



HCN-4000 NEO HCN-5000 NEO

[High-speed, high-accuracy horizontal machining centers]



HCN-4000 NEO
HCN-5000 NEO

Production Support Software Free Trial

The "Mazak Software" folder in the CNC control contains free trial versions of production support software.

Install these programs on your computer and try them.

Production Support Software	Overview
SMOOTH Monitor AX	Monitor and analyze machine status
SMOOTH Scheduler	Create production schedules
SMOOTH Tool Management	Centralize tool data management
SMOOTH Link	View and edit tool data and programs on mobile devices
SMOOTH Project Manager	Manage program and setup information
SMOOTH CAM Ai	Efficient digital setup on an office PC

For details of the production support software, please visit the Yamazaki Mazak website.

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HCN-4000 NEO

HCN-5000 NEO

High performance machine tool NEO series with high productivity and environmental performance

The Mazak NEO series has evolved into a 'Next Generation' machine, with enhanced spindles, tables, hydraulic fixtures and automation equipment. Equipped even more 'Excellent' specifications. Capable of providing 'Optimal' solutions to meet customer needs.

High productivity

Enhanced spindle / table shorten cycle times

High accuracy

Enhanced heat displacement compensation ensures stable machining accuracy

Environmental performance

Visual tools to manage power consumption and regeneration
Energy-saving control of equipments



HCN-4000 NEO

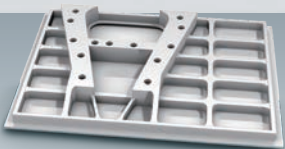
HCN-5000 NEO

Exceptional machine construction and a wide variety of spindle specifications ensure higher productivity as well as higher accuracy

- Spindle specifications to meet a wide variety of machining requirements
- Standard NC rotary table reduces non-cut time to enhance productivity
- High-rigidity machine construction and compensation ensure high-accuracy machining over extended periods of time
- Wide variety of available automation equipment, including a modular PALLETECH flexible manufacturing system, MPP (MULTI PALLET POOL), 6-pallet changer and a robot system
- Improved environmental performance with energy-saving equipment



Construction machinery component
: Mount (stainless)



Aerospace component : Frame (aluminum alloy)

Spindle specifications to meet a wide variety of machining requirements

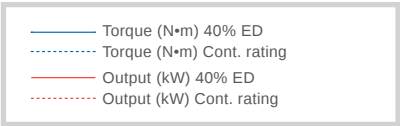
The high-rigidity spindle can perform heavy-duty machining of challenging materials and steel, and high-speed machining of non-ferrous materials such as aluminum. High-speed and high-torque specifications are optionally available.

Standard 12000 min⁻¹ (rpm)

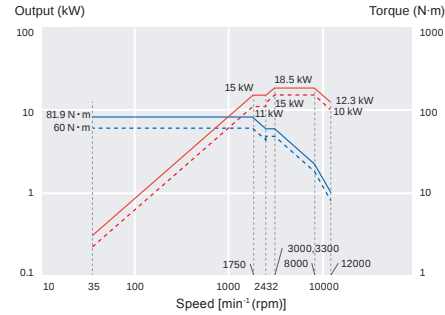
For general-purpose machining of a variety of materials

Integral spindle/motor with No. 40 taper to machine a wide variety of workpiece materials.

No. 40, BBT-40, HSK-A63	
Integral spindle/motor	
Grease lubrication	
Speed	12000 min ⁻¹ (rpm)
Output	18.5 kW (25 HP) [40% ED]
	15 kW (20 HP) [cont. rating]
Max. torque	81.9 N·m [40% ED]



Spindle output/torque diagram



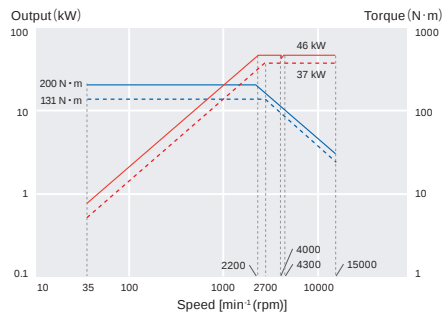
High torque 15000 min⁻¹ (rpm) OPTION

Heavy-duty machining of difficult-to-cut materials, steel and cast iron

High-torque integral spindle/motor with No. 40 spindle taper designed for heavy-duty machining of steel. Integral spindle/motor with minimal vibration for fine surface finishes.

No. 40, BBT-40, HSK-A63	
Integral spindle/motor	
Oil and air lubrication	
Speed	15000 min ⁻¹ (rpm)
Output	46 kW (62 HP) [40% ED]
	37 kW (50 HP) [cont. rating]
Max. torque	200 N·m [40% ED]

Spindle output/torque diagram



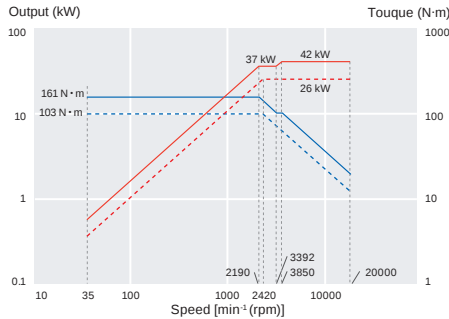
High speed, high output 20000 min⁻¹ (rpm) OPTION

High speed machining with small diameter tool as well as machining of aluminum

High-speed, high-output integral spindle/motor can perform high speed machining with small diameter tool.

No. 40, BBT-40, HSK-A63	
Integral spindle/motor	
Oil and air lubrication	
Speed	20000 min ⁻¹ (rpm)
Output	42 kW (56 HP) [40% ED]
	26 kW (35 HP) [cont. rating]
Max. torque	161 N·m [40% ED]

Spindle output/torque diagram



High speed, high output

20000 min⁻¹ (rpm) spindle machining example

Machining conditions

- Material: aluminum (A5052)
- Cutting speed: 3000 m/min
- Feed per tooth: 0.25 mm
- Depth of cut: 5 mm
- ø80 mm facemill (5 teeth)
- Spindle speed: 11943 min⁻¹ (rpm)
- Cutting width: 60 mm

ø80 mm facemill

Spindle speed	Feedrate	Cutting width	Depth of cut	Material removal rate
11943 min ⁻¹ (rpm)	1.25 mm/rev	60 mm	5 mm	4479 cm ³ /min

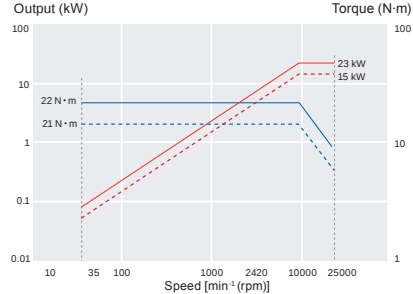
High speed 25000 min⁻¹ (rpm) OPTION

High-speed machining of precision aerospace components, die-cast components

Because the spindle unit is combined with the high-output, high-speed motor, the integral spindle/motor structure enables high acceleration to ensure high-speed machining for a wide range of workpieces.

HSK-A63	
Integral spindle/motor	
Oil and air lubrication	
Speed	25000 min ⁻¹ (rpm)
Output	23 kW (31 HP) [40% ED]
	15 kW (20 HP) [cont. rating]
Max. torque	22 N·m [40% ED]

Spindle output/torque diagram



Note: Coolant through spindle is not available.

