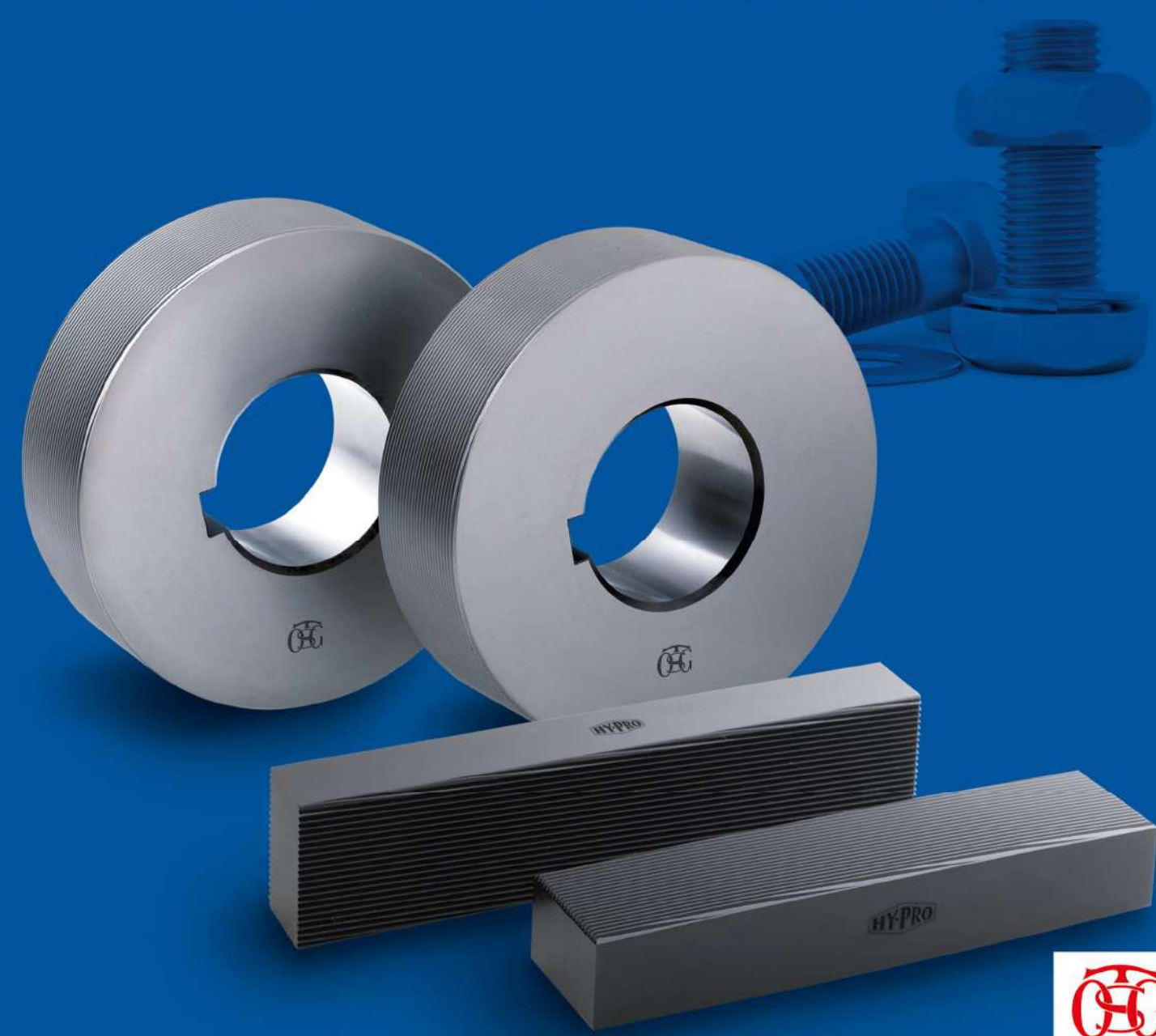




轉造工具系列

Vol.1

ROLLING DIES



總公司 Headquarters
820439 高雄市岡山區大寶街27號
No. 27, Dabao St., Gangshan Dist., Kaohsiung City 820439, Taiwan
TEL : +886-7-624-0338 FAX : +886-7-623-3137

