

SMEC

MCV 6700/6700L

VERTICAL MACHINING CENTER



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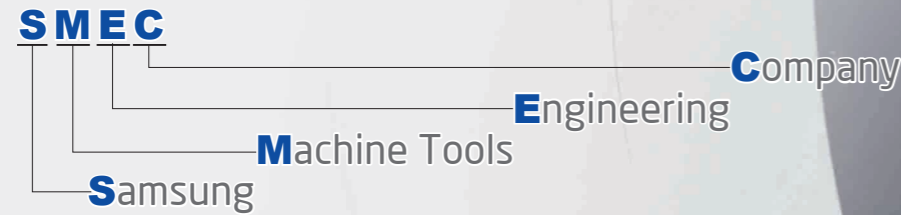


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SMEC
SMEC CO.,LTD.

- 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



MCV 6700 MCV 6700L

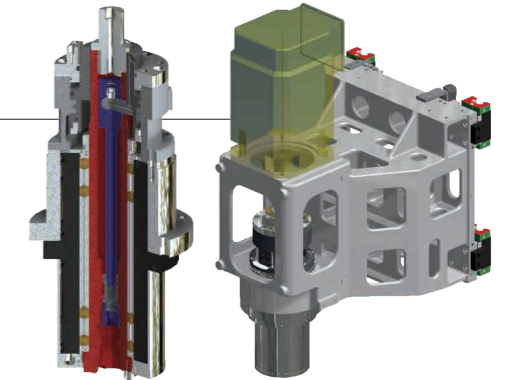
High speed and precision
vertical machining center!
High rigidity arch structure!

- Low centered one piece Bed with triangle Rib design
- Biggest X axis stroke(MCV 6700:1,600mm, MCV 6700L:2,100mm) and table in its class
- Realize high rigidity and precision with high rigidity Saddle and arch Column structure
- 4 rows Y axis LM guide way prevent overhang
- High speed and precision direct spindle

Direct head

Spindle Speed
12,000 rpm

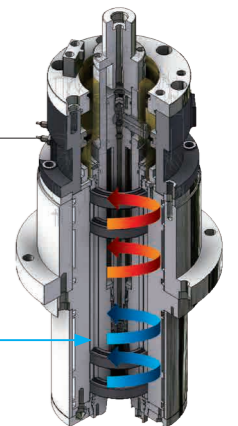
Spindle Motor
11/15/18.5 kW



Spindle is sustained by 4 rows P4 speedy angular ball bearing reducing temperature increasing to realize high speed and precision machining.
By adopting Direct Drive type spindle minimize vibration to excellent machining for nonmetal surface finishing.
Motor direct type is connected by coupling without extra power transmission.

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.



JACKET circulation cooling

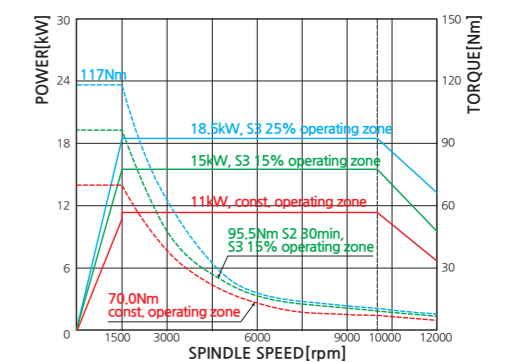
Dual Contact Spindle (BBT40)

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.(BT40)



Big Plus BBT40(Opt.)
(Simultaneous Dual Contact)

Spindle Power & Torque Diagram



High-speed tool changer being driven by enhanced technologies



Twin 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.

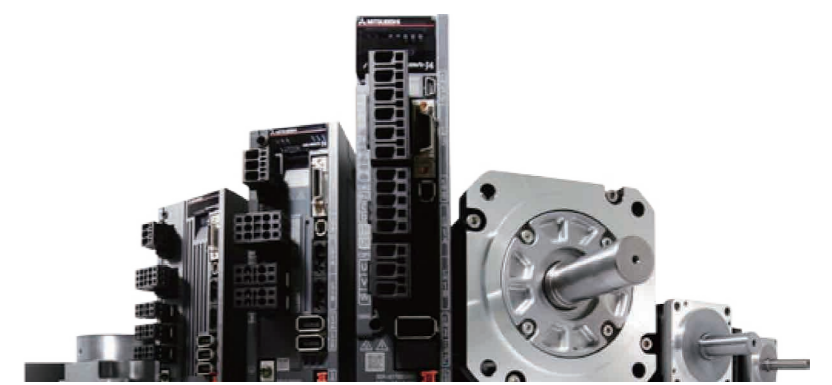
Tool to Tool : **1.2sec** at **60Hz**



Tool Magazine

By adopting 30ea tools as a standard having maximum tool storage capacity in its class. Also, shortest moving system design can set up next tool within short time.

