VARIAXIS i-600 NEO
VARIAXIS i-700 NEO

Mazak

[5-axis vertical machining center]

VARIAXIS i-600 NEO
VARIAXIS i-700 NEO

High performance machine tool NEO series with high productivity and environmental performance

High productivity
Enhanced spindle / table shorten cycle times

High accuracy
Enhanced heat displacement compensation ensures stable machining accuracy

Environmental performance
Visualization of energy consumption and regenerative power, energy-efficient control of equipment

VARIAXIS i-600 NEO
Shown with optional equipment

VARIAXIS i-700 NEO
Shown with optional equipment

5-axis machining centers that ensure high productivity with a wide variety of spindle specifications and extensive automation equipments

- Spindle specifications to meet a wide variety of machining requirements
- High-rigidity full gantry construction ensures stable machining accuracy
- A wide range of automation systems to meet various needs

Machine Design

Full gantry construction ensures stable machining accuracy

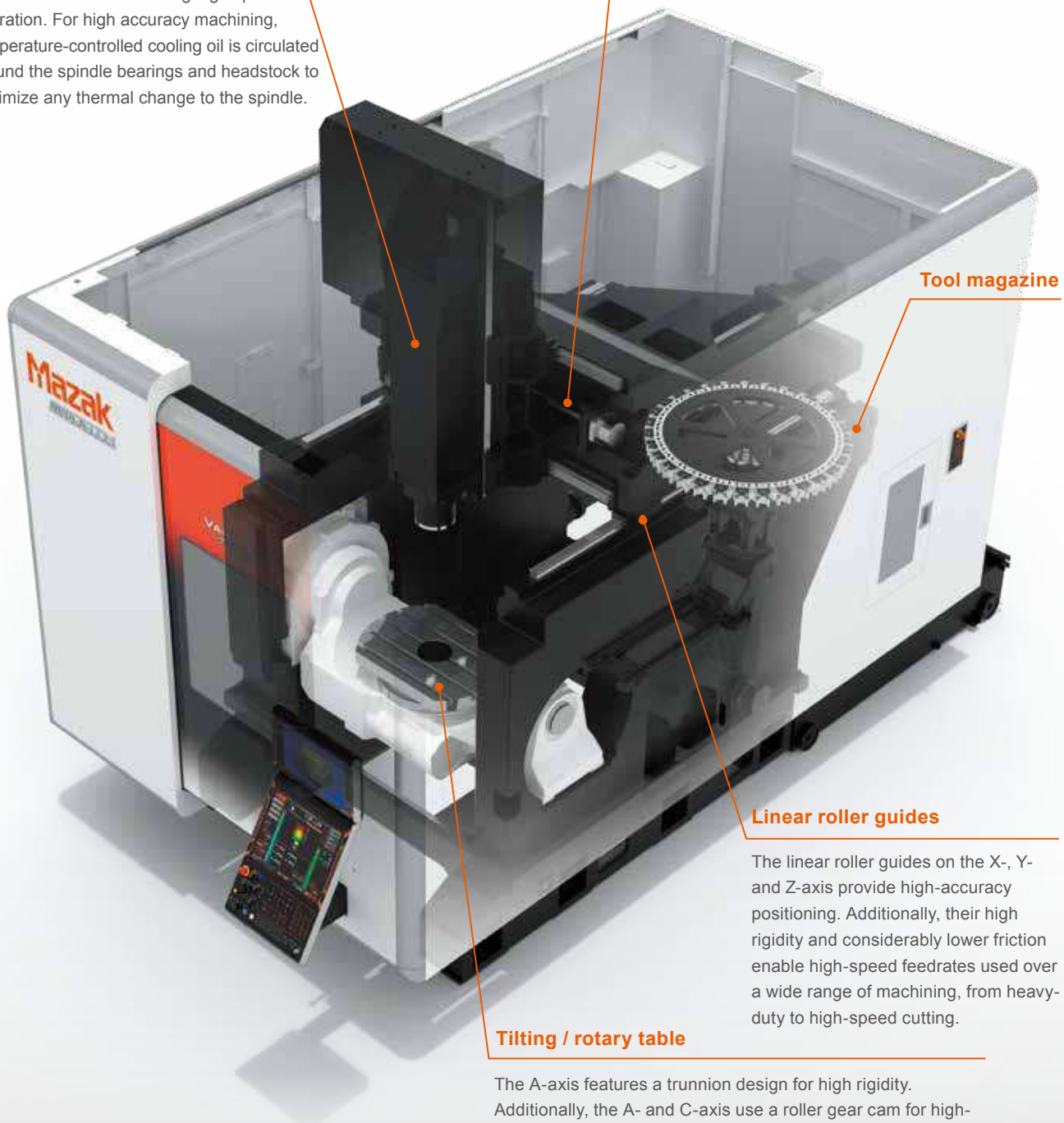
Machine construction was designed utilizing FEA. Minimized vibration during acceleration/deceleration ensures stability for high-accuracy machining.

Integral spindle / motor

Vibration is minimized during high speed operation. For high accuracy machining, temperature-controlled cooling oil is circulated around the spindle bearings and headstock to minimize any thermal change to the spindle.

Ball screw core cooling

For sustained high-speed operation, temperature-controlled cooling oil circulates through the ball screw cores.



Tool magazine

Linear roller guides

The linear roller guides on the X-, Y- and Z-axis provide high-accuracy positioning. Additionally, their high rigidity and considerably lower friction enable high-speed feedrates used over a wide range of machining, from heavy-duty to high-speed cutting.

Tilting / rotary table

The A-axis features a trunnion design for high rigidity. Additionally, the A- and C-axis use a roller gear cam for high-speed and high-accuracy machining.

Standard 30-tools magazine and optional MAZATROL SmoothAi dual monitor are shown

Main Features

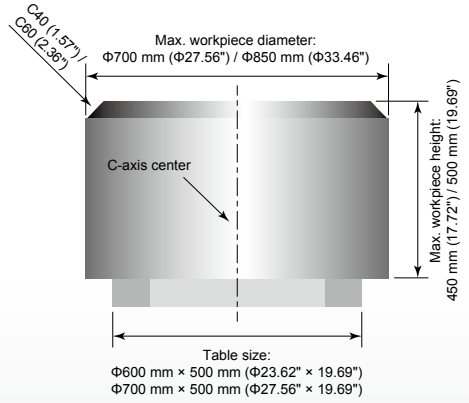
Spindle specifications to meet a wide variety of machining requirements

The highly rigid spindle can perform heavy-duty machining of steel as well as high-speed machining of non-ferrous materials such as aluminum. High-speed and high-torque options are available.

Speed	Standard	High torque·high speed OPTION		
	18000 rpm	15000 rpm	20000 rpm	20000 rpm
Output [40% ED (30 min. rating)]	30 kW (40 HP)	46 kW (62 HP)	30 kW (40 HP)	42 kW (56 HP)
Max. torque [40% ED (30 min. rating)]	120 N·m (89 ft·lbs)	200 N·m (148 ft·lbs)	120 N·m (89 ft·lbs)	161 N·m (119 ft·lbs)
Tool shank	BIG-PLUS No.40 / HSK-A63*	BIG-PLUS No.40 / HSK-A63	BIG-PLUS No.40 / HSK-A63	BIG-PLUS No.40 / HSK-A63

*Option

Maximum workpiece size and travel



Travel

X-axis : 510 mm (20.08") / 630 mm (24.80")
Y-axis : 910 mm (35.83") / 1100 mm (43.31")
Z-axis : 510 mm (20.08") / 600 mm (23.62")

A-axis : -120° ~ + 30° (table tilt)
C-axis : ±360° (table rotation)

Max.load : 500 kg (1102 lbs) / 700 kg (1543 lbs)

