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BULLETIN No. 5-W
MARCH, 1935

The 9-inch
"WORKSHOP" LATHE

Is Recommended

For

Small Machine Shops

Electrical Shops

Auto Electric Shops

Manufacturing Plants

For Use in Groups on
Production of Small Parts

Repair Shops

Automotive Repair Shops

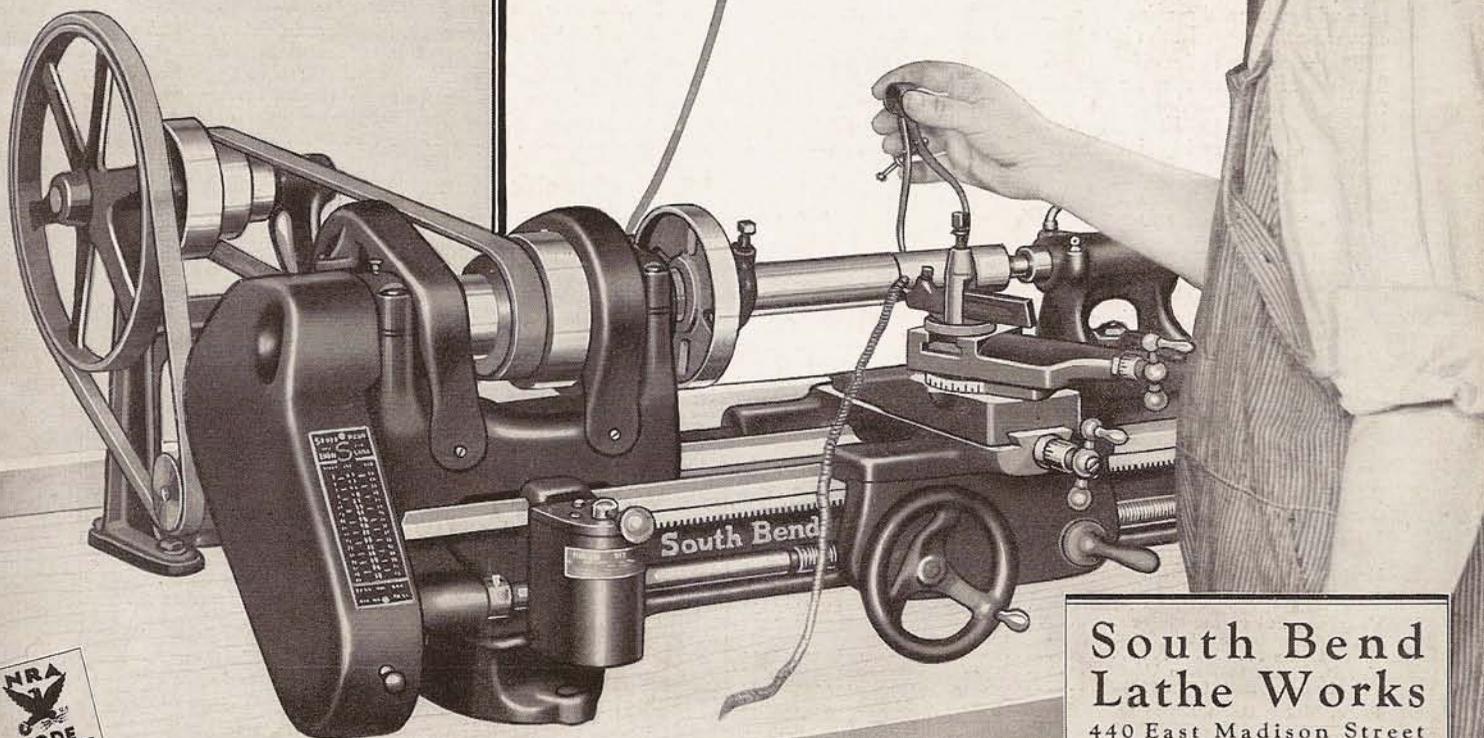
Home Work Shops

Laboratories

School Machine Shops

South Bend
9-inch No. 5 "Workshop"
Back-Geared, Screw Cutting
Bench Lathe

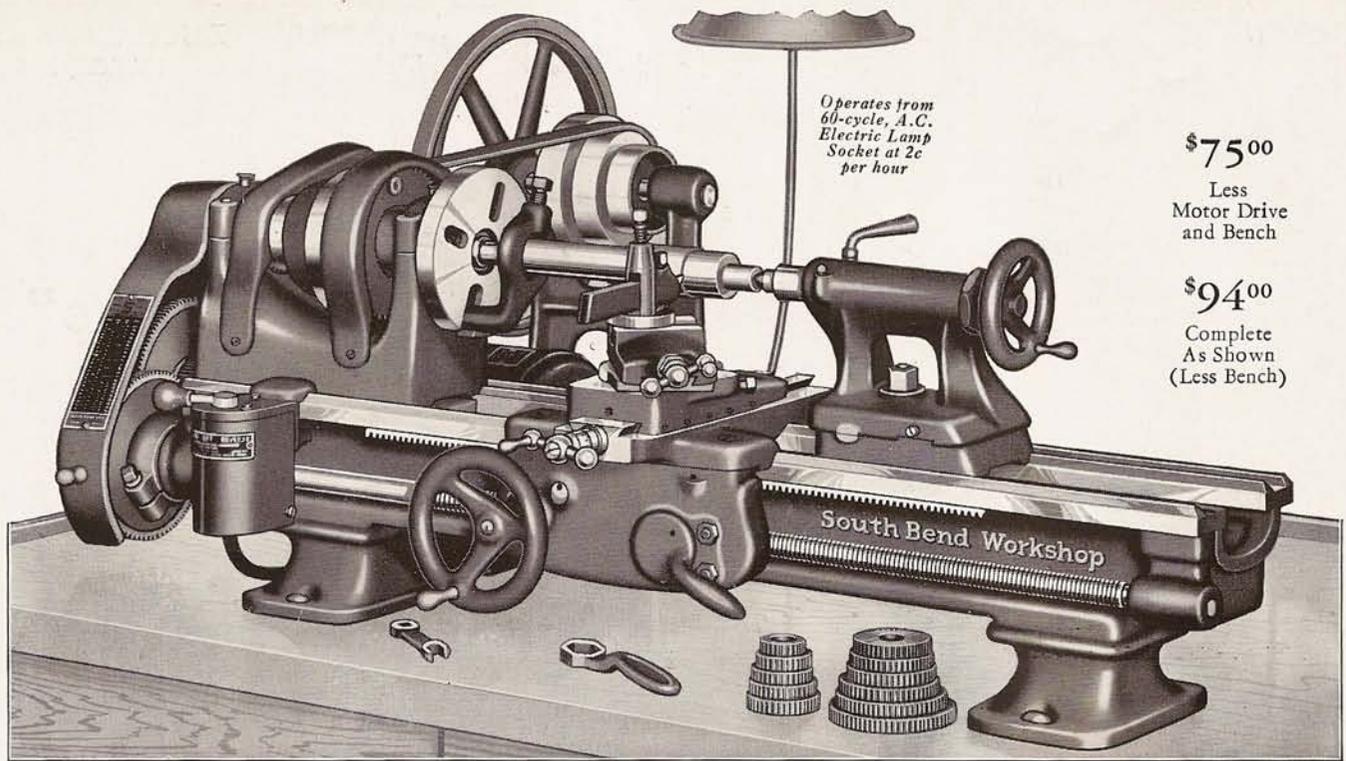
*Lathe Operates
From an
Electric Lamp
Socket*



South Bend
Lathe Works

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





9" x 3' No. 405-Y, "Workshop" South Bend Bench Lathe with Horizontal Motor Drive.

\$75.00
Less
Motor Drive
and Bench

\$94.00
Complete
As Shown
(Less Bench)

9-inch "Workshop" South Bend Horizontal Motor Driven Bench Lathe

A Back-Geared, Screw Cutting Lathe—Automatic Longitudinal Power Feed to Carriage

The 9-inch No. 5 "Workshop" South Bend Lathe is the smallest and lowest priced lathe in our line and represents the latest development of this Company, which has specialized for twenty-eight years in building back-geared, screw cutting lathes that are being used today in 97 countries.

A South Bend Lathe. The 9-inch "Workshop" Lathe carries the South Bend name and is a South Bend Lathe throughout in its high quality. This lathe is a good, substantial, accurate lathe, well constructed and guaranteed, and with the proper care will give good service for at least twenty-five years. No die cast metal is used. Lathe is painted a sea gull grey.

Features and Specifications. Brief features and specifications of this lathe are listed below and on page 4. For illustrations and detailed description of the principal units such as the back-geared headstock, headstock spindle, spindle bearings, compound rest, carriage, lathe bed, lead screw etc., see pages 6 to 9.

The Horizontal V-Belt Motor Drive as illustrated above and on page 3, is the most practical type of drive for the 9-inch "Workshop" Lathe in the average shop. The lathe, countershaft and motor may be mounted on a bench in any part of the shop and operated from an ordinary 60-cycle, A.C. electric lamp socket at a cost of about 2¢ per hour. For further details see next page.

Horizontal Motor Drive Equipment for operating the 9-inch "Workshop" Lathe is listed in the price tabulation at the bottom of the page. The entire equipment may be purchased with the lathe or any item may be omitted.

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

Lathe Features

- Back-geared headstock, six spindle speeds.
- Hollow steel spindle, $\frac{3}{8}$ " hole.
- Reverse gear for left-hand threads and feeds.
- Graduated compound rest swivels to any angle.
- Carriage lock for accurate facing and cutting-off.
- Tailstock set-over for taper turning.
- Micrometer graduations on feed screws.
- Automatic longitudinal power feeds to carriage.
- Precision lead screw for screw thread cutting.
- Half-nuts for screw thread cutting.
- Three V-ways and one flat-way on lathe bed.
- Adjustable bearings for spindle.
- Adjustable gibbs on cross feed and compound rest.

Lathe Specifications

- Swing over bed..... $9\frac{1}{8}$ in.
- Swing over carriage..... $6\frac{1}{8}$ in.
- Hole through spindle $\frac{3}{8}$ ". Collet capacity $\frac{1}{16}$ " to $\frac{1}{2}$ ".
- Standard screw thread cutting range..... 4 to 40 per in.
- Spindle speeds..... 39, 70, 124, 202, 353, 630 R.P.M.
- Width of cone pulley belt..... 1 in.
- Lathe tool shank $\frac{3}{8}$ " x $\frac{3}{4}$ ". Cutter Bits..... $\frac{1}{4}$ x $\frac{1}{4}$ in.
- Size of spindle nose..... $1\frac{1}{8}$ in. diam., 10 threads
- Head and tail spindle centers..... No. 2 Morse Taper
- Lead screw, Acme thread..... $\frac{3}{4}$ in. diam., 8 threads
- Tool cross slide travel..... $5\frac{1}{8}$ in.
- Angular lathe compound rest top..... $1\frac{1}{8}$ in.
- Tailstock spindle travel..... $1\frac{1}{8}$ in.

Net Factory Prices of 9-inch No. 5 "Workshop" South Bend Bench Lathe

	9" x 3' Acdug 405-Y	9" x 3 1/2' Acets 405-Z	9" x 4' Acfog 405-A	9" x 4 1/2' Abpib 405-R
9-inch No. 5 "Workshop" South Bend Bench Lathe with Graduated Compound Rest and Regular Equipment, but not Bench	\$75.00	\$87.00	\$99.00	\$116.00
Prices of Horizontal Motor Drive Equipment				
Horizontal Countershaft, Plain Type	5.00	5.00	5.00	5.00
1/4 H.P. Start-and-Stop Reversing Split-Phase Motor, 1725 R.P.M. (1-phase, 60-cycle, A.C. 110-volt)	7.75	7.75	7.75	7.75
V-Groove Pulley for Motor	.50	.50	.50	.50
Drum Reversing Switch (Style R-12) and Bracket for Attaching Switch to Lathe	4.00	4.00	4.00	4.00
V-Belt, Motor to Drive Unit	.75	.75	.75	.75
Flat Leather Belt (1" x 45")	1.00	1.00	1.00	1.00
Price, Motor Drive Lathe and Equipment, Complete	\$94.00	\$106.00	\$118.00	\$135.00
Distance Between Spindle Centers of Lathe	18 in.	24 in.	30 in.	36 in.
Shipping Weight, Lathe and Motor Drive Equipment	300 lbs.	325 lbs.	350 lbs.	400 lbs.

SCREW THREAD CUTTING CHART			
9-inch WORKSHOP LATHE			
THREADS TO CUT	SPINDLE GEAR	COMP. GEAR	LEAD, SCREW GEAR
4	24	2-1	24
5	24	2-1	30
6	24	2-1	36
7	24	2-1	42
8	24	2-1	48
9	24	2-1	54
10	24	2-1	60
11	24	2-1	66
1 1/2	24	2-1	69
12	24	2-1	72
13	24	2-1	78
14	24	2-1	84
16	24	2-1	96
18	24	2-1	108
20	24	2-1	120
22	24	1-2	33
24	24	1-2	36
26	24	1-2	39
28	24	1-2	42
30	24	1-2	45
32	24	1-2	48
36	24	1-2	54
40	24	1-2	60

SOUTH BEND LATHE WORKS
SOUTH BEND, INDIANA, U. S. A.

Metal Screw Thread Cutting Chart attached to 9" "Workshop" Lathe.

The Horizontal Motor Drive for 9-inch "Workshop" Lathe

A Quiet, Powerful and Efficient V-Belt Motor Drive

The illustrations below show two end views of the 9-inch No. 5 "Workshop" South Bend Lathe equipped with horizontal motor drive. This is the drive with which the lathe shown on page 2 is equipped. The horizontal countershaft, plain type, and the motor are mounted on the bench back of the lathe. The motor used is a $\frac{1}{4}$ H.P. Start-and-Stop type split-phase reversing motor and can be operated when connected

to any ordinary 60-cycle, A.C. electric lamp socket. A drum type reversing switch conveniently located on front of lathe, provides for starting, stopping and reversing the motor. Power is supplied from the motor to the horizontal countershaft by a V-belt and by a flat leather belt from the countershaft to the cone pulley of lathe. Further details on the operation of the drive, also information on motors and switches will be found below.

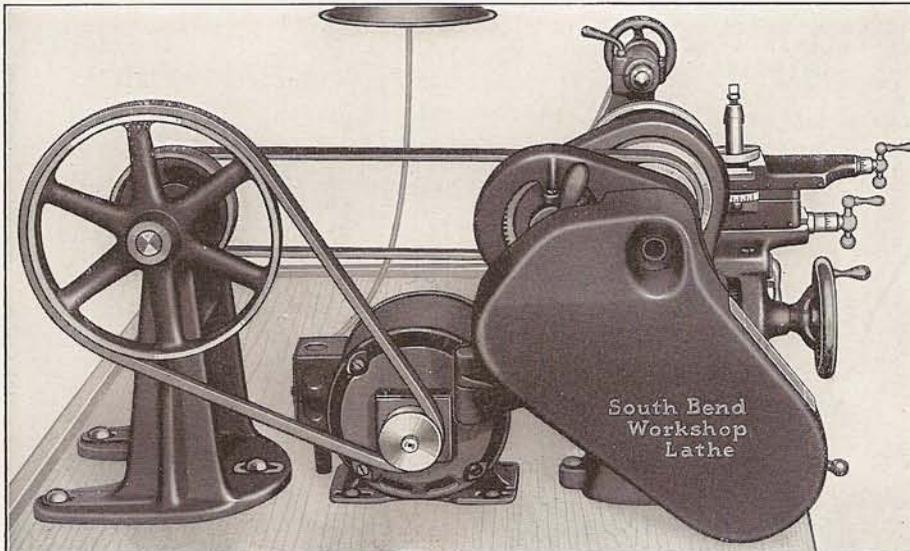


Fig. 1. View of 9-inch "Workshop" Lathe from Headstock End.

View of Lathe From Headstock End

The illustration at left, taken from the headstock end of the 9-inch "Workshop" Lathe, shows the compact arrangement of lathe, motor and horizontal countershaft. The Horizontal Motor Drive is one of the most popular types of drives for a bench lathe and is used in thousands of machine shops, repair shops, and home shops.

The most common method of arranging the Horizontal Countershaft Drive for the lathe is as shown in the illustration at left and below. However, if desired, both countershaft and motor may be mounted on the wall, post or ceiling instead of on the bench.

View of Lathe From Tailstock End

The illustration at right shows the sturdy construction of the various lathe units such as the bed, compound rest, cross slide, saddle, apron, etc. Note the three V-ways and one flat-way on the lathe bed which accurately align the headstock, carriage and tailstock. See also pages 6 and 7.

The horizontal countershaft base and motor base have slotted bolt holes which permit them to be adjusted to or from the lathe for any required tension of either the V-belt or the flat leather belt. See figure 1, above.

A Wiring Diagram Blue Print, showing how to connect the reversing motor and reversing switch to the electric lines for proper operation, is supplied with each 9-inch Motor Driven "Workshop" South Bend, Back-Geared, Screw Cutting Lathe.

