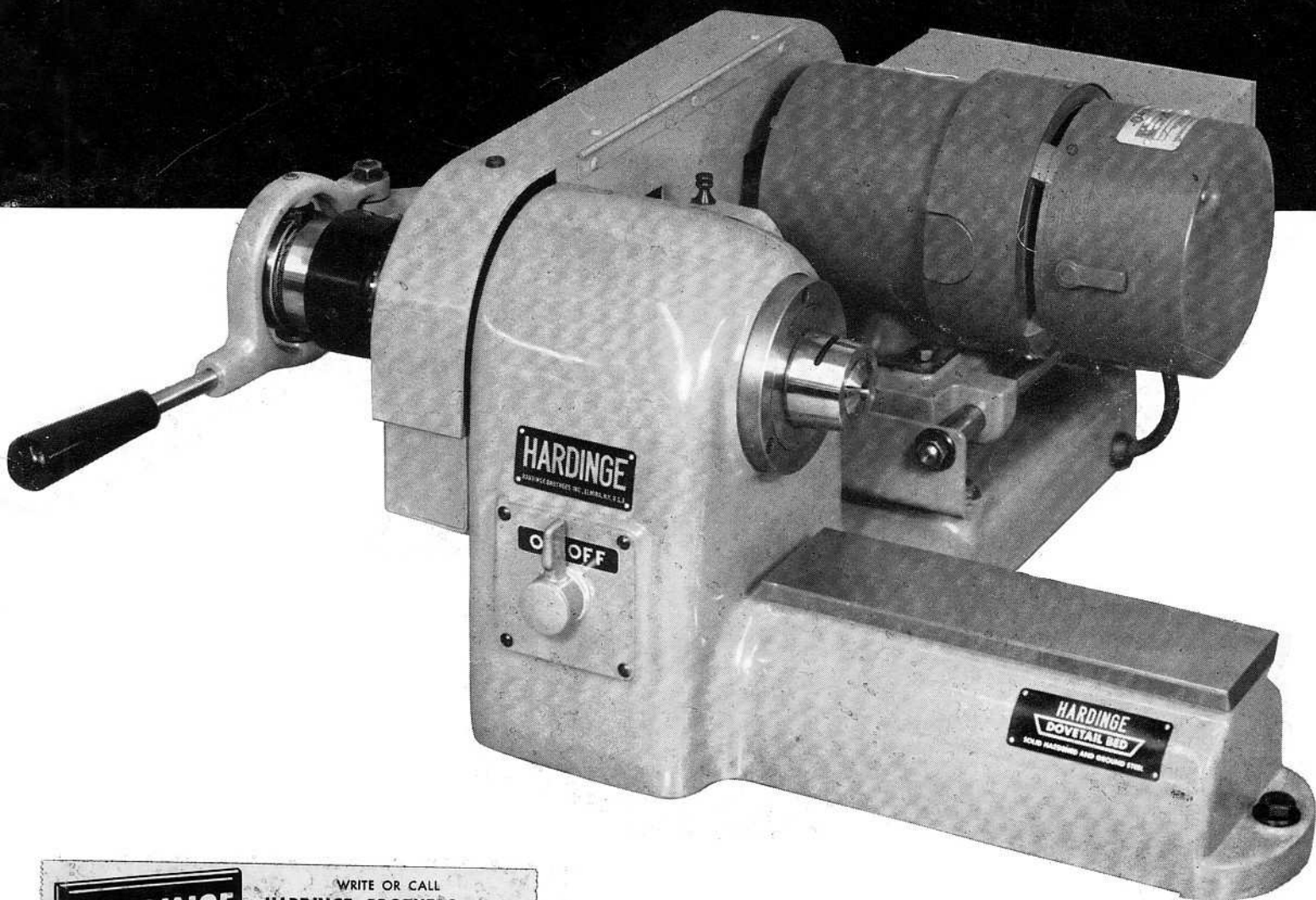


HARDINGE

SPEED LATHE

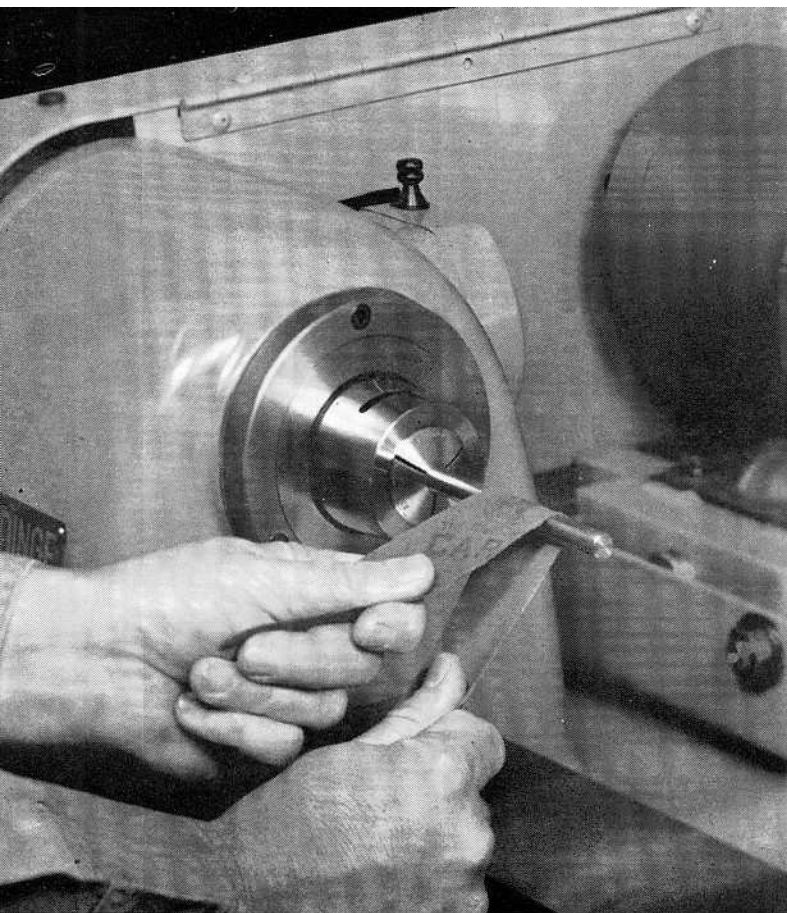


HARDINGE

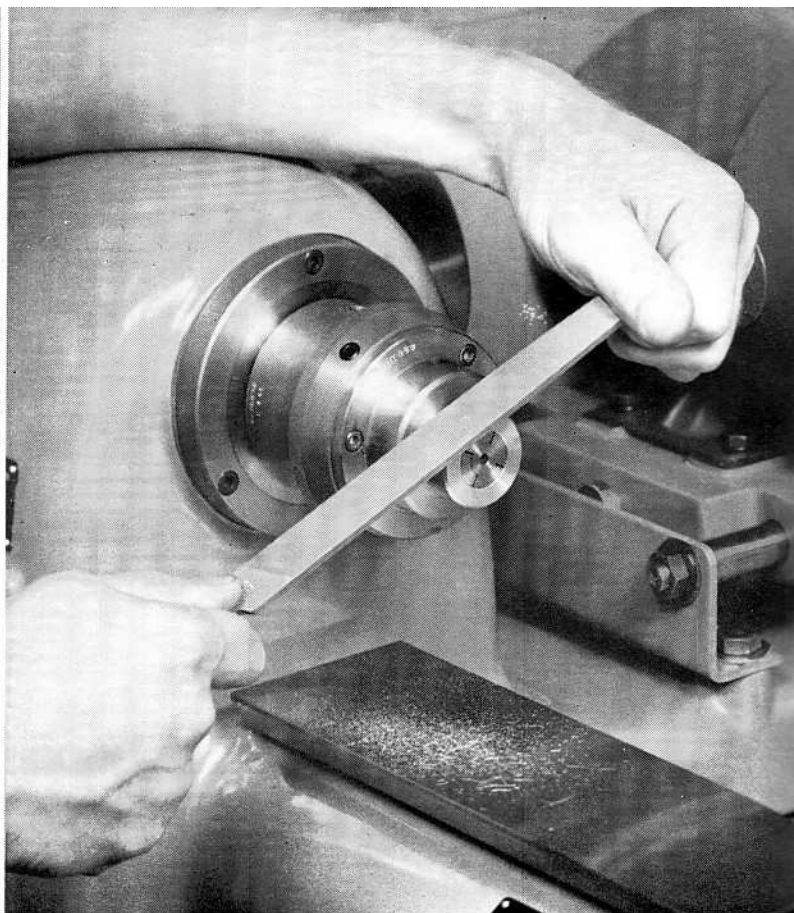
WRITE OR CALL
HARDINGE BROTHERS, INC.
1420 COLLEGE AVENUE
ELMIRA, NEW YORK 14902
W. C. HASKINS—SALES ENGINEER

