

HARDINGE WORKHOLDING

Custom Workholding Solutions Provider



800-843-8801
WWW.HARDINGE.COM



Custom Design and Manufacturing

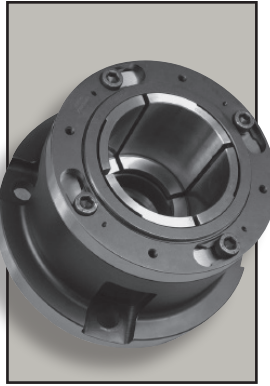
Introducing a productivity and solutions guide for custom-manufactured workholding products. Over the next several pages you'll see remedies to problems you may relate to, such as out-of-round parts, odd shapes, hard-to-grip materials, geometric bar stock, unusual or difficult process problems and non-traditional applications listed below.

- Production Assembly
- Pharmaceutical Capsules
- Glass Rods & Lenses
- Fiber Optic Components
- Friction Welding
- Munition Crimping & Forming
- Plastics
- Bottle Cap Crimping
- Cable Crimping
- Pipe Bending

Hardinge operates three shifts manufacturing non-standard products that they call **SPECIALS**. Common **SPECIALS** include custom collets, expanding collets, feed fingers, step chucks, special accuracies, special shapes and fixturing. Hardinge specializes in solutions for extruded stock, non-round parts, eccentric, off-center and stepped parts.

A large portion of the manufacturing facility is dedicated to custom manufacturing of traditional and non-traditional **SPECIALS**. Design and Applications Engineers will work closely with you to solve your individual needs while working within your parameters. For generations, Hardinge **SPECIALS** have been the choice of experienced machinists, manufacturing engineers and forward-thinking manufacturers around the world.





Large Diameter Chucking

Large diameter (110mm) turning application on ANSI, JIS, DIN, and ISO spindle configurations on a standard chuck-style lathe. Hardinge Sure-Grip® true parallel gripping design with part length control. Ideal replacement for a jaw chuck to improve precision.

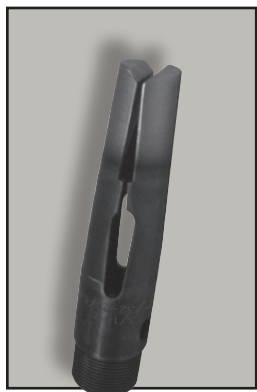
Ref: #T-001



Low-cost Pick-off Alternatives

Collet assembly fits in Euroturn OD pickoff attachment. Eliminates need to buy costly ID pickoff attachment from machine builder. Tornos Deco and Gildemeister assemblies available.

Ref: #T-005



Versatile Feed Fingers

Mill thru end feed fingers accept a family of geometric bar stock sizes. A two-split design accepts stock in rectangular, square, hex and octagon with parallel flats of same dimension.

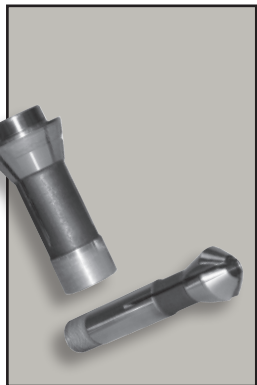
Ref: #T-002



Hydromat Quick-Change

Quick change capability for Hydromat rotary transfer machines. Bayonet style cam lock replaces standard collet threads.

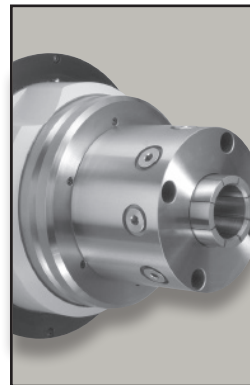
Ref: #T-006



Counter Collets for Coil Feed

Hardinge provides small diameter counter collets for Escomatic and other brand coil-feed turning centers and machines.

Ref: #T-003



Shape-Compliant Chuck

Multiple gripping locations with independent travels solve the problem of maintaining high-accuracy OD and ID concentricity's on out-of-round and delicate parts. Exclusive to Hardinge CNC lathes.

Ref: #T-007



Proper Grip of Extruded Shapes

Hex, square, rectangular, double-D and other geometric shapes can be manufactured in thru-collet, step collet and off-center variations. Collets, guide bushings and feed fingers available to specification.

Ref: #T-004

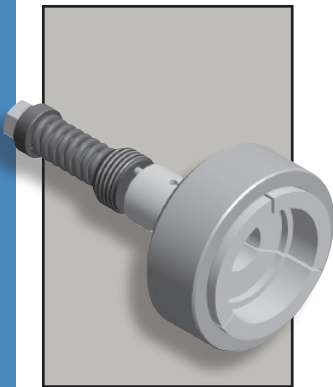


Gear Hobbing Interference Fit

Ball cage design for interference-fit applications such as gear hobbing. Extremely accurate centering of the gear with manual loading and unloading.

Ref: #T-008

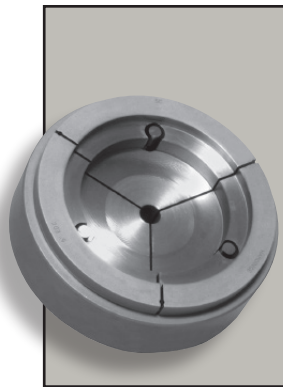
Turning Applications



Grip without Distortion

Built-in force control safely grips delicate or thin wall materials without crushing or distorting the workpiece. Maintains ID and OD concentricity. For use in Hardinge collet-ready machine spindles.

Ref: #T-009



Pinned Step Chuck

The part is located against pins for exact part length control. The part will not move even when there is a variation in the chucking diameter.

Ref: #T-013



Bar Pushing, Loading, Feeding

Hardinge stocks standard collets for FMB, LNS and Robobar bar loaders. Other style pushers can be manufactured to order.

Ref: #T-010



Swiss Pick-off Bayonet Lock

Pick-off collet designed with quick-change bayonet lock. A groove in the diameter is for the use of a tool to install the collet.

Ref: #T-014



Threaded Order Hole Collets

Threaded order hole accepts threaded parts to maintain machined surfaces with thread pitch.

