

Types of Shops  
Using the  
**9-INCH  
"WORKSHOP"  
LATHE**

Manufacturing Plants

Machine Shops,  
all Kinds

Laboratories

Automotive  
Repair Shops

Electrical Shops

Home Workshops

Inventors

School Shops

Repair Shops

# 1936 Model South Bend 9-inch "WORKSHOP" PRECISION LATHE

A BACK-GEARED, SCREW CUTTING  
METAL WORKING LATHE

**\$75**  
And Up

Operates  
From  
Lamp  
Socket

Wt.  
310  
lbs.

Cutting a Screw Thread on the 9-inch "Workshop" Lathe. This Lathe is illustrated, described and priced on pages 4, 9, 16 and 17.

## SOUTH BEND LATHE WORKS

490 E. Madison Street

South Bend, Indiana, U.S.A.



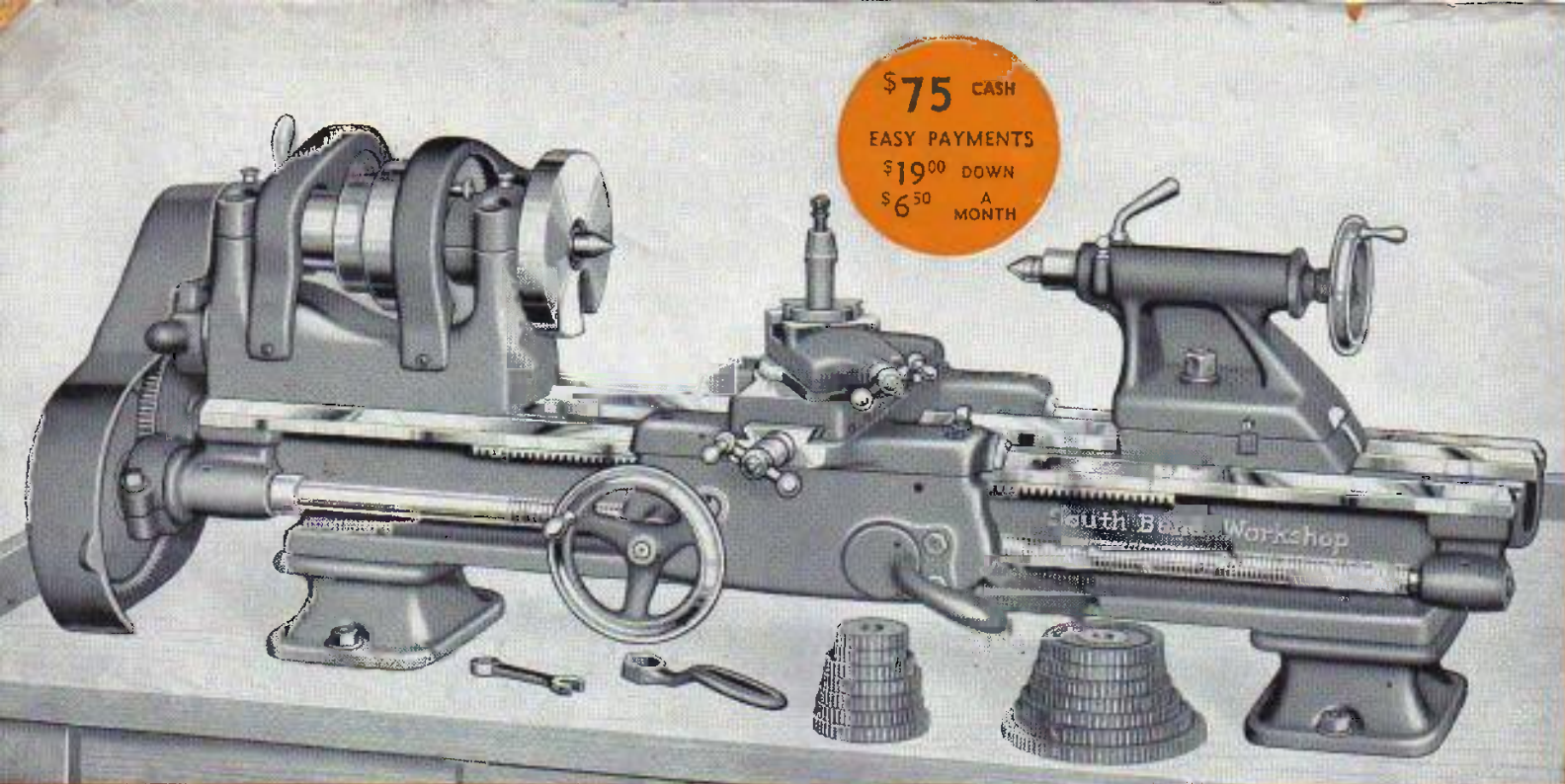


Fig. 1. 9"x3" "Workshop" Precision Lathe with Wrenches and Gears as shown, but without bench or drive equipment (Ship. Wt. Crated 250 lbs.) . . \$75.00

## 1936 Model 9-inch "Workshop" South Bend Lathe

### A Back-Geared, Screw Cutting Precision Lathe for the Working of Metals

The 9-inch "Workshop" Back-Geared, Screw Cutting Precision Lathe, illustrated above and referred to in this catalog, is the 1936 Model. It has ten major improvements and new features which make it the greatest value we have ever offered in our twenty-nine years as builders of fine lathes. This lathe is as carefully and accurately built and has the same high quality material as our \$900.00 Tool Room Lathe.

This Small 9-inch Precision Lathe is the pride of the skilled toolmaker because of its accuracy and precision and the complete set of attachments which can be fitted to it. Over 75% of the work in the average shop can be done on a lathe of 9-inch swing.

#### "Workshop" Lathe Features

Back-geared headstock, six spindle speeds  
Hollow steel spindle,  $\frac{3}{8}$ " hole  
Reverse bracket for right-hand and left-hand screw threads  
and automatic longitudinal feeds to carriage  
Compound rest graduated 180°, swivels to any angle  
Tailstock has  $\frac{3}{8}$ " set-over for taper turning  
Micrometer graduations on compound rest screw  
Micrometer graduations on cross feed screw  
Automatic longitudinal power feeds to carriage  
Precision lead screw for screw thread cutting  
Half-nuts for screw thread cutting and power feeds  
Three V-ways and one flat-way on lathe bed  
Adjustable bearings for headstock spindle  
Adjustable gibs on cross feed and compound rest

The Lathe Shown Above is identical with the lathes on pages 4, 5, 14 and 15, except that it is priced without countershaft and motor, so that the shop owner wishing to provide his own motor and drive arrangement can purchase the plain lathe. Double Friction Countershaft is available at \$12.00. See page 28.

Regular Equipment included in price consists of: graduated compound rest; face plate 5" diameter; forged steel tool post, ring and wedge; two 60-degree lathe centers No. 2 Morse Taper; headstock spindle sleeve; wrenches; change gears for screw thread cutting and automatic longitudinal power feeds; installation plan blue print; and book, "How to Run a Lathe."

#### "Workshop" Lathe Specifications

Swing over bed	9 $\frac{1}{2}$ "
Swing over carriage	5 $\frac{1}{2}$ "
Collet Capacity	$\frac{1}{16}$ " to $\frac{1}{2}$ "
Hole through spindle	$\frac{3}{8}$ "
Standard screw thread cutting range	4 to 40 per in.
Spindle Speeds	39, 68, 122, 202, 353, 630, RPM.
Width of cone pulley belt	1"
Lathe tool shank $\frac{3}{4}$ " x $\frac{3}{4}$ "	Cutter bits $\frac{1}{4}$ " x $\frac{3}{4}$ " x 2"
Size of spindle nose	1" diam. 8 threads
Head and tail spindle lathe centers	No. 2 Morse Taper.
Lead Screw, Acme Thread	$\frac{3}{8}$ " diam. 8 threads
Tool cross slide travel	5 $\frac{1}{2}$ "
Angular travel compound rest top	2 $\frac{1}{2}$ "
Tailstock spindle travel	2"

#### Prices of 9-inch "Workshop" Bench Lathe with Regular Equipment, but without Drive\*\*

Swing Over Bed Inches	Length of Bed Feet	Distance Between Centers Inches	Hole Through Spindle Inches	Collet Capacity $\frac{1}{16}$ " up by 64ths to	Swing Over Carriage Inches	Power Required H.P.	Approx. Ship. Wt. Crated Pounds	Cash Price		Easy Payment Plan*			
								Cat. No.	Code Word	F.O.B. Factory	Amount Down Payment	Payment Each Month	Approx. No. of Payments
9 $\frac{1}{2}$ "	3	17	$\frac{3}{4}$ "	$\frac{1}{2}$ "	5 $\frac{1}{2}$ "	$\frac{1}{4}$	250	15-YB	Manty	\$ 75.00	\$19.00	\$6.50	10
9 $\frac{1}{2}$ "	3 $\frac{1}{2}$	23	$\frac{3}{4}$ "	$\frac{1}{2}$ "	5 $\frac{1}{2}$ "	$\frac{1}{4}$	275	15-ZB	Manze	87.00	21.00	7.00	10
9 $\frac{1}{2}$ "	4	29	$\frac{3}{4}$ "	$\frac{1}{2}$ "	5 $\frac{1}{2}$ "	$\frac{1}{4}$	300	15-AB	Mapag	99.00	24.00	7.00	11
9 $\frac{1}{2}$ "	4 $\frac{1}{2}$	35	$\frac{3}{4}$ "	$\frac{1}{2}$ "	5 $\frac{1}{2}$ "	$\frac{1}{4}$	350	15-RB	Mapak	116.00	29.00	8.00	12

\* For details on Easy Payment Plan see Page 29.

\*\* For floor legs instead of bench legs add \$10.00 to above prices.

# General Description of 9-inch "Workshop" Lathe

Applying to All 9-inch "Workshop" Lathes Shown in This Catalog

The 9-inch "Workshop" South Bend Precision Lathes illustrated and described throughout this catalog are basically the same regardless of drive, model, type or bed length. The same features, specifications and improvements apply to all 9-inch "Workshop" Lathes shown in this catalog.

**10 New Features.** The 9-inch "Workshop" Lathe shown in this catalog has many new and improved features including:

1. Twin Gear Reverse for Right and Left Hand Screw Threads and Automatic Longitudinal Feeds to Carriage.
2. Ball Bearing Thrust Collar on Headstock Spindle.
3. New and improved Tailstock.
4. Improved Compound Rest.
5. New and heavier designed Saddle.
6. Simplified Gearing for threads and feeds.
7. Polished hand wheel on Tailstock.
8. Polished hand wheel on Carriage.
9. Improved Back Gears.
10. Felt Oilers and shear wipers on Saddle.

**Made in 4 Bed Lengths.** The 9-inch "Workshop" Precision Lathe is available in seven bench and two floor leg models and each model can be supplied in four different bed lengths, as follows: 3', 3½', 4' and 4½'. Prices for the various bed lengths are shown in the price tabulation which accompanies each lathe illustration. For further information regarding the various models see pages 2, 4, 5, 14 and 15.

**Principal Units** of the lathe, such as headstock, compound rest, saddle, tailstock, lathe bed, leadscrew, reverse bracket and other units are fully illustrated and described in detail on pages 6 to 11, inclusive. These descriptions apply to the mechanical units of every size, drive, type, model and bed length of "Workshop" Lathes shown throughout this catalog.

**Machines Metals** of all kinds. The 9-inch "Workshop" Lathe will machine metals of all kinds such as cast iron, steel, cast steel, steel forgings, wrought iron, brass, bronze, copper, babbitt, aluminum and the various alloy steels and metals. It is also practical for working wood, hard rubber, catalin, celluloid, plastics, alabaster, fibre, and all other materials.

**38 Practical Attachments** can be fitted to each size, type and model 9-inch "Workshop" Lathe for handling a wide variety of work. These attachments include automotive servicing attachments, manufacturing attachments and general machine shop attachments. For further details, and prices see pages 18 to 28.

**Standard Screw Threads 4 to 40 Per Inch**, Right or Left Hand, including 1½" pipe thread can be cut on the 9-inch "Workshop" Lathe. The accuracy and precision of this lathe are such that we guarantee it for machining the finest precision gauges, taps, tool and die work.

**For High Quality Precision Work**, the 9-inch "Workshop" Lathe is unequalled in the small lathe field today. We recommend the 9-inch "Workshop" lathe for use in groups on production of small duplicate parts in the manufacturing plant, for the tool room, machine shop, auto service shop, laboratory, school shop, repair shop and for modern shops of all kinds engaged in light accurate machine work.

**Free Instruction Book.** A copy of the book "How to Run a Lathe" is supplied with each 9-inch "Workshop" Lathe. This valuable reference book contains 160 pages with more than 300 illustrations showing how to handle the various machine operations on a lathe. The inexperienced operator will find this book indispensable and the experienced mechanic will find it both interesting and valuable. For further description of this instruction book see page 30.

## For Further Information See the Following Pages

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Attachments for Lathe	Page
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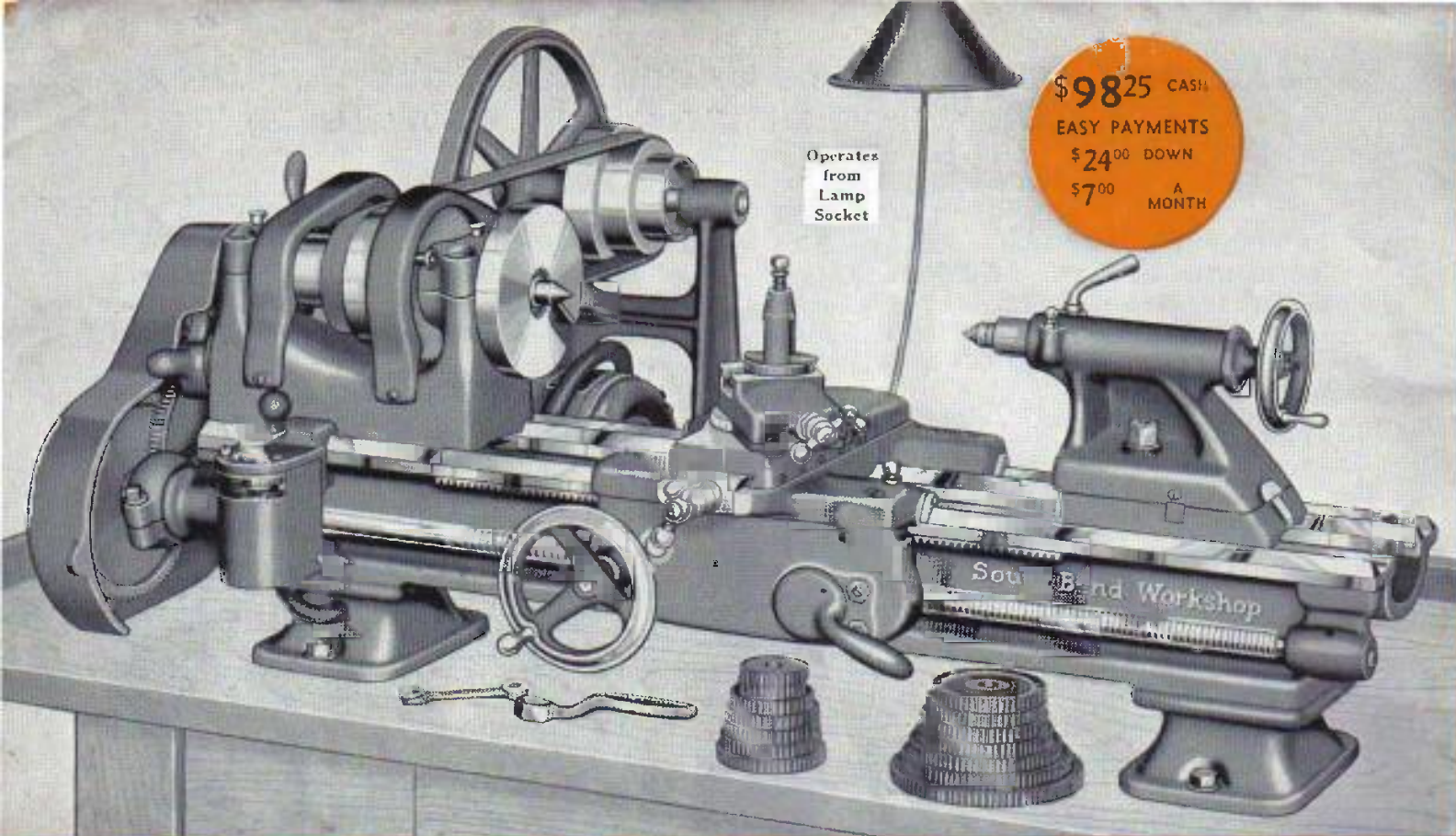


Fig. 2. 9" x 3" "Workshop" Bench Lathe with Horizontal Motor Drive, motor, switch and lathe equipment, less bench (Ship. Wt. Crated 310 lbs.) \$98.25

## 1936 Model 9-inch "Workshop" Motor Driven Lathe

With Plain Type Horizontal Motor Drive Countershaft—See next page

The Horizontal Motor Driven 9-inch "Workshop" South Bend Bench Lathe is a complete unit consisting of the basic lathe shown on page 2, plain type horizontal countershaft, reversing motor, reversing switch, and belting as priced below, set up ready to operate when connected to an electric light socket. The entire drive equipment may be mounted on any bench.

Two Types of Horizontal Motor Drive Countershafts are available as described on the opposite page. The Plain Type Countershaft is illustrated with the lathe above. The Adjustable Type Horizontal Countershaft may also be used with lathe above and is recommended for the shop doing a large amount of work.

Prices of 9-inch "Workshop" Lathes equipped with Plain Type Horizontal Countershaft and Adjustable Type Horizontal Countershaft are shown in the tabulation below. The entire equipment may be purchased with lathe or any item may be omitted.

Regular Lathe Equipment included in the price consists of: graduated compound rest; face plate 5" diameter; forged steel tool post, ring and wedge; two 60-degree lathe centers No. 2 Morse Taper; headstock spindle sleeve; wrenches; set of independent change gears for screw thread cutting; large turning gears for automatic longitudinal power feeds; installation plan blue print and instruction book, "How to Run a Lathe".

Prices of 9-inch "Workshop" Horizontal Motor Driven Bench Lathe

Cat. No.	Description	Lathe with Horizontal Motor Drive Countershaft—Plain Type				Lathe with Horizontal Motor Drive Countershaft—Adjustable Type			
		9" x 3'	9" x 3 1/2'	9" x 4'	9" x 4 1/2'	9" x 3'	9" x 3 1/2'	9" x 4'	9" x 4 1/2'
No. 15.	9-inch "Workshop" South Bend Precision Bench Lathe Complete with Graduated Compound Rest and Regular Lathe Equipment, but without Motor Drive Equipment and Less Bench	\$ 75.00	\$ 87.00	\$ 99.00	\$116.00	\$ 75.00	\$ 87.00	\$ 99.00	\$116.00
<b>Prices of Motor Drive Equipment</b>									
No. 932.	Horizontal Motor Drive Countershaft, Plain Type..	7.00	7.00	7.00	7.00	12.00	12.00	12.00	12.00
No. 238.	Horizontal Motor Drive Countershaft, Adjustable..								
No. 127.	1/2 H.P. Start-Stop Reversing Split-Phase Motor, 1725 R.P.M. 1-ph. (80-cy., A.C. 110-v.)*	8.75	8.75	8.75	8.75	8.75	8.75	8.75	8.75
No. 217.	V-Groove Pulley for Motor	.50	.50	.50	.50	.50	.50	.50	.50
No. 789.	Drum Reversing Switch (Style R-12) and Bracket.	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
No. 798.	V-Belt, Motor to Drive (45"x11"x11")	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
No. 797.	V-Belt, Motor to Drive (44"x11"x11")	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
No. 933.	Flat Leather Belt and Lacing	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
<b>Total Price, Lathe with Motor Drive Equipment</b>		<b>\$ 98.25</b>	<b>\$110.25</b>	<b>\$122.25</b>	<b>\$139.25</b>	<b>\$103.25</b>	<b>\$115.25</b>	<b>\$127.25</b>	<b>\$144.25</b>
Catalog Number, Lathe with Motor Drive Equipment		No. 415-Y	No. 415-Z	No. 415-A	No. 415-R	No. 415-YA	No. 415-ZA	No. 415-AA	No. 415-RA
Code Word, Lathe with Motor Drive Equipment		Macan	Macer	Mafab	Maget	Magla	Mahik	Manaf	Mandi
<b>Easy Payment Terms. Down Payment with order</b>		<b>\$24.00</b>	<b>\$29.00</b>	<b>\$30.00</b>	<b>\$31.00</b>	<b>\$28.00</b>	<b>\$29.00</b>	<b>\$30.00</b>	<b>\$32.00</b>
11 to 12 Equal Monthly Payments		7.00	8.00	8.50	9.00	7.00	8.00	8.50	10.00
Distance Between Spindle Centers of Lathe		17 in.	23 in.	29 in.	35 in.	17 in.	23 in.	29 in.	35 in.
Shipping Wt., Lathe and Motor Drive Complete		310 lbs.	335 lbs.	360 lbs.	410 lbs.	320 lbs.	345 lbs.	370 lbs.	420 lbs.
Collet Capacity "A" up by 64ths to		1/2 in.	1/2 in.	1/2 in.	1/2 in.	1/2 in.	1/2 in.	1/2 in.	1/2 in.

\*Price extra for heavy, rubber covered wiring for connecting motor with switch, together with 6-ft. extension cord and plug, \$1.75

# Two Types of Horizontal Motor Drive Countershafts

For the 1936 Model Improved 9-inch "Workshop" Precision Lathe

## 1 Plain Type Horizontal Motor Drive Countershaft

The Plain Type Horizontal Motor Drive Countershaft, illustrated at the right, is used mostly in small shops where only a limited amount of machine work is to be done. The countershaft is held in position on the bench by three bolts inserted through three slotted holes in the base of the countershaft. Tension on the flat belt is varied by changing the position of the countershaft in relation to the lathe. For example, to increase belt tension, the bolts are loosened and the entire unit moved away from the lathe. Similarly, tension on the "V" Belt may be obtained by loosening bolts in the motor base and moving motor toward the lathe.

The Plain Type Horizontal Motor Drive Countershaft can also be used on the wall for lathes 1, 4, 5 and 6 as shown on pages 14 and 15 but cannot be used with lathes 3 and 8.

The 9-inch "Workshop" Lathe illustrated on page 2 of this catalog can be equipped with the plain type horizontal motor drive countershaft. The lathe illustrated at the top of opposite page is equipped with plain type horizontal motor drive countershaft.

The Large Pulley on the Horizontal Countershafts, Plain Type and Adjustable Type, are not grooved but have flat faces as the friction area is many times that of the motor pulley. Motor pulleys are grooved for the V-belt.

Cat. No. 932. Plain Type Horizontal Motor Drive Countershaft for 9-inch "Workshop" Lathe, Code "EWIRD." Shipping Weight, 35 lbs. .... \$7.00

## 2 Adjustable Type Horizontal Motor Drive Countershaft

The Adjustable Type Horizontal Motor Drive Countershaft illustrated at the right is used in shops that do a great amount of machine and tool work, as it permits adjustments to any desired belt tension between the countershaft cone pulley and the lathe cone pulley. This adjustment can be made in a few moments by the turnbuckle as shown in the photo.

In Actual Operation the Adjustable Type Horizontal Motor Drive Countershaft is held in an upright position by rod "A," fitted with a turnbuckle and a pivot at the base of the release lever "C." Operating lever "C" permits the top of the drive unit to tilt about 2°, slacking the belt so it can be shifted from step to step on the cone pulley. The turnbuckle on rod "A" provides an accurate screw adjustment for obtaining belt tension.

Independent Adjustment of the V-belt is accomplished by moving the motor up or down on the drive unit. Slotted feet in the motor "B" provide the necessary movement to obtain the desired tension.

V-Belt Instead of Flat Belt may be used to drive the lathe when Adjustable Type Horizontal Countershaft is used. In this case V-Cone Pulleys are used on lathe spindle and on countershaft. We can supply 4-Step cone pulleys with one V-belt; 2-Step cone pulleys with double V-Belt and single-step pulleys with triple V-Belt.

