Mazak

HCN SERIES

[6800, 8800, 10800, 12800]
Advanced features of the MAZATROL SmoothG CNC

- Touch screen operation similar to your smartphone/tablet
- PC with Windows® 8 embedded OS
- Fastest CNC in the world with latest hardware and software for unprecedented speed and precision
- Easy conversational programming of multiple-surface machining
- Smooth graphical user interface and support functions for unsurpassed ease of operation
- MTConnect® ready for convenient networking
- Easily configure machine parameters for different workpiece materials and application requirements

Windows is a registered trademark of Microsoft Corporation in the United States and other countries.
MTConnect is a registered trademark of AMT in the United States and other countries.

Designed for unsurpassed productivity
High-speed, high-accuracy horizontal machining centers

HCN SERIES

- Pallet sizes: □ 630 mm (24.8’’), □ 800 mm (31.5’’), □ 1000 mm (39.37’’) and □ 1250 mm (49.21’’)
- No. 50 taper spindle suitable for any production requirements:
  - Standard: 10000 rpm
  - High speed: 16000 rpm
  - High torque: 8000 rpm
  - Hard metal: 6000 rpm
- Rigid machine construction for heavy-duty machining
- Unsurpassed ease of operation

HCN-12800
Shown with optional three-color status light
Higher Productivity

Spindle specifications for any workpiece material requirement

**Standard 10000 rpm spindle**
- Integral spindle/motor
- Oil & air lubrication
- High performance at any speed for a wide variety of materials, including cast iron and aluminum.

10000 rpm spindle output/torque diagram

- **Speed**: 10000 rpm
- **Output**: AC 37 kW (50 hp) [30-min. rating]
- **AC 30 kW (40 hp) [cont. rating]
- **Max. torque**: 350 N∙m [256 ft∙lbs] [30-min. rating]

Mount (stainless steel)
Construction machinery component

**High-speed 16000 rpm spindle**
- OPTION
- Integral spindle/motor
- Oil & air lubrication
- Thanks to the changeable bearing preload, rigidity is ensured during low-speed machining and high-speed aluminum machining.

16000 rpm spindle output/torque diagram

- **Speed**: 16000 rpm
- **Output**: AC 37 kW (50 hp) [30-min. rating]
- **AC 30 kW (40 hp) [cont. rating]
- **Max. torque**: 179 N∙m [132 ft∙lbs] [30-min. rating]

Frame (aluminum alloy)
Aerospace component

**High-torque 8000 rpm spindle**
- OPTION
- Integral spindle/motor
- Oil & air lubrication
- High-torque, No. 50 taper 8000-rpm integral spindle/motor for heavy-duty machining of steel and other difficult-to-machine materials.

8000 rpm spindle output/torque diagram

- **Speed**: 8000 rpm
- **Output**: AC 37 kW (50 hp) [30-min. rating]
- **AC 30 kW (40 hp) [cont. rating]
- **Max. torque**: 609 N∙m [449 ft∙lbs] [30-min. rating]

Cylinder block (cast iron)
Automotive component

Higher Productivity
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- Integral spindle/motor
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Cylinder block (cast iron)
Automotive component
**Higher Productivity**

**Hard Metal package**

A Hard Metal (HM) package with protective functions is available as an option. Its high-torque spindle, greater thrust force on feed axes and high-rigidity base are designed for high-productivity machining of challenging materials.

**High-torque 6000 rpm spindle**

Integral spindle/motor with a maximum torque of 800 N·m (590 ft·lbs) torque (continuous rating) for high-performance, heavy-duty machining.

<table>
<thead>
<tr>
<th>Speed (rpm)</th>
<th>Output (30-min. rating)</th>
<th>Torque (30-min. rating)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6000</td>
<td>AC 37 kW (50 hp)</td>
<td>955 N·m (704 ft·lbs)</td>
</tr>
</tbody>
</table>

**6000 rpm spindle output/torque diagram**

**Feed thrust on all axes is 20 kN (4496 lbf)** for heavy-duty machining.

**Protective functions**

Minimize damage to workpieces and the machine by detecting abnormal errors.

- **Crash detection**
  Feed is stopped when the registered thrust force is exceeded
- **Pallet displacement**
  Detects displacement of pallet on pallet seats
- **Spindle clamp sensor**
  Confirms proper tool clamping

**X, Y and Z-axis thrust**

Feed thrust on all axes is 20 kN (4496 lbf) for heavy-duty machining.

