

MILLING



GX-Series
Performance
Vertical Machining Centers



www.bpt.com

 **BRIDGEPORT**[®]
EXPECT MORE[™]

GX-Series Performance Vertical Machining Centers

From one-off and small part machining right through to medium-to-high volume production runs, Bridgeport 40-taper spindle GX-Series vertical machining centers include superior design characteristics to ensure many years of accurate and reliable performance. The GX-Series VMCs are the enhanced generation of P³-Series VMCs that are in thousands of installations worldwide.

GX-Series VMCs include a stiff and thermally-stable spindle, a rigid C-frame fixed column design, and fixed pre-tensioned double-nut ball screws on all axes. The unique Bridgeport-designed linear guide and guide truck configuration provides added stiffness, damping and surface contact area. Each machine is configured with heavy-duty guideways and guide trucks.

GX-Series machines are ideal for mold and die manufacturers, as well as precision engineers in the automotive, aerospace, medical and general engineering sectors.



GX 600

- Travels
X-axis - 600mm (23.62")
Y-axis - 540mm (21.25")
Z-axis - 540mm (21.25")



GX 1000

- Travels
X-axis - 1020mm (40.16")
Y-axis - 540mm (21.25")
Z-axis - 540mm (21.25")



GX 1300

- Travels
X-axis - 1300mm (51.18")
Y-axis - 700mm (27.55")
Z-axis - 635mm (25.00")

GX 1600

- Travels
X-axis - 1600mm (62.99")
Y-axis - 700mm (27.55")
Z-axis - 635mm (25.00")

Rigidity...built like a rock from the ground up

The GX 1300 and GX 1600 column staff mount design deflects ATC weight overhang, providing superior rigidity and minimized vibration to the cutting zone.

Large high-quality, low maintenance roller guide-ways on GX 1300 and GX 1600 machines provide greater positioning accuracy and superior finishes—very low friction and high stiffness for long machine life. Linear guideways featured on GX 600 and GX 1000 models.

Highly engineered machine structure manufactured from grey cast iron—heavily ribbed throughout to ensure high overall rigidity and thermal stability.

Best-in-class spindle design incorporates five (5) bearings for superior rigidity and overall spindle life—four (4) angular contact bearings on the front; one (1) roller bearing on the rear:

Oversized high-class 45mm (1.77") double-nut ballscrews—fixed and pre-tensioned to provide superior machine accuracy and repeatability (40mm ballscrews on GX 600 and GX 1000 models).

All geometric alignments conform to ISO 230 standards—every machine passes strict laser and ballbar tests.

GX 1600 shown

Standard features include:

- 10,000-rpm Spindle Speed
- CT40 or BT40 Taper Spindle
- Rigid Tapping
- 4th Axis Preparation

Optional features include:

- Larger Capacity ATCs
- 12,000-rpm Grease Lubricated Spindle
- 15,000-rpm High-Speed Oil-Air Lubricated Spindle (GX 600 and GX 1000 models)
- 20-bar (300-psi) Through-Spindle Coolant
- Chip Conveyor with Chip Washdown¹
- Absolute Linear Glass Scales
- Tool Setting Probes
- Spindle Probe
- Tri-color Light Tower
- Air Blast
- 4th Axis Interface
- Hardinge 5C and 16C Indexers and Rotary Tables
- Hand-held Manual Pulse Generator

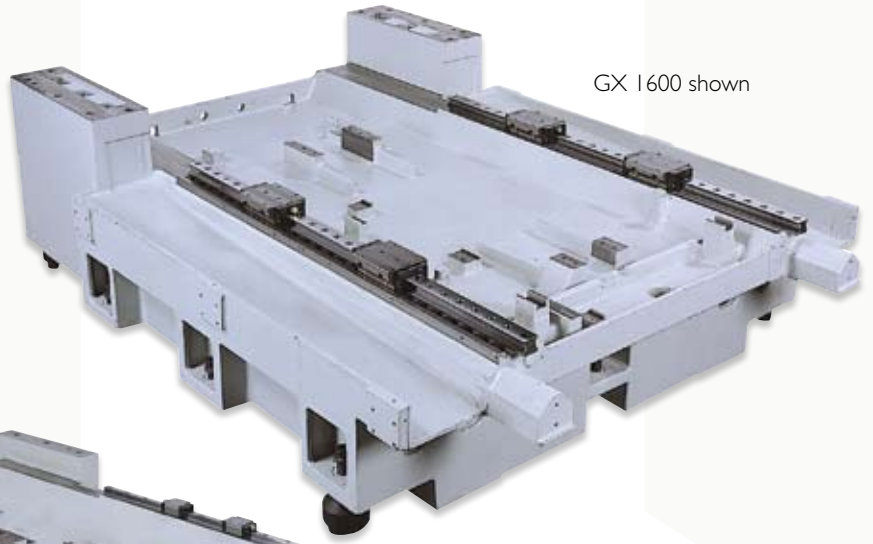
¹ - Standard on GX 1300 and GX 1600 models.

