

MILLING

BRIDGEPORT GX-SERIES 5-Axis & 5-Face Vertical Machining Centers



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 **BRIDGEPORT®**

GX 250 5-Axis & GX250 5F

Bridgeport's Machining Center are high-quality machine tools designed for leading edge machining in the Aerospace, Mold & Die, Medical and Automotive Industries and other manufacturing sectors. These machines have been developed to provide a powerful and precise solution to meet today's high demands of the metal cutting user. Manufactured from quality-sourced, grey cast iron, these 5-Axis machines showcase power and speed at affordable prices.

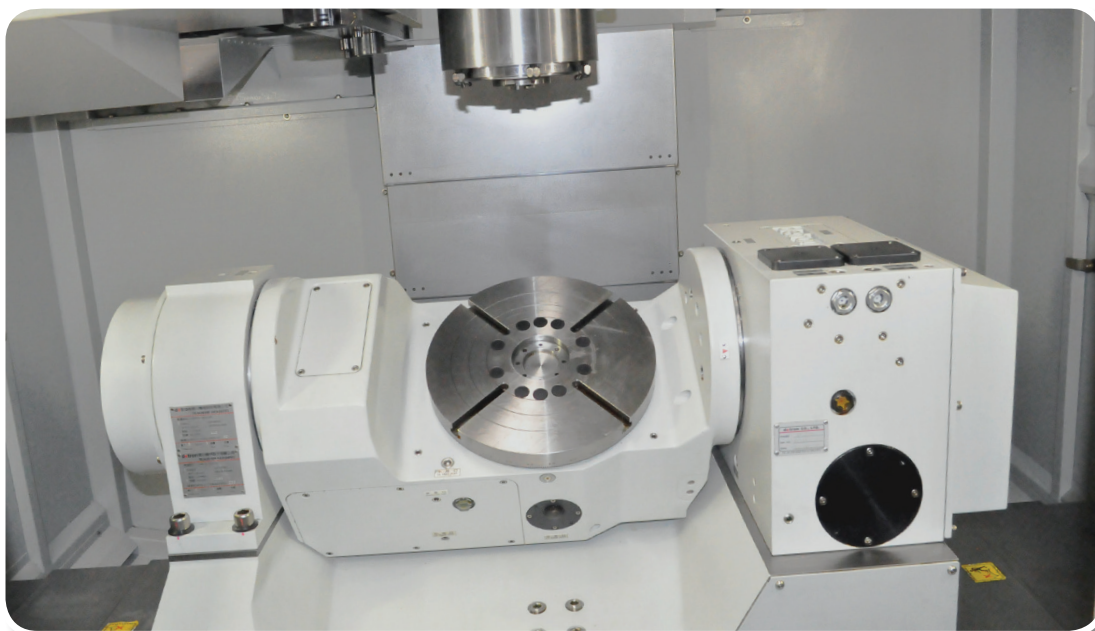
GX 250 5AX

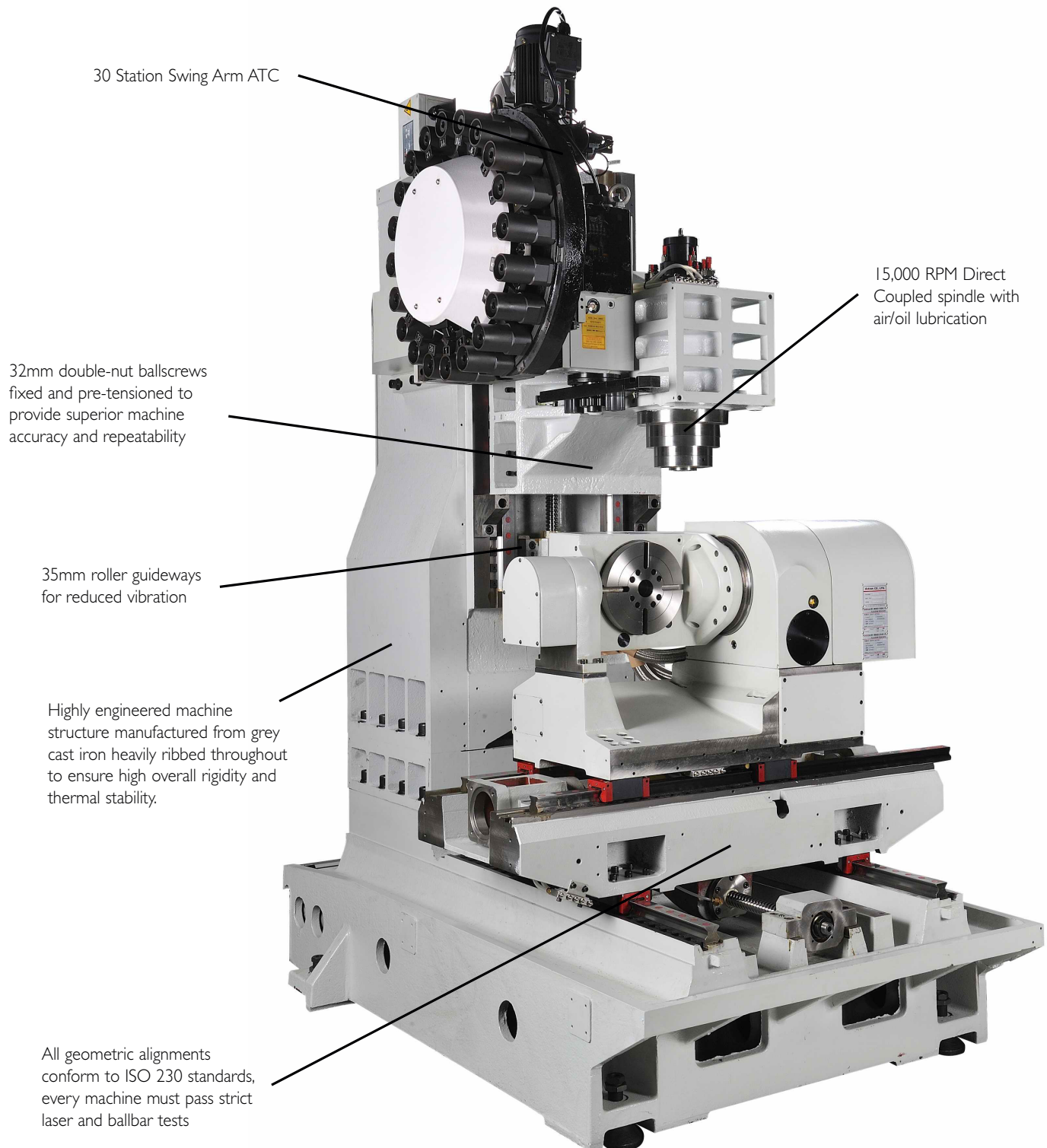
Axis Travel	
Travel (X/Y/Z axis):	11.8" x 15.7" x 16.9"
A Axis (tilt):	+30°~120°
C Axis (rotary):	360° (continuous)
Spindle Speed:	15,000 RPM
Horsepower:	20 HP (15 kW)
Magazine Capacity:	30 Station ATC / CT 40
Spindle:	BIG PLUS® System
Control:	FANUC 3iMB5



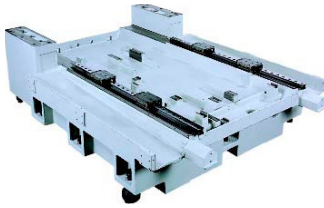
GX 250 5F

Axis Travel	
Travel (X/Y/Z axis):	11.8" x 15.7" x 16.9"
A Axis (tilt):	+30°~120°
