

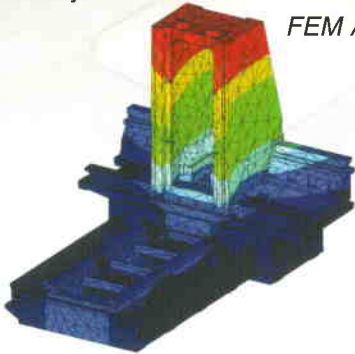
***Mycenter® HX 1000i / 1250i***

Heavy Duty Horizontal Machining Centers

## Rigid Box Way Construction Ensures Accuracy and Rigidity in Large Part Machining

The Mycenter-HX1000i is a productive and efficient workhorse designed for the precision necessary to produce close tolerance parts from the toughest of materials. The induction hardened solid box way design, combined with the highest grade Meehanite casting offers the stiffness needed for true high precision hard milling. Contact surfaces are extensively hand-scraped for optimum accuracy. Net weight is a massive 57,320 kg.

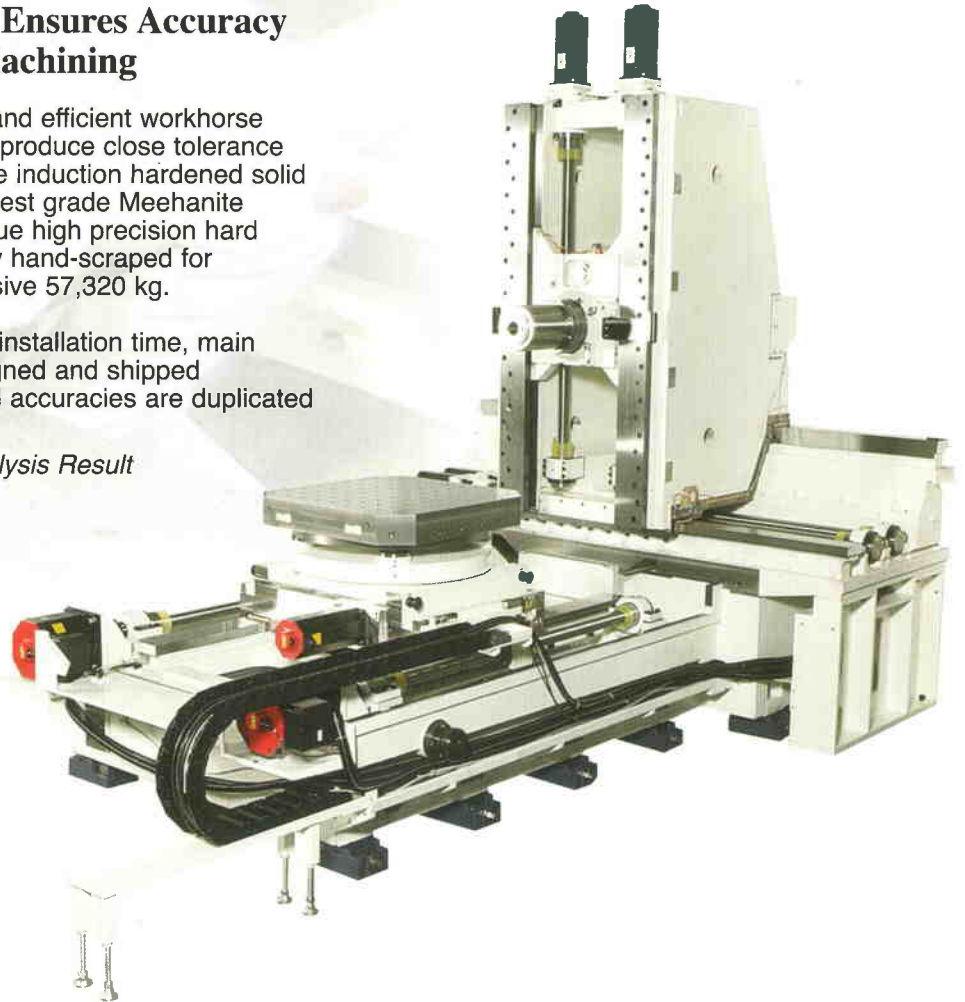
For optimum precision and reduction of installation time, main casting components are assembled, aligned and shipped complete. This ensures factory specified accuracies are duplicated upon delivery.



