

The Art of Productivity



H6 / H7 / H10 / H12 / H13 / H16

High Speed Bridge Type Machining Center

- ◆ Box structure design
- ◆ 3 axes linear guide ways
- ◆ High speed & high precision

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The Embodiment of Technical Expert –
the perfect combination for high-speed and high-accuracy machining



H Series

High Speed Bridge Type
Machining Center

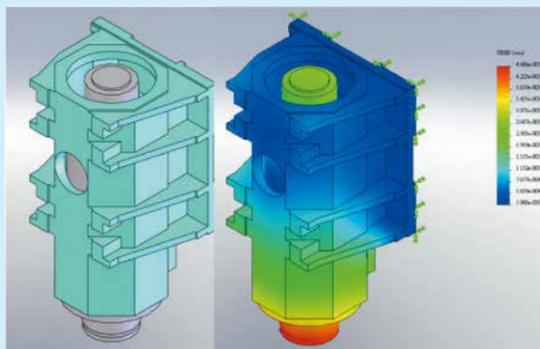


User-Friendly Design

- Fully-enclosed cover makes the operation safe and clean.
- User-friendly & rotatable operation panel makes the operator operate it at every convenient angle.
- Two adjacent doors to be open make the loading and unloading of workpiece easier. Enlarged window panels, of explosion-proof grade, enable the eye observation on the machining clear and safe.
- The mechanism of automatic tool changer can effectively prevent the magazine and tool from being damaged by chips and protect the operators' safety.



H6 new two adjacent doors to be open make the loading and unloading of workpiece easier.



Extraordinary design on Headstock

- The extraordinary design on the headstock make it move in the Z-axis direction steady and stable. The shorter and lighter the headstock is makes the latitudinal movement more rapid, decreases its deflection and keeps it steady between the guides and the spindle.



Linear Guides and Ball-screws

- Each guide-way among 3 axes is equipped with 4~6 blocks, which assures the performance and accuracy of the machine and extends the service hours of the machine.
- The roller-type guideway, combined with high-duty mechanical structure and smooth dynamic movement makes the accuracy higher and friction lower.
- The lubrication for 3-axis ballscrews and linear guideways is controlled by an automatic lubrication system.
- The absolute-encoded motors are used for 3-axis movement, which make the positioning accuracy good.
- Each ballscrew is of C2 grade.



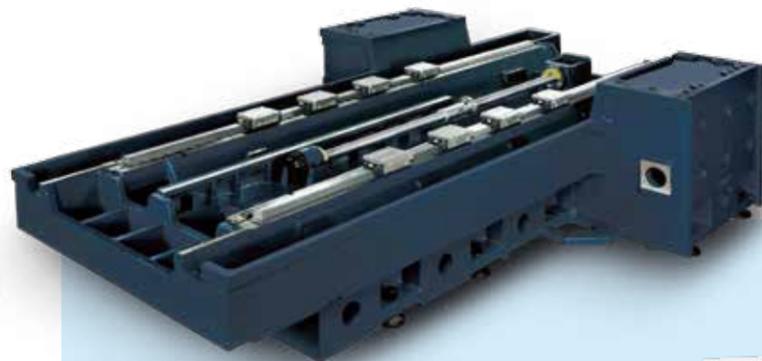
The Embodiment of Technical Expert – the perfect combination for high-speed and high-accuracy machining



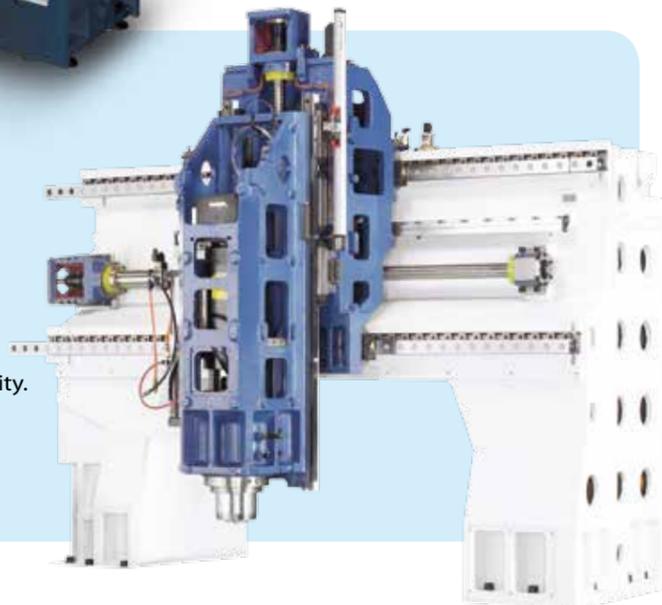
- The design of H-series machine is to focus on the practical machining requirement. The roller-typed linear guideways for 3 axes are to achieve a better response in acceleration and deceleration, to get the highest rapid feed-rate, up to 30 m/min (H12/H13/H16). To go with the high-speed spindle (12Krpm ~ 24Krpm), H-series is widely applied on the industries, such as: 3C, automobile and die & mold.
- The doors with wider open make the loading/unloading of the workpiece more convenient.



