Mazak

VC-Ez X

SERIES

[16X | 20X]

Affordability and Performance

Expanding the Mazak legacy of dependable, high-quality vertical machining centers, the VC-Ez X Series of machines deliver high performance and accuracy with unparalleled value. Designed and built in Kentucky, VC-Ez X Series machines are optimized for simple operation as well as fast and easy installation, and offer enhanced ergonomics, stable and reliable part processing and long-term reliability.

- MX Hybrid Roller Guide System on all linear axes
- Pretensioned ballscrews supported at both ends
- Roller gear trunnion and rotary table for fast, accurate, 5-axis machining
- Thermal Shield Technology ensures continuously stable machine accuracy

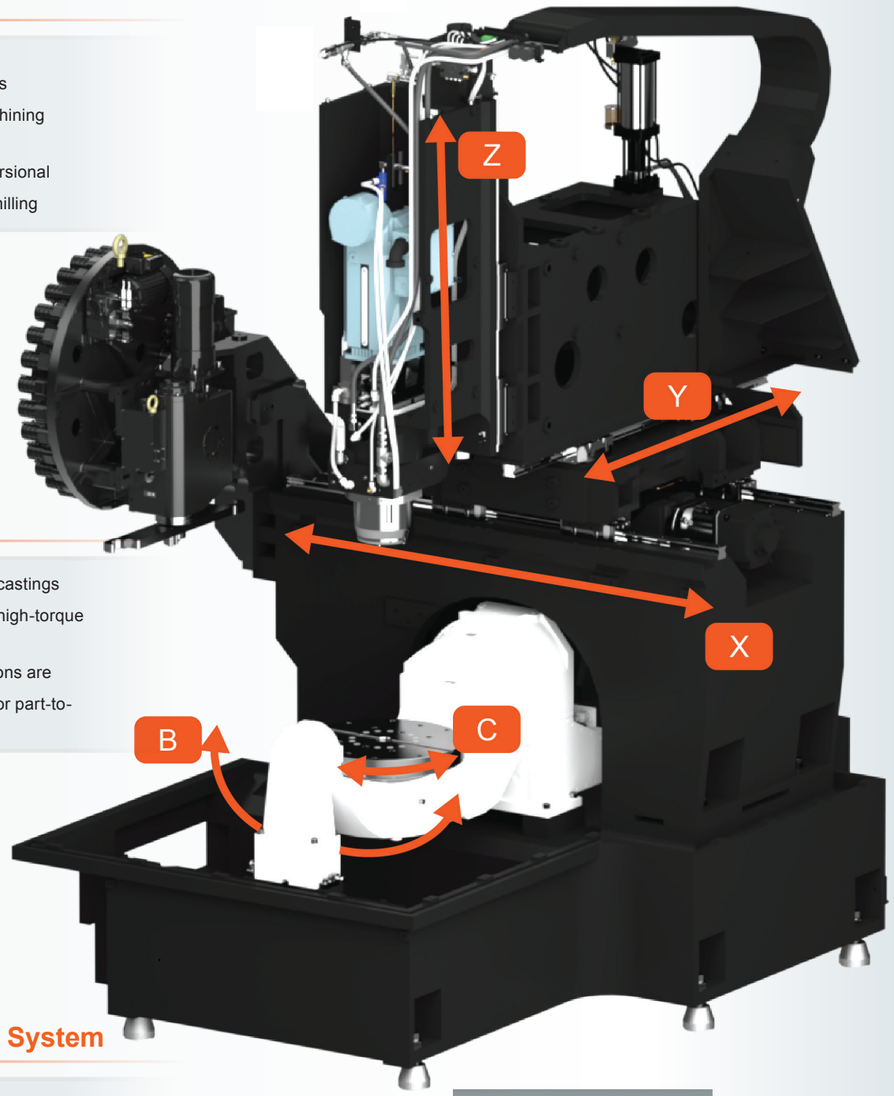
VC-Ez X Series

Machine shown with options

Precision, Accuracy, and Rigidity by Design

Spindles

- Precision-balanced spindle cartridges
- Thermally controlled spindle minimizes growth and contraction for stable machining all day long
- Large headstock castings eliminate torsional displacement when heavy side-load milling

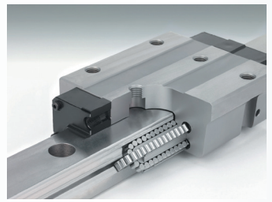


Structure

- Base, column, saddle and headstock castings are all designed with high-speed and high-torque cutting applications in mind
- Castings and ambient thermal conditions are monitored to make axis adjustments for part-to-part consistency

MX Hybrid Roller Guide System

- More surface contact for greater load capacities
- Higher positioning accuracy than boxways
- Faster and greener than boxways with nearly twice the rapid traverse rate and less contamination in machine coolant system



VC-Ez 16X

●:Standard ○:Option

Model	rpm			Table size	Rapid rates X, Y, Z axis	Tool magazine (standard/optional)
	12,000 min[1]	15,000 min[1]	20,000 min[1]			
VC-Ez 16X	•	○	○	Ø15.74" (Ø400mm)	1,260 ipm	30 / 50

VC-Ez 20X

●:Standard ○:Option

Model	rpm			Table size	Rapid rates X, Y, Z axis	Tool magazine (standard/optional)
	12,000 min[1]	15,000 min[1]	20,000 min[1]			
VC-Ez 20X	•	○	○	Ø19.69" (Ø500mm)	1,260 ipm	30 / 50

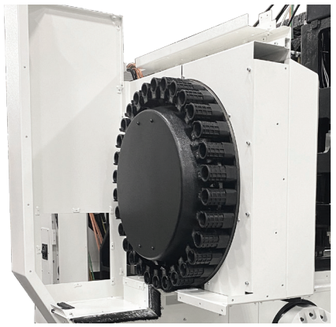
Features for High Productivity

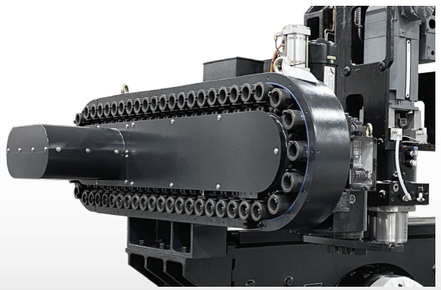
High-Speed ATC

Our high-speed ATC system employs a simple and reliable servo-driven cam actuation system that aids in rapid tool change to reduce non-cut time. Spindle utilization is also increased through bi-directional rotation of the magazine to the next required tool position offering enhanced productivity.

