



High-Speed Horizontal Machining Center

# MB-4000H



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Thermo-Friendly  
Concept



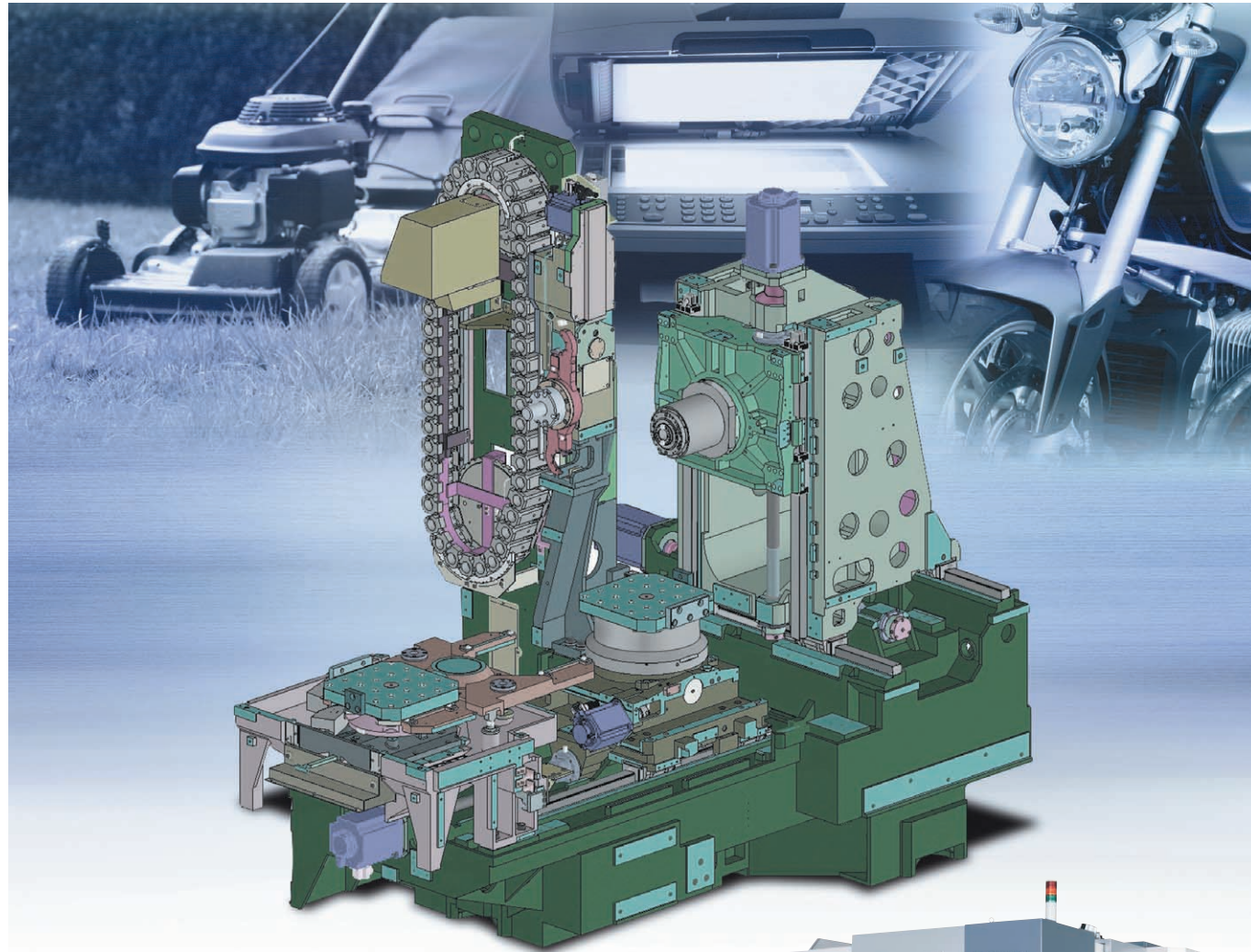
Collision Avoidance  
System



Machining  
Navi

## Agile/Compact/Productive

Nothing beats it for fast, accurate, highly efficient machining of IT and automobile parts



■ **High productivity** Reduced non-cutting time

■ **High accuracy** Outstanding accuracy stability with use of Thermo-Friendly Concept

