South Bend
9-inch "Workshop" Lathe

Back-Geared—Screw Cutting
Metal Working

BULLETIN
No. 5-E
OCT. 1934

South Bend Lathe Works
442 East Madison Street
South Bend, Ind., U. S. A.

The 9-inch "Workshop" South Bend Lathe—$75.00 and Up

A Back-Geared—Screw Cutting—Metal Working Lathe

The 9-inch "Workshop" South Bend Lathe, illustrated and described throughout this bulletin, represents the latest development of the South Bend Lathe Works, which has specialized for twenty-eight years in building Back-Geared, Screw Cutting Lathes, of which more than 57,000 are being used today in 97 countries of the world.

Construction. The "Workshop" Lathe is a sturdy, accurate and dependable tool of unusual power and capacity for a lathe of its size. It is built to meet the exacting requirements of the laboratory technician and tool room mechanic in the making of the finest tools and gauges. We recommend it for the highest class of metal work where precision is required.

Material and Workmanship in the 9-inch "Workshop" Lathe is equal in quality to that in any size South Bend Lathe that we build regardless of price. The power and capacity of the 9-inch "Workshop" Lathe are shown by illustrations and descriptions on page 11.

The Low Price at which the "Workshop" Lathe is sold is possible only through our ability to produce the lathe in large quantities.

A Wide Variety of Work is handled on the 9-inch "Workshop" Lathe including all classes of small machine operations. Machines all kinds of metals, fibres, hard rubber, wood, bakelite, catalin, celluloid, etc. Cuts standard screw threads. Services valves, armatures, pistons, bushings, and connecting rods. See pages 10 to 23 inclusive.

Guarantee. "Every 9-inch 'Workshop' South Bend Lathe is guaranteed to be accurate and mechanically perfect; to give entire satisfaction and the service you have a right to expect. We will replace, free of charge, f.o.b. South Bend, Indiana, within one year from the date of purchase, any 9-inch 'Workshop' Lathe part that proves defective either in material or workmanship."

The Machine Age. The Back-Geared, Screw Cutting Lathe is the universal tool and is a necessity in the machine shop in this mechanical age. A New England machinist claims he has performed more than 4,000 different kinds of operations on metal in a Back-Geared Screw Cutting Lathe.

The Well Equipped Shop acquires an enviable reputation in any community. The public, regardless of what it knows about machinery, knows that the up-to-date shop equipped with high quality tools, manned by expert mechanics is the only reliable place to take expensive machines and equipment for repairs.

One 9" "Workshop" Lathe with Attachments is capable of taking care of all the jobs that are illustrated in this bulletin. The same lathe is shown throughout the bulletin in all illustrations. The jobs illustrated merely show the universal use of the lathe and its attachments for work of all kinds.

A General Purpose Tool. The lathe can take care of a variety of jobs and when fitted with attachments becomes a general purpose tool. The screw cutting lathe can be purchased for a fraction of the cost of many single purpose machines which are used only part of the time.

Efficiency of the Small Lathe. The expert machinist knows that the small lathe is very practical in the shop because it will take care of all the small work, which is about 75% of the work in the average shop. A large shop may have larger lathes also, but it will be noticed that the small lathe is always the busiest. It takes care of the small work with great accuracy and much quicker than a large lathe.

Learning How to Operate a Lathe. Some mechanics claim it is as easy to learn how to run a lathe as it is to learn how to run an automobile. These mechanics evidently are thinking of some of the simpler lathe jobs. However, with the book, "How to Run a Lathe" (P. 28) an operator of average ability should do good lathe work after a little practice.

Features and Specifications

The features and specifications listed at right apply to all the various sizes and types of 9-inch "Workshop" Lathes shown throughout this bulletin. Additional features together with illustrations and detailed descriptions are shown on pages 8 to 11 inclusive.

Workshop Lathe Features

- Back-geared headstock, six spindle speeds.
- Hollow steel spindle, ¾" hole.
- Reverse gear for left-hand threads and feeds.
- Compound rest graduated 180°, swivels to any angle.
- Carriage lock for accurate facing and cutting-off.
- Tailstock has ⅝" 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 gibs on cross feed and compound rest.

Workshop Lathe Specifications

Swing over bed	9⅛ in.
Swing over carriage	6⅛ in.
Hole through spindle ¾". Collet capacity 1/64" to ½".	
Standard screw thread cutting range	4 to 40 per in.
Spindle speeds	39, 68, 122, 202, 353, 630 R. P. M.
Width of cone pulley belt	1 in.
Lathe tool shank ⅜" x ¾"	Cutter Bits ¼ x ¼ in.
Size of spindle nose	1⅜ in. diam., 10 threads
Head and tail spindle centers	No. 2 Morse Taper
Lead screw, Acme thread	¾ in. diam., 8 threads
Tool cross slide travel	5½ in.
Angular travel compound rest top	1⅞ in.
Tailstock spindle travel	1⅞ in.

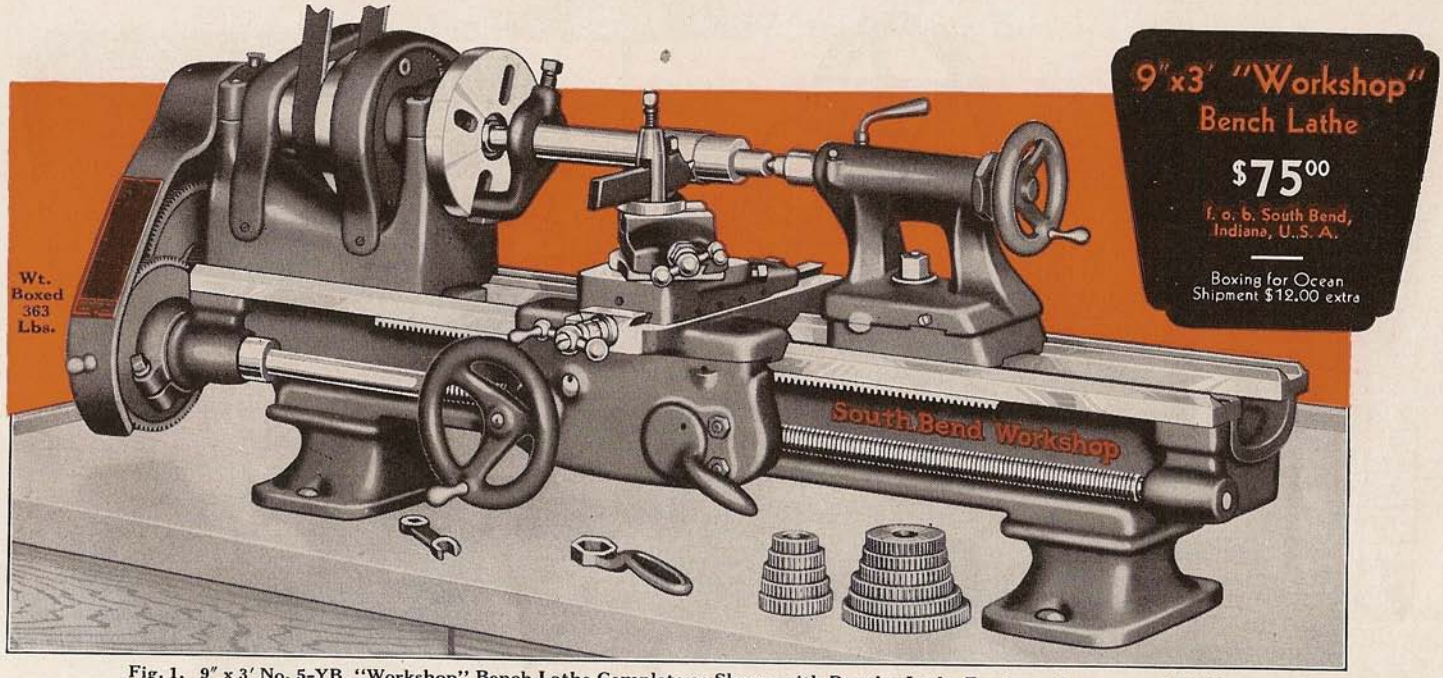


Fig. 1. 9" x 3' No. 5-YB, "Workshop" Bench Lathe Complete as Shown with Regular Lathe Equipment.....$75.00

9-inch "Workshop" South Bend Bench Lathe

An Unequalled Value in the High Quality Small Lathe Field

The 9-inch "Workshop" South Bend Back-Geared, Screw Cutting Lathe illustrated above and described on page 2 is a remarkable and efficient tool for light machine work. High quality materials, skilled workmanship, fine finish and adherence to strictest accuracy standards, make this lathe the outstanding value in the small lathe field.

The above lathe, without countershaft, is supplied for shops that have their own drive arrangements or wish to use their own motors, etc. For prices of "Workshop" lathes with drives see pages 4 to 7 inclusive.

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

Prices of 9-inch "Workshop" Lathe—Without Drive

Swing Over Bed Inches	Length of Bed Feet	Distance Between Centers Inches	Approx. Ship. Wt. Lathe Boxed Pounds	Cubic Contents Ship'g Case Feet	Cat. No.	Code Word	Price F.O.B. Factory S. Bend	Boxing For Ocean Shipment	Freight To Ship Side New York City
9 1/8	3	18	363	11	5-YB	Aftik	**$75.00**	**$12.00**	**$4.72**
9 1/8	3 1/2	24	398	12	5-ZB	Aftol	**87.00**	**12.00**	**5.17**
9 1/8	4	30	433	14	5-AB	Aftum	**99.00**	**12.00**	**5.63**
9 1/8	4 1/2	36	468	16	5-RB	Agals	**116.00**	**12.00**	**6.08**

For further details on export information, see pages 30 and 31.

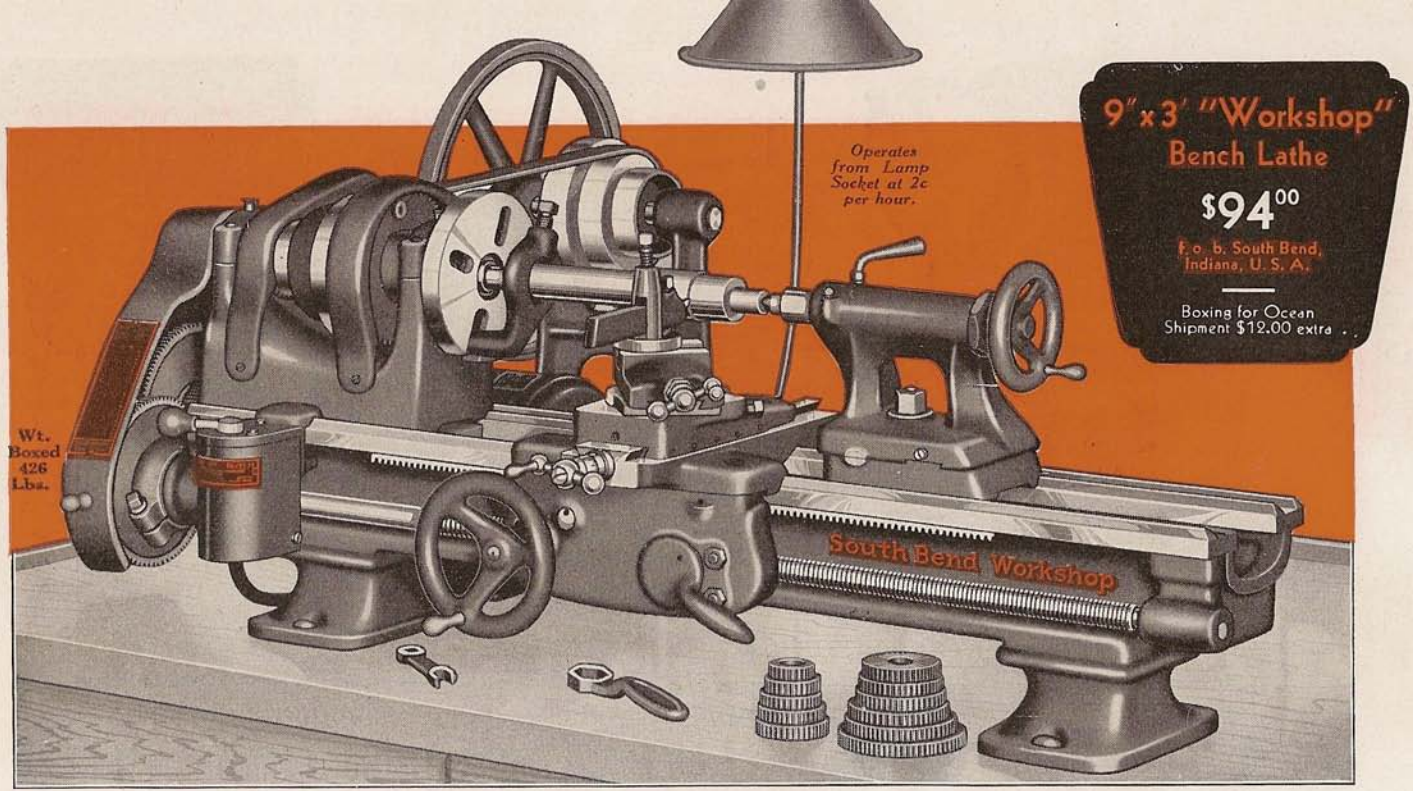


Fig. 3. 9" x 3' No. 405-Y, "Workshop" Bench Lathe with Horizontal V-Belt Motor Drive Complete as Shown.....$94.00

9-inch "Workshop" Horizontal V-Belt Motor Driven Bench Lathe

A High Quality Back-Geared, Screw Cutting, Metal Working Lathe

The 9-inch "Workshop" South Bend Lathe illustrated above is exactly the same as the lathe shown on page 3, except that it is equipped with the Horizontal V-Belt Motor Drive. This drive equipment is described on the following page. The lathe has all the features and specifications described on pages 2 and 8 to 11 inclusive, and will handle all the jobs shown throughout the bulletin. Itemized prices of the lathe and motor drive equipment are shown in the tabulation on page 5.

Regular Lathe Equipment included in the price of the 9-inch "Workshop" Horizontal V-Belt Motor Driven Bench Lathe consists of: Graduated compound rest; face plate; forged steel tool post, ring and wedge; two 60° lathe centers, No. 2 Morse Taper; spindle sleeve; wrenches for tool post and tailstock; set of change gears for screw thread cutting; large turning gears for automatic longitudinal power feeds; installation plan and instruction book, "How to Run a Lathe."

9-inch "Workshop" Horizontal V-Belt Motor Driven Bench Lathe (Continued from page 4)

The Horizontal V-Belt Motor Drive is one of the most popular and efficient types of motor drives for the bench lathe. Its compactness, simplicity, efficiency and economy of operation are features which appeal to every mechanic.

What the Drive Consists of. The Horizontal V-Belt Motor Drive consists of a horizontal countershaft, plain type; a ¼ H.P. start-and-stop type split-phase reversing motor for 60-cycle, A.C. 110-volt; and a six-contact drum type reversing switch (Style R-12). The horizontal countershaft and motor are mounted on the bench back of the lathe. The drum reversing switch is conveniently located on the front "V" of the lathe bed and provides for starting, stopping and reversing the motor. The drive operates from an ordinary electric lamp socket. Power is transmitted from the motor to the countershaft by V-belt and by flat leather belt from the countershaft to the cone pulley of lathe.

How the Drive is Mounted. The most popular method of mounting the horizontal V-belt drive is on the bench back of the lathe, as shown at right and on page 4. This makes a complete and efficient motor drive unit for the Back-Geared, Screw Cutting Bench Lathe as it permits the lathe spindle to be reversed in either direction, when necessary.

Belt Tension Adjustment. The base of the horizontal V-Belt countershaft and the base of the motor have slotted bolt holes which permit adjustment "to" or "from" the lathe to provide for any required tension of either the V-belt or the flat leather belt.

We Recommend that the motor, switch and drive equipment as listed and priced below be ordered with the lathe because motors and switches we supply are carefully checked and tested for efficiency before they leave the factory. The entire Horizontal V-Belt Motor Drive Equipment may be purchased with the lathe or any item not wanted may be omitted.

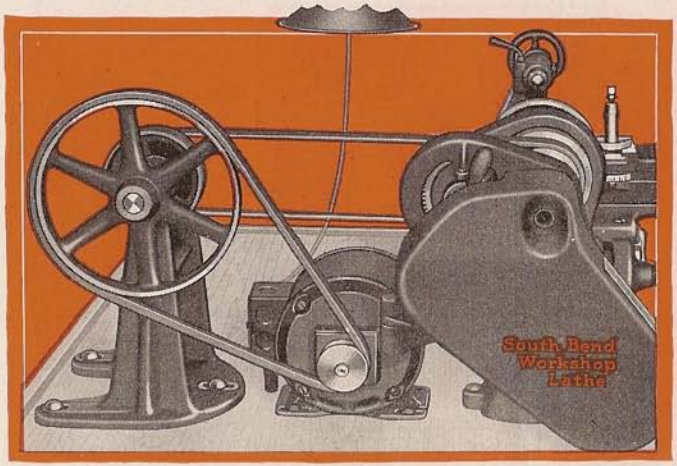


Fig. 4. Headstock End View of the 9" x 3' No. 405-Y "Workshop" Horizontal V-Belt Motor Driven Bench Lathe as shown on page 4.

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

Motors of special voltage, phase and cycle, to meet the requirements of the current available in various parts of the world, can be supplied for operating the South Bend 9-inch "Workshop" Lathe. For complete information see page 31.

Motors of special voltage and cycle require longer time in delivery, therefore if you wish to order your lathe less motor and purchase your motor locally, the price of the motor may be deducted in the tabulation at left.

The Index Plate at the right shows the arrangement of change gears for cutting screw threads and automatic longitudinal feeds. For further information on this subject see page 10.


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		24
9	24	2-1	54
10	24		30
11	24		33
11½	24	2-1	69
12	24		36
13	24		39
14	24		42
16	24		48
18	24		54
20	24		60
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.

Fig. 5. See page 10 on thread cutting.

