

Technical Specifications

技術規格書

Machine Type

機械型式

全自動控制平面磨床

Machine Model

機械型號

FSG-2040ADIII

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1. Machine Introduction 機台簡介

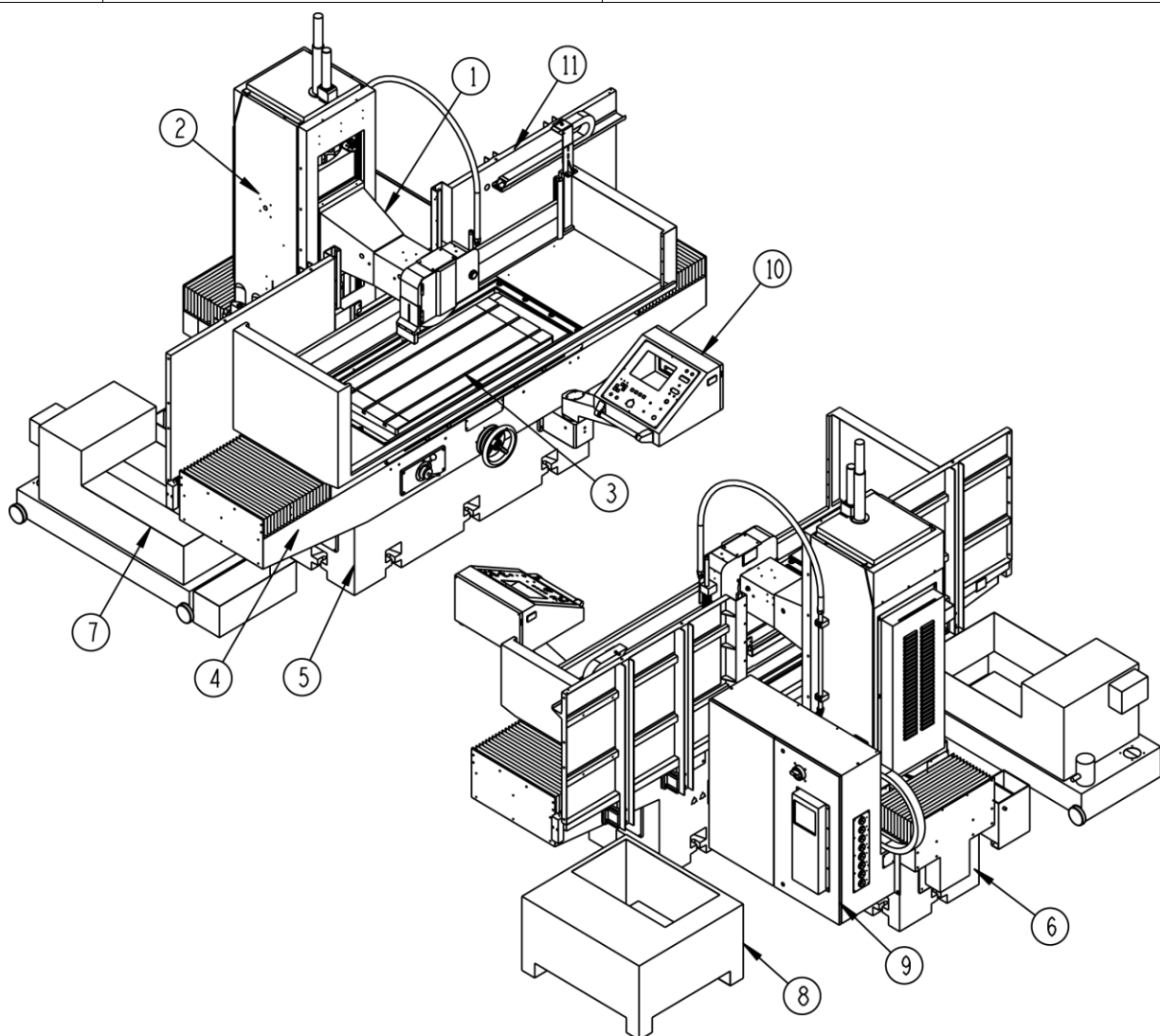


註：圖示包含特別附件

Note : This diagram include optional accessory

1.1 Machine structure 機械結構

1	主軸座/Spindle seat	
2	立柱/Column	
3	工作台/Table	
4	鞍座/Saddle	
5	前底座/ Front base	
6	後底座/ Rear base	
7	水機/Coolant system	特別附件/Optional accessory
8	油壓箱/Hydraulic tank	
9	電氣箱/Electric cabinet	
10	操作箱/Operation cabinet	
11	雙邊擋水牆/ X-axis motor	特別附件/Optional accessory



1.2 Machine specifications 機械規格

	Description 項目	Specifications 規格
Capacity 容量能力	Max. grinding length- Longitudinal 最大研磨長度-左右向	40" (1015mm)
	Max. grinding width- Crosswise 最大研磨寬度-前後向	19 5/8" (500mm)
	Max. grinding height- Elevation 最大研磨高度	552mm (使用 14"砂輪工作台至砂輪邊緣之距離)
	Distance between table to spindle centerline 工作台至主軸中心距離	28 5/8" (730mm)
	Table loading 容許加工負載	2574 lbs (1170kg)
Table 工作台	Table working size 工作台尺寸	19 5/8" x39 3/8" (500mmx1000mm)
	T-slots(wid x dis xno.) T 形槽(尺寸 x 距離 x 數量)	14mmx160mmx3 (0.551"x6.3"x3)
	Height from the machine table to ground 工作台至地面距離	39" (990mm)
	Table speed 工作台速度	16~82fpm (5-25m/min)
	Max. table stroke 工作台行程	43 1/4" (1100mm)
Transverse movement 橫向移動 (Z)	Rapid travel 快動	60HZ / 4.9 fpm (1.5 m/min), 50HZ / 4.08 fpm (1.25 m/min)
	Automatic transverse movement 自動橫向移動	1/8" – 1 1/4" (3-32mm)
	Hand wheel per revolution 每一轉	0.2" (5mm)
	Hand wheel per graduation 每一刻度	0.0008" (0.002mm)
	Transverse movement stroke 橫向移動行程	22" (560mm)

	Description 項目	Specifications 規格
Elevating movement of wheel head 輪頭垂直移動 (Y)	Rapid travel 快動	15 IPM (396mm/min)
	Head wheel per graduation 每一刻度	0.00005" (0.001mm)
Spindle 主軸	Spindle speed 主軸轉速	60HZ/1750rpm 50HZ/1450rpm
Wheel size (OD×W×BORE) 砂輪(外徑×寬度×孔徑)		$\phi 14'' \times \phi 2'' \times \phi 5''$ ($\phi 355\text{mm} \times \phi 50\text{mm} \times \phi 127\text{mm}$)
Control system 控制系統		TOUCH PANEL+PLC
Motors 馬達	Spindle motor 主軸馬達	5.6 KW (7.5HP,4P)
	Axis motors 軸向馬達(X、Y、Z)	Y: 2KW Z: 1/2 HP/6P
	The motor for dressing 修整器馬達	—
	Oil lubrication system motor 潤滑油馬達	—
	Hydraulic tank motor 油壓馬達	3HP
	Coolant system motor 切削液馬達	—
	coolant gun motor 清潔槍馬達	—
Power requirement 電源	Power required 電源容量	18HP(13.5KW)
	Input voltage 輸入電壓	Local voltage 隨當地電壓
	Pressure 空壓需求	—
Tank capacities 儲槽容量	Hydraulic tank voltage 油壓箱容量	200L
	Spindle oil chiller tank voltage 主軸冷卻油箱容量	—
	Lubricant tank voltage 潤滑油容量	—
	Coolant tank voltage 切削液容量	—

	Description 項目	Specifications 規格
Machine dimensions 機械尺寸	Machine height(H) 機械高度(高)	107"(2719mm)
	Required floor space(WxL) 佔地面積(寬 x 長)	150"x118"(3810mmx2997mm)
	Machine weight 機械重量	13640bls (6200kg)
Accuracy 精度	Positioning accuracy 定位精度	—
	Repeatability accuracy 重覆精度	—
	Accuracy standard 精度檢驗方式	ISO 1986-1

