

# FD Series

HYUNDAI WIA Column Moving Type Vertical Machining Center



# Technical Leader

The Vertical Machining Center FD Series designed by Hyundai WIA with years of expertise and the latest technology, is a column moving type machining center equipped with Dual Table to maximize productivity.



MODEL	Y-Axis Stroke				Spindle rpm			Magazine	
	350mm (13.8")	410mm (16.1")	460mm (18.1")	600mm (23.6")	8,000	10,000	12,000	24 TOOL	30 TOOL
F410D		●			○	●		●	
F500D			●		●	○	○	●	○
F500DM	●						●		●
F600D				●	●	●	○	●	○

●: Standard ○: Option

High productivity Dual Table equipped  
High tech column moving Machining Center

# FD Series

- High precision main spindle designed with P4 Angular Contact Ball Bearings
- High power/torque main spindle for heavy duty cutting
- Dual Tables for enhanced productivity
- Latest Servo ATC for the fastest tool change time in the class
- Combination of Roller Type LM Guide and Box Guide for optimal feed (F500D)
- Roller Type LM Guide on all axes for high precision heavy cutting (F600D)
- Latest HYUNDAI-iTROL Controller with wide range of support software



# 01

FD Series

## F410D Basic Features

High Speed & Productivity Vertical Machining Center

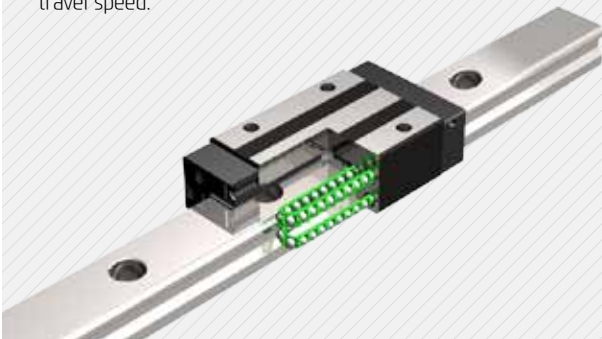
01

### Moving Column

The F410D is designed with a moving column in order to maximize productivity of the incorporated Dual Table. In addition, due to the enlargement of the column's width and symmetrical heat behavior column structure, heat displacement is minimized and machining accuracy is increased.

#### LM Guideway

F410D Ball Type LM Guide provides reduction of noise while in motion, and reduction of non-cutting time due to superior travel speed.



02

#### Double Anchored Ball screw

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

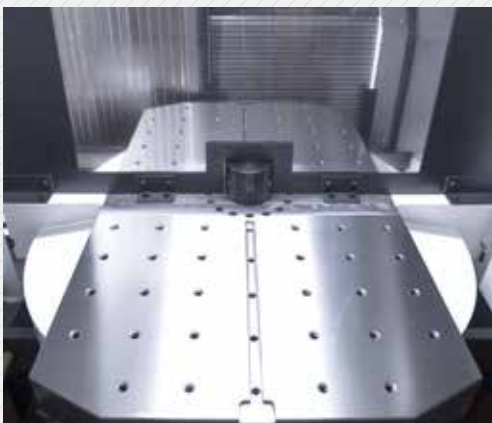
The double anchored and pretensioned design provides outstanding positioning and repeatability with virtually no thermal growth.



03

#### Directly Coupled Servo Motor

Each axis is directly connected to a highly reliable digital servo motor to provide high rigidity and minimal thermal displacement.

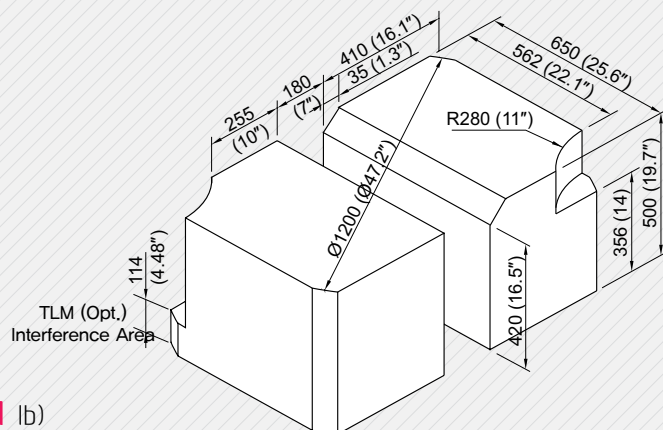


#### Dual Table

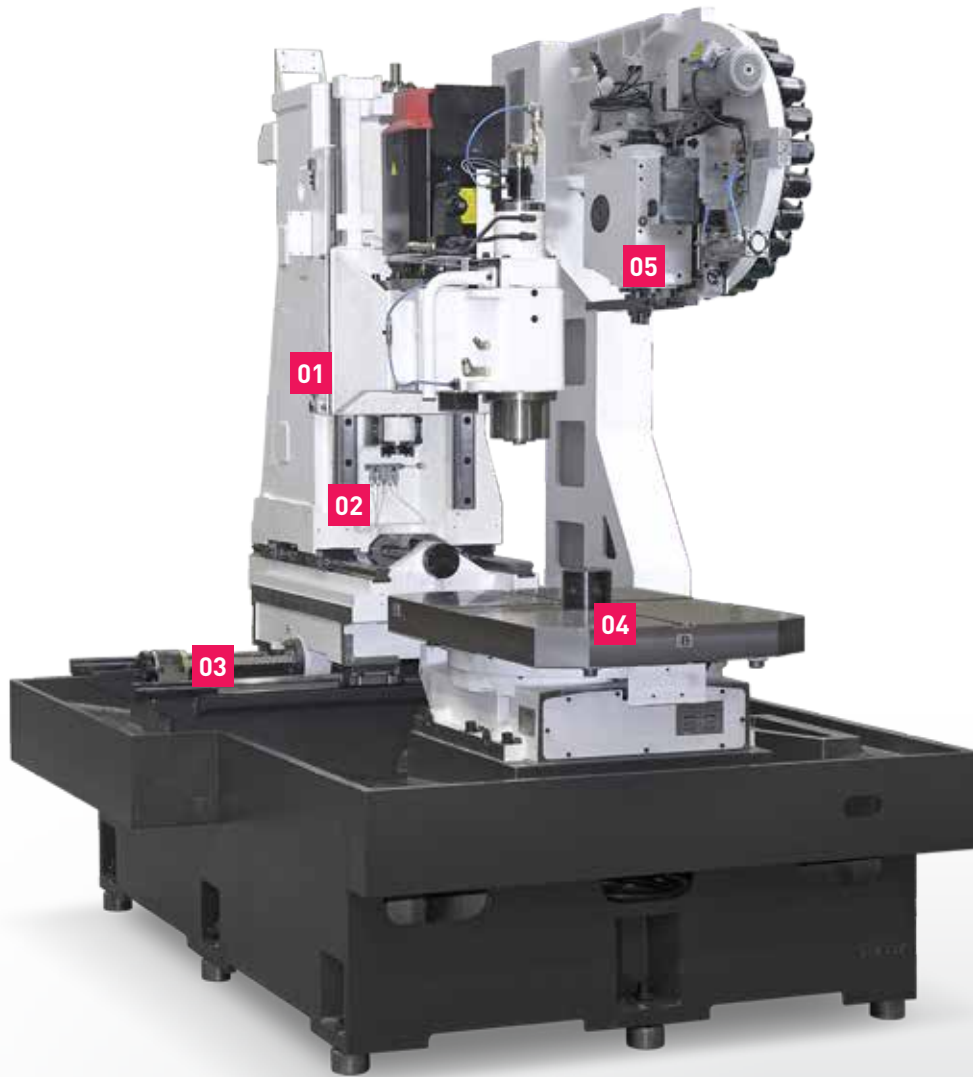
High speed 180° index rotating table increases productivity by providing the ability to load and unload on the outer table while processing on the other table.

04

- **Table Size** (L×W) : **2-650×410** mm  
(2-25.6"×16.1")
- **Max. Load Capacity** : **2-250** kg (2-551 lb)
- **Table Change Time** : **5.2** sec



# Basic Features



## 05 ATC Speed Improvement

Tool to Tool Time



Chip to Chip Time



- Rapid Traverse Rate** (X/Y/Z axis) :  
 36/36/30 m/min (1,417/1,417/1,181 ipm)
- Spindle Speed** : 10,000 [8,000] [10,000] rpm
- Spindle Output** (Max./Cont.) :  
 18.5/15 [15/11] [18/12] kW  
 (24.8/20.1 [20.1/14.8] [24.1/16.1] HP)
- Travel** (X/Y/Z axis) :  
 570/410/580 mm (22.4"/16.1"/22.8")
- Spindle Torque** (Max./Cont.) :  
 118/95 [287/143] [189/126] N·m  
 (87/70 [211.7/15.5] [139.4/92.9] lbf·ft)

# 02

FD Series

## F500D Basic Features

High Speed & Productivity Vertical Machining Center

01

### Moving Column

The F500D is designed with a moving column in order to maximize productivity of the incorporated Dual table. In addition, due to the enlargement of the column's width and symmetrical heat behavior column structure, heat displacement is minimized and machining accuracy is increased.

### Hybrid Type Slideway

Each axis on F500D is designed with slideways optimized to the axis. Sturdy **Box Guide** on Z-axis for heavy loads, and **Roller Type LM Guides** on X and Y axis for optimal travel ability.



02

### Double Anchored Ball screw

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.



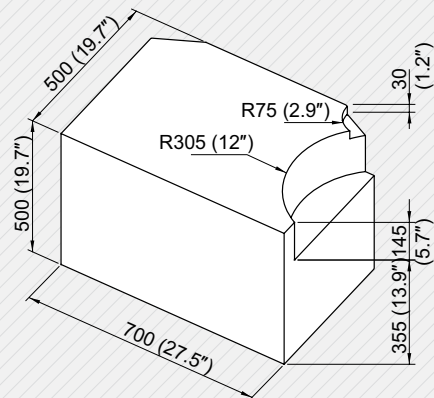
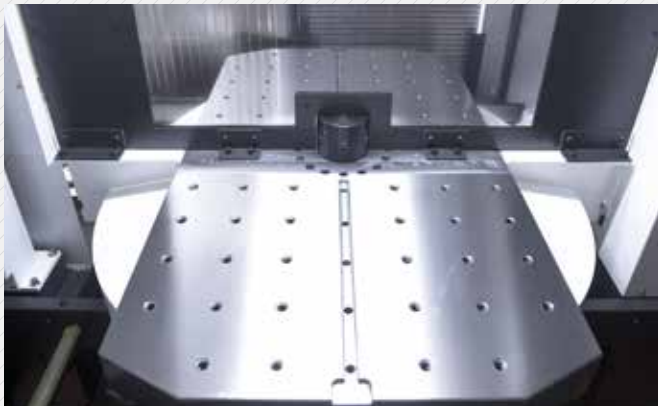
03

### Directly Coupled Servo Motor

Each axis is directly connected to a highly reliable digital servo motor to provide high rigidity and minimal thermal displacement.

### Dual Table

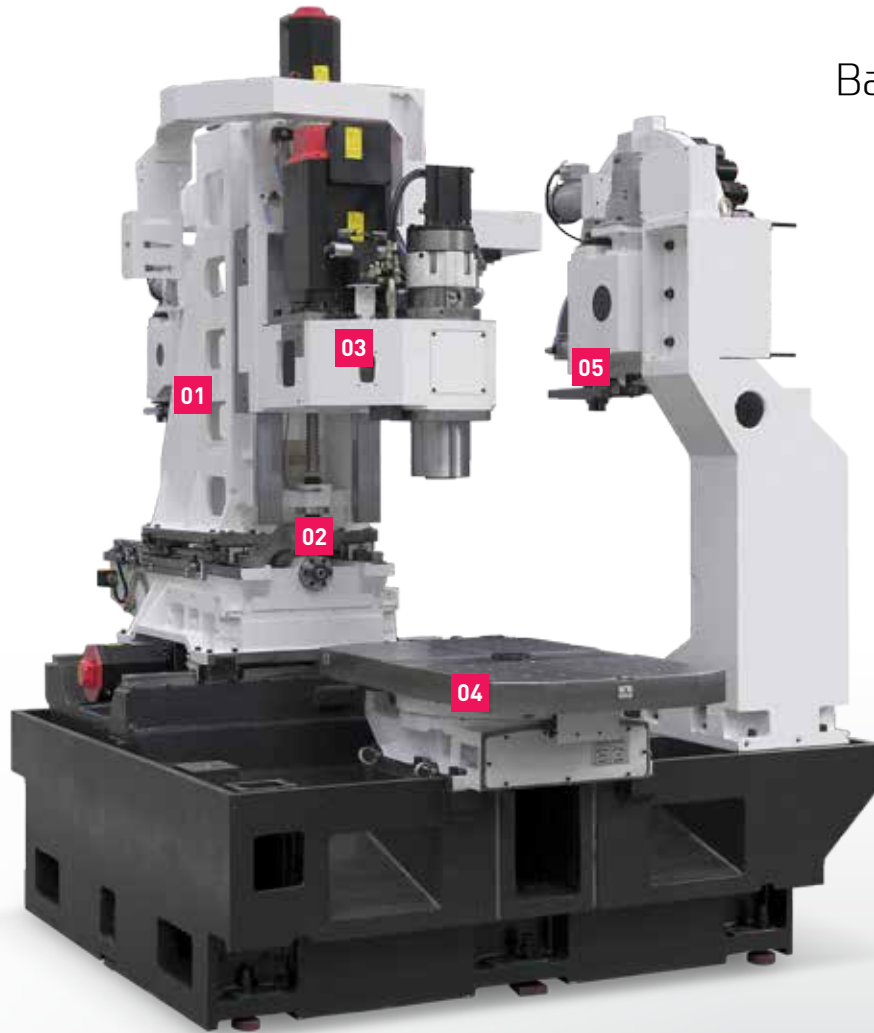
High speed 180° index rotating table increases productivity by providing the ability to load and unload on the outer table while processing on the other table.