- The swivel operation panel allows users to operate at any angle and position.

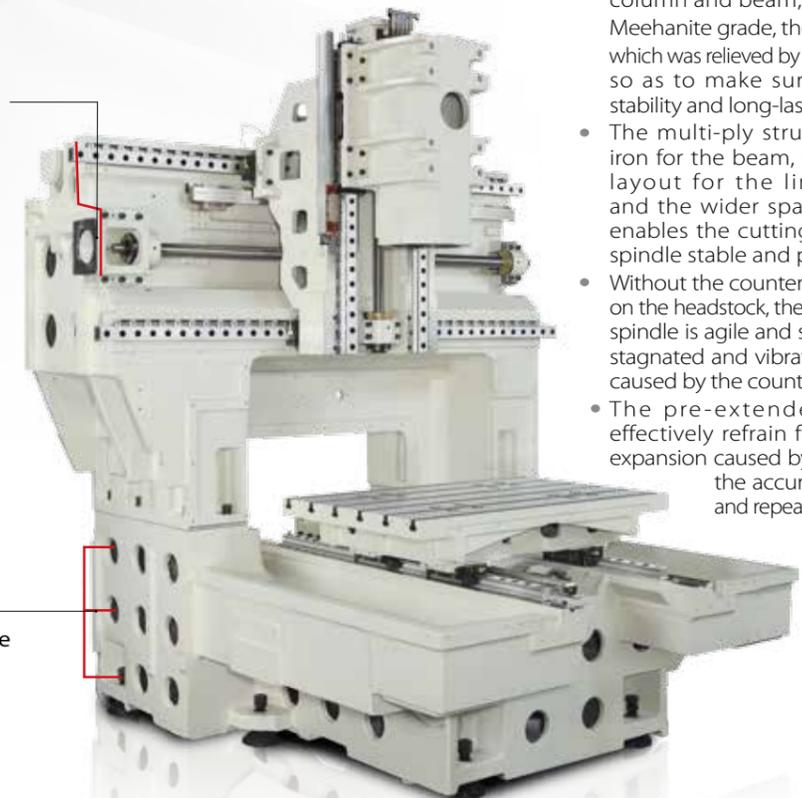


- Special color for customer
- T-shape bed provides the best rigidity and stability.
- Beam & column are made of one piece casting.



High-rigid and high-stable mechanical structure

- Ladder-typed layout for linear guideways
- 3-ply high-rigid mechanical structure of the base



- All the main casting irons, such as: base, column and beam, are of high-class Meehanite grade, the internal stress of which was relieved by the head treatment so as to make sure the structural stability and long-lasting accuracy.
- The multi-ply structure of casting iron for the beam, the ladder-typed layout for the linear guideway and the wider span for the saddle enables the cutting capacity of the spindle stable and powerful.
- Without the counter-balancing design on the headstock, the movement for the spindle is agile and stable without the stagnated and vibrated phenomenon caused by the counterbalance.
- The pre-extended ball-screws effectively refrain from the thermal expansion caused by heat and ensure the accuracy of the position and repeatability.



- H6/H12/H13/H16: 6 guide blocks on Z axis linear guide ways ensure the consistent precision of consecutive operation.
- The quantities of guide blocks on 3 axes are as below:
- The design of tilting bed surface and flushing coolant system on H7/H10 provides perfect performance of chip-removal. (H12/H13/H16 are equipped with chip augers and coolant flushing system.)