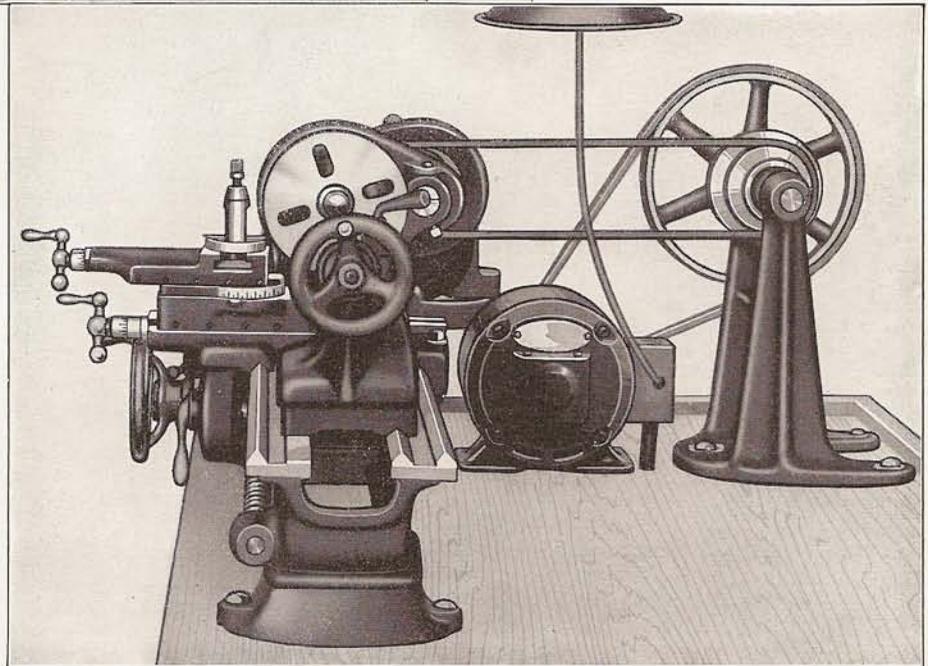


Fig. 2. View of 9-inch "Workshop" Motor Driven Lathe from Tailstock end.

Motors and Switches for the 9-inch "Workshop" Lathe

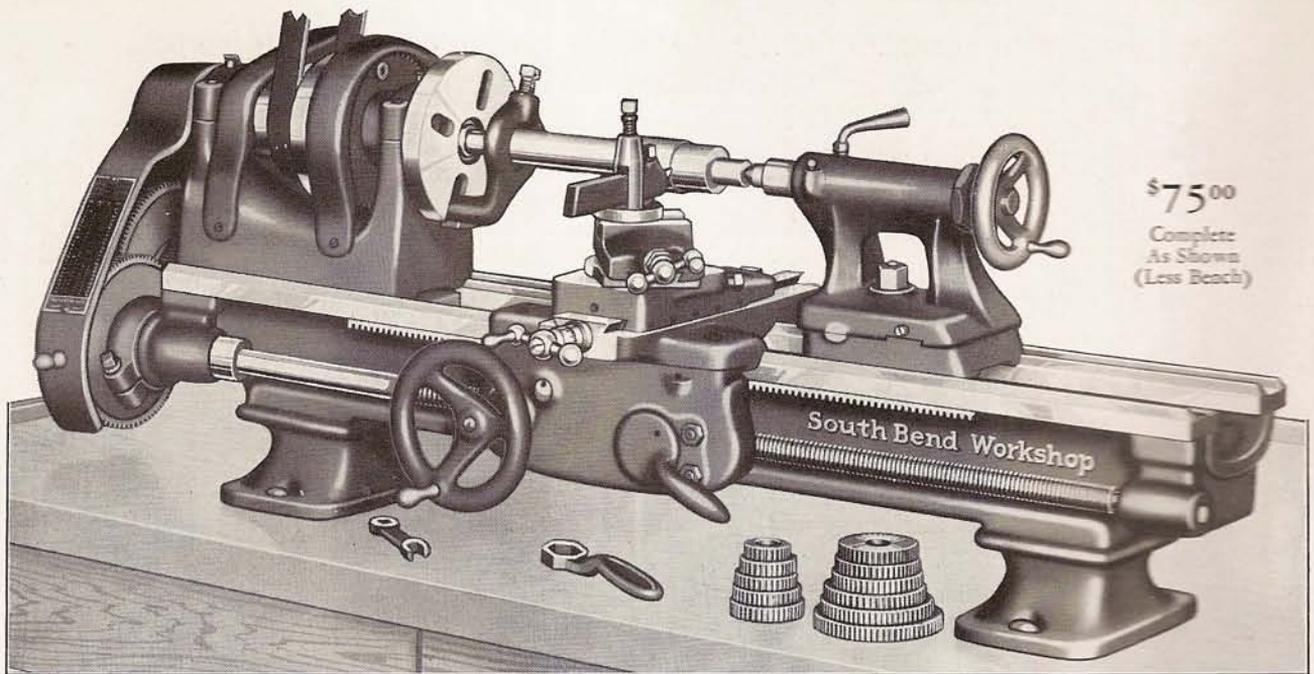
The motor which is supplied with the 9-inch Horizontal Motor Driven "Workshop" Lathe is a $\frac{1}{4}$ H.P. start-and-stop reversing split-phase motor, 1725 R.P.M. Operates from 1-phase, 60-cycle, A.C. 110-volt electric lamp socket. The drum type reversing switch supplied for the 9-inch "Workshop" Lathe provides for starting, stopping and reversing the lathe spindle. This is a practical six contact switch which will give excellent service over a long period of use.

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, at the following prices:

1-phase, 60-cycle, 110 or 220-volt A.C., No. 714	\$27.00
3-phase, 60-cycle, 110 or 220-volt A.C., No. 717	20.00
Direct Current Motor, 115 or 230-volt, No. 718	31.00
Drum Reversing Switch, No. 719	7.00
Bracket for mounting switch, No. 944	.75

Special Electric Motors for A.C. 2-phase and 3-phase of 25, 40 and 50-cycle, also D.C. of various voltages, can be supplied at prices slightly higher than those listed.



9" x 3' No. 5-YB, "Workshop" South Bend Bench Lathe with Regular Lathe Equipment but without Drive.

9-inch "Workshop" South Bend Countershaft Driven Bench Lathe

A Back-Geared, Screw Cutting Lathe—Automatic Longitudinal Power Feed to Carriage

The 9-inch No. 5 "Workshop" South Bend Back-Geared, Screw Cutting Lathe, illustrated above, is exactly the same as the "Workshop" Lathe on page 2, except that it is illustrated and priced without motor drive or countershaft. The description, features and specifications below apply to the "Workshop" Lathe on page 2 as well as to the lathe above.

Features and Specifications. A partial list of features and specifications of the 9-inch "Workshop" Lathe are listed below. For illustrations and detailed description of the back-geared headstock, headstock spindle, spindle bearings, tailstock, compound rest, carriage, apron, etc., see pages 6 to 9.

The Power and Capacity of the 9-inch "Workshop" Lathe are shown by illustrations and description on page 8.

Screw Thread Cutting. The screw thread cutting mechanism on the 9-inch "Workshop" Lathe is of the same general design as used on large size back-geared, screw cutting lathes. A set of independent change gears is provided which permits the operator to cut standard screw threads, right or left-hand, from 4 to 40 per inch, including 1 1/2 pipe thread, as indicated on the screw thread chart below. See page 9.

Automatic Power Feeds to Carriage. The equipment of the 9-inch No. 5 "Workshop" Lathe includes large turning gears, which provide for automatic longitudinal power feeds to carriage as low as .003 of an inch per revolution of spindle.

Types of Drives. The 9-inch "Workshop" Lathe illustrated above, can be operated by four different types of drives: (1) Horizontal Motor Drive, plain type, (2) Horizontal Motor Drive with belt tension adjustment, (3) Overhead Double Friction Countershaft Drive, and (4) Gasoline Engine Drive. The (1) Horizontal Motor Drive, plain type, as shown on page 3 is the most popular drive. For other drives see pages 5 and 13.

Practical for a Wide Variety of Work. The 9-inch No. 5 "Workshop" Lathe with any of the above methods of drive and in any of the various bed lengths will handle all classes of machine operations, and machine all kinds of metals, fibres, wood, bakelite, catalin, celluloid, etc. For illustrations showing jobs done on lathe see pages 8 to 15.

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

Attachments, Chucks and Tools which can be fitted to the 9-inch No. 5 "Workshop" South Bend Lathe are illustrated, described and priced on pages 15, 16 and 17.

Lathe Features

- Back-geared headstock, six spindle speeds.
- Hollow steel spindle, 3/4" hole.
- Reverse gear for left-hand threads and feeds.
- Graduated compound rest swivels to any angle.
- Tailstock set-over for taper turning.
- Carriage lock for accurate facing and cutting off.
- Micrometer graduations on feed screws.
- Automatic longitudinal power feeds to carriage.
- Half-nuts for screw thread cutting.
- Three V-ways and one flat-way on lathe bed.
- Adjustable bearings for spindle.
- Adjustable gibs on cross feed and compound rest.

Lathe Specifications

- Swing over bed..... 9 1/2 in.
- Swing over carriage..... 6 3/4 in.
- Hole through spindle 3/4". Collet capacity 1/4" to 1/2".
- Standard screw thread cutting range..... 4 to 40 per inch.
- Spindle speeds..... 39, 70, 124, 202, 353, 630 R.P.M.
- Width of cone pulley belt..... 1 in.
- Lathe tool shank 3/8" x 3/4". Cutter Bits..... 3/4 x 1/2 in.
- Size of spindle nose..... 1 1/2 in. diam., 10 threads
- Head and Tail spindle centers..... No. 2 Morse Taper
- Lead screw, Acme thread..... 3/4 in. diam., 8 threads
- Tool cross slide travel..... 5 1/2 in.
- Angular travel compound rest top..... 1 1/2 in.

Prices of 9-inch No. 5 "Workshop" Lathe with Regular Equipment, But Without Drive*

Swing Over Bed Inches	Length of Bed Feet	Distance Between Centers Inches	Hole Thru Spindle Inches	Swing Over Carriage Inches	Width Cone Pulley Belt Inches	Power Required H.P.	Approx. Ship. Wt. Crated Pounds	Without Countershaft		
								Cat. No.	Code Word	Net Factory Price
9 1/4	3	18	3/4	6 1/2	1	1/4	240	5-YB	Aftik	\$ 75.00
9 1/2	3 1/2	24	3/4	6 1/2	1	1/4	265	5-ZB	Aftol	87.00
9 3/4	4	30	3/4	6 1/2	1	1/4	290	5-AB	Aftum	99.00
9 3/4	4 1/2	36	3/4	6 1/2	1	1/4	340	5-RB	Agals	116.00

*Prices extra for drive equipments for above lathe will be found on pages 2, 3, 5 and 13.

SCREW THREAD CUTTING CHART

9-inch WORKSHOP LATHE

THREADS TO CUT	SPINDLE GEAR	COMP. GEAR	HEAD SCREW GEAR
4	24	2-1	24
5	24	2-1	30
6	24	2-1	36
7	24	2-1	42
8	24	2-1	48
9	24	2-1	54
10	24	—	60
11	24	—	66
1 1/2	24	2-1	39
12	24	—	36
13	24	—	39
14	24	—	42
16	24	—	48
18	24	—	54
20	24	—	60
22	24	—	33
24	24	—	36
26	24	—	39
28	24	—	42
30	24	—	45
32	24	—	48
36	24	—	54
40	24	—	60

SOUTH BEND LATHE WORKS
SOUTH BEND, INDIANA, U. S. A.

Metal Screw Thread Chart Attached to 9" "Workshop" Lathe.

Horizontal Countershaft with Belt Tension Adjustment

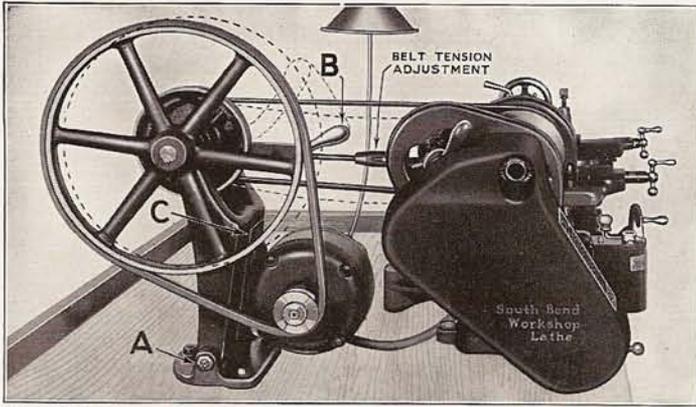


Fig. 3. The 9-inch No. 5 "Workshop" South Bend Back-Geared, Screw Cutting Lathe Equipped with Horizontal Motor Drive with Belt Tension Adjustment.

The Horizontal Countershaft with belt tension adjustment, as illustrated at left, is an excellent drive for the 9-inch "Workshop" Lathe. This countershaft is similar to the horizontal countershaft, plain type, illustrated on pages 2 and 3, but has these added features: (A) Belt tension adjustment, (B) Belt release lever for easy shifting of the cone pulley belt, (C) Motor is attached to the countershaft frame instead of on the bench.

The Belt Release Lever "B" permits the countershaft to tilt forward on pivot "A" which relieves the tension of the cone pulley belt and permits it to be easily shifted from one step of the cone pulley to the other. The belt tension arrangement is provided with a screw adjustment for obtaining any desired tension of the flat leather belt. The motor base has slotted bolt holes which permit the bolts to be loosened and the position of the motor changed to obtain any desired tension of the V-belt.

Cat. No. 238. Horizontal Countershaft, (with Belt Tension Adjustment) for 9-inch "Workshop" Lathe. Code "Aghap".....\$10.00

2-Step Pulleys for Countershaft & Motor

Provide 12 Speeds, 42 to 1225 R.P.M., for Metal and Wood

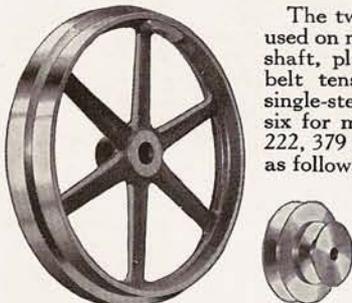


Fig. 4. Two-Step Pulleys for Countershaft and Motor.

The two-step pulleys, as illustrated at left, when used on motor and countershaft (horizontal countershaft, plain type, or horizontal countershaft with belt tension adjustment) instead of the regular single-step pulleys, provide twelve spindle speeds, six for machining metals as follows: 42, 73, 127, 222, 379 and 662 R.P.M., and six for wood working as follows: 79, 135, 236, 410, 702 and 1225 R.P.M.

For metal working speeds the V-belt is placed on the small step of the motor pulley and the large step of the countershaft pulley. For wood working speeds the V-belt is placed on the large step of the motor pulley and on the small step of the countershaft pulley, as shown in Fig. 56, page 13.

Prices of 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
Two-Step Drive Pulley for Countershaft	426	Aghun	\$3.00	427	Agdin	\$4.00
Two-Step V-Groove Pulley for Motor..	158	Ageup	2.00	159	Agfp	2.50



Fig. 5. 9-inch "Workshop" Horizontal Motor Driven Lathe Equipped with Belt Guard.

Belt Guard for Motor Drive

Schools can be supplied with belt guard for covering the large pulley of drive unit, V-belt and motor pulley, as shown in the illustration above. It can be used on the 9-inch "Workshop" Lathe with horizontal countershaft, plain type, as shown on pages 2 and 3; and on the lathe with horizontal countershaft with belt tension adjustment, as shown above.

No. 214. Belt Guard. Code "Alnac".....\$6.00

A guard for covering the flat leather belt between drive unit and lathe spindle cone pulley can be supplied at an additional cost of \$7.00.

Double Friction Countershaft Drive

The overhead double friction countershaft drive, as shown in the illustration below, is a practical type of drive for operating the 9-inch "Workshop" Lathe from a lineshaft. The double friction countershaft drive can be mounted on the ceiling, as shown below, or on the side wall.

For shops that already have a lineshaft, it is one of the most economical types of drives to install. For shops without lineshaft, planning on adding other equipment later on, it is the logical drive because it permits all shop equipment to be operated from a lineshaft.

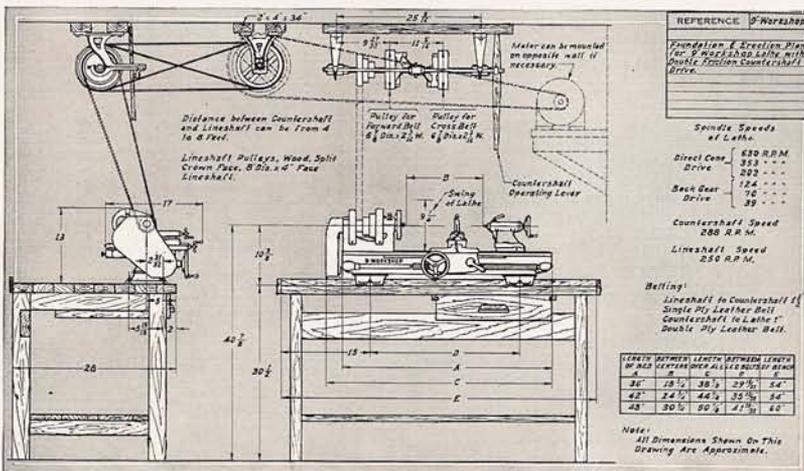
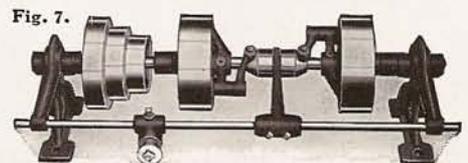


Fig. 6. An Installation Plan Blue Print, Showing How to Install the 9-inch "Workshop" Lathe and Countershaft, is Supplied with the Double Friction Countershaft.