1.3 Standard accessory 標準附件

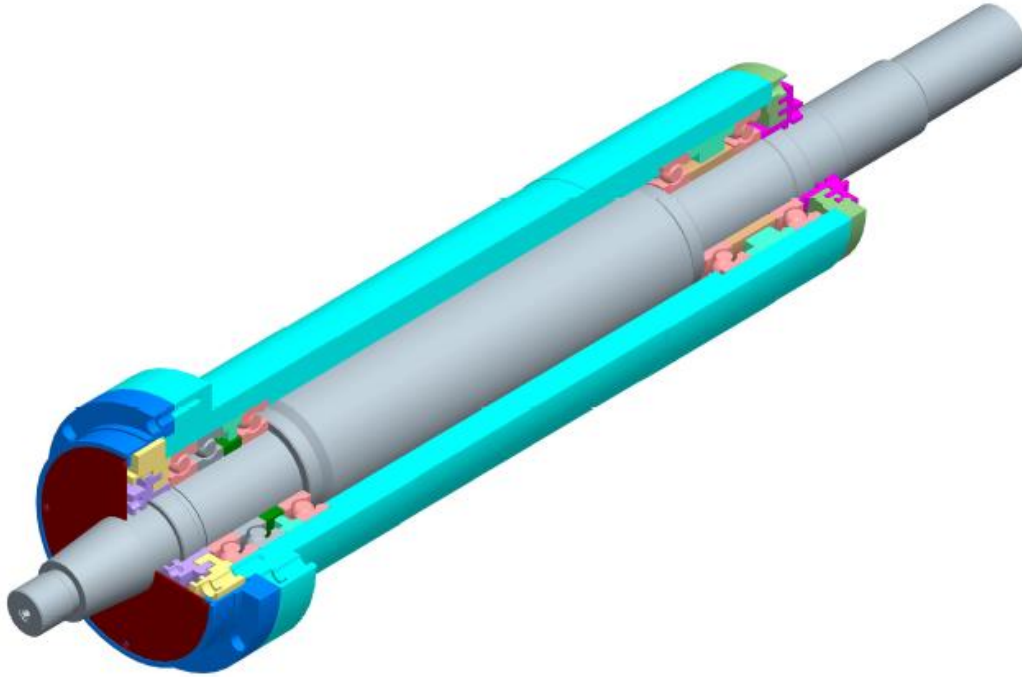
1.Balancing Arbor	砂輪平衡棒
2.Spanner (14mm)	六角板手(14mm)
3.Tool Box	工具箱
4.Pad	腳墊
5.Adjusting Bolt	水平調整螺絲組
6.Can Paint	補漆罐
7.Grinding Wheel	砂輪轂
8.Splash Guard	防水罩
9.Spanner	六角板手組
10.Grinding Wheel	砂輪
11.Stylus	電阻式觸控筆

1.4 Optional accessory 特別附件

1.Work Lamp	工作燈
2.Grinding Wheel Flange	砂輪轂
3.Coolant System With Paper Feeding Device	紙帶式過濾水機
3. Coolant System With Paper Feed And Magnetic Separator	紙帶電磁式過濾水機
4.Water Baffle	雙邊擋水牆
5.Linear Scale	光學尺
6.Hydraulic Oil Cooler	油溫冷卻機
7.Auto Rotary Compensation Dresser	自動補正修整器
8.Balancing Stand Roller	砂輪平衡台
9.Electromagnetic Chuck	電磁鐵
10.Grinding Wheel Dynamic Balancing System	自動平衡校正儀
12.15HP Spindle Motor	15HP 主軸馬達
14.Parallel Dressing Attachment	手動平行修整器

2. Machine Features 機台特點

2.1 Spindle design 主軸設計



The spindle is supported by 4 Class p4 super precision angular contact ball bearings that are permanently lubricated. The new spindle design includes circulation grooves on spindle with options for air and oil cooling.

主軸採用四個 P4 級超精密斜角滾珠軸承支撐，並填加高轉速之黃油，無需另外潤滑工作。主軸套外徑設計有冷卻循環溝，能選配氣冷或油冷裝置，配合穩固剛強的主軸座結構能承受重負荷研磨，馬達與主軸以撓性接頭連結，並使用精密平衡儀校正，可確保主軸精度，可加裝主軸吹氣功能。

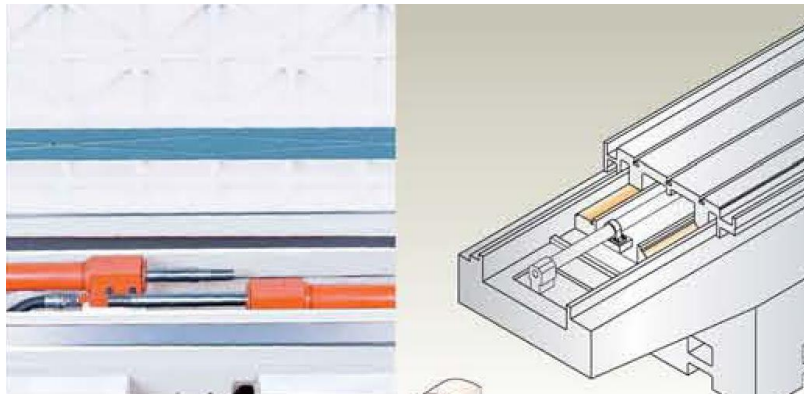
2.2 Machine structure 機械結構

Longitudinal slide way

One “V” and one flat table guideways are laminated with Turcite-B and precisely hand scraped to ensure high accuracies. Continuous lubrication is provided to assure smooth stick-slip free movement of the table and accurate positioning.

左右軌道

工作台滑軌採用一 V 一平，黏貼 Turcite-B 耐磨膠，配合自動強制潤滑系統，精度穩定。底座軌道超長設計，以確保左右運動的平穩，提高研磨精度。

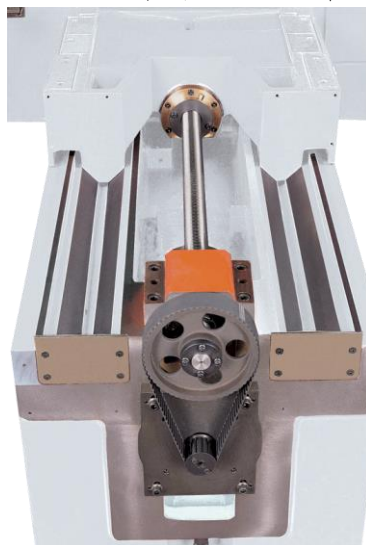


Crossfeed transmission mechanism

Enlarged precision leadscrew with backlash adjustment device is driven by an AC motor. The encoder type stroke setting key allows crossfeed reversal points to be set from operators control panel, thereby working efficiency is increased

前後傳動機構

前後採用加大外徑之精密級螺桿，並附背隙調整裝置，配合 AC 馬達自動進給及 ENCODER 按鈕式行程設定，操作方便效率高。

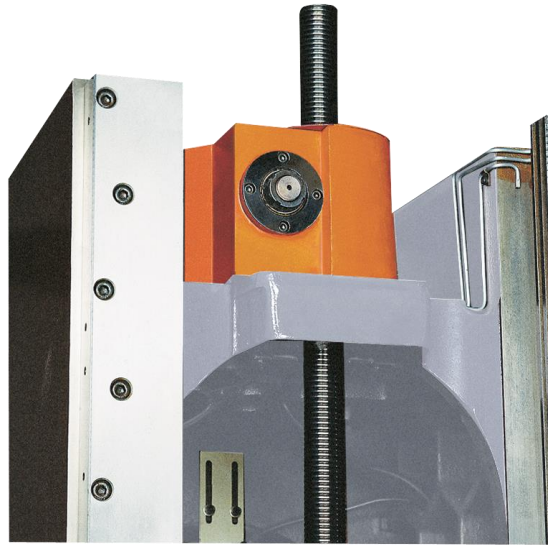


Elevating transmission mechanism

The wheelhead travelling on a preloaded hardened and ground guideway system is driven by a hardened and ground leadscrew and an AC servo motor providing high torque, speed and accurate positioning with minimum increment of 0.0001"(0.002mm). A manual pulse generator (MPG) is standard for easy operation

升降傳動機構

升降傳動由熱處理之研磨螺桿配合 AC 伺服馬達驅動，扭力大，速度快，更有大接觸面之軌道設計，定位精度高。配備有電子手輪微調 MPG，不僅進給精度可達 0.0001"(0.002mm)，操作也更為方便。



2.3 Coolant control scheme 切削液管理方案

Coolant equipment is placed at the left hand side of the machine base. Please have the water tray match the travel of the water returning joint. Plug in and lock the power source cable to the reserved plug, which is located on the side of the electric box.

Pipe of the rear part of the coolant equipment must be connected with the pipe beside the column.

We recommend that you use a visible, soluble and high pressure durable, no-foam coolant with the mixing ratio of 1: 60 to 1: 80. Please let the mixed coolant flow into the coolant tank through the water tray which is on top of the coolant tank. Capacity of the tank is 80~120 liters (20~30 gallon)

裝切削液的水機箱位於機器底座之左邊，回水槽之接頭須位於水機之開口處，使切削液流入水機而加以過濾。在機身旁的切削液管路須連接水機之出水口。只要把水機馬達電源線插在控制箱邊的插座，水機就接通電源。我們建議使用透明，具有耐高壓性，不易產生泡沫的可溶性切削液。切削液與水的混合比例是 1:60 1:80，紙帶式水機箱的容量是約 80~120 公升(20~30 加侖)

Note 注意:

1. If the coolant equipment goes with the machine, just plug in the plug of coolant equipment onto the electric box. Once the coolant equipment is started, the coolant pump motor will rotate in the correct direction. If the coolant equipment is purchased separately, then you have to make sure the rotating direction of the motor is as shown in the pump. Do not use the equipment if the rotating direction is not correct.