Model	H6	H7	H10	H12	H13	H16
X Axis	4	4	4	6	4	8
Y Axis	4	4	4	4	4	4
Z Axis	6	4	4	6	6	6



High Accuracy and High Performance Spindle

ATC / Optional Accessories

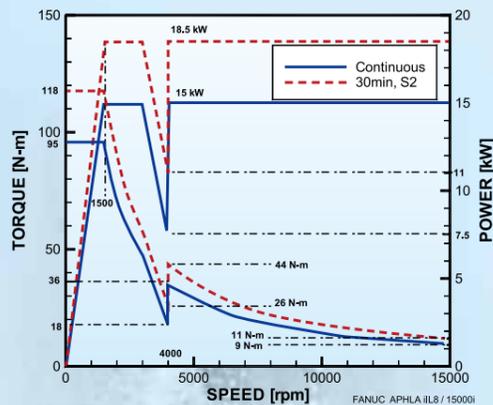


- H7~H16 series provides direct-drive type spindle and built-in type spindle to meet different machining requirements. The spindle speed ranges from 12000rpm~24000rpm.
- Spindles are from professional spindle manufacturers, featuring high accuracy and high performance.
- The built-in thermal compensation system (optional: IBAG spindle only) decreases the effect of thermal variation, assuring the accuracy during operation.
- Spindle cooling system reduces thermal variation and prolongs working life of spindle.



Spindle Power & Torque Chart

- Direct-drive type spindle, 15/18.5 kW, 15000rpm (standard, for FANUC controller)



ATC

Armless type ATC (standard)

- H6 : 20T, HSK-E40



Arm type ATC (standard)

- H7 : 24T, BBT40
- H10~H16 : 30T, BBT40



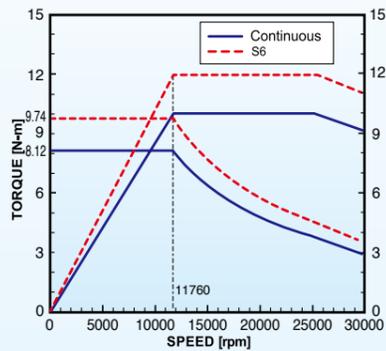
Arm type ATC (optional)

- H12 : 24T, BBT50
- H13/H16 : 50T, BBT40
- H13/H16 : 32/60T, BBT50

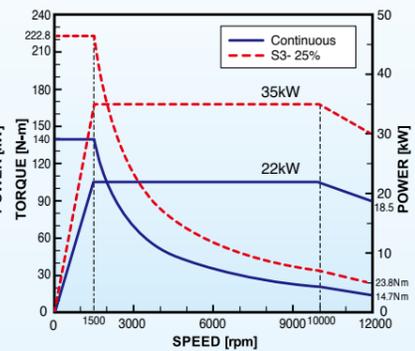


Optional Accessories

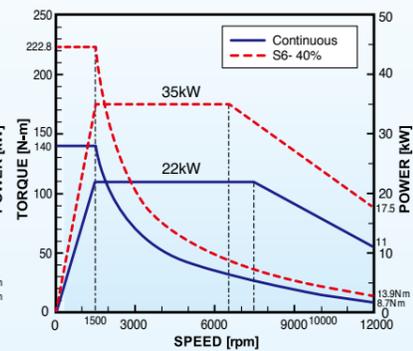
- Build-in type spindle, 10/12 kW, 30000rpm (H6 standard)



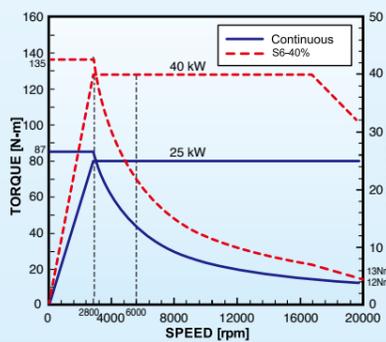
- Direct-drive type spindle, 22/35kW, 12000rpm (optional, for FANUC controller)



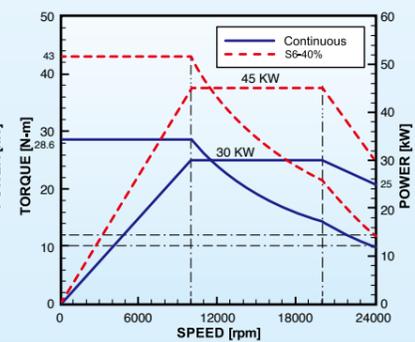
- Direct-drive type spindle, 22/35kW, 12000rpm (optional, for HEIDENHAIN controller)



