

# SMEC

## LCV 850/1060

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**



**SMEC Advanced Engineering  
and Machine Design**

## Large Scale Machining Center Ideal for Medium to Large Machining and Aircraft Part Machining

- 6 row support guide way (Y-axis): 4 row box + 2 row roller recirculating unit
- Optional precision polished high precision gear including spline spindle grooving
- Optional vibration dampened, high-speed built-in spindle (12,000rpm) for machining
- Largest in-class Z-axis stroke (950mm) for deep machining (LCV 1060 High Column Option)
- Highest in-class speed (7,000rpm) using oil-air lubricated high power gear box head
- One piece bed and radial rib to dampen vibration caused by high power cutting and force due to machining

Description	LCV 850	LCV 1060
Table Size	2,050 x 850mm	2,800 x 1,060mm
Travel(X/Y/Z)	2,000/850/800mm	2,500/1,060/900mm
Spindle RPM	7,000 (12,000)rpm	7,000 (12,000)rpm
Spindle Power	15/18.5 (25/30)kW	15/18.5 (25/30)kW
Max. Load	3,000kgf	5,000kgf
Rapid Traverse Rate(X/Y/Z)	20/20/16 m/min	16/16/16 m/min

Gear Box Spindle(Std.)	Through Type	Built-in Type
Spindle Speed <b>7,000 rpm</b>	Spindle Speed <b>7,000 rpm</b>	Spindle Speed <b>12,000 rpm</b>
Spindle Motor <b>18.5/15 kW</b>	Spindle Motor <b>18.5/15 kW</b>	Spindle Motor <b>30/25 kW</b>
Spindle Torque <b>768/614/498 Nm</b>	Spindle Torque <b>768/614/498 Nm</b>	Spindle Torque <b>421/238 Nm</b>





One Piece Frame Design and High Rigidity Spindle  
Guaranteeing High Power Machining and High Rigidity

Z-axis

X-axis

Y-axis

### Tool Magazine

Designed with the highest in-class tool capacity with the shortest travel distance, allowing the system to setup the next tool very quickly.

Tool Capacity(ea)  
**30 / 40<sub>(Opt.)</sub>**



◀ Saddle



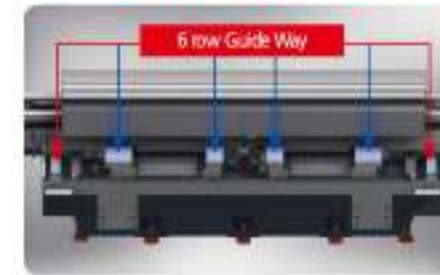
◀ Bed

Maintain high stability during high power machining with low vibration using rigid Box configuration for Bed and Saddle with properly arranged triangular truss ribs.



### Large Bore Ø63 Ball Screw Fixed End Pre-Tension Axis Traversal

Using pre-tensed fixed ended ball screws on all axes to minimize thermal expansion with P4 class high precision angular bearings on each end providing support and driven using large bore, high precision ball screws.



6 row Guide Way

Using a stable Y-axis traversal configuration comprised of a 4 row Box Guide Way and 2 row Roller Recirculating Unit, prevent table position inaccuracies and provide stability during high power machining and heavy loads.



Optional highly rigid radial rib configuration, enabling high rigidity and vibration dampening during machining (load balancing, vibration absorption)

Able to offer deep machining with the largest in-class Z-axis traversal stroke of 900mm (Z axis for High Column: 950). With a wide guide way providing strong support, the spindle head can maintain high rigidity for extended periods of time (Image: LCV 1060).

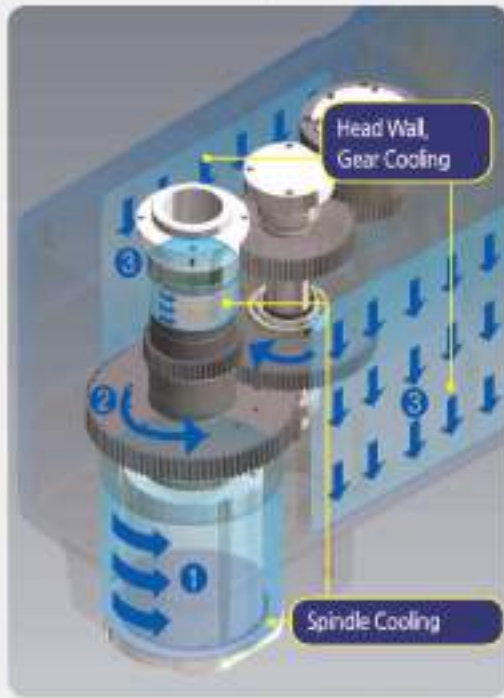


Able to machine a variety of parts along its longest in-class 2,500mm X-axis (LCV 1060).





