



HB1416

Horizontal Boring & Machining Center Specifications



*All specifications are subject to change without prior notice
Verification of technical changes may be confirmed after receipt of order*

Designed and built by Wele Mechatronic in Taiwan, this machining center is sold and serviced exclusively by Jtekt Toyoda Americas Corporation and our exclusive representatives.

Machine Specifications:		
Stroke	Unit	Specifications
X Axis Travel (Table Movement)	mm (in)	2,000 (78.7)
Y Axis Travel (Carriage Movement)	mm (in)	1,800 (70.9)
Z Axis Travel (Head Stock Movement)	mm (in)	1,300 (51.2)
W Axis Tavel (Quill Movement)	mm (in)	500 (19.7)
Distance from Spindle Nose to Center of Rotary Table	mm (in)	200 - 700 (7.9 - 27.6)
<i>Distance Between Table Top and Floor</i>	mm (in)	1,200 (47.2)
Table	Unit	Specifications
Table Size	mm (in)	1,440 x 1,600 (56.7 x 63.0)
Indexing Angle	degree	.001 (1 Optional)
Table Load Capacity	kg (lb)	8,000 (17,600)
Table T-Slot Size - Width x Pitch x Number	mm (in)	24 x 200 x 7 (0.94 x 7.87 x 7)
Spindle (2 Speed Gear Transmission)	Unit	Specifications
Spindle Taper	type	CAT50
Spindle Motor (Cont. / 30 Min. Rating)	kW (hp)	22 / 26 (30 / 35)
Spindle Speed	rpm	10 ~ 3,500 min -1
Quill Diameter	mm (in)	110 (4.3)
Spindle Bearing Diameter (Front / Rear)	mm (in)	150 (5.9)/ 85(3.3)
Spindle Output Torques	Nm (ft-lb)	1,187.8 (876.3)
Tool Clamping Force	kg (lb)	1,800 (3,970)
Feedrates	Unit	Specifications
Rapid Feedrate (X Axis)	m/min (in/min)	15 (590.6)
Rapid Feedrate (Y Axis)	m/min (in/min)	12 (472.4)
Rapid Feedrate (Z Axis)	m/min (in/min)	15 (590.6)
Rapid Feedrate (W Axis)	m/min (in/min)	5 (196.8)
Rapid Feedrate (B Axis)	rpm	5
Cutting Feedrate of Each Axis	m/min (in/min)	1 ~ 5,000 (0.04 ~ 197)
Ballscrew (X Axis)	mm / in	Ø63 x P16 (2.48 x P0.63)
Ballscrew (Y Axis)	mm / in	Ø63 x P12 (2.48 x P0.47)
Ballscrew (Z Axis)	mm / in	Ø63 x P16 (2.48 x P0.63)
Ballscrew (W Axis)	mm / in	Ø50 x P10 (1.97 x P0.39)

ATC	Unit	Specifications
Tool Magazine Capacity	number	40 (60, 90 Optional)
Maximum Tool Diameter with Tool in Adjacent Pocket	mm (in)	125 (4.9)
Maximum Tool Diameter with Adjacent Pocket Empty	mm (in)	250 (9.84)
Maximum Tool Length	mm (in)	400 (15.7)
Maximum Tool Weight	kg (lb)	25 (55)
Tool Shank	type	CAT50
Pull Stud	type	ANSI CAT50
Accuracy	Unit	Specifications
Positioning Accuracy JIS	mm (in)	±.022 (±.0008)
Repeatability JIS	mm (in)	±.010 (±.0004)
Rotating Accuracy (B Axis)	arc sec	± 5
Utilities	Unit	Specifications
Power Requirement	v (kVA)	220 ±10% (65)
Power Requirement	phase (hz)	3 (50 / 60)
Pneumatic Pressure Requirement	kg/cm ² (psi)	6 (90)
Coolant Tank Capacity	liter (gal)	400 (105)
Coolant Pump Capacity	kW (hp)	1 (1.5)
Hydraulic Unit Capacity	liter (gal) hp	125 (33) 10
Lubrication Tank Capacity	liter (gal)	6 (1.5)
Control	Unit	Specifications
Control Type	type	Fanuc 0iMF
Dimensions and Weight*	Unit	Specifications
Machine Weight	kg (lb)	30,000 (66,000)
Machine Length	mm (in)	6,500 (255.9)
Machine Width	mm (in)	6,292 (247.7)
Machine Height	mm (in)	4,136 (162.8)

Note: Machine is 220V / 3 Phase / 60 Hz. Any other voltage requires a transformer (not supplied as std.)

