

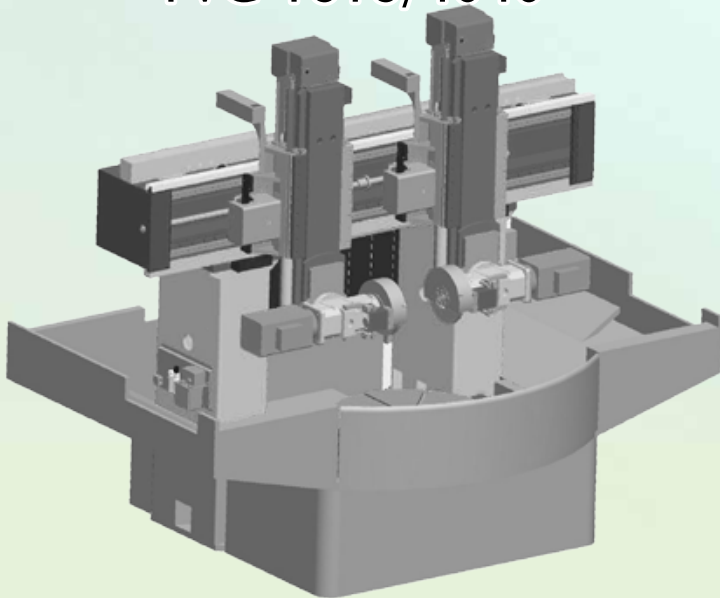
Features:/特性:

- No overhang caused by chuck and workpiece, accuracy and surface finish is better than universal grinder.
不受工件與夾具自重導致振動與偏擺問題，影響研磨精度。
- Z-axis can swivel $\pm 22^{\circ}30'$, head stock can rotate $+22^{\circ}30'$, suitable for various grinding application.
Z 軸可作角度旋轉 $\pm 22^{\circ}30'$ 提供直線進給斜度研磨，主軸頭部亦可作角度旋轉 $+22^{\circ}30'$ ，研磨工件形狀範圍更廣。
- Air Counter weight balance for elevation mechanism, providing smooth and high micro downfeed accuracy.
升降配合氣壓配重裝置，使升降移動更平順。
- Parallelism of X/Z Linear ways are within 0.002mm. providing highest positioning accuracy and low vibration for low chattering dynamic grinding. Great choice for high grinding accuracy. Roundness of workpiece is within 0.002mm.
X/Z 軸線性滑軌平行度在 0.002mm 以內，定位精度高，切削低振動，適合磨床高精度重切削之進給。真圓度保證在 0.002mm 以內。
- Build-in spindle assures grinding accuracy even at very high speed. Spindle roundout is within 0.002mm.
砂輪主軸採用內藏式主軸，主軸偏擺在 0.002mm 以內。

CNC Vertical Grinding Machine

高精度、高剛性
CNC 立式複合磨床

FVG-1616/4040



FVG-4040 雙磨頭立式磨床



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CNC Vertical Grinding Machine

- This CNC vertical grinding machine is performing the latest grinding technology thoroughly. In addition to enhancing the grinding accuracy substantially, this machine is offering less investment cost and smaller machine floor space.

複合式立式磨床

- CNC 立式複合研削磨盤，徹底表露研磨科技精湛的一面。除了大幅提升研磨精度，更節省投資成本，並節省機器佔地空間。

Swivel Vertical Grinding Head

- Head stock is able to swivel $+22^{\circ}30'$ suitable for various grinding application.

旋轉式立磨頭

- 本機最大特色可作角度旋轉 $+22^{\circ}30'$ 直線斜度研磨

Advantage Of This Vertical Grinder

- No overhang caused by chuck and workpiece, the accuracy and surface roughness are much better than horizontal grinder.
- Easier to hold workpiece with irregular shape.
- Capable of ID and surface grinding for asymmetric workpiece.
- Capable of taper grinding, and wider range of different sharper of workpieces accessibility.



