



HCN-4000 NEO HCN-5000 NEO

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



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

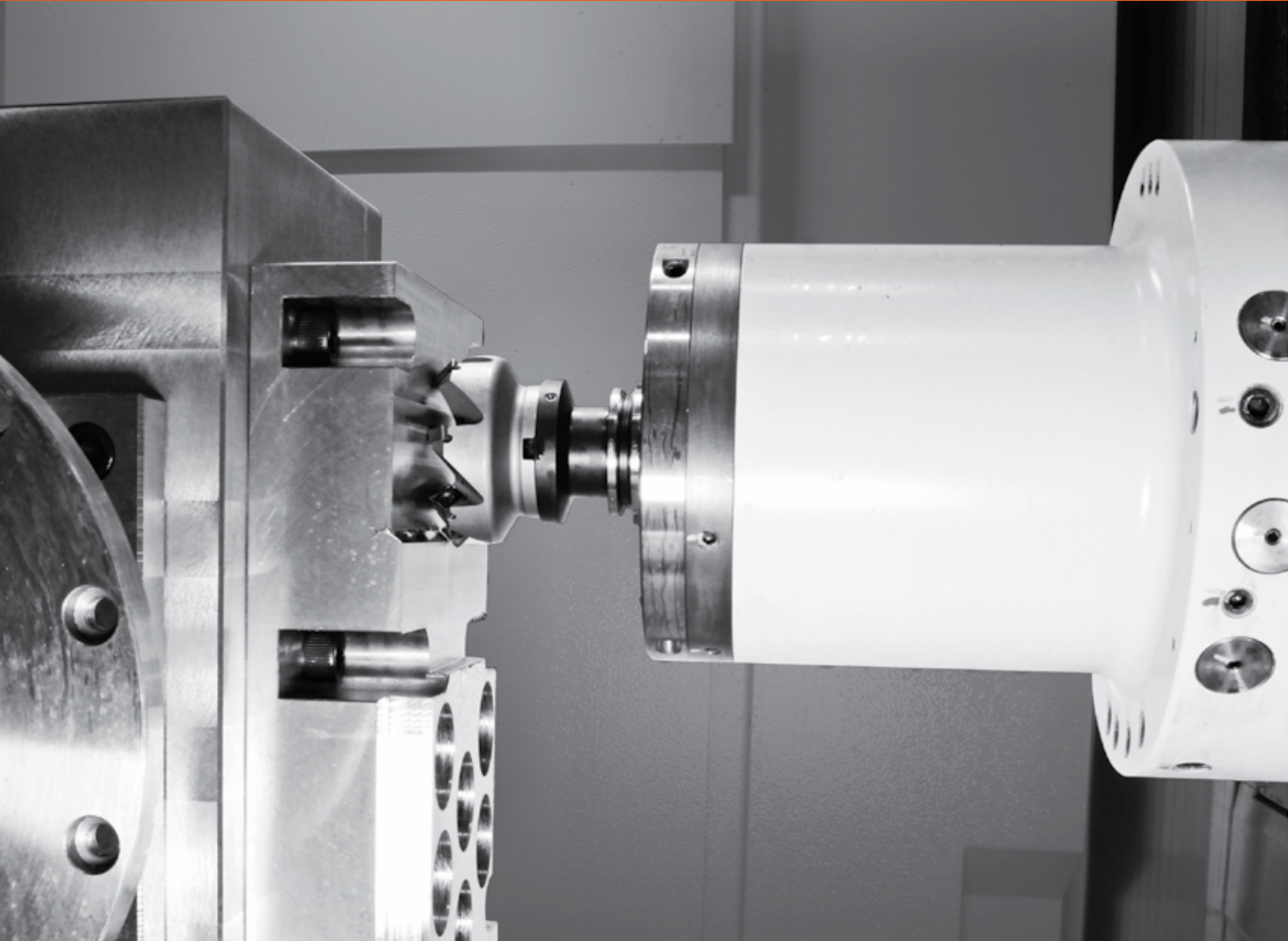
Wide variety of available automation equipment, including a modular PALLETECH flexible manufacturing system, MPP (MULTI PALLET POOL), 6-pallet changer and a robot system

Improved environmental performance with energy-saving equipment



HCN-4000 NEO

HCN-5000 NEO



Applicable to various workpiece materials

Aerospace component

Rib (aluminum)



Aerospace component

Frame (aluminum alloy)



Construction machinery component

Mount (stainless)



Aerospace component

Cylinder block (cast iron)



Higher Productivity

Spindle specifications to meet a wide variety of machining requirements

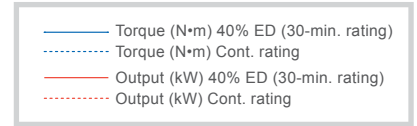
The high-rigidity spindle can perform heavy-duty machining of challenging materials and steel, and high-speed machining of non-ferrous materials such as aluminum. High-speed and high-torque specifications are optionally available.

