

# F850

HYUNDAI WIA Vertical Machining Center

## F850

Table Size	mm(in)	1,800×850 (70.9" ×33.5")
Maximum Load Capacity	kg(lb)	1,000 (2,204)
Spindle Taper	—	NT #40
Spindle RPM	r/min	12,000
Spindle Power Output	kW(HP)	25/10.5 (33.5/14.1)
Number of Tools	EA	24 [30]
Travel (X/Y/Z)	mm(in)	1,600/850/580 (63"/33.5"/22.8")
Rapid Feed Rate	m/min	36/36/36 (1,417/1,417/1,417)

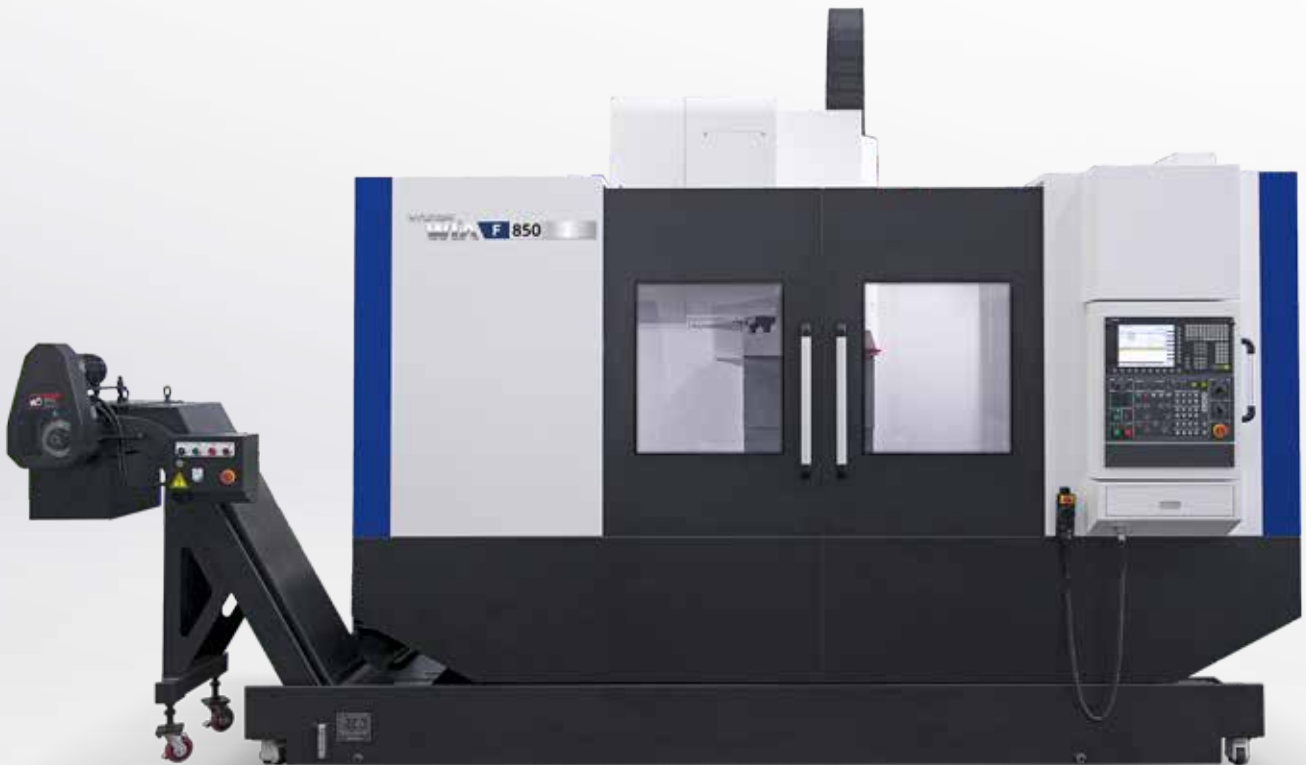
## Technical Leader

The Vertical Machining Center F850, designed by Hyundai WIA with years of expertise and the latest technology, maximizes productivity while maintaining rigidity and accuracy.



# F850 Advanced Technology, Vertical Machining Center

- Designed specifically for processing large aluminum metal plates and sheets
- 850mm(33.4") Y-axis for spacious machining area
- 4 guideways for Y-axis to enhance feed
- Roller Type LM Guide  
(130% increase in maximum load capacity compared to Ball Type)
- 12,000rpm high speed spindle with direct couplings
- High speed, 24 Tool Twin Arm ATC (C-C : 4.7sec)

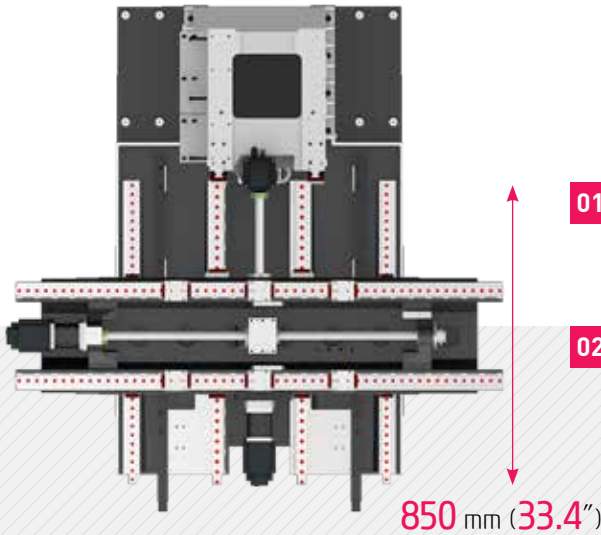


# 01

F850

## Basic Features

High Speed & Productivity Vertical Machining Center



### 01 Extended Y-axis Structure

The travel on Y-axis is designed to be 850mm(33.4"), allowing various processing of large metal plates.

### 02 Spindle

The direct coupling headstock, with the maximum output of 12,000rpm, is highly effective when it comes to high speed operations, and the shaft diameter has increased as well as the spindle thickness to enhance rigidity.



### Slideway

4 Slideways on the Y-axis to minimize sagging of X-axis, enabling manufacture of high precision products.

### Roller Type LM Guide

In order to implement fast feed rate and high rigidity, Roller Bearing LM Guideway was chosen over the conventional Ball Bearing LM Guideway, resulting in a super-fast 36m/min feed rate, at the same time reinforcing maximum load capacity.

**(130% increase)**

### Double Anchored Ballscrew

In order to eliminate thermal growth and increase accuracy, all axes are driven by high precision double anchored ballscrews.

The double anchored and pretensioned design provides outstanding positioning and repeatability with virtually no thermal growth.

