

# LCV 850/1060

BOX GUIDE TYPE  
VERTICAL MACHINING CENTER



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LCV 850/1060

LCV 850  
LCV 1060

## Box Guide Type Vertical Machining Center

# LCV 850/1060

### Large machining center ideal for machining large parts

- designed with 4 rows of box guideways and 2 sub guides for stable traverse
- ultra high precision gears with precision grinding to the spline inner diameter grooves
- two stage gear head with air-oil lubrication for high power, heavy duty cutty and minimal noise
- integrated bed with high-rigidity radial rib structure to minimize vibration during heavy duty cutting
- large open design allows load/unload of heavy workpieces without interference when the door is opened

Category		LCV 850	LCV 1060
Travel (X/Y/Z)	mm(inch)	2000/850/800(78.74/33.46/31.50)	2500/1060/900(98.43/41.73/35.43)
Table size	mm(inch)	2,050 × 850 × P125 (80.71 × 33.46 × P4.92)	2,800 × 1,060 × P150 (110.24 × 41.73 × P5.91)
Table loading capacity	kgf(lb)	3,000(6,613.87)	5,000(11,023.11)
Max. spindle speed	rpm	6,000	6,000
Spindle motor (cont/max)	kW(Hp)	15/25(20.12/33.53)	15/25(20.12/33.53)
Tool-to-tool time	sec	2.5	2.5
Rapid traverse (X/Y/Z)	m/min(ipm)	20/20/16(787.40/787.40/629.92)	16/16/16(629.92/629.92/629.92)
Tool storage capacity	EA	30(40)	30(40)



### High precision, high rigidity design

Integrated frame and high-rigidity spindle ensure powerful cutting capacity and high precision, providing excellent machining stability

### Optimized spindle design

By applying coolant circulation around the spindle bearing housing, thermal growth is minimized, enabling stable performance and improved spindle lifetime

### Easy Accessibility

With the door opened, the hoist can access the center of the table while the gap between the splash guard to the table was minimized, making it easy to load/unload workpieces

### Operator Convenience

The high performance NC option (S4 package), standard operator-centric OP Panel (15" screen) and eco-friendly coolant system maximizes operator convenience

High precision, high rigidity design



Box guideway design ideal for heavy-duty cutting, providing excellent machining stability

Feed axes (servo-motor direct drive)

Minimized backlash during axis feed by using direct coupling between servo-motor and ballscrew

Feed axis system

Box guideways enhance high rigidity and durability while the addition of SUB GUIDES help maintain precision for heavy loads

Optimized spindle design

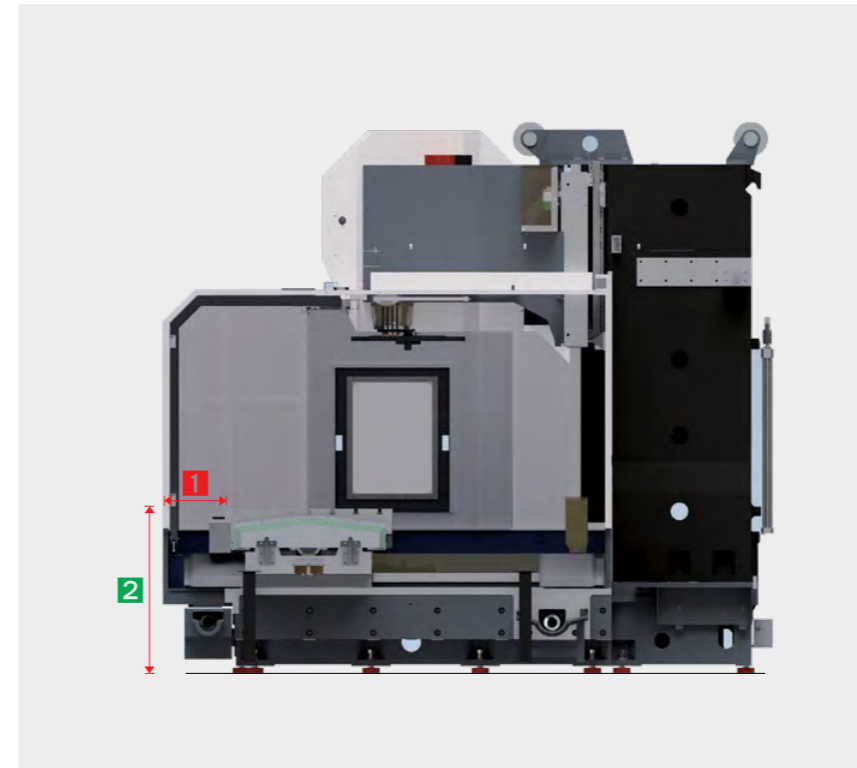


High power, high torque gearbox spindle ideal for heavy duty machining of large workpieces

JACKET Circulation Cooling

Semi-permanent grease lubrication applied to the bearings, while thermal growth is minimized using jacket circulation cooling around the bearing housing (a source of heat) via a Fan Cooler, ensuring stable performance and extending the lifetime of the spindle.

Superior Accessibility



- With the door opened, a hoist can be brought in past the center point of the table, making it very easy to move heavy materials into the machine
- The distance between the cover and the table was minimized for easy loading/unloading of materials and to allow access to the entire table surface

