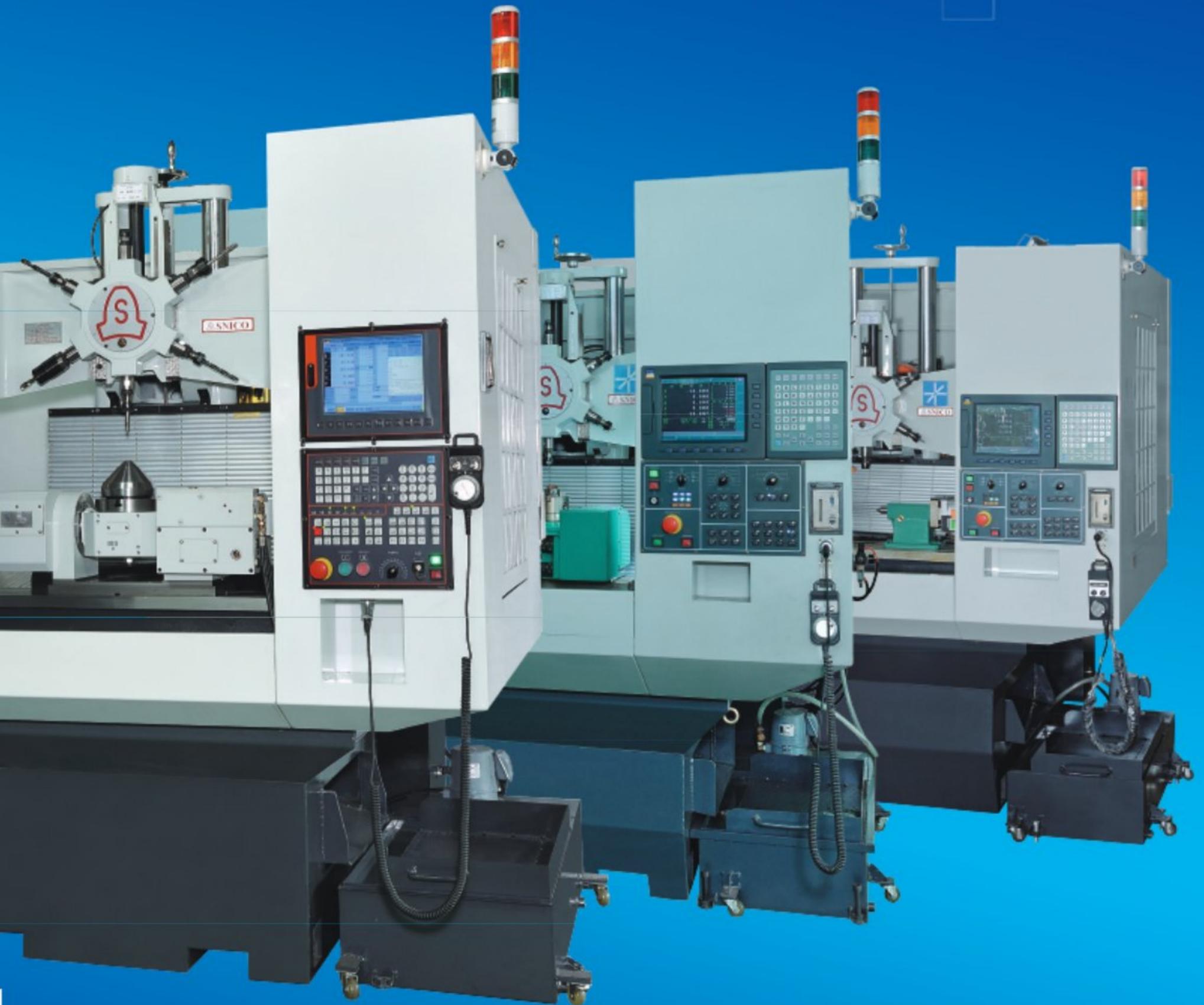




SNICO

動柱式數控鑽床

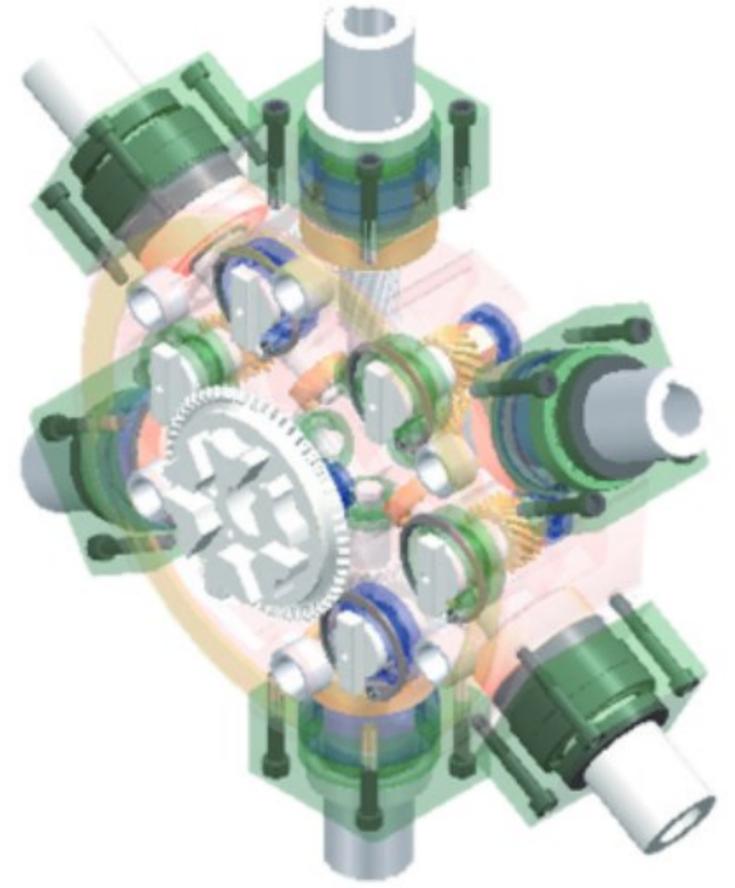
CNC COLUMN TRAVERSE TURRET DRILLING MACHINE





企業簡介

COMPANY PROFILE



興農工業股份有限公司前身－「興農號」創立於1950年代，在早期1956~1970年代的台灣農業發展中，致力於農業機械之生產，在當時之嘉南平原的農業機械中佔舉足輕重的地位。1980年代台灣工業起飛時，轉入工業機械之生產，專注於鑽床之研究發展。三十多年來，由傳統的手動機械進步到電腦控制的CNC鑽床，在品質上不斷精進，在技術上更臻圓熟。

營業項目為：

- 1) CNC工作母機及電腦輔助設計製造。
- 2) 機械器具,齒輪零件之製造，加工。
- 3) 自動化週邊設備，夾治具之設計。
- 4) 空間桁架連結球之設計製造。
- 5) 相關進出口業務。



主要產品為：電腦數值控制六角鑽床、轉塔式六角鑽床、立式強力鑽床、立式搪磨床、立式鑽搪床、鑽床專用精密虎鉗、各式多軸鑽頭及配合加工件之精密夾具、治具設計等。

本公司的各式鑽床，針對不同需要提供：高精密度之鑽孔、攻牙、搪孔、鉸孔、滾光等功能，加工快速、精準。以上產品皆是透過正確的製程及在嚴格的品管下完成。主要的外銷市場為日本『OEM』、印度、東南亞、美國『ODM』及加拿大歐洲俄羅斯等地區。

SHANG NONG INDUSTRY CO., LTD. (SNICO) established since from 1962, In the early 1960-1970 SNICO devoted production in the agriculture machinery especial for the rice crop & ipomoes batatas. At that time held the pivotal status in the Chianan Plain of South Taiwan. For the Taiwan industry developed in 1980, we upgrade to the machine tool field, concentrated on the research of development in the Drilling & Tapping Machine. More than 30 years, progress the CNC Turret Drilling Machine which by manual mechanical & auto mechanical structure to the CNC System. Unceasing the better quality and achieve drilling machine technology mature.

The SNICO service & products are:

1. CNC 5 Axis Turret Drilling Machine (X,Y,Z with A,C Axis), Drilling & tapping machine & Application of CAD/CAM.
2. The manufacture processing of Spur Gear, Helical Gear & precise spline shafts and machine parts.
3. Automatic loading & unloading equipment and the design of Jig & fixture for drilling & tapping process.
4. Space Frame, Node design & manufacture
5. Machine tool import & export

Our machine equipment including Sawing Machine, Lathe, CNC Lathe, Milling machine, Slotting & Broaching Machine, VMC, HMC, Gear Hobbing, Gear Shaper, Gear Shaving Machine, Drilling & Tapping Machine, CNC Turret Drilling & Tapping Machine, some precise Grinding Machine...etc. Also the CAD software: AUTOCAD INVENTOR, SOLIDWORK for 2D & 3D drawing, CAM software: MASTERCAM for the program editing 2-5 Axis of CNC Lathe, VMC, HMC, the CAPP software for the manufacturing process & ERP software do the service for buyers on time. Also we are family group for the material of steels, cast iron, aluminums, forging...etc.

Now the standard products are CNC Column Traverse 3-5 Axis Turret Drilling Machine, Turret Drilling & Tapping Machine (similar Burgmaster USA 2D, 1D Drilling Machine), Inner Coolant CNC Drilling Machine, Upright Drilling & Tapping Machine, Multi-spindle Drilling Machine, Multi-spindle Drill Head, all kind of Spur, helical gears and gear sets for Diesel Engine of Yanmar. We also made drilling machine OEM for Japan and America company.

Please feel free to website <http://www.drillmachine.com> or <http://www.snico.com.tw> see more about drilling & tapping machine specification.

If there are something we can do for you, please don't hesitate to let us know.





MACHINE CONCEPT

SNICO drill sprint PECKER 12 (STC-12A).

Designed and developed to provide the most cost effective and productive solution for centering, drilling, peck drilling, reaming and tapping operations.

Built without compromise, it is an automatic, high specification but simple to operate machine, And inexpensive.



STC-12A

Especially suited to small and medium batches of components the PECKER 12 (STC-12A) is ideal for taking inappropriate work off expensive machining centers. Accurate repeat positioning under the tool spindle renders expensive drill fixtures unnecessary.

The simplicity, flexibility and low cost of the PECKER 12 (STC-12A) makes it an ideal first introduction to the benefits of C.N.C

One set up can do 6 operations as centering, drilling, peck drilling, countersink, counter bore, reaming, tapping.

Save time of moving components, high accuracy and effective.

Index turret head automatically by Geneva Index Mechanism.

STC 系列

標準功能：

機械原點復歸設定
 自動回復原位
 目前位置顯示
 程式記憶：59組(每組300行)
 指令可和分度盤連結
 程式診斷錯誤，記憶備份失敗顯示
 內部連續控制：4組輸出，3組輸入
 控制主軸：正逆轉和停止
 自動冷卻系統：防濺板設計(特別附件)
 使用RS232C軟體做程式存、取、讀

Standard Features

Machining home setting, Automatic original return.
 Current position display, Program memory : 300 line.
 Dwell Command can be linked with rotary table.
 Diagnosis of program error and memory backup failure.
 Internal sequential control : 4 outputs, 3 inputs , control spindle rotating & stop.
 Automatic coolant system, Splash guard.
 Software RS232C for program communication & editing.



- 精巧 COMPACT
- 準確 ACCURATE
- 程式簡易 SIMPLY PROGRAMMED
- 多功能 VERSATILE
- 成本低 INEXPENSIVE

Pecker 12(STC-12A) Program Center、Drilling、Peck drilling、Tapping、Reaming

02
 M8
 N1 G91 G28 Z0. :
 N2 G90 G49 :
 N3 S1
 N4 M13 :
 N5 G4 Z1. :
 N6 M8 :
 N7 T01 :
 N8 G4 Z0.2 :
 N9 G92 Z95.72 :
 N10 G0 Z10. :
 N11 G98 G82 Z-2.5 R2. P47 F112 :
 N12 G80 :
 N13 G91 G28 Z0. :
 N14 G90 G49 :
 N15 T02 :
 N16 G4 Z0.2 :
 N17 G92 Z80.75 :
 N18 G0 Z10. :
 N19 G98 G83 Z-45. R2. Q15. F93 :
 N20 G80 :
 N21 G91 G28 Z0. :
 N22 G90 G49 :
 N23 T03 :
 N24 G4 Z0.2 :
 N25 ON13 :
 N26 G92 Z132.08 :
 N27 G0 10. :
 N28 G98 G82 Z-3. R2. P193 F36 :
 N29 OFF13 :
 N30 G80 :
 N31 G91 G28 Z0. :
 N32 G90 G49 :
 N33 T06 :
 N34 G4 Z0.2 :
 N35 ON13 :
 N36 G92 Z67.22 :
 N37 G0 Z10. :
 N38 G98 G84 Z-25. R2. F450 :
 N39 OFF13 :
 N40 G80 :
 N41 G91 G28 Z0. :
 N42 G90 G49 :
 N43 M15 :
 N44 G4 Z0.5 :
 N45 M2 :

NC unit	Avail 102
Control axis	1 (Z Axis)
Z axis motor	AC Servo 1.0 kw 4.78Nm
Least increment	0.01 mm
Feed Function	F4-Digits Direct Designation
Data display	LCD
Program input	Panel Keyboard & RS232
Position accuracy	0.01 mm
Repeatability	±0.01 mm
G code	G00, G01, G04, G28, G98 G81, G83, G84, G85, G99
M code	M02, M08, M09, M13, M14, M15 M25, M40, M50, M96, M97, M98
T code	T1, T2, T3, T4, T5, T6



轉塔鑽孔攻牙中心機

Turret Drilling & Tapping Center

特色：

- 為了零件製造過程管理，利用NC程式將刀具類型作分析：刀具直徑、轉數、切削深度、攻牙間距、切削速度，和其他參數整合。
- NC程式檔案用RS232C做檔案轉換、接收、編輯、刪除、複製和儲存。
- 轉塔鑽孔攻牙中心機的軟體版本可用在微軟作業系統。(WinXP)
- 控制器可辨識刀具數字T1-T6，刀具選擇為連續的順時鐘方向。
- 當刀塔主軸重複換刀或無法定位時，會發出警告，避免刀具與工件碰撞。
- 刀具轉換時間為1.3秒(刀具到刀具)。

For the components manufacturing process management, analysis the tool type, tool diameter, RPM, cutting depth, tapping pitch, feed rate and other parameters together generated NC program.

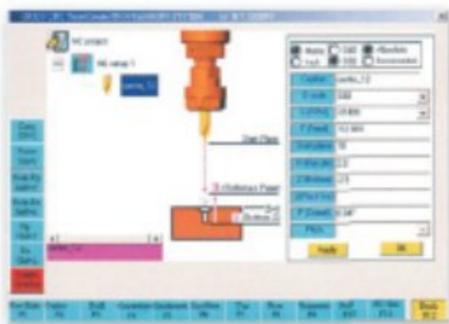
NC program file use RS232C for file transfer, receive, edit, delete, copy, save.

The versions of Turret Drilling & Tapping Center software are used on Microsoft Windows OS <Win98, win2000, WinXP, WinCE>.

The controller identify the Tool number T1-T6, Tool selection: sequential, clockwise.

If Turret spindle double indexing or no indexing should be alarm to prevent the collision of tool and components.

