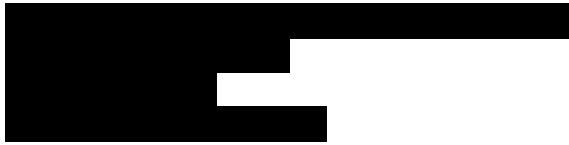




SNK America, Inc



Double Column Type 5-face Machining Center - Model RB-6M III Haas



* Photo may include selected options





Features

Proven rigidity enables high precision and powerful cutting

- Dynamic rigidity achieved utilizing round column
- Static spindle head rigidity increased 1.4 times
- Thermal distortion minimized by advanced machine design and TDC software

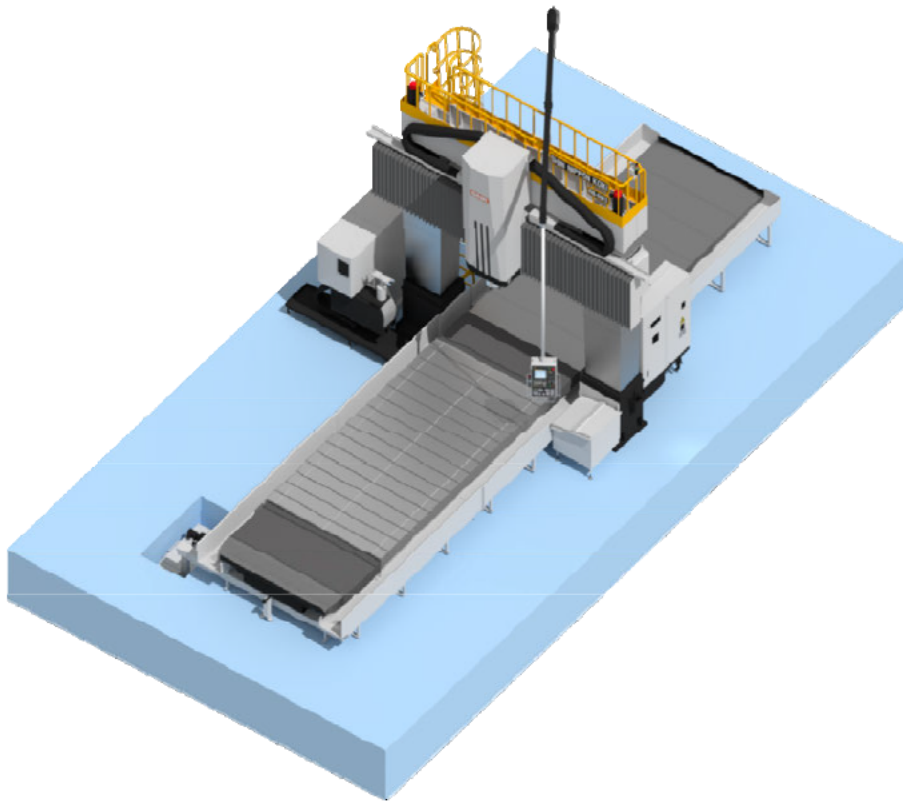
User-friendly design

- Round quill design minimizes interference
- SNK's exclusive software allows easy 4 axes programming
- Highly customizable to meet customer demands

Increased user productivity

- Exclusive SNK software enhances machine productivity
- Remote machine monitoring available with IoT

Wide range of the bridge width can be applied to a variety of workpiece





Features

Available Machine Options Upon Request

Special accessories

Machine body spec change

| | |
|---|--|
| APC device | |
| APC device (front & side load) | Standard / Small-footprint |
| Table / Pallet | |
| Table / Pallet length change | -1,000mm / +1,000mm / +2,000mm / Others |
| X-axis stroke extension | Table length+250mm / Pallet length+250mm+APCst. 2,000mm |
| Distance from table / pallet top to spindle end | Depends on combination of options (Details on page 18) |
| Z-axis stroke extension | +200mm |
| W-axis stroke extension | +250mm |
| Column stand extension | +250mm / +500mm |
| Spindle specification | |
| Spindle head | High-torque, high-power & high-speed spindle (Details on page 6) |
| Spindle / quill diameter (Standard: 90/300) | 90/330, 100/330 Depends on spindle head, Z-axis stroke and combination of options |

