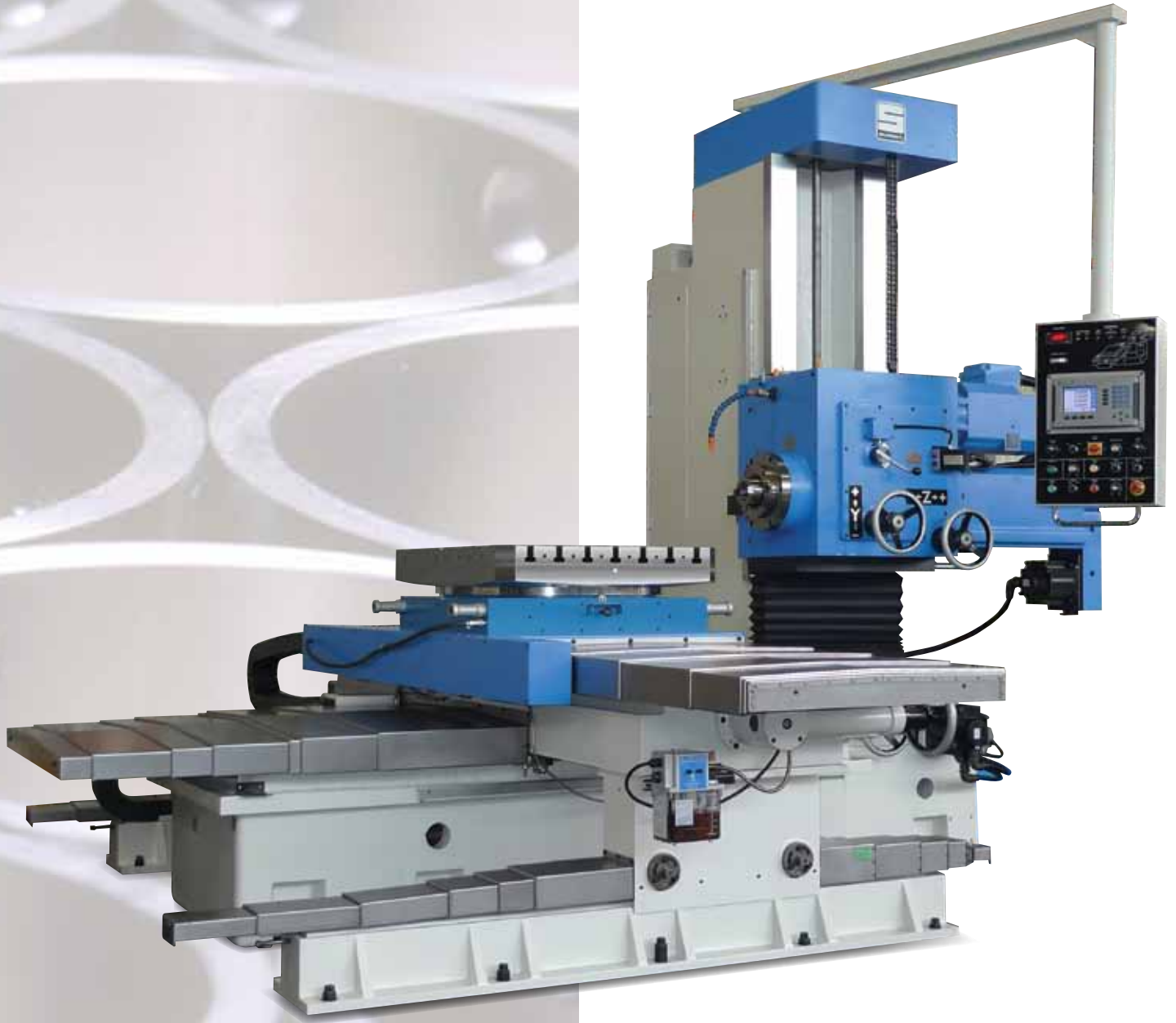


**Summit Machine
Tool Manufacturing
Corporation**



Horizontal Boring Mill

HBM 110

Whenever metal must be machined efficiently and with precision, **Summit** Horizontal Boring Mills provide a cost effective solution. **Summit's** series of HBMs incorporate many advanced construction features, utilizing the latest technologies to ensure high performance and to meet the ever increasing demand for greater productivity.

