

SMEC

MCV 420UL

VERTICAL MACHINING CENTER



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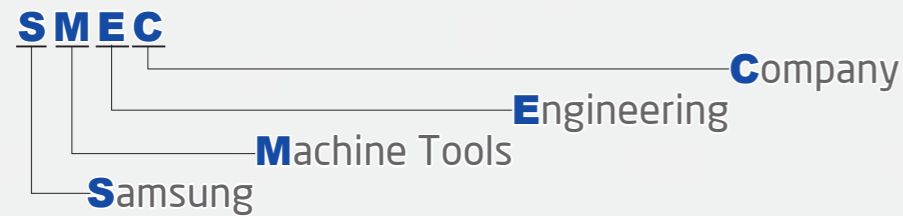


SMEC
Smart One,
Global One

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



- 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 420UL

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

- Able to handle customer's work size
- Incomparable non-cutting time for large machining center
- Significantly reduced non-cutting time with the ATC attached directly to the column



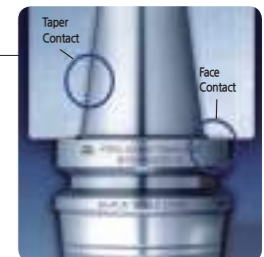
Designed for high speed and productivity also ultra precision machining - **MCV 420UL**

Item	MCV 420UL
Table Size	6,600 x 460mm
Travels (X/Y/Z)	6,200/420/450mm
Spindle Speed	10,000rpm
Spindle Motor	7.5/11kW
Tool Shank	BT40
Rapid Traverse (X/Y/Z)	24/30/30 m/min

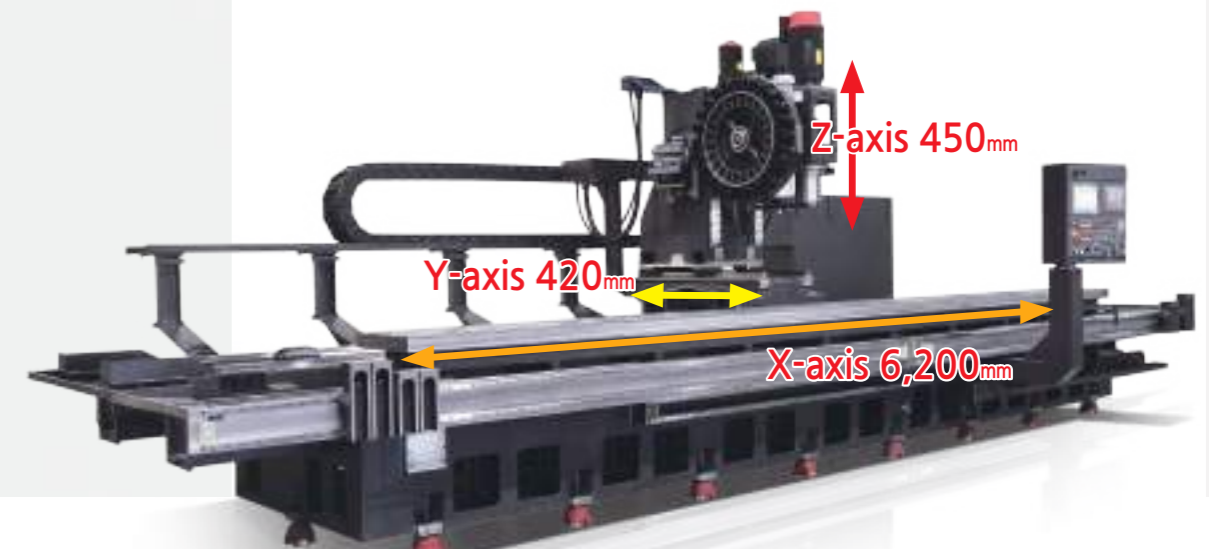
Dual Contact Spindle (BBT 40)

