

NC Specification (Mitsubishi M70VA)

Item		Specification
Controlled axis	Simultaneously controlled axes	3 axes (X/Y/Z)
	Least input increment	0.001mm (0.000039")
	Absolute	
	Inch / metric conversion	G20, G21
Interpolation	Positioning	G00
	Linear Interpolation	G01
	Circular Interpolation	G02, G03
Feed function	Dwel	G04
	Handle traverse override	0.001/0.01/0.1mm (0.000039"/0.000039"/0.000039)
	Travel override	F0, 25, 50, 100%
	Feed override	0-200% (10% unit)
	Jog override	0-6000mm/min (196.9ipm) (20steps)
	Automatic deceleration	Rapid travel : linear Cutting feed : exponential Soft over travel
Program / Editing	Program storage length	M70 : 600m M700 : 1280m
	Number of stored programs	M70 : 400 M700 : 1000EA
	Program editing	Del, Ins, Alt, Protect
	Program number search	Program Name
	Sequence number search	N4 Digits
	Program data input	G10
	Background editing	
	Manual data input / rigid tapping	
Screen display	Operation panel	8.4" Color LCD
	Language	English / Korean / Chinese / EU
Interface	Data input/output interface	RS-232C
	Taper code	CF CARD
STM function	Spindle speed function	S5 digit
	Tool	T2 digit
	M,B function	M2, B2 digit
Tool function	Tool length compensation	
	Tool diameter compensation	
	Number of tool compensations	400
Coordinate system	Automatic origin return	G28
	Origin return confirmation	G27
	Automatic work coordinates	
	Work coordinate system	G53(machine), G54-G59
Program aux. functions	Auxiliary function	M
	Drilling canned cycle	
	Mirror image	
	Program restart	



SMEC Co., Ltd.
157-10, Goldenroot-ro, Juchon-myeon,
Gimhae-si, Gyeongsangnam-do, Korea
Tel +82 55 340 4800
Fax +82 55 340 4740



www.esmec.com



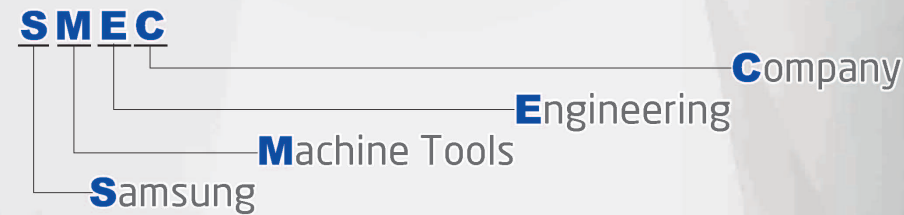
https://www.youtube.com/c/smecmachinetools



SMEC
SM 400
TAPPING CENTER



- 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



Great Productivity,
Vertical Tapping Center

Ideal for mass production of automotive parts, IT parts and mold machining.
Newest champion in vertical tapping centers
Futuristic vertical machining center with advanced technology in a compact design



Spindle

Fanuc	Fanuc	SIEMENS
Spindle Speed 12,000 rpm	Spindle Speed 20,000 rpm	Spindle Speed 24,000 rpm
Spindle Motor 3.7/5.5 kW	Spindle Motor 2.2/3.7 kW	Spindle Motor 5.5/11 kW
Spindle Torque 23.5/35 N.m	Spindle Torque 6.9/11.8 N.m	Spindle Torque 3.7/2.4 N.m
Mitsubishi	Mitsubishi	
Spindle Speed 12,000 rpm	Spindle Speed 24,000 rpm	
Spindle Motor 3.7/5.5 kW	Spindle Motor 2.2/3.7 kW	
Spindle Torque 12.6/18.8 N.m	Spindle Torque 7/17.7 N.m	

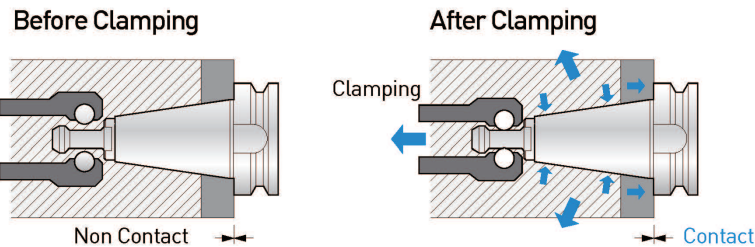
Capable of supporting a variety of machining operations with its 20,000 rpm Direct Motor and optimized bearing pre-loaded settings that increase rigidity, counter temperature increase during operation and extend bearing life.

