



TURNING MILLING GRINDING WORKHOLDING ROTARY

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

# Hardinge Workholding – Elmira, New York



**Acme-Gridley and New Britain S16 collets.**

From bar stock to finished product – 100% in-house

Individual care goes into every collet, feed finger and pad, at each manufacturing process, from handling the initial bar stock to polishing and laser etching. Generations of skilled machine operators have taken part in the many important processes of producing a proper hardened and ground collet. Hardinge has been manufacturing workholding and industrial products for all brands of lathes, mills and grinding machines for over a century. Their process expertise, precision and accuracy provides a workholding product that is world-renowned.



A Hardinge Brown & Sharpe collet requires more spread than a lathe collet. The exaggerated spread in this photo shows the incredible flexibility of a Hardinge collet due to the multiple processes that Hardinge uses to provide the best value on the market.

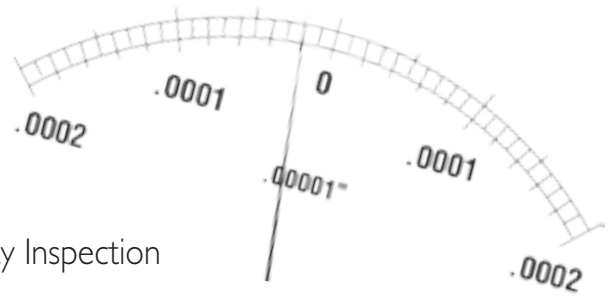
## Hardness, Spring and Spread

A very important factor in manufacturing collets, feed fingers and pads that are long lasting and provide the performance you expect is the raw material used and the heat treat process control system to guarantee proper hardness and tempering. Collets and feed fingers are prone to breakage where the hardened area meets the tempered area. Hardinge heat treat processes are planned to eliminate breakage on critical design areas to provide a long-lasting product that is not subject to breakage and wear. Hardinge collets are 5 to 7 points of Rockwell "C" harder than competitor's products to provide a longer lasting product. The harder the collet, the longer the life, reducing collet changeover and downtime associated with collet changing. However, if a collet is too hard, it could be brittle and break. It is the combination of hardness, spring and spread that Hardinge has perfected over the years at their Elmira, New York facility.



*Did you know? Many more hours go into the preparation of the material than go into the machining of the collet size and shape.*

# Hardinge Workholding — Elmira, New York



## Collet Concentricity Inspection

Concentricity is measured in terms of Total Indicator Runout (TIR) using a Hardinge Super-Precision® spindle. A gage pin is inserted in the collet and the TIR is measured at a set distance from the spindle face depending on the order hole size using a .00001" dial indicator. You can be assured of a qualified inspection. Standard collets will run .0005" or better, while special accuracy collets will run .0002" or better. This assures that the collet will hold your part consistently during your specified machining operations.



Hardinge checks the accuracy of the nose angle of a headstock center using an optical comparator measuring device.



Laser-etching marks master collet pads in the B-pad cell at Hardinge.

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## Machine Tool Builder

Hardinge has provided metalworking leadership to the world for over a century. They have developed into a global leader with manufacturing facilities on three continents and a presence in thirty countries.

Hardinge continually integrates new and advanced technologies into their products and services to assist you in enhancing your operations. Hardinge manufactures a broad range of machines for high-performance turning, vertical turning with integrated automation, grinding, vertical machining and of course the industry's premier line of workholding and industrial products in Elmira, New York.

Hardinge is your unparalleled resource for technology, information, products and performance — your performance.



## Value in Workholding

Team up with the Hardinge Workholding Group to add value to your material-cutting processes and assembly operations. Work with dedicated sales, design and application engineers to solve difficult process problems, or choose your standard collet or step chuck knowing that quality and reliability comes with the Hardinge name. Experience value in longer lasting products, value in machine uptime, value in workpiece accuracy and value in your customer's satisfaction.

Hardinge has explored and defined the avenues of materials and processes to perfect methods for gripping metals, wood, plastic and glass; holding pins, electronic components, pill capsules and pipes; fastening tops on perfume bottles; crimping; and expanding plastic tubing.

Leave the technical terms and expertise to Hardinge, or browse the abundance of Hardinge educational resources that can help you recognize your specific requirements or motivate changes to an existing process. Hardinge offers comprehensive literature, instruction manuals and parts lists to ease the machine operator into a new product or concept.

Shop online at [www.hardingetooling.com](http://www.hardingetooling.com) at any hour, any day of the week. Placing an order, getting pricing or product availability is safe and convenient and requires no password.

