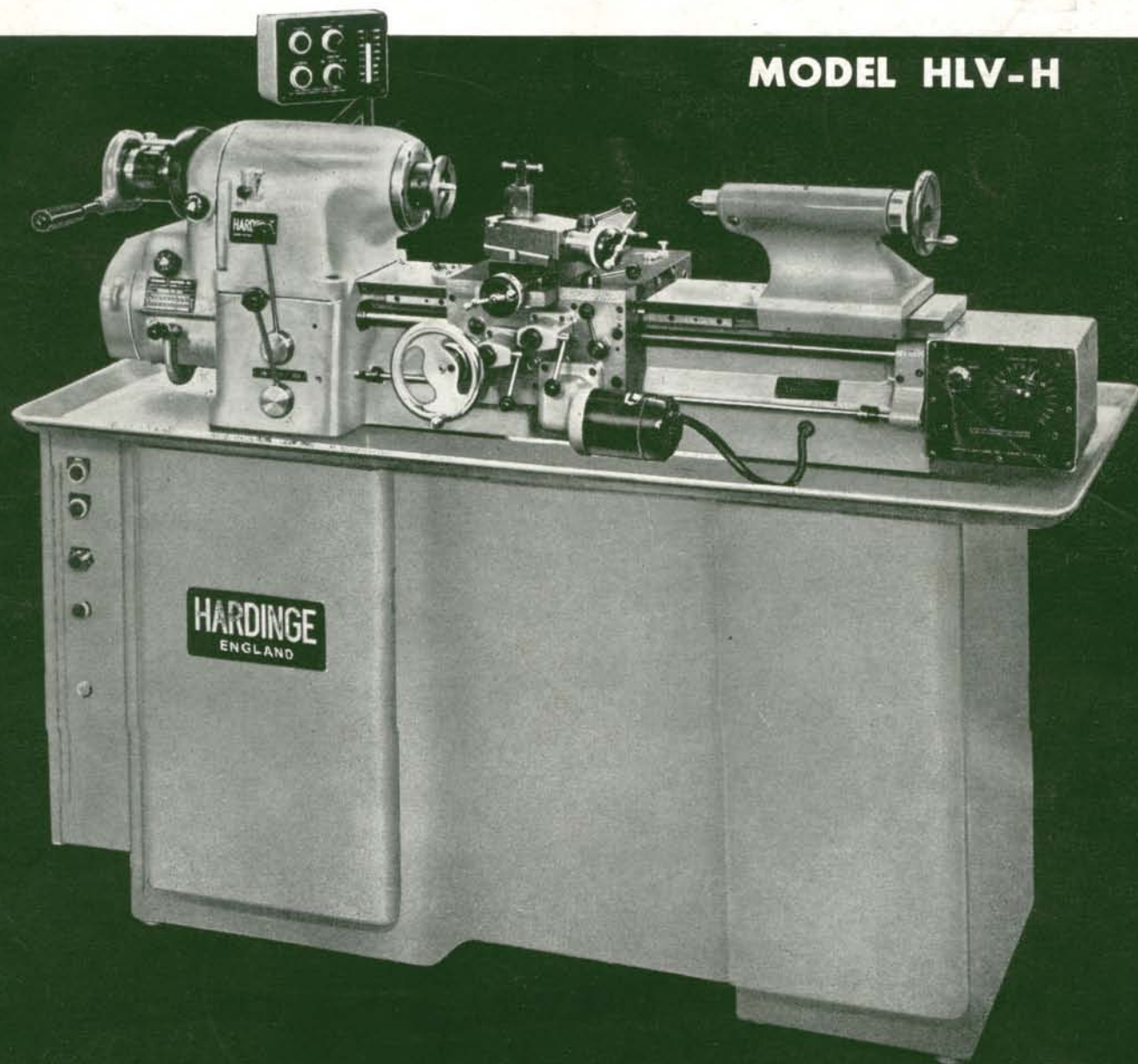


HARDINGE
FELTHAM MIDDLESEX ENGLAND

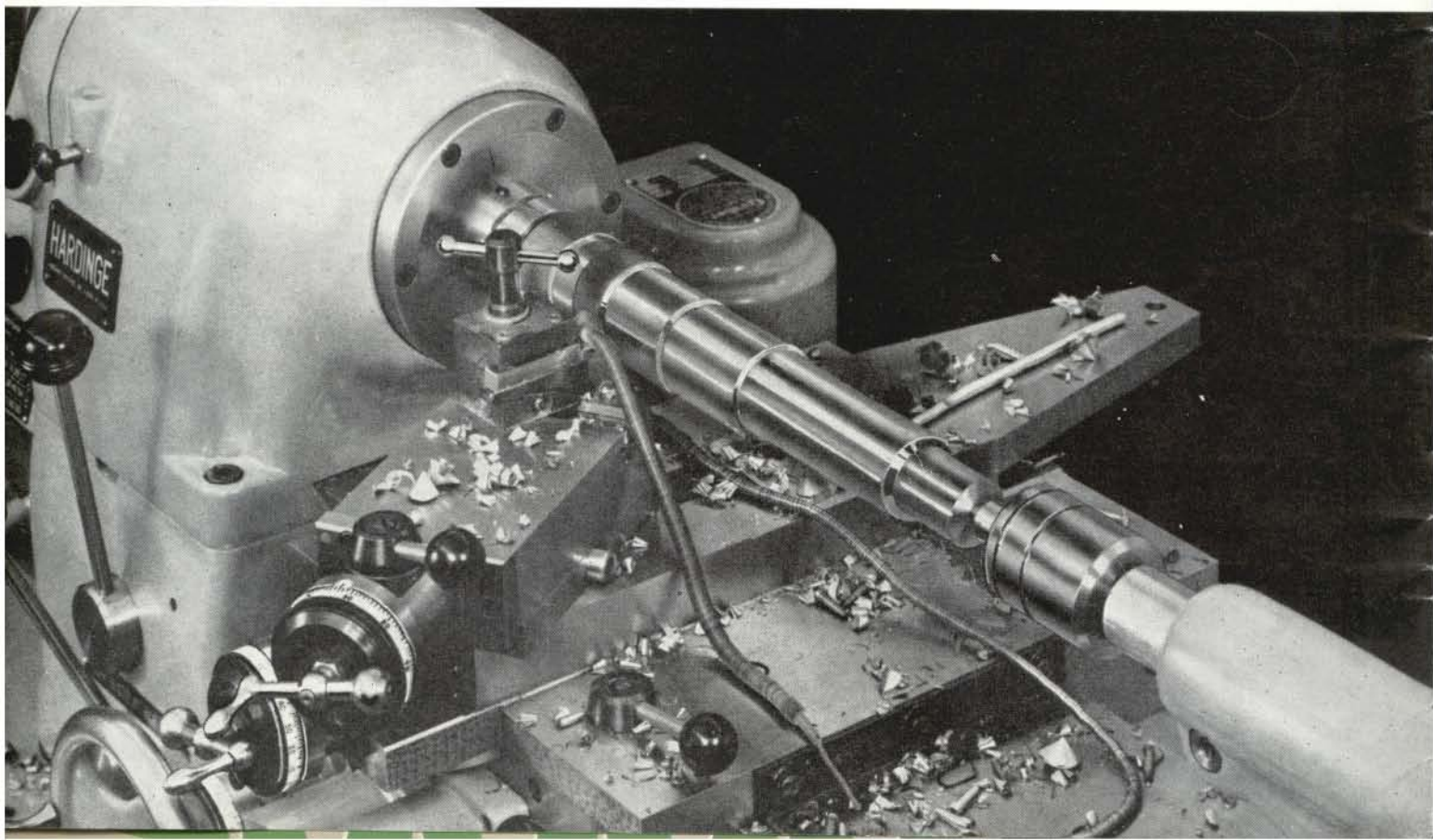
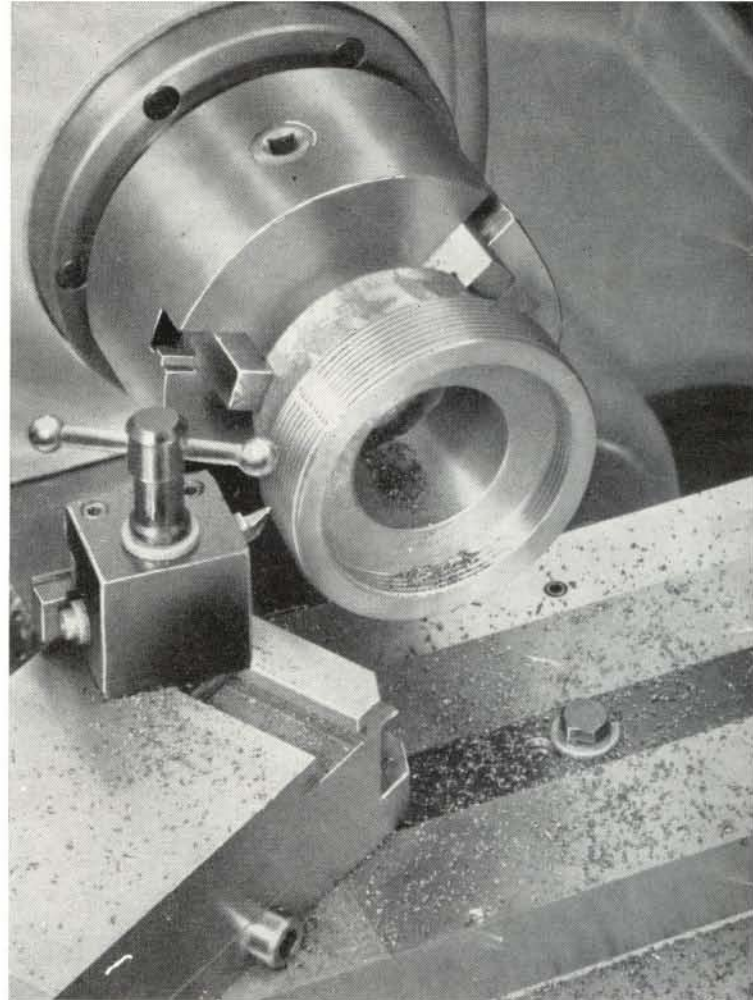
SUPER PRECISION

