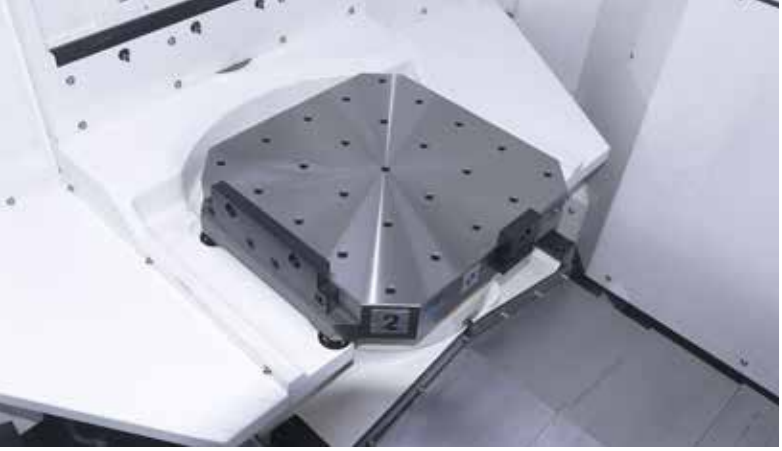
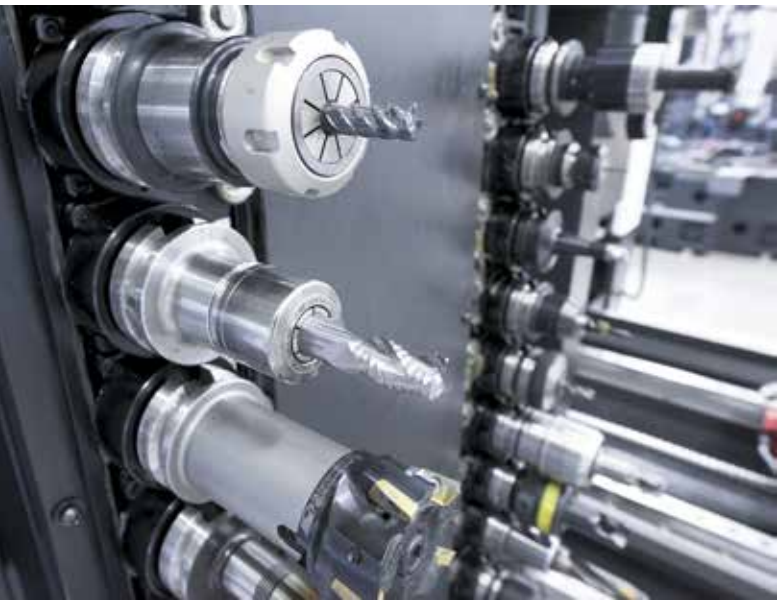
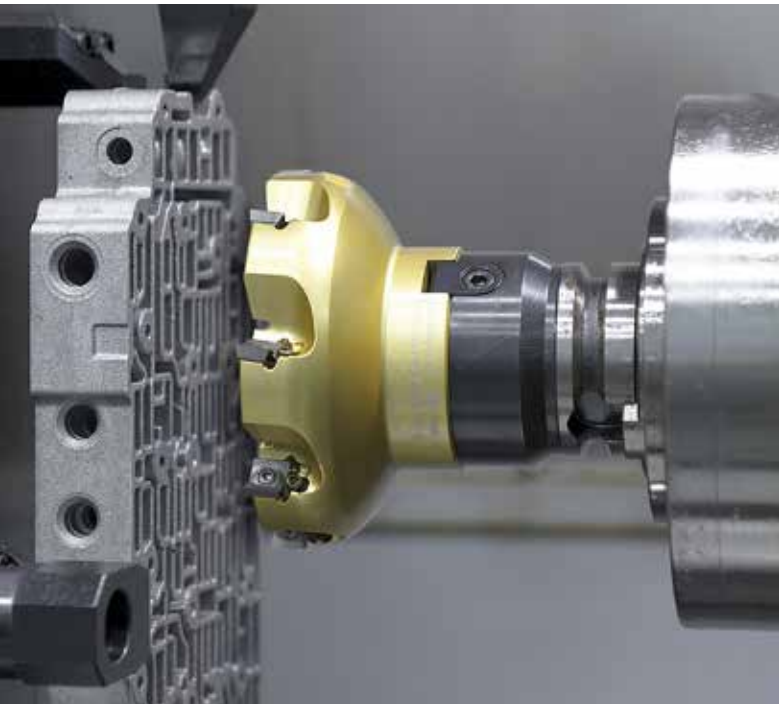
HS Series

HYUNDAI WIA High Speed Horizontal Machining Center

HYUNDAI WIA







HS4000 | 4000M

[ ] : Option

Pallet Size	mm(in)	2-400×400 (2-15.7″×15.7″)
Max. Load Capacity	kg(lb)	2-500 (2-1,102)
Spindle Taper	-	ΠT #40 [HSK-A63]
Spindle RPM	r/min	15,000
Spindle Output	kW(HP)	25/22 (33.5/29.5)
Travel(X/Y/Z)	mm(in)	620/560/650 (24.4″/22″/25.6″)

HS5000M-1P | 5000M/50-1P

[ ] : Option

Pallet Size	mm(in)	500×500 (19.7″×19.7″)
Max. Load Capacity	kg(lb)	800 (1,764)
Spindle Taper	-	ΠT #40 [HSK-A63] I ΠT #50 [HSK-A100]
Spindle RPM	r/min	15,000 I 12,000 [6,000]
Spindle Output	kW(HP)	37/22 (49.6/29.5) I 45/25 (60.3/33.5)
Travel(X/Y/Z)	mm(in)	850/700/750 (33.5″/27.6″/29.5″)

HS5000M/50 | 5000/50

[ ] : Option

Pallet Size	mm(in)	2-500×500 (2-19.7″×19.7″)
Max. Load Capacity	kg(lb)	2-800 (2-1,764)
Spindle Taper	-	ΠT #50 [12K : HSK-A100] I ΠT #50 [HSK-A100]
Spindle RPM	r/min	12,000 [6,000] I 12,000
Spindle Output	kW(HP)	30/25 (40.2/33.5) I 45/25 (60.3/33.5)
Travel(X/Y/Z)	mm(in)	850/700/750 (33.5″/27.6″/29.5″)

HS5000 | 5000M

[ ] : Option

Pallet Size	mm(in)	2-500×500 (2-19.7″×19.7″)
Max. Load Capacity	kg(lb)	2-500 (2-1,102) I 2-800 (2-1,764)
Spindle Taper	-	ΠT #40 [HSK-A63]
Spindle RPM	r/min	15,000
Spindle Output	kW(HP)	25/22 (33.5/29.5) I 37/22 (49.6/29.5)
Travel(X/Y/Z)	mm(in)	850/700/750 (33.5″/27.6″/29.5″)

HS4000i

[ ] : Option

Pallet Size	mm(in)	2-400×400 (2-15.7″×15.7″)
Max. Load Capacity	kg(lb)	2-500 (2-1,102)
Spindle Taper	-	ΠT #40 [HSK-A63]
Spindle RPM	r/min	12,000
Spindle Output	kW(HP)	25/22 (33.5/29.5)
Travel(X/Y/Z)	mm(in)	620/560/650 (24.4″/22″/25.6″)

HS5000i

[ ] : Option ● : SIEMENS

Pallet Size	mm(in)	2-500×500 (2-19.7″×19.7″)
Max. Load Capacity	kg(lb)	2-500 (2-1,102)
Spindle Taper	-	ΠT #40 [HSK-A63]
Spindle RPM	r/min	12,000 [10,000] [12,000]
Spindle Output	kW(HP)	25/22 (33.5/29.5) [38/25 (51/33.5)] [26 (34.9)]
Travel(X/Y/Z)	mm(in)	850/700/750 (33.5″/27.6″/29.5″)

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.

GOOD DESIGN

HS4000M I 4000 I 4000i

Highly Efficient Next Generation Machining Center for High Productivity

HS Series

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

HS5000M/50 I 5000M/50-1P I 5000M-1P I 5000/50 I 5000i

High Speed Machining Center

To decrease non-cutting time, large linear roller guideways are applied which show excellent acc/deceleration performance and high rigidity. Ball screws in each axis are directly connected with reliable digital servo motor and this improves feed accuracy.

Rapid Traverse Rate (X/Y/Z axis)

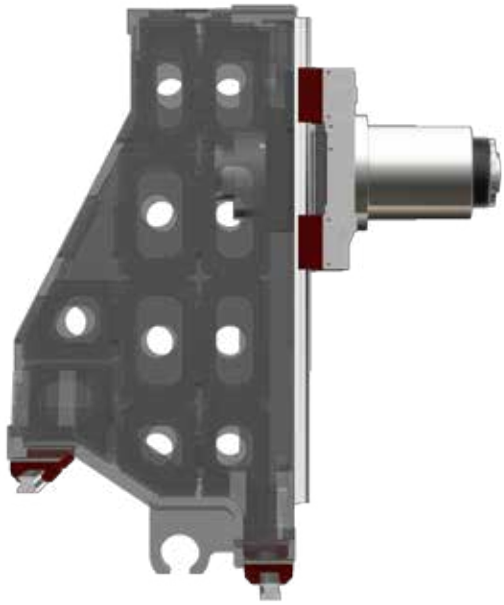
60/60/60 m/min (2,362/2,362/2,362 ipm)
– HS4000M | 5000M Series | HS4000 | HS5000

50/50/50 m/min (1,968/1,968/1,968 ipm)
– HS4000i | HS5000i | HS5000/50)

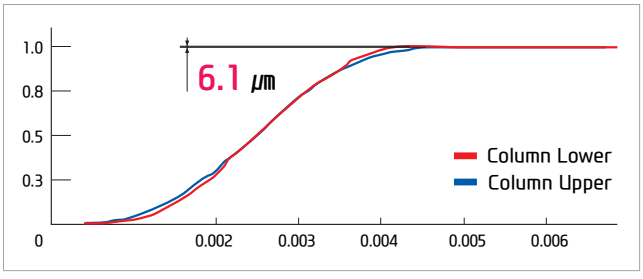
01

HS Series

HS4000M/5000M Series
Basic Feature



⊙ X-Axis Column Deformation (HS4000M) : 6.1 ㎛



01

Step Type Bed Structure

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

02

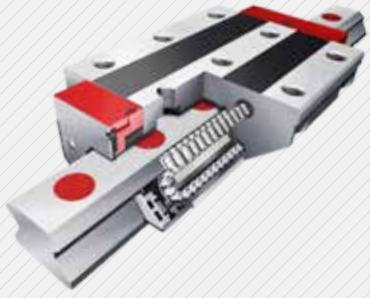
Built-in Spindle

The new built-in spindle reduces heat generation and brings faster acc/deceleration during high speed operations .

03

High-Speed Roller Guideway

Large linear roller guideways are applied to reduce non-cutting time and bring high rigidity.

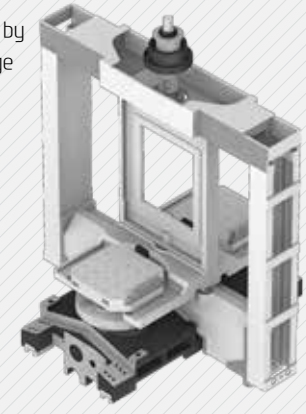


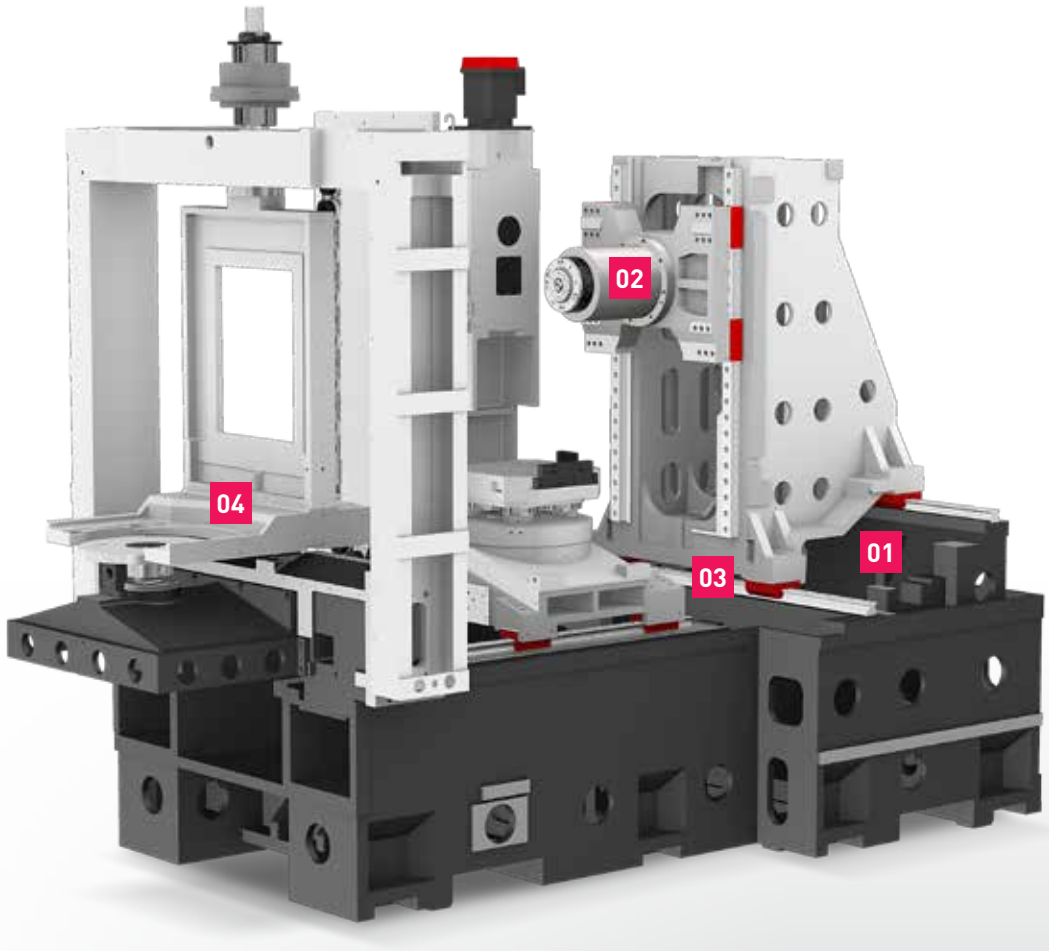
04

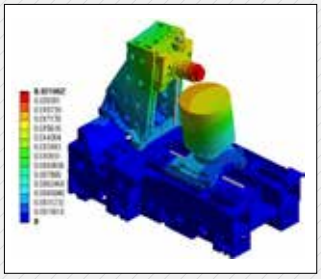
Rotary Type APC

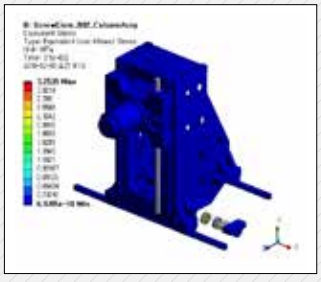
Pallet change time is minimized by applying automatic pallet change device.

(HS4000M I HS5000M/50)









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.

X-axis Static Stiffness

Other Machine	36.9 u/um
HS4000M	46.2 u/um — 25% UP

Y-axis Static Stiffness

Other Machine	77.1 u/um
HS4000M	90.4 u/um — 17% UP

Z-axis Static Stiffness

Other Machine	131.2 u/um
HS4000M	147.2 u/um — 12% UP

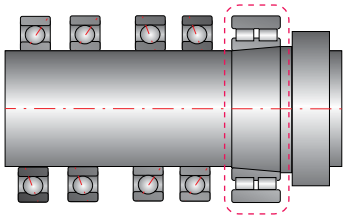
02
HS Series

HS4000M/5000M Series
Built-in Spindle

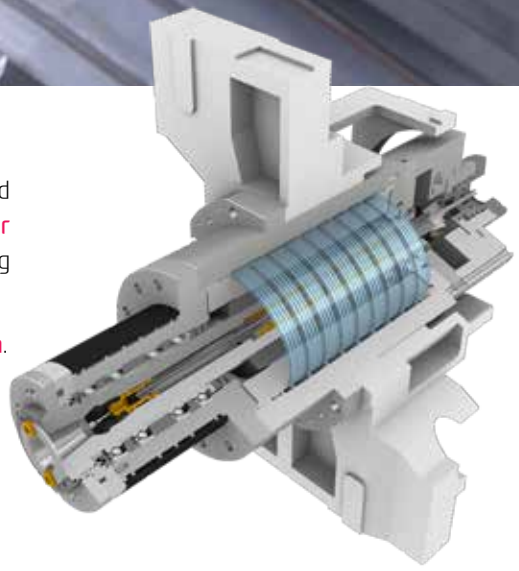
Built-in Spindle

The built-in main spindle minimizes vibration and heat during high speed rotation and achieves fast acceleration/deceleration. By applying taper roller bearing (6,000rpm) for heavy duty cutting, it is suitable for machining difficult-to-cut materials such as cast iron.

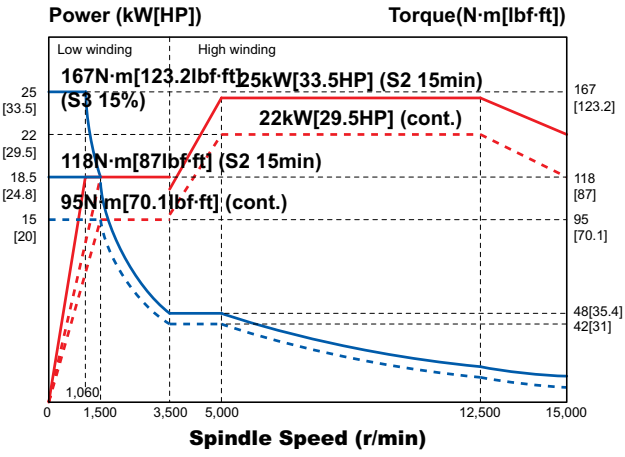
Also, thermal displacement can be minimized by applying oil cooling system.