Hardinge is a company that excels in performance and reliability, eliminating wasted time, inventory and cost. They are continually improving all aspects of their business to make themselves and their customers more competitive.

# Collets for Lathes, Mills, Grinding Machines and Fixtures



**Precision grinding of the order hole takes place on a Tripet grinding machine in the 5C cell. Collets are then laser etched in the same work cell.**

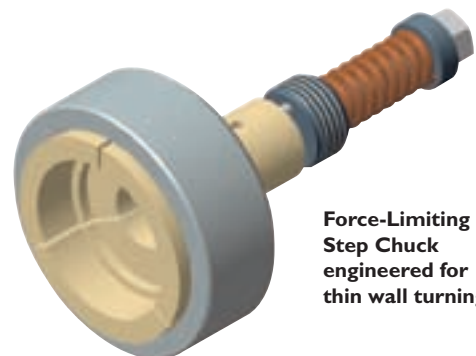
## Predictable Performance

Hardinge is the world's largest manufacturer of spindle tooling. With over a century of experience, they are a trusted partner for all of your workholding applications. Hardinge collets are renowned for their accuracy and durability with the best total indicator reading (TIR) in the industry. Choose from a large inventory of 5C, 16C, 20C, 25C and 3J collets, emergency collets and step chucks, as well as B42 and B65 stationary collets. Let Hardinge solve your workholding problems such as hard-to-grip shapes and surfaces, part length control, thin-wall turning, etc.

## Micro-Machining and Laboratory Workholding

Hardinge supplies D-style, WW and 3C collets and step chucks for instrument lathes, turret lathes and micro-drilling machines for the medical, dental, electronic, watchmaking, model engineering and related industries.

- Hardened and Ground Collets
- Special Accuracy Collets
- Emergency Collets
- Extended-Nose Collets
- Step Collets
- Long Bearing Drill Collets
- Lensmaker Collets
- Step Chucks and Closers
- Force-Limiting Step Chucks
- Collet Stops
- Dead-Length® Collets
- Dead-Length® Emergency Step Chucks
- Dead-Length® Collet Ejector Stops
- Dead-Length® Spider Stop Step Chuck
- Style "S" Master Collets and Pads
- Expanding Collets
- B42 and B65 Stationary Collets
- Manual Chucks
- Fixture Plates



**Force-Limiting Step Chuck engineered for thin wall turning.**

# Collets for Automatic Screw Machines and Rotary Transfer Machines



Stock delivery of a variety of styles, shapes and sizes for all brands.

## Collets for Automatics

Hardinge manufactures workholding solutions for EuroTurn, Gildemeister, Index, Schütte, Tornos Multideco, Acme-Gridley, Brown & Sharpe, Davenport, New Britain, and most other brands of automatic lathes. Products include solid collets, burring collets, feed fingers, bushings, master collets and pads. Fractional and metric sizes available for European multi-spindle machines.

## Turret Lathe Collets

Hardinge manufactures collets for Bardons & Oliver, Foster, Gisholt, Jones & Lamson, Morey, Pratt & Whitney, Warner & Swasey and most other brands of turret lathes. Choose from solid collets, master collets & pads and emergency collets & pads.

## HQC® Quick-Change Collet Systems

Change from one size collet to another size in less than 20 seconds! True parallel clamping minimizes stock "push back" and requires less draw bar force to achieve the same gripping capability as conventional collets. Less draw bar force greatly reduces the breakage of closing fingers and pins common when the bar varies beyond the range of a standard solid collet. Systems are available for Acme-Gridley, Cone, New Britain and Wickman machines.



## Hydromat Collets

Hardinge offers stock delivery on standard round, hex and square sizes. Non-round stock, special shapes and stepped-hole collets are available. All hex and square collets have two keyways, one to the corner and one to the flat, for synchronization. Custom collet manufacturing is available for Hydromat and other rotary transfer machines.

## ID Pick-off Collet Assemblies

Hardinge engineers ID pick-off collet assemblies for Euroturn, Gildemeister and Tornos Deco that fit in the standard OD pickoff attachments to save time and money, eliminating the purchase and installation of a costly ID pickoff attachment from the machine builder.