Catalog No. 238 Adjustable Type Horizontal Motor Drive Countershaft for 9-inch "Workshop" Lathe, Code "AGHAP." Shipping Weight, 45 lbs. ... \$12.00

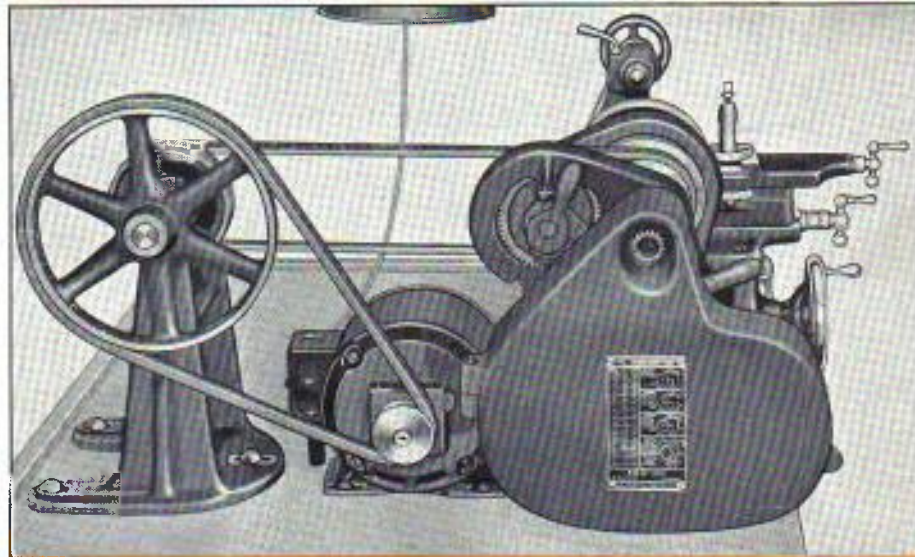


Fig. 3. End View of 9-inch "Workshop" Precision Bench Lathe with Horizontal Motor Drive Countershaft—Plain Type.

### Power Required for Horizontal Motor Drive

An Electric Motor of  $\frac{1}{4}$ -horse power is required to operate the 9-inch Workshop Lathe when either the Plain Type or Adjustable Type or Horizontal Motor Drive Countershafts are used. Power is transmitted from the motor to the horizontal drive countershaft by a V-belt and by a flat leather belt from the countershaft to the cone pulley of lathe. A drum type reversing switch conveniently located on the front V-way of lathe near the headstock, provides for starting, stopping and reversing the motor.

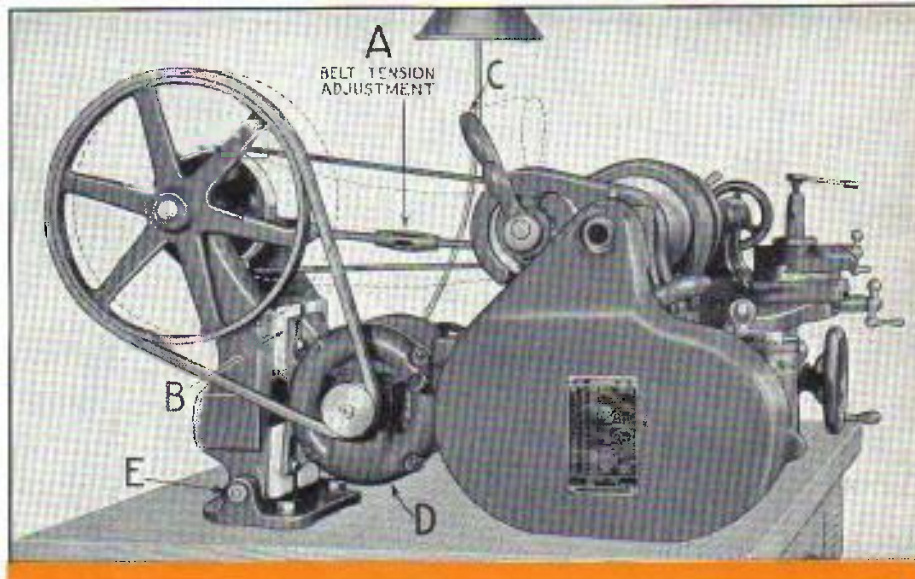


Fig. 4. End View of 9-inch "Workshop" Precision Bench Lathe with Horizontal Motor Drive Countershaft—Adjustable Type.

### Installation Plan and Wiring Diagram

With Each Horizontal Motor Driven 9-inch Workshop Lathe equipped with Plain Type or Adjustable Type Horizontal Drive Countershaft is supplied an installation blueprint showing how to lay out the bolt holes in the bench top to receive the lathe, countershaft and motor. Wiring diagram blueprint showing how to connect the reversing motor and reversing switch to the electric line for proper operation is also supplied with each lathe.

## New Improved Back-Geared Headstock on the 1936 "Workshop" Lathe

The New Improved Back-Geared Headstock used on the 1936 model 9-inch "Workshop" Lathe is strong and rigidly built with several new features and improvements, among which are the following:

1. New twin gear reverse for left hand threads and feeds
2. Larger spindle bearings, adjustable for wear
3. Ball bearing thrust collar
4. Simplified gearing for threads and feeds
5. Improved split take-up nut for adjusting spindle to remove end play
6. Improved lubricating system on spindle bearings
7. All gears machine-cut and tested
8. Improved back-geared mechanism
9. Cone pulley takes 1" belt
10. Wrenchless bull gear lock
11. Accurately threaded and ground spindle with pilot for face plate and chuck alignment
12. Hardened spindle optional

The Headstock Casting is reinforced and webbed, giving it strength and rigidity. The base is accurately machined and hand scraped to fit the lathe bed, is aligned by the inside V-way and inside flat way on the bed and is held permanently in place by a strong substantial clamp between headstock and bed.

Six spindle speeds are provided on the standard headstock, ranging from 39 to 630 R.P.M. Three speeds are obtainable on open belt and three speeds in back gear. Back gear ratio is 5 to 1. Quick acting bull gear lock permits engaging or disengaging back gears quickly.

Special headstock cone pulleys for operation by V-belt with 4-step cone providing 8 spindle speeds, 2-step double V-belt drive cone providing 4 spindle speeds, and single step triple V-belt drive providing two spindle speeds, are available if desired at extra cost. See pages 15 and 21.

The Cross Section Drawing at Left shows the construction of the headstock of the 1936 model "Workshop" lathe including the ball bearing thrust collar, wrenchless bull gear lock, hollow steel spindle, take-up nut, 3-step cone pulley and back gears. A close-up view of the ball bearing thrust collar is shown just above this illustration.

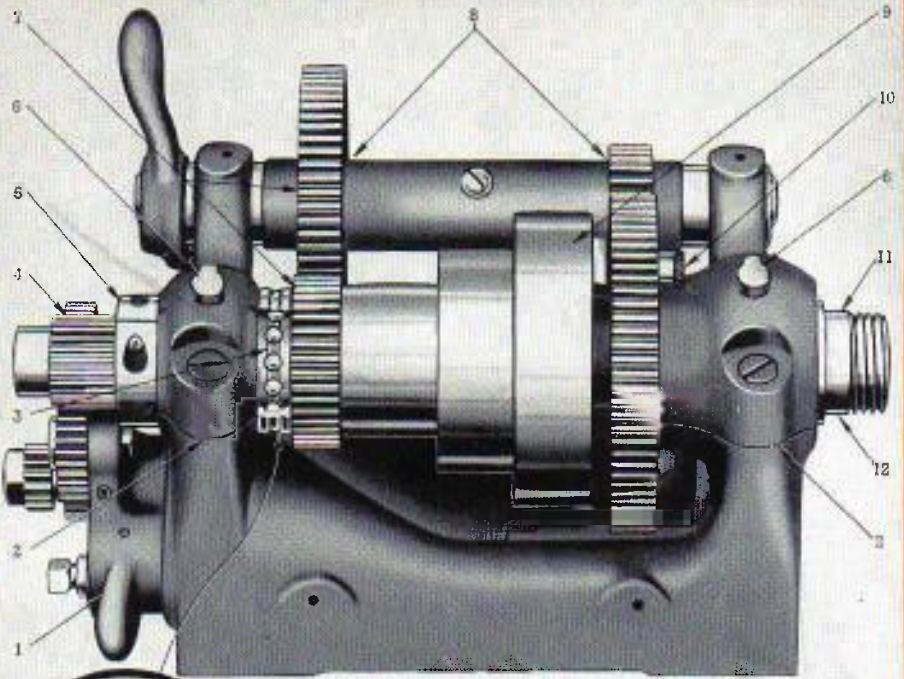


Fig. 5. New Headstock with Gear Guards Removed.

Fig. 6. Close-up of Ball Bearing Thrust Collar on all 1936 Model 9-inch "Workshop" Lathes.

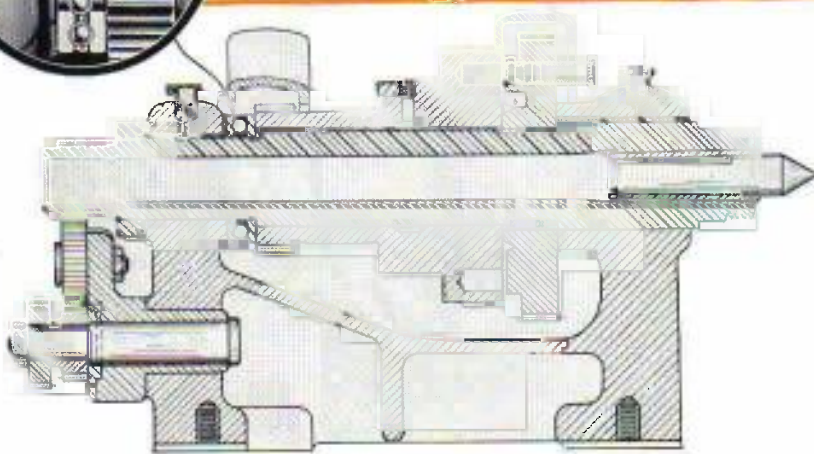


Fig. 7. Cross Section Drawing of 9-inch "Workshop" Lathe Headstock

## New Improved Headstock Spindle



Fig. 8. Take-up Nut.

Fig. 9. Ball Bearing Thrust Collar.

New Improved Headstock Spindle of 1936 Model 9-inch "Workshop" Lathe is bored from a solid bar of alloy steel and has a  $\frac{3}{4}$ " hole its entire length. Size of rear spindle bearing is  $1\frac{1}{8}$ " diameter. Front bearing is  $1\frac{1}{8}$ " diameter. Spindle nose is  $1\frac{1}{2}$ " diameter and has 8 pitch U.S.S. thread. Tapered hole in spindle is fitted with a reducing sleeve which takes No. 2 Morse Taper Center.

All Bearing Surfaces are accurately ground to fit the spindle. Ground pilot back of the spindle nose threads provides accurate alignment of face plate and chuck.

A New Hardened and Ground Steel Ball Bearing Thrust Collar takes up thrust of spindle against the rear bearing.



Fig. 10. New Improved Headstock Spindle.

Split nut and fibre washer provide accurate end adjustment of spindle.

A Hardened, Heat Treated Spindle can be supplied as an optional feature on the "Workshop" Lathe. This hardened spindle running in the cast iron bearings of the "Workshop" Lathe makes a combination that is unsurpassed for long life and precision service. It is designed for heavy duty and continuous day in and day out use. We recommend it for shops which use the lathe for quantity production of metal parts and also for shops which use the lathe for wood turning or other work requiring high spindle speeds. Price of hardened spindle in lieu of regular spindle. .... \$10.00

# NEW—Twin Gear Reverse

## For Right and Left Hand Screw Threads and Feeds

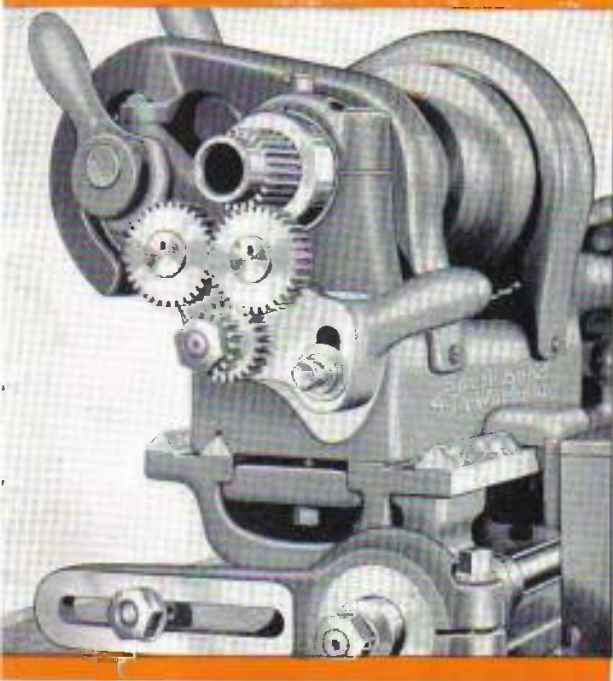


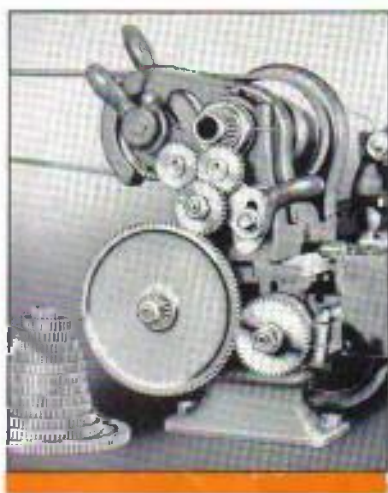
Fig. 11. New Twin Gear Reverse Mechanism furnished on 1936 Model 9-inch "Workshop" Lathe. Reverse Lever is in "Up" position for Right Hand Threads and Feeds.

The New Twin Gear Reverse for right and left hand screw threads and feeds is an improvement on the 1936 Model 9-inch "Workshop" Lathe. This improvement will be appreciated by the mechanic as it permits changing from right to left hand threading and feeding, or vice versa, quickly by means of the convenient reverse lever located on the headstock.

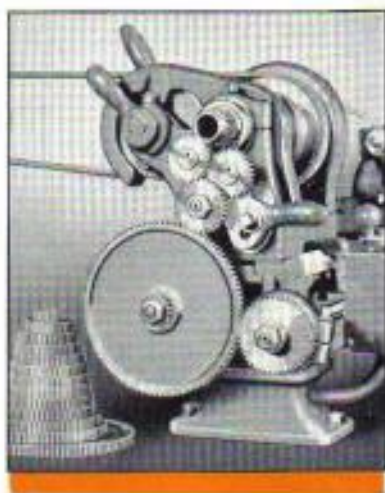
Three Positions of the Reverse Lever are obtainable, as follows: "Up" position for cutting right hand screw threads and feeds; "Down" position for left hand screw threads and feeds; "Center" position or "neutral" at which point neither of the twin reverse gears are engaged with the spindle gear. With the gears in this position the lathe spindle rotates freely, without movement of the leadscrew, so that the lathe can be used for polishing, filing, wood turning and similar operations.

This new design of twin gear reverse mechanism is similar to that used on large expensive machines and offers several advantages over previous designs, including (1) simplification of gearing arrangement so that only one compound gear is used for turning feeds, (2) two positions are provided for changing gears for threading, that is, both the leadscrew gear and stud gear may be changed as shown on index plate, (3) arrangement permits using a wide variety of special gears for cutting special threads of all kinds.

Each 9-inch South Bend "Workshop" Lathe comes regularly equipped with the new twin gear reverse mechanism, train of gears from spindle to leadscrew and a set of independent change gears for cutting a wide range of screw threads and a wide range of turning feeds. For complete information on screw thread cutting see page 11.



A Fig. 12. Right Hand Screw Thread Gearing Arrangement.



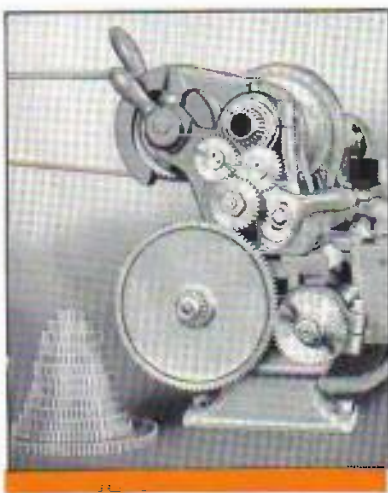
B Fig. 13. Left Hand Screw Thread Gearing Arrangement.

### A Right Hand Screw Thread Cutting

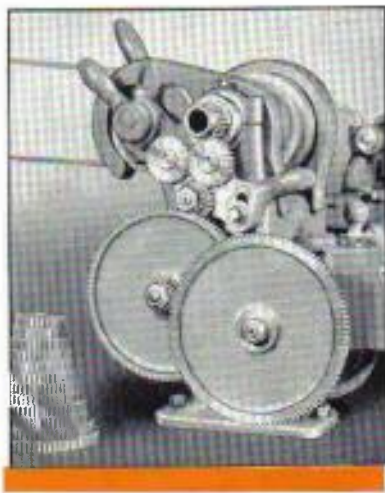
The illustration "A" at left shows the train of gears at the headstock end of the lathe set up for cutting right hand screw threads. Note that the new twin gear reverse mechanism is in the "Up" position so that the right hand twin gear is in mesh with the spindle gear. The large gear of 108-teeth in the gear train acts only as an idler gear to connect the stud gear and screw gear.

### B Left Hand Screw Thread Cutting

The illustration "B" at the left shows the train of gears at the headstock end of the lathe set up for cutting left hand screw threads and for left hand turning feeds. Note that the new improved twin gear reverse mechanism is in the "Down" position so that the left hand twin gear is in mesh with the spindle gear which reverses the direction of the leadscrew.



C Fig. 14. Neutral Position for Polishing, Filing, etc.



D Fig. 15. Right Hand Longitudinal Power Feed Gearing Arrangement.

### C Neutral Position for Polishing

The illustration "C" at the left shows the new twin gear reverse mechanism entirely disengaged from the spindle gear so that the lathe can be operated at high speed for polishing, filing, wood turning or for any other purpose. The train of gears does not operate when the reverse mechanism is in the "neutral" position so it is impossible to cut screw threads or use the automatic turning feeds in this position.

### D Right Hand Automatic Power Feed

The illustration "D" at left shows the train of gears at the headstock end of the 9-inch Workshop Lathe set up for right hand automatic longitudinal screw feed to carriage. Note that the reverse lever is in the "Up" position. With this set-up the lathe is arranged for an automatic power feed of .0028" feed per revolution of lathe spindle.

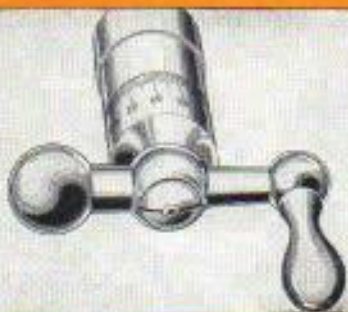


Fig. 16. Close-up of Graduated Collars on Compound Rest and Cross Feed Screws, reading in thousandths of an inch.



Fig. 17. Close-up Showing the 180-degree Graduations on Base of Compound Rest for Accurate Angular Settings.

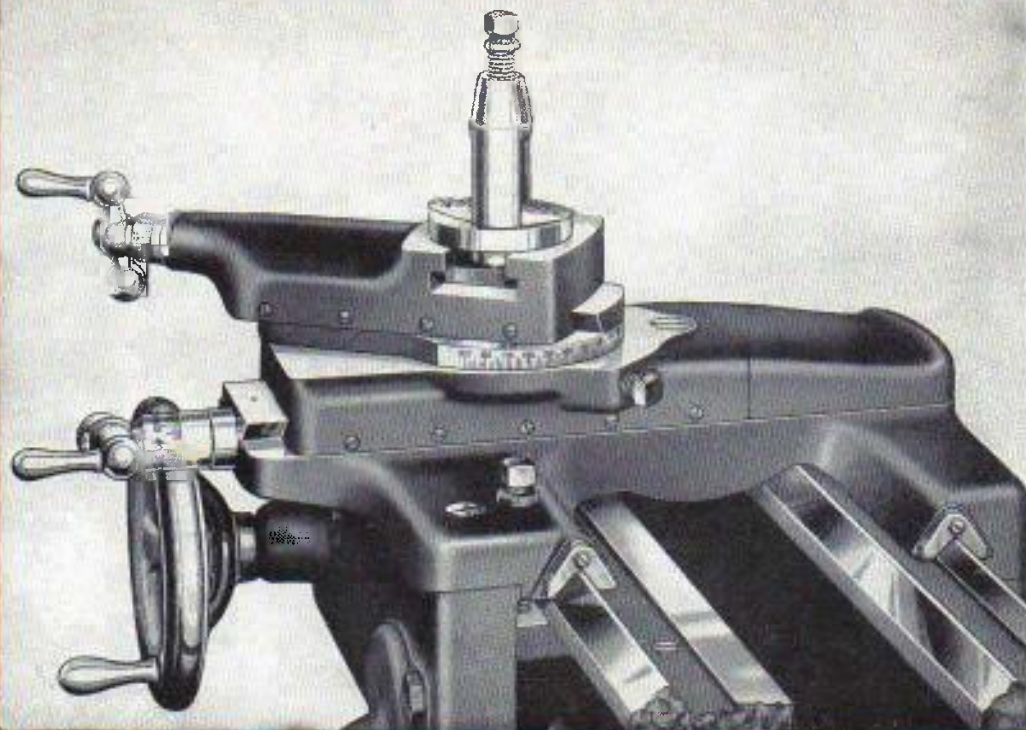


Fig. 18. Saddle and Compound Rest used on the 9-inch "Workshop" Lathe.

## Saddle and Compound Rest

The Saddle of the 9-inch "Workshop" Lathe is strong and rigid. It has long, accurate, hand-scraped bearings for the front and rear V-ways of the lathe bed. A wide, deep bridge provides rigid support for the compound tool rest. A clamping device is provided to lock the carriage on the lathe bed for facing and cutting-off operations. Gibs are provided at both front and rear of the saddle for taking up wear and for accurate adjustment. The dovetail cross slide is accurately hand-scraped and has gibs for delicate adjustment and for taking up wear. The cross feed travel is  $5\frac{1}{2}$  inches. Tool post is of hardened drop forged steel.

The Compound Rest of the 9-inch "Workshop" Lathe is graduated 180 degrees and can be swiveled and locked at any desired angle for machining or for turning and boring short tapers. It has an angular travel of  $2\frac{1}{8}$  inches. The compound rest slide is an accurately hand-scraped, dovetail bearing with gib for taking up wear and for accurate adjustment. A large T-slot is provided for the tool post and for holding boring bars, grinder, turret attachment, etc. Feed screws for the compound rest and the cross slide have coarse pitch Acme threads and are fitted with micrometer graduated collars reading in thousandths of an inch.

## Apron of Lathe

The Apron of the 9-inch "Workshop" Lathe is strong, powerful and of simple construction. The illustration below is an

interior view of the apron and shows a section of the lead screw, the opened split-nuts and the hand feed reduction gearing of the apron used for moving carriage by hand.

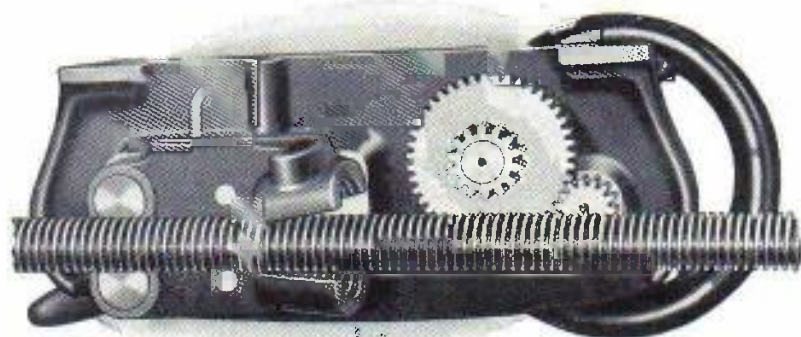


Fig. 19. Interior View of the Apron used on the 9-inch "Workshop" South Bend Lathe.

The Split-Nuts or Half-Nuts are engaged with the lead screw for cutting screw threads and to provide power feed to the carriage when using the automatic longitudinal power feed. They are made of cast iron, bored, threaded and tested with a master thread gauge. Both halves are threaded. They are opened and closed by a cam mechanism controlled by a lever on the front of the apron.

Hand Feed to the carriage, either right or left, is provided by means of a polished hand wheel on the front of the apron. By a system of reduction gearing the hand wheel drives a steel pinion which meshes with the rack on the lathe bed permitting movement of the entire carriage.

An Improved Oiling System lubricates the split-nuts, the threads of the lead screw and the apron gearing. Ducts lead the oil from the front of the apron to the bearing surfaces.

