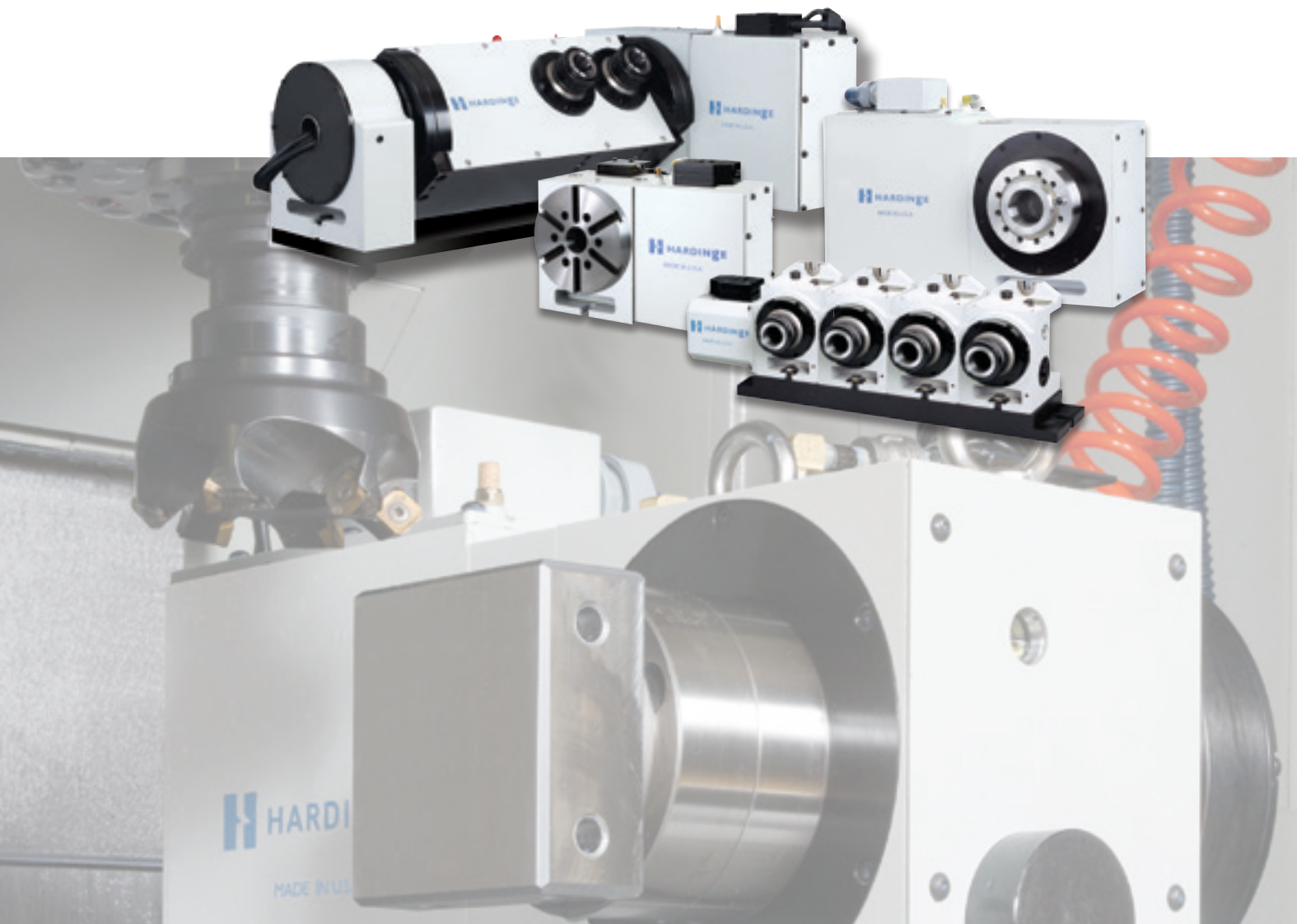




# HARDINGE

Rotary Tables  
Indexers  
and Trunnions



[www.hardinge.com](http://www.hardinge.com)

**HARDINGE**  
WORKHOLDING

## More Accuracy, Speed and Flexibility!



The Most Flexible Quick-Change Workholding Concept in the Market...

Hardinge's A2-4 (5C) and A2-5 (16C) spindle nose designs allow 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.

**800.843.8801 [www.ShopHardinge.com](http://www.ShopHardinge.com)**  
**[www.HardingeWorkholding.com](http://www.HardingeWorkholding.com)**

Hardinge has a large selection of rotary products for all ranges of production. Choose from precision, single-spindle, multi-spindle and dual-axis configurations...

- Accuracy to  $\pm 15$  Arc-Sec
- Repeatability to  $\pm 5$  Arc-Sec
- Rugged and reliable
- Flexibility of workholding tooling
- Fast changeover
- Heavy axial and radial load capacity



## 5C<sup>2</sup> Gear-Driven Rotary Indexers

GD5C2 single  
GD5C2-02 dual  
GD5C2-03 triple  
GD5C2-04 quad

pages 10 - 11



## 16C<sup>2</sup> and 3J<sup>2</sup> Gear-Driven Rotary Indexers

GD16C2 and GD3J2 single  
GD16C2-02 and GD3J2-02 dual  
GD16C2-03 and GD3J2-03 triple

pages 12 - 13



## 160 and 210mm Low-Profile Rotary Tables

GD160LP  
GD210LP

pages 14 - 15



## Tilting Dual-Axis Rotary Indexers Single and Multi-Spindle

LPX5C2-01 single  
LPX5C2-02 dual  
LPX5C2-03 triple  
LPX5C2-04 quad  
GDX5C2

pages 16 - 17



## All-Digital Indexer Control

pages 18 - 19



## Collet Closers, Tailstocks, Plate and Cube Trunnions, Workholding Options and Manual Index and Inspection Fixtures

pages 20 - 26

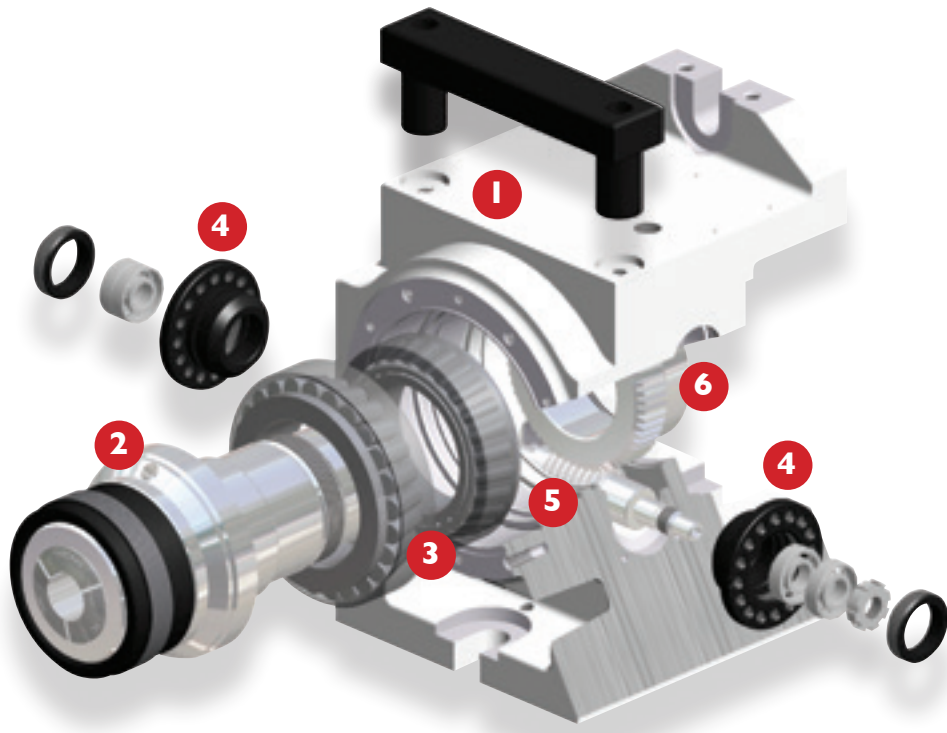
# Quality Manufacturing Processes

Hardinge's GD5C2 has higher accuracy, more spindle clearance and more thrust and radial load. All rotary products are manufactured in Elmira, New York to strict specifications.

Curved front casting and removable handle for increased spindle clearance and better tool access.

±5 arc-sec Repeatability  
±30 arc-sec Accuracy  
.0002" Max. Runout (.005mm TIR)

Robust, dual-bearing spindle for heavier radial and axial loads.  
50-lb (23kg) part weight and 1000-lb (4448N) tailstock thrust per spindle is not a problem – even on a quad unit with tailstocks!



Hardinge next-generation 5C<sup>2</sup> mechanically outmaneuvers the competition.

## 1. HOUSING

Machined and bored on a Dixi 280 precision CNC jig boring machine for close tolerance finish dimensions. Foundry castings (made in the USA) provide vibration damping.

## 2. SPINDLE

Spindle is finish ground on a high-precision Kellenberger® CNC universal grinding machine. All surfaces where bearings and gears are installed are ground in the same setup for maximum accuracy.

## 3. BEARINGS

High-load, tapered dual roller bearings are used to support heavy radial and axial loads and to provide a longer spindle life.

## 4. DOUBLE ECCENTRICS

Double eccentrics (not single) provide the finest gear mesh adjustment. Hardinge has lowered the backlash range and improved accuracy overall. Customers can perform future gear wear compensation for extended life and improved accuracy over time.

## 5. WORM DRIVE SHAFT

Hardened and ground steel worm drive shaft is standard. The process begins on a Hardinge SUPER-PRECISION® CNC lathe and the threads are finish ground on a Drake thread grinder. Grind quality of AGMA class 13 is verified on a Wenzel CNC gear inspection machine.

## INSPECTION

Final inspection of every unit is performed using a Heidenhain encoder mounted directly on the spindle nose to assure final positioning accuracy and repeatability. Printout of accuracy is shipped with each unit.

## 6. ALUMINUM BRONZE WORM GEAR

A high quality worm gear system with 60:1 gear ratio allows for an efficient forward driving capability while at the same time preventing backdriving from occurring. The process begins on a Hardinge SUPER-PRECISION® CNC lathe, then hobbled on a Koepfer hobber.





## SEALING

Hardinge has an extremely thorough seal system to keep coolant out.

## MULTIPLE PART SETUPS

Choose from dual, triple and quad units for processing multiple parts to increase output. All spindles are synchronized for aligned part orientation within .0002" (.005mm).

## THE EVOLUTION OF THE HARDINGE 5C<sup>2</sup> INDEXER SYSTEM

1901	1940	1940's	1960's
 Hardinge manufactures the 5C Collet	 Hardinge manufactures and introduces the 5C "threaded-nose" spindle	 Hardinge manufactures a 5C dividing head	 Hardinge manufactures 5C manual indexers using Hardinge's threaded-nose spindle & collet closer design

Hardinge Collet-Ready Spindles provide the most Flexible Rotary Products in the industry!

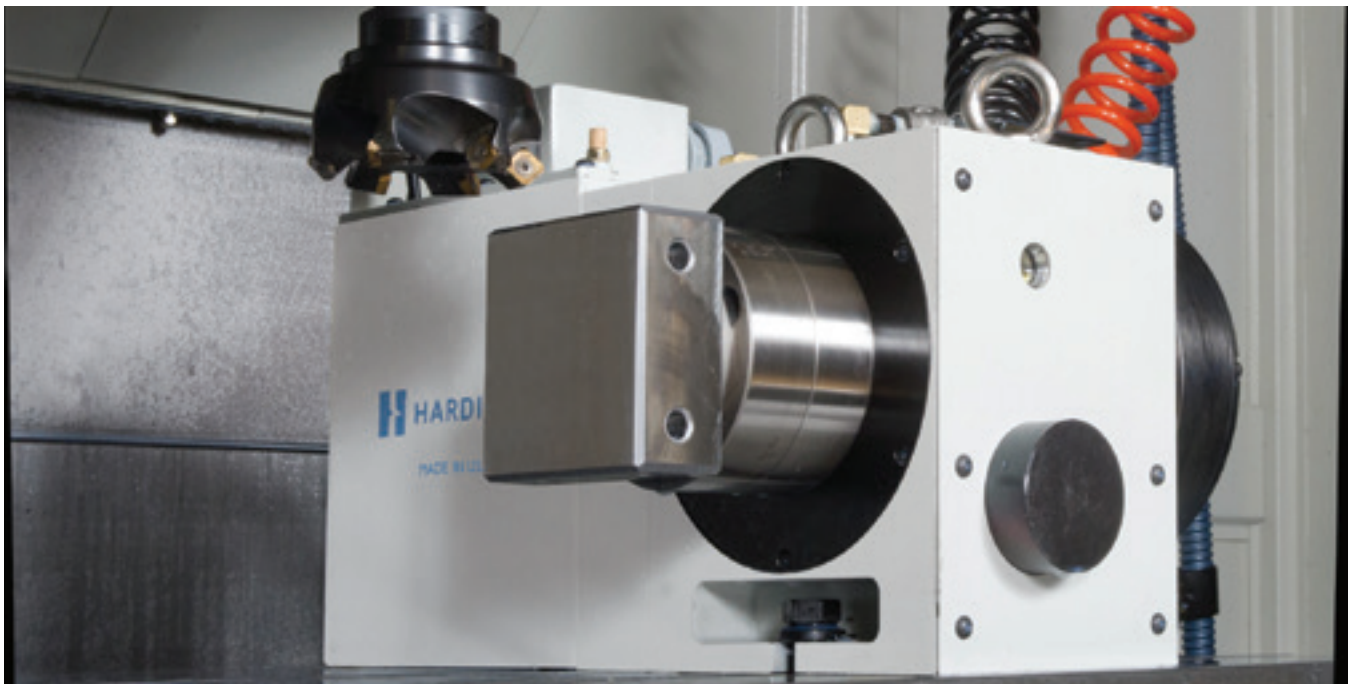
Hardinge rotary systems accept many styles of standard tooling without an adapter, which is unique in the industry.