C Axis (rotary):	360° (continuous)
Spindle Speed:	15,000 RPM
Horsepower:	20 HP (15 kW)
Magazine Capacity:	30 Station ATC / CT 40
Spindle:	BIG PLUS® System
Control:	FANUC Oi



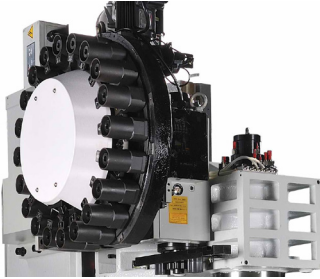


Key Features



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. 32mm ballscrews are featured on the GX 250 5-Axis and GX 250 5F.



Large Capacity, fast performance automatic tool changers

GX-Series VMCs have a fast tool change time of 2.5 seconds (Tool-Tool). The 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. To ensure smooth and vibration-free tool changing, these machines have their tool changer strategically located for minimal transfer of vibration--a unique design feature. All ATCs feature random-access, bi-directional indexing.



Advanced digital control to unleash your productivity

A custom designed FANUC 3iMB5 control is used on the full 5-axis GX 250 5AX model. A FANUC Oi control is featured on the 5-sided GX 250 5F machine. These controls have the latest hardware and software technology, providing an operator-friendly, common platform that many of our customers are accustomed to.