High torque

15000 min⁻¹ (rpm) spindle machining example

Machining conditions

- Material: C45
- Cutting speed: 300 m/min
- Feed per tooth: 0.25 mm
- Depth of cut: 5.5 mm
- ø80 mm facemill (6 teeth)
- Spindle speed: 1194 min⁻¹ (rpm)
- Cutting width: 60 mm

ø80 mm facemill

Spindle speed	Feedrate	Cutting width	Depth of cut	Material removal rate
1194 min ⁻¹ (rpm)	1.5 mm/rev	60 mm	5.5 mm	591 cm ³ /min

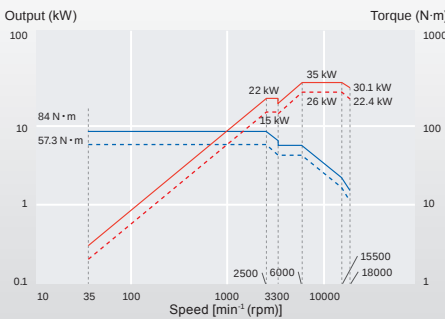
High speed 18000 min⁻¹ (rpm) OPTION

Designed for versatile performance

Integral spindle/motor accelerates to top speed in 1.8 seconds to perform high-efficiency machining of various workpieces.

No. 40, BBT-40, HSK-A63	
Integral spindle/motor	
Oil and air lubrication	
Speed	18000 min ⁻¹ (rpm)
Output	35 kW (47 HP) [40% ED]
	26 kW (35 HP) [cont. rating]
Max. torque	84 N·m [40% ED]

Spindle output/torque diagram



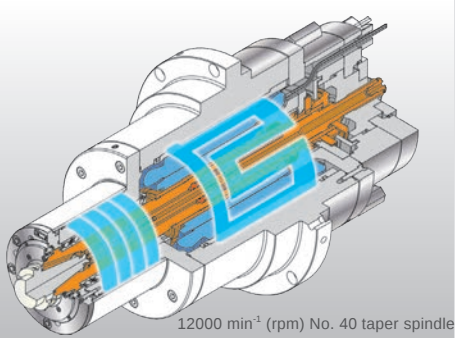
Spindle

Integral spindle/motor

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

Spindle temperature control

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



Wilde variety of tables available

0.0001° × 3600000 NC rotary table is standard equipment. DDM rotary table is an available option.

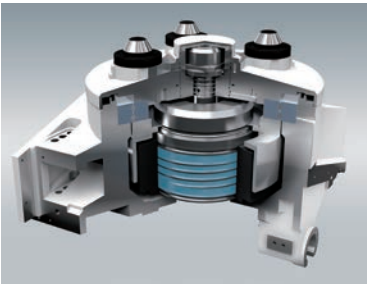
0.0001° × 3600000 NC rotary table

The NC rotary table uses a backlash-free rotary gear cam to ensure high accuracy as well as long service life.

	HCN-4000 NEO	HCN-5000 NEO
Index increment	0.0001° × 3600000	0.0001° × 3600000
Table rotation speed	50 min ⁻¹ (rpm)	50 min ⁻¹ (rpm)
Indexing time (90°)	1.0 sec.	1.2 sec. (standard)/ 1.3 sec. (optional 700 kg load capacity)

DDM rotary table OPTION

For efficient high-speed operation, direct transmission of driving power to the rotary table axis eliminates power transmission components such as the worm shaft and the worm gear.



Inertia Auto Tuning

Supports inertia adjustment on the screen

- Generate estimated programs
- Visualize estimated results
- Adjust programs

Smooth Machining Configuration

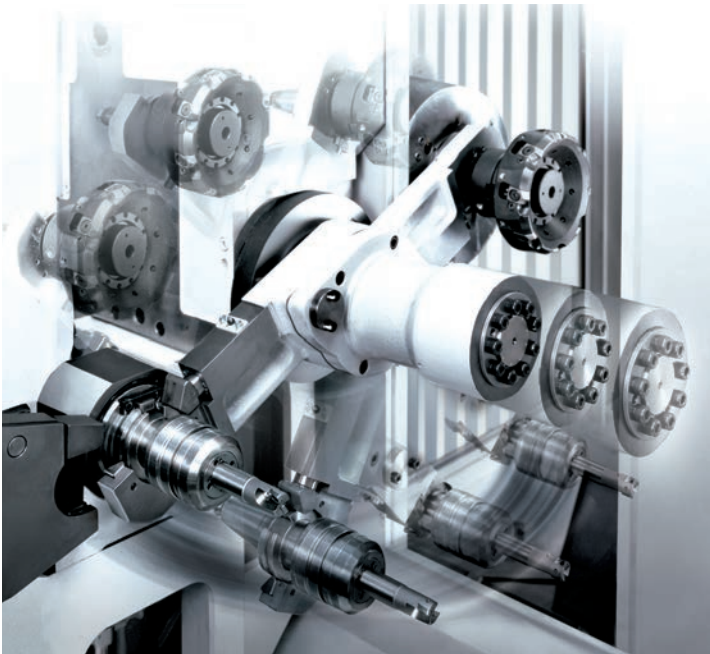
Adjust machining features including cycle time, finished surface and machining shape with slider switches on the display to match material requirements and machining methods. This is especially effective for complex workpiece contours defined in small program increments. Newly added "2X-R" function reduces rough machining time (standard equipment).



Tool magazine range to meet variety machining requirements

The simple, reliable cam-driven automatic tool changer performs fast tool changes over extended periods of operation.

- Max. tool length ————— 4000 NEO: **420 mm**
5000 NEO: **510 mm**
- Max. moment ————— **5.9 N•m**
- Tool change time ————— 4000 NEO: Min. **2.4 sec.**
5000 NEO: Min. **2.6 sec.**



Available tool magazine specifications

Drum-type tool magazine

Drum-type tool magazine with high-speed tool index positions tools at an angle to store long tools in a reduced machine width.

Chain-type tool magazine OPTION

Chain-type tool magazine for high-mix, low-volume production, with random shortest path tool selection (fixed pocket assignment).

TOOL HIVE OPTION

Store a large number of tools in a small space. To reduce tool setup time, edit operations and tool data on the TOOL HIVE TERMINAL control panel.

●: Standard ○: Option -: N/A

Tool storage capacity	40	60	80	120	160	240	348
Drum-type tool magazine	●	○	-	-	-	-	-
Chain-type tool magazine OPTION	-	-	○	○	○	-	-
TOOL HIVE OPTION	-	-	-	-	-	○	○

Tool ID OPTION

For networked machines, Tool ID allows for automatic input and update of tool data into the CNC. It eliminates tool-loading and data-entry mistakes to reduce setup time.



High positioning accuracy

3 times better than ISO standard

Bidirectional positioning accuracy	X axis	Y axis	Z axis
ISO	25 μm	25 μm	25 μm
Tolerance	9 μm	9 μm	9 μm
Results	2.8 μm	2.3 μm	2.4 μm

Unidirectional positioning repeatability	X axis	Y axis	Z axis
ISO	8 μm	8 μm	8 μm
Tolerance	3 μm	3 μm	3 μm
Results	0.6 μm	1 μm	0.9 μm

Note: The inspection is conducted according to ISO 230 and ISO 10791 on a recommended foundation with room temperature controlled to 22°C±1°C after the machine has reached operating temperature. Sample results for reference only.

Continuous inverted boring accuracy

Test results

Perform continuous machining from a cold start for stable high accuracy. Special tools and compensation with touch sensor are not required for high accuracy boring.

Concentricity (max.)	11.6 μm
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Note: The inspection is conducted on a recommended foundation with room temperature controlled to 22°C±0.5°C after machine has reached operating temperature. Example results for reference only.

X, Y, Z-axis 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.

Heat displacement control

Ai Thermal Shield

New algorithms automatically determine and apply compensation according to temperature changes to ensure even higher machining accuracy.



