AW MILLER
TECHNICAL SALES, INC.

EAST AURORA, NY 716.652.8282 | HARMONY, PA 724.453.1690 | STE-LAURENT, QC 514.333.9174 | HARLEYSVILLE, PA 215.256.8281

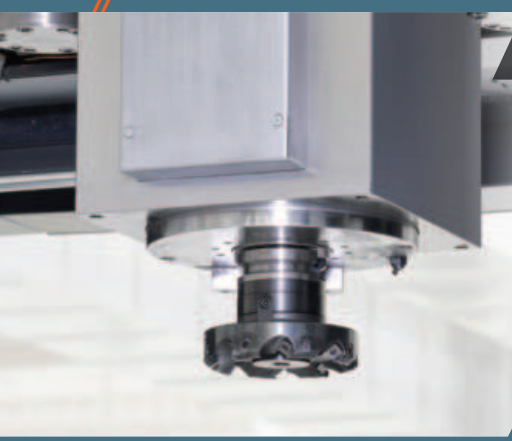
Mazak FJW-100/160

[Five-Face Double-Column Machining Center]

Column height: 1.65 m (64.96")

Width between columns: 2.65 m (104.33")

5-face machining



Spindle (V)

Angle head attachment

0°

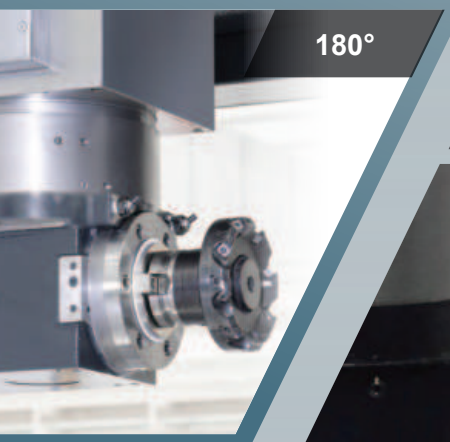
New lineup of 5-face machining centers

Process integration with 5-face machining/Large workpiece capacity/High-power machining

90° angle attachment tool for 4-face machining – standard equipment
(EIA/ISO program performs 5° indexing machining)

6000 rpm spindle, 26 kW and 828 N·m (611 ft·lbs) for high-power machining

Column height 1650 mm (64.96") by utilizing cross rail with W-axis control



Powerful machining

Top-face machining

Material: C50

	840 CC/min	735 CC/min
Tool	ø200 mm (ø7.87") Face mill (10 teeth)	ø160 mm (ø6.3") Face mill (8 teeth)
Cutting speed	189 m/min (620 sfm)	220 m/min (722 sfm)
D.O.C × Cutting width	5 mm × 160 mm (0.2" × 6.3")	5 mm × 120 mm (0.2" × 4.72")
Feedrate	1053 mm/min (41 ipm)	1225 mm/min (48 ipm)
Z-axis extension	800 mm (31.5")	800 mm (31.5")

ø160 mm (6.3") face mill

Side-surface machining

Material: C50

	763 CC/min	603 CC/min
Tool	ø200 mm (ø7.87") Face mill (10 teeth)	ø160 mm (ø6.3") Face mill (8 teeth)
Cutting speed	189 m/min (620 sfm)	220 m/min (722 sfm)
D.O.C × Cutting width	5 mm × 145 mm (0.2" × 5.71")	4.1 mm × 120 mm (0.16" × 4.72")
Feedrate	1053 mm/min (41 ipm)	1225 mm/min (48 ipm)
Z-axis extension	800 mm (31.5")	800 mm (31.5")

