

XR-Series High-Performance  
Vertical and Horizontal  
Machining Centers with  
Automatic Pallet Changers



# XR-Series High-Performance Vertical and Horizontal Machining Centers with Automatic Pallet Changers

An investment in Bridgeport's latest generation of XR-Series vertical and horizontal machining centers with automatic pallet changers is guaranteed to bring instant and positive results on volume-manufactured parts. All models feature the latest WEISS spindle technology, providing high radial and axial rigidity for fast and ultra-productive machining. Our unrivalled technology coupled with an unswerving commitment to improving our customers' productivity and business performance have contributed to a large, and loyal, customer base. Always at the cutting-edge of innovative and technological developments, the Bridgeport name is synonymous with quality and engineering excellence that is second to none.

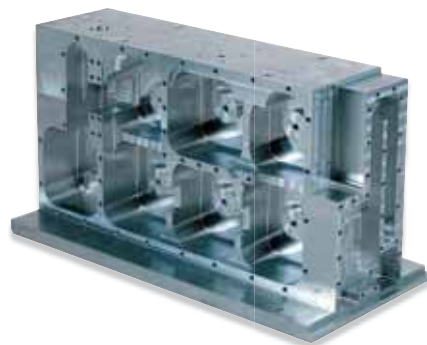
XR 700 APC



XR 1000 APC



XR 700 HMC



# Unique features that make the XR-Series Machining Centers with Automatic Pallet Changers the best in the industry!

## Rigid machine base

See page 4



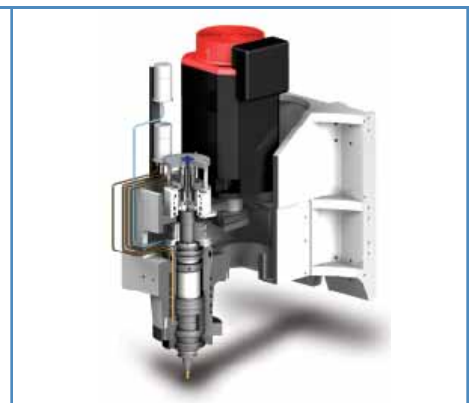
## Heavy-duty linear guideways, ballscrews and axis drives

See page 5



## Unprecedented spindle technology

See page 6-7



## Advanced digital CNC control systems

See page 10-11



# XR-Series High-Performance Vertical and Horizontal Machining Centers with Automatic Pallet Changers

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

Large fixed pallet design provides substantial support and large working area for production fixturing.

XR 1000 APC

Large 45mm high-quality, low maintenance linear guideways provide greater positioning accuracy and superior finishes—very low friction and high stiffness for long machine life.

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:

Through hole access for 4th-axis and/or fixture cabling.

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

Fast indexing, pallet changers with over 5 tons of clamping force featured on all APC and HMC machining centers.

Traveling column design allows for a fixed pallet/rotary table arrangement—allows the spindle to travel to the workpiece.

XR 700 HMC

Fully integrated 4th axis on all HMC models.

Unique ATC mount design for superior rigidity and minimized vibration to the cutting zone.

Massive 40-taper WEISS spindle offers unique grease replenishment system along with a dual-contact (BIG-PLUS) flange fit system.

Oversized high-class 45mm double-nut ballscrews—fixed and pre-tensioned to provide superior machine accuracy and repeatability.

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

**Optional features:**

- Larger Capacity ATCs
- Data Server with 640MB Flash Card, AI NANO HPCC and RISC Processor
- 15,000-rpm High-Speed Spindle Drives
- Absolute Linear Glass Scales
- Tool Setting Probes
- Spindle Probe

XR 700 APC



## Heavy-duty linear guideways, ballscrews

and fast tool changes add speed and rigidity

### Heavy-duty linear guideways, ballscrews and axis drives

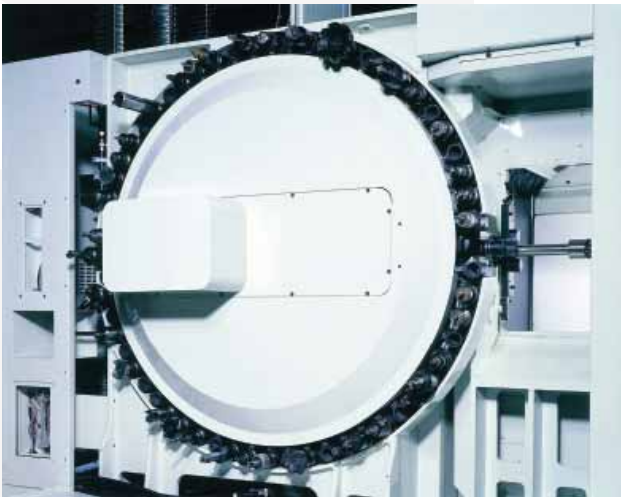
Wide-spaced, oversized linear guideways provide optimum stiffness with less friction, less heat and less thermal growth for faster traverse rates, longer machine life and greater positioning accuracy. The linear way modules consist of slide members (guide trucks) and linear rails to provide a large load rating, stable accuracy, high rigidity and low friction. The wide spacing between all axes rails provides optimum stiffness for the overall machine structure. Oversized 1.77"/45mm ballscrews are featured on all the XR-Series machines shown in this brochure.

### Large capacity, fast performance ATC (Automatic Tool Changer)

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



48-tool Swing-arm ATC shown



60-tool HMC Swing-arm ATC shown

Model	ATC Tool Positions	ATC Option	Tool Shank Taper
XR 700 APC HP	32	48 or 60	40
XR 700 APC HPD	32	48 or 60	40
XR 1000 APC	32	48 or 60	40
XR 700 HMC	60	120	40
XR 700 HMC HP	60	120	40
XR 700 HMC HPD	60	120	40



# XR-Series High-Performance Vertical and Horizontal Machining Centers with Automatic Pallet Changers

Unprecedented spindle technology second to none

## Revolutionary WEISS spindle—the latest in spindle technology

XR-Series machining centers are equipped with the very latest, high-performance WEISS spindle technology. The XR 700 APC HPD and XR 700 HMC HPD models feature a powerful directly-coupled 15,000-rpm spindle; all other models feature a belted 12,000-rpm spindle. Other speeds and drive system options offered.