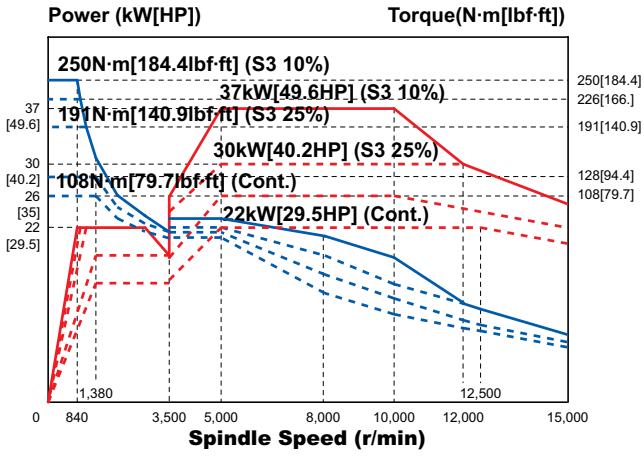
<< Taper Roller Bearing
(6,000r/min)



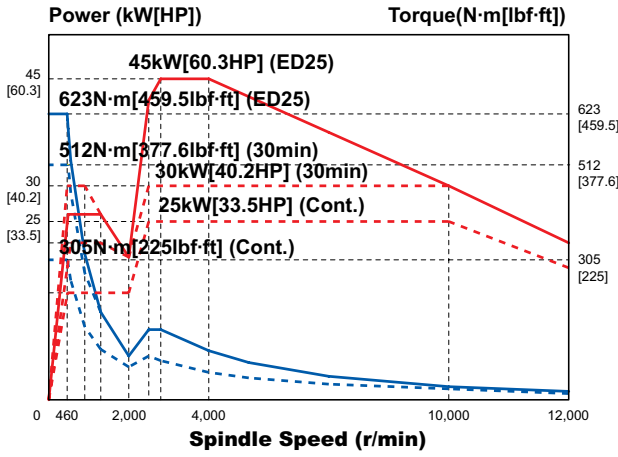
HS4000M 15,000rpm



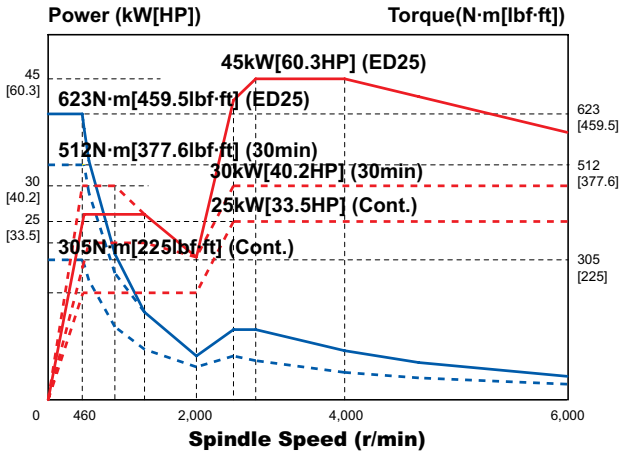
HS5000M-1P 15,000rpm

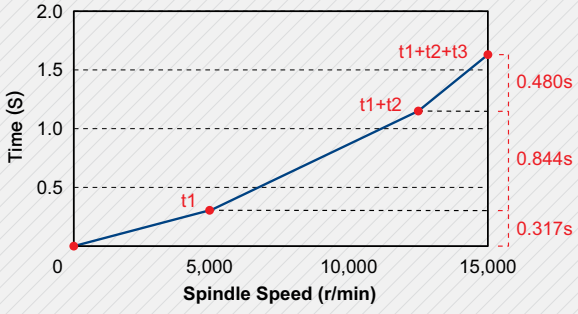


HS5000M/50 | 5000M/50-1P 12,000rpm



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

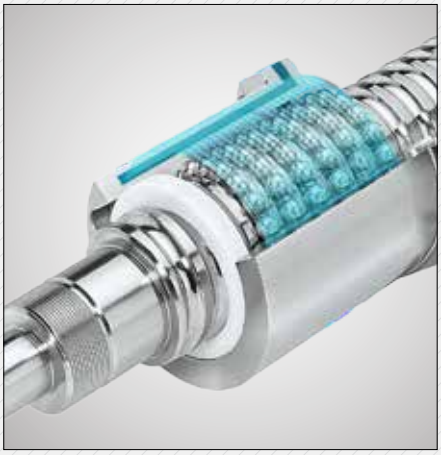




Spindle Acc/Deceleration Time (HS4000M)

Fulfilled 15,000RPM variable speed of 1.631 sec.

High Precision & High Speed Horizontal Machining Center

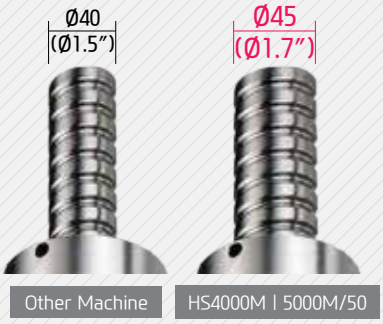


Nut Cooling Ball Screw

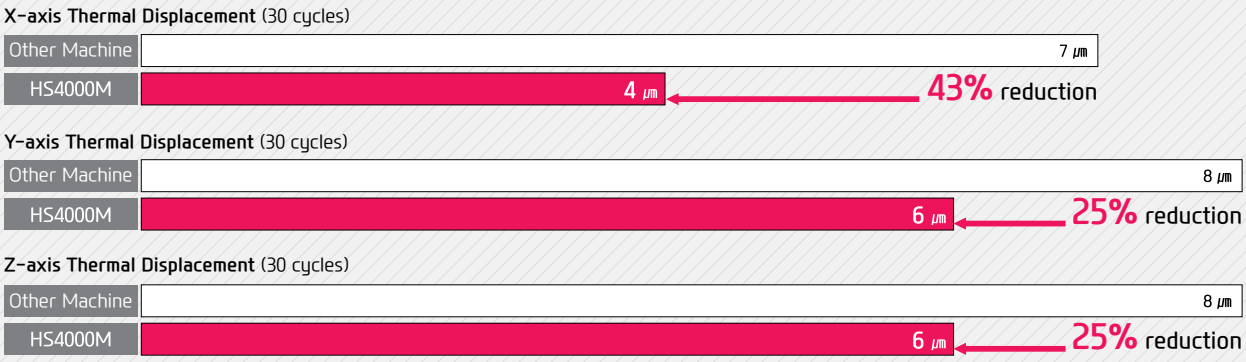
Nut cooling ball screws on all axes(HS4000M/HS5000M/50) decrease thermal displacement which enhances precision machining ability.

Large Ball Screw

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



⊙ Feed Shaft Thermal Displacement



⊙ Rapid Traverse Rate (X/Y/Z axis) :

HS4000M I 5000M Series : 60/60/60 m/min (2,362/2,362/2,362 ipm)

⊙ Travel (X/Y/Z axis)

HS4000M : 620/560/650 mm (24.4″/22″/25.6″)

HS5000M Series : 850/700/750 mm (33.5″/27.6″/29.5″)

HS5000M-1P | 5000M/50-1P

1 Pallet Type Features

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.

Optimized Automobiles Parts & Automation System

- **Rapid Traverse Rate** (X/Y/Z axis) : 60/60/60 m/min (2,362/2,362/2,362 ipm)
- **Travel** (X/Y/Z axis) : 850/700/750 mm (33.5"/27.6"/29.5")
- **Spindle Taper**
  HS5000M-1P : BBT40 [HSK-A63] HS5000M/50-1P : BBT50 [HSK-A100]

Automobile Part FA Line - Sample Workpieces

CALIPER HOUSING (FCD550)

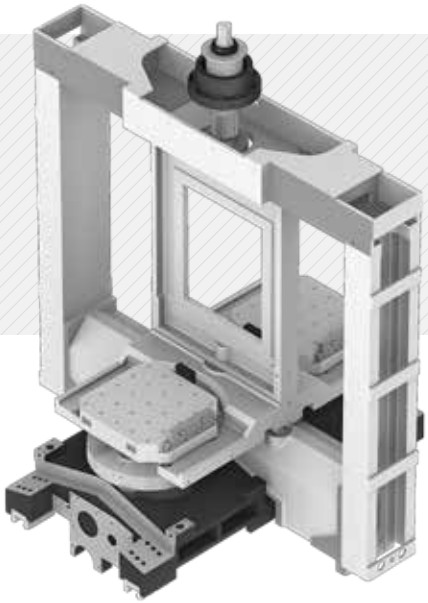
BED PLATE (FCD550)

T/M HOUSING (AL)

VALVE BODY (AL)

03 HS4000M/5000M Series
ATC & APC

HS Series



APC & Pallet (2 Pallet Type)

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.

Other Machine

Pallet Change Time 10 sec

HS4000M

Pallet Change Time 7 sec 30% reduction

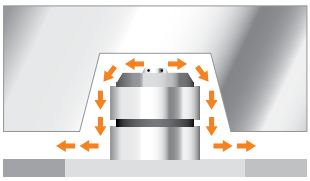
B Axis Index Angle

Std. : 1° [Opt. : 0.001°]

Pallet Index Time

HS4000M : 7 sec

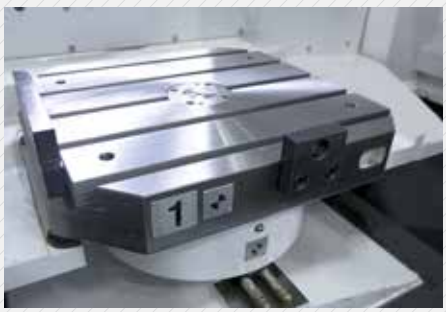
HS5000M/50 : 10 sec



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.

Tap Type Pallet

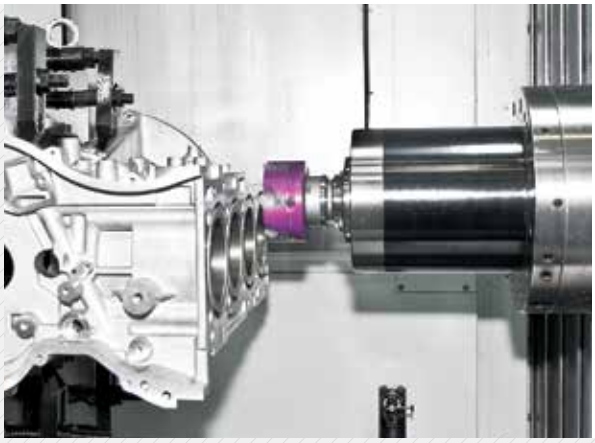


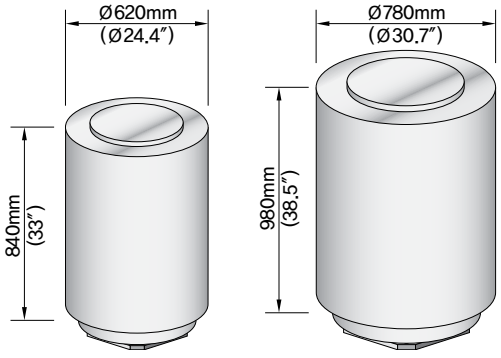
T-Slot Type Pallet OPTION

Various Pallet Type

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

Work Area

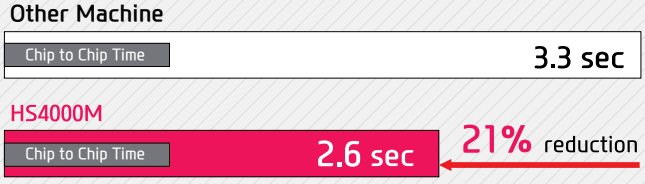




HS4000M HS5000M Series

ATC & Magazine

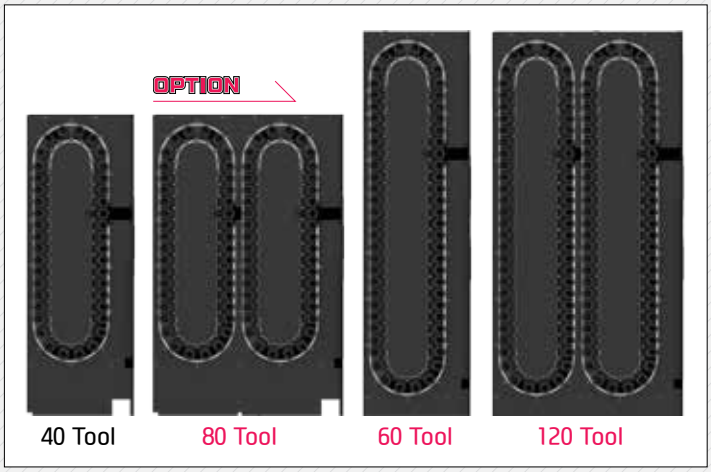
The tool magazine of HS4000M/HS5000M holds 40 tools as standard and up to 120 tools as an option depending on model. Fixed address tool selection method and a separate magazine control panel enhance user convenience.
Also, the servo driven ATC dramatically decreases tool change time and its structure is less complicated compared to the inverter type for easier repair & maintenance.

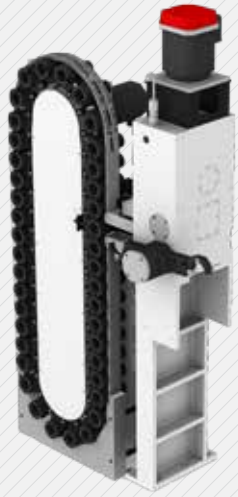


ATC Tool Change Time (Chip to Chip Time)

HS4000M : 2.6 sec HS5000M-1P : 3.1 sec
HS5000M/50 | HS5000M/50-1P : 3.8 sec

Magazine Controller

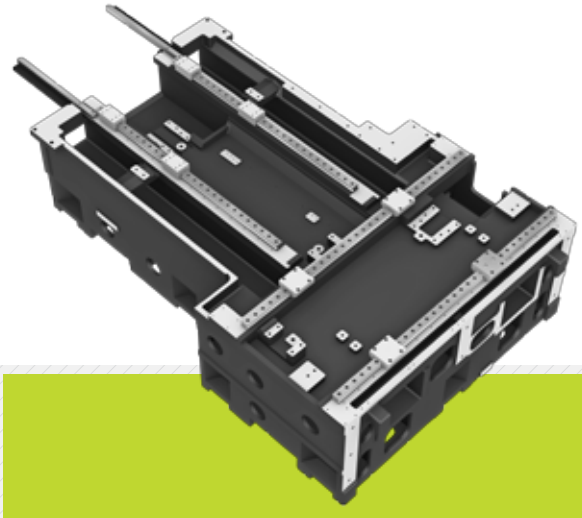




HS4000M | HS5000M-1P : 40 [60/80/120] EA HS5000M/50 | HS5000M/50-1P : 40 [60] EA

04 HS4000/5000 Series Basic Feature

HS Series



HS Series

Through Hyundai WIA's unique structural analysis, it is designed with optimal structure.

In particular, the optimized design of the spindle and axes system maximizes productivity.

01

Reversed 'T' Type Bed

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

02

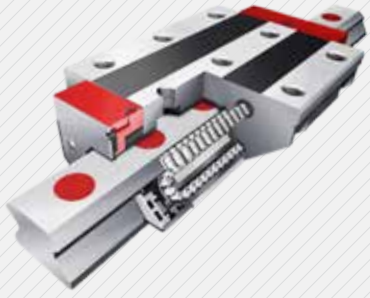
Built-in Spindle

The new built-in spindle reduces heat generation and brings faster acc/deceleration during high speed operations.

03

High-Speed Roller Guideway

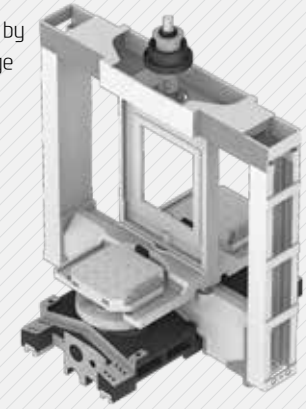
HS4000/5000 applies large sized linear roller guideways to reduce non-cutting time and bring high rigidity.

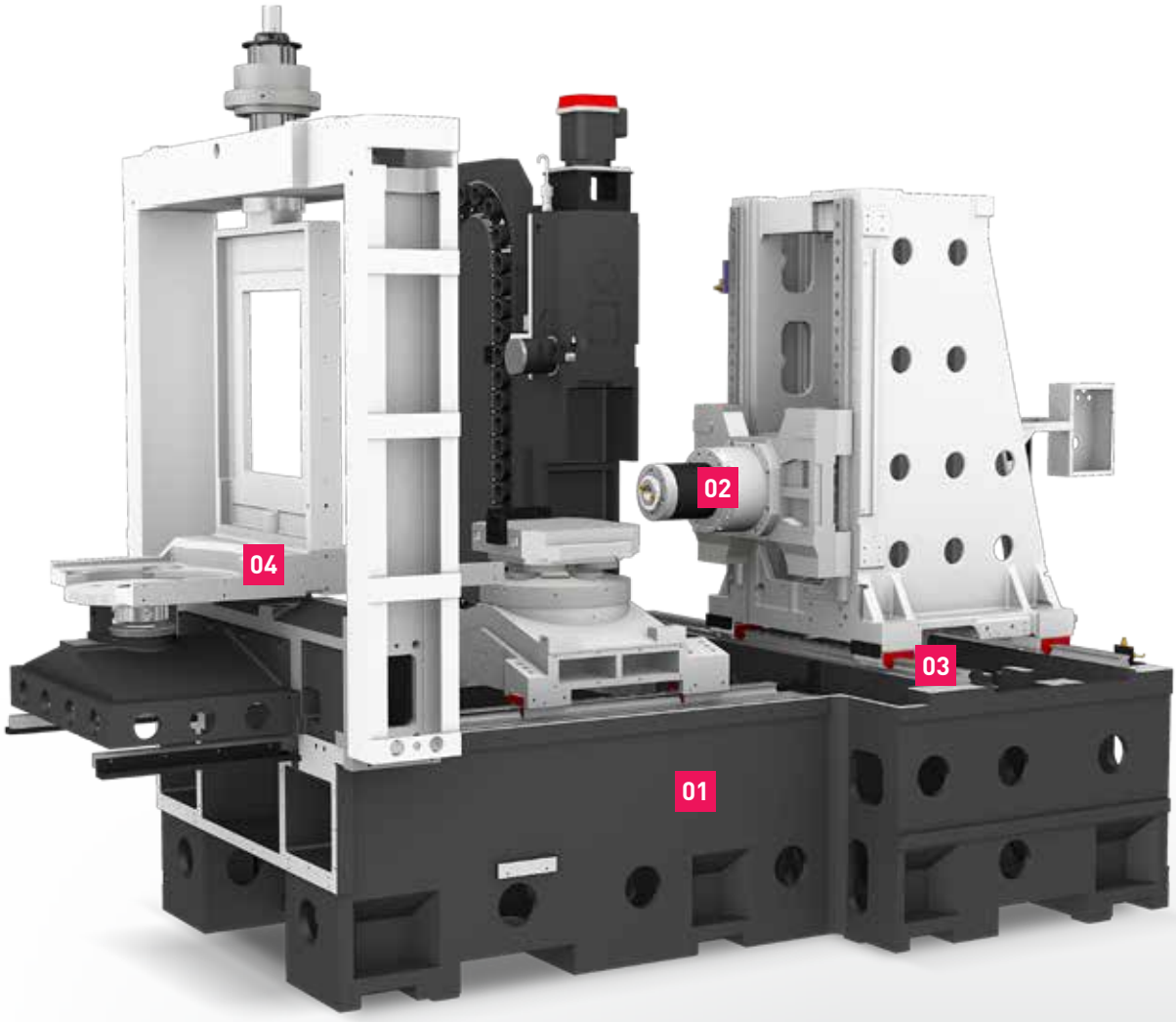


04

Rotary Type APC

Pallet change time is minimized by applying automatic pallet change device.





