

SAMSUNG Machine Tools

LCV 550 / 650 VERTICAL MACHINING CENTER



SMEC

SAMSUNG MACHINE TOOLS

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SAMSUNG MACHINE TOOLS

SAMSUNG'S Advanced Engineering and Machine Design

High speed, ultra precision vertical machining center!

- The Largest machining capacity in its class
- Applying low-centered box structure and Rigid one piece cast iron bed
- Applying the widest linear guide way guide span and wide saddle in its class to prevent overhang
- Available with direct type spindle and belt type spindle for user's preference.

Description		LCV 550	LCV 650
Table Size	mm	1,200 × 550	1,550 × 650
Travel(X/Y/Z)	mm	1,150/550/520	1,350/650/635
MAX. Load	kg	800	1,000
Rapid Traverse Rate(X/Y/Z)	m/min	24/24/20	

Description		LCV 550 / 650 Spindle 사양			
		8K	12K	15K	20K
Spindle	RPM	8,000	12,000	15,000	20,000
Spindle Power	kW	15/11		15/7.5	18.5/11
Drive Type	-	Belt/ Direct	Direct	Direct	Belt
Tool Shank	-	BT50(40)	BT40(BBT40)		BBT40 (HSK63A)

LCV 550
LCV 650



Designed for **high speed and productivity** also **ultra precision machining** -LCV 550 / 650

■ Spindle Line up of Various Modules

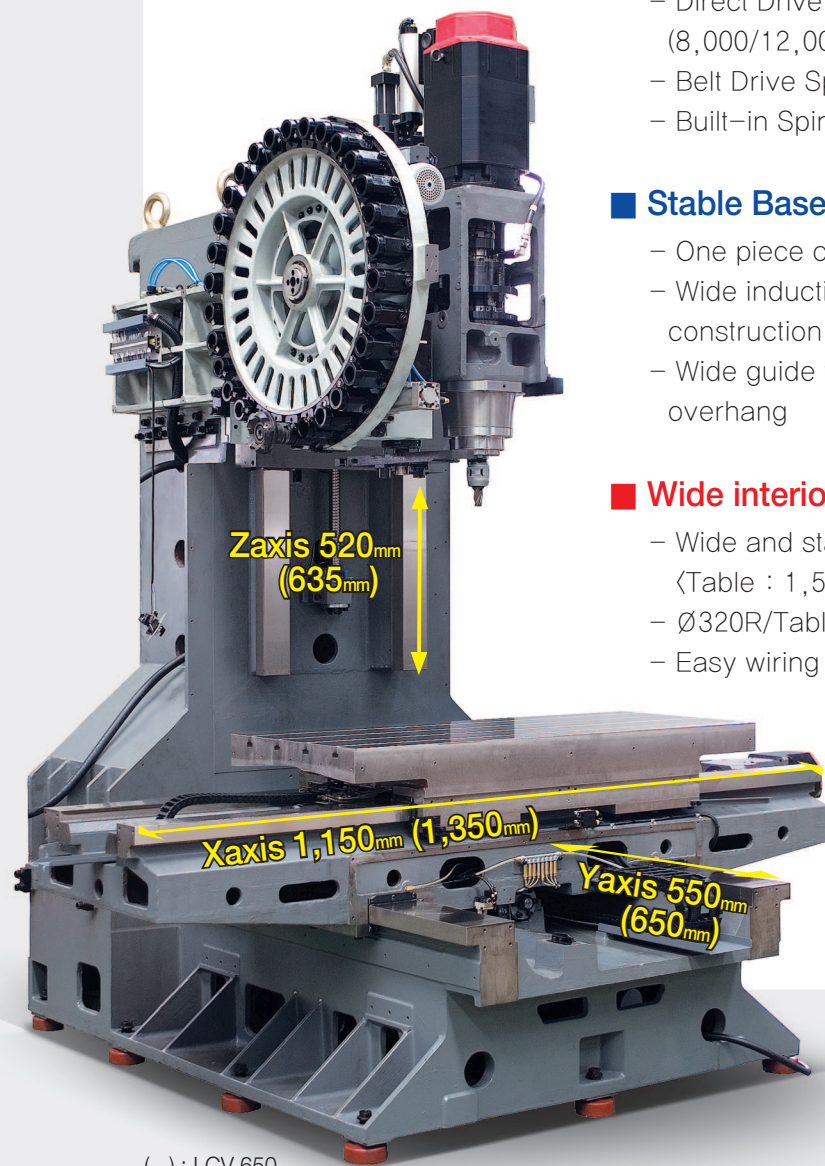
- Direct Drive Spindle for High Speed and Rigidity (8,000/12,000/15,000rpm)
- Belt Drive Spindle for easy Thru Spindle Coolant set up
- Built-in Spindle for High quality of a mold machining