You can purchase a complete system all tooled up and ready to run your parts.

Rely on the spindle tooling experts for the accuracy and repeatability to get the job done.

All-digital Indexer Control with USB capability

Hardinge indexer controls have USB capability for convenient upload or download of programs from a Windows-based Pocket PC.



**2004**

Hardinge manufactures 5C Rotary Systems based on 1960's mechanical design



**2007**

Hardinge manufactures and introduces the next-generation 5C<sup>2</sup> Rotary System



**2014**

Hardinge introduces the next generation of Indexer Control

**MADE  
IN THE  
U.S.A.**

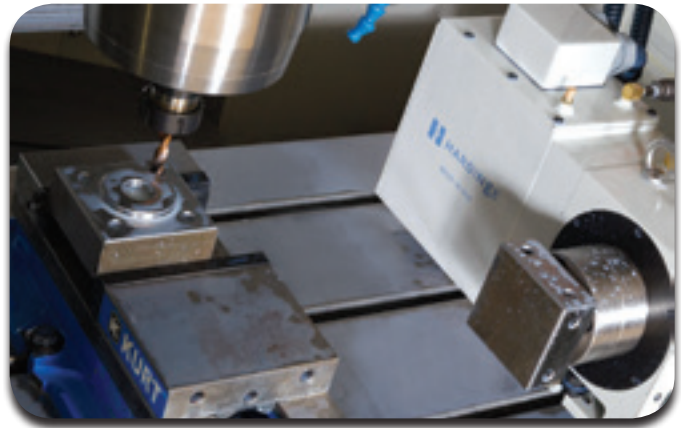
Manufactured in the USA

Hardinge rotary products are manufactured in Elmira, New York to strict specifications and are approved for worldwide export.

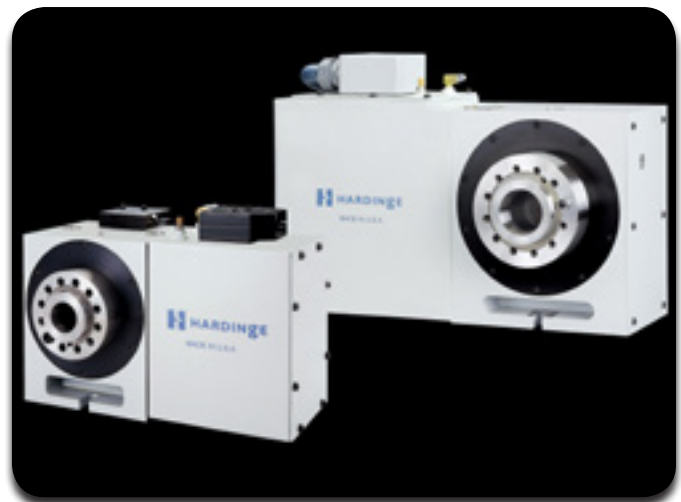
## Fourth-Axis Integration



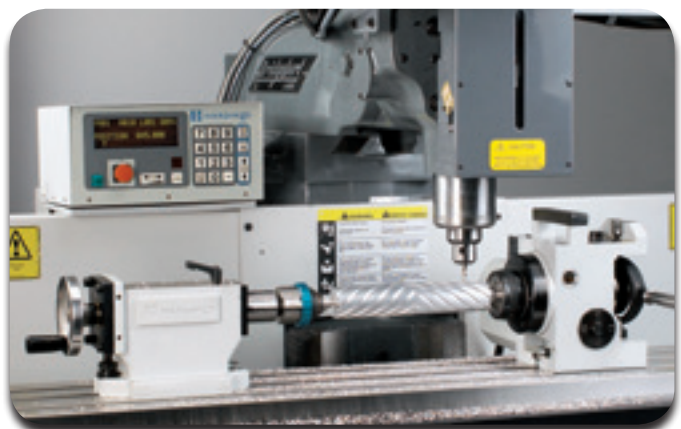
GD160LP  
Rotary mounted  
in a Bridgeport®  
vertical machining  
center machining  
six sides  
of the part.



GD160LP Rotary  
and GD210LP Rotary.

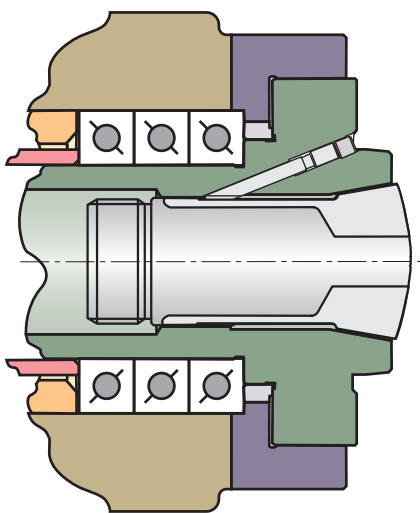


Spiral milling  
application on  
a Bridgeport  
knee mill using a  
5C<sup>2</sup> indexer and  
manual tailstock.



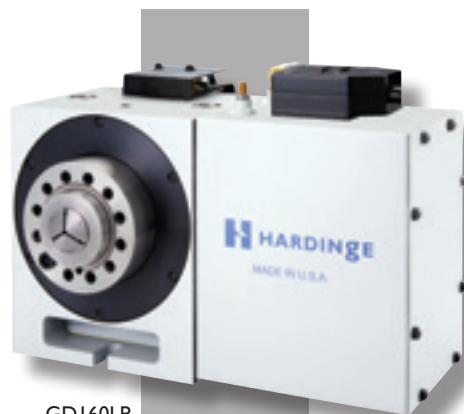
## Advantages of the Hardinge Spindle

- Collet seats directly in the Hardinge spindle
- Minimum overhang from the spindle bearings assures that spindle accuracy is transferred directly to the workpiece
- Maximum rigidity and gripping power transferred to the part
- Minimum weight on spindle
- Optimum T.I.R.
- Gripping force directly over the workpiece
- Superior tolerances and finishes
- Quick changeover— collet draw tube is easily and accurately adjusted from the back of the spindle
- Ability to use a wide variety of workholding devices 3-jaw chucks, collets, quick-change collets, step chucks, expanding collets, Dead-Length® systems, fixture plates and others



Hardinge Spindle shown with Collet

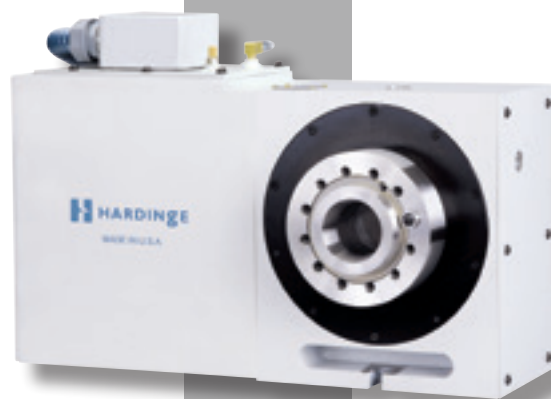
*Image does not represent actual indexer design.*



GDI60LP



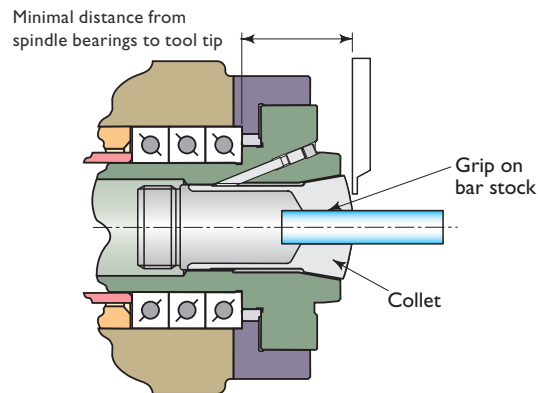
I6C



GD210LP

# Disadvantages of other Rotary Spindle Designs

## Hardinge Spindle Design – no collet adapter required

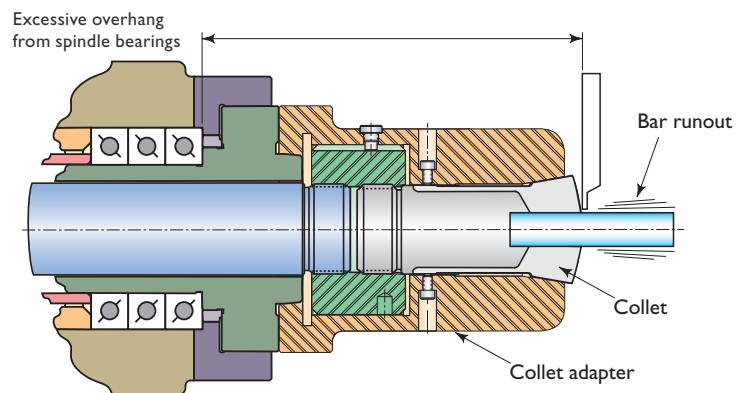


*Image does not represent actual indexer design.*

## Other Rotary Spindle Design – collet adapter required

Other spindle designs require the use of a collet adapter creating an extreme overhang from the spindle bearings.

Any error in the spindle is multiplied by the overhang distance.



*Image does not represent actual indexer design.*

This spindle design:

- Is not rigid
- Is not easily adjusted
- Creates poor T.I.R.
- Reduces the work envelope
- Creates excessive overhang
- Does not allow quick changeover



Interface Cable  
for Options #2 and #3

**Function**

Wiring to the host CNC

**Cycle Start command to indexer  
via M-code output, relay  
(pins 3 and 4 of Hardinge connector)**

Spare M-code output  
and associated relay

**24 volt supply  
(pin 1 of Hardinge connector)**

To power supply

**M-code finish signal  
(pin 2 of Hardinge connector)**

Spare M-code input

\*4th Axis is a generalized term referring  
to an additional axis that can be integrated  
into the current X, Y and Z axes  
machining center configuration.

### True 4th-Axis\* via the host machine (gear-driven)

Hardinge gear-driven rotary systems may be connected directly to the host machine and its CNC control. Connecting to the machine's CNC control requires replacing the standard servo motor and cable with a servo motor and cable that is compatible with the host CNC. If the machine is not 4th-axis ready, the machine will need a 4th-axis option and servo amplifier installed. Hardinge has integrated its rotary products with Fanuc, Siemens, Heidenhain, Okuma and Milltronics. Other systems can be supported with the assistance of our engineering team and your machine distributor or manufacturer.

Configured as a 4th-axis, the Hardinge Rotary System operates in a fully interpolated fashion with the other axes of the host machine. This arrangement does not use the Hardinge Indexer Control but relies on the capabilities of the machine's CNC control and its motor amplifier. The programming requirements for the rotary system become fully integrated into the main CNC program and is treated as a 4th axis\* of the machining center. The system effectively becomes an integral part of the host machine.

INTERFACE  
OPTION

1

### Indexing via RS-232 port and interface cable (program resides in the host machine)

The Hardinge gear-driven rotary systems (rotary unit and servo control) may be connected to the host machine via the RS-232 port. Using this method, the program commands will be resident in the machine's CNC control and sent directly to the Hardinge Indexer Control. This interfacing technique requires that the host CNC be capable of communicating programming information over an RS-232 communications port during program execution.

