

SMEC

LCV 6700

VERTICAL MACHINING CENTER



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<https://www.youtube.com/c/smecmachinetools>

SMEC
Smart One,
Global One

SMEC
SMEC CO.,LTD.

- 1988 - Started as Samsung Heavy Industries Machine Tools Business
- 1989 - Horizontal and vertical machining center technology partnership with OKK Japan
- 1991 - Turning center and vertical machining center technology partnership with Mori Seiki
- 1996 - 5-sided processing center technology partnership with Toshiba
- 1999 - Spun out from Samsung Aerospace Industries and established SMEC Co., Ltd

SMEC

Company
Engineering
Machine Tools
Samsung

LCV 6700

Superb structural design offering best-in-class heavy duty and precision machining

- High rigidity spindle offering high speed and high precision
- Stable machine structure
- High productivity with short non-cutting time
- Lineup offering various spindle options
 - high speed, high precision direct motor type (8,000 / 12,000rpm)
 - gear motor type (6,000rpm) available with various options such as through spindle cooling



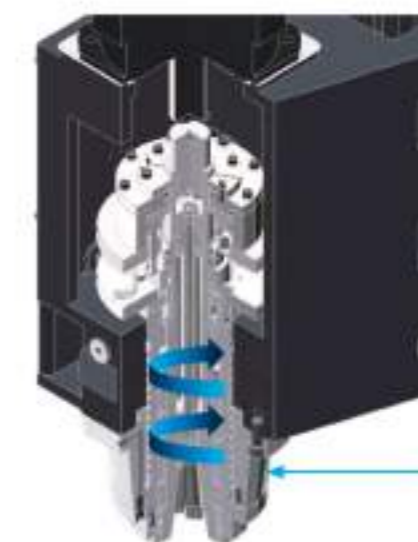
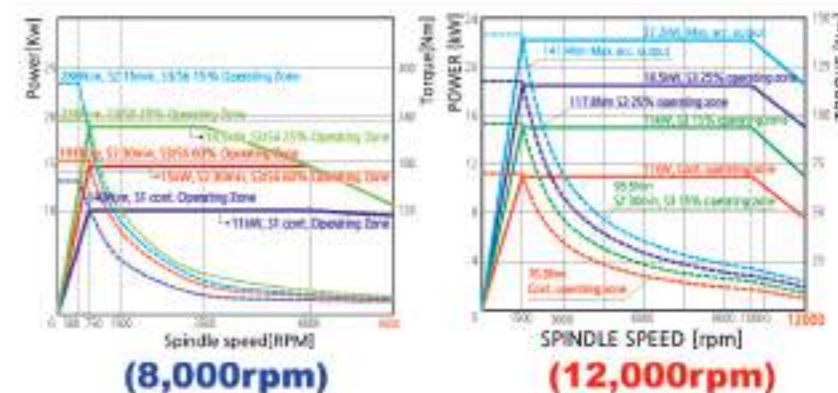
DIRECT HEAD TYPE [BT50] [BT40]

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.



Spindle Speed 8,000 rpm	Spindle Motor 11/15/18.5 kW	Spindle Torque 143/236/286 Nm
Spindle Speed 12,000 rpm	Spindle Motor 11/15/18.5/22.2 kW	Spindle Torque 70/95.5/117.8/141.4 Nm

Spindle Power & Torque Diagram



JACKET circulation cooling system

Adopting semipermanent Grease lubrication system on bearing, minimize thermal displacement by jacket circulation cooling through Fan Cooler on bearing housing, showing stable performance to take longer spindle life time.

Minimize thermal displacement by standard spindle motor base cooling system

(OIL COOLING :
Std : BT40 12R, OPT : BT50 8R)

Std. BT50 6R, BT40 12R
Opt. BT50 8R

High-speed tool changer being driven by enhanced technologies



Double Swing arm type auto tool changer

It is Double swing arm swing type by memory random method and has no error during tool changing and minimize idle time.

Tool to Tool : **BT 50 : 2.5sec**
BT 40 : 1.2sec



Tool Magazine

Highest tool storing capabilities in its class to be suitable wide machining area and adopting a cartridge type port for easy repair