Spindle Taper

2-face tool locking system offered (STD)

The dual contact against the spindle surface and taper surface reduces vibration while enabling high precision, high speed machining.

The increased diameter enhanced the rigidity and ATC repeatability while improving tool life by preventing Z-axis displacement during high speed machining.

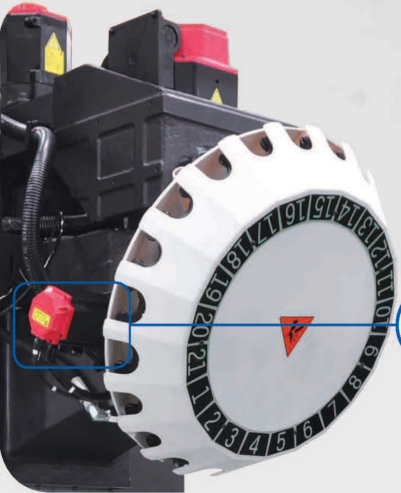


High-speed tool changer being driven by enhanced technologies



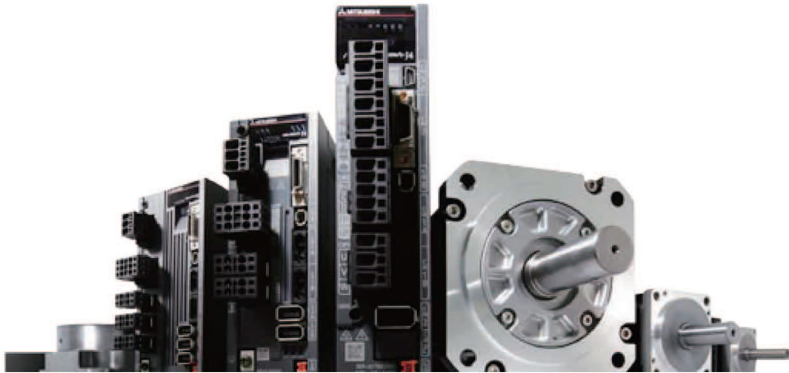
ATC & Magazine

The standard unit has a 21 tool turret-type magazine. While the twin-arm type offers fast tool changes of 1.4 second Tool to Tool and 2.3 second Chip to Chip, minimizing the amount of non-cutting time.



Servo Motor ATC

The high-speed/precision servo motor ATC is a "must have item" to maximize productivity.



the most advanced mechanism of high-speed technology

Servo Motor

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

Guide Way

The use of LM Guides with superb responsiveness increased rapid traverse speeds and reduced non-cutting time while minimizing noise during travel. In particular, by minimizing Stick Slip and wear that occurs on normal slides, we can maintain precision over long machining periods.

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.



Rapid Traverse

Offering best-in-class rapid traverse of 60m/min and 1G deceleration significantly reducing non-cutting time.