Maximum tool capacity : **30ea**

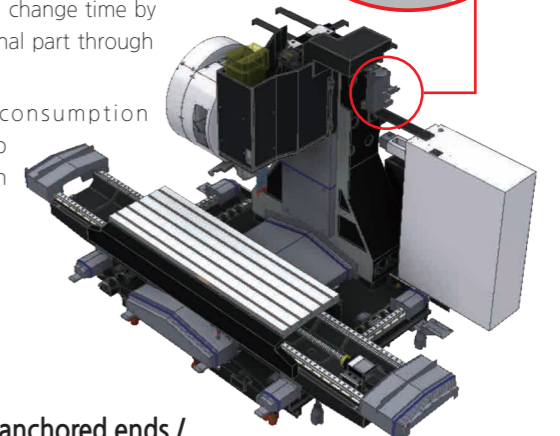
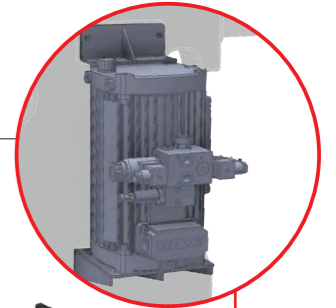


the most advanced mechanism of high-speed technology

HYD. UNIT

By using Hydraulic Unit from Germany product we realize that life time enhancement and lower power consumption with high reliability.

- Adopting accumulator
Enhance durability and tool change time by friction down of each internal part through reducing pumping time
- Epoch-making power consumption down(90%) by using pump when actuator is working(In case of HYD. UNIT)



Ball screw support with anchored ends / Opt. Nut cooling system(X, Y-Axis only)

Reduced changes to load on support bearing due to thermal displacement, while extending support bearing lifetime



Largest-in-class internal area(MCV 6700L Spec.)

- Wide and stable stroke <2,100x670x520mm>, <TABLE : 2,200x660mm>
- Can fit up to Ø320 rotary table - Easy wiring/piping for automation



High rigidity Z axis arch column structure

By adopting arch column structure with optimal structural analysis realizing high rigidity and precision machining.

High rigidity Saddle without overhang on X axis

By maximum X axis stroke 2,100mm in its class and high rigidity saddle it is fit for various and stable as well as long work piece machining.

4 rows Guide way bed on Y axis

Bed has 4 rows sustaining method on Y axis and maximum span L/M Guide way structure in its class to minimize over hang.



X-Axis
1,600 mm (MCV 6700)
2,100 mm (MCV 6700L)

Y-Axis
670 mm

Z-Axis
520 mm



Pendant arm / Operation panel

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



High efficiency Spindle Head Cooling System

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. (Standard at Spindle Speed 12K)



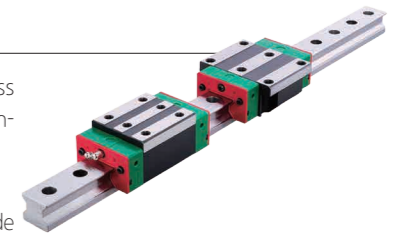
Centralized Pneumatic Utility

Easily check the operation status of items such as lubrication, bearing fluid and air supply.

Roller Guide Way

The use of LM Guides with superb responsiveness increased rapid traverse speeds and reduced non-cutting time while minimizing noise during travel.

