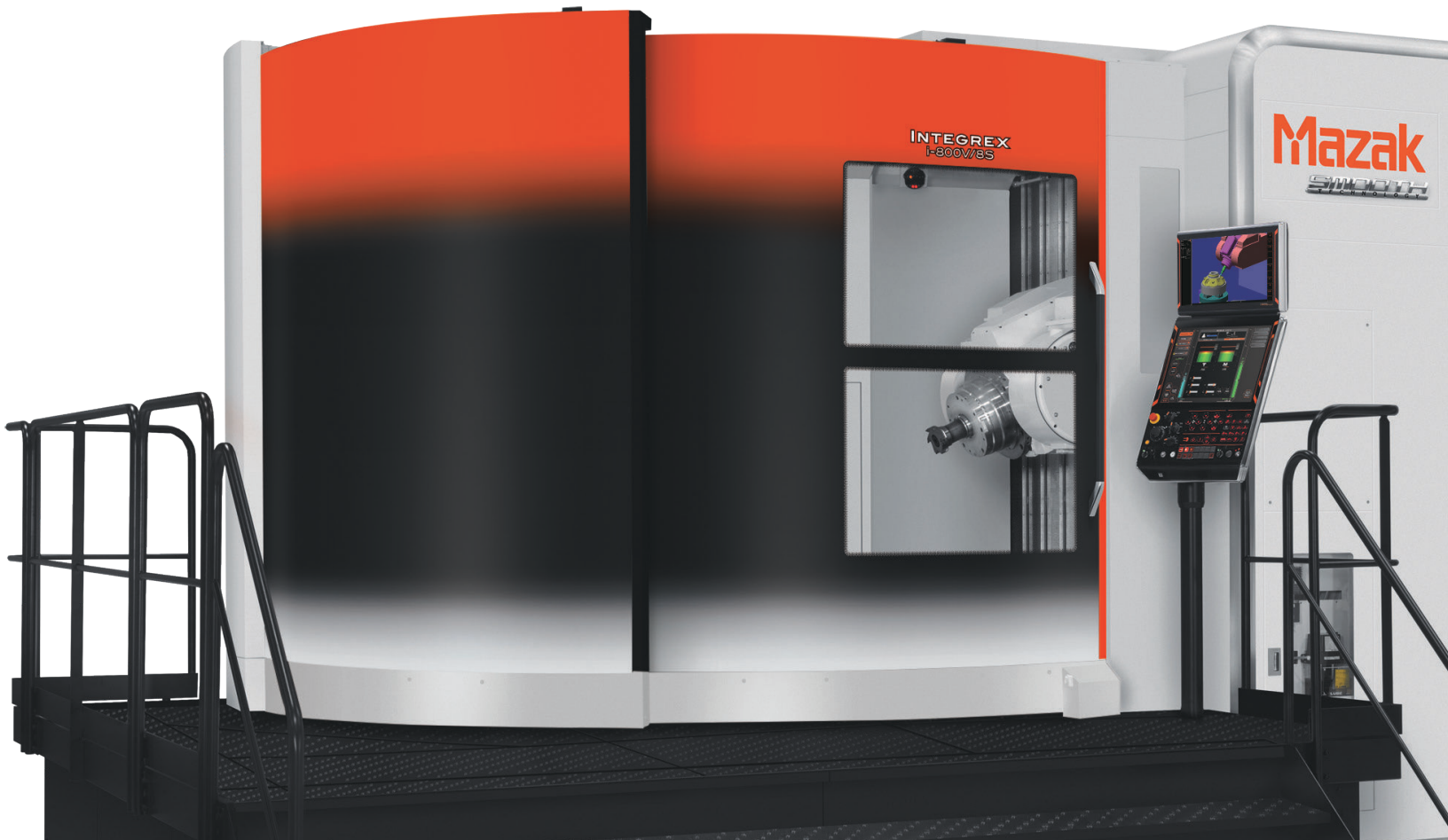
AW MILLER
TECHNICAL SALES, INC.
EAST AURORA, NY 716.652.8282 | HARMONY, PA 724.453.1690 | STE-LAURENT, QC 514.333.9174 | HARLEYSVILLE, PA 215.256.8281

Mazak

INTEGREX i-V
VORTEX i-V
SERIES



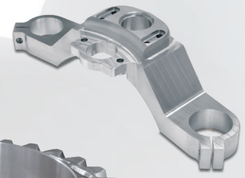
Exceptional Higher Productivity

For higher productivity, perform multiple-surface machining, free curved surface machining with 5-axis control, and combined machining including turning.

The VORTEX i-V Series tilting main spindle machines side, upper, slanted, and curved surfaces with 5-axis control. The INTEGREX i-V Series integrates the turning spindle with the table to enable turning. Parts that once required multiple processes can be completed in a single setup. This reduces in-process inventory and lead-time while it improves simultaneous machining accuracy.

Vertical 5-Axis Machining Center

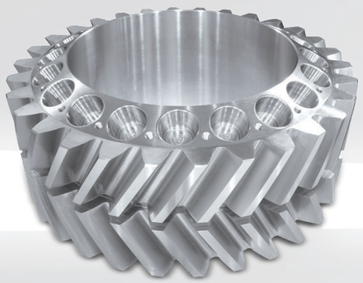
VORTEX i-V SERIES



Part: stabilizer
Category: automotive component
Material: aluminum
Machine: VORTEX i-630V/6



Part: impeller
Category: automotive component
Material: aluminum
Machine: VORTEX i-630V/6



Part: herringbone
Category: energy-related component
Material: steel
Machine: VORTEX i-800V/8



Part: rib
Category: aerospace component
Material: aluminum
Machine: VORTEX i-800V/8

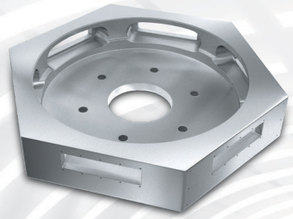


VORTEX i-630V/6S

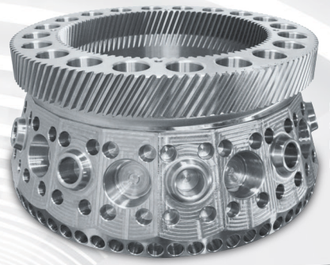
Vertical 5-Axis Machining Center
(single table)

Vertical Multi-Tasking Machine

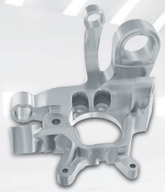
INTEGREX i-V SERIES



Part: casing
Category: vacuum chamber component
Material: aluminum
Machine: INTEGREX i-630V/6



Part: housing
Category: energy-related component
Material: steel
Machine: INTEGREX i-800V/8



Part: knuckle
Category: automotive component
Material: aluminum
Machine: INTEGREX i-630V/6



Part: planetary carrier
Category: construction machinery component
Material: cast iron
Machine: INTEGREX i-630V/6

Part: housing
Category: general machinery component
Material: aluminum
Machine: INTEGREX i-630V/6



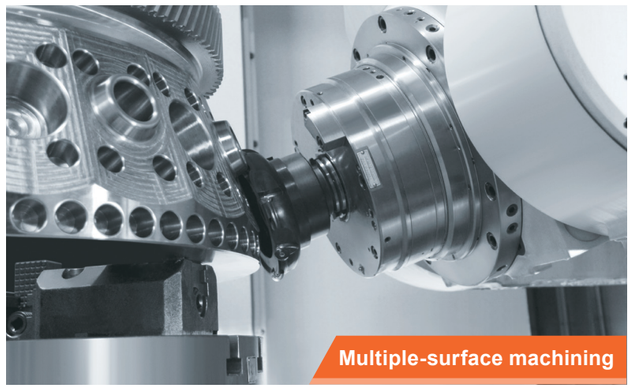
INTEGREX i-630V/6

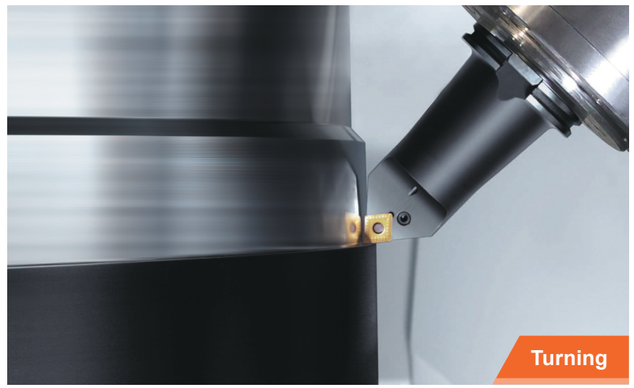
Vertical Multi-Tasking Machine
(2-pallet changer)

Shown with optional equipment

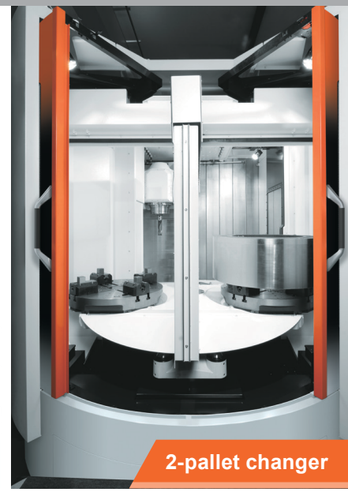

5-axis machining

Extensive Series Range to Meet Your Production Requirements


Multiple-surface machining


Turning


Single table


2-pallet changer

Vertical 5-Axis Machining Center

VORTEX i-V SERIES

VORTEX i-630V/6
(2-pallet changer)

VORTEX i-800V/8
(2-pallet changer)



VORTEX i-630V/6S
(single table)



VORTEX i-800V/8S
(single table)

Vertical Multi-Tasking Machine

INTEGREX i-V SERIES

INTEGREX i-630V/6
(2-pallet changer)

INTEGREX i-800V/8
(2-pallet changer)



INTEGREX i-630V/6S
(single table)



INTEGREX i-800V/8S
(single table)

Shown with optional equipment

High Accuracy

High-rigidity construction for high-accuracy machining

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

Linear roller guides on the X, Y and Z axes provide high accuracy and heavy-duty machining.

B-axis roller gear cam

Elimination of backlash ensures high accuracy and high-efficiency machining. Positioning accuracy is two times greater than the ISO standard over the rotary positioning range of 150°.

C-axis roller gear cam

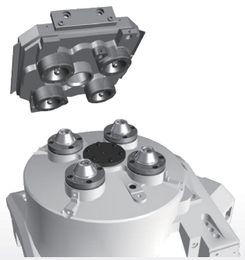
VORTEX i-V Series

The NC rotary table can be indexed in 0.0001° increments and utilizes a roller gear cam for high-accuracy machining over extended periods of operation.