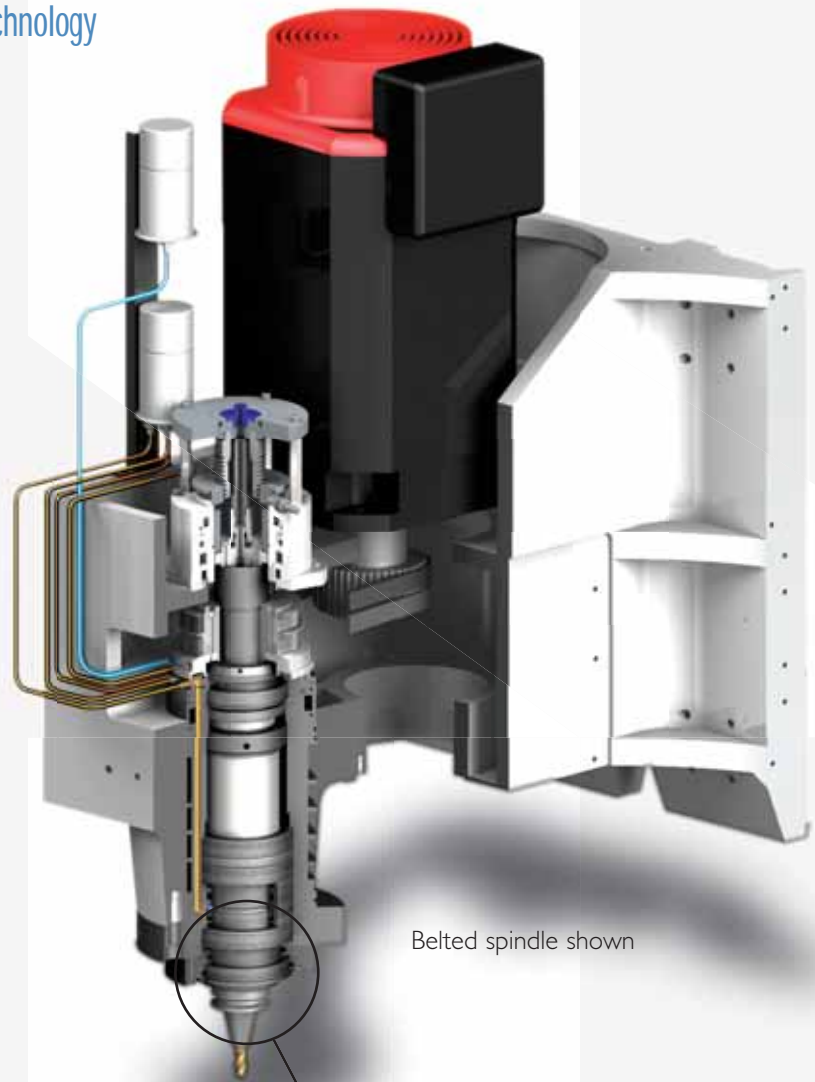
The WEISS directly-coupled spindle configuration reduces spindle inertia and increase accel/decel times for increased productivity. Main features include low vibration and high power density—giving even greater rigidity and radial stiffness. The absence of drive traverse forces permits extremely high accuracy on the workpiece due to smooth, accurate spindle motion even at very low speeds.

## 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-axial 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.



Belted spindle shown



Taper Contact

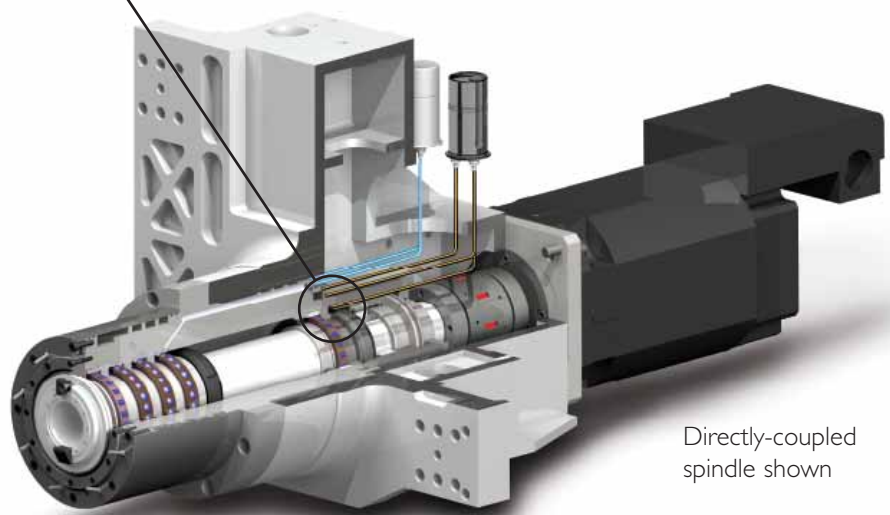
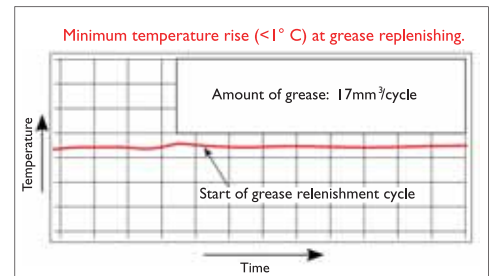
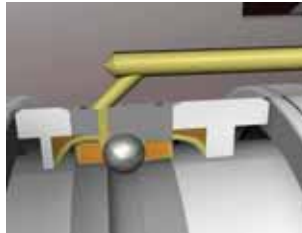
Flange Contact