Standard 18000 rpm

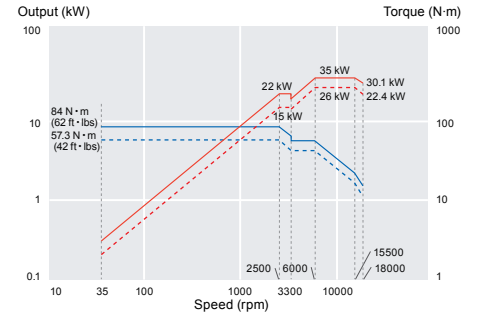
Designed for versatile performance

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 rpm
Output	35 kW (47 HP) [40% ED (30-min.rating)]
	26 kW (35 HP) [cont. rating]
Max. torque	84 N·m (62 ft·lbs) [40% ED (30-min.rating)]



Spindle output/torque diagram



General machining 12000 rpm

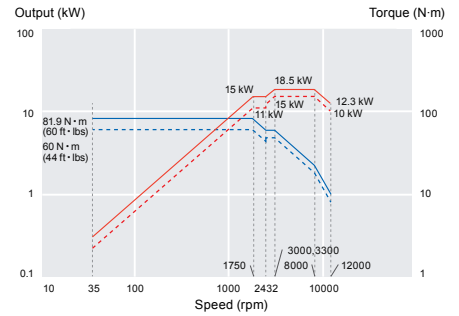
OPTION

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 rpm
Output	18.5 kW (25 HP) [40% ED (30-min.rating)]
	15 kW (20 HP) [cont. rating]
Max. torque	81.9 N·m (60 ft·lbs) [40% ED (30-min.rating)]

Spindle output/torque diagram



High torque 15000 rpm

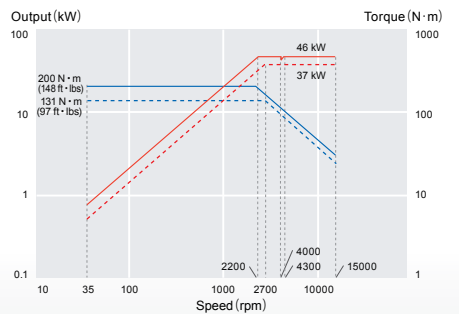
OPTION

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 rpm
Output	46 kW (62 HP) [40% ED (30-min. rating)]
	37 kW (50 HP) [cont. rating]
Max. torque	200 N·m (148 ft·lbs) [40% ED (30-min. rating)]

Spindle output/torque diagram



High torque

15000 rpm spindle machining example

Machining conditions

- Material: C45
- Cutting speed: 300 m/min (984 SFM)
- Feed per tooth: 0.25 mm (0.01")
- Depth of cut: 5.5 mm (0.22")
- ø80 mm (ø3.15") facemill (6 teeth)
- Spindle speed: 1194 rpm
- Cutting width: 60 mm (2.36")

ø80 mm (ø3.15") facemill

Spindle speed	Feedrate	Cutting width	Depth of cut	Material removal rate
1194 rpm	1.5 (0.06")/rev	60 mm (2.36")	5.5 mm (0.22")	591 cm ³ (36 in. ³)/min

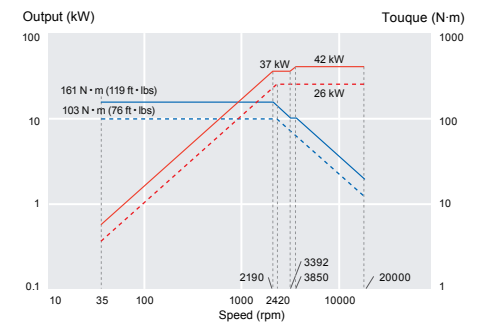
High speed, high output 20000 rpm OPTION

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 rpm
Output	42 kW (56 HP) [40% ED (30-min. rating)]
	26 kW (35 HP) [cont. rating]
Max. torque	161 N·m (119 ft·lbs) [40% ED (30-min. rating)]

Spindle output/torque diagram



**High speed,
high output**

**20000 rpm spindle
machining example**

Machining conditions

- Material: aluminum (A5052)
- Cutting speed: 3000 m/min (9842 SFM)
- Feed per tooth: 0.25 mm (0.01")
- Depth of cut: 5 mm (0.20")
- ø80 mm (ø3.15") facemill (5 teeth)
- Spindle speed: 11943 rpm
- Cutting width: 60 mm (2.36")

ø80 mm (ø3.15") facemill

Spindle speed	Feedrate	Cutting width	Depth of cut	Material removal rate
11943 rpm	1.25 (0.05")/rev	60 mm (2.36")	5 mm (0.20")	4479 cm ³ (273 in. ³)/min

High speed 25000 rpm OPTION

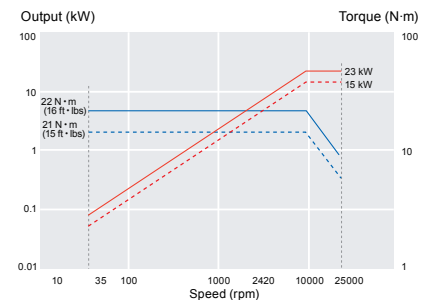
High-speed machining of precision aerospace components, die-cast components

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.

Note: Coolant through spindle is not available.

