

 **TAKUMI**

# H Series



High Speed Bridge Type  
Machining Center

H22S/T  
H32S/T  
H42S  
H52S

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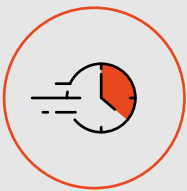
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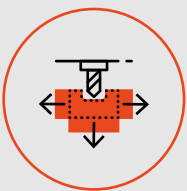
### High rigidity frame structure

The solid one-piece bed, column and cross rail design with no weldments, provides excellent support. The base width provides stability for large table loads. Cross rail saddle carries a constant weight which results in excellent part finish at fast cutting speeds.



### High speed, high accuracy

The H Series meet the requirement of high accuracy and high speed simultaneously thanks to the optimal mechanical structure, high response axial transmission system, low vibration and excellent thermal controlled spindle.



### Largest Y-axis travel in its class

The H series large work envelope, which can machine large workpieces that are difficult to handle by other machines in the same class.

# H Series

The Takumi H Series machining centers are designed for high dynamic and accuracy as demonstrated in both surface finish quality and consistent precision.



# Basic Structure

01



## High rigidity frame structure

High rigidity one-piece bed, column and cross rail providing excellent stability as the casting absorbs the thrust forces of high rapids, while the "ladder" design of the cross rail, enables the spindle to be stable and powerful at high speeds.

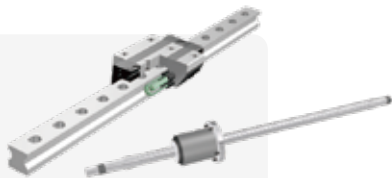
02



## High speed built-in spindle

The high-power built-in spindle limits vibration, noise and power loss during high speeds to achieve superior part finish. The helical cooling channel design minimizes thermal distortion and enables precision over extended cycle times.

03



## High speed, stable axis structure

The H Series are equipped with roller type LM guideways that offer the best combination of high speed and superior rigidity. High precision ballscrews are connected directly to axis motors.

04



## ATC and magazine

H Series offer a wide range of magazine capacity options, from 20 tools even up to 48 tools.

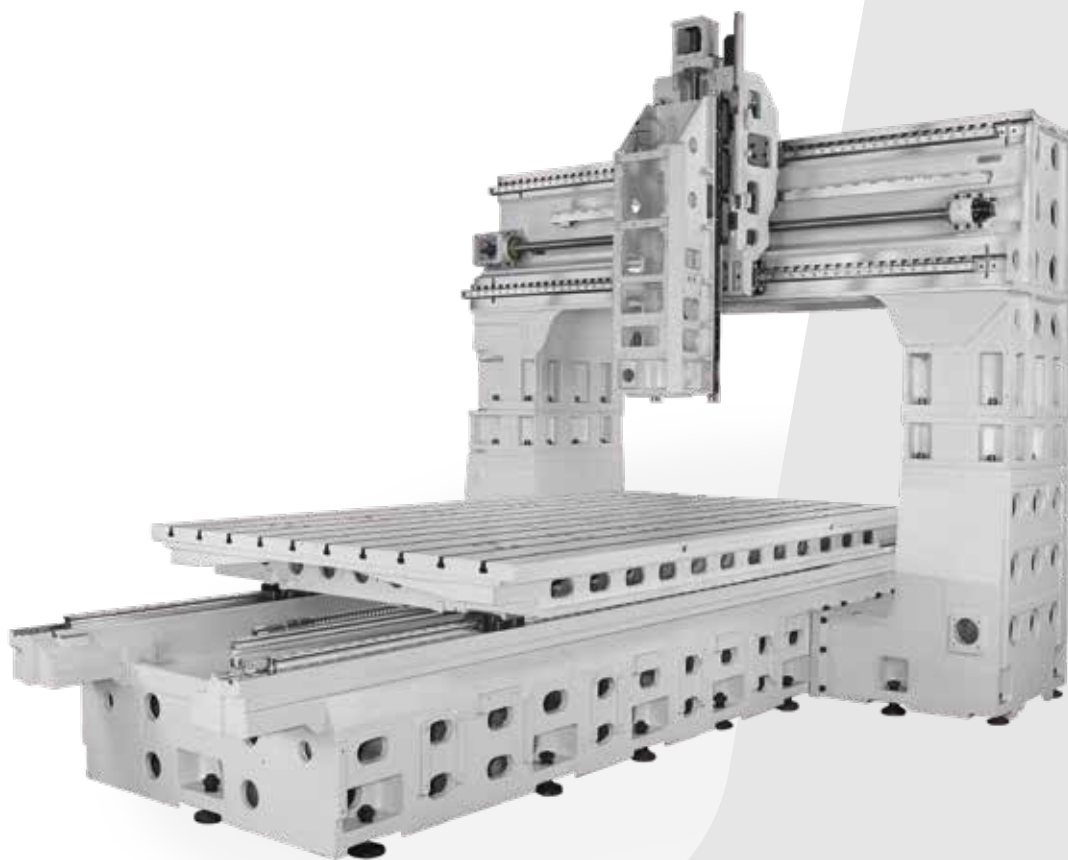
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## User convenience