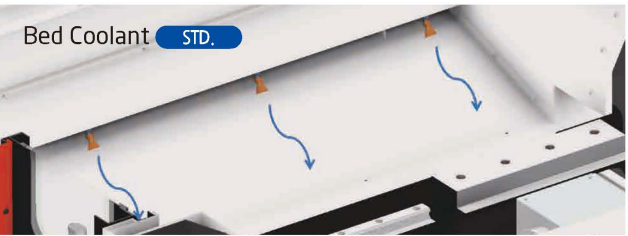
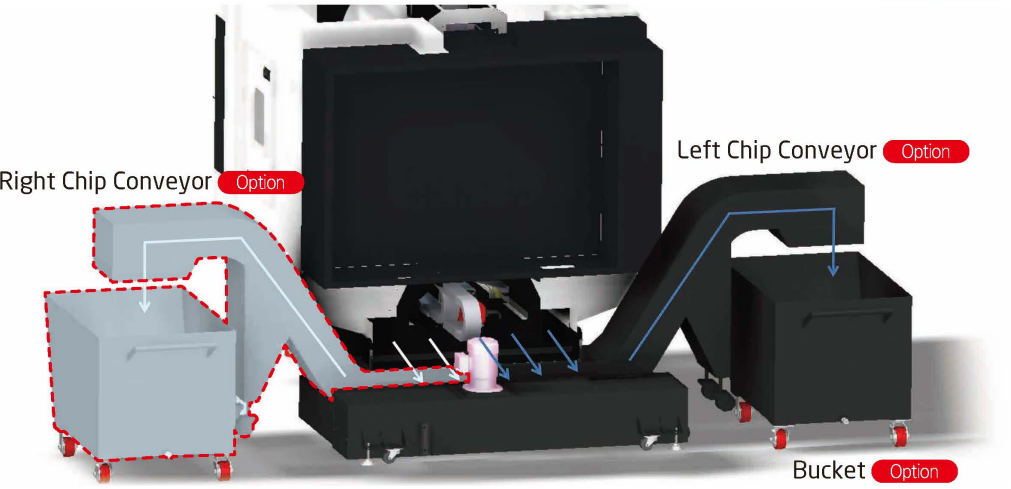
Optimized high-performance features

Table

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



Chip Conveyor



Centralized Utility Alcove

Operation status of lubrication, air supply, etc. can easily be checked.

X-Axis
530 mm

Y-Axis
400 mm

Z-Axis
350 mm

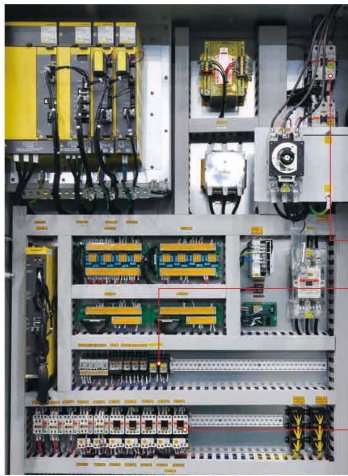


Centralized Operation Panel

- 8.4 inch color LCD
- Semipermanent LED Lamp
- Swivel operation panel for convenient operation and work access

Spindle Head Cooling System
[20,000 / 24,000rpm]

For long-term continuous high-speed operation, a coolant system may be installed to maintain room temperature. The coolant system circulates coolant oil around the spindle bearings to prevent thermal expansion due to the spindle temperature, ensuring high precision machining.
(12,000rpm : Opt.)



High reliability components used in the electric cabinet to reduce frequency of breakdown.

- Magnet switch, circuit breaker, Key S/W (Fuji)
- Relay (Weidmuller, Omron)



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.

Cutting Capacity (BBT30 3.7/5.5KW)

Face milling Carbon Steel (SM45C)

Ø63mm Face mill (5Z)

Cutting amount
112.5 cm/min

Spindle speed
1000 r/min

Feedrate
450 mm/min

Drilling Carbon Steel (SM45C)