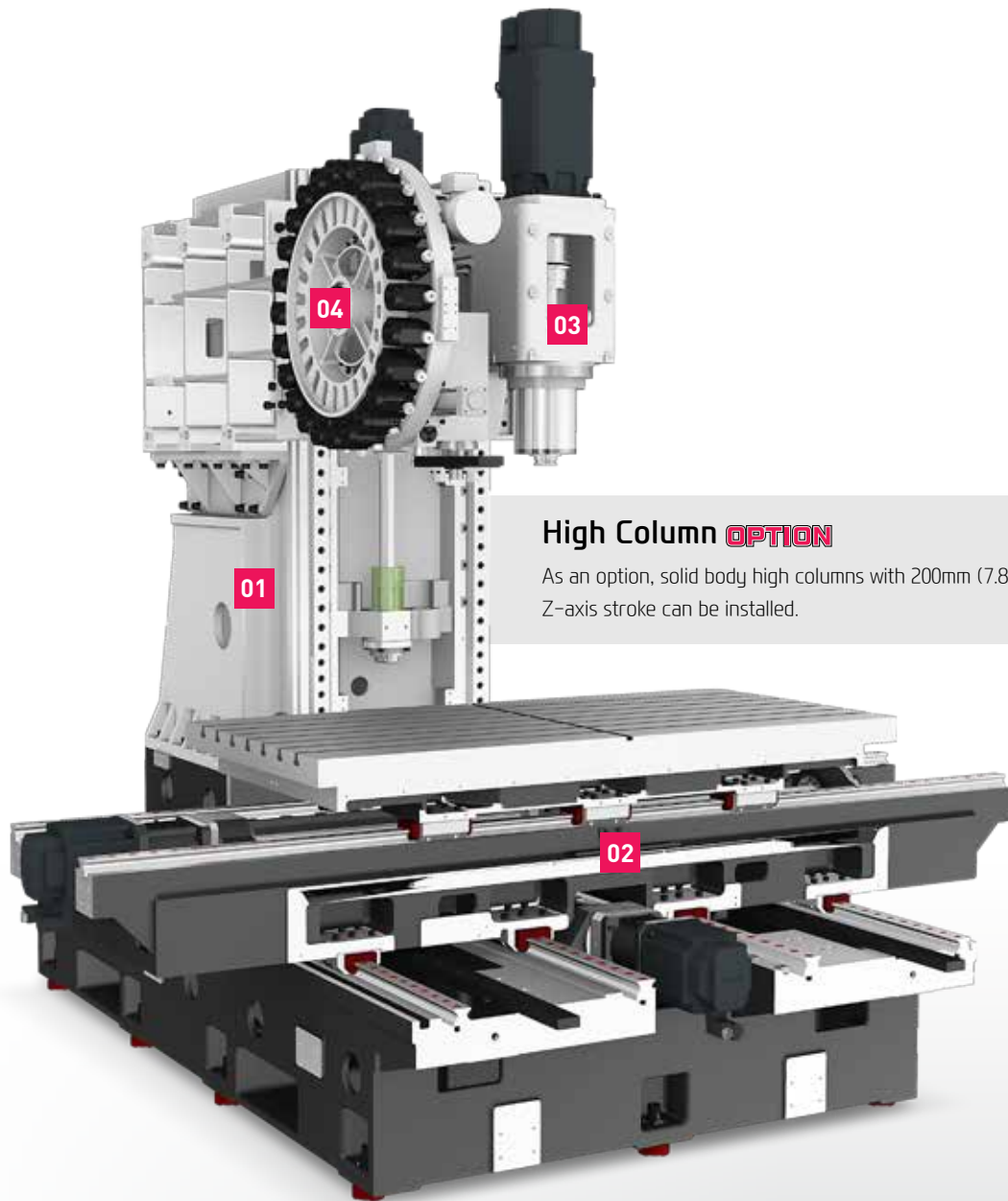


### 04 ATC & Magazine

The tool magazine holds 24 tools as standard and 30 tools as an option. The twin arm ATC makes it possible for faster tool changing and increased productivity.



## Basic Features



### High Column **OPTION**

As an option, solid body high columns with 200mm (7.8") Z-axis stroke can be installed.

## Reduction of non-cutting time

- ⦿ **Rapid Traverse Rate** (X/Y/Z axis) : **36/36/36** m/min ( **1,417/1,417/1,417** ipm)
- ⦿ **Travel** (X/Y/Z axis) : **1,600/850/580** mm ( **62.9"/33.4"/22.8"** )
- ⦿ **Maximum Load Capacity** : **1,000** kg ( **2,205** lb)

02  
F850

## High Precision Spindle

High Accuracy & High Performance  
Vertical Machining Center



## Direct Type Spindle

F850[12,000rpm] has a spindle that is directly connected to the motor so that spindle acc/deceleration time is reduced. Also, it is designed to make maintenance more convenient.

## Spindle Cooling

The spindle cooling system minimizes thermal displacement which can happen during lengthy machining operations, and offers continued accuracy based on the thermal stability.

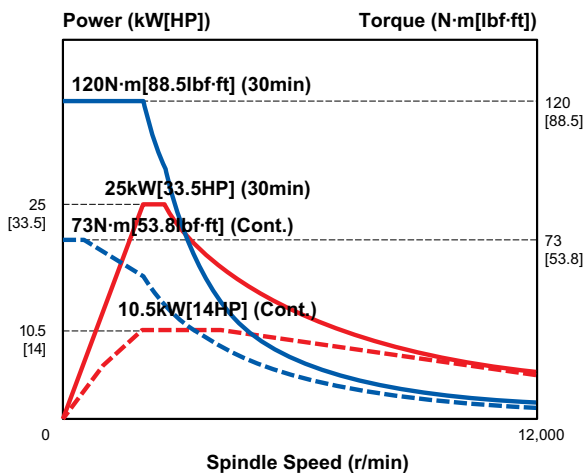
## Through Spindle Coolant **OPTION**

Through Spindle Coolant is exceedingly useful when drilling deep holes. It helps increase the lifetime of the tool, while decreasing cycle time.

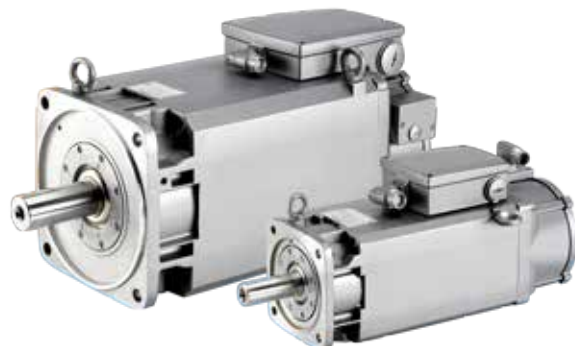


The 1PH8 Series is a high quality performance motor providing concentricity of 10 $\mu$ m and fast response time. They operate smoothly in extreme environments such as high temperature, dust and dirt. Heat emission minimizing design makes it possible to maintain a degree of accuracy at all time.