The H series are built ergonomically for simple operation. Large door opening to the working area gives the operator impressive freedom and handling space.

# H Series



H22S

**20/20/20**

**m/min** Rapid traverse (X/Y/Z-axis)

**2200/1600/800**

**mm** Travel (X/Y/Z-axis)

H22T

**20/16/20**

**m/min** Rapid traverse (X/Y/Z-axis)

**2200/2200/800**

**mm** Travel (X/Y/Z-axis)

H32S

**16/20/20**

**m/min** Rapid traverse (X/Y/Z-axis)

**3200/1600/800**

**mm** Travel (X/Y/Z-axis)

H32T

**16/16/20**

**m/min** Rapid traverse (X/Y/Z-axis)

**3200/2200/800**

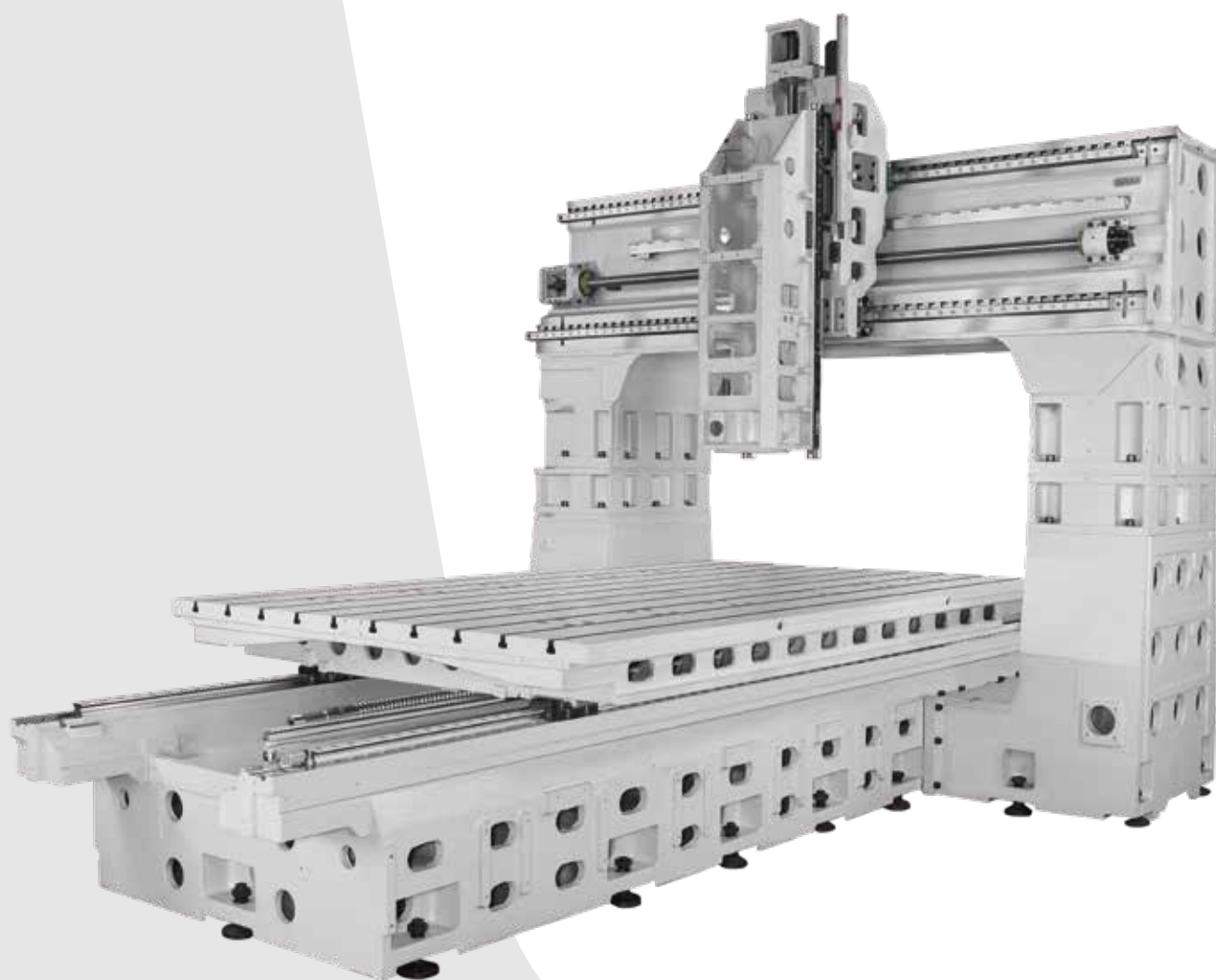
**mm** Travel (X/Y/Z-axis)