Standard tool changer time
Chip to chip – 3.7 seconds

Tool Changers





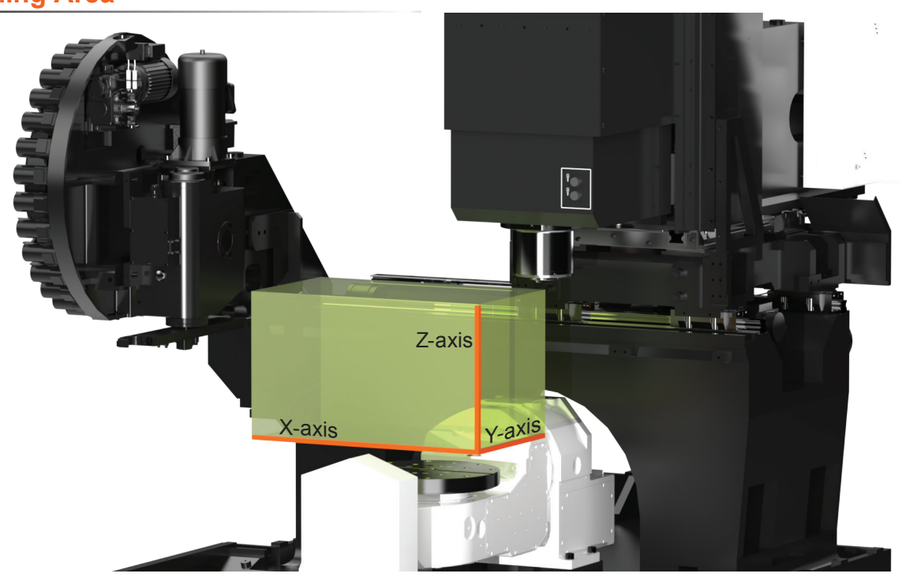
High-capacity CAT 40 tool magazines, common throughout the Ez Series, minimize setups for a variety of workpieces while ensuring adequate tooling for uninterrupted operation.

Magazine capacities
Standard 30 tools
Optional 50 tools

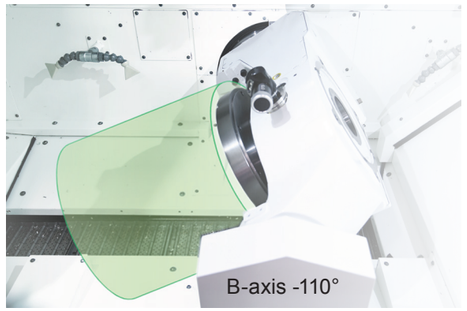
Specifications	VC-Ez 16X	VC-Ez 20X
Maximum tool length	12.0" (305mm)	12.0" (305mm)
Maximum tool diameter	2.95" (75mm)	2.95" (75mm)
(30 tool) Maximum tool diameter with adjacent pockets empty	5.91" (150mm)	5.91" (150mm)
(50 tool) Maximum tool diameter with adjacent pockets empty	5.0" (127mm)	5.0" (127mm)

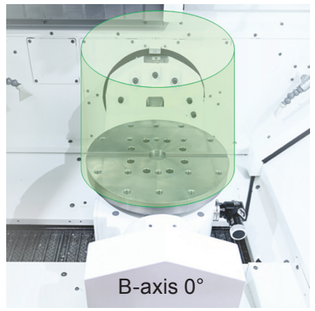
Maximum tool weight of 8kg (17.64 lbs)

Machining Area



	X-axis Stroke	Y-axis Stroke	Z-axis Stroke	B-axis Stoke	C-axis Stroke
VC-Ez 16X	27.76" (705mm)	16.14" (410mm)	16.14" (410mm)	-110° / +40°	+/- 360°
VC-Ez 20X	31.49" (800mm)	20.08" (510mm)	20.08" (510mm)	-110° / +40°	+/- 360°





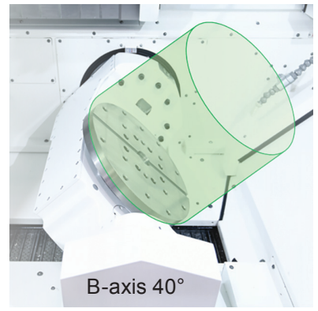
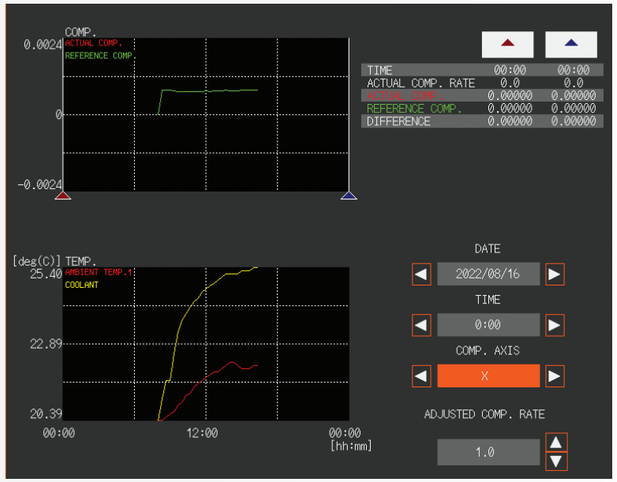


	Table Size	Max Table Weight	Max Part Diameter	Max Part Height	Rapid Rates X,Y,Z	Tool Magazine
VC-Ez 16X	15.75" (400mm)	507lbs (230kg)	18.11" (460mm)	19.09" (485mm)	1,260 ipm	30 / 50 opt
VC-Ez 20X	19.69" (500mm)	881lbs (400kg)	27.55" (700mm)	23.00" (584mm)	1,260 ipm	30 / 50 opt

Thermal Displacement Control

In addition to environmental changes such as increases or decreases in room temperature, aggressive machine movement can generate heat that can affect overall machine accuracy. Being able to monitor and react to thermal disruption provides stable machining accuracy that can be maintained over long periods of time.

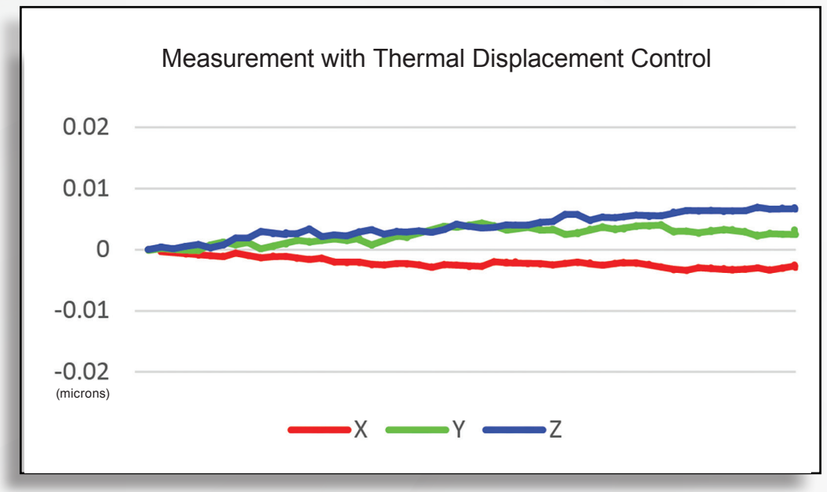


Thermal Displacment Control Testing Results

Testing Method:

➔ B-axis cycle (6-hour run time)
Turn 360º Stop 5 seconds

➔ C-axis cycle (6-hour run time)
Turn 90º Stop 5 seconds

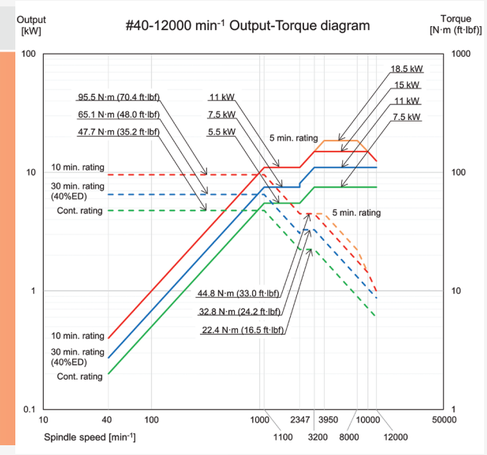


High-Performance Spindles

CAT 40, 12,000 min^{-1} (Standard)