台北營業所 Taipei Sales Office
241643 新北市三重區光復路一段61巷26號14樓之1(利達商業大樓)
14F-1, No.26, Ln. 61, Sec. 1, Guangfu Rd., Sanchong Dist., New Taipei City 241643, Taiwan
TEL : +886-2-8512-2900 FAX : +886-2-8511-2655

台中營業所 Taichung Sales Office
403020 台中市西區台灣大道二段573號12樓之E室(中港經貿大樓)
12F-E, No.573, Sec. 2, Taiwan Blvd., West Dist., Taichung City 403020, Taiwan
TEL : +886-4-2359-6959 FAX : +886-4-2359-6958

高雄營業所 Kaohsiung Sales Office
820439 高雄市岡山區大寶街27號
No. 27, Dabao St., Gangshan Dist., Kaohsiung City 820439, Taiwan
TEL : +886-7-621-6136 FAX : +886-7-621-6140

昆山營業所 Kunshan Sales Office
江蘇省昆山市祖沖之南路1666號清華科技園科技大廈7樓
Science&Technology Building 7F, Tsinghua Science & Technology Park, Zuchongzhi
South Rd., No.1666, Kunshan city, Jiangsu Province, China
TEL : +86-512-5779-9688 FAX : +86-512-5779-9689

寧波營業所 Ningbo Sales Office
浙江省寧波市海曙區藍天路201號麗園尚都A2幢504室
Room 504, Building A2, Liyuan Shangdu, No.201, Lantian Rd., Haishu District,
Ningbo City, Zhejiang Province, China
TEL : +86-574-8750-1180 FAX : +86-574-8750-1132

安全使用注意事項

- 使用工具時，工具可能有破損的風險，請務必使用上蓋、護目鏡、安全鞋等等防護物品，以策安全。
- 請勿空手接觸切屑與切刃。
- 工具切削銳利度下降時，請停止使用。
- 發生異音、異常震動時，請立刻停止使用。
- 請勿修改工具樣式。
- 加工前，請確認工具尺寸。

Safe use of cutting tools

- Use safety cover, safety glasses and safety shoes during operation.
- Do not touch cutting edges and chips with bare hands.
- Stop cutting when the tool becomes dull.
- Stop cutting operation immediately if you hear any abnormal cutting sounds.
- Do not modify tools.
- Please use appropriate tools for the operation. Check dimensions to ensure proper selection.

大寶精密工具代理店



Copyright © 2020 TAIHO TOOL MFG. Co., Ltd. All rights reserved.