## Precision Lead Screw

The Precision Lead Screw used on the 9-inch "Workshop" Lathe is  $\frac{3}{4}$ -inch in diameter and has 8 Acme Standard Threads per inch. These threads are tested for accuracy of lead, form of thread and pitch diameter. The leadscrew threads are cut on a special machine equipped with a Pratt and Whitney master screw and they may be used for the most accurate threading jobs.



Section of Precision Lead Screw used on 9-inch "Workshop" Lathe.

# Strong Rigid Lathe Bed

## Features of Lathe Bed



Fig. 20—Above. View of 9' x 3' Workshop Lathe Bed lying on its side to show top surfaces and box braces.

Fig. 20—Below. 9' x 3' Workshop Lathe Bed mounted on bench legs showing machine cut steel rack and hand scraped V-ways and flat way.

- 50% Steel, 50% Nickel Iron
- Weight 3' bed, 90 lbs.
- 3' Bed has 3 box braces
- 3½' Bed has 4 box braces
- 4' Bed has 5 box braces
- 4½' Bed has 6 box braces
- 3 V-ways, all bed lengths
- 1 Flat way, all bed lengths
- Planed, hand scraped
- One-Piece casting
- .001" Accuracy
- Felt Shear Wipers

## Semi-Steel One-Piece Bed Casting

The Bed on the 9-inch Workshop Lathe is a strong substantial one-piece casting of 50% steel and 50% nickel iron, with box braces cast in at short intervals its entire length. Each bed length is made from a separate pattern so that the long bed lengths are equally stiff and rigid as the short bed lengths.

Each 9-inch Workshop Bed has three V-ways and one flat way accurately planed, seasoned and hand scraped so that headstock, tailstock and carriage are in accurate alignment to within limits of .001". V-ways and flat ways are perfectly parallel to within limits of .001".

With proper care and lubrication the 9-inch Workshop Lathe will last a lifetime and continue doing accurate and precise work.

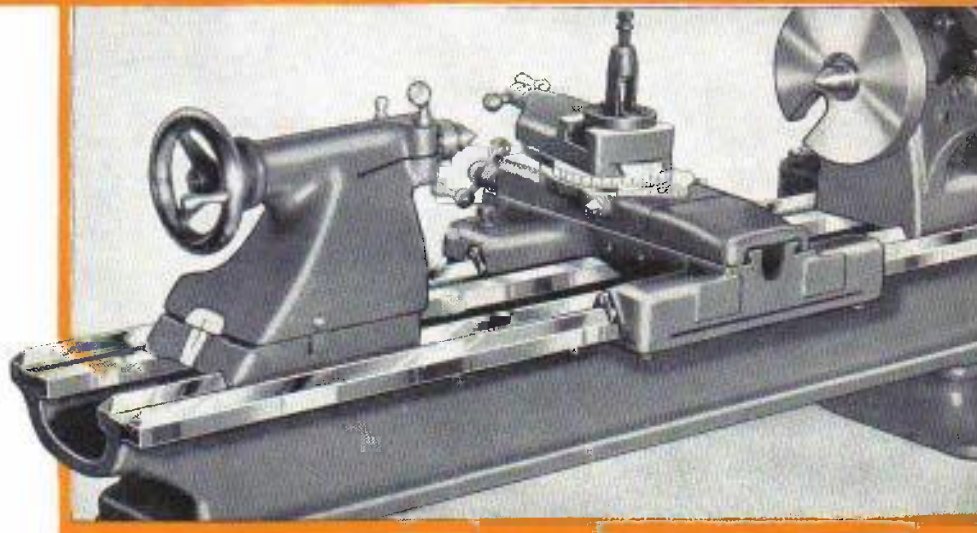


Fig. 21. Rear View of 9-inch Workshop Lathe showing how the 3 V-ways and 1 Flat Way align headstock, tailstock and saddle.

## 3 "V"-ways and 1 Flat Way on Bed

Note that the carriage slides on the two large outside V-ways of the bed; the tailstock slides on the inside "V" and the inside flat way; the headstock is aligned by and permanently attached to the inside V-way and the inside flat way. This insures doing most accurate work during entire life of the lathe.



Fig. 22.

## New Design Tailstock

The Tailstock of the 1936 Model 9-inch Workshop Lathe is a new and improved design with long accurately hand scraped bearing on the lathe bed. Features include 5/8" set-over for taper turning, improved spindle lock, No. 2 Morse Taper self-ejecting center, alloy steel spindle ground and lapped to fit tailstock barrel, spindle travel 2", cut-away design of tailstock top permitting compound rest to swivel parallel with lathe bed over tailstock base. Note the set-over for taper turning and graduated index for convenient aligning of tailstock.

Tailstock Spindle Graduated in sixteenths of an inch, can be furnished at extra cost, if desired. The graduated spindle is of great convenience for measuring depth of hole when drilling with drill chuck held in tailstock. Price extra for Graduated Tailstock Spindle when fitted to lathe at factory.

**\$1.50** Tailstock Spindle.



Fig. 22-A. Graduated Tailstock Spindle.

## TESTED TO .001" ACCURACY

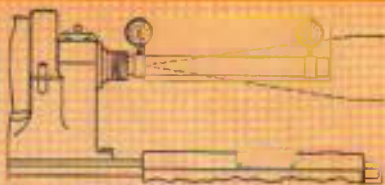


Fig. 25. Testing Alignment of Headstock Spindle with Bed.

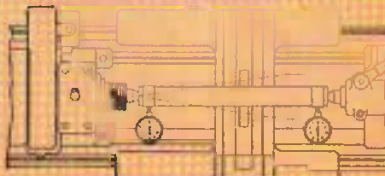


Fig. 26. Testing Alignment of Tailstock Spindle with Headstock Spindle.

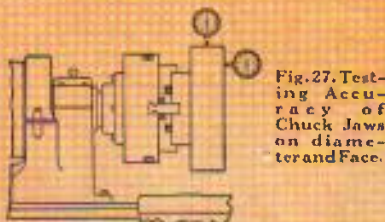


Fig. 27. Testing Accuracy of Chuck Jaws on diameter and Face.

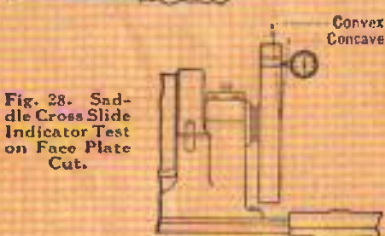


Fig. 28. Saddle Cross Slide Indicator Test on Face Plate Cut.

# 64 Major Accuracy Tests

Made on each 9-inch Workshop Precision Lathe

The highest standards of precision accuracy are maintained in manufacturing the 9-inch Workshop Lathe from the planing of the bed to the final inspection.

Sixty-four major accuracy tests are made on every lathe during the process of manufacturing. The most accurate measuring instruments, gauges, test bars, master templates, etc., are used throughout to insure precision and interchangeability of parts.

The illustrations show five of the sixty-four actual accuracy tests made in the construction of these lathes. The dial test indicators used will detect errors of a fraction of a thousandth. The absolute maximum error allowed in any test on the 9-inch Workshop Lathe is .001".

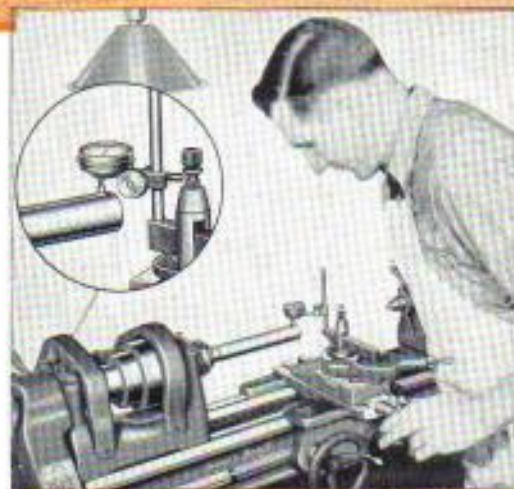


Fig. 24. Testing Alignment of Headstock Spindle with Lathe Bed, Using 6" Test Bar and Dial Indicator.

One of the most rigid tests made on each lathe is shown in the illustration above. An inspector is testing the alignment of the headstock spindle of the 9-inch Workshop Lathe. The steel bar 6" long is hardened and accurately ground to fit the taper hole in the lathe spindle. The dial test indicator is held in the tool post with the indicator button resting on the end of the test bar. In this test the maximum run-out allowed at the outer end of the test bar is .001". Alignment of test bar with bed in both horizontal and vertical planes is held within .001". Tailstock and tailstock spindle are similarly aligned.

Our plant in which these lathes are built is strictly modern and utilizes the most modern equipment known. Special machines, fixtures, jigs and tools are employed for producing the 9-inch Workshop Lathe in factory lots of one thousand lathes at a time. The finest precision instruments are used such as Browne & Sharpe Gear Testing Machines, Johansson Gauge Blocks, the Hartometer Precision Thread Gauge, Starrett Dial Test Indicators and other precision instruments and devices.

## Power For Heavy Cuts

The 9-inch Workshop Lathe is a powerful tool, capable of handling any machine job in the toughest steels and other metals and alloys. The lathe is back-geared, giving it great power for taking heavy cuts with coarse feed whenever desired. The weight of the lathe makes it rigid and substantial. Large bearing surfaces and generous proportion in the design of the various mechanical parts of the lathe insure unusual strength and rigidity on heavy cuts.

For example, this 9-inch Workshop lathe will reduce the diameter of a .45 carbon steel shaft  $\frac{3}{8}$  of an inch in one cut using .005" feed per revolution of lathe spindle, and driven by  $\frac{1}{4}$  H. P. Motor.

## Capacity Of Lathe

The capacity or size of any back-geared screw cutting lathe is indicated by the swing over bed, distance between centers and swing over carriage. The capacity of the 9-inch Workshop Lathe in the various bed lengths is shown in the table at left.

On the 3-foot bed lathe, for example, work up to 9  $\frac{1}{8}$  inches in diameter can be accommodated in a chuck or on the face plate. Shafts up to 5  $\frac{1}{2}$  inches in diameter can be accommodated between centers up to a maximum length of 17 inches.

The 9-inch Workshop Lathe has the capacity for all classes of small work coming up in the modern shop and plant for production and repair work. It will be found equal to any reasonable demand where power, precision and accuracy are required.

Capacity of 9" "Workshop" Lathe				
Length of Bed Feet	Distance Between Centers Inches	Swing Over Bed Inches	Swing Over Carriage Inches	Ship. Wt. Mfr. Dr. Bench Lathe Crated
3'	17"	9 $\frac{1}{8}$ "	5 $\frac{1}{2}$ "	310 lbs.
3 $\frac{1}{2}$ '	23"	9 $\frac{1}{8}$ "	5 $\frac{1}{2}$ "	335 lbs.
4'	29"	9 $\frac{1}{8}$ "	5 $\frac{1}{2}$ "	360 lbs.
4 $\frac{1}{2}$ '	35"	9 $\frac{1}{8}$ "	5 $\frac{1}{2}$ "	410 lbs.

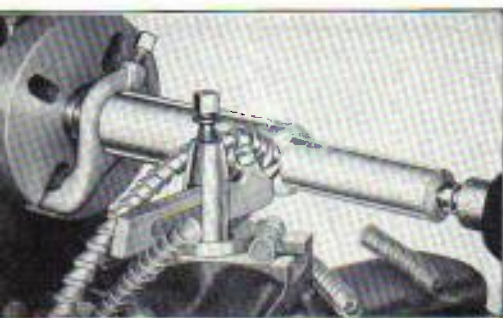


Fig. 29. Taking a Heavy Cut with Coarse Feed on a Bar of Machinery Steel in the 9-inch Workshop Lathe.

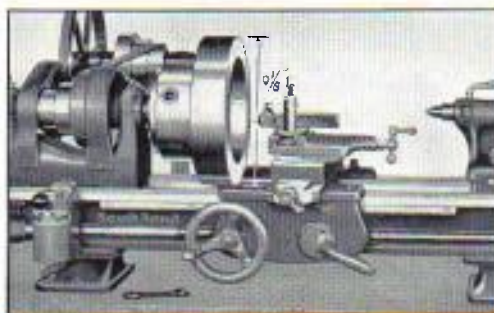


Fig. 30. Chucking capacity of the 9-inch Workshop Lathe is 9  $\frac{1}{8}$ " in diameter as shown.

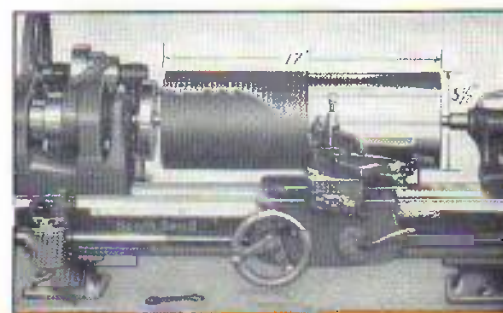


Fig. 31. 9' x 3' Workshop Lathe takes work 5  $\frac{1}{4}$ " in diameter over the tool carriage and 17" long.

# Cutting Screw Threads

On the 9-inch Workshop Lathe



Fig. 34. Operator Cutting Screw Thread on 9-inch Workshop Lathe.

SOUTH ENGINE BEND LATHES		
THREADS TO CUT	STUD GEAR	SCREW GEAR
4	64	32
5	64	40
6	64	48
7	64	56
8	32	32
9	64	72
10	32	40
11	32	44
11½	32	46
12	32	48
13	32	52
14	32	56
16	32	64
18	32	72
20	32	80
22	16	44
24	16	48
26	16	52
27	16	54
28	16	56
30	16	60
32	16	64
36	16	72
40	16	80

Fig. 32. Thread Chart Attached to 9-inch "Workshop" Lathes.

Standard Screw Threads, right or left hand, from 4 to 40 per inch including 1½ pipe thread as listed on the chart at the left can be cut on the 9-inch "Workshop" Lathe in the following standards: National Coarse or U.S.S., National Fine or S.A.E., Sharp "V," Whitworth, Acme, Square, all in single or multiple threads.

Automatic Longitudinal Power Feeds as fine as .0028 of an inch per revolution of lathe spindle and other feeds, both fine and coarse, are obtainable with the gears furnished as standard equipment with lathe. See "D," page 7.

Change Gears are supplied with the lathe for cutting screw threads and to make the various combinations as shown on the index chart at the left. Change gears are made of cast iron and have accurately machine-cut and tested teeth.



Fig. 33. Change Gears.

Fine Screw Threads up to 80 per inch can be cut using the Fine Screw Thread Attachment. See page 20.

Metric Screw Threads from .5 mm. to 8.0 mm. pitch can be cut by using the Transposing Gear Attachment. See page 20.



Internal Square Thread



Master Thread Gauge



"V" Thread Tap



Limit Thread Gauge



Acme Thread Tap



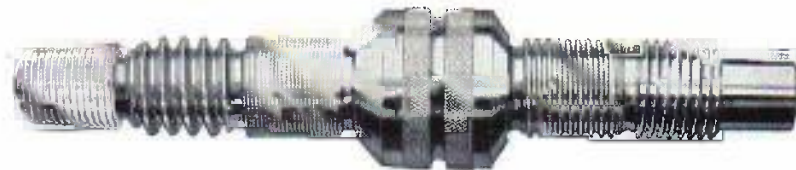
Internal U. S. Standard Thread



Right Hand Acme Double Screw Thread



National Coarse (U.S.) Screw Thread



Special Screw Showing Various Types of Threads



Acme Screw Thread

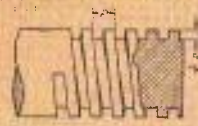
## STANDARD SCREW THREAD FORMULAS

National Coarse (U. S. S.) Screw Thread



FORMULA  
 $P = \text{PITCH} = \frac{1}{\text{THREADS PER IN.}}$   
 $D = \text{DEPTH} = P \times .6495$   
 $F = \text{FLAT} = \frac{1}{8}$

Square Thread



FORMULA  
 $P = \text{PITCH} = \frac{1}{\text{THREADS PER IN.}}$   
 $D = \text{DEPTH} = P \times .50$   
 $F = \text{SPACE} = P \times .50$

International Standard Metric Screw Thread



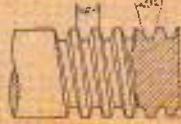
FORMULA  
 $P = \text{PITCH}$   
 $D = \text{DEPTH} = P \times .7169$   
 $C = \text{FLAT} = \frac{1}{8}$   
 $R = \text{BOTTOM FLAT} = \frac{1}{8}$

Whitworth Standard Screw Thread



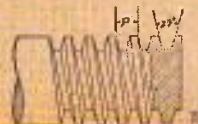
FORMULA  
 $P = \text{PITCH} = \frac{1}{\text{THREADS PER IN.}}$   
 $D = \text{DEPTH} = P \times .6135$   
 $R = \text{RADIUS} = .1175 P$   
 $A = \text{FLAT} = .0125 P$

Acme Screw Thread



FORMULA  
 $P = \text{PITCH} = \frac{1}{\text{THREADS PER IN.}}$   
 $D = \text{DEPTH} = P \times .34$   
 $F = \text{FLAT} = .0125 P$   
 $C = \text{FLAT} = .0125 P$

Brown & Sharpe 29° Worm Thread



FORMULA  
 $P = \text{PITCH} = \frac{1}{\text{THREADS PER IN.}}$   
 $D = \text{DEPTH} = .6866 P$   
 $F = \text{FLAT} = .31 P$   
 $C = \text{FLAT} = .335 P$

# A Few Examples of Machine Work

## Handled in the 9-inch "Workshop" Lathe



Fig. 35. Lathe Used as Drill Press for Drilling Hole in Flat Piece of Work.



Fig. 36. 9" "Workshop" Lathe used for Production Work in the Manufacturing Plant.



Fig. 38. Boring the Taper in a Steel Conical Die Using Compound Rest.



Fig. 41. Knurling a Large Handle Mounted Between Centers in the Lathe.



Fig. 44. Manufacturing Small Parts Using the Draw-in Collet Chuck and Turret.

### Examples of Machine Work

Illustrated at the right are examples of the fine precision work that can be handled in the 9-inch "Workshop" Lathe.

The operations required in machining these parts include screw thread cutting, turning, boring, reaming, drilling, filing, polishing, knurling, etc.

For a more complete list of jobs handled in the "Workshop" Lathe see page 13.



Fig. 37. Metal Parts Machined in the 9-inch "Workshop" South Bend Precision Lathe.



Fig. 39. Lathe is Practical for Filing and Polishing Bushings, Shafts, Parts, etc.



Fig. 40. Winding a Steel Spring in the Lathe. Attachment makes Springs from wire 0" to 1/8" in diam. Cat. No. 367. "Balun" \$4.00



Fig. 42. Drilling a Bushing Supported in a Crotch Center.

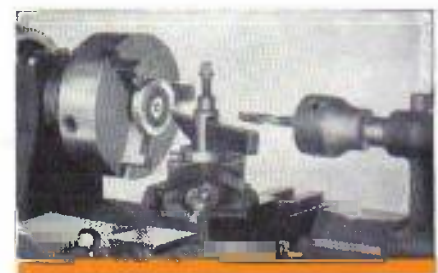


Fig. 43. Drilling and Facing a Gear Blank Held in a Three-Jaw Chuck.



Fig. 45. Squaring the End of a Steel Shaft Using the Milling Attachment.



Fig. 46. Cutting a Slot in a Metal Block Held in Milling and Boring Table.

# A Few Examples of Machine Work Handled in the 9-inch "Workshop" Lathe



Fig. 47. Turning a Short Taper on a Shaft in the 9" Workshop Lathe



Fig. 48. Boring the Hole in a Bushing after it has been Drilled.



Fig. 49. Machining a Steel Sleeve Mounted on a Mandrel Between Centers in the Lathe.



Fig. 50. Winding an Experimental Coil for a Radio. Note the Automatic Counter.



Fig. 51. Making a Bushing, Complete without Removing from the Chuck.



Fig. 52. Boring a Steel Collar held in a 4-Jaw Independent Chuck.

## List of Small Mechanical Devices

Serviced on the 9-inch "Workshop" Lathe

The list below contains a few of the hundreds of mechanical devices used in manufacturing plants, factories, offices, laboratories, homes, etc., that can be repaired and serviced on the 9-inch "Workshop" South Bend Lathe.

Battery Service Equipment	Scales, Meters and Gauges	Scientific Apparatus
Engineering Equipment	Hydraulic Equipment	Sewing Machines
Fishing Tackle	Traffic Signal Equipment	Watches, Clocks and Chronometers
Outboard Motors	Barometrical Instruments	Bicycles, Motorcycles
Railroad Signal Equipment	Bottlers' and Brewers' Apparatus	Telegraph and Signal Equip.
Construction Equipment	Hardware Parts	Laboratory Equipment
Metal Pattern Work	Electric Railway Equipment	Dental and Medical Instruments
Electrotyping Equipment	Engraving Equipment	Model Parts
Gasoline Pumps	Silk, Cotton and Fabric Mills Equipment	Optical Instruments
Refining Apparatus	Lubricating Instruments	Microscopes
Marine and Nautical Instruments	Die Stamping & Embossing Equipment	Invention Development
Television Apparatus	Surgical Instruments	Pattern Makers Equipment
X-Ray Equipment	Vacuum Controlled Equipment	Artificial Limb Makers Equip.
Gas and Water Works Equip.	Plumbing Apparatus	Television Apparatus
Aeronautical Instruments	Hoists and Cranes	Toys and Playground Equip.
Agricultural Implements	Animated Signs	Vacuum Sweepers
Navigation Instruments	Typewriters	Cameras and Projectors
Auto, Bus and Truck Parts	Cash Registers	Vending Machines
Tractor Parts	Firearms	Locks, Safe Mechanism
Farm Equipment	Motors, Generators	Tools and Dies
Radio Equipment	Electrical Appliances	
Refrigerators		
Jewelry and Novelties		

## General Machine Jobs Which Can be Handled in the 9" Workshop Lathe

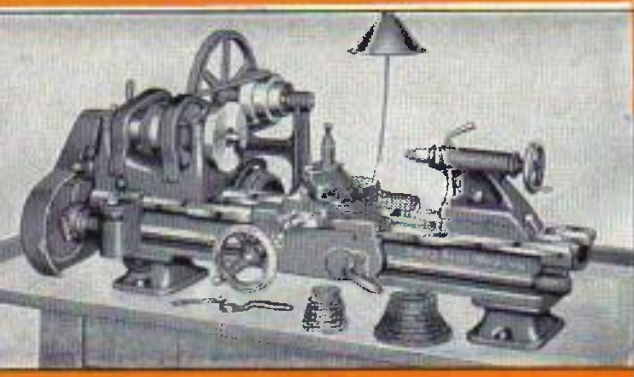
- Turning
- Cutting-off
- Boring
- Screw Thread Cutting
- Knurling
- Machining Bevels
- Turning Wood
- Spring Winding
- Drilling —Reaming
- Chucking
- Metal Spinning
- Facing
- Taper Boring and Turning
- Sanding and Polishing
- Grinding and Filing
- Turning Irregular Work
- Testing and Truing
- Countersinking and Tapping
- Chamfering and Milling
- Restoring Center Holes
- Forming and Recessing
- Cutting Key Seats
- Draw-in Collet Chuck Work
- Turret and Bar Work
- Using Multiple Tools
- Crowning Pulleys
- Truing Typewriter Platens
- Rubber Roll Turning
- Pipe Threading
- Pattern Making
- Making Bushings
- Accurate Finishing Work
- Tap, Die and Gauge Work
- Making Emergency Parts
- Manufacturing and Production

## Metals, Wood and Compositions

Can be Machined in the  
9" Workshop Lathe

- Steel: rolled, drawn, cast
- Steel Forgings
- Cast and Wrought Iron
- Brass, Bronze, and Copper
- Babbitt—Soft Alloys
- Alloy Steels
- Aluminum
- Hard Rubber
- Alabaster
- Wood and Fibres
- Celluloid —Bakelite

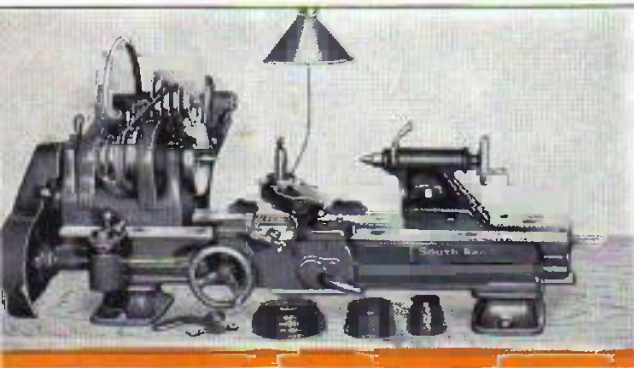
# 9-inch "Workshop" South A Type and Drive to Meet the Requirements



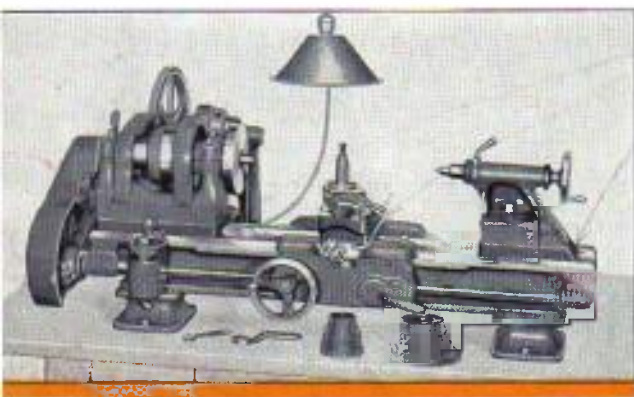
**1** No. 415-Y 9" x 3" "Workshop" Bench Lathe with Horizontal V-Belt Motor Drive, Plain Type as shown. \$98.25



**2** No. 415-YA 9" x 3" "Workshop" Bench Lathe with Horizontal V-Belt Motor Drive, Adjustable Type. \$103.25



**3** No. 4415-YA, 9" x 3' Workshop Bench Lathe with Horizontal V-Belt Motor Drive and with Four Step Single V-Belt Drive to Spindle as shown. \$113.25



**4** No. 6415-Y 9" x 3" "Workshop" South Bend Bench Precision Lathe with Raising Blocks as shown. \$123.25

The 9-inch "Workshop" Lathe is built in several models, each in four different bed lengths. The mechanical units, specifications and dimensions are exactly the same on all models, the only differences being in the modifications to meet the requirements in various types of shops.