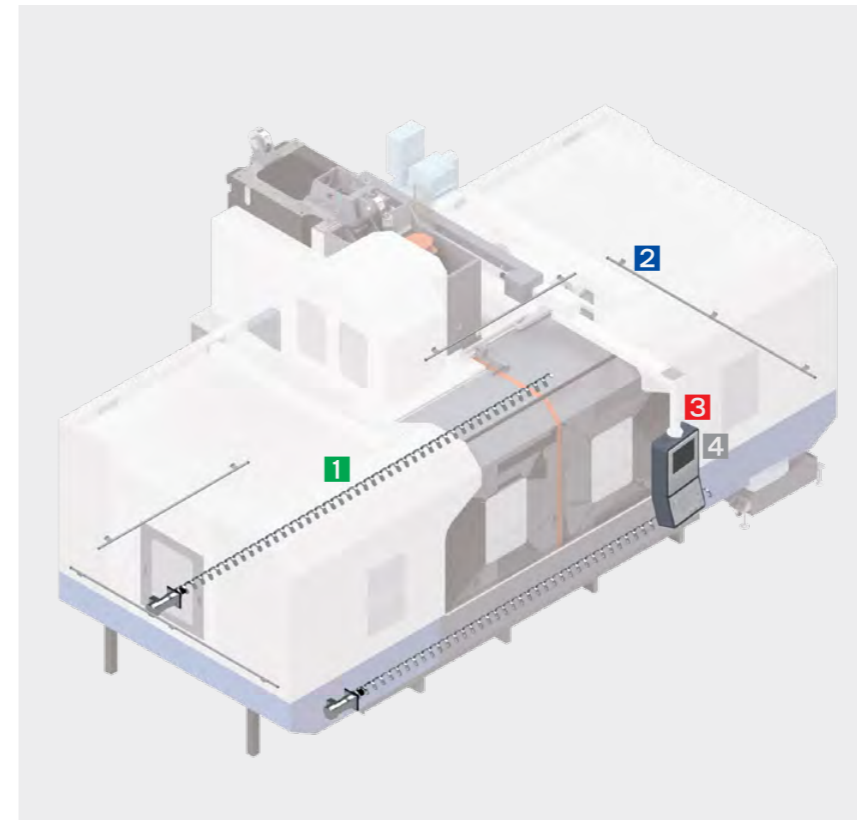
1 Distance between front door and table

390mm (15.36 inch)(LCV 1060)  
448.5mm (17.66 inch)(LCV 850)

2 Distance from floor to table top

1,045mm (41.14 inch)(LCV 1060)  
1,030mm (40.55 inch)(LCV 850)

Operator Convenience



1 Coil Conveyor

The 2 standard internal coil conveyors efficiently removes the chips that are created during machining

2 Bed Flushing (OPT : LCV 1060)

The standard bed flush system installed along the sides of the machine prevents chip build-up and ensure effective chip removal

3 Operator-centric 15" Large Screen OP Panel

The swivel-type OP Panel is easy to work with and the QWERTY keyboard and high visibility buttons and efficient arrangement improves operator convenience

4 Machining Performance Enhancing High Performance NC Options Made Standard

Data server and various NC options are made standard to significantly improve machining performance

# LCV 850/1060

VERTICAL MACHINING CENTER

## Machine Design

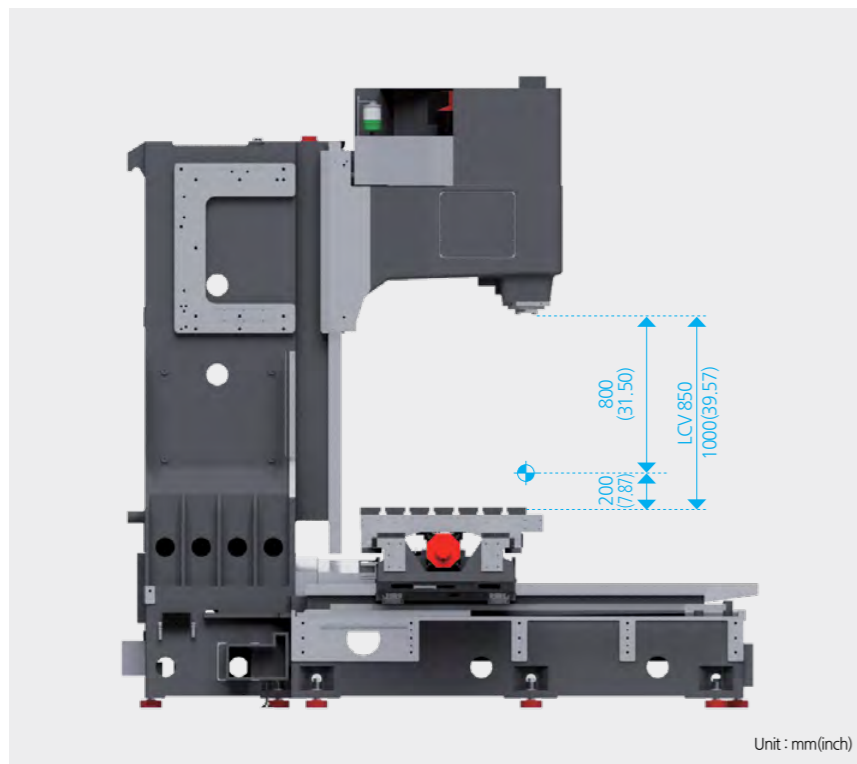


All feed axes use high rigidity box guideways to support heavy duty cutting, offering superb productivity with excellent rigidity

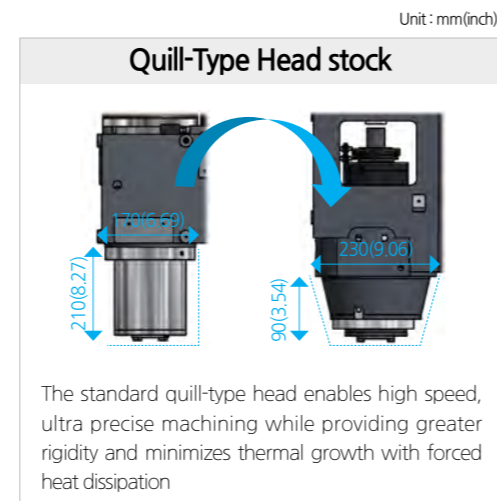
### High rigidity bed design

The contact area between the Y-axis guideway and the saddle is designed with a stable 1:2 ratio, ensuring stable saddle movement and preventing deflection

Model	Travel [mm (inch)]			Rapid Traverse [m/min (ipm)]		
	X-axis	Y-axis	Z-axis	X-axis	Y-axis	Z-axis
LCV 850	2,000 (78.74)	850 (33.46)	800 (31.50)	20 (787.40)	20 (787.40)	16 (629.92)
LCV 1060	2,500 (98.43)	1060 (41.73)	900 (35.43)	16 (629.92)	16 (629.92)	16 (629.92)



