

# MEGA 8800

SUPER HIGH TORQUE MACHINING CENTER



# **Higher Productivity**

## High-power, high-torque 4000 rpm spindle

- · The integral spindle / motor ensures high-power, high-torque machining
- · High-efficiency machining of difficult-to-cut materials thanks to high-rigidity construction using ø130 mm (ø5.12") bore spindle bearing.

Spindle output (15% ED)

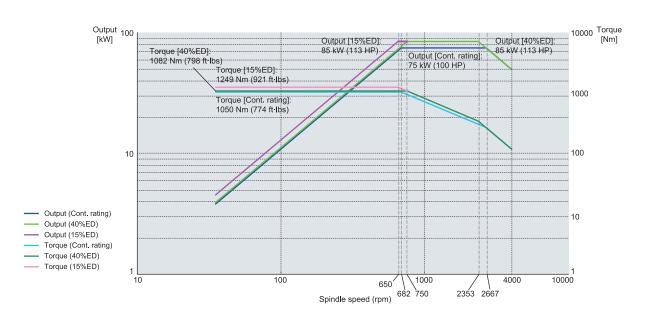
Max. torque (15% ED)

85 kW (113 HP) 1249 Nm (921 ft·lbs)

#### ■ 4000 rpm spindle specification

Spindle speed	4000 rpm
Spindle output	AC 85 kW (113 HP) [15% ED]
	AC 75 kW (100 HP) [Cont. rating]
Torque	1249 Nm (921 ft·lbs) [15% ED]
	1050 Nm (774 ft·lbs) [Cont. rating]
Spindle acceleration	0.9 sec

#### ■ MEGA 8800 4000 rpm Spindle output and torque diagram



# INTELLIGENT MACHINE

## A variety of Intelligent Functions provides incomparable operator support for exceptional ease of operation and the optimum machine efficiency

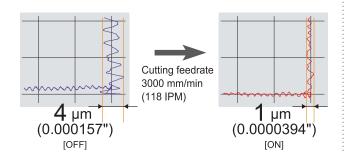
Yamazaki Mazak has developed a variety of functions for the improvement of productivity, high accuracy machining and operator support. A variety of unique technologies has been developed that incorporate the expertise of experienced machine operators that realizes unsurpassed productivity and higher accuracy machining.



Minimized Vibration

**ACTIVE VIBRATION CONTROL** 

Minimized vibration function for high-speed, high-accuracy machining and longer tool life

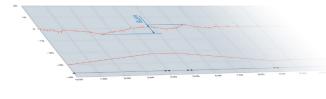




Heat Displacement Control

INTELLIGENT THERMAL SHIELD

Unique Mazak heat displacement compensation system

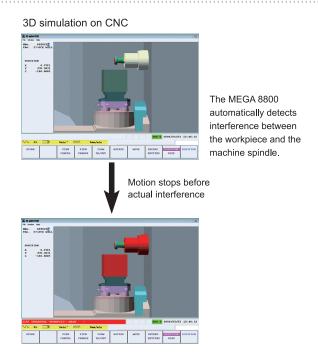




Machine Interference Prevention

INTELLIGENT SAFETY SHIELD

Functions for safe operation during machine setup and manual operation









Comprehensive Spindle Monitoring

INTELLIGENT **PERFORMANCE SPINDLE** 

Monitoring milling spindle status - designed to minimize downtime and improve preventative maintenance





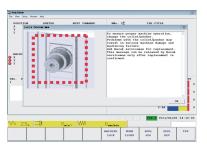


Comprehensive Maintenance Monitor INTELLIGENT MAINTENANCE

**SUPPORT** 

Useful information for improved preventative maintenance to prevent unexpected machine downtime







Verbal Message System

MAZAK VOICE ADVISER

Verbal support for machine setup and safe conditions confirmation



# Higher Productivity

Unique machine structure ensures high-performance and high-accuracy machining

## High-rigidity bed and column

The mounting position of the X-axis guide has two different levels. By bringing the rear guide close to the center of column, the column's weight can be reduced, and the guide face is closer to the center of gravity of column, which allows high acceleration.



