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VERSATECH

SERIES

Mazak



VERSATECH SERIES

Machine very large workpieces with unsurpassed versatility

- **Machine multiple surfaces in just one workpiece setup**

Minimum non-cutting time thanks to the head for 5-axis machining.
The B- and C-axis can be indexed in 0.0001 degree increments for high accuracy machining.

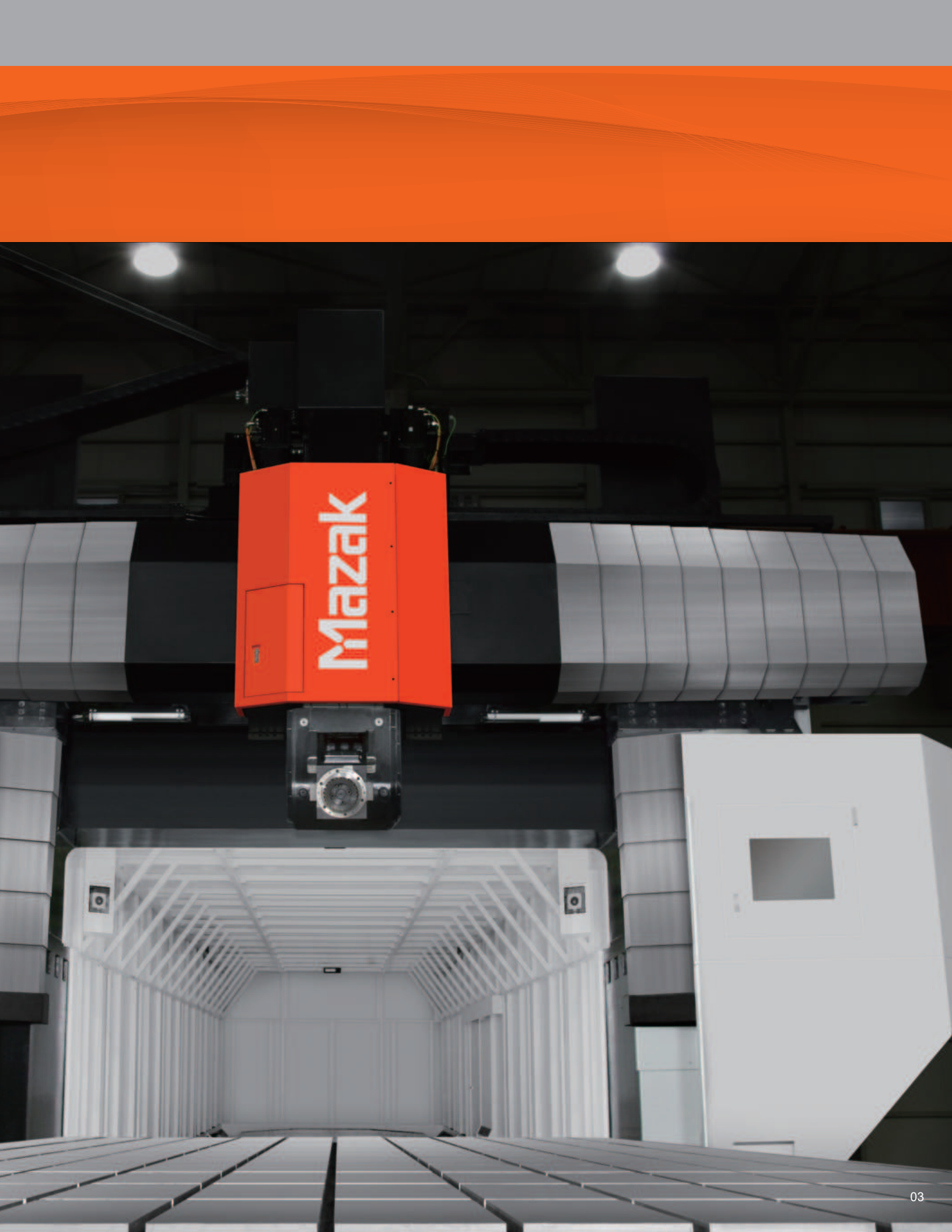
- **Specifications available to meet a wide range of production requirements**

Highly versatile standard integral spindle / motors, and optional high torque and high speed spindle is selectable

- **High speed, X-, Y- and Z-axis feedrate**

A servo nut drive with stationary ball screw is used for X- and Y-axis to increase feedrate speed and productivity.

VERSATECH V-140N 280 shown
with optional parts such as cover



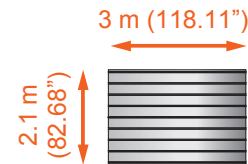
Higher Productivity

Large workpiece capacity thanks to the machine table length up to 10 m (393.70")

VERSATECH V-100N 160

Table size : 2100 mm × 3000 mm (82.68" × 118.11")

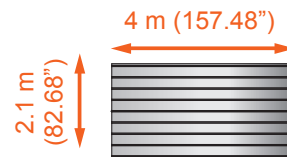
Table load capacity : 43000 kg (94797 lbs)



VERSATECH V-100N 200

Table size : 2100 mm × 4000 mm (82.68" × 157.48")

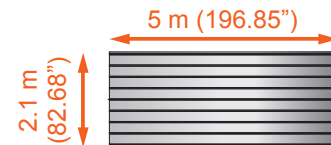
Table load capacity : 43000 kg (94797 lbs)



VERSATECH V-100N 240

Table size : 2100 mm × 5000 mm (82.68" × 196.85")

Table load capacity : 43000 kg (94797 lbs)



VERSATECH V-140N 280

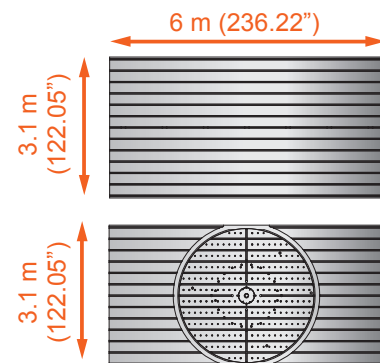
Table size : 3100 mm × 6000 mm (122.05" × 236.22")

Table load capacity : 43000 kg (94797 lbs)

Turning table specifications **OPTION**

Table size : $\Phi 2950$ mm ($\Phi 116.14$ ")

Maximum workpiece size : $\Phi 3500$ mm × 1750 mm ($\Phi 137.80$ " × 68.90")



VERSATECH V-140N 360

Table size : 3100 mm × 8000 mm (122.05" × 314.96")

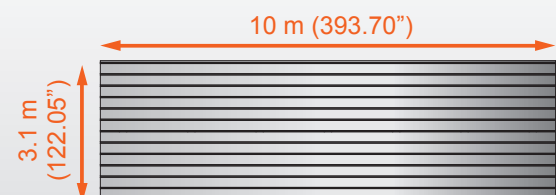
Table load capacity : 43000 kg (94797 lbs)



VERSATECH V-140N 440

Table size : 3100 mm × 10000 mm (122.05" × 393.70")

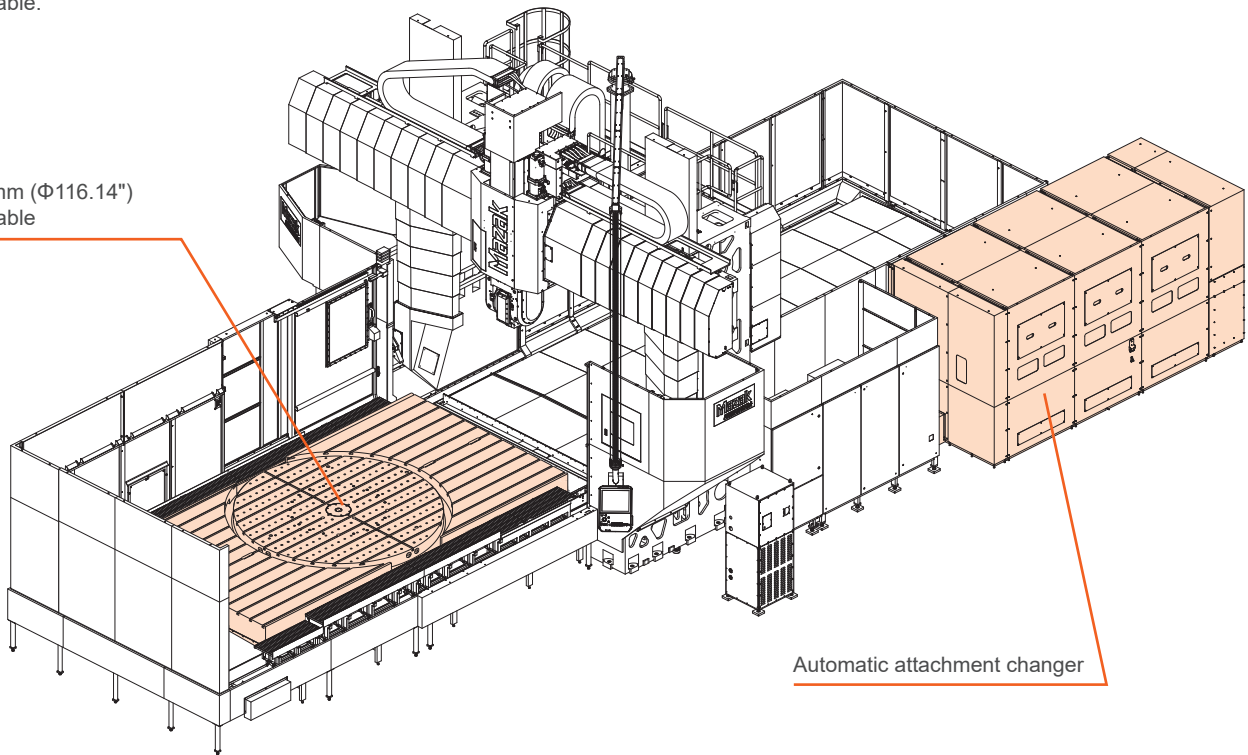
Table load capacity : 43000 kg (94797 lbs)