04

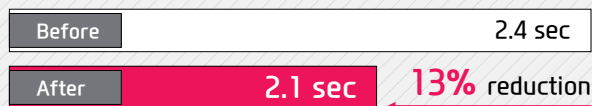
- **Table Size (L×W) :** 2-700×500 mm (2-27.6"×19.7")
- **Max. Load Capacity :** 2-350 kg (2-772 lb)
- **Table Change Time :** 6 sec

## Basic Features

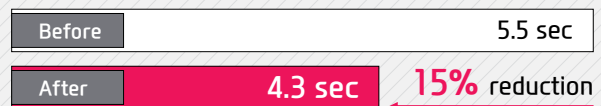


### 05 ATC Speed Improvement

Tool to Tool Time



Chip to Chip Time



- Rapid Traverse Rate** (X/Y/Z axis) F500D : 40/40/30 m/min (1,575/1,575/1,181 ipm)  
 F500DM : 40/40/36 m/min (1,575/1,575/1,417 ipm)
- Travel** (X/Y/Z axis) F500D : 600/460/570 mm (23.6"/18.1"/22.4")  
 F500DM : 600/350/570 mm (23.6"/13.8"/22.4")
- Spindle Speed** F500D : Belt 8,000 [10,000] [8,000] Direct [12,000] rpm F500DM : Direct 12,000 rpm
- Spindle Output** (Max./Cont.) F500D : 15/11 [15/11] [27.8/18.5] [11/7.5] kW  
 (20.1/14.8 [20.1/14.8] [37.3/24.8] [14.8/10] HP)  
 F500DM : 22/15 kW (29.5/20.1 HP)
- Spindle Torque** (Max./Cont.) F500D : 287/143 [230/115] [235.5/157] [70/47.7] N·m  
 (211.7/105.5 [170/84.8] [173.7/115.8] [51.6/35.2] lbf·ft)  
 F500DM : 150/102 N·m (110.6/75.2 lbf·ft)

# 03

FD Series

## F600D Basic Features

High Speed & Productivity Vertical Machining Center

01

### Moving Column

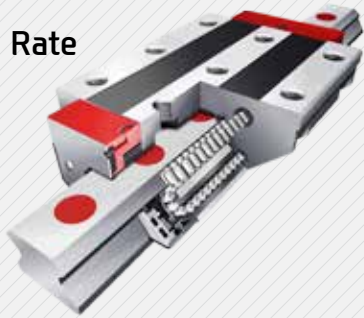
The F600D is designed with a moving column in order to maximize productivity of the incorporated Dual table. In addition, due to the enlargement of the column's width and symmetrical heat behavior column structure, heat displacement is minimized and machining accuracy is increased.

#### Roller Type LM Guide

The travel mechanism on F600D is equipped with Roller Type LM Guide for rigidity and reducing idle time.

#### Rapid Traverse Rate

42 m/min  
(1,654 ipm)



02

#### Double Anchored Ball screw

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.



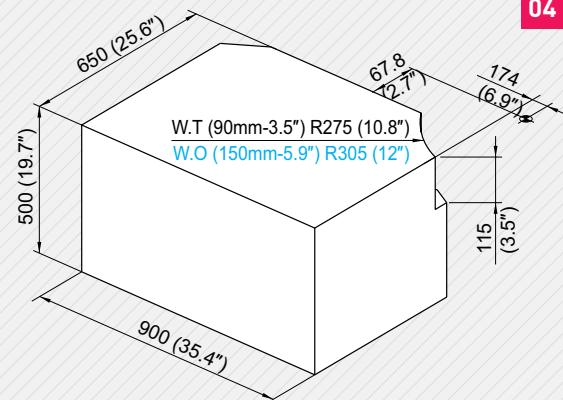
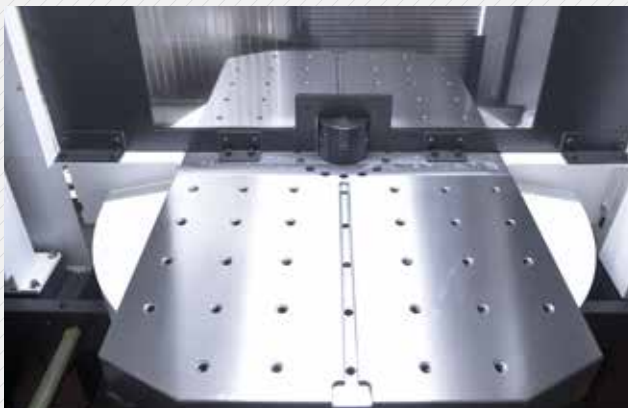
03

#### Directly Coupled Servo Motor

Each axis is directly connected to a highly reliable digital servo motor to provide high rigidity and minimal thermal displacement.

### Dual Table

High speed 180° index rotating table increases productivity by providing the ability to load and unload on the outer table while processing on the other table.

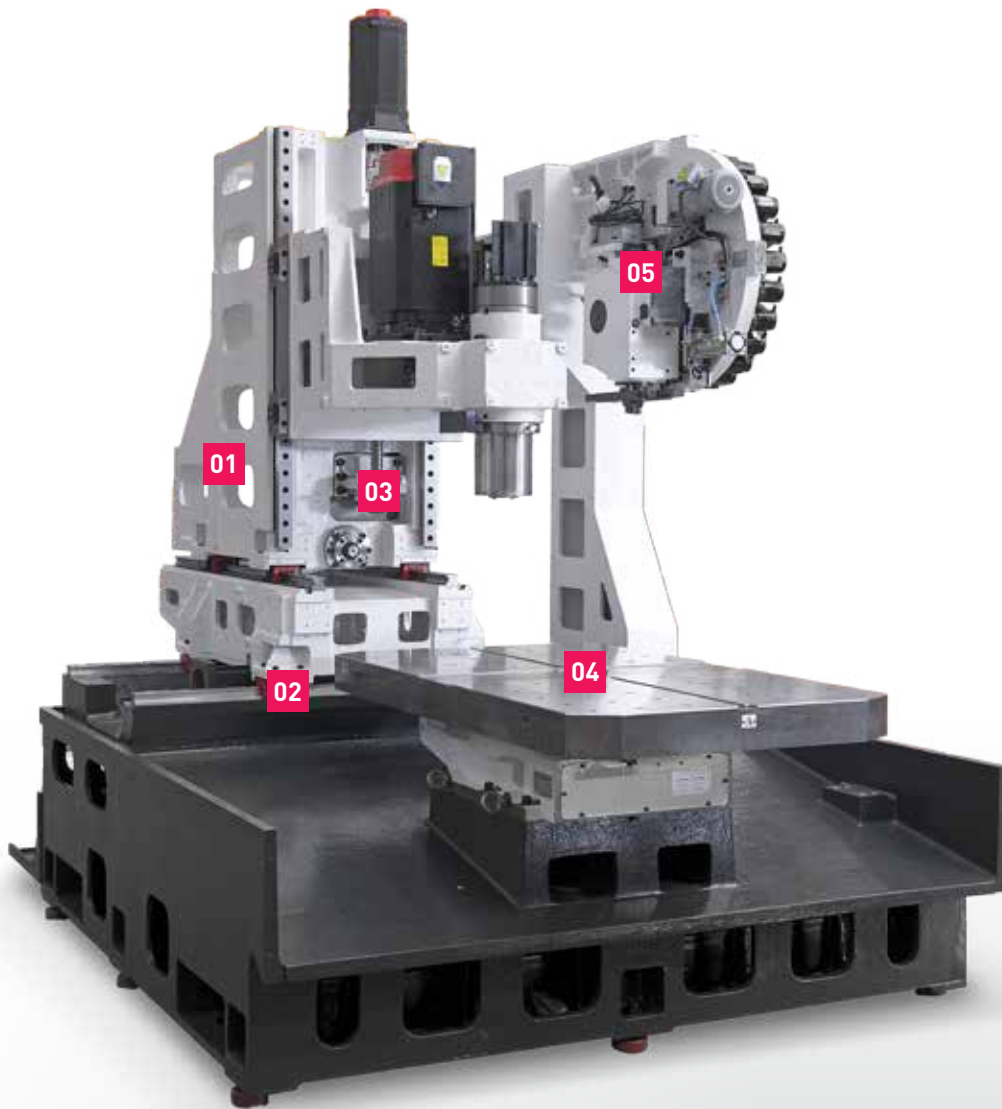


04

- **Table Size** (L×W) : 2-900×650 mm  
(2-35.4"×25.6")
- **Max. Load Capacity** : 2-400 kg (2-882 lb)
- **Table Change Time** : 8.5 sec

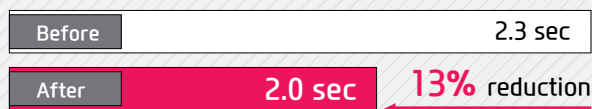


# Basic Features

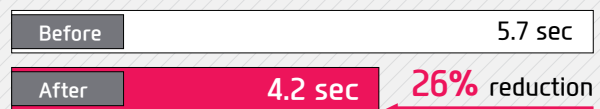


## 05 ATC Speed Improvement

Tool to Tool Time



Chip to Chip Time



⊙ **Rapid Traverse Rate** (X/Y/Z axis) :  
42/42/42 m/min (1,654/1,654/1,654 ipm)

⊙ **Spindle Speed** : 8,000 Belt [12,000 Direct] rpm

⊙ **Spindle Output**(Max./Cont.) :  
15/11 [11/7.5] kW (20.1/14.8 [14.8/10] HP)

⊙ **Travel** (X/Y/Z axis) :  
800/600/600 mm (31.5"/23.6"/23.6")

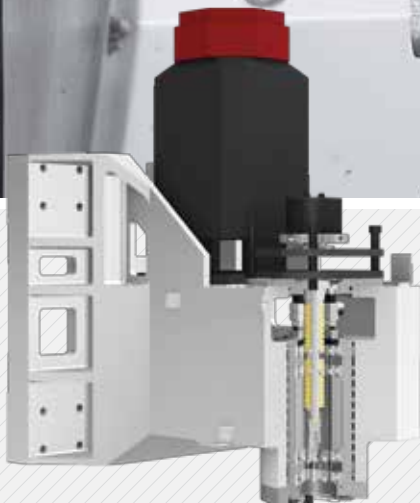
⊙ **Spindle Torque** (Max./Cont.) :  
287/143 [70/47] N·m  
(211.7/105.5 [51.6/34.7] lbf·ft)

[Option]

**04**  
FD Series

## High Precision Spindle

Long Lasting High Accuracy & Excellent Performance  
Vertical Machining Center



### Belt Type Spindle

The FD Series is equipped with a Belt Type Spindle to ease maintenance and minimize machining noise.

The main spindle is designed with P4 Angular Contact Ball Bearings to assure quality during high speed processing, also to stabilize high precision even over long periods of machining.

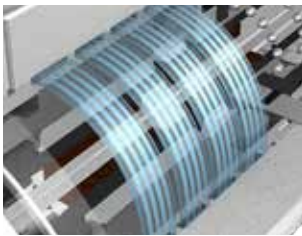
# Spindle

## OPTION

### Direct Type Spindle (F500D/600D)

The spindle motor is directly connected to the main spindle by a high speed and high precision coupling. Rapid spindle acc/deceleration is performed without backlash. The coupling also minimizes vibration and heat transfer from the motor preventing thermal displacement.

- ◉ Spindle Speed : 12,000 rpm
- ◉ Spindle Taper : NT #40



### Spindle Cooling OPTION

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.



20 bar / 30 bar / 70 bar  
(290 psi / 435 psi / 1,015 psi)

### Tool Holders

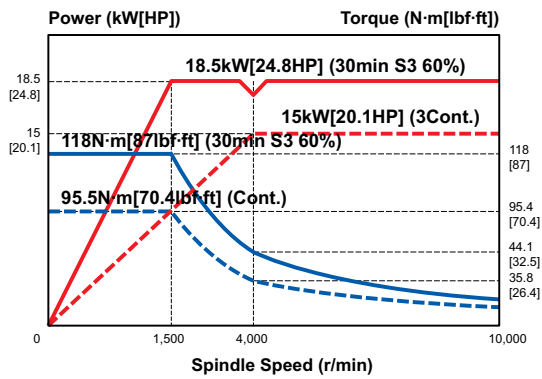
#### CAT OPTION



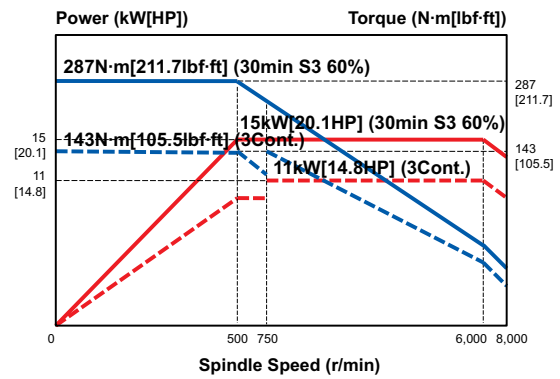
BT

# FANUC Spindle

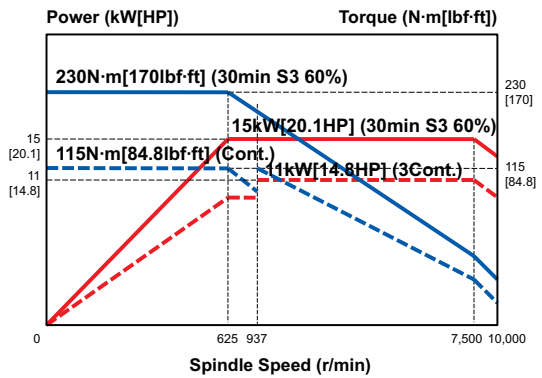
### F410D (10,000r/min, Belt)



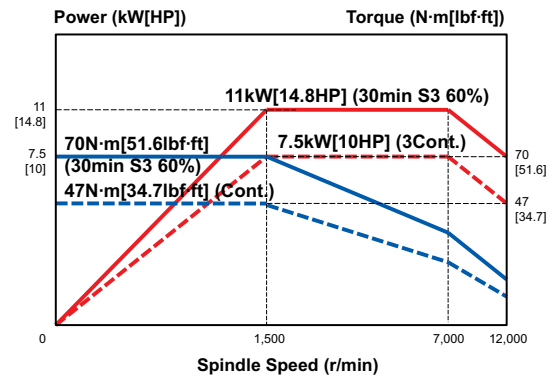
### F410D/500D/600D (8,000r/min, Belt)



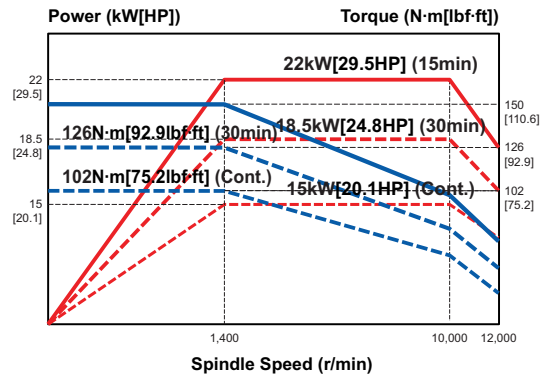
### F500D (10,000r/min, Belt)