GX 600 shown

GX-Series Performance Vertical Machining Centers

Heavy-duty linear guideways, ballscrews and axis drives

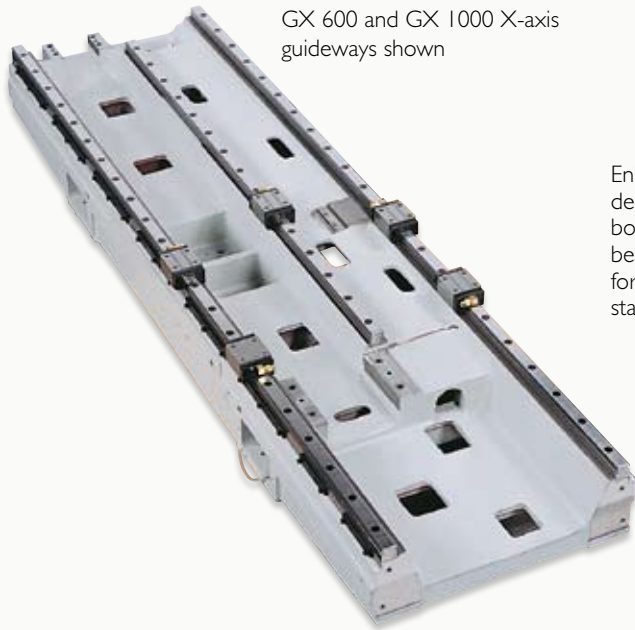
Wide-spaced, oversized linear guideways provide optimum stiffness with less friction, less heat and less thermal growth for faster traverse rates, longer machine life and greater positioning accuracy. The linear way modules consist of slide members (guide trucks) and linear rails to provide a large load rating, stable accuracy, high rigidity and low friction. The wide spacing between all axes rails provides optimum stiffness for the overall machine structure. Oversized 45mm (1.77") ballscrews are featured on GX 1300 and GX 1600 VMCs; 40mm (1.57") ballscrews on GX 600 and GX 1000 models.