Spindle output: 25 hp / 18.5 kw

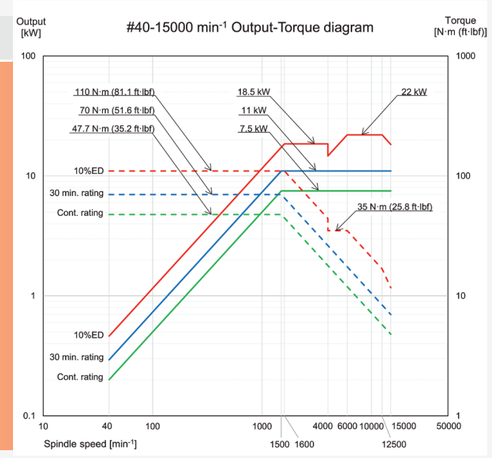
This spindle gives shops the performance they need to achieve high productivity and exceptional accuracy. VC-Ez X Series standard machine spindles deliver unbeatable metal removal rates for most common materials, including steel, aluminum and cast iron. The VC-Ez X Series spindles employ the latest technology for the shortest possible acceleration/deceleration times. This air-cooled spindle utilizes grease packed lubrication to reduce maintenance and oil consumption.



CAT 40, 15,000 min^{-1} (Optional)

Spindle output: 29.5 hp / 22 kw

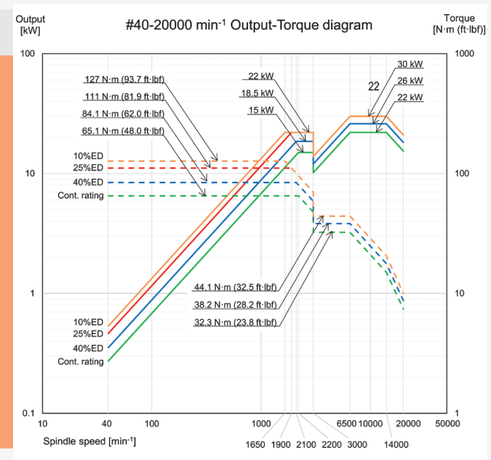
The optional 15,000 min-1 spindle employs air-oil mist lubrication and air cooling for significantly longer spindle life. Designed to give you added flexibility for high material removal rates and/or large-contact tooling, this spindle provides higher RPM's, torque and power for a variety of tooling requirements.



CAT 40, 20,000 min^{-1} (Optional)

Optional spindle output: 40 hp / 30 kw

The optional 20,000 min-1 spindle employs air-oil mist lubrication and liquid cooling for significantly longer spindle life. The 20,000 rpm spindle is designed for maximum performance cutting in a variety of materials plus the flexibility for intricate finishing utilizing very small cutting tools.



Ease of Use

Ergonomic Design Emphasizes Ease of Operation and Maintainability

Easy tool loading/unloading

The tool clamp/unclamp switch is conveniently placed next to the spindle for ease of tool maintenance. To further increase productivity and conserve shop floor space, the VC-Ez X Series offers an optional Ez Tool Station to store tools outside the machine, often eliminating the need for separate tool carts.

Large door opening

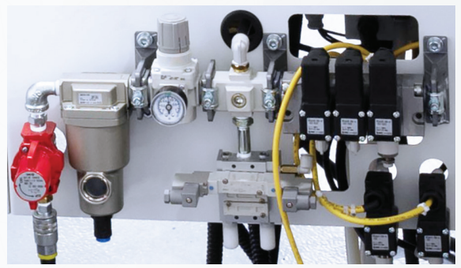
VC-Ez 16X: 34.84" (885mm)
VC-Ez 20X: 36.42" (925mm)

MAZATROL SMOOTHEz5 Adjustable operator panel

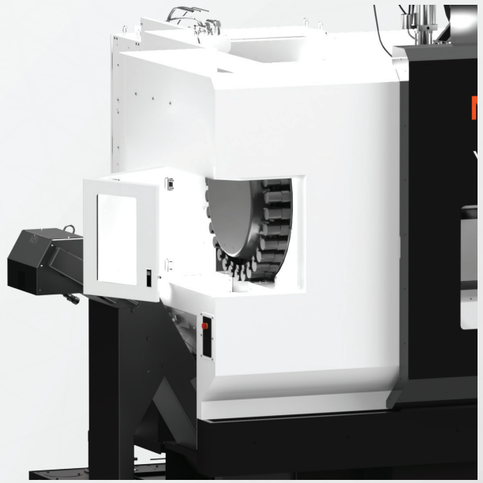
MAZATROL SmoothEz5 CNC operation panel enhances usability. The swivel mount of the CNC control panel allows for rotation toward the work envelope for easy setup and operation.

Ease of maintenance and safety

The centralized placement of commonly checked items facilitates and encourages daily maintenance.



Easy Tool Magazine Access

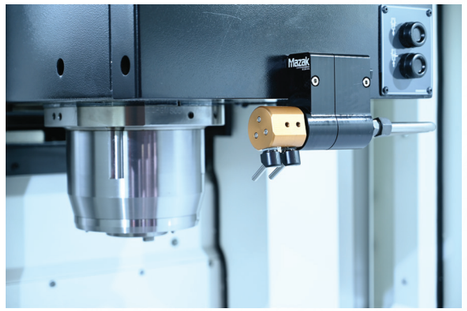


VC-Ez X Series machines have an optional magazine access door to load and unload tools outside the cutting area.

Optional Accessories

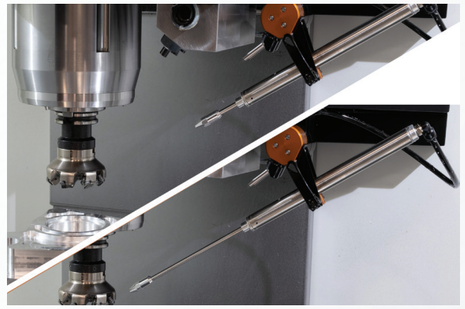
Programmable coolant

Programmable coolant nozzles are adjusted from outside the machine to direct the coolant stream to the desired position to optimize chip evacuation while machining.



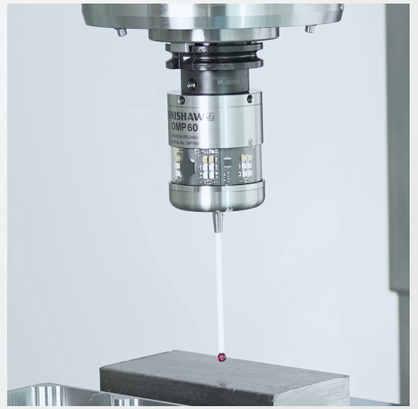
Telescopic air nozzle

The air nozzle extends when air blast is actuated. The nozzle concentrates air to a desired position optimizing chip evacuation.