**THE LOW COST TURNING-POLISHING-FINISHING MACHINE
FEATURING**

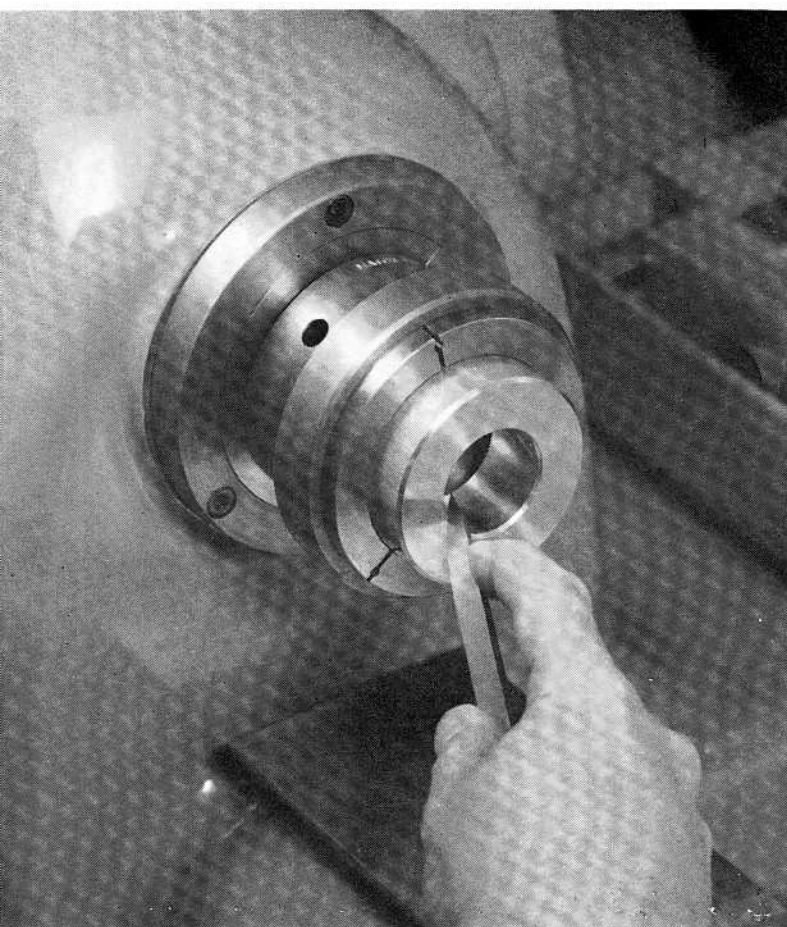
BULLETIN HSL



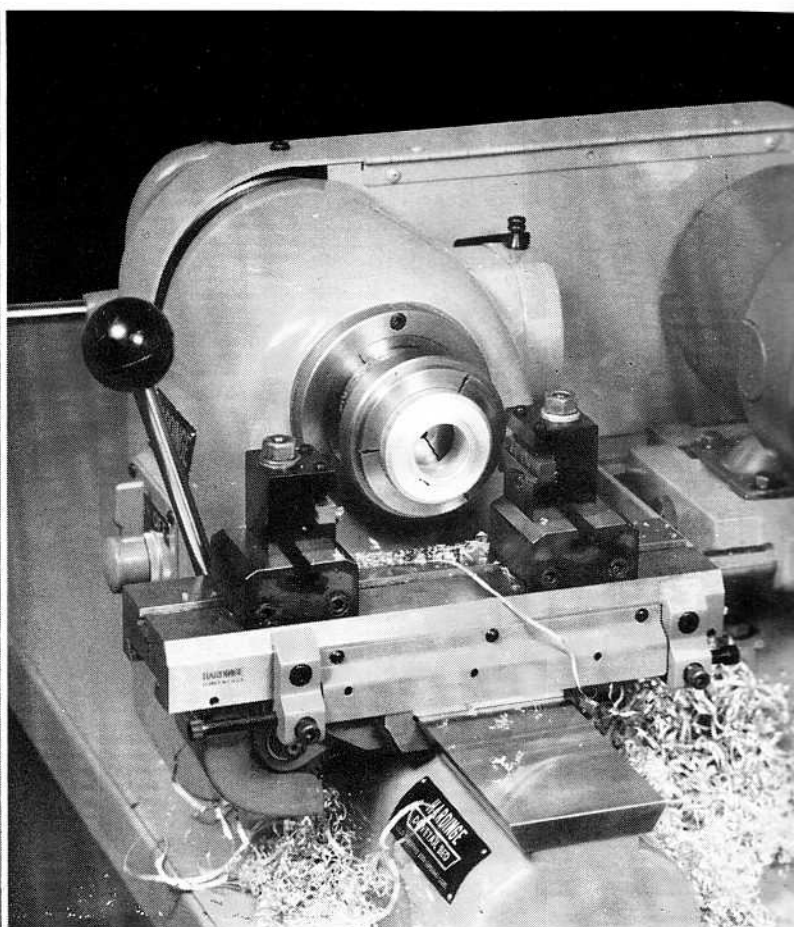
POLISHING
WORK HELD BY COLLET



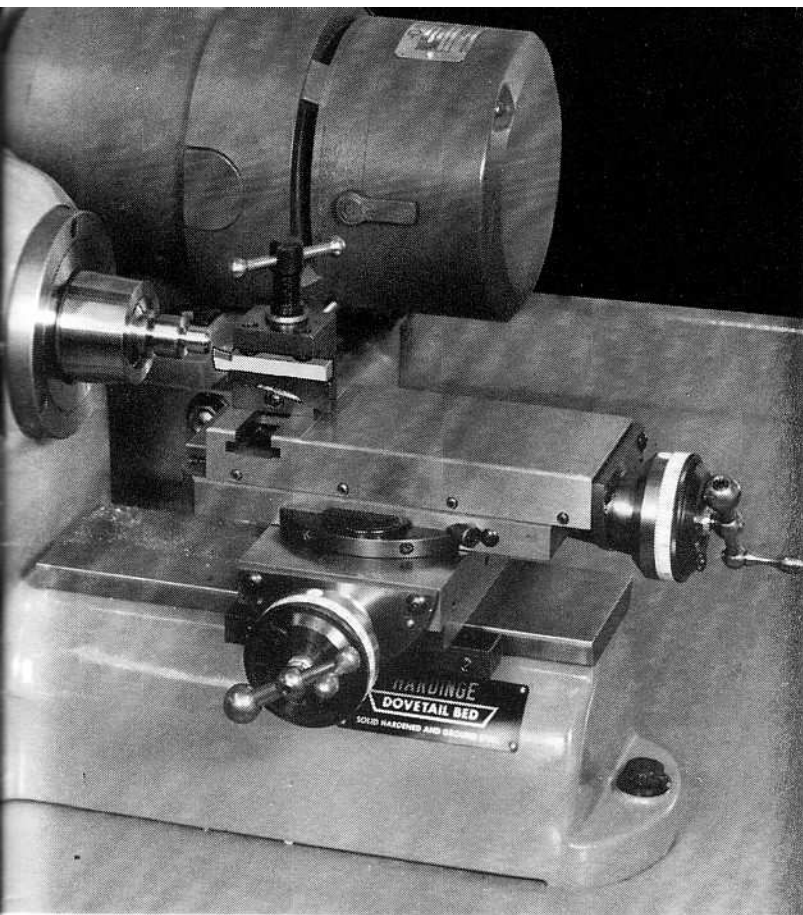
CHAMFERING
WORK HELD BY EXPANDING COLLET



BREAKING CORNER
WORK HELD BY STEP CHUCK

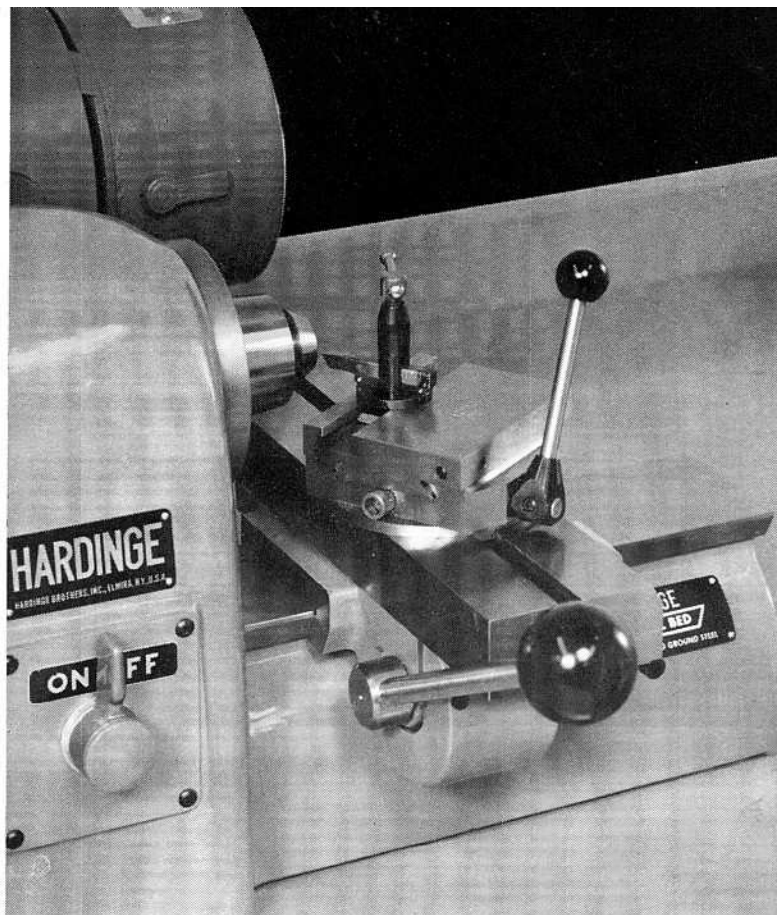


FACING AND FORMING
WITH DOUBLE TOOL CROSS SLIDE



FACING

WITH COMPOUND SLIDE REST



TURNING A TAPER

WITH STRAIGHT AND TAPER TURNING SLIDE

CUT YOUR COSTS ON PRODUCTION RUNS

WITH

THE HARDINGE SPEED LATHE

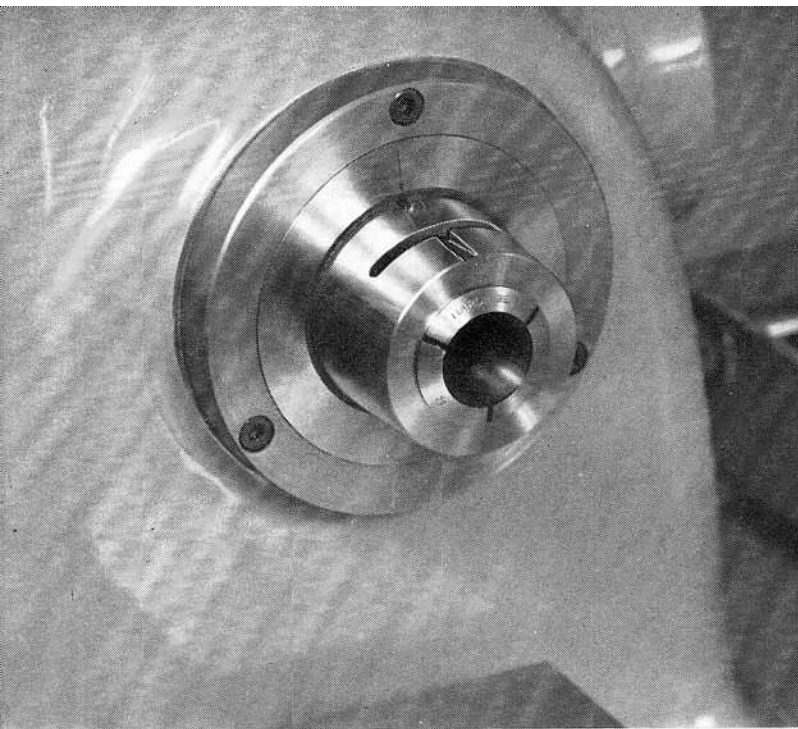
FEATURING

FAST SET-UP and FAST CHANGE-OVER

INTERCHANGEABLE ATTACHMENTS

CLOSE TOLERANCE WORK with relatively unskilled operators

LOWER CAPITAL INVESTMENT



HEADSTOCK FEATURES

**SUPER-PRECISION PRELOADED BALL
BEARING SPINDLE**

1-1/16" COLLET CAPACITY

COLLET SEATS DIRECTLY IN SPINDLE

**SOLID ONE-PIECE TOTALLY ENCLOSED
HEADSTOCK FRAME**

SPINDLE SPEEDS TO 3000 r.p.m.

HARDINGE Super-Precision Spindle

The Hardinge Super-Precision preloaded ball bearing spindle is mounted in the solid one-piece totally enclosed headstock housing for maximum rigidity and sustained accuracy.

The bearings require no adjustment and are permanently lubricated to operate at all speeds without attention. Preloading eliminates all end play, radial play and assures the turning of true pieces.

The collet seats directly in the hardened and precision ground spindle, thus eliminating troublesome sleeves and adaptors that introduce costly inaccuracies.

The rigidity provided for sustained accuracy also provides the proper support for work when cutting with carbide tooling.