Tool Magazine Capacity : **30ea**

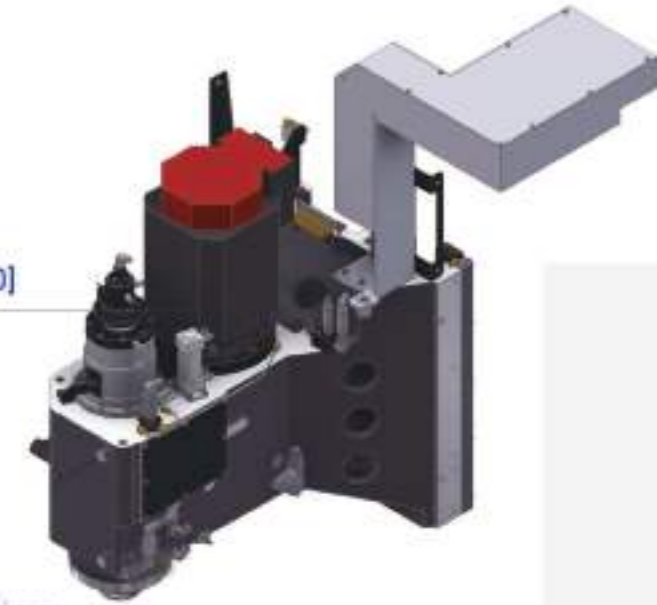


GEARED HEAD TYPE [BT50]

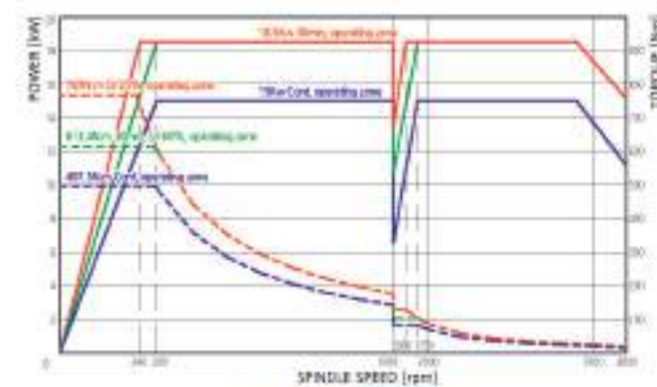
Spindle Speed
6,000 rpm

Spindle Motor
15/18.5 kW

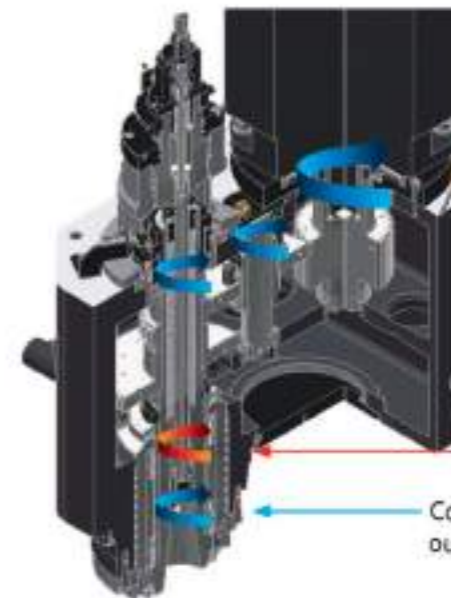
Spindle Torque
497.5/613.5/767 N.m



Sub-Spindle Power & Torque Diagram



(6,000rpm)



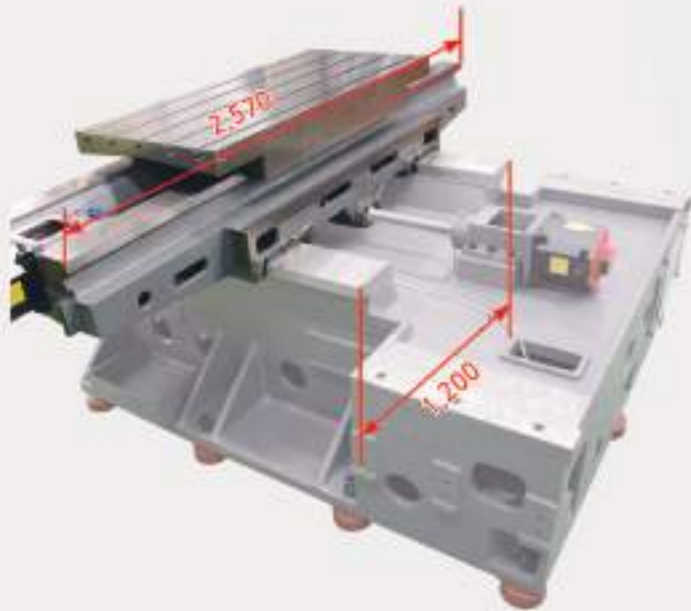
JACKET circulation cooling system

Adopting semipermanent Grease lubrication system on bearing, minimize thermal displacement by Jacket circulation cooling through Fan Cooler on bearing housing, showing stable performance to take longer spindle life time.
Minimize thermal displacement by standard spindle motor base cooling system.
Highly effective cooling via supply of cooling oil to the gears.