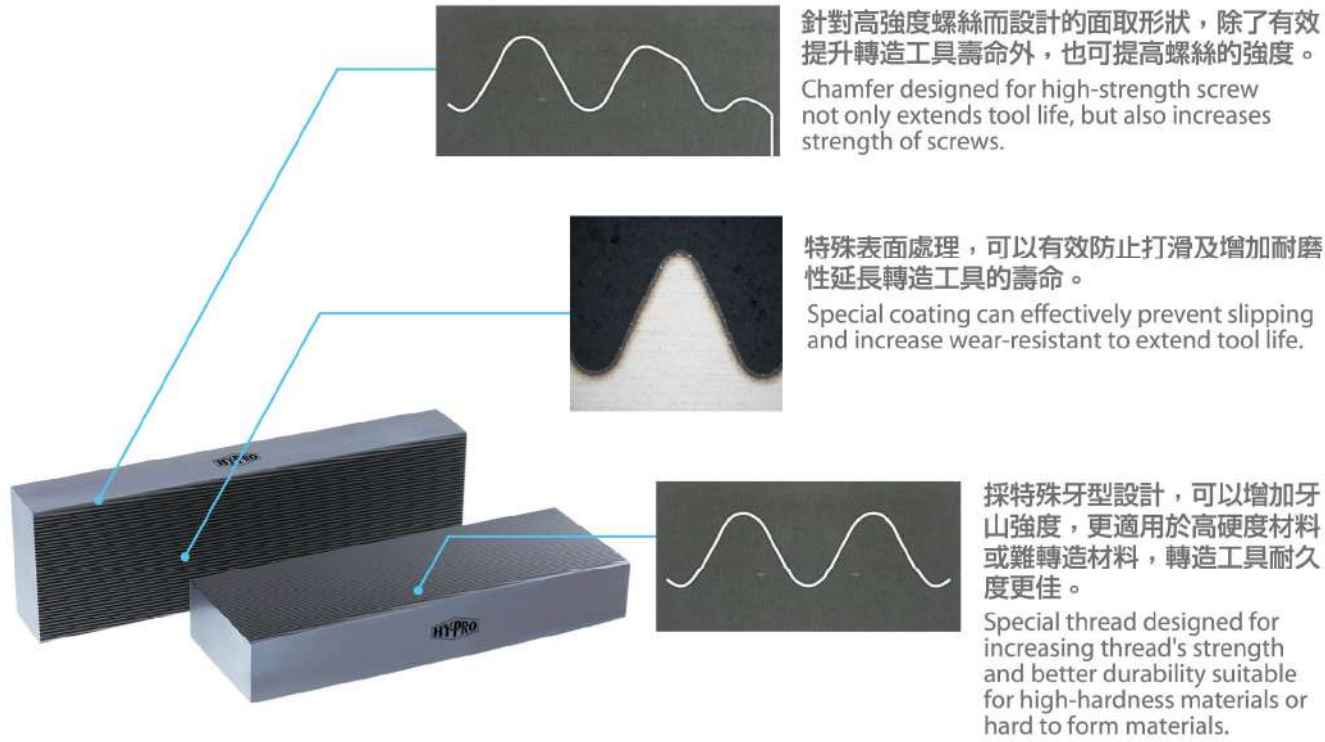
- 製品經常進行研究、改良，本目錄中的工具樣式如有更改，恕不另行通知。
Tool specifications are subject to change without notice.
- 本目錄內容請勿任意轉載及複製。

2020.08.2000



■ HY-PRO牙板性能介紹 HY-PRO Flat Die Introduction

客製化管理，依據各種不同的螺絲，設計專用的轉造工具達到理想的轉造效果。
Customized rolling dies base on different types of screws in order to reach the ideal result.



■ 用途別牙板選定表 Match-making for Dies and Workpiece

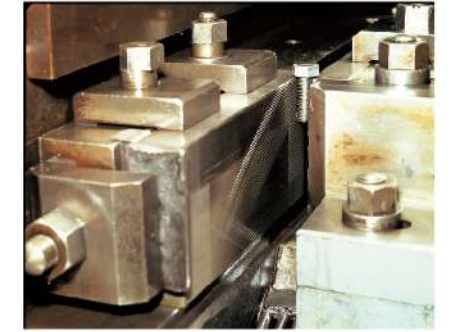
品名 Abbreviation	材質 Material	表面處理 Surface treatment	適用工件 Workpiece
HPX-D-DP	EXO	M處理 M treatment	使用在熱處理後螺絲、高強度螺絲、汽車或航空用螺絲等等，硬度在40HRC以上工件的加工。 For heat-treated screws, high-strength screws, aerospace screws and automotive screws, screw hardness over 40HRC.
HPH-D-DP	H1(HSS改良材) H1(HSS refined material)	M處理 M treatment	使用在熱處理後螺絲、不鏽鋼螺絲、汽車用螺絲等工件的加工。 For heat-treated screws, stainless steel screws, and automotive screws.
HPD-D-DP	D1(SKD改良材) D1(SKD refined material)	M處理 M treatment	使用在不鏽鋼螺絲等加工。 For stainless steel screws.

※本商品所使用材質為OSG集團自行研發的牙板專用材。
The materials we used are researched and developed by OSG.

※M處理為OSG集團公司內部研發的轉造工具專用表面處理。
Surface treatment M which is dedicated to forming dies is exclusively developed by OSG.

