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

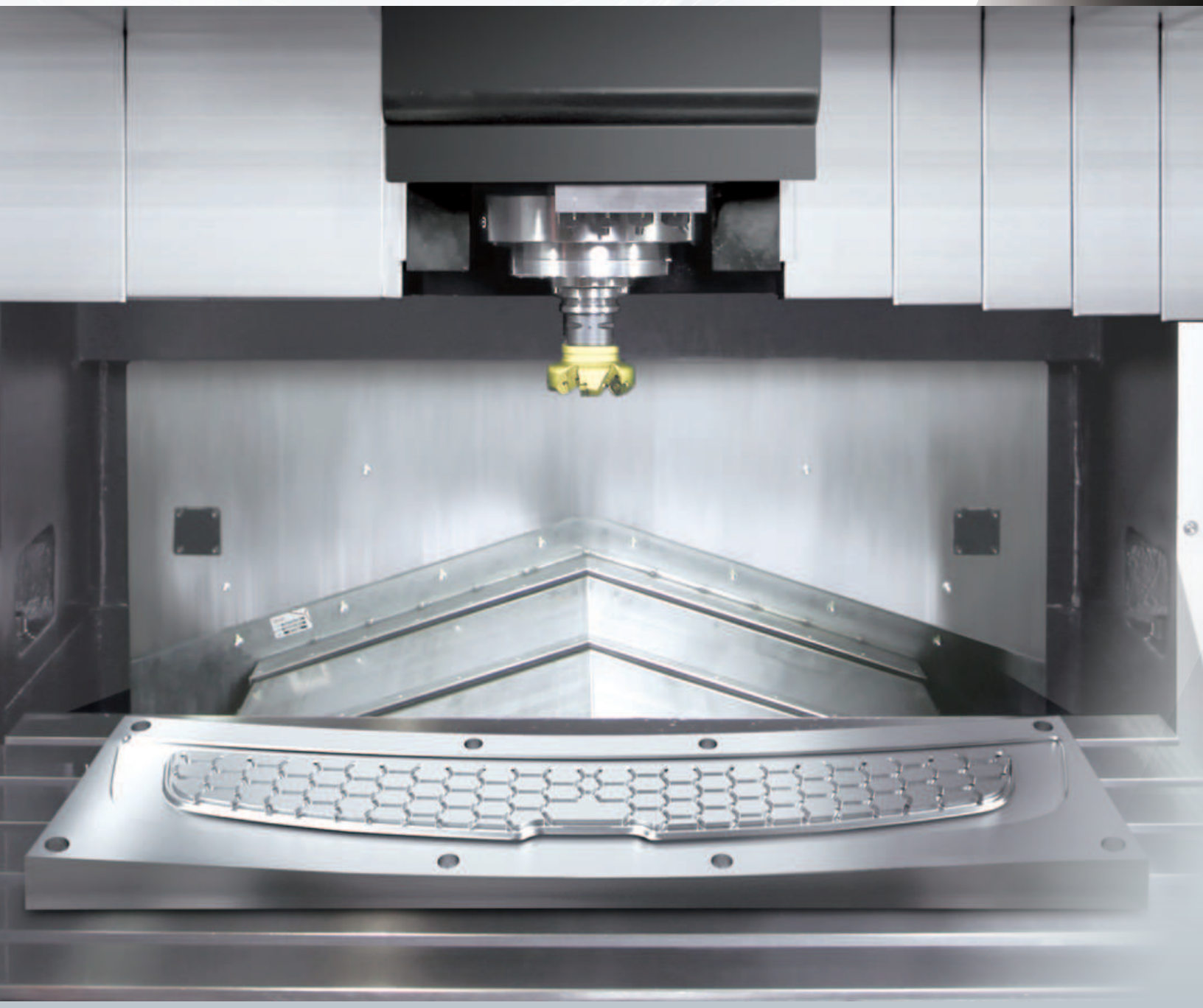
# FJV-200, 250

Mazak

[ Double-Column Machining Centers ]

# No. 40 taper spindle double-column machining centers designed for high accuracy and high productivity

Within a basic design concept proven in the field over many years, these machining centers are equipped with a new high-speed spindle and advanced CNC system. They are designed for efficient machining of workpieces such as dies, molds and aerospace components – at high speed with high accuracy.



## High-rigidity No. 40 taper spindle

Four spindle specifications are available to meet a wide variety of workpiece material requirements

| | |
|---|---|
| 12000 rpm [ Standard ] | 12000 rpm High torque [ Option ] |
| 18000 rpm [ Option ] | 25000 rpm [ Option ] |

