



X-2540A

斜進式數控外圓磨床

**CNC CYLINDRICAL GRINDING MACHINE
ANGULAR GRINDING**



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TOPKING

TK250401

X-2540A

斜進式數控外圓磨床 CNC CYLINDRICAL GRINDER ANGULAR GRINDING

加工能力 Capability

工作台旋徑	Swivel Over Table: $\Phi 270\text{mm}$
兩頂心間距	Distance Between Centers: 400mm
最大研磨外徑	Max. Grinding Dia.: $\Phi 250\text{mm}$
CNC 控制	CNC control
全罩式板金	Fully splash cover

金格科技斜進式數控外圓磨床，能夠同時進行外徑及端面研磨加工作業。這種同時加工的方式節省了換工件位置的時間，提高了加工效率，降低了生產週期。

砂輪軸(X軸)與橫移軸(Z軸)採用先進的斜進式十字形滑台設計配合斜進式砂輪軸座，提供高效靈活可靠的研磨解決方案。獨特的十字形滑台結構確保加工過程中行程快速穩定，保持高精度的研磨加工。

操作系統搭載高性能的CNC控制系統內建圖形對話式(GUI) 操作介面，設定及操作簡易，研磨加工應用廣泛，提供給使用者最便捷的加工環境。

TOPKING's CNC Angular Cylindrical Grinding Machine offers the capability to perform simultaneous O.D. and end-face grinding in a single clamping setup, resulting in time-saving component changeovers, enhanced processing efficiency, and shorter production cycles. The advanced wheel head axes X-axis) and traverse axes (Z-axis) feature cross-slider designs with an angular grinding wheelhead, ensuring rapid and stable movements during processing, and delivering high-precision grinding results.

Equipped with a high-performance CNC control system and a user-friendly graphical user interface (GUI), the operating system facilitates easy setup and is suitable for various grinding applications, providing users with a hassle-free machining environment.

十字滑台設計

- X軸與Z軸結構採用斜進式十字滑台形式設計，縮小佔地面積。兩軸使用全密閉伸縮護罩，完整的保護傳動結構，杜絕研磨屑與冷卻液的汙染。
- X軸與Z軸標配高解析度封閉式抗汙光學尺，控制定位精度。
- 工作台完整的固定在機器床身上，堅固的設計方式有效的穩定工件，提升加工速度及品質。

Cross-Slide Design

- X axis and Z axis is design as angular cross-slide to reduce machine space. Two axes cover by enclosed telescopic covers. To avoid the drive assembly be damaged by grinding dust or coolant liquid underneath the telescopic covers.
- X axis and Z axis equip with high resolution enclosed linear scales as standard accessories, for controlling positioning accuracy and finish quality.
- The work-table is bolted permanently to the machine base with robust design, keeps the workpiece stable also optimising the process cycle time and quality.

靈活進給模式設計

X-A系列兩軸移動採用精密線軌搭配滾珠螺桿設計。線軌的耐磨耗和低摩擦性確保了軸座平穩運動，而滾珠螺桿的高載荷和低背隙使進給模式輕快靈活，迅速達到所需尺寸。這種組合進給模式快速靈敏，為小型工件提供了卓越的加工品質。

Flexible Feed Design

X-A series adopts precise linear guides and ball screw design for the two-axis movement. The linear guides are designed to be wear-resistant and have low-friction properties, ensuring that the axis seat moves smoothly. The ball screw can handle high loads and has low backlash, which allows for a quick and flexible feed mode, achieving the required dimensions rapidly. This integrated combination offers a fast and responsive feed mode, delivering outstanding machining quality for small component.

斜進式砂輪頭座

培林式主軸，採用精密及軸承，提升迴轉精度及掌控使用壽命，特殊軸套設計，便於使用端更換、維修、保養，使工廠管理更緊密。
砂輪主軸採用SNCM-220高級合金鋼材，經正常化、調質、滲碳熱處理、深冷處理等多重處理。再作精密研磨與鏡面處理，表面硬度達HRC62°以上。保證不變形、耐磨耗、永保高精度。

Angular Type Wheel Head

Wheel spindle with high precision bearing, upgrade spindle rotation accuracy and control the using life. Special spindle sleeve design easy to maintenance job. The grinding wheel spindle is precision machined from high quality alloy steel SNCM-220, normalized, tempered, carburized and sub-zero treated, precision ground and mirror-effect treated. Hardness reaches to over HRC 62°. No deformation, maximum wear resistance and lifetime accuracy are assured.