假如您一起購買水機箱，水機的轉向則在本廠內試驗好了。若是您自己另外購買，在使用時，水機轉向須和外殼標示方向相同。

2. If the coolant has not been filled in, please do not start the coolant pump. Otherwise, the pump will be damaged.

假如沒有填加切削液，請不要啟動水機馬達。

3. When grinding wheel stop, please do not let the coolant flow into it, otherwise, grinding wheel will absorb coolant unevenly to cause wheel unbalanced.

假如砂輪還沒轉動或已停止，就不要供給切削液，否則因砂輪吸水不均造成砂輪之不平衡。

2.4. ADIII controller features 機台電控特色

2.4.1 Description of control features 控制功能描述

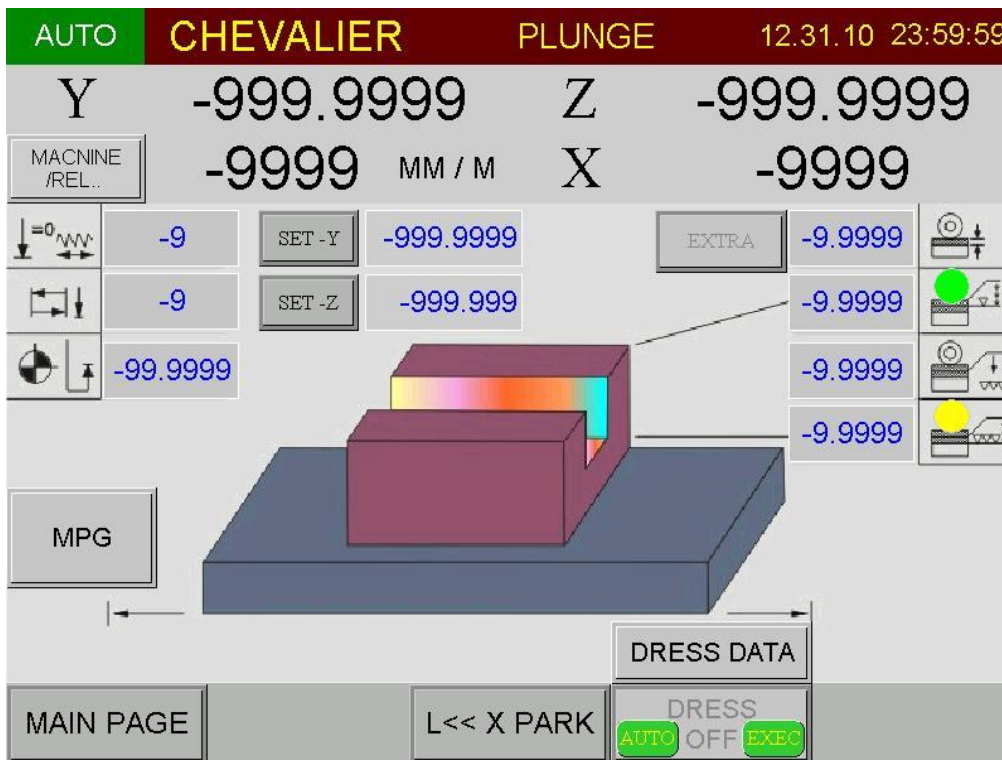


1. 高可靠度 NC 控制定位平台。
2. 8" TFT 高彩 65536 色，觸控式人機控制介面。
3. 超強功能的圖形對話，平面溝槽...等標準研磨程式。
4. 簡潔清楚的操作面板。
5. 機台異常警報文字顯示及歷史警報紀錄。
6. Y 軸使用高精度定位伺服馬達，Y 軸原點定位功能。
7. 支援 Windows 內建所有字型的多國語言文字。
8. 機械座標顯示、相對座標顯示。
9. 數位 IO 檢測模式，讓維修系統功能更有效率。
10. 操作容易，不用編寫 CNC 程式即可實現研磨+砂輪修整+自動修整補償。



1. High reliability NC controlled positioning platform.
2. 8 " TFT with 65536 pixel color touch panel control interface.
3. Powerful graphic conversational function with surface/plunge standard built-in grinding program.
4. Brief and clear operation panel.
5. Machine abnormal alarm message display and alarm history record.
6. Y axis home positioning function.
7. Multi-language support available.
8. Mechanical coordinates and relative coordinates display.
9. Digital I/O check mode makes service system more efficient.
10. Operation friendly, grinding, wheel dressing and automatic compensation can be accomplished easily without making CNC program.

