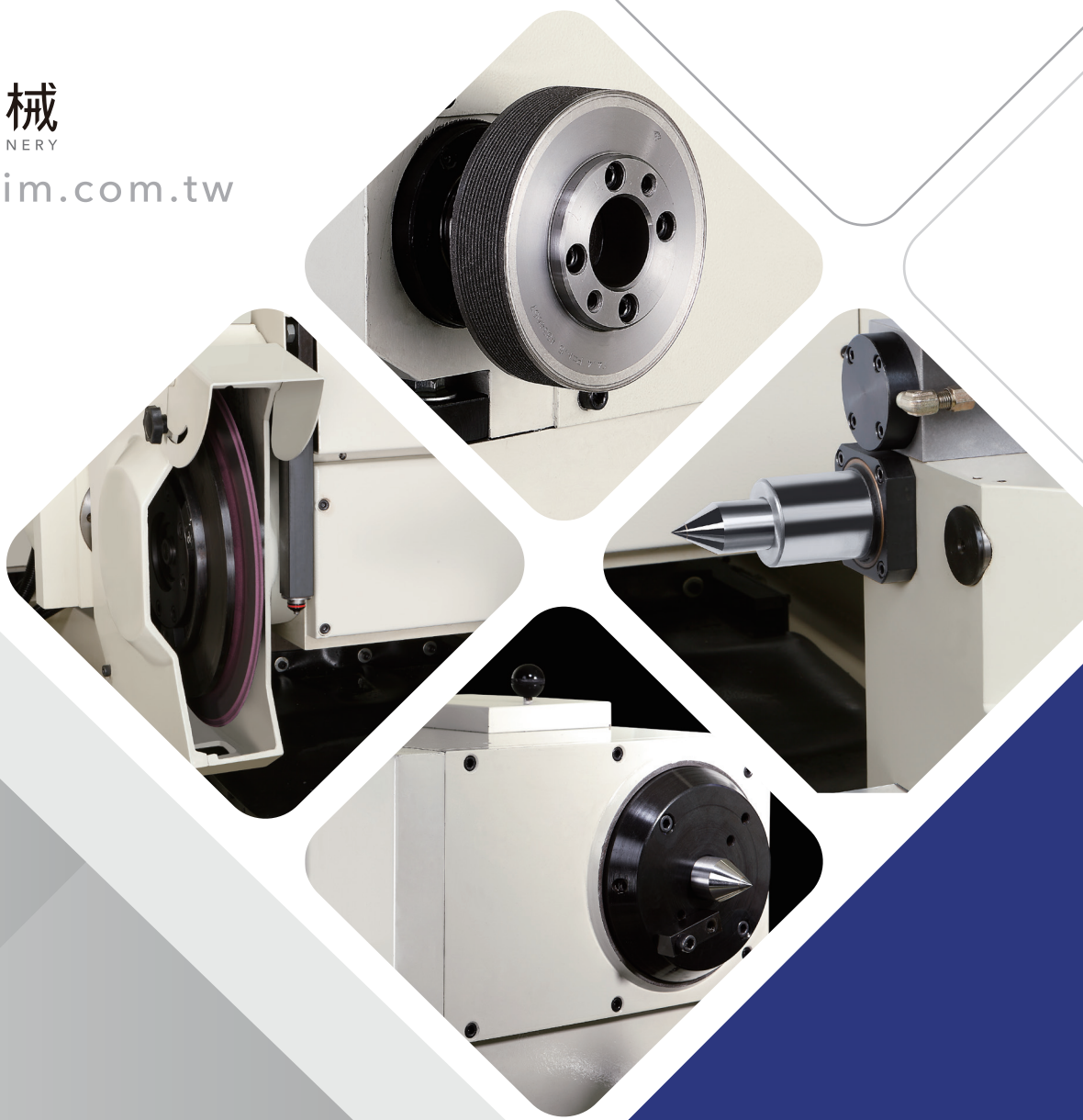




向應機械

HYPERMAX MACHINERY

www.lumaxjim.com.tw



TDG Series

CNC30-TDG200

CNC35-TDG400

CNC35-TDG1000

數控螺紋磨床

CNC PRECISION THREAD GRINDER

數控螺紋磨床

CNC PRECISION THREAD GRINDER

CNC30-TDG200
CNC35-TDG400
CNC35-TDG1000



1. 主機 Structure

- 採用FC30鑄鐵鑄造而成。每機台均經過一年以上的自然放置，以消除內應力，確保機台穩定，不變形，精度高。
- 可根據加工需求選擇線軌或是硬軌設計。

CNC35-TDG400



CNC35-TDG1000

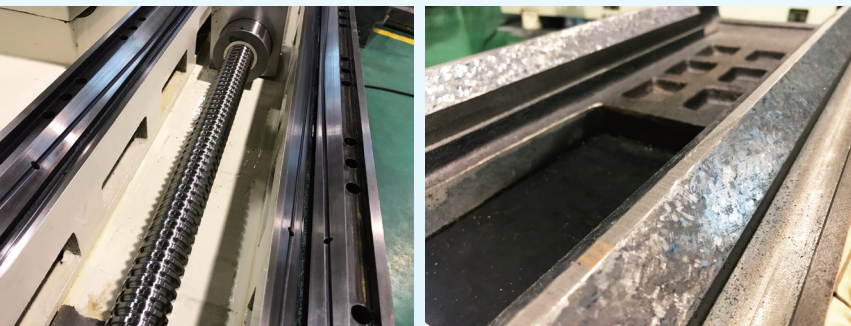
- The machine body is made of FC30 one-piece casting. Each machine has been placed for more than one year to eliminate internal force, which ensures the stability, no-deformation, and high-precision of the machine.
- You can choose either linear guide or box way design base on the workpiece processing requirements.

2. 砂輪進給座

X軸，縱向移動 Longitudinal axis X

工作臺

Z軸，橫向移動 Transverse axis Z



- (1) 線軌最小移動單位準確性高，重複定位精準，可滿足高速高精度需求。

藉由鋼珠在滑塊及滑軌間的滾動，達到高精度的進給，並且線軌移動速度較快，可減少砂輪進給時間，以此達到加工速度的提升。

- (2) 硬軌配合精密產花技術，液靜壓設計滑道，使機台運動平穩、高精度、低震動、壽命長。