Tool measurement

Tool length measurement and tool breakage detection

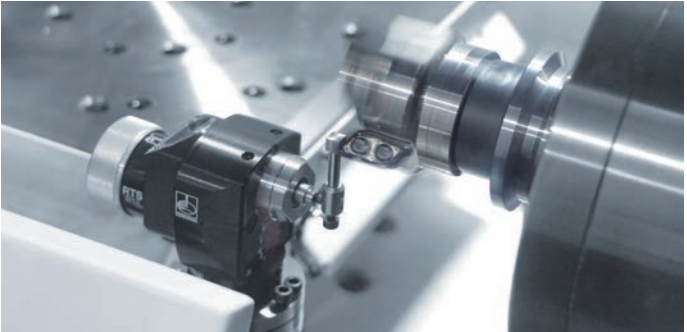
Tool length is measured and registered in CNC system automatically. Tool breakage can be detected during automatic operation.

NC4 high-accuracy laser tool measurement system OPTION

Designed for tool-length measurement and tool-breakage detection with small-diameter tools. Non-contact NC4 measures tool length and diameter with laser at production speeds for stable machining accuracy.

RTS 3D touch trigger tool setter OPTION

RTS performs tool length and diameter measurement and detects tool breakage. Tool diameter can be measured down to ø1 mm. Compact design with optical signal transmission mounts/dismounts RTS without limiting machine movement to ensure easy operation.



Coordinate value / workpiece measurement

Smooth OMM (on machine measurement software) OPTION

Move the touch probe manually to a measurement point and create a measurement program after the point is registered. Automatically update work coordinates and tool compensation using measurement results, and measure geometric tolerances of workpiece features.



Note: The user must prepare the touch probe and reference sphere for on-machine measurement. Additional purchases may be necessary depending on the customer environment. For further details, please contact your nearest Mazak office.

Smooth Set and Inspect (on-machine measurement software) OPTION

Make inspection programs easily. Automatically update work coordinates and tool compensation using measurement results.



Note: The user must prepare the touch probe and reference sphere for on-machine measurement. Additional purchases may be necessary depending on the customer environment. For further details, please contact your nearest Mazak office.

Mazak monitoring system B OPTION

Coordinate values automatically shift based on workpiece probing results from a touch sensor mounted in the machine spindle.

High-rigidity machine construction for stable machining performance

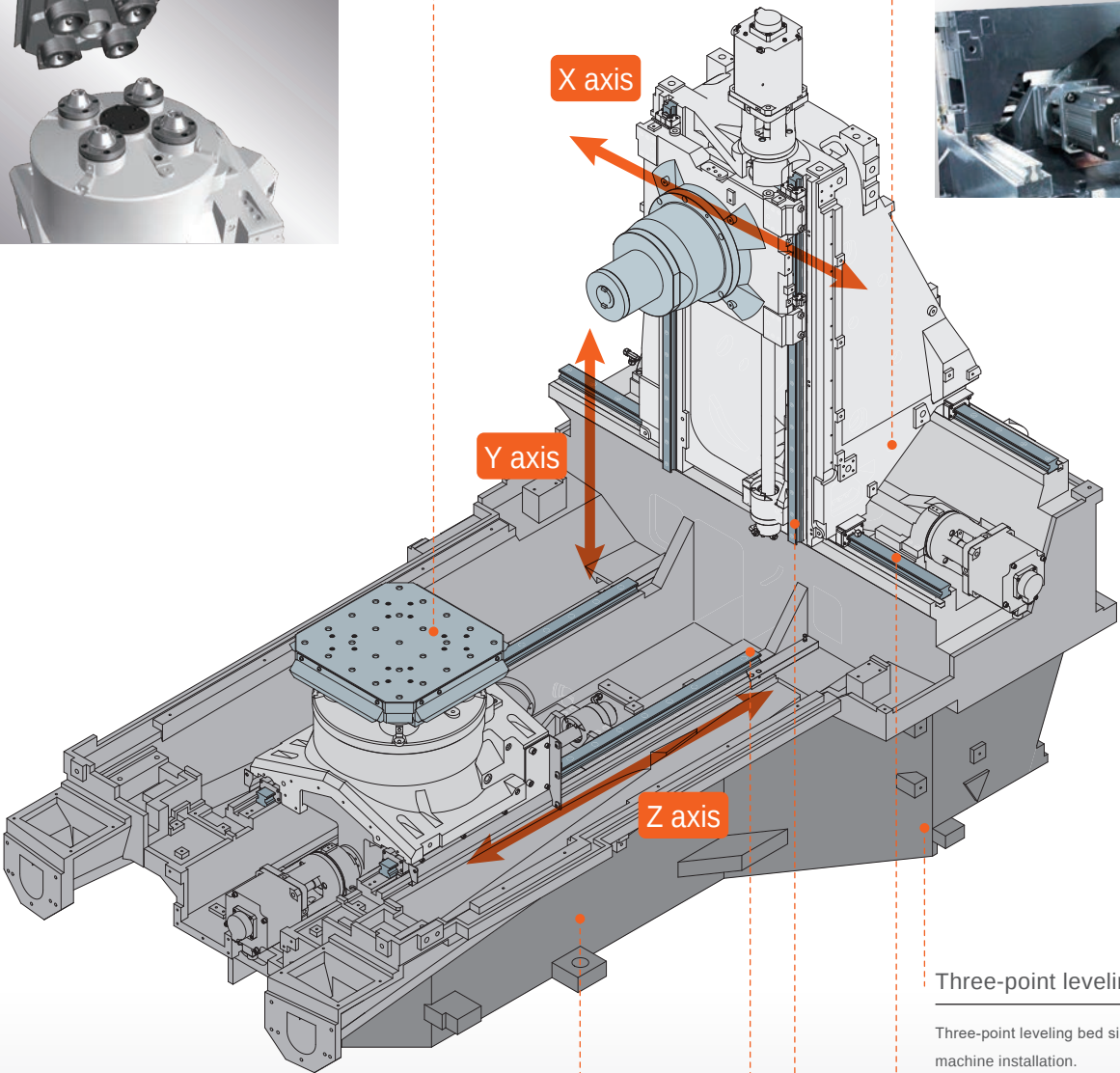
Table coupling

The table and pallet are clamped on 4 taper cones for stable heavy-duty machining.



X-axis slanted design

The mounting surfaces of the X-axis linear guide rails are at different heights to ensure high rigidity for high-speed and high-accuracy positioning.



High-speed acceleration/deceleration on X, Y, Z axis

Rapid traverse rate	Maximum feedrate	Acceleration/deceleration
60 m/min (X, Y, Z axis)	60 m/min (X, Y, Z axis)	1.0 G (X, Y, Z axis)

High-rigidity bed

The high-rigidity bed is reinforced with strategically located ribs to ensure stability during X and Z axis travel.

Three-point leveling bed

Three-point leveling bed simplifies machine installation.