* VARIAXIS i-600 NEO / i-700 NEO

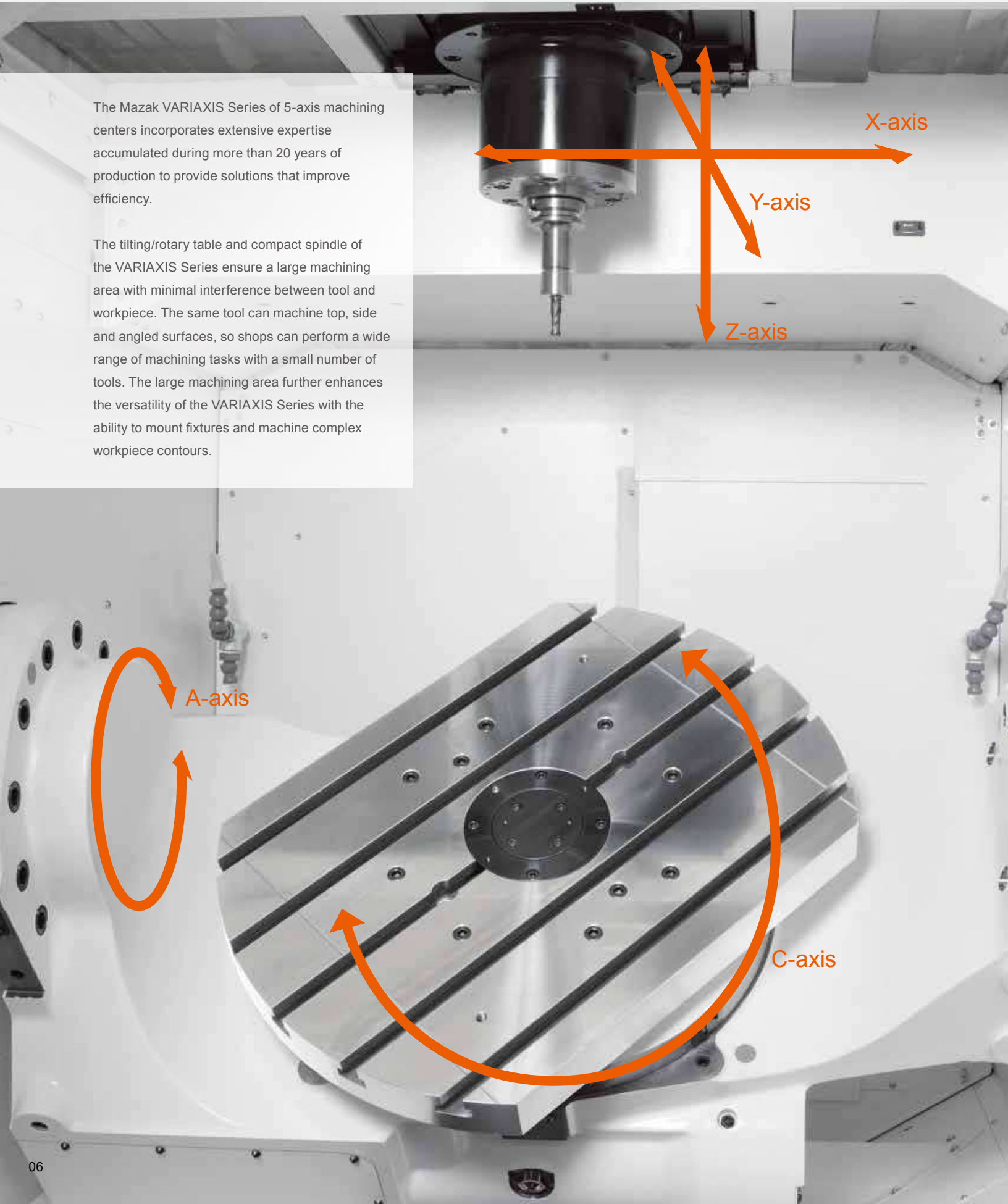
Tool magazine

The standard tool magazine accommodates 30 tools, with 40, 80 and 120-tool options available. This generous capacity provides ample storage for complex workpieces and high-mix production, as well as spare tools for prolonged continuous operations.

Applications

The Mazak VARIAXIS Series of 5-axis machining centers incorporates extensive expertise accumulated during more than 20 years of production to provide solutions that improve efficiency.

The tilting/rotary table and compact spindle of the VARIAXIS Series ensure a large machining area with minimal interference between tool and workpiece. The same tool can machine top, side and angled surfaces, so shops can perform a wide range of machining tasks with a small number of tools. The large machining area further enhances the versatility of the VARIAXIS Series with the ability to mount fixtures and machine complex workpiece contours.



High-accuracy machining of multiple and inclined surface, and simultaneous 5-axis machining of complex contours

Maximizing aluminum high-speed machining with high-speed spindle performance

· Machining of complex contours using small diameter tools at high-speed rotation
· Multiple surface machining
· Simultaneous 5-axis machining, including inclined and curved surfaces

Material : Aluminum (A5052)
Part : Transmission housing
Size : Φ370 mm × 350 mm (Φ14.57" × 13.78")
Spindle : 20000 rpm high-speed spindle

Drilling small diameters

Multiple surface machining with
A- and C-axis high-speed positioning :
Φ12 mm (Φ0.47") flat drill
Φ6 mm (Φ0.24") drill

Simultaneous 5-axis machining

Finish machining of curved surface : R3 ball endmill
High-speed, high-quality machining with 20000 rpm spindle

High efficiency pocket milling

High-speed rough machining:
Φ100 mm (Φ3.94") face mill
Spindle speed : 6366 rpm
Material removal rate : 2860 cm^3/min (174.53 $in.^3$/min)

Pocket milling : Φ50 mm (Φ1.97") face mill
Spindle speed : 20000 rpm
Material removal rate : 2660 cm^3/min (162.32 $in.^3$/min)

Drilling inclined surface

Drilling large diameters :
Φ32 mm (Φ1.26") insert drill

■ Machining benefits

· Reduce rough machining time with high-speed machining
· Enable rough machining to finish machining of complex contour in one process with process integration through 5-axis machining
· Reduce number of machine setups

■ SMOOTH MACHINING CONFIGURATION

Easily adjust machining time, finished surface smoothness and machining shape for improved productivity, even with complex curved surfaces.

Machining shape priority

Extensive machining applications with high accuracy 5-axis machining

Automotive component
Control arm

Industrial machinery
Industrial camera body

Construction machinery component
Housing

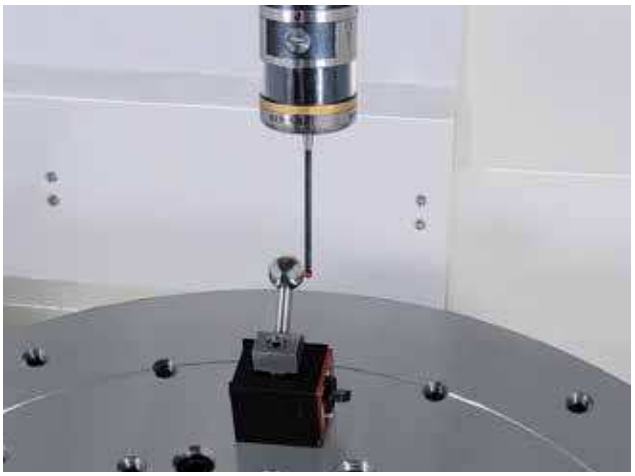
Semiconductor production equipment
Vacuum chamber

Aerospace component
Impeller

Higher Accuracy

High accuracy 5-axis calibration - MAZA-CHECK

Automatically measure and compensate for position misalignment and incline of the rotary axes for high-accuracy 5-axis machining. The centers and tilts of rotary axes can be automatically measured and compensated.

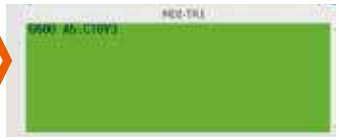


Wireless touch probe RMP600 (optional equipment)

Measurement item selection

Measurement information setting

Automatic measurement program generation



Convenient screen display assists measurement operation.

Ai Thermal Shield

Based on spindle speed and temperature of the machine, Ai Thermal Shield suppresses changes in the cutting edge position. It stabilizes continuous machining accuracy through meticulous machine control that takes into account temperature changes, machine position, coolant ON/OFF, and other factors. Furthermore, by accumulating and analyzing data from subsequent measurements, thermal displacement compensation can be optimized for each machining environment.