## Gear Box Spindle 7,000RPM



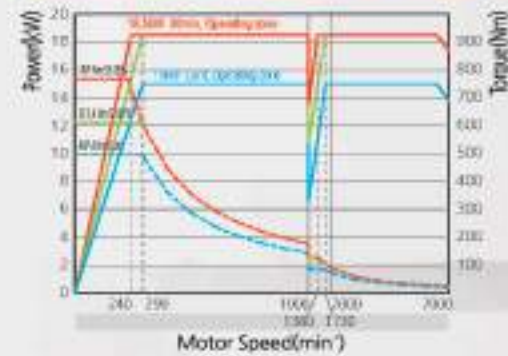
### Optimized Thermal Expansion Prevention

High rigidity machining by minimizing thermal expansion using solid cooling systems like air-oil lubrication system, ① Spindle cooling, ② Gear cooling and ③ Head surface cooling.

### High Output, Cutting, Low Noise Spindle

Low noise using polished spline bore grooving and precision gear in high power 2-speed gear box spindle.

### Spindle Power and Torque Diagram



## Built-in Type 12,000rpm

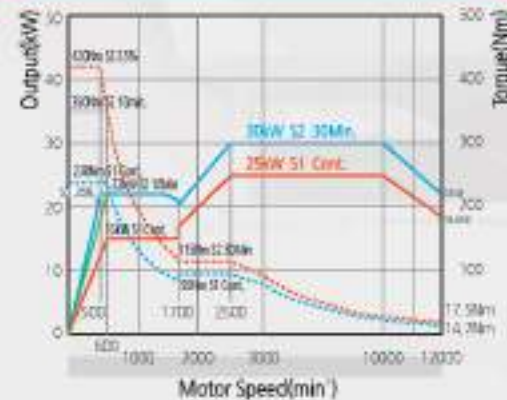
### High Rigidity, High Precision Spindle

Guaranteeing high rigidity during long-term operation using highly rigid ceramic bearings and air-oil system.

### Highest in-class Spindle Speed

Demonstrating highest in-class spindle speed and torque for optimized machining using vibration dampened built-in motor. The 2-sided Big Plus Spindle offers high rigidity and easy tool switching.

### Spindle Power and Torque Diagram



### Spindle Bearing Air-Oil Lubrication

Supplying clean/dry pressurized air lubrication to the bearing using highly reliable mixing valve and low heat generating oil-mist lubrication system during high speed revolution.

### Twin Arm Type Tool Switch

Minimize non-machining time and errors during tool switching using Memory Random high speed Twin Arm Swing Type-Tool Switching.



### Centralized Pneumatic Utility

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

### Lubrication Circulation System

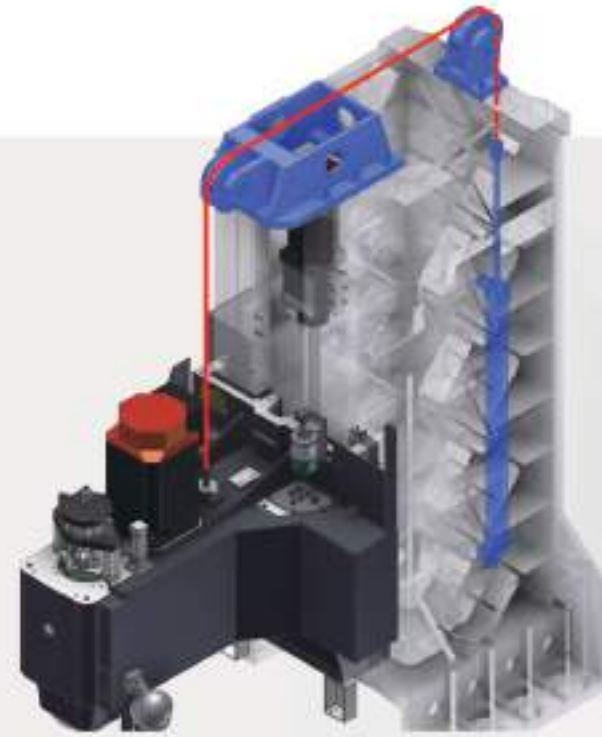
For the lubrication pump, the highly reliable LUBE line of products were selected to supply the right amount of lubricant to the guide ways through the metering valve. Waste lubricant is collected, increasing the life span of the lubricant and prevent decomposition of the cutting oil.





