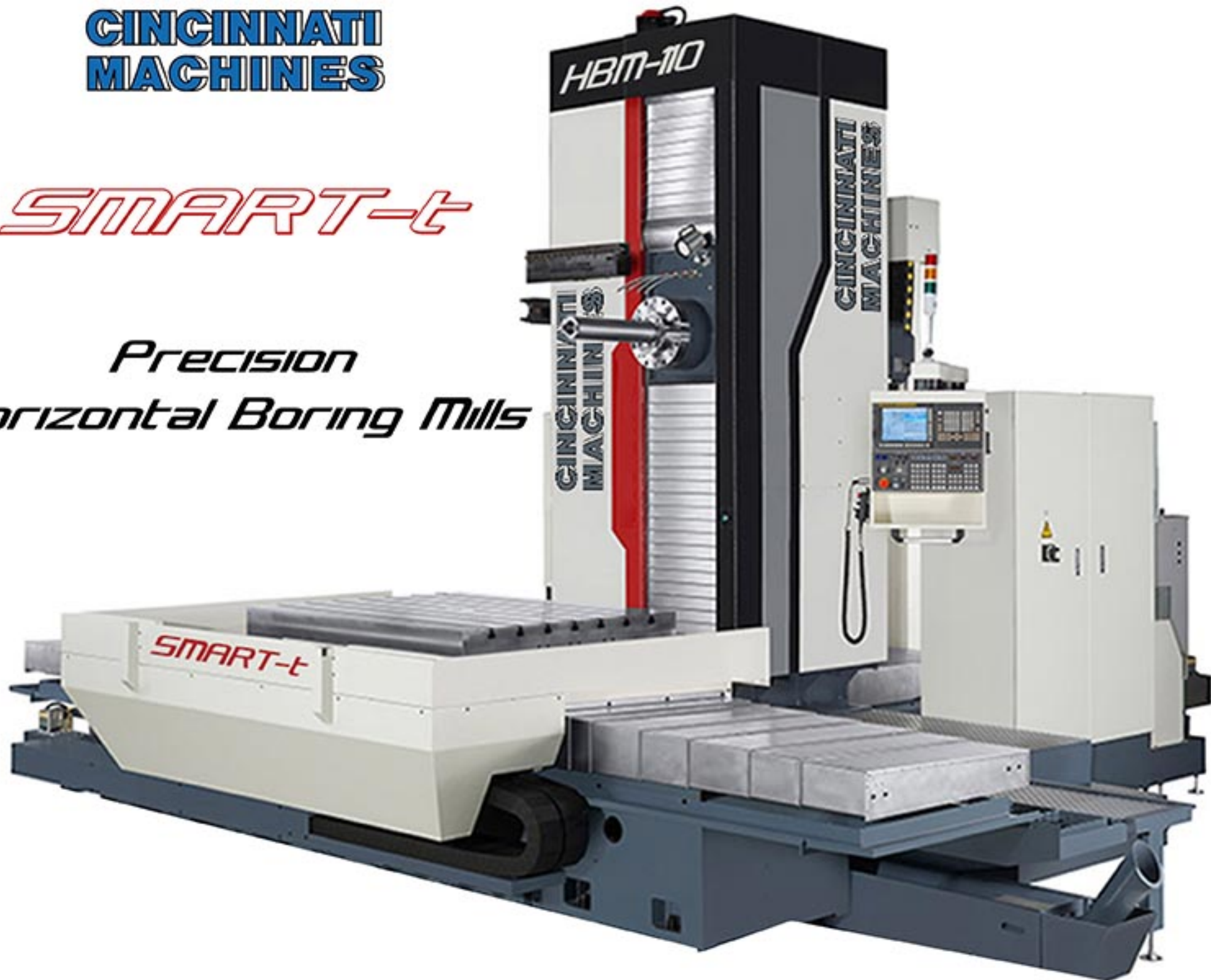


**CINCINNATI  
MACHINES**

*SMART-t*

*Precision  
Horizontal Boring Mills*



# SMART-t

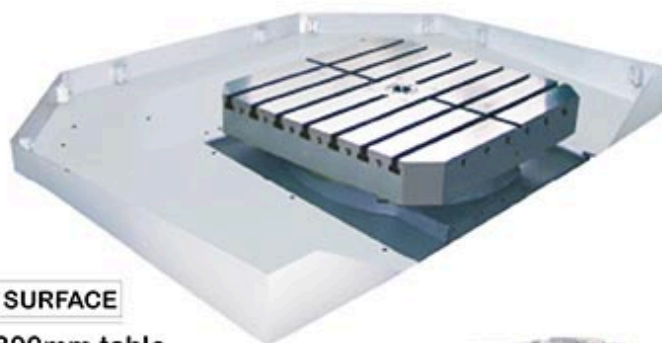
## HBM-80

Precision Horizontal Boring Mill



### AUTOMATIC TOOL CHANGE SYSTEM

The Standard 60 Tool Automatic Tool Changer provides maximum versatility and production



### WORK SURFACE

Large 800 x800mm table with 1° index and 6600lb weight capacity



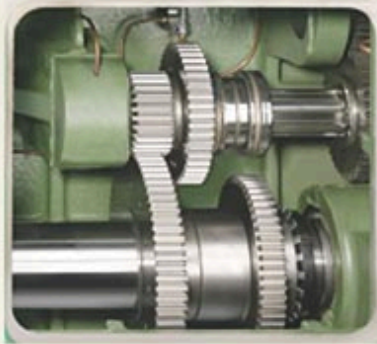
### MASSIVE MEEHANITE CASTINGS AND HARD BOX WAYS

### MACHINE BASE

Heavy-Duty Extra-Wide Single-Piece Base with 4 Slideways and the Extra-Wide Saddle provide maximum support and rigidity through the machine travels

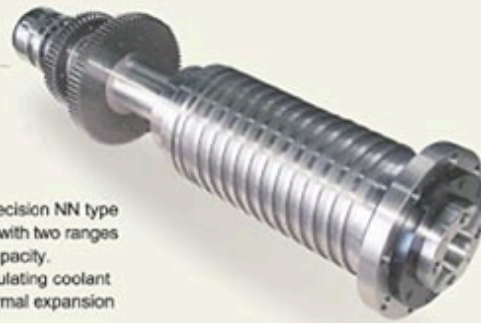
# CNC

CNC HORIZONTAL BORING & MILLING MACHINE



### MAIN SPINDLE

- The spindle is mounted on class SP high precision NN type dual roller bearing. Full geared drive spindle with two ranges of speed change provides flexible cutting capacity.