The Double Friction Countershaft has two friction clutch pulleys which permit the lathe to be operated both forward and in reverse, which is so necessary on a screw cutting lathe.

For Wood Working the friction clutch pulley, ordinarily used for reverse, may be driven from a large size pulley on the lineshaft to provide the required high speeds.

A Foundation and Erection Plan Blue Print, size 12" x 18", as illustrated at left, giving complete information for installing the Lathe; is supplied with the countershaft.



Cat. No. 289. Double Friction Countershaft for 9-inch "Workshop" Lathe. "Afget" \$10.00.

Features of the 9-inch "Workshop" South Bend Lathe

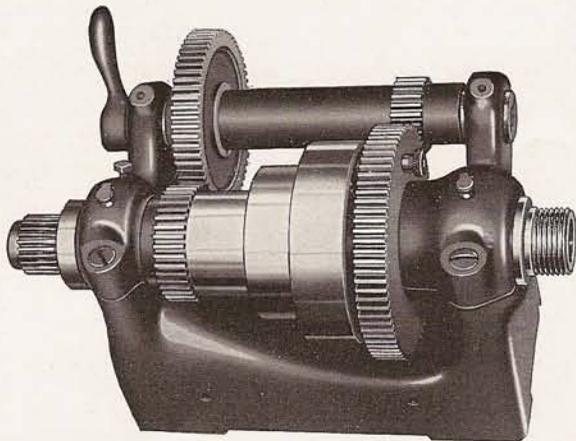
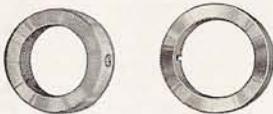


Fig. 8. Headstock of 9-inch "Workshop" Lathe with Guards Removed to Show Back Gears.



Fig. 9. Above—Headstock Spindle of the 9-inch "Workshop" Lathe.

Fig. 10. Below—Take-up Nut, and Hardened Steel Thrust Collar.



The headstock spindle is made of special quality spindle steel with all bearing surfaces accurately ground to master gauges. The spindle nose is $1\frac{3}{8}$ " diameter and has ten U.S.F. threads cut to a precision gauge, permitting the interchangeable use of chucks and face plates. The tapered hole in spindle conforms to No. 3 Morse Taper and is fitted with a reducing sleeve which takes a No. 2 Morse Taper spindle center.

The Tailstock

The tailstock of the 9" "Workshop" Lathe has long bearing on the inside V-way and flat-way of the lathe bed. The tailstock may be set-over $\frac{5}{8}$ " for taper turning; has improved spindle lock, and No. 2 Morse Taper self-ejecting center, made of tool steel, hardened and ground.

The tailstock spindle is made of alloy steel, finish ground and lapped to fit the tailstock barrel. The spindle has a travel of $1\frac{7}{8}$ " and is operated by Acme thread screw and convenient hand wheel. The design of the tailstock top permits the compound rest to swivel parallel with the bed over the tailstock base.

Extra for lathe with graduated tailstock spindle, \$1.00.



Fig. 11.

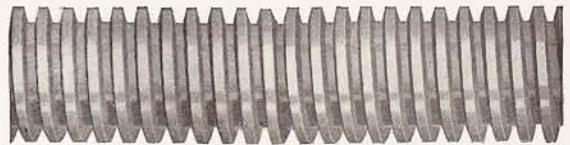


Fig. 12. A Section of Lead Screw, Actual Diameter, Used on 9-inch "Workshop" Lathe. $\frac{3}{4}$ " diameter, 8 pitch.

Precision Lead Screw

The lead screw used on the 9-inch "Workshop" Lathe is made of special quality steel, is $\frac{3}{4}$ " in diameter and has eight Acme standard threads per inch, cut with precision-accuracy on a special machine equipped with a Pratt and Whitney master lead screw. The lead screw is tested for accuracy of lead, form of thread and pitch diameter and is guaranteed for cutting the most accurate screw threads.

Apron Used on the 9-inch "Workshop" Lathe

An interior view of the apron used on the 9-inch "Workshop" Lathe is shown at right. The apron is strong, powerful and of simple construction.

Half-Nuts for Screw Thread Cutting are provided in the apron of the 9-inch "Workshop" Lathe. The half-nuts are made of cast iron, bored, tapped with precision taps, and tested in a master gauge, and are guaranteed for cutting precision screw threads. The half-nuts are engaged with the lead screw by means of a cam mechanism controlled by a lever on front of apron. The half-nuts are also used for obtaining automatic longitudinal power feeds.

Hand Feed to the Carriage, either right or left, is provided by means of a hand wheel on the front of the apron which drives a steel pinion which meshes with the rack on the lathe bed.

An Improved Oiling System lubricates the half-nuts, lead screw and apron gearing.

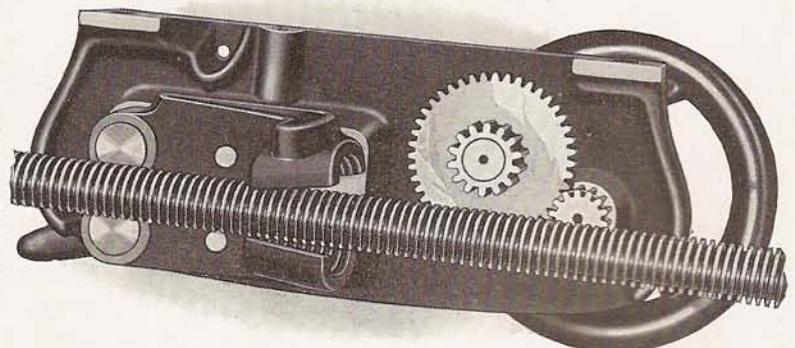


Fig. 13. Interior View of the Apron Used on the 9-inch "Workshop" Lathe.

Features of the 9-inch "Workshop" South Bend Lathe

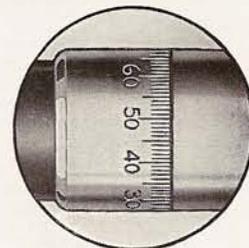
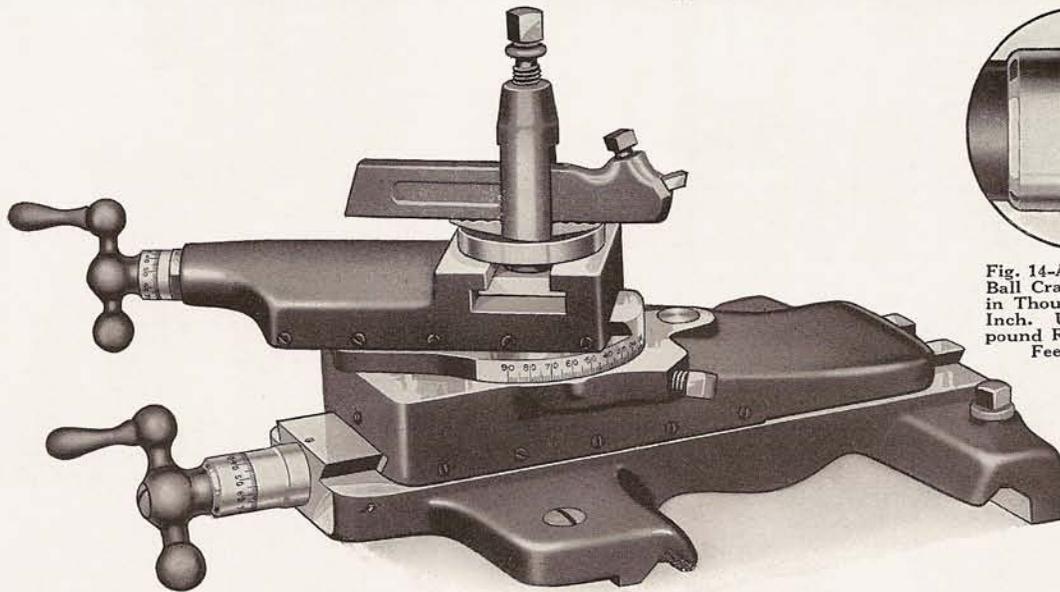


Fig. 14-A. Close-up of Ball Crank Graduated in Thousandths of an Inch. Used on Compound Rest and Cross Feed Screws.

Fig. 14. Saddle and Compound Rest Used on the 9-inch "Workshop" Lathe. No Die-cast Metal is Used in the Compound Rest, or Any Part of the 9-inch "Workshop" Lathe.

Saddle and Compound Rest

The Saddle of the 9-inch "Workshop" Lathe has long, accurately fitted bearings on the front and rear V-ways of the lathe bed. A deep, wide bridge provides rigid support for the compound tool rest. A clamping device is provided for locking the carriage to the bed for facing and cutting-off operations.

The Compound Rest of the 9-inch "Workshop" Lathe is graduated 180° and can be swivelled and fastened at any desired angle for machining and for turning and boring short tapers. Has an angular travel of 1/8". A large T-slot is provided for the tool post and for holding boring bars, grinder, etc.

Feed Screws. The illustration above shows the advantage of the two feed screws—the compound rest feed screw for angular feeds and the cross feed screw of the saddle for cross feeds. In

combination these two feed screws permit the cutting tool to be fed to the work at any angle for straight or taper machining.

Micrometer Graduated Ball Cranks. The ball cranks on both the compound rest feed screw and the cross feed screw of the saddle have micrometer graduations reading in thousandths of an inch for adjusting the depth of the cut when turning and boring. The graduations are accurately cut and easy to read.

Adjustable Gibs. The cross slide of the saddle and compound rest top are of dovetailed construction and are fitted with adjustable gibs for delicate adjustment, and for taking up wear.

The Tool Post, ring and wedge, illustrated above, are made of drop forged steel. Tool post screw is made of tool steel, hardened.



9" x 3' "Workshop" Lathe Bed

The illustration above shows the 3-ft. bed of a 9-inch "Workshop" Lathe mounted on bench legs. The net weight of this bed with bench legs is 90 lbs., which gives it strength, rigidity and stiffness. The 3 1/2-ft. bed is not an extension of the 3-ft. bed, but is made from a separate pattern, which casts a heavier bed equipped with one more box brace than the 9" x 3' bed. Likewise the 9" x 4' and 9" x 4 1/2' lathe beds are made from separate patterns, are heavier, stiffer and have additional box braces. Note box brace in end view of bed, Fig. 15-A.

Each size lathe bed is fitted with a steel rack, with machine cut teeth, which provides for hand feed to carriage.

Bed casting and all other castings of the 9-inch "Workshop" Lathe are made of 50% steel and 50% grey iron, which gives them strength, stiffness and unusual wearing qualities. Each lathe bed is first rough planed, set aside and thoroughly seasoned, and then finished planed. This prevents warping and twisting of the bed and insures accuracy.

Fig. 15. Lathe Bed for 9"x3' "Workshop" Lathe.

Three V-Ways and One Flat-Way.

The 9-inch "Workshop" Lathe beds are of standard design such as are used on large size lathes, and have three V-ways and one flat-way on the bed, accurately planed and finished. The carriage slides on the two outer V-ways of the bed, while the inner V-way and flat-way on the bed align the headstock and tailstock.

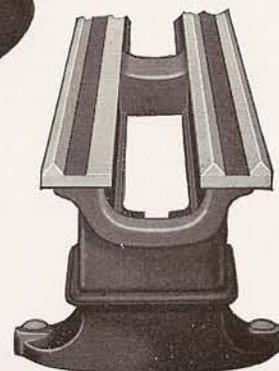


Fig. 15-A. End View of 9-inch "Workshop" Lathe Bed.

9-inch "Workshop" Lathe Has Power for Heavy Cuts

The 9-inch No. 5 "Workshop" South Bend Back-Geared, Screw Cutting Lathe has the power to reduce the diameter of a steel shaft $\frac{1}{4}$ " in one cut. The back-geared headstock provides great power and the required spindle speeds for taking heavy cuts or machining large diameters. The weight of the lathe, plus large bearing surfaces and generous proportions, insure unusual strength and rigidity.

The carriage is driven by automatic longitudinal power feed which permits the lathe to take a continuous heavy cut over the entire length of the work. The illustration at right shows a close-up of a heavy chip being taken on a bar of steel. For heavy cuts the back-gears of the lathe are engaged and the belt is placed on either the first or second step of the spindle cone pulley. With the belt on the second step of the cone pulley a spindle speed of 70 R.P.M. is obtained, which permits the lathe to take a cut $\frac{1}{8}$ " in depth which will reduce the diameter of a steel shaft $\frac{1}{4}$ " in one cut.

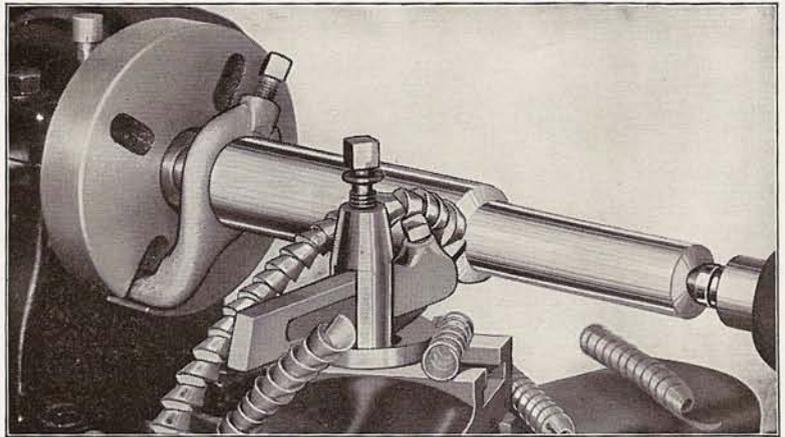


Fig. 16. The 9-inch "Workshop" South Bend Bench Lathe will reduce the Diameter of a Steel Shaft $\frac{1}{4}$ " in One Cut.

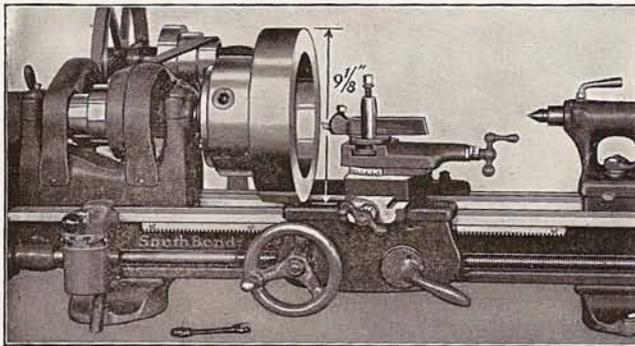


Fig. 17. The Chucking Capacity of the 9-inch No. 5 "Workshop" Lathe is $9\frac{1}{8}$ " in diameter, as shown by the illustration above.

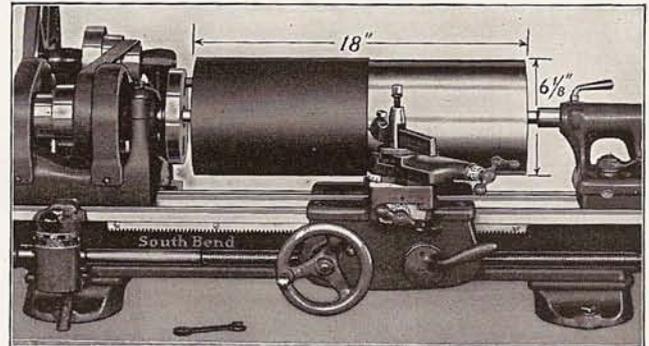


Fig. 18. The 9" x 3" "Workshop" Lathe Will Handle a Steel Roll $6\frac{1}{8}$ " in Diameter and 18" Long, between Centers. See table below.

Capacity of "Workshop" 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 9-inch "Workshop" South Bend Lathe will take work up to $9\frac{1}{8}$ " over the bed, and up to $6\frac{1}{8}$ " over the carriage. The "Workshop" Lathe with 3-ft. bed will take work up to 18-inches long, between centers; the $3\frac{1}{2}$ -ft. bed length will take work up to 24-inches long; and the 4-ft. bed length will take work up to 30-inches long. The $4\frac{1}{2}$ -ft. bed length will take work up to 36-inches long.

The 9-inch "Workshop" Lathe has the capacity for all classes of small work in the small machine shop, electrical shop, auto electric shop, manufacturing plant, repair shop, auto repair shop, home shop, laboratory, and school shop.

CAPACITY OF 9-inch "WORKSHOP" LATHE				
Length of Bed Feet	Distance Between Centers Inches	Swing Over Bed Inches	Swing Over Carriage Inches	Shipping Weight Lathe Crated
3'	18"	$9\frac{1}{8}$ "	$6\frac{1}{8}$ "	300 lbs.
$3\frac{1}{2}$ '	24"	$9\frac{1}{8}$ "	$6\frac{1}{8}$ "	325 lbs.
4'	30"	$9\frac{1}{8}$ "	$6\frac{1}{8}$ "	350 lbs.
$4\frac{1}{2}$ '	36"	$9\frac{1}{8}$ "	$6\frac{1}{8}$ "	400 lbs.