砂輪進給座採用雙V滑軌設計，滑道平穩度極佳，不會產生偏擺，滑道精度高，無貼任何耐磨片。滑道接處以精密劃花配合，每組軌道均經過2次以上的精密劃花。

- (1) Linear guideway have high accuracy for the smallest movement units and precise repeat positioning, meeting the requirements for high speed and high precision.

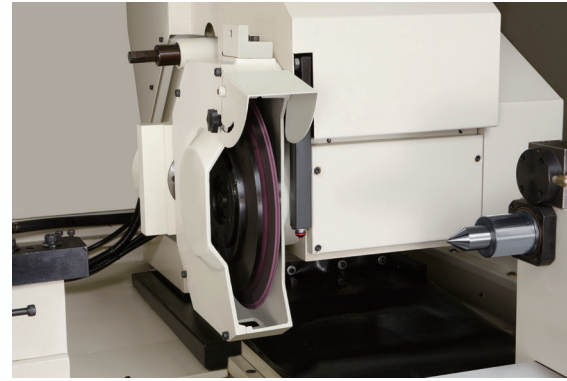
By the rolling of steel balls between the slider and the guideway, high-precision feed is achieved. The linear guideway also moves at a higher speed, reducing the wheel feed time and thereby improving processing speed.

- (2) The box ways, combined with precision scraping technology and hydrostatic slideway design, ensure smooth movement, high precision, low vibration, and long service life of the machine.

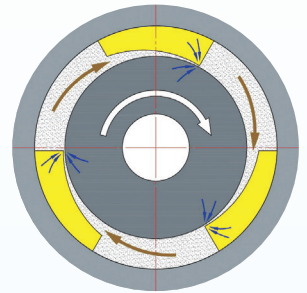
The X axis adopts a double V-slideway design, offering excellent smoothness without deviation, high slideway precision, and no wear-resistant sheets attached. Each surface of slideway has been scraped for more than two times.

