

SMEC

LCV 400D

VERTICAL TAPPING CENTER



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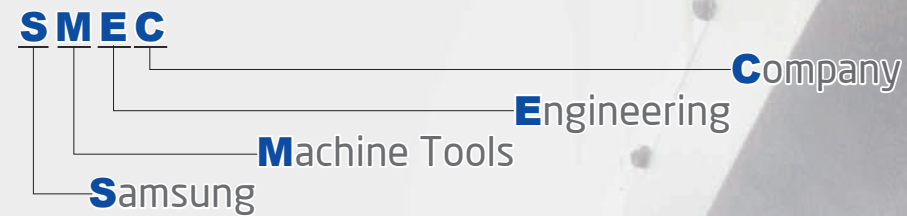


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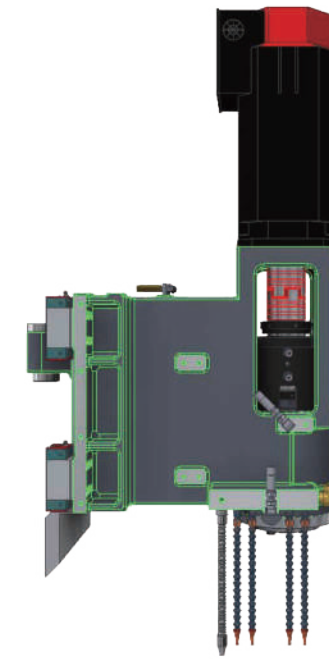
- 1988 - Started as Samsung Heavy Industries Machine Tools Business
- 1989 - Horizontal and vertical machining center technology partnership with OKK Japan
- 1991 - Turning center and vertical machining center technology partnership with Mori Seiki
- 1996 - 5-sided processing center technology partnership with Toshiba
- 1999 - Spun out from Samsung Aerospace Industries and established SMEC Co., Ltd



LCV 400D

Great Productivity, BBT40 Vertical Tapping Center

- Powerful roller guide on all axis
- Column moving structure
- High speed and precision and productivity column moving type tapping center
- User friendly OP SUPPORT ARM



**High speed and
High rigidity direct spindle**

Spindle Speed
12,000 rpm

Spindle Motor
11/7.5 kW

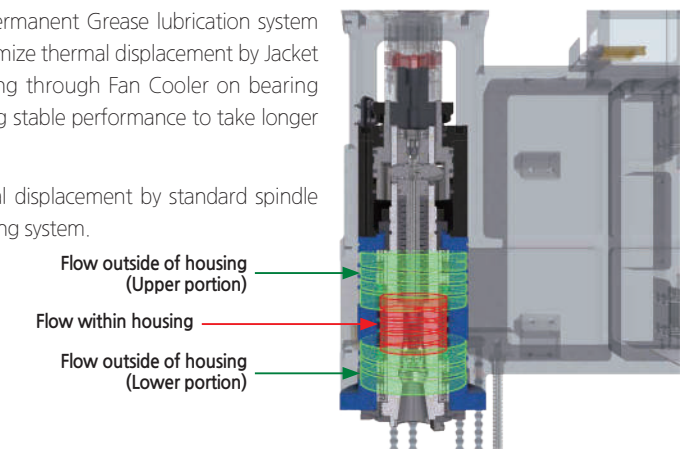
Spindle Torque
48/69.6 N.m

It can transmit motor rpm, power, torque to tools without loss since Motor direct type(Fanuc, Siemens) is connected by coupling without extra power transmission.

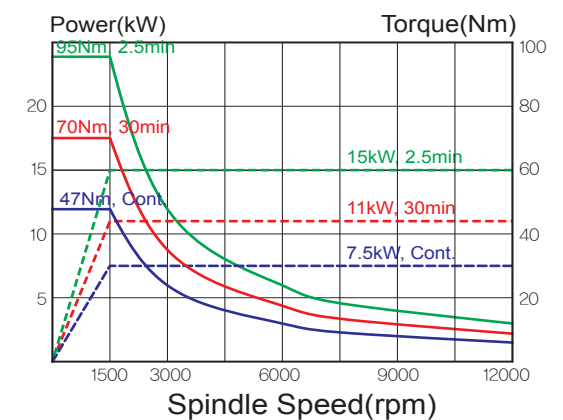
Main spindle cooling method

Adopting semipermanent Grease lubrication system on bearing, minimize thermal displacement by Jacket circulation cooling through Fan Cooler on bearing housing, showing stable performance to take longer spindle life time.