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

9-inch "Workshop" South Bend Bench Lathe with Graduated Compound Rest and Regular Equipment but not Bench	9" x 3' 405-Y	9"x3½' 405-Z	9" x 4' 405-A	9" x 4½' 405-R
	$75.00	$87.00	$99.00	$116.00
Prices of Horizontal V-Belt Motor Drive Equipment				
Horizontal Countershaft, Plain Type	5.00	5.00	5.00	5.00
¼ 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	4.00	4.00	4.00	4.00
V-Belt, Motor to Drive Unit	.75	.75	.75	.75
Flat Leather Belt	1.00	1.00	1.00	1.00
Cash Price, Motor Drive Lathe and Equip., Complete..	$94.00	$106.00	$118.00	$135.00
Code Word	Acdug	Acets	Acfog	Abpib
Additional charge for boxing lathe for ocean shipment	$12.00	$12.00	$12.00	$12.00
Transportation charge on lathe to ship side (New York City)	5.54	5.99	6.45	6.90
Distance Between Spindle Centers of Lathe	18 in.	24 in.	30 in.	36 in.
Shipping Wt., Lathe and Drive, boxed for ocean shipment	426 lbs.	461 lbs.	496 lbs.	531 lbs.
Cubic Contents of Shipping Case, Lathe boxed for ocean shipment	12 ft.	13½ ft.	15 ft.	17 ft.

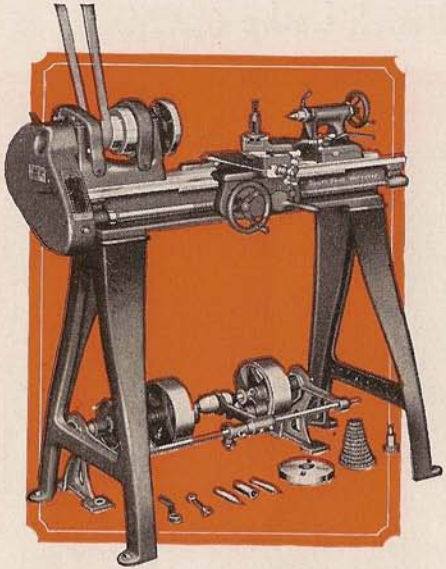


Fig. 6. 9″ x 3′ "Workshop" Floor Leg Lathe. Price $95.00. Extra for Boxing $12.00.

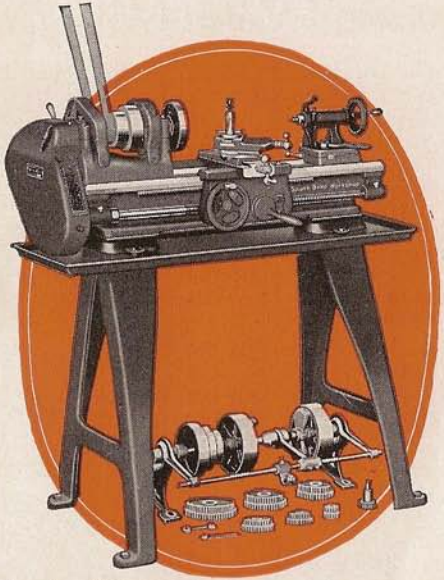


Fig. 7. 9″ x 3′ "Workshop" Oil Pan Floor Leg Lathe. Price $114.00. Extra for Boxing $12.00.

Fig. 8. 9″ x 3′ "Workshop" Motor Driven Floor Leg Lathe $104.00. Extra for Boxing $12.00.

9″ "Workshop" Floor Leg Lathe

Countershaft Drive

The 9-inch "Workshop" Lathe shown above is mounted on Floor Legs, otherwise it is exactly the same as the bench lathe shown on page 3, and has the same features, specifications and equipment. Prices below include Double Friction Countershaft and equipment as illustrated beneath lathe.

9⅛-inch Swing "Workshop" Floor Leg Lathe

Length of Bed Feet	Distance Between Centers Inches	Approx. Ship. Wt. Lathe Boxed Pounds	Cubic Contents Case Feet	Cat. No.	Code Word	Price F.O.B. Factory South Bend
3	18	493	15	5-YW	Behoc	$ 95.00
3½	24	528	16	5-ZW	Bejob	107.00
4	30	563	18	5-AW	Bekac	119.00
4½	36	598	20	5-RW	Bekmo	136.00

Boxing lathe for ocean shipment $12.00 extra.

9″ "Workshop" Oil Pan Lathe

Floor Leg Type—Countershaft Drive

The 9-inch "Workshop" Lathe illustrated above has Floor Legs and is equipped with a Pressed Steel Oil Tight Pan, otherwise this lathe is the same as the bench lathe shown on page 3, and has the same features, specifications and equipment. Prices include Double Friction Countershaft.

9⅛-inch Swing "Workshop" Oil Pan Lathe

Length of Bed Feet	Distance Between Centers Inches	Approx. Ship. Wt. Lathe Boxed Pounds	Cubic Contents Case Feet	Cat. No.	Code Word	Price F.O.B. Factory South Bend
3	18	546	15	205-YW	Bekce	$114.00
3½	24	582	16	205-ZW	Bekeg	127.00
4	30	617	18	205-AW	Bekik	140.00
4½	36	652	20	205-RW	Belap	158.00

Boxing lathe for ocean shipment $12.00 extra.

9″ "Workshop" Motor Driven Lathe

Horizontal Motor Drive Mounted on Wall

The 9-inch "Workshop" Lathe illustrated above is the same as the lathe shown on page 4, except that the Motor Drive is Mounted on the Wall instead of on the Bench and the lathe has Floor Legs. Prices include floor legs and motor drive equipment as itemized on page 5.

9⅛-inch Swing "Workshop" Motor Driven Lathe

Length of Bed Feet	Distance Between Centers Inches	Approx. Ship. Wt. Lathe Boxed Pounds	Cubic Contents Case Feet	Cat. No.	Code Word	Price F.O.B. Factory South Bend
3	18	496	15	405-YF	Abgac	$104.00
3½	24	531	16	405-ZF	Abgeg	116.00
4	30	566	18	405-AF	Abgik	128.00
4½	36	601	20	405-RF	Aboxd	145.00

Boxing lathe for ocean shipment $12.00 extra.

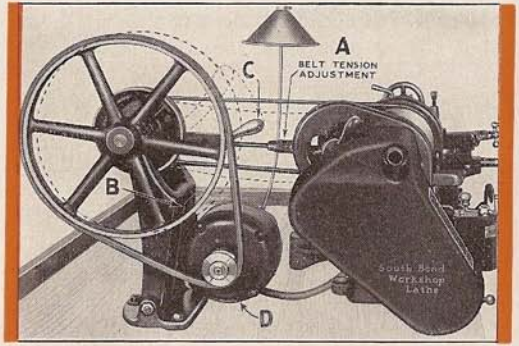


Fig. 9. Horizontal V-Belt Motor Drive Countershaft with Belt Tension Adjustment, for 9-inch "Workshop" Lathe. See Price Below.

Horizontal V-Belt Countershaft

With Belt Tension Adjustment—For "Workshop" Lathe

The Horizontal V-Belt Countershaft with belt tension adjustment, shown above, differs from the horizontal countershaft, plain type, as supplied with the lathes shown and priced on pages 4 and 5, in that it has the following features: (a) Belt tension adjustment for flat leather belt, (b) Adjustable motor base for V-Belt tension, (c) Belt release lever for easy shifting of cone pulley belt, (d) Motor is attached to countershaft frame instead of bench.

Price of Horizontal Countershaft with belt tension adjustment when purchased with "Workshop" Bench Lathe instead of Plain Type Horizontal Countershaft—Cat. No. 238. Code "Aghap" **$10.00**

Gasoline Engine Drive

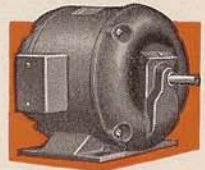
For Operating the 9-inch "Workshop" Lathe

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

Electric Motors and Control Switches

For Operating the 9-inch "Workshop" Lathe

¼ H.P. Start-and-Stop Type Reversing Split-Phase Motors



Start-and-Stop Type Reversing Motor

The 60-cycle, A.C. 110-volt, ¼ H.P. Start-and-Stop Type Reversing Split-Phase Motor, 1725 R.P.M., shown at right and priced with the Motor Driven Lathes in this bulletin, operates from an electric lamp socket at an average cost of 2 cents per hour. This motor is practical, powerful and efficient for operating the "Workshop" Lathe. It will operate, in either direction by allowing the motor to come to a full stop before moving the switch lever from "forward" to "reverse" or vice versa. Cat. No. 127. Code Word "Atpix" Price..... **$7.75**

50-cycle, A.C. 110-volt, ¼ H.P. Start-and-Stop Type Split-phase Reversing Motor can be supplied in lieu of the 60-cycle Motor described above. Cat. No. 711. "Awpal"....**$10.00**

Drum Type Reversing Switch (Style R-12)

Reversing Switch

The Drum Type Reversing Switch (Style R-12), shown at right, is listed with the Motor Driven Lathes in this bulletin. This is an efficient 6-contact reversing switch for use with the Start-and-Stop Type Reversing Motors described above. Switch has three positions: "left" for starting; "center" for stopping; and "right" for reversing the rotation of the lathe spindle. Price of Switch includes bracket for mounting. Cat. No. 789. Code Word "Atwig" Price..... **$4.00**

Instant Reversing Motors and Switches

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

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

Special Motors for A.C. 2-phase, and 3-phase, of 25 and 40-cycle, also D.C. motors of various voltages can be supplied at slightly higher prices. See page 31.

When Ordering a Motor Driven Lathe Give the Following Information

When ordering a motor driven lathe give the following information regarding the electric current to be used.

—If Alternating Current state exact voltage, phase, cycle, and number of wires.

—If Direct Current state exact voltage only.

When giving voltage state the exact voltage of motor wanted. Do not specify 110-220 volt motor, as we can not furnish motors of double voltage rating.

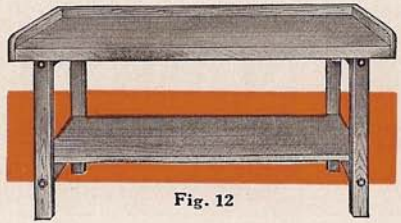


Fig. 12

Hard Pine Benches for Lathe

Benches are of mortise and tenon construction. Height of bench is 30½". Bench tops are 1½" thick, made of narrow strips, glued. Benches are shellacked and varnished. Shipped knocked down. If you wish to make your own bench, we will supply blue prints, free, with the lathe. Extra for mounting lathe on bench, $5.00.

No. 275-L. Bench. Size top: 45" x 28". "Adnul".....	**$15.00**
No. 275-M. Bench. Size top: 54" x 28". "Adonk".....	**17.00**
No. 275-O. Bench. Size top: 60" x 28". "Adpik".....	**18.00**
Extra for bench with drawer.....	**2.00**

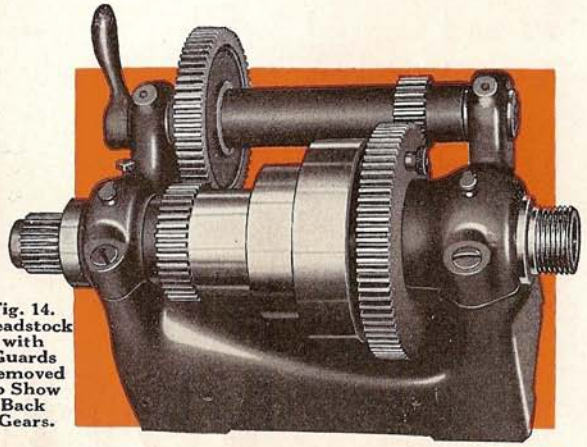


Fig. 14. Headstock with Guards Removed to Show Back Gears.

Back-Geared Headstock

The Back-Geared Headstock is strong, rigid and accurately fitted. Has six spindle speeds: 39, 68, 122 R.P.M. in back gear, and 202, 353 and 630 R.P.M. direct belt speeds. The back gears may be quickly engaged. Back gear ratio is 5 to 1. A reverse gear provides for left-hand threads and feeds. Takes 1" belt. **Bearings** are cast integral with headstock and may be adjusted to take up wear. Felt wick oilers lubricate headstock bearings and spindle.

Fig. 15.

The Tailstock

Tailstock has 5/8" set-over for taper turning; improved spindle lock and No. 2 Morse Taper self-ejecting center of tool steel, hardened and ground. Spindle travel is 1 7/8".

Extra for graduated tailstock spindle, $1.00.

Fig. 16. Take-up Nut

Fig. 17. Thrust Collar.

Alloy Steel Headstock Spindle

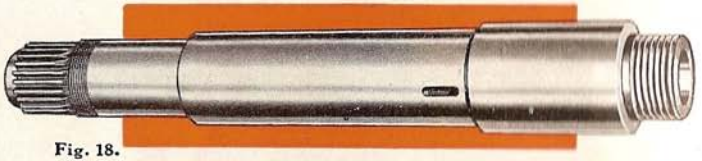


Fig. 18.

The headstock spindle has 3/4" hole its entire length. Spindle nose is 1 3/8" diameter and has 10 threads per inch. Hole in end of spindle conforms to No. 3 Morse Taper and has a reducing sleeve which takes No. 2 Morse Taper spindle center. Spindle has hardened and ground steel thrust collar and take-up nut for end adjustment of spindle.

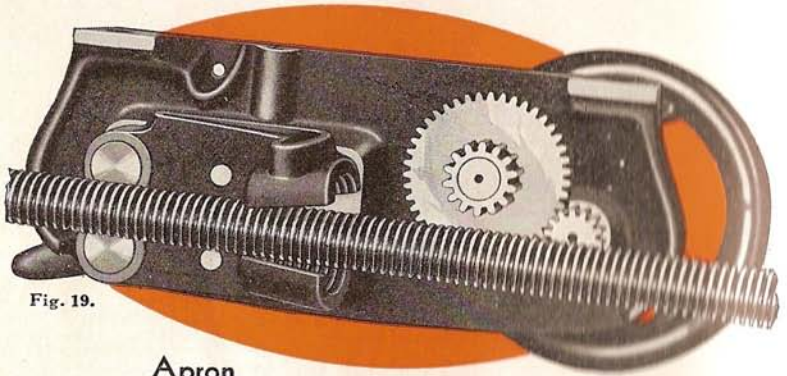


Fig. 19.

Apron

The apron is strong and powerful. Half-nuts for screw thread cutting and for automatic longitudinal feeds have long bearings on the lead screw and are guaranteed for accuracy. Hand feed to the carriage is provided by a hand wheel. An improved oiling system lubricates the half-nuts, lead screw and gearing.

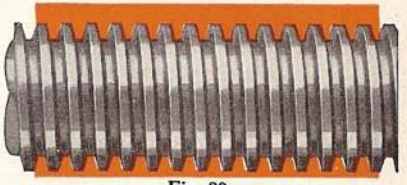


Fig. 20.

Precision Lead Screw

The lead screw is 3/4 inches in diameter and has eight Acme threads per inch. Guaranteed for making the finest and most accurate precision gauges, master taps, dies, tools, etc.

Saddle and Compound Rest

The Saddle has long accurately fitted bearings on the lathe bed and provides rigid support for the compound tool rest. It has a clamping device to lock carriage for facing and cutting-off operations. Cross feed travel 5½".

The Compound Rest is graduated 180° for machining at any angle and for turning and boring short tapers. Angular travel 1⅞". The cross feed screw and compound rest screw have ball cranks with micrometer graduations reading in thousandths of an inch. In combination these two feed screws permit the cutting tool to be fed to the work at any angle for straight and taper machining.

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

A Large T-slot in the compound rest top is provided for the tool post and for holding boring bars, grinder, etc. The tool post, ring and wedge, shown in illustration, are made of drop forged steel. The tool post screw is made of tool steel, hardened.

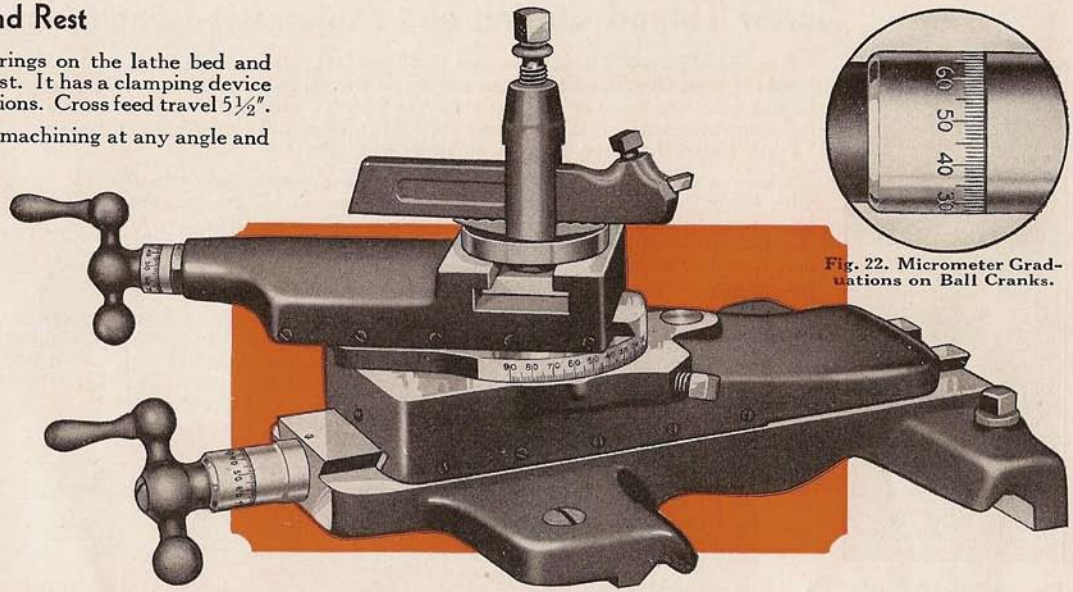


Fig. 21. Saddle and Compound Rest for Lathe

Fig. 22. Micrometer Graduations on Ball Cranks.