Basic Information

- Frame

Machine Information

05 Frame



# 01 **H Series** Frame



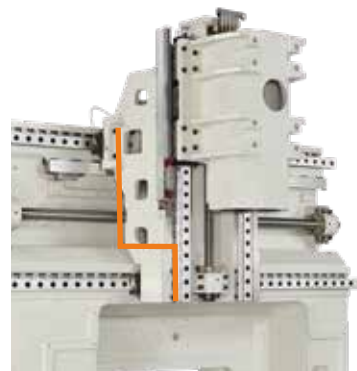
### Robust one-piece casting bed

Integrated bed frame ensures high rigidity, excellent vibration absorption and outstanding surface finishes, especially when compared to separate structures.

The base width provides stability for heavy table loads even when operating at high speed.

### Outstanding ladder structure on the beam

The bridge utilizes a “ladder design” head casting and saddle which increases rigidity, reduces overhang and eliminates head deflection. The Y-axis cross rail saddle carries a constant weight, allowing for faster cutting while maintaining excellent part finish.



### Double column structure

The one-piece design provides increased weight to absorb cutting vibration, and increased rigidity. The dual contact areas with the base eliminates pitch in the Y-axis and reduces the effect of machine leveling changes over time.

### Hand scraping

Accuracy is ensured by hand scraped contact points. Contact surfaces such as column to base components, spindle cartridge to spindle housing, ball screw bearing block seats to bearing retainer and worktable to linear guide trucks and motor seat. Hand scraping results in better mating surfaces of key components and will provide consistent results over a longer period of time.

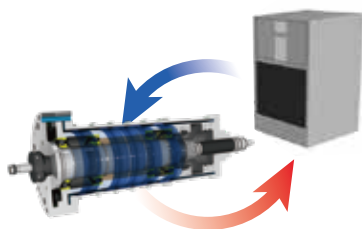


# 02 H Series Spindle



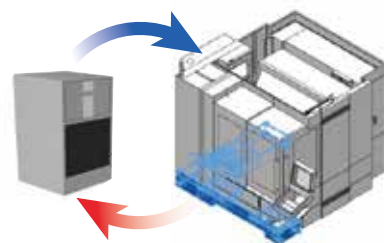
## High Speed Built-in Spindle **option**

The high-power built-in spindle limits vibration, noise and power loss during high speeds to achieve superior part finish. The helical cooling channel design minimizes thermal distortion and enables precision over extended cycle times.



## Stable Spindle Cooling Circulation

Spindle temperature is constantly controlled by oil chiller. Our test result have proven that the temperature of the circulating oil is controlled within  $\pm 0.2^{\circ}\text{C}$ , which minimizes thermal displacement during continuous operation at high speed.



## Cutting Coolant Chiller **option**

The coolant chiller reduces the temperature of the cutting fluid before it is circulated through the machine. The cooler has effectively reduced the deviation and leads to excellent accuracy of the workpieces and extends the life of cutting tool by stabilizing coolant temperature.