* Dimensions are approximate, please verify upon ordering

HB1416-110 CNC Horizontal Boring and Machining Center with Fanuc OiMF CNC

Optional Accessories:

Coolant Through Spindle with Extra High Tank 20 bar (290 PSI)

Coolant Through Spindle with Extra High Tank 40 bar (580 PSI)

Coolant Through Spindle with Extra High Tank 70 bar (1016 PSI)

Heidenhain Linear Scale on X, Y and Z Axes (in lieu of Fagor scales) with air purge

Table Area Splash Guarding

Entire Work Area Enclosed Splash Guarding (no roof)

Entire Work Area Enclosed Splash Guarding (with roof)

60 Tool ATC (in Lieu of Std. 40 Tools) with factory order

90 Tool ATC (in Lieu of Std. 40 Tools) with factory order

Fanuc Data Server (factory order only, field retrofit pricing may vary)

X-Axis extended travel from 2000mm / 78.7" to 3000mm / 118"

Y-Axis extended travel from 1800mm / 70.8.7"" to 2100mm / 82.7"

Control Options

200 Block Look-Ahead in lieu of 40 Block (STD)

Multi Step Skip Function (Required when more than one of the following; Toyoda Conductive System, Spindle Probe, Tool Measure System Installations is Ordered).

Inverse Time Feed

Automatic Corner Override

Part Program Storage Capacity 2,048 Kbyte (5,120m) In Lieu of 320M (1,049 ft.) Includes 1,000 Registerable Programs

Upgrade to Fanuc 31iMB Controller

Machine Options-Miscellaneous

Canadian & Ontario Electrical & Safety Codes (ESA & PHSR)

Toyoda will schedule a licensed Professional Engineering firm to inspect the equipment and submit a report defining any and all issues of regulatory non-compliance. Based on these findings, Jtekt Toyoda Americas will review all issues and submit a quotation for full compliance to ESA & PHSR regulations. The customer has the option of contracting Toyoda (additional PO required), using a 3rd party electrical contractor or performing the work themselves.

(Per machine/model/ site visit. VMC & Grinder Product line only)

Local Municipality Electrical Code Preparation Inspection Only

Toyoda will schedule a licensed Professional Engineering firm to inspect the equipment and submit a report defining any and all issues of regulatory non-compliance. Based on these findings, Jtekt Toyoda Americas will review all issues and submit a quotation for full compliance to the MEC. The customer has the option of contracting Toyoda (additional PO required), using a 3rd party electrical contractor or performing the work themselves.

(Per machine/model/ site visit. All product lines)

*** Customers opting not to purchase this service from Toyoda assume the responsibility of inspection & compliance to any Federal, State, Provincial or Local Electrical and Safety regulations.**

Miscellaneous**Price is F.O.B. Port of Entry**

Jtekt Toyoda Americas' responsibility ceases when delivery is made to the carrier.

Any claim for loss and/or damage must be made by the purchaser against the carrier.

One (1) Year Parts and Labor Warranty on Machine and Control**Machine Training, Set-Up and Warranty Labor**

Via Jtekt Toyoda Americas Corp. or Authorized Distributor

Place of Shipment

Port of Entry, unless otherwise stated

Time of Quote Validity

Ninety (90) Days, unless otherwise stated

Payment Terms

Ten (10%) Percent with Purchase Order, Eighty (80%) Percent Upon Shipment,

Ten (10%) Percent Thirty (30) Days from Shipment

Control Specifications:

Specifications of Fanuc Oi MF Control	Function Description
10.4" LCD	
Absolute / Increment Command	
Addition of Custom Macro Common Variables	#100~#199, #500~#999
Addition of Workpiece Coordinate System	Pair
AI Nano CC	Look-Ahead 40 bps (AI HPCC is not Available)
Alarm Display	
Alarm History Display	
Automatic Corner Override	
Automatic Power Off	M30
Background Editing	
Backlash Compensation	
Canned Cycles	G74, G76, G80, G81, G84~G89
Canned Cycles for Drilling	G73, G83
Circular Interpolation	G02, G03
Conical / Spiral Interpolation	
Controllable Axes	4 Axes
Coordinate System Rotation	G68, G69
Custom Macro B	
Cutting Feedrate Command	
Cutting Feedrate Override	0, 10%, 20%, 30%, ...,150%
Cylindrical Interpolation	
Decimal Point Programming / Pocket Calc Type	
Dry Run	
Dwell	G04
Emergency Stop	
Ethernet Interface (RJ45)	
Exact Stop	G09
Exact Stop Mode	G61
Extend Program Edit	
FANUC Semi-Operator Panel	
Feedrate Speed Setting	
G Code Program Mirror Function	G50.1 / G51.1
Graphic Display	
Handle Interruption	
Handle Wheel Feedrate	1 Handle Wheel
Handle Wheel Override	Override X1, X10, X100
Helical Interpolation	
HRV3 Control	HRV 3
Interpolation	
Interpolation Pitch Error Compensation	Standard Equipment
Least Programmable Increment	0.001mm / 0.0001" / 0.001 ^o
Limit Check Before Movement	
Linear Acceleration/Deceleration after Cutting Feed	
Linear Interpolation	G01
Machine Lock	
Manual Reference Position Return	G28
Maximum Command Value	± 99999.999
M-Code Blush	M07

Control Specifications (Continued):

Fanuc Oi MF Control	Function Description
Metric / Inches Conversion	G20, G21
MST Function	
Operation History Display	
Operator Message History Display	
Optional Chamfering / Corner R	
Optional Single Block Skip	
PC MCIA Memory Card Slot	On CNC Pendant
Plane Selection	G17, G18, G19
Playback	
Polar Coordinate Command	G15, G16
Program Number Display	O4 digits
Program Restart	
Program Single Block Number	N5 Digits
Program Start / Movement Hold	M00, M01
Program Stop / Program End	M02, M30
Program Storage	1,280 M (512 kB)
Programmable Data Input	G10
Rapid Movement Percentage	F0, 25%, 50%, 100%
Rapid Positioning	G00
Rapid Traverse Bell-Shaped Acceleration / Deceleration	
Registered Program Number	400 Pcs
Remote Diagnostic	
Rigid Tapping	M29
RS232 Interface	
Run Hour and Parts Count Display	
Scaling	
Simultaneous Axes	4 Axes
Single Block	
Single Direction Positioning	G60
Soft Limit Setting	
Spindle Positioning	M19
Spindle Speed Override	50%, 60%, 70%, ..., 120%
Sub-Program Call	4 Levels
Tool Offset	400 Sets
Tool Offset Memory C	
Tool Offset Value Counter Input	
Tool Positioning Offset	G45 ~ G48
Tool Radius Compensation C	G40, G41, G42
Workpiece Coordinate System	G54 ~ G59
Z Axis Lock	

Toyoda Standard Accessories:

Adjust Tools with Tool Box

Arm Type Tool Change System

One (1) Degree Indexing, Programmable B Axis Rotary Table (proprietary hydrostatic design)

Caterpillar Type Chip Conveyor with Bucket

Centralized Automatic Lubrication System for 3 Axes

Coolant System (Including Tank and Pump)

Foot Switch for Spindle Tool Clamp / Unclamp

Forty (40) Tool Capacity Tool Magazine

Foundation Leveling Bolt with Screws

Hydraulic Counter Balancing System

Hydraulic System

Lubrication Oil Collection Devices on all Axes

Mechanism Torque Limit on X, Y and Z Axes Feed System

Manual Pulse Generator

Work Are Splash Guarding (Photo in Section 9)

CE Specification including Operator are enclosure with interlocks (not shown)

