

HS Series

HS4000 Series | HS5000 Series | HS5000M-1P Series

HYUNDAI WIA High Speed Horizontal Machining Center



GOD DESIGN

Technical Leader

Horizontal Machining Center HS Series, designed by Hyundai WIA with years of expertise and the latest technology, provides high speed, high performance and maximum productivity.

Model	Tool Shank				Pallet			Controller	
	BBT40	BBT50	HSK-A63	HSK-A100	400×400	500×500	1P	FANUC	SIEMENS
HS4000M	●		○		●			●	
HS4000i	●		○		●			●	
HS5000/50		●		○		●		●	
HS5000M	●		○			●		●	
HS5000M/50		●		○		●		●	
HS5000M-1P	●		○			●	●	●	
HS5000M/50-1P		●		○		●	●	●	
HS5000i	●		○			●		●	○

● : Standard ○ : Option

HS

Series

Next Generation Machining Center for High Productivity

- Reversed 'T' bed structure
- Best-in-class rapid traverse rate of 60m/min (2,362ipm)
- Heavy duty Built-in Spindle
- High speed rotary APC
- Step type bed structure (HS4000M | 5000M/50)
- Servo motor driven ATC & APC (HS4000M | 5000M/50)





APPLICATIONS & PARTS



CYLINDER BLOCK



T/M HOUSING

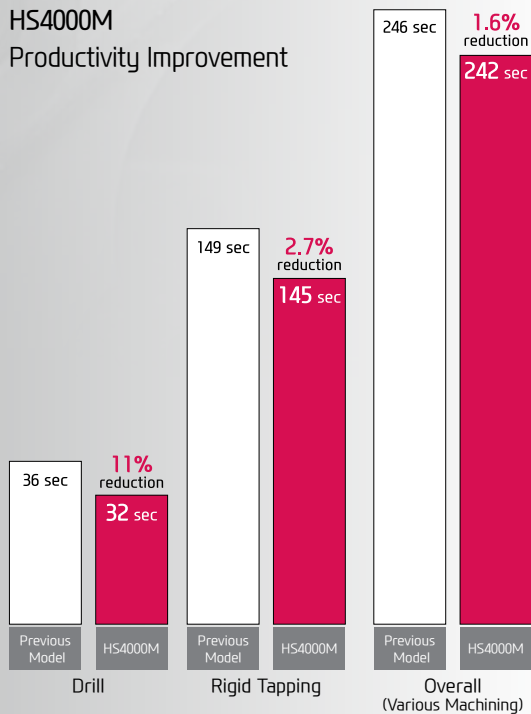


BED PLATE

Reduced machining time by HYUNDAI WIA's Technique

HS series has been designed with high-precision structure, high Speed built-in spindle and travel system, maximizing precision and minimizing thermal displacement when process the products.

HS4000M Productivity Improvement



FACE MILL,
(Material : SM45C)

Tool dia.	Ø80 (Ø3.14")×6F
Spindle speed	1,137 r/min
Rapid feed rate	1,000 mm/min
Cutting width	70 mm (2.76")
Cutting depth	5 mm (0.2")
Chip quantity	350 cc/min

DRILL
(Material : SM45C)

Tool dia.	Ø43 (Ø1.7")
Spindle speed	199 r/min
Rapid feed rate	39 mm/min
Cutting width	43 mm (1.7")
Cutting depth	60 mm (2.36")
Chip quantity	57 cc/min

TAP
(Material : SM45C)

Tool dia.	M33×P3.5
Spindle speed	70 r/min
Rapid feed rate	280 mm/min
Cutting width	36 mm (1.4")
Cutting depth	54 mm (2.12")

01 BASIC STRUCTURE

High Speed & Productivity Horizontal Machining Center

High Precision Spindle

- Built-in Spindle
- Taper Roller Bearing (HS4000M/5000M)
- Oil Cooling System
- BBT40 [HSK-A63], BBT50 [HSK-A100]

ATC & Magazine

- No. of Tools : 40 [60/80/120] EA
- Tool Selection Method : Fixed

HS4000M/5000M

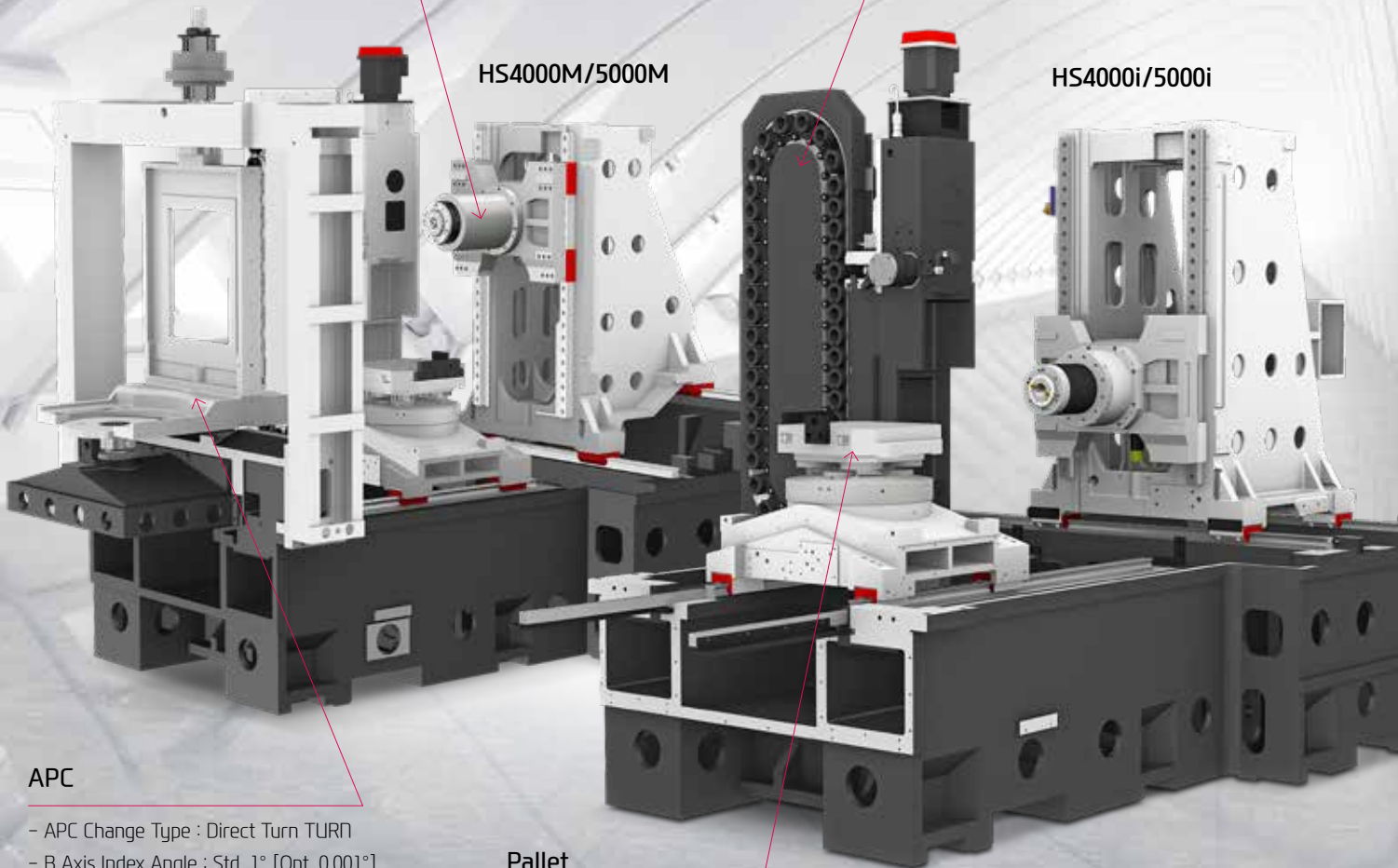
HS4000i/5000i

APC

- APC Change Type : Direct Turn TURN
- B Axis Index Angle : Std. 1° [Opt. 0.001°]

Pallet

- Pallet Size (X/Y)
 - HS4000 Series : 400×400 mm (15.7"×15.7")
 - HS5000 Series : 500×500 mm (19.7"×19.7")
- Air Clearing System



IMPROVED RIGIDITY, OPTIMAL PERFORMANCE

HIGH-PRECISION STRUCTURE

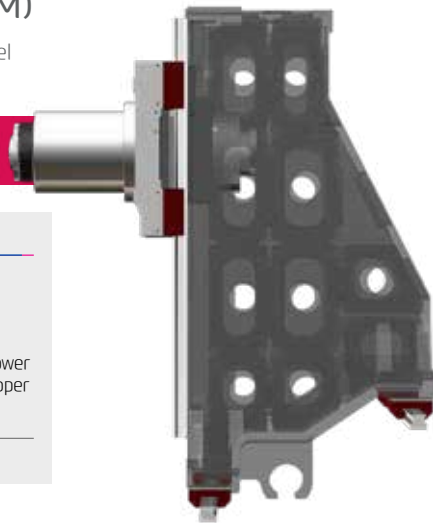
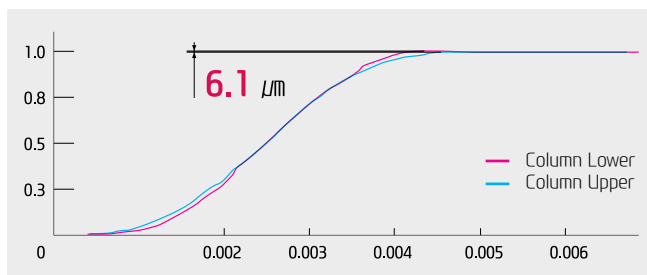
Reversed 'T' Type Bed

The bed is designed with reversed 'T' structure where sufficient height and thickness bring high rigidity.

Step Type Bed Structure (HS4000M/5000M)

It is designed to minimize the load occurring at the front. Also, travel stability is increased by column weight optimization.

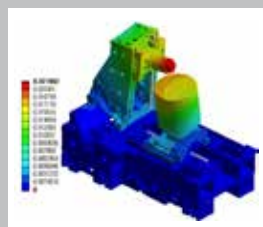
X-Axis Column Deformation (HS4000M) : 6.1 μm



IMPROVED RIGIDITY

Optimal Structural Analysis

It is designed to have optimal structure through Hyundai WIA's unique structural analysis. Also, column has become more rigid even though it is lighter in weight compared to the previous model.



Axis	Previous model	HS4000M	Change
X-axis	36.9 u/um	46.2 u/um	25% ↑
Y-axis	77.1 u/um	90.4 u/um	17% ↑
Z-axis	131.2 u/um	147.2 u/um	12% ↑

HS SERIES

02 HIGH-SPEED FEED

Highest Quality, High-speed Horizontal Machining Center

Travel (X/Y/Z)

HS4000 Series

620/560/650 mm (24.4"/22"/25.6")

HS5000 Series

850/700/750 mm (33.5"/27.6"/29.5")

Rapid Traverse Rate (X/Y/Z)

60/60/60 m/min (2,362/2,362/2,362 ipm)

HS4000i | 5000i | 5000/50 : **50/50/50** m/min (1,968/1,968/1,968 ipm)

REDUCED NON-CUTTING TIME & IMPROVED FEED PRECISION

GUIDE WAY

High-Speed Roller LM Guideway

Linear roller guideways are applied to reduce non-cutting time and bring high rigidity. Each axis is directly connected to a highly reliable digital servo motor to provide high rigidity and minimal thermal displacement.



Ball Screw

Travel is stabilized by fastening both ends of the ball screw using the double anchored method.

Ø40
(Ø1.6")

Ø45
(Ø1.7")

Large Ball Screw ('M' Type)

The increased diameters of all ball screws allow for high accuracy even during heavy duty machining.



Other Machine

HS4000M | 5000M/50

Feed Shaft Thermal Displacement (HS4000M)

X-axis Thermal Displacement (30 Cycles)



Y-axis Thermal Displacement (30 Cycles)



Z-axis Thermal Displacement (30 Cycles)



NUT COOLING BALL SCREW ('M' Type)

Nut cooling ball screws on all axes(HS4000M/HS5000M/50) decrease thermal displacement which enhances precision machining ability.



OPTION

03 HIGH PRECISION SPINDLE

Excellent machining performance with high-precision spindle

Spindle Specifications

[] : Option

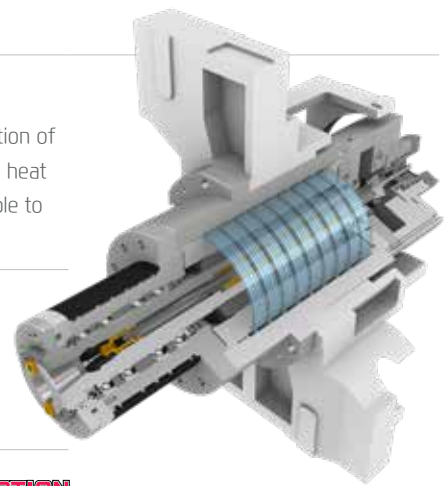
Model	Speed (rpm)	Motor (Max./Cont.)	Torque (Max./Cont.)	Type
HS4000i	12,000 rpm (FANUC)	25/22 kW (33.5/30 HP)	167/95 N·m (123.1/70.1 lbf-ft)	Built-in
HS4000M	15,000 rpm (FANUC)	25/22 kW (33.5/30 HP)	167/95 N·m (123.1/70.1 lbf-ft)	
HS5000i	12,000 rpm (FANUC)	25/22 kW (33.5/30 HP)	167/95 N·m (123.1/70.1 lbf-ft)	
	[10,000 rpm (SIEMENS)]	[38/25 kW (51/33.5 HP)]	[266.8/120.5 N·m (196.8/88.9 lbf-ft)]	
	[12,000 rpm (SIEMENS)]	[26/26 kW (35/35 HP)]	[113/75 N·m (83.3/55.3 lbf-ft)]	
HS5000/50	12,000 rpm (FANUC)	30/25 kW (40/33.5 HP)	420/238 N·m (310/175.5 lbf-ft)	
HS5000M HS5000M-1P	15,000 (FANUC)	37/22 kW (50/30 HP)	250/108 N·m (184.4/79.7 lbf-ft)	
	[20,000 (FANUC)]	[37/18.5 kW (50/25 HP)]	[221/79.6 N·m (163/58.7 lbf-ft)]	
HS5000M/50 HS5000M/50-1P	12,000 [6,000] rpm (FANUC)	45/25 kW (60/33.5 HP)	623/305 N·m (459.5/225 lbf-ft)	

HIGH-PERFORMANCE, HIGH-PRECISION SPINDLE

SPINDLE

Built-in Spindle

By using ultra precision class angular ball bearings, fast acc/deceleration of the main spindle is achieved. The spindle head is designed to minimize heat displacement therefore reducing heat generation and making it possible to maintain high accuracy.