# Spindle Power - Torque Curve

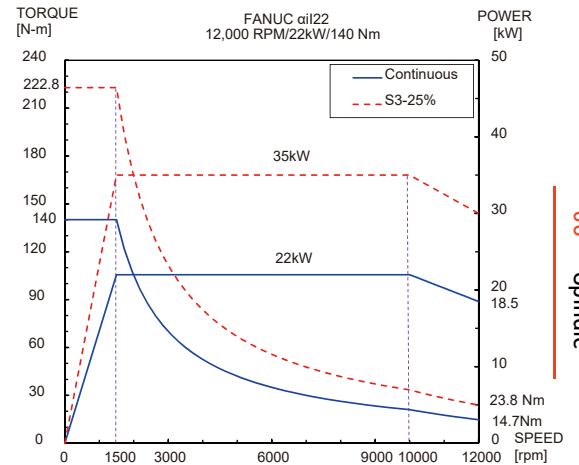
**12,000rpm Direct drive spindle (ST: H22S/T, H32S/T)**

**22/35**

**kW** Power (Cont./S3-25%)

**140/222.8**

**N.m** Torque (Cont./S3-25%)



08 Spindle

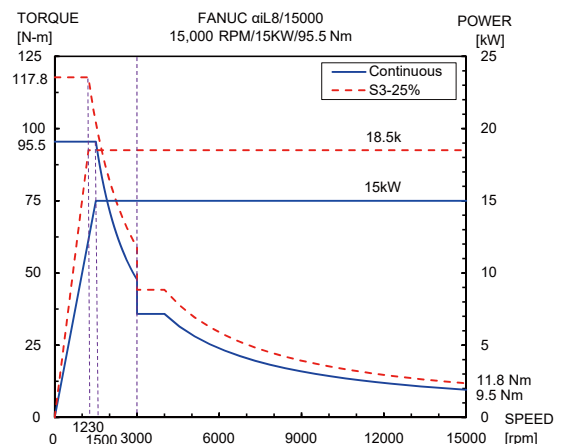
**15,000rpm Direct drive spindle (OPT: H22S/T, H32S/T)**

**15/18.5**

**kW** Power (Cont./S3-25%)

**95.5/117.8**

**N.m** Torque (Cont./S3-25%)



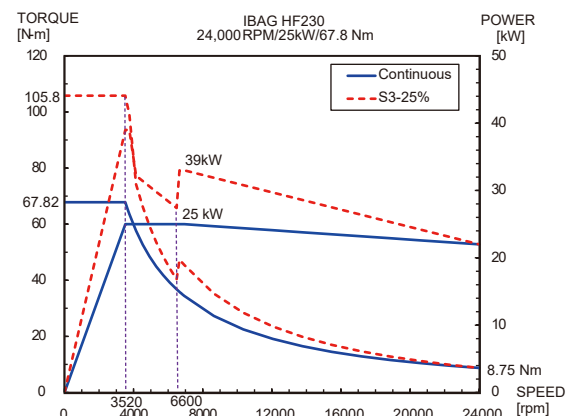
**24,000rpm IBAG Built-in spindle (OPT:H22S/T, H32S/T)**

**25/39**

**kW** Power (Cont./S3-25%)

**67.82/105.8**

**N.m** Torque (Cont./S3-25%)





# 03

## H Series Feed Axis

**H22S**     **20/20/20**  
**m/min** Rapid traverse rate (X/Y/Z-axis)

**H22T**     **20/16/20**  
**m/min** Rapid traverse rate (X/Y/Z-axis)

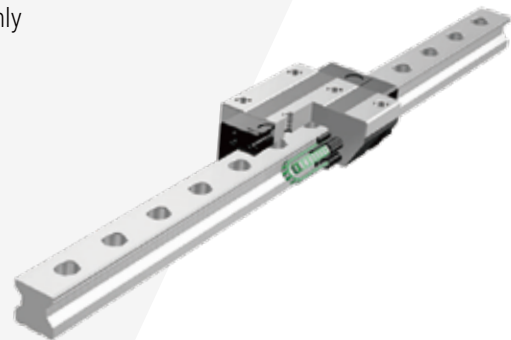
**H32S**     **16/20/20**  
**m/min** Rapid traverse rate (X/Y/Z-axis)

**H32T**     **16/16/20**  
**m/min** Rapid traverse rate (X/Y/Z-axis)



### High Rigidity Rotating Nuts Design

With the rotating nuts design, the screw remains fixed and the nut is rotated to achieve linear motion. This not only allows greater speeds, but also greater strokes.