Program End and Alarm Lights

RS232 Interface

Sealed Electronic Cabinet with Heat Exchanger

Screw Type Chip Removing Equipment in X Axis Direction

Fagor Linear Scale Feedback System on X, Y and Z Axes

Spindle Oil Cooling System

Swing Away Type Operator Panel

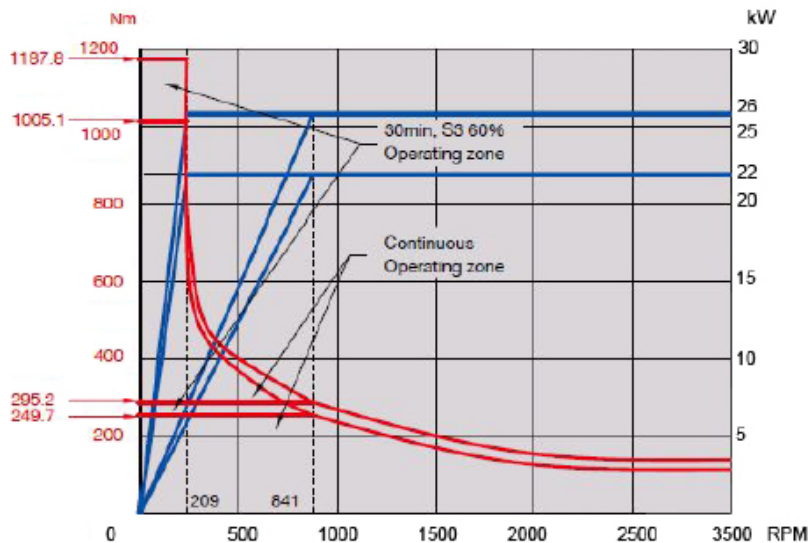
Technical Documents (Including Operator Manuals, etc)

Wash Gun

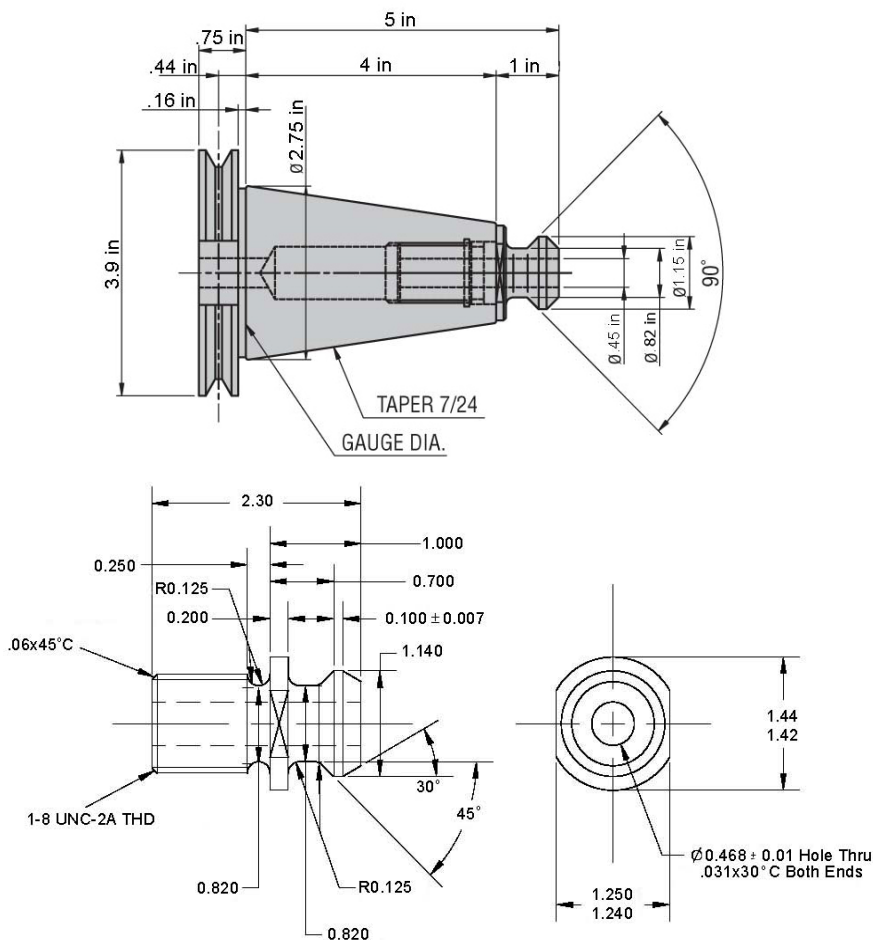
Work Light



Standard Spindle Power & Torque #50 2 Speed Geared Head 3,500 RPM



Retention Knob & Tool Assembly CAT50



Rotary Table (Reference Only)