3. 砂輪主軸 Grinding Wheel Spindle

- 軸心採鎳鉻鉬合金鋼經熱處理、精密研磨，並拋光完成。
- 軸受為三個楔型塊，與軸心接觸為三條直線，經由軸心轉動，帶動油膜的滾動擠壓，產生極大的壓力包覆，剛性極大。
- 採用液動壓砂輪主軸設計，擁有強大切削能力、高精度、高剛性、震動小。
- 套管式設計並採入油半浸潤方式，使主軸不易發生失油而故障。
- 採用變頻器驅動。
- 風扇式冷卻系統。



- The axle is made from alloy steel (nickel-chromium-molybdenum alloy), after heat treatment, precision grinding, and polishing.
- The shaft is made up of three wedge-shaped blocks. Based on the physical principle of fluid friction. A separation lubricant film is generated between the shaft and the gliding element under a relative movement, bringing high rigidity to a spindle.
- Hydrodynamic spindle, which has a powerful capacity, high precision, rigidity, and low vibration.
- Double-pipe design and semi-immersed method are adopted to reduce the chance of failure caused by the lack of oil.
- Uses Variable-frequency Drive (VFD)
- Adopts fan cooling system.



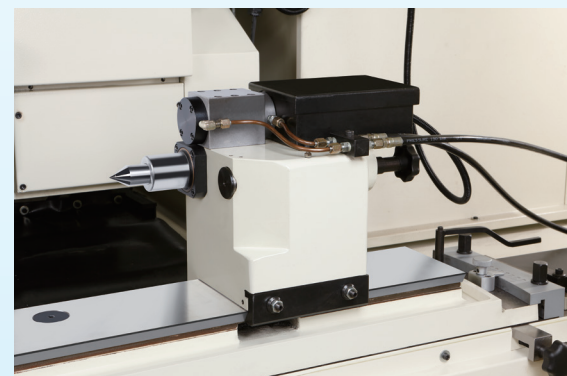
4. 工件主軸 Workhead Spindle

- 主軸由P4級日制高精密斜角滾柱軸承組合而成。
- 工件主軸內孔MT4（5）# 莫式錐度：工件載重能力強（請參照規格表）。
- 採用高精密斜角滾珠軸承組裝，高扭力，配合伺服C軸設計（選配），精度高，並可用頂針旋轉與固定兩用。
- 採用伺服馬達無段驅動，扭力高，精度佳。
- 可做精密主軸定位，配合機械手臂，可將工件準確帶入工作軸。
- Composed of Japanese P4 grade high precision angular contact ball bearings.
- Morse 4(5) taper inner hole: Have strong load capacity. (Please see technical data for more details.)
- Made by high rigid precision angular contact ball bearings means high torque. With a servo motor C axis (optional), a spindle got high precision and can both rotating and fixing by using Ejector pins.
- Adopts servomotor with variable speed that provides high torque, and great accuracy.
- Precision spindle orientation. With a robotic arm, workpieces can be brought into a workhead spindle precisely.

5. 尾座 Tailstock

- 尾座採整體鑄件完成，具有極佳剛性且堅固。
- 可調式夾力設計，夾持能力強大（大小工件均可）。
- 伸縮行程較長（請參照規格表），可容易搭載自動手臂入料系統，無干涉點。
- 並可搭配2段式油壓自動尾座（選配）確保夾持力道之均勻。
- 頂心採MT4（5）規格。

- The tailstock is made by one piece casting, great rigidity, and solid.
- Adjustable clamp design, it allows the operator to clamp a wide variety of workpieces.
- Longer travel (Please see technical data for more details), easily install an automatic feeding robot arm without interference.
- Two-step chuck device (opt.) to make sure powerful capacity.
- MT4(5) center



