SMEC

MCV 510XL

VERTICAL MACHINING CENTER

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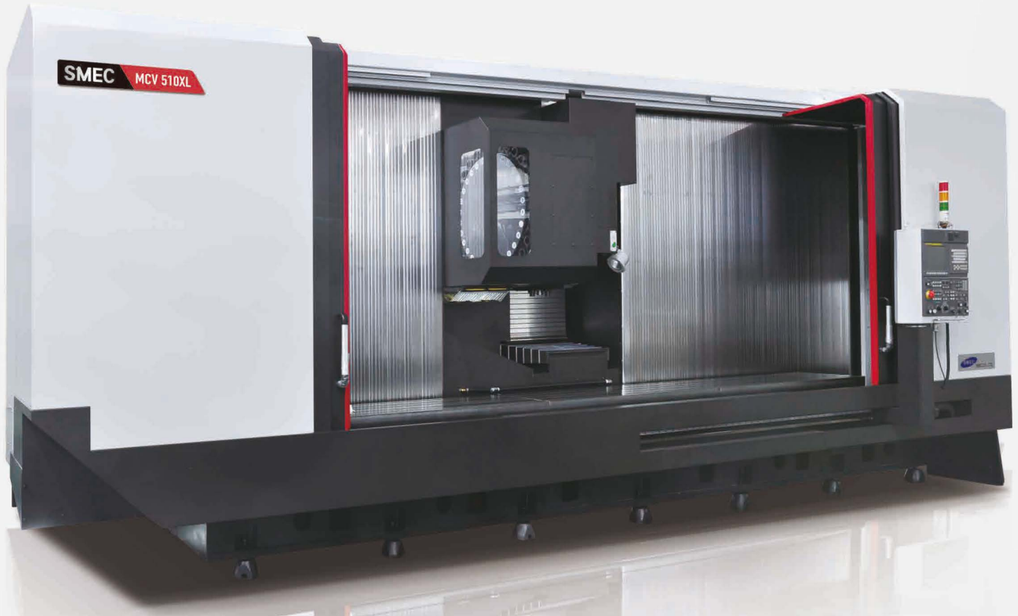


MCV 510XL

Offers high productivity and efficiency while meeting the various needs of the production floor with it's unique structural design

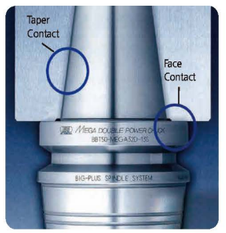
- Incomparable non-cutting time for large machining center
- Customer recognized best quality (precision)
- High rigidity C3 class ball screw, roller guide used for all axes to simultaneously realize high speed, high precision and high rigidity
- Significantly reduced non-cutting time with the ATC attached directly to the column

MCV 510XL, Designed for High Efficiency and High Productivity Machining

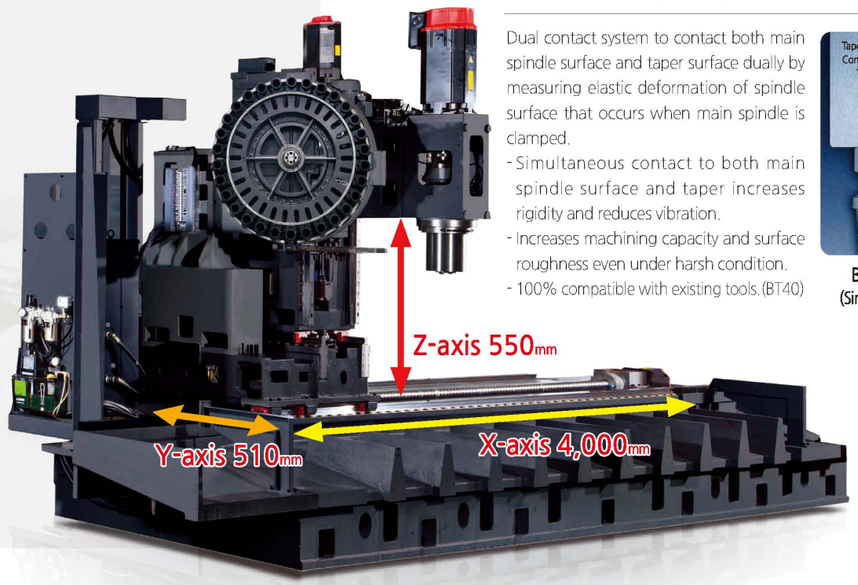
Item	MCV 510XL
Table Size	4,600 x 550mm
Travels (X/Y/Z)	4,000/510/550mm
Spindle Speed	12,000rpm
Spindle Motor	11/15/18.5/22.2(Max)kW
Tool Shank	BBT40
Rapid Traverse (X/Y/Z)	24/30/30 m/min

