

HORIZONTAL MACHINING CENTER RANGE



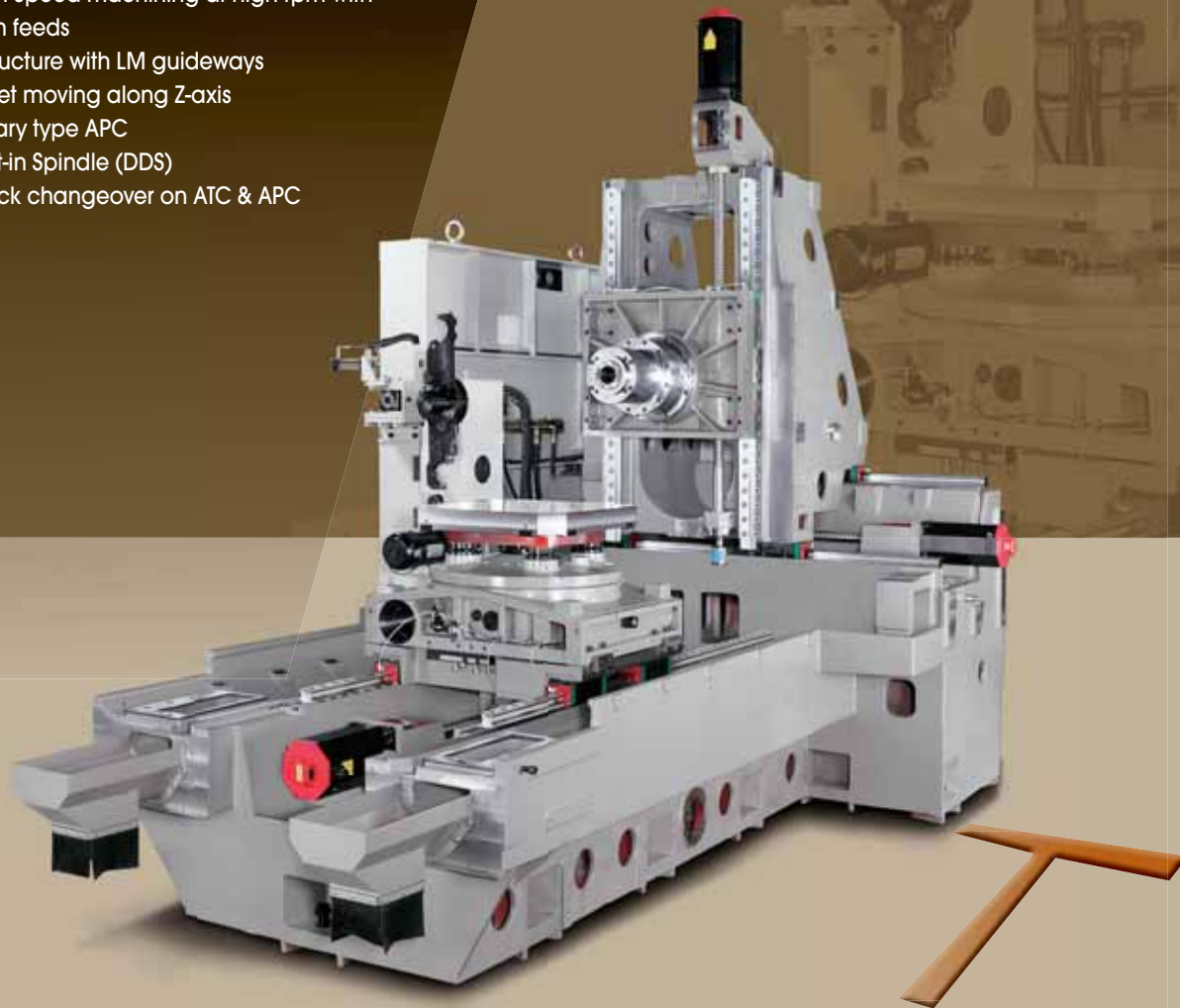
*The Vcenter-H Range Profile*

*Increased productivity with  
high speed or heavy duty  
machining*



# High Speed (HS) Series

High Speed machining at high rpm with high feeds  
T structure with LM guideways  
Pallet moving along Z-axis  
Rotary type APC  
Built-in Spindle (DDS)  
Quick changeover on ATC & APC



## **Vcenter-H400**

- 48/48/48 m/min  
(1890/1890/1890 IPM)
- BBT-40 (BCV-40) tooling
- 60 tools
- 15000 rpm / 22 kW (29.5 HP)



## **Vcenter-H500HS**

- 30/30/24 m/min  
(1181/1181/1181 IPM)
- BT-40 (CT-40) tooling
- 40 tools
- 15000 rpm / 22 kW (29.5 HP)



## **Vcenter-H500**

- 24/24/24 m/min  
(945/945/945 IPM)
- BT-50 (CT-50) tooling
- 40 tools
- 6000 rpm / 15 kW (20 HP)

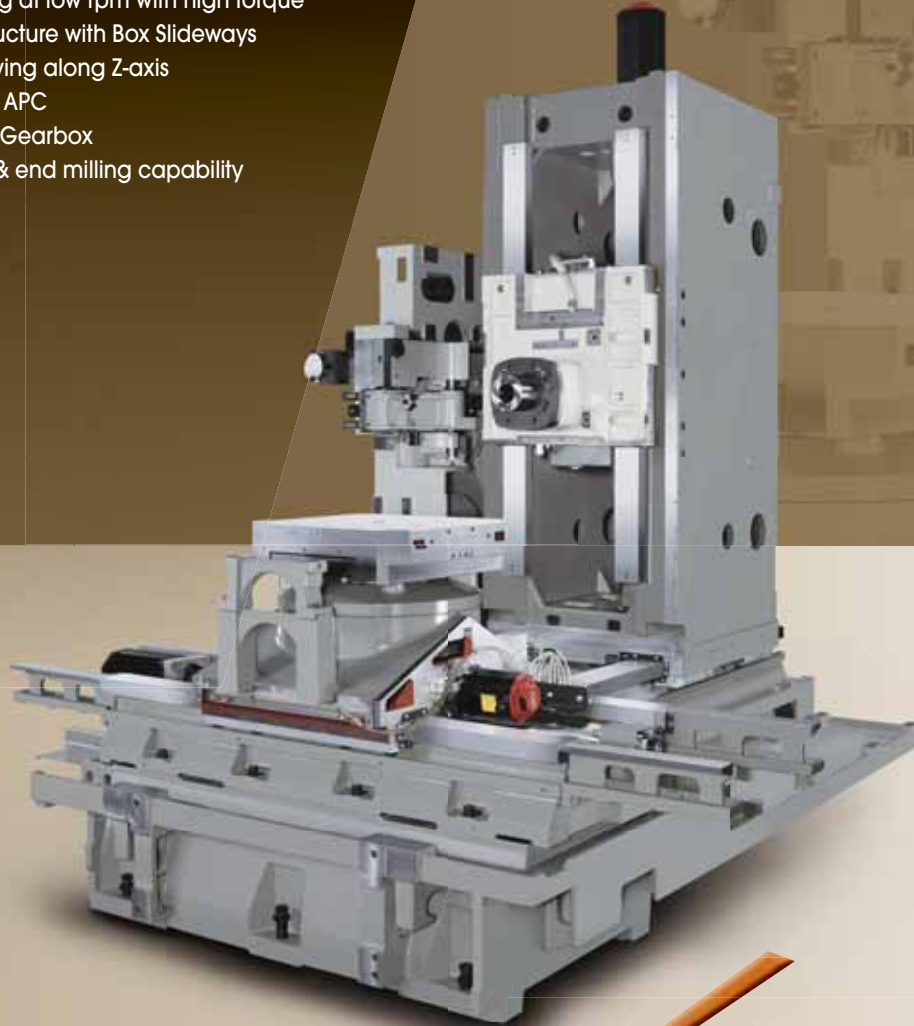
## **Vcenter-H630HS**

- 48/48/48 m/min  
(1890/1890/1890 IPM)
- BT-50 (CT-50) tooling
- 60 tools
- 10000 rpm / 30 kW (40 HP)

# Heavy Duty (HD) Series



Heavy cutting at low rpm with high torque  
Reverse T structure with Box Slideways  
Column moving along Z-axis  
Parallel type APC  
Spindle with Gearbox  
Heavy face & end milling capability



## **Vcenter-H630HD**

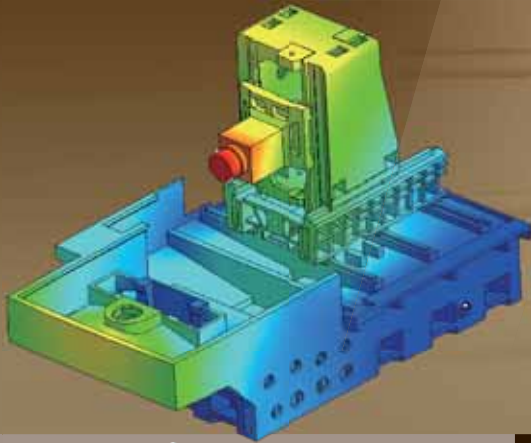
- 24/24/24 m/min (945/945/945 IPM)
- BT-50 (CT-50) tooling
- 60 tools
- 902 Nm / 665.2 ft-lbf



## **Vcenter-H1000**

- 20/20/15 m/min (787/787/590 IPM)
- BT-50 (CT-50) tooling
- 90 tools
- 1072 Nm / 790.6 ft-lbf

# Vcenter-H400



## **Rapid feed rate 48/48/48 m/min (1890/1890/1890 IPM)**

3-axis moving column design features high rapid feed rate 48 m/min (1890 IPM) for 3 axes to reduce tool changeover time.

Axis acceleration 0.7G/0.7G/0.7G with high power output 4.5/5.5/4.5 kW (6/7.4/6 HP) reaches highest machining efficiency.

Steel type telescopic cover design assures long service life.



## **Servo driven ATC and tool magazine**

Front mounted ATC to reduce machine width.  
40-tool magazine with twin arm type ATC offers quick changeover time 4.5 seconds (chip-to-chip) for BBT-40 (BCV-40) tooling.

Both ATC and magazine are servo driven to assure higher reliability and longer service life.



## **High speed pallet changer APC**

Rotary type APC for quick pallet exchange.  
4 ground cone shaped taper pins and bushings ensures high accuracy and repeatability throughout entire service life.  
Air jets are blown through cones assure pallet clamping and chip removing.  
External pallet can be rotated manually.  
Pallet loading 400 kgs (880 lbs).





### **15000 rpm built-in spindle**

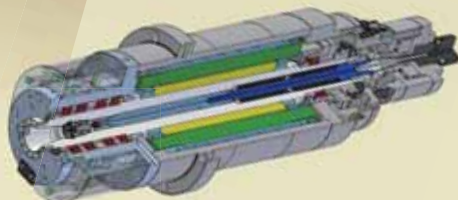
Built-in spindle avoids belt vibration to affect machining quality.

Dual winding (low/high winding) with power output 18.5/22 kW (25/29.5 HP) further reduces cutting time.

4 pcs front bearings enhance cutting rigidity.

Oil-air lubrication for long service life.

BIG PLUS® BBT-40 (BCV-40) tooling (compatible with BT-40 (CT-40) tooling) for sufficient tool clamping at high rpm.



### **User friendly design**

Rotary control panel with large keypads for easy operation.

Spindle oil cooler, pneumatic and lubrication systems are located in the rear location for easy maintenance.