### F500D/600D (12,000r/min, Direct)



### F500DM (12,000r/min, Direct)

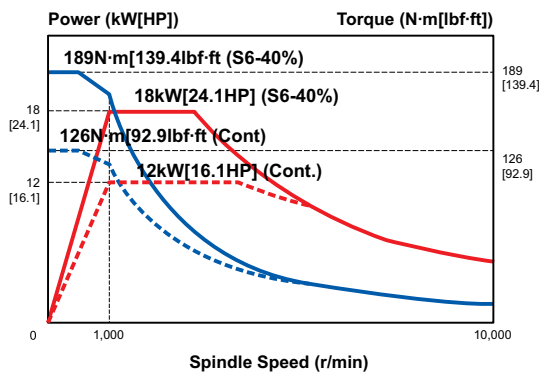


### Sample Workpieces

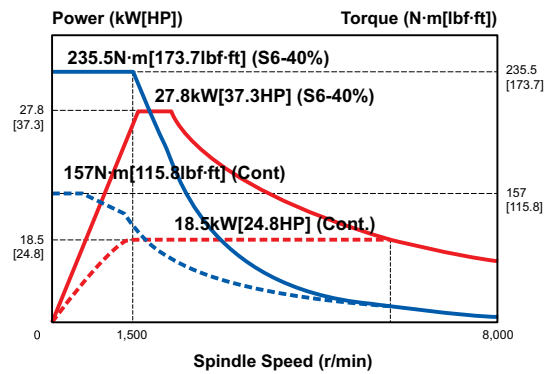


# HYUNDAI - iTROL

F410D (10,000r/min, Belt)

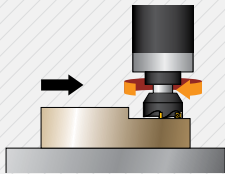


F500D (8,000r/min, Belt)



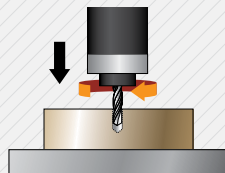
## Machining Capability

### F500D



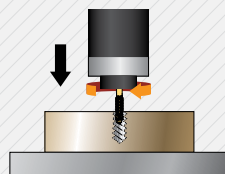
FACE MILL (Material(JIS):S45C(Carbon steel))

Tool diameter	Ø80 (Ø3.15") × 6F
Cutting depth	4.5 mm (0.177")
Cutting width	70 mm (2.755")
Cutting speed	286 m/min (11,260 ipm)
Spindle rpm	1,137 r/min
Traverse rate	0.99 mm/rev (0.038"/rev)
Chip quantity	350 cc/min



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

Tool diameter	Ø43 (Ø1.7") × MT4
Cutting depth	43 mm (1.7")
Cutting speed	27 m/min (1,063 ipm)
Spindle rpm	199 r/min
Traverse rate	0.38 mm/rev (0.015"/rev)
Chip quantity	109 cc/min



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

Tap spec./Pitch	M42 × P4.5
Cutting depth	42 mm (1.65")
Cutting speed	7 m/min (0.27")
Spindle rpm	53 r/min
Traverse rate	4.5 mm/rev (0.177"/rev)



### Rigid Tapping

The standard Rigid Tapping function allows fast and accurate tapping, leading to high efficiency and tool life extension.

❖ The above results might be different by types of processing circumstances.

# 05

FD Series

## ATC & Magazine

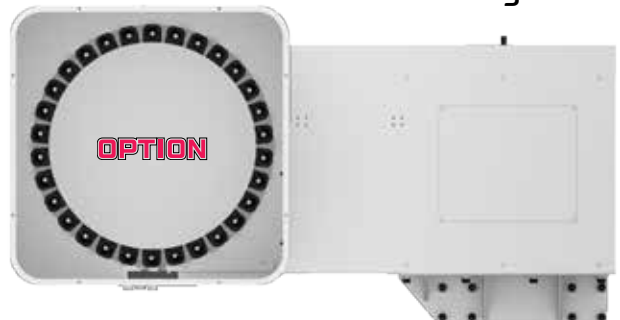
High Productivity with  
High Rigidity and Accurate Machining



24 Tool Magazine



30 Tool Magazine



## Servo ATC

Adopting the Twin Arm Servo ATC further enhances position control and shortens tool change time, maximizing productivity.

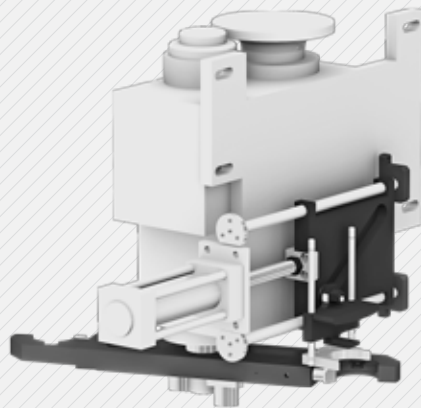
F600D standard.

Tool to Tool Time

**13%** Reduce

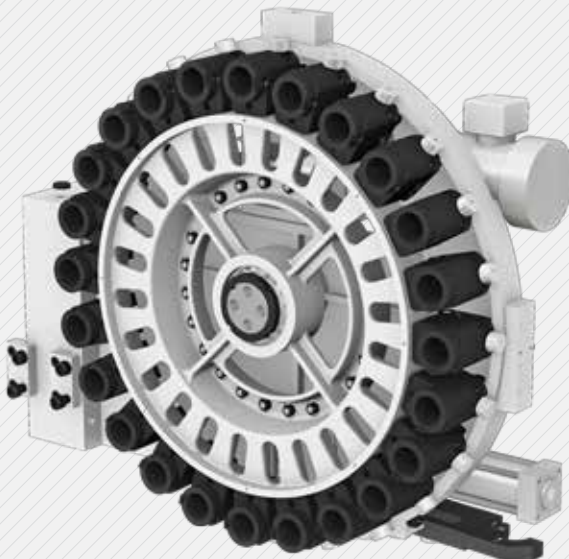
Chip to Chip Time

**26%** Reduce



## Magazine

The tool magazine holds 24 tools as standard and 30 tools as an option. Due to the wider selection of tools and the random tool selection method, tool change time has been improved.



## F410D

- ⊙ No. of Tools : **24 [30]** EA
- ⊙ Tool Shank : **BT40**
- ⊙ Max. Tool Dia. (W.T/W.O)  
**Ø90/Ø150 (Ø3.5"/Ø5.9")**
- ⊙ Max. Tool Weight : **8 kg (18 lb)**
- ⊙ Tool Selection Method :  
**Random**

## F500D/600D

- ⊙ No. of Tools : **24 [30]** EA
- ⊙ Tool Shank : **BT40**
- ⊙ Max. Tool Dia. (W.T/W.O)  
**Ø90/Ø150 (Ø3.5"/Ø5.9")**
- ⊙ Max. Tool Weight : **8 kg (18 lb)**
- ⊙ Tool Selection Method :  
**Random**



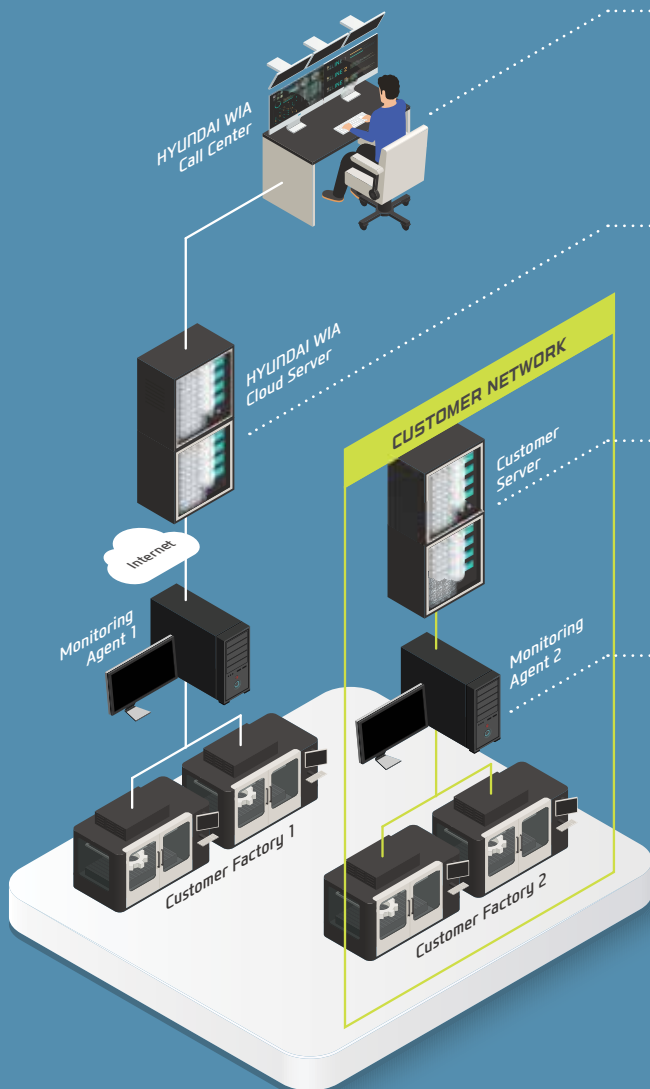
**iRiS** HYUNDAI WIA  
Smart Factory Solution

integrated Revolution of industrial Solution

## iRiS is HYUNDAI WIA's Smart Factory Solution.

iRiS, HYUNDAI WIA's revolutionary smart factory solution, consists of **Smart Monitoring System** for integrated management of HYUNDAI WIA machines around the world, and the **Smart Machining System** with ease, quality control, productivity and safety of the operator in mind.

## SMART MONITORING



### HW-MMS Remote (Remote service based)

Hyundai Wia Call Center's remote diagnosis service provides a HMI/video diagnostic function.



### HW-MMS Cloud (Cloud server based)

A cloud server-based equipment monitoring system for collecting and analyzing facility operation data.



### HW-MMS Edge (Customer Server Based)

A customer server-based equipment monitoring system for collecting and analyzing facility operation data.



### HW-MMS Collector (Machine data collector)

A dedicated program for collecting CNC data for MES/ERP.

A brand new manufacturing machine by Hyundai Wia, HW-MMS is a unique software capable of monitoring the operation status of manufacturing machines in factories, a **smart solution** to improve manufacturing conditions of customers.



## SMART MACHINING



**HW-MCG**  
HYUNDAI WIA  
Machine Guidance

Software that offers operation, maintenance, management monitoring and various user friendly features.



**HW-TM**  
HYUNDAI WIA  
Tool Monitoring

A tool monitoring software which analyzes the load of the spindle motor to determine and monitor possible damage of tools.



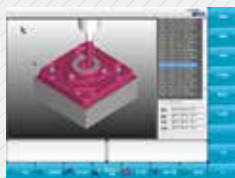
**HW-MCS**  
HYUNDAI WIA Machining  
Condition Selection

Software that automatically sets cutting and feeding parameters according to the machining types (speed, degree, quality)



**HW-WARMUP**  
HYUNDAI WIA  
WARMing Up

Warm-up software that measures main spindle halt and offers system warm-up time automatically.



**HW-DPRO**  
HYUNDAI WIA  
Dialogue PROGRAM

Software to create machining program easily and quickly through interactive operation



**HW-TDC**  
HYUNDAI WIA Thermal  
Displacement Compensation

Software that measures the changes in the external environment as well as heat emission during processing to help reduce thermal displacement.



**HW-AFC**  
HYUNDAI WIA  
Adaptive Feed Control

Software that controls the feed automatically to maintain a certain working load to extend tool life as well as productivity.



**HW-ESS**  
HYUNDAI WIA  
Energy Saving System

An environmental friendly software that reduces the unnecessarily wasted standby power waiting for an operation.



**RENISHAW GUI**  
Work / Tool Offset  
Measurement

User-friendly GUI software for material coordinate system, tool length / diameter/breakage measurement (included in RENISHAW H/W set)



**HW-eDNC**  
HYUNDAI WIA ethernet  
Direct Numerical Control

This software allows transmission of NC data between PC and a machine's CNC. The processing programs can be managed on the PC through the ethernet or serial communication.

# 07

FD Series

# HYUNDAI-iTROL

The Powerful CNC Platform for Machine Tools



## COMMUNICATION FUNCTION

RJ 45 Ethernet

USB 2.0

Compact Flash Card



Easy input/output of programs is possible with the use of USB memory card, CF memory card and LAN.



Energy Saving & ECO System



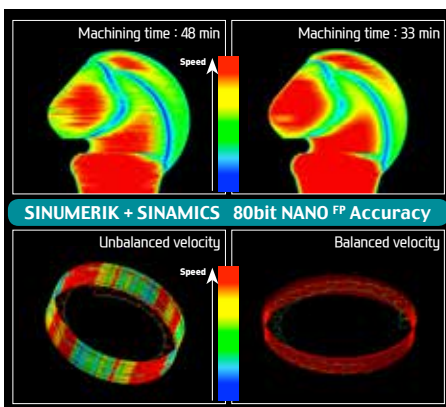
## Energy Saving System

You can use energy saving function (ECO) and machining optimization function (SMART) with the MCP button.

## HYUNDAI Intelligent Control

Convenient and Easy-to-Use Machine Tool...

Hyundai WIA take operator convenience to a higher level with the new controller, HYUNDAI-iTROL. Experience the new operating environment with HYUNDAI-iTROL.