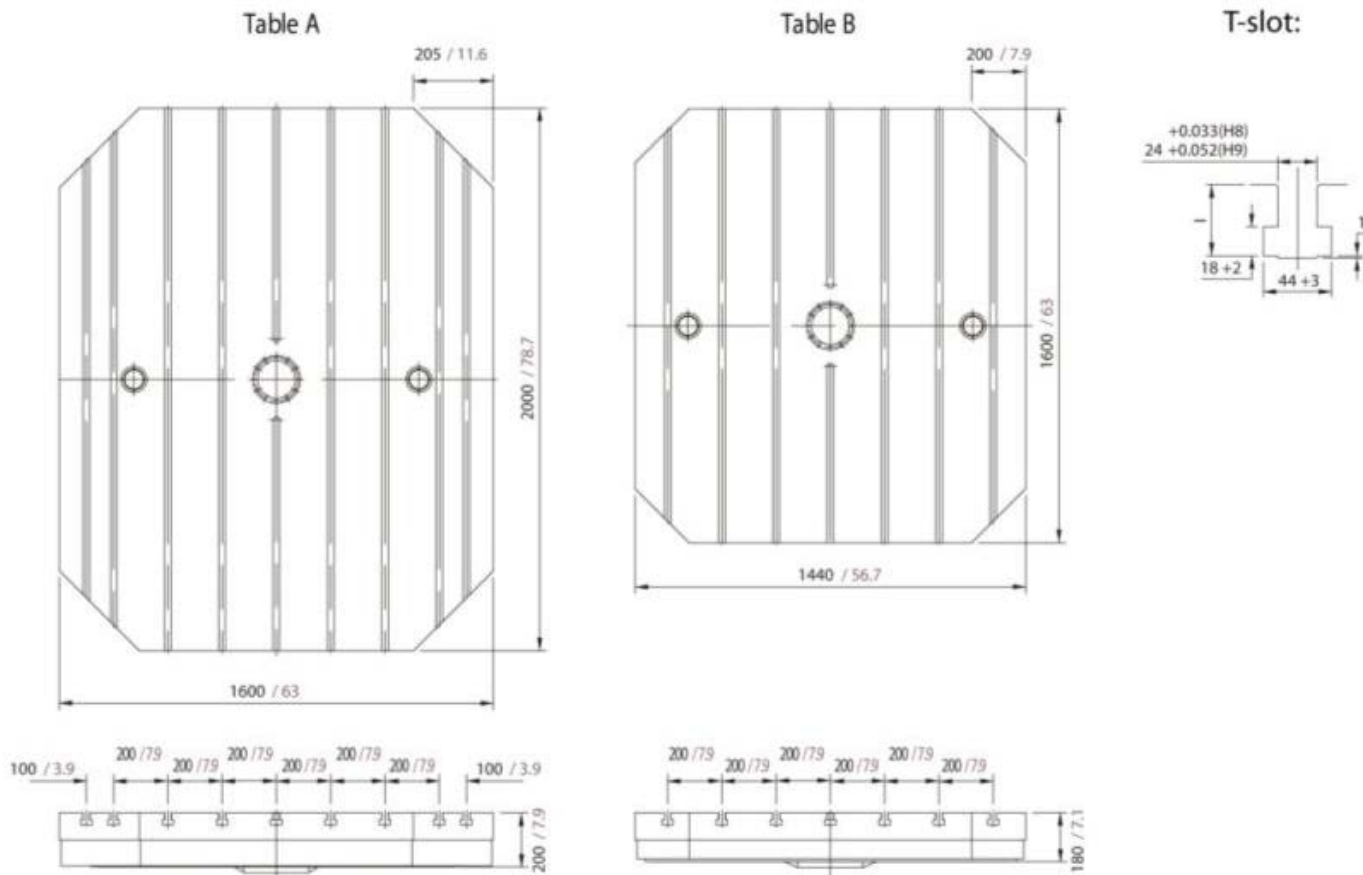