Precision table clamping

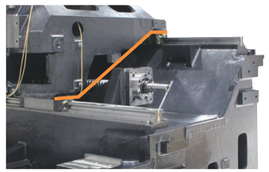
The pallet and table are clamped on corn coupling to ensure high rigidity and high-accuracy positioning repeatability during pallet changes.

(single-table VORTEX i-630V/6S, VORTEX i-800V/8S and INTEGREX i-800V/8S: table is bolted to table base.)



Y-axis slant structure

Mount Y-axis linear guides on the slanted surface at the bottom of the column. This structure's excellent response to cutting loads during machining produces greater stability.



High-precision function as standard equipment

Milling spindle cooling prevents heat displacement

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

Ball screw core cooling (X, Y, Z axes)

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



INTEGREX i-V Series

Turning spindle and C-axis direct drive motor

Eliminates power transmission components such as the belt and the gear to ensure high speed and high-accuracy machining. Temperature-controlled cooling oil circulates in the stator part of the table to prevent heat displacement by the direct drive motor and ensure high accuracy machining.

Ai Thermal Shield

Ai Thermal Shield ensures enhanced heat displacement compensation. Based on temperature changes, new algorithms automatically determine the amount of compensation to apply for even greater machining accuracy.

Higher Productivity

Enhanced milling performance for high productivity

Three milling spindles available to suit a wide range of applications from steel to non-ferrous materials.
All use a built-in motor to ensure size minimization and high output.

CAT No. 50, 10000 rpm milling spindle

Standard spindle designed for high-efficiency machining of a wide variety of applications including cast iron, steel and non-ferrous material.

Speed	10000 rpm
Output [40% ED (30-min. rating)/cont. rating)]	AC 37 kW (50 hp)/AC 30 kW (40 hp)
Max. torque [40% ED (30-min. rating)/cont. rating)]	353 N•m (260 ft•lbs)/248 N•m (183 ft•lbs)

HSK T-100, 15000 rpm milling spindle OPTION

Ensures high-speed machining of non-ferrous and difficult-to-cut materials.

Speed	15000 rpm
Output [40% ED (30-min. rating)/cont. rating)]	AC 56 kW (75 hp)/AC 45 kW (60 hp)
Max. torque [40% ED (30-min. rating)/cont. rating)]	143 N•m (105 ft•lbs)/118 N•m (87 ft•lbs)

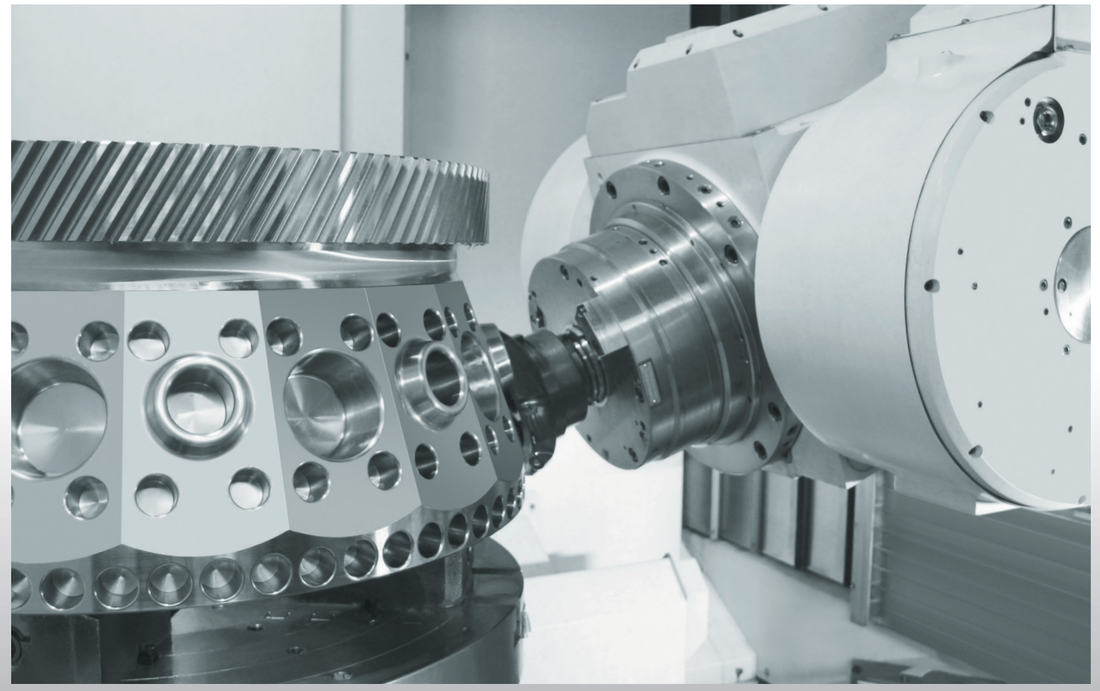
CAT No. 50, 5000 rpm milling spindle OPTION

Designed for high-torque machining, such as rough machining of cast iron and steel.

Speed	5000 rpm
Output [40% ED (30-min. rating)/cont. rating)]	AC 37 kW (50 hp)/AC 30 kW (40 hp)
Max. torque [40% ED (30-min. rating)/cont. rating)]	715 N•m (527 ft•lbs)/525 N•m (387 ft•lbs)

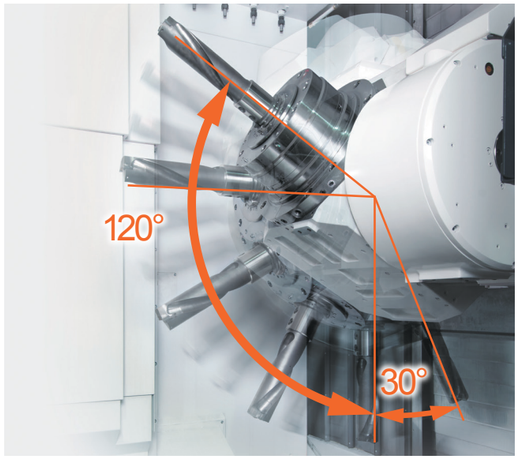
BIG-PLUS No. 58 • HSK T-100 • CAPTO C8 OPTION

High-speed spindle with two-face contact tool holders for high-rigidity machining.



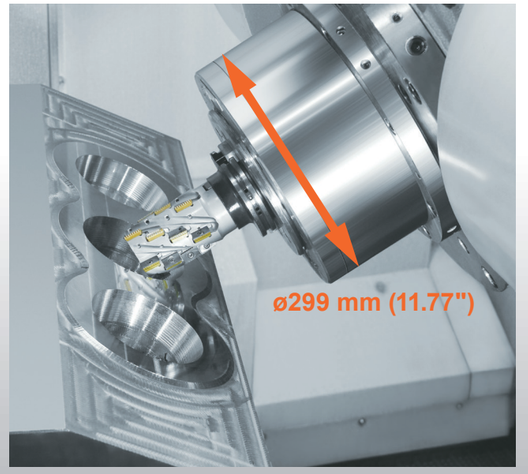
B-axis tilting range 150°

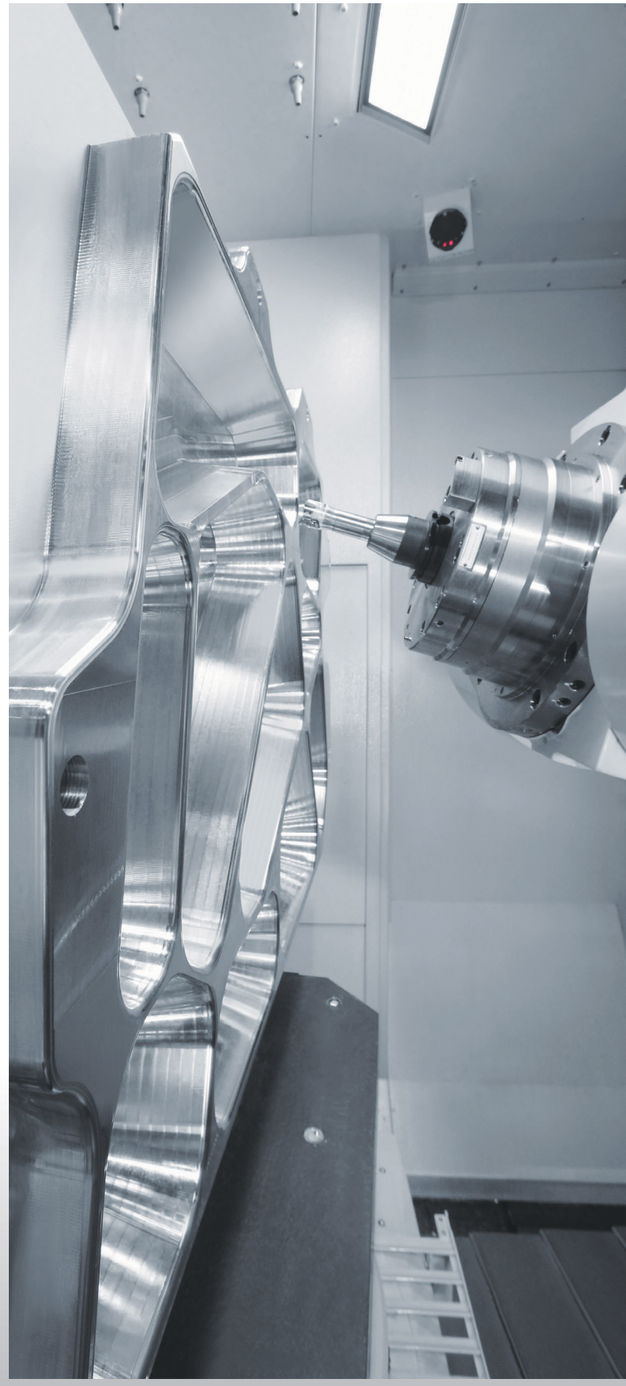
To ensure high accuracy, a roller gear cam with no backlash drives the B-axis tilting range of 150°(-30° ~ 120°).



Designed for minimum interference

The compact milling spindle headstock design minimizes workpiece interference. It increases processing area while it enables the use of shorter tools for better machining performance and higher accuracy.

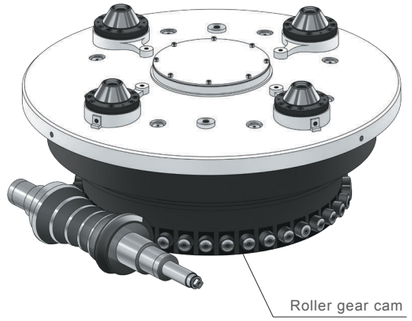




Higher Productivity

High-accuracy rotary table (C axis)

Power transfers through a roller gear cam to eliminate backlash and increase efficiency. NC rotary table positioning is performed with minimum program increments of 0.0001° with positioning accuracy two times better than the ISO standard.