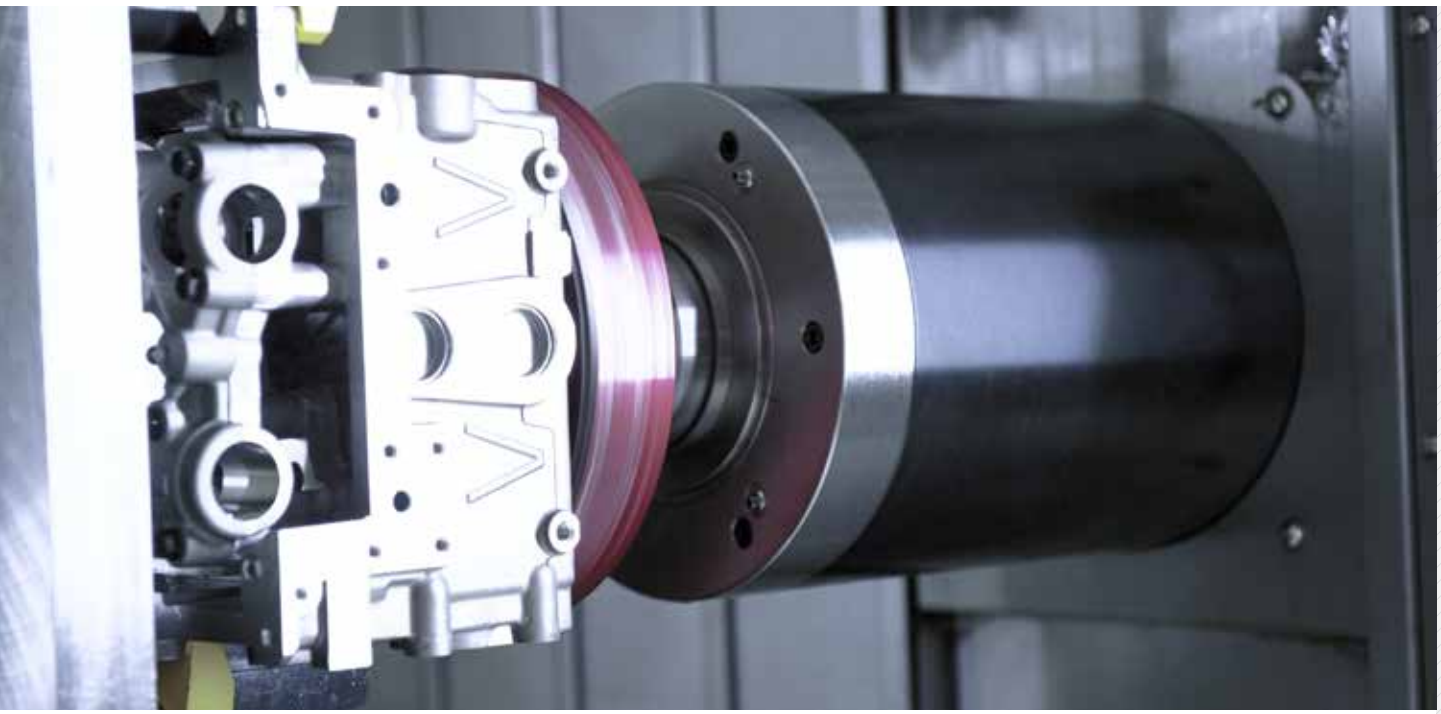
High-Precision & High-Speed Horizontal Machining Center

- **Rapid Traverse Rate** (X/Y/Z axis)
  HS4000 I 5000 : 60/60/60 m/min (2,362/2,362/2,362 ipm)
  HS4000i I 5000i I 5000/50 : 50/50/50 m/min (1,968/1,968/1,968 ipm)

- **Travel** (X/Y/Z axis)
  HS4000 I 4000i : 620/560/650 mm (24.4"/22"/25.6")
  HS5000 I 5000i I 5000/50 : 850/700/750 mm (33.5"/27.6"/29.5")

05 HS Series

HS4000/5000 Series
Built-in 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.

Spindle temperature can be controlled by the use of the spindle oil cooling system.

Tool Holders

BBT, BCV and HSK tool holders are applicable.

⊙ Max. Tool Weight

HS5000/50 : 25 kg (55.1 lb)
HS4000 | 4000i | 5000 | 5000i : 8 kg (17.6 lb)

⊙ Spindle Taper

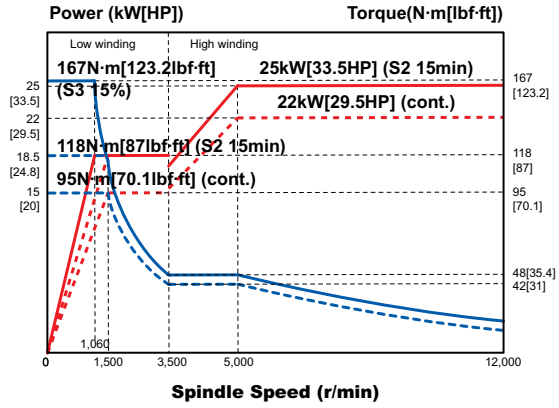
HS5000/50 : BBT50 [HSK-A100]
HS4000 | 4000i | 5000 | 5000i : BBT40 [HSK-A63]

Spindle Through Coolant OPTION

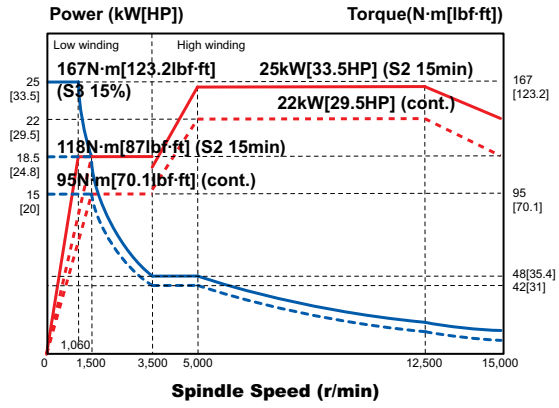
High pressrue coolant of 70 bar[1,015 psi], 30 bar[435 psi] are provided as options.

FANUC Spindle Motor

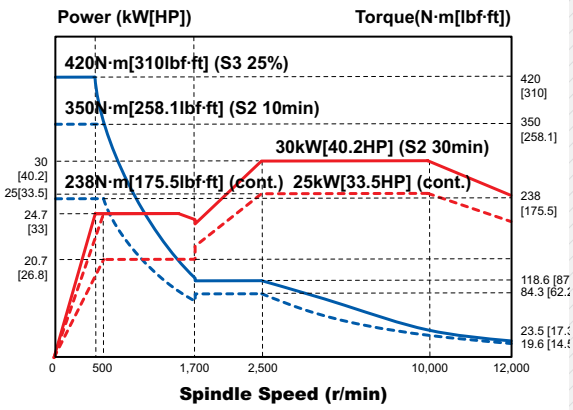
HS4000i/5000i 12,000rpm Built-in



HS4000/5000 15,000rpm Built-in



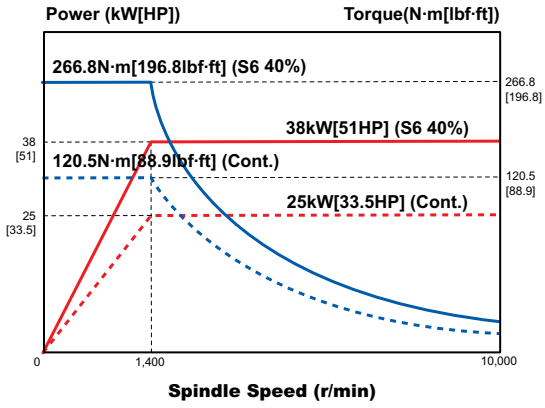
HS5000/50 12,000rpm Built-in



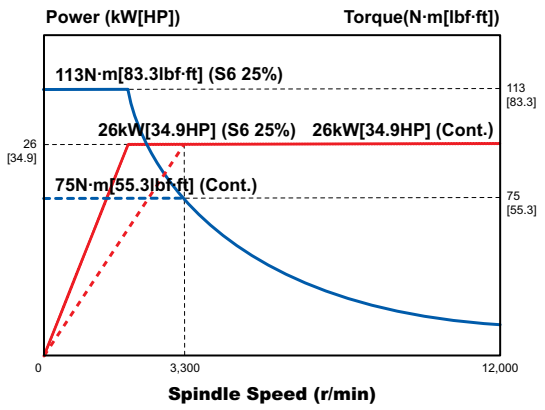
SIEMENS Spindle Motor

The 1PH8 Series is a high quality performance motor providing concentricity of 10㎛ and fast response time.

HS5000i 10,000rpm Built-in



HS5000i 12,000rpm Built-in



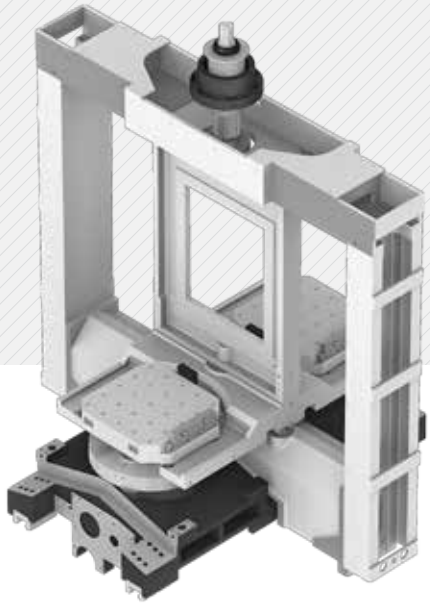
06
HS Series

HS4000/5000 Series
ATC & APC

APC & Pallet

HS4000/5000 provides a rotary shuttle APC(automatic pallet changer) as standard. The pallet at the loading station can be rotated in 90° and be fixed so it becomes easier to load/unload workpiece and to deal with chips.

Locating cones at the positining base are used for pallet clamping. Inside the cones there are clamping devices for powerful claimping of pallets which is suitable for heavy duty cutting. 1° index table applies high precision curvic coupling for accurate indexing.

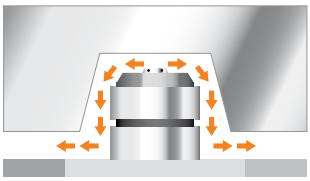


B Axis Index Angle

Std. : 1° [Opt. : 0.001°]

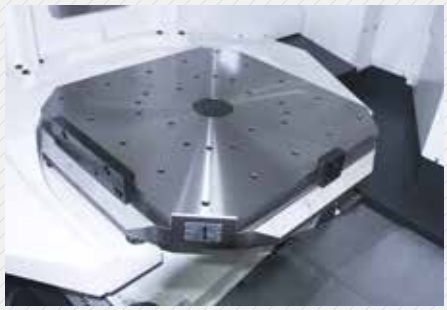
Pallet Index Time HS4000 | 4000i : 10 sec 5000 | 5000i | HS5000/50 : 12 sec

Pallet 90° Index Time HS4000 | 5000 : 1.5 sec HS5000/50 : 2.0 sec

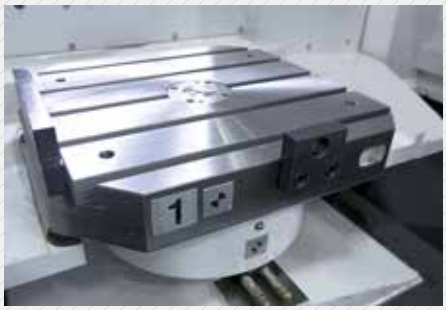


Air Clearing System

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.



Tap Type Pallet

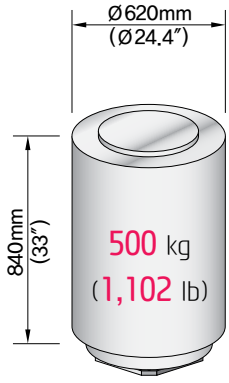


T-Slot Type Pallet OPTION

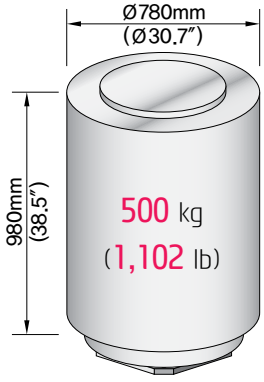
Various Pallet Types

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

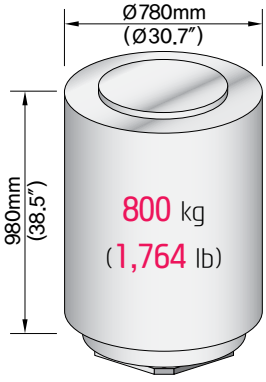
Work Area



HS4000 | 4000i



HS5000 | 5000i



HS5000/50

ATC & Magazine

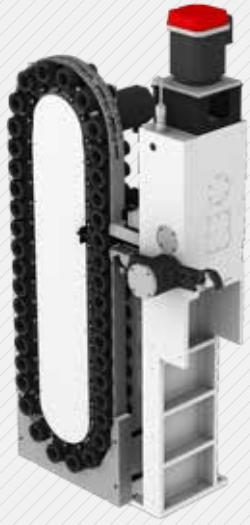
Magazine Controller >>

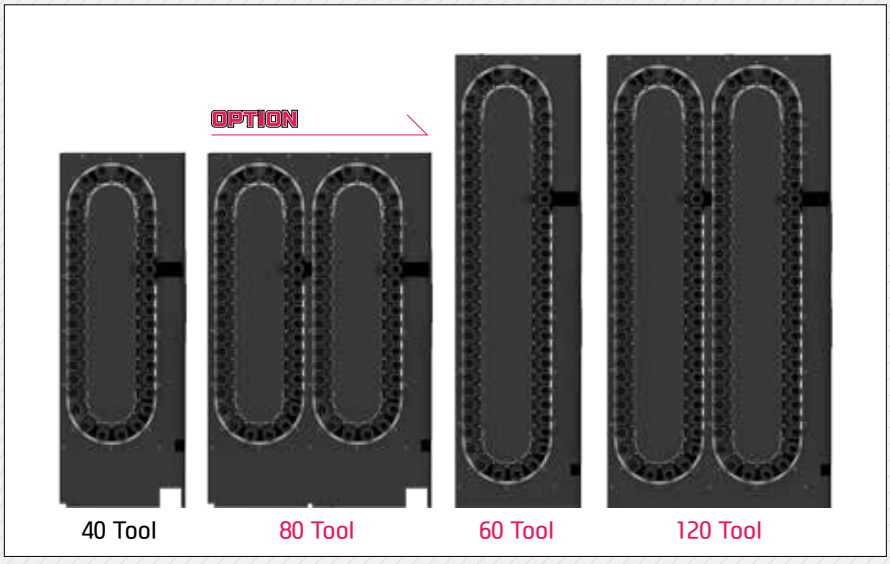
The tool magazine holds 40 tools as standard and up to 120 tools as an option depending on model. Servo control, fixed address tool selection method and a separate magazine control panel enhance user convenience.

The twin arm ATC provides fast and reliable tool change to reduce non-cutting time. Also, servo driven ATC is provided as an option for faster tool change.

ATC Tool Change Time (Chip to Chip Time)

HS4000i : 3.4 sec | HS5000i : 3.5 sec | HS4000 : 3.3 sec | HS5000 : 3.8 sec | HS5000/50 : 4.8 sec





07

HS Series

SIEMENS Controller

The Powerful CNC platform for Machine Tools

SIEMENS

DIFFERENTIATED CAPABILITIES, INTEGRATED ENGINEERING PERFECTLY INTERLINKED

SIEMENS 840D Milling is the latest generation controller, with the capability of running up to 5 spindles on one machine. It is designed for horizontal/vertical all-purpose equipment.

The powerful 80-bit controller reduces processing time and increases productivity. It supports the preparation of a variety of programs and setup functions. It is easy to handle.