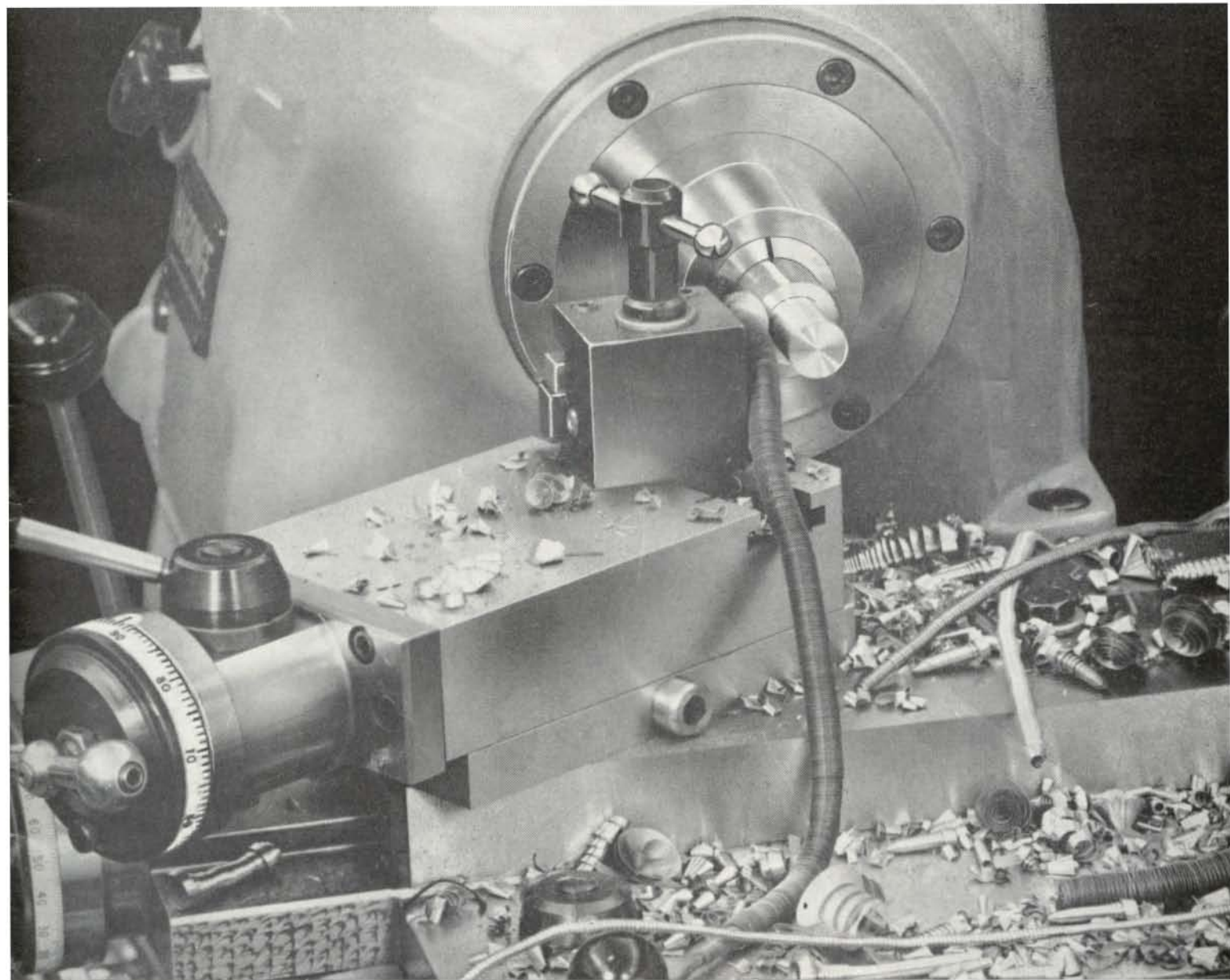
**HIGH SPEED
TOOL ROOM LATHE**

MODEL HLV-H



**THE MODERN COST CUTTING MACHINE
FOR
SUPER PRECISION LOW COST EASE OF OPERATION**





Complete Range For Machining Parts Economically

Close observation in your plant will reveal the use of machines entirely out of proportion to the work. It is not uncommon to see engine lathes weighing two to four thousand pounds slowly labouring away on work one inch in diameter or less.

Plants have small and large work and, for economy and proper results, there must be such a distinction among the lathes used. When using a large engine lathe for collet work, you have a greater investment, loss of floor space, added power consumption, improper speeds, poor results, and most important, the loss of valuable time.

The Hardinge Model HLV-H Lathe, presented in this bulletin, was primarily designed to fill a very old existent gap between the plain precision bench lathe and the heavy duty engine lathe. Extreme accuracy, high spindle speeds, and thread cutting ability are coupled with power and handiness for ease of operation to rapidly obtain desired results.

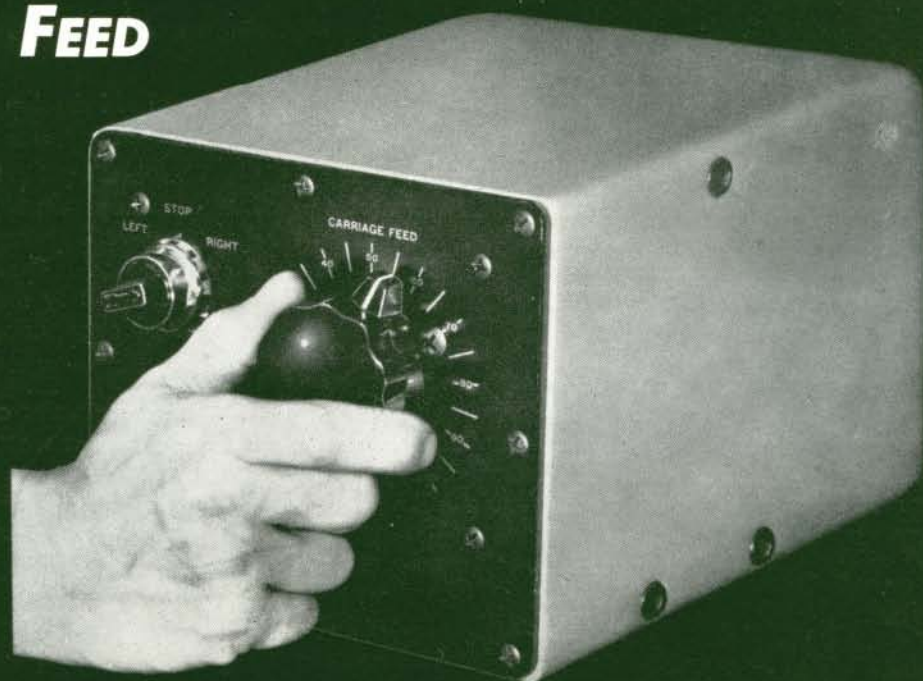
The correct size of the Hardinge HLV-H Lathe will become apparent when turning and threading, changing collets and jaw chucks, positioning the tailstock and when making use of the many speeds and feeds.

**SIMPLY PUSH A BUTTON
FOR
EXACT SPINDLE SPEED**



EASY and CONVENIENT to OPERATE

**SIMPLY TURN A KNOB
FOR
EXACT FEED**



INFINITELY VARIABLE SPINDLE SPEEDS

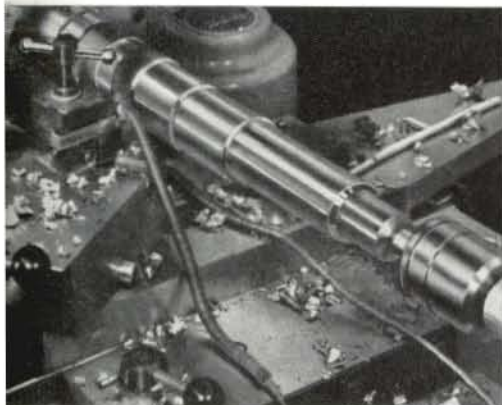
Your lathe operators will get full value for you when using the Hardinge variable spindle speed because it is easy to operate. This cannot be said for the ordinary lathe with complicated features which operators refuse to use because of the effort required to operate such machines.

With the Hardinge HLV-H lathe the spindle speed may be increased or decreased at the touch of a control button. Selecting the exact speed required can be done while the tool is cutting. It is easy to vary the spindle speed to obtain desired rate of production and specified surface finish.

SLOW SPEED

MEDIUM SPEED

HIGH SPEED



COARSE FEED

MEDIUM FEED

FINE FEED

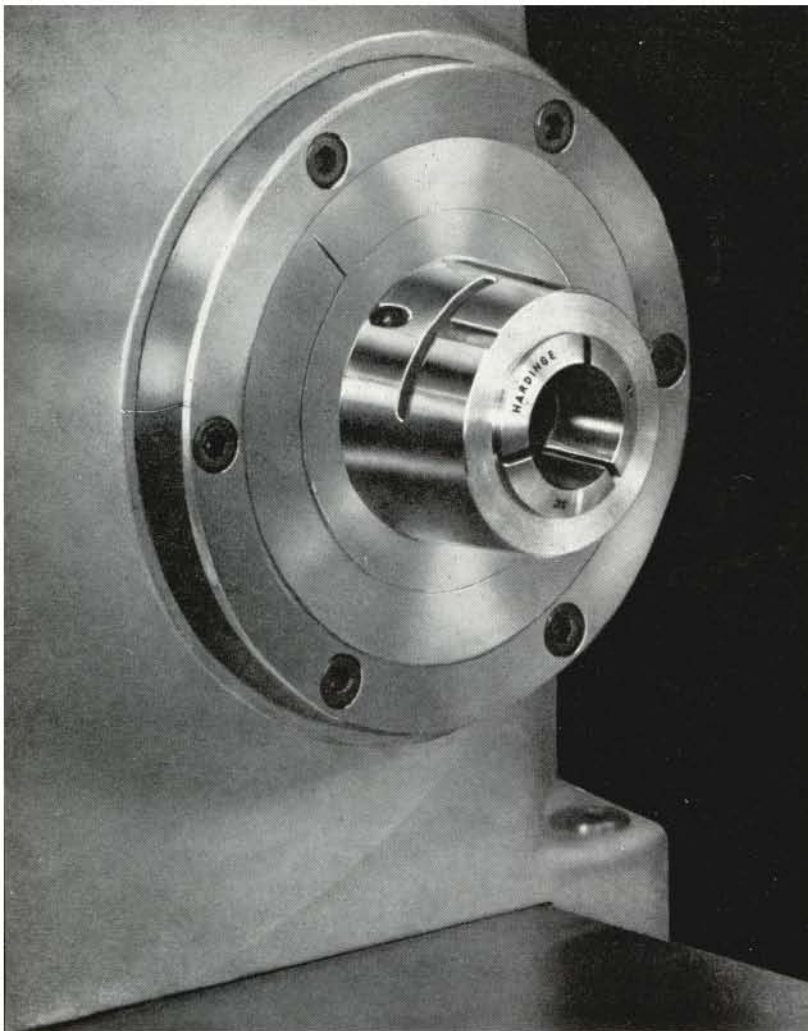
INDEPENDENT ELECTRIC VARIABLE FEEDS

Your operators will produce more work with less effort in less time and with more precision on the Hardinge HLV-H lathe. The independent variable electric feed for carriage and cross slide provide complete freedom of operation. You are not tied down to conventional rates of feed in relation to spindle speed. With the machine in operation you simply turn the control knob

to obtain the exact feed for efficient chip removal and best surface finish.

The rate of feed can be changed instantly at any time, even when the tool is cutting, without wasting valuable production time stopping the machine to shift gears as is the case with slow conventional lathes.

The Hardinge variable spindle speed drive and the Hardinge independent electric feed were developed by Hardinge and come to you laboratory tested and customer shop use approved. Neither is complicated which means little or no maintenance. For example, electronic tubes are not used in either unit. All designs are basic and understood by regular shop people.



HEADSTOCK FEATURES

**SUPER-PRECISION PRELOADED
BALL BEARING SPINDLE**

1-1/16" COLLET CAPACITY

**COLLET SEATS DIRECTLY
IN SPINDLE**

**PRECISION TAPER NOSE SPINDLE
FOR MOUNTING TOOLING**

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

**INFINITELY VARIABLE
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.

Your operators will enjoy the carefree operation of the Hardinge preloaded ball bearing spindle. The bearings require no adjustment and are permanently lubricated to operate continuously at all speeds without attention. Preloading eliminates all end play, radial play and assures the turning of true pieces.