■ **Small footprint** Compact

■ **Easy to operate** User friendly

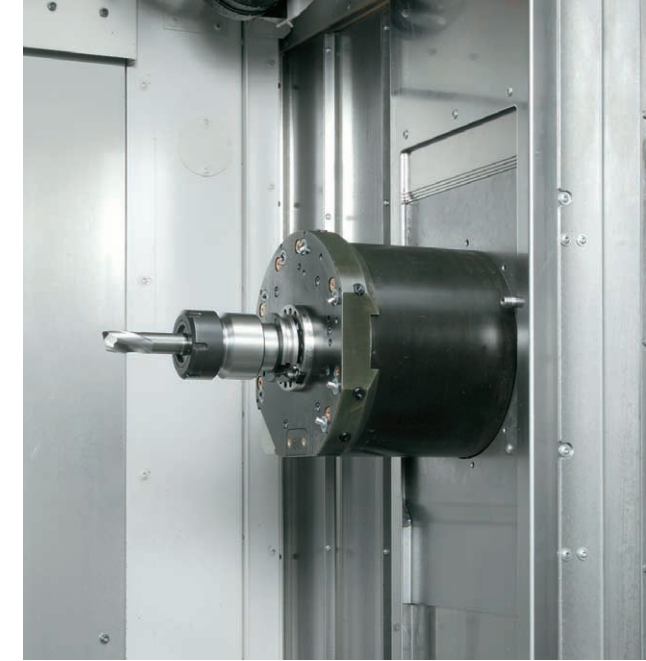
■ **Expandable** Easy to add more specs



## High productivity

### High-speed spindle

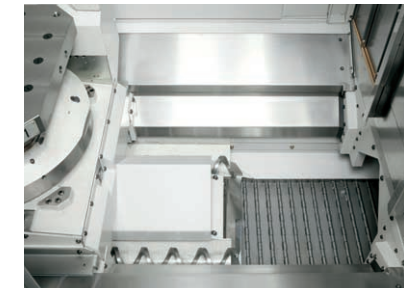
- Spindle speed 15,000 min<sup>-1</sup>
- Output VAC 26/18.5 kW (10 min/cont)
- Torque 163/120 N·m (5 min/cont)



### Reduced non-cutting time

- Rapid traverse X-Y-Z axes: 60 m/min
- ATC (T-T/C-C) 1.0/2.3 sec (Tool mass ≤ 4 kg)  
1.3/2.6 sec (Tool mass ≥ 4 kg)
- APC 7.0 sec

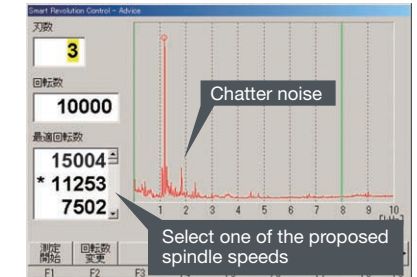
### Chip conveyor directly under spindle



In-machine chip conveyor

### Machining Navi M-g (Opt)

- Searches optimum cutting conditions
- Proposes a number of spindle speed options



## Easy to operate

■ **Independent swivel-type operation panel**



Independent swivel-type operation panel

■ **Front-facing ATC magazine**  
Magazine door opening high & low

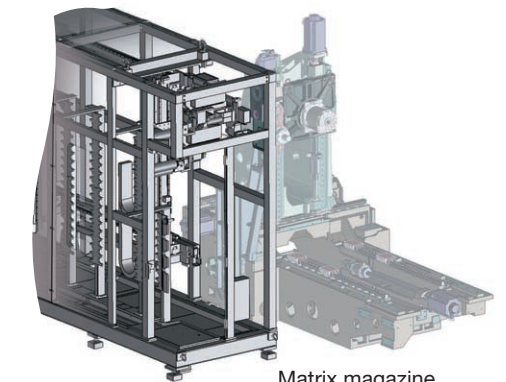


ATC magazine (64 tools : Optional)