## Thermally stable system for optimal spindle performance

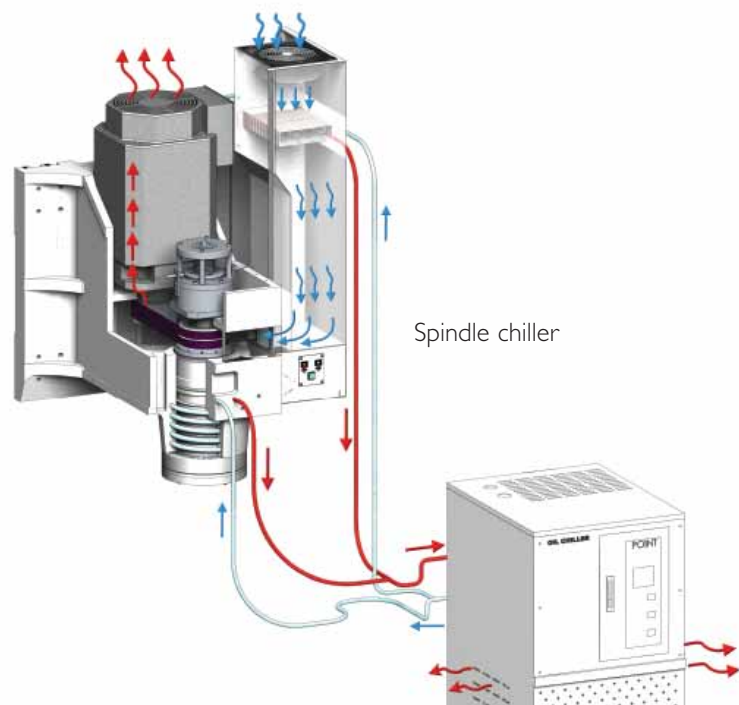
### Grease lubrication “on-the-fly”

Longer grease life leads to longer spindle service life. Bridgeport XR-Series spindles offer 2-to-3 times longer life due to our grease replenishment technology that keeps the grease quality at a consistently high level. Lubrication cycles are controlled by an external grease replenishing unit, triggered by an on/off signal from the machine's control unit. Most other brand machining centers have no way to replenish grease. Not so with our system! The grease replenishing unit is integrated in the spindle, thus maintaining a totally sealed spindle. Fresh grease is injected very close to the raceway, pushing older grease away from the bearings. The benefit to this technology is higher permissible bearing preloads, resulting in higher rigidity, higher metal removal rates and the ability to run at higher spindle speeds for longer periods of time.



### Spindle chiller

For extreme duty cycles, a spindle chiller offers the best solution to maintain constant spindle temperature. Heat generated in the spindle assembly is conducted away through a circuit of chilled oil, providing thermal stability of the machine. The oil chiller maintains the temperature to 2 degrees below ambient. On the belted spindle versions, except the XR 700 APC HP model, there is an additional cooling of the belt housing by cooled air as shown in the illustration to the right.



### Eco Cooling heat exchanger system

Generated heat is conducted away from the XR 700 APC HP spindle assembly into the atmosphere through an Eco cooler heat exchanger.



# XR-Series High-Performance Vertical and Horizontal Machining Centers with Automatic Pallet Changers

## Automatic pallet changers

Manufacturing companies are under constant pressure to cut lead times, increase work throughput and reduce their costs. Practices and processes that were once acceptable are no longer relevant in today's tough manufacturing environments.

In response to these pressures manufacturers are demanding more from their machine tool investments. This includes faster cutting speeds, improved accuracy, better reliability and a requirement to run their machines more profitably—whether unattended, throughout the evenings and even over the weekends.

Enlightened companies are turning increasingly to Bridgeport's advanced milling technology, with integrated automation, to meet their production challenges.

The new, ultra-productive XR-Series APC range of vertical and horizontal machining centers with integrated workpiece pallet change capability is the latest in a long line of high-performance Bridgeport machine tools.

If you're looking for a machining center capable of taking your manufacturing to a whole new level, check out the new XR-Series range of machines with automatic pallet changing systems!

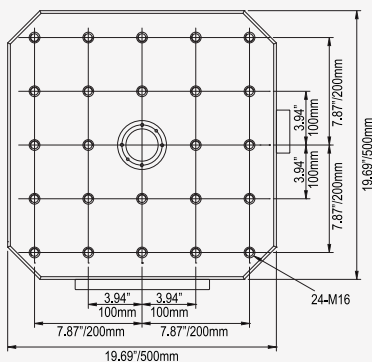


XR 700 HMC pallets

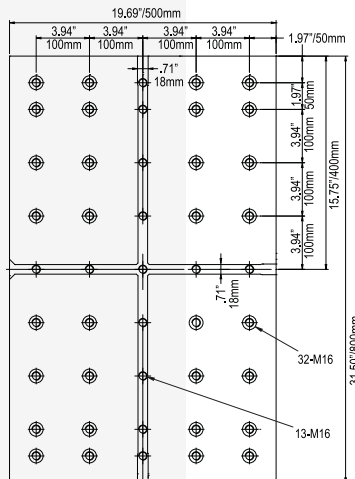


XR 1000 APC pallet

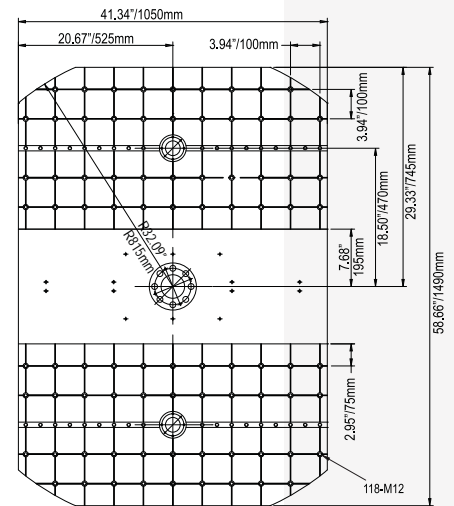
XR 700 HMC pallet (one shown)



