

Mazak

VCN SERIES

Mazak

VCN
SERIES

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VCN SERIES 20.03.0 A 99J289320E0



Designed for high productivity - with available spindle specifications and table sizes to meet a wide range of machining requirements

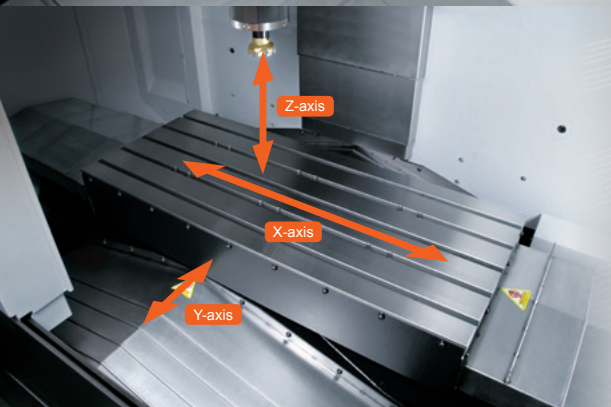
Reduced cutting time - thanks to high-speed rapid traverse rate, spindle acceleration and tool change time

Linear roller guides on the X-, Y-, and Z-axes provide stable machining over extended periods of operation

The THERMAL SHIELD ensures stable continuous machining accuracy

Designed for ease of operation and maintenance

Example workpieces



Material : Aluminum
Workpiece name : Medical component



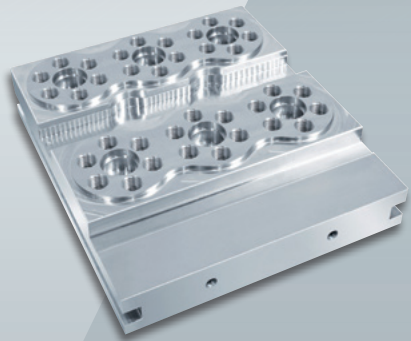
Material : Prehardened steel
Workpiece name : Automotive component die



Material : Stainless steel
Workpiece name : Metal processing machinery component



Material : Cast iron
Workpiece name : Construction machinery component



Material : S45C
Workpiece name : General industry machinery component



VCN-530C (MAZATROL SmoothC)
Shown with optional equipment

High Efficiency Vertical Machining Center

VCN SERIES

A wide range of VCN models are available to meet your production requirements



No.40 spindle
Vertical machining centers



VCN-430A



VCN-530C

●: Standard ○: Option

Machine model	Spindle		Table	Rapid traverse rate (X-, Y-, Z-axis)	Ball screw core cooling (X-, Y-, Z-axis)	Tool magazine		2-pallet changer
	12000 min ⁻¹ (rpm)	12000 min ⁻¹ (rpm) High torque spindle				30 tools	40 tools	
VCN-430A	●	○	900 mm × 430 mm	42 m/min	○	●	○	○
VCN-530C	●	○	1300 mm × 550 mm	42 m/min	○	●	○	○



High-speed, High-accuracy
Vertical machining centers



VCN-430A HS



VCN-530C HS

●: Standard ○: Option

Machine model	Spindle		Table	Rapid traverse rate (X-, Y-, Z-axis)	Ball screw core cooling (X-, Y-, Z-axis)	Tool magazine	
	18000 min ⁻¹ (rpm)	25000 min ⁻¹ (rpm)				30 tools	40 tools
VCN-430A HS	●	○	900 mm × 430 mm	52 m/min	●	●	○
VCN-530C HS	●	○	1300 mm × 550 mm	52 m/min	●	●	○



No.50 spindle
Vertical machining centers



VCN-535C



VCN-700D

●: Standard ○: Option –: Not available

Machine model	Spindle				Table	Rapid traverse rate (X-, Y-, Z-axis)	Ball screw core cooling (X-, Y-, Z-axis)	Tool magazine		2-pallet changer
	7000 min ⁻¹ (rpm)	8000 min ⁻¹ (rpm)	10000 min ⁻¹ (rpm)	BT No.40 16000 min ⁻¹ (rpm)				24 tools	48 tools	
VCN-535C	–	●	○	–	1300 mm × 550 mm	42 m/min	●	●	○	○
VCN-700D	○	●	○	○	1740 mm × 700 mm	30 m/min	●	●	○	○

High Accuracy • High rigidity

High speed, high-accuracy feed system and temperature control systems ensure high accuracy machining over extended periods of time.

Integral spindle / motor (430A HS, 530C HS, 535C, 700D)

The integral spindle / motor provides high accuracy machining and minimum vibration during spindle acceleration as well as minimum heat generation.

Ball screw core cooling

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

(Optionally available for VCN-430A and VCN-530C)

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

The rigid linear roller guides utilized on all linear axes provide improved positioning accuracy with lower friction.

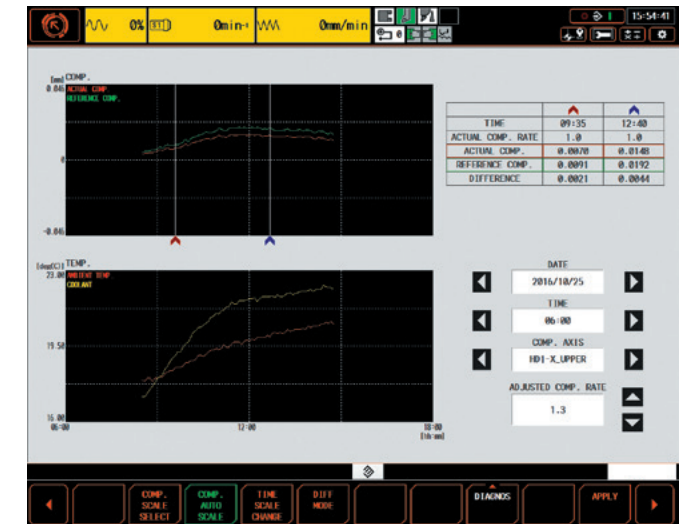
Machine design

Using CAD FEA, the main machine components such as the bed and column are designed to withstand the forces generated by heavy duty cutting and high speed operation.

Heat Displacement Control THERMAL SHIELD

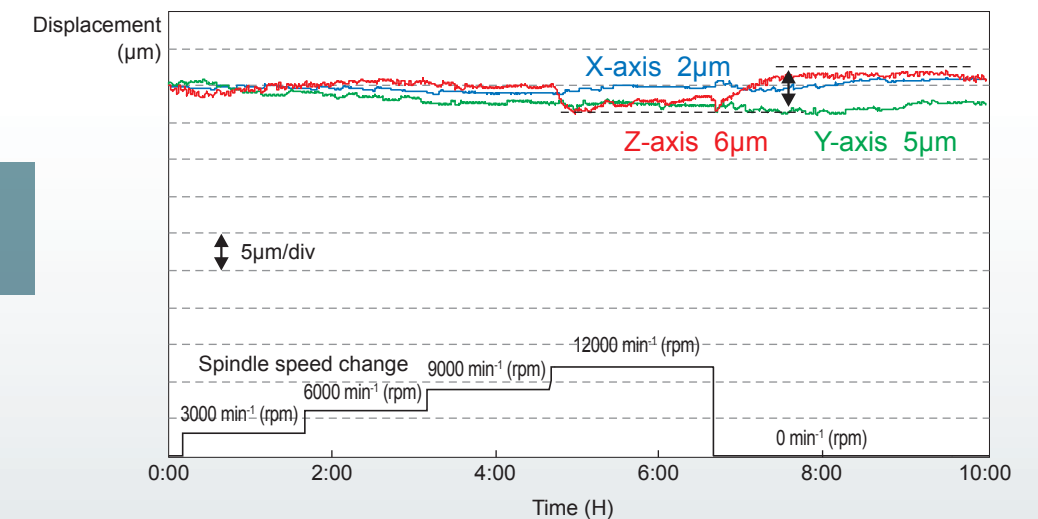
The THERMAL SHIELD is an automatic compensation system for room temperature changes, which realizes enhanced continuous machining accuracy. Mazak has performed extensive testing in a variety of environments in a temperature-controlled room and has used the results to develop a control system that automatically compensates for temperature changes in the machining area.

Temperature and compensation are displayed on screen. Operator can adjust compensation by looking at the data.