# High-speed, high-accuracy positioning

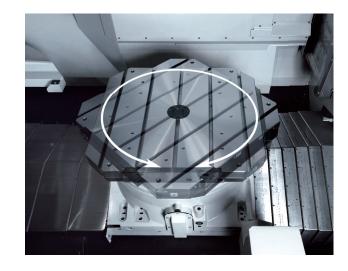
By utilizing linear-roller guides on all axes, not only is non-cutting time reduced - high accuracy machining is ensured even at high speed feedrates. Additionally, the ball screw core cooling system ensures stable machining accuracy over extended periods of high speed operation.

# NC rotary table

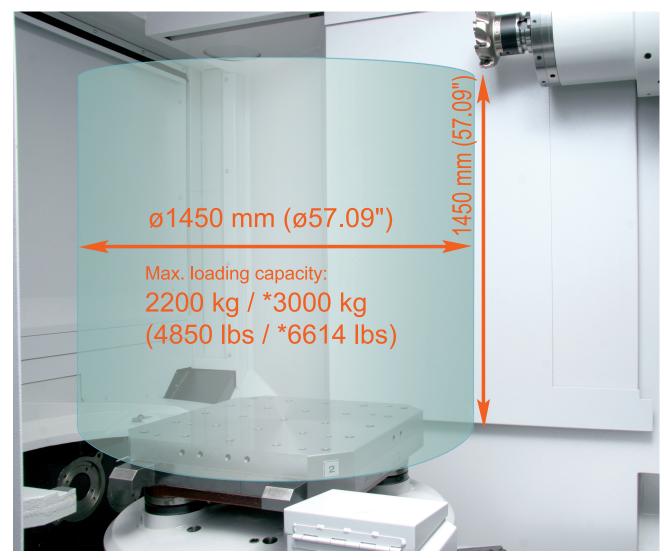
The NC rotary table, which can be positioned in 0.0001° increments is standard equipment.

Table 90° indexing time: 1.7 Sec

Min. indexing increment: 0.0001°



## Machining area for large, heavy workpiece



\* Optional specification

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Capability to perform a variety of applications thanks to the wide machining area and maximum loading capacity.

800  $\times$  800 mm (31.5"  $\times$  31.5") pallet is standard equipment. 1000  $\times$  1000 mm (39.37"  $\times$  39.37") pallet and 800  $\times$  1000 mm (31.5"  $\times$  39.37") pallet are optionally available.

# **Higher Productivity**

# Pallet changer

The 2 pallet changer is standard equipment for higher efficiency. The operator can setup the next workpiece during the machining of the current workpiece.

Additionally, a 6 pallet changer system is optionally available for the MEGA 8800.

Pallet change time: 13.0 sec



# High-special and the care high-special and t

# High-speed ATC

The cam-driven tool change ensures reliable high-speed tool change cycles.

Tool change time: 5.5 SEC

# PALLETECH MANUFACTURING CELL

The PALLETECH MANUFACTURING CELL is designed for convenient system expansion after the initial system installation from a minimum of 1 machining center, 1 loading station and pallet stocker with 6 pallets. The pallet stocker modules are available in single level. two levels and three levels.



# Tool magazine

A variety of tool magazine capacities is available to meet the machining requirements of a wide variety of workpieces in small lot sizes and to perform unmanned operation over extended periods of time. Tool Hive magazines with 180 tools up to 348 are available.

Mazak

TOOL HIVE with 240 tools

	: Standard	$\bigcirc:0$	ptio
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Tool storage capacity	60 tools	80 tools	120 tools	160 tools	180 tools	240 tools	348 tools
MEGA 8800	•	0	0	0	0	0	0

# **Ergonomics**

# Design features for unsurpassed ease of operation

# (ergonomics)

## Large window

The large front window allows the operator to easily monitor workpiece machining.



#### Swiveling operation panel

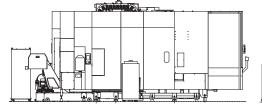
Tool inspection and the machine current position can be conveniently checked by the movable CNC operation panel.

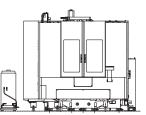


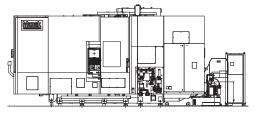
#### Maintenance area

Items requiring frequent access for machine maintenance, such as hydraulic and air pressure inlets, lubrication reservoirs and others are conveniently arranged.









#### Rotary dial switches and "QWERTY" key borad

Changes to feedrate override and axes selection can be detected by feel for more convenient operation. A QWERTY keyboard is standard equipment providing the same data input operation method as a personal computer.