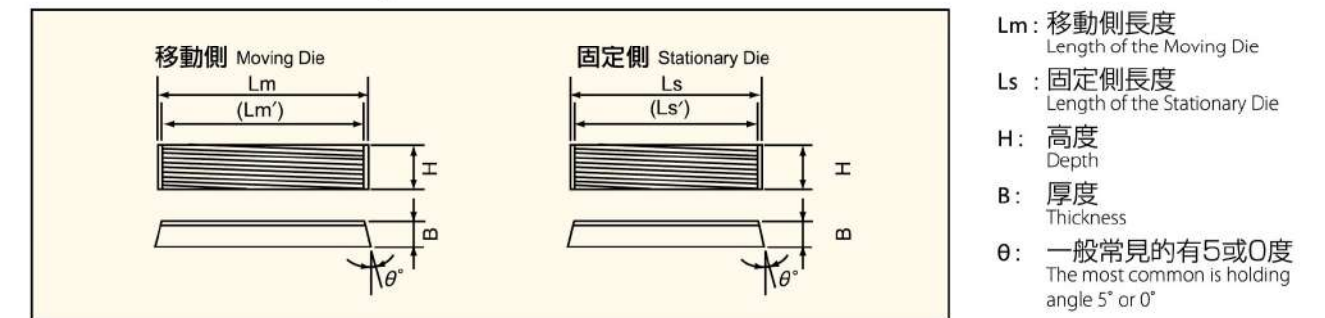
■ 牙板(DP) Thread Rolling Flat Dies

TOSG系列牙板分為一般泛用型牙板及根據客戶需求而設計的專用型牙板。
We offer a wide variety of flat dies with different specifications and customized dies.



■ 牙板訂製要領 When Ordering Thread Rolling Flat Dies

1. 搓牙機機型(請告知是否有5度角及單/雙面牙板)。
The types of machine. (Please inform us whether it contains holding angle 5° and duplex or simplex face.)
2. 牙板各部尺寸(如下圖)
All dimensions of flat dies as the drawing below.



3. 螺絲規格，工件成品形狀及素材形狀，若無註明工件的素材徑，請依本公司建議尺寸採用(有工件圖者佳)
We offer recommended specification like screw size, shape of workpieces or parts and outer diameter for materials if there's no special requirements. (Drawing of workpieces is appreciated)
4. 工件的材質及硬度。
The material and hardness of workpiece.
5. 有無R面取或是工件有無強度需求。
Requirements for radius run-out process or intensity of workpiece.
6. 若有其他要求或注意事項，敬請告知。
Please inform us if there is additional requirement.

■ 本公司之製作可能範圍 Production Capability Range

長度 Length	MAX. 950mm
厚度 Thickness	MAX. 120mm
高度 Depth	MAX. 400mm
牙距 Pitch	MIN. 0.2mm(100μ/ inch)

【註】若有牙距小於0.2mm的需求時，請聯繫本公司。
Requirement for pitch under 0.2mm, please contact us.

■ 牙輪 Thread Rolling Cylindrical Dies

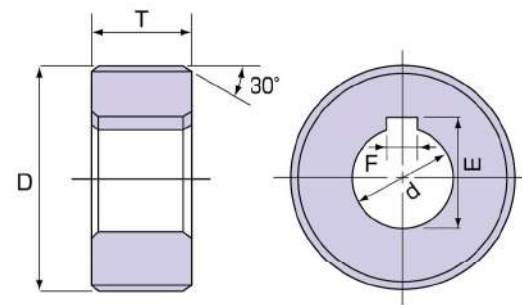
牙輪一般可分為固定式(TR)與滾通式(AR-TR)兩種，通常為2個或3個的組合，加工精度佳，但生產速度較慢，一般用在形狀不規則的工件、歐姆牙及精度要求較高的工件。

There are two types of thread rolling cylindrical dies, which are in-feed (TR) and thru-feed (AR-TR). These two are usually 2-roller or 3-roller type. Excel in processing precise thread limit, but with slow production speed. Commonly used in irregular workpieces, worm thread and workpieces with high demand for thread limits.