XR 700 APC pallet



XR 1000 APC pallet





Choose the machine variation that suits your  
current and future needs



### XR 700 APC

- Travels
  - X-axis - 27.56" (700mm)
  - Y-axis - 19.69" (500mm)
  - Z-axis - 22" (560mm)
- Pallet Changer—2 Pallets  
31.5 x 19.69" (800 x 500mm)
- Rapid rates
  - HP Model—(X/Y)—1,575ipm (40m/min)
  - (Z)—1,260ipm (32m/min)
  - HPD Model—(X/Y/Z)—2,362ipm (60m/min)
- Spindle horsepower
  - HP Model—25-hp/18.5-kW
  - HPD Model—30-hp/22-kW
- Spindle speeds
  - HP model—12,000-rpm; 40 taper
  - 9,000- or 15,000-rpm option available
  - HPD model—15,000-rpm; 40 taper
- Fanuc I8i-MB control



### XR 1000 APC

- Travels
  - X-axis - 40" (1020mm)
  - Y-axis - 24" (610mm)
  - Z-axis - 23.62" (600mm)
- Pallet Changer—2 Pallets  
41.3 x 21.70" (1050 x 550mm)
- Rapid rates (X/Y/Z)
  - 1,260ipm (32m/min)
  - 1,890ipm (48m/min) Option
- Spindle horsepower—40-hp/30-kW
- Spindle speeds—12,000-rpm; 40 taper
- 9,000- or 15,000-rpm option available
- Fanuc I8i-MB control



### XR 700 HMC

- Travels
  - X-axis - 27.95" (710mm)
  - Y-axis - 24" (610mm)
  - Z-axis - 24" (610mm)
- Pallet Changer—2 Pallets  
19.69 x 19.69" (500 x 500mm)
- Rapid rates (X/Y/Z)—1,260ipm (32m/min)
- HP & HPD models—1,890ipm (48m/min)
- Spindle horsepower—25-hp/18.5-kW
- HP & HPD models—40-hp/30-kW
- Spindle speeds
  - Standard & HP models—12,000-rpm; 40 taper
  - 9,000- or 15,000-rpm option available
  - HPD model—15,000-rpm; 40 taper
- Fanuc Oi-MC control; I8i-MB on HP and HPD models

# XR-Series High-Performance Vertical and Horizontal Machining Centers with Automatic Pallet Changers

Advanced digital control systems to unleash your productivity

## Fanuc 18i-MB Control—Standard

Oi-MC Control (Standard on XR 700 HMC)<sup>†</sup>

- 10.4"/264mm LCD Color Monitor
- AI Nano Contour Control—High-Speed Machining Software
  - Bell Shaped ACC/DEC after cutting feed interpolation
  - Advanced Feed Forward Control
  - Auto Corner Override and more
- HRV3—allows for fine digital tuning of the servo drives
- Dynamic Graphic Display
- Ethernet Ready
- PCMCIA Card Slot—can be used to run large files directly from a memory card
- Manual Pulse Generator
- Part Program Memory 256KB (640M)
- Rigid Tapping
- Extended Editing Functions—cut, copy and merge
- Tool Life Management
- Custom Macro B—Parametric Part Programming (Part Family's)
- Tool Offset type C—Separate Length and Diameter
- Tool Offsets—200 pairs
- Tool Length Measurement
- Cutter Compensation Type C
- 200 Registered Programs

- Run Hour and Parts Count Display
- Helical Interpolation
- Work Coordinate Systems (G54-G59)
- Additional Work Coordinate System (G54.1-G54.48)
- Coordinate System Rotation
- Scaling
- Programmable Mirror Image
- Program Restart (Mid program restart)
- Chamfering and Corner Rounding
- Background Editing
- Program input of offset data (G10)
- Embedded Macro Function
- Reader/Puncher Interface (RS232)
- Stroke Limit Check prior to move
- Pitch Error Compensation
- Controlled Axis Expansion—used for the 4th axis
- Simultaneously Controlled Axis Expansion—used for the 4th axis
- High Speed Skip
- Inch/Metric Conversion



## Heidenhain iTNC 530 Control—Option\*

Available on XR 700 APCs and XR 700 HMC HP

- 15.1"/383mm TFT Color Flat Panel Display with Soft Keys
- Program Memory Hard Disk (Minimum 6GB)
- Interpolation
  - Straight Line in 4 Axes
  - Helix: Combination of Circular and Linear Motion
  - Circle in 2 Axes
- 3.6ms Block Processing Time
- Data Interfaces
- Heidenhain Conversational Programming as per ISO
- Tool Compensation
- Several Tool Tables with Any Number of Tools
- Cutting Data Tables
- Constant Contouring Speed
- Parallel Operation—create programs with graphic support while another program is running
- Contour Elements—line segment, chamfer, circular arc, circle center, circle radius, tangentially connecting circular arc and corner rounding

<sup>†</sup> Features listed apply to the 18i-MB control. The Oi-MC features can be obtained from the machine quotation.

