

**TOSHIBA MACHINE**

# ***TUE series***

**Vertical Boring & Turning Mill**



**TOSHIBA MACHINE's best-selling TUE**  
**TUE series is the economical solution for your**  
**turning capabilities.**

**Optional (S) type has a live spindle that performs**

# TUE-Series

## ■ High accuracy

- Extremely rigid anti-friction pre-loaded linear roller guide used on the X-axis slide unit for high speed and accurate positioning.
- Ram travel (Z-axis) is guided by heavy duty box way.
- Gear box is apart from bed and thermal displacement is smaller.
- High accurate table index by Cs axis control.

## ■ High efficiency

- All main components are made by high quality cast iron. Column structure is rigid box type.
- Maximum table speeds are increased. (TUE-150 400min<sup>-1</sup>, TUE-200 240min<sup>-1</sup>)
- Live Spindle employed built in motor(18.5/15kW / 25/20HP). Gearless drive assures high efficient milling capability. (TUE-150(S), TUE-200(S))

## ■ Automatic function

- Automatic Tool Changer (ATC) (Option)
- Automatic diameter and step difference measuring device, Automatic tool tip measuring device. (Both are option)

Main specifications		TUE-150	TUE-200
Table diameter	mm(in)	1450(57.09)	2000(78.74)
Maximum swing	mm(in)	2000(78.74)	2400(94.09)
Maximum cutting height	mm(in)	1550(67.72)	
Maximum table load	kg(lb)	8000(17600)	15000(33070)
Vertical travel of ram	mm(in)	900(35.43)	
Table speeds	min <sup>-1</sup> (rpm)	2-400 ( Low : 2~100 High : 8~400 )	2-240 ( Low : 2~60 High : 8~240 )
Table drive motor	kW(HP)	45 / 37(60 / 50)	

**series has been enhanced.**  
**turning needs yet achieves high quality**

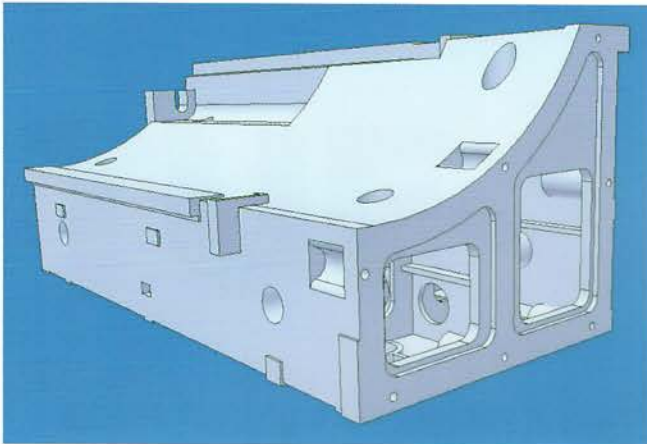


**drilling and tapping and boring operations.**



## ***Rigidity and accuracy of main components of our TUE series are the essence of high quality.***

Robust and high quality cast iron components of TUE series assures high rigidity and accuracy of the machine.

