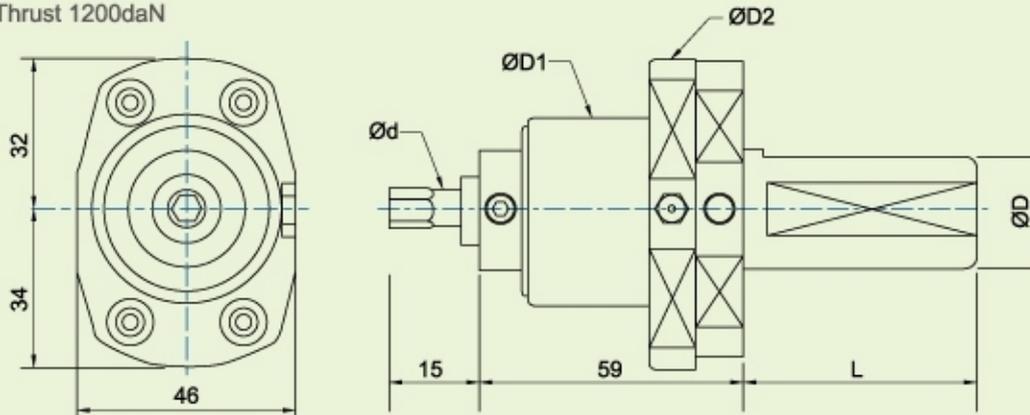


產品規格 Model No.	尺寸 Dimensions				沖刀 Insert	應用範圍 Scope of application
	D	D1	d	L		
BCM22-ST16	16	28	8	38	BCM32-***	六角形 (Hexagonal) 星形 (Torx) 正方形 (Square) 溝槽 (Grooves) 特殊外形 (Special Profiles)
BCM22-ST20	20			38		
BCM22-ST20-60	20			60		
BCM22-ST25	25			60		

迴轉沖削刀座 (中心可調式) / Adjustable Center Rotary Broaching Tool Holders

■ TYPE: BCM26

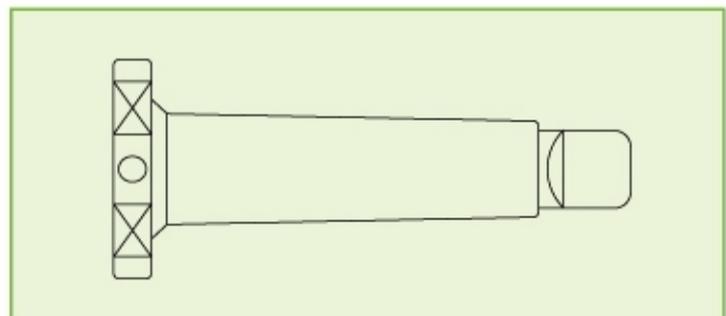
最大推力 1200daN
Max. Thrust 1200daN



產品規格 Model No.	尺寸 Dimensions					沖刀 Insert	應用範圍 Scope of application
	D	D1	D2	d	L		
BCM26-ST16	16	40	66	8	50	BCM32-***	六角形 (Hexagonal) 星形 (Torx) 正方形 (Square) 溝槽 (Grooves) 特殊外形 (Special Profiles)
BCM26-ST20	20						
BCM26-ST25	25						
BCM26-ST30	30						
BCM26-ST32	32						

*沖削刀座特殊刀柄: SPECIAL SHANK (Morse Taper)

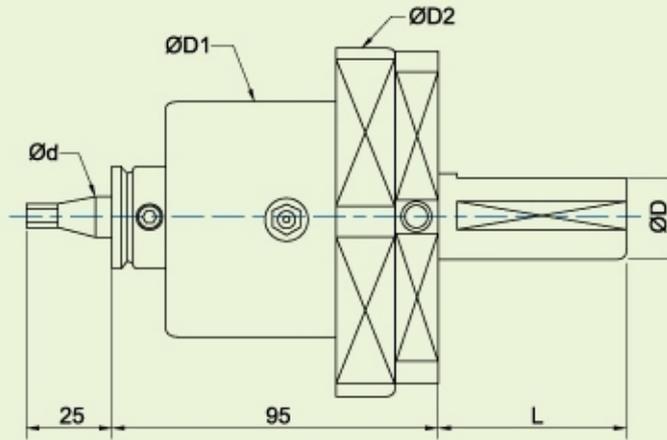
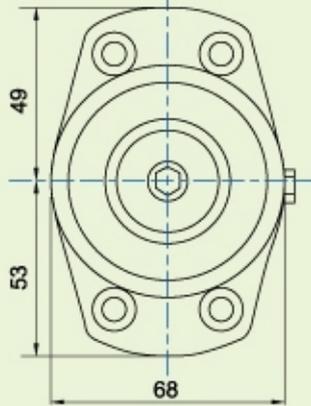
產品規格 Model No.	刀柄 Shank
BCM26-MT4	MT4