SIEMENS Technology

OPTION

Shop Mill

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

OPTION

3D Simulation

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

Easy Screen

- Create an easy-to-screen
- Insert text and pictures support
- Max. 5-screen configuration
- NC variables and PLC interface with read/write support

SIEMENS MDynamics

SIEMENS MDynamics is required for a variety of CNC mold processing software solutions which is combined into one package achieving the highest processing rates

ISO Code Programming

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

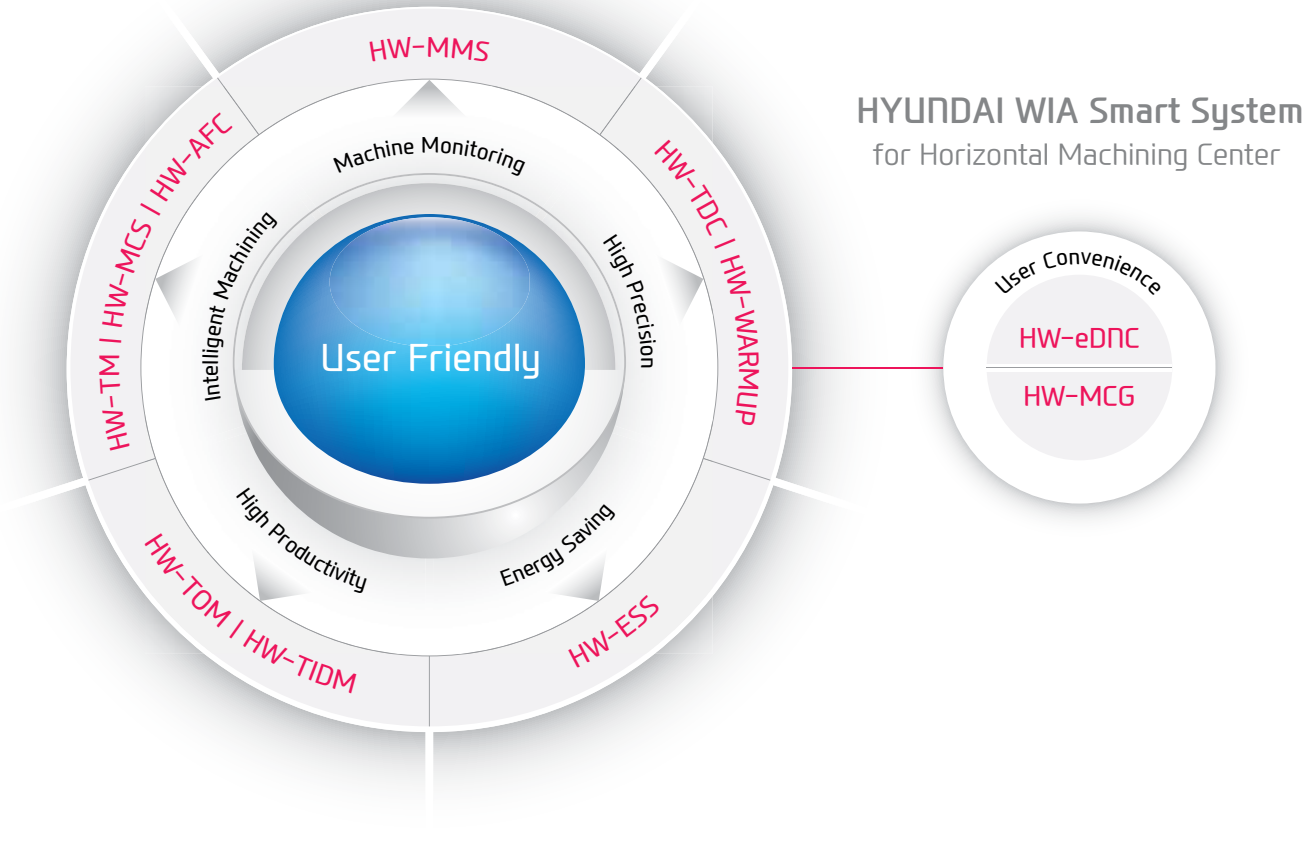
n8
HS Series

Smart System

OPTION

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.



HYUNDAI WIA Smart System
for Horizontal Machining Center

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)

(FANUC)

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.

(FANUC)

HW-ESS

HYUNDAI WIA
Energy Saving System

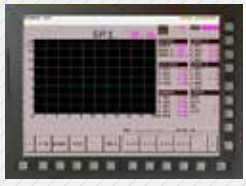
An environmental friendly software that reduces the unnecessarily wasted standby power waiting for an operation.

(FANUC)

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.

09

HS Series

User Convenience

OPTION

Various Devices for User Convenience

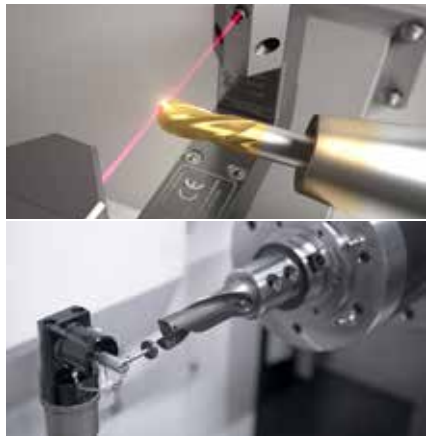
Measuring Device

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 attrition and detect broken tools.



Tool Broken Detector

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

Precision Device

Linear Scale

Linear scale helps process highly accurate products through precise positioning.

Environment Device

Oil Skimmer

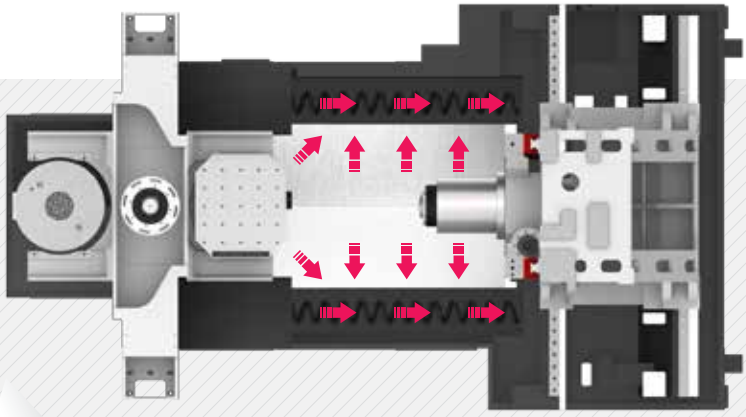
An oil skimmer can increase coolant and tool life by removing tramp oil contaminants.

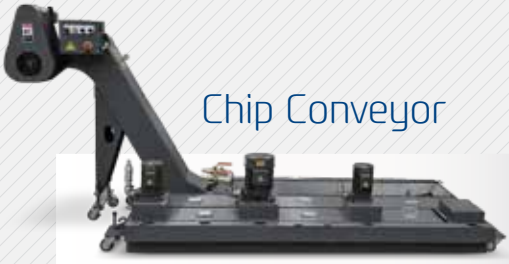
Mist Collector

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

Chip Disposal

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



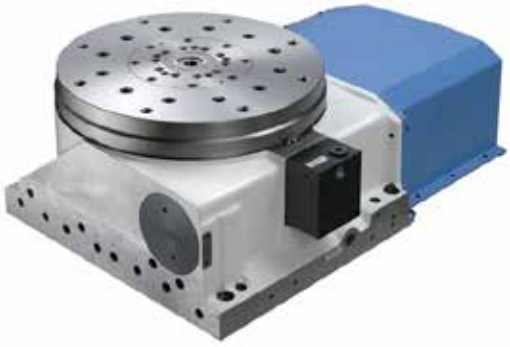


Chip Conveyor

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

- **Hinge 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)**

NC Rotry Table



10 Automation System

OPTION

HS Series

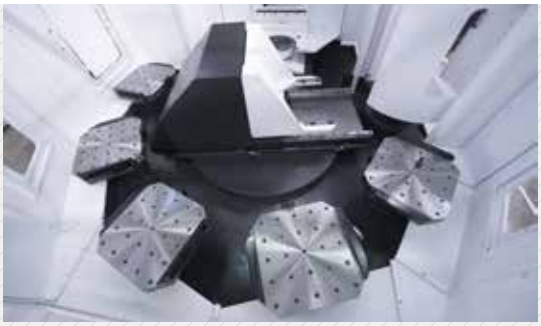
Automatic Solutions to Improve Productivity

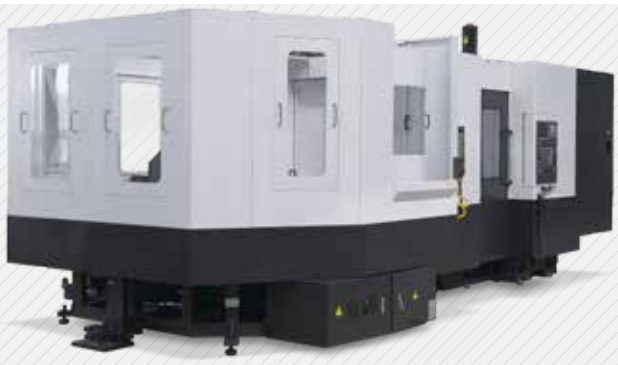
Automation System

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

Gantry Loader System

The high speed gantry loaders and the work stocker make it possible to implement automation cells with optimum installation area. This brings process flexibility and productivity enhancement.





6PPL Specification

ITEM	6PPL
PALLET Capacity	6 EA (Machine 1EA, PPL 5EA)
PALLET Load Weight	Max. 500 kg (1,102 lb)
CYCLE TIME	150 sec

6PPL

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.

Hydraulic Supply Unit (Upper)

An optional hydraulic supply of 16(2×8)Port, 100bar is provided for powerful fixture clamping.

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.

Auto Door

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

Start Switch

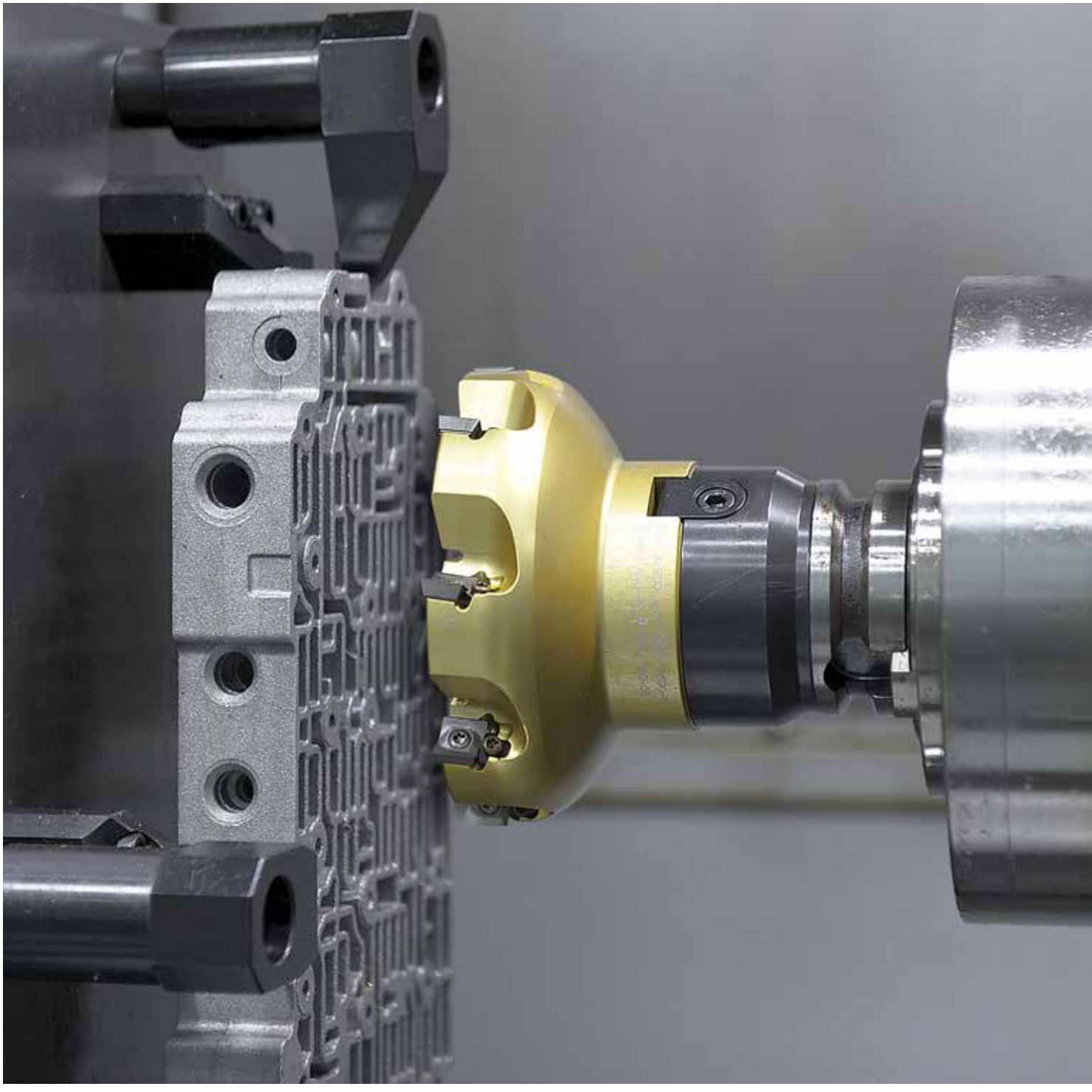
By simply touching the spring type startup switch located next to the door, fixtures can be easily set in a sequence, increasing convenience.

11

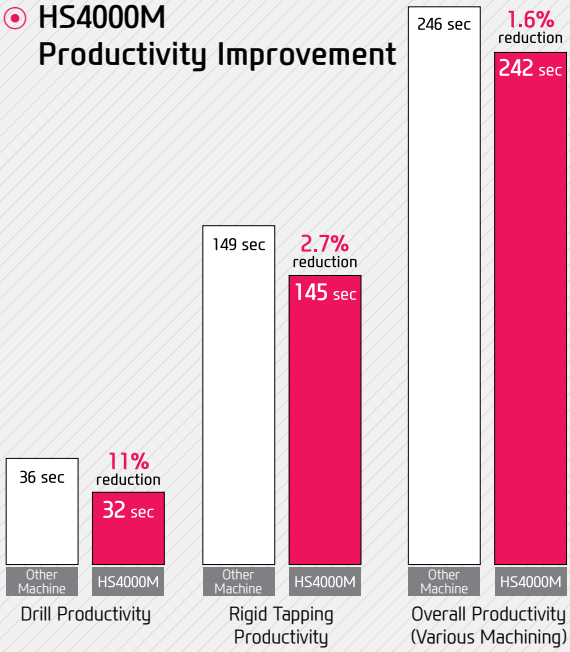
HS Series

Machining Capability

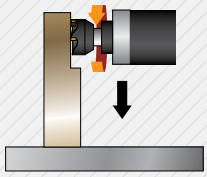
The Best Performance, Powerful Cutting, High Speed
Horizontal machining center



HS4000M Productivity Improvement

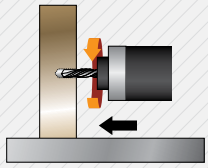


HS5000 (15,000r/min)



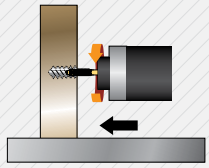
FACE MILL, S45C

Tool diameter	Ø80 (Ø3.14") x 6F
Spindle RPM	1,137 r/min
Rapid Feed Rate	1,000 mm/min (39.4 ipm)
Cutting width	70 mm (2.76")
Cutting depth	5 mm (0.2")
Chip quantity	350 cc/min



DRILL, S45C

Tool diameter	Ø43 (Ø1.7")
Spindle RPM	199 r/min
Rapid Feed Rate	39 mm/min (1.53 ipm)
Cutting width	43 mm (1.7")
Cutting depth	60 mm (2.36")
Chip quantity	57 cc/min



TAP, S45C

Tool diameter	M33 x P3.5
Spindle RPM	70 r/min
Rapid Feed Rate	280 mm/min (11 ipm)
Cutting width	36 mm (1.4")
Cutting depth	54 mm (2.12")

Sample Workpieces – Automobile Part

SPECIFICATIONS

Standard & Optional

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

Spindle		HS4000i	HS4000	HS4000M
15,000rpm (25/22kW[33.5/29.5HP])	Built-In	–	●	●
12,000rpm (25/22kW[33.5/29.5HP])	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)	○	○	○
	25KG (55 lb)	–	–	–
Tool Change Control Type	Invertor	●	●	○
	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)		●	●	●
Bed Flushing Coolant		–	–	–
Through Spindle Coolant*	6 bar (87 psi)	●	●	●
	20 bar (290 psi)	○	○	○
	30 bar (435 psi)	○	○	○
	70 bar (1,015 psi), 15 ℓ (3.9 gal)	○	○	○
	70 bar (1,015 psi), 30 ℓ (7.9 gal)	○	○	○
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	☆	☆	☆
S/W				
Machine guidance (HW-MCG)		☆	☆	☆
Tool Monitoring (HW-TM)		○	○	○
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)		○	○	○

S/W		HS4000i	HS4000	HS4000M
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	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	○	○	○
Rotary Scale	B 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.	○	○	○
	High Speed	–	–	–
Auto Shutter (Only for Automatic System)		–	–	–
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	70bar (1,015psi) / 45 ℓ (11.8 gal)	●	●	●
	65bar (1,015psi) / 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 (653psi)	○	○	○
	70bar (1,015psi)	○	○	○
	100bar (1,450 psi)	○	○	○
	Customized	☆	☆	☆
ETC				
Tool Box		●	●	●
Customized Color	Need for Munsel No.	☆	☆	☆
CAD&CAM Software		☆	☆	☆

Through Spindle Coolant* : Please check the filter types with sales representative.

Specifications are subject to change without notice for improvement.