INTERFACE  
OPTION

2

After passing the command information to the servo control, the host CNC will trigger movement to occur via the four-wire interconnecting cable as described in the chart to the left. The cable is provided with a connector for the Hardinge control side and wire terminations for the CNC side. Configuring to the Fanuc control is fully supported. Other control types may be considered upon request. Please note that control systems that do not directly provide the ability to write information to the RS-232 port may require special software by the control builder in order to operate in this fashion. The RS-232 cable is to be provided by the customer. A total of nine control units can be daisy-chained together for program transfer — each with a distinct axis identifier

### Indexing via CNC interface cable (program resides in the Indexer Control)

In this interface arrangement, the communication that occurs between the Hardinge all-digital indexer control and the host CNC is in the simplest form. Logically the host CNC requests that the rotary system control process its next programmed command and then advise when completed. This requires that the program be stored internally within the Hardinge servo control, which is then asked to execute the commands sequentially as a signal is received from the host CNC control. Typically the START rotary command is prompted by a spare and programmable M-Code. At the completion of the rotary-commanded movement, the unit sends the host CNC a finished signal so that the VMC can proceed with the remainder of its program. The interface cable is provided to connect the host machine to the Hardinge servo control. Note that not all CNC machines have spare relays and M-codes as standard.

INTERFACE  
OPTION

3

# 5C<sup>2</sup> Indexers



The 5C<sup>2</sup> Rotary System is based on a long history of Hardinge 5C spindle and manual indexer designs. Over 60 years of Hardinge-engineered and proven mechanical elements guarantee an accurate, repeatable, reliable and flexible product.

GD5C2  
GD5C2-02  
GD5C2-03  
GD5C2-04



## Standard Features

- Curved front casting and removable handle for increased spindle clearance and better tool access
- Rapid indexing speed up to 360° per second
- ±5 arc-sec Repeatability
- ±25 arc sec Accuracy
- .0002" (.005mm) Maximum runout (TIR)
- Robust, dual-bearing spindle accommodates heavy axial and radial loads with the ability to run a triple or quad unit with tailstocks
- Brushless motor
- Industry compatible – same spindle centerline, foot print and tool clearance as previous Hardinge products and other US-made brands for direct replacement
- Single, dual, triple and quad spindle configurations
- Operate with the Hardinge all-digital indexer control or interface to your machine
- Uses standard 5C collets, Sure-Grip® expanding collets, step chucks and manual jaw chucks

## Options

- Collet closers – manual, pneumatic fail-safe through-hole and pneumatic high-force
- Tailstocks and plate trunnions
- Quill Switch for Bridgeport® knee mill to automate the indexing process
- Manual drawbar for each spindle for multi-spindle units
- Preset tailstock and indexer combinations – self-contained units mounted on a subplate for easy placement on and off the machine table to maintain factory tolerances
- Complete array of Hardinge spindle tooling

## Preset Tailstock and Rotary Combinations

**SINGLE:** Pneumatic Tailstock with valve, Pneumatic Rotary Unit, Double Mounting Plate and Servo Control

**DUAL:** Two Pneumatic Tailstocks with valving, Dual-unit Pneumatic Rotary Unit, Double Mounting Plate and Indexer Control

## INDEXER CONTROL / PROGRAMMING

Indexer Control Model	Standard Indexer Control
Storage - Number of programs/steps	9999/500
RS-232 Interface	YES
LCD Display	multiple lines
USB 2.0 Upload/Download	YES
Baud Rate Capacity	19.2 BPS

## SPINDLE

Runout Maximum (TIR)	0.0002" (.005)
Backlash	40 arc-sec
Speed - single - multi	0.001 to 360° per sec 0.001 to 180° per sec
Maximum RPM Rapid <sup>Min.-1</sup> - single - multi	60 30
Load Support – max. part weight	Dual Bearing 50 lb / 23 kg
Spindle Type	2 <sup>3</sup> / <sub>16</sub> – 10 threaded nose
Collets	Standard 5C
Spindle center to base	4.000" ± 0.001 (101.6 ± .0254)

## POSITIONING

Accuracy (arc-sec)	±30 arc-sec
Repeatability	±5 arc-sec
Resolution (degree)	0.001
Max Rotation/Step (degree) <sup>1</sup>	9999.99
Gear Diameter	2.8" (71.1)

## MOTOR

Type (DC servo)	0.78hp / 0.58KW
Torque at Spindle	54 ft-lb / 73 Nm
Duty Cycle	90% at full speed

## OPERATING SPECIFICATIONS

Gear Ratio (worm & gear)	60:1
Operating Temp. (maximum ambient)	120°F / 49°C
Power Requirements (VAC)	115 +/- 5% @ 10 amps
Max Air Pressure using High-Force Collet Closer	120 psi / 8.3 bar
Max Air Pressure using Fail-Safe Collet Closer	85 psi / 5.8 bar

## WEIGHT

Single Indexer	55 lb / 25 kg
Dual Indexer	119 lb / 54 kg
Triple Indexer	179 lb / 81 kg
Quad Indexer	240 lb / 109 kg
Control	10 lb / 4.5 kg

Note: 1 – continuous rotation available





## Workholding Capacities

Collets – Round (max. capacity)	1 1/16" (26.98)
Collets – Hex (max. capacity)	29/32" (23.01)
Collets – Square (max. capacity)	3/4" (19.05)
Step Chucks – Regular Depth	up to 6" (152.4)
Step Chucks – Extra Depth	up to 6" (152.4)
3-Jaw Chuck	5" (127)
3-Jaw Chuck	6" (152.4)
Sure-Grip® Expanding Collets	1/8" - 3" (3.17 - 76.2)
Fixture Plate – Spindle Mount	3" (76.2)
Fixture Plate – Spindle Mount	5" (127)
Fixture Plate – Collet Style	3 3/8" (85.72)
Fixture Plate – Collet Style	4 3/8" (111.12)
Slotted Face Plate (diameter)	7" (178)
Collet Stops for part positioning	YES

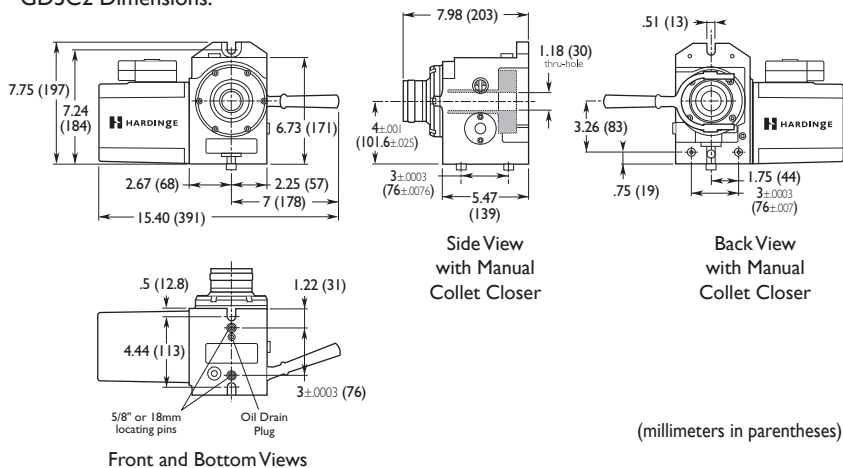
Slotted face plates can be used for "light duty" off-center work only.

## Bridgeport Knee Mill Remote Quill Switch

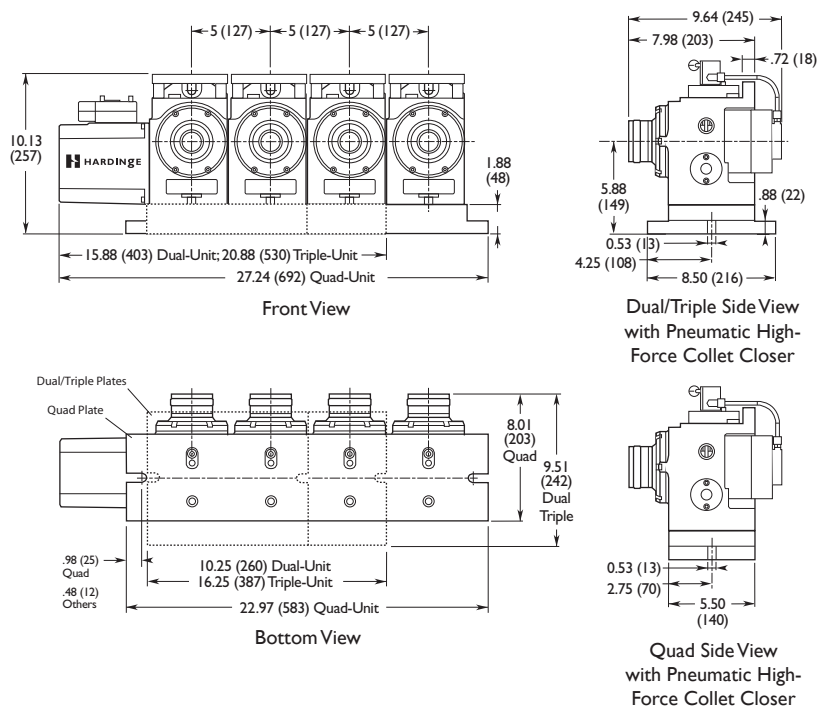
A remote quill switch is available for use with manual Bridgeport® mills. When the quill handle is retracted, it touches a micro switch for automatic indexing, eliminating the need to push the start button on the servo control. The bracket and interface cable are included.



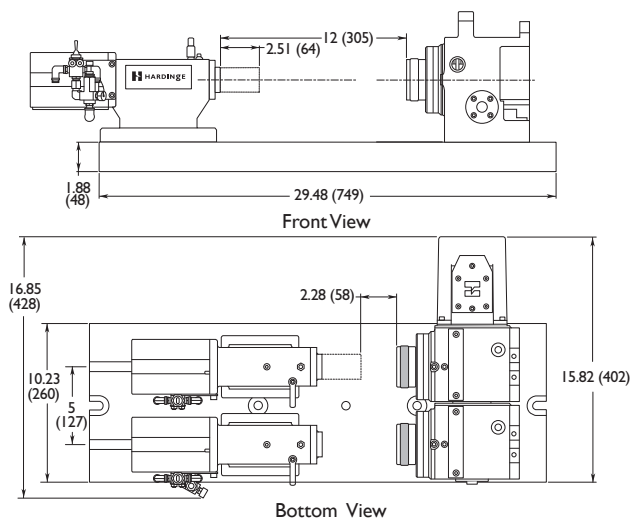
## GD5C2 Dimensions:



## GD5C2-02, -03 and -04 Dimensions:



## Preset Tailstock and Indexer Dimensions:



# 16C<sup>2</sup> and 3J<sup>2</sup> Indexers



Hardinge's world-renowned collet-ready A2-5 spindle is the heart of the system. The same accuracy, precision and reliability built into the Hardinge lathe extends to a large capacity rotary indexer. A variety of standard 16C or 3J spindle tooling will mount directly in or on the spindle without the use of an adapter. Common spindle tooling can now be shared between a rotary unit and a lathe.



Slotted faceplate sold separately.