## F850 (12,000rpm)



## SIEMENS 1PH8 Spindle Motor



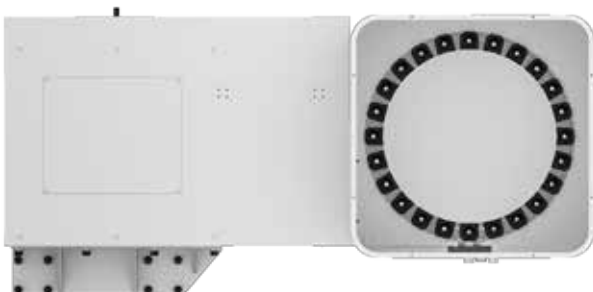


# 03

F850

## Peripheral Device

High Productivity Achieved with Rigidity and High Accuracy Machining

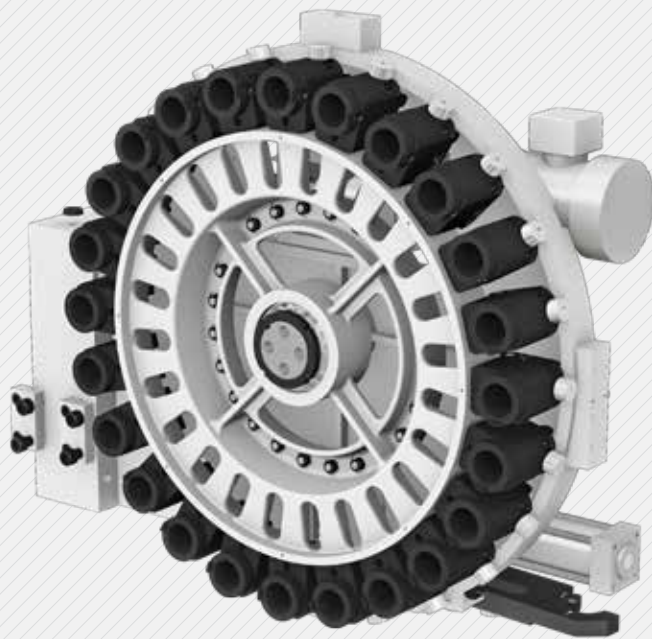


- ◉ No. of Tool : **24 [30]** EA
- ◉ Tool Shank : **BT40**
- ◉ Max. Tool Weight : **8 kg (17.6 lb)**
- ◉ Tool Selection Method : **Random**
- ◉ Tool Change Time :  
T-T : **2.0** sec C-C : **4.7** sec



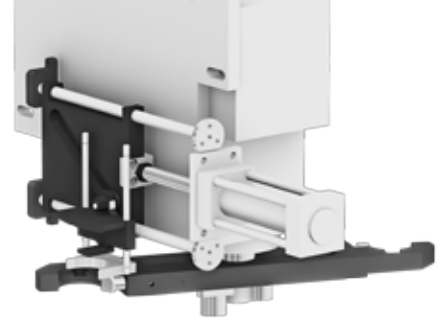
## Magazine

The tool magazine holds 24 tools as standard and 30 tools as an option.



## ATC

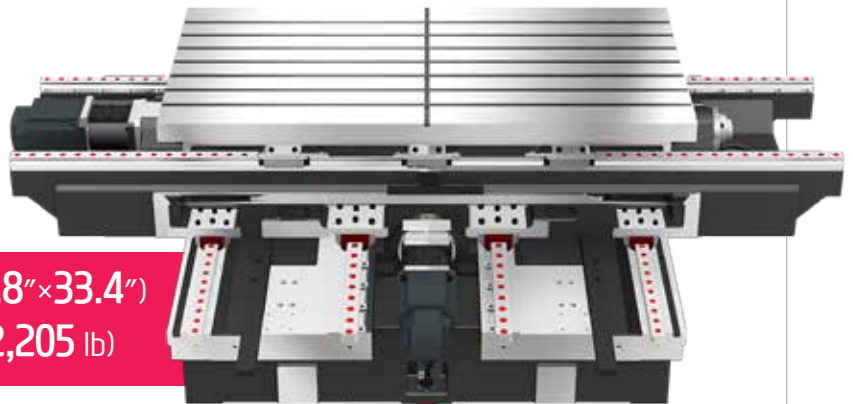
Position control through the **Twin Arm ATC** on Servo Motors has improved drastically. The twin arm ATC makes it possible for faster tool change and increased productivity.



## Table

A large, 1,800×850mm (70.8"×33.4") table is suitable for large product machining.

The table has a maximum load capacity of up to 1,000kg (2,205lb), which demonstrates its ability to handle heavy-duty tasks.