SPECIFICATIONS

Standard & Optional

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

Spindle		HS5000i	HS5000	HS5000/50
12,000rpm (25/22kW[33.5/29.5HP])	FANUC	●	–	–
10,000rpm (38/25kW [51/33.5HP])	SIEMENS	○	–	–
12,000rpm (26/26kW [34.9/34.9HP])	SIEMENS	○	–	–
15,000rpm (25/22kW [33.5/29.5HP])	FANUC	–	●	–
12,000rpm (30/25kW [40.2/33.5HP])	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	☆	☆	☆
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)		●	●	●
Bed Flushing Coolant		●	●	●
Through Spindle Coolant*	6 bar (87 psi)	○	○	○
	20 bar (290 psi)	○	○	○
	30 bar (435 psi)	○	○	○
	70 bar (1,015 psi), 15 ℓ (3.9 gal)	○	○	○
	70 bar (1,015 psi), 30 ℓ (7.9 gal)	○	○	○
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	☆	☆	☆

S/W		HS5000i	HS5000	HS5000/50
Machine guidance (HW-MCG) : FANUC/SIEMENS		☆/–	☆	☆
Tool Monitoring (HW-TM)		○	○	○
DNC Software (HW-eDNC)		○	○	○
Spindle Heat Distortion Compensation (HW-TDC)		○	○	○
Spindle Warm up Function (HW-WARMUP)		☆	☆	☆
Energy Saving System (HW-ESS) : FANUC/SIEMENS		☆/–	☆	☆
Machine Monitoring System (HW-MMS)		○	○	○
Tool Offset Measurement (HW-TOM) : FANUC/SIEMENS		☆/–	☆	☆
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	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 (1,015psi) / 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 (653psi)	○	○	○
	70bar (1,015psi)	○	○	○
	100bar (1,450 psi)	○	○	○
	Customized	☆	☆	☆
ETC				
Tool Box		●	●	●
Customized Color	Need for Munsel No.	☆	☆	☆
CAD&CAM Software		☆	☆	☆

Through Spindle Coolant* : Please check the filter types with sales representative.

Specifications are subject to change without notice for improvement.

SPECIFICATIONS

Standard & Optional

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

Spindle		HS5000M	HS5000M/50
15,000rpm (37/22kW [49.6/29.5HP])	FANUC	●	–
6,000rpm (45/25kW [60.3/33.5HP])	FANUC	–	○
12,000rpm (45/25kW [60.3/33.5HP])	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	Invertor	○	○
	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*	6 bar (87 psi)	●	●
	20 bar (290 psi)	○	○
	30 bar (435 psi), 15 ℓ (3.9 gal)	☆	○
	30 bar (435 psi), 20 ℓ (5.2 gal)	○	○
	70 bar (1,015 psi), 15 ℓ (3.9 gal)	○	○
	70 bar (1,015 psi), 30 ℓ (7.9 gal)	○	○
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	☆	☆

S/W		HS5000M	HS5000M/50
Machine guidance (HW-MCG)		☆	☆
Tool Monitoring (HW-TM)		○	○
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	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	☆	☆
External M Code 4ea		○	○
Automation Interface		☆	☆
I/O Extension (In & Out)	16Contact	○	○
	32Contact	○	○
6PPL		–	–
Hyd. Device			
Std. Hyd. Unit	65bar (1,015psi) / 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 (653psi)	○	○
	70bar (1,015psi)	○	○
	100bar (1,450 psi)	○	○
	Customized	☆	☆
ETC			
Tool Box		●	●
Customized Color	Need for Munsel No.	☆	☆
CAD&CAM Software		☆	☆

Through Spindle Coolant* : Please check the filter types with sales representative.

Specifications are subject to change without notice for improvement.

SPECIFICATIONS

Standard & Optional

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

Spindle		HS5000M-1P	HS5000M/50-1P
15,000rpm (37/22kW [49.6/29.5HP])	FANUC	●	–
6,000rpm (45/25kW [60.3/33.5HP])	FANUC	–	○
12,000rpm (45/25kW [60.3/33.5HP])	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	☆	☆
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*	6 bar (87 psi)	●	●
	20 bar (290 psi)	○	○
	30 bar (435 psi), 15 ℓ (3.9 gal)	☆	☆
	30 bar (435 psi), 20 ℓ (5.2 gal)	○	○
	70 bar (1,015 psi), 15 ℓ (3.9 gal)	○	○
	70 bar (1,015 psi), 30 ℓ (7.9 gal)	○	○
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	☆	☆

S/W		HS5000M-1P	HS5000M/50-1P
Machine guidance (HW-MCG)		☆	☆
Tool Monitoring (HW-TM)		○	○
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	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	☆	☆
External M Code 4ea		○	○
Automation Interface		☆	☆
I/O Extension (In & Out)	16Contact	○	○
	32Contact	○	○
6PPL		–	–
Hyd. Device			
Std. Hyd. Unit	65bar (1,015psi) / 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 (653psi)	○	○
	70bar (1,015psi)	○	○
	100bar (1,450 psi)	○	○
	Customized	☆	☆
ETC			
Tool Box		●	●
Customized Color	Need for Munsel No.	☆	☆
CAD&CAM Software		☆	☆

Through Spindle Coolant* : Please check the filter types with sales representative.

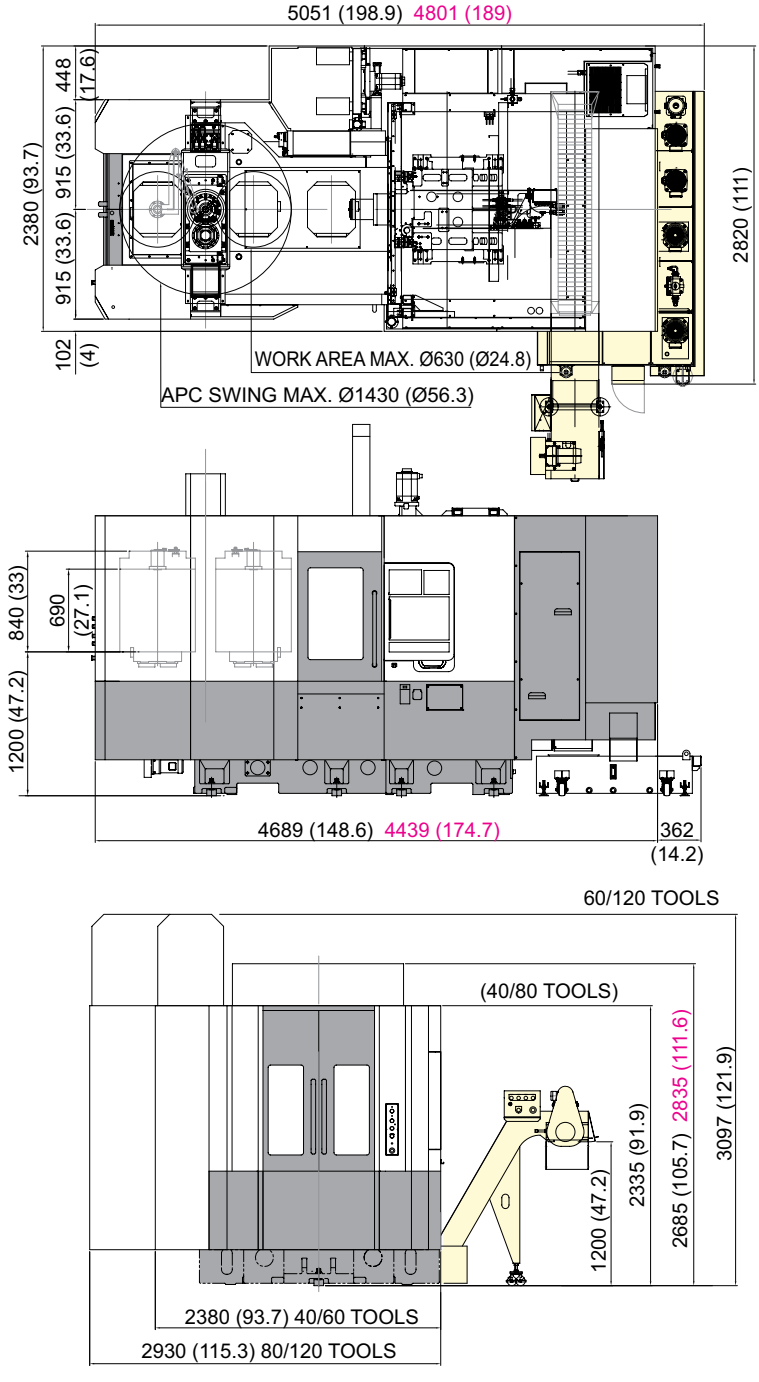
Specifications are subject to change without notice for improvement.

SPECIFICATIONS

External Dimensions

unit : mm(in)

HS4000i/4000
HS4000M

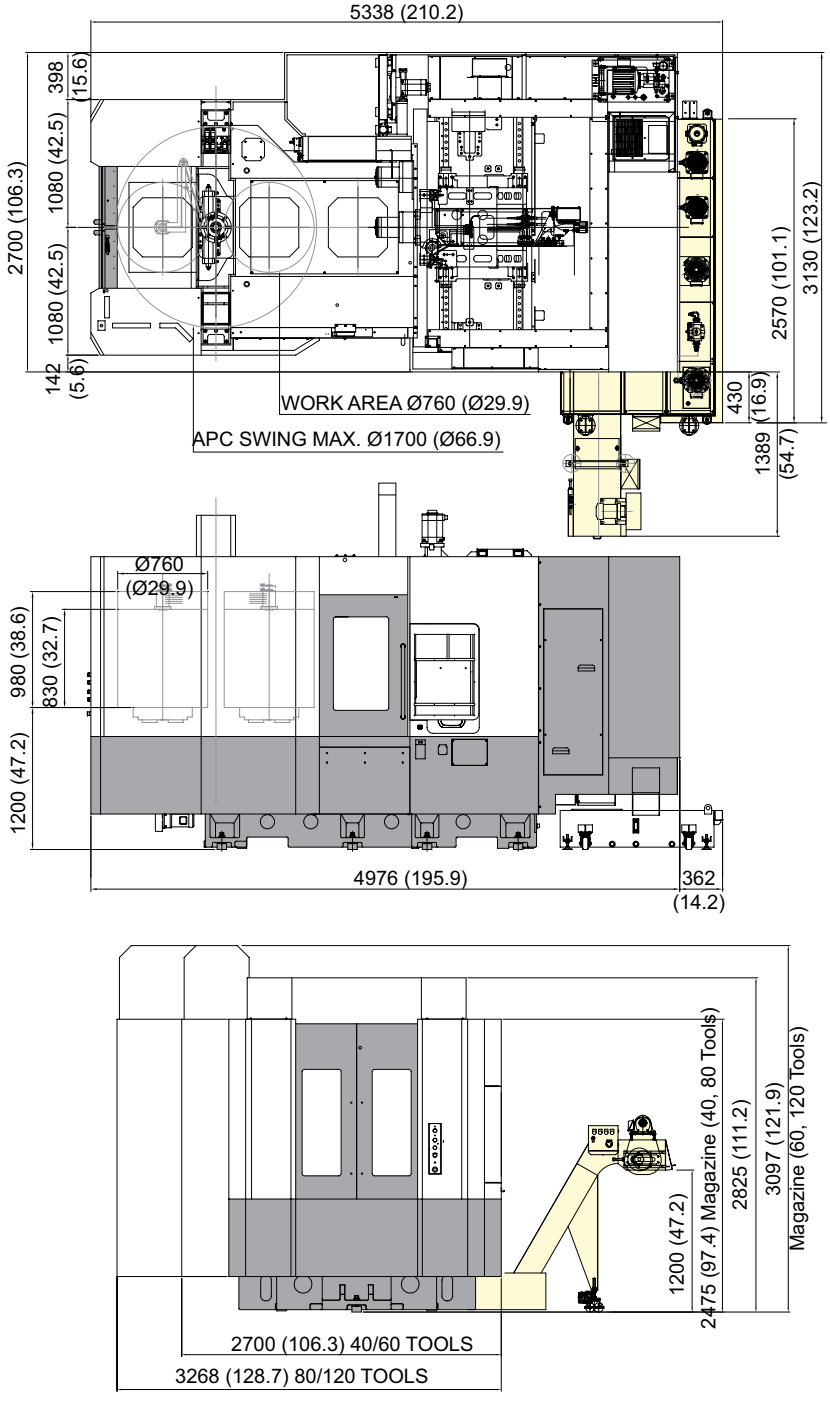


Height when upper hydraulic supply device is attached – HS4000, 4000i, 5000, 5000i, : 3,100mm (122"), HS4000M : 3,350mm (132")

External Dimensions

unit : mm(in)

HS5000i/5000



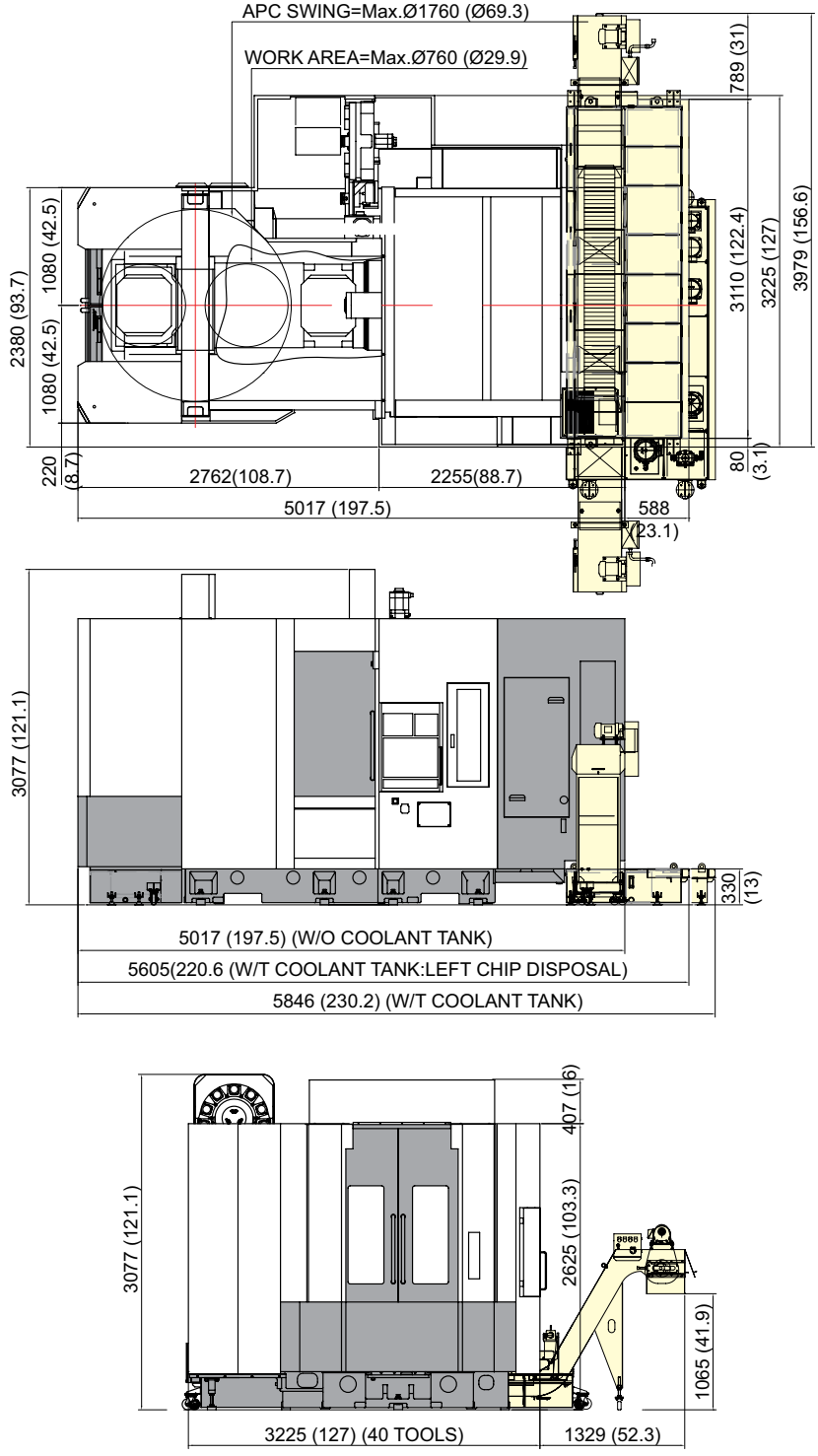
Height when upper hydraulic supply device is attached – HS4000, 4000i, 5000, 5000i : 3,100mm (122"), HS4000M : 3,350mm (132")

SPECIFICATIONS

External Dimensions

unit : mm(in)

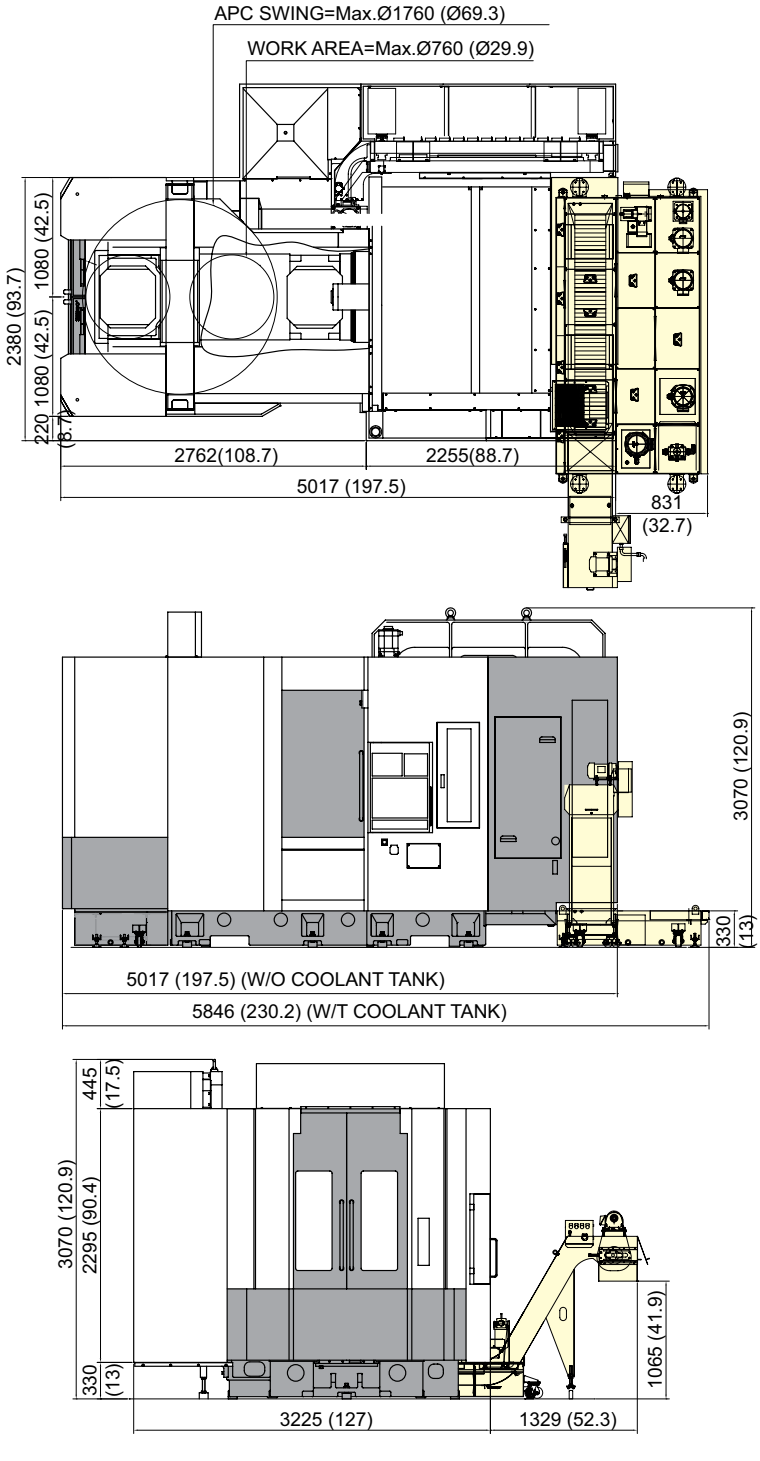
HS5000/50
40Tools



External Dimensions

unit : mm(in)