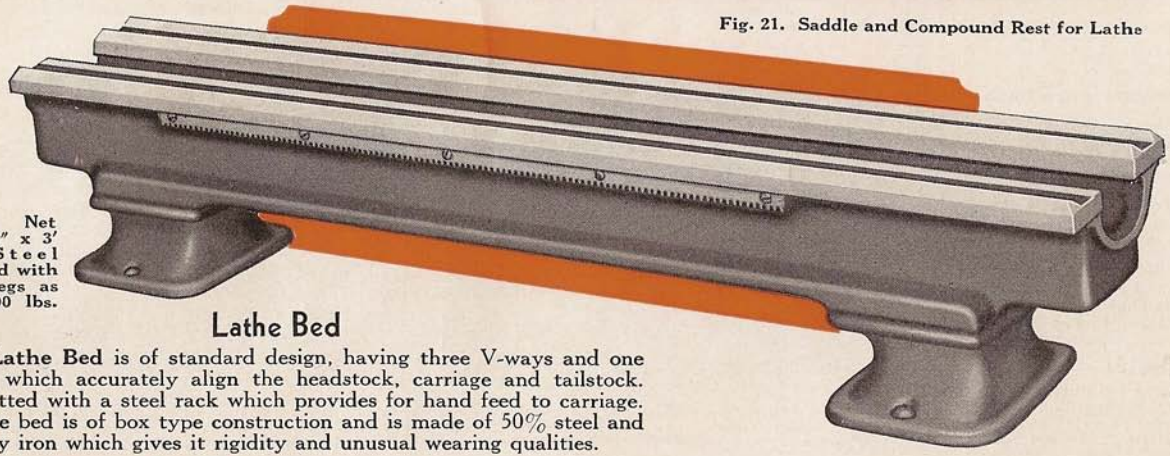


Fig. 23. Net Weight 9" x 3' Semi-Steel Lathe Bed with Bench Legs as shown, 90 lbs.

Lathe Bed

The Lathe Bed is of standard design, having three V-ways and one flat way, which accurately align the headstock, carriage and tailstock. Bed is fitted with a steel rack which provides for hand feed to carriage. The lathe bed is of box type construction and is made of 50% steel and 50% grey iron which gives it rigidity and unusual wearing qualities.

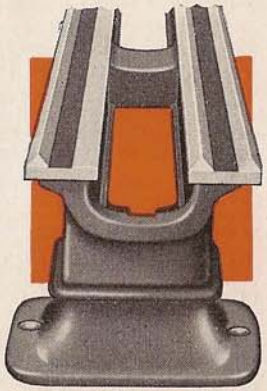


Fig. 24. End View of 9"x3' Bed. Note V-Ways and Box Brace.

Screw Thread Cutting and Automatic Longitudinal Power Feeds

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				24
9	24		2-1		54
10	24				30
11	24				33
11½	24		2-1		69
12	24				36
13	24				39
14	24				42
16	24				48
18	24				54
20	24				60
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.

Fig. 25. Metal Screw Thread Cutting Chart Attached to Lathe.

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. 27. Change Gears.

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. 2 Special Compound Gears. Code "Atmet" . . **$5.00**

Fig. 26. Various Threads Cut on 9-inch "Workshop" Lathe.

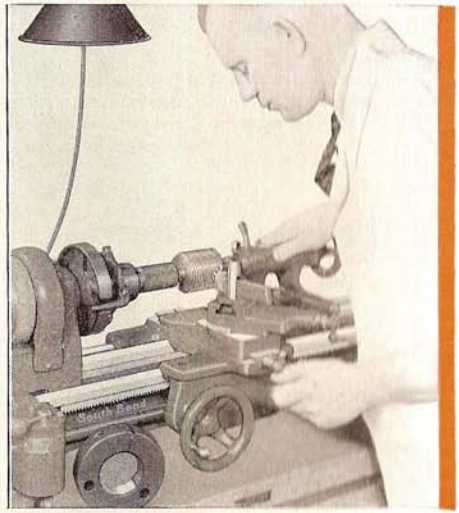


Fig. 28. Screw Thread Cutting on the 9-inch "Workshop" Lathe.

Arranging Gears for Threads and Feeds

The illustrations at right show the 9-inch "Workshop" Lathe with gears arranged for cutting right and left-hand screw threads and for automatic longitudinal power feed to carriage.

A metal screw thread cutting chart, shown above, is attached to each Lathe and shows the gears to use and the method of arranging them for cutting the various screw threads.

The Reverse Gear for left-hand screw threads and automatic longitudinal feeds is shown by letter "R" in Fig. 32. Its application is shown in Fig. 30.

Metric Screw Threads

A transposing gear attachment for cutting screw threads in millimeter pitch can be supplied for use on the 9-inch "Workshop" Lathe at extra cost. For illustration, description and prices, see page 31.

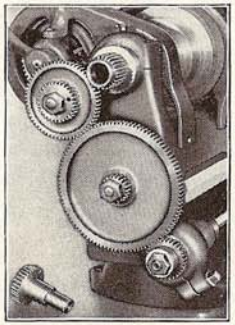


Fig. 29. Gears Arranged to Cut Right Hand Screw Threads.

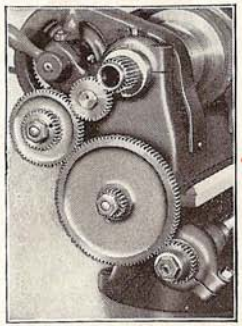


Fig. 30. Gears Arranged to Cut Left Hand Screw Threads.

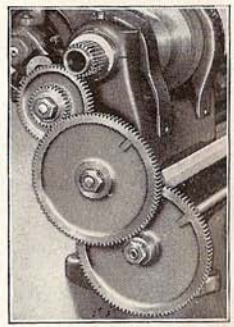


Fig. 31. Gears Arranged for R.H. Automatic Longitudinal Power Feeds.

Fig. 32. Gears Removed to Show Gear Bracket which Holds Gears.

Power for Heavy Cuts

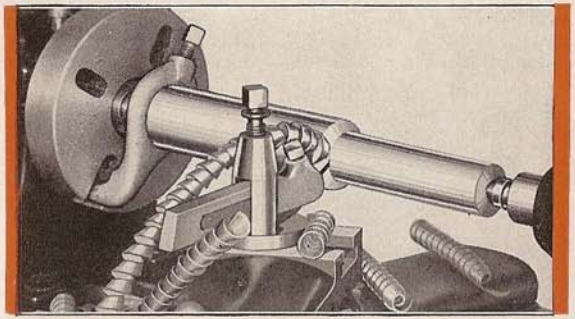


Fig. 33. Reducing Diameter of a Steel Shaft ¼" in One Cut.

The 9-inch "Workshop" Lathe has the power to reduce the diameter of a shaft of machinery steel ¼" in one cut by taking a chip ⅛" deep. The back-geared headstock provides great power and a variety of spindle speeds for taking heavy cuts or machining large diameters. The weight of the lathe, plus large bearing surfaces and generous proportions, insures unusual strength and rigidity.

The carriage of the lathe is driven by automatic longitudinal power feed.

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 capacity of the 9-inch "Workshop" Lathe in the various bed lengths is shown in the table at right.

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

CAPACITY OF 9" "WORKSHOP" LATHE

Length of Bed Feet	Distance Between Centers Inches	Swing Over Bed Inches	Swing Over Carriage Inches	Ship. Wt. Mtr. Dr. Bench Lathe Crated
3′	18″	9⅛″	6⅛″	300 lbs.
3½′	24″	9⅛″	6⅛″	325 lbs.
4′	30″	9⅛″	6⅛″	350 lbs.
4½′	36″	9⅛″	6⅛″	375 lbs.

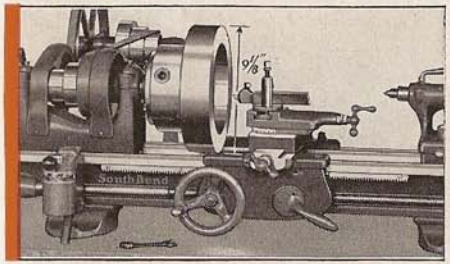


Fig. 34. Chucking Capacity of the 9-inch "Workshop" Lathe is 9⅛" in diameter, as shown.

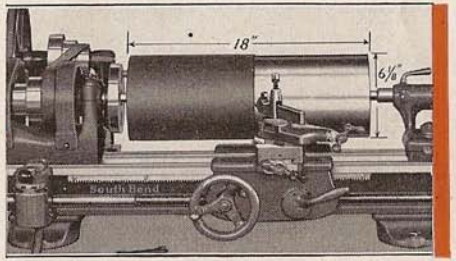


Fig. 35. 9" x 3 Lathe Takes Work 6⅛" in diameter over the tool carriage and 18" long.

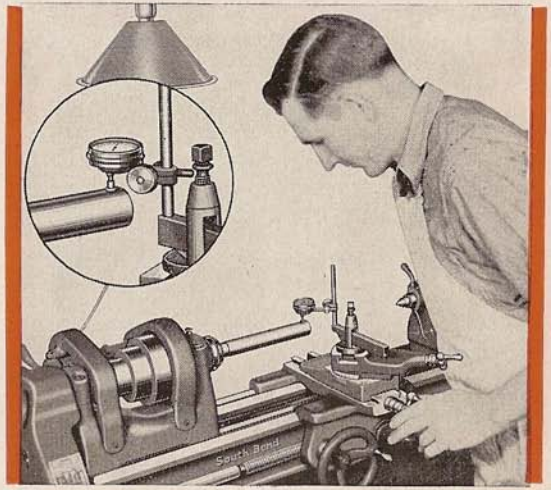


Fig. 36. Testing Alignment of Headstock Spindle.

Accurate to 1/1000 of An Inch

Before the 9-inch "Workshop" Lathe leaves the factory it is set up, operated and tested. Each lathe undergoes several tests for accuracy, one of which is the headstock spindle test shown above. In the headstock spindle test the maximum run-out allowed at the outer end of the test bar is one-thousandth (1/1000). Alignment of test bar with bed in both horizontal and vertical plane, is held within one-thousandth (1/1000).

The South Bend "Workshop" Lathe is built with the finest precision and accuracy and is capable of doing all classes of fine, accurate tool, die and gauge work. Throughout the process of manufacture the highest standards of accuracy are maintained. The most accurate measuring instruments, test bars and master templets, etc., are used constantly to insure accuracy and interchangeability.

The special machinery with which our factory is equipped permits building the "Workshop" Lathe units in large quantities, which insures accuracy, increased production and lower costs.

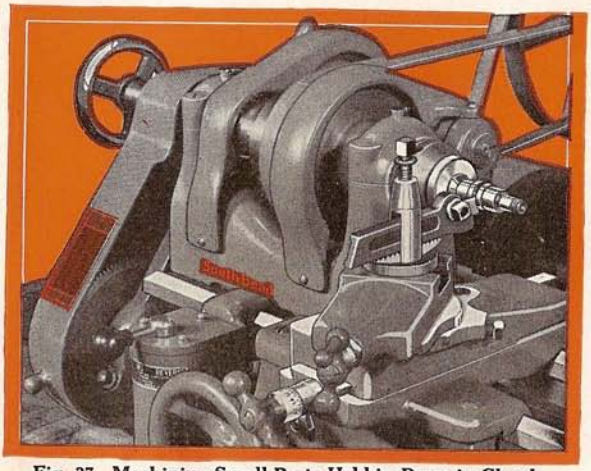


Fig. 37. Machining Small Parts Held in Draw-in Chuck

Draw-in Collet Chuck Attachment

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

Collets can be supplied with hole sizes up to and including 1/2 inch 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. When ordering specify hole size of collet wanted.

Cat. No. 4306. Code Word "Acrut". Price $25.00

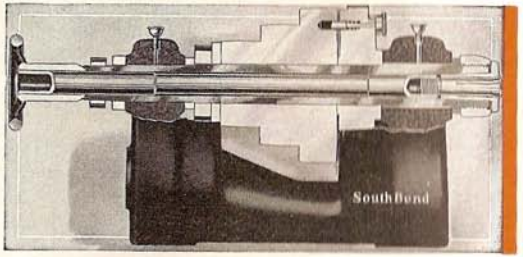


Fig. 38. Section of Headstock of Lathe Showing Draw-in Collet Chuck Attachment.

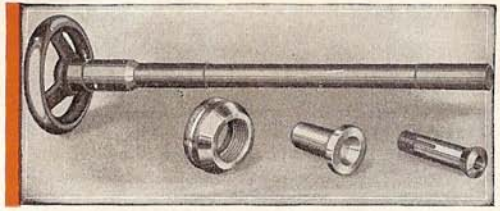


Fig. 39. Hand Wheel Type Draw-in Collet Chuck Attachment for Lathe.

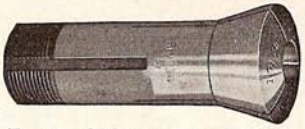


Fig. 40. Collet for Round Work.

Fig. 41. Group of Ten Collets for Round Work—Holes from 1/64" up.

Split Collets for Round Work

Round collets for holding round work, made of tool steel, hardened, tempered and ground, can be supplied in any hole diameter from 1/64" up to 1/2" by 64ths. Cat. No. 609-W. Code "Catra" Each **$2.50**

Collets With Holes in Millimeters

Collets with holes measured in millimeters for holding round work can be supplied in any hole diameter from 1mm. to 13 mm. Cat. No. 363. Code Word "Aborx". Each $2.75

Prices of special collets for holding square and hexagonal work, with hole dimensions in either inches or millimeters, will be supplied on request.

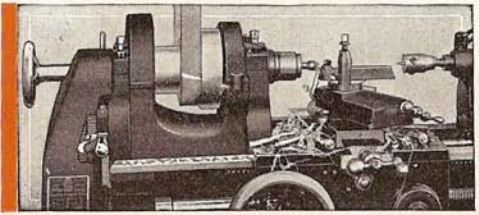


Fig. 42. Manufacturing Small Duplicate Parts from Bar Steel Held in the Draw-in Chuck.

Lathe Equipped for Production

The illustrations at left and right show the 9-inch Lathe fitted with various attachments for manufacturing and production work.

Hand Lever Draw-in Collet Chuck (Fig. 43.) For rapid production work. Cat. No. 5206. Code word "Abpat". Price complete with one collet....**$70.00**

Hand Lever Tailstock (at right). Supplied in lieu of reg. tailstock. Cat. No. 898. "Abont" **$30.00**

Hand Lever Double Tool Slide (shown on the lathe at right). Cat. No. 738. Code "Abotz" **$50.00**

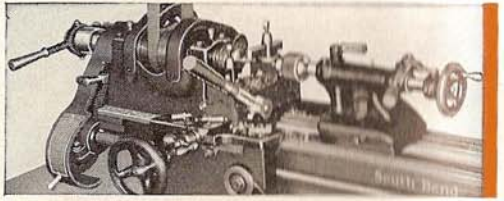


Fig. 43. Lathe Equipped with Hand Lever Draw-in Chuck, H.L. Double Tool Slide and H.L. Tailstock.

Milling and Keyway Cutting Attachment

Milling Cutters and Arbors Are Not Included in Price

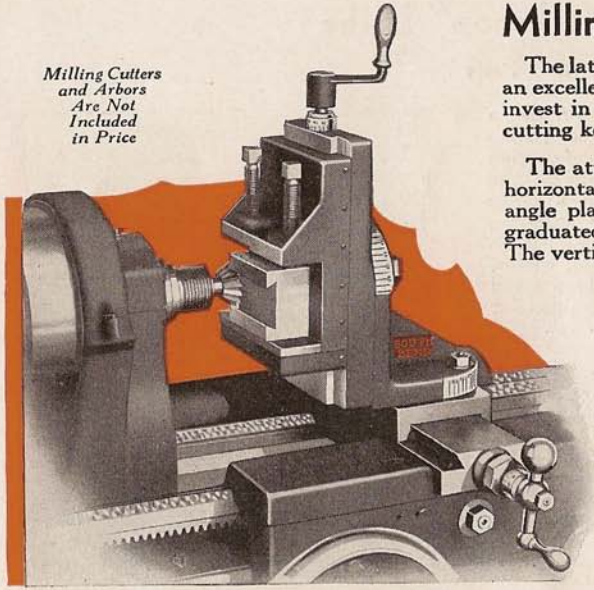


Fig. 44. Milling a Dovetail on Lathe Using Milling Attachment

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 ends of shafts, milling dovetails, tapers, etc.

The attachment fits on the compound rest base of the lathe, swivels horizontally and is graduated 180 degrees. In addition, the upright angle plate, to which the vise is attached, swivels vertically and is graduated 180 degrees. Capacity of vise is 1⅜". Vertical feed is 2½". The vertical adjusting screw has a micrometer graduated collar. Cross feed is 5½", operates by hand. Longitudinal feed can be by hand or by automatic feed to carriage.

Equipment includes: Milling attachment, two V-blocks for round work, crank handle for feed screw, and double end wrench. **Cat. No. 9-W. "Vabif".....$35.00**

Milling Cutters and Arbors

We can supply the milling cutters shown at right in all standard and special sizes.

No. 109-M. Arbor for Milling Cutters. Code "Kacel" **$7.50**

No. 101-A Woodruff Collet Chuck. Code "Askeb". **$2.65**

Prices of popular milling cutters on request.

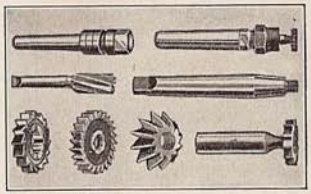


Fig. 45. Milling Cutters and Arbors

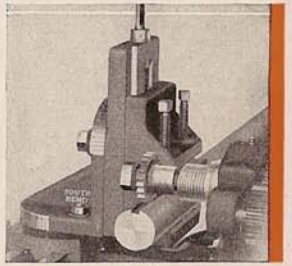


Fig. 46. Milling a Keyway

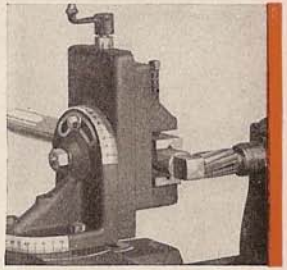


Fig. 47. Squaring End of Shaft

Fig. 48

Adjustable Thread Cutting Stop

A practical attachment for regulating the depth of each chip in screw thread cutting. Fits on dovetail of cross slide. Has locking nut for clamping in position and screw for regulating depth of cut.