## Standard Features

- A2-5 16C or 3J spindle accepts standard collets, Sure-Grip® expanding collets, step chucks, fixture plates and power chucks
- Typical part handling of 5 x 7" (127 x 178) parts
- Rapid indexing speed up to 300° per second
- ±5 arc-sec Repeatability
- ±15 arc sec Accuracy
- .0002" (.005mm) Maximum runout (TIR)
- Robust, dual-bearing spindle accommodates heavy axial and radial loads with the ability to run a dual or triple unit with tailstocks
- Spindle clamp eliminates slippage when performing heavy off-center drilling
- Pneumatic collet closer provides 2792-pound (1266kg) draw bar pull at 70psi
- 6" (152.4) centerline to base
- .6248" (15.87) total drawbar travel suitable for 3-jaw power chucks
- Through-hole: 16C<sup>2</sup> - 1.624" (41.25), 3J<sup>2</sup> - 1.75" (44.5)
- Performs spiral, arc and linear milling as well as standard indexing operations
- Single, dual and triple spindle configurations

## Options

- 5C adapter available for small part processing – Order part no. CJ 00002835CA
- Tailstocks, plate and cube trunnions
- Complete array of Hardinge spindle tooling

## INDEXER CONTROL / PROGRAMMING

Indexer Control Model	Enhanced Indexer Control
Storage - Number of programs/steps	9999/500
RS-232 Interface	YES
Text Display	multiple lines
USB 2.0 Upload/Download	YES
Baud Rate Capacity	19.2 BPS

## SPINDLE

Runout Maximum (TIR)	0.0002" (.005)
Backlash	40 arc-sec
Speed	0.001 to 300° per sec
Maximum RPM Rapid <sup>Min-1</sup>	50
Load Support	Dual Angular Contact Bearing
Maximum part weight	150 lb / 68 kg
Spindle Type	A2-5
Collets	Standard 16C / Standard 3J
Spindle center to base	6.000" ± 0.001 (152.4 ± .0254)

## POSITIONING

Accuracy	±15 arc-sec
Repeatability	±5 arc-sec
Resolution (degree)	0.001
Max Rotation/Step (degree) <sup>1</sup>	9999.99
Gear Diameter (inch/mm)	6.2 (157)

## MOTOR

Type (DC servo)	0.78 hp / 0.58kW
Clamping Torque <sup>2</sup>	175 ft-lb / 237 Nm
Torque at Spindle	70 ft-lb / 95 Nm
Duty Cycle	90% at full speed

## OPERATING SPECIFICATIONS

Gear Ratio (worm & gear)	60:1
Operating Temp. (maximum ambient)	120°F/49°C
Power Requirements (VAC)	115 +/- 5% @ 10 amps
Maximum Air Pressure	100 psi / 6.9 bar
Minimum Air Pressure	85 psi / 5.8 bar

## WEIGHT

Single Indexer	200 lb / 90.7 kg
Dual Indexer	520 lb / 235.8 kg
Triple Indexer	680 lb / 308.4 kg
Control	9.54 lb / 4.34 kg

Notes: 1 – continuous rotation available

2 – maximum torque applied before slipping occurs



SINGLE      GD16C2      GD3J2  
 DUAL      GD16C2-02      GD3J2-02  
 TRIPLE      GD16C2-03  
 GD3J2-03

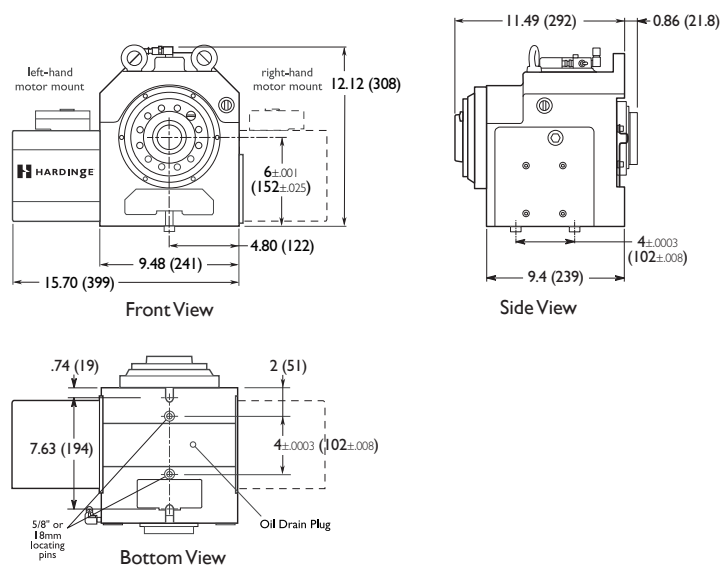
## Workholding Capacities 16C<sup>2</sup>

Collets – Round (max. capacity)	1 5/8" (41.27)
Collets – Hex (max. capacity)	1 13/32" (35.71)
Collets – Square (max. capacity)	1 7/64" (28.97)
Step Chucks – Regular Depth	up to 6" (152.4)
Step Chucks – Extra Depth	up to 6" (152.4)
FlexC Collet Systems	2 9/16" (65.00)
3-Jaw Chucks (diameter)	5", 6", 8"
Sure-Grip® Expanding Collets	
Collet Style	1 1/2" - 4" (12.70 - 101.6)
Spindle Style	1 1/8" - 4" (3.17 - 101.6)
Fixture Plates	
Spindle Mount	5 1/2" (139.70)
Spindle Mount	8 7/8" (225.42)
Collet Style	6 3/8" (161.92)
Slotted Face Plate	8.85" (225)
Slotted Face Plate	10" (254)
Collet Stops for part positioning	YES

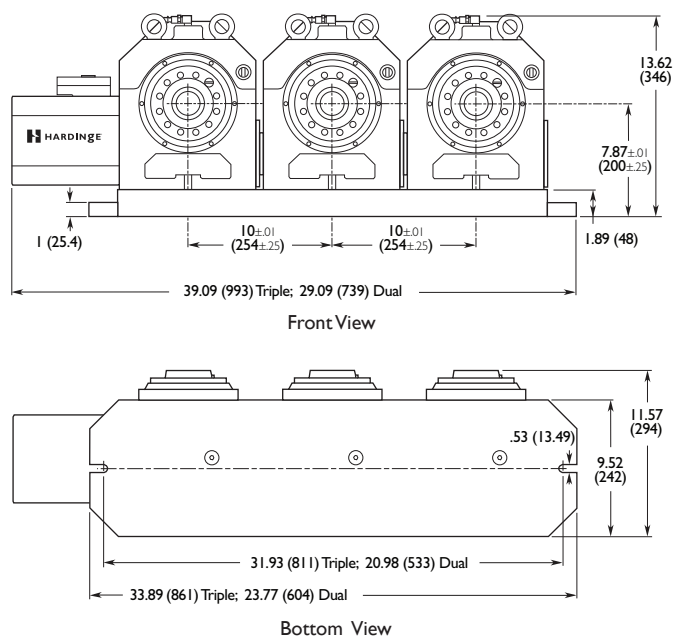
## Workholding Capacities 3J<sup>2</sup>

Collets – Round (max. capacity)	1 3/4" (44.45)
Collets – Hex (max. capacity)	1 17/32" (38.89)
Collets – Square (max. capacity)	1 1/4" (31.75)
Step Chucks – Regular Depth	up to 6" (152.4)
FlexC Collet Systems	2 9/16" (65.00)
3-Jaw Chucks	5", 6"
Sure-Grip® Expanding Collets	
Collet Style	1 1/2" - 4" (12.70 - 101.6)
Spindle Style	1 1/8" - 4" (3.17 - 101.6)
Fixture Plates	
Spindle Mount	5 1/2" (139.70)
Spindle Mount	8 7/8" (225.42)
Slotted Face Plate	8.85" (225)
Slotted Face Plate	10" (254)
Collet Stops for part positioning	YES

## GD16C2 and GD3J2 Dimensions:



## GD16C2-02, -03, GD3J2-02 and -03 Dimensions:



Top view of 16C<sup>2</sup>  
 Rotary Indexer –  
 Configure  
 for either left-  
 or right-hand  
 application.



# LPI60 and LP210 Indexers

Sleek, fast and accurate. Engineered to support heavy loads and high-force cutting applications while maintaining accuracy over a long life. Fast clamp and release in milliseconds gives you increased parts-per-hour. Hardinge rotary tables have collet-ready spindles for increased part gripping options.



Face plate included

## Standard Features

- 160 and 210mm slotted face plates are precision ground on a Kellenberger® grinding machine
- A2-4 (GD160LP) and A2-5 (GD210LP) extended-nose spindles accept collets, expanding collets, step chucks, manual chucks, power chucks and slotted face plates
- Built-in clamp to handle off-center drilling, cross-axis milling and other high-force cutting applications
- Fast clamp and release in milliseconds for increased parts-per-hour
- Hardened steel worm and hardened steel worm gear for long life and continued accuracy
- Double eccentric design for finest possible factory gear mesh
- Left- or right-hand motor mount
- Use with all-digital indexer control on most brands of machines, or as 4th-axis (Fanuc, Siemens, Haas, Heidenhain)

Extended-nose spindle design provides optimum clearance.



## Options

- Pneumatic Collet Closer (draw bar force at 70 psi)  
GD160LP – 1825 lb / 828 kg  
GD210LP – 2792 lb / 1266 kg
- GD210LP available with or without collet-ready spindle
- Tailstocks, plate and cube trunnions (GD160LP plate trunnion only)
- Complete array of Hardinge spindle tooling

GD160LP		GD210LP
INDEXER CONTROL / PROGRAMMING		
Indexer Control Model	Standard Indexer Control	
Storage - Number of programs/steps	9999/500	
RS-232 Interface	YES	
Text Display	multiple lines	
USB 2.0 Upload/Download	YES	
Baud Rate Capacity	19.2 BPS	
SPINDLE		
Runout Maximum (TIR)	0.0002" (.005)	
Backlash	40 arc-sec	
Speed	0.001 to 240° per sec	
Maximum RPM Rapid <sup>Min-1</sup>	40	
Load Support	Dual Bearing	Dual Bearing
Maximum part weight	100 lb / 45 kg	220 lb / 100kg
Spindle Type	A2-4	A2-5
Table Diameter	6.299" (160)	8.267" (210)
Thru Diameter Face Plate (maximum)	1" or 25mm choice	2" or 50mm choice
Thru Dia. Opt. Collet Closer (max)	1.08" (27.4)	1.62" (41.27)
Width of T-slot	.44" (11.2)	.57" (14.4)
Collets	Standard 5C	Standard 16C
Spindle center to base	5.000" ± 0.001 (127 ±.0254)	6.000" ± 0.001 (152.4 ±.0254)
POSITIONING		
Accuracy	±20 arc-sec	±15 arc-sec
Repeatability	±5 arc-sec	
Resolution (degree)	0.001	
Max Rotation/Step (degree) <sup>1</sup>	9999.99	
Gear Diameter (inch/mm)	3.7 (94)	6.2 (157)
MOTOR		
Type (DC servo)	0.78 hp / 0.58kW	2.0 hp / 1.50 kW
Clamping Torque <sup>2</sup> (pneumatic)	150 ft-lb / 203 Nm	275 ft-lb / 373 Nm
Torque at Spindle	73 ft-lb / 99 Nm	90 ft-lb / 122 Nm
Duty Cycle	90% at full speed	
OPERATING SPECIFICATIONS		
Gear Ratio (worm, gear & timing belt)	90:1	
Operating Temp. (maximum ambient)	120°F/49°C	
Power Requirements (VAC)	115 +/- 5% @ 10 amps	
Maximum Air Pressure	100 psi / 6.9 bar	
Minimum Air Pressure	85 psi / 5.8 bar	
WEIGHT		
Rotary Table	120 lb / 57 kg	200 lb / 90.7 kg
Control	9.54 lb / 4.34 kg	

Notes: 1 – continuous rotation available  
2 – maximum torque applied before slipping occurs



GD160LP  
GD210LP

## Workholding Capacities

### GD160LP

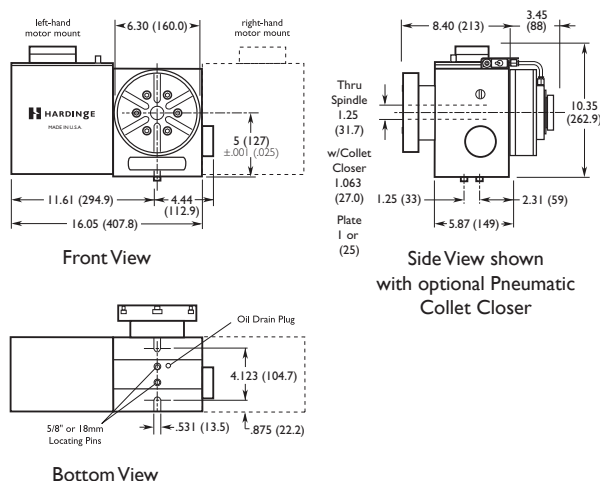
Collets – Round (max. capacity)	1 1/16" (26.98)
Collets – Hex (max. capacity)	2 9/32" (23.01)
Collets – Square (max. capacity)	3/4" (19.05)
Step Chucks – Regular Depth	up to 4" (101.6)
Step Chucks – Extra Depth	up to 4" (101.6)
Sure-Grip® Expanding Collets	1/8" - 3" (3.17 - 76.2)
3-Jaw Manual Chuck	5" (127)
3-Jaw Manual Chuck	6" (152.4)
3-Jaw Sure-Grip® Power Chuck	4" (101.6)
Fixture Plate – Collet Style	3 3/8" (85.72)
Fixture Plate – Collet Style	4 3/8" (111.12)
Slotted Face Plate (diameter)	6.3" (160)
Collet Stops for part positioning	YES

