

SMEC

MCV 510XL

VERTICAL MACHINING CENTER



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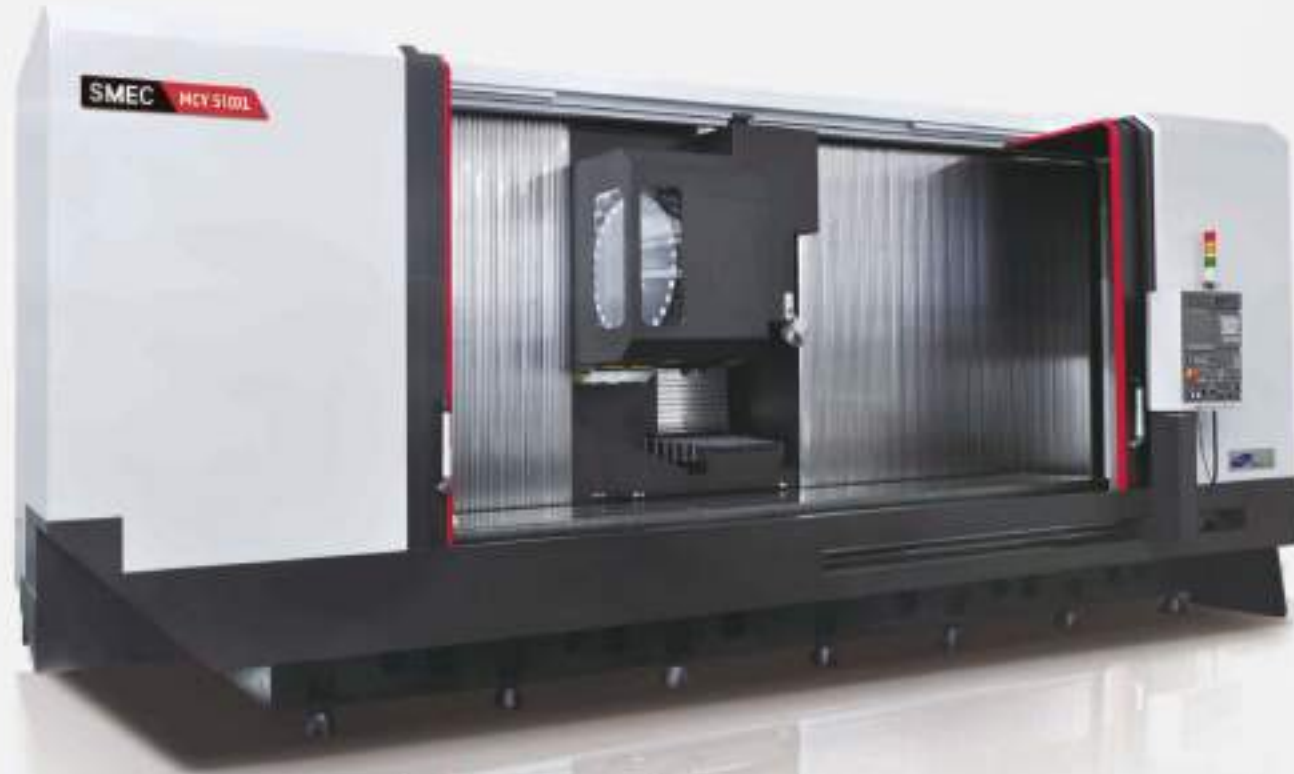


<https://www.youtube.com/c/smecmachinetools>

SMEC
Smart One,
Global One



MCV 510XL



MCV 510XL

Offers high productivity and efficiency while meeting the various needs of the production floor with its 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 surface 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)



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FULL SPLASH GUARD(STD.)

The standard Full Splash Guard with front, left and right side 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

1.5_{sec} at 60Hz (MCV 510XL)



Oil Bath Cam Type (MCV 510XL)

In general, 8T30 sized machines use Drum Type tool changing. But due to the vibration from the heavy head of Drum Types, SMEC implemented a 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.