V-140N with turning table**OPTION**

A wide variety of large workpiece machining processes can be performed by the integral turning table.

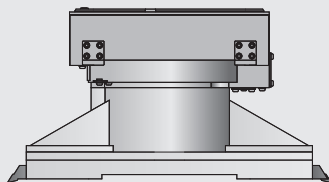
Φ2950 mm (Φ116.14")
turning table

**Turning attachment****OPTION**

Optional inner diameter and outer diameter turning attachments are available for increased versatility. The attachments have a coolant through spindle system for the machining of difficult-to-cut material. The attachments can be automatically changed by the automatic attachment changer.

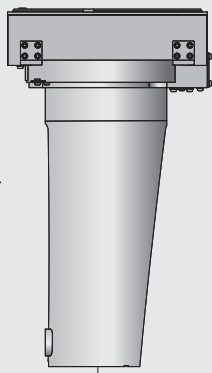
Inner diameter turning attachment and tool holders for inner diameter turning

Outer diameter
turning attachment

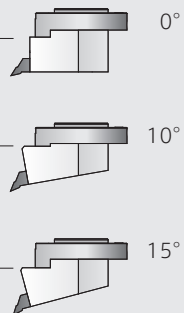


Double turning tool holder
positioned by C-axis

Inner diameter
turning attachment



Tool holders for
inner diameter turning

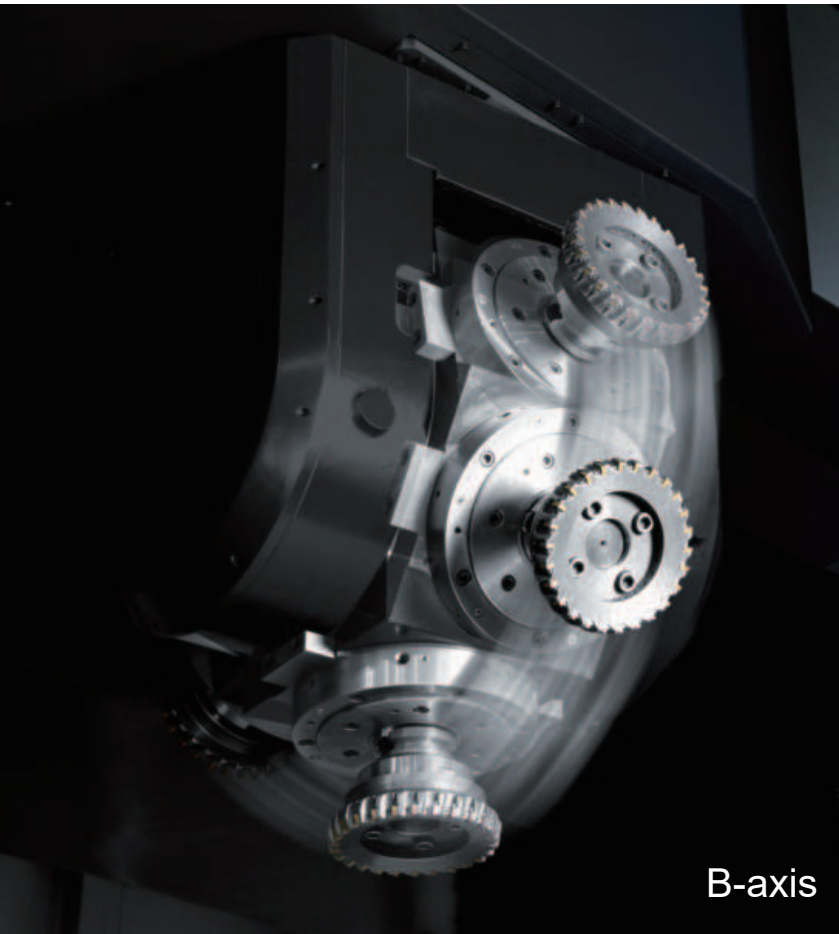
**Automatic attachment
changer****OPTION**

The attachments are stored in the stocker outside of the machining area.

The number of attachments that can be stored ranges from 1, 2, 4 and 6 - this number can be increased after the initial installation.



Higher Productivity



B-axis



C-axis

Simultaneous 5-axis machining specification **OPTION**

Since the VERSATECH does not require a head changer thanks to the B- and C-axis, non-cutting time is greatly reduced. The simultaneous 5-axis machining specification is optionally available for the machining of complex surfaces such as those found in components for the die and mold and aerospace industries.

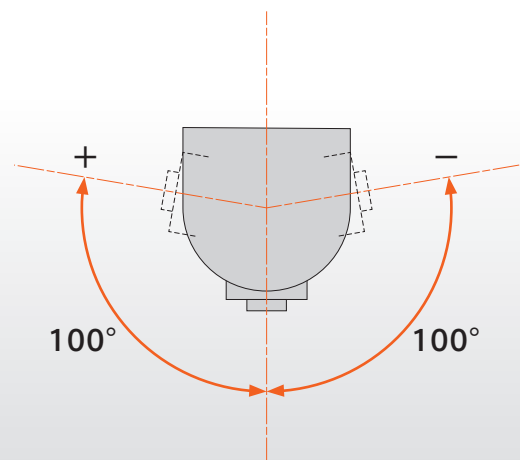
B, C-axis specification [simultaneous 5-axis]

OPTION

B-axis	Stroke	$\pm 100^\circ$
	Rapid traverse rate	21600°/min*
	Max. torque	1500 N · m (1106 ft · lbs)
	Continuous torque	630 N · m (465 ft · lbs)
	Stall torque	520 N · m (384 ft · lbs)
C-axis	Stroke	Unlimited
	Rapid traverse rate	21600°/min*
	Max. torque	3000 N · m (2213 ft · lbs)
	Continuous torque	800 N · m (590 ft · lbs)
	Stall torque	660 N · m (487 ft · lbs)

*Rapid traverse rate is 5400°/min when attachment is mounted

B-axis stroke: $\pm 100^\circ$ (when C-axis at 0°)

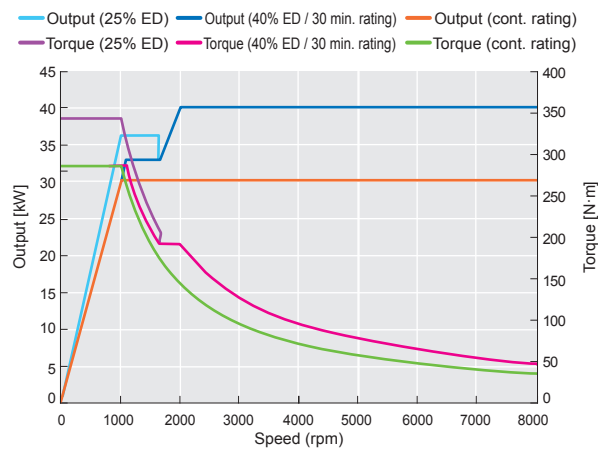


Selectable 8000 rpm and 12000 rpm spindle specification

8000 rpm spindle

No.50 taper 8000 rpm, 40 kW (54 HP) (40% ED / 30 min. rating) spindle, maximum torque 334 N·m (254 ft·lbs) for the machining of steel workpieces.