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

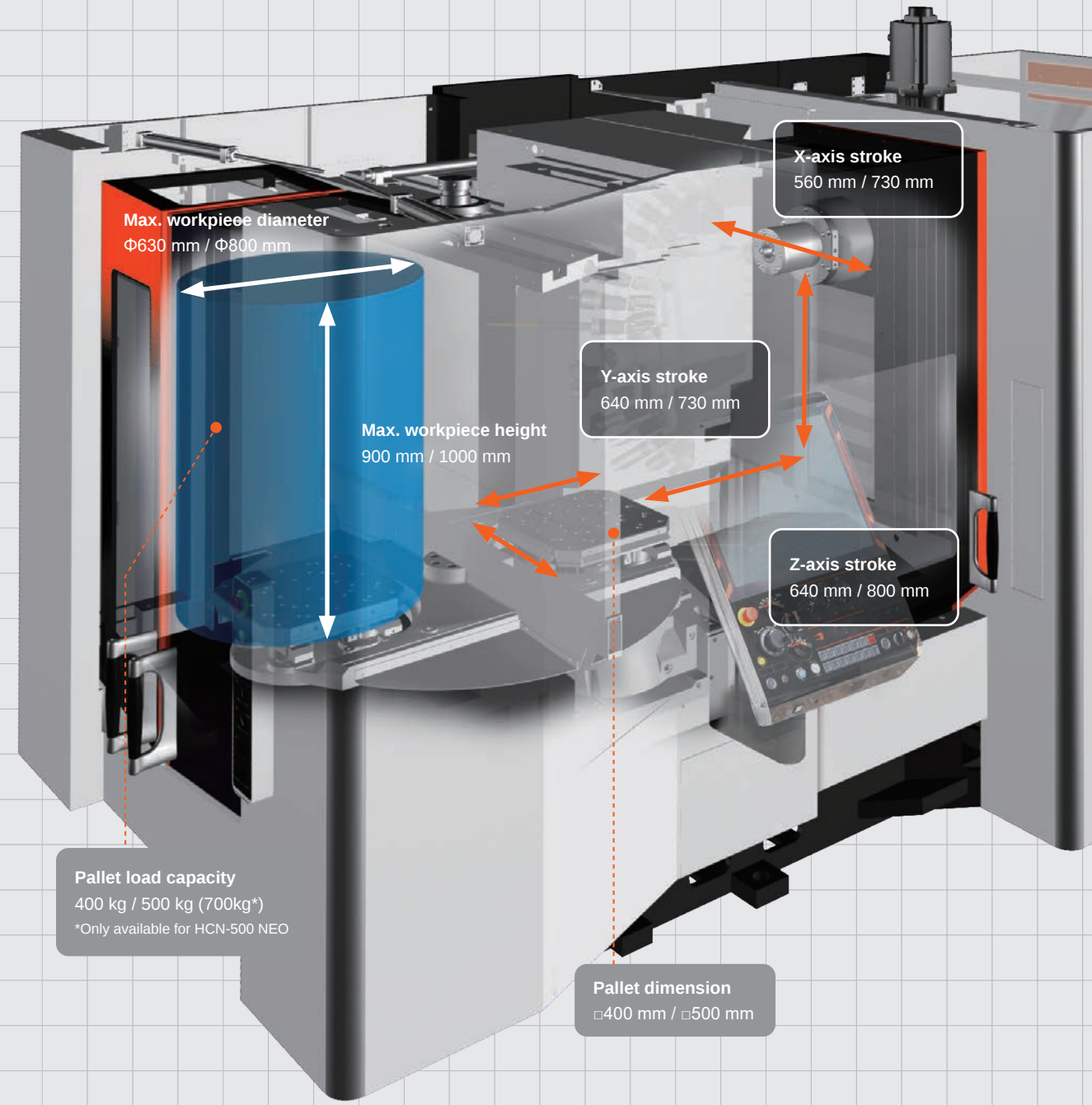
The HCN series uses linear roller guides on the X, Y and Z axis for high accuracy and heavy-duty machining.

40 taper spindle

□400mm / □500mm pallet size

Largest axis strokes and workpiece sizes for this class of horizontal machining center

HCN-4000 NEO / HCN-5000 NEO () : Option



Automation

PALLETECH SYSTEM

Integrate horizontal machining centers, 5-axis machining centers, multi-tasking machines and turning centers to create a system with unsurpassed versatility. After initial installation, the modular PALLETECH design enables shops to add more machines and increase pallet storage capacity in response to changing production requirements.



PALLETECH HIGH-RISE SYSTEM + Horizontal machining center

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

SMOOTH
P M C

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

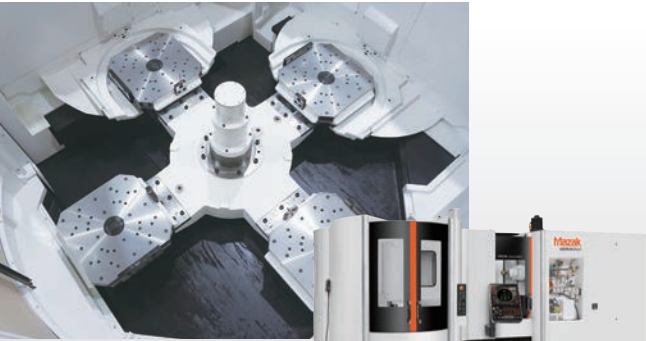


Pallet changer

For higher productivity, set up the next workpiece during machining of the current workpiece.

6-pallet changer **OPTION**

Set up multiple workpieces for automatic operation over extended periods of time.



HCN-4000 NEO + 6-pallet changer

MPP (MULTI PALLET POOL) **OPTION**

Compact multi-pallet stocker system stores a maximum of 16 pallets in its pallet stocker.



HCN-4000 NEO + MPP (16PC)

Hydraulic fixtures for higher productivity

Optional hydraulic fixtures provide multiple ports with pneumatic seating detection to increase workpiece loading/unloading efficiency and improve productivity even further with workpiece transfer units such as robots.

Hydraulic power supply A (supply from machine top) **OPTION**

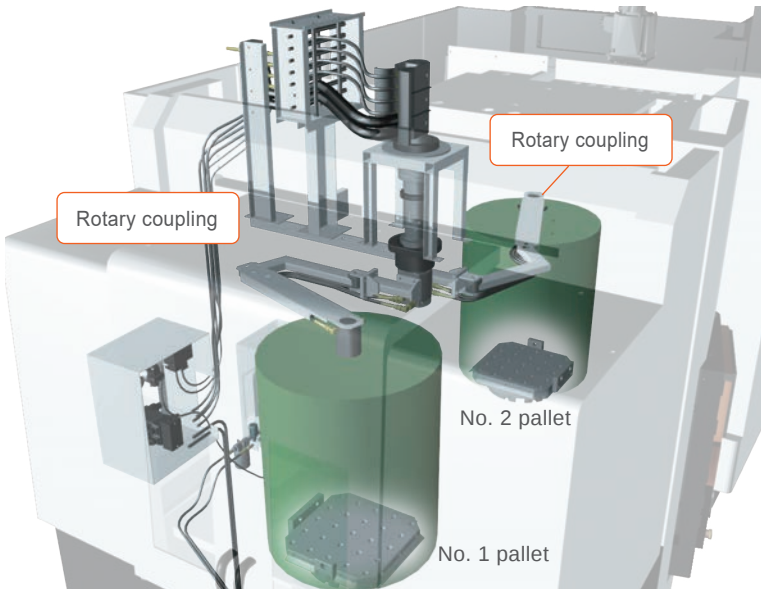
Hydraulic hoses supply hydraulic power from the top part of the pallet changer to fixtures mounted on each pallet. Arrange up to 12 ports. High-power hydraulic supply with 21 MPa (214 kgf/cm²) is available.

Hydraulic power supply B (supply through pallet) **OPTION**

A leak-free coupling system supplies hydraulic power to the supply port on the bottom of the pallet. Unlike hydraulic power supply from machine top, this system requires no hydraulic hose or hydraulic rotary coupling. This minimizes interference for easy fixture design and workpiece machining. High-power hydraulic supply with 21 MPa (214 kgf/cm²) is available.