Minimize thermal displacement by standard spindle motor base cooling system.



Main-Spindle Power & Torque Diagram



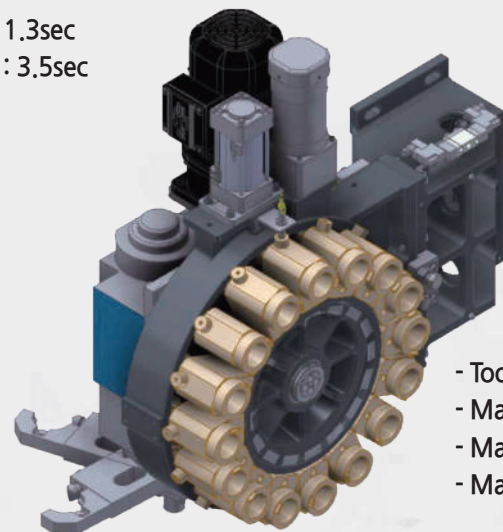
High-speed tool changer being driven by enhanced technologies



ATC & Magazine

The standard unit has a 16 tool turret-type magazine. While the twin-arm type offers fast tool changes of 1.3 second Tool to Tool and 3.5 second Chip to Chip, minimizing the amount of non-cutting time..

Tool to Tool : 1.3sec
Chip to Chip : 3.5sec



- Tool type : MAS 403 BT-40
- Max tool number : 16 tools
- Max tool diameter : Ø80 (There is closing tool or not)
- Max tool length : 200mm

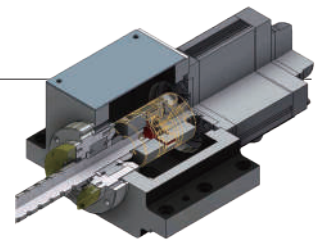


the most advanced mechanism of high-speed technology

Servo Motor

Travel precision was improved by directly connecting the ballscrew with high reliability digital servo motors for each axis.

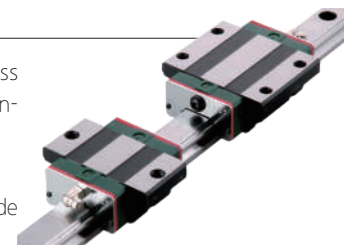
- There is no intermediate channel to transmit power but using coupling
- Minimize back lash during axis moving



Guide Way

The use of LM Guides with superb responsiveness increased rapid traverse speeds and reduced non-cutting time while minimizing noise during travel.

- Strengthen speed, rigidity, durability
- Much better durability comparing with Ball LM Guide to realize precision moving and longer life time



Ball Screw

The ballscrews were anchored on both ends using 4 rows of Angular Thrust Bearings with pre-tension to prevent thermal expansion due to the increased temperature of the ballscrew during operation and backlash.

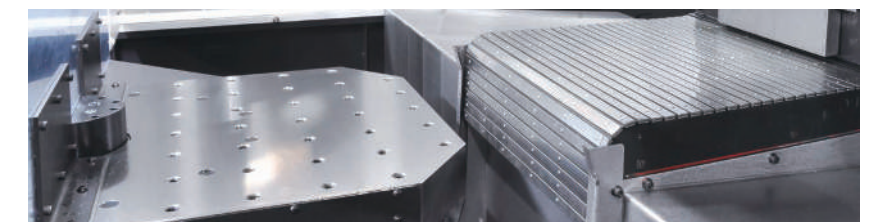
In addition, the ballscrews are directly coupled to the servo motor to enable precise axis travel.