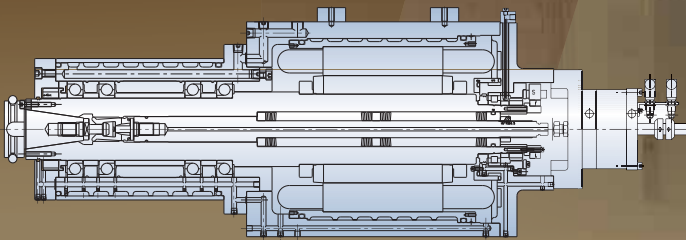


### **Efficient disposal on coolants and chips**

Fixed pallet design with bottom flushing coolants assures minimal coolant leakage and chip build-up.

Rear disposal chip conveyor utilizes easy layout for line production.

# Vcenter-H500/H500HS



## **Built-in spindle**

Built-in spindle avoids belt vibration to affect machining quality.  
Dual winding (low/high winding) with high power output further reduces cutting time.  
Air curtain for extra spindle protection.  
6000 rpm, 11/15 kW (15/20 HP) for Vcenter-H500.  
15000 rpm, 18.5/22 kW (25/29.5 HP) for Vcenter-H500HS.



## **Durable tool changer**

Side mounted 40-tool magazine with twin arm type ATC offers quick changeover time 8.5 second (chip-to-chip) for BT-40 (CT-40) tooling and 10.6 seconds for BT-50 (CT-50) tooling.  
ATC unit has been designed with minimal maintenance with the use of hydraulic motor to ensure stability and longer service life.



## **Strong machine structure**

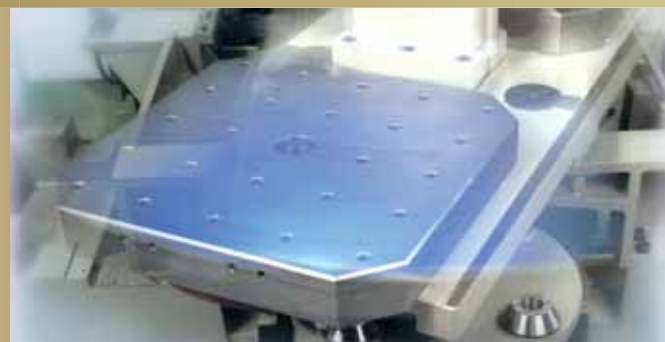
Meehanite® casting from Victor Taichung's licensed foundry for maximum damping and strength.  
One piece bed castings with triangular structure and heavily ribbed column minimizes distortion during heavy cutting.  
Low table height reduces the bending moment for high positioning accuracy.  
Curvic coupling is used for table indexing and offer high repeatability.



### ***Symmetrical design for minimal heat growth and chips build-up***

Symmetrical machine design with steep angular splashguards inside minimizes the thermal growth on machine accuracy.

Twin screw-type chip removers have been fitted to help remove chips out of the machining area to the machine front through the assistance of high pressure coolants. Front positioned chip conveyor for easy chip clean-up.



### ***High speed pallet changer APC***

Rotary type APC for quick changeover.

4 ground cone shaped taper pins and bushings ensures high accuracy and repeatability throughout entire service life.

Air jets are blown through cones assure pallet clamping and chip removing.

High loading capacity 800 kgs (1760 lbs).

### ***High rigidity and high damping guideways***

Oversized NRS style linear guideways ensure each axis can absorb the most extreme of cutting forces.

Ballscrew holders are cast into the machine base to ensure a constant support over the entire machine life.



# Vcenter-H630HS



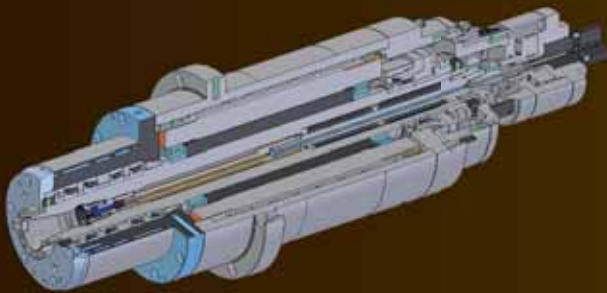
## **High rapid feeds 48/48/48 m/min (1890/1890/1890 IPM)**

"T"-shape structure with Meehanite® casting from Victor Taichung's licensed foundry ensures maximum damping and strength.

Roller type linear guideways enhance the structural stiffness by absorbing the extreme cutting forces generated by high speed machining.

Heat in the ballscrews generated by high feed rates is removed by 'Through Ballscrew Coolant' feeds.

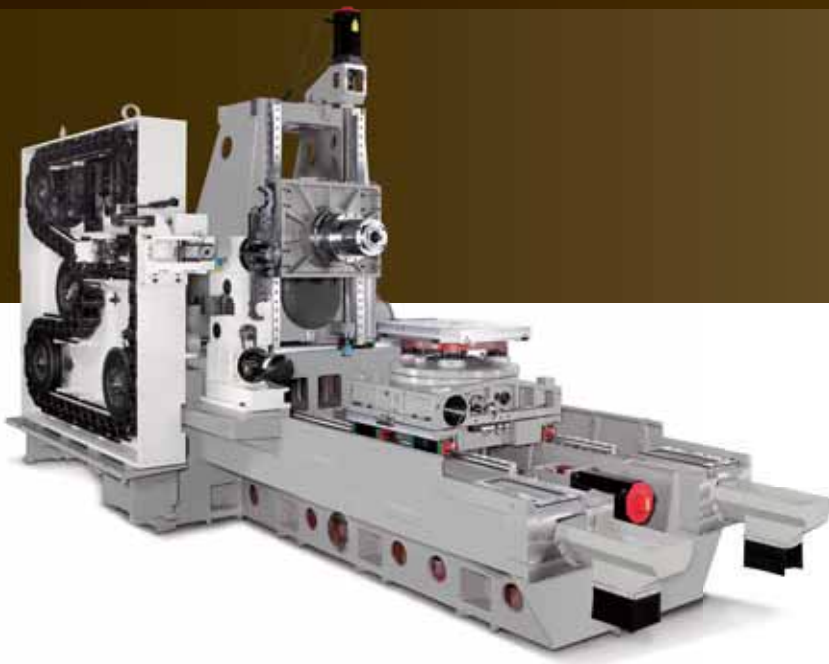
Ballscrew holders are cast into the machine base enhances a constant supports.



## **10000rpm built-in spindle 30 kW (40 HP)**

Built-in spindle avoids belt vibration to affect machining quality.

Dual winding (low/high winding) with high power output 25/30 kW (30/40 HP) further reduces cutting time. Oil-air lubrication assures long service life.

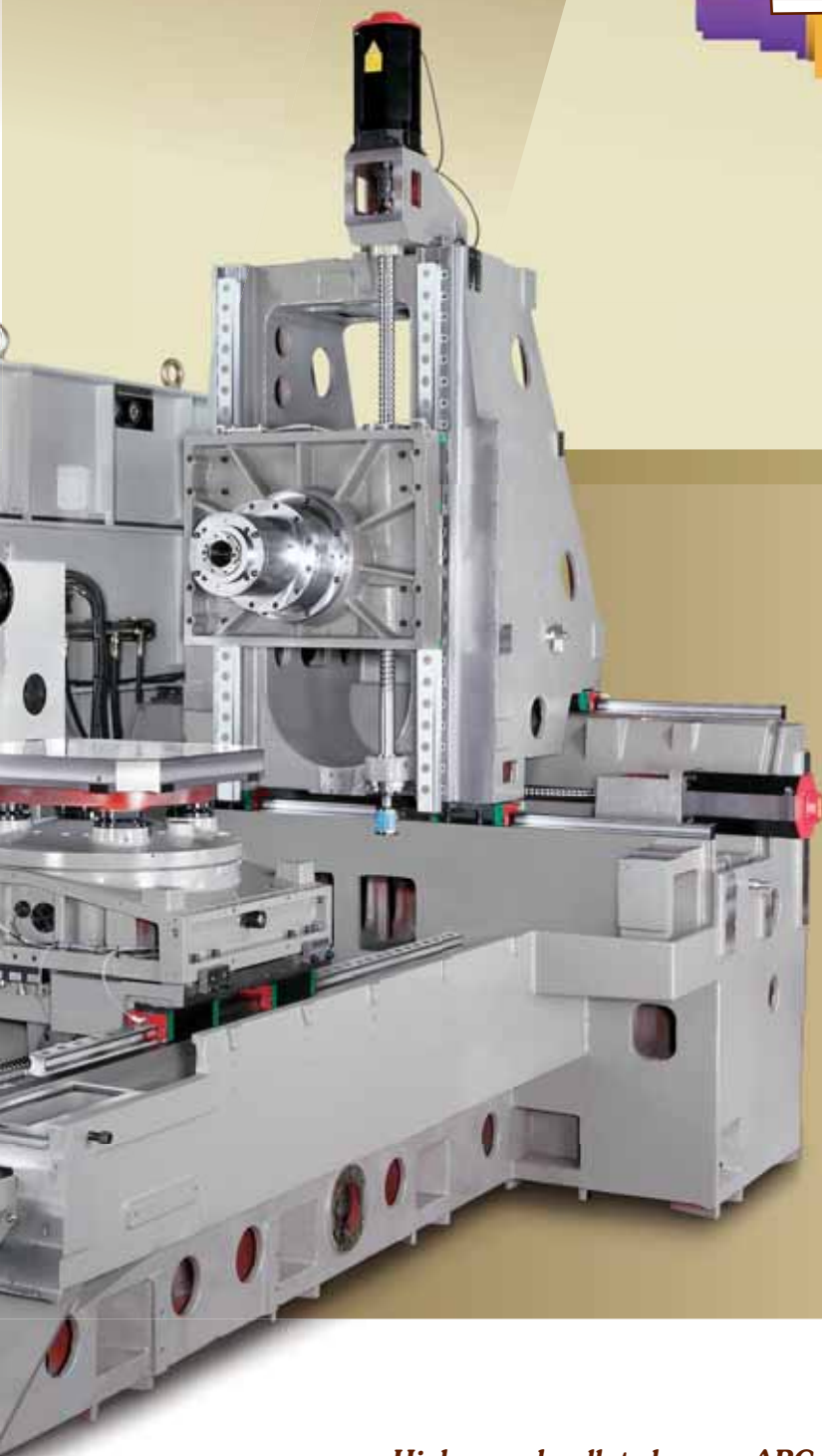


## **Servo driven tool magazine**

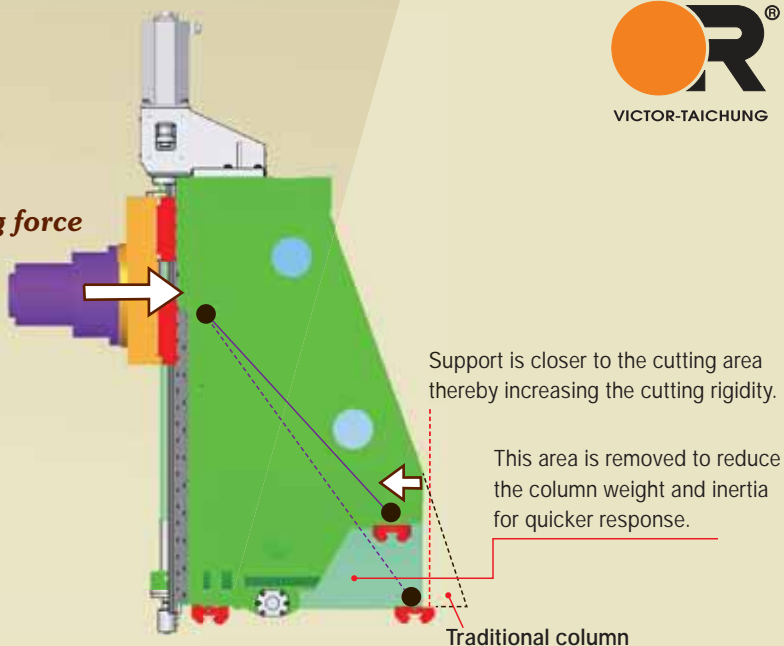
60 tool magazine with twin arm type ATC offers quick changeover time 7.5 seconds (chip-to-chip) for heavy BT-50 (CT-50) tooling.