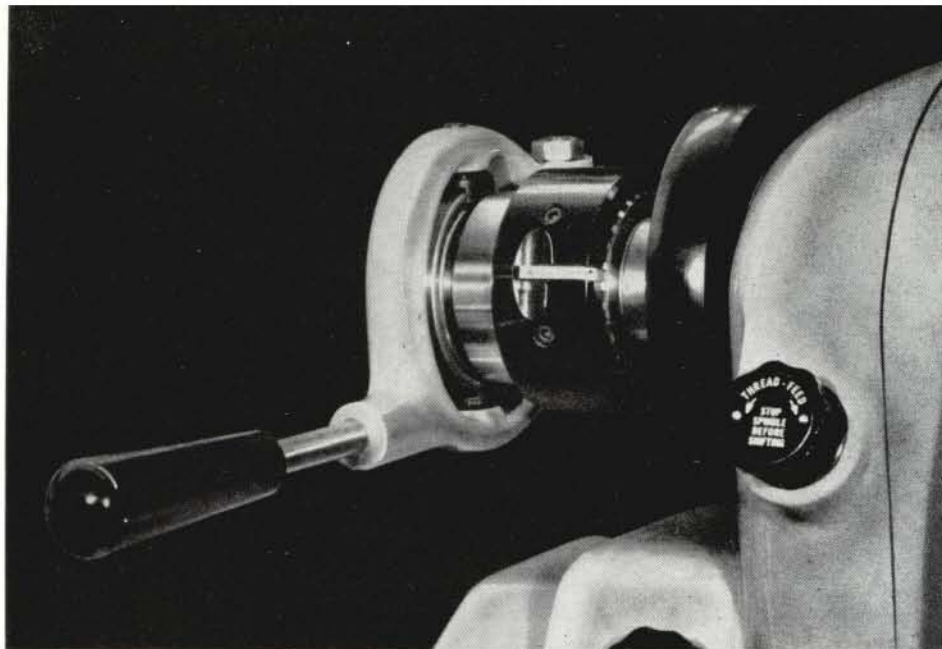
The collet seats directly in the hardened and precision ground spindle, thus eliminating troublesome sleeves and

adaptors that introduce costly inaccuracies.

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

An exclusive feature of the Hardinge super-precision headstock is an electrically interlocked spindle lock pin. The new type lock pin eliminates any chance of starting the main drive motor with the lock pin engaged.

The headstock spindle drive belt can be changed without removing the spindle or disturbing the precision pre-loaded ball bearings.

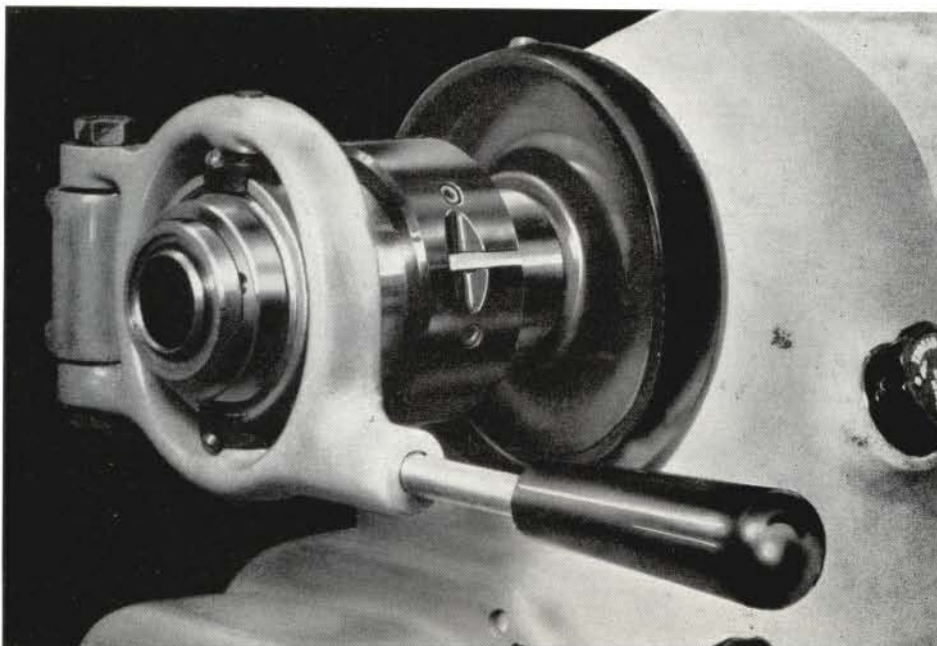


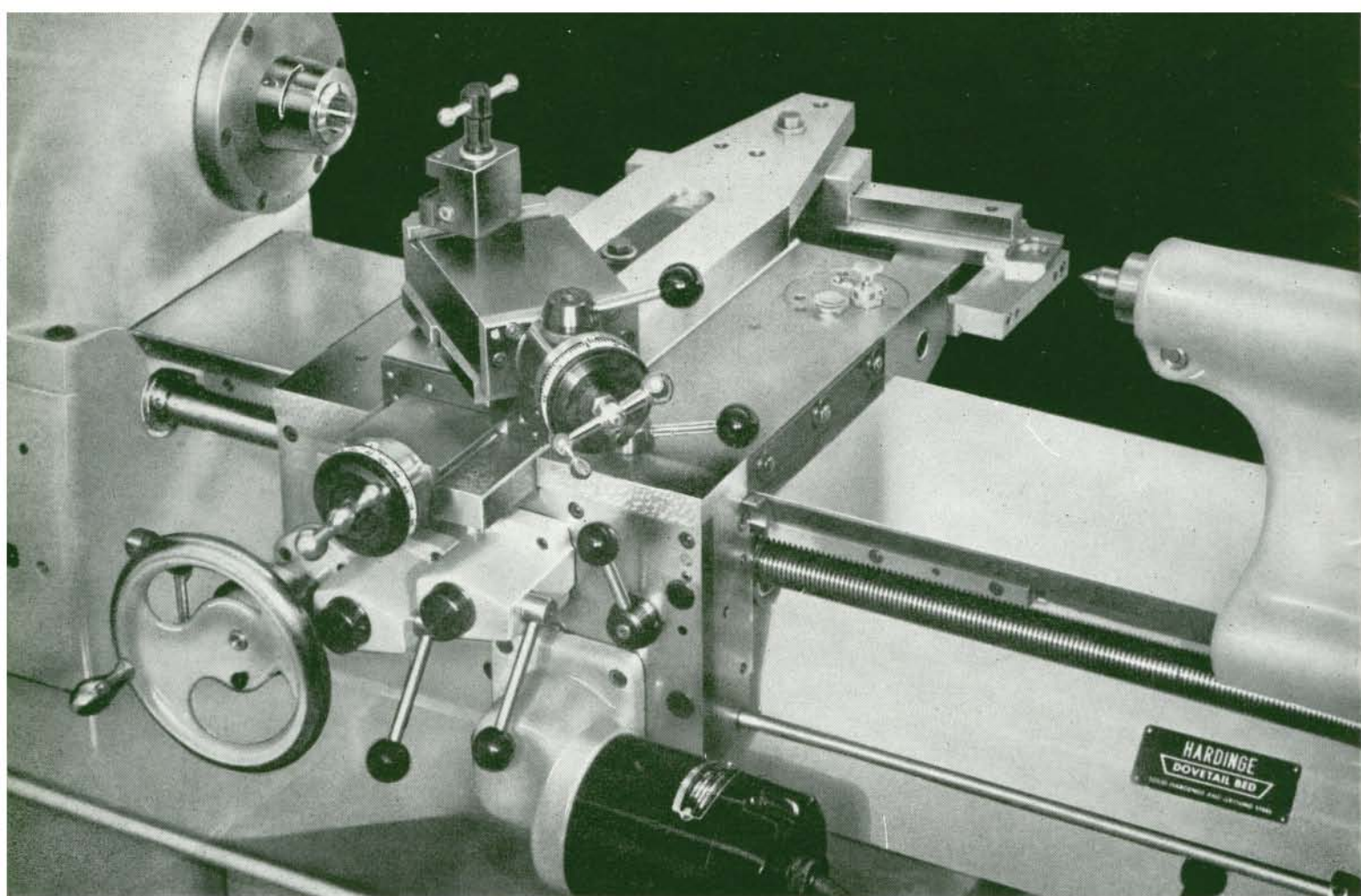
FAST LEVER COLLET CHUCKING

Positive collet gripping is fast and easy with the lever operated collet closer which is additional equipment on this modern lathe. Collet tension is instantly adjustable throughout the full range from light to heavy holding power without the use of tools. A single movement to the left closes the collet. A single movement to the right opens the collet.

HANDWHEEL FOR SPINDLE

Your operators will appreciate the standard built-in handwheel for the spindle. It provides a safe, convenient means for rotating the spindle by hand . . . a must when indicating or inspecting precision work. This feature means increased production at lower cost.





HARDINGE FULL BEARING CARRIAGE

Look at the rigid carriage on this machine. It is one solid piece. No narrow bridge to connect long, slender carriage wings as on the ordinary "H" type carriage design. A solid full bearing carriage means the cross slide and cutting tool have maximum support to withstand heavy cuts and high work speeds used for modern economical machining with carbide tools. Notice also the long rugged full bearing cross slide for maximum accuracy on facing work.

The carriage has a full bearing on the front dovetail; it has a full bearing on the top of the bed, and a full bearing on the rear dovetail. The dovetail design of carriage and bed ways means that all tool carrying slides are dovetailed together for maximum rigidity and accuracy. Dovetailing of compound and cross slides has been done for years — now Hardinge has all three dovetailed together. The carriage dovetail bed ways are pressure lubricated.

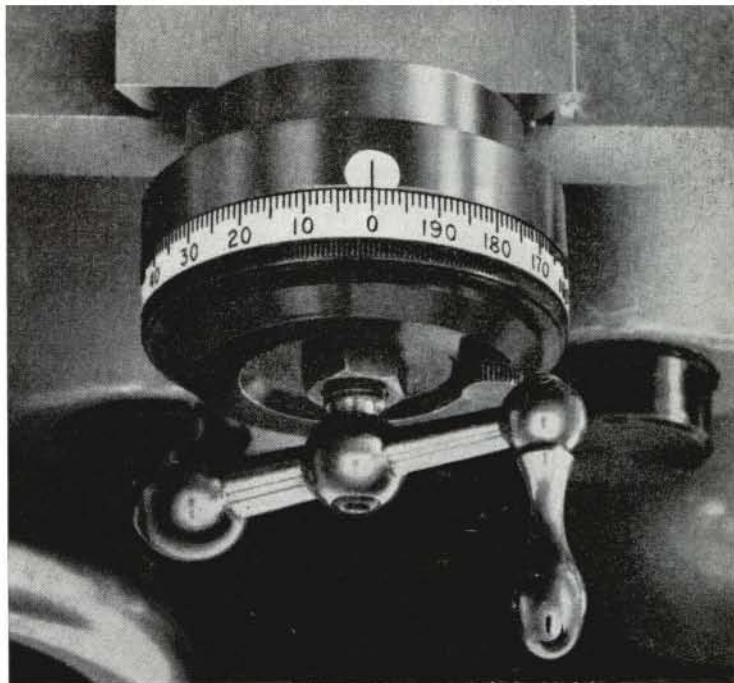
The easy operating snap-up clutches for the longitudinal and cross slide feed are properly located for convenient operation.

The apron for carriage is of the double wall type completely enclosing precision gears and clutches. The entire carriage gear train runs in a sealed oil bath.

DIRECT READING CROSS SLIDE DIAL

Hardinge black and white dials are the easiest reading feed screw dials developed as standard lathe equipment. In operation of a lathe no other item receives such close operator attention as the feed screw dials—dial graduations control the size of the part produced. This lathe with its fast, easy reading black and white dials will produce more accurate work at lower cost than a lathe with conventional hard-to-read dials.