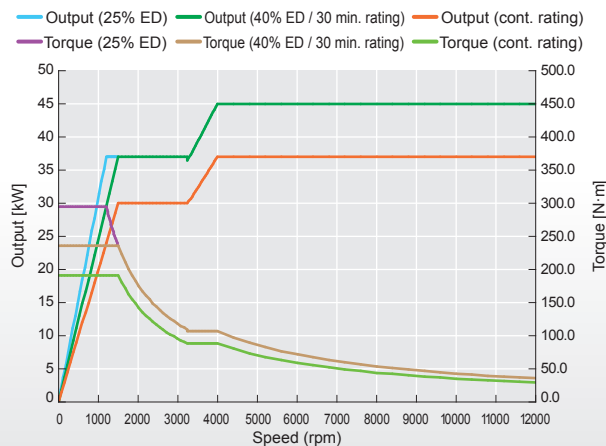
8000 rpm spindle output and torque diagram



12000 rpm high speed spindle

A 12000 rpm spindle with output of 45 kW (60 HP) (40% ED / 30 min. rating) is available for aluminum machining.

12000 rpm spindle output and torque diagram



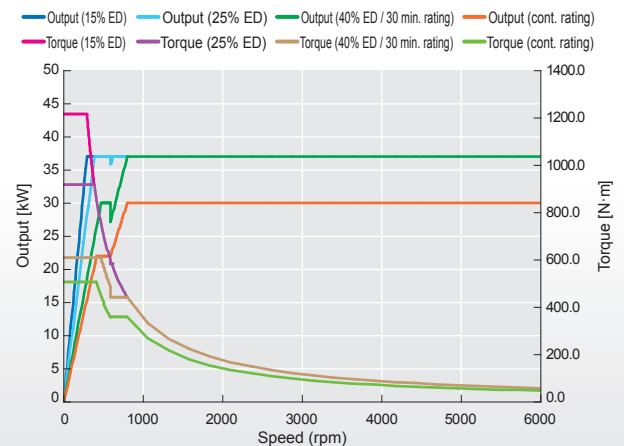
Note: Spindle is longer than 8000 rpm spindle which limits stroke. Each attachment and turning table are not available.

6000 rpm high torque spindle

OPTION

A 6000 rpm spindle with maximum torque of 1218 N·m (898 ft·lbs) is optionally available for heavy-duty machining.

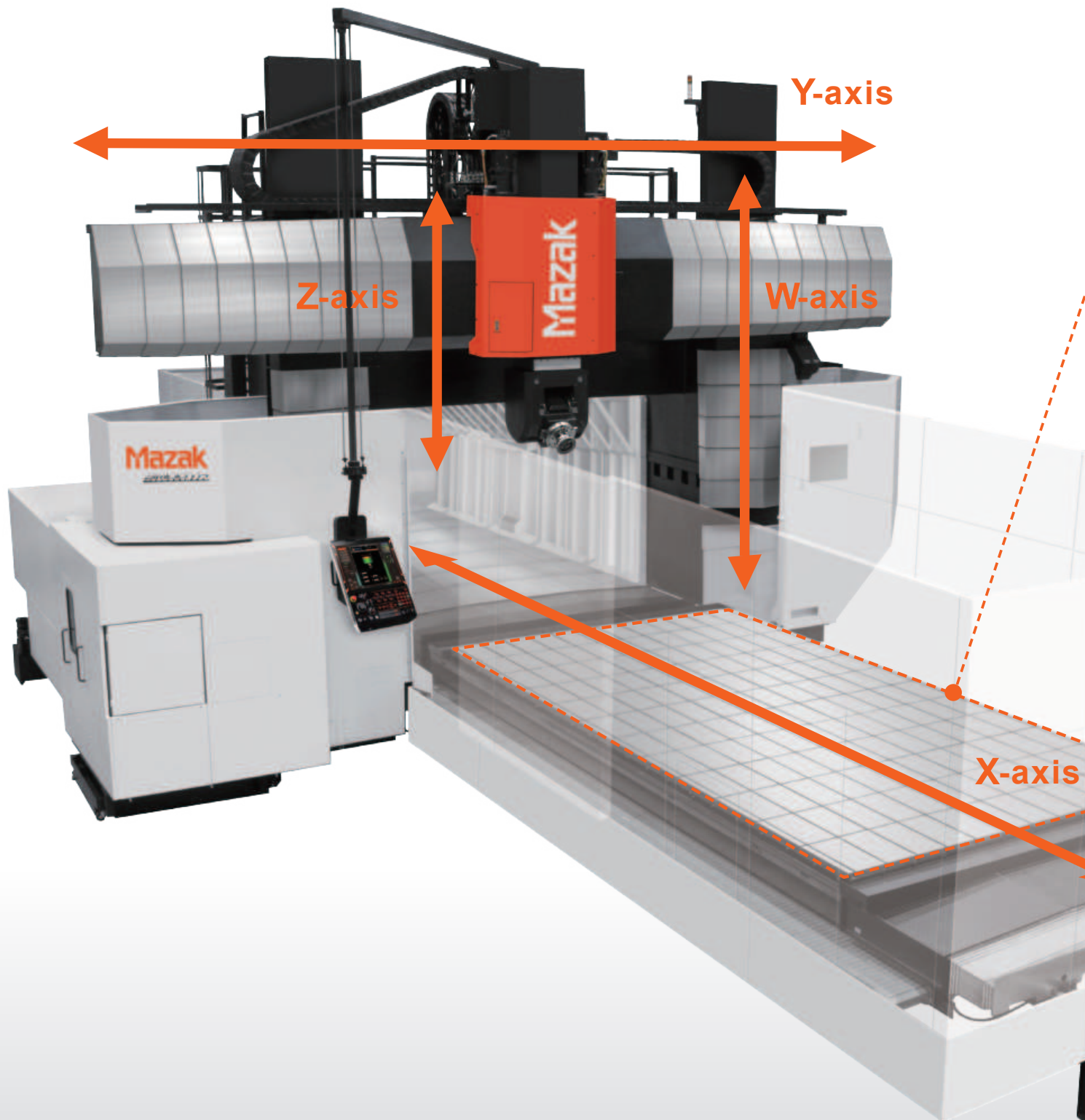
6000 rpm spindle output and torque diagram



Note: Spindle is longer than 8000 rpm spindle which limits stroke. Each attachment is not available.

Higher Productivity

High-speed, high-accuracy X-, Y- and Z-axis feed system





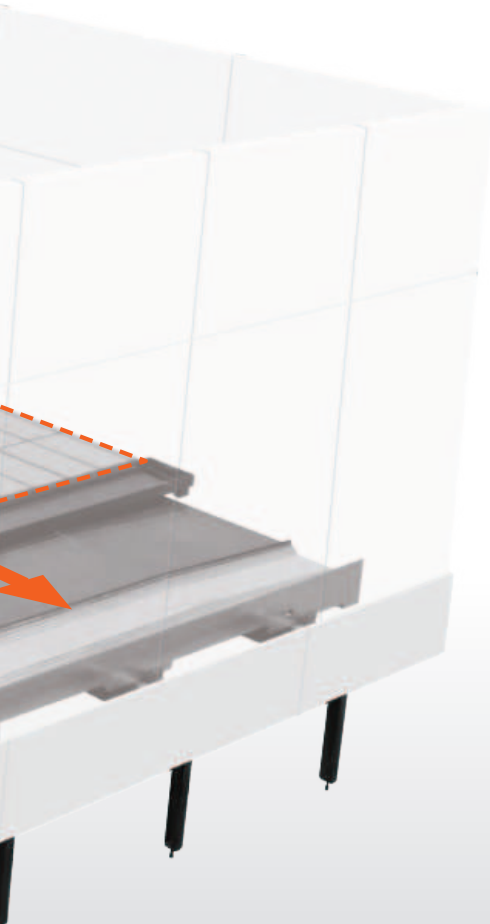
High speed

The maximum feedrate of the X- and Y-axis is 30 m/min* thanks to the stationary ball screw.

*Rapid traverse rate (X-axis) for V-140N 360, V-140N 440 is 15 m/min.

High accuracy

Temperature controlled cooling oil circulates through the ball screw cores to ensure stable machining accuracy over extended periods of high speed operation.