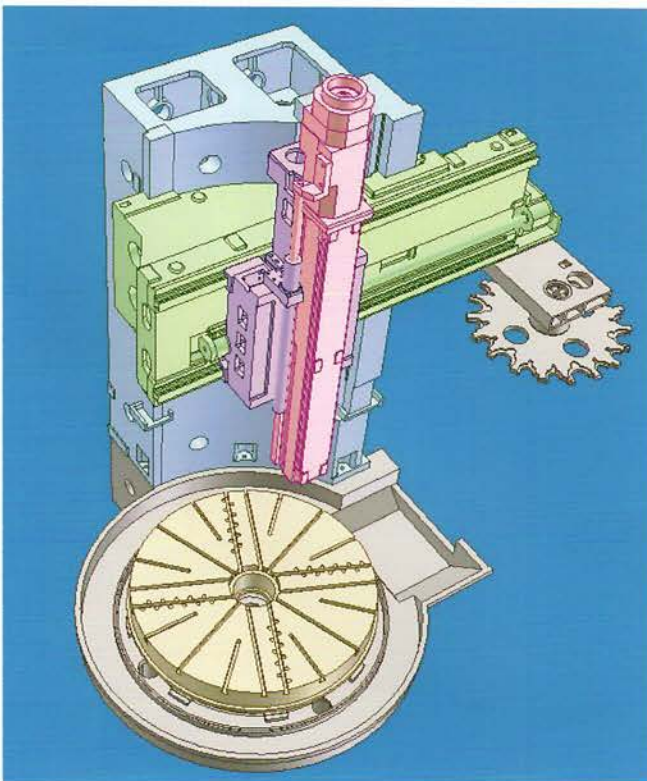
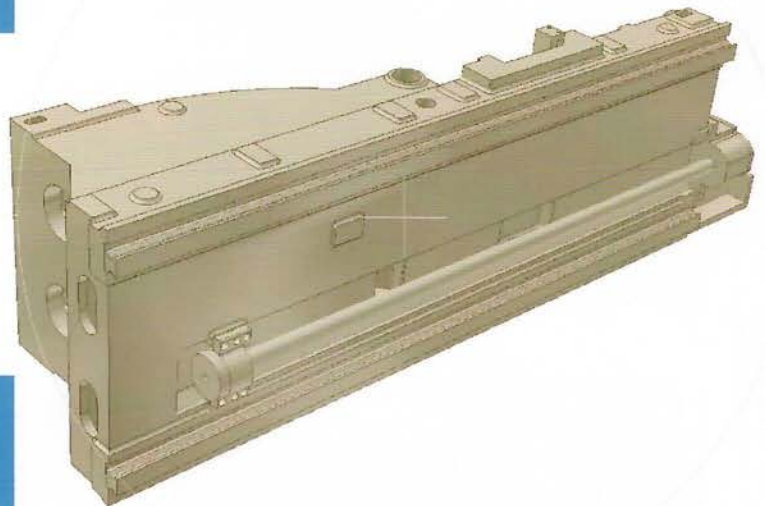


### **Wall type column**

The extended width of the crossrail support side, delivers robust and strong combination, including a larger column cross section in comparison to previous TUE model.

### **One-body cross rail**

Rigidity of one-body construction goes up 50% higher than previous TUE model.

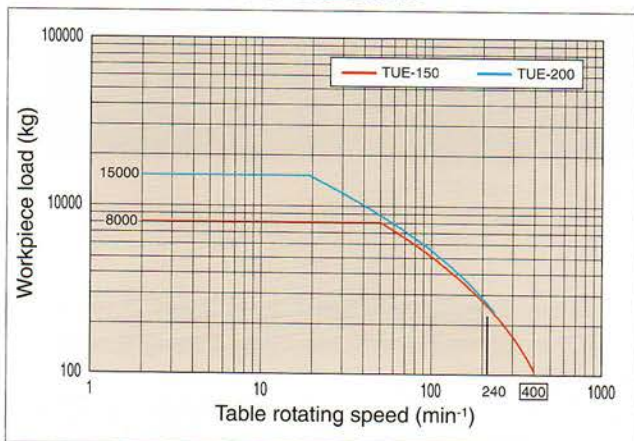


Cutting force which are absorbed by the ram are transferred efficiently through a one-body crossrail and "unique" wall type column design that extends to the center of the table. This structure assures high rigidity and high accuracy of the machine.

The table supported by two bearings assures stable and high-speed powerful cutting even when machining a large diameter workpiece.

