

FB Series

HYUNDAI WIA Vertical Machining Center



Technical Leader

The Vertical Machining Center FB Series, designed by Hyundai WIA with years of expertise and the latest technology, is a heavy duty cutting machine with high precision and productivity.



MODEL	Y-Axis Stroke		Belt	Gear					Taper		Magazine		
	510mm (20.1")	600mm (23.6")	8,000 (287N·m) (211.7lbf·ft)	4,500 (730N·m) (538.4lbf·ft)	4,500 (901N·m) (664.5lbf·ft)	8,000 (512N·m) (377.6lbf·ft)	8,000 (532N·m) (392.4lbf·ft)	8,000 (657N·m) (484.6lbf·ft)	BT40	BT50	20 Tool	24 Tool	30 Tool
F510B	●		●			○			●			●	○
F600B		●		●	○		○	○		●	●		○

●: Standard ○: Option

High tech Vertical Machining Center for High Precision Heavy Duty Cutting

FB Series

- High precision main spindle designed with Angular Contact Ball Bearings
- High power/torque main spindle for superb heavy duty cutting
- Gear driven main spindle for high power and high torque
- Box guideways for exceptional traveling during heavy duty cutting
- Latest Servo ATC for highly efficient tool changing (F510B)



F510B Basic Features

Excellent Heavy Duty Cutting Capability & Productivity
Vertical Machining Center



01 All Axes Box Guideway

All Axes box guideways for efficient traveling for heavy duty cutting.

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.

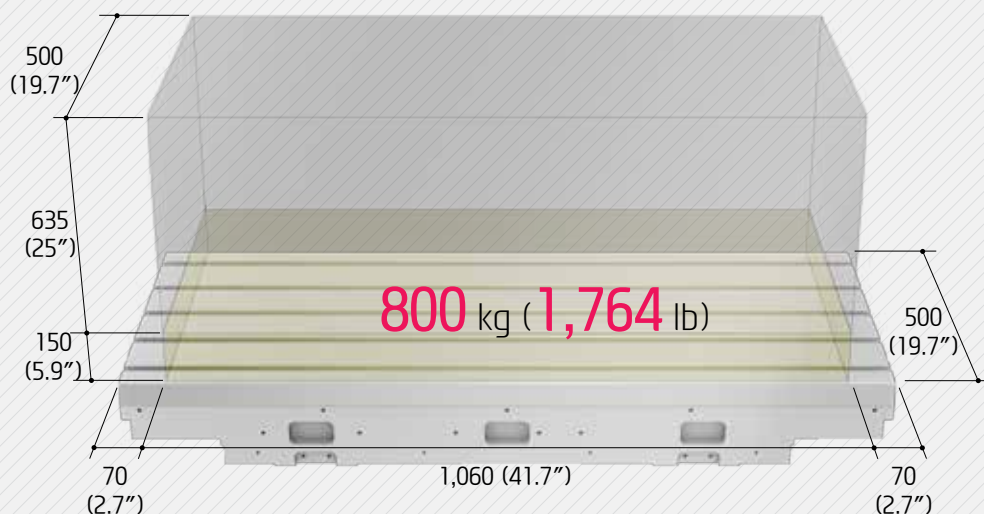


Directly Coupled Servo Motor

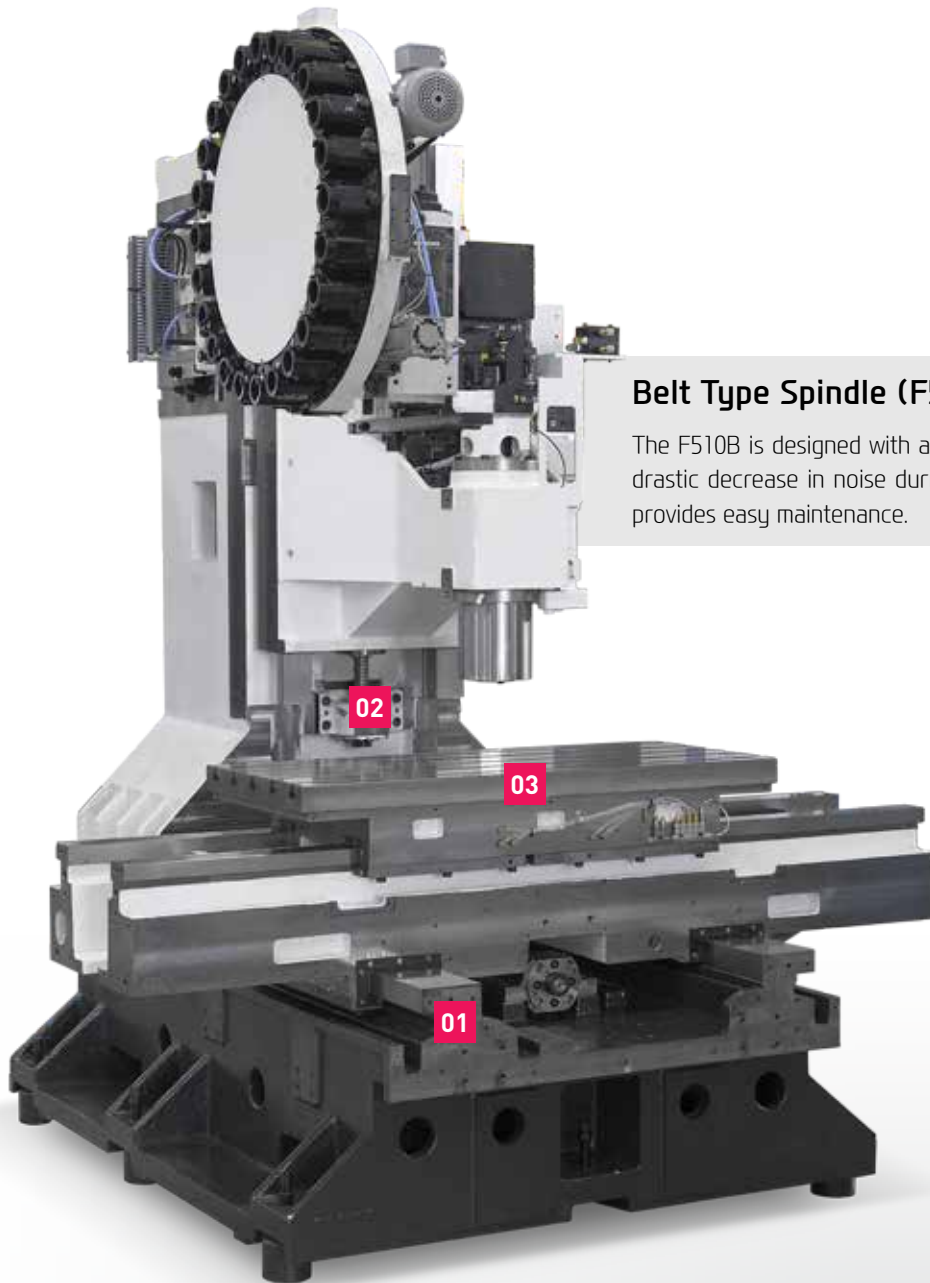
Each axis is directly connected to a highly reliable digital servo motor to provide high rigidity and minimal thermal displacement.

Table & Machining Area

⊙ **Table Size** (X/Y axis) : **1,200/500** mm (**47.2"/19.7"**)



Basic Features



Belt Type Spindle (F510B)

The F510B is designed with a belt type spindle. This allows drastic decrease in noise during machining operations and provides easy maintenance.

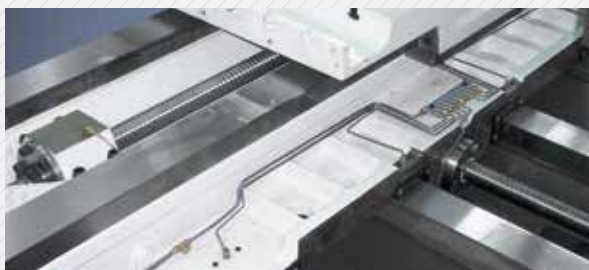
- ◉ **Travel** (X/Y/Z axis) : **1,100/510/635** mm (**43.3"/20.1"/25"**)
- ◉ **Spindle Speed(rpm)** : **8,000 Belt [8,000 Gear]** rpm
- ◉ **Spindle Power Output** (Max./Cont.) : **15/11 [15/11]** kW (**20/14.7 [20/14.7]** HP)
- ◉ **Spindle Torque** (Max./Cont.) : **287/143 [512/375]** N·m (**211.7/105.5 [377.6/276.6]** lbf·ft)

F600B Basic Features

High Speed & Productivity Vertical Machining Center

01 4 Slideway Y-Axis Structure

The Y-axis on the F600B is designed with 4 slideways. This reduces the degree of displacement from sagging.