Fully integrated 5-axis rotary table

Bridgeport 5-Axis and 5-Face machines feature a robust integrated 5-axis rotary table supported by large bearings to allow heavy horizontal and vertical cutting loads with smooth and accurate rotation at all time. Equipped with a standard trunnion encoder; the GX 250 5AX and GX 250 5F offer an 8.26" table size.



BIG-PLUS® dual contact spindle system

The BIG-PLUS® spindle system assures higher rigidity, stiffness and accuracy of toolholders in high-speed and difficult machining applications. The dual contact precisely positions the toolholder within 1 micron following a tool change.

Elimination of Z-axis movement

At High rotational spindle speeds, the mouth of the machine spindle can expand slightly due to centrifugal force. As the machine spindle expands, the conventional toolholder, which under constant draw bar pulling pressure, moves further into the spindle. On high tolerance applications, this slight pull back of the cutter can affect dimensional accuracy of the Z-axis. Pull back can also cause the toolholder to get locked into the machine spindle taper. The face contact provided by the BIG-PLUS Spindle System prevents the toolholder from being drawn back into the machine spindle.



BIG-PLUS
SPINDLE SYSTEM PAT.
DUAL CONTACT
US Patent No. 5,352,073

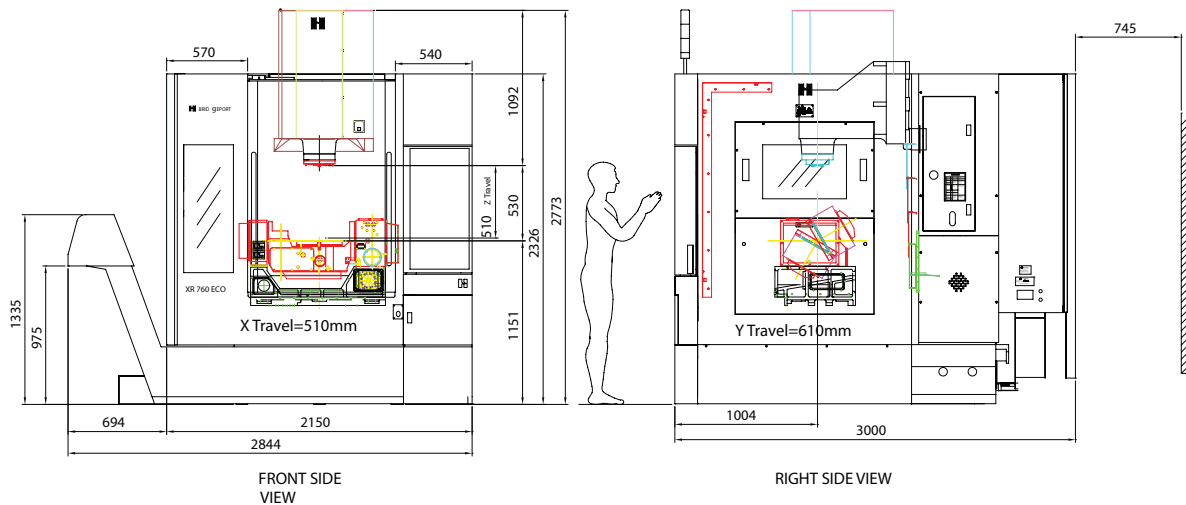
Fanuc i Series GX

- 10.4" Color LCD
- AICC Contour Control II
- Manual Guide i
- Controlled axes 5
- Simultaneous controlled axes 4
- DNC operation with memory card
- Program restart
- Dry run
- Skip function
- Least input increment - 0.001mm, 0.001deg.
- Fine Acc & Dec control
- Servo control HRV3
- Backlash compensation
- Linear interpolation
- Chamfering and corner rounding
- Coordinate system rotation
- Scaling
- Cylindrical interpolation
- Helical interpolation
(Circular interpolation plus Max. 2 axes linear interpolation)
- Polar coordinate command
- Circular interpolation (Multi-quadrant is possible)
- Programmable mirror image
- Background editing
- Extended editing
- Dynamic graphic display
- Multi language display
- Run hour and parts count display
- Automatic acceleration /deceleration
- Automatic corner override
- Rapid traverse: linear Cutting feed: exponential
- Tool offset pairs, ± 6 digits, 400 pairs
- Tool length compensation
- Tool offset memory C
- Part program storage length 1280 m
- Number of registered programs 400
- Self-diagnosis function
- Alarm history display
- Operation history display
- Help function
- Stored pitch error compensation
- Sub call
- Custom Macro B
- Additional custom macro variables
- Canned cycles for drilling
- Small hole peck cycle
- Tool life management
- Workpiece coordinate system, G52 - G59
- Addition of workpiece coordinate system 48 pairs
- Automatic tool length measurement
- Inch / Metric
- Manual Pulse Generator
- USB & PCMCIA Slot
- Tilted working plane command