# Sure-Grip® Expanding Collet Systems

## Parallel Gripping

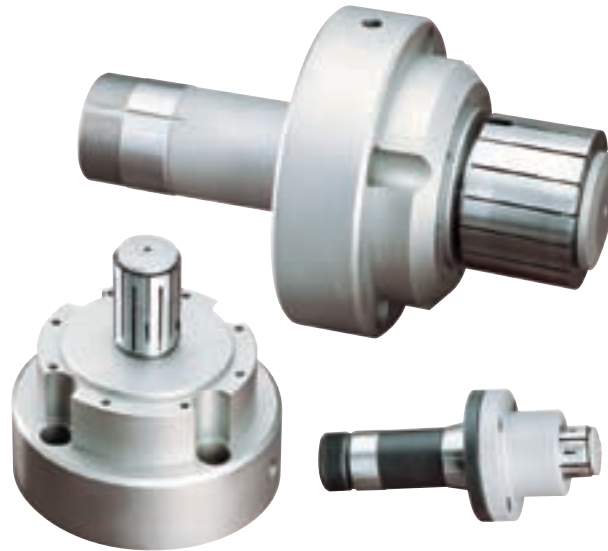
The Hardinge® Sure-Grip Expanding Collet is a double-angle design that assures true parallel gripping of the workpiece with maximum torque. Generally, special restrictors are not needed when gripping a workpiece that is shorter than the collet's bearing diameter.

## Dead-Length® Work Stop

Hardinge is the expert when it comes to exact part length control. They patented the first Dead-Length 5C and 16C collets used for high-production manufacturing. The Sure-Grip Expanding Collet has true part length control built into its design. The workpiece locates against the face of the arbor or the face of the work stop to ensure no longitudinal end movement. The collet draws the workpiece firmly against the stop, producing an extremely stable part. The results are heavier cuts, better surface finishes, and closer tolerances. Long parts can be easily machined due to this added stability.

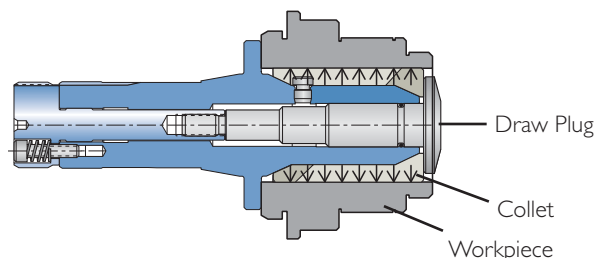
## Specials

Sure-Grip Collets can be custom manufactured for special applications for spindles, sub-spindles and mill tables. Pick-off collets are frequently engineered for Swiss and multi-spindle machines. Splined or serrated surfaces can be made for special grips and shapes, while recessed draw-plug styles might solve your short gripping problem.



Take advantage of these benefits on your next ID gripping job to save you time and money...

- Instant centering of the arbor—no adjustment needed after mounting
- Quick changeover
- Wide gripping range for each collet
- True parallel gripping even when gripping on half the collet body
- High gripping force
- Light gripping on small parts with bores down to 1/8" (3.175mm)
- Built-in safety stop to prevent the collet from overexpanding
- Exact part length control
- Consistency in collet capacity for different spindle styles (interchangeable collets)



Sure-Grip Expanding Collet Systems are available for all brands of machines — collet-style, spindle-mount style and center arbors.

The gripping range of each collet is  $+0.015"$  to  $-0.001"$  ( $+0.38$  to  $-0.025\text{mm}$ ) from its specified size.



Hardinge manufactures highly accurate and reliable tools to produce small parts for the medical and aerospace industries — headstock collets, pick-off collets, carbide guide bushings and bar loader collets.

Dedicated manufacturing teams and work cells are established to provide 24-hour delivery of collets and guide bushings for Citizen, Hardinge, Star, Tornos, Traub and Tsugami Lathes — as well as for cam-operated lathes.

### Swiss-Type Collets

Hardinge Swiss-type Collets are ground to precise size and TIR to meet precision machining requirements with a standard accuracy that rivals the industry! Every collet and guide bushing is inspected on a Hardinge Super-Precision® (.000015" TIR) headstock before reaching the stockroom. Hardinge manufactures to Swiss quality, in the USA, for all brands of Swiss-style machines and cam-operated lathes. Extended-nose Collets feature added nose length, flat or tapered, for doing pick-off work or to compensate for tooling interferences.

An **Emergency Collet** may be used when a standard collet is not in your current inventory. It can be machined to the desired bore size and used until a hardened collet arrives. Emergencies are also available in extended-nose for added nose length. The head of the collet is heat-treated to 40 Rockwell for easy machining.

# Swiss-Style Collets, Guide Bushings and Bar Loader Collets



**TSG-20R guide bushings are turned, threaded and bored on a Hardinge QUEST® TwinTurn® 65 twin-spindle, twin-turret CNC lathe with bar feed. Simultaneous machining is one of the many methods Hardinge uses to increase productivity.**

## Guide Bushings

Hardinge round Swiss Guide Bushings are carbide-lined to keep the stock clean and unmarked. Specials are available in hardened steel, Meehanite lining, angular & zig-zag slotted and extruded shapes. Escomatic counter collets and guide bushings can be manufactured to order.



