

**Mazak**

**VCN-570C**  
**VCN-575C**





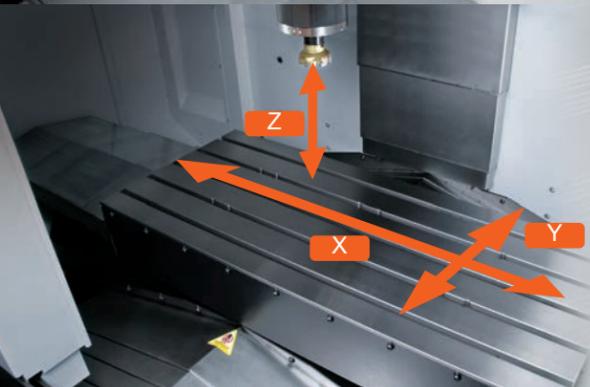
The highly productive VCN-570C and VCN-575C will improve your shop's ability to process a variety of different applications, from high-speed mold and die milling to large radial and axial power cutting. With multiple spindle choices and numerous options, these machines meet your production needs with power and precision.

Short cycle spindle acceleration/deceleration and quick tool changes reduce overall machining times.

Durable roller guides are used on X, Y and Z axis for long-lasting machine stability and longevity.

Thermal Shield technology ensures continuously stable machine accuracy.

Ergonomic designs focus on ease of use and maintainability.



Sample Workpieces



Material: Aluminum  
Industry: Medical equipment

Material: Pre-hardened steel  
Industry: Auto parts mold



Material: Stainless steel  
Industry: Metal processing machinery



Material: Cast iron  
Industry: Construction machinery



Material: S45C  
Industry: Industrial machine parts



VCN-570C CAT 40



VCN-575C CAT 50

Model	rpm					Table size	Rapid rates X, Y, Z axis	Tool magazine				4th axis
	6,000 min <sup>-1</sup>	10,000 min <sup>-1</sup>	15,000 min <sup>-1</sup>	15,000 <sup>HT</sup> min <sup>-1</sup>	20,000 min <sup>-1</sup>			24 tool	30 tool	48 tool	60 tool	
VCN-570C			●	○	○	51.18" X 22.44"	1,654 ipm		●	○	○	○
VCN-575C	●	○				51.18" X 22.44"	1,654 ipm	●				○

●:Standard ○:Option

HT: (High-torque spindle)

# Higher Productivity

Precision, accuracy & rigidity by design

(VCN-570C and VCN-575C)

## Spindles

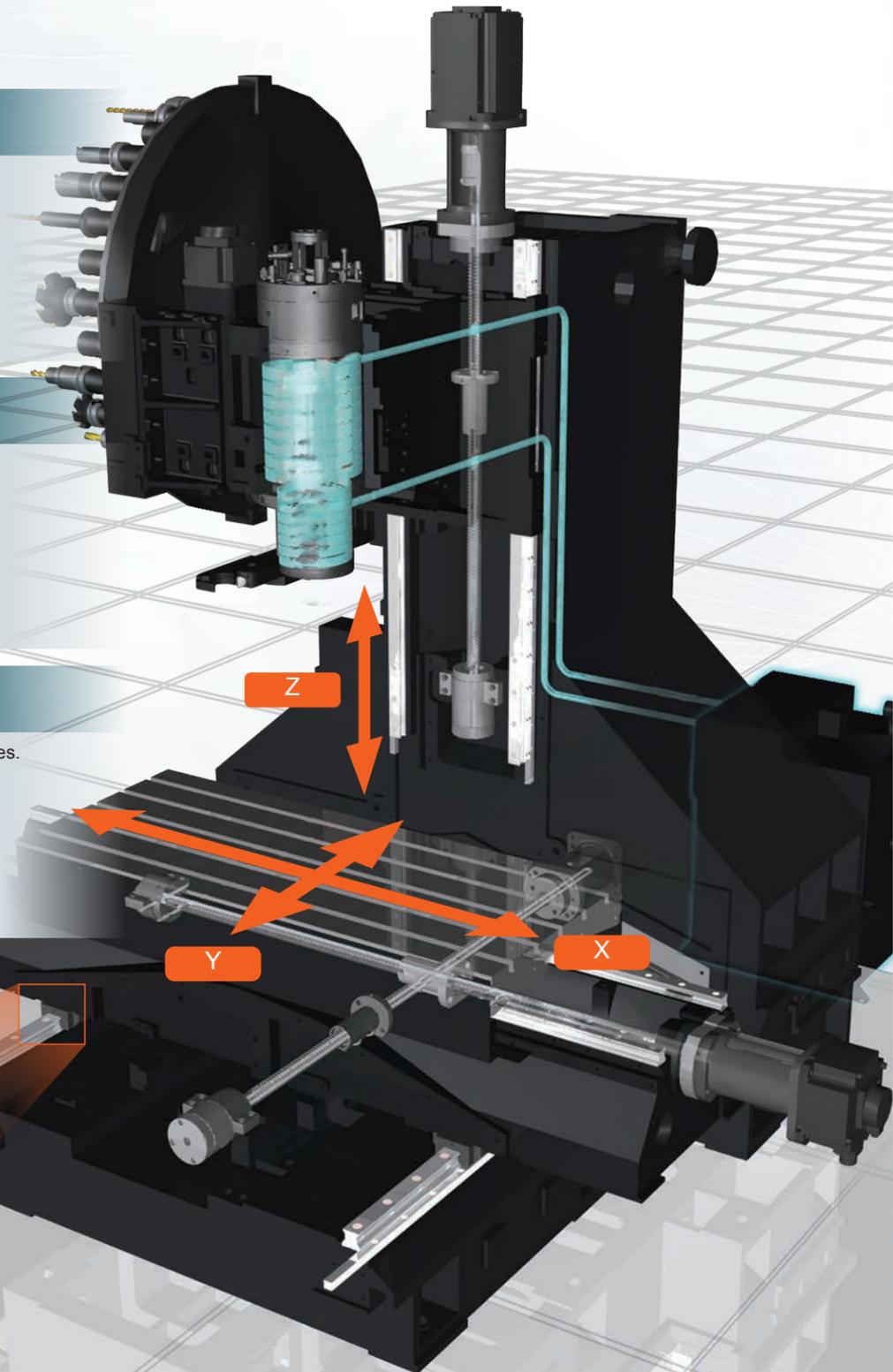
- Precision-balanced spindle cartridges.
- Thermally controlled spindle minimizes growth and contraction for stable machining all day long.
- Large headstock castings eliminate torsional displacement when heavy side-load milling.