DBB (test results)

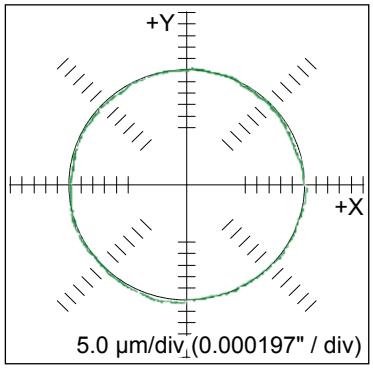
X-Y plane measured results

3.0 µm (CW) (0.00012")

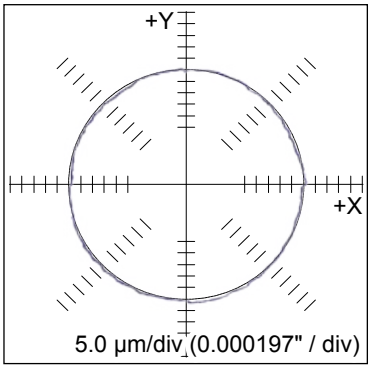
2.7 µm (CCW) (0.00011")

Machine	VARIAXIS i-700 NEO
Diameter	100 mm (3.94")
Feedrate	560 mm/min (22 IPM)

3.0 µm (CW) (0.00012")



2.7 µm (CCW) (0.00011")



Positioning accuracy and repeatability (test results)

Mazak precision results (ISO)

Positioning accuracy	X-axis	1.24 µm (0.000049")
	Y-axis	2.38 µm (0.000094")
	Z-axis	1.12 µm (0.000044")

Positioning repeatability	X-axis	0.86 µm (0.000034")
	Y-axis	1.36 µm (0.000054")
	Z-axis	1.02 µm (0.000040")

Mazak precision results (previous JIS)

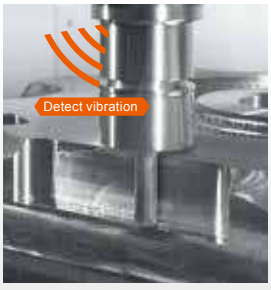
Positioning accuracy	X-axis	± 0.70 µm (±0.000028")
	Y-axis	± 1.01 µm (±0.000040")
	Z-axis	± 0.89 µm (±0.000035")

Note : The inspection is conducted according to ISO and previous JIS on a recommended foundation with room temperature controlled to 22°C±1°C after the machine has reached operating temperature.

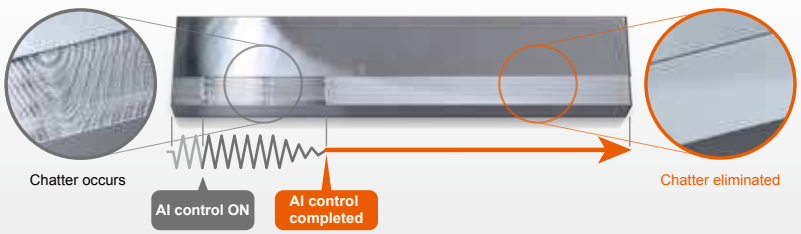
Smooth Ai Spindle

OPTION

SMOOTH AI SPINDLE



The machine uses AI to detect milling spindle vibration and adjust machining conditions automatically to produce unsurpassed surface finishes and high productivity. With AI, even a less-skilled operator can make adjustments easily in a short time.



Automation

2-pallet changer

OPTION

For higher productivity, set up the next workpiece during machining of the current workpiece. The 2-pallet changer offers a compact design and is suitable for mass production. Reduced length to pull out the rear conveyor saves space in the maintenance area.

Pallet size	400 mm × 400 mm (15.75" × 15.75") / 500 mm × 500 mm (19.69" × 19.69")
Max. workpiece size	Φ600 mm × 425 mm (Φ23.62" × 16.73") / Φ730 mm × 500 mm (Φ28.74" × 19.69")
Max. load	400 kg (882 lbs) / 600 kg (1323 lbs)

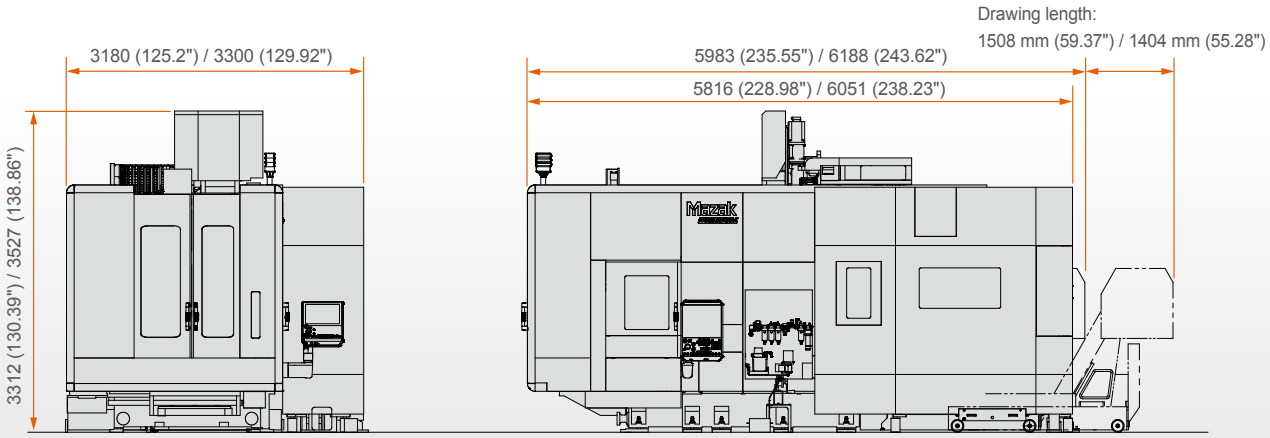
* VARIAXIS i-600 NEO / i-700 NEO

* VARIAXIS i-600 NEO / i-700 NEO

Machine dimension (2-pallet changer)

Dimensions of 80-tool magazine

Unit : mm (inch)



* VARIAXIS i-600 NEO / i-700 NEO

MPP (MULTI PALLET POOL) — OPTION

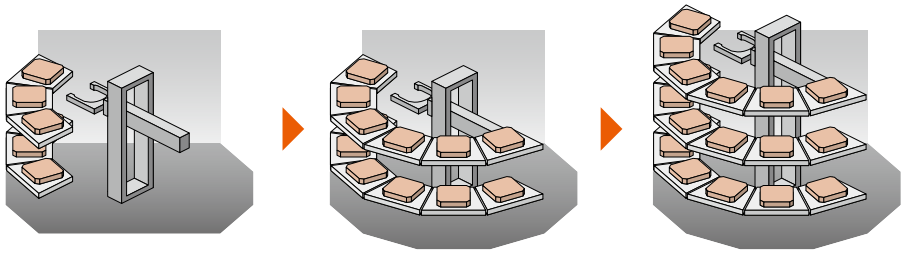
The MPP (MULTI PALLET POOL) is a system to meet the increasing worldwide demand for automation.
It is designed to provide high productivity in the production of a wide variety of parts in small size lots.


Pallet loader and workpiece stocker


Loading station

Flexible pallet stocker capacity

6, 12 and 18 pallet storage capacities
are available after initial installation.



3 pallets ×2 levels
6 PC

6 pallets ×2 levels
12 PC

6 pallets ×3 levels
18 PC

Workpiece specifications

Model	Pallet size	Max. load (without pallet)	Max. workpiece size (without pallet)
VARIAXIS i-600 NEO	400 mm × 400 mm (15.75" × 15.75")	400 kg (882 lbs)	Φ600 mm × 425 mm (Φ23.62" × 16.73")
VARIAXIS i-700 NEO	500 mm × 500 mm (19.69" × 19.69")	600 kg (1323 lbs)	Φ730 mm × 500 mm (Φ28.74" × 19.69")

SMOOTH MPP

MPP control / management software

Once the production schedule is input, operation will be performed automatically.
Production results, system utilization and other data can be checked on the MAZATROL SmoothAi CNC. If connected to a network (prepared by user), system date are accessible on office PCs, tablets and smartphones.

Automation

PALLETECH SYSTEM

OPTION

Pallet size
□400 mm (□15.75") / □500 mm (□19.69")

* VARIAXIS i-600 NEO / i-700 NEO

* PALLETECH SYSTEM with the VARIAXIS i-700 NEO and horizontal machining center

- PALLETECH can be expanded flexibly in response to increased production volume
- VARIAXIS i series can be integrated to other machines such as horizontal machining centers using PALLETECH SYSTEM
- Flexible connection to peripheral system and devices that increase automatic operation time

SMOOTH PMC

PALLETECH system management software

- Effortless, prompt and efficient operation scheduling by a real-time simulation based on actual machine data.
- Assists the operator in the setup of workpieces and tools.
- The system can remotely monitor the machine operation from office PCs, tablets, and smartphones.

System monitoring screen

Simulation

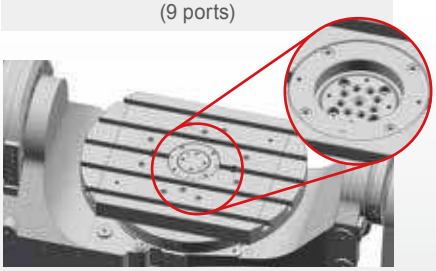
Preparation for hydraulic fixtures

OPTION

Hydraulic fixture support for easier workpiece setup and removal

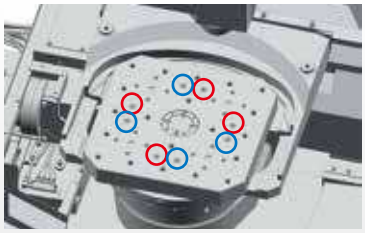
Continuous power is supplied through the pallet for hydraulic fixtures. Pneumatic fixtures also are available.
Maximum number of ports:
· 9 (single table)
· 4 ports inside the machine (2-pallet changer)
· 8 ports on workpiece setup station (2-pallet changer)

Single table
(9 ports)



2-pallet changer
(4 ports inside the machine)

2-pallet changer
(8 ports on workpiece setup station)



○ Hydraulic pressure supply port (retain continuously)
○ Hydraulic pressure supply port (retain at only setup station)

* The specifications mentioned are for VARIAXIS i-700 NEO. The layout of the supply port differs for VARIAXIS i-600 NEO. Please contact us for more details.