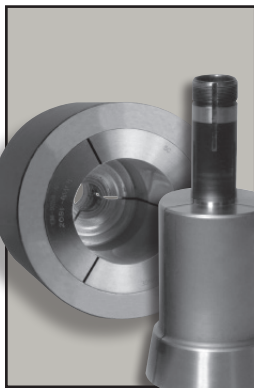
Ref: #T-011



Over-the-Shoulder Gripping

Multiple slots (or large slots) and double angle design allow extra spread to clear a shoulder and grip on a smaller diameter beyond.

Ref: #T-015



Swallow & Grip Deep Parts

Extreme-depth step chucks will swallow long parts for turning and grinding applications.

Ref: #T-012



Collet Step-Down Adapters

Convert your existing spindle collet size to a smaller collet size to handle a wider variety of workpieces. 5C to 1C collet adapter shown—other standard sizes available.

Ref: #T-016



Angled or Zig-Zag Slots

Angled or zig-zag slots are applied to a round order hole collet to hold geometric bar stock. This slot design prevents the corners from falling into the slots.

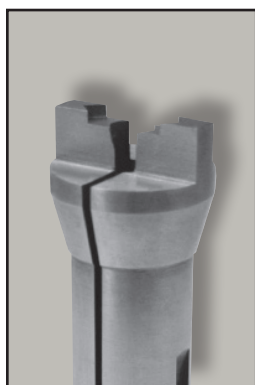
Ref: #T-017



Eliminate Tool Interference

Extended-nose collets feature added nose length, flat or tapered for doing pick-off work or to compensate for tooling interferences.

Ref: #T-021



2-Jaw Collet

Dual-slotted collet with custom-shaped jaws provided maximum gripping force for this customer's part.

Ref: #T-018

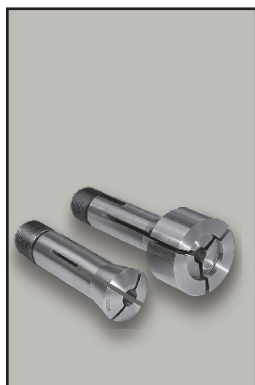


Special-Shapes

Special-shape collets and step chucks are used for extruded stock, or for precision cast parts and molded products.

Special-shape feed fingers and guide bushings are also available.

Ref: #T-022

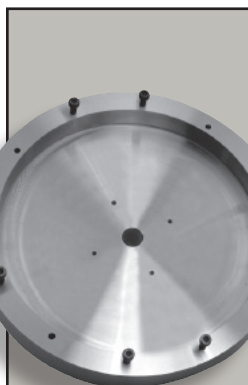


Micro Machining and Drilling

Small collets for making surgical and dental instruments, laboratory work, electronic and aerospace parts, clockmaking and jewelers. D, VW and 3C style collets available.

5C to small collet adapters also available.

Ref: #T-019



Step Chuck Fixture Plate

Solid fixture plates may be the best solution for odd-shaped parts. Part will bolt on, or can be held by a partial cap/lid. (pot chuck)

Ref: #T-023



Non-slip & non-marking Guide Bushings

Carbide-lined guide bushings are tough and non-slip. Meehanite lining can be used for non-marking applications. Serrations and extruded shapes available.

Ref: #T-020



Miniature Collets

Collets, guide bushings and pick-off collets available for coil feed swiss and other small stock applications.

Ref: #T-024

Milling Applications



Eight Castings –One Setup

Mill odd-shape castings using a custom fixture setup. Hydraulic internal gripping application shown. Stock 5C or 16C collet blocks can be arranged and plumbed to your requirements. Pneumatic and hydraulic options are available.

Ref: #M-001



Large Run Angled Fixturing

Fixed-angle collet block fixturing may be the answer to your large run machining and/or boring requirements.

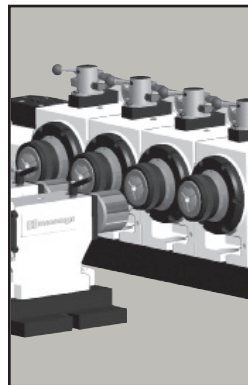
Ref: #M-005



Tombstone-style Fixturing

Collet blocks mount vertically or horizontally to hold single or multiple parts. 5C, 16C or 3J collet OD or ID gripping applications available.

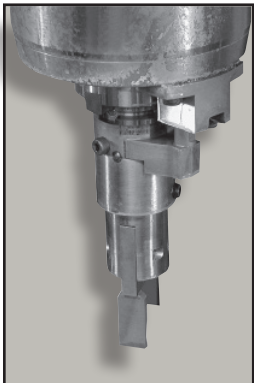
Ref: #M-002



Multiple, Long Part Indexing

Bearing spindle indexer handles heavy radial and axial thrusts. Single, dual, triple and quad unit setups support heavy loads.

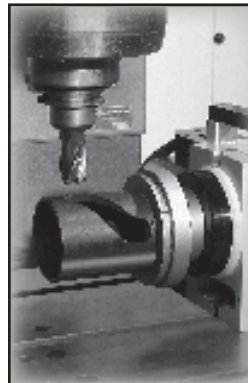
Ref: #M-006



Pick & Place Tool Holder Automation

Custom designed tool holder places workpiece from pallet to indexer spindle. Finished work goes back on pallet fixture after machining.

Ref: #M-003



Semi 4th-Axis Spiral Milling

Did you know that true 4th-axis is not necessary to accomplish spiral milling, but can be done using an RS-232 cable with the Hardinge Indexing System?

Ref: #M-007



Loss of Air - No Problem

5C Pneumatic Collet Block has fail-safe pneumatic operation. Parts remain clamped if loss of air should occur. Internal gripping application with work stop for controlled part length shown.

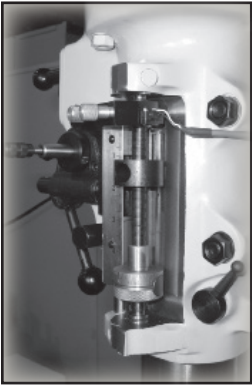
Ref: #M-004



Quick-Change R8 Tooling

Ground pull stud snaps the tool holder in place in seconds! The Mach-I Tooling System reduces job setup and increases accuracy and repeatability.