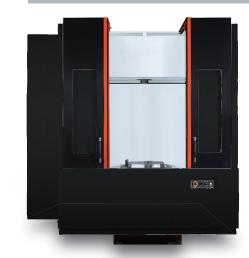


#### Tool magazine display

The operator can sea tool data information registered in the CNC on the tool magazine display located next to the tool magazine.



# 2 pallet changer door



The wide door opening at the front of the machine provides excellent accessibility to the pallet at the setup station lor convenient loading/unloading of large, heavy workpieces.

#### Tool magazine door

Heavy tools are easily loaded/unloaded to/from the tool magazine thanks to the wide opening of the tool magazine door.



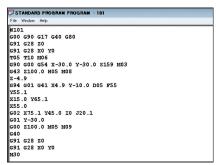
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# **Ease of Programming**

# Ability to use both conversational programming and EIA/ISO program format - standard equipment

Multiple surface processing can be performed by conversational programming or EIA/ISO programs that are prepared by CAM systems.



EIA / ISO program display





#### Useful functions for EIA/ISO format programs

Useful functions supporting efficient cutting cycles and high-speed, high-accuracy cutting such as "MAZACC-3D high-speed, high accuracy cutting software package" and "Tapping/boring tornado" are standard equipment.

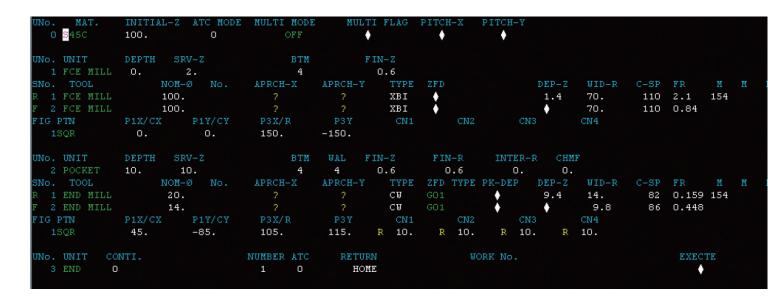
#### Combined use of both MAZATROL and EIA/ISO programs

MAZATROL programs can have EIA/ISO programs as sub-programs and vice-versa.



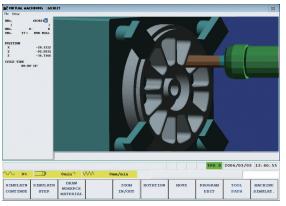
## Simplified programming with MAZATROL matrix nexus 2 CNC

The programming of multiple surfaces for many workpieces can be complicated for horizontal machining centers. However, conversational MAZATROL programs for this type of machining are simplified thanks to a variety of automatic functions.

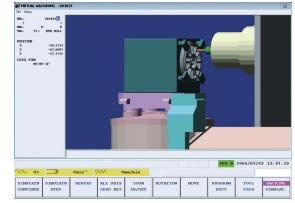


#### Virtual Machining

Machine programs can be made with minimum errors and time required for test cuts thanks to realistic machine simulation displays that can be used for convenient program confirmation and checking for any machine interference.





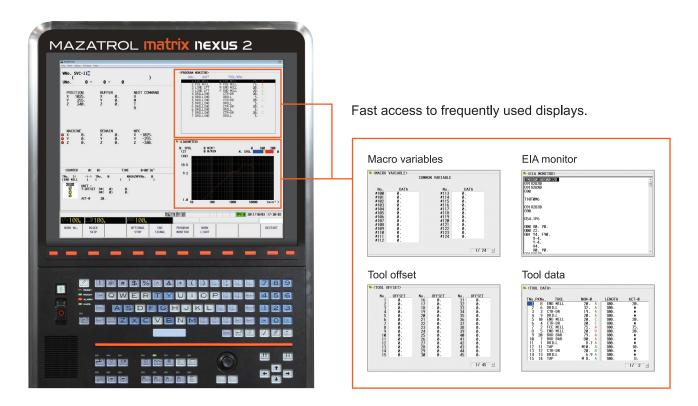


Workpiece simulation

Machine simulation

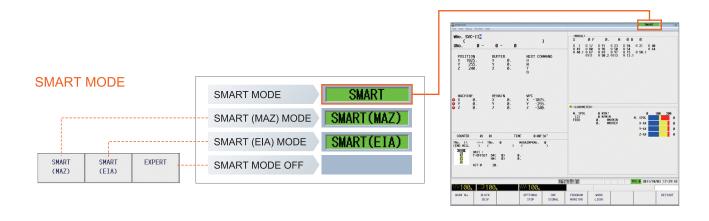
# **Ease of Programming**

## Flexible display layout



# SMART menu keys minimize the number of displays to reduce the time required for programming

The type of programming to be performed is selected by menu key. After the selection is made, only the necessary displays will be shown to simplify programming and program editing.