Workpiece touch probing

Contact-style touch probes decrease setup time while allowing operators to inspect workpieces before removal from the machine. Results can be used instantly for inspection data or tool and workpiece offsets or stored and output later for use in statistical analysis or basic data collection.

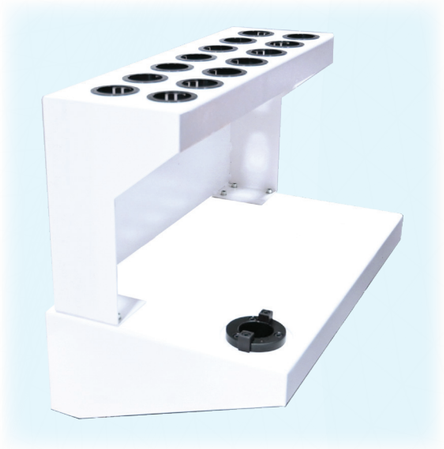


Automatic tool setter

The addition of a contact tool setter can reduce set-ups by measuring both tool length and diameter. In-process measurements can also be accomplished for unattended part processing. The tool setter can even address tool breakage during automatic operation for enhanced process security.

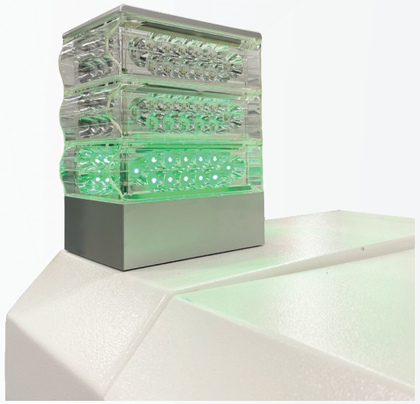
Ez Tool Station

VC-Ez X Series of machines incorporate Mazak's Ez Tool Station to store tools outside the machine, and creates a place to service cutting tools prior to use.



Three-color status light

Three colors to indicate the machine's current operating status. Green is normal operation. Yellow is a warning condition. Red is an alarm state.



Mist collector

Reclaiming the mist generated in VC-Ez X Series machines is critical to maintaining a healthy and productive machining environment for operators.

Chip conveyor (hinge type)

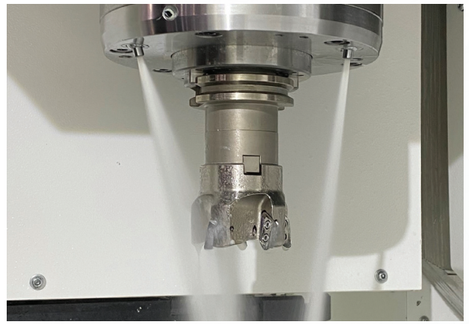
The hinge type conveyor removes cutting chips to reduce maintenance interruptions.

Optional Accessories

Coolant Options

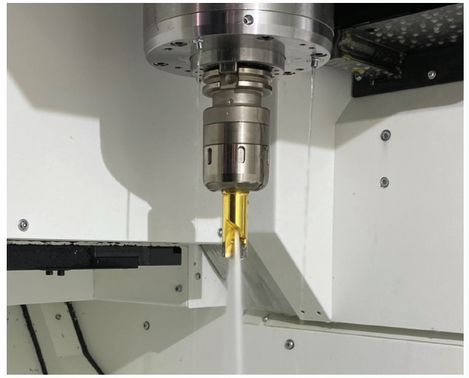
Flood coolant

Coolant flows from multiple nozzles on the spindle face, helping to remove chips and reduce temperature and friction at the tool tip, which increases tool life. Flood coolant (64 psi) is standard. Powerful flood coolant (100 psi) is available as an option.



Through-spindle coolant

Coolant passes through the center of the spindle taper, allowing for concentrated coolant discharge using through-coolant tooling. This option is critical for tooling such as through-coolant drills, ported taps and deep-hole boring applications. Discharge pressure is offered in three options, 71 psi, 213 psi or 1,000 psi.



Through-spindle air blast

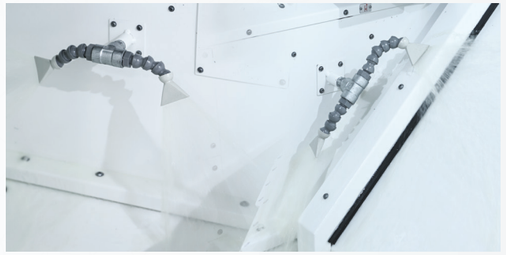
Shop air is continuously funneled through the spindle for use with ported tooling. Positive air pressure at the cutting edge displaces previously cut chips, dramatically improving tool life and surface finish for dry cutting applications.

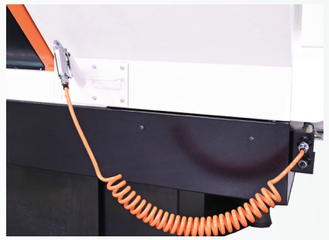
Mazak SUPERFLOW (1,000 psi)

Using high-pressure coolant boosts productivity and maximizes tool life by enabling improved chip control, reduction of thermal shock and higher feeds and speeds. Mazak SUPERFLOW allows you to get more out of your Mazak equipment and tooling investments.

Cover coolant including handheld coolant nozzle

Cover coolant disperses cutting chips and keeps them from accumulating. Efficient removal of cutting chips extends the time between maintenance periods. This option comes standard with 71 psi or may be upgraded to 213 psi. The handheld coolant nozzle can be used for cleaning swarf, workholding, and workpieces inside the machine. This system includes a tank-mounted pump, valving and logic to provide reliable and safe operation.





Automation

Cobot

This entry level automation system is designed to be a safe and intuitive integrated solution. The fixed-table design can be configured with different grid plates depending on the application. The system includes a user interface with a touch-screen display, along with a basic loading and unloading pattern to guide with programming the cobot. This easy-to-access system uses a continuous area monitoring scanner for a safe and open operating environment.

Custom solutions

Mazak also provides the options necessary to integrate custom solutions allowing greater flexibility to the VC-Ez Series of machines. Robot interface, auto door, fixture interface along with various other software features to make sure that each custom system performs and the highest level.

Mill assist

This next level automation solution offers increased payload/ workpiece size and is designed for seamless machine integration and operation. The flexible table design can be configured with either v-block supports or grid plates depending on workpiece application. The system includes a graphical user interface with a touch-screen display, along with pre-configured part loading and unloading patterns for easy programming. The easy-to-access system incorporates an area scanner for a safe and open operating environment.

VC-Ez 16X machine with Cobot automation

MAZATROL SMOOTHEz5 Control

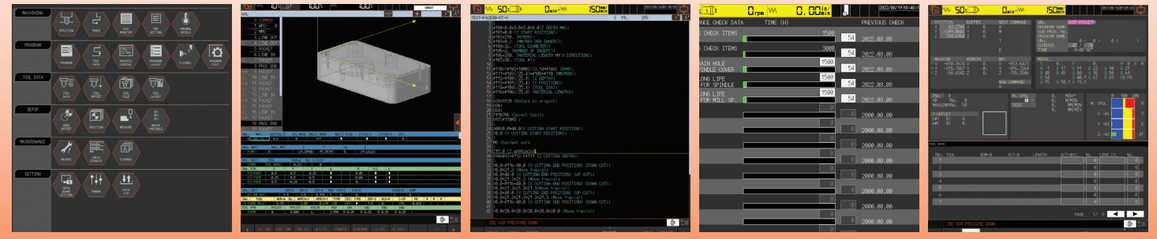
The SMOOTHEz5 has a 15" touchscreen coupled with a dual core, 800MHz processor which provides unparalled power and ease of use.