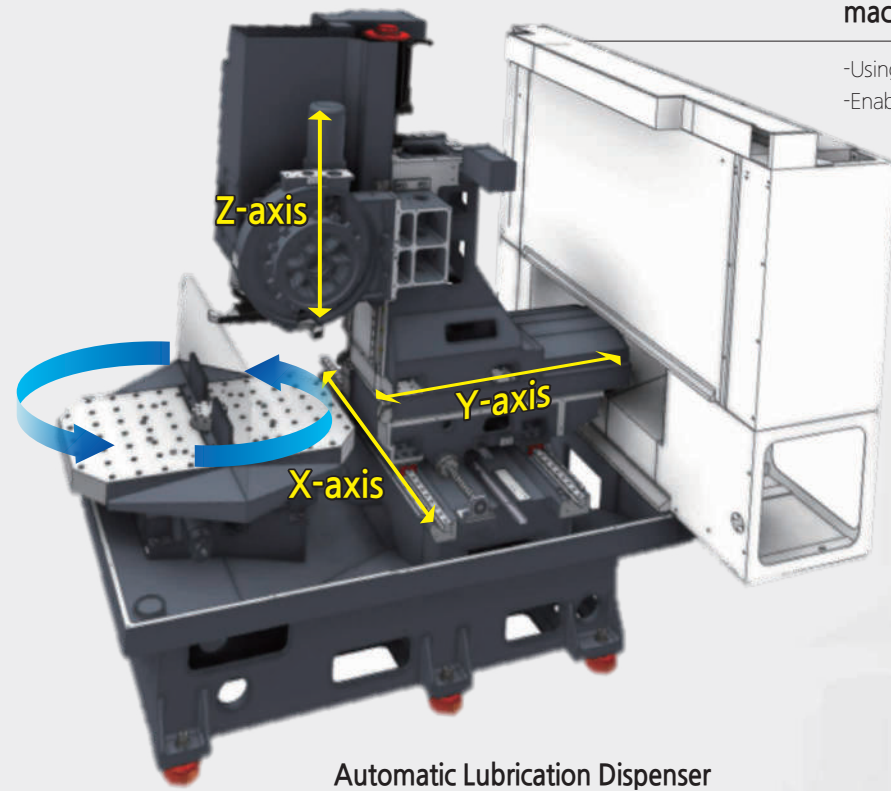


Optimized high-performance features

Table

The wide table work surface and completely enclosed slide way structure keeps chips and coolant out of the guideways.





High rigidity & function C type machine structure

- Using High rigidity Roller LM Guide for all axis
- Enable to fast and stable moving

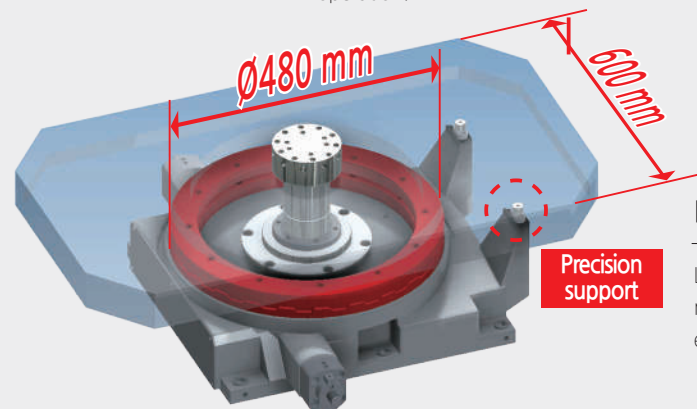
X-Axis
550 mm

Y-Axis
400 mm

Z-Axis
350 mm

Automatic Lubrication Dispenser

Automatic lubrication dispenser that reliably dispenses the required amount of lubrication to the required travel axes. Lubrication is only dispensed when the travel axes is in operation, reducing the amount of lubrication that is consumed. When there is problem on lubrication line it shows warning message on a screen and stop the machine for users safety operation.



Reliable Lubrication Dispenser

Lubrication pump adopted LUBE which is one of the most reliable brand and offers exact amount of oil on each face.