## Double-column construction

Designed for extended periods of high-accuracy machining


FJV-250 [MAZATROL SmoothG CNC]
Shown with optional equipment

High-accuracy, high-productivity double-column machining centers

# FJV-200, 250

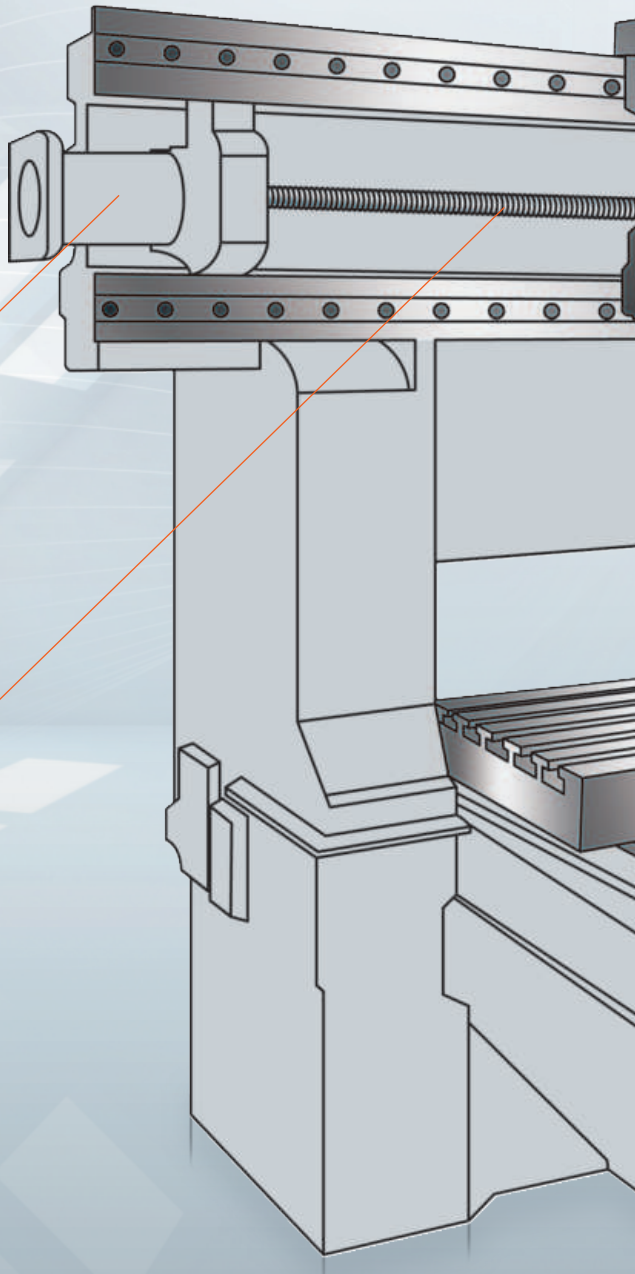
# Higher Accuracy

## Double-column machine construction for high-speed, high-accuracy performance

Symmetrical machine construction, together with advanced technologies – such as integral spindle/motor, ball screw core cooling system, the THERMAL SHIELD and many others – provide unsurpassed performance.

### High-rigidity machine construction

Double-column construction delivers high-accuracy machining over extended periods of operation, and ensures that the spindle is used to its full potential.

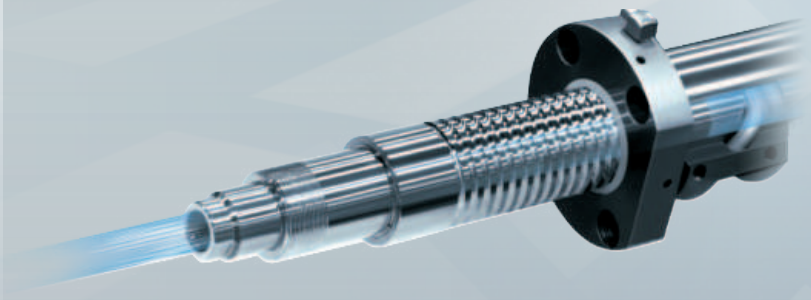


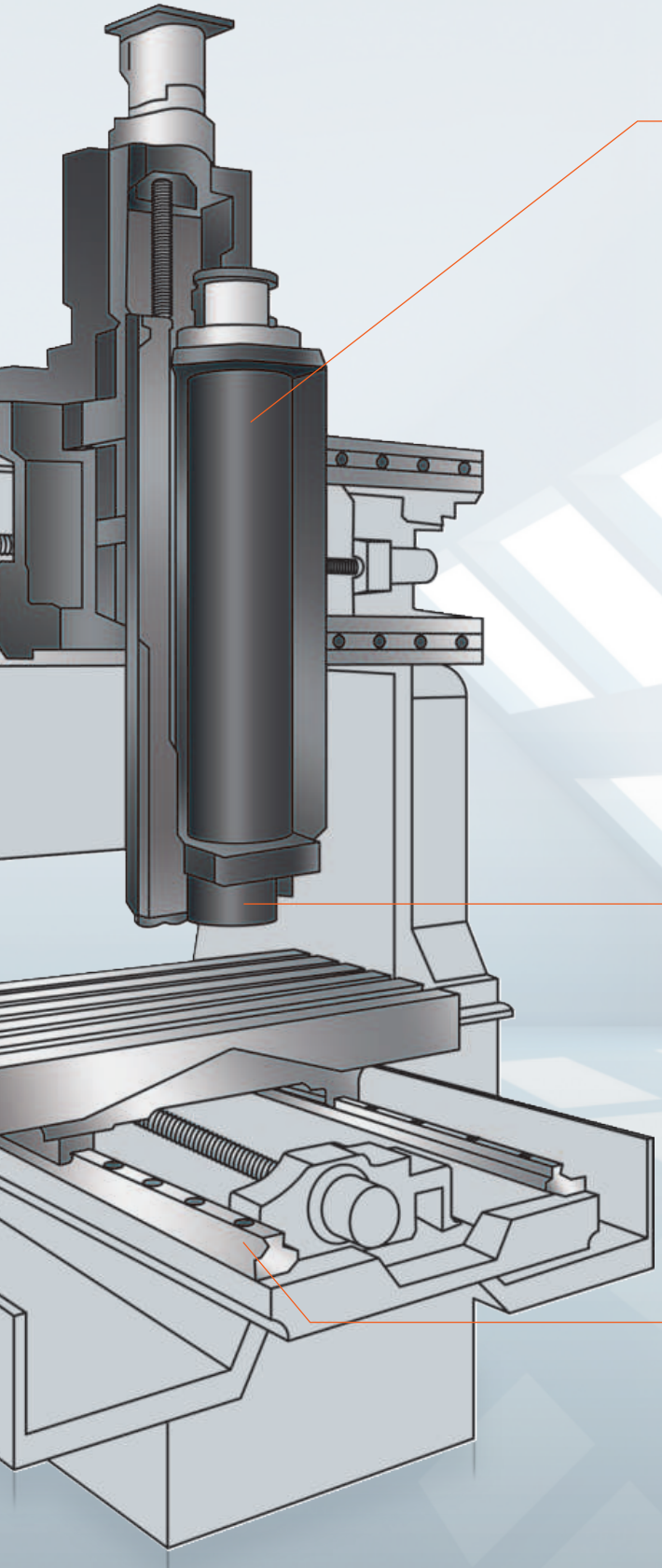
### Direct servo mounting

Servo motors are mounted directly on the X, Y and Z-axis ball screws. Elimination of transmission between the servo motor and ball screw minimizes backlash for high-accuracy positioning.