Dials are made of a permanent white, hard material with each graduation individually engraved for maximum accuracy. Each direct reading graduation is equal to $.001''$ on work diameter.



EASY READING BLACK and WHITE DIALS for INCREASED PRODUCTION

CARRIAGE HANDWHEEL DIAL IS STANDARD EQUIPMENT

Accurate control of carriage movement is as essential in precision work as positive control of cross slide movement.

To secure full value from this modern high speed precision lathe, Hardinge includes an easy reading black and white dial with the carriage handwheel . . . providing a fast, accurate and convenient way of controlling the travel and positioning of the carriage. Dial graduations are $.010''$.



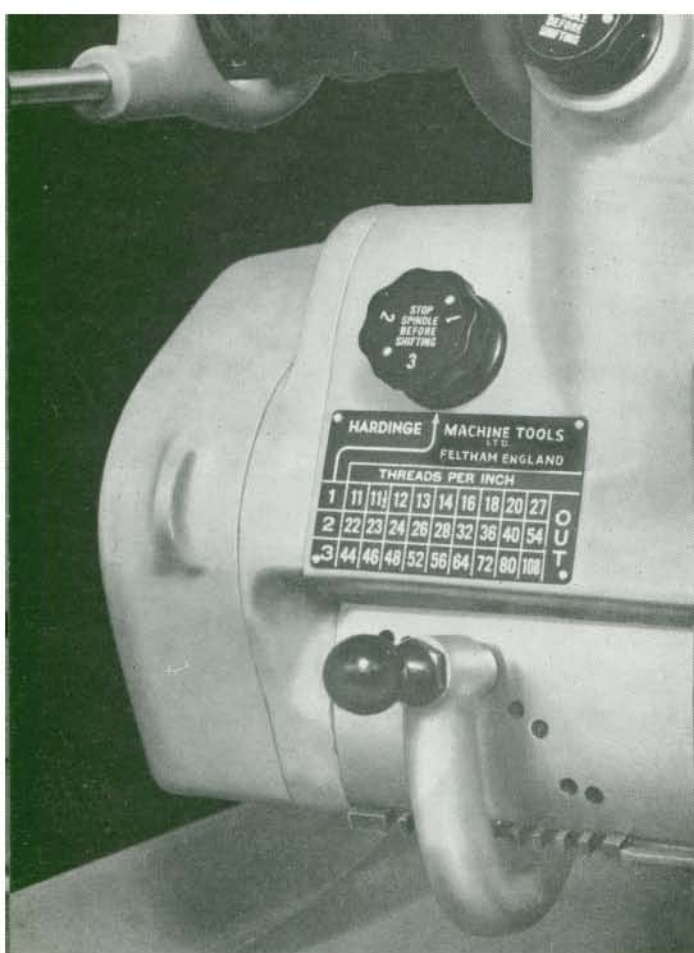
PRECISION GEAR BOX FOR THREADING

The Hardinge HLV-H lathe has a precision quick change gear box designed and built for threading — there has been no compromise as with most lathe gear box designs where the gear box is run constantly and used for both power feed of the carriage and threading operations.

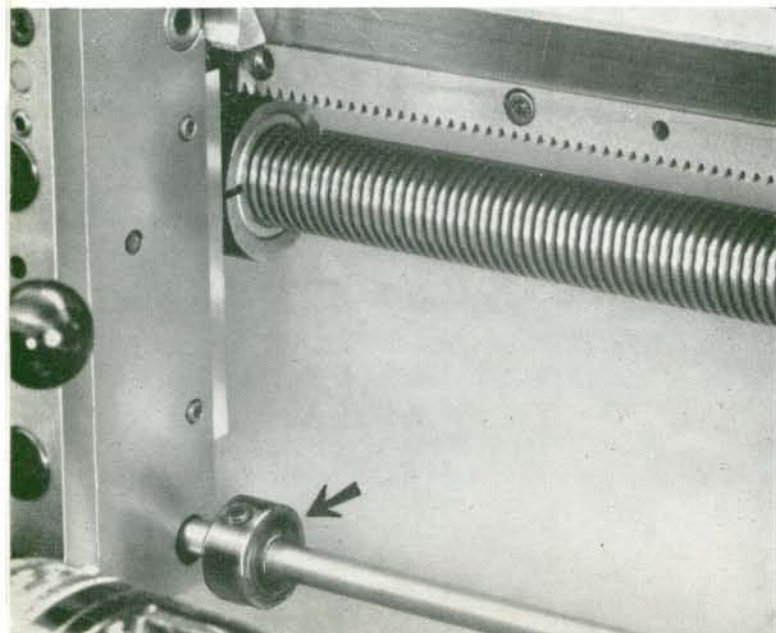
The gear box is instantly engaged or disengaged and **operates only when thread cutting.** The result is obvious; the original accuracy is sustained for threading operations.

Here again, this lathe is designed to speed production by making everything simple for the operator. Look at the clear, easy, direct reading gear box thread chart. It is not confusing with a mixed dual purpose as are the plates on other lathes which give both threads and feeds — compare with lathes in your shop.

Standard threads, including pipe threads, are immediately available through the gear box — refer to specification section Page 15. By the use of outside change gears pitches to 250 threads per inch can be cut.



PRECISION LEAD SCREW FOR THREADING with Automatic Thread Length Control for Carriage



Users confirm that the Hardinge HLV-H lathe is the fastest threading standard lathe available. The automatic thread length control makes threading easy at turning speeds—even when threading to a shoulder or into a blind hole without a threading relief. With this control we have eliminated the slow troublesome threading dial. The lead screw nut is engaged at the start of the thread and remains engaged until the thread is completed. These positive stops accurately control the automatic stopping of the carriage for either left or right hand threads at the starting and finishing position.

The lead screw is used for threading only — the result is obvious; the original accuracy is sustained for precision threading operation.

QUICK-ACTING TOOL POST SLIDE FOR THREADING

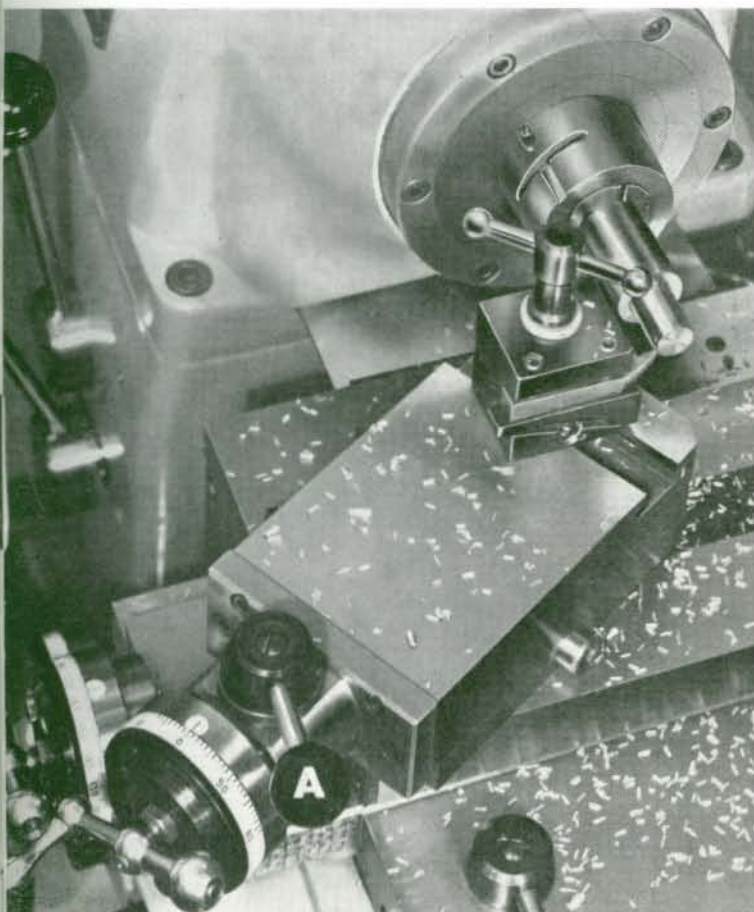
The quick-acting tool post slide for threading is standard equipment on the Hardinge HLV-H lathe.

This feature coupled with the automatic thread length control simplifies threading to the point where tool room thread cutting is no longer an "art". Anyone can cut good threads fast on the Hardinge HLV-H lathe.

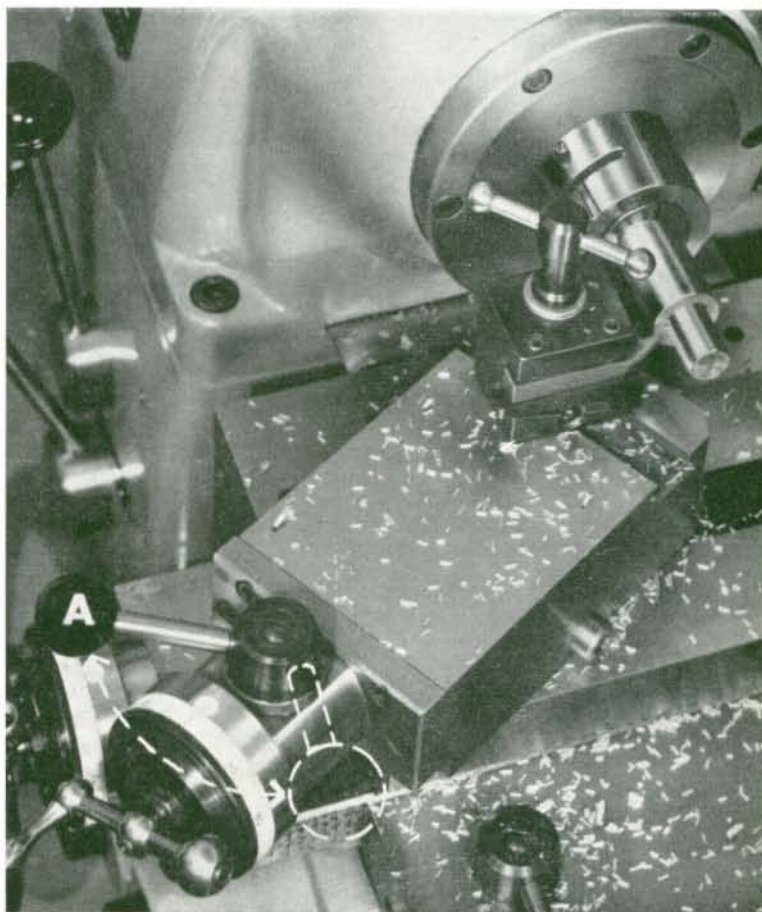
At the end of the threading cut, the threading tool is instantly cleared from the work for the return of the

carriage to the next cut. This is accomplished by means of a ball-handled lever actuating the tool post slide entirely independent of the tool post slide feed screw.

During the threading operation the cross slide or tool post slide feed screw is fed "in" before each threading cut. Feed screws are **never** reversed, saving time and assuring correct threads even with inexperienced operators.



Shown above the Hardinge HLV-H lathe is set up for precision threading. The cross slide has been fed in for the threading cut, placing the threading tool in position to start cut. Notice the position of quick-acting compound slide handle "A".



Now the threading tool is at the end of the cut. The tool and carriage were stopped exactly at this predetermined point by the automatic thread length control. Quick-acting handle "A" has been moved as shown, withdrawing the tool from the work so that the carriage can be returned to the starting point.