## Bar Loader Collets

Hardinge manufactures bar loader collets for FMB, LNS and Robobar bar feeders. Collets are available for other brands on request.

## Tool and Tap Holders and Collets

Hardinge offers a complete line of toolholders, tap holders, toolholder collets, tap collets and bushings that can be used on Swiss-type lathes. You'll find reliable and economical solutions for back-end, sub-spindle and end-working slides.



## Custom ID Pick-off Collets

Custom expanding pick-off collets may be the solution for workpieces with delicate outside threading or a thin wall, and may eliminate the time and cost involved with second operations. A built-in spring ejector will drop each part into a basket or conveyor for automated parts process.

# HQC® Quick-Change Collet Systems



The precision-engineered HQC® Quick-Change Collet System is designed for use on automatic screw machines, Hardinge collet-ready CNC lathes and all other chuck-style CNC lathes with A2-5, A2-6 and A2-8 spindles.

## Greater Gripping Force & Faster Machining Times

Since solid collets and master collets are of a one-piece construction, considerable force is required to flex the leaves of a solid collet and bring the gripping surface in contact with the workpiece OD. Because there are no leaves in the HQC system, additional gripping pressure is directly applied to the workpiece. Higher feed rates and higher spindle speeds are possible. Because of the extra gripping force, tool life increases and parts come off the machine quicker.

## Ideal for Bar Work

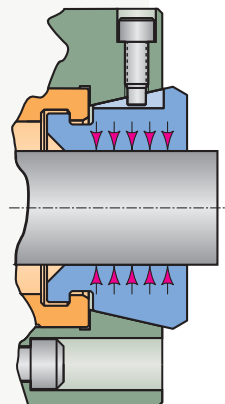
The HQC Quick-Change Collet System has a working range of  $\pm 1/64$ " (.396 mm) for under a 2" diameter; and  $\pm 1/32$ " (.793mm) for a 2" diameter and over; when used on automatic screw machines and a range of  $-1/64$ " to  $+0.008$ " on CNC lathes. This unique feature allows you to replace the solid and master collets currently used for bar work.

## Quick-Change in 20 Seconds or Less

Hardinge® HQC Quick-Change collets can be changed from one size collet to another size in less than 20 seconds. This is accomplished by using a manual or hydraulic changing wrench. Power units are available for the hydraulic wrenches.

## Increase Productivity

Replace your 3-jaw power chuck with the HQC Quick-Change Collet System. The reduction in weight and the unique, efficient design of the HQC System allow you to increase the spindle rpm without any concern for centrifugal forces. Hi-tech cutting tools, along with faster speeds and feeds, can now be used to boost your productivity beyond your previous experience. Chucking forces are higher than jaw chucks and even higher than solid standard and master collets. The interferences associated with jaw chucks are nonexistent with the clean contours of the HQC Quick-Change Collet System.



## True Parallel Gripping

There is no collet shank. Therefore, the collet segments remain parallel to the stock even when there are variations in the stock size. Parallel clamping minimizes stock "push back" and requires less draw bar force to achieve the same gripping capability as conventional collets.

# HCAC<sup>®</sup> Collet Adaptation Chucks



## Increased Productivity, Capability and Control when compared to 3-Jaw Chucks

- Faster job changeover using collets—5C, 16C, 3J, 22J, 35J, S15, S20, S26, S30, #21 B&S, #22 B&S, B42, B60, DIN 90 and many more
- Higher spindle speeds for reduced cycle times
- More work envelope to machine longer workpieces
- Achieve higher precision
- Interchangeable Style "S" master pads accommodate a wide range of workpiece sizes and configurations
- Exact part length control
- Improved concentricity for optimum part roundness

Hardinge HCAC Collet Chucks offer collet capability for most brands of jaw chuck lathes.

Increase productivity, capability and control.