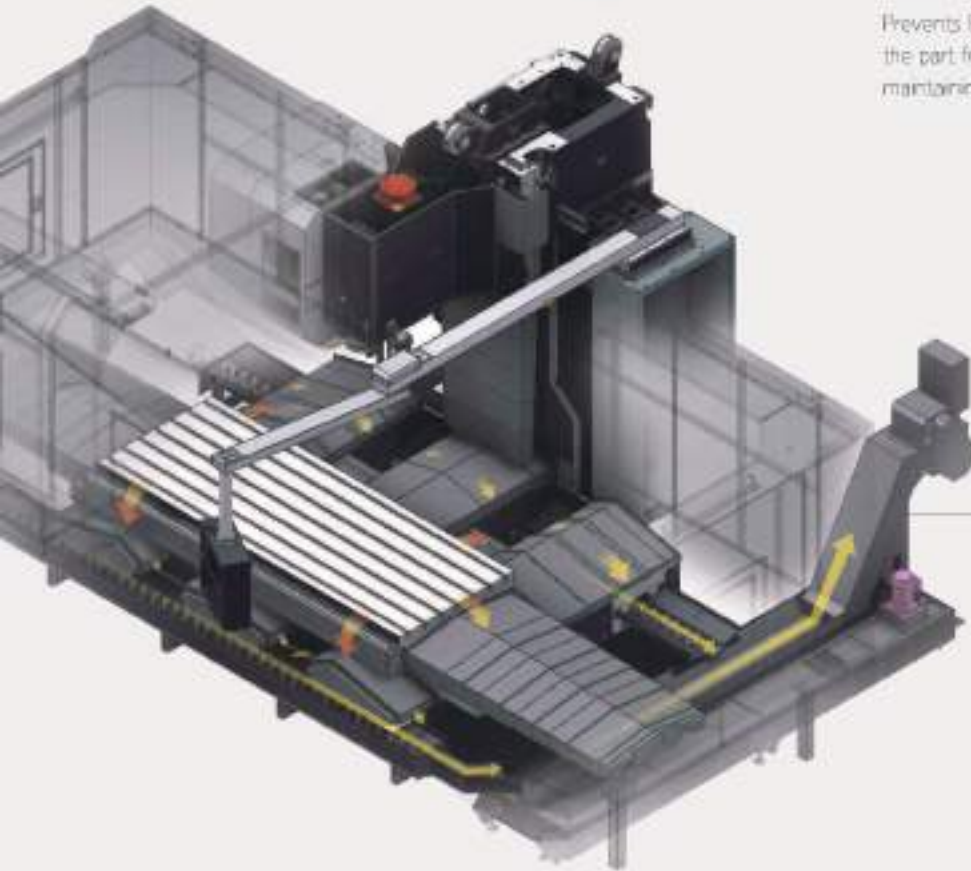
### High Efficiency Spindle Oil Cooler Unit to Maintain the Highest Spindle Accuracy

The Oil Cooler Unit keeps the oil at room temperature and forces the cooled oil to the heated areas of the spindle, maintaining constant temperature and suppressing heating so that high accuracy machining is possible, even in high speed operations.



### Oil Pressure Balance Cylinder

Prevents Ball Screw overload due to Head weight and protects the part from a tool fall caused by a momentary power loss while maintaining long-term rigidity by preventing Head Slide Way wear.



### Complete and Rapid Chip Disposal

Using a chip conveyor to easily move the chips on top and below, in front and behind, and on the left and right of the table out of the workspace and into the chip pan.