Gear and bearing cooling

Coolant circulation inside and outside of spindle housing

Description		LCV 6700
Table Size	mm	1,550×670
Travel(X/Y/Z)	mm	1,350/670/650
MAX. Load	kg	1,000
Rapid Traverse Rate(X/Y/Z)	m/min	30/30/24



Bed

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
2,570 : 1,200mm



Pendant arm / Operation panel

Pendant/panel design by considering user space and convenience improve working environment.

High efficiency Spindle Head Cooling System

STD. BT50 6R, BT40 12R
OTP. BT50 8R

For long-term continuous high-speed operation, a coolant system may be installed to maintain room temperature. The coolant system circulates coolant oil around the spindle bearings to prevent thermal expansion due to the spindle temperature, ensuring high precision machining.



Centralized utility check

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

Dual Contact Spindle(BBT50/BBT40)

Dual contact system to contact both main spindle surface and taper surface dually by measuring elastic deformation of spindle surface that occurs when main spindle is clamped.

- Simultaneous contact to both main spindle surface and taper increases rigidity and reduces vibration.
- Increases machining capacity and surface roughness even under harsh condition.
- 100% compatible with existing tools, (BT50/BT40)



(Simultaneous Dual Contact)

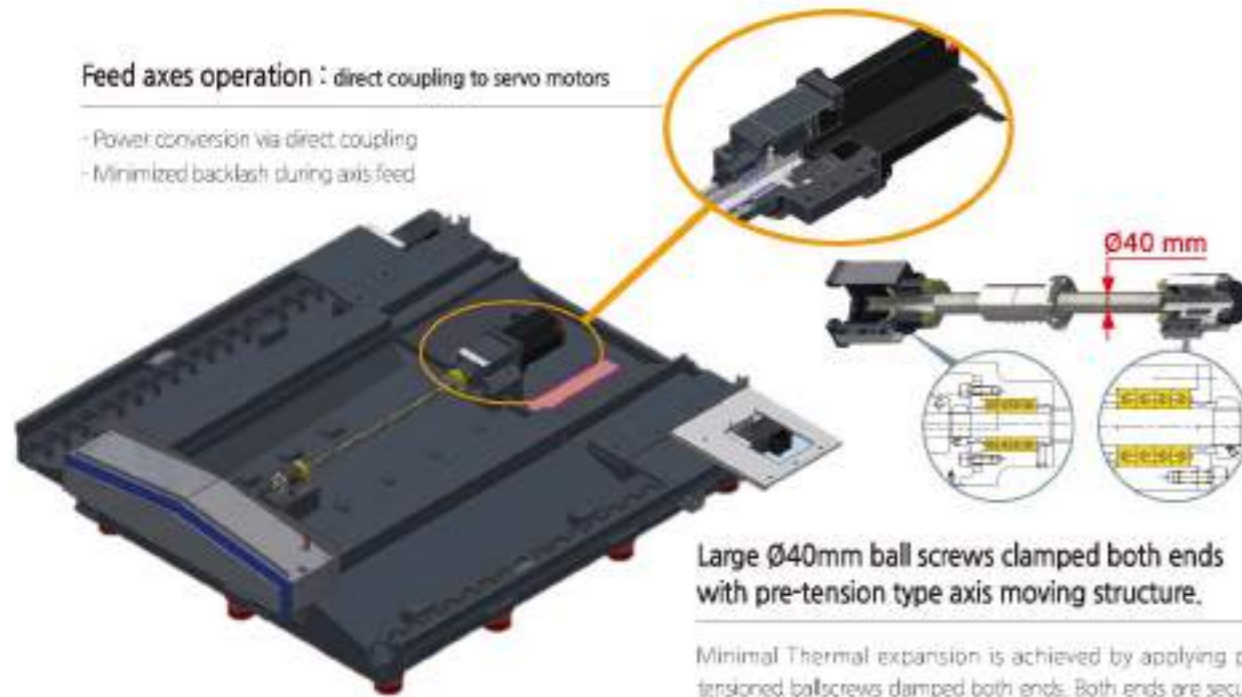


Automatic Lubrication Dispenser

Automatic lubrication dispenser that reliably dispenses the required amount of lubrication to the required travel axes. Lubrication is only dispensed when the travel axis is in operation, reducing the amount of lubrication that is consumed. When there is a problem on the lubrication line, it shows a warning message on a screen and stops the machine for user safety operation.