## Structure

- Heavy 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 Roller Guide System

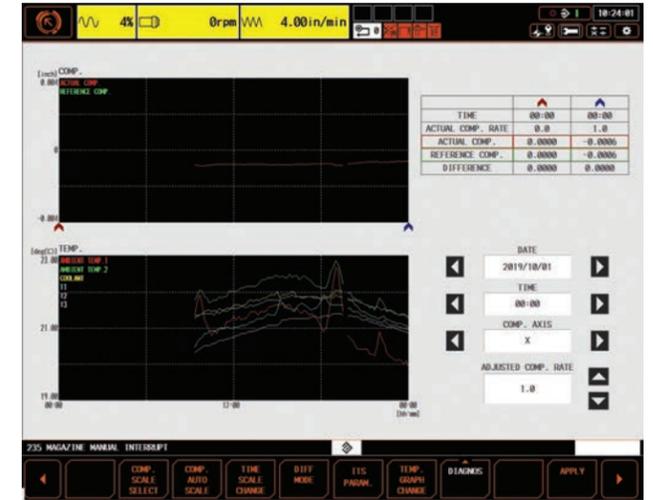
- More surface contact for greater load capacities.
- Higher positioning accuracy than boxways.
- Faster and greener than boxways with nearly twice the rapid traverse rate and less contamination in the machine coolant system.



## Thermal Displacement Control Patent Pending

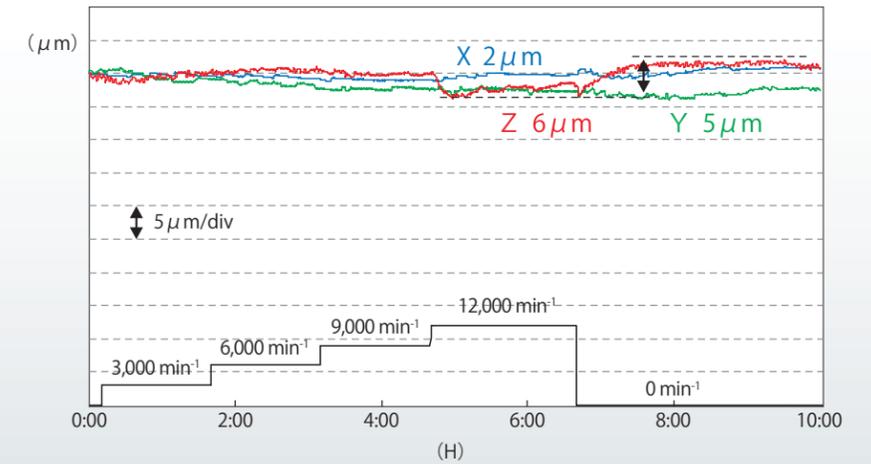
In addition to environmental changes such as increases or decreases in room temperature, operations such as spindle start/stop create sudden expansions and contractions in the spindle. Being able to react to thermal disruption provides stable machining accuracy that can be maintained over long periods of time.

The MAZATROL SmoothG thermal displacement screen displays temperature information and displacement correction values in real time. The values are also stored for later use. Correction amounts can also be adjusted while viewing the real-time data.

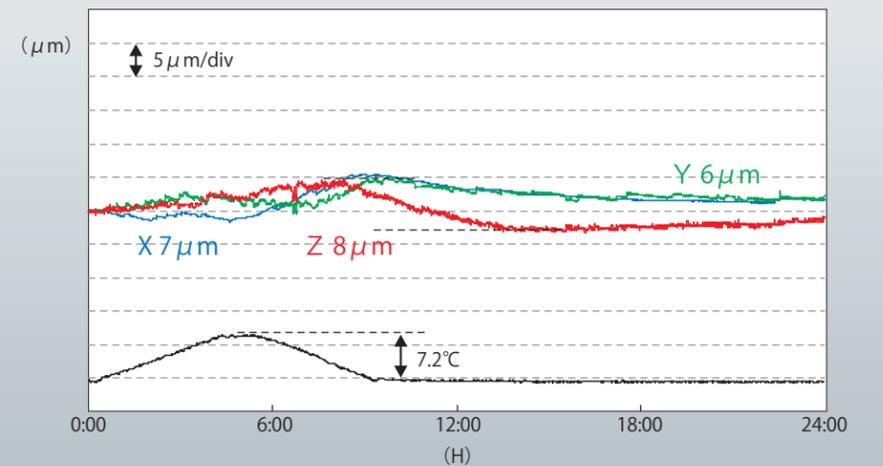


### Example of compensation with Thermal Shield

Spindle speed acceleration test  
(68°F/20°C constant temp.)



Environmental change test  
(45°F/7.2°C change)



# High-Performance Spindles

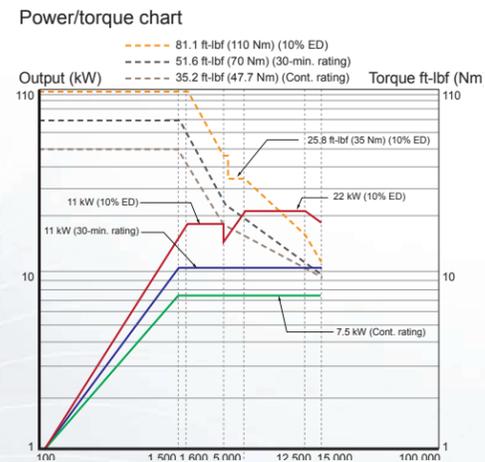
High-speed cutting for greater productivity with CAT 40, BT40, HSK-A63 and CAT 50 spindles

**Spindle output: 30 hp/10 hp [10% ED/Cont.]**

CAT 40, 15,000 min<sup>-1</sup> spindle

VCN-570C standard spindle

The VCN-570C gives shops the performance they need to achieve high productivity and exceptional accuracy. Its standard machine spindle delivers unbeatable metal removal rates for most common materials including steel, aluminum and cast iron. Mazak also offers optional spindle speed/torque configurations to allow shops to optimize spindle performance for specific part machining needs. These spindles employ the latest technology for the shortest possible acceleration/deceleration times. Mazak's innovative designs use oil-air mist lubrication for significantly longer spindle life while allowing for the addition of through-spindle high-pressure coolant capability.

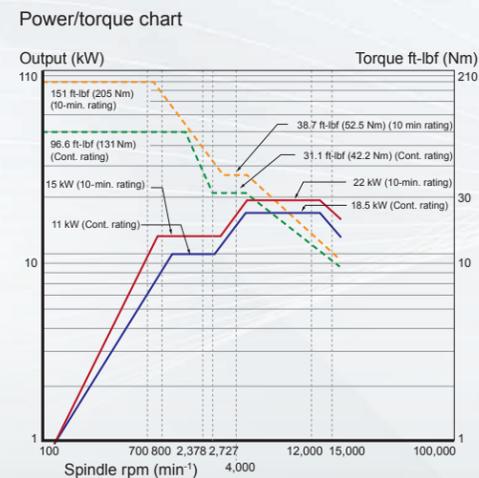


**Spindle output: 30 hp/25 hp [10 min./Cont.]**

CAT 40, 15,000 min<sup>-1</sup> high-torque spindle

VCN-570C optional spindle

The optional high-torque 15,000 min<sup>-1</sup> spindle is designed to give you added flexibility for jobs requiring large material removal rates and/or large-contact tooling. This spindle offers shops the torque, power and speed required for tools that need higher surface footage.