## Workholding Capacities

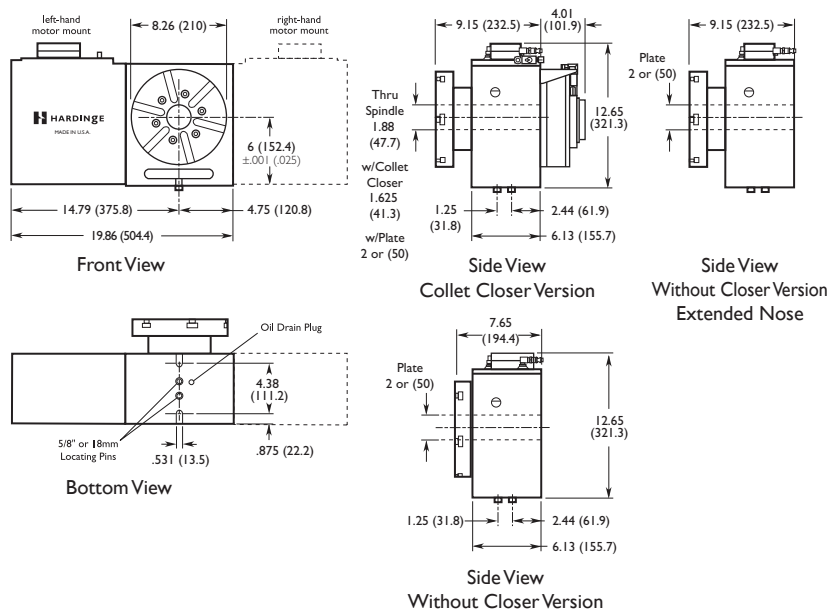
### GD210LP

Collets – Round (max. capacity)	1 5/8" (41.27)
Collets – Hex (max. capacity)	1 13/32" (35.71)
Collets – Square (max. capacity)	1 3/64" (28.97)
Step Chucks – Regular Depth	up to 6" (152.4)
Step Chucks – Extra Depth	up to 6" (152.4)
FlexC Collet Systems	2 9/16" (65.00)
3-Jaw Chucks (diameter)	5", 6", 8"
Sure-Grip® Expanding Collets	
Collet Style	1/2" - 4" (12.70 - 101.6)
Spindle Style	1/8" - 4" (3.17 - 101.6)
Fixture Plates	
Spindle Mount	5 1/2" (139.70)
Spindle Mount	8 7/8" (225.42)
Collet Style	6 3/8" (161.92)
Slotted Face Plate	8.26" (210)
Slotted Face Plate	8 7/8" (225.42)
Slotted Face Plate	10" (254)
Collet Stops for part positioning	YES

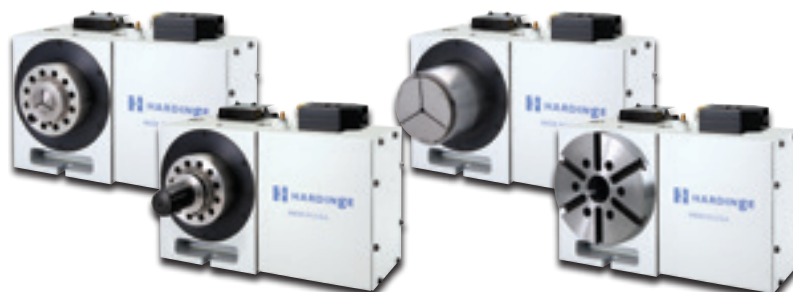
## GD160LP Dimensions:



## GD210LP Dimensions:



(millimeters in parentheses)



Hardinge collet-ready spindles accept collets, expanding collets and step chucks with the use of an optional collet closer.

# Dual-Axis 5C<sup>2</sup> Systems



Add efficiency to your table with dual-axis, multiple part machining and flexible part gripping options. Eliminate the need for second or third operations or expensive fixturing. Accepts standard collets, Sure-Grip® expanding collets, step chucks, jaw chucks and face or fixture plates in the 5C spindles.

GDX5C2  
LPX5C2-01  
LPX5C2-02  
LPX5C2-03  
LPX5C2-04



LPX5C2-01CC

## Standard Features

GDX5C2

### Single-Spindle:

- 5th-axis base unit has a total 360° tilt ( $\pm 180^\circ$  from the 12-o'clock position)
- Adjustable hardware limit switches to limit travel to reduce risk of possible crash included when purchased with Servo Control (limit switch not available on LPX5C2-01CC with a collet closer)
- Units are precision aligned to the spindle center
- Two units in one – quick release for separate use of indexers (do not disassemble multiple-spindle models)

### Multi-Spindle Configurations:

- Robust dual-bearing trunnion support
- Dual pneumatic clamp system for increased rigidity
- 5" (127) spindle center-to-center
- Pneumatic collet closers
- Overall Trunnion length:
  - dual 32.24" (819)
  - triple 37.24" (946)
  - quad 42.25" (1073)

### All Configurations:

- 5C threaded-nose spindle accepts standard collets, step chucks, expanding collets and jaw chucks
- Operate with indexer control boxes – GDX5C2 will also operate as 4th-axis connection, tilt only
- Single, dual, triple and quad spindle configurations

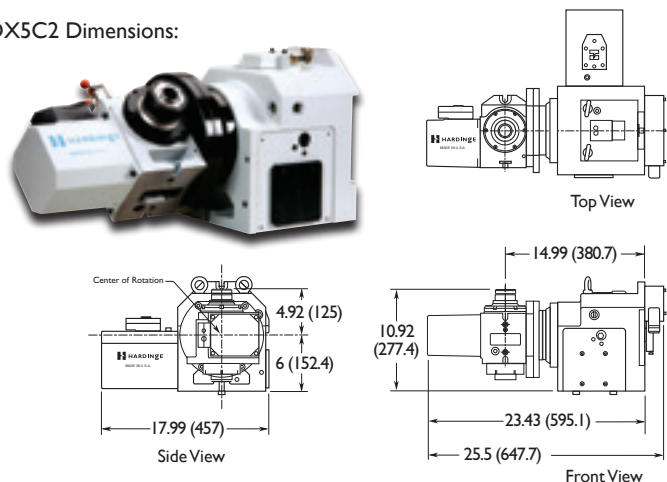
## Optional Features

### Multi-Spindle Configurations:

- Adjustable hardware limit switches to limit travel to reduce risk of possible crash (using control box only)
- Two individual indexer controls are required for operation (capable of 4th- or 4th- & 5th-axis interfacing on some machines)
- Manual drawbar turns by hand for reduced-cost option

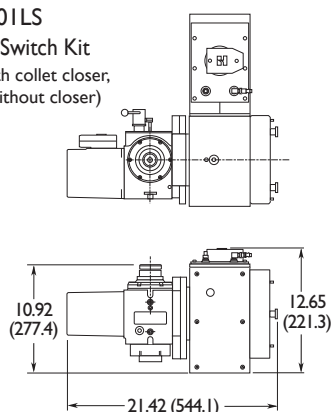
INDEXER CONTROL / PROGRAMMING	4th-Axis 5C Spindles	Tilting 5th-Axis
Indexer Control Model	Standard Indexer Control	
Storage - Number of programs/steps	9999/500	
RS-232 Interface	YES	
Text Display	multiple lines	
USB 2.0 Upload/Download	YES	
Baud Rate Capacity	19.2 BPS	
SPINDLE		
Runout Maximum (TIR)	0.0002" (.005)	
Backlash	40 arc-sec	40 arc-sec
Maximum RPM Rapid <sup>Min-1</sup>	30	10
Load Support – max. part weight	Dual Bearing 17.6 lb / 8 kg	Dual Bearing
Spindle Type	2 <sup>3</sup> / <sub>16</sub> – 10 threaded nose	A2-5
Collets	Standard 5C	—
Table Height at Collet Nose	12.62" (320.5)	—
Spindle center to base	7.25" ± 0.001 (184.2 ±.0254) (90°)	7.25" ± 0.001 (184.2±.0254)
POSITIONING		
Tilting Range	—	-180° to +180°
Accuracy	±30 arc-sec	±15
Repeatability	±5 arc-sec	
Max Rotation/Step (degree)	9999.99 <sup>1</sup>	±180.00
Minimum Increment	.001	
Gear Diameter	2.8" (71.1)	6.2" (157.0)
MOTOR		
Clamping System	—	Pneumatic
Clamping Torque <sup>2</sup>	—	(single) 275 ft-lb / 373 Nm (multi) 550 ft-lb / 745 Nm
Working Torque at Spindle	(single) 54 ft-lb / 73 Nm (multi) 34 ft-lb / 46 Nm	(16C) 70 ft-lb / 95 Nm (210LP) 90 ft-lb / 122 Nm
Duty Cycle	90% at full speed	
OPERATING SPECIFICATIONS		
Speed Reduction Ratio	60:1	90:1
Operating Temp. (maximum ambient)	104°F / 40°C	
Power Requirements (VAC)	115 +/- 5% @ 10 amps	
Max Air Pressure	100 psi / 6.9 bar	
WEIGHT		
Single Spindle	265 lb / 120 kg	
Dual Spindle	460 lb / 208 kg	
Triple Spindle	525 lb / 238 kg	
Quad Spindle	590 lb / 268 kg	
Control – standard or enhanced	9.54 lb / 4.34 kg	
Notes: 1 – continuous rotation available		
2 – maximum torque applied before slipping occurs		

## GD5C2 Dimensions:

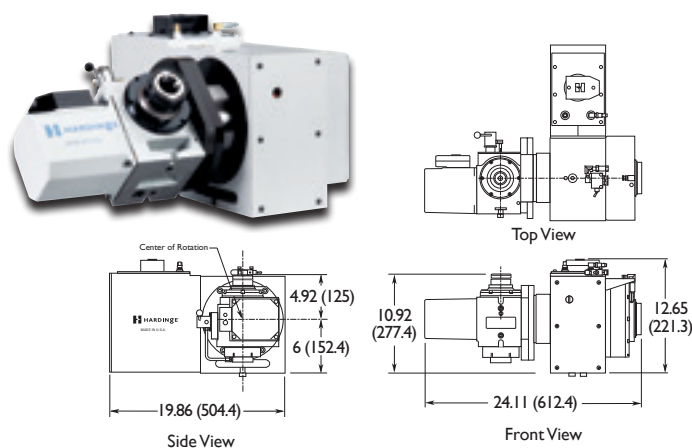


## LPX5C2-01LS

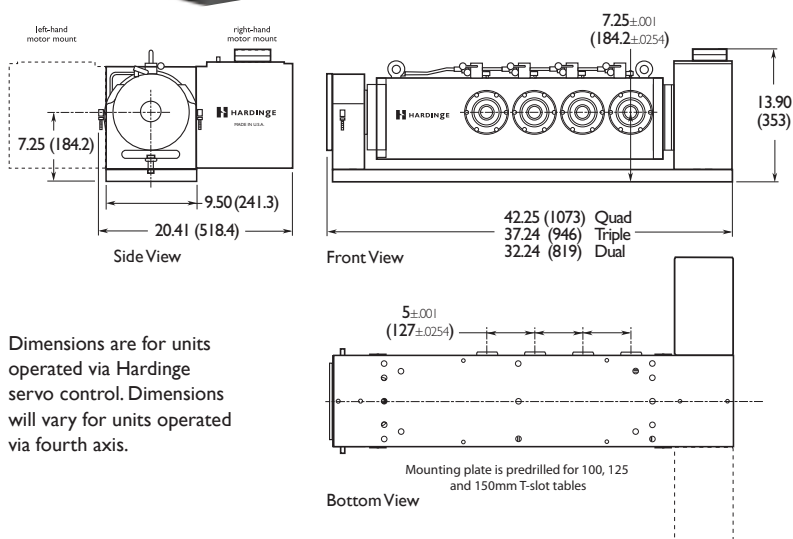
with Limit Switch Kit  
(GD5C2 with collet closer,  
GD210LP without closer)



## LPX5C2-01CC with Collet Closers (no limit switch kit)



## LPX5C2-02, -03, and -04 Dimensions:



## Workholding Capacities

Collets – Round (max. capacity)	1 1/16" (26.98)
Collets – Hex (max. capacity)	29/32" (23.01)
Collets – Square (max. capacity)	3/4" (19.05)
Step Chucks – Regular Depth	up to 6" (152.4)
Step Chucks – Extra Depth	up to 6" (152.4)
3-Jaw Chuck	5" (127)
3-Jaw Chuck	6" (152.4)
Sure-Grip® Expanding Collets	1/8" - 3" (3.17 - 76.2)
Fixture Plate – Spindle Mount	3" (76.2)
Fixture Plate – Spindle Mount	5" (127)
Fixture Plate – Collet Style	3 3/8" (85.72)
Fixture Plate – Collet Style	4 3/8" (111.12)
Collet Stops for part positioning	YES

(Multi-spindle units limited by 5" (127) spindle-to-spindle centers)

Dimensions are for units operated via Hardinge servo control. Dimensions will vary for units operated via fourth axis.