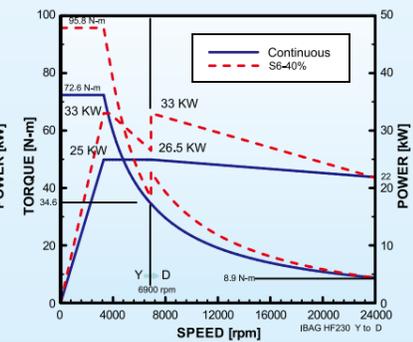
- Build-in type spindle (Kessler), 25/40kW, 20000rpm (optional)



- Build-in type spindle (IBAG), 30/45kW, 24000rpm (optional, H7/H10)



- Build-in type spindle (IBAG), 25/33kW, 24000rpm (optional, H12/H13/H16)



- Oil mist collector



- Linear scales (3 axes)



- Workpiece measurement system



- Tool length measurement system



- Ball screw cooling system



ISO 9001 : 2015 Quality Management

Dimensions



• Ballscrew adjustment



• Ball bar test

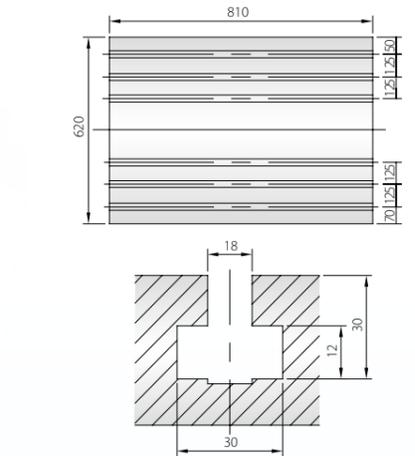
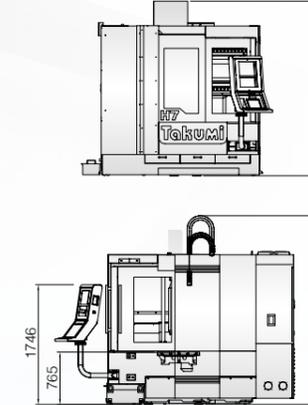
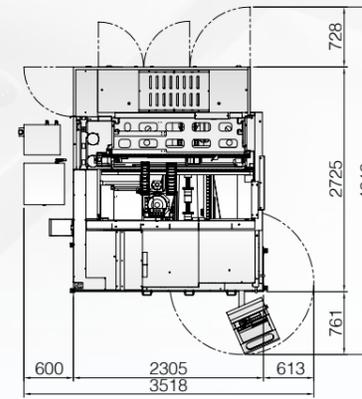


• Laser inspection

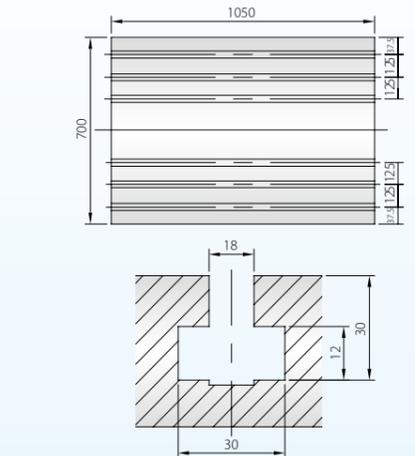
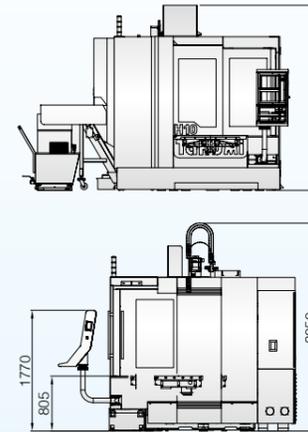
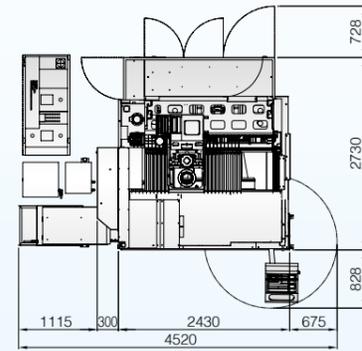