Less heat generated in comparison as hydraulic system assure higher reliability.





**Cutting force**



### **Slant style column design**

An innovative design has a shorter distance from the spindle to the rear supporting guideways enhancing the cutting stability. Column responds more dynamically due to the reduced weight and inertia.



### **High speed pallet changer APC**

Rotary style APC driven by servo motor reduce overall cycle time.  
 4 ground cone shaped taper pins and bushings ensures high accuracy and repeatability throughout entire service life.  
 Air jets are blown through cones assure pallet clamping (air sealing detection).  
 Hydraulic interface for APC (optional) powered through the B-axis mechanism facilitates auto part clamping.  
 High loading capacity 1200 kgs (2640 lbs).

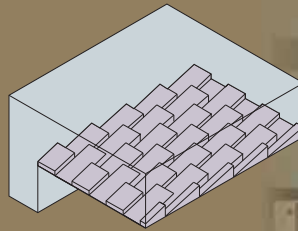
# Vcenter-H630HD

## **Hydro-dynamic box slideways:**

50mm (2") large diameter ballscrews with 10mm (0.4") pitch provide high torque at high rapid feed rates of 24m/min (945 IPM) on all 3 axes.

Large contact surfaces fully support both axial and lateral loading to prolong machine accuracy in heavy duty machining of hard materials.

Higher damping with the use of bonded Turcite® eliminates local stick-slip for improved finish and longer tool life.



## **Hand scraping**

The traditional method of hand scraping remains the most effective way of ensuring squareness and flatness in machine tools using plain bearing linear ways. With 60 years experience in building machine tools using this traditional manufacturing manner, our understanding of the critical factors that ensure accuracy and durability are second to none. Highly skill personnel, trained in-house, are employed to make sure this hand scraping is done to perfection.



## **Tool arbor cleaning system (Rotating tool pocket with brushes)**

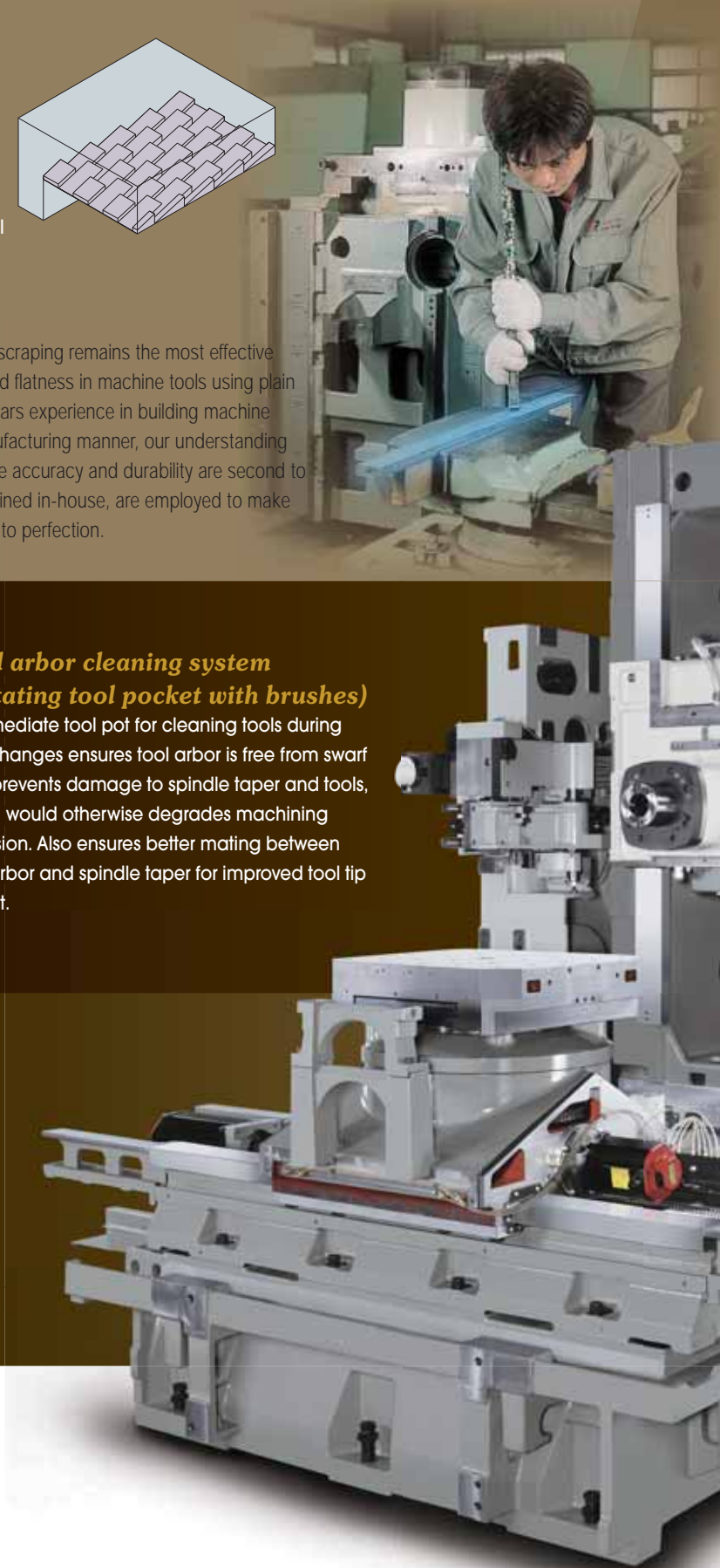
Intermediate tool pot for cleaning tools during tool changes ensures tool arbor is free from swarf and prevents damage to spindle taper and tools, which would otherwise degrades machining precision. Also ensures better mating between tool arbor and spindle taper for improved tool tip runout.



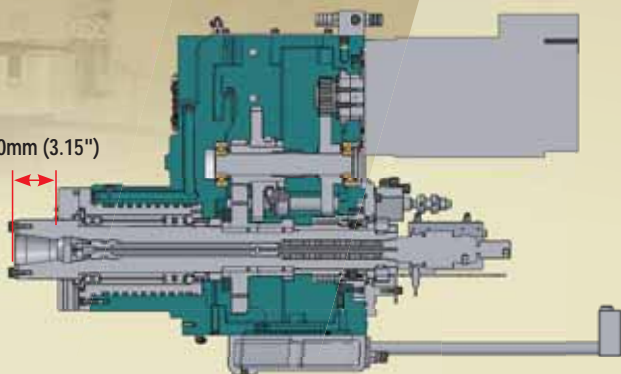
## **Servo driven tool magazine**

Servo driven tool magazine with less heat generation than hydraulic type assures high reliability.

60 tool magazine covers wide range of applications.



80mm (3.15")



### Two-step geared spindle head

The 2-step gearbox coupled with 22 kW (30 HP) spindle motor offers maximum torque output 902 Nm (665.2 ft-lbf) giving unrivalled metal removal rates at low spindle speed 196 rpm.

Rotary joint is included as standard and ready for CTS retrofitting.

Long overhang design spindle reduces the tool length for higher rigidity. The roller type bearings are used for rear bearings even enhance cutting capability.

Oil cooling to the spindle and gearbox maintain low bearing temperature for extended spindle life.

### High pallet loading 1200 kg (2640 lbs)

High B-axis mechanism with deep slope helps reduce chips built-up on X-axis covers.

Available with optional **hydraulic interface** which allows the power to go through the B-axis mechanism from bottom.

**CNC pallet** (option) with continuous 0.001° indexing is available by unique feature of **Roller-CAM-Drive®** mechanism guarantees higher rigidity without existence of worm-gear backlash for full 4 axis.



\*Roller cam drive®



### ECO design

Control panel is mounted on the front lateral guarding, so the operator can easily see inside and operate the machine after opening the door to the right.

External pallet can be manually rotated on APC with pedals.



# Vcenter-H1000



## **Advanced design**

Through the use of advanced CAD and CAE, our R&D laboratory makes computer simulations of the machine's structure for deformation and vibration during operation, which can be later confirmed by computer aided testing. Areas of high stress concentration or excessive thermal growth are pinpointed on the drawing board, so they are eliminated at an early stage and optimum machine life can be guaranteed.

## **Strong machine structure**

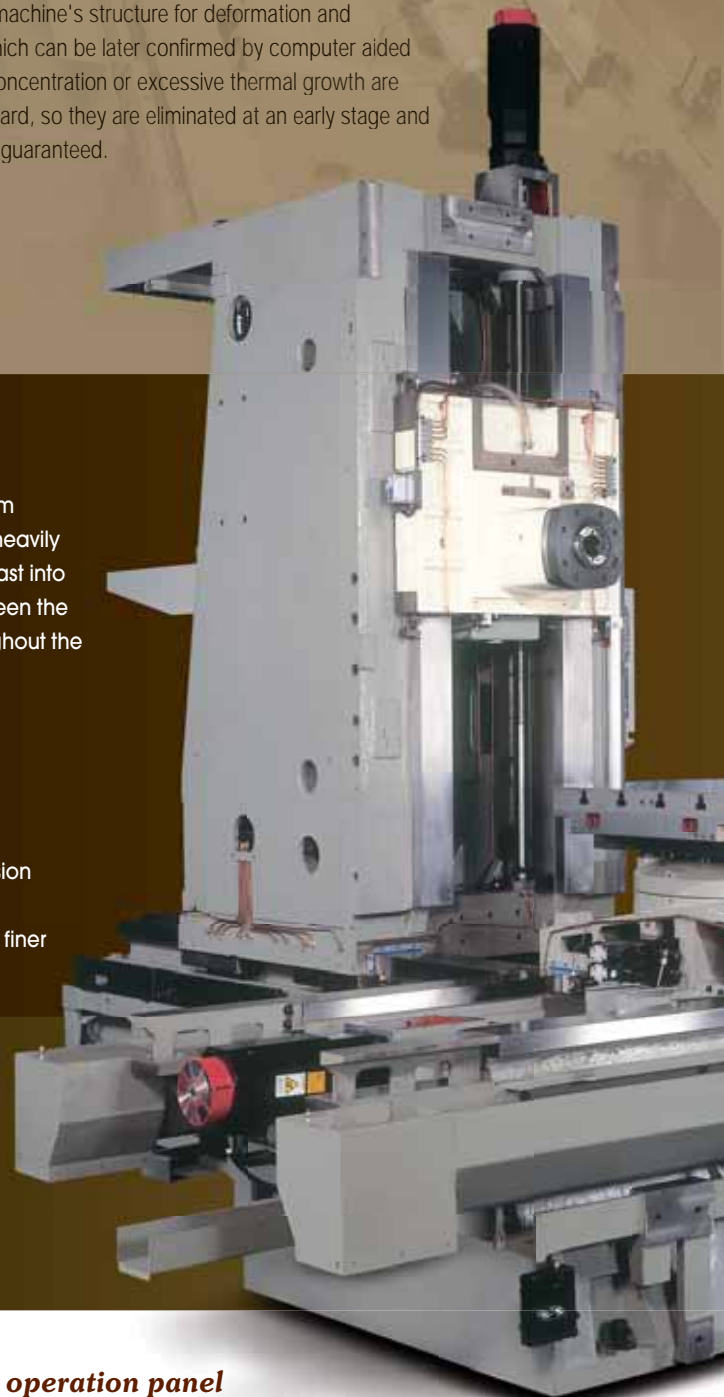
Heavy duty Meehanite castings are used in the bed and column for maximum damping and strength. One-piece bed casting with triangular structure and heavily ribbed column minimise machine distortion during operation. Boxways are cast into the bed and column so no distortion occurs due to thermal differences between the slide-ways and machine casting! This maintains alignment of the ways throughout the machine life.