HSK-A63	
Integral spindle/motor	
Oil and air lubrication	
Speed	25000 rpm
Output	23 kW (31 HP) [40% ED (30-min.rating)]
	15 kW (20 HP) [cont. rating]
Max. torque	22 N·m (16 ft·lbs) [40% ED (30-min.rating)]

Spindle output/torque diagram



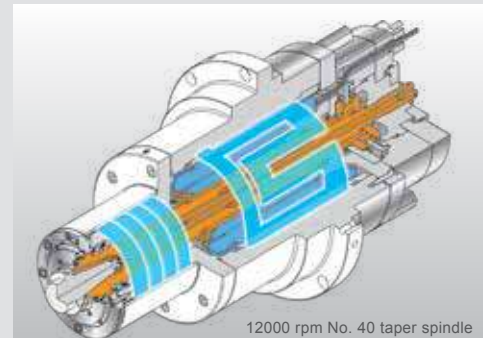
Spindle

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.



12000 rpm No. 40 taper spindle

Higher Productivity

Wide 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
Clamping torque	2450 N·m (1807 ft·lbs)	4740 N·m (3496 ft·lbs)
Table rotation speed	50 rpm	50 rpm
Contouring torque (cont. rating)	490 N·m (361 ft·lbs)	490 N·m (361 ft·lbs)
Indexing time (90°)	1.0 sec.	1.2 sec. (standard)/ 1.3 sec. (optional 700 kg (1543 lbs) 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 diameter — 4000 NEO: **420 mm (16.54")**
5000 NEO: **510 mm (20.08")**
- Max. moment — **5.9 N•m (4 ft•lbs)**
- 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

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.



Higher Accuracy

High positioning accuracy

3 times better than ISO standard

Unit: μm (inch)

Bidirectional positioning accuracy	X axis	Y axis	Z axis
ISO	25 μm (0.000984")	25 μm (0.000984")	25 μm (0.000984")
Tolerance	9 μm (0.000354")	9 μm (0.000354")	9 μm (0.000354")
Results	2.8 μm (0.00011")	2.3 μm (0.000091")	2.4 μm (0.000094")

Unidirectional positioning repeatability	X axis	Y axis	Z axis
ISO	8 μm (0.000315")	8 μm (0.000315")	8 μm (0.000315")
Tolerance	3 μm (0.000118")	3 μm (0.000118")	3 μm (0.000118")
Results	0.6 μm (0.000024")	1 μm (0.000039")	0.9 μm (0.000035")

Note: The inspection is conducted according to ISO 230 and ISO 10791 on a recommended foundation with room temperature controlled to $22^{\circ}\text{C} \pm 1^{\circ}\text{C}$ 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 improved productivity.

Concentricity (max.)	11.6 μm (0.00046")
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Note: The inspection is conducted on a recommended foundation with room temperature controlled to $22^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$ after machine has reached operating temperature. Example results for reference only.

Heat displacement control

Ai Thermal Shield

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



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.



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.

OTS 3D touch trigger tool setter **OPTION**

OTS performs tool length and diameter measurement and detects tool breakage. Tool diameter can be measured down to $\varnothing 1$ mm ($\varnothing 0.04''$). Compact design with optical signal transmission mounts/dismounts OTS 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