HS5000/50
60 Tools

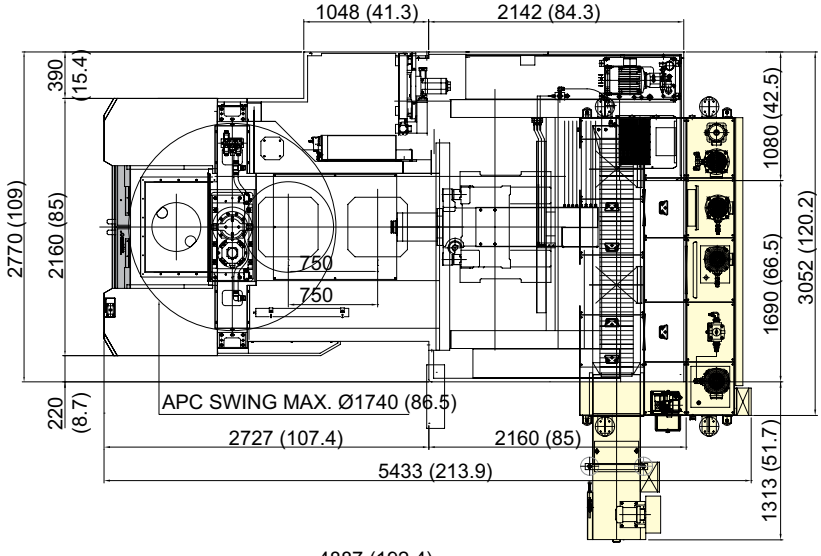


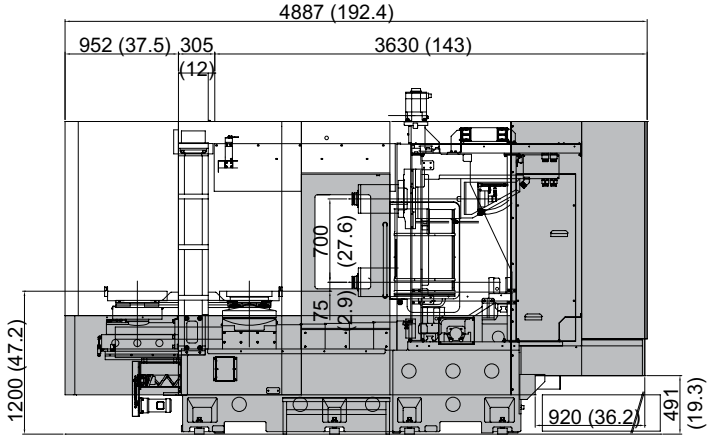
SPECIFICATIONS

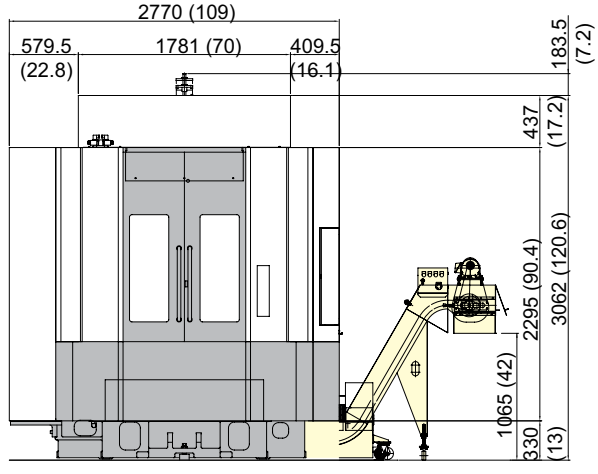
External Dimensions

unit : mm(in)

HS5000M



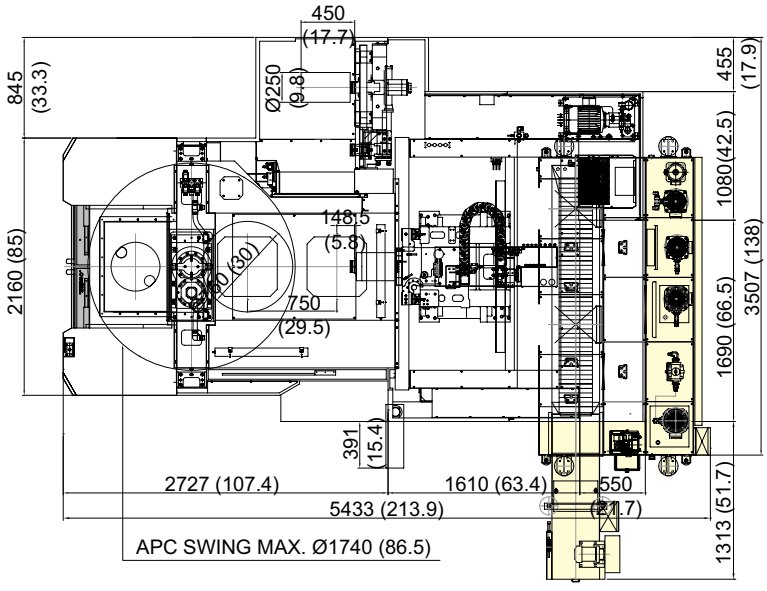


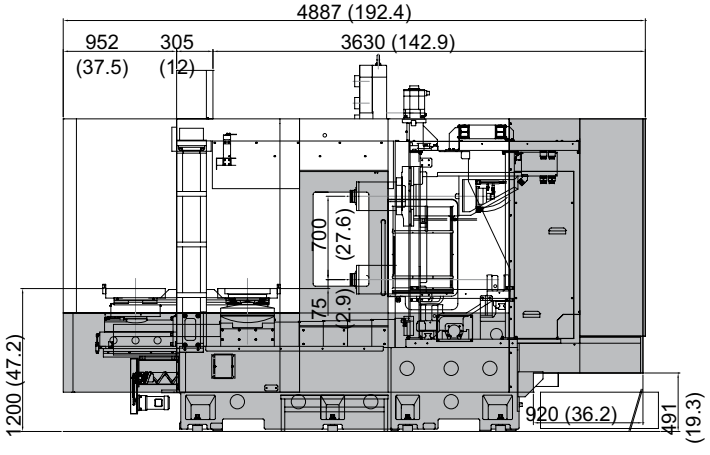


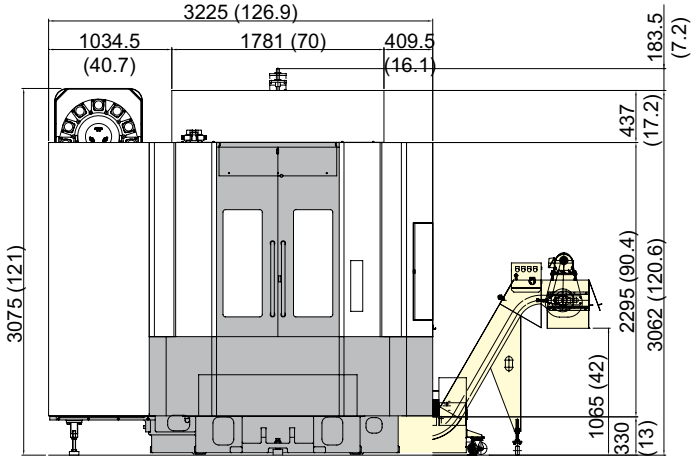
External Dimensions

unit : mm(in)

HS5000M/50





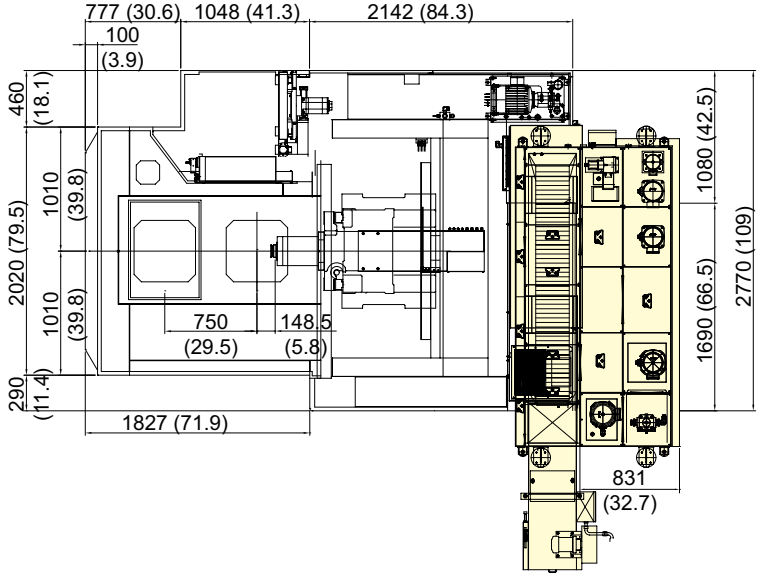


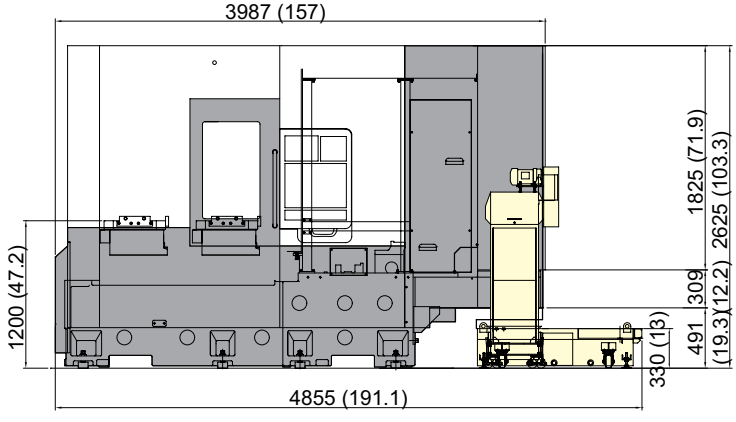
SPECIFICATIONS

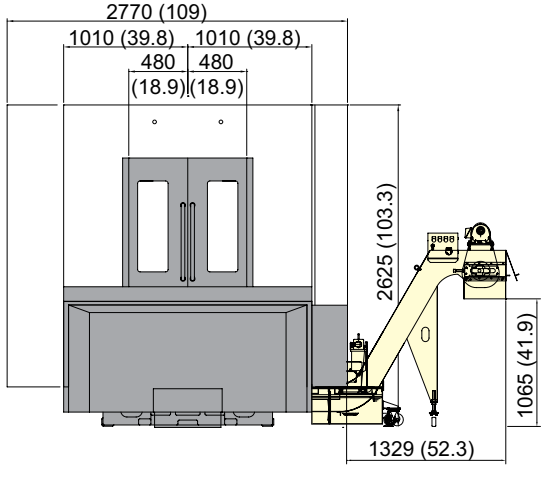
External Dimensions

unit : mm(in)

HS5000M-1P



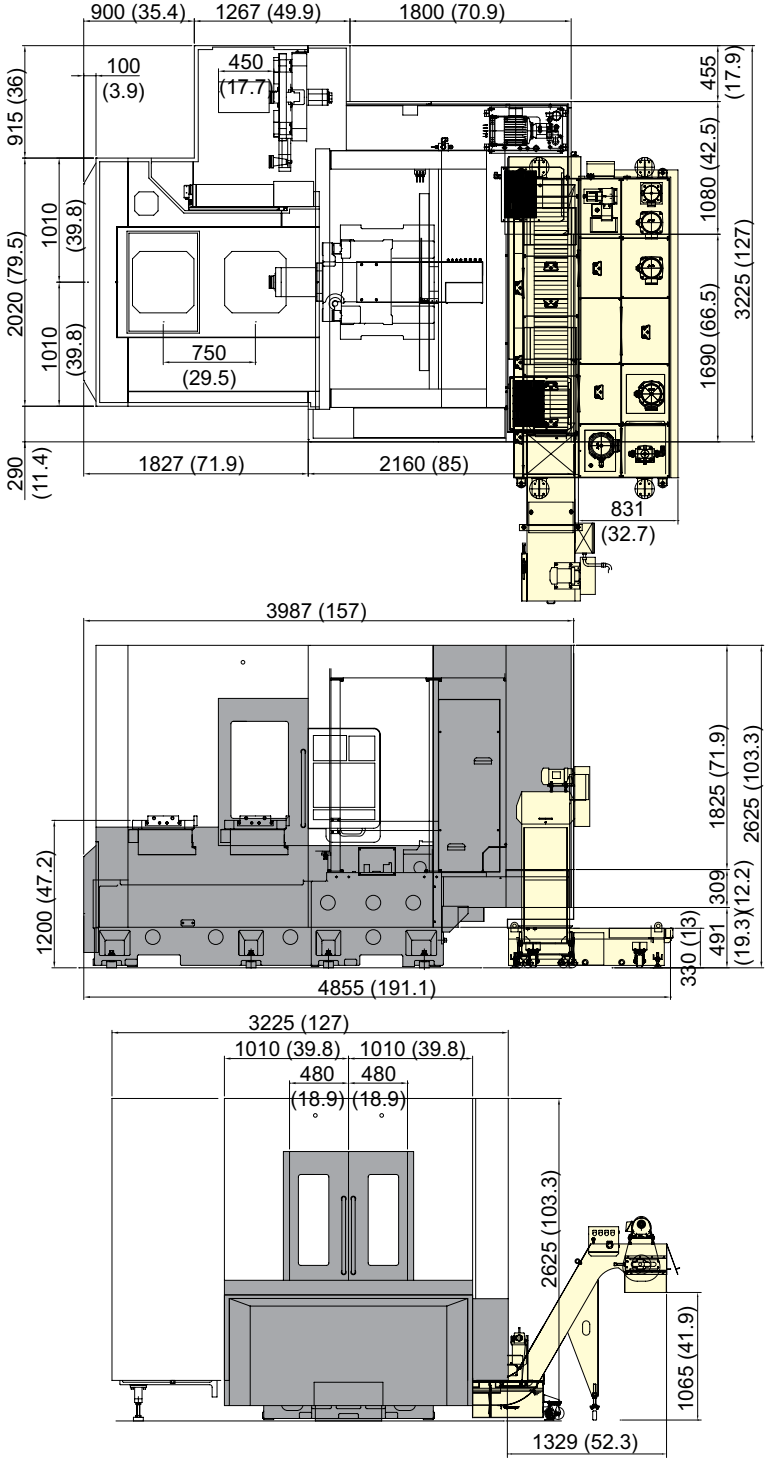




External Dimensions

unit : mm(in)

HS5000M/50-1P

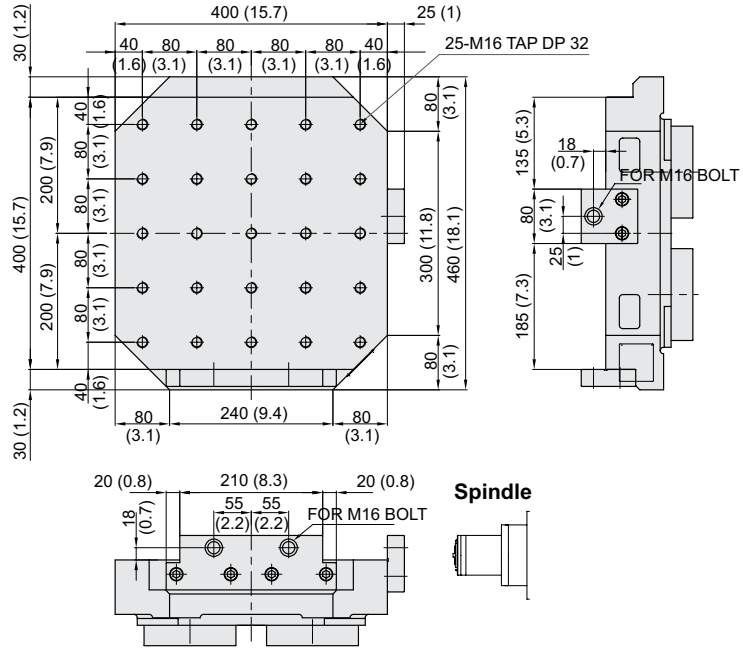


SPECIFICATIONS

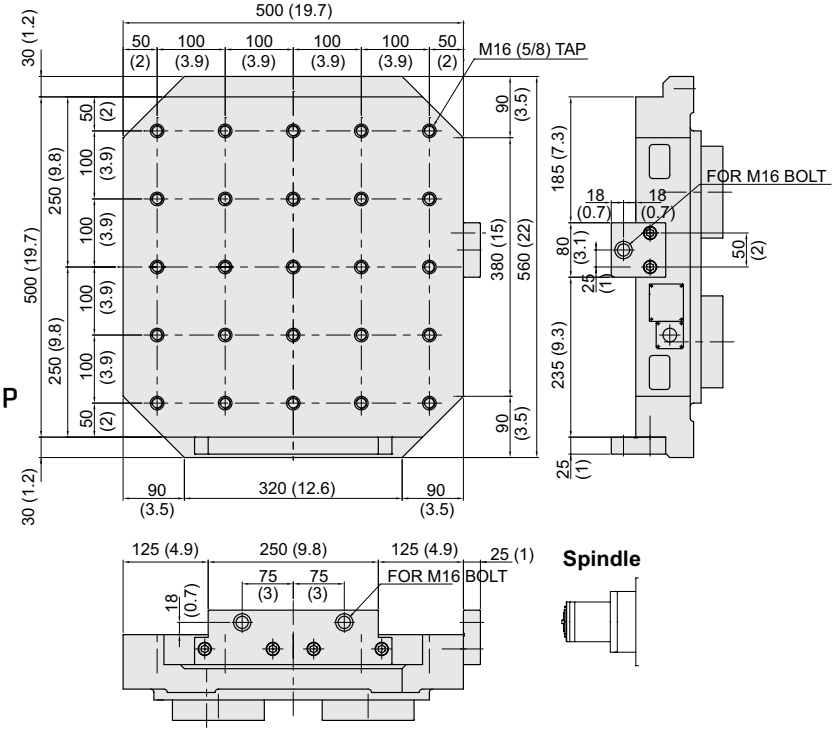
Table Dimensions

unit : mm(in)