## 1 Lathe with Horizontal Drive—Plain Type

The 9-inch "Workshop" Lathe with Horizontal V-Belt Motor Drive Plain Type, illustrated at "1" at the left, is the same lathe as that illustrated, described and priced on pages 4 and 5 of this catalog.

### Net Factory Prices, F.O.B. Cars, South Bend, Indiana

Swing Over Bed Inches	Length of Bed Feet	Distance Between Centers Inches	Approx. Ship. Wt. Crated Pounds	Cash Price			Easy Payment Plan*		
				Cat. No.	Code Word	F.O.B. Factory	Amount Down Payment	Payment Each Month	Approx. No. of Paym'ts
9 1/8"	3	17	310	415-Y	Macan	\$ 98.25	\$24.00	\$7.00	11
9 1/8"	3 1/2	23	335	415-Z	Maer	110.25	29.00	8.00	12
9 1/8"	4	29	360	415-A	Mafab	122.25	30.00	8.50	12
9 1/8"	4 1/2	35	410	415-B	Magot	139.25	31.00	9.00	12

## 2 Lathe with Horizontal Drive—Adjustable

The 9-inch "Workshop" Lathe with Horizontal V-Belt Motor Drive Adjustable Type, illustrated at "2" at the left, is the same as the lathe described under "1" above, except that it has the Adjustable Type Horizontal Countershaft. An end view of the lathe showing this drive, and further description, are shown on page 5.

### Net Factory Prices, F.O.B. Cars, South Bend, Indiana

Swing Over Bed Inches	Length of Bed Feet	Distance Between Centers Inches	Approx. Ship. Wt. Crated Pounds	Cash Price			Easy Payment Plan*		
				Cat. No.	Code Word	F.O.B. Factory	Amount Down Payment	Payment Each Month	Approx. No. of Paym'ts
9 1/8"	3	17	320	415-YA	Magla	\$103.25	\$28.00	\$ 7.00	12
9 1/8"	3 1/2	23	345	415-ZA	Mahik	115.25	29.00	8.00	12
9 1/8"	4	29	370	415-AA	Manaf	127.25	30.00	8.50	12
9 1/8"	4 1/2	35	420	415-BA	Mandi	144.25	32.00	10.00	12

## 3 Lathe with 4-Step Single V-Belt Drive

The 9-inch "Workshop" Lathe illustrated at the left is fitted with 4-step cone pulley for single V-Belt drive, providing eight spindle speeds, four on open belt and four in back gear as follows: 44, 60, 82, 113, 230, 313, 424 and 585. The countershaft is similarly equipped with four-step V-pulley for single V-belt motor drive. Used only with adjustable type countershaft which is also equipped with V-pulley.

### Net Factory Prices, F.O.B. Cars, South Bend, Indiana

Swing Over Bed Inches	Length of Bed Feet	Distance Between Centers Inches	Approx. Ship. Wt. Crated Pounds	Cash Price		Easy Payment Plan*			
				Horizontal Drive with Adjustable Type Countershaft		Price F.O.B. Factory	Amount Down Payment	Payment Each Month	Approx. No. of Payments
				Cat. No.	Code Wd.				
9 1/8"	3	17	320	4415-YA	Kabli	\$113.25	\$28.00	\$ 8.00	12
9 1/8"	3 1/2	23	345	4415-ZA	Kabli	125.25	30.00	8.50	12
9 1/8"	4	29	370	4415-AA	Kabro	137.25	31.00	9.00	12
9 1/8"	4 1/2	35	420	4415-BA	Kacal	154.25	35.00	11.50	12

## 4 Lathe with Raising Blocks

Raising Blocks under headstock, tailstock and tool rest may be added to any 9-inch "Workshop" lathe to increase the swing capacity of the lathe from 9 1/8" to 11 1/8". Tabulation below shows prices of three popular models of "Workshop" lathes equipped with raising blocks. Prices of other models may be determined by adding to the regular price of the lathe, the cost of raising blocks (\$25.00) as shown in the right-hand column below.

### Net Factory Prices, F.O.B. Cars, South Bend, Indiana

Swing Over Bed Inches	Length of Bed Feet	Approx. Ship. Wt. Crated For Adj. Hor. Drive Lathe Pounds	Plain Lathe without Drive Equipped with Raising Blocks See Pages 2 and 3		Lathe with Horizontal Drive, Plain Type, Equipped with Raising Blocks See Pages 4 and 5		Lathe with Horizontal Drive, Adjustable Type, Equipped with Raising Blocks See Pages 4 and 5		For Raising Blocks For All Other Lathes shown in this Catalog, add to Regular Price of Lathe
			Cat. No.	Price	Cat. No.	Price	Cat. No.	Price	
11 1/8"	3	340	6015-YB	\$100.00	6415-Y	\$123.25	6415-YA	\$128.25	\$25.00
11 1/8"	3 1/2	365	6015-ZB	112.00	6415-Z	135.25	6415-ZA	140.25	25.00
11 1/8"	4	390	6015-AB	124.00	6415-A	147.25	6415-AA	152.25	25.00
11 1/8"	4 1/2	440	6015-RB	141.00	6415-R	164.25	6415-RA	169.25	25.00

NOTE: Prices of all Motor Driven Lathes include 1/4 H.P., 1-phase, 60-cycle, A.C. Start-stop Reversing Motors and regular equipment.  
\*For Easy Payment Details see page 29.

# Bend Precision Lathes

## Of Every Kind of Shop, Plant and Industry

Any 9-inch "Workshop" Lathe shown in this catalog, for example, can be fitted with oil pan; any floor leg lathe can be fitted with raising blocks. If you are uncertain as to the drive and equipment for your work, write to us and we will quote you on the lathe exactly suited to your needs.

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### Lathe with Wall Motor Drive

The 9-inch "Workshop" Lathe shown at the right is practical for the shop wishing a floor leg lathe in the individual motor drive. This is the same lathe as illustrated and described on pages 2, 3, 4 and 5 except it is fitted with floor legs and the drive unit is mounted on the wall.

#### Net Factory Prices, F.O.B. Cars, South Bend, Indiana

Swing Over Bed Inches	Length of Bed Feet	Distance Between Centers Inches	Approx. Ship. Wt. Crated Pounds	Cash Price			Easy Payment Plan**		
				Cat. No.	Code Word	F.O.B. Factory	Amount Down Payment	Payment Each Month	Approx. No. of Payments
9 1/8	3	17	380	415-YF	Wupok	\$108.25*	\$29.00	\$ 7.00	12
9 1/8	3 1/2	23	405	415-ZF	Wurax	120.25*	30.00	8.50	12
9 1/8	4	29	430	415-AF	Wurby	132.25*	31.00	9.00	12
9 1/8	4 1/2	35	480	415-RF	Wurda	149.25*	32.00	10.00	12

6

### Lathe with Oil Pan and Floor Legs

The 9-inch "Workshop" Lathe shown at the right is fitted with an oil pan, with floor legs and with double friction countershaft. This is basically the same lathe as shown throughout this catalog, except for the oil pan and floor legs which can be mounted on any 9-inch "Workshop" Lathe if desired.

#### Net Factory Prices, F.O.B. Cars, South Bend, Indiana

Swing Over Bed Inches	Length of Bed Feet	Distance Between Centers Inches	Approx. Ship. Wt. Crated Pounds	Cash Price			Easy Payment Plan**		
				Cat. No.	Code Word	F.O.B. Factory	Amount Down Payment	Payment Each Month	Approx. No. of Payments
9 1/8	3	17	410	215-YW	Marel	\$116.00	\$29.00	\$ 8.00	12
9 1/8	3 1/2	23	435	215-ZW	Marho	129.00	30.00	8.50	12
9 1/8	4	29	460	215-AW	Marta	142.00	32.00	10.00	12
9 1/8	4 1/2	35	510	215-RW	Marub	160.00	35.00	11.50	12

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### "Workshop" Tool Room Precision Lathe

With 3-Step Flat Belt, Horizontal Motor Drive

This 9 1/8-inch Swing "Workshop" Tool Room Precision Lathe is the same as Lathe No. 2 on page 14, except that it is fitted with the following attachments for tool room work, all of which are included in the prices below: Hand wheel draw-in collet chuck with one round split collet (choice of any size from 1/8 inch up to 1/2 inch); graduated taper attachment; micrometer carriage stop; thread cutting stop; collet cabinet.†

#### Net Factory Prices, F.O.B. Cars, South Bend, Indiana†

Swing Over Bed Inches	Length of Bed Feet	Distance Between Centers Inches	Approx. Ship. Wt. Crated Pounds	Cash Price		Easy Payment Plan**			
				Horizontal Drive with Adjustable Type Countershaft		Price F.O.B. Factory	Amount Down Payment	Payment Each Month	Approx. No. of Payments
				Cat. No.	Code Wd.				
9 1/8	3	17	361	4815-YA	Clawn	\$195.25	\$40.00	\$13.00	12
9 1/8	3 1/2	23	386	4815-ZA	Claxo	207.25	45.00	15.50	12
9 1/8	4	29	411	4815-AA	Clebu	219.25	45.00	15.50	12
9 1/8	4 1/2	35	461	4815-RA	Clefy	236.25	50.00	17.00	12

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### "Workshop" Tool Room Precision Lathe

With 4-Step Single V-Belt Horizontal Motor Drive

This 9 1/8-inch Swing "Workshop" Tool Room Precision Lathe is the same as Lathe No. 3 on page 14, except that it is fitted with the following attachments for tool room work, all of which are included in the prices below: Hand wheel draw-in collet chuck with one round split collet (choice of any size from 1/8 inch up to 1/2 inch); graduated taper attachment; micrometer carriage stop; thread cutting stop; collet cabinet.†

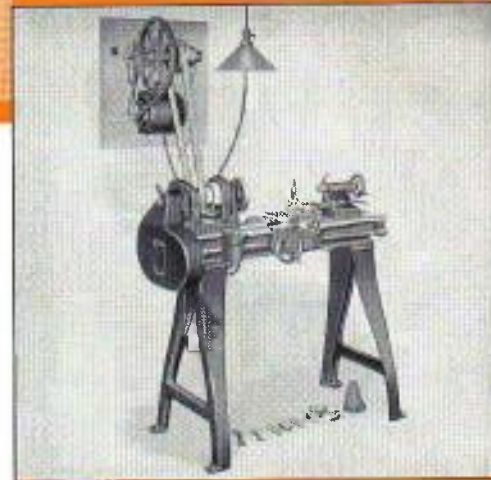
#### Net Factory Price, F.O.B. Cars, South Bend, Indiana†

Swing Over Bed Inches	Length of Bed Feet	Distance Between Centers Inches	Approx. Ship. Wt. Crated Pounds	Cash Price		Easy Payment Plan**			
				Horizontal Drive with Adjustable Type Countershaft		Price F.O.B. Factory	Amount Down Payment	Payment Each Month	Approx. No. of Payments
				Cat. No.	Code Wd.				
9 1/8	3	17	301	8415-YV	Edade	\$205.25*	\$45.00	\$15.50	12
9 1/8	3 1/2	23	336	8415-ZV	Edano	217.25*	45.00	15.50	12
9 1/8	4	29	411	8415-AV	Edars	223.25*	50.00	17.00	12
9 1/8	4 1/2	35	461	8415-RV	Edast	248.25*	50.00	17.50	12

\*Prices include 1/4 H.P. Start-Stop Type Reversing Motor and Drum Reversing Switch.

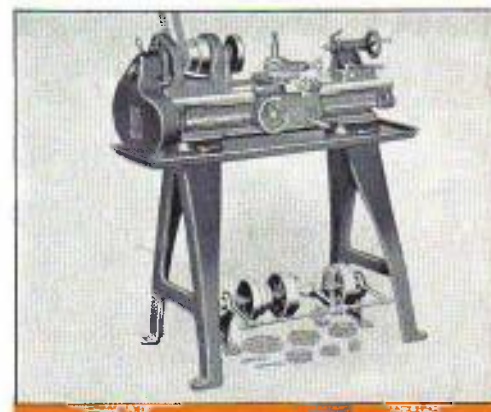
†Collets shown in cabinet are not included in prices.

\*\*For details on Easy Payment Plan see page 29.



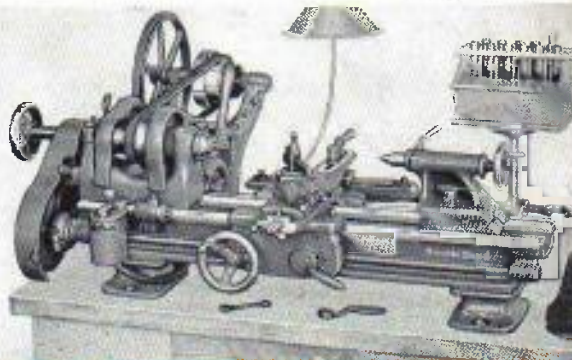
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No. 415-YF, 9" x 3' "Workshop" Lathe with Floor Legs, Regular Lathe Equipment and Wall Motor Drive Complete. . . \$108.25



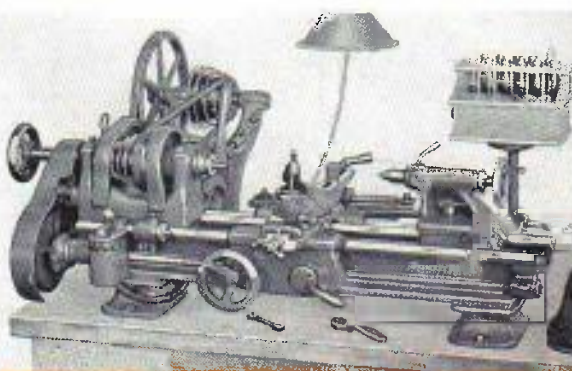
6

No. 215-YW, 9" x 3' "Workshop" Floor Leg Lathe with Oil Pan and Double Friction Countershaft as shown. . . . \$116.00



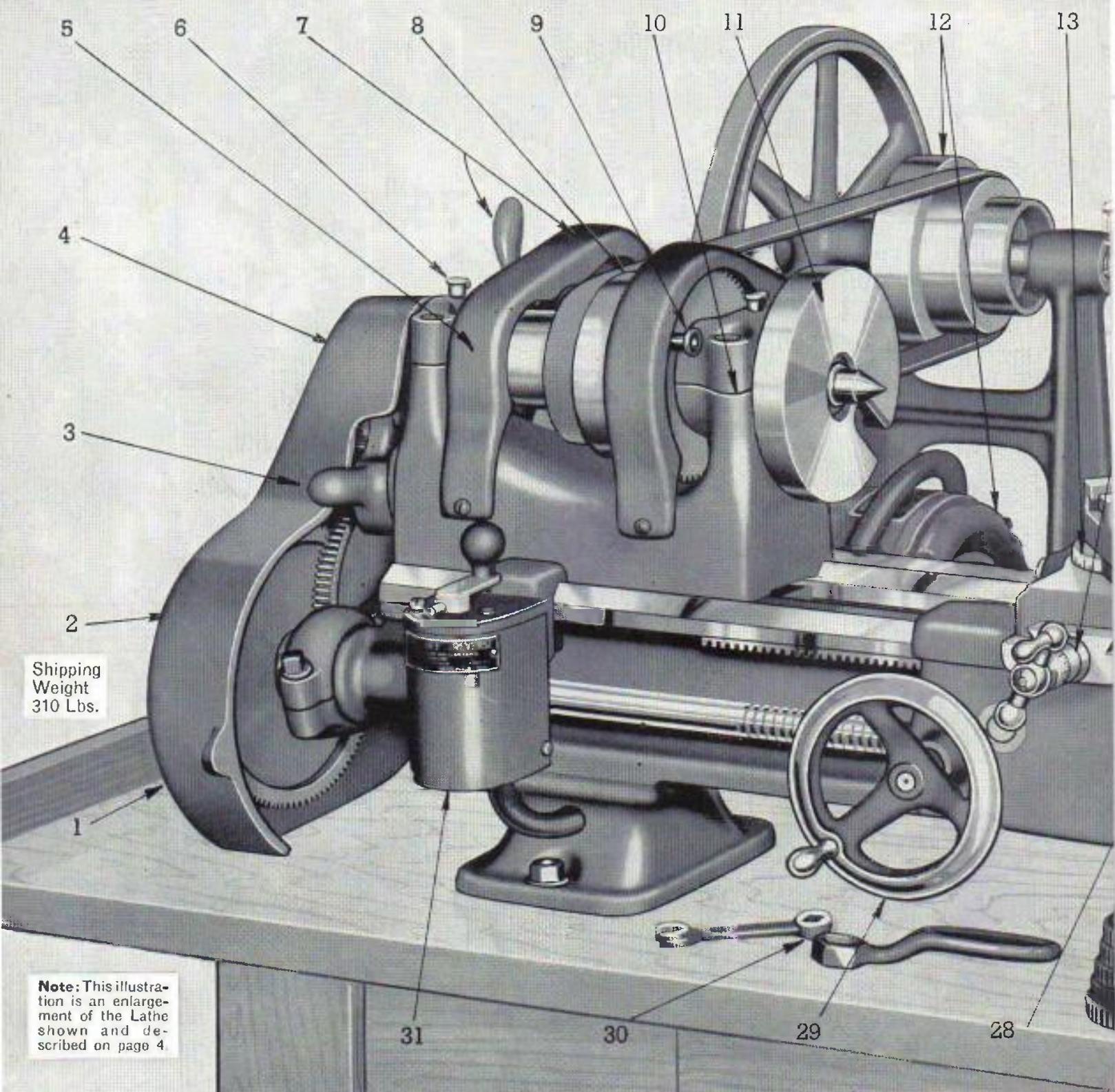
7

No. 4815-YA, 9" x 3' "Workshop" Tool Room Precision Lathe with Horizontal Flat Belt Motor Drive Complete as shown. . . . \$195.25



8

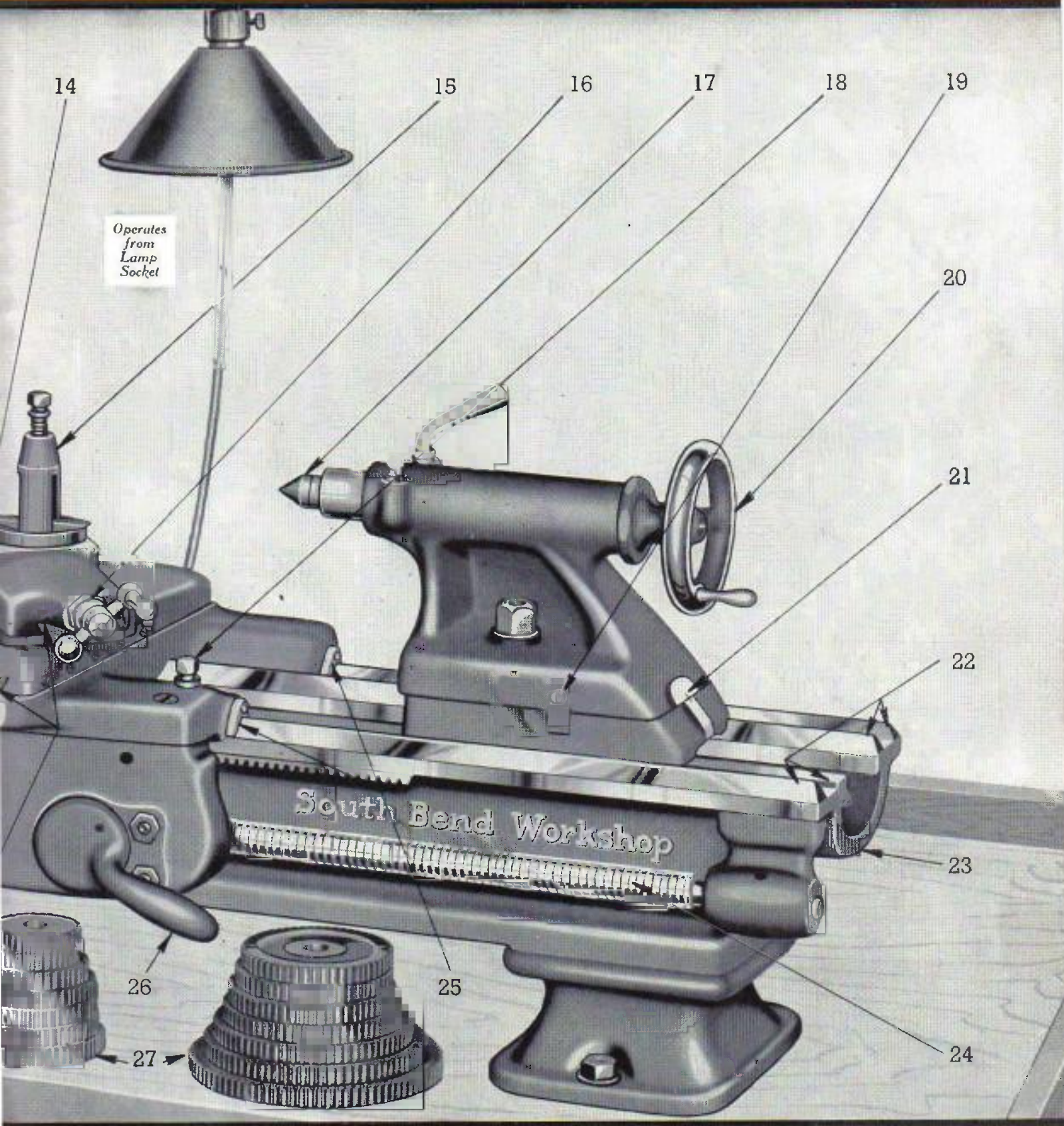
No. 8415-YV, 9" x 3' "Workshop" Tool Room Precision Lathe with Horizontal V-Belt Motor Drive, with Four-Step Single V-Belt Drive to Spindle as shown. Price . . . . . \$205.25



## Principal Features of the New 9-

These Features Apply to Every 9-inch "V"

- |  |   |  |
|--|---|--|
| 1. Swinging Gear Guard.                    | 7. Back gears for slow speeds.  | 12. Horizontal countershaft—plain type, and reversing motor. |
| 2. Index plate for threads and feeds.      | 8. Three step pulley—6 spindle speeds —3 direct belt and 3 back gear. | 13. Compound rest graduated 180°.                            |
| 3. Reverse bracket for threads and feeds.  | 9. Bull gear lock pin—wrenchless type.                                | 14. Micrometer graduated collar on cross feed screw.         |
| 4. Hollow spindle of high carbon steel.    | 10. Spindle bearings are adjustable.                                  | 15. Adjustable tool post, drop forged steel.                 |
| 5. Ball bearing thrust collar for spindle. | 11. Face plate threaded to spindle.                                   |  |
| 6. Spindle Bearings well lubricated.       |   |  |



## South Bend "Workshop" Precision Lathe

South Bend "Workshop" Lathe Shown in This Catalog

- 16. Micrometer graduated collar on compound rest screw.
- 17. Tailstock center is self-ejecting.
- 18. Carriage lock for accurate facing.
- 19. Set-over for taper turning.
- 20. Hand wheel on tailstock.