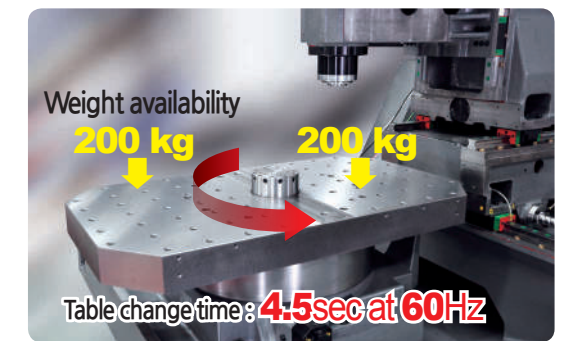
Centralized Operation Panel

8.4inch color LCD

Swivel operation panel with 90 degree for convenient operation and work access
Wide alarm message of all kinds of errors to support user's convenience

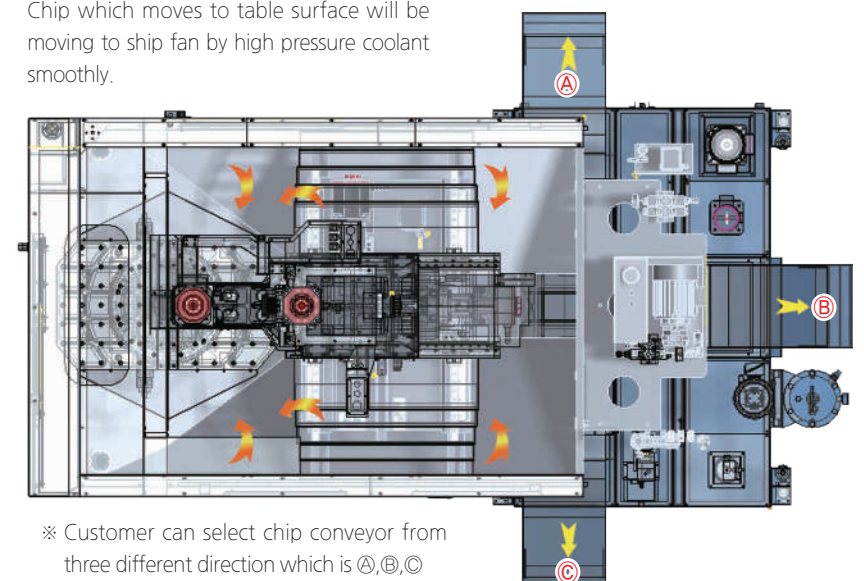
High speed and rigidity rotating table by Ø480 coupling

LCV400D which adopts high precision big diameter coupling to minimize heavy work piece transforming has rotating table with 2 pallet system. User can pre setting work piece on empty table reducing idle time.



Perfect and speedy chip disposal

Chip which moves to table surface will be moving to ship fan by high pressure coolant smoothly.

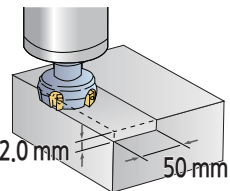


※ Customer can select chip conveyor from three different direction which is ㉠,㉡,㉢

Cutting Capacity (BBT40 3.7/5.5KW)

Face milling Carbon Steel (SM45C)

Ø63mm Face mill (5Z)



2.0 mm 50 mm

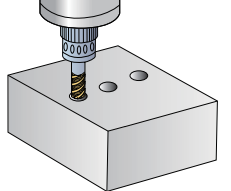
Cutting amount
112.5 cm³/min

Spindle speed
1000 r/min

Feedrate
450 mm/min

Drilling Carbon Steel (SM45C)

Ø16 Drill



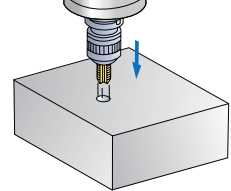
Cutting amount
45 cm³/min

Spindle speed
1200 r/min

Feedrate
225 mm/min

Tapping Carbon Steel (SM45C)