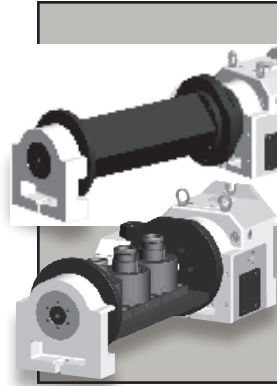
Ref: #M-008



Automatic Indexing Quill Switch

Automated indexing can be accomplished on a Bridgeport® knee mill using a remote quill switch with a Hardinge Indexing System. Eliminates pushing the start button on the controller.

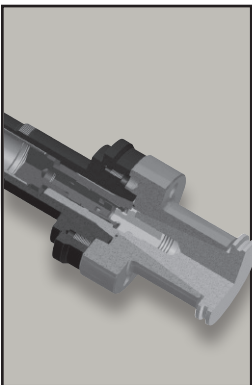
Ref: #M-009



Multiple Part Indexing

Load up a trunnion with collet blocks, configure with clamping devices, or customize a window box fixture allowing 4-sided part machining to increase your parts production.

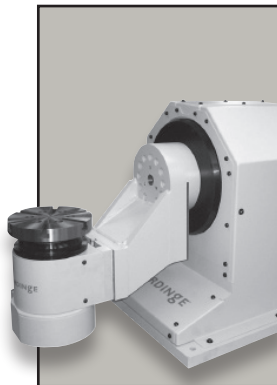
Ref: #M-013



Tapered Part Collet Adapter

16C collet-style adapter used in a Hardinge 16C indexer grips a VMC-type tool holder for boring, grooving and milling the flats. An internal assembly grips the retention knob on the back end of the part.

Ref: #M-010



SUPER-PRECISION® Positioning Device

Two-axis Super-Precision positioning device incorporates direct-drive (gearless) technology for use on high accuracy measuring equipment. 220° tilting capability with a full rotating precision-ground slotted table.

Ref: #M-014



VMC Tool Holder Taper Adapters

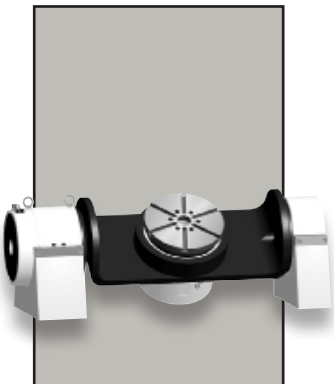
Change the taper of your toolholder spindle with a Hardinge toolholder adapter. 3CH to 1CH morse adapter shown.

Ref: #M-011

Hardinge manufactures a complete line of **ROTARY PRODUCTS** that can be customized for your application:

- Milling
- Turning
- Grinding
- Measuring/Inspection

General precision and Super-Precision models can be configured with collets, step chucks, jaw chucks, magnetic chucks, slotted face plates or custom fixture plates. Grip on an OD, ID, or a special shape or taper. Customize a trunnion for multiple part positioning.

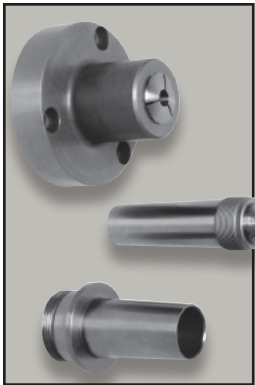


5th-Axis Parts Positioning

Direct-drive, zero backlash trunnion system available for 5th-axis parts positioning. SUPER-PRECISION® accuracy and repeatability is featured.

Ref: #M-012

Grinding Applications



Adapt Workhead to use Collets

Adapt Morse taper, B&S taper and Jarno taper grinding machines to use collets and other standard spindle tooling—collets, expanding collets, step chucks, collet chucks, manual chucks and fixture plates.

Ref: #G-001



Double-head Collet-2x Grip

Two working ends for twice the life and twice the grip. Commonly used with collet adapter sleeve and cap. Serrations available for extra grip.

Ref: #G-005



Wheelhead Collets

1C, 2VB and other small collets are available from Hardinge to grip various size grinding wheels.

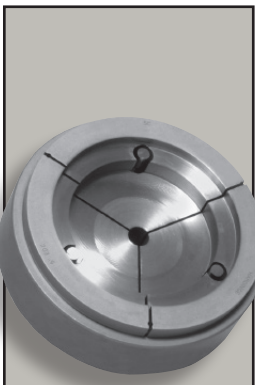
Ref: #G-002



Lens Grinding

This collet grips a plug placed on the lens for ease of grinding and polishing of all surfaces.

Ref: #G-006



Pinned Step Chuck

Step chucks and pinned step chucks can provide faster changeover than a manual chuck. Steel pins can be ground to a desired stop location for part length control. Adapter sleeve required.

Ref: #G-003



Non-tapered Workheads

Collet sleeves and collets are available for non-tapered workheads in a bolt-on style.

Ref: #G-007



Kellenberger® 5C Adaptability

Built-in A2-5 / MT5 workhead spindle accepts an array of standard 5C spindle tooling including collets, step chucks, emergency collets and expanding collets for flexible gripping options.

Ref: #G-004

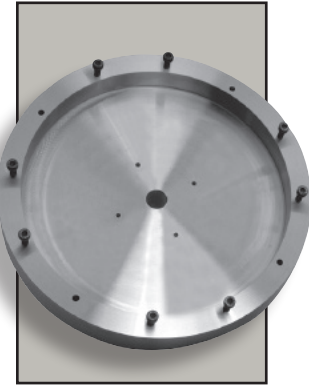


Internal Gripping

Expanding collets can be used with draw plugs in the workhead for internal gripping. Screw-in style offers quick-on, quick-off feature.

Between center arbors available.

Ref: #G-008



Fixture Plates

Custom fixtures are smart solutions for high production facilities running the same part 24/7. A fixed loading position eliminates manual positioning and setup that would occur using a magnetic chuck.

Ref: #G-009



Jig Grinding Collet Block

Multiple part setup can be achieved using 16C hydraulic or 5C pneumatic collet blocks. Single and multiple configurations available. Uses standard spindle tooling for OD and ID gripping applications.