- 21. Witness mark for aligning tailstock.
- 22. 3 V-ways and one flat way on bed.
- 23. Cast iron, semi-steel seasoned bed.
- 24. Precision lead screw. Acme thread.
- 25. Felt shear wipers and oilers.
- 26. Half-nut lever for threads and feeds.

- 27. Change gears for threads and feeds.
- 28. Adjustable gibbs on cross slide and compound rest base.
- 29. Hand wheel for feed to carriage.
- 30. Wrenches for lathe.
- 31. Drum type reversing switch.

# Draw-in Collet Chuck Attachments and Split Collets

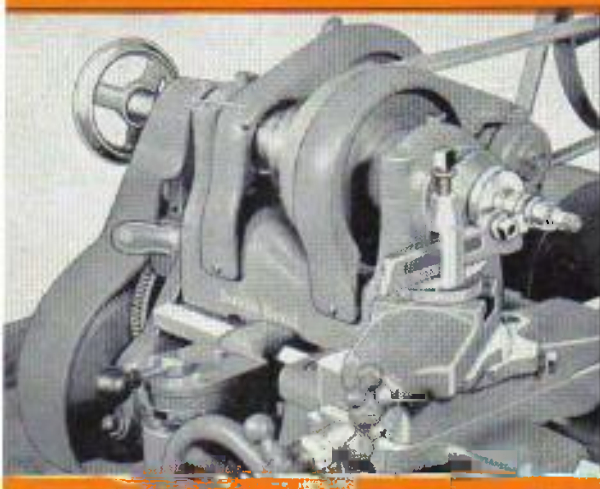


Fig. 62. Machining Small Parts Held in Hand Wheel Draw-in Collet Chuck Attachment.

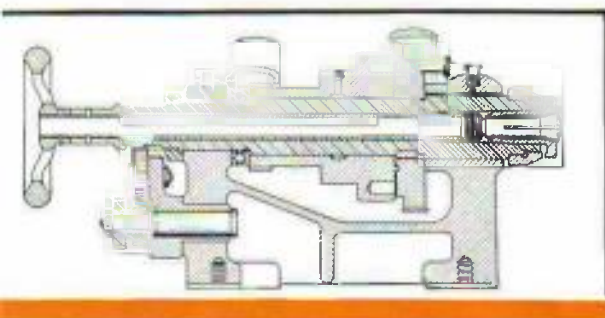


Fig. 63. Cross Section of Headstock with 3-Step Flat Belt Cone Pulley, Showing the Draw-in Collet Chuck Attachment.

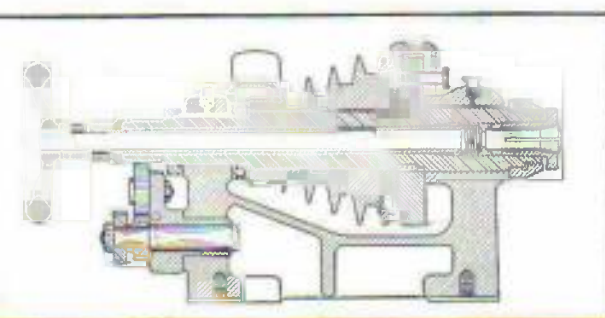


Fig. 64. Cross Section of Headstock with 4-Step V-Belt Cone Pulley, Showing the Draw-in Collet Chuck Attachment.

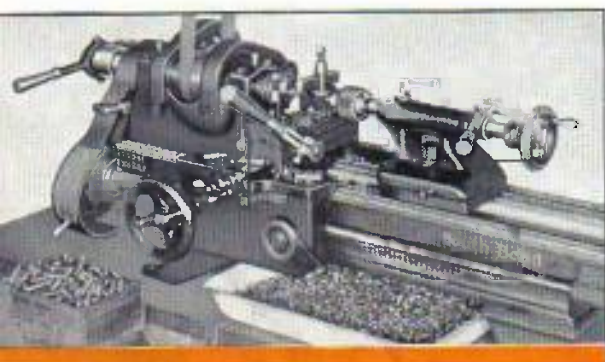


Fig. 65. Forming and Cutting-off Duplicate Parts Held in the Hand Lever Draw-in Collet Chuck. (See Prices of Hand Lever Draw-in Collet Chuck, Hand Lever Double Tool Slide and Hand Lever Tailstock on page 21.)

## Draw-in Collet Chuck Attachment

The Draw-in Collet Chuck Attachment is used on the lathe in the tool room for making small accurate tools and in the manufacturing plant for making small precision parts for watches, electrical devices, cash registers, typewriters, sewing machines, adding machines, radios, and other similar equipment where accuracy is essential.

The Draw-in Collet Chuck is the most accurate type of chuck made and will accurately center any small work. The draw-bar of the attachment is hollow which permits bars and rods from  $\frac{1}{8}$ " in diameter up to and including  $\frac{1}{2}$ " in diameter to be passed through the spindle of the lathe and held in the collet for machining.

## Hand Wheel Type Draw-in Collet Chuck Attachment

The Hand Wheel Draw-in Chuck Attachment is recommended for making small tools and parts where the greatest accuracy is essential and for quantity production work in the manufacturing plant. The work is held in the collet chuck by turning the hand wheel to the right and released by turning it to the left. The lathe spindle must be stopped in order to open or close the collet chuck.



Fig. 66. Hand Wheel Draw-in Collet Chuck Attachment.

Equipment includes hand wheel and hollow draw-bar; spindle nose cap and spanner wrench; tapered closing sleeve made of tool steel hardened, tempered and ground; and one split collet for round work. When ordering specify hole size of collet wanted.

Cat. No. 4306. Code Word, "Acru." Shipping Weight 4 lbs. Price \$25.00

## Hand Lever Type Draw-in Collet Chuck Attachment



Fig. 67. Hand Lever Type Draw-in Collet Chuck Attachment.

This attachment is recommended for rapid production work on small interchangeable parts where accuracy is required. Chuck permits releasing or feeding bar stock through the collet without stopping lathe. Collet can be adjusted to any desired tension.

Cat. No. 5206. Code Word, "Abpat." Shipping Wgt., 10 lbs. Price with one collet, \$70.00

## Split Collets for Round Work

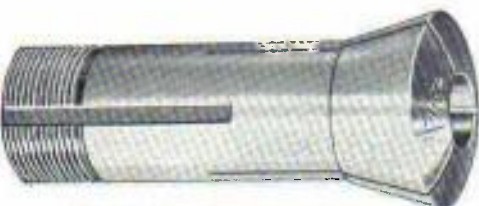


Fig. 68. Split Collet for Round Work.

Split Collets for holding round work are the most widely used for manufacturing and in the tool room. Collets supplied for the 9-inch "Workshop" South Bend Lathe are made of tool steel, hardened and tempered. Both outside and inside surfaces are ground to insure accuracy. The small end of collet is threaded for the hollow draw-bar of the draw-in chuck and has a keyway to prevent the collet from turning while holding the work. The other end of collet is tapered to conform to the tapered closing sleeve furnished with the attachment.

### Range of Collet Sizes

Split collets can be supplied with standard hole sizes up to and including  $\frac{1}{2}$ -inch in diameter in steps of 64ths of an inch, for example:  $\frac{1}{8}$ ",  $\frac{1}{4}$ ",  $\frac{3}{8}$ ",  $\frac{1}{2}$ ", etc. When ordering specify hole size of collet.

A  $\frac{1}{4}$ -inch round split collet, for example, will hold finished work that is exactly .250" in diameter or .001" undersize (.249" diameter). A separate collet must be used for each step of increase or decrease in the diameter of the work.

Cat. No. 609-W. Split Collet for Round Work. "Catra." Wt. 6 oz. Each \$3.25

### Collets with Holes in Millimeters

Cat. No. 363. Collets ranging from .5 m/m up to and including 13 m/m, diameter, in steps of .5 m/m. Code Word, "Aborx." Ship. Wt. 6 oz. Price each, \$3.75

[Special Split Collets for holding square and hexagonal work, also collets of special hole sizes can be supplied. Prices quoted on request.



Fig. 69. Collets with Hole Sizes Ranging from  $\frac{1}{8}$ " up by Steps of 64ths of an Inch.

# Milling Attachment, Electric Grinder, Taper Attachment

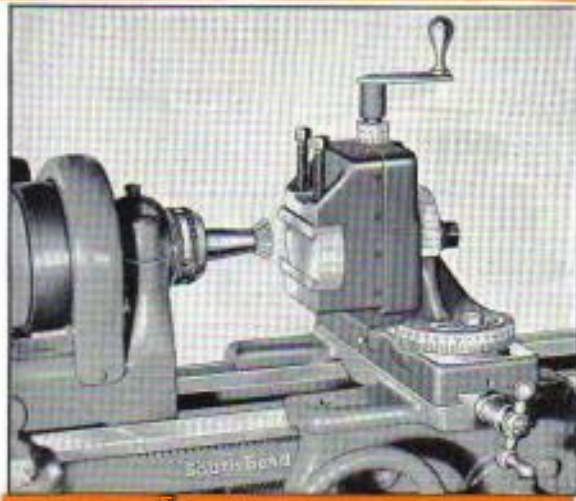


Fig. 70. Milling a Dovetail on the 9" Workshop South Bend Lathe Using the Milling Attachment.

## Milling and Keyway Cutting Attachment

This attachment is practical for the small shop handling such work as cutting keyways, squaring ends of shafts, milling dovetails, etc. Attachment fits on the compound rest base of the lathe and swivels both horizontally and vertically over arcs of 180°. Capacity of vise is 1 1/2". Vertical feed is 2 1/2". The vertical adjusting screw has a micrometer graduated collar. Cross feed is 5 1/2" and is operated by hand. Longitudinal feed can be operated by hand or by automatic feed to carriage. Jaw size 1 1/2"x3".

**Equipment includes:** Milling attachment, two V-blocks, crank for feed screw and wrench.

Cat. No. 9-W. "Vabif." Ship. Wt. 13 lbs. \$35.00

The Milling and Boring Table shown in Fig. 72, at right, is practical for light milling, boring, keyway cutting, etc. The table swivels on a post attached to compound rest base and is adjustable for height. Has 3 T-slots for clamping work.

T-slots take 1/2" bolts. Table size 3 1/2"x7 1/2". Maximum distance from table top to center line of lathe 1 1/2". Clamps and bolts not furnished.

Cat. No. 904. Code "Yason." Ship. Wt. 8 lbs. \$12.50



Fig. 71. Milling a Keyway.



Fig. 72. Milling and Boring Table.

## Milling Cutters and Arbors for Milling Attachment

All Cutters Are High Speed Steel

### Plain Milling Cutters

Cat. No.	Width	Code	Price
849-A	3/8"	Naber	\$1.85
849-B	1/2"	Nboki	2.45
849-C	3/4"	Ncerl	2.60
849-D	1"	Ndixo	2.75
849-E	1 1/4"	Nedop	2.95
849-F	1 1/2"	Nfens	3.05
849-G	1 3/4"	Ngori	3.35

Cutter diam. 2 1/2"; hole diam. 1".

### Side Milling Cutters

Cat. No.	Width	Code	Price
850-A	3/8"	Oates	\$3.90
850-B	1/2"	Oband	4.15
850-C	3/4"	Oeips	4.35
850-D	1"	Oodate	4.55
850-E	1 1/4"	Oehlt	4.80

Cutter diam. 3"; hole diam. 1".



### Spiral End Mills

Cat. No.	Diam.	Flute	Code	Price
868-B	3/8"	No. 2	Pearl	\$2.90
868-D	1/2"	No. 2	Phial	2.95
868-F	3/4"	No. 2	Pinke	2.95
868-H	1"	No. 2	Plant	3.45
868-G	1 1/4"	No. 2	Ponds	3.95



### Milling Arbor

For Plain and Side Milling Cutters. No. 109-M. Code "Kacel". \$5.00



### Screw Arbor

For Angular Milling Cutters. No. 820-A. Code "Aboma". \$2.00

**IMPORTANT:** Specify right or left hand threads and diameter of threads.



### Collet Chuck

For Woodruff Milling Cutters. No. 101-A. Code "Askel". \$3.50



### Prices Woodruff Milling Cutters

Cat. No.	Diam.	Face	Code	Price
897-A	1/2"	1 1/2"	Uabed	\$1.70
897-B	3/8"	1 1/2"	Ubons	1.70
897-C	1/2"	1 1/2"	Ucedx	1.70
897-D	3/8"	1 1/2"	Udwin	1.85
897-E	1/2"	1 1/2"	Ueyos	1.85
897-F	3/8"	1 1/2"	Ufont	2.05
897-G	1/2"	1 1/2"	Ugers	2.05
897-H	3/8"	1 1/2"	Uthoni	2.30
897-I	1/2"	1 1/2"	Uitos	2.30
897-J	3/8"	1 1/2"	Uljis	2.40

### Angular Milling Cutters



When ordering angular milling cutters specify whether style 1, 2, 3 or 4, as shown above, is wanted and give diameter of threaded hole.

Cat. No.	Cutter Diam.	Thickness of Cutter	Hole in Cutter	Threads Per Inch	Code	Price
667	1 1/2" in.	7/8 in.	3/8 in.	24 NF	Bathe	\$3.25
669	1 3/4" in.	7/8 in.	3/8 in.	20 NF	Batif	3.65



Fig. 73. Electric Grinder Mounted on Compound Rest.

## Electric Grinder for Lathe

The Electric Grinder is a valuable addition to the lathe in any shop that is not equipped with a modern tool room grinder. The grinder fits on the compound rest, operates from a lamp socket and is practical for grinding reamers, lathe centers, milling cutters, taps, dies, valves, pistons, bushings, hardened and tempered tools, parts, etc., but is not intended for grinding lathe tool bits, drills, etc.

**Price includes** 1/2 H. P. Motor, 1725 R.P.M. (1-phase, 60-cycle, 110-volt, A.C.) V-belt, belt guard, one 4" x 1/2" Aluminum grinding wheel (grain 3860, grade L5B), extension cord, switch and clamp for mounting. When ordering specify voltage and current required.

Cat. No. 75-K. Code, "Cyfax." Ship. Wt. 55 lbs. \$40.00

If D.C. Motor is wanted, add \$13.00 to price above. For 3-phase Motor add \$13.00.

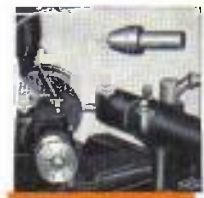


Fig. 74.

### Diamond Hold-Ing Fixture

Clamps to tail-spindle. Holds No. 406 Diamond Dresser, No. 91-W. "Kibaf." Wt. 1 1/2 lbs. \$2.00 No. 406. Diamond Dresser. "Kirwe." Price \$6.00



Fig. 75. Taper Attachment on Lathe.

## Graduated Taper Attachment

The graduated taper attachment is used for turning and boring all classes of taper work, and is practical for the rapid and accurate production of duplicate tapered parts and pieces. The attachment is bolted to the lathe carriage and can be used at any position along lathe bed. Does not interfere with straight turning. Attachment should be fitted to lathe at factory.

The swivel bar which controls the taper is graduated and can be set for cutting any taper up to 3" per foot and up to 7" in length at one setting; maximum taper in degrees, 14° in either direction.

Cat. No. 428. Code, "Hapwo". Wt. 35 lbs. \$45.00

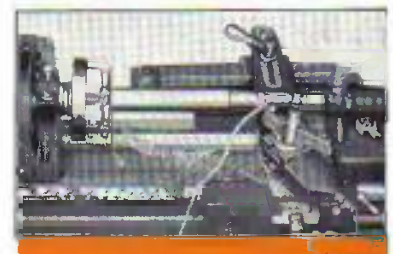


Fig. 76. Turning a Taper on a Shaft Using the Graduated Taper Attachment.

# Attachments and Accessories for "Workshop" Lathes



Fig. 77.

## Thread Dial Indicator

When cutting screw threads this attachment permits reversing carriage by hand to the starting point of each cut. A graduated dial shows when to clamp half-nuts on lead screw for the next cut.

Cat. No. 810. Code Word "Adnok." Shipping Weight, 2 lbs. Price each \$5.00



Fig. 78.

## Plain Carriage Stop

A practical and inexpensive stop for general facing, turning, boring, etc. Can be used on either side of carriage at any point along the lathe bed. Has clamp with collar screw for locking to lathe bed.

Cat. No. 758. Code Word "Tahro." Shipping Weight, 1 1/4 lbs. Price each \$2.25



Fig. 79.

## Micrometer Carriage Stop

A precision stop with micrometer adjustment for accurate facing, turning, boring, etc. Does not stop carriage automatically. Has hardened stop which may be locked for doing duplicate work.

Cat. No. 968-W. Code Word "Capys." Shipping Weight, 2 lbs. Price each \$8.00

## Fine Thread Cutting Attachment

For Cutting Fine Threads 44 to 80 per Inch



Fig. 80. Fine Thread Cutting Attachment.

The Fine Screw Thread Cutting Attachment illustrated at the left permits compounding the gears furnished with the lathe for cutting additional screw threads of fine pitch from 44 to 80 per inch. A blue print, shown below, is supplied showing how to arrange the gears for cutting the following fine pitches of screw threads: 44, 46, 48, 52, 54, 56, 60, 64, 72 and 80 per inch.

Equipment includes a double arm bracket, one 1 to 2 compound gear (36 teeth—72 teeth) one 80-tooth intermediate gear, bushings, bolt, nut and washer.

Cat No. 1565. Attachment when ordered with lathe and fitted to lathe at factory. Code, "Bezso." Ship. Wt. 6 lbs. \$8.00†

Cat. No. 1670. Attachment when ordered as extra equip. Code, "Atary." \$10.00†

SPECIAL FINE THREADS			
THREADS PER INCH	STUD GEAR	COMP GEAR	SCREW TO CUT
44	16	1-2	44
46	16	1-2	46
48	16	1-2	48
52	16	1-2	52
54	16	1-2	54
56	16	1-2	56
60	16	1-2	60
64	16	1-2	64
72	16	1-2	72
80	16	1-2	80

†We can supply the Fine Thread Cutting Attachment and Metric Transposing Gear Attachment at lower prices when they are ordered together, as several of the parts used are interchangeable. Prices quoted on request.

## Metric Transposing Gear Attachment

For Metric Screw Threads from .5 m/m to 8.0 m/m



Fig. 82. Metric Transposing Gear Attachment.

The metric transposing gear attachment shown at left equips the 9" "Workshop" Lathe for cutting the following international standard metric screw threads: .5, .75, 1., 1.25, 1.5, 1.75, 2., 2.5, 3., 3.5, 4., 4.5, 5., 5.5, 6., 6.5, 7., 7.5, 8. See thread cutting chart illustrated at right.

Equipment includes double arm bracket, bushings, bolts, nuts, washers, gear guard, gear guard bracket and seven gears.

Cat. No. 1550. Attachment when ordered with lathe, and fitted to lathe at factory. Code, "Bydof." Ship. Wt. 40 lbs. \$12.00†

Cat. No. 1640. Attachment when ordered as extra equip. Code, "Tyar." \$15.00†

METRIC THREAD CUTTING CHART			
For 9" Workshop Lathe			
MM	IN	STUD GEAR	COMP GEAR
.5	16	127-100	40
.75	24	127-100	40
1.	32	127-100	40
1.25	40	127-100	40
1.5	48	127-100	40
1.75	56	127-100	40
2.	64	127-100	40
2.5	80	127-100	40
3.	96	127-100	40
3.5	112	127-100	40
4.	128	127-100	40
4.5	144	127-100	40
5.	160	127-100	40
5.5	176	127-100	40
6.	192	127-100	40
6.5	208	127-100	40
7.	224	127-100	40
7.5	240	127-100	40
8.	256	127-100	40

Fig. 83. Metric Thread Cutting Chart.

## Center Rest

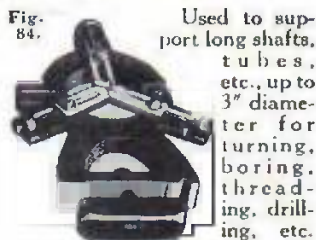


Fig. 84. Center Rest.

Used to support long shafts, tubes, etc., up to 3" diameter for turning, boring, threading, drilling, etc.

Cat. No. 125-W. Code Word, "Cegke." Wt. 10 lbs. \$6.00\*

\*Price when ordered for Raising Block Lathe Cat. No. 905, "Clano." \$8.00

## Follower Rest



Fig. 85. Follower Rest.

The Follower Rest is used when machining long slender work up to 2" diameter. It fastens to the saddle and travels with the cutting tool. Should be fitted to lathe at factory.

Cat. No. 34-W. Code Word, "Cegmo." Wt. 4 lbs. \$4.00\*

\*Price when ordered for Raising Block Lathe, Cat. No. 938, "Bezok." \$5.00

## Adjustable Thread Cutting Stop



Fig. 86. Thread Cutting Stop.

Used when cutting screw threads for regulating depth of each chip that is cut. The attachment fits on the cross slide dovetail of the lathe. Can be adjusted and locked at any point on cross slide. See application below.

Cat. No. 67-W. Code Word, "Cegpy." Wt. 8 oz. \$2.00

## Large Face Plate



Fig. 87. Large Face Plate.

The Large Face Plate is 7 3/8" in diameter and is accurately threaded to fit the spindle nose of the lathe. Is equipped with six slots for clamping work. See view below.

Cat. No. 40-W. Code Word, "Cehak." Weight, 6 lbs. \$6.00



Fig. 88. Turning Long Work in the Center Rest.



Fig. 89. Using Follower Rest on a Threading Job.



Fig. 90. Application of the Adjustable Thread Cutting Stop.



Fig. 91. Boring Work Clamped to Large Face Plate.

# Manufacturing Attachments

For the 9-inch "Workshop" Lathe

The 9-inch "Workshop" Lathe is practical for use in general manufacturing plants, tool rooms and for special machine operations of all kinds. More than 38 practical attachments may be fitted to the lathe for handling production jobs. The illustrations below show the application of several of the more popular manufacturing attachments. These attachments may be fitted to any size or type 9-inch "Workshop" Lathe in this Catalog. Further information and details will be supplied on any or all of the attachments shown below.

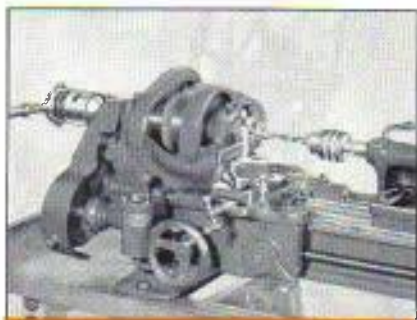


Fig. 92. Hand Lever Draw-in Chuck for the 9-inch "Workshop" South Bend Lathe. Cat. No. 5206. "Abpat". Wt. 10 lbs. \$70.00

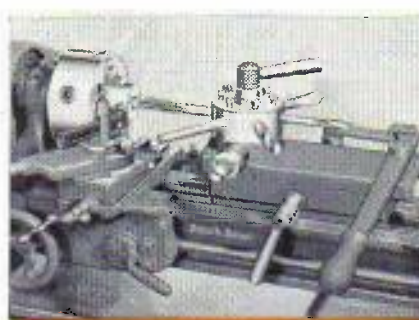


Fig. 93. Hand Lever Bed Turret, takes six tools. Indexes by hand only. Wt. 60 lbs. Cat. No. 176-W. Turret only. \$115.00 Fitted.



Fig. 94. 6-Hole Turret on Tailstock Spindle. Cat. No. 943-W. Turret only. \$39.00 Fitted. Cat. No. 785. Hand Lever Tailstock in Lieu of Regular Tailstock. \$30.00



Fig. 95. Four-Way Tool Post Turret. Mounts in "T"-slot of Compound Rest. Wt. 6 lbs. Cat. No. 179-W. Turret only. Price on request.



Fig. 96. Face Plate indexed with 360 holes. For indexing work of all kinds. Wt. 9 lbs. Cat. No. 99-W. "Ibaho". Price on request.