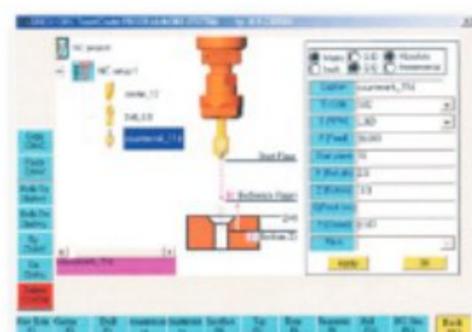
Tool change time 1.3 Sec (Tool toTool), 2.8 Sec (Chip to chip).



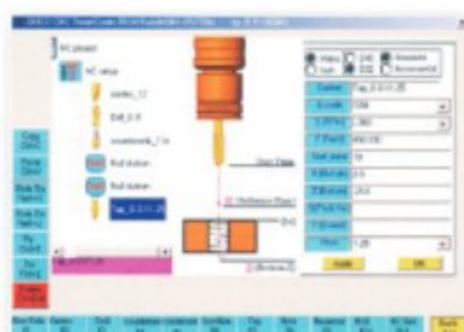
Centering edit



Pecker drill edit



Countersink edit



Tapping edit

刀塔 TURRET

六主軸快速換刀定位的刀塔與滑座精密剷花後組合，採用Z軸可上下位移的結構，用研磨級齒輪、齒條與變速箱機構的配合設計，固定在可上下的鞍座，在兩根垂直支柱間。透過AC伺服馬達的傳動，刀塔正確移動到零件加工的高度調整位移，並減少刀具位移距離和滑動時間。

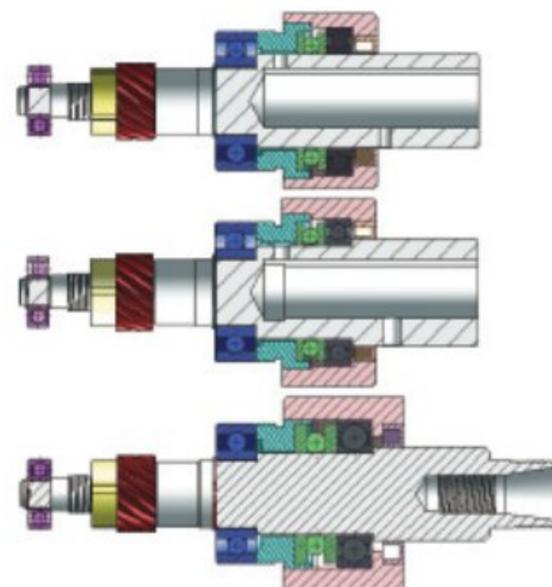
此刀塔對刀具主軸提供了12種選擇或(50 ~ 4600RPM)轉速。對切削、停留(dwell)、位移和定位做程式化設計。

刀塔每一主軸內有4個高品質滾珠及阻推軸承可支撐旋轉和偏擺，提高Z軸扭力剛性，可作重負載切削、鑽孔加工。提供自動潤滑系統使滑座可持久維持運轉順暢。

The six spindle rapid indexing turret is mounted on AC servo motor with gear rack driven slide(Z axis)in a saddle, fixed adjustable, on the two vertical support columns. This enables correct turret slide to component height relationship, minimizing tool travel and slide wear.

The turret provides 12 speed options (six within a speed pulley) or (50~4600rpm) to the tool spindles. And is programmable for feed, dwell, travel and index. The turret head every spindle within 4 bearings high quality support the rotation and run-out.

Automatic centralised lubrication is provided to slides (STC-12A) for extended maintenance free operation.



Tr20 刀塔主軸新設計
發明專利申請中
Tr20 New Turret Spindle Design

Tr20 強力型(式)
Tr20 Heavy Duty Type

Er20 直結式
Er20 Series type



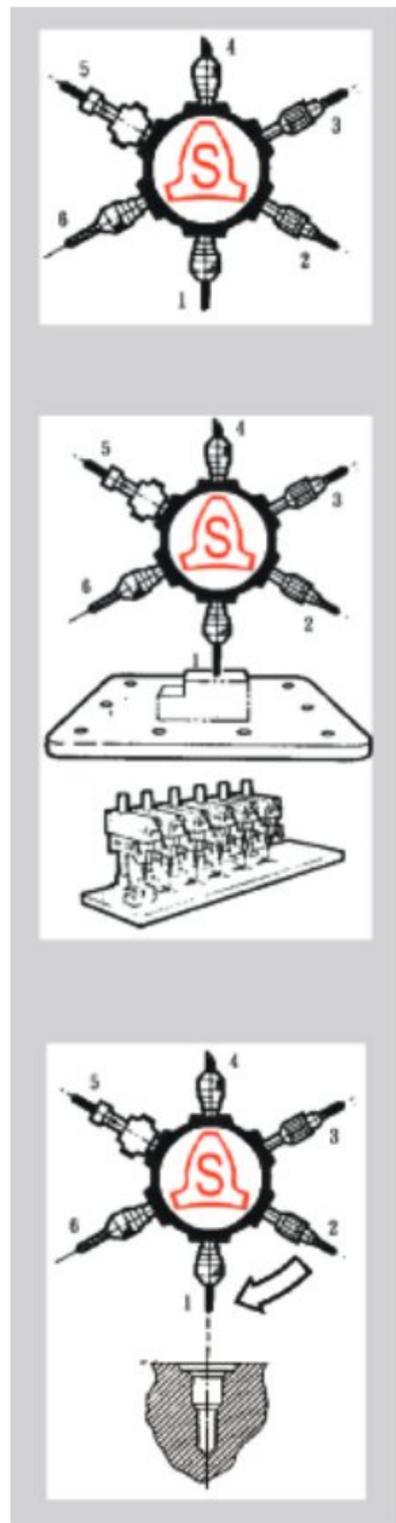
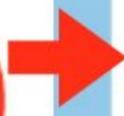


興農為您省錢的六大原由

Six reasons why SNICO puts more money in your pocket...

1. 六角鑽床為一簡單且易操作的自動機器，加工過程中，操作者不需去移動刀具，刀塔會自動60度旋轉同時更換刀具，使生產更具效率。
2. Tr20、Er20的主軸設計，刀具安裝夾持容易，刀長量測補正快速。
3. 有了六角刀塔，您可讓六支精密主軸刀具同時運用在一個鑄件的加工。
4. 一台興農的六角鑽床STC-12所需花費(成本)比六台單軸的鑽床還低，而且更快、更精確(速度更快、準確度更高)。並且節省占地面積以及廠房、生產線空間。
5. 刀塔在每次主軸順時針切換時會自動地移動到鑽孔的中心線，使加工零件達到準確且一致性。
6. 興農公司為國際化分布，同時在美國、印度和大陸等重要地區都有零件倉庫。

1. The Turret Drill is a simple, accurate machine like any other drill press... Except it is more productive because the operator never has to move a part during the work cycle. Instead, the automatic indexing turret spindle moves to the work.
2. A turret drill is just as easy to set up as a line of gang drills.
3. With Pecker 12 you bring 6 spindles to the work rather than moving the work to 6 spindles. (Save you time and it's easier too !)
4. One STC-12 with its 6 spindles costs less per spindle than 6 sets of individual drill presses. And besides, it's faster and more accurate.
5. Because the turret automatically indexes to the centerline of the hole each time, it delivers accurate, concentric, uniform machined parts without using drill bushings.
6. SNICO are distributed international wide with parts warehouse in strategic area of U.S.A. & India & China.



五軸數值控制鑽床

5 Axis Turret Drilling & Tapping Machine





Column Traverse Turret Drilling & Tapping Machine

STC-450 動柱式數控鑽床



標準機能

Standard function

- ※ 自動原點復歸功能
- ※ Automatic origin return
- ※ 加工原點設定，自動工具長度設定功能
- ※ Automatic tool length setting, machine home setting
- ※ 空運轉，現在位置表示
- ※ Dry run, current position display
- ※ 程式外部輸出入機能(RS232C)
- ※ Program down/up load from/to personal computer RS-232C
- ※ 程式記憶機能
- ※ Program memory capacity
- ※ 內藏順序控制器(輸出4點，刀具輸入3點，控制主軸正轉及停止功能)
- ※ Internal sequencer control (4 outputs, 3 tool inputs, controlling spindle rotating direction and stop)
- ※ 副程式呼叫，條件副程式呼叫
- ※ Subprogram call, Subprogram loop
- ※ 暫停指令可與分度盤連線使用
- ※ Pause instruction can connect with NC-Rotary Table
- ※ 鏡像功能，可檢驗程式錯誤、記憶失常
- ※ Mirror image function, it can examine program mistake, memory abnormal.
- ※ 具放大縮小功能
- ※ Zoom in & Zoom Out.
- ※ 自動潤滑系統以及冷卻系統
- ※ Auto Lubrication system and cooling system.



汽車排氣管減音器
STEEL Tube



火焰槍噴頭工件加工範例
FIRE CUT NOZZLE

Column Traverse Turret Drilling & Tapping Machine

STC-450 動柱式數控鑽床

動柱型CNC六角鑽床乃量產型工作母機，國內外之製造工廠皆採特殊專用控制器。本公司在研發此機型時，經由工研院機械所、PMC之推薦，與寶元公司LNC M600、600i型CNC控制器配合，研發成功此機型。現更有Liux LNC8600新型五軸控制器。

在機電整合過程中，第一代研發費時多年，主要針對此機型特有之功能，發展專用軟體。如：按鈕換刀功能(Tool to Tool 只需1.3秒)，六刀把檢出辨識，點到點快速位移(Point to Point)、進給速率快慢設定、攻牙控制等。同時可在PC上做程式之編輯與修改，再透過RS232C與控制器連線，作程式之存取。

為達到快速且準確之位移，避免附載過大而產生精度誤差，而後又完全改變設計，採最新型CNC工作母機之設計理念“動柱型位移”，採用高強度之線性滑軌HSR 30TA 2SSC，成為動柱式轉塔中心機。

控制軸數：3~5軸，可擴充與NC分度盤連線

Controlled Axis：3 Axis, it can connected with 2 or 1 Axis NC-Rotary Table

同時控制軸數：X,Y,Z,A,C (or X,Y,Z,B,C) 5軸

Simultaneously controlled axes：X,Y,Z,A,C (or X,Y,Z,B,C) 5 Axis

補間機能：直線補間，圓弧補間

Interpolation Functions：Linear interpolation, Circular interpolation

指令方式：絕對/相對

Input Commands：Absolute coordinate / Relative coordinate

最小設定單位：0.001 mm

Least Setting Unit：0.001 mm

最大指令值：±999.99 mm

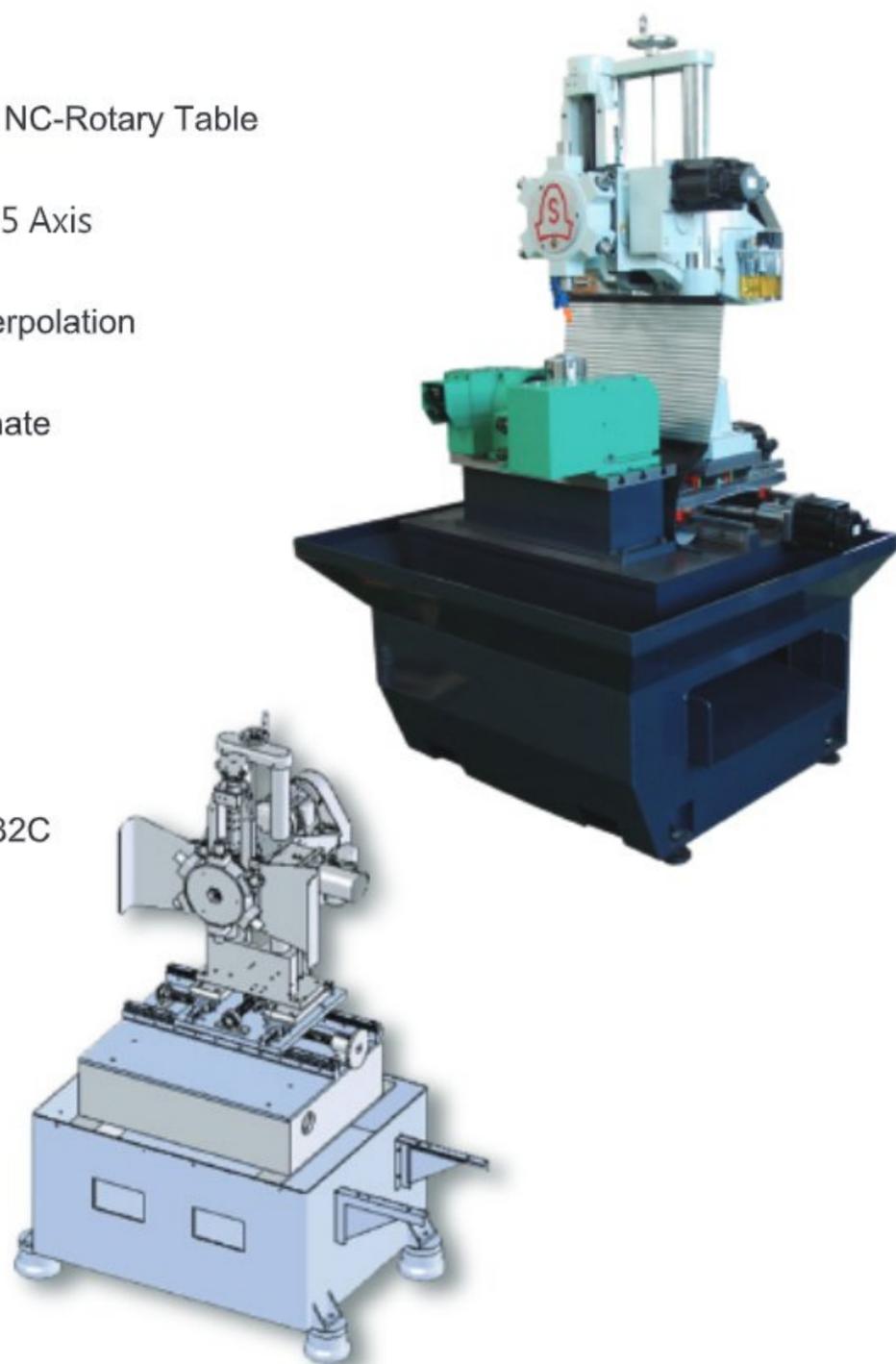
Biggest Commands Unit：±999.99 mm

顯示螢幕：彩色10.4" LCD液晶螢幕

Monitor：Color 10.4" LCD Screen

程式編輯方式：面板按鍵 or 在PC上利用RS232C

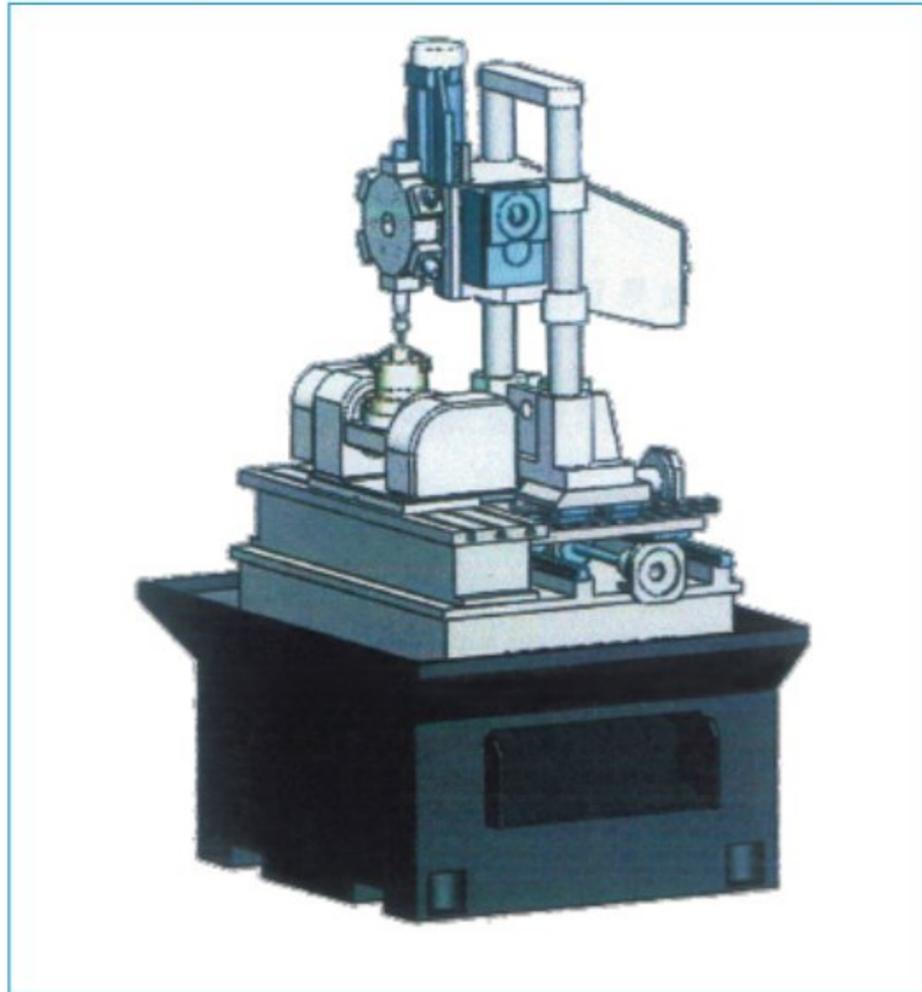
Program edit：Controller Panel or Connect PC with RS232C