The **Summit** HBM Models contain more standard features than similar machines on the market, features that make the **Summit** HBMs versatile, durable, heavy-duty and user friendly machine tools for all your machining needs.

The combination of state of the art mechanical and electrical engineering ensures that the operation of **Summit** HBMs is the most efficient and cost effective way of increasing productivity and keeping your company on the cutting edge of machining technology.



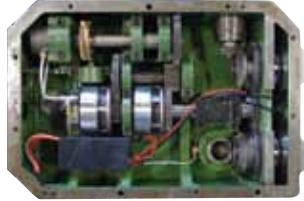
Summit HBM 110 Horizontal Boring Mill



Control Panel

The control panel is pendant mounted for ease of operation and availability. The panel contains the AcuRite Electronic Digital Readout for measurement of all linear axis

movement. The 4 axis DRO is inch/metric switchable and has several functions for ease of operation. Spindle speed and axis feed are controlled from the pendant by push buttons, rheostats and axis selection joystick switches. LEDs indicate axis condition (clamped/unclamped and over limit travel). Spindle load is indicated by a load meter.



Feed and Rapid Traverse

The feed gearbox distributes feeds to the various axes through heavy-duty precision hardened and ground gears and shafts. In addition to feed distribution, this gearbox also provides rapid traverse motion which is supplied by a large 4 HP motor. The gearbox is lubricated by a constant pressure gear pump to guard against damage and can be easily accessed for quick maintenance.



Spindle Drive Box

The extra heavy-duty spindle drive gearbox provides spindle speeds through large width, precision hardened and ground gears. Each gear is thoroughly tested for accurate tooth configuration and flank engagement to ensure a quiet and smooth operation while delivering maximum torque and power to the spindle. The gears are precision mounted on hardened and ground splined shafts in ball and tapered roller bearings. To ensure extremely precise operation, the spindle is controlled by a Yaskawa spindle motor.



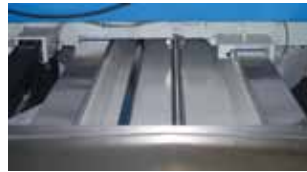
Electrics & Drives

Summit utilizes only state of the art programmable logic electronics to ensure long, reliable operation. Components are installed in a centralized, column-mounted, fully accessible cabinet for ease of maintenance. Each load

circuit is provided with fused or thermally-monitored overload devices to ensure complete protection of major components. These devices are fully integrated into the control circuitry to provide warning lights and/or suspend machine operation as necessary.

Centralized Lubrication System

Lubrication of the HBM is achieved through independent, centralized lube systems for each of the major machine sections. Individual self-contained pumping units provide proper lubrication for the spindle drive gearbox, the feed gearbox, the headstock ways and the table/saddle assembly. The lubrication oil is distributed through specially calibrated metering units to ensure precise lubrication amounts to all critical components.

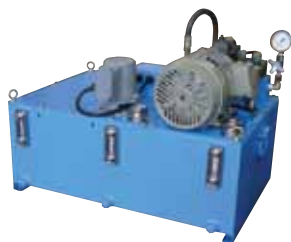


Way Surfaces - Ball Screws - Way Covers

The way surfaces on the HBM 110 are hardened and precision ground cast iron square sections that are extremely wide to give the ultimate in support anywhere along the travels of the machine.

Axis travel is accomplished by movement of the ball screw and preloaded ball nuts for smooth precise movement. (X and W axis)

The way surfaces and ball screws are protected by steel telescoping way covers to keep contamination away from these precision components.



Hydraulics

The independent hydraulic system features state-of-the-art components for reliable, continuous service.



Oil Chiller

A compact but highly efficient Chiller is integrated into the headstock lubrication system to provide cooled oil to the spindle to prevent heat build up and thermal distortion.