GX 1600 shown

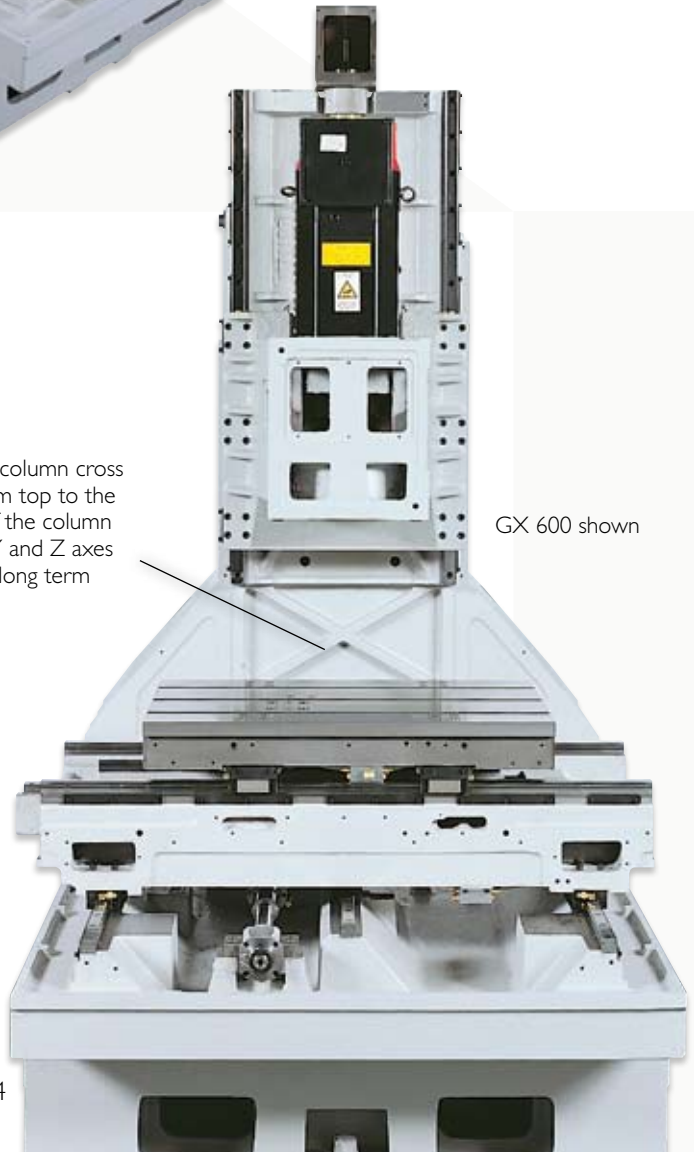


GX 600 and GX 1000
Y-axis guideways shown



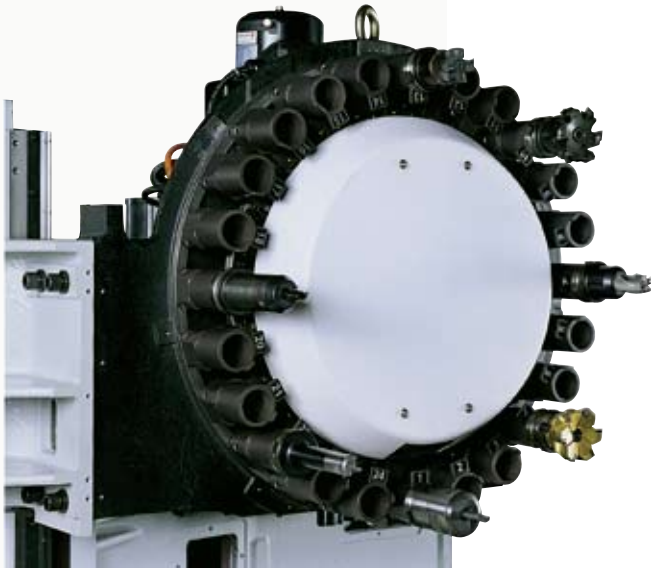
GX 600 and GX 1000 X-axis
guideways shown

Enhanced column cross design from top to the bottom of the column bears X, Y and Z axes forces for long term stability.



GX 600 shown

Large capacity, fast performance automatic tool changers



GX 600 and GX 1000 24-tool swing-arm ATC



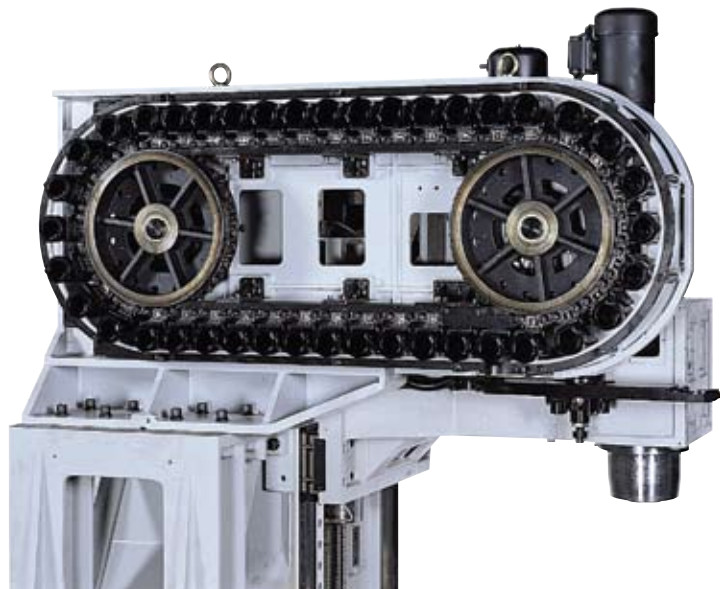
GX 600 and GX 1000 swing arm



GX 1300 and GX 1600 30-tool swing-arm ATC

To ensure smooth and vibration-free tool changing, GX 1300 and GX 1600 machines have their tool changer strategically located for minimal transfer of vibration—a unique design feature. All ATCs feature random-access, bi-directional indexing.

Model	ATC Tool Positions	ATC Option	Tool Shank Taper
GX 600	24	30	40
GX 1000	24	30	40
GX 1300	30	40	40
GX 1600	30	40	40



GX 1300 and GX 1600
40-tool ATC option

GX-Series Performance Vertical Machining Centers

Powerful spindle motors

GX-Series machining centers feature a powerful spindle motor for aggressive cutting capabilities. A 15-kW (20-hp) spindle drive is included on GX 600 and GX 1000 models; GX 1300 and GX 1600 machines feature an 18.5-kW (25-hp) drive. The rigid spindle design includes two angular contact bearings at the front and one roller bearing at the rear for optimum performance and long life. The non-contact magnetic encoder design eliminates noise and vibration, while providing more accurate spindle orientation feedback.

The high-speed spindle option is ideal for mold and fixture work when machining hardened materials, as well as high-speed cutting of aluminum or magnesium alloy.

Through-spindle coolant is available as an option to supply coolant to the cutting edge at 20 bar (300 psi), allowing faster speeds, enhanced deep hole drilling and blind pocket milling.