M16



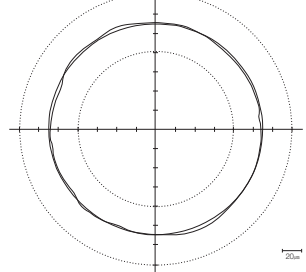
Depth of cut
30 mm

Spindle speed
1500 r/min

Feedrate
3000 mm/min

High Precision

Roughness

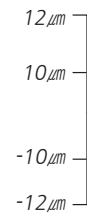


6.3µm

Roundness

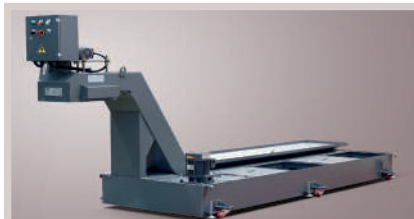
Machine	LCV 4000
Material	A 1050P
Tool	Ø25×4T
Spindle Speed	1,500RPM

Surface Roughness <O.D. cutting>

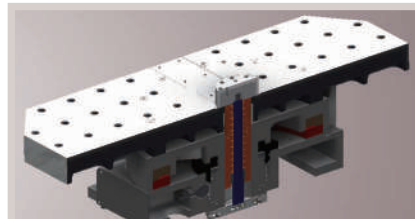


0.093µmRy

Optional Accessories



CHIP CONVEYOR



