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Mazak builds their HC Series machines with the same proven designs and technologies long incorporated into its line up of world-class horizontal machining centers. Designed and built in Kentucky, the fully-equipped, yet extremely cost-effective, HC Horizontal Machining Centers deliver unsurpassed reliability, productivity and ease of operation. Get the capabilities and high performance of a larger Mazak horizontal machining center but on a space-saving, smaller-footprint machine platform for low, medium and high-volume production environments.

As with all its machines, Mazak backs those in the HC Series with the industry's most acclaimed and comprehensive service and support program.

MACHINE CONFIGURATIONS:
- HC-4000
- HC-5000
OPTIMUM PLUS SERVICE AND SUPPORT

MAZAK OPTIMUM PLUS
To maximize machine tool investments, the Mazak Optimum Plus program represents a company-wide commitment to provide the best possible, most comprehensive support.

The Optimum Plus program encompasses Five Pillars — distinct, yet interrelated areas:
• Single-source service
• Technical support — machine and CNC
• Parts support
• Progressive Learning
• Spindle and unit rebuild

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

Benefits of Mazak’s single-source approach include:
• Free technical phone support and software upgrades for the life of a Mazak machine
• Software support that provides instantaneous diagnostic services via remote real-time systems
• Guaranteed phone response to any technical question within one hour via a 24/7 technical phone support system
• More than 350 factory-trained Mazak service representatives and certified distributor personnel that can be at a customer’s site within 24 hours under most circumstances
• Wide variety of services, including laser calibration to ISO, ANSI and JIS standards; ball bar qualification and analysis; preventive maintenance plans and programs; and vibration analysis and benchmarking

Technical support — machine and CNC
Comprehensive warranties on every Mazak machine tool component, including a two-year part warranty on CNC control components.

Technical support for machines and CNCs also includes:
• Additional warranty coverage (available upon request)
**Parts support**

Mazak’s spare parts fulfillment ensures the fastest possible reaction time. The state-of-the-art Mazak North American Parts Center uses the latest AS/RS fully automated warehouse storage system technology and maintains a $65 million parts inventory.

Benefits of the North American Parts Center include:
- Average 97% same day parts shipment and after hours shipping
- 60,000 part numbers in stock
- Call center open Monday-Saturday
- Convenient web-based parts ordering
- Experienced part specialists
- Lifetime CNC parts support

[Click here for more information on parts support.](#)

**Progressive Learning**

*Mazak’s Progressive Learning* represents a unique, phased approach to education and training for customers, combining hands-on training, web-based instruction and real-world examples. The program’s tiers of offerings — Pyramid of Learning — range from self-paced coursework to highly advanced classes. Every Mazak machine includes three years of programming training at no charge to customers.

*Mazak’s Pyramid of Learning* is a visual representation of its approach to training. The lower levels at the base of the pyramid represent basic skills education for new machinists, while the upper levels signify advanced training for highly experienced programmers and operators.

Pyramid of Learning levels include:
- Simple online training
- Introductory programming training
- Traditional hands-on training
- Advanced training
- Customized training

[FULLY AUTOMATED WAREHOUSE STORAGE SYSTEMS ENSURE THE FASTEST DELIVERY OF MAZAK SPARE PARTS.](#)
TOP 10 ADVANTAGES OF THE HC SERIES

HC Series machines feature several new and innovative technologies to help job shops boost speed, performance and precision in a wide variety of metalworking applications. The series brings advanced technology, value and productivity to part-processing operations.

1. Full fourth-axis as standard.

2. Extremely rigid bases and columns built for stability and vibration dampening.

3. Robust high-performance spindles offered in various maximum speeds.

4. 1G axis acceleration provides high speed machining and superior accuracy.

5. Automatic tool changer and large 84-tool drum-style magazines provide twice the storage capacity as standard.


8. Mazak MAZATROL SmoothG CNC offers fast and easy EIA/ISO and conversational programming.

9. Simple and efficient chip management helps reduce downtime.

10. Space-saving innovative small machine footprint and easy-to-access maintenance panels.
HIGH ACCURACY

Mazak’s rigid machine base structure, advanced spindle/motor design and MAZATROL CNC submicron machine movement give HC Series machines extremely high part accuracy and surface finish capabilities. And, as with all the machines built at the Mazak iSMART Factory™ in Florence, Kentucky, Mazak closely monitors the manufacture and assembly of each and every HC Series machine to guarantee their consistent precision and performance.