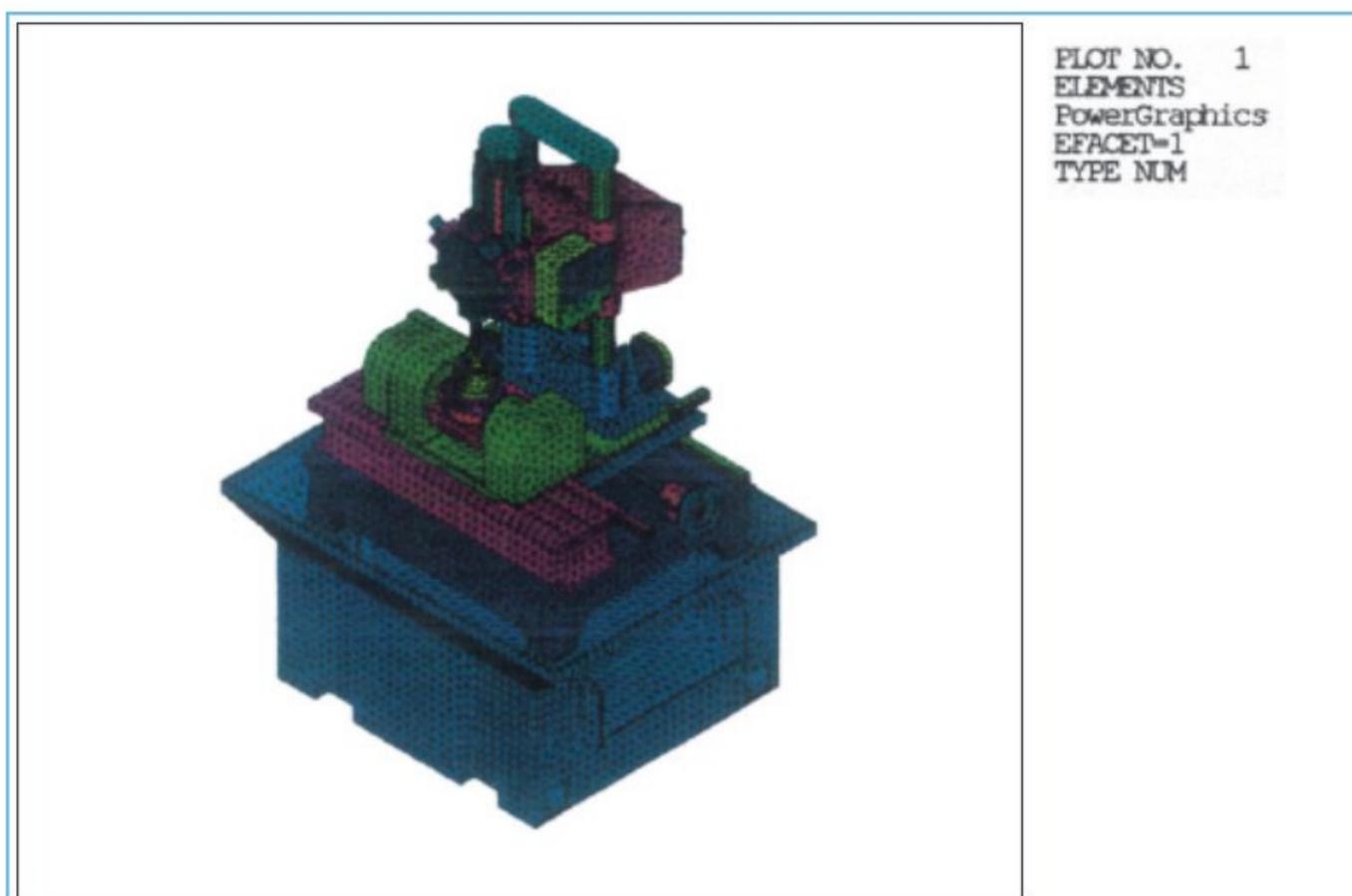


STC-450

*X.Y.Z Axis Column Moving
A.C Axis Rotary Table*



整機三維立體模型
3D STC-450 Model



整機分析模型
5 Axis ansys Model Pattern

機台各單一結構件靜剛性分析

將各單一結構件在此整機靜剛性所扮演的剛性解析出來，以方便整機靜剛性提升之執行。解析出之單一結構件包括底座、X軸鞍座、工作台、旋轉工作台、X進給軸、Y軸鞍座、Y進給軸、Y軸滑板、鑽柱基座、鑽柱、鞍座、Z軸滑座、六角刀塔、主軸（請參考圖2.3.2-1）。其中X進給軸包含X軸螺桿及X軸線軌，Y進給軸包含Y軸螺桿及Y軸線軌。

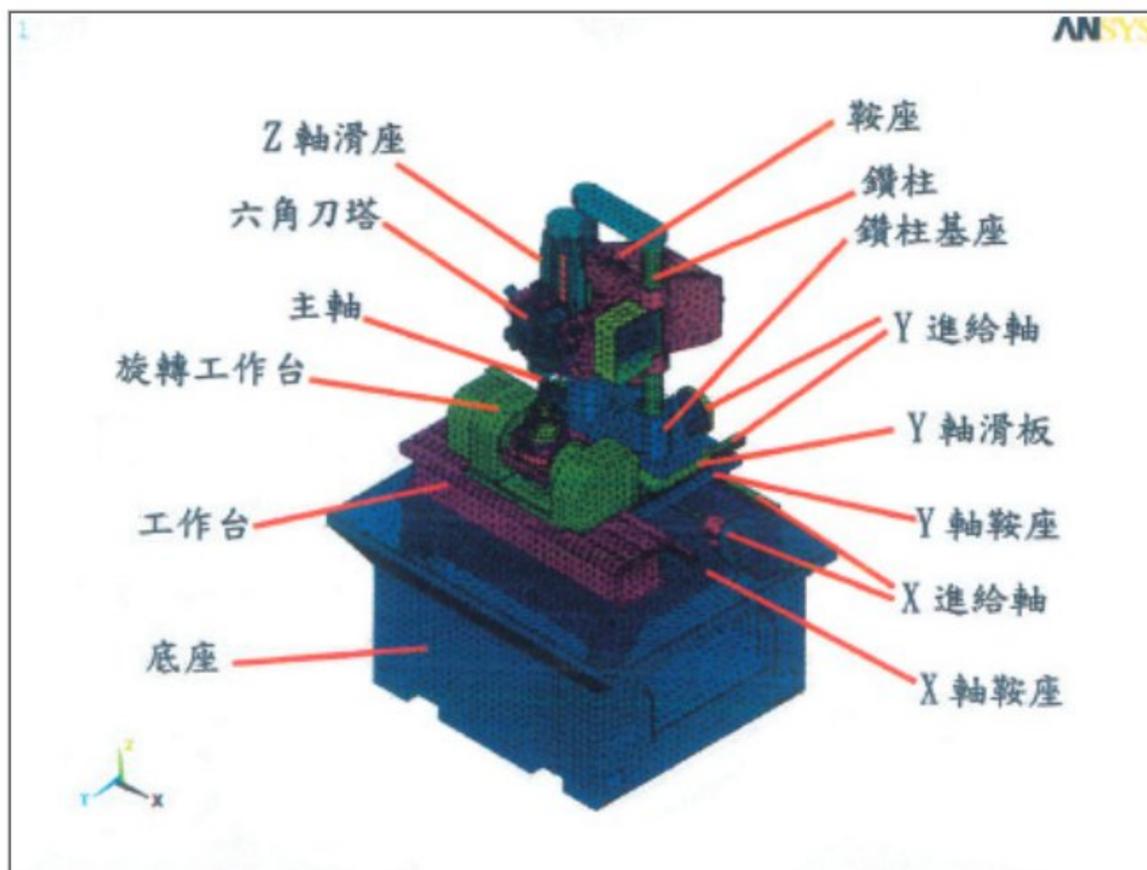


圖2.3.2-1 各結構名稱說明

- 委託PMC「五軸轉塔式鑽削中心機FEA整機靜剛性分析」進行靜剛性分析之後，初步結果如圖5-1、圖5-2和圖5-3所示)



圖5-1 X方向之靜剛性分析結果



圖5-2 Y方向之靜剛性分析結果

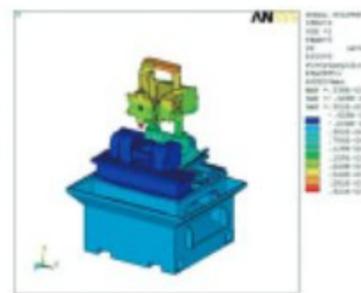


圖5-3 Z方向之靜剛性分析結果



ISO 230-4:2005(E)

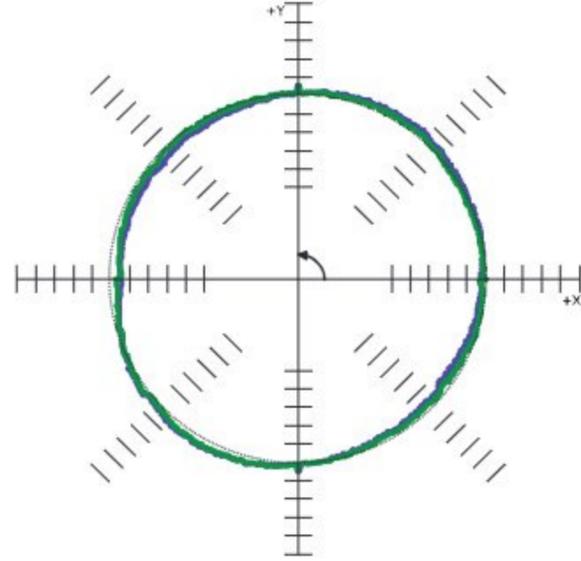
雙向真圓度偏差 XY

操作者: PMC-T4
日期: 2013-四月-30 18:19:20



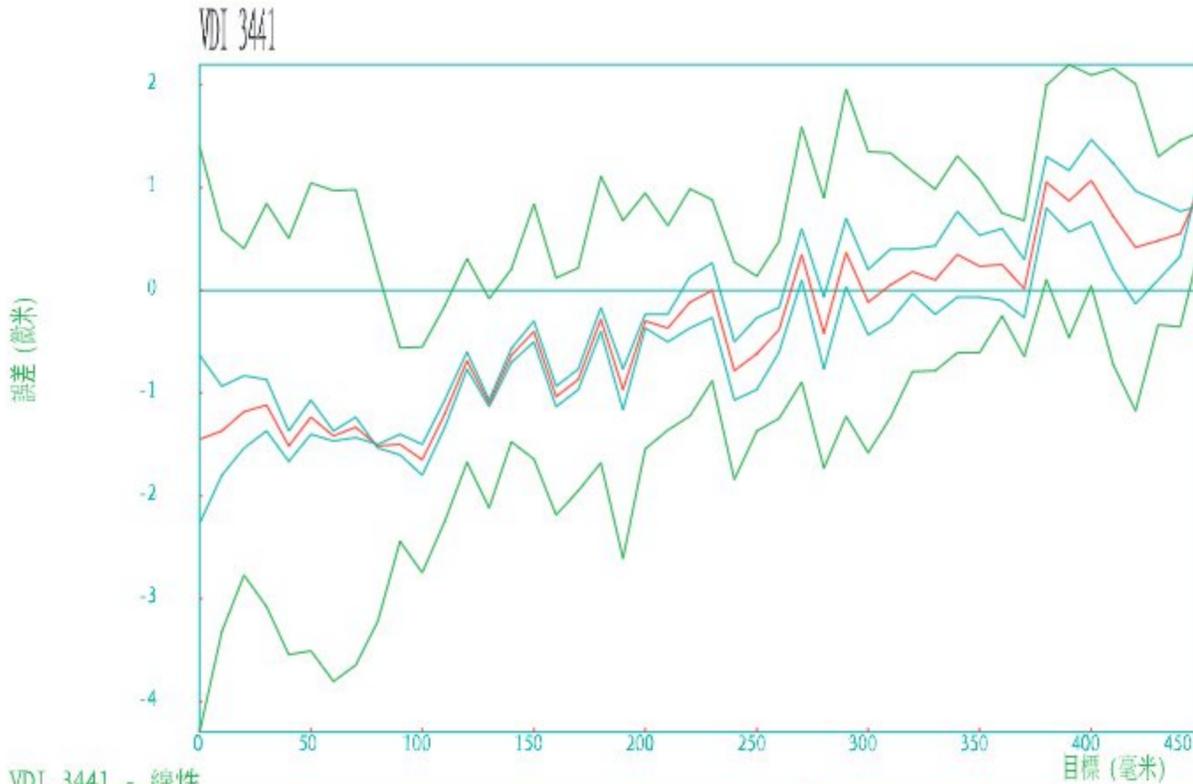
機器: 快速檢驗
QC20-W: 05L550, 上次校正 2010-07-11

雙向真圓度偏差	
數值	12.2µm
測試參數	
半徑	100.0000mm
進給速率	1000.0mm/min
執行順序	CCW CW
測試平面	XY
測試位置	興農
起始角度	0°
終止角度	360°

