

Mazak

VARIAXIS C-600

[5-axis Vertical Machining Center]



VARIAXIS C-600

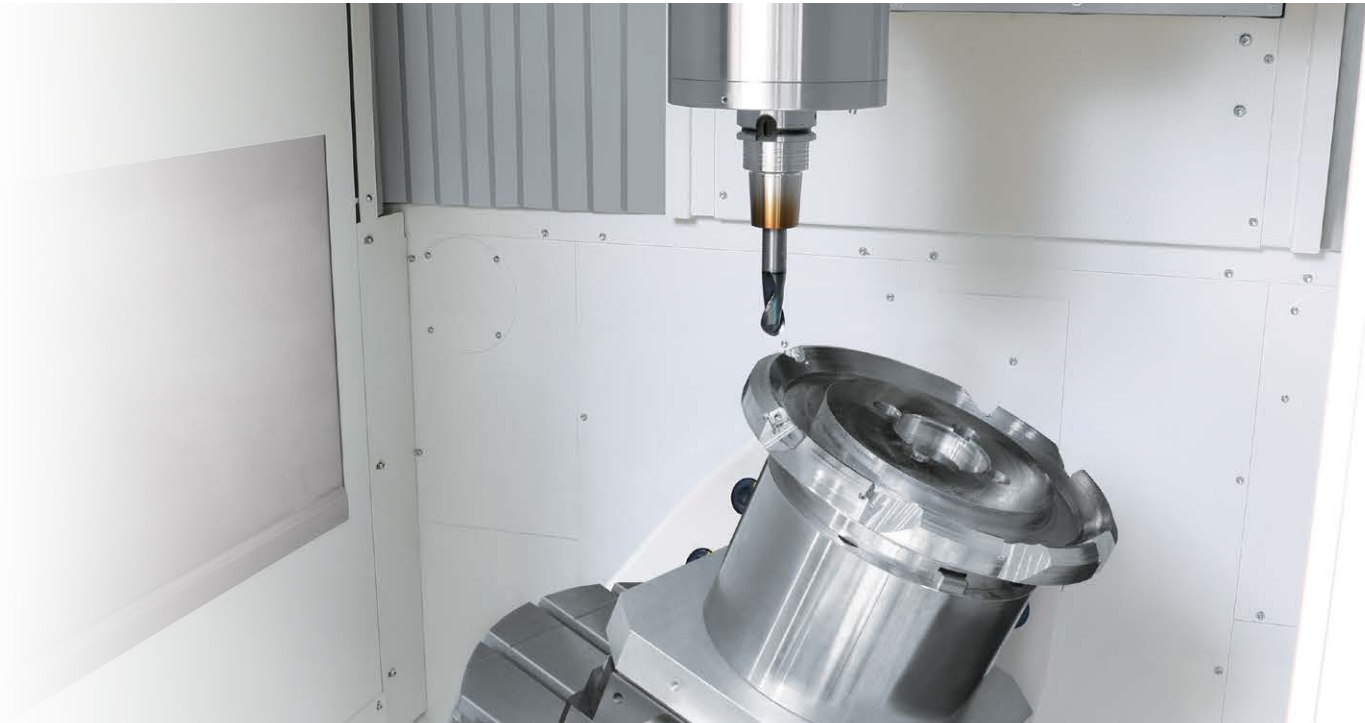
Your new portal to simultaneous 5-axis machining.
Designed to provide you with maximum value.

- Spindle specifications available for a wide range of machining requirements.
- Tool storage capabilities including 30 (standard), 60, 90 and 120 (options).
- Wide variety of automation equipment such as 2-pallet changer available.
- Next generation MAZATROL SmoothAi CNC system.



Shown with optional equipment

Machine all sides of a workpiece in a single setup
thanks to the rotary/tilt table.