All Axes Box Guideway

Box guideway allows even distribution of force on the guideway surface, resulting in high rigidity and stable feeding. This provides the background for high quality heavy duty cutting.

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.



Directly Coupled Servo Motor

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

Table & Machining Area

● **Table Size** (X/Y axis) : **1,600/600 mm (63"/23.6")**

[When applying JIG - Y-axis : 580 mm(22.8")]



Basic Features



Gear Driven Spindle

F600B is designed with a gear driven spindle which allows high torque at low rpm and stable machining at high rpm.

- ⊙ **Travel** (X/Y/Z axis) : 1,150/600/600 mm (45.3"/23.6"/23.6")
- ⊙ **Spindle Speed(rpm)** : 4,500 [4,500] [8,000] [8,000] rpm
- ⊙ **Spindle Driving Method** : Gear
- ⊙ **Spindle Power Output** (Max./Cont.) :
15/11 [18.5/15] [15/11] [18.5/15] kW (20/14.7 [24.8/20] [20/14.7] [24.8/20] HP)
- ⊙ **Spindle Torque** (Max./Cont.) : 730/535 [901/730] [532/390] [657/532] N·m
(538.4/394.6 [664.5/538.4] [392.4/287.6] [484.6/392.4] lbf·ft)

n3

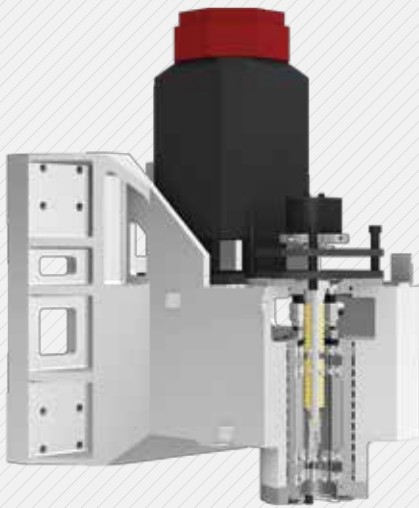
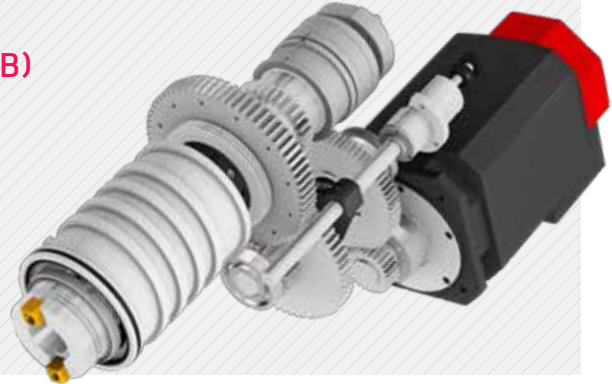
FB Series

High Precision Spindle

High Accuracy & Excellent Performance
Vertical Machining Center

2 Step Gear Driven Spindle (F600B)

F600B spindle features cylindrical roller bearings, ensuring maximum torque and heavy duty cutting abilities. The 2 step gear driven spindle allows high torque during low speed operations and stable machining during high speed operations.



Belt Type Spindle (F510B)

The F510B is designed with a belt type spindle. This allows drastic decrease in noise during machining operations and provides easy maintenance.

By using ultra precision angular ball bearings, fast acc/deceleration of spindle is achieved.

The spindle head is designed to minimize the heat displacement, and with the use of a hydraulic tool locking system the machining stability is improved.

Through Spindle Coolant **OPTION**

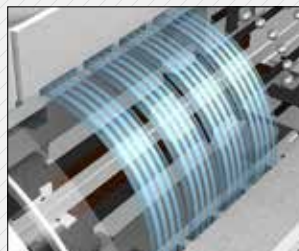
Through Spindle Coolant is exceedingly useful when drilling deep holes. It helps increase the lifetime of the tool, while decreasing cycle time.



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

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.



F600B

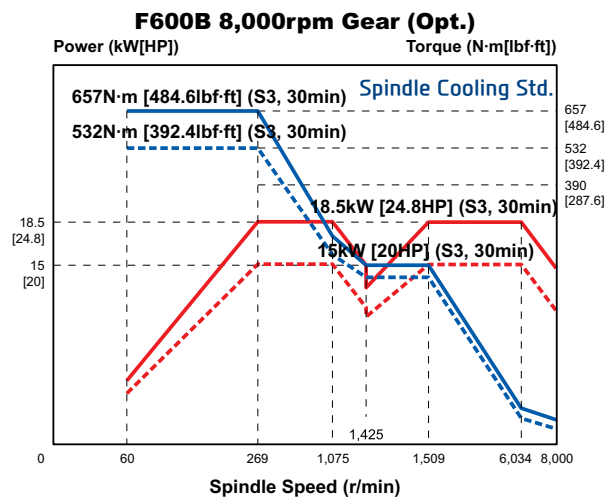
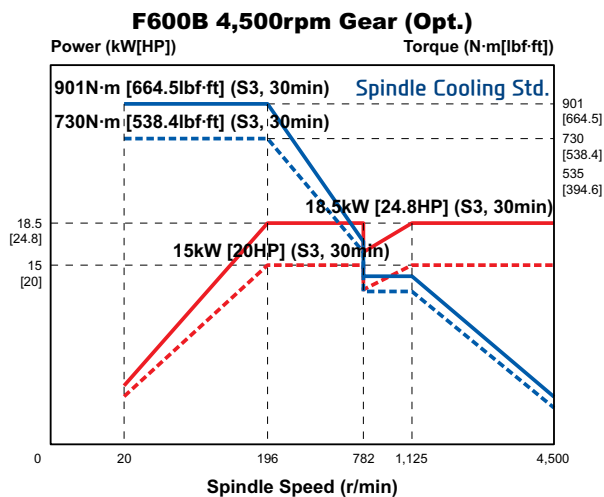
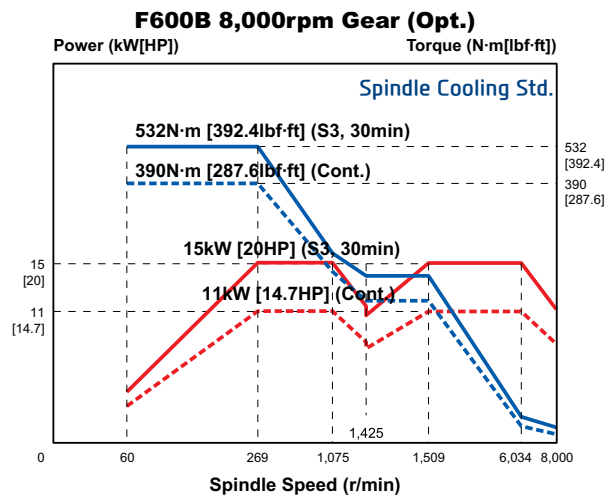
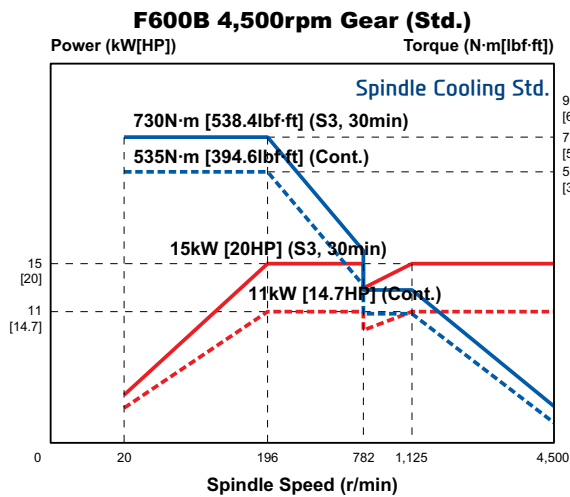
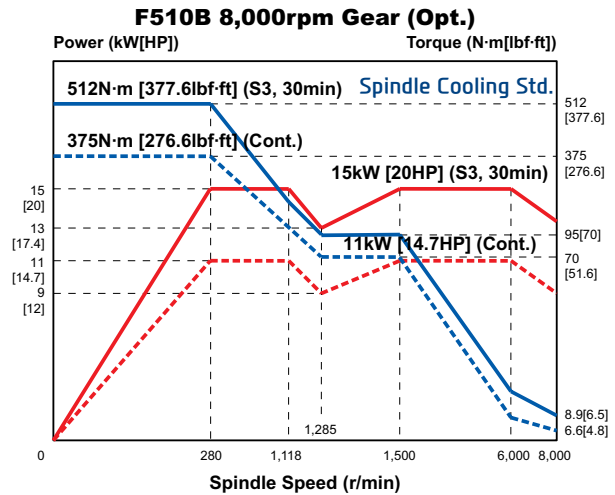
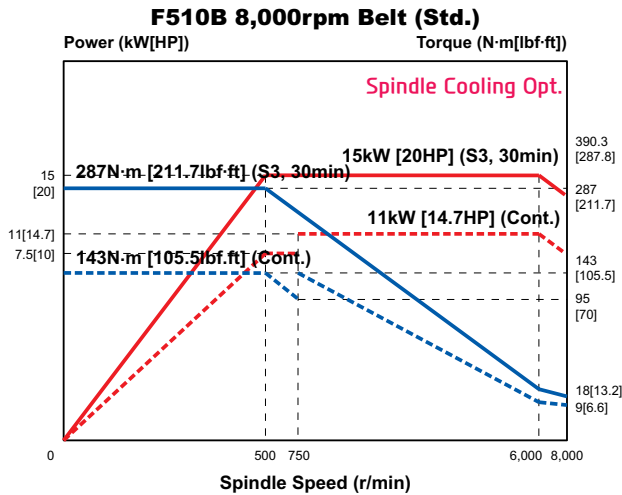
All Axes : **Standard**