迴轉沖削刀座 (中心可調式) / Adjustable Center Rotary Broaching Tool Holders

■ TYPE: BCM27

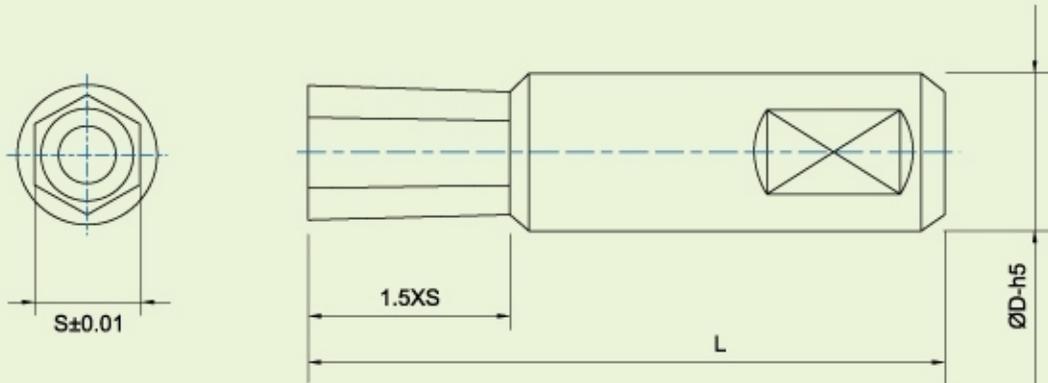
最大推力 4000daN
Max. Thrust 4000daN



產品規格 Model No.	尺寸 Dimensions					沖刀 Insert	應用範圍 Scope of application
	D	D1	D2	d	L		
BCM27-ST25	25	68	98	12	55	BCM37-***	六角形 (Hexagonal) 星形 (Torx) 正方形 (Square) 溝槽 (Grooves) 特殊外形 (Special Profiles)
BCM27-ST32	32						

六角沖刀 / Hexagon Broachs

■ BCM32



產品規格 Model No.	尺寸 Dimensions(mm)			材質 Grade	
	S	D	L	HSS	Carbide
BCM32-H015	1.55	8	$28^{+0.3}_{-0}$	●	○
BCM32-H02	2.05			●	○
BCM32-H025	2.55			●	○
BCM32-H03	3.05			●	○
BCM32-H035	3.55			●	○
BCM32-H04	4.06			●	○
BCM32-H05	5.06			●	○
BCM32-H06	6.06			●	○
BCM32-H07	7.06			●	○
BCM32-H08	8.08			●	○
BCM32-H09	9.08			●	○
BCM32-H10	10.08			●	○

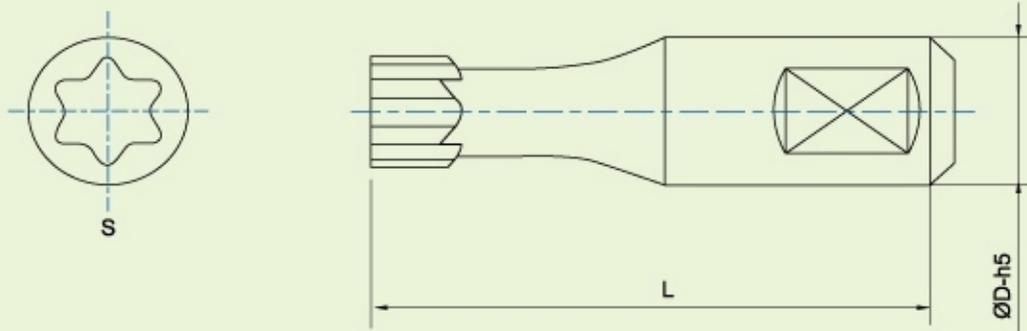
● Standard Stock

○ Standard(Please Check Delivery)

※規格外尺寸，歡迎訂製！(Custom specifications are available upon request.)