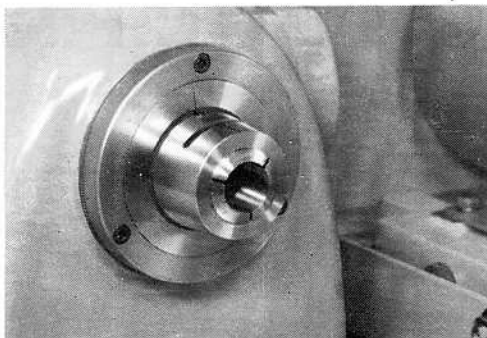
Complete Chucking

Capacity

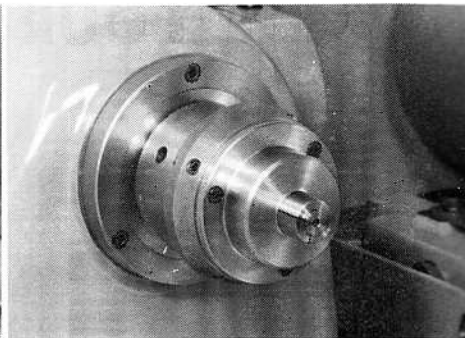
Describes The

Hardinge Speed Lathe

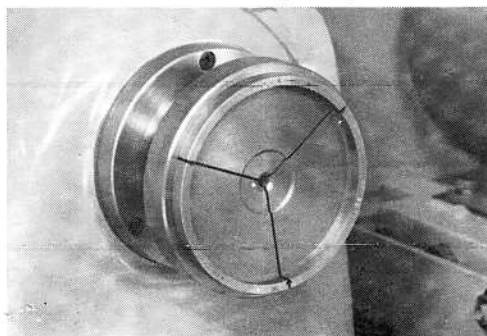
Headstock



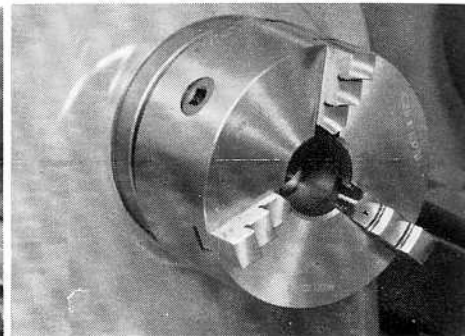
**1-1/16"
Collet Capacity**



**1/2" to 3"
Internal Chucking Capacity**



**1-1/16" to 6"
Step Chuck Capacity**

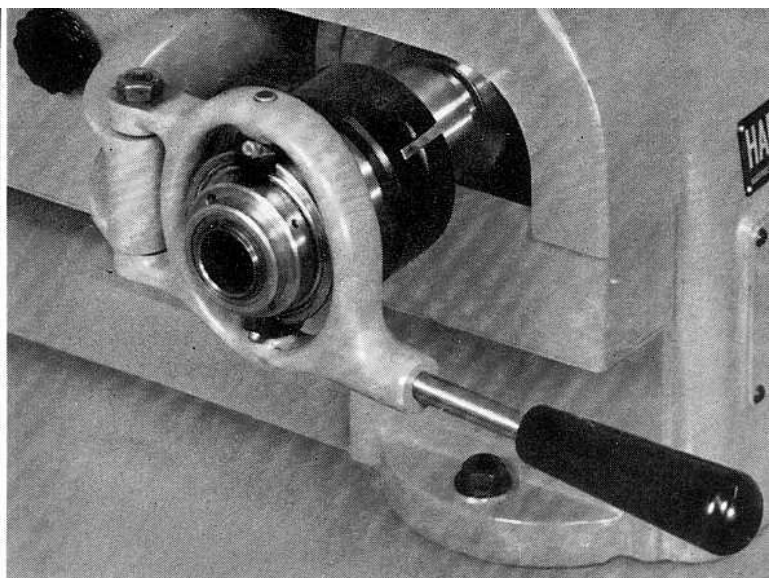


**5"
3 or 4 Jaw Chuck Capacity**



FAST ON-OFF CONTROL

The ON - OFF switch control is easy and fast to operate. A short movement of the switch control to the left, "ON", starts the machine spindle. The control then automatically returns to a neutral vertical position. Movement to the right or "OFF" position shuts off the electric motor, energizes the electric brake, stopping the spindle.

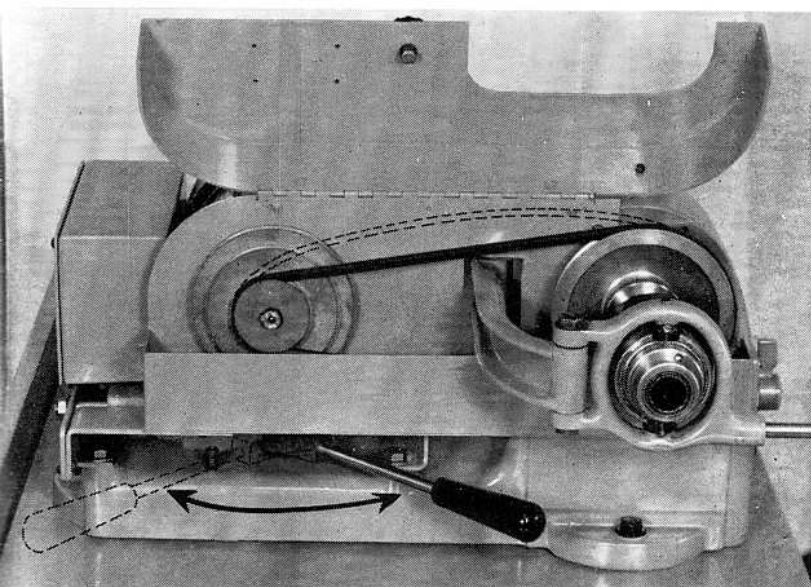


FAST LEVER COLLET CHUCKING

The ball bearing collet closer permits rapid closing and opening of a collet or step chuck when the headstock spindle is at speed or stopped.

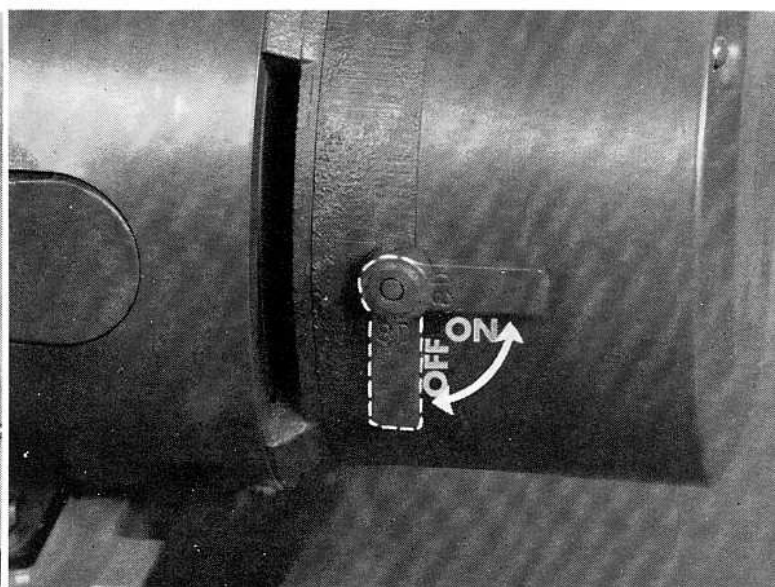
The ball bearing collet closer is adjustable so that any desired collet tension may be applied on the parts to be machined. Moving the lever to the right and to the left instantly opens and closes the collet.

See Page 13 for optional power collet closer.



QUICK CHANGE SPINDLE SPEEDS

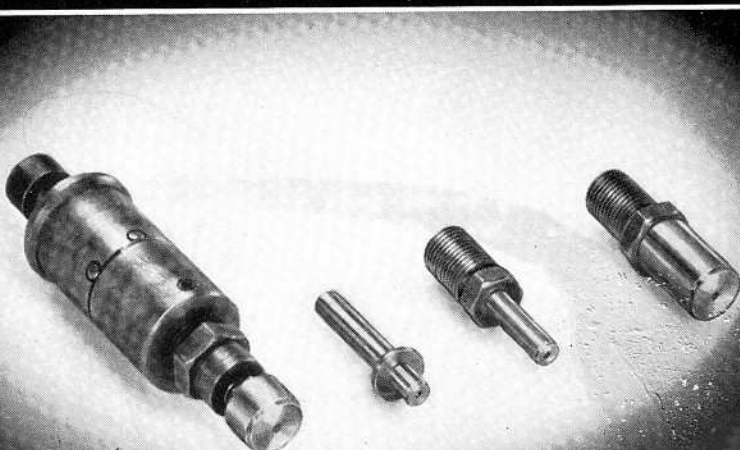
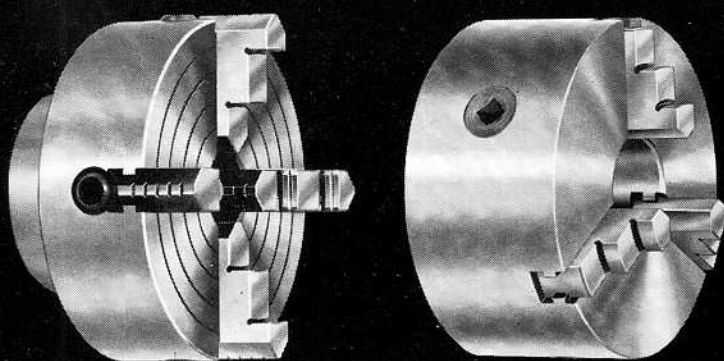
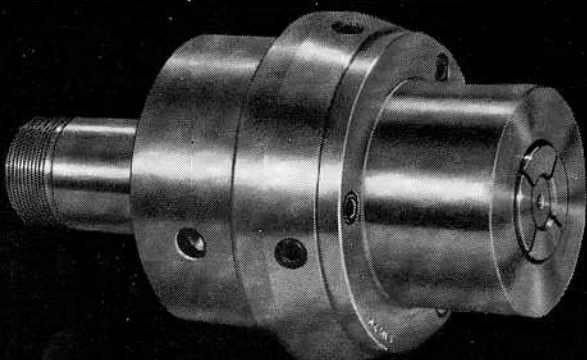
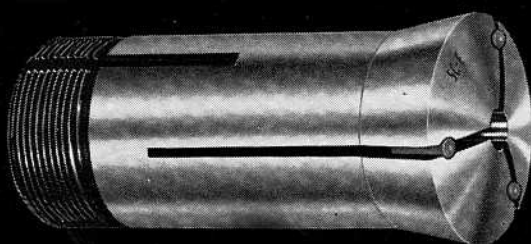
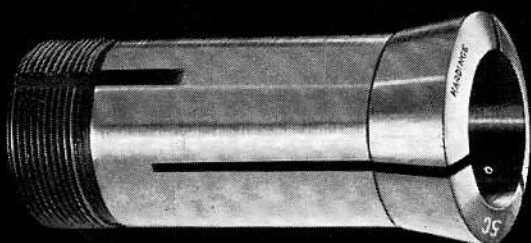
Spindle speeds are provided of 750, 1800 and 3000 R.P.M. through an endless V-belt and three step pulley arrangement. Spindle speeds are quickly and simply changed. Raise the pulley and belt cover as shown. Move the lever horizontally to the extreme left which will slide the motor pulley to the "belt release" position. Change belt to the pulley step desired and return the lever to the extreme right or "belt tight" position. Close the cover and the machine is ready for operation.