Model	Power†	Torque†	Max. Speed	Max. Speed Option
GX 600	15kW (20hp)	114Nm (84ft-lb)	10,000 rpm	12,000 & 15,000 rpm
GX 1000	15kW (20hp)	114Nm (84ft-lb)	10,000 rpm	12,000 & 15,000 rpm
GX 1300	18.5kW (25hp)	141Nm (104ft-lb)	10,000 rpm	12,000 rpm
GX 1600	18.5kW (25hp)	141Nm (104ft-lb)	10,000 rpm	12,000 rpm

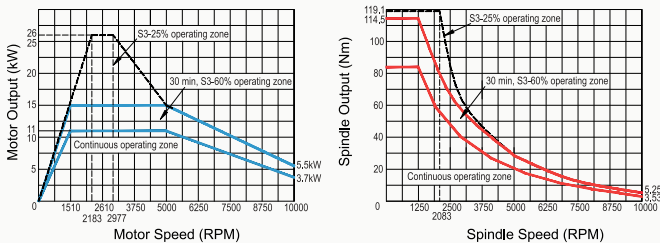
†S3-60% rating



GX 600 and GX 1000 spindle drive motor

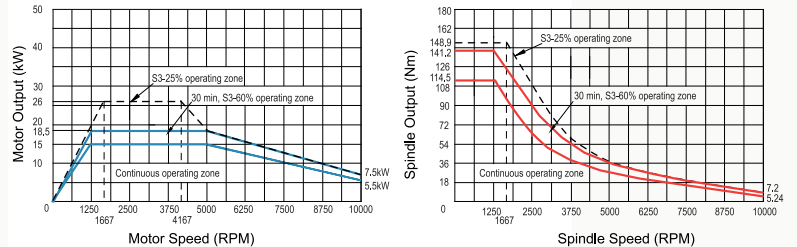
GX 600 and GX 1000

10,000-rpm Belt-Driven Spindle (Standard)

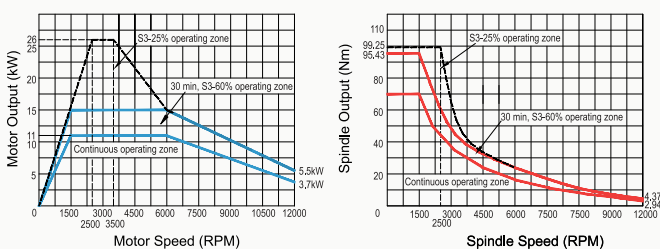


GX 1300 and GX 1600

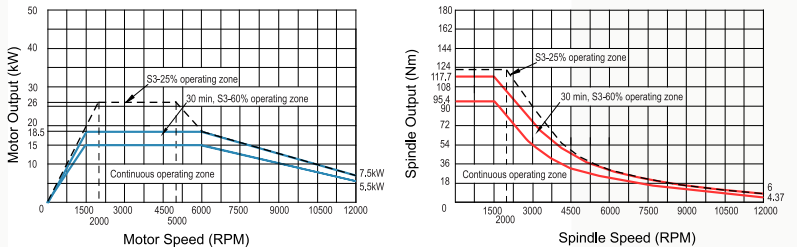
10,000-rpm Belt-Driven Spindle (Standard)



12,000-rpm Belt-Driven Spindle (Option)



12,000-rpm Belt-Driven Spindle (Option)



Advanced digital control to unleash your productivity



Bridgeport/Fanuc i-Series GX control
(GX 600 and GX 1000 models)



Bridgeport/Fanuc i-Series GX control
(GX 1300 and GX 1600 models)

GX-Series machines feature a custom-designed CNC control with the latest hardware and software technology, providing an operator-friendly, common platform. Many standard features are included that other machine tool builders charge extra for—rigid tapping, tool life management, run time and parts counter.

Bridgeport/Fanuc 32-bit i-Series GX Control

- 264mm (10.4") Color LCD
- Controlled axes—4
- Manual Guide *i*
- Least input increment—0.001mm (.0001"), 0.001deg.
- AICC Look-ahead Control
- Data Server with 64MB Flash Card Slot (option)
- Ethernet (option)
- Fine Acc & Dec control
- Servo control HRV3
- Backlash compensation
- Linear interpolation
- Coordinate system rotation
- Cylindrical interpolation
- Helical interpolation (Circular interpolation plus Max. 2 axes linear interpolation)
- Polar coordinate command
- Circular interpolation (Multi-quadrant possible)
- Mirror image
- Automatic acceleration /deceleration
- Rapid traverse: linear Cutting feed: exponential
- Tool offset pairs, \pm 6 digits—400 pair
- Tool length compensation
- Tool offset memory C
- Cutter compensation C
- Part program storage length—640m
- Number of registerable programs—400
- Self-diagnosis function
- Alarm history display
- Operation history display
- Help function
- Stored pitch error compensation
- Custom Macro B
- Tool life management
- Workpiece coordinate system (G52 - G59)
- Addition of workpiece coordinate system (48 pairs)
- Automatic tool length measurement
- Rigid tapping
- PCMCIA card slot—can be used to run large files directly from a memory card