Fig. 97. Hand Lever Double Tool Slide. Price includes 1 Tool Post, Ring and Wedge but no Tool Holder. Cat. No. 738. "Abatz". Wt. 20 lbs. \$60.00



Fig. 98. Screw Feed Double Tool Slide. Price includes one Tool Post, Ring and Wedge, but no Tool Holder. Cat. No. 958. "Bemor". Wt. 18 lbs. \$35.00



Fig. 99. Gear Cutting Attachment Cuts Gears up to 4 1/2" diam. Cutters not included. Cat. No. 270-W. "Hapno". \$165.00 Fitted.

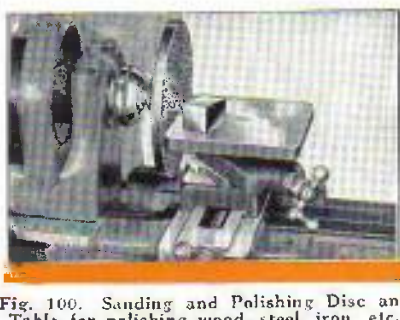


Fig. 100. Sanding and Polishing Disc and Table for polishing wood, steel, iron, etc. Cat. No. 943. Sanding Disc, 6" diam. with taper shank. Code "Dylax". Wt. 5 lbs. \$3.50 Cat. No. 1129-W. Table for Compound Rest. Code "Atata". Wt. 4 lbs. \$2.50



Fig. 101. Six Tool Turret mounted on saddle of "Workshop" Lathe. Price Turret and Bracket only. \$42.00

## 38 Attachments for the 9-inch "Workshop" Lathe

Milling and Keyway Cutting Attach.  
Electric Grinder for Lathe  
Draw-in Collet Chucks, Hand Wheel  
and Hand Lever Types  
Collets for Draw-in Chucks  
Step Chuck and Closer  
Thread Dial Indicator  
Plain Carriage Stop  
Micrometer Carriage Stop  
Hand Rest for Wood Turning  
Fine Screw Thread Cutting Attach.  
Metric Transposing Gear Attachment  
Graduated Taper Attachment  
Milling and Boring Table  
Diamond Dresser and Holders  
Hand Lever Tailstock  
Double Tool Slides, Screw and Hand  
Lever Types  
Turrets: Bed, Tool Post and Tailstock  
Types  
Die Holder for Tailstock  
Spring Winding Attachment  
Oil Pan and Oil Pump  
Indexed Face Plate  
Center Rest, Large Face Plate, Fol-  
lower Rest, Thread Cutting Stop  
Gear Cutter  
Tool Grinders, Electric and V-Belt  
Drive Types  
Knocked-Down Benches  
Sanding and Polishing Disc

### Automotive Attachments

Armature Support Bushing  
Mica Undercutter, Hand Type  
Piston Adapter, Cone Rings, Reamers  
Rocker Arm Grinding Fixture  
Connecting Rod Boring Attachment  
Precision Valve Chuck

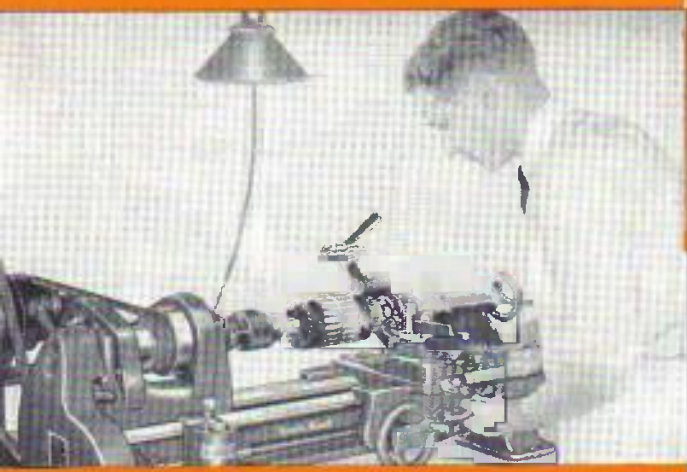


Fig. 102. Truing an Armature Commutator in the 9-inch "Workshop" South Bend Precision Lathe.

## Servicing Armatures

All sizes and types of armature commutators, up to 5 1/2" in diameter, can be trued and the insulation undercut in the 9" "Workshop" Lathe, as illustrated above. Both operations may be performed without removing the turning tool or the undercutter from the lathe. The lathe can also be used to test and straighten armature shafts, bore field poles, etc.



Fig. 103. Armature Support Bushing



Fig. 104. Cross-Section of Armature Support Bushing Showing its Application.

## Armature Support Bushing

The armature support bushing is used in the tailstock for supporting armature shafts with or without center holes. Permits armature shaft to revolve, yet holds it firm and rigid. Has brass jaws. Takes shafts from 3/8" to 3/4" in diameter. Price includes arbor.

Cat. No. 340. Code, "Adang." Ship. Wt. 4 lbs. \$9.00

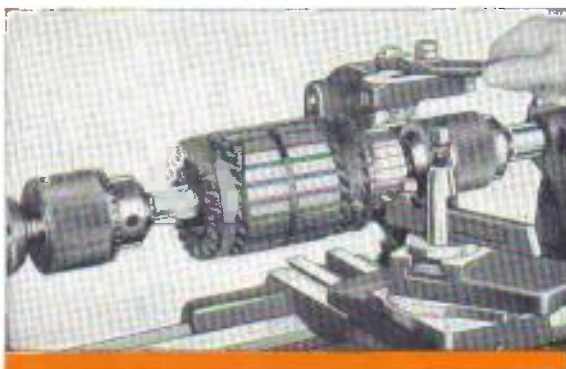


Fig. 105. Undercutting Mica Insulation on an Armature Commutator with the Hand Type Mica Undercutter.

## Hand Type Mica Undercutter

This attachment undercuts commutators of all sizes and types. Fastens on side of saddle. The cutter consists of a piece of hack saw blade which is moved by a hand lever. An adjustment regulates depth of cut. One cutter blade is supplied .025" thick. Attachment can be turned back out of the way when not in use.

Cat. No. 673. Code, "Abibe." Ship. Wt. 8 lbs. \$15.00

# Auto Service Jobs Done in

The 9" "Workshop" Back-Geared, Screw Cutting Lathe is the ideal tool for the modern auto service shop, garage, auto electric shop, radio shop, battery shop, bus and truck service stations.

This lathe plus a few attachments will handle such jobs as grinding valves, truing armature commutators and undercutting insulation.

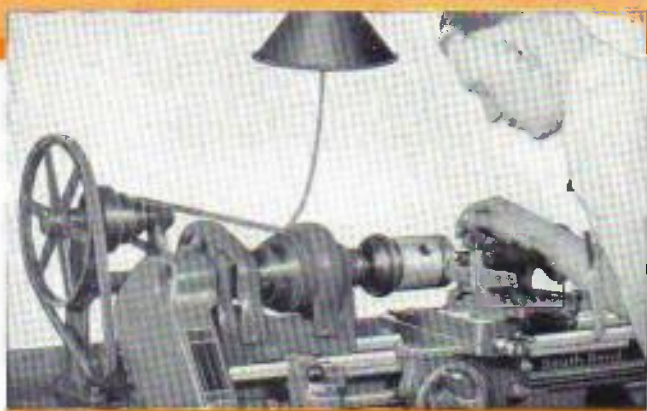


Fig. 106. Finishing a Semi-Machined Piston in the 9-inch "Workshop" South Bend Precision Lathe.

## Finishing Semi-Machined Pistons

Semi-machined pistons, solid or split skirt type, made of cast iron, aluminum or other alloys, can be quickly and accurately machined in the 9-inch "Workshop" Lathe. See illustration above. Other jobs handled include: reaming piston skirts, reaming wrist pin holes, machining ring grooves, machining ring lands, etc.



Adapter Shank



Driving Dog Type A



Cone Ring



Reamer

## Piston Adapter, Adapter Rings and Reamers

The Self-Centering Piston Adapter is used for mounting pistons in the lathe. Uses cone rings for pistons with center hole in head and centering rings for pistons without center hole in head.

No. 44-W. Piston Adapter, Driving Dog, Type A, and No. 1-D Cone Ring. Code, "Adawp." Ship. Wt. 3 1/2 lbs. \$10.00

No. 1-Z. Centering Ring and Driver. Code, "Aghir." Ship. Wt. 7 lbs. \$2.50



Fig. 107. Reaming the Skirt of a Piston Held on Piston Adapter.

### Prices of Extra Cone Rings and Skirt Reamers

For Pistons Outside Diam.	Cone Rings				Skirt Reamers			
	Cat. No.	Code Word	Weight Lbs.	Price Each	Cat. No.	Code Word	Weight Lbs.	Price Each
2 1/2 to 3 1/4 in.	1-D	Hudao	1 1/2	\$2.00	1-R	Hacke	1	\$ 7.50
3 1/4 to 3 3/4 in.	2-D	Hwaki	2 1/2	2.25	2-R	Heine	1 1/2	9.00
3 3/4 to 4 1/4 in.	3-D	Hvena	3	2.50	3-R	Hiley	2	10.00
4 1/4 to 5 in.	4-D	Hzage	4 1/2	3.00	4-R	Holer	3	12.00

## A Partial List of Automotive Jobs

### Valves

Grinding Valves  
Testing Valve Stems  
Sharpening Valve Seat Reamers  
Grinding Valve Tappet Face  
Truing Rocker Arm Face

### Truing Contactor Rings on Split-phase Motors

Cutting Wire from Armatures  
Boring Generator Field Poles

### Armatures

Truing Armature Commutators  
Undercutting Mica Insulation  
Testing Bent Armature Shafts

### Connecting Rods

Boring Connecting Rod Bearings  
Boring Bronze-Back Bearings  
Milling Oil Relief Pockets

# the 9-inch "Workshop" Lathe

making bushings, finishing pistons, boring connecting rods, sharpening reamers, and many similar auto service jobs. See list at bottom of page.

In addition, a wide range of general jobs can be handled on this machine, including screw thread cutting, turning, boring, reaming, drilling, knurling, chucking, and all other general machining operations.

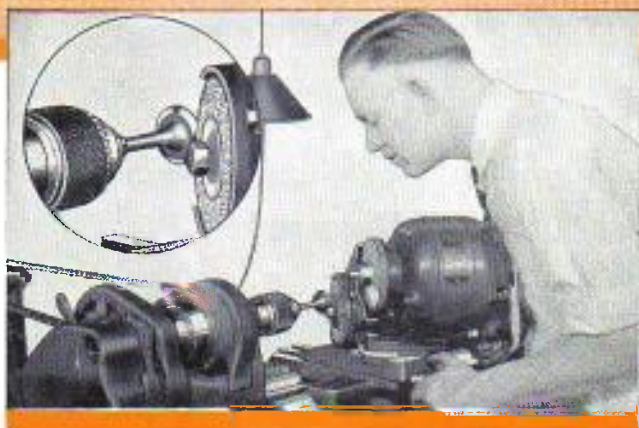


Fig. 108. Refacing a Valve by Grinding in the 9" "Workshop" South Bend Precision Lathe.

## Grinding Valves

Valves, both intake and exhaust, all makes and materials, for all types of motor vehicles, can be accurately refaced in the 9-inch "Workshop" South Bend Lathe equipped with an electric grinder and headstock spindle chuck, as shown in the illustration above. This lathe will also test bent valve stems, grind reamers and hones, valve tappets, tappet adjusting screws, rocker arms, etc.

## Boring Connecting Rods



Fig. 109. Boring a Connecting Rod.

Connecting rods up to 13" between bearing centers and 5" across bolt lugs can be accurately bored in the "Workshop" Lathe using the connecting rod boring attachment, as above. Cat. No. 1229-W. Connecting Rod Boring Attach. "Cuyey." Wt. 60 lbs. Price .....\$45.00 Boring Bars and Cutters are extra.

## Grinding Reamers of all Types

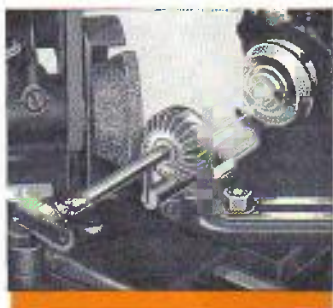


Fig. 110. Grinding Valve Seat Reamer.

Valve seat reamers, straight, taper and spiral reamers, milling cutters, etc., can be ground in the "Workshop" Lathe fitted with electric grinder priced on page 19 and adjustable holding fixture.

Cat. No. 19-W. Adjustable Holding Fixture Code "Abnog." Wt. 3 lbs. \$8.00

## Serviced in the "Workshop" Lathe

### Bushings

Making Replacement Bushings and Sleeve Bearings complete. Operations handled include: drilling, boring, reaming, facing, threading, cutting-off, filing, polishing, grinding.

### Pistons

Finishing Semi-Machined Pistons  
Reaming Piston Skirts

Turning Piston Ring Lands  
Reaming Wrist Pin Holes  
Making Wrist Pins  
Remachining Ring Grooves  
Cutting Oil Ring Grooves

### General

Turning Taper on Axle Shaft  
Chasing Thread on Axle Shaft  
Truing a Bent Hub Flange  
Rechasing Damaged Hub Threads

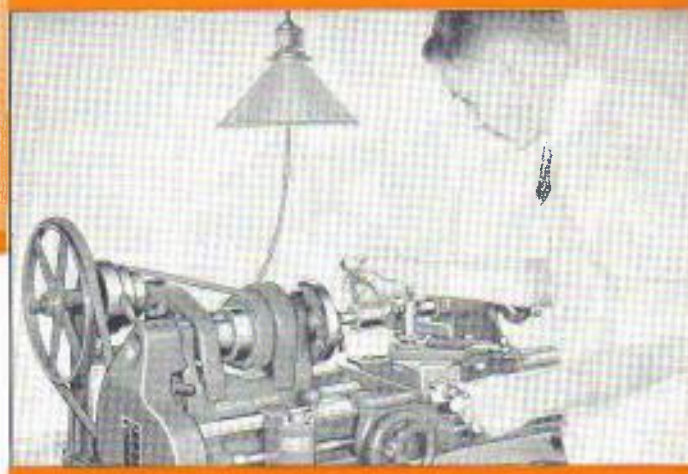


Fig. 111. Making a Replacement Bushing in the 9-inch "Workshop" South Bend Precision Lathe.

## Making Bushings

All sizes and types of bushings and sleeve bearings, of any material, for automobiles, buses, trucks, tractors and machinery of all kinds, can be made complete quickly and economically in the 9-inch "Workshop" Lathe equipped with a few tools and chucks. See illustration above. Making bushings is more economical than carrying expensive stocks of finished bushings.

## Motor Service Jobs

The Bulletins listed below contain from 8 to 12 pages, illustrating and describing the latest improved methods for servicing armatures, valves, pistons, bushings and connecting rods on autos, buses, trucks, tractors, etc. Each Bulletin describes the operation for each job in sequence. Used in the shops of leading automobile manufacturers such as General Motors, Chrysler, Yellow Cab, Auburn-Cord, Studebaker, Marmon, Reo, etc.

Price of each bulletin, 10c postpaid, coin of any country accepted. Any one bulletin of your choice supplied free with each 9-inch "Workshop" Lathe.

"How to Grind Valves", Bulletin No. 1. Shows the latest methods and equipment for refacing valves and sharpening valve seat reamers. Also illustrates the following jobs: Grinding rocker arms, grinding ends of valve stems for clearance, grinding tappets, etc.

"How to Service Armatures", Bulletin No. 2. Describes and illustrates the modern methods and equipment for truing armature commutators, undercutting mica insulation, testing and straightening bent armature shafts, etc.

"How to Bore Connecting Rods", Bulletin No. 6. Gives complete instructions for boring, facing and finishing reabbitted connecting rod bearings of all types.

"How to Make Bushings", Bulletin No. 7. Explains the methods and equipment for making bushings of brass, bronze, steel, cast iron, etc., for starting motors and generators, water pumps, etc.

"How to Finish Pistons", Bulletin No. 9. An instructive bulletin describing the latest methods and equipment for finishing semi-machined pistons, reaming wrist pin holes, etc.

The 9-inch "Workshop" Lathe in the "Auto Service and Electric Shop," Bulletin No. 6-C. This illustrated Bulletin, size 8 1/2 x 11, shows how the shop equipped with a 9-inch "Workshop" Lathe can service valves, armatures, pistons, bushings and connecting rods. Mailed postpaid on request.



Fig. 112. Bulletins on Motor Service Jobs  
Price, 10 Cents, Each, Postpaid

## A Few Interesting South Bend Installations

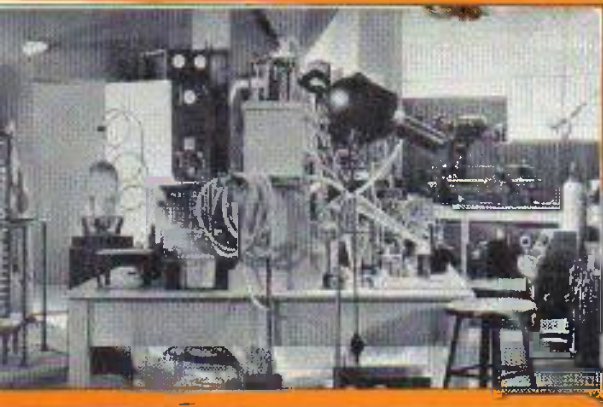


Fig. 113. A Scientific Laboratory equipped with a South Bend Lathe.



Fig. 114. A Radio Repair Shop at Neillsville, Wisconsin.



Fig. 115. Mr. C. C. Coppin, Licensed Transport Pilot of Chicago, Ill., in his Aviation Experimental Shop.



Fig. 116. Technician's Shop in the Adler Planetarium in Chicago.



Fig. 117. Shop of the New York Society of Model Engineers located at 42nd and Broadway, New York City.

## Laboratories and Engineering Shops Use the 9-inch "Workshop" Lathe

The 9-inch "Workshop" Lathe is practical for all classes of work coming up in the engineering shop, scientific laboratory and experimental shop because of its accuracy and precision and wide range of operations it will handle.

Modern mechanical developments in science and industry are being made possible in hundreds of shops and laboratories throughout the United States by the 9-inch Workshop South Bend Lathe. This work embraces radio apparatus, television equipment, astronomical devices, aircraft engines, aeronautical and marine navigation equipment, home appliances and mechanical equipment used in every field of endeavor.

The illustrations shown on this page are just a few of the hundreds of South Bend Lathe installations of similar type throughout the world. If interested in seeing photographs of some of these interesting installations, write for a copy of Bulletin No. 71, described on page 30 of this catalog.

## A Few Prominent Users

Bell Telephone Laboratories  
U. S. Bureau of Standards  
Western Union Telegraph Co.  
Eastman Kodak Company  
U. S. Signal Corps  
General Electric X-Ray Corp.  
U. S. Coast and Geodetic Survey  
Eugene Dietzgen Co.  
South Dakota State Testing  
Laboratory  
Rockefeller Institute  
Bureau of Marine Fisheries  
Libby-Owens-Ford Glass Co.  
Tennessee Valley Authority  
Toledo Scale Mfg. Co.  
U. S. Naval Torpedo Station



Fig. 118. Telegraphic Bureau and Signal Department Laboratory of the New York Police Department, New York City.

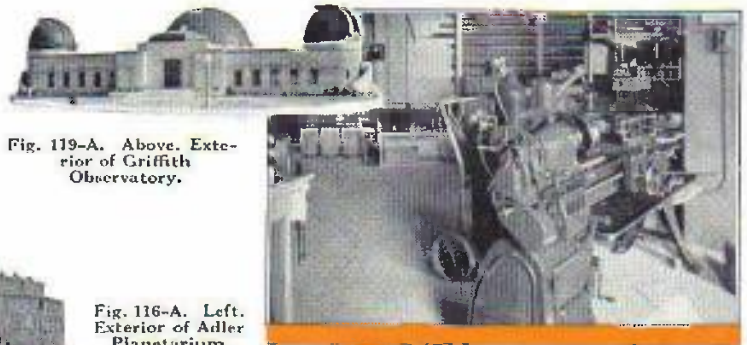


Fig. 119-A. Above. Exterior of Griffith Observatory.

Fig. 116-A. Left. Exterior of Adler Planetarium.

Fig. 119. Technical Laboratory in the Griffith Observatory at Hollywood Hills, Calif.

# Wood, Fibre, Composition

Can be Machined in the 9-inch  
"Workshop" Lathe

The 9-inch "Workshop" South Bend Back-Geared, Screw Cutting Lathe is practical for handling all classes of wood turning, boring, and drilling, in addition to the other work shown throughout this bulletin. The lathe is more efficient than the ordinary wood turning lathe for machining compositions and woods, due to its greater rigidity, large headstock bearings and balanced spindle cone for operation at high speeds. The power feeds, graduated compound rest, and carriage give the lathe great versatility in pattern-making and in general wood working jobs. The illustration at the right shows the 9-inch "Workshop" Lathe on a wood working job.

**High Speeds for Wood Working.** For a small amount of wood working, the Lathe can be operated at its regular spindle speeds. If a moderate amount is contemplated a  $\frac{1}{2}$  h.p. motor is suggested. However, for most practical results, we recommend a  $\frac{1}{2}$  h.p. motor (see page 28) and the two-step pulleys on countershaft and motor as illustrated at right and priced below.

## Materials which Can be Machined

Hard and Soft Wood  
Hard Rubber  
Catalin  
Bakelite

Celluloid  
Pyralin  
Alabaster  
All Types of Fibres



Fig. 121. At Left. Truing a Typewriter Platen in the 9-inch Workshop Lathe, using a turning tool. Lathe trues all Types of Rubber Rollers. Rollers that cannot be turned can be ground and polished in the lathe.



Fig. 123. Lathe is Efficient for the Spinning of Metal. Fancy Bowls, Ornamental Bric-a-brac, etc., can be Spun from Light Gauge Metals.



Fig. 124. Two-Step Pulleys for Countershaft and Motor. The large pulley is not grooved as the friction area is many times that of the motor pulley. Motor pulley is grooved.

## Wood Chisels



(A) (B) (C) (D) (E) (F)

Designed for use in the home work shop, etc. Made of good quality cutlery steel, carefully sharpened. The set at left consists of six tools: (A)  $\frac{1}{2}$ " Skew; (B)  $\frac{1}{2}$ " Diamond Nose; (C)  $\frac{1}{2}$ " Round Nose; (D)  $\frac{1}{2}$ " Gouge; (E)  $\frac{1}{4}$ " Gouge; (F)  $\frac{1}{2}$ " Parting Tool. No. 278. Set of six chisels. Code Word, "Alder." Price.....\$4.20  
Single Chisels, each ..... .75

At Left:

When ordering single chisels be sure you specify the shape of chisel wanted. Use convenient letters assigned in the illustration.

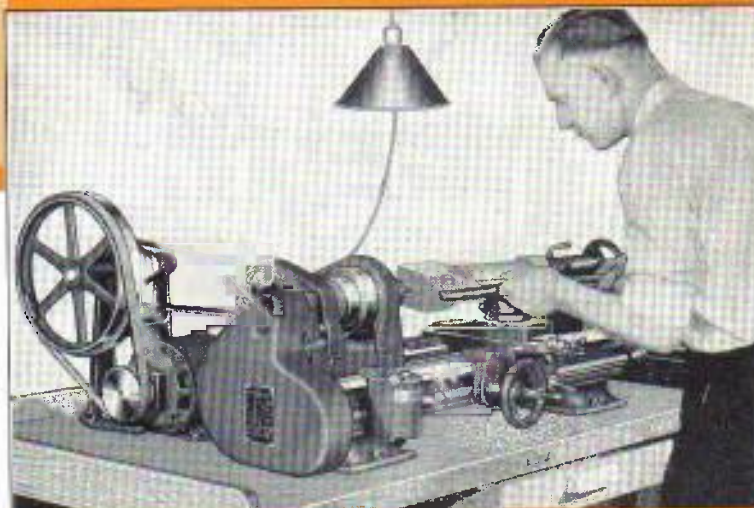


Fig. 120. 9-inch "Workshop" Lathe Equipped with 2-step Pulleys on Countershaft and Motor with Belt Arranged for Woodworking.



Fig. 122. Wood and Fibre Parts Machined in the 9-inch "Workshop" Lathe.

## 2-Step Pulleys for Countershaft and Motor

The two-step Pulleys, as illustrated at left, when used on a motor and countershaft, (horizontal countershaft, plain type, or horizontal countershaft with belt tension adjustment) provide twelve spindle speeds for metal and wood as follows: 39, 68, 122, 133, 202, 233, 353, 373, 630, 691, 1206, 1935.  $\frac{1}{2}$  H.P. Motor required (see page 28). Hardened spindle recommended (see page 6).