High-rigidity machine construction for stable machining performance

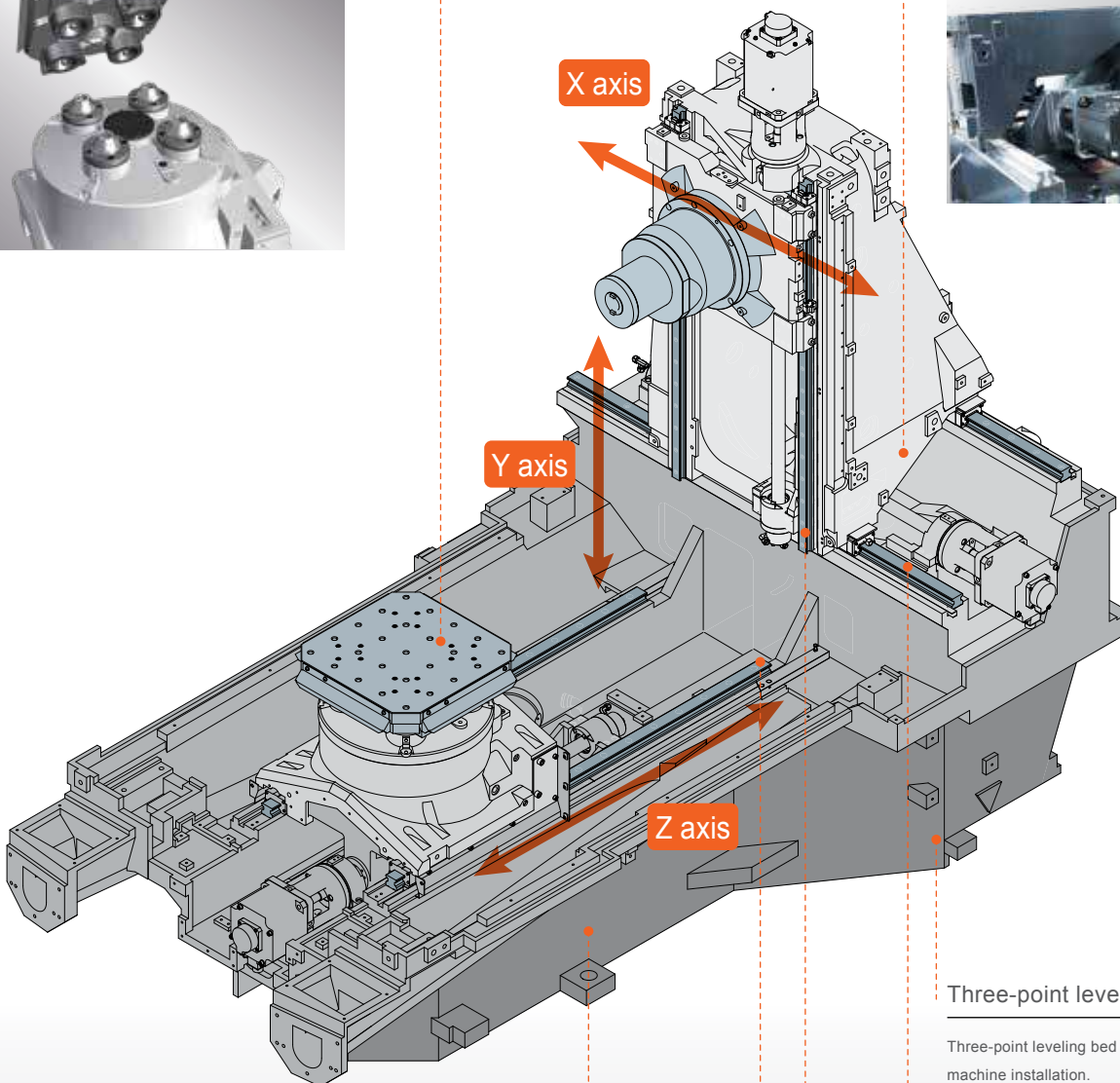
Table coupling

The table and pallet are clamped on 4 taper cones by 73.2 kN (16456 lbs) of force 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

60 m/min
(2362 ipm)
(X, Y, Z axes)

Maximum feedrate

60 m/min
(2362 ipm)
(X, Y, Z axes)

Acceleration/deceleration

1.0 G
(X, Y, Z axes)

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 axes

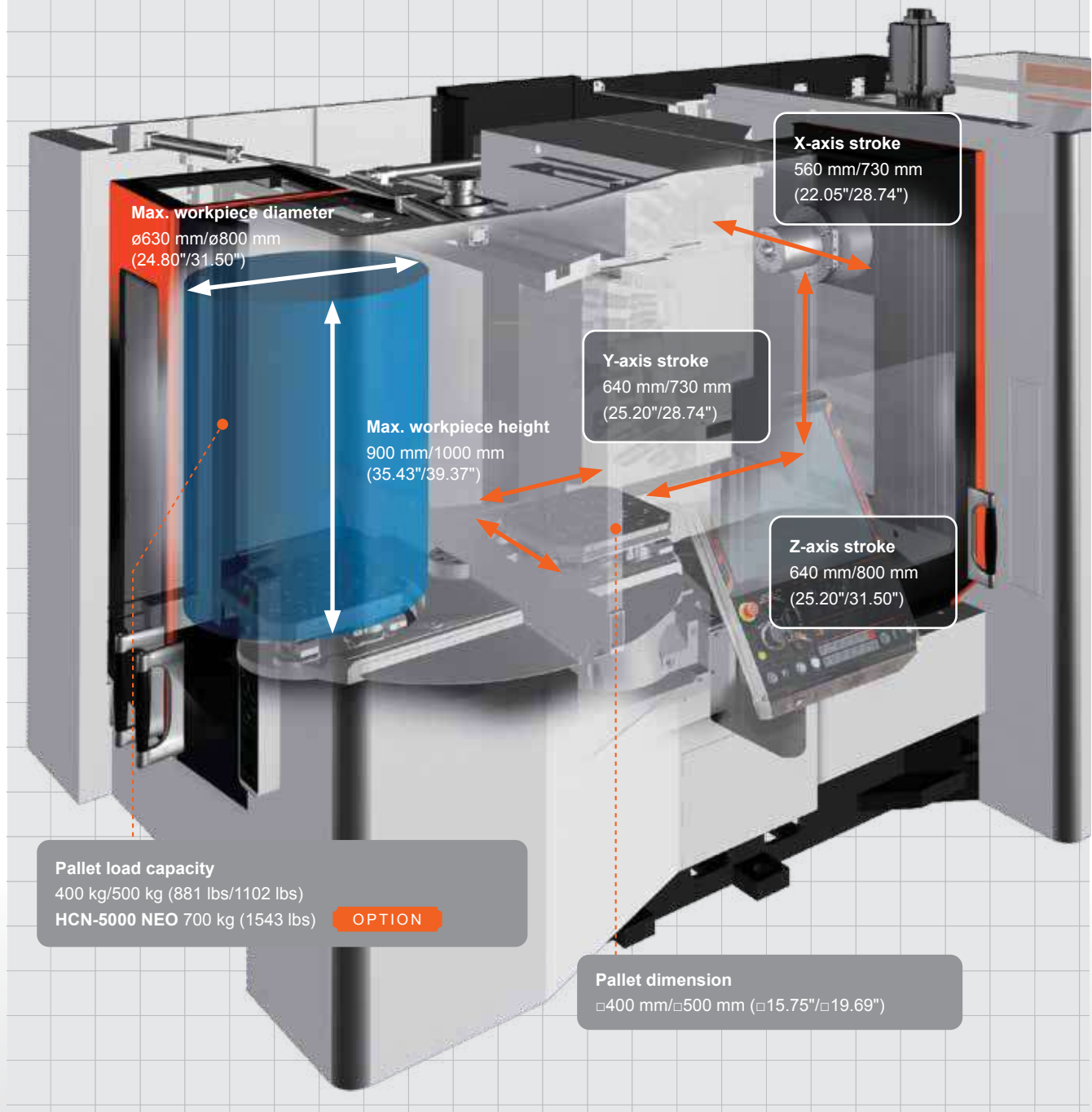
The HCN series uses linear roller guides on the X, Y and Z axes for high accuracy and heavy-duty machining.