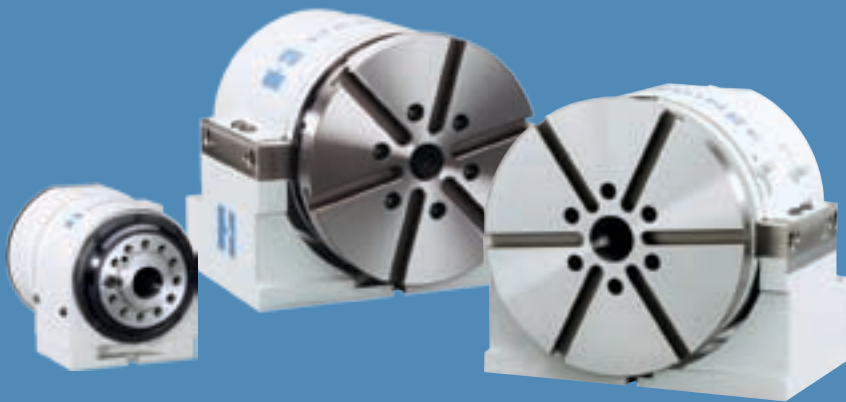
## OD Sure-Grip<sup>®</sup> Dead-Length<sup>®</sup> Collet Chucks

Hardinge combines Sure-Grip parallel gripping technology, Dead-Length exact part length control and a wide gripping range into one collet chuck to increase your productivity. Available in 42, 65 and 90mm sizes for A2-5, A2-6 and A2-8 spindle noses.



## Dead-Length<sup>®</sup> Collet Chucks

The Hardinge A2-5 Dead-Length Collet Chuck offers exact part length control, maintains a .001" TIR and incorporates a nonstick feature for increased productivity. Available for most brand lathes with an A2-5 spindle nose.



Zero Backlash, Gearless, Direct-Drive Rotary Systems

## Zero Backlash, Gearless, Direct-Drive Rotary Systems

Hardinge offers high speed and super-precision positioning and repeatability to the product mix. A wraparound torque motor provides ZERO backlash and high servo stiffness for rapid bidirectional response. Take advantage of this affordable technology for a competitive edge in the precision parts machining industry!

—DD100, DD200, DD300



Enhanced 5C<sup>2</sup> Rotary Systems

## 5C<sup>2</sup> Rotary Systems

A beefy, dual-bearing spindle supports heavier radial and axial loads. Industry compatible for drop-in replacement. This 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 and reliable performance!

—Singles, Duals, Triples and Quads



Flexible, Quick-change 16C<sup>2</sup> and 3J<sup>2</sup> Rotary Systems  
2-Axis 5C<sup>2</sup> Rotary Systems

## 16C<sup>2</sup> and 3J<sup>2</sup> Rotary Systems

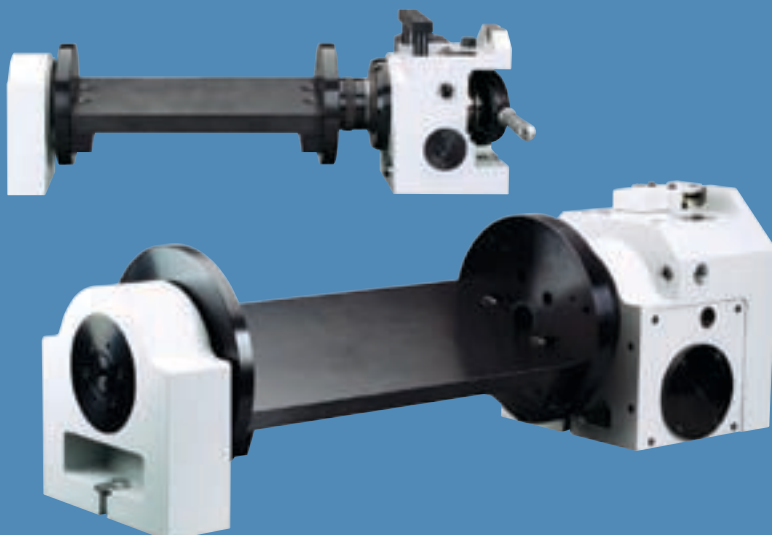
Unique to the industry, the 16C<sup>2</sup> and 3J<sup>2</sup> rotary systems meet the demand of larger part positioning with complete workholding flexibility. This affordable unit has an A2-5, 16C spindle to accept collets, step chucks, expanding collets, chucks and face plates.

—Singles, Duals, and Triples

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

Here is a solution to complex 5-axis machining that can eliminate second and third operations in your shop! The tilting A-axis is the standard 16C<sup>2</sup> rotary unit while the rotating B-axis is the standard 5C<sup>2</sup> rotary unit. When used on a 3-axis VMC this 2-axis positioning system will eliminate the need for sine plates and other expensive fixtures for angular milling.