Build-in high speed wheel spindle

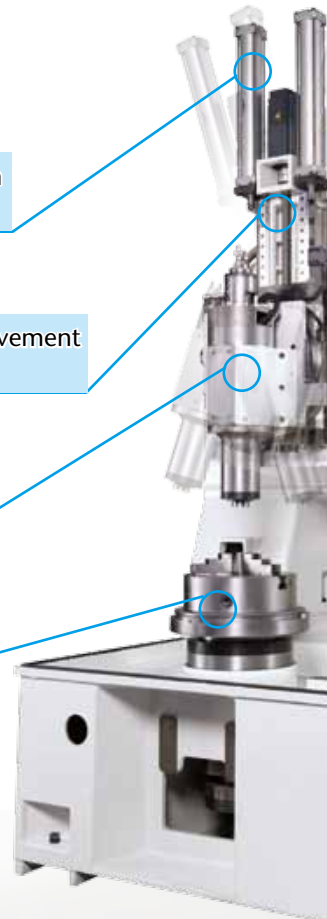
- HSK63 tool arbor provides rigidity and excellent repeatability accuracy for holding workpiece with irregular shape.
- Spindle speed range 2000~15000rpm.
- One spindle carries ID and OD grinding.

Air counter balancing system
氣壓配重裝置

Ball screw set for vertical movement
升降螺桿組

Vertical grinding head
立磨頭

Work head
工件分度盤



立式磨床優點

- 不受工件與夾具自重導致震動與偏擺問題，影響研磨精度
- 不規則外型工件之夾持容易
- 內孔與外型不對稱之工件，也可作內孔與端面研磨
- 可作直線角度研磨，研磨工件形狀範圍更廣



內藏式高速砂輪主軸

- 採用 HSK63 刀柄剛性及重複精度佳
- 主軸轉速 2500~15000rpm
- 內外徑可同主軸研磨

Ball screw set for longitudinal movement
左右螺桿組

Counter Balancing System

- Vertical movement is equipped with counter balancing system for smooth elevation.

升降機構

- 升降有配重裝置，能使升降移動平順

Column
立柱

Machine base
底座

Guideway Design

- Linear guideway design for all slide ways, providing highest positioning accuracy and lowest vibration, this machine is the best choice for high accuracy grinding.

軌道設計

- 採用線性滑軌，使得速度快、精度佳，切削振動減至最低，是最佳的軌道設計，最適合磨床的高精度重切削及進給

Standard Accessory

- CONTROL SYSTEM:
SIEMENS 802D SL
- 16" 3-jaw power scroll chuck
- Air drying machine
- spindle oil coolant devise(grinding wheel head)
- Tool box
- ATC (16 positions)
- Heat exchanger for electric cabinet
- Diamond dresser
- Build-in spindle

Optional Accessory

- Single disc. Diamond dresser (without diamond roller)
- Diamond roller
- Three points diamond
- Permanent magnetic chuck (round type)
- Rotation electromagnetic chuck (round type)
- Auto. Power Shutoff
- Auto. doors
- Cooler for coolant system
- Powerful magnetic separator coolant system
(Volume 500L, power 1.1kw)
- X/Z axis closed loop linear scale
- Oil mist collector
- Fanuc Control

※ Note: The manufacturer reserves the right to modify the design, specifications, mechanisms... etc. of the machine without prior notice. All the specifications shown above are just for reference.
注意: 本公司隨時在進行研究改進工作，因此保有隨時更改設計、規格尺寸及機械結構之權利。

標準附件

- 控制系統: SIEMENS 802D SL
- 16" 三爪強力夾頭
- 空氣乾燥機
- 主軸油溫冷卻裝置(砂輪軸)
- 工具箱鑽
- ATC 裝置(16刀位)
- 電氣箱熱交換器
- 鑽石筆修整器座
- 內藏式主軸