# MAZATROL Inatrix CAM 2



# Convenient programming and comprehensive simulation in the office

- Programs can be made, edited and checked anytime in the office.
- A machine operator can easily use the MAZATROL matrix CAM 2 since the operation method is the same as the CNC mounted on the Machine.
- Required information such as workpiece configuration and coordinate values can be easily input to MAZATROL programs from 2D CAD drawings.

# Networking to peripheral equipment

Convenient network connection to peripheral equipment thanks to industrial network standards.



### EtherNet/IP (Industrial Protocol)

EtherNet/IP is a communications protocol between industrial control systems and their components and designed for use in process control and other industrial automation applications. EtherNet/IP is built on the standard EtherNet, TCP/IP protocols and Common Industrial Protocol (CIP) for convenient interconnection. EtherNet/IP can be applied from small production lines to large factory networks.

Transmission rate	10 / 100 Mbps
Communication distance	Internodal distance: 100 m (328 ft)
Max. number of connections	64

#### PROFIBUS-DP

PROFIBUS DP (Decentralized Peripherals) is used to operate sensors and actuators via a centralized controller in production automation applications.

Removal can be safely done without affecting a

connection to the other devices.

Transmission rate	12 Mbps
Transmission distance	100 m (328 ft)
Max. number of connections	125

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# High Accuracy



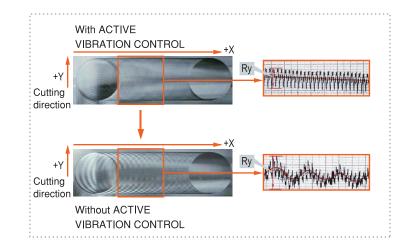
Minimized Vibration

#### **ACTIVE VIBRATION CONTROL**

ΑV

Machine vibration caused by axis-movement acceleration/deceleration can considerably affect machining accuracy and machining time.

The ACTIVE VIBRATION CONTROL reduces the vibration for high accuracy positioning in all axes. Since this function reduces tool nose vibration, high quality machined surface finishes are realized and excessive tool nose wear is prevented.





Heat Displacement Control

#### INTELLIGENT THERMAL SHIELD

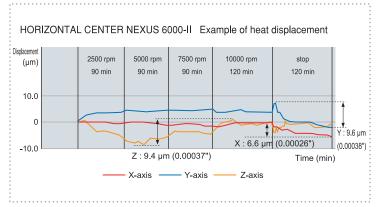
IT.

The MEGA 8800 is equipped with automatic compensation for room temperature changes, the INTELLIGENT THERMAL SHIELD, to realize enhanced continuous machining accuracy.

MAZAK has performed extensive testing in a variety of environments in a temperature controlled room and has used the results to develop a control system that automatically compensates for temperature changes in the machining area.



High-accuracy machining thanks to high-rigidity construction and high-response feedrate



		Donad on ICO	MEGA 8800
		Based on ISO	MAZAK STD.
		Bi-directional positioning accuracy	0.021 mm (0.000827")
	X-axis	Positioning repeatability (positive)	0.006 mm (0.000236")
		Positioning repeatability (negative)	0.006 mm (0.000236")
Positioning accuracy Y-axis	Bi-directional positioning accuracy	0.016 mm (0.000630")	
	Positioning repeatability (positive)	0.005 mm (0.000197")	
	Positioning repeatability (negative)	0.005 mm (0.000197")	
	Bi-directional positioning accuracy	0.021 mm (0.000827")	
	Z-axis Positioning repeatability (positive)	0.006 mm (0.000236")	
		Positioning repeatability (negative)	0.006 mm (0.000236")

Note) The inspection is conducted according to ISO-230 on a recommended foundation with room temperature controlled to 22°C±1°C/71.6°F±1.8°F) after machine has reached operation temperature.