To further ensure the highest precision possible over extended hours of operation, Active Vibration Control and Thermal Shield intelligent machine functions minimize detrimental vibration and heat when machining.

ACTIVE VIBRATION CONTROL
Axis acceleration/deceleration can cause machine vibration. Mazak’s Active Vibration Control function effectively reduces vibration for high accuracy positioning in all axes and shorter machining cycle times. It also curbs the effects such vibration has on the cutting tool for longer tool life and exceptional part surface finishes.

INTELLIGENT THERMAL SHIELD
Mazak designs its machine units to generate the least amount of heat possible during operation to minimize displacement. But when ambient shop temperatures fluctuate, the Thermal Shield function automatically compensates via exhaust ducts that channel generated heat out and away from the machine and any machines adjacent to it.

MAZAK iSMART FACTORY
The Mazak iSMART Factory encompasses the complete digital integration of the factory with state-of-the-art manufacturing equipment, automation and advanced manufacturing practices. It hinges on the free flow and sharing of data in terms of process control and operation monitoring to ensure the highest quality standards and the utmost production consistency from one machine to the next.
MACHINE DESIGN

The HC Series combines high quality, innovation and extreme cost-effectiveness without sacrificing machine performance, and because Mazak engineers and builds the series in Kentucky, the company can ensure the shortest delivery time possible. The Mazak factory uses a Production-On-Demand approach for extreme manufacturing agility to quickly react to current market trends, which means machines coming off the line all incorporate the latest, most innovative technology.

MACHINE CONFIGURATIONS
HC Series machines are 4-axis horizontal machining centers with traveling columns and full fourth-axis NC rotary tables as standard. While smaller in size, the machines accommodate large and heavy workpieces as well as offer, as standard, built-in two-pallet changing capability.

BASE AND COLUMN
New reinforced cast-iron bases and columns ensure high-rigidity and thermal control as well as ample part capacity.

Because smaller-size machines are more likely to be moved around a shop, Mazak equips the HC Series machine bases with its highly effective 3-point support systems. The system simplifies foundation preparation for faster machine installations and easier machine-leveling adjustments.

FULL FOURTH-AXIS ROTARY TABLES
The HC Series rotary tables deliver speed and precision that help shorten part cycle times, while high-accuracy encoders ensure exceptional repeatability.
SERVO DRIVE SYSTEM
HC Series machines use the latest servo drive system with 1G axis acceleration for high machining speeds and superior accuracy. A ballscrew core cooling system ensures stable machining accuracy over extended periods for high-speed operation.

ROLLER GUIDE SYSTEM
The Mazak MX Hybrid Roller Guide System featured on HC Series machines allows for faster speeds and boosts accuracy, leading to a comprehensive improvement in overall machine productivity and profitability. When compared with traditional ball guides and boxways, the advantages of the Mazak MX Hybrid Roller Guide System are clear.

• More surface contact for large load capacities and better dampening
• Better distribution of load points via an X-design that allows load to be applied to four directions
• Higher positioning accuracy than boxways due to no stick and slip
• Faster and greener than boxways with nearly twice the rapid traverse rate and less contamination in machine coolant system

SENSORS
Advanced sensor technology incorporated into HC Series machines allows for optimum stability and condition control. Sensors monitor heat and vibration along with other machine functions to ensure consistent high-precision machining over extended hours of operation.

EASE OF MAINTENANCE
The single maintenance panel for oil and air units on HC Series machines is easy to access, and cables are easy to identify by color, which reduces time required for maintenance.

EFFICIENT CHIP MANAGEMENT
Chip conveyor systems on HC Series machines provide fast, low-maintenance chip management, while flood coolant evacuates chips quickly and efficiently from machine work envelopes. Complete chip systems fit within the footprints of the machines.
PALLETS AND TWO-PALLET CHANGERS

Built-in, standalone rotary-style two-pallet changers on HC Series machines increase spindle utilization and allow for continuous uninterrupted production. As a form of simple and efficient automation, the turntable pallet changing capability enhances productivity by allowing operators to load, unload and inspect parts on one pallet while the machine continues to work uninterrupted on parts fixtured on the other pallet.

Number of pallets: 2  
Changing system: rotary  
Change time: 7 sec (HC-4000), 8 sec (HC-5000)

TAPER CONE PALLET CLAMPING SYSTEM
Four fixed taper cones on HC Series machine pallets clamp with more force and strength than do existing center-clamping systems. With each taper cone clamping with 4,114 ft-lb (18.3 kN) of force, the system delivers overall pallet holding power of 16,456 ft-lb (73.2 kN). This stronger holding force allows for a higher Z-axis allowable thrust height of 19.68" (500 mm) as well as an increased allowable thrust level of 8,487 ft-lb (11.5 kN) at the maximum height for aggressive machining of bigger parts.