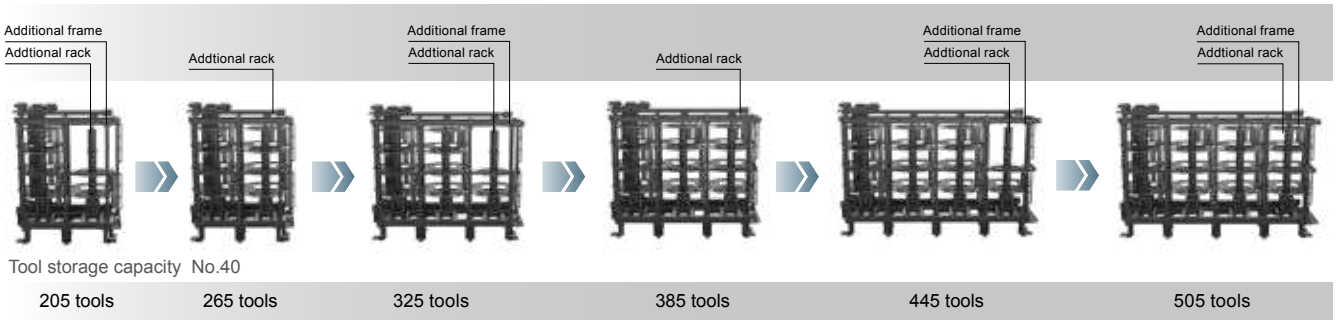
Multiple drum tool magazine

OPTION

The compact multiple drum tool magazine with large storage capacity meets the requirements for small-lot machining of a wide variety of workpieces. Tools load automatically from the multiple-drum tool magazine to the magazine next to the machining area. The new shifter mechanism reduces tool waiting time and improves productivity by positioning the tool to be used after the next tool. Select the tool magazine size that best meets your production requirements.
The standard magazine consists of 25-tool magazine inside the machine and 180-tool magazine outside the machine, with tool length up to 350 mm (13.78") (some 360 mm (14.17")) installed.

Shown with optional equipment

265 tools drum tool magazine

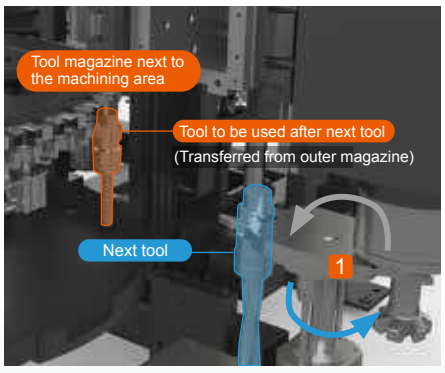


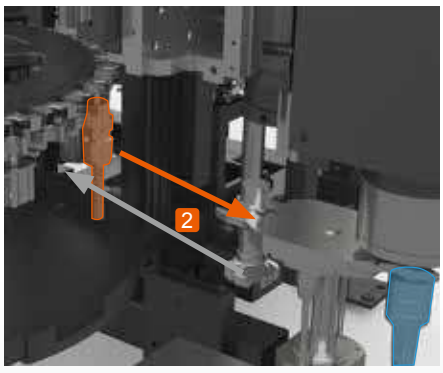
Tool storage capacity No.40

205 tools	265 tools	325 tools	385 tools	445 tools	505 tools

Considerably reduced tool waiting time

The new shifter mechanism has reduced tool waiting time by its ability to position the tool to be used after the next tool. As a result, non-cuttingtime is minimized by reducing waiting time when tools are changed which have individual short machining cycle times.





Used tools are stored in magazine and tool to be used after next tool is moved to next tool position

Magazine operation panel

The tool magazine operation panel is used to perform tool loading / unloading and tool data editing (of tools stored in the magazine) to reduce tool setup time.

Ergonomics & Maintainability & Setup Support

Unsurpassed ease of operation through ergonomic design

Effortless setup operations

1 Excellent visibility

The large window provides excellent visibility, making it easier to monitor the machining process and confirm and adjust cutting conditions that often arise during setup. As a result, work efficiency improves without any added stress.

2 Excellent accessibility

The operator has excellent access to the table from the front of the machine for convenient workpiece loading/unloading and machine setup.

Height from floor to table top : 1000 mm (39.37") / 1000 mm (39.37")
Distance from table center to the operator: 400 mm (15.75") / 500 mm (19.69")

* VARIAXIS i-600 NEO / i-700 NEO

3 Convenient loading by crane

The large front door opening ensures excellent access to the machine table for convenient loading and unloading of workpieces. The automatic retractable top cover allows for easy use of an overhead crane for handling heavy workpieces and fixtures.

4 Maintenance area

Items that requiring frequent access for machine maintenance are arranged in one central location.

Support functions for achieving high-precision setup tasks

Tool measurement

Tool length measurement and tool breakage detection

OPTION

Tool length is measured and registered in CNC system automatically. Tool breakage can be detected during automatic operation.

NC4 high-accuracy laser tool measurement system

OPTION

Designed for tool-length measurement and tool-breakage detection with small diameter tools. Non-contact NC4 measures tool length and diameter with laser at production speeds for stable machining accuracy.

Tool length measurement

High-accuracy laser tool measurement system

Coordinate value / workpiece measurement

Smooth OMM
(on machine measurement software)

OPTION

Moves the touch probe manually to a measurement point and create a measurement program after the point is registered. Automatically updates work coordinates and tool compensation using measurement results, and measures geometric tolerances of workpiece features.

Note: The user must prepare the touch probe and reference sphere for on-machine measurement. Additional purchases may be necessary depending on the customer environment. For further details, please contact your nearest Mazak office.

Smooth Set and Inspect
(on-machine measurement software)

OPTION

Makes inspection programs easily. Automatically updates work coordinates and tool compensation using measurement results.

Note: The user must prepare the touch probe and reference sphere for on-machine measurement. Additional purchases may be necessary depending on the customer environment. For further details, please contact your nearest Mazak office.

Mazak monitoring system B RMP600

OPTION

Coordinate values automatically shift based on workpiece probing results from a touch sensor mounted in the machine spindle.

Coolant & Chip Disposal

Coolant

Workpiece washing coolant

OPTION

By discharging a large volume of coolant from nozzles, machined chips are efficiently removed from the workpiece and fixture. This option is effective for machines equipped with the pallet changer or robot to minimize the accumulation of machined chips during automatic operation.

Flood coolant (standard)

Coolant discharges from nozzles on the spindle housing to cool the workpiece and remove chips.

SUPERFLOW coolant system

OPTION

The SUPERFLOW coolant system features improved chip-control and lubrication, along with lower tool-tip temperatures.

· High-performance cyclone filter with minimum maintenance requirements
· Easily set coolant pressure by M-code (pressure range from 0 to 7 MPa (0 to 1015 PSI))

Coolant through spindle

OPTION

Coolant is fed to the tool tip by passages through the tool for lower tool tip temperatures, improved chip-control and lubrication. 2 pump pressure specifications are available : 0.5 MPa (73 PSI) and 1.5 MPa (218 PSI).

Coolant temperature control

OPTION

Control coolant temperature to prevents heat displacement for higher machining accuracy.

Quick coolant stop

OPTION

Quick coolant stop prevents leakage of residual coolant in the tool magazine area during tool exchange to improve the working environment.

Mist collector

OPTION

Remove coolant mist generated by machining from the machining area to maintain a safe and clean working environment.