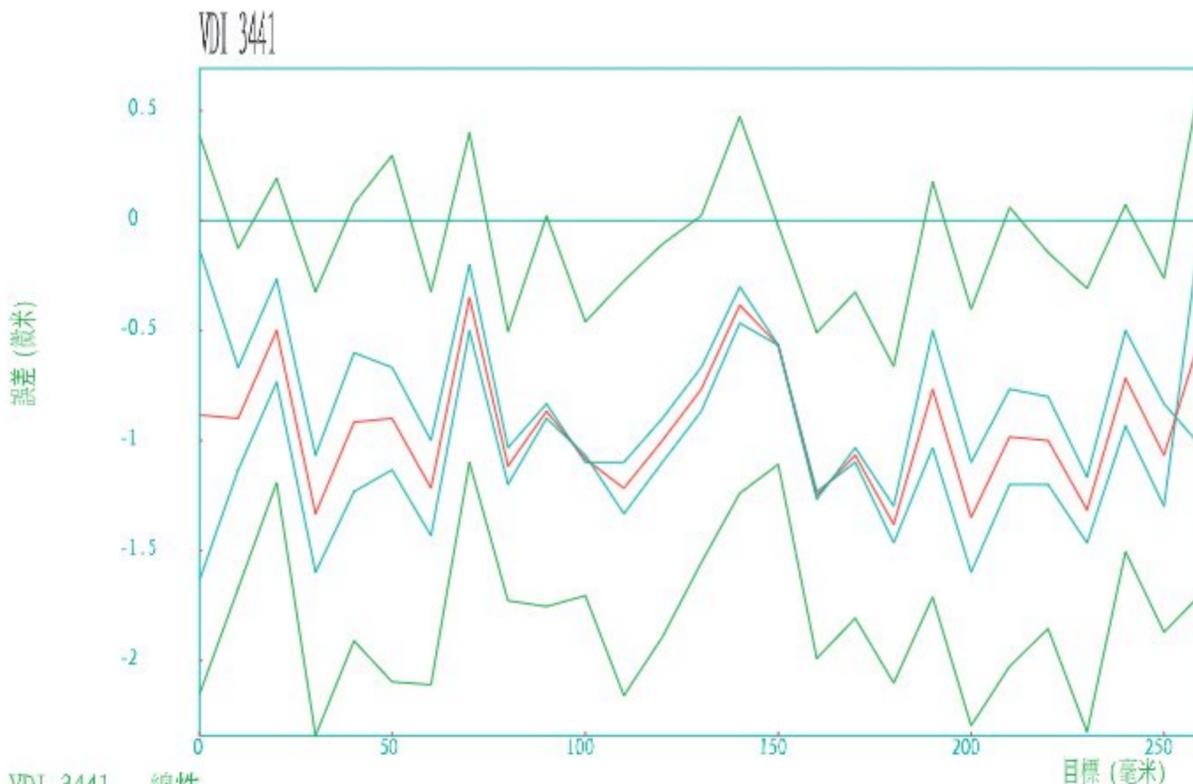


執行 1
執行 2

10.0µm/div

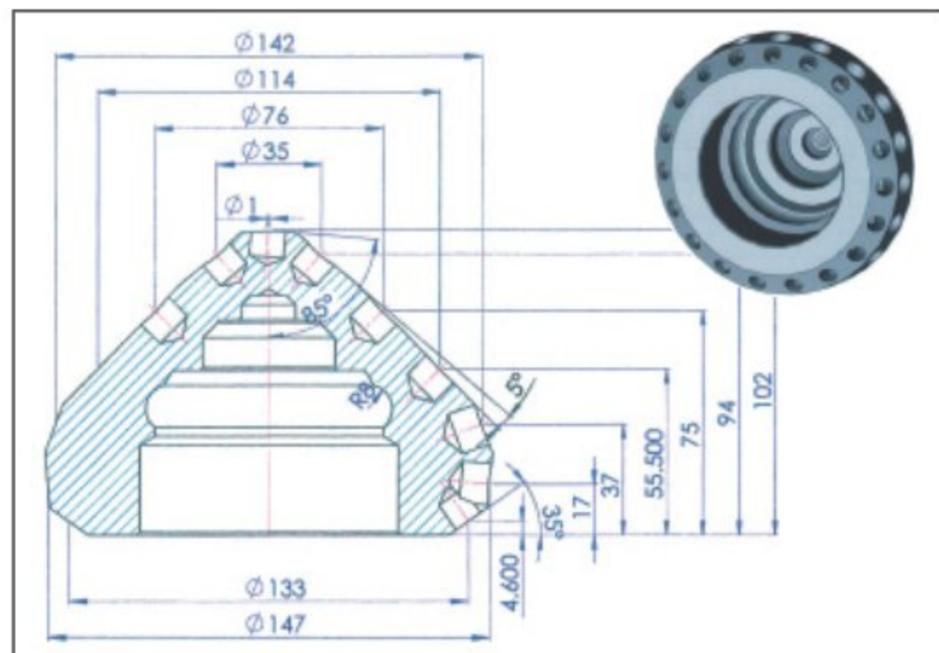
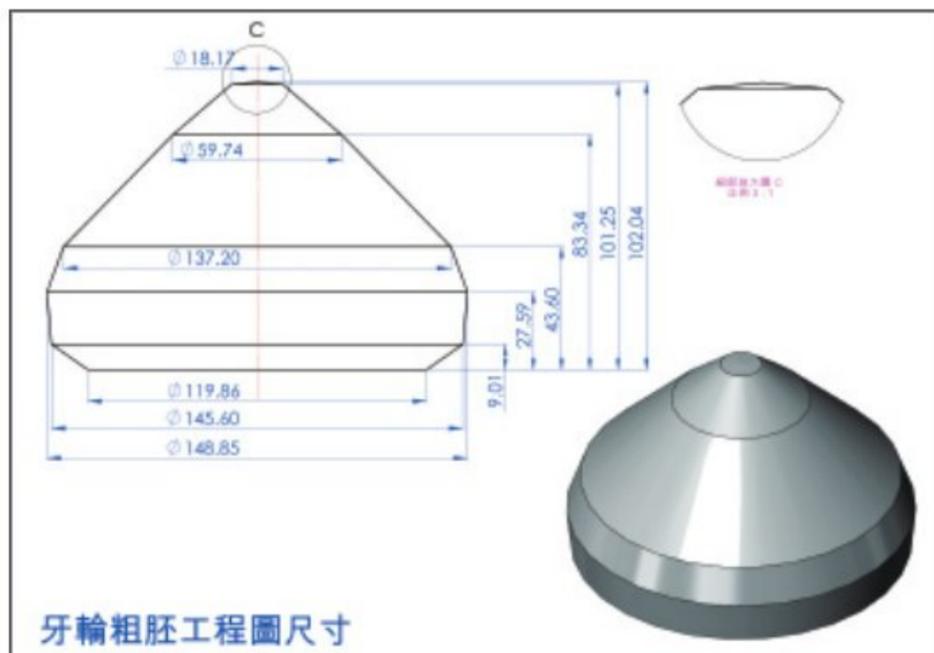


VDI 3441 - 線性		
機器名稱: STC-450	軸向: X-AXIS	反向誤差 U ma 1.633
序號: SN-T0012	測試地點: 興農	定位精度 P: 6.489
日期: 12:15 Apr 30 2013	U 平均: 0.496	重覆精度 Ps m 4.677
檢驗者: PMC-T4	Ps 平均: 2.056	位置偏差 Pa: 2.717



VDI 3441 - 線性		
機器名稱: STC-450	軸向: Y-AXIS	反向誤差 U ma 1.500
序號: SN-T0012	測試地點: 興農	定位精度 P: 3.035
日期: 13:23 Apr 30 2013	U 平均: 0.380	重覆精度 Ps m 1.929
檢驗者: PMC-T4	Ps 平均: 1.362	位置偏差 Pa: 1.033

STC-450 加工範例



傾斜面加工系統

TIMTOS 2013, 5 ~ 10 March 2013, Taipei, Taiwan



特色:本系統可以讓使用者以兩軸或三軸加工的程序輕易地轉換到五軸傾斜面加工,其傾斜面加工的定義包含一般高階控制器具有之方法外,更加強投影角與尤拉角的定義。

- ✦ 尤拉角定義平面:12種定義方法。
- ✦ 旋轉角定義平面:6種定義方法。
- ✦ 三點定義平面。
- ✦ 兩向量定義平面
- ✦ 投影角定義平面:3種定義方法。
- ✦ 刀具向量定義平面。

1. 「傾斜面定義實例」

0.X->Y->X 1.X->Y->Z
 2.X->Z->X 3.X->Z->Y
 4.Y->X->Y 5.Y->X->Z
 6.Y->Z->X 7.Y->Z->Y
 8.Z->X->Y 9.Z->X->Z
 10.Z->Y->X 11.Z->Y->Z

鑽4°傾斜孔的設定, 假設鑽X正方向中心節圓直徑為φ16, 傾斜4°, 設定方法:

2. 「手寫鑽傾斜孔的 NC 製作實例」

- ✦ 設定機械參數
- ✦ 設定後處理參數
- ✦ 定義傾斜面
- ✦ 手寫傾斜面鑽單孔的 NC 程式
- ✦ 使用對 Z 軸 (C 軸) 之旋轉拷貝

對Z軸 (C軸) 之旋轉拷貝

旋轉拷貝14個孔結果

聯絡:

鄭新有 副教授

遠東科技大學

資訊工程系 副教授

高永洲 博士

國立高雄應用科技大學

機械工程系 副教授

五軸動柱式數控鑽床 客製化鑽削模擬系統



興農工業股份有限公司

<http://www.snico.com.tw>

國立高雄應用科技大學



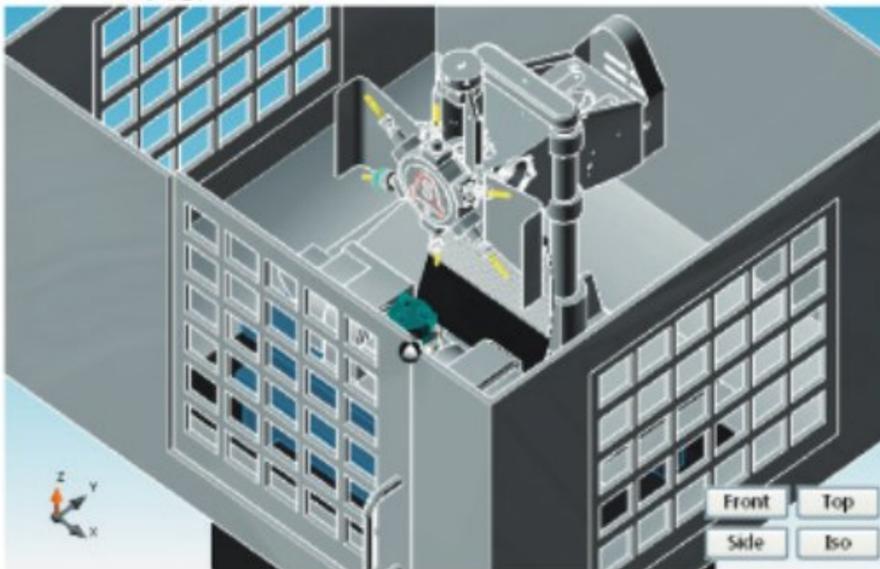
機械工程系



特色：本系統具備互動式 3D 人機介面功能模組，包括：

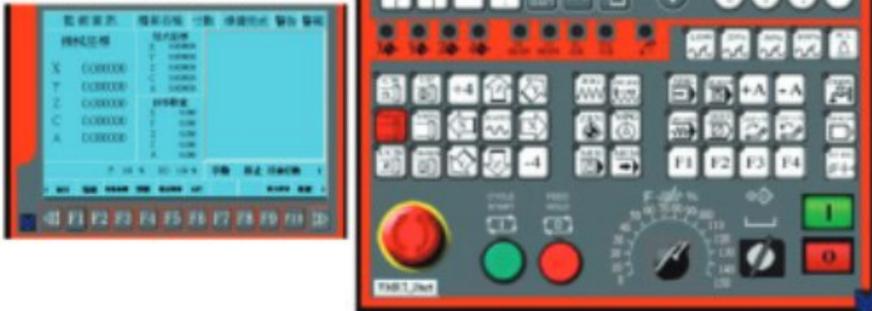
1. 「五軸機台運動與操作模擬功能」

- 以開放性視角呈現機台全貌，提升機台運動情形 3D 可視性。



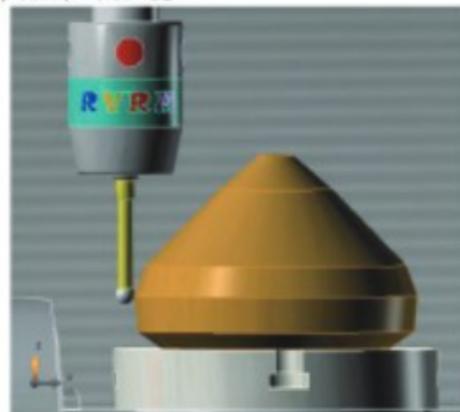
2. 「CNC 控制器面板人機介面功能」

- 發展虛擬控制器驅動 3D 虛擬機台，更接近真實的操作方式。



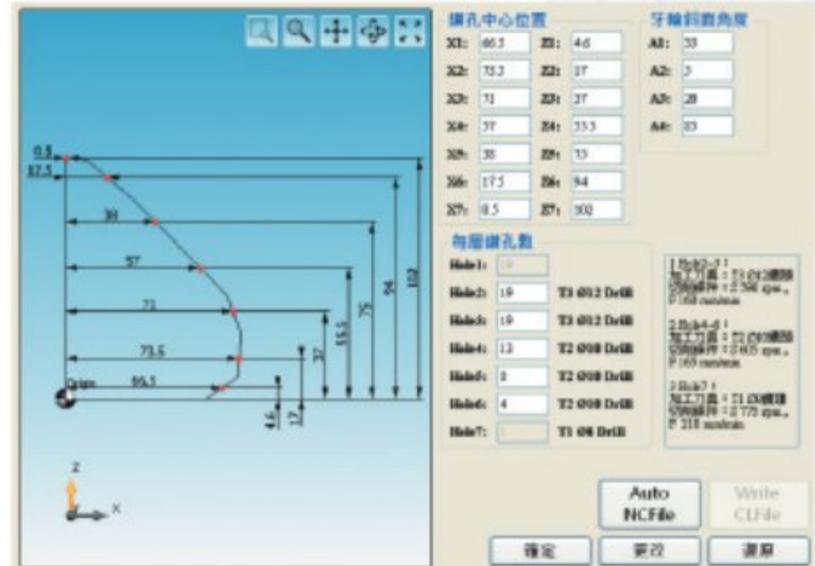
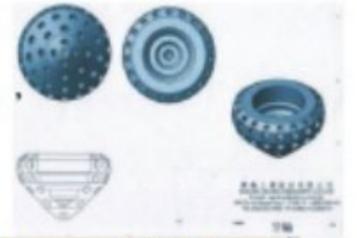
3. 「尋邊功能」