2.4.2 ADIII Operation screen 圖形對話畫面



溝槽模式：簡易設定，達到精密溝槽研磨

Plunge mode: Easy to set, achieve precision grinding grooves



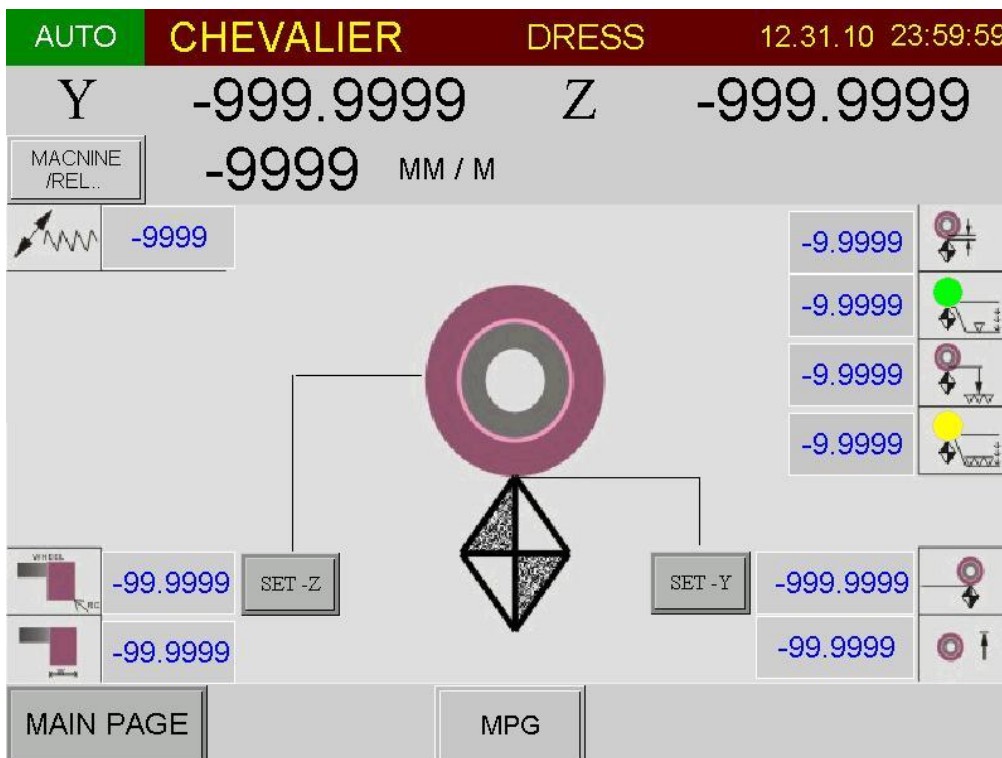
平面模式：簡易設定，達到精密平面研磨

Surface mode: easy setup, to precision surface grinding



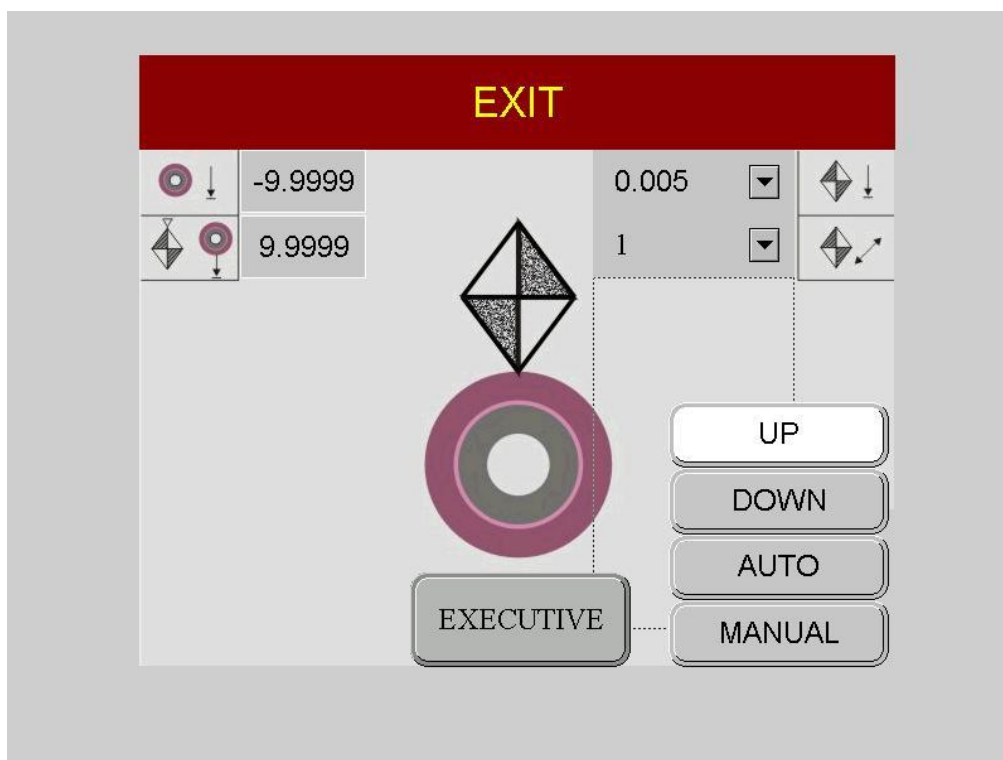
Z 字型研磨：Z 軸使用精密伺服調速，確保研磨精度可靠性

Cross grinding: Z axis using precision servo control, to ensure the reliability of precision grinding



砂輪修整：簡易設定，快速完成修砂

Dresser: Easy Setup, quickly to dress wheel



自動修整補償(選購)：自動研磨中搭配修砂自動補償，整體加工效率提升

Automatic dressing compensation (optional): Auto dressing with automatic compensation during grinding, the overall processing efficiency

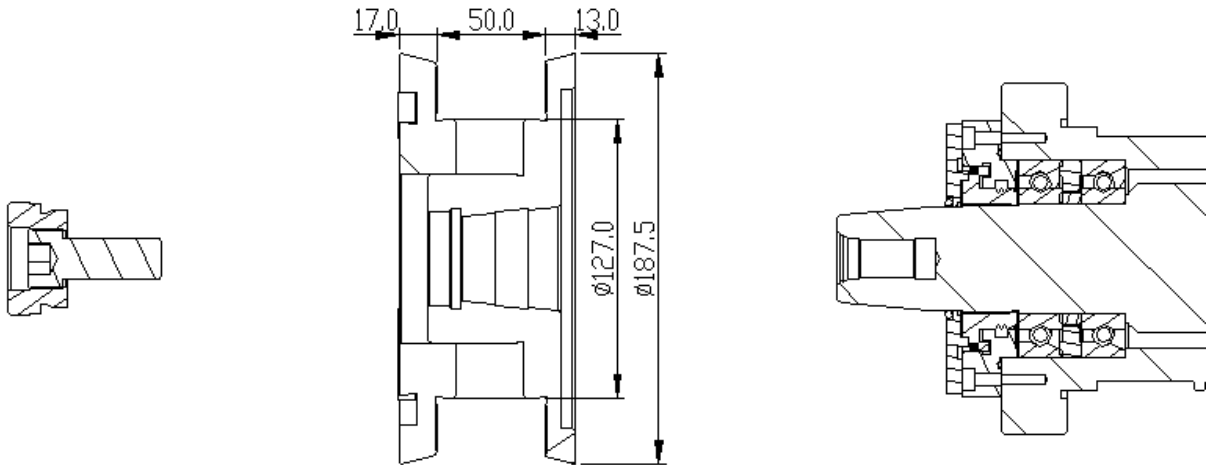
2.4.3 Feature comparison sheet 功能比較分析表

說明 項次		功 能	ADS	ADIII
硬 體	1	控制系統	FATEK PLC	FATEK PLC
	2	操作面板	觸控式8.0"面板	觸控式8.0"面板
	3	MPG	置於面版上	置於面版上
	4	按鍵配置	除E.Stop、Cycle Start、Stop、磁力開關、速率控制…等按鍵，其餘為觸控式	除E.Stop、Cycle Start、Stop、磁力開關、速率控制，其餘為觸控式
	5	自動補正修整器	操作介面置於人機	操作介面置於人機
	6	上下傳動(Y)	台達伺服馬達(1KW)	台達伺服馬達(1KW)
	7	前後傳動(Z)	台達伺服馬達(1KW)	台達伺服馬達(1KW)
	8	工作台左右調程	機構調整行程	機構調整行程
	9	前後調程	觸控面板軟體設定	觸控面板軟體設定
	10	操作箱配置	懸臂式操作箱	懸臂式操作箱
軟 體	1	砂輪修整	圖形對話(自動補正)	圖形對話(自動補正)
	2	工作台修整(CBN)	圖形對話	無
	3	平面研磨(弓字)	圖形對話	圖形對話
	4	溝槽研磨	圖形對話	圖形對話
	5	平面研磨(Z字)	圖形對話	圖形對話
	6	不等深不等距研磨	圖形對話	無
	7	Y/ Z軸原點復歸	Y/ Z軸標準	Y/ Z軸標準
	8	座標顯示	機械/相對座標顯示	機械/相對座標顯示
	9	警報功能	號碼、文字顯示	號碼、文字顯示
	10	多國語言顯示	支援	支援
其 它	1	維修服務	問題偵測容易、維修服務速度快	問題偵測容易、維修服務速度快
	2	硬體熟悉性	對話式觸控介面，熟悉性高，非專業人員可進行維修	對話式觸控介面，熟悉性高，非專業人員可進行維修

Description NO		FUNCTION	ADS	ADIII
HARDWAY	1	CONTROL SYSTEM	FATEK PLC	FATEK PLC
	2	CONTROL PANEL	ONE TOUCH LED SCREEN 8.0"	ONE TOUCH LED SCREEN 8.0"
	3	MPG	ASSEMBLY PANEL	ASSEMBLY PANEL
	4	BUTTON	TOUCH SCREEN	TOUCH SCREEN
	5	AUTO DRESSER UNIT	PLACED IN HMI OPERATOR INTERFACE	PLACED IN HMI OPERATOR INTERFACE
	6	ELEVATING GUIDEWAY SYSTEM(Y)	SERVO MOTOR(1KW)	SERVO MOTOR (1KW)
	7	CROSSFEED GUIDEWAYS(Z)	SERVO MOTOR (1KW)	SERVO MOTOR (1KW)
	8	TABLE GUIDEWAYS	STRUCTURAL ADJUSTMENT STROKE	STRUCTURAL ADJUSTMENT STROKE
	9	CROSSFEED DEVICE	TOUCH PANEL SOFTWARE SETTINGS	TOUCH PANEL SOFTWARE SETTINGS
	10	OPERATION BOX	SUPSPENSION ARM	SUPSPENSION ARM
SOFTWARE	1	WHEEL DRESSER	GRAPHIC CONVERSATIONAL	GRAPHIC CONVERSATIONAL
	2	CBN MODE	GRAPHIC CONVERSATIONAL	GRAPHIC CONVERSATIONAL
	3	SURFACE GRINDING	GRAPHIC CONVERSATIONAL	GRAPHIC CONVERSATIONAL
	4	PLUNGE GRINDING	GRAPHIC CONVERSATIONAL	GRAPHIC CONVERSATIONAL
	5	CROSS GRINDER	GRAPHIC CONVERSATIONAL	NONE
	6	MULTI-GROOVE	GRAPHIC CONVERSATIONAL	NONE
	7	Y/ Z AXIS RE-TURN HOME	Y/Z STANDARD	Y/Z STANDARD
	8	COORDINATES DISPLAY	MECHANICAL / RELATIVE COORDINATE DISPLAY	MECHANICAL / RELATIVE COORDINATE DISPLAY
	9	WARNING FUNCTION	ALARM CODE&WORD DISPLAY	ALARM CODE&WORD DISPLAY
	10	LANGUAGE SELECT	STANDARD	STANDARD
OTHER	1	SERVICE	PROBLEM DETECTION EASIER, FASTER SERVICE	PROBLEM DETECTION EASIER, FASTER SERVICE
	2	HARDWAY KNOW HOW	CONVERSATIONAL TOUCH SCREEN EASY TROUBLE SHOOTING	CONVERSATIONAL TOUCH SCREEN EASY TROUBLE SHOOTING