Oil skimmer

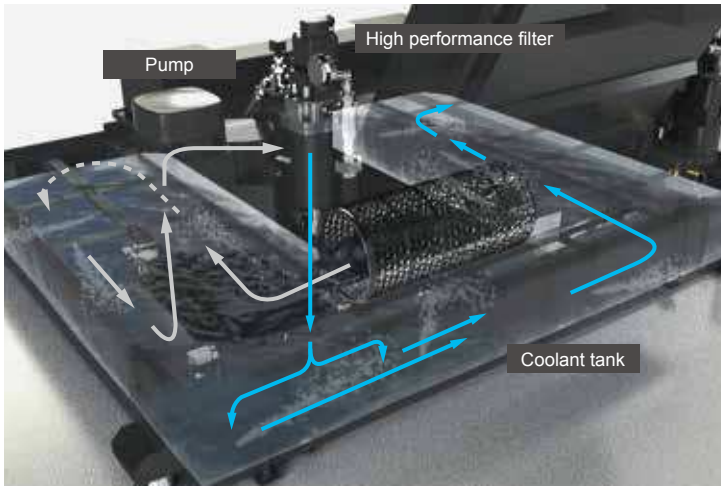
OPTION

Oil skimmer collects the oil content, such as floating working oil and lubricating oil, mixed in water-soluble coolant. This will maintain machining accuracy and extend the coolant's lifespan.

Smooth coolant system

OPTION

Smooth coolant system collects sludge and saves energy. By adopting a high-performance filter, it can recover 99% of the sludge, keep the tank clean, and achieve extended coolant lifespan and improved maintainability. In collaboration with the Energy saver in the CNC system, it can control the optimal coolant discharge amount according to the machining requirements, enabling energy-efficient machining. For more details, please refer to page 23.

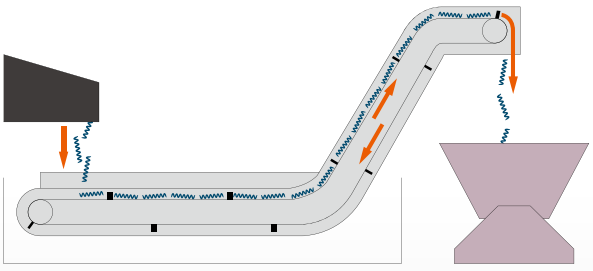


Chip Disposal

Chip conveyor (hinge)

OPTION

Chips are removed by hinge-plate belt and discharged from the rear side of the machine. Very suitable for curly shaped steel chips from 30 mm ~ 150 mm (1.18" ~ 5.91") long.

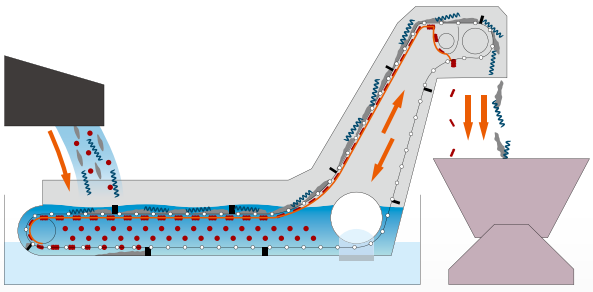


Chip conveyor (ConSep 2000 II WS*)

OPTION

Chip conveyor with internal coolant filtration that is effective for removing small chips as well as long, curly chips.

* The machine with 2-pallet changer is equipped with ConSep 2000.



	Hinge	ConSep 2000 II WS
Sludge-like chips (0.25 mm ~ 1 mm) (0.01" ~ 0.04")	×	○
Needle-like chips (~ 0.5 mm) (~ 0.02")	×	○
1 ~ 5 mm (0.04" ~ 0.2")	×	○
5 ~ 30 mm (0.2" ~ 1.18")	×	○
30 ~ 70 mm (1.18" ~ 2.76")	○	○
70 mm (2.76") ~	○	○

Innovation with latest features

High-speed and high-precision control CNC system

MAZATROL SMOOTH Ai

Shown with optional dual monitor

Smooth graphical user interface

MAZATROL Smooth graphical user interface is operable similar to smart phone / tablet, allowing for easy and intuitive control.

Ease of operation

Designed for unsurpassed ease of operation with advanced intelligent functions.

Unparalleled high-speed, high-precision control

Latest hardware and software for unprecedented speed and precision.

High-precision 5-axis machining programming

High-precision 5-axis machining programming and high-speed simulation provide extensive support at every step of the process, from programming to machining.

AI

Vibration control and heat displacement compensation with AI ensure improved machining surfaces as well as stable high-accuracy machining.

Digital Twin

Virtual machines are created on an office PC for efficient setup and further enhanced productivity.

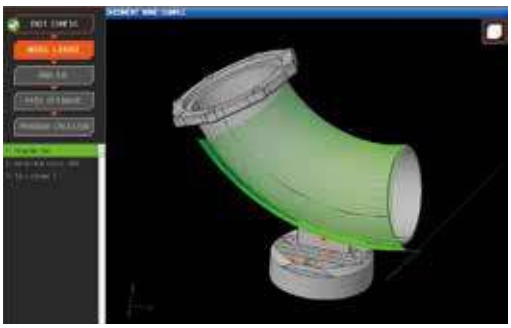
Cutting adviser

Optimize machining conditions through simulation and visualization of machining processes from accumulated machining results.

SMC PLUS

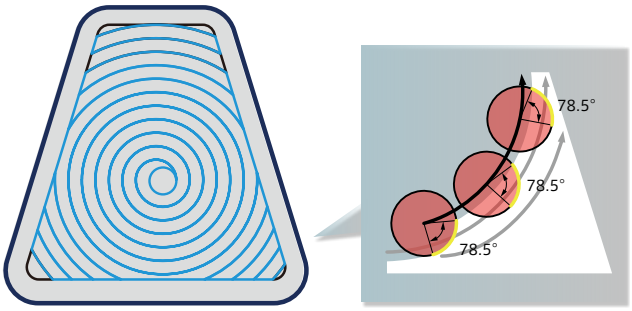
OPTION

Compares the cutting point of the EIA program with the 3D model to change the correct command point for correct tool paths and high-accuracy finished surfaces.



Pocket milling

Pocket Milling is a new pocketing cycle for MAZATROL programming. This function maintains a constant angle of engagement between the cutter and material to create a high efficiency tool path, reduces chip load variation, extends tool life and allows tools to be used to their full potential.



Convenient Parameter Setting and Fine Tuning Function

SMOOTH MACHINING CONFIGURATION

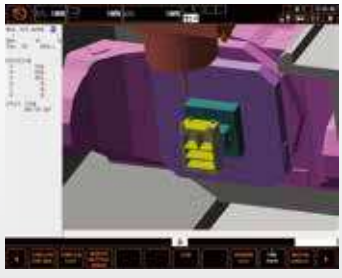
Machining features including cycle time, finished surface, and machining shape can be adjusted by slider switches on the display according to material requirements and machining methods. With MAZATROL SmoothAi, rotary axis can be adjusted as well as linear axis, allowing for optimal adjustments for 5-axis machining.

Smooth CAM Ai

OPTION

Programs can be made and edited, as well as performing simulation and analysis in the office for multiple machines.

Programming



Fast simulation

Machining analysis · Optimization

Ease of Programming

Easy programming

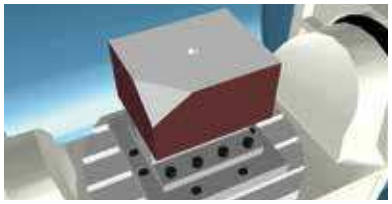
Multiple-surface machining

Easy programming of multiple-surface machining which normally requires complex machining programs.

Setting Coordinate

Setting Index Angle

The same home position and coordinate system can be used for the top surface and angled surfaces without requiring any complicated programming for the angled surfaces.



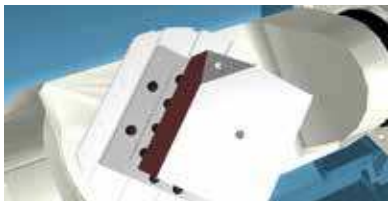
Program origin automatic calculation workpiece coordinate shift

Program origin automatic calculation workpiece coordinate shift.

Setting Index Angle

Coordinate Shift

No complicated calculations required when changing program coordinate system.

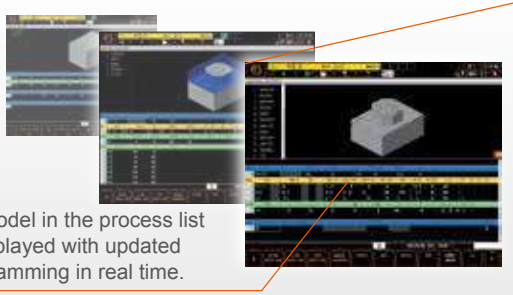


QUICK MAZATROL

Reduced time for conversational programming

Programs can be easily created and checked by displaying the 3D model of the workpiece. Can reduce input errors and time for program checking.

Quickly move to the corresponding section in the MAZATROL program by touching a feature in the 3D model.



3D model in the process list is displayed with updated programming in real time.