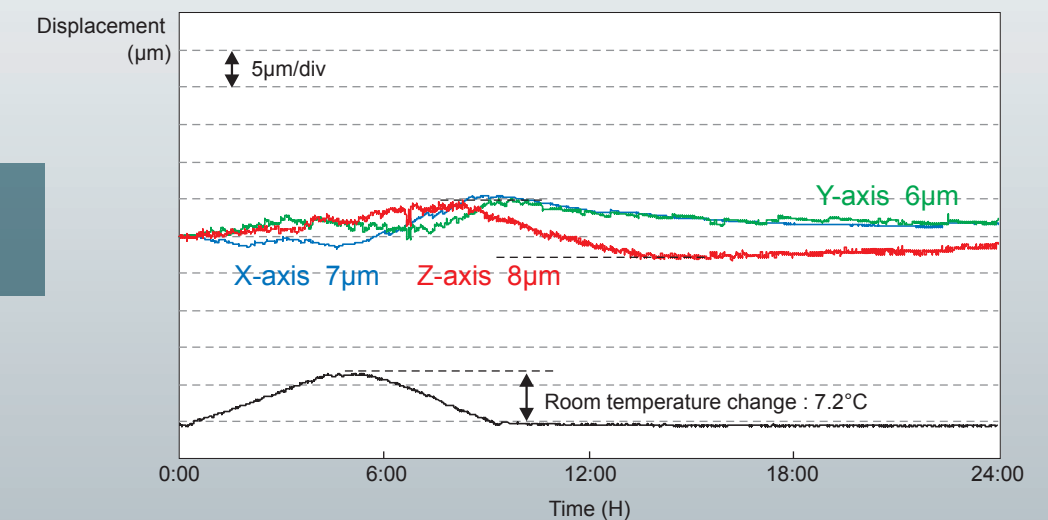


VCN-430A test results - heat displacement compensation by THERMAL SHIELD

Changing spindle speed in constant temperature area : 20°C

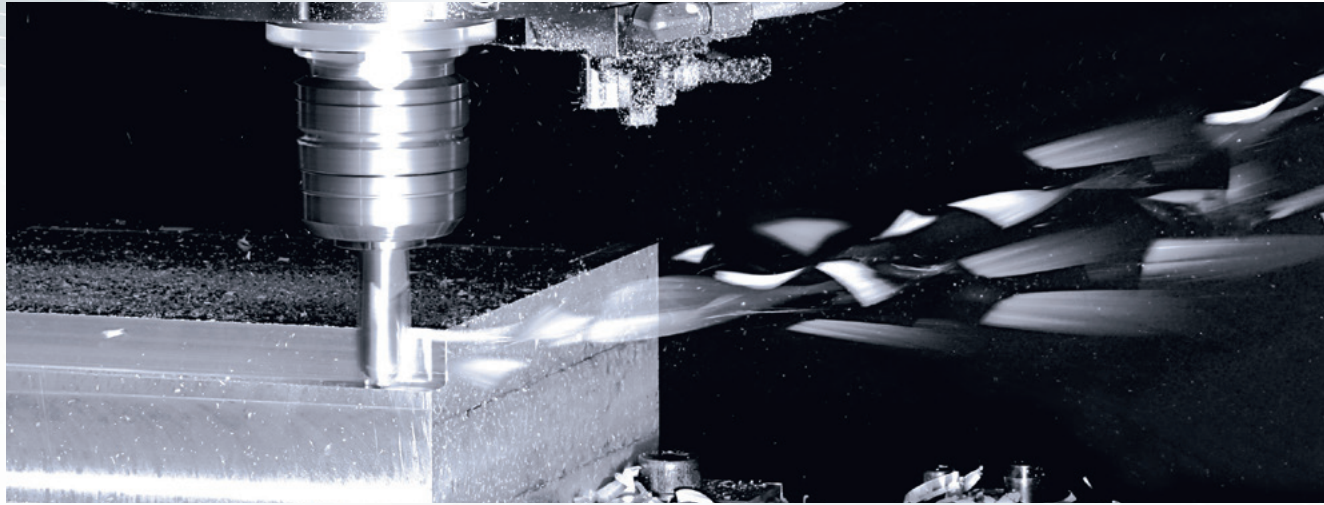


Room temperature change : 7.2°C



Higher Productivity

High-speed machining for higher productivity
No.40 / HSK-A63 Spindle



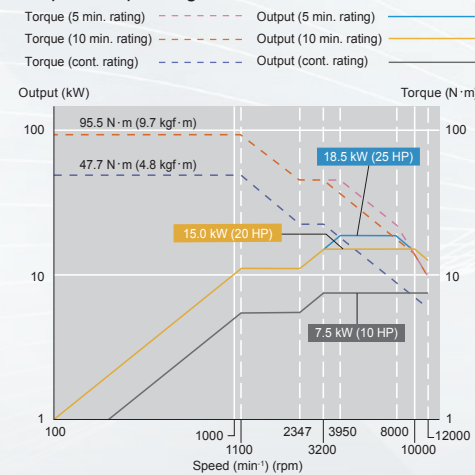
Spindle output : 18.5 kW / 7.5 kW (5 min.rating / cont. rating)

12000 min⁻¹ (rpm) spindle (#40)

[VCN-430A, VCN-530C standard spindle]

The 12000 min⁻¹ (rpm) spindle can perform heavy duty machining of steel as well as high speed machining of aluminum with small diameter tools. Powerful machining can be performed with minimum heat generation by the spindle with ceramic ball spindle bearings. To ensure machining accuracy, the high efficiency flexible coupling reduces vibration to extremely low levels. Thanks to grease lubrication of the spindle bearings, oil, which can damage plastic and other similar materials, does not drip from the spindle face.

Output / torque diagram



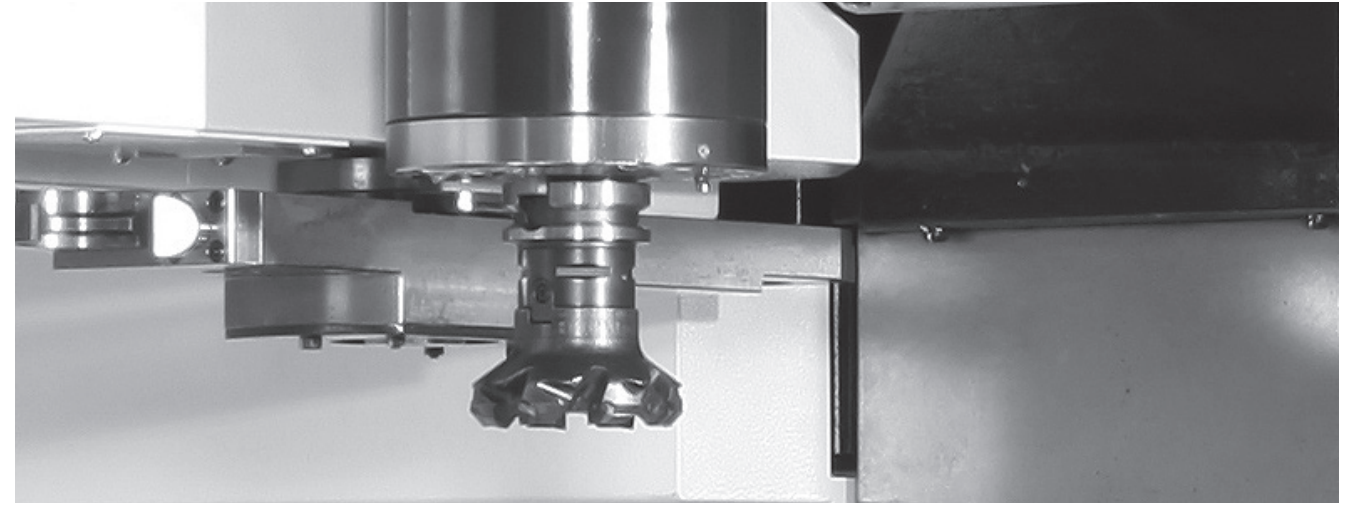
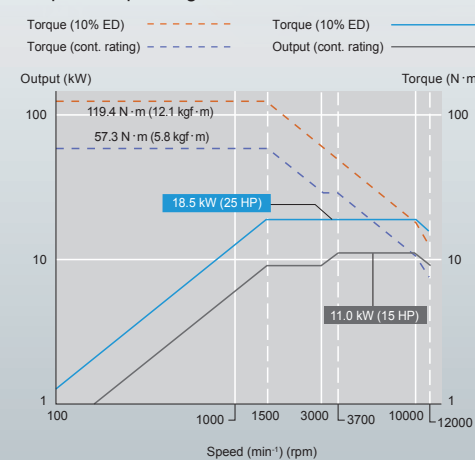
Spindle output : 18.5 kW / 11.0 kW (10% ED / cont. rating)

12000 min⁻¹ (rpm) spindle (#40)

[VCN-430A, VCN-530C high-torque spindle] **OPTION**

High torque spindle ensures high-accuracy machining and exceptional surface finishes with low heat generation and low vibration when performing powerful machining.

Output / torque diagram



Spindle output : 30.0 kW / 22.0 kW (50% ED / cont. rating)

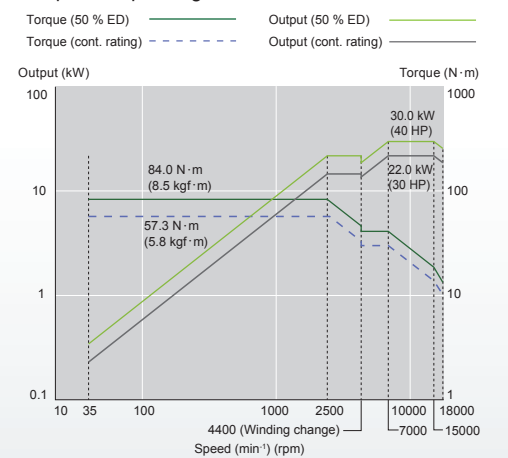
18000 min⁻¹ (rpm) spindle (#40)

[VCN-430A HS, VCN-530C HS standard spindle]

[VCN-700D] **OPTION**

Due to the integral spindle / motor design, vibration is minimized during high-speed operation. Designed for efficient machining of dies and molds and aluminium with minimized vibration.

Output / torque diagram



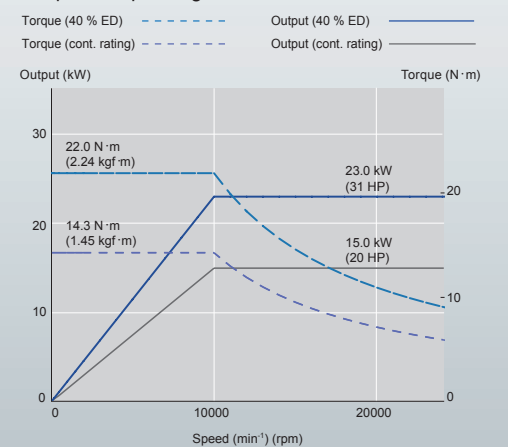
Spindle output : 23.0 kW / 15.0 kW (40% ED / cont. rating)

25000 min⁻¹ (rpm) HSK-A63 high-speed spindle

[VCN-430A HS, VCN-530C HS] **OPTION**

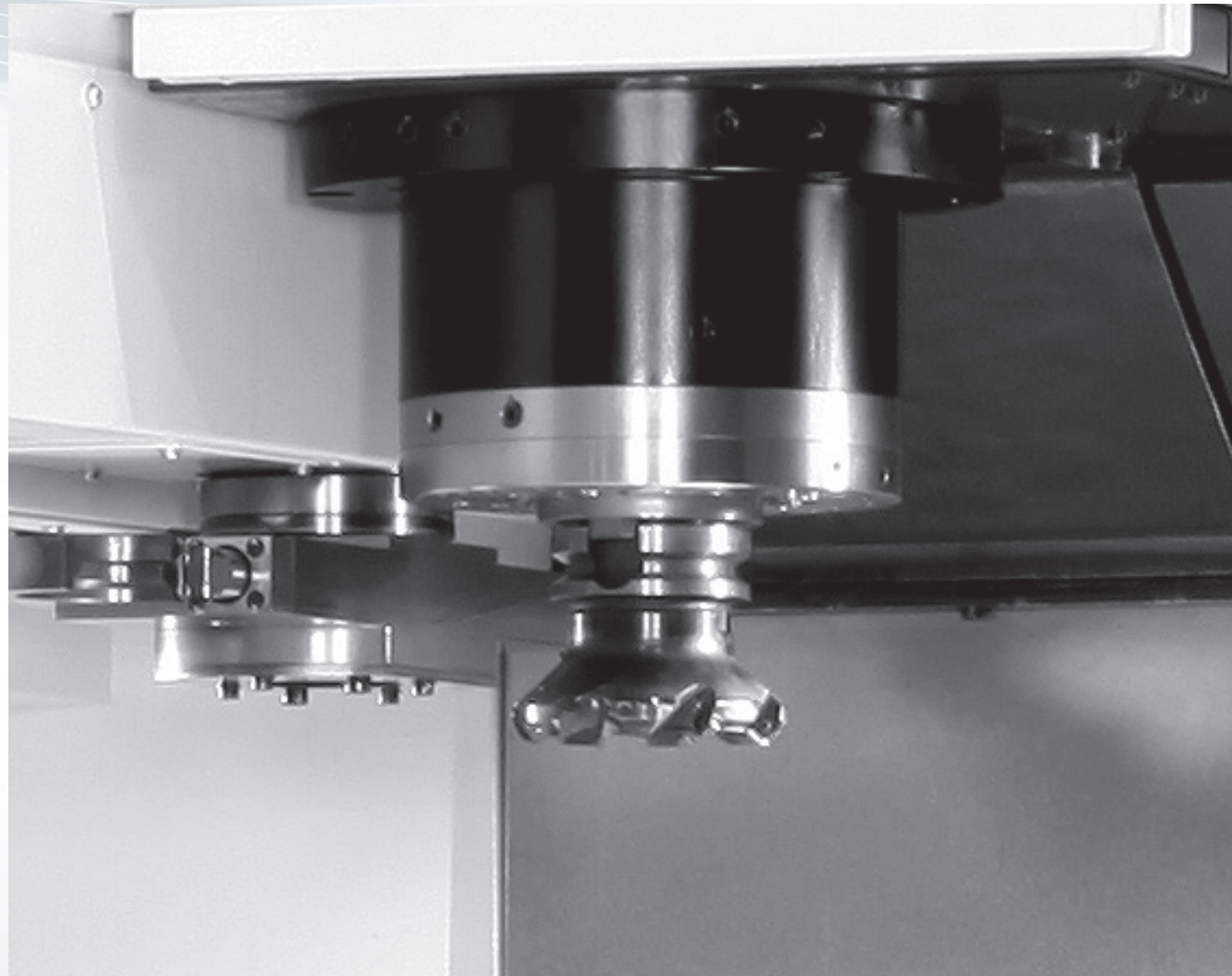
High-speed spindle utilizing two-face contact tool holders for high-rigidity machining.