■ 牙輪訂製要領 When Ordering Thread Rolling Cylindrical Dies

No.	項目 Item	指示事項 Instructions
1	滾牙機機種 Machine Type	製造廠商名稱、型式 Manufacturer and Model
2	主軸是否可傾斜 Helix Shaft	主軸可以傾斜：固定式或滾通式 Tiltable helix shaft: in-feed or thru-feed 主軸不可傾斜：固定式 No tiltable helix shaft: in-feed
3	牙輪外徑 Outer Diameter	外徑需配合滾牙機型及螺絲規格而定 Outer diameter depends on machine model and screw specification.
4	牙輪寬度 Width	固定式牙輪寬度必須比工件長； 滾通式牙輪寬度可以比工件短 Width of in-feed model must be longer than workpiece. Width of thru-feed model can be shorter than workpiece.
5	加工物的要項 Info of Workpiece	①標稱②外徑③等級④牙部長度等 ①Specification ②Major Diameter ③Grade ④Thread Length
6	其他的指示 Others	特殊的使用條件(如逆導程)及其他 注意事項 Specific condition (e.g., reversed lead) and precaution.



D : 外徑
Outer Diameter
T : 厚度
Width
d : 內孔徑
Bore Diameter
F : 鍵槽寬
Keyway Width
E : 鍵槽深
Keyway Depth

■ 製作可能範圍 Production Capability Range

外徑 Outer Diameter	MAX. 330mm
厚度 Width	MAX. 300mm
牙距 Pitch	MIN. 0.2mm(100山/ inch)

■ 行星式牙輪 Thread Rolling Planetary Dies

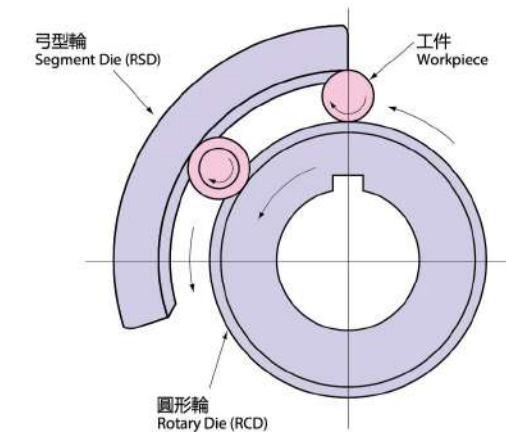
行星式牙輪為一個轉動的圓形輪(RCD)與一個固定的弓形輪(RSD)的組合，為生產速度最快的轉造工具，一般用於大量生產加工上。

Planetary dies are set with a moving rotary die (RCD) and a fixed segment die (RSD), which has the fastest production speed, generally used in mass production.



■ 行星式牙輪訂製要領 When Ordering Thread Rolling Planetary Dies

1. 滾牙機機種
Machine Type
2. 牙輪厚度
Width
3. 螺紋規格
Specification
4. 工件的材質與硬度
Workpiece Material and Hardness
5. 其他特殊事項
Others



■ 製作可能範圍 Production Capability Range

	弓形輪 (RSD)	圓形輪 (RCD)
外徑 Outer Diameter	MAX. 600mm	MAX. 470mm
厚度 Width	MAX. 165mm	MAX. 300mm
牙距 Pitch	MIN. 0.4mm(64山/ inch)	MIN. 0.4mm(64山/ inch)

MAThread專利牙板 MATHREAD DIES

■ MAThread牙板 MATHread Dies

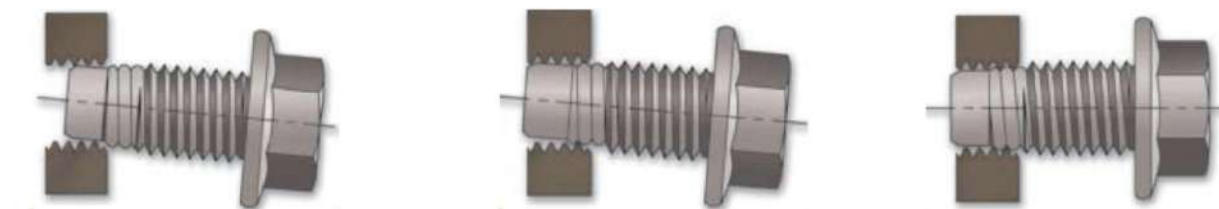
MAThread的引導圓牙可以解決螺栓傾斜鎖付的問題。
The guiding point of MAThread is used to solve the problem of incline during fastening.