3D ASSIST

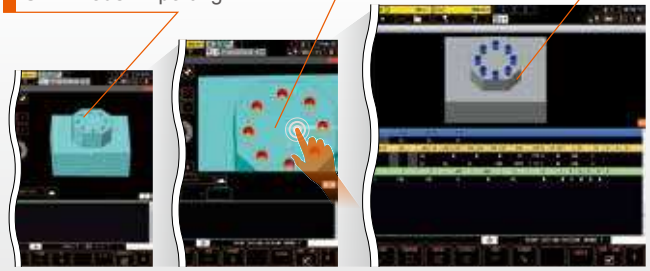
Making a program directly from 3D CAD data

Workpiece coordinates data can be imported from 3D CAD data to a MAZATROL program. No coordinate value inputs are required. Can reduce input errors and time for program checking.

Automatically input to MAZATROL program

Shape selection

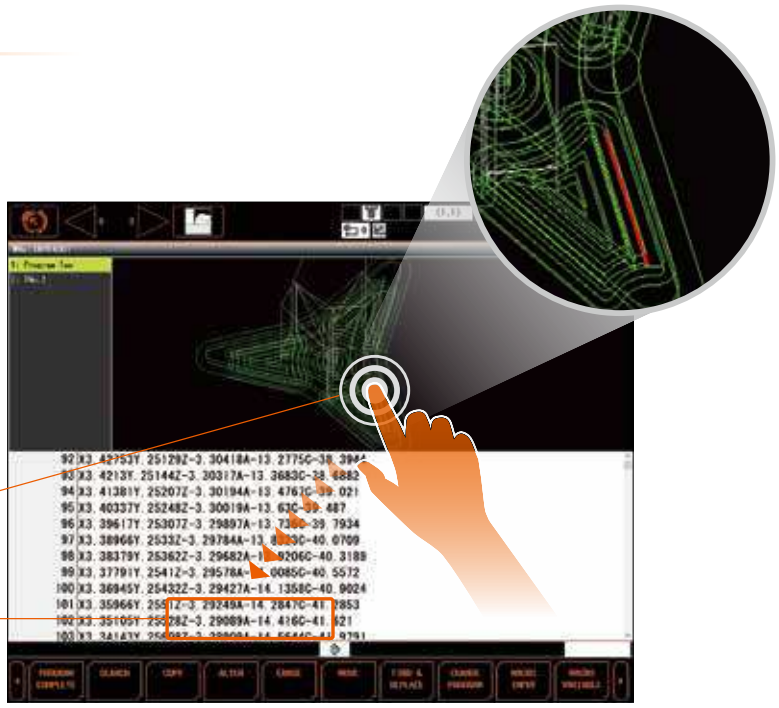
CAD model importing



QUICK EIA

EIA program visualization

Program, process list and 3D tool path display are linked to each other. Visible search on touch screen can reduce the time for program checking.



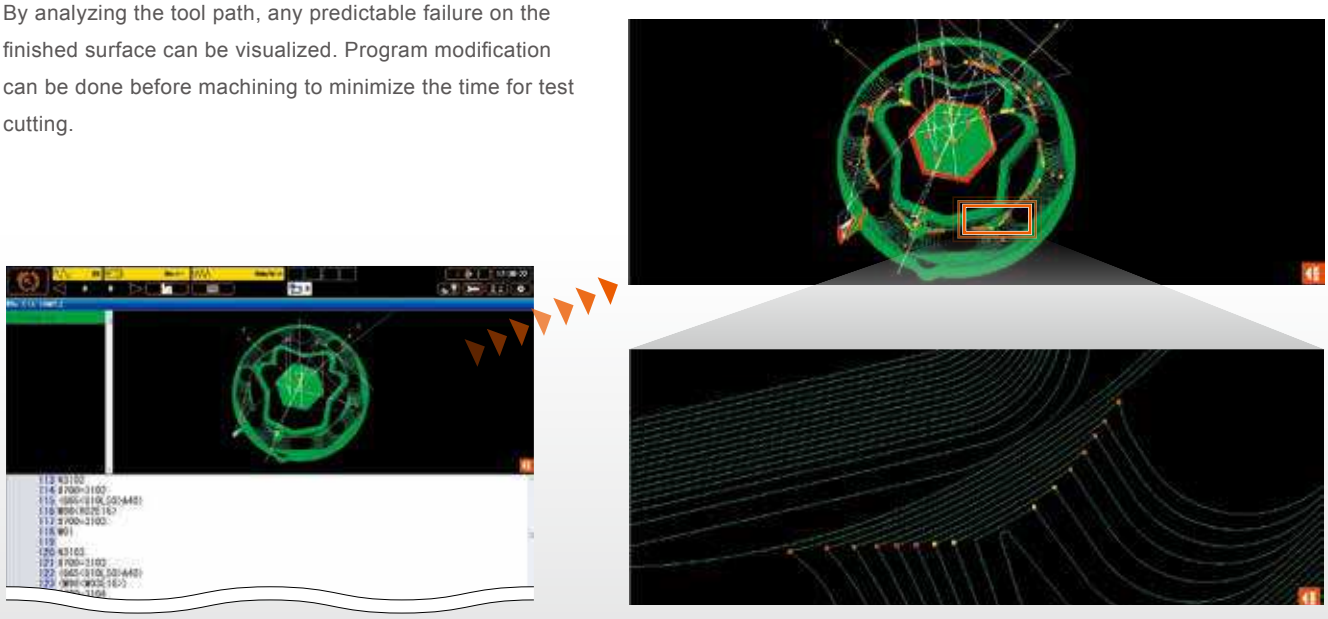
Selecting tool path by touching the screen.

Moving to the corresponding EIA program line.

VIEW SURF

Analyzing EIA programs

By analyzing the tool path, any predictable failure on the finished surface can be visualized. Program modification can be done before machining to minimize the time for test cutting.

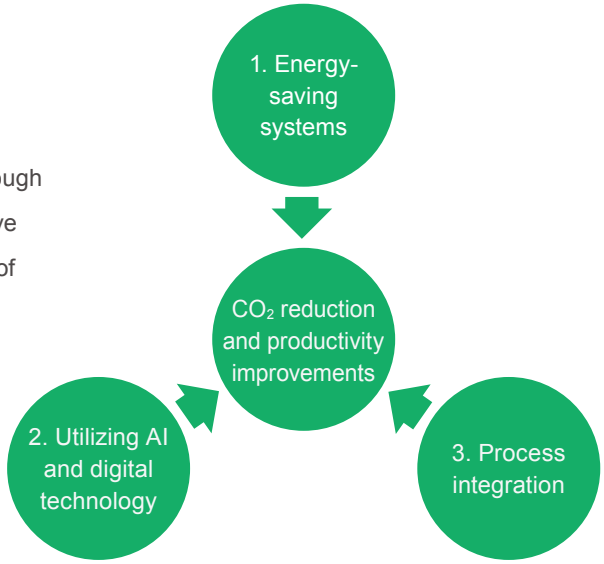


Environmentally Friendly

Mazak Go GREEN

Decarbonization-related technology for Mazak products

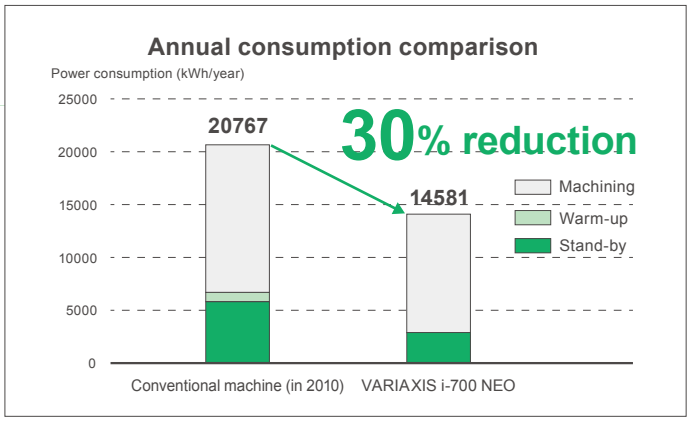
We are committed to developing technology for decarbonization through productivity improvements. Mazak promotes the three comprehensive approaches to the reduction of our environmental impact in support of achieving a sustainable society.



Energy-saving equipment reduces power consumption

◎Hydraulic unit utilizing accumulator
◎Inverter type chiller unit
◎Reduced warm-up time
by stable machining accuracy

Annual power consumption
30% reduction



Energy saver

Energy consumption and the regenerative power produced through the energy saving equipment can be viewed visually on the CNC system - control/management of coolant and other equipment.