Output / torque diagram



Higher Productivity

Powerful machining for higher productivity
No.50 spindle



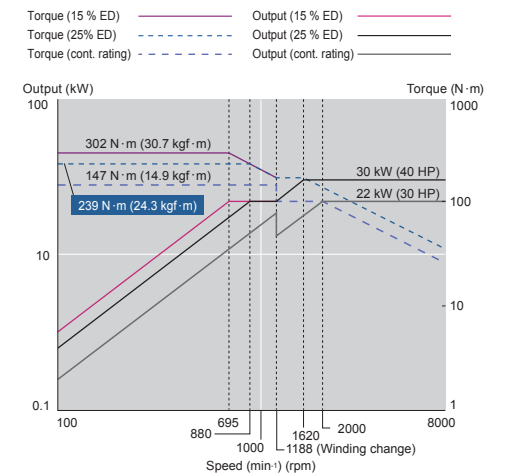
Torque : 302 N·m [15% ED, low winding]

No.50, 8000 min⁻¹ (rpm) spindle

[VCN-535D, VCN-700D standard spindle]

Wide speed range of 35 - 8000 min⁻¹ (rpm) to meet the machining requirements of a wide range of materials - from cast iron and steel to aluminium.

Output / torque diagram



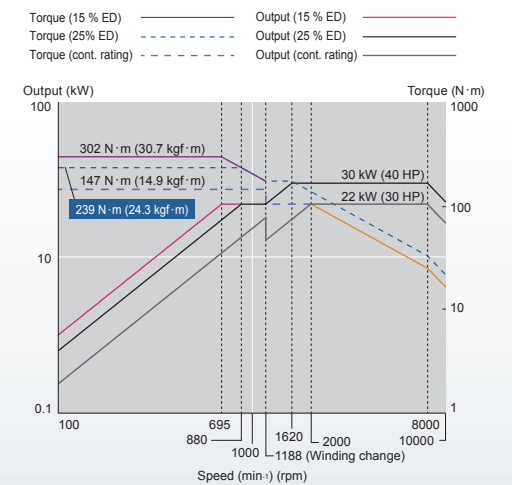
Torque : 302 N·m [15% ED, low winding]

No.50, 10000 min⁻¹ (rpm) spindle

[VCN-535C, VCN-700D spindle] **OPTION**

For high-speed as well as heavy-duty machining of a wide range of workpiece materials.

Output / torque diagram



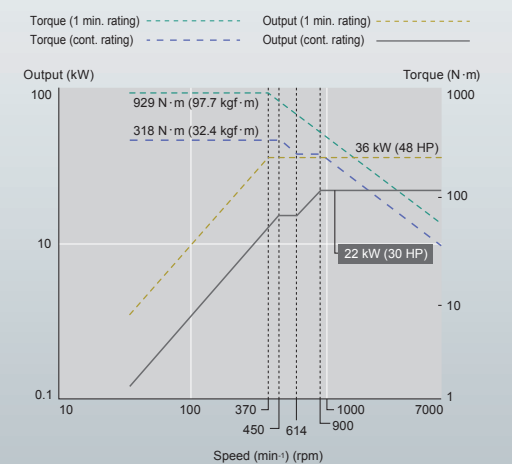
Torque : 929 N·m [1min. rating, low winding]

No.50, 7000 min⁻¹ (rpm) spindle

[VCN-700D high-torque spindle] **OPTION**

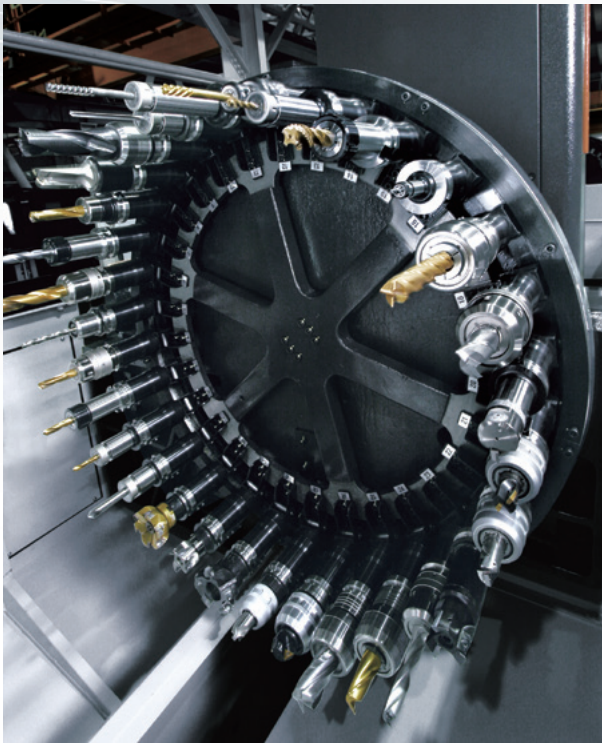
High torque spindle for heavy-duty machining of steel and cast iron.

Output / torque diagram



Higher Productivity

Tool magazine



#40 taper tool magazine

430A, 430A HS, 530C, 530C HS (700D 18000min⁻¹ spindle **OPTION**)

The standard tool magazine has a storage capacity of 30 tools – 40 tools are optionally available.

#50 taper tool magazine

535C, 700D

The standard tool magazine has a storage capacity of 24 tools - 48 tools are optionally available.

Model	430A, 530C, 700D* 430A HS, 530C HS	535C	700D
Tool shank	BT No.40	BT No.50	BT No.50
Max. tool length (from gauge line)	350 mm	350 mm	400 mm
Max. tool diameter (with adjacent tools)	80 mm	105 mm**	105 mm**
Max. tool diameter (with adjacent pockets empty)	125 mm	210 mm***	210 mm****
Max.tool weight	8 kg	20 kg	20 kg
Tool capacity	30, 40*	24, 48*	24, 48*

*Option
** 48 tool-magazine is 125 mm
*** 48 tool-magazine is 240 mm
**** 48 tool-magazine is 250mm

High speed automatic tool changer

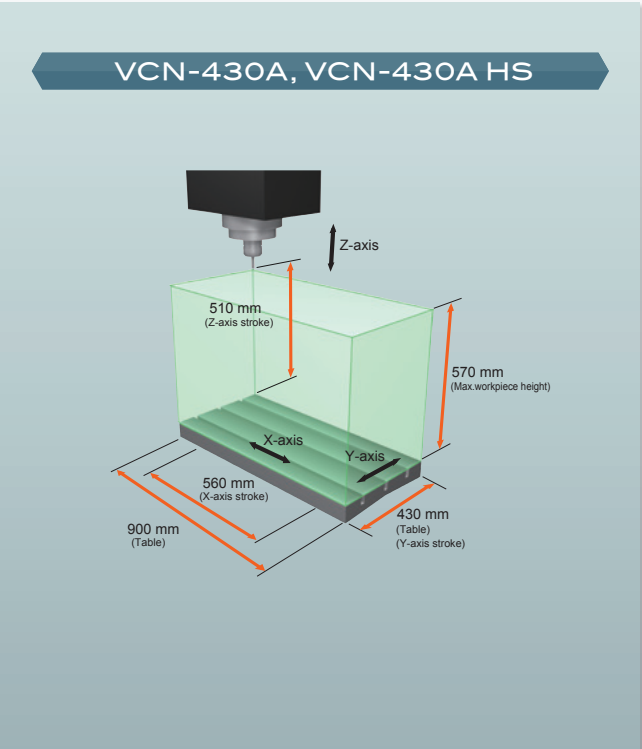
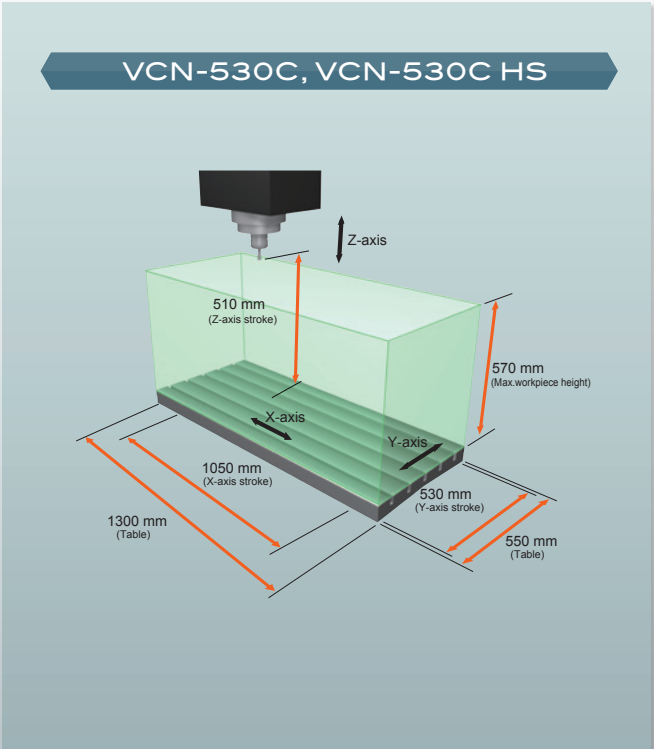
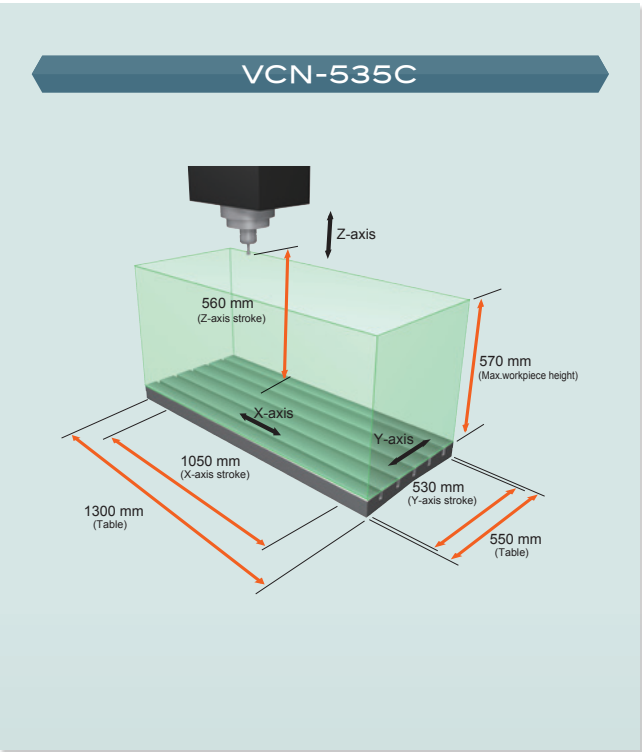
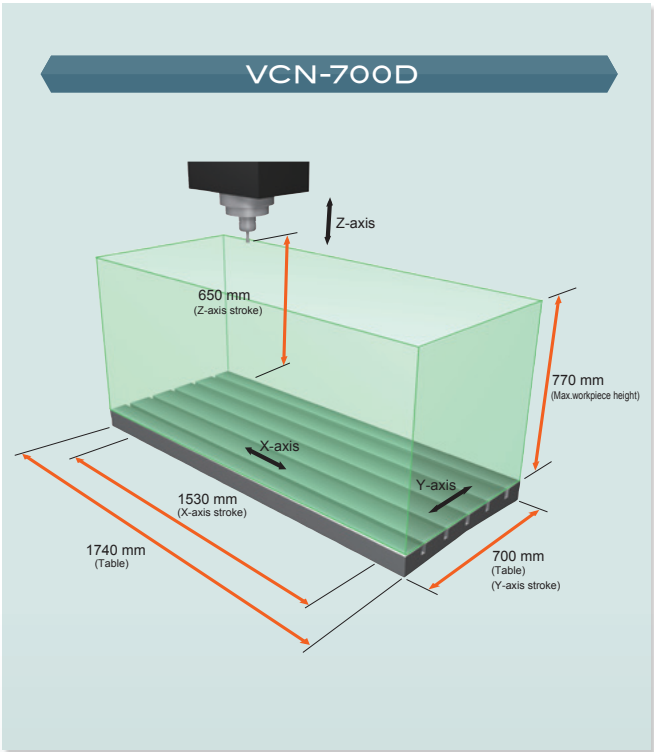