- Strengthen speed, rigidity, durability
- Much better durability comparing with Ball LM Guide to realize precision moving and longer life time



Automatic Lubrication Dispenser



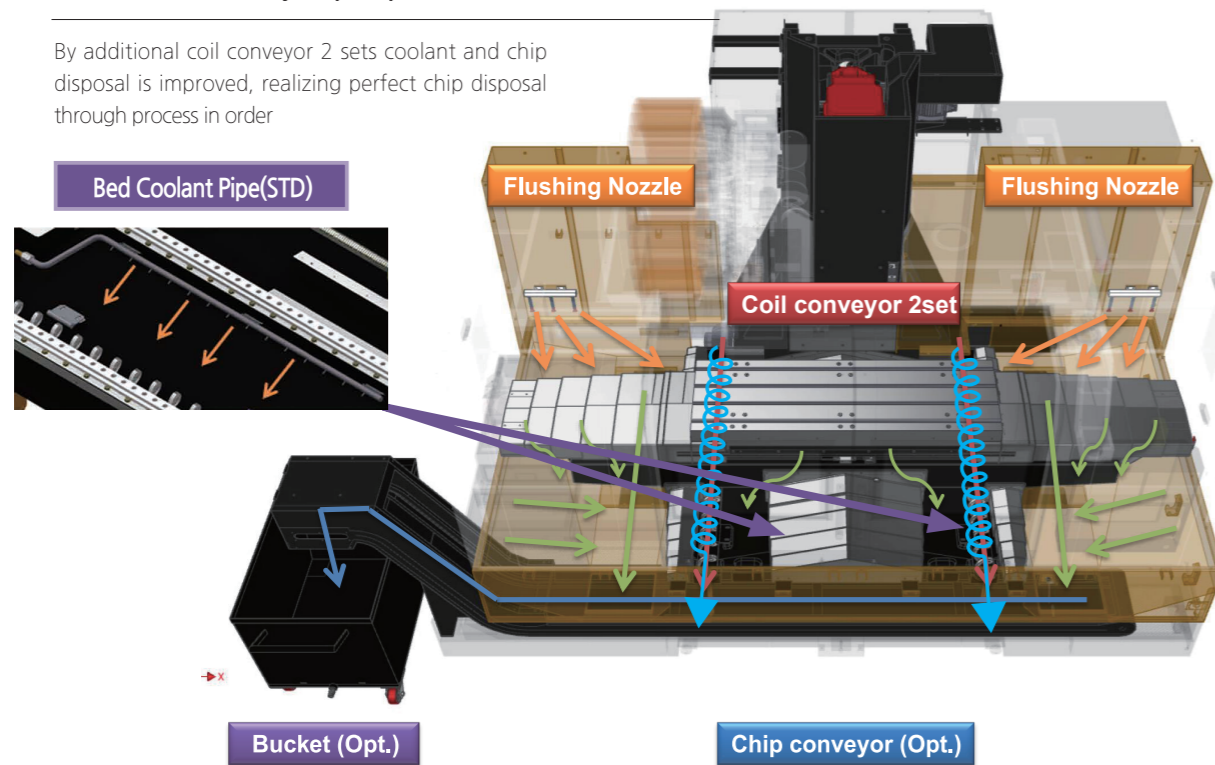
Automatic lubrication dispenser that reliably dispenses the required amount of lubrication to the required travel axes. Lubrication is only dispensed when the travel axes is in operation, reducing the amount of lubrication that is consumed. When there is problem on lubrication line it shows warning message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

Fully enclosed Splash Guard!



Environment friendly chip disposal

By additional coil conveyor 2 sets coolant and chip disposal is improved, realizing perfect chip disposal through process in order



High rigidity & performance travel system

Travel type

Directly connecting with servo motor(Y/Z)

There is no intermediate channel to transmit power but using coupling and minimize back lash during axis moving

Roller type LM guide axis moving system

Best-in-class high performance guideways (for all axes)