- 採用實際工件校正方式，直覺性的操作，簡化繁瑣設定流程，降低操作難度。



4. 「客制化工件暨加工程序自動生成」

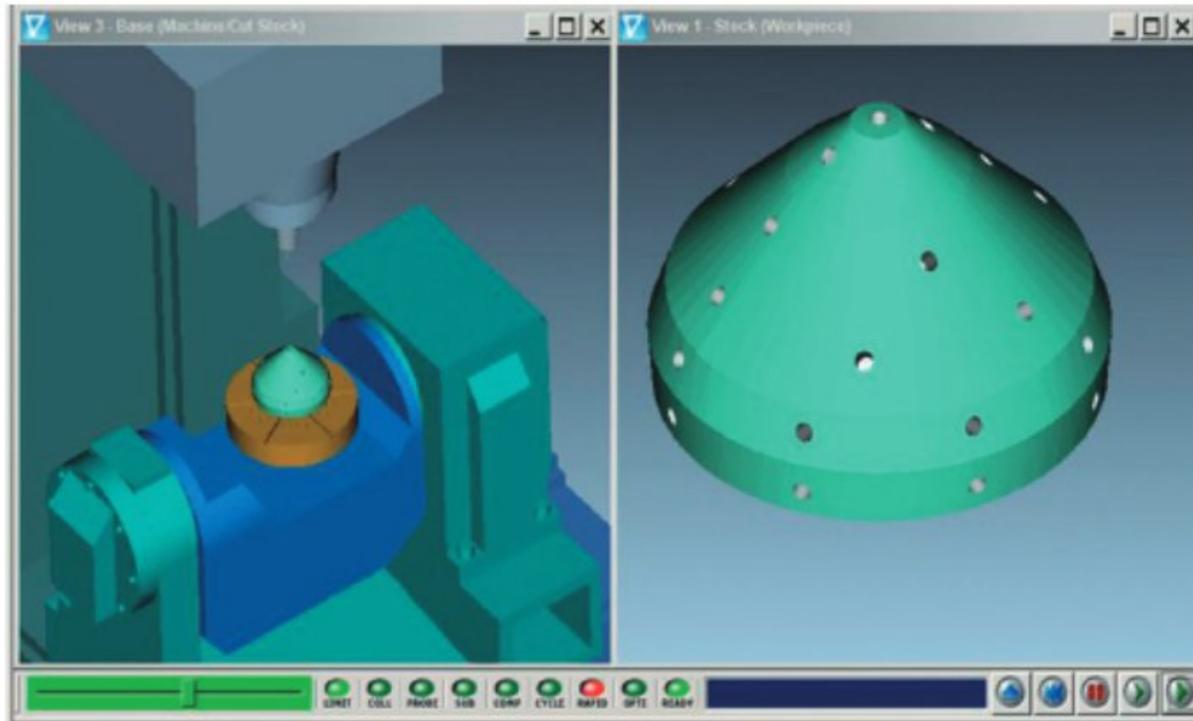
- 從工件尺寸設計、加工參數設定，再到五軸 NC 程式自動產出一系列功能整合，加速工件加工時程。



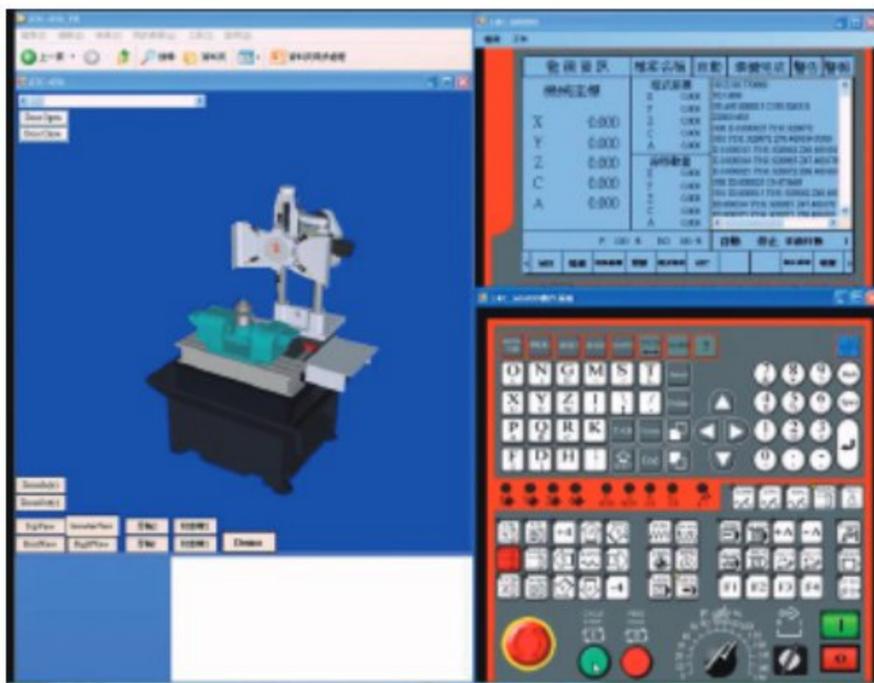
5. 「五軸鑽削模擬與碰撞偵測」

- 透過機台作動能夠觀看並了解其實體切削加工情形，模擬五軸鑽削 NC 加工過程，檢查運動路徑可能發生的碰撞情形，減少實際機台加工之加工意外發生。

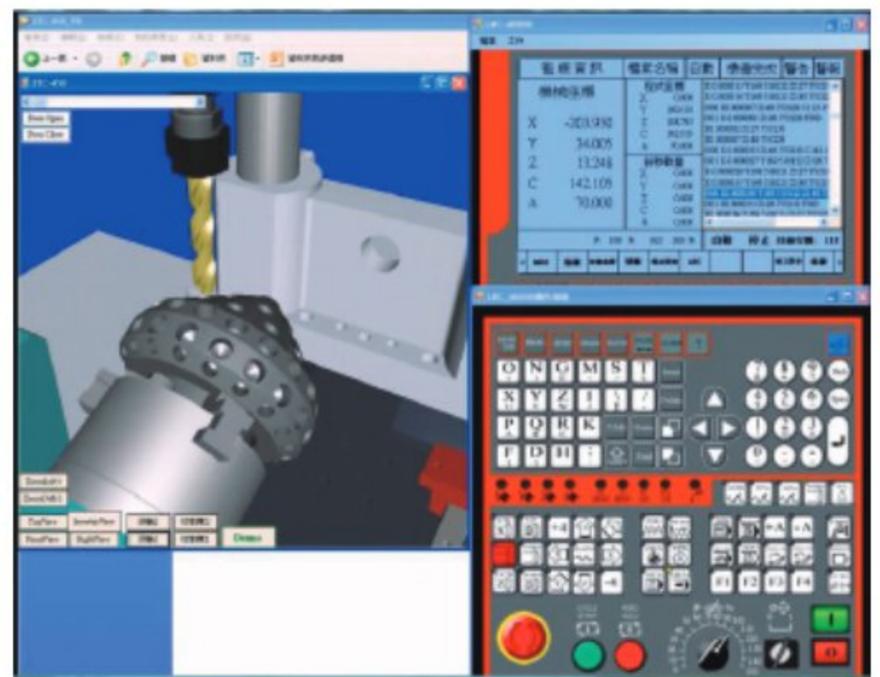
監視資訊	檔案名稱	自動	準備完成	警告	警報
機械座標	程式名稱	M032805			
X	X	0.00000	055		
Y	Y	0.00000	000 X: 148.55874 206.63770 A45		
Z	Z	0.00000	001 Y: 40.55678 245.72070 F360		
C	C	0.00000	002 Z: 0.00000 206.63770		
A	A	0.00000	003 R: 0.00000 245.72070 C		
			004 Y: 40.55678 206.63770		
			005 Z: 0.00000 245.72070		
			006 X: 148.55874 206.63770		
			007 Y: 40.55678 245.72070		
			008 Z: 0.00000 206.63770		
			009 R: 0.00000 245.72070 C		
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			026 Z: 0.00000 206.63770		
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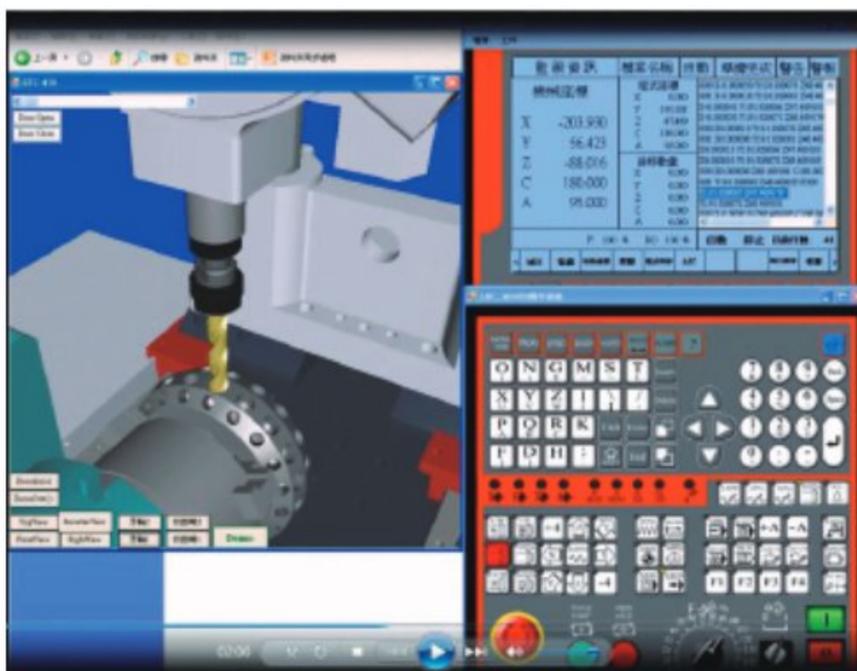
VERICUT驗證



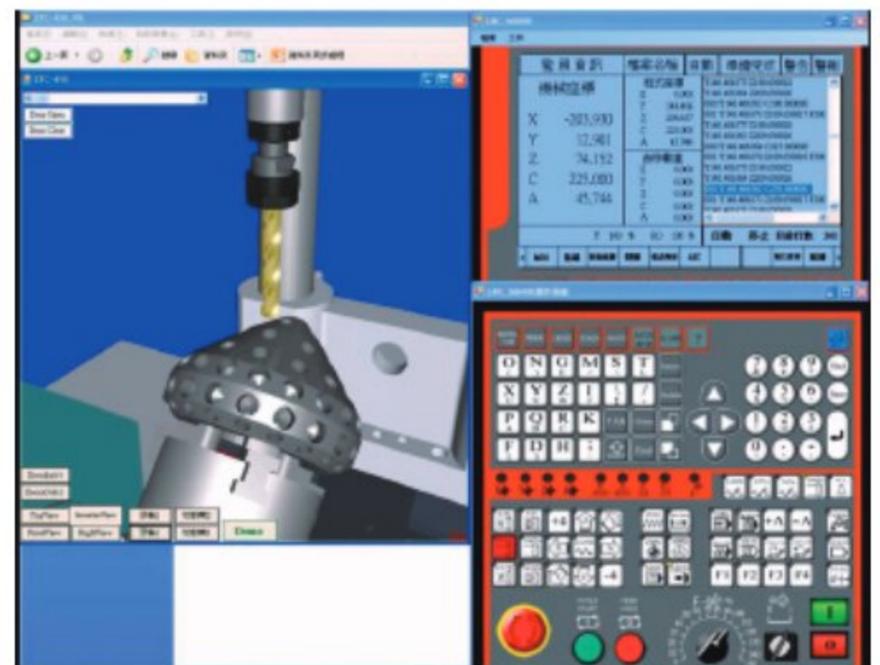
五軸轉塔式鑽削加工機之鑽削路徑模擬系統之外觀



五軸轉塔式鑽削加工機之鑽削路徑模擬系統進行牙輪鑽削路境模擬之2



五軸轉塔式鑽削加工機之鑽削路徑模擬系統進行牙輪鑽削路境模擬之1

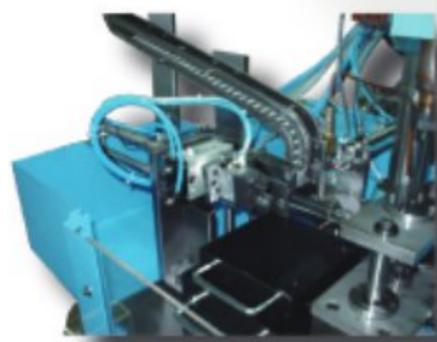


五軸轉塔式鑽削加工機之鑽削路徑模擬系統進行牙輪鑽削路境模擬之3

STC-12A (PECK-12)



六角成型刀 & 內六角工件
Rotary Broaching Tools & Work piece



STC-12A 搭配自動進給系統
STC-12A With Automatic Feeder



對需要高精準同心度、位置度的加工件，可同時完成定位、鑽孔、倒角、擴孔、沉頭孔、魚眼孔、搪孔、鉸孔、攻牙、滾光等等六種製造加工流程。

Features: For precise concentricity and positioning, this machine handles centering, spot drilling, core drilling, chamfering, countersinking counterbore, reaming boring, spotfacing, tapping, finishing and roller burnishing simultaneously.

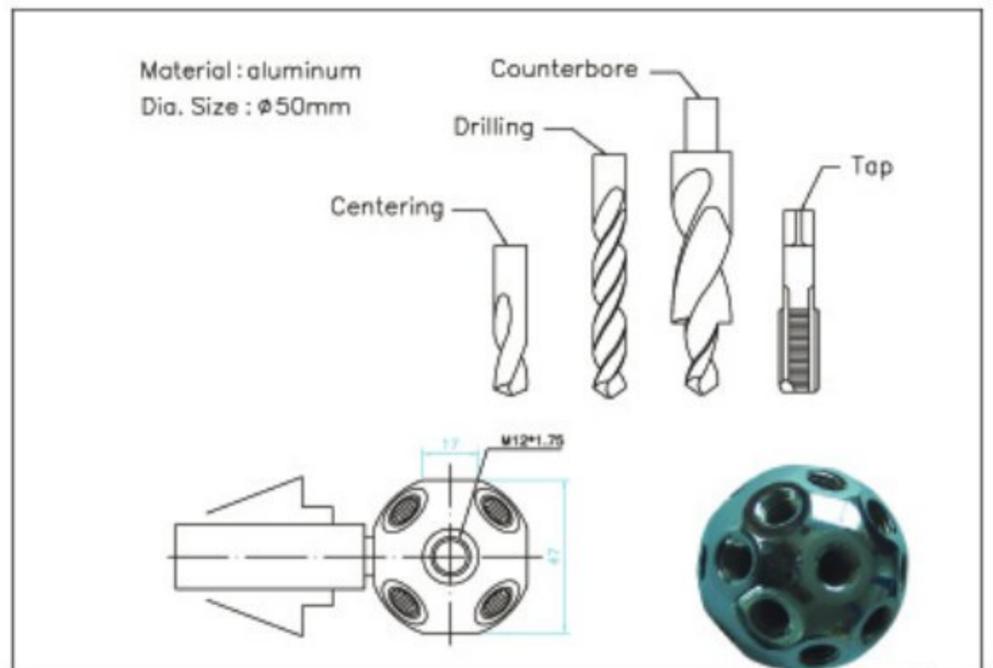


STC-200AR



OPTIONAL STC TOOLING

The six main spindles are positioned for ready drilling, hole expansion, chamfering reaming, and tapping. The equipment is ideal for manufacturers wishing to mass produce jacks, spray nozzle, drill chucks and more. Machining home setting, Automatic original return. The X Axis & CNC Rotary Table.



依照加工物件的不同，可選配不同形式的工作檯面。

空間桁架萬向連接球之設計與製造
Space truss Node Design and Manufacture



STC-200A

W/SPLASH GUARD



STC-200A 有著高精度CNC控制的X軸行程及Z軸行程，對於管狀或是條狀的工件，有著高精度的加工表現。六角轉塔式鑽孔攻牙機具有六主軸，刀塔能一次完成定位、鑽孔、擴孔、搪孔、絞孔、攻牙、滾光等加工程序，配合CNC高精準度的伺服控制器與自動指令選刀功能，搭配伺服滑台價格只須要CNC綜合加工機的1/3。最大鑽孔能力16mm，最大攻牙能力M16，並可客制化搭配自動檢測與送料系統為客戶大幅提昇生產效率。CNC轉塔式六角鑽床特別適合軸承、氣動元件、塗裝器材、空油壓零件、模具、汽機車零件與運動器材等相關孔加工產業。

One set-up can do 6 operations as centering, drilling, chamfering, boring, reaming, tapping. Save the time of moving work pieces. Index turret head automatically by Geneva index mechanism. High accuracy and increased protection.