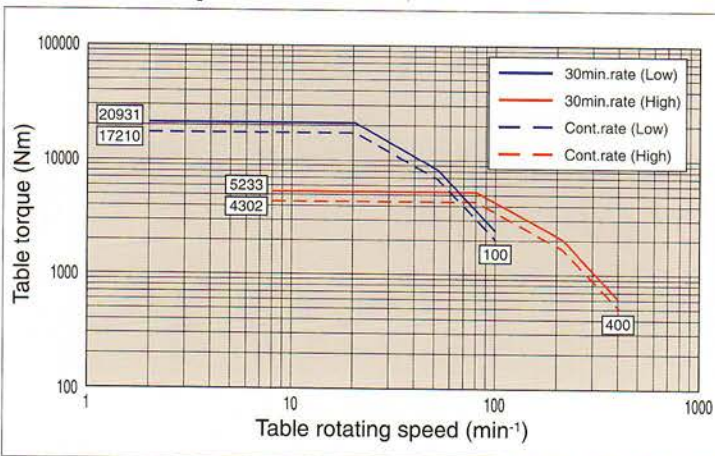


## Maximum load on table

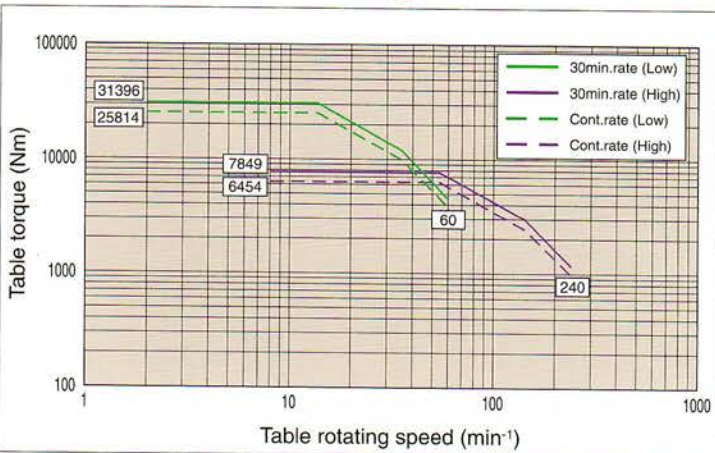


\* Machine limitation:  
Depends on the size and shape of the workpiece.

## Table torque (TUE-150)



## Table torque (TUE-200)



T-slots incorporated on the table top, are used to guide four independent manually-operated jaws and to clamp a workpiece.

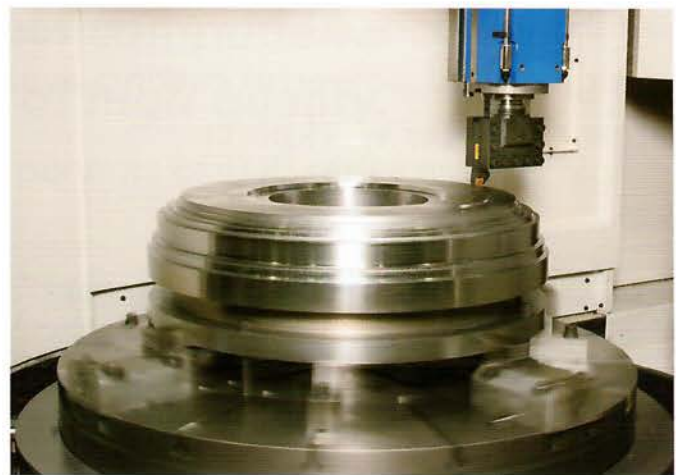
The bed made of cast iron has rationally arranged ribs for rigid table support. The rear side of the bed is connected with column and contain a main gear drive system.





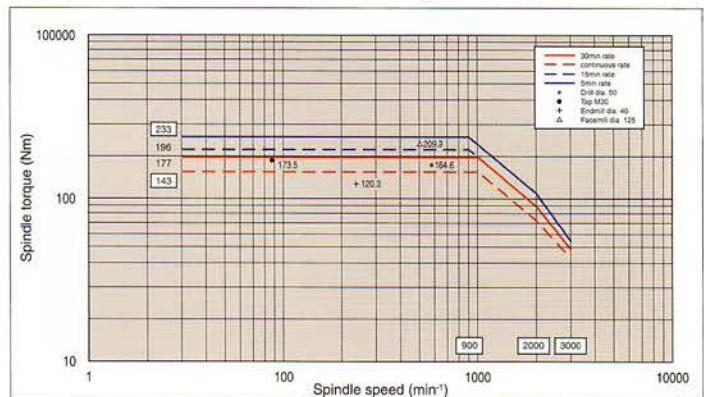
## Rail head for improved machine performance

The rail head is positioned horizontally (X-axis) and the ram vertically (Z-axis) by means of large-diameter ball screws of which each is supported by special angular contact ball bearings. The X-axis slideways consists of linear rolling guides and the Z-axis slideway is composed of non-metallic liners to assure high positioning accuracy, high axis feed and heavy-duty operations.