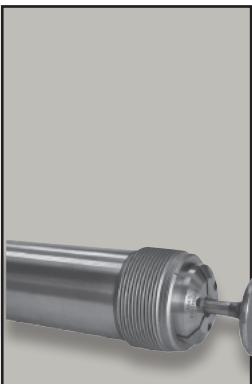
Ref: #G-010



Jig Grinder Spindle Adapters

Change the taper of your spindle to accept the taper of another style tooling to use your existing tooling.

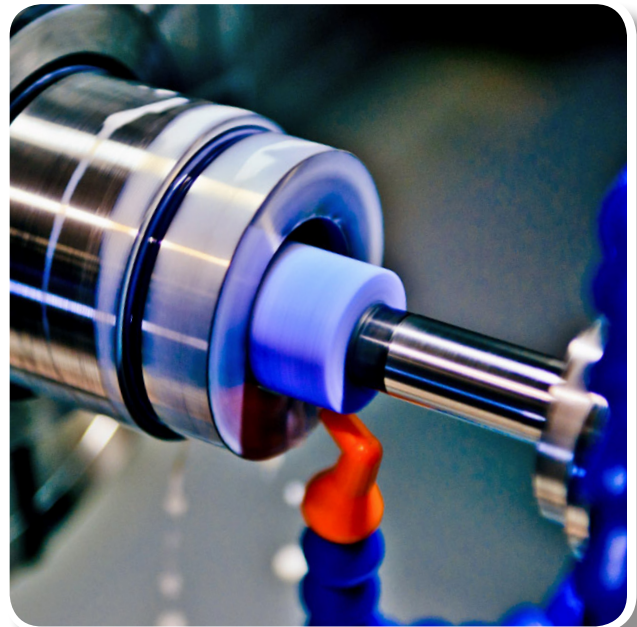
Ref: #G-011



Valve Seater Grinding

Collet sleeve with collet holds valve stem for grinding the seat angle of an engine valve.

Ref: #G-012



Assembly and Process Applications



Pharmaceutical Assembly

Capsule collet grips capsule for filling and assembly process.

Ref: #A-001



Polishing Collet

Parker-Matic collet for polishing.

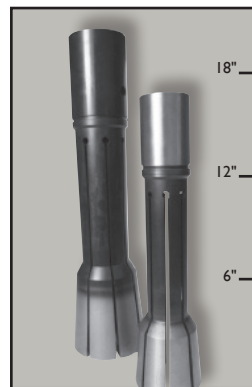
Ref: #A-005



Pneumatic Crimping Assembly

Secure tips on medical assemblies using a manual pneumatic collet block crimping operation.

Ref: #A-002



Hold Pipes for Bending

A range of collet sizes hold pipes or tubes for the hydraulic bending process. We've made up to a 14-inch diameter!

Ref: #A-006



Crimping Solutions

Crimping collets expand or contract to fasten bottle caps, perfume spray assemblies, and attach cable ends without crushing or distorting where applicable.

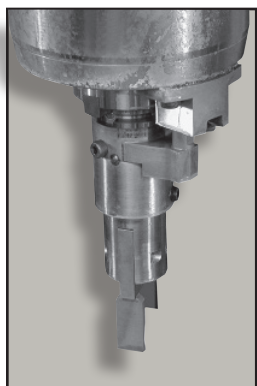
Ref: #A-003



Heat Stabilizing Ceramic Inserts

Ceramic inserts have been used as heat stabilizers involving high temperature friction welding. This design prolongs the life of the collet and maintains accuracy of the workpiece.

Ref: #A-007



Pick & Place Tool Holder

Automate your process using a custom toolholder to move the workpiece from spindle to pallet.

Ref: #A-004



Friction Welding

Double-head collet grips the component in two locations. Serrations improve grip on unfinished stock. Commonly used for engine valve components on Gatwick and other brand machines.

Ref: #A-008



Expanding Plastic Parts

Collets available in one-piece or multiple segments with ring. Expand with use of customer's draw plug.

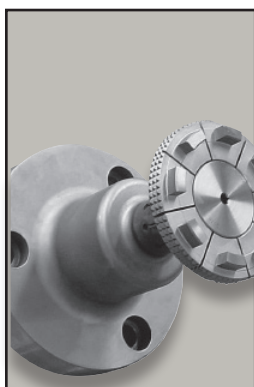
Ref: #A-009



Laser Welding Collet for Fuel Injection System

Hardinge manufactures laser welding collets and other gripping devices for many automotive assembly processes.

Ref: #A-011



Expanding Collet holds Casting

Call Hardinge for your unique prismatic tooling requirements.

Ref: #A-010

Hardinge machine and workholding divisions team up for complete **TURNKEY** services. Let Hardinge provide your complete ready-to-install manufacturing cell, whether it's turning, milling, grinding or assembly.

Custom workholding manufacturing can provide you with reduction in setup, reduction in cycle time, less waste and precision parts.

Economical Pick-off Collet Assembly designed for low-cost alternative for Euroturn 6/32

Manth-Brownell Saves \$40,655 – Increases Productivity and Improves Accuracy...

Hardinge designed an ID Pickoff Collet Assembly as an alternative to purchasing the machine tool builder's ID Pickoff Attachment and Kit. This allows the customer to change just the collet rather than the entire attachment, saving hours of setup time. The ID Pick-off Collet Assembly with built-in part ejector is available for Euroturn, Gildemeister and Tornos Deco's standard OD pick-off attachments and is application specific.



Standard Pickoff Attachment shown left with Hardinge ID Pick-off Collet Assembly (right).

COMPARE	Hardinge Collet Assembly	Machine ID Attachment & Kit
Cost	\$2,995	\$43,650
Setup	15 min.	8 hrs.
Length Control*	.0002-.0003	.004-.006

*finished part length



Gripping Glass Rods

Rubber inserts combined with a highly flexible collet design provides cushion and delicate handling for glass rods.

Ref: #S-001



No Scratching Allowed

Bronze and brass pads and collets will hold polished rods and parts to eliminate scratching. Inserts or pads can be used in hardened and ground collets when collet spring and spread is critical.