### Two-Step Pulleys for Countershaft and Motor

Description	When Ordered in Lieu of Regular Countershaft Pulley and Motor Pulley			When Ordered as Separate Equipment		
	Cat. No.	Code	Price	Cat. No.	Code	Price
Pulley for Countershaft.....	426	Agbn	\$3.00	427	Agdn	\$4.00
Pulley for Motor.....	158	Agcp	2.00	159	Agfp	2.50



Fig. 126.

## Hand Rest for Wood Turning

The hand rest for wood turning shown above consists of base and 3 T-rests, 4", 7", and 12" long. Made of cast iron. Fits on compound rest base of lathe.

No. 896-W. Code, "Adows".....\$4.00



CUP CENTER  
No. 733-W, "Jalak" \$2.00



SPUR CENTER  
No. 732-W, "Ikdoi" \$2.50



SCREW CENTER  
No. 731-W, "Kalaf" \$2.50

# Lathe Chucks and Drill Chucks for "Workshop" Lathes

## 4-Jaw Independent Lathe Chuck\*



Wt.  
9 1/4  
lbs.

### A Light Weight Chuck

A good, substantial, accurate chuck for machining metals of all kinds. Has four reversible independent jaws with individual screw adjustment for chucking round or irregular work in a concentric or eccentric position. Chuck body is semi-steel, ground. The face is graduated in inches. Jaws 1/2" wide, made of special steel, hardened and ground. Screws are hardened alloy steel, and have 11-pitch square thread.

Price includes: wrench and screws for fitting chuck-back but does not include chuck-back or fitting chuck to lathe. See fitting charges below. Cat. No. 4806, 6-inch Chuck, 7 1/4" cap., Ship. Wt. 9 1/4 lbs. "Rapno" \$18.00†

\*Tested to run true to within .003" when fitted at factory.

## 3-Jaw Universal Lathe Chuck\*



Wt.  
6 3/4  
lbs.

### A Light Weight Chuck

A good, substantial, accurate chuck for machining metals of all kinds. Chuck is self-centering and holds round or hexagonal work. Has two sets of jaws, one set for outside chucking, the other for inside chucking. Chuck body is semi-steel, ground. Jaws are 7/16" wide, made of special steel, hardened and ground. The scroll is of high grade steel. It is balanced and accurate. The bevel pinion is hardened alloy steel.

Price includes: wrench and screws for fitting chuck-back but does not include chuck-back or fitting of chuck to lathe. See fitting charges below. Cat. No. 3905, 5-inch Chuck, 5" Cap., Ship. Wt. 6 3/4 lbs. "Rasep" \$20.00†

\*Tested to run true to within .003" when fitted at factory.

### Recommended Chucks

The light weight chucks shown above are recommended for chucking small or large quantities of all classes of metal work requiring accurate machining.

The extra light weight chucks shown at the right are both low priced chucks and are usually selected by those who have very little chucking work to do.

## 4-Jaw Independent Lathe Chuck

### Extra Light Weight



This is a good quality, low priced, extra light weight chuck. Has four reversible independent jaws, wrench and screws for chuck-back. See fitting charges below.

Cat. No. 4906, 6-inch Chuck, 7" Capacity, Code Word "Abhod", Ship. Wt. 5 3/4 lbs. \$10.00†

## 3-Jaw Universal Lathe Chuck\*

### An Extra Light Weight Chuck



An excellent low priced, extra light weight self-centering chuck. Complete with wrench, two sets of jaws, and screws for chuck-back. See fitting charges below.

Cat. No. 3905, 5-inch Chuck, 5" Capacity, Code Word, "Abhix", Shipping Weight 6 3/4 lbs. \$13.00†

\*Tested to run true to within .003" when fitted at factory.

## †Prices for Fitting Lathe Chucks to Lathe



Semi-Machined Chuck-Back



Recess in Chuck for Chuck-Back



Chuck with Chuck-Back Attached

No. 126, Semi-Machined Chuck-Back, "Acmin", Ship. Wt. 5 lbs. \$2.50  
No. 236, Fitting Chuck-Back to Chuck and to Lathe, "Acmap" 1.50  
No. 258, Total Price for Chuck-Back and Fitting, "Acors" 4.00

### Applying to Chucks Listed Above

A chuck-back is needed to fit 4-Jaw Independent Chucks and 3-Jaw Universal Chucks to the lathe. The chuck-back is first bored and threaded to fit lathe spindle nose; next it is mounted on spindle nose, faced and turned to fit recess in back of chuck and bolted in place. We recommend that chucks be fitted to lathe at factory. When ordering a chuck-back without chuck, specify serial number of lathe and diameter of chuck-back required.

## Chucks Jaws for Face Plate



Chuck Jaws Mounted on Face Plate

The illustration shows a set of four non-reversible chuck jaws mounted on the No. 40-W Large Face Plate priced on page 20 for chucking round or irregular work. Each jaw has an individual screw adjustment. Capacity of Jaws, 4 1/2".

Cat. No. 97-W, Code, "Cuyll" wt. 3 lbs. \$5.00



## 3-Jaw Drill Chuck\*

### Standard Weight

A practical, powerful and accurate drill chuck. Jaws are of tempered steel. Prices include pinion key, but not arbor.

No. 1200, 0 to 1/2" Cap. Chuck, Wt. 1 lb. Code, "Cleve" \$4.25  
No. 1201, 0 to 1/2" Cap. Chuck, Wt. 1 1/4 lb. Code, "Wauko" 6.75  
No. 1202, 3/16" to 1/2" Cap. Chuck, Wt. 2 1/4 lb. Code, "Faloa" 9.00

\*Tested to run true to within .003"



## 3-Jaw Drill Chuck\*

### Medium Weight

An accurate chuck for general drilling in the lathe. Jaws are of tempered steel. Prices include pinion key but not arbor.

No. 219, 0 to 1/2" Cap. Chuck, Wt. 3/4 lb. Code, "Acpen" \$3.85  
No. 220, 0 to 1/2" Cap. Chuck, Wt. 1 1/2 lb. Code, "Acpi" 5.25  
No. 327, 1/8" to 3/4" Cap. Chuck, Wt. 2 1/4 lb. Code, "Rulid" 7.50

\*Tested to run true to within .003"



## Headstock Spindle Chuck\*

Chuck screws on spindle nose of lathe. Has hollow spindle for holding small rods, bar work, and automobile engine valves for relacing. Chuck can also be used in tailstock of lathe when fitted with arbor pin at right.

No. 907-B, 1/4" to 3/4" Cap. Chuck, Ship. Wt. 3 lbs. Code, "Robal" \$9.00

\*Tested to run true to within .002"



## Solid Arbor for Drill Chucks

The arbor is used for fitting three-jaw drill chucks shown at left, to the lathe spindle. When information on the size and make of drill chuck is not given a semi-finished arbor which is fitted to lathe spindle but not to drill chuck is supplied. No. 709, Arbor, No. 2 Morse Taper, Code, "Achuk", Shipping Wt. 1 lb. \$1.00



Fig. 127. No. 105-W Chuck and Tool Assortment for "Workshop" Lathes

## No. 105-W Chuck and Tool Assortment \$37.70

We recommend the chucks and tools shown in the assortment at left and listed below for use on the "Workshop" Lathe. This is the basic equipment required in the average shop for handling general machine jobs, such as turning, boring, drilling, cutting-off, chucking, etc.

Cat. No.	Description	Price
No. 4806.....	6-inch Light Weight 4-Jaw Independent Lathe Chuck	\$18.00
No. 258.....	Fitting above Chuck to Lathe including Chuck-back	4.00
No. 220.....	1/2-inch Medium Weight 3-Jaw Drill Chuck	5.25
No. 709.....	Solid Arbor Fitted to above Drill Chuck	1.00
No. 847-S.....	Straight Shank Tool Holder with 1/4" Cutter Bit, Unground	1.25
No. 291.....	Six 1/4-inch High Speed Steel Cutter Bits, Ground	1.45
No. 505-F.....	Boring Tool Holder, Style "D", with 1/4-inch Boring Bar	3.00
No. 833-R.....	Cutting-off Tool Holder, Right Hand, with ground cutter	1.50
No. 178.....	4 Standard Malleable Lathe Dogs, 1/2", 3/4", 1", 1 1/4" Cap.	2.25

No. 105-W Chuck and Tool Assortment, Code "Axtro", Ship. Wt. 15 lbs. \$37.70

# Tool Holders, Cutter Bits and Accessories



## Tool Holder—Straight Shank

The Straight Shank Tool Holder is made of drop-forged steel, heat treated and hardened. The set screw is made of fine grade alloy steel with hardened point. Prices include tool holder, wrench and one unground high speed steel cutter bit.

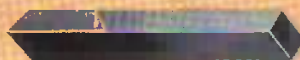
Cat. No. 847-S, Code Word "Acump." Shipping Weight 1 lb. Price each.....\$1.25

## Extra Quality High Speed Steel Cutter Bits

Cutter bits are of high speed steel, extra quality, heat treated and hardened and can be supplied either ground or unground. When ordering ground bits specify catalog number (Cat. No.) and form wanted.

### Unground Cutter Bits

No. 1460. Unground Cutter Bit, Size  $\frac{1}{4}$ " x  $\frac{1}{4}$ " x 2". Code, "Adwir". Ship. Wt. 2 oz. Price each.....\$0.15



Unground Cutter Bit

No. 1629. Six Unground Cutter Bits. Code Word, "Cixas". Shipping Weight 10 oz. Price.....\$0.80

### Ground Cutter Bits

No. 1355. Cutter Bit, ground to forms A to F, shown below. Size  $\frac{1}{4}$ " x  $\frac{1}{4}$ " x 2". Code, "Adwap". Shipping Wt. 2 oz. Each \$0.25



Ground Cutter Bit

No. 291. Set of 6 Cutter Bits, ground to forms A to F, shown below. Code, "Adwas". Ship. Wt. 10 oz.....\$1.45

## Cutter Bits—Ground to Form



A. L. H. Turning B. Round Nose C. R. H. Turning D. L. H. Side E. Threading F. R. H. Side

## Knocked-Down Benches



Fig. A. Knocked-Down Bench Assembled.

Fig. "A", at left, shows a knocked-down bench completely assembled. All material is shipped from the factory accurately cut to size ready for assembling, but is left unfinished. See Fig. "B", below. Material is provided for a drawer, 12" wide x 20" long x 3" deep. Drawer is not assembled. Top is made of 2" No. 1 clear fir lumber. Side braces are 1" and 2" thick x 6" wide, hard pine. Legs are 2" thick, x 6" wide, hard pine. Height of bench 30". A blue print is supplied showing how to set up the bench. Either screws or nails may be used. No hardware is furnished. Shipping weight 160 lbs. Cat. No. 89-L, Top 28" x 48", Code "Bydar".....\$5.75 Cat. No. 89-N, Top 28" x 54", Code "Bydev".....6.25 Cat. No. 89-Q, Top 28" x 66", Code "Bydiz".....7.00



Fig. B. Knocked-Down Bench Material



### R. H. Turning Tool

Made of drop-forged steel. Price includes holder, wrench, H.S. steel cutter bit, not ground. Shipping Wt. 1 lb. No. 847-R, "Acurt".....\$1.25



### L. H. Turning Tool

Made of drop-forged steel. Price includes holder, wrench, H.S. steel cutter bit, not ground. Shipping Wt. 1 lb. No. 847-L, "Acvet".....\$1.25



### Style "D" Boring Tool

Made of drop-forged steel. Price includes holder, wrench,  $\frac{1}{4}$ " boring bar. Wt.  $1\frac{1}{4}$  lbs. No. 505-F, "Adyot".....\$3.00 No. 498-B,  $\frac{5}{16}$ " Boring bar, "Advor". Ship. Wt. 2 oz. \$5.55



### Sleeve Boring Bars: (Wt. 1 lb.)

No. 344,  $\frac{1}{4}$ ", "Bewem" \$2.25 No. 345,  $\frac{3}{8}$ ", "Bewow" 2.25 No. 365,  $\frac{1}{2}$ ", "Bewud" 2.85



### Head Spindle Center

Made of tool steel, ground. Ship. Wt. 8 oz. No. 725-W, "Adgud" \$2.00



### Crotch Center

Used in tail spindle. Centers round work for drilling. Shipping Wt. 10 oz. No. 728-W, "Fanid" \$2.50



### Drill Pad

Used in tail spindle. Supports flat work for drilling. Shipping Wt.  $1\frac{1}{4}$  lbs. No. 727-W, "Donav" \$2.00



### Tool Grinder

(Electric)

A high grade bench grinder for grinding tool bits, drills, etc. Has  $\frac{1}{4}$  H.P. 1-ph., 60-cy., 110-v., A.C. ball bearing motor, 3450 R.P.M.; 2 abrasive wheels, 6"x $\frac{1}{2}$ "x $\frac{1}{4}$ ", 60 and 36 grit; 2 wheel guards; 2 rests; switch; 10-ft. cord and plug. No. 655, Code, "Jadax". Shipping Wt. 54 lbs.....\$16.50



### Cutting-Off Tool

Made of drop-forged steel. Price includes holder, wrench, H.S. cutter, ground. Wt. 1 lb. No. 833-S, "Adcat".....\$1.50 Extra Cutter, No. 819, "Adsop". Ship. Wt. 3 oz. .50



### Knurling Tool Holder

Made of drop-forged steel. Price includes holder and set of knurls. Wt.  $1\frac{1}{4}$  lbs. No. 820, Code, "Domta" \$3.00 No. 817, Knurls (Pair) "Digmo". Ship. Wt. 1 oz. \$1.00



### Style "C" Boring Tool

Made of drop-forged steel. Price includes holder, wrench,  $\frac{1}{4}$ " boring bar, and H.S. cutter. Ship. Wt.  $1\frac{1}{4}$  lbs. No. 486, Code "Ipcen" \$3.00 No. 483,  $\frac{1}{4}$ " Boring bar, "Advep". Ship. Wt. 6 oz. .30 No. 485,  $\frac{3}{16}$ " Boring bar, "Adwut". Ship. Wt. 6 oz. .35



### Tail Spindle Center

Made of tool steel, hardened and ground. Wt. 8 oz. No. 726-W, "Cenre" \$2.25



### Morse Taper Sleeve

No. 2 Morse Taper Sleeve. No. 1 Morse Taper Bore. No. 118-A "Corse" 6 oz. .60



### Center Drill and Countersink

Made of carbon tool steel, hardened and ground. No. 898-A,  $1/16$ " dia. Code "Xmqib". Ship. Wt. 3 oz. .30 No. 898-B,  $3/32$ " dia. Code "Xnrjc". Ship. Wt. 3 oz. .35 No. 898-C,  $1/8$ " dia. Code "Xoskd". Ship. Wt. 3 oz. .40



### Tool Grinder

(V-Belt Drive)

A practical bench grinder for tool bits, drills, etc. Price includes 2 abrasive wheels, 6"x $\frac{1}{2}$ "x $\frac{1}{4}$ ", 60 and 36 grit; 2 guards and rests. Cat. No. 710-B, "Jerub". Shipping Wt. 13 lbs. \$6.00



### R. H. Cutting-Off Tool

Made of drop-forged steel. Price includes holder, wrench, H.S. cutter, ground. Wt. 1 lb. No. 833-R, "Cemso".....\$1.50 Extra Cutter, No. 819, "Adsop". Ship. Wt. 3 oz. .50



### Threading Tool Holder

Made of drop-forged steel. Price includes holder, wrench and formed H.S. single point cutter (V.U.S.S. or Whitworth). Specify pitch or threads per inch required. Shipping Wt. 1 lb. No. 845, Code "Adfob" \$2.50 Extra Cutter, No. 814, "Adurp". Ship. Wt. 3 oz. \$1.50



### Standard Lathe Dog

Made of heavy malleable iron, designed for strength and service. Ship. Wt. 1 lb.

$\frac{3}{4}$ " cap. No. 1-WJ, "Adirm" \$0.40  $\frac{1}{2}$ " cap. No. 2-WJ, "Adiol" .45  $\frac{1}{4}$ " cap. No. 4-WJ, "Adkog" .50 1" cap. No. 6-WJ, "Adler" .60  $1\frac{1}{2}$ " cap. No. 8-WJ, "Adig" .70  $1\frac{1}{2}$ " cap. No. 10-WJ, "Adnag" .80



### Clamp Lathe Dog

Made of Drop Forged Steel.

Cat. No.	Cap. In.	Ship. Wt.	Code Word	Price
160	$\frac{1}{4}$ "	1 lb.	Xaxpi	\$1.80
161	$\frac{3}{4}$ "	$1\frac{1}{4}$ lbs.	Xiyqi	2.40

### Spindle Oil and Oiler

A high quality machine oil especially selected for oiling South Bend Lathes. Oiler is of extra heavy steel.

No. 935, 1 Qt. Oil and Oiler. Wt.  $1\frac{1}{4}$  lbs. "Oawah" .50



### Precision Level

A sensitive level 12" long with ground and graduated vial, recommended for leveling the "Workshop" Lathe. Shipping Weight 11 lbs. No. 977, Code, "Netaf" \$7.50



Center Gauge for testing lathe centers and setting threading tool. No. 650, "Xutje" Wt. 3 oz. .50

# Countershafts, Motors, Switches and Belting

For 9-inch "Workshop" South Bend Precision Lathes

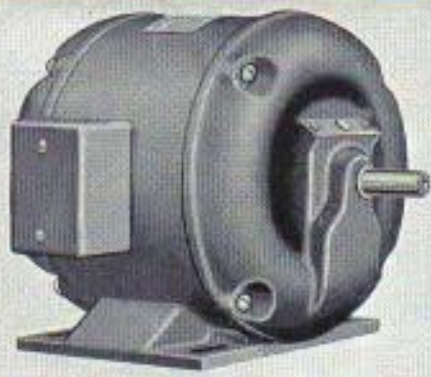


Fig. 128. Start-and-Stop Type Reversing Motor.

## 1/4 H.P. Start-and-Stop Type Reversing Split-Phase Motors

The 60-Cycle, A.C. 110-volt, 1/4 H.P. Start-and-Stop Type Reversing Split-Phase Motor, 1725 R.P.M., shown at left and priced with the Motor Driven Lathes in this catalog, operates from an electric lamp socket at an average cost of 2 cents per hour. This motor is practical and powerful for operating the "Workshop" Lathe. Operates in either direction by allowing motor to come to a stop before moving switch lever from "forward" to "reverse" or vice versa.

Cat. No. 127. Code Word, "Atpix." Shipping Weight, 40 lbs. Price.....\$8.75  
50-Cycle, A.C. 110 volt, 1/4 H.P. Start-and-Stop Type Split-Phase Reversing Motor can be supplied in lieu of the 60-Cycle Motor described above. Cat. No. 711. Code "Awpal".....\$11.00

## 1/8 H. P. and 1/2 H. P. Start-and-Stop Reversing Motors

1/8 H.P. and 1/2 H.P. Reversing Motors are recommended for the "Workshop" Lathe when (1) extremely heavy loads are encountered (2) when countershaft and motor are fitted with 2-step drive pulleys for high speeds, and (3) when lathe headstock is fitted with single step, triple V-Belt drive and 2-step, double V-Belt drive, as shown on page 15. Prices on request.

When Ordering a Motor Driven Lathe give the following information: If Alternating Current, state voltage, phase, cycle and number of wires. If Direct Current, state voltage only.

## Instant Reversing Motors and Switches

Instant Reversing Motors and suitable Drum Type Reversing Switches can be supplied in lieu of the Start-and-Stop Type Reversing Motor and Drum Type Reversing Switch, Style R-12, as follows:

1-Phase, 60-Cy. 110 or 220-volt A.C. No. 714	\$27.00
3-Phase, 60-Cy. 110 or 220-volt A.C. No. 717	20.00
Direct Current Motor 115 or 230-volt No. 718	25.00
Drum Reversing Switch, No. 791	7.00
Bracket for mounting switch, No. 944	.75

Special Motors for A.C. and D.C. can be supplied at slightly higher prices.

## Drum Type Reversing Switch

The Drum Type Reversing Switch (Style R-12), illustrated at the right, is listed with the 9-inch "Workshop" Motor Driven Lathes shown in this catalog. This is an efficient 6-contact drum reversing switch for use with the 1/4 H.P. Start-and-Stop Reversing Motors described above. The switch has three positions "left" for starting; "center" for stopping; and "right" for reversing the rotation of the lathe spindle. Price includes bracket for mounting. Price of Switches for 1/8 H.P. and 1/2 H.P. Start-and-Stop Type Reversing Motors quoted on request.

Cat. No. 789. "Atwig." Ship. Wt., 3 1/2 lbs.. \$5.00



Fig. 129. Reversing Switch

## V-Groove Pulley



Fig. 130.

This high grade pulley is used on the electric motors described above. Pulley has headless set screw. The bore is machined to fit 1/2" motor shafts. Cat. No. 217. "Hefia." Ship. Wt., 11 oz. \$0.50

## Flat Leather Belting



Fig. 131.

motor drive lathes. A strand of round rawhide is supplied for lacing belt. Cat. No. 933. "Labig". Wt. 11 oz.. \$1.00

This is a good quality medium weight oak tanned single ply belting for 9" "Workshop"

## V-Belting



Fig. 132.

This is a moulded, rubberized cord V-belting. Is practical, durable and efficient for use between motor and horizontal countershaft with 9-inch "Workshop" motor driven lathes. Cat. No. 959. Code Word, "Kedec". Shipping Weight 11 oz. \$1.00

## Sanding and Polishing Disc and Table



Fig. 133. Sanding and Polishing Disc and Table, on Lathe.

The Sanding and Polishing Disc shown at left is practical for polishing wood, steel, iron, etc. Size 6" diam. Disc has taper shank and fits into hole of headstock spindle.

No. 943-W. Sanding Disc. Code "Dylax." Price .....\$3.50

Table for Sanding and Polishing work fits in "T" slot of Compound Rest. No. 1129-W. Table. Code "Atata" ....\$2.50

## Tight and Loose Pulley Countershaft



Fig. 134. Tight and Loose Pulley Countershaft for any bench or floor leg model South Bend "Workshop" Lathe.

The Tight and Loose Pulley Countershaft shown at the left is a dependable low cost unit for driving the 9" "Workshop" Precision Lathe from a line shaft. It may be used with any bench or floor leg model "Workshop" Lathe and may be either mounted overhead on the ceiling or on the side wall.

Cat. No. 1019. Code "Abhap." Ship. Wt. 38 lbs. Price .....\$5.00

## Double Friction Countershaft

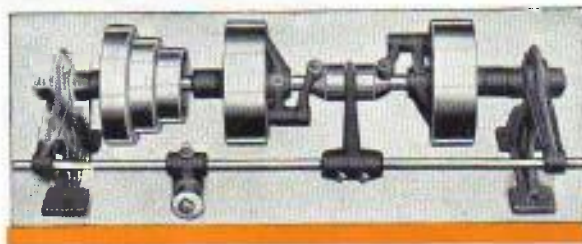


Fig. 135. Double Friction Countershaft.

The Double Friction Countershaft shown at right, is practical and powerful. It is recommended for lathes operating from a lineshaft. May be used with any bench or floor leg lathe shown on pages 2, 14 and 15. See Countershaft Drive Floor Leg Lathe on page 15. Has two friction clutch pulleys, which permit lathe to be operated both forward and in reverse. Cat. No. 289. Code, "Afget." Shipping Weight, 60 lbs.. \$12.00

## Gasoline Engine Drive

For shops located where electric current is not available, we can supply a practical and dependable gasoline engine drive equipment for operating the 9-inch "Workshop" Lathe, bench or floor leg type. Prices and illustrations showing the application of the drive will be supplied on request.

# South Bend Easy Payment Plan

10 to 15 Months to Pay

By using our Easy Payment Plan, customers in the United States can purchase any size South Bend Lathe, with or without attachments, chucks and tools, on easy payments.

In the first column of the schedule at right, find the amount nearest the total price of your order. On the same line you will find the amount of the down payment, the amount for monthly payments, the amount for financing the balance, and number of monthly payments.

By making a small down payment with the order, the lathe is shipped immediately and the balance is paid in small monthly installments while the lathe is being used. You deal directly with us—we have no connection with any finance company.

## Example Easy Payment Order

1 No. 415-Z, 9"x31/2" "Workshop" South Bend Horizontal Motor Driven Bench Lathe complete with Electrical Equipment and Regular Lathe Equipment as shown on pages 4 and 5	\$110.25
1 No. 105-W, Chuck and Tool Assortment, (shown on page 26)	37.70
Total Price f.o.b. cars, South Bend, Indiana	\$147.95

## Easy Payment Terms on Above Order

Total Price of above order	\$147.95
Amount of Down Payment	32.00
Balance Due	115.95
Amount for Financing Balance	9.00
Amount to be paid in Monthly Installments	\$124.95
Payments each Month	10.00
Number of Months to Pay—12 Months.	