星形沖刀 / Torx Broachs

■ BCM32



產品規格 Model No.	尺寸 Dimensions(mm)			材質 Grade	
	S	D	L	HSS	Carbide
BCM32-T6	T6	8	$28^{+0.3}_{-0}$	○	○
BCM32-T8	T8			●	○
BCM32-T10	T10			●	○
BCM32-T15	T15			●	○
BCM32-T20	T20			●	○
BCM32-T25	T25			●	○
BCM32-T30	T30			●	○
BCM32-T40	T40			●	○
BCM32-T45	T45			○	○
BCM32-T50	T50			●	○
BCM32-T55	T55			○	○

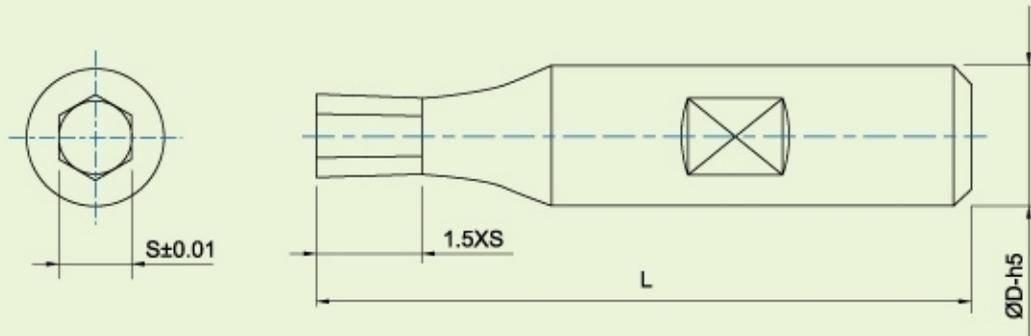
● Standard Stock

○ Standard(Please Check Delivery)

※規格外尺寸，歡迎訂製！(Custom specifications are available upon request.)

六角沖刀 / Hexagon Broachs

■ BCM37



產品規格 Model No.	尺寸 Dimensions(mm)			材質 Grade	
	S	D	L	HSS	Carbide
BCM37-H03	3	12	$55 \begin{smallmatrix} +0.3 \\ -0 \end{smallmatrix}$	<input type="radio"/>	<input type="radio"/>
BCM37-H04	4			<input type="radio"/>	<input type="radio"/>
BCM37-H05	5			<input type="radio"/>	<input type="radio"/>
BCM37-H06	6			<input type="radio"/>	<input type="radio"/>
BCM37-H07	7			<input type="radio"/>	<input type="radio"/>
BCM37-H08	8			<input type="radio"/>	<input type="radio"/>
BCM37-H09	9			<input type="radio"/>	<input type="radio"/>
BCM37-H10	10			<input type="radio"/>	<input type="radio"/>
BCM37-H11	11			<input type="radio"/>	<input type="radio"/>
BCM37-H12	12			<input type="radio"/>	<input type="radio"/>
BCM37-H13	13			<input type="radio"/>	<input type="radio"/>
BCM37-H14	14			<input type="radio"/>	<input type="radio"/>
BCM37-H15	15			<input type="radio"/>	<input type="radio"/>
BCM37-H16	16			<input type="radio"/>	<input type="radio"/>
BCM37-H17	17			<input type="radio"/>	<input type="radio"/>
BCM37-H18	18			<input type="radio"/>	<input type="radio"/>

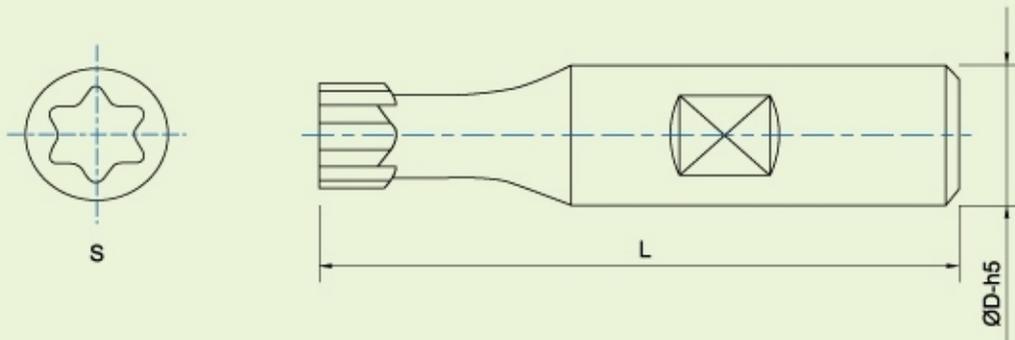
● Standard Stock

○ Standard(Please Check Delivery)

※規格外尺寸，歡迎訂製！(Custom specifications are available upon request.)