3. Major Technical Datum 主要技術數據

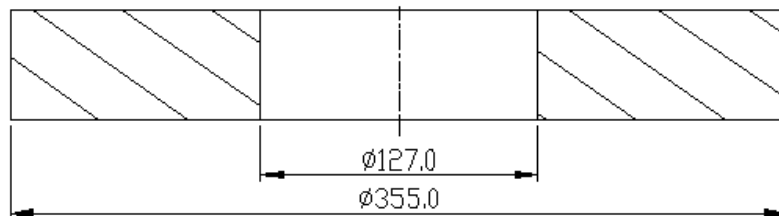
3.1 Grinding wheel 研磨砂輪



Lock nut
鎖緊螺帽

Grinding Wheel Flange
砂輪轂

Main Spindle
主軸



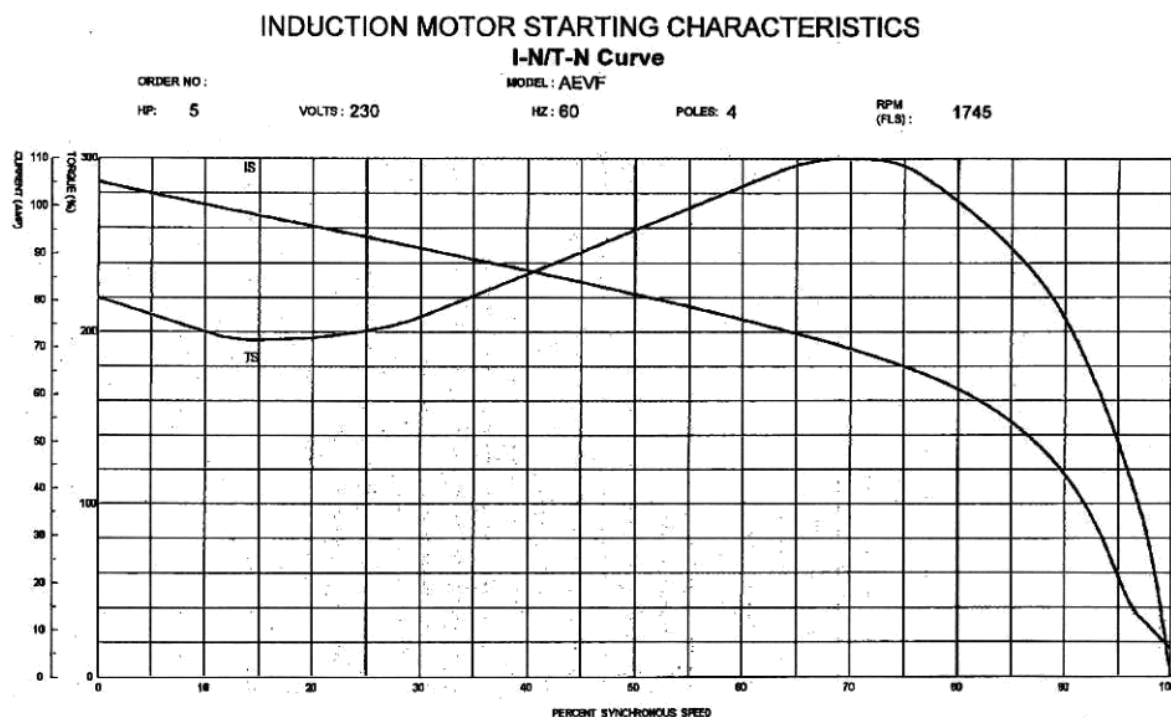
Grinding Wheel
砂輪

3.2 Spindle power and torque chart 主軸功率和扭矩圖

3.2.1 Spindle motor 主軸馬達

Spindle types 主軸類型	Drive mode 驅動模式	Motor 馬達	Speed (rpm) 轉速(60/50HZ)	Note 備註
	Direct-driven 直接傳動	5HP	1,750/1450	Standard 標準
		7.5HP	1,750/1450	Optional 特別附件

3.2.2 Spindle motor torque output value 主軸馬達扭力輸出值

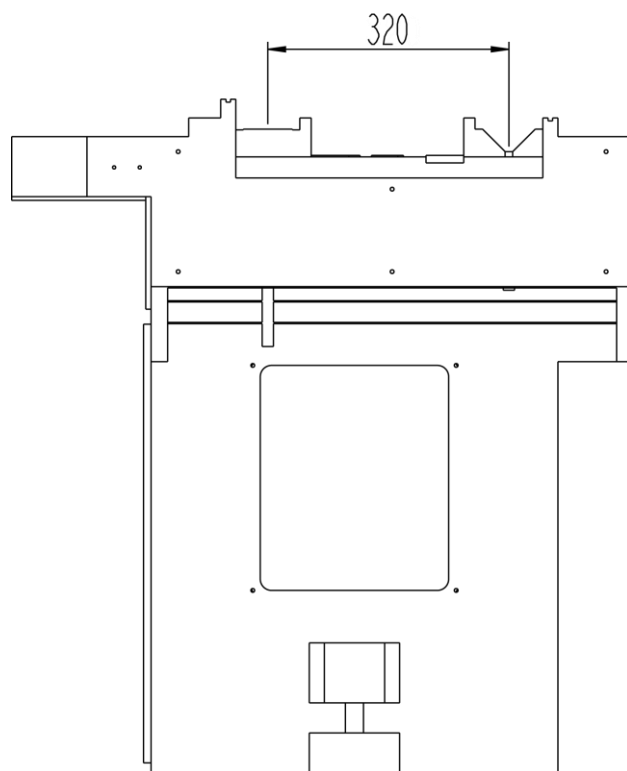


3.2.3 Axis motor driving torque 軸向馬達驅動扭力

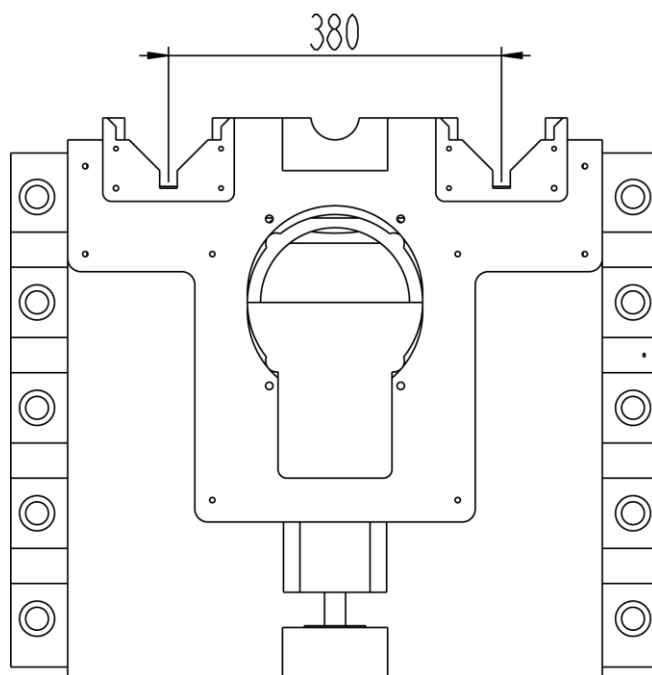
Axis	Rated torque at stall
X axis	-
Y axis	480kgf
Z axis	480kgf

3.3 Guideways configuration and dimension 軌道型式及尺寸

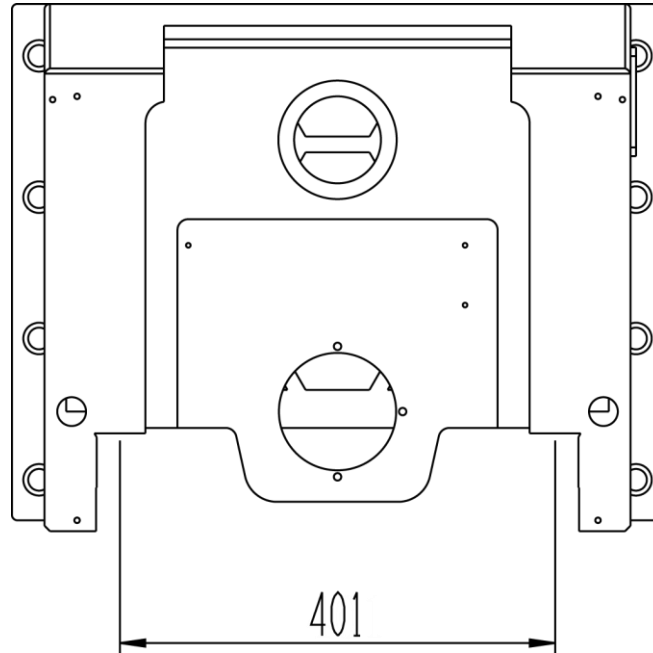
X Axis 軸



Z Axis 軸

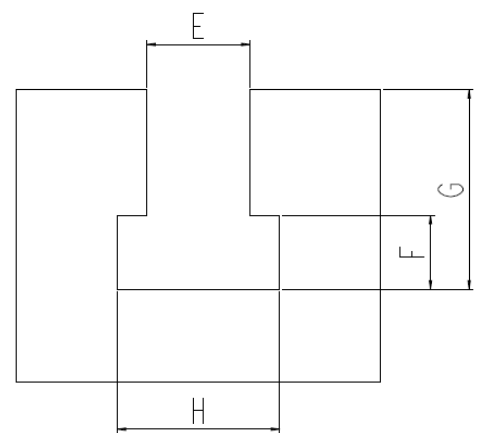
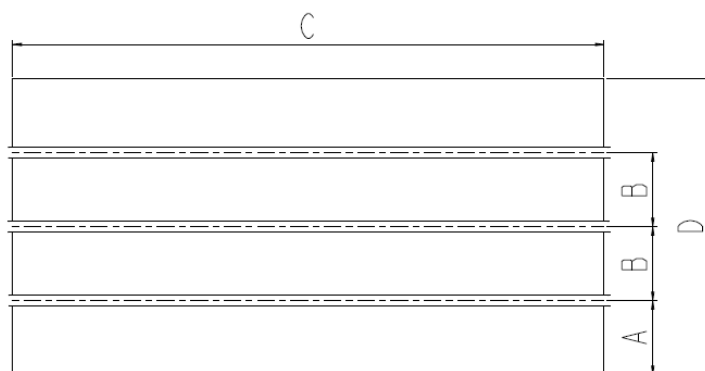