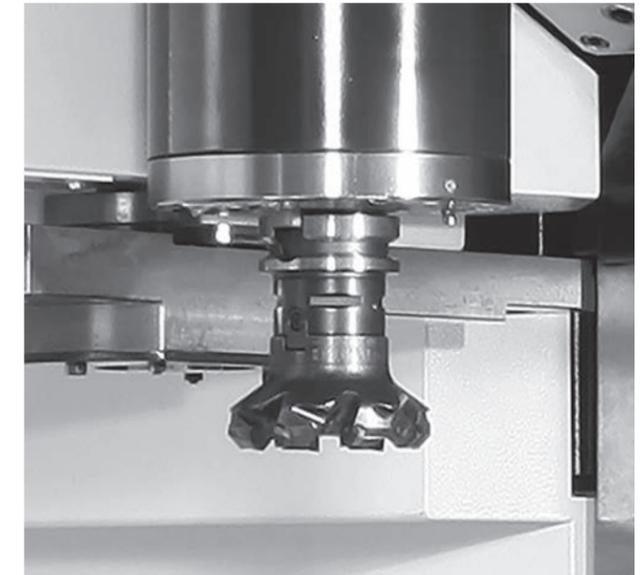
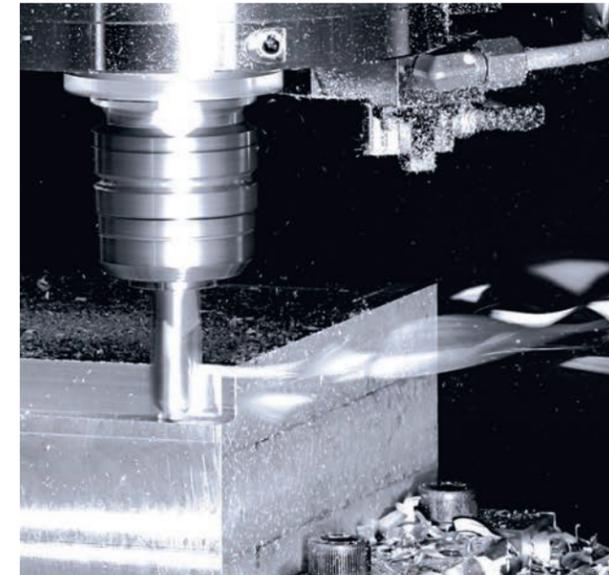
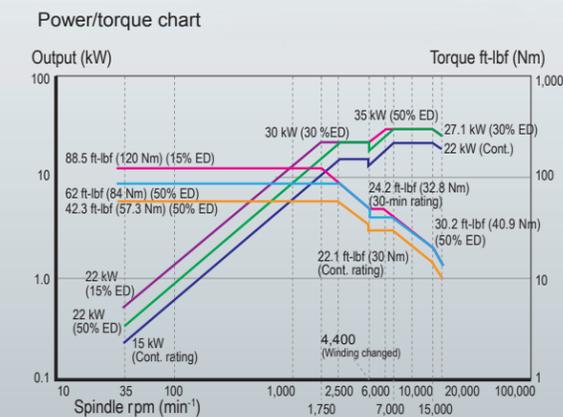


**Spindle output: 47 hp/30 hp [50% ED/Cont.]**

CAT 40, 20,000 min<sup>-1</sup> spindle

VCN-570C optional spindle

This built-in motor design eliminates power loss and minimizes vibration during high-speed machining applications. The spindle has a perfect balance of power and torque to allow for ultra-high productivity in mold and die work, along with non-ferrous materials such as aluminum, brass, copper, etc.

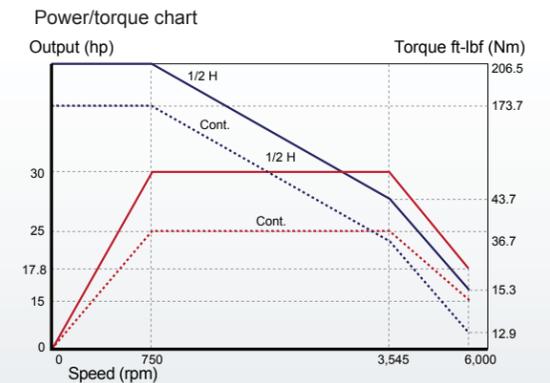


**Spindle torque: 206 ft-lbf [30-min. rating]**

CAT 50, 6,000 min<sup>-1</sup> spindle

VCN-575C standard spindle

Our rugged and reliable CAT 50 spindle has a maximum power rating of 30 hp and a maximum torque rating of over 206 ft-lbf of torque for aggressive metal removal rates in all types of material.

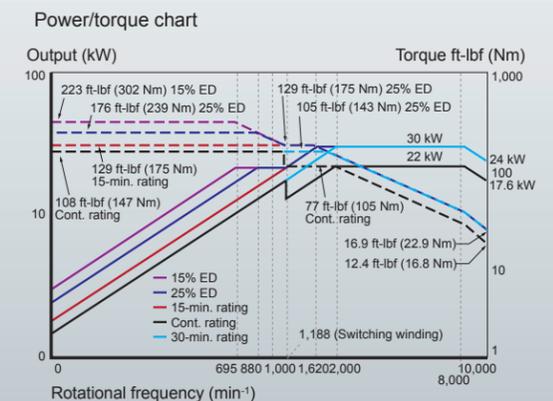


**Spindle torque: 223 ft-lbf [15% ED]**

CAT 50, 10,000 min<sup>-1</sup> spindle

VCN-575C optional spindle

This 30 hp CAT 50 spindle offers a flexible machining platform for shops that have applications where both high torque and high speed are required. A maximum rotational speed of 10,000 min<sup>-1</sup> allows for a wide range of materials, from non-ferrous metals to cast iron and steels, to be processed in a single machine.



# Features for High Productivity

## High-speed ATC (Automatic Tool Changer)



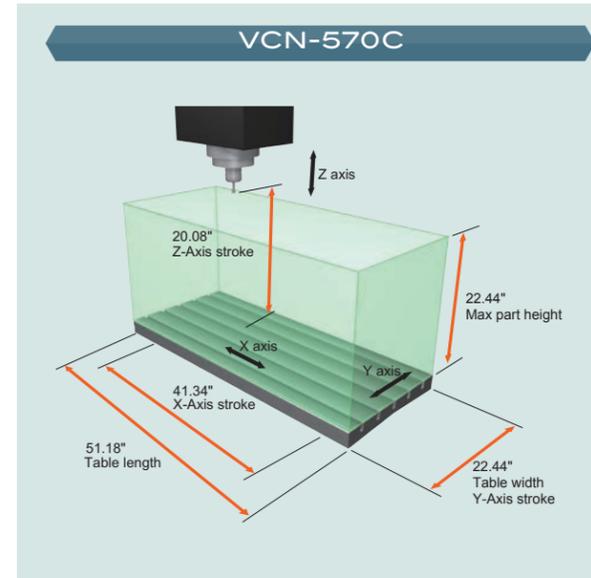
Our high-speed ATC system employs a simple and reliable servo driven cam actuation system that aids in rapid tool change to reduce non-cut time. Spindle utilization is also increased through bi-directional rotation of the magazine to the next required tool position, bringing more productivity to your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