(millimeters in parentheses)

# All-Digital Indexer Control



## Indexer Control

- Used with GD5C2, GD16C2, GD3J2, GD160LP and GD210LP Indexers
- Advanced G-code programming supports hardware and software limit switches and clamping
- Three additional inputs and outputs support external 24V accessories
- 120 or 240vac operation
- A nonvolatile memory retains your program even when power is turned off
- Program to rotate the spindle clockwise or counter-clockwise with step sizes from .001 to 9999.99 degrees



## Optional Handwheel

- Compact Size: 5.60 x 3.25 x 1.53"
- Detented hand wheel positions
- Two handed safe operation
- Eight foot connector cable
- Handle design for hanging
- Anti-skid rubber feet



The Hardinge all-digital indexer controls are current generation, easy to use and will support either brush or brushless indexers. A multi-line display reduces scrolling and user manual dependency. Connect via a standard interface cable or use the RS-232 port. Upload and download your programs via a USB 2.0 compatible memory device.

### INDEXER CONTROL PROGRAMMING FEATURES

AUTOMATIC CIRCLE DIVISION	You can program a step that automatically divides a circle into any number of equal parts between 2 and 999
CONTINUOUS ROTATION CAPABLE	Continuous rotation with no limit to the number of revolutions through G-code function
STOP	You can use the CYCLE STOP to feed-hold spindle movement without losing position on restart
FAST SET-UPS	All connectors are "quick-disconnect", ensuring fast and easy set-ups
INTERFACING	Most CNC mills can be interfaced quickly and easily by using a spare M function which provides a switch-closer as a signal between your mill and the control
LINEAR & SPIRAL MILLING	For semi fourth-axis capability
MEMORY	A nonvolatile memory retains your program even when power is turned off
PROGRAM STORAGE	Store and recall from 1 up to 9999 different programs
PROGRAMMABLE PARAMETERS	You can alter many of the basic features by performing your own basic programming
PROGRAMMING	Program to rotate the spindle clockwise or counter-clockwise with step sizes from .001 to 9999.99 degrees
ABSOLUTE OR INCREMENTAL PROGRAMMING	Up to 500 different steps can be stored in memory and each step can be repeated (looped) 999 times
RS-232 INTERFACE	For computer control of sending and receiving programs and running RS-232 commands from machine
RESOLUTION	Standard resolution of .001 degrees
SIMPLE EDITING	Edit a program by simply writing over existing steps, or inserting or deleting a line (or several lines) between steps, with automatic program line renumbering
SUBROUTINES	Allows you to repeat sequences up to 999 times saving programming time and memory space
VARIABLE FEED RATES	Variable from .001 deg/sec to 2150 deg/sec (limited by indexer model)
ZERO RETURN	An "automatic home" position can be programmed to return the spindle to its original starting position from any point

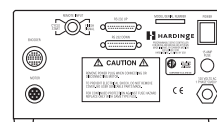
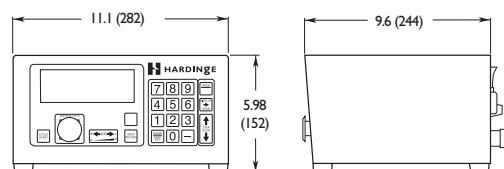
## Standard Features

- Supports either brush or brushless motor indexers made by Hardinge and other rotary system manufacturers
- Store up to 9999 programs with up to 500 steps in each program
- Multiple line LCD display will allow you to view the program number, step number, loop count and preparatory g-code without scrolling
- Intelligent power module (drive electronics) to bring the best possible system to your machining center or knee mill
- Parameter number as well as its definition can be viewed in logical English with Parameter Help for some entries.
- Error and fault messages will be displayed to help diagnose problems
- Expanded diagnostic capabilities allow faster troubleshooting and part program debugging.
- External RS232 communication rates to 19.2bps supporting the latest speeds for sending and receiving data
- Communication parameters can be adjusted to support stop bits, data bits and different baud rates to work with different machine tool brands
- Memory is nonvolatile so that the program content is fully captured and will be maintained after power off conditions

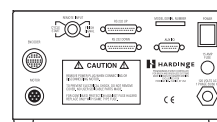
## Cable Management Options

- Cable Retractor Kits are available for use with the standard 9-foot main cable(s) that attaches the rotary table to the connectors in the roof of the machining compartment - for fully integrated rotary tables only:
  - For Gear Driven Systems – Part No. CI 000301 ICSRK
  - For Direct-Drive Systems – Part No. RT 000301 ICSRK
- Rectangular wall mount Cable Frame Kit is used to route cabling out through the sheet metal of the machine - for indexers operated via indexer control only:
  - Part No. CI 001208205
- Quick-Connect CNC Cable for use with Bridgeport GX machines that have a wired rotary connection located in the power case - for indexers operated via indexer control only:
  - Part No. CI 000301 IICQC

## Standard and Enhanced Servo Control Dimensions:



Standard Back Panel



Enhanced Back Panel

## Direct-Drive Back Panel



Horizontal mount  
tilting stationary shelf



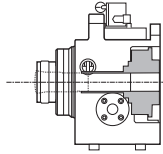
Vertical mount  
tilting swivel shelf

# Collet Closer & Tailstock Options

## GD5C2

### Fail-Safe Collet Closers

- Spring-close, air-to-open for fail-safe operation (85psi max)
- Part remains clamped even if loss of air should occur
- Non-adjustable grip force

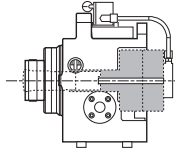


GD5C2  
pneumatic  
fail-safe  
collet closer

## GD5C2

### High-Force Collet Closers

- Dual cylinder for greater resulting force
- Set force according to levels below the maximum allowed for the workholding system

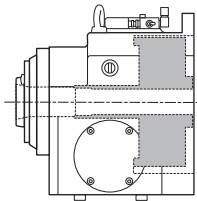


GD5C2  
pneumatic  
high-force  
collet closer<sup>1</sup>

## GD16C2, GD3J2 Pneumatic

### Collet Closers

- Dual cylinder
- Set force according to levels below the maximum allowed for the workholding system
- Accepts power chucks

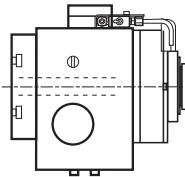


GD16C2  
and GD3J2  
pneumatic  
collet closer

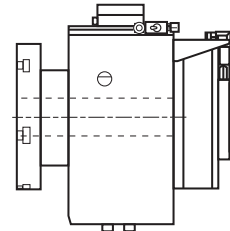
## GD160LP and GD210LP

### Pneumatic Collet Closer

- Air open and air close actuation
- Enough stroke for power chuck use



GD160LP  
pneumatic  
collet closer



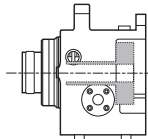
GD210LP  
pneumatic  
collet closer

## GD5C2 Manual Collet Closer

- Manual lever open and close

### Manual Drawbar

- Individual drawbar turns in by hand for low-cost option



GD5C2  
manual  
collet closer



for multi-spindle  
5C<sup>2</sup> units

All collet closers have a through-hole to accommodate through coolant, while some can accommodate long parts. Valving is included with pneumatic collet closers when purchased with indexer.

ROTARY	COLLET CLOSER	DRAWBAR FORCE @70 PSI / 4.8 BAR	THRU HOLE	STROKE	MOUNTING PLATE <sup>1</sup>
GD5C2	Manual (lever-operated)	950 lb / 431 kg	1.18" (30.00)	.125" (3.1)	N/A
GD5C2	Pneumatic Fail-Safe <sup>2</sup>	1760 lb / 798 kg	1.08" (27.43)	.060" (1.5)	N/A
GD5C2	Pneumatic High Force	1950 lb / 885 kg	.311" (7.90)	.060" (1.5)	required
GD16C2	Pneumatic	2792 lb / 1266 kg	1.62" (41.275)	.625" (15.8)	N/A
GD3J2	Pneumatic	2792 lb / 1266 kg	1.75" (44.450)	.625" (15.8)	N/A
GD160LP	Pneumatic	1825 lb / 828 kg	1.08" (27.432)	.375" (9.5)	N/A
GD210LP	Pneumatic	2792 lb / 1266 kg	1.625" (41.30)	.625" (15.8)	N/A

Notes: 1 – mounting plate required for using the rotary unit in a vertical on-end position  
2 – 85 psi / 5.8 bar maximum drawbar force for fail-safe collet closers

(millimeters in parentheses)

Hardinge tailstocks are designed to be used where extra support is needed for either workpiece or fixture holding. Workpieces that have a length-to-diameter ratio of greater than 3-to-1 are candidates for a tailstock support. This is especially true when attempting to achieve high accuracy levels. Choose from manually- or pneumatically-operated tailstocks.



## Manual Tailstock

- Manually-operated quill-type tailstock with convenient hand wheel – 1/4-turn quill lock
- #3 Morse taper spindle
- Only live centers are recommended for use
- Base locating pins to reference and configure with any Hardinge Rotary System
- Riser plate is supplied for all rotary devices with spindle centerline above 4" (101.6)

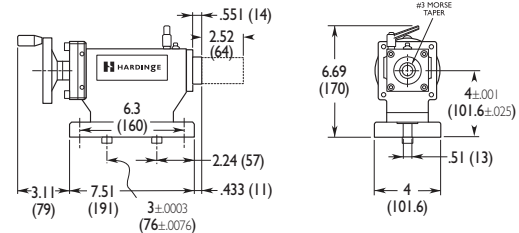


## Pneumatic Tailstock

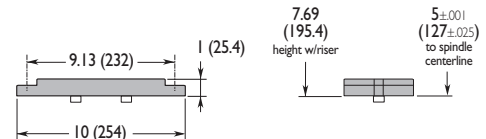
- Allows greater level of cell automation and reduces operator fatigue
- #3 Morse taper spindle
- Only live centers are recommended for use
- May be operated from a host CNC machine tool via M-code or by the operation of a convenient hand valve
- Large actuator diameter produces higher forces than competitor's brands
- Riser plate is supplied for all rotary devices with spindle centerline above 4" (101.6)
- Pneumatic valving included

## Manual Tailstock

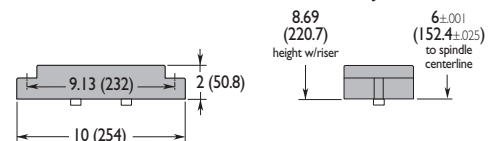
for GD5C2



1" Tailstock Riser included for GD160LP

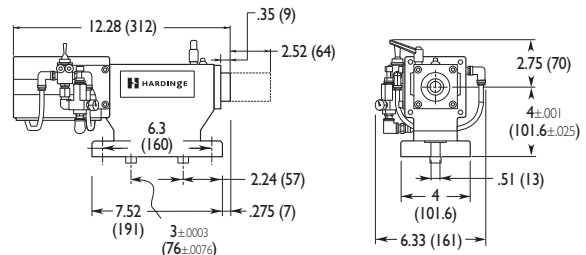


2" Tailstock Riser included for GD16C2, GD3J2, GD210LP,

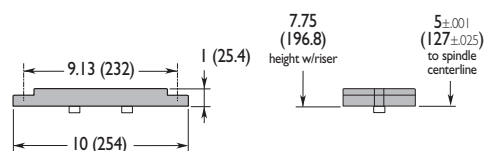


## Pneumatic Tailstock

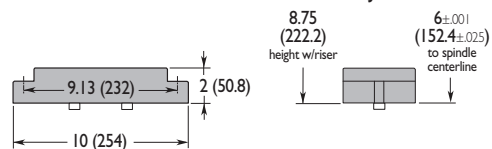
for GD5C2



1" Tailstock Riser included for GD160LP

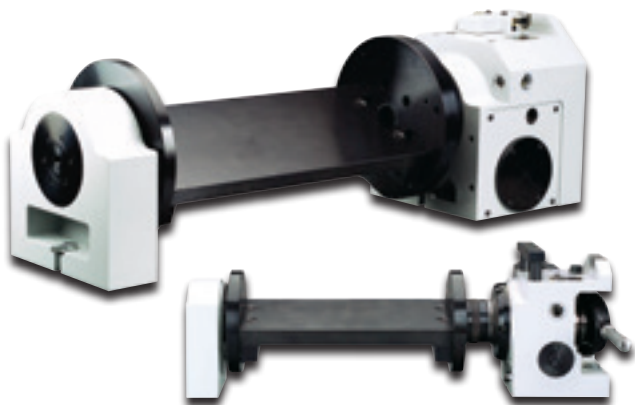


2" Tailstock Riser included for GD16C2, GD3J2, GD210LP



(millimeters in parentheses)

# Plate & Cube Trunnions



Custom manufacturing available

ROTARY DEVICE COMPATIBILITY	PT5C 5C PLATE	PTA24 A2-4 PLATE	PTA25 A2-5 PLATE	CTA25 A2-5 CUBE
GD5C2	YES			
Centerline	4" (101.6)	NO	NO	NO
Overall Length	23.80" (607)			
GD160LP	YES	YES		
Centerline	5" (127.0)	5" (127.0)	NO	NO
Overall Length	23.48 (596)	23.3 (591.8)		
GD16C2			YES	YES
Centerline	NO	NO	6" (152.4)	6" (152.4)
Overall Length			37.54" (954)	37.48" (952)
GD210LP			YES	YES
Centerline	NO	NO	6" (152.4)	6" (152.4)
Overall Length			31.04" (788.3)	32.07" (814.7)

(millimeters in parentheses)

Imagine the possibilities for multiple part processing...

