

# GX SERIES

GX 600  
GX 1300  
GX 1000  
GX 1600



**BRIDGEPORT**

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 **HARDINGE**

# 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.



**GX 600**



**GX 1000**



**GX 1300 / GX 1600**

## 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.

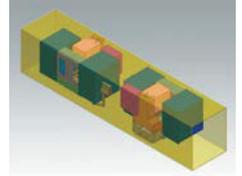
- Three linear guideways designed on X and Y axes provides more stiffness and machining consistency (GX 600/1000).
- Roller linear guideways on each axis, low static and dynamic friction providing longer machine life and greater positioning accuracy (GX 1300/1600).
- Direct drive-nut ball screws feature 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

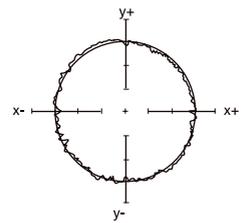
- Accurate positioning accuracy ISO230-2
  - Full stroke positioning 0.01 mm (GX 600/1000)
  - Full stroke positioning 0.014 mm (GX 1300/1600)
- Accurate repeatability accuracy ISO230-2
  - Full stroke repeatability 0.005 (GX 600/1000)
  - Full stroke repeatability 0.007mm (GX 1300/1600)
- Ball-bar accuracy,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

## LOAD IN HQ CONTAINER 1



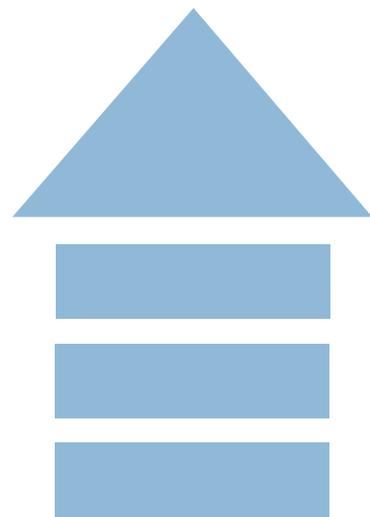
2 units GX 1600 machines in 40' HQ container, saving more transportation cost

## BALL-BAR ACCURACY



X-Y Plane Circularity: 4µm

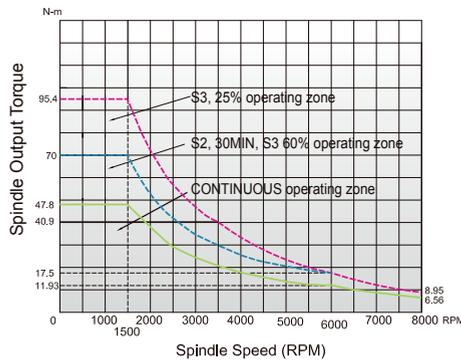
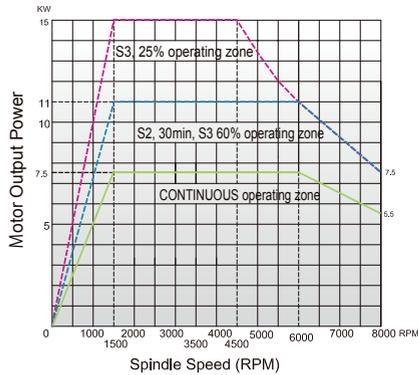
## ISO 10791-7 “CIRCLE-DIAMOND-SQUARE” CUTTING EXAMPLE



# KEY FEATURES

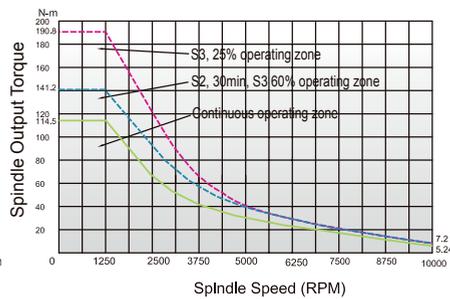
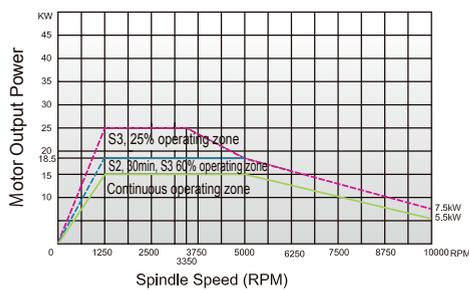
## SPINDLE OUTPUT DIAGRAM