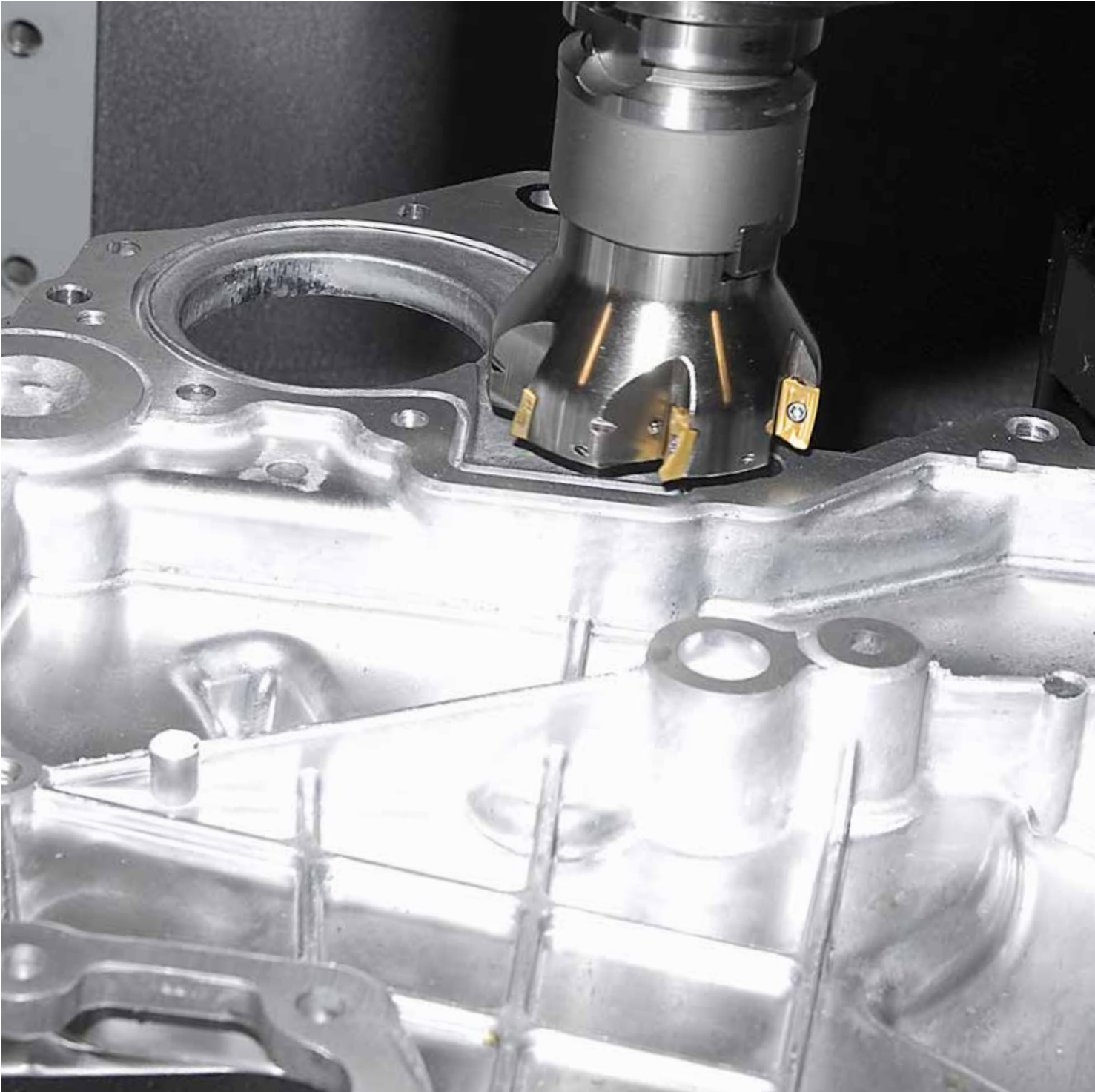


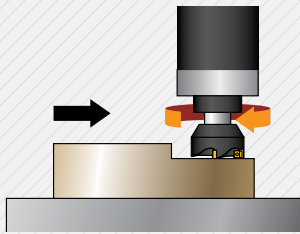
- ◎ Table Size : 1,800×850 mm (70.8"×33.4")
- ◎ Max. Load Capacity : 1,000 kg (2,205 lb)

04  
F850

## Machining Capability

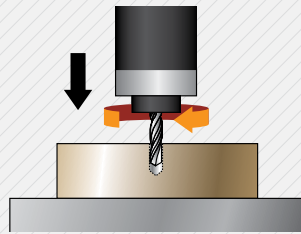
High Performance, High Accuracy Cutting  
Vertical Machining Center





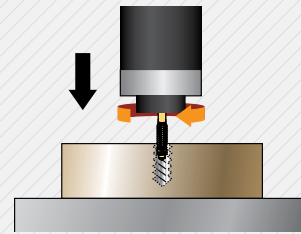
**FACE MILL** (Material(JIS):S45C(Carbon steel))

Tool diameter	<b>Ø80 (Ø3.14") x 6F</b>
Cutting depth	<b>3 mm (0.118")</b>
Cutting width	<b>70 mm (2.755")</b>
Cutting speed	<b>286 mm/min (11.25 ipm)</b>
Spindle rpm	<b>1,137 r/min</b>
Feed rate	<b>0.9 mm/rev (0.035"/rev)</b>
Chip quantity	<b>210 cc/min</b>



**DRILL** (Material(JIS):S45C(Carbon steel))

Tool diameter	<b>Ø32 (Ø1.25")</b>
Cutting depth	<b>40 mm (1.57")</b>
Cutting speed	<b>24 mm/min (0.94 ipm)</b>
Spindle rpm	<b>268 r/min</b>
Feed rate	<b>0.2 mm/rev (0.007"/rev)</b>
Chip quantity	<b>43 cc/min</b>



**TAP** (Material(JIS):S45C(Carbon steel))

Tap spec./Pitch	<b>M24 x P3.0</b>
Cutting depth	<b>40 mm (1.57")</b>
Cutting speed	<b>8 mm/min (0.31 ipm)</b>
Spindle rpm	<b>106 r/min</b>
Feed rate	<b>3 mm/rev (0.118"/rev)</b>

❖ The above results might be different based on your processing circumstances.

## Sample Workpieces



# 05

F850

## SIEMENS Controller

Software for smart operating and machining



# SIEMENS

## DIFFERENTIATED CAPABILITIES, INTEGRATED ENGINEERING PERFECTLY INTERLINKED

SIEMENS 828D is a latest model CNC.

It is designed for horizontal/vertical all-purpose equipment.

Its 80-bit control reduces processing time and increases productivity.

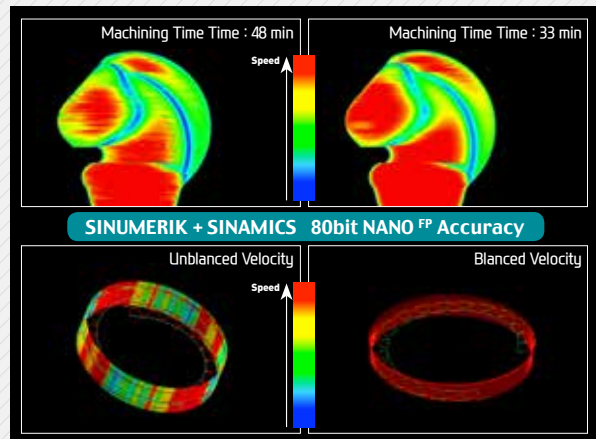
The 828D is easy to maintain and run, with its easy setup functions.





## SIEMENS Advanced Surface

SIEMENS 828D comes with Advanced Surface, metal processing software that monitors speed and accuracy.



## SIEMENS Technology

### Shop Mill

- Dialogue-type programming, simple and convenient
- Effective specifications for small quantity batch production
- Step-by-step operation possible without knowledge of the DIN/ISO code



OPTION

### 3D Simulation

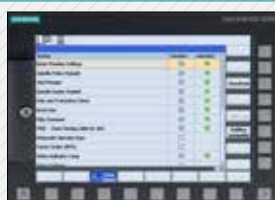
- 3D confirmation of the completed processing configuration of the NC program is possible.
- Offers standards for 2D simulation.
- Possible to confirm the simulation of the NC program during processing.



OPTION

### Easy Extend

- Easy to install/uninstall an option (Ex : barfeeder and chip conveyor, etc.)
- Possible to install in one motion without revision of individual perimeters.
- A spate list is unnecessary as option items are indicated with letters.



## SIEMENS Communication

### Variable Communication Port

RJ 45 Ethernet

USB 2.0

Compact Flash Card



Easy input/output of a program is possible as a USB memory card, a CF memory card and LAN can all be used.