### Roller Type LM Guide

All axes are equipped with LM roller guideways. These features higher load capacity and greater rigidity even at high acceleration. Additionally, they have greater contact area to support faster feeds, higher rigidity and higher weight bearing capability.

### Larger Ballscrew

H series are equipped with high precision ballscrews, featuring high load capacity while also providing high durability and rigidity.

With  $\phi 63\text{mm}$  larger ballscrews provide rigidity and accuracy during heavy cutting.



### High-Accuracy Linear Scales

Linear scales are optional on all 3 axes. Mounted to the table, cross rail and head they take a direct reading of the true position of the axes. This compensates for thermal growth of the ballscrews mechanical flex and backlash, for improved accuracy and repeatability during the life of the machine.



## ATC

The ATC is mounted outside of the work area, with a door protecting the mechanisms of the tool changer, keeping tools and tool changer from chips and coolant.



## Tool magazine for various types of tools

The tool magazine can store up to 20 tools as standard and up to maximum 48 tools as option depending on the model. Optional servo driven magazine ensures fast and reliable tool indexing.

04

## H Series Automatic Tool Changer

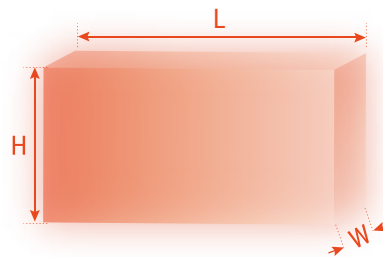
## Maximum workpiece weight

|        |                |
|--------|----------------|
| H22S/T | <b>8000</b> kg |
|--------|----------------|

|        |                |
|--------|----------------|
| H32S/T | <b>8500</b> kg |
|--------|----------------|

## Maximum workpiece size (L x W x H)

|      |                     |
|------|---------------------|
| H22S | 1600 x 2200 x 800mm |
| H22T | 2200 x 2200 x 800mm |
| H32S | 1600 x 3200 x 800mm |
| H32T | 2250 x 3200 x 800mm |



The H series are built ergonomically for simple operation and uncomplicated maintenance.



#### 01 Optimal Ergonomic Design

The operation panel can swivel 120° , and the height can be adjusted to the operator's viewpoint.

#### 02 Large Door Opening

Large door opening to the working area gives the operator impressive freedom and handling space.

H22S/T **2210**  
mm width of the door

H32S/T **3155**  
mm width of the door

## 05 H Series User Convenience

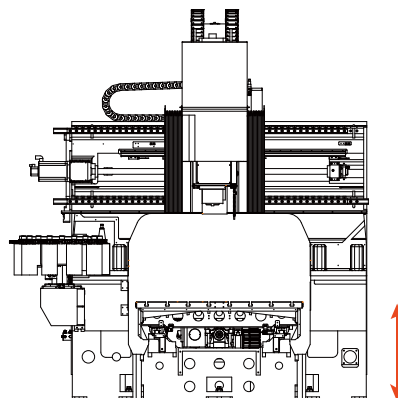
## Ergonomic Design

Large door opening to the working area give the operator impressive freedom and loading and unloading space.



### ▪ Large door opening:

- 2210mm (H22S/T)
- 3155mm (H32S/T)

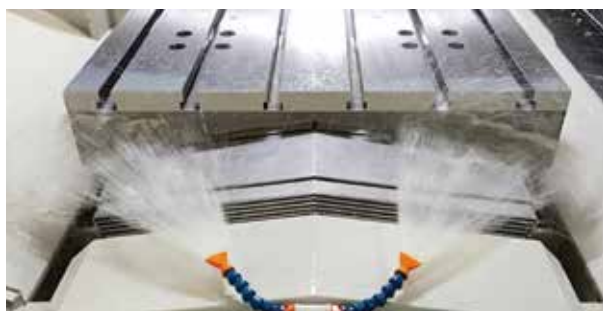


### ▪ Distance from floor surface to table top:

- 970mm (H22S/T, H32S/T)

## Rear Side Flushing Coolant System

The design of the sloping way covers, tilt of the bed casting and the flushing coolant system on H10 provides excellent chip removal.