## Expandable

■ **Space-saving with large tool storage capacity**

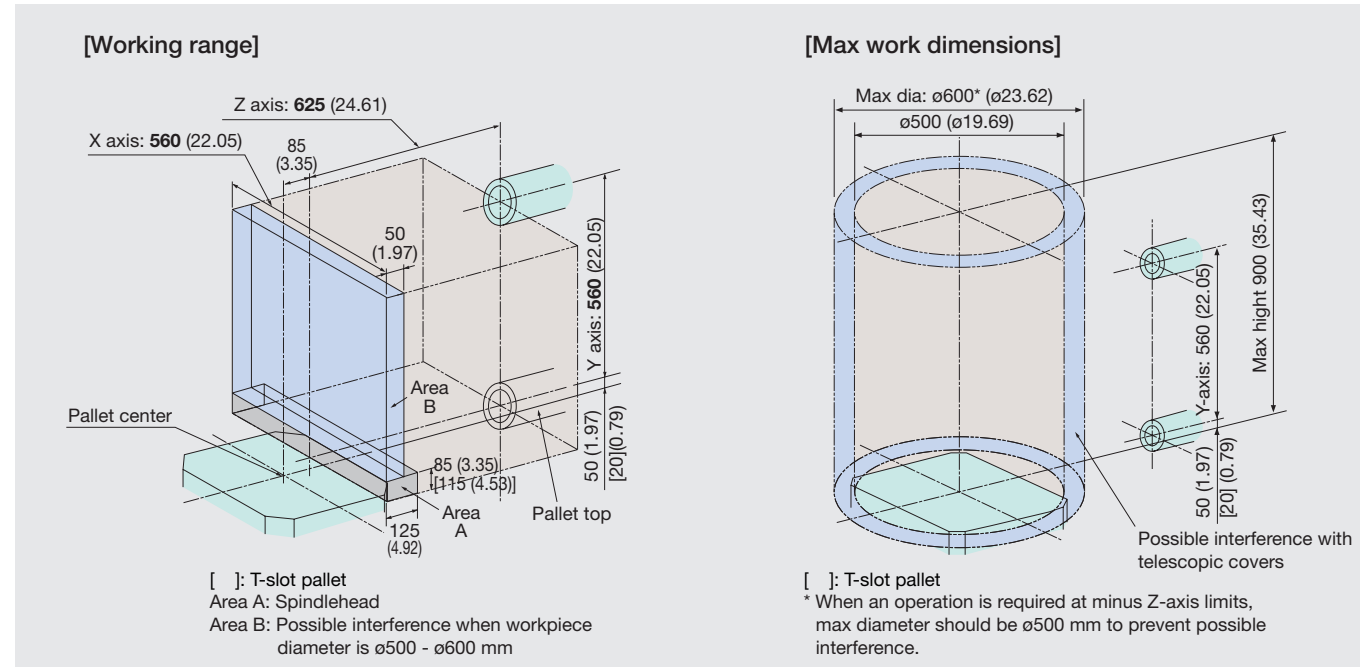
- Standard
  - 48 tools: Chain system
- Optional specifications
  - 64 tools: Chain system
  - 110, 146, 182, 218 tools: Matrix system