Cat. No. 67-W. Code Word "Cegpy"
Price.....$2.00

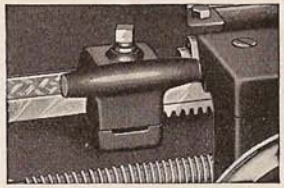


Fig. 49

Plain Carriage Stop

Stops carriage at any point along lathe bed on accurate facing, turning and boring work. Can be used on either side of carriage.

Cat. No. 758. Code "Tahro". **$2.00**

Micrometer Carriage Stop. Cat. No. 968-W. Code Word "Capys". Price. **$8.00**

Fig. 50

Electric Tool Grinder

A high grade bench grinder for grinding lathe tool bits, drills, etc. Equipment includes ⅓ H.P. 1-ph., 60-cy., 110-v., A.C. ball bearing motor, 1725 R.P.M.; 2 abrasive wheels, 7" x ⅝" x ½", 60 and 36 grit; 2 wheel guards; 2 rests; switch; 10-ft. cord and plug.

Cat. No. 710-E. "Jeroz". . **$20.00**

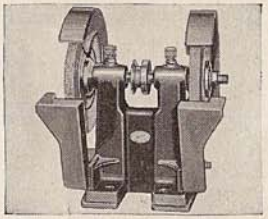


Fig. 50-A

V-Belt Drive Tool Grinder

A practical bench grinder for lathe tool bits, drills, etc. Price includes 2 abrasive wheels, 6"x½"x½", 60 and 36 grit; 2 guards and rests.

Cat. No. 710-B. Code "Jerub" **$5.00**

No. 14-K Electric Grinder for the "Workshop" Lathe

For Grinding Hardened or Tempered Tools and Parts

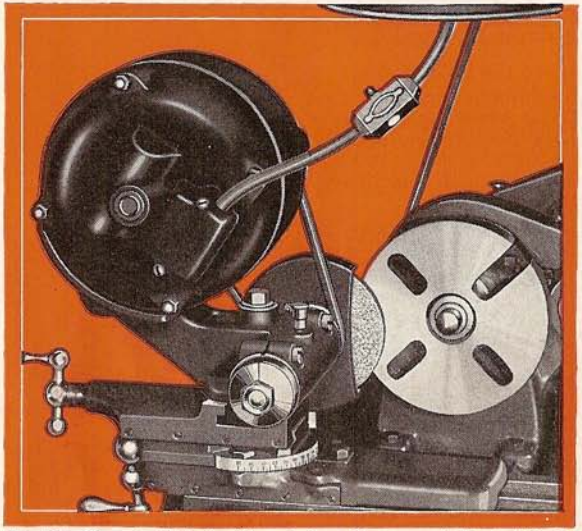


Fig. 51. Electric Grinder Mounted on Compound Rest of Lathe

The No. 14-K Electric Grinder makes a valuable addition to the lathe in any shop that is not equipped with a modern tool room grinder. The grinder fits on the compound rest, operates from a lamp socket and is practical for grinding straight, taper and spiral reamers, lathe centers, milling cutters, taps, dies, valves, pistons, bushings, hardened and tempered tools, parts, etc., but is not intended for grinding lathe tool bits, drills, etc.

Equipment for Grinder

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" Alundum grinding wheel (grain 3860, grade L5B), **extension cord, switch and clamp for mounting the grinder to the compound rest of lathe.**

Cat. No. 14-K. Code "Rihip"..**$35.00**

Prices of No. 14-K Electric Grinder fitted with other motors will be supplied on request.

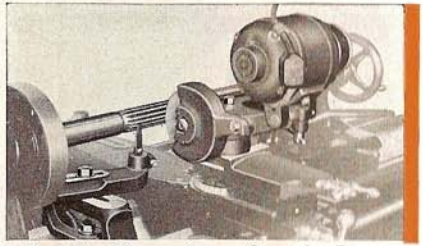


Fig. 52. Sharpening a Straight Reamer

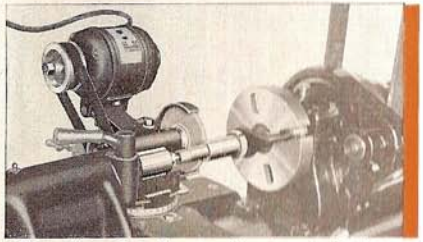


Fig. 53. Grinding a Hardened Bushing

Fig. 54. Truing a Grinding Wheel with Diamond Dresser

Adjustable Holding Fixture

Holds the No. 18 Industrial Diamond for truing grinding wheels and will also hold the cutter stop. Clamps to lathe bed so that carriage has free movement.

Cat. No. 19-W. Code "Abnog" **$6.00**

Fig. 55. **Industrial Diamond,** metal mount, 1/3 carat, Cat. No. 18. Code "Quaft" **$5.00**

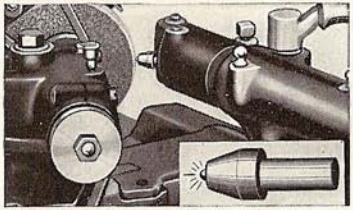


Fig. 56. Diamond Holding Fixture

Diamond Holding Fixture

Clamps to tail-spindle. Holds No. 406 Diamond Dresser for truing wheels used for valve or general work.

No. 91-W. Code Word "Kibaf" **$2.00**

No. 406. Dresser. "Kirwe" **$4.50**

Abrasive Grinding Wheels

Abrasive grinding wheels for the No. 14-K Electric Grinder are priced in the tabulation below. We carry these grinding wheels in stock as they are the most widely used wheels for general work. Other grinding wheels can be supplied if desired. Prices will be quoted on request.

Prices of Abrasive Grinding Wheels

Metal	Name	Grain	Grade	Size Inches	Cat. No.	Price Each
Steel	Alundum	3860	L5B	4x1/2x1/2	410-A	$1.00
Aluminum & Cast Iron	Crystalon	3746	K	4x1/2x1/2	410-B	1.00
Hardened Tool Steels	Alundum	3860	K5B	4x1/2x1/2	410-D	1.00
Hard Rubber	Bakelite	3760	K5T	4x1/2x1/2	410-C	1.00
Cup Wheel for Reamer and Tool Work	Alundum	1946	J	3 1/4x2 1/2 x1 1/4x3/8	763-A	$1.20

Grinding Valves in the Lathe

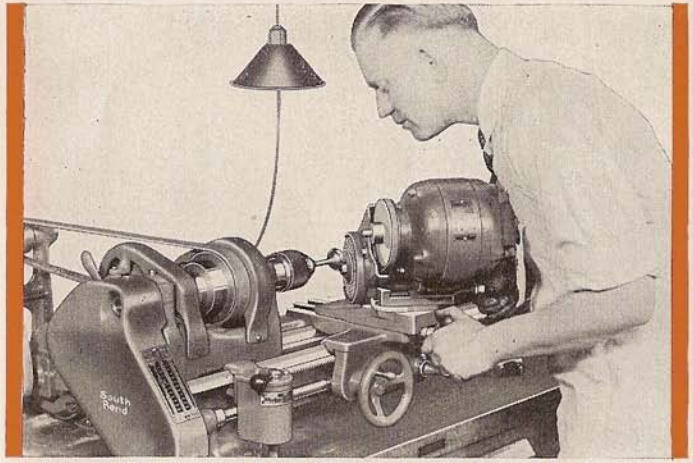


Fig. 57. Grinding a Valve in the "Workshop" Lathe.

The "Workshop" Lathe with electric grinder attachment, as shown above, is the ideal tool for grinding valves, both intake and exhaust, all makes and materials, and at any angle, for motor vehicles and engines of all kinds. Lathe is also practical for grinding the following: Reamers, hones, clearance on end of valve stems, face on valve tappets, tappet adjusting screws, rocker arm face, also for testing bent valve stems.

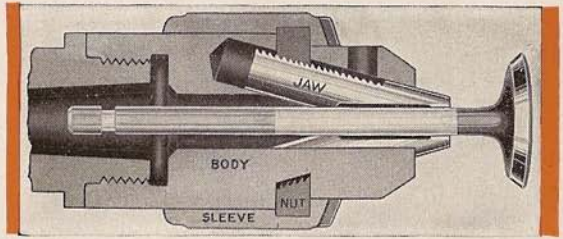


Fig. 58. Left—

Valve Chuck

A cross-section view of Precision Valve Chuck. Screws on Spindle Nose of lathe. Chuck automatically centers all sizes and types of valve stems up to ⅝" in diameter. Valve is held on the valve guide bearing surface, assuring accuracy in refacing.

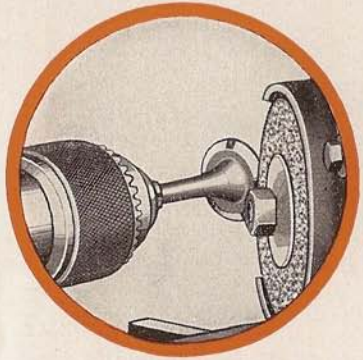


Fig. 59. Close-up of Grinding Valve Face in the Precision Valve Chuck.

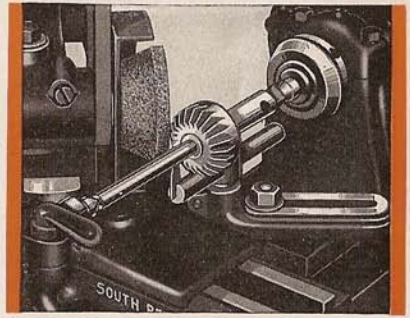


Fig. 60. Sharpening a Valve Seat Reamer in Lathe Using a Cup Shaped Abrasive Wheel.

Equipment for Grinding Valves

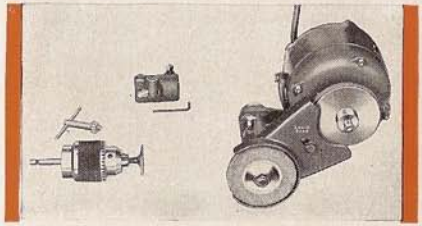


Fig. 61. Valve Grinding Equipment.

The equipment illustrated at left and itemized below will take care of all valve grinding work in addition to handling a variety of other grinding work. The equipment may be purchased complete or any item not wanted may be omitted.

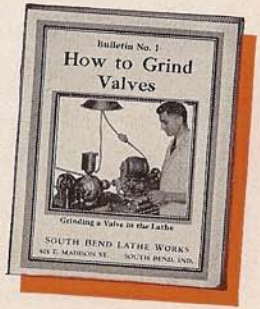
1 No. 14-K	¼ H.P. Electric Grinder (1-ph., 60-cy., 110-v., A.C., with cord and switch (See pg. 14)	$35.00
1 No. 907-B	Precision Valve Chuck, ⅝" Capacity	9.00
1 No. 91-W	Diamond Holding Fixture	2.00
1 No. 406	Diamond Dresser for truing grinding wheel	4.50

"How to Grind Valves"

Bulletin No. 1

This instructive 8-page bulletin illustrates the latest shop practice and methods for re-facing valves, sharpening valve seat reamers, grinding tappets, truing rocker arm face, and other lathe work in connection with valve service.

A copy of this bulletin will be supplied free on request with each 9-inch "Workshop" Lathe. Anyone interested in this class of work will be mailed a copy postpaid, upon receipt of 10c in coin or stamps.



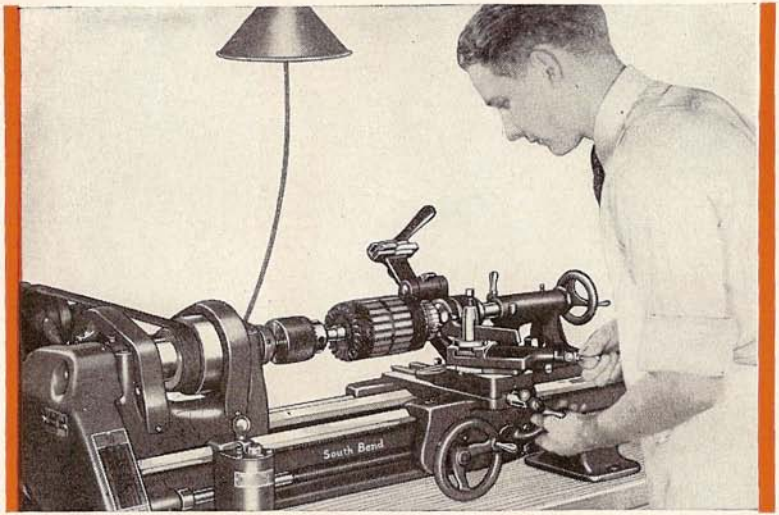


Fig. 62. Truing an Armature Commutator in the 9-inch "Workshop" Lathe.

The illustration above shows a centerless generator armature mounted between centers in the "Workshop" Lathe for truing the commutator and undercutting the mica. Both of these operations may be performed on the armature at one setting without removing the turning tool or detaching the mica undercutter. Close-ups of truing the commutator and undercutting the mica are shown in the illustrations at the right.

Equipment for Servicing Armatures

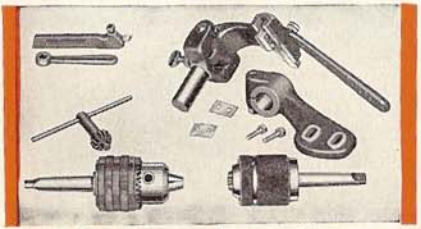


Fig. 64. Equipment for Servicing Armatures.

The equipment illustrated at left and itemized below will take care of all armatures up to 9⅛" in diameter, and centerless armatures having shafts up to and including ¾" in diameter.

1 No. 327 ¾" Headstock Driving Chuck, fitted to lathe..... **$ 7.35**
1 No. 340 Armature Support Bushing (⅜" to ¾" cap.) fitted to lathe **8.10**
1 No. 847-S Straight Turning Tool **1.25**
1 No. 673 Hand Type Mica Undercutter **12.50**

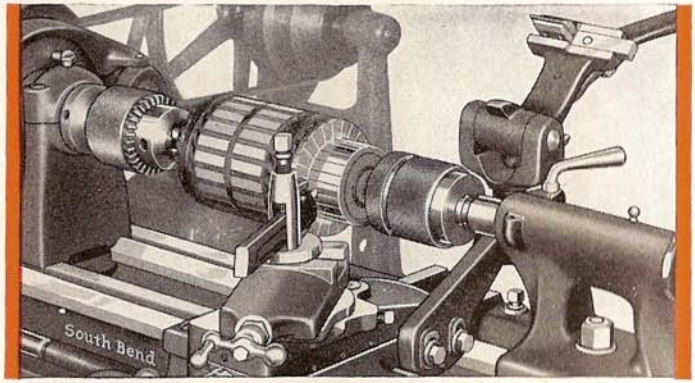


Fig. 63. A Centerless Armature Mounted in Lathe for Truing.

The left end of the armature shaft is held in a headstock driving chuck and the right end in an armature support bushing—see Fig. 66, page 17. The Undercutter is turned back when not in use.

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 "Abibe". Price....$12.50

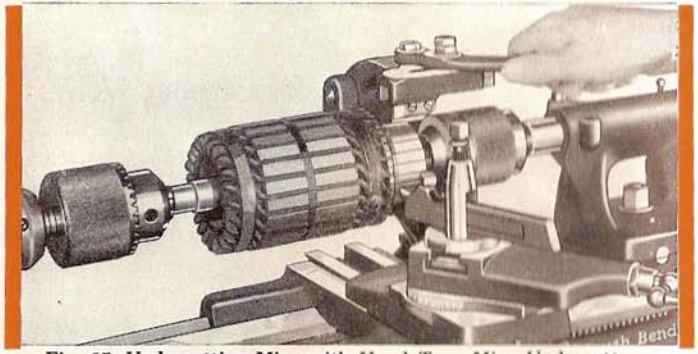


Fig. 65. Undercutting Mica with Hand Type Mica Undercutter.

Armature and Electrical Service Jobs

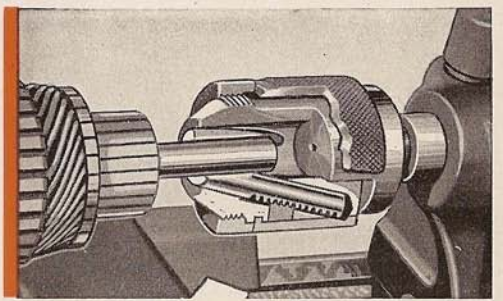


Fig. 66. Cross Section of Armature Support Bushing for Mounting Centerless Armature Shafts in Lathe.

Armature Support Bushing (Chuck)

The Armature Support Bushing illustrated above is used in the tailstock for supporting armature shafts with or without center holes. Permits armature shaft to revolve yet holds it firm and rigid. Has brass jaws. Takes shafts from ⅜ to ¾" in diameter. Price includes arbor. Cat. No. 340. Code "Adang" **$8.10**

Coil Winding in the Lathe

The "Workshop" Lathe is the practical tool to use for winding coils for radios, motors, generators, transformers, etc. See Fig. 69. The lead screw and half-nut feed is indispensible for winding space wound coils and for threading coil forms.

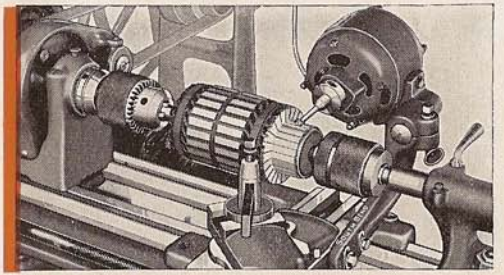


Fig. 67. Undercutting an Armature Commutator with South Bend Rotary Electric Undercutter.