Oil Cooling System.

Spindle temperature is controlled by the use of a spindle oil chiller. This ensures consistent spindle temperature which minimizes thermal displacement.

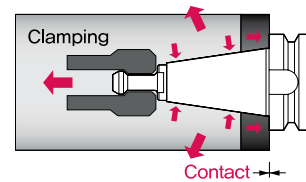
Through Spindle Coolant (20/30/70 bar) **OPTION**

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

Dual Contact Spindle

The Big Plus spindle system (BBT) provides dual contact between the spindle face and the flange face of the tool holder.

The increase in standard diameter improves stiffness and ATC repeatability, and Z-axis displacement is prevented which further extends tool life.

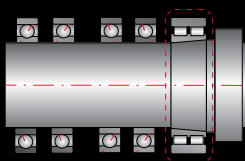


HSK Tool Holder **OPTION**

HSK tool holder is utilized for precise positioning with less expansion in the spindle taper during high speed rotation. This ensures an excellent level of precision for high precision machining.



HSK Tool Holders



Taper Roller Bearing (HS4000M/5000M)

HS4000M/5000M is by applying taper roller bearing (6,000rpm) for heavy duty cutting, it is suitable for machining difficult-to-cut materials such as cast iron.

Fulfilled 15,000 rpm Variable Speed of 1.631 sec. (HS4000M)

04 ATC & MAGAZINE

High Productivity Achieved with High Rigidity, Accuracy Machining

ATC & Magazine Specifications

[] : Option

Model	No. of Tools	Max. Tool Dia. (W.T/W.O)	Max. Tool Length	Tool Shank
HS4000i/4000M	40 [60, 80, 120] EA	Ø75/Ø140 mm (Ø3"/Ø5.5")	350 mm (13.8")	BBT40 [HSK-A63]
HS5000i/5000M			450 mm (17.7")	
HS5000/50	40 [60] EA	Ø125/Ø250 mm (Ø4.9"/Ø9.8")	450 mm (17.7")	BBT50 [HSK-A100]
HS5000M/50				

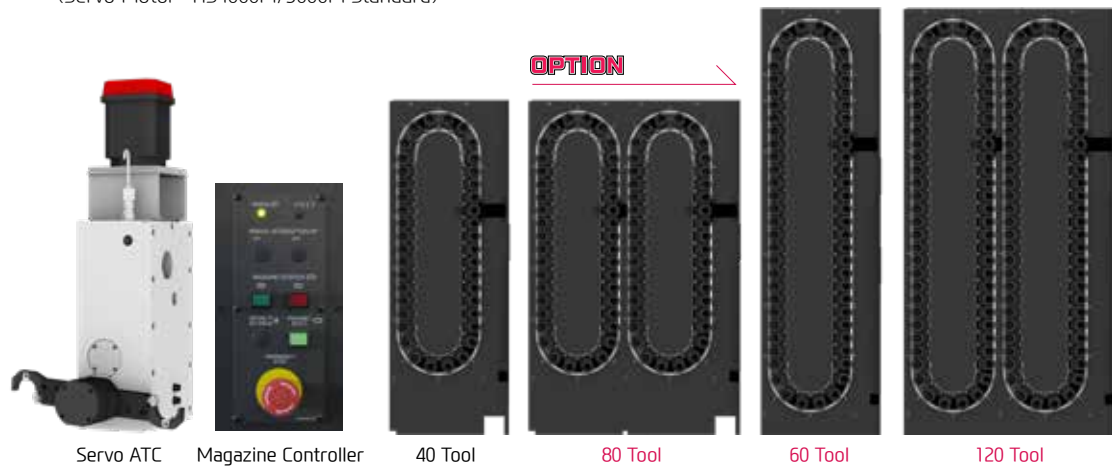
HIGH RIGIDITY, TOOL CHANGE SYSTEM

ATC & MAGAZINE

High Speed ATC **OPTION**

Position control through twin arm ATC on servo motors has been improved drastically. In addition, tool exchanging has become easier, reducing specific cutting time tremendously.

(Servo Motor : HS4000M/5000M Standard)



Magazine

The tool magazine of HS Series holds 40 tools as standard and up to 120 tools as an option depending on model. Fixed address tool selection method and a separate magazine control panel enhance user convenience.

Improved Tool Change time (HS4000M)



ATC Tool Change Time (Chip to Chip)

HS4000i	HS4000M	HS5000i	HS5000/50	HS5000M	HS5000M/50
3.4 sec	2.6 sec	3.8 sec	4.8 sec	3.1 sec	3.8 sec

05 ATC & PALLET

Productivity improvement through servo motor drive type APC

APC & Pallet Specifications

[] : Option

Model	Pallet Size	Max. Load Capacity	Change Time	APC Type
HS4000i	2-400×400 mm (2-15.7"×15.7")	2-500 kg (1,102 lb) [0.001° : 2-500 kg (1,102 lb)]	10 sec	Direct Turn
HS4000M			7 sec	
HS5000i	2-500×500 mm (2-19.7"×19.7")	2-500 kg (1,102 lb) [0.001° : 2-450 kg (992 lb)]	12 sec	
HS5000/50			12 sec	
HS5000M Series			10 sec	

HIGH RIGIDITY & HIGH SPEED PALLET EXCHANGE SYSTEM

APC & PALLET (2 Pallet Type)

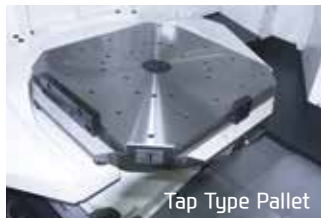
High Speed APC

The servo motor driven APC is designed with Hyundai WIA's advanced technology where APC driving time is reduced significantly. Its best-in-class pallet changing time helps reduce non-cutting time and improve productivity.

Pallet Index Time : 1.5 sec, (HS5000/50 Series : 2.0 sec)



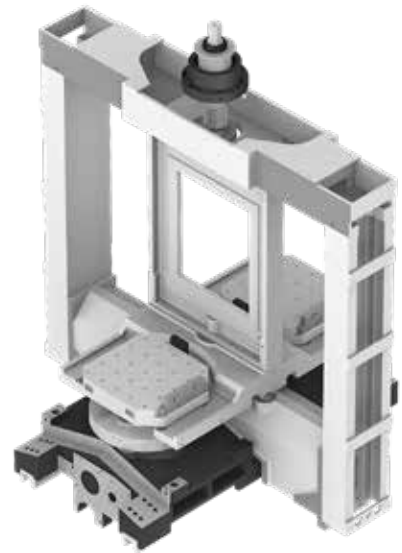
B Axis Index Angle Std. : 1° [Opt. : 0.001°]



Tap Type Pallet



T-Slot Type Pallet

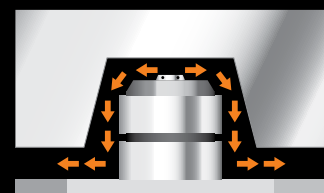


Various Pallet Type

Standard tap type and optional T-Slot type pallet are available for various fixtures.

AIR CLEARING SYSTEM

During the pallet change cycle, strong air blasts from the taper cones on the machine table help remove chips and provide clean surfaces for locating the pallet. This ensures high accuracy of pallet positioning and guarantees optimum rigidity.



Air Clearing System

06 AUTOMATION SYSTEM

Automatic Solutions to Improve Productivity



Through the experience gained from manufacturing machine tools and automobile parts for decades, Hyundai WIA can offer its expertise in designing and installing automation system. Using advanced technology, Hyundai WIA is able to maximize output by increasing system efficiency.

AUTOMATION SYSTEM OPTIMIZED FOR AUTOMOTIVE PARTS PROCESSING

1 Pallet Type Features (HS5000M-1P | 5000M/50-1P)

Step type bed structure for column moving part minimizes the load occurring at the front.

Also, 1-pallet structure improves machining speed and durability when compared with 2-pallet type, and is suitable for FA of automobile parts.



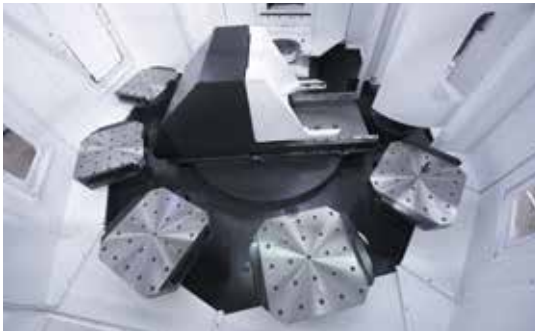
Auto Door

Using M-code, the doors can be automatically opened and closed which brings productivity and convenience for automation.

Start Switch

By simply touching the spring type startup switch located next to the door, fixtures can be easily set in a sequence, increasing convenience.

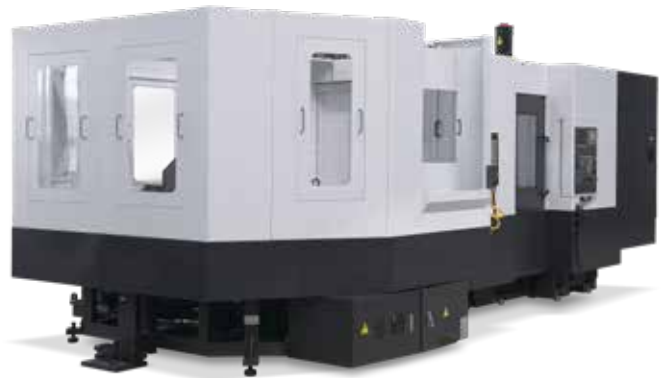
6PPL



6PPL Specification

ITEM	6PPL
Pallet Capacity	6 EA (Machine 1EA, PPL 5EA)
Load Weight	Max. 500 kg (1,102 lb)
Cycle Time	120 sec

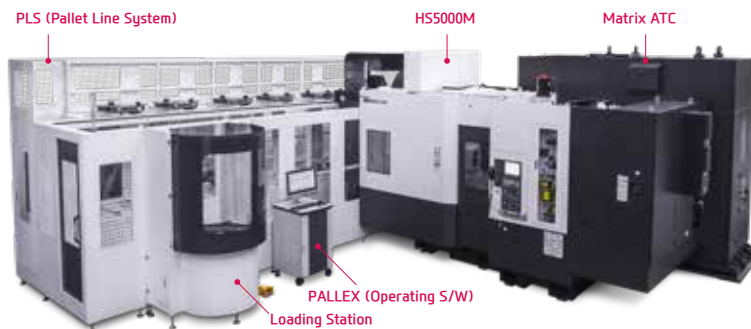
6PPL contains 5 buffer stations and a setup station as standard. Compared to conventional machines that feature APC (2 Pallets), 6PPL runs automatically for longer time. Also, machining various products is possible under a scheduled operation.



PLS (PALLET LINE SYSTEM)

High level of automation system with multi-level pallet rack

Hyundai WIA PLS is an unmanned automation system for horizontal machining centers with two-storied pallet stackers to achieve a reasonable installation area. Especially, it contributes to productivity improvement by easy and efficient system operation to flexibly respond to changes in production volume.



PLS (Pallet Line System)

Pallet Size	mm(in)	500×500 (19.7"×19.7")
Max. Load Capacity	kg(lb)	800 (1,764)
Max. Machining Dia.	-	Ø800 (Ø31.5")
Max. Machining Length	mm(in)	980 (38.6")
No. of Pallet	EA	12~72 [81]
No. of Loading Station	EA	1~4
No. of Machine Tools	EA	1~7 [10]

[] : Prior consultation needed

MATRIX ATC

No. of Tools	EA	195, 240, 300, 360
Driving Method	-	Servo (U/V-Axis)
Tool Selection Method	-	Fixed
Max. Tool Dia.	mm(in)	Ø75/Ø140 (Ø3"/Ø5.5")
Max. Tool Length	mm(in)	450 (17.7")
Max. Tool Weight	kg(lb)	10 (22)

07 USER CONVENIENCE

Various Devices for User Friendly

CHIP DISPOSAL SOLUTION & COOLANT UNIT



Std. Coolant (Nozzle)



Gun Coolant (Opt.)

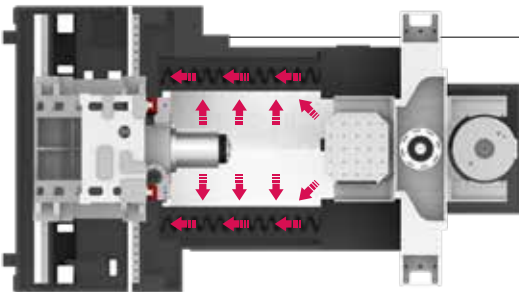


Air Gun (Opt.)



Spindle Cooling Unit

The cooling unit is installed within the side of the machine to minimize the installation area. The application of the inverter type, $\pm 0.1^\circ$, enables rapid and effective control of the spindle thermal displacement.



Interior Screw Chip Conveyor

Dual screw type chip conveyors are located at each side of the bed which makes it convenient to remove chips.



Chip Conveyor

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



Hinge	Chip Type : Roughing chip, long chip, chip complex	Material : SS41, 45C, Cast Steel	Rear Right Direction
	Highly efficient when disposing a lot of chips. Capable of handling stringy chips..		
Scraper	Chip Type : Finely broken chip blown out	Material : cast Iron, Nonferrous	
	Convenient for shortly cut chips.		
❖ Screw	Chip Type : The lower portion of micro-chips	Material : Steel, Casting	
	Compresses and ejects chips to reduce chip trouble.		
❖ Drum Filter	Chip Type : Powder, micro chip	Material : AL	
	Advantageous in precision, as the chips do not flow in to the coolant nozzle.		

❖ When ordering a screw or drum filter chip conveyor, prior consult with hyudai wia's sales person.

Optional

PRECISION SYSTEM & ECO SYSTEM



Tool Broken Detector

The external broken tool detector measures and detects tool wear before actual usage, reducing cycle time.