**Turned workpiece features on a machining center**

Machine turning features with the high-speed feed performance of the HCN Series and the high-speed, high-accuracy MAZATROL SmoothG CNC.

- **Machine taper bores**
- **Machine different bore diameters with a single tool**
- **A single tool can machine a wide range of bore sizes and outer diameters**

The spindle orientation is controlled so that the boring tool’s tip can machine turning features while it moves in an arc along the X and Y axes. As a result, turning features can be machined without U-axis tool control.

**Orbit machining**

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### Extensive Series Range

Horizontal machining centers with No. 50 spindles for large workpieces

<table>
<thead>
<tr>
<th>Machines</th>
<th>HCN-6800</th>
<th>HCN-8800</th>
<th>HCN-10800</th>
<th>HCN-12800</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. workpiece diameter × Max. workpiece height</td>
<td>ø1050 mm (ø41.34&quot;) × 1300 mm (51.18&quot;)</td>
<td>ø1450 mm (ø57.09&quot;) × 1500 mm (57.09&quot;)</td>
<td>ø2050 mm (ø80.71&quot;) × 2000 mm (78.74&quot;)</td>
<td>ø2400 mm, ø3000 mm*² (ø94.49&quot;, ø118.11&quot;) × 2000 mm (78.74&quot;)</td>
</tr>
<tr>
<td>Max. load on pallet (evently distributed)</td>
<td>1500 kg (3307 lbs)</td>
<td>2200 kg, 3000 kg<em>² (4850 lbs, 6614 lbs</em>)</td>
<td>3000 kg, 4000 kg<em>² (6614 lbs, 8818 lbs</em>)</td>
<td>6000 kg, 8000 kg<em>², 10000 kg</em>² (13228 lbs, 17637 lbs*, 22046 lbs*)</td>
</tr>
<tr>
<td>Pallet size</td>
<td>□ 630 mm (□ 24.8&quot;)</td>
<td>□ 800 mm (□ 31.5&quot;)</td>
<td>□ 1000 mm (□ 39.37&quot;)</td>
<td>□ 1250 mm (□ 49.21&quot;)</td>
</tr>
<tr>
<td></td>
<td>630 mm × 800 mm*² (24.8&quot; × 31.5&quot;)</td>
<td>800 mm × 1000 mm*² (31.5&quot; × 39.37&quot;)</td>
<td>1000 mm × 1250 mm*² (39.37&quot; × 49.21&quot;)</td>
<td>1250 mm × 1600 mm*² (49.21&quot; × 62.99&quot;)</td>
</tr>
<tr>
<td></td>
<td>□ 800 mm*² (□ 31.5&quot;)</td>
<td>□ 1000 mm*² (□ 39.37&quot;)</td>
<td>□ 1250 mm*² (□ 49.21&quot;)</td>
<td>□ 1600 mm*² (□ 62.99&quot;)</td>
</tr>
<tr>
<td>Stroke (X/Y/Z)</td>
<td>1050 mm/900 mm/980 mm (41.34&quot;/35.43&quot;/38.58&quot;)</td>
<td>1400 mm/1200 mm/1325 mm (55.12&quot;/47.24&quot;/52.17&quot;)</td>
<td>1700 mm/1400 mm/1525 mm (66.93&quot;/55.12&quot;/60.04&quot;)</td>
<td>2200 mm, 2800 mm/1600 mm/1850 mm (86.61&quot;, 110.24&quot;*/62.99&quot;/72.83&quot;)</td>
</tr>
</tbody>
</table>

* Option
*² Single table (option) specification (not available with FMS)

*3 Option
*² Option
Higher Accuracy, Higher Productivity

High-rigidity construction for high-accuracy machining

Base X-axis construction
The bottom of the column has a slanted surface for mounting the X-axis linear guides. The ballscrew is close to the column’s center of gravity to ensure high-accuracy positioning.

Table clamping
The table and pallet are clamped on taper cones. This construction ensures high rigidity and pallet-changing repeatability accuracy.

Linear roller guides utilized on the X, Y and Z axes
Linear roller guides on the X, Y and Z axes are utilized by the HCN Series in order to provide high-accuracy and heavy-duty machining.

High-rigidity bed
The high-rigidity bed is reinforced with strategically located ribs to ensure stability during heavy-duty machining.

Designed for high-accuracy machining

Spindle
Integral spindle/motor
Thanks to the integral spindle/motor design, vibration is minimized during high-speed operation to ensure exceptional surface finishes and maximum tool life.