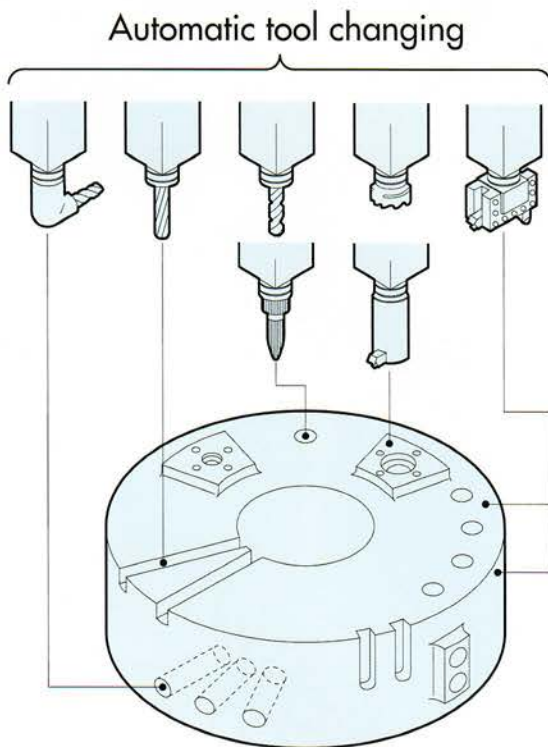
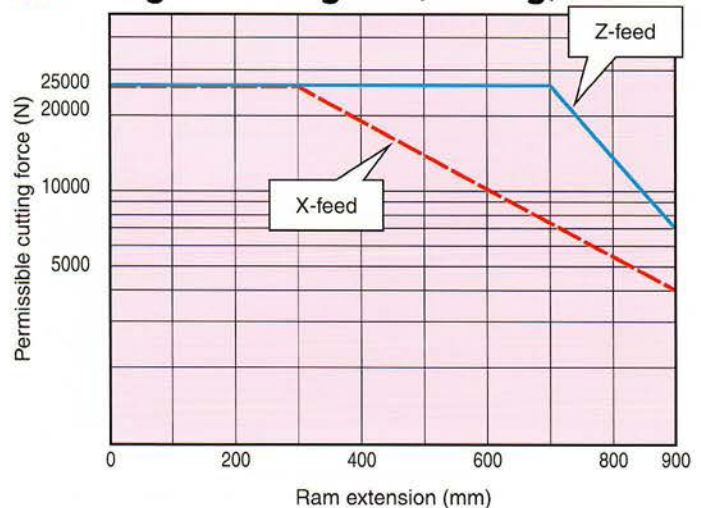


Tool can be clamped/unclamped automatically in the spindle (ISO taper No.50) with the collet type pull stud and the spindle is driven by the AC type motor located at the top of the ram.