ø160 mm (6.3") face mill

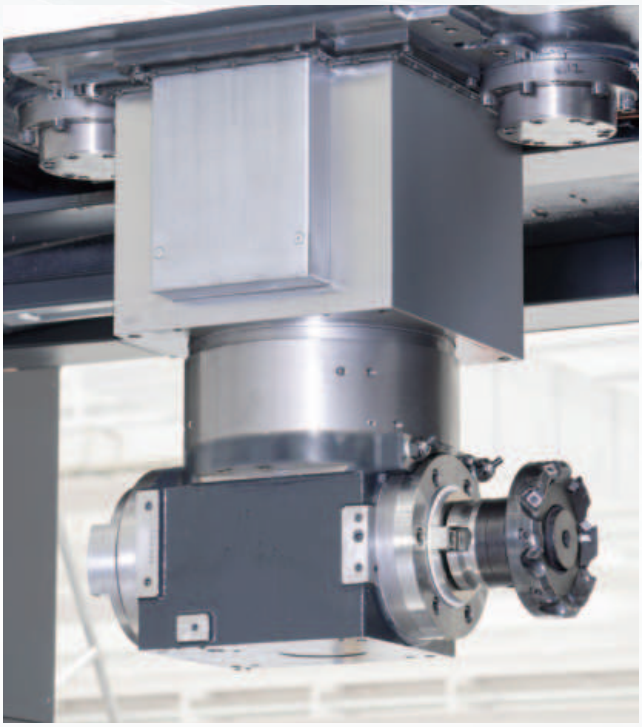
5-face double-column machining center

FJW-100/160

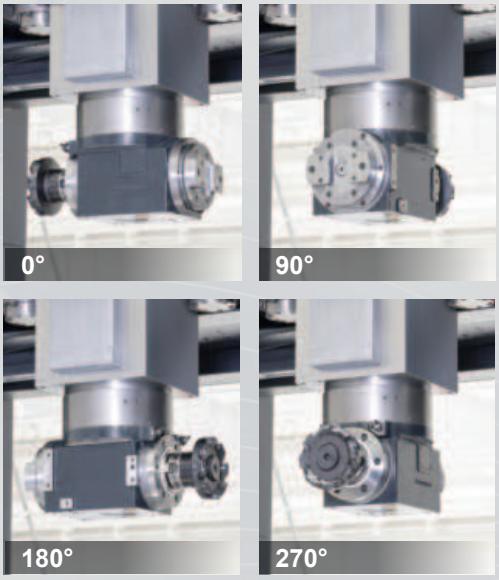
5-Face Machining System

Angle head attachment

Automatically load/unload angle head attachment and perform automatic tool change (index 72 positions, every 5°) for automatic continuous machining as well as top-face machining. (EIA/ISO programs perform 72-position indexing per 5°)



90° index angle

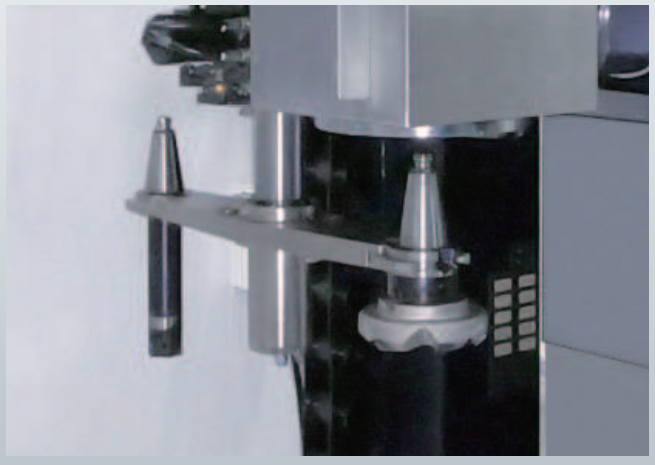


Automatic attachment changer (2 stations)

Automatic attachment changer next to the column on the side of the CNC operation panel performs automatic change of angle head attachment and V tool cover. (V tool cover is attached to the spindle at top-surface machining)

Automatic tool changer

Exchanges tools for both spindle and angle head attachment from 50-tool storage magazine.

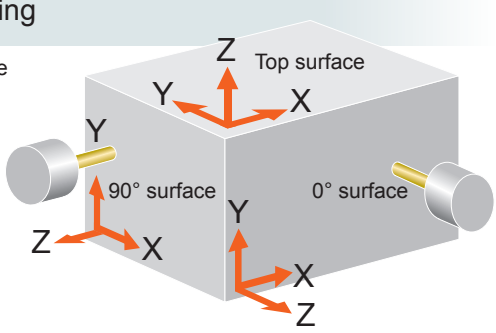


Program functions for 5-face machining and 5° index machining

Convenient programming – even for 5-face machining

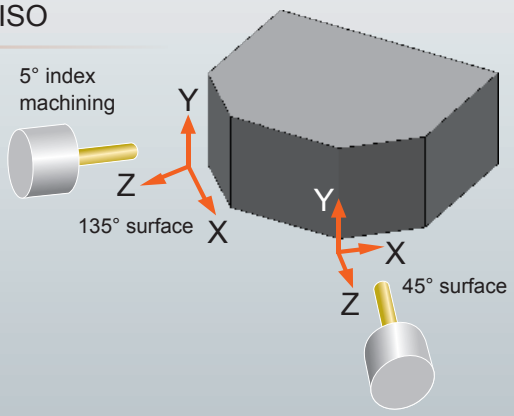
Both MAZATROL and EIA programs can perform 5-face machining. Program side-surface machining easily with the conversational MAZATROL format. Simply enter the surface to be machined, followed by normal data entry.

Coordinate system and machining surface



Program 5-face machining and 5° indexing machining with EIA/ISO

Make programs for 5-face machining with G code. MAZATROL conversational programs and G code automatically coordinate for ease of operation. Additionally, perform machining by angle head attachment at every 5° of indexing.



5-face machining/5° index machining preparation functions, G code	
Attachment indexing	G301C□□□ (□□□: Attachment indexing angle)
Attachment coordinates conversion/ tool length offset	G680C◇◇◇ (◇◇◇: Angle of machining surface)