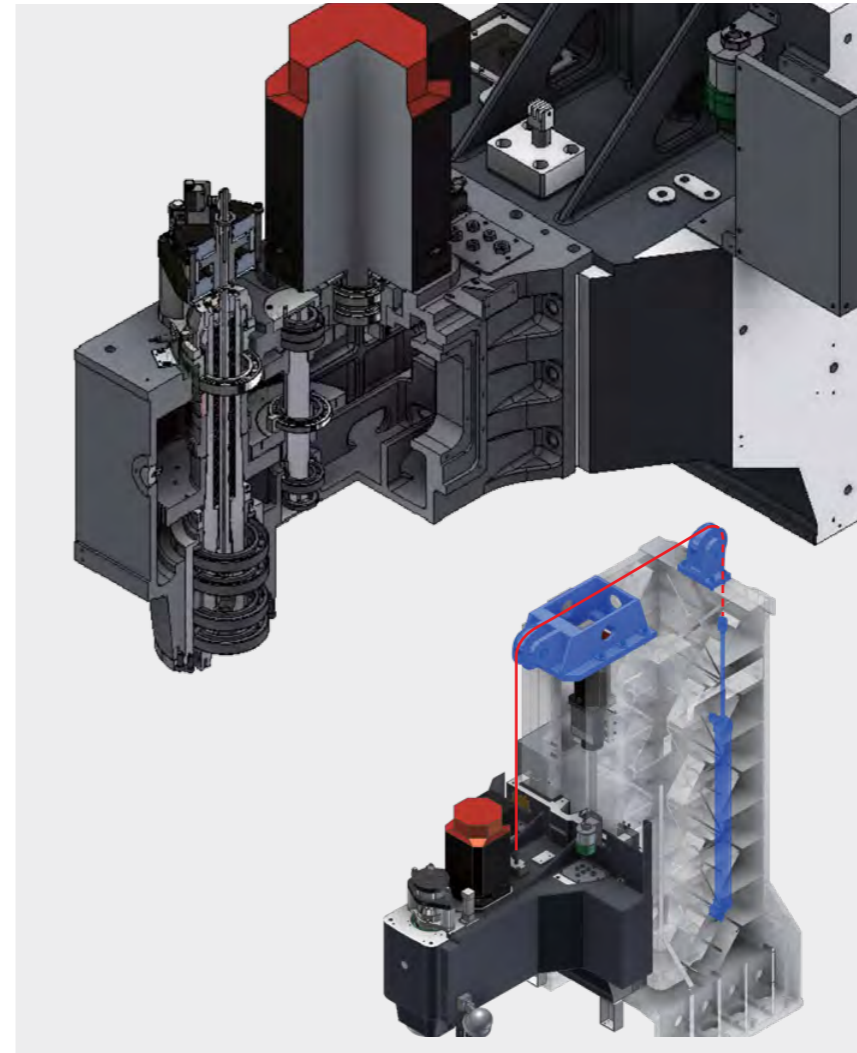
Unit : mm (inch)



### Spindle to table-top distance

(LCV 850)  
**200~1000mm (7.87~39.47 inch)**  
 (LCV 1060)  
**200~1100mm (7.87~43.31 inch)**

## Spindle



The ultra precision spindle is supported by 4 rows of P4 class high-speed angular bearings allowing high speed, high precision machining with the direct-coupled head that minimizes thermal growth through forced heat dissipation.

### Gear Head Type

**Max Spindle Speed**  
**6,000rpm**  
**Power (Cont/Max)**  
**15/25kW (20.12/33.53 Hp)**  
**Torque (Cont/Max)**  
**497.5/830N·m**  
**(366.96/612.21 lbs-ft)**

### Hydraulic head balancing cylinder

Prevents ball screw overload from the head weight and damage to the workpiece from the head dropping due to sudden power loss, while maintaining long term high precision by preventing wear on the head slideway



### Standardized Dual-Contact Spindle

The dual-contact system that provides taper and flange contact when tool holders are clamped into the spindle

- with both the taper and flange in contact, improved stability with reduced vibration
- improved machining capability and surface finish under extreme conditions
- 100% compatible with current tools

# LCV 850/1060

VERTICAL MACHINING CENTER

## ATC / Magazine



### ATC Magazine

Designed with a standard 30 tool magazine with short travel distance to enable quick tool changes

Fast and errorless tool changes are made possible using the memory random technique and double arm type tool changer, minimizing non-cutting time

Tool storage capacity : **30(40)**ea

Tool-to-tool time : **2.5**sec

Max. tool dia. [adjacent empty] :

**110[200]**mm (4.33[7.87] inch)

Max. tool length :

**300**mm (LCV 850) (11.81 inch)

**350**mm (LCV 1060) (13.78 inch)

Max. tool weight : **15**kg (33.07 lb)



## Table

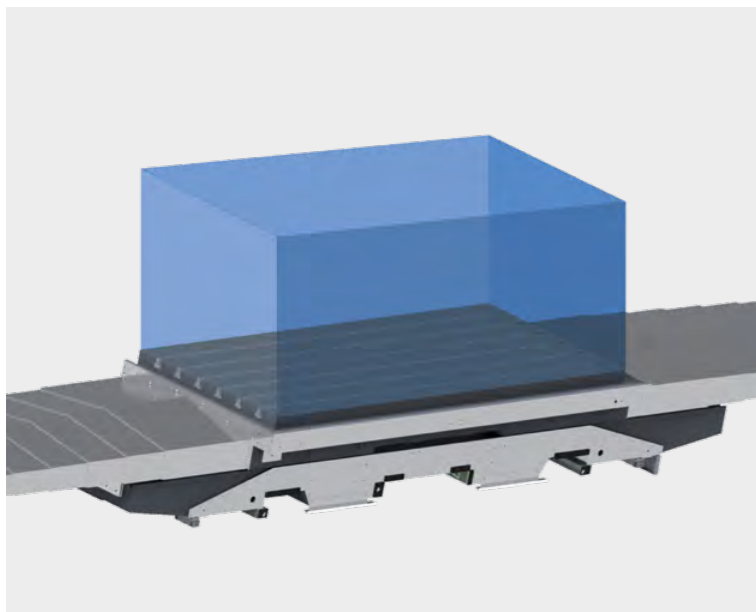


Table size and loading capacity were increased to support larger work area

Table size :

**2,050×850**mm (80.71×33.46") (LCV 850)

**2,800×1060**mm (110.24×41.73") (LCV 1060)

Table surface :

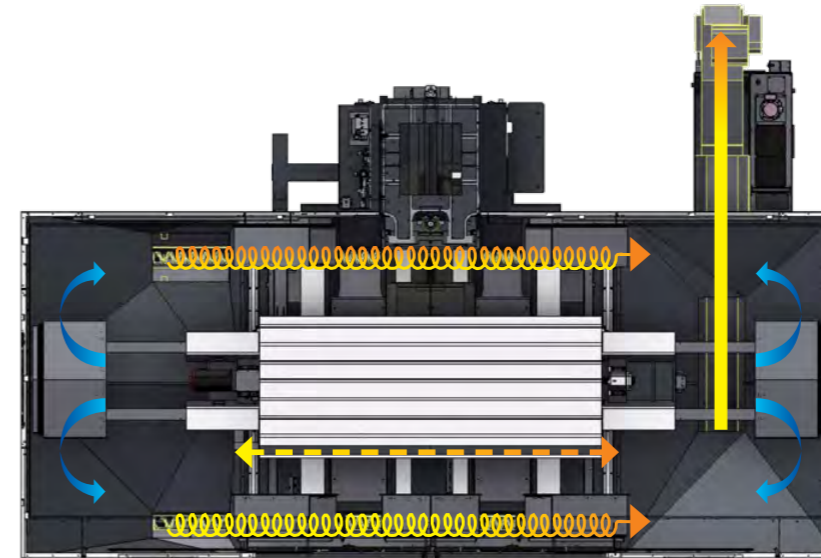
**22H8×p125×6**ea (LCV 850)  
(0.87H8×p4.92×6ea)