Loading station	Hydraulic power supply: 8 ports
Inside machine	Hydraulic power supply: 4 ports

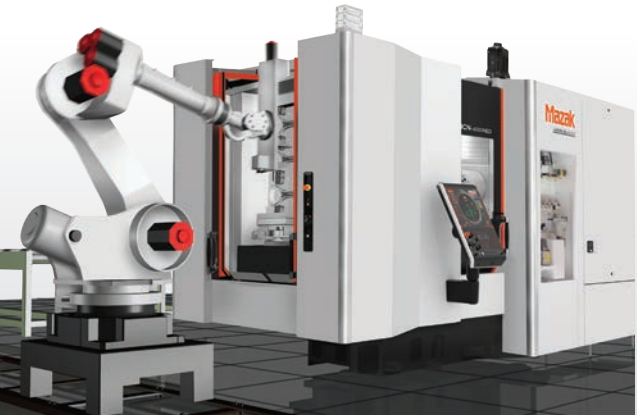
Hydraulic power supply from top



Robot system **OPTION**

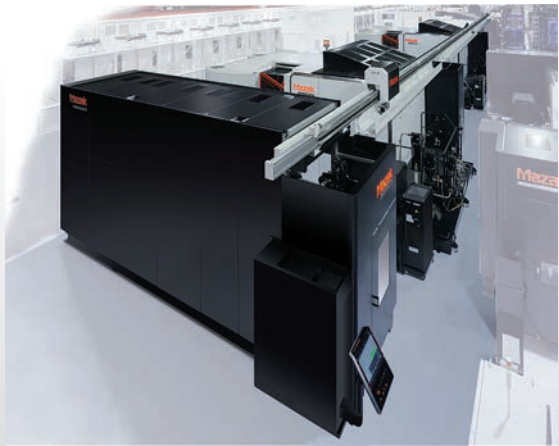
Interface for connecting an external robot for workpiece loading/unloading to/from automatic hydraulic fixtures is optionally available.

•Field network available



Tool transport system **OPTION**

Automatic tool transportation minimizes number of stored tools in the machine magazine and enables sharing of special tools among machines.



Ease of operation

Design focus on ergonomics provides unsurpassed ease of operation



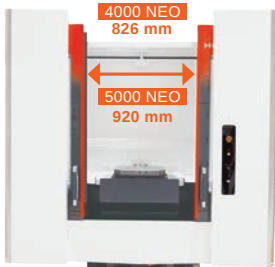
1 Large window (2-pallet changer)

Large windows on the 2-pallet changer cover door give the operator a clear view of workpiece status in the setup station.



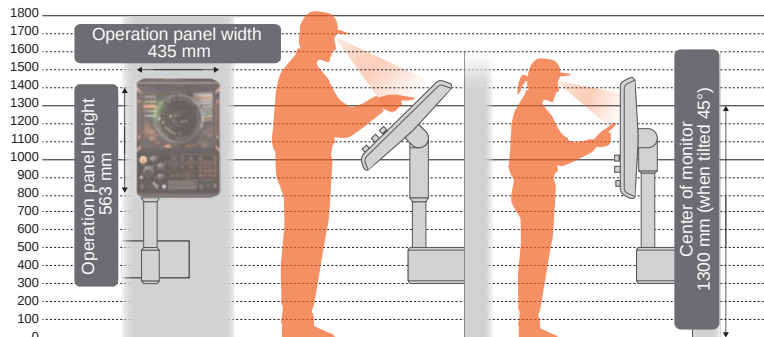
2 Convenient workpiece loading/unloading

Easily load/unload heavy workpieces and fixtures with an overhead crane.



3 Adjustable CNC touch panel

Tilt the operation touch panel to the optimum position for any operator's height to ensure ease of operation.



4 Convenient setup

Excellent accessibility provides convenient setup, with a short distance from ground to pallet surface. Index the setup station by 90° for easy workpiece loading/unloading and setup.



5 Maintenance area

Simplify machine maintenance with convenient central location of items that require frequent access, such as hydraulic and air pressure inlets, lubrication reservoirs and more.



6 Large operation window

Operators can monitor workpiece machining easily.

Coolant

SUPERFLOW coolant system **OPTION**

The SUPERFLOW coolant system supplies a maximum 7.0 MPa (70 kgf/cm²) coolant pressure to lower tool tip temperatures, improve coolant lubrication and chip disposal.

- Adjustable coolant pressure
- High performance cyclone filter with minimum maintenance requirements to reduce running cost

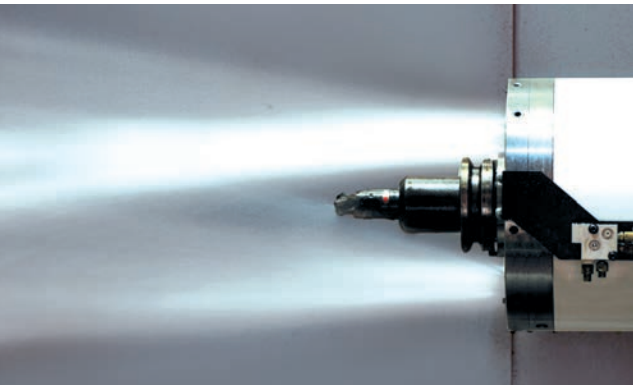


Niagara coolant **OPTION**

Nozzles mounted on the machine top cover discharge a large volume of coolant to flush chips from the workpiece to conveyors on both sides of the table.

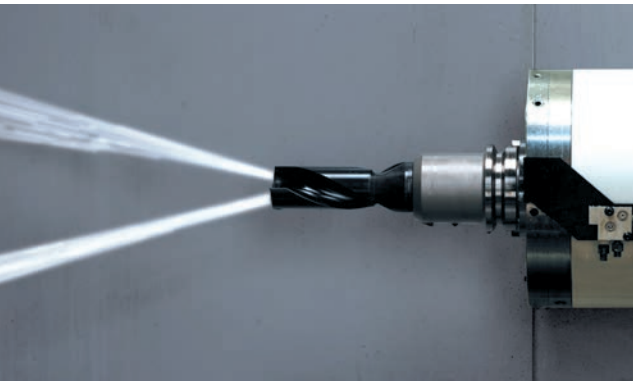
Flood coolant

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



Coolant through spindle **OPTION**

Coolant feeds to the tool tip through passages in the tool. 0.8 MPa (8 kgf/cm²) and 1.5 MPa (15 kgf/cm²) pump pressure specifications are available as options.



Quick coolant stop

Quick coolant stop prevents leakage of residual coolant in the tool magazine area during tool exchange to improve the working environment.

Coolant temperature control **OPTION**

Maintains coolant temperature at room temperature to prevent thermal displacement that can affect machining accuracy.

Mist collector **OPTION**

To maintain a safe, clean working environment, the mist collector removes coolant mist generated during machining.

MAZATROL SMOOTHG

4-axis simultaneous CNC

Unprecedented speed and precision

Latest hardware and software for unparalleled speed and precision.

Smooth graphical user interface

MAZATROL Smooth graphical user interface for unsurpassed ease of operation. Touch screen operates like a smartphone/tablet.

Ease of operation

Designed with advanced functions for unequalled ease of operation.



Shown with optional dual monitor

Process home screens

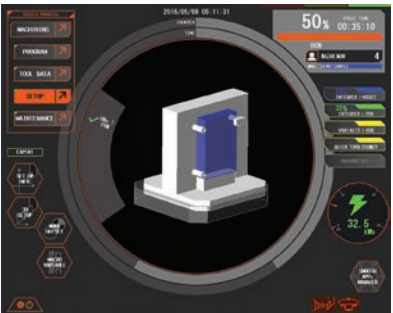
Five home process screens display the appropriate data in an easy-to-understand manner. Touch icons in each process display to reach additional screens.



Programming



Tool data



Setup



Machining



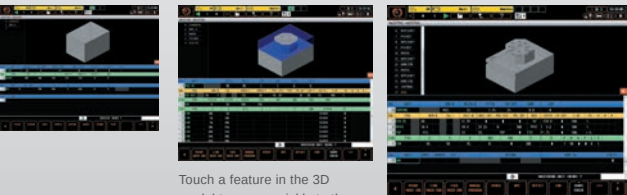
Maintenance

Programming screen links tool path, workpiece shape and programming to reduce programming time.