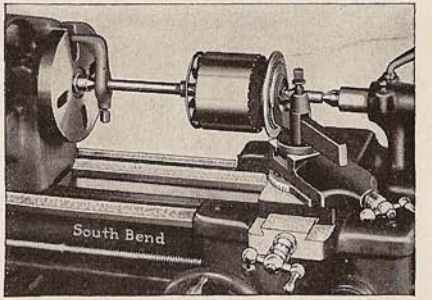


Fig. 68. Truing Contactor Rings of a Split-Phase Electric Motor.

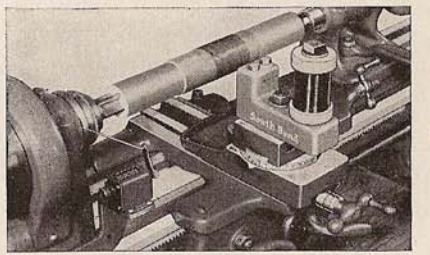


Fig. 69. Winding an Experimental Coil for a Radio. Note the Automatic Counter.

Electric Mica Undercutter

The Electric Mica Undercutter, illustrated in Fig. 67 at left, undercuts insulation on all sizes and types of armature commutators. Is mounted on lathe by means of a bracket bolted to the lathe saddle. When not in use the undercutter may be turned back out of the way so as not to interfere with turning operations. A vertical adjustment controls height of cutter. Price includes 1/20 H.P. motor 1725 R.P.M. for 1-phase, 60-cycle, A.C., bolts for mounting on lathe, and 5 disc cutters ¼" diameter, and .015", .020", .025", .030", .035" thick. **Cat. No. 614. Code word "Abnum" $25.00**

Price for attachment with motor of other voltage, phase and cycle on request.

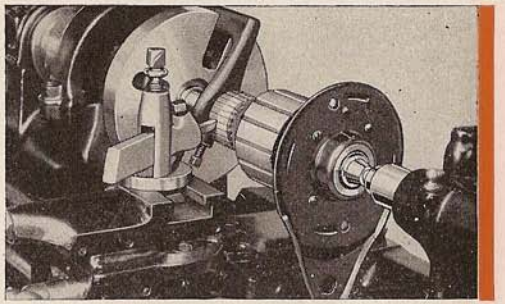


Fig. 70. A Ford Generator Armature with End Cap Attached Mounted in the Lathe for Truing.

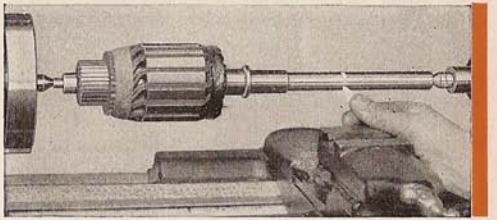


Fig. 71. Marking the "High Spot" on a Bent Armature Shaft for Straightening.

"How to Service Armatures"

Bulletin No. 2

This interesting bulletin contains eight pages illustrating and explaining the approved method of handling all the jobs shown on these two pages and many other electrical jobs.

A copy of this bulletin will be supplied free on request with each 9-inch "Workshop" Lathe. Anyone interested will be mailed a copy postpaid upon receipt of 10c in coin or stamps.

Finishing Semi-Machined Pistons in the Lathe

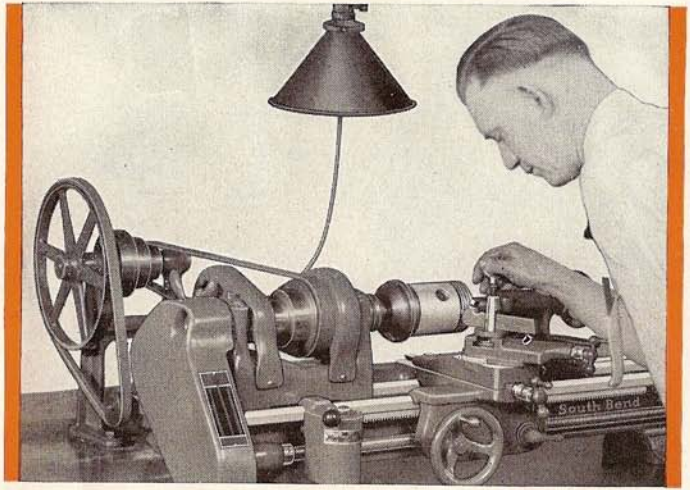


Fig. 73. Finishing a Semi-Machined Piston in the "Workshop" Lathe.

Semi-machined pistons, solid or split skirt type, made of cast iron, aluminum or other alloys, can be quickly and accurately machined in the 9-inch "Workshop" Lathe when fitted with the equipment listed below. Other practical piston jobs for this lathe include: reaming piston skirts, reaming wrist pin holes, machining ring lands, machining ring grooves, etc.

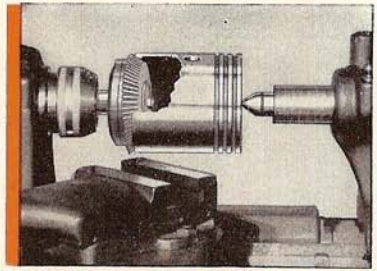


Fig. 74. Reaming the Skirt of a Piston. Reamer is Held on Piston Adapter Shank.

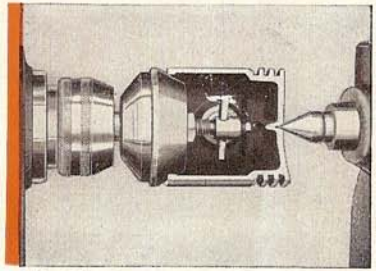


Fig. 75. Cross-section View Showing Application of the Piston Adapter.

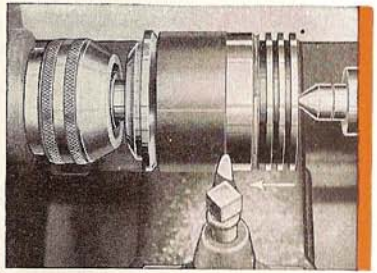


Fig. 76. Finishing Semi-Machined Piston Mounted on the Piston Adapter.

Fig. 77. Lathe May be Used at Variable Speeds for Reaming, Lapping, Honing.

Equipment for Servicing Pistons

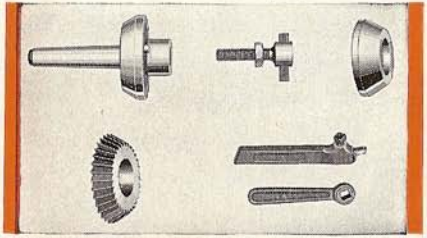


Fig. 78. Equipment for Servicing Pistons.

The tools illustrated at left and itemized below equip the "Workshop" Lathe for handling all the operations required for finish machining semi-machined pistons, all types and all sizes, ranging from 2½" to 3⅛" outside diameter.

1 No. 44-W Piston Adapter, Driving Dog and Cone Ring for Pistons 2½" to 3⅛" outside diam...$9.00

1 No. 1-R Piston Skirt Reamer for Pistons 2½" to 3⅛" outside diameter 6.00

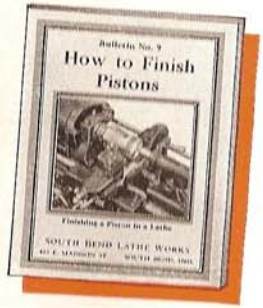
1 No. 847-S Straight Shank Turning Tool 1.25

"How to Finish Pistons"

Bulletin No. 9

An interesting and instructive 8-page bulletin, illustrating and describing in detail, the correct, accurate, and economical method of handling each of the jobs shown on this page and many other important piston servicing operations.

A copy of this bulletin will be supplied free on request with each "Workshop" Lathe. Anyone interested in this class of work will be mailed a copy postpaid, upon receipt of 10c in coin or stamps.



Making New and Replacement Bushings

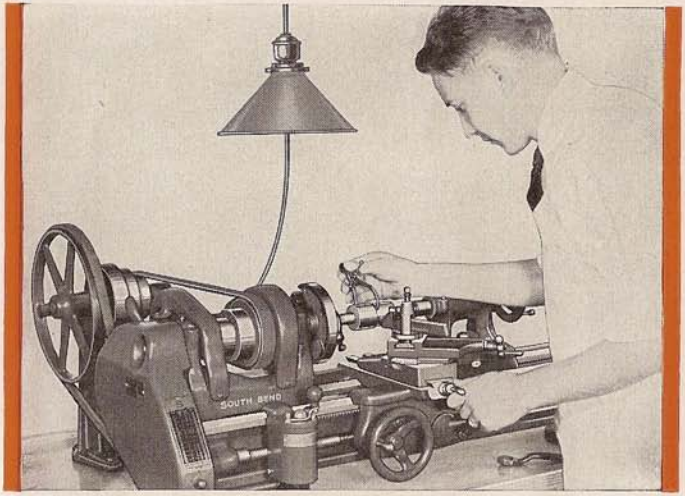


Fig. 79. Making Bushings on a Mandrel in the "Workshop" Lathe.

With the 9-inch "Workshop" Lathe you can make, quickly and economically, all sizes and types of bushings and sleeve bearings, of any material, for automobiles and machinery. A few chucks and tools are all that are needed to equip the lathe for handling all the various operations such as: Drilling, boring, reaming, facing, threading, cutting-off, turning, filing, polishing, etc.

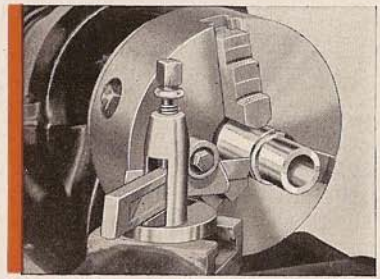


Fig. 80. Making Bushing Complete Without Removing Work from Chuck.

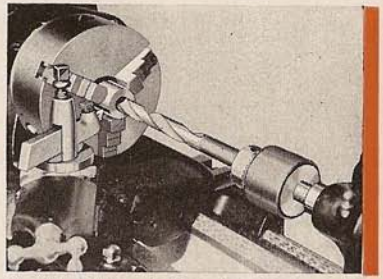


Fig. 81. Drilling Hole in Bushing. Drilling of All Kinds Can be Handled.

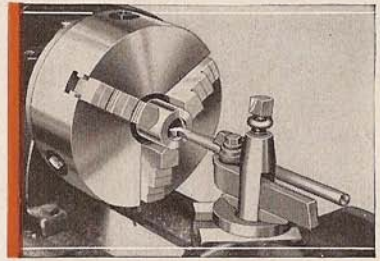


Fig. 82. Boring the Hole in Bushing after it has been Drilled.

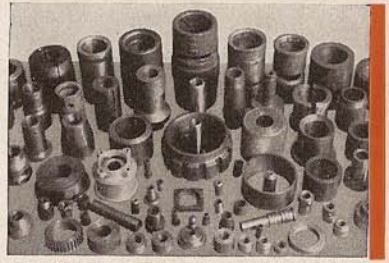


Fig. 83. Typical Bushings which you can Make in the "Workshop" Lathe.

Equipment for Making Bushings

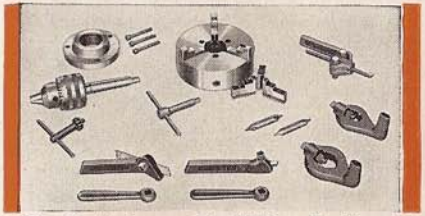


Fig. 84. Equipment for Making Bushings.

The equipment illustrated at left and listed below is practical for making all sizes and types of bushings and sleeve bearings. It is also practical for general machine work.

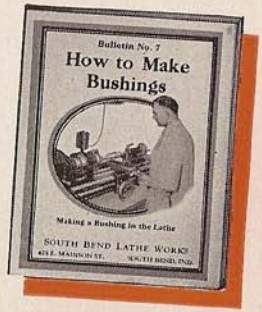
1 No. 3805	5" 3-Jaw Universal Chuck, fitted to lathe	$21.00
1 No. 220	½" 3-Jaw Drill Chuck, fitted	4.85
1 No. 833-R	Right-Hand Cutting-Off Tool	1.50
1 No. 847-S	Straight Turning Tool	1.25
1 No. 505-F	Boring Tool, Style "D"	2.50
2	Malleable Lathe Dogs, ½", 1"	1.00
1 No. 898-A	1/16" Center Drill & C'sink.	.25
1 No. 898-B	3/32" Center Drill & C'sink.	.30

"How to Make Bushings"

Bulletin No. 7

This interesting 8-page bulletin gives the complete story on how bushings for any requirement in the auto service and machinery field can be made in the lathe. It describes and illustrates many other practical jobs in addition to those listed on this page.

A copy of this bulletin will be supplied free on request with each 9-inch "Workshop" Lathe. Anyone interested in this class of work will be mailed a copy postpaid, upon receipt of 10c in coin or stamps.



Reboring Connecting Rods

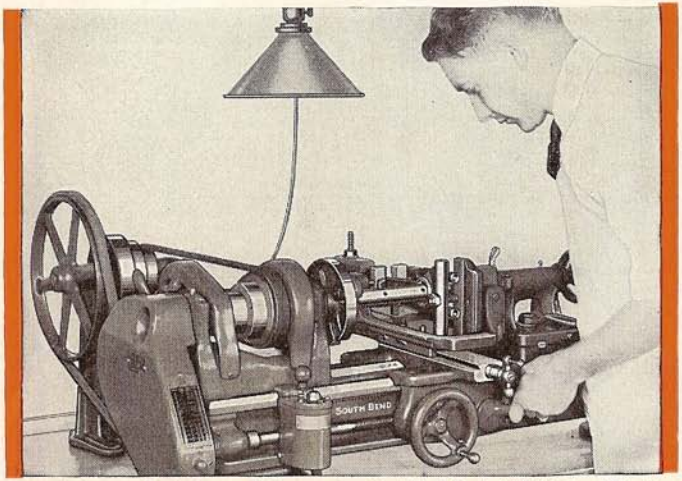


Fig. 85. Boring Rebabbitted Connecting Rod in 9 inch "Workshop" Lathe.

The illustration above shows the reboring of a connecting rod in the "Workshop" Lathe. All size connecting rods for automobiles, light buses and light trucks can be bored in this attachment on the lathe, as the clamps holding the connecting rod are adjustable for different lengths. This connecting rod boring attachment is fast, accurate, and practical for doing an excellent job.

Mounting

The attachment which holds the connecting rod fits on the lathe carriage and may be quickly removed. The small end of the rod is centered in the V-block clamp by means of a piston pin. The large end of the rod is held by clamps.

Boring Bars

Two short, stiff double end boring bars are used, one for rough boring and the other for finish boring. The bars also carry facing, rounding and trimming cutters for finishing both sides of bearing.

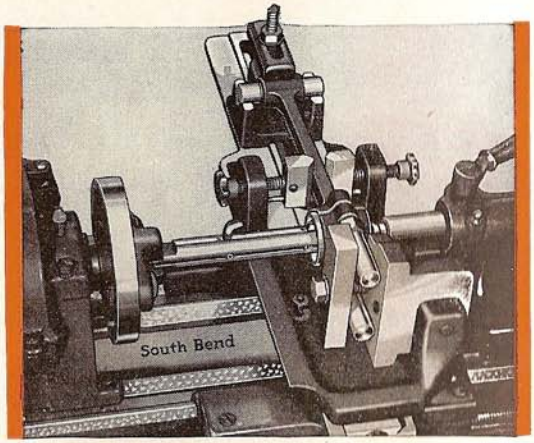


Fig. 86. Close-up Boring a Connecting Rod in Lathe

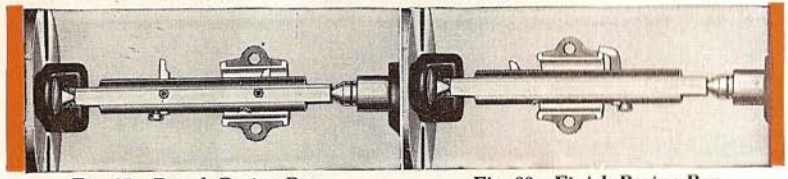


Fig. 87. Rough Boring Bar.

Fig. 88. Finish Boring Bar.

Equipment for Servicing Connecting Rods

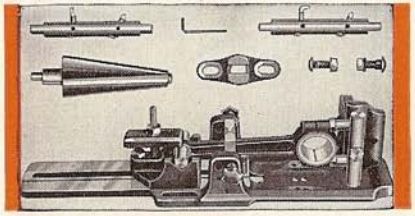


Fig. 89. Connecting Rod Servicing Equipment.

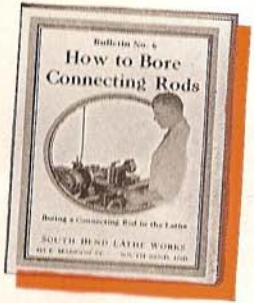
With the equipment illustrated at left and itemized below the lathe will bore all connecting rods 13" between bearings and 5" across bolt lugs. The equipment may be purchased complete or any item may be omitted.

1 No. 1229	Connecting Rod Boring Attachment for rods 13" between bearings and 5" across bolt lugs	$45.00
2 No. 461-B	Boring Bars for Bearings 1¼" to 2½" diameter	17.00
1 No. 228	Driver for Boring Bars	1.00
1 No. 581	Centering Cone for Bearings 1¼" to 2½" diameter	2.50

"How to Bore Connecting Rods" Bulletin No. 6

This interesting bulletin contains eight pages illustrating and describing the correct, modern precision methods for handling all the various operations in boring connecting rods with speed and economy. Also shows how to bore bronze backed bearings, mill oil relief pockets, oil grooves, etc.

A copy of this bulletin will be supplied free on request with each 9-inch "Workshop" Lathe. Anyone interested may obtain a copy postpaid, on receipt of 10c in coin or stamps.