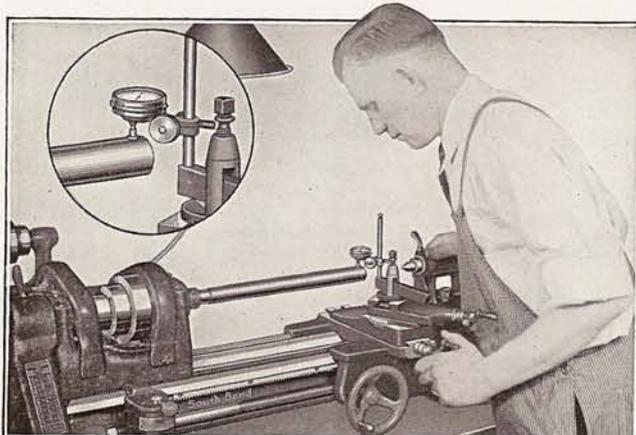


Fig. 19. Testing Alignment of Headstock Spindle of 9-inch "Workshop" Lathe with Test Dial Indicator.

Testing and Accuracy

Before the 9-inch "Workshop" Lathe leaves our factory it must undergo several tests for accuracy. The illustration at left shows an inspector testing the alignment of the headstock spindle of the 9-inch "Workshop" Lathe. The steel bar is hardened and accurately ground to fit the taper hole in spindle. The dial test indicator is held in the tool post with the button resting on the end of the test bar, as shown at left. In this test the maximum run-out allowed at the outer end of the test bar is one-thousandth. Alignment of test bar, with bed in both horizontal and vertical plane, is held within one-thousandth.

The 9-inch "Workshop" South Bend Back-Geared, Screw Cutting Lathe is a carefully and accurately built lathe, and is capable of doing fine work. Throughout the process of manufacture high standards of accuracy are maintained. The most accurate measuring instruments, test bars, master templets, etc., are used constantly to insure accuracy and interchangeability. Special equipment permits building the lathe units in large quantities which insures accuracy, increased production and lower costs.

Screw Thread Cutting on the 9-inch "Workshop" Lathe

SCREW THREAD CUTTING CHART			
9-inch WORKSHOP LATHE			
THREADS TO CUT	SPINDLE GEAR	COMP. GEAR	LEAD SCREW GEAR
4	24	2-1	24
5	24	2-1	30
6	24	2-1	36
7	24	2-1	42
8	24	2-1	48
9	24	2-1	54
10	24	2-1	60
11	24	2-1	66
11½	24	2-1	69
12	24	2-1	72
13	24	2-1	78
14	24	2-1	84
16	24	2-1	96
18	24	2-1	108
20	24	2-1	120
22	24	1-2	33
24	24	1-2	36
26	24	1-2	39
28	24	1-2	42
30	24	1-2	45
32	24	1-2	48
36	24	1-2	54
40	24	1-2	60

SOUTH BEND LATHE WORKS
SOUTH BEND, INDIANA, U. S. A.

Standard Screw Threads from 4 to 40 per inch, right or left-hand, including 11½ pipe thread, as listed on the screw thread cutting chart at left, can be cut with the greatest precision on the 9-inch "Workshop" Lathe, in the following standards: National Coarse (U.S.S.), National Fine (S.A.E.), Sharp "V," Whitworth, Acme, Square, single or multiple.

Change Gears and Large Turning Gears are supplied with the lathe for cutting screw threads and for automatic longitudinal power feeds to carriage as low as .003 of an inch per revolution of lathe spindle. Change gears are made of cast iron and have accurately machine-cut and tested teeth. No die-cast metal gears are used in any part of the lathe.



Fig. 21. Change Gears.

Fig. 20. Metal Screw Thread Cutting Chart. Attached to Lathe.

Fine Screw Threads 42 to 80 per inch (42, 44, 45, 48, 52, 54, 56, 60, 64, 72, 80) can be cut in addition to the threads on chart at left, by using the change gears supplied with the lathe and two special compound gears.

Cat. No. 119. Code "Atmet" . . . \$5.00
Metric Screw Threads. A transposing gear attachment for cutting screw threads in millimeter pitch from .5 to 8 m/m can be supplied for the 9-inch "Workshop" Lathe at extra cost.
Cat. No. 1434. Code "Tilog" . . . \$25.00



Fig. 22. Cutting a Screw Thread on the 9-inch "Workshop" Lathe.

Screw Thread Cutting and Automatic Feed of 9" "Workshop" Lathe

The screw thread cutting mechanism of the 9-inch "Workshop" South Bend Lathe is of the same general design as used on the large size back-gearing, screw cutting lathes.

The illustrations below show the various gear arrangements for cutting right and left-hand screw threads and for right and left-hand automatic longitudinal power feeds to carriage.

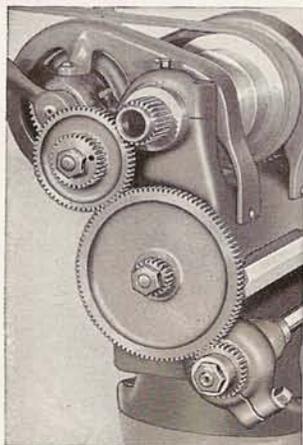


Fig. 23. Gear Arrangement for Cutting Right-Hand Screw Threads.

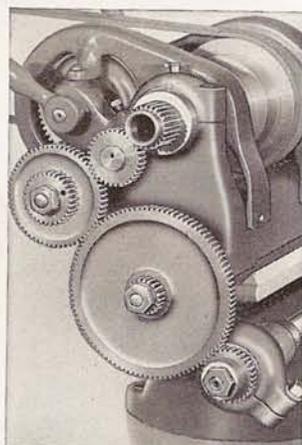


Fig. 24. Gear Arrangement for Cutting Left-Hand Screw Threads.

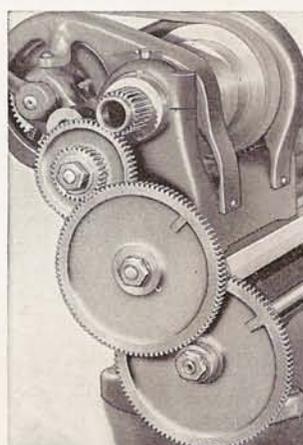


Fig. 25. Gear Arrangement for Right Hand Automatic Longitudinal Power Feeds to Carriage.

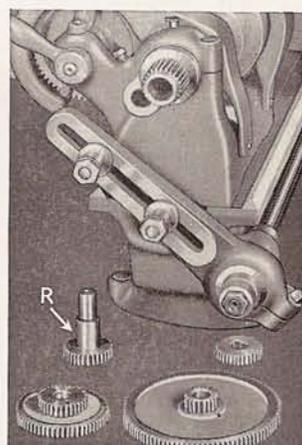


Fig. 26. Gears Removed to Show Bracket Which Holds Gears for Threads and Feeds.

Arranging Gears for Screw Thread Cutting

The illustration, Fig. 23, above shows the 9-inch "Workshop" Lathe with gears arranged for cutting a right-hand screw thread. Fig. 24 shows the gears arranged for cutting a left-hand screw thread. The gear arrangement in Fig. 24 is exactly the same as in Fig. 23, except that the reverse gear, as described at right, has been included in the gear set-up.

A metal screw thread cutting chart, as shown at the top of page, is attached to each 9-inch "Workshop" South Bend Lathe and shows the correct gears to be used and the method of arranging them for cutting the various screw threads. All gear changes may be made quickly and easily.

Automatic Longitudinal Power Feeds

The illustration, Fig. 25, above shows the 9-inch "Workshop" Lathe geared for automatic longitudinal power feeds to carriage. Left-hand automatic longitudinal power feeds are obtained by using the reverse gear as shown in Fig. 24.

Reverse Gear for Left-Hand Threads and Feeds

The reverse gear, shown by letter "R" in illustration Fig. 26; is used when cutting left-hand screw threads and for left-hand automatic longitudinal power feeds. The reverse gear is attached to and revolves on a stud, the shank of which fits into the socket shown at lower left of spindle in Fig. 26. See also Fig. 24.

At Right—
Samples of screw thread cutting done on the 9-inch "Workshop" Lathe.



Fig. 27. Special Screw Showing Various Threads Cut on 9-inch "Workshop" Lathe.



Fig. 28. Master Tap Cut on 9-inch "Workshop" Lathe.

Machine Jobs Handled on the 9-inch "Workshop" Lathe

The 9-inch No. 5 "Workshop" South Bend Back-Geared, Screw Cutting Lathe is practical for light production work in the manufacturing plant and for general repair and machine work in the machine shop and repair shop.

The Best Shop Practice is to manufacture small parts on a small lathe tooled to take care of the job, because of the speed and accuracy with which the operations can be performed. Two or more small lathes are frequently operated on quantity production by one operator.

Production Engineers in large manufacturing plants making products such as: Sewing machines, typewriters, electrical parts, etc., are using small lathes in the manufacture of accurate interchangeable metal parts.

All Kinds of Metals Can Be Machined in the "Workshop" Lathe such as: cast iron, steel, cast steel, steel forgings, wrought iron, brass, bronze, copper, aluminum, babbitt and the various alloy steels. The lathe is also practical for working wood, hard rubber, catalin, bakelite, celluloid, fibres and other materials.

Attachments for Special Work. The "Workshop" Lathe may be fitted with a number of practical attachments such as draw-in collet chuck, milling attachment, electric grinder, etc. See pages 15, 16 and 17. Equipped with these attachments the lathe will handle hundreds of special jobs which otherwise would require expensive single purpose machines.

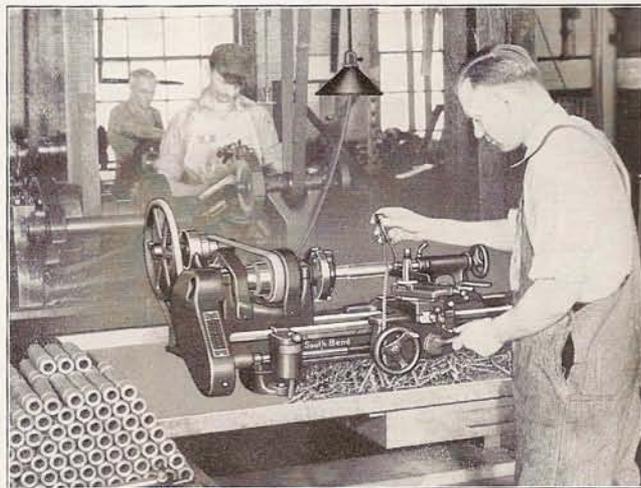


Fig. 29. The 9-inch "Workshop" South Bend Back-Geared, Screw Cutting Lathe Used for Production Work in a Manufacturing Plant.

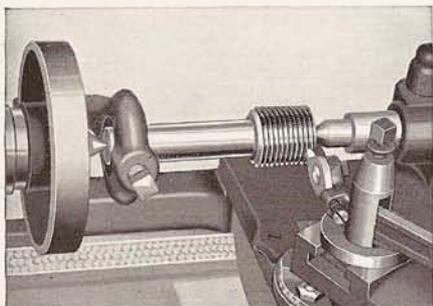


Fig. 30. Cutting a Screw Thread on a Gauge in the 9-inch "Workshop" Lathe.

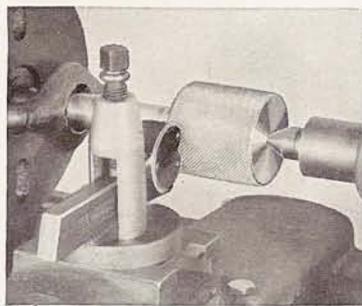


Fig. 31. Knurling a Large Handle Mounted Between Centers in the Lathe.



Fig. 32. Lathe is Practical for Filing and Polishing Bushings, Shafts, Parts, etc.

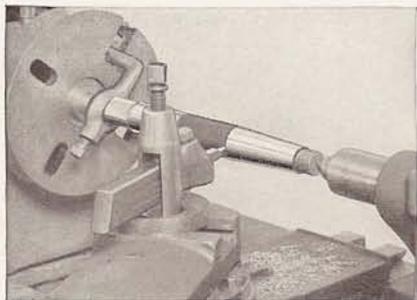


Fig. 33. Turning a Taper on a Shaft in the 9-inch "Workshop" Lathe.

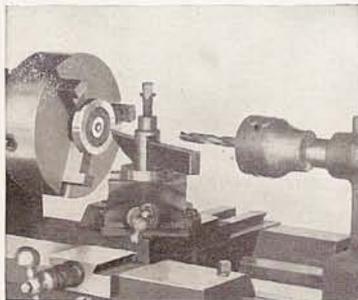


Fig. 34. Making a Replacement Part for an Orphan Car in the Auto Shop.

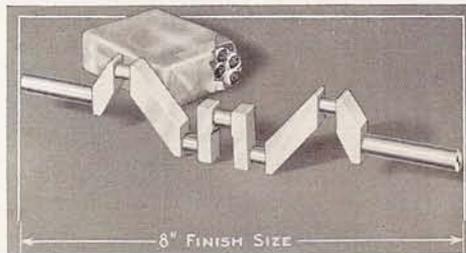


Fig. 35. Crankshaft of a Small Marine Motor. Cut from a Solid Bar and Machined on a 9-inch South Bend Lathe. Actual Size of Crankshaft, 8 Inches Long.

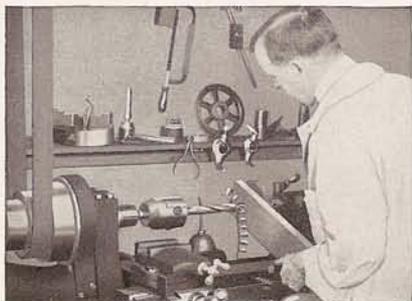


Fig. 36. Lathe Used as Drill Press for Drilling Hole in Flat Piece of Work.

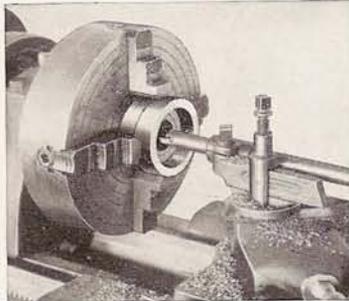


Fig. 37. Boring a Steel Collar Held in a 4-Jaw Chuck.

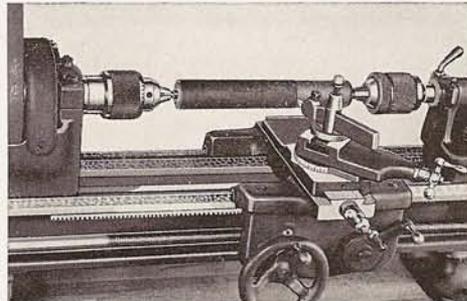


Fig. 38. Truing a Typewriter Platen. Lathe Trues all types of rollers.

Auto Service Jobs Done on the 9-inch "Workshop" Lathe

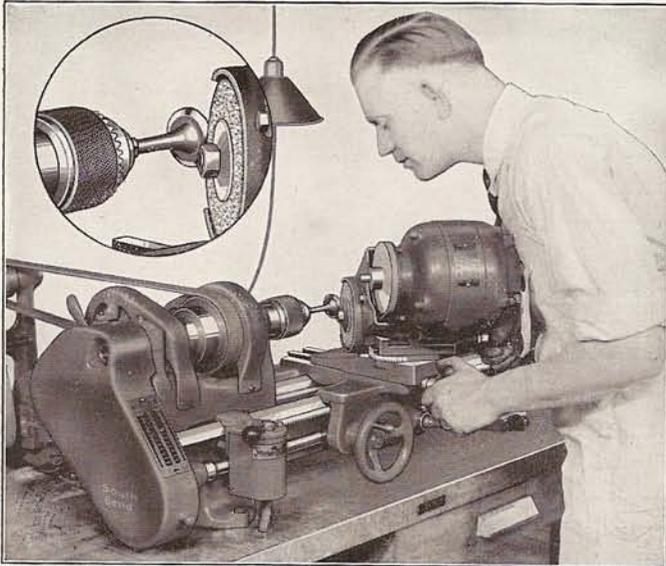


Fig. 39. Grinding a Valve in the 9-inch "Workshop" South Bend Lathe Using Electric Grinder and Precision Valve Chuck.

The wide variety of automotive service work and general machine work which the 9-inch "Workshop" South Bend Lathe will handle makes it the practical tool for the Auto Service Shop. The price of this lathe, plus a few attachments for handling special auto service jobs, is less than one-fourth the total price of single purpose machines required to do the same work. No other shop tool is the equal of the lathe in versatility, ease and economy of operation, wide range and accuracy.

A Few of the Profitable Auto Service Jobs which can be handled on the "Workshop" Lathe include: Truing armature commutators, undercutting mica insulation, making bushings, finishing pistons, grinding valves, sharpening reamers of all kinds, and many other operations of a general nature, such as cutting screw threads, turning, boring, drilling, etc.

Other Classes of Work. The illustrations below show a few of the auto service jobs which can be handled on the "Workshop" Lathe. In addition, this lathe will do all the jobs illustrated in this bulletin, and hundreds of other jobs.

Automotive Service Manuals. We can supply to "Workshop" Lathe owners a complete set of instruction manuals showing step by step how to service each of the automotive service jobs mentioned above in the modern and up-to-date way. These manuals were compiled by engineers in our automotive research laboratory, which we have maintained in our factory for the last ten years.