40 taper spindle

□400mm (□15.75")/□500mm (□19.69") pallet size

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

HCN-4000 NEO/HCN-5000 NEO mm (inch)



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



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 (16 PC)

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

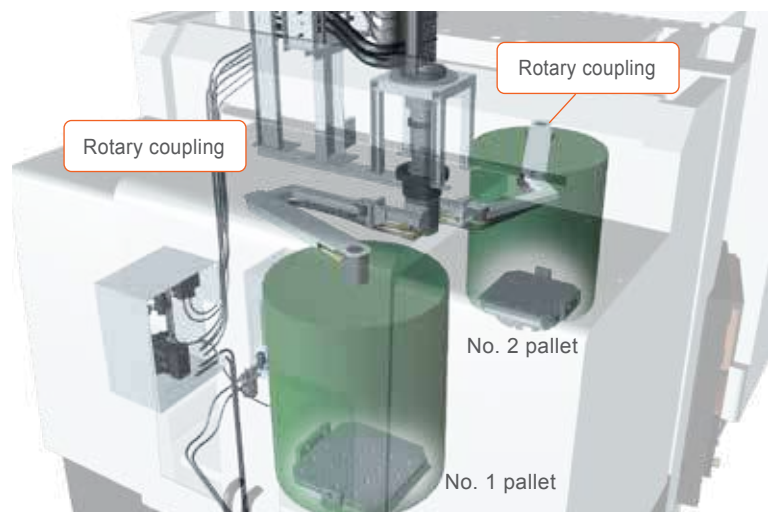
Hydraulic hoses supply hydraulic power from the top part of the pallet changer to fixtures mounted on each pallet. Arrange up to 12 ports. High-power hydraulic supply with 21 MPa (3046 psi) is available.

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 (3046 psi) is available.

Hydraulic power supply from top

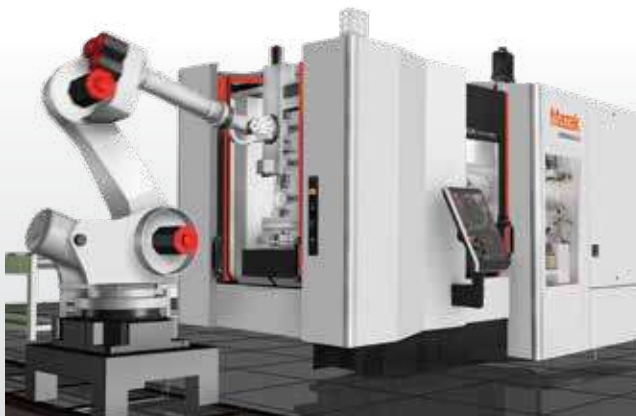


Loading station	Hydraulic power supply: 8 ports
Inside machine	Hydraulic power supply: 4 ports

Robot system

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

•Field network available



Tool transport system

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



Ergonomics

Ease of operation

Design focus on ergonomics provides unsurpassed ease of operation



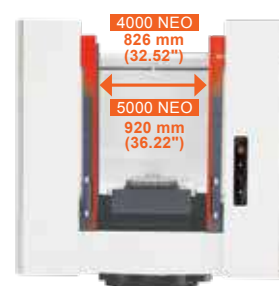
1 Large window (2-pallet changer)

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



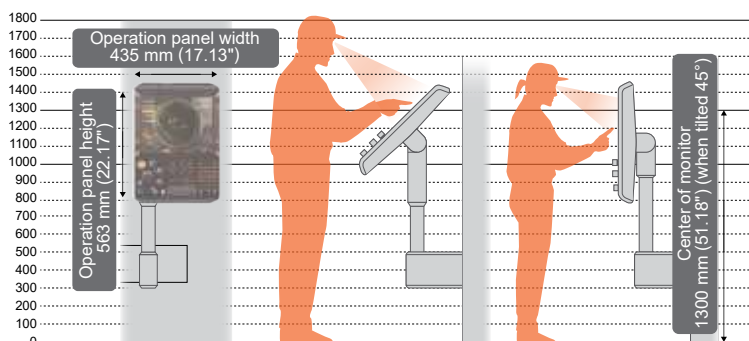
2 Convenient workpiece loading/unloading