Machine		VERSATECH V-100N			VERSATECH V-140N		
		160	200	240	280	360	440
Stroke	X-axis	4000 mm (157.48")	5000 mm (196.85")	6000 mm (236.22")	7000 mm (275.59")	9000 mm (354.33")	11000 mm (433.07")
	Y-axis	3600 mm (141.73")			4600 mm (181.1")		
	Z-axis	710 mm (27.95")			710 mm (27.95")		
	W-axis	1250 mm (49.21")			1250 mm (49.21")		
Table size		2.1 m x 3 m (82.68" x 118.11")	2.1 m x 4 m (82.68" x 157.48")	2.1 m x 5 m (82.68" x 196.85")	3.1 m x 6 m (122.05" x 236.22")	3.1 m x 8 m (122.05" x 314.96")	3.1 m x 10 m (122.05" x 393.7")
Max. table loading capacity		43000 kg (94797 lbs)*			43000 kg (94797 lbs)*		

*2 table changer :28000 kg (61728 lbs)

Factory Automation

Attachments designed for increased versatility
and less interference

Angle attachment

OPTION

Can machine areas that cannot be reached by the standard spindle

Tools from the magazine are automatically changed the same as tools for the standard spindle

In addition to flood coolant, the coolant through spindle system is optionally available

Snout attachment

OPTION

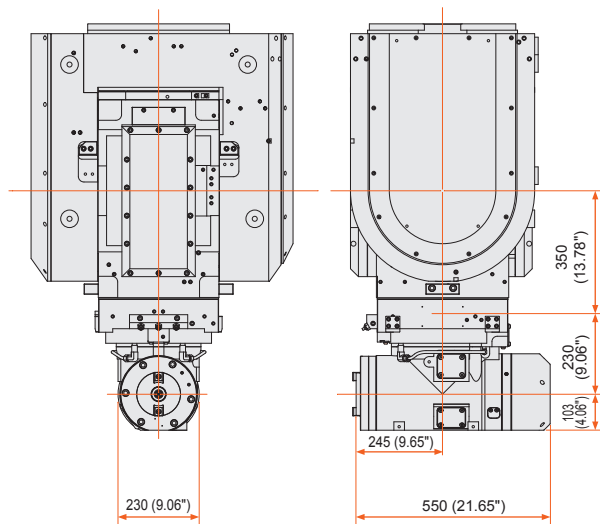
Can perform deep boring that cannot be done by the standard spindle

Tools from the tool magazine are automatically changed the same as tools for the standard spindle

In addition to flood coolant, the coolant through spindle system is optionally available

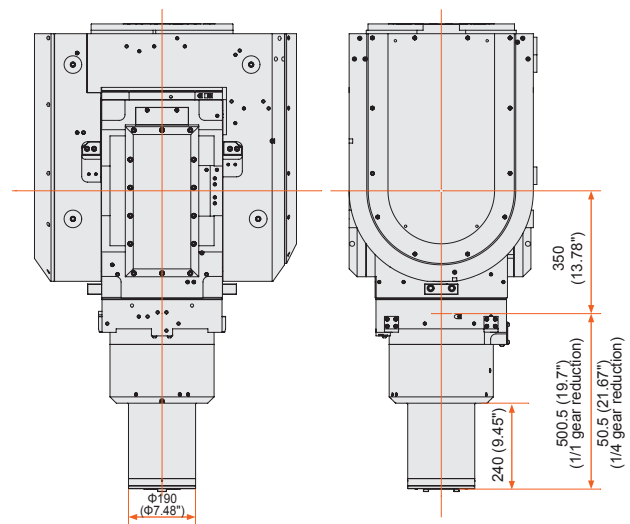
Dimensions

Unit : mm (inch)



Dimensions

Unit : mm (inch)



Specifications

Spindle taper	No.50
Spindle speed	50 ~ 1500 rpm
Gear reduction	1/2
Spindle bearing ID	100 mm (3.94")
Max. tool diameter	Φ125 mm (Φ4.92")
Max. tool diameter (adjacent pockets empty)	Φ210 mm (Φ8.27")
Max. tool diameter (from gauge line)	500 mm (19.69")
Max. tool weight	15 kg (33 lbs)

Specifications

Spindle taper	No.50
Spindle speed	50 ~ 1500 rpm (1/4) 50 ~ 5000 rpm (1/1)
Gear reduction	1/4, 1/1
Spindle bearing ID	100 mm (3.94")
Max. tool diameter	Φ125 mm (Φ4.92")
Max. tool diameter (adjacent pockets empty)	Φ210 mm (Φ8.27")
Max. tool diameter (from gauge line)	500 mm (19.69")
Max. tool weight	15 kg (33 lbs)

Angle / snout attachment is only available for the 8000 rpm spindle



PALLETECH MANUFACTURING CELL

The VERSATECH can be integrated into a PALLETECH SYSTEM designed with the flexibility required for shorter product life cycles, reduced in-process inventory, just-in-time production and other demands of today's manufacturing environment. Additionally, the production schedule can be easily set or edited by just inputting the work flow of the pallets into the scheduler software of the FMS computer.

	Minimum	Maximum
Machine(s)	1	15
Number of pallets	6	240
Loading station(s)	1	8
Loading robot	1	1

Innovation for Higher Productivity

MAZATROL *SMOOTH*Ai

New MAZATROL SmoothCNC

Designed to provide unsurpassed productivity through even faster and higher precision control while elevating your production to the next level with AI and digital twin technology

- Touch screen operation — similar to using your smartphone / tablet
- MAZATROL Smooth graphical user interface for unsurpassed ease of operation
- CNC System integrates with your Windows® PC
- Latest hardware and software for unprecedented speed and precision
- Higher machining speed for high accuracy 5-axis machining
- Fine tuning function- easy machining parameter setting for various workpieces
- Digital twin software that enables real-time sharing and centralized management of various data for increase productivity



■ Automation

Advanced automation utilizing robot and software



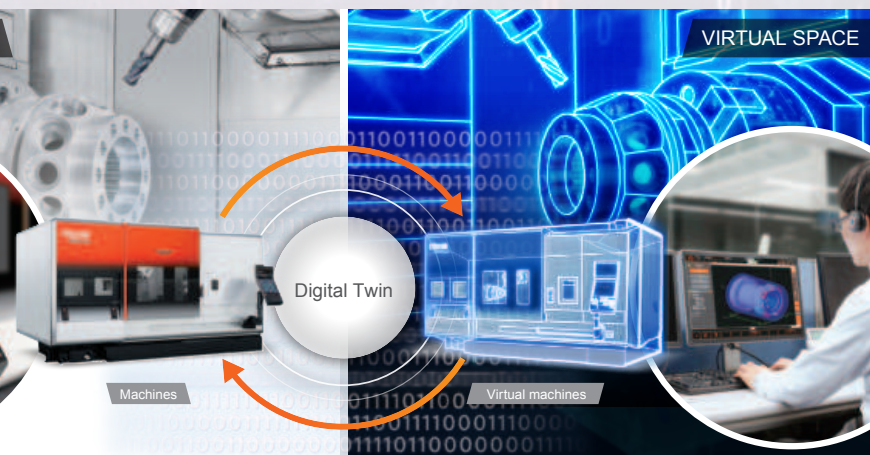
■ AI

Increase your productivity with
AI technology



■ Digital Twin

Create a virtual machine on your office PC for efficient setup and improved
productivity



Ease of Programming

Programming screen links tool path, workpiece shape and programming to reduce programming time

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

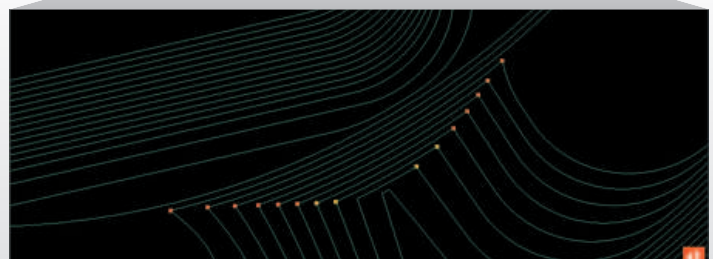
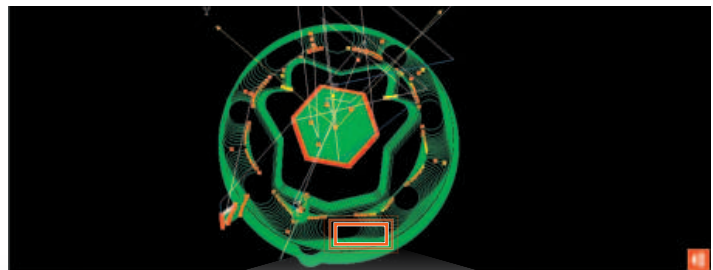
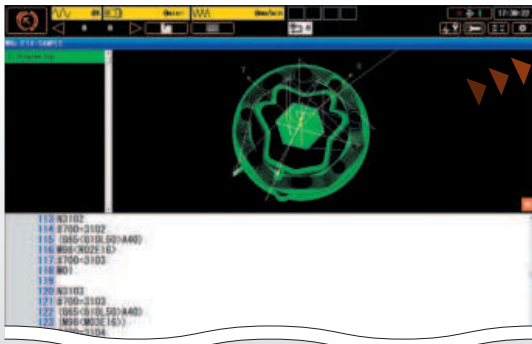
Moving to the corresponding EIA program line



VIEW SURF

Analyzing EIA programs

By analyzing 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.