## **Improved positioning accuracy**

Table height is kept low to reduce the bending moment so that improved positioning accuracy is possible under heavy cutting.

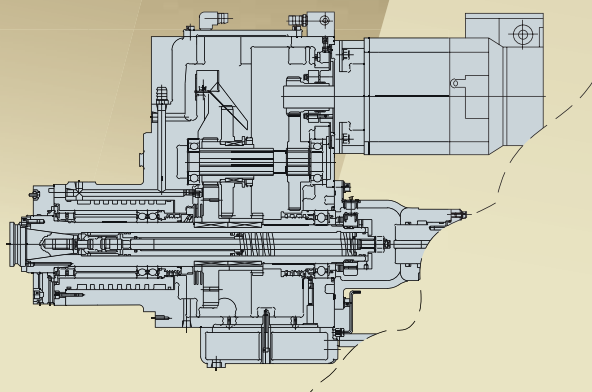
A curvic coupling in table indexing offers excellent repeatability.

All axes motors are direct coupled with flexible couplings so that no transmission vibrations are present. For Y-axis counter balancing is replaced with high powered 7 kW (9.4 HP) servo-motor with built-in brake, for smoother travel and finer positioning accuracy.



## **Machine operation panel**

Operator friendly control panel makes manual operation simple which includes remote MPG to ease machine set-up and ergonomic layout to maximize operator efficiency. Control panel is CE compatible and is built to withstand the most arduous shop floors! Air cond for control cabinet maintains temperature control to ensure durable operation. High level of PLC integration with numerous safety features ensures smooth and safe operation.



### **Minimizing the effects of thermal growth**

Symmetrical design and construction means heat generation is limited to minimise the effects of thermal growth on machine accuracies. Double-anchored ballscrews are pretensioned during assembly to absorb thermal growth without effecting accuracy. Effective chip evacuation from the machining area improves heat dissipation from the working area while spindle oil cooling prevents excessive spindle growth.



### **Durable tool changer**

Twin arm type ATC performs better over continuous tool changes compared with disc type tool changers, while at the same time offering fast tool change.

The ATC mechanism and tool magazine are both driven by durable hydraulic motors which ensures increased stability and longer service life. The entire unit is designed for minimum maintenance.

### **Heavy duty spindle with integral 2-speed gearbox**

Vcenter-H1000 have been designed to handle large workpieces in a single set-up. The 2-speed gearbox coupled with 18.5/22 kW (25/29.5 HP) spindle motor offers maximum torque output of 1072 Nm (790.6 ft-lbf) giving unrivalled metal removal rates.

Spindle is supported with heavy duty roller bearings with large contact areas that easily handles large axial and radial loads.

Oil cooling to the spindle and gearbox maintain low bearing temperature for extended spindle life.



### **Enclosed guarding on APC\*(optional.)**

\*Standard for CE machine



### **Maximum flexibility with parallel type APC**

Parallel pallet changer offers increased machining area for oversized parts without interference with machine guarding. Pallets can be easily removed from the APC to make workpieces set-ups trouble free. Additional pallets can be set-up and kept in storage until needed. This system also enables swift and simple integration into FMS lines.



# Machine Options

## **CNC table with 0.001° continuous indexing**

0.001° continuous indexing is available on the B-axis for simultaneous 4-axes machining. The servo-motor is upgraded so that plenty of power is provided in machining complex forms and contours. Table indexing time is also reduced to only 0.2 sec per deg. **Rotary encoder** is included as standard for improved positioning accuracy.



## **Coolants through spindle (CTS)**

For improved drilling or boring capability, coolants with high pressure can be forced through the center of the spindle and flow through the tool directly to the cutting area. To ensure the long and reliable running of this system, fine particles produced during machining must be filtered out to prevent the damages to the spindle. Victor Taichung offers several types of filtration systems to meet different requirements in machining.



## **Table shower (Niagara coolants)**

To enhance chip removal around the workpiece and reduce thermal growth supplies a table shower system is available which flood coolant from above. The strong coolant flow ensures the workpiece and guards are swept clear of cutting chips.



## **Linear scales (standard on Vcenter-H1000)**

Linear scales on all 3 axes offer exceptional positioning accuracy, up to 0.005 mm over full stroke. Heidenhain® or FAGOR® linear scales with a thermal behaviour similar to that of the machine are selected, so that thermal expansion can be compensated for further enhancing repeatability.

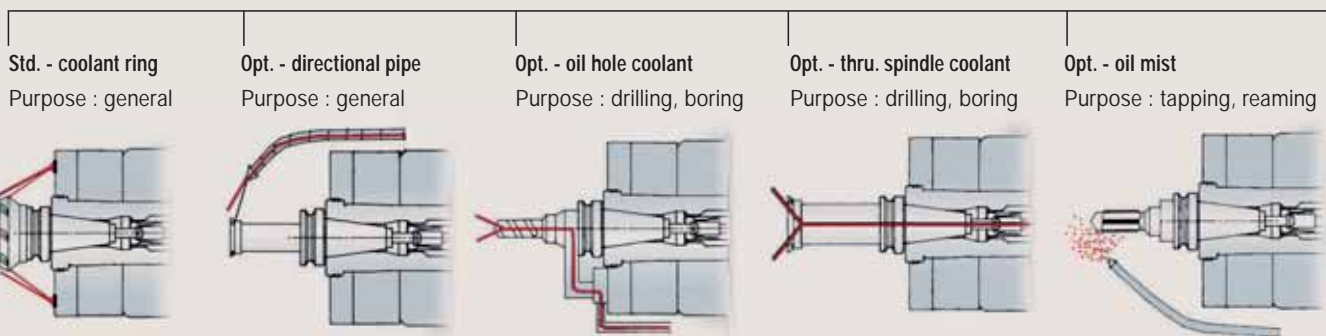
Sealed encoders with durable aluminum housing offer improved reliability and service life. This option is included as standard for Vcenter-H1000 to guarantee the consistent accuracy.

## **Expandable tool magazine**

Modular design allows from 60 to 120 tools to be held in tool magazine.

Since the magazine is made up of cast-sections it is easy to slot in additional sections to expand tool capacity on site!

## **Coolant options**



### **Workpiece measurement**

To reduce time spent setting workpiece positions and then manually inspecting finished parts, which would be better invested in machining, automatic workpiece measurement is available with the use of Renishaw MP-10, OMP-60 or RMP-60 measuring probes. Workpiece position can be identified with the probe and work offsets automatically updated, enabling parts to be made right first time. During batch production in-processing checking can be performed on the machine, while for optimum accuracy in machining part inspection can be done after roughing so that finished part can maintain tight tolerances.



### **Auto tool length measurement**

To reduce tool set-up times and improve machine operator interface, Victor Taichung offers Renishaw tool measurement system. Using the Renishaw® TS-27R probe or NC-4 non-contact tool setter, the tool length and diameter values can be automatically inputted into the tool offset values once the tool is tipped off the probe. This system is ideal for batch production where tools need to be constantly changed or replaced.



### **Multi-face table (Tombstone fixture)**

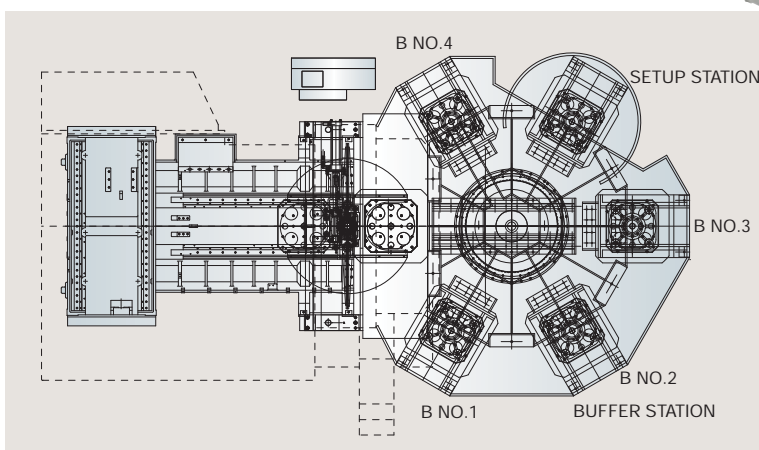
T-slotted or bolted fixture block allows a variety of parts to be clamped offering improved productivity over vertical machine centres. Used in conjunction with standard B-axis pallet allows more parts to be set-up at a time!



### **Single cell FMC or FMS for unmanned operation**

For HS high speed series HMC with rotary type APC, pallet-pool design with 6 pallets and traverse mechanism composes a compact cell for unmanned operation. 12 pallets can be easily built up by two floors of pallets at the same floor space.

For HD heavy duty series HMC with parallel type APC, FMC is composed by multiple pallets and RGV (Rail Guided Vehicle) for unmanned operation.



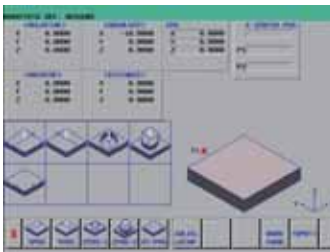
# Victor Taichung's NC Package

## **Fanuc Oi-MD/31i-B controls**

With 10.4" color display included as standard, Victor Taichung's Fanuc control package includes conversational function MANUAL GUIDE I to reduce the programming time for easier operation. Through the latest technology for AI contouring control (AICC), Fanuc Oi-MD control is capable of addressing look-ahead up to 200 blocks to offer optimal reliability with the highest level of machine integration. For higher speed and precision, the control can be upgraded to 31i-B control which is capable of addressing 600 blocks as standard and optionally 1000 blocks available by the so-called AICC-2 with HSP function (High Speed Processing) to further reduce the block addressing time for better surface finish.

## **Victor's GUI (Graphic User Interface) - VSS Macros**

With exclusive software developed in-house by highly experienced engineers, VSS (Victor Smart System) enhances not only machine operation to reduce tool set-up time but also safety features to protect costly spindle. Productivity can be further increased when the adaptive controlled cutting is implemented.



Smart workpiece measurement



Power saving (ECO)



Air Bag (abnormal load monitoring)



Renishaw® GUI

## **Heidenhain iTNC-530 HSCI control**

Powerful dialog programming (SmartNC®) with fully alphanumeric keyboard, Heidenhain control iTNC-530 HSCI is also available on Vcenter-H630HD/H10000. Without remembering complicated G codes, the sophisticated graphic functions with 15" TFT monitor make programming check easy. Heidenhain iTNC-530 HSCI control is capable of addressing 1024 blocks and further makes use of hard drive memory for advanced 4 axis control.



