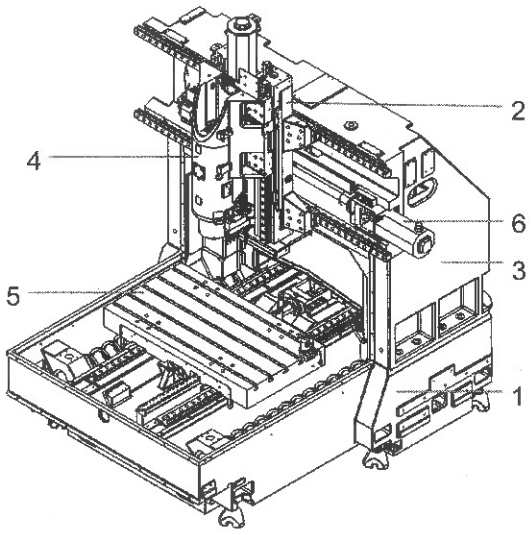
3. Axes system

Axes system consists of bodies for axes and ball-screw/servo motor to move them, and linear motion guide is used for rapid traverse in X, Y, Z axes.



Symbol	Description	Function
1	BED	- To from the foundation of machine - To form Y axis guide
2	SADDLE	- X axis movement - To form Z axis guide
3	COLUMN	- To form X axis guide
4	HEAD BODY	- Main spindle is attached - Z axis movement
5	TABLE	- Workpiece is loaded - Y axis movement
6	BALL-SCREW & SERVO-MOTOR	- Devices for Move-ment of all axes

3.1 Main specifications

ITEM		UNIT	SPECIFICATION
Stroke	X AXIS	mm	900
	Y AXIS	mm	550
	Z AXIS	mm	500
Rapid traverse	X AXIS	m/min	30
	Y AXIS	m/min	30
	Z AXIS	m/min	30
MAX. Cutting feedrate		mm/min	20,000
Ball screw (diameter x lead)	X AXIS	mm	Ø45 x P10
	Y AXIS	mm	Ø45 x P10
	Z AXIS	mm	Ø45 x P10
Accuracy	Positioning	mm	±0.005/FULL STROKE
	Repeatability	mm	±0.002
Feedback system	Incremental pulse coder	-	-
	Absolute pulse coder	-	X, Y, Z std.
	Linear scale	-	Opt.

4.1 Warning relating to Tool Holder Balance with High-Speed Spindle

For machines equipped with the high-speed spindle, strictly observe the precautions indicated below to ensure safe machine operation and long term spindle life and accuracy.

(1) Rotating a cutting tool with a high dynamic unbalance speed at high speeds will result in excessive vibration, damage to the spindle bearings, and severe wear of the tool, adversely affecting the accuracy of the machine.

(2) There are situations where the spindle must not be operated at the highest speed, due to the conditions of the jig and cutting tools & holders, even if all dimensions (length, diameter) are within the permissible range. In this case it has to be avoided to rotate the tool at the highest speed in order to avoid falling out of the tool and serious damage of machine.

(3) Do not rotate the spindle beyond the permissible rotation speed for each tool. Use the tool approved by the tool manufacturer for the allowable speed of the tool. Consult the toolmaker for balancing the high speed tool.

(4) We recommend using dual contact face holder in order to avoid jamming tool holder in the spindle after rotation and to improve dynamic stiffness of tool holder.

(5) In high-speed spindle, The balance grade of the tool should be G2.5 or better. When using 20,000 r/min, Allowable residual unbalance and formula are as follows.
(U=Gx9550xMr/n (mmg), Mr is tool weight(kg))

Tool Type	Spindle Speed n(r/min)	Balance Grade Quality(G)	Allowable Residual Unbalance with Tools U(mmg)
#40	20,000	2.5	1.8

4.2 Main specifications

ITEM		UNIT	SPECIFICATION	
			20,000 r/min	30,000 r/min
TYPE	CNC system		FANUC	
	Motor type		αB112s/20000i	αB80s/40000i
	Motor power (cont./10min)	kW	11/22	13/18.5
	Spindle speed	r/min	20,000	30,000
	Basic speed	r/min	2,300	30,000
	MAX. Torque	kgf · m	6.1 (15%ED)	0.6
Tool clamping force		kg	764	1100
Orientation			POSITION CODER	POSITION CODER
Taper type			ISO #40, 7/24 TAPER	HSK F63
Power transmission			BUILT – IN Motor	BUILT – IN Motor

2. Table

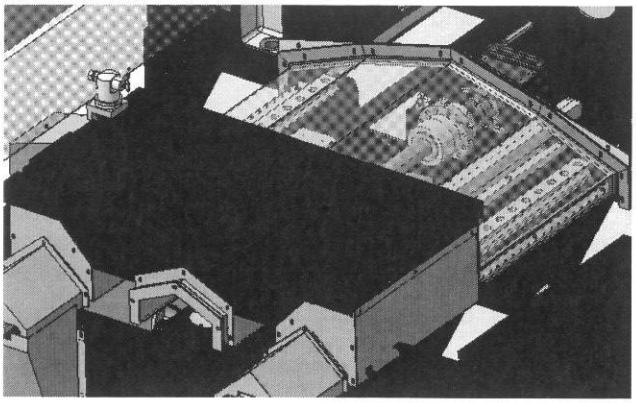


TABLE is installed to the front of machine.

2.1 Main specifications

ITEM		UNIT	SPECIFICATION
TABLE TYPE	Surface type		T-SLOT
	Spindle to table height	mm	150~650
	Table shape	mm	5-100x18H8
	Max. Workpiece height	mm	500
Number of table surfaces		EA	1
Table size		mm	1000x550
Max. load		kg	700

2.2 Table shape

TYPE	SHAPE
Std. Specif-cations