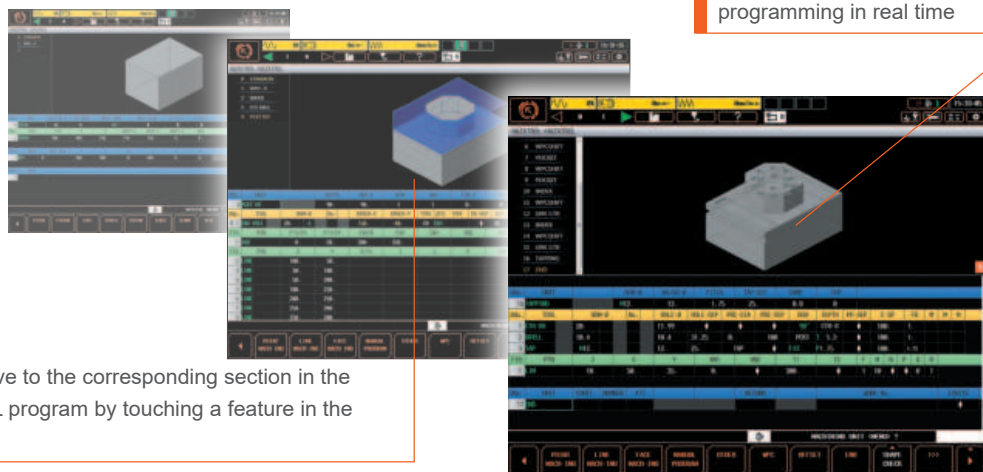


QUICK MAZATROL

Reduce 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.

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



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

3D ASSIST

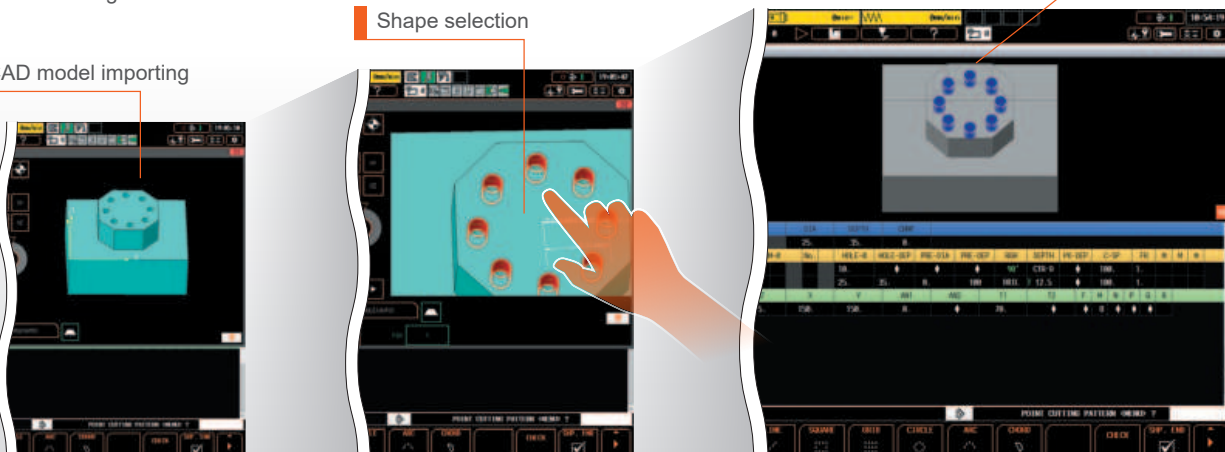
Making a program directly from 3D CAD data

Workpiece and 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

CAD model importing

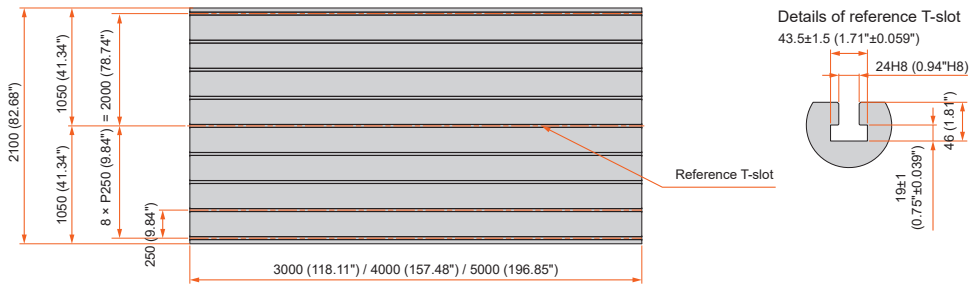
Shape selection



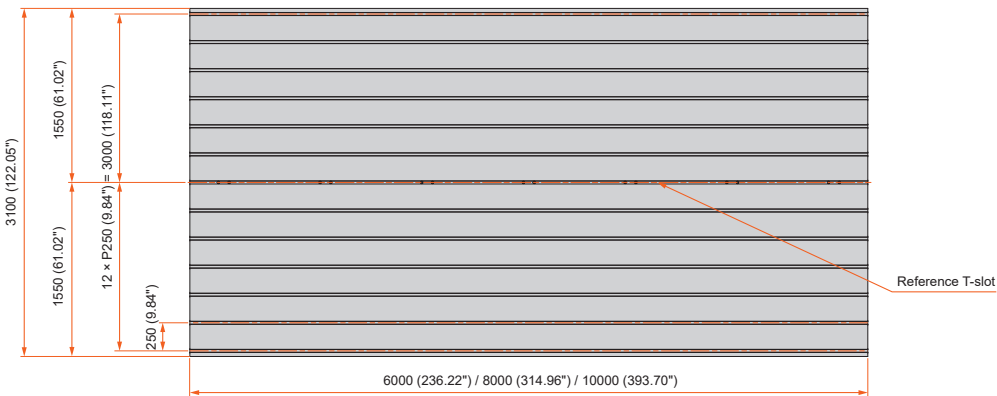
■ Table Dimensions

Unit : mm (inch)