Dual Contact Spindle (BBT 40)

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)



MCV 510XL

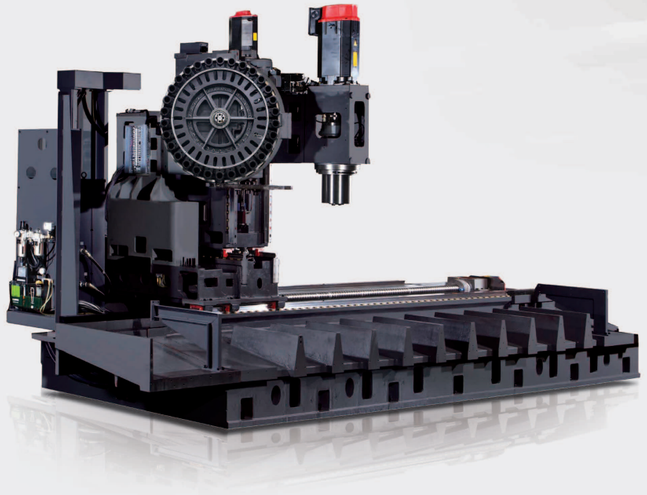
FULL SPLASH GUARD(STD.)

The standard Full Splash Guard with front, left and right slide covers keeps the chips and coolant contained near the table, preventing their discharge into the outside environment, simplifying chip discharge.(MCV 510XL)

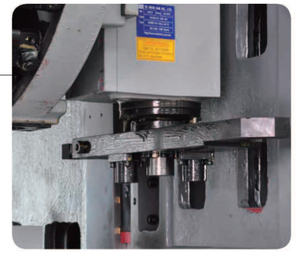
Rapid Traverse(X/Y/Z)
: **24/30/30** m/min

Table Size
: **4,600×550** mm

Motor power (Cont. / Max.)
: **11/22.2** kW



MEMORY RANDOM Type Quick Tool Changer



Double Arm Swing Type offers the fastest tool change time

Tool to Tool Time
1.5sec at **60**Hz (MCV 510XL)

Oil Bath Cam Type (MCV 510XL)

In general, BT30 sized machines use Drum Type tool changing. But due to the vibration from the heavy head of Drum Types, SMEC implemented an self-developed high-speed CAM system.

Tool Magazine

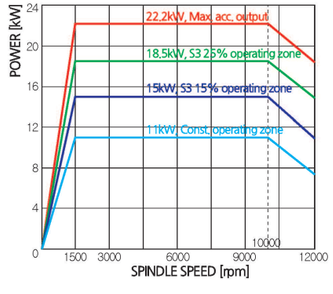
Servo motors are used to operate the ATC and MG, ensuring problem-free high-speed ATC operation. High speed magazine rotation helps reduce non-cutting time.

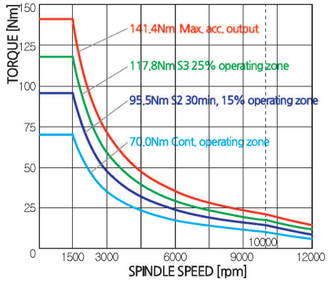
Main Operation Panel

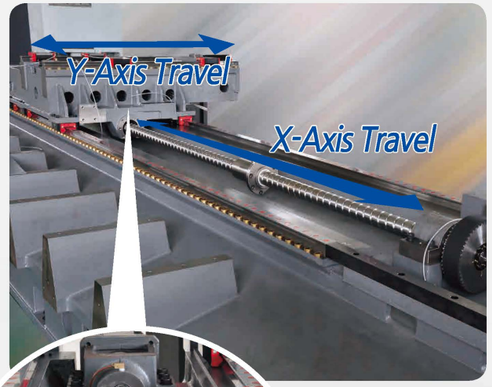
Mounted on a guide rail, the OP panel can be moved from the right edge of the table to the very center, allowing the operator to look closely at the workpiece.

Spindle Power and Torque Diagram

Unit : mm

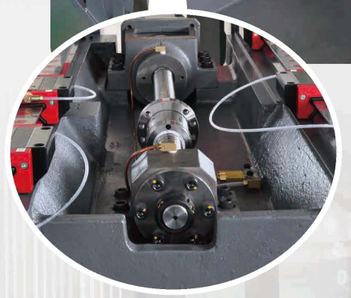


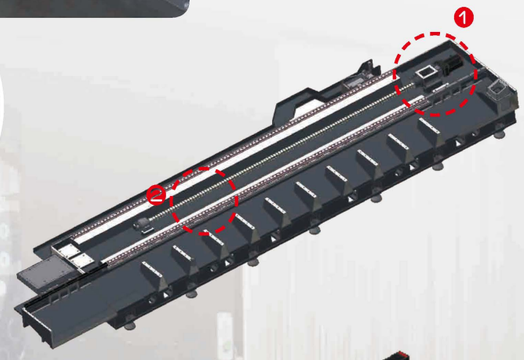




Moveable Column

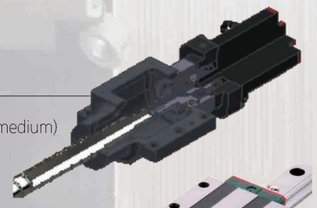
With the workpiece fixed, the column travels in the X and Y-axis and machines, so even if the workpiece is large and heavy, there is no overhang of the X and Y axis, enabling precise machining.