For efficient and interference-free operation, HC Series machines accommodate, as optional, overhead hydraulic systems. Up to six ports can supply either hydraulics or pneumatics from the top of machine pallet changers to the upper ends of fixtures.
SPINDLE POWER AND SPEEDS

HC Series available machine spindles range from standard to high-speed versions, all of which feature hybrid ceramic ball bearings and cooling jackets for precision performance and long life. With such a wide offering, spindle speed and power are matched perfectly to intended part applications, whether machining aluminum, cast iron or nickel-based alloys.

- 12,000 rpm/40 taper or BigPlus 40 (standard)
- 15,000 rpm/40 taper or BigPlus 40 (optional)
- 20,000 rpm/40 taper or BigPlus 40 (optional)

AUTOMATIC TOOL CHANGING AND STORAGE

With double the capacity, HC Series machine tool magazines — as standard — accommodate 84 tools. The rotary drum-type storage system features Mazak’s innovative space-saving double pocket design where each tool position actually has two tool pockets situated at 60 degree angles from one another. This allows HC Series machines to store twice the amount of tooling within the same space as 42-tool magazine for extended periods of unmanned operation.

The high-speed automatic toolchangers (ATCs) work in tandem with the double-pocket tool magazines, and because the changer always takes the quickest route to the next needed tool position, tool changes are extremely fast and help reduce non-cut times. With cam-driven technology, the changing system delivers strong, dependable and consistent performance.
FAST, EASY AND EFFICIENT PROGRAMMING

The continuously innovative Mazak MAZATROL SMOOTH CNC controls make programming HC Series machines easy, fast and efficient. The highly versatile controls allow for both EIA/ISO and conversational programming, while other features and capabilities boost power and functionality.

EIA/ISO COMPATIBILITY STANDARD
MAZATROL G-codes are the same as those used in conventional EIA CNC machines. This allows HC Series machine users to run programs made for other machine brands by simply editing M codes and confirming axis strokes along with cutting conditions.

CONVERSATIONAL PROGRAMMING
The industry standard MAZATROL conversational programming makes it possible for inexperienced operators to quickly and easily develop machining programs for HC Series machines. Operators answer conversationally displayed questions concerning the intended workpiece. These queries include type of material, OD/ID dimensions, part lengths and several others. Then, according to the input data, the MAZATROL control automatically calculates intersection coordinates and tool index positioning in addition to optimized cutting conditions and machining processes.
PROCESS HOME SCREENS
Innovative touch operation of the MAZATROL SmoothG control streamlines data entry and minimizes the number of displays to reduce programming times for HC Series machines. Five different home process screens each display their appropriate data in an easy to understand manner. Operators can touch icons to quickly navigate to additional screen displays.

Process home screens include:
- Programming
- Tool data
- Setup
- Machining
- Maintenance
MAZATROL SmoothG CONTROL

The MAZATROL SmoothG CNC optimizes programming and makes it easy to generate programs for processing complex parts through off-centerline machining as well as angled drilling, milling and tapping. The control incorporates a wide variety of advanced programming functions that allow it to offer complete ease of use and ensure high-speed, high-accuracy machining performance.

Features and functions of the MAZATROL SmoothG control include:

- **Virtual Machining** allows operators to perfect part programs prior to initiating cutting
- **High Gain Feed Forward Control** boosts machining speed and accuracy
- **Fast Rotary Axis Speeds** optimize gear skiving and rotary axis threading
- **Variable Acceleration Control** calculates optimal acceleration for a combination of axes
- **Position-Controlled Hobbing** provides fast, convenient hobbing and skiving operations
- **Real Time Tuning** ensures optimal machining balance as workpiece weight changes
- **Quick MAZATROL** makes it possible to directly import 3D CAD models into the control and automatically extract coordinates from it to simply machine programming
- **Quick EIA** plots toolpaths prior to running programs and checks for any interferences in those paths
## MAZATROL SmoothG SPECIFICATIONS