The SMOOTHEz5 uses industry leading MAZATROL conversational along with G-code programming to create a powerful platform for processing simple to complex parts quickly.

Informative process home screens

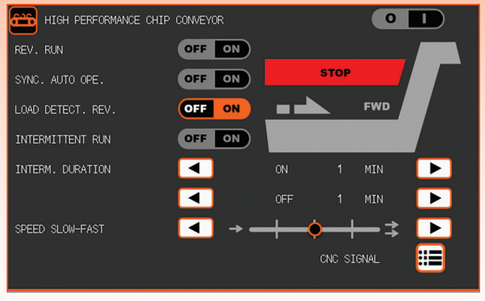
These are five examples of screens that make it very easy to find and utilize the information. The "Launcher" screen has shortcuts to most commonly used screens for moving around the controller quickly. The "Position" screen can be configured to include data and machine configuration pages along with the current operating condition of the machine on a single screen.

Launcher | MAZATROL | EIA (G-code) | Maintenance | Position



Chip conveyor interface

Our GUI interface gives the operator the ability to control the chip conveyor. This interface will help reduce coolant loss and downtime due to chip evacuation issues.



SMC (SMOOTH machining configuration)

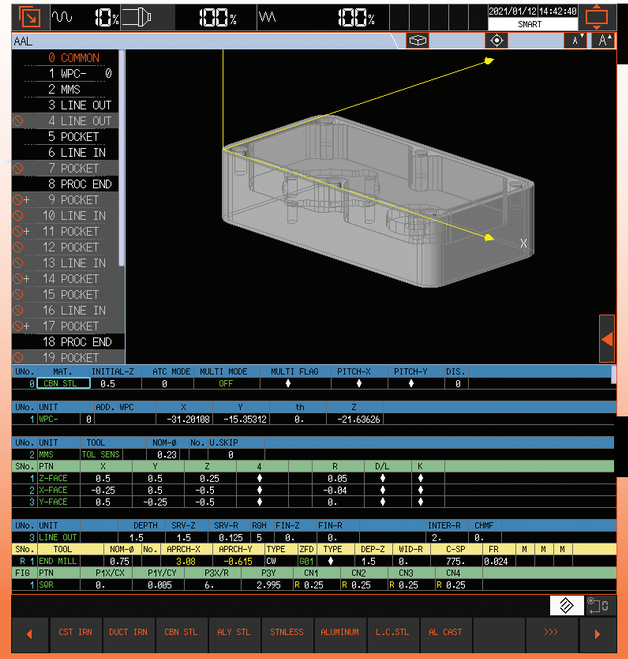
SMC provides optimized machine tuning for multiple machining styles. The SMC screen makes preconfigured tuning selectable or the operator can adjust the tuning and easily store it as a new configuration.

MAZATROL SMOOTHEz5

Programming

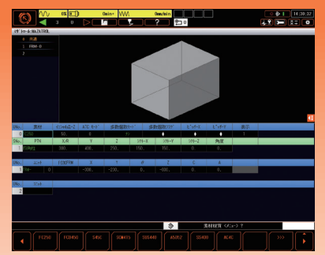
MAZATROL Interactive programming

MAZATROL interactive programming uses common language to easily create and edit programs simply by entering data from a drawing. Inexperienced operators can quickly learn to create programs by utilizing preset cutting conditions and automatic tool path creation.

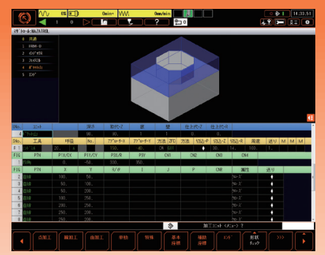


QUICK MAZATROL

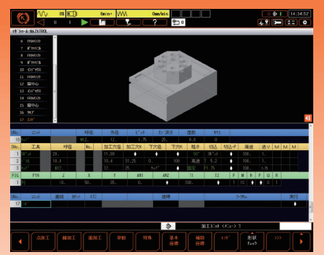
MAZATROL SMOOTHEz5



Create a stock unit to define the size of the material and orientation in the machine



A 3D rendering is created based on the input from the MAZATROL unit in real time

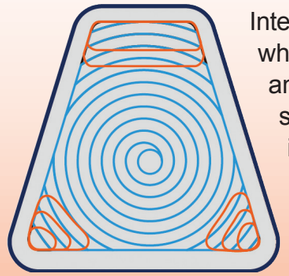


Once the program is complete, the model will represent a finished part.

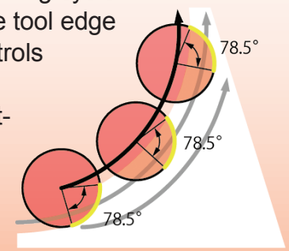
QUICK MAZATROL offers the programmer/operator the option to see - in real time - a 3D rendering of the work piece as they create the program. This reduces errors that are usually not found until the actual machining has occured. Once the program has been created, one can easily modify features on the workpiece by selecting the MAZATROL unit and making the edits.

Intelligent Pocket Milling

MAZATROL SMOOTHEz5



Intelligent Pocket Milling is a MAZATROL pocket machining cycle which calculates a constant contact angle between the tool edge and the workpiece material. This intelligent path controls spindle and axis fluctuations, extending tool life and improving machining efficiency especially in difficult-to-machine materials.

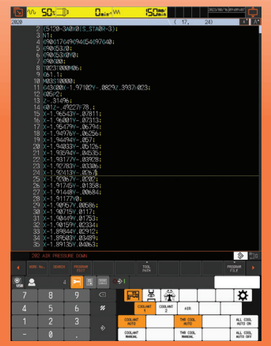


EIA (G-CODE)

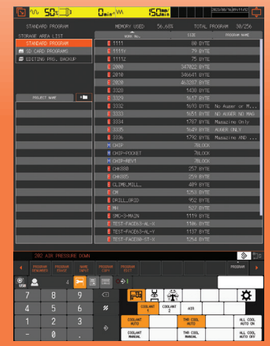
MAZATROL SMOOTHEz5

All Mazak controllers incorporate G-code language for CAM generated programs and legacy G-code programs. The SMOOTHEz5 has multiple menus dedicated to the organization, editing, restarting and execution of G-code programs.

The EIA monitor screen shows the current block of code as the machine is running in memory/ automatic mode.



The program screen displays the selected program and provides tools for editing a program including search, find, replace, etc.



The program file screen provides a list of all programs that are currently stored in the control, EIA and MAZATROL.

Mazak MT Tablet OPTION

MAZATROL SMOOTHEz5

The optional MT Tablet provides a 10" HD display. This Windows 10 IoT based interface allows access to various productivity apps

- MTConnect
- MAZAK SMOOTH LINK
- MAZAK Manual Viewer
- MAZAK Program Transfer

MT Tablet packages are offered in several different variations. Packages can include a one year subscription to one of three popular CAM softwares, probing software, or a combination of both.