Speed → Reducing unnecessary time to move faster and stable

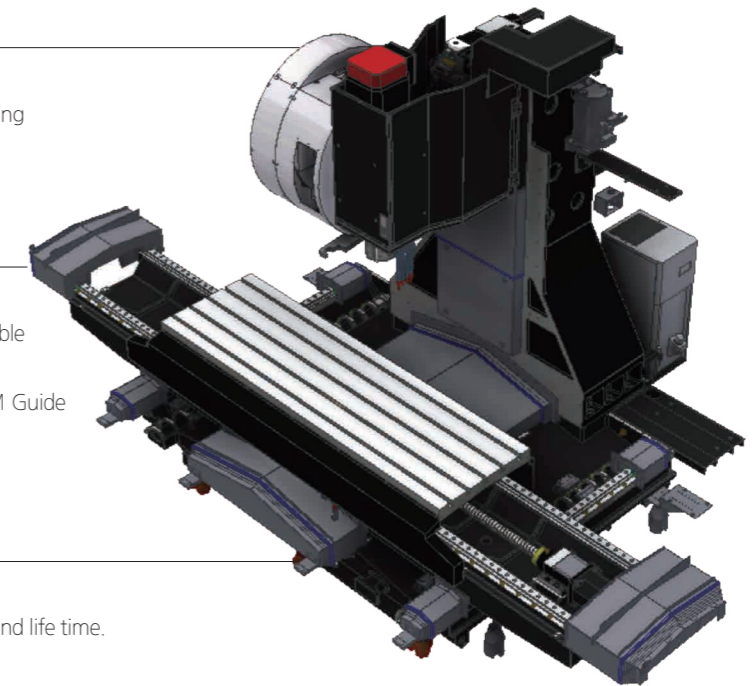
Rigidity → Strengthen axis moving during heavy cutting

Durability → Much better durability comparing with Ball LM Guide to realize precision moving and longer life time

Applied 4 rows bearing for all axis(X-Y-Z)

High rigidity with 4 times the lifetime

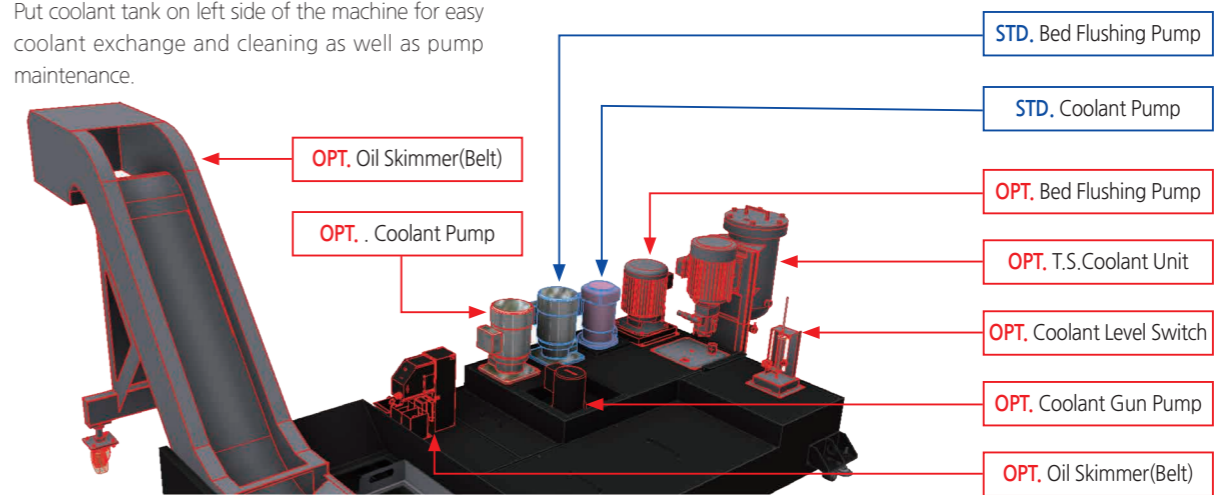
By sustaining 8 bearings on each axis realizing high rigidity and life time.



Chip Conveyor & Coolant Tank

Removable coolant tank

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



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)
Feed Override
0~1260 (16 step)
→ 0~5000 (21 step change)
- ⑦ Addition of spare buttons for fixtures

Centralized utility check



Fuse Box Made with Highly Reliable Components

Cutting Capacity (BT40 11/18.5KW)

Face mill Carbon Steel (SM45C)

Ø100mm Face mill (SZ)
Cutting amount **182 cm/min**
Spindle speed **600 r/min**
Feedrate **650 mm/min**

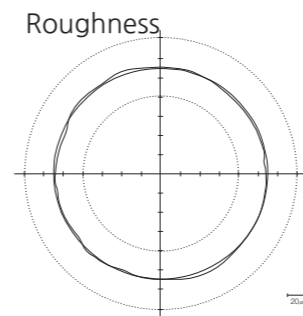
Face mill Aluminum (AL6061)