The cam driven double arm system is designed for reliability and high-speed tool changes.

Tool change time (Tool-to-tool)
1.3 sec. : 430A, 430A HS, 530C, 530C HS
2.0 sec. : 535C, 700D

Largest table and machining area for this class of vertical machining center

The large table and axes strokes allow the loading of large fixtures and workpieces.



Ergonomic

Ergonomic design for convenient operation

Large door opening

Thanks to its large door opening, workpieces can easily be loaded / unloaded by using an overhead crane.



VCN-430A, VCN-530C

Ease of tool loading / unloading

Tool clamp / unclamp switches are located on the headstock for convenient loading / unloading of tools to / from the spindle.



2 Magazine cover / ATC door

Magazine cover and ATC door shutter isolates tools in the magazine from machined chips.

3 Maintenance area

Items requiring frequent access for machine maintenance are arranged in one central location.



4 Accessibility to table / spindle

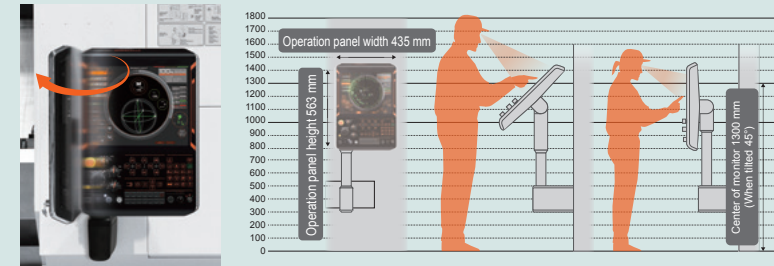
A 50 mm recess on the machine base for the operator's feet provides increased ease of access to the machine table.



5 MAZATROL SMOOTH-G

Adjustable CNC touch panel

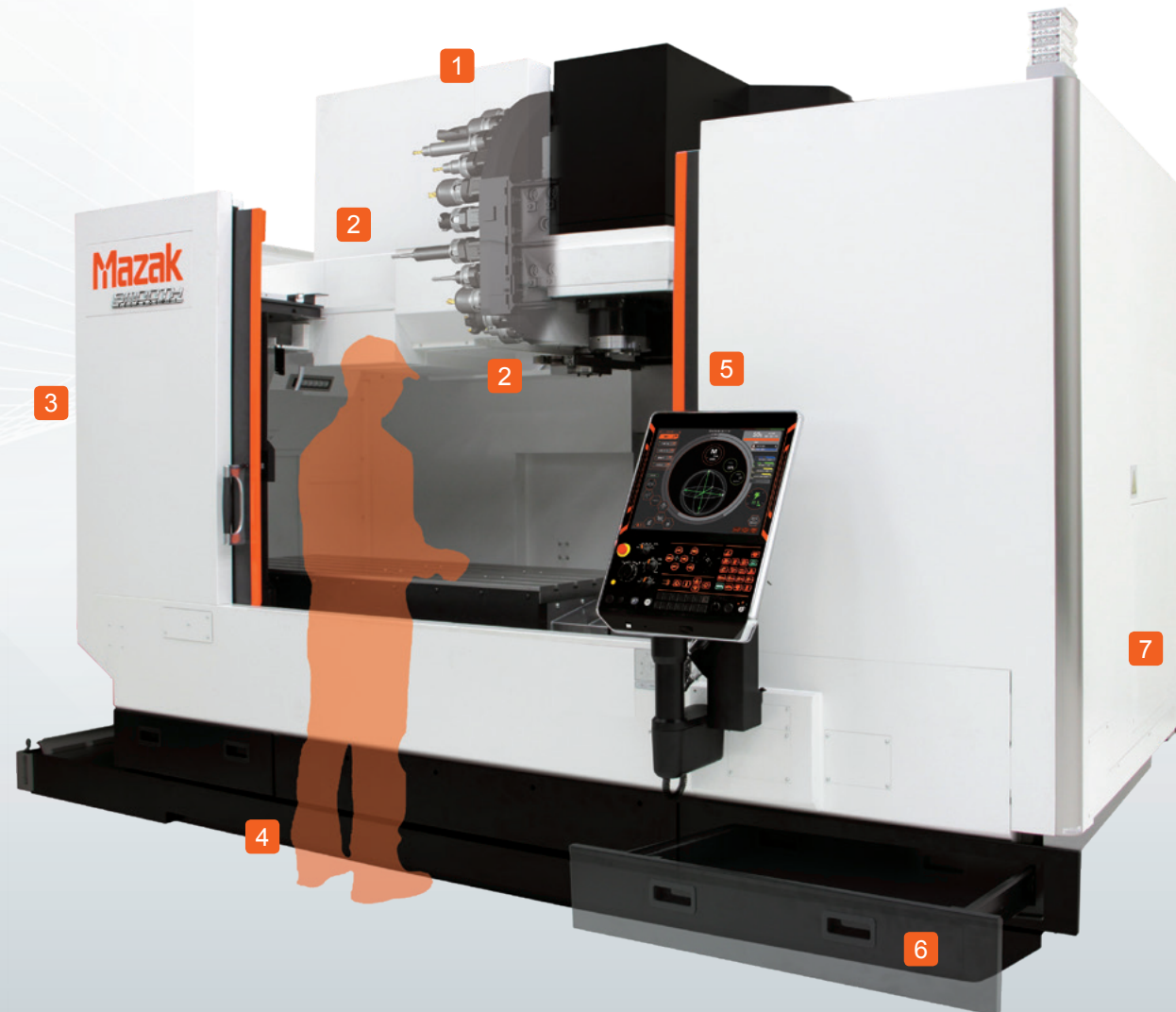
Operation touch panel can be tilted to the optimum position for any operator's height to ensure ease of operation.



MAZATROL SMOOTH-C

Rotating operation panel

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



VCN-535C, VCN-700D

Excellent accessibility to tool magazine

Stepped platform with handrail for convenient access to tool magazine is standard equipment.



6 Chip pans easily removed for convenient cleaning

(VCN-700D shown)

7 Cover on both sides

Cover on both sides allows ease of chip disposal and maintenance.

MAZATROL CNC System



**MAZATROL
SMOOTHG**

Unsurpassed ease of operation
with touch screen

**MAZATROL
SMOOTHC**

Simplified display and key input
operation

Process home screens

Five different home process screens — each home screen displays the appropriate data in an easy-to-understand manner. Icons can be touched in each process display for additional screen displays.



Shown with MAZATROL SmoothG process home screens

Convenient Parameter Setting and Fine Tuning Function

SMOOTH MACHINING CONFIGURATION

Machining features including cycle time, finished surface, and machining shape can be adjusted by slider switches on the display according to material requirements and machining methods. This is especially effective for complex workpiece contours defined in small program increments. Once the desired results are obtained, the settings can be stored in memory so that they can be easily used again in the future.



Variable Acceleration Control Function

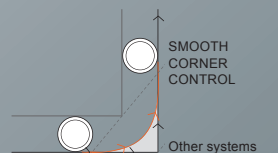
● VARIABLE ACCELERATION CONTROL

Variable acceleration control is a new function which permits the faster acceleration capability of linear axes to be used whenever possible. The slower acceleration of the rotary axes is not used for all program commands, resulting in faster machining cycle times.

Seamless Corner Control Function

● SMOOTH CORNER CONTROL

Improved finished surfaces and reduced cycle times by optimized acceleration / deceleration when machining corners



Ease of Programming

MAZATROL conversational programming

MAZATROL interactive programming uses conversational language and it is easy to make / edit programs by inputting data on workpiece drawings in response to questions displayed on the operation screen. Even a beginner operator can quickly make programs with automatically determined cutting conditions and automatic creation of tool paths.



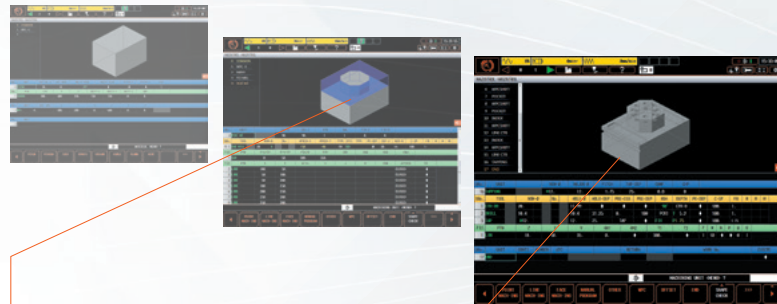
MAZATROL SmoothC shown

QUICK MAZATROL

MAZATROL
SMOOTHG

Reduced time for conversational programming

After defining a machining unit in a MAZATROL program, the 3D shape is immediately displayed to easily and quickly check for any programming error.



Quickly move to the corresponding section in the MAZATROL program by touching a feature in the 3D model

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

3D ASSIST

MAZATROL
SMOOTHG

Making a program directly from 3D CAD data

Workpiece and coordinates data can be imported from 3D CAD data to a MAZATROL program. No coordinate value inputs are required. Can reduce input errors and time for program checking.



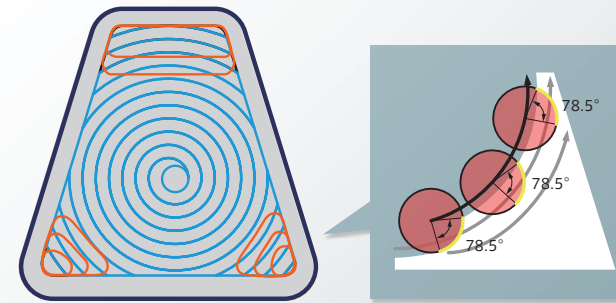
CAD model importing

Shape selection

Automatically input to MAZATROL program

Pocket milling

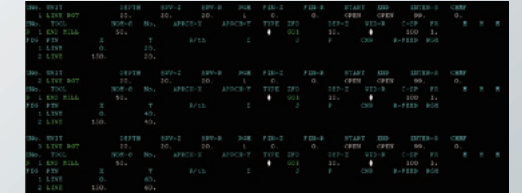
Pocket Milling is a new pocketing cycle for MAZATROL. This function maintains a constant angle of engagement between the cutter and material to create a high efficiency tool path, reduce chip load variation, extend tool life and allow tools to be used to their full potential.