TLM (Laser & Touch)

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



Touch Sensor

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



Linear Scale

Linear scales increase positioning accuracy and reduce distortion caused by thermal growth, thus ensuring a more accurate finished part



Hydraulic Supply Unit (Upper)

Upper hydraulic structure constantly supplies hydraulic pressure for fluent APC motion. It is free from coolant leakage or chips which makes a pleasant work environment.



Oil Skimmer

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



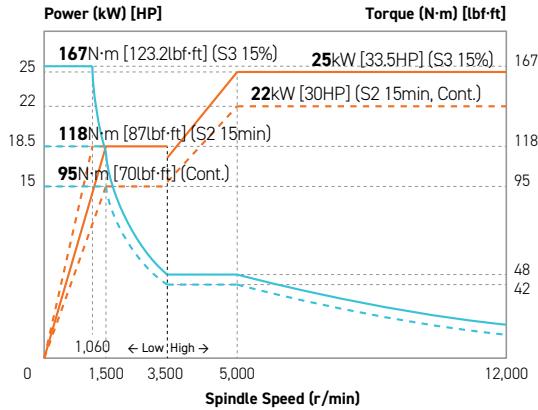
NC ROTARY TABLE & HYDRAULIC SUPPLY UNIT

Various shapes of products can be processed when using NC Rotary Table. In addition, 100 bar of high pressure hydraulic unit for the fixture increases the tightening power of the teeth.

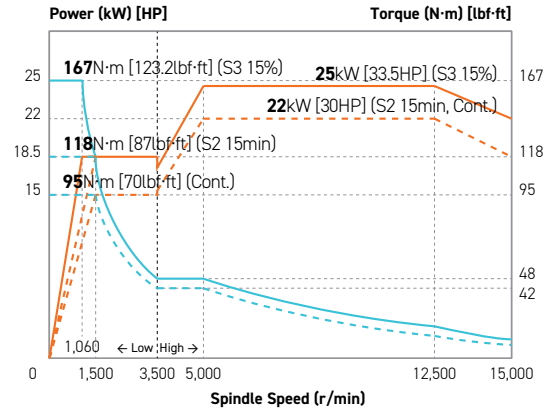
SPECIFICATIONS

Spindle Output/Torque Diagram

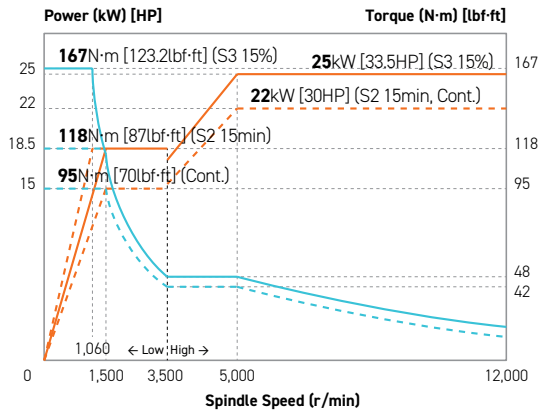
HS4000i 12,000rpm



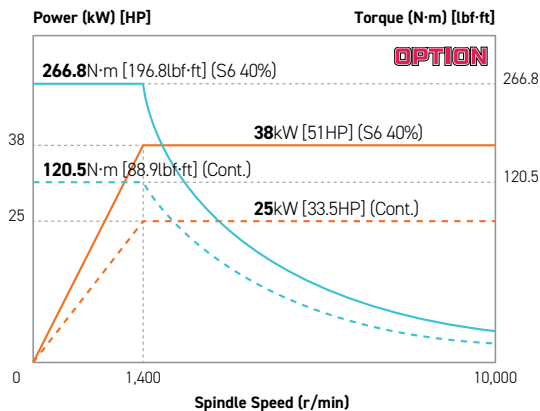
HS4000M 15,000rpm



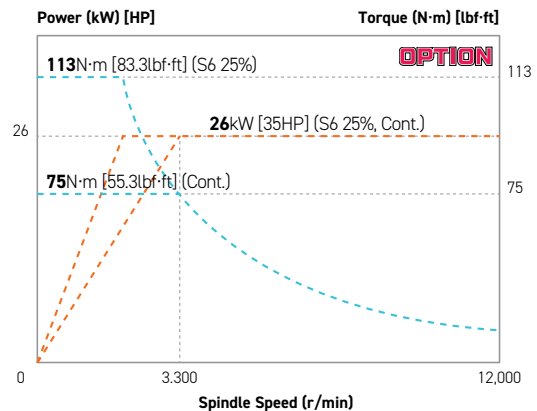
HS5000i 12,000rpm



HS5000i 10,000rpm SIEMENS



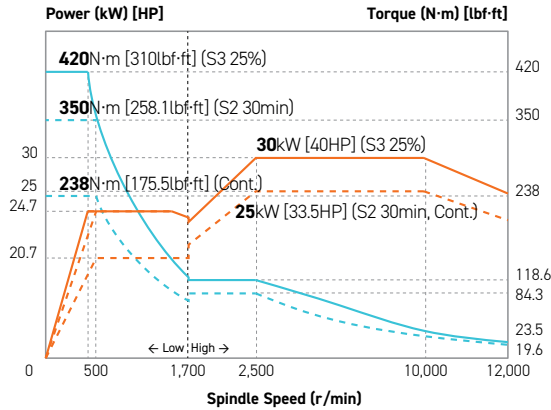
HS5000i 12,000rpm SIEMENS



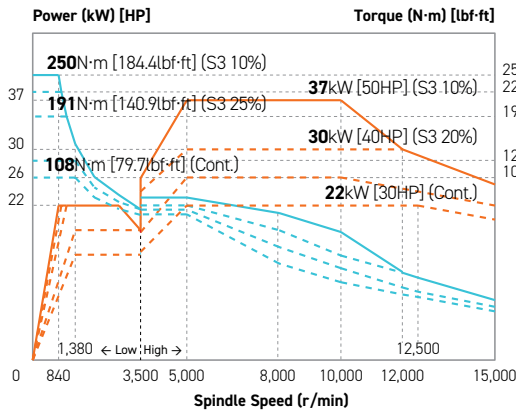
SPECIFICATIONS

Spindle Output/Torque Diagram

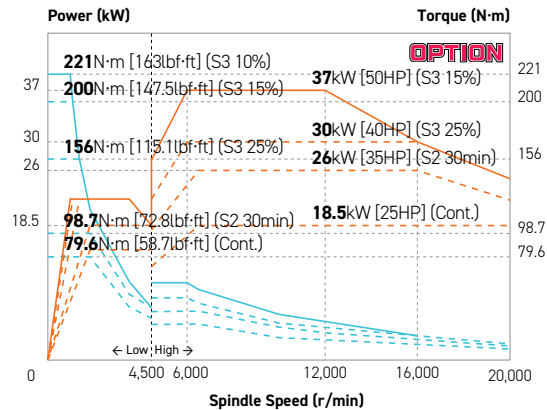
HS5000/50 12,000rpm



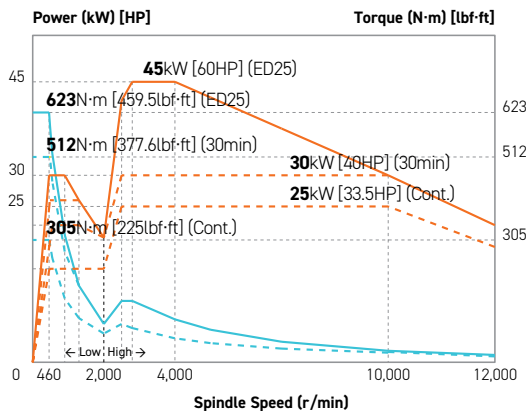
HS5000M | 5000M-1P 15,000rpm



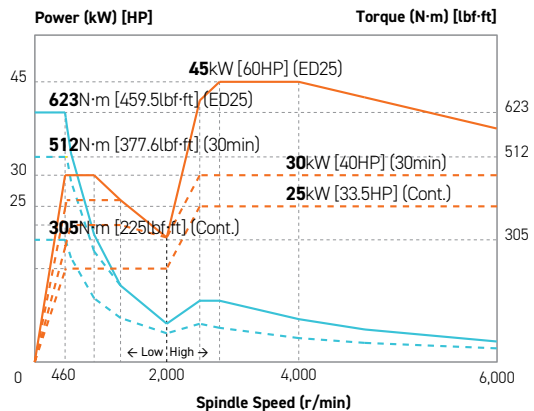
HS5000M | 5000M-1P 20,000rpm



HS5000M/50 | 5000M/50-1P 12,000rpm



HS5000M/50 | 5000M/50-1P 6,000rpm



SPECIFICATIONS

Standard & Optional

Spindle		HS4000i	HS4000M
15,000rpm (25kW [33.5HP])	Built-In	-	●
12,000rpm (25kW [33.5HP])	Built-In	●	-
Spindle Cooling System		●	●
ATC			
ATC Extension	40	●	●
	60	○	○
	80/120	○	○
Tool Shank Type	BBT40	●	●
	HSK-A63	○	○
	BCV40	○	○
Tool Weight	8KG (17.6 lb)	○	○
Tool Change Control Type	Inverter	●	○
	Servo	○	●
U-Center	D'andrea	☆	☆
	45°	●	●
	60°	☆	☆
Pull Stud	90°	☆	☆
Servo Motor Magazine		●	●
Table, APC & Pallet			
APC	Rotary Turn	●	●
Tap Type Pallet		●	●
T-Slot Pallet		○	○
B Axis Table	1°	●	●
	0.001°	○	○
Coolant System			
Std. Coolant (Nozzle)		●	●
Bed Flushing Coolant		-	-
Through Spindle Coolant*	20 bar	○	○
	30 bar	○	○
	70 bar	○	○
Shower Coolant		○	○
APC Chip Cleaning		●	●
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	600 ℓ (158.5 gal)	●	●
Cabin Screw Chip Conveyor		●	●
Chip Conveyor (Hinge/Scraper)	Front (Left)	☆	☆
	Rear (Left)	☆	☆
	Rear (Right)	○	○
	Rear (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	☆	☆
ETC			
Tool Box		●	●
Customized Color	Need for Munsel No.	☆	☆
CAD&CAM Software		☆	☆

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

Safety Device		HS4000i	HS4000M
Total Splash Guard		●	●
Electric Device			
Call Light	1 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	50KVA	○	○
Auto Power Off		○	○
Back up Module for Black out		○	○
Measuring Device			
Air Zero	TACO	○	○
	SMC	○	○
Work Measuring Device		☆	○
TLM (Marposs/Renishaw/Blum)	Touch	○	○
	Laser	○	○
Tool Broken Detecting Device		☆	☆
Linear Scale	X/Y/Z Axis	○	○
Pallet Close Confirmation Device		●	●
Coolant Level Sensor (Only for Chip Conveyor, Bladder Type)		☆	☆
Environment			
Air Conditioner		○	○
Dehumidifier		○	○
Oil Mist Collector		☆	☆
Oil Skimmer (Only for Chip Conveyor)		○	○
MQL (Minimal Quantity Lubrication)		☆	☆
Fixture & Automation			
Auto Door	Std.	○	○
Sub O/P		☆	☆
Control of Additional Axis	1Axis	☆	☆
	2Axis	-	-
External M Code 4ea		○	○
Automation Interface		☆	☆
I/O Extension (In & Out)	16Contact	○	○
	32Contact	○	○
6PPL		☆	☆
Hyd. Device			
Std. Hyd. Unit	65bar/45 ℓ (11.8 gal)	●	●
	2×3 (6P)	☆	☆
Center Type Hyd. Supply Unit (Upper)	2×4 (8P)	☆	☆
	2×6 (12P)	○	○
	2×8 (16P)	○	○
Center Type Hyd. Supply Unit (Lower)	2×6 (12P)-0.001°	-	-
Hyd. Unit for Fixture	45bar	○	○
	70bar	○	○
	100bar	○	○
	Customized	☆	☆
S/W			
DFC software (HW-eDFC)		○	○
Machine Monitoring System (HW-MMS Cloud/Edge/Remote)		○	○
Machine Monitoring System & Analysis (HW-MMS Edge Plus)		☆	☆
Automation CAM program (HW-ACAM)		○	○
Conversational program (HW-DPRO)		○	○
Machine Guidance (HW-MCG) : FANUC		●	●
Tool Monitoring (HW-TM) : FANUC		○	○
Thermal Displacement Compensation (HW-TDC)		○	○
Spindle Warm up Function (HW-WARMUP) : FANUC		●	●
Energy Saving System (HW-ESS) : FANUC		●	●
RENISHAW GUI : FANUC		○	○
Machining Condition Selection (HW-MCS) : FANUC		●	●
Adaptive Feed Control (HW-AFC) : FANUC		●	●

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

SPECIFICATIONS

Standard & Optional

		HS5000i	HS5000/50
Spindle			
12,000rpm (25kW [33.5HP])	FANUC	●	-
10,000rpm (38kW [51HP])	HYUNDAI-SIEMENS	○	-
12,000rpm (26kW [35HP])	HYUNDAI-SIEMENS	○	-
15,000rpm (25kW [33.5HP])	FANUC	-	-
12,000rpm (30kW [40HP])	FANUC	-	●
Spindle Cooling System		●	●
ATC			
ATC Extension	40	●	●
	60	○	○
	80/120	○	☆
Tool Shank Type	BBT40	●	-
	BBT50	-	●
	HSK-A63	○	-
	HSK-A100	-	○
	BCV40	○	-
	BCV50	-	○
Tool Weight	8KG (17.6 lb)	○	-
	25KG (55 lb)	-	○
Tool Change Control Type	Invertor	●	●
	Servo	○	○
U-Center	D'andrea	☆	☆
	45°	●	●
Pull Stud	60°	☆	☆
	90°	☆	☆
		○	○
Servo Motor Magazine		●	●
Table, APC & Pallet			
APC	Rotary Turn	●	●
Tap Type Pallet		●	●
T-Slot Pallet		○	○
B Axis Table	1°	●	●
	0.001°	○	○
Coolant System			
Std. Coolant (Nozzle)		●	●
Bed Flushing Coolant		●	●
Through Spindle Coolant*	20 bar	○	○
	30 bar	○	○
	70 bar	○	○
Shower Coolant		○	○
APC Chip Cleaning		●	●
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	630 ℓ (16.4 gal)	●	●
	700 ℓ (184.9 gal)	-	-
Cabin Screw Chip Conveyor		●	●
Chip Conveyor (Hinge/Scraper)	Front (Left)	☆	☆
	Rear (Left)	-	40T(○), 60T(-)
	Rear (Right)	○	○
	Rear (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	☆	☆
ETC			
Tool Box		●	●
Customized Color	Need for Munsel No.	☆	☆
CAD&CAM Software		☆	☆