Ref: #S-005



Lens Grinding

This collet grips a plug placed on the lens for ease of grinding and polishing of all surfaces.

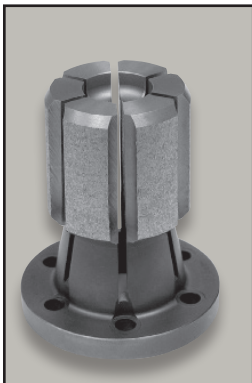
Ref: #S-002



Serrations add Gripping Power

Serrations add 10% additional gripping power using the same draw bar pressure. They can help prevent push-back and radial slipping during heavy forming or drilling.

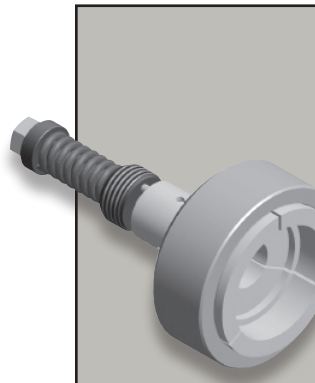
Ref: #S-006



Strong Carbide Grip

Expanding collet with impregnated carbide surfaces for improved gripping power. Carbide provides the highest wear resistance.

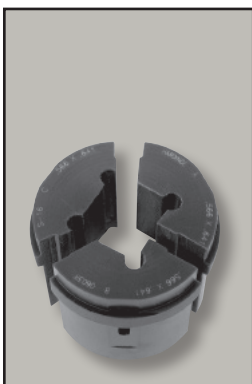
Ref: #S-003



Non-Crushing for Thin Wall

Built-in force control safely grips delicate or thin wall materials without crushing or distorting the workpiece. Maintains ID and OD concentricity. For use in Hardinge collet-ready machine spindles.

Ref: #S-007



Delicate Non-Marking

Delrin and Nylatron are used to eliminate marking. Inserts or pads of either can be used in hardened and ground collets when collet spring and spread is critical.

Ref: #S-004



Double Grip on Rough Stock

Double-head collet grips the component in two locations. Serrations improve grip on unfinished stock. Commonly used for engine valve components on Gatwick and other brand machines.

Ref: #S-008

Concentricity

When you purchase a Hardinge Special Collet with a defined concentricity, you can be assured of a qualified inspection. Each collet is inspected in a fixture that rotates in a set of precision bearings. The fixture itself is a mirror image of your spindle. This assures each collet will hold your parts consistently during your machining operations. Concentricity is measured in terms of Total Indicator Runout (TIR) a set distance from the face of the collet.

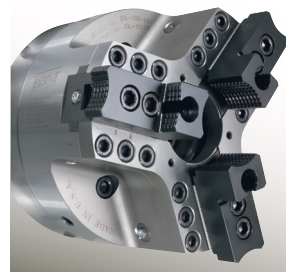
In-House Heat Treat and Spring Temper

One of the keys to 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 on the product. 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 competitive products.



Hardinge provides the proper combination of hardness and tempering for longer wear. This exaggerated case shows extreme flexibility without breakage!





WHY CUSTOMERS CHOOSE HARDINGE WORKHOLDING

- Over 125 years of Precision Workholding Manufacturing experience. We have the track record and experience to serve all of your Workholding needs.
- Hardinge Workholding has over 25 product families to allow for one stop shopping on a large variety of spindle tooling products.
- Our ecommerce website: **www.ShopHardinge.com** gives you 24/7 access to products, pricing, availability and technical information on all workholding products.
- Hardinge is the largest Custom Workholding Solutions provider. We can manufacture you the correct Workholding device no matter how unique.
- Hardinge is a 9001:2008 registered company where continuous improvement is the culture. Following strict guidelines ensure the quality that our customers expect and deserve.

WORKHOLDING EXPERTS

With 125 years of manufacturing experience it is no coincidence that Hardinge has become the Workholding experts that many shops have turned to for their Workholding needs. Allow Hardinge Workholding to put our expertise to work for you!



SAME-DAY SHIPPING

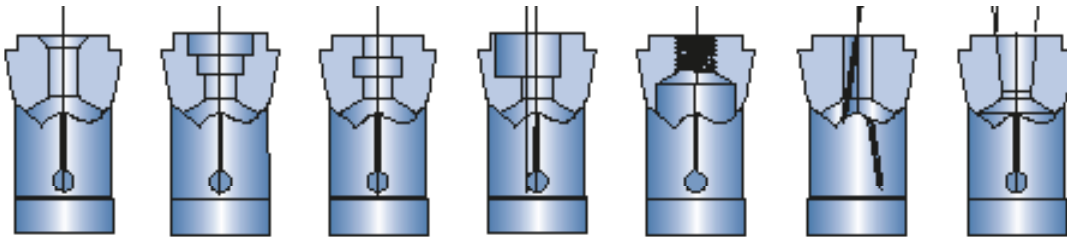
- Hardinge holds to a strict 95% same day ship rate for all standard Workholding products. Serving our customer requests quickly is our goal.
- Hardinge stocks more than 15,000 Workholding SKUs in our in-house inventory. We ship every day, all day, to serve our customers.

CUSTOMER SUPPORT

- Our fully staffed team of experienced customer service representatives who will help you from product identification to shipment.
- Accomplished Engineers averaging over 20 years of service each, making that special application easy for you.