VORTEX i-630V/6, i-630V/6S

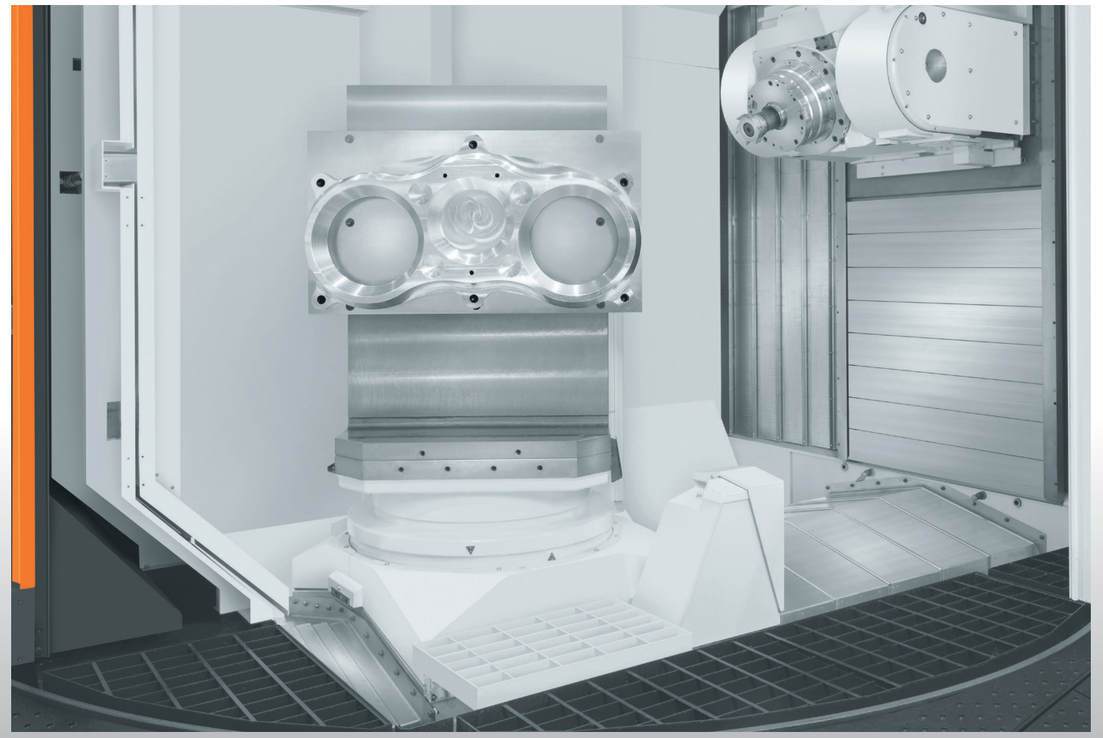
NC rotary table

C-axis minimum indexing increment	0.0001°
C-axis rapid traverse rate	30 rpm
Contouring torque	1270 N•m (937 ft•lbs) [cont. rating]

VORTEX i-800V/8, i-800V/8S

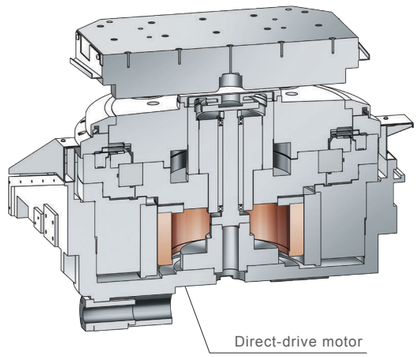
NC rotary table

C-axis minimum indexing increment	0.0001°
C-axis rapid traverse rate	25 rpm
Contouring torque	4000 N•m (2950 ft•lbs) [cont. rating]



High-torque, high-accuracy, high-speed table (turning spindle and C axis)

A compact, high-torque direct-drive motor drives the table. This provides the high torque necessary to machine large workpieces and achieve fast positioning performance.



INTEGREX i-630V/6, i-630V/6S

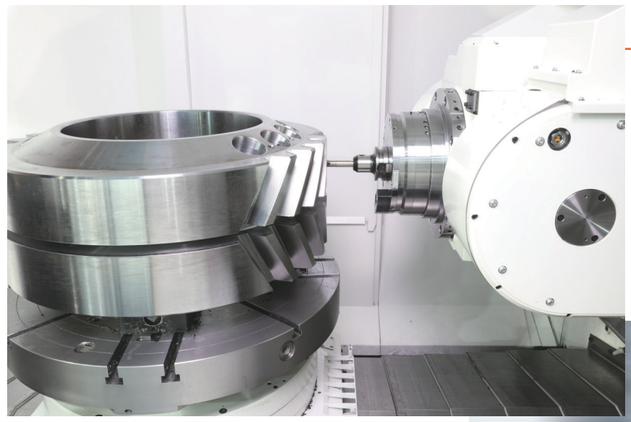
550 rpm table

Speed	550 rpm
Output	AC 37 kW (50 hp) [cont. rating]
Max. torque	3120 N•m (2301 ft•lbs) [cont. rating]
C-axis minimum indexing increment	0.0001°
C-axis rapid traverse rate	50 rpm
Contouring torque	3120 N•m (2301 ft•lbs) [cont. rating]

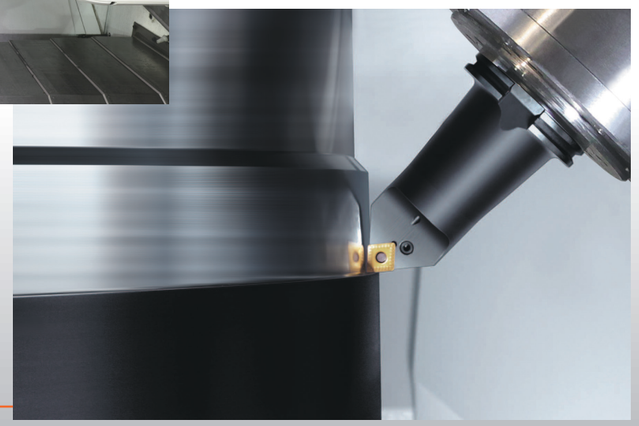
INTEGREX i-800V/8, i-800V/8S

500 rpm table

Speed	500 rpm
Output	AC 45 kW (60 hp) [cont. rating]
Max. torque	3120 N•m (2301 ft•lbs) [cont. rating]
C-axis minimum indexing increment	0.0001°
C-axis rapid traverse rate	50 rpm
Contouring torque	3120 N•m (2301 ft•lbs) [cont. rating]



Gear milling



O.D. turning

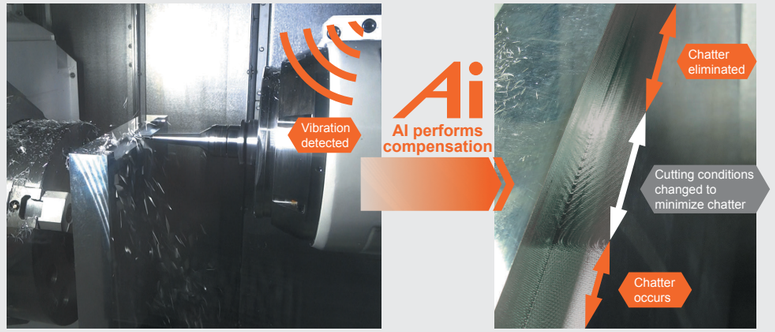
High Accuracy

High-Precision Machining with Advanced Technology

SMOOTH Ai Spindle

OPTION

Mazak's unique AI adaptive control improves productivity and machined surface quality. If chatter or vibration occurs during milling, the vibration sensor and AI adaptive control automatically change the machining conditions.



SMOOTH Machining Configuration

Machining parameter tuning function

Adjust machine characteristics related to machining time, smooth finished surface and shape accuracy to match the workpiece and the machining method.

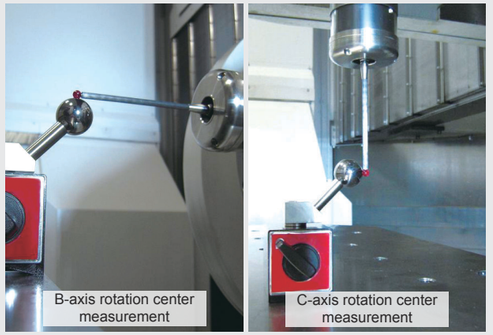


MAZA-CHECK

High-accuracy 5-axis calibration

To ensure 5-axis machining accuracy, MAZA-CHECK measures and calibrates three values: the distance between the milling spindle center and table center of rotation (X-axis direction and Y-axis direction), the deviation between the B-axis center of rotation and the milling spindle center, and the offset between the B-axis center of rotation and the milling spindle edge surface. This automatic calibration process uses a standard sphere, touch sensor*, and measurement macro.

*Requires RMP-600 wireless type high-precision touch sensor.

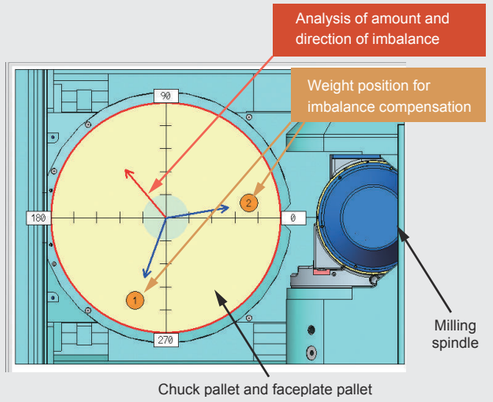


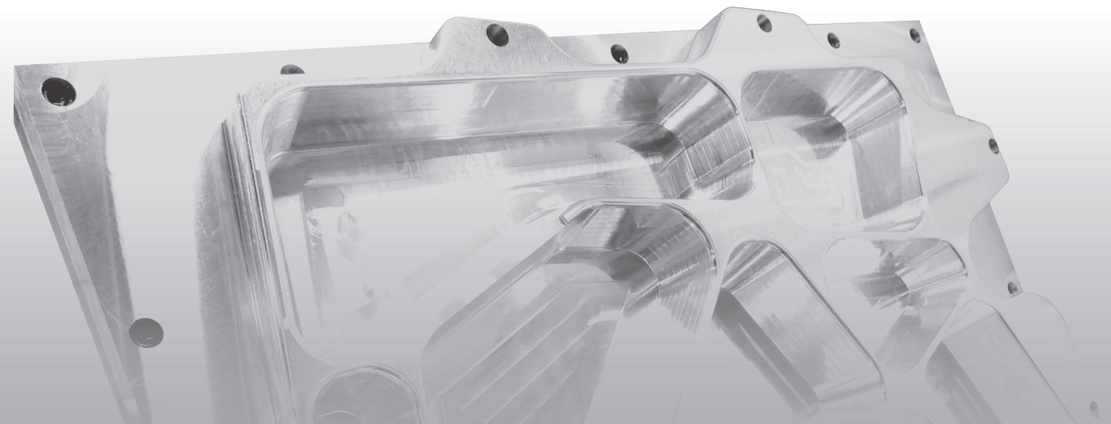
Balance Analyzer

INTEGREX i-V Series

Imbalanced table detection and analysis

Turning table imbalance from the fixture and workpiece causes machining defects and machine damage. Analysis shows the position of the weight required for balancing and displays it graphically. If an excessive amount of imbalance occurs, an alarm sounds to stop the machine.