Especially suited to small and medium batches of components the NC Turret Center Drilling & Tapping machine is ideal for taking inappropriate work off expensive machining centers.



STC-16A



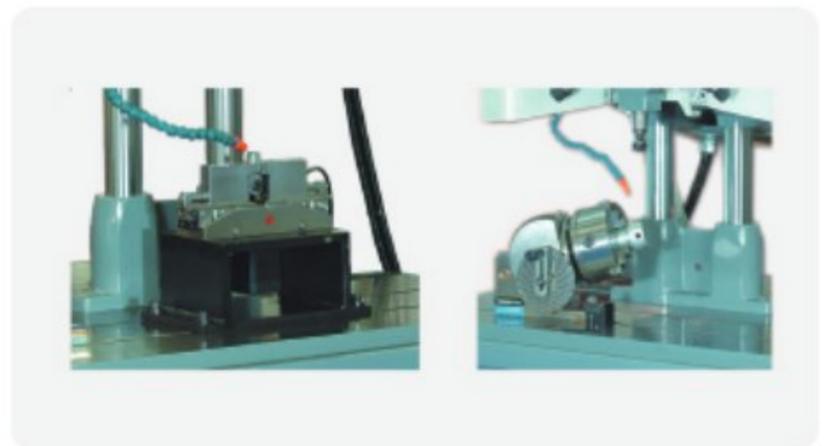
加工案例：

- 空油壓零組件：如ISO氣缸、導桿氣壓缸、滑台氣壓缸、電磁閥夾持氣缸，及配合航太工業的發展，製造航空器的空油壓零件。
- 汽機車剎車零件：如連軸器、剎車總幫、剎車分幫。
- 軸承零件：聯座軸承、特殊傳動軸承座、線性導軌上之孔加工。
- 氣動工具之零件：如氣動油壓板手、氣動螺絲起子等零件之加工。
- 偵測零件：如LIMIT SWITCH、光電開關、近接開關等之孔加工。



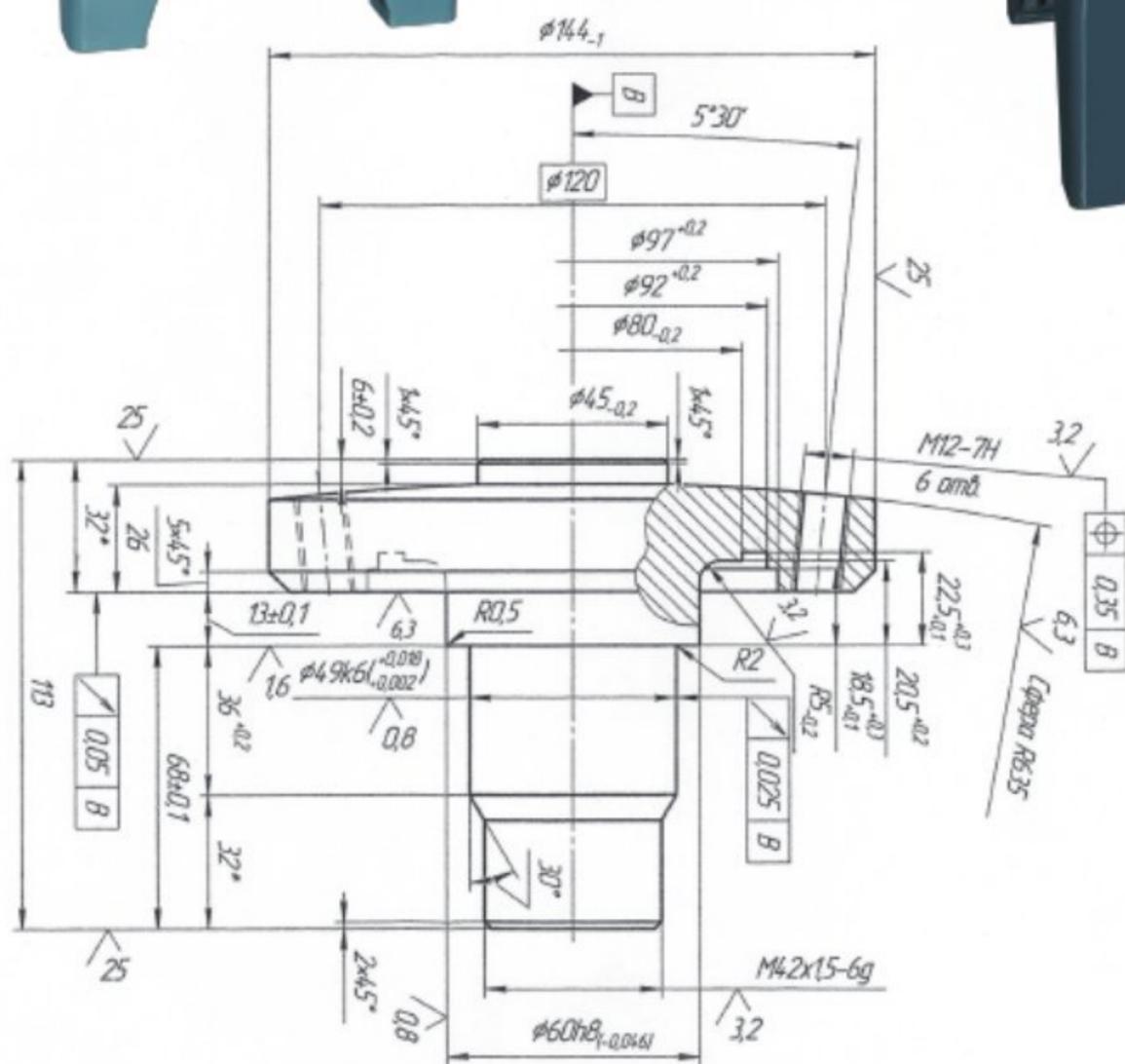
Processing case :

- Air & oil pressure spare part: ISO Cylinder, Guide Cylinder, Air Slide Table, Solenoid Valve, Coordinate government aerospace industry development, manufacture aviation flight vehicle's air pressure perhaps flowing tubing head pressure components.
- Cars and motorcycle use to brake the components: Junction box, Brakes the pump.
- bearing parts: Joint place bearing, Special transmission bearing seat, Linear guide rail.
- Components of the pneumatic tool: Air operated flowing tubing head pressure trigger, Air operated screw driver.
- Detection components: LIMIT SWITCH, Electro-optical switch, Recently received switch.



