



Spindle Tooling for Manual & CNC Lathes

Spindle Tooling for Automatics, Turret Lathes & Rotary Transfer Machines

Tooling for Grinding Machines

Swiss-Type Collets, Guide Bushings & Barloader Collets

HQC® Quick-Change Collet Systems

Sure-Grip® Expanding Collet Systems

HCAC® Collet Adaptation Chucks

Sure-Grip® 3-Jaw Power Chucks

Chuck Jaws

Toolholder Collets, Bushings & Tool Holders

Precision CNC Tooling for Mills

Collet Blocks

Rotary Indexing Products

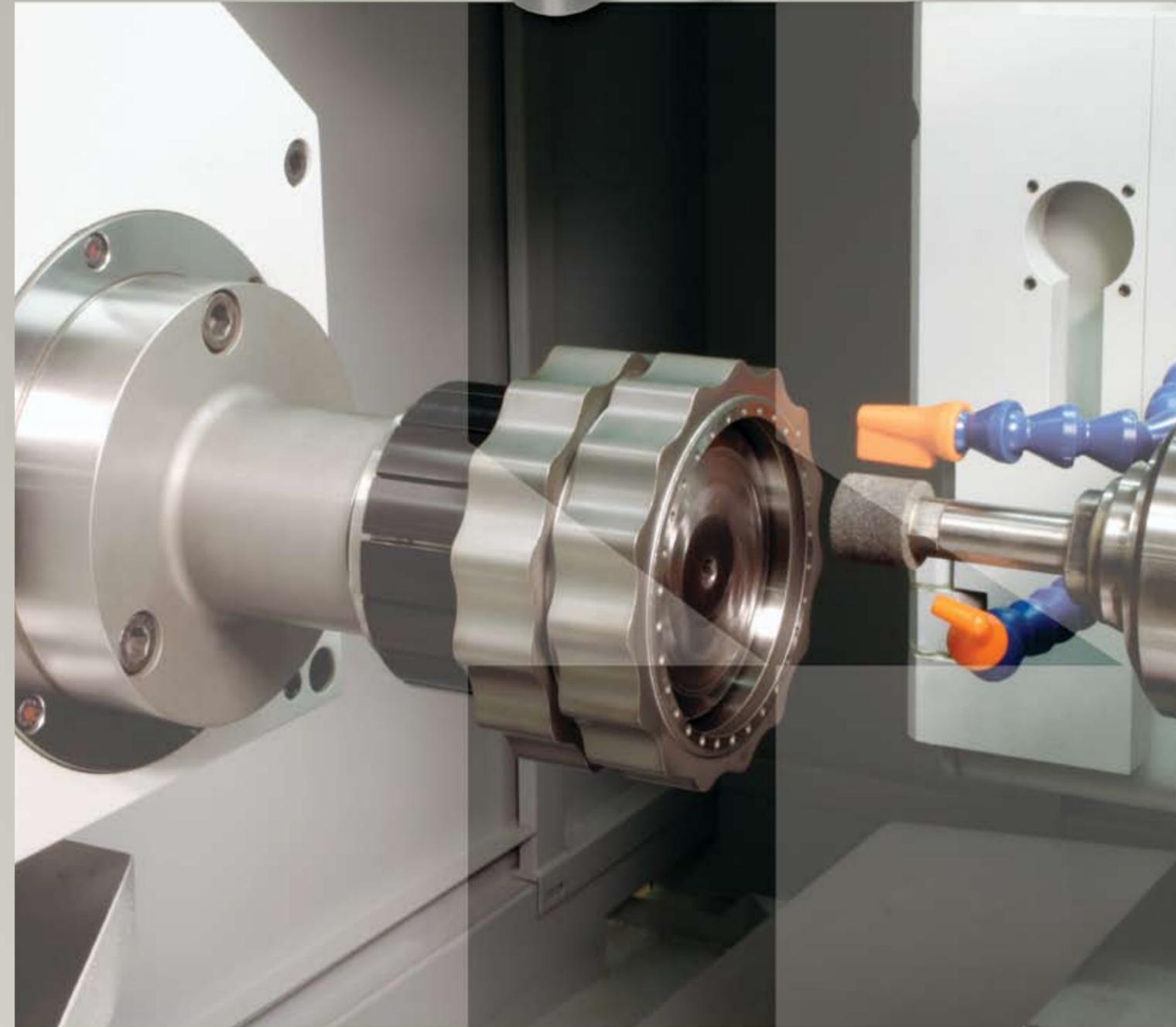
Custom Workholding

Industrial Products

Machine Tools

Hardinge is everything you need in workholding for all brands of lathes, mills, grinding machines, automatic screw machines, rotary transfer machines, turret lathes, automation and assembly. Expect more from your workholding. Choose Hardinge precision and reliability for increased productivity and value!

Call us today, we've got your answer.



A five minute EYE-OPENER to alternate gripping methods for grinding machines...

Are you utilizing your grinding machine to its full workholding job capacity? Centers, arbors, fixtures and magnetic chucks are just the tip of the iceberg.

Many shops are still doing second operation work when they could be finishing parts complete using an alternate workholding method.