■ MAThread的螺紋先端形狀 MATHread Shapes

	"P" Point MAThread	適用於 2 個以上重疊的部品，可修正孔偏心進行組合。 Suitable for 2 or more overlapping objects, which corrects run-out properly.
	Custom MAThread	配合用途進行設計，詳洽 MAThread 公司。 Customized design. Contact MATHread company for more details.
	Dog Point MAThread	適用於有重量的部品，利用槓桿原理效率極佳。 Perfect for heavy objects as leverage provides higher efficiency.
	Mat Point	此系列中為代表性的形狀可適用於很多用途，但是針對較重的零件請選用 Dog Point。 The most representative type which is used for multiple applications. For heavy object, we recommend dog point type.
	Very Short MAThread	適用於螺紋先端長度有限的場合，螺紋插入時的傾斜角在 8 度以內可使用。 Suitable for limited thread point length, and with inclining angle under 8° during fastening.

■ MAThread的螺紋特性 MATHread Features



MAThread的螺紋特性是外螺紋與內螺紋的鎖付發生偏心與傾斜等問題時，引導圓牙在組合時可發揮導正的效果。
The MAThread is effective when inclining or run-out happens.

若是傾斜鎖付的話可藉由先端部引導，進行導正。
The guide point of MAThread helps to correct the inclining issue during fastening.

正常螺紋鎖付完成。
Normal fastening completed.

RF牙板 RACK DIES

■ RF牙板 Rack Dies

機械剛性高，轉造精度優良，牙板交換容易，可以大幅縮短調機時間的轉造工具。
The rolling tool gives high mechanical rigidity, excellent processing precision, easy exchanging of dies, and quick adjusting on machines.



■ RF牙板常用車台表 The General Type of RF Machine

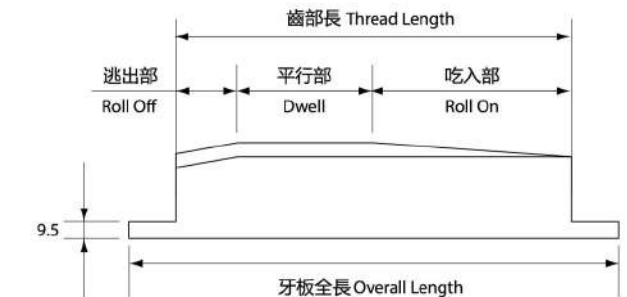
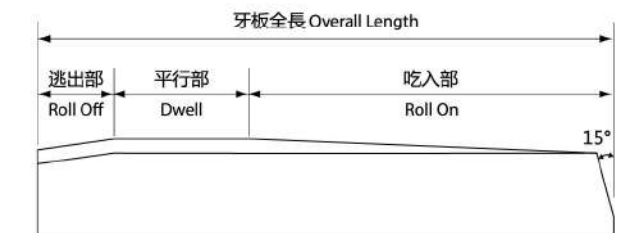
型式 Type	牙板全長 Overall Length
CT-200	210
CT-300	310
CT-400	410
CT-600	623.2
CT-650	665.2
CT-700	715.2
CT-1000	928

牙板標稱(英吋) Size (inch)	全長(mm) Overall Length	齒部長(mm) Thread Length
13"	362	330.2
20"	539.7	508
24"	641	609.6
28"	743	711.2
36"	946	914.4
48"	1251	1219.2

■ RF牙板訂製要領 When Ordering Rack Dies

滾造花鍵軸各部位參數 Work Detail	
項目 Item	範例 Example
齒數 Number of Teeth	25
模數 Module	1.0
壓力角 Pressure Angle	45°
螺旋角(方向) Helix Angle(Direction)	0°10'±4' (右)
分度圓直徑 Pitch Dia.	25.000
基圓直徑 Base Dia.	17.678
齒頂圓直徑(滾造後) Major Dia. as Rolled	26.000 ^{+0.10} _{-0.25}
齒頂圓直徑(研磨後) Major Dia. as Grinded	
齒底圓直徑 Minor Dia.	24.000 ⁰ _{-0.25}
漸開線起始圓直徑 Form Dia.	(24.300)
跨棒距(滾造後) Over Pins Dia. as Rolled	28.270 ⁰ _{-0.045}
跨棒距(熱處理後) Over Pins Dia. After H.T	
量棒直徑 Pin Dia.	2.0
基準素材直徑 注(1) Blank Dia.(1)	25.00

注(1) 由於基準素材徑是計算值的緣故，經滾造試驗後，再進行聯絡。
Note (1) Blank dia. should be confirmed by actual rolling before producing blanks in quantities.