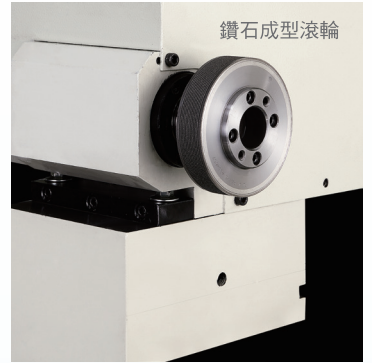
6. 修砂座 Dresser

- 精密型強力迴轉式修砂座，可安裝鑽石滾輪或鑽石成型滾輪，進行CBN（碳化硼）砂輪之修整。並採用伺服馬達驅動，轉速與扭力穩定，修砂準確快速。
- 單點式修砂裝置，配置2只鑽石筆，依程式進行任意角度修整，並進行各種牙型之研磨。
- The axle is made from alloy steel (nickel-chromium-molybdenum alloy), after heat treatment, precision grinding, and polishing.
- The shaft is made up of three wedge-shaped blocks. Based on the physical principle of fluid friction. A separation lubricant film is generated between the shaft and the gliding element under a relative movement, bringing high rigi

螺紋研磨砂輪修砂座



鑽石成型滾輪



7. 軌道潤滑系統

Guideway Lubrication System

- 滑道油回油採3段浸油式過濾，確保回油乾淨，不會帶有雜質，以確保軌道完美。
- 滑道採用強制給油潤滑，軌道壽命長、穩定度高。
- 使用臺制1HP直結泵浦。
- 裝置壓力檢測，油壓壓力潤滑失效則會發出警告訊息。
- 獨立軌道潤滑油容量30公升。
- Adopts three-step immersed filter to make sure the return oil is clean without impurities.
- Forced lubrication extended guide ways life and high stability.
- Adopts 1 HP direct drive pump made in Taiwan
- Pressure inspection system, sending an alarm signal while lubricant pressure fails.
- 30 liters oil tank for guideways.

8. 砂輪主軸潤滑系統

Grinding Spindle Lubrication System

- 使用臺制1HP直結泵浦。
- 採用0.005mm過濾網
- 裝置壓力檢測，油壓壓力潤滑失效則會發出警告訊息，並停止主軸運轉，且停止程式運作。
- 砂輪主軸潤滑油容量37公升。
- Adopts 1 HP direct drive pump made in Taiwan
- Uses 0.005 mm filter.
- Pressure inspection system, sending an alarm signal while lubricant pressure fails and stops the spindle from rolling.
- 37 liters oil tank for wheel spindle.

9. 控制器 Controller

電腦

TDG系列可選配2種控制器，分別為FANUC 0i-TF plus 和 SYNTEC 22MA，讓您能根據不同的加工需求，選擇最適合您的方案。

控制模式 Mode

- AUTO mode.
- MDI mode.
- JOG mode.
- MPG mode.(HANDLE)
- EDIT mode.



FANUC 0i – TF PLUS



SYNTEC 22MA

控制軟體：JIMATIC F-9000T or JIMATIC S-9000

可選用FANUC控制器或SYNTEC控制器，均各自搭配專用研磨軟體，操作簡易化，能力強化，效率極佳化，使用者的操作與教育訓練均能快速又有效能。

Software : JIMATIC F-9000T or JIMATIC S-9000

Available to install FANUC controller or SYNTEC controller. Both of them with the specific grinding software, which are user-friendly, powerful, and high-efficiency. The operators can be trained easily and efficiently to acquire the skill.

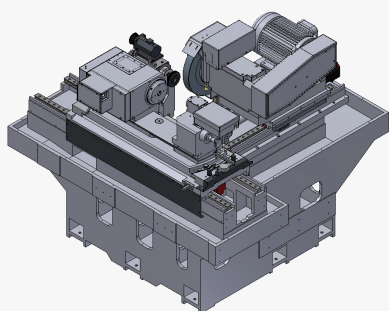
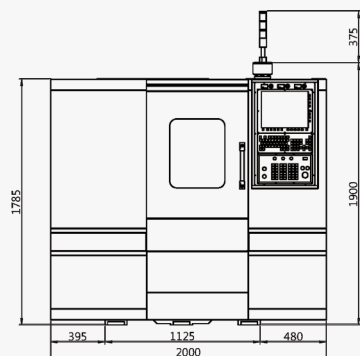
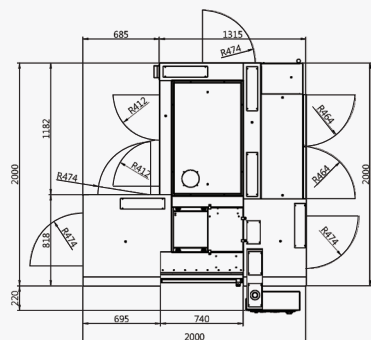