QUICK MAZATROL

Reduced time for conversational programming

MAZATROL program, unit list and 3D workpiece shape are linked to each other. After defining a machining unit in a MAZATROL program, the 3D shape is displayed immediately to check for any programming errors easily and quickly.



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

Real-time display of 3D model in the process list with updated programming

3D ASSIST

Make a program directly from 3D CAD data

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



Import CAD model

Select shape

Automatic input to MAZATROL program

Cutting adviser

Simulation, test cutting (machining analysis, optimization)

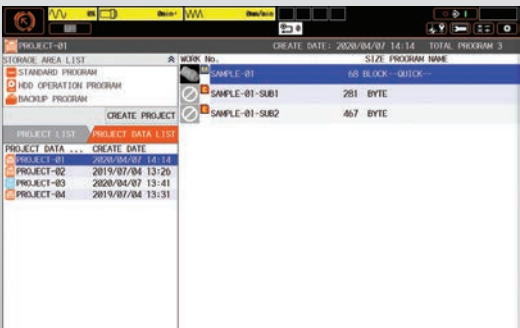
Cutting adviser optimizes machining conditions with MAZATROL SmoothG CNC and Smooth CAM Ai simulation (optional software).



Project function

Setup

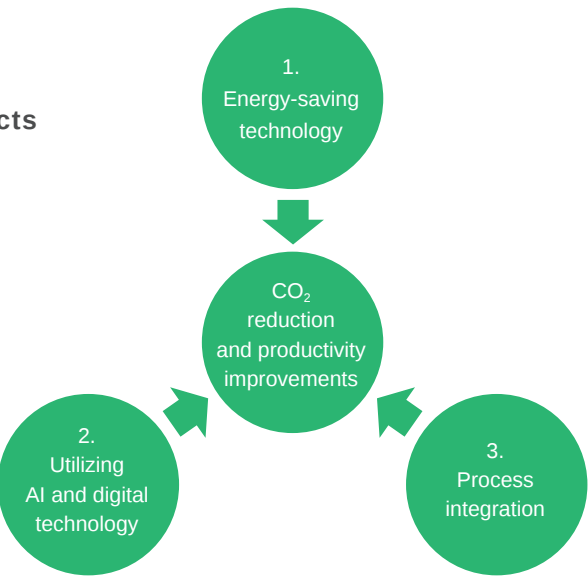
Data required to execute machining is managed as project data, which can be exported to the machine for drastic reduction of data-input time. Additionally, optional Smooth Project Manager software can manage project data for an entire factory.



Mazak Go GREEN

Decarbonization-related technology for Mazak products

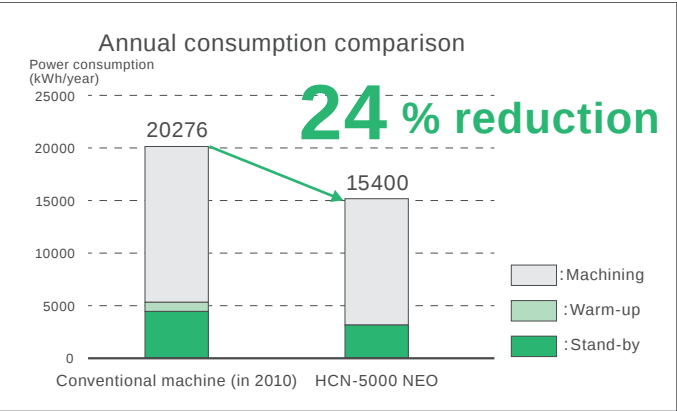
We are committed to developing technology for decarbonization through productivity improvements. Mazak promotes the three comprehensive approaches to the reduction of our environmental impact in support of achieving a sustainable society.



Energy-saving equipment reduces power consumption

- Hydraulic unit utilizing accumulator
- Inverter type chiller unit
- Reduced warm-up time by stable machining accuracy

Annual power consumption
24% reduction



Energy saver

Energy consumption and the regenerative power produced through the energy saving equipment can be viewed visually on the CNC system - control/management of coolant and other equipment.

Graphical display

Display instantaneous power / consumed power / regenerated power / actual power graphically.

Trend display

Display power consumption by hour / day / week / month.

Optimal control function

Displays the energy-saving status of each piece of equipment. Energy-saving level can be adjusted.



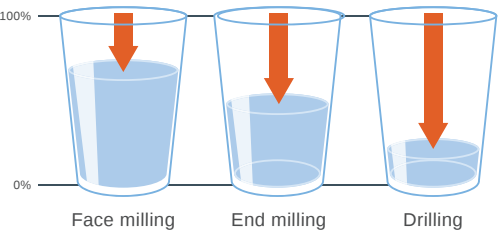
Smooth coolant system

OPTION

Optimal control of coolant discharge amount

Energy saver automatically determines the optimal coolant discharge for energy-saving machining.

- The cutting volume is calculated by simulation
- The optimal discharge amount is automatically determined



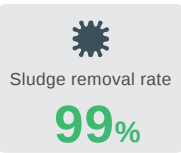
Energy-saving coolant system with sludge removal performance

No need to frequently clean the tank

The coolant tank has a coolant jet that makes a vortex in the center so that small machined chips will not settle in the tank. Thanks to this feature, the coolant tank stays clean and the service life of the coolant is extended. Ease of maintenance is also ensured. The frequency of coolant changes is reduced as well as CO₂ emissions at coolant disposal

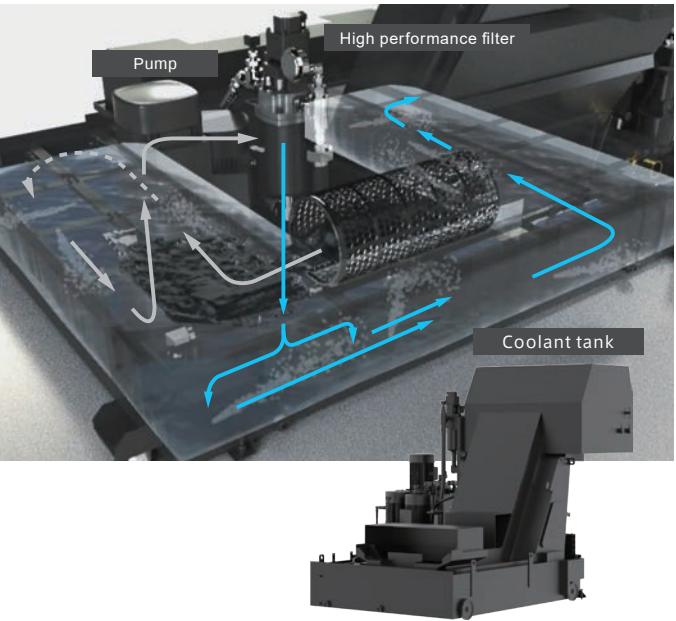
High performance filter removes 99% of sludge

High performance filter removes 99% of sludge from the coolant.



Reduced running cost / environmental impact

Reduced tank cleaning, optimal control of coolant discharge and the efficient pump operation with inverters, reduces power consumption and CO₂ emissions.