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

X, Y and Z-axis ballscrew core cooling
Ballscrew core cooling
Temperature-controlled cooling oil circulates through the ballscrew cores to ensure stable machining accuracy over extended periods of high-speed operation.

Tables
High-index coupling
To realize high-accuracy indexing, the standard 1° indexing table of the HCN-6800 and HCN-8800 uses 360° high-index coupling.

Roller gear cam
The NC rotary table uses a roller gear cam system for 0.001° positioning increments and high-accuracy performance. (Standard on the HCN-10800 and HCN-12800. Optional for the HCN-6800 and HCN-8800)
These complicated procedures are eliminated with the MAZATROL SMOOTH Machining Configuration
For production flexibility, a 0.0001° × 3600000 position NC rotary table is available on all machines (standard on the HCN-10800 and HCN-12800). On the HCN-6800 and HCN-8800, a 1° index table is standard equipment and a 0.001° index table is optionally available.

1° × 360 index table
The 360° high index coupling provides high-accuracy indexing in 1° increments.

0.001° × 360000 NC positioning table
The table can be indexed in 0.001° increments (contouring is not available). Hydraulic power supply through the table is available as an option.

NC rotary table
The backlash-free rotary gear cam utilized by the NC rotary table ensures high accuracy as well as a long service life.

A scale feedback system for the rotary axis is available as an option.

The table dimensions and specifications are as follows:

### ATC Specifications

<table>
<thead>
<tr>
<th>Machines</th>
<th>HCN-6800</th>
<th>HCN-8800</th>
<th>HCN-10800</th>
<th>HCN-12800</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. tool diameter</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With tools in adjacent pockets</td>
<td>ø125 mm (ø4.92&quot;)</td>
<td>ø125 mm (ø4.92&quot;)</td>
<td>ø135 mm (ø5.31&quot;)</td>
<td>ø135 mm (ø5.31&quot;)</td>
</tr>
<tr>
<td>With adjacent pockets empty</td>
<td>ø260 mm (ø10.24&quot;)</td>
<td>ø260 mm (ø10.24&quot;)</td>
<td>ø260 mm (ø10.24&quot;)</td>
<td>ø260 mm (ø10.24&quot;)</td>
</tr>
<tr>
<td>When adjacent pockets are empty and pockets next to them have tools less than ø240 mm (9.45&quot;)</td>
<td>ø260 mm (ø10.24&quot;)</td>
<td>ø260 mm (ø10.24&quot;)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>When adjacent pockets are empty and pockets next to them have tools less than ø200 mm (7.87&quot;)</td>
<td>ø320 mm (ø12.6&quot;)</td>
<td>—</td>
<td>ø320 mm (ø12.6&quot;)</td>
<td>ø320 mm (ø12.6&quot;)</td>
</tr>
<tr>
<td>When adjacent pockets are empty and pockets next to them have tools less than ø180 mm (7.09&quot;)</td>
<td>—</td>
<td>ø320 mm (ø12.6&quot;)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>When adjacent pockets are empty and pockets next to them have tools less than ø180 mm (7.09&quot;)</td>
<td>—</td>
<td>—</td>
<td>ø380 mm (ø14.9&quot;)</td>
<td>ø380 mm (ø14.9&quot;)</td>
</tr>
<tr>
<td>Max. tool length</td>
<td>ø300 mm* (ø11.8&quot;)</td>
<td>ø360 mm* (ø14.1&quot;)</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

| Max. tool weight | 30 kg (66 lbs) | 30 kg (66 lbs) | 30 kg (66 lbs) | 30 kg (66 lbs) |
|——|——|——|——|
| Max. tool diameter |
| With X-axis stroke limitation | — | — | ø360 mm* (ø14.1") | — |

* Option

Large-capacity tool magazine

Large-capacity tool magazines make it possible to machine a wide variety of workpieces in small-size lots and store spare tools for unmanned operation.

For tool storage capacities larger than 180 tools, two types of rack-type tool magazines are available:
• The TOOL HIVE stores No. 50 or HSK-A100 tools horizontally.
• The TOOLTECH stores tools (No. 50 tools only) vertically with minimal floor-space requirements.

| Chain-type magazine |
|——|——|——|——|——|——|——|——|
| 43 | 60 | 80 | 100 | 120 | 140 | 160 |
| HCN-6800 | ● | ○ | ○ | ○ | ○ | ○ | ○ |
| HCN-8800 | — | — | — | — | — | — | — |
| HCN-10800 | — | — | — | — | — | — | — |
| HCN-12800 | — | — | — | — | — | — | — |

* Standard ○ Option — N/A

Tool changing of heavy, large-diameter tools

Handles long boring bars and large-diameter mills for higher productivity.
Automation for single machines and multiple-machine systems

## Pallet changer

Rotary 2-pallet changer and optional 6-pallet changer

### 2-pallet changer

Rotary-type pallet changers quickly change pallets with heavy workpieces for higher productivity.