Machine Specifications VC-Ez X

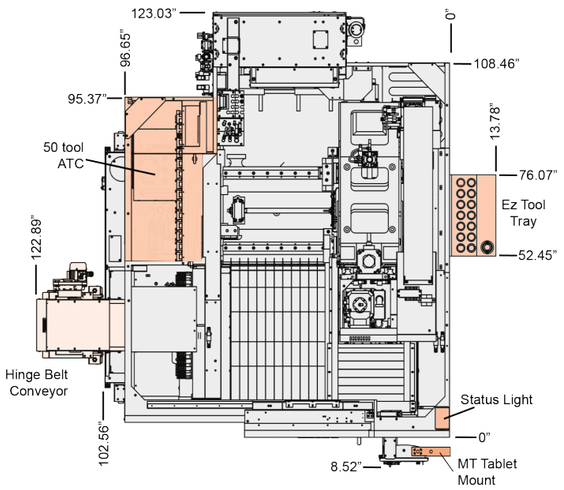
			VC-Ez 16X	VC-Ez 20X
Capacity	Table diameter	in (mm)	15.75 (400)	19.69 (500)
Table Weight Capacity	Table Weight Capacity	lbs (kg)	507 lb (230)	881 lb (400)
Workpiece Capacity	Max Workpiece Size	dia in (mm) height	18.11 (460) 19.09 (485)	27.55 (700) 23.00 (584.2)
Spindle Face to Table Surface	Min - Max	in (mm)	4.53 (115) - 20.67 (525)	4.53 (115) - 24.61 (625)
Rapid Rates	Rapid Rates	ipm	1,260	1,260
Spindle	Spindle Taper	ISO	CAT-40	CAT-40
	Maximum Speed	rpm	12,000	12,000
	Motor Output (5-minute rating)	hp (kw)	24.8 (18.5)	24.8 (18.5)
	Torque	ft-lbs (N-m)	70.4 (95.5)	70.4 (95.5)
Magazine	Number of Tools	Standard / Optional	30 (50)	30 (50)
Feed Axes	Travel (X Axis)	in (mm)	27.76 (705)	31.5 (800)
	Travel (Y Axis)	in (mm)	16.14 (410)	20.08 (510)
	Travel (Z Axis)	in (mm)	16.14 (410)	20.08 (510)
	Travel (B/C Axis)	deg	-110~+40 / +/-360	-110~+40 / +/-360
Maximum Tool Diameter	Without adjacent pockets empty	in (mm)	2.95 (75)	2.95 (75)
	With adjacent pockets empty	in (mm)	5.91 (150)	5.91 (150)
Maximum Tool Length		in (mm)	12.0 (305)	12.0 (305)
Maximum Tool Weight		lbs (kg)	17.64(8)	17.64(8)
Tool Change Time	Tool to tool	sec	2.3	2.3
Dimensions	Machine Depth	in (mm)	131.55 (3,341.4)	146.32 (3,716.4)
	Machine Width	in (mm)	102.56 (2,605)	104.21 (2,647)
	Machine Height	in (mm)	110.13 (2,797)	126.67 (3,217.3)
	Machine Weight	lbs (kg)	19,200 (8,700)	23,589 (10,700)

MAZATROL SmoothEz 5 Specifications

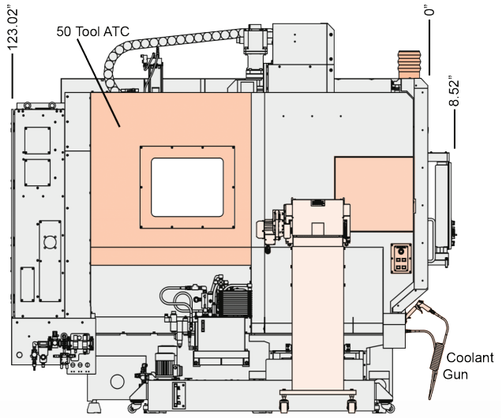
	MAZATROL	EIA
Number of Controlled Axes	2-6 axes	
Least Input Increment	0.00001 inch, 0.0001 mm, 0.0001°	
High Speed, High-Precision Control	Smooth corner control, Rapid traverse overlap, Rotary axis shape compensation	Smooth corner control, Rapid traverse overlap, Rotary axis shape compensation
Interpolation	Positioning (Linear interpolation), Positioning (Independent interpolation), Linear interpolation, Circular interpolation, Synchronized milling spindle tapping*	Positioning (Linear interpolation), Positioning (Independent interpolation), Linear interpolation, Circular interpolation, Spiral interpolation, Helical interpolation, Cylindrical coordinate interpolation*, Fine spline interpolation*, Polar coordinate interpolation*, Synchronized milling spindle tapping*
Feed Rate	Rapid traverse, Cutting feed, Cutting feed (per minute), Dwell (specified time, specified number of rotation), Rapid traverse override, Cutting feed override, G0 speed variable control, Feedrate clamp, Variable acceleration/deceleration control	Rapid traverse, Cutting feed, Cutting feed (per minute), Inverse time feed, Dwell (specified time, specified number of rotation), Rapid traverse override, Cutting feed override, G0 speed variable control, Feedrate clamp, Time constant changing for G1, Variable acceleration/deceleration control
Program Registration	Max. number of programs: 960, Program storage: 2MB, Program storage expansion: 8MB*, Program storage expansion: 32MB*	
Control Display	Display: 10.4" screen, Screen resolution: VGA	
Spindle Functions	S code output, Spindle speed clamp, Spindle speed override, Spindle speed reaching detection, Multiple position orient, Constant surface speed, Spindle speed command with decimal digits, Synchronized spindle control, Max. speed control for spindle	
Tool Functions	Tool offset pairs: 4000, T code output for tool number, Tool life monitoring (time), Tool life monitoring (number of machined workpieces)	Tool offset pairs: 4000, T code output for tool number, T code output for group number, Tool 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	
Tool Offset Pairs	128	
Coordinate System	Machine coordinate system, Work coordinate system, Local coordinate system, Additional work coordinates (300 set)	
Machine Compensation	G0/G1 independent backlash compensation, Pitch error compensation, Volumetric compensation*	
Protection Functions	Emergency stop, Interlock, Stroke check before travelling, Retraction function for the vertical axis	
Automatic Operation Mode	Memory operation	Memory operation, Tape operation, MDI operation, EtherNet operation*
Automatic Operation Control	Optional stop, Dry run, Automatic handle control, MDI control, TPS, Restart, Machine lock	Optional block skip, Optional stop, Dry run, Automatic handle control, MDI control, TPS, Restart, Restart 2, Collation stop, Machine lock
Manual Measuring Functions	Tool length and tip teach, Touch sensor coordinates measurement, Workpiece offset measurement, WPC coordinate measurement, Measurement on machine	Tool length and tip teach, Tool offset teach, Touch sensor coordinates measurement, Workpiece offset measurement, WPC coordinate measurement, Measurement on machine
Automatic Measuring Functions	WPC coordinate measurement, Auto tool length measurement, Sensor calibration, Tool eye auto tool measurement, Tool breakage detection, External tool breakage detection*	Auto tool length measurement, Tool breakage detection, External tool breakage detection*
MDI Measurement	Partial auto tool length measurement, Auto tool length measurement, Coordinate measurement	
Interface	PROFIBUS-DP*, EtherNet I/P*, CC-Link*, USB	
Card Interface	SD card interface	
EtherNet	10 M/100 M/1 G bps	