TDG 系列技術資料－數控螺紋磨床

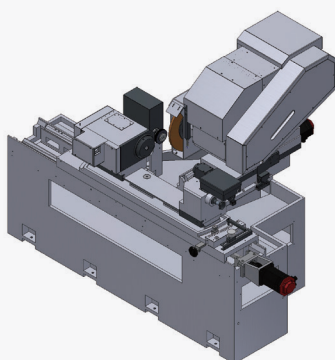
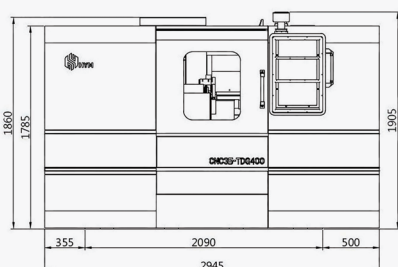
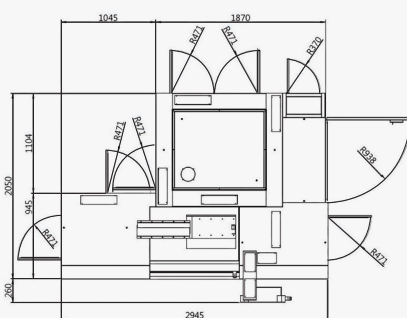
TDG SERIES TECHNICAL DATA - Cnc Precision Thread Grinder

		CNC30-TDG200	CNC35-TDG400	CNC35-TDG1000
機械規格	MAIN DIMENSIONS			
可研磨螺紋長度	THREAD GRINDING LENGTH	200 mm	400 mm	600 mm
可研磨螺紋大小	THREAD DIAMETER GRINDING RANGE	Ø 200 mm	Ø 200 mm	Ø 200 mm
最大工件長度	MAX. WORKPIECE LENGTH	200 mm	400 mm	1000 mm
最大工件外徑	MAX. WORKPIECE OD RANGE	Ø 300 mm	Ø 350 mm	Ø 350 mm
最大工件重量	MAX. WORKPIECE WEIGHT	40 kg	80 kg	150 kg
工作台旋徑	SWING DIAMETER OVER THE TABLE	Ø 306 mm	Ø 360 mm	Ø 360 mm
中心高	CENTER HEIGHT	153 mm	180 mm	180 mm
機械尺寸（長*寬*高）	MACHINE DIMENSION (L x W x H)	2000 x 2220 x 2278 mm	2945 x 2310 x 2278 mm	3940 x 2307 x 2210 mm
機械重量	TOTAL WEIGHT	3300 kg	3800 kg	4300 kg
縱向X軸	LONGITUDINAL AXIS X			
最大行程	MAX. TRAVEL	270 mm	270 mm	270 mm
進給速度	SPEED	5000 mm/min	5000 mm/min	5000 mm/min
最小設定單位	RESOLUTION	0.001 mm	0.001 mm	0.001 mm
最小設定單位（選配）	RESOLUTION (optional)	0.0001 mm	0.0001 mm	0.0001 mm
驅動力－伺服馬達	DRIVING POWER	Servo Motor 1.8 kw	Servo Motor 1.8 kw	Servo Motor 1.8 kw
橫向Z軸	TRANSVERSE AXIS Z			
最大行程	MAX. TRAVEL	350 mm	520 mm	1020 mm
進給速度	SPEED	5000 mm/min	5000 mm/min	5000 mm/min
最小設定單位	RESOLUTION	0.001 mm	0.001 mm	0.001 mm
最小設定單位（選配）	RESOLUTION (optional)	0.0001 mm	0.0001 mm	0.0001 mm
驅動力－伺服馬達	DRIVING POWER	Servo Motor 1.8 kw	Servo Motor 1.8 kw	Servo Motor 1.8 kw
研磨砂輪軸	GRINDING WHEEL			
砂輪尺寸（外徑*寬*內徑）	GRINDING WHEEL (OD x WIDTH x ID)	dia. 405 / 152.4 x 20 mm dia. 405 / 203.2 x 20 mm	dia. 405 / 152.4 x 20 mm dia. 405 / 203.2 x 20 mm	dia. 405 / 152.4 x 20 mm dia. 405 / 203.2 x 20 mm
主軸轉速	SPINDLE SPEED	2100 rpm	2100 rpm	2100 rpm
周速度	PERIPHERAL SPEED	45 m/sec	45 m/sec	45 m/sec
砂輪傾角（螺旋角）	HELIX ANGLE	-5~+19 deg	-5~+19 deg	-5~+19 deg
驅動力－馬達	DRIVING POWER	Motor 10 hp	Motor 10 hp	Motor 10 hp
工作主軸	WORKHEAD SPINDLE			
轉速	RPM RANGE	0 - 100 rpm	0 - 100 rpm	0 - 100 rpm
主軸內孔錐度	INNER HOLE TAPER	MT.4	MT.4	MT.4
主軸孔徑	THROUGH SPINDLE HOLE DIAMETER	Ø 18	Ø 18	Ø 18
驅動力－馬達	DRIVING POWER	Motor 1.8 kw	Motor 1.8 kw	Motor 1.8 kw
尾座	TAILSTOCK			
錐度	FITTING TAPER	MT. 4	MT. 4	MT. 4
尾座行程	BARREL STROKE	40 mm	40 mm	40 mm
油壓尾座（選配）	HYDRAULIC TAILSTOCK (optional)	-	-	-
冷卻水箱	COOLANT TANK			
冷卻水箱容量	CAPACITY	350 L	350 L	350 L
冷卻水流量	IMAX. FLOW	60 L/min	60 L/min	60 L/min
冷卻水幫浦	COOLANT PUMP	1/4 hp	1/4 hp	1/4 hp
其他	OTHERS			
油壓幫浦馬達	HYDRAULIC PUMP	1 hp	1 hp	1 hp
砂輪主軸潤滑油馬達	GRINDING SPINDLE LUBRICATION PUMP	1 hp	1 hp	1 hp
軌道潤滑油馬達（選配）	GUIDEWAY LUBRICATION PUMP (optional)	1/4hp	1/4hp	1/4hp
控制系統	CONTROLLER			
電腦：FANUC 0i-TF PLUS	軟體 SOFTWARE ：JIMATIC – F-9000T			
電腦：SYNTEC 22MA	軟體 SOFTWARE ：JIMATIC – S-9000			

