GX SERIES

GX 600
GX 1300
GX 1000
GX 1600
GX SERIES

GX Series vertical machining centers with thousands installed worldwide. These 40 taper spindle machines include superior design characteristics to ensure many years of accurate and reliable performance.

HIGHER EFFICIENCY
Faster machining duty cycle time, lower non-cutting time.
- Spindle motor 7.5/11/15 kW for GX 600/1000. 15/18 kW for GX 1300/1600 feature higher cutting efficiency
- Equipped 8000 rpm (GX 600/1000, 10000 rpm (GX 1300/1600) spindle as standard: 12000 rpm, 15000 rpm (GX 600/1000) as optional for different cutting requirements.
- Max rapid on X, Y and Z axes is 36 m/min on GX 600/1000, GX 1300/1600.

RIGID STRUCTURE
Longer tool life and higher heavy cutting ability.
- Three linear guideways designed on X and Y axes provides more stiffness and machining consistency (GX 600/1000).
- Roller linear guideways on each axis, low static and dynamic friction providing longer machine life and greater positioning accuracy (GX 1300/1600).
- Direct drive-nut ball screws feature low noise, low thermal growth and heavy-duty transmission.
- Rigid C-frame fixed column design. Spindle carrier, column and base are manufactured from high quality cast iron, contributing to overall rigidity and machining capabilities.

EXCELLENT AND STABLE ACCURACY
Stable static and cutting accuracy
- Accurate positioning accuracy ISO230-2
  - Full stroke positioning 0.01 mm (GX 600/1000)
  - Full stroke positioning 0.014 mm (GX 1300/1600)
- Accurate repeatability accuracy ISO230-2
  - Full stroke repeatability 0.005 (GX 600/1000)
  - Full stroke repeatability 0.007 mm (GX 1300/1600)
- Ball-bar accuracy, example accuracy 0.004 mm on X-Y plane
- “Circle-Diamond-Square” cutting complies with ISO 10791-7
KEY FEATURES

SPINDLE OUTPUT DIAGRAM

GX 600/1000 - 8000 RPM

GX 1300/1600 #40 - 10000 RPM

SPINDLE

GX 1300/1600 #40#50 - 10000 RPM

SPINDLE

FANUC AIL8 / 8000 RPM SPINDLE MOTOR

FANUC AIL15 / 12000 RPM SPINDLE MOTOR

FANUC AIL22 / 12000 RPM SPINDLE MOTOR (OPTION)

STANDARD 30-TOOL SWING ARM ATC (GX 1300/1600)

OPTIONAL 40-TOOL SWING ARM (GX 1300/1600)

AUTOMATIC TOOL CHANGER

Standard carousel ATC. 20 tools for GX 600, GX 1000

OPTIONAL 24-TOOL SWING ARM ATC (GX 600/1000)

Fast tool change time 2 sec. (T-T), for design of random bi-directional ATCs and cam type mechanism features accurate, rapid and stable tool change system. 90 degree tool pocket prevents tool dropping (GX 600/1000).
FEA (FINITE ELEMENT ANALYSIS)

FEA techniques were used to analyze the structure deviation, stress, thermal rise and vibration. This process ensures excellent geometric accuracy and cutting surface shown by our Hardinge engineering team.

STIFF AND THERMALLY-STABLE SPINDE

Significant radial and axial stiffness with quad-set of angular-contact bearings on the front and taper bore roller bearing on the rear. Non-contact magnetic encoder design eliminated noise and vibration, also provides more accurate spindle orientation feedback.

RIGID LINEAR GUIDeways

Three (3) guideways and five (5) blocks for stable support in X / Y axes. Two (2) guideways and six (6) blocks for optimum rigidity and stability in Z axis (GX 600/1000).

For GX 1300/1600, 45mm wide roller type linear guideway on X / Y / Z axes. 45 mm dia. ball screw features rigidity, superior positioning & repeatability accuracy.
TOOL PROBE (OPTIONAL)
Automatic Renishaw Tool Probe, easy to use and define tool offset combined with marco programming. Reduce non-cutting cycle time and easily check tool length, diameter or wear.