### Ball screw core cooling

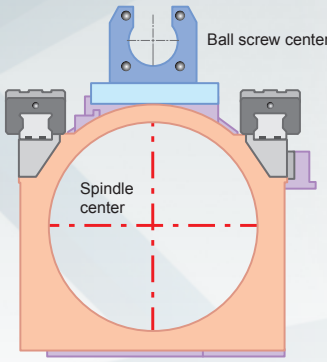
Temperature-controlled cooling oil circulates through the ball screw cores to ensure stable machining accuracy over extended periods of high-speed operation.





## Symmetrical headstock design

Symmetrical headstock design and integral spindle/motor minimize spindle displacement from heat generated by spindle operation.




Y-axis direction symmetry

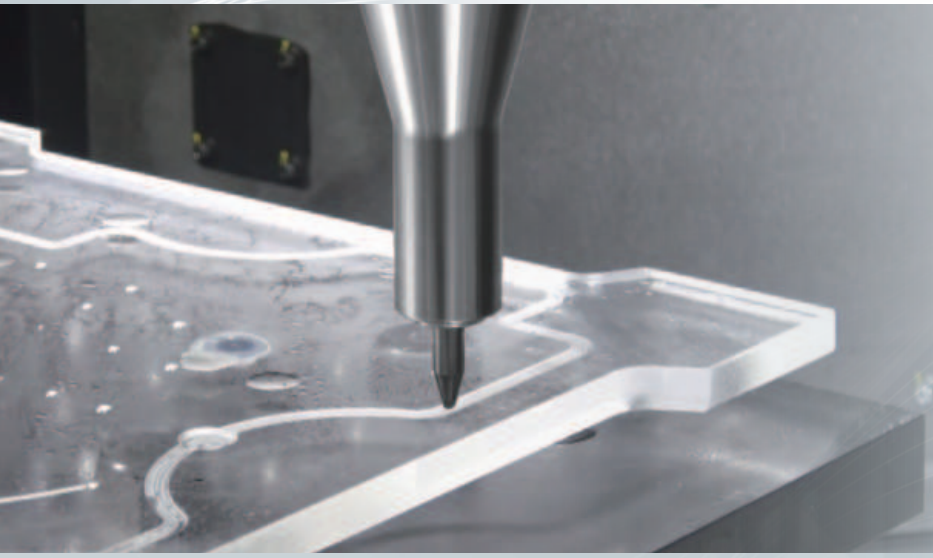
## Milling spindle cooling prevents temperature change

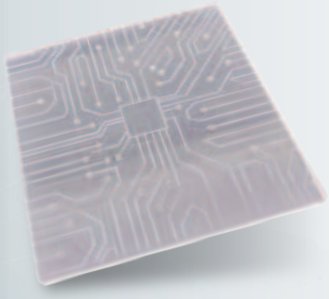
Temperature-controlled cooling oil circulates through the milling spindle headstock to prevent heat displacement.

## Linear roller guides on the X, Y and Z axes

The FJV-200 and FJV-250 use linear roller guides on the X, Y and Z axes for high-accuracy heavy-duty machining.

# Higher Productivity





Material: Quartz
Sample workpiece



Material: Aluminium
Workpiece: Aerospace bracket



Material: Prehardened steel
Workpiece: Mold for automotive component

## Spindle

### Integral spindle/motor

Integral spindle/motor design minimizes vibration during high-speed operation to ensure exceptional surface finishes and maximum tool life.

### Spindle temperature control

For high-accuracy machining, temperature controlled cooling oil circulates around the spindle bearings and headstock to minimize any thermal change to the spindle.

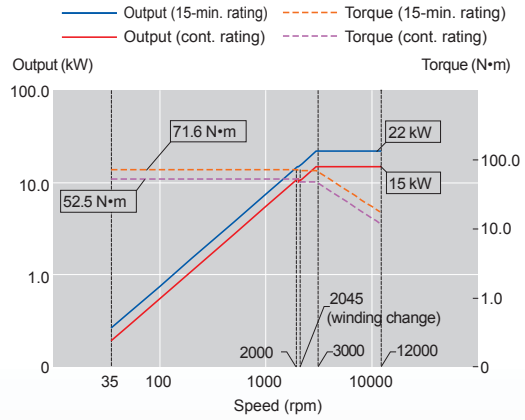
# Four different integral spindle/motor specifications available to meet a wide variety of workpiece material machining requirements

## 12000 rpm standard spindle

Machine a wide variety of workpiece materials from steel to non-ferrous metals with maximum torque of 172 N·m (1 min. rating) from 35-1000 rpm.

| | |
|---|---|
| Max. spindle speed | 12000 rpm |
| Spindle output | AC 22 kW (30 HP) [15-min.rating] |
| Torque | 71.6 N•m [15-min.rating] |
| | 52.5 N•m [cont. rating] |