Standard Machine Specifications

		HCN-4000 NEO	HCN-5000 NEO
Stroke	X axis (column right/left)	560 mm	730 mm
	Y axis (spindle up/down)	640 mm	730 mm
	Z axis (table back/forth)	640 mm	800 mm
	Distance from table top to spindle nose	70 mm ~ 710 mm	70 mm ~ 870 mm
	Distance from pallet to spindle center	80 mm ~ 720 mm	100 mm ~ 830 mm
Pallet	Pallet size	400 mm × 400 mm	500 mm × 500 mm
	Maximum workpiece dimensions	Φ630 mm × 900 mm	Φ800 mm × 1000 mm
	Pallet load capacity (evenly distributed)	400 kg	500 kg
	Pallet top surface	M16 × P2, tapped holes 25 places, 80 mm pitch	M16 × P2, tapped holes 25 places, 100 mm pitch
Table	Minimum indexing angle increment	0.0001°	
	Indexing time	1.0 sec./90°	1.2 sec./90°
Spindle	Maximum spindle speed	12000 min ⁻¹ (rpm)	
	Spindle speed range	2-step (electric)	
	Spindle taper	7/24 taper No. 40	
	Spindle bearing ID	Φ 70 mm	
	Spindle acceleration	1.48 sec. (0 → 12000 min ⁻¹ (rpm))	
Feedrate	Rapid traverse rate (X, Y, Z axis)* ¹	60000 mm/min	
	Cutting feedrate (X, Y, Z axis)* ¹	1 mm ~ 60000 mm/min	
	Axis acceleration/deceleration	1.0 G	
Automatic tool changer	Tool shank	No. 40	
	Tool storage capacity	40	
	Maximum tool diameter	Φ 95 mm	
	Maximum tool diameter with adjacent pockets empty	Φ 170 mm	
	Maximum tool length (from gauge line)	420 mm	510 mm
	Maximum tool weight	12 kg (max. moment: 5.9 N·m)	
	Tool selection method	MAZATROL random memory (random pocket assignment)	
	Tool change time (chip-to-chip)	2.4 sec.	2.6 sec.
Automatic pallet changer	Number of pallets	2	
	Changing system	Rotary type	
	Pallet change time	7.0 sec.	8.0 sec.
Motors	Spindle motor (40% ED / cont. rating)	18.5 kW / 15 kW (25 HP / 20 HP)	
	Flood coolant pump motor	750 W / 1100 W (50 Hz/60 Hz)	
Power requirement	Electrical power supply (40% ED / cont. rating)	39.91 kVA / 34.93 kVA(50Hz) 41.09 kVA / 36.11 kVA(60Hz)	40.33 kVA / 35.36 kVA(50Hz) 41.52 kVA / 36.54 kVA(60Hz)
	Air supply (pressure)	0.5 MPa ~ 0.9 MPa (5~9 kgf/cm ²)	
	Air supply (flow rate)	240 L/min	
Machine size	Machine height	2713 mm	2813 mm
	Machine width* ²	2400 mm	2623 mm
	Machine length* ²	5429 mm	5744 mm
	Machine weight * ²	10720 kg	11700 kg

*¹ Limited feedrate with continuous axis movement
*² Including rear coolant tank and chip conveyor (ConSep2000)

Standard and Optional Equipment

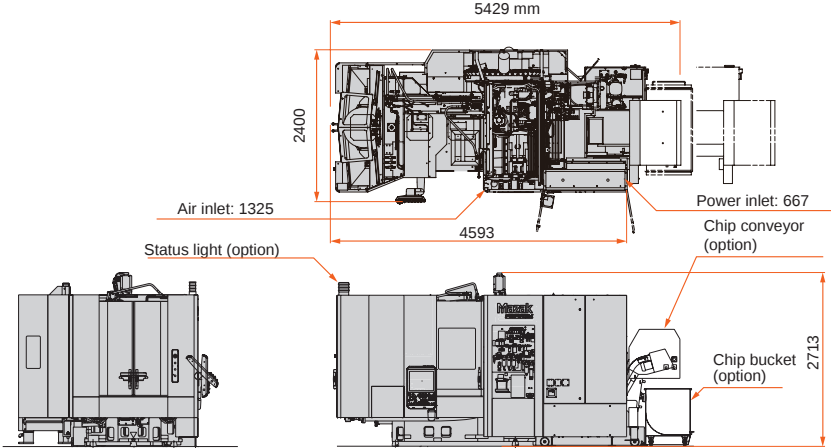
		●: Standard ○: Option -: N/A	
		HCN-4000 NEO	HCN-5000 NEO
Spindle	12000 min ⁻¹ (rpm) (No. 40)	●	●
	12000 min ⁻¹ (rpm) (BBT-40, HSK-A63)	○	○
	15000 min ⁻¹ (rpm) (No. 40, BBT-40, HSK-A63)	○	○
	18000 min ⁻¹ (rpm) (No. 40, BBT-40, HSK-A63)	○	○
	20000 min ⁻¹ (rpm) (No. 40, BBT-40, HSK-A63)	○	○
	25000 min ⁻¹ (rpm) (HSK-A63)	○	○
Tool magazine	40-tool drum type magazine	●	●
	60-tool drum type magazine	○	○
	Chain type tool magazine (80, 120, 160 tools)	○	○
	TOOL HIVE tool rack magazine (240, 348 tools)	○	○
Table	0.0001°× 3600000 NC rotary table	●	●
	0.0001°× 3600000 NC rotary table (with scale)	○	○
	0.0001°× 3600000 DDM table	○	○
	Table load capacity 400 kg* ¹	●	—
	Table load capacity 500 kg* ¹	—	●
	Table load capacity 700 kg* ¹	—	○
Pallet	□400 mm tapped pallet without edge locator	●	—
	□400 mm tapped pallet with edge locator	○	—
	□400 mm tapped pallet with edge locator and center bore	○	—
	□500 mm tapped pallet without edge locator	○	●
	□500 mm tapped pallet with edge locator	○	○
	□500 mm tapped pallet with edge locator and center bore	○	○
	500 mm × 400 mm tapped pallet with edge locator	○	—
	500 mm × 400 mm tapped pallet with edge locator and center bore	○	—
	□630 mm tapped pallet with edge locator	—	○
	□630 mm tapped pallet with edge locator and center bore	—	○
	630 mm × 500 mm tapped pallet with edge locator	—	○
	630 mm × 500 mm tapped pallet with edge locator and center bore	—	○
Automation	2-pallet changer	●	●
	6-pallet changer/pallet changer management/hand held coolant nozzle	○	○
	Hydraulic power supply A (supply from machine top) 3 ports × 2	○	○
	Hydraulic power supply A (supply from machine top) 12 ports × 2	○	○
	Hydraulic power supply B (supply through pallet) loading station: 3 ports; inside the machine: 3 ports	○	○
	Hydraulic power supply B (supply through pallet) loading station: 8 ports; inside the machine: 4 ports	○	○
	Workpiece seating detection, ON/OFF switch (requires hydraulic fixture)	○	○
	Automatic loading station rotation (90°index, 4 positions)	○	○
	Automatic front door	○	○
	Robot interface	○	○
	PMC application	○	○
	Automatic power ON/OFF + warm-up operation	●	●
Setup	SmoothAi spindle	○	○
	Remote manual pulse generator (wired)	●	●
	Remote manual pulse generator (wireless)	○	○
	Magazine operation panel for tool ID	●	●
	Preparation for Mazak monitoring system B (optical) RMP60/600	●	●
	Mazak monitoring system B (optical) RMP60	○	○
	Mazak monitoring system B (optical) RMP600	○	○
	Smooth OMM (on machine measurement software)	○	○
	Smooth Set and Inspect (on machine measurement software)	○	○
	Automatic tool length measurement & tool breakage detection	●	●
	RTS tool length measurement	○	○
	RENISHAW NC 4 laser tool length measurement* ²	○	○
	Tool breakage detection (detection in ATC area/up to standard tool length)	○	○
Safety equipment	Tool runout detection (from chip contamination between spindle and tool holder)	○	○
	Operator door interlock	●	●
High accuracy	Scale feedback (X, Y, Z axis)	○	○
	Chiller unit	●	●
	Coolant temperature control	○	○
	Ball screw core cooling (X, Y, Z axis)	●	●
Coolant/chip disposal	Flood coolant	●	●
	Niagara coolant	○	○
	Coolant through spindle 0.8 MPa (8 kgf/cm ²), 1.5 MPa (15 kgf/cm ²)	○	○
	SUPERFLOW coolant system 7.0 MPa (70 kgf/cm ²)	○	○
	Secondary coolant filter for aluminum	○	○
	Hand held coolant nozzle (for workpiece washing on pallet changer)	○	○
	Oil skimmer (RB-200)	○	○
	Mist collector	○	○
	Magnetic separator for cast iron	○	○
	Preparation for chip conveyor (rear discharge, ConSep2000)	●	●
	Chip conveyor (rear discharge, ConSep2000)	○	○
	Chip conveyor (rear discharge, hinge)	○	○
	Chip conveyor (rear discharge, MH)	○	○
	Chip conveyor (rear discharge, RD3G)	○	○
	Dual monitor for MAZATROL SmoothG CNC	○	○

