

HBM110XT

CNC Horizontal Boring Mill



STANDARD FEATURES

- Fanuc 32i-MB CNC control
- 10.4" LCD Color Display
- Manual Guide *i*
- 60 Pocket Double Arm Automatic Tool Changer
- 3000 RPM 50 Taper Spindle
- Powerful 30/25 HP Spindle Motor
- Rugged Two Speed Geared Head
- B-Axis Simultaneous 360,000 Position Rotary Table
- Locking Pins Every 90 Degrees
- Table Mounted Chip Auger and Chip Conveyor Chip Removal System
- Automatic Lubrication
- Spindle Extension Sleeve
- Remote Handwheel
- Spindle Oil Chiller
- Hydraulic System
- Flood Coolant System
- 700 psi Coolant Through Spindle
- Table Chip/Coolant Guarding
- Work Light
- Rigid Tap
- Spindle Orientation
- Cycle End and Warning Light
- Auto Power Off Function
- Ethernet Connection
- RS-232 Interface

SPECIFICATIONS

CAPACITY:

X axis travel	78.7" (2000 mm)
Y axis travel	66.9" (1700 mm)
Z axis travel	55.1" (1400 mm)
W axis travel	21.6" (550 mm)
With spindle extension sleeve	11.5" (290 mm)
B axis – Contouring	360,000 Positions

TABLE:

Table size	59 x 49" (1500 x 1250 mm)
Table Height	51" (1290 mm)
Table load capacity	11,000 lb (5000 kg)
T-Slot size	0.87" (22 mm)
Table clamping system	Hydraulic
Table clamping force	5700 ft-lb (800 kg-M)
Locking Pins	90° Positions

SPINDLE:

Distance from spindle nose to table center	0 – 55.1" (0 - 1400 mm)
Distance from table top to spindle center	0 - 66.9" (0 - 1700 mm)
Boring Spindle Diameter	4.3" (110 mm)
Spindle taper	ISO No. 50
Spindle speed	3000 RPM
AC spindle motor	30/25 HP (22/18.5 kW)
Spindle Transmission	Two Range Geared - Automatic Shift
Gear ratio (High) - 2:1	35 - 3000 RPM
Gear ratio (Low) - 6:1	35 - 1100 RPM
Spindle torque	636 ft-lb (863N.m)

AUTOMATIC TOOL CHANGER:

Number of tools	60
Tool shank	CT50
Pull stud	ANSI Retention Knob 50 Taper
Max. tool diameter	4.9"(1125 mm)
With empty adjacent pockets	10"(250 mm)
Max. tool length	15.7" (400 mm)
Max. tool weight	55 lb (25 kg)
Tool change time	16 Sec

MOTION:

X, Y / Z / W axis rapid traverse rate	590/470/393 IPM (15/12/10 m/min)
Ball Screw Dia/Pitch X, Y,Z	55 mm / 12 mm
Ball Screw Dia/Pitch W	40 mm / 5 mm
B axis rapid traverse rate	2.5 RPM
Max. cutting feedrate X, Y, Z, W	200 IPM (5000 mm/min)
Max. cutting feedrate B	2.5 RPM
Positioning accuracy X, Y, Z, W	±0.00059" (±0.015 mm)
Repeatability X, Y, Z, W	0.00047" (0.012mm)
Positioning accuracy B	± 15 Sec
Repeatability B	5 Sec
Axis thrust force (continuous) X, Z / Y / W	3500/4600/3300 lb (1600/2100/1500 kg)
B axis cutting force	4600 ft-lb (640 kg-M)

GENERAL:

Machine height	159" (4030 mm)
Floor space required (W x D)	210" x 248" (5335 x 7055 mm)
Approximate machine weight	54,000 lb (24,500 kg)
Power required	57 KVA / 150 amps
Voltage required	208-240 Volts / 3 Phase
Air required	85 PSI (6 kgf/cm ²) at 4 CFM (65 L/m)

CONSTRUCTION

➤ **BASE, COLUMN AND SADDLE:**

The base, column, and saddle are composed of certified, fine-grain Meehanite cast iron, which provides very high dampening characteristics. The one piece base casting and column are stress relieved and annealed to ensure machine geometry is maintained throughout the machines life. Wide spacing of the solid box ways insures optimal support and rigidity throughout the full travel of each axis. Heavily ribbed castings provide superior rigidity and dampening for high speed machining and prevent casting deformation during aggressive milling. The mating surface of the base and column are hand scraped to optimize fit and machine geometry.