# **Environmentally friendly**

#### **Environmental considerations**

The environment and our impact on our natural surroundings have always been important concerns of Yamazaki Mazak. This is shown by the fact that all factories in Japan where Mazak machine tools are produced are ISO 14001 certified, an international standard confirming that the operation of our production facilities does not adversely affect air, water or land.

The linear-roller guides utilized by all linear axes are lubricated by a grease lubrication system instead of oil. (Spindle bearings are lubricated by an oil-air system). With this system, tramp oil in the coolant is considerably reduced, resulting in a longer coolant service life. Additionally, the work light, the CNC display and the optional chip conveyor are automatically shut off after a predetermined period for lower power consumption when the machine is in the stand-by state.

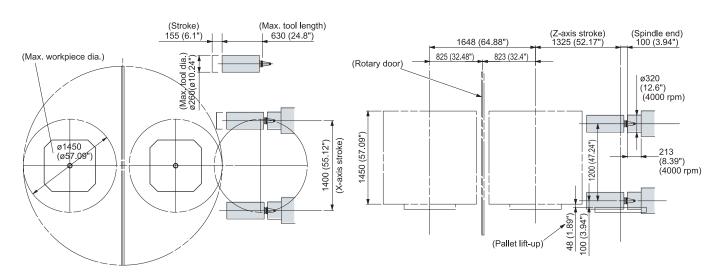


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Unit: mm

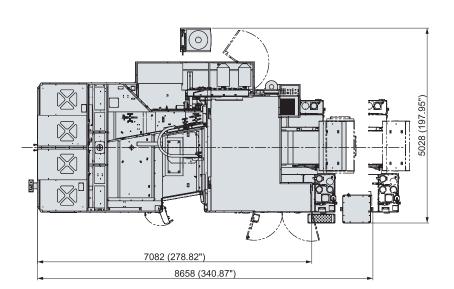
#### Stroke diagrams

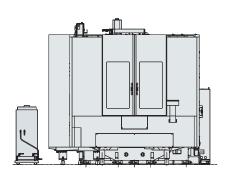
Unit: mm

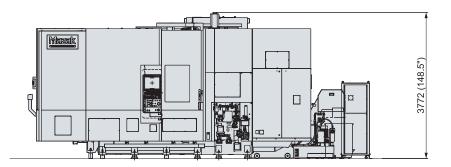


Machine dimensions

Unit: mm





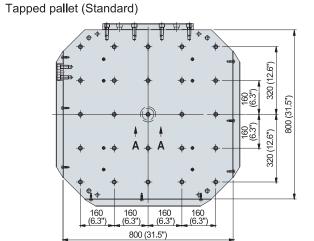


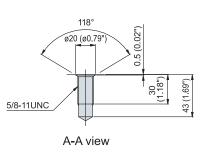
Pallet dimensions

#### □ 800 mm (□ 3.15") Pallet

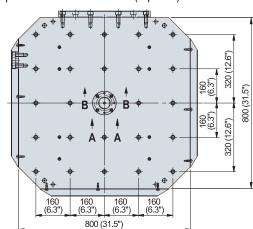
#### Pallet sectional views

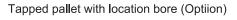
#### Tapped pallet (Standard)

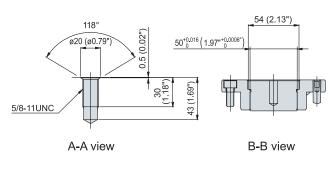




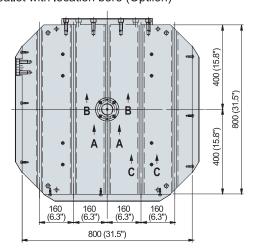
#### Tapped pallet with location bore (Optiion)