• Spindle thermal compensation

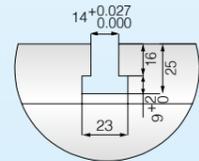
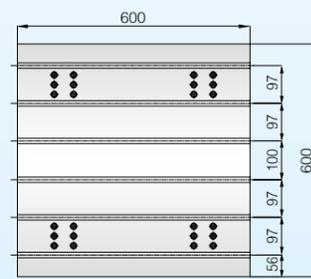
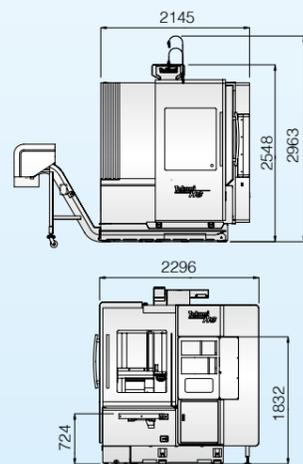
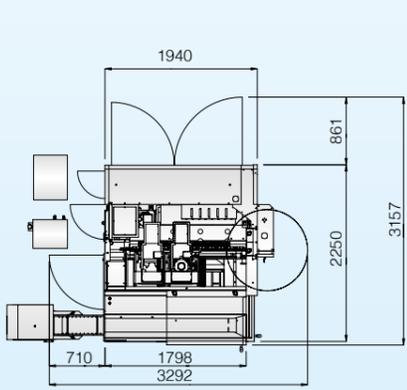
H7 Dimensions Table & T-slot



H10 Dimensions Table & T-slot

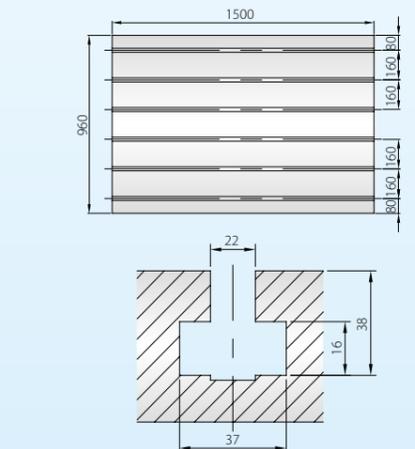
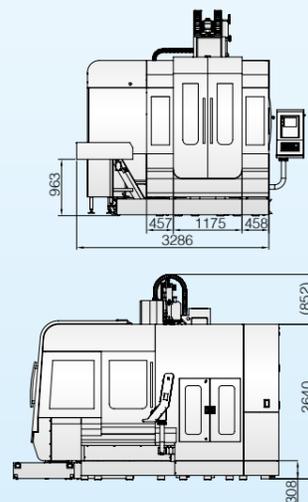
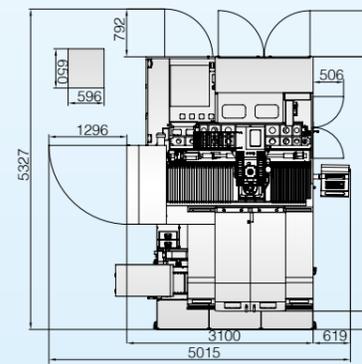