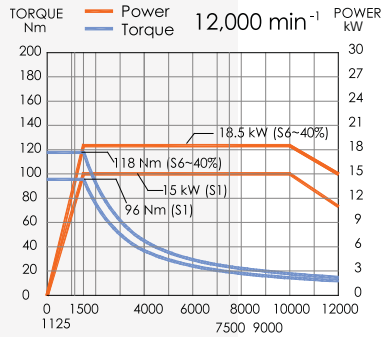
- Contour Approach and Departure
- FK Free Contour Programming
- Program Jumps
- Fixed Cycles
- Coordinate Transformations
- Q Parameters
- Programming Aids
- Actual Position Capture
- Verification Graphics
- Programming Graphics
- Program Run Graphics
- Machining Time
- Returning to the Contour
- Datum Tables
- Pallet Tables
- Touch Probe Cycles
- Preset Table

\* Availability limited to certain countries

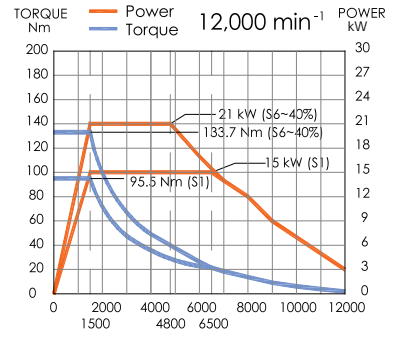


# Spindle drives that provide the power and torque to machine the toughest materials

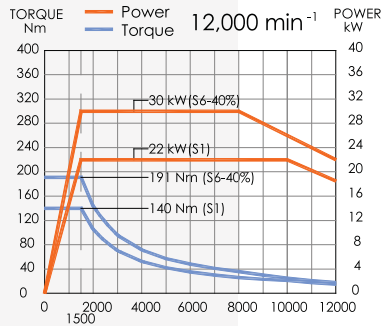
12,000-rpm  
Belted Spindle  
Fanuc Control  
XR 700 APC HP &  
XR 700 HMC



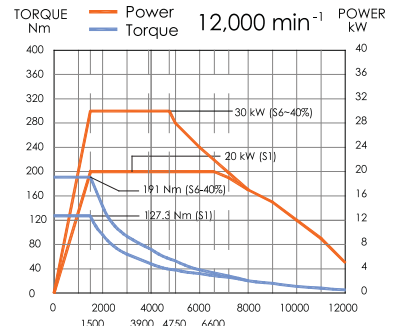
12,000-rpm  
Belted Spindle  
Heidenhain Control  
XR 700 APC HP



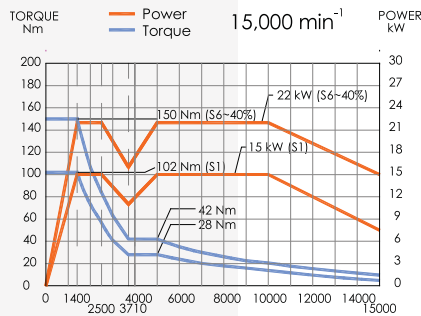
12,000-rpm  
Belted Spindle  
Fanuc Control  
XR 1000 APC &  
XR 700 HMC HP



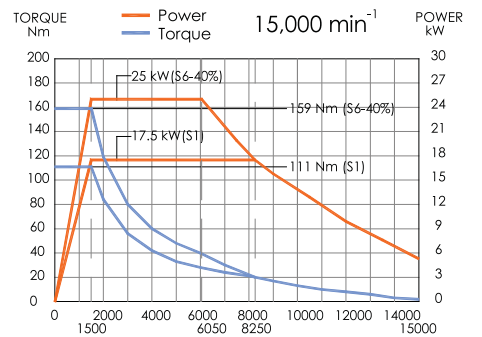
12,000-rpm  
Belted Spindle  
Heidenhain Control  
XR 700 HMC HP



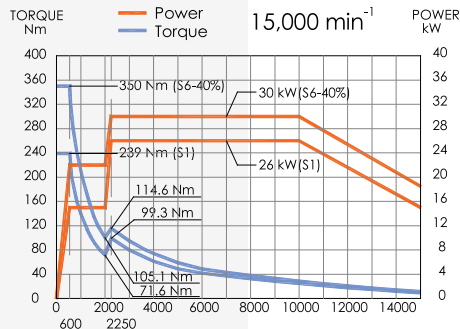
15,000-rpm  
Directly-Coupled  
Spindle  
Fanuc Control  
XR 700 APC HPD



15,000-rpm  
Directly-Coupled  
Spindle  
Heidenhain Control  
XR 700 APC HPD



15,000-rpm  
Directly-Coupled  
Spindle  
Fanuc Control  
XR 700 HMC HPD



See pages 14 and 15 for a complete listing of spindle drives available.

# XR-Series High-Performance Vertical and Horizontal Machining Centers with Automatic Pallet Changers

## 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.

Hardinge offers standard gear-driven Indexing / Rotary Table Systems, gearless Direct-Drive Rotary Systems and trunnion products as well as a complete line of flexible workholding products that can be shared between your lathe and mill!

The Indexing / Rotary Table System can be used as a manual system with a servo control, or it 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.

### All-Digital Servo Control

Hardinge's state-of-the-art servo control features a multi-line display and will store up to 50 programs. Infrared sensor capability allows you to upload/download programs from a pocket PC. A servo control is not required when 4th-axis integration is chosen.

### 5C, 16C and 3J gear-driven Indexing / Rotary Table Systems

Hardinge's 5C rotary system is based on a long history of Hardinge 5C spindle and manual indexer designs. The dual-bearing spindle accommodates heavy axial and radial loads with the ability to run a triple or quad unit with tailstocks. 16C and 3J systems will handle larger part positioning and can be configured in single, dual and triple units depending on the machine table size. The motor can be ordered on the left or the right side according to operational needs.

*Refer to brochure 2372 for a complete rotary product offering with dimensions and specifications.*

### Trunnion Products

Hardinge Trunnion Systems allow for multiple part fixturing to increase output. Imagine the possibilities. Low-profile clamping, window box fixturing for 4-sided machining, toggle & saddle clamping and collet blocks are just some of the possible customer clamping arrangements.

Adjustable, two-sided plates or four-sided cubes are made of blackened steel for ease of drilling and slotting according to application requirements, either by Hardinge or by the customer. A bearing pillow block assures rigid, accurate positioning and will accommodate heavy loads. Trunnions are available for 5C, 16C and 3J Indexing / Rotary Table Systems.



### 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, power 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

Hardinge produces more than just the XR-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 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 Pocket Guide #1325. You can also e-mail us at [info@hardinge.com](mailto:info@hardinge.com) or visit our web site at [www.hardinge.com](http://www.hardinge.com).