## Dual Chip Auger

Chip removal efficiency is greatly enhanced thanks to the dual screw type augers.



## Effective Chip Removal Solutions

High pressure coolant and/or air through the spindle and other chip removal solutions help wash away chips from hole drilling, tapping and other machining. By effectively cooling and flushing, tool life can be greatly extended.



Air through spindle



Spindle cooling splash

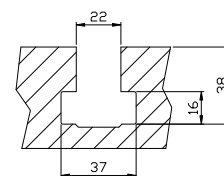
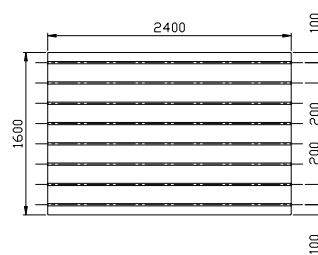
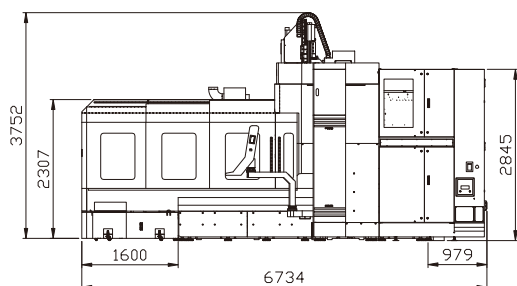


30 bar coolant through spindle

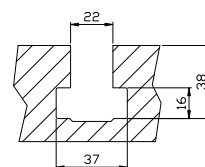
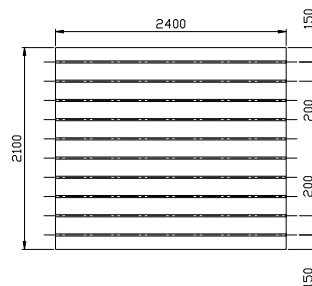
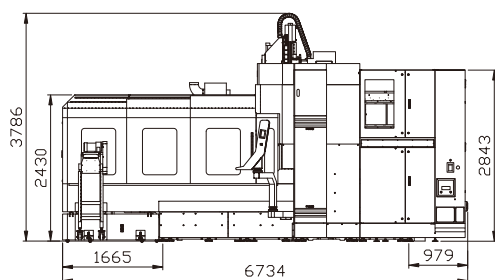


# Table & T-Slot Dimension

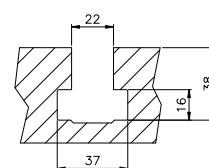
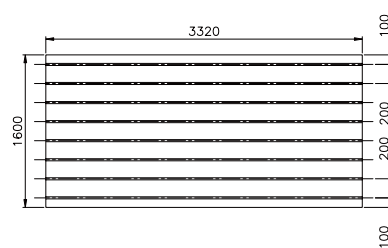
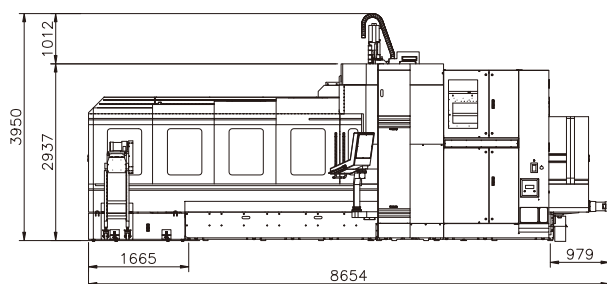
Unit : mm



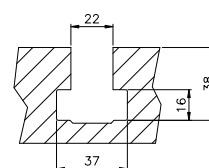
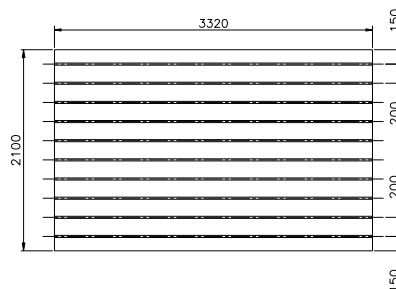
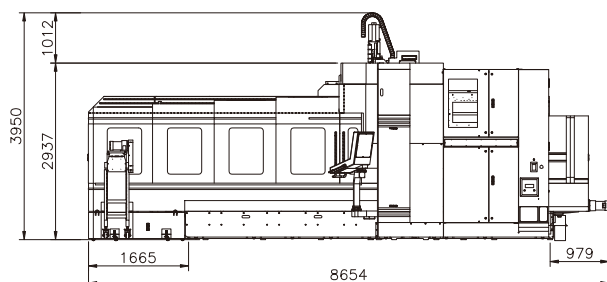
Unit : mm