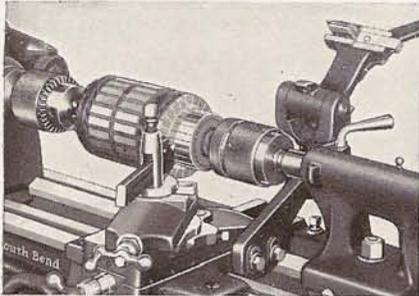


Fig. 40. Truing an Armature Commutator and Undercutting Mica in One Set-up. Mica Undercutter, as shown, No. 673, \$12.50

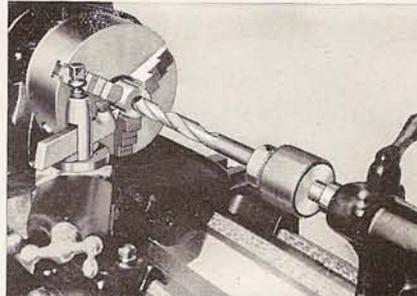


Fig. 41. Drilling Hole in Bushing. Drilling of all Kinds can be Done on the Lathe.

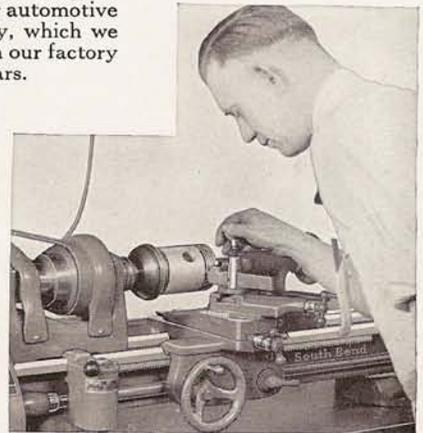


Fig. 42. Turning Ring Lands to Size on a Semi-Machined Piston.

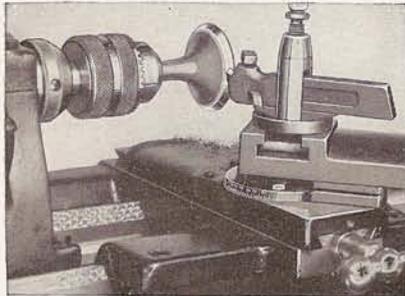


Fig. 43. All Intake Valves Can be Quickly Trued with an Ordinary Turning Tool.

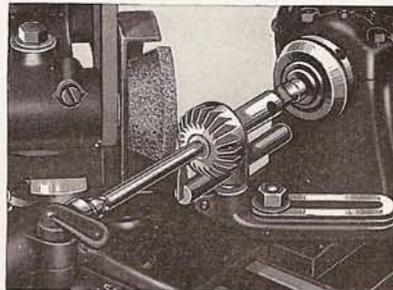


Fig. 44. Sharpening a Valve Seat Reamer Using Holding Fixture with Spring Stop. Holding Fixture, as shown, Cat. No. 19-W. \$6.00

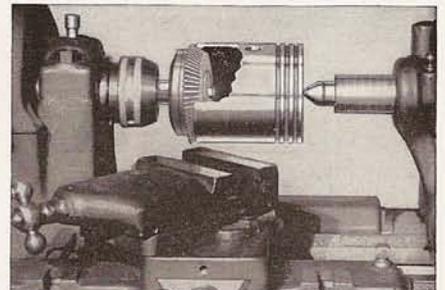
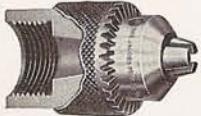


Fig. 45. Reaming the Skirt of a Piston. Reamer is Held on Piston Adapter Shank.

Valve Chuck



A precision self-centering chuck. Takes all types of valve stems up to $\frac{3}{8}$ " diameter. Screws on spindle nose of lathe. No. 907-B, "Robal" \$9.00



Piston Adapter, Adapter Rings and Reamers



Adapter Shank



Driving Dog Type A



Cone Ring Reamer

The Self-Centering Piston Adapter shown above and in Fig. 46 is used for mounting pistons in the lathe. Use 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 A, and No. 1-D Cone Ring. "Adawp" \$9.00

Price Extra Cone Rings			Prices of Skirt Reamers		
For Pistons Outside Dia.	Cat. No.	Price Each	Cat. No.	For Piston Outside Dia.	Price Each
$2\frac{1}{2}$ to $3\frac{1}{2}$ in.	1D	\$1.50	1R	$2\frac{1}{2}$ to $3\frac{1}{2}$ in.	\$6.00
$3\frac{1}{8}$ to $3\frac{3}{4}$ in.	2D	1.75	2R	$3\frac{1}{8}$ to $3\frac{3}{4}$ in.	6.50
$3\frac{3}{4}$ to $4\frac{1}{2}$ in.	3D	2.00	3R	$3\frac{3}{4}$ to $4\frac{1}{2}$ in.	8.00
$4\frac{1}{2}$ to 5 in.	4D	2.50	4R	$4\frac{1}{2}$ to 5 in.	10.00

No. 1-Z. Centering Ring and Driver. \$2.50

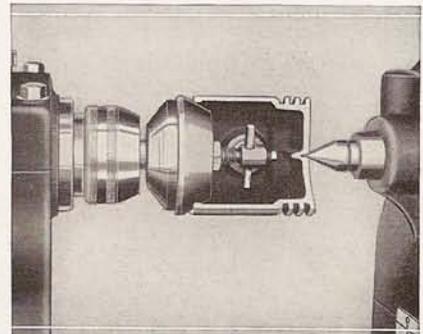


Fig. 46. Cross Section View of a Piston Mounted in Lathe Showing Application of the Piston Adapter.

Electrical Jobs Handled on the 9-inch "Workshop" Lathe

The 9-inch No. 5 "Workshop" South Bend Back-Geared, Screw Cutting Lathe is a practical tool for electrical shops, radio shops, experimental shops, battery shops, and auto electric shops because of the numerous jobs which it will handle in addition to the standard electrical service jobs. This is one of the reasons why so many electrical shops are being equipped with lathes. These shops realize that the lathe is one of the most accurate of all tools and can be depended upon for years of profitable service.

Handles Many Electrical Jobs. The "Workshop" Lathe, when equipped with a few attachments and tools, will true armature commutators—those with center holes in shaft and the centerless type; undercut insulation; test and straighten armature shafts; restore damaged center holes; cut old wire from armatures; center armature shafts; rewind armatures; bore field poles; wind coils; chase screw threads; cut new screw threads; make replacement bushings; repair all types of electrical appliances for home and office, etc.

Practical for Other Jobs. A few of the common electrical service jobs handled on the lathe are illustrated below. In addition to these jobs the 9-inch "Workshop" Lathe will handle all the other jobs shown throughout this bulletin.



Fig. 47. Truing the Commutator of an Armature Mounted Between Centers in the Lathe before Undercutting the Mica Insulation.

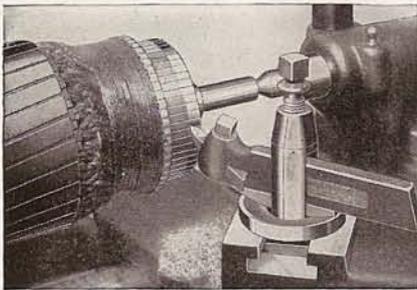


Fig. 48. Armature Commutators of Generators and Starting Motors are Accurately Trued.

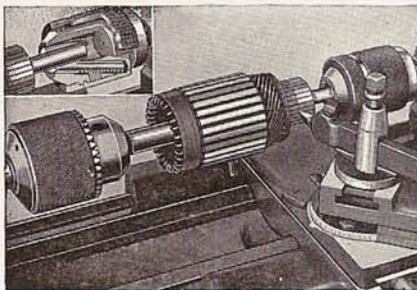


Fig. 49. Centerless Armature Mounted in Lathe using Armature Support Bushing.

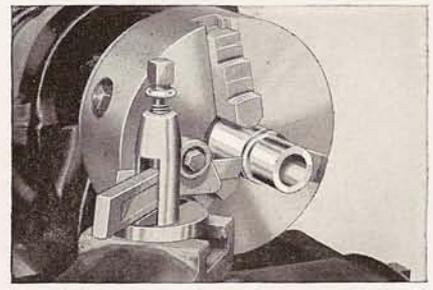


Fig. 50. Making a Bushing Complete without Removing from the Chuck.

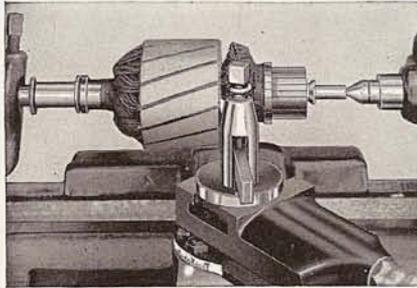


Fig. 51. Cutting Wires to Facilitate Removing Preparatory to Rewinding Armature.

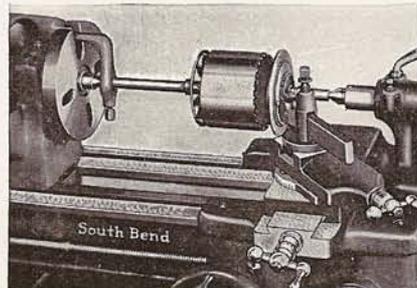


Fig. 52. Truing Contactor Rings of a Split-Phase Electric Motor.

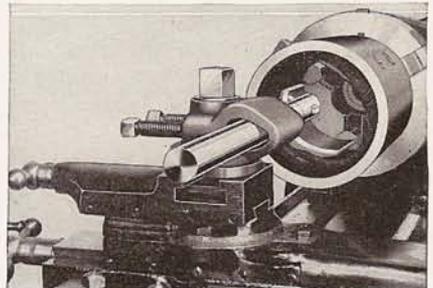


Fig. 53. Boring the Field Poles of a Generator True to Provide Clearance for Armature.

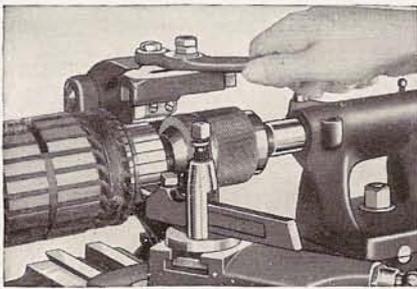


Fig. 53A. Undercutting Mica with a Hand Type Mica Undercutter Attachment.

Mica Undercutter Attachment (Hand Type)

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.

Hand Type Mica Undercutter Attachment complete with three cutter blades each .025" thick.

Cat. No. 673. Code Word "Abibe". \$12.50

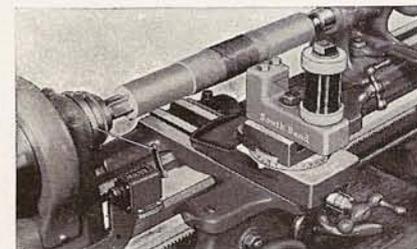


Fig. 54. Winding an Experimental Coil for a Radio. Note the Automatic Counter.

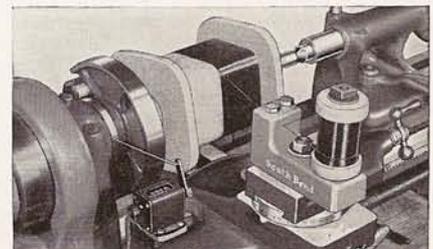


Fig. 55. Winding a Transformer Coil, Each Turn Being Recorded on a Counter.

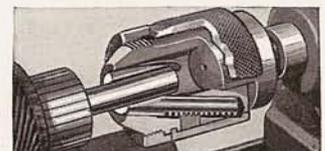


Support Bushing

Armature Support Bushing

Centerless armatures are held in a chuck at headstock end of lathe and in the support bushing at tailstock end. Has brass jaws, capacity $\frac{3}{8}$ " to $\frac{1}{4}$ ". Price includes arbor.

No. 340 "Adang".....\$8.10



Cross-Section of Support Bushing Showing its Application.

SOUTH BEND LATHE WORKS

Wood Working Jobs on the 9-inch "Workshop" Lathe

The 9-inch "Workshop" South Bend Back-Gear, Screw Cutting Lathe is practical for handling all classes of wood turning, boring, drilling, etc. in addition to all the other work shown throughout this bulletin. The illustrations below show lathe used on woodworking jobs.

The "Workshop" Lathe has greater weight and is more substantial than the ordinary wood turning lathe. The headstock has large bearings and the spindle cone is balanced for operation at high speeds. The longitudinal feed of the lathe is practical for drilling and boring. The compound rest, is indispensable for turning and boring tapers and for turning to accurate specifications. Lathe can also be used for cutting screw threads in wood, etc.

High Speeds for Wood Working. If only a small amount of wood working is to be done the lathe can be operated at its regular spindle speeds; however, if much wood working is to be done we recommend higher speeds which can be obtained by using two-step pulleys on countershaft and motor as illustrated at right.

For illustrations, description and prices of the two-step pulleys see page 5 of this bulletin.



Fig. 56. 9-inch "Workshop" Lathe Equipped with Two-Step Pulleys on Countershaft and Motor, with Belt Arranged for Wood Working.

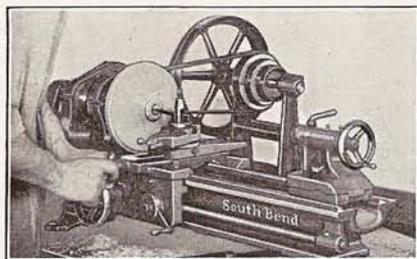


Fig. 57. Boring a Wood Disc Held on the Face Plate of the Lathe.

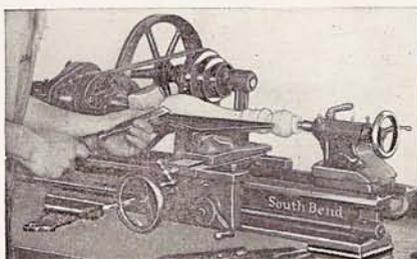


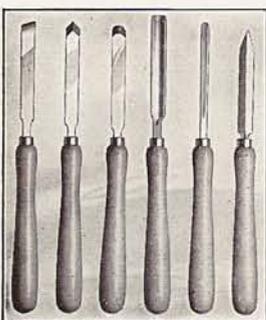
Fig. 58. Turning a Wood Pedestal for a Lamp on the Lathe.



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 Word "Adows" \$4.00



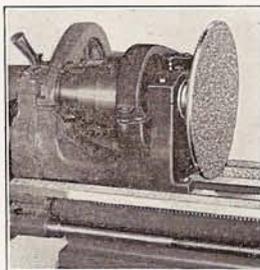
(A) (B) (C) (D) (E) (F)

Wood Chisels

The chisels shown at left are designed for the home workshop, etc. Made of good quality cutlery steel, sharpened. Set consists of: (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; and (F) $\frac{1}{2}$ " Parting Tool.

No. 278. Set of 6 Chisels, "Alder"\$4.20
Single Chisels, ea. \$0.75

Sanding and Polishing Disc



Sanding and Polishing Disc on the Lathe.

The sanding and polishing disc shown at left is practical for polishing wood, steel, iron, etc. Size $8\frac{1}{2}$ " diam. Screws on headstock spindle nose of lathe. Supplied with emery cloth or sandpaper attached, if desired.

No. 507-W. Sanding Disc. Code "Acwat"\$5.00
Price of extra emery cloth etc. on request.

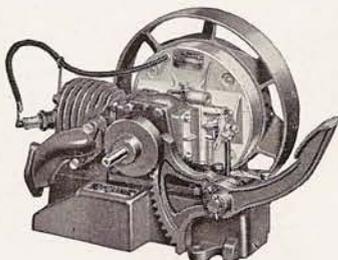


CUP CENTER
No. 732-W, "Jalak" \$2.00

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

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

Gasoline Engine Drive for 9-inch "Workshop" Lathe



$\frac{1}{2}$ H.P. Gasoline Engine for Driving the Lathe

1750 R.P.M.—Single Cylinder—Valveless—Two Cycle—Air Cooled—Bore 2", Stroke $1\frac{1}{2}$ ", Height $10\frac{3}{4}$ ", Base Area 10" x 12"—Weight 40 lbs.

The gasoline engine drive illustrated at right is a practical and dependable drive for operating the 9-inch "Workshop" Lathe shown on page 4 in shops where electric current is not available. The drive consists of a gasoline engine, a jack-shaft and a double friction countershaft, which is described on page 5.

Wood Working. The jackshaft and motor may be fitted with two-step pulleys to provide the required high speeds for wood working. For prices and further information on these pulleys see page 5.