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

		HS5000i	HS5000/50
Safety Device			
Total Splash Guard		●	●
Electric Device			
Call Light	1 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	50KVA	○	○
Auto Power Off		○	○
Back up Module for Black out		○	○
Measuring Device			
Air Zero	TACO	○	○
	SMC	○	○
Work Measuring Device		☆	○
TLM (Marposs/Renishaw/Blum)	Touch	○	○
	Laser	○	○
Tool Broken Detective Device		☆	☆
Linear Scale	X/Y/Z Axis	○	○
Pallet Close Confirmation Device		●	●
Coolant Level Sensor (Only for Chip Conveyor, Bladder Type)		☆	☆
Environment			
Air Conditioner		○	○
Dehumidifier		○	○
Oil Mist Collector		☆	☆
Oil Skimmer (Only for Chip Conveyor)		○	○
MQL (Minimal Quantity Lubrication)		☆	☆
Fixture & Automation			
Auto Door	Std.	○	○
Sub O/P		☆	☆
Control of Additional Axis	1Axis	☆	☆
	2Axis	-	-
External M Code 4ea		○	○
Automation Interface		☆	☆
I/O Extension (In & Out)	16Contact	○	○
	32Contact	○	○
6PPL		☆	☆
Hyd. Device			
Std. Hyd. Unit	65bar/45 ℓ (11.8 gal)	●	●
Center Type Hyd. Supply Unit (Upper)	2×3 (6P)	☆	☆
	2×4 (8P)	☆	☆
	2×6 (12P)	○	○
	2×8 (16P)	○	○
Center Type Hyd. Supply Unit (Lower)	2×6 (12P)-0.001°	☆	-
Hyd. Unit for Fixture	45bar	○	○
	70bar	○	○
	100bar	○	○
	Customized	☆	☆
S/W			
DNC software (HW-eDNC)		○	○
Machine Monitoring System (HW-MMS Cloud/Edge/Remote)		○	○
Machine Monitoring System & Analysis (HW-MMS Edge Plus)		☆	☆
Automation CAM program (HW-ACAM)		○	○
Conversational program (HW-DPRO)		○	○
Machine Guidance (HW-MCG) : FANUC		●	●
Tool Monitoring (HW-TM) : FANUC		○	○
Thermal Displacement Compensation (HW-TDC)		○	○
Spindle Warm up Function (HW-WARMUP) : FANUC		●	●
Energy Saving System (HW-ESS) : FANUC		●	●
RENISHAW GUI : FANUC		○	○
Machining Condition Selection (HW-MCS) : FANUC		●	●
Adaptive Feed Control (HW-AFC) : FANUC		●	●

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

SPECIFICATIONS

Standard & Optional

Spindle		HS5000M	HS5000M/50
15,000rpm (37kW [50HP])	FANUC	●	-
6,000rpm (45kW [60HP])	FANUC	-	○
12,000rpm (45kW [60HP])	FANUC	-	●
20,000rpm (37kW [50HP])	FANUC	○	-
Spindle Cooling System		●	●
ATC			
ATC Extension	40	●	●
	60	○	○
	80/120	○	☆
Tool Shank Type	BBT40	●	-
	BBT50	-	●
	HSK-A63	○	-
	HSK-A100 (12K)	-	○
	BCV40	○	-
	BCV50	-	○
Tool Weight	8KG (17.6 lb)	●	-
	25KG (55 lb)	-	●
Tool Change Control Type	Inverter	○	○
	Servo	●	●
U-Center	D'andrea	☆	☆
Pull Stud	45°	●	●
	60°	☆	☆
	90°	☆	☆
		●	●
Servo Motor Magazine			
Table, APC & Pallet			
APC	Rotary Turn	●	●
Tap Type Pallet		●	●
T-Slot Pallet		○	○
B Axis Table	1°	●	●
	0.001°	○	○
Coolant System			
Std. Coolant (Nozzle)		●	●
Through Spindle Coolant*	20 bar	○	○
	30 bar	○	○
	70 bar	○	○
Shower Coolant		○	○
APC Chip Cleaning		●	●
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	600ℓ (158.5 gal)	●	●
Cabin Screw Chip Conveyor		●	●
Chip Conveyor (Hinge/Scraper)	Front (Left)	☆	☆
	Rear (Left)	☆	☆
	Rear (Right)	○	○
	Rear (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	☆	☆
ETC			
Tool Box		●	●
Customized Color	Need for Munsel No.	☆	☆
CAD&CAM Software		☆	☆

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

Safety Device		HS5000M	HS5000M/50
Total Splash Guard		●	●
Electric Device			
Call Light	1 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	50KVA	○	○
Auto Power Off		○	○
Back up Module for Black out		○	○
Measuring Device			
Air Zero	TACO	○	○
	SMC	○	○
Work Measuring Device		○	○
TLM	Touch	○	○
(Marposh/Renishaw/Blum)	Laser	○	○
Tool Broken Detecting Device		☆	☆
Linear Scale	X/Y/Z Axis	○	○
Pallet Close Confirmation Device		●	●
Coolant Level Sensor (Only for Chip Conveyor, Bladder Type)		☆	☆
Environment			
Air Conditioner		○	○
Dehumidifier		○	○
Oil Mist Collector		☆	☆
Oil Skimmer (Only for Chip Conveyor)		○	○
MQL (Minimal Quantity Lubrication)		☆	☆
Fixture & Automation			
Auto Door	Std.	○	○
Sub O/P		☆	☆
Control of Additional Axis	1Axis	☆	☆
External M Code 4ea		○	○
Automation Interface		☆	☆
I/O Extension (In & Out)	16Contact	○	○
	32Contact	○	○
6PPL		-	-
Hyd. Device			
Std. Hyd. Unit	65ba/45ℓ (11.8 gal)	●	●
Center Type Hyd. Supply Unit (Upper)	2×3 (6P)	☆	☆
	2×4 (8P)	☆	☆
	2×6 (12P)	○	○
Center Type Hyd. Supply Unit (Lower)	2×8 (16P)	○	○
	2×6 (12P)-0.001°	-	-
Hyd. Unit for Fixture	45bar	○	○
	70bar	○	○
	100bar	○	○
	Customized	☆	☆
S/W			
DNC software (HW-eDNC)		○	○
Machine Monitoring System (HW-MMS Cloud/Edge/Remote)		○	○
Machine Monitoring System & Analysis (HW-MMS Edge Plus)		☆	☆
Automation CAM program (HW-ACAM)		○	○
Conversational program (HW-DPRO)		○	○
Machine Guidance (HW-MCG) : FANUC		●	●
Tool Monitoring (HW-TM) : FANUC		○	○
Thermal Displacement Compensation (HW-TDC)		○	○
Spindle Warm up Function (HW-WARMUP) : FANUC		●	●
Energy Saving System (HW-ESS) : FANUC		●	●
RENISHAW GUI : FANUC		○	○
Machining Condition Selection (HW-MCS) : FANUC		●	●
Adaptive Feed Control (HW-AFC) : FANUC		●	●

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

SPECIFICATIONS

Standard & Optional

		HS5000M-1P	HS5000M/50-1P
Spindle			
15,000rpm (37kW [50HP])	FANUC	●	-
6,000rpm (45kW [60HP])	FANUC	-	○
12,000rpm (45kW [60HP])	FANUC	-	●
20,000rpm (37kW [50HP])	FANUC	○	-
Spindle Cooling System		●	●
ATC			
ATC Extension			
	40	●	●
	60	○	○
	80/120	○	☆
Tool Shank Type			
	BBT40	●	-
	BBT50	-	●
	HSK-A63	○	-
	HSK-A100	-	○
	BCV40	○	-
	BCV50	-	○
Tool Weight			
	8KG (17.6 lb)	●	-
	25KG (55 lb)	-	●
Tool Change Control Type			
	Invertor	○	○
	Servo	●	●
U-Center			
	D'andrea	☆	☆
	45°	●	●
Pull Stud			
	60°	☆	☆
	90°	☆	☆
Servo Motor Magazine		●	●
Table, APC & Pallet			
APC			
	Rotary Turn	-	-
Tap Type Pallet		●	●
T-Slot Pallet		○	○
B Axis Table			
	1°	●	●
	0.001°	○	○
Coolant System			
Std. Coolant (Nozzle)		●	●
Through Spindle Coolant*			
	20 bar	○	○
	30 bar	○	○
	70 bar	○	○
Shower Coolant		○	○
APC Chip Cleaning		●	●
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		●	●
Cabin Screw Chip Conveyor		●	●
Chip Conveyor (Hinge/Scraper)			
	Front (Left)	☆	☆
	Rear (Left)	☆	☆
	Rear (Right)	○	○
	Rear (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	☆	☆
ETC			
Tool Box		●	●
Customized Color		☆	☆
CAD&CAM Software		☆	☆

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

		HS5000M-1P	HS5000M/50-1P
Safety Device			
Total Splash Guard		●	●
Electric Device			
Call Light	1 Color : ●	●	●
Call Light & Buzzer	3 Color : ●●●	○	○
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	50KVA	○	○
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	○	○
Pallet Close Confirmation Device		●	●
Coolant Level Sensor (Only for Chip Conveyor, Bladder Type)		☆	☆
Environment			
Air Conditioner		○	○
Dehumidifier		○	○
Oil Mist Collector		☆	☆
Oil Skimmer (Only for Chip Conveyor)		○	○
MQL (Minimal Quantity Lubrication)		☆	☆
Fixture & Automation			
Auto Door	Std.	○	○
Sub O/P		☆	☆
Control of Additional Axis	1Axis	☆	☆
External M Code 4ea		○	○
Automation Interface		☆	☆
I/O Extension (In & Out)	16Contact	○	○
	32Contact	○	○
6PPL		-	-
Hyd. Device			
Std. Hyd. Unit	65bar/45 ℓ (11.8 gal)	●	●
Center Type Hyd. Supply Unit (Upper)	2x3 (6P)	-	-
	2x4 (8P)	-	-
	2x6 (12P)	-	-
	2x8 (16P)	-	-
Center Type Hyd. Supply Unit (Lower)	2x6 (8P)-0.1°	●	●
	2x6 (10P)-0.001°	○	○
Hyd. Unit for Fixture	45bar	○	○
	70bar	○	○
	100bar	○	○
	Customized	☆	☆
S/W			
DNC software (HW-eDNC)		○	○
Machine Monitoring System (HW-MMS Cloud/Edge/Remote)		○	○
Machine Monitoring System & Analysis (HW-MMS Edge Plus)		☆	☆
Automation CAM program (HW-ACAM)		○	○
Conversational program (HW-DPRO)		○	○
Machine Guidance (HW-MCG) : FANUC		●	●
Tool Monitoring (HW-TM) : FANUC		○	○
Thermal Displacement Compensation (HW-TDC)		○	○
Spindle Warm up Function (HW-WARMUP) : FANUC		●	●
Energy Saving System (HW-ESS) : FANUC		●	●
RENISHAW GUI : FANUC		○	○
Machining Condition Selection (HW-MCS) : FANUC		●	●
Adaptive Feed Control (HW-AFC) : FANUC		●	●

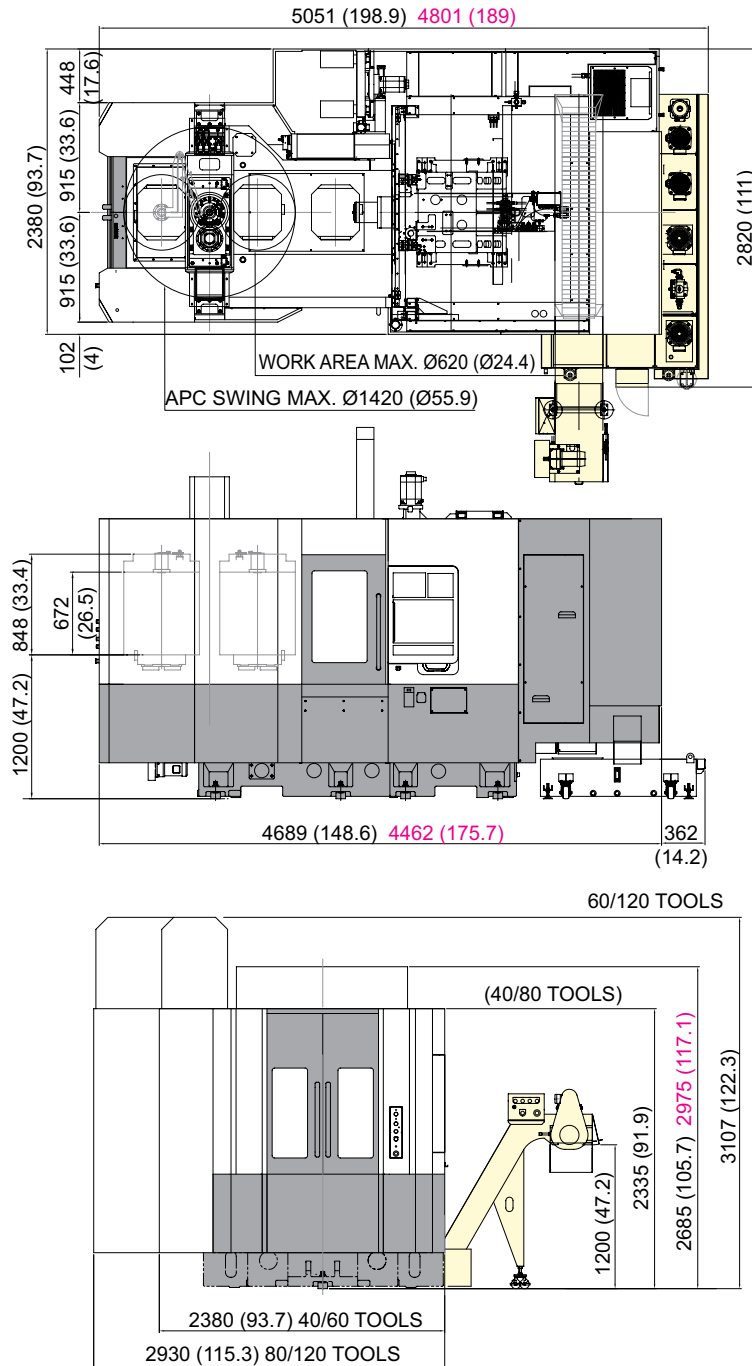
Through Spindle Coolant* : Please check the filter types with sales representative.
Specifications are subject to change without notice for improvement.