H6 Dimensions Table & T-slot



Unit : mm

H12 Dimensions Table & T-slot



Unit : mm



Dimensions

Specifications



H13 Dimensions

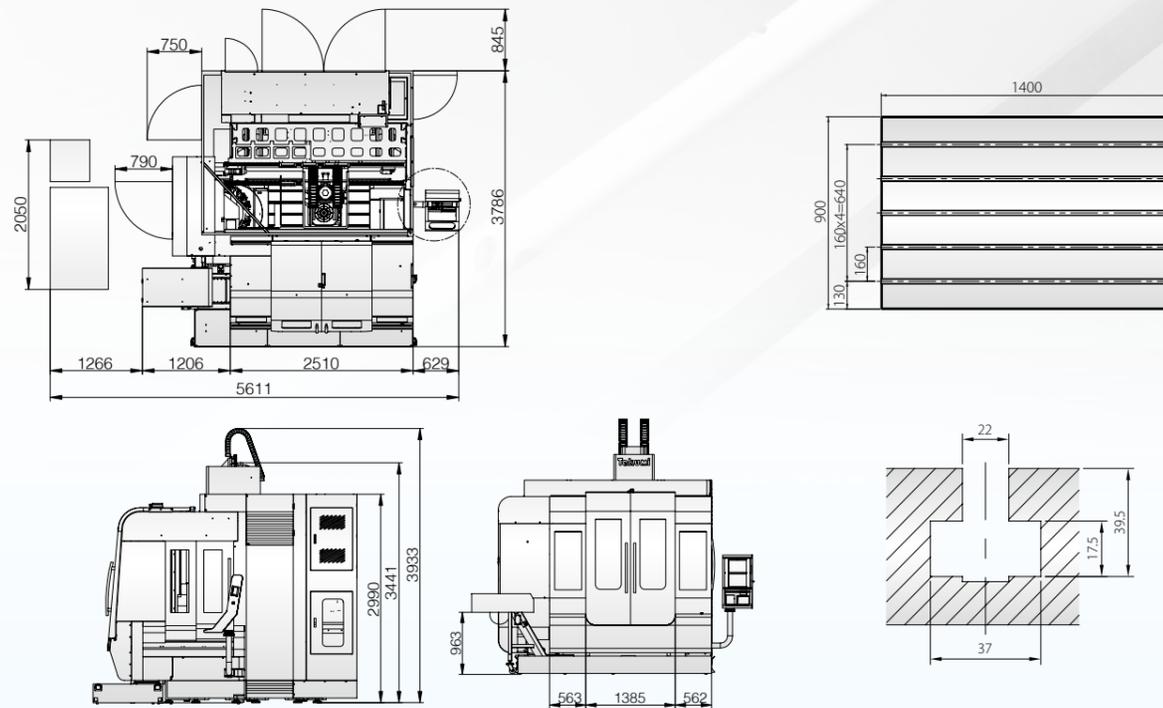


Table & T-slot

H16 Dimensions

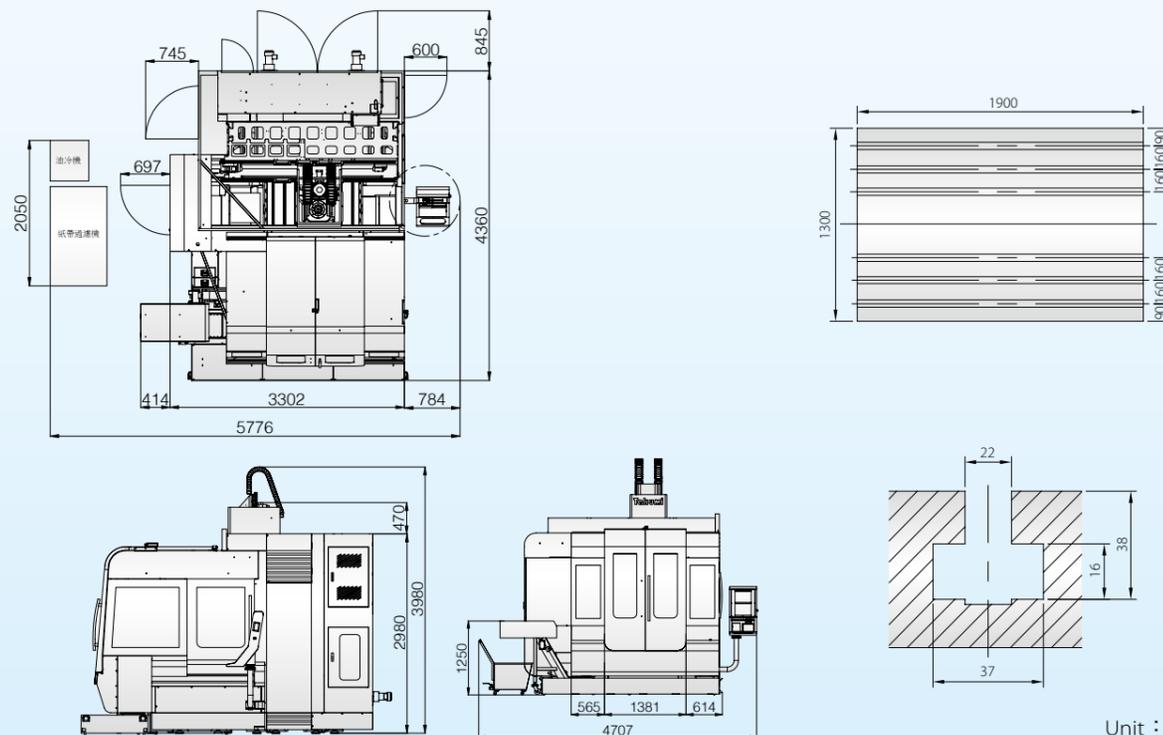


Table & T-slot

Travel	Unit	H6	H7	H10	H12	H13	H16
X axis	mm	550	750	1020	1350	900	1600
Y axis	mm	600	600	700	950	1300	
Z axis	mm	350	500		600	700	
Distance from spindle nose to table	mm	120~470	150~650	180~680	200~800	200~900	
Distance between columns	mm	640	850	1080	1060	1500	1500