星形沖刀 / Torx Broachs

■ BCM37



產品規格 Model No.	尺寸 Dimensions(mm)			材質 Grade	
	S	D	L	HSS	Carbide
BCM37-T20	T20	12	$55^{+0.3}_{-0}$	<input type="radio"/>	<input type="radio"/>
BCM37-T25	T25			<input type="radio"/>	<input type="radio"/>
BCM37-T30	T30			<input type="radio"/>	<input type="radio"/>
BCM37-T40	T40			<input type="radio"/>	<input type="radio"/>
BCM37-T45	T45			<input type="radio"/>	<input type="radio"/>
BCM37-T50	T50			<input type="radio"/>	<input type="radio"/>
BCM37-T55	T55			<input type="radio"/>	<input type="radio"/>

● Standard Stock

○ Standard(Please Check Delivery)

※規格外尺寸，歡迎訂製！(Custom specifications are available upon request.)

迴轉沖削孔加工使用說明

ADONAI 沖削刀具是一個操作簡單的轉削孔刀具，可在盲孔或通孔上，銳邊或倒角邊製作有規則或不規則的多邊形，除了標準的六角形與正方形孔，也可製作溝槽，星形或其他特殊外形。



ADONAI 沖削刀具適用於一般車床、CNC自動車床、綜合加工機、鑽床以及特殊功能機器。也適用各種標準或特殊內外孔沖孔。

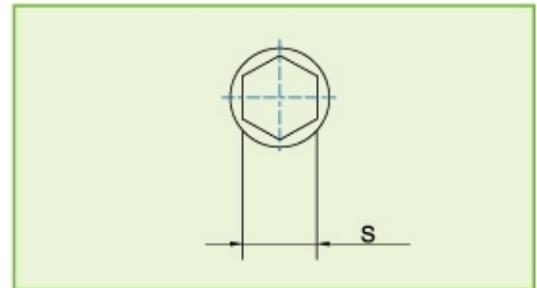
在正確的配合下，這個特殊角度 θ 的結構可以節省80%的機械推力(如圖一)。這個重要的加工力量縮減是依賴特殊角度 θ 的傾斜使機械推力集中於外形區域的一小部份去沖孔。外形的每一部份被沖刀的先端在同步迴轉中連續加工。輪廓精密度取決於沖刀的精密度，但也與正確的中心調整有關，如此也可增進刀刀的壽命。

在大部份轉塔車床的案例，夾頭本體是靜止的而組合在一起的沖刀卻可正、逆旋轉。在一些多軸或專用機械，情況剛好相反，夾頭本體在旋轉而沖刀在工件擋住而靜止。當輪廓必須被定位到工件的形狀，此時需要一個在主軸鼻端的連接器將沖刀靜止在正確的角度位置上。

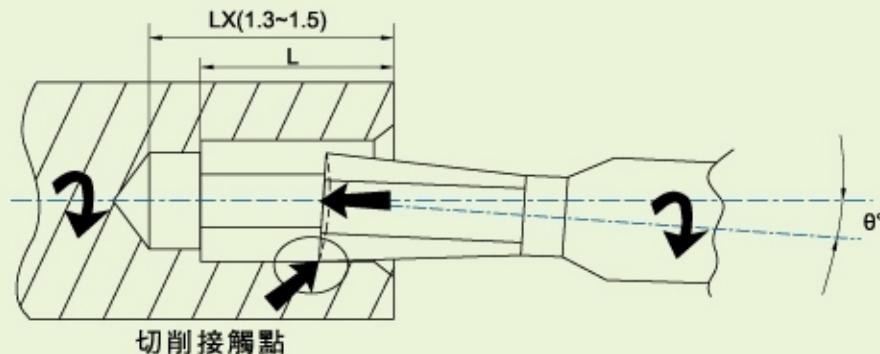
一、沖削孔加工之前的鑽孔與搪孔

例如沖六角孔其正常的鑽孔必須稍大於被沖孔兩相對平面的有效尺寸。在中碳鋼(60-80dN/mm)我們建議以下的容許公差值：

六邊形對邊尺寸S	鑽孔的容許公差值
1.5~3mm	$S + 0.03 \sim + 0.06$
3~6mm	$S + 0.04 \sim + 0.08$
6~10mm	$S + 0.06 \sim + 0.12$
10~16mm	$S + 0.10 \sim + 0.20$
> 16mm	$S + 0.15 \sim + 0.30$



(圖1) 工件



二、鑽孔的深度

通常我們建議鑽孔的深度是沖孔深度的1.3至1.5倍，(如圖一)碎片必須被沖刀充分的推擠而清除。如果工件必須熱處理，在這個狀況可能需要利用小於當初鑽孔0.1~0.2mm的鑽頭去鑽掉碎片。鑽孔的偏心最大不可超過沖孔尺寸的0.02~0.04mm。