<table>
<thead>
<tr>
<th>Model</th>
<th>Pallet change time</th>
<th>Pallet load capacity (evenly distributed)</th>
<th>Max. workpiece diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCN-6800</td>
<td>10.0 sec</td>
<td>1500 kg (3307 lbs)</td>
<td>ø1050 mm (ø41.34&quot;) × 1300 mm (51.18&quot;)</td>
</tr>
<tr>
<td>HCN-8800</td>
<td>13.0 sec</td>
<td>2200 kg (4850 lbs)</td>
<td>ø1450 mm (ø57.09&quot;) × 1450 mm (57.09&quot;)</td>
</tr>
<tr>
<td>HCN-10800</td>
<td>25.0 sec</td>
<td>3000 kg (6614 lbs)</td>
<td>ø2050 mm (ø80.71&quot;) × 1600 mm (62.99&quot;)</td>
</tr>
<tr>
<td>HCN-12800*</td>
<td>48.0 sec</td>
<td>6000 kg (13228 lbs)</td>
<td>ø2400 mm (ø94.49&quot;) × 2000 mm (78.74&quot;)</td>
</tr>
</tbody>
</table>

*Shuttle type pallet changer

### 6-pallet changer

Multiple workpieces can be set up on the six pallets, allowing for longer periods of unmanned operation. Available for the HCN-6800 and HCN-8800.

### Robot system

An interface for connecting external robots for workpiece loading/unloading to/from automatic hydraulic fixtures is available as an option.
- Field network available
- Cycle start, door open/close, work loading confirmation, hydraulic fixture operation and table position interface are available as options.

### PALLETECH Manufacturing Cell

The modular design of the PALLETECH system allows more machines and increased pallet storage capacity to be added to the system after the initial installation in response to changing production requirements. The pallet stocker is available with one, two or three levels for large pallet-storage capacity with minimal floor-space requirements.

#### System specifications

<table>
<thead>
<tr>
<th>Machine(s)</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of pallets</td>
<td>1 level</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>2 levels</td>
<td>240</td>
</tr>
<tr>
<td></td>
<td>3 levels</td>
<td>240</td>
</tr>
<tr>
<td>Loading station(s)</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Loading robot</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pallet stocker</th>
<th>HCN-6800</th>
<th>HCN-8800</th>
<th>HCN-10800</th>
<th>HCN-12800</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 level</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>2 levels</td>
<td>○</td>
<td>○</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>3 levels</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

○: Available —: N/A

FMS control/management software provides unsurpassed ease of system operation to help meet sudden schedule changes.

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HCN-6800 with 6-pallet changer
Optimal system for maximum versatility

Integration of multiple machine models in a PALLETECH system

Horizontal machining centers, 5-axis machining centers, Multi-Tasking machines and turning centers can be integrated to create a system with unsurpassed versatility.

PALLETECH system combination: applicable machine models

<table>
<thead>
<tr>
<th>PALLETECH system pallet size</th>
<th>Horizontal machining center</th>
<th>Multi-Tasking machines</th>
<th>Turning center</th>
</tr>
</thead>
<tbody>
<tr>
<td>630 mm × 630 mm (24.8” × 24.8”)</td>
<td>HCN-6800</td>
<td>VORTEX i-630V/6</td>
<td>INTEGREX i-630V/6</td>
</tr>
<tr>
<td>800 mm × 800 mm (31.5” × 31.5”)</td>
<td>HCN-8800</td>
<td>VORTEX i-800V/8</td>
<td>INTEGREX i-1200V/8</td>
</tr>
<tr>
<td>1000 mm × 1000 mm (39.37” × 39.37”)</td>
<td>HCN-10800</td>
<td>—</td>
<td>INTEGREX i-1600V/10</td>
</tr>
</tbody>
</table>

HCN series

TOOL HIVE

The TOOL HIVE can store more than 180 tools in a small space. Operation and tool data editing can be performed on the TOOL HIVE TERMINAL control panel to reduce the time required for tool setup. The TOOL HIVE’s tool storage capacity can be expanded after the initial installation.