*FEM Analysis Result*



*X Axis Slideway - Designed for Optimum Stability*



## Unmatched Accuracy in its Class!

**Positioning Accuracy  $\pm 0.002$  mm / full stroke** ■ **Repeatability  $\pm 0.001$  mm**



*Patented Twin Ballscrew and Dual Feedback Technology (PAT. 8-355814)*

### Ultra High Precision Expands Productivity

Guide ways are equipped with ultra high precision twin ball screws and twin servo motors that provide the capability of running speeds of 36 m/min. Linear scale feedback is a standard feature on all axes allowing for positioning accuracy of  $\pm 0.002$  mm Full Stroke and repeatability of  $\pm 0.001$  mm – Stand out, ultra high precision for a machine of this size.

Rubber/Copper way wipers prevent chip contamination to the box ways and the ballscrew cooling system incorporates chilled oil through the ball screw shaft on the X, Y and Z-axes, both sustaining stability and reducing warm-up time in axis motion. With this added feature, the temperature of the ball screws will maintain a constant rate and minimize thermal displacement, allowing for higher accuracy through continuous operation.

Kitamura's Intelligent Advanced Control (IAC) System further compensates for thermal displacement by a combination of regulating sensors and a machine efficiency monitor that provide data on variable compensation values to the machines offsets, minimizing displacement to less than  $5\mu$  (0.0002").



## High-Torque, Gear Driven, 8,000 rpm Spindle Combines Highly Efficient Cutting Performance with Low Energy Consumption.

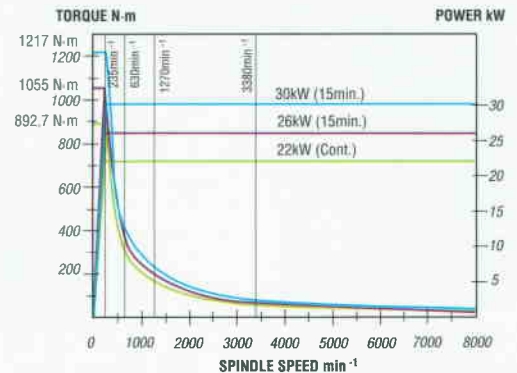
Standard is an efficient AC 30 kW spindle motor with a 4-speed geared head. The geared head enables the Mycenter-HX1000i to reach full power at 235 rpm, output maximum torque of 1,217 N·m. An 8,000 rpm spindle with a dual contact design is standard offering the benefits of greater machining rigidity, improved surface finish, higher cutting accuracy and extended cutting tool life. An efficient oil chiller system is used for minimizing thermal displacement and maximizing spindle life in order to achieve the performance needed for high-speed and high accuracy machining. A 12,000 rpm spindle is an available option for higher speed machining requirements.

### Less Vibration

Kitamura's original shockless drive mechanism minimizes vibration from milling cuts. Our headstock design completely relieves the spindle bearings from unclamping thrust shock and thus ensures long-term precision of the spindle bearing

### Increased Accuracy

The use of four precise angular contact bearings at the front of the spindle and one roller bearing at the rear of the spindle enable our spindles to withstand large loads while a longer spindle nose design improves accessibility to the work piece. Refrigerated oil circulates around the spindle cartridge maintaining constant accuracy and increasing long term reliability as well as reducing heat.