三、沖削孔前注意事項

1、一個60度或90度倒角，倒角稍大於沖刀兩對角尺寸，這是一般沖孔的原則。如果在高迴轉速度下加工，則可能需要在沖孔後再修補倒角。

2、當需要高同心度時，預鑽一個0.5mm深的孔，直徑相同或稍小於沖刀兩對角尺寸，可提供解決的方案，這個預留的孔當開始沖孔時能撐住沖刀防止偏擺。加工完成後可將這個預留孔切削掉或倒角。

四、沖孔加工的迴轉速度

迴轉沖刀的原理允許應用於高轉速，從1000到3000轉/分鐘，因為迴轉速度不影響切削速度。然而，在非常高速下，當開始加工時沖刀會與工件摩擦，直到速度同步為止。這樣在時常使用小沖刀時非常容易提早磨損沖刀，為了避免這種現象，剛開始時用較慢的轉速或甚至不旋轉，當沖刀進入工作狀態在增加迴轉速度。

五、進刀

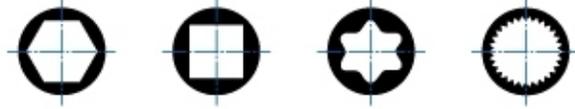
進刀量的選擇是根據材料的特性，在中碳鋼，如果機械有足夠的推力，我們建議每一迴轉進給率0.03~0.06mm。在銅、鋁材料能夠用到兩倍甚至三倍的進刀量。在大的輪軸尺寸和難切削材料加工，必須減少進給率0.01mm。

六、切削液

使用一般冷卻液或切削油。

ROTARY BROACHING TOOLS OPERATING MANUAL

The **ADONAI** broaching tools is a simple, easy to operate attachment, which produces regular or irregular polygons in blind or through holes having sharp or chamfered edges. The attachment operates with a hunting rotary motion which, in addition to the standard hexagonal and square holes, can also produce grooves, Torx and other special profiles.

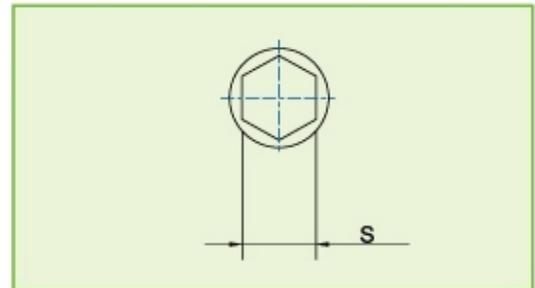


The **ADONAI** broaching tools can also be used on lathes, CNC automatic lathes, machining centers, drilling machines and special purpose machines for a wide variety of standard or special internal and external forms.

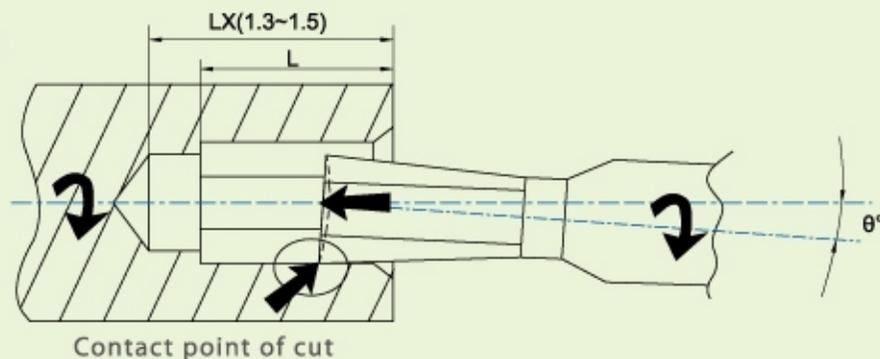
1.

Drilling The Hole - For internal broaching, the hole should be drilled approximately 1% bigger than the diameter across the flats of a hex shape. This percentage can be reduced in free cutting material and increased as machinability decreases, In mild steel we recommend the following tolerances:

Hex. Size S	Drill Hole Tolerance
1.5~3mm	S + 0.03~ + 0.06
3~6mm	S + 0.04~ + 0.08
6~10mm	S + 0.06~ + 0.12
10~16mm	S + 0.10~ + 0.20
> 16mm	S + 0.15~ + 0.30



(Fig1) Workpiece



2.

Drill the hole as deep as possible to leave room for chip accumulation. A depth of 1.3 to 1.5 times the length of the profile is recommended. (Fig.1) If the chips need to be removed, re-drill the hole with a slightly smaller drill size.

3.

Preparing To Broach A Hole - The hole should first be prepared with a 60°-90° chamfer slightly bigger than the largest dimension of the broach tool. This ensures easy starting of the broach by guiding the tool in.

4.