—Singles, Duals, Triples and Quads



Multi-part Setup 5C<sup>2</sup> and 16C<sup>2</sup> Trunnion Products

## Trunnion Products

Hardinge Trunnion Systems have super robust bearing supports. Choose from plate or cube style trunnions. Tool up with Hardinge collet blocks for multiple part processing to increase output!

—5C<sup>2</sup> and 16C<sup>2</sup> Plate, 16C<sup>2</sup> Cube

# Rotary Systems



## 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.

—Standard, Enhanced and Direct-Drive models

Expect **MORE** from your Rotary System

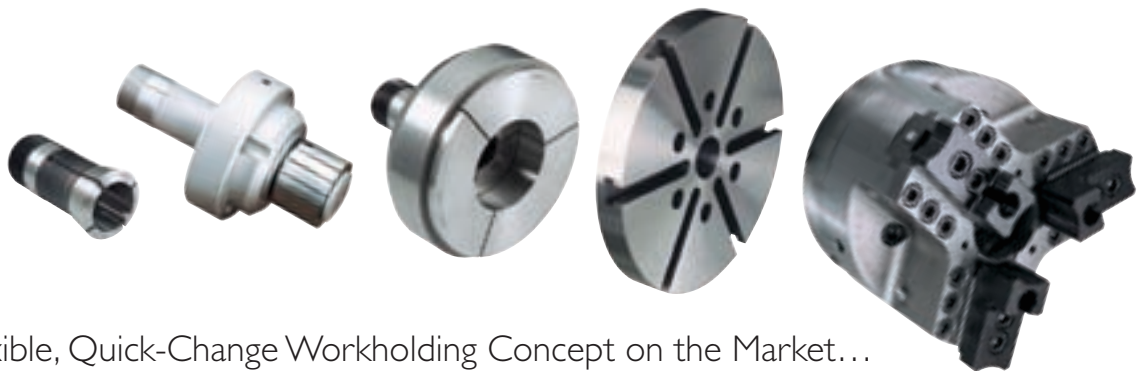
**MORE** Productivity

**MORE** Accuracy

**MORE** Flexibility

**MORE** Speed

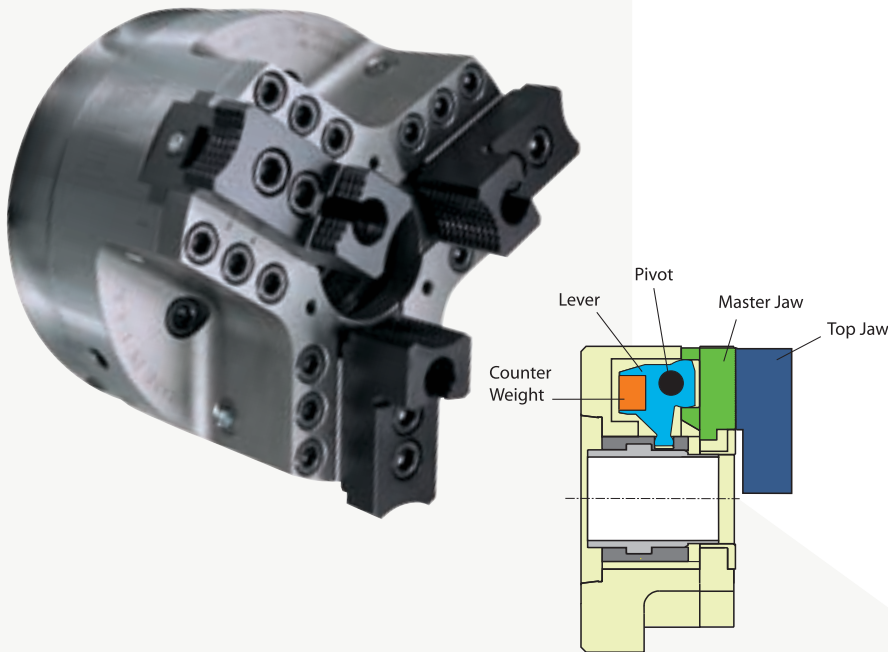
*Hardinge provides MORE to meet the needs of a demanding, highly-competitive precision parts machining industry...*



The Most Flexible, Quick-Change Workholding Concept on the Market...

Hardinge's A2-4 (5C) and A2-5 (16C) spindle nose designs allow quick change between collets, expanding collets, step chucks, 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.

# Sure-Grip® 3-Jaw Power Chucks and Jaws



## Lever-Operated and Fully Balanced

All Sure-Grip Power Chucks are lever-operated, counter-centrifugal and dynamically balanced. This enables you to continually operate your CNC lathe at higher spindle speeds and feed rates with less concern for loss of jaw force normally associated with other manufacturer's chucks.