■ Stable Base and Column Construction

- One piece cast iron bed
- Wide induction hardened and precision ground box construction way
- Wide guide way saddle construction to prevent table overhang

■ Wide interior Working Space

- Wide and stable stroke (1,350×650×635mm)
(Table : 1,550×650mm)
- Ø320R/Table can be installed
- Easy wiring and plumbing for Automation



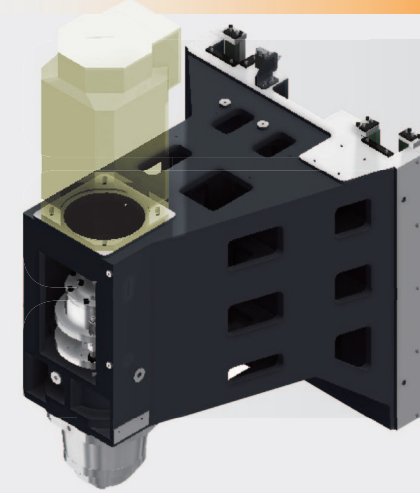
() : LCV 650

Table Size

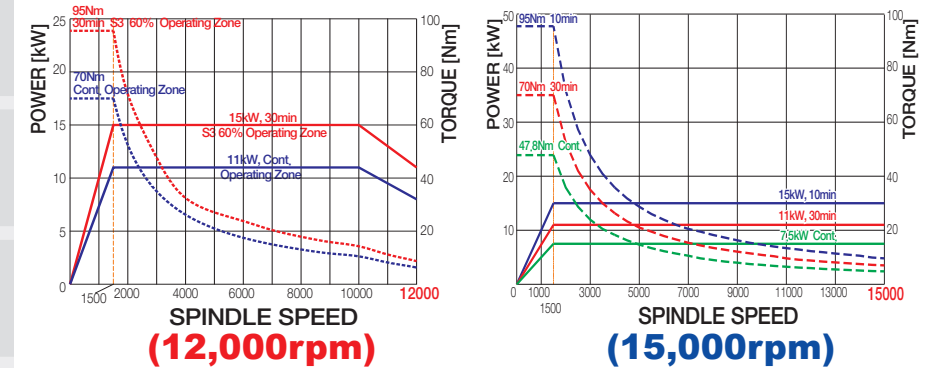
LCV 550 : 1,200×550mm

LCV 650 : 1,550×650mm

Direct Drive

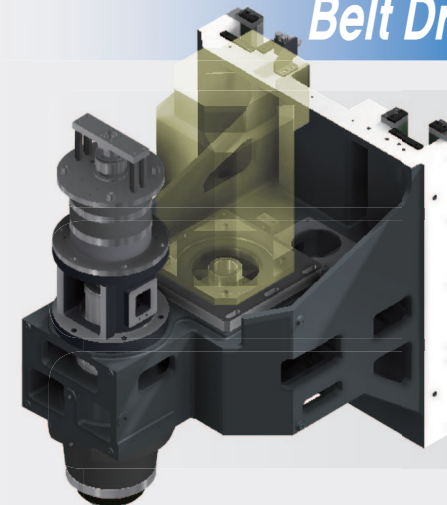


Spindle Power and Torque Diagram



The spindle is supported by four P4 class high precision angular ball bearings to minimize heat increment. Also belt head takes forced heat emission to minimize thermal expansion to provide high speed and ultra precision machining.