TOOL HIVE specifications

- Tool storage: 180, 204, 240, 288, 312, 348
- Tool shank: No. 50, HSK-A100
- Magazine: Rack type

TOOLTECH

No. 50 tools are stored vertically in a magazine with minimal floor-space requirements.

TOOLTECH specifications

- Tool storage: 206, 276, 348
- Tool shank: No. 50
- Magazine: Rack type

Tool ID

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

Hydraulic power supply

Type A
(supply from machine top, maximum: eight ports)

Hydraulic power is supplied from the top part of the pallet changer to fixtures mounted on each pallet using hydraulic hoses.

Type B
(supply through pallet, maximum: three ports)

By using a leak-free coupling, hydraulic power is supplied to the supply port on the pallet bottom.
**Ergonomics**

Design focus on ergonomics provides unsurpassed ease of operation

- **Large window**
  The large windows on the 2-pallet changer cover door* allow the operator to easily see the status of the workpiece in the setup station.

- **Convenient workpiece loading/unloading**
  An overhead crane can be used for the loading/unloading of heavy workpieces and fixtures.

- **Tool magazine operation panel/Tool ID**
  The tool magazine operation panel is designed for increased ease of operation. Instead of simply having a forward/reverse button for indexing the tool magazine and manually positioning the desired tool pocket, the pocket number or tool number can be input into the operation panel’s numeric keyboard and the desired pocket will be automatically brought into position. Tool data are displayed on this panel, eliminating trips back to the machine’s CNC. By selecting the tool data, the tool magazine will be indexed to the selected tool. The sort key quickly shows which tool pockets are empty.

- **Remote manual pulse generator**
  The remote manual pulse generator provides convenient operation even when the operator is not near the CNC operation panel. Its display shows the position display and the machine coordinate values.

  Four different positions can be registered in memory by the remote manual pulse generator. A wireless remote manual pulse generator is available as an option.

*Instead of a 2-pallet safety cover door, the HCN-12800 has an area sensor in the setup station.
**MAZATROL CNC System**

**MAZATROL SMOOTH 6**
4 axes simultaneous CNC

**Fastest CNC in the world**
Latest hardware and software for unprecedented speed and precision

**Smooth graphical user interface**
PC with Windows® 8 embedded OS
MAZATROL Smooth graphical user interface offers unsurpassed ease of operation.
Touch screen operation similar to your smartphone/tablet

**Ease of operation**
Designed for unsurpassed ease of operation with advanced functions.
Windows is a registered trademark of Microsoft Corporation in the United States and other countries.

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

**QUICK MAZATROL**
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 error easily and quickly.

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

**QUICK EIA**
Program, process list and 3D tool path display are linked to each other.
Visible search on touch screen can reduce the time for program checking.

**VIEW SURF**
Analyze the tool path to visualize any predictable failure on the finished surface.
Perform program modification before machining to minimize the time for test cutting.

**Process home screens**
Five different home screens display the appropriate data in an easy-to-understand manner.
Touch icons in each process display for additional screen displays.

**Setup**
**Machining**
**Maintenance**
**Programming**
**Tool data**
**Optional Equipment**

A variety of optional equipment is available for increased versatility in machining large workpieces.

**ø3000 mm (ø118.11”) workpiece diameter**

The X-axis stroke can be increased by 600 mm (23.62”). This may be applied with the optional single-table specification and heavy-workpiece specification [8000 kg (17637 lbs) and 10000 kg (22046 lbs)].

**Considerable reduction in floor space**

**Single table specification (HCN-12800)**

Floor space is reduced by eliminating the 2-pallet changer. Available for both single machines and multiple machines integrated into a FMS. Can be applied with the optional 2800 mm (110.24”) X-axis stroke and the 8000 kg (17637 lbs), 10000 kg (22046 lbs) heavy-workpiece specification.

Note: When applied with the 10000 kg (22046 lbs) heavy-workpiece specification, it cannot be used with an FMS, as the pallet is bolted directly to the machine table.