汽車零組件的加工
Car Components

STC-16 A3 A5





STC-16B

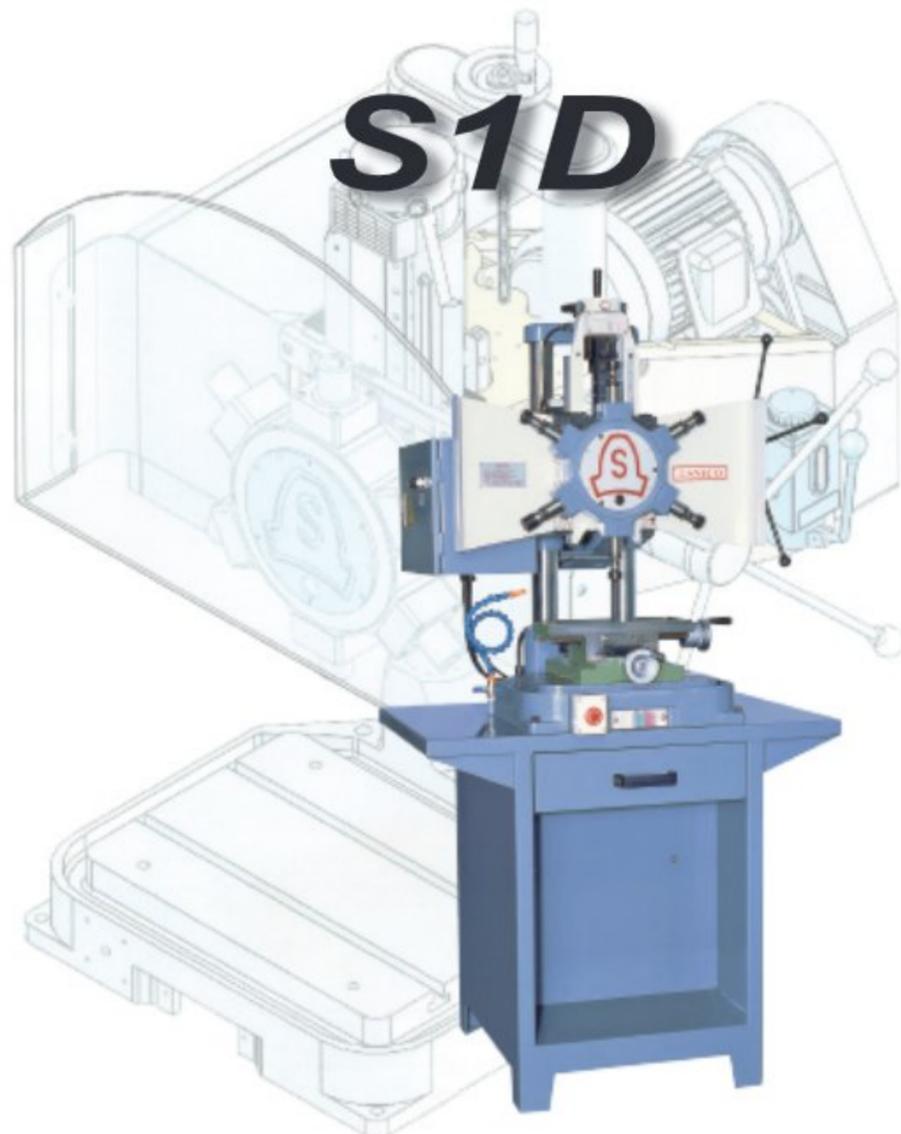
STC-12B

STC-16B3



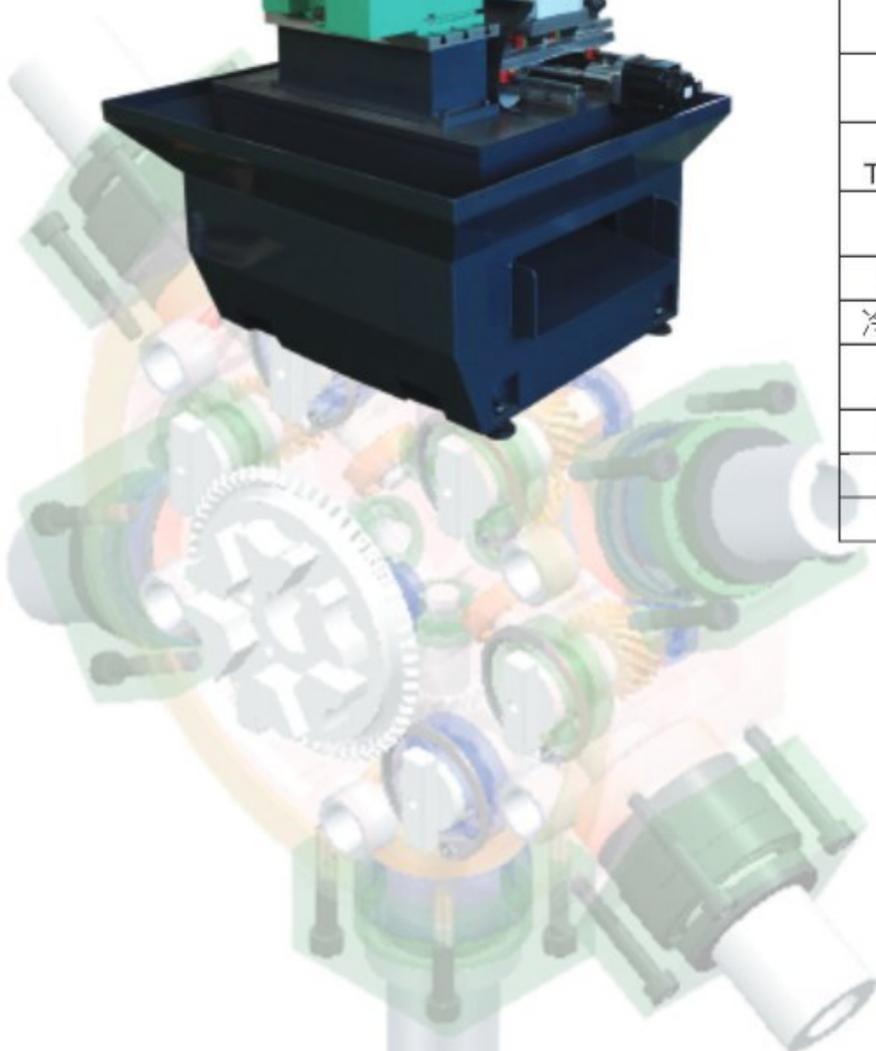
STC-12

S1D



STC 規格表

STC Specification table

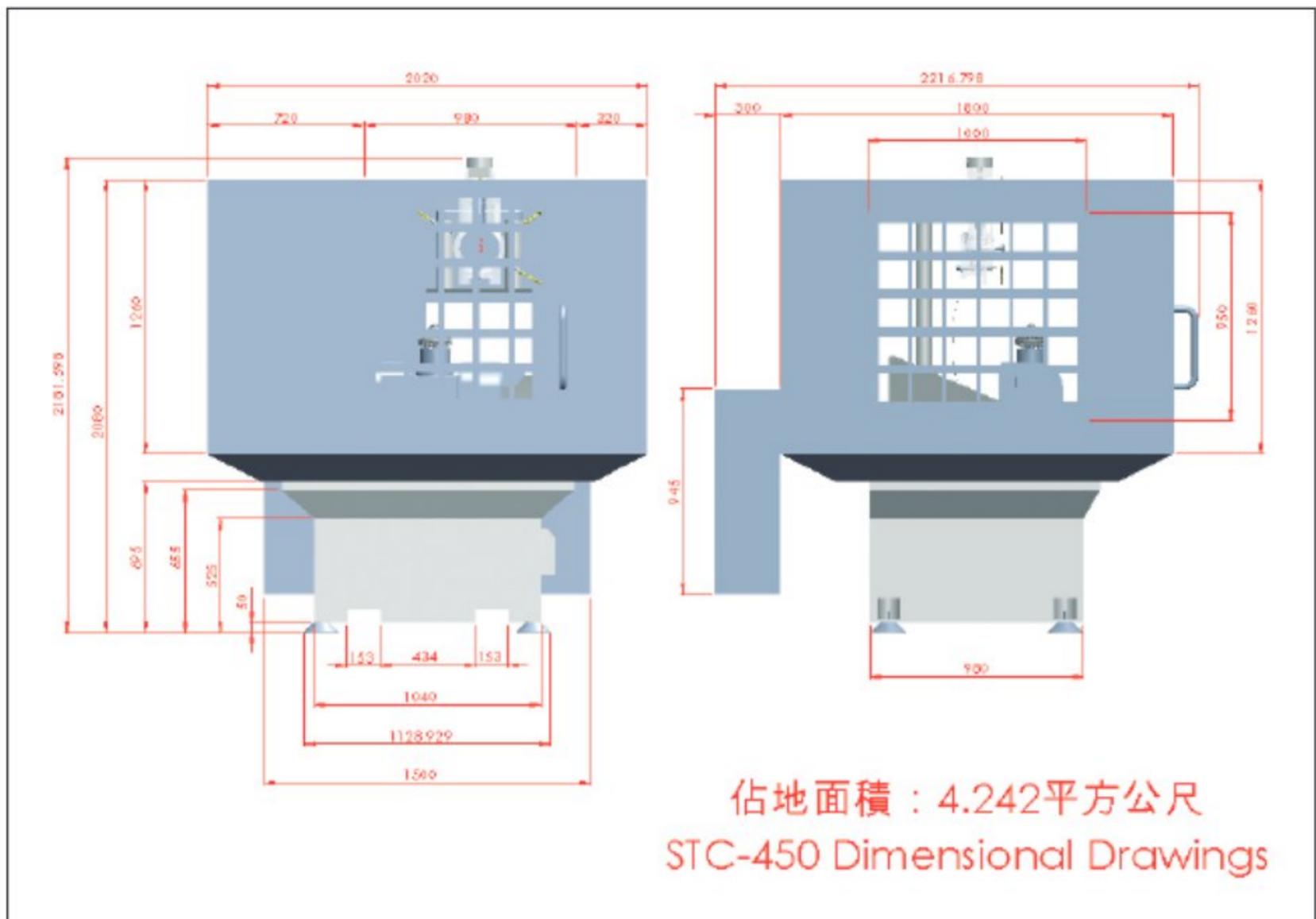
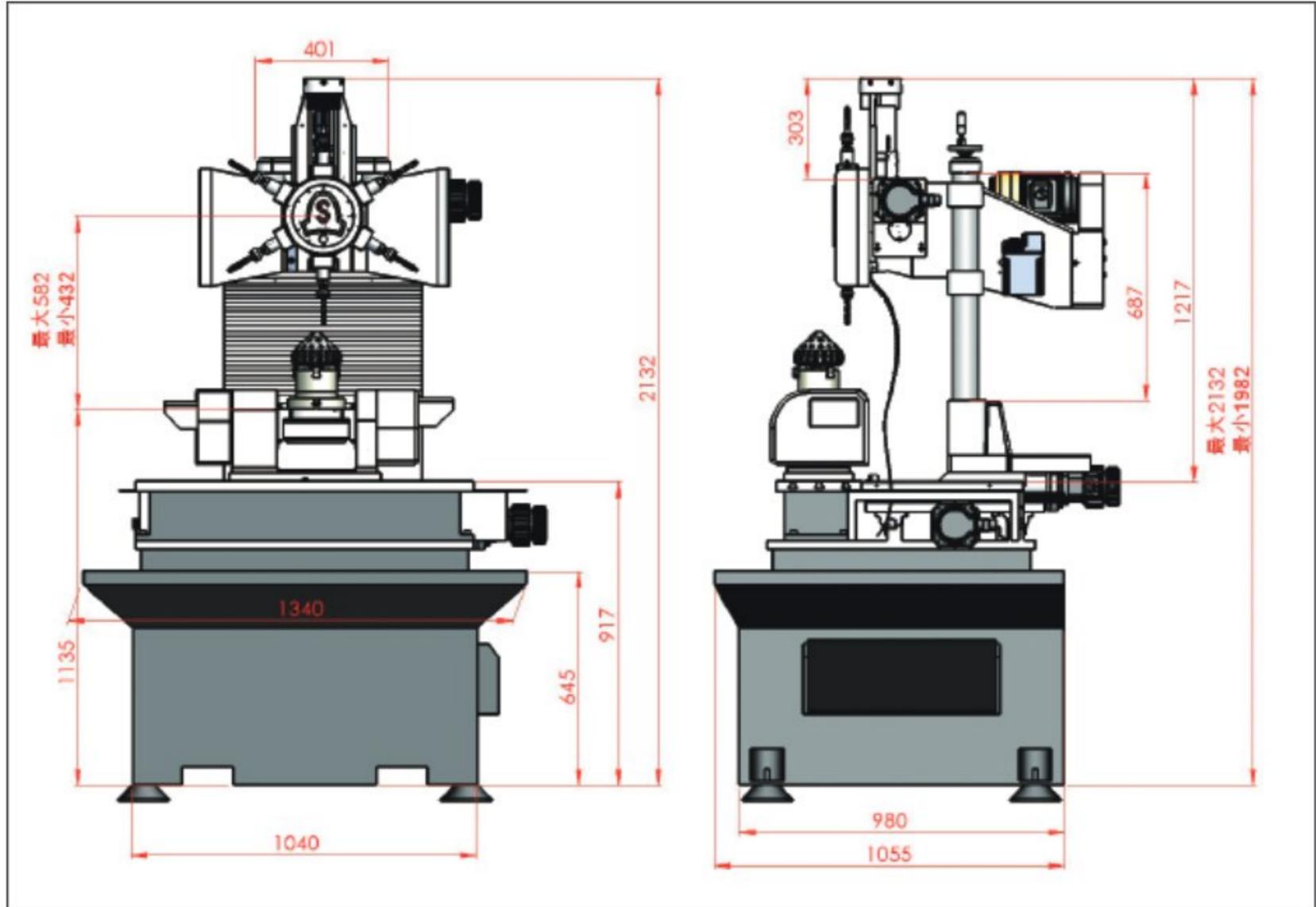


STC-450				
MACHINING CAPABILITY				
<i>Machining</i>	<i>Conditions</i>	<i>S45C</i>	<i>FC20</i>	<i>ADC12</i>
鑽孔能力 Drilling	直徑 / 進給量 Diameter(mm) / Feed(mm/rev.)	16 / 0.15	20 / 0.15	25 / 0.20
攻牙能力 Tapping	直徑 / 進給量 Diameter(mm) / Pitch(mm/rev.)	M16 / 2.0	M20 / 2.5	M24 / 3.0
端銑能力 End Milling	每分鐘切削量 Cutting speed (cm ³ /min.) / Dia 16 (mm)	4.6	8	30
Face Milling	每分鐘切削量 Cutting speed (cm ³ /min.) / Dia 50 (mm)	8	20	80
三軸行程 Stroke Travel	X Axis : 460 / Y Axis : 260 / Z Axis : 150			
有效工作臺面尺寸 Table working space	620 x 250 or 1020 x 250			
SPINDLE				
主軸轉速 Spindle R.P.M. : 5000 ~100				
SPINDLE	R.P.M			
T1-T4	4600-200			
T2-T5	3600-100			
T3-T6	2600-100			
高速移動速度 Rapid traverse (mm/min.)	16,000			
切削速度 Cutting feed rate (mm/min.)	10 ~ 4,000			
主軸至工作檯面距離 Spindle end to table	Max. 680 mm , Min. 180 mm			
鞍座上下移動行程 Saddle seat travel	500 mm			
AUTO TOOL CHANGER				
刀具形狀 Tool Shank	Tr20 or TM22 with ER20 or ER32			
刀具數目 Tool Storage Capacity	6			
刀具直徑 Max. Tool Diameter	52 mm			
刀具最大長度 Max. Tool Length	160 mm			
刀具最大重量 Max. Tool weight	2 Kg / 1 Spindle, 9 Kg / Total			
刀具選擇方向 Tool Selection	Sequential, Clock wise			
刀具更換時間 Tool to Tool / Chip to Chip	1.3 Sec. / 2.8 Sec.			
MOTOR				
主軸馬達 Spindle Motor	2.2 kw AC Spindle Servo Motor			
冷卻泵馬達 Coolant Motor	1/4 HP			
MACHINE SIZE				
機械高度 Machine Height	2,160 mm			
機械重量 Net Weight KG	2,500 kg			
Technical Specifications subject to change without notice				



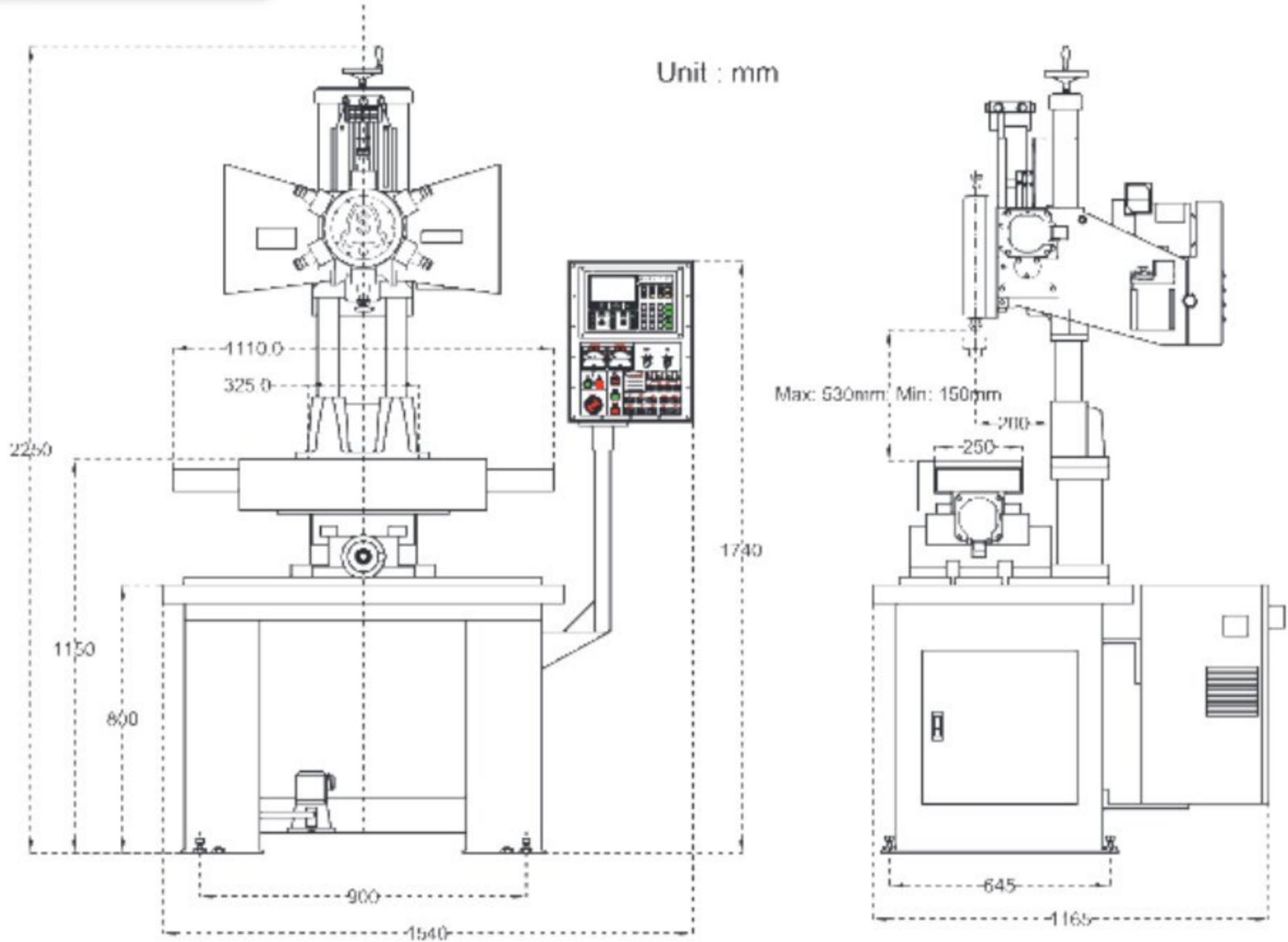
規格 Specification		Model 機型	STC-200AR	STC-200A	STC-16A	STC-12A	STC-12B	STC-12					
鑽孔能力 Drill Capacity	Mild Steel 鋼		16	16	16	12	12	12					
	Cast Iron 鑄鐵		18	18	18	14	14	14					
攻牙能力 Drill Capacity	Mild Steel 鋼		M14	M14	M14	M12	M12	M10					
	Cast Iron 鑄鐵		M16	M16	M16	M14	M14	M12					
鑽孔深度(主軸行程) Drill depth			150										
高速移動速度 Rapid Traverse (mm/min.)			10,000				手動 Manual						
切削速度 Cutting feed rate (mm/min.)			10 ~ 4,000			15 ~ 3,000	手動 Manual						
刀具數目 Number of tools			6										
刀具最大長度 Max. tool length			250										
刀具最大重量 Max. tool weight			2 Kg / 1 Spindle, 9 Kg / Total										
刀具選擇方向 Tool selection			連續換刀, 順時針 (Sequential, Clock Wise)										
刀具形狀 Spindle taper			Tr20 or TM22 with ER20 or ER32										
換刀時間 Tool change time			1.3 Sec. (Tool to Tool) / 2.8 Sec. (Chip to Chip)										
刀具直徑 Max. tool diameter			MT#2 / 20mm										
主軸轉速 Spindle speed		RPM / Pulley	高速 High Speed		低速 Low Speed		RPM / Pulley	高速 High Speed		低速 Low Speed			
		主軸轉速 (Spindle)	H	L	H	L	主軸轉速 (Spindle)	H	L	H	L		
		60 Hz	1-4	3900	1950	1400	700	50 Hz	1-4	3240	1655	1165	590
			2-5	2700	1350	930	460		2-5	2165	1105	775	395
			3-6	2080	1050	730	360		3-6	1685	850	605	305
Worm Gear		1186	593	438	219	Worm Gear		960	485	355	180		
		530	270	188	94			430	220	154	78		
主軸至工作檯面距離 Spindle end to table	Max.		575				648	575		645			
	Min.		200				275	200		275			
鞍座上下移動行程 Saddle seat travel			370										
工作檯面尺寸 Table Size			1170x760			800x600		535x400					
有效工作檯面尺寸 Table working space			1020x480			500x360							
主軸馬達 Spindle motor			1.5 / 0.7 kw 2 Speed						0.75/0.4 kw 2 Speed				
冷卻泵馬達 Coolant motor			60 W 2P										
機械高度 Machine height			1,880	1,880	1,880	1,880	1,880	1,880	1,160				
機械重量 Net weight Kg.			1,500	1,100	900	800	700	400					