Aerospace component
Workpiece:
Fastener



Transportation industry component
Workpiece:
Bracket



General industry component
Workpiece:
Blower



Automotive component
Workpiece:
Control arm

Spindle specifications to meet a wide variety of machining requirements

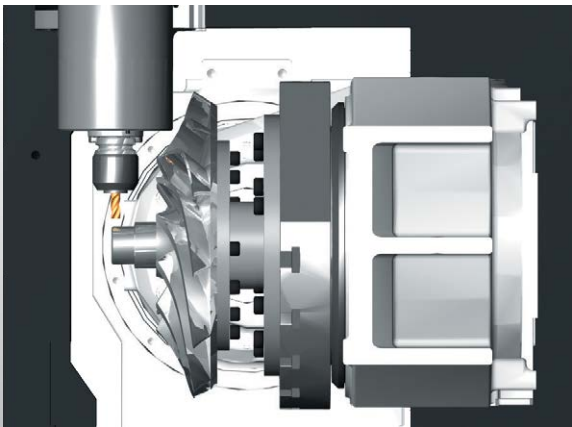
The high-rigidity spindle can perform heavy-duty machining of steel as well as high-speed machining of non-ferrous materials such as aluminum. High-speed and high-torque specifications are available.



Speed	Standard	High-torque <option>	High-speed <option>	
	12000 rpm	15000 rpm	18000 rpm	20000 rpm
Output (40% ED/30 min. rating)	11 kW (15 hp)	46 kW (62 hp)	30 kW (40 hp)	42 kW (56 hp)
Max. torque (40% ED/30 min. rating)	70 N·m (52 ft·lbs)	200 N·m (148 ft·lbs)	105 N·m (77 ft·lbs)	161 N·m (119 ft·lbs)
Tool shank	No.40/BBT-40/HSK-A63	No.40/BBT-40/HSK-A63	No.40/BBT-40/HSK-A63	No.40/BBT-40/HSK-A63

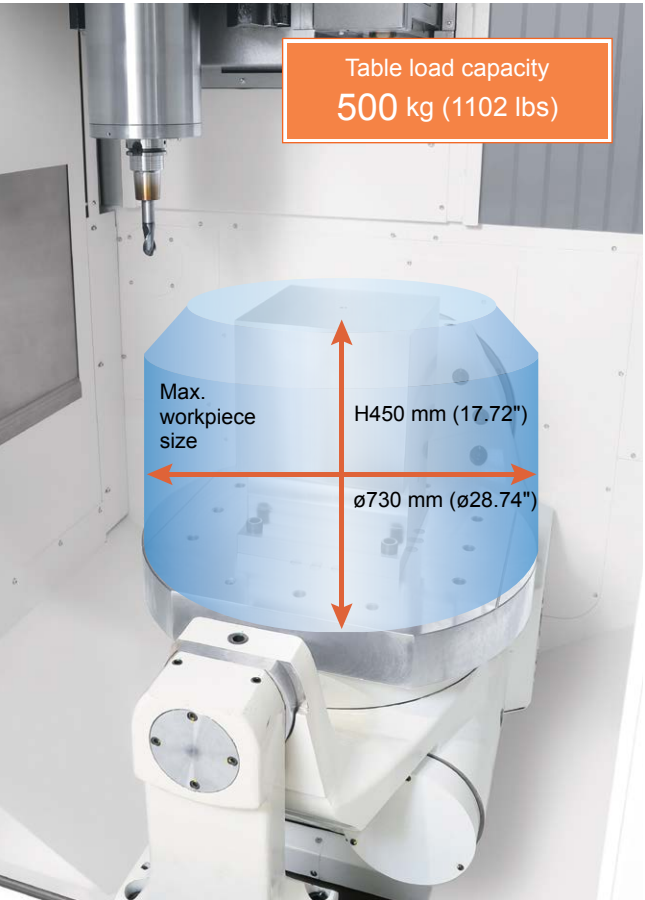
Compact spindle cartridge minimizes workpiece interference

Large machining area and compact spindle cartridge allow short tools to be used for high-accuracy machining.