**12000 rpm spindle output/torque diagram**



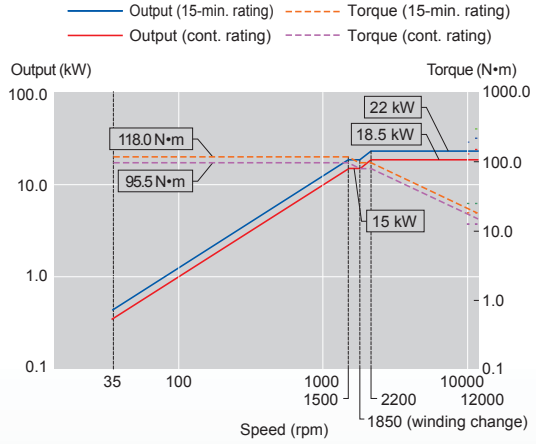

## 12000 rpm high-torque spindle

OPTION

No. 40 taper spindle with maximum torque of 252 N·m (1 min. rating) for heavy-duty, rough machining of steel and cast iron.

| | |
|---|---|
| Max. spindle speed | 12000 rpm |
| Spindle output | AC 22 kW (30 HP) [15-min.rating] |
| Torque | 118.0 N•m [15-min.rating] |
| | 95.5 N•m [cont. rating] |

**12000 rpm high-torque spindle output/torque diagram**



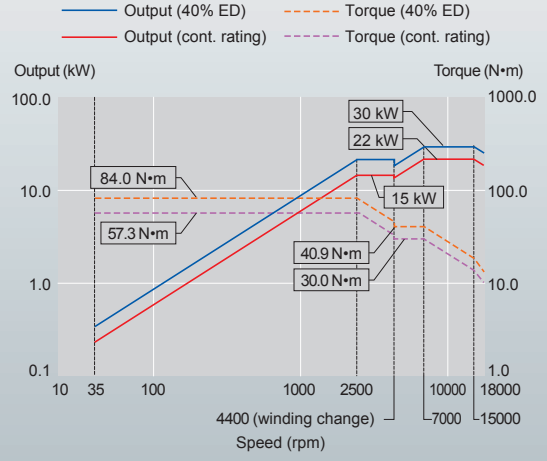

## 18000 rpm high-speed spindle

OPTION

High-speed No. 40 taper spindle to machine aluminum, copper and similar materials.

| | |
|---|---|
| Max. spindle speed | 18000 rpm |
| Spindle output | AC 30 kW (40 HP) [40% ED] |
| Torque | 84.0 N•m [40% ED] |
| | 57.3 N•m [cont. rating] |

**18000 rpm high-speed spindle output/torque diagram**



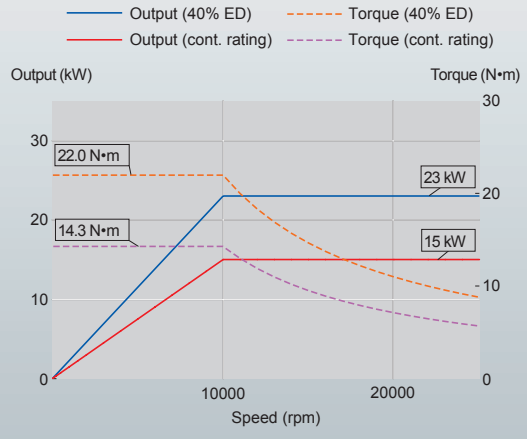

## 25000 rpm high-speed spindle

OPTION

This 23 kW high-speed spindle specification with two face contact tool holders is effective for high-speed die machining with small-diameter end mills.

| | |
|---|---|
| Max. spindle speed | 25000 rpm |
| Spindle output | AC 23 kW (31 HP) [40% ED] |
| Torque | 22.0 N•m [40% ED] |
| | 14.3 N•m [cont. rating] |

**25000 rpm high-speed spindle output/torque diagram**



# MAZATROL CNC System


## MAZATROL SMOOTH G

**Unsurpassed ease of operation with touch screen**

## MAZATROL SMOOTH C

**Simplified display and key input operation**

## Process home screens

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


MAZATROL SmoothG process home screens shown

Convenient Parameter Setting and Fine-Tuning Function

## SMOOTH MACHINING CONFIGURATION

Slider switches on the display adjust machining features, including cycle time, finished surface and machining shape, according to material requirements and machining methods. This is especially effective for complex workpiece contours defined in small program increments. Store settings in memory to achieve the desired results again in the future.


Variable Acceleration Control Function

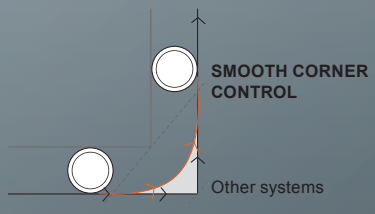
## ● VARIABLE ACCELERATION CONTROL

With new variable acceleration control, use the faster acceleration capability of linear axes whenever possible.
The slower acceleration of the rotary axes is not used for all program commands, resulting in faster machining cycle times.

Seamless Corner Control Function

## ● SMOOTH CORNER CONTROL

Improve finished surfaces and reduce cycle times with optimized acceleration/deceleration when machining corners.



# Ease of Programming

## MAZATROL conversational programming

MAZATROL interactive programming uses conversational language. To make/edit programs, simply enter data on workpiece drawings in response to questions displayed on the operation screen. Even a novice operator can make programs quickly with automatically determined cutting conditions and automatic creation of tool paths.

MAZATROL SmoothC shown

## QUICK MAZATROL

MAZATROL SMOOTH G

### Reduced time for conversational programming

Define a machining unit in a MAZATROL program, and the 3D shape is displayed immediately for quick, easy program verification.

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

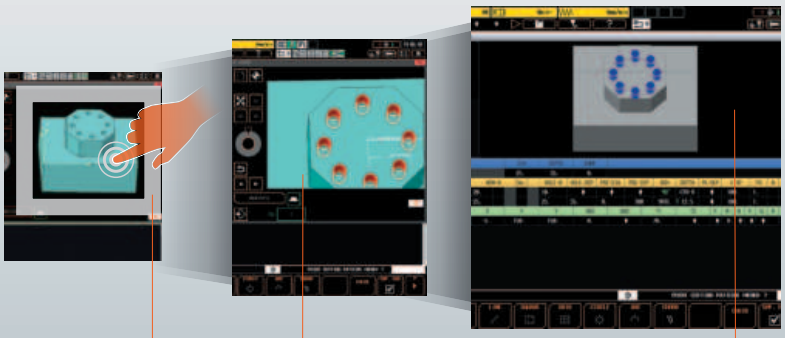
3D model in the process list displays with updated programming in real time

## 3D ASSIST

MAZATROL SMOOTH G

### Make a program directly from 3D CAD data

Import workpiece and coordinate data from 3D CAD data directly to a MAZATROL program with no coordinate value inputs. Reduce input errors and the time required for program checking.