Belt Drive

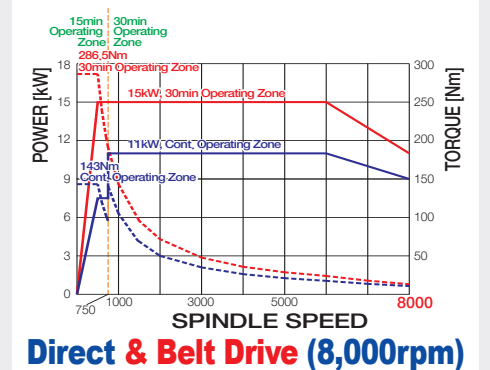


Spindle Speed
8,000 rpm

Spindle Motor
15 / 11 kW

Spindle Torque
95.1 / 69.6 N.m

Spindle Power and Torque Diagram



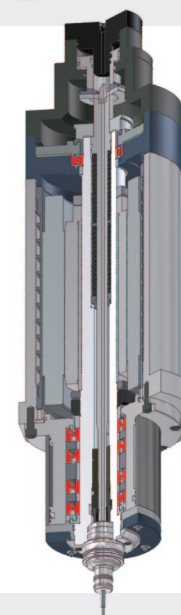
Built-in Type 20,000rpm

High Rigidity, High Precision Spindle

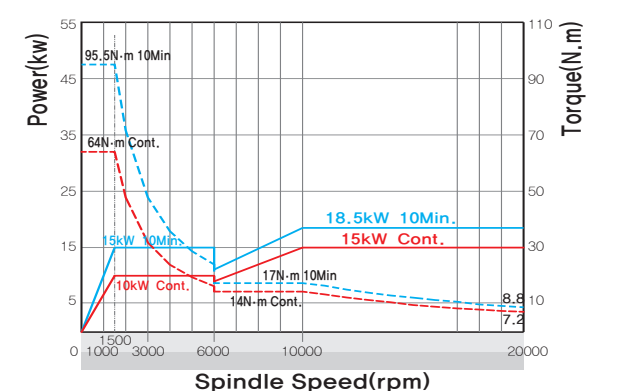
Guaranteeing high rigidity during long-term operation using highly rigid ceramic bearings and air-oil system.

Highest in-class Spindle Speed

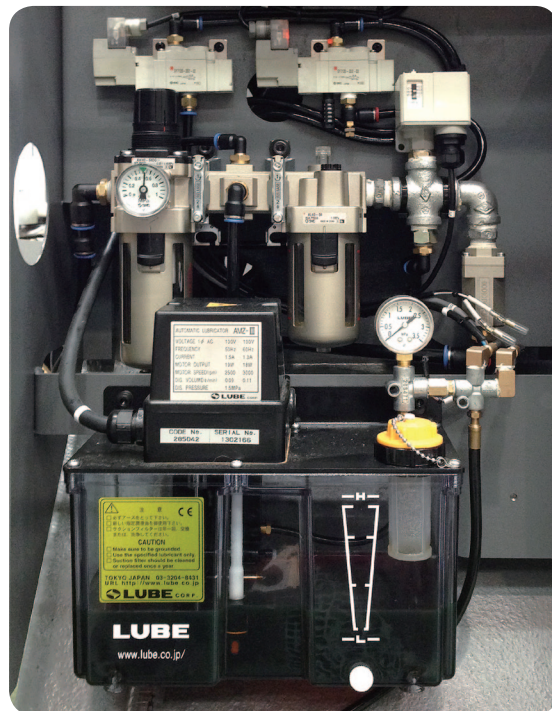
Demonstrating highest in-class spindle speed and torque for optimized machining using vibration dampened built-in motor. The 2-sided Big Plus Spindle offers high rigidity and easy tool switching.