Ergonomics

Achieve comfortable work and machine operation

Quickly check workpiece status at the setup station

Large windows on the cover door give the operator an easy view of workpiece status in the setup station.



Improve the operability and safety of crane work

The door is integrated with the ceiling to ensure a wide opening and prevent interference with the workpiece hanging wire. Load and unload large workpieces and fixtures easily and safely with a crane.





(2-pallet changer)



(single table)

Shown with optional equipment

Check processing status at a glance

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

Inside and outside steps with no height difference

OPTION

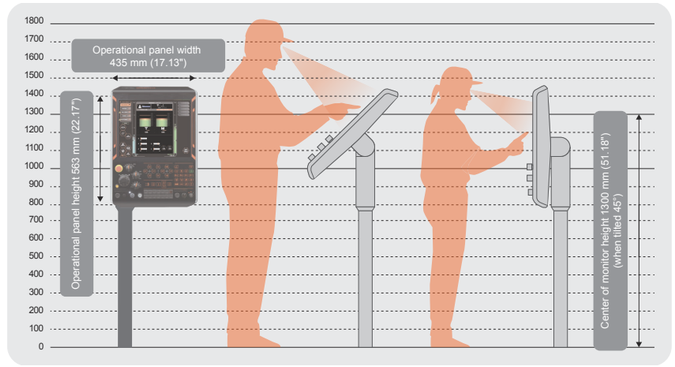
The step inside the machining area is the same height as the optional external platform for excellent inspection access to workpiece or tool.



MAZATROL SmoothAi operation panel

Adjustable CNC operation panel

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



Manual pulse generator

Check machine coordinate values for efficient operation inside the machine

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.



Tool magazine operation panel

Numeric keyboard for easy setup

The tool magazine operation panel is designed for increased ease of operation. Instead of using just a forward/reverse button to index the tool magazine and manually position the desired tool pocket, input the pocket number or tool number on the operation panel's numeric keyboard to bring the desired pocket into position automatically. This is standard equipment for the various tool magazine capacities.



Automation



PALLETECH system

OPTION

The modular PALLETECH system design makes it easy to add more machines and pallet storage capacity after inital installation to respond to changing production requirements.The pallet stocker is available with one, two and three levels for large pallet storage capacity with small floor space requirements.

System specifications

		Minimum	Maximum
Machines		1	15
Number of pallets	1 level	6	240
	2 levels	12	240
	3 levels	18	240
Loading station(s)		1	8
Loading robot		1	1

Pallet stocker	i-630V/6	i-800V/8
1 level	○	○
2 levels	○	○
3 levels	○	—

○: Available —: N/A



PALLETECH MANUFACTURING CELL (1 level)



PALLETECH HIGH RISE SYSTEM (3 levels)

SMOOTH PMC

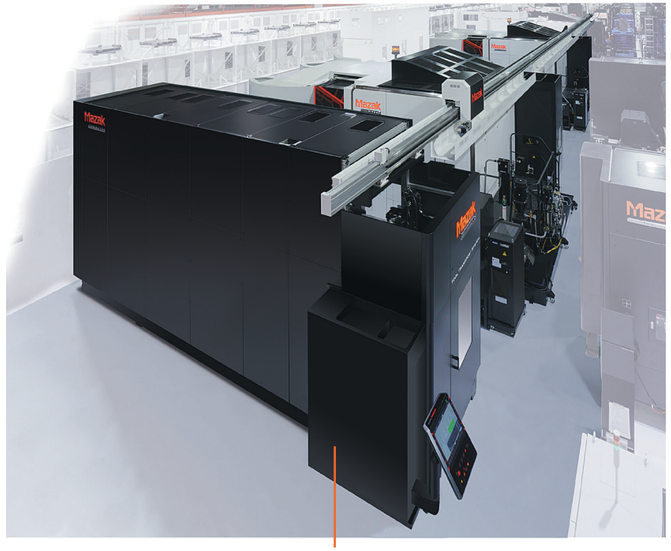
FMS control/management software with unsurpassed ease of system operation to meet sudden schedule changes.



Automation

Tool transport system — OPTION

Minimize the number of stored tools in the machine magazine and share special tools to extend automatic operation time and increase machine utilization significantly. Tool transport system links SMOOTH Tool Management (option) and SMOOTH PMC to enable automatic tool transportation within the PALLETECH system. The tool stocker sets up tools used in the PALLETECH system, and automatically transports tools that are not in the machine magazine from the tool stocker or another machine within the PALLETECH system as necessary. Additionally, broken tools or those with no remaining preregistered tool life are returned to the tool stocker automatically.



Tool stocker

*Available on 120-tool chain-type magazine

Retention bolt with tool ID — OPTION

Identifies each tool with SMOOTH Tool Management (option). Only the tool ID number is stored in the tool ID. SMOOTH Tool Management centralizes and manages tool data. Push the tool attachment button on the compatible tool ID magazine operation panel to input tool data automatically from the SMOOTH Tool Management server computer through the network. No tool data registration or updates are required on the machine, which reduces setup time significantly.

SMOOTH Tool Management is optional software to manage a large amount of tool data for higher productivity. It reduces the time spent searching for and registering a large number of tools in the factory for prompt, assured tool management.



Tool ID compatible magazine operation panel

TOOL HIVE — OPTION

The TOOL HIVE can store more than 240 tools in a small space. Perform operations and edit tool data on the TOOL HIVE TERMINAL control panel to reduce the time required for tool setup. Expand TOOL HIVE tool storage capacity after initial installation. Available options include 240 and 348-tool storage capacities.



TOOL HIVE TERMINAL



TOOL HIVE magazine (240 tools)

TOOLTECH — OPTION (CAT No. 50 only)

Compact rack-type tool magazine with tool cart for loading/unloading. Available options include 240 and 348-tool storage capacities.



Tool cart



TOOLTECH magazine (206 tools)

Innovation for Higher Productivity

MAZATROL SMOOTH Ai

New MAZATROL Smooth CNC

Designed to provide unsurpassed productivity through even faster and higher-precision control while elevating 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
- MAZATROL TWINS: Software that enables real-time sharing and centralized management of various data for increased productivity

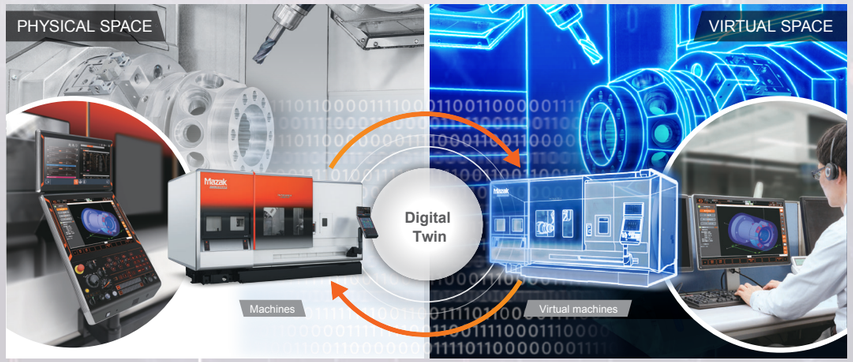
■ AI

Increase your productivity with AI technology



■ Digital Twin

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



■ Automation

Advanced automation with robot and software





Shown with optional MAZATROL SmoothAi dual monitor

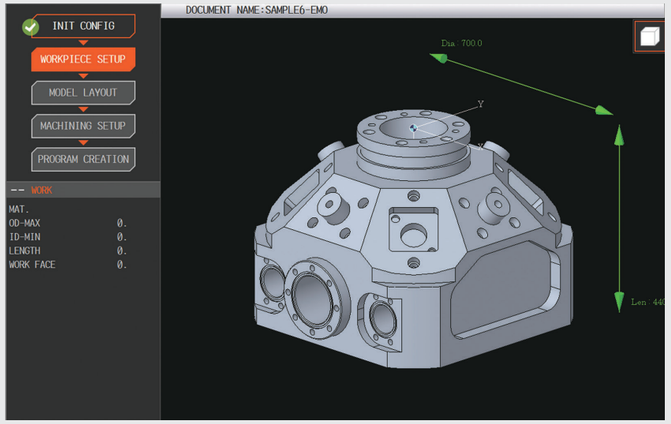
Innovative Functions for Higher Productivity

Improve productivity from programming to machining

Automatic programming

Solid MAZATROL *INTEGREX i-V Series*

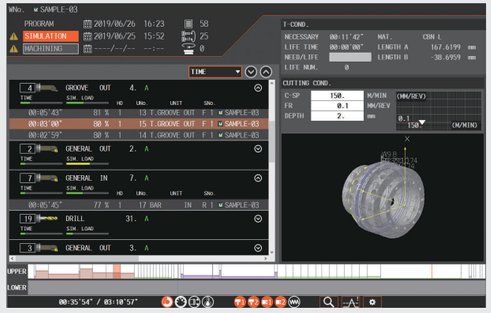
Generate a program automatically from 3D CAD data. AI learning draws on machining knowhow from programs created in the past, automatically calculates the machining process and generates the optimal program.



Simulation, test cutting (machining analysis, optimization)

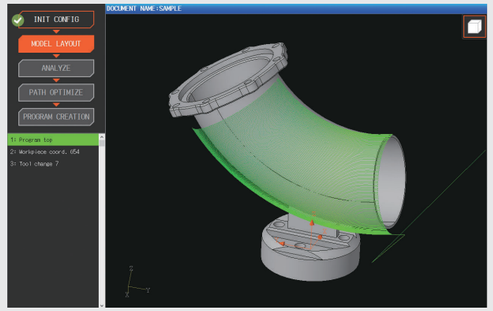
SMOOTH Cutting Adviser

To optimize machining conditions, SMOOTH Cutting Adviser uses accumulated results to simulate and visualize machining processes on the MAZATROL SmoothAi CNC.