*¹ Without pallet weight
*² Not available with automatic tool length measurement

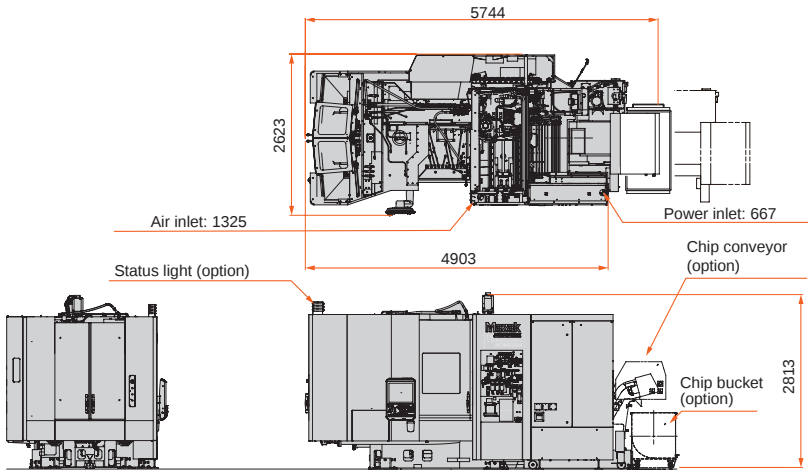
Machine Dimensions

Unit: mm

HCN-4000 NEO



HCN-5000 NEO

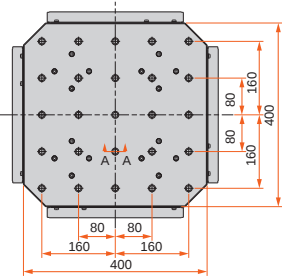


Pallet Dimensions

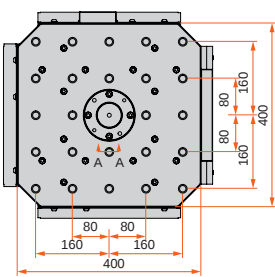
Unit: mm

HCN-4000 NEO

400 mm × 400 mm
tapped pallet

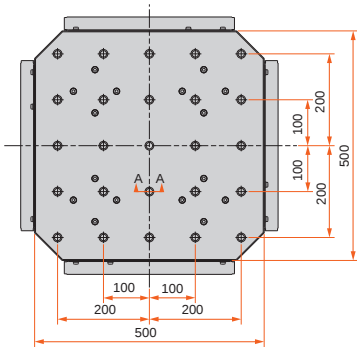


400 mm × 400 mm
tapped pallet with edge locator
and center bore (option)

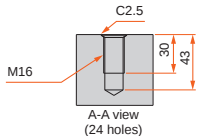
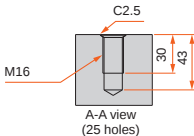
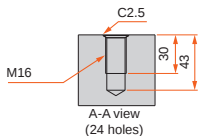
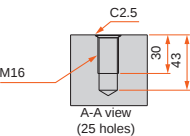
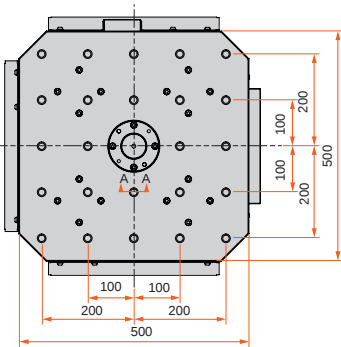


HCN-5000 NEO

500 mm × 500 mm
tapped pallet



500 mm × 500 mm
tapped pallet with edge locator
and center bore (option)



MAZATROL SmoothG Specifications

	MAZATROL	EIA
Number of controlled axes	Simultaneous 2 ~ 4 axes	
Minimum input increment	0.0001 mm, 0.00001 inch, 0.0001 deg	
High-speed, high-precision control	Shape compensation, Smooth corner control, Rapid traverse overlap, Rotary axis shape compensation	Shape compensation, Smooth corner control, Rapid traverse overlap, Rotary axis shape compensation, High-speed machining mode, High-speed smoothing control
Interpolation	Positioning (interpolation), Positioning (non-interpolation), Linear interpolation, Circular interpolation, Synchronous tapping*	Positioning (interpolation), Positioning (non-interpolation), Linear interpolation, Circular interpolation, Spiral interpolation, Helical interpolation, Cylindrical interpolation*, Fine spline interpolation*, NURBS interpolation*, Polar coordinate interpolation*, Synchronous tapping*
Feedrate	Rapid traverse, Cutting feed, Cutting feed (per minute), Cutting feed (per revolution), Dwell (time/rotation), Rapid traverse override, Cutting feed override, G0 speed variable control, Feedrate limitation, Variable acceleration control, G0 slope constant*	Rapid traverse, Cutting feed, Cutting feed (per minute), Cutting feed (per revolution), Inverse time feed, Dwell (time/rotation), Rapid traverse override, Cutting feed override, G0 speed variable control, Feedrate limitation, Time constant changing for G1, Variable acceleration control, G0 slope constant*
Program registration	Number of programs: 256 (Standard)/960 (Max.), Program memory: 2MB, Program memory expansion: 8MB*, Program memory expansion: 32MB*	
Control display	Display: 19" touch panel, Resolution: SXGA	
Spindle functions	S code output, Spindle speed limitation, Spindle speed override, Spindle speed reaching detection, Multiple position orient*, Constant surface speed, Spindle speed command with decimal digits, Synchronized spindle control, Spindle speed range setting	
Tool functions	Number of tool offset: 4000, T code output for tool number, Tool life monitoring (time), Tool life monitoring (number of machined workpieces)	Number of tool offset: 4000, T code output for tool number, T code output for group number, Tool life monitoring (time), Tool life monitoring (number of machined workpieces)
Miscellaneous functions	M code output, Simultaneous output of multiple M codes	
Tool offset functions	Tool position offset, Tool length offset, Tool diameter/tool nose R offset, Tool wear offset	
Coordinate system	Machine coordinate system, Work coordinate system, Local coordinate system, Additional work coordinates (300 set)	
Machine functions	—	Tilted working plane**, Shaping function*, Dynamic compensation II*, Tool center point control*,**, Workpiece positioning error compensation*,**
Machine compensation	Backlash compensation, Pitch error compensation, Ai Thermal shield, Volumetric 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, Single process, Machine lock	Optional block skip, Optional stop, Dry run, Manual handle interruption, MDI interruption, TPS, Restart, Restart 2, Collation stop, Machine lock
Manual measuring 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, 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	
Peripheral network	PROFIBUS-DP*, Ethernet/IP*, CC-Link*, CC-Link IE Field Basic	
Interface	SD card interface, USB	
Ethernet	10M/100M/1Gbps	
Security function	Security software*	

* Option

** Simultaneous 4-axis control