工作主軸台與尾座

- 主軸台採用伺服馬達驅動，可依需求無段變速調整。
- 尾座可選用油壓式與止擋裝置，操作便利。
- 工作主軸及尾座皆附有平面氣壓設計，方便位移、減少摩擦，加強使用壽命。
- 主軸及尾座裝有針對頂針與頂針孔接觸面的冷卻裝置，降低頂針與頂針孔接觸處面摩擦發熱所產生的變形。



Workhead and Tailstock

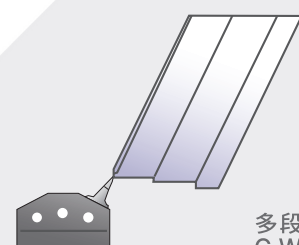
- The workhead is driven by a servo motor with step-less variable speed change.
- Hydraulic tailstock (opt.) with support for easy operation.
- Both the workhead and the tailstock are designed with flat air pressure design, which is easy to move, reduces friction and increase using life.
- The cooling system is installed in the center to prevent the contact surface of the center hole from being heated and deformed.

砂輪修整

- X軸與Z軸兩軸同動控制，依工件需求，進行多段差成型修整。
- 標配修整機構固定於尾座，多樣化的修整機構，可依工件需求選擇。

Grinding wheel dressing

- X axis and Z axis simultaneous control apply for G.W. profile dressing satisfy for multiple-step grinding in one in-feed.
- Standard dressing device is mounted on tailstock.
- Diverse dressing device is available, adaptable to the requirements of the component.



多段差成型修整
G.W. profile dressing



標準配件:砂輪修整座
(尾座固定式)
Standard: Diamond
Tool Holder (tailstock
mounted type)



人性化操作環境

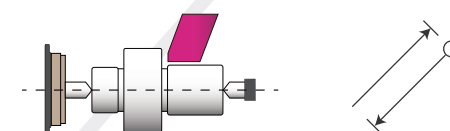
內建先進的CNC控制系統搭配圖形對話式的操作介面。操作者可藉著圖形的導引，將複雜的工件分成數個研磨工序，以數值化的方式簡化研磨及修整的工序編輯。不需另外進行複雜的程式編寫(G碼、M碼)，提供最便捷的操作環境。

User Friendly Operation

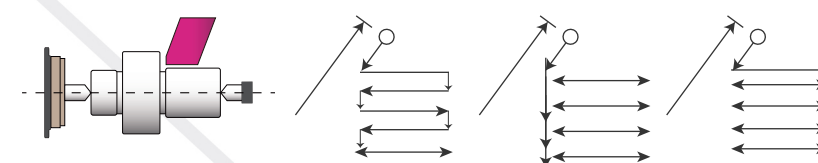
The built-in advanced CNC control system is equipped with GUI. The operator can divide the complex component into several grinding processes through the guidance of the graphic, and simplify the process editing of grinding, and dressing in a numerical way. No complicated programming (G code, M code) is required, and the most convenient operating environment is provided.