### ISO Code Programming



If the ISO Dialect (G291) is ordered, JIS-based G-code programs can be used. (Standard)

# SPECIFICATIONS

## Standard & Optional

● : Standard ○ : Option ☆ : Prior Consultation - : Non Applicable

Spindle		F850	
12,000rpm (25/10.5kW)	Direct	●	
Spindle Cooling System		●	
<b>ATC</b>			
ATC Extension	24	●	
	30	○	
Tool Shank Type	BT40	●	
	BT50	-	
U-Center	D'andrea	-	
	45°	●	
	60°	○	
Stud Bolt Collet Change	60°	○	
	90°	○	
<b>Table &amp; Column</b>			
APC	Shuttle	-	
Tap Type Pallet		-	
T-Slot Pallet		●	
NC Rotary Table		☆	
High Column	200mm(7.8")	○	
<b>Coolant System</b>			
Std. Coolant (Nozzle)		●	
Bed Flushing Coolant		●	
Through Spindle Coolant*	20bar (290 psi)	○	
	30bar (435 psi), 20 ℓ (5.3 gal)	○	
	70bar (1,015 psi), 15 ℓ (4 gal)	○	
	70bar (1,015 psi), 30 ℓ (7.9 gal)	○	
Top Cover		●	
Jet Coolant		○	
Gun Coolant		○	
Side Oil Hole Coolant		☆	
Air Gun		○	
Spindle Air Blow		○	
Tool Measuring Air Blow (Only for TLM)		○	
Air Blow for Automation		☆	
Thru MQL Device (Without MQL)		☆	
Coolant Chiller		☆	
Power Coolant System (For Automation)		☆	
<b>Chip Disposal</b>			
Coolant Tank	650 ℓ (171.7 gal)	●	
Internal Screw Chip Conveyor		-	
Chip Conveyor (Tank Position/Chip Disposal)	Hinge Scrapper	Left(Left)	○
	Filter		☆
Chip Wagon	Standard (180 ℓ [47.5 gal])	○	
	Swing (200 ℓ [52.8 gal])	○	
	Large Swing (290 ℓ [76.6 gal])	○	
	Large Size (330 ℓ [87.2 gal])	○	
	Customized	☆	
<b>Safety Device</b>			
Total Splash Guard		●	
<b>S/W</b>			
DNC Software		○	
Spindle Heat Distortion Compensation		○	
Spindle Warm up Function		○	
Machine Monitoring System (HW-MMS)		☆	
<b>ETC</b>			
Tool Box		●	
Customized Color	Need Munsell No.	☆	
CAD & CAM Software		☆	

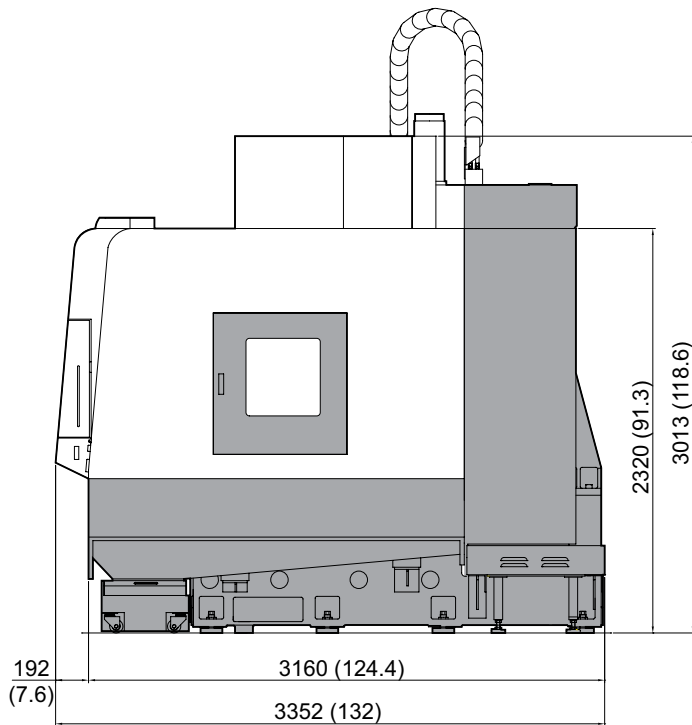
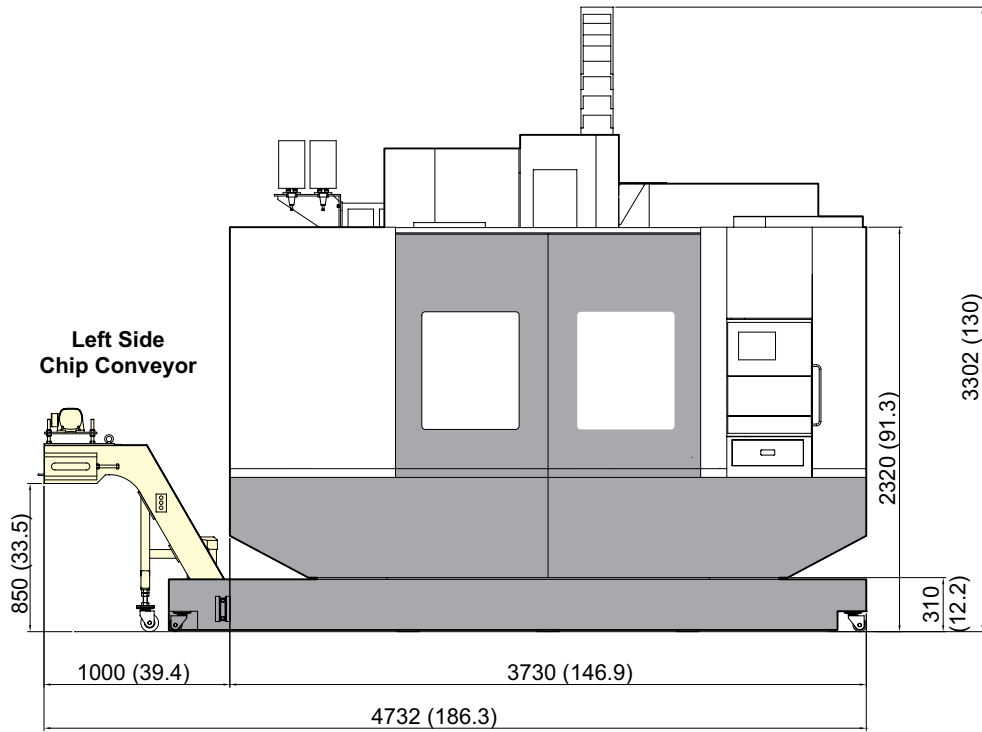
Electric Device		F850
Call Light	1 Color : ●	●
Call Light	3 Color : ● ● ●	○
Call Light & Buzzer	3 Color : ● ● ● B	○
Work Light		●
Electric Cabinet Light		○
Door Inter-Lock		●
Remote MPG		●
3 Axis MPG		○
Spindle Load Meter	LED Type	-
Spindle Speed Meter	LED Type	-
Work Counter	Digital	○
Total Counter	Digital	○
Tool Counter	Digital	○
Multi Tool Counter	6EA	○
	9EA	○
Electric Circuit Breaker		○
AVR (Auto Voltage Regulator)		☆
Transformer	45kVA	○
	55kVA	-
Flash Memory Card		○
Auto Power Off		○
Back up Module for Black out		○
<b>Measuring Device</b>		
Air Zero	TACO	○
	SMC	○
Work Measuring Device		○
TLM	Touch	○
	Laser	○
Tool Broken Detecting Device		☆
Linear Scale	X/Y/Z Axis	○
Coolant Level Sensor (Only for Chip Conveyor)		☆
<b>Environment</b>		
Air Conditioner		○
Dehumidifier		○
Oil Mist Collector		○
Oil Skimmer (Only for Chip Conveyor)		○
MQL (Minimal Quantity Lubrication)		☆
<b>Fixture &amp; Automation</b>		
Auto Door	Std.	○
	High Speed	○
Auto Shutter (Only for Automatic System)		☆
Sub O/P		☆
NC Rotary Table/F	Single	○
	Channel	☆
Control of Additional Axis	1Axis	○
	2Axis	☆
External M Code 4ea		○
Automation Interface		☆
I/O Extension (In & Out)	16Contact	○
	32Contact	○
<b>Hyd. Device</b>		
Std. Hyd. Unit	45bar (652.7 psi) / 20 ℓ (5.3 gal)	●
	70bar (1,015 psi) / 65 ℓ (17.2 gal)	-
Hyd. Unit for Fixture	45bar (652.7 psi)	○
	70bar (1,015 psi)	○
	100bar (1,450 psi)	☆
	Customized	☆

Through Spindle Coolant\* : Please check the filter types with sales representative.  
Specifications are subject to change without notice for improvement.