Recommended Speed - The basic principle of the θ° offset allows high speed application from 1000 up to 3000 rpm. Surface footage has very little effect on cutting action or the tool life. The cutting edges of the broach tend to dig in to the face of the part as the tool comes in to contact with the rotating material. At higher speeds this dig mark will become more pronounced and tool life will suffer. For best results start the broach operation at a slow rotation and then increase the speed when it is in full contact. Reversing the spindle rotation half way into the part can reduce spiraling.

5.

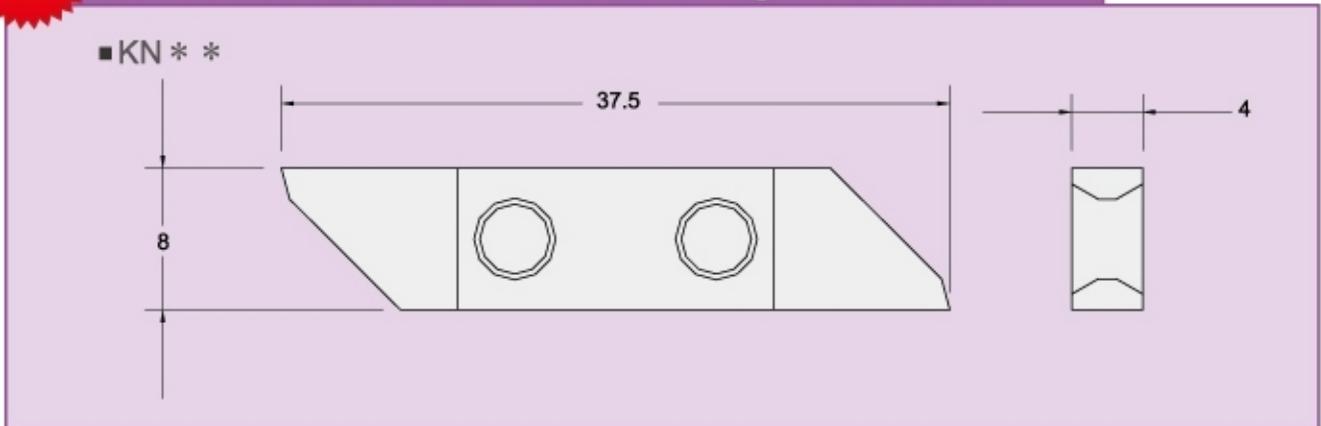
Feed Rate - The feed choice mainly depends on the material characteristics. In a mild-steel, we recommend. 0.03~0.06mm per revolution. If the machine thrust force is sufficient, the feed can be doubled even.

6.

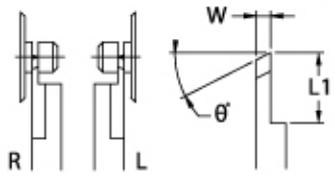
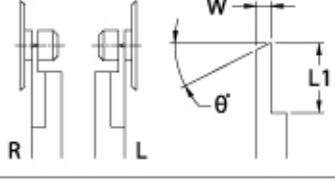
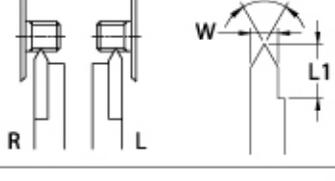
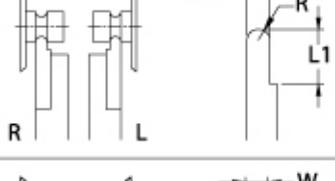
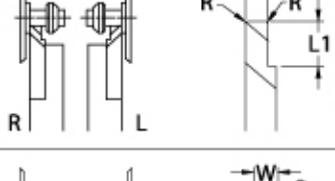
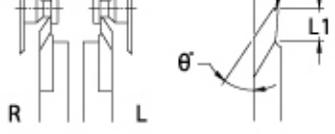
Coolant - Water soluble coolant or cutting oil are both sufficient for Rotary Broaching.