Feed axes operation : direct coupling to servo motors

- Power conversion via direct coupling
- Minimized backlash during axis feed

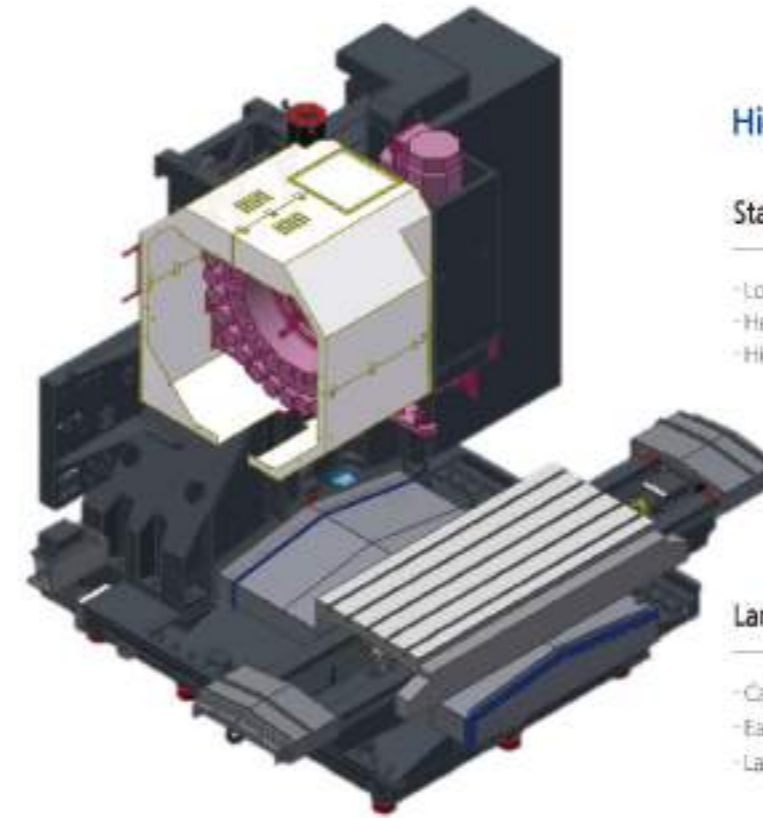
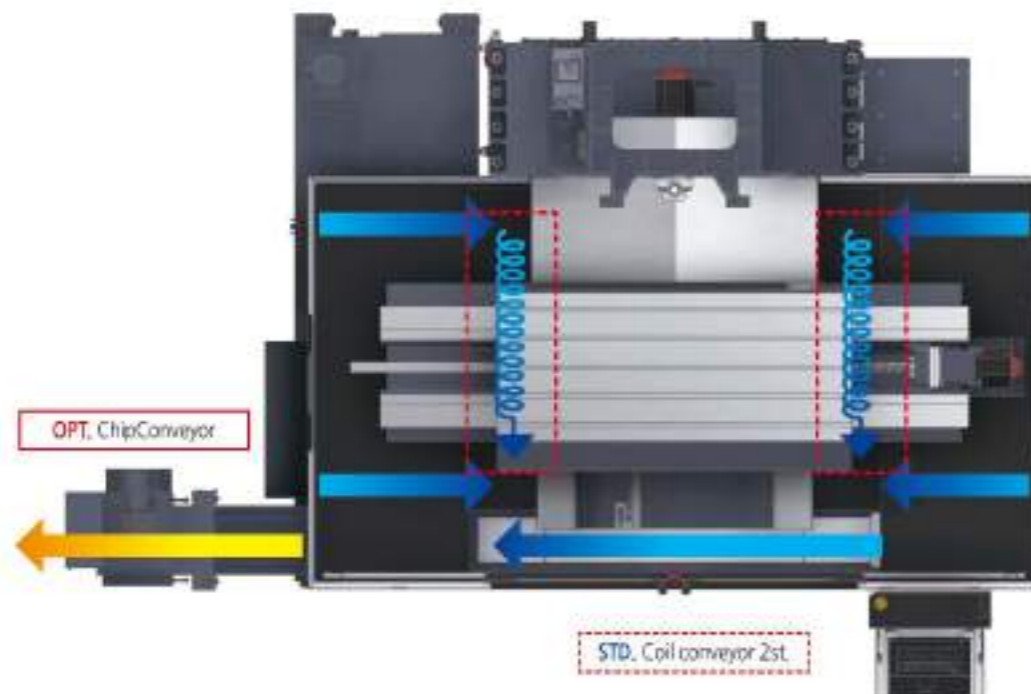


Large Ø40mm ball screws clamped both ends with pre-tension type axis moving structure.

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.