Standard Accessory spec change

| | |
|--|--|
| ATC device for both vertical and horizontal position | |
| Device type | M II type |
| Tool storage capacity | 60 tools / 80 tools |
| Tool shank+Pull stud | MAS-P60T-1 / CT50+P60T-2 |
| Max tool length (standard: 400 mm) | 600mm |
| Max tool weight (standard: 20 kg) | 35kg |
| AAC device for one attachment & dust proof cover | |
| Attachment storage capacity | Two attachments & dust proof cover / One attachment at ATC side |
| Angular attachment / Dust proof cover | |
| C-axis rotation indexing angle | 90° / 5° / 1° |
| Coolant nozzle for vertical spindle | Long 2 pcs + short 2 pcs / Short 4 pcs |
| Provision for special tool | Speed-up attachment (R80) / Angle head (R110) / Through-tool coolant (R80) |
| Through spindle coolant | Coolant / Coolant + Air |
| Slideway cover | |
| Y-axis armored cover | |
| Coolant tank | |
| Capacity change (effective) | 300L / 500L / 1000L |
| High-pressure option | 3MPa / 7MPa |
| Coolant filtering device | |
| Mist coolant | |
| Cleaning-less tank | |
| Chip management | |
| Gutter shape change (standard: tilted type) | Horizontal type |
| Chip conveyor | 2 pcs (30°/45°rising) / 3 pcs (30°/45°rising, elevation towards ATC side / AAC side) |
| Splash cover (Standard: Type-0, safety fence) | Type-A / Type-B / Type-C / Type-D (Details on page 16) |
| Table / Pallet top surface | |
| Improved T-slot accuracy | H7 |
| Custom table top surface | Made to order |
| Attachment software | |
| Automatic attachment data measuring function | |
| Special software for DC type attachment | |
| Machine color | |
| Special machine color | Made to order |

Special Accessories

| | |
|---|--|
| Additional attachment | (Details on page 17) |
| Extension attachment | |
| Center swing universal attachment | |
| 30° inclined attachment | |
| Compact special angular attachment | |
| Machine accuracy | |
| Scale feedback | X&Y-axis / X, Y & Z-axis / X, Y, Z & W-axis |
| Ball screw core cooling (X-axis) | |
| Thermal displacement compensation function | Z-axis thermal displacement compensation function (sensor-less) / Environmental thermal displacement compensation function (TDC) |
| High-Precision Restoration System | MCC-I / MCC-I Pro |
| Improved productivity | |
| Automatic measuring & alignment function | |
| Workpiece setup support function | |
| Tool measurement + Broken tool detection | Tool length measuring + broken tool detection function (touch type) / Tool length & diameter measuring + broken tool detection function (laser type) |
| Interactive machining pattern software (optional) | |
| Machine operation | |
| Movable operation pendant (hanging type) | |
| Half machining function | |
| Manual Pulse Generator total: 2 pcs | |
| Visualization function | |
| Intelligent PC (software only) | Machine monitoring |
| MT-LINK | MT-LINK Operation totalization software |
| SI-View | Intelligent PC |
| SI-Count | Graphical drawing of collected data |
| SI-Shift | Distance + Time integration |
| SI-Tool Check | MT-LINK Data conversion |
| SI-MoldPG | Simple tool check function |
| PUMANET (software only) | Program analysis / Program analysis & conversion |
| Others | Machining time calculation / DNC function |
| Power transformer | |
| Cooler for control unit | |
| Control panel unit position riser | For pitted foundation machine |



Machine Specifications

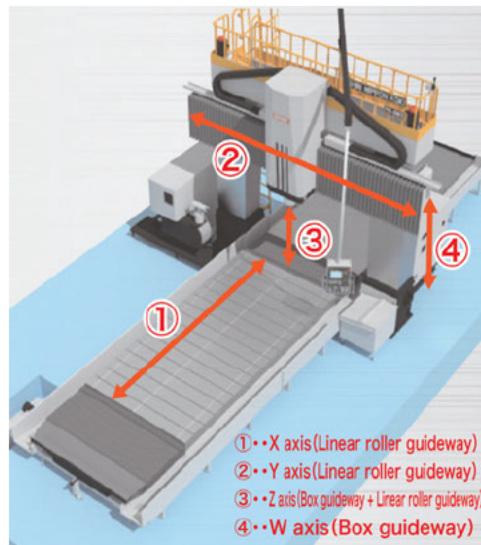
Travels:

| | | | |
|---------------------------|--------|-----------|------------|
| · Table longitudinal | X-axis | 10,250 mm | 403.5 inch |
| · Spindle head transverse | Y-axis | 3,900 mm | 153.5 inch |
| · Ram vertical | Z-axis | 800 mm | 31.5 inch |
| · Crossrail vertical | W-axis | 1,600 mm | 63.0 inch |