SPECIFICATIONS

External Dimensions

unit : mm(in)

HS4000i
HS4000M

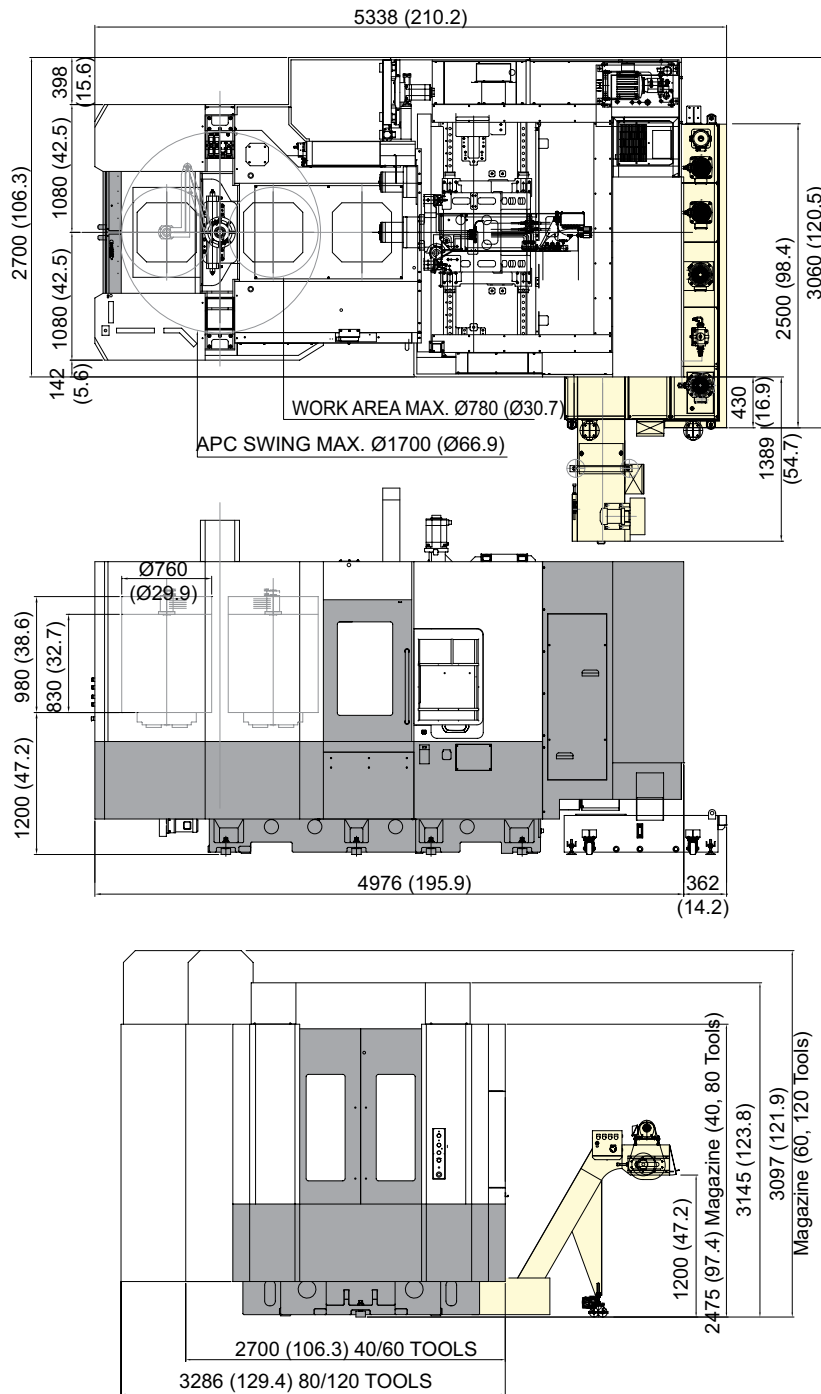


SPECIFICATIONS

External Dimensions

unit : mm(in)

HS5000i



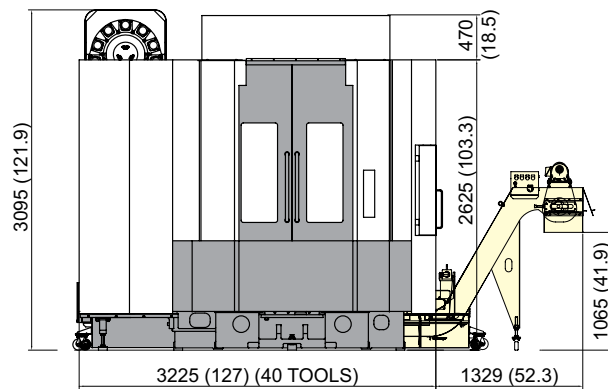
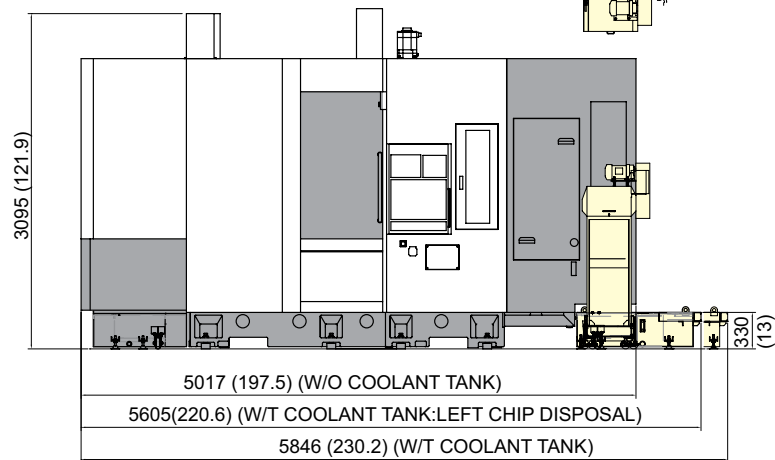
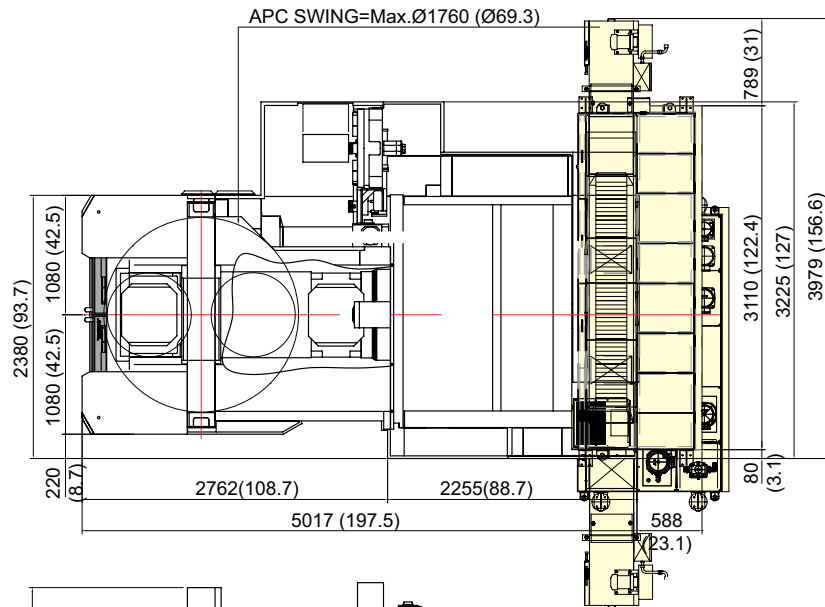
Height when upper hydraulic supply device is attached - HS4000, 4000i, 5000, 5000i, : 3,100mm (122"), HS4000M : 3,350mm (132")

SPECIFICATIONS

External Dimensions

unit : mm(in)

HS5000/50
40Tools

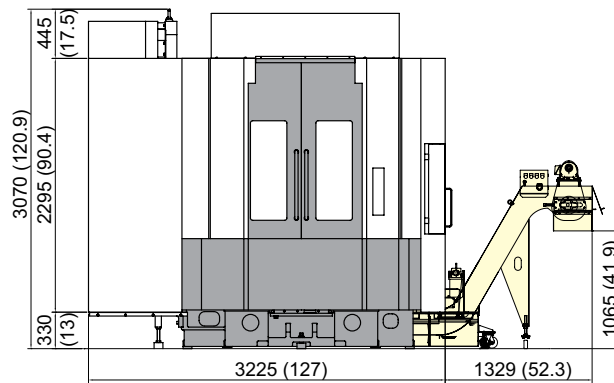
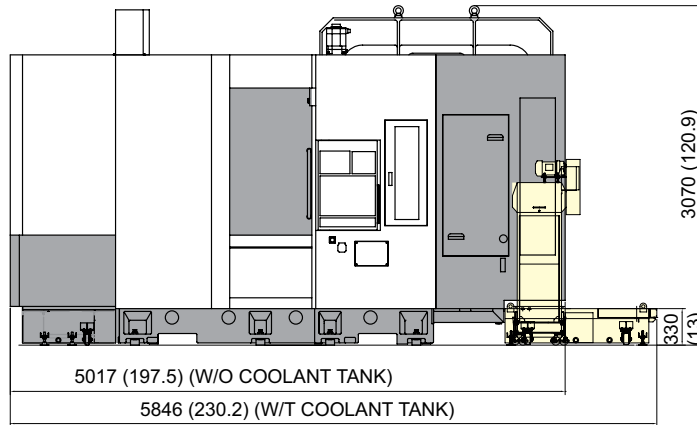
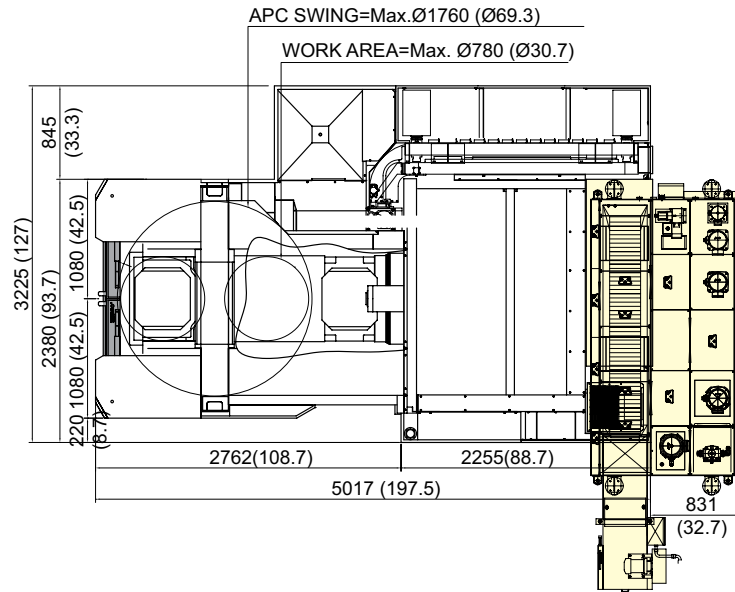


SPECIFICATIONS

External Dimensions

unit : mm(in)

HS5000/50
60 Tools

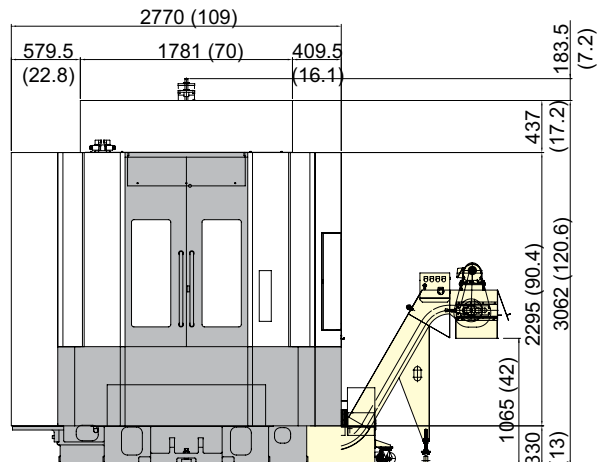
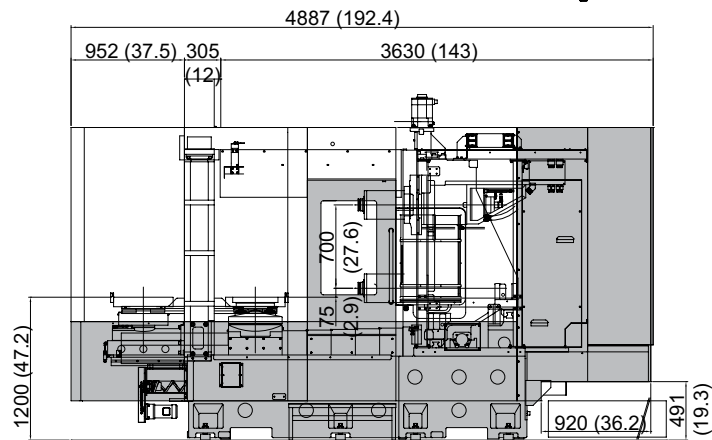
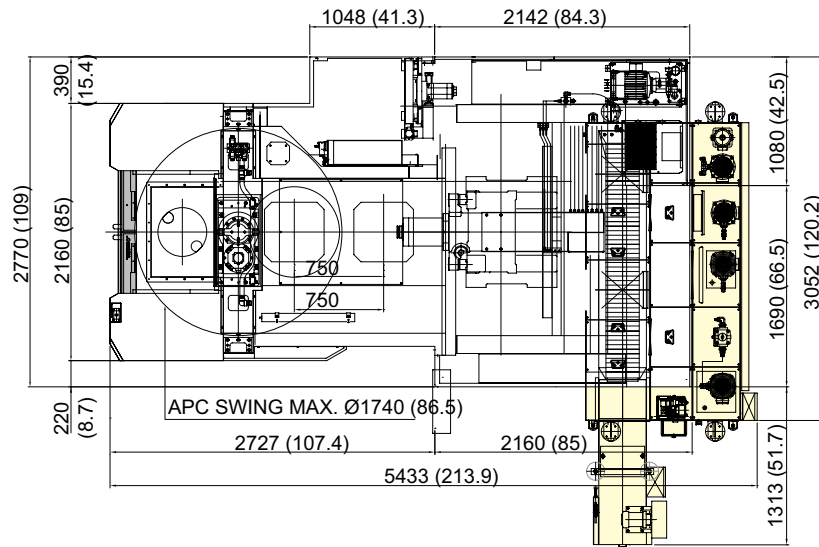