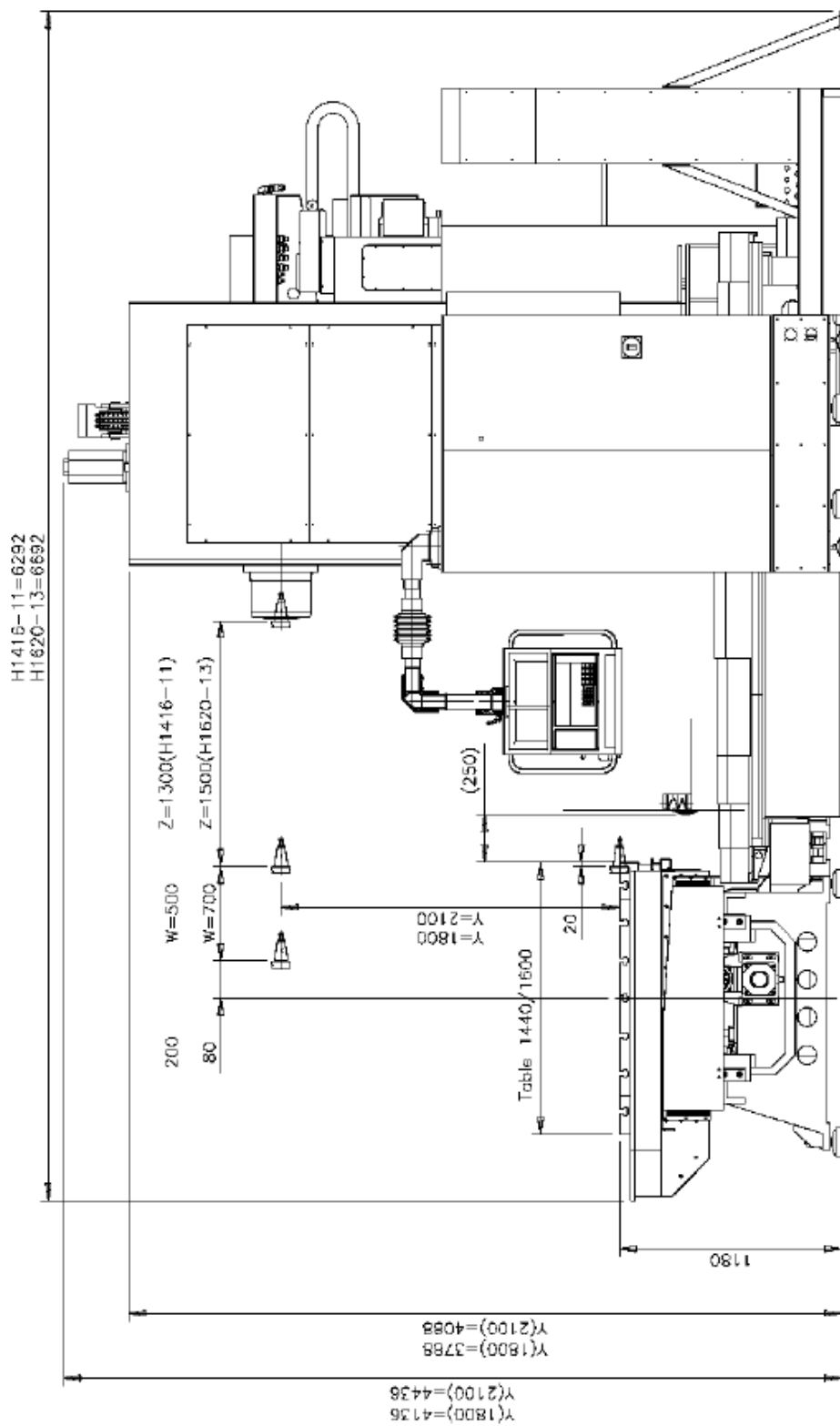