F510B

8,000rpm (Belt) : **Option**

8,000rpm (Gear) : **Standard**

Spindle Output/Torque Diagram



n4
FB Series

ATC & Magazine

High Productivity Achieved with Rigidity and Accuracy in Machining



F510B

- ◉ 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 (17.6 lb)**
- ◉ Tool Selection Method : **Random**

F600B

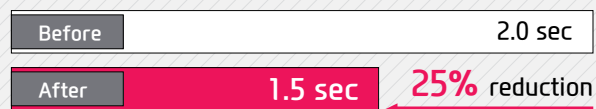
- ◉ No. of Tools : **20 [30]** EA
- ◉ Tool Shank : **BT50**
- ◉ Max. Tool Dia. (W.T/W.O) :
Ø125/Ø240 (Ø4.9"/Ø9.4")
- ◉ Max. Tool Weight : **20 kg (44.1 lb)**
- ◉ Tool Selection Method : **Random**

Servo ATC

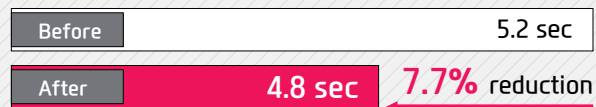
High precision compound cam Twin Arm Servo ATC offers fast and accurate tool change, reducing non-cutting time compared to the previous model.

⦿ ATC Speed Improvement (F510B)

Tool to Tool

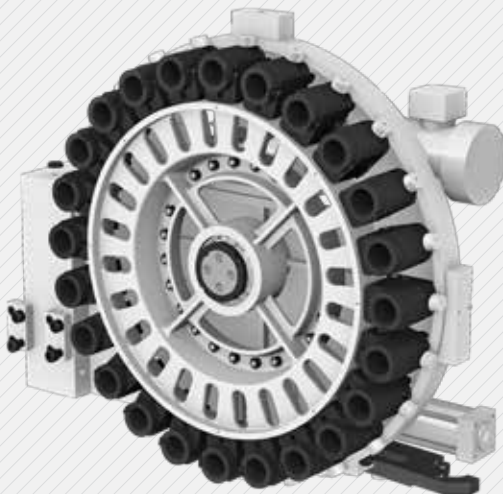


Chip to Chip



Magazine (F510B)

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.



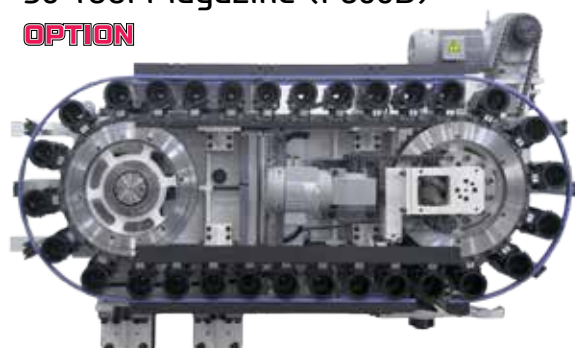
30 Tool Magazine (F510B)

OPTION



30 Tool Magazine (F600B)

OPTION



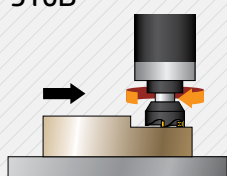
05
FB Series

Machining Capability

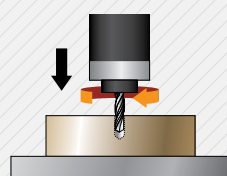
Excellent Performance, High Accuracy
Vertical Machining Center



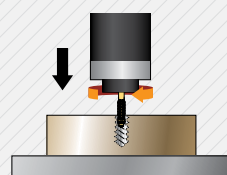
F510B



FACE MILL (Material(JIS):S45C(Carbon steel))	
Tool diameter	Ø80 (Ø3.15") × 6F
Cutting depth	5.5 mm (0.22")
Cutting width	70 mm (2.76")
Cutting speed	236 mm/min (9.3 ipm)
Spindle rpm	1,137 r/min
Feed rate	0.99 mm/rev (0.039"/rev)
Chip quantity	430 cc/min



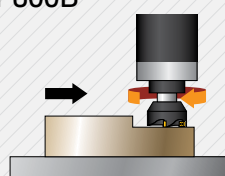
DRILL (Material(JIS):S45C(Carbon steel))	
Tool diameter	Ø43 (Ø1.7")
Cutting depth	43 mm (1.7")
Cutting speed	27 mm/min (1.06 ipm)
Spindle rpm	199 r/min
Feed rate	0.38 mm/rev (0.014"/rev)
Chip quantity	109 cc/min



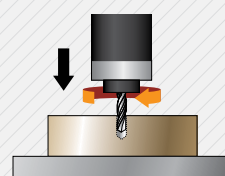
TAP (Material(JIS):S45C(Carbon steel))	
Tap spec./Pitch	M24 × P4.5
Cutting depth	42 mm (1.65")
Cutting speed	7 mm/min (0.27 ipm)
Spindle rpm	53 r/min
Feed rate	4.5 mm/rev (0.17"/rev)

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

F600B

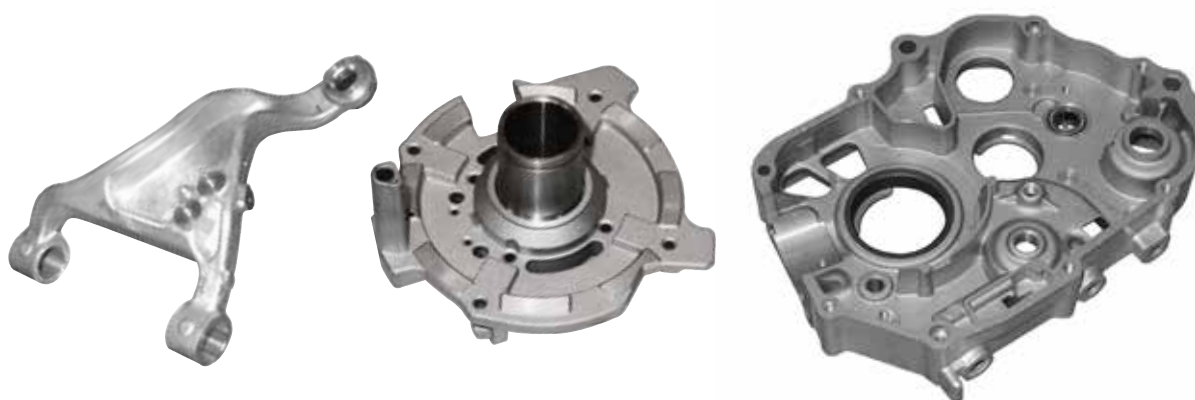


FACE MILL (Material(JIS):S45C(Carbon steel))	
Tool diameter	Ø160 (Ø6.3") × 10F
Cutting depth	7 mm (0.27")
Cutting width	100 mm (3.94")
Cutting speed	160 mm/min (6.3 ipm)
Spindle motor	15/11 kW (20/14.7 kW)
Feed rate	230 mm/min (9.05 ipm)
Chip quantity	403 cc/min