SPECIFICATIONS

External Dimensions

unit : mm(in)

HS5000M

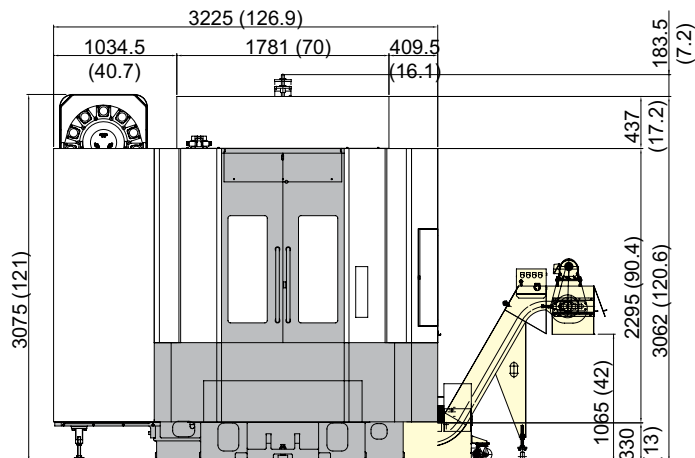
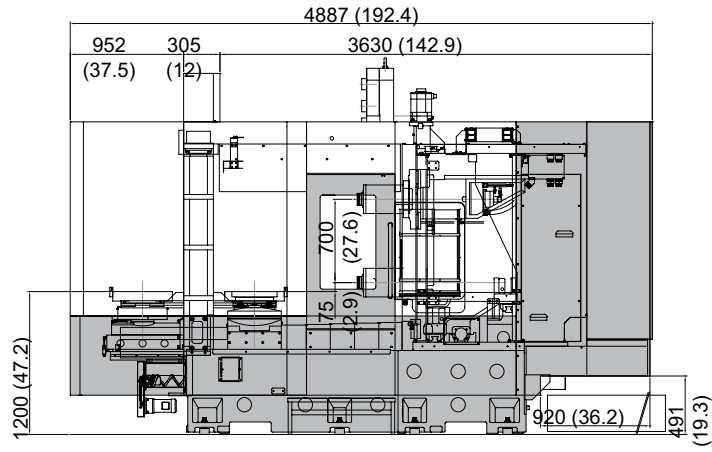
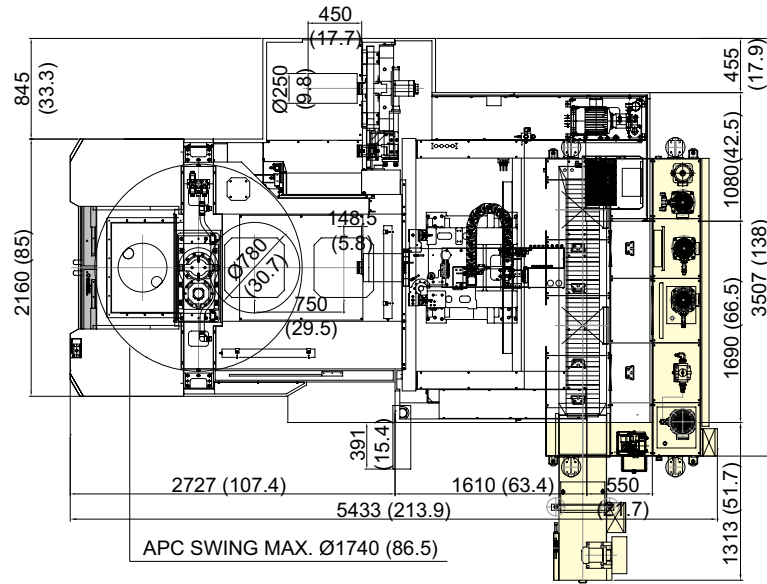


SPECIFICATIONS

External Dimensions

unit : mm(in)

HS5000M/50
40Tools

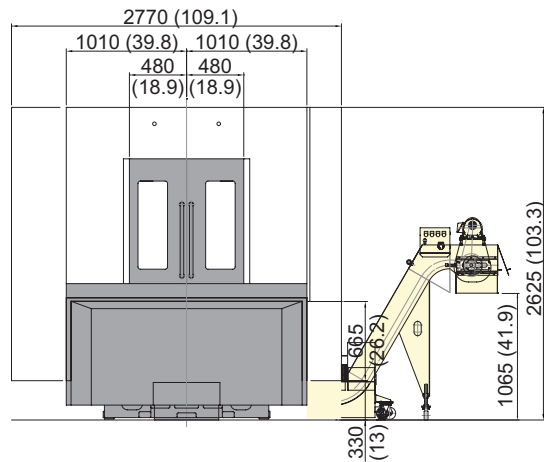
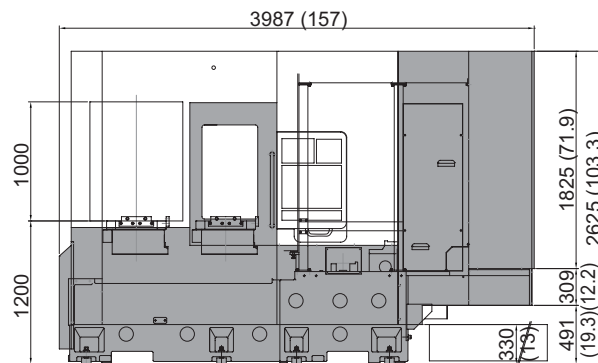
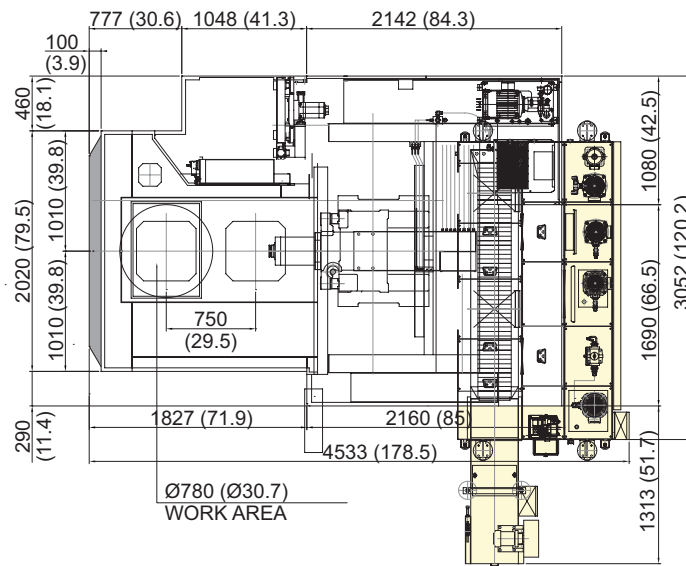


SPECIFICATIONS

External Dimensions

unit : mm(in)

HS5000M-1P

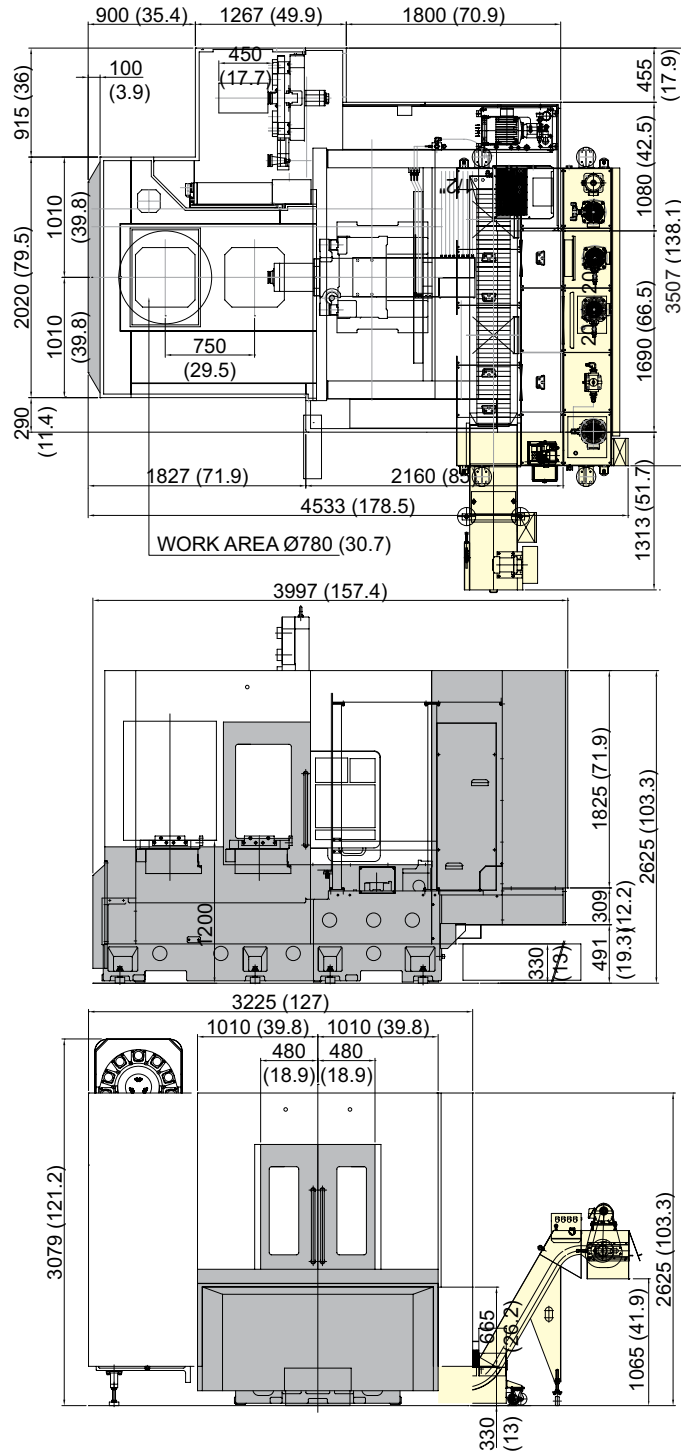


SPECIFICATIONS

External Dimensions

unit : mm(in)

HS5000M/50-1P

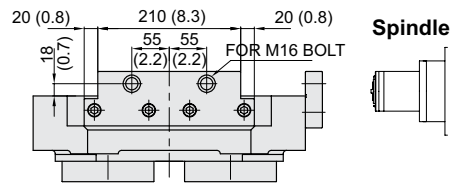
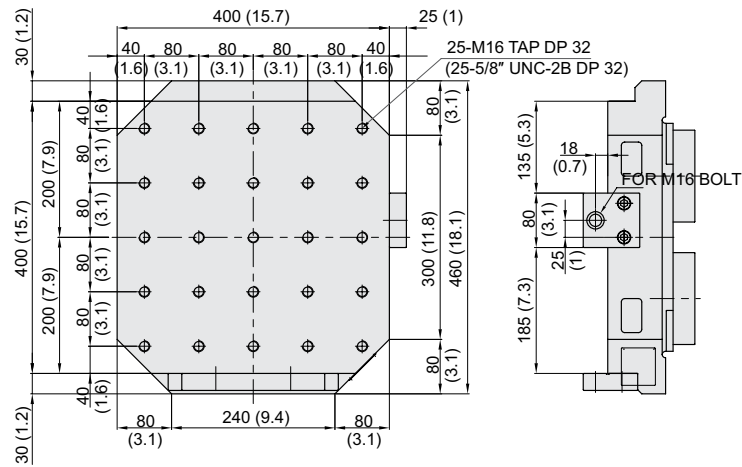


SPECIFICATIONS

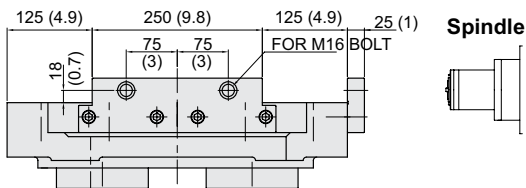
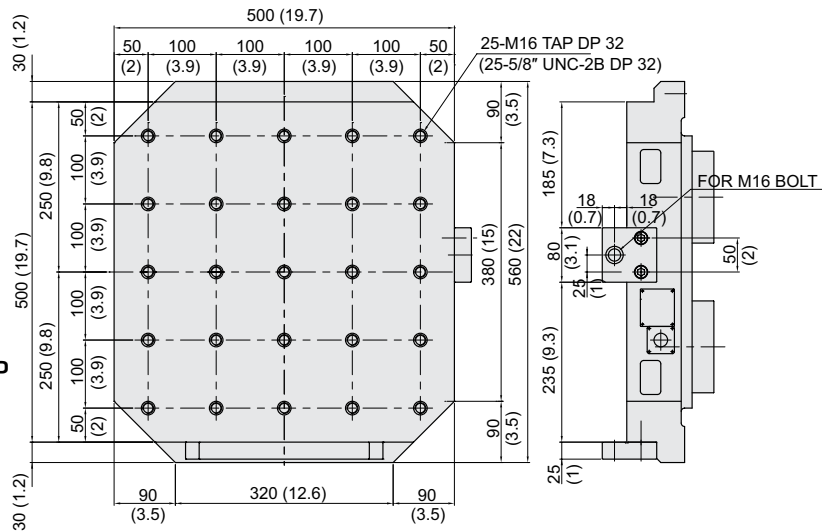
Table Dimensions

unit : mm(in)

HS4000i
HS4000M



HS5000i
HS5000/50
HS5000M-1P
HS5000M/50
HS5000M/50-1P

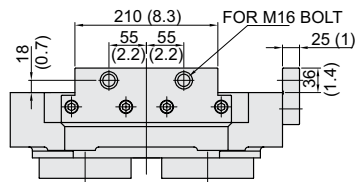
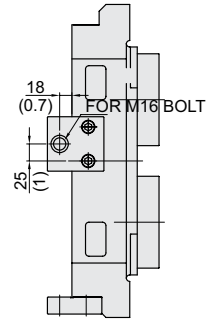
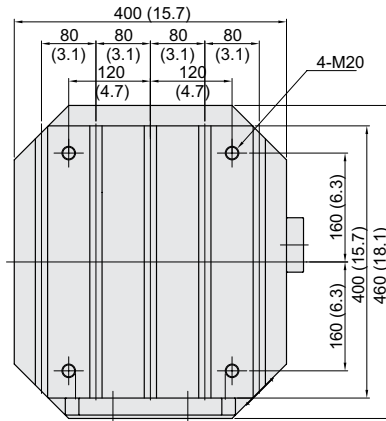


