1.1 Table and Bed

The table is made of cast iron. It is supported by a thrust ball bearing to receive the load in the axial direction, and by a taper roller bearing against the load in the radial direction. Thus high stability is assured and high-speed and heavy-duty machining operation is possible with efficiency. The T-slots run over the table top, which are used to guide a locally operated 4-jaw chuck and to clamp a workpiece.

The bed is made of cast iron and supports the table firmly with the logically arranged ribs.. It is designed symmetry construction which lessen thermal deformation. The bed incorporates the main gear box and is connected to the column. As the column is secured on the rigid bed, high and stable accuracy can be assured.

Cutting chips drop around the table , these are carried out the machine by screw conveyor(option) and chip conveyor(option).

1.2 Table Drive Mechanism

Power is transmitted from the main motor to drive helical gears mounted on the table through a 2-stage speed change gear train on the vertical shafts. The table speed change is carried out in two (2) steps by means of hydraulic shift and AC motor control. The simplified gear train minimizes heat generation and is arranged thermo-symmetrically to improve the thermal rigidity.

1.3 Column and Crossrail

The column and the crossrail are made of cast iron. It has features a box construction with symmetry and rigidity. The roller guideway and ball screw are guarded cover for chips and cutting oils.

1.4 Rail Head

Ball screws are employed for the horizontal (X axis) and vertical (Z axis) travel of the rail head. These ball screws are supported by special angular ball bearings, and the X and Z axis guideway consists of a roller guideway which allows high positioning accuracy, high - speed feed and heavy - duty machining.

The ram has a tapered face (ISO #50) and is designed to allow automatic tool clamp and release by means of a collet type pull stud mechanism.

1.5 Safety Devices

To prevent an accident, the machine is provided with a variety of interlocking devices including the EMERGENCY STOP pushbutton switch, limit switches for travel ends and pressure sensors in the hydraulic and pneumatic circuits, in addition to the covers for the revolving parts.

1.6 Lubrication device

Ball screw and bearing of X and Z axis are supplied oil mist lubrication. Roller guideway of X and Z axes lubrication use lubricant grease.

2. Machine Specifications

	Specifications	Unit		Remarks
Capacity	Pallet diameter	mm	1,016	
	Maximum swing	mm	1,200	On APC
	Maximum height from pallet top to ram face	mm	860	High column
	Maximum cutting height	mm	690	Cylindrical turning
	Maximum cutting diameter	mm	1,200	
	Maximum cutting force of ram	N(kgf)	19,600(2,000)	
	Maximum load on pallet	kg	1,000	Table speed less 300 $min.^{-1}$
Travel	Horizontal travel of rail head	mm	-510 - 725	X-axis
	Vertical travel of ram		800	Z-axis
Table	Table speed	$min.^{-1}$	Low range 2 - 125 high range 6 - 500	
	Number of table speed ranges		2 ranges	Hydraulic gear shift
	Maximum table torque(theoretical value)	N·m	9,160	Table speed Less 47 $min.^{-1}$
Spindle	Spindle speed	$min.^{-1}$	25 - 2,500	
	Maximum spindle torque(theoretical value)	N·m (kgf·m)	420	Spindle speed Less 500 $min.^{-1}$
Feedrate	Rapid traverse rate of rail head	mm/min	15,000	X-axis
	Rapid positioning rate of ram		12,000	Z-axis
	Feedrate by NC command		1 - 5,000	X and Z-axes
	Manual feedrate		1 - 2,000	X and Z-axes
	Rapid positioning rate of table indexing	deg/min	1,080	C-axis
	Feedrate of table indexing		1 - 360	C-axis

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	Specifications	Unit		Remarks
Ram	Type		Ram type	
	Guide		Roller guideway type	
	Size	mm	240 × 220	
Tool	Type of tool shank		7/24 taper No. 50	
	Type of pull stud		JIS 50P(JIS B6339-1992)	
	Force of retention	N(kgf)	31,300(3,200)	
Motors	Table drive motor	kW	VAC 45/37	30-min. rating/ continuous rating
	Spindle drive motor		VAC 22/15	10-min. rating/ continuous rating
	Feed motors		X-axis: AC1.5, Z-axis: AC1.5,C-axis: AC1.5	Servo
	Table main gear box lubricant pump motor		AC 4P 0.4	
	Spindle cooling oil pump motor		AC 4P 0.4	
	Table main gear box lubricant and spindle cooling oil ump motor		AC 4P 0.75	
	Hydraulic pump motor		AC4P 3.7	
	ATC Hydraulic pump motor		AC4P 3.7	
	APC setup STA. drive		AC 0.9	Servo
Tank	Mist lubrication	L	0.8	
	Table main gear box lubrication		55	
	Hydraulic unit		100	
	ATC Hydraulic unit		100	

	Specifications	Unit		Remarks
Machine size	Machine height	mm	4,920	
	Floor space		6,940 × 5,450	
	Machine weight (Not include option)	kg	22,200	
Accuracy	Positioning accuracy of linear axis (X & Z axes)		±0.005 mm per 500 mm	The testing method is as per the KYUSHU TOSHIBA MACHINE's standard.
	Repeatability of linear axis(X & Z axes):		±0.003 mm	
	Positioning accuracy of rotary axis (C axes)		±10 sec per 360 deg	
	Repeatability of rotary axis(C axes):		±5 sec	
Coating color	Exterior (Urethane painting)		Munsell 5Y8.4/0.5& N3 and accent color	For the procured devices, the painting colors are as per each manufacturer's standard.
	Interior		Munsell 10YR8/4	

3. Utilities

	Specifications		Unit		Remarks
Power sources	Electrical power supply			AC380V±10%,50Hz±1Hz	
	Power capacity		kVA	75	
	Compressed air supply (The air must not contain oil, water and contaminant.)	Pressure	MPa	0.5 ~0.8	
		Flowrate	L/min	500 (Air compressor 3.7kw)	with ATC,APC

Notice:

1. Keep the air pressure over 0.5MPa. If the air pressure will be down under 0.5MPa, the pneumatic device may not activate normally.

2. As if electric power voltage will fluctuate within permissible value, electric motor may not perform the specific power.

① 3. Painting might flake off by the special coolant used.