**22H8×p150×7**ea (LCV 1060)  
(0.87H8×p5.91×7ea)

Table loading capacity :

**3,000**kgf (LCV 850) | **5,000**kgf (LCV 1060)  
(6,613.87 lbs) | (11,023.11 lbs)

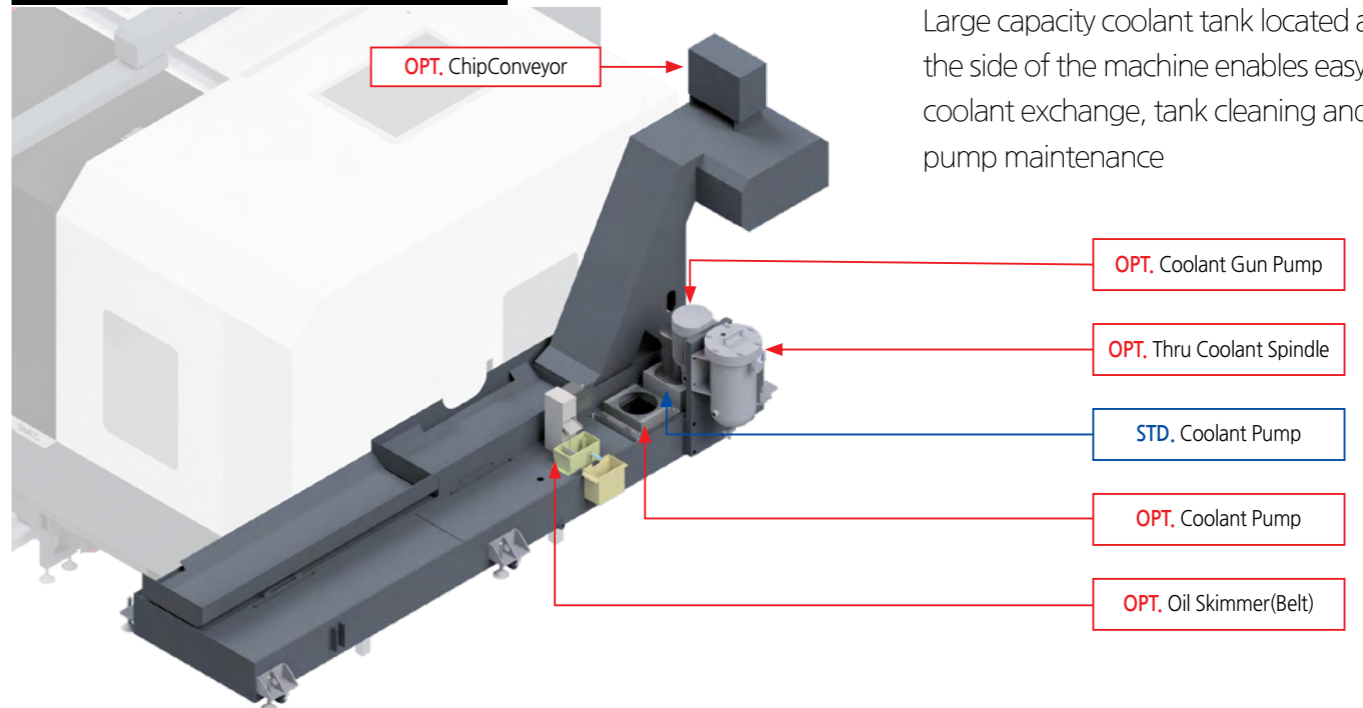
## Eco-Friendly Chip Disposal



Complete chip discharge through the series of chip disposal processes by the coolant nozzle, bed flush, coil conveyor and chip conveyor

- All surfaces such as SLIDE COVER, BASE COVER are angled
- All locations where chips are expected to drop have standard angled chutes installed to discharge chips to the side coolant tank
- Coil conveyors are installed onto the bed instead of the S/GUARD preventing damage to the S/GUARD and reducing noise during operation

## Automated Coolant Supply



Large capacity coolant tank located at the side of the machine enables easy coolant exchange, tank cleaning and pump maintenance

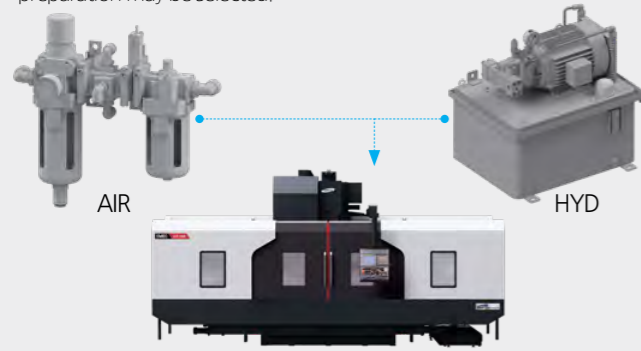
Coolant tank capacity : **350**ℓ (92.46 gal) (LCV 850)

**645**ℓ (170.39 gal) (LCV 1060)

Options

Rotary table and air/hyd fixture preparation

Components necessary for the installation of rotary table and fixtures may be added during assembly wherein hydraulic or pneumatic preparation may be selected.



Linear scale

Use of linear scales enhances precision as each feed axis is able to accurately traverse to the commanded location



Tool measurement probe

Various automated tool diameter, length and lifetime measuring devices may be installed.



Measurement method : Touch probe  
Repeatability : ± 1 μm

Measurement method : Non-contact  
Repeatability : ± 0.1 μm  
Min. tool detection : 0.03mm

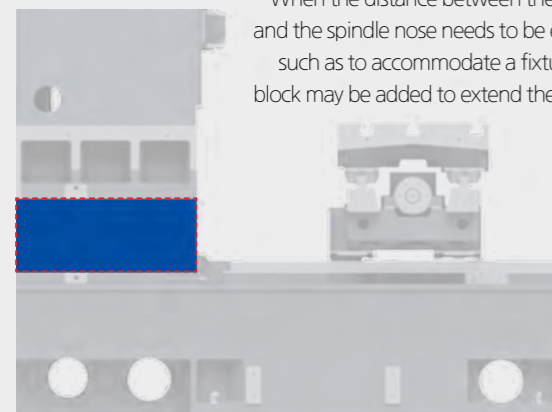
Chip conveyor

Equipment meant to remove chips created during machining



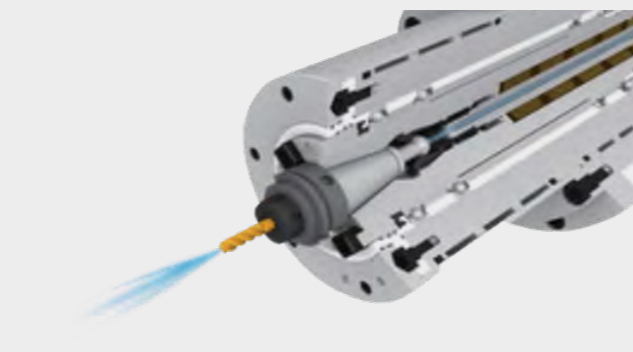
High column

When the distance between the table top and the spindle nose needs to be extended, such as to accommodate a fixture, a riser block may be added to extend the distance.