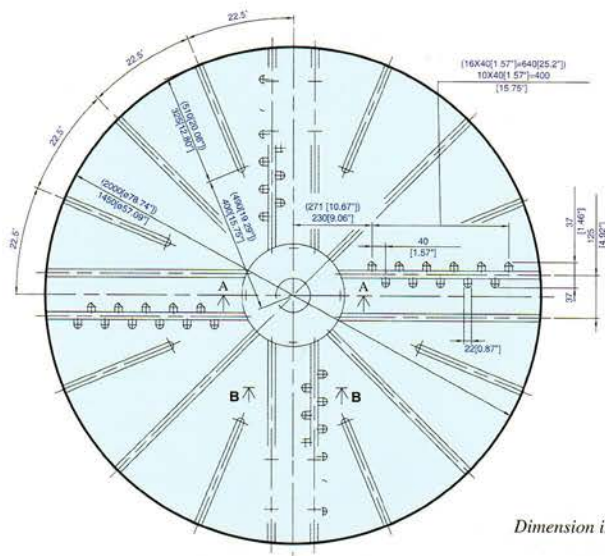
## Live Spindle torque diagram



## Cutting force diagram (Turning)



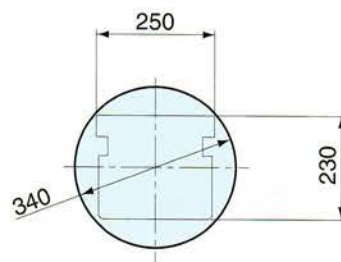
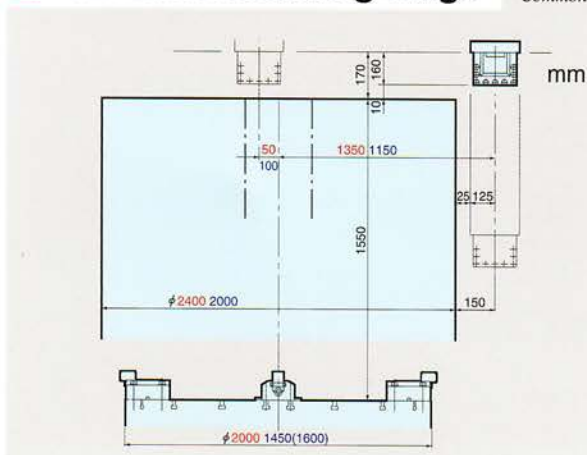
TUE-(S) type machine equipped with a live spindle reduces the amount of setups, in order to achieve a more efficient process.



Technical drawing of a cross-section of a tunnel with a rectangular structure inside. The drawing shows various dimensions and labels. At the top, a dimension line indicates a width of [MAX 61.02 (63.07) - 25.58 (28.15)]. Below this, a vertical dimension line on the left indicates a height of [0.13501 (156) - 0.000358]. To the right of this, a horizontal dimension line indicates a width of [0.27 (16.77) - 12.25 (62.87)]. Further down, a horizontal dimension line indicates a width of [0.12431 (800) - 0.550430]. Below that, a horizontal dimension line indicates a width of [48.82 (70.87) - 13.78 (16.37)]. At the bottom, a horizontal dimension line indicates a width of [0.13291 (64.0) - 4.834 (16.0270)]. To the right of this, a horizontal dimension line indicates a width of [42.25 (64.57) - MIN 2.45 (10.63)]. The drawing also shows a rectangular structure with a blue fill, and several small circles representing bolts or fasteners.

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※Value of TUE-200 in red character. TUE-150 standard in blue character.  
Common value is written in black character on above drawing.



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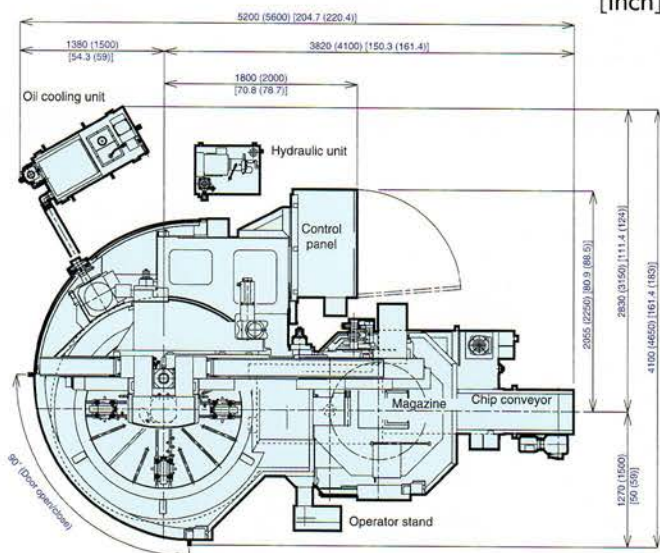
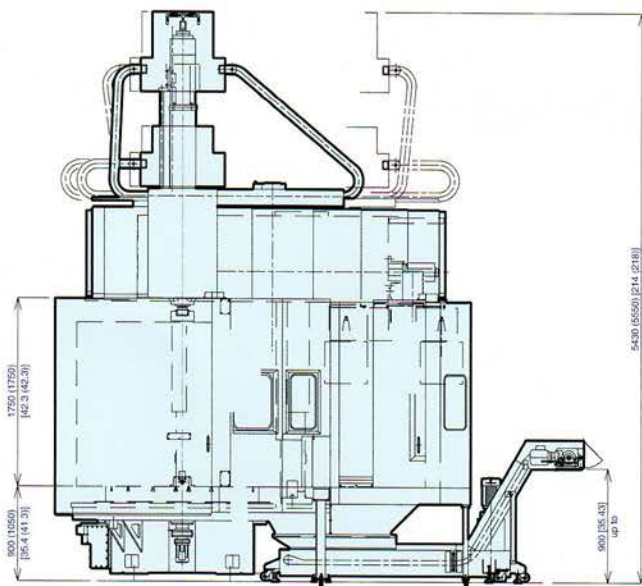
## Machine Specifications