➤ **WAY SURFACES:**

The axes are square box ways hardened to a minimum of HRC50 and ground with turcite on all axes. Z axis utilizes additionally 55 mm linear guide ways attached to the one piece base casting for outside support of the oversized saddle. Linear guide way technology allows heavier table capacities and maintains machine precision under any table load. The Z axis box and guide ways are spaced to eliminate table pitch and deformation. The square box way surfaces on X & Y axes utilize gibs with easy adjustment to maximize rigidity and maintain geometry throughout the life of the machine tool.

➤ **SPINDLE:**

The 3000 rpm spindle uses cylindrical roller spindle bearings that require no maintenance. The spindle and sleeve are made from high grade chrome steel hardened to HRC55 - 58, then ground to a precision fit to insure maximum cutting rigidity. The spindle oil chiller maintains proper lubrication while eliminating spindle growth due to thermal expansion, further insuring part accuracy and extending the spindle life.

➤ **GEARED HEAD STOCK:**

The automatic shifting, integral two range geared spindle offers both speed and power for a variety of work. With a 6:1 gear ratio in low range spindle torque of 636 ft-lb will handle your toughest machining applications. The 2:1 high range gearing still offers considerable torque along with the spindle speeds for higher material removal rates. The combination of speed and power offer the most flexibility for the varying shop applications encountered.

➤ **TABLE:**

The heavily ribbed Meehanite cast table is hardened to HB 180 - 220 and ground for accuracy. Running on turcite with an inner and outer oil feed system allows for a table capacity of up to 11,000 lb. Seven 22 mm (0.87") T-Slots with 150 mm (5.9") spacing offers flexible fixture or work piece mounting on the table surface. A dual, direct drive worm gear system with 180:1 ratio using a Heidenhain rotary encoder mounted to the table shaft offers smooth and accurate machining with the B axis. Locking pins located in the 90° quadrants provide additional accuracy in an indexing application.

➤ **BALL SCREWS AND AXIS DRIVES:**

Each axis is driven using a grade C3 precision ground ball screw. Each of the axes ball screws are pre-tensioned to allow fast feedrates and high axis thrust loads. Each ball screw is supported on each end using angular contact thrust bearings and is perfectly centered between the way surfaces. The X, Y, Z & W axis ball screws are direct belt driven using AC servo type drive motors for smooth axes acceleration.

➤ **AUTOMATIC TOOL CHANGER:**

The 60 pocket double arm ATC provides fast and reliable tool changes with little to no maintenance. Tools can be staged in an ATC wait position prior to the tool change command further increasing the speed of the tool change sequence.

➤ **FLOOD COOLANT SYSTEM:**

A dedicated flood pump provides high volume coolant to the machine tool for general machining applications. Coolant is recirculated through the machine tool utilizing an 80 gallon return tank. An oil skimmer is included to help remove oil contaminants and extend the life of the flood coolant, reducing the frequency of replacing coolant.

➤ **COOLANT THROUGH SPINDLE:**

Utilizing a high quality rotary union, the through spindle coolant system is capable of 700 psi making easy work of deep hole drilling and heavy machining where coolant directly at the tool is required. The CTS system adds a 118 gallon auxiliary coolant tank with a transfer pump from the main coolant tank. To insure the life of the rotary union, the 5 HP pump system has a replaceable 11 micron filter cartridge.

➤ **TABLE CHIP GUARD:**

A table mounted chip guard helps contain chips and coolant in the machining area. The table guard allows for large opening doors and side panels for easy part load and unload, and in extreme cases with large parts the table chip guard is easily removable.

➤ **CHIP REMOVAL:**

A single, table mounted chip auger is used to carry chips away from the table area. Auger chute exits into a belt type chip conveyor system to carry chips away from the machine tool.

➤ **LUBRICATION:**

Automatic lubrication is provided to the way surfaces and ball screws with oil to eliminate wear. Way oil is delivered by metered valves, which precisely control the volume. A low oil-level alarm warns the user preventing possible damage to the way surfaces and ball screws.

➤ **REMOTE HANDWHEEL:**

The axes can be moved with the remote hand wheel to ease setup and set work coordinates. The remote handwheel can move the axis in increments of 1, 10, or 100. The side button can be used to set the work coordinate for the selected axis.

➤ **PCMCIA CARD READER:**

The Fanuc 32i-MB CNC control is equipped with an operator panel mounted PCMCIA card slot. This PCMCIA card and slot provide a solution for easy program transfer to and from the CNC program storage memory. Programs exceeding the CNC's memory capacity can be drip fed from PCMCIA card as well, enabling large program execution.

➤ **ETHERNET CONNECTION:**

An RJ45 Ethernet or Network Port is provided on the side of the operator station allowing simple and fast data exchange between the CNC control and your local network. Programs, tool offset information or control/machine parameters can easily be transferred through the Ethernet connection.