SMC PLUS OPTION

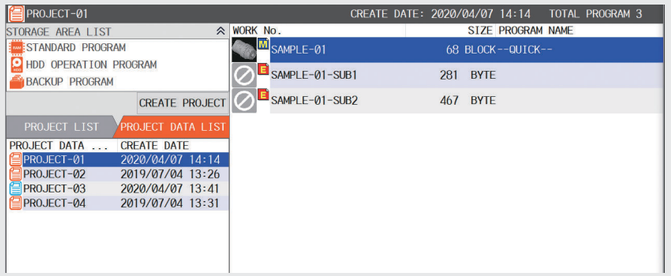
Compares the cutting point of the EIA program with the 3D model to change the correct command point and ensure both the correct tool path and high-accuracy finished surfaces.



Setup

Project function

Manages data required to execute machining as project data. Export project data to the machine for a drastic reduction in data-input time. Additionally, manage project data for an entire factory with SMOOTH Project Manager (optional software).



Machining

Ai Thermal Shield

Based on temperature changes, new algorithms automatically determine the amount of compensation to apply for even greater machining accuracy.

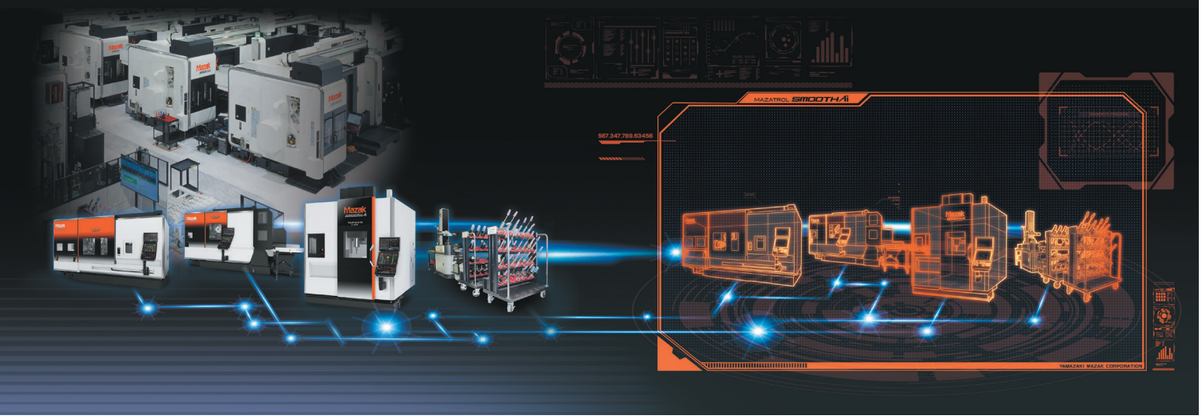


Advanced Digital Technology

MAZATROL TWINS (software) for high productivity

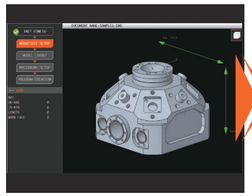
OPTION

Virtual machines in your office accurately duplicate the operation of machines on your factory floor. Use available software together with machines equipped with the MAZATROL SmoothAi CNC for a substantial increase in production efficiency.

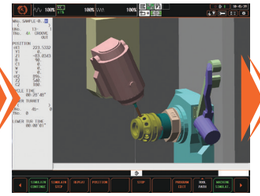


SMOOTH CAM Ai

Make and edit programs, perform simulation and analysis for multiple machines. Send the resulting data to machines in the factory for fast, accurate setups.



AI programming



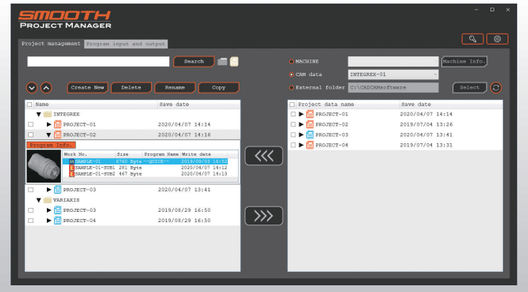
Fast simulation



Machining analysis • Optimization

SMOOTH Project Manager

SMOOTH Project Manager manages project data for the entire factory. Synchronize data between the machine in the factory and the PC in the office.



SMOOTH Tool Management

Optional SMOOTH Tool Management software manages a large volume of tool data for higher productivity. For quick, assured tool management, it reduces the time required to search for and register a large number of tools in the factory .



SMOOTH Monitor AX • Smooth Link

To improve factory productivity, SMOOTH Monitor AX software monitors operational status and analyzes accumulated manufacturing data. View operational status and machining programs on tablets and smartphones with SMOOTH Link, so the operator can view necessary information instantaneously away from the monitor.



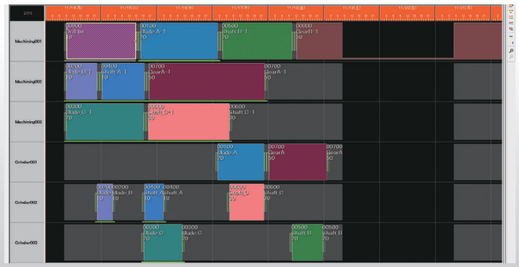
SMOOTH PMC

Software for FMS's automatic operation and management. Smooth simulation function enables highly efficient automatic operation by predicting the operation load, missing tools for each machine, and production output. Create schedules and monitor operational status from a PC in an office, tablets and smartphones by connecting to the network.



SMOOTH Scheduler

SMOOTH Scheduler software uses utilizes production data to create effective machining schedules. Schedules are displayed for convenient monitoring of production progress.



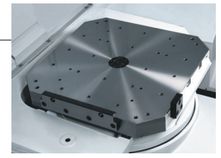
Standard and Optional Equipment

Pallets/chucks

Tapped square pallet with location bore OPTION

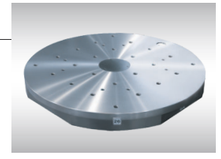
For irregularly shaped workpieces without turning operations.
Mount a workpiece fixture on the pallet.

Note: Turning spindle maximum speed is limited to 50 rpm when using square pallets



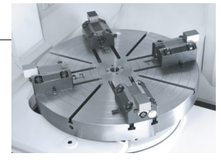
Tapped round pallet with location bore OPTION

For irregularly shaped workpieces with turning operations.
For turning operations, place a fixture plate on this pallet to mount the workpiece.



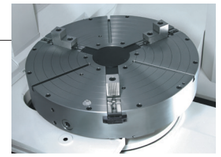
Faceplate with jaws OPTION

For cylindrical and square workpieces. Move jaws separately for accurate workpiece centering and to adjust them for different workpiece diameters.



Scroll chuck with 3 jaws OPTION

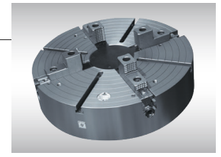
For cylindrical workpieces. Turn a wrench to move all three jaws toward the chuck center for easy workpiece centering.



4-jaw independent chuck OPTION

For cylindrical and square workpieces. Move jaws separately for accurate workpiece centering, and conduct fine adjustment of a workpiece's central position for high precision. For simple setup, change the jaws' installation position while changing a workpiece's gripping diameter.

Note: Turning spindle maximum speed is limited according to specifications of circular pallets and chucks



Tool holder for turning *INTEGREX i-V Series*

Standard tooling package

Comes with a tool holder (CAT No. 50) for outer and inner diameter machining.

Name	Bite shape	Insertion shape	Quantity
O.D. tool holder (right handed)	25×25×25 mm (0.98"×0.98"×0.98")	—	1
O.D. tool holder (left handed)	25×25×25 mm (0.98"×0.98"×0.98")	—	1
Boring bar holder (side lock)	—	—	2
O.D. tool holder 45°	—	80° diamond-shape chip	2
I.D. tool holder (right handed)	—	80° diamond-shape chip	2

Tool measurement

Tool eye OPTION *INTEGREX i-V Series*

Program the tool eye for automatic tool measurement and compensation as well as to inspect for tool breakage. Simply bring the tool tip into contact with the tool eye to perform tool setup, which speeds up tool setup considerably.



Automatic tool length measurement and tool breakage detection *VORTEX i-V Series*

Tool length is measured and registered automatically in the CNC system.
Detect tool breakage during automatic operation.

Laser milling tool measurement system OPTION

Measure tool length and diameter down to ø1.0 mm (ø0.04"), which conventional measurement systems cannot accomplish.



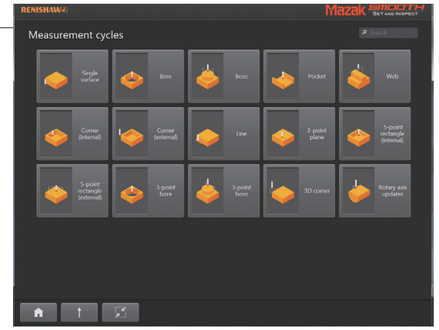
Coordinate and workpiece measurement

Mazak monitoring system B RMP-600 OPTION

Coordinate values automatically shift based on the results of workpiece probing with a touch sensor (RMP600). Reads the current position through a contact signal with the measurement device (touch sensor tool) and workpiece, and displays the information on the CNC.

SMOOTH Set and Inspect OPTION

Easily make inspection programs. Automatically update work coordinates and tool compensation with measurement results.



Standard and Optional Equipment

Coolant • Chip disposal

SUPERFLOW coolant system OPTION

The SUPERFLOW coolant system supplies a maximum of 7.0 MPa (1015 psi) coolant pressure for lower tool tip temperatures plus improved coolant lubrication and chip disposal.
- Adjustable coolant pressure
- High-performance cyclone filter with minimum maintenance requirements reduces running cost

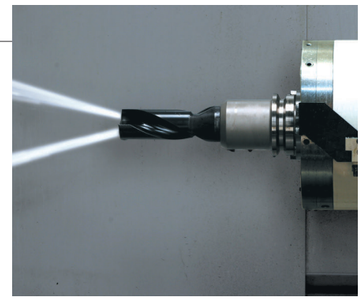


High-pressure pump unit



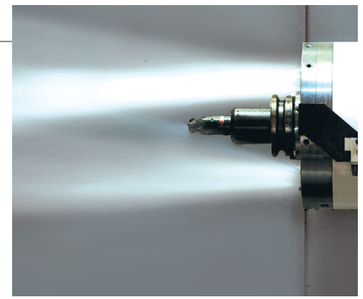
Coolant through spindle OPTION

Coolant feeds to the tool tip through passages in the tool.
Three pump pressure specifications are available:
0.8 MPa (116 psi), 1.5 MPa (218 psi) and 7.0 MPa (1015 psi).