VERSATECH V-100N



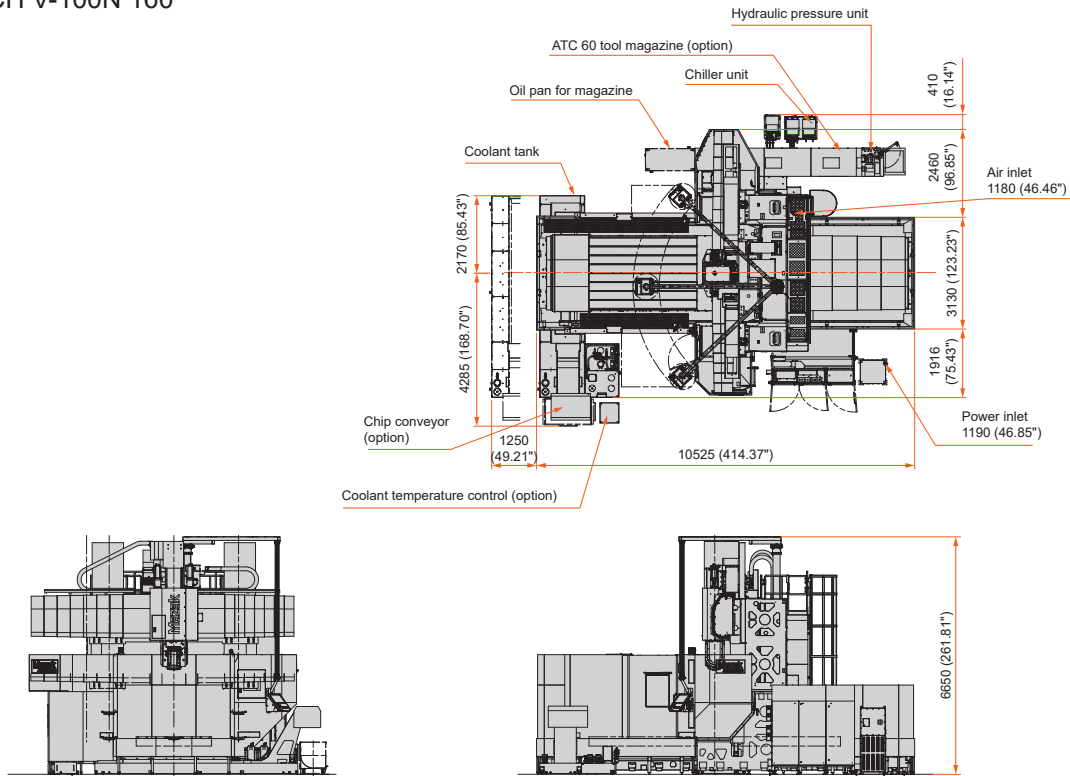
VERSATECH V-140N



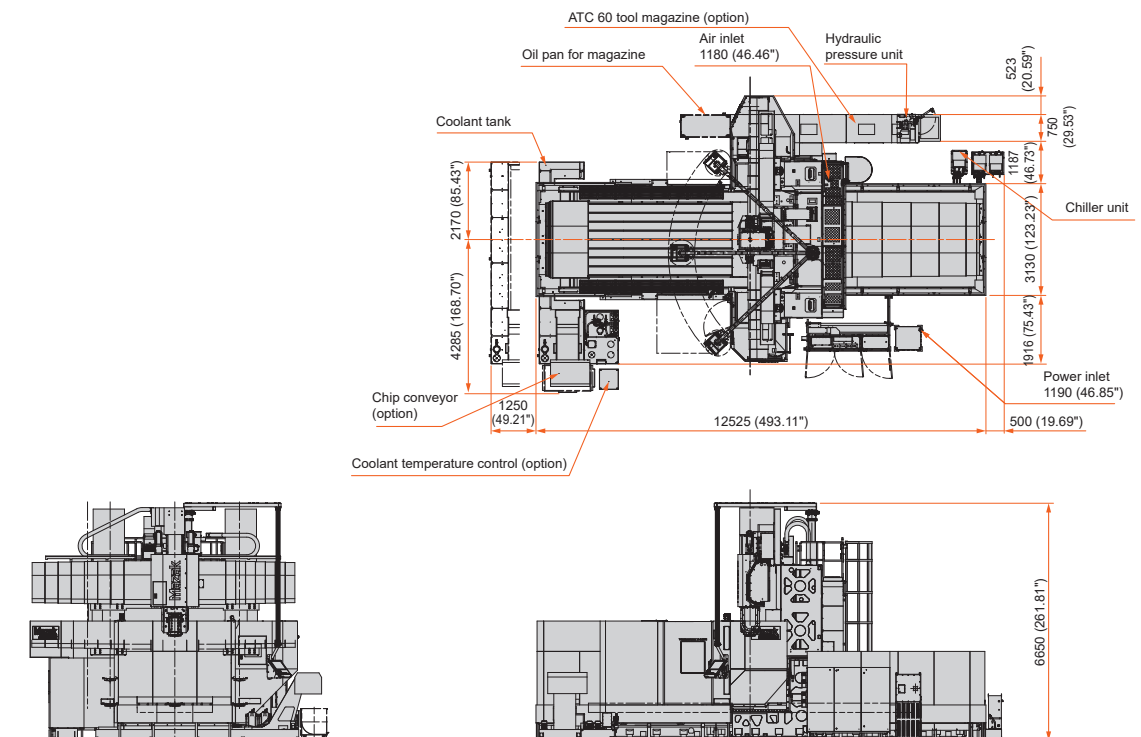
Machine Dimensions

Unit : mm (inch)