**GX 600/ 1000 - 8000 RPM**



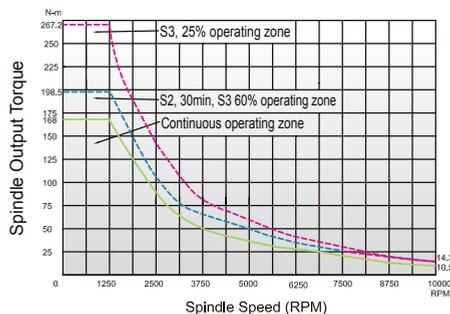
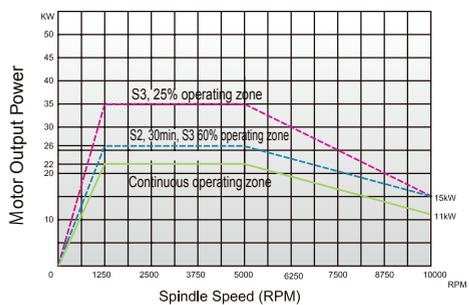
**FANUC AIL8 / 8000 RPM SPINDLE MOTOR**

**GX 1300/ 1600 #40 - 10000 RPM SPINDLE**



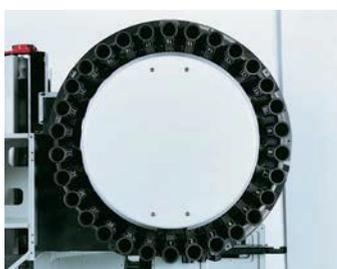
**FANUC AIL15 / 12000 RPM SPINDLE MOTOR**

**GX 1300/ 1600 #40#50 - 10000 RPM SPINDLE**

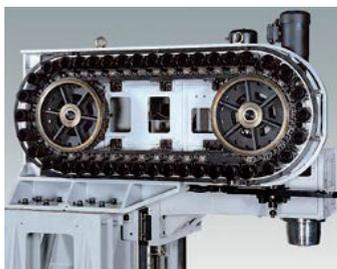


**FANUC AIL22 / 12000 RPM SPINDLE MOTOR (OPTION)**

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

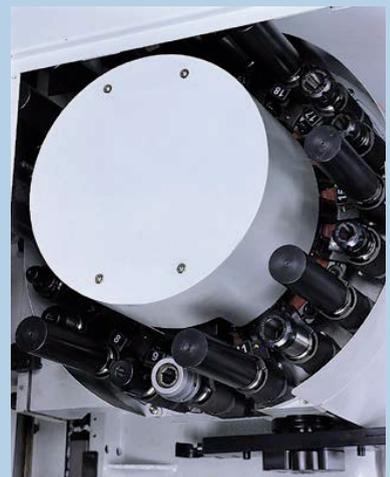


**OPTIONAL 40-TOOL SWING ARM (GX 1300/1600)**



## AUTOMATIC TOOL CHANGER

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

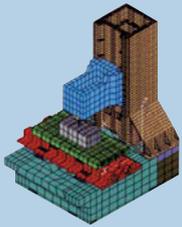


## OPTIONAL 24-TOOL SWING ARM ATC (GX 600/1000)

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).



# GS SERIES



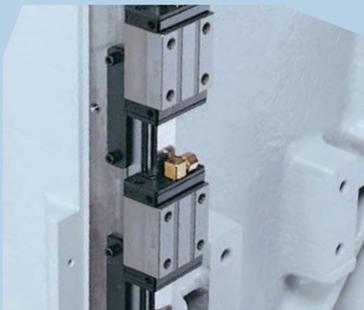
## FEA (FINITE ELEMENT ANALYSIS)

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.



GX 600 / 1000

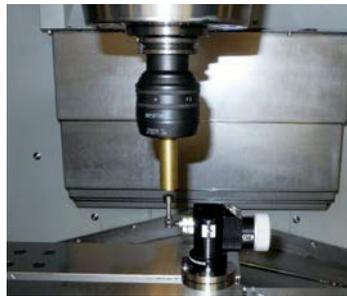


GX 1300 / 1600

# KEY FEATURES

## 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.



## 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

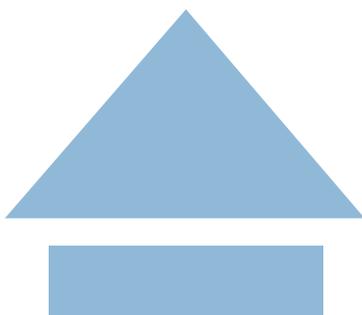
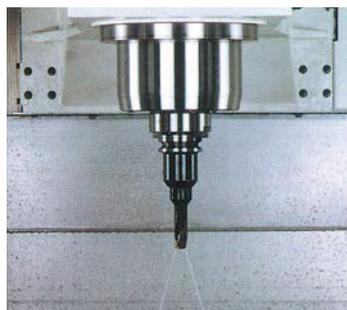