HARDINGE DOVETAIL BED

- Hardened and Precision Ground Steel Bed Ways Resist Wear
- Solid Construction – No Weakening Holes or Slots
- Chips Cannot Fall on Angular Guide Ways
- Easy to Clean – No Slots or Under Cuts to Wedge Chips
- Proved Design – Used for Years on Hardinge Chucking Machines



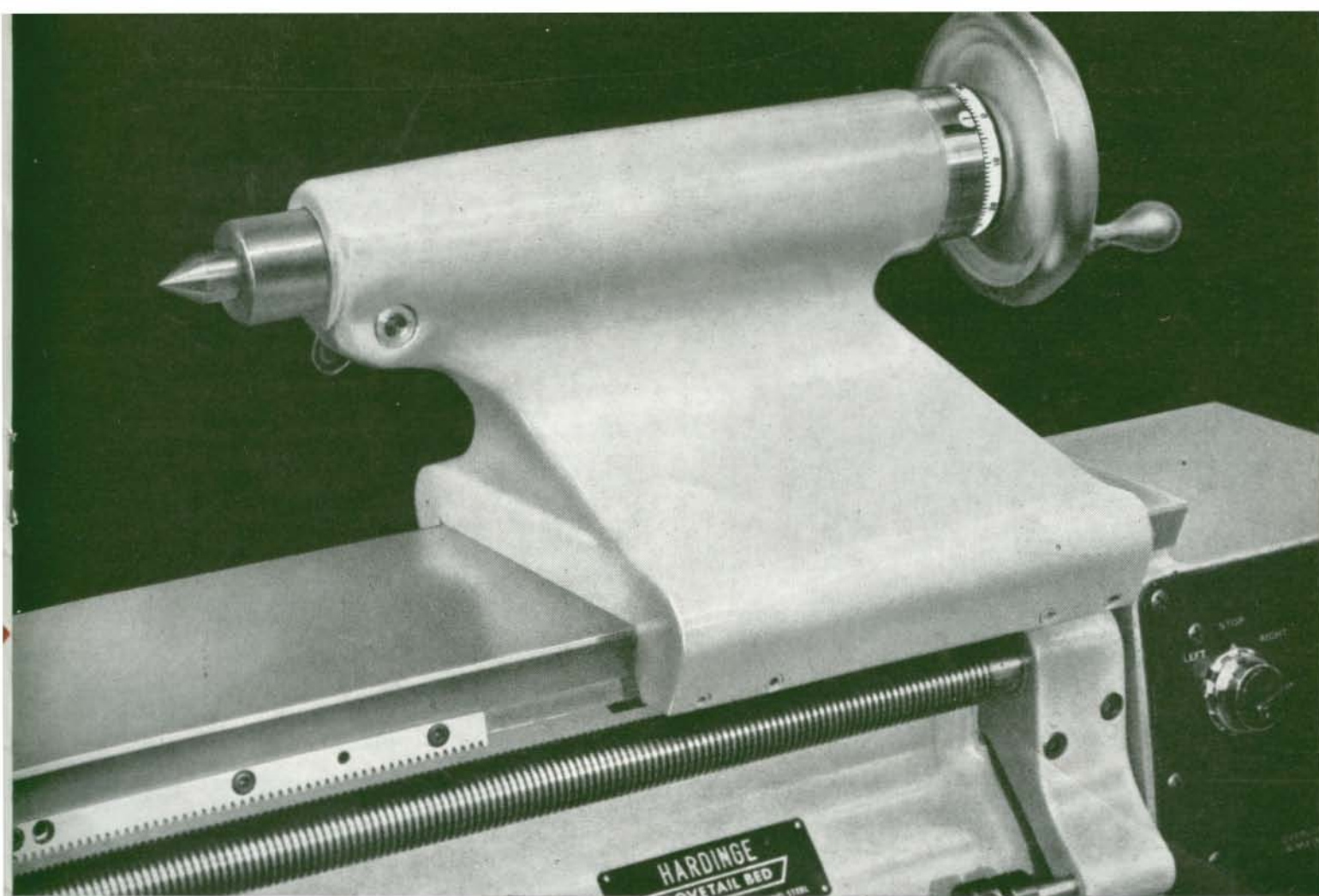
HARDINGE
DOVETAIL BED
SOLID HARDENED AND GROUND STEEL

Analytical consideration of bed construction for opposing cutting strains brought about the dovetail carriage and bed design. Many years ago, Hardinge solved the accuracy and proper finish needs of the optical, camera, projector and range finder manufacturers. This was done with our high speed precision chucking machines having dovetail carriage and bed construction.

Because of the design of the Hardinge bed, there can be no lifting action of the carriage as the back 30° way changes the “pushing away” force into a “pulling down” action, thus ensuring bearing surfaces on the 30° back way and the top way. On the other hand, the conventional bed design results in a lifting action as the conventional inverted vee way changes the “pushing away” action into a “lifting up” action, hence reducing the number of bearing surfaces. Lifting action in the conventional bed design is admitted by the many “hold down” bolted sections for the carriage. This lifting action of the carriage causes chatter which means vibration and wear. Because there is no lifting action in the Hardinge construction, there is a steady support to bring about accuracy and fine finish. Further, the Hardinge construction covers the angular ways so that chips cannot collect on the guide-way surfaces.

The heavy box section bed is made of a seasoned alloy semi-steel casting. The Hardinge dovetail bed ways are made of alloy steel, hardened and precision ground for sustained accuracy.

Between the self-contained bed and the welded steel pedestal base there are three spherical seats. Two of these spherical seats at the headstock end of the bed and one spherical seat at the tailstock end provide a three point bearing for sustained accuracy.



SOLID FULL BEARING TAILSTOCK

The correct design and substantial construction of the above tailstock are clearly apparent. Throughout, consideration was given to the fact that the tailstock should have features to easily support any load in working with a preloaded ball bearing headstock.

— FEATURES —

- 1. Solid tailstock body** — The body is not split as a part of ordinary design in providing for a spindle lock; therefore, our tailstock body has a uniform inside diameter which means a precision bearing for the tailstock spindle.
- 2. Ease of operation** — The tailstock handwheel is provided with a ball bearing to absorb tool thrust which affords an unusually fine "feel" for precision work.
- 3. Precision Control** — The spindle is graduated in eighths of an inch and the handwheel has a large adjustable easy reading black and white dial graduated in thousandths.
- 4. Black and white dial** — The large adjustable easy reading black and white dial is the same type used on the cross slide and carriage handwheels and will produce more accurate work.
- 5. Spindle and base lock** — A lever operates two substantial half nuts to securely hold the spindle in any desired travel position. The tailstock itself is clamped in any desired position along the bed by a lever operated clamp bolt.
- 6. Hardened and ground spindle** — Has a travel of $3\frac{3}{4}$ ". Standard shank tools are automatically discharged from the tailstock spindle at the end of the right-hand travel.

Tailstock spindle furnished with No. 2 Morse taper
See Page 23 for Complete Tailstock Tooling



TOOL COMPARTMENT

The high speed and precision of the Hardinge HLV-H lathe will increase production for you. By keeping regularly used tooling in the convenient built-in tool compartment your operators will save valuable time instead of walking to and from a distant tool crib.

The sliding ball bearing collet trays provide space for collets and centres within easy reach of the operator. The collet trays and tool storage shelves are made of a smooth, splinter-free, non-metallic material.

REGULAR EQUIPMENT

- Fully enclosed headstock with preloaded ball bearing $1\frac{1}{8}$ " collet capacity spindle.
- Drive Plate and Headstock Centre.
- Quick change Gear Box reserved for precision cutting of 27 different threads.
- Set of five change gears.
- Completely Enclosed Carriage and Apron.
- Independent Electric Variable Power Feed Drive for carriage and cross slide.
- Finger Tip Snap-Up Clutches for longitudinal and cross feed.
- Preloaded Ball Bearing Lead Screw for threading only.
- Automatic Lead Screw Stop with adjustable stop collars.
- Quick-acting Tool Post Slide for threading.
- Easy Reading Black and White Feed Screw Dials.
- Easy Reading Black and White Carriage Hand-wheel Dial.
- Solid Full Bearing Carriage.
- Solid Hardened and Ground Steel Dovetail Bed Ways.
- Full Bearing Tailstock with No. 2 Morse Taper.
- Welded Steel Base with oil type chip pan and coolant sump.
- Push Button Control for Variable Speed Drive.
- Direct Reading Spindle Speed Indicator.
- Tool Storage Compartment with Collet Trays.
- Variable Speed Drive complete with 2-speed, reversing motor and controls for operation on 440 volt, 50 cycle, 3 phase (unless otherwise Specified).
- Magnetic Electric Control Panel with transformer providing 230 volts for push button control circuit; time lag thermal overload relays provide overload protection; low voltage protection is also provided; cam operated, quick make and quick break forward and reverse switches. Completely wired and assembled when delivered.

— See Pages 16 to 23 for Additional Tooling —

—SPECIFICATIONS—

FOR HARDINGE HLV-H 10" TOOLMAKERS LATHE



Swing Over Bed.....	11"
Swing Over Carriage.....	9"
Swing Over Cross Slide.....	6"
Distance Between Centres.....	18"
Hole Through Spindle.....	1 1/4"
Spindle Bearing Construction.....	Preloaded Ball Bearing
Variable Spindle Speeds.....	125 to 3000 r.p.m.
Collet Capacity — 5C HARDINGE:	
Round.....	1 1/16"
Hexagon.....	7/8"
Square.....	3/4"
Spindle Nose.....	Hardinge Tapered
Compound Slide Travel.....	3"
Power Feed Range.....	1/4" to 7" per minute
Size of Lathe Tool:	
Wedge Type (Standard).....	3/8" x 3/8"
Rocker Type (Optional).....	3/8" x 1"
Tailstock Spindle Diameter.....	1 3/8"
Tailstock Spindle Travel.....	3 1/4"
Tailstock Spindle Taper.....	No. 2 Morse
Steady Rest Opening.....	3"
Lead Screw Diameter.....	1" — 8 Thread
Range of Threads in Gear Box.....	11 to 80
Number of Thread Changes in Gear Box.....	27
Actual Threads Cut Through Gear Box—	
11, 11 1/2, 12, 13, 14, 16, 18, 19, 20, 22, 23, 24, 26, 27, 28, 32, 36, 40, 44, 46, 48, 52, 54, 56, 64, 72, 80.	
<i>NOTE: Standard threads in all standard English systems are included in the foregoing gear box selections.</i>	
Over-all Length.....	68"
Over-all Width.....	30"
Over-all Height.....	58"
Distance, Spindle centre to floor.....	48"
Weight Complete (approximate).....	1700 lbs.



METRIC THREADING

Metric threads are easily cut on the Hardinge HLV-H lathe. The application of a metric attachment to the gear box is simple and fast. The metric attachment consists of bracket, mounting studs and bushing, 127 tooth transposing gear, 25 other gears and large gear box cover. .50, 1.00 and 2.00 mm. threads can be cut with the gears supplied. Metric threads from .1 to 3.00 mm. can be cut by purchasing a metric attachment.

STEP CHUCKS

Lever operated collet chucking is fast and accurate. With the Hardinge HLV-H lathe, collet chuck range is extended to 6" diameters by the use of standard step chucks.