Feedrates:

| | | | |
|------------------|--------|----------|-----------|
| · Rapid feedrate | X-axis | 23 m/min | 905.5 ipm |
| | Y-axis | 23 m/min | 905.5 ipm |
| | Z-axis | 8 m/min | 314.9 ipm |
| | W-axis | 5 m/min | 196.9 ipm |

| | | | |
|----------------------|--------|----------|-----------|
| · Machining feedrate | X-axis | 10 m/min | 393.7 ipm |
| | Y-axis | 10 m/min | 393.7 ipm |
| | Z-axis | 8 m/min | 314.9 ipm |
| | W-axis | 4 m/min | 157.5 ipm |





Machine Specifications

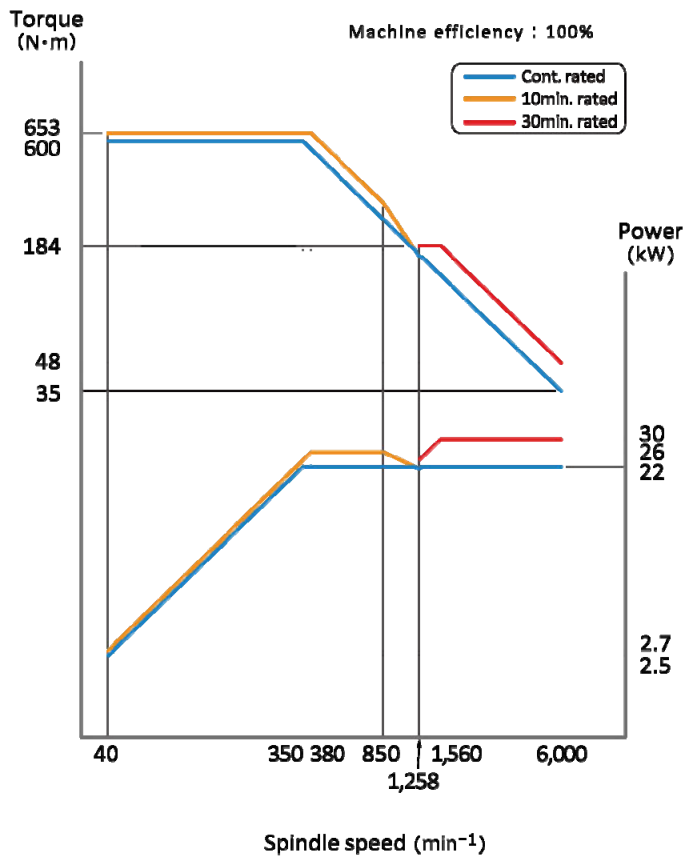
Table:

| | | |
|--|-------------------|--------------------|
| · Work mounting surface of table | 10,000 x 3,000 mm | 393.7 x 118.1 inch |
| · Effective distance between the columns | 3,600 mm | 141.7 inch |
| · Distance from table top to spindle end | 2,000 mm | 78.7 inch |
| · Table load capacity | 30,000 kg | 66,138.7 lbs |

Spindle:

| | | |
|-----------------------|----------------------------|----------------|
| · Spindle speed range | 20 - 6,000 rpm | |
| · Spindle nose | CT-50 + P50T-2 | |
| · Spindle drive motor | VAC 26 / 22 kw | 34.9 / 29.5 HP |
| | (10 min continuous rating) | |

SPINDLE TORQUE & POWER DIAGRAM





Environmental & working conditions

Note: Following requirements may vary according to the selected options or functions.