# SPECIFICATIONS

## External Dimensions

unit : mm(in)

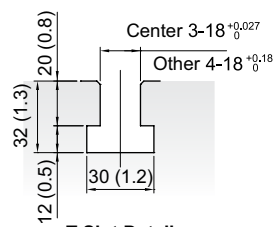
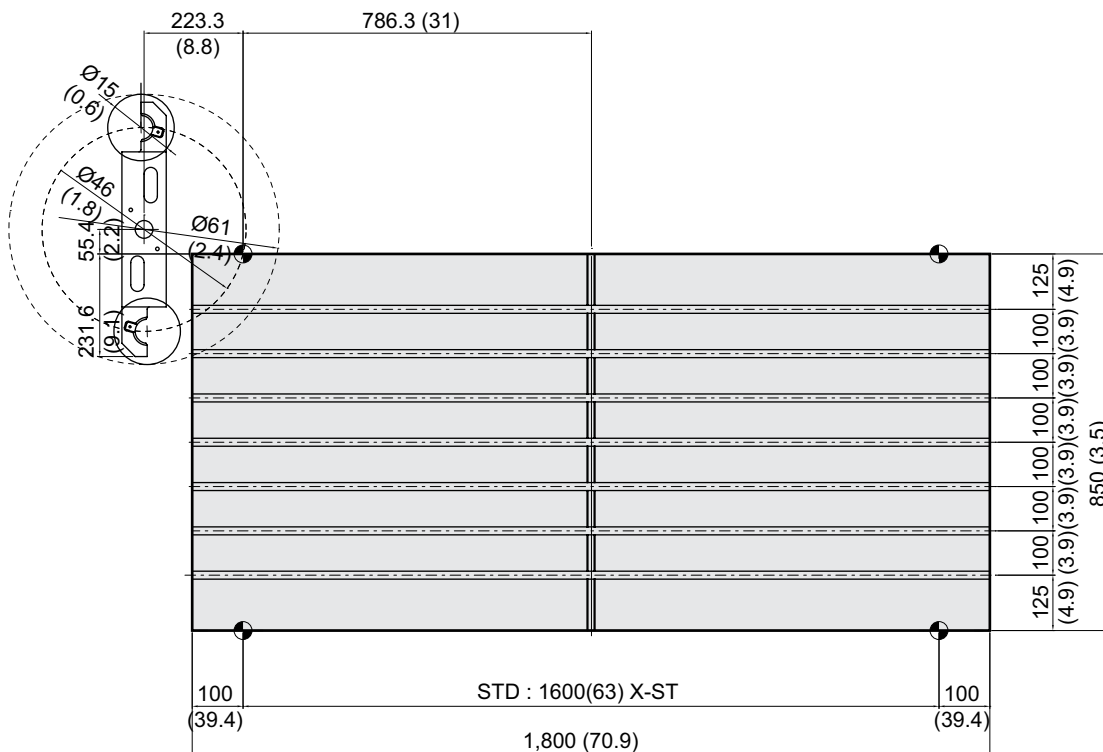




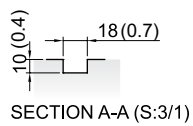
# SPECIFICATIONS

## Table Dimensions

unit : mm(in)



T-Slot Detail

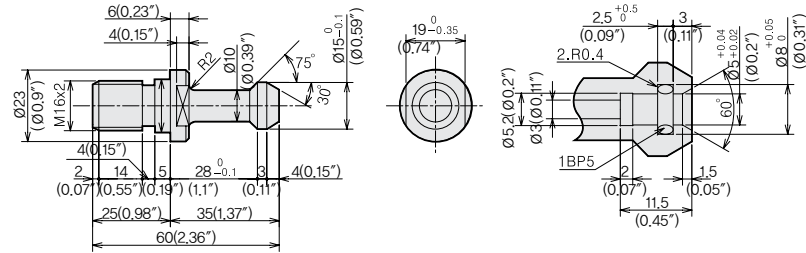
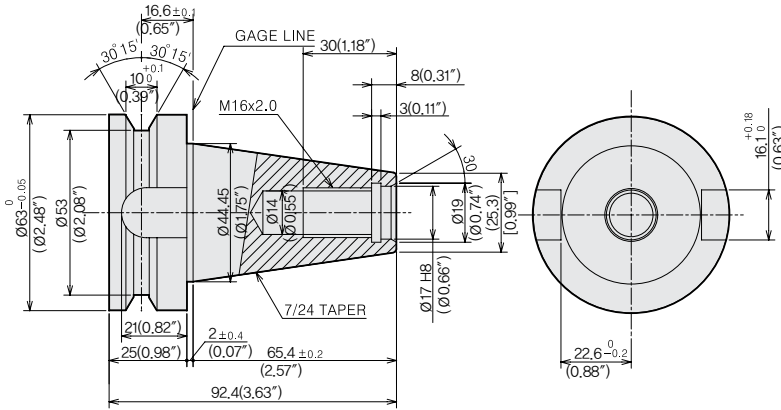


# SPECIFICATIONS

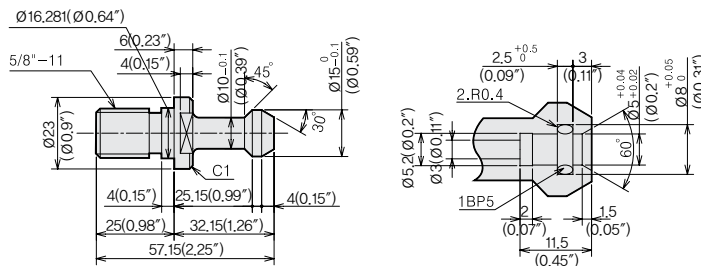
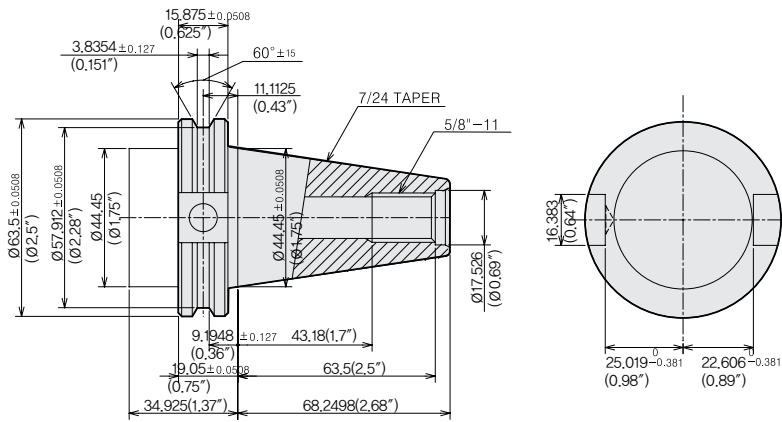
Tool Shank

unit : mm(in)