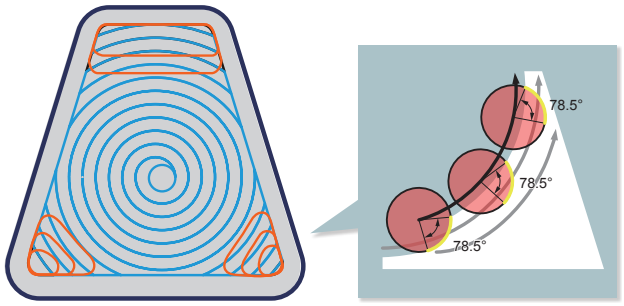
CAD model import

Shape selection

Automatically input to MAZATROL program

## Pocket milling

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




## Stepover line machining

Previously, programming line machining in a MAZATROL program could require multiple machining passes if the radial depth of cut was too small. This function eliminates those extra machining passes to reduce programming time.

Previous programming display

MAZATROL SmoothG programming display

## VFC function

Push the VFC key to override programmed cutting conditions and change them in the machining program. Use the new cutting-condition data to make a new program.


## Reduced checking time for EIA/ISO programs

### QUICK EIA

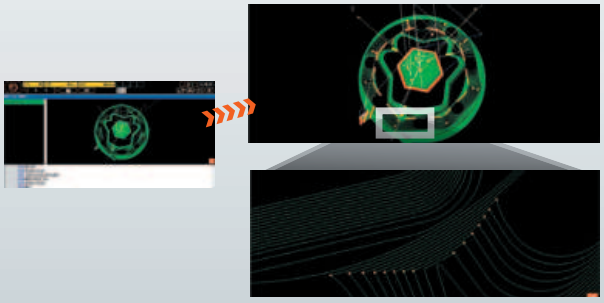
MAZATROL SMOOTHG


EIA program visualization

Touch the tool path on the screen to move to the corresponding EIA program and check its details.

### VIEW SURF

MAZATROL SMOOTHG



Analyze EIA programs

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

# Ergonomics

## Designed for ease of operation and maintenance

1

### Large window

Large front window enables the operator to monitor workpiece machining easily.

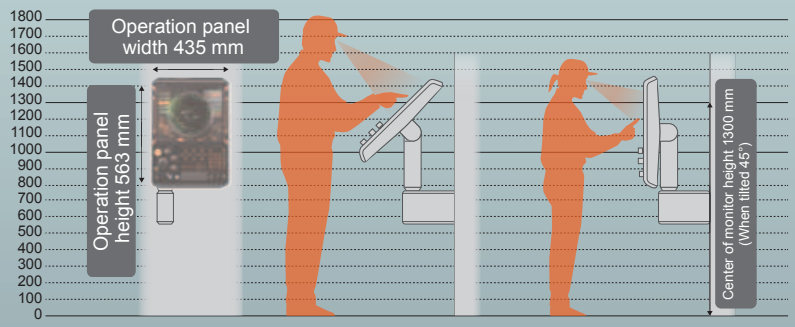


2

MAZATROL SMOOTH G

### Adjustable CNC touch panel

To ensure ease of operation, tilt the operation touch panel to the optimal position for any operator's height.




MAZATROL SMOOTH C

### Rotating operation panel

The operation panel rotates easily to each operator's preferred position.

# Environmentally Friendly

## Designed with environmental considerations

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

Extended coolant service life

Reduction of lubrication consumption

Reduction of electrical power consumption


## Auto power off

When the machine does not operate for a predetermined period of time, the machine worklights and the CNC backlight turn off automatically. They turn back on when the motion sensor detects the operator's return.

## Chip conveyor stop

A predetermined period after automatic machine operation stops, the chip conveyor stops automatically to reduce electrical power consumption. (Chip conveyor is optional equipment)

## Grease lubrication

To eliminate tramp oil in the coolant and extend coolant service life, grease lubricates the linear roller guides and ball screws.

## Energy Dashboard

OPTION

MAZATROL SMOOTH G

The Energy Dashboard provides convenient visual monitoring and analysis of energy consumption.