A step chuck is exceptionally useful for accurately holding work larger than 1" in diameter up to 6" in diameter. Tubing can be held without crushing or distorting. The step chuck will also hold castings, mouldings, stampings and machined parts rigidly and accurately. The standard ball bearing lever operated collet closer is used to close and open the step chuck. The step chuck is closed by the taper on the periphery seating in the taper of the closer.

Many users purchase step chucks, split only, and then apply the desired steps while the step chuck is in place on the machine, assuring dead accuracy of the steps.

All Hardinge Step Chucks are supplied with pin holes and pins in place for precision machining. This built-in feature provides greater accuracy, convenience and precision results.

STEP CHUCK CLOSERS

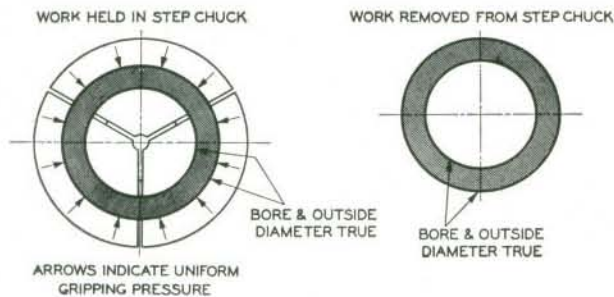
A closer is used with each size step chuck. The closer fits directly to the machine spindle and has a taper corresponding to the taper on the periphery of the step chuck for closing the step chuck. A step chuck closer is used with each nominal size step chuck to place the closing pressure over the stepped area of the chuck, resulting in greater gripping power and accuracy.

With locating pins applied in the step chuck closer and with clearance holes for the pins drilled in the step chuck, work may be held to predetermined length.

ADVANTAGES OF USING STEP CHUCKS

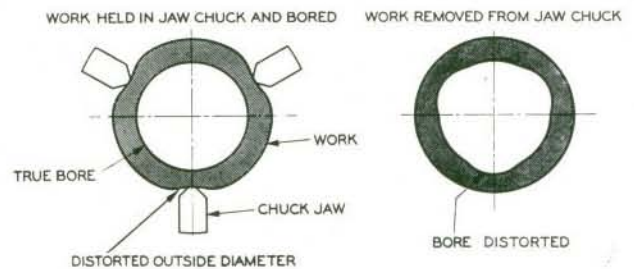
Step chucks, developed for precision instrument makers, are a time-proved method of rigidly and accurately holding work. Step chucks take over on sizes above the regular collet capacity, providing collet-like accuracy, convenience, and precision results as with collets.

WHEN USING STEP CHUCKS: Analytical consideration of the gripping pressure applied on the work by a step chuck clearly shows one of the advantages of



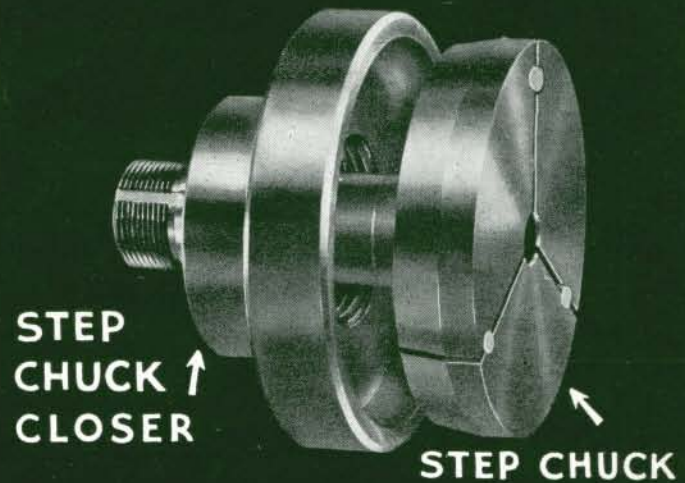
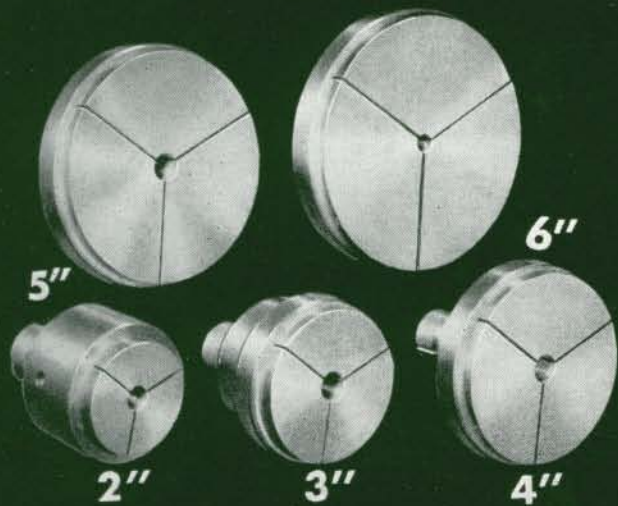
using step chucks. Note how the gripping pressure is uniformly distributed over the entire circumference of the work. The large gripping area prevents distortion and eliminates marring of the work.

WHEN USING JAW CHUCKS: Studied consideration of the gripping pressure applied on the work by a jaw chuck clearly shows the disadvantage of using jaw



chucks for precision work. Note how the localized gripping pressure of the jaws distorts the work. The small area of the gripping surface of the chuck jaws will also mark the surface of the work.

Tooling

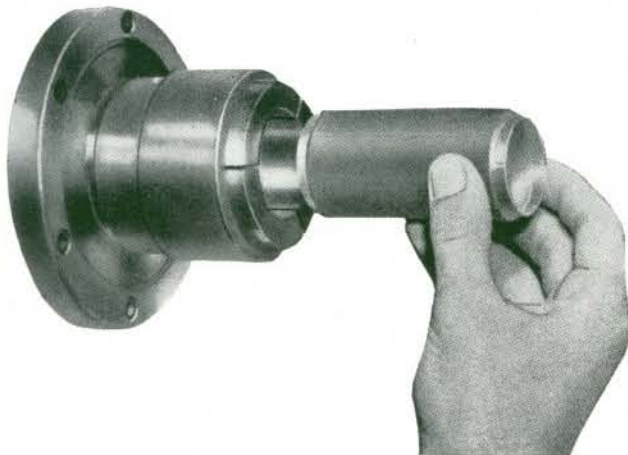


5C HARDINGE STEP CHUCKS

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.

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 the 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



REGULAR DEPTH CAPACITY



Regular depth capacity step chucks and closers will be supplied unless extra depth capacity are specified. When ordering, specify machine serial number.

Tooling



5C HARDINGE PRECISION COLLETS

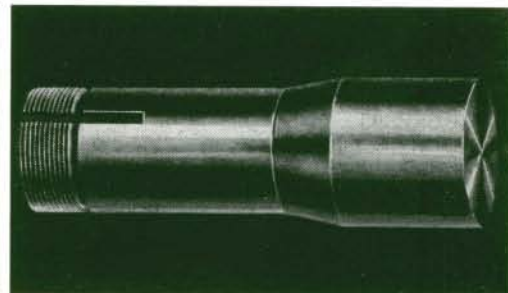
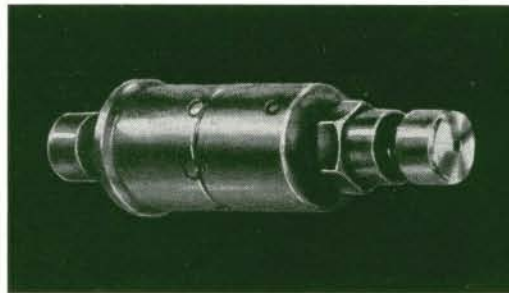
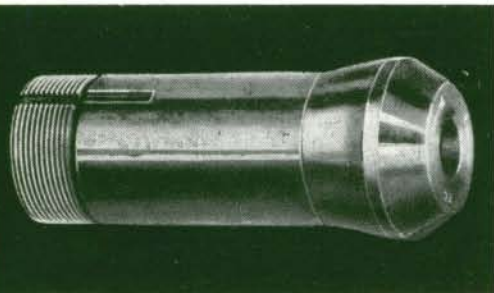
Your operators can chuck work faster, truer and with less effort on the HARDINGE HLV-H lathe because it uses lever operated collets. The Hardinge HLV-H lathe takes the popular 5C Hardinge collet directly in the headstock spindle for maximum accuracy and rigidity of the work.

5C Hardinge precision collets are manufactured to exact precision standards. Made of fine alloy steel, heat-treated with special equipment, hardened and precision ground to assure lasting accuracy and precision results.

The 5C Hardinge collets are carried in stock, for immediate delivery, in all 64th, 32nd and 16th sizes.

Round sizes from $\frac{1}{64}$ " to $1\frac{1}{16}$ ". Hexagon sizes from $\frac{1}{8}$ " to $\frac{3}{8}$ ", and square sizes from $\frac{1}{8}$ " to $\frac{3}{8}$ ".

Extra capacity $1\frac{3}{4}$ ", $1\frac{3}{2}$ ", $1\frac{7}{8}$ " and $1\frac{1}{2}$ " round 5C Hardinge collets are carried in stock for immediate delivery. These sizes can be used for chucking to a depth of $1\frac{1}{2}$ ".



5C TAPER HOLE COLLETS

Hardinge 5C taper hole collets are hardened and precision ground for direct application to the headstock spindle. They are used for holding taper shank tools in the headstock spindle. Available with No. 1, 2 & 3 Morse Taper.

UNIVERSAL COLLET STOP

This stop will convert 5C Hardinge collets into solid stop or spring ejector stop collets, without alteration of the standard collets. With the Universal Collet Stop, collets obtained for this machine can be used in the regular manner or as solid stop collets or as spring ejector stop collets.

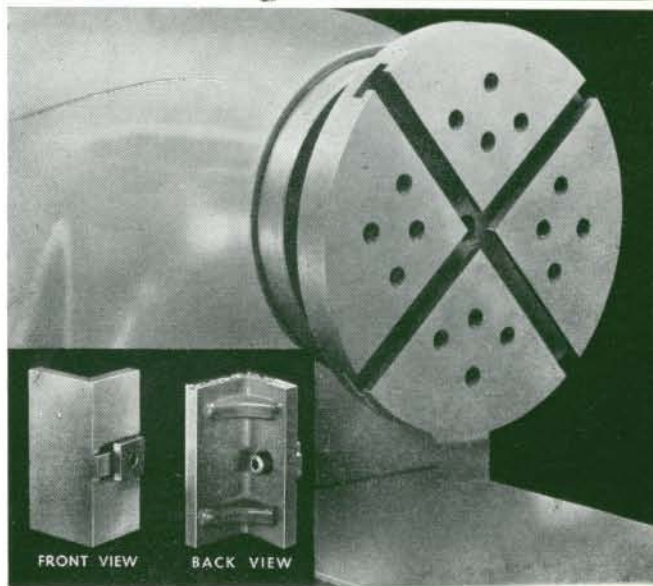
5C HARDINGE PLUG CHUCK

The 5C Hardinge collet shank section is ground to size for direct application to the machine spindle. The nose section is $1\frac{1}{32}$ " in diameter and $1\frac{3}{8}$ " long. The nose section can be machined in place for the greatest degree of accuracy to suit your particular requirements for special arbors.

FACE PLATES

9" diameter face plates are used for holding irregular shaped pieces. Holes are drilled and tapped to permit the use of standard $\frac{5}{16}$ x 18 bolts.