**Specifications**

Max. workpiece diameter: ø3000 mm (ø118.11”)
X-axis max. acceleration: 2.4 m/s²
Pallet change time: 76 sec

**8000 kg (17637 lbs) workpiece specifications (HCN-12800)**

Available for 2-pallet changer and single-table machine

**Specifications**

Table load (evenly distributed): 8000 kg (17637 lbs) (pallet weight included)
Z-axis rapid traverse rate: 34000 mm/min (1339 ipm)
Z-axis max. acceleration: 2.4 m/s²
Table positioning time: 3.8 sec/90°

**10000 kg (22046 lbs) workpiece specifications (HCN-12800)**

Available on single-table machine only

**Specifications**

Table load (evenly distributed): 10000 kg (22046 lbs) (pallet weight included)
Z-axis rapid traverse rate: 24000 mm/min (945 ipm)
Z-axis max. acceleration: 2.4 m/s²
Table positioning time: 4.2 sec/90°

**3000 kg (6614 lbs) workpiece specifications (HCN-8800)**

**Specifications**

Pallet load: 3000 kg (6614 lbs)
Z-axis rapid traverse rate: 3.43 m/s²
Z-axis max. acceleration: 3.43 m/s²
Table rotating time: 4.3 sec/90° (NC index table)
Pallet change time: 25 sec

**4000 kg (8818 lbs) workpiece specifications (HCN-10800)**

**Specifications**

Pallet load: 4000 kg (8818 lbs)
Z-axis max. acceleration: 3.43 m/s²

**Coolant system for longer tool life and higher productivity**

- Reduces tool wear by controlling rises in tool tip temperature
- Higher quality surfaces and machining performance thanks to tool and workpiece lubrication
- Prevents tool damage by removing long chips from tool and workpiece

**SUPERFLOW coolant system**

- Max. 7 MPa (1015 psi) coolant pressure
- Adjustable coolant pressure
- High-performance cyclone filter with minimal maintenance requirements

**Coolant through spindle**

Coolant is fed to the tool tip by passages through the tool holder and tool. Three pump pressure specifications are available: a standard 0.8 MPa (116 psi) pump and 1.5 MPa (218 psi) or 7 MPa (1015 psi) pumps as options.

**Flood coolant**

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

**Niagara coolant**

A large volume of coolant is discharged from nozzles mounted on the machine’s top cover to flush chips from the workpiece to conveyors on both sides of the table.
### Smooth Process Support Software

Production support software for optimum factory management

- Machining program development
- Machining simulation
- Time studies

### Standard Pallet Dimensions

**HCN-6800**  630 mm × 630 mm (24.8" × 24.8")
- tapped pallet

**HCN-10800**  1000 mm × 1000 mm (39.37" × 39.37")
- tapped pallet

**HCN-8800**  800 mm × 800 mm (31.5" × 31.5")
- tapped pallet

**HCN-12800**  1250 mm × 1250 mm (49.21" × 49.21")
- tapped pallet

Note: Edge locator is optionally available.

### Smooth CAM RS

- Option

### Smooth Scheduler

- Production scheduling of machines
- Higher equipment utilization
- Visual monitoring of production progress

### Smooth Tool Management

- Option

- Centralized tool-data management
- Simplified operation and setup with tool ID

### Smooth Monitor AX

- Option

- Timely action by monitoring the operation of an entire plant
- Improved productivity through manufacturing data analysis
- Production results database
- Accessible by smartphone/tablet
Machine Dimensions

**HCN-6800**
- Power inlet: Height 525 from floor
- Chip conveyor (option)
- Chip bucket (option)

**HCN-8800**
- Power inlet: Height 525 from floor
- Chip conveyor (option)
- Chip bucket (option)

**HCN-10800**
- Power inlet: Height 1945 from floor
- Chip conveyor (option)

**HCN-12800**
- Power inlet: Height 10896 from floor
- Chip conveyor (option)
## Standard Machine Specifications

### HCN-6800

<table>
<thead>
<tr>
<th>Specification</th>
<th>Standard Package</th>
<th>Hard Metal Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke</td>
<td>1050 mm (41.34&quot;)</td>
<td>1400 mm (55.12&quot;)</td>
</tr>
<tr>
<td>Y axis (spindle up/down)</td>
<td>900 mm (35.43&quot;)</td>
<td>1200 mm (47.24&quot;)</td>
</tr>
<tr>
<td>Z axis (table back/side)</td>
<td>980 mm (38.58&quot;)</td>
<td>1325 mm (52.17&quot;)</td>
</tr>
<tr>
<td>Distance between table center to spindle nose</td>
<td>100 mm - 1060 mm (3.94&quot; - 42.52&quot;)</td>
<td>100 mm - 1425 mm (5.91&quot; - 56.1&quot;)</td>
</tr>
<tr>
<td>Distance between pallet top to spindle center</td>
<td>100 mm - 1000 mm (3.94&quot; - 39.37&quot;)</td>
<td>100 mm - 1300 mm (4.33&quot; - 51.18&quot;)</td>
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### HCN-8800

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### Motors

- **50 Hz Motor (40% ED/cont. rating)**: 90.55 kVA/80.61 kVA
- **60 Hz Motor (30-min. rating/cont. rating)**: 117.69 kW/107.75 kVA