➤ **FOUNDATION REQUIREMENTS:**

Machine geometry and accuracies cannot be guaranteed unless the machine is placed on a proper foundation. Consult Milltronics for recommended foundation requirements.

STANDARD EQUIPMENT IN BASE PRICE

- Fanuc 32i-MB CNC Control
- 10.4" Color LCD Display
- Manual Guide *i*
- 3000 RPM Spindle
- Two Range Geared Head Stock
- Spindle Oil Chiller
- Hydraulic Unit
- 30/25 HP (22/18.5 kW) spindle motor
- Full Contouring B axis, 360,000 positions w/90° Locking Pin Locators
- Rigid Tap
- 60 pocket Automatic Tool Changer
- Feedrate and Spindle speed Overrides
- Remote Handwheel
- Edit Protection Key Switch
- One Piece Certified Meehanite Cast Iron Base
- Fully Hardened and Ground 59 x 49" Table
- Hardened and Ground Box Ways on all Axes
- Additional 55 mm Linear Guide Ways on Z Axis
- AC Servo motors
- 55 mm Ball screws on X, Y, and Z axes
- 40 mm Ball screw on W Axis
- Double Anchored, Pre-tensioned Ball screws
- Matched AC Servo Amplifiers on All Axes
- Automatic Metered Lubrication System
- Telescopic Metal Way Covers
- Table Mounted Chip Auger Empties to Belt type Chip Conveyor
- Flood Coolant System with 80 gallon Tank
- 700 PSI Coolant Through Spindle with Auxiliary 118 Gallon Tank
- Table Mounted Chip Guard with Oversized Access Doors
- Coolant Tank Oil Skimmer
- Work Light
- Instruction Manual, Parts List, and Electrical Drawings
- Operator and Maintenance Manuals

OPTIONAL ACCESSORIES:

Milling Head Attachments:

Right Angle Milling Head

Universal Manual Milling Head

Facing Head (*W Axis controlled*)

Probing:

5173-1

Renishaw OMI-2T interface including the Renishaw OMP40-2 Optical Spindle probe w/ macros and the Renishaw OTS contact tool setter w/ macros

5163

Renishaw OMI-2T interface including the Renishaw OMP40-2 Optical Spindle probe w/ macros

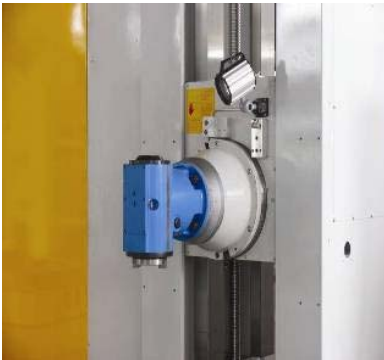
5167

Renishaw OMI-2T interface including the Renishaw OTS contact tool setter w/ macros

5174

Renishaw NC4-F300 non-contact laser tool setter – Consult Factory

Right Angle Milling Head



Facing Head



Universal Milling Head



Fanuc 32i-MB CNC Control Features

The Fanuc 32i-MB CNC Control utilizes the latest in CNC technology to offer the highest levels of reliability, operator convenience and ease of use, along with the power and high speed you have come to expect from a Fanuc controlled machine tool.

Basic Control Features

- High Resolution 10.4" TFT Color Display
- Graphic Display
- Manual Guide *i*
- PCMCIA Card Slot
- Ethernet Connection
- Self-Diagnostic Functions
- Alarm & Operation Message History Display
- 8 m/s Block Processing Speed
- RS-232 Interface
- 3 Axes Simultaneous Controlled Movement
- Program Storage Capacity 1280M (512K)

Machine Control Functions

- Backlash Compensation
- Ballscrew Pitch Error Compensation
- Smallest Programmable Increment 0.0001"
- Spindle Speed Override
- MDI - Manual Data Input
- Run Hour and Parts Counter Display
- Manual Pulse Generator
- JOG Feed

Program & Editing Features

- Number of Registered Programs (1000)
- Program Protection - Lock Out Function
- Background Editing

Motion Control Functions

- Feedrate Override
- Rapid Traverse Rate Override
- Jog Override
- Automatic Acceleration/Deceleration Control
- Feed per Minute / Feed per Revolution

Tool Control Features

- Tool Offset Pairs - 200 Total Offsets
- Tool Length Compensation
- Cutter Compensation C
- Tool Life Management