Standard tool changer time (tool-to-tool)

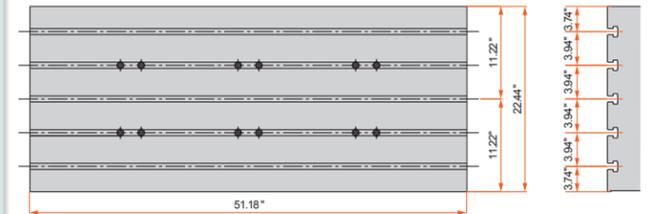
1.3 Sec: 570C

2.0 Sec: 575C

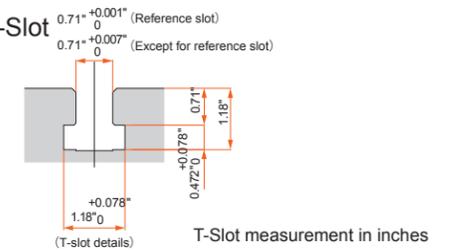
## Large Table/Machining Area



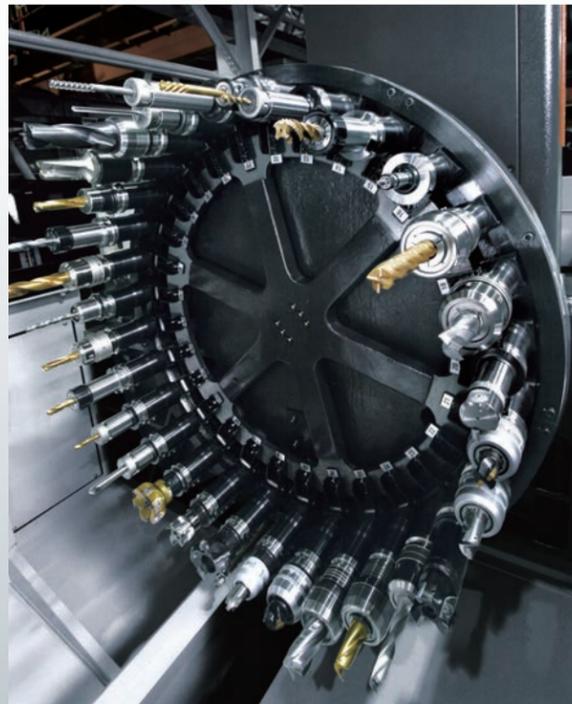
### VCN-570C



### T-Slot



## Tool Magazines



### CAT 40 tool magazines

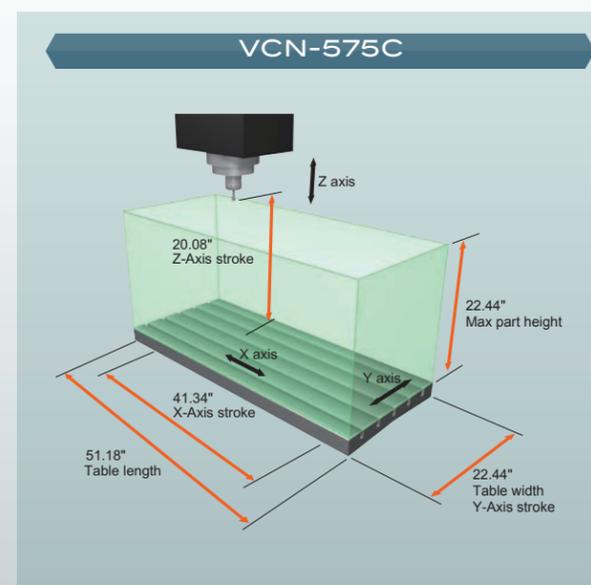
Tool setups can be minimized for a variety of workpieces with our high-capacity standard and optional tool magazines.

- VCN-570C – 30 tool standard, 48 and 60 tool options

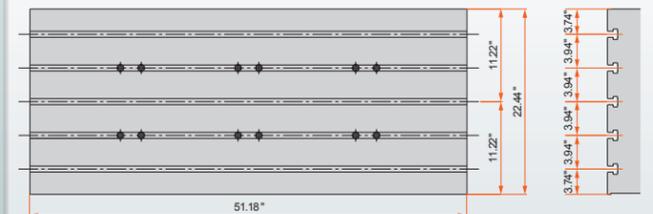
### CAT 50 tool magazines

- VCN-575C – 24 tool standard

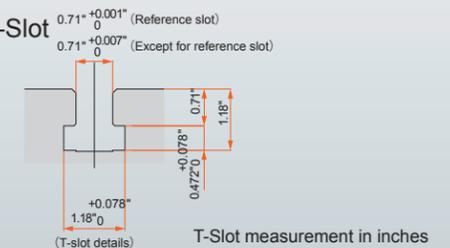
Specification	570C	575C
Spindle taper	CAT 40	CAT 50
Maximum tool length	13.78"	13.78"
Maximum tool diameter	3.15"	4.13"
Maximum tool diameter with adjacent pockets empty	4.92"	8.27"
Maximum tool weight	17.64 lbs	33.33 lbs



### VCN-575C



### T-Slot



# Ease of Use

An ergonomic design that emphasizes workability and maintainability

## Access, Loading/Unloading

A large front door opening greatly improves setup efficiency. Heavy objects can be loaded and unloaded easily with overhead crane access.



**2 Magazine shutter/ATC door shutter**  
The magazine cover/ATC door shutter aids in preventing foreign material from adhering to the tools in the magazine.

**3 Ease of maintenance and safety**  
**Centralized maintenance**  
The centralized placement of commonly checked items facilitate and encourage daily maintenance.



**4 Table/spindle accessibility**  
The 2" toe-kick on the coolant tank allows for ease of setup to the table without added strain on the operator.



**5 MAZATROL SMOOTHG**  
**An operation panel to enhance usability**  
The swivel mount of the CNC control panel allows for rotation toward the cutting chamber for easy setup and operation.



**6 Removable covers**  
Covers are placed on both the left and right sides of the machines for easy chip removal and maintenance.



VCN-570C

## Easy tool loading/unloading

The tool clamp/unclamp switch is conveniently placed next to the spindle for ease of tool maintenance.