Through spindle cooling (TSC)

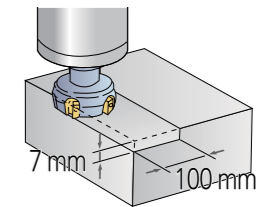
The TSC option may be added to improve machining effectiveness



Cutting performance

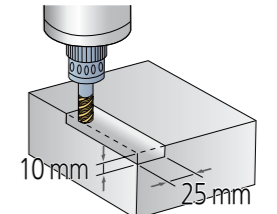
Face mill [Ø125mm (Ø4.93")] / Carbon steel (SM45C)

Chip removal rate [cm³/min (inch³/min)]	Spindle speed (r/min)	Feedrate [mm/min (ipm)]
762.3 (46.52)	968	871 (34.29)



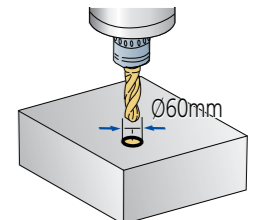
End mill [Ø25mm (Ø0.99")] / Carbon steel (SM45C)

Chip removal rate [cm³/min (inch³/min)]	Spindle speed (r/min)	Feedrate [mm/min (ipm)]
201.38 (12.29)	895	806 (31.73)



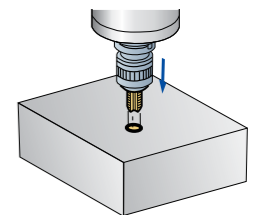
U-Drill [Ø60mm (Ø2.37")] / Carbon steel (SM45C)

Chip removal rate [cm³/min (inch³/min)]	Spindle speed (r/min)	Feedrate [mm/min (ipm)]
180 (10.98)	318	60 (2.52)



Tap / Carbon steel (SM45C)

Feedrate [mm/min (ipm)]	Spindle speed (r/min)	Tap size [mm (inch)]
299 (11.77)	100	M33×3.5 (M1.30×0.14)

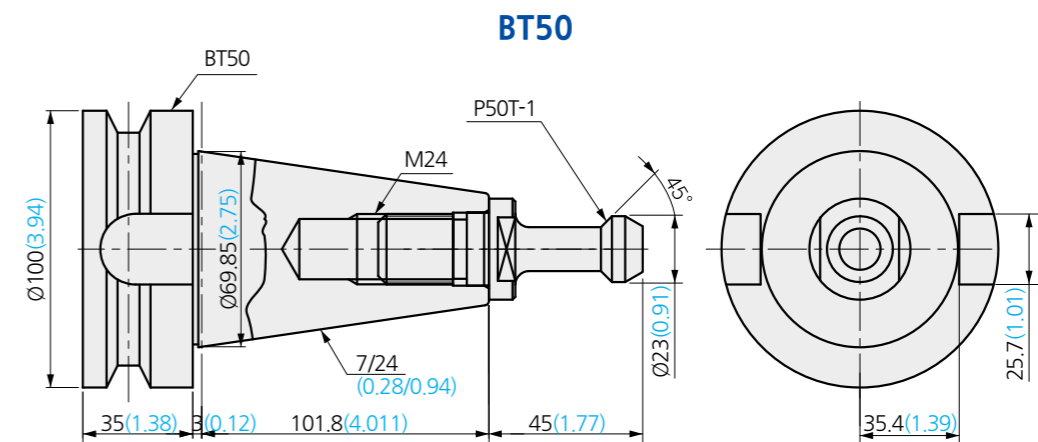


TEST conditions : LCV 1060 - 6,000rpm [BT50]

※ The above data is based on internal testing. Values may change depending on cutting conditions.

Tool Shank

Unit : mm (inch)



※ STD pull stud type is MAS P50T-1F(90°) for Gear Type

# LCV 850/1060

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## Spindle Power & Torque Diagram

Max Spindle Speed

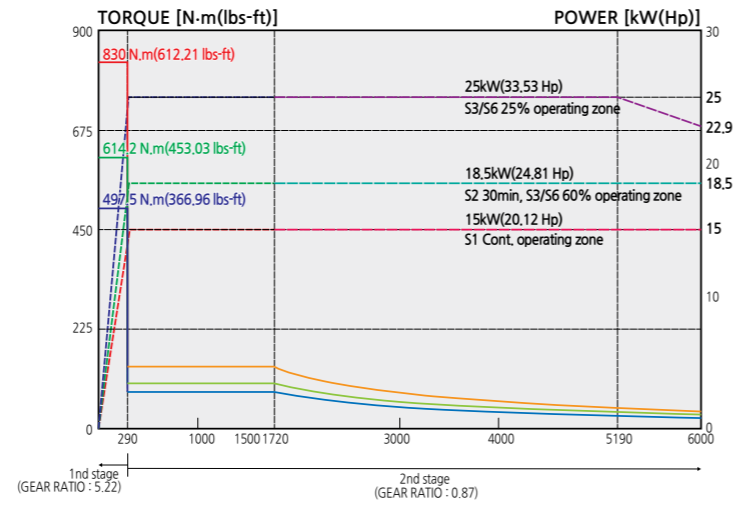
**6,000** rpm

Power (Cont/Max)