Ø80mm Face mill (SZ)
Cutting amount **403 cm/min**
Spindle speed **1,500 r/min**
Feedrate **1,260 mm/min**

End mill Carbon Steel (SM45C)

Ø30mm End mill (GZ)
Cutting amount **65 cm/min**
Spindle speed **230 r/min**
Feedrate **48 mm/min**

High Precision

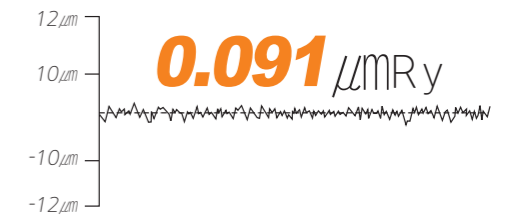


5.80 μm

Roundness

Machine	MCV 6700L
Material	A 1050P
Tool	Ø25×4T
Spindle Speed	1,500RPM

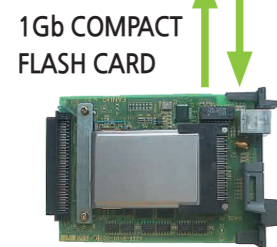
Surface Roughness <O.D. cutting>



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



FAST DATA SERVER
allowing fast program transmission between PC and data server

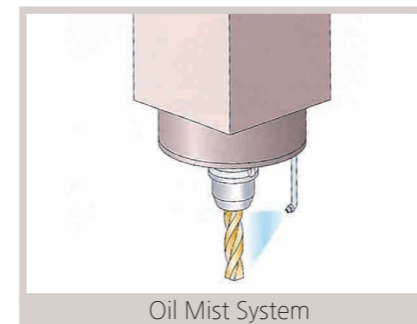


**Memory/DNC operation
Program Editing**

High Precision, High Speed AICC II

CNC MODEL	FOi -MF	31i
Block Look Ahead	200	200
Nano Interpolation	○	○
Decel Before Interpolation	Linear	Linear, Bell-Shaped
Acceleration Setting for Each Axis	○	○
Automatic Corner Deceleration	○	○
Radial Speed Clamp	○	○
Deceleration Speed Clamp	○	○