## SIEMENS Advanced Surface

- Advanced surface software for high speed, high accuracy mold processing
- 80-bit floating-point calculation accuracy is superior to nano-interpolation
- A brand new filter for speed and acceleration control - Minimizes errors generated from irregular CAM data
- Standard jerk-restriction function to ease deceleration impact - Minimized vibration and high-speed deceleration
- Standard feed-forward function for speed control - Improves contouring accuracy by correcting the following error before setting point output



## Tool Monitoring, AFC

- The same tool monitoring function as the Fanuc HW-TM + new AFC
- Automatic transfer speed control
  - Expected benefits : Tool monitoring possible even when machining molds and prototype products, etc. Shortens the cycle time and protects the machine through an active control function



## Measuring System

- Simplified UI by removing unnecessary screens
- Compatible with the standard Renishaw/Marposh as well as third-party TLM (the measuring program needs to be converted into TLM.SPF)
- Continuous measuring function to measure 10 tools at a time
- Tool data comparison (before and after measuring) and enhanced animation function



## Coordinate System Setting

- Quicker setting of coordinate system enabled by an improved UI (using the top-left coordinate system value)
- Parameter change process has been changed to "enter all and apply later" type to prevent the worker's erroneous entry
- Pre-defined coordinate value displayed in the bottom bed image for easier identification
- A 'Spindle rotation' button added for easier spindle rotation



## Engraving Setting

- Ability to engrave model name/serial number in mass production
- Available in the program edit window
- Text, quantity of work, working date, working time can be engraved and ordered
- Easily and quickly apply the engraved functions of Siemens CYCLE



## Monitoring of Operating Ratio

- Intuitive display uses distinctive colors to indicate the 4 stages of alarm, cycle, setup, and inactivity.
- Displays current activated status as "Activated".
- Options to export 10-day operation history as an PC file or to CF card (MS Excel compatible format)



## Warming-up

- The mode selection path simplified with an improved UI
- Except Tool, Spindle RPM, Time, Program, the parameters not used frequently have been moved to 'Settings' screen.
- Messages for the current progress (%) and remaining time displayed at the top of the screen

## Shop Turn

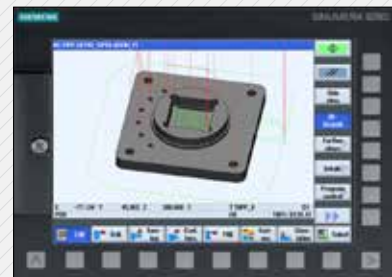
**OPTION**



- 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

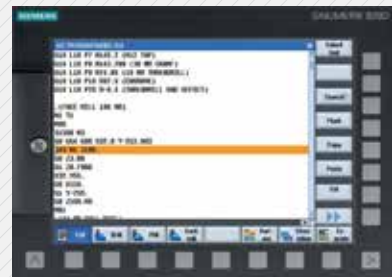
## 3D Simulation

**OPTION**



- 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.

## ISO Code Programming



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

# n8

FD Series

## User Convenience



Various Devices for User Convenience

### Measuring Device

#### Touch Sensor

Workpiece coordinate values can be set automatically using the optional spindle probe.



#### TLM - Laser & Touch

Tool lengths and diameters can be set automatically using the optional tool setter. This can also be used to monitor tool attrition and detect broken tools.

Laser Type



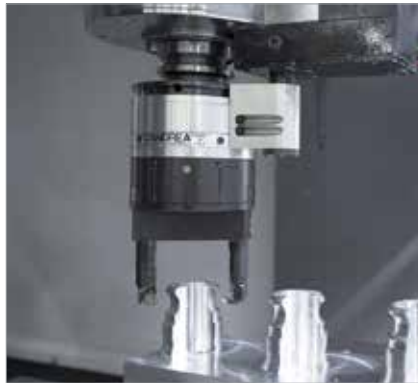
Touch Type



### Precision Device

#### U-Center

With U-Center, both external and internal diameter turning become possible, allowing for a wide range of variety in products.



#### NC Rotary Table

The NCRT makes it possible to machine up to 5-axis. Various types of products can be machined.



### Hydraulic Device

#### Hydraulic Supply Unit

Instead of the standard hydraulic supply unit, an optional fixture unit can bring the pressure up to **70 bar (1,015 psi)**, maximizing the clamping force on the fixture.



## Coolant Unit

Std. Coolant (Nozzle)	Standard
Bed Flushing Coolant	Standard
Through Spindle Coolant (20/30 bar [290/435 psi])	Option
Shower Coolant	Option
Gun Coolant	Option
Side Oil Hole Coolant	Option



## Chip Conveyor

Timely and effective disposal of chips will enhance productivity as well as the working environment.

- **Hinge Belt Type** : Highly efficient when disposing a lot of chips. Capable of handling stringy chips. (Long Chip)
- **Scraper Type** : Convenient for shortly cut chips.. (Short Chip)
- **Drum Filter Type** : Advantageous in precision, as the chips do not flow in to the coolant nozzle. (AL Chip)



## Environment Device

### Oil Skimmer

An oil skimmer can increase coolant and tool life by removing tramp oil contaminants.

### Mist Collector

Mist Collector reduces the amount of smoke and oil mist in the air. This helps build a safe and comfortable working environment and improve durability.



# SPECIFICATIONS

## Standard & Optional

Spindle		F410D
10,000rpm (18.5/15kW [24.8/20.1HP])	FANUC	●
8,000rpm (15/11kW [20.1/14.8HP])	FANUC	○
10,000rpm (18/12kW [24.1/16.1HP])	HYUNDAI-ITROL	○
Spindle Cooling System		○
<b>ATC</b>		
ATC Extension	24	●
	30	-
Tool Shank Type	BT40	●
	CAT40	○
U-Center	D'andrea	☆
	45°	○
Pull Stud	60°	☆
	75°	●
	90°	☆
<b>Table &amp; Column</b>		
APC	Rotary Turn	●
TAP TYPE Pallet		●
T-SLOT Pallet		○
NC Rotary Table		☆
High Column		-
<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 (8 gal)	-
Top Cover		○
Shower Coolant		☆
Gun Coolant		○
Side Oil Hole Coolant		☆
Air Gun		○
Cutting 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	300 ℓ (79.3 gal)	●
	600 ℓ (158.5 gal)	-
Cabin Screw Chip Conveyor		-
Chip Conveyor (Hinge/Scraper)	Rear (Left)	○
	Front (Right)	-
	Right (Rear)	-
Special Chip Conveyor (Drum 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>S/W</b>		
Machine guidance (HW-MCG)		●
Tool Monitoring (HW-TM) : FANUC/HYUNDAI-ITROL		○/●
DFC Software (HW-eDFC)		○
Spindle Heat Distortion Compensation (HW-TDC)		○
Spindle Warm up Function (HW-WARMUP)		●
Energy Saving System (HW-ESS)		●
Machine Monitoring System (HW-MMS)		○
REFINISHAW GUI		○

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

S/W		F410D
Machining Condition Selection (HW-MCS)		●
Adaptive Feed Control (HW-AFC)		●
Conversational Program (HW-DPRO)		○
<b>Electric Device</b>		
Call Light	1 Color : ●	●
Call Light	2 Color : ●●	○
Call Light	3 Color : ●●●	○
Call Light & Buzzer	3 Color : ●●● B	○
Work Light		●
Electric Cabinet Light		○
Remote MPG		●
3 Axis MPG	FANUC	○
	HYUNDAI-ITROL	-
Work Counter	Digital	○
Total Counter	Digital	○
Tool Counter	Digital	○
Multi Tool Counter	6 EA	○
	9 EA	○
Electric Circuit Breaker		○
AVR (Auto Voltage Regulator)		☆
Transformer	25kVA	○
Auto Power Off		○
Back up Module for Black out		○
<b>Measuring Device</b>		
Air Zero	TACO	○
	SMC	○
Work Measuring Device		○
TLM (Marposs/Renishaw/Blum)	Touch	○
	Laser	☆
Tool Broken Detecting Device		☆
Linear Scale	X/Y/Z Axis	-
Coolant Level Sensor (Only for Chip Conveyor, Bladder Type)		☆
<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)	16 Contact	○
	32 Contact	○
<b>Hyd. Device</b>		
Std. Hyd. Unit	65bar (942.7 psi) / 35 ℓ (9.2 gal)	●
	45bar (652.7 psi) / 60 ℓ (15.8 gal)	-
	45bar (652.7 psi) / 13 ℓ (3.4 gal)	-
Center Hyd. Supply Device	2x3 (6 Port)	○
	2x5 (10 Port)	○
Compact Center Hyd. Supply Device	2x3 (6 Port)	-
Fixture Hyd. Unit	70bar (1,015 psi)	○
	100bar (1,450 psi) Customized	○ ☆
<b>ETC</b>		
Tool Box		●
Customized Color	Need for Munsel No.	☆
CAD&CAM Software		☆

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

# SPECIFICATIONS

## Standard & Optional

Spindle		F500D/DM	F600D
8,000rpm (15/11kW [20/15HP])	BELT	●	●
8,000rpm (27.8/18.5kW [37.3/25HP])	BELT (HYUNDAI-ITROL)	○	-
10,000rpm (15/11kW [20/15HP])	BELT	○	-
12,000rpm (11/7.5kW [15/10HP])	DIRECT	○	○
12,000rpm (22/15kW [29.5/20.1HP])	DIRECT	- (● DM)	-
Spindle Cooling System	8,000rpm	○	○
	10,000rpm	●	-
	12,000rpm	●	●
<b>ATC</b>			
ATC Extension	24	●	●
	30	○ (● DM)	○
Tool Shank Type	BT40	●	●
	CAT40	○	○
U-Center	D'andrea	☆	☆
	45°	●	●
Pull Stud	60°	☆	☆
	75°	☆	☆
	90°	☆	☆
<b>Table &amp; Column</b>			
APC	Rotary Turn	●	●
TAP TYPE Pallet		●	●
T-SLOT Pallet		○	-
PC Rotary Table		☆	☆
High Column		-	-
<b>Coolant System</b>			
Std. Coolant (Nozzle)		●	●
Bed Flushing Coolant		○	○
	20bar (290 psi)	○	○
	30bar (435 psi), 20ℓ (5.3 gal)	○	○
	70bar (1,015 psi), 15ℓ (4 gal)	○	○
	70bar (1,015 psi), 30ℓ (8 gal)	-	-
<b>Through spindle coolant*</b>			
Top Cover		○	○
Shower Coolant		☆	☆
Gun Coolant		○	○
Side Oil Hole Coolant		☆	☆
Air Gun		○	○
Cutting 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	300ℓ (79.3 gal)	●	-
	460ℓ (121.5 gal)	○	-
	400ℓ (119 gal)	-	●
Cabin Screw Chip Conveyor		-	-
	Rear (Rear)	○	-
	Rear (Right) Right (Rear)	○	○
Special Chip Conveyor (Drum Filter)		☆	☆
Chip Wagon	Standard (180ℓ [47.5 gal])	○	○
	Swing (200ℓ [52.8 gal])	○	○
	Large Swing (290ℓ [76.6 gal])	○	○
	Large Size (330ℓ [87.2 gal])	○	○
	Customized	☆	☆
<b>S/W</b>			
Machine guidance (HW-MCG)		●	●
Tool Monitoring (HW-TM) : FAIUC/HYUNDAI-ITROL	○/● (○ DM)	○	○
DNC Software (HW-eDNC)		○	○
Spindle Heat Distortion Compensation (HW-TDC)		○	○
Spindle Warm up Function (HW-WARMUP)		●	●
Energy Saving System (HW-ESS)		●	●
Machine Monitoring System (HW-MMS)		○	○

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

S/W		F500D/DM	F600D
RENISHAW GUI		○	○
Machining Condition Selection (HW-MCS)		●	●
Adaptive Feed Control (HW-AFC)		●	●
Conversational Program (HW-DPRO)		○	○
<b>Electric Device</b>			
Call Light	1 Color : ●	●	●
Call Light	2 Color : ●●	○	○
Call Light	3 Color : ●●●	○	○
Call Light & Buzzer	3 Color : ●●●B	●	●
Work Light		○	○
Electric Cabinet Light		●	●
Remote MPG		○	○
3 Axis MPG	FAIUC	-	-
	HYUNDAI-ITROL	○	○
Work Counter	Digital	○	○
Total Counter	Digital	○	○
Tool Counter	Digital	○	○
Multi Tool Counter	6 EA	○	○
	9 EA	○	○
Electric Circuit Breaker		☆	☆
AVR (Auto Voltage Regulator)		☆	
Transformer	25kVA	-	-
	35kVA	○	○
Auto Power Off		○	○
Back up Module for Black out		○	○
<b>Measuring Device</b>			
Air Zero	TACO	○	○
	SMC	○	○
Work Measuring Device		○	○
TLM (Marposs/Renishaw/Blum)	Touch	○	○
	Laser	☆	☆
Tool Broken Detective Device		☆	☆
Linear Scale	X/Y/Z Axis	○	○
Coolant Level Sensor (Only for Chip Conveyor, Bladder Type)		☆	☆
<b>Enviornment</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		☆	☆
PC Rotary Table/F	Single	○	○
	Channel	☆	☆
Control of Additional Axis	1Axis	☆	☆
	2Axis	-	-
External M Code 4ea		○	○
Automation Interface		☆	☆
I/O Extension (In & Out)	16 Contact	○	○
	32 Contact	○	○
<b>Hyd. Device</b>			
Std. Hyd. Unit	65bar (942.7 psi) / 35ℓ (9.2 gal)	-	-
	45bar (652.7 psi) / 60ℓ (15.8 gal)	●	-
	45bar (652.7 psi) / 13ℓ (3.4 gal)	-	●
Center Hyd. Supply Device	2x3 (6 Port)	○	○
	2x5 (10 Port)	○	○
Compact Center Hyd. Supply Device	2x3 (6 Port)	○	-
	70bar (1,015 psi)	○	○
Fixture Hyd. Unit	100bar (1,450 psi)	-	-
	Customized	☆	☆
<b>ETC</b>			
Tool Box		●	●
Customized Color	Need for Munsel No.	☆	☆
CAD&CAM Software		☆	☆

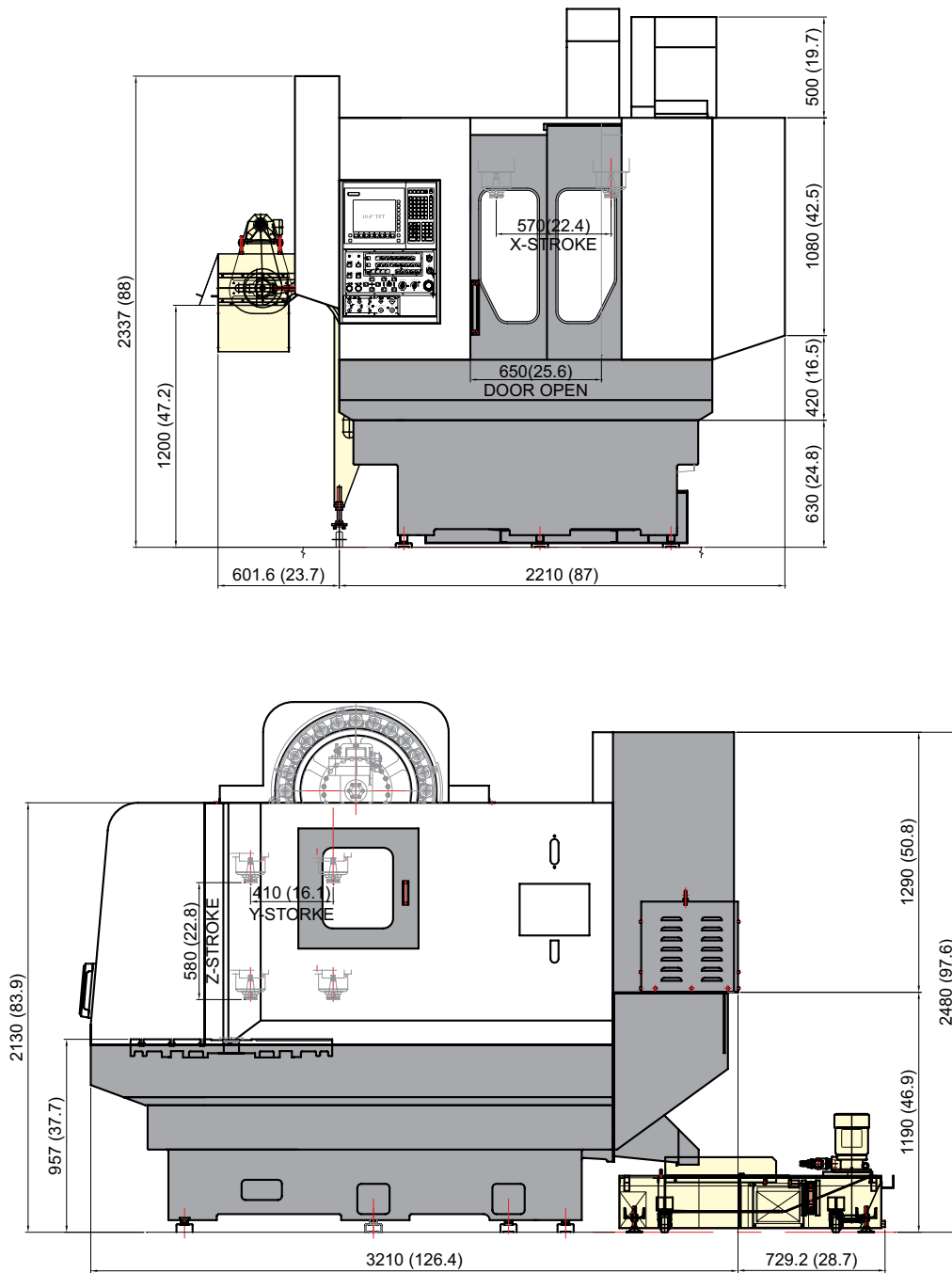
Through Spindle Coolant\* : Please check the filter types with sales representative.  
Specifications are subject to change without notice for improvement.