**15/25** kW (20.12/33.53 Hp)

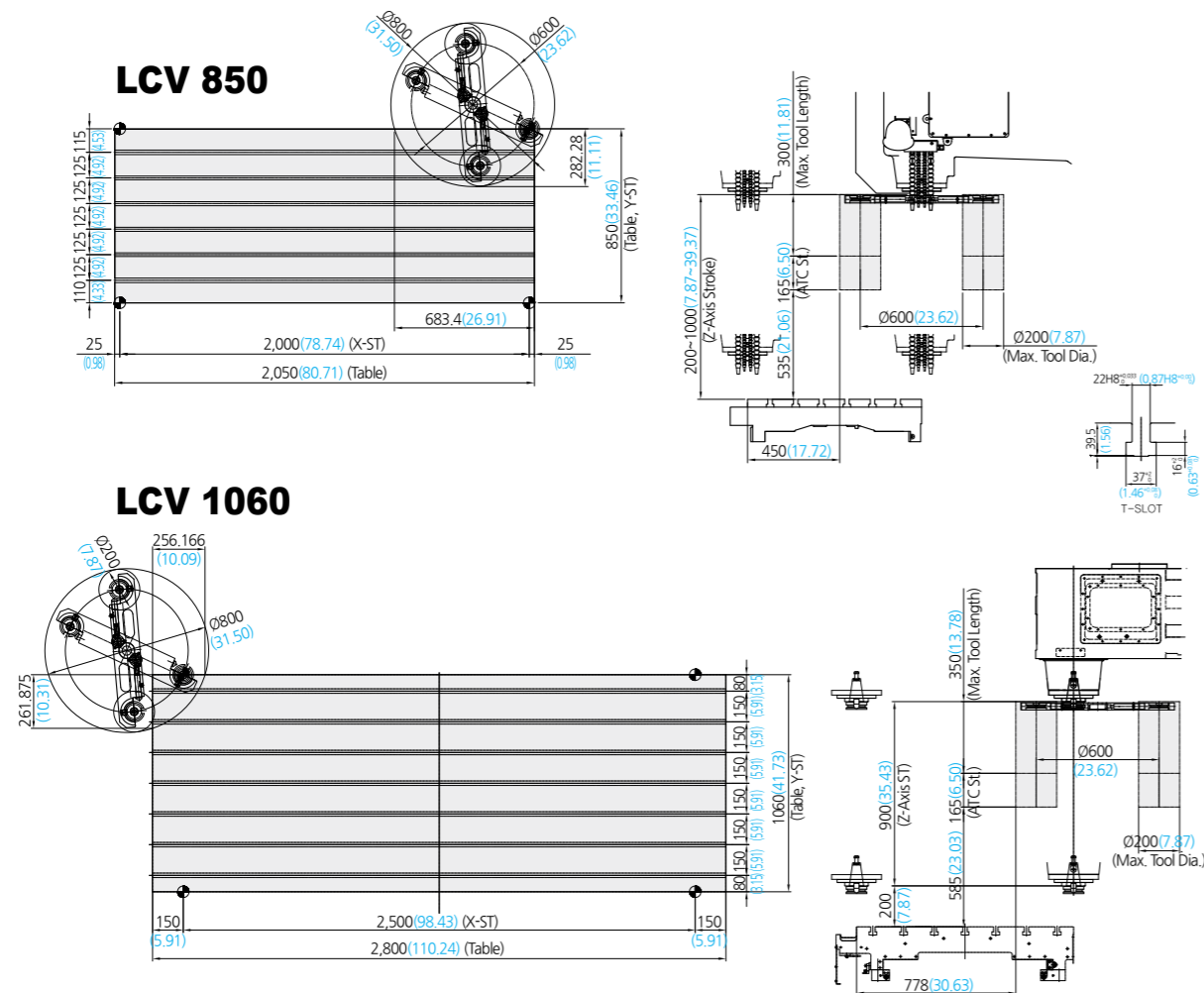
Torque (Cont/Max)

**497.5/830** N·m  
(366.96/612.21 lbs-ft)



## Table & T-Slot / ATC Interference

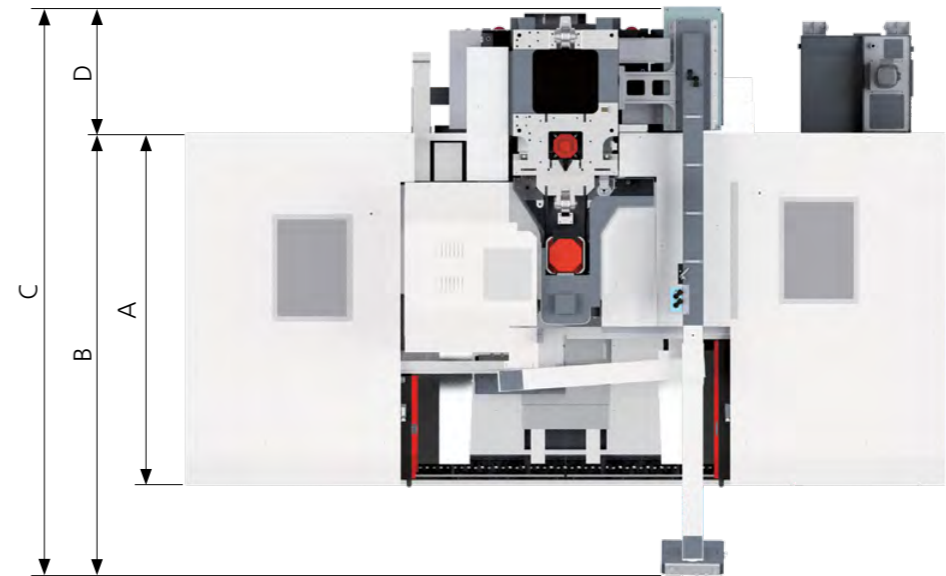
Unit : mm (inch)



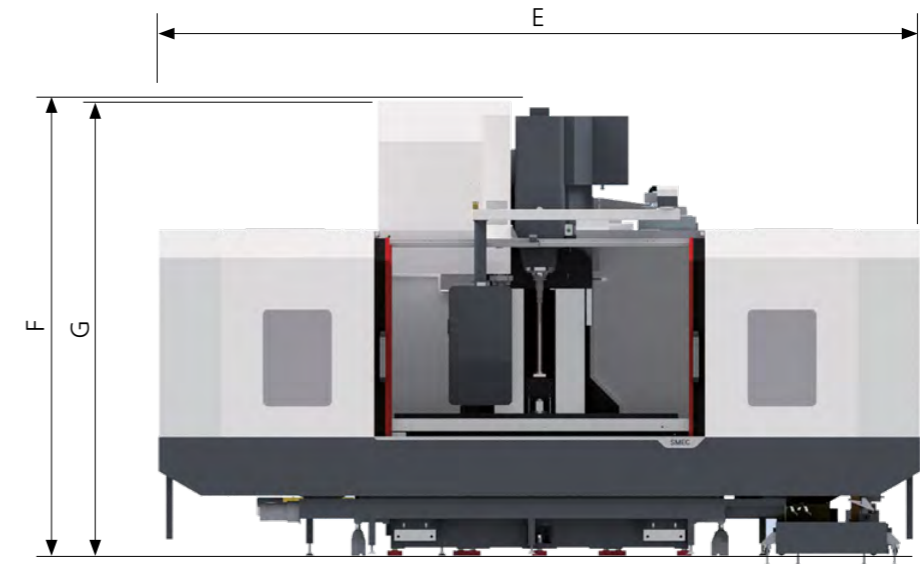
## Machine Dimensions

Unit : mm (inch)