Wood Turning on the "Workshop" Lathe

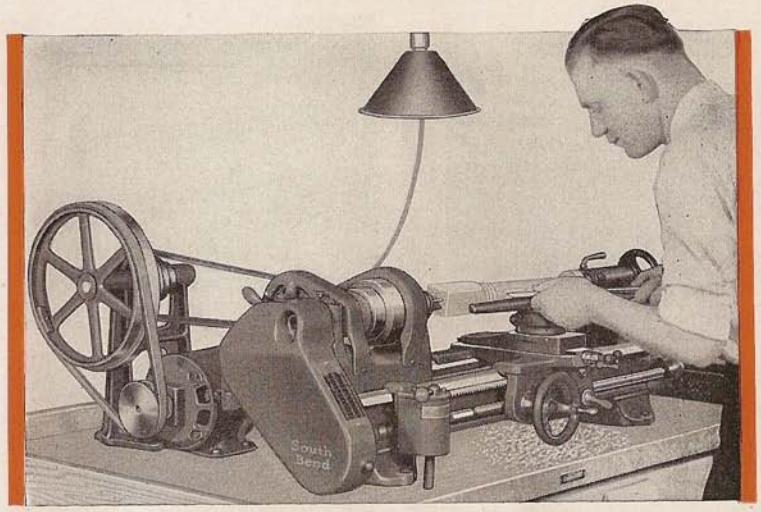


Fig. 90. 9-inch "Workshop" Lathe Equipped with Two-Step Pulleys on Countershaft and Motor with Belt Arranged for Wood Working.

The illustration at left shows the "Workshop" Lathe set up for machining both wood and metal. A 2-step drive pulley is used on the countershaft and a 2-step pulley on the motor. High speeds for wood working, 374, 652 and 1163 R.P.M. are provided when the V-belt is on the small step of the countershaft drive pulley and the large step of motor pulley. Metal working speeds, 39, 68, 122, 202, 353 and 630 R.P.M. are available when the belt is on the other steps of pulleys.

Horizontal Countershaft (plain type) with 2-Step Drive Pulley and 2-Step V-Groove Pulley for Motor, as shown in the illustration at left, Cat. No. 337. Code Word "Abpha".....**$10.00**

The Home Work Shop

The 9-inch "Workshop" Lathe is very practical for the home workshop because it can be used for wood turning, also for machining hard rubber, brass, aluminum and all kinds of other metals. The utility of the lathe, too, makes it the ideal machine for general use.

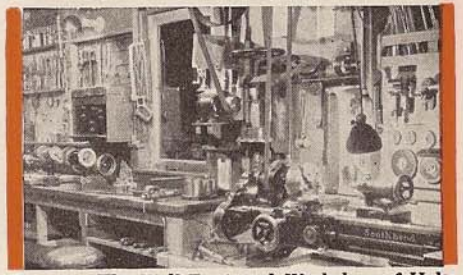
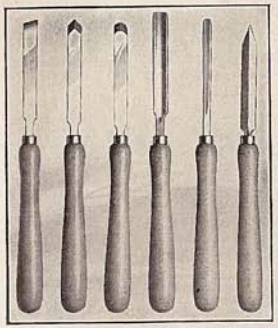


Fig. 91. The Well-Equipped Workshop of Holt Condon, Pasadena, California.



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

Fig. 92. Wood Chisels.

When ordering single chisels be sure to specify the shape of chisel wanted.

Hand Rest for Wood Turning

Consists of base and 3 hand T-rests, 4", 7" and 12" long. Made of cast iron. Fits on compound rest base. No. 896-W. Code Word "Adows". Price....**$4.00**

Wood Chisels

Designed for use in the home work shop, etc. Made of good quality cutlery steel, carefully sharpened. The set at left consists of six tools: (A) ½" Skew; (B) ½" Diamond Nose; (C) ½" Round Nose; (D) ½" Gouge; (E) ¼" Gouge; (F) ½" Parting Tool.

No. 278. Set of six chisels. Code Word "Afder". Price **$4.20**

Single Chisels, each **$0.75**

Centers for Wood Work

Cup Center
733-W "Jalak" $2.00

Spur Center
732-W "Ikdol" $2.50

Screw Center
731-W "Kalaf" $2.50

Sanding and Polishing Disc

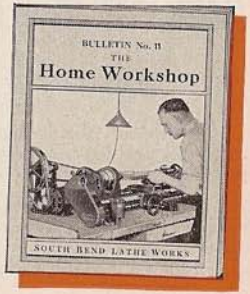
Polishes wood, steel, iron, etc. Size 8" diameter. Screws on headstock spindle. Supplied with emery cloth or sandpaper attached, if desired.
No. 507-W. Code "Acwat" **$5.00**

"The Home Workshop"

Bulletin No. 11

This interesting new bulletin contains sixteen pages, fully illustrated, showing the use of the screw cutting, metal working lathe on model making, wood working, experimental inventing, and general machining jobs.

Contains suggestions on shop layouts, also recommended shop equipments. Copy free with "Workshop" Lathe if requested. A copy will be mailed postpaid, to anyone interested upon receipt of 10c in coin or stamps.



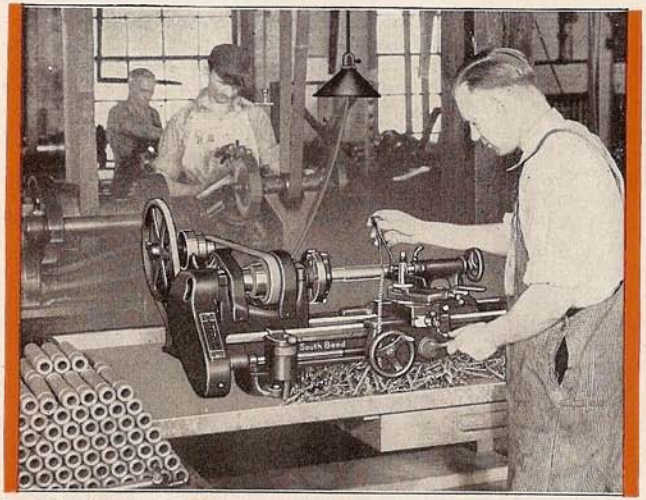


Fig. 93. The 9-inch "Workshop" South Bend Lathe Used for Production in the Manufacturing Plant.

The 9-inch "Workshop" South Bend Lathe is practical for light production work in the manufacturing plant and for general machine work in the machine shop, and repair shop.

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, babbitt, and the various alloy steels. The lathe is also practical for working wood, hard rubber, catalin, celluloid, fibres and other materials.

The Best Shop Practice is to manufacture small accurate interchangeable metal parts on a small lathe tooled to take care of the job.

Production Engineers in large manufacturing plants use small lathes for making parts for such products as: Sewing machines, typewriters, electrical parts, etc.

The 9-inch "Workshop" Lathe will handle all the jobs shown in this bulletin when equipped with attachments required for the different jobs. For illustrations and descriptions of the various attachments, see pages 12 to 23 inclusive.

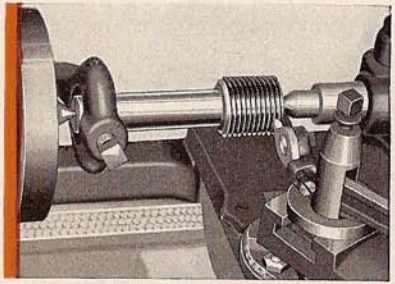


Fig. 94. Cutting a Screw Thread on a Gauge in the 9-inch "Workshop" Lathe.

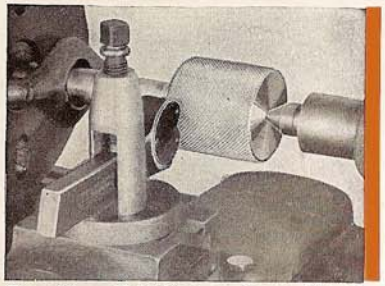


Fig. 95. Knurling a Large Handle Mounted Between Centers in the Lathe.

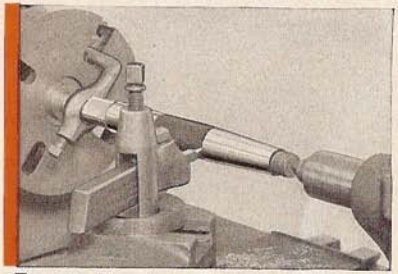


Fig. 96. Turning a Taper on a Shaft in the 9-inch "Workshop" Lathe.

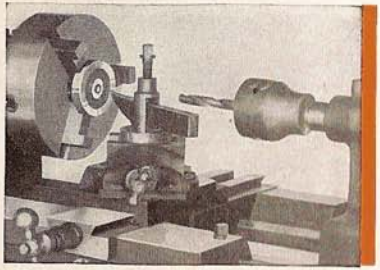


Fig. 97. Machining the Face of a Gear Blank in the Lathe.

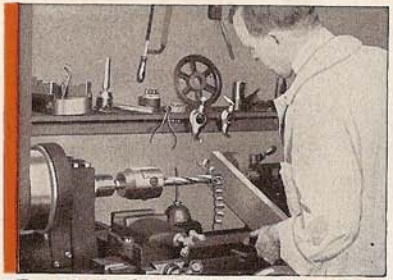


Fig. 98. Lathe Used as Drill Press for Drilling Hole in Flat Piece of Work.

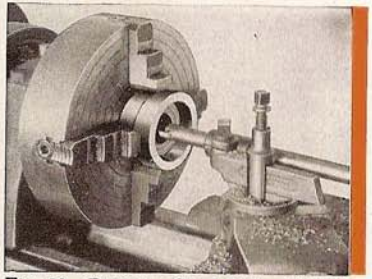


Fig. 99. Boring a Steel Collar Held in a 4-Jaw Independent Chuck.

Machine and Manufacturing Jobs

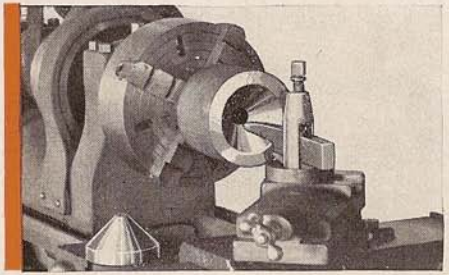


Fig. 100. Boring The Taper in a Steel Conical Die Using Compound Rest.

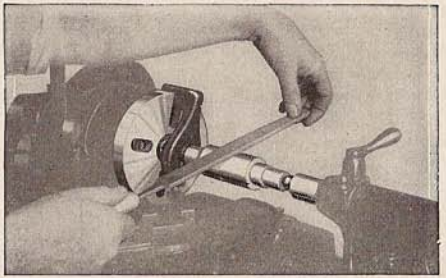


Fig. 101. Lathe is Practical for Filing and Polishing Bushings, Shafts, Parts, etc.

Fig. 102. Many Shops Install 9-inch "Workshop" Lathes in Batteries of from 10 to 50.

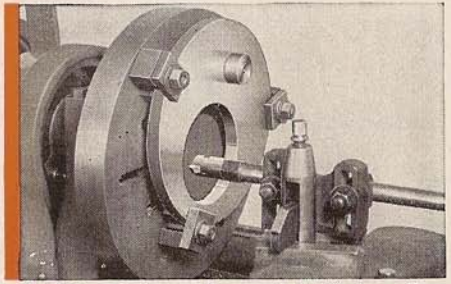


Fig. 103. Boring an Eccentric in Work on Face Plate of the 9-inch "Workshop" Lathe.

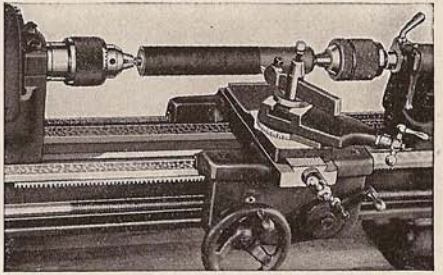
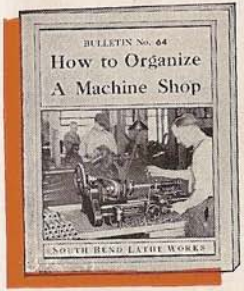


Fig. 104. Lathe trues Typewriter Platens, Also Grinds Rubber Rollers of all Types.

Fig. 105. Frederic Craven, Ship Model Maker with his South Bend Lathe.



"How to Organize a Machine Shop." Bulletin No. 64

This bulletin, size 6"x9", will be of interest to anyone planning a small machine shop. It recommends the correct size and type of equipment to install and the practical type of drive for the shop. It also shows shop layouts indicating placement of equipment for various size buildings, and contains other information on organizing a new machine shop.

A copy of this bulletin will be supplied free on request with each 9-inch "Workshop" Lathe. Anyone interested will be mailed a copy postpaid, upon receipt of 10c in coin or stamps.

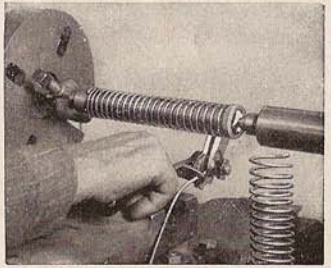


Fig. 106. Winding a Steel Spring. Attachment makes springs from wire 0" to 3/8" diam. Cat. No. 488.....$2.50

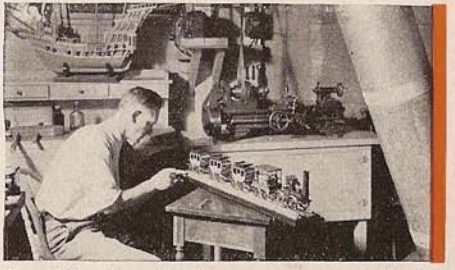
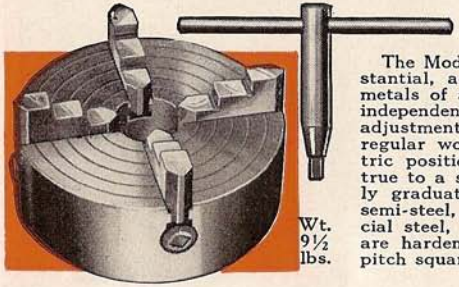


Fig. 107. Ivar Nordstrom, winner of Popular Mechanics' 1933 De Witt Clinton Model Railway Contest. South Bend Lathe Used.

Lathe Chucks for 9-inch "Workshop" South Bend Lathes

4-Jaw Independent Lathe Chuck



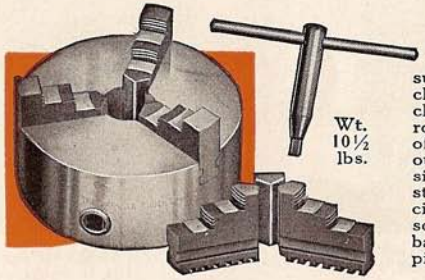
MODEL "O"

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. Face of chuck is ground true to a straight edge and is accurately graduated in inches. Chuck body is semi-steel, ground. Jaws are made of special steel, hardened and ground. Screws are hardened alloy steel, and have 11-pitch square thread.

Price includes: wrench and cap screws for fastening chuck-back to chuck. Price does not include chuck-back or fitting chuck to lathe. For these charges see prices at bottom of page.

6-inch Chuck, 6¼" Cap., Ship. Wt. 9½ lbs. **Cat. No. 4806. "Rapno".....$15.25***

3-Jaw Universal Lathe Chuck



MODEL "T"

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. Two sets of jaws are furnished: one set for outside chucking, the other for inside chucking. Chuck body is semi-steel, ground. Jaws are made of special steel, hardened and ground. The scroll is of high grade steel; it is balanced and accurate. The bevel pinion is hardened alloy steel.

Price includes: wrench, two sets of jaws and cap screws for fastening chuck-back to chuck. Price does not include chuck-back or fitting of chuck to lathe. For these charges see prices at bottom of page.

5-inch Chuck, 5" Cap., Ship. Wt. 10½ lbs. **Cat. No. 3805. "Rasep".....$17.00***

Recommended Chucks

The Model "O" 4-Jaw Independent Chuck and Model "T" 3-Jaw Universal Chuck shown above are recommended for chucking work requiring accurate machining on metals of all kinds and in small and large quantities.

The Model "P" and Model "X" chucks shown at the right are both low priced chucks and are usually selected by those who have very little chucking work to do.

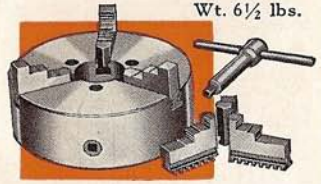
4-Jaw Independent Lathe Chuck

MODEL "P"

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

6-inch Chuck. Cat. No. 4906. Code Word "Abhod" Ship. Weight 5¼ lbs. Price $8.00*

3-Jaw Universal Lathe Chuck



MODEL "X"

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

5-inch Chuck. Cat. No. 3905. Code Word "Abhix". Ship. Weight 6½ lbs. Price $12.00*

*Prices for Fitting Lathe Chucks to Lathe

Applying to Chucks, Models O, T, P and X

A chuck-back is needed to fit 4-Jaw Independent Chucks and 3-Jaw Universal Chucks to the lathe. The chuck-back is first bored and threaded to fit the lathe spindle nose. 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 lathe at factory. When ordering a chuck-back without chuck, specify the serial number of your lathe and give the minimum diameter of chuck-back required.

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

Fig. A
Semi-Machined Chuck-Back Threaded to Spindle

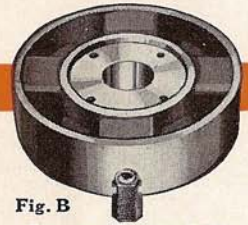


Fig. B
Recess Machined in Chuck for Chuck-Back

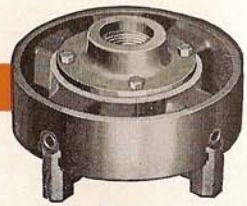


Fig. C
Chuck with Chuck-Back attached, ready for use

Drill Chucks and Chuck and Tool Assortments

3-Jaw Drill Chuck (Model "A")

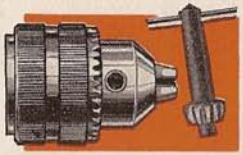
A practical, powerful and accurate chuck for lathe. Jaws are of tempered steel. Price includes pinion key and wrench, but not arbor which is listed below.