2-SPEED GEARBOX (OPTIONAL) - GX 600/1000/1300/1600
Planetary-type gearbox features high-torque spindle and helical sun gear design offers higher efficiency, quieter, smoother and stronger-running spindle power output. (8000rpm max.)

COOLANT THROUGH SPINDLE (OPTIONAL)
Supplies coolant to the cutting edge at 280psi. Allows higher speed, deep hole drilling and blind pocket milling. Enhanced tool life and machining accuracy.

20,000 HOUR LIFE TEST FOR RELIABILITY AND QUALITY
VMC prototype life test confirms:
- Benchmark Test
- MTBF Test
- Wear Test
- Accuracy Test
- Vibration Test
- Noise Test
- Leakage Test
- Safety Test
- Thermal Test
**DIMENSIONAL DRAWINGS GX 600 / GX 1000**

### Machine Configuration

<table>
<thead>
<tr>
<th>Machine Configuration</th>
<th>GX 600</th>
<th>GX 1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>X x Y x Z</td>
<td>600 x 540 x 540</td>
<td>1020 x 540 x 540 mm</td>
</tr>
</tbody>
</table>

### Travel

- Spindle Nose to Table Surface: 145 - 685 mm
- Table Front End to Door: 175 mm
- Spindle Center to Column: 584.2 mm

### Table

- Table Dimension: 750 x 540 - 1120 x 540 mm
- Weight on Table (Max.): 700 kg
- T-Slots (width x no. x pitch): 18mm x 160mm x 3

### Spindle + Torque Motor Rating

<table>
<thead>
<tr>
<th>Motor Rating</th>
<th>Fanuc (S3 25%)</th>
<th>Siemens (S6 25%)</th>
<th>Heidenhain (S6 25%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed (Max.)</td>
<td>8000 rpm</td>
<td>8000 rpm</td>
<td>8000 rpm</td>
</tr>
<tr>
<td>Torque</td>
<td>20.1 hp / 15 kW</td>
<td>20.4 hp / 15.2 kW</td>
<td>17.4 hp / 13 kW</td>
</tr>
</tbody>
</table>

### Ball Screw

- Diameter: 40 / 40 / 40 mm
- Z Axis Travel: 12 mm

### Tool Changer

- Tool Capacity: 20
- Tool Type: Carousel
- Tool Selection: 8x Directional
- Tool Holder Type: BT or CAT or SK or ANSI
- Tool Diameter (Max.): 94 mm
- Dia. with Adjacent Pots Empty: 152 mm
- Tool Length (Max.): 250 mm
- Tool Weight (Max.): 6 kg
- Tool Change Time (Avg.): 6 sec

### Accuracy (ISO 230-2)

- Positioning (All Axes): 0.01 mm
- Coolant Pressure: 0.005 m

### Motors

<table>
<thead>
<tr>
<th>Motor Type</th>
<th>Fanuc</th>
<th>Siemens</th>
<th>Heidenhain</th>
</tr>
</thead>
<tbody>
<tr>
<td>X / Y / Z</td>
<td>1.6 / 1.6 / 4.0 kW</td>
<td>2.29 / 3.3 / 3.3 kW</td>
<td>2.64 / 2.64 / 5.0 kW</td>
</tr>
<tr>
<td>Coolant Motor Rating</td>
<td>60 Hz</td>
<td>0.8 kW</td>
<td>50 Hz</td>
</tr>
</tbody>
</table>

### Lubrication

- Spindle Bearing Grease
- Linear Guideways Central Manual Grease Lubricator
- Ball Screws Central Manual Grease Lubricator

### Coolant Capabilities

- Coolant Tank Capacity: 230 (GX 600) - 360 (GX 1000) liters
- Feed Rates (All Axes): Rapid and Jog (Max.): 36 m/min, Cutting Feed Rate (Max.): 12 m/min