### Top view



### Front view



Model	A (Length)	B	C	D	E (Width)	F (Height)	G
LCV 850	3,576 (140.79)	4,359 (171.61)	4,789 (188.54)	485 (19.09)	5,500 (216.54)	3,756 (147.87)	3,132 (123.31)
LCV 1060	4,051 (159.49)	4,651 (183.11)	5,300 (208.66)	460 (18.11)	6,700 (263.78)	3,660 (144.09)	3,385 (133.27)

Machining Solution (STD)

# S4(SMEC SMOOTH SURFACE SYSTEM) Package

High performance NC options to improve machining performance provided as standard



15 inch LCD monitor standard	
AICC II (AI Contour Control II)	Efficient accel/deceleration (200 block look ahead)
Jerk control	Speed control during acceleration changes
Smooth tolerance plus control	Stable curved shape forming
Machining conditions selection function	Adjust accuracy level according to machining conditions
Machining quality selection function	
Manual Guide i	Visual machining check and setup guide
Data server	Transfer large program files
Part program storage	2MB (5,120M)
Number of registered programs	1,000ea



IoT Solution (OPT)



## NC-Gate / IoT-Gate

The NC-Gate / IoT-Gate that was developed in-house with our ICT technology is a universal gateway that not only interworks with our machine tools, but machine tools from other manufacturers, robots, automation equipment, and analog / digital sensors as a network device capable of bi-directional communication.

Supported drivers : Fanuc / Mitsubishi / Siemens NC, Modbus TCP, DeviceNet, Profibus, Ethernet, AI/DI/DO

### KPI (Key Performance Indexes)

Provides key performance indicators and displays target achievement

- Indicators : achievement rate, productivity, process defect rate, equipment and factory usage, quality defect rate, lead time, and average cycle time

### OEE (Overall Equipment Effectiveness)

Provides figures and graphs of overall equipment effectiveness

- Availability, performance, quality, etc.

### Realtime Monitoring

Provides operation status and alarm information in case of problems in the production line

- Provides information about the operation status, speed, production alarms, etc. of each machine

### Remote Control/Management

Remote control and operation

- Emergency stop switch, program editing, etc.

### Remote A/S

Problem diagnosis via remote control

- Provide remote diagnosis services to users via the IoT solution

SMEC User Interface



## Fanuc Oi MF Plus

- 15" LCD color display
- Part program size 2MB
- High quality designed OP Panel
- SMEC Custom S/W
- Portable M.P.G

SMEC Custom S/W displayed using MDI's button or OP Panel's button

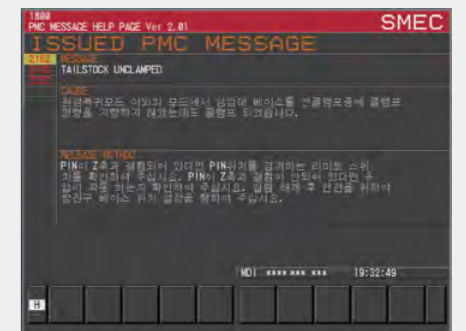
**CUSTOM** : Provide operator convenience and improve productivity using the support function for tool management and additional device setting.

## SMEC HMI



### M/G-Code check function

Allows the operator to directly read the M/G-Code on the machine for easy application programming

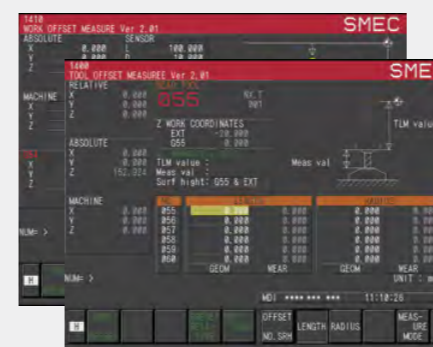


### PMc alarm check function

When a PMc alarm occurs, the cause and countermeasures are described in detail, making operation and maintenance more convenient



### ATC Magazine status check, setting and maintenance function



### Work coordinates, tool setting support function



### Counter for each T-Code

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## VERTICAL MACHINING CENTER

### Standard / Optional

Category		LCV 850	LCV 1060
<b>Spindle</b>			
RPM	6R	●	●
Spindle chiller		○	○
<b>ATC</b>			
Tool type	BBT50	●	●
	CAT50	○	○
	HSK-A63	X	X
Pull Stud	15°	○	○
	45°	●	●
<b>Table &amp; Column</b>			
T-slot table		●	●
High column	200mm(7.81")	○	○
	300mm(11.81")	○	○
<b>Coolant Equipment</b>			
FULL SPLASH GUARD		●	●
Shower coolant		○	○
Coolant gun		○	○
Bed flushing		○	○
Air gun		○	○
Air blow		○	○
Tool measurement air blow (with tool measuring device)		○	○
Internal screw conveyor		●	●
Chip conveyor, HINGE	Left	○	○
	Right	○	○
	Rear	X	X
Chip conveyor, SCRAPER	Left	○	○
	Right	○	○
	Rear	X	X
Chip bucket	STD (380ℓ)	○	○
	Rotating (200ℓ)	○	○
<b>Electrical Equipment</b>			
3 step patrol lamp & buzzer		●	●
Elec. cabinet light		○	○
Remote MPG		○	○
3-axis MPG		●	●
Work counter	GUI	●	●
Total counter	GUI	●	●
Tool counter	GUI	●	●
Multi counter	GUI	●	●
Residual current breaker		○	○

● : Standard ○ : Optional X : N/A

Category		LCV 850	LCV 1060
<b>Electrical equipment</b>			
AVR (Auto Voltage Regulator)		○	○
Transformer	65kVA	○	○
Auto Power Off		○	○
Power outage backup module		○	○
<b>Precision machining option</b>			
AICC II (AI Contour Control II)		●	●
Jerk control		●	●
Smooth tolerance plus control		●	●
Machining condition selection function		●	●
Machining quality selection function		●	●
Data server		●	●
Manual guide i		●	●
<b>Measurement</b>			
Workpiece contact check device	TACO	○	○
	SMC	○	○
Auto tool measuring device		○	○
Tool breakage detection		○	○
Linear scale	X-axis	○	○
	Y-axis	○	○
	Z-axis	○	○
Coolant level detection		○	○
<b>Environmental</b>			
Air conditioner		○	○
Oil mist collector		○	○
Oil skimmer		○	○
<b>Fixture &amp; automation</b>			
Auto door	STD	○	○
	High speed	X	X
Auto shutter		X	X
Operation sub-console		○	○
NC rotary table		○	○
NC rotary table interface		○	○
Rotary table control	+1 axis	○	○
	+2 axis	○	○
Add. M-code (4 sets)		○	○
Robot interface		○	○
I/O expansion		○	○
<b>Hydraulic equipment</b>			
Hydraulic unit for fixtures		○	○
<b>Safety device</b>			
Door interlock		●	●
KCs		●	●

\* For detailed information, please contact your local SMEC dealer.