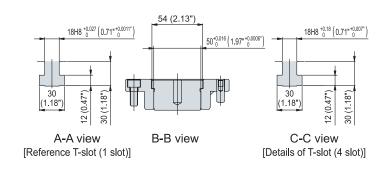




#### T-slot pallet with location bore (Optiion)



#### T-slot pallet with location bore (Optiion)



#### Standard machine specifications

		MEGA 8800
Stroke	X-axis (column travel left / right)	1400 mm (55,12")
	Y-axis (spindle head travel up / down)	1200 mm (47.24")
	Z-axis (pallet forward / backward)	1325 mm (52.17")
	Distance from pallet center to spindle nose	100 mm ~ 1425 mm (3.94" ~ 56.1")
	Distance from pallet top to spindle center	100 mm ~ 1300 mm (3.94" ~ 51.18")
Table	Pallet size	800 × 800 mm (31.5" × 31.5")
	Max. workpiece dimension	ø1450 mm × 1450 mm (ø57.09" × 57.09")
	Pallet load capacity (evenly distributed)	2200 kg (4850 lbs)
	Pallet top surface	M16 (5/8-11 UNC) × P2, Tapped 25 places, pitch 160 mm (6.3")
	Minimum indexing angle increment	0.0001°
	Indexing time	1.7 sec / 90°
Spindle	Max. Spindle speed	4000 rpm
	Spindle gear ranges	1 step
	Spindle taper	No. 50 7/24 Big Plus
	Spindle bearing size (I. D.)	ø130 mm (ø5.12")
	Spindle acceleration time to top speed	0.9 sec ( 0→4000 rpm )
Feedrate	Rapid traverse rate *1 (X / Y / Z-axes)	48 / 40 / 48 m/min (1890 / 1575 / 1890 IPM)
	Cutting feedrate *1 (X Y Z-axes)	1 ~ 48000 mm/min / 1 ~ 40000 / 1 ~ 48000 mm/min (1 ~ 1890 /1 ~ 1575 /1 ~ 1890 IPM)
	Axis acceleration / deceleration	0.5G
Automatic tool	Tool shank	No. 50
changer	Tool magazine capacity	60
	Maximum tool dia. / length (from gauge line) /weight	ø125 mm / 630 mm / 30kg (ø4.92" / 24.8" / 66 lbs)
	Maximum tool diameter (when adjacent pockets empty)	ø260 mm (ø10.24")
	Tool selection method	Random selection / shortest path
	Tool change time (chip-to-chip)	5.5 sec
Automatic pallet	Number of pallets	2
changer	Change system	Rotary type
	Pallet change time	13.0 sec
Motors	Spindle motor (30 min. rating / cont. rating)	AC 85/75 kW (113/100 HP)
	Flood coolant pump motor (50 Hz / 60 Hz)	730W / 1210W
Electrical and	Electrical power supply (30 min. rating / cont. rating)	117.2 / 180.2 kVA
air requirement	Air supply pressure	0.5 MPa (73 PSI) ~ 0.9 MPa (131 PSI) / 350L/min (12.36 ft³/min)
Machine size	Height	3772 mm (148.5")
	Required floor space <including (rear="" )="" and="" chip="" conveyor="" coolant="" discharge="" tank=""></including>	5028 mm × 8658 mm (197.95" × 340.87")
	Machine weight	31000 kg (68342 lbs)