3/8" Chuck. Wt. ⅞ lb.
No. 219. "Acpen" **$3.50**

1/2" Chuck. Wt. 1½ lbs.
No. 220. "Acpip" **$4.25**

3/4" Chuck. Wt. 2¾ lbs.
No. 327. "Rulid" **$6.75**

Arbor for Drill Chuck.
No. 709. "Achuk" $0.60



Keyless Drill Chuck (Model "S")

A practical chuck for light machine work. Turning the knurled chuck body to right tightens the jaws of the chuck on the drill or work; turning the chuck body in opposite direction releases work.

1/2" Model "S" Chuck and Arbor for fitting chuck to the lathe spindle. Weight 1½ lbs.

Cat. No. 210. Code "Acpur" $3.30

Headstock Spindle Chuck (Model "H")

Chuck screws on spindle nose of lathe. Has hollow spindle for holding small rods and bar work for machining in the lathe. It is also practical for holding all kinds of automobile engine valves, centered and centerless, for refacing. Chuck can also be used in tailstock of lathe when fitted with No. 709 arbor priced at extreme left under Model "A" chuck.

5/8" Model "H" Chuck. Weight 3 lbs. Cat. No. 907-B. Code "Robal" $9.00

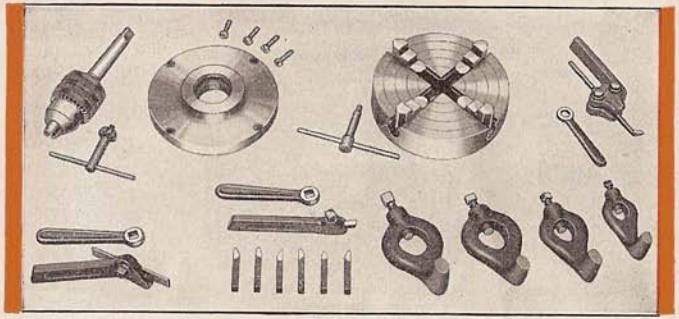


Fig. 108

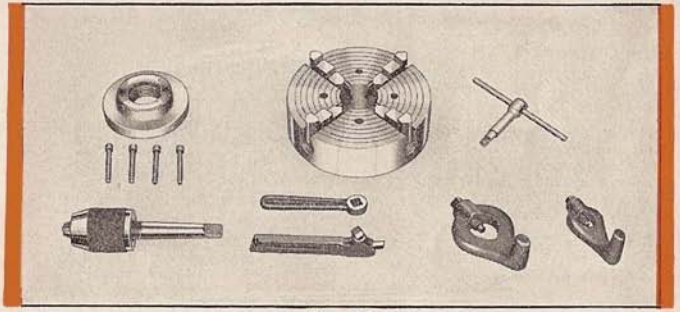


Fig. 109

No. 105 Chuck and Tool Assortment $32.65

We recommend the chucks and tools shown in the assortment above and listed below for use on the 9-inch "Workshop" Lathe. This is the basic equipment required in the average shop for handling the general machine jobs which come up every day, such as turning, boring, drilling, cutting-off, chucking, etc.

Cat. No.	Description	Price
No. 4806	6-inch Model "O" 4-Jaw Independent Lathe Chuck	$15.25
No. 258	Fitting above Chuck to Lathe including Chuck-back	4.00
No. 220	½-inch 3-Jaw Model "A" Drill Chuck	4.25
No. 709	Solid Arbor Fitted to above Drill Chuck	.60
No. 847-S	Straight Shank Tool Holder with ¼" Cutter Bit, not ground	1.25
No. 291	Six ¼-inch High Speed Steel Cutter Bits, Ground to Form	1.10
No. 505-F	Boring Tool Holder, Style "D", with ¼-inch Boring Bar	2.50
No. 833-R	Cutting-off Tool Holder, Right Hand, with ground cutter blade	1.50
	Four Standard Malleable Lathe Dogs, ½", ¾", 1", 1¼" Cap.	2.20

No. 105 Chuck and Tool Assortment. Code Word "Adpol" $32.65

No. 190 Chuck and Tool Assortment $17.55

This assortment is recommended for the shop that wishes a moderate priced assortment of chucks and tools for handling general machine work, such as, turning, drilling, chucking, etc. This assortment is similar to the No. 105 assortment at left, except that the 4-Jaw Independent Chuck and the Drill Chuck are not of such high quality, and the Cutting-off Tool, Boring Tool, Six Ground Cutter Bits, and two of the Lathe Dogs have been omitted.

Cat. No.	Description	Price
No. 4906	6-inch Model "P" 4-Jaw Independent Lathe Chuck	$ 8.00
No. 258	Fitting Above Chuck to Lathe including Chuck-back	4.00
No. 210	½-inch Model "S" Keyless Drill Chuck and Arbor for fitting chuck to spindle of the lathe	3.30
No. 847-S	Straight Shank Tool Holder with ¼" Cutter Bit, Not ground	1.25
	Two Standard Malleable Lathe Dogs, ½", 1" Capacity	1.00

No. 190 Chuck and Tool Assortment. Code Word "Abhet" $17.55

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

Tool Holder and Cutter Bit Set $2.35

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 "Actit" Price complete.....$2.35

High Speed Steel Cutter Bits

Ground to Form and Unground

Cutter Bit Ground to Form

No. 1355. Cutter Bit, ground to forms A to F, shown above. Size ¼"x¼"x2" Code "Adwap." Each.....$0.20

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

Cutter Bit not Ground to Form

No. 1460. Unground Cutter Bit, Size ¼"x¼"x2". Code "Adwir," Each ...$0.10

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

Threading Tool

With wrench and formed H. S. cutter, choice of V, U. S. S. or Whitworth Standard. Specify pitch or number of threads per inch required.

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

Drop Forged Steel

Knurling Tool

With one set of knurls, fine, medium or coarse: straight or diamond pattern.

No. 820, Code Word, "Domta"..... ..$3.00
No. 817, Knurls "Digmo" per pair .. 1.00

Drop Forged Steel

Boring Tool Holder Style "C"

With wrench, ¼" ground boring bar, and one high speed steel unground cutter bit.

No. 486. Code Word "Ipcen"..... ..$3.00
No. 483. ⅛" Boring bar, "Advep"... .30
No. 485. 5/16" Boring bar, "Adwut"... .35

Drop Forged Steel

Boring Tool Holder Style "D"

With wrench and ¼" boring bar, ground.

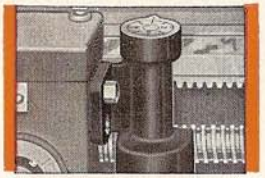
No. 505-F. Code Word "Adyot"..... $2.50
No. 498-B. 5/16" Boring bar, "Advor".. .45

Standard Lathe Dogs

Made of malleable iron. Designed for strength and service.

⅜" cap. No. 1-WJ, "Adirm"..... $0.30
½" cap. No. 2-WJ, "Adjof"..... .40
¾" cap. No. 4-WJ, "Adkog"..... .50
1" cap. No. 6-WJ, "Adlef"..... .60
1¼" cap. No. 8-WJ, "Adlig"..... .70
1½" cap. No. 10-WJ, "Adnag"..... .80

No. 650 Center Gauge. Code "Xutje". $0.50



Thread Indicator

Cat. No. 810. Code Word "Adnok". Price Complete.....$5.00

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

1/16" dia. No. 898-A. Code Word "Xmqib"..... $0.25
3/32" dia. No. 898-B. Code Word "Xnrje"..... .30
⅛" dia. No. 898-C. Code Word "Xoskd"..... .35

Center Rest

Catalog No. 125-W, Code Word "Cegke". Price $8.00

Follower Rest

Cat. No. 34-W, Code Word "Cegmo" $4.00

We recommend that this unit be fitted to the lathe at the factory.

Large Face Plate (6¾" dia.)

Catalog No. 40-W. Code "Cehak". Price $6.00

Attachments

Many of the lathe attachments and accessories shown in this bulletin are manufactured by us and are designed for the South Bend Lathe only, and are not guaranteed to fit lathes of other makes.

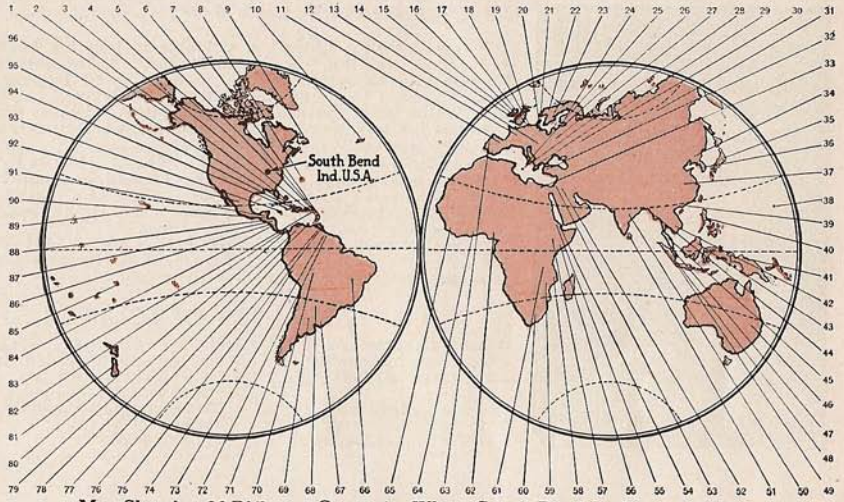
List of Small Mechanical Devices

Serviced on the 9-inch "Workshop" Lathe

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

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

South Bend Lathes Are Used in 96 Countries



Map Showing 96 Different Countries Where South Bend Lathes Are in Use.

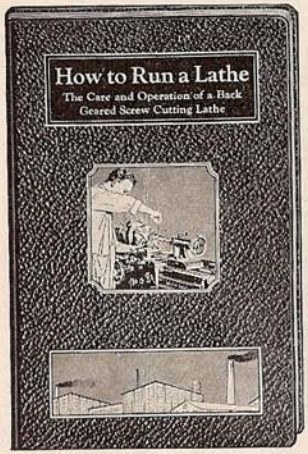
The South Bend Lathes are justly known as "World-Famed" as they are used all over the world from North of the Arctic Circle to Little America in Antarctica and from the metropolitan cities of Europe to the jungles of mid-Africa. In more than 96 countries and colonies throughout the world, South Bend Lathes will be found doing all classes of fine precision work, manufacturing and repairing on every known type of mechanical equipment.

Factory Employees

The illustration at right shows a group of South Bend Lathe Works factory employees. Normally over four hundred and fifty skilled and trained workers are employed in building South Bend Back-Geared, Screw Cutting Lathes.

Fig. 111. Employees and Office Force of the South Bend Lathe Works.

"How to Run a Lathe"—31st Edition



Copy Free with Each 9-inch "Workshop" Lathe

"How to Run a Lathe", a valuable instruction book, contains 160 pages, size 5¼" 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.

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.

Paper Binding or Leatherette. Price of book, "How to Run a Lathe," with paper binding 25c; with leatherette binding 75c. Coin or stamps of any country accepted.

PARTIAL LIST OF CONTENTS

—How to set up the lathe.
—How to care for the lathe.
—How to calculate size and speed of pulleys.
—How to grind and set lathe tools.
—How to cut screw threads.
—How to turn and bore tapers.
—How to do grinding and milling work.
—How to do centering and countersinking.
—How to drill, bore and ream.
—How to use chucks and arbors.
—The cutting speeds & feeds for metals.
—Tables of information.
—300 other shop kinks.

"Manual del Tornero"—Edición No. 28

Escrito en Español

El libro "El Manual del Tornero," es sumamente autoritativo y describe los principios fundamentales sobre el manejo del torno con engranajes de dobles velocidades para cortar tornillos. Este libro tiene ilustraciones de 200 métodos de utilizar el torno en la práctica. Es un libro de referencias de gran valor, pues es la mayor autoridad en tornería de metales y se estan usando más de un millón doscientos cincuenta mil ejemplares por todo el mundo.

Se ha preparado éste libro para el uso de los aprendices en los talleres de mecánica. Es uno de los libros más completos en tornería de metales que se puede conseguir. Representa la experiencia de sus autores quienes trabajaron por más de 30 años como ingenieros y mecánicos expertos en varias industrias de labrar metales.

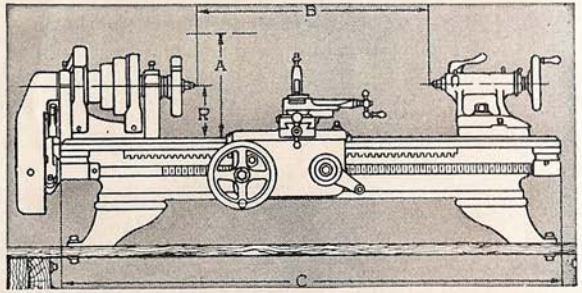
Dicho manual, encuadernado en papel fuerte, puede ser obtenido al precio de 25c (moneda de los Estados Unidos). Aceptamos su equivalente en moneda o estampillas de cualquier país. Un ejemplar de este libro está suministrado con cada torno despachado a países de habla española.

GUARANTEE

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

We will replace, free of charge, f.o.b. South Bend, Indiana, within one year from the date of purchase, any 9-inch "Workshop" Lathe part that proves defective either in material or workmanship.

South Bend Lathe Works



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 4½-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.

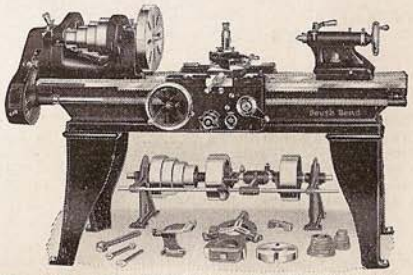


Fig. 113. 16″ x 6′ Countershaft Drive Lathe. Prices listed at right.

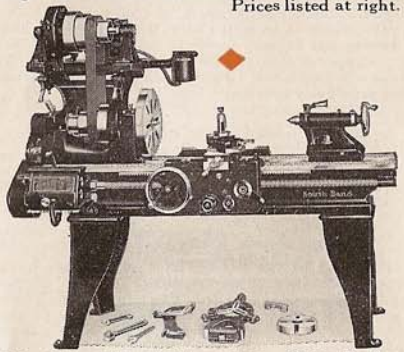


Fig. 114. 16″ x 6′ Silent Motor Drive Lathe. Write for Prices.

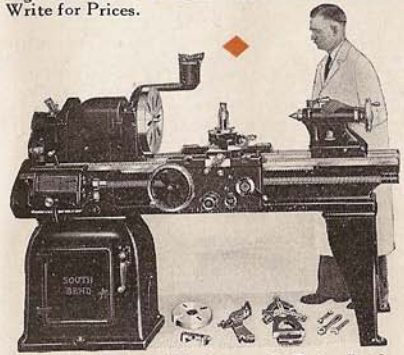


Fig. 115. 16″ x 6′ Underneath Drive Lathe. Write for Prices.

Export Prices on All Sizes of South Bend Lathes

For those whose work requires a larger size than the "Workshop" Lathe we offer our complete line of South Bend Back-Geared, Screw Cutting Lathes in Quick Change Gear and Standard Change Gear types, at the prices listed below.

Listed below are prices of Countershaft Drive Lathes. If you are interested in a Motor Drive Lathe, either Silent V-Belt Motor Drive or Underneath Belt Motor Drive, write to us and we will be pleased to send you an itemized quotation on the size and type lathe in which you are interested, including boxing and transportation to your port.

Prices below are for lathe boxed for ocean shipment f.o.b. cars South Bend, Indiana. Transportation charges to ship side New York City are extra, as shown in the column at right of table.

PRICES, DIMENSIONS AND WEIGHTS OF SOUTH BEND LATHES, BOXED FOR EXPORT

Prices Include Lathe, Double Friction Countershaft and Regular Equipment, Boxed for Ocean Shipment, f.o.b. Factory, South Bend, Indiana, U. S. A.

Specifications				Standard Change Gear Lathes			Quick Change Gear Lathes			Export Weights, Charges, Etc.		
Swing Over Bed Inches	Length of Bed Feet	Distance Between Centers Inches	Power Required H.P.	Cat. No.	Code Word	Price F.O.B. Factory	Cat. No.	Code Word	Price F.O.B. Factory	Weight of Lathe Boxed Pounds	Cubic Contents of Case Feet	Transportation to Ship Side N. Y. City
9-inch Toolmaker Bench Lathes*												
9¼	3	18	¼	20-YBW	Hegos	$140.00				500	14¼	$ 6.50
9¼	3½	24	¼	20-ZBW	Hegpa	150.00	Not Made in Quick			525	15¾	6.83
9¼	4	30	¼	20-ABW	Hegso	160.00	Change Gear Type			550	17½	7.15
9-inch Junior Bench Lathes*												
9¼	3	16⅜	¼	22-YB	Babig	$170.00				525	19¼	$ 6.83
9¼	3½	21⅜	¼	22-ZB	Bacaf	180.00	Not Made in Quick			555	21	7.22
9¼	4	27⅜	¼	22-AB	Baceg	190.00	Change Gear Type			585	23	7.61
9¼	4½	34⅜	¼	22-RB	Bacoj	200.00				615	25	8.00
9-inch South Bend Bench Lathes*												
9¼	3	16⅜	¼	30-YB	Bakur	$225.00	80-YB	Bagup	$265.00	580	19¼	$ 7.54
9¼	3½	21⅜	¼	30-ZB	Bakys	235.00	80-ZB	Bahel	275.00	610	21	7.93
9¼	4	27⅜	¼	30-AB	Balan	245.00	80-AB	Bahon	285.00	640	23	8.32
9¼	4½	34⅜	¼	30-RB	Balep	255.00	80-RB	Bahup	295.00	670	25	8.71
11-inch South Bend Floor Leg Lathes†												
11¼	3	12	½	33-Y	Eazir	$276.00	84-Y	Eabot	$316.00	810	24¾	$10.53
11¼	3½	18	½	33-Z	Ebuka	288.00	84-Z	Elken	328.00	850	27	11.05
11¼	4	24	½	33-A	Ecsty	300.00	84-A	Emdor	340.00	890	29½	11.57
11¼	5	36	½	33-B	Edres	312.00	84-B	Eolin	352.00	970	33¾	12.61
13-inch South Bend Floor Leg Lathes												
13¼	5	28	¾	35-B	Geldy	$352.00	86-B	Gehos	$402.00	1380	37	$17.94
13¼	6	40	¾	35-C	Gisot	367.00	86-C	Gifts	417.00	1470	42	19.11
13¼	7	52	¾	35-D	Goldy	384.00	86-D	Gobli	434.00	1560	47	20.28
16-inch South Bend Floor Leg Lathes												
16¼	6	34	1	41-C	Mater	$480.00	92-C	Malta	$540.00	2140	57½	$27.82
16¼	8	58	1	41-E	Milky	520.00	92-E	Mitre	580.00	2540	71	33.02
16¼	10	82	1	41-G	Money	564.00	92-G	Movir	624.00	2940	85	38.22
16¼	12	106	1	41-H	Mules	627.00	92-H	Muday	687.00	3340	98¾	43.42
36-inch Brake Drum and General Purpose Lathes												
36¼	6	27	1	2-BC	Cocoa	$650.00	4-BC	Cajga	$710.00	2480	71¾	$32.24
36¼	8	51	1	2-BE	Cuxom	692.00	4-BE	Cajig	752.00	2880	89	37.44
36¼	10	75	1	2-BG	Cialr	738.00	4-BG	Cajko	798.00	3280	106¼	42.64
36¼	12	99	1	2-BH	Cojal	803.00	4-BH	Camra	863.00	3680	123½	47.84

*If lathe is wanted with Floor Legs instead of Bench Legs, add $10.00. †If lathe is wanted with Bench Legs, deduct $10.00.