High-rigidity table

The tilting rotary table is rigidly supported on both ends to ensure high-speed, high-accuracy machining. The B axis and C axis both utilize a roller gear cam to eliminate backlash.



High-speed automatic tool changer

Cam-driven double-arm automatic tool changer is designed to drastically reduce chip-to-chip time.



Tool magazine

The standard tool magazine has a storage capacity of 30 tools. 60, 90, 120-tool options are available.

- Max. tool length (from tool tip to gauge line) 300 mm (11.81")
- Tool diameter 80 mm (3.15") (with adjacent pockets empty 130 mm (5.12"))
- Max. tool weight 8 kg (18 lbs) (120 kg (265 lbs) total weight of tools in magazine)



2-pallet changer

option

The next workpiece can be set up during the machining of the current workpiece for higher productivity.



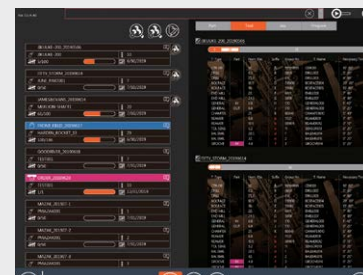
Robot interface

option

Robot interface is an available option.
Parts can be automatically
loaded/unloaded over extended
periods of operation.



SMOOTH RCC is a management software for the robot cell, which can perform high-mix, low-volume production. This provides a convenient display of operation status and production scheduling to the operator on the optional CNC second monitor.

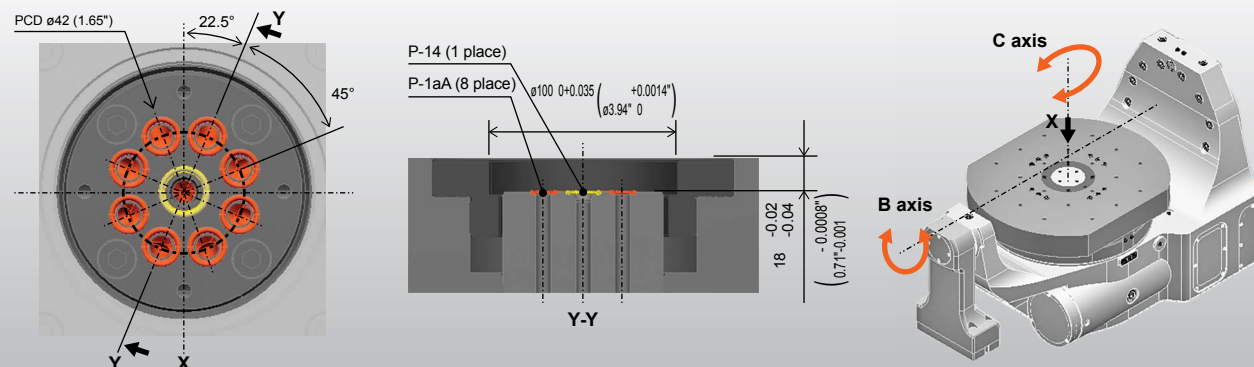


Preparation for hydraulic fixtures

option

Unit: mm (inch)

Hydraulic power is supplied through the pallet for hydraulic fixtures. The maximum port number is 9 ports.



Higher Efficiency

Auto-power off

option

When the machine is not operated for a specified period of time, the machine worklights and the CNC backlight are turned off automatically. They are automatically turned on when the motion sensor detects the return of the operator.