<sup>\*1</sup> Limited feedrate with continuous axis movement

#### MAZATROL matrix nexus 2 specifications

	MAZATROL	EIA / ISO	
Number of controlled axes	Max. 4 axes (Sim	ultaneous 4 axes)	
Least input increment	0.0001mm, 0.000	001inch, 0.0001°	
Max. programmable value	±99999.9999mm, ±9999.99999inch, ±99999.9999°		
High precision control	Smooth high gain control, *Scale fe	edback, Absolute position detection	
MAZACC-2D	Lenear acceleration/deceleration before interpolation, Optimum corner deceleration, Precision v	ector interpolation, Feed forward control, *Shape error designation, *Rotational-shape correction	
MAZACC-3D	-	*High-speed feedrate for contour defined in small program increments	
Interpolation	Positioning ( Independent axes control, Linear interpolation ), Linear int	terpolation, Circular interpolation, *Synchronized milling spindle tapping	
	-	*Spiral interpolation, Imaginary interpolation, *Fine spline interpolation, Helical interpolation	
Feed function	Rapid traverse, Cutting feed ( Per revolution	on, Per minute ), Feedrate clamp, Override	
	( Rapid traverse, Cutting feed, External	override, 2nd override, Override cancel)	
	Automatic acceleration/deceleration feedrate ( Linear acc./dec	c., Time constant), Constant tangential speed control, Dry run	
Program registration	256, *5 <sup>-</sup>	12, *960	
	2 MB (5300 m), *8 MB ( us	ser area 7.7 MB, 20000 m )	
Display	19" col	lor TFT	
NC display languages	English, German, French, Italian, S	panish, Dutch, Norwegian, Swedish	
	Finnish, Danish, Portuguese, Tu	urkish, Polish, Czech, Romanian	
	Chinese (simplified), Chinese (traditional), Korean, Slovakian, Russia	an, Hungarian, Bulgarian, Japanese, ( simplified language switching )	
Windows languages	English, Chinese ( simplified / traditional )	, Korean, Russian, Japanese ( Selection )	
Data Input / Output	USB, *0	CF card	
Protocol	*MAZAK protocol,	Net work protocol	
Interface	*Card BUS, Ethernet (1000BASE-TX), *PROFIBUS-DP, *EtherNet/IP		
Spindle function S code	S code output ( 8-digit binary output, Analog output, Actual revolution speed binary output ), Spindle revolution control		
	(RPM clamping, High speed RPM confirm/speed change detection,	Rotary speed display), Spindle override ( 0 - 150 % ), multiple orient	
Tool function	T code output ( 8-digit binary data, Ne.	xt tool, Used tool ), Tool life monitoring	
	Spare tool exchange, Tool manageme	ent ( Group number., Pocket number )	
Tool compensation	Tool position compensation, Tool length co	ompensation, Tool diameter compensation	
Number of registered tools	Max.	4000	
Tool offset pairs	40	100	
Miscellaneous functions	M code output ( M3 - digit ), Simultaneous output of four 3-digit M codes, Sec	cond miscellaneous functions ( B 3-digit output ), High speed MSTB interface	
Coordinate system control	MAZATROL coordinate system	Machine coordinate system ( Machine coordinate system, Machine coordinate system shift, Zero point shift )	
		Work coordinate system ( Work coordinate system, Work coordinate system shift ) $ \\$	
Manual operation	Rapid traverse, Cutting feed, Handle feed, Zeropoin	t return, Manual control ( machine lock, gear shift ),	
	Manual spindle control ( spindle	le start, stop, reverse, jogging )	
Automatic operation	Memory operation, MDI operation, Cycle start, N	IC reset, Single block, Feed hold, Single process	
	Optional block skip, Opt	ional stop, Machine lock	
	Feed override, Spindle control, Dry run, Man	ual handle control, Tool path storage ( TPS )	
	-	Hard disk memory operation, *Ethernet operation, *IC memory card operation	
Background functions	During automatic operation ( Programmi	ng, Data input / output, Tool path check )	
Machine compensation	Backlash compensation, Pitch error compensation, Rotational axis pitch error compensation	ompensation, Thermal displacement compensation, *Space error compensation	
Protection functions	Emergency sto	pp, Over travel,	
	Interlock ( cutting start, axis interlock ), Alarm, Intelligen	nt safety shield, Virtual Machining, Mazak Voice Adviser	
Measuring functions	*Manual measurement (Tool set measurement, Mea	asurement on machine, Squareness measurement),	
	*Automatic measurement ( MMS measurement, E	xternal measurement), Measurement data printout	