Unit : mm



Unit : mm



# Machine Specification

| Travel                              | H22S                | H22T                | H32S                | H32T                |
|-------------------------------------|---------------------|---------------------|---------------------|---------------------|
| X/Y/Z-axis                          | 2200 / 1600 / 800mm | 2200 / 2200 / 800mm | 3200 / 1600 / 800mm | 3200 / 2200 / 800mm |
| Distance from spindle nose to table | 150-950mm           |                     |                     |                     |
| Distance between columns            | 1750mm              | 2350mm              | 1750mm              | 2350mm              |

| Table                           |                |                 |                |                 |
|---------------------------------|----------------|-----------------|----------------|-----------------|
| Dimension                       | 2400 x 1600mm  | 2400 x 2100mm   | 3320 x 1600mm  | 3320 x 2100mm   |
| Max. load                       | 8000kg         |                 | 8500kg         |                 |
| T-slot (width x pitch x number) | 22 x 200 x 8mm | 22 x 200 x 10mm | 22 x 200 x 8mm | 22 x 200 x 10mm |

| Spindle              |                            |  |  |  |
|----------------------|----------------------------|--|--|--|
| Spindle type         | Direct drive               |  |  |  |
| Spindle speed        | 12000rpm                   |  |  |  |
| Spindle rated torque | 22 kW/35 kW (Cont./S3-25%) |  |  |  |
| Spindle taper        | BBT50                      |  |  |  |

| Feed                |               |               |               |               |
|---------------------|---------------|---------------|---------------|---------------|
| Rapid feed (X/Y/Z)  | 20/20/20m/min | 20/16/20m/min | 16/20/20m/min | 16/16/20m/min |
| Cutting feed        | 1~12000mm/min |               |               |               |
| Motor power (X/Y/Z) | 9.0/9.0/6.0kW |               |               |               |

| ATC & Magazine                          |           |  |  |  |
|---|-----------|--|--|--|
| ATC type                                | Armless   |  |  |  |
| Number of tools                         | 20pcs     |  |  |  |
| Max. tool diameter (next pockets empty) | 105/150mm |  |  |  |
| Max. tool length                        | 300mm     |  |  |  |
| Max. tool weight                        | 7kg       |  |  |  |
| Tool shank                              | BBT50     |  |  |  |

| Supply                |          |  |  |  |
|-----------------------|----------|--|--|--|
| Air pressure          | 6kgf/cm2 |  |  |  |
| Electric power supply | 75kVA    |  |  |  |

| Net Weight     |         |         |         |         |
|----------------|---------|---------|---------|---------|
| Machine weight | 27000kg | 31000kg | 33000kg | 37000kg |

| Travel                              | H42S               | H52S               |
|-------------------------------------|--------------------|--------------------|
| X/Y/Z-axis                          | 4200 / 1600/ 800mm | 5200 / 1600/ 800mm |
| Distance from spindle nose to table | 150-950mm          |                    |
| Distance between columns            | 1750mm             |                    |

\* The specifications and information may be changed without prior notice.