研磨循環 Grinding Cycle

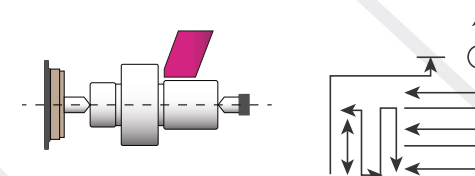
直進研磨 Plunge Grinding



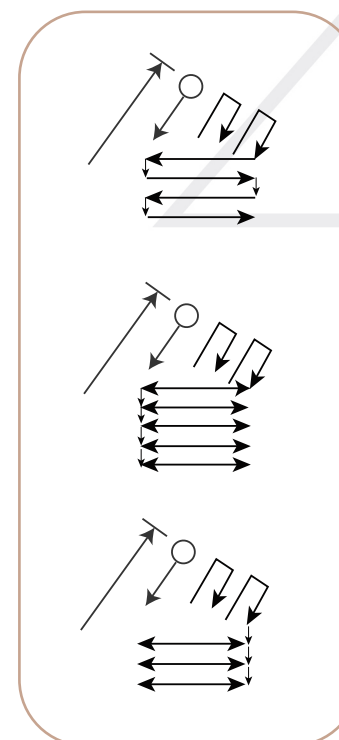
橫移研磨 Traverse Grinding



肩部研磨 Shoulder Grinding



直進橫移研磨 Plunge / Traverse Grinding



機器規格 Machine Specification

			X-2540A
能力 CAPABILITY	工作台最大旋徑	Swing Over Table	Ø270 mm
	兩頂心間最大距離	Distance Between Centers	400 mm
	最大研磨直徑	Max. Grinding Diameter	Ø250 mm
	最大研磨長度	Max. Grinding Length	400 mm
	兩頂心間最大承受重量	Max. Load Held Between Centers	15 kg
	中心高(工作台面至頂針中心)	Center Height (from table to center tip)	135mm
砂輪 GRINDING WHEEL	尺寸(外徑 x 寬度 x 內徑)	Size (O.D. x width x I.D.)	Ø510 x 50 x Ø127 mm
	線速度	Linear Velocity	33 m/sec (opt.: 45 m/sec)
工作臺 TABLE	旋轉角度	Swiveling Angle	-1° ~ +8°
工作主軸 WORKING SPINDLE	旋轉角度	Swiveling Angle	-30° ~ +90°
	頂針斜度	Center Tapper	MT. No. 3 (opt.: MT. No. 4)
	主軸轉速	Spindle Speed	10 ~ 300 rpm
	工作主軸負荷(含夾具)	Max. Load of Spindle (tool holder included)	15 kg (max. length: 100 mm)
尾座 TAILSTOCK	頂針斜度	Center Tapper	MT. No. 3 (opt.: MT. No. 4)
	中心頂針移動方式	Center Moving	Manual type
	尾座軸移動距離	Tailstock Stroke	25 mm
	(選購) 錐度微調距離	Micro Adjustment (opt.)	±0.03 mm
X軸行程 X-AXIS TRAVEL	最大移動距離	Max. Travel	300 mm
	快速移動速度	Rapid Feedrate Speed	6000 mm/Min
	自動切入速度	Auto. Feeding Speed	0.001 ~ 2000 mm/Min
	最小設定值	Min. Feeding Setting	0.001 mm
Z軸行程 Z-AXIS TRAVEL	最大移動距離	Max. Travel	580 mm
	快速移動速度	Rapid Feedrate Speed	6000 mm/Min
	自動切入速度	Auto. Feeding Speed	0.001 ~ 2000 mm/Min
	最小設定值	Min. Feeding Setting	0.001 mm
馬達 MOTOR	砂輪主軸	Grinding Wheel Spindle	5.5 kW
	工作主軸	Workhead Spindle Motor	1.0 kW
	X軸-砂輪軸座進給	Wheelhead Feed X-axis	1.5 kW
	Z軸-工作台進給	Table Feed Z-axis	1.5 kW
	軸向潤滑	Ballscrew Lubrication	Auto Lubricator (LUBE)
	潤滑油壓馬達	Lubrication Hydraulic Motor	NIL
	動力油壓馬達	Power Hydraulic Motor	0.75 kW
	冷卻液泵浦	Coolant Pump	0.18 kW
容量 TANK VOLUME	動力油壓油箱	Power Hydraulic Tank	18L
	潤滑油箱	Lubrication Tank	NIL
機器 MACHINE	尺寸(長 x 寬 x 高)	Dimension (L x W x H)	2200 x 2150 x 1900 mm
	淨重	Net Weight	4300 kg
	中心高(地面起至頂針中心)	Center Height (from fround to center tip)	1110 mm

標準配件 Standard Accessories

1. 三菱 CNC 控制器 x 1 套
2. 砂輪與砂輪法蘭 x 1 組
3. 頂針 (2支/組) x 1組
4. 砂輪修整座 (尾座固定式) x 1組
5. X軸 & Z軸光學尺 x 1組
6. 砂輪變頻器 x 1組
7. 電器箱標準附件 x 1組
8. 全罩式鋁金 x 1組
9. 潤滑油箱 (含泵浦) x 1組
10. 冷卻水箱 (含泵浦) x 1組
11. 工作燈 x 1組
12. 工具 (含腳墊)及工具箱 x 1組