Spindle Power and Torque Diagram

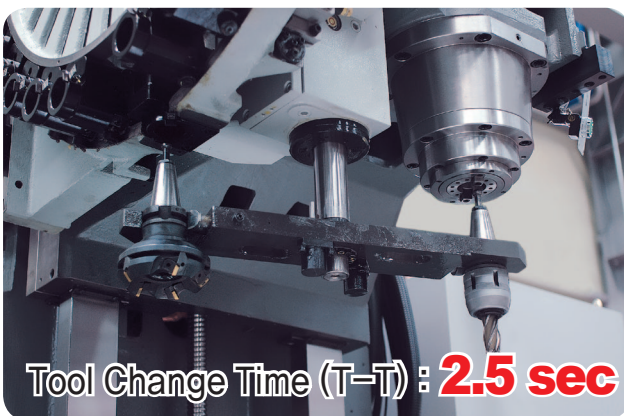


Machine Structure



Centralized utility check

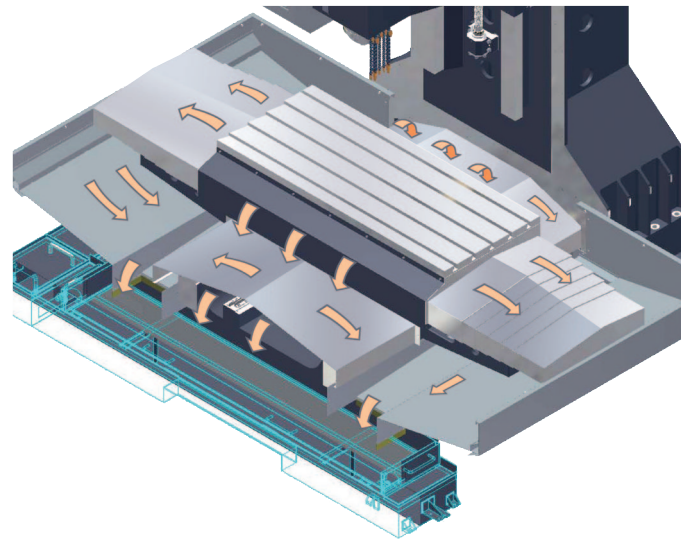
With the centralized utility check layout, operators can easily check operation status of lubrication, bearing fluid, air supply, Etc



Tool Change Time (T-T) : **2.5 sec**

High Speed Tool Change

The 24 tools Double Arm type ATC provides reliable and fast exchange of tools



Effective Chip Disposal

- Large capacity coolant tank (420L) with chip pan and filter
- Wide slant bed for easy chip disposal
- Diverse chip disposal options
 - Side chip disposal screw and lift up conveyor
 - Rear chip disposal coil and lift up conveyor