# SPECIFICATIONS

## External Dimensions

unit : mm(in)

### F410D



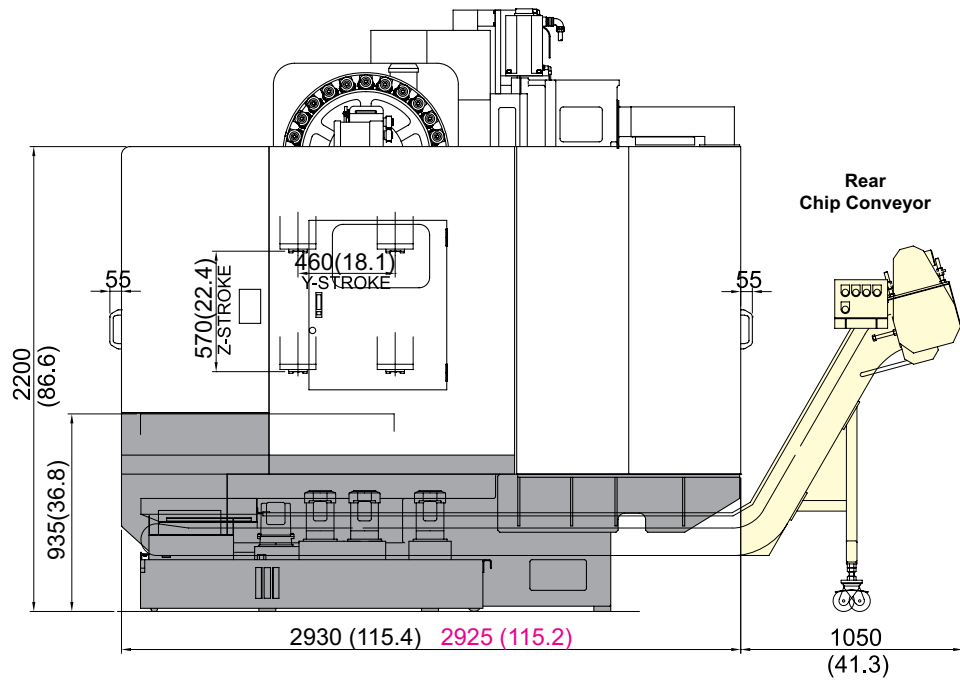
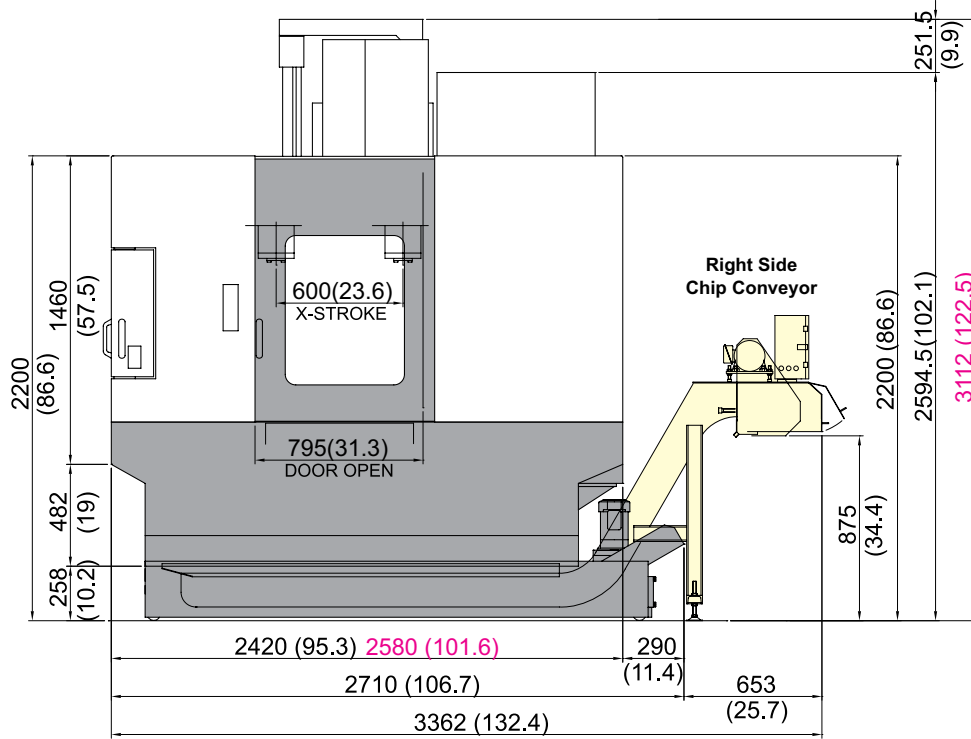


# SPECIFICATIONS

## External Dimensions

unit : mm(in)

### F500D/500DM

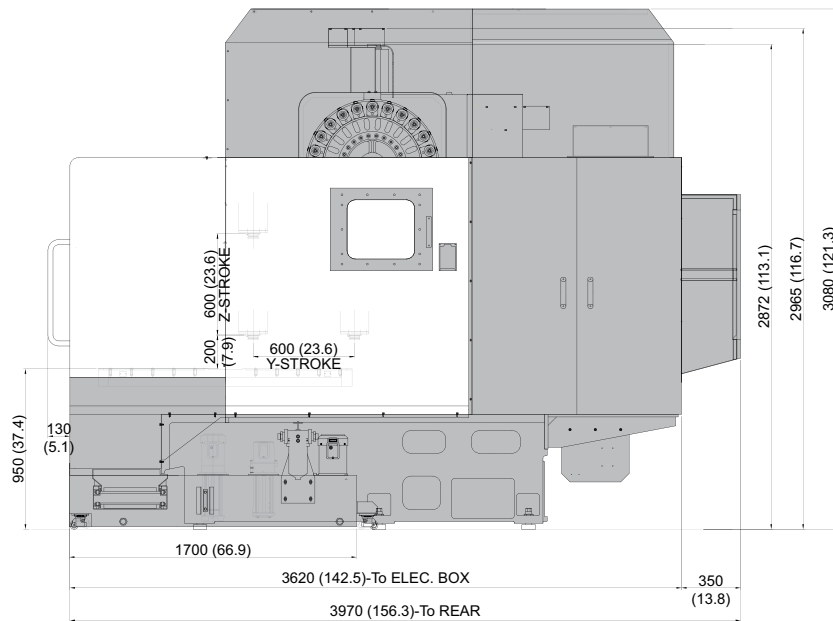
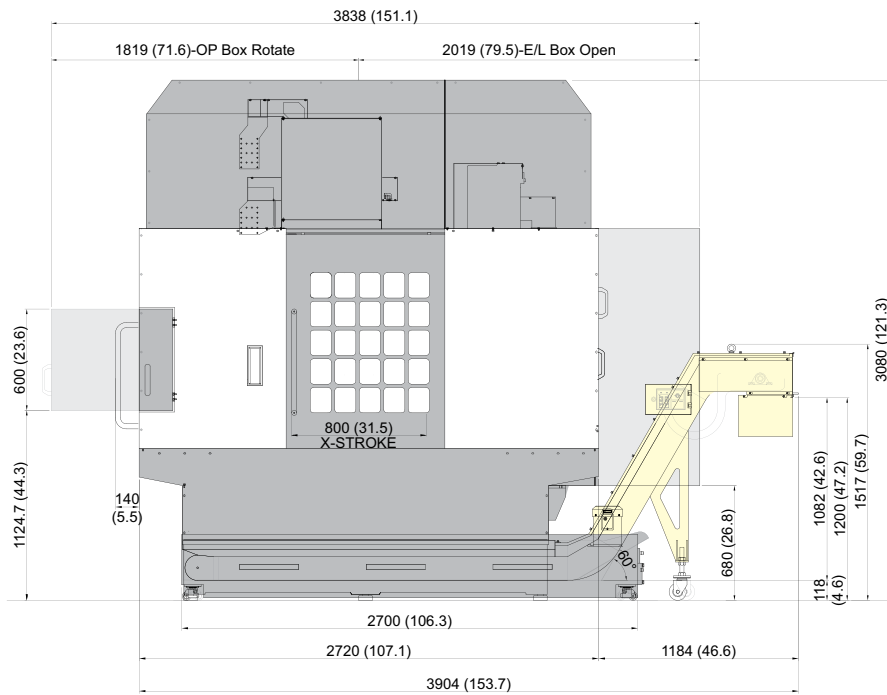


# SPECIFICATIONS

## External Dimensions

unit : mm(in)

### F600D



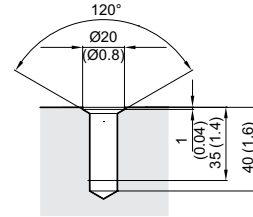
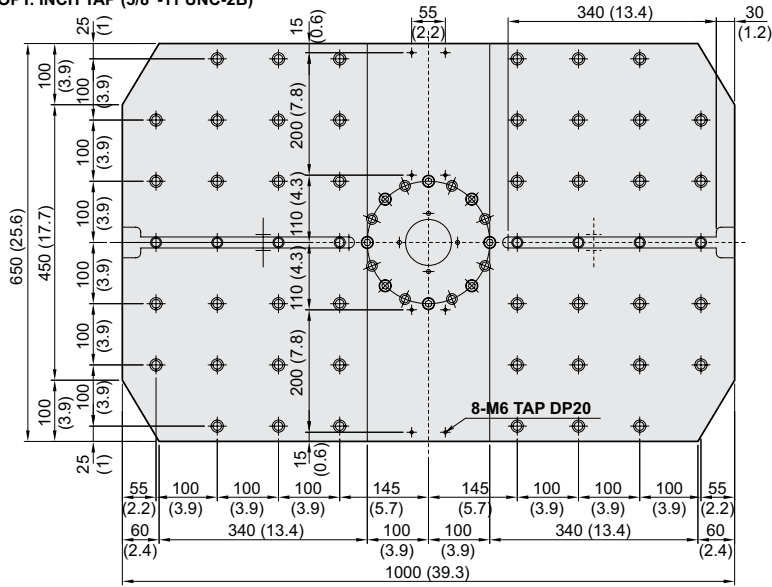
# SPECIFICATIONS

## Table Dimensions

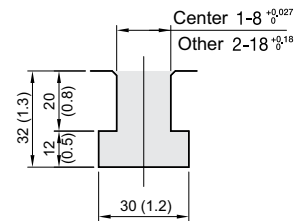
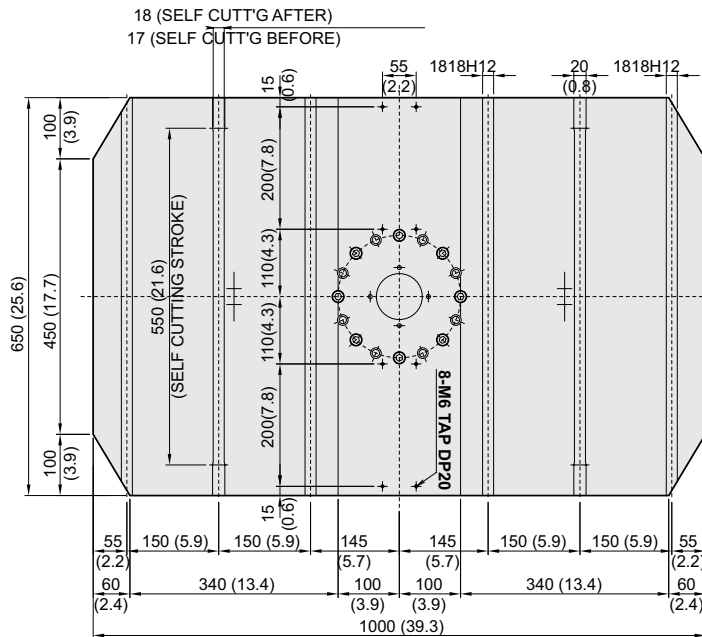
unit : mm(in)

### F410D

STD. MM TAP (M16 TAP)  
OPT. INCH TAP (5/8"-11 UNC-2B)



Tap Detail  
(M16 Tap)