BRAKE RELEASE FOR FREE SPINDLE

During regular operations the brake release lever pictured above remains in a horizontal automatic "brake on" position. When a free spindle is required for hand rotation of the spindle for inspection of work or indicating work or in setting up work holding devices, move the brake release to the down position. When the machine is turned on, the brake release lever automatically returns to the horizontal position and The electric brake is then ready for regular braking operation.

HEADSTOCK SPINDLE TOOLING



5C HARDINGE COLLETS

The Hardinge HSL takes 5C HARDINGE collets with capacity of 1-1/16" round, 7/8" hexagon and 3/4" square.

All Hardinge 5C Collets are arranged to use the threaded positive stops shown on opposite page.

Round Fractional Sizes 1/16" to 1-1/16"

Hexagon Fractional Sizes 1/8" to 7/8"

Square Fractional Sizes 1/8" to 3/4"

5C-E EMERGENCY COLLETS

For emergencies requiring a step type, odd size or special shape collet, the 5C-E with its soft face and pilot hole permits rapid drilling and boring to exact size.

5C-E — 1/4" Pilot Hole

5C-E2 — 1/8" Pilot Hole

5C-E1 — 1/16" Pilot Hole

5C-E0 — No Pilot Hole

EXPANDING COLLETS

HARDINGE Expanding Collets for internal chucking permit many machining operations to be completed in one chucking assuring precision results. Exact lengths are easily obtained since both the expanding collet and work locating stop have NO END MOVEMENT.

FOR COMPLETE DETAILS REQUEST BULLETIN EC

INTEGRAL MOUNT JAW CHUCKS

5" 3 Jaw Universal Chuck is furnished with inside and outside jaws providing a gripping range of 1/16" to 5" outside, 1-1/8" to 5" inside and 1-5/32" through the spindle.

5" 4 Jaw Independent Chuck has reversible jaws providing a gripping range of 3/16" to 5" outside, 1-1/4" to 5" inside and 1-5/32" through the spindle.

(Specify for taper or threaded nose spindle)

UNIVERSAL COLLET STOP

This stop converts 5C HARDINGE collets into solid stop or spring ejector stop collets, without alteration of the standard collets. The application of this stop to the collet requires no machining. In other words, all collets up to and including 1" capacity can be used in the regular manner or as solid stop collets or as spring ejector stop collets.

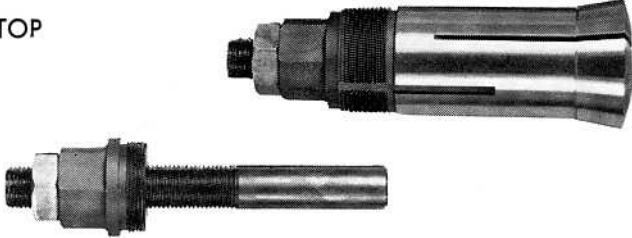
Tool No. G-10

HEADSTOCK SPINDLE TOOLING

THREADED POSITIVE STOPS

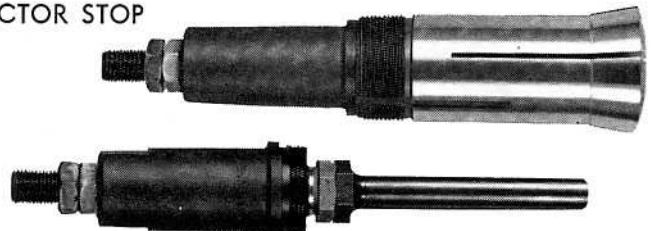
The Hardinge 5C Solid, Ejector and Long Stops are threaded into and **positively shoulder locked** against the end of new 5C HARDINGE Collets. Once locked in place, the stop cannot move even under heavy drilling or other end working pressures. The three types of stops permit a wide variety of chucking work since all are adjustable to the desired part length to the maximum depths indicated. Keep production moving at lower cost. Use 5C HARDINGE Positive Stops.

SOLID STOP



For Chucking Parts to a Depth of $3\frac{1}{8}$ " from the Collet Face.
Model SS-5C

EJECTOR STOP



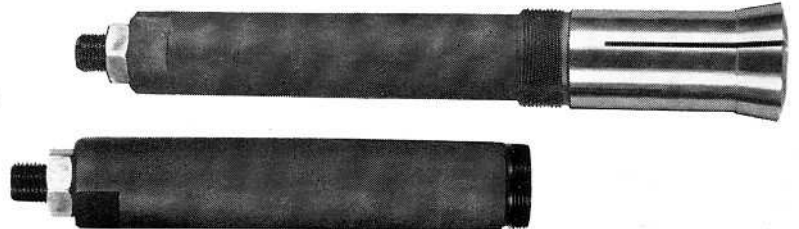
For Chucking Parts to a Depth of $2\frac{3}{4}$ " from the Collet Face.
Model ES-5C

LONG STOP

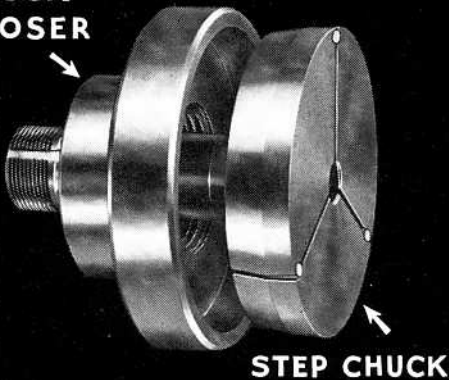
For Chucking Parts to a Depth of $7\frac{1}{2}$ " from the Collet Face.

For Work to and including
 $\frac{7}{8}$ " Round, $\frac{3}{4}$ " Hex and $1\frac{9}{32}$ " Square.

Model LS-5C



STEP CHUCK CLOSER



STEP CHUCK

5C HARDINGE STEP CHUCKS AND CLOSERS WITH 2", 3", 4", 5" AND 6" CAPACITY

REGULAR DEPTH CAPACITY step chucks and closers are carried in stock in 2", 3", 4", 5" and 6" sizes for immediate delivery. They are $\frac{3}{8}$ " larger in diameter than the rated size, so full capacity may be readily applied. Steps may be applied to a depth of $\frac{5}{8}$ " in these regular step chucks.

EXTRA DEPTH CAPACITY step chucks and closers are carried in stock in 2", 3", 4", 5" and 6" rated sizes for immediate delivery. These step chucks are made so the full rated capacity step may be applied to the maximum depth of $1\frac{1}{4}$ ". An extra depth step chuck closer is required for each size extra depth capacity step chuck.

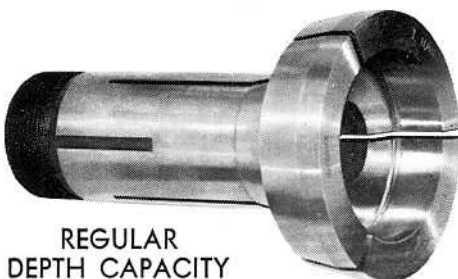
5C HARDINGE STEP CHUCKS Hardened and Ground to Size

Sizes in Stock with $\frac{1}{2}$ " Depth:

$1\frac{1}{16}$ ", $1\frac{1}{8}$ ", $1\frac{3}{16}$ ", $1\frac{1}{4}$ ", $1\frac{5}{16}$ ", $1\frac{3}{8}$ ", $1\frac{7}{16}$ ", $1\frac{1}{2}$ ",
 $1\frac{9}{16}$ ", $1\frac{5}{8}$ ", $1\frac{11}{16}$ ", $1\frac{3}{4}$ ", $1\frac{13}{16}$ ", $1\frac{7}{8}$ ", $1\frac{15}{16}$ ", 2" round

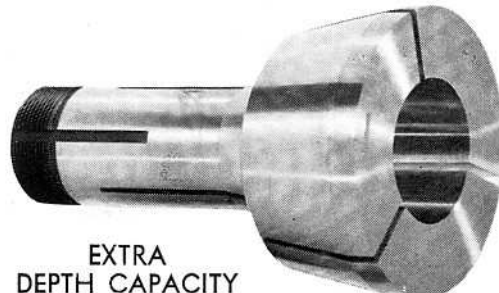
Sizes in Stock with $1\frac{1}{4}$ " Depth:

$1\frac{1}{8}$ ", $1\frac{3}{16}$ ", $1\frac{1}{4}$ ", $1\frac{5}{16}$ ", $1\frac{3}{8}$ ", $1\frac{7}{16}$ ", $1\frac{1}{2}$ ", $1\frac{9}{16}$ ",
 $1\frac{5}{8}$ ", $1\frac{11}{16}$ ", $1\frac{3}{4}$ ", $1\frac{13}{16}$ ", $1\frac{7}{8}$ ", $1\frac{15}{16}$ ", 2" round



REGULAR
DEPTH CAPACITY

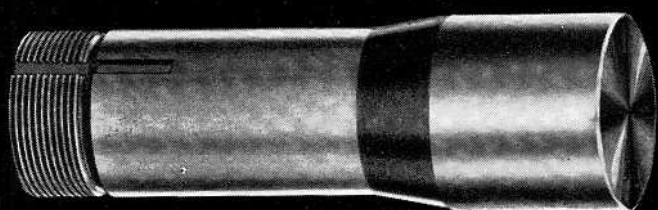
HOLE SIZE
DEPTH $\frac{1}{2}$ "



EXTRA
DEPTH CAPACITY

HOLE SIZE
DEPTH $1\frac{1}{4}$ "

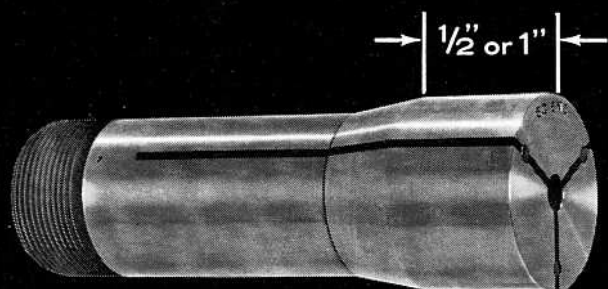
HEADSTOCK SPINDLE TOOLING



5C HARDINGE PLUG CHUCK

The 5C Hardinge collet shank section is ground to size for direct application to the machine spindle. The nose section is 1-15/32" in diameter and 1-3/4" long. The nose section can be machined in place for the greatest degree of accuracy to suit your particular requirements for special arbors.

Tool No. L-17

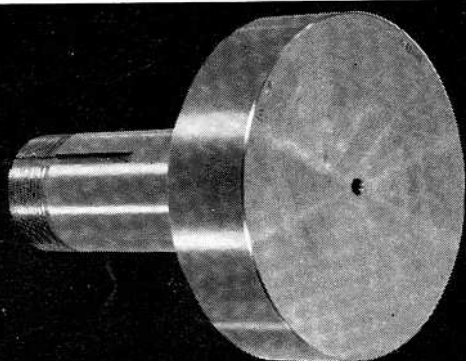


EXTENDED NOSE EMERGENCY COLLETS

The 5C-EN Collets are for the same applications as the 5C-E. The extended nose permits deeper counterbores.