Energy Dashboard

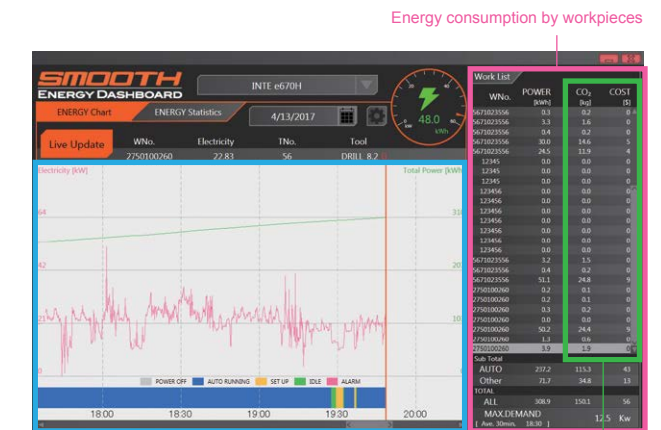
option

The Energy Dashboard provides a convenient visual monitoring of energy consumption and analysis (optional electrical power monitor required).



Process screen display

- Total energy consumption (of workpiece in operation)
- Current energy consumption



Energy consumption by workpieces

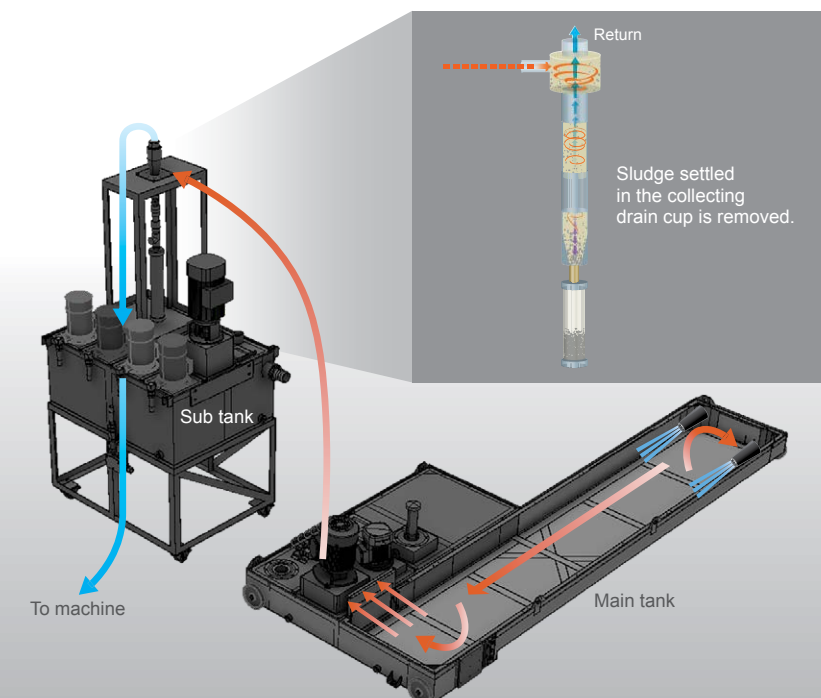
Energy consumption
displayed on graph

Display approximate CO₂ emission from electrical power generation and electrical power cost

Clean coolant system

option

Nozzles inside the main tank circulate coolant to prevent the accumulation of chips and sludge. More than 95% of particles larger than 20 μm are removed by separation by the cyclone filter. Thanks to these features, the coolant tank stays clean and the service life of the coolant is extended.



Next generation MAZATROL Smooth CNC system

MAZATROL *SMOOTH*Ai



The newest MAZATROL CNC system is designed to meet your production requirements in today's constantly changing manufacturing environment.

Shown with optional second monitor for SmoothAi Spindle and SMOOTH RCC

Convenient Parameter Setting and Fine Tuning Function: SMOOTH MACHINING CONFIGURATION