HS4000i
HS4000
HS4000M



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



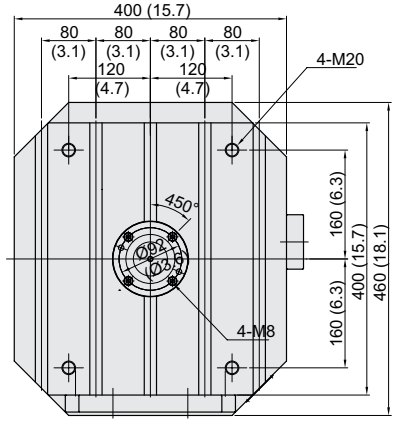
SPECIFICATIONS

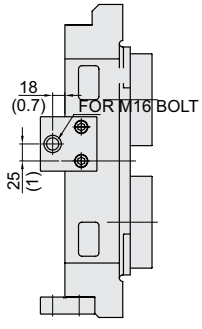
Table Dimensions

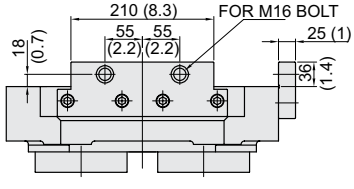
unit : mm(in)

OPTION

HS4000i
HS4000
HS4000M

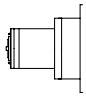


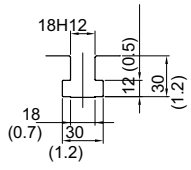




T-SLOT PALLET

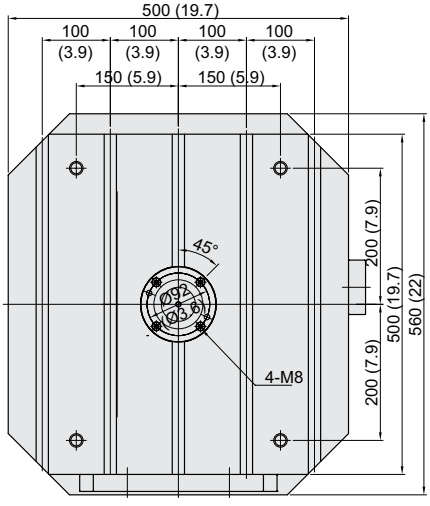
Spindle

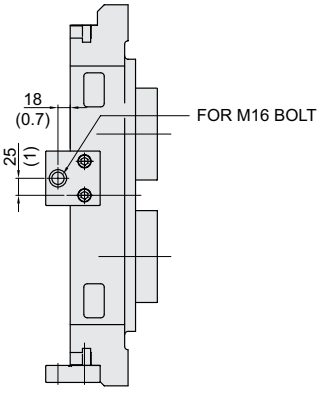


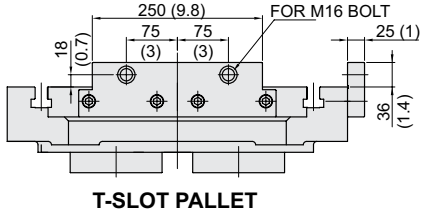


T-Slot Detail

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

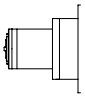


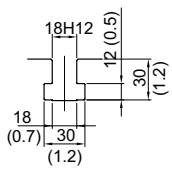




T-SLOT PALLET

Spindle





T-Slot Detail

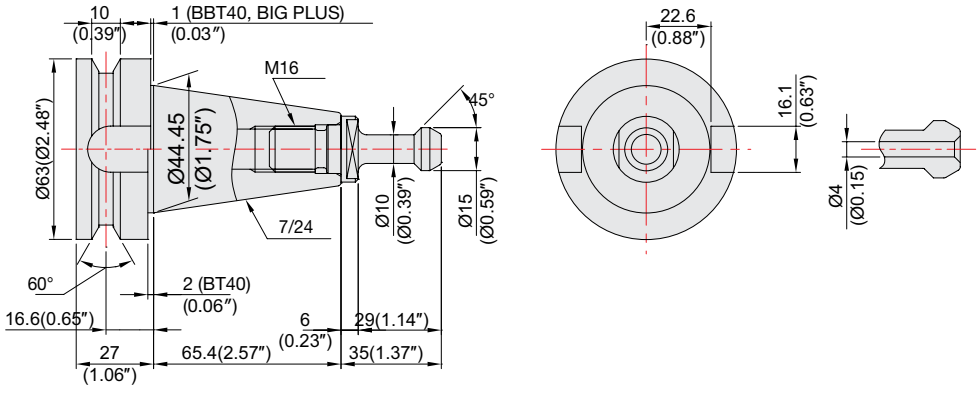
SPECIFICATIONS

Tool Shank

unit : mm(in)

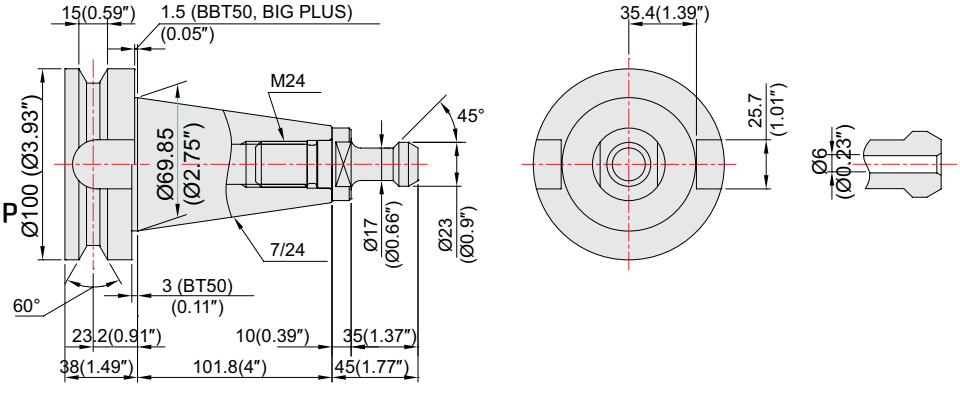
BT40/BBT40, BIG PLUS

HS4000i
HS4000
HS4000M
HS5000i
HS5000
HS5000M-1P



BT50/BBT50, BIG PLUS

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



SPECIFICATIONS

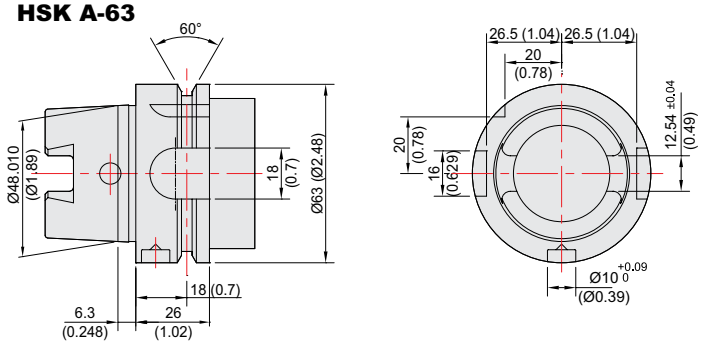
Tool Shank

unit : mm(in)

OPTION

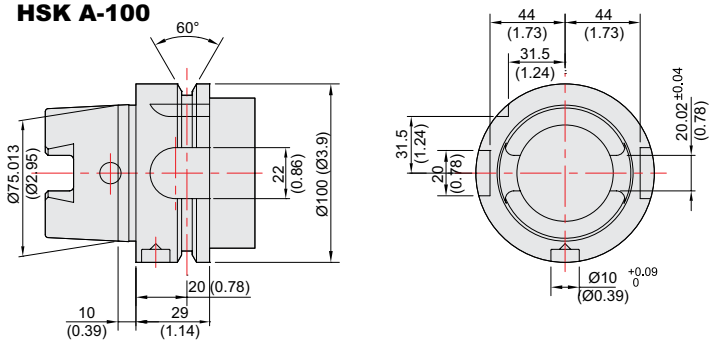
HSK A-63

HS4000i
HS4000
HS4000M
HS5000i
HS5000
HS5000M-1P



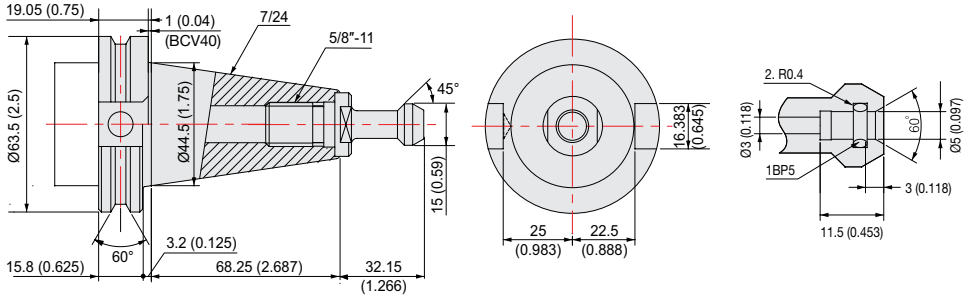
HSK A-100

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



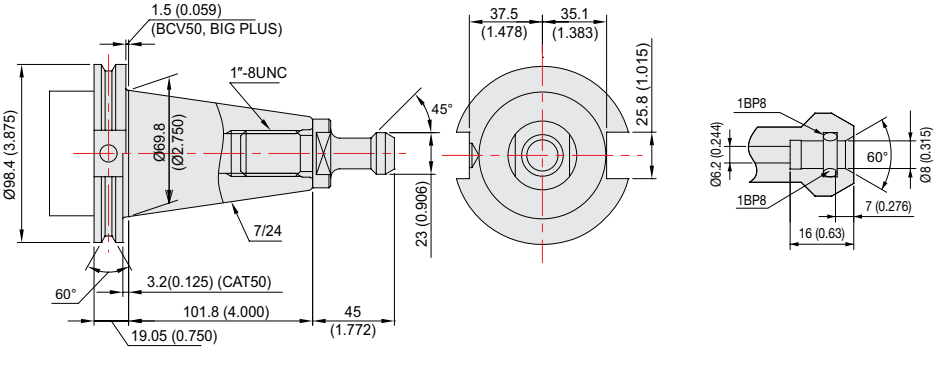
CAT40/BCV40

HS4000i
HS4000
HS4000M
HS5000i
HS5000
HS5000M-1P



CAT50/BCV50

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



SPECIFICATIONS

Specifications

[ ] : Option

ITEM				HS4000i	HS4000	HS4000M
PALLET	Pallet Size		mm(in)	2 – 400×400 (15.7″×15.7″)		
	Maximum Load Capacity		kgf(lbf)	2 – 500 (1,102)		
	Maximum Working Size		mm(in)	Ø620×H840 (Ø24.4″×H33.1″)		
	Min. Indexing Angle		deg	1° [0.001°]		
SPINDLE	Spindle Taper		–	BIG PLUS #40 [HSK-A63]		
	Spindle RPM		r/min	150 ~ 12,000	150 ~ 15,000	
	Spindle Motor Output (Max./Cont.)		kW(HP)	25/22 (33.5/29.5)		
	Spindle Torque (Max./Cont.)		N·m(lbf.ft)	167/95 (123.2/70.1)		
	Spindle Driving Method		–	BUILT IN		
FEED	Travel (X/Y/Z axis)		mm(in)	620/560/650 (24.4″/22″/25.6″)		
	Distance from Column to SP. center		mm(in)	50~610 (2″~24″)		
	Distance from Table Surface to SP		mm(in)	150~800 (5.9″~31.5″)		
	Rapid Traverse Rate (X/Y/Z)		m/min(ipm)	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		EA	40 [60, 80, 120]		
	Tool Shank		–	BBT40 [BCV40] [HSK-A63]		
	Max. Tool Dia. (W.T/W.O)		mm(in)	Ø75/Ø140 (Ø3″/Ø5.5″)		
	Max. Tool Length		mm(in)	350 (13.8″)		
	Max. Tool Weight		kg(lb)	8 (17.6)		
	Tool Selection Method		–	FIXED ADDRESS		
	Tool Change Time	T-T	sec	1.0		
		C-C	sec	3.4	3.3	2.6
APC	No. of Pallet		EA	2		
	APC Type		–	Direct Turn		
	Pallet Change Time		sec	10		7
TANK CAPACITY	Coolant Tank		ℓ (gal)	600 (158.5)		
	Lubricating Tank		ℓ (gal)	3 (0.8)		
	Hyd. Tank Unit		ℓ (gal)	45 (11.9)		
POWER SUPPLY	Air Consumption (0.5MPa)		ℓ/min(gal/min)	750 (198.1)	500 (132.0)	
	Electric Power Supply		KVA	40		
	Thickness of Power Cable		Sq	Over 35	Over 50	
	Voltage		V/Hz	220/60 (200/50*)		
MACHINE	Floor Space (L×W)		mm(in)	2,820×5,051 (111″x198.9″)		2,820×4,801 (111″x189″)
	Height		mm(in)	2,685 (105.7″)		2,835 (111.6″)
	Weight		kg(lb)	10,000 (22,046)		
NC	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	HS5000/50
PALLET	Pallet Size	mm(in)	2 - 500×500 (19.7″×19.7″)		
	Maximum Load Capacity	kgf(lbf)	2 - 500 (1,102)		2 - 800 (1,764)
	Maximum Working Size	mm(in)	Ø780×H980 (Ø30.7″×H38.6″)		Ø780×H980 (Ø30.7″×H38.6″)
	Min. Indexing Angle	deg	1° [0.001°]		
SPINDLE	Spindle Taper	-	BIG PLUS #40 [HSK-A63]		BIG PLUS #50 [HSK-A100]
	Spindle RPM	r/min	12,000 [10,000] [12,000]	15,000	12,000
	Spindle Motor Output (Max./Cont.)	kW(HP)	25/22 (33.5/29.5) [38/25(51/33.5)] [26(34.9)]	25/22 (33.5/29.5)	30/25 (40.2/33.5)
	Spindle Torque (Max./Cont.)	N·m(lbf.ft)	167/95 (123.1/70.1) [266.8/120.5 (196.8/88.9] [113/75 (83.3/55.3)]	167/95 (123.2/70.1)	420/238 (310/175.5)
	Spindle Driving Method	-	BUILT IN		
FEED	Travel (X/Y/Z axis)	mm(in)	850/700/750 (33.5″/27.6″/29.5″)		
	Distance from Column to SP. center	mm(in)	50~750 (2″~29.5″)		75~775 (3″ ~ 30.5″)
	Distance from Table Surface to SP	mm(in)	150 ~ 900 (5.9″ ~ 35.4″)		
	Rapid Traverse Rate (X/Y/Z)	m/min (ipm)	50/50/50 (1,968/1,968/1,968)	60/60/60 (2,362/2,362/2,362)	50/50/50 (1,968/1,968/1,968)
	Slide Type	-	ROLLER GUIDE		
ATC	Number of Tools	EA	40 [60, 80, 120]		40 [60]
	Tool Shank	-	BBT40 [BCV40] [HSK-A63]		BBT50 [BCV50] [HSK-A100]
	Max. Tool Dia. (W.T/W.O)	mm(in)	Ø75/Ø140 (Ø3″/Ø5.5″)		Ø125/Ø250 (Ø4.9″/Ø9.8″)
	Max. Tool Length	mm(in)	450 (17.7″)		
	Max. Tool Weight	kg(lb)	8 (17.6)		25 (55.1)
	Tool Selection Method	-	FIXED ADDRESS		
	Tool Change Time	T-T sec	1.1		2.0
		C-C sec	3.5	3.8	4.8
APC	No. of Pallet	EA	2		
	APC Type	-	Direct Turn		
	Pallet Change Time	sec	12		12
TANK CAPACITY	Coolant Tank	ℓ (gal)	630 (166.4)	700 (184.9)	630 (166.4)
	Lubricating Tank	ℓ (gal)	3 (0.8)		
	Hyd. Tank Unit	ℓ (gal)	45 (11.9)		
POWER SUPPLY	Air Consumption (0.5MPa)	ℓ/min(gal/min)	750 (198.1)		
	Electric Power Supply	KVA	40		
	Thickness of Power Cable	Sq	Over 35	Over 50	
	Voltage	V/Hz	220/60 (200/50*)		
MACHINE	Floor Space (L×W)	mm(in)	3,130×5,338 (123.2″×210.2″)		3,225×5,605 (127″×220.6″)
	Height	mm(in)	2,825 (111.2″)		3,077 (121.1″)
	Weight	kg(lb)	15,000 (33,069)		17,000 (37,478)
NC	Controller	-	F 32i-B [S 840D sl]	FANUC 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.