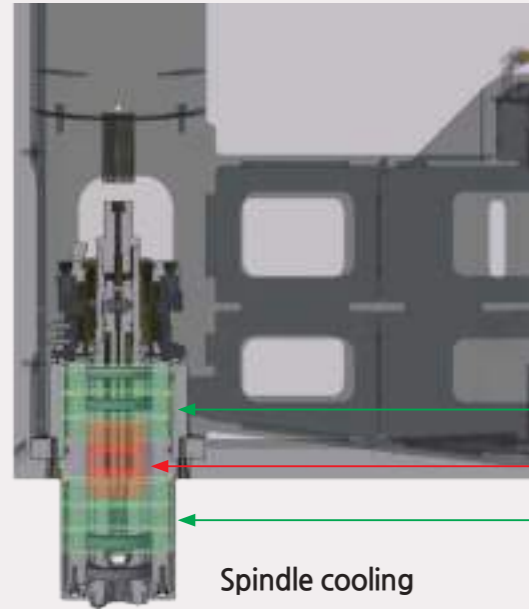
Dual contact system to contact both main spindle surface and taper surface dually by measuring elastic deformation of spindle surface that occurs when main spindle is clamped.

- 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)

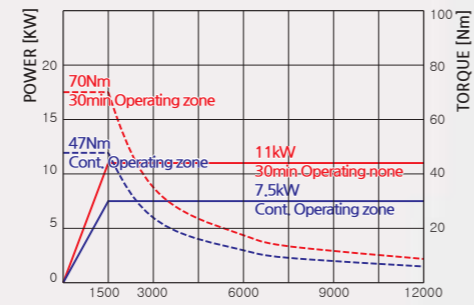




Spindle cooling

Adopting semipermanent grease to bearing, minimizing thermal displacement by jacket circulation cooling through oil cooler to bearing housing which is root of the heat, realizing spindle life longer through stable performances.

Spindle torque diagram Unit : mm



- Housing outer ring circulation(Above)
- Housing inner ring circulation
- Housing outward circulation(Below)

SPLASH GUARD(Standard)

Even if moving spindle head up to full z axis stroke head can be covered by splash guard to prevent coolant or chips go to outside.

Option design considered user's way of moving(Optional)

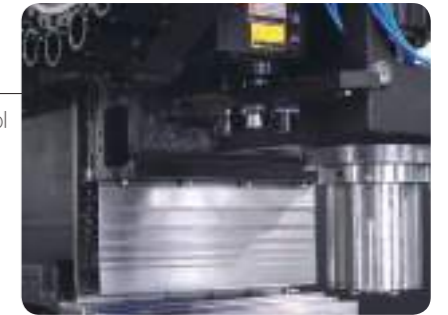
- Air gun can be moved with stand
- Coolant gun can be installed in right and left side
- Installing second control panel is possible when using additional axis



MEMORY RANDOM Type Quick Tool Changer

Double Arm Swing Type offers the fastest tool change time

Tool to Tool Time
1.3sec at 60Hz



Oil Bath Cam Type

In general, BT30 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.

24 ea



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.

Perfect chip disposal

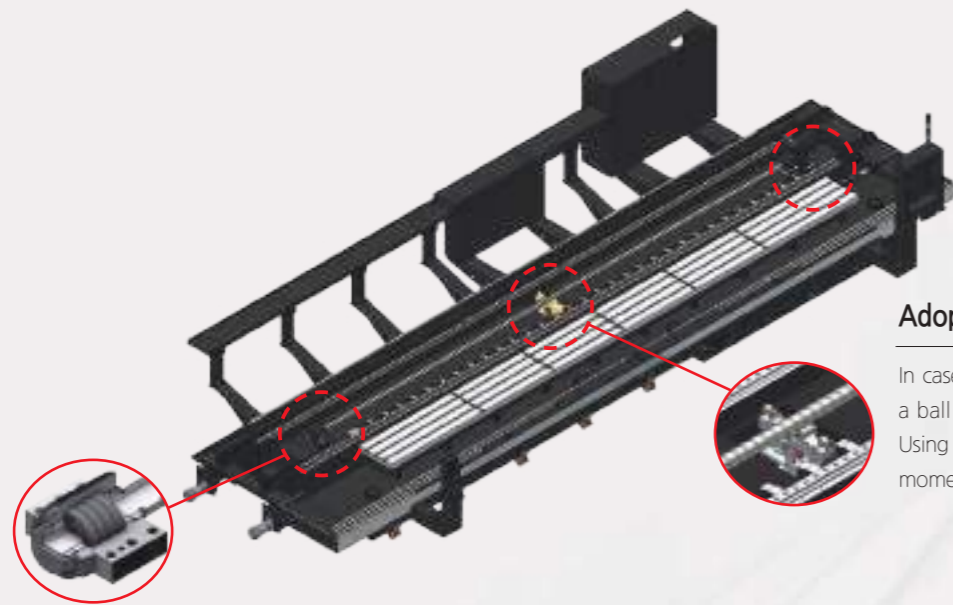


Enable to chip disposal to X axis direction by 4 rows coil conveyor. Realizing appropriate chip disposal structure by locating the way of disposal is behind the saddle. Chip can be fallen into the coil conveyor directly by slant slide cover.