### Miscellaneous

- Power Supply Requirement: 82A FLA / 220V / 3 Phase (Fanuc)
- Coolant Through Spindle 280 psi (20 bar)
- Chip Conveyor: Hinge Type
- Tool Probe: Part Probe
- Air Blast by Spindle Side (M code controlled)
- Rapid and Jog 36 m/min or 42 m/min 4th Axis Pro-wiring
- Tri-Color Stack Light 4th Axis Driver Kit
- Coolant Flush System Transformer
- Coolant Wash Gun M80 Auto Power Off
- Rotary Table / Tailstock
- Swing Arm Type ATC 24 Tools Power Case Chiller
- Z Axis Column Raiser 140 mm Spindle Chiller
- Fanuc 31i-B
- Siemens 828D
- Heidenhain TNC 620 HSCI
- Ethernet Interface + Data Server 2 GB (Fanuc 0iMF)

* To keep improvements and development of new functions, Hardinge Taiwan reserves the rights to change specifications without further notice.

* Due to varying conditions, actual results may be greater or less than those listed.
**Machine Configuration**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>GX 1300</th>
<th>GX 1600</th>
</tr>
</thead>
<tbody>
<tr>
<td>X x Y x Z</td>
<td>1300 x 700 x 635</td>
<td>1600 x 700 x 635</td>
</tr>
<tr>
<td>Spindle Nose to Table Surface</td>
<td>133 - 768 mm</td>
<td></td>
</tr>
<tr>
<td>Table Front End to Door</td>
<td>113.4 mm</td>
<td></td>
</tr>
<tr>
<td>Spindle Center to Column</td>
<td>725 mm</td>
<td></td>
</tr>
<tr>
<td>Table Dimension</td>
<td>1425 x 700</td>
<td>1700 x 700</td>
</tr>
<tr>
<td>Weight on Table (Max.)</td>
<td>1500 kg</td>
<td></td>
</tr>
</tbody>
</table>

**Spindle * Torque Motor Rating**

<table>
<thead>
<tr>
<th>Motor Type</th>
<th>Fanuc (S3 25%)</th>
<th>Siemens (S6 25%)</th>
<th>Heidenhain (S6 25%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed (Max.)</td>
<td>10000 rpm</td>
<td>34.8 hp / 26 kW</td>
<td>35 hp / 26.3 kW</td>
</tr>
<tr>
<td>Torque</td>
<td>190 N·m</td>
<td>143 N·m</td>
<td>182.5 N·m</td>
</tr>
</tbody>
</table>

**Tool Changer**

| Capacity | 30 |
| ATC Type | Swing Arm |
| Tool Selection | Bi-Directional |
| Tool Holder Type | BT or CAT or SK or ANSI |
| Tool Diameter (Max.) | 75 mm |
| Dia. with Adjacent Pots Empty | 150 mm |
| Tool Length (Max.) | 350 mm |
| Tool Weight (Max.) | 7 kg |
| Tool Change Time (Avg.) | 2.7 sec |
| Positioning (All Axes) | 0.014 mm |
| Coolant Pressure | 0.007 m |

**Accuracy (ISO 230-2)**

| Axis Motor Rating | 4 |
| Coolant Motor Rating | 60 Hz / 0.8 / 2.35 kW |
| | 50 Hz / 0.54 / 2.6 kW |

* To keep improvement and developing new functions, Hardinge Taiwan reserves the rights to change specifications without further notice.

* Due to varying conditions, actual results may be greater or less than those listed.
Hardinge is a leading international provider of advanced metal-cutting solutions. We provide a full spectrum of highly reliable CNC turning, milling, and grinding machines as well as technologically advanced work-holding accessories.

The diverse products we offer enable us to support a variety of market applications in industries including aerospace, agricultural, automotive, construction, consumer products, defense, energy, medical, technology, transportation and more.

We’ve developed a strong global presence with manufacturing operations in North America, Europe, and Asia. Hardinge applies its engineering and applications expertise to provide your company with the right machine tool solution and support every time.