## **Control features for fast contour milling (Victor Taichung's standard)**

| Feature \ Controller                   | Fanuc                             |                                   |                                  | Heidenhain     |
|--|-----------------------------------|-----------------------------------|----------------------------------|----------------|
|  | Oi-MD                             | 32i-B                             | 31i-B                            | iTNC-530 HSCI  |
| Block addressing time                  | 2 ms (by AICC-2)                  | 2 ms                              | 0.4 ms                           | 0.5 ms         |
| Data storage                           | 1280m (512kB)<br>Opt. 5120m (2MB) | 1280m (512kB)<br>Opt. 5120m (2MB) | 2560m (1MB)<br>Opt. 10240m (8MB) | > 21GB         |
| Data server (Memory extension)         | Opt. (by CF Card)                 | Opt. (by CF card)                 | Std. (by CF card)                | N.A.           |
| Ethernet link                          | Std.                              | Std.                              | Std.                             | Std.           |
| Preview Contouring (look ahead blocks) | 200 (with AICC-2)                 | 200                               | 600 (Opt. 1000 by HSP)           | 1024           |
| Graphic display                        | 10.4"                             | 10.4"                             | 10.4"                            | 15"            |
| Conversational function                | Manual guide i + VSS macros       | Manual guide i                    | Manual guide i                   | Std. + SmartNC |
| Data transfer interface                | PCMCIA + USB                      | PCMCIA + USB                      | PCMCIA + USB                     | USB port       |



# VICTOR's FANUC Oi-MD/32i-B/31i-B Control SPECIFICATIONS

## Standard

| ITEM                   | SPECIFICATION   | DESCRIPTION  |
|------------------------|---|--|
| <b>Controlled Axes</b> |   |  |
| 1.                     | Controlled Axes   | 3 Axes (X, Y, Z)   |
| 2.                     | Simultaneous Controlled Axes  | Position / Linear interpolation / Circular interpolation (3 / 3 / 2) |
| 3.                     | Least Input Increment   | 0.001 mm / 0.0001 inch / 0.001 deg.                                  |
| 4.                     | Least Input Increment 1 / 10  | 0.0001 mm / 0.00001 inch / 0.0001 deg.                               |
| 5.                     | Max. command value  | ± 99999.999mm (± 9999.9999in)  |
| 6.                     | Fine Acceleration & Deceleration Control                                      | Std.   |
| 7.                     | High Speed HRV Control  | Std.   |
| 8.                     | Inch / Metric Conversion  | Std. (G20 / G21)   |
| 9.                     | Interlock   | All Axes / Each Axis / Cutting Block Start                           |
| 10.                    | Machine Lock  | All Axes / Each Axis   |
| 11.                    | Emergency Stop  | Std.   |
| 12.                    | Over-travel   | Std.   |
| 13.                    | Stored Stroke Check 1 and Check 2   | Std.   |
| 14.                    | Mirror Image  | Each Axis  |
| 15.                    | Mirror Image M73, M74, M75, M76   | X, Y Axes  |
| 16.                    | Follow-up   | Std.   |
| 17.                    | Position switch (with Victo's own PLC)  | Std.   |
| <b>Operation</b>       |   |  |
| 1.                     | Automatic Operation   | Std.   |
| 2.                     | MDI Operation   | MDI B  |
| 3.                     | DNC Operation   | Reader / Puncher Interface is Required                               |
| 4.                     | DNC Operation with Memory Card  | PCMCIA Card Attachment is Required                                   |
| 5.                     | Program Number Search   | Std.   |
| 6.                     | Sequence Number Search  | Std.   |
| 7.                     | Sequence Number comparison and stop   | Std.   |
| 8.                     | Buffer Register   | Std.   |
| 9.                     | Dry Run   | Std.   |
| 10.                    | Single Block  | Std.   |
| 11.                    | JOG Feed  | Std.   |
| 12.                    | Manual Reference Position Return  | Std.   |
| 13.                    | Manual Handle Feed  | 1 Unit / Each Path   |
| 14.                    | Manual Handle Feed Rate   | X1, X10, X100  |
| 15.                    | Z Axis Neglect  | Std.   |
| <b>Interpolation</b>   |   |  |
| 1.                     | Positioning   | G00  |
| 2.                     | Single Direction Positioning  | G60  |
| 3.                     | Exact Stop Mode   | G61  |
| 4.                     | Exact Stop  | G09  |
| 5.                     | Linear Interpolation  | G01  |
| 6.                     | Circular Interpolation  | G02, G03 (multi-quadrant is possible).                               |
| 7.                     | Dwell   | G04  |
| 8.                     | Helical Interpolation   | Std.   |
| 9.                     | Skip Function   | G31  |
| 10.                    | Reference Position Return   | G28  |
| 11.                    | Reference Position Return Check   | G27  |
| 12.                    | 2 <sup>nd</sup> / 3 <sup>rd</sup> / 4 <sup>th</sup> Reference Position Return | Std.   |
| <b>Feed</b>            |   |  |
| 1.                     | Rapid Traverse Rate   | Std.   |
| 2.                     | Rapid Traverse Override   | F0, 25%, 50%, 100%   |
| 3.                     | Feed Per Minute   | G94 (mm / min)   |
| 4.                     | Tangential Speed Constant Control   | Std.   |
| 5.                     | Cutting Feed rate Clamp   | Std.   |
| 6.                     | Automatic Acceleration / Deceleration   | Rapid traverse: linear; Cutting feed: exponential                    |
| 7.                     | Rapid traverse Bell-shaped Acc. / Deceleration                                | Std. (G00)   |
| 8.                     | Bell-shaped Acc. / Deceleration Before & After Cutting Feed Interpolation     | Std. (G01)   |
| 9.                     | Automatic Corner Deceleration   | Std. (G64)   |
| 10.                    | Linear Acc / Deceleration Before & After Cutting Feed Interpolation           | Std. (G01)   |
| 11.                    | Feed rate Override  | 0 ~ 150%   |
| 12.                    | Jog Override  | 0 ~ 100%   |
| 13.                    | Automatic Corner Override   | G62  |
| 14.                    | Feed Stop   | Std.   |
| 15.                    | AI contour control (AICC, G05.1) (in total)                                   | 200 blocks (0/32i with AICC-2)                                       |
| 16.                    | AICC-2 + High speed processing (G05.1) (in total)                             | 600 blocks (31i)   |
| 17.                    | Jerk Control  | Std. (31i)   |
| 18.                    | Rigid Tapping Bell-Shaped Acc./Deceleration                                   | Std.   |
| 19.                    | Feed rate clamp by arc radius (G02/G03)                                       | Std.   |
| <b>Program Input</b>   |   |  |
| 1.                     | EIA / ISO Automatic Recognition   | Std.   |
| 2.                     | Label Skip  | Std.   |
| 3.                     | Parity Check  | Std.   |
| 4.                     | Control In / Out  | Std.   |
| 5.                     | Optional Block Skip   | 1  |
| 6.                     | Max. Programmable Dimension   | ± 8-Digit  |
| 7.                     | Program Number  | O4-Digit   |
| 8.                     | Sequence Number   | N5-Digit   |
| 9.                     | Absolute / Incremental Programming  | G90 / G91  |
| 10.                    | (Pocket Calculator Type) Decimal Point Programming                            | Std.   |
| 11.                    | Input Unit 10 Time Multiply   | Std.   |
| 12.                    | Plane Selection   | G17, G18, G19  |
| 13.                    | Rotary Axis Designation   | Std.   |
| 14.                    | Rotary Axis Roll-Over Function  | Std.   |
| 15.                    | Polar coordinate Command  | G16  |
| 16.                    | Coordinate System Setting   | Std.   |
| 17.                    | Automatic Coordinate System Setting   | Std.   |
| 18.                    | Work piece Coordinate System  | G52, G53, G54 ~ G59  |
| 19.                    | Addition of Workpiece Coordinate System Pair                                  | 48 Pairs   |
| 20.                    | Manual Absolute On And Off  | Std.   |
| 21.                    | Optional Chamfering / Corner R  | Std.   |
| 22.                    | Programmable Data Input   | G10  |
| 23.                    | Sub Program Call  | 4 (0/32i) or 10 (31i) folds nested                                   |
| 24.                    | Custom macro B  | Std.   |
| 25.                    | Addition of Custom Macro Common Variables                                     | #100-#199, #500-#999   |
| 26.                    | Canned Cycles For Milling   | G73 / G74 / G76, G80-G89, G98 / G99                                  |
| 27.                    | Small hole peck drilling cycle  | G83  |
| 28.                    | Circular Interpolation by R Programming                                       | Std.   |
| 29.                    | Program Format  | FANUC std. format  |
| 30.                    | Program Stop / Program End  | M00 / M01 / M02 / M30  |

|     |                            |      |
|-----|----------------------------|------|
| 31. | Reset                      | Std. |
| 32. | Scaling                    | G51  |
| 33. | Coordinate System Rotation | G68  |

### Auxiliary Spindle Speed Function

|    |                                |           |
|----|--------------------------------|-----------|
| 1. | Auxiliary Function Lock        | Std.      |
| 2. | High Speed M / S / T Interface | Std.      |
| 3. | Spindle Speed Function         | Std.      |
| 4. | Spindle Override               | 50 ~ 120% |
| 5. | 1° Spindle Orientation         | Std.      |
| 6. | M Code Function                | M3 digit  |
| 7. | S Code Function                | S5 digit  |
| 8. | T Code Function                | T2 digit  |
| 9. | Rigid Tapping                  | Std.      |

### Tool Function & Tool Compensation

|    |                          |                                   |
|----|--------------------------|-----------------------------------|
| 1. | Tool Function            | T8 digit                          |
| 2. | Tool Offset Pairs        | ± 6-digit, 400 (0/32i), 999 (31i) |
| 3. | Tool Offset Memory C     | Std. (D/H codes are separated)    |
| 4. | Tool Length Compensation | G43-G44, G45-G48, G49             |
| 5. | Cutting Compensation C   | Std.                              |

### Accuracy Compensation

|    |                                 |                               |
|----|---------------------------------|-------------------------------|
| 1. | Backlash Compensation           | Rapid Traverse / Cutting Feed |
| 2. | Stored Pitch Error Compensation | Std.                          |

### Edit Operation

|    |  |                                    |
|----|--|------------------------------------|
| 1. | Part Program Storage Length (in total)     | 1280m (512KB) (0/32i), 2560m (31i) |
| 2. | Number of Registerable programs (in total) | 400 (0/32i), 1000 (31i)            |
| 3. | Part Program Editing / Protect             | Std.                               |
| 4. | Background Editing                         | Std.                               |

### Setting and Display

|     |  |                            |
|-----|--|----------------------------|
| 1.  | Status Display                                     | Std.                       |
| 2.  | Clock Function                                     | Std.                       |
| 3.  | Current Position Display                           | Std.                       |
| 4.  | Program Display                                    | Program name 31 characters |
| 5.  | Parameter Setting and Display                      | Std.                       |
| 6.  | Self Diagnosis Function                            | Std.                       |
| 7.  | Alarm Display                                      | Std.                       |
| 8.  | Alarm History Display                              | 25                         |
| 9.  | Operation History Display                          | Std.                       |
| 10. | Help Function                                      | Std.                       |
| 11. | Run Hour and Parts Count Display                   | Std.                       |
| 12. | Actual Cutting Feedrate Display                    | Std.                       |
| 13. | Display of Spindle Speed and T Code At All Screens | Std.                       |
| 14. | Graphic Function                                   | Std.                       |
| 15. | Dynamic graphic display                            | Std.                       |
| 16. | Servo Setting Screen                               | Std.                       |
| 17. | Spindle Setting Screen                             | Std.                       |
| 18. | Display of Hardware and Software Configuration     | Std.                       |
| 19. | Multi-Language Display                             | Std.                       |
| 20. | Data Protection Key                                | Std.                       |
| 21. | Erase CRT Screen Display                           | Std.                       |
| 22. | Machining Condition Selecting Screen               | Std.                       |
| 23. | Color LCD / MDI                                    | 10.4" (0/32i/31i)          |