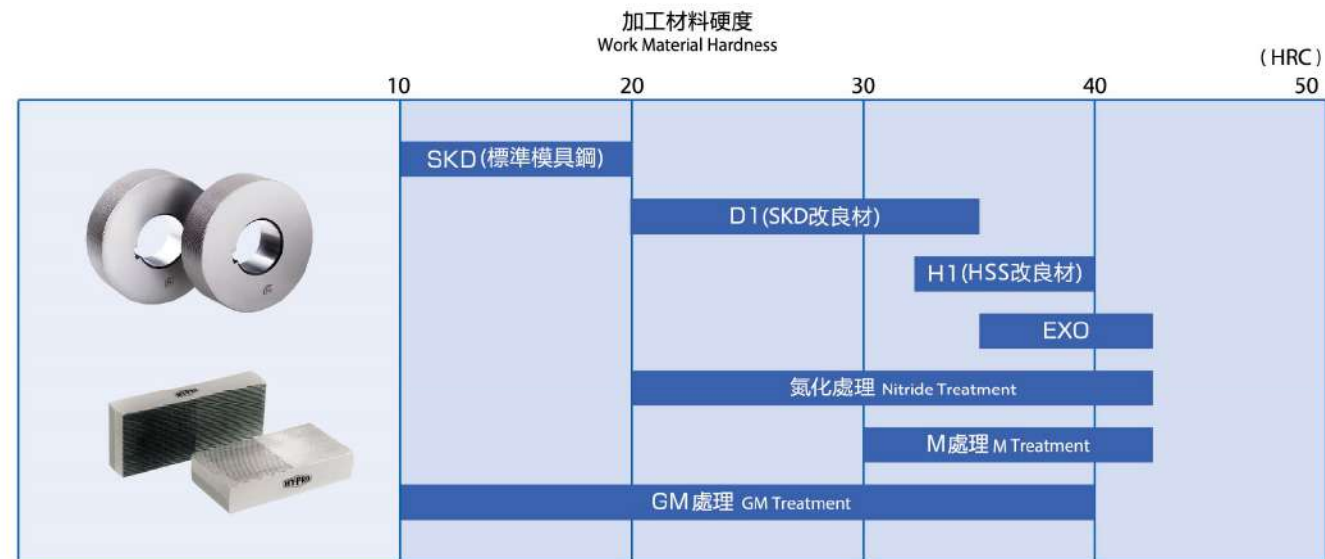
■ 製作可能範圍 Production Capability Range

RF(搓齒板)可以加工的範圍 RF Dies Working Capability	
最大模數 Maximum Module	1.5875(DP 16/32)
壓力角 Pressure Angle	20° 以上 Over 20°
齒數 Number of Teeth	14齒以上(無螺旋角) Over 14 (No Helix)
最大工件直徑 Maximum Working Dia.	約Ø60以下(根據設備情況) Under 60 (Depending on the equipment)
最大滾造寬度 Maximum Width	最大120mm(根據設備情況) Maximum 120mm (Depending on the equipment)
工件硬度 Working Material Hardness	最高HV350以下 Under HV350
工件精度 Working Material Class	JIS 5~6級程度 JIS 5~6

※本公司可承接使用過產品的修改。
TAIHO provides dies repairment service.

轉造工具的選用及區分 ROLLING DIES APPLICATION & DISTINCTION

樣式選擇圖 Map for Design Selection



R面取的選用 Selection for Radius Run-Out Process

R面取種類 Type	S Complete-special	C Complete	I Incomplete
表示方法 Symbol	R-S	R-C	R-I
選用參考 Reference	一般用在螺絲強度要求較高時或航空、汽機車用及高張力螺絲。 In general, it is applied for high durability required, aeroscrew, automobile screw and high tension screw.	螺絲強度無特別要求時，只需將螺絲的不完全山銳角去除。 It is used for only rounding the sharp crest of incomplete threads on die edges without any special requirement for screws strength.	