<table>
<thead>
<tr>
<th>Feature</th>
<th>MAZATROL</th>
<th>EIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of controlled axes</td>
<td>Simultaneous 2 ~ 4 axes</td>
<td></td>
</tr>
<tr>
<td>Least input increment</td>
<td>0.00001 inch, 0.0001 mm, 0.0001&quot;*</td>
<td></td>
</tr>
<tr>
<td>High speed, high-precision control</td>
<td>Shape error designation, Smooth corner control, Rapid traverse overlap, Rotary axis shape compensation</td>
<td>Shape error designation, Smooth corner control, Rapid traverse overlap, Rotary axis shape compensation, High-speed machining mode, High-speed smoothing control function</td>
</tr>
<tr>
<td>Interpolation</td>
<td>Positioning (Linear interpolation), Circular interpolation, Cylindrical coordinate interpolation, Polar coordinate interpolation, Synchronized milling spindle tapping*</td>
<td>Positioning (Linear interpolation), Positioning (Independent interpolation), Linear interpolation, Circular interpolation, Spiral interpolation, Helical interpolation, Cylindrical coordinate interpolation*, Fine spline interpolation*, NURBS interpolation*, Polar coordinate interpolation*, Synchronized milling spindle tapping*</td>
</tr>
<tr>
<td>Feed rate</td>
<td>Rapid traverse, Cutting feed (per minute), Cutting feed (per revolution), Dwell (specified time, specified number of rotation), Rapid traverse override, G0 speed variable control, Feedrate clamp, Variable acceleration/deceleration control, Constant control for G0 tilting*</td>
<td>Rapid traverse, Cutting feed (per minute), Cutting feed (per revolution), Inverse time feed, Dwell (specified time, specified number of rotation), Rapid traverse override, Cutting feed override, G0 speed variable control, Feedrate clamp, Time constant changing for G1, Variable acceleration/deceleration control, Constant control for G0 tilting*</td>
</tr>
<tr>
<td>Program registration</td>
<td>Max. number of programs: 960, Program storage: 2 MB, Program storage expansion: 8 MB*, Program storage expansion: 32 MB*</td>
<td></td>
</tr>
<tr>
<td>Control display</td>
<td>Display: 19&quot; touch panel, Resolution: SXGA</td>
<td></td>
</tr>
<tr>
<td>Spindle functions</td>
<td>S code output, Spindle speed clamp, Spindle speed reaching detection, Multiple position orient, Constant surface speed, Spindle speed command with decimal digits, Synchronized spindle control, Max. speed control for spindle</td>
<td></td>
</tr>
<tr>
<td>Tool functions</td>
<td>Tool offset pairs: 4000, T code output for tool number, Tool life monitoring (time), Tool life monitoring (number of machined workpieces)</td>
<td>Tool offset pairs: 4000, T code output for tool number, T code output for group number, Tool life monitoring (time), Tool life monitoring (number of machined workpieces)</td>
</tr>
<tr>
<td>Miscellaneous functions</td>
<td>M code output, Simultaneous output of multiple M codes</td>
<td></td>
</tr>
<tr>
<td>Tool offset functions</td>
<td>Tool position offset, Tool length offset, Tool diameter/tool nose R offset, Tool wear offset</td>
<td></td>
</tr>
<tr>
<td>Coordinate system</td>
<td>Machine coordinate system, Work coordinate system, Local coordinate system, Additional work coordinates (300 set)</td>
<td></td>
</tr>
<tr>
<td>Machine functions</td>
<td>—</td>
<td>Hobbing*, Shaping function*, Dynamic compensation II*</td>
</tr>
<tr>
<td>Machine compensation</td>
<td>G0/G1 independent backlash compensation, Pitch error compensation, Volumetric compensation*</td>
<td></td>
</tr>
<tr>
<td>Protection functions</td>
<td>Emergency stop, Interlock, Stroke check before travelling, Retraction function for the vertical axis, INTELLIGENT SAFETY SHIELD (manual mode), INTELLIGENT SAFETY SHIELD (automatic mode)*, MAZAK VOICE ADVISER</td>
<td></td>
</tr>
<tr>
<td>Automatic operation mode</td>
<td>Memory operation</td>
<td>Memory operation, Tape operation, MDI operation, EtherNet operation*</td>
</tr>
<tr>
<td>Automatic operation control</td>
<td>Optional stop, Dry run, Automatic handle control, MDI control, TPS, Restart, Machine lock</td>
<td>Optional block skip, Optional stop, Dry run, Automatic handle control, MDI control, TPS, Restart, Restart 2, Collation stop, Machine lock</td>
</tr>
<tr>
<td>Manual measuring functions</td>
<td>Tool length and tip teach, Touch sensor coordinate measurement, Workpiece offset measurement, WPC coordinate measurement, Measurement on machine</td>
<td>Tool length and tip teach, Tool offset teach, Touch sensor coordinate measurement, Workpiece offset measurement, WPC coordinate measurement, Measurement on machine</td>
</tr>
<tr>
<td>Automatic measuring functions</td>
<td>WPC coordinate measurement, Auto tool length measurement, Sensor calibration, Tool eye auto tool measurement, Tool breakage detection, External tool breakage detection*</td>
<td>Auto tool length measurement, Sensor calibration, Tool breakage detection, External tool breakage detection*</td>
</tr>
<tr>
<td>MDI measurement</td>
<td>Partial auto tool length measurement, Auto tool length measurement, Coordinate measurement</td>
<td></td>
</tr>
<tr>
<td>Interface</td>
<td>PROFIBUS-DP*, EtherNet I/P*, CC-Link*</td>
<td></td>
</tr>
<tr>
<td>Card interface</td>
<td>SD card interface, USB</td>
<td></td>
</tr>
<tr>
<td>EtherNet</td>
<td>10 M / 100 M / 1 G bps</td>
<td></td>
</tr>
</tbody>
</table>