### Data Input / Output

|    |                                   |                  |
|----|-----------------------------------|------------------|
| 1. | Reader / Puncher Interface        | RS-232 interface |
| 2. | External Work piece number search | 9999             |
| 3. | Memory Card Interface             | Std.             |
| 4. | Embedded Ethernet (10Mbps)        | Std.             |

## OPTIONS

| ITEM                             | SPECIFICATION   | DESCRIPTION |       |            |
|----------------------------------|---|-------------|-------|------------|
| With hardware included           |   | Oi-MD       | 32i-B | 31i-B      |
| 1.                               | Conversational programming (Manual Guide I)                 | Std.        | Std.  | Std.       |
| 2.                               | Conversational programming (Super Cap I)                    | N.A.        | N.A.  | N.A.       |
| 3.                               | Data server (with PCB and CF card 1GB)                      | □           | □     | Std.       |
| 4.                               | Fast Ethernet (100Mbps, available in Data server)           | □           | Std.  | Std.       |
| 5.                               | Tool life management (2 buttons on control panel)           | □           | □     | □          |
| 6.                               | Part Program Storage Length 5120m (2MB in total)            | □           | □     | □          |
| 7.                               | Part Program Storage Length 8MB in total                    | N.A.        | N.A.  | □          |
| 8.                               | Program restart   | □           | □     | □          |
| 9.                               | Optional block skip 9 blocks                                | □           | □     | □          |
| 10.                              | High Precision Contour Control (HPnanoCC, with RISC board*) | N.A.        | N.A.  | Std.       |
| 11.                              | Profibus  | □           | □     | □          |
| 12.                              | USB Device  | Std.        | Std.  | Std.       |
| 13.                              | 5-axis simultaneous control                                 | N.A.        | N.A.  | □ (31i-B5) |
| <b>Without hardware included</b> |   |             |       |            |
| 14.                              | AI contour control II (AICC-2, G05.1, 200 blocks) **        | Std.        | Std.  | Std.       |
| 15.                              | Look ahead block expansion (1000 blocks in total) **        | N.A.        | N.A.  | □          |
| 16.                              | Tool load monitoring (with Victor own PLC)                  | □           | □     | □          |
| 17.                              | Programmable mirror image (G50.1)                           | □           | □     | □          |
| 18.                              | Bi-directional Pitch Error Compensation                     | □           | □     | □          |
| 19.                              | Addition of tool pairs for tool life management 512 sets    | N.A.        | □     | □          |
| 20.                              | Cylindrical interpolation (G7.1) (used on 4th-axis)         | Std.        | □     | □          |
| 21.                              | Interruption type custom macro                              | N.A.        | □     | □          |
| 22.                              | Addition of work-piece coordinate systems 300 sets          | N.A.        | N.A.  | □          |
| 23.                              | Exponential interpolation (G2.3)                            | N.A.        | N.A.  | □          |
| 24.                              | Smooth interpolation  | N.A.        | N.A.  | □          |
| 25.                              | Spiral/conical interpolation                                | N.A.        | N.A.  | □          |
| 26.                              | Polar coordinate interpolation                              | N.A.        | □     | □          |
| 27.                              | Floating reference position return                          | N.A.        | N.A.  | □          |
| 28.                              | Hypothetical axis interpolation (G07)                       | N.A.        | N.A.  | □          |
| 29.                              | Tool retract and return (G10.6 with Victor own PLC)         | N.A.        | N.A.  | □          |
| 30.                              | NURBS interpolation (only avail. in HPCC/RISC)              | N.A.        | N.A.  | □          |
| 31.                              | Tilted work plane command (G68.2, STD for Vc-AX350)         | □           | □     | □          |

\*1. Block addressing time:

- 2 ms for AICC-2 (0i-D/31i-B)
- 1ms for HPCC (max. cutting feed 60 m/min) (31i-B)
- 0.4ms for AI HPCC and AI nano HPCC (150m/min) (31i-B) and AICC-2+ High speed processing (31i-B)

# Machine Specification

| Item          | Units                                  | Vcenter-H400       | Vcenter-H500HS               | Vcenter-H500                 |  |
|---------------|--|--------------------|------------------------------|------------------------------|--|
| Capacity      | X axis travel                          | mm                 | 500                          | 720                          | 720  |
|               | Y axis travel                          | mm                 | 600                          | 650                          | 650  |
|               | Z axis travel                          | mm                 | 500                          | 720                          | 720  |
| Distance      | Spindle nose to table center           | mm                 | 150-650                      | 140-800                      | 140-800                                    |
|               | Spindle center to table surface        | mm                 | 80-680                       | 50-700                       | 50-700                                     |
|               | Max. part dimension (W x L x H)        | mm                 | Ø600 x 750                   | Ø720 x 750                   | Ø720 x 750                                 |
| Working Table | Table work area                        | mm                 | 400 x 400                    | 500 x 500                    | 500 x 500                                  |
|               | Max. table pallet                      | kg                 | 400                          | 800                          | 800  |
|               | Surface configuration                  |                    | M12 x P1.75                  | M16 x P2.0                   | M16 x P2.0                                 |
|               | Min. angle of rotation                 | deg.               | 1 (opt. 0.001 for CNC table) | 1 (opt. 0.001 for CNC table) | 1 (opt. 0.001 for CNC table)               |
|               | Pallet exchange time                   | sec.               | 7 (P-P), 11.4 (C-C)          | 6.5 (P-P), 11 (C-C)          | 6.5 (P-P), 11 (C-C)                        |
|               | Pallet exchange type                   |                    | rotary                       | rotary                       | rotary                                     |
|               | Time to index 90°                      | sec.               | 3 (opt. 1.6 for CNC table)   | 3 (opt. 1.6 for CNC table)   | 3 (opt. 1.6 for CNC table)                 |
|               | Time to index 180°                     | sec.               | 5 (opt. 2.96 for CNC table)  | 5 (opt. 2.96 for CNC table)  | 5 (opt. 2.96 for CNC table)                |
| Spindle       | Spindle taper                          |                    | BBT-40                       | BT-40                        | BT-50                                      |
|               | Spindle motor-cont/30min               | kW                 | 18.5/22 (high winding)       | 18.5/22 (high winding)       | 11/15 (opt. 15/18.5 for 10000 rpm spindle) |
|               | Spindle speed                          | rpm                | 15000                        | 15000                        | 6000 (opt. 10000)                          |
|               | Spindle bearing diameter               | mm                 | 70                           | 70                           | 110  |
| Axis feed     | Rapid feed rate - X/Y/Z                | m/min              | 48/48/48                     | 30/30/24                     | 24/24/24                                   |
|               | Axis feed motor - X/Y/Z                | kW                 | 4.5/4.5/4.5                  | 4/7/4                        | 4/7/4                                      |
|               | Cutting feed rate by table             | m/min              | 10000                        | 10000                        | 10000                                      |
|               | B axis feed motor                      | kW                 | 1.6 (opt. 3 for CNC table)   | 1.6 (opt. 4 for CNC table)   | 1.6 (opt. 4 for CNC table)                 |
|               | X/Y/Z ball screw (dia. X pitch)        | mm                 | Ø40 x 12                     | Ø45 x 20                     | Ø45 x 12                                   |
|               | Boxway hardness                        |                    | SNS 35/45/45                 | NRS 55/55/55                 | NRS 55/55/55                               |
| ATC & Tools   | Tool magazine capacity                 |                    | 60 Disk type                 | 40 (opt. 60, 90) Chain type  | 40 (opt. 60, 90) Chain type                |
|               | Tool selection                         |                    | Random                       | Fixed tool pot number        | Fixed tool pot number                      |
|               | Max. tool dia. (without Adjacent tool) | mm                 | 80 (125)                     | 85 (170)                     | 120 (240)                                  |
|               | Max. tool length                       | mm                 | 300                          | 400                          | 400  |
|               | Max. tool weight                       | kg                 | 7                            | 7                            | 20   |
|               | Tool exchanging Time                   | sec.               | 1.8 (T-T), 4.5 (C-C)         | 4.1 (T-T), 8.5 (C-C)         | 6.8 (T-T), 10.6 (C-C)                      |
|               | Pull stud angle                        | deg.               | 15 (JIS 40P)                 | 90                           | 60   |
| Machine       | Standard CNC controller                |                    | 0i-MD (10.4")                | 0i-MD (10.4")                | 0i-MD (10.4")                              |
|               | Power requirement                      | kVA                | 44 (54 with CTS)             | 50 (60 with CTS)             | 40 (50 with CTS)                           |
|               | Air pressure requirement               | kg/cm <sup>2</sup> | 5.5-6.5                      | 5.5-6.5                      | 5.5-6.5                                    |
|               | Coolant tank                           | L                  | 550                          | 400                          | 400  |
|               | Chip disposal (with chip conveyor)     |                    | Rear                         | Front and left               | Front and left                             |
|               | Machine height                         | mm                 | 2571                         | 2937                         | 2937                                       |
|               | Floor space requirement                | mm                 | 2580 x 5320                  | 4393 x 5393                  | 4393 x 5393                                |
|               | Machine weight                         | kg                 | 9000                         | 12500                        | 12500                                      |

## Standard accessories :

- 1° indexing table
- Spindle oil cooler
- Coolant tank
- Fully enclosed splash guard
- Manual pulse generator (remote type)
- Hand tools and tool box
- Scroll type chip removers (except Vcenter-H400)
- Built-in work lamp
- Programming end light
- Leveling block
- Automatic pallet changer
- Spindle load meter
- Oil skimmer
- Rigid tapping
- Air conditioner for electrical cabinet
- Chip conveyer with cart
- Handy coolant gun

## Optional accessories :

- Table shower system
- Coolant Through Spindle (CTS)
- CNC table with 0.001° continuous indexing
- 60, 90, 120 tool magazine
- T-slot pallet
- Tool length measurement
- Workpiece measurement
- Linear encoder feedback