Outrigger

The Summit HBMs are designed with independent outriggers to support the saddle and table throughout the travel of the X and W axis. This allows maximum support of the work piece even on odd shapes and off center loads.



STANDARD FEATURES

- Heavily ribbed closed grain cast iron construction, heat treated and stress relieved
- Hardened and precision ground ways
- Tapered roller bearing headstock
- Limit switches on all axes
- Easy access programmable electrics
- Built-in manual rotary table
- Air operated power draw bar
- Precision hardened and ground gears
- Central pendant control
- Multi-axis electronic digital readout
- Inch/metric switchable readout
- Automatic timed lubrication system
- Coolant system
- Steel telescoping way covers on x and w axis
- Hydraulic axis clamping
- Rapid traverse
- Ballscrews on x, w & z axis

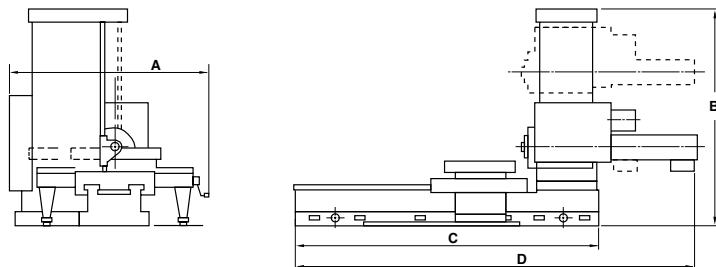
OPTIONAL EQUIPMENT

- Right angle milling attachment
- Universal milling attachment
- Spindle support
- Transformer for other than 220/3/60
- Installation assistance
- Facing head

Specifications

HBM 110

Summit Horizontal Boring Mill



Horizontal Boring Mill Dimensions

MODEL	A	B	C	D
HBM 110	154"	126"	137"	175"

SPECIFICATIONS

SPINDLE

Diameter of spindle	4.3"	110mm
Taper of spindle	#50 NMT	
Number of spindle speeds	Infinitely variable	
Spindle speed range	20-1500 RPM	

TRAVELS

Vertical travel - Y axis	39.4"	1000mm
Cross travel of table - X axis	63"	1600mm
Saddle travel - W axis	49.2"	1250mm
Spindle travel - Z axis	16"	400mm

FEEDS

Number of feeds	Infinitely variable	
Feed range	0 - 37.4 IPM	0-950mm/min
Rapid traverse in all directions	110 IPM	2800mm/min

TABLE

Size of table	31.5" x 39.4"	800 x 1000mm
Maximum weight of workpiece	5,500 lbs.	2500 kg
Table height from floor	49"	1250mm
Table T-slot Width (7)	.875"	22mm
Rotation	Manual	
Increment	1°	

COLUMN

Width of ways	4.5"	115mm
Number of ways	2	
Width across ways	21.5"	550mm

SADDLE

Width of ways	4.375"	110mm
Number of ways	2	
Width across ways	23.25"	590mm

BASE

Width of ways	5.75"	146mm
Number of ways	2	
Width across ways	36.5"	927mm

MAIN DRIVE MOTOR

20 HP 15 kw

AXIS FEED MOTOR (X, Y & W)

3.9 HP 2.9 kw

SPINDLE FEED MOTOR (Z)

3.9 HP 2.9 kw

ELECTRICS

220/3/60

DIMENSIONS (LxWxH)

175" x 154" x 126" 4445 x 3915 x 3200mm

WEIGHT (approx.)

26,400 lbs 12,000 kg

FOR MORE INFORMATION CALL
1-800-654-3262



WARRANTY: A copy of Summit Machine Tool Manufacturing Corp.'s standard written warranty is attached to each Summit Machine. Call or write to Summit for a copy or for further information concerning Summit's standard warranty. All purchases are subject to Summit's standard written warranty. Specifications are subject to change without notice.

POINT OF OPERATION guarding is the responsibility of the end user. For information contact your local OSHA office.

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A Subsidiary of LSB Industries, Inc.

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