- The housing type designed spindle has circulating coolant with oil temperature control to eliminate thermal expansion on the spindle.



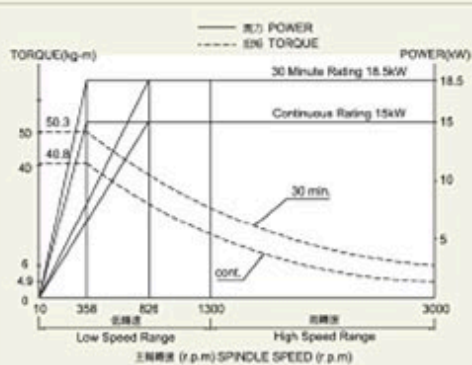
### CONTROL SYSTEM

- The suspended control box can be rotated during operation and the portable MPG handwheel easily in set-up workpiece.
- With high reliable and high performance control FANUC

### SPINDLE OIL COOLER



### CHAIN-TYPE CHIP CONVEYOR



### TORQUE CHART

Powerful AC spindle motor: 15kW/18.5kW  
2 steps variable speed at maximum 3000rpm.



### TABLE SPLASH GUARD

A removable splash guard helps to prevent chips and coolant splashing to keep the working area clean.(Optional)

# CNC

## CNC HORIZONTAL BORING & MILLING MACHINE

# CINCINNATI MACHINES

## SMART-t

*Precision  
Quality  
Productivity*



## HBM-110 Series Precision CNC Horizontal Boring Mills

### AUTOMATIC TOOL CHANGE SYSTEM

- Standard chain type with 60 tools magazine ATC, provide safety and stable exchange. This enhances machining flexibility and efficiency.
- Loading and unloading tools at the rear of the ATC is available.