Step over line machining

Previously, when programming line machining in a MAZATROL program, if the radial depth of cut was too small, multiple machining passes would have to be programmed. Programming of multiple machining passes is eliminated by this function to reduce the time required for programming.

Previous programming display



MAZATROL SmoothG programming display



VFC function

By pushing the VFC key, the programmed cutting conditions can be overridden and changed in the machining program. The new cutting conditions data can be used when a new program is made.



Reduced checking time of EIA/ISO programs

QUICK EIA

MAZATROL
SMOOTHG



Selecting tool path by touching the screen

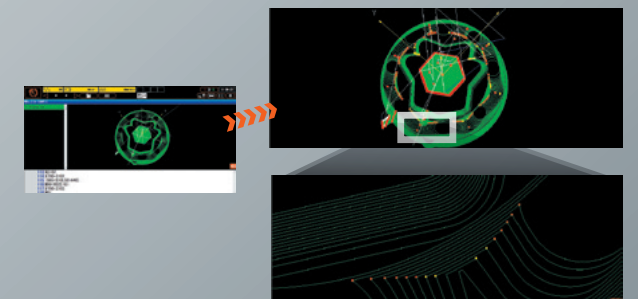
Moving to the corresponding EIA program line

EIA program Visualization

By touching the tool path on the screen, it is possible to move to the corresponding EIA program, and check the program details.

VIEW SURF

MAZATROL
SMOOTHG



Analyzing EIA programs

By analyzing tool path, any predictable failure on the finished surface can be visualized. Program modification can be done before machining to minimize the time for test cutting.

Optional Equipment

Automation

SMOOTH SET AND INSPECT (only available for MAZATROL SmoothG)

Inspection programs can be easily made. Work coordinates and tool compensation can automatically be updated using measurement results.



Tool ID (only available for MAZATROL SmoothG)

Tool ID allows automatic input and update of tool data into the CNC for machines in a network. It eliminates mistakes when loading tools into the magazine and tool data input, reducing setup time. (requires retention bolt with tool ID and tool presetter)

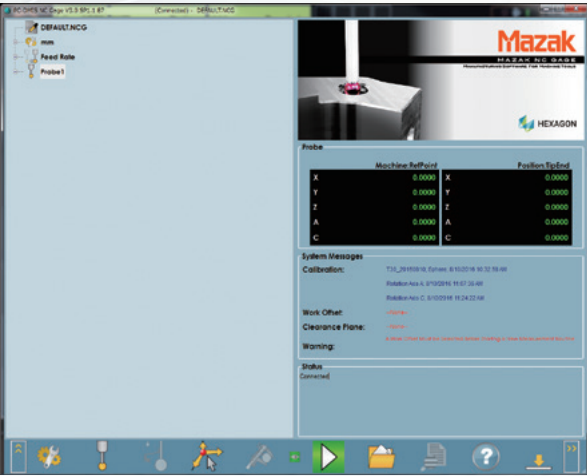


Mazak monitoring system B (OMP60)

Coordinate values are automatically shifted according to the results of probing a workpiece by a touch sensor mounted in the machine spindle.

MAZAK NC GAGE (only available for MAZATROL SmoothG)

By manual operation, the touch probe can be moved to a measurement point and after the point is registered, a measurement program can be made. In addition to automatic update of work coordinates and tool compensation using measurement results, geometric tolerances of workpiece features can also be measured.



Calendar automatic power ON / OFF + warm-up operation

The setting of a self-timer is used to automatically turn on and turn off the machine.

Automatic tool length measurement & tool breakage detection

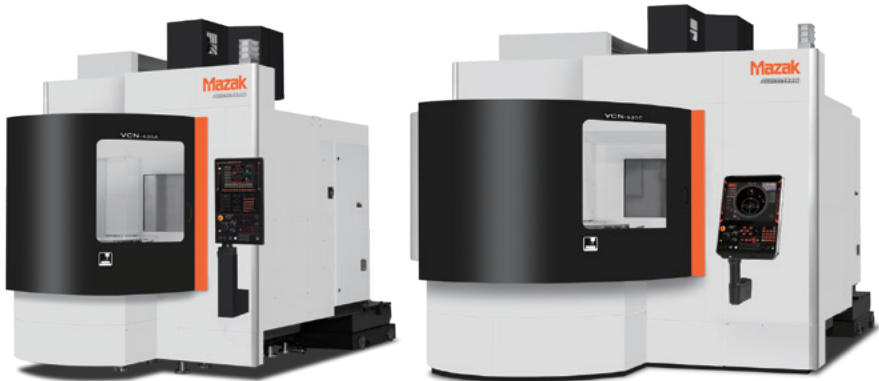
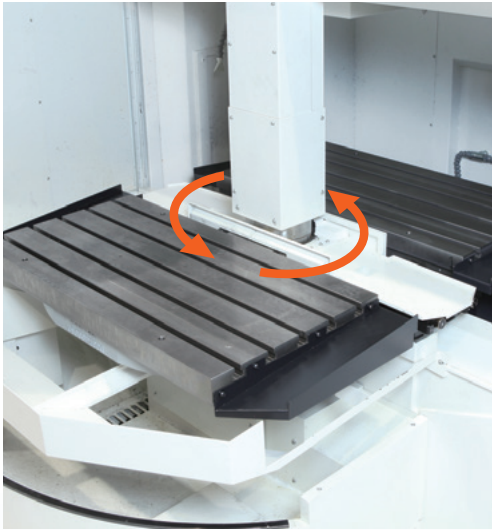
Tool length is automatically measured and registered in CNC system. Tool breakage can be detected during automatic operation.



2-pallet changer

VCN-430A, VCN-530C

The next workpiece can be loaded during the machining of the current workpiece for increased productivity.



VCN-430A 2-pallet changer
(MAZATROL SmoothC)

VCN-530C 2-pallet changer
(MAZATROL SmoothG)

	VCN-430A 2-pallet changer	VCN-530C 2-pallet changer
Table size	600 mm × 430 mm	1050 mm × 550 mm
Max. load capacity	500 kg	800 kg
Table surface configuration	18 mm T slot × 3 125 mm pitch	18 mm T slot × 5 100 mm pitch
Pallet change time	9.0 sec.	12.0 sec.

VCN-535C, VCN-700D

Max. load capacity and workpiece size for 2-pallet changer is the same as that of standard single table.



VCN-535C 2-pallet changer
(MAZATROL SmoothG)

	VCN-535C 2-pallet changer	VCN-700D 2-pallet changer
Table size	1300 mm × 550 mm	1740 mm × 700 mm
Max. load capacity	1200 kg	2000 kg
Table surface configuration	18 mm T slot × 5 100 mm pitch	18 mm T slot × 5 125 mm pitch
Pallet change time	17.0 sec.	22.0 sec.

Optional Equipment

Coolant / chip disposal

Coolant system STANDARD

Coolant is discharged from nozzles located at the bottom of the spindle headstock.



Flood coolant 0.45 MPa (4.5 kgf/cm²), 30 L/min

High pressure coolant is extremely effective for tool cooling and extending tool life.

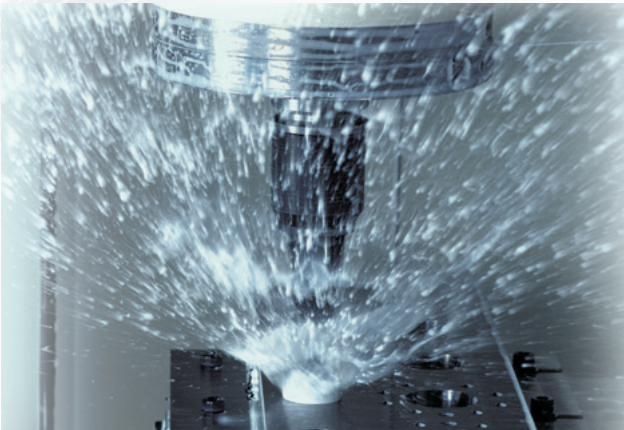
Coolant through spindle system

Coolant is fed to the tool tip by passages through the tool holder and tool. 3 pump pressure specifications are available : 0.5 MPa (5 kgf/cm²), 1.5 MPa (15 kgf/cm²), 7.0 MPa (70 kgf/cm²) . Very effective for drilling such as indexable insert drill operation.



SUPERFLOW coolant system

- Max. 7.0 MPa (70 kgf/cm²) coolant pressure
- Adjustable coolant pressure
- High performance cyclone filter with minimum maintenance requirements to reduce running cost.



Niagara coolant system

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

Cover coolant

Additional coolant nozzles used to flush machined chips from the sides of the coolant cover.

Magnetic separator

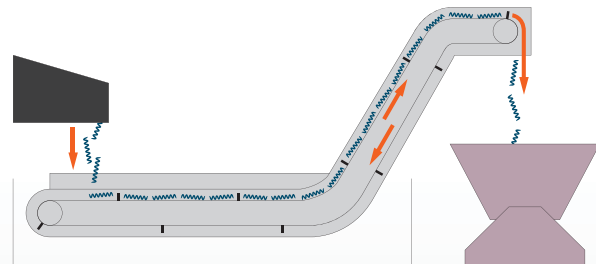
Magnetic separator which is inside the coolant tank separates ferrous chips from the coolant.

Mist collector

Coolant mist generated by machining is removed from the machining area in order to maintain a safe and clean working environment.

Chip conveyor (hinge)

Chips are removed by hinge-plate belt and discharged from the side of machine. Very suitable for curly shaped steel chips from 30 mm ~ 150 mm long.

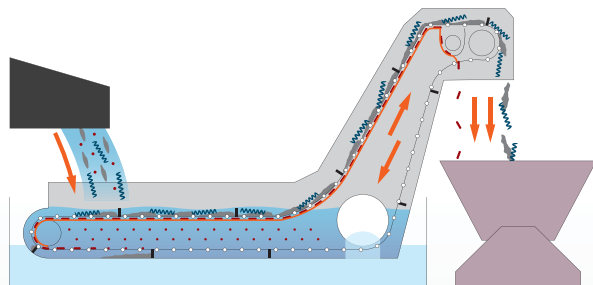


Coolant temperature control

Maintains the coolant temperature to be same as the room temperature to prevent thermal displacement which can affect machining accuracy.

Chip conveyor (ConSep 2000 II WS)

Chip conveyor with internal coolant filtration that is effective for removing small chips as well as long, curly chips.



Chip conveyor

The type of chip conveyor to be selected is based on the kind of machined chips to be produced.