Structure and Function for Large Workpieces

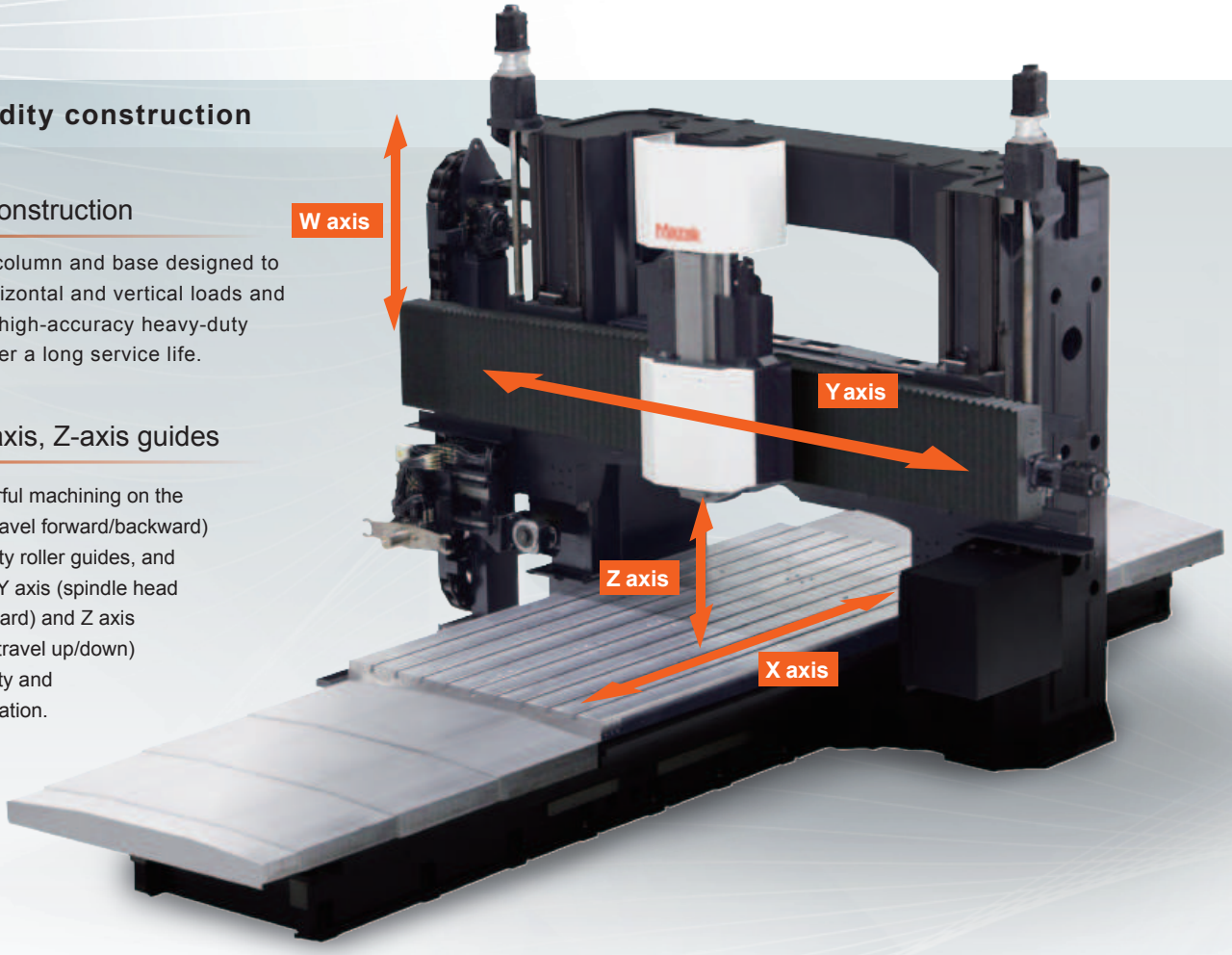
High-rigidity construction

Machine construction

High-rigidity column and base designed to withstand horizontal and vertical loads and distortion for high-accuracy heavy-duty machining over a long service life.

X-axis, Y-axis, Z-axis guides

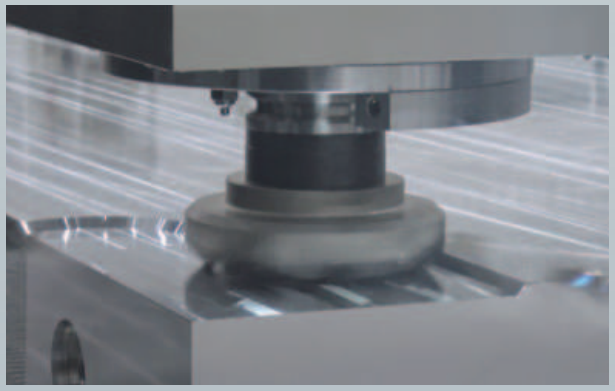
Perform powerful machining on the X axis (table travel forward/backward) with high-rigidity roller guides, and slide ways on Y axis (spindle head forward/backward) and Z axis (spindle head travel up/down) with high rigidity and minimized vibration.



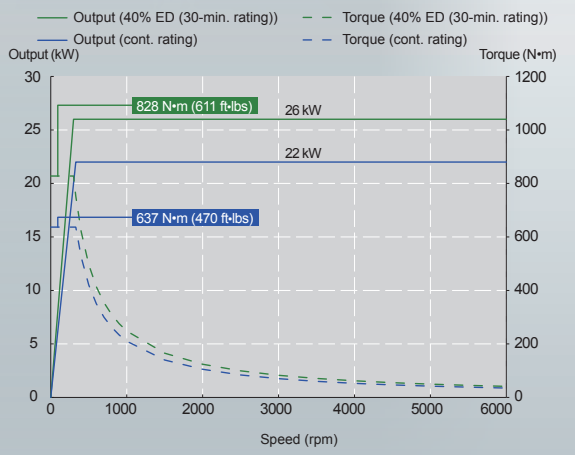
Spindle

High-torque 6000 rpm spindle

6000 rpm high-torque 828 N·m (611ft·lbs) [40% ED (30-min. rating)] spindle for heavy-duty machining of steel or cast iron material.