Tool No. 5C-EN1 1"

Tool No. 5C-EN2 1/2"

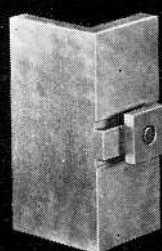


5C COLLET FIXTURE PLATES

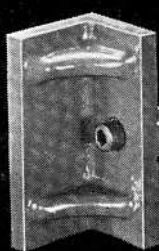
Fit directly in the Speed Lathe spindle. They can be machined for mounting of parts. Flange is 1" thick and there are two diameters available 3-3/8" and 4-3/8".

Tool No. 5C-3F 3-3/8"

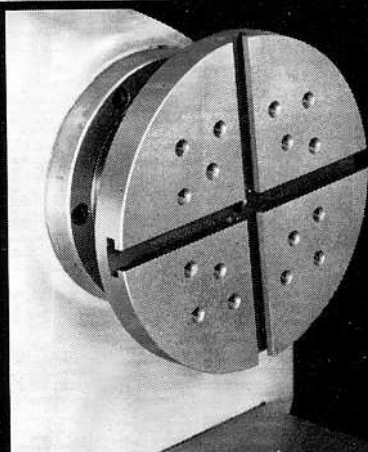
Tool No. 5C-4F 4-3/8"



FRONT VIEW



BACK VIEW



FACE PLATES

7" or 9" diameter face plates are used for holding irregular shaped pieces. Holes are drilled and tapped to permit the use of standard 5/16" x 18 bolts.

(Specify for taper or threaded nose spindle)

Tool No. C-26 7" Plate

Tool No. C-27 9" Plate

ANGLE PLATE

The angle plate fastens directly to the T-slot of the face plate and is used to support work at right angle to the face plate. Work clamping surface is 1-1/2" x 3".

Tool No. G-11

FIXTURE PLATES

The fixture plates are machined all over for direct application to the headstock spindle. Three sizes are available: 3", 5" and 8-7/8" diameter. The flange section is 3/4" thick. The center hole is 7/16" in diameter. These plates can be machined to become a fixture or for mounting fixtures to hold work or for mounting special purpose chucks.

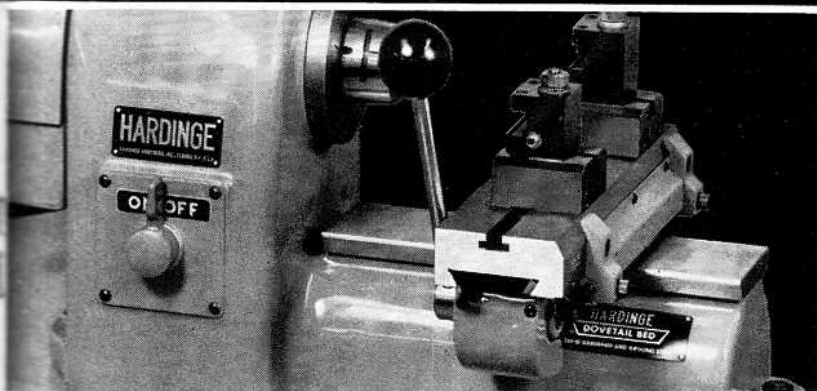
(Specify for taper or threaded nose spindle)

Tool No. C-23 3" Plate

Tool No. C-24 5" Plate

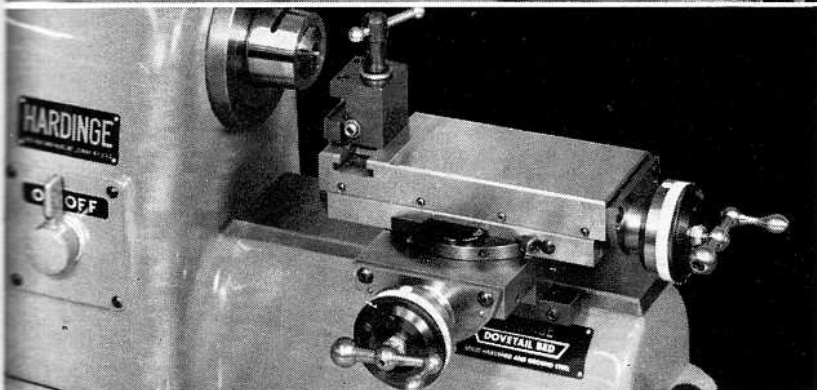
Tool No. C-25 8-7/8" Plate

TOOLING



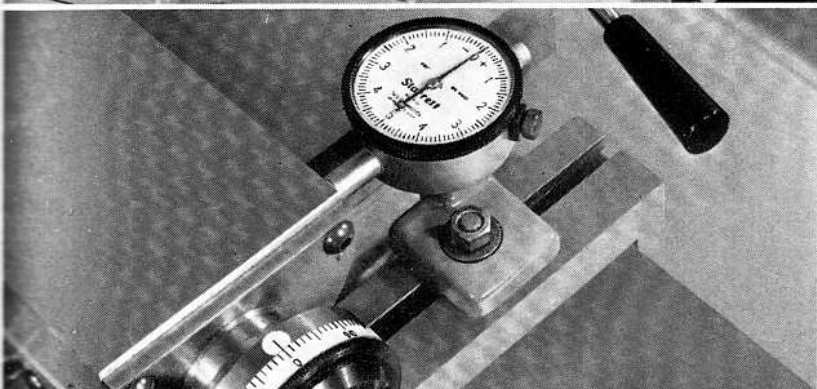
DOUBLE TOOL CROSS SLIDE

A rugged unit mounting directly to the bed for forming, facing, cutting off or when turning with the straight and taper turning slide. Double tool cross slide tool posts adapt standard 3/8" square bits.



COMPOUND SLIDE REST

The compound slide rest can be readily applied to the Hardinge Speed Lathe for screw feed precision turning, facing and boring operations. The large diameter feed screws are hardened and mounted on preloaded ball bearings. The Hardinge black and white feed screw dials are 2" in diameter. Both dials give direct readings in thousandths and are adjustable for zero settings.

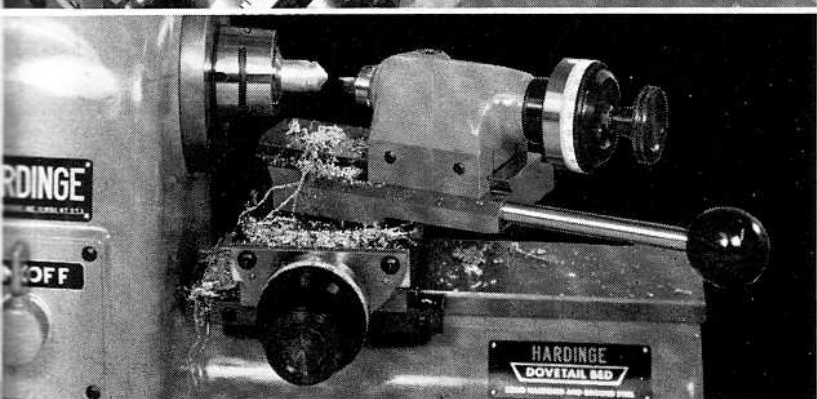


PRECISION INDICATOR STOP FOR SLIDE REST

A precision .0001" dial indicator stop is used for production turning and boring of parts to exceedingly close tolerances. The base of the indicator holder fastens directly to the dovetail bed ways.

The standard precision indicator stop consists of a .0001" dial indicator, bracket and base.

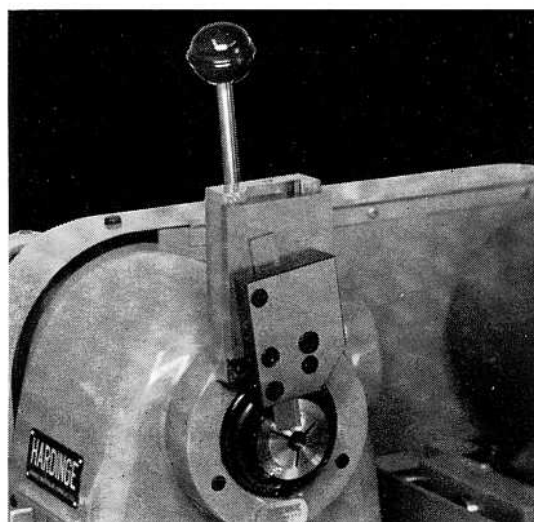
Tool No. DV-12 (Complete with Indicator)



RADIUS TURNING ATTACHMENT

For precision turning of concave or convex surfaces up to 1-1/2" radius. Useful for turning punches, dies, ball-shaped valve seats and special spherical cutting tools.

The swivel slide is mounted on precision preloaded ball bearings for accuracy and rigidity. The swivel slide moves through 360°. Hardened feed screws are mounted on preloaded ball bearings and have adjustable dials graduated in thousandths of an inch.



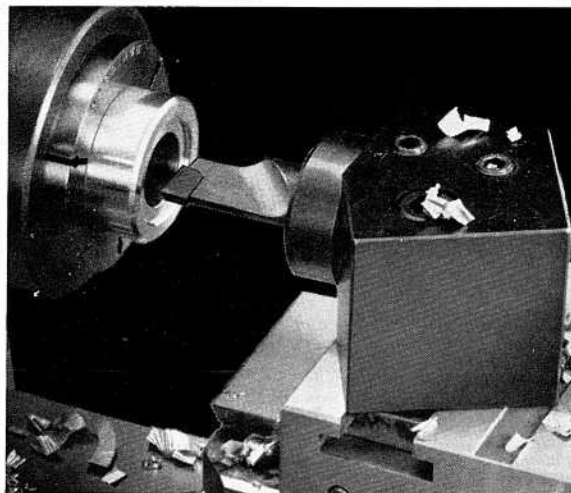
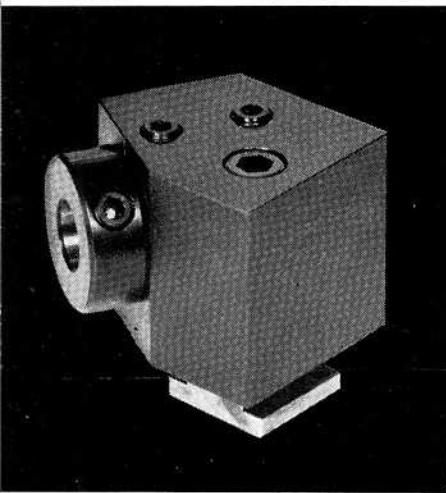
VERTICAL CUT-OFF SLIDE

Provides a cut-off operation as a separate tool position not involving other accessories. The slide fastens to the front of the headstock by cap screws.