GASOLINE ENGINE DRIVE EQUIPMENT

No. 285.	$\frac{1}{2}$ H.P. Gasoline Engine. "Afdot".....	\$35.00
No. 287.	Jack-Shaft with drive pulley for engine and two pulleys for countershaft. "Afenc".....	8.00
No. 289.	Double Friction Countershaft, as illustrated and described on page 5. Code "Afget".....	10.00
No. 293.	V-Groove Pulley for engine. Code "Afovn".....	.50
No. 297.	Two Flat Leather Belts (2" x 88") @ \$3.00 each. Code Word "Afsag".....	6.00
No. 298.	One Flat Leather Belt, countershaft to Lathe (17" x 60"). Code Word "Afsok".....	1.15
No. 299.	V-Belt, Engine to Jack-Shaft. Code "Afsul".....	1.40
Total Price of Gasoline Engine Drive Equipment.....		\$62.05

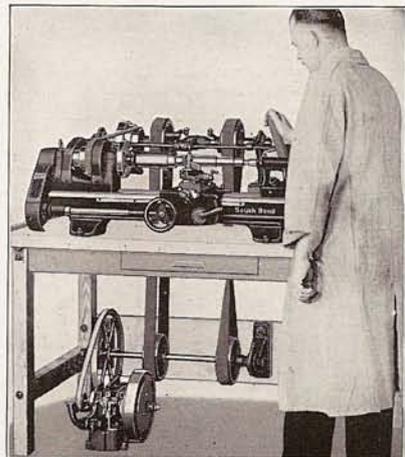


Fig. 59. Lathe with Gasoline Engine Drive.

The 9-inch "Workshop" Lathe in the Home Shop

The 9-inch "Workshop" South Bend Back-Gearred, Screw Cutting Lathe is the ideal tool for the home shop as it is practically a machine shop in itself and occupies but a small space. This lathe permits the operator to do all classes of machine work, drilling, screw thread cutting in metal and wood, and in addition all kinds of wood working. With the 9-inch "Workshop" Lathe the model builder can handle all machine work on model locomotives, steam engines, gasoline engines, aero engines, etc. The inventor will find the 9-inch "Workshop" Lathe the most practical tool for developing his ideas.

Universal Shop Tool. The Back-Gearred, Screw Cutting Lathe is the universal tool, with it the owner can make hundreds of tools and other equipment for his shop. Any home shop owner who desires to do high quality work cannot get along without the lathe. If planning a shop we will be pleased to send you blue prints of home shop layouts. Just send us the dimensions of the room available for your shop.

Attachments. The 9-inch "Workshop" Lathe can be fitted, at small additional cost, with special attachments such as milling attachment, grinder, etc., for handling hundreds of jobs ordinarily requiring expensive single-purpose tools.

Hundreds of home work shops throughout the country are equipped with South Bend Back-Gearred, Screw Cutting Lathes, a few of which are illustrated on this page.



Fig. 60. A Home Shop Enthusiast at Work on his South Bend Back-Gearred, Screw Cutting Lathe.

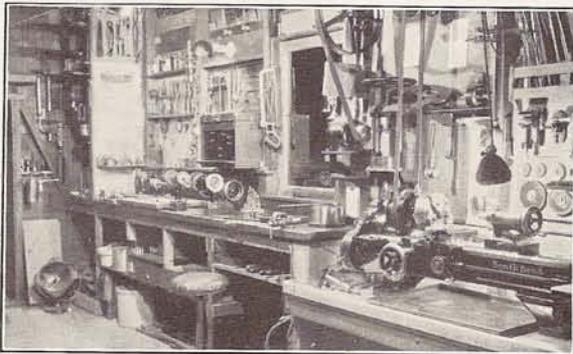


Fig. 61. Holt Condon, Pasadena, California, is the Owner of the Well-Equipped Workshop Illustrated Above.

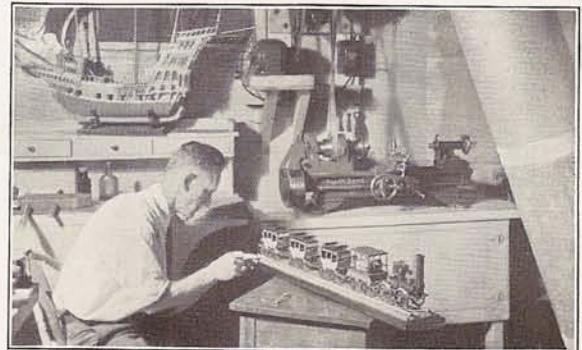


Fig. 62. Ivar Nordstrom, Winner of the Popular Mechanics Magazine 1933 DeWitt-Clinton Model Railway Contest.

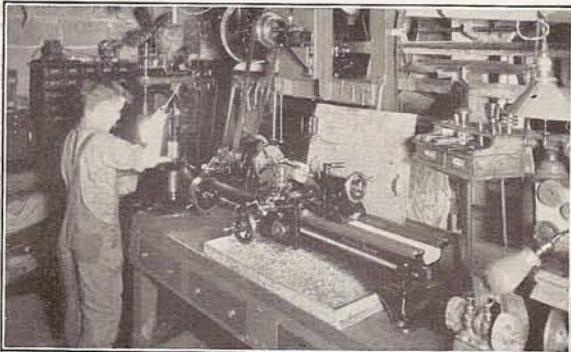


Fig. 63. The Son of J. W. Neptune, Akron, Ohio, is Shown at Work in his Father's Workshop. The Lathe is a South Bend.



Fig. 64. Rod LaRocque, Movie Star, Skilled Machinist and Inventor, uses a South Bend Lathe in his shop.



Fig. 65. Frederic Craven, LaPorte, Indiana, well known Builder of Ship Models, Uses a 9-inch South Bend Lathe.

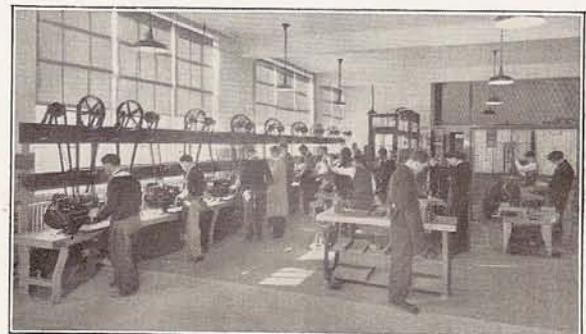
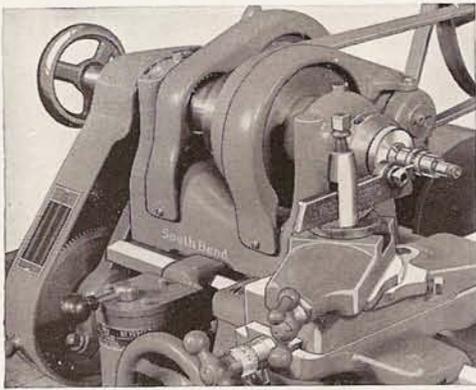


Fig. 66. The 9-inch "Workshop" South Bend Lathe is a practical Lathe for School Machine Shops.



Machining Small Parts Held in Draw-in Chuck

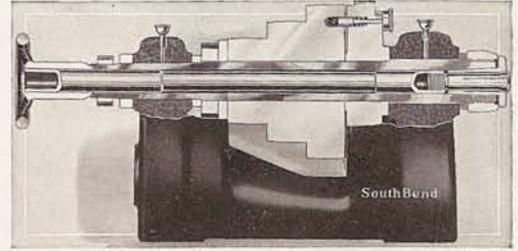
Hand Wheel Draw-in Collet Chuck Attachment

The Hand Wheel Draw-in Collet Chuck illustrated and described below is a precision chuck. The draw-bar, which tightens and loosens the collet is a hollow tube and permits bar stock from 1/64" to 1/2" in diameter to be held in the various size collets. Collet Capacity: A 1/4" collet, for example, is one that will hold finished work that is exactly .250" in diameter; it will also hold work .001" undersize (.249" diam.). A separate collet must be used for each step of increase or decrease in the diameter of the work.

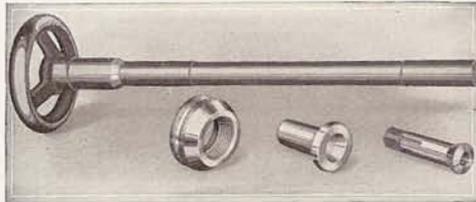
Collets can be supplied in steps of 64ths of an inch, for example, 1/64", 1/32", 3/64", 1/16", 5/64", etc.

Price includes hand wheel and hollow draw-bar; nose cap, wrench; closing sleeve, hardened, tempered and ground, and one collet for round work. Specify hole size of collet wanted.

No. 4306. Code "Acrut" \$25.00



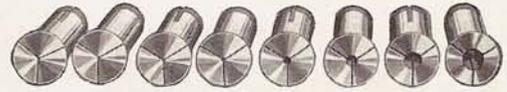
Section of Headstock Showing Draw-in Collet Chuck



Hand Wheel Draw-in Collet Chuck Attachment



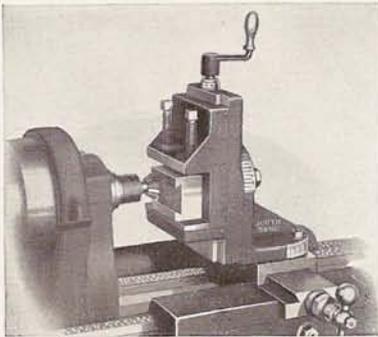
Collet for Round Work



Group of Collets with Holes Ranging from 1/64" up

Split Collets for Round Work

The most commonly used collets are those for holding round work. Collets are made of tool steel, hardened, tempered and ground both outside and inside to insure accuracy. Supplied in any hole diameter from 1/64" to 1/2" (by 64ths). In ordering specify exact diameters wanted. No. 609-W. Code "Catra", Each Collet.....\$2.50
Prices of collets of special hole sizes; square and hexagonal collets, etc., on request.



Milling a Dovetail in the Lathe

Milling and Keyway Cutting Attachment

The lathe fitted with a milling and keyway cutting attachment makes an excellent equipment for the small shop that has not enough work to invest in an expensive milling machine. It will handle such work as cutting keyways, squaring shafts, milling dovetails, tapers, etc.

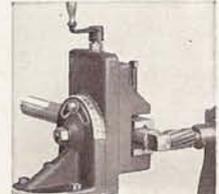
The attachment fits on the compound rest base of the lathe, swivels all the way around in a horizontal plane like the compound rest and is graduated 180 degrees. In addition, the upright angle plate, to which the vise is attached, swivels in a vertical plane and is graduated 180 degrees. The vertical adjusting screw is equipped with a micrometer graduated collar. Cross feed is by hand; longitudinal feed can be by hand or by automatic feed to the carriage.

Equipment consists of: Milling attachment, two V-blocks for round work, crank handle for feed screw, double end wrench, T-bolts and nuts. Cat. No. 9-W. Code, "Vabif" \$35.00

NOTE: We can supply popular milling cutters and arbors in all standard and special sizes. Prices on request.

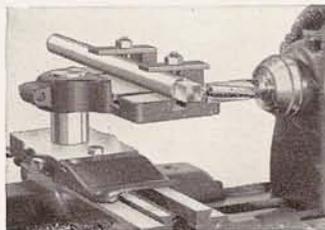


Milling a Keyway



Squaring End of Shaft

Milling and Boring Table



Squaring the End of a Steel Shaft

The Milling and Boring Table is practical for milling, boring, keyway cutting, squaring ends of shafts, etc.

The table swivels on a central post attached to compound rest base and may be adjusted for height. It has three T-slots for clamping work.

Equipment included in the price consists of milling and boring table, post and clamp bolt.

Cat. No. 904. "Yason" \$12.50

No. 14 Electric Grinder for Lathe



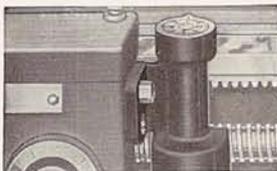
Electric Grinder with Diamond Holder and Diamond Dresser

The Electric Grinder is practical for grinding reamers, lathe centers, milling cutters, taps, dies, valves, pistons, bushings, hardened tools, etc. Operates from electric light socket. Fits on compound rest. Price includes 1/4 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, extension cord, switch, and clamp for mounting.

No. 14-K. "Rihip".....\$40.00

No. 91-W Diamond Holder, Tailstock Type. "Kibaf" \$2.00

No. 406 Diamond Dresser for holder. "Kirwe".....\$4.50



Thread Dial Indicator

Thread Indicator

The Thread Indicator permits running carriage back by hand when cutting screw threads. Eliminates reversing the travel of the carriage by power to the starting point to catch the thread at the beginning of each cut.

Cat. No. 810. Code, "Adnok" \$5.00



Plain Carriage Stop

Plain Carriage Stop

The Plain Carriage Stop is used for stopping carriage at any point along the lathe bed on accurate facing, turning and boring work. Can be used on either side of carriage. Has positive locking clamp. Cat. No. 758. Code Word "Tahro".....\$2.00

Micrometer Carriage Stop, Cat. No. 968-W. Code "Capys" \$8.00

Hard Pine Benches for 9" "Workshop" Lathe

Benches are of mortise and tenon construction. Bench tops are 1 1/2" thick, made of narrow strips, glued. Height of bench is 30 1/2". Benches are shellacked and varnished. If you wish to make your own bench we will supply blue prints, free, with the lathe.

No. 275-L. Bench. Size Top: 45" long; 28" wide. "Adnul".....\$15.00

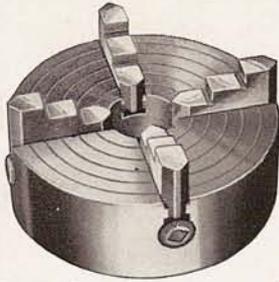
No. 275-M. Bench. Size Top: 54" long; 28" wide. "Adonk".....17.00

No. 275-O. Bench. Size Top: 60" long; 28" wide. "Adpik".....18.00

Extra for bench with drawer.....2.00

NOTE—The various attachments and accessories which we manufacture, and which are shown in this bulletin, are designed and intended for use on South Bend Lathes only, and are not recommended for use on lathes of other manufacture because they may not fit.

Lathe Chucks and Drill Chucks for 9-inch "Workshop" Lathe



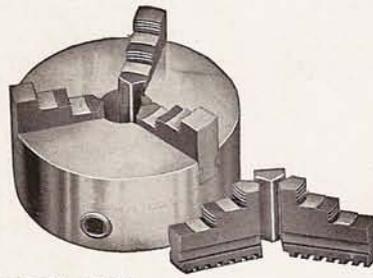
MODEL "O"

4-Jaw Independent Lathe Chuck

The Model "O" Chuck is 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. Jaws are $\frac{3}{8}$ " wide, made of special steel, hardened and ground. Screws are hardened alloy steel, have 11 pitch square thread. Capacity $7\frac{1}{4}$ ". Ship. Wt. $6\frac{5}{8}$ lbs.

No. 4806. 6" 4-Jaw Chuck, Model "O". Price includes wrench and screws, but not chuck-back or fitting; code "Rapno".....\$15.25

Price extra for fitting either of the above chucks to lathe, including chuck-back.....\$4.00



MODEL "T"

3-Jaw Universal Lathe Chuck

The Model "T" Chuck is a good, substantial, accurate chuck for machining metals of all kinds. The chuck is self-centering and holds round or hexagonal work. Has two sets of jaws, one for outside chucking, the other for inside chucking. Chuck body is semi-steel, ground. Jaws are $\frac{3}{8}$ " wide, made of special alloy steel, hardened and ground. The scroll is of high grade steel; it is balanced and accurate. The spur pinion is hardened alloy steel. Cap. 5", Ship. Wt. $6\frac{3}{4}$ lbs.

No. 3805. 5" 3-Jaw Chuck, Model "T". Price includes wrench and screws, but not chuck-back or fitting; code "Rasep".....\$17.00

Recommended Chucks for Use on "Workshop" Lathes

We recommend the Model "O" 4-Jaw Independent Chuck and the Model "T" 3-Jaw Universal Chuck for accurate machining on all classes of metal work in the 9" "Workshop" Lathe. These chucks are made by the manufacturers of high quality chucks. Tests have proved them to be accurate and entirely satisfactory.

The 4-Jaw Independent Chuck, Class 900, shown below, is a low priced chuck that can be used for chucking wood, fibre, etc. We do not recommend this chuck for metal working. We carry it only to supply those who want a very light, low price chuck.

Class 900 4-Jaw Independent Chuck



An extra light weight, low price chuck. Cap. 7". Ship. Wt. $5\frac{5}{8}$ lbs. Price includes wrench.

No. 4906. 6" 4-Jaw Chuck. "Abhod".....\$8.00
Extra for fitting chuck to lathe, including chuck-back.....\$4.00

Prices for Fitting Lathe Chucks to Lathe

Applying to Chucks, Models "O," "T" and Class 900

A chuck back is needed to fit the 4-Jaw Independent Lathe Chucks and 3-Jaw Universal Chuck to the lathe. The chuck back is first bored and threaded to fit the spindle nose of lathe. Next it is mounted on the spindle nose and faced and turned to fit the recess in back of chuck and then bolted in place. See illustrations at right. We recommend that the chuck be fitted to the lathe at the factory. When ordering a chuck back without chuck specify serial number of lathe and give diameter of recess in back of chuck.

No. 126. Semi-Machined Chuck-Back. Code Word "Acmin".....\$2.50
No. 236. Fitting Chuck-Back to Chuck and to Lathe. "Acump" 1.50
No. 258. Total Price for Chuck-Back Fitted to Chuck. "Acors" 4.00



Fig. A

Semi-Machined Chuck-Back Threaded to Spindle

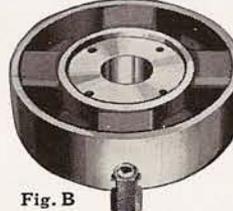


Fig. B

Recess Machined in Chuck for Chuck-Back



Fig. C

Chuck with Chuck-Back attached, ready for use



Model "J"

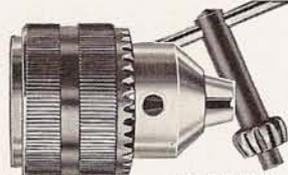
Three-Jaw Drill Chuck

A standard weight chuck. Jaws are of tempered steel. The geared sleeve and key assure a powerful grip. Price includes wrench.