Graphical display

Display instantaneous power / consumed power / regenerated power / actual power graphically.

Trend display

Display power consumption by hour / day / week / month.

Optimal control function

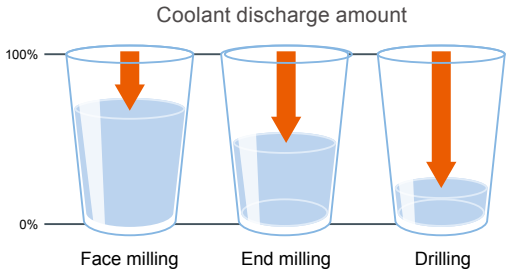
Displays the energy-saving status of each piece of equipment.
Energy-saving level can be adjusted.

Smooth coolant system OPTION

Optimal control of coolant discharge amount

Energy saver automatically determines the optimal coolant discharge for energy-saving machining.

◎The cutting volume is calculated by simulation
◎The optimal discharge amount is automatically determined



Energy-saving coolant system with sludge removal performance

No need to frequently clean the tank

The coolant tank has a coolant jet that makes a vortex in the center so that small machined chips will not settle in the tank. Thanks to this feature, the coolant tank stays clean and the service life of the coolant is extended. Ease of maintenance is also ensured.
The frequency of coolant changes is reduced as well as CO_2 emissions at coolant disposal

High performance filter removes 99% of sludge

The high-performance filter suctions the chips along with the coolant, separates them, and removes 99% of the sludge.

Sludge removal rate
99%

Reduced running cost / environmental impact

Reduced tank cleaning, optimal control of coolant discharge and the efficient pump operation with inverters, reduces power consumption and CO_2 emissions.

Smooth coolant system deployment

Standard Machine Specifications

		VARIAXIS i-600 NEO	VARIAXIS i-700 NEO
Stroke	X-axis travel (spindle head left / right)	510 mm (20.08")	630 mm (24.80")
	Y-axis travel (spindle head back / forth)	910 mm (35.83")	1100 mm (43.31")
	Z-axis travel (spindle head up / down)	510 mm (20.08")	600 mm (23.62")
	A-axis travel (table tilt)	-120° ~ + 30°	
	C-axis travel (table rotation)	±360°	
Table	Distance from table top to spindle nose	70 mm ~ 580 mm (2.76" ~ 22.83") (table horizontal)	100 mm ~ 700 mm (3.94" ~ 27.56") (table horizontal)
	Table size	Φ600 mm (Φ23.62") × Width 500 mm (19.69")	Φ700 mm (Φ27.56") × Width 500 mm (19.69")
	Max. workpiece size	Φ700 mm × 450 mm (Φ27.56" × 17.72")	Φ850 mm × 500 mm (Φ33.46" × 19.69")
	Table load capacity (evenly distributed)	500 kg (1102 lbs)	700 kg (1543 lbs)
	Table surface configuration	18 mm (0.71") T-slot × 5, 100 mm (3.94") pitch	
Milling Spindle	Max. spindle speed	18000 rpm	
	Spindle taper	7/24 taper No. 40	
	Spindle bearing I.D.	Φ80 mm (Φ3.15")	
Feedrate	Rapid traverse rate (X-, Y-, Z-axis)	60 m/min, 60 m/min, 56 m/min (2362 IPM, 2362 IPM, 2205 IPM)	
	Rapid traverse rate (A-, C-axis)	40 min^{-1} / 50 min^{-1}	32 min^{-1} / 50 min^{-1}
	Cutting feedrate*1 (X-, Y-, Z-axis)	56 m/min (2205 IPM)	
	Cutting feedrate*1 (A-, C-axis)	9000°/min	
	Simultaneously controlled axes	5	
	Min. indexing increment (A-, C-axis)	0.0001°	
	Indexing time (A-axis) (clamp / unclamp time not included)	0.62 sec. / 90°	0.67 sec. / 90°
Automatic tool changer	Tool shank configuration	BIG-PLUS No.40	
	Tool storage capacity	30	
	Max. tool diameter / length (from gauge line) / weight	Φ90 mm / 300 mm / 8 kg (Φ3.54" / 11.81" / 18 lbs)	Φ90 mm / 360 mm / 8 kg (Φ3.54" / 14.17" / 18 lbs)
	Max. tool diameter with adjacent tool pockets empty	Φ130 mm (Φ5.12")	
	Tool selection method	Random selection, shortest path (fixed pocket assignment)	
	Tool change time (chip-to-chip)	3.4 sec.	3.6 sec.
Motors	Spindle motor (40% ED (30 min. rating) / cont. rating)	30 kW (40 HP) / 26 kW (35 HP)	
	Electrical power requirement (40% ED (30min. rating) / cont. rating)	57.09 kVA / 51.52 kVA	59.59 kVA / 54.02 kVA
	Air supply	360 NL/min (12.71 ft3/min)	
Coolant	Coolant tank capacity	500 L (132 gal)	
Machine size	Height	3232 mm (127.24")	3455 mm (136.02")
	Width	2240 mm (88.19")	2400 mm (94.49")
	Length*2	4455 mm (175.39")	
	Machine weight*3	13000 kg (28660 lbs)	15000 kg (33069 lbs)

*1 Limited feedrate with continuous axis movement

*2 Chip conveyor and coolant tank not included

*3 Chip conveyor not included

Standard and Optional Equipment

● : Standard ○ : Option - : N/A

		VARIAXIS i-600 NEO	VARIAXIS i-700 NEO
Table	Φ600 mm × 500 mm (Φ23.62" × 19.69") T-slot table	●	-
	Φ700 mm × 500 mm (Φ27.56" × 19.69") T-slot table	-	●
Machine	Work light	●	●
	Ai THERMAL SHIELD	●	●
	15000 rpm high torque spindle	○	○
	18000 rpm	●	●
	20000 rpm	○	○
	20000 rpm high output spindle	○	○
Automation	Automatic tool length measurement & tool breakage detection (RENISHAW PRIMO LTS)	●	●
	Laser type tool length measurement	○	○
	30 tool magazine	●	●
	40 tool magazine	○	○
	80 tool magazine	○	○
	120 tool magazine	○	○
	Workpiece measurement printout (printer not included)	○	○
	Absolute positioning system	●	●
	Remote manual pulse generator	○	○
	Automatic front door	○	○
	Automatic power ON / OFF + warm-up operation	●	●
	Operation end buzzer	○	○
	Status light (3 colors)	○	○
	2-pallet changer	○	○
	Wireless touch probe RMP600	○	○
	Preparation for hydraulic fixtures	○	○
Safety Equipment	Operator door interlock	●	●
High Accuracy	MAZA-CHECK (software, reference sphere)*1	●	●
	Ball screw core cooling (X-, Y-, Z-axis)	●	●
	Scale feedback (X-, Y-, Z-axis)	○	○
	Scale feedback (A-, C-axis)	○	○
	Coolant temperature control	○	○
Coolant / Chip disposal	Coolant system	●	●
	Workpiece air blast	○	○
	Oil skimmer	○	○
	Mist collector	○	○
	Hand held coolant nozzle*2	○	○
	Coolant through spindle system 0.5 MPa (73 PSI)	○	○
	Workpiece washing coolant	○	○
	High pressure coolant through spindle 1.5 MPa (218 PSI)	○	○
	SUPERFLOW coolant system 0 ~ 7.0 MPa (0 ~ 1015 PSI)	○	○
	Flood coolant 0.44 MPa (64 PSI) 30 L/min (1.06 ft^3/min)	●	●
	Coolant through spindle pressure switch	○	○
	Top cover	●	●
	Chip conveyor (hinge) rear discharge	○	○
	Chip conveyor (ConSep 2000 II WS) rear discharge for single machine	○	○
	Chip conveyor (ConSep 2000) rear discharge for 2-pallet changer	○	○
	Chip bucket (swing type)	○	○
	Chip bucket (fixed type)	○	○
Tooling	Pull stud bolt	○	○
Others	Manual	●	●
	Additional manuals	○	○

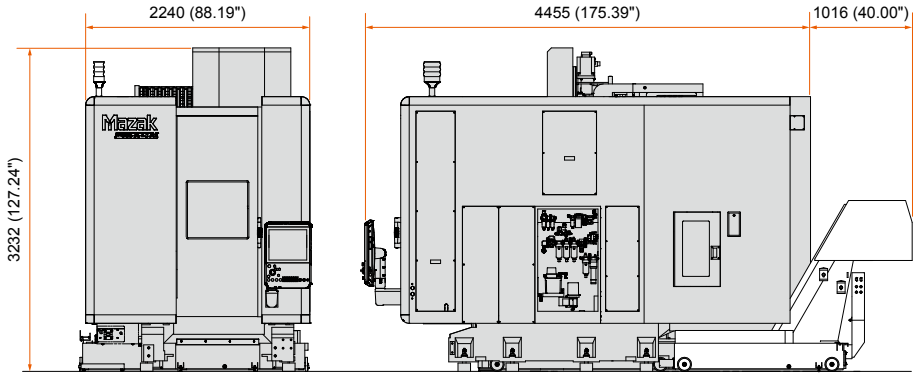
*1 MAZA-CHECK requires optional RMP600 wireless touch probe.