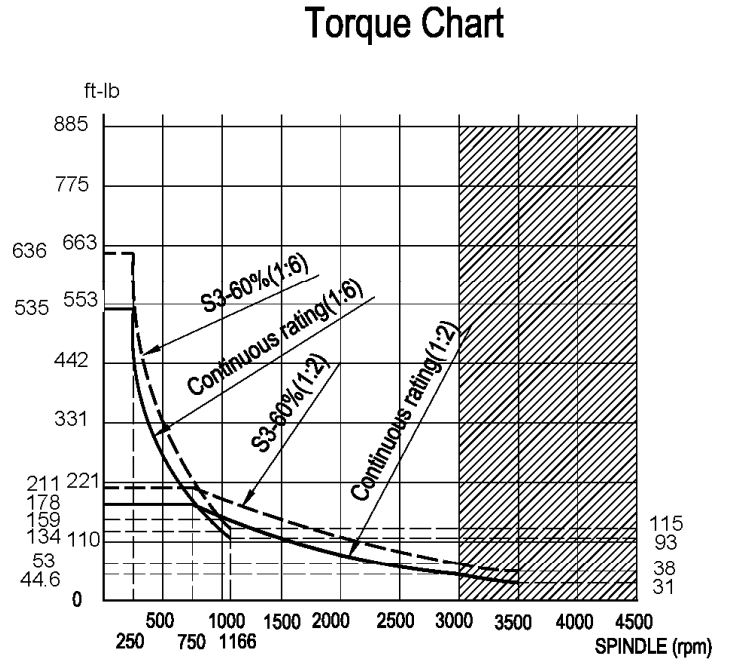
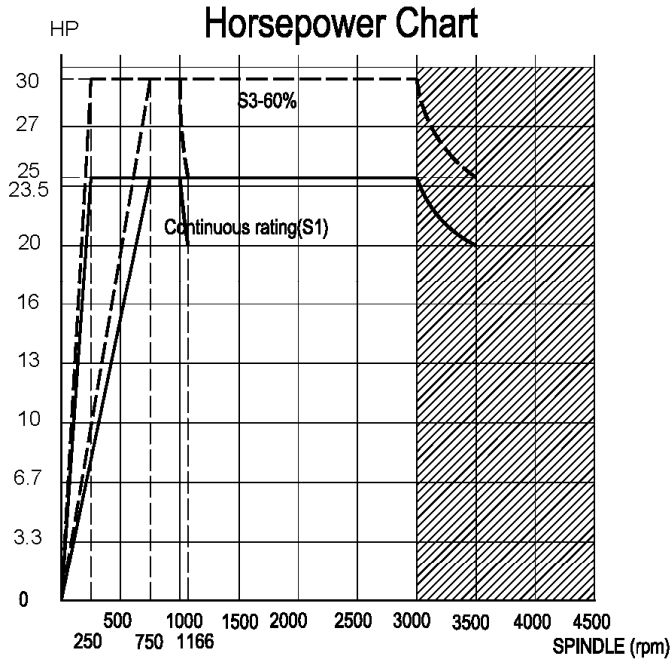
Interpolation Functions

- Exact Stop
- Single Direction Positioning
- Linear Interpolation
- Circular Interpolation
- Threading, Synchronous Cutting
- 3rd& 4th Reference Position Return

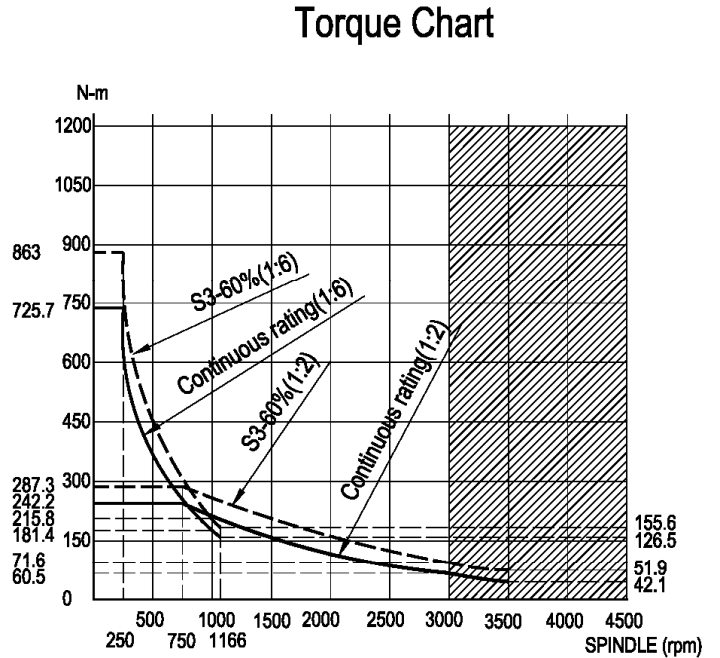
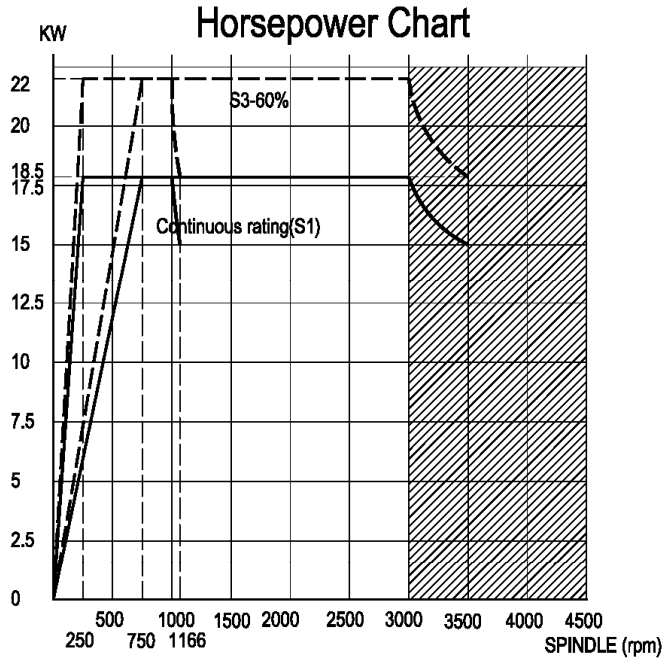
Program Input Features