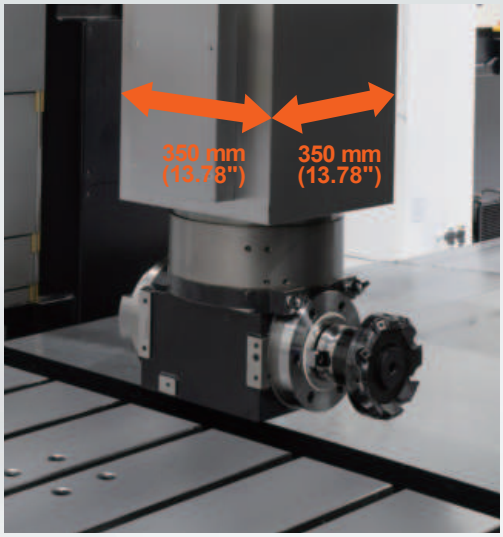


6000 rpm spindle output/torque diagram



High-rigidity ram

The large cross-sectional area [350 mm (13.78")] of the spindle unit ram structure reduces ram displacement by 54% over conventional models.



High rigidity with strong cross beam

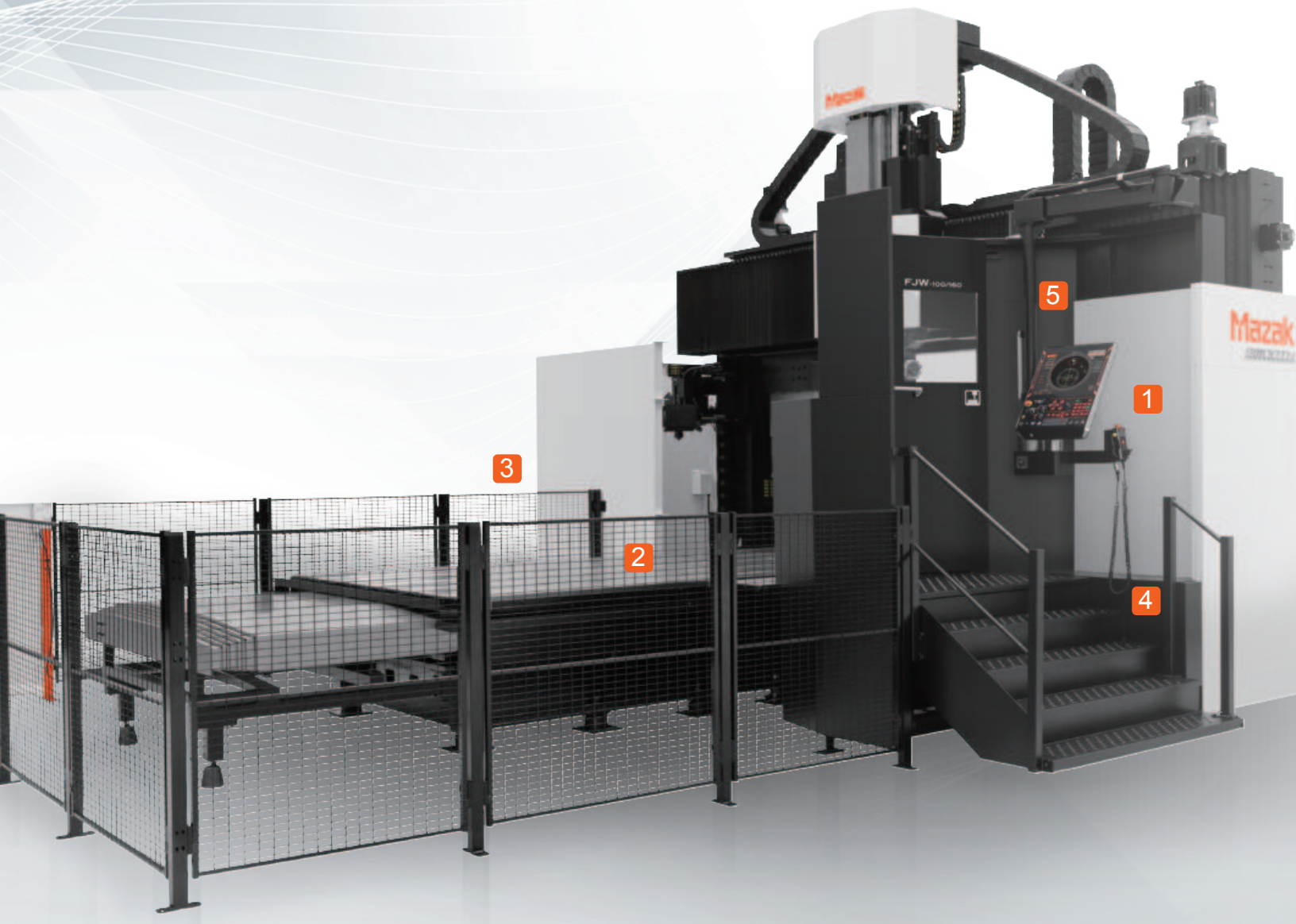
The double-column structure connects the columns with the cross beam for high rigidity.

W axis

Cross rail lift

Achieve column height of 1.65 m (64.96") with simultaneous operation of the ram [Z-axis stroke of 0.8 m (31.5")] and the cross rail (W axis) to machine tall workpieces.

Ease of Operation



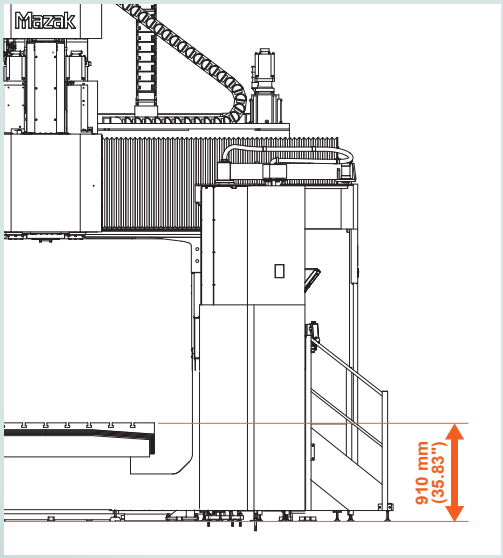
1

Remote manual pulse generator

For convenient operation when the operator is not near the CNC operation panel, the remote manual pulse generator display shows the position and the machine coordinate values. Register four different positions in memory.