END MILL (Material(JIS):S45C(Carbon steel))	
Tool diameter	Ø50 (Ø1.97")
Cutting depth	35 mm (1.38")
Cutting speed	120 mm/min (4.72 ipm)
Spindle motor	15/11 kW (20/14.7 kW)
Feed rate	230 mm/min (9.05 ipm)
Chip quantity	403 cc/min

Sample Workpieces



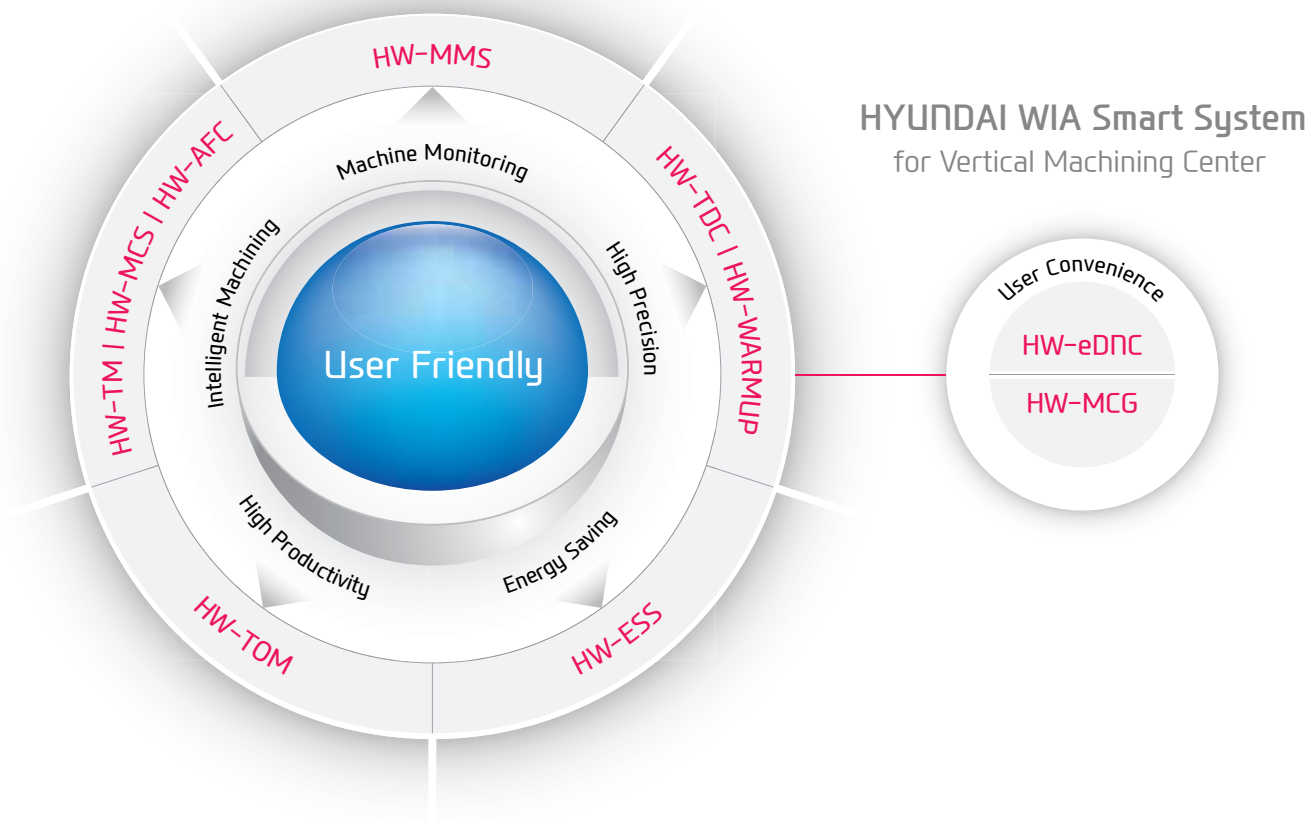


Smart System



Software for smart operating
and machining

Faster processing and enhanced accuracy in are possible through the **HYUNDAI WIA Smart System**. The user friendly software and equipment monitoring of the Smart System maximizes productivity.



Mold-related Software



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-MCS

HYUNDAI WIA
Machining Condition Selection

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

Smart Factory HW-MMS (HYUNDAI WIA-Machine Monitoring System)

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.



- 01 Real-time monitoring of machine operation status (Cloud)
- 02 History and statistics of machine operation (Cloud)
- 03 History and statistics of alarm occurrence (Cloud)
- 04 History and statistics of work count (Cloud)
- 05 Remote diagnosis (Remote)



HW-MCG
HYUNDAI WIA
Machine Guidance

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



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-WARMUP
HYUNDAI WIA
WARMing Up

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



HW-ESS
HYUNDAI WIA
Energy Saving System

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



HW-TOM
HYUNDAI WIA
Tool Offset Measurement

User friendly GUI software that indicates tool length, diameter, and damage (H/W excluded)



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.



User Convenience

Various Devices for User Convenience



Measuring Device

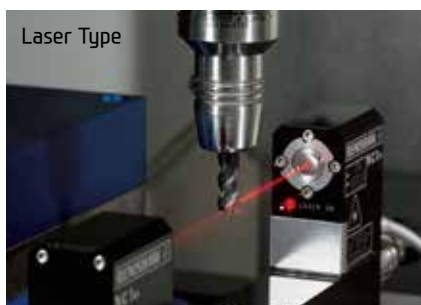
Touch Sensor

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

NC Rotary Table

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



U-Center

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



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.



Optional

Chip Disposal Process (F510B)

Chip Conveyor Rear (Left)

Coolant Unit

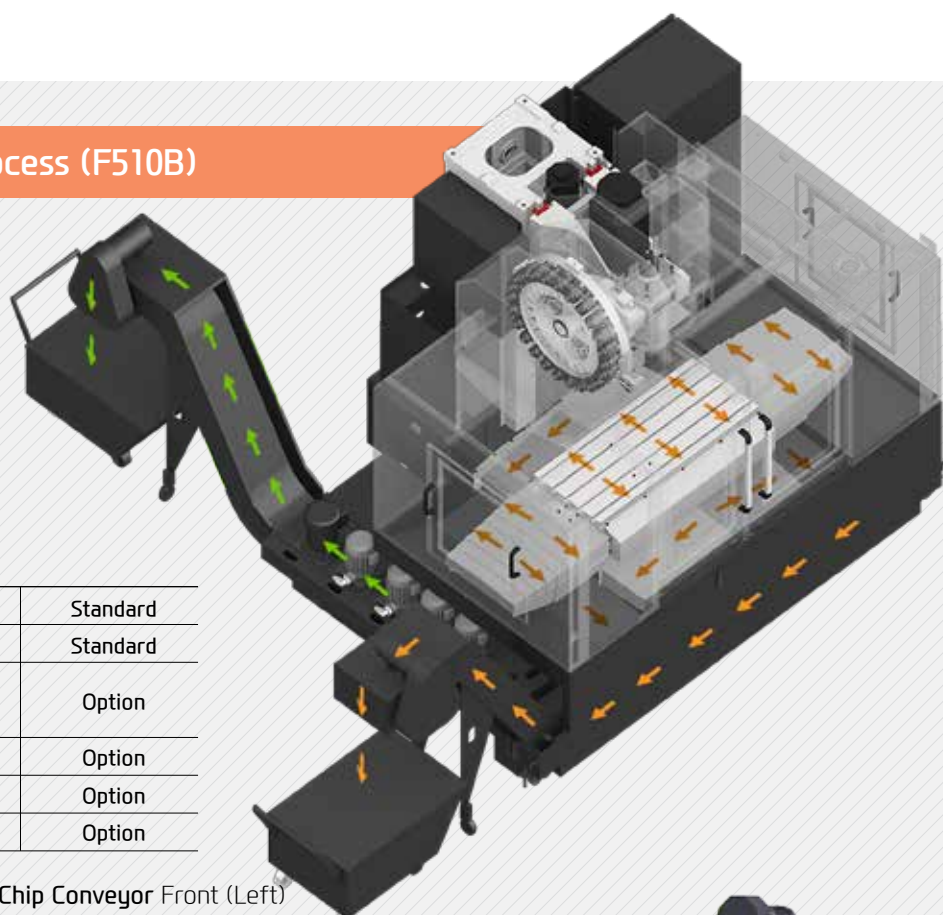
Std. Coolant (Nozzle)	Standard
Bed Flushing Coolant	Standard
Through Spindle Coolant (20/30/70 bar [290/435/1,015 psi])	Option
Shower Coolant	Option
Gun Coolant	Option
Side Oil Hole Coolant	Option