Flood coolant

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



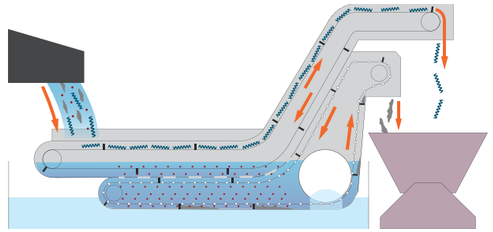
Niagara coolant

Large-volume coolant discharges from nozzles mounted on the machine top cover to flush chips from the workpiece onto conveyors on both sides of the table.



Chip conveyor (ConSep2000) OPTION

The upper conveyor discharges long and curly chips. The lower conveyor discharges fine chips and filters coolant using the drum filter.



Chip conveyor

Choose the type of chip conveyor based on the types of produced during machining.

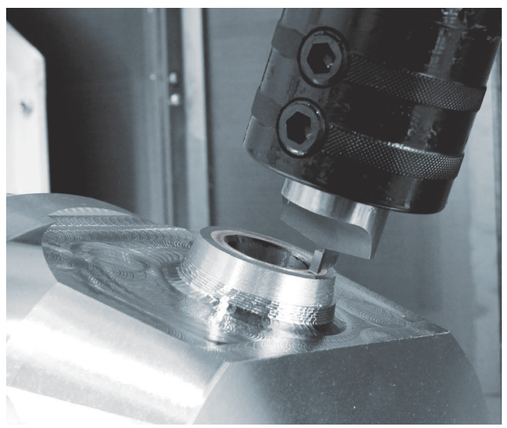
○: Applicable ×: Not applicable

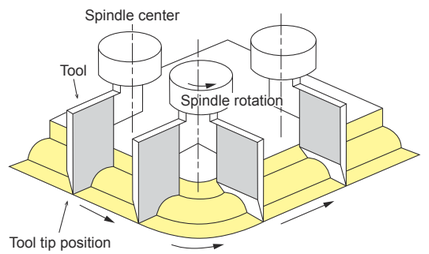
Chip shape		Sludge-like chips (0.25 mm ~ 1 mm (0.01" ~ 0.04"))	Needle-like chips (~0.5 mm (~0.02"))	1~5mm (0.04 ~ 0.2")	5~30mm (0.2~1.18") (Max. 30mm (1.18"))	30~70mm (1.18~2.76") (Max. 70mm (2.76"))	70mm - (2.76"-)	Features
Hinge	For ferrous machining	×	×	×	×	○	○	Use for long steel chips
ConSep	For ferrous/ aluminum/ cast-iron machining	○	○	○	○	○	○	Applicable regardless of chip length

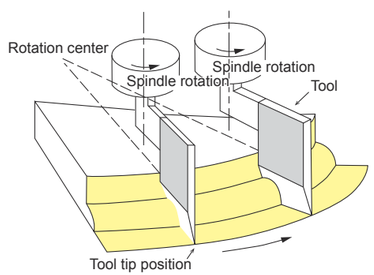
Machining software

Shaping OPTION

Radially position and feed a shaping tool to machine features such as grooves and sealing surfaces with better surface finishes than on workpieces produced with an endmill.



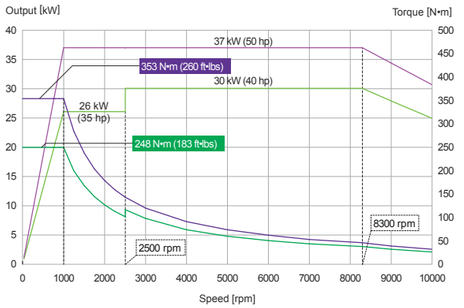




■ Milling Spindle Output/Torque Diagram

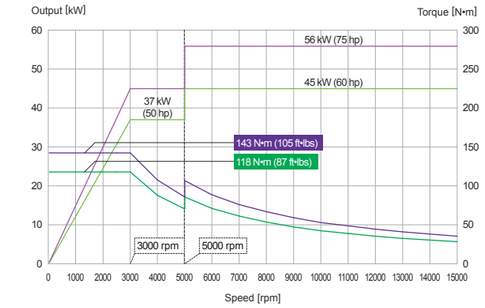
CAT No. 50, 10000 rpm milling spindle

Max. speed	10000 rpm
Output [40% ED (30-min. rating)/cont. rating]	AC 37 kW (50 hp)/AC 30 kW (40 hp)
Max. torque [40% ED (30-min. rating)/cont. rating)]	353 N•m (260 ft•lbs)/248 N•m (183 ft•lbs)



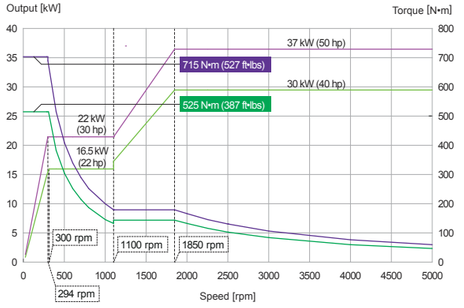
HSK T-100, 15000 rpm milling spindle OPTION

Max. speed	15000 rpm
Output [40% ED (30-min. rating)/cont. rating]	AC 56 kW (75 hp)/AC 45 kW (60 hp)
Max. torque [40% ED (30-min. rating)/cont. rating)]	143 N•m (105 ft•lbs)/118 N•m (87 ft•lbs)



CAT No. 50, 5000 rpm milling spindle OPTION

Max. speed	5000 rpm
Output [40% ED (30-min. rating)/cont. rating]	AC 37 kW (50 hp)/AC 30 kW (40 hp)
Max. torque [40% ED (30-min. rating)/cont. rating)]	715 N•m (527 ft•lbs)/525 N•m (387 ft•lbs)

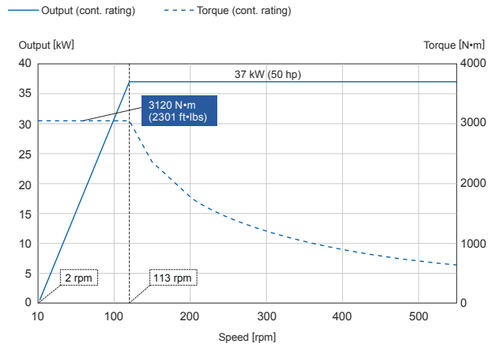




■ Table (turning spindle) output/torque diagram

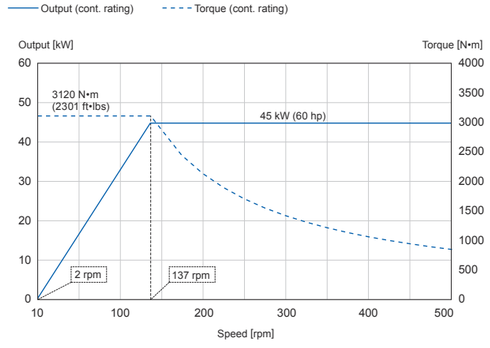
INTEGREX i-630V/6, i-630V/6S 550 rpm table (turning spindle)

Max. speed	550 rpm
Output	AC 37 kW (50 hp) [cont. rating]
Max. torque	3120 N•m (2301 ft•lbs) [cont. rating]
Min. indexing angle increment (C axis)	0.0001°
Rapid traverse rate (C axis)	50 rpm
Contouring torque	3120 N•m (2301 ft•lbs) [cont. rating]



INTEGREX i-800V/8, i-800V/8S 500 rpm table (turning spindle)

Max. speed	500 rpm
Output	AC 45 kW (60 hp) [cont. rating]
Max. torque	3120 N•m (2301 ft•lbs) [cont. rating]
Min. indexing angle increment (C axis)	0.0001°
Rapid traverse rate (C axis)	50 rpm
Contouring torque	3120 N•m (2301 ft•lbs) [cont. rating]

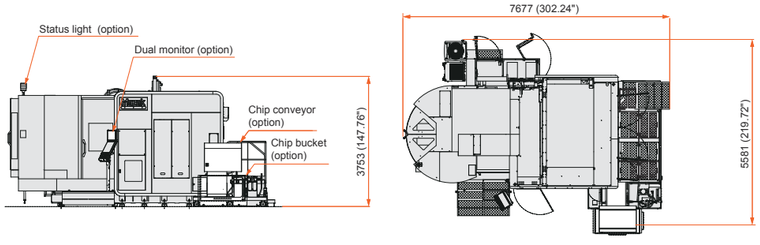




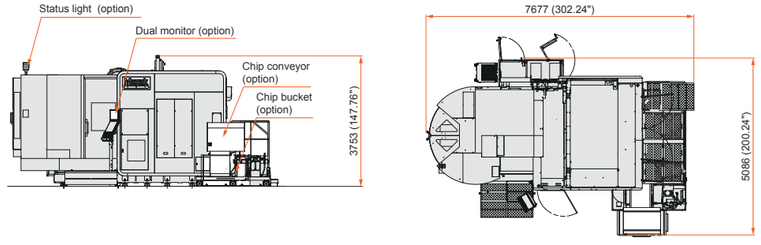
■ Machine Dimensions

Unit: mm (inch)