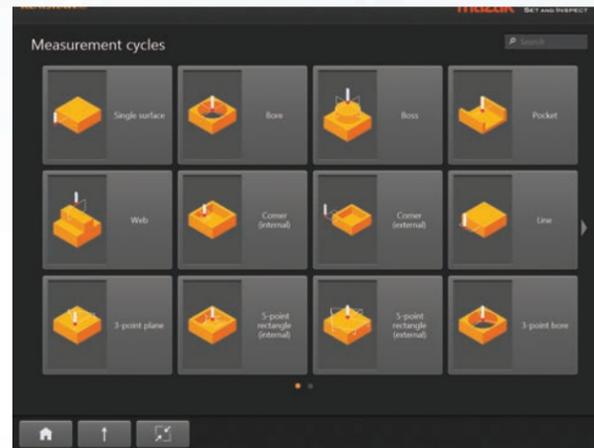


## Optional Accessories

### Tools & Measurement

#### SMOOTH Set & Inspect

This graphically intuitive interface allows operators of all skill levels to quickly and safely create probing routines. Users can easily update workpiece coordinates, measure features or compensate tools using the measurement results.



#### Tool ID (MAZATROL SmoothG)

Register and update tool data in the CNC by simply installing tools into the magazine, which prevents mistakes and significantly reduces setup time. Tool ID requires tool holders with ID pull studs and does not include a tool presetter.

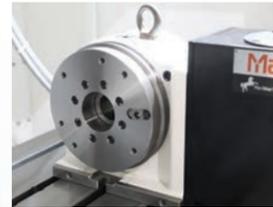


#### Automatic power ON/OFF + warm-up operation

The machine can be automatically powered on according to the timer settings. Once the machine is on, a warm-up program can be executed. This option can also power off the machine via M-code once a designated time is reached.

#### Fourth-axis NC rotary tables

The fourth-axis rotary table allows you to process numerous parts that traditionally took multiple setups. Cylindrical and polar applications are easily processed with an NC rotary table.



#### 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 length & diameter setter

The VCN-570C and VCN-575C can come equipped with either contact or non-contact-style tool setters. Both tool length and diameter can be measured while live measurements can be passed automatically to the tool data registered in the CNC. Both styles of tool setters can address tool breakage during automatic operation for enhanced process security.



### Automation

#### Mill-Assist

This intuitive automation solution is designed for easy machine integration and usability. The fixed-table design can be configured with either supports or grid plates depending on the 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 unguarded system uses a continuously monitoring area scanner for an open and safe operating environment.



VCN-570C with RoboJob Mill-Assist

# Optional Accessories

## Coolant/Chip Removal

### Flood coolant

Coolant flows from nozzles in the spindle face, helping to remove chips and reduce temperature and friction at the tool tip, which increases tool life. Flood coolant (71 psi) is standard. High-pressure coolant (213 psi) is offered as an option.



### Through-spindle coolant

Coolant passes through the spindle taper, allowing for a concentrated coolant discharge with through-coolant tooling. This option is critical for tooling such as through-coolant drills, ported taps and deep-hole applications. Standard discharge pressure is 71 psi (options: 213 and 1,000 psi).



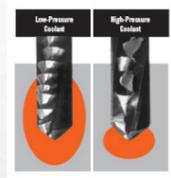
### Through-spindle air blast

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 improved lubricity. Mazak SUPERFLOW allows you to get more return out of your Mazak equipment and tooling investments.

- HEAT**  
 Temperature at the cutting edge can exceed 1,000 °F. Normal flood coolant may fail to reach the cutting zone, while high-pressure coolant ensures delivery to the cutting edge.
- CHIP CONTROL**  
 High-pressure coolant delivered to the cutting zone helps to reduce chip size creating efficient and safe chip evacuation.
- LUBRICITY**  
 With traditional systems, coolant often vaporizes before it can reach the cutting zone, minimizing its effectiveness in dispersing heat and providing lubrication. Mazak SUPERFLOW delivers coolant directly between the tool and workpiece, improving lubricity, tool life and surface finishes.



### Cover coolant

Cover coolant is used to disperse cutting chips and keep them from accumulating on the way covers and other components. Efficient removal of cutting chips extends the time between maintenance. This option comes standard with 71 psi or can be upgraded to 213 psi.

### Hand-held coolant nozzle

Used for cleaning swarf from inside the machine, workholders and workpieces, this system includes a tank-mounted pump, valving and logic to provide reliable and safe operation.

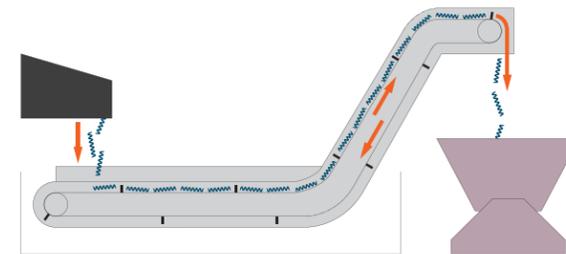
### Mist collector

Reclaiming the mist created in these machines is critical to creating a safe and productive machining environment. Mist collection systems are sized to each specific model to ensure proper mist evacuation.



### Chip conveyor (hinge type)

Ideal for curled chips with a length of 1.1"-5.9". These chip conveyors are made for discharging iron-based chips. Inverter-type chip conveyors have automatic load sensors that can reverse automatically to clear obstructions.

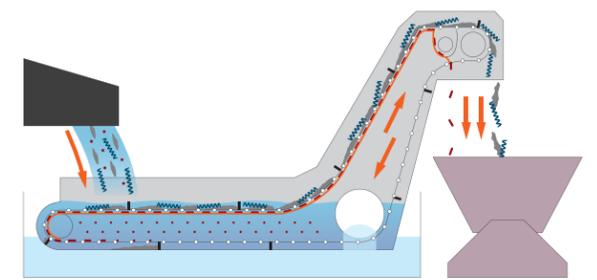


### Coolant temperature control

Reduces thermal displacement in coolant caused by machining conditions, ensuring the highest possible precision.

### Chip conveyor (fine-filtering type)

Recommended for materials that range from 0.01" to 5.9" in size. Multiple configurations are available based on material and required stages of filtration.



### Compatibility of chips and conveyors

When choosing a chip conveyor, it is important for the longevity of the machine to select the proper conveyor system. When machining mainly long-chipping materials, a hinge-belt chip conveyor is usually recommended. Fine-filtering conveyors combine the ability to remove longer chips, while some models use a secondary filtration system for removing smaller chips/swarf. The removal of smaller particles reduces the need for maintenance, avoids filter clogging and ultimately reduces premature machine component failure.