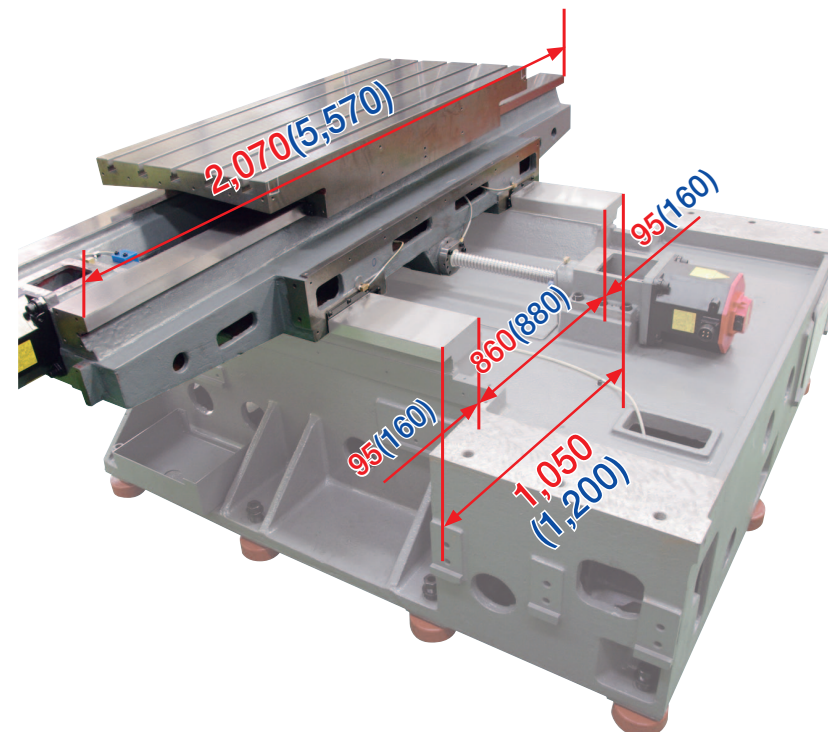
Tool Magazine

Highest tool storing capabilities in its class to be suitable wide machining area and adopting a cartridge type port for easy repair (BT50 : 24 Tools, BT30 : 30 Tools)

Tool Magazine Capacity(ea)

24 / 30(opt.)

Machine Structure



Durable Bed, Saddle and Guideways Design

Wide Box guideways provide excellent support for the saddle to prevent table overhang, and a rigid triangular rib body structure ensures minimal machine vibration and structural deformation even during heavy machining.

Saddle : Bed Guide

2,070 : 1,050 (LCV 550)

2,570 : 1,200 (LCV 650)

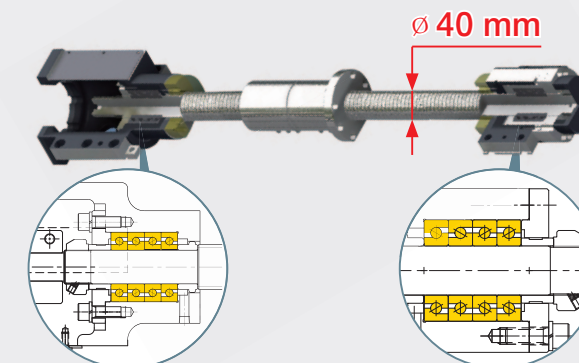


Wide Interior Working Space

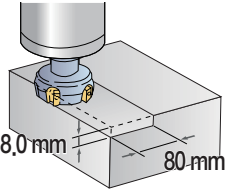
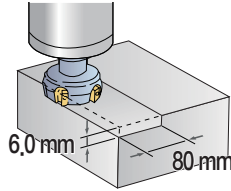
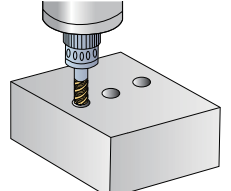
With wide interior working space LCV 650 is capable of adopting various jigs and fixtures. Rotary table size up to Ø320 can be installed on LCV 650.

Large Ø40 ball screws clamped both ends with pre-tension type axis moving structure.

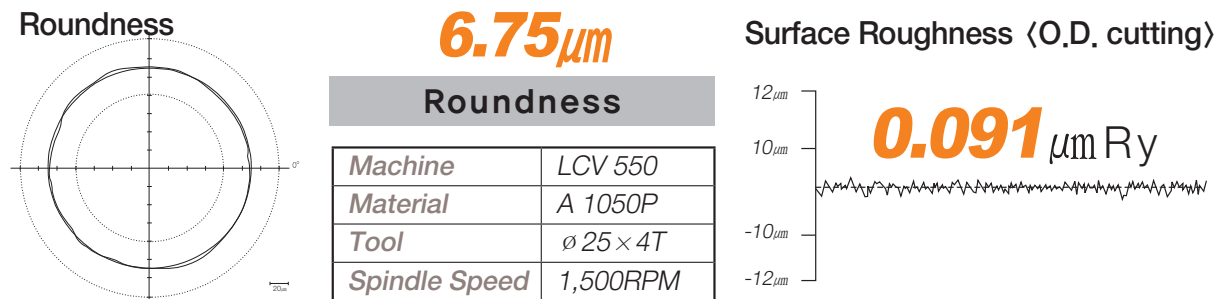
Minimal Thermal expansion is achieved by applying pre-tensioned ballscrews clamped both ends. Both ends are secured by four P4 class high precision thrust angular bearings and the bearings are lubricated by forced lubrication system to provide extended life of the bearings.