No. 1200— $\frac{3}{8}$ -inch Model "J" Three Jaw Drill Chuck. Weight 1 lb. Code "Cleve".....\$4.25

No. 1201— $\frac{1}{2}$ -inch Model "J" Three Jaw Drill Chuck. Weight $1\frac{1}{4}$ lbs. Code "Wauko" \$6.75

Arbor for fitting above chucks to lathe spindle. No. 709. Code word "Achuk" \$0.60



Model "A"

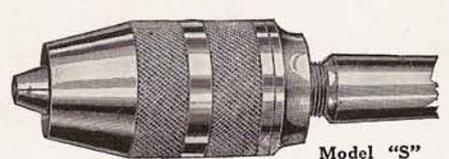
Three-Jaw Drill Chuck

A medium weight chuck. Jaws are of tempered steel. The geared sleeve and key assure a powerful grip. Price includes wrench.

No. 219— $\frac{3}{8}$ -inch Model "A" Three Jaw Drill Chuck. Weight $\frac{3}{8}$ lb. Code "Acpen".....\$3.50

No. 220— $\frac{1}{2}$ -inch Model "A" Three Jaw Drill Chuck. Weight $1\frac{1}{2}$ lbs. Code "Acpip" \$4.25

Arbor for fitting above chucks to lathe spindle. No. 709. Code word "Achuk" \$0.60

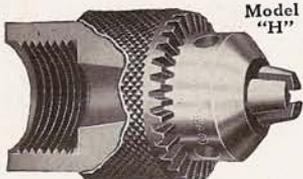


Model "S"

Keyless Drill Chuck

Practical for light machine work. It is adjusted by hand—turning the knurled chuck body to right tightens the jaws of the chuck on the drill or work. The drill or work is released by turning the chuck body in the opposite direction. Price of chuck includes a taper shank arbor.

No. 210— $\frac{1}{2}$ " Model "S" Keyless Drill Chuck and Arbor for fitting chuck to lathe spindle. Weight $1\frac{1}{2}$ lbs. "Acpur".....\$3.30



Model "H"

Headstock Spindle Chuck

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

No. 907-B— $\frac{3}{8}$ " Model "H" Headstock Spindle Chuck. Wt. 3 lbs. Code Word "Robal".....\$9.00



Chuck to tailstock spindle. The short taper fits socket of chuck; the long taper fits lathe spindle. When arbor is ordered without drill chuck we supply a semi-finished arbor which is fitted to the lathe spindle but is not machined to the drill chuck.

No. 709. Finished Arbor. No. 2 Morse Taper. Code "Achuk".....\$0.60

Arbor for Drill Chucks

The arbor is used for fitting Model "J" and Model "A" drill chucks to the lathe spindle. May also be used to fit Model "H" chuck to tailstock spindle.



Center Rest



Follower Rest



Large Face Plate



Adjustable Thread Cutting Stop

Center Rest, Follower Rest, Thread Cutting Stop and Face Plate for "Workshop" Lathe

Description	Cat. No.	Code	Price
Center Rest.....	125-W	Cegke	\$8.00
Follower Rest.....	34-W	Cegmo	4.00*
Thread Cutting Stop.....	67-W	Cegpy	2.00
Large Face Plate ($6\frac{3}{4}$ " dia.).....	40-W	Cehak	6.00

*Must be fitted to lathe at factory.

Tools for the 9-inch "Workshop" South Bend Lathe

Tool Holder and Cutter Bit Set \$2.35



Straight Tool Holder with Cutter Bit



A B C D E F

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.

Tool Holder and Cutter Bit Set consists of: Drop Forged Tool holder (choice of straight, right-hand or left-hand), wrench, unground cutter bit and six high speed steel cutter bits ground to forms A, B, C, D, E, F.

Cat. No. 323-A. Code Word "Acti" Price complete.....\$2.35



Drop Forged Steel

Turning Tool Holder

With wrench and one high speed steel unground cutter bit.

Right-Hand—No. 847-R, "Acurt"....\$1.25
Left-Hand—No. 847-L, "Acvet".... 1.25
Straight—No. 847-S, "Acump".... 1.25

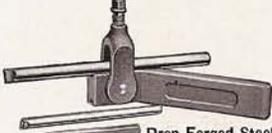


Drop Forged Steel

Cutting-Off Tool

With wrench and H. S. ground blade.

Right-Hand—No. 833-R, "Cemso"....\$1.50
Straight—No. 833-S, "Adcat".... 1.50
Extra Cutter No. 819, "Adsop".... .50



Drop Forged Steel

Boring Tool Holder Style "C"

With wrench, 1/4" ground boring bar, and one high speed steel cutter bit.

No. 486. Code Word "Ipcen"....\$3.00
No. 483. 1/8" Boring bar, "Advpe".... .30
No. 485. 3/16" Boring bar, "Adwut".... .35

High Speed Steel Cutter Bits



No. 1460. Unground Cutter Bit, Size 1/4"x1/4"x2". Code "Adwir," Each.....\$0.10

No. 1355. Cutter Bit, ground to forms A to F, shown at left. Size 1/4"x1/4"x2" Code "Adwap," Each.....\$0.20

No. 291. Set of Six Cutter Bits, ground to forms A to F shown at left. Code "Adwos," Each.....\$1.10



Drop Forged Steel

Threading Tool

With wrench and formed H. S. cutter.

No. 845. Code Word, "Adfob".....\$2.50
Extra Cutter No. 814. "Adurp".... 1.50



Drop Forged Steel

Boring Tool Holder Style "D"

With wrench and 1/4" boring bar, ground.

No. 505-F. Code Word "Adyot"....\$2.50
No. 498-B. 3/16" Boring bar, "Advor".... .45

Standard Lathe Dogs

Made of malleable iron. Designed for strength and service.

3/8" cap. No. 1-WJ, "Adirm".....\$0.30
3/8" cap. No. 2-WJ, "Adjof"..... .40
3/8" cap. No. 4-WJ, "Adkog"..... .50
1" cap. No. 6-WJ, "Adlef"..... .60
1 1/4" cap. No. 8-WJ, "Adlig"..... .70
1 1/2" cap. No. 10-WJ, "Adnag"..... .80



Crotch Centers

Used in tailstock spindle to center round work while being drilled.

No. 728-W, "Fanid"....\$2.00



Drill Pad

Used in tailstock spindle to support flat work while being drilled.

No. 727-W, "Donav"....\$2.00

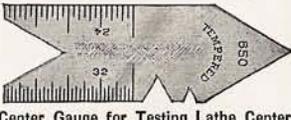


Center Drill and Countersink

3/16" dia. No. 898-A. Code Word "Xmqjb".....\$0.25

3/8" dia. No. 898-B. Code Word "Xnrje".... .30

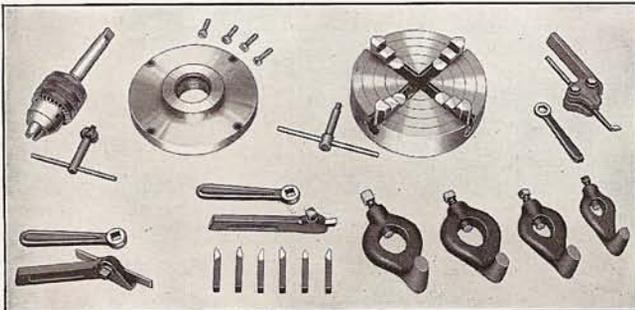
1/2" dia. No. 898-C. Code Word "Xoskd".... .35



Center Gauge for Testing Lathe Centers and Setting Threading Tool

No. 650. Code Word "Kutje".....\$0.50

No. 105 Chuck and Tool Assortment for 9-inch "Workshop" Lathe



A Practical Chuck and Tool Assortment for General Machine Work

We recommend the chucks and tools listed below for use on the "Workshop" Lathe because this is the basic equipment required for handling the general machine jobs which come up every day, such as turning, boring, threading, cutting-off, chucking, etc.

Cat No.	Description	Price
No. 4806	6" Model "O" 4-Jaw Independent Lathe Chuck.....	\$15.25
No. 258	Fitting Chuck to Lathe including chuck back.....	4.00
No. 220	1/2" 3-Jaw Model "A" Drill Chuck.....	4.25
No. 709	Arbor Fitted to above Drill Chuck.....	.60
No. 847-S	Straight Shank Tool Holder with 1/4" Cutter Bit.....	1.25
No. 291	Six 1/4" High Speed Steel Ground Cutter Bits.....	1.10
No. 505-F	Boring Tool Holder, Style "D", with 1/4" Boring Bar.....	2.50
No. 833-R	Cutting Off Tool Holder, Right Hand, with ground cutter Four Malleable Lathe Dogs, 3/8", 3/4", 1, 1 1/4".....	2.20
No. 105	Chuck and Tool Assortment. Code "Adpol".....	\$32.65

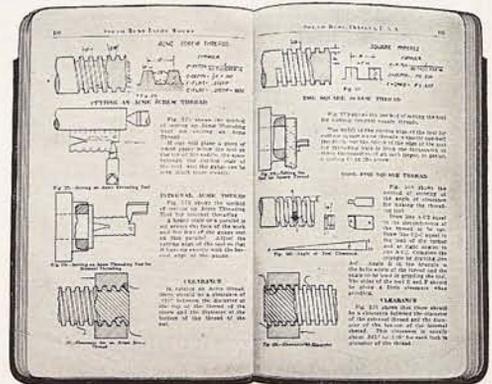
"How to Run a Lathe"—31st Edition

"How to Run a Lathe", a valuable instruction book, contains 160 pages, size 5 1/4" x 8". This book thoroughly covers the fundamental operations of the modern screw cutting lathe and contains more than 300 illustrations, all devoted to the erection, installation and operation of the lathe. Correct and modern methods for handling over 400 machine operations on the lathe are fully described and illustrated. A paper bound copy is included with each 9-inch "Workshop" lathe.

More than a million and a half copies of "How to Run a Lathe" are in use throughout the world, printed in English, Spanish, Portuguese and Chinese. The book is used as a textbook in trade and industrial schools, also by apprentices in the machine shops of large industrial plants.

Prices for Additional Copies:

Paper Bound Copies, Postpaid.....25c each
Leatherette Bound Copies, Postpaid, 75c each
Coin or Stamps of Any Country Accepted.

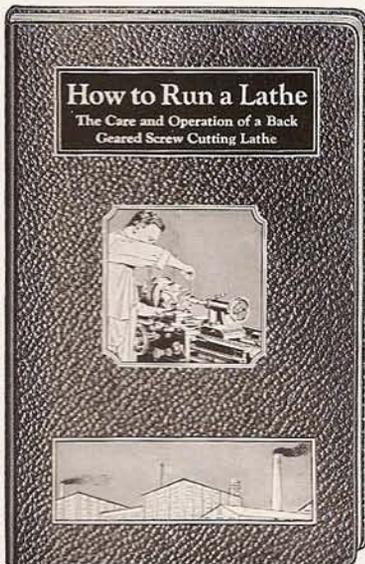


PARTIAL LIST OF CONTENTS

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

Grinding and Setting Lathe Tools
Cutting Screw Threads
Turning and Boring Tapers
Grinding and Milling Work
Chucks and Face Plates
Cutting Speeds and Feeds

Operating Automatic Feeds
Reading Micrometer Calipers
Using Outside and Inside Calipers
Aligning Lathe Centers
Drilling, Boring, Reaming, Tapping
Use of Compound Rest



De Luxe Leatherette Edition

South Bend Easy Payment Plan—10 to 12 Months to Pay

For the Purchase of 9-inch "Workshop" Lathe, Attachments and Tools

For our customers in U.S.A. we have an easy payment plan that can be used when buying any size South Bend Lathe, with or without attachments, etc. Refer to the Schedule at right, locate the total amount of your order in column (1) and add the amount for financing in column (2). This is the total amount you pay. Column (3) gives the down payment and column (4) the amount of monthly payments.

Example Order

1 No. 405-Y, 9" x 3' "Workshop" South Bend Horizontal Motor Driven Lathe Complete with Electrical Equipment and Regular Lathe Equipment as listed on page 2.
 Price f.o.b. cars South Bend, Indiana \$ 94.00
 1 No. 105, Chuck and Tool Assortment (shown on page 17) 32.65
 Total f.o.b. cars South Bend, Indiana 126.65

Easy Payment Terms on Above Order

Total Amount of Order (see column 1 of schedule) 126.65
 Financing Charge (see column 2 of schedule) 8.00
 Total 134.65
 Cash Down Payment (see column 3 of schedule) 30.00
 Balance to be paid monthly (\$134.65 less \$30.00) 104.65
 Monthly Payments Each (see column 4 of schedule) 8.50

All Easy Payment accounts are carried in our own office and you make your payments directly to us each month. Mail your order, with down payment, and the lathe will be shipped immediately.

SCHEDULE OF EASY PAYMENT TERMS

If Total Price of Your Order Amounts to (1)	Amount to Add for Financing (2)	Amount of Down Payment (3)	Payment Each Month (4)	Approx. No. of Payments* (5)
\$ 80.00 to \$ 90.00	\$ 6.50	\$21.00	\$ 7.00	10
90.01 to 100.00	7.00	24.00	7.00	11
100.01 to 110.00	7.50	28.00	7.00	12
110.01 to 120.00	7.50	29.00	8.00	12
120.01 to 130.00	8.00	30.00	8.50	12
130.01 to 140.00	8.50	31.00	9.00	12
140.01 to 150.00	9.00	32.00	10.00	12
150.01 to 175.00	10.00	35.00	11.50	12
175.01 to 200.00	11.50	40.00	13.00	12
200.01 to 225.00	13.00	45.00	15.50	12
225.01 to 250.00	14.50	50.00	17.00	12

*In some cases there will be one more or less payments than the number listed because of the difference in the total order.

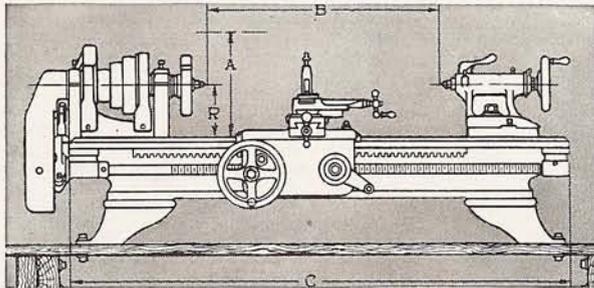
Approximate Freight Rates From South Bend to Principal Cities

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 300 lbs., to Omaha, Nebr., at \$1.48 per 100 lbs., \$4.44.

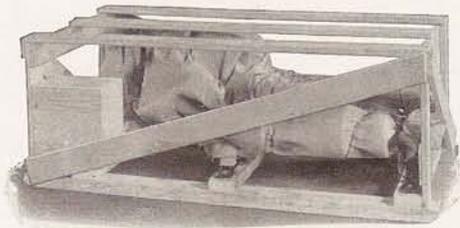
If desired your lathe can be shipped by railway express, at slightly higher cost than by freight. Unless you specify how shipment is to be made, lathe will be shipped freight by the most economical method.

City	State	Rate per 100 lbs.	City	State	Rate per 100 lbs.
Baltimore	Maryland	\$1.12	Montgomery	Alabama	\$1.64
Boise	Idaho	4.60	New York	New York	1.23
Boston	Massachusetts	1.27	New Orleans	Louisiana	1.90
Chicago	Illinois	.48	Oklahoma City	Oklahoma	2.36
Charleston	South Carolina	1.89	Omaha	Nebraska	1.48
Cleveland	Ohio	.72	Philadelphia	Pennsylvania	1.17
Denver	Colorado	2.49	Pittsburgh	Pennsylvania	.84
Detroit	Michigan	.63	Portland	Oregon	5.27
Hartford	Connecticut	1.23	Richmond	Virginia	1.20
Helena	Montana	4.46	St. Louis	Missouri	.80
Los Angeles	California	5.27	Salt Lake City	Utah	4.46
Louisville	Kentucky	.72	San Antonio	Texas	2.91
Miami	Florida	2.58	San Francisco	California	5.27
Milwaukee	Wisconsin	.62	Seattle	Washington	5.27
Minneapolis	Minnesota	1.39	Wichita	Kansas	1.88



How to Determine the Size of a Lathe

The size of a Back-Geared, Screw Cutting Lathe is determined by the swing over bed and length of bed. European tool manufacturers determine the size of a lathe by its radius or center distance. Their 4 1/2-inch center lathe is the same as our 9-inch swing lathe. The letters in illustration designate the various dimensions of lathe as follows: A—swing over bed; R—radius or one-half the swing; C—length of bed; B—distance between centers. If you will let us know the kind and size of work you wish to handle, we will be glad to recommend the size of lathe 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 illustration above shows a 9-inch "Workshop" South Bend Lathe skidded and crated for domestic shipment, that is by rail to any point in the United States, Canada or Northern Mexico. In preparing lathes for shipment 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 lathe is skidded and crated and the small parts are packed in a box which is nailed to the skids.