Machine Specifications		Unit	TUE-150	TUE-200
Capability and capacity	Table diameter	mm (in)	1450 (57.09)	2000 (78.74)
	Maximum swing	mm (in)	2000 (78.74)	2400 (94.49)
	Maximum height from table top to ram bottom	mm (in)	1720 (67.72)	
	Maximum machining height	mm (in)	1550 (61.02)	
	Maximum machining diameter	mm (in)	2000(78.74)	2400(94.49)
	Maximum machining force of ram	N (lbf)	24500 (5508)	
	Maximum table load	kg (lbs)	8000 (17600)	15000 (33070)
Travel	Horizontal travel of rail head (X-axis)	mm (in)	-100~1150 (-3.94~45.28)	-50~1350 (-1.97~53.15)
	Vertical travel of ram (Z-axis)	mm (in)	900 (35.43)	
	Vertical travel of cross rail (Not NC axis)	mm (in)	1000 (39.38)	
Table	Table speed	min <sup>-1</sup> (rpm)	2~400 (Low : 2~100 High : 8~400)	2~240 (Low : 2~60 High : 8~240)
	Maximum torque	N·m (ft-lbs)	20930 (15435)	31396 (23153)
Live Spindle [TUE(S)]	Rotation speed	min <sup>-1</sup>	15~3000	
	Maximum torque	N·m (ft-lbs)	233 (171.8)	
Feedrate	Rapid traverse rate of rail head (X-axis)	mm/min (in/min)	15000 (590.55)	
	Rapid traverse rate of ram (Z-axis)	mm/min (in/min)	12000 (472.44)	
	Feedrate (X, Z-axes)	mm/min (in/min)	1~2000 (0.04~78.74)	
	Table index positioning speed (C-axis) [TUE(S)]	deg/min	720	
Ram	Section	mm (in)	250×230 (9.84×9.06)	
Tool	Type of tool shank		7/24 taper JIS 50T and Dia. 145mm flange	
	Type of pullstud		50PU (JIS B 6339-1992) (1-8UNC)	
Motor	Table drive motor (30min/cont.)	kW (HP)	VAC45/37 (60/50)	
	Spindle drive motor (30min/cont.) [TUE(S)]	kW (HP)	VAC18.5/15 (25/20)	
	Feed servo motor	kW (HP)	AC4 (5.4)	
Power source	Electrical power supply		AC200/220V, 50/60Hz	
	Power capacity	kVA	80	
Machine size	Height	mm (in)	5430 (214)	5550 (218)
	Floor area	mm (in)	5100×3750 (200.8×147.6)	5600×4400 (220.5×173.2)
	Machine weight	kg (lbs)	17000 (37480)	21700 (47840)
Accuracy	Positioning (X-axis)	mm (in)	±0.007/500 (±0.0003/20)	
	(Z-axis)	mm (in)	±0.007/500 (±0.0003/20)	
	Positioning repeatability (X, Z-axes)	mm (in)	±0.003 (±0.00012)	
	Positioning (C-axis) [TUE (S)]	arc-sec	±10" per 360 deg.	
	Positioning repeatability (C-axis) [TUE (S)]	arc-sec	±5"	

### General view

TUE-150(S)

Unit:mm  
[inch]



Dimension in brackets ( ) are TUE-200(S)

## Standard accessories

- |   |       |
|---|-------|
| (1) Installation parts                          | 1 set |
| (2) Special service tools                       | 1 set |
| (3) Automatic slideway lubricating unit         | 1 set |
| (4) Crossrail elevating device                  | 1 set |
| (5) Four (4) independent manually-operated jaws | 1 set |
| (6) Steel telescopic crossrail slide cover      | 1 set |
| (7) Splash cover                                | 1 set |
- (Height between table-top to cover top: 1775 mm [69.9 inch])