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

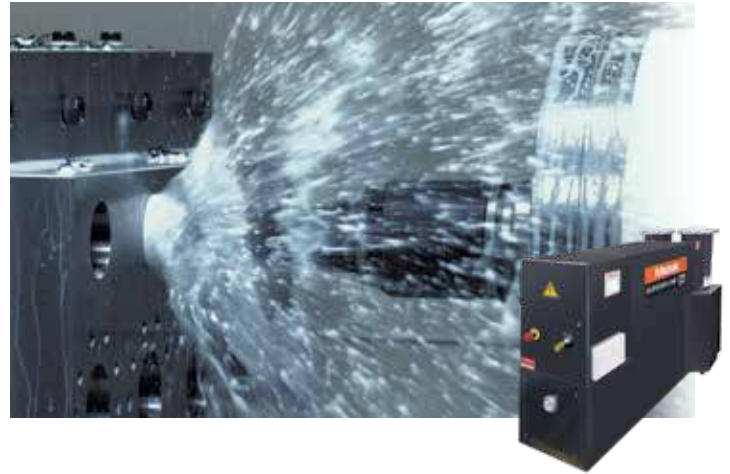
Operators can monitor workpiece machining easily.

Coolant

SUPERFLOW coolant system **OPTION**

The SUPERFLOW coolant system supplies a maximum 7.0 MPa (1015 psi) 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



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 (116 psi) and 1.5 MPa (218 psi) 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.

Mist collector **OPTION**

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

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.

Coolant temperature control **OPTION**

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

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

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

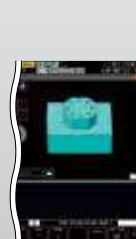


Real-time display of 3D model in the process list with updated programming

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

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

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.



Environmental Friendly

Mazak Go GREEN

Decarbonization-related technology for Mazak products

We are committed to developing technology for decarbonization through productivity improvements. Mazak promotes the following comprehensive three approaches to reduce our environmental impact and move toward achieving a sustainable society.

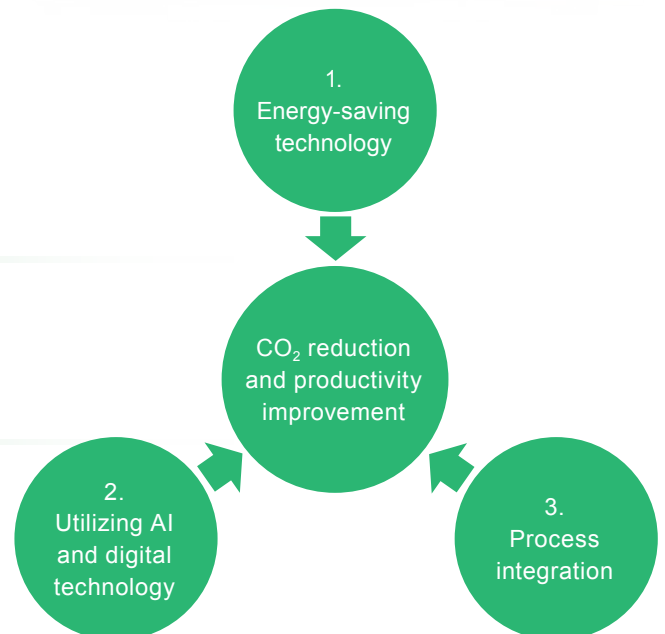


Three approaches to reducing CO₂ emissions

- 1 Energy-saving technology**
Equipped with energy-saving equipment and the visualization of emissions, saving resources and reducing waste

- 2 Utilizing AI and digital technology**
Equipped with Ai Thermal Shield and Digital Twin technology to reduce setup times

- 3 Process integration**
Development of HYBRID Multi-Tasking machines and automation systems



Smooth Energy Dashboard to manage the power consumption of machine tools

OPTION

SMOOTH
ENERGY DASHBOARD

The Smooth Energy Dashboard provides convenient visual monitoring of energy consumption, with real-time display of electrical power consumption and consumption history. This software analyzes the data corresponding to programs and tool data to suggest improvements in electrical power consumption, management and reduction.

Energy consumption on process screen

- Total energy consumption (of workpiece in operation)
- Current energy consumption



Convenient visual monitoring



Significantly reduced CO₂ emissions during machining

Hydraulic unit uses an accumulator as well as an inverter-type chiller unit for considerable reduction of energy consumption during operation.