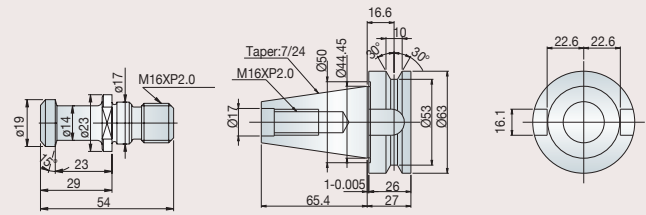
# Tool Specification



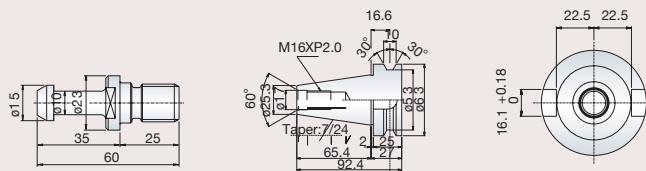
| Vcenter-H630HS               | Vcenter-H630HD               | Vcenter-H1000                |
|------------------------------|------------------------------|------------------------------|
| 1000                         | 900                          | 1350                         |
| 850                          | 800                          | 1050                         |
| 900                          | 710                          | 1050                         |
| 75-925                       | 200-910                      | 220-1270                     |
| 150-1050                     | 0-800                        | 0-1050                       |
| Ø1000 x 1150                 | 880 x Ø1200 x 930            | Ø1350 x 1350                 |
| 630 x 630                    | 630 x 630                    | 1000 x 1000                  |
| 1200                         | 1200                         | 2000                         |
| M16 x P2.0                   | M16 x P2.0                   | M16 x P2.0                   |
| 1 (opt. 0.001 for CNC table) | 1 (opt. 0.001 for CNC table) | 1 (opt. 0.001 for CNC table) |
| 7 (P-P), 12 (C-C)            | 41 (chip-chip)               | 48 (chip-chip)               |
| rotary                       | Parallel                     | Parallel                     |
| 3 (opt. 1.6 for CNC table)   | 5 (opt. 2 for CNC table)     | 8 (opt. 4 for CNC table)     |
| 5 (opt. 3 for CNC table)     | 7 (opt. 3 for CNC table)     | 10 (opt. 5 for CNC table)    |
| BT-50 (opt. BBT-50)          | BT-50                        | BT-50                        |
| 25/30 (high winding)         | 15/18.5 (opt. 18.5/22)       | 18.5/22                      |
| 10000                        | 4500 (opt. 6000)             | 4500                         |
| 100                          | 100                          | 100                          |
| 48/48/48                     | 24/24/24                     | 15/15/15 (opt. 20/20/15)     |
| 4/7/4                        | 7/9/7                        | 9/9/9                        |
| 10000                        | 10000                        | 10000                        |
| 3 (opt. 3 for CNC table)     | 1.6 (opt. 4 for CNC table)   | 4 (opt. 7 for CNC table)     |
| Ø45 x 12                     | Ø50 x 10                     | Ø55 x 10                     |
| RGW 55/55/55 (roller)        | HRC 55                       | HRC 55                       |
| 60 (opt. 90, 120)            | 60 (opt. 90, 120)            | 90 (opt. 120)                |
| Fixed tool pot number        | Fixed tool pot number        | Fixed tool pot number        |
| 125 (250)                    | 110 (245)                    | 110 (245)                    |
| 450                          | 600                          | 600                          |
| 20                           | 25                           | 25                           |
| 5.9 (T-T), 7.5 (C-C)         | 13.8 (T-T), 14.2 (C-C)       | 13.8 (T-T), 20.5 (C-C)       |
| 60                           | 60                           | 60                           |
| 0i-MD (10.4")                | 0i-MD (10.4")                | 0i-MD (10.4")                |
| 69 (79 with CTS)             | 40 (50 with CTS)             | 54 (60 with CTS)             |
| 5.5~6.5                      | 5.5~6.5                      | 5.5~6.5                      |
| 550                          | 500                          | 600                          |
| Front and left               | Left and front               | Left and front               |
| 3268                         | 3195                         | 3950                         |
| 3978 x 5396                  | 3635 x 5250                  | 4580 x 8400                  |
| 18850                        | 18000                        | 31420                        |

- Multi-face table (Tombstone fixture)
- Air blow system
- HSK-A63 tooling (Vcenter-H400/H500HS)
- 20000 rpm spindle (Vcenter-H400/H500HS)
- Hydraulic interface on APC (Vcenter-H400/H500HS/H500/H630HS)

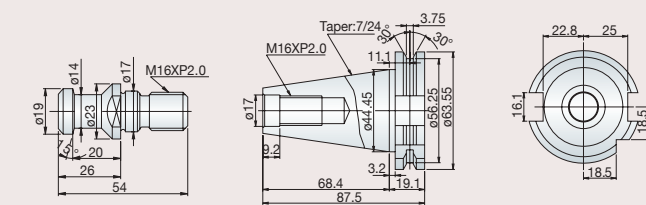
## BBT-40 (used for Vcenter-H400)



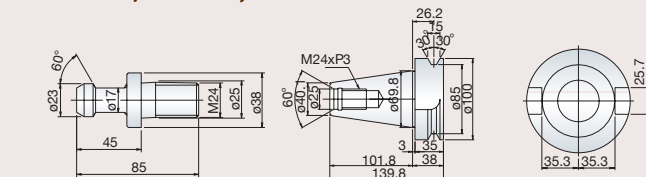
## BT-40 (used for Vcenter-H500HS)



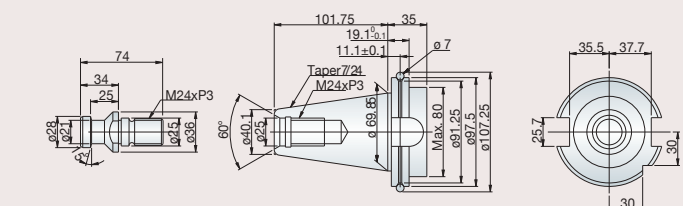
## SK-40 (used for Vcenter-H400/H500HS)



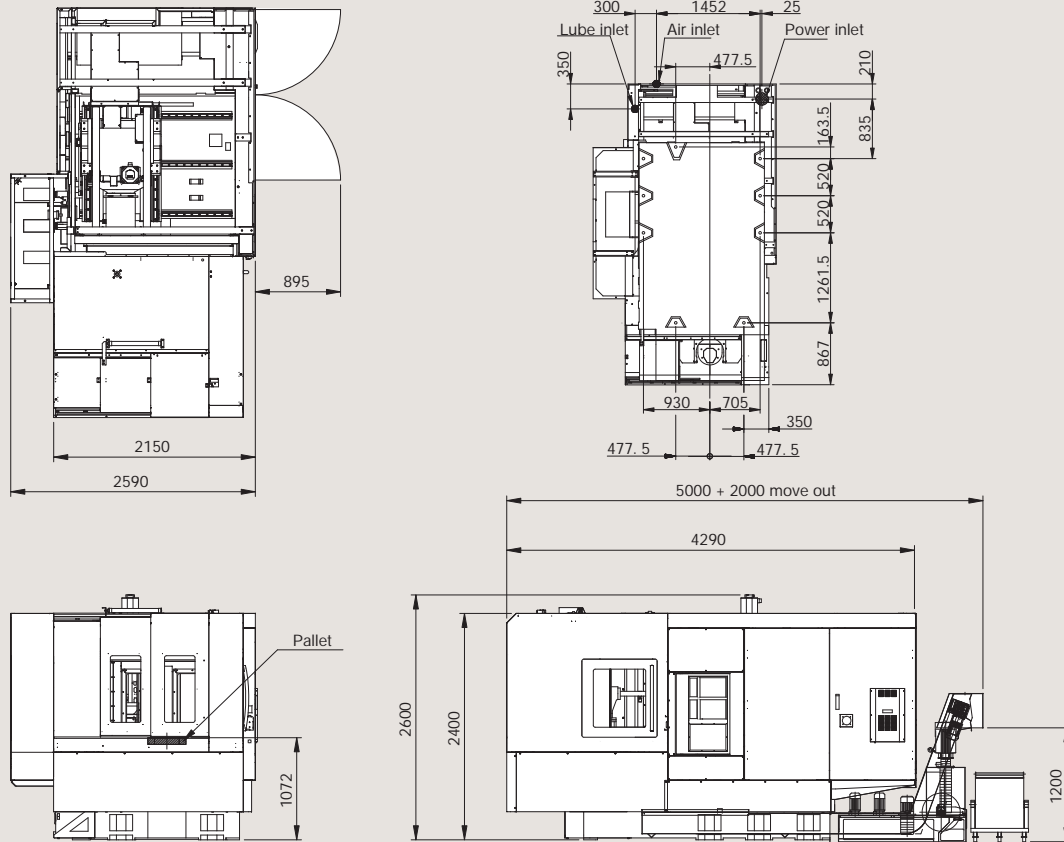
## BT-50 (used for Vcenter-H500/H630HS/H630HD/H1000)



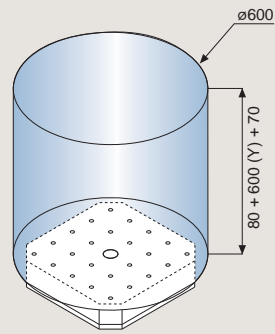
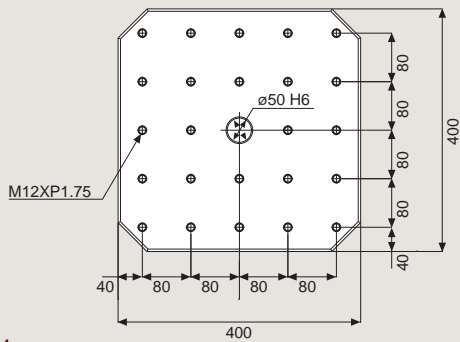
## SK-50 (used for Vcenter-H500/H630HS/H630HD/H1000)



# Vcenter-H400

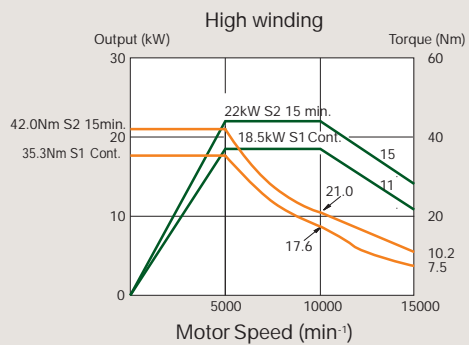
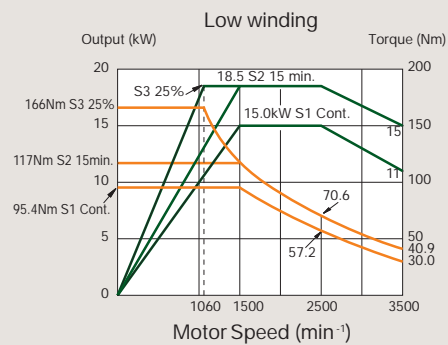


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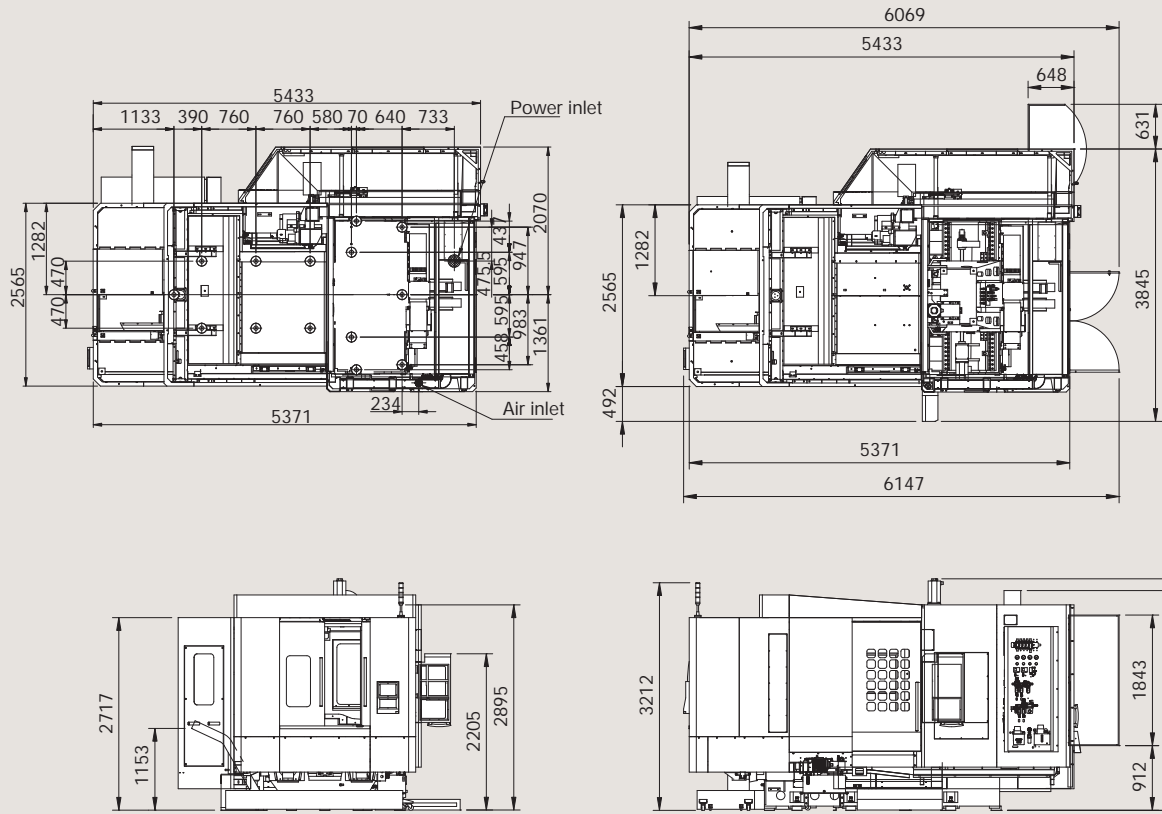
## Spindle Output