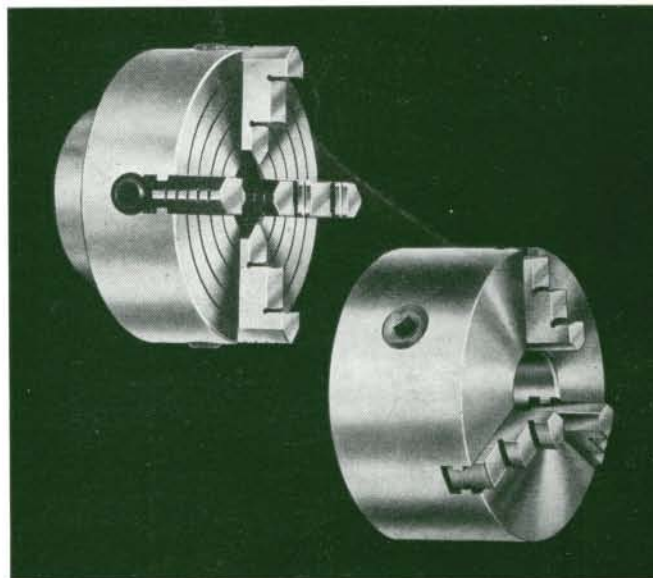
The angle plate fastens directly to the T-slot of the face plate and is used to support work at right angle to the face plate. Work clamping surface is $1\frac{1}{2}$ " x 3".



JAW CHUCKS

Rugged 5" capacity three jaw and 5" four jaw chucks are available, as shown at the right, for the Hardinge HLV-H lathe.

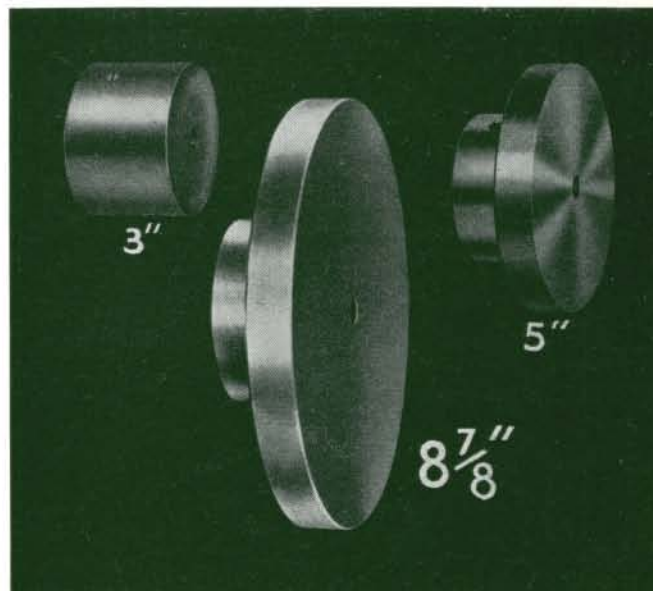
These chucks are integrally mounted for direct application to the precision taper nose spindle, thus eliminating a separate mounting plate.

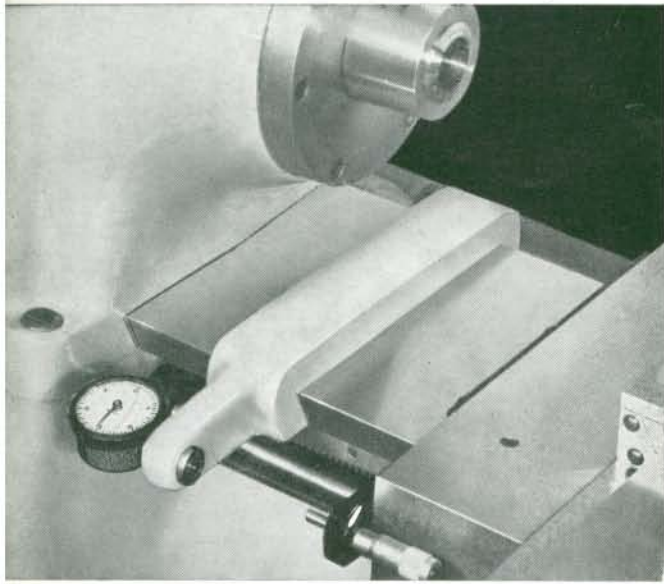


FIXTURE PLATES

The fixture plates are machined all over for direct application to the taper nose headstock spindle. Three sizes are available: 3", 5" and $8\frac{7}{8}$ " diameter. The flange section is $\frac{3}{4}$ " thick. The centre hole is $\frac{7}{8}$ " in diameter.

These plates can be machined to become a fixture or for mounting fixtures to hold work or for mounting special purpose chucks.

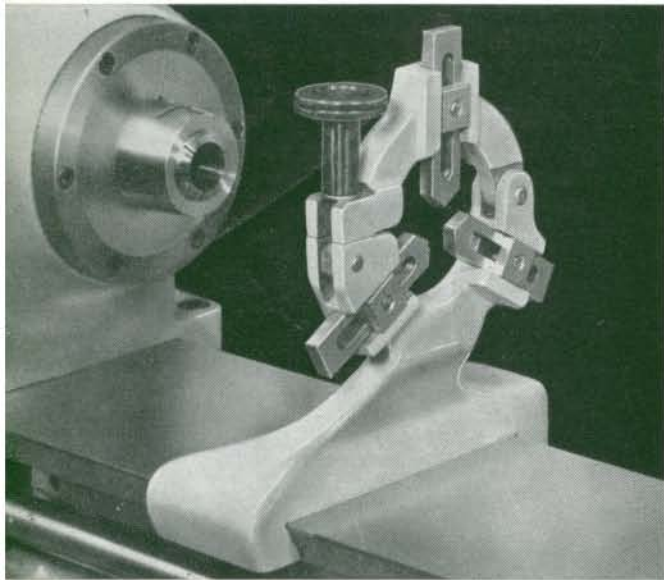




INDICATOR CARRIAGE STOP

The micrometer carriage stop is a useful accessory when producing parts with exact shoulder lengths or when facing to close tolerances.

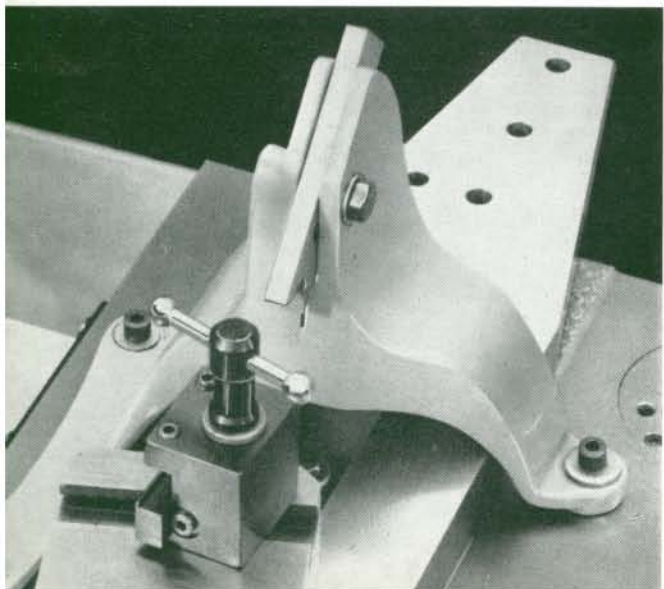
The indicator reads in $.0005''$ increments. The micrometer reads in $.001''$. Each HLV-H lathe is machined for direct application of the indicator stop.



STEADY REST

Long cylindrical work held between centres requires a steady rest to prevent such work from springing away from a cutting tool. A steady rest is also used when there are machining operations to be performed on the end of work which prohibits the use of the tailstock centre.

The three jaws are adjustable and have an accurate fit in the milled guides of the body. The top section is hinged to provide ease in loading shoulder work without disturbing the setting of the jaws. The steady rest has a maximum capacity of 3".



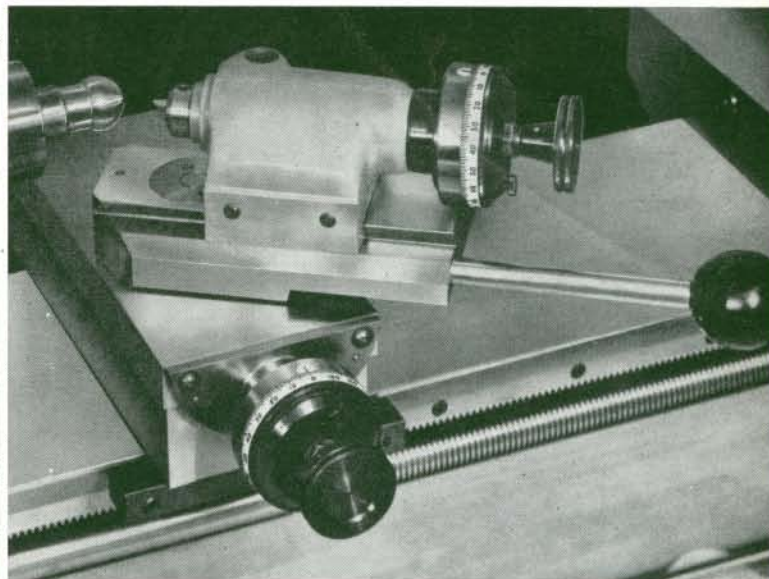
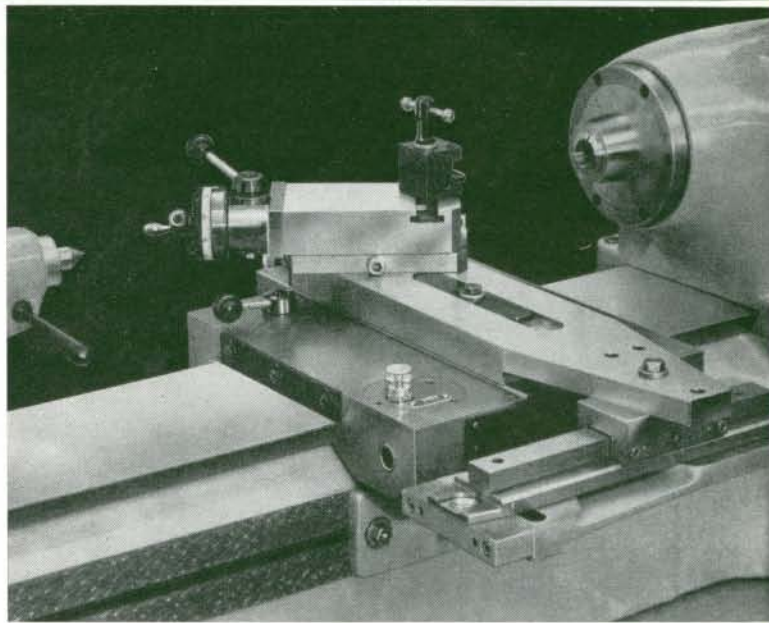
FOLLOW REST

When you have work that is small in diameter in relation to length it may spring away from the cutting tool. In such cases, the follow rest applied to the carriage, as shown, will assure you of accurate work.

TAPER TURNING ATTACHMENT

The turning or boring of precision tapers is readily accomplished on the Hardinge HLV-H lathe by the use of a taper turning attachment. The Hardinge taper turning attachment is based on the sine bar principle—swivelling the guide bar from one end. Graduations for setting guide bar are in $\frac{1}{8}$ " taper per foot and in degrees.

The taper turning attachment mounts directly on the back of the lathe bed and is adjustable along the bed to suit the work.



AUTOMATIC INDEXING TURRET

The square turret is applied directly to the tool post T-slot of the compound slide. The turret takes standard $\frac{1}{8}$ " 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.