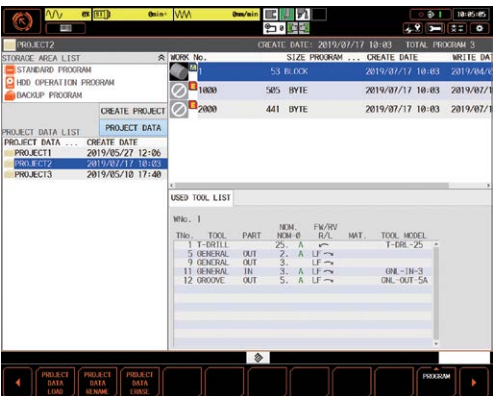
Machining features, including cycle time, finished surface and machining shape, can be adjusted by slider switches on the display according to material requirements and machining methods. This is especially effective for complex workpiece contours defined in small program increments. Once the desired results are obtained, the settings can be stored in memory so that they can be easily used again in the future. Additionally, the rotary axis acceleration tuning parameter can now be adjusted by a slider switch and operators have access to new options for selecting speed or accuracy as a priority.



File management

Convenient management of data required to execute machining programs

- Tool data
- Fixtures
- Coordinates
- Parameters
- Workpiece 3D model



Cutting Adviser

Provides assistance to the operator to obtain most productive cutting conditions.



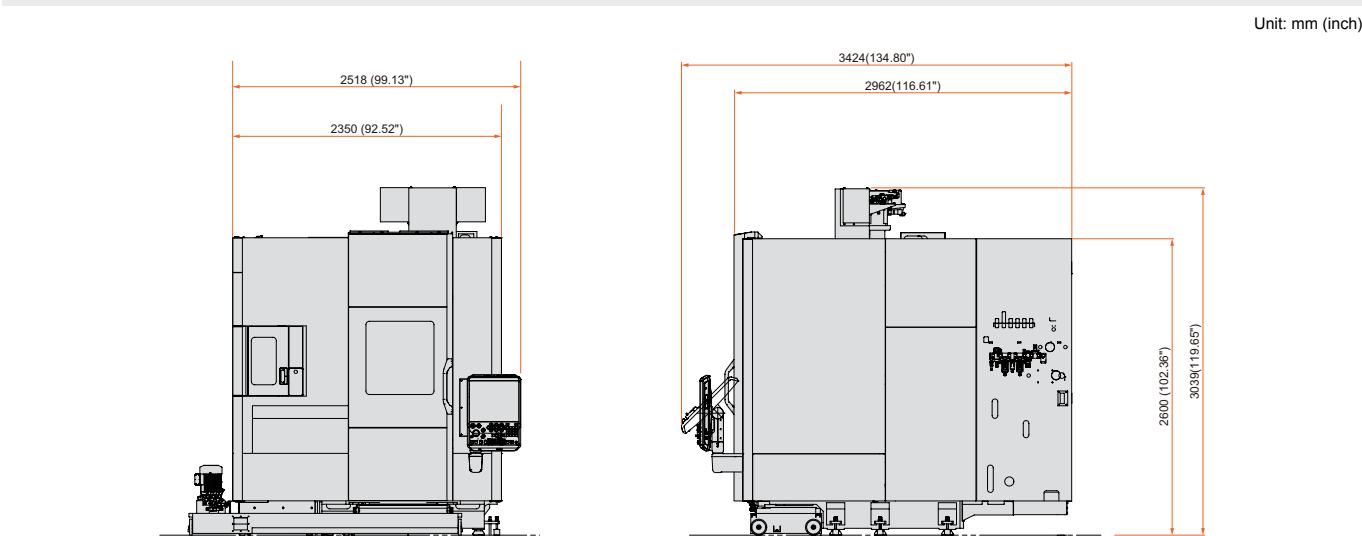
Ai Thermal Shield

New algorithms automatically determine the amount of compensation to be applied based on changes in the temperature to ensure even higher machining accuracy.