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.

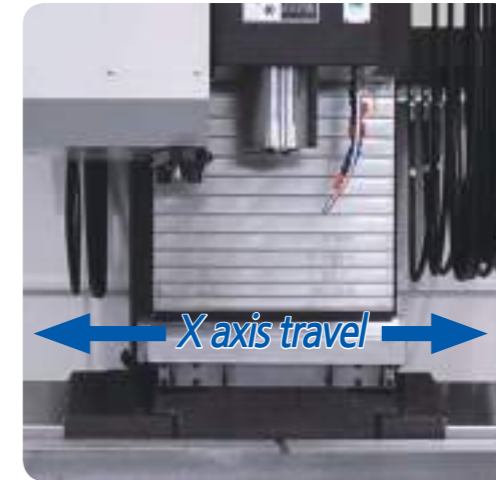


Adopting support

In case of long axis machine there is a ball screw slack by heavy weight. Using support on ball screw to erase moment by causing slack.

Guide Way

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



Rapid traverse
24/30/30 m/min
X axis ball screw diameter
Ø63
X axis Feed Motor
6 kW

Rapid Traverse Rate

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



Automatic Lubrication Dispenser

Automatic lubrication dispenser uses LHL-X100 oil making strong oil layer to prevent abrasion on guide way. Gel type grease prevent coolant rotten to provide fresh environment. <Extend over three times of coolant life time>



X-Axis Thermal Expansion Prevention

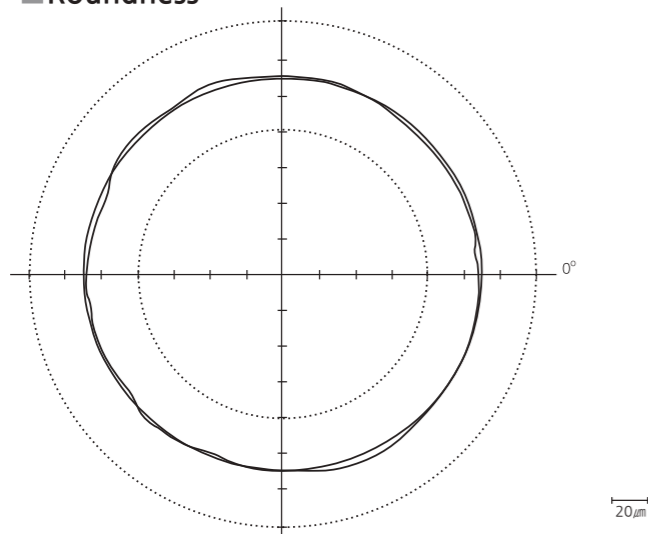
As long workpieces (in the X-Axis) are usually machined, small changes in temperature changes the length of the ballscrew on both ends. SMEC minimizes this change by fixing both ends and applying pre-tension to the ballscrew.



Machining Precision

Unit : mm

Roundness



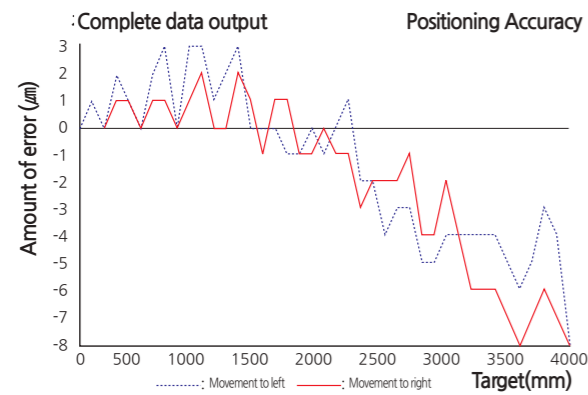
7.80 μm

Roundness

Conditions

Machine	MCV 420UL
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 μm/4,000mm