CENTER THRU SUPPLY SYSTEM



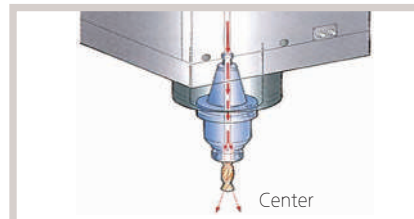
OIL SKIMMER



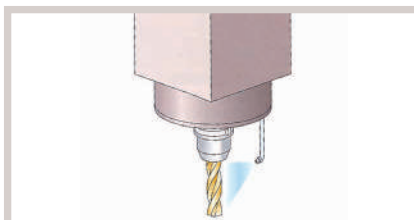
AUTO TOOL LENGTH MEASUREMENT SYSTEM



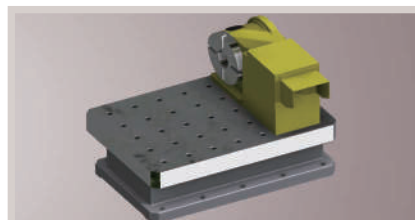
COOLANT GUN



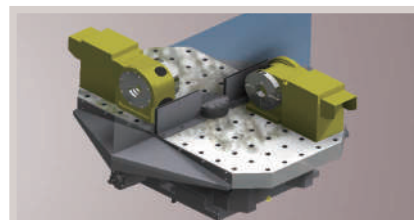
THROUGH-SPINDLE COOLANT SYSTEM



OIL MIST SYSTEM



ADDITIONAL 1 AXIS



ADDITIONAL 2 AXIS

Machine Dimensions

Unit : mm

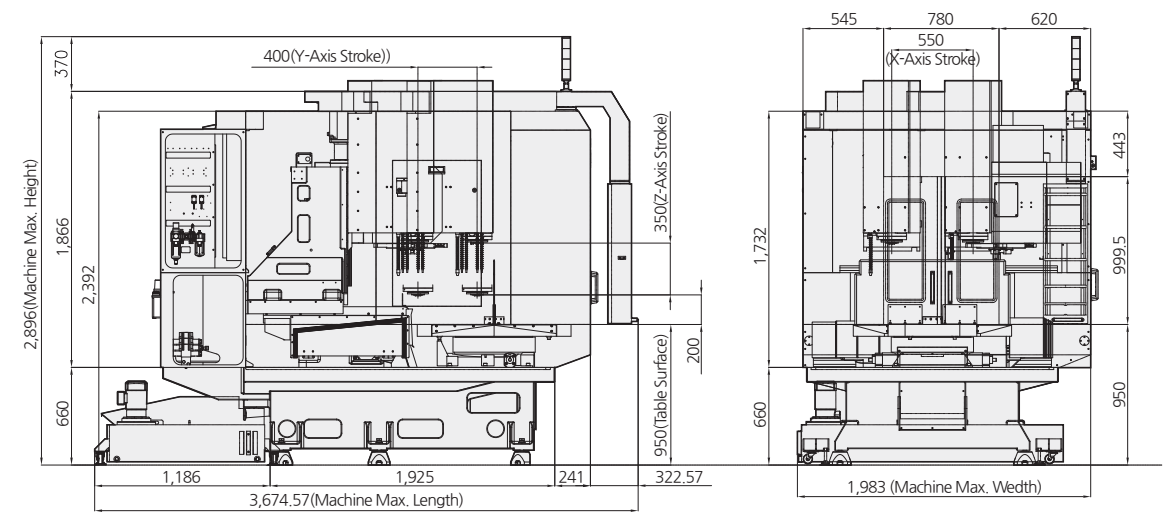
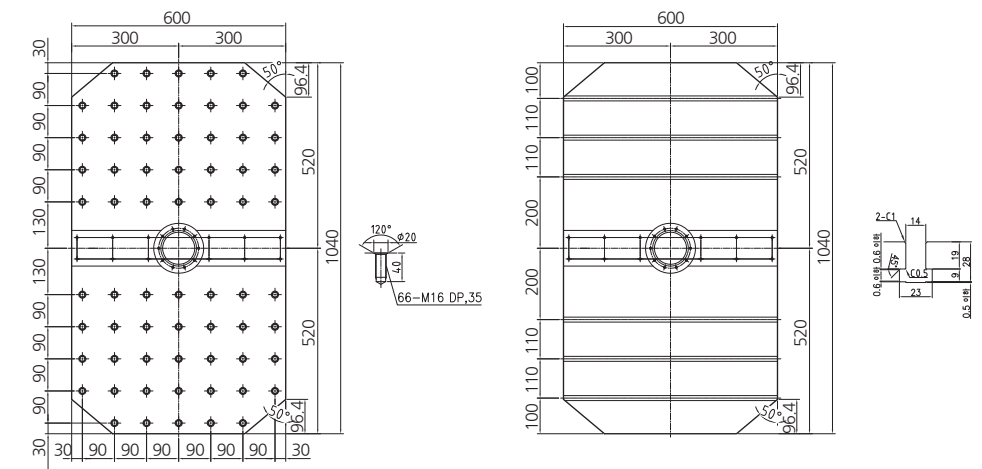