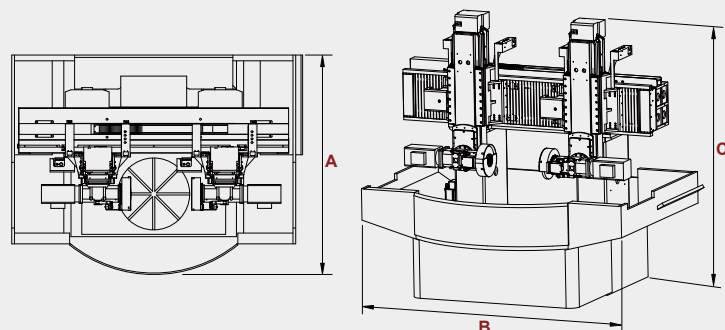
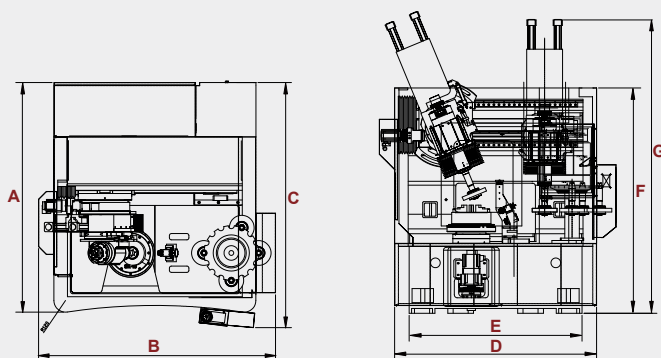
特別附件

- 單碟靚輪修整裝置
- 修整用單碟靚輪
- 工件量測系統
- 圓型永久磁盤
- 圓型旋轉電磁磁盤
- 自動斷電裝置
- 自動門裝置
- 切削液冷卻裝置
- 強力型電磁過濾水機(容量:500L 馬力:1.1kw)
- X/Z 軸光學尺回饋裝置
- 油霧回收機
- Fanuc 控制器

MACHINE SPECIFICATIONS

機械規格

項目			FVG-1616	FVG-4040
Capacity 能力	I.D. Grinding Range	內孔研磨尺寸範圍	45~380mm (1.7"~15")	80~1000mm (3"~40")
	O.D. Grinding Range	外圓研磨尺寸範圍	400mm (15.7")	1000mm (40")
	Max. Grinding High	研磨最大高度	300mm (11.8")	外徑 700mm (27.5") 內徑 350mm (13.7")
	Max. Loading Capacity	工件最大載重	200 kgs (440 lbs)	3000 kgs (6600 lbs)
Control System 控制器	Controller	控制系統	Fanuc or Siemens 802D SL	Fanuc or Siemens 802D SL
Stroke 行程	X-axis (left / right)	X 軸左右移動	900mm (35.4")	1250mm (50")
	Z-axis (up / down)	Z 軸上下移動	450mm (17.7")	900mm (35.4")
Wheel Head Spindle 主軸	Wheel Speed	砂輪迴轉速	2000~15000rpm	1000~8000rpm
	Wheel Diameter	砂輪直徑	40~255mm	400mm
	Wheel Motor Capacity	砂輪主軸馬力	5HP/3.7kw	20HP/15kw
Work Head Spindle 工件軸	Work Head Speed	工件軸回轉數	40~400rpm	50~60rpm
Holding Chuck 工件夾頭	Chuck Size	工件夾頭尺寸	405mm (16")	1000mm (40")
Feed 進給	X/Z axis feed rate	X/Z 軸快速進給	10m/min	5m/min
	X/Z axis least input value	X/Z 軸最小設定單位	0.001mm	0.001mm
	X/Z cutting feed rate	X/Z 切削速度	1~5000mm/min	1~5000mm/min
Motors 馬達	Work Head Motor	工件主軸馬達	4.7HP(3.5kW)	10HP(7.5kW)
	Wheel Head Motor	砂輪主軸馬達	5HP(3.7kW)	軸向馬達 X1/X2 軸 2.5HP 軸向馬達 Z1/Z2 軸 1HP
Machine Dimensions 機台尺寸	LxWxH	長x寬x高	3606x2400x3133mm	4800x4000x4000mm
	Machine Weight	重量	6500kgs (14300 lbs)	20000kgs (44000 lbs)



項目	FVG-1616
A	2364mm(93")
B	2240mm(96")
C	2524mm(99")
D	2080mm(81.8")
E	1780mm(70")
F	2320mm(91.3")
E	3020mm(118.8")

項目	FVG-4040
A	3050mm(120")
B	3752mm(147.7")
C	3880mm(152.7")

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