Ø16 Drill

Cutting amount
45 cm/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

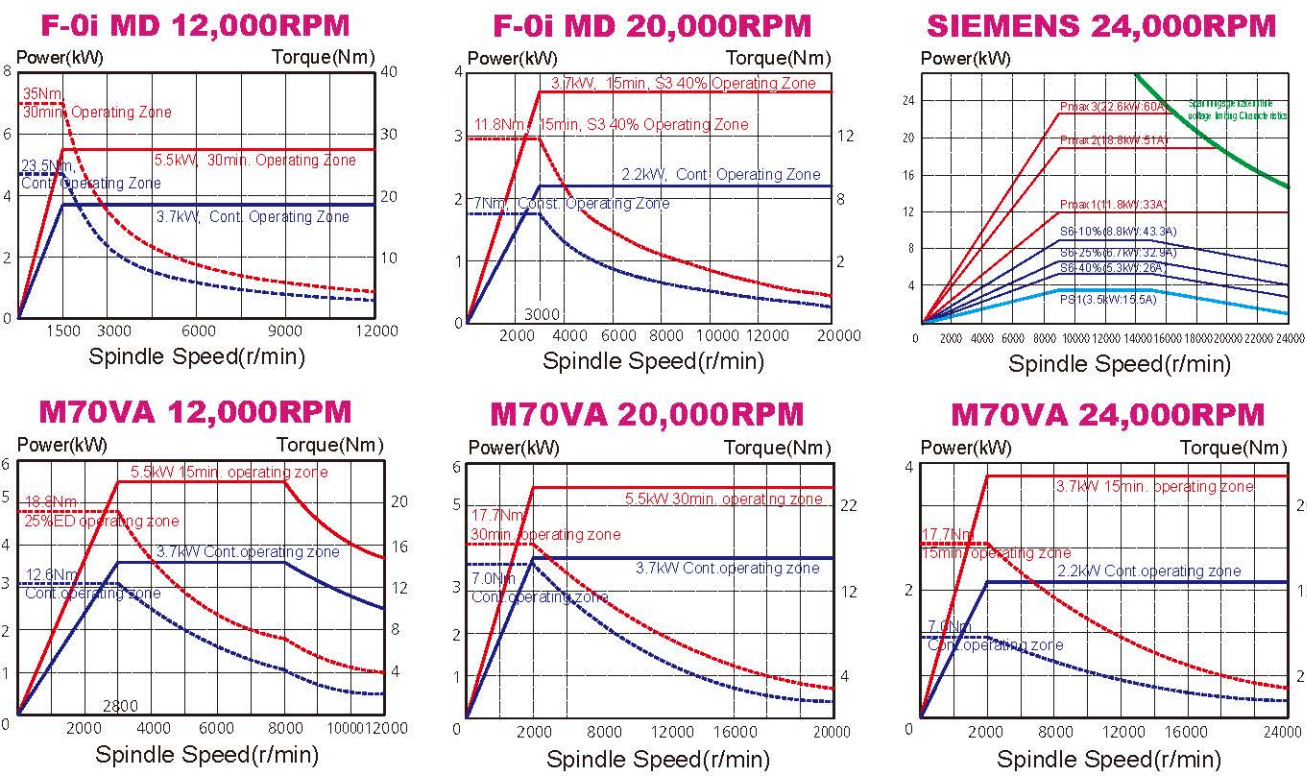
Roundness

Machine	SM 400
Material	A 1050P
Tool	Ø25×4T
Spindle Speed	1,500RPM