VERSATECH V-100N 160

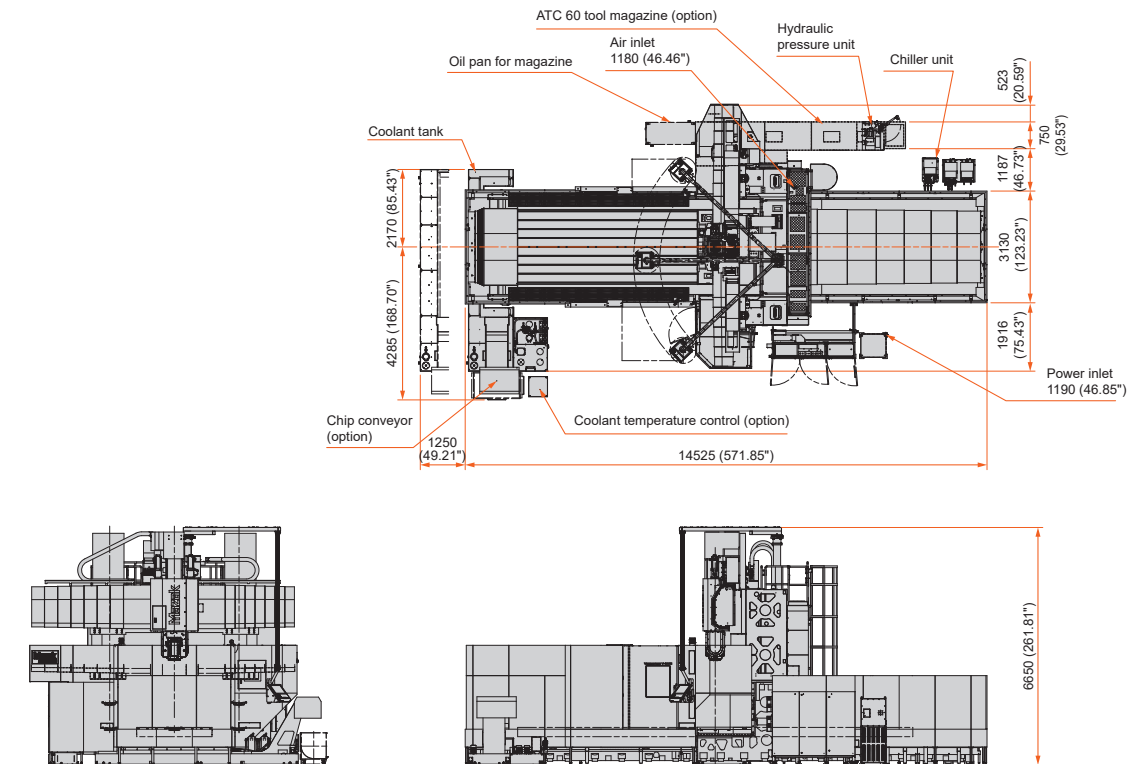


VERSATECH V-100N 200

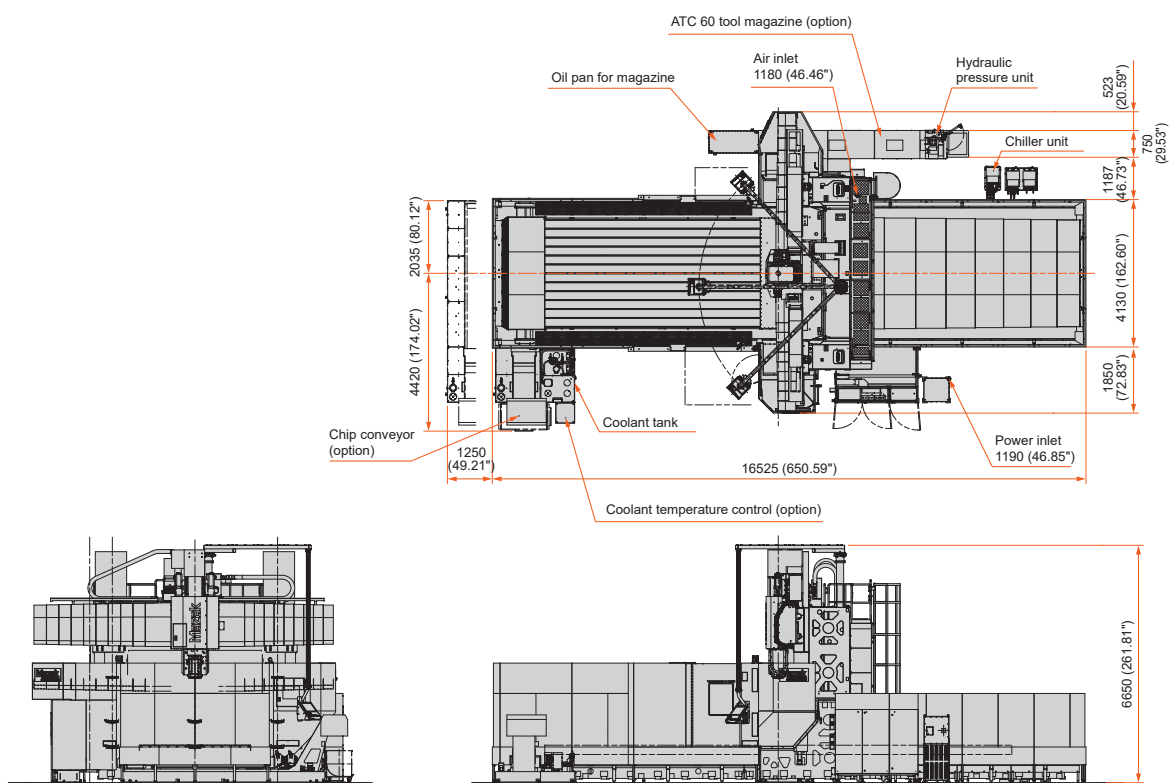


Machine Dimensions

VERSATECH V-100N 240

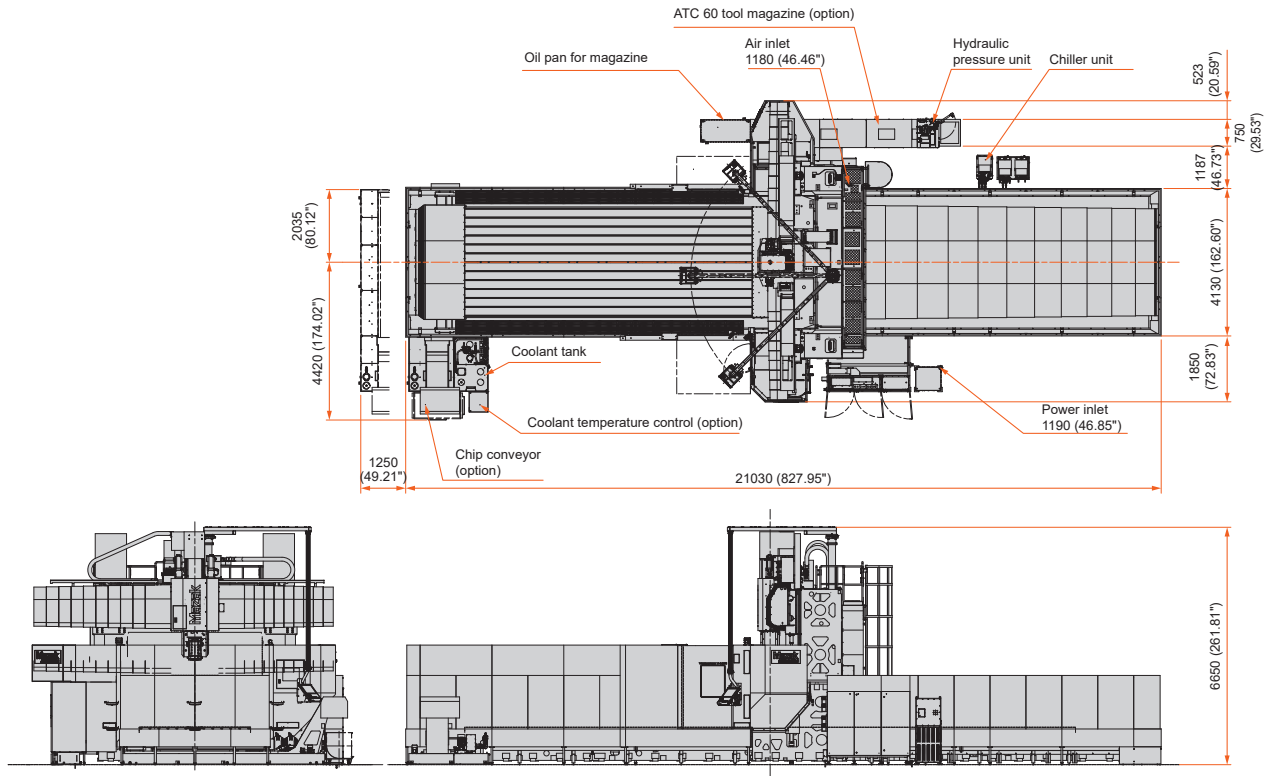


VERSATECH V-140N 280

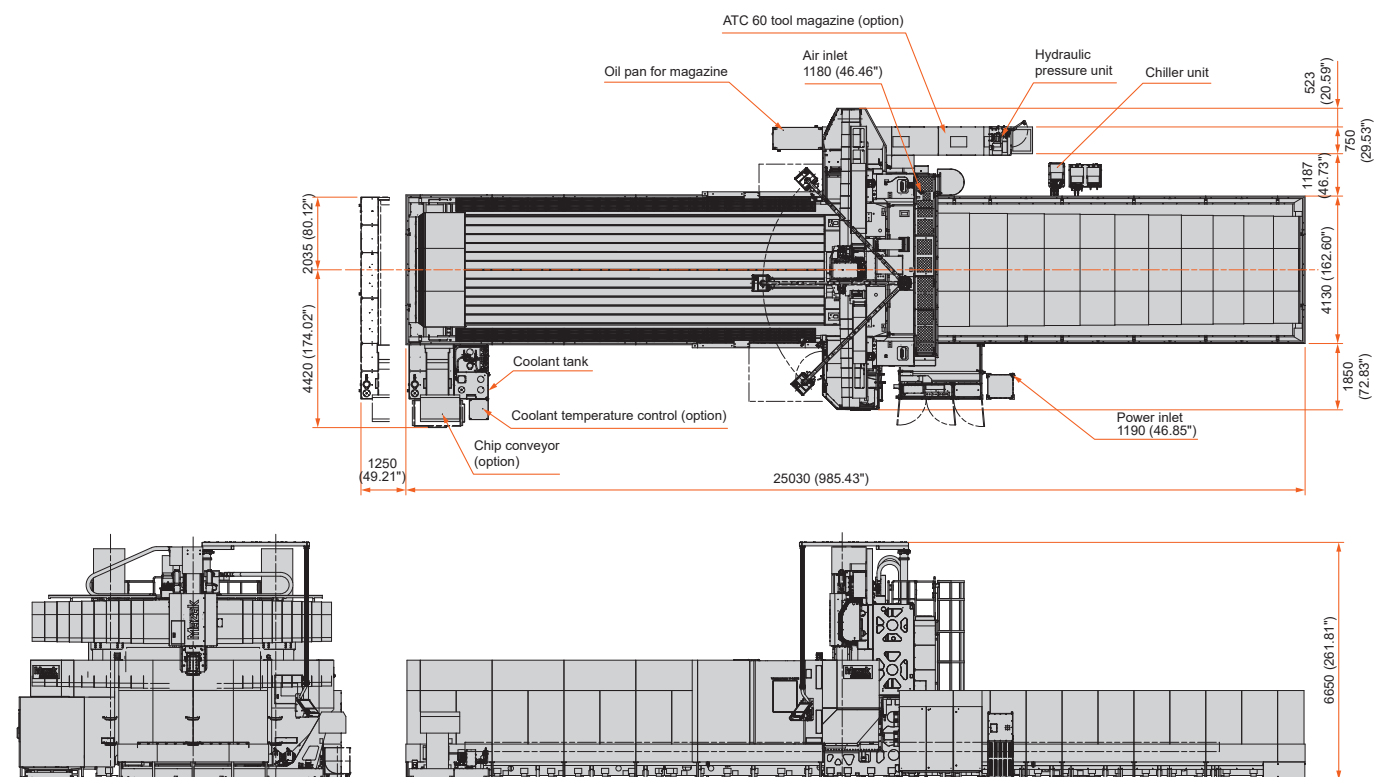


Unit : mm (inch)

VERSATECH V-140N 360



VERSATECH V-140N 440



Standard Machine Specifications

		V-100N 160	V-100N 200	V-100N 240	V-140N 280	V-140N 360	V-140N 440
Column	Distance between columns	2750 mm (108.27")			3750 mm (147.64")		
Stroke	X-axis (table forward / backward)	4000 mm (157.48")	5000 mm (196.85")	6000 mm (236.22")	7000 mm (275.59")	9000 mm (354.33")	11000 mm (433.07")
	Y-axis (spindle head travel right / left)	3600 mm (141.73")			4600 mm (181.10")		
	Z-axis travel (ram travel up / down)	710 mm (27.95")					
	W-axis (cross rail up / down)	1250 mm (49.21")					
	B-axis (positioning only)	-100°~100°					
	C-axis (positioning only)	±180°					
	Distance between spindle face and table top (B-axis:0°)	1880 mm (74.02")					
Table	Table size	2100 mm × 3000 mm (82.68" × 118.11")	2100 mm × 4000 mm (82.68" × 157.48")	2100 mm × 5000 mm (82.68" × 196.85")	3100 mm × 6000 mm (122.05" × 236.22")	3100 mm × 8000 mm (122.05" × 314.96")	3100 mm × 10000 mm (122.05" × 393.70")
	Table load capacity (evenly distributed)	43000 kg (94797 lbs)					
	Table surface configuration	24 mm (0.94") T-slot × 9 250 mm (9.84") pitch			24 mm (0.94") T-slot × 13 250 mm (9.84") pitch		
Spindle	Max. spindle speed	8000 rpm, 12000 rpm (selectable)					
	Spindle	8000 rpm No.50 / 12000 rpm HSK-A100					
	Ram size	□450 mm (□17.72")					
	Ram guide face	Rollar guide					
	Min. indexing increment (B-axis, C-axis)	0.0001°					
	Indexing time (B-axis)	2.3 s (90°)					
	Indexing time (C-axis)	3.0 s (180°)					
Feedrate	Rapid traverse rate (X- / Y- / Z-axis)	30 / 30 / 30 m/min (1181 / 1181 / 1181 IPM)				15 / 30 / 30 m/min (591 / 1181 / 1181 IPM)	
	Rapid traverse rate (W-axis)	3 m/min (118 IPM)					
	Cutting feedrate (X-, Y-, Z-axis)	8 m/min (315 IPM)					
Automatic tool changer	Tool magazine capacity	30					
	Max. tool diameter / length (from gauge line) / weight	Φ125 mm / 500 mm / 25 kg (Φ4.92" / 19.69" / 55 lbs)					
	Max. tool diameter when adjacent pockets empty	Φ210 mm (Φ8.27")					
	Tool selection method	Random selection, shortest path (fixed pocket assignment)					
	Tool change time (chip-to-chip)	16.5 sec.					
Motors	Spindle motor (40% ED (30 min. rating) / cont. rating)	8000 rpm (40 kW (54 HP) / 30 kW (40 HP)) , 12000 rpm (45 kW (60 HP) / 37 kW (50 HP))					
Power requirement	Electrical power supply (40% ED (30 min. rating) / cont. rating)	105 kVA / 96 kVA					
Machine size	Height	6650 mm (261.81")					
	Floor space requirement*	7916 mm × 10525 mm (311.65" × 414.3")	7506 mm × 13025 mm (295.51" × 512.80")	7506 mm × 14525 mm (295.51" × 571.85)	8440 mm × 16525 mm (332.28" × 650.59")	8440 mm × 21030 mm (332.28" × 827.95")	8440 mm × 25030 mm (332.28" × 985.43")
	Machine weight	59700 kg (131616 lbs)	65200 kg (143742 lbs)	70800 kg (156087 lbs)	86300 kg (190259 lbs)	101700 kg (224206 lbs)	113100 kg (249343 lbs)