Y Axis 軸

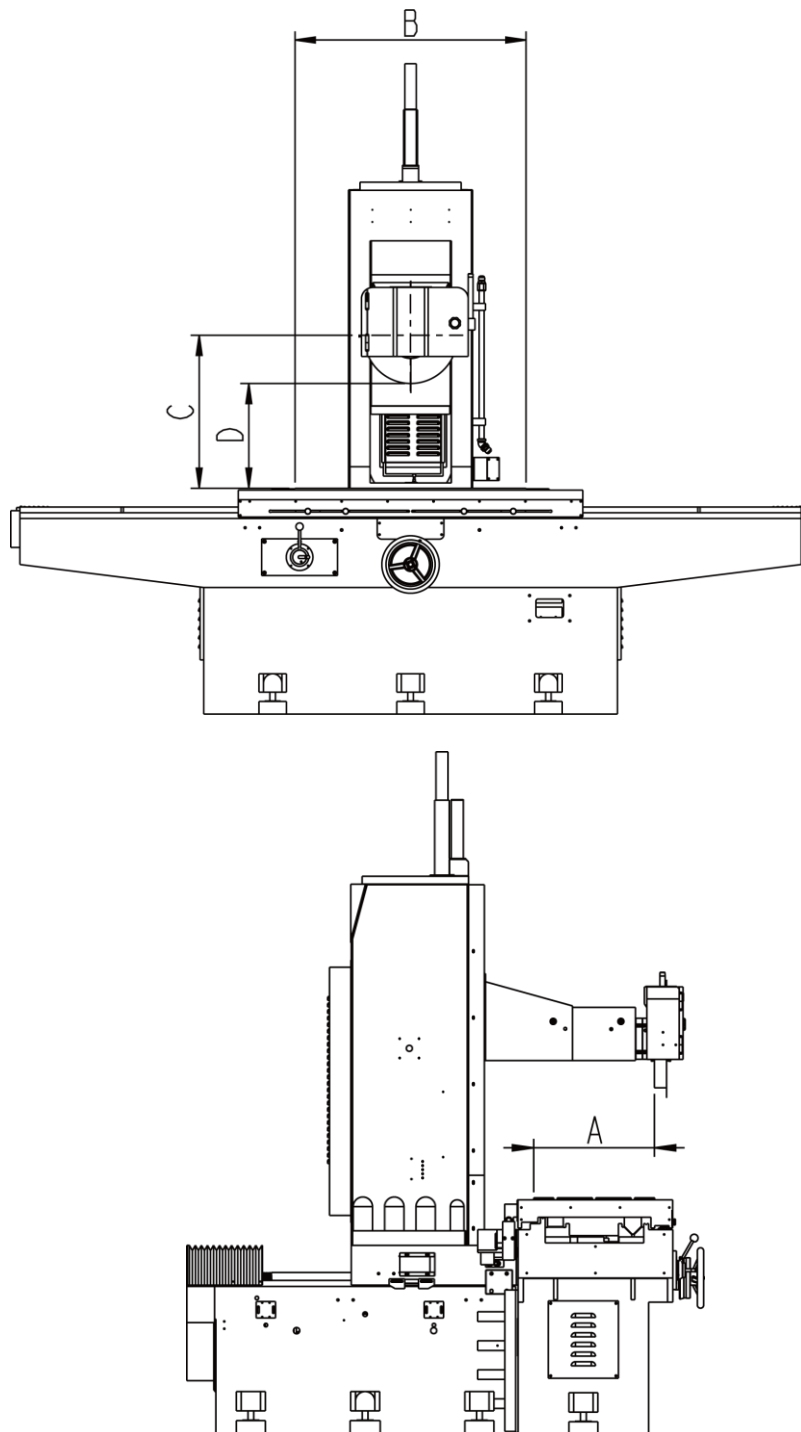


3.4 Table and T-slot dimensions 工作台 T 型槽尺寸

MODEL	A	B	C	D	E	F	G	H
	100	160	1000	500	14	9	20	23

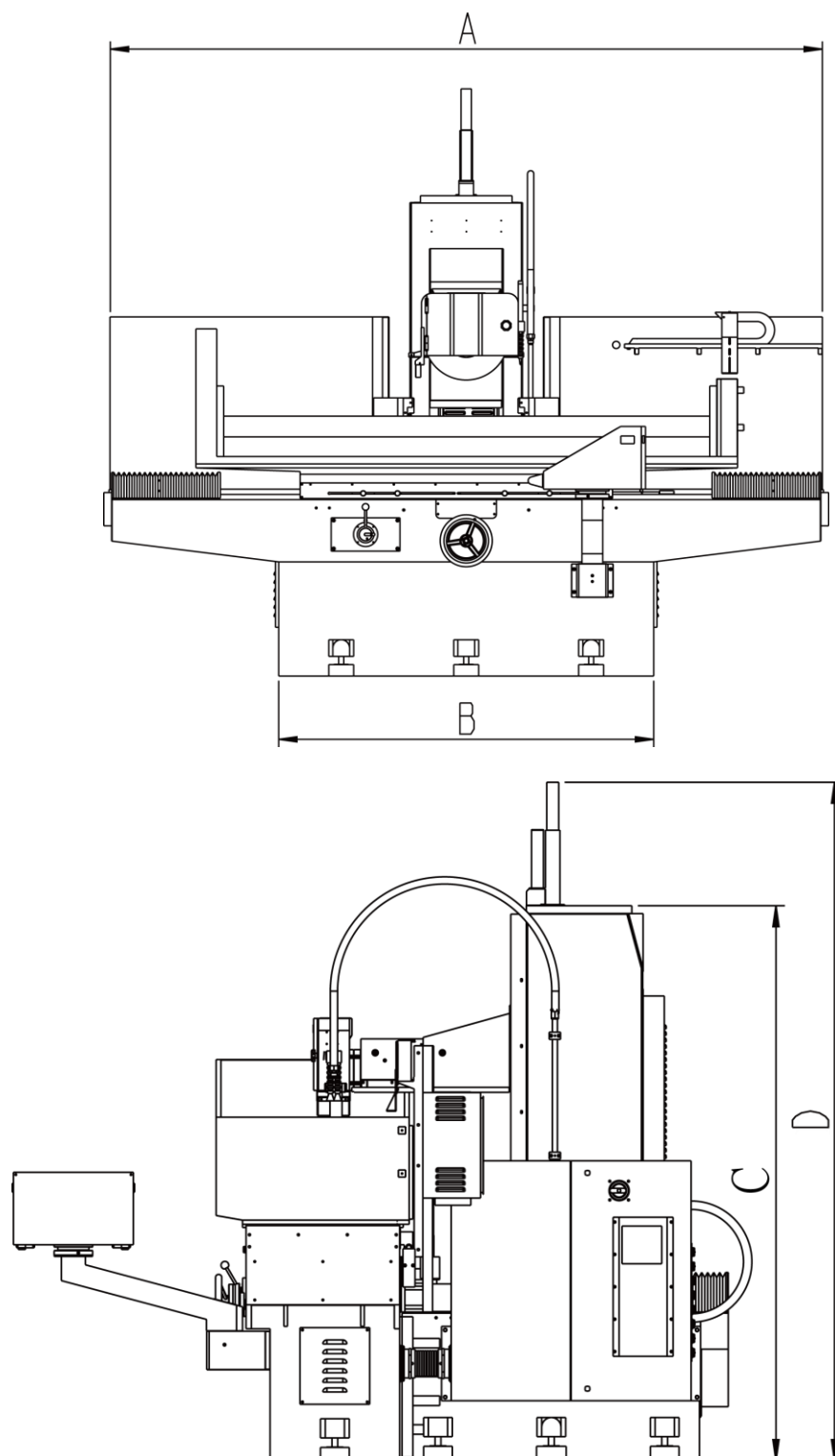


3.5 Working range 工作範圍



機 種	A	B	C	D
FSG-2040ADIII	500mm	1000mm	730mm	527.5mm

3.6 Machine floor space 佔地面積圖



機 種	A	B	C	D
FSG-2040ADII	3400mm	1800mm	2310mm	2719mm

3.7 Vital elements list 重要部品清冊

3.7.1 Spindle types and bearing specifications 主軸類型及規格

Spindle types 主軸類型		
Drive mode 傳動方式		Direct-driven 直結
Speed(rpm) 轉速		主軸馬達轉速可達 1800rpm 主軸極限轉速 2000rpm 出廠設定 1800rpm Spindle motor speed up to 1800rpm spindle speed limit 2000rpm The factory setting 1800rpm
Spindle taper 主軸錐度		5°
Spindle nose side 主軸鼻端	Bearing 軸承規格	7210CP4
	Maker 廠牌	NTN.NSK.
Rear side of spindle 主軸後端軸承	Bearing 軸承規格	7210CP4
	Maker 廠牌	NTN.NSK