### Hardinge precision and Super-Precision® CNC turning centers

We can help you turn your business around. From our competitively-priced SV-Series range of machines to our TALENT® and ELITE® Series II range of quick-change-over bar and chucking machines right



through to our high-productivity RS-Series and SR-Series multi-tasking turning centers and QUEST® GT gang tool machines, we can provide you with the optimum turning solution.

### 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.



### 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.



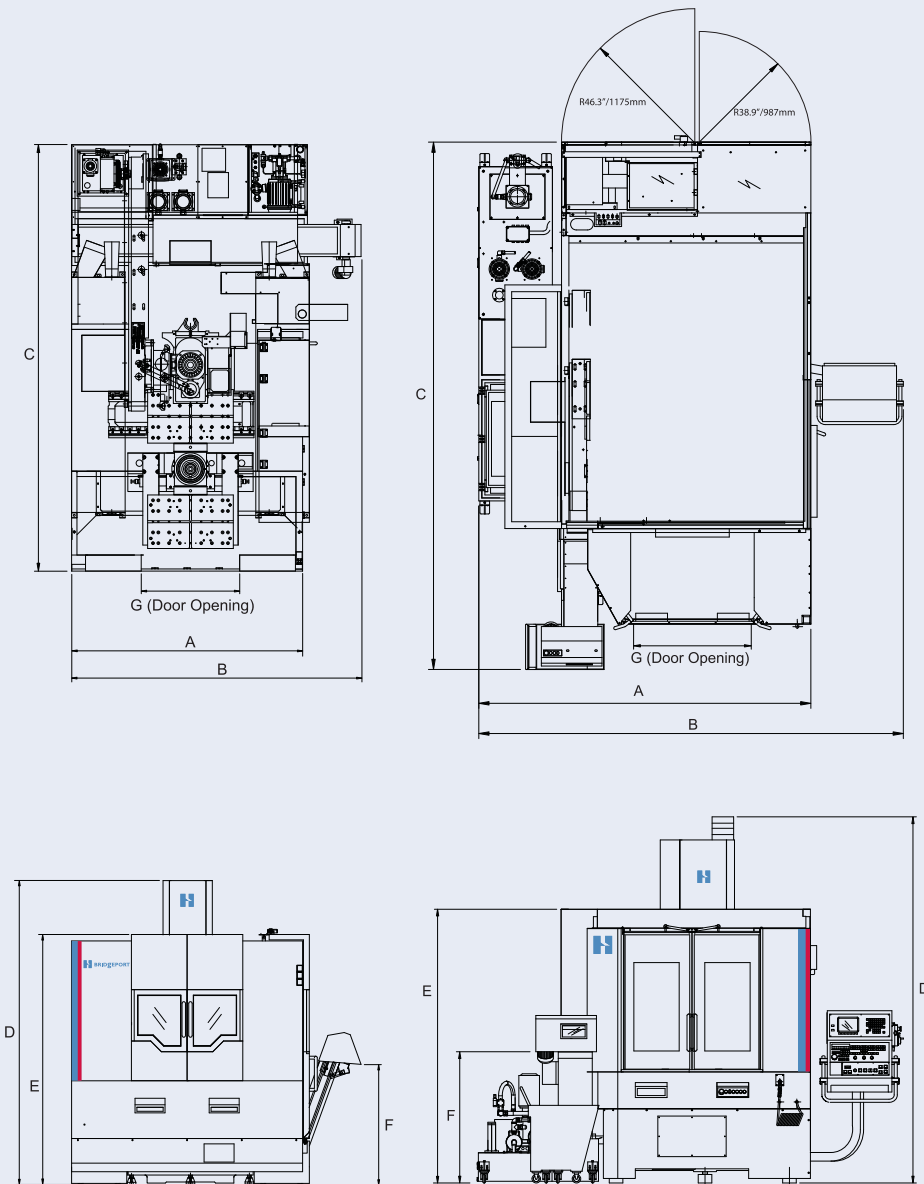
### Workholding

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 tool-holders, 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.



# XR-Series High-Performance Vertical and Horizontal Machining Centers with Automatic Pallet Changers

## Floor plans



Dim.	XR 700 APCs
A	87.4" / 2220mm
B	106.7" / 2710mm
C	156.7" / 3980mm
D	118.5" / 3010mm
E	91.9" / 2334mm
F	43.3" / 1100mm
G	36.2" / 920mm

Dim.	XR 1000 APC	XR 700 HMCs
A	115.4" / 2930mm	111.2" / 2825mm
B	144.5" / 3670mm	144.7" / 3675mm
C	183.1" / 4650mm	177.6" / 4510mm
D	130.0" / 3300mm	121.3" / 3080mm
E	95.1" / 2415mm	94.5" / 2400mm
F	43.3" / 1100mm	43.3" / 1100mm
G	39.4" / 1000mm	31.5" / 800mm

1—Includes Oil Chiller.  
2—Other voltages require external transformer.