## SCHEDULE OF EASY PAYMENT TERMS

If Total Price of Your Order Amounts to	Amount of Down Payment	Payment Each Month	Amount for Financing Balance	Approx. No. of Months to Pay*
\$ 70.00 to \$ 80.00	\$ 19.00	\$ 6.50	\$ 6.00	10
80.01 to 90.00	21.00	7.00	6.50	10
90.01 to 100.00	24.00	7.00	7.00	11
100.01 to 110.00	28.00	7.00	7.50	12
110.01 to 120.00	29.00	8.00	7.50	12
120.01 to 130.00	30.00	8.50	8.00	12
130.01 to 140.00	31.00	9.00	8.50	12
140.01 to 150.00	32.00	10.00	9.00	12
150.01 to 175.00	35.00	11.50	10.00	12
175.01 to 200.00	40.00	13.00	11.50	12
200.01 to 225.00	45.00	15.50	13.00	12
225.01 to 250.00	50.00	17.00	14.50	12
250.01 to 275.00	55.00	18.50	16.00	12
275.01 to 300.00	60.00	19.50	17.50	12
300.01 to 325.00	65.00	22.00	19.00	12
325.01 to 350.00	70.00	24.00	20.50	12
350.01 to 375.00	75.00	25.00	23.50	13
375.01 to 400.00	80.00	26.00	25.00	13
400.01 to 450.00	90.00	26.00	29.00	14
450.01 to 500.00	100.00	29.00	32.50	14
500.01 to 550.00	107.50	30.50	38.00	15
550.01 to 600.00	115.00	33.50	41.00	15

\* In some cases there will be one more month depending on the amount of the total order.

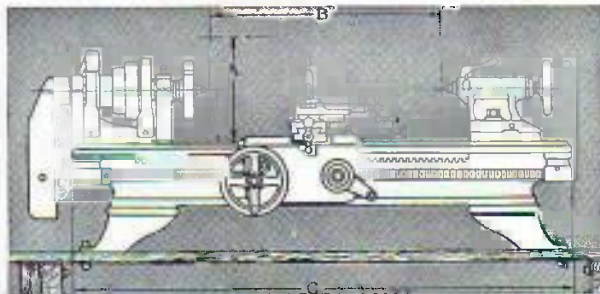
## Approximate Freight Rates From South Bend to Principal Cities

To determine the freight charges on your order, use the freight rate applying to the city nearest your shipping point—as shown in list at right. Multiply the total weight of your order by the rate given per hundred pounds and the result will be the approximate freight charges on your order.

Example—Freight charges on the 9" x 3' "Workshop" Lathe, weighing 310 lbs., to Omaha, Nebr., at \$1.57 per 100 lbs., \$4.87.

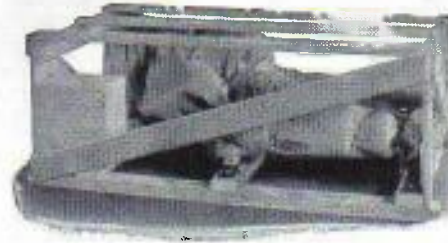
If desired your lathe can be shipped by railway express, at slightly higher cost than by freight. Unless you specify how shipment is to be made, lathe will be shipped freight by the most economical route.

Rate per 100 lbs.	Rate per 100 lbs.
Baltimore, Md. .... \$1.20	Montgomery, Ala. .... \$1.73
Boise, Idaho ..... 4.68	New York, N. Y. .... 1.32
Boston, Mass. .... 1.36	New Orleans, La. .... 1.99
Chicago, Ill. .... 0.48	Oklahoma City, Okla. .... 2.45
Charleston, S. C. .... 2.00	Omaha, Nebr. .... 1.57
Cleveland, Ohio .... 0.71	Philadelphia, Pa. .... 1.26
Denver, Colo. .... 2.58	Pittsburgh, Pa. .... 0.84
Detroit, Mich. .... 0.61	Portland, Ore. .... 5.36
Hartford, Conn. .... 1.32	Richmond, Va. .... 1.29
Helena, Mont. .... 4.68 1/2	St. Louis, Mo. .... 0.81
Los Angeles, Calif. .... 5.36	Salt Lake City, Utah .... 4.57
Louisville, Ky. .... 0.71	San Antonio, Tex. .... 3.00
Miami, Fla. .... 2.67	San Francisco, Calif. .... 5.36
Milwaukee, Wisc. .... 0.60	Seattle, Wash. .... 5.36
Minneapolis, Minn. .... 1.48	Wichita, Kan. .... 1.97



## How to Determine the Size of a Lathe

The letters in the illustration above show the various dimensions which determine the size of a Back-Geared Screw Cutting Lathe: A—Swing over bed; R—Radius or one-half the Swing; C—Length of Bed; B—Distance between Centers. If you desire, our engineers will recommend the size lathe best suited to your needs.



## Safe Delivery Guaranteed

Every South Bend Lathe is carefully packed and crated to reach you in perfect condition, free from rust and breakage. We guarantee you against any loss or damage while your lathe is in transit.

## Lathe Crated for Domestic Shipment

The 9-inch "Workshop" Lathe, for shipment to points in the United States, Canada or northern Mexico is not knocked down, but is skidded and crated as shown above. All finished or polished parts are greased to prevent rusting and each unit is wrapped securely in heavy paper to protect it from dust and dirt. The small parts are packed in a box which is nailed to the skids.

## Export Information on 9-inch "Workshop" South Bend Lathes

Export Prices. All prices quoted in this bulletin are the latest net prices f.o.b. factory South Bend, Indiana. On shipments requiring the lathe to be boxed, an extra charge of \$7.00 per lathe is made for packing and boxing. On shipments which are crated as for domestic shipment there is no additional packing charge.

Boxing the Lathe for Export Shipment. Lathes boxed for ocean shipment are dismantled and all parts are oiled, greased, wrapped and packed in one strong case. We have had more than 25 years' experience in shipping to more than 96 countries and colonies.

C. I. F. Prices. Let us know the size and type of lathe in which you are interested and we will give you an itemized quotation in your own language showing the price of the lathe delivered C. I. F. to your nearest port. Write to us at once as this places you under no obligation.

## Export Shipping Information

Size of Export Case (9" x 3' "Workshop" Lathe)	48"x24"x21"
Weight of 9" x 3' Lathe, boxed, approximately	450 lbs.
Freight Rate to Ship Side New York City	\$1.45 per cwt.
Extra charge for Boxing for Ocean Shipment, per lathe	\$7.00

## Shipping Costs to Principal World Ports

Listed below are approximate transportation and insurance charges to various world ports on the 9" x 3' "Workshop" Lathe including transportation from our factory to steamship pier and ocean freight where shipment is made by water. Consular fees and customs duties levied by various countries are not included in these estimates. For itemized shipping expense write to us for quotation.

Buenos Aires, Argentina....\$20.00	Alexandria, Egypt .....\$20.00
Callao, Peru ..... 21.00	Bangkok, Siam ..... 15.00
Guayaquil, Ecuador ..... 22.00	Batavia, Java ..... 17.00
Havana, Cuba ..... 17.00	Calcutta, India ..... 15.00
La Guayra, Venezuela ..... 19.00	Honolulu, Hawaii ..... 14.00
La Libertad, Salvador ..... 20.00	Kingston, Jamaica ..... 15.00
La Paz, Bolivia via Mollendo, 21.00	Lisbon, Portugal ..... 22.00
Panama City, Panama..... 16.00	London, England ..... 17.00
Puerto Colombia, Colombia 20.00	Port Natal, U. of S. Africa 16.00
Puerto Limon, Costa Rica.. 16.00	Port of Spain, Trinidad.... 16.00
Rio de Janeiro, Brazil ..... 18.00	Rangoon, Burma ..... 16.00
San Jose, Guatemala ..... 18.00	Shanghai, China ..... 17.00
San Juan, Puerto Rico ..... 13.00	Singapore, S. S. .... 15.00
Valparaiso, Chile ..... 21.00	Sydney, Australia ..... 17.00
Vera Cruz, Mexico ..... 18.00	Wellington, New Zealand.. 17.00

# Get One or More of These Valuable Books

Listed below are 9 of the most interesting and valuable reference books covering all classes of lathe work and showing application of lathe in the latest shop practice in metal working shops.

The mechanic and the shop owner planning on installing a lathe in the shop will find these books and bulletins of great value. The experienced machinist, the mechanic and the apprentice will appreciate the modern, technical information they contain. Write to us for the book in which you are interested. Copies are mailed, postpaid, on request.

## "How to Run a Lathe"—32nd Edition—25c

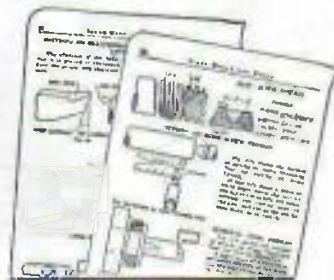
### Copy Free with Each 9-inch "Workshop" Lathe

"How to Run a Lathe" is an authoritative and instructive manual completely covering the care and operation of a back-gear, screw cutting lathe and gives the fundamentals of lathe operation in detail with illustrations. The book contains 160 pages, 5½" x 8", and more than 300 illustrations.

Students in educational institutions and apprentices in industrial plants, railroads and machine shops use "How to Run a Lathe" as a textbook. The book is the most popular text on lathe work in the world.

One and one-half million copies are in use throughout the United States and all countries throughout the entire world. Editions have been printed in English, Spanish, Portuguese and Chinese.

A copy of "How to Run a Lathe" will be mailed anywhere in the world postpaid, 25c for the paper bound copy and 75c for the leatherette bound copy. Coin or stamps of any country accepted.



Two Sample Pages.

### PARTIAL LIST OF CONTENTS

Operating Automatic Feed  
Reading Micrometer Calipers  
Using Outside and Inside Calipers  
Aligning Lathe Centers  
Drilling, Boring, Reaming, Tapping  
Use of Compound Rest  
Grinding and Setting Lathe Tools  
300 Shop Kinks

Turning and Boring Tapers  
Grinding and Milling Work  
Chucks and Face Plates  
Cutting Speeds and Feeds  
How to Set up the Lathe  
How to Lay Out a Shop  
How to Level a Lathe  
How to Hang a Countershaft

Calculating Size and Speed of Pulleys  
How to Lace a Belt  
Methods of Centoring Work  
Tables of Information for Machinists  
Turning Steel and Cast Iron  
Screw Thread Cutting  
Information on Gears  
Morse Tapers

## These Valuable Books Sent Free, Postpaid

### "Auto Service and Electric Shops"

—bulletin No. 6-G is an illustrated 12-page 8½"x11" book showing the latest approved methods and equipment for handling six of the most important service jobs in the auto service and electrical shop, such as servicing armatures, grinding valves, finishing semi-machined pistons, making bushings and sleeve bearings, etc. A copy of this interesting book will be sent to any one interested, free, postpaid.

### "The Home Workshop"

—Booklet No. 11-W, contains a wealth of information for the homeshop owner. Shows actual photographs of homeshops, layouts of equipment for homeshops, contains list of projects that can be built in the homeshop, and contains an entire section devoted to information on where supplies, blueprints and other materials can be obtained. Every homeshop owner should have a copy. Sent free, postpaid.

### "Modern School Shops"

Booklet No. 55-W, is a 24-page 6" x 9" bulletin containing actual photographs of some of the most outstanding school machine shops throughout the world. This bulletin will be of interest and of value to every vocational director, supervisor and instructor in shop work. A copy will be sent postpaid, to any school official.

### "Interesting Installations of South Bend Lathes"

—Booklet No. 71. This 24-page booklet size 6"x9" contains a series of illustrated descriptions of some of the more interesting and unusual shops all over the world where South Bend Lathes are an important part of the mechanical equipment. The installations include manufacturing plants, U. S. Government shops, scientific laboratories, and large and small shops of all kinds. Sent postpaid, no charge, on request.

### "What Users Say About Their South Bend Lathes"

—Booklet No. 4-N, is a 24-page book, 6" x 9" containing actual photographs of South Bend Lathe installations and actual reproductions of letters we have received from hundreds of customers telling of the results they have received in their own shops with South Bend Lathes. A copy of this interesting book will be sent to anyone interested, free, postpaid.

### "Factory Views of South Bend Lathe Works"

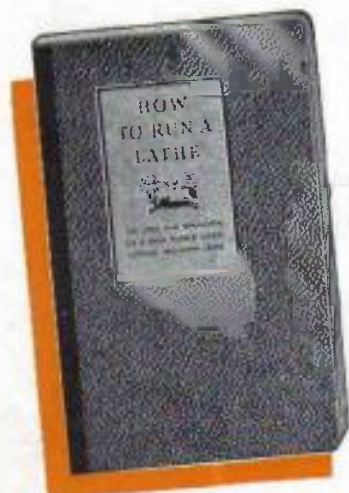
—Booklet No. 51-W, is the next thing to a personal visit to our plant. This 24-page, 6" x 9" book contains actual photographs of the Manufacturing, Engineering and Assembling Departments in our factory, showing South Bend Lathes during the various stages of manufacture. A copy will be sent free, postpaid, to anyone interested in lathes.

### "Easy Payment Plan"

Booklet No. 10-N, contains complete information on the South Bend Easy Payment Plan of purchasing all sizes and types of South Bend Lathes, attachments and tools. Write for a copy of this booklet and use the same convenient terms that ten thousand and more South Bend Lathe customers have used in buying their equipment. Sent free postpaid, to any address.

### "Exporting to 96 Countries"

Booklet No. 96-W is not only interesting but a very valuable book to those interested in lathes and located outside the United States. In this book will be found complete information on the methods used in handling export shipments, transportation expenses, insurance charges, ways to remit money, etc. A copy will be mailed free of charge to any address outside continental United States, postpaid.



# 96 Sizes and Types of South Bend Lathes

9" to 18" Swing—All Shown in New General Catalog No. 94-A

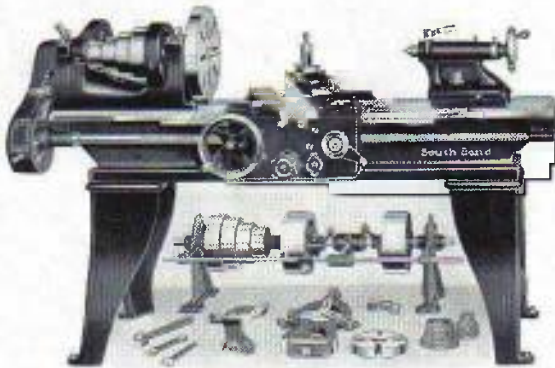
If you are interested in a lathe of larger size and capacity than the 9-inch "Workshop" South Bend Lathe, as described in this Catalog, write for a copy of the New General Catalog No. 94-A.

The new 72-page General Catalog No. 94-A, size 8 1/8" x 10 3/4", illustrates, describes and prices the line of New Model South Bend Back-Geared, Screw Cutting Precision Lathes, from 9-inch to 18-inch swing, in bed lengths from 2-ft. to 16-ft. Quick Change Gear Lathes, Standard Change Gear Lathes, Junior Lathes, Toolmaker Lathes, "Workshop" Lathes, Floor Leg Lathes, Bench Lathes, for operation from Overhead Countershaft Drive and several types of Motor Drives, are shown. Other types include Tool Room Lathes and Brake Drum Lathes. Some of the popular sizes and types are priced in the tabulation below.

A complete line of attachments, chucks, tools and accessories for these South Bend Lathes is also shown in Catalog No. 94-A, a copy of which will be mailed on request, anywhere in the world, postpaid, no charge.



72-Page  
General  
Catalog  
No. 94-A



16" x 6' Standard Change Gear Lathe Including Countershaft and Regular Lathe Equipment.....\$480.00



16" x 6' Quick Change Gear Underneath Motor Driven Lathe Complete with Electrical and Regular Equipment....\$752.00

## BENCH LATHES—Net Factory Prices of 9-inch Swing Lathes

Prices below are net f.o.b. cars factory South Bend, Indiana, crated for domestic shipment. Countershaft Drive Lathes include Countershaft and Regular Equipment. Motor Drive Lathes include Regular Lathe Equipment and 1/4 H.P. Split phase Reversing Motors and switches.

Brief Specifications of Lathes								Countershaft Drive Lathes				Horizontal Motor Drive			
Swing Over Bed Inches	Length of Bed Feet	Distance Between Centers Inches	Hole Thru Spindle Inches	Swing Over Carriage Inches	Collet Capacity 1/4" up by 6ths to	Cone Pulley Belt Inches	Power Required H.P.	Quick Change		Standard Change		Quick Change		Standard Change	
								Weight Crated Pounds	Cat. No.	Net Factory Price		Weight Crated Pounds	Cat. No.	Net Factory Price	
9-inch Toolmaker South Bend Bench Lathes (Geared Screw Feed Type)															
9 1/4	3	18	3/4	5 1/2	1 1/2	1	1/2	325	Not made in Quick Change Gear Type.	20-YBW	\$140.00	340	Not made in Quick Change Gear Type.	420-YN	\$162.00
9 1/4	3 1/2	24	3/4	5 1/4	1 1/2	1	1/2	345		20-ZBW	150.00	360		420-ZN	172.00
9 1/4	4	30	3/4	5 3/4	1 1/2	1	1/2	365		20-ABW	160.00	380		420-AN	182.00
9 1/4	4 1/2	36	3/4	5 3/4	1 1/2	1	1/2	385		20-RBW	170.00	400		420-RN	192.00
9-inch Junior South Bend Bench Lathes (Geared Screw Feed Type)															
9 1/4	3	18	3/4	5 1/2	1 1/2	1 1/4	1 1/4	375	Not made in Quick Change Gear Type.	22-YB	170.00	416	Not made in Quick Change Gear Type.	422-YN	192.00
9 1/4	3 1/2	21	3/4	5 1/2	1 1/2	1 1/4	1 1/4	400		22-ZB	180.00	441		422-ZN	202.00
9 1/4	4	27 1/2	3/4	5 1/2	1 1/2	1 1/4	1 1/4	425		22-AB	190.00	466		422-AN	212.00
9 1/4	4 1/2	31 1/2	3/4	5 1/2	1 1/2	1 1/4	1 1/4	450		22-RB	200.00	491		422-RN	222.00
9-inch South Bend Quick Change Gear and Standard Change Gear Bench Lathes															
9 1/4	3	16 1/2	3/4	6 3/4	1 1/2	1 1/4	1 1/4	430	80-YH	\$265.00	30-YH	225.00	471	180-YH	\$265.00
9 1/4	3 1/2	21 1/2	3/4	6 3/4	1 1/2	1 1/4	1 1/4	455	80-ZH	275.00	30-ZB	235.00	496	180-ZN	298.00
9 1/4	4	27 1/2	3/4	6 3/4	1 1/2	1 1/4	1 1/4	480	80-AB	295.00	30-AB	245.00	521	180-AN	308.00
9 1/4	4 1/2	31 1/2	3/4	6 3/4	1 1/2	1 1/4	1 1/4	505	80-RB	295.00	30-RB	255.00	546	180-RN	318.00

## FLOOR LEG LATHES—Net Factory Prices of 9", 11", 13" and 16" Swing Lathes

Countershaft Drive Lathes include Countershafts and Regular Lathe Equipment.

All Underneath Belt Motor Driven Lathes are equipped with Regular Lathe Equipment and 3 phase Instant Reversing Electrical Equipment.

Brief Specifications of Lathes								Countershaft Drive Lathes				Underneath Belt Motor Drive			
Swing Over Bed Inches	Length of Bed Feet	Distance Between Centers Inches	Hole Thru Spindle Inches	Swing Over Carriage Inches	Collet Capacity 1/4" up by 6ths to	Cone Pulley Belt Inches	Power Required H.P.	Quick Change		Standard Change		Quick Change		Standard Change	
								Weight Crated Pounds	Cat. No.	Net Factory Price		Weight Crated Pounds	Cat. No.	Net Factory Price	
9-inch South Bend Quick Change Gear and Standard Change Gear Floor Leg Lathes															
9 1/4	3	16 1/2	3/4	6 3/4	1 1/2	1 1/4	1 1/4	482	80-Y	\$265.00	30-Y	\$265.00	765	180-Y	\$372.00
9 1/4	3 1/2	21 1/2	3/4	6 3/4	1 1/2	1 1/4	1 1/4	507	80-Z	285.00	30-Z	245.00	820	180-Z	382.00
9 1/4	4	27 1/2	3/4	6 3/4	1 1/2	1 1/4	1 1/4	532	80-A	295.00	30-A	255.00	845	180-A	392.00
9 1/4	4 1/2	31 1/2	3/4	6 3/4	1 1/2	1 1/4	1 1/4	557	80-R	305.00	30-R	265.00	870	180-R	402.00
11-inch South Bend Quick Change Gear and Standard Change Gear Floor Leg Lathes															
11 1/4	3 1/2	18	3/4	7 3/4	1 1/2	1 1/4	1 1/4	695	80-Z	328.00	33-Z	288.00	955	181-Z	467.00
11 1/4	4	24	3/4	7 3/4	1 1/2	1 1/4	1 1/4	725	84-A	340.00	33-A	300.00	965	181-A	479.00
11 1/4	5	30	3/4	7 3/4	1 1/2	1 1/4	1 1/4	795	84-B	352.00	33-B	312.00	1035	181-B	491.00
13-inch South Bend Quick Change Gear and Standard Change Gear Floor Leg Lathes															
13 1/4	5	28	1	9	1 1/2	1 1/4	1 1/4	1110	80-B	402.00	35-B	352.00	1510	186-B	575.00
13 1/4	6	40	1	9	1 1/2	1 1/4	1 1/4	1160	80-C	417.00	35-C	367.00	1560	186-C	593.00
13 1/4	8	64	1	9	1 1/2	1 1/4	1 1/4	1275	80-E	453.00	35-E	403.00	1675	186-E	626.00
16-inch South Bend Quick Change Gear and Standard Change Gear Floor Leg Lathes															
16 1/4	8	34	1 1/8	11 1/8	1 1/2	1 1/4	1	1875	92-C	540.00	41-C	480.00	2340	192-C	752.00
16 1/4	8	58	1 1/8	11 1/8	1 1/2	1 1/4	1	2055	92-E	580.00	41-E	520.00	2460	192-E	782.00
16 1/4	10	82	1 1/8	11 1/8	1 1/2	1 1/4	1	2195	92-G	624.00	41-G	564.00	2620	192-G	836.00

# Lathe Builders for 29 Years

## Users in 96 Countries



Fig. 135. Assembly line where from 25 to 50 Lathes of one size are assembled at one time.



Fig. 137. Headstocks, Tailstocks, Carriages, Gear Boxes, etc., in stock ready for assembly.



Fig. 138. Gear Cutting Department where all Gears for South Bend Lathes are made.



Fig. 139. Engineering Department of the South Bend Lathe Works.



Fig. 140. Factory Display and Demonstration Room showing a few of the 96 types and sizes of South Bend Lathes.

The South Bend Lathe Works was established in South Bend, Indiana in 1906 and has been continuously in operation under the same active management for twenty-nine years. Our entire plant with special equipment is devoted exclusively to the manufacture of South Bend Back-Geared, Screw Cutting Lathes. The Plant covers more than four acres. Floor space in the buildings totals more than 180,000 square feet. Modern machinery and tool equipment permit production by the most modern methods.

The broad principles on which the business is conducted are to give satisfaction and service to the users of South Bend Lathes. The guarantee printed below is the same guarantee under which more than 65,000 South Bend Lathes have been sold during the past twenty-nine years.

**WE GUARANTEE** the South Bend 9-inch "Workshop" Lathe to be accurate and mechanically perfect; to give entire satisfaction and the service you have a right to expect.

If you are interested in a lathe and are not familiar with the quality and workmanship of South Bend Lathes, we will, on request, ship any size or type of South Bend Lathe anywhere in the United States for use in your shop. If for any reason you are not satisfied, you may return it to us within thirty days and we will pay the return freight charges and refund your money.

South Bend Lathe Works

### South Bend Lathe Works

490 East Madison Street,  
South Bend, Ind., U. S. A.

CABLE ADDRESS: "TWINS," SOUTH BEND. ALL COMMERCIAL CODES USED.



Fig. 141.  
Factory of the South Bend  
Lathe Works, 180,000 sq. ft.  
floor space, 4 1/2 acres of land.