Matrix magazine

## Large working range, maximum workpiece dimensions

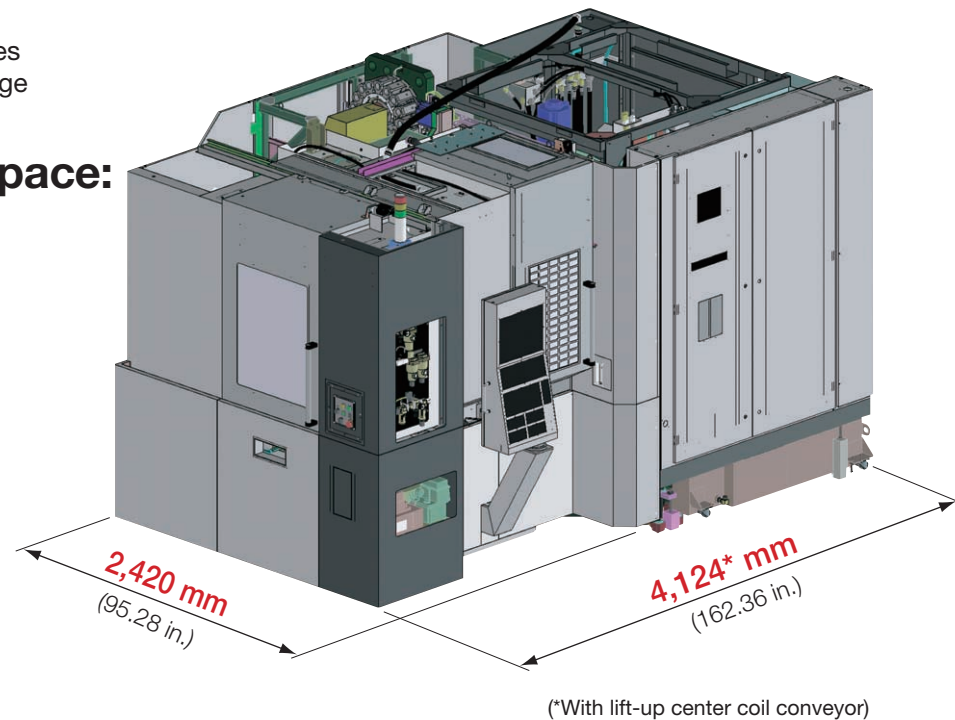
Travels: 560 x 560 x 625



## Small footprint

Space-saving design improves productivity per square footage

Installation floor space:  
**10% less**  
 (Compared to MA-400HA)



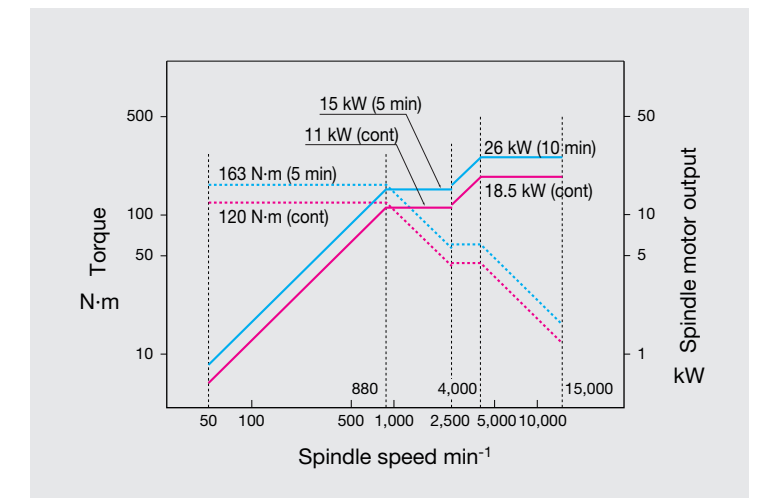
## Machine Specifications

Item	Unit	MB-4000H		
Travels	X axis (column left/right)	mm (in.)	560 (22.05)	
	Y axis (spindle up/down)	mm (in.)	560 (22.05)	
	Z axis (table front/back)	mm (in.)	625 (24.61)	
	Spindle center to pallet top	mm (in.)	50~610 (1.97~24.02)	
	Spindle nose to pallet center	mm (in.)	85~710 (3.35~27.95)	
Pallet	Pallet size	mm (in.)	400 x 400 (15.75 x 15.75)	
	Max load	kg (lb)	400 (880)	
	Indexing angle	deg	1° [0.001°]	
	Max workpiece dimensions	mm (in.)	$\phi 600$ x 900 (23.63 x 35.44)	
Spindle	Spindle speed	min <sup>-1</sup> (rpm)	50~15,000 [50~20,000]	
	Tapered bore		7/24 taper No. 40 [HSK-A63]	
	Bearing dia	mm (in.)	$\phi 70$ [ $\phi 70$ ] ( $\phi 2.76$ [ $\phi 2.76$ ])	
	Feedrate	mm/min (ipm)	X, Y, Z: 60 (2.36)	
Feedrate	Cutting feedrate	mm/min (ipm)	1~60,000 (0.04~2,362)	
	Motors			
Motors	Spindle (10 min/cont)	kW (hp)	26/18.5 [30/22] (35/25 [40/30])	
	Feed axes	kW (hp)	X: 4.6 (6.13), Y-Z: 3.5 (4.67)	
	Table indexing	kW (hp)	2.2 (3) [3.0 (4)]	
ATC	Tool shank		MAS403 BT40 [HSK-A63]	
	Pull stud		MAS 2 [-]	
	Magazine capacity	tools	48 [64, 110, 146, 182, 218]	
	Max tool dia (w/ adjacent)	mm (in.)	$\phi 70$ ( $\phi 2.76$ )	
	Max tool dia (w/o adjacent)	mm (in.)	$\phi 150^*$ ( $\phi 5.91$ )	
	Max tool length	mm (in.)	300 [400] (11.81 [15.75])	
	Max tool weight	kg (lb)	10 (22)	
	Tool selection		Memory random (Fixed address for 110 + tools)	
	Machine Size	Height	mm (in.)	2,697 (106.18)
		Floor space; width 5 depth	mm (in.)	2,420 x 4,700 (95.28 x 185.04)
Weight		kg (lb)	9,300 (20,460)	
Controller			OSP-P200M	