- Inch/Metric Conversion / programming
- Tape Code: EIA/ISO
- Absolute/Incremental Programming
- Program Numbering: O(32 Characters)
- Plane Selection
- Polar Coordinate Commands
- Workpiece Coordinate System (G52 - G59)
- Chamfering & Round Corner Function
- Sub Program Call
- Custom Macro B
- Additional Macro Command Variable (#100-199, & #500-999)
- Canned Cycles for Drilling & Tapping
- Scaling
- Coordinate System Rotation
- Programmable Mirror Image
- Three-Dimensional Coordinate Conversion
- Macro Executer

HBM110XT Torque Charts



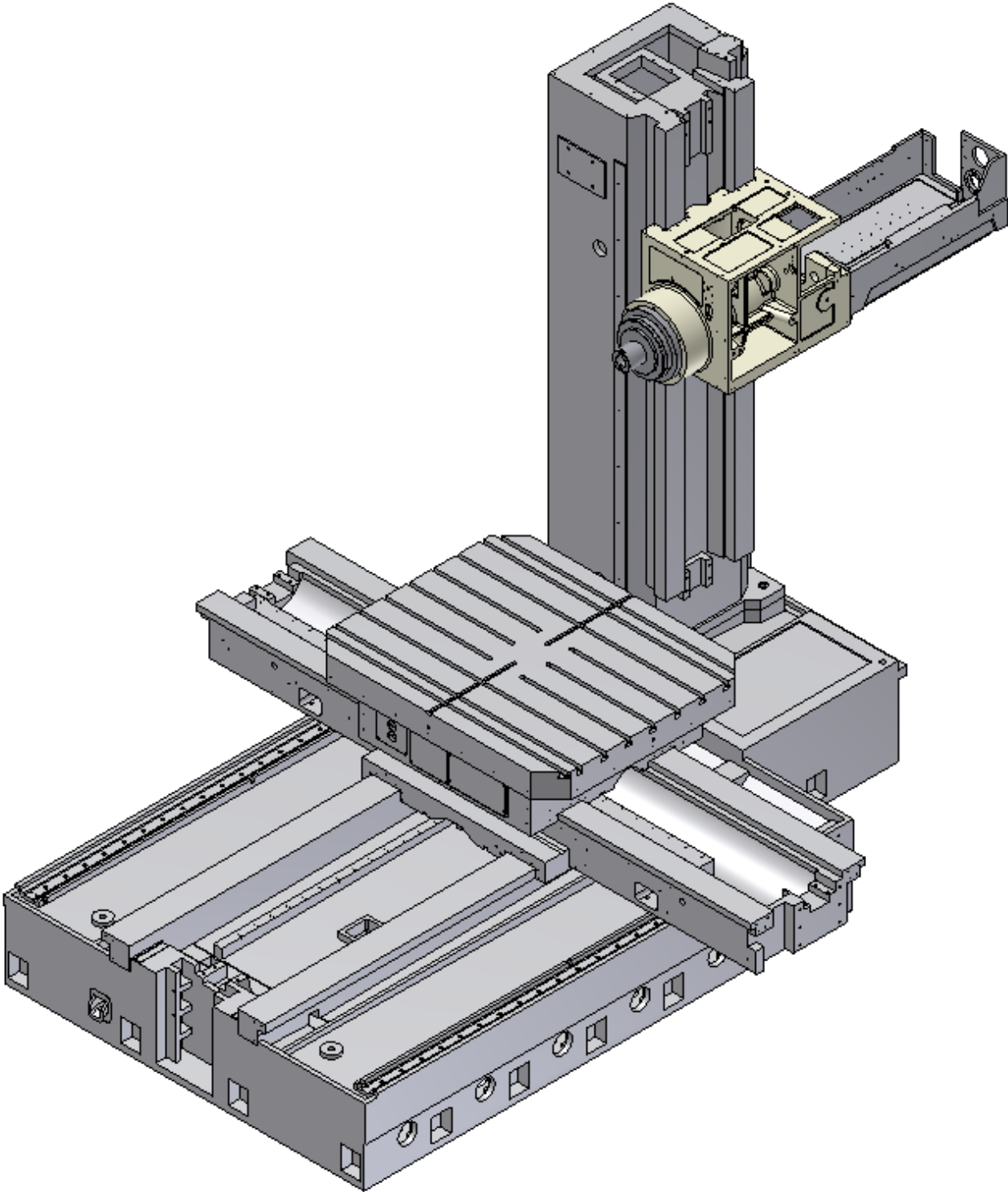
Torque / Horsepower Chart Data				
Spindle Taper	ISO	BT50	Spindle Motor	FANUC α18/7000i
		CAT50	Motor Output	18.5 / 22 kw
	DIN	DIN 69871	Gear Ratio	1:2 / 1:6
Spindle Speed	3000 RPM		Pulley Ratio	-