Chip Conveyor Front (Left)

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)**



SPECIFICATIONS

Standard & Optional

Spindle		F510B	F600B
4,500rpm (15/11kW [20/14.7HP])	GEAR (2STEP)	-	●
4,500rpm (18.5/15kW [24.8/20HP])	GEAR	-	○
8,000rpm (15/11kW [20/14.7HP])	BELT	●	-
8,000rpm (15/11kW [20/14.7HP])	GEAR	○	○
8,000rpm (18.5/15kW [24.8/20HP])	GEAR (2STEP)	-	○
Spindle Cooling System	BELT	○	-
	GEAR	●	●
ATC			
ATC Extension	20	-	●
	24	●	-
	30	○	○
Tool Shank Type	BT40	●	-
	CAT40	○	-
	BT50	-	●
	CAT50	-	○
U-Center	D'andrea	☆	☆
	45°	●	●
Pull Stud	60°	○	○
	90°	○	○
Table & Column			
APC		-	-
Tap Type Pallet		-	-
T-Slot Pallet		●	●
NC Rotary Table		☆	☆
High Column	250mm (9.8")	-	○
	300mm (11.8")	-	-
Coolant System			
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 (Thru coolant applied when necessary)	●	○
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)		☆	☆
Chip Disposal			
Coolant Tank	400 ℓ (105.7 gal)	-	●
	450 ℓ (118.9 gal)	●	-
Intenal Screw Chip Conveyor		-	●
Chip Conveyor (Hinge/Scraper)	Left(Rear)	○	○
	Left(Left)	○	-
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	☆	☆
S/W			
Machine guidance (HW-MCG)		☆	☆
Tool Monitoring (HW-TM)		○	○

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

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

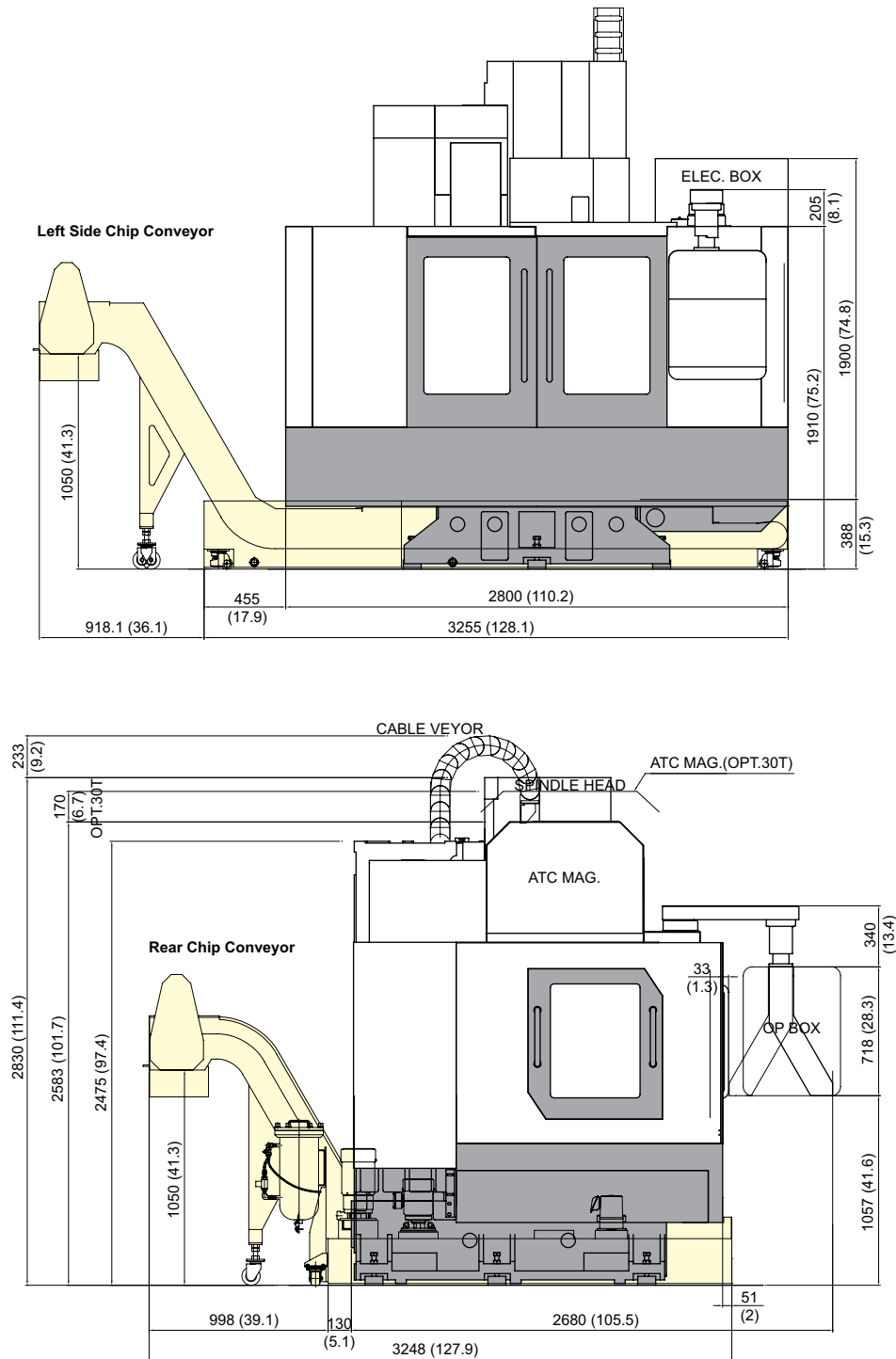
S/W		F510B	F600B
DNC Software (HW-eDNC)		○	○
Spindle Heat Distortion Compensation (HW-TDC)		○	○
Spindle Warm up Function (HW-WARMUP)		☆	☆
Energy Saving System (HW-ESS)		☆	☆
Machine Monitoring System (HW-MMS)		○	○
Tool Offset Measurement (HW-TOM)		☆	☆
Machining Condition Selection (HW-MCS)		☆	☆
Adaptive Feed Control (HW-AFC)		☆	☆
Conversational Program (HW-DPRO)		○	○
Safety Device			
Total Splash Guard		●	●
Electric Device			
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		○	○
Work Counter	Digital	○	○
Total Counter	Digital	○	○
Tool Counter	Digital	○	○
Multi Tool Counter	6 EA	○	○
	9 EA	○	○
Electric Circuit Breaker		○	○
AVR (Auto Voltage Regulator)		☆	☆
Transformer	30KVA	○	○
Auto Power Off		○	○
Back up Module for Black out		○	○
Measuring Device			
Air Zero	TACO	○	○
	SMC	○	○
Work Measuring Device		○	○
TLM	Touch	○	○
(Marposs/Renishaw/Blum)	Laser	○	○
Tool Broken Detective Device		☆	☆
Linear Scale	X/Y/Z Axis	○	○
Coolant Level Sensor (Only for Chip Conveyor, Bladder Type)		☆	☆
Enviornment			
Air Conditioner		○	○
Dehumidifier		○	○
Oil Mist Collector		○	○
Oil Skimmer (Only for Chip Conveyor)		○	○
MQL (Minimal Quantity Lubrication)		☆	☆
Fixture & Automation			
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	○	○
Hyd. Device			
Std. Hyd. Unit	70bar (1,015 psi) / 11 ℓ (2.9 gal)	●	-
	45bar (652.7 psi)	○	○
Fixture Hyd. Unit	70bar (1,015 psi)	○	○
	100bar (1,450 psi)	☆	☆
	Customized	☆	☆
ETC			
Tool Box		●	●
Customized Color	Need for Munsel No.	☆	☆
CAD&CAM Software		☆	☆

SPECIFICATIONS

External Dimensions

unit : mm(in)