Surface Roughness <O.D. cutting>

0.091 µmRy

Spindle Power & Torque Diagram



Machine Dimensions

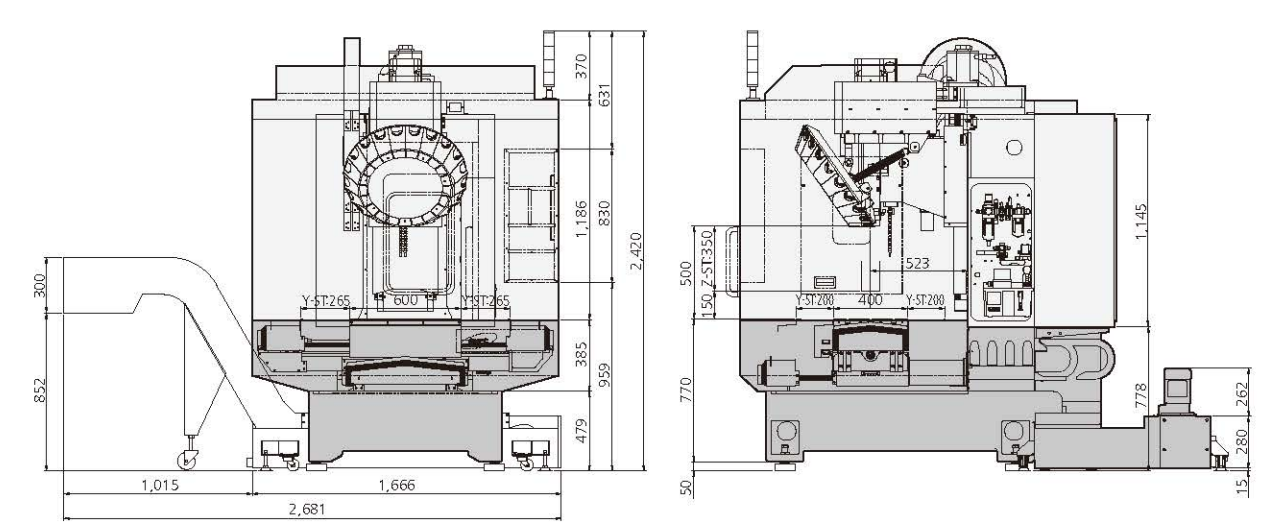
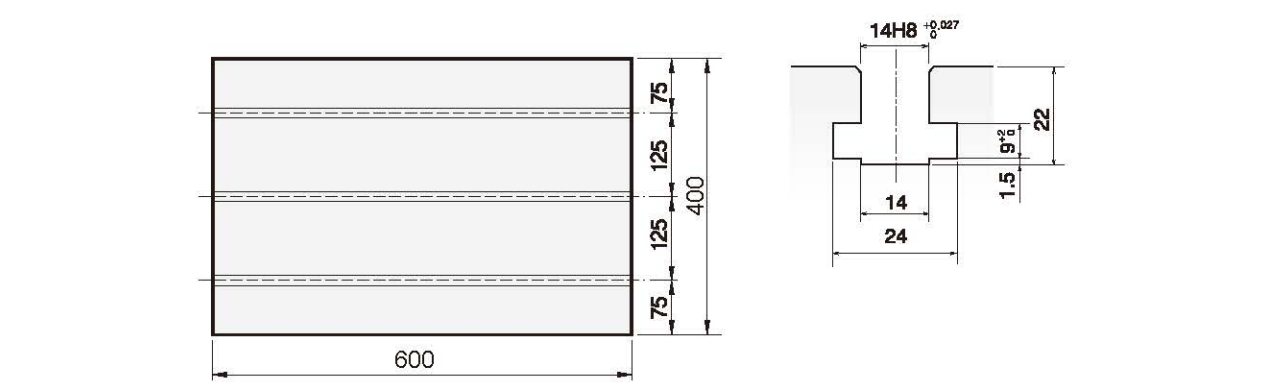
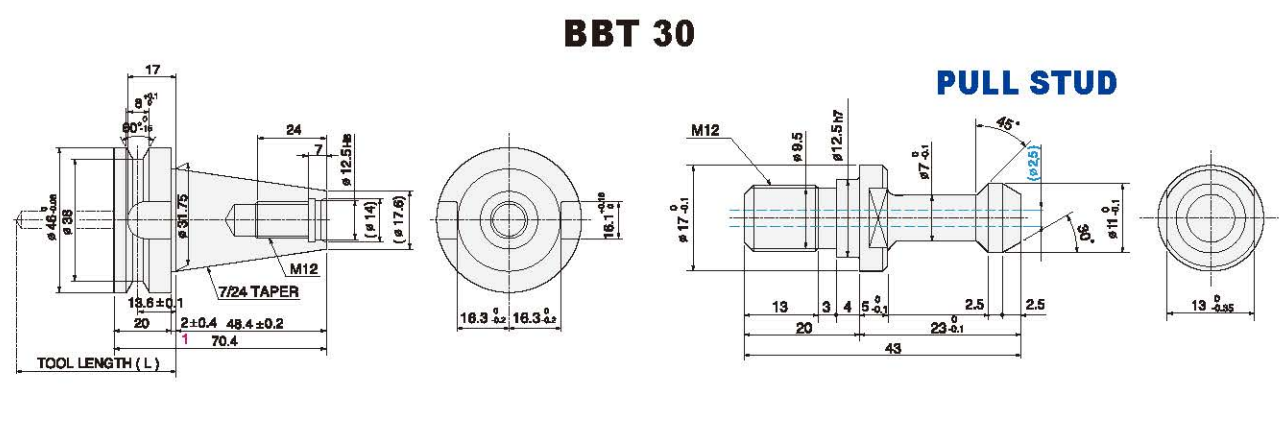