* Option

Product images are for illustration purposes only and may not be exact representations of the product. Mazak reserves the right to change product images and specifications at any time without notice.
Mazak offers a wide array of options from which to choose for the HC Series that further enhance machine performance, increase uptime and boost overall operational efficiency.

- **High-pressure coolant** maximizes chip evacuation and contributes to longer cutting tool life
- **SUPERFLOW® coolant** allows for increased cutting speeds, extends tool life and makes for efficient chip evacuation
- **Mist collector** helps reduce maintenance costs and ensures a clean, safe work environment
- **Automatic tool length measurement and tool breakage detection** allows for fast, non-contact tool setting and tool breakage detection to significantly reduce overall part set-up time
- **Mazak monitoring system B (OMP-60)** touch sensor tool mounted in machine spindle to automatically align workpieces via shifting coordinate values
- **Chip conveyor** designs for a wide variety of chip shapes and material types such as aluminum, steel and cast iron
- **Work air blast** removes sticking chips from chuck and workpiece
Mazak automation further increases the productivity, throughput and part quality of HC Series machines. Standard and customized Mazak automation solutions paired with extensive and ongoing support ensure the best fit for individual production needs and that output goals are achieved.

**STANDARD AUTOMATION**

**TWO-PALLET CHANGER**

**ENGINEERED SOLUTIONS**

**ARTICULATED ROBOT**

**STANDARD TWO-PALLET CHANGERS**

Standard two-pallet changers enhance productivity by allowing part loading and unloading while the machine continues to work uninterrupted.

**ARTICULATED ROBOTS**

Articulated robots automate part transfers and peripheral operations. They also eliminate the challenges associated with handling large, heavy or cumbersome parts. Robot configurations range from two jointed to seven jointed to meet the needs of various applications.
MAZAK DIGITAL SOLUTIONS

For the HC Series and all its machines, Mazak offers digital solutions for fully integrated, data-driven smart manufacturing. These progressive solutions include SMOOTH TECHNOLOGY, MTConnect®, Mazak SMOOTH Link and the Mazak SmartBox.

SMOOTH TECHNOLOGY
Spanning the entire part-production landscape, Mazak’s SMOOTH TECHNOLOGY platform significantly boosts productivity at every stage of the metal cutting process — from programming and setup to actual metal removal operations to automation to monitoring/data collection and transfer.

Features and benefits of SMOOTH TECHNOLOGY:
- All-encompassing continuously evolving process-performance technology platform
- Combines advanced capabilities of machine tools and leading-edge CNC processing and software technologies
- Makes machine tools easy to use
- Boosts machining speed and performance accuracy

MTCONNECT
As an open-source, royalty-free manufacturing protocol, MTConnect easily connects devices and systems from different suppliers to capture and share information in a common format such as XML. It then gives manufacturers the means to gather valuable data from machines and automated systems for use in process improvement and increased equipment utilization.