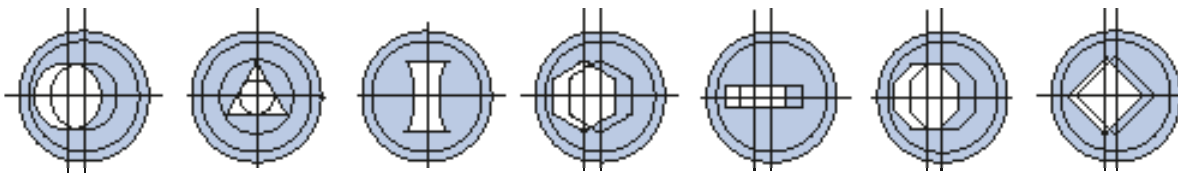
www.ShopHardinge.com

ORDER HOLES

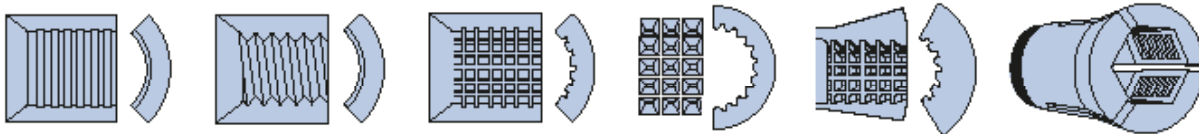


Chamfer Double-Stepped Bearing Relief Eccentric Step Threaded Hole Angular Slotted Taper Hole

OFF-CENTER ECCENTRIC ORDER HOLES



SERRATIONS



A Standard Collet is one whose order hole (round, round serrated, hex or square) is on the center line of the collet with a TIR within the manufacturer's specifications for that collet style.

A Special Collet deviates from a standard collet. It's TIR may be extremely close at .0002". The order hole may have one step to act as a stop, or multi-stepped allowing the part to be end-for-ended after completing the first operation. The order hole may be eccentric (not on the centerline of the collet) or it may be a special shape. Described on the next two pages are examples of common Special Collets that Hardinge manufactures.



Angular or Zig-Zag Slots

- Holds hex, square or triangular parts on their corners rather than on the flats. Corners will fall into the slots of a standard collet. Zig-zag slots are used for stock under 1/4".

Bearing Relief

- A relief groove is placed in the center of the bearing length to increase the gripping force in that area.

Customized for the Application

- Collets or workholding devices can be completely designed from scratch to accommodate assembly work, high-speed production machines and specialty machines.

Dead-Length Pinned Step Chucks and Closers

- Holes are drilled in the step chuck, aligned with the gage point of the workpiece. Pins are located in the closer to go through the holes in the step chuck. The pins are lightly faced to make them perpendicular to the center line of the spindle. In operation, the part is located against the pins and the step chuck is closed. The part will not move even when there is a variation in the chucking diameter.

Double-Head

- Provides extra gripping on the bar stock. May be reversed when one side wears out.

Custom Collet Styles

Expanding Collets – Internal Gripping

- Many similar specials are available for expanding collets such as serrated, eccentric, stepped, and spring ejectors.

Extended Nose – Straight or Tapered

- Extended nose collets are sometimes required when there is a tool or slide interference situation on the machine tool.

Extended Nose Collets – Pinned

- This extended nose collet has a pin in each slot to restrict the collapse of the collet under the head angle eliminating collet breakage. Because the collet no longer collapses, there is a more substantial grip on the part.

Extreme Depth Step Chucks and Closers

- Parts that have shanks bigger than the thru capacity can be held in these special step chucks and closer assemblies. The Z-Axis work stroke of the machine tool is reduced.

Extruded

- Variations include thru-collet, step collet, and off-center.

Flat Face

- The flat face is a locating surface for the workpiece. The flat face should never be behind the face of the spindle when the collet is closed on the part or a step will be worn in the spindle angle of the machine tool.

Off-Center, Eccentric

- Off-Center, Eccentric collets can be round, hex, square, rectangular, or extruded.

Oversize Step Chucks and Closers

- An oversize step chuck can be used when the standard step chuck is too small to hold your workpiece. Tooling interferences should be thoroughly checked before ordering.

Over-The-Shoulder

- When you have to clear a shoulder and grip on a smaller diameter, an over-the-shoulder collet may be used. These collets are usually standard as pick-off collets on automatic screw machines. This style collet can also be used on CNC lathes that have a long draw bar stroke.
- These collets are multi-slotted and double angled. The closing angle is very short and the opening angle is very steep. The collet requires an extremely large spread and is only practical for light machining operations such as face, chamfer, etc.

Round Off-The-Spindle Fixturing

- Several fixtures are made with round chucking surfaces. The chucking diameter of the fixtures are held within .0002" of each other. The bore of the step chuck is made to the same diameter as the chucking diameter of the round fixtures.
- While one part is running in the machine, another fixture can be loaded to reduce setup time.
- The critical lengths are controlled because the chucking diameters of the round fixtures are held to within a couple ten thousandths. Holding lengths to .001" are the accepted norm. If closer length tolerances are required, pins can be used in the step chuck and closer assembly.

Custom Serrations

- Serrations add 10% additional gripping power using the same draw bar pressure – popular round serrated collet sizes are standard.
- They can help prevent push-back and radial slipping during heavy forming or drilling.
- Serrations can be made in circular, buttress, diamond, tap and tapered flat (for draft angles).

Special Shape

- Special shape collets are used for precision cast parts and molded products.
- Many of these collets are made using the EDM process.
- Contour milling may also be done using a CNCVMC mill or a precision jig boring / grinding machine. Part size is only limited by the machine tool's capabilities.

Stepped, Single & Multi-Stepped

- This style collet locates the part a specific distance from the face of the collet. It eliminates push back of the stock but does not control lengths due to stock diameter variations.
- A single-stepped may have a thru-hole to grip on the shank of a part during the first operation or it may be a clearance hole for a drill or boring tool.
- Multi-stepped are used when end-for-ending the workpiece.

Synchronized Collets

- A synchronized collet is used when a point on the part has to align with the center of the keyway of the collet. Hex and square collets are synchronized to the center of the flat or the corner. Some standard collets for specific machines are already synchronized.

Tapered

- Taper styles include regular Morse, Jacobs and custom tapers, as well as reverse taper.

Threaded

- Threaded collets can be ordered in solid, 3-split and 4-split.

To place your order or request a quote, simply fill out this form and send the requested information below. All of this information is necessary for us to process your order quickly. Checking the box in front of each item will help to ensure everything is complete before sending the information to us. The following two pages will assist you in choosing your collet configuration.