15000 rpm BBT-40 spindle (Fanuc motor B112L-18.5/15000)

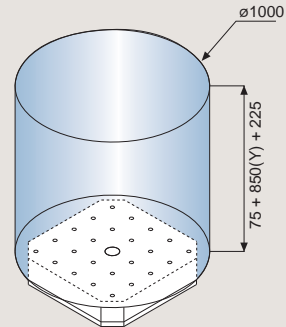
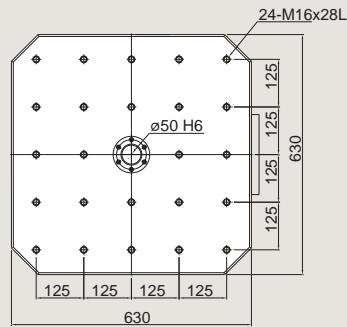




# Vcenter-H630HS

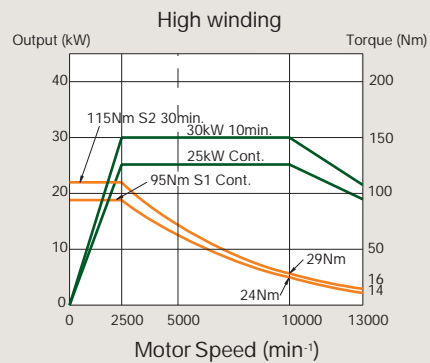
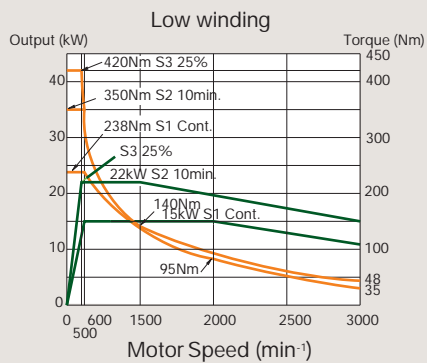


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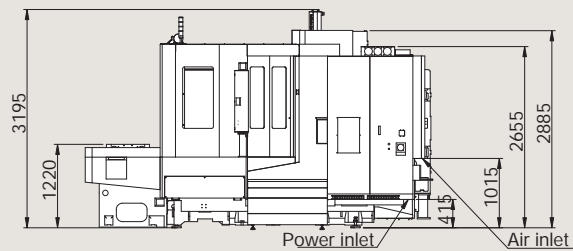
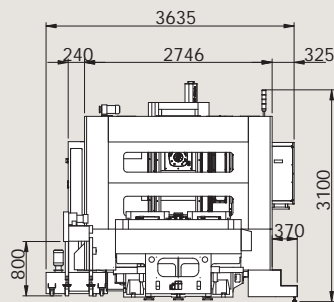
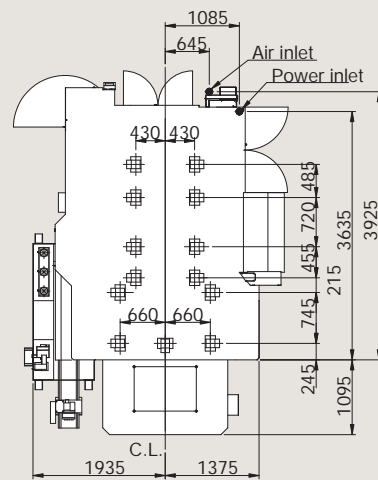
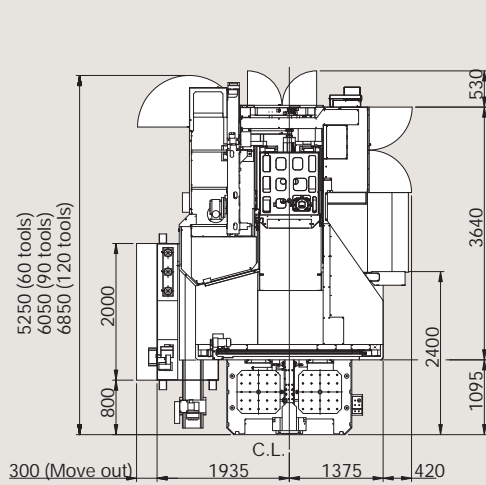


## Spindle Output

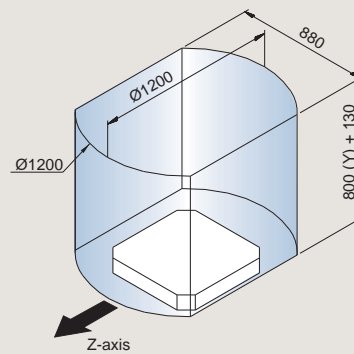
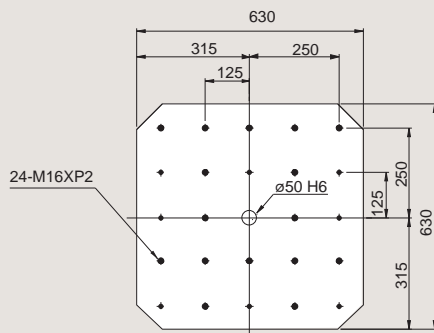
10000 rpm BT-50 spindle (Fanuc motor B160LL/13000)



# Vcenter-H630HD

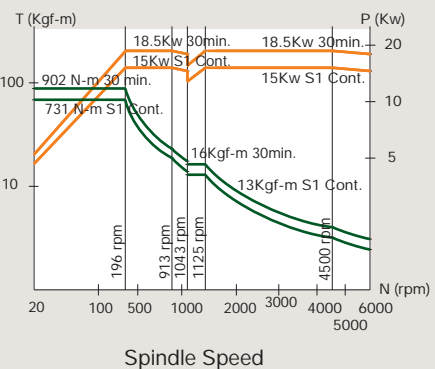
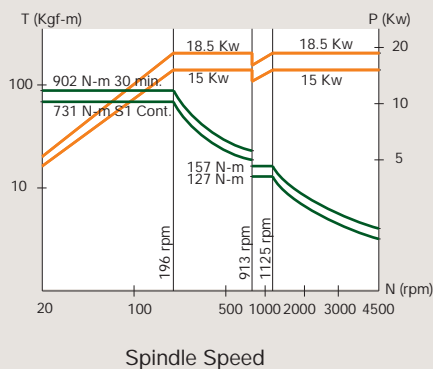


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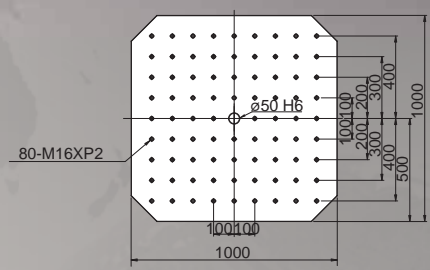
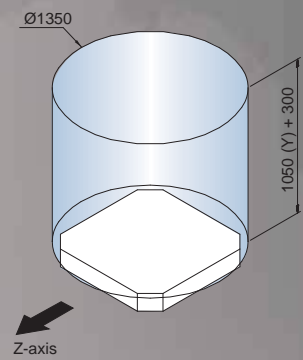
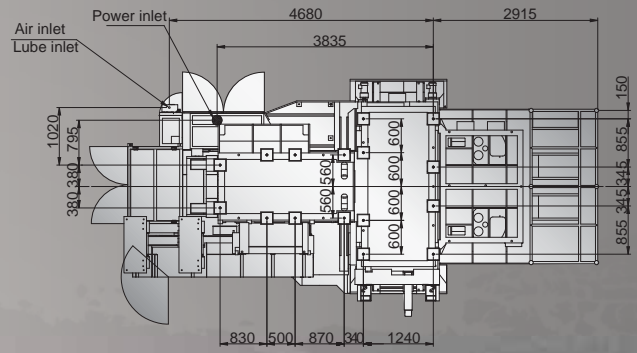
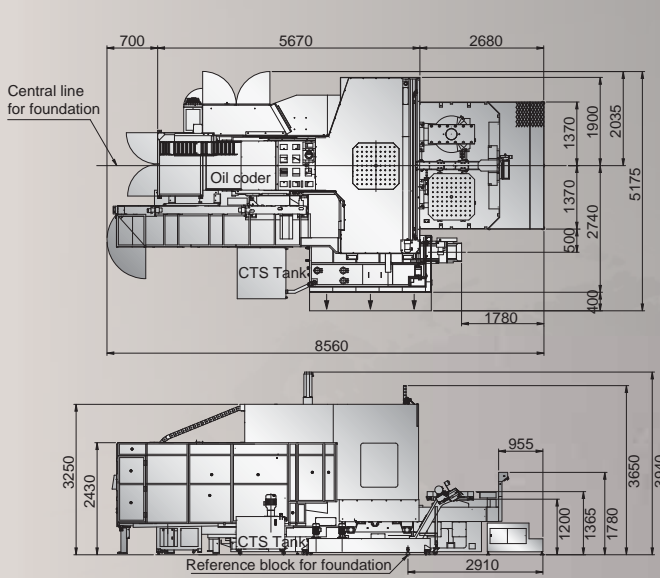


## Spindle Output

Spindle speed-output diagram

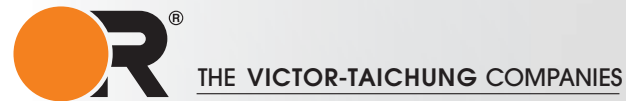
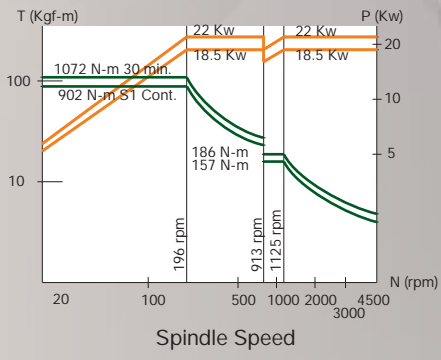


# Vcenter-H1000




unit:mm

## Spindle Output



**VictorTaichung profile:**  
 Sales turnover: USD 143 mil's (in 2013)  
 No. of employees: 1091  
 \*Exchange rate: 1 USD=30 TWD.




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