### Spindle

- **Spindle motor (40% ED/cont. rating)**: 37 kW/30 kW (50 hp/40 hp)
- **Spindle gear range**: CAT No. 50
- **Spindle acceleration***: 3.0 sec (0 → 10000 rpm)
- **Max. spindle speed**: 6000 rpm

### Tool magazine capacity

- **43 places**: M16 × P2 (5/8-11 UNC), tapped 25 places, pitch 125 mm (4.25")
- **2 (electric)**: M20 (3/4-10 UNC), tapped 81 places, pitch 100 mm (3.94")

### Feedrate

- **Axis acceleration/deceleration**: X, Y axis: 0.35 G/Z axis: 0.3 G
- **Cutting feedrate (X, Y, Z axis)**: 1 ~ 63000 mm/min (2492 ipm)

### Air supply (pressure/volume)

- **50 Hz Motor (40% ED/cont. rating)**: 98.68 kVA/88.86 kVA
- **60 Hz Motor (30-min. rating/cont. rating)**: 105.95 kVA/95.97 kVA

### Maximum tool diameter

- **ø135 mm/800 mm/30 kg (ø5.31"/31.5"/66 lbs)**
- **ø120 mm (ø4.72")**: M20 (3/4-10 UNC), tapped 81 places, pitch 100 mm (3.94")
- **ø100 mm (ø3.94")**: M16 × P2 (5/8-11 UNC), tapped 25 places, pitch 125 mm (4.25")

### Machine size

- **HCN-8800**: 6081 mm × 8858 mm (239.47" × 349.13")
- **HCN-10800**: 7047 mm × 10896 mm (277.44" × 428.98")
- **HCN-12800**: 8042 mm × 12856 mm (315.00" × 505.00")

### Machine height

- **HCN-8800**: 3726 mm (146.69")
- **HCN-10800**: 4511 mm (177.62")
- **HCN-12800**: 5350 mm (210.64")

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*Limited feedrate with continuous axis movement*  
**When adjacent pockets are empty and pockets next to them have tools less than ø240 mm (**ø41.4")**, maximum tool diameter is ø260 mm (**ø10.24")**
## Standard and Optional Equipment

### Spindle
- 1800 rpm (70 taper No. 50 spindle)
- 1500 rpm (60 taper B-BT40) ●
- 1500 rpm (60 taper B-BT40) ●
- 8000 rpm, 7°24 taper No. 50, BBT-50, HSK-A100 high-torque spindle ○
- 6000 rpm, 37 kW (BBT-50, HSK-A100) Hard Metal specification ○
- 9000 rpm, 37 kW (BBT-50, HSK-A100) Hard Metal specification ○
- 9000 rpm (70 taper No. 50) high-speed spindle ○
- 18000 rpm (HSK-A100) high-speed spindle ○

### Tool magazine
- 43-tool chain-type magazine ●
- 80-tool chain-type magazine ○
- 100, 120, 140, 160-tool chain-type magazine ○
- 80-tool chain-type magazine ○
- 191, 204, 240, 320, 340 tool TOOL HAVE ○
- 260, 276, 340 tool (No. 50 taper only) TOOLTECH ○

### Table
- 1° indexing table ○
- NC positioning table (continuing not available) ○
- NC rotary table ○
- NC rotary table with nose ○
- 1 ton pallet load for 13000 mm (51.2") pallet ○
- 4 ton pallet load ○
- 8 ton table load ○
- 15 ton table load (single table machine) ○