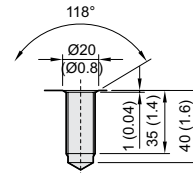
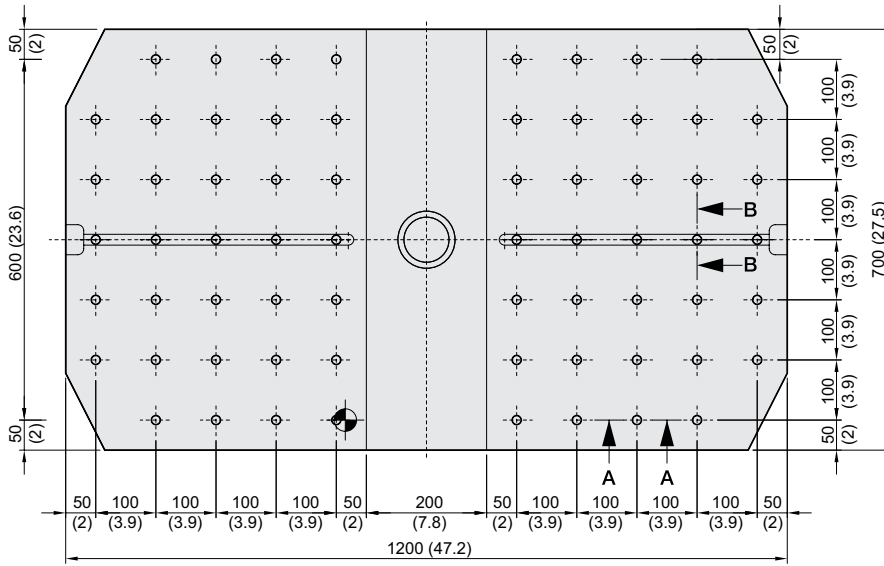
T-Slot Detail

# SPECIFICATIONS

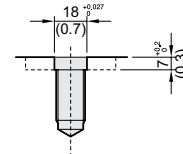
## Table Dimensions

unit : mm(in)

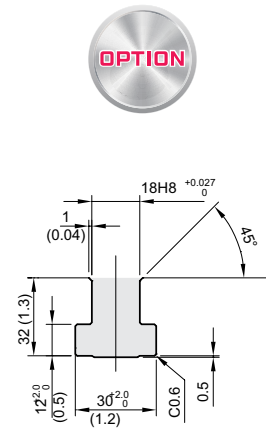
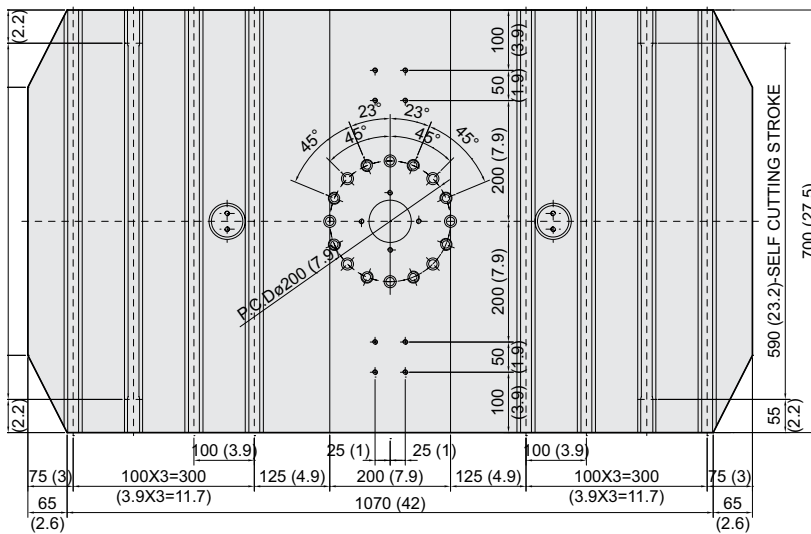
### F500D



SECTION A-A  
Tap Detail  
(M16 Tap)



SECTION B-B  
Tap Detail  
(M16 Tap)



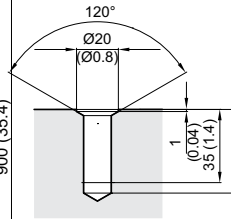
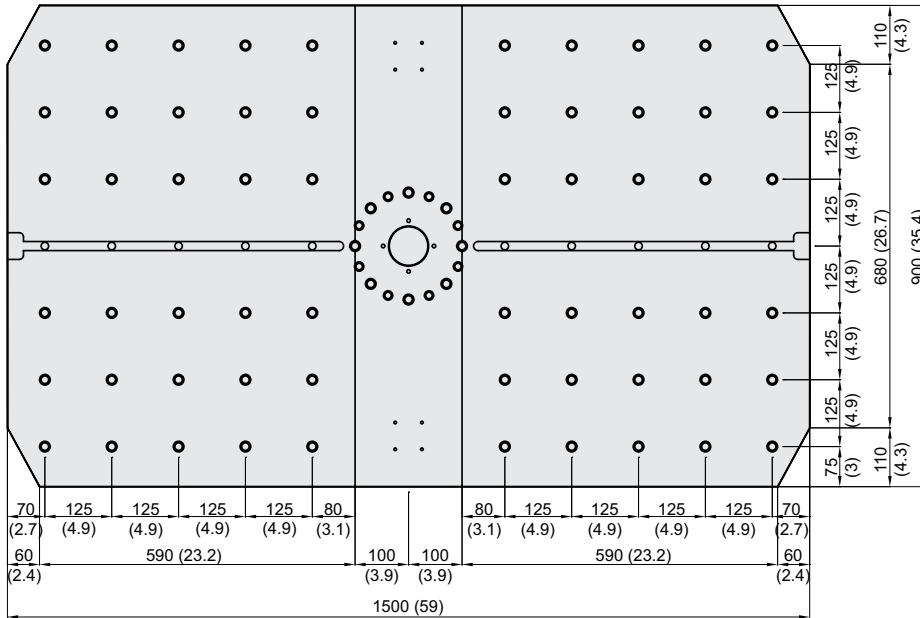
T-Slot Detail

# SPECIFICATIONS

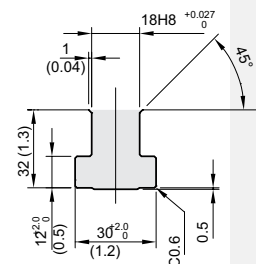
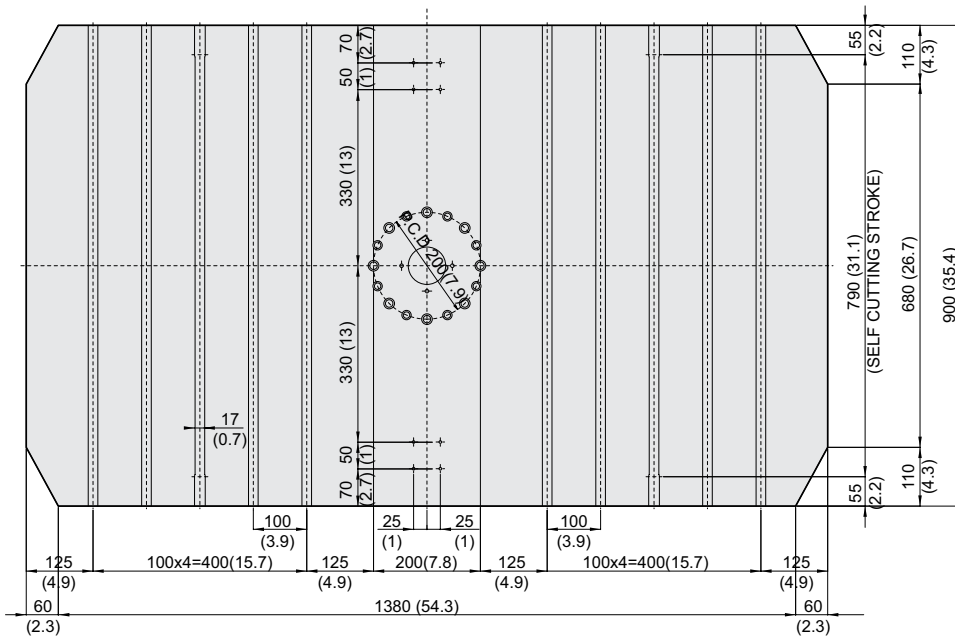
## Table Dimensions

unit : mm(in)

### F600D



Tap Detail  
(M16 Tap)



T-Slot Detail

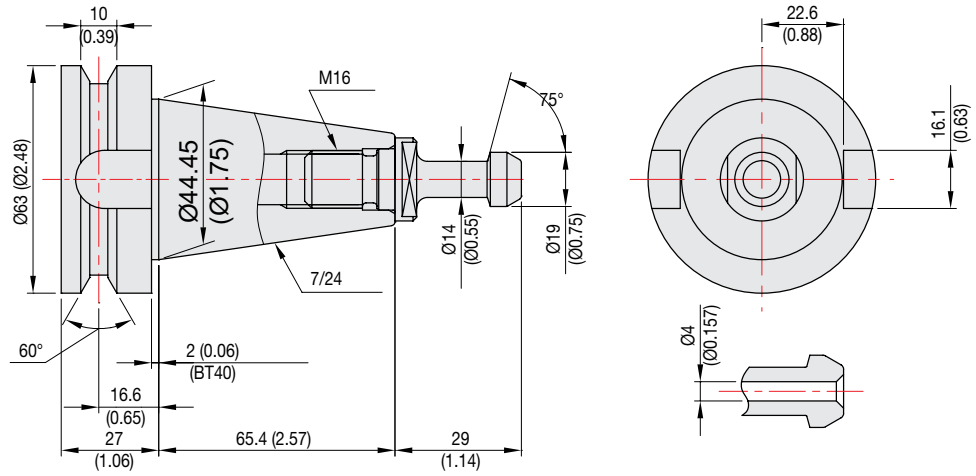
# SPECIFICATIONS

Tool Shank

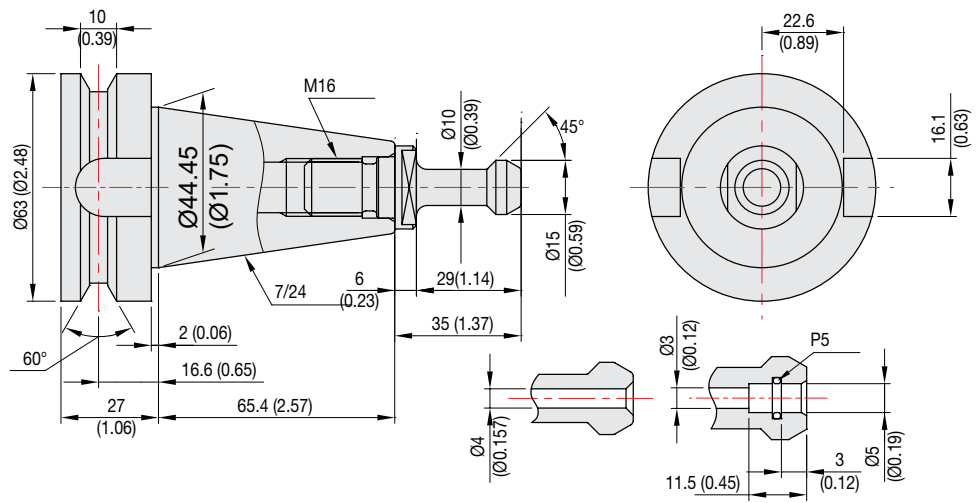
unit : mm(in)

## BT40

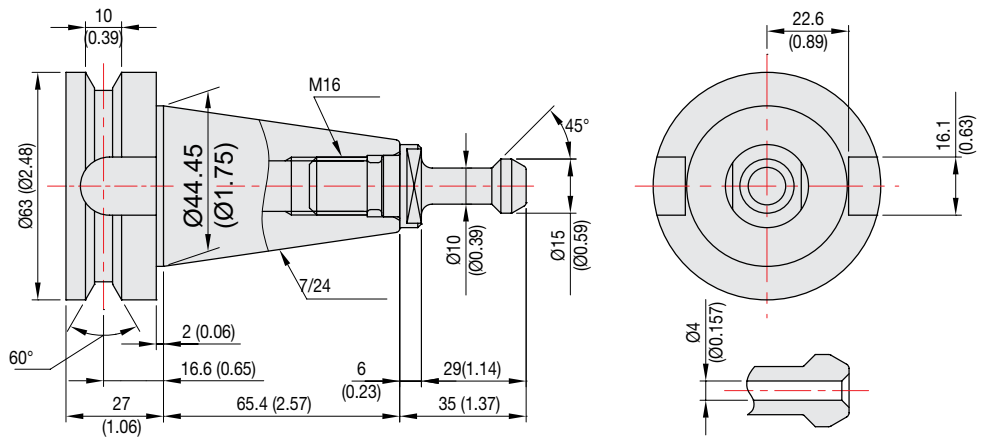
### F410D



### F500D



### F600D F410D (Opt.)



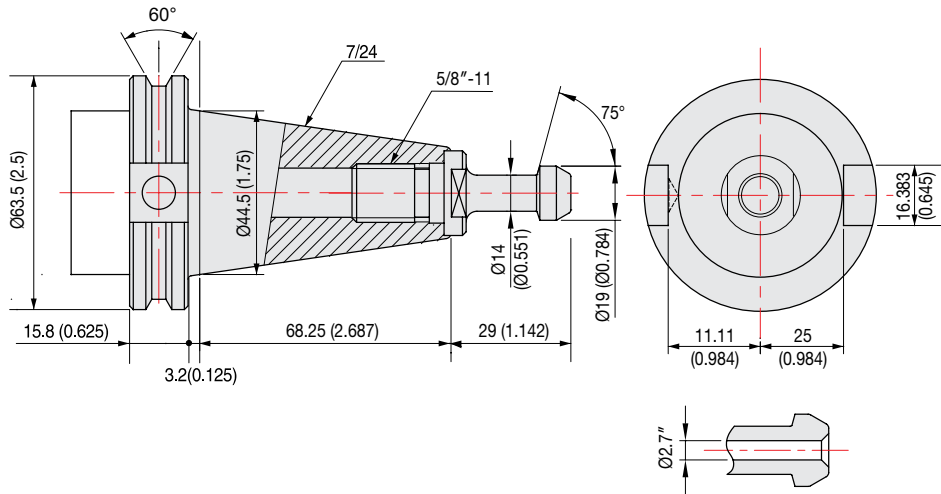
# SPECIFICATIONS

Tool Shank

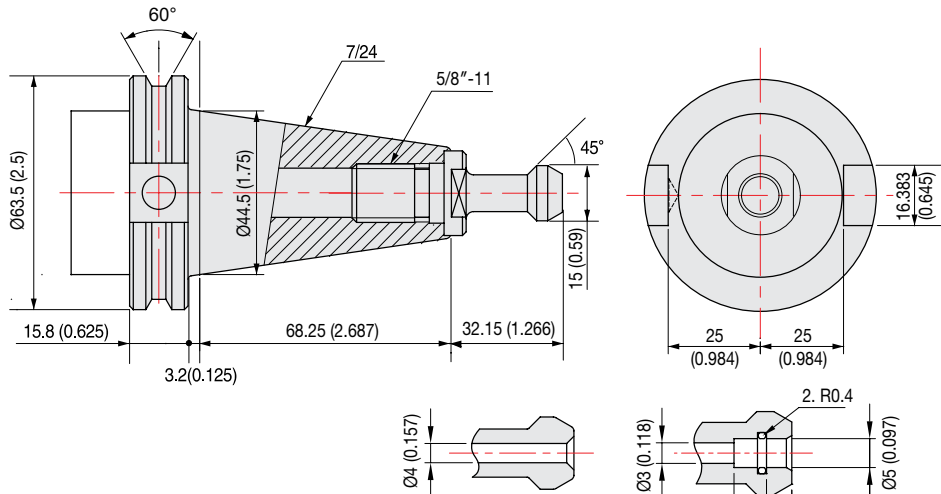
unit : mm(in)