3.7.2 Bearing specifications 軸向軸承規格

Feed axis 軸向	Motor side 馬達端	Maker 廠牌	Free side 自由端	Brand 廠牌
X axis	-	-	-	-
Z axis	7203 CP4	NTN TPI	6003ZZ	TPI
Y axis	7209B	NSK	7209B	NSK

3.7.3 Description of major components 主要部件說明

Item	Description 品名	Manufacturer 製造商	Erg ion 區域
1	Controller 微電腦控制器	CHEVALIER 福裕自行研發	Taiwan
2	Y Axis Motor Y 軸向伺服馬達	Taiwan 台灣製	Taiwan
3	Z Axis Motor Z 軸向伺服馬達	Taiwan 台灣製	Taiwan
4	Spindle Bearing 主軸軸承	FAG/NSK/NTN 日本製	Japan
5	Turice-B 耐磨膠	CAPTAIN 克普典	America
6	Flexible Coupling 撓性連結器	TATUNG 日本大同	Japan
7	Spindle 主軸心軸	Japan Cr-Mo Alloy 日本鋼材鉻鉬合金鋼	Japan
8	Hydraulic Oil Cooler 油溫冷卻器	HABOR 台灣哈伯	Taiwan
9	Spindle Motor 主軸馬達	Taiwan 台灣製	Taiwan
10	Contacteur 接觸器	TE.CO 法國製	France
11	Thermal Relay 過載保護器	TE.CO 法國製	France
12	Switch Contacteur 門式開關接觸器	KRAUS & NAIMER 奧地利	Austria
13	Relay 繼電器	OMRON 日本歐姆龍	Japan
14	Limit Switch 極限開關	OMRON 日本歐姆龍	Japan
15	Proximity Switch 近接開關	TE.CO 法國製	France

3.8 Easily damaged parts list 易損壞零件清冊

Item	Part No. 零件編號	Description 品名	Spec. 規格	Q'ty 數量	Remark 備註
1	1002-00008000	FRONT DUST PROTECTION PLATE 前遮塵板		2	
2	1003-00032A01	DUST PROTECTION PLATE 防塵板		2	
3	1004-00022001	DUST PROTECTION PLATE 防塵板		1	
4	0904-00035002	SPRING 彈簧		1	
5	5008-10001000	Timing belt 齒型皮帶	40*322L	1	
6	4926-32005300	TAPERED ROLLER BEARING 圓錐滾子軸承	32005	2	
7	4926-32011000	TAPERED ROLLER BEARING 圓錐滾子軸承	32011	2	
8	4903-69074000	DEEP GROOVE BALL BEARING 深槽滾珠軸承	6907ZZ	1	
9	4901-60024000	DEEP GROOVE BALL BEARING 深槽滾珠軸承	6002ZZ	2	
10	4902-62083000	DEEP GROOVE BALL BEARING 深槽滾珠軸承	6208Z	1	
11	4904-72111540	ANGULAR CONTACT BALL BEARING 斜角滾珠軸承	7211CP4	5	
12	4905-73074000	ANGULAR CONTACT BALL BEARING 斜角滾珠軸承	7307B	2	
13	4909-00490860	NEEDLE ROLLER BEARING 滾針軸承	ILO NA4908	1	
14	6101-10240010	O RING O 圈	P24	1	
15	6101-10300010	O RING O 圈	P30	2	
16	6101-10110010	O RING O 圈	P11	1	
17	6101-10630010	O RING O 圈	P63	1	

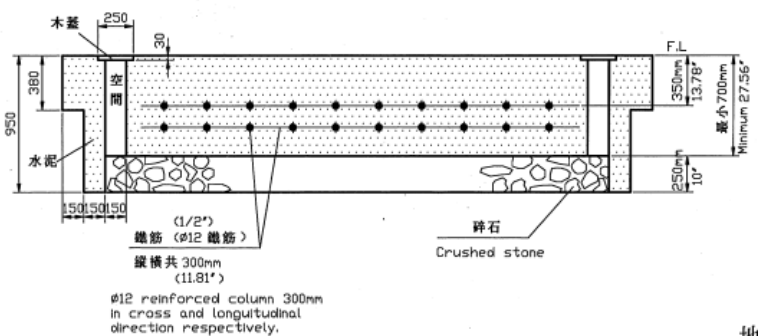
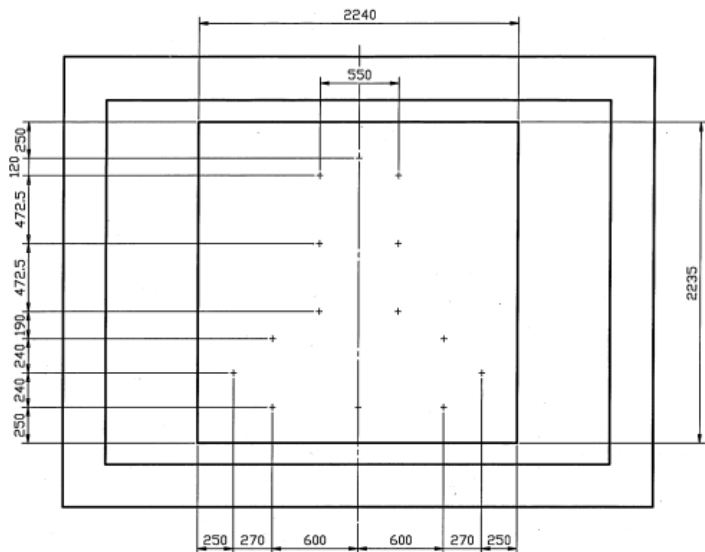
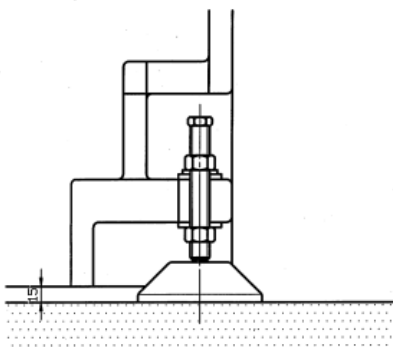
Item	Part No. 零件編號	Description 品名	Spec. 規格	Q'ty 數量	Remark 備註
18	6101-20500010	O RING O 圈	G50	1	
19	6101-10350010	O RING O 圈	P35	1	
20	6101-10460010	O RING O 圈	P46	5	
21	6101-20400010	O RING O 圈	G40	2	
22	6101-10224010	O RING O 圈	P22.4	2	
23	6001-10250000	OIL SEALS 油封	UHS-25	4	
24	6000-03000010	OIL SEALS 油封	φ 30	4	

4. Foundation and Layout 地基

Due to the extreme strong anti – distortion capability of the machine base, a special foundation is not required; a foundation with 30cm thickness concrete is good enough. Bond the concrete with base is not extremely required, but it is suggested. It will improve the machine lateral stability. When covering the concrete , space for leveling the machine must be reserved , or else leveling can not be performed. A wooden foundation can't be adopted, because its instability will cause machine to move slowly. Install the machine on first floor or second floor but the stress of foundation and the ceiling must be carefully considered to resist the machine load.