Vertical Cut-Off Slide (Complete with Blade)

Tool No. P-3N Blade (Extra Blade)

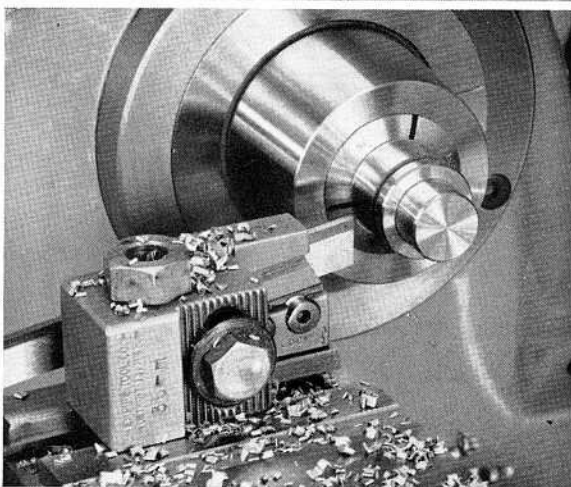
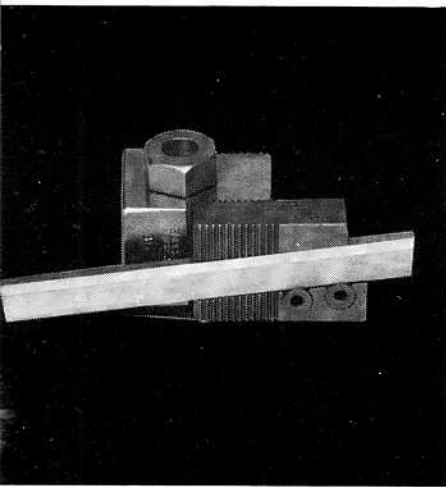
SLIDE REST TOOLING



BORING TOOL HOLDER

The holder mounts directly to the T-slot of the compound slide and adapts standard 5/8" diameter boring bars. An eccentric bushing permits height adjustment of the tool.

Tool No. L-5



CUT-OFF TOOL HOLDER

The holder mounts directly to the T-slot of the compound slide rest.

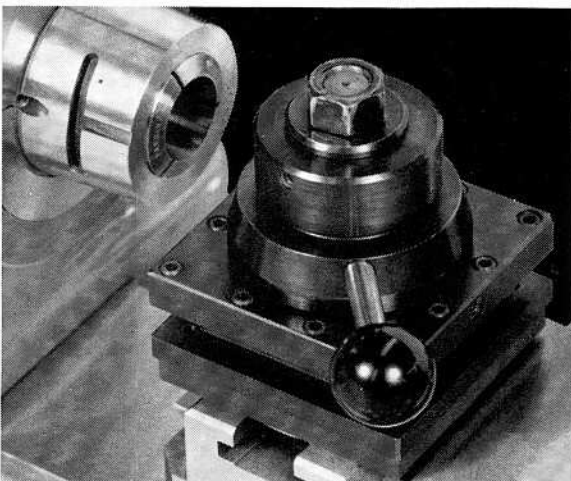
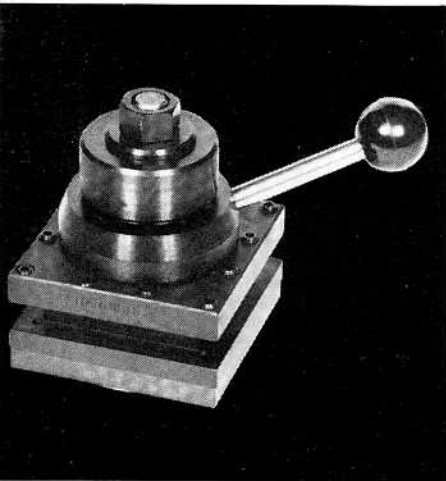
The blade and serrated blade holder are adjustable. The holder is furnished with a wrench for locking the blade in place — less blade. Blades are available in 1/16", 3/32" or 1/8" sizes. When ordering, specify desired blade thickness.

Tool No. L-10 Holder only

Tool No. P-1 1/16" Blade

Tool No. P-2 3/32" Blade

Tool No. P-3 1/8" Blade

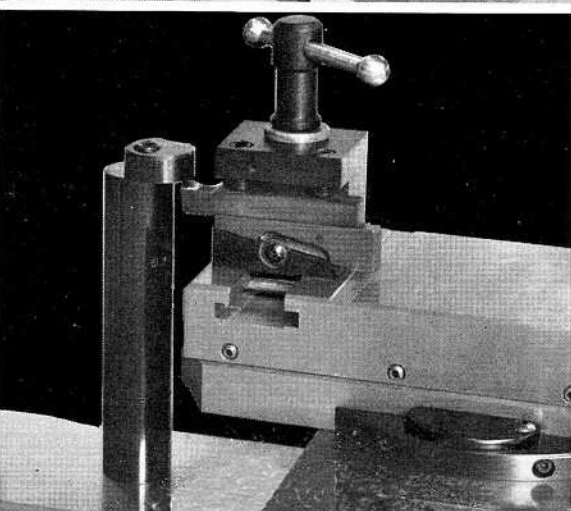


SQUARE INDEXING TURRET

The square turret is applied directly to the tool post T-slot of the compound slide. The turret takes standard 3/8" square tool bits. By a simple movement of the ball-handled lever, the turret is automatically unlocked, indexed to the next tool position and relocked, ready for the next machining operation.

Accurate indexing is accomplished by the use of tapered mating surfaces that automatically bring each tool into exact position.

Tool No. HTD

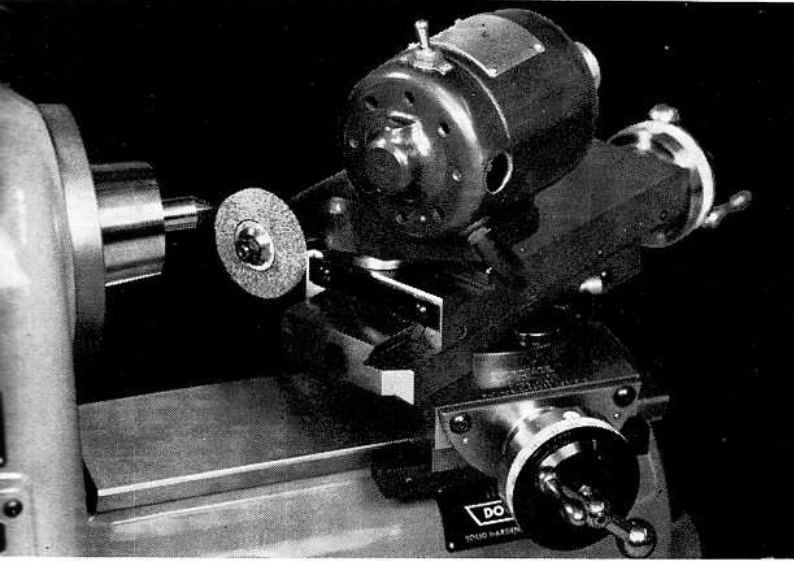


TOOL SETTING GAGE

The Hardinge tool setting gage for compound slide rest is an essential aid for fast, accurate setting of tool bits to the spindle centerline of your Hardinge HSL machine. With the Hardinge tool setting gage slow scale measurement for setting tools on center is eliminated.

Tool No. L-2

SLIDE REST TOOLING



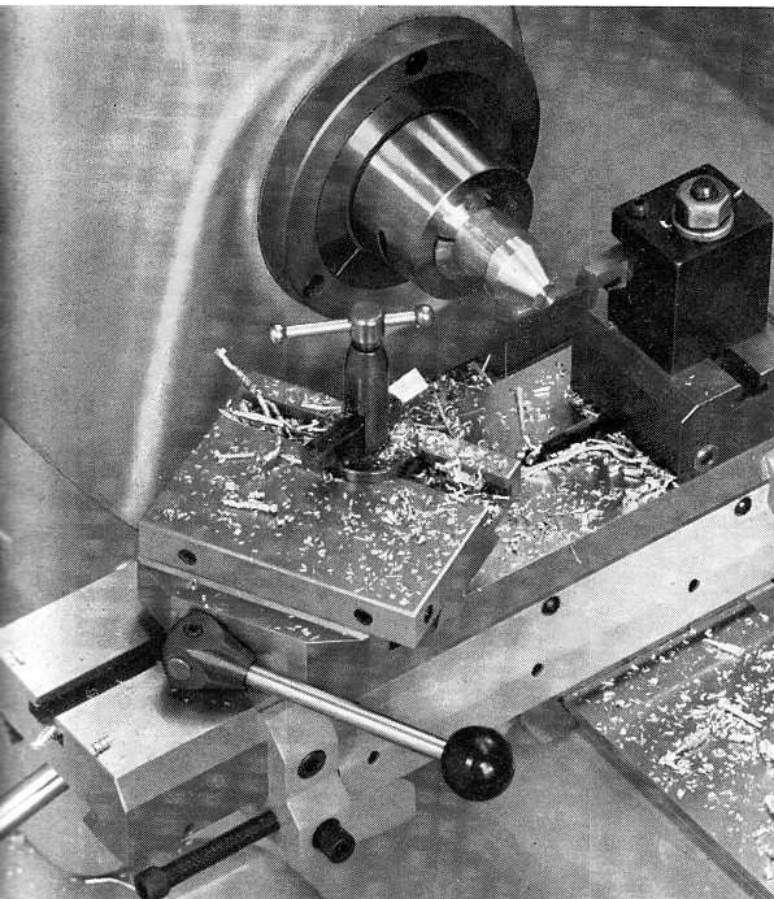
MOTOR GRINDER

The motor grinder mounts directly to the T-slot of the compound slide rest. It can be used for both external and internal grinding. Spindle speeds are 8,500 and 19,000 R.P.M. The motor operates on 110 or 220 volts, single phase.

(Specify Voltage When Ordering)

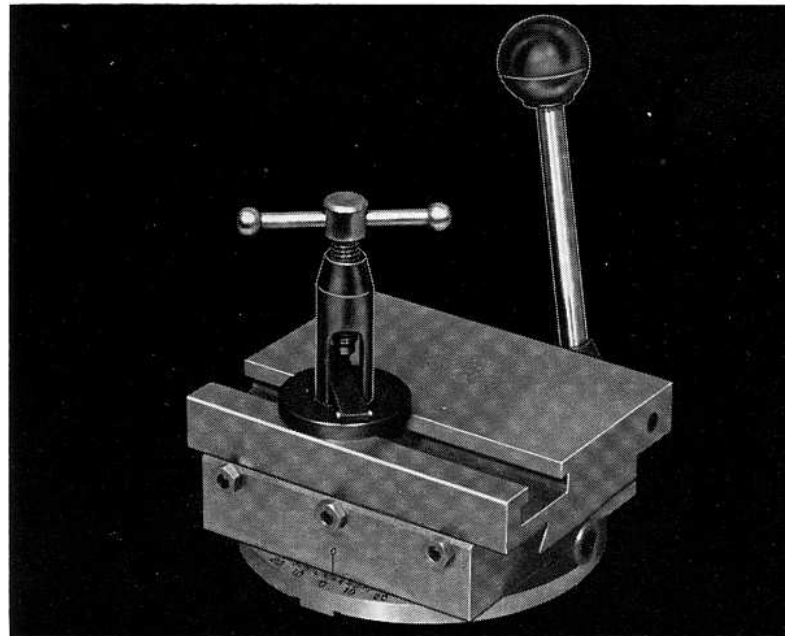
Tool No. L-7

DOUBLE TOOL CROSS SLIDE TOOLING



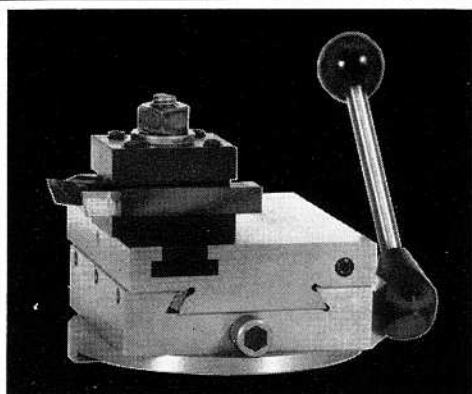
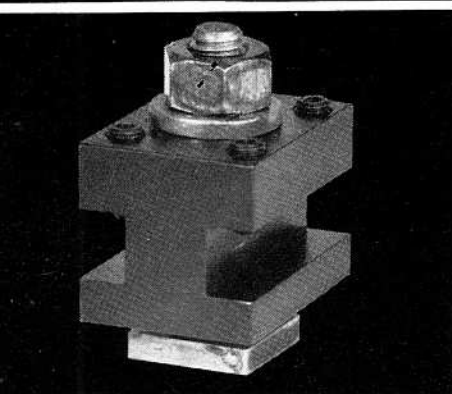
This attachment can be used on the front or rear of the double tool cross slide. It is for straight or angular turning, back facing, undercutting or for turning long slender parts that cannot be readily formed by a full width tool.