Designed for superb chip discharge

- Inclined surface on all SLIDE COVERS and BASE COVERS.
- Standard inclined chute installed where chips fall so they are discharged to the coolant tank on the left-side
- Coil mounting part attached on BED part instead of S / GUARD prevents noise and S / GUARD damage during operation



High rigidity & performance travel system

Stable Machine Structure

- Low center of gravity design and stable wide bed surface
- Heat treated and polished slideways
- High rigidity box-type body with triangular rib structure

Largest-in-Class Internal Area

- Can fit up to Ø320 large rotary table
- Easy to wire/pipe for automation
- Largest-in-class work space



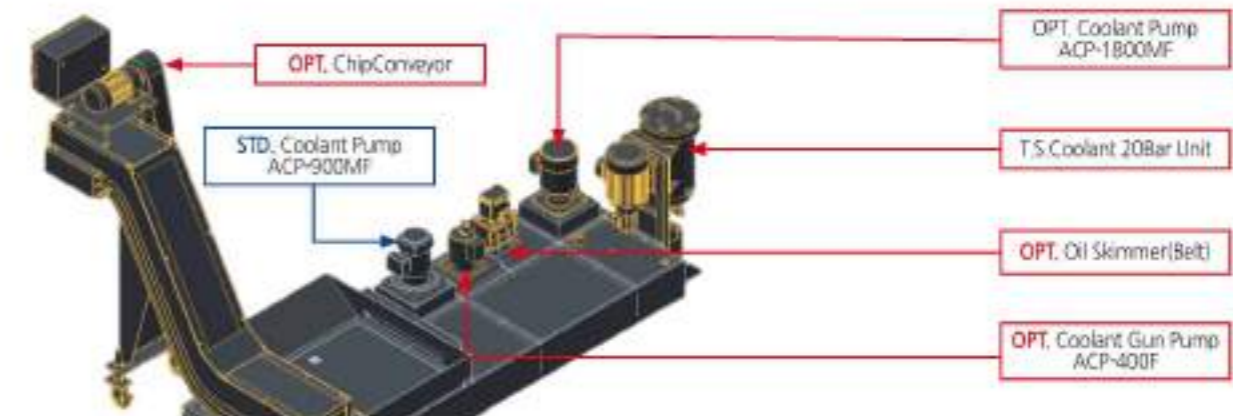
LCV 6700

Stroke : 1350x670x650mm (Table: 1550x670)

Automatic Lubrication Dispenser

Removable coolant tank

Put coolant tank on left side of the machine for easy coolant exchange and deairing as well as pump maintenance.



OPT, ChipConveyor

STD, Coolant Pump ACP-900MF

OPT, Coolant Pump ACP-1800MF

T.S.Coolant 20Bar Unit

OPT, Oil Skimmer(Belt)

OPT, Coolant Gun Pump ACP-400F

User friendly centralized control panel.



- 1 CRT: 10.4 inch color LCD
- 2 Bigger BEZEL switch size: 50% larger than the conventional switch size
- 3 Addition of MG stand-by tool No
- 4 Addition of MG change button
- 5 Addition of 4th and 5th axis switch
- 6 Spindle Override: 50~120% (15 step) → 50~150% (20 step change)
- 7 Feed Override: 0~1260 (16 step) → 0~5000 (21 step change)
- 8 Addition of scale buttons for fixtures

Cutting Capacity (BT50 11/15KW)

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

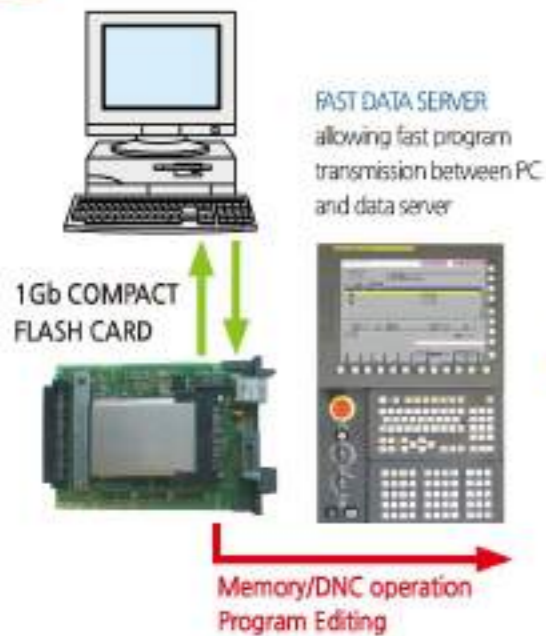
High Precision



Optional Accessories



Std. SMEC Package 2 (FAST DATA SERVER + AICC II)