■ Cutting Capacity (BT50 11/15KW)

Face mill	Carbon Steel (SM45C)	Face mill	Alumium (AL6061)	Drill	Carbon Steel (SM45C)
Ø125mm Face mill (6Z)		Ø125mm Face mill (6Z)		Ø60 Drill	
	Cutting amount 288 cm ³ /min Spindle speed 600 r/min Feedrate 450 mm/min		Cutting amount 507 cm ³ /min Spindle speed 800 r/min Feedrate 1,060 mm/min		Cutting amount 226 cm ³ /min Spindle speed 720 r/min Feedrate 80 mm/min

■ High Precision

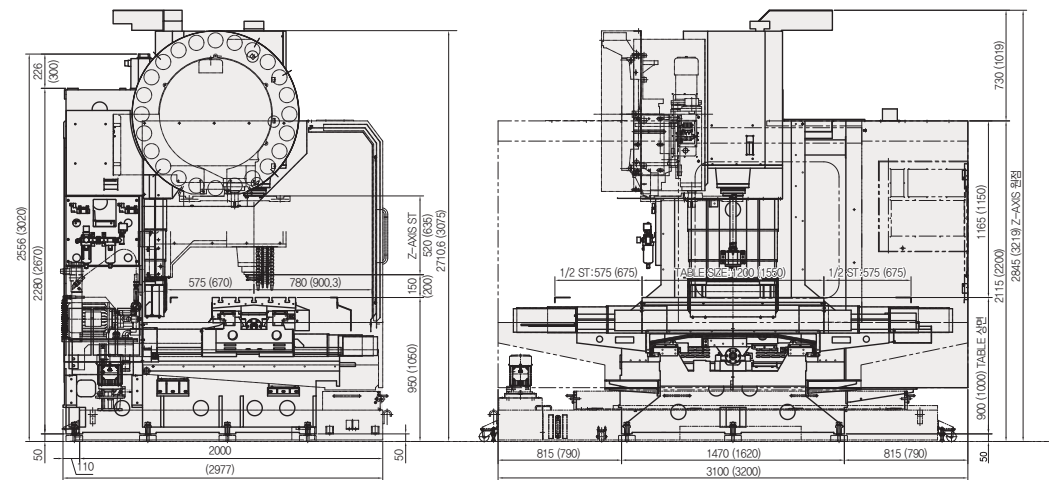


■ Accessories (Option)