- low-profile clamping
- window box fixturing for 4-sided machining
- toggle and saddle clamping
- collet blocks

## Standard Features

- Bearing pillow block assures rigid, accurate positioning and will accommodate heavy loads
- Multiple part fixturing for increased output
- Load up a second plate to maximize cutting time
- All parts can be machined efficiently with the same tool before going to the next tool
- Plates provide two sides for fixturing, while the cube provides four sides
- 360° revolution depending on part clearance required
- Can be field installed to existing rotary units
- Plates are of blackened steel and the cube is of solid aluminum for ease of drilling and slotting according to the application requirements, either by Hardinge or by the customer
- Custom manufacturing available

## Optional Features

- Pillow block clamp available on PTA25 and CTA25 models with clamping torque of 275 ft-lb / 373 Nm
- Rotary union in pillow block for pneumatic fixturing on the cube trunnion – part number CJ 0002483CTA
- Complete line of collet blocks available for gripping round, hex, square and odd-shaped parts using collet sizes from 1C up to 35J



Collet Blocks



PT5C2  
PTA24  
PTA25  
CTA25-4IN  
CTA25-6IN

## Plate Trunnion PT5C2

- 4 x 10" (101.6 x 254) machineable area on two surfaces
- Adjustable centerline to accommodate various part heights
- Collet-style face plate draws in to the 5C spindle nose of the rotary product

## Plate Trunnion PTA24

- 4 x 10" (101.6 x 254) machineable area on two surfaces
- Adjustable centerline to accommodate various part heights
- Face plate bolts on to the A2-4 spindle nose of the rotary product
- 1" riser required for GD160LP

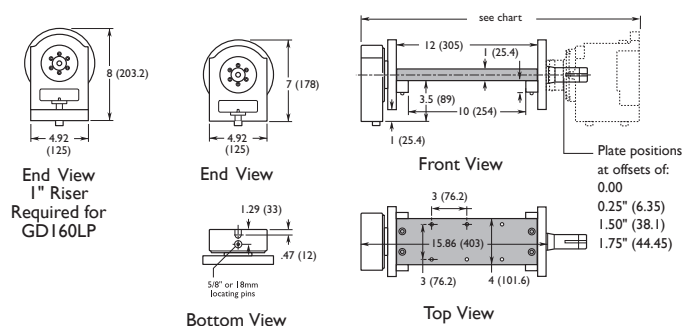
## Plate Trunnion PTA25

- 7 x 16.73" (177.8 x 425) machineable area on two surfaces
- Adjustable centerline to accommodate various part heights
- Face plate bolts on to the A2-5 spindle nose of the rotary product

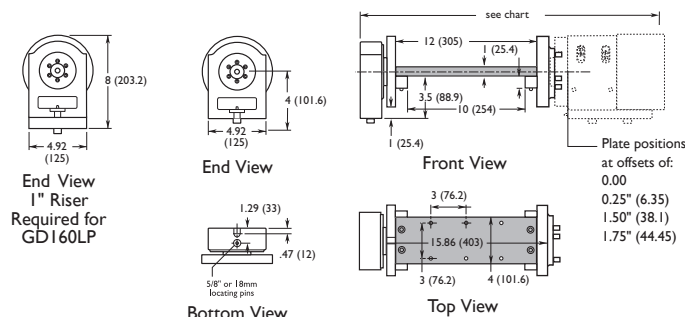
## Cube Trunnion CTA25

- 18" (457mm) long solid aluminum block for four-sided machining applications
- Available in 4" and 6" cubes
- 1/8" NPT ports to accommodate air-actuated workholding
- Face plate bolts on to the A2-5 spindle nose of the rotary product
- Can easily be configured for highly productive 2D work

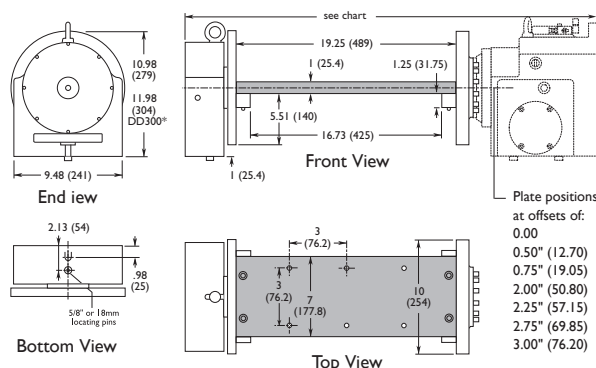
## PT5C2 Tilting Plate Trunnion for GD5C2 and GD160LP:



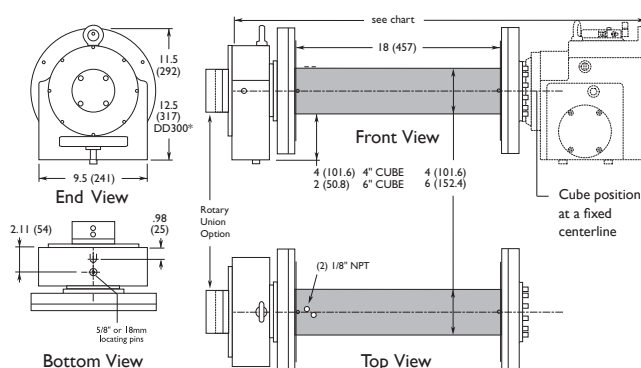
## PTA24 Tilting Plate Trunnion for GD160LP:



## PTA25 Tilting Plate Trunnion for GD16C2, GD3J2 and GD210LP:



## CTA25-4IN and CTA25-6IN Tilting Cube Trunnions for GD16C2, GD3J2 and GD210LP:



(millimeters in parentheses)



## Hardened and Ground Collets

- Manufactured to exacting standards from special alloy steel
- Threads are heat treated and body is spring tempered to assure accuracy and durability at low cost
- Wide range of standard sizes and shapes (and some not so standard) "off-the-shelf"
- Round, hex, rectangular, square and emergency collets (ready to bore)
- 5C, I6C and 3J



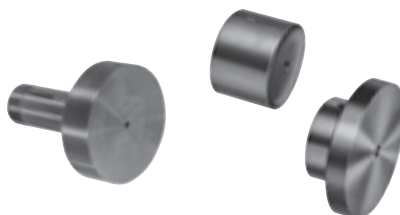
## I6C-to-5C Spindle Adapter

- Mounts on A2-5 spindle
- Part No. CJ 00002835CA



## Sure-Grip® Expanding Collet Systems

- Mount directly into the collet seat of the spindle
- Solid, one-piece body and arbor combination with a minimum of parts required to expand the collet
- Expanding arbor instantly locates on center, unlike other designs
- Quick collet changeover
- Wide gripping range for each collet
- True parallel gripping with a high gripping force
- 5C, I6C and 3J



## Fixture Plates

- Used to mount parts which cannot be held with a collet or jaw chuck
- Clamping method to be designed, manufactured and balanced by the customer
- Collet and spindle-mount styles available



## Step Chucks

- Accurately hold work up to, or larger than, 6" (152.4) diameter
- Castings, moldings, stampings and machined parts are held rigidly and accurately
- Tubing can be held without crushing or distortion
- Regular-Depth Step Chucks are  $\frac{3}{8}$ " larger in diameter than the rated size so the full capacity may be readily applied to a depth of  $\frac{1}{2}$ "
- Extra-Depth Step Chucks are made so the full rated capacity may be applied to a depth of  $1\frac{1}{4}$ "
- Small closing angles available on step chucks for non-rotating use
- A step chuck closer is required for all rotating spindle applications – mounts directly on the spindle nose
- An inside taper corresponding to that on the step chuck places the closing pressure over the stepped area of the chuck, resulting in greater gripping power and accuracy
- Emergency Step Chucks are supplied with pin holes and pins in place for precision just-in-time machining
- 5C, I6C and 3J



## Slotted Face Plates

- Precision ground in sizes to fit all rotary units



## FlexC™ Vulcanized Collet Systems

- A2-5 Spindle mount style
- .0004" (.010mm) concentricity
- Round, hex, square and emergency styles
- ±.020 (.5mm) gripping range will accommodate stock variation
- 1/4 to 2<sup>9</sup>/<sub>16</sub>" 65mm capacity
- 7/32 to 1<sup>5</sup>/<sub>8</sub>" 42mm capacity

## Sure-Grip® 3-Jaw Power Chucks

- Lever-operated, counter-centrifugal and dynamically balanced to maintain jaw force
- Testing indicates a mechanical advantage over wedge-style chucks
- Accuracy and repeatability up to .0005" (.0127mm) for 4" to 8" chucks

## Manual Jaw Chucks

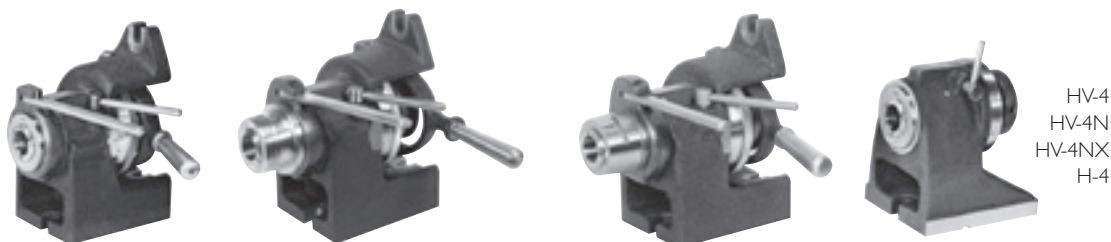
- 5" / 6" 3-jaw and 4-jaw, 8" and 10" 3-jaw styles
- 5C threaded-nose style for GD5C2 indexer
- A2-5 spindle mount styles
- 3-Jaw universal and 4-jaw independent