Fanuc 3iMB5

- 10.4" LCD, Color Monitor
- AICC II - Look Ahead Block Expansion
 - Bell Shaped ACC/DEC after cutting feed interpolation
- Advanced Feed Forward Control
 - Auto Corner Override
- High Speed Processing
- HRV3 – Allows for fine digital tuning of the servo drive's
- Dry run
- Dynamic Graphic Display
- Least input increment - 0.001mm, 0.001deg.
- Ethernet Ready
- PCMCIA Card Slot
- USB
- Data Server
- Part Program Memory 1 MB
- Rigid Tapping
- Extended Editing Functions – Cut, Copy and Merge
- Tool Life Management
- Custom Macro B – Parametric Part Programming (Part Family's)
- Tool Offset memory C – Separate Length and Diameter
- Tool Offsets 400 pairs
- Tool Length Measurement
- Multi language display
- Run Hour and Parts Count Display
- Helical Interpolation
- Cylindrical Interpolation
- Polar Coordinate Interpolation
- Constant Surface Speed
- High-Speed smooth TCP
- Work Coordinate Systems (G54-G59)
- Additional Work Coordinate System (G54.1 – G54.48)
- Coordinate System Rotation
- Scaling
- Rigid Tapping
- Program Restart (Mid program restart)
- Background Editing
- Program input of offset data (G10)
- Stroke Limit Check prior to move
- Pitch Error Compensation
- Inch / Metric Conversion
- Self-diagnosis function
- Alarm history display
- Operation history display
- Help function
- Stored pitch error compensation
- Sub call
- Automatic tool length measurement
- Inch / Metric
- Tilted working plane command
- Built-in 3D interface check function
- Canned cycle

Floor Plan

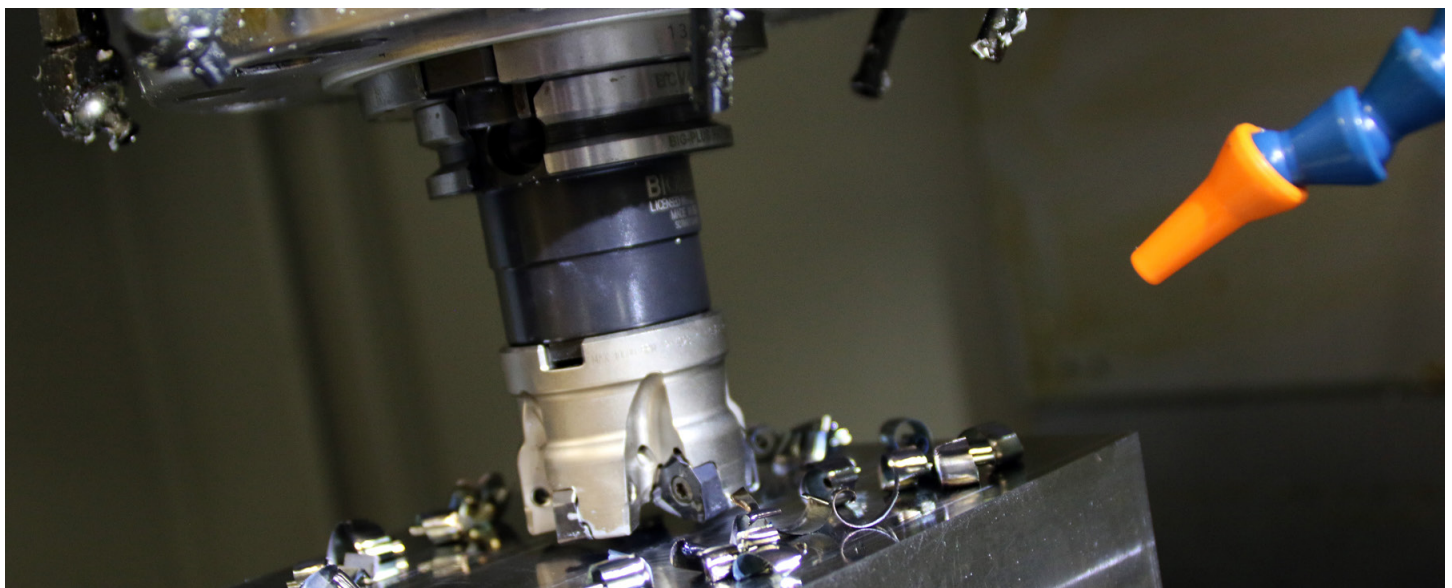


GX 250 5F available options:

- Auto door with light curtain (original equipment only)
- Air blast, for dry cutting
- Additional spare m codes (8 set) applicable for machine configured with compliant to world safety standard
- Central grease system, manual pump
- External transformer 35kva (type tbsw-31-35kva-ce/y-460-600, y-400v)
- Chip conveyor-standard hinge type
- C axis rotary encoder
- A axis rotary encoder
- 280 PSI - thru spindle coolant fanuc, for 15k dds spindle
- Renishaw part probe omp40-2 + omi2t
- Coolant wash down gun - automatic
- X/Y/Z axis linear scale, (original equipment only)
- Oil mist collector - filtermist

GX 250 5AX available options:

- Air blast for dry cutting
- Additional spare m codes (8 set) applicable for machine configured with compliant to world safety standard
- Central grease system, manual pump
- Oil mist collector - filtermist
- 280 PSI - thru spindle coolant fanuc, for 12k/15k dds spindle
- Renishaw part probe omp40-2 + omi2t
- C-axis encoder
- X/Y/Z axis linear scale, originalequipment only
- Chip conveyor - scraper type (small fine chips)
- Coolant wash down gun - automatic
- Chip conveyor - standard hinge type
- Oil mist collector - filtermist



Axis Travel	GX 250 5AX	GX 250 5F
Table (X axis)	11.8"	11.8"
Saddle (Y axis)	15.7"	15.7"
Head (Z axis)	16.9"	16.9"
A Axis (tilt)	+30°~-120°	+30°~-120°
C Axis (rotary)	360° (continuous)	360° (continuous)
Max Swing diameter	9.8"	9.8"
Y-Axis throat distance	18.5"	18.5"
Minimum Resolution	.0001	.0001
Positioning		
Auto Mode (X and Y axes)	1,260 in. /min.	1,260 in. /min.
Auto Mode (Z axis)	1,260 in. /min.	1,260 in. /min.
Manual Mode (X,Y and Z axes)	0-236 in. /min.	0-236 in. /min.
Feedrate Range (X and Y axes)	0.1-787 in. /min.	0.1-787 in. /min.
Feedrate Range (Z axis)	0.1-787 in. /min.	0.1-787 in. /min.
Acceleration x/y/z	157/157/196 in. / s ² (4/4/5m/ s ²)	157/157/196 in. / s ² (4/4/5m/ s ²)
Minimum Increment	0.00004"	0.00004"
Ball Screw Diameter and Pitch (X,Y)	1.77" x .472"	1.77" x .472"
Ball Screw Diameter and Pitch (Z)	1.77" x .472"	1.77" x .472"
Axes Thrust (X/Y/Z)	2533/3060/4457 lbs	2533/3060/4457 lbs
Spindle		
Spindle Speed Range - Direct Coupled	15,000 RPM	15,000 RPM
Spindle Motor HP Rating (S6-40%)	20 HP (15 kW)	20 HP (15 kW)
Spindle Torque 15,000 RPM (S6-40%)	70.4 ft/lb (95.5 Nm)	70.4 ft/lb (95.5 Nm)
Spindle Taper	No. 40 Big Plus	No. 40 Big Plus
Tool Holder	CT40	CT40
Lubrication	Grease	Grease
5-Axis Rotary Table		
Rotary Table Diameter	8.26" Dia (210 mm)	8.26" Dia (210 mm)
Table load	Vertical 110 lbs (50 kg)	Vertical 110 lbs (50 kg)
Table load	Horizontal 165 lbs (75 kg)	Horizontal 165 lbs (75 kg)
Max. Workpiece Range Diameter x Height	9.8" x 9.4"	9.8" x 9.4"
T-Slots (Size x Number of Slots)	0.47" x 4	0.47" x 4
Control	FANUC 3i MB5	FANUC Oi
Automatic Tool Change		
Type of tool shank	Big Plus CT40	Big Plus CT40
Magazine capacity	30 Tools	30 Tools
Tool Selection	Bi-Directional	Bi-Directional
Max. tool diameter (adjacent pockets)	3.0" (76.2 mm)	3.0" (76.2 mm)
Max. tool diameter (Without adjacent pockets)	5.12" (130 mm)	5.11" (130 mm)
Maximum Tool Length	9.5" (240 mm)	9.5" (240 mm)
Maximum Tool Weight	15.4 lbs. (7 kg)	15.4 lbs. (7 kg)
Tool change time (chip-to-chip)	4.3 seconds	4.3 seconds
Coolant and Chip Management		
Swarf removal	Chip Conveyor	Chip Conveyor
Coolant tank capacity	45 US gallons (170L)	45 US gallons (170L)
Wash down	Standard	Standard
Wash gun	Standard	Standard
Stainless chip pan	Standard	Standard
Accuracy Specifications ISO 230-2 with scales X,Y,Z,A and C		
Positioning X,Y,Z	0.0002" (0.005 mm)	0.0002" (0.005 mm)
Positioning A (arc sec)	10	12
Positioning C (arc sec)	10	12
Repeatability X,Y,Z	0.0001" (0.003 mm)	0.0001" (0.003 mm)
Repeatability A, C (arc sec)	4	4
Machine Size		
Machine height	101" (2,568 mm)	101" (2,568 mm)
Machine length	71" (1,800 mm)	71" (1,800 mm)
Machine depth	105" (2,663 mm)	105" (2,663 mm)
Machine weight	12,698 lbs (5,750 kg)	12,698 lbs (5,750 kg)
Installation Specifications		
Electrical Supply - Balanced 3-phase	60 Hz	60 Hz
Power	25 KVA	25 KVA
Voltage (Other voltages require an external transformer)	220 volt	220 volt
Compressed Air (Pressure Flow)	6kg / cm ²	6kg / cm ²
Coolant Tank Capacity	45 gallons	45 gallons
Nozzle Coolant (Pump @ 60hz)	34.3gal(130L) / min@18.5psi	34.3gal(130L) / min@18.5psi
Through Spindle Coolant	280 psi	280 psi
Wash Down Option (Pump @ 60hz)	34.3gal(130L) / min@38.4 psi	34.3gal(130L) / min@38.4 psi
	5.2gal(20L) / min@72.5 psi	5.2gal(20L) / min@72.5 psi