		Chip shape						Features
		Sludge-like chips (0.25 mm ~ 1 mm)	Needle-like chips (~0.5 mm)	1~5mm	5~30mm (Max. 30mm)	30~70mm (Max. 70mm)	70mm -	
Hinge	For ferrous machining	×	×	×	×	○	○	Applicable for long, steel chips
	For ferrous / aluminium / cast-iron machining	○	○	○	○	○	○	Applicable regardless of chip length

Standard and Optional Equipment

● : Standard ○ : Option - : Not available									
		VCN-430A		VCN-430A HS		VCN-530C		VCN-530C HS	
		MAZATROL SmoothG	MAZATROL SmoothC	MAZATROL SmoothG	MAZATROL SmoothC	MAZATROL SmoothG	MAZATROL SmoothC	MAZATROL SmoothG	MAZATROL SmoothC
Machine	12000 min ⁻¹ (rpm) spindle (No. 40)	●	●	-	-	●	●	-	-
	12000 min ⁻¹ (rpm) High torque spindle (No. 40)	○	○	-	-	○	○	-	-
	18000 min ⁻¹ (rpm) spindle (No. 40)	-	-	●	●	-	-	●	●
	25000 min ⁻¹ (rpm) spindle (HSK-A63)	-	-	○	○	-	-	○	○
	30 tool magazine	●	●	●	●	●	●	●	●
	40 tool magazine	○	○	○	○	○	○	○	○
	200 mm raised column (not available for 2-pallet changer)	○	○	○	○	○	○	○	○
	Spindle HSK-A63	○	○	○	○	○	○	○	○
	Spindle BIG-Plus	○	○	○	○	○	○	○	○
	Multiple spindle orient (M code / 1 degree)	○	○	○	○	○	○	○	○
	Oil and air lubrication on linear axis (linear guide, ball screw)	○	○	○	○	○	○	○	○
	Remote manual pulse generator	○	○	○	○	●	●	●	●
	Status light (3 colors)	○	○	○	○	○	○	○	○
	Work light (LED)	●	●	●	●	●	●	●	●
Automation	2-pallet changer	○	○	-	-	○	○	-	-
	Automatic power ON / OFF + warm-up operation	●	○	●	○	●	○	●	○
	Automatic tool length measurement & tool breakage detection	○	○	○	○	○	○	○	○
	Magazine operation panel for tool ID (touch panel)	○	-	○	-	○	-	○	-
	Mazak monitoring system B (OMP60)	○	○	○	○	○	○	○	○
	Preparation for Mazak monitoring system B (OMP60)	○	○	○	○	○	○	○	○
	Preparation for hydraulic fixtures	○	○	○	○	○	○	○	○
	Preparation for pneumatic fixtures	○	○	○	○	○	○	○	○
	Automatic front door with 2 hand switch	○	○	○	○	○	○	○	○
	Operation end buzzer	○	○	○	○	○	○	○	○
Safety equipment	Operator door interlock	●	●	●	●	●	●	●	●
Coolant / chip disposal	Fully enclosed top cover	●	●	●	●	●	●	●	●
	Splash guard	●	●	●	●	●	●	●	●
	Coolant system	●	●	●	●	●	●	●	●
	Flood coolant 0.45 MPa (4.5 kgf/cm ²) 30 L / min	○	○	○	○	○	○	○	○
	Air through spindle	○	○	○	○	○	○	○	○
	Coolant through spindle 0.5 MPa (5 kgf/cm ²)	○	○	○	○	○	○	○	○
	High pressure coolant through spindle 1.5 MPa (15 kgf/cm ²)	○	○	○	○	○	○	○	○
	SUPERFLOW coolant system 7.0 MPa (70 kgf/cm ²)	○	○	○	○	○	○	○	○
	Cover coolant	○	○	○	○	○	○	○	○
	Niagara coolant	○	○	○	○	○	○	○	○
	Coolant temperature control	○	○	○	○	○	○	○	○
	Hand held coolant nozzle	○	○	○	○	○	○	○	○
	Workpiece air blast	○	○	○	○	○	○	○	○
	Oil skimmer	○	○	○	○	○	○	○	○
	Oil mist coolant	○	○	○	○	○	○	○	○
	Mist collector	○	○	○	○	○	○	○	○
	Chip conveyor (side discharge / hinge)	○	○	○	○	○	○	○	○
	Chip conveyor (side discharge / ConSep)	○	○	○	○	○	○	○	○
	Chip bucket (swing type)	○	○	○	○	○	○	○	○
	Chip bucket (fixed type)	○	○	○	○	○	○	○	○
High accuracy	Absolute position detection	●	●	●	●	●	●	●	●
	Scale feedback system	○	○	○	○	○	○	○	○
	Ball screw core cooling (X-, Y-, Z-axes)	○	○	●	●	○	○	●	●
Table	NC rotary table	○	○	○	○	○	○	○	○
	Scroll chuck	○	○	○	○	○	○	○	○
	Sub-table	○	○	○	○	○	○	○	○

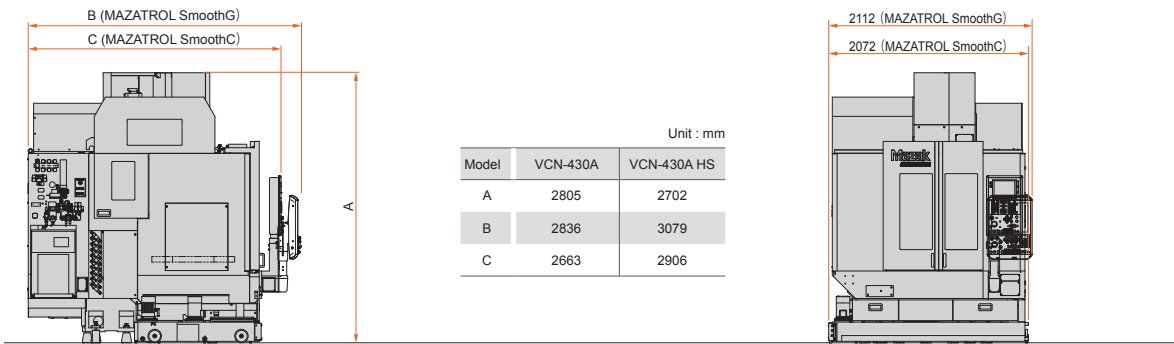
Standard and Optional Equipment

● : Standard ○ : Option - : Not available				
		VCN-535C		VCN-700D
		MAZATROL SmoothG	MAZATROL SmoothC	MAZATROL SmoothG MAZATROL SmoothC
Machine	8000 min ⁻¹ (rpm) spindle (No. 50)	●	●	●
	10000 min ⁻¹ (rpm) spindle (No. 50)	○	○	○
	18000 min ⁻¹ (rpm) spindle (No.40)	-	-	○
	7000 min ⁻¹ (rpm) High torque spindle (No. 40)	-	-	○
	24 tool magazine	●	●	●
	48 tool magazine	○	○	○
	200 mm raised column (not available for 2-pallet changer)	○	○	-
	Spindle BIG-Plus	○	○	○
	Multiple spindle orient (M code / 1 degree)	○	○	○
	Oil and air lubrication on linear axis (linear guide, ball screw)	○	○	○
	Remote manual pulse generator	●	●	●
	Status light (3 colors)	○	○	○
	Work light (LED)	●	●	●
Automation	2-pallet changer	○	○	○
	Automatic power ON / OFF + warm-up operation	●	○	●
	Automatic tool length measurement & tool breakage detection	○	○	○
	Magazine operation panel for tool ID (touch panel)	○	-	-
	Mazak monitoring system B (OMP60)	○	○	○
	Preparation for Mazak monitoring system B (OMP60)	○	○	○
	Preparation for hydraulic fixtures	○	○	○
	Preparation for pneumatic fixtures	○	○	○
	Automatic front door with 2 hand switch	○	○	○
	Operation end buzzer	○	○	○
Safety equipment	Operator door interlock	●	●	●
Coolant / chip disposal	Fully enclosed top cover	○	○	○
	Splash guard	●	●	●
	Coolant system	●	●	●
	Flood coolant 0.45 MPa (4.5 kgf/cm ²) 30 L/min	○	○	○
	Air through spindle	○	○	○
	Coolant through spindle 0.5 MPa (5 kgf/cm ²)	○	○	○
	High pressure coolant through spindle 1.5 MPa (15 kgf/cm ²)	○	○	○
	SUPERFLOW coolant system 7.0 MPa (70 kgf/cm ²)	○	○	○
	Cover coolant	○	○	○
	Niagara coolant	○	○	○
	Coolant temperature control	○	○	○
	Hand held coolant nozzle	○	○	○
	Workpiece air blast	○	○	○
	Oil skimmer	○	○	○
	Oil mist coolant	○	○	○
	Mist collector	○	○	○
	Chip conveyor (side discharge / hinge)	○	○	○
	Chip conveyor (side discharge / ConSep)	○	○	○
	Chip bucket (swing type)	○	○	○
	Chip bucket (fixed type)	○	○	○
High accuracy	Absolute position detection	●	●	●
	Scale feedback system	○	○	○
	Ball screw core cooling (X-, Y-, Z-axes)	●	●	●
Table	Sub-table	○	○	○