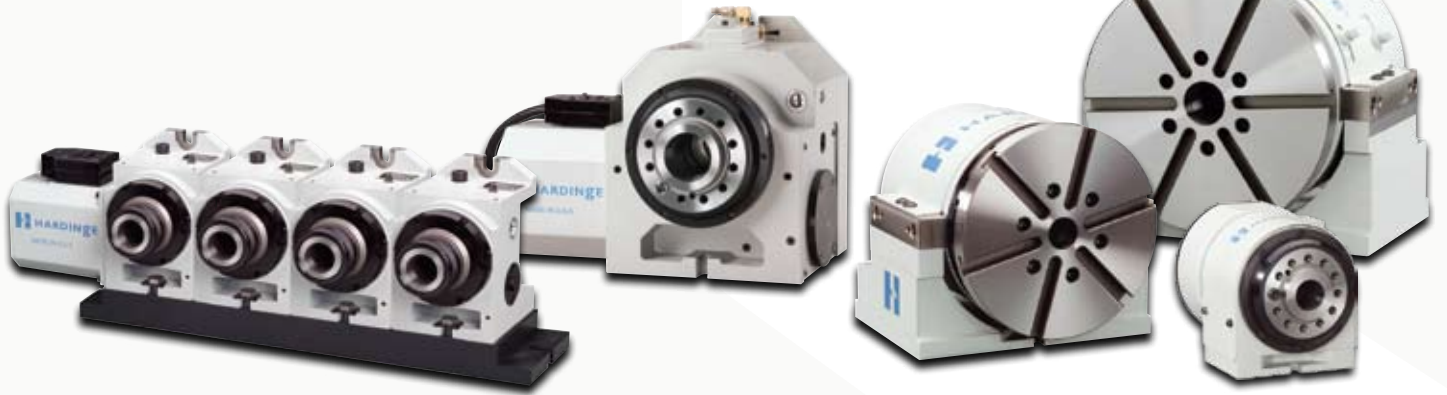
User-friendly Manual Guide *i* software

Manual Guide *i* is an advanced conversational programming system. A fully animated version of the operator-generated part program can be easily viewed on the full-color display. Using Manual Guide *i* ensures that the process is proven prior to actual machining. If desired, the simple push of a button converts the conversational program into a standard G- and M-code program.

GX-Series Performance Vertical Machining Centers

Optional Rotary Solutions by Hardinge

Increase your productivity by adding affordable automation to your machining center for rapid positioning of single or multiple part setups.



Enhanced, entry-level 5C² Rotary Systems

- Beefy, dual-bearing spindle for heavier radial and axial loads
- 5C² single, dual, triple & quad, trunnion and 2-axis configurations
- Industry compatible for drop-in replacement
- 360 degrees-per-second
- Hardinge threaded-nose 5C spindle

Flexible, quick-change 16C and 3J Rotary Systems

- Beefy, dual-bearing spindle for heavier radial and axial loads
- 16C and 3J single, dual & triple, trunnion and 2-axis configurations
- A2-5, 16C or 3J collet-ready spindle
- 5C adapter available for small part processing

Zero backlash, gearless, Direct-Drive Rotary Systems

- Rare-earth, permanent magnet wraparound torque motor
- Rapid bidirectional movement
- High servo stiffness
- High-speed and Super-Precision[®] positioning and repeatability
- Direct-mount ± 0.077 arc-sec high resolution encoder
- DD100, DD200 & DD300, trunnion and 2-axis configurations

Hardinge Rotary Systems can be integrated into the machine, operating in a fully interpolated fashion with the other axes of the machine. The machining center must be configured for immediate or future 4th-axis operation. Refer to brochure 2372 for a complete rotary product offering with dimensions and specifications.



The most flexible Quick-Change workholding concept on the market...

Hardinge's collet-ready spindle nose design allows quick change between collets, expanding collets, step chucks, 3-jaw chucks and face plates. Common spindle tooling can be shared between the Hardinge Rotary System(s) and a lathe. The gripping is in the spindle, closest to the spindle bearings, unlike surface-mounted adapters used on traditional rotary tables. Multiple workholding options provide alternate gripping solutions for increased precision and capability.

The Hardinge Group™ ...

Bridgeport® milling machines, **Hardinge®** turning centers,
Hauser, Kellenberger®, Tripet and Tschudin grinding machines,
and **Workholding and industrial products**

The Hardinge Group produces more than just the GX-Series machining centers shown in this brochure...we build a full range of value-packed and high-precision turning centers; vertical and horizontal machining centers; high-speed and 5-axis milling machines; creep-feed, jig, universal cylindrical and ID/OD grinding machines; and workholding systems and equipment. Hardinge machine tool technology is not only the most comprehensive on the market, it's also creating new benchmarks as a solutions provider for quality, productivity and reliability.