Explanation:

Send drawings, sample parts and all forms to:

Hardinge Collet Sales Dept.
One Hardinge Drive
Elmira, New York 14902-1507

Return Material Authorization (RMA#) required for
Hardinge to receive your Sample Part

Phone: 800-843-8801
Canada: 800-468-5946
Other countries: 607-378-4022
Fax: 607-734-3886
International Fax: 607-734-1701
Email: info@hardingetooling.com

☐ _____
Name

☐ _____
Company

☐ _____
Address

☐ _____
City, State & Zip

☐ _____
Phone

☐ _____
Fax

☐ _____
Email

☐ **Machine Make and Model Number on which workholding will be used:**

(Example: Hardinge QUEST 8/51, 1-1/4" Acme)

☐ **Collet Required:**

(Example: 5C, 16C, 1-1/4" Acme, etc.)

☐ **Spindle Nose:**

(Example: A2-5, A2-8, etc.)

☐ **Sample Stock** (6" long - extruded stock), casting, first operation part, finished part

☐ **Legible Prints** of the stock, finished part. These must be marked to show the diameters or surfaces to be gripped. Mark the locating surface used for length control. Please mark the surfaces to be machined.

☐ **AutoCad Files** or dxf files of the above, if available.

☐ **Written Explanation** of any special requirements: For example special concentricity or perpendicularity requirements, concerns with chip flushing, requirements for thru-spindle coolant, concerns with part being deformed by gripping, large variation of gripping surface or locating dimensions, etc.

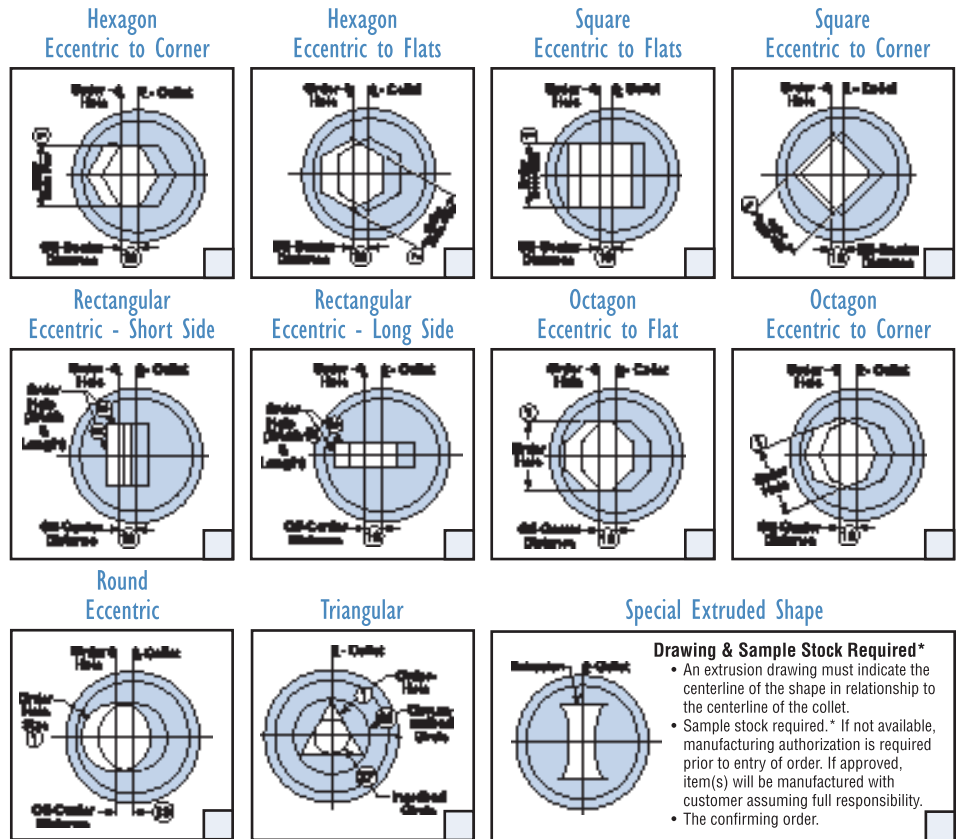
Custom Quote Request

Write in the type of Collet or Special:

(5C, 16C, 1-1/4" Acme, etc.)

Find the illustration containing the feature you require in one of the boxes shown over the next two pages. Check mark the box and record the dimensions on the corresponding lines below:

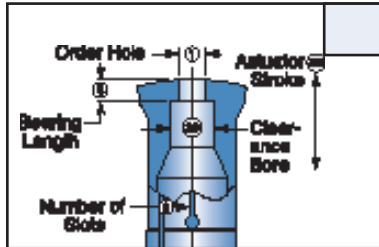
1. Order Hole Size: _____
2. Order Hole, 2nd: _____
3. Number of Slots: _____
4. Radius: _____
5. Bearing Length: _____
6. Bearing Length Front: _____
7. Back Drill Dia.: _____
8. Relief Dia.: _____
9. Relief Length: _____
10. Depth of Step, 1st: _____
11. Depth of Step, 2nd: _____
12. Auxiliary Hole Size: _____
13. Length of Extension: _____
14. Dia. at Face: _____
15. Degrees Taper/Chamfer: _____
16. Front Dimension of Taper: _____
17. Rear Dimension of Taper: _____
18. Taper-Industrial Std: _____
19. Off Center Distance: _____
20. Order Hole - Width: _____
21. Order Hole - Length: _____
22. Thread Length: _____
23. Threads Per Inch: _____
24. Right/Left Hand Thrd.: _____
25. Class Thread (1), (2), (3): _____
26. Chamfer Depth: _____
27. Inscribed Circle: _____
28. Circumscribed Circle: _____
29. Clearance Bore: _____
30. Actuator Stroke: _____



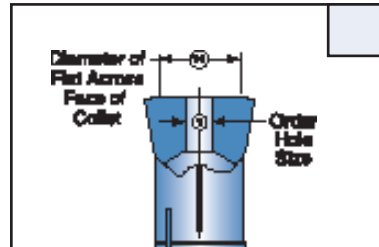
*One 6" length of stock required when ordering 1 to 3 collets; two 6" lengths for 4 to 7 collets; three 6" lengths for 8 to 11 collets; four 6" lengths for 12 to 15 collets ordered.