Process screen display

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


Energy consumption displayed on graph

Energy consumption by workpieces

Display approximate $CO_2$ emission and electrical power cost

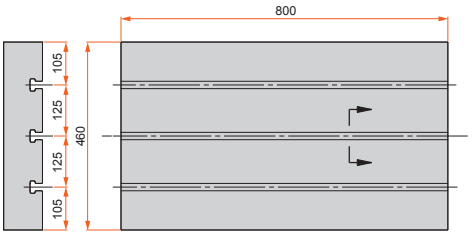
# Standard Machine Specifications

| | | FJV-200 | FJV-250 |
|---|---|---|---|
| Travel | X-axis travel | 560 mm | 1020 mm |
| | Y-axis travel | 410 mm | 510 mm |
| | Z-axis travel | 410 mm | 460 mm |
| | Distance from table top to spindle nose | 150 mm ~ 560 mm | 200 mm ~ 660 mm |
| | Effective width between colums | 955 mm | 1380 mm |
| Table | Table size | 800 mm × 460 mm | 1200 mm × 550 mm |
| | Table load capacity (evenly distributed) | 350 kg | 1200 kg |
| | Table top surface | 18 mm T-slot × 3 (125 mm pitch) | 18 mm T-slot × 5 (100 mm pitch) |
| Spindle | Spindle speed | 12000 rpm | |
| | Gear ranges | 2 steps (electric) | |
| | Spindle taper | No. 40 | |
| | Spindle bearing I.D. | ø80 mm | |
| | Spindle acceleration time to top speed | 1.86 sec | |
| Feedrate | Rapid traverse rate (X, Y, Z axes) | 52 m/min | |
| | Maximum cutting feedrate (X, Y, Z axes) | 52 m/min | |
| Automatic tool changer | Tool shank | No. 40 | |
| | Tool magazine capacity | 30 | |
| | Max. tool dia./length (from gauge line)/weight | ø80 mm/300 mm/8 kg | |
| | Max. tool dia. with adjacent pockets empty | ø125 mm | |
| | Tool selection method | Random selection, shortest path (fixed pocket assignment) | |
| | Tool change time (chip-to chip) | 3.4 sec. | 3.7 sec. |
| Motors | Spindle motor (15-min./cont. rating) | 22 kW (30 hp)/15 kW (20 hp) | |
| | Flood coolant pump motor (50/60 Hz) | 0.23 kW/0.37 kW | |
| Power requirement | Required power capacity (30-min.rating/cont.rating) | 45 kVA/35 kVA | |
| | Air source | More than 0.5 MPa/300 L/min | |
| Machine size | Height | 2826 mm | 2926 mm |
| | Required floor space (MAZATROL SmoothC CNC) | 2440 mm × 2375 mm | 2995 mm × 2475 mm |
| | Required floor space (MAZATROL SmoothG CNC) | 2440 mm × 2520 mm | 2995 mm × 2615 mm |
| | Machine weight | 6400 kg | 8500 kg |
| Sound | Equivalent continuous sound pressure level at operator position (dependent on equipment options) | Less than 80 db (A) | |

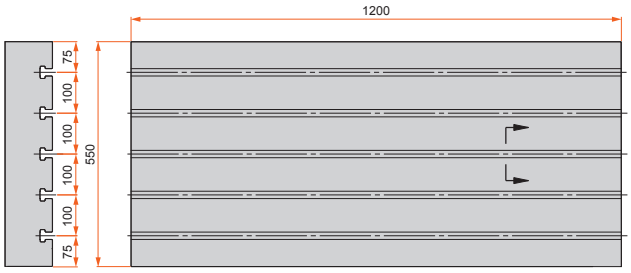
# Table Dimensions

Unit: mm

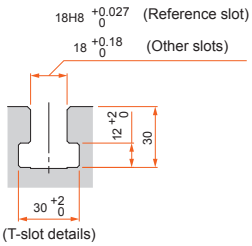
## FJV-200




## FJV-250




[FJV-200, FJV-250 Common]