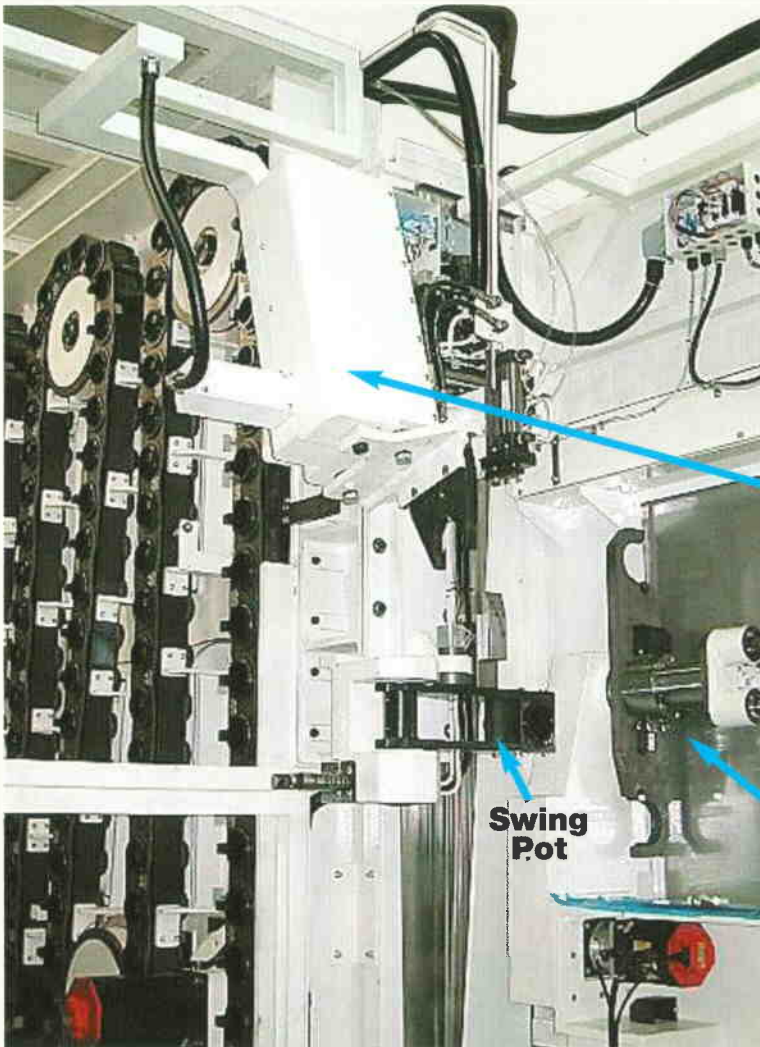
## Expansive Work Envelope Means More Production Per Pallet Load

The Mycenter-HX1000i is built big to handle your largest part machining requirements. An efficient positive 180 degree rotating pallet change system handles four-sided tombstones up to 1,550 mm (H) x 1,450 mm square, weighing up to 3,000 kg each. This system provides optimum operator convenience in pallet accessibility and the loading/unloading of work pieces. It takes 30 seconds to exchange pallets with over 9 tons of clamping power for unparalleled rigidity and stability.

Guarding between the work envelope and pallet station allows you to perform high velocity metal removal machining while another tombstone is being safely unloaded and reloaded with new parts to be machined. This efficient system leaves operators with more time to attend to other machines or verify component quality.

*The indexer is positively positioned to ±1 arcsecond by a powerfully rigid Curvic coupling for optimum accuracy and stability. A full 4th axis rotary table is an available option.*





## Reliable, State-of-the-Art Servo Driven ATC System Offers Maintenance Free Operation

With a standard 150-Tool ATC (200, 250, 300 optional), the Mycenter-HX1000i maximizes tool handling efficiency using Kitamura's exclusive fixed pot ATC system whereby each tool is always returned to the same tool pot and the next tool to be used is kept ready in a "stand-by" tool pot, minimizing tool change time.



*Sub arm feeds tool to swing pot.*

The servo motor ATC drive system enables the tool change mechanism to easily adjust and better position tools by using an absolute encoder. Advantages are higher speeds and less vibration for reliable and maintenance free tool change operation.

**Swing Pot**

**ATC Arm**



*Tool Magazine*

## Efficient Components Combine for Optimum Chip Discharge and Containment Promoting Better Surface Finishes and Improving Accuracy

**Overhead Shower & Base Wash Coolant Systems** – Work together to aid in washing chips to waiting internal hinge belt conveyor.

**Internal Hinge Belt Conveyor** – Quickly and effectively captures chips from the work envelope and carries them out and away from the machining environment.

**Double Decker Conveyor and Filtration System** – The versatile primary conveyor, with the capability to handle a variety of chips. A drum filter separates fine chips from the coolant to a 100-micron nominal, keeping the coolant clean.





## Features that Increase Productivity and Provide a More Effective Working Environment



### Operator Convenience

Generous work envelopes, wider door openings and high splash guards enhance worker safety, expand work fixturing capability and simplify set-up. Varying steps at the operator door offer increased comfort and visibility for in process inspection.