External Dimensions – VC-Ez 16X

(FOR REFERENCE ONLY)



OPTIONAL EQUIPMENT IS SHADED IN ORANGE



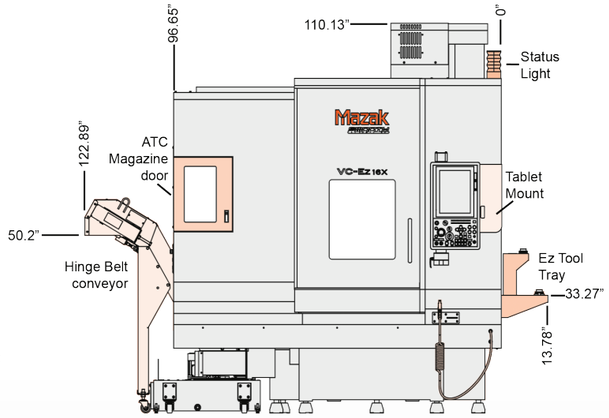
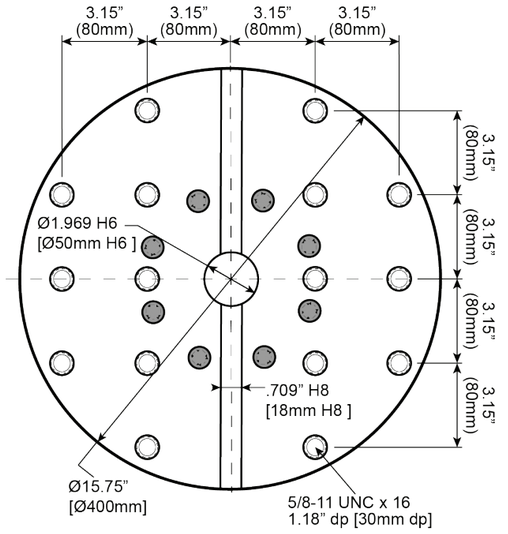


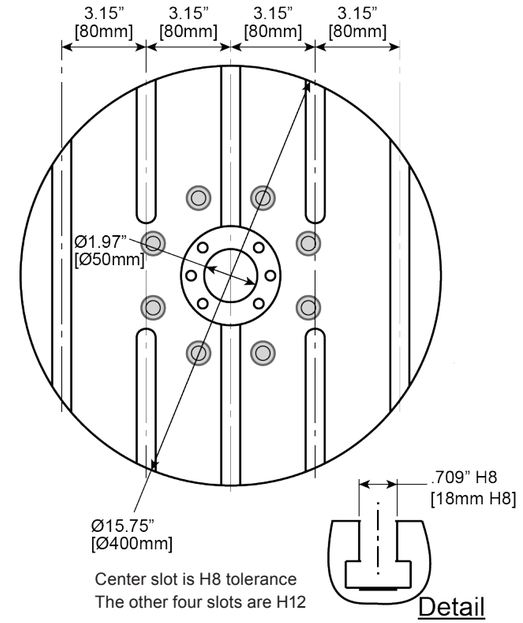
Table Configurations – VC-Ez 16X

(FOR REFERENCE ONLY)

Standard Tapped Pallet

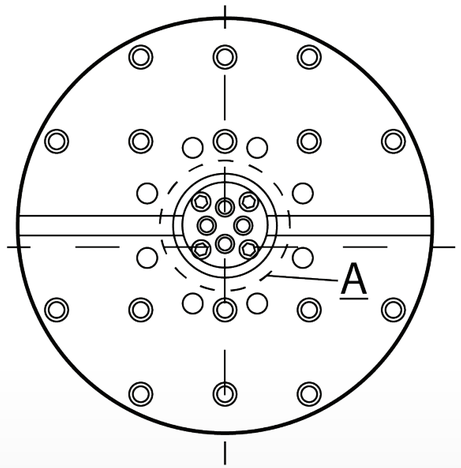


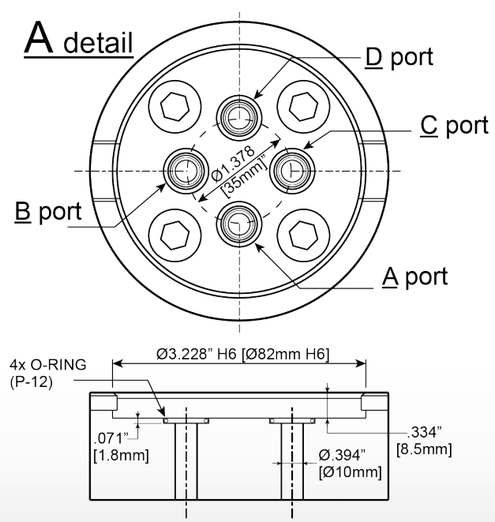
Optional T-slot Pallet



Center slot is H8 tolerance
The other four slots are H12

Optional Fixture Interface

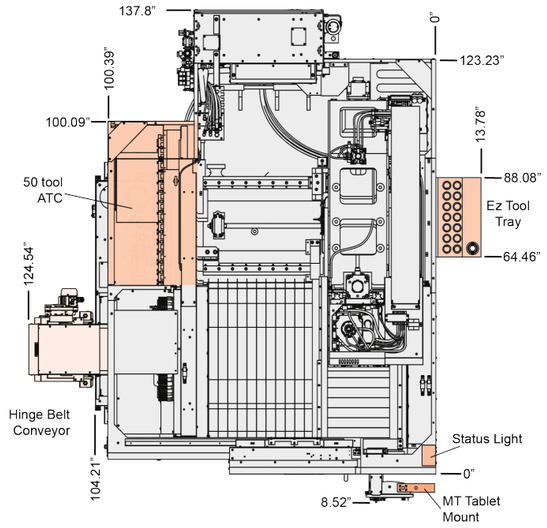




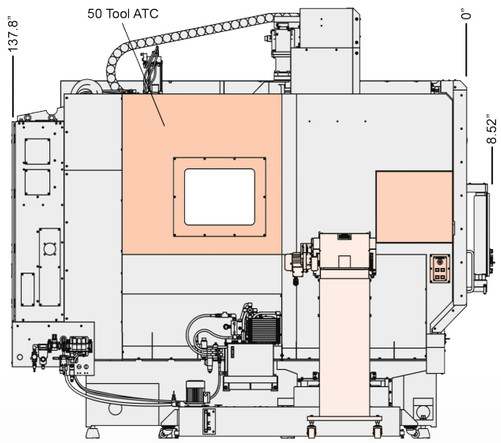
Port assignment for hydraulic and air is dependent on option package

External Dimensions – VC-Ez 20X

(FOR REFERENCE ONLY)