Preferable ambient conditions for machines

- Ambient temperature range 17 to 25°C (62 to 77°F)
- Temperature fluctuation 2°C (3.6°F) or less/day and mild variation
- Temperature difference Within 1°C at a height of approx. 5 m from the floor
- Humidity 40 to 75% at 20°C (68°F)
- Atmosphere Density of dust, coolant and organic solvent shall not be high. To avoid direct sunshine and wind.

Power requirement

- Power 80 KVA
- Frequency 60Hz ± 1Hz
- 3-phase voltage AC460V ± 10%

Air requirement

- Pressure (Greater than) 0.6 to 0.7 MPa (70 to 98 psi)
- Volume 1,400 NL/min.or more
- Supply port Rc 1/2

Training & documentation

Training

SNK will conduct the following training courses at the customer's premise. Trainee(s) must have basic knowledge of operation and programming of CNC machines.

- Operator and programming training 5 days
- Mechanical and Electrical maintenance training 1 day

Documentation

- User / maintenance manual (One (1) hard copy (paper) + One (1) CD-ROM in English)
 - 1 MACHINE STRUCTURE DRAWINGS
 - 2 PARTS LIST
 - 3 EXPLANATION OF PURCHASED EQUIPMENT
 - 4 OPERATION MANUAL & PROGRAMMING MANUAL
 - 5 SCHEMATIC DIAGRAM
 - 6 PMC SETTING DATA
 - 7 LADDER DIAGRAM
 - 8 MACHINE WIRING
- FANUC programming manual (One (1) hard copy (paper) + One (1) CD-ROM in English)

The necessary manuals according to FANUC are included as standard together with FANUC options fitting the machine.



NC Control Specifications

NC Control:

- Model
- Controlled axes
- Simultaneously controlled axes
- Maximum programmable dimension
- Least input increment

FANUC Series 31i-MODEL B Plus
 5 axes (X, Y, Z, Wm & Ws)
 Positioning (rapid traverse) 4 axes
 Linear interpolation 4 axes
 Circulation interpolation 2 axes
 Linear axes $\pm 999999.999\text{mm}$
 0.001mm

· Basic specification

- HRV control
- Interlock
- Machine lock
- Emergency stop
- Stored stroke check 1
- Mirror image
- Automatic operation (Memory/MDI/DNC)
- Program number search
- Sequence number search
- Wrong operation prevention
- Buffer register
- Dry run
- Single block
- Manual continuous feed (JOG)
- Manual reference position return
- Nano interpolation
- Positioning (G00)
- Exact stop mode (G61)
- Exact stop (G09)
- Linear interpolation (G01)
- Circular interpolation(Multi-quadrant is possible)(G02,G03)
- Dwell (Per second)(G04)
- Skip (G31)
- Reference position return/check (G27,G28,G29)
- 2nd reference positioning return (G30)
- Rapid traverse override (F0,25%,50%,100%)
- Feed per minute (mm/min)
- Tangential speed constant control
- Cutting feedrate clamp
- Feedrate override (0 to 200%(per every 10%))
- Override cancel
- Linear ACC/DEC after cutting feed interpolation
- Tape code (EIA/ISO automatic recognition)
- Label skip
- Control in/out
- Program le name (32 characters)
- Sequence number (N8 digit)
- Absolute/incremental programming (G90,G91)
- Decimal point programming/pocket calculator type decimal point programming
- Plane selection (G17 to G19)

- Rotary axis roll-over
- Coordinate system setting (G92)
- Manual absolute on and off
- Programmable data input (G10)
- Programmable parameter input
- Sub program call (10 folds nested)
- Circular interpolation by R programming
- Auxiliary function (M code)
- Auxiliary lock function
- Tool function (T code)
- Tool offset memory A
- Tool length offset (G43,G44,G49)
- Tool length measurement
- Backlash compensation for each rapid traverse and cutting feed
- Smooth backlash compensation
- Program protect
- Extended part program editing
- Clock function
- Current position display
- Program comment display
- Parameter setting and display
- Alarm display
- Alarm history display
- Operator message history display
- Operation history display
- Actual cutting feedrate display
- Operating monitor screen
- Servo setting screen
- Spindle setting screen
- Servo waveform display
- Data protection key (1 type)
- Erase CRT screen display
- Parameter set supporting screen
- Help function
- Self-diagnosis function
- Memory card input/output
- USB memory input/output
- Screen hard copy
- Machine interface (DI/DO)