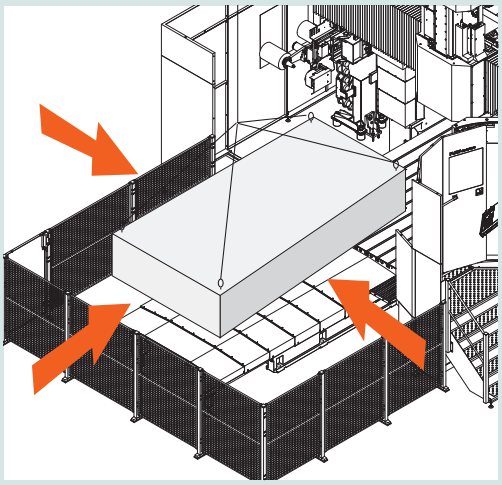
2 Table height: 910 mm (35.83")

Designed for convenient fixture setup and workpiece loading/unloading.



3 Superior crane accessibility

The safety fence structure separates the worker from the machine's moving parts. Move the crane to the table from any direction – other than the column side – to load and unload large workpieces easily.

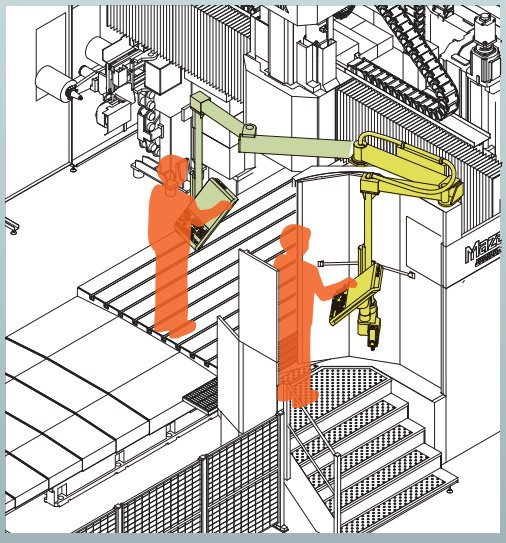


4 Easy in-and-out access to the machine

The optional outside deck eliminates height difference between the inside and outside of the work floor for improved workability.

5 Movable operation panel

Move the MAZATROL SmoothG CNC panel inside the machine and operate it the same way, even during setup on the table.



CNC System

World's fastest CNC

Latest hardware and software for unprecedented speed and precision

Smooth graphical user interface

MAZATROL Smooth graphical user interface for unsurpassed ease of operation. Touch screen operation similar to your smart phone/tablet

Ease of operation

Designed for unsurpassed ease of operation

4-axis simultaneous CNC

MAZATROL SMOOTH G

Process home screens

Five different home process screens provide easy-to-understand display of the appropriate data.
Touch icons in each process display to reach additional screens.

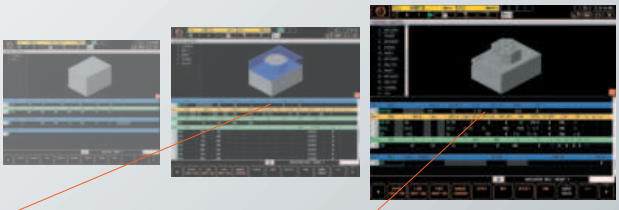
Programming | Tool data | Setup | Machining | Maintenance

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

QUICK MAZATROL

Reduced time for conversational programming

MAZATROL program, unit list and 3D workpiece shape are linked to each other. Define a machining unit in a MAZATROL program, and the 3D shape is displayed immediately to check for any programming error easily and quickly.



Touch a feature in the 3D model to move quickly to the corresponding section of the MAZATROL program.

3D model in the process list displays updated programming in real time.

3D ASSIST

Make a program directly from 3D CAD data

To reduce input errors and program-checking time, import workpiece and coordinate data from 3D CAD data to a MAZATROL program – with no coordinate value inputs required.

Import CAD model

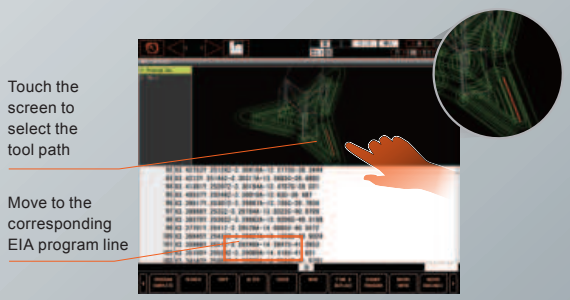
Select shape

Automatically input to MAZATROL program

QUICK EIA

EIA program visualization

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



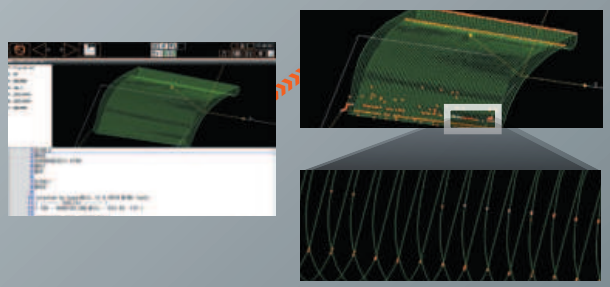
Touch the screen to select the tool path

Move to the corresponding EIA program line

VIEW SURF

Analyze EIA programs

Analyze tool paths to visualize any predictable failure on the finished surface. Modify programs before machining to minimize the time for test cutting.