Whether you are an OEM or sub-contract precision engineering company—regardless of the sectors you serve (aerospace, automotive, medical, autosport, mold, tool and die or general engineering)—the Hardinge product portfolio will interest you.

Our advanced manufacturing technologies in combination with our range of after-sales and support services (maintenance and service contracts; operator training; technical and applications support) have been designed to help you improve your performance and maintain your competitive advantage.

If you would like to know more about our manufacturing solutions, call us at 800.843.8801 or 607.734.2281 and request our Product Guide #1365. You can also e-mail us at info@hardinge.com or visit our web site at www.hardinge.com.



Hardinge standard, performance and high-performance turning centers

We can help you turn your business around! From our competitively-priced standard SV-Series of machines to our performance GS-Series and ELITE®-Series range of quick-changeover bar and chucking machines right through to our high-performance QUEST® GT gang tool and multi-tasking machines, we can provide you with the optimum turning solution.



Bridgeport Milling machines and machining centers

Our comprehensive line of Bridgeport milling machines have been designed to meet any manufacturing challenge you might be facing today or in the future. Our market-leading XR range of vertical machining centers continue to grow in popularity—and we have similar expectations with our new competitively-priced XV and GX VMCs as well. For heavy-duty, high metal removal we offer our HMC range of Horizontal Machining Centers and for increased manufacturing flexibility and improved productivity there's our 5-axis (5AX) model that is well worthy of consideration. If you are making your first step up to CNC machining, you will find that our entry-level GX 480 and GX 480 DT machines provide the ideal solution. For high-speed machining applications, our HSC machining centers are second to none.



Kellenberger, Hauser, Tripet and Tschudin grinding machines

The Hardinge grinding companies include Hauser, Kellenberger, Tripet, Tschudin and, most recently, Bridgeport. Collectively we have all the technology, experience and know-how you need to transform your manufacturing operations. From high-performance cylindrical and jig grinding machines through to multi-functional ID/OD and universal machines—not to mention Bridgeport's state-of-the-art Flexible Grinding Centers (FGC 2). It doesn't get more comprehensive than this.



Hardinge workholding and industrial products

Because we design and manufacture market-leading, technically-excellent machine tools it's no surprise that we know more than a thing or two about workholding solutions. From our extensive portfolio of CNC toolholders, collets and chucks—right through to our 5C Indexing systems—our workholding and fixturing technology will improve your performance when and where it matters most.

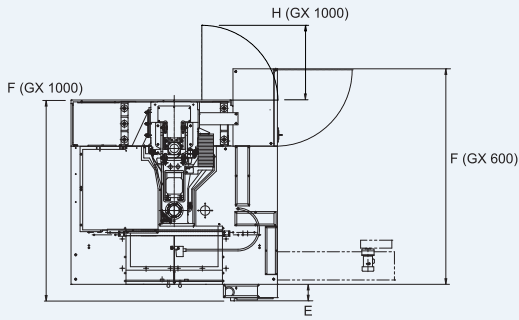


Hardinge rotary products

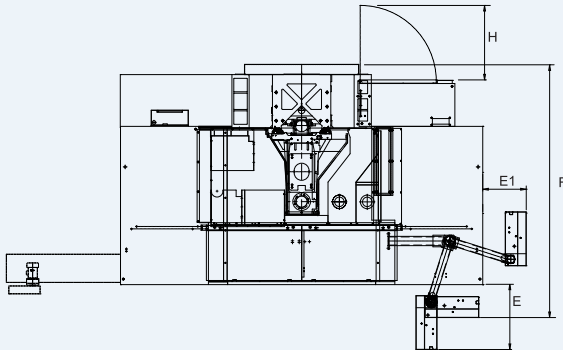
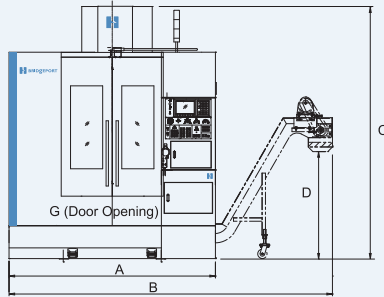


GX-Series Performance Vertical Machining Centers

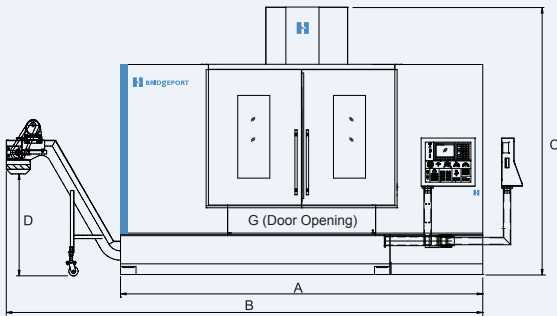
Floor plan



GX 600 floor plan shown.