## Turning basic package

- (1) Automatic tool changer (ATC)  
 Tool storage capacity : 18 tools (6 tools for turning, 12 tools for milling)  
 Total tool weight : 360kg [794 lb]  
 Tool changing time (\*Note 1) 30sec Note 1 : Tool-to-tool time.  
 Type of tool shank for turning : 7/24 taper No.50 and flange  
 (double face contact type)  
 for milling 7/24 taper No.50 (\*Note 1)  
 Type of pull stud : 50PU (1-8UNC) (JIS B 6339-1992)  
 Maximum tool size : 400W×150T×500L mm  
 [15.7W×5.9T×19.7L inch]  
 Maximum tool weight : 50 kg (110 lb)  
 Method of tool selection : Soft tool post address
- (2) Work light (lamp type) : 13 W
- (3) Operator call lamp  
 This lamp is mounted on top of the arm right side.  
 Green : Illuminated during automatic operation.  
 Yellow : Illuminated when M00, M01, M02, M30 or M52 has been executed.  
 Red : Illuminated at NC alarm or machine alarm generation.
- (4) Table lubricant oil cooling unit
- (5) Automatic power OFF
- (6) Chip conveyor with tank / coolant unit  
 Used to discharge chips recovered by the chip scraper from the machine.  
 Not available to operate by inputting M-code (only manual push button).  
 Coolant tank capacity : 400 L [105.7 gal]  
 Standard type : Motor : AC 4P, 0.2kW [0.27 HP]
- (7) Chip scraper  
 Used to discharge chips from around the table.  
 Available to operate by inputting M-code and manual push button.  
 Drive motor : AC 4P, 0.4 kW [0.54 HP]

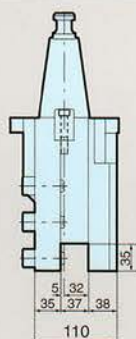
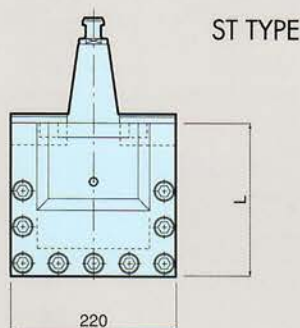
## User Option

- (8) High type column+300mm [11.81"]
- (9) Long type ram+350mm [13.78"]
- (10) Dia. 1600 mm [63"] table specification (for TUE-150)  
 Maximum rotating speed is limited to 320 min<sup>-1</sup>.
- (11) High type independent manually-operated jaw set (4 pieces)
- (12) Separate type independent manually-operated Soft jaw set (4 pieces)
- (13) Separate type independent manually-operated Hard jaw set (4 pieces)
- (14) Special stroke type independent manually-operated jaws set (4 pieces)  
 Jaw stroke : 100 mm [3.94"]
- (15) Additional table center hole and tap hole  
 Table center hole for fixture : Dia. 100 mm [3.94"]  
 Tap size : M24×pitch 3.0
- (16) Tool holder (see below)
- (17) X-axis linear scale feedback
- (18) Automatic radius and step difference measuring device  
 (with automatic tool compensation function)
- (19) Automatic tool tip measuring device
- (20) ATC jib crane  
 This is the jib crane for lifting a TUE(S) tool holder.  
 Maximum lifting load : 50 kg (110lb)
- (21) Heavy duty type chip conveyor  
 Motor : AC 4P, 0.4 kW [0.54 HP]
- (22) Chip Bucket
- (23) Through spindle type coolant function  
 (for TUE-S)
- (24) Customer specification painting color

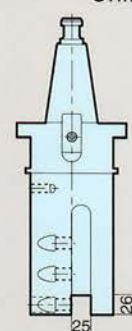
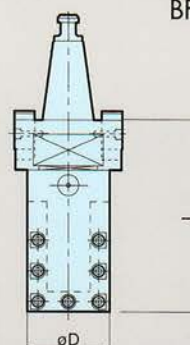


(7) Chip scraper

## Tool holder



## BFP TYPE



Unit:mm(inch)

Type	L	D	Bite
TA50-ST-160-JU	160(6.29)	-	32×32(1.25×1.25)
TA50-ST-200-JU	200(7.87)	-	32×32(1.25×1.25)
TA50-ST-250-JU	250(9.84)	-	32×32(1.25×1.25)
TA50-BFP-250-JU	250(9.84)	110(4.33)	25×25(0.98×0.98)
TA50-BFP-300-JU	300(11.81)	110(4.33)	25×25(0.98×0.98)
TA50-BFP-350-JU	350(13.77)	110(4.33)	25×25(0.98×0.98)
TA50-BFP-400-JU	400(15.74)	110(4.33)	25×25(0.98×0.98)

Type of tool holders for TUE-(S) series change to "FMX50A"



# TOSHIBA MACHINE

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### ISO 9001



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