F510B

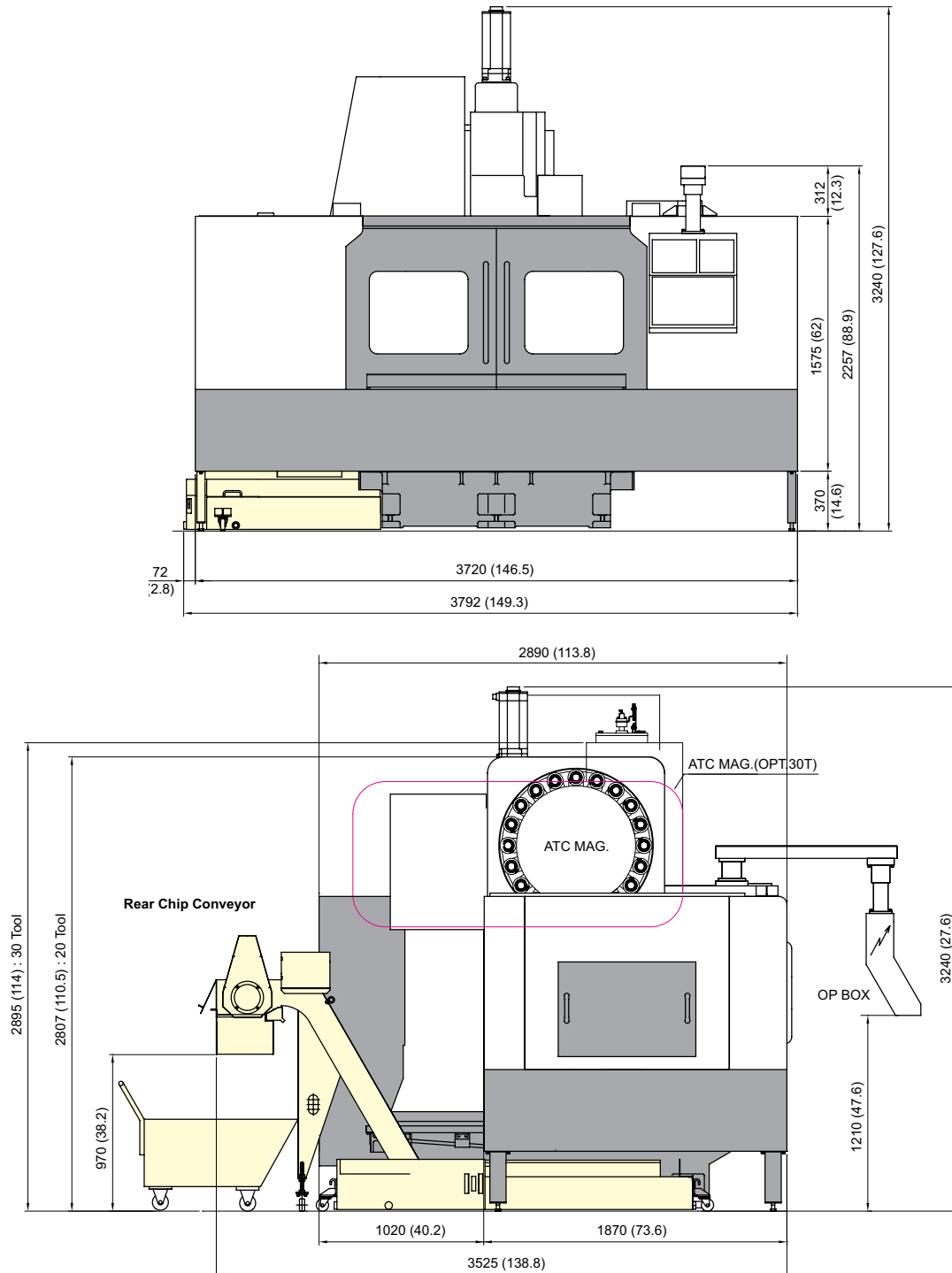


SPECIFICATIONS

External Dimensions

unit : mm(in)

F600B



HYUNDAI WIA
MACHINE TOOL

FB SERIES
Vertical Machining Center

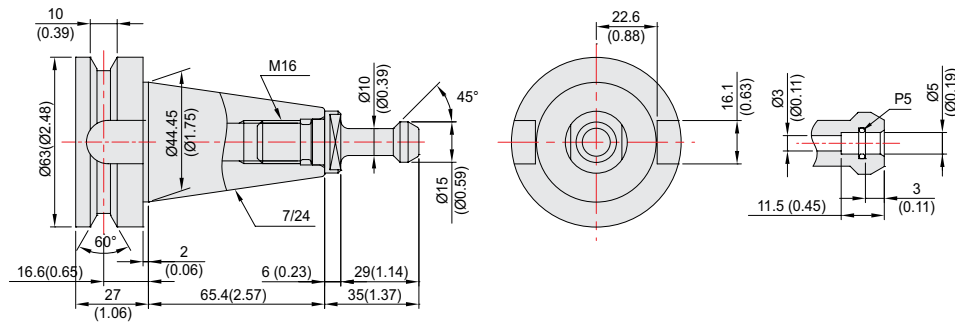
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21

SPECIFICATIONS

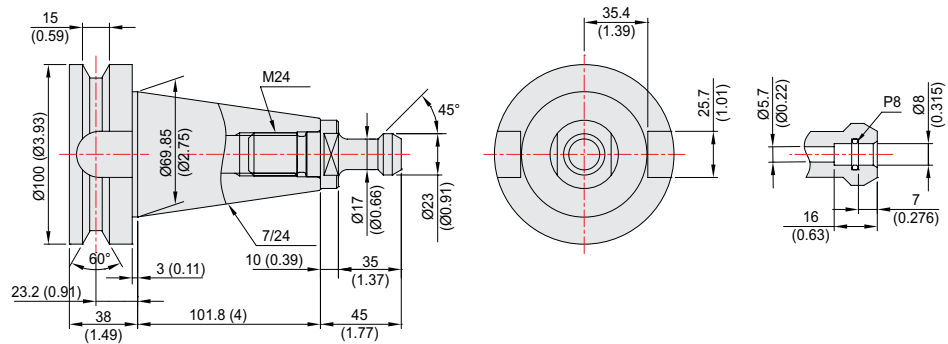
Tool Shank

unit : mm(in)