GX 1600 floor plan shown.



Note: mm/inch measurements shown

Dim.	GX 600	GX 1000	GX 1300	GX 1600
A	2215/87.20	2955/116.30	3298/129.84	3898/153.46
B	3471/136.65	4211/165.79	4527/178.23	5127/201.85
C	2713/106.81	2713/106.81	2878/113.31	2878/113.31
D	1153/45.39	1153/45.39	1097/43.20	1097/43.20
E	177/6.97	177/6.97	698/27.48	698/27.48
E1	—	—	428/16.85	428/16.85
F	2490/98.03	2137/84.13	2724/107.24	2724/107.24
G	670/26.38	1160/45.67	1410/55.51	1710/67.32
H	—	802/31.58	801.2/31.54	801.2/31.54

Axis Travel

- Table (X axis)
- Saddle (Y axis)
- Head (Z axis)
- Table Surface to Spindle Gauge Plane Distance (Min to Max)

Positioning

- Auto Mode (X, Y and Z axes)
- Feedrate Range (X, Y and Z axes)
- Minimum Increment
- Ball Screw Dia. and Pitch (X, Y and Z axes)

Spindle¹

- Speed (Belted)
- Motor Power Rating (S3-60%)
- Torque (S3-60%)
- Retention Force
- Spindle Taper
- Tool Holder

Spindle Options¹

- Speed (Belted)—Grease Lubricated
- Motor Power Rating (S3-60%)
- Torque (S3-60%)
- Speed (Belted)—Oil-Air Lubricated
- Motor Power Rating (S3-60%)
- Torque (S3-60%)

Worktable

- Working Surface
- Table Load
- Number of T-Slots
- T-Slot Size
- T-Slot Center Dimension

Control—Bridgeport/Fanuc

Automatic Tool Changer—Side-Mount Swing Arm

- Magazine Capacity
- Tool Select by Shortest Path and Random Select
- Max. Tool Diameter (adjacent pockets empty) (adjacent pockets)
- Max. Tool Length
- Max. Tool Weight
- Random Change Time (chip-to-chip)

Coolant and Chip Management

- Swarf Removal
- Coolant Tank Capacity
- Wash Down
- Wash Gun
- Cutter Air Blast
- Through Spindle Coolant

Accuracy—ISO 230-2

- Positioning - A
- Repeatability - R
- Linear Scales Option (X/Y/Z-Axes)
- Positioning
- Repeatability

Machine Size

- Machine Dimensions (WxD)
- Height
- Mass of Machine

Installation Specifications

- Electrical Supply (Input)—Balanced 3-phase
- Power
- Voltage²
- Compressed Air Requirement
- Through Spindle Coolant Option—Pressure
- Nozzle Coolant
- Wash Down Option

¹—Spindle Oil Chiller option offered.
²—Other voltages require external transformer.