## FEA Design Analysis

Finite Element Analysis (FEA) techniques are used to design and build Sure-Grip Chucks to ensure optimum rigidity and fatigue life. Unique design software accurately depicts the structural deflections, stress levels, thermal response and vibration response of the assembled components.

Extreme case loadings are modeled in FEA to determine the effects. This technique fine tunes the engineered design and aids in defining operating specifications while verifying the chuck life expectancy.

## Direct Mount

Sure-Grip Power Chucks mount directly to ANSI A2-4, A2-5, A2-6 and A2-8 spindles, eliminating the added tolerance buildup when using special adapter plates. Sure-Grip Power Chucks come standard with 1.5mm x 60° serrated master jaws designed to ISO specifications.

Hardinge Sure-Grip Power Jaw Chuck parts are hard milled on a special accuracy Hardinge VMC700 vertical machining center.



Hardinge provides jaws for all brands of power and manual chucks.

## Quick-Change Sure-Grip Chucks

Maintain accuracy while increasing productivity with the Hardinge *quick-change* chuck. The revolutionary patented top jaw design provides top jaw change with the simple turn of a single locking bolt in less than one minute – much faster than conventional jaws! The Hardinge-designed safety feature utilizes centrifugal force and a unique locking system, eliminating the possibility of the *quick-change* jaws coming off during operation. 6", 8", 10" and 12" chucks accept standard jaws.

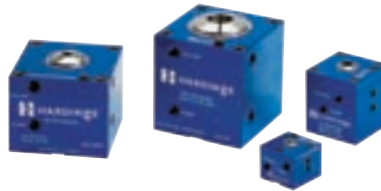
# Collet Blocks and CNC Tooling



## 1C, 3C, 5C, 16C, 3J, 22J and 35J Pneumatic and Hydraulic Collet Blocks

Hardinge has expanded their line of modular collet blocks to include a larger variety of standard collet sizes so that you can utilize your existing collet inventory.

1C and 3C units operate on pneumatic or hydraulic service. They have a dead-length design for consistent part length control and are ideal for smaller parts for the medical, aerospace and defense industries.



## Pneumatic 5C Collet Block

Hardinge's air-open, spring-to-close collet block has a fail-safe design to maintain concentricity, without scrap, if loss of air occurs. The 5C threaded-nose accepts standard 5C tooling such as collets, expanding collets, step chucks and manual chucks. Use vertically or horizontally for machining or assembly operations.



## Pneumatic 16C Collet Block

The 16C collet block is pneumatically actuated with a manually-operated valve. The A2-5 spindle nose accepts closers for step chuck work up to 6" (152.4mm) diameter—collet stop required. Custom multi-unit fixturing is available.

## CAT-V and BT-Flange Toolholders

At Hardinge, their mission is to provide the best value in workholding products to meet demanding production levels and produce the quality of parts required in a competitive industry. When it comes to the tool holder, value is all about precision and reliability. Hardinge's standards of performance are high to help you achieve the level of accuracy required for automotive, medical, aerospace and the electronic industries.

Hardinge CNC tool holding systems are precision ground to ensure a stable holder with the best possible TIR, resulting in better surface finishes, longer tool life and more accurate workpieces. Their AT-3 (and better) accuracy for the shank taper on all tool holders exceeds ANSI Standards by a minimum of 35%.

Hardinge offers a full line of tool holders for BT and CAT-V flange machine spindles. Styles include collet-style, shell mill, semi-flush slitting saw, stub arbor, tapping (floating and rigid), boring tool, Jacobs chuck, Morse taper, and blanks.

Hardinge is unique as a workholding product manufacturer. They have over a century of experience in manufacturing machine tools as well as the tooling that they use. Hardinge tool holding systems are used in the production of their own machine components as well as in their own workholding production cells. They put Hardinge tool holding systems to-the-test around the clock in their own manufacturing facilities.

Hardinge is an ISO-certified facility with a Total Quality Program focusing on continuous improvement to meet the demanding needs of their customers.