Table	Dimension	mm	600x600	810x620	1050x700	1500x960	900x1400	1900x1300
Max. load	kg		500	500	800	2500	3500	6000
T-slot (width x pitch x number)	mm		14x100x6	18x125x5	18x125x6	22x160x6	22x160x5	22x160x8

Spindle	Spindle type	—	Built-in	Direct-drive			
Spindle speed	rpm		30000	15000			
Spindle motor power	kW		10/12 (cont./15 min rated)	15/18.5 (cont./30 min rated)			
Spindle taper	—		HSK-E40	BBT40			

Feed	Rapid traverse (X/Y/Z)	m/min	30/30/30		32/32/32		30/30/30	
Cutting feed rate	mm/min		1~12000		1~20000			
Motor power (X/Y/Z)	kW		1.6/1.6/3.0		4.5/4.5/4.5		7.0/4.0/7.0 5.5/5.5/5.5 14/5.5/5.5	

ATC & magazine	ATC type	—	Armless	Arm			
Magazine capacity	pcs		20	24(#40)	30(#40)		
Max. tool diameter (next pockets empty)	mm		75/150	75/120			
Max. tool length	mm		200	300			
Max. tool weight	kg		1.5	7			
Tool shank	—		HSK-E40	BBT40			
Pull stud	—		DIN69872	MAS 1			

Space & System Requirement	Pneumatic pressure	kgf/cm ²	6					
Electrical power consumption	kVA		20	50	60	75		
Machine net weight	kg		5000	7000	9100	13000	18000	20000
Max. floor space (W x L x H)	mm		2250x2145x2965	3300x4300x2750	3400x4300x3050	4540x3890x3510	3800x4400x4000	4650x4400x4000

Standard Accessories

- H6**
- FANUC 0iMF controller
 - 30000 rpm, HSK-E40, Built-in type spindle
 - 20T, HSK-E40, armless type ATC
- H7~H16**
- FANUC 31iMB controller
 - 15000 rpm, BBT40, Direct-drive type spindle (Oil cooler)
 - 24T, BBT40, arm type ATC (H7)
 - 30T, BBT40, arm type ATC (H10~H16)
 - Spindle air blast
 - Cutting air blast
 - Spindle air blast
 - Cutting coolant system
 - Automatic centralized lubrication system
 - 3-axis absolute encoder motors
 - Full enclosure splash guard
 - Working lamp
 - Indication lamp
 - Washing gun & air gun
 - Oil skimmer
 - Coolant tank & coolant flushing system (H6~H12)
 - Steel belt chip conveyor (H13/H16)
 - Manual pulse generator(MPG)
 - Ethernet & RS-232C interface
 - Air conditioner for electrical cabinet
 - Tool kits
 - Leveling bolts & pads
 - Operation manuals
 - One-year machine warranty (Spindle warranty upon spindle manufacturer)
 - Controller warranty (FANUC:24 months from shipping date)

Optional Accessories

- H7~H16**
- HEIDENHAIN TNC620/TNC640 controller
 - MITSUBISHI M830 controller
 - 12000rpm, BBT50, Direct-driven type spindle (H13/H16)
 - 12000rpm, BBT50, Build-in type spindle (H12)
 - 20000rpm, HSK63A, Build-in type spindle
 - 24000rpm, HSK63A, Build-in type spindle (IBAG)
- ATC & Magazine**
- 24T, #50, Arm type (H12)
 - 50T, #40, Arm type (H13/H16)
 - 32/60T, #50, Arm type (H13/H16)
 - Steel belt type chip conveyor (H6~H12)
 - Scraper type chip conveyor (H6~H16)
 - Coolant through spindle (H7~H16)
 - Spindle thermal compensation system (For IBAG spindle only)
 - Ball screw cooling system (H7~H16)
 - Oil mist device
 - Oil mist collector
 - 3-axis linear scales
 - Workpiece measurement system
 - Tool length measurement system
 - Rotary table (the 4th/5th axis)
 - Transformer
 - CE (CE area only)

* All data listed here are based on machines with standard accessories. Data will be altered according to different options. For detailed information, please refer to local dealers or Takumi sales.
* Takumi reserves the right on the modifications of the machine specifications.

Unit : mm