(Continue)



NC Control Specifications

| | |
|--|----------------------------------|
| ● Cs contouring control | |
| ● Synchronous control | For Z, W-axis control |
| ● Inch / metric conversion | G20, G21 |
| ● Stored stroke check 2,3 | G22, G23 |
| ● Stroke limit check before move | |
| ● Stored/interpolation pitch error compensation | |
| ● Sequence number comparison and stop | |
| ● Manual handle feed (1 unit) | 0.001, 0.01, 0.1mm / pulse |
| ● 3-dimensional manual feed | For sending 3-dimensional handle |
| ● Manual Handle interruption | |
| ● Single direction positioning | G60 |
| ● Helical interpolation | G02, G03 |
| ● High-speed skip function | |
| ● 3rd/4th reference position return | G30 |
| ● Bell-shaped acceleration / deceleration after cutting feed interpolation | |
| ● Inverse time feed | G93 |
| ● External deceleration | |
| ● Optional block skip | 3 blocks |
| ● Workpiece coordinate system | G52~G59 |
| ● Workpiece coordinate system preset | G92.1 |
| ● Custom macro | G65~G67 |
| ● Custom macro common variable | Total 600 (#100~199, #500~999) |
| ● Canned cycles for drilling | G73, G74, G76, G80~G89, G98, G99 |
| ● Automatic corner override | G62 |
| ● Coordinate system rotation | G68, G69 |



NC Control Specifications

- 3-dimensional coordinate system conversion
- Tape format for FS15
- Macro executer & SRAM 2MB
- Spindle serial output
- Spindle orientation
- Spindle output switching function Switching low / high speed winding line including 3-dimensional rigid tap
- Rigid tapping Total 99 pairs (± 6 digits)
- Tool offset pairs G40~G42
- Tool compensation
- Tool offset memory C 4M byte
- Part program storage size Total 1000
- Number of registrable programs expansion Multi part program editing
- Background editing
- Run hour and parts count display
- Multi-language display English/Japanese
- RS-232C interface 1, 2 Channel 1, 2
- Fast Ethernet / Data server CF card 1GB
- External data input For alarm message
- Display unit 10.4" color LCD (dual display)
*15" display available upon request
- Spare parts 100% of fuses (Max. 10 pcs. / the same type)



General Sales Terms & Conditions

Machine installation

This machine requires a foundation (includes, but not limited to checkered plates, mortar grouting, plates for leveling block for temporary installation, rack for cable if required) which is the responsibility of the Buyer. Seller will provide a foundation drawing.

Unless otherwise stated, chip conveyor system, chip bucket, splashguard, fixtures, tools, setup instruments, test bars and test pieces at time of installation, oil for lubrication, coolant oil, working oil and flushing oil, machine rigging for unloading, inland freight and fencing around the ATC moving area are not included.

Freight from Stocking Point is the responsibility of the Buyer. Seller will provide installation supervision for the installation of the machine. However, additional labor is required during the installation and is the responsibility of the Buyer. Rigging of the machine during installation is also the responsibility of the Buyer.

Buyer acknowledges that upon machine delivery seller will proceed with UCC filing without any express authorization from buyer. Upon receipt of full payment seller will remove UCC lean.

Delivery

The machine is ready to ship from SNK plant in Japan in approximately twelve (12) months after receipt of purchase order, down payment and all technical information. This period may change after the validity of this quote.

- 1 Machinery quoted by SNK America, depending on the model type, specifications, and options, are subject to the regulations of the Japanese authority for exports.
- 2 For those machines subject to the export regulations:
 - (A) It may be necessary for SNK America to verify the End User and the end use of the machinery.
 - (B) SNK America requests that after the sale the End User inform SNK America if the End User re-sells the machines to a third party or if the End User moves the machine to a new location.

Packing

When it is necessary for the correct protection of the parts during the shipment, the supply includes the packing of the machine and components and also a superficial protection, for road transportation on truck.

Export & Transit limitations

Due to the restrictions concerning movement of high technology products carried out by the international authorities, all 5-axis machines are subject to export authorization issued by the Japanese Government. Consequently the Purchaser / End-User shall prepare and supply the relevant End-User and End-Use Certificate as well as all the necessary information requested by SNK for Export Authorization application.