General Export Information on 9-inch "Workshop" Lathes

Exporters for 25 Years

South Bend Lathes have been exported to all parts of the world for more than twenty-five years. In that time shipments have been made to 96 different countries and colonies which are shown in the illustration on page 27.

Your Order Carefully Handled

When you place your order with us for a 9-inch "Workshop" Lathe for shipment outside the United States we give this order close personal attention, handling it even more carefully than orders in the United States so as to prevent all possibility of error and inconvenience to you when the lathe reaches its destination.

Selection and Inspection of Lathe

The lathe is first carefully selected by a capable inspector. Every part is closely checked to make sure the lathe is in perfect mechanical condition after which it is set up and operated. It is then turned over to the packing department where it is carefully and rigidly packed to reach you in perfect condition.

Prices F. O. B. South Bend, Ind., U. S. A.

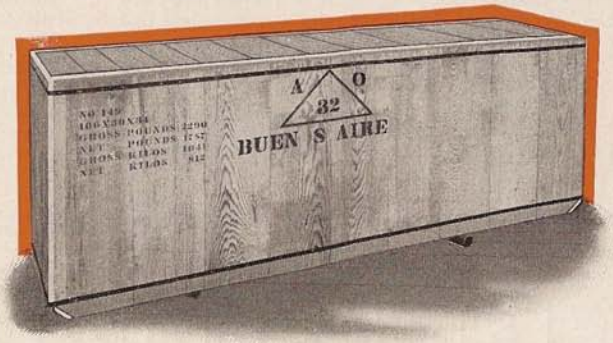
All prices listed throughout this catalog are f.o.b. our factory, i.e. free on board railroad cars in South Bend, Indiana, U.S.A. Prices are shown in United States Dollars. You can determine prices in your own currencies by consulting your local bank for the exchange rate between U. S. Dollars and your own money at the time of ordering.

South Bend, Indiana, U. S. A.

South Bend is located approximately 700 miles West of the port of New York City and most shipments are made through the port of New York. We, therefore, have listed approximate transportation charges from our factory to shipside New York throughout this book.

Our Own Manufacture

The 9-inch "Workshop" Lathe is a product of our own manufacturing plant. Nearly all the attachments and accessories shown throughout this book are manufactured in our own plant by our own workmen. The few items shown in the catalog not manufactured by us are purchased from reliable manufacturers.



South Bend Lathe Boxed for Ocean Shipment.

Boxing for Export Shipment

When boxing the 9" Workshop Lathe for export shipment we remove all small parts, dismantle the machine to occupy a minimum amount of space. All parts removed are oiled, greased, wrapped and packed in one strong case as illustrated just above. The entire unit is blocked and fastened solidly inside the case to prevent moving while in transit. The box is lined inside with water proof paper and bound with steel tape outside. A charge of $12.00 per lathe is made for boxing the 9" Workshop Lathe.

Remittances

Remittances may be made by international postal money orders, bank drafts or letters of credit arranged with any bank in the United States. Your local Post Office can give you information about international postal money orders. Your local banker can purchase drafts payable in United States dollars in this country. Ask him about them. Your banker also can arrange to secure letters of credit if you prefer to make remittances in this manner.

Mule Back Packing

When desired we can pack the 9" "Workshop" Lathe in two or three small boxes or cases each being less than two hundred pounds in weight, suitable for mule back transportation. A net charge of $17.00 per lathe is made for packing the 9" "Workshop" Lathe for mule back transportation.

Insurance

Unless otherwise instructed we insure your shipment when it leaves our factory and charge you the actual cost of this service. We insure the shipment against fire, theft, damage, pilferage and the usual marine risks. The policy is in effect from the time the shipment leaves our factory until it reaches your warehouse. Therefore you are positively guaranteed that the lathe will reach you in the same perfect condition as when it left our factory.

C.I.F. Prices to Various Ports

Should you desire a quotation on the lathe delivered to the port in your own country write to us specifying the size and type of lathe in which you are interested and we will send an itemized quotation to you.

Approximate C.I.F. Prices

In the tabulation at the bottom of this page we have shown approximate delivery expenses on the 9" x 3' Workshop Lathe to important ports throughout the world. These estimates include railroad freight from our factory to the port of export, cartage charges from railroad terminal to shipside, ocean freight, insurance and forwarding.

Consular Fees

Consular fees are sometimes levied by various countries in addition to or in place of customs duties. The consular fees and customs duties are not included in the estimated transportation table below. For information on this subject write to us for C.I.F. quotations and we will itemize the consular fees, if any, according to the latest rules of the country in which you are located.

Export Rates per 100 pounds from South Bend to Shipside at Principal U.S. Ports

New York, N. Y.	$1.30
Baltimore, Md.	1.20
Key West, Florida	1.64
New Orleans, La.	1.11½
Los Angeles, Calif.	2.25
San Francisco, Calif.	2.25
Seattle, Wash.	2.25
Vancouver, B.C., Canada	2.31
Laredo, Texas	2.16½
El Paso, Texas	2.16½

Approximate Shipping Charges on the 9" x 3' "Workshop" Lathe to World Ports Including Freight in U. S. A., Ocean Freight and Insurance

Alexandria, Egypt	$29.00	Dairen, Manchou Tikou	18.00	Osaka, Japan	18.00
Auckland, New Zealand	17.00	Durban (Natal) So. Africa	16.00	Pernambuco, Brazil	20.00
Bangkok, Siam	14.00	Hong Kong	18.00	Port-au Prince, Haiti	18.00
Batavia, Java	14.00	Honolulu, T. H.	13.00	Rio de Janeiro, Brazil	22.00
Beirut, Syria	24.00	Ketchikan, Alaska	17.00	San Juan, P. R.	13.00
Belize, Br. Honduras	15.00	Kingston, Jamaica	15.00	Santos, Brazil	22.00
Bombay, India	15.00	Lisbon, Portugal	24.00	Seward, Alaka	17.00
Bridgetown, Barbados	14.00	Liverpool, England	16.00	Shanghai, China	18.00
Calcutta, India	15.00	Laurenco Marques, P.E.A.	19.00	Singapore, S. S.	15.00
Cape Town, South Africa	16.00	Melbourne, Australia	17.00	Wellington, New Zealand	17.00

General Export Information on 9-inch "Workshop" Lathes

Shipments Via New York City

Most shipments for export are made via the port of New York City. We ship from our factory in South Bend in consolidated cars to New York requiring five days in transit. The lathes are then placed aboard one of the many steamers leaving New York every week and are shipped to your port of destination. Only well established, responsible steamship lines are used for ocean shipments.

Shipments Via West Coast

From two to three weeks delivery time can be saved to ports in China, Japan, Siam, Philippine Islands, Australia, New Zealand and several other far eastern countries, if shipment is made via West Coast ports of the United States, such as San Francisco, Seattle, Los Angeles, and Vancouver, British Columbia, Canada. The expense of shipping via West Coast ports is seldom, if ever, greater than the expense of shipping via New York City. The lathes leave South Bend in consolidated cars for West Coast ports and require eight to nine days in transit.

Lathes Crated for Rail Shipment

Lathes for shipment to the Republic of Mexico, are crated, the same as we pack shipments for delivery in the United States. There is no additional charge for packing when shipments are made in crates instead of the usual export boxing. Shipments to Alaska, Hawaii, Puerto Rico and several other nearby destinations may also be made with the lathes crated instead of boxed.

Lathe Crated for Rail Shipment

Shipments Via Key West

Shipments to the Republic of Cuba are usually made via Key West, Florida. South Bend is very near Chicago, therefore, we are able to take advantage of consolidated car service from Chicago to Key West and thence by car ferry from Key West to Havana. The lathe is loaded in a Havana car and is not removed from that car until it reaches Havana. About seven days are required in transit from South Bend to Havana. Shipments by this route are crated instead of boxed.

Motors and Switches We Furnish

Our prices are based on single phase, 60-cycle, 110-volt, Alternating Current for lighting circuits and 3-phase, 60-cycles, 220-volt Alternating Current for power circuits, and Direct Current 115-volts and 230-volts for both lighting and power. Motors we supply are standard makes, usually Westinghouse or General Electric or equal make.

Switches are also of standard makes, suitable in each case to the type of motor they are intended to control.

Electrical Equipment Abroad

Electric lines in countries outside the United States frequently have different current specifications than those in the United States. For example, single phase lighting current is frequently generated at 25, 30, 40 and 50 cycles, with voltages of 125, 150, etc. Power lines of 3-phase are frequently generated at cycles of 25, 30, 40 and 50, and with voltages of 199, 208, 230, 260, 340 and 400 volts. Always be sure to specify clearly and exactly the electric current you will use for operating your motor driven lathe and the attachments shown throughout this catalog.

Special Motors and Switches

Should your electric current be generated at one of the unusual cycles and voltages listed in the preceding paragraph, the cost of your electric motor and switch may be higher than the prices shown throughout this catalog. Electric motor manufacturers usually charge from ten to twenty percent more for wiring motors for odd cycles and voltages. You may send your order to us and we will charge you the lowest price possible, or, if you wish, you may write us and we will quote you in advance giving the exact price of special motors and switches.

Using Your Own Motor

Should you have your own motor or if you wish to purchase your motor locally, you may order your lathe and equipment less the motor. We will gladly quote prices on lathes and attachments less electrical equipment, on request. 9-inch Workshop Lathes have motors and switches priced separately throughout this catalog so you can, if you wish, omit the items not wanted at the time of ordering. The 9-inch Workshop" Lathe requires ¼ H. P. motor, and may be operated from an electric light socket.

Ordering Motors From Us

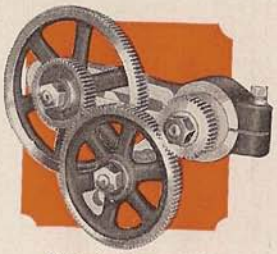
It is recommended that you order your Motor Driven Lathes and Motor Driven Attachments complete from us, as they are carefully tested in our factory and will operate satisfactorily when you get them. However, if your current specifications are special, some allowance should be made for delay in shipment. Delays will average from ten days to three weeks on motors of odd cycle and voltage.

TRANSPOSING GEAR ATTACHMENT

For Cutting Metric Screw Threads

The illustration at the right shows the special gear holding bracket and transposing gear set which may be used on any 9-inch "Workshop" Lathe for cutting screw threads in millimeter pitch.

The attachment includes gear bracket, one compound 127-100 gear and all the change gears necessary to cut the metric threads listed on the index plate below. Cat. No. 1434. Code "Tilog"... **$25.00**



Metric Transposing Gear Attachment

Metric Thread Chart

The illustration at the right shows the chart furnished with each Metric Transposing Gear Attachment, to indicate the proper method of setting up the lathe gearing for cutting metric threads. The range of metric threads which can be cut is from .5 millimeter to 8.0 millimeter including all the commonly used international standard metric pitches.

The use of Metric Transposing Gears with an English pitch lead screw is a standard practice accepted by the best manufacturing plants and engineers all over the world. The advantage is that both metric threads and English pitch threads can be cut on the same machine at very slight additional cost for the transposing gear attachment.

METRIC THREAD CUTTING CHART
FOR 9" "WORKSHOP"

PITCH IN M M	TRANS COMP	COMP GEAR	SCREW GEAR
.5	127-100-	- - -	-120
.75	127-100-	-30-	-120
1.	127-100-	-40-	-120
1.25	127-100-	-50-	-120
1.5	127-100-	-60-	-120
1.75	127-100-	-35-	-60
2.	127-100-	-40-	-60
2.5	127-100-	-50-	-60
3.	127-100-	-60-	-60
3.5	127-100-	-70-	-60
4.	127-100-	-80-	-60
4.5	127-100-	-45-	-30
5.	127-100-	-50-	-30
5.5	127-100-	-55-	-30
6.	127-100-	-60-	-30
6.5	127-100-	-65-	-30
7.	127-100-	-70-	-30
7.5	127-100-	-75-	-30
8.	127-100-	-80-	-30

Metric Screw Thread Cutting Chart for "Workshop" Lathe.

Fine Metric Threads

Finer threads than .5 millimeter pitch can be cut by using additional gears with the metric transposing gear attachment. Additional gears for cutting .4, .3, .25 and .2 millimeter pitch threads can be supplied at the following price. Cat. No. 534. Code Word "Cisyb" Price..... **$5.00**

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

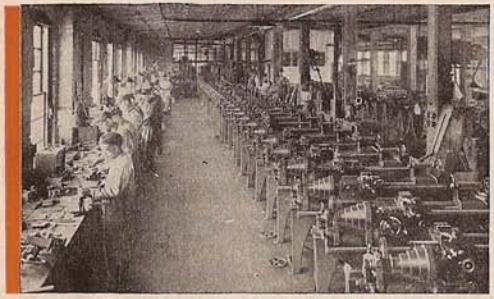


Fig. 116. Assembly Line Where from 25 to 50 Lathes of One Size are Assembled at a time.

Fig. 117. Factory Display Room Where South Bend Lathes are set-up Ready for Operation.

The South Bend Lathe Works was established November 1st, 1906, and will have been continuously in operation, under the same management, for twenty-eight years on November 1st, 1934. The plant, which represents an investment of over $2,000,000 in buildings and equipment, is devoted exclusively to the manufacture of South Bend Lathes which are built in the following sizes—18″, 16″, 13″, 11″ and 9″ swing, all in Countershaft Drive and Motor Drive.

More than 57,000 South Bend Lathes have been manufactured and are in use in ninety-seven countries of the world.

Factory. Interior shop views of a few departments in our plant are illustrated on this page. The factory exterior is shown below. Our plant occupies a ground area of slightly more than four and one-half acres The floor space is approximately 180,000 square feet.

Plant Facilities. The factory is equipped with the most modern machinery, jigs, tools and fixtures necessary for the manufacture of high quality lathes. More than one hundred South Bend Lathes are in use in our own shops.

Our Workmen have an average of ten years experience in building South Bend Lathes and are capable of doing the highest class of work.

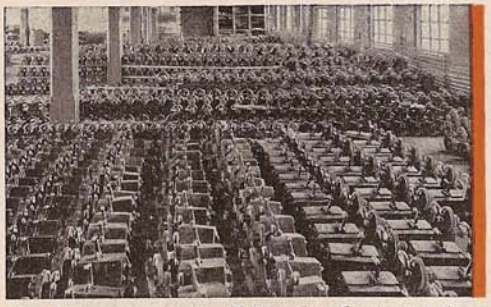


Fig. 118. Headstocks, Tailstocks, Carriages, Gear Boxes, etc., in Stock Ready for Assembly.

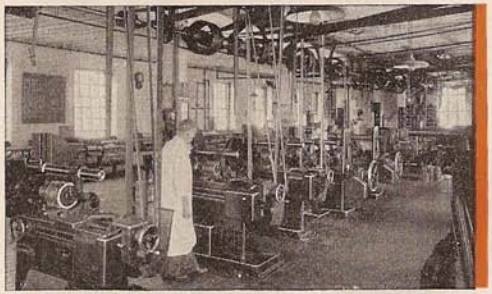
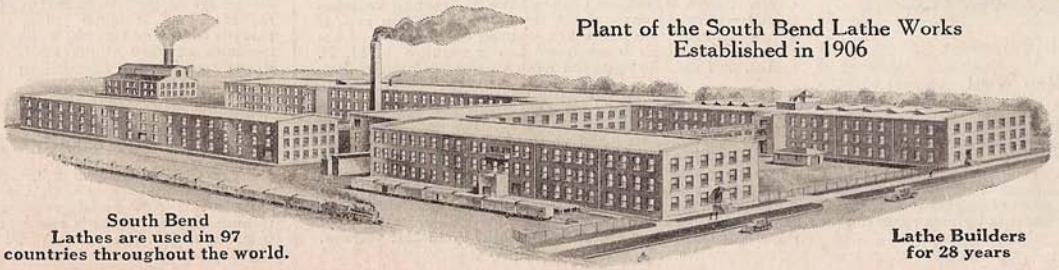


Fig. 119. Gear Cutting Department Where All Gears for South Bend Lathes are made.

TRADE MARK SOUTH BEND TWINS ENGINE LATHES

Plant of the South Bend Lathe Works
Established in 1906



South Bend Lathes are used in 97 countries throughout the world.

Lathe Builders for 28 years

South Bend Lathe Works
442 E. Madison Street
South Bend, Indiana
(U. S. A.)
Cable Address "TWINS"

Printed in U.S.A. 10-27-'34-ROXM