BT40



CAT40



# SPECIFICATIONS

## Specifications

[ ] : Option

ITEM		F850	
TABLE	Table Size	mm(in)	1,800×850 (70.9"×33.5")
	Maximum Load Capacity	kg(lb)	1,000 (2,204)
	Table Change Time	sec	-
	Change Method	-	-
	Table Driving Method	-	-
SPINDLE	Spindle Taper	-	PT #40
	Spindle RPM	r/min	12,000
	Spindle Power Output (Max./Cont.)	kW(HP)	25/10.5 (33.5/14)
	Spindle Torque (Max./Cont.)	N·m(lbf·ft)	120/73 (88.5/53.8)
	Spindle Driving Method	-	DIRECT
FEED	Travel (X/Y/Z)	mm(in)	1,600/850/580 (63"/33.5"/22.8")
	Distance from Table Surface to SP	mm(in)	150~730 (5.9"~28.7")
	Distance from Column to SP. center	mm(in)	932 (36.7")
	Rapid Traverse Rate (X/Y/Z)	m/min(ipm)	36/36/36 (1,417/1,417/1,417)
	Slide Type	-	ROLLER GUIDE
ATC	Number of Tools	EA	24 [30]
	Tool Shank	-	BT40
	Max. Tool Dia. (W.T / W.O)	mm(in)	∅90/∅150 (3.5"/5.9")
	Max. Tool Length	mm(in)	300 (11.8")
	Max. Tool Weight	kg(lb)	8 (17.6)
	Tool Selection Method	-	RANDOM
	Tool Change Time	T-T	sec
C-C		sec	4.7
TANK CAPACITY	Coolant Tank	ℓ (gal)	650 (171.7)
	Lubricating Tank	ℓ (gal)	3.1 (0.8)
	Hydraulic Tank	ℓ (gal)	13 (3.4)
POWER SUPPLY	Air Consumption (0.5MPa)	ℓ /min(gal)	500 (132.1)
	Electric Power Supply	KVA	65
	Thickness of Power Cable	Sq	OVER 25
	Voltage	V/Hz	380V, 50/60Hz
MACHINE	Floor Space (L×W)	mm(in)	3,730×3,352 (146.9"×132")
	Height	mm(in)	3,302 (130")
	Weight	kg(lb)	15,000 (3,307)
NC	Controller	-	SIEMENS 828D

# CONTROLLER

## SIEMENS 828D

### Control Function

Max. configuration of axes	5 axes
Max. configuration of axes and sp.	6 axes (axes + spindle)
Least Command/input	0.0001mm / 0.00001inch

### Feed Function

Feedrate Override	0 - 120%
Rapid Traverse Override	F0, 5, 25/50, 100%
Acceleration with jerk limitation	
Programmable acceleration	
Follow-up mode	
Measuring system 1 and 2, selectable	
Separate path feed for corners and chamfers	
Travel to fixed stop	

### Spindle Functions

Spindle Override	
Spindle Orientation	
Spindle Speed Limitation	50% - 120%
Rigid Tapping	

### Interpolations

Linear interpolation axes	Max 4 axes
Circle via center point and end point	
Circle via interpolation point	
Helical interpolation	
non-uniform rational B splines	
Advanced Surface	High Speed, High Rigidity Function
Compressor for 3-axis machining	

### Tool Function

Tool Nose R Comp./Tool Radius Comp.	
Zero Offset (G54, G55, G56, G57, G58, G59)	Standard 100 EA
Programmable Zero Offset	
3D Tool Radius Compensation	
Tool management	

### Display

CRT / MDI	TFT 10.4" Color
Screen saver	

### Manual Operation

Manual Handle/Jog Feed	
Reposition	
Reference Approach	Ref 1, 2 Approach
Spindle Control	Start, Stop, Rev, Jog, Ort.

### Auto Operation

Single Block	
Feed Hold	
Optional Block Skip	
Machine Lock	
Dry Run	
Simulation	2D

### Diagnosis Function

Alarm Display	
Monitor	
PLC status/LAD display	

### Programming Function

Part Program Storage Length	5MB
Program Name	23 digits
Subroutine Call	Protection Level
Absolute/Incremental Command	G90 - G91
Scaling, ROT	
Inch / Metric Conversion	
Conversational Cycle Program	
Block Search	
Macro	
Read / Write System Variable	
BackGround Editing	
Miscellaneous Functions	M - Code
Label Skip	
Program Stop / End	M00, M01, M02, M30
Lookahead, Jerk Limitation Feed & Forward Control	150 Block
SIEMENS Program exe.	
Maximum number of tools/cuttings	256/512
Number of levels for skip blocks 1	

### Protection Function

Emergency Stop	
Over Travel	Soft Limit
Contour Monitoring	
Program Protection	

### Automation Support Fun.

Actual Speed Display(Monitor)	
Tool Life Management	Time, Parts
Work Count Function	Internal

### Language Function

Two Language switchable	Chinese Traditional, Czech, Danish, Dutch, Finnish, Hungarian, Japanese, Korean, Polish, Russian, Swedish, Portuguese, Turkish
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### Data Transfer