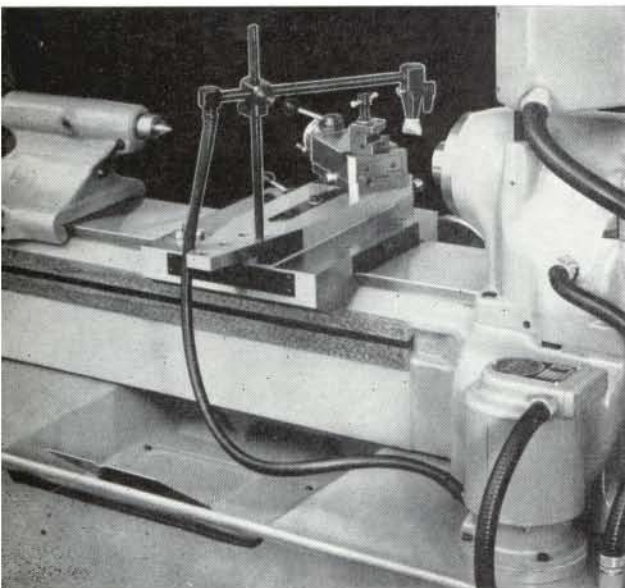
Accurate indexing is accomplished through a hardened and precision ground tapered index pin.

RADIUS TURNING ATTACHMENT

For precision turning of concave or convex surfaces up to $1\frac{1}{2}$ " 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.

Tooling

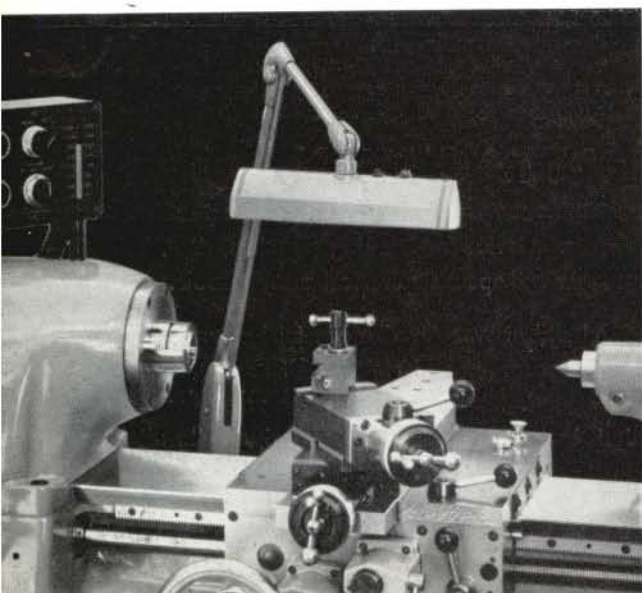
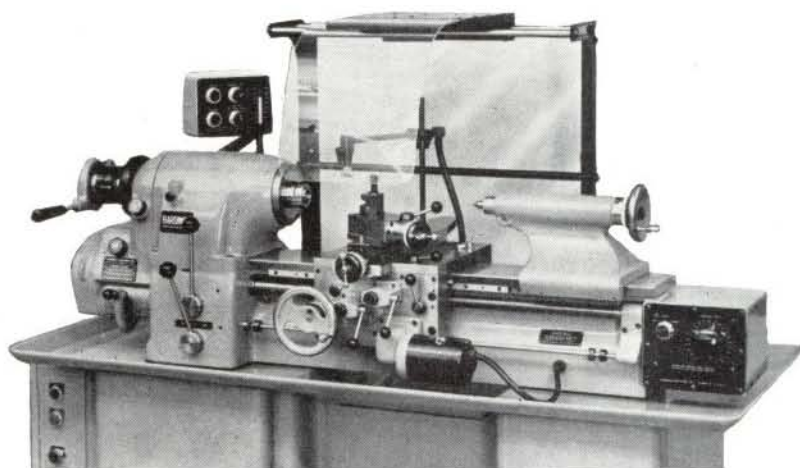


COOLANT PUMP

The Hardinge HLV-H lathe chip pan has an integral sump built into the sloping bottom of the pan. Coolant facilities can be ordered with the machine or supplied at a later date and installed by the user.

CHIP AND COOLANT GUARD

This transparent plastic chip and coolant guard is available for use with the Hardinge HLV-H lathe. The hinged section is adjustable to left or right to suit work requirements.



MACHINE LAMP

A low voltage lighting set is available for use with the Hardinge HLV-H lathe. The lamp fastens to the back of the lathe bed.

Tooling

DRILL PLATE



The drill plate, when in place in the tailstock spindle, is used to support work at right angle to the machine spindle centre line. The plate is made of close-grained cast iron and has a steel taper shank. The finished face surface is $3\frac{1}{2}$ " in diameter.

V CENTRE

The swivel V centre is constructed so the V block rotates on the shank.

MALE CENTRE

This male centre has a $\frac{1}{8}$ " head diameter and is furnished with all Hardinge tailstocks. All centres are hardened and ground.

HALF CENTRE

A half centre is used if tool clearance is desired when turning the full length of a part supported by the tailstock. The head diameter is $\frac{1}{8}$ ".

FEMALE CENTRE

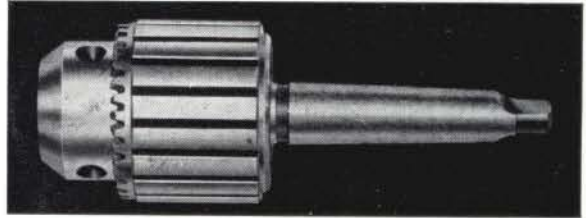
A female centre is used for work that cannot have the usual centre hold. The $\frac{1}{8}$ " head has a 60° conical hole $\frac{1}{8}$ " in diameter at the large end.

LARGE CENTRE

This centre has a head diameter of 1". It is indispensable for supporting tubing or recessed work too large for the standard male centre.

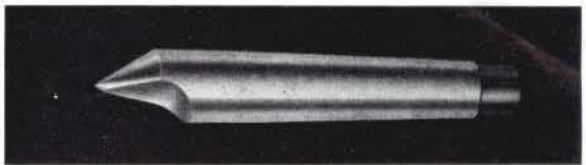
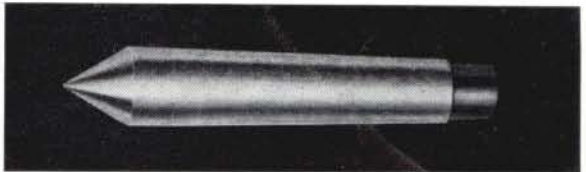
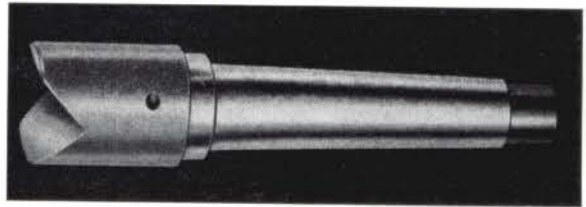
SUPER-PRECISION BALL BEARING CENTRE

This heavy duty anti-friction centre has a No. 2 Morse taper shank for direct application to the tailstock spindle. Work can be done between centres at high spindle speed when the anti-friction centre is used.



DRILL CHUCK

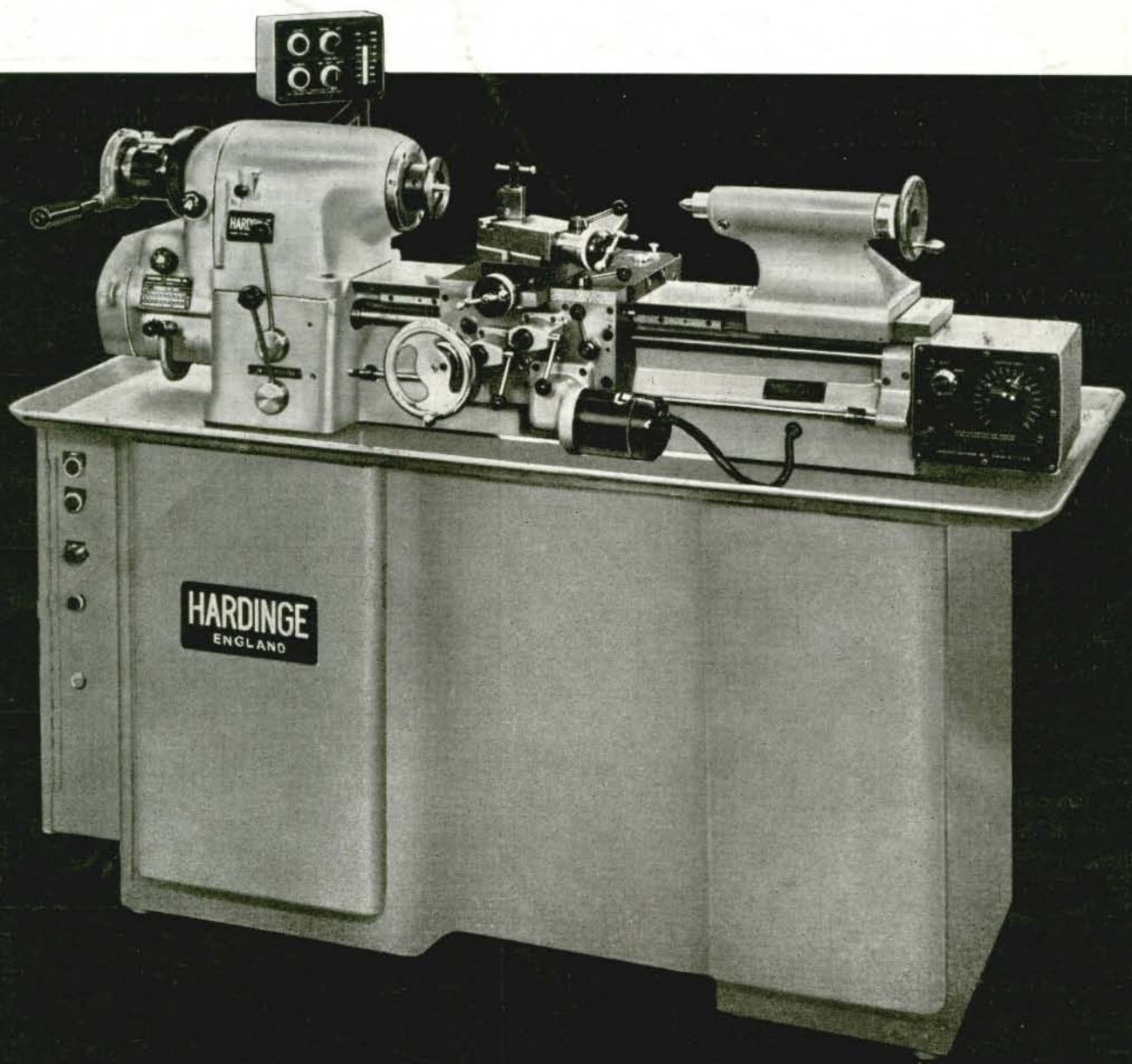
We recommend the improved type drill chucks with our tailstocks. We carry $0\text{-}\frac{1}{4}$ ", $0\text{-}\frac{3}{8}$ " and $0\text{-}\frac{1}{2}$ " sizes in stock mounted ready for use.



HARDINGE
FELTHAM MIDDLESEX ENGLAND

SUPER-PRECISION LATHE

**RIGIDLY BUILT TO TAKE ADVANTAGE OF
CARBIDE CUTTING TOOLS AT HIGH SPEED**



MODERN POWERFUL FAST

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