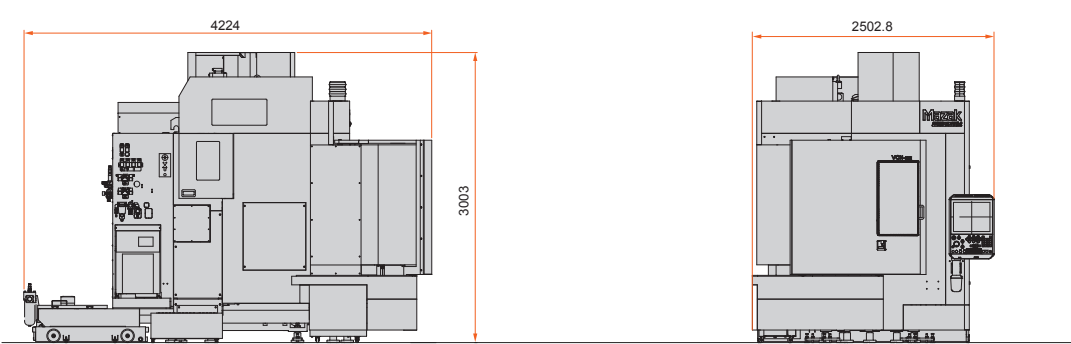
Machine Dimensions

Unit : mm

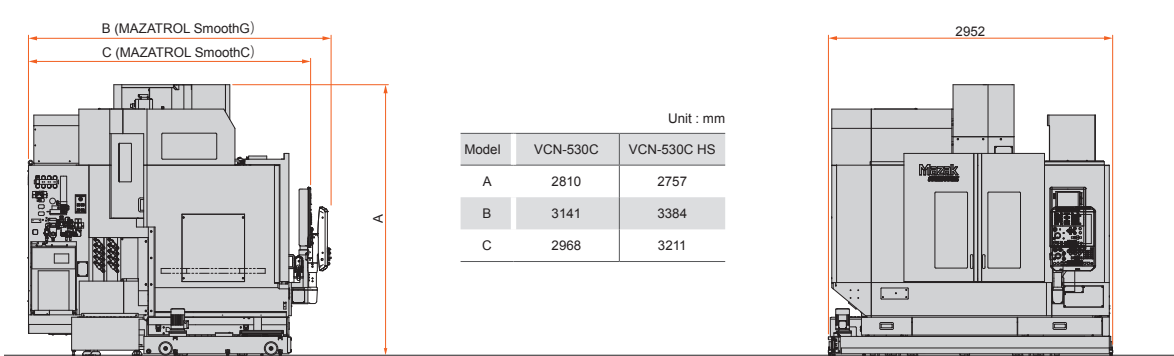
VCN-430A, VCN-430A HS



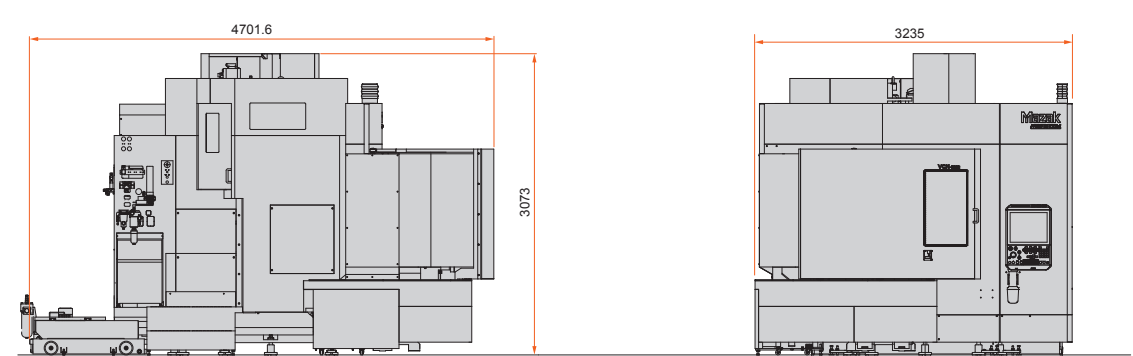
VCN-430A 2-pallet changer



VCN-530C, VCN-530C HS



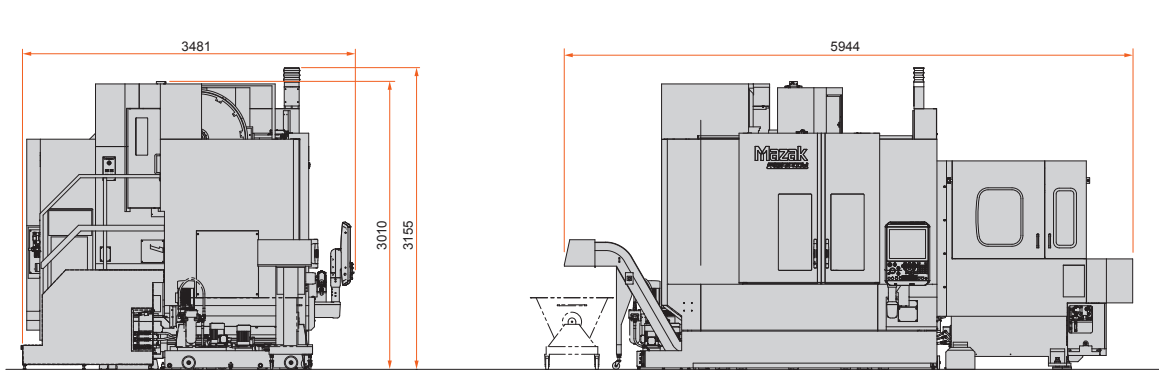
VCN-530C 2-pallet changer



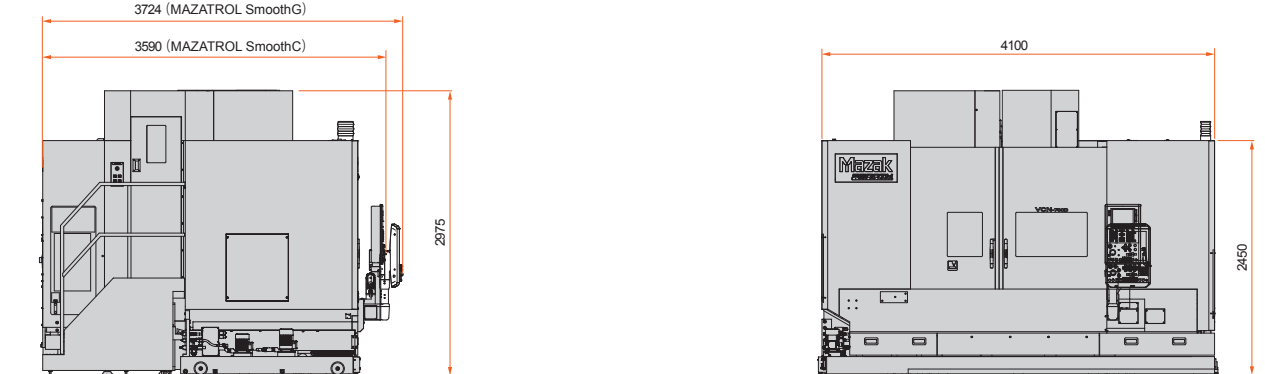
VCN-535C



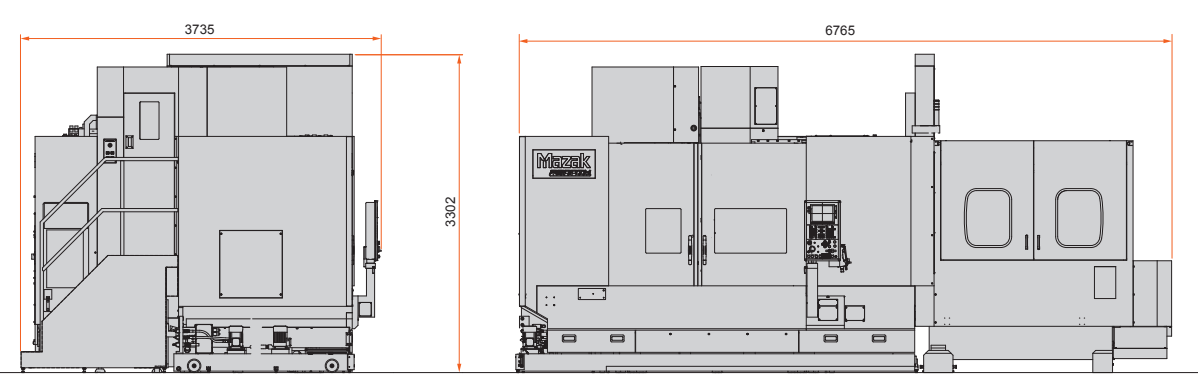
VCN-535C 2-pallet changer



VCN-700D



VCN-700D 2-pallet changer



Standard Machine Specifications

		VCN-430A	VCN-430A HS	VCN-530C	VCN-530C HS
Stroke	X-axis stroke (table right / left)	560 mm		1050 mm	
	Y-axis stroke (saddle back / forth)	430 mm		530 mm	
	Z-axis stroke (spindle up / down)	510 mm			
	Distance from table top to spindle nose	150 ~ 660 mm			
	Distance from column surface to spindle center	494 mm		586 mm	
Table	Table size	900 mm × 430 mm		1300 mm × 550 mm	
	Max. load capacity (evenly distributed)	500 kg		1200 kg	
	Table surface configuration	18 mm T slot × 3 , 125 mm pitch		18 mm T slot × 5 , 100 mm pitch	
Spindle	Max. spindle speed	12000 min ⁻¹ (rpm)	18000 min ⁻¹ (rpm)	12000 min ⁻¹ (rpm)	18000 min ⁻¹ (rpm)
	Spindle speed range	2-steps (Electric)			
	Spindle taper	No. 40			
Feedrate	Rapid traverse rate (X-, Y-, Z-axes)	42000 mm/min	52000 mm/min	42000 mm/min	52000 mm/min
	Cutting feedrate (X-, Y-, Z-axes)	1 ~ 8000 mm/min	1 ~ 52000 mm/min	1 ~ 8000 mm/min	1 ~ 52000 mm/min
	[Shape compensation]	[1 ~ 42000 mm/min]		[1 ~ 42000 mm/min]	
Automatic tool changer	Tool shank	No.40			
	Tool storage capacity	30			
	Max. tool diameter / length (from gauge line) / weight	Φ80 mm / 350 mm / 8 kg			
	Max. tool diameter with adjacent tool pockets empty	Φ125 mm			
	Tool selection method	MAZATROL random memory (random pocket assignment)			
	Tool change time (tool-to-tool)	1.3 sec			
Motor	Spindle motor	18.5 kW (25 HP) [5 min. rating]	30 kW (40 HP) [50% ED]	18.5 kW (25 HP) [5 min. rating]	30 kW (40 HP) [50% ED]
	Spindle motor (cont. rating)	7.5 kW (10 HP)	22 kW (30 HP)	7.5 kW (10 HP)	22 kW (30 HP)
Power requirement	Electrical power requirement (30 min. rating)	28.4 kVA	54.2 kVA	28.6 kVA	54.3 kVA
	Electrical power requirement (cont. rating)	20.5 kVA	43.1 kVA	20.7 kVA	43.2 kVA
	Air supply (pressure / flow rate)	0.9 MPa (9 kgf/cm ²) / 250 NL			
Coolant	Coolant tank capacity	200 L		250 L	
Machine size	Machine height (from floor)	2805 mm	2702 mm	2810 mm	2757 mm
	Machine width (MAZATROL SmoothG)	2112 mm	2112 mm	2952 mm	2952 mm
	Machine width (MAZATROL SmoothC)	2072 mm	2072 mm	2952 mm	2952 mm
	Machine length (MAZATROL SmoothG)	2836 mm	3079 mm	3141 mm	3384 mm
	Machine length (MAZATROL SmoothC)	2663 mm	2906 mm	2968 mm	3211 mm
	Machine weight (without coolant tank)	4800 kg	5250 kg	6800 kg	7350 kg

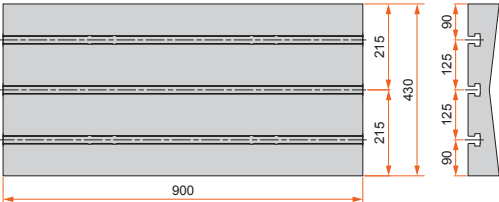
		VCN-535C	VCN-700D
Stroke	X-axis stroke (table right / left)	1050 mm	1530 mm
	Y-axis stroke (saddle back / forth)	530 mm	700 mm
	Z-axis stroke (spindle up / down)	560 mm	650 mm
	Distance from table top to spindle nose	150 ~ 710 mm	200 ~ 850 mm
	Distance from column surface to spindle center	571 mm	722 mm
Table	Table size	1300 mm × 550 mm	1740 mm × 700 mm
	Max. load capacity (evenly distributed)	1200 kg	2000 kg
	Table surface configuration	18 mm T slot × 5 , 100 mm pitch	18 mm T slot × 5 , 125 mm pitch
Spindle	Max. spindle speed	8000 min ⁻¹ (rpm)	
	Spindle speed range	2-steps (Electric)	
	Spindle taper	No. 50	
Feedrate	Rapid traverse rate (X-, Y-, Z-axes) *1	42000 mm/min	30000 mm/min
	Cutting feedrate (X-, Y-, Z-axes) *2	1 ~ 42000 mm/min	1 ~ 30000 mm/min
Automatic tool changer	Tool shank	No.50	
	Tool storage capacity	24	
	Max. tool diameter / length (from gauge line) / weight	Φ105 mm / 350 mm / 20 kg	Φ105 mm / 400 mm / 20 kg
	Max. tool diameter with adjacent tool pockets empty	Φ210 mm	
	Max. tool diameter with tools next to adjacent tool pockets empty	Φ240 mm	Φ250 mm
	Tool selection method	MAZATROL random memory (random pocket assignment)	
	Tool change time (tool-to-tool)	2.0 sec	
Motor	Spindle motor (30 min. rating)	30 kW (40 HP)	
	Spindle motor (cont. rating)	22 kW (30 HP)	
Power requirement	Electrical power requirement (30 min. rating)	53.6 kVA	55.1 kVA
	Electrical power requirement (cont. rating)	41.8 kVA	43.3 kVA
	Air supply (pressure / flow rate)	0.5 MPa (5 kgf/cm ²) ~ 0.9 MPa (9 kgf/cm ²) / 200 NL	
Coolant	Coolant tank capacity	250 L	380 L
Machine size	Machine height (from floor)	2810 mm	2975 mm
	Machine width (MAZATROL SmoothG)	2880 mm	4100 mm
	Machine width (MAZATROL SmoothC)	2880 mm	4100 mm
	Machine length (MAZATROL SmoothG)	3207 mm	3724 mm
	Machine length (MAZATROL SmoothC)	3107.5 mm	3590 mm
	Machine weight (without coolant tank)	7830 kg	11500 kg