Investment Summary

| | | |
|----------|--|------------------------------|
| 1 | SNK Double Column Type 5-face Machining Center - RB-6M III | \$1,612,680.00 |
| | Table length extension: Total 10,000mm | Included with Machine |
| 2 | Included Machine Options | |
| | Spindle end shape/Tool shank + pull stud CT50V+P50T-2 | \$550.00 |
| | Spindle quill diameter upgrade: 330 mm | Included with Machine |
| | Attachment indexing at every 1 deg | Included with Machine |
| | Chip conveyor - 3 pcs conveyor with integrated coolant tank (2,000L) | \$172,610.00 |
| | ATC upgrade 60 to 220 (matrix type) | \$259,750.00 |
| | Movable operation pendant | \$7,500.00 |
| | Scale feedback (X, Y & Z-axis) | \$20,720.00 |
| | Machine 3D model (Head & table for vericut) | \$2,190.00 |
| | Machine 3D model (Entire machine for layout check) | \$1,650.00 |
| | Y-axis bellow armour cover | \$7,840.00 |
| | Z-axis travel extension: Total 800mm | \$28,920.00 |
| | Reinshaw tool probe | \$40,280.00 |
| | Reinshaw parts probe | \$28,100.00 |
| 3 | Included Control Options | |
| | Attachment data automatic measurement/registration function | \$4,990.00 |
| | NC options (included but not limited to): | |
| | · NC option kit | Included with Machine |
| | · 3D coordinate system conversion | \$610.00 |
| | · 3D manual feed | \$610.00 |



Investment Summary

4 Pricing

Double Column Type 5-face Machining Center - RB-6M III **\$1,612,680.00**

All Included Options **\$576,320.00**

Total Investment **\$2,189,000.00**

*Total investment does not include tariffs. Due to fluctuating tariff regulations, SNK America will charge directly to the customer, the invoiced tariff and duties amount in a future invoice. See attached Terms & Conditions of Sales. Buyer acknowledges receipt of the SNK terms and conditions.

5 Payment Terms

- 1) Thirty percent (30%) down payment with purchase order (Immediate upon receipt)
- 2) Thirty percent (30%) 3 months ARO (Net 30 days)
- 3) Thirty percent (30%) before shipment from factory (Due before shipment from factory)
- 4) Ten percent (10%) upon acceptance of the machine (Net 30 days)

See attached Terms & Conditions of Sales. Buyer acknowledges receipt of the SNK terms and conditions.

6 Warranty

SNK AMERICA INC. warrants the equipment to be free from defects in material and workmanship. SNK AMERICA INC. will issue a one - (1) year warranty on the machine and a two - (2) year warranty on the Fanuc control. Warranty claims shall be made at the discretion of SNK AMERICA INC.

7 Machine Installation - Rigging and inland freight not included

This machine requires a foundation (includes, but not limited to checkered plates, mortar grouting, plates for leveling block for temporary installation, rack for cable if required) which is the responsibility of the Buyer. Seller will provide a foundation drawing.

Unless otherwise stated, chip conveyor system, chip bucket, splashguard, fixtures, tools, setup instruments, test bars and test pieces at time of installation, oil for lubrication, coolant oil, working oil and flushing oil, machine rigging for unloading, inland freight and fencing around the ATC moving area are not included.

Freight from Stocking Point is the responsibility of the Buyer. Seller will provide installation supervision for the installation of the machine. However, additional labor is required during the installation and is the responsibility of the Buyer. Rigging of the machine during installation is also the responsibility of the Buyer.

Buyer acknowledges that upon machine delivery seller will proceed with UCC filing without any express authorization from buyer. Upon receipt of full payment seller will remove UCC lien.

8 FOB Port of Entry



Investment Summary

9 Final Acceptance

Upon completion of installation, inspection, and training performed at customer facility.

10 Anticipated Install Time

6-7 weeks. Subject to change.

11 Training

SNK will conduct the following training courses at the customer’s premise. Trainee(s) must have basic knowledge of operation and programming of CNC machines.

- Operator and programming training 5 days
- Mechanical and Electrical maintenance training 1 day

12 Validity of quote

The quote is valid 30 days.

SNK America, Inc.