## 2-SPEED GEARBOX (OPTIONAL) - GX 600/1000/1300/1600

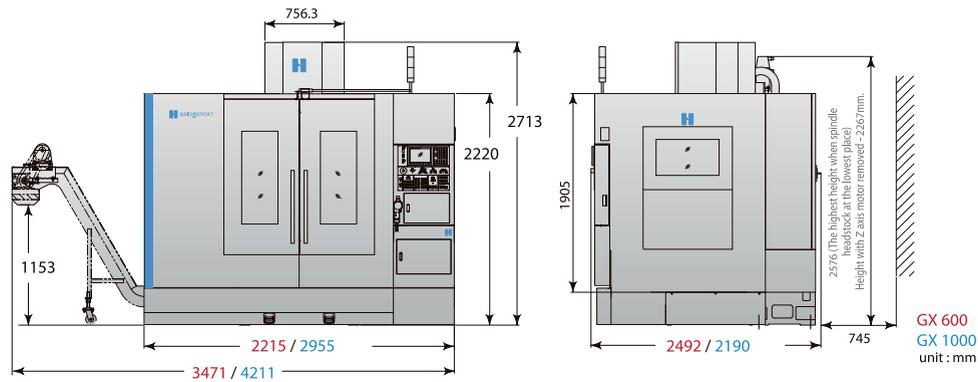
Planetary-type gearbox features high-torque spindle and helical sun gear design offers higher efficiency, quieter, smoother and stronger-running spindle power output. (8000rpm max.)

## 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.



# DIMENSIONAL DRAWINGS GX 600 / GX 1000



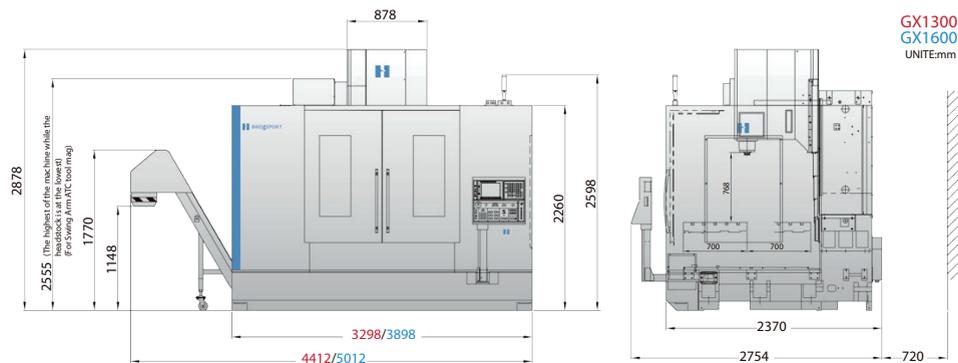
Machine Configuration	GX 600	GX 1000		
<b>Travel</b>	X x Y x Z	600 x 540 x 540	1020 x 540 x 540	mm
	Spindle Nose to Table Surface	145 - 685		mm
	Table Front End to Door	175		mm
	Spindle Center to Column	584.2		mm
<b>Table</b>	Table Dimension	750 x 540	1120 x 540	mm
	Weight on Table (Max.)	700		kg
	T-Slots (width x no. x pitch)	18mm x 160mm x 3		
<b>Spindle * Torque Motor Rating</b>	Speed (Max.)	8000	8000	rpm
	Fanuc (S3 25%)*	20.1 hp / 15 kW		
	Siemens (S6 25%)*	20.4 hp / 15.2 kW		
	Heidenhain (S6 25%)*	17.4 hp / 13 kW		
	Fanuc (S3 25%)*	95.4		N-m
	Siemens (S6 25%)*	86		N-m
	Heidenhain (S6 25%)*	83		N-m
<b>Ball Screw</b>	Diameter	40 / 40 / 40		mm
	Z Axis Travel	12		mm
<b>Tool Changer</b>	Tool Capacity	20		
	ATC Type	Carousel		
	Tool Selection	Bi-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
<b>Accuracy (ISO 230-2)</b>	Positioning (All Axes)	0.01		mm
	Coolant Pressure	0.005		m
<b>Motors</b>	Axis Motor Rating X / Y / Z	Fanuc	1.6 / 1.6 / 4.0	kW
		Siemens	2.29 / 3.3 / 3.3	
		Heidenhain	2.64 / 2.64 / 5.0	
	Coolant Motor Rating	60 Hz	0.8	kW
50 Hz		0.54		