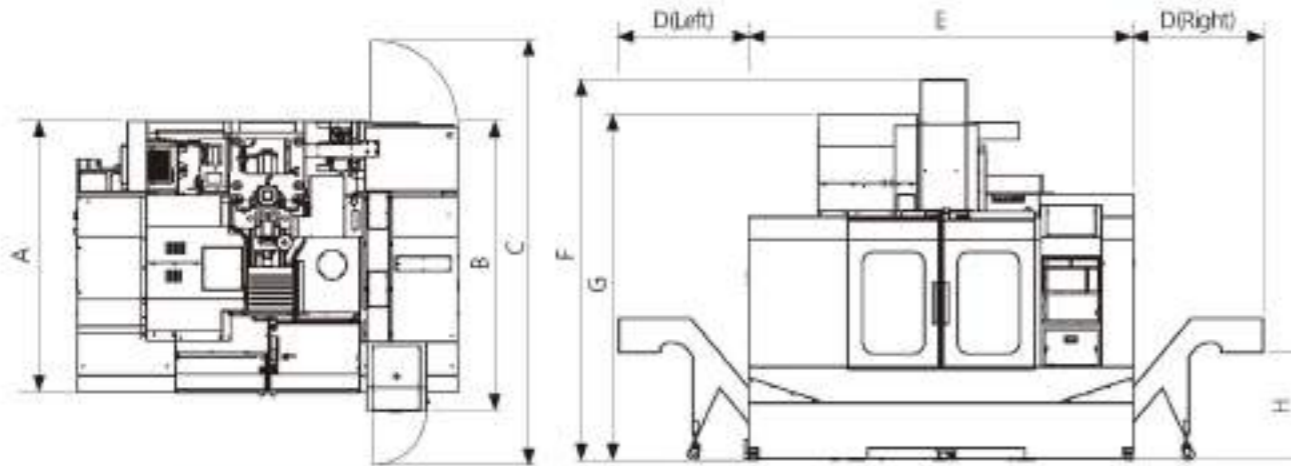


High Precision, High Speed AICC II

CNC MODEL	FO: -MD
Block Look Ahead	200
Nano Interpolation	○
Decel Before Interpolation	Linear
Acceleration Setting for Each Axis	○
Automatic Corner Deceleration	○
Radial Speed Clamp	○
Deceleration Speed Clamp	○

Machine Dimensions

Unit : mm



DESCRIPTION	A (width)	B (with control box)	C (max. width)	D (with chip conveyor)	E (length)	F (height)	G (shipping height)	H (discharge)
BT 50/30	2,430	2,630	3,800	1,146	3,400	3,160	3,054	950
BT 40/30	2,430	2,600	3,800	1,146	3,400	3,055	2,950	950

