

**TOSHIBA MACHINE MACHINERY'S VERTICAL BORING AND TURNING MILL
MODEL; TUD-16 with FANUC SERIES 31iA CNC CONTROLLER**

MACHINE MAIN SPECIFICATIONS

MAIN CAPACITY

Table diameter	62.9"	1,600mm
Maximum swing	78.7"	2,000mm
Maximum height from table top to ram bottom		
* without Automatic Pallet Changer	61.0"	1,550mm
* with Automatic Pallet Changer	53.1"	1,350mm
Maximum cutting height		
* without Automatic Pallet Changer	53.1"	1,350mm
* with Automatic Pallet Changer	45.2"	1,150mm
Maximum cutting force of ram	6,700lbf	30,000N
Maximum load on table		
* without Automatic Pallet Changer	22,000lbs	10,000kg
* with Automatic Pallet Changer	11,000lbs	5,000kg

TRAVEL

Horizontal travel of rail head (X-axis)	-31.6 ~ 44.0 -805 ~ 1,120mm	
Vertical travel of ram (Z-axis)	31.4"	800mm
Vertical travel of crossrail (Not NC-axis)	19.6"	500mm

TABLE

Table speed	2 ~ 350min-1	
Number of table speed ranges	2 ranges (Hydraulic gear shift)	
Maximum table torque	17,000lbf.ft	23,000N.m

FEED RATE

Rapid traverse X-axis (Rail head)	472ipm	12,000mm/min
Z-axis (Ram)	393ipm	10,000mm/min
Feedrate X & Z-axes	0.04 ~ 78.7i 1 ~ 2,000mm/min	
Vertical travel speed of crossrail	11.8ipm	300mm/min

RAM

Type of ram	Ram type (4 guideways closed type)	
Section of ram	8.6x8.6"	220x220mm

MOTORS

Table drive motor (30min/cont.)	60/50HP	VAC 45/37kW
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ACCURACY

Positioning accuracy of linear axis (X&Z-axes)	±0.0003 pe ±0.007 per 500mm	
Repeatability of linear axis (X&Z-axes)	±0.00012r ±0.003mm	

- 1) Accuracy under no-load and stable ambient condition
- 2) Other accuracy as per the our standard test chart (testing method & tolerances)

MACHINE SIZE

Machine height	192.3"	4,885mm
Floor space		
* without Automatic Pallet Changer	174.6 x 235	4,435 x 5,970mm
* with Automatic Pallet Changer	255.5 x 271	6,490 x 6,900mm
Machine weight		
* without Automatic Pallet Changer	41,800lbs	19,000kg
* with Automatic Pallet Changer	61,700lbs	28,000kg

POWER SOURCES

Electric power supply	AC 208V, 60Hz
Power capacity	90kVA
Compressed air supply	
* Pressure	72.5 ~ 116p 0.5 ~ 0.8MPa
* Flow rate	
without Automatic Pallet Changer	300L/min
with Automatic Pallet Changer	720L/min

- 1) No oily, moist or dusty air shall be prepared by customer
Air dryer is recommended to prevent moisture contamination from air supply.
- 2) Customer needs to prepare either direct AC208V 60Hz or a transformer to meet the applicable power source requirement for the machine

STANDARD ACCESSORIES

- 1) Installation parts
- 2) Special service tools
- 3) Chip guard
- 4) Automatic slideway lubricating unit
- 5) Crossrail step positioning unit
- 6) Individually operated chuck jaws (4pcs/1set)
- 7) Crossrail slides cover
- 8) Automatic main power OFF device
- 9) Table lubricant oil cooling unit
- 9) Spindle head cooling unit (Main bearings, Motor flange oil jacket)
- 10) Spindle centering unit
- 11) Hand wheel feed unit for X, Y, Z, W & B axes (Portable)
- 12) Scale feedback for X, Y Z and B-axes
- 13) Automatic table random angle indexing unit (every 0.0001 degree)
- 14) Automatic table clamping unit (Hydraulic)
- 15) Table reference piece
- 16) Table oil pan
- 17) Saddle slide-way cover
- 18) Bed slide-way cover
- 19) Auxiliary slide-way cover
- 20) Column front cover
- 21) Coil conveyor (Built in bed)
- 22) Working light (Spotlight)
- 23) Hydraulic unit for spindle head hydraulic pressure and lubrication
* including cooling unit
- 24) Plug receptacle for external equipment (AC 100V, 2A)
- 25) Assembly and reassembly tools for maintenance
- 26) Installation parts
- 27) Auto power OFF unit
- 28) Operator call lamp (1color, Yellow)