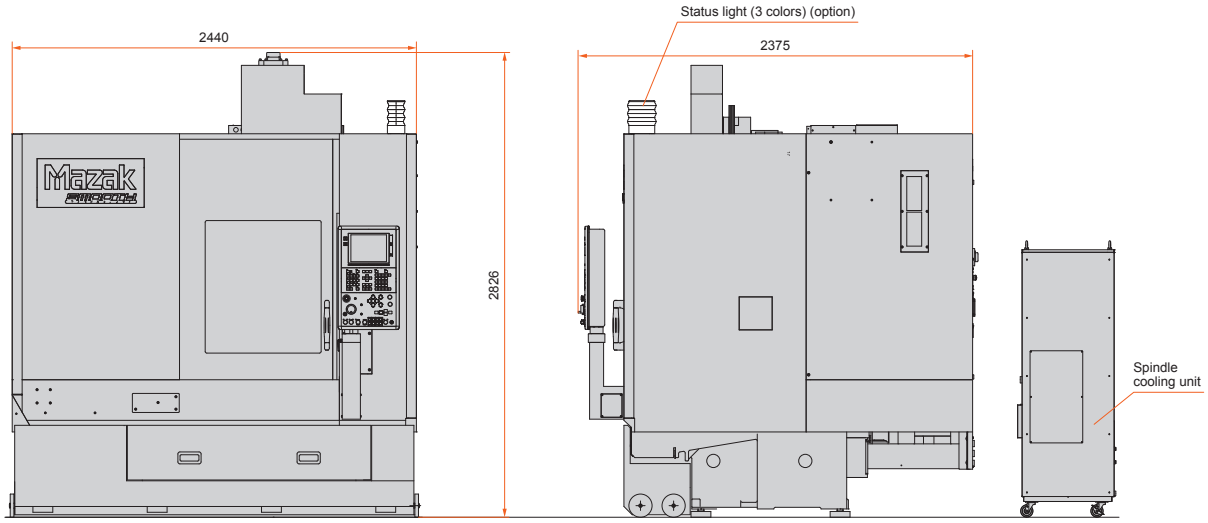
# Standard and Optional Equipment

●: Standard ○: Option —: N/A

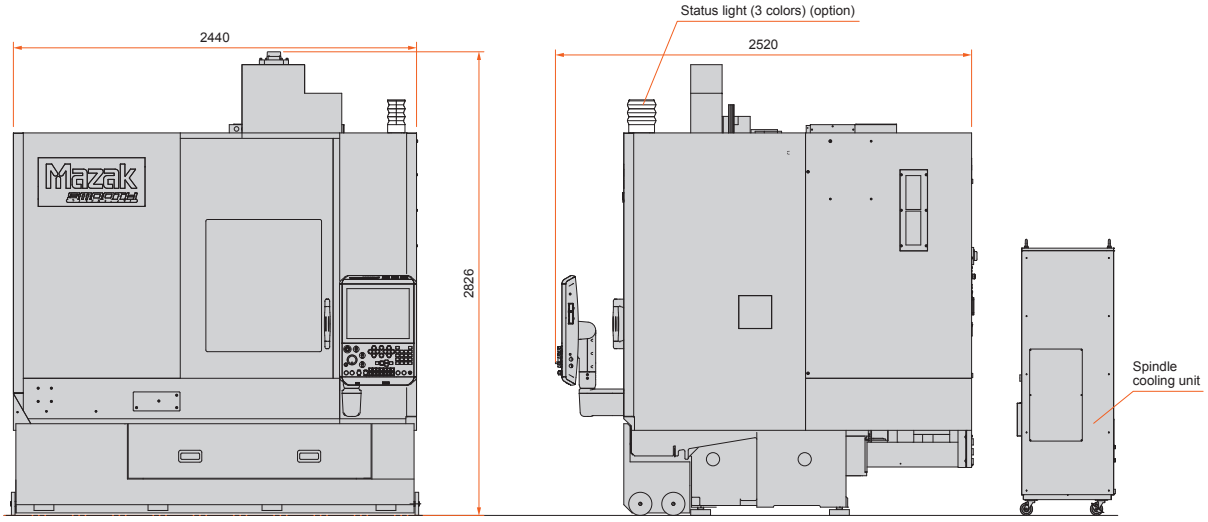
| | | FJV-200 | | FJV-250 | |
|---|---|---|---|---|---|
| | | MAZATROL SmoothC | MAZATROL SmoothG | MAZATROL SmoothC | MAZATROL SmoothG |
| Machine | Sub table | ○ | ○ | ○ | ○ |
| | Work light | ● | ● | ● | ● |
| | Additional work light | ○ | ○ | ○ | ○ |
| | Top cover | ● | ● | ● | ● |
| | Additional top cover | ○ | ○ | ○ | ○ |
| | Status light (3 colors) | ○ | ○ | ○ | ○ |
| | Status light (1 color) | ○ | ○ | ○ | ○ |
| | Additional axis | ○ | ○ | ○ | ○ |
| Spindle | 12000 rpm (#40) | ● | ● | ● | ● |
| | 12000 rpm high-torque (#40/BBT/HSK) | ○ | ○ | ○ | ○ |
| | 18000 rpm (#40/BBT/HSK ) | ○ | ○ | ○ | ○ |
| | 25000 rpm (HSK) | ○ | ○ | ○ | ○ |
| Tool magazine | 30-tool magazine | ● | ● | ● | ● |
| | 40-tool magazine | ○ | ○ | ○ | ○ |
| | 60-tool magazine | ○ | ○ | ○ | ○ |
| Setup | Absolute position detection | ● | ● | ● | ● |
| | Automatic tool length measurement & tool breakage detection | ○ | ○ | ○ | ○ |
| | Laser tool measurement | ○ | ○ | ○ | ○ |
| | Automatic front door (with 2 hand switches) | ○ | ○ | ○ | ○ |
| | Tool ID magazine operation panel (touch panel) | — | ○ | — | ○ |
| | Pull stud with tool ID | ○ | ○ | ○ | ○ |
| | Mazak monitoring system B (optical) OMP60 | ○ | ○ | ○ | ○ |
| | Preparation for Mazak monitoring system B/OMP60 | ○ | ○ | ○ | ○ |
| | Manual pulse generator | ○ | ○ | ○ | ○ |
| Factory automation | Automatic power off | ● | — | ● | — |
| | Automatic power ON/OFF + warm-up operation | ○ | ● | ○ | ● |
| | Machining end buzzer | ○ | ○ | ○ | ○ |
| High accuracy | Ball screw core cooling (X, Y, Z axes) | ● | ● | ● | ● |
| | Coolant temperature control* | ○ | ○ | ○ | ○ |
| | Scale feedback (X, Y, Z axes) | ○ | ○ | ○ | ○ |
| Coolant | Coolant system | ● | ● | ● | ● |
| | Work air blast | ○ | ○ | ○ | ○ |
| | Oil skimmer | ○ | ○ | ○ | ○ |
| | Oil mist coolant | ○ | ○ | ○ | ○ |
| | Hand-held coolant nozzle | ○ | ○ | ○ | ○ |
| | Flood coolant 0.45 MPa (4.5 kgf/cm$^2$), 30 L/min | ○ | ○ | ○ | ○ |
| | Air through spindle (can operate while spindle rotates) | ○ | ○ | ○ | ○ |
| | Coolant through spindle 0.5 MPa (5 kgf/cm$^2$) | ○ | ○ | ○ | ○ |
| | Niagara coolant* | ○ | ○ | ○ | ○ |
| | Niagara coolant & cover coolant* | ○ | ○ | ○ | ○ |
| | High pressure coolant through spindle 1.5 MPa (15 kgf/cm$^2$) | ○ | ○ | ○ | ○ |
| | High pressure coolant through spindle 7.0 MPa (70 kgf/cm$^2$) | ○ | ○ | ○ | ○ |
| | Mist collector | ○ | ○ | ○ | ○ |
| | Preparation for mist collector | ○ | ○ | ○ | ○ |
| | Cover coolant* | ○ | ○ | ○ | ○ |
| Chip disposal | Chip conveyor (side discharge/ConSep) | ○ | ○ | ○ | ○ |
| | Chip conveyor (side discharge/Hinge) | ○ | ○ | ○ | ○ |
| | Chip bucket (rotary) | ○ | ○ | ○ | ○ |
| | Chip bucket (fixed) | ○ | ○ | ○ | ○ |
| Safety equipment | Operator door interlock | ● | ● | ● | ● |
| Miscellaneous | Manuals | ● | ● | ● | ● |
| | Additional manuals | ○ | ○ | ○ | ○ |