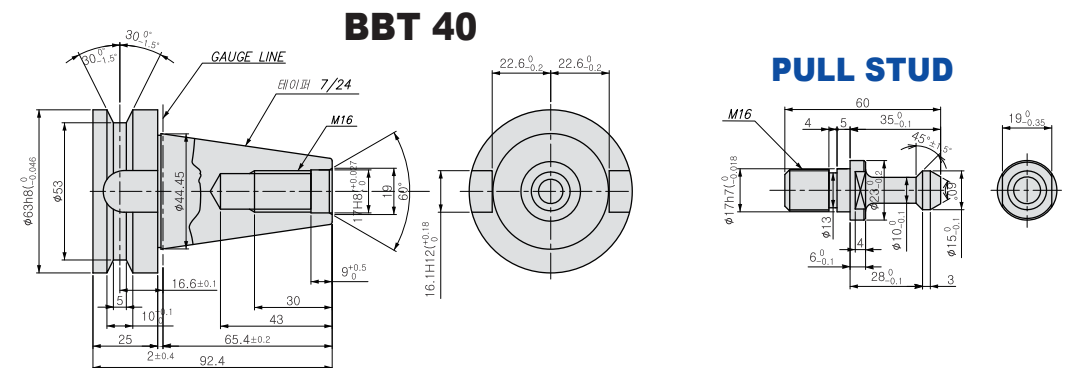
Table & T-Slot

Unit : mm



Tool Shank

Unit : mm



Machine Specification

Item		LCV 400D	
Travel	X-axis	mm	550
	Y-axis	mm	400
	Z-axis	mm	350
	Distance from table surface to spindle nose	mm	200~550
Table	Table Size	mm	2-600 × 520
	Loading capacity	kg	2-200
	Table & T Slot	mm	2x33-M16 × 90 × 90
Spindle	Max. Spindle Speed	rpm	12,000
	Maximum Torque(cont./15min)	N.m	48 / 69.6
	Bearing inner Dia.	mm	70
Feedrate	Rapid Traverse(X/Y/Z)	m/min	48 / 48 / 36
	Feedrate(X/Y/Z)	mm/min	1~20,000
	Spindle Drive Motor(30min/Cont.)	kW	11 / 7.5
	Feed motor(X/Y/Z)	kW	3 / 3 / 3
ATC	Tool Shank		BBT40(BT30)
	Tooling changing method		Twin arm type
	Tool Changing Time(T-T)	sec	1.3
	Magazine Capacity	ea	16
	Tool Selection	-	Memory random
	Max. Tool dia./adjacent empty	mm	∅80
	Max. Tool Length/Weight	mm / kgf	200 / 3
	Pull stud type	-	MAS 403 P30T-1
Power Supply	kVA	22	
Floor Space (L×W×H)	mm	2,931 × 1,945 × 2,466	
Machine Weight	kgf	4,800	
CNC System		FANUC 0i-MF(SIEMENS)	

• Design and specifications subject to change without notice.

Standard Accessories

- Full splash guard
- Coolant system (1.8kW)
- Leveling parts (Level plate, bolt, etc.)
- Standard tools and tool box
- Lubrication system
- Work light (LED)
- 3 step patrol lamp
- Rigid tapping
- Spindle override
- Spindle
- Door inter lock
- Oil cooler
- Bed flushing
- KCS specification
- MPG handle
- Manual and parts list

Optional Accessories

- Air gun
- Air blow
- Coolant gun
- Rotary table
- Oil skimmer
- Coolant level gauge
- MPG handle(3ea)
- Spindle oil cooler
- HYD unit
- Mist collector (Top cover must be installed)
- Top cover (Recommended when using TSC)
- Lift-up chip conveyor (HINGE TYPE / SCRAPPER TYPE)
- SIEMENS NC.
- Through spindle coolant (TSC 20Bar)

NC Specifications / FANUC 0i-MF

Item	Description	
Controlled axes	Controlled axes	X, Y, Z, (A)
	Max. simultaneously controlled axes	Positioning (G00) / Linear Interpolation (G01) Circular Interpolation (G02, G03)
	Least input increment	0.001 mm / 0.0001°
Spindle function	Spindle speed control	S5 (5 Digit)
	Spindle speed override	50~120%
	Spindle orientation	M19
Feed function	Feedrate override (10% increase)	0~200%
	Dwell	G04
	Reference position return	G27 / G28 / G29 / G30
	Manual pulse generator	0.001/0.01/0.1mm
	Cutting feed override	0 ~ 5,000 mm/min
Tool function	Rapid traverse override	F0(Fine Feed), 25/50/100%
	Tool number command	T2(2 Digit)
	Tool nose radius compensation	G43 / G44
	Tool radius compensation	G41 / G42
	Tool offset pairs	400 EA
Programming function	Absolute / Incremental Programming	G90 / G91
	Canned cycle	G70 ~ G72 / G74 ~ G76 / G80 / G83 ~ G88
	Decimal point input	Able to input up to decimal point
	R command circular interpolation	R radial programming without using I, J, K values
	SUB program	4 phase
	Work coordinate system	G54 ~ G59
	Local / machine coordinate	G52 / G53
Max program dimension	±99999.999mm	
Tape Functions	M function	M3 (3 digit)
	Input code	ISO/EIA auto recognition
	I/O interface	RS232C
	Program storage space	512 Kbyte
Other features	Number of stored programs	400ea
	Display unit / MDI	8.4" color LCD / Soft input type MDI
	Display unit / MDI	10.4" color LCD / Soft input type MDI
	Synchronized tapping	Rigid tapping function
	Background editing	Program saving / editing during automatic operation
	Backlash compensation	Pitch error offset compensation for each axis
	Search function	Sequence / program number search
	Safety function	Emergency stop / overtravel
	Program test function	Machine Lock / Single Block
	Control function	Memory / MDI / Manual
	Mirror image	M75 / M76
	Custom macro	#100 ~ #199, #500 ~ #999