### Axis Travel

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

### Positioning

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

### Spindle

- Fanuc—Motor HP Rating (S6-40%)
- Torque (S6-40%)
- Heidenhain—Motor HP Rating (S6-40%)
- Torque (S6-40%)
- Retention Force
- Spindle Taper
- Tool Holder

### Spindle Options

- Speed (Belted)
  - Fanuc—Motor HP Rating (S6-40%)
  - Torque (S6-40%)
  - Heidenhain—Motor HP Rating (S6-40%)
  - Torque (S6-40%)
- Speed (Belted)
  - Fanuc—Motor HP Rating (S6-40%)
  - Torque (S6-40%)
  - Heidenhain—Motor HP Rating (S6-40%)
  - Torque (S6-40%)
- Speed (Directly Coupled)
  - Motor HP Rating (S6-40%)
  - Torque (S6-40%)

### Pallet Changer

- Number of Pallets
- Working Surface
- Surface Configuration
- Table Load per Pallet
- Max. Workpiece Size
- Max. Workpiece Height
- Pallet Change Time
- Pallet Clamping Force
- Method of Pallet Change

### Control—Fanuc

- Optional Heidenhain

### Automatic Tool Changer—Swing Arm

- Type of Tool Shank
- Magazine Capacity
- Tool Select by Shortest Path and Random Select
- Max. Tool Diameter
- (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
- Stainless Chip Pan
- Cutter Air Blast
- Through-Spindle Coolant

### Accuracy ISO 230-2

- Positioning - A
- Repeatability - R
- Linear Scales
- Positioning
- Repeatability

### Machine Size

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

### Installation Specifications

- Electrical Supply (Input)—Balance 3-phase
- Power
- Voltage<sup>2</sup>
- Compressed Air (Pressure / Flow)