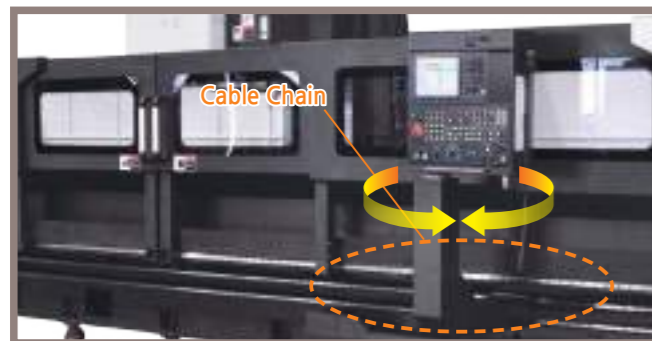
Position Accuracy

Conditions

Measured axis	X-axis
Methodology	Roundtrip

※Measured X-axis ballscrew position accuracy.

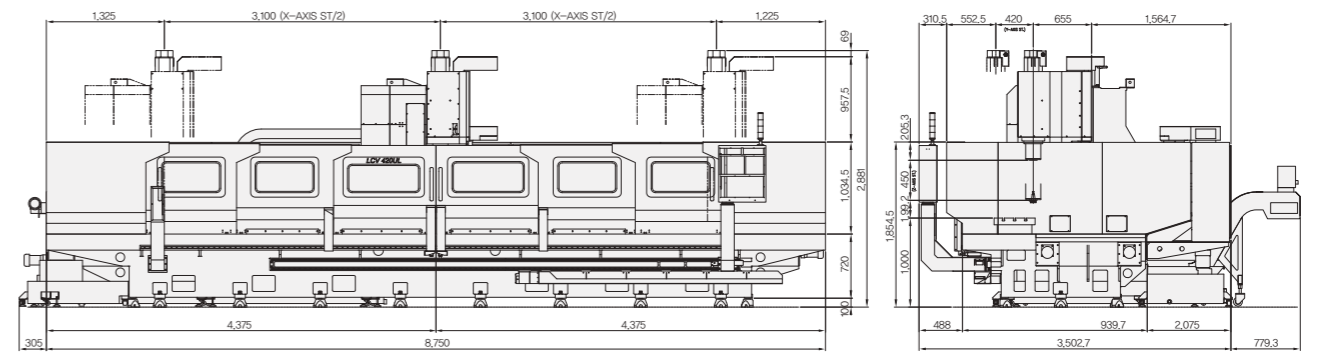
Cable Chain



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.