# Standard & Optional

● : Standard   ○ : Option   ✕ : Non Applicable

| Spindle   |                                 | H22S | H22T | H32S | H32T |
|---|---------------------------------|------|------|------|------|
| 12,000rpm   |                                 | ●    | ●    | ●    | ●    |
| 15,000rpm   |                                 | ○    | ○    | ○    | ○    |
| 24,000rpm   |                                 | ○    | ✕    | ✕    | ✕    |
| ATC   |                                 |      |      |      |      |
| ATC Extention   | 20T                             | ●    | ●    | ●    | ●    |
|   | 30T                             | ○    | ○    | ○    | ○    |
|   | 32T                             | ○    | ○    | ○    | ○    |
|   | 48T                             | ○    | ○    | ○    | ○    |
| Tool Shank Type                                       | BBT40                           | ○    | ○    | ○    | ○    |
|   | BBT50                           | ●    | ●    | ●    | ●    |
|   | HSK-63A                         | ○    | ○    | ○    | ○    |
| Coolant System  |                                 |      |      |      |      |
| Coolant Through Spindle Ready (w/o filter)            |                                 | ○    | ○    | ○    | ○    |
| Coolant Through Spindle                               | 30bar                           | ○    | ○    | ○    | ○    |
|   | 70bar                           | ○    | ○    | ○    | ○    |
|   | 70bar ready (w/o filter system) | ○    | ○    | ○    | ○    |
| Air Through Spindle (w/o CTS)                         |                                 | ○    | ○    | ○    | ○    |
| Cutting Air Blast                                     |                                 | ●    | ●    | ●    | ●    |
| Cutting Coolant Chiller                               |                                 | ○    | ○    | ○    | ○    |
| Chip Disposal   |                                 |      |      |      |      |
| Coolant Tank & Coolant Flushing System                |                                 | ●    | ●    | ●    | ●    |
| Full Chip Enclosure                                   |                                 | ●    | ●    | ●    | ●    |
| Chip Disposal   | Steel Belt Type                 | ●    | ●    | ●    | ●    |
|   | Scraper Type                    | ○    | ○    | ○    | ○    |
| Feed Axis   |                                 |      |      |      |      |
| Linear Scales (X/Y/Z)                                 |                                 | ●    | ●    | ●    | ●    |
| 3-Axis Absolute Encoder Motors                        |                                 | ●    | ●    | ●    | ●    |
| Y/Z-Axis Ballscrew Cooling                            |                                 | ○    | ○    | ○    | ○    |
| Electric Device                                       |                                 |      |      |      |      |
| 3-Color Signal Light                                  |                                 | ●    | ●    | ●    | ●    |
| Working Light   |                                 | ●    | ●    | ●    | ●    |
| Air Conditioner for Electric Cabinet                  |                                 | ●    | ●    | ●    | ●    |
| Measuring Device                                      |                                 |      |      |      |      |
| Workpiece Measurement                                 |                                 | ○    | ○    | ○    | ○    |
| Tool Measurement                                      |                                 | ○    | ○    | ○    | ○    |
| Environment   |                                 |      |      |      |      |
| Oil Skimmer   |                                 | ●    | ●    | ●    | ●    |
| Oil Mist Collector                                    |                                 | ○    | ○    | ○    | ○    |
| Oil Mist Cutting Device                               |                                 | ○    | ○    | ○    | ○    |
| Control   |                                 |      |      |      |      |
| Fanuc 0iMF-Plus 10.4"                                 |                                 | ●    | ●    | ●    | ●    |
| Fanuc 31iMB   |                                 | ○    | ○    | ○    | ○    |
| Heidenhain TNC620/TNC640                              |                                 | ○    | ○    | ○    | ○    |
| Transformer / Stabilizer                              |                                 |      |      |      |      |
| Transformer 75kVA 3P 600V                             |                                 | ○    | ✕    | ○    | ○    |
| Stabilizer 75kVA, 220V or 380V Instead of Transformer |                                 | ○    | ✕    | ○    | ○    |
| Transformer + Stabilizer                              |                                 | ○    | ✕    | ○    | ○    |
| ETC   |                                 |      |      |      |      |
| Leveling Block and Screws                             |                                 | ●    | ●    | ●    | ●    |
| Maintenance Tools                                     |                                 | ●    | ●    | ●    | ●    |
| Manuals   |                                 | ●    | ●    | ●    | ●    |
| Washing Gun & Air Gun                                 |                                 | ●    | ●    | ●    | ●    |
| Manual Pulse Generator                                |                                 | ●    | ●    | ●    | ●    |
| USB / Ethernet / RS-232C Interface                    |                                 | ●    | ●    | ●    | ●    |
| Automatic Centralized Lubrication System              |                                 | ●    | ●    | ●    | ●    |
| 250mm Raiser for Column                               |                                 | ○    | ○    | ○    | ○    |
| CE Certified  |                                 | ○    | ○    | ○    | ○    |

**TAKUMI** When Precision Matters



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