\* Max tool size 2 pots away can not exceed  $\phi 135$  mm ( $\phi 5.32$  in.) [ ]: Optional

## Spindle output/torque diagram

- Speed 15,000 min<sup>-1</sup>
- Max output VAC 26/18.5 kW (10 min/cont) (35/25 hp)
- Max torque 163/120 N·m (5 min/cont) (120/88 ft-lbf)

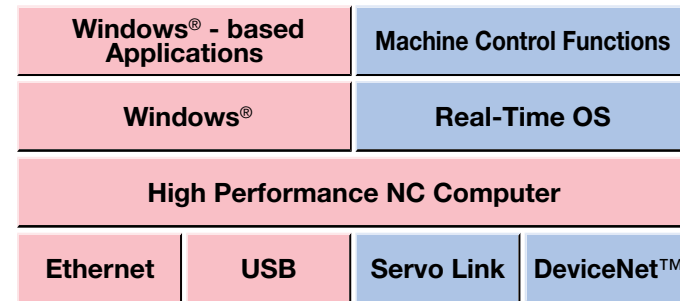




## An OSP / Windows® Collaboration

High-performance NC computer incorporated in panel

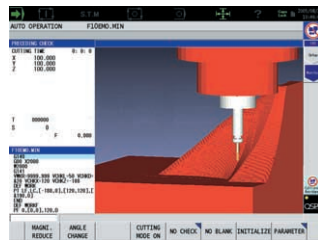
The advanced architecture



### With simply the more advanced functions

#### Collision Avoidance System (Opt)

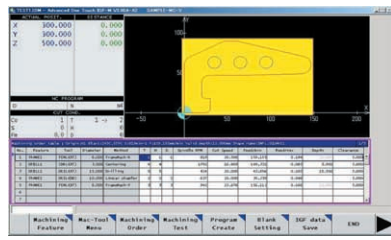
- Collisions prevented in any situation
- Safe and quick manual machining preps
- Easy input of blank and tool models



Collision detected (Affected components turn red)

#### Advanced One-Touch IGF (Opt)

- Program create, machining preps; various operations can be done directly from machining order tables
- Operation is simple even without memorizing G/M codes

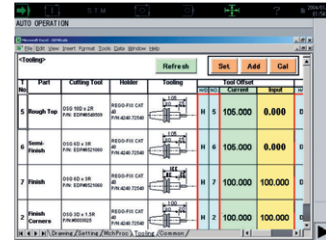


Advanced One-Touch IGF (Collision detection screen)

#### One-Touch Spreadsheet (Opt)

- Now you can use Excel® files on an NC controller
- Enter system/common variables straight from Excel sheets

Excel® is a registered trademark of Microsoft Corporation in the United States and other countries.



One-Touch Spreadsheet (Customized screen example)

### Standard Specifications

Basic Specs	Control	X, Y, Z simultaneous 3-axis, spindle control (1 axis)
	Position feedback	OSP full range absolute position feedback (zero point return not required)
	Coordinate functions	Machine coordinate system (1 set), work coordinate system (20 sets)
	Min / Max inputs	8-digit decimal, ±99999.999 ~0.001 mm (±3937.0078~0.0001 in.), 0.001" Decimal: 1 μm, 10 μm, 1 mm (0.0001, 1 in.) (1°, 0.01°, 0.001°)
	Feed	Override: 0 to 200%
	Spindle control	Direct spindle speed commands (S5) override 50~200%, multi-point indexing
	Tool compensation	Tool length/tool dia compensation (100 sets)
	Display	15-inch color display operation panel, OSP-Win X
	Self-diagnostics	Automatic diagnostics and display of program, operation, machine, and NC system faults
	Programming	Program capacity
Program operations		Program management, editing, multitasking, scheduled program, fixed cycle, G-/M-code macros, arithmetic, logic statements, math functions, variables, branch commands, coordinate calculate, area calculate, coordinate convert, programming help
Operations	Machine operations	MDI, manual (rapid traverse, manual cutting feed, pulse handle), load meter, operation help, alarm help, sequence return, manual interrupt/auto return, pulse handle overlap, parameter I/O, self-diagnostics, PLC monitor
	MacMan	Machining management: machining results, machine utilization, fault data compile & report, external output
Communications / Networking		USB ports, Ethernet
High speed/accuracy specs		TAS-S (Spindle), TAS-C (Construction), Hi-Cut Pro, pitch error compensation