Standard Machine Specifications

VARIAXIS C-600		
Stroke	X-axis travel (spindle head left/right)	650 mm (25.59")
	Y-axis travel (spindle head back/forth)	550 mm (21.65")
	Z-axis travel (spindle head up/down)	530 mm (20.87")
	B-axis travel (table tilt)	-30° ~ +120°
	C-axis travel (table rotation)	±360°
Table	Table size	ø600 mm × Width 500 mm (ø23.62" × 19.69")
	Max. workpiece size	ø730 mm × 450 mm (ø28.74" × 17.72")
	Table load capacity (evenly distributed)	500 kg (1102 lbs)
	Table surface configuration	M16×P2 (5/8-11 UNC) tap 20
Milling Spindle	Max. spindle speed	12000 rpm
	Spindle taper	No. 40
	Spindle bearing I.D.	ø70 mm (ø2.76")
Feedrate	Rapid traverse rate (X, Y, Z axis)	42 m/min (1654 ipm)
	Rapid traverse rate (B, C axis)	30 rpm
	Simultaneously controlled axes	5-axis
	Min. indexing increment (B, C axis)	0.0001°
Automatic tool changer	Tool shank configuration	CAT No. 40
	Tool storage capacity	30 tools
	Max. tool diameter/length (from gauge line)/weight	ø80 mm/300 mm/8 kg (ø3.15"/11.81"/18 lbs)
	Max. tool diameter with adjacent tool pockets empty	ø130 mm (ø5.12")
	Tool selection method	MAZATROL random memory (Random pocket assignment)
	Tool change time (chip-to-chip)	4.5 sec.
Motors	Spindle motor (40% ED (30 min. rating)/cont. rating)	11 kW (15 hp)/11 kW (15 hp)
	Electrical power requirement (40% ED (30 min. rating)/cont. rating)	29.03 kVA/29.03 kVA
Coolant	Coolant tank capacity	220 L (58 gal)
Machine size	Height	2720 mm (107.09")
	Width	2350 mm (92.52")
	Length	2962 mm (116.61")
	Machine weight	10000 kg (22046 lbs)

Machine Dimensions



Standard and Optional Equipment

●: Standard ○: Option

VARIAXIS C-600		
Table	ø600 mm × 500 mm (ø23.62" × 19.69") tapped table	●
	ø600 mm × 500 mm (ø23.62" × 19.69") T-slot table	○
Machine	Work light	●
	12000 rpm	●
	15000 rpm high-torque spindle	○
	18000 rpm	○
	20000 rpm	○
Factory Automation	Automatic tool length measurement (RENISHAW PRIMOS LTS)	○
	Laser tool measurement system	○
	30-tool magazine	●
	60-tool magazine	○
	90-tool magazine	○
	120-tool magazine	○
	Work measurement printout (printer not included)	○
	Absolute positioning system	●
	Remote manual pulse generator	○
	Front door automatic open/close	○
	Right side door automatic open/close (Not available with 2PC)	○
	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	Ai Thermal Shield	●
	MAZA-CHECK (software, reference sphere) ¹⁾	●
	Ball screw core cooling (X, Y, Z axis)	●
	Scale feedback (X, Y, Z axis)	○
	Scale feedback (B, C axis)	○
		○
		○
		○
Coolant/Chip Disposal	Coolant system	●
	Work air blast	○
	Oil skimmer	○
	Mist collector	○
	Coolant temperature control	○
	Hand-held coolant nozzle	○
	Coolant through spindle system (0.5 MPa (73 psi))	○
	Work washing coolant	○
	High-pressure coolant through spindle (1.5 MPa (218 psi))	○
	SUPERFLOW coolant system	○
	Flood coolant (0.4 MPa (58 psi)) (30 L/min (7.92 gal/min))	●
	Coolant through spindle pressure switch	○
	Coolant tank with secondary filter	○
	Chip conveyor (Hinge) side discharge	○
	Chip conveyor (drum type) side discharge	○
Tooling	Chip conveyor (Hinge) rear discharge	○
	Chip conveyor (drum type) rear discharge	○
	Chip bucket (swing type)	○
	Chip bucket (fixed type)	○
	Pull stud bolt	○
Others	Manual (CD)	●
	Additional manuals	○
	MAZATROL SmoothAi second monitor	○

¹⁾MAZA-CHECK requires RMP600 wireless touch probe.



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