Product Description	GD5C2	GD16C2	GD3J2	GD160LP	GD210LP
Spindle	5C threaded-nose	A2-5 16C	A2-5 3J	A2-4	A2-5
42mm FlexC Collet System (Style A)	—	V42-5A01000*	V42-5A01000*	—	V42-5A01000*
42mm FlexC Collet System (Style D)	—	V42-5D00300*	V42-5D00300*	—	V42-5D00300*
42mm FlexC Collet System (Style DL)	—	V42-5DL05400*	V42-5DL05400*	—	V42-5DL05400*
65mm FlexC Collet System (Style A)	—	V65-5A01200*	V65-5A01200*	—	V65-5A01200*
65mm FlexC Collet System (Style D)	—	V65-5D00500*	V65-5D00500*	—	V65-5D00500*
65mm FlexC Collet System (Style DL)	—	V65-5DL05700*	V65-5DL05700*	—	V65-5DL05700*
4" Power Chuck	—	—	—	SCA-2000304-A24H	—
5" Power Chuck	—	SCA-2000305-A25H	SCA-2200305-A25C*	—	SCA-2000305-A25H
6" Power Chuck	—	SCA-2000306-A25H	SCA-2300306-A25C*	—	SCA-2000306-A25H
8" Power Chuck	—	SCA-2000308-A25H	O/A	—	SCA-2000308-A25H
10" Power Chuck	—	O/A	O/A	—	O/A
5" 3-Jaw Universal Manual Chuck	53B-5405-HB D	53B-5405-BCA5	53B-5405-BCA5	53B-5405-BCA4	53B-5405-BCA5
5" 4-Jaw Independent Manual Chuck	54B-5405-HB D	—	—	—	—
6" 3-Jaw Universal Manual Chuck	63B-5405-HB D	63B-5405-BCA5	63B-5405-BCA5	63B-5405-BCA4	63B-5405-BCA5
6" 4-Jaw Independent Manual Chuck	64B-5405-HB D	64B-5405-BCA5	64B-5405-BCA5	64B-5405-BCA4	64B-5405-BCA5
8" 3-Jaw A2-5 Manual Chuck	—	83A-5405-A25	83A-5405-A25	—	83A-5405-A25
10" 3-Jaw A2-5 Manual Chuck	—	13A-5405-A25	13A-5405-A25	—	13A-5405-A25
3" Spindle-mount Fixture Plate	53A-0008750-D	—	—	—	—
5" Spindle-mount Fixture Plate	55A-0008750-D	—	—	—	—
5 1/2" Spindle-mount Fixture Plate	—	A2-0008750-05	A2-0008750-05	—	A2-0008750-05
8 7/8" Spindle-mount Fixture Plate	—	A2-0008750-08	A2-0008750-08	—	A2-0008750-08
3 3/8" Collet-style Fixture Plate	1397-00-00	—	—	1397-00-00	—
4 3/8" Collet Style Fixture Plate	1399-00-00	—	—	1399-00-00	—
6 3/8" Collet-style Fixture Plate	—	1785-00-00	—	—	1785-00-00
210mm Slotted Face Plate (50mm thru)	—	CJ 1990200M	CJ 1990200M	—	CJ 1990200M
8.26" Slotted Face Plate (2" thru hole)	—	CJ 1990200E	CJ 1990200E	—	CJ 1990200E
170mm Slotted Face Plate (19mm thru)	—	—	—	RT 0007214A4	—
160mm Slotted Face Plate (25mm thru)	—	—	—	LI 0001990160M	—
6.229" Slotted Face Plate (1" thru hole)	—	—	—	LI 0001990160E	—
7" Slotted Face Plate (.437mm thru)	57A-0000692-D	—	—	—	—
8 7/8" Slotted Face Plate (.437mm thru)	—	A2 0000692-A9	A2 0000692-A9	—	A2 0000692-A9
10" Slotted Face Plate (1.5" thru hole)	—	CJ 000199020	CJ 000199020	—	CJ 000199020
12" Slotted Face Plate (2" thru hole)	—	RT 000690009**	RT 000690009	—	RT 000690009**
Spindle Adapter 16C-to-5C	—	CJ 00002835CA	—	—	CJ 00002835CA

\* Linkup and/or adapter required – please specify indexer model.

\*\* Riser Plate recommended

# Manual Index & Inspection Fixtures



HV-4  
HV-4N  
HV-4NX  
H-4

Manual index fixtures are used in both production and toolroom environments as a low cost, quick and accurate means of holding a workpiece and performing indexing operations. The tapered or threaded-nose spindles are hardened and ground. They accept all standard 5C collets, step chucks with closers, expanding collets, Dead-Length® collets and manual jaw chucks.

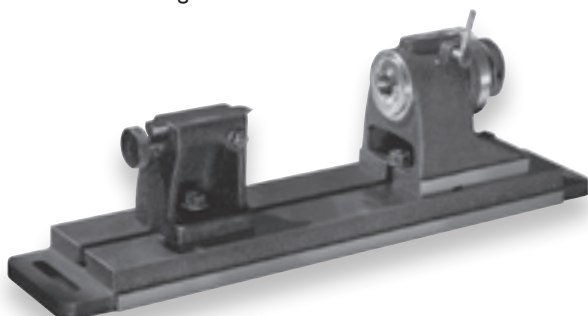
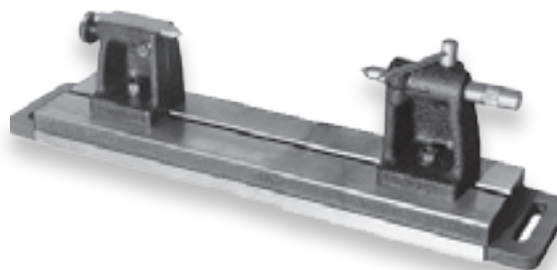
Manual Indexer	Part Number	Figure page 27
HV-4 <sup>A</sup> with Plain Spindle and 24-Hole Index Plate	HV-0000002-P4	1
HV-4N <sup>A</sup> with Threaded-Nose Spindle and 24-Hole Index Plate	HV-0000002-D4	1
HV-4NX <sup>A</sup> with Taper-Nose Spindle and 24-Hole Index Plate	HV-0000002-T4	1
H-4 <sup>B</sup> with 24-Hole Index Plate	HF-0000002-24	2
Index Plates	Part Number	Figure page 27
Blank Index Plate for HV Models	HV-9004138	3
20-Hole Index Plate for HV Models	HV-0004138-2A	4
24-Hole Index Plate for HV Models	HV-0004138-4A	5
Blank Index Plate for H-4 Model	HF-9004138	6
20-Hole Index Plate for H-4 Model	HF-0004138-20	7
24-Hole Index Plate for H-4 Model	HF-0004138-24	8

A - Used in horizontal or vertical positions.

B - Used in horizontal position only.

## Tailstocks and Inspection Fixtures

- The SB-4 Sub-Base with the tailstocks can be used as a bench center
- The L-4 Tailstock has a hardened and ground spindle which is lever-operated with a rack and pinion
  - Spindle is spring loaded to hold the center against the workpiece
  - Position lock is provided
- The hardened and ground spindle on the T-4 Tailstock is screw fed and can be locked in any position with a hexagon clamp bolt
  - Removable keys permit the tailstocks to be applied directly to any machine table
- SB-4 Sub-Base accepts various combinations of fixtures such as the HV and H-4 series of indexing fixtures



Tailstocks and Sub-Base	Part Number	Figure
L-4 Tailstock with Rapid Movement Lever	HV-0000056	9
T-4 Tailstock with Screw Adjustment	HF-0000056	10
SB-4 Sub-Base	HV-0001996-A	11

## Manual Indexer Standard Features

- Choice of spindle nose
  - HV-4 plain
  - HV-4N threaded nose
  - HV-4NX taper nose
- Includes 24-hole index plate
- HV models can be used horizontal or vertical

## Optional Features

- Blank index plates
- 20-hole index plates
- 24-hole replacement index plates

## Workholding Capacities

(threaded and taper nose indexers only)

Collets – Round (max. capacity)	1 1/16" (26.98)
Collets – Hex (max. capacity)	29/32" (23.01)
Collets – Square (max. capacity)	3/4" (19.05)
Step Chucks – Regular Depth	up to 6" (152.4)
Step Chucks – Extra Depth	up to 6" (152.4)
3-Jaw Chuck	5" (127)
3-Jaw Chuck	6" (152.4)
Sure-Grip® Expanding Collets	1/8" - 3" (3.17 - 76.2)
Fixture Plate – Spindle Mount	3" (76.2)
Fixture Plate – Spindle Mount	5" (127)
Fixture Plate – Collet Style	3 3/8" (85.72)
Fixture Plate – Collet Style	4 3/8" (111.12)
Slotted Face Plate (diameter)	7" (178)
Collet Stops for part positioning	YES

Figure 1  
HV-4, HV-4N, HV-4NX  
Dimensions:

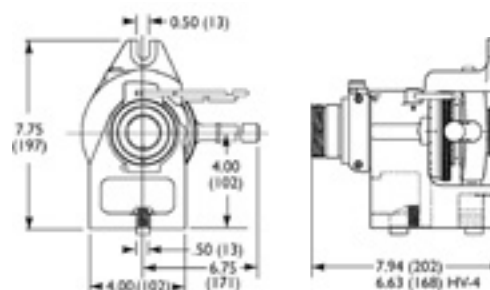
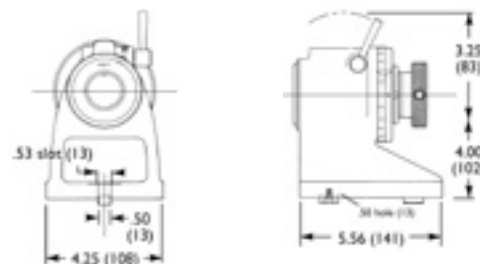
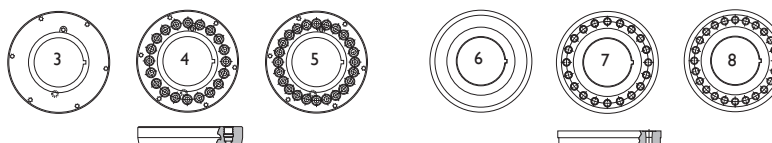


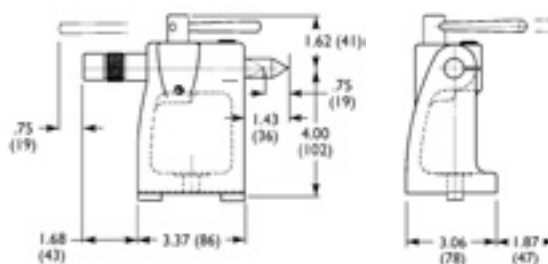
Figure 2  
H-4 Dimensions:



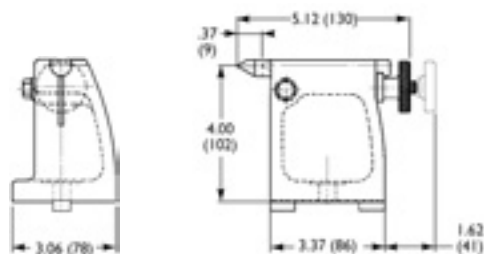
Figures 3 - 8 Indexer Plate Configurations:



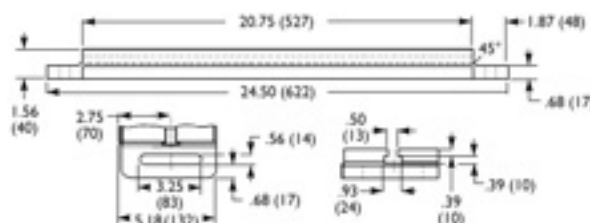
Figures 9  
L-4 Dimensions:



Figures 10  
T-4 Dimensions:



Figures 11  
SB-4 Dimensions:



(millimeters in parentheses)

## HARDINGE COMPANIES WORLDWIDE

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, Usach and Voumard brands to the Hardinge family. The company also designs and manufactures Bridgeport machining centers and other industrial products for a wide range of material cutting, turnkey automation and workholding 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.



### North America

Hardinge Inc.  
General Information: 607-734-2281  
Sales Fax: 607.734.8819  
Workholding Fax: 607.734.3886  
Service: 800.424.2440  
[www.hardinge.com](http://www.hardinge.com)

### Canada

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

### China

Hardinge Machine (Shanghai) Co. Ltd.  
Hardinge China Limited  
Tel: 0086 21 38108686  
Fax: 0086 21 38108681

Hardinge Precision Machinery (Jiaxing) Co., Ltd.  
Economic and Technology Development Zone  
Tel: 0573-82601088  
Fax: 0573-82601988

### Germany

Hardinge GmbH  
Tel: (49) 2151 496490  
Fax: (49) 2151 4964999

### Taiwan

Hardinge Machine Tools B.V.  
Tel: 886 49 2260536  
Fax: 886 49 2252203  
[cs@hardinge.com.tw](mailto:cs@hardinge.com.tw)

### Switzerland

L. Kellenberger & Co. AG  
Tel: +41 (0) 71 242 91 11  
Fax: +41 (0) 71 242 92 22  
[info@kellenberger.com](mailto:info@kellenberger.com)  
[www.kellenberger.net](http://www.kellenberger.net)

L. Kellenberger & Co. AG  
Tel: +41 (0) 32 344 11 52  
Fax: +41 (0) 32 341 13 93  
[info@kellenberger.com](mailto:info@kellenberger.com)  
[www.kellenberger.net](http://www.kellenberger.net)

### United Kingdom

Jones & Shipman Hardinge  
Tel: +44 (0) 116 2013000  
Fax: +44 (0) 116 2013002  
[info@jonesshipman.com](mailto:info@jonesshipman.com)  
[www.jonesshipman.com](http://www.jonesshipman.com)



All specifications subject to change without notice.  
All marks indicated by ® and ™ are trademarks of their respective owners. #2372L • Litho in USA • ©Hardinge Inc.  
• October 2014