Morse taper, B&S taper and Jarno taper grinding machines can be adapted to use collets, step chucks, pin step chucks, Sure-Grip® expanding collets, Dead-Length® collets, Dead-Length work stops, collet chucks, manual chucks, magnetic chucks, face plates and fixture plates. Hardinge manufactures collet sleeves or adapters to fit in the spindle of the workhead to accept a useful variety of gripping products, even for the older grinding machines that are as reliable now as they were 50 years ago!

Kellenberger®, a Hardinge Company, incorporates a combination A2-5 / MT5 workhead spindle nose in their line of grinding machines to allow the customer access to an array of stock 5C tooling for increased gripping options. **5C Spindle tooling** includes collets, step chucks,



Hardinge 5C Spindle Tooling with Kellenberger spindle adapter. Refer to brochure #2348 for complete 5C product details and specifications.

emergency collets, fixtures, face plates and the Sure-Grip Expanding Collet system.

The Hardinge **Sure-Grip Expanding Collet System** is extremely popular for OD grinding. The Sure-Grip expanding collet performs true parallel gripping with instant centering of the workpiece. Stock products are available to accommodate work from 1/8 inch to 4 inches in diameter. It is possible to access full grinding length of the workpiece unlike a fixture or chuck setup. The hardened and ground expanding collet head can be reground in place to the desired size for the best possible concentricity scenario to achieve zero TIR. Many jobs later, it can then be reground or recycled to accept a smaller ID

workpiece for a different job setup. Different size expanding collet heads fit on the same collet body, and are quick-change from the front without removing the collet body. The expanding collet has many advantages over a manual chuck or fixture setup. The setup time is decreased because of instant centering without individual clamping. The unit is smaller, lighter and mounts faster, and can achieve the highest accuracy possible. Collets are available in 1/64" increments with a range of +.015" to -.001" (+.38mm to -.025mm) from its specified size. Hardinge **Sure-Grip expanding arbors** can be used between centers instead of tapered arbors to achieve more contact area. Load a part on a second, spare arbor for quicker part changeover.

Step chucks are handy devices for holding parts larger than the one-inch diameter 5C capacity. Job shops can purchase emergency step chucks and grind them to size, matching the spindle bearings of the machine to achieve the best TIR. Hardened and ground steel step chucks are ordered to size for specific applications. When comparing step chucks to manual jaw chucks, they offer faster part change-over considering the time involved in opening and closing the manual chuck with a wrench. A step chuck can be more economical given that a set of jaws typically costs more than an emergency step chuck. Repeatability and part roundness are more accurate on the step chuck. **Custom pin step chucks** have steel pins in the collet closer that are ground to a desired stop location for part length control.

Custom extra-depth step chucks are used to "swallow" a long workpiece for precision ID grinding providing a larger contact surface. This product is commonly used when the 3-to-1 ratio is exceeded. For example if you have a part that is one inch in diameter and it exceeds three inches in length, you would introduce chatter and runout using traditional gripping methods. If your part exceeds the 3-to-1 ratio, use an extra-depth step chuck to hold the part more rigidly.

Innovative solutions for OD and ID gripping



Custom Collets for Grinding Machines

Hardinge provides workholding products for ID, OD, Universal, tool room, cutter & drill and jig grinding machines. Many products are **custom manufactured** for a specific application. Wheel-head collets and adapters, workhead spindle sleeve adapters, double-head, high-speed grinding, ID grip expanding, drill, and lens grinding collets are examples of products that Hardinge has designed and manufactured for the grinding industry.

Custom fixtures are smart solutions for high production facilities running the same part 24/7. The fixture accepts the part in a fixed loading position, eliminating manual positioning and setup time that would occur using a magnetic chuck or jaw chuck. In high production situations, the accumulated time saved during loading of parts will substantially increase the parts output per hour. For small runs and job shop work, inexpensive **blank fixture plates** are available from 3- to 12-inch diameters. The clamping method is designed, machined and balanced by the job shop and is commonly used for odd shapes. **Universal faceplates** are perfect for holding nonferrous materials that cannot be held with a magnetic chuck. Small angle plates position in the four channels for clamping materials such as plastic, glass, ceramic, carbide and aluminum.



Hardinge is the world's largest manufacturer of 5C spindle tooling with a host of innovative solutions for ID and OD gripping. The **Hardinge 5C indexing system** provides automated part positioning for Hauser Jig Grinders. Multiple part set up can be achieved using **pneumatic collet blocks** for high production work.



Spindle Sleeve Adapters



Sure-Grip Expanding Collet Systems, Expanding Arbor & Centers



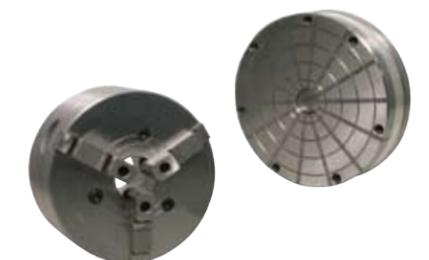
Step Chuck and Pin Step Chuck



Extra-Depth Step chuck



Custom Fixture, Face and Fixture Plates



Manual Jaw Chuck and Magnetic Chuck