*1 Limited feedrate with continuous axis movement
*2 Shape compensation used

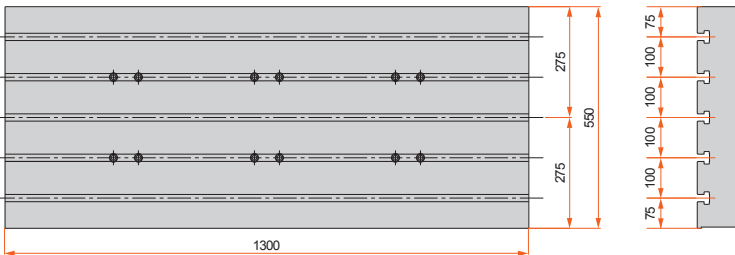
Table Dimensions

Unit : mm

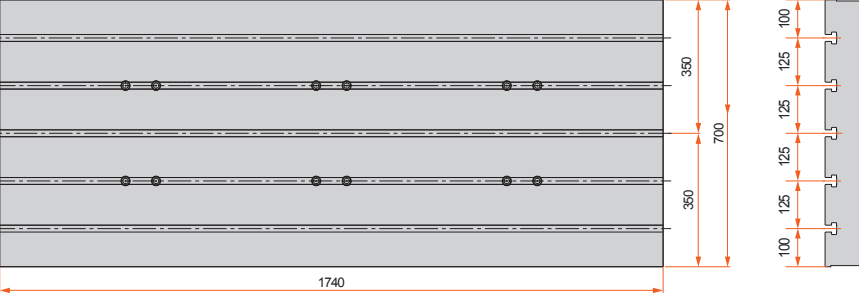
VCN-430A, VCN-430A HS



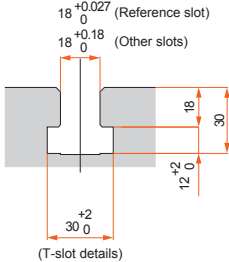
VCN-530C, VCN-530C HS, VCN-535C



VCN-700D



T-slot



MAZATROL SmoothC Specifications

	MAZATROL	EIA
Number of controlled axes	Simultaneous 2 ~ 4 axes	
Least input increment	0.0001 mm, 0.00001 inch, 0.0001 deg	
High speed, high precision control	Shape compensation, Smooth corner control, Rapid traverse overlap, Rotary axis shape compensation	Shape compensation, Smooth corner control, Rapid traverse overlap, Rotary axis shape compensation, High-speed machining mode, High-speed smoothing control
Interpolation	Positioning (interpolation), Positioning (non-interpolation), Linear interpolation, Circular interpolation, Synchronous tapping*	Positioning (interpolation), Positioning (non-interpolation), Linear interpolation, Circular interpolation, Spiral interpolation, Helical interpolation, Cylindrical interpolation*, Fine spline interpolation*, NURBS interpolation *, Polar coordinate interpolation* , Synchronous tapping*
Feedrate	Rapid traverse, Cutting feed, Cutting feed (per minute), Cutting feed (per revolution), Dwell (time / rotation), Rapid traverse override, Cutting feed override, G0 speed variable control, Feedrate limitation, Variable acceleration control, G0 slope constant*	Rapid traverse, Cutting feed, Cutting feed (per minute), Cutting feed (per revolution), Inverse time feed, Dwell (time / rotation), Rapid traverse override, Cutting feed override, G0 speed variable control, Feedrate limitation, Time constant changing for G1, Variable acceleration control, G0 slope constant*
Program registration	Number of programs : 256 (Standard) / 960 (Max.), Program memory : 2 MB, Program memory expansion : 8 MB*, Program memory expansion : 32 MB*	
Control display	Display : 10.4" touch panel, Resolution : VGA	
Spindle functions	S code output, Spindle speed limitation, Spindle speed override, Spindle speed reaching detection, Multiple position orient, Constant surface speed, Spindle speed command with decimal digits, Synchronized spindle control, Spindle speed range setting	
Tool functions	Number of tool offset : 4000, T code output for tool number, Tool life monitoring (time), Tool life monitoring (number of machined workpieces)	Number of tool offset : 4000, T code output for tool number, T code output for group number, Tool life monitoring (time), Tool life monitoring (number of machined workpieces)
Miscellaneous functions	M code output, Simultaneous output of multiple M codes	
Tool offset functions	Tool position offset, Tool length offset, Tool diameter / tool nose R offset, Tool wear offset	
Coordinate system	Machine coordinate system, Work coordinate system, Local coordinate system, Additional work coordinates (300 set)	
Machine functions	—	Shaping function*, Dynamic compensation II*
Machine compensation	Backlash compensation, Pitch error compensation	
Protection functions	Emergency stop, Interlock, Pre-move stroke check	
Automatic operation mode	Memory operation	Memory operation, Tape operation, MDI operation, SD card operation, EtherNet operation*
Automatic operation control	Optional stop, Dry run, Manual handle interruption, MDI interruption, TPS, Restart, Machine lock	Optional block skip, Optional stop, Dry run, Manual handle interruption, MDI interruption, TPS, Restart, Restart2, Collation stop, Machine lock
Manual measuring functions	Tool length teach, Touch sensor coordinates measurement, Workpiece offset measurement, WPC coordinate measurement, Measurement on machine	Tool length teach, Tool offset teach, Touch sensor coordinates measurement, Workpiece offset measurement, WPC coordinate measurement, Measurement on machine
Automatic measuring functions	WPC coordinate measurement, Automatic tool length measurement, Sensor calibration, Tool breakage detection, External tool breakage detection*	Automatic tool length measurement, Sensor calibration, Tool breakage detection, External tool breakage detection*
MDI measurement	Semi automatic tool length measurement, Full automatic tool length measurement, Coordinate measurement	
Interface	PROFIBUS-DP*, EtherNet/IP*, CC-Link*	
Card interface	SD card interface, USB	
EtherNet	10 M / 100 M / 1 Gbps	

*Option

MAZATROL SmoothG Specifications

	MAZATROL	EIA
Number of controlled axes	Simultaneous 2 ~ 4 axes	
Least input increment	0.0001 mm, 0.00001 inch, 0.0001 deg	
High speed, high precision control	Shape compensation, Smooth corner control, Rapid traverse overlap, Rotary axis shape compensation	Shape compensation, Smooth corner control, Rapid traverse overlap, Rotary axis shape compensation, High-speed machining mode, High-speed smoothing control
Interpolation	Positioning (interpolation), Positioning (non-interpolation), Linear interpolation, Circular interpolation, Synchronous tapping*	Positioning (interpolation), Positioning (non-interpolation), Linear interpolation, Circular interpolation, Spiral interpolation, Helical interpolation, Cylindrical interpolation*, Fine spline interpolation*, NURBS interpolation *, Polar coordinate interpolation* , Synchronous tapping*
Feedrate	Rapid traverse, Cutting feed, Cutting feed (per minute), Cutting feed (per revolution), Dwell (time / rotation), Rapid traverse override, Cutting feed override, G0 speed variable control, Feedrate limitation, Variable acceleration control, G0 slope constant*	Rapid traverse, Cutting feed, Cutting feed (per minute), Cutting feed (per revolution), Inverse time feed, Dwell (time / rotation), Rapid traverse override, Cutting feed override, G0 speed variable control, Feedrate limitation, Time constant changing for G1, Variable acceleration control, G0 slope constant*
Program registration	Number of programs : 256 (Standard) / 960 (Max.), Program memory : 2 MB, Program memory expansion : 8 MB*, Program memory expansion : 32 MB*	
Control display	Display : 19" touch panel, Resolution : SXGA	
Spindle functions	S code output, Spindle speed limitation, Spindle speed override, Spindle speed reaching detection, Multiple position orient, Constant surface speed, Spindle speed command with decimal digits, Synchronized spindle control, Spindle speed range setting	
Tool functions	Number of tool offset : 4000, T code output for tool number, Tool life monitoring (time), Tool life monitoring (number of machined workpieces)	Number of tool offset : 4000, T code output for tool number, T code output for group number, Tool life monitoring (time), Tool life monitoring (number of machined workpieces)
Miscellaneous functions	M code output, Simultaneous output of multiple M codes	
Tool offset functions	Tool position offset, Tool length offset, Tool diameter / tool nose R offset, Tool wear offset	
Coordinate system	Machine coordinate system, Work coordinate system, Local coordinate system, Additional work coordinates (300 set)	
Machine functions	—	Shaping function*, Dynamic compensation II*
Machine compensation	Backlash compensation, Pitch error compensation	
Protection functions	Emergency stop, Interlock, Pre-move stroke check, SAFETY SHIELD (manual mode), SAFETY SHIELD (automatic mode)*, VOICE ADVISER	
Automatic operation mode	Memory operation	Memory operation, Tape operation, MDI operation, EtherNet operation*
Automatic operation control	Optional stop, Dry run, Manual handle interruption, MDI interruption, TPS, Restart, Machine lock	Optional block skip, Optional stop, Dry run, Manual handle interruption, MDI interruption, TPS, Restart, Restart2, Collation stop, Machine lock
Manual measuring functions	Tool length teach, Touch sensor coordinates measurement, Workpiece offset measurement, WPC coordinate measurement, Measurement on machine	Tool length teach, Tool offset teach, Touch sensor coordinates measurement, Workpiece offset measurement, WPC coordinate measurement, Measurement on machine
Automatic measuring functions	WPC coordinate measurement, Automatic tool length measurement, Sensor calibration, Tool breakage detection, External tool breakage detection*	Automatic tool length measurement, Sensor calibration, Tool breakage detection, External tool breakage detection*
MDI measurement	Semi automatic tool length measurement, Full automatic tool length measurement, Coordinate measurement	
Interface	PROFIBUS-DP*, EtherNet/IP*, CC-Link*	
Card interface	SD card interface, USB	
EtherNet	10 M / 100 M / 1 Gbps	

*Option