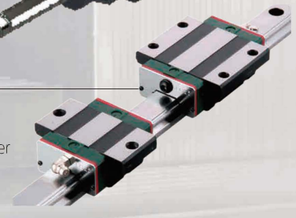
Servo Motor 1

- Power conversion via direct coupling (without using transfer medium)
- Minimized backlash during axis feed



Guide Way 2

- Improved speed, rigidity and durability
- Better wear resistance than BALL LM GUIDES, ensuring better precision travel and extended machine lifetime



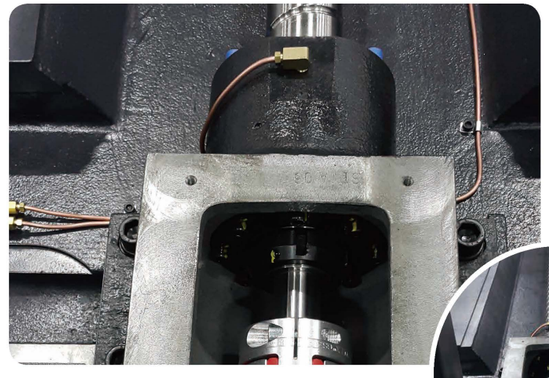
Rapid Traverse Rate

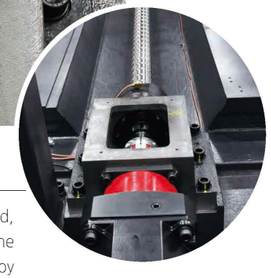
In order to increase traverse rate, L/M Guides were used for all the axes, to offer rapids not normally seen in large machines. To ensure durability and quality assurance during heavy-duty cutting, Roller Type LM Guides were used.

Rapid Traverse
24/30/30 m/min

·X-Axis Ball Screw Diameter
Ø63

·X-Axis Feed Motor
4 kW





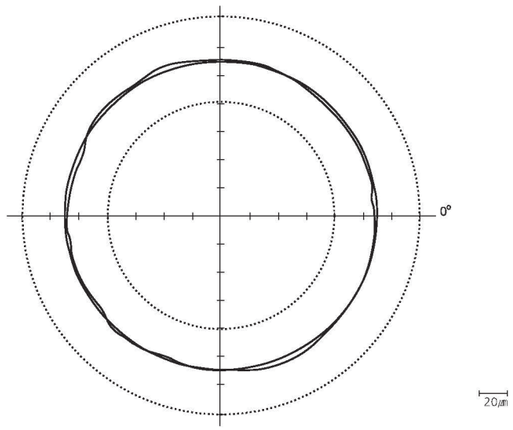
X-Axis Thermal Expansion Prevention

As long workpieces (in the X-Axis) are usually machined, small changes in temperature changes the length of the ballscrew on both ends. SMEC minimizes this change by fixing both ends and applying pre-tension to the ballscrew.

Machining Precision

Unit : mm

Roundness



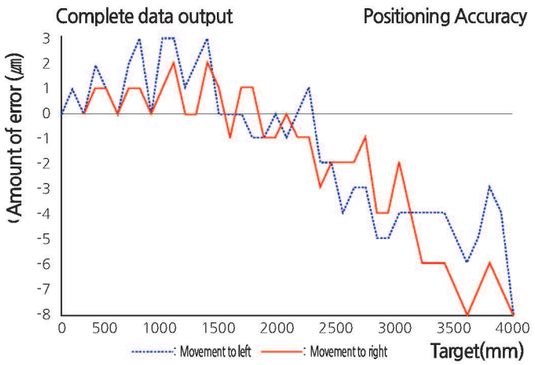
7.80㎛

Roundness

Conditions

Machine	MCV 510XL
Material	A 1050P
Tool	Ø25×4T
Spindle Speed	1,500RPM
Cutting depth	0.1mm
Tool size	Ø180
Feedrate	300m/min