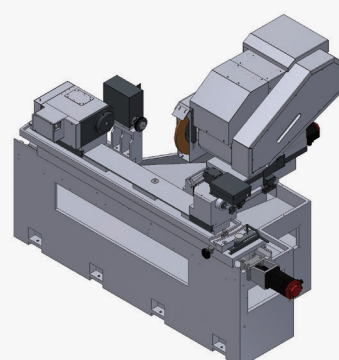
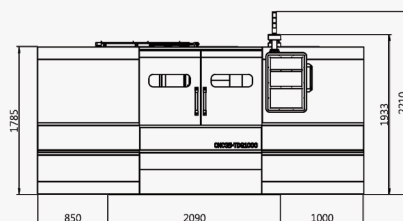
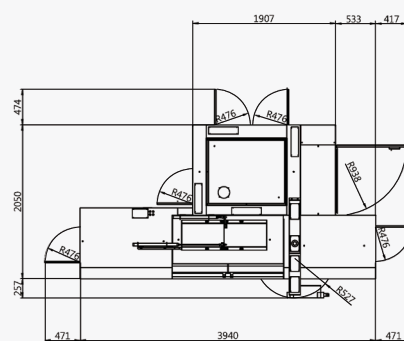
CNC30-TDG200



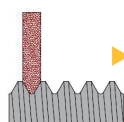
CNC35-TDG400



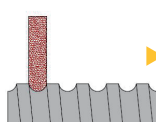
CNC35-TDG1000



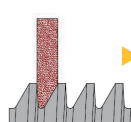
磨牙機螺紋示意圖



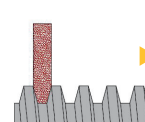
▶ 三角螺紋
Trilobular Thread



▶ 滾珠螺紋 Ball Thread



► 梯形螺紋
Trapezoidal Thread



▶ 鋸齒螺紋
Buttress Thread



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