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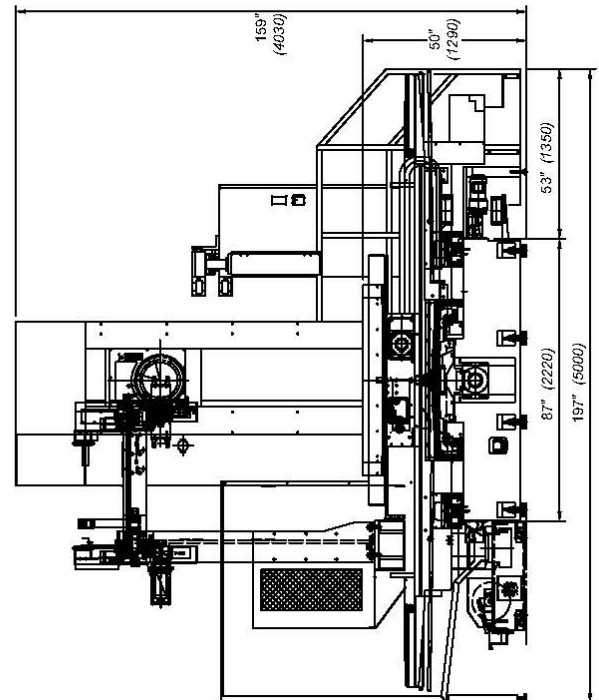
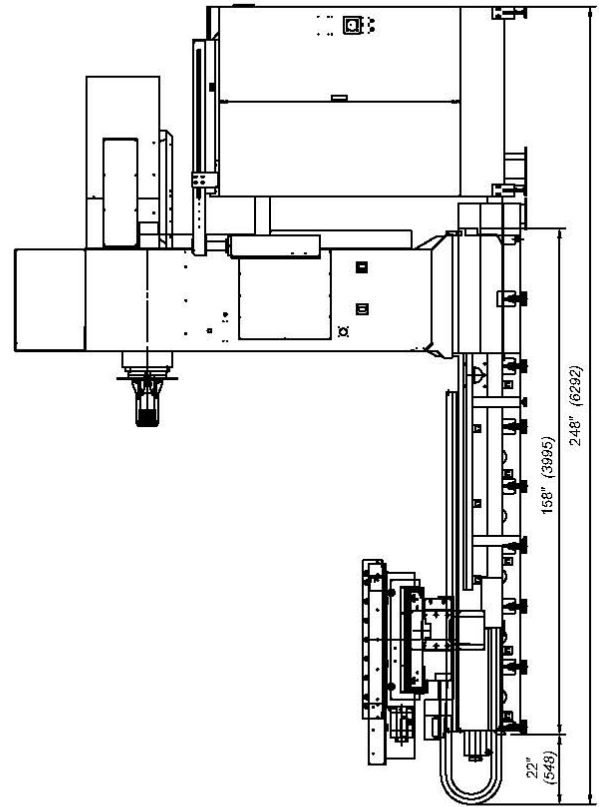
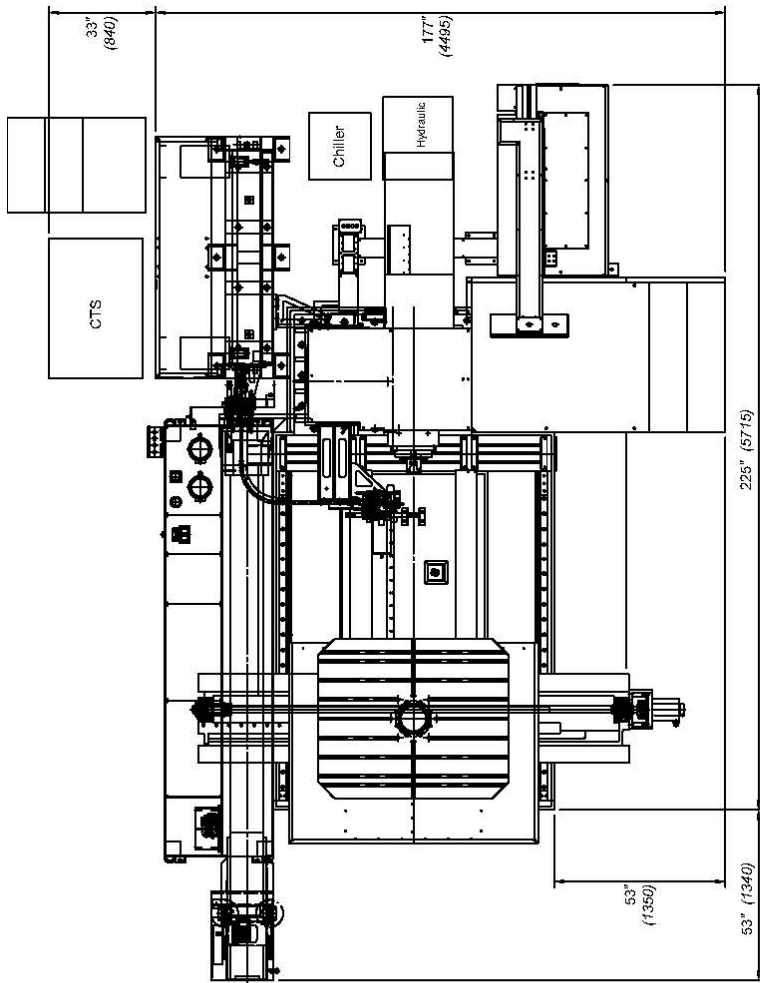
* Prices and specifications are subject to change without notice.