NEW

走心式自動車床刀片 / Inserts For Sliding Head Auto Lathes

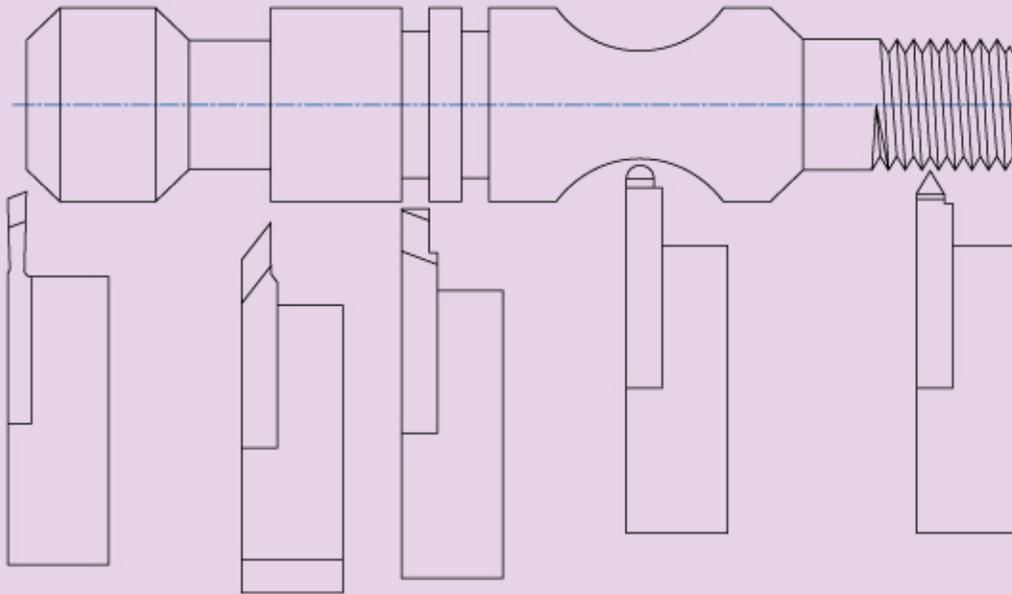


Applicable Inserts 適用刀片

刀片形狀 Shape	刀片規格 Type of Inserts	尺寸 Dimension(mm)				材質 Grade
		W	L1	R	θ	Coating VP12CF
	KNPR-150BC	1.5	9.0	0.1	20	●
	KNPR-200BC	2.0				●
	KNPR-250BC	2.5				●
	KNPR-300BC	3.0				●
	KNPR-150	1.5	9.0	0.1	20	●
	KNPR-200	2.0				●
	KNPR-250	2.5				●
	KNPR-300	3.0				●
	KNTR-55005	2.0	6.0	0.05	55	●
	KNTR-55010	3.0		0.10		●
	KNTR-60005	2.0		0.05	60	●
	KNTR-60010	3.0		0.10		●
	KNRR-050R	1.0	2.0	0.50		●
	KNRR-075R	1.5	2.0	0.75		●
	KNRR-100R	2.0	3.5	1.00		●
	KNRR-125R	2.5	4.0	1.25		●
	KNRR-150R	3.0	4.0	1.50		●
	KNGR-100	1.0	2.5	0.1		●
	KNGR-150	1.5	3.0			●
	KNGR-200	2.0	4.0			●
	KNGR-250	2.5	6.0			●
	KNGR-300	3.0	7.0			●
	KNBR-2010	2.0	5	0.1	35	●
	KNBR-4020	4.0	7.0	0.2	35	

走心式自動車床刀架 / Tool Holders For Sliding Head Auto Lathes

■ SKANR

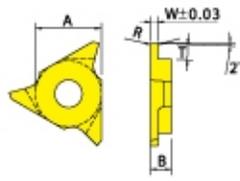
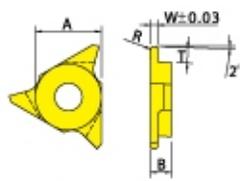


■ SKANR



產品規格 Model No.	尺寸 Dimensions				刀片 Insert	Screw	Wrench
	Right-hand/Left-hand	HxB	L	L1			
SKANR/L-1010K37	10x10	125	9	4	KNPR	 P-CS352-J	 TF-T15-P
SKANR/L-1212K37	12x12	125	9	4	KNTR		
SKANR/L-1616K37	16x16	125	9	4	KNRR		
SKANR/L-2020K37	20x20	125	9	4	KNGR		
SKANR/L-2525M37	25x25	150	9	4	KNBR		

Triple Corner Insert For Shallow Grooving

刀片形狀 Shape	規格說明 Description	部位尺寸 Dimension(mm)					材質 Grade	
		W	T	R	A	B	PVD Coating	Carbide
							VP12F	H10
 Right Hand Shown	GB43R/L 100	1.00	2.0	R0.2	12.70	4.76	●	○
	125	1.25		R0.2			●	○
	145	1.45		R0.2			●	○
	150	1.50	3.5	R0.2			●	○
	165	1.65		R0.2			●	○
	175	1.75		R0.2			●	○
	185	1.85	4.0	R0.2			●	○
	200	2.00		R0.2			●	○
	230	2.30		R0.2			●	○
	250	2.50	5.0	R0.3			●	○
	265	2.65		R0.3			●	○
	275	2.75		R0.3			●	○
	280	2.80	5.0	R0.3			●	○
	300	3.00		R0.3			●	○
	330	3.30		R0.3			●	○
	350	3.50	5.0	R0.3			●	○
	400	4.00		R0.4			●	○
	430	4.30		R0.4			●	○
450	4.50	R0.4	●	○				
 Right Hand Shown	GB43R/L 050R	1.00	2.0	R0.50	12.70	4.76	●	○
	075R	1.50	3.5	R0.75			●	○
	100R	2.00		R1.00			●	○
	125R	2.50	4.0	R1.25			●	○
	150R	3.00		R1.50			●	○
	200R	4.00	5.0	R2.00			●	○