SPECIFICATIONS

Specifications

[ ] : Option

ITEM				HS5000M	HS5000M/50
PALLET	Pallet Size		mm(in)	2-500×500 (19.7″×19.7″)	
	Maximum Load Capacity		kgf(lbf)	2-800 (1,764)	
	Maximum Working Size		mm(in)	Ø780×H980 (Ø30.7″×H38.6″)	
	Min. Indexing Angle		deg	1° [0.001°]	
SPINDLE	Spindle Taper		-	BIG PLUS #40 [HSK-A63]	BIG PLUS #50 [12K : HSK-A100]
	Spindle RPM		r/min	15,000	12,000 [6,000]
	Spindle Motor Output (Max./Cont.)		kW(HP)	37/22 (49.6/29.5)	45/25 (60.3/33.5) [45/25 (60.3/33.5)]
	Spindle Torque (Max./Cont.)		N·m(lbf.ft)	250/108 (184.4/79.7)	623/305 (459.5/225) [623/305 (459.5/225)]
	Spindle Driving Method		-	BUILT IN	
FEED	Travel (X/Y/Z axis)		mm(in)	850/700/750 (33.5″/27.6″/29.5″)	
	Distance from Column to SP. center		mm(in)	75~775 (3″ ~ 30.5″)	
	Distance from Table Surface to SP		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		-	ROLLER GUIDE	
ATC	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″)
	Max. Tool Length		mm(in)	450 (17.7″)	
	Max. Tool Weight		kg(lb)	8 (17.6)	25 (55.1)
	Tool Selection Method		-	FIXED ADDRESS	
	Tool Change Time	T-T	sec	1.0	1.8
		C-C	sec	3.1	3.8
APC	No. of Pallet		EA	2	
	APC Type		-	Direct Turn	
	Pallet Change Time		sec	10	
TANK CAPACITY	Coolant Tank		ℓ (gal)	600 (158.5)	
	Lubricating Tank		ℓ (gal)	4.9 (1.3)	
	Hyd. Tank Unit		ℓ (gal)	45 (11.9)	
POWER SUPPLY	Air Consumption (0.5MPa)		ℓ/min(gal/min)	750 (198.1)	
	Electric Power Supply		KVA	60	
	Thickness of Power Cable		Sq	Over 50	
	Voltage		V/Hz	220/60 (200/50*)	
MACHINE	Floor Space (L×W)		mm(in)	3,052×5,433 (120.2″×213.9″)	3,507×5,433 (138″×213.9″)
	Height		mm(in)	3,062 (120.6″)	3,075 (121″)
	Weight		kg(lb)	17,000 (37,479)	17,000 (37,479)
NC	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.

SPECIFICATIONS

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)	
	Maximum Working Size		mm(in)	Ø780×H980 (Ø30.7″×H38.6″)	
	Min. Indexing Angle		deg	1° [0.001°]	
SPINDLE	Spindle Taper		-	BIG PLUS #40 [HSK-A63]	BIG PLUS #50 [HSK-A100]
	Spindle RPM		r/min	15,000	12,000 [6,000]
	Spindle Motor Output (Max./Cont.)		kW(HP)	37/22 (49.6/29.5)	45/25 (60.3/33.5)
	Spindle Torque (Max./Cont.)		N·m(lbf.ft)	250/108 (184.4/79.7)	623/305 (459.5/225)
	Spindle Driving Method		-	BUILT IN	
FEED	Travel (X/Y/Z axis)		mm(in)	850/700/750 (33.5″/27.6″/29.5″)	
	Distance from Column to SP. center		mm(in)	75~775 (3″ ~ 30.5″)	
	Distance from Table Surface to SP		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		-	ROLLER GUIDE	
ATC	Number of Tools		EA	40 [60, 80, 120]	40 [60]
	Tool Shank		-	BBT40 [BCV40] [HSK-A63]	BBT50 [BCV50] [HSK-A100]
	Max. Tool Dia. (W.T/W.O)		mm(in)	Ø75/Ø140 (Ø3″/Ø5.5″)	Ø125/Ø250(Ø4.9″/Ø9.8″)
	Max. Tool Length		mm(in)	450 (17.7″)	
	Max. Tool Weight		kg(lb)	8 (17.6)	25 (55.1)
	Tool Selection Method		-	FIXED ADDRESS	
	Tool Change Time	T-T	sec	1.0	1.8
		C-C	sec	3.1	3.8
APC	No. of Pallet		EA	1	
	APC Type		-	-	
	Pallet Change Time		sec	-	
TANK CAPACITY	Coolant Tank		ℓ (gal)	600 (158.5)	
	Lubricating Tank		ℓ (gal)	4.9 (1.3)	
	Hyd. Tank Unit		ℓ (gal)	45 (11.9)	
POWER SUPPLY	Air Consumption (0.5MPa)		ℓ/min(gal/min)	750 (198.1)	
	Electric Power Supply		KVA	60	
	Thickness of Power Cable		Sq	Over 50	
	Voltage		V/Hz	220/60 (200/50*)	
MACHINE	Floor Space (L×W)		mm(in)	3,052×4,533 (120″×178.5″)	3,225x3,987 (127″×157″)
	Height		mm(in)	2,625 (103.3″)	3,077 (121″)
	Weight		kg(lb)	15,000 (33,069)	15,000 (33,069)
NC	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 axes : 0.001 mm (0.0001 inch)
	B axes : 0.001 deg
Least input increment	X, Y, Z axes : 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 axes Machine lock, Stroek check before move
Single block	
Search function	Program Number / Sequence Number
Interpolation functions	
Nano interpolation	
Positioning	G00
Linear interpolation	G01
Cylinderical 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/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
Cylinderical interpolation	G07.1
One-way positioning	G60
Stored stroke check 2, 3	
Inverse-time feed	G93
Scaling	G50, G51
Manual guide i	Conversational auto program
Handle interrupt	
Manual handle feed	2/3 units
Additional custom macro variables	#100~#199, #500~#999
	#100~#199, #500~#999, #98000~#98499
Retraction for rigid tapping	
Tool management function	
Tool offset number	Max. 400 pair
Program storage capacity	512KB ~ 2MB
Program registration number	Max. 1000 ea
AICC II	200 block
	400 block ☆

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

CONTROLLER

FANUC 31i-B (HS4000 | H4000M | H5000M Series)

[ ] : Option ☆ Needed technical consultation

Controlled axis / Display / Accuracy compensation	
Control axes	3 axes (X, Y, Z) 4 axes (X, Y, Z, B)
Simultaneously controlled axes	3 axes [Max. 4 axes]
Least setting Unit	X, Y, Z axes : 0.001 mm (0.0001 inch)
	B axes : 0.001 deg
Least input increment	X, Y, Z axes : 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 axes Machine lock, Stroek check before move
Single block	
Search function	Program Number / Sequence Number
Interpolation functions	
Nano interpolation	
Positioning	G00
Linear interpolation	G01
Cylinderical 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 axes Input C
Editing function	
Part program storage size	640m (256KB)
No. of registerable programs	500 EA
Program protect	
Background editing	
Extended part program editing	Copy, move and change of NC program
Memory card program edit	
Data input / output & Interface	
I/O interface	RS 232C serial port, CF card, USB memory
	Embedded Ethernet interface
Screen hard copy	
External message	
External key input	
External workpiece number search	
Automatic data backup	
Setting, display and diagnosis	
Self-diagnosis function	
History display	Alarm & Operator message & Operation
Run hour / Parts count display	
Maintenance information	
Actual cutting feedrate display	
Display of spindle speed / T code	
Graphic display	
Operating monitor screen	Spindle / Servo load etc.
Power consumption monitoring	Spindle & Servo
Spindle / Servo setting screen	
Multi language display	Support 20 languages
Display language switching	Selection of 5 optional Languages
LCD Screen Saver	Screen saver
Processing select	Speed/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
Cylinderical interpolation	G07.1
One-way positioning	G60
Stored stroke check 2, 3	
Inverse-time feed	G93
Scaling	G50, G51
Manual guide i	Conversational auto program
Handle interrupt	
Manual handle feed	2/3 units
Additional custom macro variables	#100~#199, #500~#999
	#100~#199, #500~#999, #98000~#98499
Retraction for rigid tapping	
Tool management function	
Tool offset number	Max. 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.
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CONTROLLER

FANUC 31i-A (HS5000 | HS5000/50)

Axis control / Display unit	
Controlled axis	4 axis (X, Y, Z, B)
Simultaneous controllable axis	3 axis (Max. 4 axis)
Least input increment	X, Y, Z axis : 0.001mm (0.0001")
	B axis : 0.001deg
Least command increment	X, Y, Z axis : 0.001mm (0.0001")
	B axis : 0.001deg
Inch / Metric conversion	G20 / G21
Interlock	Each axis / All axis
Machine lock	All axis
Emergency stop	
Stored stroke check 1	Over-travel
Follow-up	
Servo off	
Backlash compensation	+/- 0~9999 pulse (rapid traverse & cutting feed)
Position switch	
Stored pitch error compensation	
LCD/MDI	10.4" color LCD
Operation	
Automatic operation (memory)	
MDI operation	
DNC operation	Need DNC Program
Program restart	
Wrong operation prevention	
Buffer register	
Program check function	Dry run, program check
Single block	
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	0~5,000mm/min (197ipm)
Rapid traverse override	F0,F1,F25%,F50%,F100%
Override cancel	
Rapid traverse bell-shaped acceleration/deceleration	
Program input & Interpolation functions	
AI contour control(AICC)	40 Block
Label Skip	
Control in/out	
Nano Interpolation	Positioning/Linear/Circular (G00/G01/G02/G03)
Exact stop mode/Exact stop	G61 / G09
Dwell	G04, 0~9999.9999 sec
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 / ISO Automatic recognition
Optional block skip	1 ea
Max. programmable dimensions	+/- 9999.9999" (+/- 8 digits)
Program number	O4 / N8
Absolute/incremental command	G90 / G91
Decimal point input	
Plane selection	G17, G18, G19
Work coordinate preset	G52~G59
Additional work coordinate system	G54.1 P1~P48 (48 pair)
Manual absolute	"On" fixed
Programmable data input	G10
Sub program call	10 Step
Custom macro	
Circular interpolation	G02, G03
Canned cycle	G73, G74, G76, G80 ~ G89
Optional chamfering/corner R	

Program input & Interpolation functions	
Skip function	G31
Automatic coordinate system setting	
Coordinate system rotation	G68, G69
Programmable mirror image	G50.1, G51.1
Sub / Spindle functions	
Miscellaneous function	M4 digit
Miscellaneous function lock	
Spindle speed command	S5 digits, binary output
Spindle speed override	50% ~ 150% (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 pairs	99 pair
Tool life management	
Data input / Output & Editing functions	
Reader/Puncher interface	RS232C
Memory card input/output	
Embeded Ethernet	100Mbps
Part program storage length	320m (128Kbyte)
Registered programs	250 ea
Memory lock	
Back ground editing	
Extended part program editing	Copy, move, change of NC program
Extenal message	
Setting, display, diagnosis	
Self-diagnosis function	
History display	Alarm & operator message
Help function	
Run hour/Parts count display	
Actual cutting feedrate display	
Graphic display	
Operation monitor screen	
Spindle/Servo setting screen	
Multi-language display	Selection of 5 optional language
LCD Screen Save	Screen saver
Auto Data Backup	

Option	
Sub Axis Control	
Work coordinate Command	G15, G16
Work coordinate Interpolation	G12.1, G13.1
Helical interpolation	G07.1
Single direction positioning	G60
Extenal data input	Tool offset/message/machine zero point shift
FAST ethernet	100 Mbps
Additional work coordinate system	300 pair
Scaling	
FS 15 Tape fornat	
Tool offset number	200 pair
Part program storage length	Max. 1000 ea
High Speed Skip Function	
Data server	1GB
AI contour control(AICC)	200 Block/Select the machining conditions
AI contour control(AICC) 1	600 Block/Select the machining conditions
	Data Server/Automatic shut-off device
AI contour control(AICC) 2	1000 Block/Select the machining conditions
	Data Server/Automatic shut-off device
Manual Guide i	Conversational program
Optional Blockskip	9 ea (Application can be limited)
Handle interupt	
3 axis MPG	
program storage length	640m (256Kbyte) / 5120m (2Mbyte)
Protection of data at 8 levels	
Additional custom micro change	#100 ~ #199, #500 ~ #999

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CONTROLLER

SIEMENS 840D sl (HS5000i)

Control Function	
Max. configuration of axis	Max 5-axes (Max. 31 Axes)
Max. configuration of axis and sp.	Max 5-axes (Max. 31 Axes)
Least Command/input	0.001mm / 0.0001inch
Feed Function	
Feedrate Override	0 - 120%
Rapid Traverse Override	F0, 25, 50, 100%
Tool Function	
Tool Radius Comp.	
Zero Offset (G54, G55, G56, G57 ,G58, G59)	6EA (MAX:100EA)
Programmable Zero Offset	
3D Tool Radius Compensation	
Display	
Language	Chinese Simplified, English, French
	German, Italian, Spanish
CRT/MDI	TFT 10.4" Color
Screen saver	
Travel to fixed stop	
Spindle Function	
Spindle Override	50% - 120%
Spindle Orientation	
Spindle Speed Limitation	
Rigid Tapping	
Manual Operation	
Manual Handle/Jog Feed	
Reposition	
Reference Approach	Ref 1, 2 Approach
Spindle Control	Start, Stop, Rev, Jog, Ort.
Auto Operation	
Single Block	
Feed Hold	
Optional Block Skip	
Machine Lock	
Dry Run	
Simulation	
Diagnosis Function	
Alarm Display	
Spindle Load Meter/RPM Meter (monitor)	
Programming Function	
Part Program Storage Length	3MB(7500M)
	**Additional CF card (512MB) possible
Program Name	23 digits
Subroutine Call	7Level
Absolute/incremental Command	G90 - G91

Programming Input & Interpolation Function	
Scaling / Rotation	
Inch / Metric Conversion	
Conversational Cycle Program	
Block Search	
Macro	
Read/Write System Variable	
BackGround Editing	
Miscellaneous Functions	M - Code
Skip	
Program Stop	M00, M01, M02, M30
Lookahead, Jerk Limitation Feed & Forward Control	
Helical interpolation	
COMPCAD, COMPCURB	
Cylinderical interpolation	
Work Coordiante interpolation	
Interactive Program	
Fanuc Program exe.	
Machining Package Milling	
Protection Function	
Emergency Stop	
Soft Limit / Over Travel	Soft Limit & Hard O.T
Contour Monitoring	
Program Protection	
Automation Support Fun.	
Actual Speed Display (Monitor)	
Tool Life Management	(Time, Parts)
Work Count	(Internal)
Language	
Two Language Switchable	(6EA)
	Chinese Traditional, Czech, Danish,
	Dutch, Finnish, Hungarian, Japanese,
	Korean, Polish, Russian, Swedish,
	Portuguese, Turkish
DATA Transfer	
RS 232C I/F	
Ethernet	Network management software is
	necessary

Option	
PCU50	With Harddisk
USB Memory Stick (Only PCU50)	Only PCU50
Lan Flash PCU20 (Only Flash Card 512MB)	Network management software,
	Spline interpolation is standard
Temperature Compensation	

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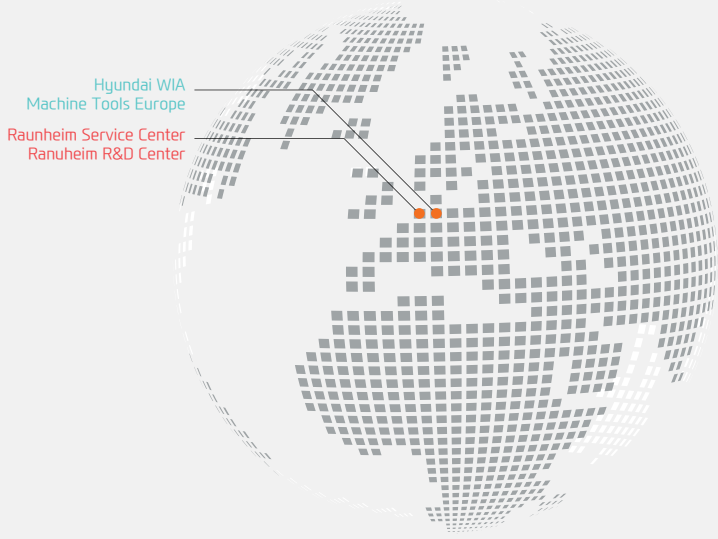
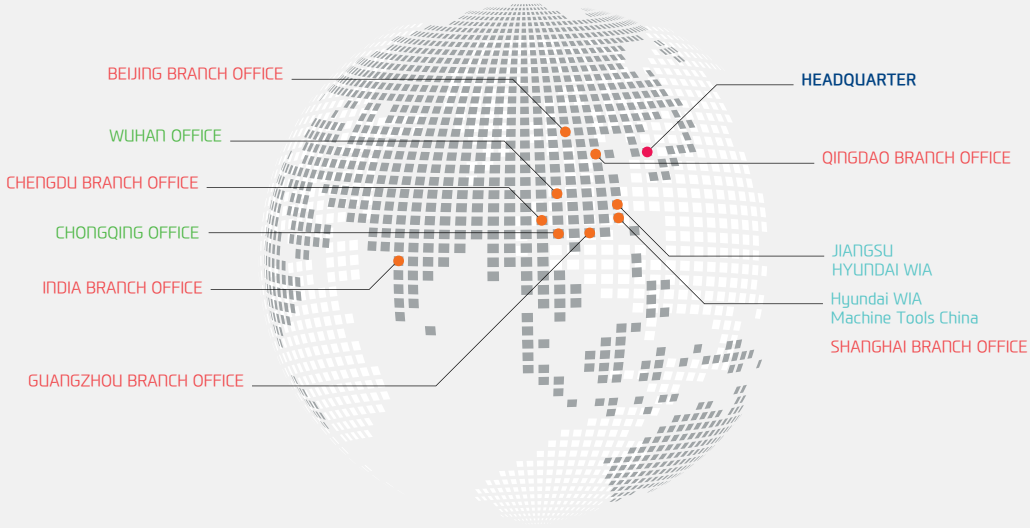
The SIEMENS controller specifications are subject to change based on the policy of company CNC supplying.

GLOBAL NETWORK





GLOBAL NETWORK

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HS4000M Movie

HS5000 Movie

HS5000M/50 Movie

HS4000M 3D Movie

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