○ : Applicable   △ : Applicable, but not recommended   × : Not suitable

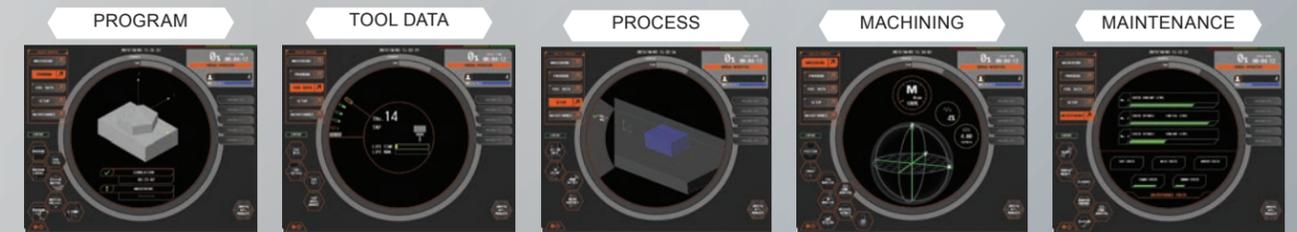
Chip shape		Sludge 0.01"~0.40"	Needles 0.20" or less	Size range 0.04"~0.20"	Size range 0.20"~1.18"	Size range 1.18"~2.75"	Longer than 2.75"	Chip formation
Hinge type	Steel	×	×	×	△	○	○	Long-chipping materials
	Iron, aluminum & cast iron	○	○	○	○	○	○	Short-chipping various shapes

# MAZATROL SmoothG Control



## 5 Informative Process Home Screens

The Process Home Screens were developed to place commonly used items required for machine operation and maintenance in one convenient location. They allow you to easily determine the progress of each process.



The MAZATROL SmoothG process home screens are pictured above.

## SMOOTH Machining Configurations

The SMOOTH Machining Configuration function adjusts machine characteristics related to shape accuracy via preset configuration or by creating your own customized settings based on your specific workpiece and material. This function gives you the power to adjust your machine on the fly to minimize cycle time, all while creating a smooth and accurate part.

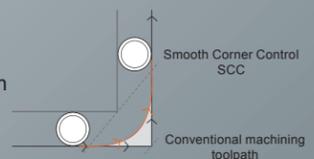


- Variable Acceleration Control

Cycle time is reduced by calculating the optimum acceleration/deceleration and maximizing the ability of each axis, both linear and rotary.

- Smooth Corner Control

Smooth Corner Control looks at "corners" within the toolpath. Based on settings, the function smoothly changes the path allowing for decreased cycle time all while achieving a smooth machined surface with minimal feed rate deceleration.



## MAZATROL SMOOTHG

CNC control developed with the perfect fusion of motion control, functionality and a new generation of touch panel human interface.

# Programming

## MAZATROL Interactive Programming

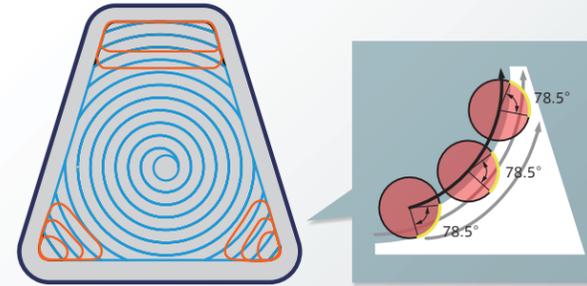
MAZATROL conversational programming makes it easy for inexperienced operators to quickly and easily develop machining programs. Operators answer questions about the part's dimensions in everyday language. The MAZATROL language aids the operator with displayed questions concerning the intended workpiece. These questions include type of material, number of parts and workpiece dimensions. Then according to the input data the MAZATROL control automatically calculates intersection coordinates and tool index positioning in addition to optimized cutting conditions and machining processes.



MAZATROL SmoothG

## Intelligent Pocket Milling

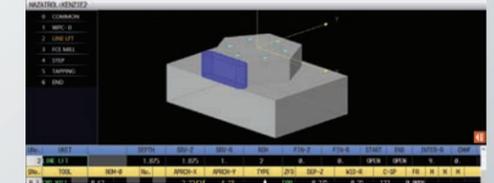
Intelligent Pocket Milling is a MAZATROL pocket machining cycle, which calculates a constant contact angle between the tool edge and the workpiece material. This Intelligent path controls spindle and axis fluctuations, extending tool life and improving machining efficiency especially in hard-to-machine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



## Line Machining

Previous MAZATROL programs for line machining required the programmer to create multiple units to allow for radial step-over to create the required shape. Our SmoothG control is able to accomplish this in one unit with easy program inputs.

Conventional program screen



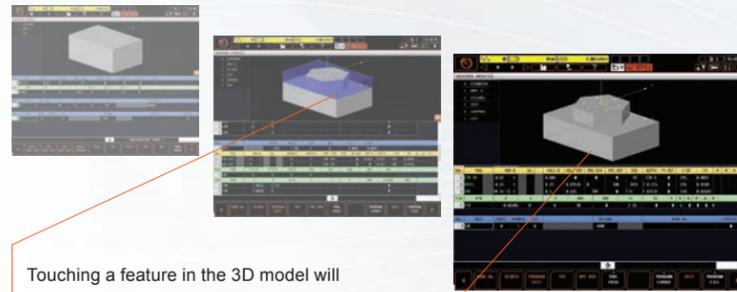
MAZATROL SmoothG program screen



## Quick MAZATROL

### Interactive programming reduces time

Quick MAZATROL allows the programmer/operator the option to see—in real-time—a 3D model of the finished workpiece as they create the program. This reduces errors that are usually not found until the actual machining has occurred. Once the program has been created, one can easily modify features on the workpiece by simply touching the desired feature and making the edits.



Touching a feature in the 3D model will instantaneously take you to the corresponding MAZATROL machining unit in the program. Once there, you can edit the machining unit or navigate freely.

Displays a real-time 3D model of the processed workpiece based on the program.

MAZATROL  
**SMOOTHG**

## VFC (Variable Feedrate Control)

Changing the feed rate and/or spindle speed overrides during machining and then pressing the VFC key, will result in the altered cutting conditions being learned. Once the altered unit is complete, the program reflects the new learned spindle speed and/or feed rates, so that future workpieces that are run by that program will not need to be adjusted.



## Efficient EIA/ISO Programming

### Quick EIA

MAZATROL  
**SMOOTHG**

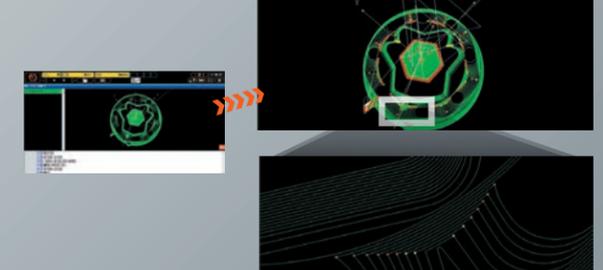
### View surf

MAZATROL  
**SMOOTHG**



Touch the toolpath on screen

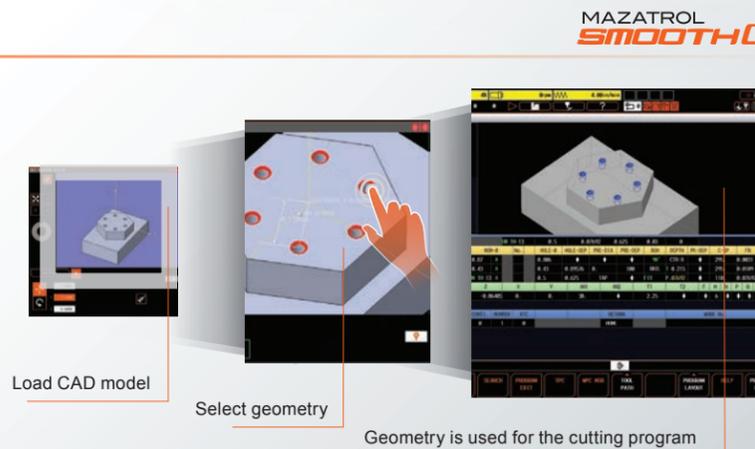
Automatically finds the corresponding block of G-code



## 3D assist

### [Program creation from a 3D CAD model]

Machining dimensions and coordinate data can be directly extracted from a 3D CAD model. The extracted data can be incorporated right into the MAZATROL program, speeding up production. Mistakes from manually inputting numerical data can be greatly reduced.