### Pallet
- 1800 mm (24.8") tapped pallet ○
- 1380 mm (24.8") tapped pallet with location bore ○
- 1380 mm (24.8") T-slot pallet with location bore ○
- 830 mm (24.8") + 800 mm (24.8") + 515° taped pallet ○
- 830 mm (24.8") + 800 mm (24.8") + 515° taped pallet with location bore ○
- 830 mm (24.8") + 800 mm (24.8") + 515° T-slot pallet with location bore ○
- 1380 mm (31.5") tapped pallet ○
- 1380 mm (31.5") tapped pallet with location bore ○
- 1380 mm (31.5") T-slot pallet with location bore ○
- 800 mm + 1000 mm (31.5" + 39.4") tapped pallet ○
- 800 mm + 1000 mm (31.5" + 39.4") tapped pallet with location bore ○
- 800 mm + 1000 mm (31.5" + 39.4") T-slot pallet with location bore ○
- 1000 mm (39.4") tapped pallet ○
- 1000 mm (39.4") tapped pallet with location bore ○
- 1000 mm (39.4") T-slot pallet with location bore ○
- 1000 mm (39.4") tapped pallet without edge locator ○
- 1000 mm (39.4") tapped pallet with edge locator ○
- 1000 mm (49.2") tapped pallet ○
- 1000 mm (49.2") tapped pallet with location bore ○
- 1250 mm (49.2") T-slot pallet with location bore ○
- 1250 mm (49.2") tapped pallet with location bore ○
- 1250 mm (49.2") tapped pallet without edge locator ○
- 1250 mm (49.2") tapped pallet with edge locator ○
- 1250 mm (62.9") tapped pallet ○
- 1250 mm (62.9") tapped pallet with location bore ○
- 1250 mm (62.9") T-slot pallet with location bore ○
- 1000 mm (62.9") tapped pallet with location bore ○
- 1000 mm (62.9") T-slot pallet with location bore ○

### Automation
- 2-pallet changer ○
- 2-pallet changer ○
- Hydraulic power supply through pallet (N/A 1° indexing table and NC rotary table) ○
- Tapped pallet for hydraulic power supply through pallet ○
- Tapped pallet with location bore for hydraulic power supply through pallet ○
- T-slot pallet for hydraulic power supply through pallet ○
- Hydraulic power supply from top of pallet changer (2 points + 2 pallets) ○
- Workpiece seating detection, ON/OFF switch ○
- Preparation for PALLETECH ○
- Automatic power ON/OFF + warm-up operation ○

### Setup
- Remote manual pulse generator (remote) ○
- Remote manual pulse generator (remote) ○
- Tool ID magazine operation panel ○
- Scale feedback (X, Y, Z axis)
- Scale feedback (X, Y, Z axis)
- Scale feedback (X, Z axis)
- Cylindrical unit ○
- Coolant temperature control ○
- Coolant supply through pallet (N/A 1° indexing table and NC rotary table)

### Safety requirement
- Chip conveyor (rear right disposal ConSep)
- Chip conveyor (rear right disposal, hinge) ○
- Chip conveyor (rear disposal, ConSep)
- Chip conveyor (rear disposal, hinge)
- Chip conveyor (side disposal, hinge) (not available with 6PC)
- Mist collector
- Work air blast
- SUPERFLOW coolant system 7.0 MPa (1015 psi)
- High-pressure coolant through spindle 3.5 MPa (508 psi)
- High-pressure coolant through spindle 1.5 MPa (218 psi)
- Coolant through spindle 0.8 MPa (116 psi)
- Niagara coolant
- Flood coolant
- Nitrogen coolant
- Oil mist coolant
- Coolant through spindle 6.8 MPa (115 psi)
- High-pressure coolant through spindle 1.5 MPa (218 psi)
- High-pressure coolant through spindle 1.5 MPa (218 psi)
- SUPERFLOW coolant system 7.5 MPa (1015 psi)
- Air through spindle
- Work air blast
- Heat-field coolant nozzle
- Secondary coolant filter for aluminum
- Oil skimmer (60-200)
- Magnetic plate
- Magnetic separator for cast iron
- Mist collector
- Oil conveyer (side disposal, hinge) (not available with 6PC)
- Oil conveyer (side disposal, ConSep) (not available with 6PC)
- Oil conveyer (near disposal, hinge)
- Oil conveyer (near disposal, ConSep)
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## Additional Information
- Inverter system for hinge chip conveyer
MAZATROL SmoothG Specifications

### Electrical consumption display

**Energy Dashboard**
- Designed with environmental considerations
- The environment and our impact on natural surroundings have always been important concerns for Mazak.
- All factories in Japan that produce Mazak machine tools are ISO 14001 certified, an international standard confirming that the operation of our production facilities does not adversely affect air, water or land.
- **Reduced electrical power consumption**
  - An automatic-off LED worklight and CNC screen are standard equipment.
  - The chip conveyor stops operation automatically after cycle completion for reduced electrical power consumption.
- **Reduced lubricant consumption**
  - High-efficiency lubrication system delivers the optimal amount of grease to the linear roller guides and ball screws for lower lubricant consumption.
  - The grease lubrication system eliminates tramp oil for extended coolant service life.
- **Extended coolant service life**
- Process screen displays total energy consumption

### Environmentally friendly

#### OPTION
- **Electrical consumption statistics/analysis display**
- **Process screen displays total energy consumption**
- **Reduced electrical power consumption**
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