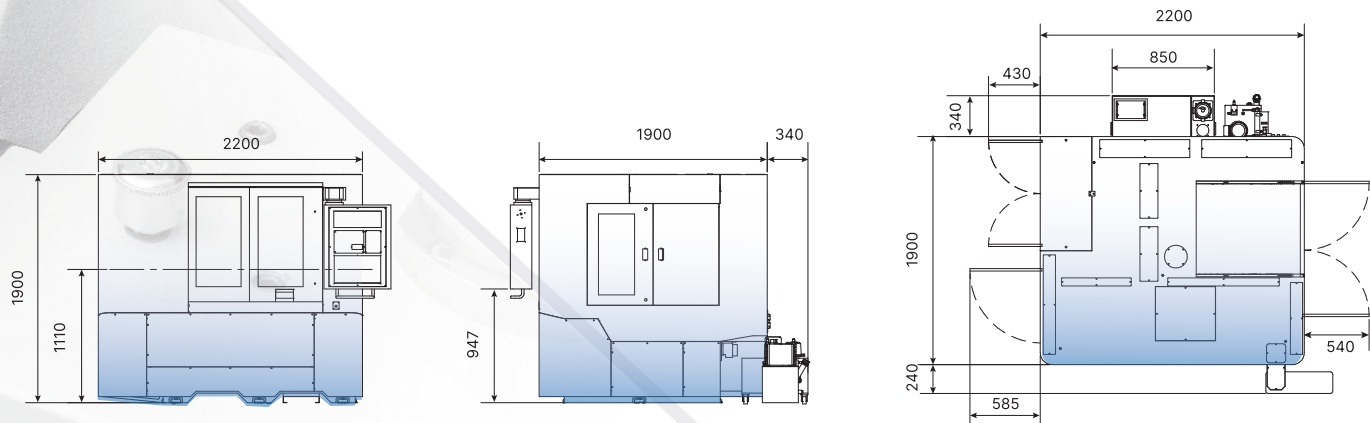
1. CNC controller (Brand: Mitsubishi) x 1set
2. Grinding wheel and flange x 1 set
3. Carbide Tipped Work Centers (2 pcs/set) x 1 set
4. Diamond Tool Holder (tailstock mounted type) x 1 set
5. Linear Scales for X-axis & Z-axis x 1 set
6. Grinding Wheel Inverter x 1 set
7. Electric System x 1 set
8. Fully Enclosed Splash Guard x 1 set
9. Hydraulic System x 1 set
10. Coolant System x 1 set
11. Work Lamp x 1 set
12. Tools (Leveling pad) and Tool Box x 1 set

選擇配件 Optional Accessories

1. 油壓尾座
2. 凸輪式帶動環 (6只/組)
3. 兩端支持座 (2只/組)
4. 兩點支持座
5. 三點式中心架
6. 三爪夾頭
7. 四爪夾頭
8. 平衡台及棒
9. 自動砂輪平衡裝置
10. 備用砂輪及法蘭
11. 砂輪吊架
12. 端面量測裝置
13. 外徑自動量測
14. 間隙消除 (防撞) 裝置
15. 電磁式冷卻液除屑裝置
16. 紙帶式冷卻液除屑裝置
17. 油霧回收機

1. Hydraulic Tailstock
2. Cam-locked Driving Dogs
3. Work Holder 2 pcs/set
4. 2-point Steady Rest
5. Adjustable 3-point Steady Rest
6. Adjustable 3-jaw Scroll Chuck
7. Adjustable 4-jaw Scroll Chuck
8. Wheel Balancing Stand and Arbor
9. Auto. Grinding Wheel Balancer
10. Spare Grinding Wheel and Flange
11. Jib Crane for Loading / Unloading G.W.
12. Touch Probe Gauge
13. Auto. In-Process Gauge
14. Gap Control
15. Magnetic Coolant Separator
16. Paper Filter
17. Oil Mist Collector

占地面積 Floor Space



單位Unit : mm