**R8 ER-style tool holding system for knee mills.**

# Tool Holders, Toolholder Collets and Bushings



ER-Style Collets & Tap Collets

ER-Style Collet Holders

DA Double-Angle Collets & Holders

TG-Style Collets

HDO-Style Collets

HF-Style Collets

Cincinnati Monoset Collets

1C Collets & Holders

Hardinge TT Tap Collets & Holders

GK Self-Feeding Tap Collets & Drivers

Bilz-Style Quick-Change Tap Collets

HDB Bushings

HDC Bushings

HDZ Bushings

## Tool Holders and Toolholder Collets

Single- and double-angle toolholder collets feature a multi-slot design to provide maximum gripping force for efficient "push-back" control. This control helps prolong tool life which reduces machine downtime to produce more pieces per hour. All locating surfaces are precision ground to assure extremely close tolerances. Most of these collets feature a compression range of up to  $\frac{1}{64}$ " (.3968mm). Hardinge's manufacturing process ensures that each collet will have a TIR (Total Indicator Reading) of .0005" (.0127mm) or less. Styles include ER, DA, TG, HDO and HF. Choose from a selection of ER-Style tool holders and double-angle extension tool holders. Standard-style toolholder collets such as Cincinnati Monoset and Hardinge 1C collets are available.

## Quick-Change Tap Collets and Holders

Quick-Change Tap Collets are used throughout the industry for mounting into Bilz-style and other popular tapping holders. Many taper-flange milling machine tap holders use these collets. The quick-change feature allows changing the tap without removing the collet from its holder. This feature ensures precise length control from one tap to another of the same length.

## Hardened and Ground Bushings

HD-Style bushings are hardened and precision ground inside and out. The hardness and resiliency manufactured into Hardinge® bushings make them the longest lasting and most accurate bushings in the industry. HDB, HDC, and HDZ bushing styles are available.

# Custom Application Manufacturing



You can't always get by with an off-the-shelf collet or workholding device. As a matter of fact, sometimes custom-made could save you money as well as setup and cycle times.

Collets, expanding collets, feed fingers, step chucks, special accuracies, special shapes and fixturing are some of the common products made daily at Hardinge. Hardinge specializes in solutions for extruded stock, non-round parts, eccentric, off-center and stepped parts. Hardinge will work closely with you to solve your individual needs

while working within your parameters. The Design and Application Engineers have over a century of combined experience. Top-of-the-line machine tools and dedicated, highly-skilled machinists can help expand your capabilities. Wire and Ram (EDM) electrical discharge machines allow custom collet shapes and stepped-holes. Precision grinding machines, milling machines and CNC lathes are maintained in top form for fast, dependable throughput.

- Angular Slotted and Zig-Zag
- Assembly Production
- Bearing Relief
- Customized by Application
- Custom Serrations
- Dead-Length® Step Chucks
- Double-Head
- Expanding Collets / Internal Gripping
- Extended Nose
- Extruded
- Flat Face
- Force-Limiting Step Chucks
- High Production Machines
- Off-Center, Eccentric
- Oversize Step Chucks and Closers
- Over-The-Shoulder
- Round Off-The-Spindle Fixturing
- Special Material Gripping
- Special Shapes & Accuracies
- Stepped, Single & Multi-Stepped
- Synchronized Collets
- Tapered
- Threaded



**Submerged ram EDM (electrical discharge machining) removes material via an electrode – ideal for stepped-hole collets.**



**Special-shaped through-hole is being cut using a wire EDM (electrical discharge machine).**

# Custom Application Manufacturing

Specials are manufactured to rigid specifications, including material, proper heat treat and machined accuracy. Hardinge will work with you for the fastest possible delivery time to meet your deadline. Quite often a stock item can be altered to meet your requirements.

## Specialty and High Production Machines

No job is too complex or unusual! Hardinge's team of experts can provide an accurate and reliable solution while minimizing your setup and handling without compromising the integrity of your machine. You'll experience less breakage and wear with Hardinge workholding products...and that means more uptime on your machine!

- Hold pins and electronic components inserted on boards
- Hold pill capsules for assembly
- Hold pipes for bending into tail pipes and bumpers
- Fasten tops on perfume bottles
- Crimping with expanding collets
- Hold engine valves for grinding
- Expand plastic tubing
- Hold long delicate glass tubes



Master pads made from Nylatron to eliminate marking the workpiece.

## Non-Typical Workpiece Materials

Often it is necessary to hold a soft or brittle workpiece, a part that cannot be marked or scratched, or a thin-walled part. Hardinge can provide a gripping solution for all types of workpiece materials.

Special Collets are available to hold glass rods, optical lenses, pill capsules, plastics and wood. Hardinge has experience with all types of materials including brass and aluminum extrusions, castings and die castings.



Hardinge Design and Applications Engineers have over a century of combined experience

State-of-the-Art design technology

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Collets for Automatics, Turret Lathes & Rotary Transfer Machines

Tooling for Grinding Machines

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HQC® Quick-Change Collet Systems

Sure-Grip® Expanding Collet Systems

HCAC® Collet Adaptation Chucks

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