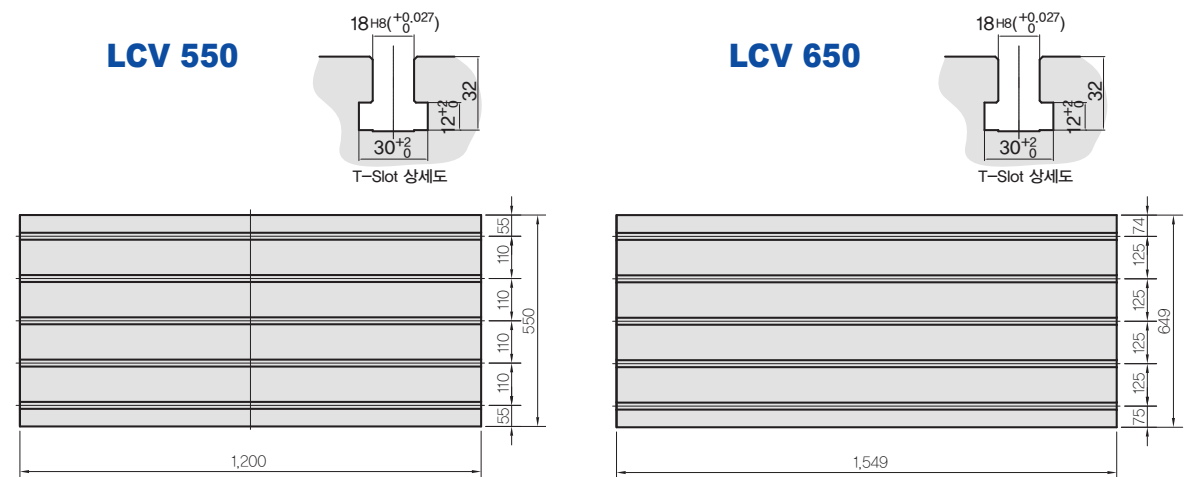
■ Machine Dimensions

Unit : mm



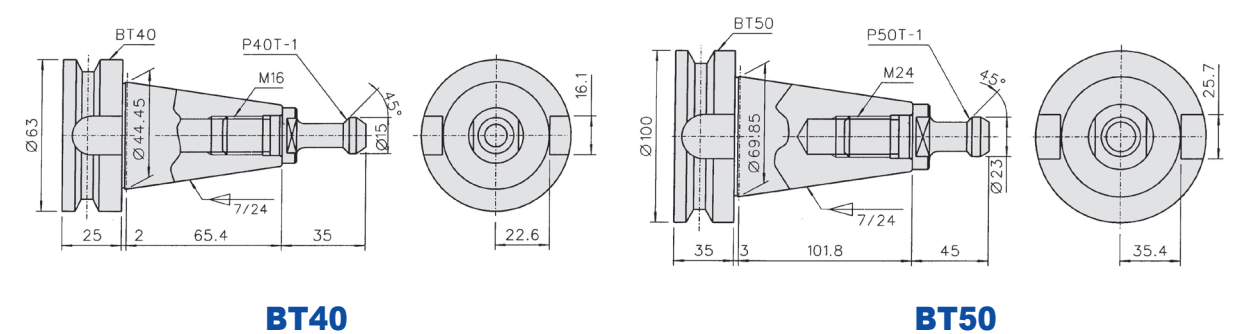
■ Table & T-Slot

Unit : mm



■ Tool Shank

Unit : mm



Machine Specification

Item		LCV 550	LCV 650
Travel	X-axis	mm1,150	1,350
	Y-axis	mm550	650
	Z-axis	mm520	635
	Distance from table surface to spindle nose	mm150~670	200~835
	Distance from pallet center to column	mm600	675
Table	Table Size	mm1,200×550	1,550×650
	Loading capacity	kgf800	1,000
Spindle	Max. Spindle Speed	rpm8,000 (12,000 15,000 20,000)	
	Spindle Drive Motor(30min/Cont.)	kW15/11 (15/11 15/7.5 18.5/15)	
	Maximum Torque(30min/cont.)	N.m286.4/143.2 (95.1/69.6 95.1/48 95.5/63.7)	
Feedrate	Rapid Traverse(X/Y/Z)	m/min24/24/20	
	Feedrate(X/Y/Z)	mm/min1~10,000	
	Feed motor(X/Y/Z)	3/3/4	3/4/7
ATC	Tool Shank	BT50(BT40, HSK63A)	
	Tooling changing method	Double Arm Swing	
	Tool Changing Time(T-T)	sec2.5(1.8)	2.5(1.5)
	Magazine Capacity	ea24(30)	
	Tool Selection	Memory Random	
	Max. Tool dia./adjacent empty	mm∅200(∅150)	
	Max. Tool Length/Weight	mm/kgf300/15(300/7)	300/15(300/8)
	Pull stud type	MAS P50T-1(P40T-1)	
Power Supply		kVA30	
Floor Space (L×W×H)		mm2,272×3,235×2,944	2,710×3,330×3,219
Machine Weight		kgf7,000	11,000
CNC System		Fanuc 0i-MD, 31i-A, 31i-A5	

• Design and specifications subject to change without notice.