Standard Machine Specifications

		HCN-4000 NEO	HCN-5000 NEO
Stroke	X axis (column right/left)	560 mm (22.05")	730 mm (28.74")
	Y axis (spindle up/down)	640 mm (25.20")	730 mm (28.74")
	Z axis (table back/forth)	640 mm (25.20")	800 mm (31.50")
	Distance from table top to spindle nose	70 mm ~ 710 mm (2.76" ~ 27.95")	70 mm ~ 870 mm (2.76" ~ 34.25")
	Distance from pallet to spindle center	80 mm ~ 720 mm (3.15" ~ 28.35")	100 mm ~ 830 mm (3.94" ~ 32.68")
Pallet	Pallet size	400 mm × 400 mm (15.75" × 15.75")	500 mm × 500 mm (19.69" × 19.69")
	Maximum workpiece dimensions	ø630 mm × 900 mm (ø24.80" × 35.43")	ø800 mm × 1000 mm (ø31.5" × 39.37")
	Pallet load capacity (evenly distributed)	400 kg (881 lbs)	500 kg (1102 lbs)
	Pallet top surface	M16 (5/8-11 UNC) tapped holes 25 places, 80 mm (3.15") pitch	M16 (5/8-11 UNC) tapped holes 25 places, 100 mm (3.94") pitch
Table	Minimum indexing angle increment	0.0001°	
	Indexing time	1.0 sec./90°	1.2 sec./90°
Spindle	Maximum spindle speed	18000 rpm	
	Spindle speed range	2-step (electric)	
	Spindle taper	7/24 taper No. 40	
	Spindle bearing ID	ø70 mm (ø2.76")	
	Spindle acceleration	1.8 sec. (0 → 18000 rpm)	
Feedrate	Rapid traverse rate (X, Y, Z axis)**	60000 mm/min (2362 lpm)	
	Cutting feedrate (X, Y, Z axis)**	1 mm ~ 60000 mm/min (0.04 ~ 2362 lpm)	
	Axis acceleration/deceleration	1.0 G	
Automatic tool changer	Tool shank	No. 40	
	Tool storage capacity	40	
	Maximum tool diameter	ø95 mm (ø3.74")	
	Maximum tool diameter with adjacent pockets empty	ø170 mm (ø6.69")	
	Maximum tool length (from gauge line)	420 mm (16.54")	510 mm (20.08")
	Maximum tool weight	12 kg (26 lbs) (max. moment: 5.9 N·m (4 ft·lbs))	
	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 (30-min. rating)/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 (30-min. rating)/cont. rating)	38.21 kVA/33.24 kVA (50Hz) 41.32 kVA/36.34 kVA (60Hz)	38.64 kVA/33.64 kVA (50Hz) 41.74 kVA/36.76 kVA (60Hz)
	Air supply (pressure)	0.5 MPa ~ 0.9 MPa (70 ~ 130 psi)	
	Air supply (flow rate)	240 L/min (8.48 ft³/min)	
Machine size	Machine height	2713 mm (106.81")	2813 mm (110.75")
	Machine width*2	2400 mm (94.49")	2623 mm (103.27")
	Machine length*2	5429 mm (213.74")	5744 mm (226.14")
	Machine weight *2	10770 kg (23743 lbs)	12150 kg (26786 lbs)

*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	18000 rpm (No. 40)	●	●
	18000 rpm (BBT-40, HSK-A63)	○	○
	12000 rpm (No. 40, BBT-40, HSK-A63)	○	○
	15000 rpm (No. 40, BBT-40, HSK-A63)	○	○
	20000 rpm (No. 40, BBT-40, HSK-A63)	○	○
	25000 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 (882 lbs)*1	●	—
	Table load capacity 500 kg (1102 lbs)*1	—	●
	Table load capacity 700 kg (1543 lbs)*1	—	○
Pallet	□400 mm (□15.75") tapped pallet without edge locator	●	—
	□400 mm (□15.75") tapped pallet with edge locator	○	—
	□400 mm (□15.75") tapped pallet with edge locator and center bore	○	—
	□500 mm (□19.69") tapped pallet without edge locator	○	●
	□500 mm (□19.69") tapped pallet with edge locator	○	○
	□500 mm (□19.69") tapped pallet with edge locator and center bore	○	○
	500 mm × 400 mm (19.69" × 15.75") tapped pallet with edge locator	○	—
	500 mm × 400 mm (19.69" × 15.75") tapped pallet with edge locator and center bore	○	—
	□630 mm (□24.80") tapped pallet with edge locator	—	○
	□630 mm (□24.80") tapped pallet with edge locator and center bore	—	○
	630 mm × 500 mm (24.80" × 19.69") tapped pallet with edge locator	—	○
	630 mm × 500 mm (24.80" × 19.69") 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	●	●
	Mazak monitoring system B (optical) OMP60	○	○
	SMOOTH OMM (on machine measurement software)	○	○
	SMOOTH Set and Inspect (on machine measurement software)	○	○
	Automatic tool length measurement & tool breakage detection	●	●
	OTS tool length measurement	○	○
	RENISHAW NC 4 laser tool length measurement*2	○	○
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 (116 psi) , 1.5 MPa (218 psi)	○	○
	SUPERFLOW coolant system 7.0 MPa (1015 psi)	○	○
	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)	○	○
Miscellaneous	Dual monitor for MAZATROL SmoothG CNC	○	○