*An open roof structure provides for full crane access in the loading and unloading of heavier materials and parts.*

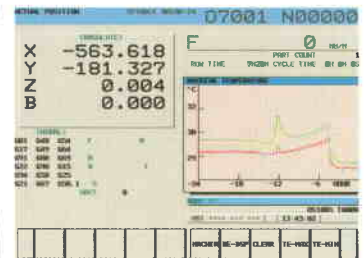
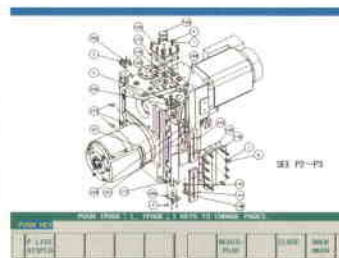


### Supportive Control

**Manual Guide Function** – Kitamura's manual guide function features user-friendly conversational programming that allows even the most complicated programs to be carried out by lesser experienced operators – saving time.



**Maintenance Support Function (Option)** – This function offers operator convenience in displaying methods of machine maintenance, repair and parts support on the NC screen.



### Easy Maintenance Management

All lubrication, hydraulic and spindle oils are located in one compact and easy to access cabinet. This makes for more productive fluid handling, at the same time, keeping the working area safer for the operator.



*Fluid reclamation and filtration systems separate valuable coolant for reuse – reducing waste and improving the environment.*

## High Speed, High Precision Features for Added Flexibility in Machining

The Kitamura-Fanuc 16iMB control with standard AI Nano High Precision Contour Control (HPCC) is not only ideal for general machining, but also provides the control capability to easily handle complex contouring and mold applications. Unlike other CNC's, this control is loaded with standard features that will enable you to achieve higher feedrates, optimize accuracy and attain ultra-fine surface finishes. And, wherever possible, we use controls, servos and motors manufactured by the same company for optimum performance synergy.

CNC panel swivels out for easy access and folds flat to save space. A manual pulse generator simplifies work set-up and precise positioning.



### Kitamura-Fanuc 16iMB Control Standard Accessories

- AI Nano Contour Control
- Custom Macro B (G64, G66, G67)
- AI Nano HPCC by RISC Control (500 Block Look Ahead)
- Tool Offset Memory C (Geo/Wear, HD)
- RISC-64 Bit Processor
- NURBS Interpolation
- Registered Programs – Total 200 Pcs.
- 1280 Meters Memory
- Helical Interpolation (G02, G03)
- 128 MB Data Server
- Rigid Tapping (Synchronized Tapping)
- Ethernet Connection
- M-Code, 3 Digits
- Work Coordinate – 54 Sets
- Manual Guide Function (Conversational Programming)
- Tool Offsets – Total 200
- Tool Life Management – 128 Pcs.
- Color Graphic Display
- Self Diagnosis Function
- Cutter Compensation C (G40, G41, G42)
- Background Editing
- Additional M Functions (4 Sets)
- User Macro B – 82 Variables
- Linear Interpolation (G01)
- Circular Interpolation (G02, G03)
- Dwell (G04)
- High-Speed Skip
- Run Hour and Parts Count Display
- Canned Cycles (G73, G74, G76, G77, G80 ~ G89, G98, G99)
- Emergency Stop Function

### HX1000i/HX1250i Machine Standard Accessories

- Machine Installation Tool Kit
- Coolant Pump & Tank
- Leveling Bolts and Plates
- Spindle Orientation
- Spindle Nose Air Blow
- Spindle Speed & Load Meter
- Spindle Oil Cooler
- Oil/Air Unit (Spindle & Each Axis)
- IAC (Intelligent Advanced Control)
- Ballscrew Cooling System
- Fully Enclosed Splash Guards
- Chip Conveyor (Internal Augers & Hinge Belt)
- Automatic Way Lubrication
- Overhead Shower Coolant
- Base Wash Coolant
- Coolant Thru the Spindle (15 bar)
- Linear Scale Feedback on All Axes (X, Y, Z)
- Index Table – 1° Curvic Coupling
- 150 Tool Magazine (Fixed Pot)
- Portable Manual Pulse Generator
- Work Light
- Cycle Finish Lamp
- 2-Station Automatic Pallet Changer
- Door Interlock
- Twin Ballscrew & Motor System
- Dual Contact Spindle System
- Double Decker Conveyor & Filtration System
- High Torque Spindle, 8,000 rpm (Gear Driven)
- Operation Panel with M Function Indicator
- Machine/CNC Spare Parts