Standard and Optional Equipment

Safety fence

Prevents the operator from entering the machining area.

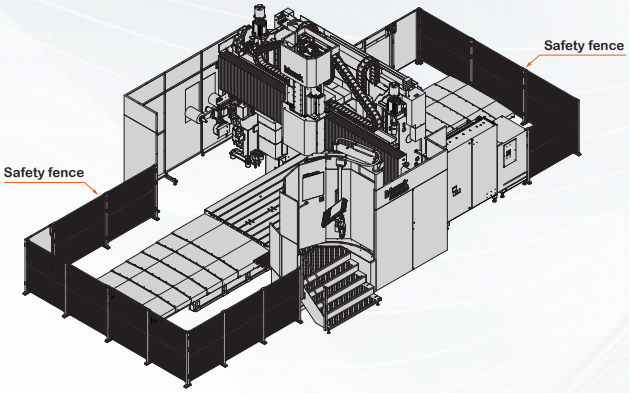
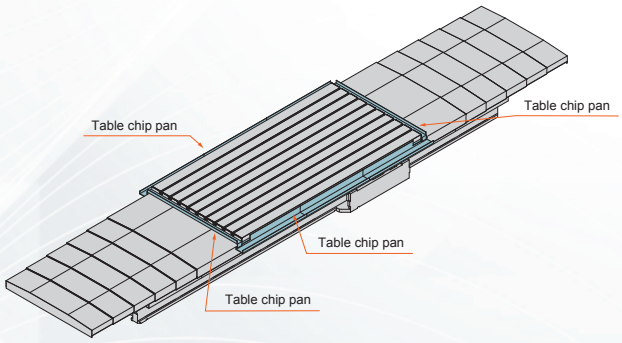


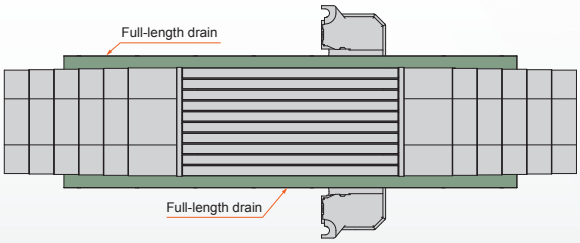
Table chip pan

Reduce cleaning time with installation of a chip pan on the outer circumference of the table to prevent chips from falling on the floor.



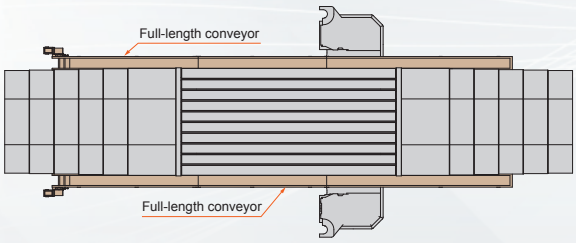
Full-length drain OPTION

For ease of removal, chips fall from the table and accumulate in a drain placed over the full range of machine motion.



Full-length conveyor OPTION

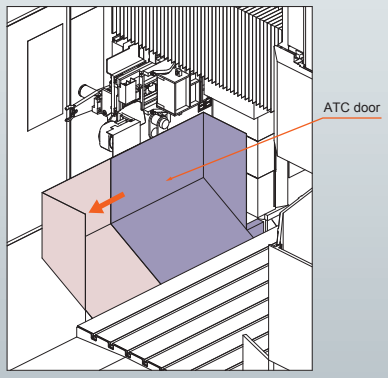
Chips fall onto a chip conveyor placed over the full range of table motion. Accumulated chips discharge to a single location for effective removal.



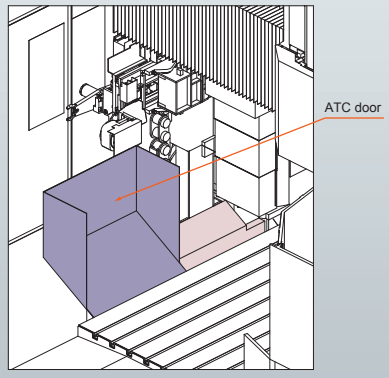
ATC door and AAC cover OPTION

ATC (automatic tool changer) door and AAC (automatic attachment changer) cover prevent chips and coolant from exiting the machine.

ATC door close



ATC door open



AAC cover

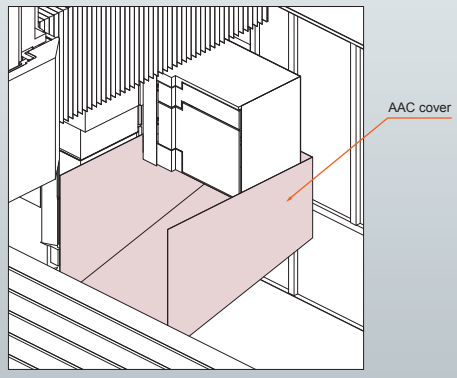
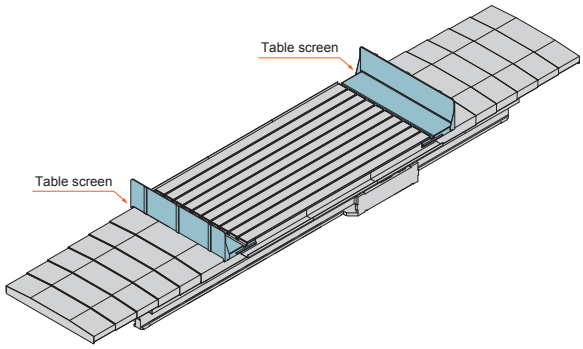