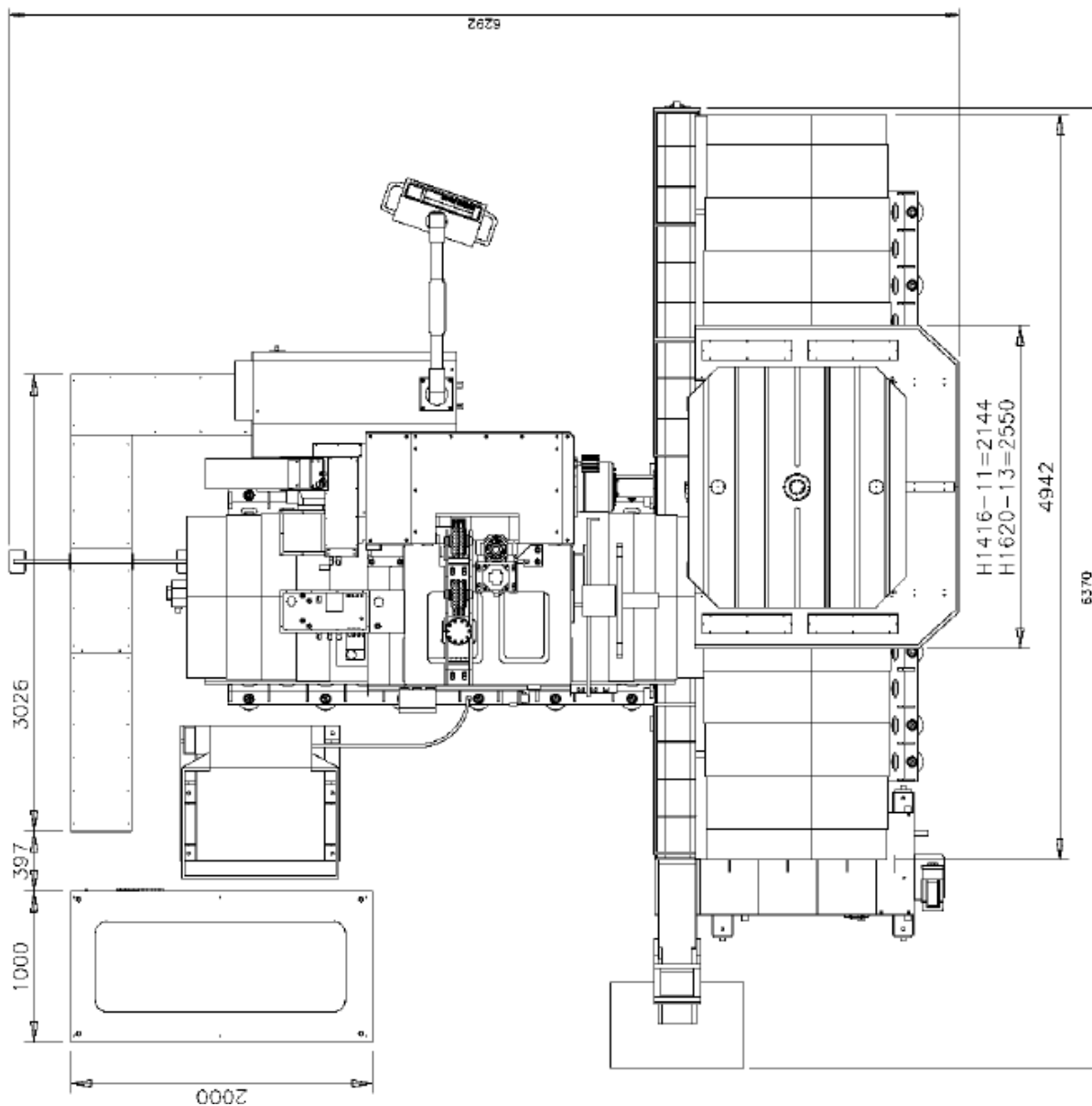
Table	Unit	HB1416 -110 (B)	HB1620 -130 (A)
Dimension	mm (in)	1,440 x 1,600 (63.0 x 56.7)	1,600 x 2,000 (78.7 x 63.0)
Load Capacity	kg (lb)	8,000 (17.6)	12,000 (26.5)
Indexing	degree	1 (.001 Option)	