Load CAD model

Select geometry

Geometry is used for the cutting program

MAZATROL  
**SMOOTHG**

### [Visualization of EIA program]

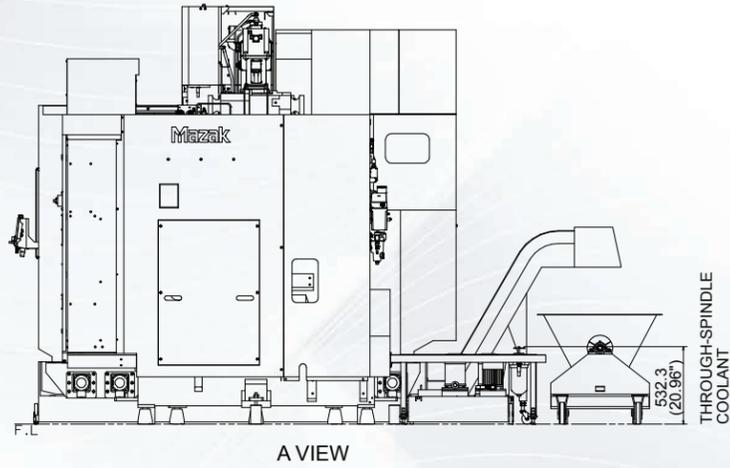
Once you touch the tool path on the screen, you instantly move to the corresponding EIA block of code allowing quick checks of the program contents. By visualizing the EIA program you can confirm and/or edit minute line segments of the program.

### [EIA program analysis]

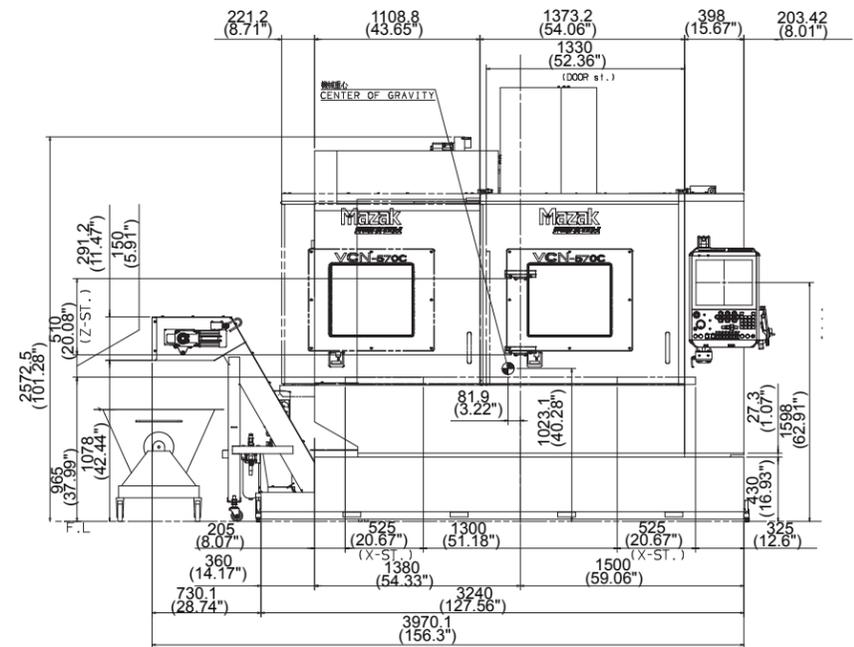
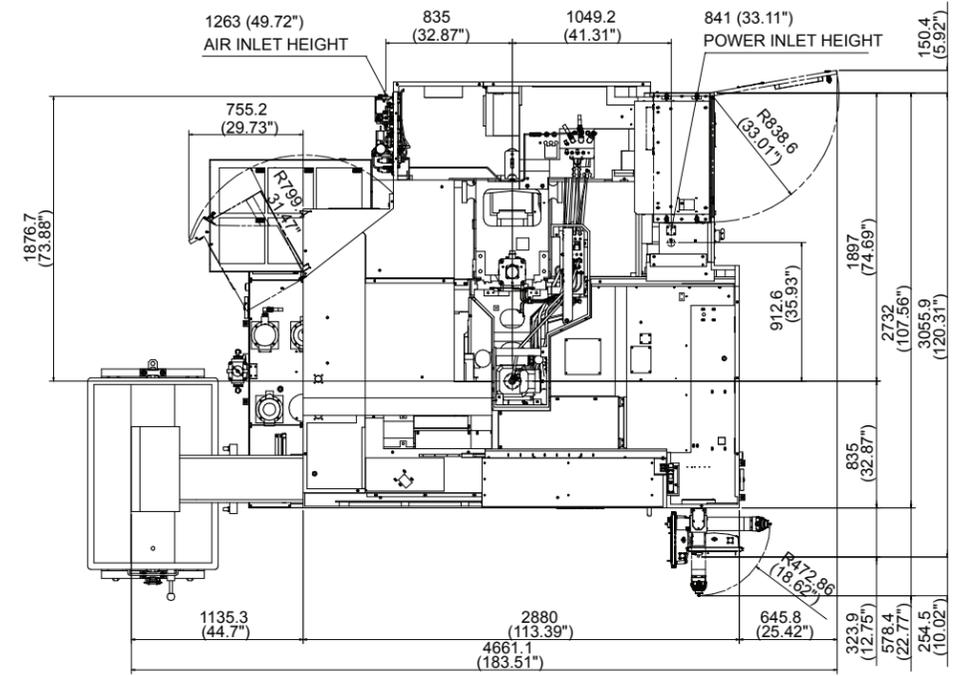
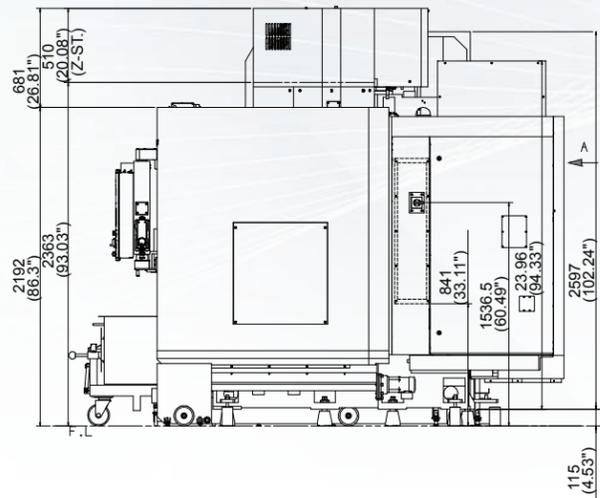
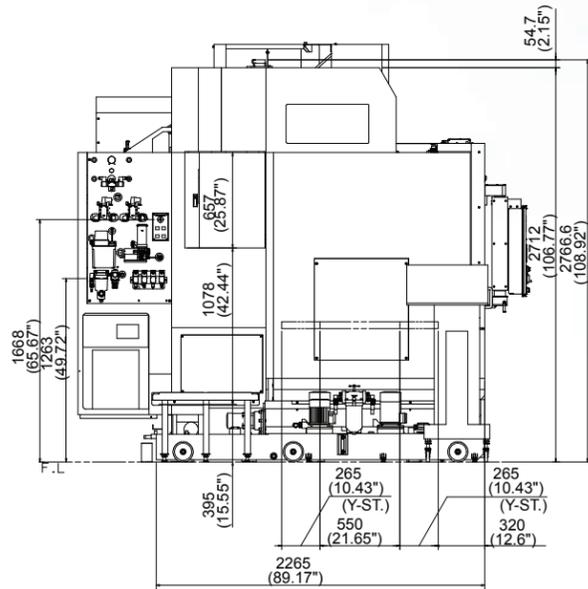
Areas of the toolpath that adversely affect the finished workpiece surface are analyzed and displayed. You can modify the program before machining, further reducing testing and lowering the time to production.