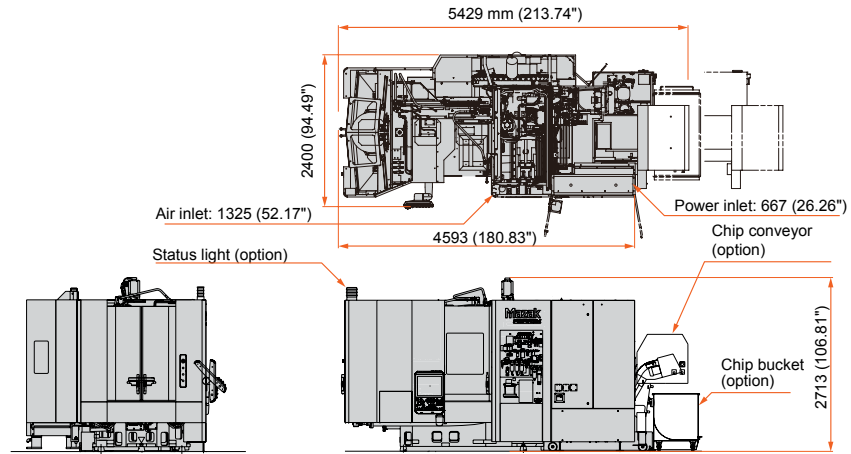
*1 Without pallet weight

*2 Not available with automatic tool length measurement

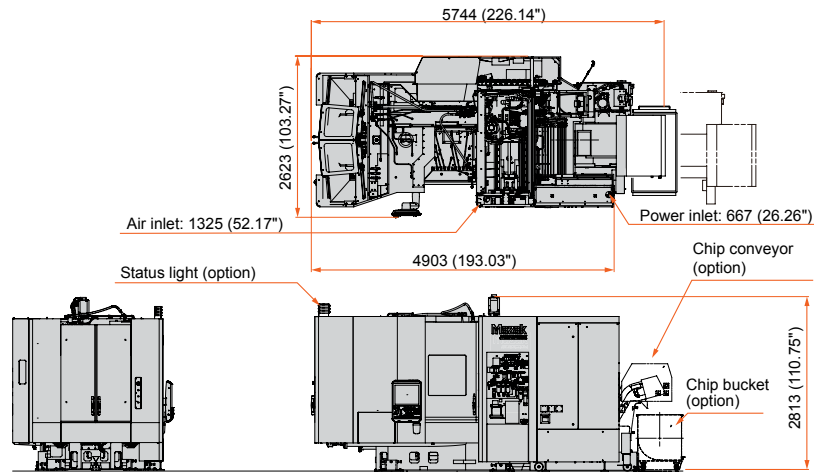
Machine Dimensions

Unit: mm (inch)

HCN-4000 NEO



HCN-5000 NEO

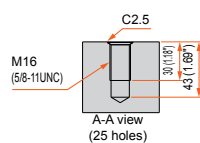
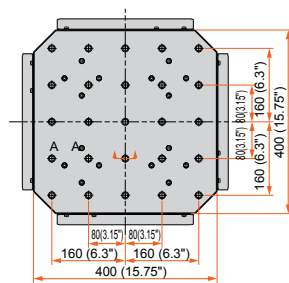


Pallet Dimensions

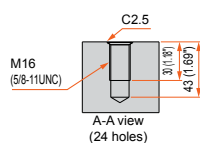
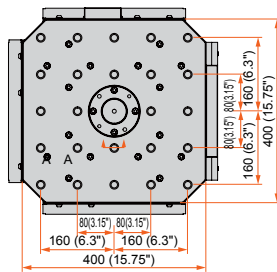
Unit: mm (inch)

HCN-4000 NEO

400 mm × 400 mm (15.75" × 15.75")
tapped pallet

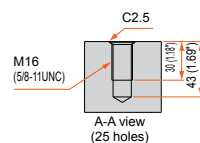
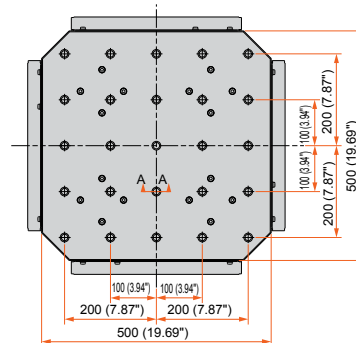


400 mm × 400 mm (15.75" × 15.75")
tapped pallet with edge locator and
center bore (option)

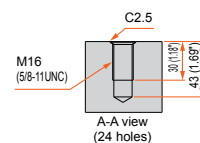
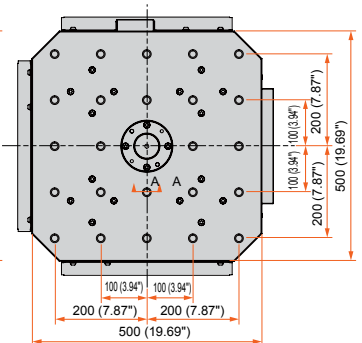


HCN-5000 NEO

500 mm × 500 mm (19.69" × 19.69")
tapped pallet



500 mm × 500 mm (19.69" × 19.69")
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



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