STRAIGHT AND TAPER TURNING SLIDE FOR DOUBLE TOOL CROSS SLIDE



The swivel base is graduated in degrees and can be swiveled and locked to any angle. The lever operated rack and pinion slide travel of 1-3/4" is controlled in either direction by adjustable stops. The tool post takes standard 5/16" square tool bits.

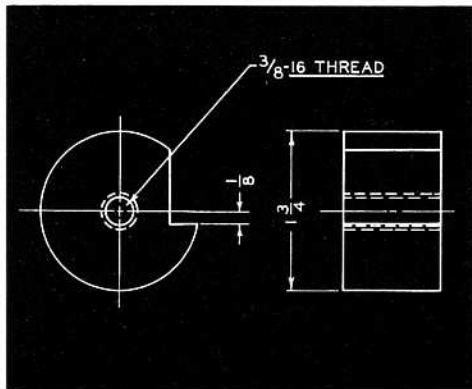
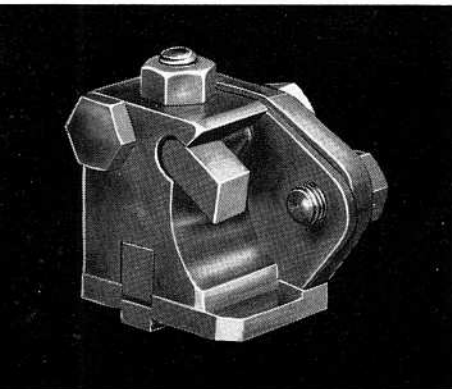
DOUBLE TOOL CROSS SLIDE TOOLING



DOUBLE TOOL BLOCK

With the D-2 Tool Block mounted on the straight and taper turning slide, shown on Page 11, combinations such as taper turning and chamfering, facing and grooving, turning two tapers and many more are possible. The D-2 Tool Block holds two 5/16" tool bits permitting dual machining operations.

Tool No. D-2

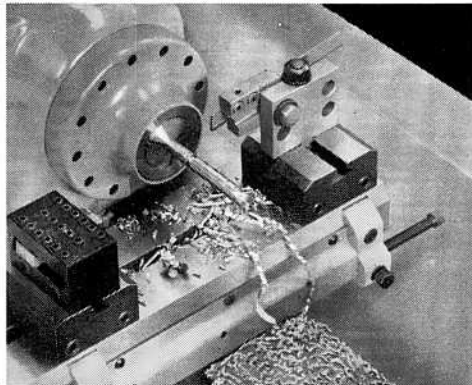
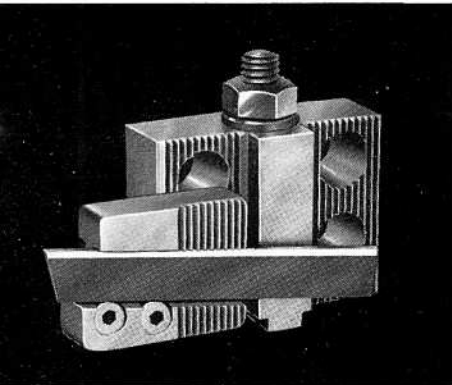


CIRCULAR FORM TOOL HOLDER

The holder assembly fits directly to the double tool cross slide tool holder block. The holder takes standard No. 00 circular form tools 1-3/4" in diameter with a maximum thickness of 1". When ordering, specify tool number.

Tool No. 00F—Front

Tool No. 00R—Rear



CUT-OFF TOOL HOLDER

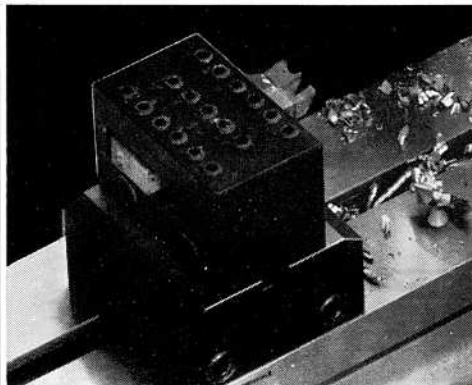
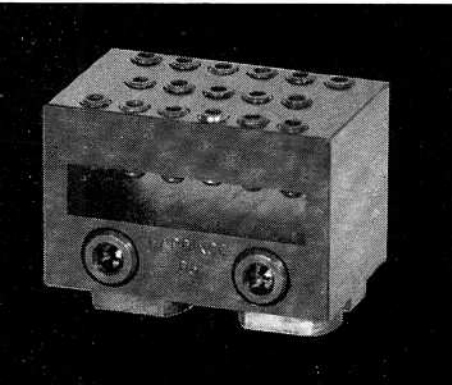
This patented cut-off tool holder fits directly to the front or rear tool block on the double tool cross slide. The blade and serrated blade holder are adjustable to provide cut-off capacity up to 1-1/16" and for either left hand or right hand cutting. The holder is furnished with a wrench for locking the blade in place—less blade. Blades are available in 1/16", 3/32" or 1/8" sizes. When ordering, specify desired blade thickness.

Tool No. D-10 Holder only

Tool No. P-1 1/16" Blade

Tool No. P-2 3/32" Blade

Tool No. P-3 1/8" Blade

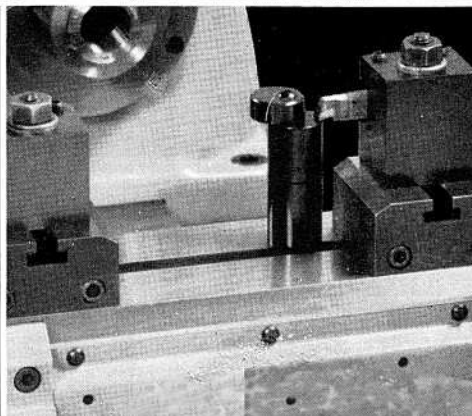


MULTIPLE TOOL HOLDER

This tool holder has an opening 7/16" x 2-1/8", permitting the use of standard 3/8" square tool bits in any multiple to capacity. By using the multiple tool holder, many operations such as under-cutting, chamfering and grooving can be done in one operation. When ordering, specify whether the holder is to be used in the front or rear position.

Tool No. D-6—Front

Tool No. D-7—Rear



TOOL SETTING GAGE

The Hardinge tool setting gage for double tool cross slide is an essential aid for fast, accurate setting of tool bits to the spindle centerline of your Hardinge HSL machine. With the Hardinge tool setting gage slow scale measurement for setting tools on center is eliminated.

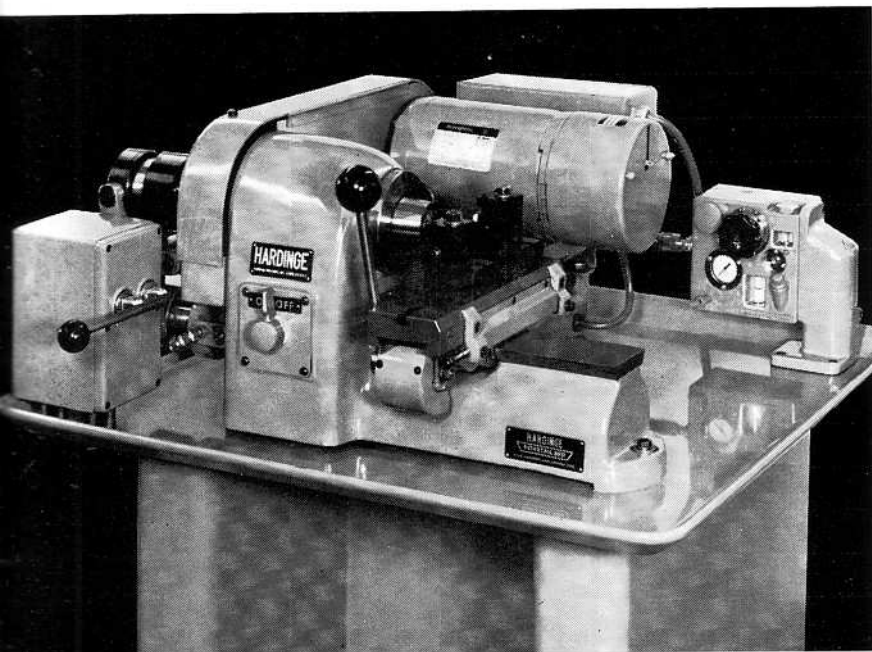
Tool No. D-3

TEMPORARILY
DISCONTINUED

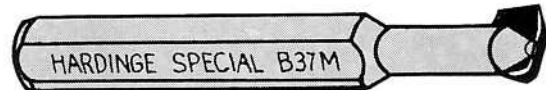
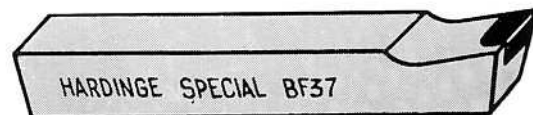
AIR OPERATED COLLET CLOSER

Fast production, positive and uniform chucking, ease of operation are obtained with the air operated collet closer.

The operator controls the unit with conveniently located hand or foot control valve. A minimum of 70 pounds air line pressure is required for operation. When ordering, specify hand or foot control.