With MTConnect, manufacturers can:
- Gain real-time data sharing throughout a manufacturing facility
- Calculate overall equipment efficiency
- Monitor all equipment from one system
- Reduce production losses
- Identify lean manufacturing strategies

Mazak builds all its machines, including those in the HC Series, to be MTConnect compliant and offers affordable adapters for existing Mazak machines in the field.
MAZAK SMOOTH LINK
Perfect for both large and small shops, Mazak SMOOTH Link makes it possible to sync machine tools with mobile devices to monitor and manage status at any time from a smartphone, tablet or laptop computer. This digital tool captures real-time information from the control and securely transfers the information to a mobile device via Wi-Fi.

Features and benefits of Mazak SMOOTH Link:
- Machine monitoring gives instant operational status of a machine and the workpiece in production
- Displays tool layouts and data of each tool changer pocket/position for effective tool management
- Programming application screen quickly shows all saved EIA programs and machine’s remaining storage capacity
- Simple to set up and does not require Internet access, a server PC or server license

MAZAK SMARTBOX
Secure the “big data” that comes from connecting machines to the Industrial Internet of Things (IIoT). Mazak SmartBox is a launch platform for easy and highly secure entrance into the IIoT. As a scalable, end-to-end solution, SmartBox connects manufacturing equipment, including machines, software and other devices, to a factory’s network and allows the free flow of information to management systems via MTConnect.

Features and benefits of Mazak SmartBox:
- Advanced cyber security protection gives IT departments confidence to digitally integrate manufacturing operations
- Completely open architecture and works with all popular third-party analytical software platforms
- Monitor any machine regardless of make, model or age
### MACHINE SPECIFICATIONS – HC SERIES

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<tr>
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<th>HC-4000</th>
<th>HC-5000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Travel</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X-axis column right/left</td>
<td>X axis in (mm)</td>
<td>22.05 (560)</td>
</tr>
<tr>
<td>Y-axis spindle up/down</td>
<td>Y axis in (mm)</td>
<td>25.20 (640)</td>
</tr>
<tr>
<td>Z-axis table back/forth</td>
<td>Z axis in (mm)</td>
<td>25.20 (640)</td>
</tr>
<tr>
<td>Distance between table top to spindle nose</td>
<td>in (mm)</td>
<td>2.76–27.95 (70–710)</td>
</tr>
<tr>
<td>Distance between pallet to spindle center</td>
<td>in (mm)</td>
<td>3.54–28.74 (90–730)</td>
</tr>
<tr>
<td><strong>Table</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Table size</td>
<td>in (mm)</td>
<td>15.75 x 15.75 (400 x 400)</td>
</tr>
<tr>
<td>Max. workpiece dimensions</td>
<td>in (mm)</td>
<td>ø24.8 x 35.43 (ø630 x 900)</td>
</tr>
<tr>
<td>Pallet load (evenly loaded)</td>
<td>lbs (kg)</td>
<td>881.85 (400)</td>
</tr>
<tr>
<td>Pallet top surface</td>
<td>5/8–11 UNC tapped holes 25 places</td>
<td></td>
</tr>
<tr>
<td>Minimum indexing angle increment</td>
<td>deg</td>
<td>0.0001°</td>
</tr>
<tr>
<td>Indexing time</td>
<td>sec</td>
<td>1.0 s/90°, 1.3 s/180°</td>
</tr>
<tr>
<td>Spindle speed</td>
<td>min⁻¹</td>
<td>40 to 12,000</td>
</tr>
<tr>
<td>Spindle speed range</td>
<td>2 speeds (electric)</td>
<td>2 speeds (electric)</td>
</tr>
<tr>
<td>Spindle taper</td>
<td>#40</td>
<td>#40</td>
</tr>
<tr>
<td>I.D. of spindle bearing</td>
<td>in (mm)</td>
<td>2.76 (70)</td>
</tr>
<tr>
<td>Feed rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid traverse rate (X, Y, Z axes)</td>
<td>ipm (m/min)</td>
<td>2,362.20 (60,000)</td>
</tr>
<tr>
<td>Cutting feed rate (X, Y, and Z axes)</td>
<td>ipm (m/min)</td>
<td>0.04 ~ 2,362 (1 ~ 60,000)</td>
</tr>
<tr>
<td>Axis acceleration/deceleration</td>
<td></td>
<td>1.0 G</td>
</tr>
<tr>
<td>Automatic tool changer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tool shank</td>
<td>#40</td>
<td>#40</td>
</tr>
<tr>
<td>Tool storage capacity</td>
<td>84</td>
<td>84</td>
</tr>
<tr>
<td>Max. tool diameter/length (from gauge line)/weight</td>
<td>ø3.74&quot;/16.54&quot;/26 lbs (ø95 mm/420 mm/12 kg) (max. moment: 4.35 ft-lbs (5.9 Nm))</td>
<td>ø3.74&quot;/16.54&quot;/25 lbs (ø95 mm/420 mm/12 kg) (max. moment: 4.35 ft-lbs (5.9 Nm))</td>
</tr>
<tr>
<td>Max. tool diameter with adjacent pockets empty in (mm)</td>
<td>ø6.69&quot; (ø170 mm)</td>
<td>ø6.69&quot; (ø170 mm)</td>
</tr>
<tr>
<td>Tool selection method</td>
<td>Random selection/shortest path</td>
<td>Random selection/shortest path</td>
</tr>
<tr>
<td>Automatic pallet changer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of pallets</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Changing system</td>
<td>Rotary</td>
<td>Rotary</td>
</tr>
<tr>
<td>Pallet change time</td>
<td>sec</td>
<td>7</td>
</tr>
<tr>
<td>Motors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spindle motor (40% ED (30 min. rating)/cont. rating)</td>
<td>hp (kW)</td>
<td>14/10 (11/7.5)</td>
</tr>
<tr>
<td>Flood coolant pump motor</td>
<td>Hz (W)</td>
<td>50/60 (730/1,210)</td>
</tr>
<tr>
<td>Power requirement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrical power supply (cont./40% ED)</td>
<td>23.7/28.8 kW @ 50/60 Hz</td>
<td>23.7/28.8 kW @ 50/60 Hz</td>
</tr>
<tr>
<td>Air supply</td>
<td>0.5 – 0.9 MPa (70 ~ 130 PSI)/80 L/min (2.82 ft³/min)</td>
<td>0.5 – 0.9 MPa (70 ~ 130 PSI)/80 L/min (2.82 ft³/min)</td>
</tr>
<tr>
<td>Machine size</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Machine height</td>
<td>in (mm)</td>
<td>112.56 (2,859)</td>
</tr>
<tr>
<td>Floor space requirement</td>
<td>in (mm)</td>
<td>120.87 x 193.23 (3,070 x 4,908)</td>
</tr>
<tr>
<td>Machine weight</td>
<td>lbs (kg)</td>
<td>26,565 (12,050)</td>
</tr>
</tbody>
</table>
## MACHINE SPECIFICATIONS