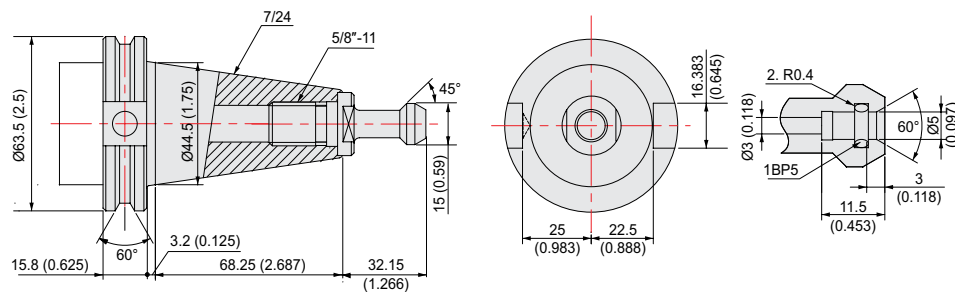
**F510B
BT40**



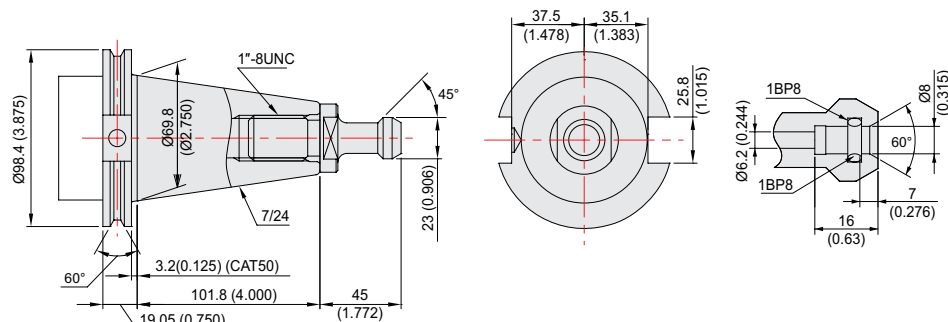
**F600B
BT50**



**F510B
CAT40**



**F600B
CAT-50**



SPECIFICATIONS

Specifications

[] : Option

ITEM			F510B	F600B
TABLE	Table Size	mm(in)	1,200×500 (47.2"×19.7")	1,600×600 (63"×23.6") {When applying jig, Y-axis : 580 (22.8")}
	Maximum Load Capacity	kg(lb)	800 (1,764)	1,000 (2,205)
	Table Change Time	sec	-	-
	Change Method	-	-	-
	Table Driving Method	-	-	-
SPINDLE	Spindle Taper	-	NT #40	NT #50
	Spindle RPM	r/min	8,000 [8,000]	4,500 [4,500] [8,000] [8,000]
	Spindle Power Output (Max./Cont.)	kW(HP)	15/11 (20/14.7) [15/11 (20/14.7)]	15/11(20/14.7) [18.5/15(24.8/20)] [15/11(20/14.7)] [18.5/15(24.8/20)]
	Spindle Torque (Max./Cont.)	N·m(lbf·ft)	287/143 (211.7/105.5) [512/375 (377.6/276.6)]	730/535 (538.4/394.6) [901/730 (664.5/538.4)] [532/390 (392.4/287.6)][657/532(484.6/392.4)]
	Spindle Driving Method	-	BELT [GEAR]	GEAR
FEED	Travel (X/Y/Z)	mm(in)	1,100/510/635 (43.3"/20.1"/25")	1,150/600/600 (45.3"/23.6"/23.6")
	Distance from Table Surface to SP	mm(in)	150~785 (5.9"~30.9")	180~780 (7.1"~30.7")
	Distance from Column to SP. center	mm(in)	615 (24.2")	620 (24.4")
	Rapid Traverse Rate (X/Y/Z)	m/min(ipm)	30/30/24 (1,181/1,181/944.8)	24/24/24 (944.8/944.8/944.8)
	Slide Type	-	BOX GUIDE	BOX GUIDE
ATC	Number of Tools	EA	24 [30]	20 [30]
	Tool Shank	-	BT40 [CAT40]	BT50 [CAT50]
	Max. Tool Dia. (W.T / W.O)	mm(in)	Ø90/Ø150 (3.5"/5.9")	Ø125/Ø240 (4.9"/9.4")
	Max. Tool Length	mm(in)	300 (11.8")	300 (11.8")
	Max. Tool Weight	kg(lb)	8 (17.6)	20 (44.1)
	Tool Selection Method	-	RANDOM	RANDOM
	Tool Change Time	T-T sec	1.5	3.4
		C-C sec	4.8	6.8
TANK CAPACITY	Coolant Tank	ℓ (gal)	450 (118.9)	400 (105.7)
	Lubricating Tank	ℓ (gal)	2 (0.5)	3 (0.8)
	Hydraulic Tank	ℓ (gal)	11 (2.9)	-
POWER SUPPLY	Air Consumption (0.5MPa)	ℓ /min(gal)	250 (66)	400 (105.6)
	Electric Power Supply	KVA	24	28
	Thickness of Power Cable	Sq	OVER 25	OVER 25
	Voltage	V/Hz	220/60 (200/50*)	220/60 (200/50*)
MACHINE	Floor Space (L×W)	mm(in)	2,800×2,680 (110.2"×105.5")	3,720×2,890 (146.5"×113.8")
	Height	mm(in)	2,830 (111.4")	3,240 (127.6")
	Weight	kg(lb)	7,700 (16,976)	10,500 (23,149)
PC	Controller	-	HYUNDAI WIA FANUC i Series	HYUNDAI WIA FANUC i Series [F 31i-A]

*) 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

Controlled axis / Display / Accuracy Compensation	
Controlled axis	3 axis (X, Y, Z)
Simultaneous controllable axis	3 axis (G00 & G01 : 3 axis, G02 & G03 : 2 axis)
Least input increment	X, Y, Z축: 0.001 mm (0.0001")
Least command increment	X, Y, Z축: 0.001 mm (0.0001")
Inch/Metric conversion	G20 / G21
Interlock	Each axis / All axis
Machine lock	All axis
Emergency stop	
Stored stroke check 1	Over Travel
Stored stroke check 2	
Stored stroke check 3	
Follow-up	
Servo off	
Backlash compensation	+/- 0~9999 pulse (rapid traverse & cutting feed)
Position switch	
Stored pitch error compensation	
LCD/MDI	8.4" color LCD
Operation	
Automatic operation (memory)	
MDI operation	
DNC operation	Need DNC Program
Search function	Sequence, Program
Program restart	
Wrong operation prevention	
Buffer register	
Program check function	Dry run, program check
Single block	
Handle interrupt	
Feed functions	
Manual jog feed	Rapid, Jog, handle
Manual handle feed-rate	x1, x10, x100
Feed command	F code feedrate direct command
Feedrate override	0~200% (10% Unit)
Jog feed	0~5,000 mm/min (197 ipm)
Rapid traverse override	F1, F25%, F50%, F100%
Override cancel	
Rapid traverse bell-shaped acceleration/ deceleration	
Auto corner override	G62
Program input & Interpolation functions	
Label Skip	
Control in/out	
Piano Interpolation	Positioning/Linear/Circular (G00/G01/G02/G03)
Exact stop mode/Exact stop	G61 / G09
Dwell	G04, 0~9999.9999sec
Helical interpolation	
Threading/synchronous feed	G33
Manual reference point return	
Reference point return	G28
Reference point return check	G27
2nd, 3rd, 4th Reference point return	G30
Program stop/end	M00, M01 / M02, M30
Tape code	EIA RS-244/ISO 840 (Automatic recognition)
Optional block skip	1 EA
Max. programmable dimensions	+/- 9999.9999 (+/- 8 digits)
Program number	04 /N8
Absolute/incremental command	G90 / G91
Decimal point input	
Plane selection	G17, G18, G19
Work coordinate system setting	G52~G59
Work coordinate preset	G50.3
Additional work coordinate system	G54.1 P1 ~P48 (48 pairs)
Manual absolute	"On" fixed
Programmable data input	G10

Program input & Interpolation functions	
Sub program call	10 folds nested
Custom macro	
Addition to custom macro common variables	#100 ~ #199 , #500 ~ #999
Cylindrical interpolation	G02, G03
Canned cycle	G73, G74, G76, G80 ~ G89
Optional chamfering/corner R	
Skip function	G31
High speed Skip function	
Automatic coordinate system setting	
Coordinate system rotation	G68, G69
Programmable mirror image	G50.1, G51.1
Single direction positioning	G60
External data input	Tool offset, message, machine zero point shift
Cylindrical interpolation	
AI advanced preview control	G5.1 (20 Block look ahead)
Polar coordinate command	G15, G16
Sub / Spindle functions	
Miscellaneous function	M3 digits
Miscellaneous function lock	
Spindle speed command	S5 digits, binary output
Spindle speed override	50%~120% (10% unit)
Spindle orientation	
Rigid tapping	
Tool functions / Tool compensation	
Tool function	Max. T8 digits
Cutter compensation C	G40~G42
Tool length measurement	Z Axis INPUT C
Tool length compensation	G43, G44, G49
Tool offset amount	G45~G48 (+/- 6 digits)
Tool offset pairs	400 pairs
Tool life management	
Data input / Output & Editing functions	
Reader/Puncher interface	RS232C
Memory card input/output	
USB input/output	
Embedded Ethernet	100Mbps
Part program storage length	1280m (512 Kbyte)
Registered programs	400 ea
Memory lock	
Back ground editing	
Extended part program editing	Copy, move, change of NC program
Setting, display, diagnosis	
Self-diagnosis function	
History display	Alarm & operator message
Help function	
Run hour/Parts count display	
Actual cutting feedrate display	
Spindle/Servo setting screen	
Multi-language display	Selection of 5 optional language
Dynamic switching display language	
LCD Screen Save	Screen saver
Option	
Sub Axis Control	4, 5 Axis
wo way pitch error compensation	
Manual Guide Oi	8.4" color LCD
Manual Guide i	10.4" color LCD (Conversational Program)
Dynamic graphic display	
Optional block skip add	9 ea (Application can be limited)
AI contour control(AICC)	40 Block look ahead
AI contour control(AICC) II	200 Block look ahead
Piano Smoothing	
Tool Management Function	
Protection of data at 8 levels	
Data server	1GB
FASTethernet	100 Mbps (Option board is required)
Part program storage length Expand	5120m (2 Mbyte)