### Machine Specifications

Category		LCV 850	LCV 1060	
Travel	X-axis travel	mm(inch)	2,000(78.74)	2,500(98.43)
	Y-axis travel	mm(inch)	850(33.46)	1060(41.73)
	Z-axis travel	mm(inch)	800(31.5)	900(35.43)
	Spindle to table surface	mm(inch)	200 ~ 1000(7.87 ~ 39.37)	200 ~ 1100(7.87 ~ 43.31)
Table	Table size	mm(inch)	2,050 × 850(80.71 × 33.46)	2,800 × 1,060(110.24 × 41.73)
	Table loading capacity	kgf(lb)	3,000(6,613.87)	5,000(11,023.11)
	Table surface	mm(inch)	22H8 T-slot × p125 × 6ea (0.87H8 T-slot × p4.92 × 6ea)	22H8 T-slot × p150 × 7ea (0.87H8 T-slot × p5.91 × 7ea)
Spindle	Spindle speed	rpm	6,000	6,000
	Power (Cont/Max)	kW(HP)	15/30(20.12/40.23)	15/30(20.12/40.23)
	Torque (Cont/Max)	N.m(lbs.ft)	390.5/780(288.03/575.33)	390.5/780(288.03/575.33)
Feedrate	X-axis rapid traverse rate	m/min(ipm)	20(787.40)	16(629.92)
	Y-axis rapid traverse rate	m/min(ipm)	20(787.40)	16(629.92)
	Z-axis rapid traverse rate	m/min(ipm)	16(629.92)	16(629.92)
ATC	Tool shank	-	BT50(BBT50)	BT50(BBT50)
	Pull stud	-	MAS P50T-1	MAS P50T-1
	Tool storage capacity	ea	30(40)	30(40)
	Max tool diameter [adjacent empty]	mm(inch)	110[200](4.33[7.87])	110[200](4.33[7.87])
	Max tool length / weight	mm/kgf(inch/lb)	300/15(11.81/33.07)	350/15(13.78/33.07)
	Tool-to-tool time	sec	2.5	2.5
	Tool changing method	-	Double Arm Swing	Double Arm Swing
Machine	Tool select type	-	Memory random	Memory random
	Size [with SIDE chip conveyor] L×W×H	mm(inch)	4,206[4,789] × 5,900 × 3,752 (165.59[188.54] × 232.28 × 147.72)	4,545[5,300] × 6,700 × 3,658 (178.94[208.66] × 263.78 × 144.02)
	Size [with REAR chip conveyor] L×W×H	mm(inch)	-	-
Weight	kg(lb)	18,000(39,683.21)	25,000(55,115.57)	
Coolant tank capacity	Liter(gal)	350(92.46)	645(170.39)	
Electric power supply	kVA/V	52/220	52/220	
Controller		FANUC Oi-MF Plus	FANUC Oi-MF Plus	

\* Design and specifications are subject to change without notice.

# LCV 850/1060

VERTICAL MACHINING CENTER

## NC Specification / FANUC

● : STD ○ : Optional X : N/A



Category	0i-MF Plus	
Controlled axis	Controlled axes	X, Y, Z
	Max simultaneously controlled axes	4
	Least input increment	0.001mm / 0.0001"
	Built-in stroke limit	Soft overtravel 1, 2, 3
	Machine lock	●
Operation function	Manual handle feed	X1, X10, X100
	Dry run	●
	Single block	●
	Feed per minute	G94
	Feed per revolution	G95
	DNC operation	Ethernet, CF card
	Retraction for rigid tapping	●
Interpolation function	Linear interpolation	G01
	Circular interpolation	G02, G03
	Dwell	G04
	Cylindrical interpolation	G70.1
	Skip	G31
	Fine surface machining	●
	Smooth tolerance control	●
	Nano smoothing	●
	Polar coordinate interpolation	X
	Reference position (zero) return	G28
	Reference position (zero) return check	G27
	2nd, 3rd, 4th reference point return	G30
	Feed function	Rapid traverse override
Feedrate override		0~200%
Jog override		0 ~ 5,000 mm/min
AI look ahead		20 block
AI contour control II		200 block
Look ahead block expansion (F0) (400 Block)		○
High-speed processing		X
Look ahead block expansion (F31i)		X
Jerk Control		●
Spindle function	Spindle orientation	●
	Rigid tapping	M29
	Spindle override	50 ~ 150%
Tool function	Tool number command	T2-Digt Tool number
	Tool nose radius compensation	G40 ~ G42
	Tool offset pairs	400 pairs
	Tool geometry / wear offset	●
	Tool length offset	●
	Tool life management	●
	Tool path graphic display	●

## NC Specification / FANUC

● : STD ○ : Optional X : N/A



Category	0i-MF Plus		
Program input	Absolute / incremental command	G90/G91	
	Repeating canned cycle	X	
	Repeating canned cycle 2	X	
	Canned cycles	X	
	Drilling canned cycle	G73/74/76, G80~89	
	Decimal point input	●	
	Inch / metric conversion	G20 / G21	
	Program restart	●	
	Sub program call	●	
	Max programmable value	±99999.999mm/±9999.9999"	
	M function	3 digit	
	Custom macro	●	
	Addition of custom macro common variables	#100~#199, #500~#999 (#98000~#98499)	
	Programmable data input	G10	
	Tape code	ISO / EIA	
	Optional block skip	●	
	Workpiece coordinate system	G52 ~ G59	
	Addition of workpiece coordinate system	48(300) pairs	
	Interface function	Embedded ethernet	●
		Fast ethernet	100 Mbps
Setting and display	Alarm and operator history display	●	
	Run hour and parts count display	●	
	Loadmeter display	●	
	Self diagnosis function	●	
	Extended part program editing	●	
	Machining condition selecting function	●	
	Machining quality level adjustment	●	
	Display screen	15" LCD	
	Multi-language display	25 language	
	Data input/output	Fast data server	●
RS232C interface		●	
Memory card input / output		●	
USB memory input / output		●	
Editing operation	Part program storage size	2MB	
	Number of registered programs	1,000EA	
	Manual guide i	●	