HBM110XT Design View



* Prices and specifications are subject to change without notice.

HBM110XT Interference Drawing



LIMITED WARRANTY ON ALL NEW MILLTRONICS USA MACHINES

Milltronics USA ("Milltronics" or "Company") warrants all of their CNC machines ("Machines") and the CNC control system supplied with these Machines shall be free from defects in workmanship and materials under normal use and service for a period of one (1) year from completion of installation or a period of fifteen (15) months from date of shipment, whichever is shorter. This warranty is limited to all factory-supplied parts and accessories as indicated on the original sales order as written by Milltronics to the original purchaser only or the original end user if the equipment is financed by a third party. Milltronics will, at its sole and exclusive discretion, either replace or repair any machine or part thereof defective in workmanship or material, at no charge to the Purchaser. Milltronics' liability for breach of warranty shall arise only upon the return of the defective parts at Purchaser's expense after notice to Milltronics of claimed breach, and shall be limited to replacing with new or remanufactured components or repairing, at Milltronics option, at its factory, any of said articles which shall within one year after shipment be returned to Milltronics' factory of origin, transportation charges prepaid, and which are, after examination, disclosed to Milltronics' satisfaction to be defective.

All warranty repairs must either be performed by or authorized by a Milltronics Authorized Service Organization. To obtain warranty service, Purchaser must contact their local Milltronics Authorized Service Organization. Purchaser must provide verification of the date of delivery or installation when requesting warranty service (dated installation documents). Ground freight charges (UPS regular or common carrier) for all warranty replacement parts are paid by Milltronics. If a machine is not operational, Milltronics will pay next day air shipment charges for necessary parts weighing 50 lbs. or less. Materials or parts alleged to be defective shall be returned to Milltronics, transportation charges prepaid within thirty (30) days. Milltronics reserves the right to analyze returned components and make final determination of warranty claims. After the warranty repair or replacement of a defective part, Milltronics warranty for such part shall continue for ninety (90) days or for the remainder of the original Limited Warranty, whichever is longer.