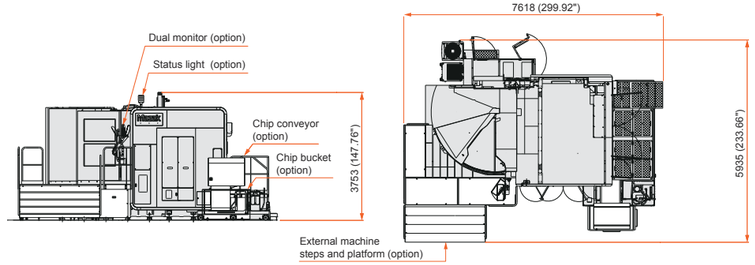
INTEGREX i-630V/6



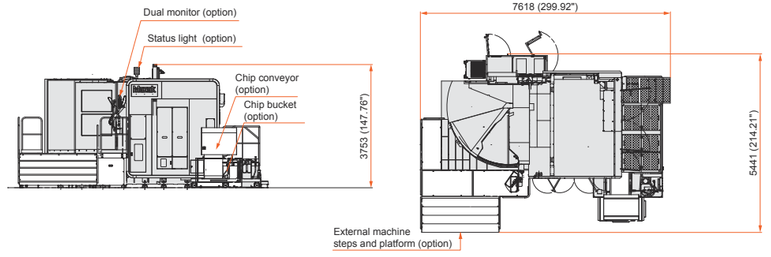
VORTEX i-630V/6



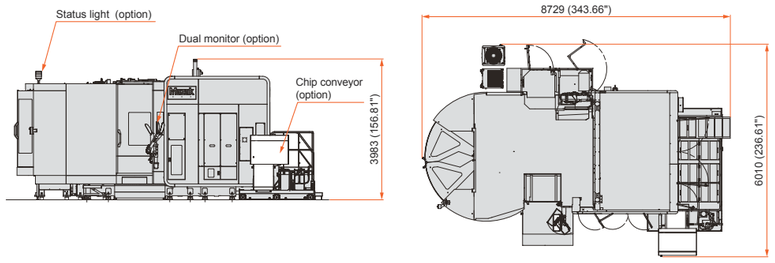
INTEGREX i-630V/6S



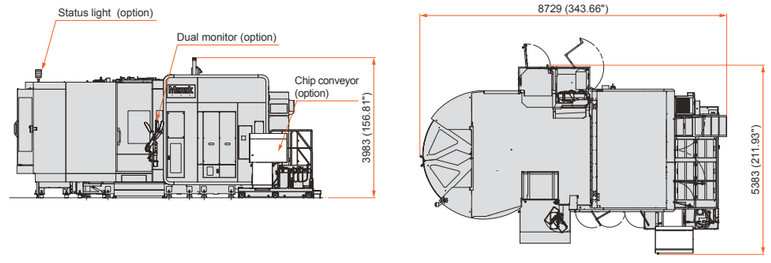
VORTEX i-630V/6S



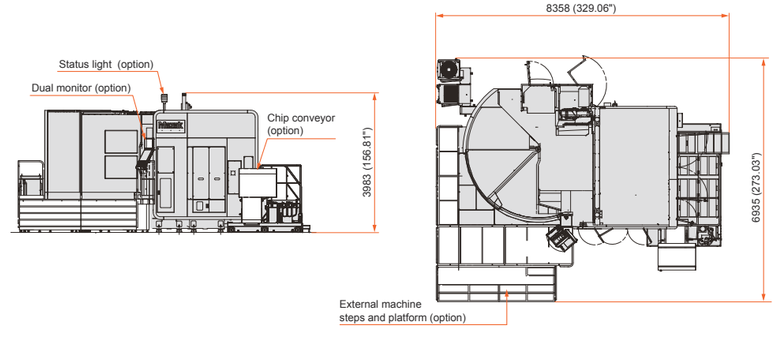
INTEGREX i-800V/8



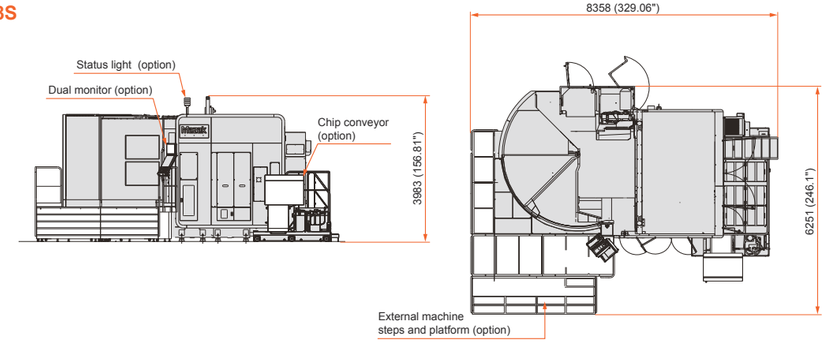
VORTEX i-800V/8



INTEGREX i-800V/8S



VORTEX i-800V/8S



■ Standard Machine Specifications

			VORTEX i-630V/6	INTEGREX i-630V/6	VORTEX i-630V/6S	INTEGREX i-630V/6S	VORTEX i-800V/8	INTEGREX i-800V/8	VORTEX i-800V/8S	INTEGREX i-800V/8S
Stroke	X axis (table forward/backward)		1425 mm (56.1")			1425 mm (56.1")	1700 mm (66.93")			
	Y axis (spindle head travel right/left)		1050 mm (41.34")			1050 mm (41.34")	1500 mm (59.06")			
	Z axis (spindle head travel up/down)		1050 mm (41.34")			1050 mm (41.34")	1150 mm (45.28")			
	B axis (spindle head tilt)		150° (−30° ～ +120°)			150° (−30° ～ +120°)	150° (−30° ～ +120°)			
	C axis (table rotate)		360° (cont.)			360° (cont.)	360° (cont.)			
	Distance between B-axis rotation center and pallet center (X axis at home)		1395 mm (54.92")			1395 mm (54.92")	1690 mm (66.54")			
	Distance between B-axis rotation center and pallet center (X axis at - end)		−30 mm (-1.18")			−30 mm (-1.18")	−10 mm (-0.39")			
	Distance between spindle gauge line and pallet center (B axis = +90°) (X axis at home)		1045 mm (41.14")			1045 mm (41.14")	1340 mm (52.76")			
	Distance between B axis rotation center and pallet top face*1		100 mm ～ 1150 mm (3.94" ～ 45.28")			100 mm ～ 1150 mm (3.94" ～ 45.28")	100 mm ～ 1250 mm (3.94" ～ 49.21")			165 mm ～ 1315 mm (6.5" ～ 51.77")
	Distance between spindle gauge line and pallet top face (B axis = 0°)*1		−250 mm ～ 800 mm (-9.84" ～ 31.5")			−250 mm ～ 800 mm (-9.84" ～ 31.5")	−250 mm ～ 900 mm (-9.84" ～ 35.43")			−185 mm ～ 965 mm (-7.28" ～ 37.99")
Capacity	Max. machining diameter (O.D.)		—	ø1050 mm (41.34")	—	ø1250 mm (49.21")	—	ø1500 mm (59.06")	—	ø1700 mm (66.93")
	Max. workpiece diameter		ø1050 mm (41.34")		ø1250 mm (49.21") (X axis at - end: ø1050 mm (41.34"))	ø1250 mm (49.21") (X axis at - end: ø1050 mm (41.34"))	ø1500 mm (59.06") (X axis at - end: ø1100 mm (43.31"))		ø1700 mm (66.93") (X axis at - end: ø1100 mm (43.31"))	
	Max. workpiece height*1		1000 mm (39.37")		1400 mm (55.12")	1400 mm (55.12")	1500 mm (59.06")		1600 mm (62.99")	1665 mm (65.55")
	Max. workpiece load (evenly distributed)*1		1500 kg (3307 lbs)			1500 kg (3307 lbs)	2500 kg (5511 lbs)		3000 kg (6614 lbs)	3020 kg (6658 lbs)
	Max. load (including pallet)		1750 kg (3858 lbs)			1750 kg (3858 lbs)	3000 kg (6614 lbs)		3500 kg (7716 lbs)	
Table	Max. spindle speed*2		—	550 rpm	—	550 rpm	—	500 rpm	—	500 rpm
	Rapid traverse rate (C axis)		30 rpm	50 rpm	30 rpm	50 rpm	25 rpm	50 rpm	25 rpm	50 rpm
	Max. cutting feedrate (C axis)		—	8.33 rpm	—	8.33 rpm	—	7.69 rpm	—	7.69 rpm
	Min. indexing angle increment (C axis)		0.0001°			0.0001°	0.0001°			
	Indexing time		1.5 s/90°	1.6 s/90°	1.5 s/90°	1.6 s/90°	2.1 s/90°			
Milling spindle	Max. spindle speed		10000 rpm			10000 rpm	10000 rpm			
	Spindle taper		7/24 taper No. 50			7/24 taper No. 50	7/24 taper No. 50			
	Spindle bearing ID		ø100 mm (3.94")			ø100 mm (3.94")	ø100 mm (3.94")			
	Spindle acceleration		5.6 s [0 ～ 10000 rpm]			5.6 s [0 ～ 10000 rpm]	4.9 s [0 ～ 10000 rpm]			
	Rapid traverse rate (B axis)		30 rpm			30 rpm	30 rpm			
	Max. cutting feedrate (B axis)		10 rpm			10 rpm	8.33 rpm			
	Min. indexing angle increment (B axis)		0.0001°			0.0001°	0.0001°			
	Indexing time (B axis)		2.2 s/90°			2.2 s/90°	2.2 s/90°			
Feedreate*3	Rapid traverse rate (X, Y, Z axes)		52000 mm/min (2047 ipm)			52000 mm/min (2047 ipm)	52000 mm/min (2047 ipm)			
	Max. cutting feedrate (X, Y, Z axes)*4		8000 mm/min (315 ipm)			8000 mm/min (315 ipm)	8000 mm/min (315 ipm)			
Automatic tool changer	Tool shank		CAT No. 50			CAT No. 50	CAT No. 50			
	Pullstud		Yamazaki ANSI type			Yamazaki ANSI type	Yamazaki ANSI type			
	Tool magazine capacity		43			43	43			
	Max. tool diameter/length (from gauge line)/weight		ø125 mm/500 mm/30 kg (4.92"/19.69"/66 lbs)			ø125 mm/500 mm/30 kg (4.92"/19.69"/66 lbs)	ø125 mm/650 mm/30 kg (4.92"/25.59"/66 lbs)			
	Max. tool diameter with adjacent tool pockets empty		ø250 mm (9.84")*5			ø250 mm (9.84")*5	ø250 mm (9.84")*6			
	Tool selection method		Random selection, shortest path (fixed pocket assignment)			Random selection, shortest path (fixed pocket assignment)	Random selection, shortest path (fixed pocket assignment)			
	Tool change time (chip-to-chip) [Mill H → Mill H]*7		8.5 s			8.5 s	10.2 s	11.0 s	10.2 s	11.0 s
Automatic pallet changer	Number of pallets		2		—	—	2		—	
	Pallet change time		11 s		—	—	22 s		—	
	Change system		Rotary type		—	—	Rotary type		—	
Motors	Table motor		—	AC 37 kW (50 hp) [cont. rating]	—	AC 37 kW (50 hp) [cont. rating]	—	AC 45 kW (60 hp) [cont. rating]	—	AC 45 kW (60 hp) [cont. rating]
	Milling spindle motor		AC 37/30 kW (50/40 hp) [40% ED (30-min. rating)/cont. rating]			AC 37/30 kW (50/40 hp) [40% ED (30-min. rating)/cont. rating]	AC 37/30 kW (50/40 hp) [40% ED (30-min. rating)/cont. rating]			
Electrical and air requirements	Electrical power supply [50 Hz]	short-duration rating cont. rating	104.3 kVA [40% ED (30-min. rating)] 94.3 kVA	120.90 kVA [40% ED (30-min. rating)] 110.97 kVA	104.3 kVA [40% ED (30-min. rating)] 94.3 kVA	120.90 kVA [40% ED (30-min. rating)] 110.97 kVA	108.5 kVA (30-min. rating) 98.8 kVA	97.85 kVA (30-min. rating) 88.11 kVA	108.5 kVA (30-min. rating) 98.8 kVA	97.85 kVA (30-min. rating) 88.11 kVA
	Electrical power supply [60 Hz]	short-duration rating cont. rating	106.2 kVA [40% ED (30-min. rating)] 96.2 kVA	122.79 kVA [40% ED (30-min. rating)] 112.86 kVA	106.2 kVA [40% ED (30-min. rating)] 96.2 kVA	122.79 kVA [40% ED (30-min. rating)] 112.86 kVA	110.8 kVA (30-min. rating) 101.1 kVA	99.49 kVA (30-min. rating) 89.75 kVA	110.8 kVA (30-min. rating) 101.1 kVA	99.49 kVA (30-min. rating) 89.75 kVA
	Air supply (pressure)		0.5 MPa (73 psi)			0.5 MPa (73 psi)	0.5 MPa (73 psi)	0.5 MPa (73 psi)	0.5 MPa (73 psi)	0.5 MPa (73 psi)
	Air supply (flow rate)		600 L/min (21.19 ft³/min)			600 L/min (21.19 ft³/min)	600 L/min (21.19 ft³/min)	800 L/min (28.25 ft³/min)	600 L/min (21.19 ft³/min)	800 L/min (28.25 ft³/min)
Tank capacity	Coolant tank capacity		1400 L (370 gal)			1400 L (370 gal)	1400 L (370 gal)			
Machine size	Machine height		3753 mm (147.76")			3753 mm (147.76")	3983 mm (156.81")			
	Floor space requirement		5086 mm × 7677 mm (200.24" × 302.24")	5581 mm × 7677 mm (219.72" × 302.24")	5441 mm × 7618 mm (214.21" × 299.92")	5935 mm × 7618 mm (233.66" × 299.92")	5383 mm × 8729 mm (211.93" × 343.66")	6010 mm × 8729 mm (236.61" × 343.66")	6251 mm × 8358 mm (246.1" × 329.06")	6935 mm × 8358 mm (273.03" × 329.06")
	Machine weight		32650 kg (71980 lbs)		30850 kg (68011 lbs)	30850 kg (68011 lbs)	38650 kg (85207 lbs)	39650 kg (87412 lbs)	34650 kg (76389 lbs)	35650 kg (78593 lbs)
CNC			MAZATROL SmoothAi			MAZATROL SmoothAi	MAZATROL SmoothAi			