### Centralized Control Panel

- 10.4 inch color LCD
- Semi-permanent LED LAMP
- Easy to operate and access Pendant Arm and mobile MPG

### Fuse Box Made with Highly Reliable Components



### SMEC Package2 (FAST DATA SERVER + AICC II)



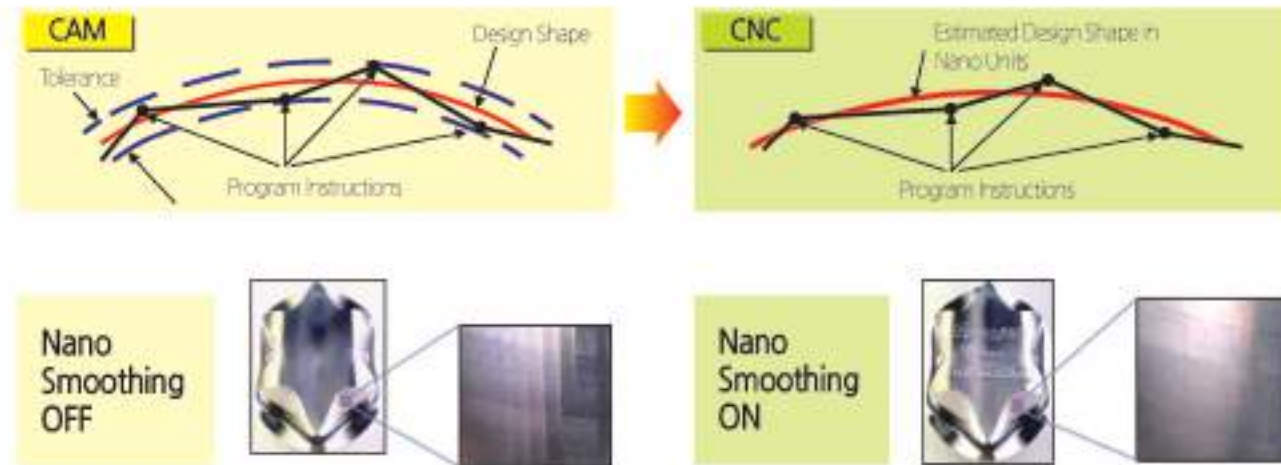
### High Precision, High Speed AICC II

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

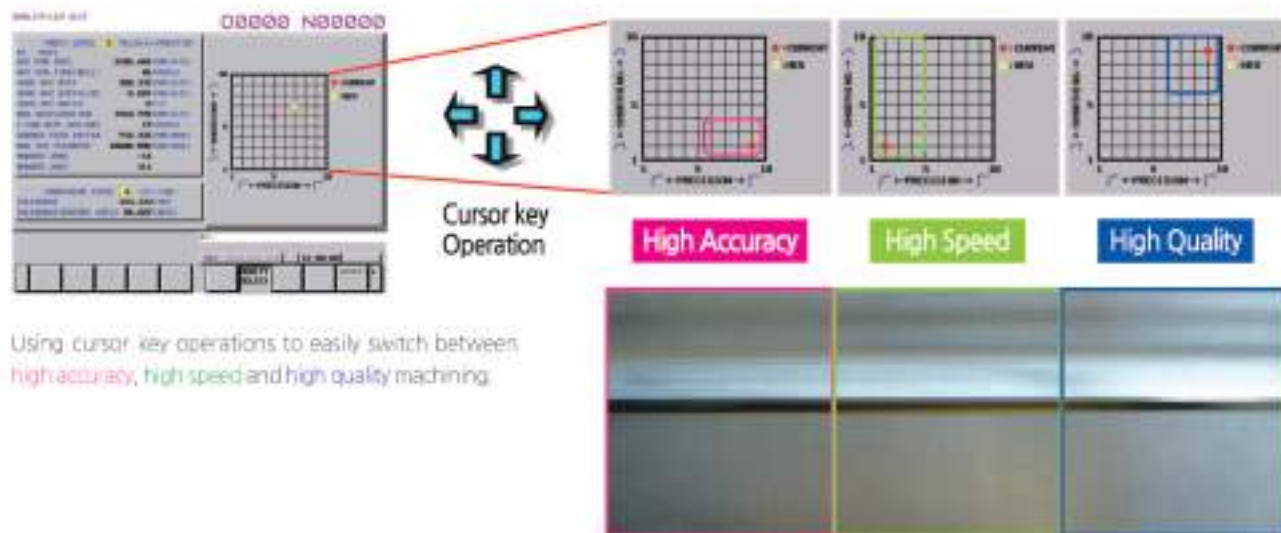


### Nano Smoothing ( F0i-MF : Option)

Produce smoother machined surfaces using NURBS curves created through nano interpolation:



### Adjust quality of machined surface using Nano Smoothing(F0i-MF : Option)



Using cursor key operations to easily switch between high accuracy, high speed and high quality machining.