**CAT40**

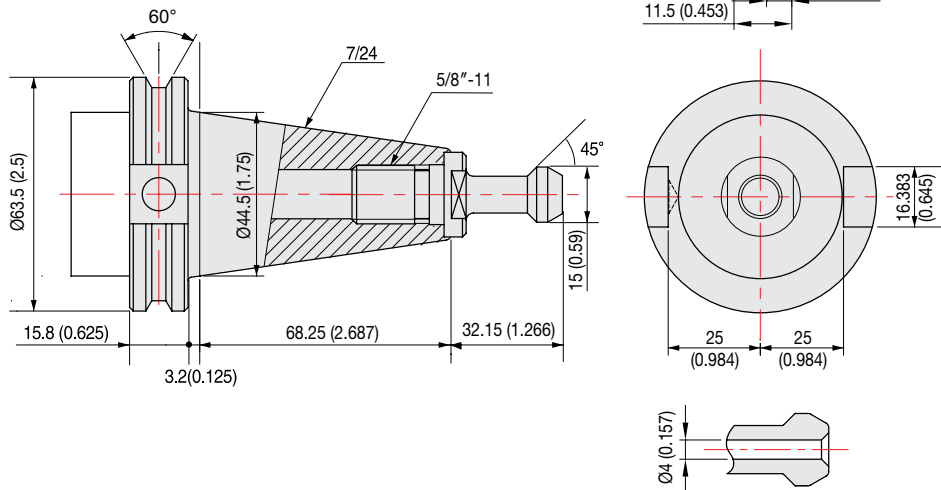
**F410D**



**F500D**



**F600D  
F410D (Opt.)**



# SPECIFICATIONS

## Specifications

[ ] : Option ■ : HYUNDAI-ITROL

ITEM		F410D	
TABLE	Table Size	mm(in)	2-650×410 (2-25.6"×16.1")
	Maximum Load Capacity	kg(lb)	2-250 (2-551)
	Table Change Time	sec	5.2
	Change Method	-	Rotary Turn
	Table Driving Method	-	Rack & Pinion
SPINDLE	Spindle Taper	-	NT #40
	Spindle RPM	r/min	10,000 [8,000] [10,000]
	Spindle Power Output (Max./Cont.)	kW(HP)	18.5/15 (24.8/20.1) [15/11 (20.1/14.8)] [18/12 (24.1/16.1)]
	Spindle Torque (Max./Cont.)	N·m(lbf·ft)	118/95.5 (87/70.4) [287/143 (211.7/15.5)] [189/126 (139.4/92.9)]
	Spindle Driving Method	-	BELT [BELT] [BELT]
FEED	Travel (X/Y/Z)	mm(in)	570/410/580 (22.4"/16.1"/22.8")
	Distance from Table Surface to SP	mm(in)	197~777 (7.8"~30.6")
	Distance from Column to SP. center	mm(in)	495 (19.5")
	Rapid Traverse Rate (X/Y/Z)	m/min(ipm)	36/36/30 (1,417/1,417/1,181)
	Slide Type	-	LM 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	3.5
TANK CAPACITY	Coolant Tank	ℓ (gal)	300 (79.3)
	Lubricating Tank	ℓ (gal)	1.32 (0.3)
	Hydraulic Tank	ℓ (gal)	35 (9.2)
POWER SUPPLY	Air Consumption (0.5MPa)	ℓ /min(gal)	400
	Electric Power Supply	KVA	30
	Thickness of Power Cable	Sq	Over 22
	Voltage	V/Hz	220/60 (200/50*)
MACHINE	Floor Space (L×W)	mm(in)	2,200×3,160 (86.6"×124.4")
	Height	mm(in)	3,015 (118.7")
	Weight	kg(lb)	6,400 (14,110)
PC	Controller	-	HYUNDAI FANUC i Series [FANUC 32i-B] [HYUNDAI-ITROL]

\*) Using 50Hz voltage instead of 60Hz may lower the output of motors. (excluding servo motors and inverter motors)  
Specifications are subject to change without notice for improvement.



# SPECIFICATIONS

## Specifications

[ ] : Option ■ : HYUNDAI-ITROL

ITEM		F500D	F500DM
TABLE	Table Size	mm(in) 2-700×500 (2-27.6"×19.7")	
	Maximum Load Capacity	kg(lb) 2-350 (2-772)	
	Table Change Time	6	7
	Change Method	Rotary Turn	Rotary Turn / Rack & Pinion
	Table Driving Method	Rack & Pinion	
SPINDLE	Spindle Taper	PT #40	
	Spindle RPM	r/min 8,000 [8,000] [10,000] [12,000]	12,000
	Spindle Power Output (Max./Cont.)	kW(HP) 15/11(20.1/14.8)[27.8/18.5(37.3/24.8)] [15/11(20.1/14.8)] [11/7.5(14.8/10)]	22/15 (29.5/20.1)
	Spindle Torque (Max./Cont.)	N·m(lb·ft) 287/143(211.7/105.5) [235.5/157(173.7/115.8)] [230/115(170/84.8)] [70/47.7(51.6/35.2)]	150/102 (110.6/75.2)
	Spindle Driving Method	BELT [BELT] [BELT] [DIRECT]	DIRECT
FEED	Travel (X/Y/Z)	mm(in) 600/460/570 (23.6"/18.1"/22.4") 600/350/570 (23.6"/13.8"/22.4")	
	Distance from Table Surface to SP	mm(in) 200~770 (7.9"~30.3")	
	Distance from Column to SP. center	mm(in) 500 (19.7")	
	Rapid Traverse Rate (X/Y/Z)	m/min(ipm) 40/40/30 (1,575/1,575/1,181)	40/40/36 (1,575/1,575/1,417)
	Slide Type	X/Y : ROLLER GUIDE, Z : BOX GUIDE	ROLLER GUIDE
ATC	Number of Tools	EA 24 [30]	30
	Tool Shank	BT40	
	Max. Tool Dia. (W.T / W.O)	mm(in) Ø90/Ø150 (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 2.1
C-C		sec 4.3	4.5
TANK CAPACITY	Coolant Tank	ℓ (gal) 300 (79.3) [460 (121.5)]	
	Lubricating Tank	ℓ (gal) 3.1 (0.8)	
	Hydraulic Tank	ℓ (gal) 60 (15.9)	
POWER SUPPLY	Air Consumption (0.5MPa)	ℓ /min(gal) 400	
	Electric Power Supply	KVA 28	
	Thickness of Power Cable	Sq Over 25	
	Voltage	V/Hz 220/60 (200/50*)	
MACHINE	Floor Space (L×W)	mm(in) 2,710×2,930 (106.7"×115.4")	2,580×2,925 (101.6"×115.2")
	Height	mm(in) 2,852 (112.3")	3,112 (122.5")
	Weight	kg(lb) 9,500 (20,944)	
PC	Controller	HW F i Series [F 32i-B] [ITROL]	HYUNDAI WIA FANUC i Series

\*) Using 50Hz voltage instead of 60Hz may lower the output of motors. (excluding servo motors and inverter motors)  
Specifications are subject to change without notice for improvement.

# SPECIFICATIONS

## Specifications

[ ] : Option

ITEM		F600D	
TABLE	Table Size	mm(in)	2-900×650 (2-35.4"×25.6")
	Maximum Load Capacity	kg(lb)	2-400 (2-882)
	Table Change Time	sec	8.5
	Change Method	-	ROTARY TURN
	Table Driving Method	-	RACK & PINION
SPINDLE	Spindle Taper	-	MT #40
	Spindle RPM	r/min	8,000 [12,000]
	Spindle Power Output (Max./Cont.)	kw(HP)	15/11 (20.1/14.8) [11/7.5 (14.8/10)]
	Spindle Torque (Max./Cont.)	N·m(lbf·ft)	287/143 (211.7/105.5) [70/47.7 (51.6/35.2)]
	Spindle Driving Method	-	BELT [DIRECT]
FEED	Travel (X/Y/Z)	mm(in)	800/600/600 (31.5"/23.6"/23.6")
	Distance from Table Top to SP. Nose	mm(in)	200~800 (7.9"~31.5")
	Distance from Column to SP. center	mm(in)	690 (27.2")
	Rapid Traverse Rate (X/Y/Z)	m/min(ipm)	42/42/42 (1,654/1,654/1,654)
	Slide Type	-	ROLLER GUIDE
ATC	Number of Tools	EA	24 [30]
	Tool Shank	-	BT40
	Max. Tool Dia. (W.T / W.O)	mm(in)	Ø90/Ø150 (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	4.2
TANK CAPACITY	Coolant Tank	ℓ (gal)	400 (119)
	Lubricating Tank	ℓ (gal)	3.1 (0.8)
	Hydraulic Tank	ℓ (gal)	23 (6.1)
POWER SUPPLY	Air Consumption (0.5MPa)	ℓ /min(gal)	400
	Electric Power Supply	KVA	30
	Thickness of Power Cable	Sq	Over 25
	Voltage	V/Hz	220/60 (200/50*)
MACHINE	Floor Space (L×W)	mm(in)	2,720×3,620 (107.1"×142.5")
	Height	mm(in)	2,965 (116.7")
	Weight	kg(lb)	10,000 (22,046)
PC	Controller	-	HYUNDAI WIA FANUC i Series [FANUC 32i-B]

\*) Using 50Hz voltage instead of 60Hz may lower the output of motors. (excluding servo motors and inverter motors)  
Specifications are subject to change without notice for improvement.

# CONTROLLER

## HYUNDAI WIA FANUC i Series

[ ] : Option ☆ Needed technical consultation

Controlled axis / Display / Accuracy Compensation	
Control axes	3 axes (X, Y, Z) 4 axes (X, Y, Z, B)
Simultaneously controlled axes	3 axes [Max. 4 axes]
Least setting Unit	X, Y, Z axes : 0.001 mm (0.0001 inch) B axes : 1 deg [0.001] deg
Least input increment	X, Y, Z axes : 0.001 mm (0.0001 inch) B axes : 1 deg [0.001] deg
Inch / Metric conversion	G20 / G21
High response vector control	
Interlock	All axes / Each axis
Machine lock	All axes
Backlash compensation	± 0 ~ 9999 pulses (Rapid traverse / Cutting feed)
Position switch	
LCD / MDI	10.4 inch color LCD
Feedback	Absolute motor feedback
Stored stroke check 1	Over travel
Stored pitch error compensation	
<b>Operation</b>	
Automatic operation (Memory)	
MDI operation	
DNC operation	Needed DNC software / CF card
Program restart	
Wrong operation prevention	
Program check function	Dry run, Program check, Z axis Machine lock Stored limit check before move
Single block	
Search function	Program Number / Sequence Number
Handle interruption	
<b>Interpolation functions</b>	
Nano interpolation	
Positioning	G00
Linear interpolation	G01
Circular interpolation	G02, G03
Exact stop mode	Single : G09, Continuous : G61
Dwell	G04, 0 ~ 9999.9999 sec
Skip	G31
Reference position return	1st reference : G28 2nd reference : G30 Ref. position check : G27
Single direction positioning	G60
Thread synchronous cutting	G33
Helical interpolation	Circular + Linear 2 axes (Max.)
<b>Feed function / Acc. &amp; Dec. control</b>	
Manual feed	Rapid traverse Jog : 0 ~ 5,000mm/min (197 ipm) Manual handle : x1, x10, x100 pulses Reference position return
Cutting Feed command	Direct input F code
Feedrate override	0 ~ 200% (10% Unit)
Rapid traverse override	F0% (F1%), F25%, F50%, F100%
Override cancel	
Feed per minute	G94
Feed per revolution	G95
Cylindrical interpolation	G07.1
Inverse time feed	G93
Look-ahead block	20 blocks (AI APC)
<b>Program input</b>	
Tape Code	EIA / ISO
Optional block skip	1 ea
Absolute / Incremental program	G90 / G91
Program stop / end	M00, M01 / M02, M30
Maximum command unit	± 999,999.999 mm (± 99,999.9999 inch)
Plane selection	X-Y : G17 / Z-X : G18 / Y-Z : G19
Workpiece coordinate system	G52, G53, 48 pairs (G54.1 P1 ~ 48)
Manual absolute	Fixed ON
Programmable data input	G10
Sub program call	10 folds nested
Custom macro	#100 ~ #199, #500 ~ #999
G code system	A

<b>Program input</b>	
Programmable mirror image	G51.1, G50.1
G code preventing buffering	G4.1
Optional chamfering corner R	
Polar coordinate command	G15, G16
Scaling	G50, G51
Coordinate system rotation	G68, G69
<b>Auxiliary function / Spindle speed function</b>	
Auxiliary function	M 4 digit
Spindle speed function	S 5 digit, Binary output
Spindle override	0% ~ 150% (10% Unit)
Spindle orientation	M19
Retraction for rigid tapping	
FSSB high speed rigid tapping	
<b>Tool function / Tool compensation</b>	
Tool function	Max. T8 digit
Tool life management	
Tool offset pairs	400 pairs
Tool nose / radius compensation	G40, G41, G42
Tool length offset	G43, G44, G49
Tool offset memory C	Tool geometry and wear (Cutter and tool length)
Tool length measurement	Z axis Input C
<b>Editing function</b>	
Part program storage size	1280m (512KB)
No. of registerable programs	400 ea
Program protect	
Background editing	
Extended part program editing	Copy, move and change of NC program
Memory card program edit	
<b>Data input / output &amp; Interface</b>	
I/O interface	RS 232C serial port, CF card, USB memory Embedded Ethernet interface
Screen hard copy	
External message	
External key input	
External workpiece number search	
Automatic data backup	
<b>Setting, display and diagnosis</b>	
Self-diagnosis function	
History display & Operation	Alarm & Operator message & Operation
Run hour / Parts count display	
Maintenance information	
Actual cutting feedrate display	
Display of spindle speed / T code	
Graphic display	
Operating monitor screen	Spindle / Servo load etc.
Power consumption monitoring	Spindle & Servo
Spindle / Servo setting screen	
Multi language display	Support 20 languages
Display language switching	Selection of 5 optional Languages
LCD Screen Saver	Screen saver

Option	
Additional optional block skip	9 ea ☆
Fast ethernet	Needed option board
Data server	Needed option board
Protection of data at 8 levels	
Additional Axis	
Manual Guide i	Conversational auto program
Manual handle feed	2/3 units
Addition of custom macro	#100 ~ #199, #500 ~ #999, #98000 ~ #98499
Tool management function	
Part program storage size	5120m (2MB)
No. registerable programs	Max. 1000 EA
Add. Workpiece	Max. 300 pairs (G54.1 P1 ~ P300) 40 blocks
AICC II	200 blocks 400 blocks ☆

Figures in inch are converted from metric values.