### WORK SURFACE

- Built-in index table 1500x1200mm driven by a servo motor.
- With high precision absolute angle encoder for closed feedback.
- Minimum input 0.001 degree, full B-axis 360 degree.
- 0-90-180-270 degree with mechanical locating pin.
- Table load capacity maximum 5000kg.
- Hydraulic clamping system.



**CNC**  
CNC HORIZONTAL BORING & MILLING MACHINE

## MAIN SPINDLE (ISO50)

### Heavy-Duty Spindle



- The 110mm diameter spindle rides on precision NN type double roller spindle bearings.
- The 2-step gear box provides maximum torque for heavy-duty precision boring capability.
- The standard spindle oil chiller insures maximum temperature stability for precision and accuracy.
- The heavy-duty quill feature 550mm W-axis travel with hydraulic clamping.

## CONTROL SYSTEM

### Fanuc Spindle and Servo Drives



- The suspended control box can be rotated during operation and the portable MPG handwheel easily in set-up workpiece.
- With high reliable and high performance control FANUC OI-MD.

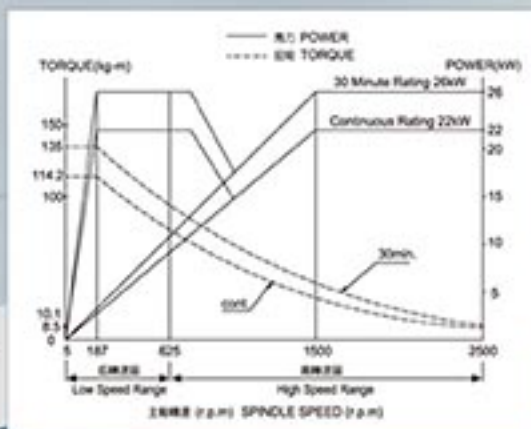
## SAFETY QUICK CONNECTORS

- The electrical box is equipped with safety connectors, safety and easy to connecting with electric parts.

## TORQUE CHART

### High Torque Boring

- Powerful spindle motor: 22/26 KW.
- 2-steps variable speed at maximum 2500rpm.
- Torque output maximum 135kg-m.



## MACHINE STRUCTURE

### Massive Heavy-Duty Rigid Meehanite Castings with Hardened and Ground Slideways

- The massive T-structure box-type meehanite castings combined with the traveling column design insures maximum rigidity.
- Massive precision hardened and ground XYZ slideway provide rock solid milling and boring capacity.
- The X,Y,Z,W, and B-Axes feature digital scale feedback insuring the highest precision.
- Telescopic way covers throughout
- Automatic lubrication system throughout.



**THREE EACH HARDENED & GROUND PRECISION BASE SLIDWAYS**

**CNC**  
CNC HORIZONTAL BORING & MILLING MACHINE

MODEL	Unit	HBM-80	HBM-110	HBM-110XL	HBM-110XL-x
<b>TABLE</b>					
Table size	mm	1,000 x 1,000 (39-3/8 x 39-3/8 inch)	1,000 x 1,000 (39-3/8 x 39-3/8 inch)	1,500 x 1,200 (59 x 47-1/4 inch)	1500 x 1200 (59 x 47-1/4 inch)
T slot (Wide x No. x Pitch)	mm	22H8 x 9 x 100 (0.86 x 9 x 4 inch)	22H8 x 9 x 100 (0.86 x 9 x 4 inch)	22H8 x 7 x 150 (0.86 x 7 x 6 inch)	22H8 x 7 x 150 (0.86 x 7 x 6 inch)
Max load capacity	kg	3,000 (6,600 lbs)	3,000 (6,600 lbs)	5,000 (11,000 lbs)	5000 (11,000 lbs)
Min. indexing unit	deg	1° (360 divisions)	1° (360 divisions)	0.001° (Every 90 deg with loading pin)	Min. input 0.001 (Every 90 deg with loading pin)
B axis rapid feed	rpm	4	4	2	2
Table height from ground	mm	1,103 (43-7/16 inch)	1,103 (43-7/16 inch)	1,095 (43-1/8 inch)	1095 (43-1/8 inch)