RS 232C I/F	
Ethernet	
USB Memory Stick & CF Card	

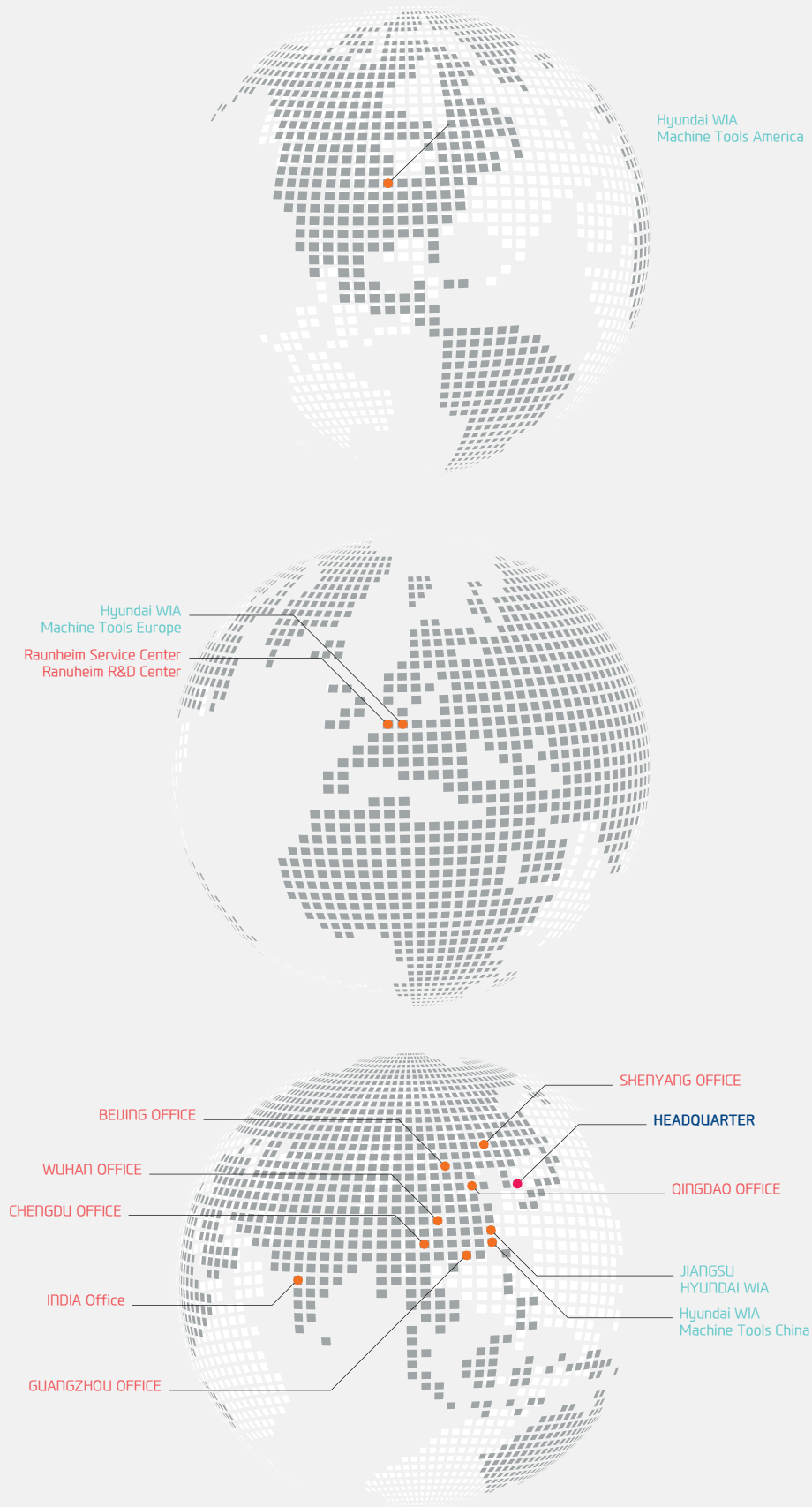
### Option

DRF offset	
Load and save of MDI	
Teach-in	
Number of levels for skip blocks 8	
Simulation in 3-D display	
Shop Mill	Interactive Program
Cylinder interpolation	
Polar coordinate interpolation	

Figures in inch are converted from metric values.

Specifications are subject to change without notice for improvement.

# GLOBAL NETWORK





## HEADQUARTER

### Changwon Technical Center / R&D Center / Factory

153, Jeongdong-ro, Seongsan-gu, Changwon-si,  
Gyeongsangnam-do, Korea (Zip Code : 51533)  
TEL : +82 55 280 9114      FAX : +82 55 282 9680

### Uiwang Technical Center / R&D Center

37, Cheoldobangmulgwan-ro, Uiwang-si, Gyeonggi-do,  
Korea (Zip Code : 16082)  
TEL : +82 31 596 8209      Fax : +82 55 210 9804

## OVERSEAS OFFICES

### HYUNDAI WIA Machine Tools America

265, Spring Lake Drive, Itasca, IL, 60143  
TEL : +1 201 489 2887  
FAX : +1 201 489 2723

### Jiangsu HYUNDAI WIA

No.6 Fenghuang Road, Fenghuang Town,  
Zhangjjagang City, Jiangsu province,  
China  
TEL : +86 512 5672 6808  
FAX : +86 512 5671 6960

### Chengdu Office

NO.508 Room, B Block, AFC Plaza, NO.88  
Jiaozi Road, High-tech Zone, Chengdu,  
China 610041  
TEL : +86 28 8665 5550  
FAX : +86 28 8666 2985

### HYUNDAI WIA Machine Tools Europe

Kaiserleipromenade 5, D-63067  
Offenbach, Germany  
TEL : +49 69271 472 701  
FAX : +49 69271 472 719

### Hyundai WIA Machine Tools China Shanghai Office

1-3F, Bldg6, No.1535 Hongmei Road,  
Xuhui District, Shanghai, China, 200233  
TEL : +86 21 6427 9885  
FAX : +86 21 3431 0376

### Wuhan Office

Room 302, B tower, Donghe Center,  
Dongfeng three road, Zhuankou, Wuhan,  
Hubei, China 430056  
TEL : +86 27 5956 3256~7  
FAX : +86 27 5952 3258

### Raunheim Service Center Raunheim R&D Center

Kelsterbacher Strasse 51, 65479  
Raunheim, Germany  
TEL : +49 6142 9256 0  
FAX : +49 6142 834 100

### Beijing Office

13 Floor Building B Zhonghangji square,  
No.15 Ronghua South Road, Yizhuang  
Economic and Technological Development  
Zone District, Beijing, China 100176  
TEL : +86 10 8453 9850~2  
FAX : +86 10 8453 9853

### Qingdao Office

Room 1207, Caifu Building, 182-6 Haier  
Middle Road, Qingdao, China 266061  
TEL : +86 532 8667 9333~5  
FAX : +86 532 8667 9338

### Inida Office

#4/169, Rajiv Gandhi Salai, (OMR),  
Kandanchavadi, Chennai-600 096,  
Tamilnadu, India  
TEL: +91-44-3290-1719

### Guangzhou Office

Room 311, Unit 1-3, Poly Tal Tu Wun,  
Hanxi Avenue, Panyu District, Guangzhou,  
China 511400  
TEL : +86 20 8550 6595~6  
FAX : +86 20 8550 6597

### Shenyang Office

Room 1304, NO.53 Beizhan Road, Shenhe  
District, Shenyang, China 110013  
TEL : +86 24 3228 6640  
FAX : +86 24 3228 6642



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**Head Office & Factory**

153, Jeongdong-ro, Seongsan-gu, Changwon-si, Gyeongsangnam-do

Tel +82 55 280 9206, 9299 Fax +82 55 210 9804

[machine.hyundai-wia.com](http://machine.hyundai-wia.com)

**Overseas Sales Team**

16F, 37, Cheoldobangmulgwan-ro, Uiwang-si, Gyeonggi-do

Tel +82 31 593 8173