() : Option

Standard

- TOOL AND TOOL BOX
- WORK LIGHT
- MPG
- COOLANT SYSTEM AND TANK
- FULL SPLASH GUARD
- 24 MAGAZINE

Optional Accessories

- CHIP CONVEYOR
- 3AXIS MPG
- THRU SPINDLE COOLANT
- AUTO TOOL LENGTH MEASUREMENT
- ROTARY TABLE 4thAXIS, 5thAXIS
- LINEAR SCALE FEED BACK SYSTEM(X,Y,Z)
- 30 MAGAZINE

NC Specification / FANUC 0i-MD

Item		Specification	F 0i-MD	F 31i
Controlled axis	feed axes		X,Y,Z (A,B)	X,Y,Z (A,B)
	Max. feed axes		4(6) AXIS	4(6) AXIS
	Max. simultaneously controlled axis		4	4
	Least command increment	0.001mm / 0.0001"	○	○
Operation functions	Pulse handle feed	X1, X10, X100	○	○
	Feedrate per minute	G94	○	○
	Feedrate per revolution	G95	○	○
Interpolation functions	Linear interpolation	G01	○	○
	Circular interpolation	G02, G03	○	○
	Dwell	G04	○	○
	Cylindrical interpolation	G70, 1	○	○
	Reference position return	G28	○	○
Feed function	Reference position return check	G27	○	○
	Rapid traverse rate override	F0, 25%, 50%, 100%	○	○
	Feedrate override		0~200%	0~200%
Spindle function	Spindle orientation		○	○
	Rigid tapping		○	○
Tool functions	Tool number command	T4-Digt / T2-Digt	T2-Digt	T2-Digt
	Tool nose radius compensation	G40 ~ G42	○	○
	Tool offset pairs		400	400
	Tool geometry/wear offset	GEOMETRY & WEAR DATA	○	○
	Tool life management		○	○
	Tool path graphic display		○	○
Program input	Automatic tool length measurement		○	○
	Absolute/incremental programming		○	○
	Multiple repetitive cycle	G70 ~ G76	○	○
	Canned cycles	G90, G92, G94	○	○
	Inch/metric conversion	G20 / G21	○	○
	Program restart		○	○
	Retraction for rigid tapping		○	○
	Max. programmable dimension	±99999.999mm/±9999.9999"	○	○
	M function	M3 digit	○	○
	Custom macro		○	○
	Canned cycle for drilling		○	○
	Direct drawing dimension programming		○	○
	Programmable data input	G10	○	○
	Optional block skip		○	○
	Workpiece coordinate system	G52 ~ G59	○	○
	Number of registerable programs		400EA	400EA
Setting and display	Alarm & Operator histor display	ALARM & OPERATION DISPLAY	○	○
	Run hour and parts count display	RUNNING TIME & PART NO. DISPLAY	○	○
	Display spindle & servo overload	SPINDLE & SERVO LOAD DISPLAY	○	○
	Self-diagnosis function		○	○
	Extended part program editing	COPY, MOVE, CHANGE OF NC PROGRAM	○	○
	Display screen		10.4" color	10.4" color
Data input/output	Memory card input/output		○	○
	USB memory input/output		○	31i-A(x), 31i-B(O)
Editing operation	Part program storage size	512Kbyte, 256Kbyte	512Kbyte	256Kbyte
Manual guide i	Manual Guide I		Opt.	Opt.