*1 i-630V/6 and i-630V/6S: with □630 mm (24.8") tapped pallet. i-800V/8: with □800 mm (31.5") tapped pallet. i-800V/8S: with ø1000 mm (39.37") bolt-on tapped pallet.
*2 Max. speed of the main spindle is limited based on specifications of round pallet and chuck. When equipped with square pallet, the spindle speed is limited to 50 rpm.
*3 Limited feedrate with continuous movement.
*4 Value of G01. Able to perform fast at G61.1 depending on conditions.
*5 When adjacent pockets are empty and pockets next to them contain tools less than ø240 mm (9.45"), maximum tool diameter is ø260 mm (10.24").
*6 When adjacent pockets are empty and pockets next to them contain tools less than ø200 mm (7.87"), maximum tool diameter is ø300 mm (11.81").
*7 Required time for EIA program utilizing BT.

MAZATROL SmoothAi Specifications

●: INTEGREX i-V Series only

	MAZATROL	EIA
Number of controlled axes	Simultaneous 2 ～ 4 axes	Simultaneous 5 axes*
Minimum 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, Constant lead threading●, Re-threading*●, Thread start point compensation*●, Thread cut-speed override*●, Synchronous tapping*	Positioning (interpolation), Positioning (non-interpolation), Linear interpolation, Circular interpolation, Spiral interpolation, Helical interpolation, Constant lead threading●, Variable lead threading●, Threading (C-axis interpolation type)●, Cylindrical interpolation*, Involute interpolation*, Fine spline interpolation*, NURBS interpolation*, Polar coordinate interpolation*, Re-threading*●, Thread start point compensation*●, Thread cut-speed override*●, 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 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), Tool life monitoring (wear)●	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), Tool life monitoring (wear)●
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 nose shape offset●, Tool wear offset, Fixed amount offset●, Simple wear offset●	Tool position offset, Tool length offset, Tool diameter/tool nose R offset, Tool wear offset, Fixed amount offset●, Simple 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, Polygonal machining*, Hobbing II*, Shaping function*, Dynamic compensation II*, Tool center point control*, Tool radius compensation for 5-axis machining*, Workpiece positioning error compensation*, 5-axis tool length compensation*, 5-axis parameter select*
Machine compensation	Backlash compensation, Pitch error compensation, Geometric deviation compensation, Ai Thermal shield, Volumetric compensation*	
Protection functions	Emergency stop, Interlock, Pre-move stroke check, Barrier, 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 eye measurement●	Tool length teach, Tool offset teach, Touch sensor coordinates measurement, Workpiece offset measurement, Measurement on machine, Tool eye measurement●
Automatic measuring function	WPC coordinate measurement, Automatic tool length measurement, Laser tool length/diameter measurement, Workpiece measurement●, Sensor calibration, Tool eye auto tool measurement●, Tool breakage detection, External tool breakage detection*	Automatic tool length measurement, Laser tool length/diameter measurement, Workpiece measurement●, Sensor calibration, Tool eye auto tool measurement●, Tool breakage detection, External tool breakage detection*
MDI measurement	Coordinate measurement, Laser measurement	
Peripheral network	PROFIBUS-DP*, EtherNet/IP*, CC-Link*	
Interface	SD card interface, USB	
EtherNet	10M/100M/1Gbps	

* Option

Standard and Optional Equipment

●: Standard ○: Option —: N/A

		i-630V/6		i-630V/6S		i-800V/8		i-800V/8S	
		INTEGREX	VORTEX	INTEGREX	VORTEX	INTEGREX	VORTEX	INTEGREX	VORTEX
Milling spindle	10000 rpm (CAT No. 50)	●		●		●		●	
	10000 rpm (BIG-PLUS No. 50, HSK T-100, CAPTO C8)	○		○		○		○	
	5000 rpm (CAT No. 50, BIG-PLUS No. 50, HSK T-100, CAPTO C8)	○		○		○		○	
	15000 rpm (HSK T-100)	○		○		○		○	
Table	Corn coupling	●		●	—	●		○	
	Bolt-on	—		—	●	—		●	
Pallet	□630 mm (24.8") tapped pallet with location bore	○		○		—		—	
	□630 mm (24.8") T-slot pallet with location bore	○		○		—		—	
	□800 mm (31.5") tapped pallet with location bore	○		○		○		—	○
	□800 mm (31.5") T-slot pallet with location bore	○		○		○		—	
	□1000 mm (39.37") tapped pallet with location bore	—		—		○		—	○
	630 × 800 mm (24.8" × 31.5") tapped pallet with location bore	—	○	—		—		—	
	630 × 800 mm (24.8" × 31.5") T-slot pallet with location bore	—	○	—		—		—	
	800 × 1000 mm (31.5" × 39.37") tapped pallet with location bore	—		—		○		—	
	ø610 mm (24.02") tapped pallet with location bore	—		—		—		—	
	ø800 mm (31.5") tapped pallet with location bore	○	—	○		—		—	
	ø1000 mm (39.37") tapped pallet with location bore	○	—	○	—	○		○	
	ø1250 mm (49.21") tapped pallet with location bore	—		—		—		○	—
	ø1000 mm (39.37") 4-jaw independent chuck	—		—		○	—	○	—
	ø1250 mm (49.21") 4-jaw independent chuck	—		—		—		○	—
	ø800 mm (31.5") 3-jaw scroll chuck	○	—	○	—	—		—	
	ø1000 mm (39.37") 3-jaw scroll chuck	—		—		○	—	○	—
	ø800 mm (31.5") face plate with jaws	○	—	○	—	—		—	
	ø1000 mm (39.37") face plate with jaws	—		—		○	—	○	—
	ø1250 mm (49.21") face plate with jaws	—		—		—		○	—
Pallet changer	2-pallet changer	●		—		●		—	
Tool magazine	43	●		●		●		●	
	80, 120, 160	○		○		○		○	
	TOOL HIVE 240, 348	○		○		○		○	
	TOOLTECH 206, 348	○		○		○		○	
Setup	Automatic tool length measurement & tool breakage detection	—	●	—	●	—	●	—	●
	Laser milling tool measurement system	○		○		○		○	
	Tool eye (automatic)	○	—	○	—	○	—	○	—
	Tool breakage detection (detection in ATC area)	○		○		○		○	
	Magazine operation panel for tool ID	○		○		○		○	

■ Standard and Optional Equipment

●: Standard ○: Option —: N/A

		i-630V/6		i-630V/6S		i-800V/8		i-800V/8S	
		INTEGREX	VORTEX	INTEGREX	VORTEX	INTEGREX	VORTEX	INTEGREX	VORTEX
Setup	External steps in front of CNC operation panel	●		—		●		—	
	External steps and platform	—		○		○		○	
	Manual pulse generator (wired)	●		●		●		●	
	Manual pallet rotation at 2-pallet changer loading station	●		—		●		—	
Automation	PMC preparation	●		—		●		—	
	PMC application	○		—		○		—	
	Automatic power ON/OFF + warm-up operation	●		●		●		●	
High accuracy	Ball screw core cooling (X, Y, Z axes)	●		●		●		●	
	Spindle chiller unit	●		●		●		●	
	Hydraulic unit temperature control	○		○		○		○	
	Coolant temperature control	○		○		○		○	
	Scale feedback (X, Y, Z axes)	○		○		○		○	
Coolant/ Chip disposal	Flood coolant	●		●		●		●	
	Coolant through milling spindle 0.8 MPa (116 psi)	○		○		○		○	
	Coolant through milling spindle 1.5 MPa (218 psi)	○		○		○		○	
	SUPERFLOW coolant system 7.0 MPa (1015 psi)	○		○		○		○	
	Niagara coolant	●		●		●		●	
	Hand held coolant nozzle (setup station)	○		—		○		—	
	Hand held coolant nozzle	—		○		—		○	
	Secondary coolant filter for aluminum (2 sets)	○		○		○		○	
	Magnetic separator for cast iron	○		○		○		○	
	Mist collector	○		○		○		○	
	Oil skimmer (RB-200)	○		○		○		○	
	Chip conveyor (ConSep 2000)	○		○		○		○	
Measurement	Mazak monitoring systemB (wireless) RMP600	○		○		○		○	
	Smooth OMM	○		○		○		○	
	Smooth Set and Inspect	○		○		○		○	
IoT	Energy dashboard	○		○		○		○	
Maintenance	ATC automatic recovery system	●		●		●		●	

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 that produce Mazak machine tools 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

Reduced lubrication consumption

Reduced electrical power consumption

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

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



INTEGREX i-V SERIES
VORTEX i-V SERIES

Mazak

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