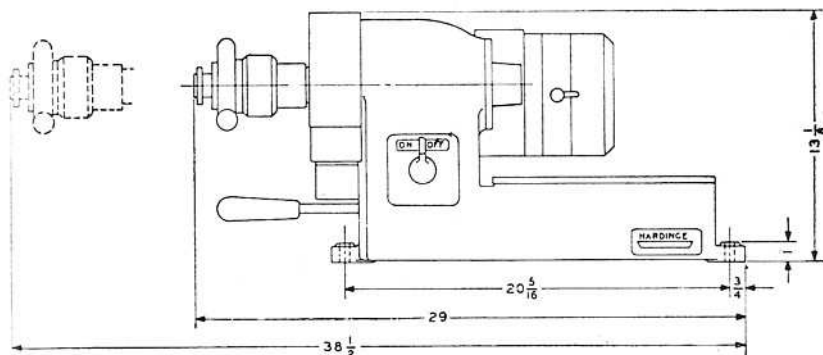
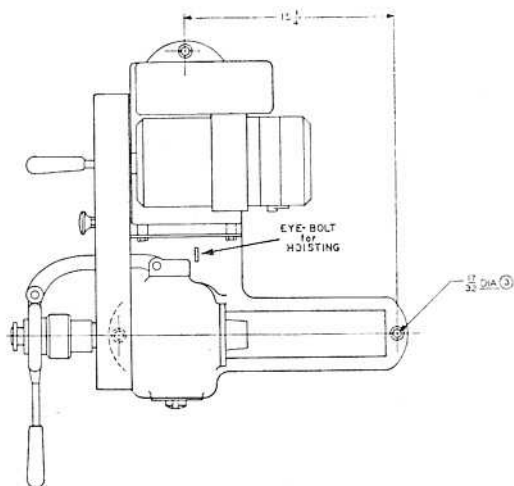
CARBIDE CUTTING TOOLS



Hardinge carbide cutting tools are designed to "CUT" rather than "PUSH" the material being machined. The clean, free-cutting action of Hardinge tools is due to the incorporation of proper TOP-RAKE to the cutting edge. Proper rake angles allow the material to flow freely from the cutting edge — this reduces cutting pressure, heat and permits lighter chucking of the work with correspondingly less distortion. Also with a free-cutting tool higher spindle speeds and faster feeds can be used to obtain a better finish on the work at lower cost.

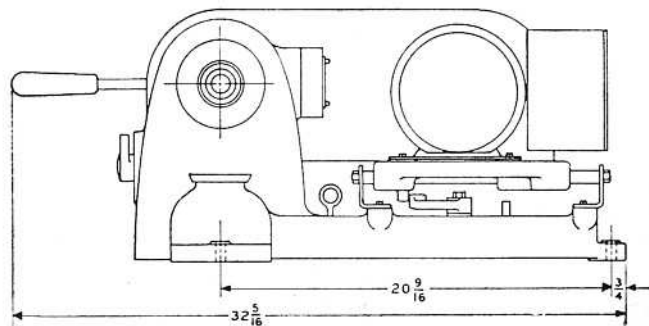
Hardinge carbide tools have cutting edges that, in addition to being precision-ground, are diamond-lapped to a fine surface finish and keen, sharp cutting edges.

The tools are specially designed for use with Hardinge Super-Precision Machines. See Bulletin DH.



— SPEED LATHE — BENCH MOUNTED SPECIFICATIONS

For additional specifications
see Pages 14, 15 and 16.



— SPECIFICATIONS —

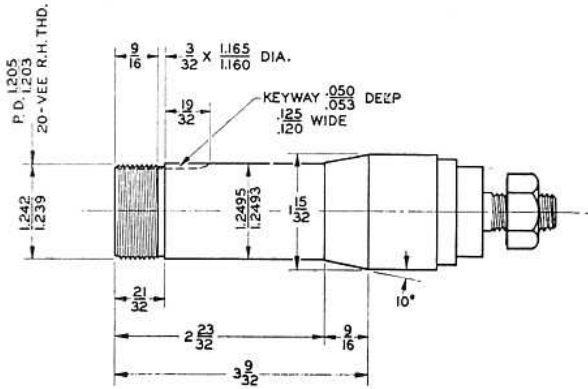
MODEL HSL-59 SPEED LATHE

SPINDLE CONSTRUCTION	HARDINGE SUPER-PRECISION
SPINDLE CAPACITY	PRELOADED BALL BEARING
WITH ROUND 5C COLLETS	1 - 1/16"
WITH HEXAGON 5C COLLETS	7/8"
WITH SQUARE 5C COLLETS	3/4"
WITH STEP CHUCKS	6"
WITH JAW CHUCKS	5"
WITH EXPANDING COLLETS	3"
SPINDLE SPEEDS	750, 1800, 3000 R.P.M.
SWING OVER BED	9"
LENGTH OF BED FROM FACE OF SPINDLE	10"
OVERALL LENGTH	29"
OVERALL DEPTH	33"
OVERALL HEIGHT	14"
SPINDLE DRIVE MOTOR	1/2 HP
WEIGHT — APPROXIMATE	300 LBS.
WEIGHT — SHIPPING — APPROXIMATE	450 LBS.

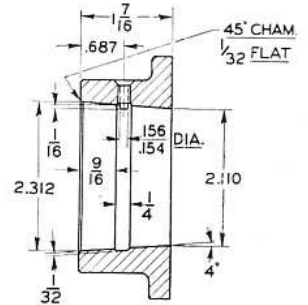
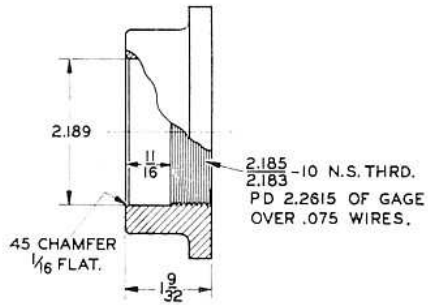
— REGULAR EQUIPMENT —

- Fully Enclosed 9" Swing Headstock
- Super-Precision Preloaded Ball Bearing Spindle
- Hardened and Precision Ground Taper Nose Spindle with 1-1/16" 5C collet capacity
- Ball Bearing Lever Collet Closer
- Hardinge Standard Hardened and Ground Steel Dovetail Bedways
- Solid One Piece Headstock and Bed Construction
- Automatic Spindle Brake built into Motor Drive
- Convenient Brake Release for free spindle
- Built-in Start-Stop Selector Switch
- Magnetic Electric Control Panel with transformer providing 110 volts for control circuit; time lag thermal overload relays provide overload protection; low voltage protection is also provided—entire panel is one self-contained unit.
- Machine is painted 7B Gray, completely wired and assembled when delivered for operation on (specify electrical current)
 - 208 volt, 60 cycle, 3 phase
 - 220 volt, 60 cycle, 3 phase
 - 440 volt, 60 cycle, 3 phase
 - 550 volt, 60 cycle, 3 phase
 - 115 volt, 60 cycle, single phase

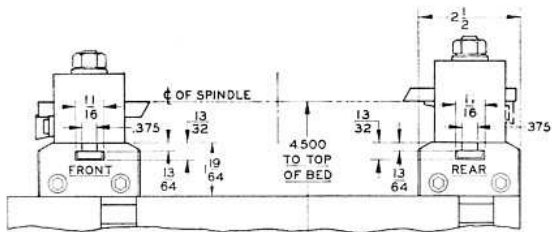
-TOOLING DIMENSIONS-



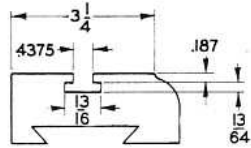
COLLET FIXTURE DIMENSIONS



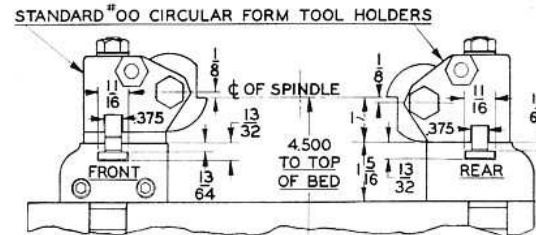
SPINDLE NOSE FIXTURE DIMENSIONS



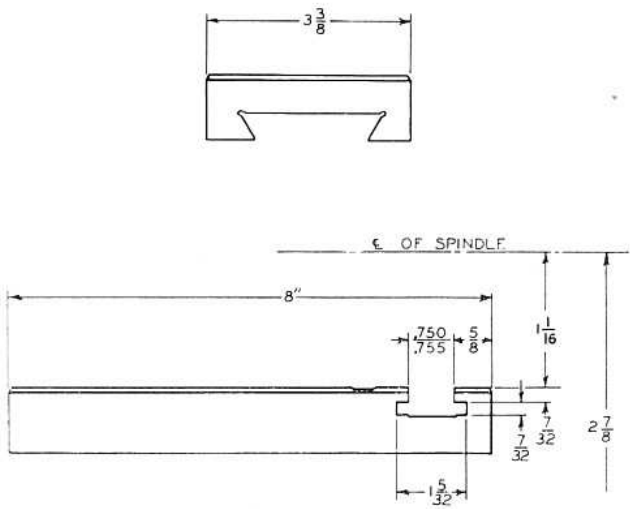
CROSS SLIDE WITH STANDARD TOOL HOLDERS



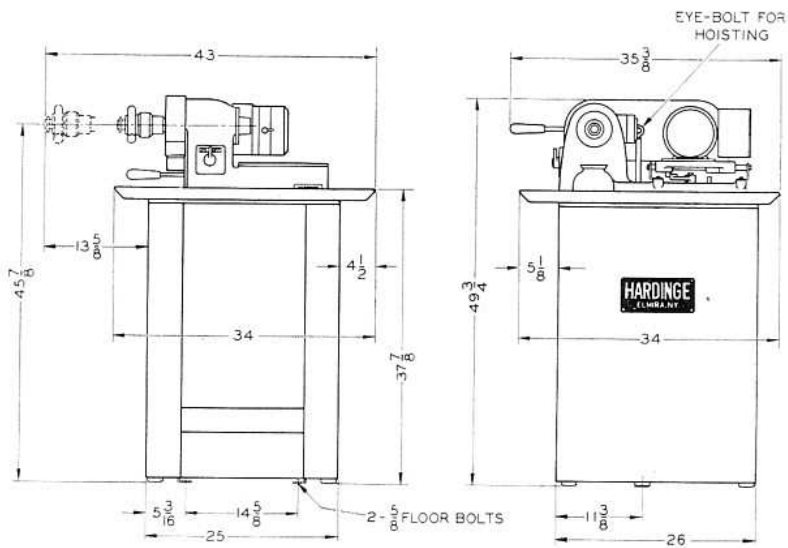
END VIEW OF CROSS SLIDE TOP SLIDE



CROSS SLIDE WITH CIRCULAR TOOL HOLDERS



TOOLING DIMENSIONS FOR COMPOUND SLIDE REST



FLOOR PLAN SPECIFICATIONS WITH PEDESTAL

Bench mounted specifications. See Page 13.

HARDINGE

HSL-59 SPEED LATHE

- COMPACT
- WELDED STEEL
- LOW COST
- CHIP PAN
- FOOT REST
- KNEE SPACE

Mount your Hardinge HSL-59 Speed Lathe on a modern, rugged, solid welded steel base. The entire unit can be easily positioned in relation to other production equipment for efficient work flow and to eliminate costly work handling from one department to another.

Knee space and foot rest for the operator increases efficiency by reducing operator fatigue. An adjustable height chair is available for the HSL-59.

Large chip pan, in addition to catching and holding chips, provides a convenient work staging area.

For easy handling, the machine, base and chip pan are each packaged and shipped separately. Assembly is fast and easy. Three mounting bolts are provided with the base.

Welded steel base and pan weigh 340 pounds.