- Through Spindle Coolant Pressure
- Nozzle Coolant
- Wash Down

# Specifications

XR 700 APC HP	XR 700 APC HPD	XR 1000 APC	XR 700 HMC	XR 700 HMC HP	XR 700 HMC HPD
27.56"/700mm 19.69"/500mm 22"/560mm	27.56"/700mm 19.69"/500mm 22"/560mm	40"/1020mm 24"/610mm 23.62"/600mm	27.95"/710mm 24"/610mm 24"/610mm 360-degrees	27.95"/710mm 24"/610mm 24"/610mm 360-degrees	27.95"/710mm 24"/610mm 24"/610mm 360-degrees
5.9" to 27.95"/150 to 710mm	5.9" to 27.95"/150 to 710mm	5.1" to 28.7"/130 to 730mm	3.34" to 27.36"/85 to 695mm 1.96" to 25.98"/50 to 660mm	3.34" to 27.36"/85 to 695mm 2.75" to 26.77"/70 to 680mm	4.13" to 28.14"/105 to 715mm 2.75" to 26.77"/70 to 680mm
1,575ipm / 40m/min 1,260ipm / 32m/min 0.1-787 ipm /0.003 - 20 m/min 0.00004"/.001mm	2,362ipm / 60m/min 2,362ipm / 60m/min 0.1-787 ipm /0.003 - 20 m/min 0.00004"/.001mm	1,260ipm / 32m/min 1,260ipm / 32m/min 0.1-787 ipm /0.003 - 20 m/min 0.00004"/.001mm	1,260ipm / 32m/min 1,260ipm / 32m/min 0.1-787 ipm /0.003 - 20 m/min 0.00004"/.001mm	1,890ipm / 48m/min 1,890ipm / 48m/min 0.1-787 ipm /0.003 - 20 m/min 0.00004"/.001mm	1,890ipm / 48m/min 1,890ipm / 48m/min 0.1-787 ipm /0.003 - 20 m/min 0.00004"/.001mm
1.77" x .629"/45 x 16mm 1.77" x .472"/45 x 12mm 12,000 rpm (Belted) 25hp/18.5kW 87ft-lb/118Nm 28hp/21kW 98ft-lb/134Nm 2,698 lbf /12,000N No. 40	1.77" x .787"/45 x 20mm 1.77" x .787"/45 x 20mm 15,000 rpm (Direct) <sup>1</sup> 30hp/22kW 110ft-lb/150Nm 34hp/25kW 117ft-lb/159Nm 2,698 lbf /12,000N No. 40	1.77" x .629"/45 x 16mm 1.77" x .472"/45 x 12mm 12,000 rpm (Belted) <sup>1</sup> 40hp/30kW 140ft-lb/191Nm — — 2,698 lbf /12,000N No. 40	1.77" x .472"/45 x 12mm 1.77" x .472"/45 x 12mm 12,000 rpm (Belted) <sup>1</sup> 25hp/18.5kW 87ft-lb/118Nm — — 2,698 lbf /12,000N No. 40	1.77" x .629"/45 x 16mm 1.77" x .629"/45 x 16mm 12,000 rpm (Belted) <sup>1</sup> 40hp/30kW 140ft-lb/191Nm — — 2,698 lbf /12,000N No. 40	1.77" x .629"/45 x 16mm 1.77" x .629"/45 x 16mm 15,000 rpm (Direct) <sup>1</sup> 40hp/30kW 258ft-lb/350Nm — — 2,698 lbf /12,000N No. 40
CT40, BT40 or DIN 40	CT40, BT40 or DIN 40	CT40, BT40 or DIN 40	CT40, BT40 or DIN 40	CT40, BT40 or DIN 40	CT40, BT40 or DIN 40
9,000 rpm 25hp/18.5kW 116ft-lb/157Nm 28hp/21kW 131ft-lb/178Nm 15,000 rpm <sup>1</sup> 25hp/18.5kW 69ft-lb/94Nm 28hp/21kW 79ft-lb/107Nm	— — — — — — — — — —	9,000 rpm <sup>1</sup> 40hp/30kW 188ft-lb/255Nm — — — — — — 15,000 rpm <sup>1</sup> 30hp/22kW 110ft-lb/149Nm	9,000 rpm <sup>1</sup> 25hp/18.5kW 116ft-lb/157Nm — — 15,000 rpm <sup>1</sup> 25hp/18.5kW 69ft-lb/94Nm — — — —	9,000 rpm <sup>1</sup> 40hp/30kW 188ft-lb/255Nm — — 15,000 rpm <sup>1</sup> 40hp/30kW 112ft-lb/153Nm — — — —	— — — — — — — — — — — —
2	2	2	2	2	2
31.5 x 19.69"/800 x 500mm 32xM16x2; 3.93/100mm Pitch 551lb/250kg	31.5 x 19.69"/800 x 500mm 32xM16x2; 3.93/100mm Pitch 551lb/250kg	41.3 x 21.7"/1050 x 550mm 128xM12x1.75; 3.93/100mm Pitch 661lb/300kg	19.69 x 19.69"/500 x 500mm 24xM16; 3.93/100mm Pitch 1,102lb/500kg	19.69 x 19.69"/500 x 500mm 24xM16; 3.93/100mm Pitch 1,102lb/500kg	19.69 x 19.69"/500 x 500mm 24xM16; 3.93/100mm Pitch 1,102lb/500kg
31.5 x 19.69"/800 x 500mm 12.60"/320mm 10 sec. 10,116lb/4589kg Swing 18i-MB iTNC 530	31.5 x 19.69"/800 x 500mm 12.60"/320mm 10 sec. 10,116lb/4589kg Swing 18i-MB iTNC 530	41.3 x 21.7"/1050 x 550mm 13.78"/350mm 10 sec. 10,080lb/4572kg Swing 18i-MB —	26.77"/680mm Dia. 27.56"/700mm 7 sec. 10,080lb/4572kg Swing Oi-MC —	26.77"/680mm Dia. 27.56"/700mm 7 sec. 10,080lb/4572kg Swing 18i-MB iTNC 530	26.77"/680mm Dia. 27.56"/700mm 7 sec. 10,080lb/4572kg Swing 18i-MB —
CT40, BT40 or DIN 40 taper 32 (48 or 60 opt) Bi-Directional 4.92"/125mm 2.95"/75mm 11.02"/280mm 15.43lb/7kg 4 sec.	CT40, BT40 or DIN 40 taper 32 (48 or 60 opt) Bi-Directional 4.92"/125mm 2.95"/75mm 11.02"/280mm 15.43lb/7kg 2.9 sec.	CT40, BT40 or DIN 40 taper 32 (48 or 60 opt) Bi-Directional 4.92"/125mm 2.95"/75mm 11.81"/300mm 15.43lb/7kg 5 sec.	CT40, BT40 or DIN 40 taper 60 Tools (120 opt) Bi-Directional 5.91"/150mm 3.15"/80mm 13.78"/350mm 22.05lb/10kg 6 sec.	CT40, BT40 or DIN 40 taper 60 Tools (120 opt) Bi-Directional 5.91"/150mm 3.15"/80mm 13.78"/350mm 22.05lb/10kg 5 sec.	CT40, BT40 or DIN 40 taper 60 Tools (120 opt) Bi-Directional 5.91"/150mm 3.15"/80mm 13.78"/350mm 22.05lb/10kg 5 sec.
Chip Conveyors (3) 132 US gal/500L Standard Standard Standard Standard Standard	Chip Conveyors (3) 132 US gal/500L Standard Standard Standard Standard Standard	Chip Auger (2); Chip Conveyor (1) 153 US gal/580L Standard Standard Not Available Standard	Chip Auger (2); Chip Conveyor (1) 153 US gal/580L Standard Standard Not Available Not Available Standard	Chip Auger (2); Chip Conveyor (1) 153 US gal/580L Standard Standard Not Available Not Available Standard	Chip Auger (2); Chip Conveyor (1) 153 US gal/580L Standard Standard Not Available Not Available Standard
0.00060" (0.015mm) 0.00030" (0.008mm) Option 0.00030" (0.008mm) 0.00015" (0.004mm)	— — Standard 0.00030" (0.008mm) 0.00015" (0.004mm)	0.00060" (0.015mm) 0.00030" (0.008mm) Option 0.00030" (0.008mm) 0.00015" (0.004mm)	0.00060" (0.015mm) 0.00030" (0.008mm) Option 0.00030" (0.008mm) 0.00015" (0.004mm)	— — Standard 0.00030" (0.008mm) 0.00015" (0.004mm)	— — Standard 0.00030" (0.008mm) 0.00015" (0.004mm)
106.7" x 156.7"/2710 x 3980mm 118.5"/3010mm 18,739lb/8500kg	106.7" x 156.7"/2710 x 3980mm 118.5"/3010mm 18,739lb/8500kg	144.5" x 183.1"/3670 x 4650mm 130.0"/3330mm 26,455lb/12,000kg	144.7" x 177.6"/3675 x 4510mm 121.3"/3080mm 28,660lb/13,000kg	144.7" x 177.6"/3675 x 4510mm 121.3"/3080mm 28,660lb/13,000kg	144.7" x 177.6"/3675 x 4510mm 121.3"/3080mm 28,660lb/13,000kg
50 or 60 Hz 30 KVA 208 - 230 or 380 - 440 volt 80 psi/4.9 cfm 5.5bar / 140 L/min 300 psi/20bar 15.8 gal/min / 60 L/min 15.8 gal/min / 60 L/min	50 or 60 Hz 35 KVA 208 - 230 or 380 - 440 volt 80 psi/4.9 cfm 5.5bar / 140 L/min 300 psi/20bar 15.8 gal/min / 60 L/min 15.8 gal/min / 60 L/min	50 or 60 Hz 40 KVA 208 - 230 or 380 - 440 volt 80 psi/4.9 cfm 5.5bar / 140 L/min 300 psi/20bar 15.8 gal/min / 60 L/min 15.8 gal/min / 60 L/min	50 or 60 Hz 35 KVA 208 - 230 or 380 - 440 volt 80 psi/4.9 cfm 5.5bar / 140 L/min 300 psi/20bar 15.8 gal/min / 60 L/min 15.8 gal/min / 60 L/min	50 or 60 Hz 40 KVA 208 - 230 or 380 - 440 volt 80 psi/4.9 cfm 5.5bar / 140 L/min 300 psi/20bar 15.8 gal/min / 60 L/min 15.8 gal/min / 60 L/min	50 or 60 Hz 45 KVA 208 - 230 or 380 - 440 volt 80 psi/4.9 cfm 5.5bar / 140 L/min 300 psi/20bar 15.8 gal/min / 60 L/min 15.8 gal/min / 60 L/min



Over the past 10 years Hardinge 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 workholding needs.

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