### Kit Specs

Item	Kit	OSP-P200M					
		NML		3D		IGF	
		E	D	E	D	E	D
Auto program schedule update		●	●	●	●	●	●
Program notes (MSG)			●		●		●
Coordinate system selection	100 sets (Std: 20 sets) 200 sets	●		●		●	
Helical cutting		●	●	●	●	●	●
Synchronized Tapping II		●	●	●	●	●	●
Programmable travel limits		●	●	●	●	●	●
Arbitrary angle chamfering		●	●	●	●	●	●
Tool length/tool dia compensation	200 sets each (Std: 100 sets ea) 300 sets each	●		●		●	
Programmable mirror image			●		●		●
Drawing enlarge/reduce			●		●		●
Tool life management		●	●	●	●	●	●
Auto power shut-off		●	●	●	●	●	●
Sequence stop		●	●	●	●	●	●
Mid-block restart			●		●		●
Advanced One-Touch IGF-M						●	●
Real 3-D simulation				●	●	●	●
I-MAP				●	●		
Simple load monitor		●	●	●	●	●	●
NC operation monitor		●	●	●	●	●	●
Manual gauging (w/o sensor)			●		●		●

### Optional Specifications

Interactive functions		Gauging	
Advanced One-Touch IGF-M	Real 3-D simulation included	Auto gauging	Touch probe
I-MAP		Auto zero offset	Includes auto gauging
<b>Programming</b>		Tool breakage detection (touch sensor)	Includes auto tool offset
Auto scheduled program update	(Scheduled program is standard)	Gauging data printout	File output
1000 common variables	(200 is standard)	Manual gauging (w/o sensor)	
Program branch; 2 sets		Interactive gauging	Touch-sensor, touch-probe required
Program notes (MSG)		<b>External I/O communication</b>	
Coordinate system selection	100 sets, 200 sets (Std: 20 sets)	Additional USB	
Helical cutting	Within 360 degrees	Additional RS-232-C channel	Standard specs include 1 channel
3-D circular interpolation		DNC-T3	
Synchronized Tapping II	(rigid tapping)	DNC-B	232-C-Ethernet (for OSP) w/converter
Arbitrary angle chamfering		DNC-C/Ethernet	
Cylindrical side facing		DNC-DT	
Slope machining		FL-net	Consultations require
F1-digit feed	4 sets, 8 sets, parameter	<b>Automation/untended operations</b>	
Programmable travel limits		Auto power shut-off	With M02 and END alarms Work preps done → OFF
Skip		Warm-up (calendar timer)	Including operation end buzzer
Axis naming		External program selection	Pushbutton, rotary switch BCD (2-digit, 4-digit)
Tool length/dia compensation	200, 400 sets each (Std: 100 sets)	Cycle time reduction	Ignores certain commands
3-D tool compensation		Pallet pool control (PPC)	Required for multi-pallet APC
Drawing conversion	Programmable mirror image Enlarge/reduce	<b>High-speed, high-precision</b>	
User task 2	I/O variables (16 each)	Tool wear compensation	
Tape conversion	Consultations required	Straightness compensation	
Inverse time feed		AbsoScale detection	X-, Y-, Z-axis
Tool grooving		Inductosyn detection	A-, B-, C-axis
Spindle path control		Super-NURBS	
Turning cut function		<b>Operations</b>	
<b>Monitoring</b>		Sequence operation	Sequence stop
Real 3-D simulation		Sequence restart (Std)	Mid-block restart
Collision Avoidance System		Pulse handles (Std: 1 pc)	2 pcs, 3 pcs, various mount locations (portable)
One-Touch Spreadsheet		External M signals	4, 8 signals
Simple load monitor	Spindle overload monitor	<b>Other</b>	
NC operation monitor	Hour meter, work counter	Control cabinet lamp (inside)	
Hour meters	Power ON, spindle run-time NC ON time, machining	Circuit breaker	
Operation end buzzer	With M02, M30, and END commands	Additional axes	A, B, C, W (preps or with order)
Work counter	With M02 and M30		
MOP-TOOL	Adaptive control, overload monitor		
Tool life management	Hour meter, No. of workpieces		
Operation end lamp	lamp (yellow)		
Alarm lamp	lamp (red)		
3-lamp status indicator	Type C [Type A, Type B]		