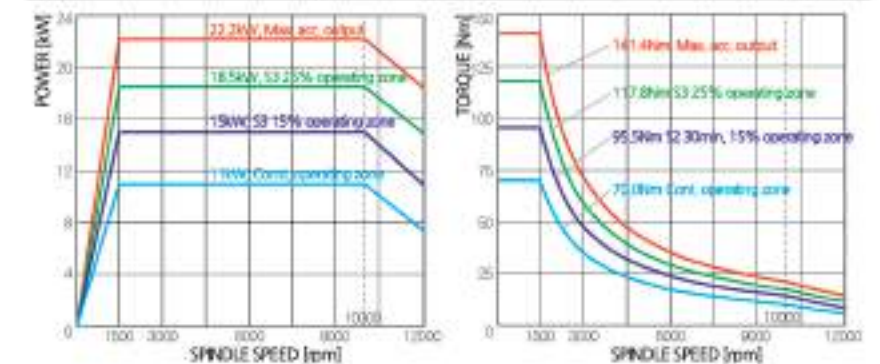


Main Operation Panel

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.

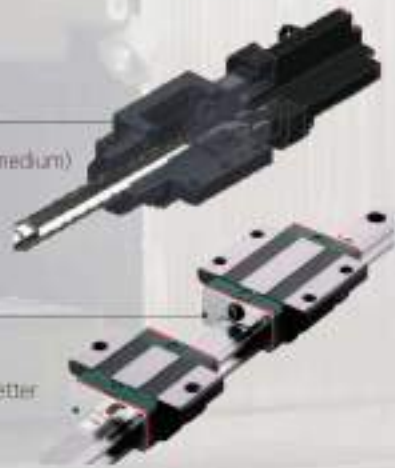


Servo Motor ①

- 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



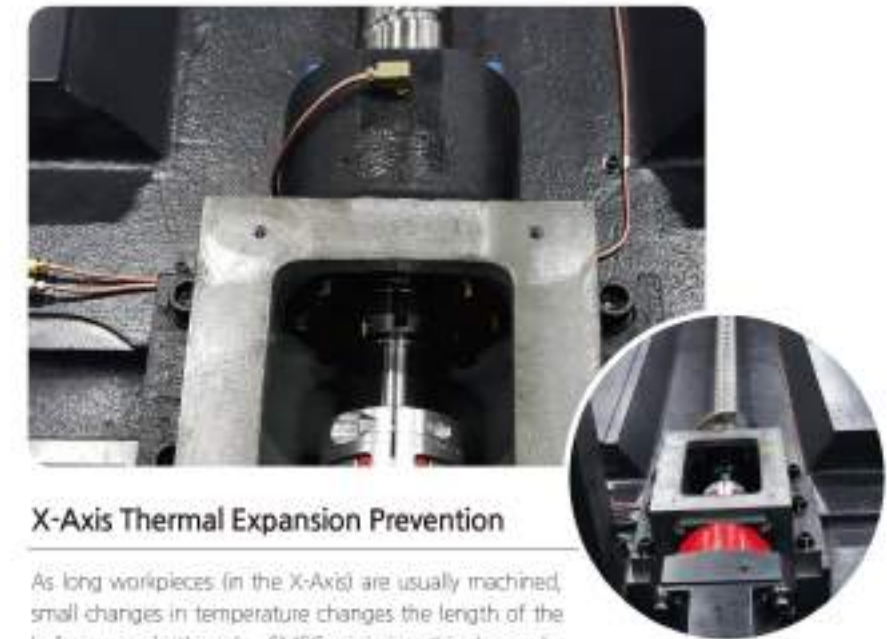
Rapid Traverse Rate

In order to increase traverse rate, LM 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
4kW



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.

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	∅70
	Motor power (Cont./30min)	kW	15/11
Feedrate	Rapid traverse (X/Y/Z)	mm/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	∅90 (∅140)
Power supply	kVA	32	
Floor space (LxWxH)	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) AXES
	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 I
	Reference Position Return	G28
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-Dgt / T2-Dgt
	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	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/±9999.999"
	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	512Mbyte(1280M)
Manual guide I	Manual Guide I	Opt.