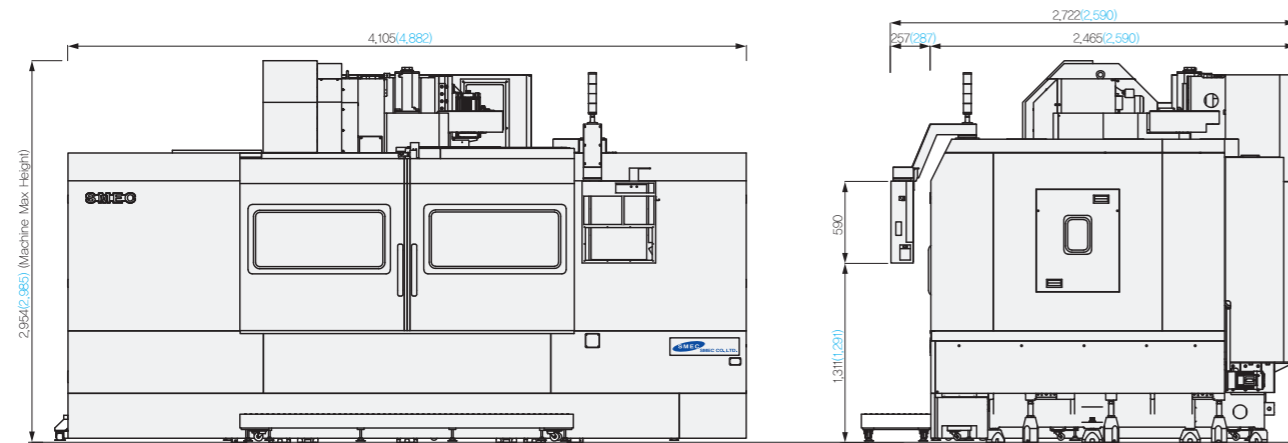
Optional Accessories



Machine Dimensions

Unit : mm

MCV 6700
MCV 6700L



ATC Interference

Unit : mm

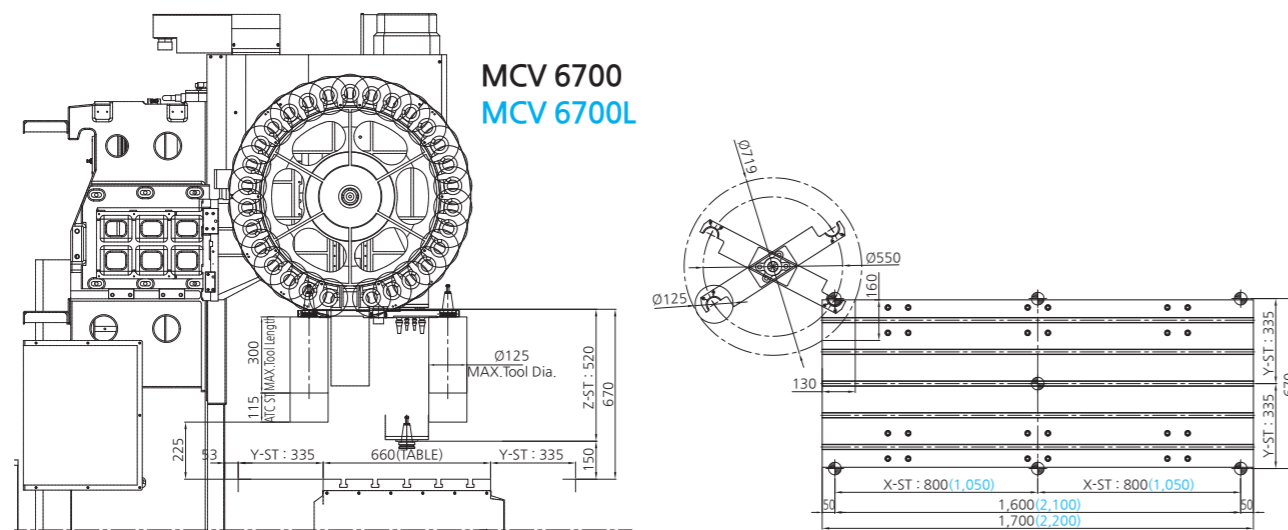
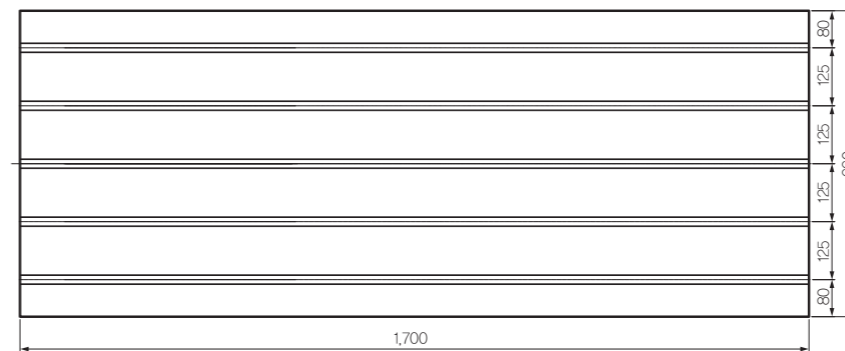