Table & T-Slot



Tool Shank



Major Specifications

DESCRIPTION			SM 400 (Fanuc)	SM 400 (Mitsubishi)	SM 400 (Siemens)
Travel	X axis	mm	530	530	530
	Y axis	mm	400	400	400
	Z axis	mm	350	350	350
	Distance from spindle center to column	mm	523	523	523
	Distance from spindle nose to table surface	mm	150~500	150~500	150~500
Table	Table surface	mm	14H8×p125×3ea	14H8×p125×3ea	14H8×p125×3ea
	Loading capacity	kg	200	200	200
	Table size	mm	600×400	600×400	600×400
Spindle	Spindle speed	r/min	12,000 (20,000)	12,000 (24,000)	24,000
	Tool shank		ISO #30 7/24 TAPER	ISO #30 7/24 TAPER	ISO #30 7/24 TAPER
	Motor (Cont./30min)	kW	3.7/5.5 (2.2/3.7)	3.7/5.5 (2.2/3.7)	5.5/11
	Torque (Cont./30min)	N.m	23.5/35(7/11.8)	12.6/18.8 (7/17.7)	3.7/24
Feedrate	Rapid traverse(X/Y/Z)	m/min	60 / 60 / 60	60 / 60 / 60	60 / 60 / 60
	Slide type	-	LM GUIDE	LM GUIDE	LM GUIDE
	Cutting feedrate(X/Y/Z)	mm/min	1~30,000	1~30,000	1~30,000
	Feedback system		Absolute	Absolute	Absolute
ATC	Feed rate(X/Y/Z/B)	kW	3 / 3 / 3	2.2 / 2.2 / 2.2	3.14 / 3.14 / 3.14
	Tool shank		BBT 30	BBT 30	BBT 30
	Magazine capacity		21	21	21
	Max. tool dia. [adjacent empty]	mm	Ø60[Ø80]	Ø60[Ø80]	Ø60[Ø80]
	Max. tool length	mm	150	150	150
	Max. tool weight	kgf	3	3	3
	Tool selection method	-	Fixed address	Fixed address	Fixed address
	Tool change method	-	Umbrella	Umbrella	Umbrella
	Tool changing time (T-T)	sec	1.3	1.3	1.3
	Chip-to-chip time	sec	2.3	2.3	2.3
	Compressed air supply	Mpa	0.4~0.6	0.4~0.6	0.4~0.6
	Power supply	kVA	32	32	32
	Floor space (L×W×H)	mm	2,700×1,670×2,570	2,700×1,670×2,570	2,700×1,670×2,570
	Machine weight	kgf	3,800	3,800	3,800
	CNC system		Fanuc Oi-MF	Mitsubishi M70VA	SIEMENS

※Design and specifications are subject to change without notification.

() : Optional

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

- Bed flushing
- MPG handle

- Manual and parts list

Optional Accessories

- Air gun

- Air blow

- Coolant gun

- Rotary table

- Oil skimmer

- Coolant level gauge
- Through spindle coolant (TSC 20Bar)

- Tool length measurement system (Automatic)

- 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)

NC Specifications (FANUC Oi-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
Tape Functions	Work coordindate system	G54 ~ G59
	Local / machine coordinate	G52 / G53
	Max program dimension	±99999.999mm
	M function	M3 (3 digit)
	Input code	ISO/EIA auto recognition
Other features	I/O interface	RS232C
	Program storage space	512 Kbyte
	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
Other features	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