This warranty shall remain in effect only if the machine is used and maintained in accordance with all the operating and maintenance instructions set forth in the manuals and instruction sheets furnished by Milltronics. Milltronics shall have no liability to repair or replace defective parts until the Purchaser has fulfilled all payment obligations. No allowance will be made for repairs or alterations made without Milltronics prior written consent or approval. The Limited Warranty provided by Milltronics excludes the following:

- Damage to machines and/or components while being transported from Milltronics facility or authorized predetermined shipping point to destination.
- Damage, malfunction, or failure caused by or resulting from improper maintenance, misuse, neglect, accident or any other cause beyond the control of Milltronics.
- Damage, malfunction, or failure caused by modification of the machine (mechanical or electrical) without written authorization by Milltronics.
- Damage, malfunction or failure caused by installation or use of accessories or peripherals not purchased through or authorized in writing by Milltronics
- Paint, batteries, filters, fluids, fuses, light bulbs, belts, or any commonly expendable or considered to be, normal wear items.
- Accessories, peripherals or CNC Controls not manufactured by Milltronics, shall be subject whatever warranty that is supplied by the manufacturer of such product. In some instances, such products not manufactured by Milltronics may carry additional warranty that exceeds this Limited Warranty by Milltronics. It becomes the Purchaser's responsibility to negotiate terms of warranty with these individual manufacturers.
- During the first six months the one-year warranty also includes all travel expenses incurred by a Milltronics factory representative if a problem occurs which is not repairable by the local distributor or a part exchange. For the second six months of the one-year warranty Milltronics will pay for all travel expenses except airfare.

EXCEPT AS SET FORTH IN ABOVE, THE COMPANY MAKES NO EXPRESS OR IMPLIED REPRESENTATIONS OR WARRANTIES WITH RESPECT TO THE *MACHINES OR THE CENTURION CNC SYSTEMS*, OR THEIR CONDITION, MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR USE BY CUSTOMER. THE COMPANY FURNISHES THE ABOVE WARRANTIES IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

MILLTRONICS USA SHALL NOT BE LIABLE FOR ANY (A) SPECIAL, INDIRECT, INCIDENTAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOSS OF PROFITS, ARISING FROM OR RELATED TO THIS WARRANTY, THE BREACH OF ANY AGREEMENT OR ORDER OR THE OPERATION OR USE OF THE *MACHINES OR CENTURION CNC SYSTEMS*, INCLUDING WITHOUT LIMITATION, DAMAGES ARISING FROM DAMAGE TO FIXTURES, TOOLS, PARTS OR MATERIALS, LOSS OF DATA OR PROGRAMMING, DIRECT OR INDIRECT LOSS CAUSED BY THE DISTRIBUTOR OR DEALER REPRESENTATIVE, LOSS OF REVENUE OR PROFITS, FAILURE TO REALIZE SAVINGS OR OTHER BENEFITS, DAMAGE TO EQUIPMENT, FINANCING OR INTEREST CHARGES, AND CLAIMS AGAINST

CUSTOMER BY ANY THIRD PERSON, EVEN IF MILLTRONICS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES; (B) DAMAGES (REGARDLESS OF THEIR NATURE) FOR ANY DELAY OR FAILURE BY THE COMPANY TO PERFORM ITS OBLIGATIONS UNDER THIS AGREEMENT DUE TO ANY CAUSE BEYOND THE COMPANY'S REASONABLE CONTROL; OR (C) CLAIMS MADE A SUBJECT OF A LEGAL PROCEEDING AGAINST THE COMPANY MORE THAN ONE (1) YEAR AFTER ANY SUCH CAUSE OF ACTION FIRST AROSE.

NOTWITHSTANDING ANY OTHER PROVISION OF THIS WARRANTY, IN THE EVENT ANY REMEDY IS FINALLY DETERMINED BY A COURT (HAVING JURISDICTION) TO FAIL OF ITS ESSENTIAL PURPOSE, THE MILLTRONICS USA LIABILITY UNDER THIS AGREEMENT WHETHER UNDER CONTRACT LAW, TORT LAW, OR OTHERWISE, SHALL BE LIMITED TO DIRECT DAMAGES NOT TO EXCEED THE AMOUNTS ACTUALLY RECEIVED BY MILLTRONICS USA PURSUANT TO THE PARTICULAR ORDER OR AGREEMENT FROM WHICH SUCH DAMAGES AROSE.

The validity, construction and performance of this warranty and any sale made by Milltronics USA shall be governed by the laws of the State of Minnesota, without regard to conflicts of laws provisions of any jurisdiction and any action related in any way to any alleged or actual offer, acceptance or sale by Milltronics USA or any claim related to performance or agreement or warranty by Buyer or Milltronics USA shall be venued in federal or state district court in Hennepin County, Minnesota.

MILLTRONICS USA

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service@milltronics.net

This warranty is invalid unless the customer has signed off on and returned to Milltronics or its distributor the factory-provided installation forms and Milltronics is funded in full for the equipment.