STC-450

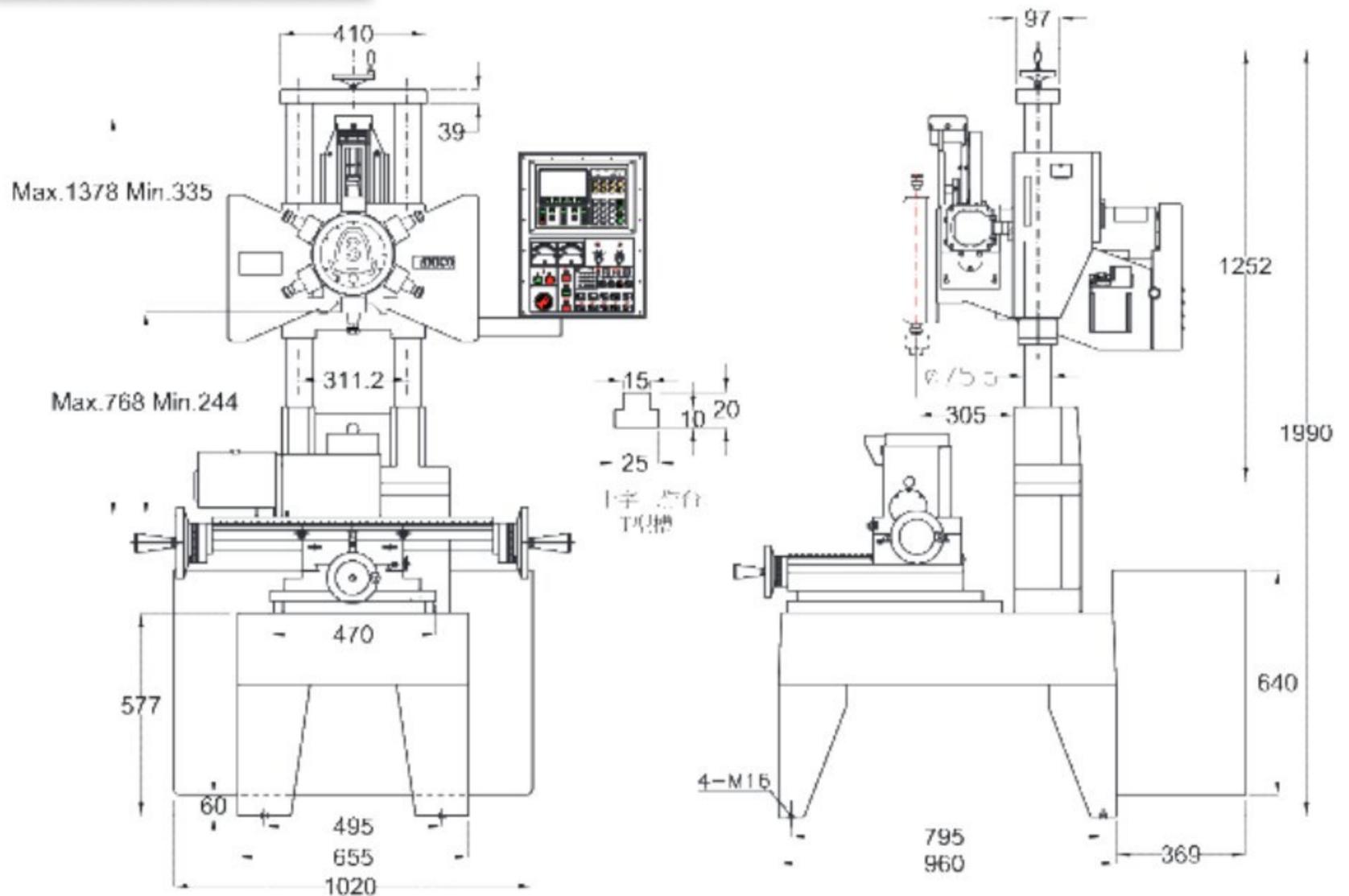




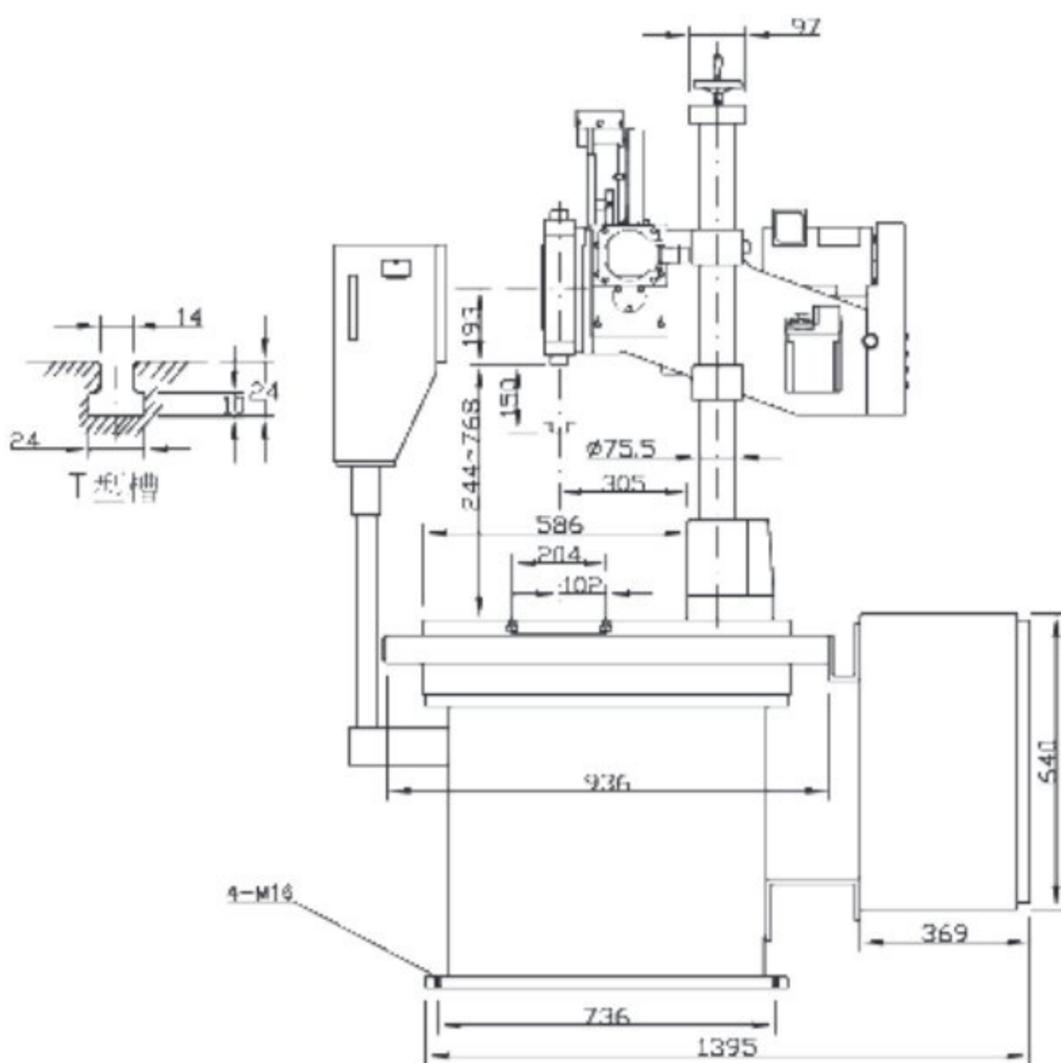
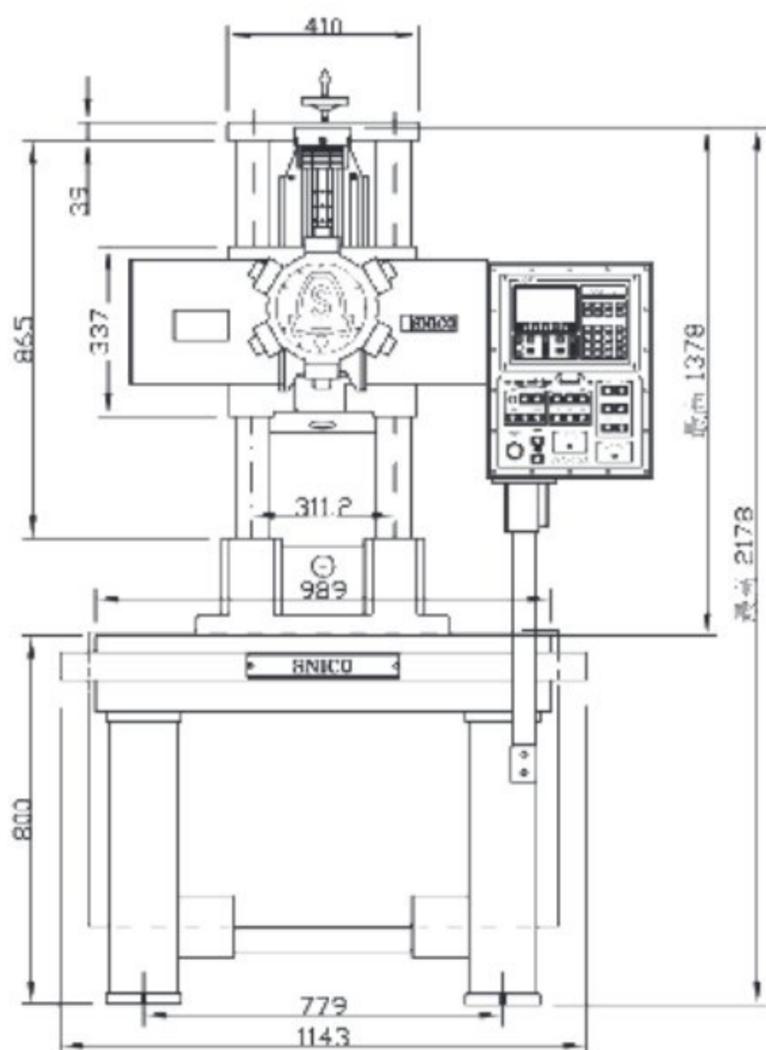
STC-200 A



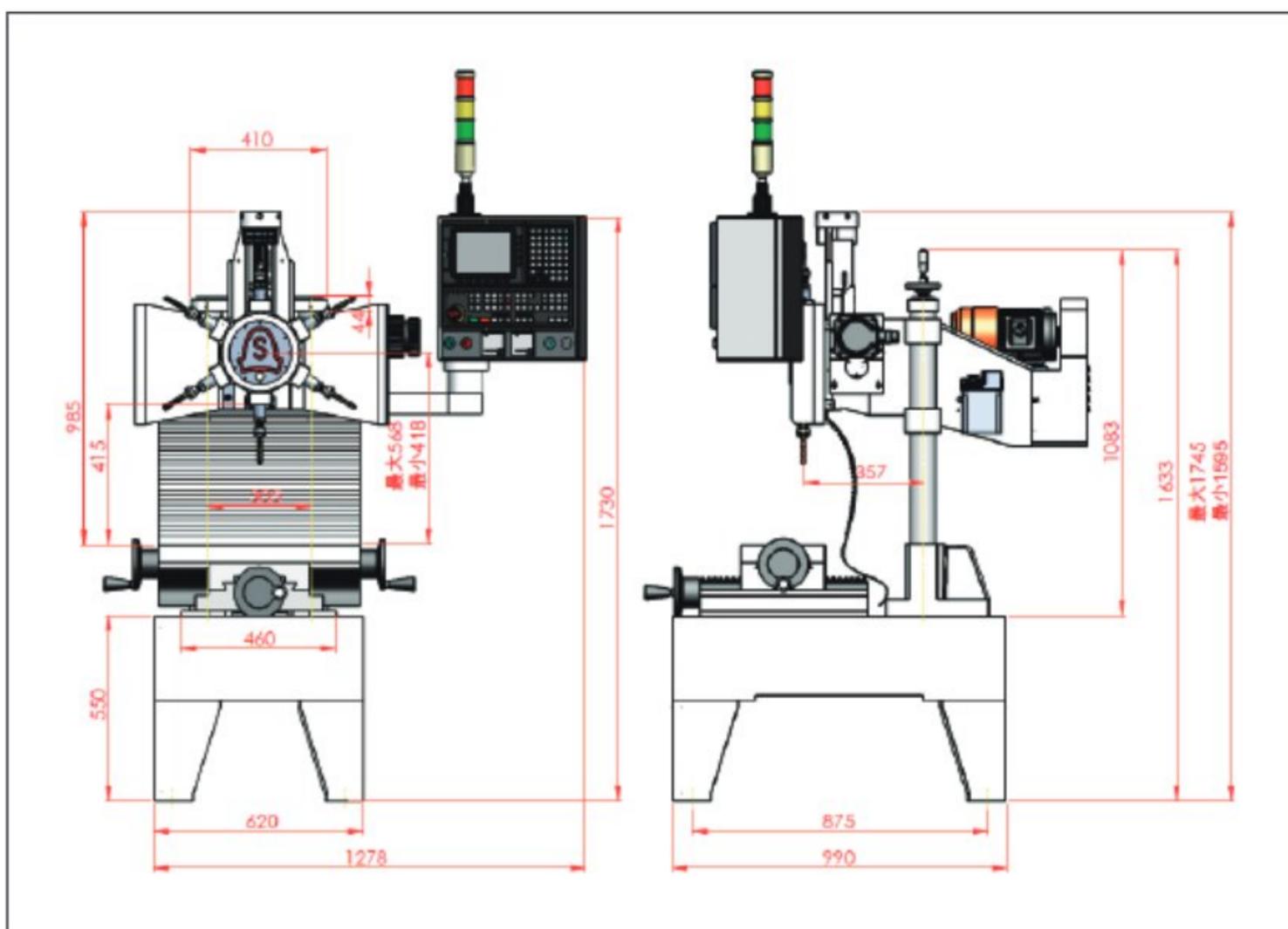
STC-200 AR



STC-16 A

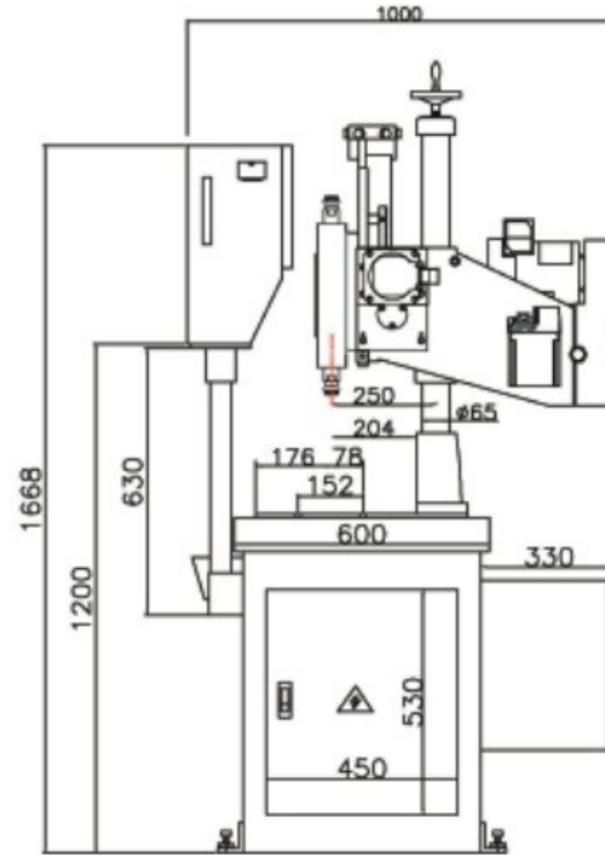
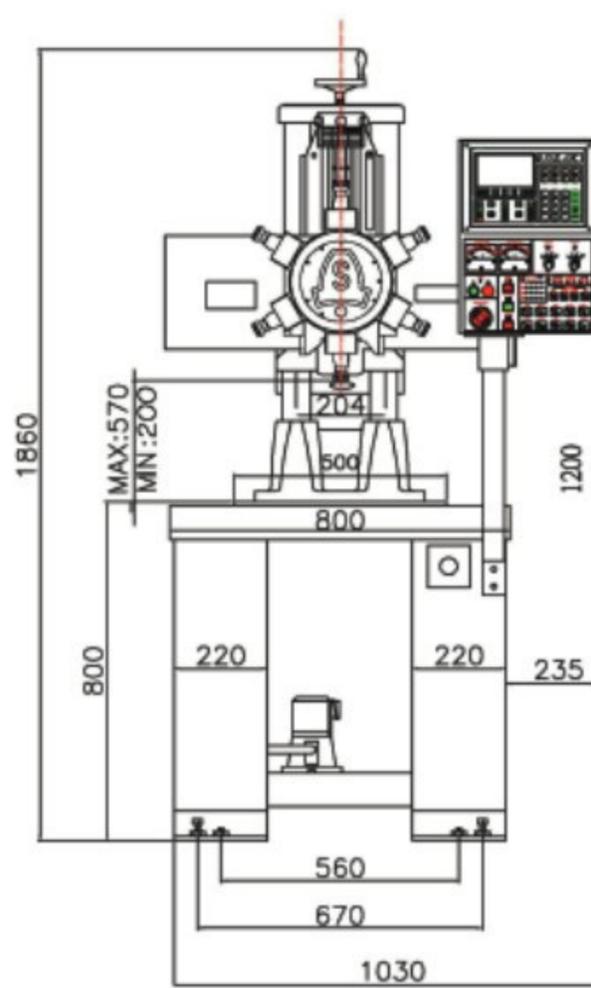


STC-16 A3





STC-12A



STC-12