### High Precision

Conditions	
Machine	LCV 1060
Material	A 1050P
Tool	∅25×4T
Spindle Speed	1,500RPM
Depth of Cut	0.1mm
Work Size	∅180
Cutting Feedrate	300m/min



BROKEN TOOL LASER DETECTION SYS.

### Accessories (Option)



Automatic Tool Length Measurement Unit



Coolant Gun (With Tank Opt.)



Oil Skimmer (With Tank Opt.)



Additional 1-axis



Additional 2-axis



Lift Up Chip Conveyor



Thru Spindle Coolant



Linear Scale Feed Back System



Full Splash Guard(LCV 850)





### Machine Specification

DESCRIPTION		LCV 850	LCV 1060	
Travel	X-axis	mm	2,000	2,500
	Y-axis	mm	850	1,060
	Z-axis	mm	800 (900)	900 (950)
	Distance from table surface to spindle nose	mm	200-1000	200-1100
	Distance from pallet center to column	mm	950	1,100
Table	Table size	mm	2,050x850	2,800x1,060
	Loading capacity	kgf	3,000	5,000
	Table surface configuration	mm	22H8 T-slot x p125 x 6ea	22H8 T-slot x p150 x 7ea
Spindle	Spindle Speed	min <sup>-1</sup>	7,000 (12,000)	7,000 (12,000)
	Maximum torque(30min/cont.)	N.m	768/498(421/238)	768/498(421/238)
	Bearing inner diameter	mm	∅100	∅100
Feedrate	Rapid Traverse(X/Y/Z)	m/min	20/20/16	16/16/16
	Cutting Feedrate(X/Y/Z)	mm/min	1-10,000	1-10,000
ATC	Tool Shank		BT50 (BBT50)	BT50 (BBT50)
	Tooling changing method		Double arm swing	Double arm swing
	Tool Changing Time(T-T)	sec	3	2.5
	Magazine Capacity	ea	30(40)	30(40)
	Tool Selection		Memory random	Memory random
	Maximum tool diameter[adjacent empty]	mm	∅110 [∅200]	∅110 [∅200]
	Maximum tool length/weight	mm/kgf	350/15	350/15
	Pull stud type		90° Type	90° Type
Motors	Spindle motor(cont./30min.)	kW	15/18.5 (25/30)	15/18.5 (25/30)
	Feed motor(X/Y/Z)	kW	7/6/7	6/6/6
Power Supply	kVA	48	47	
Floor Space(LxWxH)	mm	4,208x5,900x3,752	4,545x6,700x3,658	
Machine Weight	kgf	18,000	25,000	
CNC System		Fanuc 0i-MF	Fanuc 0i-MF	

\* Design and specifications subject to change without notice.

( ) : Option

#### Standard Accessories

- TOOL AND TOOL BOX
- FULL SPLASH GUARD(LCV 1060)
- HALF COVER(LCV 850)
- WORK LIGHT
- COOLANT SYSTEM(1.8KW) AND TANK
- MPG(DETACHABLE)
- STANDARD 90° DOOR INTERLOCK

#### Optional Accessories

- CHIP CONVEYOR
- 3-AXIS MPG
- THRU SPINDLE COOLANT
- AUTO TOOL LENGTH MEASUREMENT
- DATA SERVER
- ROTARY TABLE 4AXIS, 5AXIS
- LINEAR SCALE
- FULL SPLASH GUARD(LCV 850)
- 30 MAGAZINE
- 40 MAGAZINE
- HIGH COLUMN & Z AXIS STROKE EXPANSION
- SPINDLE THERMAL DISPLACEMENT REVISION

### NC Specification (FANUC Series)

Item	Specification	F 0i-MF
Controlled axis	feed axes	XYZ, (A,B)
	Max. feed axes	4(B) Axes
	Max. simultaneously controlled axis	4
Operation functions	Least command increment	0.001mm/0.0001"
	Pulse handle feed	X1, X10, X100
	Feedrate per minute	G94
Interpolation functions	Feedrate 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 rate override	F0, 25%, 50%, 100%
	Feedrate override	0-200%
Tool functions	Spindle orientation	
	Rigid tapping	
	Tool number command	T4-Digt / T3-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 length measurement	
	Absolute/incremental programming	
Program input	Multiple repetitive cycle	G70 ~ G76
	Canned cycles	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	900EA
	Setting and display	Alarm & Operator listor display
Run hour and parts count display		RUNNING TIME & PART NO. DISPLAY
Display spindle & servo overload		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(1280mj)
Manual guide I	Manual Guide I	Opt.