Table & T-Slot

Unit : mm

MCV 6700

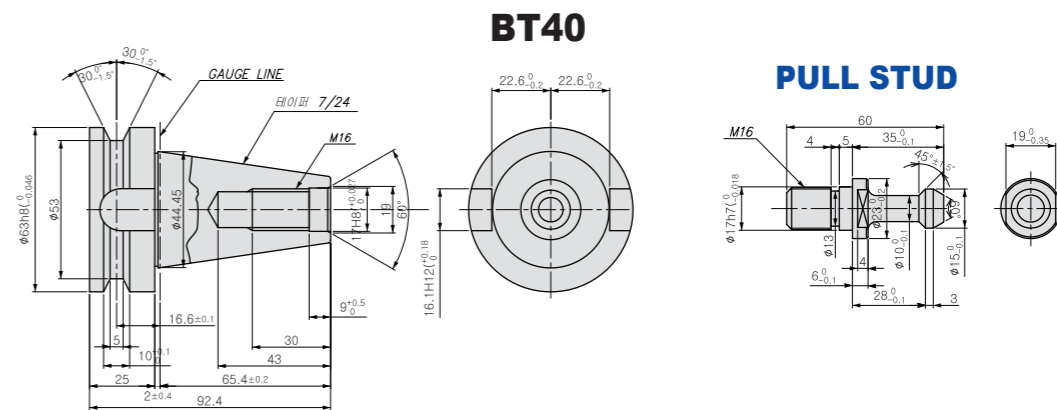


MCV 6700L



Tool Shank

Unit : mm



Major Specifications

DESCRIPTION		MCV 6700	MCV 6700L
Travel	X axis mm	1,600	2,100
	Y axis mm	670	670
	Z axis mm	520	520
	Distance from spindle nose to table surface mm	150~670	150~670
Table	Table size mm	1,700×660	2,200×660
	Loading capacity kgf	1,300	1,200
	Table surface mm	22H8×p125×5ea	18H8 T-slot×p125×5ea
Spindle	Spindle speed rpm	12,000	12,000
	Torque (Cont./Max.) N.m	69.6 / 117.8	69.6 / 117.8
	Bearing inner diameter mm	Ø70	Ø70
Feedrate	Rapid traverse(X/Y/Z) m/min	30 / 30 / 30	30 / 30 / 30
	Cutting feedrate(X/Y/Z) mm/min	1-15,000	1-15,000
ATC	Tool shank -	BT40(CAT40)	BT40(CAT40)
	Tooling changing method -	Double Arm Swing	Double Arm Swing
	Tool changing time (T-T) sec	1.2	1.2
	Magazine capacity ea	30	30
	Tool Selection -	Memory Random	Memory Random
	Max. tool dia. [adjacent empty] mm	Ø80[Ø125]	Ø80[Ø125]
	Max. tool length / weight mm/kgf	300 / 7	300 / 7
	Pull stud type -	MAS P40T-1	MAS P40T-1
Motor	Spindle motor(cont./30min) kW	15 / 18.5	15 / 18.5
	Feed motor(X/Y/Z) kW	4 / 4 / 7	4 / 4 / 7
Power supply kVA	35	35	
Floor space (L×W×H) mm	4,105×3,400×3,000	4,900×3,400×3,000	
Machine weight kgf	8,500	9,500	
CNC system	Fanuc Series		

※ Design and specifications subject to change without notice.

※ () :Option

Standard Accessories

- Full splash guard
- Coolant system (1.8kW)
- Leveling parts (Level plate, bolt, etc.)
- Standard tools and tool box
- Lubrication system
- Work light (LED)
- 3 step patrol lamp
- Rigid tapping
- Spindle override
- Spindle
- Door inter lock
- Spindle Head Cooling System
- Bed flushing
- MPG handle
- Manual and parts list

Optional Accessories

- Air gun
- Air blow
- Coolant gun
- Rotary table
- Oil skimmer
- Coolant level gauge
- High Column
- Through spindle coolant (TSC 20Bar)
- MPG handle(3ea)
- Air conditioner for electric cabinet
- Tool measuring system
- Lift-up chip conveyor (HINGE TYPE / SCRAPPER TYPE)
- Mist collector
- AICC II & Data Server

NC Specifications / FANUC Series

Item	Specification	Fanuc Series
Controlled axis	Controlled axes	X,Y,Z,(A,B)
	Max. controlled axes	4(6) AXIS
	Max. simultaneously controlled axes	4
	Least input increment	0.001mm / 0.0001"
Operation functions	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
	Rapid traverse feedrate override	F0, 25%, 50%, 100%
Spindle function	Feedrate override	0~200%
	Spindle override	○
Tool functions	Rigid tapping	○
	Tool function	T4-Digt / T2-Digt
	Tool nose radius compensation	G40 ~ G42
	Tool offset pairs	400
	Tool geometry / wear offset	GEOMETRY & WEAR DATA
	Tool life management	○
	Tool path graphic display	○
Program input	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	±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
Setting and display	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	Display screen	10.4" color
	Memory card input / output	○
Editing operation	USB memory input / output	○
	Part program storage size	512Kbyte, 256Kbyte
Manual guide i	Manual Guide I	Opt.