ATC Interference

Unit : mm

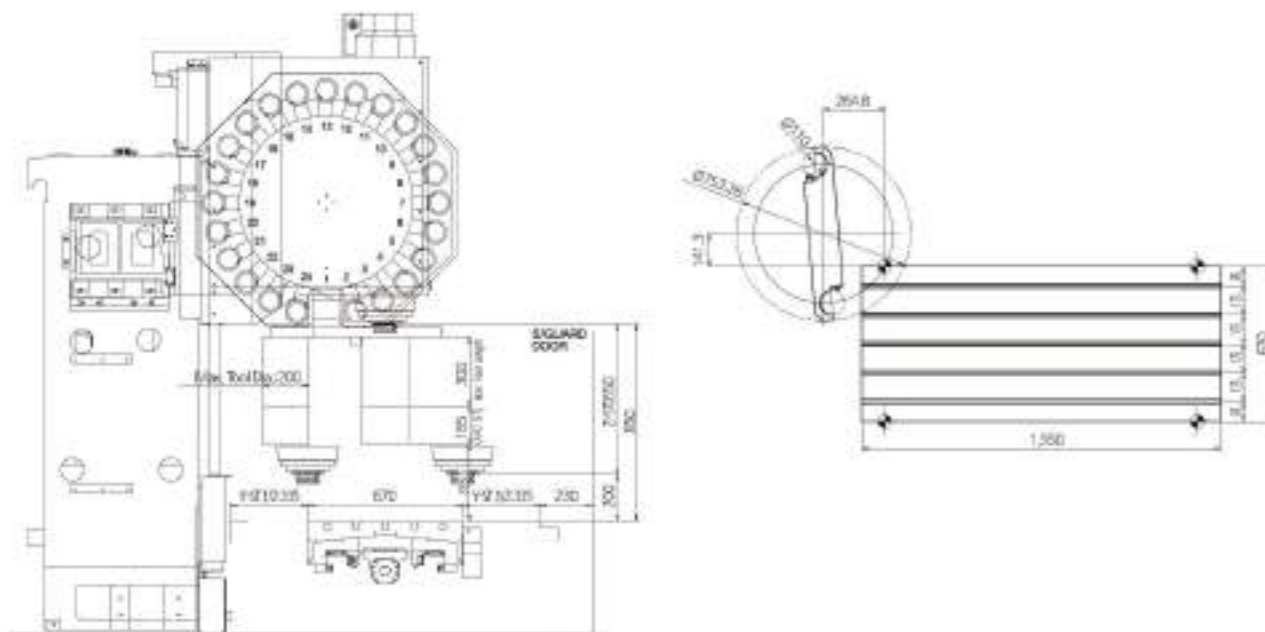
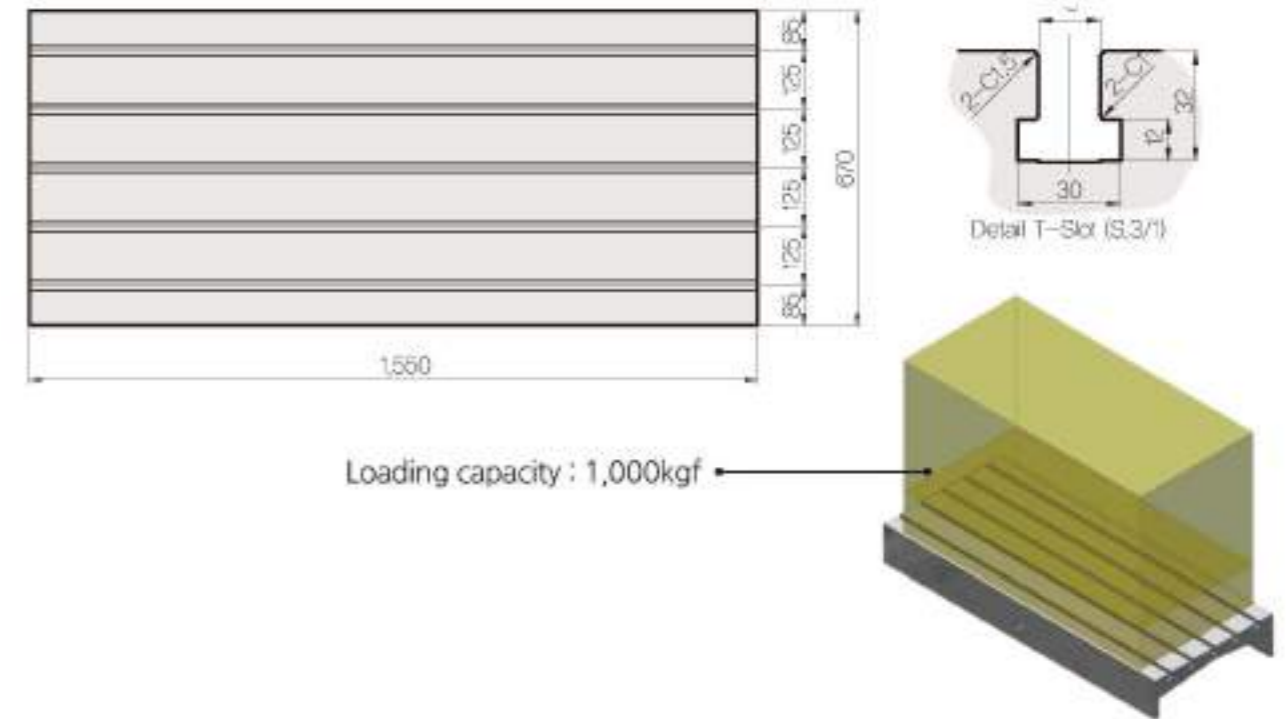