<sup>\*</sup>option

#### Standard and optional equipment

#### ●: Standard ○: Option

Options		Options	
60-tool magazine	•	800 × 1000 mm T-slot pallet with location bore	0
80-tool magazine	0	Work light	•
120-tool magazine	0	MAZAK standard color (F white/S black)	•
160-tool magazine	0	Scale feedback (X, Y, Z-axis)	0
180-tool hive	0	Chiller unit	•
240-tool hive	0	Preparation for HSK100	0
348-tool hive	0	4000 rpm spindle (AC113HP) (BIG-PLUS)	•
Preparation for PMC (Rotation on loading station availavle)	0	Positioning block for angle tool holder	0
Preparation for PMC (Rotation on loading station not available)	0	NC rotary table (with scale)	0
Preparation for FMS tool transporter (Chain only)	0	NC rotary table	•
Mazak monitoring system B OMP-60	0	Tool specification ø260 × 630 mm (Tool end limit)	•
Preparation for mazak monitoring system B OMP-60	0	Tool specification ø260 × 800 mm (Chain/tool end limit)	0
Additional tapped pallet	0	Tool specification ø320 × 630 mm (Chain/tool end limit)	0
Preparation for pallet management	0	Tool specification ø320 × 800 mm (Chain/tool end limit)	0
Separate type pulse handle operating panel	•	Additional work light (Fluorescent light)	0
Safety cover for 2 pallet changer	•	Light inside of electric cabinet	0
Step for setup	0	Visual tool ID/preparation for data management (Euchner)	•
Hydraulic pressure unit temparature control	0	Preparation for tool ID (Balluff)	0
Ball screw core cooling (X, Y, Z-axis)	•	Preparation for tool ID (Omron)	0
Preparation B for mounting a hydraulic fixture (pressure through pallet, NC position)	0	Preparation for tool ID for tool hive (Euchner)	0
Preparation for hydraulic fixture (2 ports×2 pallet)	0	Tool ID chip (HSK) Euchner (5)	0
Rotary coupling×2 for 2 ports fixture on top of PC	0	Pull stud with tool ID (#50 Euchner)	0
Preparation for hydraulic fixture with confirmation of workpiece position	0	Tool pre-set for #50 Euchner ID/with PC	0
Rotary coupling×2 for 3 ports fixture on top of PC	0	Tool pre-set for #51 Balluff ID/with PC	0
Additional tapped pallet without location bore for pressure through pallet	0	Tool pre-set for #52 Omron ID/with PC	0
Additional tapped pallet witht location bore for pressure through pallet	0	Multi-PC machining control function	0
Additional T-slot pallet without location bore for pressure through pallet	0	6 pallet changer/Safety fence & setup station door	0
Additional T-slot pallet witht location bore for pressure through pallet	0	Machining completion buzzer	0
Height adjusting operation panel	•	Status light (Machining completion indicator/yellow)	0
□800 mm pallet for 3 ton	0	Status light (Alarm indicator/red)	0
Auto tool measurement & Tool breakage detection	0	Three-color machine status light	0
Laser milling tool measurement system (NC4/RENISHAW)	0	Operator's door interlock	•
(not valid in combination with auto tool measurement)	O	Sprinkler system (COX-18E)(not valid in combination with mist collector)	0
Tool breakage detection	0	Work air blast	0
2 pallet changer	•	Oil skimmer (RB-200)	0
Tapped pallet with location bore	0	Magnetic plate	0
T-slot pallet with location bore	0	Magnetic plate separator for cast iron	0
□1000 mm tapped pallet	0	Oil hole holder mounting unit	0
□1000 mm tapped pallet with location bore	0	Oil mist coolant	0
□1000 mm T-slot pallet with location bore	0	Mist collector	0
800 × 1000 mm tapped pallet	0	Coolant temperature control	0
800 × 1000 mm tapped pallet with location bore	0	Hand held coolant nozzle	0

Options		Options	
Air through spindle	•		
Coolant through spindle (8 kgf)	0		
High-pressure coolant through spindle (15 kgf)	0		
Preparation for high-pressure coolant through spindle (70 kgf) without pump	0		
High-pressure coolant through spindle (70 kgf) /mounting unit	0		
Niagara coolant	0		
Niagara coolant (Swing type)	0		
High-pressure coolant through spindle (35 kgf)	0		
Pressure switch for coolant through spindle	0		
Coolant secondary treatment filter for aluminum	0		
Inverter system for chip conveyor (Hinge-type)	0		
Chip conveyor for iron (Side disposal, Hinge) not available with 6PC	0		
Chip conveyor (Side disposal, Consep) not available with 6PC	0		
Chip conveyor for iron (Rear disposal, Hinge)	0		
Chip conveyor (Rear disposal, Consep)	0		
Large capacity rotary chip bucket	0		
Chip bucket (Rotary/not available for rear disposal chip conveyor)	0		
Chip bucket (Fixed/not available for rear disposal chip conveyor)	0		
Flood coolant system	•		
Hand held grease nozzle (LG-400)	0		
Grease cartridge EP-1 (2 sets)	0		
Pull stud bolt	0		
Manuals	•		
Additional Manuals	0		
Disassembly and adjustment tools	•		
Foundation kit (A set of standard leveling blocks)	•		
- Carlound ( Cool of Standard 1015 m/g 2150 to)			



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- ■Specifications are subject to change without notice.
- This product is subject to all applicable export control laws and regulations.
- ■The accuracy data and other data presented in this catalogue were obtained under specific conditions. They may not be duplicated under different conditions. (room temperature, workpiece materials, tool material, cutting conditions, etc.)