Size T: Grooving Depth
Order No: GB43R150 VP12F

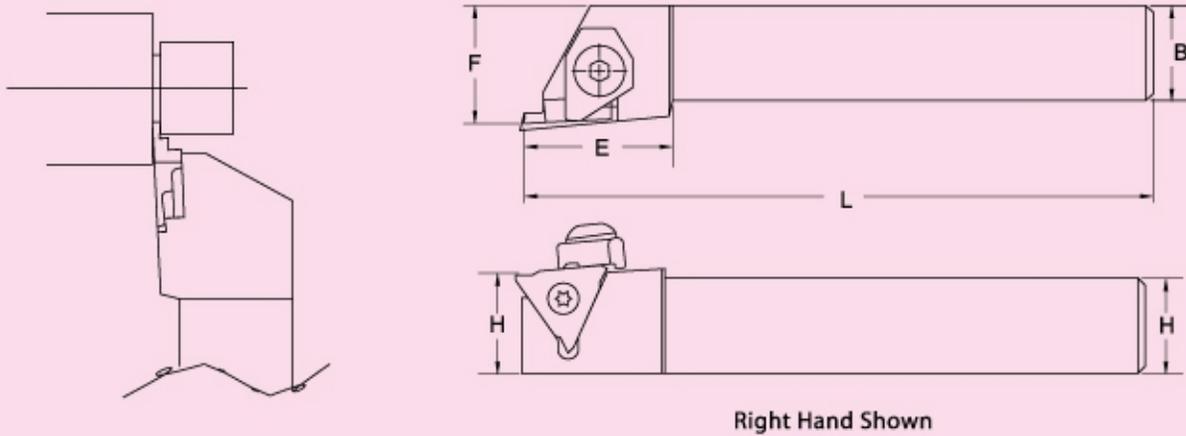
● Standard Stock
○ Standard (Please Check Delivery)

Machining Conditions 參考切削條件

被切削材 Workpiece	刀片材質 Insert material	切削速度 Cutting speed	進給率 Feed(mm/rev)
鋼件 Carbon Steel Alloy Steel General Steel	VP12F	50~140	0.05~0.15
不銹鋼 Stainless Steel	VP12F	40~120	0.03~0.12
鑄鐵 Cast Iron	VP12F	60~150	0.03~0.12
鎳基合金 Nickel Based Alloys 鈦基合金 Titanium Based Alloys	VP12F	10~50	0.03~0.08
非鐵金屬(鋁、銅合金) Non-Ferrous Materials Including (Aluminum and Copper Alloy)	H10	150~300	0.05~0.15

外徑淺槽用切槽刀架 EXTERANL SHALLOW GROOVING HOLDERS

MGH TYPE



* R-hand holder is available for R-hand insert and L-hand holder is for L-hand insert.

產品規格 Model No.	尺寸 Dimensions				Clamp	Clamp Screw	Spring	Wrench	Insert Screw	Insert Wrench
	Right-hand/Left-hand	HxB	L	E						
MGHR/L2020K43-15W	20x20	125	33	25						
MGHR/L2525M43-15W	25x25	150	33	30						
MGHR/L2020K43-25W	20x20	125	33	25						
MGHR/L2525M43-25W	25x25	150	33	30						
MGHR/L2020K43-35W	20x20	125	33	25						
MGHR/L2525M43-35W	25x25	150	33	30						

* The holder is available for MITSUBISHI、KYOCERA and PRAISE PRECISION self made inserts.

* 這系列的刀架適用MITSUBISHI、KYOCERA和主上自製的開槽刀片。

Applicable Inserts 適用刀片

刀片規格 Type of Holders	刀片規格 Type of Inserts	
MGHR/L ...43-15W	GB43R/L125-230	GB43R/L050R~100R
MGHR/L ...43-25W	GB43R/L250-330	GB43R/L125R~150R
MGHR/L ...43-35W	GB43R/L350-450	GB43R/L200R

鎢鋼頂針
Solid Center of Carbide Tipped



捨棄式切削刀具
Throw-Away Cutting Tools



鎢鋼柄替換式精搪頭系列
Interchangeable Fine Boring Head
with Solid Carbide Shank Series



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七豪牌

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