# External Dimensions – VCN-570C/VCN-575C

(FOR REFERENCE ONLY)



A VIEW



## Machine Specifications

		VCN-570C	VCN-575C	
Stroke	X-axis travel	41.34 (1,050)		
	Y-axis travel	22.44 (570)		
	Z-axis travel	20.08 (510)		
Table	Size	51.18 x 22.44 (1,300 x 570)		
	Spindle face to table top (min/max.)	5.91 (150) 25.98 (660)		
	Max. table weight	2645.6 (1200)		
	Floor to table top	37.99 (965)		
Spindles	Speed	rpm	15,000	6,000
	Continuous rating	hp (kw)	10 (7.5)	25 (19)
	30-min. rating		15 (11)	30 (22)
	Tool shank	—	CAT 40	CAT 50
	Lubrication	—	Air/Oil	
Feed rates	Rapid traverse rate	ipm (m/min)	1,654 (42)	
	Cutting feed rate (without SMC)		0.04-315 (1-8,000)	
ATC/Magazine	Magazine capacity	—	30	24
	Tool change time (ATC open/chip to chip)	sec	3.3	5.2
	Tool change time (ATC closed/chip to chip)		4.4	6.3
Machine dimensions	Height from floor	in (mm)	113.11 (2,873)	
	Width		122.1 (3,100)	
	Depth		120.3 (3,055)	
	Mass (without coolant tank)	lb (kg)	14,992 (6,800)	
Power	Integrated transformer	v	AC 200/220/230/240 ± 10% AC 380/400/415/440 ± 10% AC 460/480 ± 10%	
Air	Pressure	psi (MPA)	70-130 (0.5-0.9)	
	Capacity	ft <sup>3</sup> /min (L/min)	7.1 (200)	

## Machine Features, Standard and Optional

●: Standard ○: Optional -: N/A

		VCN-570C	VCN-575C
Spindles	6000 rpm [30HP/207ft·lbf (22kW/281N·m) CAT50]	-	●
	10000 rpm [40HP/223ft·lbf (30kW/302N·m) CAT50]	-	○
	15000 rpm [30HP/81ft·lbf (22kW/110N·m) CAT40]	●	-
	15000 rpm [30HP/151ft·lbf (22kW/205N·m) CAT40]	○	-
	20000 rpm [30HP/89ft·lbf (35kW/120N·m) CAT40]	○	-
	Big-Plus spindle connection	○	○
Magazine	Tool magazine operation panel	●	●
	Tool capacity (Standard/Optional)	30/48	24
	60-tool multi-pod drum style	○	-
NC rotary tables	Mazak MR-160RAM01 NC rotary table (160mm faceplate)	○	○
	Mazak MR-200RAM01 NC rotary table (200mm faceplate)	○	○
	Mazak MR-250RAM01 NC rotary table (250mm faceplate)	○	○
	Mazak MR-320RAM01 NC rotary table (320mm faceplate)	○	○
	Mazak RDT821 NC TRUNNION (positional 5 face)	○	○
Automation	Tool life monitoring	●	●
	Automatic front door	○	○
	Robot interface (advanced/ethernet/IP)	○	○
	Robot interface (basic)	○	○
	Mazak COBOT automation system	○	○
	Robojob automation system	○	○
	Auto power ON/OFF + warm-up operation	○	○
	Workpiece air blast	○	○
	Radio & optical tool setters and part probes	○	○
Non-contact tool setters	○	○	
Operator conveniences	Memory (Standard/Optional)	2MB/(8MB, 32MB)	
	Work light LED	●	●
	Additional work light LED	○	○
	Machining end buzzer	○	○
	Signal tower (Yellow)	○	○
	Signal tower (3 color)	○	○
	Manual pulse generator (wired/detachable)	●	●
	Digital documentation manual set (CD-ROM)	●	●
	Paper documentation set	○	○
	ATC/magazine loading door	●	●
	Digital interface [USB (2 ports), SD slot and LAN port (cabinet mount)]	●	●
	Coolant	Flood coolant (64psi)	●
Flood coolant powerful (100psi)		○	○
Through spindle with flood coolant (71psi)		○	○
Hi-pressure coolant (213psi)		○	○
Oil mist coolant		○	○
Cover coolant		○	○
SUPERFLOW 1000psi coolant		○	○
Handheld coolant nozzle		○	○
Mist collector FX-1200 (floor or machine mount)		○	○
Mag-core magnetic canister	○	○	
Chip management	Side exit hinge belt chip conveyor	○	○
	LNS Turbo micro hinge 250 chip conveyor	○	○
	Jorgensen Eco-filter chip conveyor	○	○
	Chip bucket (swing type)	○	○
	Chip bucket (fixed type)	○	○

# Mazak

**MAZAK CORPORATION  
NORTH AMERICAN MANUFACTURING  
HEADQUARTERS**

8025 Production Drive, Florence, KY 41042  
Tel: (859) 342-1700 Fax: (859) 342-1865

[www.MazakUSA.com](http://www.MazakUSA.com)

- Specifications are subject to change without notice.
- This product is subject to all applicable export control laws and regulations.
- The accuracy data and other data presented in this catalogue were obtained under specific conditions. They may not be duplicated under different conditions (room temperature, workpiece materials, tool material, cutting conditions, etc.)
- Unauthorized copying of this catalogue is prohibited.