*2 Not available with the 2-pallet changer

Machine Dimensions

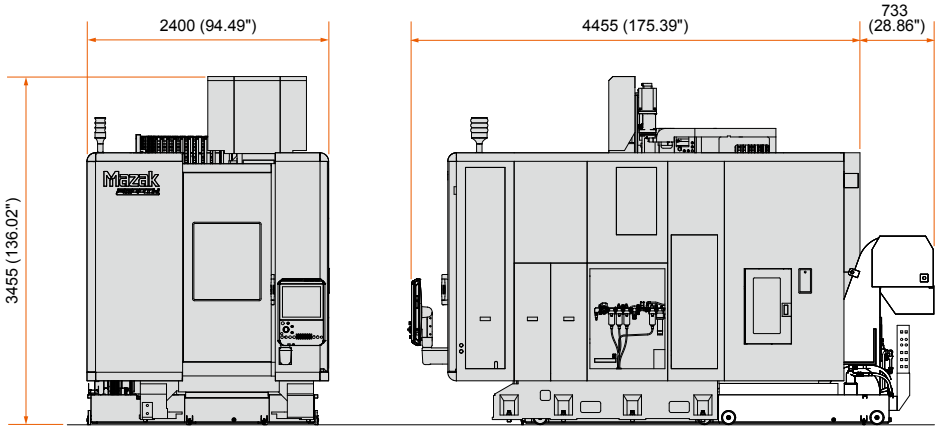
Unit : mm (inch)

VARIAXIS i-600 NEO



* Shown with optional ConSep 2000 II WS chip conveyor (rear discharge)

VARIAXIS i-700 NEO

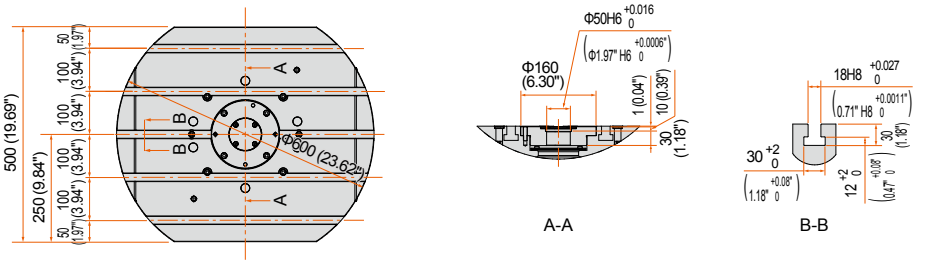


* Shown with optional ConSep 2000 II WS chip conveyor (rear discharge)

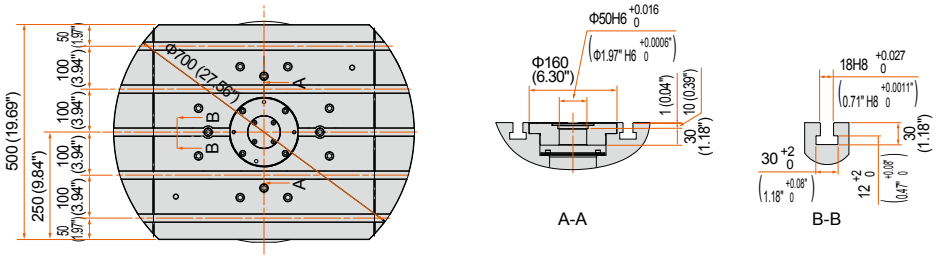
Table Dimensions

VARIAXIS i-600 NEO

Unit : mm (inch)



VARIAXIS i-700 NEO



MAZATROL SmoothAi Specifications

	MAZATROL	EIA
Number of controlled axes	Simultaneous 2 ~ 4 axes	Simultaneous 5 axes
Least input increment	0.0001 mm, 0.00001 inch, 0.0001 deg	
High speed, high precision control	Shape compensation, Smooth corner control, Rapid traverse overlap, Rotary axis shape compensation	Shape compensation, Smooth corner control, Rapid traverse overlap, Rotary axis shape compensation, High-speed machining mode, High-speed smoothing control, 5-axis spline*, Path error suppression control*, Tool path optimization*
Interpolation	Positioning (interpolation), Positioning (non-interpolation), Linear interpolation, Circular interpolation, Cylindrical interpolation, Polar coordinate interpolation, Synchronous tapping*	Positioning (interpolation), Positioning (non-interpolation), Linear interpolation, Circular interpolation, Spiral interpolation, Helical interpolation, Cylindrical interpolation*, Involute interpolation*, Fine spline interpolation*, NURBS interpolation*, Polar coordinate interpolation*, Synchronous tapping*
Feedrate	Rapid traverse, Cutting feed, Cutting feed (per minute), Cutting feed (per revolution), Dwell (time / rotation), Rapid traverse override, Cutting feed override, G0 speed variable control, Feedrate limitation, Variable acceleration control, G0 slope constant*	Rapid traverse, Cutting feed, Cutting feed (per minute), Cutting feed (per revolution), Inverse time feed, Dwell (time / rotation), Rapid traverse override, Cutting feed override, G0 speed variable control, Feedrate limitation, Time constant changing for G1, Variable acceleration control, G0 slope constant*
Program registration	Number of programs : 256 (Standard) / 960 (Max.), Program memory : 2 MB, Program memory expansion : 8 MB*, Program memory expansion : 32 MB*	
Control display	Display : 19" touch panel, Resolution : SXGA	
Spindle function	S code output, Spindle speed limitation, Spindle speed override, Spindle speed reaching detection, Multiple position orient, Constant surface speed, Spindle speed command with decimal digits, Synchronized spindle control, Spindle speed range setting	
Tool functions	Number of tool offset : 4000, T code output for tool number, Tool life monitoring (time), Tool life monitoring (number of machined workpieces)	Number of tool offset : 4000, T code output for tool number, T code output for group number, Tool life monitoring (time), Tool life monitoring (number of machined workpieces)
Miscellaneous functions	M code output, Simultaneous output of multiple M codes	
Tool offset functions	Tool position offset, Tool length offset, Tool diameter / tool nose R offset, Tool wear offset	
Coordinate system	Machine coordinate system, Work coordinate system, Local coordinate system, Additional work coordinates (300 set)	
Machine functions	-	Rotary axis prefilter, Tilted working plane, Hobbing II*, Shaping function*, Dynamic compensation II*, Tool center point control*, Tool radius compensation for 5-axis machining*, Workpiece positioning error compensation*
Machine compensation	Backlash compensation, Pitch error compensation, Geometric deviation compensation, Ai Thermal shield, Volumetric compensation*	
Protection functions	Emergency stop, Interlock, Pre-move stroke check, SAFETY SHIELD (manual mode), SAFETY SHIELD (automatic mode), VOICE ADVISER	
Automatic operation mode	Memory operation	Memory operation, Tape operation, MDI operation, EtherNet operation*
Automatic operation control	Optional stop, Dry run, Manual handle interruption, MDI interruption, TPS, Restart, Single process, Machine lock	Optional block skip, Optional stop, Dry run, Manual handle interruption, MDI interruption, TPS, Restart, Restart 2, Collation stop, Machine lock
Manual measuring function	Tool length teach, Touch sensor coordinates measurement, Workpiece offset measurement, WPC coordinate measurement, Measurement on machine	Tool length teach, Tool offset teach, Touch sensor coordinates measurement, Workpiece offset measurement, Measurement on machine
Automatic measuring function	WPC coordinate measurement, Automatic tool length measurement, Sensor calibration, Tool breakage detection, External tool breakage detection*	Automatic tool length measurement, Sensor calibration, Tool breakage detection, External tool breakage detection*
MDI measurement	Semi automatic tool length measurement, Full automatic tool length measurement, Coordinate measurement	
Peripheral network	PROFIBUS-DP*, EtherNet/IP*, CC-Link*, CC-Link IE Field Basic	
Memory	SD card interface, USB	
Ether Net	10 M / 100 M / 1 Gbps	
Security function	Security software	

* Option

Mazak

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VARIAXIS i-600 NEO, i-700 NEO 24.07.0 T 99J297224E0