SPECIFICATIONS

Table Dimensions

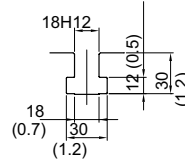
unit : mm(in)

HS4000i
HS4000M



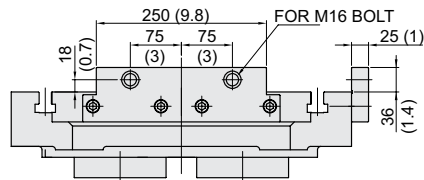
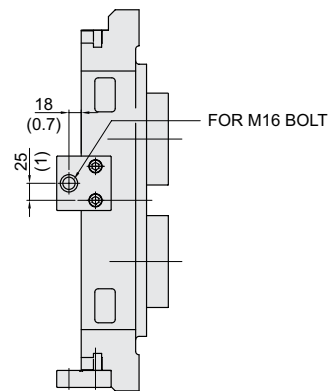
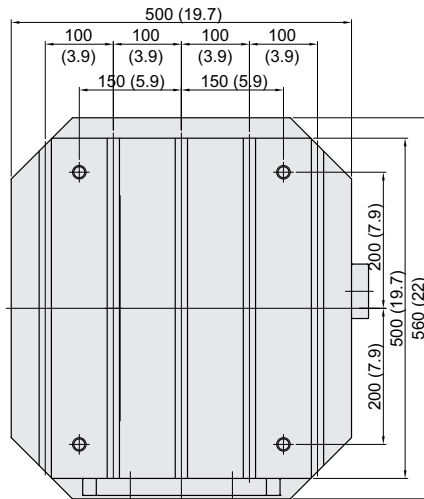
T-SLOT PALLET

Spindle



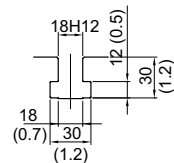
T-Slot Detail

HS5000i
HS5000/50
HS5000M-1P
HS5000M/50
HS5000M/50-1P



T-SLOT PALLET

Spindle



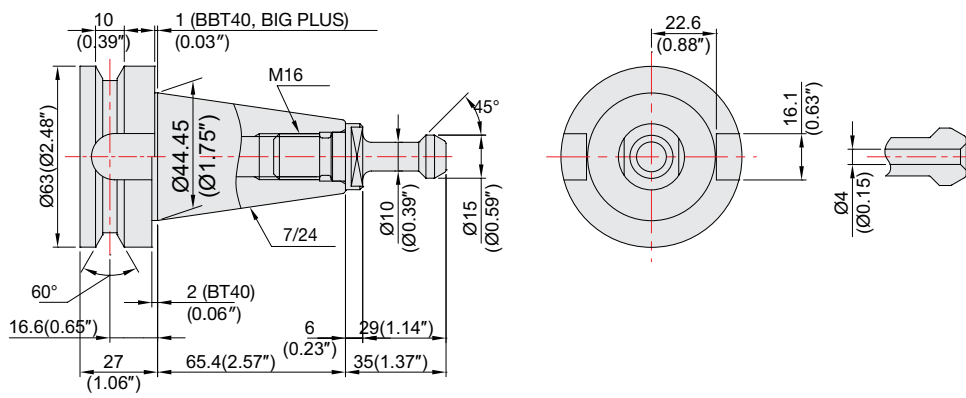
T-Slot Detail

SPECIFICATIONS

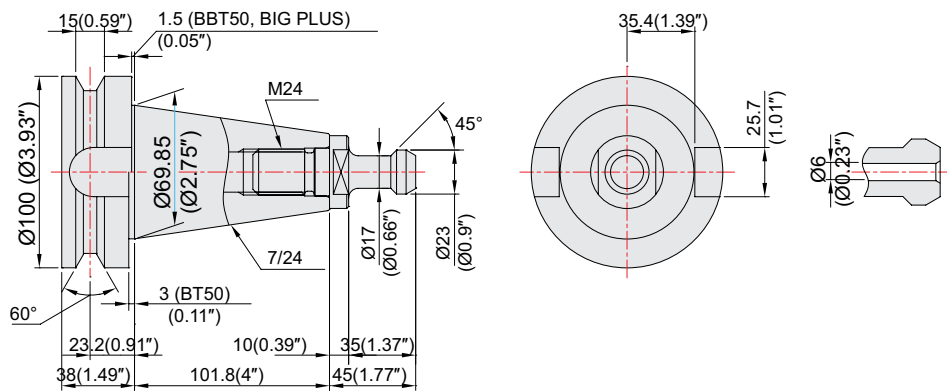
Tool Shank

unit : mm(in)

BT40/BBT40, BIG PLUS



BT50/BBT50, BIG PLUS

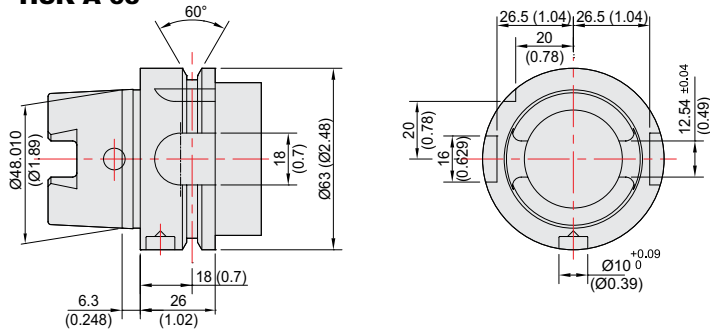


SPECIFICATIONS

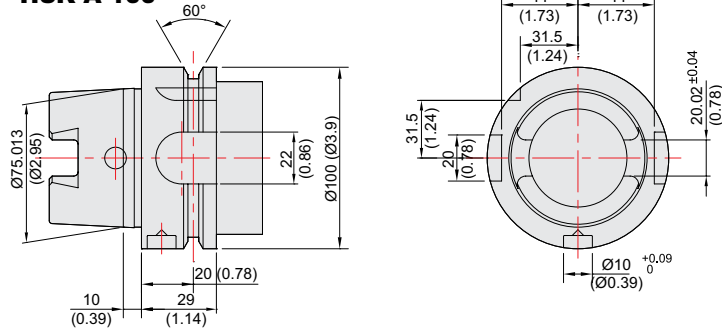
Tool Shank

unit : mm(in)

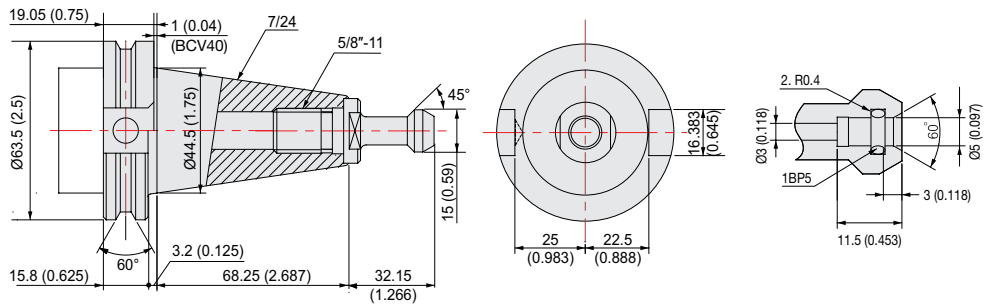
HSK A-63



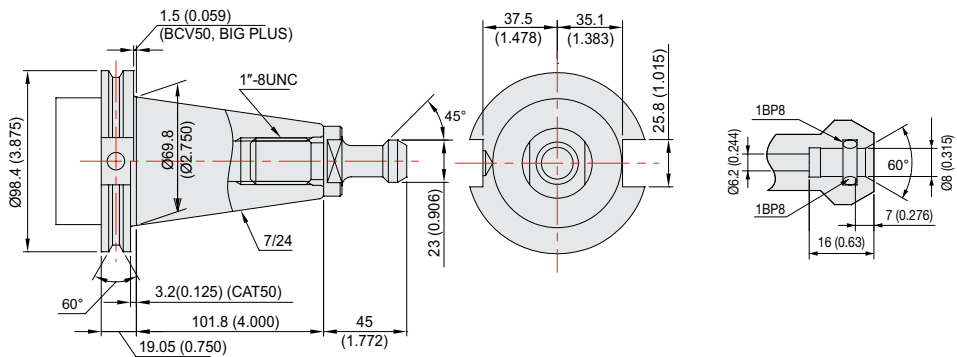
HSK A-100



CAT40/BCV40



CAT50/BCV50



SPECIFICATIONS

Specifications

[] : Option

ITEM		HS4000i	HS4000M
PALLET	Pallet Size	2 - 400×400 (15.7"×15.7")	
	Maximum Load Capacity	2 - 500 (1,102)	
	Maximum Working Size	Ø620×H840 (Ø24.4"×H33.1")	
	Min. Indexing Angle	1° [0.001°]	
SPINDLE	Spindle Taper	BBT40 [HSK-A63]	
	Spindle Speed	150 ~ 12,000	150 ~ 15,000
	Spindle Motor Output (Max./Cont.)	25/22 (33.5/30)	
	Spindle Torque (Max./Cont.)	167/95 (123.2/70.1)	
	Spindle Driving Method	Built-in	
FEED	Travel (X/Y/Z axis)	620/560/650 (24.4"/22"/25.6")	
	Distance from Table Top to Sp. Center	50~610 (2"~24")	
	Distance from Table Center to Sp. Nose	150~800 (5.9"~31.5")	
	Rapid Traverse Rate (X/Y/Z)	50/50/50 (1,968/1,968/1,968)	60/60/60 (2,362/2,362/2,362)
	Slide Type	Roller Guide	
ATC	Number of Tools	40 [60, 80, 120]	
	Tool Shank	BBT40 [BCV40] [HSK-A63]	
	Max. Tool Dia. (W.T/W.O)	Ø75/Ø140 (Ø3"/Ø5.5")	
	Max. Tool Length	350 (13.8")	
	Max. Tool Weight	8 (17.6)	
	Tool Selection Method	Fixed Address	
	Tool Change Time	T-T	1.0
C-C		3.4	2.6
APC	No. of Pallet	2	
	APC Type	Direct Turn	
	Pallet Change Time	10	7
TANK CAPACITY	Coolant Tank	600 (158.5)	
	Lubricating Tank	3 (0.8)	4.8 (1.7)
	Hyd. Tank Unit	45 (11.9)	
POWER SUPPLY	Air Consumption (0.5MPa)	750 (198.1)	500 (132.0)
	Electric Power Supply	40	
	Thickness of Power Cable	Over 35	Over 50
	Voltage	220/60 (200/50*)	
MACHINE	Floor Space (L×W)	2,820×5,051 (111"×198.9")	2,820×4,801 (111"×189")
	Height	2,685 (105.7")	2,975 (117.2")
	Weight	10,000 (22,046)	
PC	Controller	FANUC 32i-B	FANUC 31i-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.

SPECIFICATIONS

Specifications

[] : Option

ITEM		HS5000i	HS5000/50
PALLET	Pallet Size	2 - 500×500 (19.7"×19.7")	
	Maximum Load Capacity	2 - 500 (1,102) [0.001° : 450kg (992lbf)]	2 - 800 (1,764) [0.001° : 450kg (992lbf)]
	Maximum Working Size	Ø780×H980 (Ø30.7"×H38.6")	
	Min. Indexing Angle	1° [0.001°]	
SPINDLE	Spindle Taper	BBT40 [HSK-A63]	BBT50 [HSK-A100]
	Spindle Speed	12,000 [10,000] [12,000]	12,000
	Spindle Motor Output (Max./Cont.)	25/22 (33.5/30) [38/25 (51/33.5)] [26 (35)]	30/25 (40/33.5)
	Spindle Torque (Max./Cont.)	167/95 (123.1/70.1) [266.8/120.5 (196.8/88.9)] [113/75 (83.3/55.3)]	420/238 (310/175.5)
	Spindle Driving Method	Built-in	
FEED	Travel (X/Y/Z axis)	850/700/750 (33.5"/27.6"/29.5")	
	Distance from Table Top to Sp. Center	50~750 (2"~29.5")	75~775 (3" ~ 30.5")
	Distance from Table Center to Sp. Nose	150 ~ 900 (5.9" ~ 35.4")	
	Rapid Traverse Rate (X/Y/Z)	50/50/50 (1,968/1,968/1,968)	50/50/50 (1,968/1,968/1,968)
	Slide Type	Roller Guide	
ATC	Number of Tools	40 [60, 80, 120]	40 [60]
	Tool Shank	BBT40 [BCV40] [HSK-A63]	BBT50 [BCV50] [HSK-A100]
	Max. Tool Dia. (W.T/W.O)	Ø75/Ø140 (Ø3"/Ø5.5")	Ø125/Ø250 (Ø4.9"/Ø9.8")
	Max. Tool Length	450 (17.7")	
	Max. Tool Weight	8 (17.6)	25 (55.1)
	Tool Selection Method	Fixed Address	
	Tool Change Time	T-T	1.1
C-C		3.8	4.8
APC	No. of Pallet	2	
	APC Type	Direct Turn	
	Pallet Change Time	12	12
TANK CAPACITY	Coolant Tank	700 (184.9)	
	Lubricating Tank	3 (0.8)	
	Hyd. Tank Unit	45 (11.9)	
POWER SUPPLY	Air Consumption (0.5MPa)	750 (198.1)	
	Electric Power Supply	40	
	Thickness of Power Cable	Over 35	Over 50
	Voltage	220/60 (200/50*)	
MACHINE	Floor Space (L×W)	3,060×5,338 (120.5"×210.2")	3,225×5,605 (127"×220.6")
	Height	3,145 (123.8")	3,095 (121.9")
	Weight	15,000 (33,069)	17,000 (37,478)
PC	Controller	FANUC 32i-B [S 840D si]	Over 50