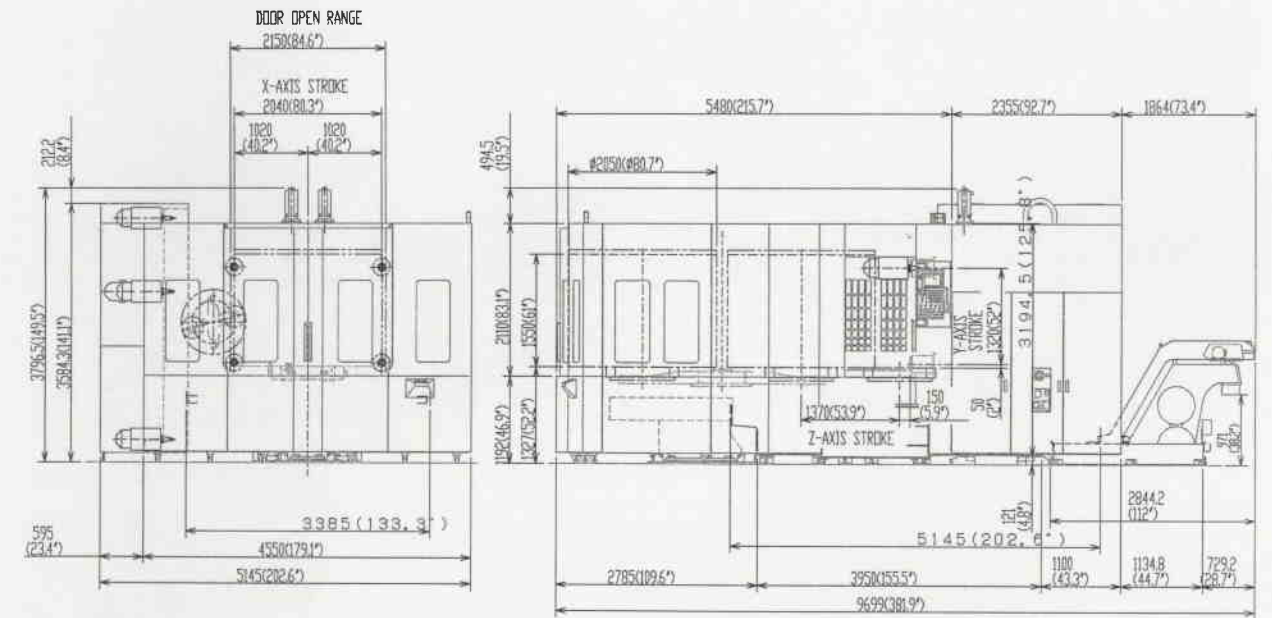




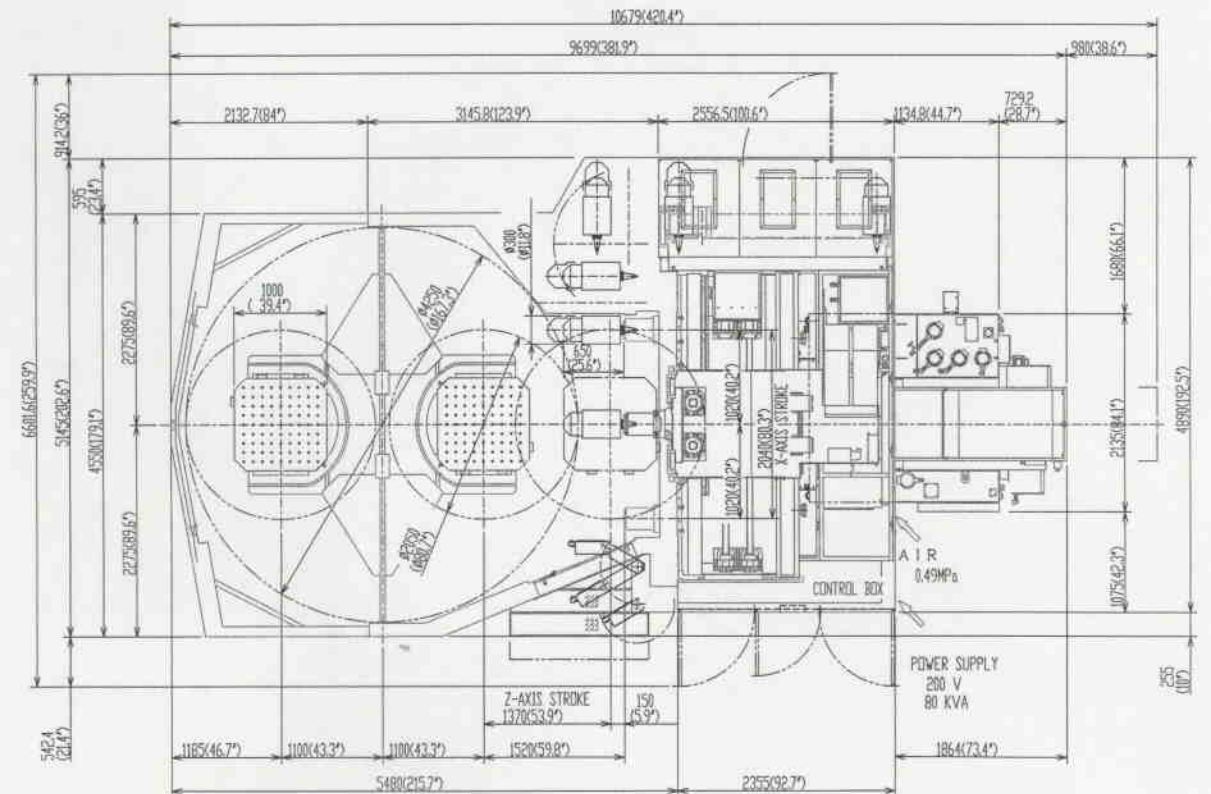
## Machine Specifications

	HX1000i	HX1250i
<b>TABLE</b>		
Table Work Area (W x L)	1,000mm x 1,000mm (39.37" x 39.37")	1,250mm x 1,250mm (49.21" x 49.21")
Table Thickness	200mm (7.87")	
Tapped Hole Size	M20 x 2.5 - 81	
Table Indexing	1°	
Max. Workpiece Size (Dia x H)	2,050mm x 1,550mm (80.71" x 61.02")	
Table Load Capacity	3,000kg (6,600Lbs)	
Table Index Time	3.5 sec (90 deg)/5.0 sec (180 deg)	
<b>TRAVEL</b>		
X-Axis	2,040mm (80.31")	
Y-Axis	1,320mm (51.97")	
Z-Axis	1,370mm (53.94")	
B-Axis	0 to 360 degrees (1° Increments)	
Distance from Table Surface to Spindle Center	50 to 1,370mm (1.97" to 53.94")	
Distance from Table Center to Spindle Nose	150 to 1,520mm (5.91" to 59.84")	275 to 1,645mm (10.83" x 64.76")
<b>SPINDLE</b>		
Spindle Taper	#50 NST	
Spindle Speed	20~8,000rpm (35~12,000rpm Option)	
Spindle Acceleration (0-8,000rpm)	3 Seconds	
Drive Method	Gear Drive, 4-Step	