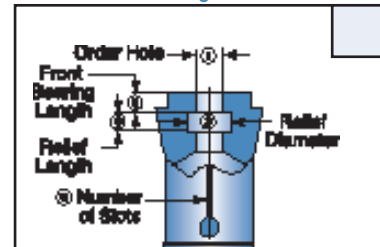
Over-the Shoulder



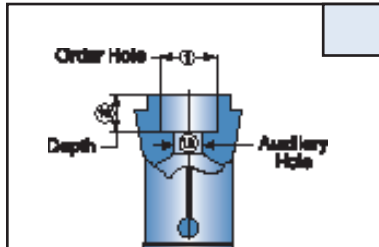
Flat Face



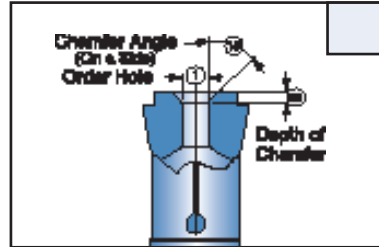
Bearing Relief



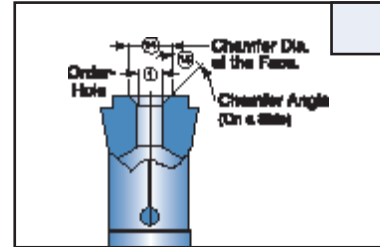
Single-Stepped



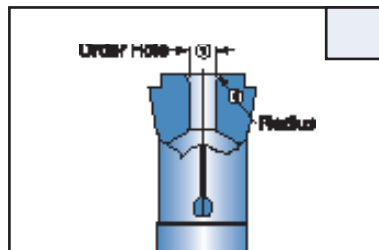
Chamfer - Depth



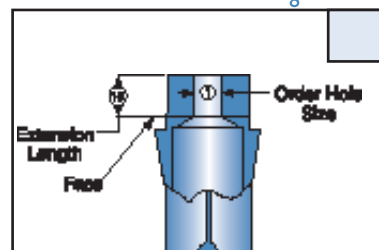
Chamfer - Diameter



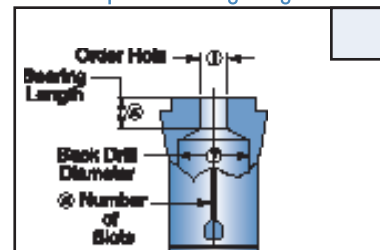
Radius



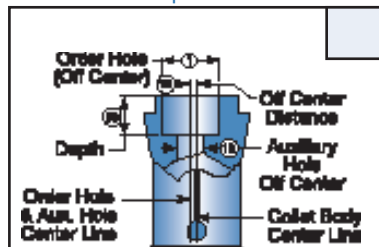
Extended Nose - Straight



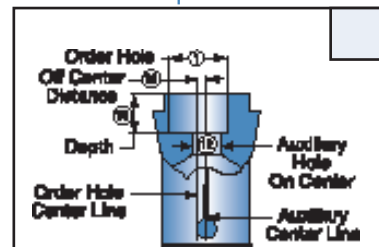
Special Bearing Length



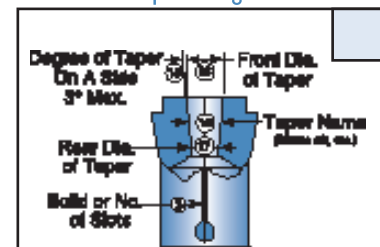
Eccentric Step - Aux. Off Center



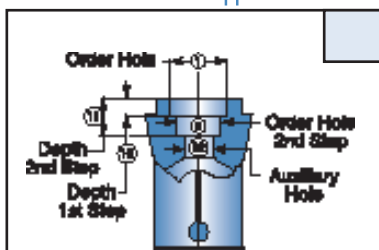
Eccentric Step - Aux. On Center



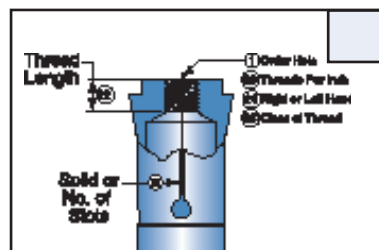
Taper - Regular



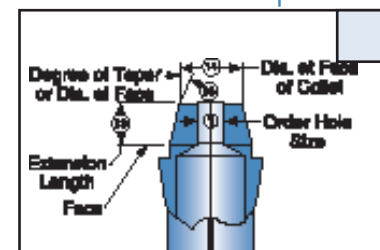
Double-Stepped



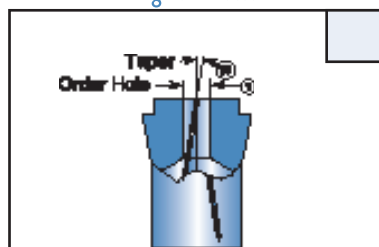
Threaded Order Hole



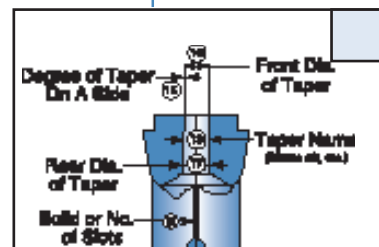
Extended Nose - Tapered



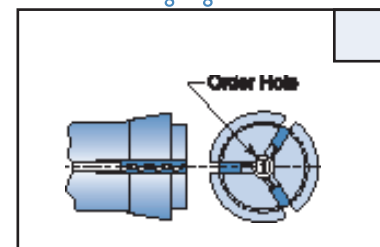
Angular Slotted



Taper - Reverse



Zig-Zag Slots





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Hardinge is a leading international provider of advanced metal-cutting solutions. We provide a full spectrum of highly reliable CNC turning, milling, and grinding machines as well as technologically advanced workholding accessories.

The diverse products we offer enable us to support a variety of market applications in industries including aerospace, agricultural, automotive, construction, consumer products, defense, energy, medical, technology, transportation and more.

We've developed a strong global presence with manufacturing operations in North America, Europe, and Asia. Hardinge applies its engineering and applications expertise to provide your company with the right machine tool solution and support every time.

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