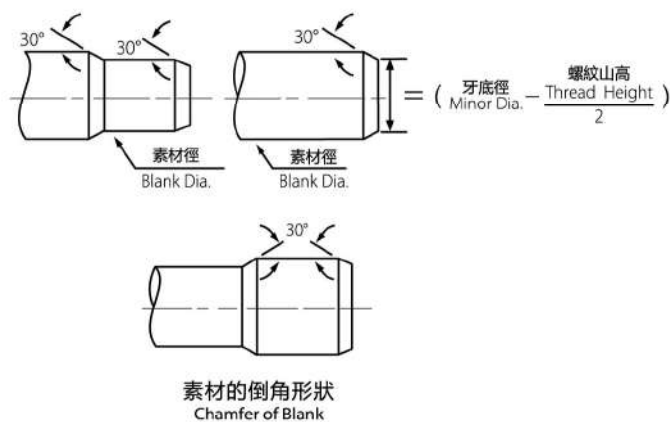
※ 以上的表示方法為單面牙板的表示方法。雙面牙板的表示方法如下：
The symbols shown on the chart are for single face flat dies, and the symbols of duplex face are noted as the following:
S級=RR-S C級=RR-C I級=RR-I

※ R面取可加工範圍：牙距(pitch) ≥ 0.4mm (U系為56山以下)
Radius Run-Out Process Capability Range : Pitch ≥ 0.4mm (Series Unified below 56 thread).

轉造素材形狀 Shape of Blank

素材的形狀與尺寸對轉造工具的壽命及螺紋精度影響非常大。素材的材料徑不穩定會導致工件轉造後的有效徑也不穩定。(素材的倒角形狀不適合常會引起轉造工具的崩牙或縮短轉造工具的壽命。若素材的倒角30°則轉造後會變成45°，對硬度高的材料倒角應改為20°，這樣的角有助於增加轉造工具的壽命。)

Shape and specification of material have great impact on tool life and thread limits. Pitch diameter would be influenced by blank diameter. (Chipping or short tool life are caused by wrong shape of blank chamfer. The chamfer 30° becomes 45° after processing. For high hardness materials, 20° chamfer helps to increase longer tool life.)



素材的倒角形狀
Chamfer of Blank

常見搓牙車台表 THE GENERAL TYPE OF THREAD ROLLING MACHINE CHART

台灣常用搓牙車台表 The General Types of Thread Rolling Machine in Taiwan

機種 Type of machine	長度 Length		厚度 Thickness	高度 Depth
	移動側 Lm	固定側 Ls		
00 號車	55	45	15	根據需求 Depending on the requirement
0 號車	63	51	20	
1/8 號車	70	60	20	
3/16 號車	90	75	25	
6R 車	105	90	25	
1/4 號車	115	103	25	
8R 車	127	108	25	
5/16 號車	140	127	25	
3/8 號車	165	150	25	
1/2 號車	215	190	35	
3/4 號車	265	230	38	
7/8 號車	310	280	48	
1 號車	420	380	50	
1 1/4 號車	450	400	50	

中國常用搓牙車台表 The General Types of Thread Rolling Machine in China

機種 Type of machine	長度 Length		厚度 Thickness	高度 Depth
	移動側 Lm	固定側 Ls		
201	55	45	20	25
202	65	55	24	30
203	80	70	24	30
204	100	85	24	40
205	115	100	24	55
302	125	110	24	40
206	145	125	30	55
207	170	150	30	55
208	210	190	40	55
209	250	230	45	65
210	250	230	50	80
213	310	285	50	80
234	145	125	40	80
235	170	150	40	80
236	170	150	40	105
237	210	190	40	80
238	210	190	40	105

※ 以上為台灣及中國常見的車台表，若貴公司欲訂購的商品，不適用列表中的機台的話，請將機台規格聯絡本公司。

The charts above are the most common use, if the dimensions of dies are not shown on the charts, please feel free to contact us with the types of machine at the time of order.