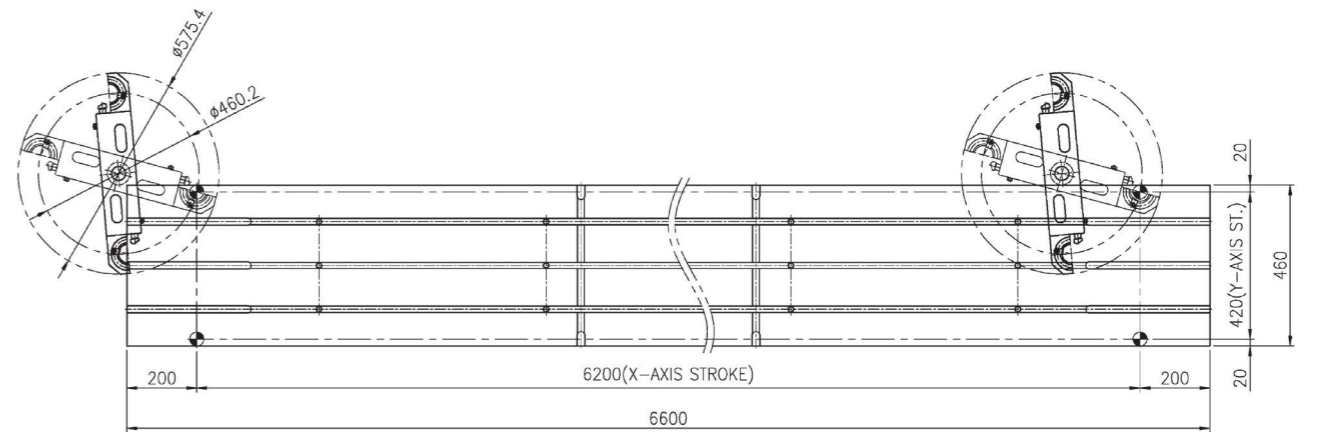
Machine Dimensions

Unit : mm



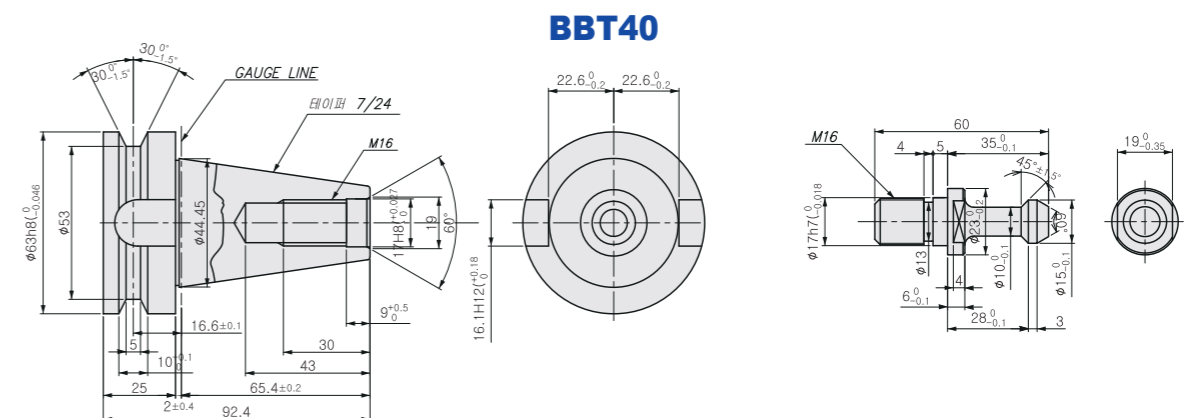
ATC Interference

Unit : mm



Tool Shank

Unit : mm



Machine Specification

Item		MCV 420UL	
Max. travel distance (X/Y/Z)	mm	6,200/420/450	
Distance from table surface to spindle nose	mm	200 ~ 650	
Table size	mm	6,600×460	
Table surface		18H8 T-slot x p125 x 3ea	
Spindle	Spindle speed	rpm	10,000
	Spindle bearing I.D.	mm	70
	Motor power (Cont./30min)	kW	7.5/11
Feedrate	Rapid traverse (X/Y/Z)	m/min	24/30/30
	Cutting feedrate	mm/min	1 ~ 20,000
	Feed motor(X/Y/Z)	kW	6/3/3
ATC	Tool shank		BT40
	Tooling changing method		Twin arm type
	Magazine capacity	ea	24
	Tool changing time (T-T)	sec	1.3
	Tool Selection		Memory random
	Max. tool length / weight	mm / kgf	300×8
	Max. tool dia. (adjacent empty)	mm	∅90 (∅150)
	Pull stud type		MAS 403 P40T-1
Power supply	KVA	30	
Floor space (L×W×H)	mm	9,300×4,680×2,900	
Machine weight	kg	21,506	
CNC system		Fanuc 0i-MF	

※ Design and specifications subject to change without notice.

[] : Option

Standard Accessories

- Half splash guard
- Coolant system (1.8kW)
- LEVEL BASE PLATES AND BOLTS
- COOLANT TANK
- TOOLS AND TOOL BOX
- Lubrication system
- 3 step patrol lamp
- Rigid tapping
- Spindle override
- Hydraulic units
- Door inter lock
- Spindle cooling system
- Bed flushing
- MPG
- Manual and part list

Optional Accessories

- Air gun
- Air blow
- Coolant gun
- Rotary table
- Oil skimmer

NC Specification (FANUC 0i-MF)

Item		Specification	F 0i-MF
Controlled axis	Controlled axes		XYZ,(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		○
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	○	
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	○
Data input/output	Display screen		LCV 30LB/XLB : 8.4" color LCV 50XB/420UL : 10.4" color
	Memory card input / output		○
Editing operation	USB memory input / output		○
	Part program storage size	512Kbyte(1280m)	1280M
Manual guide i	Manual Guide I		Opt.