*) 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		HS5000M	HS5000M/50
PALLET	Pallet Size	2 - 500×500 (19.7"×19.7")	
	Maximum Load Capacity	2 - 800 (1,764) [0.001° : 450kg (992lbf)]	
	Maximum Working Size	Ø780×H980 (Ø30.7"×H38.6")	
	Min. Indexing Angle	1° [0.001°]	
SPINDLE	Spindle Taper	BBT40 [HSK-A63]	BBT50 [12K : HSK-A100]
	Spindle RPM	15,000 [20,000]	12,000 [6,000]
	Spindle Motor Output (Max./Cont.)	37/22 (50/30) [37/18.5 (50/25)]	45/25 (60/33.5)
	Spindle Torque (Max./Cont.)	N·m(lbf·ft) 250/108 (184.4/79.7) [221/79.6 (163/58.7)]	623/305 (459.5/225)
	Spindle Driving Method	Built-in	
FEED	Travel (X/Y/Z axis)	850/700/750 (33.5"/27.6"/29.5")	
	Distance from Table Top to Sp. Center	75~775 (3" ~ 30.5")	
	Distance from Table Center to Sp. Nose	150 ~ 900 (5.9" ~ 35.4")	
	Rapid Traverse Rate (X/Y/Z)	60/60/60 (2,362/2,362/2,362)	
	Slide Type	Roller Guide	
ATC	Number of Tools	40 [60, 80, 120]	40 [60]
	Tool Shank	BBT40 [BCV40] [HSK-A63]	BBT50 [BCV50] [12K : HSK-A100]
	Max. Tool Dia. (W.T/W.O)	Ø75/Ø140 (Ø3"/Ø5.5")	
	Max. Tool Length	450 (17.7")	
	Max. Tool Weight	8 (17.6)	25 (55.1)
	Tool Selection Method	Fixed Address	
	Tool Change Time	T-T	1.0
C-C		3.1	3.8
APC	No. of Pallet	2	
	APC Type	Direct Turn	
	Pallet Change Time	10	
TANK CAPACITY	Coolant Tank	700 (184.9)	
	Lubricating Tank	4.8 (1.3)	
	Hyd. Tank Unit	45 (11.9)	
POWER SUPPLY	Air Consumption (0.5MPa)	750 (198.1)	
	Electric Power Supply	60	
	Thickness of Power Cable	Over 50	
	Voltage	220/60 (200/50*)	
MACHINE	Floor Space (L×W)	3,052×5,433 (120.2"×213.9")	3,507×5,433 (138"×213.9")
	Height	3,062 (120.6")	3,075 (121")
	Weight	17,000 (37,479)	17,000 (37,479)
PC	Controller	FANUC 31i-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

Specifications

[] : Option

ITEM		HS5000M-1P	HS5000M/50-1P
PALLET	Pallet Size	mm(in) 500×500 (19.7"×19.7")	
	Maximum Load Capacity	kgf(lbf) 800 (1,764) [0.001° : 220 (485)]	
	Maximum Working Size	mm(in) Ø780×H980 (Ø30.7"×H38.6")	
	Min. Indexing Angle	deg 1° [0.001°]	
SPINDLE	Spindle Taper	BBT40 [HSK-A63]	BBT50 [12K : HSK-A100]
	Spindle RPM	15,000 [20,000]	12,000 [6,000]
	Spindle Motor Output (Max./Cont.)	37/22 (50/30) [37/18.5 (50/25)]	45/25 (60/33.5)
	Spindle Torque (Max./Cont.)	N·m(lbf·ft) 250/108 (184.4/79.7) [221/79.6 (163/58.7)]	623/305 (459.5/225)
	Spindle Driving Method	-	
FEED	BUILT IN		
	Travel (X/Y/Z axis)	mm(in) 850/700/750 (33.5"/27.6"/29.5")	
	Distance from Table Top to Sp. Center	mm(in) 75~775 (3" ~ 30.5")	
	Distance from Table Center to Sp. Nose	mm(in) 150 ~ 900 (5.9" ~ 35.4")	
	Rapid Traverse Rate (X/Y/Z)	m/min(ipm) 60/60/60 (2,362/2,362/2,362)	
Slide Type	-		
ATC	ROLLER GUIDE		
	Number of Tools	EA 40 [60, 80, 120]	40 [60]
	Tool Shank	BBT40 [BCV40] [HSK-A63]	BBT50 [BCV50] [12K : HSK-A100]
	Max. Tool Dia. (W.T/W.O)	mm(in) Ø75/Ø140 (Ø3"/Ø5.5")	Ø125/Ø250(Ø4.9"/Ø9.8") [285(Ø11.2")]
	Max. Tool Length	mm(in) 450 (17.7")	
	Max. Tool Weight	kg(lb) 8 (17.6)	25 (55.1)
	Tool Selection Method	-	
Tool Change Time	T-T	sec 1.0	1.8
	C-C	sec 3.1	3.8
APC	FIXED ADDRESS		
	No. of Pallet	EA 1	1
	APC Type	-	-
Pallet Change Time	sec -	-	
TANK CAPACITY	Coolant Tank	ℓ (gal) 700 (184.9)	700 (184.9)
	Lubricating Tank	ℓ (gal) 4.8 (1.3)	4.8 (1.3)
	Hyd. Tank Unit	ℓ (gal) 45 (11.9)	45 (11.9)
POWER SUPPLY	Air Consumption (0.5MPa)	ℓ /min(gal/min) 750 (198.1)	750 (198.1)
	Electric Power Supply	KVA 60	60
	Thickness of Power Cable	Sq Over 50	Over 50
	Voltage	V/Hz 220/60 (200/50*)	220/60 (200/50*)
MACHINE	Floor Space (L×W)	mm(in) 3,052×4,533 (120"×178.5")	3,507×4,533 (138.1"×178.5")
	Height	mm(in) 2,625 (103.3")	3,079 (121.2")
	Weight	kg(lb) 15,000 (33,069)	15,000 (33,069)
PC	Controller	-	FANUC 31i-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

FANUC 32i-B (HS4000i | HS5000i)

[] : 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 axis : 0.001 mm (0.0001 inch) B axes : 0.001 deg
Least input increment	X, Y, Z axis : 0.001 mm (0.0001 inch) B axes : 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 axis Machine lock, Stroke check before move
Single block	
Search function	Program Number / Sequence Number
Interpolation functions	
Nano 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, 48 pairs (G54.1 P1 ~ 48)
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	99 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 axis 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
Retraction for rigid tapping	#100~#199, #500~#999, #98000~#98499
Tool management function	
Tool offset number	Max. 400 pair
Program storage capacity	512KB ~ 2MB
Program registration number	Max. 1000 ea
	200 block
AICC II	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.

CONTROLLER

FANUC 31i-B (H4000M | H5000/50 | H5000M | H5000M/50)

[] : 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 axis : 0.001 mm (0.0001 inch) B axes : 0.001 deg
Least input increment	X, Y, Z axis : 0.001 mm (0.0001 inch) B axes : 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 axis 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, 48 pairs (G54.1 P1 ~ 48)
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 axis 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/ridigity 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 #100~#199, #500~#999
Additional custom macro variables	#100~#199, #500~#999, #98000~#98499
Retraction for rigid tapping	
Tool management function	
Tool offset number	Max. 2000 pair ☆
Program storage capacity	512KB ~ 8MB ☆
Program registration number	Max. 4000 ea ☆
Additional work coordinate	Max. 300 pair (G54.1 P1 ~ P300)
AICC II	200 block 400 / 600 / 1000 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.

CONTROLLER

SIEMENS 840D sI (H5000i)

[] : Option ☆ Needed technical consultation

Controlled axis / Display / Accuracy Compensation	
Control axes	5 axes (X1, Y1, Z1, B1, MAG)
Simultaneously controlled axes	Max. 4 axes
Least setting Unit	X, Y, Z axis : 0.001 mm (0.0001 inch), B axes : 1 deg [0.001 deg]
Least input increment	X, Y, Z axis : 0.001 mm (0.0001 inch), B axes : 1 deg [0.001 deg]
Inch / Metric changeover	G70 (inch) / G71 (metric)
Interlock	All axes / Each axis
Machine lock	All axes
Backlash compensation	
Pitch error compensation	
Feedforward control (Torque control)	
LCD / MDI	12 inch color LCD
Keyboard	ABCD Type
Stored stroke check	Over travel
Operation	
Automatic operation (Memory)	
MDI operation	
Program restart	
Program check function	Dry run / Program check / Machine lock
Single block	
Block search	Block search
Reposition	
Working area limit	Working area limitations
Interpolation functions	
Positioning	G00
Linear interpolation	G01
Circular interpolation	Circular Interpolation CW (G02) Circular Interpolation CCW (G03)
Exact position stop	Single block exact stop (G09) Exact stop G60 (G601, G602, G603)
Dwell	Dwell (G04)
Reference position return	Return to reference point Return to 2nd reference point
Helical interpolation	
Spline interpolation	Non-uniform rational B splines
Feed function / Acc. & Dec. control	
	Rapid traverse
Manual feed	Jog Manual handle Reference position return
Cutting Feed command	Direct input F code
Feedrate override	0 ~ 120%
Rapid traverse override	1%, 25%, 50%, 100%
Feed per minute	G94
Feed per revolution	G95
Program input	
ISO correspondence	G291(ISO)/G290 (SIEMENS) (ISO G Code system-A)
Optional block skip	G7# (0~7)
Program stop / end	G90 / G91
Absolute / Incremental program	M00, M01 / M02, M30
Maximum command unit	± 999,999,999 mm, ± 99,999,9999 inch
Plane selection	X-Y : G17, X-Z : G18, Y-Z : G19 G54 ~ G57, G505~G549
Workpiece coordinate system	G500 (Basic frame - settable zero offset) G53 (Work offset non modal) G153 (basic frame non modal)
Sub program call	16 folds nested
G code preventing buffering	STOPRE
Drilling/Milling cycle	with programing support
User cycle	

Auxiliary function / Spindle speed function	
Auxiliary function	M Code 4 digit
Spindle speed function	S Code 5 digit
Spindle override	0% ~ 120%
Spindle orientation	SPOS
Rigid tapping	
Automatic mode Interchange	Spindle / Axis mode
Constant surface speed control	G96, G97
Spindle speed limitation	LIMS
Tool function / Tool compensation	
Tool function	Tool number & Tool name
Tool life management	
Tools in tool list	600 ea
Cutting Edges in tool list	1,500 ea
Tool radius compensation	ISO (G40, G41, G42)
Geometry / Wear compensation	
Tool management function	
Editing function	
Part program storage size	10MB
External Storage devices	USB
Background editing	
Extended part program editing	Copy, move and change of NC program
Memory card program edit	
Data input / output & Interface	
I/O interface	USB memory interface Embedded Ethernet memory interface
Screenshot	
Setting, display and diagnosis	
Self-diagnosis function	
History display & Operation	Alarm & Operator message & Operation
Run hour / Parts count display	
Actual cutting feedrate display	
Display of spindle speed / T code	
Graphic display	
Operating monitor screen	Spindle / Servo load etc.
Multi language display	Support 7 languages Chinese, English, French, German, Italian, Korean, Spanish
LCD Screen Saver	Screen saver & Motion sensing

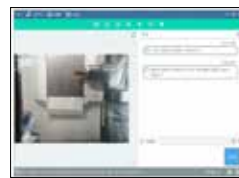
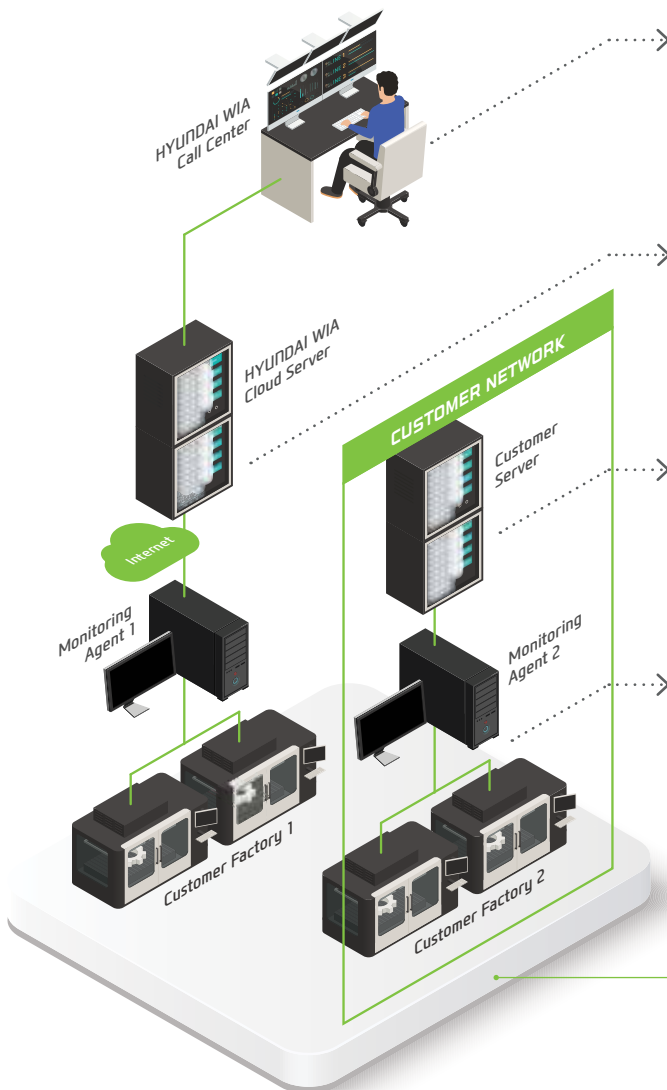
Option	
ShopMill	Machining step programming for milling
3D simulation	
Real time simulation	
Compressor (Improving machining quality)	CompCAD / CompCURV (Cycle 832)
Look-ahead block	3,000 block (With M-dynamics)
Measurement of tool length	
Built-in PC	Industrial PC (IPC427E)
Multi language display	☆ 20 Support languages : Inquiry need

HW-MMS

HYUNDAI WIA Machine Monitoring System



A manufacturing machine self-developed 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



HW-MMS Remote

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



HW-MMS Cloud

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



HW-MMS Edge

A client server-based tool monitoring system for collection/analysis of facility operation data. (Compatible with client MES / ERP interface)



HW-MMS Edge Plus

This is a facility big data-based smart factory solution that collects and analyzes spindle/feed data, tool lifespan, PC processing files, etc. in real time

HYUNDAI WIA
Smart Factory Solution



HS4000M
Movie



HS5000M/50
Movie



HS4000M
3D Movie



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