Spindle Motor	AC 30kw (40HP)	
Maximum Torque	1,277 N·m (897.7 ft·lbs)	
<b>FEED</b>		
Rapid Feed Rate X, Y, Z	36,000 mm/min (1,417ipm)	
Cutting Feed Rate	0-36,000 mm/min (0-1,417ipm)	
<b>APC</b>		
Number of Pallets	2	
APC Drive System	Servo Motor Driven	
APC Change Time	30 Seconds	
Pallet Clamping Power	9 Tons (24,213 lbs)	
<b>ATC</b>		
Tool Storage Capacity	150 Tools (200, 250, 300 Optional)	
Tool Selection Method	Random, Bi-Directional, Fixed Pot	
Tool Holder Style	BT50 / DIN50 / CT50	
Max. Tool Size (D x L)	Ø125 x 650mm (Ø4.92" x 25.59")	
- With Neighboring Pots Empty	Ø300 x 650mm (Ø11.81" x 25.59")	
Max. Tool Weight	30 kg	
Tool Change Time (T-T)	3 Seconds	
Tool Change Time (C-C)	7 Seconds (minimum)	
<b>MACHINE DIMENSIONS</b>		
Required Space (L x W)	5,145 x 9,824mm (202.6" x 386.8")	
Machine Height	3,796.5mm (149.5")	
Machine Weight	57,320 kg (126,104 Lbs)	
Power Requirement	80KVA, 200V AC, 3 Phase	

## Mycenter-HX1000i



Front View



Layout View