### STANDARD AND OPTIONAL EQUIPMENT

<table>
<thead>
<tr>
<th>Feature</th>
<th>HC-4000</th>
<th>HC-5000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spindle</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12,000 rpm #40</td>
<td>Standard</td>
<td>Standard</td>
</tr>
<tr>
<td>12,000 rpm BBT-40</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td>15,000 rpm #40/BBT-40</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td>20,000 rpm #40/BBT-40</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td><strong>Pallet changer</strong></td>
<td>2PC</td>
<td>Standard</td>
</tr>
<tr>
<td><strong>Set up</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Automatic tool length measurement &amp; tool</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td>breakage detection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mazak monitoring system B (OMP60)</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td>Manual pulse generator</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td><strong>Coolant disposal</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flood coolant</td>
<td>Standard</td>
<td>Standard</td>
</tr>
<tr>
<td>Cover coolant</td>
<td>Standard</td>
<td>Standard</td>
</tr>
<tr>
<td>Coolant through spindle with flood 71 psi</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td>High-press coolant thru spindle with flood</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td>213 psi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hand held coolant nozzle (for workpiece</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td>washing on pallet changer)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil skimmer (RB-200)</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td>Magnetic separator for cast iron</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td><strong>High accuracy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ball screw core cooling (X, Y, Z axes)</td>
<td>Standard</td>
<td>Standard</td>
</tr>
<tr>
<td>Chiller unit</td>
<td>Standard</td>
<td>Standard</td>
</tr>
<tr>
<td>Hydraulic unit temperature control</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td>Coolant temperature control</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td>Scale feedback (X, Y, Z axes)</td>
<td>Optional</td>
<td>Optional</td>
</tr>
</tbody>
</table>

Product images are for illustration purposes only and may not be exact representations of the product. Mazak reserves the right to change product images and specifications at any time without notice.
Spindle rebuild

Mazak’s spindle exchange and rebuild program provides the option to purchase a brand new spindle, have an existing spindle repaired or acquire a Mazak rebuilt spindle.