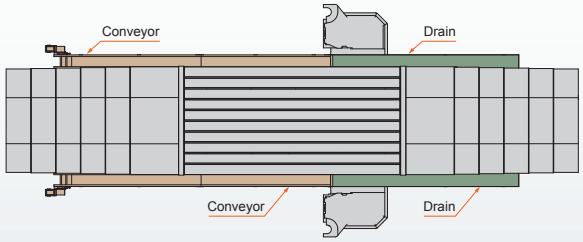
Table screen OPTION

To improve disposal efficiency, reduce the number of chips that diffuse to the front/back of the table during machining.



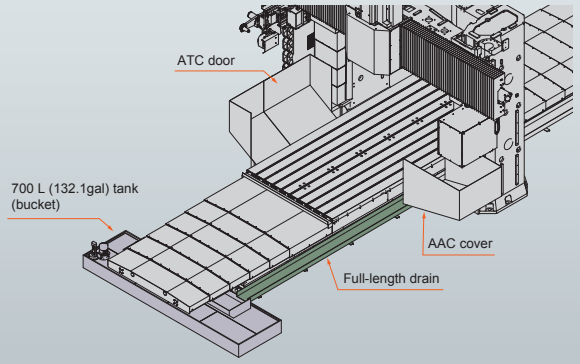
Half conveyor OPTION

Half conveyor includes chip conveyor and drain. For easy chip removal, drain is positioned in front of the spindle where chips accumulate to reduce power consumption and required maintenance time.



Coolant package A OPTION

Package option: Full-length drain, 700 L (132.1 gal) tank (bucket), flood coolant, ATC door and AAC cover



●: Standard ○: Option

Spindle	6000 rpm (No. 50)	●
Table	Y-axis reference slot	○
Factory automation	50-tool magazine	●
	80-tool magazine	○
	120-tool magazine	○
	Automatic attachment changer (2 stations)	●
	Angle head attachment	●
	V tool cover	●
	Printout function for workpiece measuring (without printer)	○
	Automatic power ON/OFF + warm-up operation	●
Setup	Absolute position detection	●
	Remote manual pulse generator (wired)	○
	Automatic tool-length measurement and tool-breakage detection	○
	Mazak monitoring system B (RMP 60)	○
	External step and platform	○
Safety equipment	Work light	●
	Safety fence	●
	ATC automatic recover function	●
	Operator door interlock	●
High accuracy	Spindle chiller unit	●
	Ball screw core cooling (X, Y, Z axes)	○
	Scale feedback (X, Y, Z axes)	○
	Scale feedback (W axis)	●
Coolant/ Chip disposal	Table chip pan	●
	Table screen	○
	Full-length drain	○
	Half drain + Half conveyor	○
	Full-length conveyor	○
	Table screen + Full-length drain	○
	Table screen + Half drain + Half conveyor	○
	Table screen + Full-length conveyor	○
	700 L (132.1 gal) tank: Bucket	○
	700 L (132.1 gal) tank: Chip conveyor (hinge)	○
	1000 L (264.2 gal) tank: Bucket	○
	1000 L (264.2 gal) tank: Chip conveyor (hinge)	○
	Flood coolant	○
	Coolant through spindle	○
	Workpiece air blast	○
	ATC door & AAC cover	○
	Coolant package A	○