X-axis Positioning Accuracy



12㎛/4,000mm

Position Accuracy

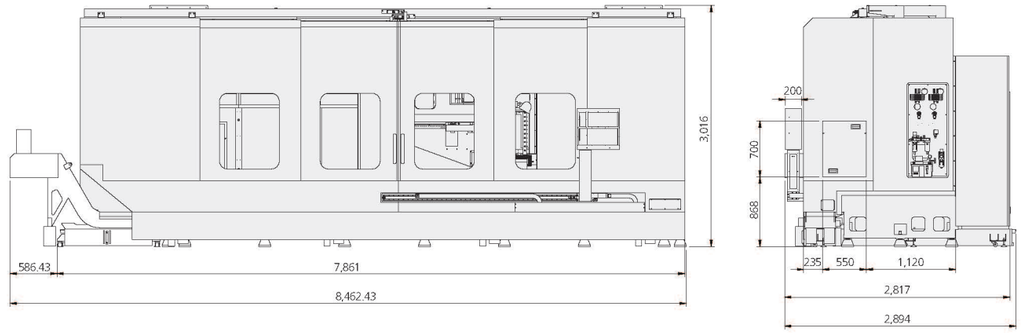
Conditions

Measured axis	X-axis
Methodology	Roundtrip

※Measured X-axis ballscrew position accuracy.

Machine Dimensions

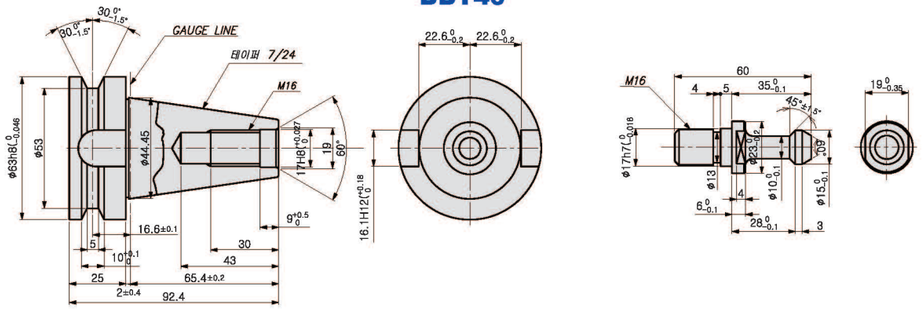
Unit : mm



Tool Shank

Unit : mm

BBT40



Cable Chain

All wires to the spindle and stranded wires to the OP Panel are protected in the Cable Chain, improving the overall design while protecting the wires from damage caused by repeated movement by the OP Panel.

SMEC Smart One, Global One

Machine Specification

Item			MCV 510XL
Max. travel distance (X/Y/Z)		mm	4,000/510/550
Distance from table surface to spindle nose		mm	150 ~ 700
Distance from spindle center to column		mm	675
Table size		mm	4,600×550
Table surface			M16 TAP
Spindle	Spindle speed	min^{-1}	12,000
	Spindle taper		NT40
	Spindle bearing I.D.	mm	Ø70
	Motor power (Cont./30min)	kW	15/11
Feedrate	Rapid traverse (X/Y/Z)	m/min	24/30/30
	Cutting feedrate	mm/min	1 ~ 10,000
ATC	Tool shank		BT 40 / BBT 40
	Magazine capacity		30
	Tool changing time (T-T)	sec	1.5
	Max. tool length / weight	kg	300 / 8
	Max. tool dia. (adjacent empty)	mm	Ø90 (Ø140)
Power supply		KVA	32
Floor space (L×W×H)		mm	2,810×7,925×3,093
Machine weight		kg	21,000
CNC system			Fanuc Series

※Design and specifications subject to change without notice.

[ ] : Option

Standard Accessories

- LEVEL BASE PLATES AND BOLTS
- COOLANT TANK
- TOOLS AND TOOL BOX
- SPLASH GUARD
- DATA SERVER
- AICC2
- T-SLOT TYPE TABLE

Optional Accessories

- LIFT UP CHIP CONVEYOR
- SCREW CONVEYOR (FOR REAR TYPE CHIP CONVEYOR)
- 3MPG

NC Specification (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	○
	Feed per revolution	G95	○
Interpolation functions	Linear Interpolation	G01	○
	Circular Interpolation	G02, G03	○
	Dwell	G04	○
	Cylindrical Interpolation	G70.1	○
	Reference Position Return	G28	○
	Reference Position Return Check	G27	○
Feed function	Rapid traverse feedrate override	F0, 25%, 50%, 100%	○
	Feedrate override		0~200%
Spindle function	Spindle override		○
	Rigid tapping		○
Tool functions	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		○
	Automatic tool compensation		○
Program input	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	○
	Number of registerable programs		400EA
Setting and display	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	○
	Display screen		10.4" color
Data input/output	Memory card input / output		○
	USB memory input / output		○
Editing operation	Part program storage size	512Kbyte(1280m)	1280M
Manual guide i	Manual Guide I		Opt.