* When ATC 60 tool magazine is equipped

V-140N turning table specifications OPTION

		V-140N 280
Column	Distance between columns	3750 mm (147.64")
Stroke	X-axis (table forward / backward)	7000 mm (275.59")
	Y-axis (spindle head travel right / left)	4600 mm (181.10")
	Z-axis travel (ram travel up / down)	710 mm (27.95")
	W-axis (cross rail up / down)	1250 mm (49.21")
	B-axis (positioning only)	-100°~100°
	C-axis (positioning only)	±180°
	U-axis (turning table-positioning only)	360°
	Distance between spindle end and pallet top face (B-axis:0°)	1980 mm (77.95")
Turning table	Table size	Φ2950 mm (Φ116.14")
	Max. workpiece size	Φ3500 mm × 1750 mm (Φ137.8" × 68.9")
	Table load capacity (evenly distributed)	10000 kg (22046 lbs)
	Table surface configuration	24 mm (0.94") T-slot × 11250 mm (9.84") pitch M20 × 200
Machine table	Table size	3100 × 6000 mm (122.05" × 236.22")
	Table load capacity (evenly distributed)	30000 kg (66138 lbs)
	Table surface configuration	24 mm (0.94") T-slot × 13 250 mm (9.84") pitch
Spindle	Max. spindle speed	8000 rpm
	Spindle	8000 rpm No.50
	Ram size	□450 mm (□17.72")
	Ram guide face	Rollar guide
	Min. indexing increment (B-axis, C-axis)	0.0001°
	Indexing time (B-axis)	2.3 s (90°)
	Indexing time (C-axis)	3.0 s (180°)
Turning table	Max. speed	60 rpm
	Torque (Cont. rating)	10470 N·m (7722 ft·lbs)
	Min. indexing increment (U-axis)	0.0001°
	Max. positioning speed (U-axis)	10.5 rpm
	Clamping torque	42500 N·m (31346 ft·lbs)
Feedrate	Rapid traverse rate (X-, Y-, Z-axis)	30 m/min (1181 IPM)
	Rapid traverse rate (W-axis)	3 m/min (118 IPM)
	Cutting feedrate (X-, Y-, Z-axis)	8 m/min (315 IPM)
Automatic tool changer	Tool magazine capacity	30
	Max. tool diameter / length (from gauge line) / weight	Φ125 mm / 500 mm / 25 kg (Φ4.92" / 19.69" / 55 lbs)
	Max. tool diameter when adjacent pockets empty	Φ210 mm (Φ8.27")
	Tool selection method	Random selection, shortest path (fixed pocket assignment)
	Tool change time (chip-to-chip)	16.5 sec.
Motors	Spindle motor (40% ED (30 min. rating) / cont. rating)	8000 rpm (40 kW (54 HP) / 30 kW (40 HP))
	Turning table motor (cont. rating)	45 kW (60HP)
Power requirement	Electrical power supply (40% ED (30 min. rating) / cont. rating)	184.41 kVA / 176.02 kVA
Machine size	Height	7000 mm (275.59")
	Floor space requirement	8550 × 16525 mm (336.61" × 650.59")
	Machine weight	101700 kg (224206 lbs)

8000rpm standard spindle is only available. 0.0001° indexing function for turning table (No contouring)

MAZATROL SmoothAi Specifications

	MAZATROL	EIA
Number of controlled axes	Simultaneous 2 ~ 4 axes	Simultaneous 5 axes*
Least input increment	0.0001 mm, 0.00001", 0.0001°	
High speed, high precision control	Shape error designation, Smooth corner control, Rapid traverse overlap, Rotary axis shape compensation	Shape error designation, Smooth corner control, Rapid traverse overlap, Rotary axis shape compensation, High-speed machining mode, High-speed smoothing control function, 5-axis spline*, Path error suppression control, Tool path optimization
Interpolation	Positioning (Linear interpolation), Positioning (Independent interpolation), Linear interpolation, Circular interpolation, Cylindrical coordinate interpolation, Synchronized milling spindle tapping*	Positioning (Linear interpolation), Positioning (Independent interpolation), Linear interpolation, Circular interpolation, Spiral interpolation, Helical interpolation, Cylindrical coordinate interpolation*, Fine spline interpolation*, NURBS interpolation*, Polar coordinate interpolation*, Synchronized milling spindle tapping*
Feedrate	Rapid traverse, Cutting feed, Cutting feed (per minute), Cutting feed (per revolution), Dwell (specified time, specified number of rotation), Rapid traverse override, Cutting feed override, G0 speed variable control, Feedrate clamp, Variable acceleration / deceleration control, Constant control for G0 tilting*	Rapid traverse, Cutting feed, Cutting feed (per minute), Cutting feed (per revolution), Inverse time feed, Dwell (specified time, specified number of rotation), Rapid traverse override, Cutting feed override, G0 speed variable control, Feedrate clamp, Time constant changing for G1, Variable acceleration / deceleration control, Constant control for G0 tilting*
Program registration	Max. number of programs : 256 (Standard) / 960 (Max.), Program storage : 2 MB, Program storage expansion : 8 MB*, Program storage expansion : 32 MB*	
Control display	Display : 19" touch panel / Resolution : SXGA	
Spindle functions	S code output, Spindle speed clamp, Spindle speed override, Spindle speed reaching detection, Multiple position orient, Constant surface speed, Spindle speed command with decimal digits, Synchronized spindle control, Max. speed control for spindle	
Tool functions	Tool offset pairs : 4000, T code output for tool number, Tool life monitoring (time), Tool life monitoring (number of machined workpieces)	Tool offset pairs : 4000, T code output for tool number, T code output for group number, Tool Identifier command, 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 pre-filter, Angled surface cutting, Shaping function*, Tool nose point control*, Tool diameter compensation for 5-axis machining*, Workpiece positioning error compensation*, Tool axis direction / tool length compensation*
Machine compensation	Backlash compensation, Pitch error compensation, Geometric deviation compensation, Ai Thermal shield, Volumetric compensation*	
Protection functions	Emergency stop, Interlock, Stroke check before traveling, SAFETY SHIELD (manual mode), SAFETY SHIELD (automatic mode), MAZAK VOICE ADVISER	
Automatic operation mode	Memory operation	Memory operation, Tape operation, MDI operation, EtherNet operation*
Automatic operation control	Optional stop, Dry run, Manual handle control, MDI control, TPS, Restart, Single process, Machine lock	Optional block skip, Optional stop, Dry run, Manual handle control, MDI control, TPS, Restart, Restart 2, Collation stop, Machine lock
Manual measuring functions	Tool length and tip teach, Touch sensor coordinates measurement, Workpiece offset measurement, WPC coordinate measurement, Measurement on machine	Tool length and tip teach, Tool offset teach, Touch sensor coordinates measurement, Workpiece offset measurement, Measurement on machine
Automatic measuring functions	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	Partial auto tool length measurement, Auto tool length measurement, Coordinate measurement	
Interface	PROFIBUS-DP*, EtherNet / IP*, CC-Link*, CC-Link IE Field Basic	
Card interface	SD card interface, USB	
EtherNet	10 M / 100 M / 1 Gbps	
Security function	Security software	

*Option