Competence and worldwide partnership



Hardinge Companies Worldwide

North America

Hardinge Inc.
One Hardinge Drive
Elmira, NY 14902-1507 USA
General Information: 607-734-2281
Sales Fax: 607.734.8819
Workholding Fax: 607.734.3886
Service: 800.424.2440
web site: www.hardinge.com

In Canada

Canadian Hardinge Machine Tools Ltd.
Tel: 800.468.5946
Fax: 607.734.8819

China

Hardinge Machine (Shanghai) Co. Ltd.
Hardinge China Limited
No. 1388 East Kang Qiao Road
Pudong, Shanghai 201319
Tel: 0086 21 38108686
Fax: 0086 21 38108681

Hardinge Precision Machinery (Jiaxing) Co., Ltd.
Economic and Technology Development Zone
No. 2676 Wango Road
Jiaxing, Zhejiang PRC 3144001
Tel: 0573-82601088
Fax: 0573-82601988

Germany

Hardinge GmbH
Fichtenhain A 13 C
47807 Krefeld
Germany
Tel: (49) 2151 496490
Fax: (49) 2151 4964999

Taiwan

Hardinge Machine Tools B.V.
4 Tzu Chiang 3rd Road
Nan Tou City
540 Taiwan, R.O.C.
Tel: 886 49 2260536
Fax: 886 49 2252203
e-mail: cs@hardinge.com.tw

Switzerland

L. Kellenberger & Co. AG
Heiligkreuzstrasse 28
Postfach
CH-9009 St. Gallen Switzerland
Tel: +41 (0) 71 242 91 11
Fax: +41 (0) 71 242 92 22
e-mail: info@kellenberger.com
web site: www.kellenberger.net

L. Kellenberger & Co. AG
Längfeldweg 107
CH-2500 Biel-Bienne 8 Switzerland
Tel: +41 (0) 32 344 11 52
Fax: +41 (0) 32 341 13 93
e-mail: info@kellenberger.com
web site: www.kellenberger.net

United Kingdom

Jones & Shipman Hardinge
Limited Murray Field Road
Leicester LE3 1UW, UK
Tel: +44 (0) 116 2013000
Fax: +44 (0) 116 2013001
e-mail: info@jonesshipman.com
web site: www.jonesshipman.com

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, Jones & Shipman, Hauser, Tschudin and Usach 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 workholding needs.

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