Lathes for domestic shipment are not knocked down but are crated and shipped completely assembled. All that is necessary on arrival is to remove the crating and wrapping and install the lathe.

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. On all ocean shipments, an extra charge of \$12.00 is made for packing and boxing. On shipments which can be made by rail, such as Canada and Northern Mexico, the lathe is crated and there is no \$12.00 additional charge.

C.I.F. Prices to any Port in the World. We will be glad to send you an itemized quotation on the lathe in which you are interested delivered C.I.F. to your nearest port. We will also include consular fees, if any, in this quotation. Approximate C.I.F. prices, less consular fees, to various ports are listed at right.

Boxing the Lathe for Export Shipment. The lathe is dismantled and all removable parts are oiled, greased, wrapped and packed in one strong case. All parts are blocked and fastened solidly inside the case. The box is lined with waterproof paper and bound with steel tape outside.

Export Shipping Information

Size of Export Case (9" x 3' "Workshop" Lathe).....48" x 24" x 21"
 Weight of 9" x 3' Lathe, boxed, approximately.....450 lbs.
 Freight Rate to Ship Side New York City.....\$1.40 per cwt.
 Extra Charge for Boxing for Ocean Shipment, per lathe.....\$12.00

Shipping Costs to Principal World Ports. We list in the table below approximate transportation and insurance charges to various world ports on the 9" x 3' "Workshop" Lathe. These estimates include transportation from our factory to steamship pier and ocean freight. All shipments are insured under the conventional "all risk" insurance policy.

Shipping Charges on "Workshop" Lathes to World Ports

Buenos Aires, Argentina	\$28.00	Alexandria, Egypt	\$20.00
Callao, Peru	27.00	Bangkok, Siam	15.00
Guayaquil, Ecuador	25.00	Batavia, Java	16.00
Havana, Cuba	17.00	Calcutta, India	15.00
La Guayra, Venezuela	18.00	Honolulu, Hawaii	13.00
La Libertad, Salvador	25.00	Kingston-Jamaica, B.W.I.	15.00
LaPaz, Bolivia (via Mollendo)	20.00	Lisbon, Portugal	24.00
Panama City, Panama	15.00	London, England	16.00
Puerto Colombia, Colombia	18.00	Port Natal, South Africa	16.00
Puerto Limon, Costa Rica	17.00	Port-of-Spain, Trinidad	15.00
Rio de Janeiro, Brazil	22.00	Rangoon, Burma (India)	15.00
San Jose, Guatemala	24.00	Shanghai, China	18.00
San Juan, Puerto Rico	13.00	Singapore, S. S.	15.00
Valparaiso, Chile	25.00	Sydney, Australia	17.00
Vera Cruz, Mexico	17.00	Wellington, New Zealand	17.00

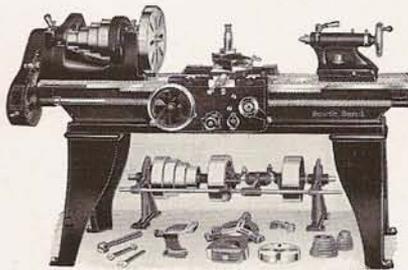
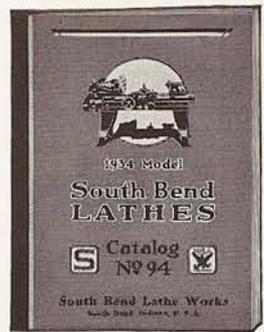
96 Sizes and Types of South Bend Lathes

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

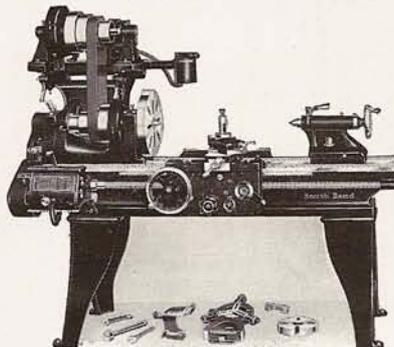
If you are interested in a lathe of larger size and capacity than the 9-inch "Workshop" South Bend Lathe, as described in this bulletin, write for a copy of the New General Catalog No. 94.

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

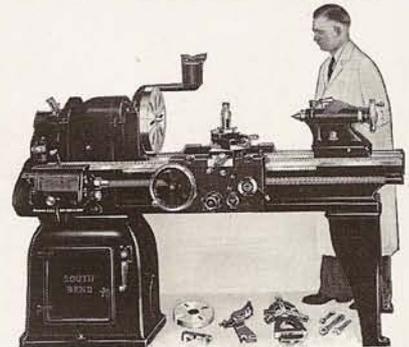
A complete line of attachments, chucks, tools and accessories for these South Bend Lathes is also shown in Catalog No. 94, a copy of which will be mailed on request, anywhere in the world, postpaid, no charge.



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



16' x 6' Quick Change Gear Silent V-Belt Motor Driven Lathe Complete.....\$682.00



16' x 6' Quick Change Gear Underneath Motor Driven Lathe Complete.....\$752.00

Prices of 18-inch to 9-inch Swing South Bend Floor Leg Lathes

Prices Include Regular Lathe Equipment and Electrical Equipment, f.o.b. Cars Factory, South Bend, Indiana, Crated for Domestic Shipment

Brief Specifications				Countershaft Drive Lathes				Silent V-Belt Motor Drive				Underneath Belt Motor Drive						
Swing Over Bed Inches	Length of Bed Feet	Distance Between Centers Inches	Power Required H.P.	Quick Change		Standard Change		Quick Change		Standard Change		Quick Change		Standard Change				
				Weight Crated Pounds	Cat. No.	Net Factory Price	Cat. No.	Net Factory Price	Weight Crated Pounds	Cat. No.	Net Factory Price	Cat. No.	Net Factory Price	Weight Crated Pounds	Cat. No.	Net Factory Price	Cat. No.	Net Factory Price
18-inch South Bend Quick Change Gear and Standard Change Gear Floor Leg Lathes																		
18 1/2	8	53 1/2	2	2640	94-E	\$705.00	43-E	\$635.00	3140	394-E	\$ 895.00	343-E	\$ 825.00	3290	194-E	\$ 975.00	143-E	\$ 905.00
18 1/2	10	77 1/2	2	2840	94-G	759.00	43-G	689.00	3340	394-G	949.00	343-G	879.00	3490	194-G	1029.00	143-G	959.00
18 1/2	12	101 1/2	2	3140	94-H	837.00	43-H	767.00	3640	394-H	1027.00	343-H	957.00	3790	194-H	1107.00	143-H	1037.00
16-inch South Bend Quick Change Gear and Standard Change Gear Floor Leg Lathes																		
16 1/2	6	34	1	1875	92-C	540.00	41-C	480.00	2230	392-C	682.00	341-C	622.00	2300	192-C	752.00	141-C	692.00
16 1/2	8	58	1	2035	92-E	580.00	41-E	520.00	2390	392-E	722.00	341-E	662.00	2460	192-E	792.00	141-E	732.00
16 1/2	10	82	1	2195	92-G	624.00	41-G	564.00	2550	392-G	766.00	341-G	706.00	2620	192-G	836.00	141-G	776.00
15-inch South Bend Quick Change Gear and Standard Change Gear Floor Leg Lathes																		
15 1/2	6	36 1/2	1	1650	88-C	485.00	39-C	430.00	2000	388-C	625.00	339-C	570.00	2070	188-C	695.00	139-C	640.00
15 1/2	8	60 1/2	1	1805	88-E	523.00	39-E	468.00	2155	388-E	663.00	339-E	608.00	2225	188-E	733.00	139-E	678.00
15 1/2	10	84 1/2	1	1970	88-G	567.00	39-G	512.00	2320	388-G	707.00	339-G	652.00	2390	188-G	777.00	139-G	722.00
13-inch South Bend Quick Change Gear and Standard Change Gear Floor Leg Lathes																		
13 1/2	5	28	3/4	1110	86-B	402.00	35-B	352.00	1460	386-B	535.00	335-B	485.00	1510	186-B	575.00	135-B	525.00
13 1/2	6	40	3/4	1160	86-C	417.00	35-C	367.00	1510	386-C	550.00	335-C	500.00	1560	186-C	590.00	135-C	540.00
13 1/2	8	64	3/4	1275	86-E	453.00	35-E	403.00	1625	386-E	586.00	335-E	536.00	1675	186-E	626.00	135-E	576.00
11-inch South Bend Quick Change Gear and Standard Change Gear Floor Leg Lathes																		
11 1/2	3 1/2	18	1/2	695	84-Z	328.00	33-Z	288.00	890	384-Z	421.00	333-Z	381.00	935	184-Z	467.00	133-Z	427.00
11 1/2	4	24	1/2	725	84-A	340.00	33-A	300.00	920	384-A	433.00	333-A	393.00	965	184-A	479.00	133-A	439.00
11 1/2	5	36	1/2	795	84-B	352.00	33-B	312.00	990	384-B	445.00	333-B	405.00	1035	184-B	491.00	133-B	451.00
9-inch South Bend Quick Change Gear and Standard Change Gear Floor Leg Lathes																		
9 1/2	3	16 3/4	1/4	482	80-Y	275.00	30-Y	235.00	655	380-Y	324.00	330-Y	284.00	795	180-Y	372.00	130-Y	332.00
9 1/2	3 1/2	21 3/4	1/4	507	80-Z	285.00	30-Z	245.00	680	380-Z	334.00	330-Z	294.00	820	180-Z	382.00	130-Z	342.00
9 1/2	4	27 3/4	1/4	532	80-A	295.00	30-A	255.00	705	380-A	344.00	330-A	304.00	845	180-A	392.00	130-A	352.00
9 1/2	4 1/2	34 3/4	1/4	557	80-R	305.00	30-R	265.00	730	380-R	354.00	330-R	314.00	870	180-R	402.00	130-R	362.00
9-inch South Bend Quick Change Gear and Standard Change Gear Bench Lathes*																		
9 1/2	3	16 3/4	1/4	480	80-YB	265.00	30-YB	225.00	599	380-YB	317.00	330-YB	277.00	751	180-YN	284.00	130-YN	244.00
9 1/2	3 1/2	21 3/4	1/4	455	80-ZB	275.00	30-ZB	235.00	615	380-ZB	327.00	330-ZB	287.00	796	180-ZN	294.00	130-ZN	254.00
9 1/2	4	27 3/4	1/4	480	80-AB	285.00	30-AB	245.00	640	380-AB	337.00	330-AB	297.00	820	180-AN	304.00	130-AN	264.00
9 1/2	4 1/2	34 3/4	1/4	505	80-RB	295.00	30-RB	255.00	665	380-RB	347.00	330-RB	307.00	856	180-RN	314.00	130-RN	274.00
9-inch Junior South Bend Bench Lathes*																		
9 1/2	3	16 3/4	1/4	375	Not made in Quick Change Gear Type.	22-YB	170.00	535	332-YB	222.00	416	Not made in Quick Change Gear Type.	422-YN	188.00				
9 1/2	3 1/2	21 3/4	1/4	400	Not made in Quick Change Gear Type.	22-ZB	180.00	560	332-ZB	232.00	441	Not made in Quick Change Gear Type.	422-ZN	198.00				
9 1/2	4	27 3/4	1/4	425	Not made in Quick Change Gear Type.	22-AB	190.00	585	332-AB	242.00	466	Not made in Quick Change Gear Type.	422-AN	208.00				
9 1/2	4 1/2	34 3/4	1/4	450	Not made in Quick Change Gear Type.	22-RB	200.00	610	332-RB	252.00	491	Not made in Quick Change Gear Type.	422-RN	218.00				
9-inch Toolmaker South Bend Bench Lathes*																		
9 1/2	3	18	1/4	325	Not made in Quick Change Gear Type.	20-YBW	140.00	410	320-YB	183.00	340	Not made in Quick Change Gear Type.	420-YN	158.00				
9 1/2	3 1/2	24	1/4	345	Not made in Quick Change Gear Type.	20-ZBW	150.00	430	320-ZB	193.00	360	Not made in Quick Change Gear Type.	420-ZN	168.00				
9 1/2	4	30	1/4	365	Not made in Quick Change Gear Type.	20-ABW	160.00	450	320-AB	203.00	380	Not made in Quick Change Gear Type.	420-AN	178.00				
9 1/2	4 1/2	36	1/4	385	Not made in Quick Change Gear Type.	20-RBW	170.00	470	320-RB	213.00	400	Not made in Quick Change Gear Type.	420-RN	188.00				
9-inch Workshop South Bend Bench Lathes (illustrated in this bulletin)*																		
9 1/2	3	18	1/4	240	Prices at right do not include Countershaft.	5-YB	75.00	300	Not made in Silent V-Belt Motor Drive Type.	325	Not made in Quick Change Gear Type.	405-Y	94.00					
9 1/2	3 1/2	24	1/4	265	Prices at right do not include Countershaft.	5-ZB	87.00	325	Not made in Silent V-Belt Motor Drive Type.	350	Not made in Quick Change Gear Type.	405-Z	106.00					
9 1/2	4	30	1/4	290	Prices at right do not include Countershaft.	5-AB	99.00	350	Not made in Silent V-Belt Motor Drive Type.	375	Not made in Quick Change Gear Type.	405-A	118.00					
9 1/2	4 1/2	36	1/4	340	Prices at right do not include Countershaft.	5-RB	116.00	400	Not made in Silent V-Belt Motor Drive Type.	400	Not made in Quick Change Gear Type.	405-R	135.00					

*Prices of all 9-inch Bench Lathes listed under the heading "Underneath Motor Drive Lathes" are for Lathes with Horizontal V-Belt Motor Drive.

A Few Shop Views of the South Bend Lathe Works

Where the 9-inch "Workshop" Lathe and All Other Sizes of South Bend Lathes are Built

South Bend Lathes are built by American workmen under the N.R.A. Machine Tool and Forging Machinery Industry Code.



Above—A view of the Assembling Line where 25 Lathes of one size are assembled at one time.

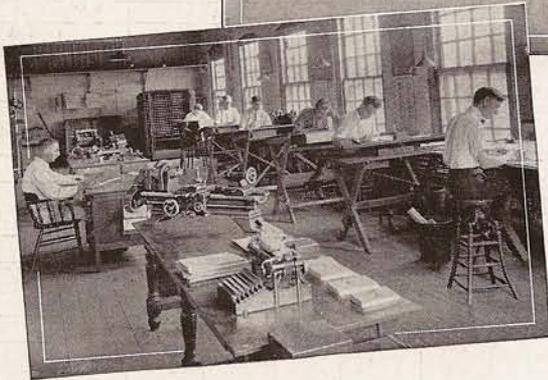


Above—One of our stock rooms showing finished lathe units including headstocks, carriages, gear boxes, etc.

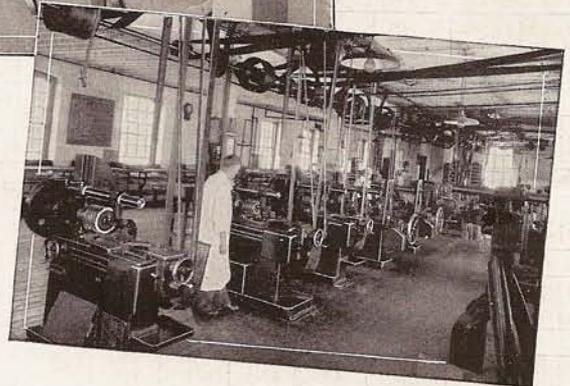
Below—The Engineering Department. A staff of engineers is constantly engaged in improving the lathe and in designing tools, jigs, etc. for our manufacturing departments.



Below—Gear Cutting Department. All gears for South Bend Lathes are hobbled on modern hobbing machines and then tested on a Brown and Sharpe gear tester.



Above—Factory display and demonstration room where the various sizes and types of South Bend Lathes are set up for inspection and for operation on various classes of work.



Guarantee

We guarantee every South Bend Lathe to be accurate and mechanically perfect; to give you entire satisfaction and the service you have a right to expect. We will replace, free of charge, within one year from the date of purchase, any lathe part that proves defective, either in material or workmanship.

We will ship a South Bend Lathe anywhere in the United States for a thirty-day trial in your own shop. If you are dissatisfied in any way, within that time, ship it back to us; we will pay the return freight charges and refund your money.

South Bend Lathe Works

Factory of the South Bend Lathe Works

The Factory. Interior shop views of various departments in our plant are illustrated above. The factory exterior is shown below. Ground area occupied is slightly more than four acres and the floor space is approximately 180,000 square feet. The factory is equipped with the most modern machinery, and represents an investment of over \$2,000,000. More than 100 South Bend Lathes used in our shop.

28 Years Making High Quality Lathes. The South Bend Lathe Works was established in South Bend, Indiana, November 4, 1906. It has operated continuously for twenty-eight years under the same management, devoting its entire organization to the building of South Bend Back-Geared, Screw Cutting Lathes. Our workmen have had an average of ten years' experience building South Bend Lathes, and are capable of doing the highest class of workmanship. South Bend Lathes will be found in ninety-seven countries in the world.

Visitors Are Always Welcome at our factory demonstration and display floor. Open every day until 5:00 P.M., except Sunday.



Lathe Builders for Twenty-eight Years

57,000 Lathes in use in the U.S. and 96 Other Countries

South Bend Lathe Works, 440 E. Madison St., South Bend, Ind.