OPTIONAL EQUIPMENT IS SHADED IN ORANGE



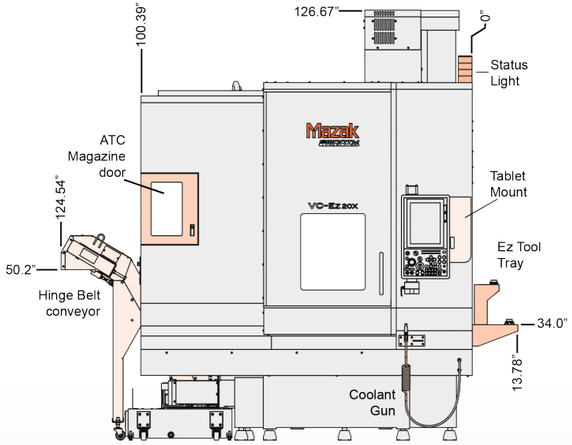
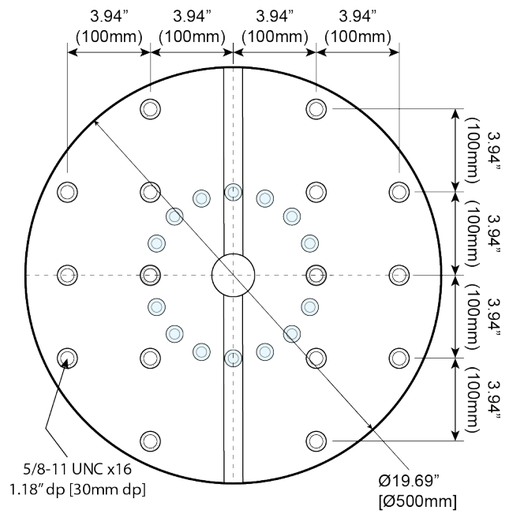


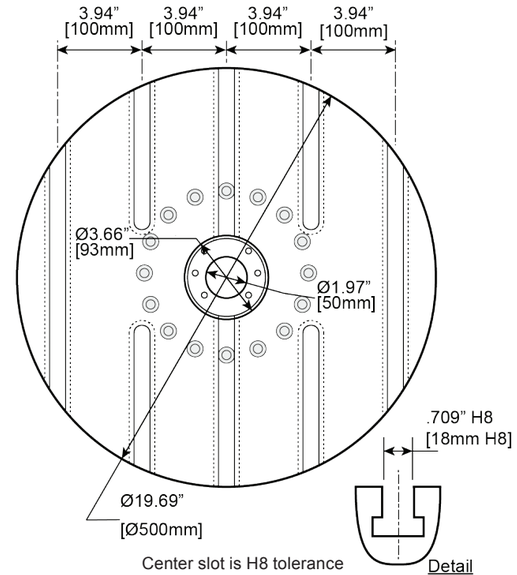
Table Configurations – VC-Ez 20X

(FOR REFERENCE ONLY)

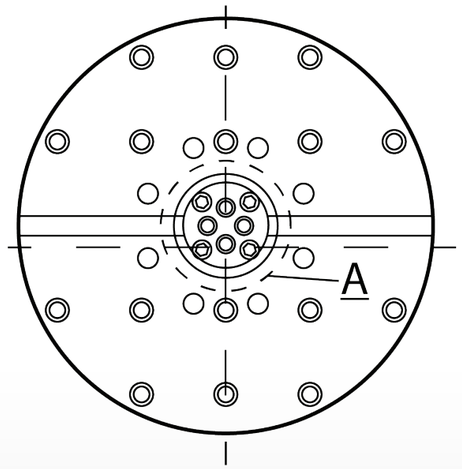
Standard Tapped Pallet

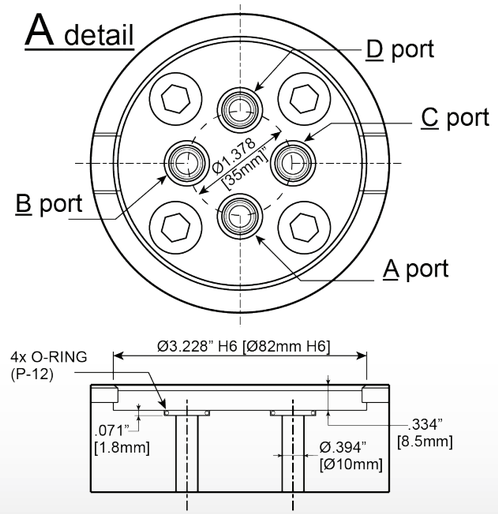


Optional T-slot Pallet



Optional Fixture Interface





Port assignment for hydraulic and air is dependent on option package

Mazak Capital Equipment Financing (MCEF)

MCEF is a one-stop choice for manufacturers throughout the United States who want fast, hassle-free, low-cost financing on Mazak equipment. Our knowledge of Mazak's product portfolio results in factory terms that can work to your advantage. Plus, with our direct access to machine specifications, delivery schedules and installation dates, we work to reduce additional paperwork or delays in the approval or shipment process.

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CAPITAL EQUIPMENT FINANCING

MCEF benefits:

- Provides flexible, timely and competitive financing for companies of all sizes
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- Obtains application approvals quickly (often within 24 hours)
- Creates customized financing programs to meet your specific requirements
- Preserves bank credit lines for working capital for your company's growth

Mazak Capital Equipment Financing
6850 Industrial Road
Florence, Kentucky 41042

Phone Number: (859) 342-1311

Toll Free Number: (877) 634-5521

Fax Number: (859) 342-1502

Email: financing@mazakcorp.com

Send confidential files through our Secure File Transfer (SFT)

Mazak MPower

MPOWER COMPLETE CUSTOMER CARE

SINGLE SOURCE SERVICE

Mazak is a single point of contact for any Mazak-related service need, whether it involves a machine, control, accessory or automation solution. This effective service approach helps customers maintain the highest possible levels of productivity.

TECHNICAL SUPPORT

Comprehensive two-year warranties on every Mazak machine tool, paired with local support from a network of Technology and Technical Centers and expert technical service through the company's Remote Assist Services.

PARTS SUPPORT

Identify, order and receive the replacements you need with unprecedented speed and ease through online access to every aspect of parts support. Whether you need a small part or a CNC repair, you are covered 24/7.

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Learn to operate, program and maintain your Mazak machine tools so you obtain the full value of your equipment, from installation throughout its working life. Take a self-paced course through our MPower On-Demand Learning (MODL) system, schedule an in-person class at one of our Technology or Technical Centers, or sign up for a customized seminar in your shop.

SPINDLE AND UNIT REBUILD

Mazak's cost-effective Spindle Rebuilding Services offer customers fast and precise spindle rebuilding under the MPower umbrella. The Mazak Spindle Rebuild Department raises the bar in terms of efficiency and quality in OEM-factory-certified machine tool spindle rebuild services that significantly reduce customer downtime.

Technical and Technology Centers

National Technology Center
Florence, Kentucky
(800) 331-9151

Northeast Technology Center
Windsor Locks, Connecticut 06096
(860) 292-4400

Southeast Technology Center
Suwanee, Georgia 30024
(678) 985-4800

Florida Technical Center
Orlando, FL 32822
(689) 205-5626

Midwest Technology Center
Schaumburg, Illinois 60173
(847) 885-8311

Southwest Technology Center
Houston, Texas 77067
(281) 931-7770

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Southlake, Texas 76092
(817) 329-6290

Western Technology Center
Gardena, California 90248
(310) 327-7172

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Fremont, California 94538
(408) 941-2240

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