<b>CAPACITY</b>					
X axis travel	mm	2,000 (78-3/4 inch)	2,000 (78-3/4 inch)	2,000 (78-3/4 inch) [3,000 opt. (118-1/8 inch) opt.]	3000 (118-1/8 inch)
Y axis travel	mm	1,200 (47-1/4 inch)	1,400 (55-3/32 inch)	1,500 (59 inch)	1500 (option 1800)
Z axis travel	mm	1,200 (47-1/4 inch)	1,150 (45-1/4 inch)	1,400 (55-3/32 inch)	1400 (55-3/32 inch)
W axis travel	mm	-	500 (19-11/16 inch)	550 (21-5/8 inch)	550 (21-5/8 inch)
Spindle nose to table center	mm	275 - 1,475 (10-13/16 - 58 inch)	-175 - 1,475 (- 6-7/8 - 58 inch)	-30 - 1,920 (- 1-3/16 - 75.1/2 inch)	-30 - 1920 (- 1-3/16 - 75.1/2 inch)
Spindle center to table top	mm	0 - 1,200 (0 - 47-1/4 inch)	0 - 1,400 (0 - 55-3/32 inch)	0 - 1,500 (0 - 59 inch)	0 - 1500 (option 1800)

<b>SPINDLE</b>					
Spindle nose	mm	BT50	BT50	BT50	BT 50
Spindle diameter	mm	-	110	110	110
Output max.	kg-m	-	135	135	135
Spindle speed (2 ranges)	rpm	Lo-speed	30 - 1300	5 - 625	5 - 625
		Hi-speed	1301-3000	626 - 2500	626 - 2500

<b>FEED</b>					
Rapid X, Y, Z, W axis	m/min	15 / 12 / 15 / -	15 / 12 / 15 / 6	10 / 10 / 10 / 6	10 / 10 / 10 / 6
Rapid table rotation	rpm	4	4	2	2
Feed rate of X, Y, Z axis	mm/min	1 - 6,000	1 - 6,000	1 - 6,000	1 - 6,000
Feed rate of W axis	mm/min	-	1 - 4,000	1 - 4,000	1 - 4,000
X, Y, Z axis ballscrew (Dia. / Pitch)	mm	50 / 10	50 / 10	63 / 10	63 / 10
W axis ballscrew (Dia. / Pitch)	mm	-	40 / 10	40 / 10	40 / 10

MODEL	Unit	HBM-80	HBM-110	HBM-110XL	BM-110XL-x
<b>A.T.C.</b>					
Magazine capacity	pcs	60	60	60	60
Pull stud	-	MAS-P50T-1	MAS-P50T-1	MAS-P50T-1	MAS-P50T-1
Max. tool length	mm	400	400	400	400
Max. tool weight	kg	25	25	25	25
Max. tool diameter	mm	Ø125 / Ø250 (w/o adjacent tool)	Ø125 / Ø250 (w/o adjacent tool)	Ø125 / Ø250 (w/o adjacent tool)	Ø125 / Ø250 (w/o adjacent tool)
Tool selection	-	Sequence by shortest path	Sequence by shortest path	Sequence by shortest path	Sequence by shortest path
Tool change time(approx)	sec	15	15	15	15

<b>MOTORS</b>					
Spindle motor	kW	15 / 18.5	22 / 26	22 / 26	22 / 26
Servo motor for X, Y, Z, B, W	kW	7 / 7 / 7 / 4	7 / 6 / 7 / 4 / 7	6 / 6 / 6 / 7 / 7	6 / 6 / 6 / 7 / 7
Centralized lubrication pump	W	150	150	150*2	150*2
Hydraulic pump	kW	2.2	3.7	3.7	3.7
Spindle oil cooler pump	kW	0.75	1.18	1.18	1.18
Coolant pump	kW	1	1	1	1

<b>GENERAL INFORMATION</b>					
Pneumatic required	kg/cm <sup>2</sup>	6	6	6	6
Coolant tank	L	350	350	250	250
Machine dimension	mm	5,000 x 5,100 x 3,250	4,900 x 5,100 x 3,605	4,480 x 5,510 x 3,820	5,500 x 5,510 x 3,820
Machine weight (Approx.)	kg	18,000 (39,600 lbs)	21,000 (46,200 lbs)	24,500 (53,900 lbs)	25,800 (56,760 lbs)
	-	Fanuc 0-MF	FS-0-MF	FS-0-MF	Fanuc 0-MF



**SMART-t  
Manual  
Precision  
Boring Mills  
are also  
available**

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