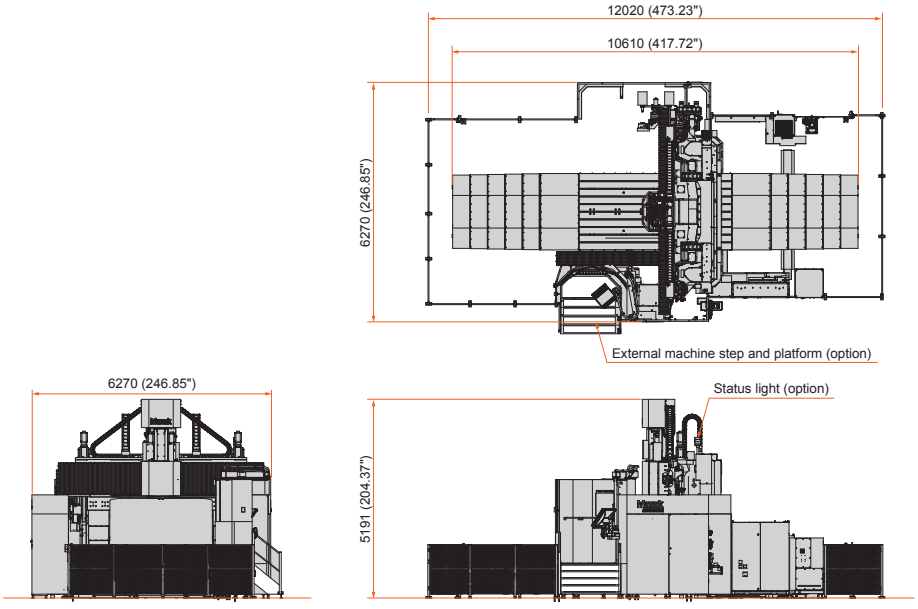
Standard Machine Specifications

Stroke	X axis (table right/left)	4250 mm (167.32")
	Y axis (spindle head forward/backward)	3200 mm (125.98")
	Z axis (spindle head up/down)	800 mm (31.5")
	W axis (cross rail up/down)	1000 mm (39.37")
	Distance between spindle face and table top	0 ~ 1681 mm (0~66.18")
Table	Column height	1650 mm (64.96")
	Effective width between columns	2650 mm (104.33")
	Table size	2000 mm × 4000 mm (78.74" × 157.48")
	Table load capacity (evenly distributed)	22000 kg(48501 lbs)
	Table surface configuration	24 mm (0.94") T-slot × 9,200 mm (7.87") pitch
Spindle	Spindle speed	35 ~ 6000 rpm
	Angle head rotation speed	35 ~ 3000 rpm
	Gear ranges	2-step (electric)
	Spindle taper	7/24 taper No. 50
	Spindle bearing ID	ø100 (3.94")
	Spindle acceleration time to top speed	5.25 s (0 → 6000 rpm)
Feedrate	Rapid traverse rate (X, Y, and Z axes)	30 m/min, 32 m/min, 20 m/min (1181,1260,787 ipm)
	Rapid traverse rate (W axis)	3 m/min (118 ipm)
	Cutting feedrate (X, Y, and Z axes)	10 m/min (394 ipm)
Automatic tool changer	Tool shank	No. 50
	Tool magazine capacity	50
	Max. tool diameter/length (from gauge line)/weight	ø125 mm/400 mm/25 kg (ø4.92"/15.75"/55 lbs)
	Max. tool diameter when adjacent pockets empty*1 *2	ø250 mm (9.84")
	Tool selection method	Random selection/shortest path (fixed pocket assignment)
	Tool change time (chip-to-chip)	25 s (V tool), 24 s (H tool)
Motors	Spindle motor (40% ED (30-min. rating)/cont. rating)	26 kW (35 hp)/22 kW (30 hp)
Power requirement	Electrical power supply (40% ED (30-min. rating)/cont. rating)	67.44 kVA/63.82 kVA
	Air source	More than 0.5 MPa (73 PSI)/650 NL/min (24.76 ft^3/min)
Machine size	Machine height	5191 mm (204.37")
	Floor space requirement	6270 mm × 10610 mm (246.85" × 417.72")
	Machine weight	43000 kg (94797 lbs)
CNC system		MAZATROL SmoothG

*1 Face mill up to 8".
*2 When attaching a ø250 mm (ø9.84") tool, adjacent tool diameter is ø230 (ø9.06 ") mm or less.

Machine dimensions

Unit: mm (inch)



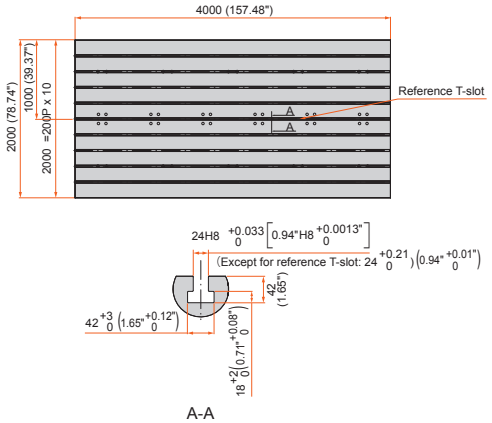
MAZATROL SmoothG Specifications

	MAZATROL	EIA
Number of controlled axes	Simultaneous 2 ~ 4 axes	
Minimum input increment	0.0001 mm, 0.00001", 0.0001°	
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
Interpolation	Positioning (interpolation), Positioning (non-interpolation), Linear interpolation, Circular interpolation, Synchronous tapping*	Positioning (interpolation), Positioning (non-interpolation), Linear interpolation, Circular interpolation, Spiral interpolation, Helical interpolation, Cylindrical 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: 2MB, Program memory expansion*: 8MB, Program memory expansion*: 32MB	
Control display	Display: 19" touch panel, Resolution: SXGA	
Spindle functions	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	—	Shaping function*, Dynamic compensation II*
Machine compensation	Backlash compensation, Pitch error 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, Machine lock	Optional block skip, Optional stop, Dry run, Manual handle interruption, MDI interruption, TPS, Restart, Restart 2, Collation stop, Machine lock
Manual measuring functions	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, WPC coordinate 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	Semi-automatic tool length measurement, Full-automatic tool length measurement, Coordinate measurement	
Interface	PROFIBUS-DP*, EtherNet/IP*, CC-Link*	
Card interface	SD card interface, USB	
EtherNet	10M/100M/1Gbps	

* Option

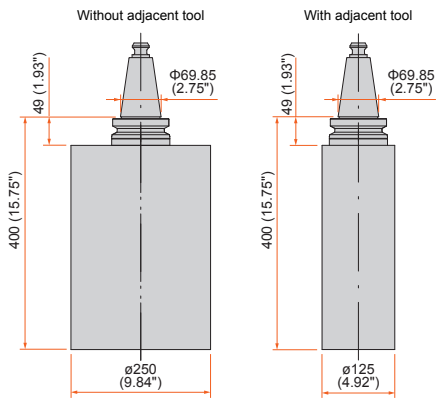
Table dimensions

Unit: mm (inch)



Max. tool dimensions

Unit: mm (inch)



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Mazak

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