Specifications

GX 600	GX 1000	GX 1300	GX 1600
600mm (23.62")	1020mm (40.16")	1300mm (51.18")	1600mm (62.99")
540mm (21.25")	540mm (21.25")	700mm (27.55")	700mm (27.55")
540mm (21.25")	540mm (21.25")	635mm (25.00")	635mm (25.00")
145 to 685mm (5.70 to 26.97")	145 to 685mm (5.70 to 26.97")	155 to 790mm (6.10 to 31.10")	155 to 790mm (6.10 to 31.10")
36m/min (1,417ipm)	36m/min (1,417ipm)	36m/min (1,417ipm)	36m/min (1,417ipm)
.0025 - 12 m/min (0.1 - .472 ipm)	0.1-472 ipm / .0025 - 12 m/min	0.1-472 ipm / .0025 - 12 m/min	0.1-472 ipm / .0025 - 12 m/min
.001mm (0.00004")	.001mm (0.00004")	.001mm (0.00004")	.001mm (0.00004")
40 x 12mm (1.57 x .472")	40 x 12mm (1.57 x .472")	45 x 12mm (1.77 x .472")	45 x 12mm (1.77 x .472")
10,000 rpm	10,000 rpm	10,000 rpm	10,000 rpm
15kW (20hp)	15kW (20hp)	18.5kW (25hp)	18.5kW (25hp)
114Nm (84ft-lb)	114Nm (84ft-lb)	141Nm (104ft-lb)	141Nm (104ft-lb)
7829N (1,760 lbf)	7829N (1,760 lbf)	7829N (1,760 lbf)	7829N (1,760 lbf)
No. 40	No. 40	No. 40	No. 40
CT40 or BT40	CT40 or BT40	CT40 or BT40	CT40 or BT40
12,000 rpm	12,000 rpm	12,000 rpm	12,000 rpm
15kW (20hp)	15kW (20hp)	18.5kW (25hp)	18.5kW (25hp)
95Nm (73ft-lb)	95Nm (70ft-lb)	118Nm (87ft-lb)	118Nm (87ft-lb)
15,000 rpm	15,000 rpm	—	—
15kW (20hp)	15kW (20hp)	—	—
76Nm (56ft-lb)	76Nm (56 ft-lb)	—	—
750 x 540mm (29.50 x 21.25")	1120 x 540mm (44.09 x 21.25")	1425 x 700mm (56.00 x 27.55")	1700 x 700mm (66.93 x 27.55")
800kg (1,760lb)	800kg (1,760lb)	1500kg (3,300lb)	1500kg (3,300lb)
3	3	5	5
18mm (.708")	18mm (.708")	18mm (.708")	18mm (.708")
160mm (6.30")	160mm (6.30")	125mm (4.92")	125mm (4.92")
<i>i</i> -Series GX	<i>i</i> -Series GX	<i>i</i> -Series GX	<i>i</i> -Series GX
24 Tools (30 Opt)	24 Tools (30 Opt)	30 Tools (40 Opt)	30 Tools (40 Opt)
Bi-Directional	Bi-Directional	Bi-Directional	Bi-Directional
150mm (5.90")	150mm (5.90")	150mm (5.90")	150mm (5.90")
80mm (3.15")	80mm (3.15")	76.2mm (3.00")	76.2mm (3.00")
300mm (11.81")	300mm (11.81")	350mm (13.70")	350mm (13.70")
8kg (17.6lb)	8kg (17.6lb)	8kg (17.6lb)	8kg (17.6lb)
4.5 sec.	4.5 sec.	4.5 sec.	4.5 sec.
Chip Conveyor Option	Chip Conveyor Option	Hinge-Style Chip Conveyor (Std)	Hinge-Style Chip Conveyor (Std)
230L (60 US gal)	360L (95 US gal)	400L (105 US gal)	400L (105 US gal)
Option	Option	Standard	Standard
Option	Option	Option	Option
Option	Option	Option	Option
Option	Option	Option	Option
0.010mm (0.0004")	0.010mm (0.0004")	0.014mm (0.0005")	0.014mm (0.0005")
0.005mm (0.0002")	0.005mm (0.0002")	0.007mm (0.0003")	0.007mm (0.0003")
0.010mm (0.0004")	0.010mm (0.0004")	0.014mm (0.0005")	0.014mm (0.0005")
0.005mm (0.0002")	0.005mm (0.0002")	0.007mm (0.0003")	0.007mm (0.0003")
2215 x 2490mm (87.20" x 98.03")	2955 x 2137mm (116.30" x 84.13")	3298 x 2724mm (129.84" x 107.24")	3898 x 2724mm (153.46" x 107.24")
2713mm (106.81")	2713mm (106.81")	2878mm (113.31")	2878mm (113.31")
5500kg (12,100lb)	5900kg (12,980lb)	9400kg (20,680lb)	9800kg (21,560lb)
50 or 60 Hz	50 or 60 Hz	50 or 60 Hz	50 or 60 Hz
74 FLA	74 FLA	92 FLA	92 FLA
208 - 230 or 380 - 440 volt	208 - 230 or 380 - 440 volt	208 - 230 or 380 - 440 volt	208 - 230 or 380 - 440 volt
5.6 kg/cm ² (80 psi)	5.6 kg/cm ² (80 psi)	5.6 kg/cm ² (80 psi)	5.6 kg/cm ² (80 psi)
20 bar (300 psi)	20 bar (300 psi)	20 bar (300 psi)	20 bar (300 psi)
49 L/min (13 gal/min)	49 L/min (13 gal/min)	80 L/min (21 gal/min)	80 L/min (21 gal/min)
49 L/min (13 gal/min)	49 L/min (13 gal/min)	80 L/min (21 gal/min)	80 L/min (21 gal/min)



Over the years, The Hardinge Group™ steadily diversified both its product offerings and operations. Today, the company has grown into a globally diversified player with manufacturing operations in North America, Europe and Asia. In addition to designing and building turning centers and collets, Hardinge is a world leader in grinding solutions with the addition of the Kellenberger, Hauser, Tripet and Tschudin brands to the Hardinge family. The company also manufactures Bridgeport machining centers and other industrial products for a wide range of material cutting, turnkey automation and work-holding needs.

Expect more from your Hardinge products.
Choose Hardinge precision and reliability for increased productivity and value!

Call us today, we've got your answer.

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