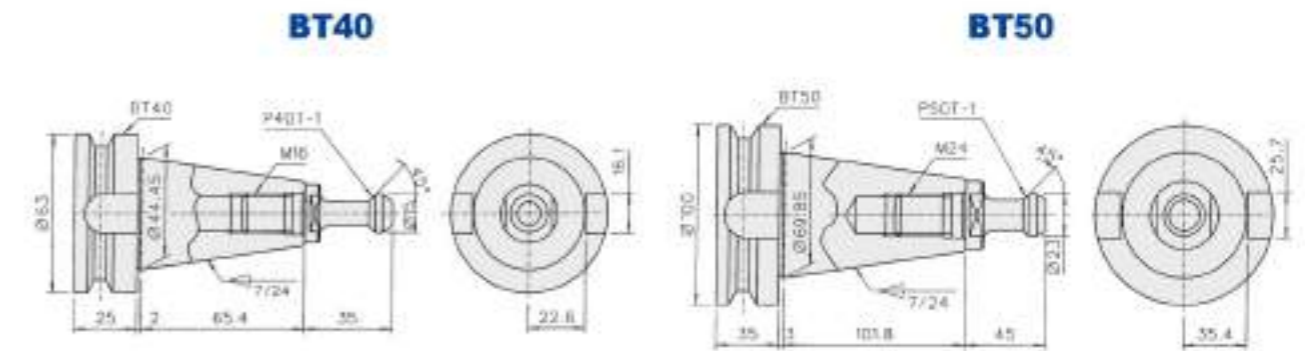
Table & T-Slot

Unit : mm



Tool Shank

Unit : mm



*Gear Type의 Pull Stud 형식은 MAS P50T-1F(90°)가 표준임

Major Specifications

DESCRIPTION			LCV 6700(BT50)	LCV 6700(BT40)
Travel	X axis	mm	1,350	1,350
	Y axis	mm	670	670
	Z axis	mm	650	650
	Distance from table surface to spindle nose	mm	200~850	200~850
Table	Table size	mm	1,550x670xP125	1,550x670xP125
	Loading capacity	kgf	1,000	1,000
Spindle	Spindle speed	rpm	Direct : 8,000 Gear : 6,000	Direct : 12,000
	Torque (Max./Cont.)	N.m	Direct : 143/286 Gear : 497.5/767	Direct : 70/141.4
	Spindle motor (Cont./15min.)	kW	Direct : 11/18.5 Gear : 15/18.5	Direct : 11/22.2
Feedrate	Rapid traverse(X/Y/Z)	m/min	30/30/24	30/30/24
	Cutting feedrate(X/Y/Z)	mm/min	12,000	12,000
ATC	Tool shank	-	BT50	BT, DN 40
	Tooling changing method	-	Double-Arm Swing	Double-Arm Swing
	Tool changing time (T-T)	sec	2.5	1.2
	Magazine capacity	cs	30	30
	Tool Selection	-	Memory Random	Memory Random
	Max. tool dia. (adjacent empty)	mm	Ø100(Ø200)	Ø100(Ø200)
	Max. tool length / weight	mm/kgf	300/15	300/15
	Tool stud type	-	Direct : MAS P50T-1 Gear : MAS P50T-1F	Direct : MAS P40T-1
Power supply	kVA	32	30	
Floor space (LxWxH)	mm	3,400x2,430x3,160	3,400x2,430x3,055	
Machine weight	kgf	11,000	11,000	
CNC system		FANUC Oi-MF		

*Design and specifications subject to change without notice.

Standard Accessories

- Full splash guard
- Coolant system
- Loading parts (level plate, bolt, etc.)
- Standard tool and tool box
- Lubrication system
- Work light
- 3 step control lamp
- Rigid tapping
- Spindle override
- Spindle tachometer
- Door inter lock
- Hydraulic unit
- MPG handle
- Manual and parts list
- 10.4" LCD OP Screen

Optional Accessories

- Air gun
- Air blow
- Coolant gun
- Rotary table
- Oil skimmer
- Coolant level gauge
- Through spindle coolant (TSC 20Bar)
- MPG handle (2ea)
- Air conditioner for electric cabinet
- Tool measuring system
- Lift up chip conveyor (HMC TYPE / SCRAPPER TYPE)
- OIL COOLER

NC Specifications / FANUC Oi-MF

Item	Specification	F Oi-MF
Controlled axis	Controlled axis	XYZ(AB)
	Max. controlled axis	4(6) AXIS
	Max. simultaneously controlled axis	4
Operation functions	least input increment	0.001mm / 0.0001"
	Manual handle feed	X1, X10, X100
	Feed per minute	G94
Interpolation functions	Feed per revolution	G95
	Linear interpolation	G01
	Circular interpolation	G02, G03
	Dwell	G04
	Cylindrical interpolation	G70, 1
Feed function	Reference position return	G28
	Reference position return check	G27
Spindle function	Rapid traverse feedrate override	F0, 25%, 50%, 100%
	Feedrate override	0~200%
Tool functions	Spindle override	○
	Rigid tapping	○
	Tool function	T1-Digt / T2-Digt
	Tool nose radius compensation	G40 - G42
	Tool offset pairs	400
	Tool geometry / wear offset	GEOMETRY & WEAR DATA
	Tool life management	○
Program input	Tool path graphic display	○
	Automatic tool compensation	○
	Absolute / incremental programming	○
	Multiple repetitive cycle	G70 - G76
	Canned cycle	G90, G92, G94
	Inch / metric conversion	G20 / G21
	Program restart	○
	Retraction for rigid tapping	○
	Max. programmable dimension	499999.999mm±9999.999"
	M function	M3 digit
	Custom macro	○
	Canned cycle for drilling	○
	Direct drawing dimension programming	○
	Programmable data input	G10
	Optional block skip	○
Setting and display	Workpiece coordinate system	G52 - G59
	Number of registerable programs	400EA
	Help function	ALARM & OPERATION DISPLAY
	Run hour / parts count display	RUNNING TIME & PART NO. DISPLAY
	Spindle & servo load display	SPINDLE & SERVO LOAD DISPLAY
	Self-diagnosis function	○
	Extended part program editing	COPY, MOVE, CHANGE OF NC PROGRAM
Data input/output	Memory card input / output	
Editing operation	USB memory input / output	○
	Part program storage size	512Kbyte, 256Kbyte
Manual guide I	Manual Guide I	Opt.