Benefits of Mazak’s spindle and unit rebuild service include:
- More than 900 different spindle variations for all types of turning centers, vertical and horizontal machining centers as well as Multi-Tasking machines.
- Over 300 available rebuilt spindles for a cost-effective spindle solution delivered in as little as two or three days.
- Spindle repairs are processed in a clean room environment and overseen by quality control teams with ISO: 9001:2008 certification.
- Spindle repairs/rebuilds occur within five days of receipt and include 12 hours of test stand runoff.
- A seven-month parts and labor warranty on rebuilt spindles with Mazak installation.
- Free technical support regarding replacement options and processes.
FINANCING AND RESOURCES

MAZAK CREDIT GROUP
As a wholly owned subsidiary of Mazak Corporation, MCC Credit Group is the preferred one-stop choice for manufacturers throughout the United States and Canada who want fast, hassle-free, low-cost financing on an HC Series machine or any other piece of Mazak equipment. With a complete knowledge of Mazak’s product portfolio, MCC Credit Group provides factory terms that can work to customer advantages. Plus, its direct access to machine specifications, delivery schedules and installation dates eliminates any additional paperwork or a delay in the approval or shipment process.

Advantages of working with MCC Credit Group:
• Approval of up to $350,000 with a simple online credit application (subject to credit approval)
• Quick turnarounds on highly competitive leases and loans with no blanket liens
• Waive security deposits
• Apply machine deposits directly toward advanced rents, fees or monthly rental payments
• Offer three to five years financing on all Mazak equipment
• Preserve bank credit lines for working capital and your company’s growth
• Structure true leases for off-balance sheet accounting treatment and maximum cash flow

Click here for more information on financing options.

NORTH AMERICAN SERVICE RESOURCES

North American Customer Service Manager
Greg Westrick
859-342-1892
gwestrick@mazakcorp.com

Assistant North American Service Manager
Hiroshi Ito
859-342-1466
hito@mazakcorp.com

North American Parts Manager
Steve Trammel
859-342-1790
strammel@mazakcorp.com

Parts Order Entry
Toni Abdon
888-462-9251
pparts@mazakcorp.com

Training Supervisor
Roy Gentry
859-342-1854
rgentry@mazakcorp.com

REGIONAL SERVICE LOCATIONS

Atlanta
Steve Carbonneau
678-985-4800/800-505-1964
scarbonneau@mazakcorp.com

Chicago
Gary Summers
847-885-8311/800-677-8311
gsummers@mazakcorp.com

Florence, Kentucky
Martin Wilber
859-342-1561
mwilber@mazakcorp.com

Hartford
Kurt Petitti
860-292-4400/800-436-8900
kpetitti@mazakcorp.com

Houston
Jim Jackson
281-931-7770
jjackson@mazakcorp.com

Los Angeles
Carlos Santos
310-327-7172/800-511-8927
csantos@mazakcorp.com

Canada
Michael Cummings
519-230-3233/800-668-5449
mcummings@mazakcorp.com

Mexico
Gustavo Alarcon
011 52 818 221 0910
galarcon@mazakcorp.com

AFTER HOURS SERVICE: 800-231-1456
AFTER HOURS PART SUPPORT:
Click here to register for after hours parts support.
MAZAK TECHNOLOGY AND TECHNICAL CENTERS

As a key component of Mazak’s comprehensive customer support, its network of eight Technology Centers and a Technical Center strategically located across North America put component machining demonstrations, experienced applications engineers and training in close proximity to customers. These centers also provide a channel for customer input to Mazak manufacturing for the development of new machine tool technology.

Technology and Technical Centers offer advanced application support, education and training, new technology and manufacturing systems along with on-site training and technology seminars.

Click here for more information on Mazak Technology Centers.

Advanced application support
• Expert applications engineers help customers optimize part-production processes and create effective manufacturing solutions
• Mazak-certified cutting tool, workholding and automation partners collaborate to develop optimized turnkey manufacturing solutions
• Test cuts of customer parts run on the latest, most advanced machine tools
• Secure applications development and complete design privacy of each customer’s individual manufacturing system

Education and training
• Education, training and seminar events in cooperation with Mazak technology partners
• Free access to the most advanced machine tools
• Industry-focused education

New technology and manufacturing systems
• The latest, most advanced manufacturing systems that can optimize the processing of industry-specific components
• Productivity experts help customers select the best new machine tool technology for their particular businesses

On-Site Training and Technology Seminars
• Hands-on applications and operator development courses
• Technical seminars held in conjunction with our Value Inspired Partners (VIPs)
• Regularly scheduled market-focused events that provide valuable industry insight