Machine Configuration	GX 600	GX 1000	
<b>Lubrication</b>	Spindle Bearing	Grease	
	Linear Guideways	Central Manual Grease Lubricator	
	Ball Screws	Central Manual Grease Lubricator	
<b>Coolant Capabilities</b>	Coolant Tank Capacity	230 (GX 600)	Liter
		360 (GX 1000)	
<b>Feed Rates (All Axes)</b>	Rapid and Jog (Max.)	36	
	Cutting Feed Rate (Max.)	12	
<b>Miscellaneous</b>	Compressed Air Require (Min.)	70 psi 5kg / cm <sup>2</sup>	
	Power Supply Requirement	82A FLA / 220V / 3 Phase (Fanuc)	45A FLA / 400V / 3 Phase (Siemens / Heidenhain)
<b>Machine Weight</b>	5260	5500	kg
<b>Options</b>	High-Torque 2 speed (2000 / 8000 rpm) Gearbox		
	12000 rpm Spindle (grease or oil / air lubrication, DDS or belt)		
	15000 rpm Spindle (oil / air lubrication, DDS or belt)		
	Coolant Through Spindle 280 psi (20 bar)		
	Chip Conveyor	Hinge Type	
		Scraper Type	
	Tool Probe	Part Probe	
	Air Blast by Spindle Side (M code controlled)	Optical Scale	
	Rapid and Jog 36 m/min or 42 m/min	4th Axis Pre-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 180 mm	Spindle Chiller		
<b>Controller Options</b>	Fanuc 31i-B		
	Siemens 828D		
	Heidenhain TNC 620 HSCI		
	Ethernet Interface + Data Server 2 GB (Fanuc 0iMF)		

\* 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.

# DIMENSIONAL DRAWINGS GX 1300 / GX 1600



Machine Configuration	GX 1300	GX 1600		
<b>Travel</b>	X x Y x Z	1300 x 700 x 635	1600 x 700 x 635	mm
	Spindle Nose to Table Surface	133 - 768		mm
	Table Front End to Door	113.4		mm
	Spindle Center to Column	725		mm
<b>Table</b>	Table Dimension	1425 x 700	1700 x 700	mm
	Weight on Table (Max.)	1500		kg
	T-Slots (width x no. x pitch)	18mm x 125mm x 5		
<b>Spindle * Torque Motor Rating</b>	Speed (Max.)	10000		rpm
	Fanuc (S3 25%)*	34.8 hp / 26 kW		
	Siemens (S6 25%)*	35 hp / 26.3 kW		
	Heidenhain (S6 25%)*	49.6hp / 37 kW		
	Fanuc (S3 25%)*	190		N-m
	Siemens (S6 25%)*	143		N-m
<b>Tool Changer</b>	Heidenhain (S6 25%)*	182.5		N-m
	Tool 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
<b>Accuracy (ISO 230-2)</b>	Positioning (All Axes)	0.014		mm
	Coolant Pressure	0.007		m
<b>Motors</b>	Axis Motor Rating	4		
	Coolant Motor Rating	60 Hz	0.8 / 2.35	kW
		50 Hz	0.54 / 2.6	

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Machine Configuration	GX 1300	GX 1600		
<b>Lubrication</b>	Spindle Bearing	Grease		
	Linear Guideways	Central Manual Grease Lubricator		
	Ball Screws	Central Manual Grease Lubricator		
<b>Coolant Capabilities</b>	Coolant Tank Capacity	400	500	liter
	<b>Ball Screw</b>	Diameter	45	
Z Axis Travel		12		mm
<b>Chip Management System</b>	Hinge Type Chip Conveyor			
<b>Feed Rates (All Axes)</b>	Rapid and Jog (Max.)	36		m/min
	Cutting Feed Rate (Max.)	12		m/min
<b>Miscellaneous</b>	Compressed Air Require (Min.)	70 psi 5kg / cm <sup>2</sup>		
	Power Supply Requirement	95A FLA / 220V / 3 Phase (Fanuc) 65A FLA / 400V / 3 Phase (Siemens / Heidenhain)		
<b>Machine Weight</b>		9400	9800	kg
<b>Options</b>	6000 rpm Spindle, #50 Taper with Gearbox			
	12000 rpm Spindle (grease)			
	15000 rpm Spindle (oil / air)			
	Coolant Through Spindle 280 psi (20 bar) or 700 psi (50 bar)			
	Chip Conveyor	Scraper Type		
	Tool Probe	Part Probe		
	4th Axis Drive Package	Coolant Wash Down Hose		
	1 Additional Overhead Worklight (bright)	Swing Arm Type ATC 32 Tools (#50 Taper)		
	Air Purge			
	Z Axis Column Raiser 260 mm			
Linear Scale				
<b>Controller Options</b>	Siemens 828D			
	Heidenhain TNC 620 HSCI			



## HARDINGE WORLDWIDE

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.

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