*Includes subtank

## FJV-200 [MAZATROL SmoothC]

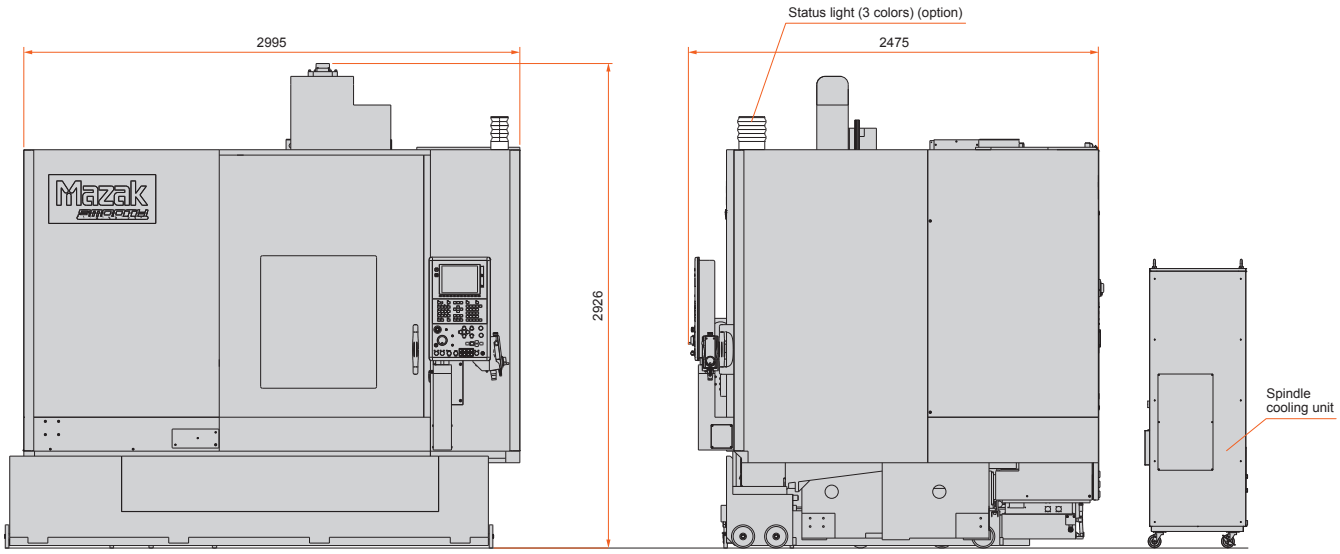



## FJV-200 [MAZATROL SmoothG]

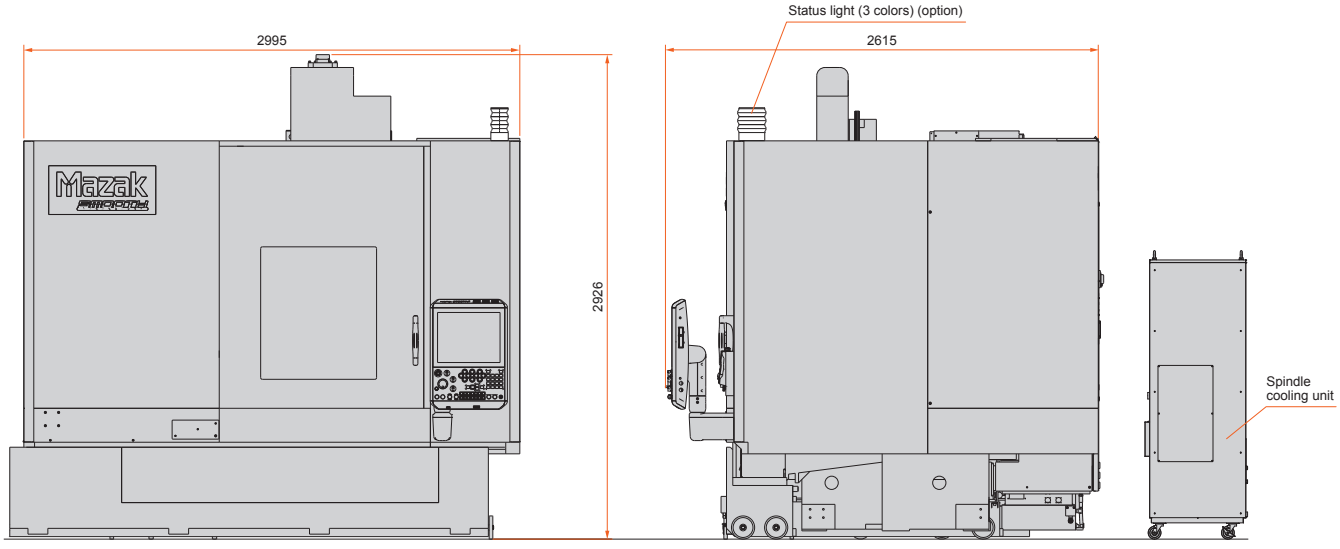


Unit: mm

## FJV-250 [MAZATROL SmoothC]




## FJV-250 [MAZATROL SmoothG]



# MAZATROL SmoothC 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: 10.4", Resolution: VGA | |
| 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 | |
| Automatic operation mode | Memory operation | Memory operation, Tape operation, MDI operation, SD card 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 I/P*, CC-Link* | |
| Card interface | SD card interface, USB | |
| EtherNet | 10M/100M/1Gbps | |

*Option

# MAZATROL SmoothG Specifications

| | MAZATROL | EIA |
|---|---|---|
| Number of controlled axes | Simultaneous 2 ~ 4 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 |
| 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 I/P*, CC-Link* | |
| Card interface | SD card interface, USB | |
| EtherNet | 10M/100M/1Gbps | |

*Option

FJV-200, 250

Mazak


## YAMAZAKI MAZAK CORPORATION

**1-131 Takeda, Oguchi-cho, Niwa-gun, Aichi-pref., Japan**
**TEL: +(81)587-95-1131**

www.mazak.com




EE


FJV-200, 250 20.03.0 G 99J289220E0