因底座有特殊抗扭力之能力，故不需特別的地基，只須於地面上鋪上 30CM 厚度之水泥即可，把地基和底座以水泥連結並非絕對需要。須留出調整水平螺絲元件之空間，否則無法調整水平，絕對不可使用木板地基，因其不穩性將使機器慢慢移動。

將機器安裝於一樓或二樓廠房均可以，但天花板和地基需仔細考慮應力，是否足夠抵消機械負荷。



地基圖

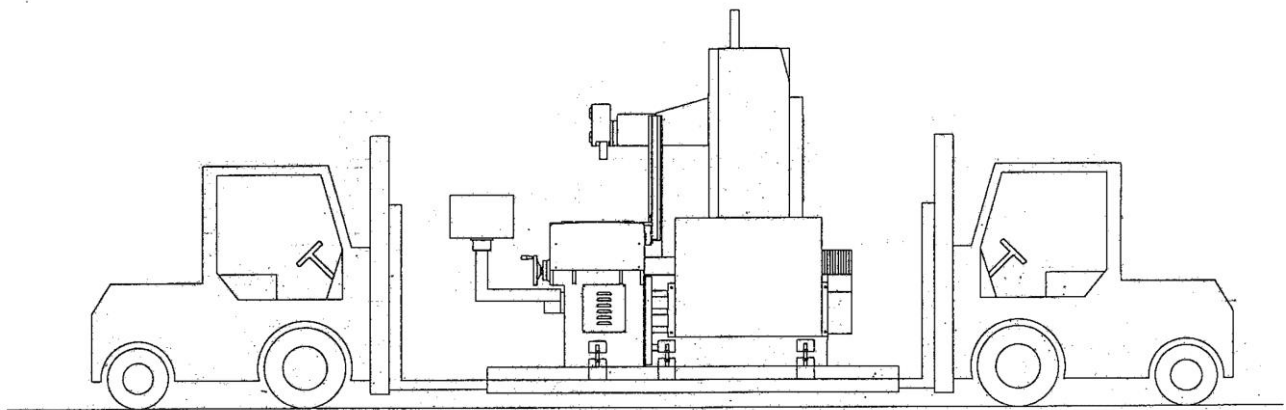
5. Installation Procedure 機器安裝程序

Forklift required: Use on two forklifts of 5 tons capacity. As shown in figure

1. If machine is fastened on a skid. Use fork directly. If machine is not fastened on a skid, use foot pads to lift machine higher than fork's height before using fork.

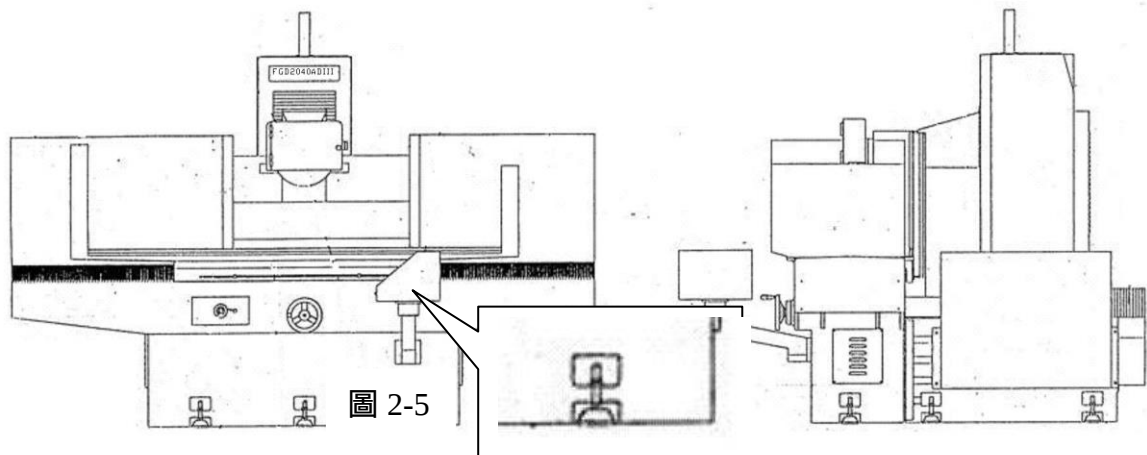
2. Be careful and slow while laying down the machine to avoid effect in mechanical precision.

使用堆高機搬運時，儘可能將機台連同棧板一起搬運，非必要的情況，我們不建議單獨搬運機台，以免影響機台精度。搬運時，需使用 5 噸堆高機 2 台，機器如有裝箱底板時，可直接使用堆高機搬運，如無裝箱底板時，需注意機台離地面的高度是否足夠堆高機搬運插爪伸入，不當的搬運方式容易造成機台損壞或影響精度。



Decide location and layout space before laying down the machine. (Refer Fig 2-5), Lay down the machine stability and slowly. Lifting the machine abnormally will damage the accuracy of the machine.

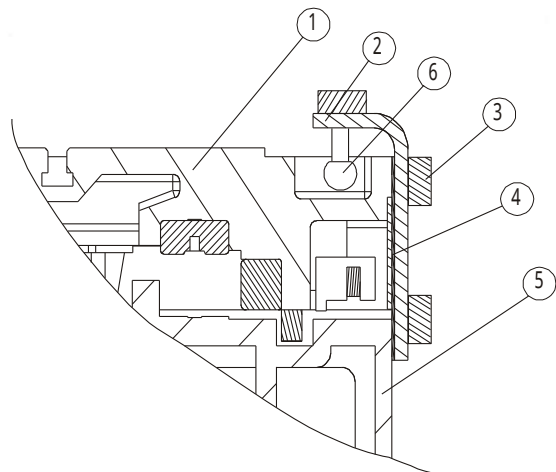
欲放下機器前，須將調整螺絲固定於底座上(請參考圖 2-5)，調整螺絲使機器儘量低接近地面，腳墊須正確放於定位，這可增加機器之穩定度。慢慢地謹慎地將機器放下，吊運或搬運不當將影響磨床精度。



Lose fixed screw (3) so that table and front base separate.

鬆掉固定螺絲③，則工作台及鞍座分離

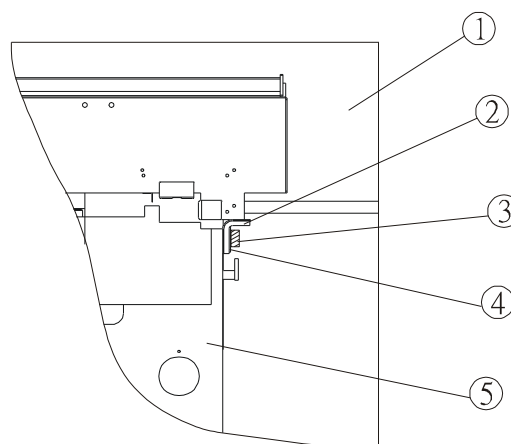
1	Table 工作台
2	Fixed plate 固定板
3	Fixed screw 固定螺絲
4	Rubber washer 橡膠背墊
5	Saddle 鞍座
6	PP bar PP 棒



Lose fixed screw (3) so that table and back base separate.

鬆掉固定螺絲③,則鞍座及底座分離

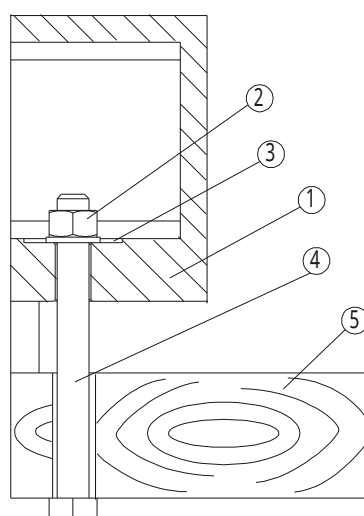
1	Saddle 鞍座
2	Fixed plate 固定板
3	Fixed screw 固定螺絲
4	Rubber washer 橡膠背墊
5	Base 底座



Loosen screw nut (2) before lay down. Pick down bolt (4) so that base (1) and bottom plate (5) separate.

安機前請鬆掉螺絲帽②,取下螺 栓④,則底座①與底板⑤分離.

1	Base 底座
2	Hexagonal nut 六角螺帽
3	Washer 墊圈
4	Bolt 螺栓
5	Bottom plate 底板



Connecting Power Supply

連接電源

1. Make sure the voltage of incoming power supply is the right type that the machine requires or as marked on the unit.
確認電源供應端之電壓是否符合機器需求，或如所標示之單位。
2. Connect the power wires per electrical code in your area.
電氣配線請依當地電氣法規要求作業。
3. Power wires, grounding and over-voltage protector should comply with the local electricity regulations.
電源線、接地線與過電壓保護器應符合當地法規之要求。
4. Power system
電力系統
 - a. 220V
 - b. 3 phase 50/60Hz
 - c. Over 50Amp
5. The external power cable requires wires diameter. 5.5mm and a 50A non-fuse switch (NFB breaker)
外部電源電纜線之線徑要求為 5.5mm，與 50 安培無熔絲開關 CNFB 斷路器。
6. After the wires are completely installed, check if the voltage is 220V $\pm$ 10%.
電線連結完成之後，應再確認電壓值是否在 220V $\pm$ 10%內。
7. Confirm if the motor phase is correct.
確認馬達相位是否正確。
8. Compress air source : Pressure 5 ~ 6 kgf/cm²
Capacity :200L/min.
壓縮空氣：壓力 5~6 kg f/cm²，平均壓力 5.5kgf/ cm²，容量 200 公升/分。