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

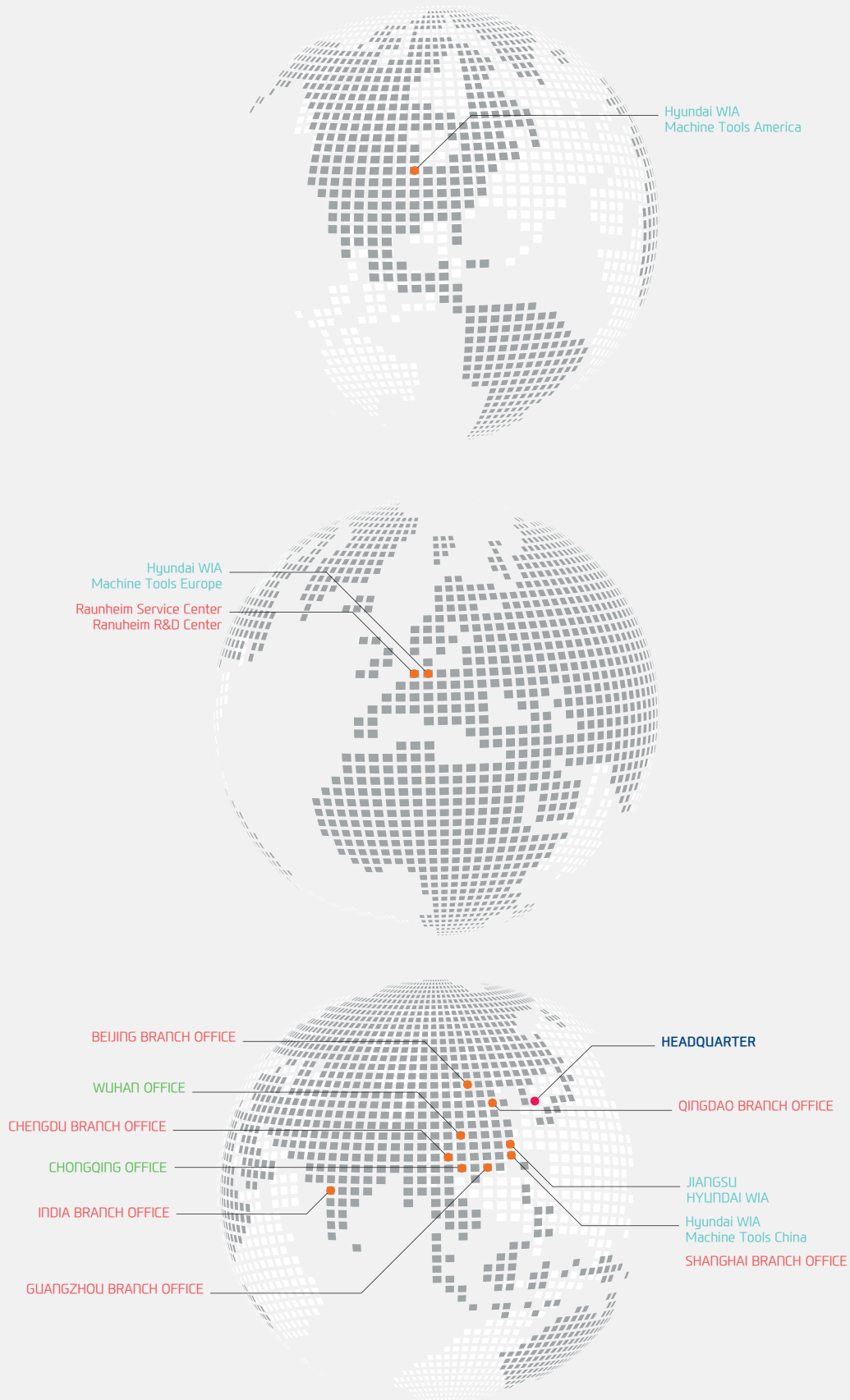
FANUC 31i-A (F600B)

Axis control / Display unit	
Controlled axes	3-axes (X, Y, Z)
Simultaneous controllable axes	3-axes (G00 & G01 : 3-axes, G02 & G03 : 2-axes)
Least input increment	X, Y, Z axis : 0.001 mm (0.0001")
Least command increment	X, Y, Z axis : 0.001 mm (0.0001")
Inch / Metric conversion	G20 / G21
Interlock	Each axis / All axes
Machine lock	All axes
Emergency stop	
Stored stroke check 1	
Mirror image	
Follow-up	
Servo off	
Backlash compensation	+/- 0~9999 pulse (rapid traverse & cutting feed)
Position switch	
Pitch error compensation	
Stored pitch error compensation*	
LCD/MDI	10.4" color LCD
Operation	
Automatic operation (memory)	
MDI operation	
Research Function	Sequence, Program
Program restart	
Dry run,	
Single Block	
Buffer register	
Memory Card DNC operation	
Feed functions	
Manual jog feed	Rapid, Jog, handle
Manual handle feed-rate	x1, x10, x100
Feed command	F code feedrate direct command
Feedrate override	0~200% (10% Unit)
Jog feed	0~5,000 mm/min (197 ipm)
Rapid traverse override	F0, F25%, F50%, F100%
Override cancel	
Rapid traverse bell-shaped acce/ deceleration	
Program input & Interpolation functions	
Label Skip	
Control in/out	
Interpolation function	Positioning/Linear/Circular (G00/G01/G02/G03)
Exact stop mode/Exact stop	G61 / G09
Dwell	
Helical interpolation	G04, 0~9999.9999sec
Threading/synchronous feed	
Manual reference point return	
Reference point return	
Reference point return check	G28
2nd, Reference point return	G27
Program stop/end	G30
Tape code	M00, M01 / M02, M30
Optional block skip	EIA / ISO (Automatic recognition)
Max. programmable dimensions	1 7#
Program number	+/- 9999.9999" (+/- 8digit)
Sequence number	04 / 18 digit
Absolute/incremental command	
Decimal point input	G90 / G91
Plane selection	G17, G18, G19
Work coordinate preset	G52~G59
Manual absolute	"On" fixed
Programmable data input	G10
Sub program call	10 folds nested
Custom macro	

Program input & Interpolation functions	
AI Contour Control(AICC) I	
Circular interpolation	
Canned cycle	
Optional chamfering/corner R	G73, G74, G76, G80 ~ G89
Skip function	
Automatic coordinate system setting	G31
Coordinate system rotation	
Programmable mirror image	
Sub / Spindle functions	
Miscellaneous function	M3 digit
Miscellaneous function lock	
Spindle speed command	S5 digits, binary output
Spindle speed override	50% ~ 120% (10% Unit)
Spindle orientation	
Rigid tapping	
Tool functions / Tool compensation	
Tool function	Max. T8 digits
Cutter compensation C	G40~G42
Tool length compensation	G43, G44, G49
Tool offset pairs	99 Pair
Tool life management	
Data input / Output & Editing functions	
Reader/Puncher interface	RS232C
Memory card input/output	
Embed Ethernet	100 Mbps
Part program storage length	320 m (128 Kbyte)
Registered programs	125 ea
Memory lock	
Back ground editing	
Extended part program editing	Copy, move, change of NC program
External message	
Setting, Display, Diagnosis	
Self-diagnosis function	
Alarm history display	Alarm & Message
Help function	
Run hour/Parts count display	
Actual cutting feedrate display	
Graphic display	
Spindle/Servo setting screen	
Operation monitor screen	Loadmeter Light
Selection of 5 optional language	
LCD Screen Save	Screen saver
Auto Data Backup	
Manual Guide i	Conversational Program

Option	
Sub Axis Control	4, 5 Axes
Additional work coordinate system	48 Pair / 300 Pair
Additional custom micro change	#100~#199, #500~#999
Work coordinate Command	
Work coordinate Interpolation	
Circular Interpolation	
Single direction positioning	G60
FAST ethernet	100 Mbps
Data server	1GB
AI Contour Control(AICC) II	AICC II (200 Block, 600 Block, 1000 Block Look Ahead)
Additional optional blockskip	9 ea (Application can be limited)
Handle interrupt	
Manual Handle Feed	3 unit
program storage length	640m (256Kbyte) / 5120m (2Mbyte)
Dynamic graphic display	
Protection of data at 8 levels	
Tool monitoring function	HWTM (Embed FANUC Type)

GLOBAL NETWORK



GLOBAL NETWORK



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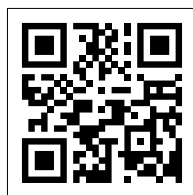
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F600B Movie



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