Layout* (Safety enclosures not shown)



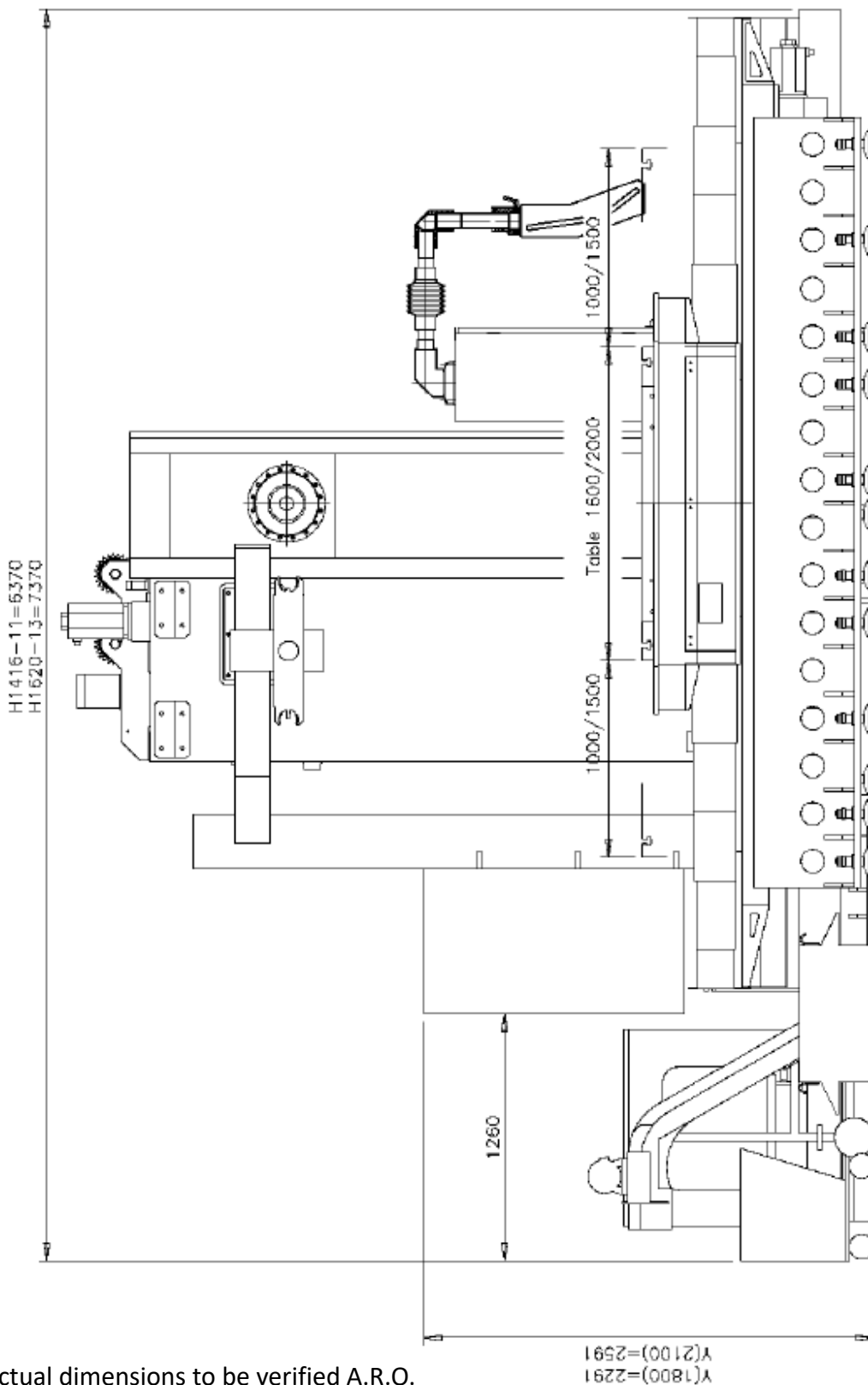
* Actual dimensions to be verified A.R.O.

Layout* (Safety enclosures not shown)



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