The FANUC controller specifications are subject to change based on the policy of company CNC supplying.

# CONTROLLER

## HYUNDAI-iTROL (F410D | F500D)

Control & Composition	
Number of axis/Spindles	3 axis (X, Y, Z)
Number of axis/Spindles, max.	6 axis (Axis + Spindle)
Color display	TFT 10.4" Color (800 x 600)
Keyboard	QWERTY Full Keyboard
Part program	1MB, 3MB, 5MB
Addition of part program on CF card	
Transfer Function	
Feedrate override	0% ~ 200%
Transfer value input range	± 999999999
Unlimited rotation of rotation axis	
Acc./Dec. with jerk limitation	
Measuring systems 1 and 2, selectable	
Travel to fixed stop	
Auto servo drive tuning	
Spindle Function	
Spindle override	0% ~ 150%
Spindle speed, max. programmable value ange	1000000 ~ 0.0001
Automatic gear stage selection	
Spindle orientation	
Spindle speed limitation	
Rigid tapping	
Interpolation	
Linear interpolation axis, max.	4 axis
Circle via center point and end point	
Circle via interpolation point	
Helical interpolation	
Non-uniform rational B splines	
Compressor for 3-axis machining	
Advanced surface	
Program Function	
Subroutine levels, max.	11
Interrupt routines, max.	4
Number of levels for skip blocks	2
Polar Coordinates	
Dimensions inch/metric, changeover manually or via program	
Dynamic preprocessing memory FIFO	
Look ahead	50, 100, 150
Absolute/Incremental command	G90 / G91
Scaling/Rotation	
Read/Write system variables	
Block search	
Edit background	
Processing program number, max.	750
Using of CF Card, USB	
Basic coordinate number, max.	1
Work coordinate number, max.	100
Basic/Work coordinate programming change	
Scratching function	
Global and Local user data (GUD/LUD)	
Global program user data	
Interactive cycle program	
Tool Function	
Tool radius compensations	
Tool offset selection via T/D numbers	
Tools / Cutting edges in tool list	80/160, 128/256, 256/512
Monitoring Function	
Working area limit	
Software and Hardware limit	
Zero-speed/Clamping monitoring	
2D/3D protection zones	
Contour monitoring	

Compensation	
Backlash compensation	
Leadscrew error compensation	
Measuring system error compensation	
Feedforward control (Speed control)	
Safety Function	
Safe torque off (STO)	
Safe brake control (SBC)	
Safe stop 1 (SS1)	
Diagnostic Function	
Alarm/Message , Alarm log	
PLC status/LAD online display	
PLC remote connection (Ethernet)	
Automation Support Function	
Actual velocity display	
Tool life management	As time / As amount
Work counter/Cycle time	Embedded
2D simulation	
Manual Operation	
Manual handle/Log transfer	
Manual measurement of workpiece / tool offset	
Automatic tool/Workpiece measurement	
Automatic/Program reference approach	
Automatic Operation	
Program run as using CF card/USB	
Program control/modification	
Block search	
Reposition	
Preset (Set actual value)	
Data Transmission	
Ethernet network	
USB memory stick & CF card	
Convenience Function	
Processing setting	Coordinate setting, Auto tool length measurement
Processing support	Tool Monitoring, Spindle overload monitoring
Maintenance	Turret Guidance, I/O monitoring, Manual
Maintenance / Management	Soft MCP, Spindle warming-up M/G code list
SMART machining	
Energy saving function (ECO)	
Machine Monitoring System (MMS Lite)	
Language	
Standard support language	Chinese Simplified, English, Korean
Option	
Maximum skip block number	10
DRF offset	
MDI program save/load	
Teach-In mode	
3D simulation	Except for working area/Collision check
Real time simulation	
Shop Mill	Conversational Program
Spline interpolation	
Program remote control in network	
Language	Chinese Traditional, French, German, Italian, Portuguese, Spanish

# CONTROLLER

## FANUC 32i-B

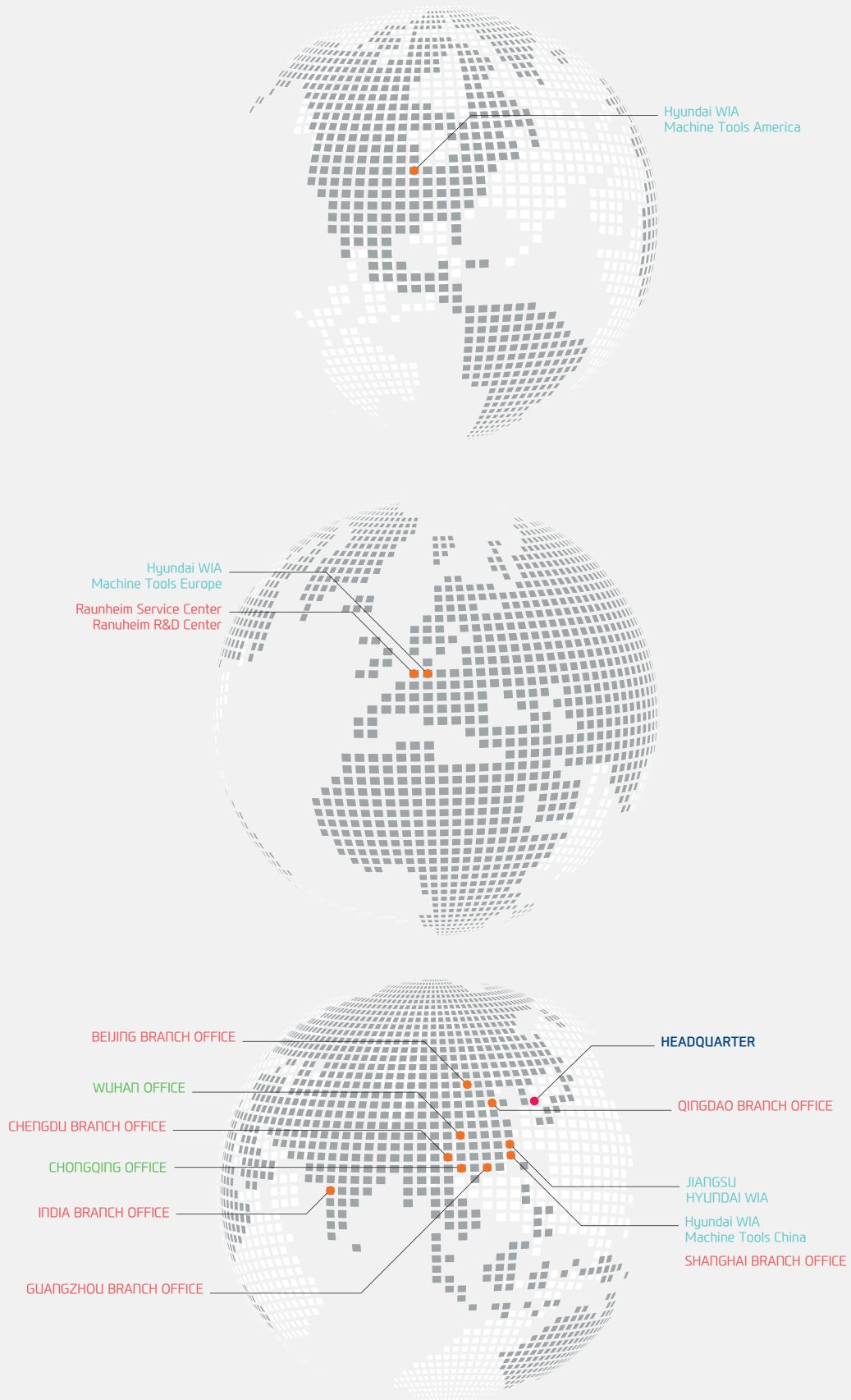
[ ] : Option ☆ Needed technical consultation

Controlled axis / Display / Accuracy Compensation	
Control axes	3 axes (X, Y, Z) 4 axes (X, Y, Z, B)
Simultaneously controlled axes	3 axes [Max. 4 axes]
Least setting Unit	X, Y, Z axes : 0.001 mm (0.0001 inch)
	B axes : 1 deg [0.001] deg
Least input increment	X, Y, Z axes : 0.001 mm (0.0001 inch)
	B axes : 1 deg [0.001] deg
Inch / Metric conversion	G20 / G21
High response vector control	
Interlock	All axes / Each axis
Machine lock	All axes
Backlash compensation	± 0 ~ 9999 pulses (Rapid traverse / Cutting feed)
Position switch	
LCD / MDI	10.4 inch color LCD
Feedback	Absolute motor feedback
Stored stroke check 1	Over travel
Stored pitch error compensation	
Operation	
Automatic operation (Memory)	
MDI operation	
DNC operation	Needed DNC software / CF card
Program restart	
Wrong operation prevention	
Program check function	Dry run, Program check Z axes Machine lock, Stroke check before move
Single block	
Search function	Program Number / Sequence Number
Interpolation functions	
Pano interpolation	
Positioning	G00
Linear interpolation	G01
Cylindrical interpolation	G02, G03
Exact stop mode	Single : G09, Continuous : G61
Dwell	G04, 0 ~ 9999.9999 sec
Skip	G31
Reference position return	1st reference : G28
	2nd reference : G27
	Ref. position check : G30
Thread synchronous cutting	G33
Helical interpolation	Circular + Linear interpolation 2 axes(max.)
Feed function / Acc. & Dec. control	
Manual feed	Rapid traverse
	Jog : 0~5,000mm/min (197 ipm)
	Manual handle : x1, x10, x100 pulses
	Reference position return
Cutting Feed command	Direct input F code
Feedrate override	0 ~ 200% (10% Unit)
Rapid traverse override	F0% (F1%), F25%, F50%, F100%
Override cancel	
Feed per minute	G94
Feed per revolution	G95
Look-ahead block	40 Block
	200 Block (Mold)
Program input	
Tape Code	EIA / ISO
Optional block skip	1 ea
Absolute / Incremental program	G90 / G91
Program stop / end	M00, M01 / M02, M30
Maximum command unit	± 999,999.999 mm (± 99,999.9999 inch)
Plane selection	X-Y : G17 / Z-X : G18 / Y-Z : G19
Workpiece coordinate system	G52, G53, 6 pairs (G54 ~ G59)
Manual absolute	Fixed ON
Programmable data input	G10
Sub program call	10 folds nested
Custom macro	#100 ~ #149, #500 ~ #549
G code system	A
Programmable mirror image	G51.1, G50.1
G code preventing buffering	G4.1
Including Chamfering / Corner R	
Canned cycle	G73, G74, G76, G80 ~ G89
Coordinate rotation	G68, G69

Auxiliary function / Spindle speed function	
Auxiliary function	M 4 digit
Level-up M Code	Multi / Bypass M code
Spindle speed command	S 5 digit , Binary output
Spindle override	0% ~ 150% (10% Unit)
Spindle orientation	M19
FSSB high speed rigid tapping	
Tool function / Tool compensation	
Tool function	Max. T 8 digit
Tool life management	256 pairs ☆
Tool offset pairs	64 pairs
Tool nose radius compensation	G40, G41, G42
Tool nose length compensation	G43, G44, G49
Tool offset memory C	Tool length, diameter, abrasion(length, diameter)
Tool length measurement	Z axes Input C
Editing function	
Part program storage size	640m (256KB)
No. of registerable programs	500 ea
Program protect	
Background editing	
Extended part program editing	Copy, move and change of NC program
Memory card program edit	
Data input / output & Interface	
I/O interface	RS 232C serial port, CF card, USB memory Embedded Ethernet interface
Screen hard copy	
External message	
External key input	
External workpiece number search	
Automatic data backup	
Setting, display and diagnosis	
Self-diagnosis function	
History display	Alarm & Operator message & Operation
Run hour / Parts count display	
Maintenance information	
Actual cutting feedrate display	
Display of spindle speed / T code	
Graphic display	
Operating monitor screen	Spindle / Servo load etc.
Power consumption monitoring	Spindle & Servo
Spindle / Servo setting screen	
Multi language display	Support 20 languages
Display language switching	Selection of 5 optional Languages
LCD Screen Saver	Screen saver
Processing select	Speed/rigidity setting
Option	
Additional optional block skip	9 ea ☆
Fast ethernet	Needed option board
Data server	Needed option board
Protection of data at 8 levels	
Sub Spindle control	
Polar coordinate command	G15, G16
Polar coordinate interpolation	G12.1, G13.1
Cylindrical interpolation	G07.1
One-way positioning	G60
Stored stroke check 2, 3	
Inverse-time feed	G93
Scaling	G50, G51
Manual guide i	Conversational auto program
Handle interrupt	
Manual handle feed	2/3 units
Additional custom macro variables	#100~#199, #500~#999 #100~#199, #500~#999, #98000~#98499
Retraction for rigid tapping	
Tool management function	
Tool offset number	Max. 400 pair
Program storage capacity	512KB ~ 2MB
Program registration number	Max. 1000 ea
Additional work coordinate	48 pair (G54.1 P1 ~ P48)
AICC II	200 block 400 block ☆

Figures in inch are converted from metric values.  
The FANUC controller specifications are subject to change based on the policy of company CNC supplying.

# GLOBAL NETWORK



# GLOBAL NETWORK



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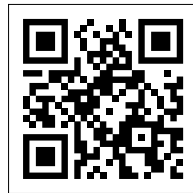
TEL : +86 020 8550 6595

FAX : +86 020 8550 6597

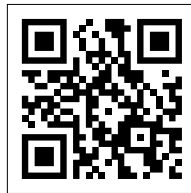
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F410D Movie



F500D Movie



<http://machine.hyundai-wia.com>

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